

**STATE BOARD OF OPTOMETRY**

2450 DEL PASO ROAD, SUITE 105, SACRAMENTO, CA 95834
P (916) 575-7170 F (916) 575-7292 www.optometry .ca.gov



Continuing Education Course Approval Checklist

Title:

Provider Name:

☒ Completed Application

Open to all Optometrists? ☒ Yes ☐ No

Maintain Record Agreement? ☒ Yes ☐ No

☒ Correct Application Fee

☒ Detailed Course Summary

☒ Detailed Course Outline

☒ PowerPoint and/or other Presentation Materials

☒ Advertising (optional)

☒ CV for EACH Course Instructor

☒ License Verification for Each Course Instructor

Disciplinary History? ☐ Yes ☒ No



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CONTINUING EDUCATION COURSE APPROVAL APPLICATION

\$250 PAID

\$50 Mandatory Fee

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule, a detailed course outline and presentation materials (e.g., PowerPoint presentation). Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

Course Title Interpreting the OCT: Fact or Artifact?	Course Presentation Date 03/03/2017
---	--

Course Provider Contact Information

Provider Name Andriana Foster K (First) (Last) (Middle)	
Provider Mailing Address Street 4661 N Shallowford Rd City Atlanta State GA Zip 30338	
Provider Email Address afoster@secostaff.com	
Will the proposed course be open to all California licensed optometrists?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

Instructor Name Gregory Caldwell (First) (Last) (Middle)	
License Number 505661	License Type Optometrist
Phone Number (814) 695-3141	Email Address grubod@gmail.com

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Andriana K Foster
Signature of Course Provider

2/7/2017

Date

February 7, 2017

California State Board of Optometry
Attn: Kristina Eklund
2450 Del Paso Road Suite 150
Sacramento, CA 95834

Dear Ms. Kristina

Re: Fee Requirement

SECO International is seeking continuing education approval for five courses. We believe that some of the classes are directly tied together. We are offering a class on pieces of equipment, and then offering a learning lab, which will be a hands-on opportunity to practice with the equipment. The Optovue OCT and Optovue OCT Learning Lab will be taught by the same teacher on the same topic. Additionally, Zeiss Cirrus OCT and Zeiss Cirrus OCT Learning Lab will have the same instructor speaking on the same equipment.

1. Optovue OCT
2. Optovue OCT Learning Lab
3. Zeiss Cirrus OCT
4. Zeiss Cirrus OCT Learning Lab
5. Interpreting the OCT: Fact or Artifact?

Previously, we had submitted an application with a payment for \$250 for our courses. However, once the application was returned, it was brought to our knowledge that if courses were on the same topic then it would count as one fee. Therefore, our correct payment would be \$150 if these courses are deemed to be related.

Thank you,

Andriana Foster



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SECO2017

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MARCH 1-5, 2017

GEORGIA WORLD CONGRESS CENTER
ATLANTA, GA

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IT'S TIME TO SEE A SPECIALIST.

(For your practice, that is.)

If you're like many medical practitioners, you provide first-rate patient care—but when it comes to running your private practice, excellence doesn't always come as easily. That's because operating a small business requires a completely different skillset—one that you'll build in the one-of-a-kind **MedPRO360 business education** program. In one day, you'll learn how to boost your overall profitability with proven strategies in marketing, management, analytics, human resources and more. Learn from the pros and give your practice the level of care it deserves—the good health of your business is worth your attention.



MARCH 1, 2017

Georgia World Congress Center | Atlanta, GA

Medical professionals in all fields will benefit from this intensive program.
REGISTER TODAY at www.seco2017.com/medpro360

Register for the
SECO2017 All-Inclusive
Package and attend at
no additional cost.

BONUS! Program registration includes a **FREE** one-year subscription for the recorded sessions—so you can refresh your knowledge on demand!

Why Attend SECO?

We'll Help You Focus On Success.

As an optometry professional, you know that business success depends on more than providing good patient care. To make sure your eye care practice thrives, you also need to focus time and effort on managing your staff, improving your operations and keeping up with the latest clinical advances. That's where we excel. When you spend five ultra-productive days at **SECO 2017, the world's largest conference for optometric professionals and staff**, you'll get up to speed on all of the latest optometry issues, product trends and medical developments, and you'll gain smart new strategies for maximizing profits and running a successful business.

This year's program offers **100+ hours of continuing education during 250 specialized courses**, plus hands-on learning labs, show floor demos and team-centered learning opportunities. Check out these education highlights you won't want to miss:

- **5 Special Sessions** with the top authorities in our profession include Retina Roundup, where you'll hear all about the modern-day retinal practice, new surgery techniques and the many uses for anti-VEGF, and Skinning Cats: From SLET to DMEK, which explores all of the new corneal surgeries, with emphasis on pre-op selection and post-op management—get ready for some stunning videos.
- **9 Learning Labs** include Laser Learning Lab, which demystifies the various laser procedures in eye care, and MGD Learning Lab, a hands-on look at the diagnostic and therapeutic modalities for dry eye.
- **"What's My Beef?"** Courses address issues that ODs may have with pharmacists, vision plans, referral sources, and glaucoma management.
- **And more...** Maximizing Profits in a Competitive Market, MACRA and MIPS: The New MU, The Optic Neuropathies—see pages 12-22 for the complete course list.

Take some time to peruse the entire event lineup so you make the most of your time at SECO 2017. **A successful future awaits!**

Set your sights on a prosperous future at **SECO 2017**.

Focus on learning in our world-class education program for optometrists and staff.

Observe innovative new products in the exhibit hall, where nearly 250 leading suppliers and industry representatives are on hand to provide guidance and recommendations.

Connect eye-to-eye with colleagues when you join 6,000 optometry professionals from across the United States and around the world.

Update your perspective and rekindle your excitement about optometry—a change of scenery and new inspiration can do wonders for your outlook.

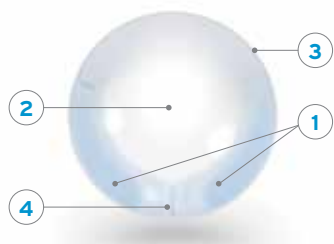
See the town and unwind during dozens of fun events like alumni receptions, the NEXT Party, the Ophthalmic Professionals Party and the can't-miss Saturday Night Fever Party at Atlanta's famous Tabernacle!

YOUR FUTURE IN FOCUS



Advanced technology for today's patients

Provide your patients with **consistently clear vision and comfort throughout the day.**²



- 1. Evolved peri-ballast lens design for comfort and stability
- 2. Spherical aberration control helps to reduce halos and glare
- 3. Thin, tapered edge design for limited lid interaction
- 4. Orientation mark for measuring rotational stability and helping patients during insertion



IMPROVE *their* VIEW

Biotrue® ONEday for Astigmatism daily disposable contact lenses with Surface Active Technology™ maintain 98% of their moisture for up to 16 hours **and provide comfortable vision for your astigmatic patients.**^{1,2}

REFERENCES: 1. Data on file. Bausch & Lomb Incorporated, Rochester, NY; 2012. 2. Results from a 7-investigator, multi-site, randomized, crossover study of Biotrue® ONEday for Astigmatism and control contact lenses on 123 current non daily disposable toric soft contact lens wearers. Each lens brand was worn on a daily wear basis for 1 week.
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Table of Contents



5	President's Invitation
7	Schedule of Events
8	Exhibit Floor Highlights
9	SECO 2017 Exhibitors
12	Optometrist (OD) Highlights
13	OD CE Hours By Category
15-22	OD Schedule At A Glance
24	Student Program
26	Ophthalmic Professionals (OP) Highlights
27	OP CE Hours By Category
29-36	OP Schedule At A Glance
38	Book Your Travel
40	Registration

FOCUS ON LEARNING

SECO 2017 is the largest optometric conference in the world, with more than 250 specialized sessions, learning labs, show floor demos and team-centered educational opportunities.

FOCUS ON TEAMWORK

A well-trained team is key for ensuring excellent patient care, a high patient retention rate and ongoing business growth. SECO 2017 provides targeted programming for everyone in your office.

FOCUS ON INNOVATION

Meet face-to-face with nearly 250 leading suppliers at the Optometry's Marketplace™ and discover new solutions that will maximize your time, boost your profits and help your clinic reach its full potential.

FOCUS ON CONNECTIONS

Exchange ideas, share common challenges, and discover effective solutions with the more than 6,000 optometry professionals that attend SECO 2017 from across the country and around the world.

THIS IS WHY correcting
will never be the same



UNIQUE WATER GRADIENT TECHNOLOGY

EAR

INTERMEDIATE

The world's first and only Water Gradient lens design

Seamless Vision Correction

Industry-leading is built to deliver clear, uninterrupted vision.

PERFORMANCE DRIVEN BY SCIENCE®



References: 1. Alcon data on file, 2015. 2. Alcon data on file, 2016. 3. Alcon data on file, 2011. 4. Angelini TE, Nixon RM, Dunn AC, et al. Viscoelasticity and mesh-size at the surface of hydrogels characterized with microrheology. *Invest Ophthalmol Vis Sci.* 2013;54:E-abstract 500.



President's Invitation



It is my great pleasure as President of SECO International to invite you to join us in Atlanta on March 1-5 for **SECO 2017**.

Our theme this year is Your Future in Focus and there is no better way or better place to focus on the latest issues, trends and medical developments. At SECO 2017, you'll access the essential knowledge, new strategies and timely techniques for running a thriving practice.

Our world-class educational program offers cutting edge topics and speakers for the entire office – optometrists, opticians, paraoptometrics, technicians, administrators and more.

This year, we are pleased to offer an exciting new program in conjunction with SECO 2017 called MedPRO 360. This one-day program focuses on practice management issues that private practice healthcare professionals deal with every day, no matter your specialty or area of medical practice. It is open to all healthcare professionals and we hope you will join us on Wednesday, March 1.

SECO is launching a new hands-on Paraoptometric Certificate Program this year that is the only one of its kind in optometry. We've also expanded the Presentation Theaters to offer even more opportunities for free CE in the exhibit hall. Plus, you will be able to see the latest fashions in frames during the fashion showcase on Friday and Saturday.

Fun is still the name of the game at SECO as well, with parties and events every night, culminating in the Saturday Night Fever Party at Atlanta's famous Tabernacle with live music from a fantastic band—check out SECO2017.com for details.

You will find registration details, course listings and all the latest information online at SECO2017.com. We look forward to seeing you in Atlanta.

Sincerely,

Ted McElroy, O.D.
President
SECO International, LLC

ORGANIZATIONAL LEADERSHIP

EXECUTIVE COMMITTEE

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BOARD OF TRUSTEES

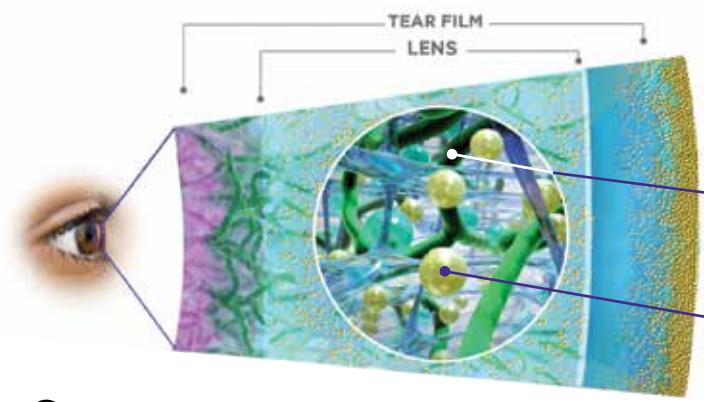
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Grad student. Volunteer. Value conscious.

Because I know Sam wants a full month's use from his lenses, I prescribe **NEW ACUVUE® VITA™**.

EYE-INSPIRED™ Design | Reliable, superior comfort—all month long



NEW HydraMax™ Technology is a non-coated silicone hydrogel formulation balanced to help **MAXIMIZE** and **MAINTAIN** hydration.

- **HYDRATION is MAXIMIZED** with the maximum amount of hydrating agent integrated throughout this lens.
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Patient ratings for ACUVUE® VITA™ were superior at weeks 1, 2, 3, and 4 for “Overall Comfort.”*



*Compared to Air Optix® Aqua, Biofinity®, and Ultra™. ACUVUE® VITA™ Brand Contact Lenses are indicated for vision correction as a daily wear lens with one-month recommended replacement. As with any contact lens, eye problems, including corneal ulcers, can develop. Some wearers may experience mild irritation, itching or discomfort. Lenses should not be prescribed if patients have any eye infection, or experience eye discomfort, excessive tearing, vision changes, redness or other eye problems. Consult the package insert for complete information. Complete information is also available by visiting acuvueprofessional.com, or by calling Johnson & Johnson Vision Care, Inc. at 1-800-843-2020. Third-party trademarks used herein are the property of their respective owners. ACUVUE®, ACUVUE® VITA™, EYE-INSPIRED™, and HydraMax™ are trademarks of the Johnson & Johnson Vision Care, Inc. © Johnson & Johnson Vision Care, Inc. 2016 10529926 April 2016

Schedule of Events

Wednesday, March 1

8:00 AM - 4:00 PM	MedPRO 360	GWCC, Exhibit Hall A3
10:30 AM - 3:45 PM	Optometrist Continuing Education Program	GWCC, Bldg A
10:30 AM - 3:45 PM	Ophthalmic Professionals Continuing Education Program	GWCC, Bldg A

Thursday, March 2

7:00 AM - 7:00 PM	Ophthalmic Professional Continuing Education Program	GWCC, Bldg A
7:15 AM - 7:00 PM	Optometrist Continuing Education Program	GWCC, Bldg A
11:00 AM - 12:00 PM	Ophthalmic Professionals Symposium	GWCC, Bldg A
12:00 PM - 1:00 PM	OD Lunch Symposium	GWCC, Exhibit Hall A3
12:45 PM - 6:00 PM	Optometry's Marketplace at SECO™	GWCC, Bldg A Exhibit Hall
4:30 PM - 6:00 PM	Food Tasting Tour	GWCC, Bldg A Exhibit Hall
9:00 PM - 11:00 PM	ODs on Facebook Party	Game-X

Friday, March 3

6:30 AM - 5:00 PM	Ophthalmic Professionals Continuing Education Program	GWCC, Bldg A
6:30 AM - 7:00 PM	Optometrist Continuing Education Program	GWCC, Bldg A
10:45 AM - 5:00 PM	Optometry's Marketplace at SECO™	GWCC, Bldg A Exhibit Hall
12:00 PM - 1:00 PM	OD Lunch Symposium	GWCC, Exhibit Hall A3
3:00 PM - 5:00 PM	Ophthalmic Professionals General Session	GWCC, Bldg A
5:00 PM - 7:00 PM	Ophthalmic Professionals Party	Omni Hotel
6:00 PM - 11:00 PM	Alumni Receptions	Omni Hotel Meeting Rooms
9:00 PM - 12:00 AM	Bad Habits - Eye Docs of Rock Party	Ventanas
9:00 PM - 12:00 AM	The NEXT Party for Students & Recent Grads	Omni Hotel

Saturday, March 4

6:30 AM - 7:00 PM	Optometrist Continuing Education Program	GWCC, Bldg A
6:30 AM - 7:00 PM	Ophthalmic Professionals Continuing Education Program	GWCC, Bldg A
10:45 AM - 5:00 PM	Optometry's Marketplace at SECO™	GWCC, Bldg A Exhibit Hall
12:00 PM - 1:15 PM	Student Lunch Symposium	GWCC, Exhibit Hall A3
3:45 PM - 5:30 PM	SoCO House of Delegates Meeting	GWCC, Bldg A
8:30 PM - 12:00 AM	Saturday Night Fever Party	The Tabernacle

Sunday, March 5

7:15 AM - 11:45 AM	Ophthalmic Professionals Continuing Education Program	GWCC, Bldg A
7:30 AM - 2:00 PM	Optometrist Continuing Education Program	GWCC, Bldg A

ARMED FORCES OPTOMETRIC SOCIETY MEETING
afos2020.org
February 27-28
The Ritz-Carlton Downtown

SOCIETY OF NATIONAL ASSOCIATED PEARLE PROFESSIONALS
snappgroup.com
March 1-3
Omni Hotel at CNN Center

ENERGEYES ASSOCIATION MEETING
energyeyesassociation.com
March 5
Omni Hotel at CNN Center

COLLEGE OF OPTOMETRISTS IN VISION DEVELOPMENT MEETING
covid.org
March 5-6
Omni Hotel at CNN Center

Exhibit Floor Highlights



Freddie Mayes, O.D.
Exhibits Committee Chair

EXHIBITS COMMITTEE

Freddie Mayes, O.D. (C)
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Darby Chiasson, O.D.*
Ronald Foreman, O.D.*
Lori Roberts Hauser, O.D.*
Allison Lord, O.D.*
Kurt Steele, OD*
Terry Tucker, O.D.*

FREE CE in Presentation Theaters

The Presentation Theaters have been expanded due to popular demand! There are now more opportunities than ever to earn free CE. See page 11 for more information.

New Frames Fashion Showcase

Don't miss out on the showcase of the latest frame trends that will drive revenue for your practice inside Optometry's Marketplace at SECO™. Fashion shows will include those fashion trends that will help you generate profit in your practice.

FREE Food Tasting Tour

Join us for the FREE Food Tasting Tour to sample free food and drinks throughout the hall and network with colleagues while checking out the latest from our exhibitors.

Thursday, March 2 4:00 – 6:00 PM

Show Specials

Many of our exhibitors are offering SECO show specials, including discounts, upgrades and more. Ask your favorite company about their SECO specials or see the list at SECO2017.com.

Visit Optometry's Marketplace™ for FREE

If you are interested in only visiting the exhibit hall, simply enter the name of an exhibiting company when you register for the Exhibit Hall Only or Guest-Social Event packages and you can attend for free.

SECO 2017 Exhibitors

as of September 28, 2016

A&A Optical
A.B.S. Smart Mirror
ABB Optical Group
Abbott Medical Optics SECO CHAMPION
Acuity Pro / VisionScience Software
Advanced Ocular Care/Bryn Mawr Communications
AKORN (Thera Tears)
Alcon SECO CHAMPION
Alcon Pharma
Allergan SECO CHAMPION
Allied Powers LLC
Applied Medical Systems
Aspex Eyewear Group
Avalon Eyewear
Bank of America Practice Solutions
Banyon
Bausch + Lomb SECO CHAMPION
Beaver Visitec International
Beye LLC
Bio Tissue
BlephEx
Briot USA / Visionix Inc.
Bruder Healthcare Company
CareCredit
ClearVision Optical
Coburn Technologies
Compulink Business Systems
CooperVision
Costa Sunglasses
Crystal Practice Management
DGH Technology Inc.
Diopsys
Eastern Ophthalmic Supply & Repair
ECLgroup
Edison Optics
E-Dr. Network/New Era
Eschenbach Optik
Essilor Instruments
Essilor of America
Europa International/State
Eye Designs, LLC
Eye Care Partners, LLC
EyeCare Prime
EYEfficient, LLC
Eyefinity
EyeMed Vision Care
Eyes of Faith Optical
Fashion Optical Displays
Fast Pay (First Insight)
FCI Ophthalmics
First Vision Media Group
FoxFire Systems Group

Georgia Acuity Systems
Good-Lite
GPN/The EDGE
Haag Streit USA/Reliance
HAI Laboratories
Healthtec Industries
Heidelberg Engineering
HEINE-USA
HOYA Vision Care SECO CHAMPION
Icare USA
i-dealoptics
Imagewear
iMatrix
Innexus by Innereactive
Interstate Optical
Italia Independent USA
Johnson & Johnson Vision Care, Inc. SECO CHAMPION
Kasperek USA Optical
Katena
Keeler Instruments Inc.
Kenmark Group
Konan Medical
Lacriversa
Lafont
LasikPlus
Latham & Phillips Ophthalmic
LiquideHR Inc.
Lombart Instruments
Luxottica Group
M&S Technologies
MacuLogix
ManagementPlus
Marchon / Altair
MARCO Ophthalmic
Marcolin U.S.A. Eyewear Corp.
Maui Jim Sunglasses
MaximEyes by First Insight
MaxiVision (MedOp Health, Inc.)
Mid-Gulf Instruments
Miraflex
Modern Design Architects
Modern Optical International
My Vision Express
MyEyeDr
National Vision Retail
National Vision, Inc.
NCI Vision Systems
Nidek Inc.
Nordic Naturals
Nouveau
NovaBay Pharmaceuticals
OASIS Medical

OcuHub
Oculus
OCuSOFT
Ogi Frames
Optometry Times
Optos, Inc.
Optovue
ProDesign Denmark
Professional Eye Care Associates of America (PECAA)
Proof Eyewear
Reichert, Inc
Review of Optometry
RevolutionEHR
Robertson Optical Lab
Safilo
Santinelli International
ScienceBased Health
Shire SECO CHAMPION
Signet Armorlite
Solutionreach
Southern College of Optometry
Spy Optic
TC CHARTON Asian Fit Eyewear
TearLab Corp.
TearScience
TelScreen
The McGee Group
THE VIEW Luxury Eyewear Pavilion at SECO
TLC Vision Group Holdings
Topcon Medical Systems
U.S. Optical
VISION EASE
Vmax Vision Inc.
Volk Optical
VSI/Vision Systems Inc.
VSP Global / VSP Vision Care & VSP Optics Group
Walman Instruments
Walman Optical
Wal-Mart Health and Wellness
Weave
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FREE CE Presentations from



Attendance for each presentation is first-come, first-served and
seating is limited. See SECO at a Glance for dates and times.

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OD CE Program Highlights



Paul C. Ajamian, O.D.
Optometric Education Program
Development Committee, Chair

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Paige Foster, O.D.
Chris Wroten, O.D.
Consultant: Walt Mayo, O.D.

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Special Sessions

SECO 2017 will feature five of our renowned Special Sessions, showcasing the cutting-edge of optometry with the best speakers in the profession, including:

Retina Roundup - Mohammad Rafieetery, MD, one of optometry’s foremost retinal authorities, moderates a panel with John Randolph, MD and Eric Sigler, MD, two of the nation’s most skilled retinal surgeons, about the modern day retinal practice, new surgery techniques, and the many uses for anti-VEGF.

Skinning Cats: From SLET to DMEK – Transplants aren’t dead but they are on life support. Peter Veldman, MD, a national expert from Harvard, shares his surgical expertise with regards to all the new corneal surgeries, with emphasis on pre-op selection and post-op management. Be prepared for some stunning videos.

Learning Labs

Choose from nine Learning Labs, including: **Laser Learning Lab**, which will demystify the various laser procedures in eyecare and **MGD Learning Lab** which is a hands-on look at the diagnostic and therapeutic modalities for dry eye.

What’s My Beef?

This series of courses is a fun way to end the day, with topics and treats that only SECO can provide! Topics include What’s My Beef with: Pharmacists, Vision Plans, Referrals, and Glaucoma Meds.

CEE at SECO

Choose from 22 courses for 43 hours of Continuing Education with Examination (CEE) during SECO 2017. The University of Alabama at Birmingham School of Optometry is the examination provider. Look for the CEE icon or visit SECO2017.com for a complete list.

OTHER COURSES YOU DON’T WANT TO MISS INCLUDE:

**Maximizing Profits
in a Competitive Market**
- David Mills, OD

MACRA and MIPS: The New MU
- Jeff Michaels, OD
- Zach McCarty, OD
- Chris Wroten, OD

The Optic Neuropathies
- Tina Porzukowiak, OD



MARCH 1, 2017

8:00 AM - 4:00 PM
Georgia World Congress Center | Atlanta, GA

**SECO’s New Business
Management Program**

Clinical Optometry

Contact Lenses	13
Functional Vision/Pediatrics	10
General Optometry	4

Ocular Disease

Glaucoma	15
Injection Skills	2
Laser Procedures	5
Peri-Operative Management of Ophthalmic Surgery	3
Refractive Surgery Management	1
Surgical Procedures	2
Treatment & Management of Ocular Disease: Anterior Segment	33
Treatment & Management of Ocular Disease: Posterior Segment	14

Related Systemic Disease

Neuro-Optometry	6
Oral Pharmaceutical	2
Pharmacology	7
Principles of Diagnosis	8
Systemic/Ocular Disease	16

Optometric Business Management

Practice Management	26
Ethics/Jurisprudence	2

Looking for course descriptions? As a part of our efforts at going green, we have eliminated some printed content. Please refer to **SECO2017.com** for full course descriptions and to register.

The accreditation designations serve as a guide to assist you with course selection. The courses have been submitted as listed for approval. Program is subject to change. Please refer to SECO2017.com for current CE approvals and course descriptions.

SECO2017
WHERE SI HT MEETS VI I N™
MARCH 1-5 | ATLANTA, GA

SECO International extends its appreciation to the following for their unrestricted educational grant support of the SECO 2017 optometric continuing education program.

ALCON
BAUSCH + LOMB
ABBOTT MEDICAL OPTICS
ALLERGAN
VSP GLOBAL
SHIRE
REVIEW OF OPTOMETRY
PRIMARY CARE
OPTOMETRY NEWS
COOPERVISION



SERIES

FREE SES

IUM

Thursday, March 2 12:00 PM - 1:00 PM

Johnson

Friday, March 3 12:00 PM - 1:00 PM

BAUSCH & LOMB

Allegan

Exhibit Hall A3
Georgia World Congress Center

All 2017 Symposia will be held during lunch. They are unopposed by education and are offered to registered ODs at no charge. Students and residents are welcome to attend. Plated food and beverages will be provided.

The SECO Symposium Series is supported by the SECO 2017 Champion Program Premier Partners. As part of SECO's commitment to complying with relevant legal requirements, we regret that meals cannot be provided to healthcare professionals licensed in the states of Massachusetts, Minnesota or Vermont, or who are affiliated with any state or federal institution that prohibits the acceptance of meals at industry-sponsored events. Alternative options are available to attendees that are licensed in one of these states, affiliated with any such institution or simply prefer not to accept a reportable meal during the Symposium Series. Please contact 770-451-8206 for more information regarding how SECO International, LLC complies with the Sunshine Act.

SECO2017
WHERE SIGHT MEETS VISION™

Looking for course descriptions? Find complete descriptions online at SECO2017.com.

WEDNESDAY 3/1

OD

8:00 AM		
9:00 AM		
10:00 AM		
10:30 AM		
10:45 AM		
11:00 AM		
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11:30 AM		
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2:00 PM		
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3:00 PM		
3:15 PM		
3:30 PM		

8:00 AM - 4:00 PM

SECO's New Business Management Program

500 OSD is Not a Four Letter Word 10:30 AM - 12:30 PM 2 hrs. <i>Alan Kabat, OD, FAAO</i> <i>Whitney Hauser, OD</i>	501 The Future of Cataract Surgery 10:30 AM - 12:30 PM 2 hrs. <i>Paul C. Ajamian, OD</i>
502 Ask the Coding Experts 1:45 PM - 3:45 PM 2 hrs. <i>Rebecca Wartman, OD</i> <i>Harvey Richman, OD</i>	503 Everything You Wanted to Know About Therapeutics, But Were Afraid to Ask 1:45 PM - 3:45 PM 2 hrs. <i>Bruce Onofrey, OD, RPh, FAAO</i>

OD COURSE FEES

	All-Inclusive Package	A la Carte Package
Learning Labs	\$45/hour	\$45/hour
Lunch Courses	\$0	\$37/hour
What's Brewing? Courses	\$0	\$32/hour
All Other Courses	\$0	\$27/hour

AFOS
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Louisville, CO 80027
720.442.8209
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AFOS Meeting
February 27-28, 2017
Ritz-Carlton Atlanta Downtown

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OD COURSE FEES





	All-Inclusive Package	A la Carte Package
Learning Labs	\$45/hour	\$45/hour
Lunch Courses	\$0	\$37/hour
What's Brewing? Courses	\$0	\$32/hour
All Other Courses	\$0	\$27/hour





	7:00 AM														
	7:15 AM														
	7:30 AM														
	7:45 AM														
	8:00 AM														
	8:15 AM														
	8:30 AM	<div>060 SPECIAL SESSION</div> <div>Retina Roundup</div> <div>8:30 AM - 10:30 AM 2 hrs.</div> <div>Mohammad Rafieetary, OD John Randolph, MD Eric Sigler, MD</div>													
	8:45 AM														
	9:00 AM														
	10:00 AM														
	10:15 AM														
	10:30 AM														
	10:45 AM														
	11:00 AM														
	11:15 AM														
	11:30 AM														
	11:45 AM														
	12:00 PM	<div>301 LUNCH SYMPOSIUM</div> <div>12:00 PM - 1:00 PM</div> <div>Enjoy informative presentations by Alcon and Johnson & Johnson Vision Care.</div>													
	12:15 PM														
	12:30 PM														
Exhibit Hall Hours (12:45PM - 6PM)	12:45 PM														
	1:00 PM	<div>FREE CE</div> <div>In the Presentation Theater</div> <div>1:00 PM - 2:00 PM 1 hr.</div> <div>Supported by an unrestricted educational grant from Marco.</div>						<div>FREE CE</div> <div>Ophthalmic Merchandising 101 In the Presentation Theater</div> <div>1:00 PM - 2:00 PM 1 hr.</div> <div>Pete Hanlin, LDO</div> <div>Supported by an unrestricted educational grant from Essilor.</div>							
	1:15 PM														
	1:30 PM														
	1:45 PM														
	2:00 PM		<div>600</div> <div>Laser Learning Lab</div> <div>2:00 PM - 5:00 PM 3 hrs.</div> <div>Nathan Lighthizer, OD</div> <div>Michelle Welch, OD</div> <div>Patricia Walker, OD</div>												
	2:15 PM														
	2:30 PM														
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	3:45 PM														
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	4:15 PM														
	4:30 PM														
4:45 PM															
5:00 PM	<div>FREE CE</div> <div>Perception of Value In the Presentation Theater</div> <div>5:00 PM - 6:00 PM 1 hr.</div> <div>Pete Hanlin, LDO</div> <div>Supported by an unrestricted educational grant from Essilor.</div>														
5:15 PM															
5:30 PM															
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	6:15 PM														
	6:30 PM														
	6:45 PM														

CLINICAL OPTOMETRY






-  Contact Lenses
-  Functional Vision/Pediatrics
-  General Optometry

OCULAR DISEASE



-  Glaucoma
-  Injection Skills
-  Laser Procedures
-  Peri-Operative Management of Ophthalmic Surgery

-  Refractive Surgery Management
-  Surgical Procedures
-  Treatment & Management of Ocular Disease: Anterior Segment
-  Treatment & Management of Ocular Disease: Posterior Segment





RELATED SYSTEMIC DISEASE


























































































































-  Neuro-Optometry
-  Oral Pharmaceutical
-  Pharmacology
-  Principles of Diagnosis
-  Systemic/Ocular Disease

OPTOMETRIC BUSINESS MANAGEMENT

-  Practice Management
-  Ethics/Jurisprudence

OTHER

-  Coffee Provided
-  Food Provided
-  Team-Centered Learning
-  SECO Certified

		Glaucoma	I Bought One, Now What?			Anterior Segment	Retina		Make It Your Business	Tech Talk	SECO CERTIFIED	Learning Labs	Learning Labs	Learning Labs
6:00 AM														
6:15 AM														
6:30 AM		121   WHAT'S BREWING? Stem Cell Technology in Glaucoma	122   WHAT'S BREWING? Zeiss Cirrus OCT	123   WHAT'S BREWING? Lid Lesions: Relax or Refer?	512     WHAT'S BREWING? CLs for the Next Generation			124     WHAT'S BREWING? Pharmacology of Injectable Meds	125    WHAT'S BREWING? Do You Understand Your Practice's Financial Health?		513     WHAT'S BREWING? Take Control of Myopia!			
6:45 AM		6:30 AM - 7:30 AM 1 hr. <i>Leo Semes, OD, FFAO</i>	6:30 AM - 7:30 AM 1 hr. <i>Ian Ben Gaddie, OD, FFAO</i>	6:30 AM - 7:30 AM 1 hr. <i>Blair Lonsberry, OD, FFAO</i>	6:30 AM - 7:30 AM 1 hr. <i>Thomas Quinn, OD</i>			6:30 AM - 8:30 AM 2 hrs. <i>Tammy Than, OD, FFAO</i>	6:30 AM - 8:30 AM 2 hrs. <i>Bryan Rogoff, OD, MBA</i>		6:30 AM - 8:30 AM 2 hrs. <i>Jeffrey Walline, OD, PhD</i>			
7:00 AM														601  Hybrid and Scleral Lens Learning Lab
7:15 AM														7:00 AM - 9:00 AM 2 hrs. <i>Jeffrey Sansino, OD, FFAO</i>
7:30 AM														
7:45 AM		126   Clinical Cases in Glaucoma	127   Optovue OCT	514    Blepharitis, MGD and OSD	128   Pain Pain, Go Away		129  Morning Retinal Rounds			130   Poor EHR Performance: Who Do I Blame?				
8:00 AM		7:45 AM - 8:45 AM 1 hr. <i>Dave Sendrowski, OD</i>	7:45 AM - 8:45 AM 1 hr. <i>Joseph Pizzimenti, OD, FFAO</i>	7:45 AM - 8:45 AM 1 hr. <i>Ian Ben Gaddie, OD, FFAO</i>	7:45 AM - 8:45 AM 1 hr. <i>Benjamin Casella, OD, FFAO</i>		7:45 AM - 8:45 AM 1 hr. <i>Mohammad Rafieetary, OD</i>			7:45 AM - 8:45 AM 1 hr. <i>Doug Tierney, BS</i>				
8:15 AM														
8:30 AM														
8:45 AM														
9:00 AM	061   SPECIAL SESSION Cornea Cornucopia													
10:00 AM	9:00 AM - 11:00 AM 2 hrs. <i>Walter Whitley, OD, MBA, FFAO Elizabeth Yeu, MD Preeya Gupta, OD</i>													
10:45 AM														
11:00 AM	FREE CE A Different POV: New Perspectives on Optometry's Future In the Presentation Theater								FREE CE In the Presentation Theater					
11:15 AM	11:00 AM - 12:00 PM 1 hr. Supported by an unrestricted educational grant from CooperVision.								11:00 AM - 12:00 PM 1 hr. Supported by an unrestricted educational grant from Katena.					
11:30 AM	<i>Not for credit.</i>													
11:45 AM														
12:00 PM	302 LUNCH SYMPOSIUM   12:00 PM - 1:00 PM <i>Enjoy informative presentations by Bausch + Lomb and Allergan.</i>													
1:00 PM														
1:45 PM		131    Next Generation Glaucoma Meds and Delivery	132   In-Office Electrodiagnostics: What Can It Do For You?	133     Treating with Oral Meds: From Dry Eye to Dendrites	134     Rules and Exceptions in Neuro-Ophthalmic Disease	135    State of the Art Cataract Care	136   CE for CME	137    The Role of Lab Testing in Managing Ocular Disease	138    Maximizing Profits in A Competitive Market	139    The Fired Employee: Avoiding Tech Revenge	140     Interpreting the OCT: Fact or Artifact?	602   MGD Learning Lab	603   Injections Learning Lab	
2:00 PM		1:45 PM - 3:45 PM 2 hrs. <i>Ian Ben Gaddie, OD, FFAO</i>	1:45 PM - 3:45 PM 2 hrs. <i>Nathan Lighthizer, OD</i>	1:45 PM - 3:45 PM 2 hrs. <i>Blair Lonsberry, OD, MS, MEd, FFAO</i>	1:45 PM - 3:45 PM 2 hrs. <i>Joseph Sowka, OD, FFAO</i>	1:45 PM - 3:45 PM 2 hrs. <i>Justin Schweitzer, OD</i>	1:45 PM - 2:45 PM 1 hr. <i>Sri Krishna Mukkamala, MD</i>	1:45 PM - 3:45 PM 2 hrs. <i>Tammy Than, OD, FFAO</i>	1:45 PM - 3:45 PM 2 hrs. <i>David Mills, OD, MBA</i>	1:45 PM - 2:45 PM 1 hr. <i>Adam Parker, OD</i>	1:45 PM - 3:45 PM 2 hrs. <i>Gregory Caldwell, OD, FFAO</i>	1:45 PM - 3:45 PM 2 hrs. <i>Whitney Hauser, OD Alan Kabat, OD, FFAO</i>	1:45 PM - 3:45 PM 2 hrs. <i>Scott Ensor, OD John Neal, OD Patricia Walker, OD</i>	
2:15 PM														
2:30 PM														
2:45 PM														
3:00 PM							141     Intravitreal Injections							
3:15 PM							2:45 PM - 3:45 PM 1 hr. <i>Sri Krishna Mukkamala, MD</i>							604   Optovue OCT Learning Lab
3:30 PM														2:45 PM - 3:45 PM 1 hr. <i>Joseph Pizzimenti, OD, FFAO</i>
3:45 PM														
4:00 PM	FREE CE   Keeping up with the Millennials In the Presentation Theater													
4:15 PM	4:00 PM - 5:00 PM 1 hr.													
4:30 PM	<i>Ryan Parker, OD</i>													
4:45 PM	Supported by an unrestricted educational grant from Essilor.													
5:00 PM		143    The Devil is in the Diagnosis	144    Game of Loans	515     A Guide to Diabetic Disease and Pharmacology	145    Prevention of Medical Errors for Optometric Physicians	146    Covering the Cornea from A(BMD) to Z(oster)	147     No Matter How You Slice It: A Primer on the OCT	148    Clinical Challenges in Uveitis: Tales from the AC	516     Making Sense Out of Healthcare Reform	149    Inept and Distracted: The Technology-Centered Employee	517     Traumatic Brain Injuries: What You Don't Know Can Hurt You		605   Advanced Corneal Procedures Learning Lab	
5:15 PM		5:00 PM - 7:00 PM 2 hrs. <i>Joseph Sowka, OD, FFAO</i>	5:00 PM - 6:00 PM 1 hr. <i>David Mills, OD, MBA</i>	5:00 PM - 7:00 PM 2 hrs. <i>Scott Ensor, OD</i>	5:00 PM - 7:00 PM 2 hrs. <i>Robert Easton OD, FFAO</i>	5:00 PM - 7:00 PM 2 hrs. <i>Justin Schweitzer, OD</i>	5:00 PM - 7:00 PM 2 hrs. <i>Mohammad Rafieetary, OD</i>	5:00 PM - 7:00 PM 2 hrs. <i>Dave Sendrowski, OD</i>	5:00 PM - 7:00 PM 2 hrs. <i>Bryan Rogoff, OD, MBA</i>	5:00 PM - 6:00 PM 1 hr. <i>Justin Bazan, OD</i>	5:00 PM - 7:00 PM 2 hrs. <i>Cella Hinrichs, OD</i>			5:00 PM - 7:00 PM 2 hrs. <i>Caroline Pate, OD, FFAO</i>
5:30 PM		5:00 PM - 7:00 PM 2 hrs. <i>Ian Ben Gaddie, OD, FFAO</i>												Elizabeth Steele, OD, FFAO
5:45 PM		5:00 PM - 7:00 PM 2 hrs. <i>Danica Marrelli, OD, FFAO</i>												Tammy Than, OD, FFAO
6:00 PM			150   Advances in Measuring Tear Film Dynamics								151   Preventing In-Office HIPAA Blunders			
6:15 PM			6:00 PM - 7:00 PM 1 hr. <i>Will Smith, OD</i>								6:00 PM - 7:00 PM 1 hr. <i>Adam Parker, OD</i>			
6:30 PM														
6:45 PM														

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RELATED SYSTEMIC DISEASE

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Surgical Procedures

Treatment & Management of Ocular Disease: Anterior Segment

Treatment & Management of Ocular Disease: Posterior Segment

OTHER

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Food Provided

Team-Centered Learning

SECO Certified

OD COURSE FEES

Learning Labs

Lunch Courses

What's Brewing? Courses

All Other Courses

All-Inclusive Package

\$45/hour

\$0

\$0

\$0

A la Carte Package

\$45/hour

\$37/hour

\$32/hour

\$27/hour

OTHER

Practice Management

Ethics/Jurisprudence




OTHER

Coffee Provided

Food Provided

Team-Centered Learning

SECO Certified

7:30 AM	063  SPECIAL SESSION
7:45 AM	Lessons Learned From Larry: Honoring a Giant
8:00 AM	7:30 AM - 9:30 AM 2 hrs.
8:15 AM	Leo Simes, OD, FAAO Joseph Pizzimenti, OD, FAAO Blair Lonsberry, OD, MS, MEd, FAAO
8:30 AM	
8:45 AM	
9:00 AM	
9:15 AM	
9:30 AM	
9:45 AM	064  SPECIAL SESSION
10:00 AM	Co-Management Quandaries
10:15 AM	9:45 AM - 11:45 AM 2 hrs.
10:30 AM	Daryl Mann, OD Steven Holbrook, OD Howell Findley, OD
10:45 AM	
11:00 AM	
11:15 AM	
11:30 AM	
11:45 AM	
12:00 PM	172  LUNCH COURSE
12:15 PM	Controversies in Clinical Care
12:30 PM	12:00 PM - 2:00 PM 2 hrs.
12:45 PM	Steven Holbrook, OD
1:00 PM	
1:15 PM	
1:30 PM	
1:45 PM	

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OD COURSE FEES

	All-Inclusive Package	A la Carte Package
Learning Labs	\$45/hour	\$45/hour
Lunch Courses	\$0	\$37/hour
What's Brewing? Courses	\$0	\$32/hour
All Other Courses	\$0	\$27/hour

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GRAB YOUR LOVE BEADS, YOUR OLD 45S AND
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JOIN SECO FOR A BLAST FROM THE PAST.

MARCH 4, 2017
8:30PM - MIDNIGHT



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Featuring:



Kellye Knueppel, OD, FCOVD



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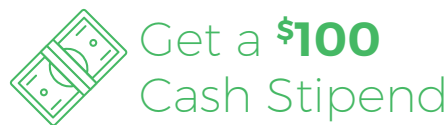
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Focus on Your Future as an optometrist at SECO 2017, where you can experience the best education in optometry. Network with your peers, working optometrists, potential employers and industry leaders, and enjoy some fun social events—all at no cost to you.

Free Continuing Education

Current optometry students and residents are welcome to attend the optometrist continuing education program at SECO 2017 for free, including the Special Sessions and lunch at the OD Symposium Series courses on Thursday and Friday along with the Student Symposia on Saturday. Students can attend courses as long as space is available, except for Learning Labs, which are excluded. Residents can sign up for courses when you register.

Student Symposium

The Student Symposium is a special course just for students with a free lunch, an opportunity to network with and hear presentations from industry leaders and interact with students from all over the country. Presentations will be geared to your interests, so be sure to sign up when you register.

Sponsored in part by  A Novartis Division  VISION CARE, INC.



Saturday, March 4 12:00 – 1:15 PM

Win a Scholarship

You could win a \$1,000 scholarship from SECO International just by attending the Student Symposium on Saturday. You must be present to win, so don't forget to register.

NEXT Party

SECO's NEXT Party is for students and recent grads, where you will celebrate your role as the future of the profession and have a great time with free food and drinks, a photo booth and a DJ.

Sponsored in part by  

Friday, March 3 9:00 PM – Midnight

The Energieyes Association
presents
SECO SUNDAY
Multi-Location Practice Management (Group A)
Dry Eye Treatment (Group B)
Sunday, March 5 7:30AM to 4PM

The Energieyes Association kicks off our 2017 partnership with SECO by offering two exciting training programs for our members. Learn how to take your single location practice to a multi-location practice in 2017. HR, scheduling, accounting, marketing and everything else you need to be successful.

over 50 practices successfully offering our program. We have a surprise trainer, great vendor discounts, weekly support calls, monthly conference calls and marketing materials. Success is your only option. Please join us.

We continue our Dry Eye training now with

For more information:
info@energieyesassociation.com
or call 415-481-9008

 The Association of Corporate-Affiliated Optometrists
Michael Pote, Executive Director



FOOD | DRINKS | MUSIC | PHOTO BOOTH

ALL STUDENTS AND RECENT GRADS ARE INVITED TO CELEBRATE THE FUTURE OF OPTOMETRY

Friday, March 3 9:00 PM – Midnight
Omni Hotel, International Ballroom ABC

Sponsored in part by  

Ophthalmic Professionals (OP) Highlights

NEW Ophthalmic Professionals Certificate Program

SECO is proud to introduce its new Ophthalmic Professional Certificate Program – the only hands-on certificate program for ophthalmic professionals. This two-year program will cover key areas necessary to become a complete technician and, if you are serious about becoming the best ophthalmic professional you can become, will put you on the right path. Choose from a specific selection of our unmatched courses and labs then, when you are ready, sit for a comprehensive, hands-on skills examination. Details are online at SECO2017.com and don't forget to indicate your interest when you register.



Rosalind Overton-Smith, O.D.
Allied Ophthalmic Professional
Education Program Committee, Chair

**ALLIED OPHTHALMIC
PROFESSIONAL PROGRAM
DEVELOPMENT COMMITTEE**

Rosalind Overton-Smith, O.D. (C)
Belinda Coberly (Paraoptometric Program)
Andrew Cook, Jr., O.D.
Susan Corwin (JCAHPO)
Brad Lane, O.D. (Logistics)
Lynn Lawrence (Paraoptometric Program)
David Meldrum (Optician Program)
Caroline Pate, O.D. (Logistics)
Stephan Sanford (Optician Program)

Lunch Symposium

Enjoy a free lunch and presentations from industry exclusively designed for ophthalmic professionals. Sponsored in part by Alcon.

Thursday, March 2 11:00 AM - 12:00 PM

More Advanced Courses

If you've been on the job for a while, SECO has technical and administrative advanced courses including CLs for the Next Generation, Blepharitis, MGD and OSD, Dealing with Difficult Patients and more.

Learning Labs

Get hands-on training in our learning labs. Some of this year's topics are Tear Evaluation, Slit Lamp, Lensometry, Eye Dissection, Refractometry, Prism Progressive, and Preliminary Skills for the Beginner.

Courses for Everyone

Opticians	Paraoptometrics
Ophthalmic Medical Personnel	Practice/Business Managers
Optometric Technicians	Administrators

CE by Category*

	HOURS
AOA Paraoptometric	189
ABO	79
NCLE	69
JCAHPO	94
Team Centered Learning	42

*The accreditation designations serve as a guide to assist you with course selection. The courses have been submitted as listed for approval. Program is subject to change. Please refer to SECO2017.com for current CE approvals and course descriptions.

Looking for course descriptions?
As a part of our efforts at going green, we have eliminated some printed content. Please refer to SECO2017.com for full course descriptions and to register.

SECO International extends its appreciation to the following Educational Grantor for making the SECO 2017 Ophthalmic Professionals continuing education program possible:

ALCON

OPHTHALMIC PROFESSIONALS PARTY

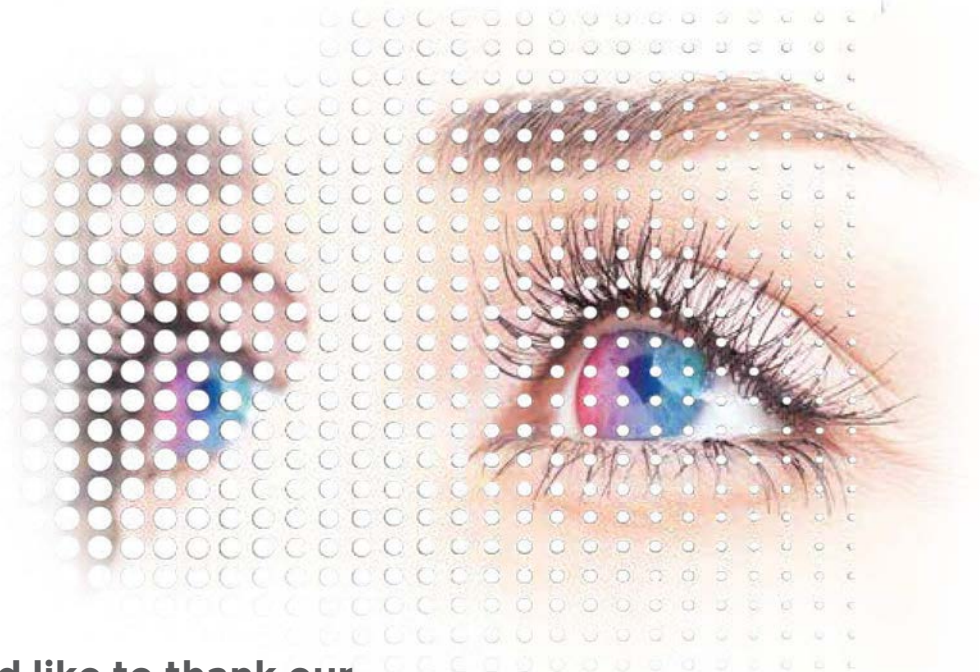
FRIDAY MARCH 3
5:00PM - 7:00PM
Omni Hotel, International Ballroom ABC

**You're a star in the optometric office
and this is your chance to celebrate!**

Sponsored in part by

Proud to honor you as a
star in your optometric office.

FOOD | DRINKS | DJ | PHOTO BOOTH



SECO International would like to thank our

2017 CHAMPIONS

for their continued support

PREMIER PARTNERS



PARTNERS



The SECO Champion Program is an elite partnership between leaders of the ophthalmic industry and SECO International. Their goal is to provide optometric professionals with the tools to achieve the highest levels of clinical knowledge and performance.

Looking for course descriptions? Find complete descriptions online at SECO2017.com.

8:00 AM	 8:00 AM - 4:00 PM SECO's New Business Management Program		
9:00 AM			
10:00 AM			
10:30 AM		500   OSD is Not a Four Letter Word	501   The Future of Cataract Surgery
10:45 AM		10:30 AM - 12:30 PM 2 hrs.	10:30 AM - 12:30 PM 2 hrs.
11:00 AM		Alan Kabat, OD, FAAO	Paul C. Ajamian, OD
11:15 AM		Whitney Hauser, OD	
11:30 AM			
11:45 AM			
12:00 PM			
12:15 PM			
12:30 PM			
12:45 PM			
1:00 PM			
1:15 PM			
1:30 PM			
1:45 PM			
2:00 PM		502   Ask the Coding Experts	503   Everything You Wanted to Know About Therapeutics, But Were Afraid to Ask
2:15 PM		1:45 PM - 3:45 PM 2 hrs.	1:45 PM - 3:45 PM 2 hrs.
2:30 PM		Rebecca Wartman, OD	Bruce Onofrey, OD, RPh, FAAO
2:45 PM		Harvey Richman, OD	
3:00 PM			
3:15 PM			
3:30 PM			

OP COURSE FEES	All-Inclusive Package	A la Carte Package
Learning Labs	\$25/hour	\$25/hour
What's Brewing? Courses	\$0	\$15/hour
All Other Courses	\$0	\$10/hour



Don't miss the most innovative and fashionable frame brands available today in SECO's luxury eyewear pavilion.

VISIT THE VIEW IN BOOTH #1221 INSIDE OPTOMETRY'S MARKETPLACE AT SECO™
















































































































	Administrative	Advanced Administrative Team-Centered	Technical	Basic Skills	Contact Lens	Optics and Dispensing Skills	Lensometry Learning Lab	Slit Lamp Learning Lab	Other Learning Lab	Team-Centered	Team-Centered	Team-Centered	
7:00 AM	700 Preventing Burnout 7:00 AM - 8:00 AM 1 hr. <i>Lynn Lawrence, CPOT, ABOC, USAF (Ret.)</i>				701 How to Be a Better Contact Lens Technician 7:00 AM - 9:00 AM 2 hrs. <i>Phyllis Rakow, COMT, NCLE-AC, FCLSA (H)</i>	702 Remakes, Warranties, and Common Sense 7:00 AM - 8:00 AM 1 hr. <i>Tami Hagemeyer, ABOC</i>				505 WHAT'S BREWING? Under Pressure: Know the Hypertensive Guidelines 7:15 AM - 8:15 AM 1 hr. <i>Elizabeth Steele, OD, FFAO</i>			
7:15 AM		504 WHAT'S BREWING? Caring for the Pregnant Patient 7:15 AM - 8:15 AM 1 hr. <i>Caroline Pate, OD, FFAO</i>											
7:30 AM													
7:45 AM													
8:00 AM			703 Effective Coding and Billing 8:00 AM - 10:00 AM 2 hrs. <i>Zachary McCarty, OD</i>	704 Slit Lamp Lecture 8:00 AM - 9:00 AM 1 hr. <i>Nathan Stevens, OD</i>			705 Lensometry Lecture 8:00 AM - 9:00 AM 1 hr. <i>Patrick Coleman, BSOE, COT</i>						
8:15 AM													
8:30 AM													
8:45 AM													
9:00 AM													
9:15 AM			707 Ocular Infections 9:00 AM - 10:00 AM 1 hr. <i>Michael Stewart, MD</i>	708 Eye Was Made This Way 9:00 AM - 10:00 AM 1 hr. <i>Brad Lane, OD, MBA</i>	709 Focus on Presbyopia: Keeping Patients in Contact Lenses 9:00 AM - 10:00 AM 1 hr. <i>Diane Drake, LDO, ABOM, FCLSA</i>	710 Dispensing for the Stars 9:00 AM - 10:00 AM 1 hr. <i>Tami Hagemeyer, ABOC</i>	900 Lensometry Learning Lab 9:00 AM - 11:00 AM 2 hrs. <i>Patrick Coleman, BSOE, COT</i> <i>Jennifer Stevens, OD</i>	901 Slit Lamp Learning Lab 9:00 AM - 11:00 AM 2 hrs. <i>Nathan Stevens, OD</i> <i>Justin Travis, OD</i>	902 Frame Adjustment Learning Lab 9:00 AM - 11:00 AM 2 hrs. <i>Irwin Shwom, OD, RDO</i>				
9:30 AM													
9:45 AM													
10:00 AM	711 E-Prescribing and PQRS 10:00 AM - 11:00 AM 1 hr. <i>Sharon Carter, BS</i>		712 OCT 10:00 AM - 11:00 AM 1 hr. <i>Michael Stewart, MD</i>	713 Pupil Testing 10:00 AM - 11:00 AM 1 hr. <i>Blair Lonsberry, OD, MS, MEd, FFAO</i>	714 Multifocals vs. Monovision: The Dilemma 10:00 AM - 11:00 AM 1 hr. <i>Phyllis Rakow, COMT, NCLE-AC, FCLSA (H)</i>	715 Task Specific Eyewear and Who Needs It 10:00 AM - 11:00 AM 1 hr. <i>Tami Hagemeyer, ABOC</i>							
10:15 AM													
10:30 AM													
10:45 AM			506 Managing Millennials 10:45 AM - 11:45 AM 1 hr. <i>Thuy-Lan Nguyen, OD</i>	300 Ophthalmic Professionals Lunch Symposium 11:00 AM - 12:00 PM									
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
12:00 PM	716 The Ultimate Practice 12:00 PM - 2:00 PM 2 hrs. <i>Lynn Lawrence, CPOT, ABOC, USAF (Ret.) / Sharon Carter, BS</i>		717 Macular Degeneration from A to Z 12:00 PM - 1:00 PM 1 hr. <i>Michael Stewart, MD</i>	718 Red Eye: What Do You See? 12:00 PM - 2:00 PM 2 hrs. <i>Kris Kerestan-Garbig, OD</i>	719 Patient Education: The Contact Lens Dispenser's Responsibility 12:00 PM - 2:00 PM 2 hrs. <i>Diane Drake, LDO, ABOM, FCLSA</i>	720 Optical Talk for Techs and Team Members 12:00 PM - 2:00 PM 2 hrs. <i>Joy Gibb, ABOC</i>	903 Prism Progressive Learning Lab 12:00 PM - 1:00 PM 1 hr. <i>Patrick Coleman, BSOE, COT</i> <i>Jennifer Stevens, OD</i>	904 Tear Evaluation Learning Lab 12:00 PM - 1:00 PM 1 hr. <i>Caroline Pate, OD, FFAO</i> <i>Elizabeth Steele, OD, FFAO</i>	905 Eye Dissection Learning Lab 12:00 PM - 2:00 PM 2 hrs. <i>Thomas Griffith, OD</i>				
12:15 PM													
12:30 PM													
12:45 PM													
1:00 PM			721 Tonometry and Pachymetry 1:00 PM - 2:00 PM 1 hr. <i>Caroline Pate, OD, FFAO</i>										
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
3:00 PM	722 How to Earn More 5 Star Reviews 3:00 PM - 4:00 PM 1 hr. <i>Justin Bazan, OD</i>		723 Eyelid Lumps and Bumps 3:00 PM - 4:00 PM 1 hr. <i>Blair Lonsberry, OD, MS, MEd, FFAO</i>	724 Questions Your Glaucoma Patients Want to Know 3:00 PM - 4:00 PM 1 hr. <i>Will Smith, OD</i>	725 Myopia Control with Contact Lenses 3:00 PM - 4:00 PM 1 hr. <i>Jeffrey Walline, OD, PhD</i>	726 Kid Care: Successfully Dispensing Children's Eyewear 3:00 PM - 4:00 PM 1 hr. <i>Joy Gibb, ABOC</i>							
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM													
05:00 PM													
5:15 PM				727 Eyes On The Game 5:00 PM - 6:00 PM 1 hr. <i>Belinda Coberly, CPOA</i>	728 Breakthrough Technologies on the Horizon 5:00 PM - 6:00 PM 1 hr. <i>Kris Kerestan-Garbig, OD</i>	729 Frame Inventory Management and Visual Merchandising 5:00 PM - 6:00 PM 1 hr. <i>Joy Gibb, ABOC</i>							
5:30 PM													
5:45 PM													
06:00 PM		510 What's My Beef With Vision Plans? 6:00 PM - 7:00 PM 1 hr. <i>Carl Spear, OD, FFAO</i>										511 What's My Beef With Speakers? 6:00 PM - 7:00 PM 1 hr. <i>Paul C. Ajamian, OD</i> <i>Thomas Griffith, OD</i>	
6:15 PM													
6:30 PM													
6:45 PM													
7:00 PM													

Looking for course descriptions? Find complete descriptions online at **SECO2017.com**.

OP COURSE FEES

Learning Labs	All-Inclusive Package	A la Carte Package
What's Brewing? Courses	\$25/hour	\$25/hour
All Other Courses	\$0	\$15/hour
		\$10/hour

SCHEDULE AT A GLANCE

		Administrative	Advanced Technical Team-Centered	Technical	Basic Skills	Contact Lens	Optics and Dispensing Skills	Professional Growth	Lensometry Learning Lab	Slit Lamp Learning Lab	Other Learning Lab	Team Centered		
6:30 AM			512    WHAT'S BREWING? CLs for the Next Generation 6:30 AM - 7:30 AM 1 hr. <i>Thomas Quinn, OD</i>									513    Take Control of Myopia! 6:30 AM - 8:30 AM 2 hrs. <i>Jeffrey Walline, OD, PhD</i>		
6:45 AM														
7:00 AM	730      A Review of HIPAA Rules 7:00 AM - 8:00 AM 1 hr. <i>Rebecca Wartman, OD Harvey Richman, OD</i>		731      Intro to Refractive Data Collection 7:00 AM - 8:00 AM 1 hr. <i>Ryan Gustus, OD</i>		732    Sometimes the Solution is the Solution 7:00 AM - 8:00 AM 1 hr. <i>Phyllis Rakow, COMT, NCLE-AC, FCLSA (H)</i>	733    Troubleshooting Dispensing to Seniors 7:00 AM - 8:00 AM 1 hr. <i>Diane Drake, LDO, ABOM, FCLSA</i>		906      Preliminary Skills for the Technician Learning Lab 7:00 AM - 9:00 AM 2 hrs. <i>Caroline Pate, OD, FAAO Will Smith, OD Elizabeth Steele, OD, FAAO</i>						
7:15 AM														
7:30 AM														
7:45 AM			514   Blepharitis, MGD and OSD 7:45 AM - 8:45 AM 1 hr. <i>Ian Ben Gaddie, OD, FAAO</i>											
8:00 AM	734    Coding and Billing 8:00 AM - 10:00 AM 2 hrs. <i>Zachary McCarty, OD</i>		735    Ocular Pathology: What Went Wrong? 8:00 AM - 10:00 AM 2 hrs. <i>Brad Lane, OD, MBA</i>	736      Basic Terminology 8:00 AM - 9:00 AM 1 hr. <i>Dianna Graves, COMT, BSEd</i>	737    It's A Very Scleral World 8:00 AM - 10:00 AM 2 hrs. <i>Thuy-Lan Nguyen, OD</i>	738    Troubleshooting Rx Complaints 8:00 AM - 10:00 AM 2 hrs. <i>Joy Gibb, ABOC</i>	907      POA, CPOT, COA Prep Course 8:00 AM - 10:00 AM 3 hrs. <i>Irwin Shwom, OD, RDO</i>				908  Refractometry Learning Lab 8:00 AM - 9:00 AM 1 hr. <i>Ryan Gustus, OD</i>			
8:15 AM														
8:30 AM														
8:45 AM														
9:00 AM					739    Making the Most Out of Patient History 9:00 AM - 10:00 AM 1 hr. <i>Blair Lonsberry, OD, MS, MEd, FAAO</i>									
9:15 AM														
9:30 AM														
9:45 AM														
10:00 AM	740    Claims Denial: What Is The Next Step? 10:00 AM - 11:00 AM 1 hr. <i>Rebecca Wartman, OD Harvey Richman, OD</i>		741   Injections Assisting 10:00 AM - 11:00 AM 1 hr. <i>Scott Ensor, OD John Neal, OD</i>	742    Blue Light 10:00 AM - 11:00 AM 1 hr. <i>Valerie Manso, ABOC, FNAO</i>	743    Achieving First-Fit Success With Toric Soft Lenses 10:00 AM - 11:00 AM 1 hr. <i>Phyllis Rakow, COMT, NCLE-AC, FCLSA (H)</i>	744    Troubleshooting Pediatric Dispensing 10:00 AM - 11:00 AM 1 hr. <i>Diane Drake, LDO, ABOM, FCLSA</i>								
10:15 AM														
10:30 AM														
10:45 AM														
11:00 AM	FREE CE   Ophthalmic Merchandising 101 In the Presentation Theater 11:00 AM - 12:00 PM 1 hr. <i>Pete Hanlin, LDO</i> Supported by an unrestricted educational grant from Essilor.										912  Refractometry Learning Lab 11:00 AM - 12:00 PM 1 hr. <i>Ryan Gustus, OD</i>			
11:15 AM														
11:30 AM														
11:45 AM														
12:00 PM														
1:00 PM	745     Meaningful Use 1:00 PM - 2:00 PM 1 hr. <i>Rebecca Wartman, OD Harvey Richman, OD</i>		746      Advances in Measuring Tear Film Dynamics 1:00 PM - 2:00 PM 1 hr. <i>Will Smith, OD</i>	747   Clinical First Aid 1:00 PM - 2:00 PM 1 hr. <i>Dianna Graves, COMT, BSEd</i>	748    Pediatric Contact Lenses 1:00 PM - 2:00 PM 1 hr. <i>Jeffrey Walline, OD, PhD</i>	749   Generation Y: Know Your Patient 1:00 PM - 2:00 PM 1 hr. <i>Valerie Manso, ABOC, FNAO</i>		913      Prism Progressive Learning Lab 1:00 PM - 2:00 PM 1 hr. <i>Patrick Coleman, BSOE, COT Jennifer Stevens, OD</i>	914     Goldmann Tonometry Learning Lab 1:00 PM - 2:00 PM 1 hr. <i>Robert McCullough, OD</i>	915  Advanced Refractometry Techniques Learning Lab 1:00 PM - 2:00 PM 1 hr. <i>Ryan Gustus, OD</i>				
1:15 PM														
1:30 PM														
1:45 PM														
2:00 PM	FREE CE   Perception of Value In the Presentation Theater 2:00 PM - 3:00 PM 1 hr. <i>Pete Hanlin, LDO</i> Supported by an unrestricted educational grant from Essilor.													
2:15 PM														
2:30 PM														
2:45 PM														
3:00 PM	750      I Speak Your Language: Understanding Personality Dynamics 3:00 PM - 5:00 PM 2 hrs. <i>Valerie Manso, ABOC, FNAO</i>													
4:00 PM														
5:00 PM	Ophthalmic Professionals Party 5:00 PM - 7:00 PM										515   A Guide to Diabetic Disease and Pharmacology 5:00 PM - 7:00 PM 2 hrs. <i>Scott Ensor, OD</i>	516   Making Sense Out of Healthcare Reform 5:00 PM - 7:00 PM 2 hrs. <i>Bryan Rogoff, OD, MBA</i>	517   Traumatic Brain Injuries: What You Don't Know Can Hurt You 5:00 PM - 7:00 PM 2 hrs. <i>Celia Hinrichs, OD</i>	
6:00 PM														
7:00 PM														

KEY

 ABO

 AOA Paraoptometric

 JCAHPO

 NCLE

 Ophthalmic Professionals Certificate Program

OTHER

 Coffee Provided






 Food Provided

 Team-Centered Learning

 SECO Certified

	Administrative	Advanced Technical Team-Centered	Technical Skills	Basic Skills	Contact Lens	Optics and Dispensing Skills	Advanced PM		Lensometry Learning Lab	Slit Lamp Learning Lab	Other Learning Lab	Team Centered	Team Centered
6:30 AM		518 WHAT'S BREWING?										519 WHAT'S BREWING?	520 WHAT'S BREWING?
6:45 AM		Transient Vision Loss										Examining A Problem Child	HIV and AIDS
7:00 AM	751 Coding and Billing	6:30 AM - 7:30 AM 1 hr. <i>Tina Porzukowiak, OD</i>		752 Visual Acuity	753 Optics in Glasses vs. Contact Lenses	754 Unequal Refractive Errors and the Effects on Vision	755 Dealing With Difficult Patients			916 Slit Lamp Learning Lab	917 Frame Adjustment Learning Lab	6:30 AM - 7:30 AM 1 hr. <i>Celia Hinrichs, OD</i>	6:30 AM - 7:30 AM 1 hr. <i>Joseph Sowka, OD, FFAO</i>
7:15 AM	7:00 AM - 9:00 AM 2 hrs. <i>Sharon Carter, BS</i>			7:00 AM - 8:00 AM 1 hr. <i>Tamara Franklin, CPOT, VSBA</i>	7:00 AM - 8:00 AM 1 hr. <i>James Slightom, BS</i>	7:00 AM - 9:00 AM 2 hrs. <i>Diane Drake, LDO, ABOM, FCLSA</i>	7:00 AM - 8:00 AM 1 hr. <i>Donna Suter, BA</i>			7:00 AM - 9:00 AM 2 hrs. <i>Dennis Cioni, RN, BS, COT</i>	7:00 AM - 9:00 AM 2 hrs. <i>Irwin Shworn, OD, RDO</i>		
7:30 AM													
7:45 AM		523 Horses or Zebras - Pediatric Cases											
8:00 AM		7:45 AM - 8:45 AM 1 hr. <i>Stacy Coulter, OD, FFAO</i>	756 There's An Optical App For That	757 Final Front Tear	758 Medically Necessary Contact Lenses		759 Inter-Generational Team Building		524 How to Perform A Basic Exam in Spanish			521 Squeezing Dollars from Your Technology Center	522 Allergy, Dry Eye or Both?
8:15 AM			8:00 AM - 9:00 AM 1 hr. <i>Justin Bazan, OD</i>	8:00 AM - 9:00 AM 1 hr. <i>Lynn Lawrence, CPOT, ABOC, USAF (Ret.)</i>	8:00 AM - 9:00 AM 1 hr. <i>Adam Gordon, OD</i>		8:00 AM - 9:00 AM 1 hr. <i>Donna Suter, BA</i>		7:45 AM - 8:45 AM 1 hr. <i>Juan Canizales, OD</i>	918 Motility Learning Lab		7:45 AM - 8:45 AM 1 hr. <i>Walter Mayo, OD</i>	7:45 AM - 8:45 AM 1 hr. <i>Milton Horn, OD, FFAO</i>
8:30 AM													
8:45 AM													
9:00 AM	760 The Efficient Front Desk		761 When Being Too Sweet Isn't So Sweet	762 The Anatomy of Glaucoma	763 The Importance of Corneal Measurement	764 It's Time to Embrace Digital Lenses	765 How To Implement Organizational Change			919 Lensometry Learning Lab	920 Goldmann Tonometry Learning Lab	921 Eye Dissection Learning Lab	
9:15 AM	9:00 AM - 10:00 AM 1 hr. <i>Sharon Carter, BS</i>		9:00 AM - 10:00 AM 1 hr. <i>Sri Krishna Mukkamala, MD</i>	9:00 AM - 10:00 AM 1 hr. <i>Dianna Graves, COMT, BSEd</i>	9:00 AM - 10:00 AM 1 hr. <i>James Slightom, BS</i>	9:00 AM - 11:00 AM 2 hrs. <i>Valerie Manso, ABOC, FNAO</i>	9:00 AM - 11:00 AM 2 hrs. <i>Lynn Lawrence, CPOT, ABOC, USAF (Ret.)</i>			9:00 AM - 11:00 AM 2 hrs. <i>Patrick Coleman, BSOE, COT</i>	9:00 AM - 11:00 AM 2 hrs. <i>Robert McCullough, OD</i>	9:00 AM - 11:00 AM 2 hrs. <i>Tom Griffith, OD</i>	
9:30 AM													
9:45 AM													
10:00 AM	766 Help! The Phone is Ringing		767 Flashes, Floaters and Tears... Oh My!	768 Should I Ask The Doctor First?	769 Contact Lens Complications						922 Alternative Tonometry Learning Lab		
10:15 AM	10:00 AM - 11:00 AM 1 hr. <i>Sharon Carter, BS</i>		10:00 AM - 11:00 AM 1 hr. <i>Sri Krishna Mukkamala, MD</i>	10:00 AM - 11:00 AM 1 hr. <i>Dennis Cioni, RN, BS, COT</i>	10:00 AM - 11:00 AM 1 hr. <i>Adam Gordon, OD</i>						10:00 AM - 11:00 AM 1 hr. <i>Caroline Pate, OD, FFAO</i>		
10:30 AM											10:00 AM - 11:00 AM 1 hr. <i>Elizabeth Steele, OD, FFAO</i>		
10:45 AM													
11:00 AM													
12:00 PM													
12:30 PM	770 Hiring Power: Building a Dynamic Team		771 Shingles, Ouch!	772 Performing A Thorough Visual Field	773 Improving Contact Lens Compliance	774 Polarized and Variable Tint Lens Update	775 From Look to Book: The Role of Staff in Marketing Your Practice		776 Connecting With Patients Through Visual Therapy	923 Prism Progressive Learning Lab	924 Toric Contact Lenses Learning Lab	925 Refractometry Learning Lab	
12:45 PM	12:30 PM - 1:30 PM 1 hr. <i>Beverly Roberts, CPOT, ABOC</i>		12:30 PM - 1:30 PM 1 hr. <i>Lynn Lawrence, CPOT, ABOC, USAF (Ret.)</i>	12:30 PM - 1:30 PM 1 hr. <i>Dianna Graves, COMT, BSEd</i>	12:30 PM - 1:30 PM 1 hr. <i>Adam Gordon, OD</i>	12:30 PM - 1:30 PM 1 hr. <i>William Underwood, PhD, ABOM, FCLSA, FNAO</i>	12:30 PM - 1:30 PM 1 hr. <i>Mary Schmidt, ABOC, CPO</i>		12:30 PM - 1:30 PM 1 hr. <i>Katie Davis, OD</i>	12:30 PM - 1:30 PM 1 hr. <i>Patrick Coleman, BSOE, COT</i>	12:30 PM - 1:30 PM 1 hr. <i>Will Smith, OD</i>	12:30 PM - 1:30 PM 1 hr. <i>Ryan Gustus, OD</i>	
1:00 PM													
1:15 PM													
1:30 PM	FREE CE Collaborative Patient Care In the Presentation Theater												
2:00 PM	1:30 PM - 2:30 PM 1 hr. <i>Ryan Parker, OD</i>												
2:15 PM	Supported by an unrestricted educational grant from Essilor.												
2:30 PM													
2:45 PM													
3:00 PM	777 Motivation for Maximum Potential		778 Comprehensive Pretesting for Monofocal and Premium IOLs	779 Customer Service: Must Have Skills for Staff	780 Intro to Scleral Contact Lenses	781 What's New in Wearable Technology Eye Wear?						926 Ophthalmic Professional Skills Course	
3:15 PM	3:00 PM - 4:00 PM 1 hr. <i>Beverly Roberts, CPOT, ABOC</i>		3:00 PM - 4:00 PM 1 hr. <i>Dennis Cioni, RN, BS, COT</i>	3:00 PM - 4:00 PM 1 hr. <i>Mary Schmidt, ABOC, CPO</i>	3:00 PM - 4:00 PM 1 hr. <i>Will Smith, OD</i>	3:00 PM - 4:00 PM 1 hr. <i>William Underwood, PhD, ABOM, FCLSA, FNAO</i>						3:00 PM - 6:00 PM 3 hrs. <i>Lynn Lawrence, CPOT, ABOC, USAF (Ret.)</i>	
3:30 PM												3:00 PM - 6:00 PM 3 hrs. <i>Jennifer Stevens, OD</i>	
3:45 PM												3:00 PM - 6:00 PM 3 hrs. <i>Tamara Franklin, CPOT, VSBA</i>	
4:00 PM	782 Keep Patients In the Express Lane		783 Retinal Diagnostic Testing	784 Common Diseases and Disorders	785 What You Really Don't Know About Contact Lenses	786 Understanding the Need For Task Specific Eyewear							
4:15 PM	4:00 PM - 5:00 PM 1 hr. <i>Beverly Roberts, CPOT, ABOC</i>		4:00 PM - 5:00 PM 1 hr. <i>Sri Krishna Mukkamala, MD</i>	4:00 PM - 5:00 PM 1 hr. <i>Mary Schmidt, ABOC, CPO</i>	4:00 PM - 5:00 PM 1 hr. <i>William Underwood, PhD, ABOM, FCLSA, FNAO</i>	4:00 PM - 5:00 PM 1 hr. <i>Diane Drake, LDO, ABOM, FCLSA</i>							
4:30 PM													
4:45 PM													
5:00 PM		528 Everything You Wanted to Know About Diabetes But Were Afraid to Ask											
5:15 PM		5:00 PM - 7:00 PM 2 hrs. <i>Anthony Cavallerano, OD, FFAO</i>											
5:30 PM													
5:45 PM													
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
7:00 PM													
7:30 PM	SATURDAY NIGHT FEVER PARTY												

Looking for course descriptions? Find complete descriptions online at SECO2017.com.

Contact Lens	Optics and Dispensing Skills
787  The Great Cover Up: Cosmetics and Contact Lenses 7:15 AM - 9:15 AM 2 hrs. <i>Diane Drake, LDO, ABOM, FCLSA</i>	788  New Technologies: AR Coating 7:15 AM - 8:15 AM 1 hr. <i>William Underwood, PhD, ABOM, FCLSA, FNAO</i>
	789  Smart Glasses Update 8:30 AM - 9:30 AM 1 hr. <i>William Underwood, PhD, ABOM, FCLSA, FNAO</i>
790  Fitting Irregular Corneas 9:30 AM - 11:30 AM 2 hrs. <i>James Slightom, BS</i>	791  It Takes a Detective to Dispense Exceptional Eyewear 9:45 AM - 11:45 AM 2 hrs. <i>William Underwood, PhD, ABOM, FCLSA, FNAO</i>

OP COURSE FEES	All-Inclusive Package	A la Carte Package
Learning Labs	\$25/hour	\$25/hour
What's Brewing? Courses	\$0	\$15/hour
All Other Courses	\$0	\$10/hour





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Atlanta, GA 30303
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\$167/night

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RESERVATION DEADLINE: FEB 6, 2017

Online resweb.passkey.com/go/seco2017
Email seco@eventsphere.com
Phone (866) 393-0555

TRAVELING TO ATLANTA

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SECO International's official travel agency, FROSCH, can assist with your air travel plans. Identify yourself as a SECO 2017 participant when booking. FROSCH charges a \$35 processing fee when issuing airline tickets. For more information, contact FROSCH at (212) 404-6320 or (877) 685-3715.

FLYING

As the world's busiest airport, Hartsfield-Jackson Atlanta International Airport (ATL) is sure to have a convenient flight available. Save with special discount codes from our partner airlines.

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For your convenience, complimentary shuttle bus service will run daily between the Westin Peachtree Plaza, Marriott Marquis, Ritz-Carlton Downtown, Aloft and the GWCC. You can catch a ride at one of these stops if you are staying at one of our other nearby hotels.

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Cancellation Refund Policy
All registration cancellations and refund requests must be made in writing by February 1, 2017. For continuing education attendees, a refund of the registration fee, minus a \$100 administrative fee, will be given for cancellations received by this date. No refunds will be granted for requests postmarked after February 1, 2017. SECO will not charge a cancellation fee for exhibit hall and event registration-only attendees, as long as the refund request is received no later than February 1, 2017. Submit all requests via email to seco@prereg.net or fax to (678) 341-3099. SECO regrets that refunds will not be given for no shows.

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The Physician Sunshine Act, § 6002 of the Affordable Care Act (P.L. 111-148 (2010)) ("the Sunshine Act"), requires eye product manufacturers to report attendance registration information for any SECO 2016 continuing education courses and/or meals or other items of value which are supported (in whole or in part) by grant funding from such companies. SECO's sponsors in the pharmaceutical and device industries have asked SECO to assist them in gathering this information. In honoring these requests, SECO will attempt to gather and provide its sponsors with the information required by the Sunshine Act. To best facilitate this process, companies covered by the Sunshine Act should ensure that their National Provider Identifier (NPI) number is correct in the National Plan and Provider Enumeration System (NPPES) and that the address used for registration is the same as the primary office address reported to the states and to the NPI database. The SECO Symposium Series is supported by the SECO 2017 Champion Program Premier Partners. As part of SECO's commitment to complying with relevant legal requirements, we regret that meals cannot be provided to healthcare professionals licensed in the states of Massachusetts, Minnesota or Vermont, or who are affiliated with any state or federal institution that prohibits the acceptance of meals at industry-sponsored events. Alternative options are available for attendees that are licensed in one of these states, affiliated with any such institution or simply prefer not to accept a reportable meal during the Symposium Series. Please contact SECO International at (770) 451-8206 for more information on these requirements.

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Georgia Optometric Association	
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To receive this discount, select the All-Inclusive Package and be sure to select the organization of which you are a member when registering. If your membership information is not in our database, we will confirm your eligibility directly with the organization.

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	Cost Before/After January 3	All OD CE Courses*	All Special Sessions	OD Symposia	Exhibit Hall Admission	All SECO- Sponsored Social Events	SECO University Access (\$299 Value)	MedPRO 360 (\$249 Value)
All-Inclusive Package	\$667/\$697	✓	✓	✓	✓	✓	✓	✓
A La Carte Package	\$147/\$197	Fee per course	Fee per course	✓	✓	✓		\$129
Students & Residents	FREE	✓	✓	✓	✓	✓	✓	
Exhibit Hall Only	\$25				✓			

OPHTHALMIC PROFESSIONALS (OP)

(Opticians, Paraoptometrics, Ophthalmic Technicians, Business Managers, etc.)

	Cost Before/After January 3	All Ophthalmic Professionals CE Courses*	Exhibit Hall Admission	OP Symposium	All SECO- Sponsored Social Events	SECO University Access (\$199 Value)	MedPRO 360 (\$249 Value)	One Exhibit Hall Lunch Coupon
All-Inclusive Package	\$247/\$297	✓	✓	✓	✓	✓	✓	✓
A La Carte Package	\$147/\$197	Fee per course	✓	✓	✓		\$129	✓
Exhibit Hall Only	\$25		✓					

*Learning Labs are not included in either of the All-Inclusive Packages, but are available at an additional cost.

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Guest - Social Events	\$100	✓	✓	✓
Guest - Exhibit Hall	\$25	✓		
Children	FREE	✓	✓	

Residents and Students Proof of residency or full time student status at an ACOE-accredited optometry school is required. Residents may reserve a space in OD courses. Students may attend OD courses on a space-available basis.	Children Children 18 years or younger may accompany parents/guardians to Optometry's Marketplace at SECO™ and the Saturday Night Fever Party. Various methods are used on-site to ensure adherence to the age restriction policy. Children may not attend education. Visit seco2017.com for information on childcare services for attendees.	Free Exhibit Hall Access Registrants who receive an Admission Pass from an exhibiting company may attend Optometry's Marketplace at SECO™ for free by following the instructions printed on the pass. This \$25 discount may be applied to the "Exhibit Hall Only" or "Guest - Social Event" registration options. Registrants who do not receive a pass from an exhibiting company may still visit Optometry's Marketplace at SECO™ for free by providing the name of an exhibiting company whom they intend to visit when registering.
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Printable forms are available online.

OD COURSE FEES

	All-Inclusive Package	A la Carte Package
Learning Labs	\$45/hour	\$45/hour
Lunch Courses	\$0	\$37/hour
What's Brewing? Courses	\$0	\$32/hour
All Other Courses	\$0	\$27/hour

OP COURSE FEES

	All-Inclusive Package	A la Carte Package
Learning Labs	\$25/hour	\$25/hour
What's Brewing? Courses	\$0	\$15/hour
All Other Courses	\$0	\$10/hour

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SECO 2017 Course Application

Name of Program: SECO 2017

Sponsor of Event: SECO International

Dates of Program: March 1-5, 2017

Location of Program: Georgia World Congress Center in Atlanta, GA

Name of Course: Interpreting the OCT: Fact or Artifact?

Date of Course: March 3, 2017

Time of Course: 1:45PM – 3:45PM

Format of Course: Lecture course

Course Speaker: Gregory Caldwell, OD, FAAO

Course Description and Objectives: This course is designed to assist the optometrist with the use and interpretation of OCT in anterior and posterior segment disease. Using a case based format, participants will learn the appropriate settings in which to make use of the OCT. Objective quantitative assessment of tissue is possible, resulting in a more accurate and earlier diagnosis and treatment. Numerous pathologies pertinent to primary care optometric practice and provides clinicians with pearls and guidance around pitfalls. Emphasis will be placed on Optovue OCT printouts.

1. Discuss the principles behind OCT imaging of the anterior and posterior segment
2. How to use OCT images to guide clinical decision making
3. Emphasize clinical diagnosis of anterior and posterior segment disease
4. Strengthen clinical treatment of anterior and posterior segment disease
5. Gain confidence in interpreting OCT images to allow accurate and earlier diagnosis and treatment

Course Outline:

Optical Coherence Tomography

- ↪ A technology that allows high resolution cross sectional imaging of the retina
- ↪ Aids and assists in the diagnosis of glaucoma and retinal disease
- Helpful in neuro-ophthalmic disease and as well as anterior segment pathologies
- ↪ Provides objective quantitative assessment of tissue structure
- Facilitating in a more accurate and earlier diagnosis and treatment

Optical Coherence Tomography

- ↪ OCT is an optical signal acquisition and processing method
- ↪ Time domain OCT
- 15-16 microns of resolution
- Stratus (Zeiss)
- ↪ Spectral domain (SD-OCT) or Fourier domain OCT
- Spatially encoded frequency domain OCT (SEFD-OCT)
- 5-6 microns of resolution
- Able to see photoreceptor morphology (inner/outer segments)
- 50 times faster than time domain
- ↪ Swept source OCT
- Time encoded frequency domain OCT
- 1 micron of resolution
- ↪ Future of OCT- intraoperative imaging, blood flow and oxygenation measurements
- ↪ May have the possibility to assess retinal pathology like a pathologist

Optical Coherence Tomography

Time Domain-Stratus

- ★ 512 A-scans that make a B-scan
- ★ Need to look at all 6 scans

Retina scan

- ★ Good for foveal center

6 diagonal scan thru fovea

↪ Spectral domain

OptoVue and Cirrus

6 mm by 6 mm scan

26,000-27,000 A-scans/sec

Synchronization with angiography

9 mm by 12 mm scan

70,000 A-scans/sec

Macula and optic nerve

Disclaimer

OCT is an imaging is a tool to assist the doctor in management of the patient

No single tool can provide the diagnosis and management

OCT of Vitreoretinal Interface Disorders

- 🌀 Early PVD
- 🌀 Epiretinal membrane
- 🌀 Vitreomacular traction syndrome
- 🌀 Pseudohole
- 🌀 Lamellar hole
- 🌀 Macular hole

Epiretinal Membrane

1. Other names: premacular fibroplasia, preretinal gliosis, macular pucker, surface wrinkling retinopathy
2. Believed to be the result of proliferation of retinal glial cells on the internal limiting membrane that escaped through breaks in the internal limiting membrane
3. May create macular edema
4. Amsler grid may elicit metamorphosia from surface wrinkling or macular edema
5. Treatment: Monitor until severe then retinal consult, possible vitrectomy with membrane peeling

Vitreomacular Traction Syndrome

1. Peripheral posterior vitreous detachment (PVD)
2. Persistent adherence with traction to macula and/or disc
3. Macular edema or disc edema
4. “Double” epiretinal membrane

Case Presentation- 66 year old woman, consult to rule out macular hole OS

Appears to be macular hole but vision 20/20 OD/OS

Diagnosis: Pseudo-Macular Hole

Pseudo-Macular Hole

- 🌀 Steepened foveal contour
- Hallmark sign
- 🌀 Small foveal aperture
- Reduced macular diameter
- 🌀 Thickening of macular edges
- Without thinning of foveal center
- 🌀 Hypothesis: centripetal ERM constriction
- 🌀 ERM is stuck so close to the macula you can not see it

Lamellar Hole

1. Gass definition: aborted macular hole
2. PVD completes-pulls off inner retinal tissue leaving outer retina (photoreceptors) intact
3. Vision usually good
 - a. 20/20 to 20/30
4. Typically stable and typically do not require surgery

Full Thickness Macular Hole

Case Presentation- 57 year old woman, vision is blurry in my OS, BVA 20/50

1. Stage 2 Macular Hole
 - ⌘ Small, full thickness defect
 - ⌘ Centric or eccentric hole
 - < 400 microns
 - ⌘ Vision 20/50-20/200
 - ⌘ Peri-foveal retinal whitening larger than hole
- Retinal edema
2. 4 Months Later
 - Stage 3 and 4 Macular Holes
 - Large > 400 microns, full thickness defect
 - Cuff of subretinal fluid
 - Vision 20/200-20/400

Clinical Pearl: The only difference between Stage 3 and 4 is vitreous is detached from macular and disc in stage 4

- ★ Can not be determined with OCT, need to examine patient

Make Sure You Carefully Review the Other Eye- Why?

1. Looking for a Stage 0 macular hole
2. Some studies say that finding a Stage 0 has a 42% risk of going to a full thickness macular hole
3. If no Stage 0 then 0-3% risk
4. OCT can identify eye at risk
 - ★ Only visible on OCT
 - ★ Not visible via clinical exam

Intraretinal Edema

Case Presentation:

1. Cystoid Macular Edema (CME) (Intraretinal Edema)
2. Clinically Significant Macular Edema
 - ⌘ Laser
 - ⌘ Anti-VEGF intravitreal injection
 - ⌘ Triamcinolone (Kenalog) intravitreal injection
3. Case of Non-CSME

Central Serous Retinopathy -(Neurosensory Detachment)

Case Presentation: 46-year-old man complains of a perfect yellow circle in the center of his OS. The circle stays in the center of his vision even when he moves his eye

1. VA 20/20 OU
2. Refraction OD Plano OS +1.00 D
Prior visit Plano OU
3. Photos
4. Discussion

RPE Detachment With Clear Fluid

Case Presentation: RPE Detachment

What we are learning about the choroid

🌀 Choroidal thickness in a normal eye

Thickest under the fovea

287 microns (mean age 50.4)

🌀 Increasing age correlated significantly with decreasing choroidal thickness

🌀 Regression analysis suggested subfoveal choroidal thickness decreased

15.6 microns for each year of life

1. Age Related Choroidal Atrophy
2. Thin choroid in pathologic myopia
3. Central Serous Chorioretinopathy
 - ★ Better understanding on what is happening
4. Thinned choroid in glaucoma
 - ★ Is there a correlation?
5. Age Related Choroidal Atrophy

Case Presentation: Adult Best's Disease

Case Presentations: AMD

1. Dry AMD/drusen

🌀 OCT is a work in progress

OCT has given us a lot more information on drusen

Now we need to interpret it

Developing drusen maps

Volume maps

2. Wet AMD

★ SD-OCT is a must in the treatment

OCT Usage in glaucoma

1. Nerve fiber layer
2. Ganglion cell complex
3. Overlay of the RNFL and GCC

OCT Usage in anterior Segment

Grand Rounds Case Presentations

1. NFL and GCC
2. POAG
3. POAG
4. POAG
5. Fuch's Dystrophy
6. Corneal Failure of PC-IOL
7. Post-LASIK
8. Angle evaluation
9. Closed Angle
10. DM for 15 years
11. Vitreous in AC
12. 45 year old woman thinned GCC not glaucoma
13. Geographic Atrophy

Plaquenil Toxicity

1-1.5 mm perimacular GCC thinning the first sign of Plaquenil toxicity

What do you see on the scans?

- A. Thinning of the GCC in the Plaquenil zone
- B. Macular edema
- C. Compromised PIL
- D. Nothing of importance

What do you see on the scans?

- A. The flying saucer sign
- B. Macular edema
- C. Increased perimacular retinal thinning
- D. A and C

OCT Angiography

1. Non-invasive visualization of individual layers of retinal vasculature
2. Pathology not obscured by fluorescein staining or pooling
3. Image acquisition requires less time than a dye-based procedure
4. Reduced patient burden allows more frequent imaging to better follow disease progression and treatment response

See The Vessels Like You've Never Seen Them Before!

- ★ Segment retinal vasculature into individual layers
- ★ Eliminate effects of dye-based blurring and pooling
- ★ Isolate areas of interest
- ★ View 3x3mm and 6x6mm scans

OCT Angiography cases:

1. Normal Retinal Vasculature
2. Type 1 "Occult" CNV
 - New vessels develop in the choroid
 - New vessels located BELOW RPE and ABOVE Bruch's membrane
3. Type 2 "Classic" CNV
 - New vessels develop in choroid
 - New vessels located ABOVE the RPE a ABOVE Bruch's membrane
4. Diabetic Retinopathy
 - Retinal capillary non-perfusion – seen as blackened area without blood flow outside FAZ
 - Microaneurysms
 - Enlarged FAZ

Speaker CV:

Home Phone 814-884-3982

Mobile Phone 814-931-2030

E-mail: grubod@gmail.com

Education:

Pennsylvania College of Optometry, Philadelphia, PA 19141

- ◆ July 1996 - Residency in Primary Care/Ocular Disease
- ◆ May 1995 - Doctor of Optometry
- ◆ May 1992 - Bachelor of Science

Gannon University, Erie, PA 16541

- ◆ May 1992 -Bachelor of Science

Employment:

Optometrist, Gregory A. Caldwell, OD, PC April 1, 2008-Present

- ◆ Perform primary eye care
- ◆ Perform secondary eye care (dry eye management, glaucoma care, in office minor procedures)
- ◆ Concentrated experience in diagnosis and management of anterior and posterior segment ocular disease.
- ◆ Perform and interpret advanced diagnostic procedures.
- ◆ Triage and manage presenting ocular emergencies.
- ◆ Lecture at local, regional, national and international meetings

Staff Optometrist, Laurel Eye Clinic July 1996-March 31, 2008

- ◆ Concentrated experience in diagnosis and management of anterior and posterior segment ocular disease.
- ◆ Performed pre and post operative care for a variety of ocular surgeries (entropion/ectropion repair, dacryocystorhinostomy, scleral tunnel and clear corneal cataract extraction, corneal transplant, pars plana vitrectomy, macular hole, pneumatic retinopexy, retinal detachment, oculoplastic, argon laser, yag-laser, radial keratotomy [LASIK] laser in situ keratomileusis, bioptics and conductive keratoplasty.
- ◆ Performed and interpreted advanced diagnostic procedures.
- ◆ Triage and manage presenting ocular emergencies.
- ◆ Assisted with in office surgical procedures.

Resident, The Eye Institute at PCO

July 1995-July 1996

- ◆ Primary Care/Ocular Disease, Module 1, Philadelphia, PA 19141

Licensure/Certifications:

- ◆ Diplomate, American Board of Optometry 1-23-2012 to 12-31-2021
- ◆ Drug Enforcement Administration (DEA) licensure
- ◆ Pennsylvania State Board Optometrist with therapeutic agents (TPA) licensure
- ◆ Pennsylvania State Board Optometrist with licensure in diagnostic pharmaceutical agents (DPA)
- ◆ Certification, Treatment and Management of Ocular Disease (TMOD)

Affiliations:

- ◆ Fellow of the American Academy of Optometry (FAAO), December 2000
- ◆ American Academy of Optometry

- ◆ Adjunct Faculty at Salus University the Pennsylvania College of Optometry
 - 1996 thru present
- ◆ Pennsylvania Optometric Association
- ◆ American Optometric Association
- ◆ American Optometric Student Association
 - Sustaining member

Expert or Consult Services:

- ◆ Utilization Review and a Peer Review Organization, Pennsylvania Workers' Compensation Act – October 2015- present
- ◆ Expert Witness/Consultant for professional licensure proceedings in the state of Pennsylvania 2007

Fact or Artifact OCT Interpretation

Greg Caldwell OD, FAAO
SECO
March 3, 2017



Disclosure Statement
(next slide)

Disclosures

- ✓ Greg A. Caldwell, OD, FAAO will mention many products, instruments and companies during our discussion. I don't have any financial interest in any of these products, instruments or companies.
- ✓ Pennsylvania Optometric Association –President 2010
 - ★ POA Board of Directors 2006-2011
- ✓ American Optometric Association, Trustee 2013-2016
 - ★ Thank you to the members and those who join
- ✓ I never used or will use my volunteer positions to further my lecturing career
- ✓ Lectured for: Shire, BioTissue, Optovue
- ✓ All of these cases have entered/referred to my practice
- ✓ Optovue is what is in my practice
 - ★ There are other instruments on the market

Life Long Professional Development

- ✓ To make positive changes to the way one practices
- ✓ To improve the care we deliver to our patients

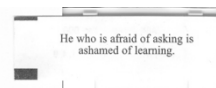
One of component is continuing education

Rules During this Presentation

- ✓ There are no rules
- ✓ Have fun, enjoy and relax
- ✓ Ask questions at the time of the case

Can anyone here tell me the only dumb question?

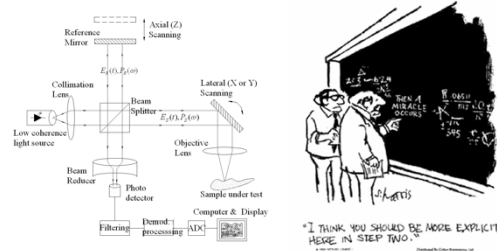
A question that is not asked



Optical Coherence Tomography

- ✓ A technology that allows high resolution cross sectional imaging of the retina
- ✓ Aids and assists in the diagnosis of glaucoma and retinal disease
 - ★ Helpful in neuro-ophthalmic disease and as well as anterior segment pathologies
- ✓ Provides objective quantitative assessment of tissue structure
 - ★ Facilitating in a more accurate and earlier diagnosis and treatment

Optical Coherence Tomography Course Design



Optical Coherence Tomography

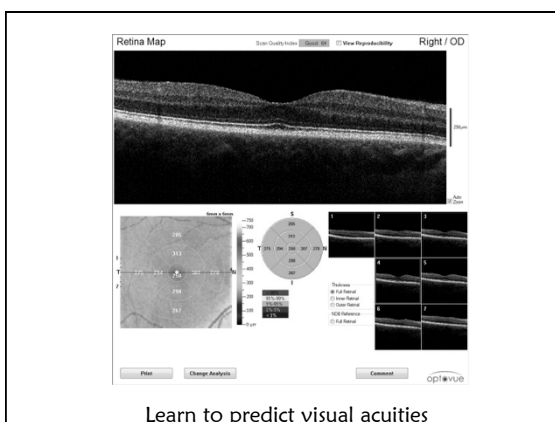
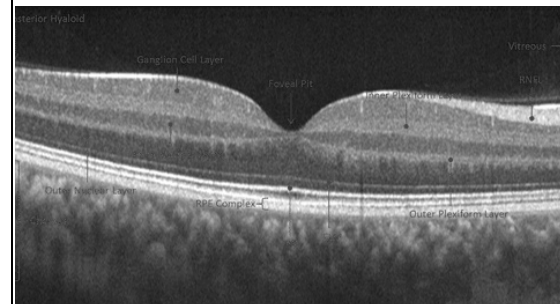
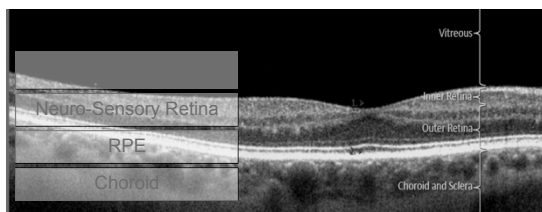
- OCT is an optical signal acquisition and processing method
- Time domain OCT
 - * 15-16 microns of resolution
 - * Stratus (Zeiss)
- Spectral domain (SD-OCT) or Fourier domain OCT
 - * Spatially encoded frequency domain OCT (SEFD-OCT)
 - * 5-6 microns of resolution
 - Able to see photoreceptor morphology (inner/outer segments)
 - * 50 times faster than time domain
- Swept source OCT
 - * Time encoded frequency domain OCT
 - * 1 micron of resolution
- Future of OCT- intraoperative imaging, blood flow and oxygenation measurements
- May have the possibility to assess retinal pathology like a pathologist

Disclaimer

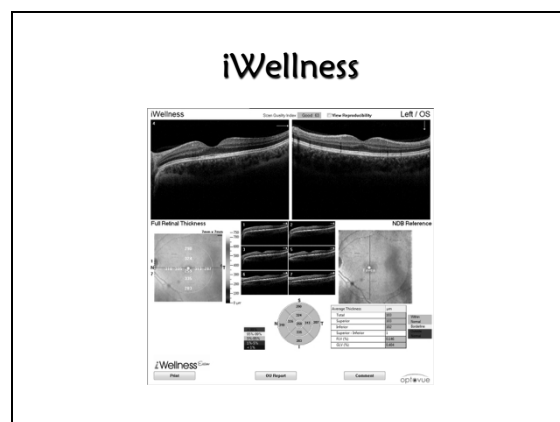
OCT is an imaging tool to assist the doctor in management of the patient

No single tool can provide the diagnosis and management

4 Basic Categories: Diseases of the....



Learn to predict visual acuities



Green, Red, Yellow, and Blue Disease

OCT measure structure

Green, Red, Yellow, and Blue Disease Hints to this Disease

- ✓ If the disease is a bilateral disease
 - * Glaucoma
 - It is usually asymmetric
- ✓ If the scans are symmetric
 - * Then it most likely not disease
 - * Anatomical variation
 - Normal for that patient

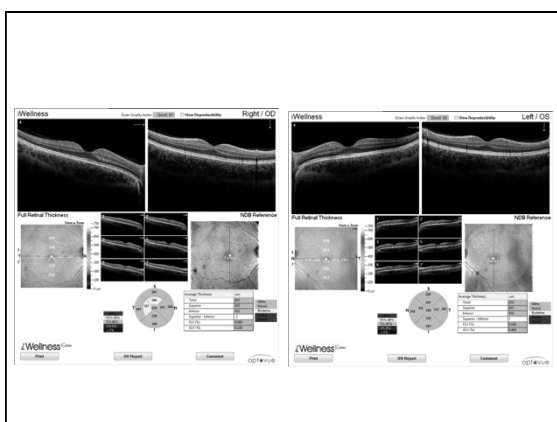
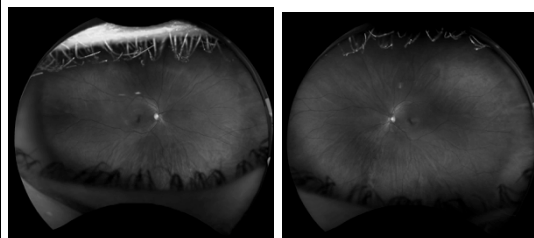
28 yo woman with yellow disease

✓ OD -6.25-0.75 x 005 20/20
 ✓ OS -6.50 -0.75 x 170 20/20

✓ No medications

✓ Systemic hx: unremarkable

✓ IOPs 17-20 mm Hg OU 2011-2016



46 yo woman with red-yellow disease

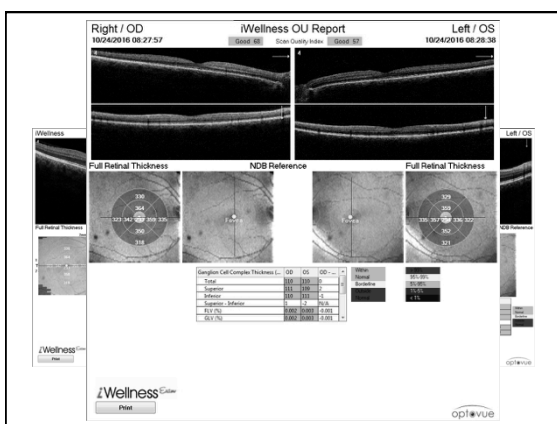
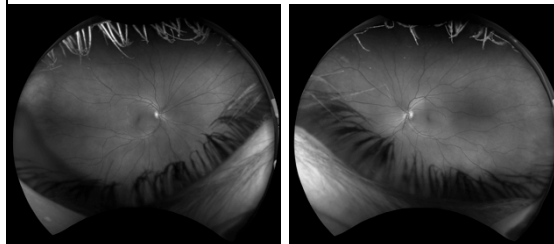
OD -0.75 20/20

OS -1.25 20/20

Systemic hx: thyroid dysfunction, high cholesterol

* Medications for the above

IOPs 15 mm Hg OU 8:30 am

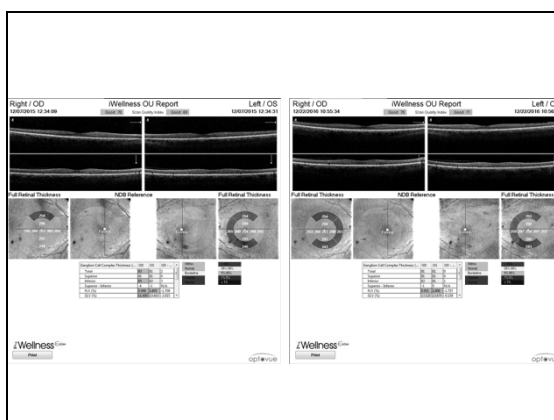


63 yo woman with red, yellow, blue, and green disease

OD plano/ +2.00 20/20

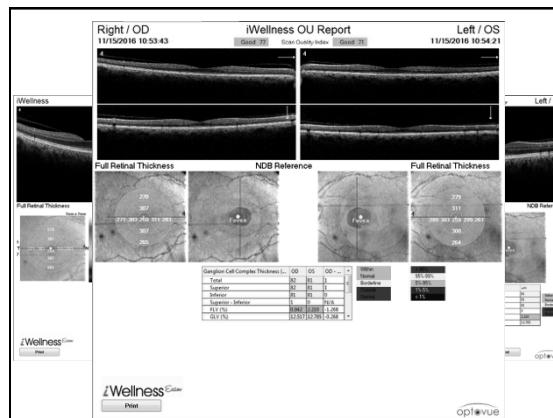
OS -0.50/ +2.00 20/20

IOPs 15-18 mm Hg OU 2011-2015



58 yo with yellow disease

OD +1.00 20/20
 OS +1.25 20/20
 IOPs: 13/15 mm Hg at 11:24 am
 (pay attention to FLV and GLV)

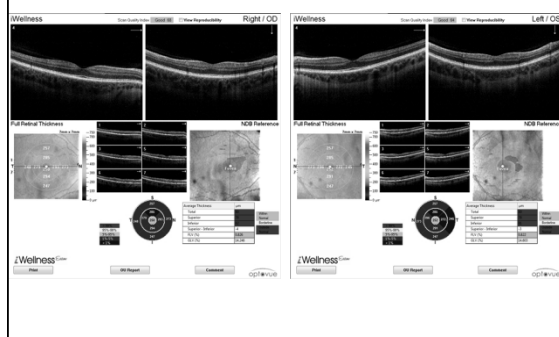


40 yo man with red, blue, green disease

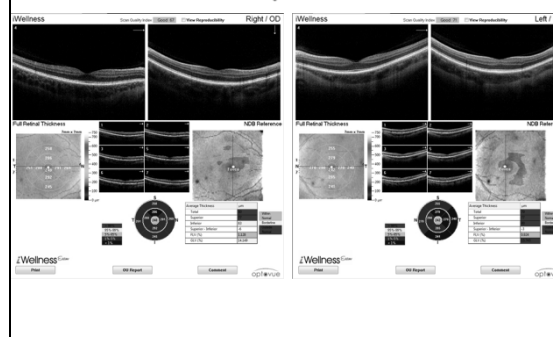
OD -7.50 - 0.75 x 110 20/20
 OS -7.50 - 0.75 x 105 20/20
 IOPs: 15/13 mm Hg at 6:30 pm

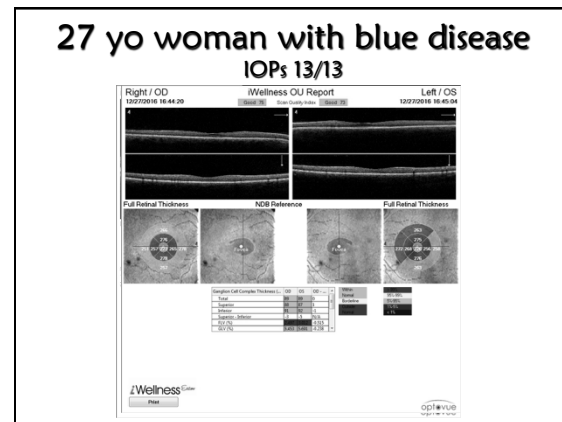
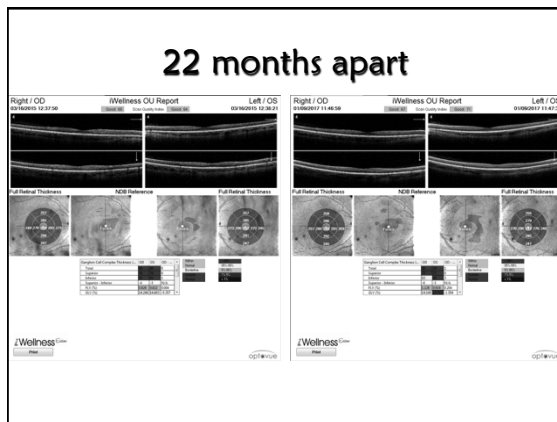


March 16, 2015



January 9, 2017

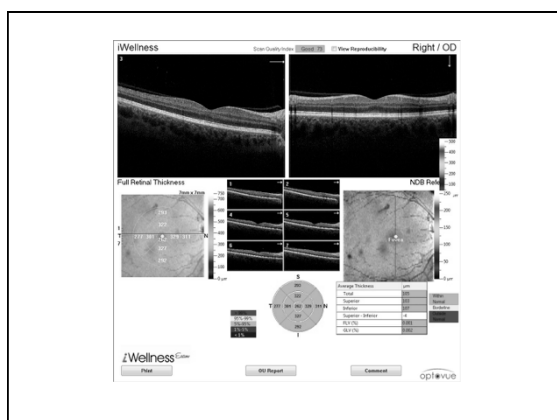




OCT of Vitreoretinal Interface Disorders

OCT of Vitreoretinal Interface Disorders

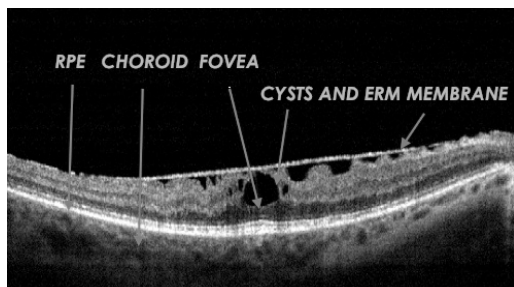
- Early PVD
- Epiretinal membrane
- Vitreomacular traction syndrome
- Pseudohole
- Lamellar hole
- Macular hole



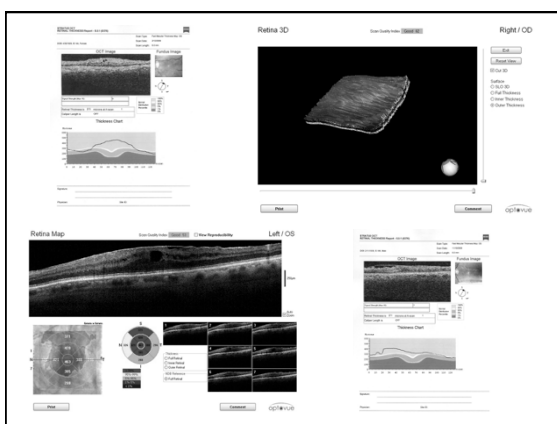
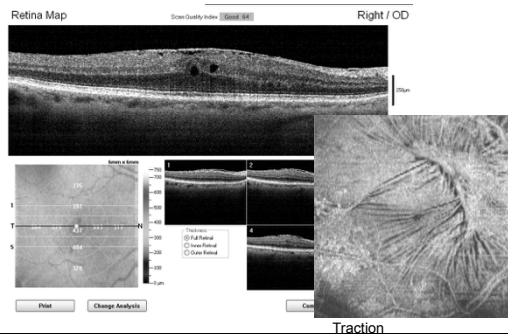
Epiretinal Membrane

- Other names: premacular fibroplasia, preretinal gliosis, macular pucker, surface wrinkling retinopathy
- Believed to be the result of proliferation of retinal glial cells on the internal limiting membrane that escaped through breaks in the internal limiting membrane
- May create macular edema
- Amsler grid may elicit metamorphosia from surface wrinkling or macular edema
- Treatment: Monitor until severe then retinal consult, possible vitrectomy with membrane peeling

Epiretinal Membrane(ERM)

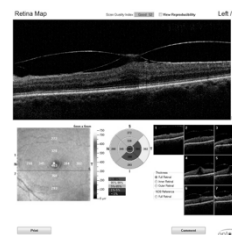


Epiretinal Membrane (ERM)



Vitreomacular Traction Syndrome

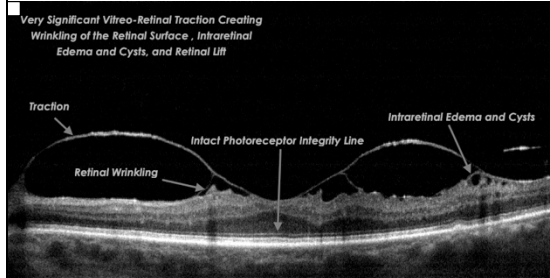
- Peripheral posterior vitreous detachment (PVD)
- Persistent adherence with traction to macula and/or disc
- Macular edema or disc edema
- "Double" epiretinal membrane

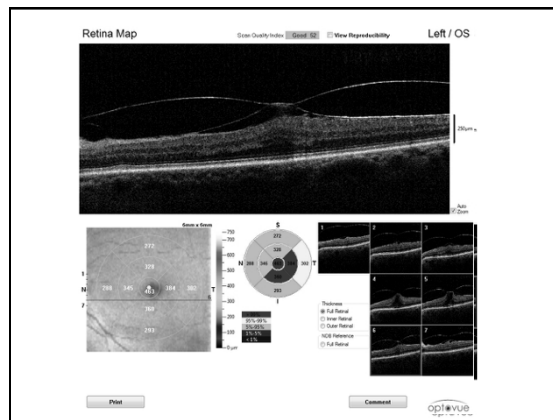
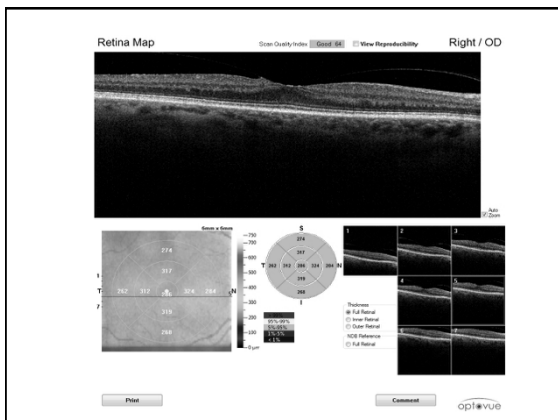


Posterior Vitreous Detachment (PVD) with Vitreo-Retinal Traction



Vitreo-Macular Traction (VMT)



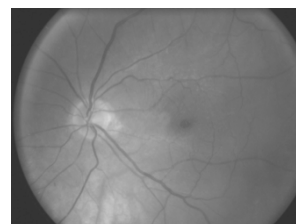


OCT of Vitreoretinal Interface Disorders

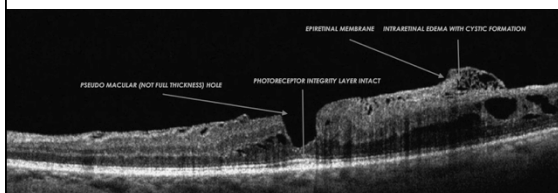
- 🔗 Epiretinal membrane
- 🔗 Vitreomacular traction syndrome
- 🔗 Pseudohole
- 🔗 Lamellar hole
- 🔗 Macular hole

66 year old woman

- Consult to rule out macular hole OS
- Appears to be macular hole but vision 20/20 OD/OS

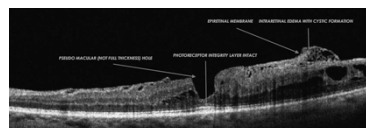


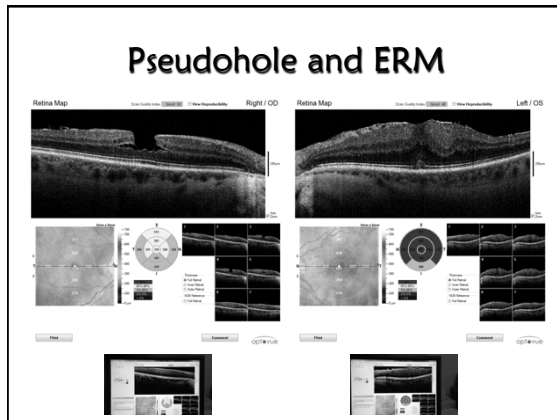
Pseudo-Macular Hole



Pseudo-Macular Hole

- Steepened foveal contour
 - Hallmark sign
- Small foveal aperture
 - Reduced macular diameter
- Thickening of macular edges
 - Without thinning of foveal center
- Hypothesis: centripetal ERM constriction
- ERM is stuck so close to the macula you can not see it

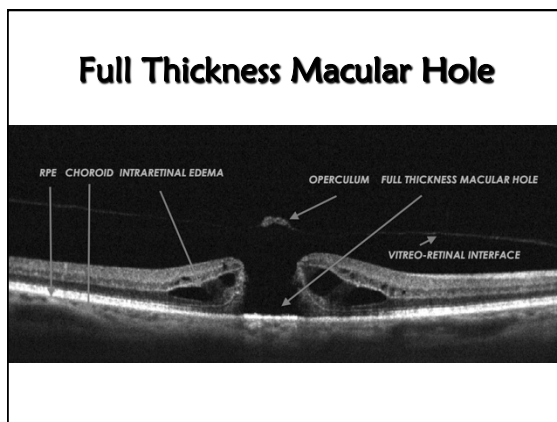




Lamellar Hole

- ✓ Gass definition: aborted macular hole
- ✓ PVD completes-pulls off inner retinal tissue leaving outer retina (photoreceptors) intact
- ✓ Vision usually good
 - ★ 20/20 to 20/30
- ✓ Typically stable and typically do not require surgery

20/25



More on Macula Holes...

Stage 1

Stage 2 (refer/consult)

Stage 3

Stage 4 – full thickness

Stage 3 and 4 Macular Holes

- ✓ Large > 400 microns, full thickness defect
- ✓ Cuff of subretinal fluid
- ✓ Vision 20/200-20/400
- ✓ The only difference between Stage 3 and 4 is vitreous is detached from macula and disc in stage 4
 - ★ Can not be determined with OCT, need to examine patient

Make Sure You Carefully Review the Other Eye Why?

- ✓ Looking for a Stage 0 macular hole
- ✓ Some studies say that finding a Stage 0 has a 42% risk of going to a full thickness macular hole
- ✓ If no Stage 0 then 0-3% risk
- ✓ OCT can identify eye at risk
 - ★ Only visible on OCT
 - ★ Not visible via clinical exam

Stage 0 macular holes: observations by optical coherence tomography.

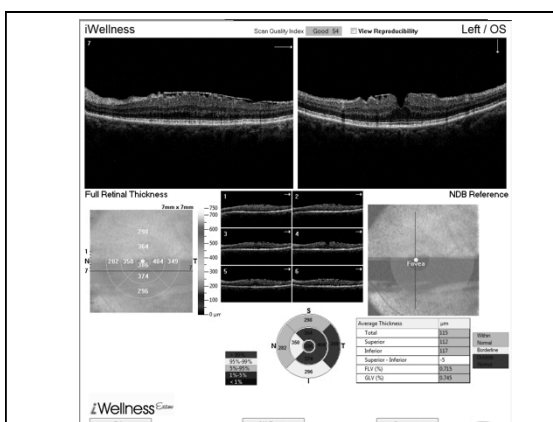
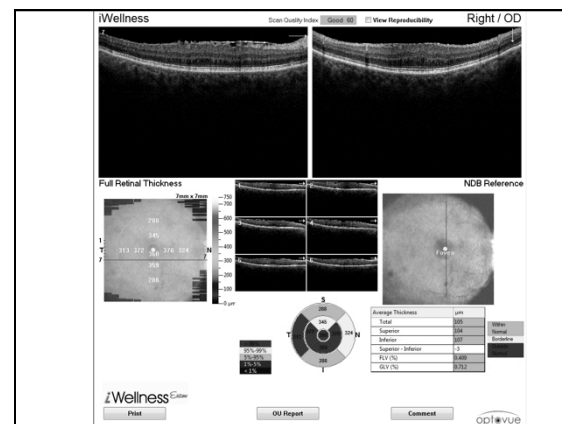
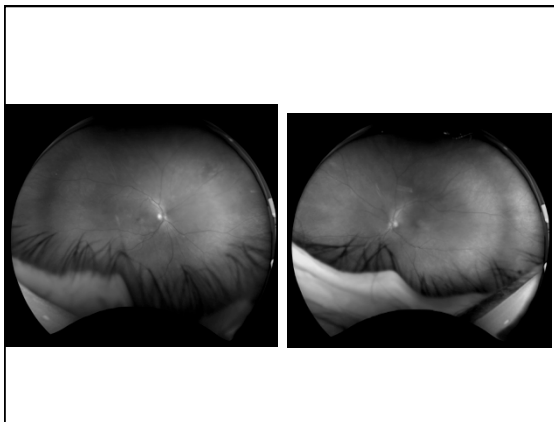
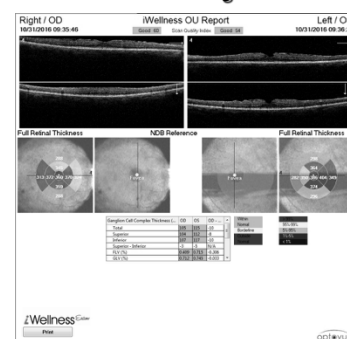
Chan A, Duker JS, Schuman JS, Fujimoto JG.
New England Eye Center, Tufts-New England Medical Center, Tufts University School of Medicine, Boston, Massachusetts 02111-1533, USA.
Comment in:
Ophthalmology. 2005 Aug;112(8):1478.

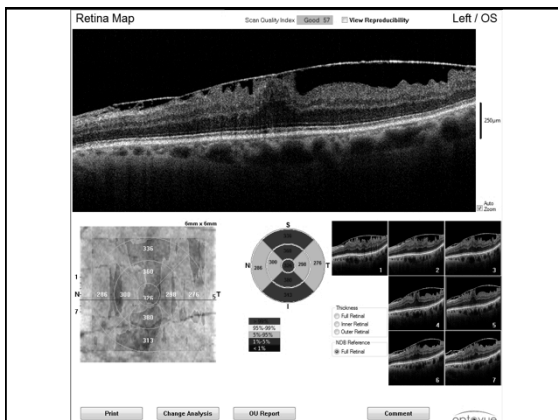
Abstract
OBJECTIVE: To introduce the concept of a stage 0 macular hole based on optical coherence tomographic observations of the vitreoretinal interface in fellow eyes of patients with unilateral idiopathic macular holes, and to evaluate the subsequent risk of progression to a full-thickness macular hole.
DESIGN: Retrospective observational case series.
PARTICIPANTS: Ninety-four patients with a unilateral stage 2, 3, or 4 full-thickness macular hole.
METHODS: The medical records of patients with a unilateral macular hole diagnosed between 1994 and 2000 at the New England Eye Center were reviewed.
MAIN OUTCOME MEASURE: Development of a full-thickness macular hole in the fellow eye on biomicroscopic funduscopy or optical coherence tomography (OCT).
RESULTS: In 27 (28.7%) of 94 clinically normal fellow eyes, OCT detected an abnormality of the vitreoretinal interface but normal foveal anatomy. The vitreoretinal abnormalities were further subclassified into severe (4 eyes), moderate (8 eyes), and mild (15 eyes) based on the intensity and morphology of the OCT signal. One of the 4 (25%) severe cases progressed to a full-thickness macular hole, 4 of the 8 (50%) moderate cases became full-thickness macular holes, and no (0%) mild cases progressed to a full-thickness macular hole. Severe and moderate eyes seemed to share characteristic features on OCT that increased their risk of macular hole development (stage 0 macular hole). The macular hole-free survival at 48 months was 94% for stage 0-negative patients, versus 54% for stage 0-positive patients. Univariate analysis revealed that the presence of a stage 0 macular hole was significantly associated with an almost 6-fold increase in the risk of macular hole formation (relative risk: 5.8, 95% confidence interval: 1.16-28.61, $P = 0.03$).
CONCLUSIONS: A stage 0 macular hole has a normal biomicroscopic appearance clinically, but has salient features on OCT as a result of oblique vitreous traction. Optical coherence tomographic findings consist of a normal foveal contour and normal retinal thickness and must include the presence of a preretinal, minimally reflective, thin band inserting obliquely on at least one side of the fovea. The presence of a stage 0 macular hole in the fellow eye is a significant risk factor for the development of a second macular hole.

69 yo woman

OD +5.00
OS +5.00

predict the VA
predict the VA

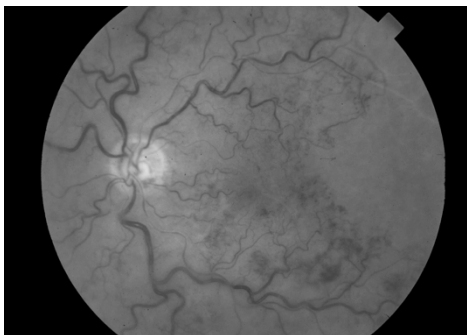
**What's the VA? What's Going on this the GCC?**



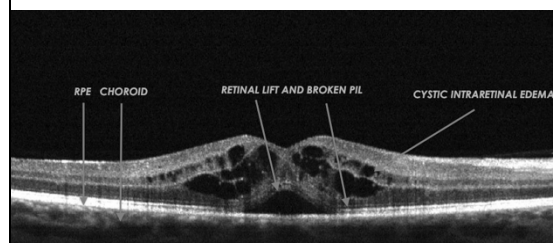
OCT of Vitreoretinal Interface Disorders

- Early PVD
- Epiretinal membrane
- Vitreomacular traction syndrome
- Pseudohole
- Lamellar hole
- Macular hole

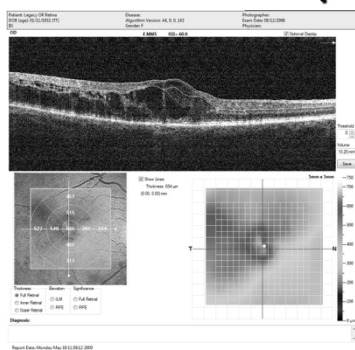
Intraretinal Edema



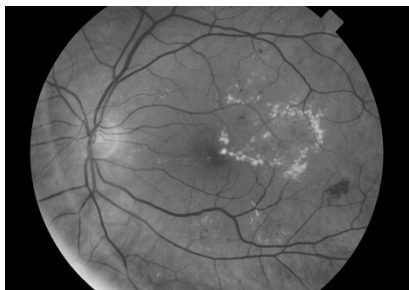
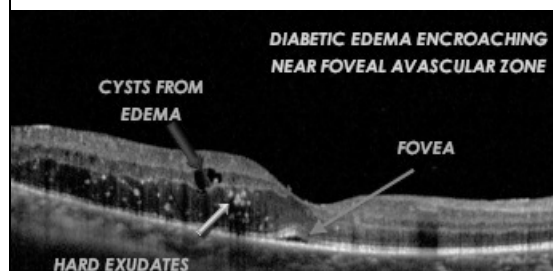
Cystoid Macular Edema (CME) (Intraretinal Edema)



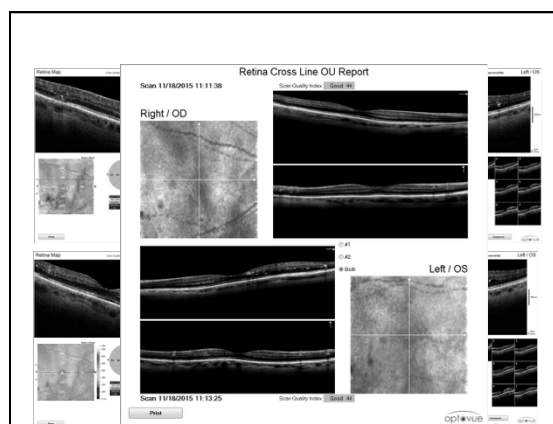
CME – Retinal Map



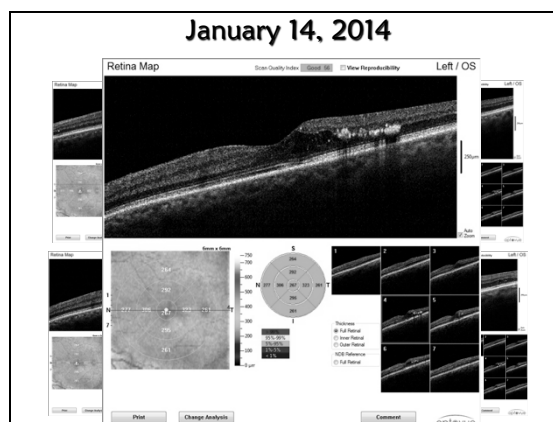
Diabetes

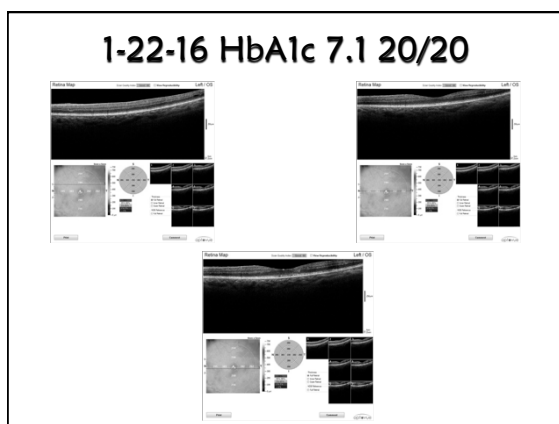
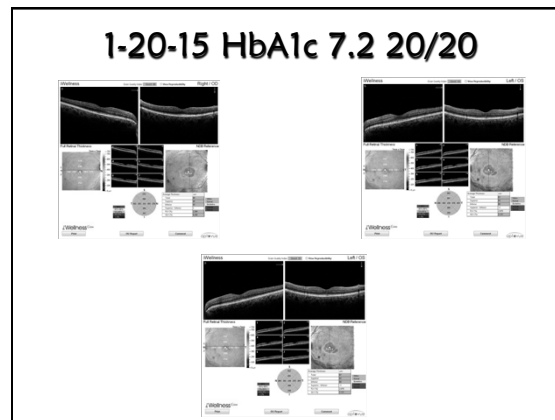
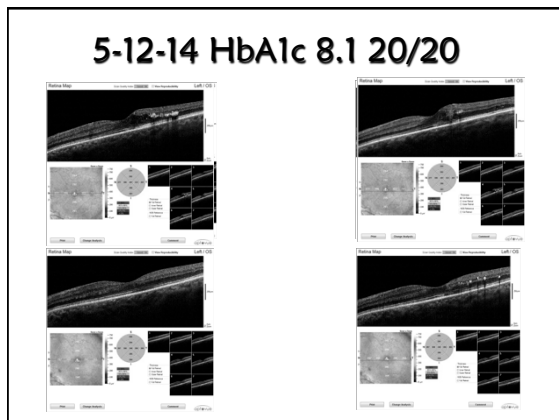
Clinically Significant Macular Edema**Clinically Significant Macular Edema****48 yo man**

- ✓ DM with Insulin pump, Humalog
- ★ Insulin pump for 10 years
- On second insulin pump
- ✓ First seen on our office 12-28-16
- ✓ HbA1c 9.2 6 months ago

**52 yo man**

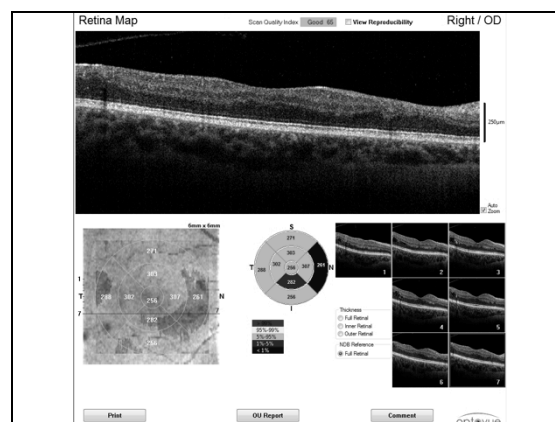
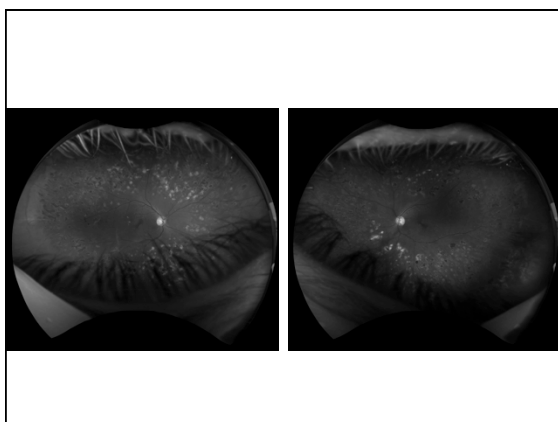
- ✓ DM for 10 years
- ✓ Reports poor control
- ✓ 20/20 OU
- ✓ HbA1c 13.1





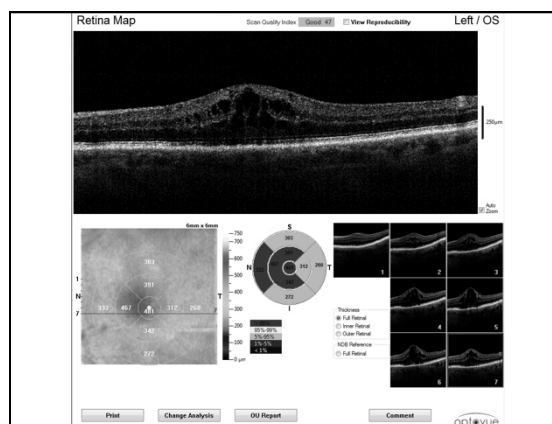
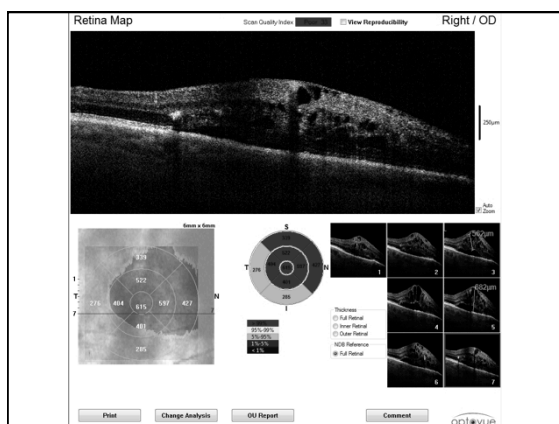
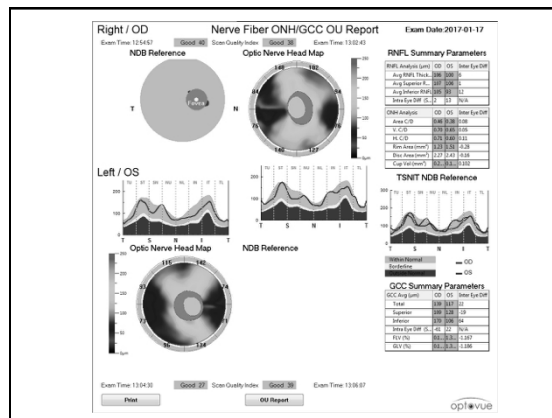
36 yo man

- History of proliferative DR OU
- History of PRP OU
 - * DFE reveals not active today
- Vitrectomy OS

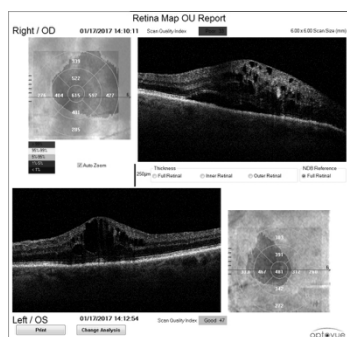


74 yo woman

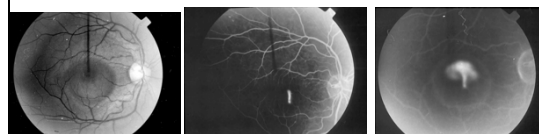
- Wants second opinion
- Going blind from glaucoma
 - Treated for 20 years
 - IOPs were 24 mm Hg at time of diagnosis
 - Were 17-18 mm Hg the longest time with Lumigan
 - Recently added Combigan due decreasing acuities
- VA OD 20/400 and OS 20/100
- History of diabetes



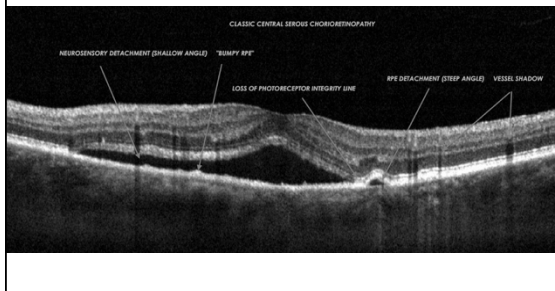
Acuities



Central Serous Retinopathy (Neurosensory Detachment)



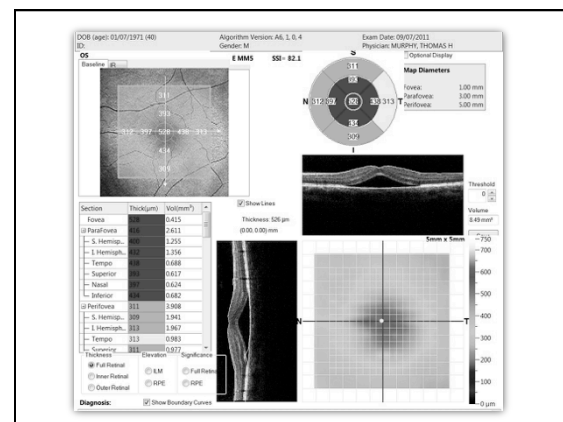
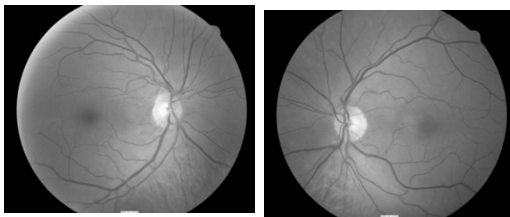
Central Serous Retinopathy (Neurosensory Detachment)



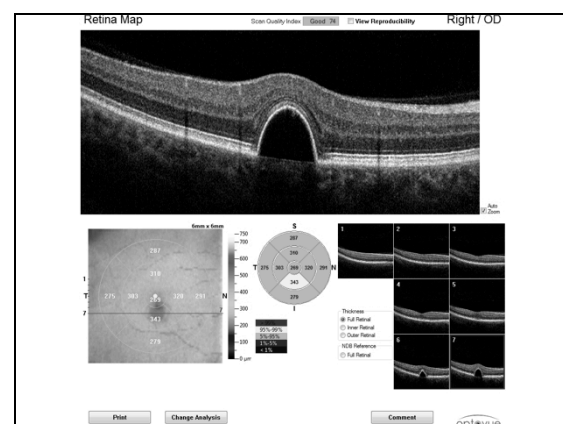
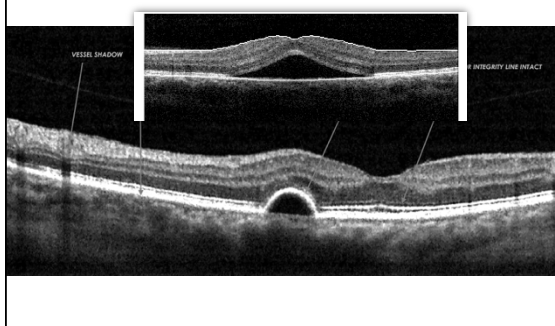
46 year old man

- Complains of a perfect yellow circle in the center of his OS
- The circle stays in the center of his vision even when he moves his eye
- VA 20/20 OU
- Refraction OD Plano OS +1.00 D
- * Prior visit Plano OU

Photos



RPE Detachment With Clear Fluid



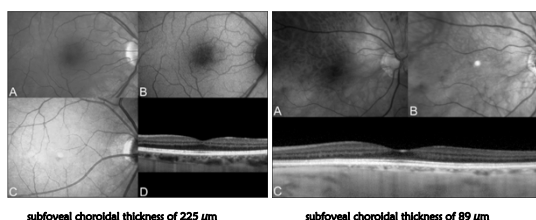
What we are Learning about the Choroid

- Choroidal thickness in a normal eye
 - * Thickest under the fovea
 - 287 microns (mean age 50.4)
- Increasing age correlated significantly with decreasing choroidal thickness
- Regression analysis suggested subfoveal choroidal thickness decreased
 - * 15.6 microns for each year of life
- Age Related Choroidal Atrophy
- Thin choroid in pathologic myopia
- Central Serous Chorioretinopathy
 - * Better understanding on what is happening
- Thinned choroid in glaucoma
 - * Is there a correlation?

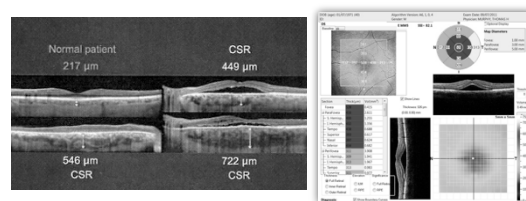
Age Related Choroidal Atrophy

- Elderly patient
 - * Non-myopic
- Recent onset of symptoms
 - * Decreased vision
 - * Difficulty with reading
 - * Difficulty in dim light
- Most have peripapillary atrophy
- 1/3 have glaucoma
- Do NOT have typical features of AMD

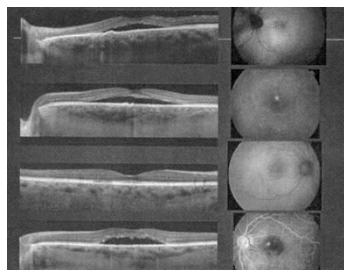
Age Related Choroidal Atrophy



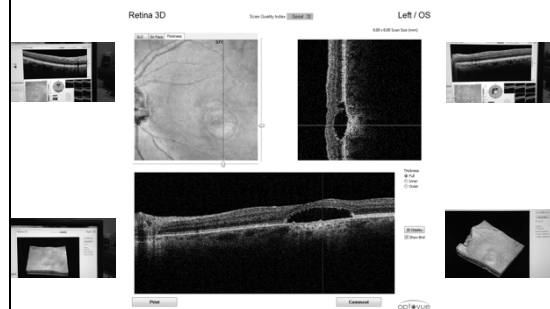
Central Serous Chorioretinopathy



Central Serous Chorioretinopathy



Adult Best's Disease



AMD

✓ Dry AMD/drusen

- * Examination
- * Visual acuity
- * Amsler grid
- * Photos
- * OCT
 - ☐ Baseline
 - ☐ May help explain vision loss in atypical appearances

✓ OCT is a work in progress

- * OCT has given us a lot more information on drusen
 - ☐ Now we need to interpret it
- * Developing drusen maps
- * Volume maps

✓ Wet AMD

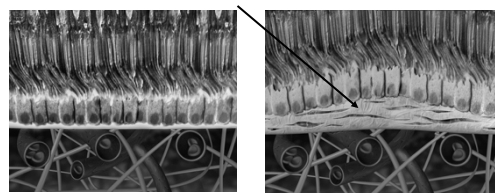
- * SD-OCT is a must in the treatment

Drusen

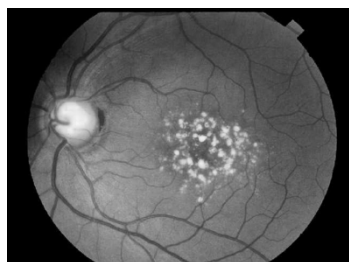
✓ Patients with macular drusen are at an increase risk for both dry and wet AMD

✓ Cause retinal, RPE and Bruch's membrane alterations

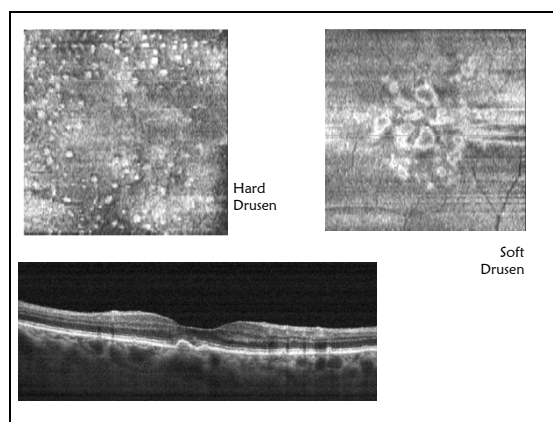
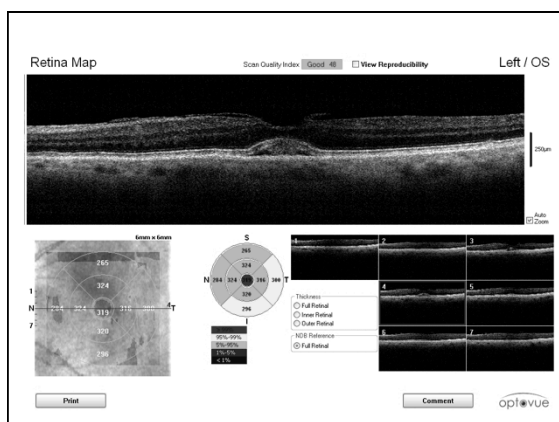
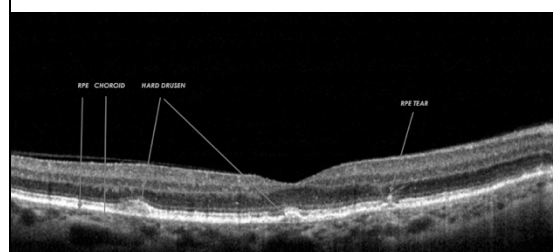
✓ Form in the matrix of Bruch's membrane

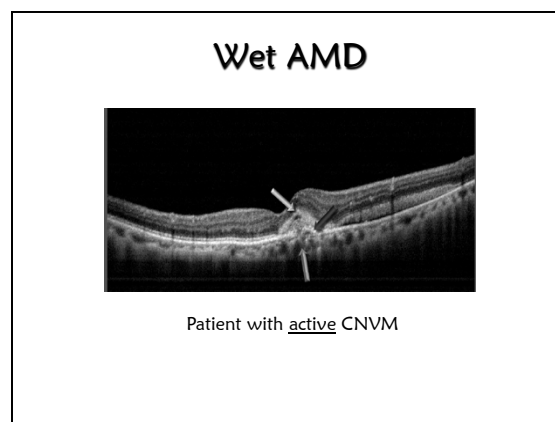
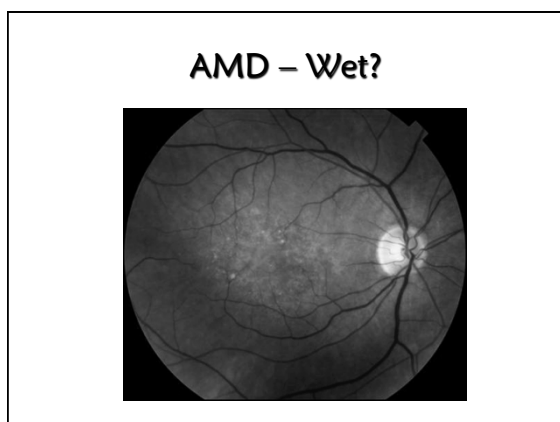
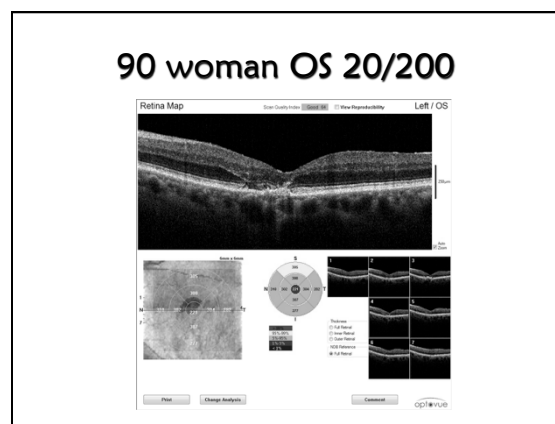
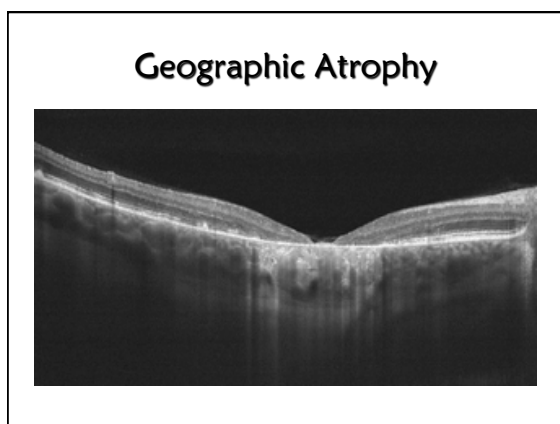
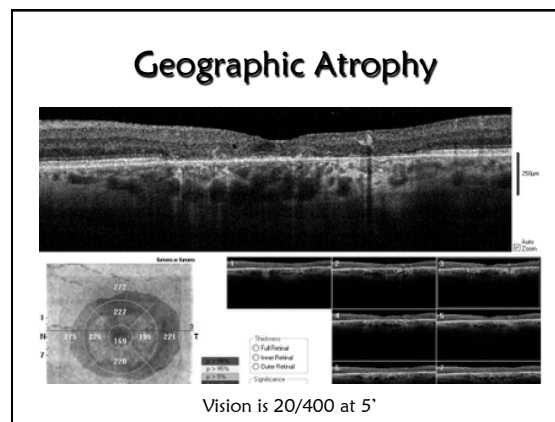
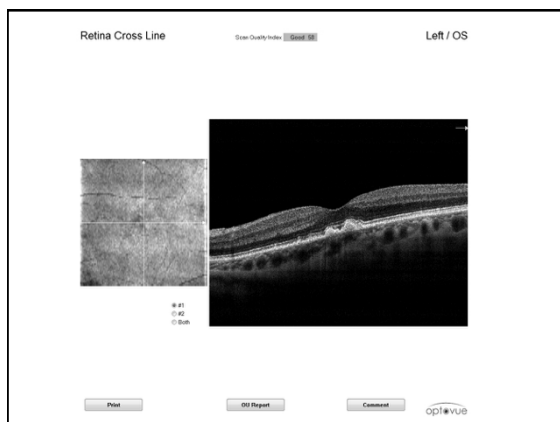


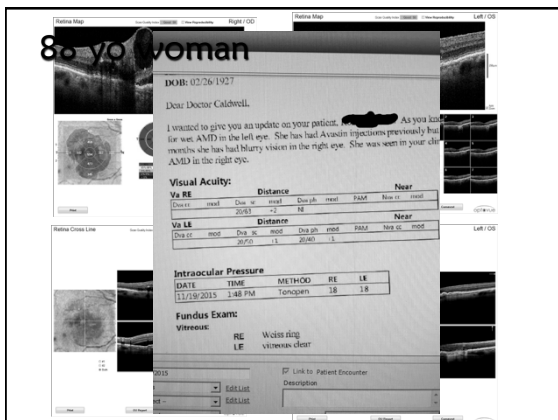
Drusen



RPE/Bruch's Hard Drusen Deposition

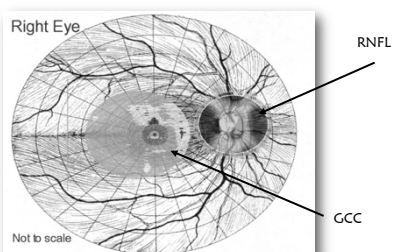




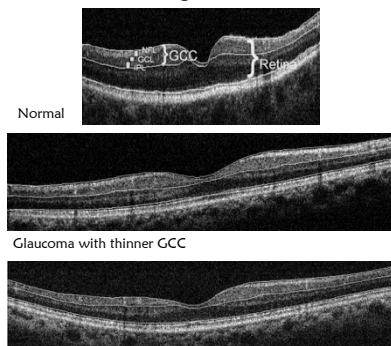


Glaucoma

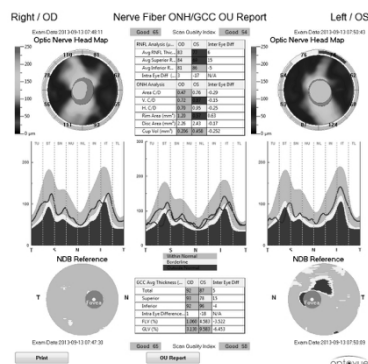
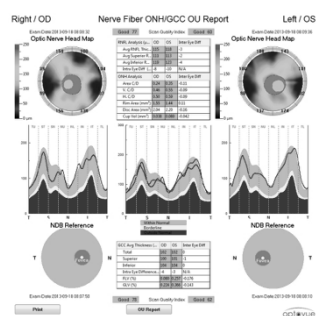
Overlay of the RNFL and GCC

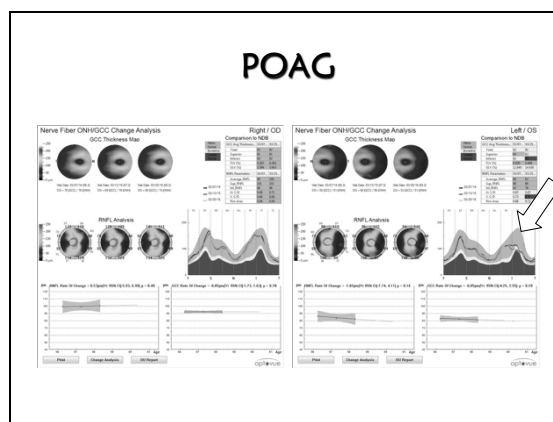
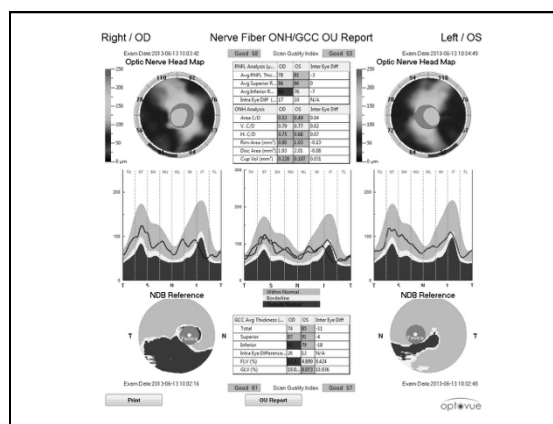
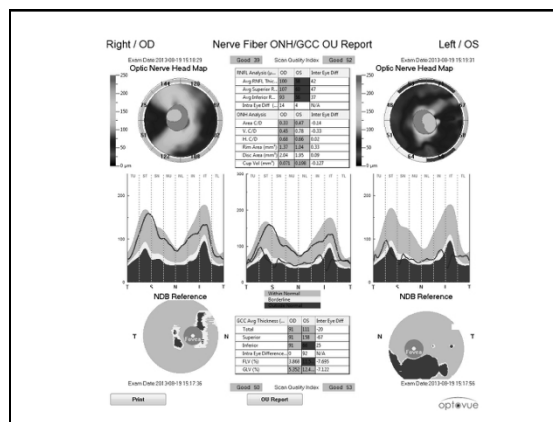


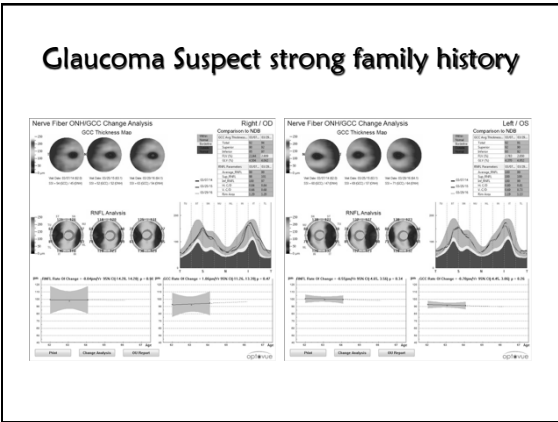
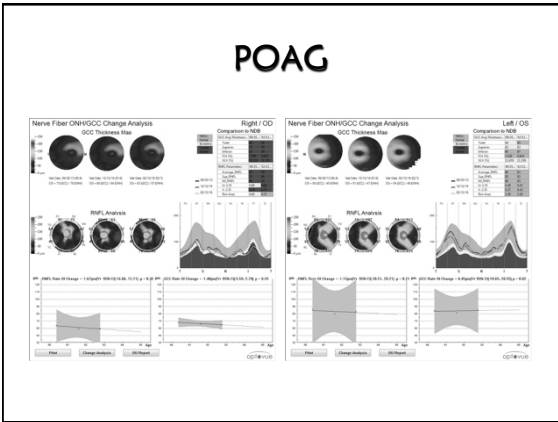
GCC Thinning in Glaucoma



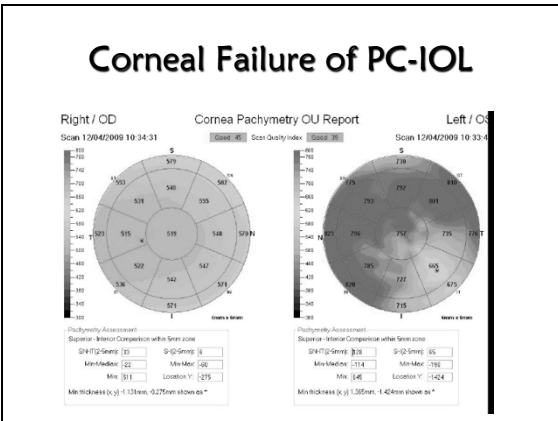
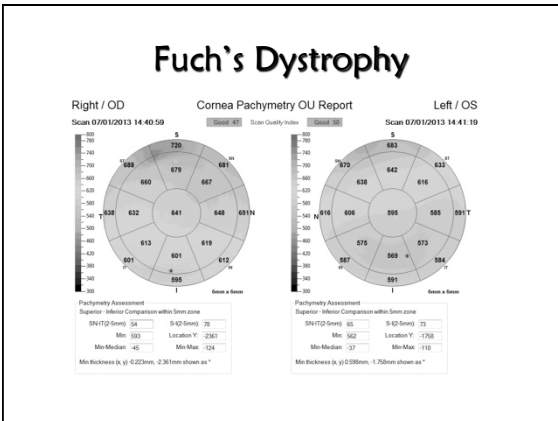
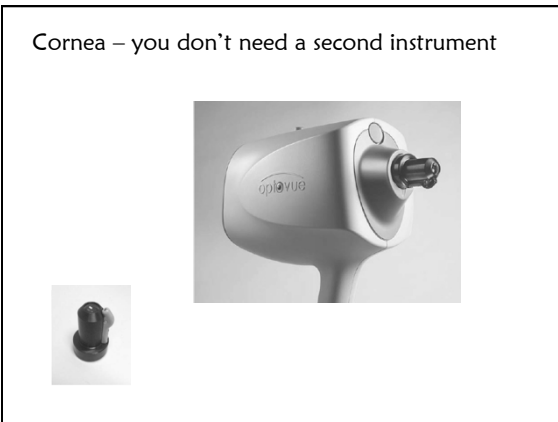
NFL and GCC

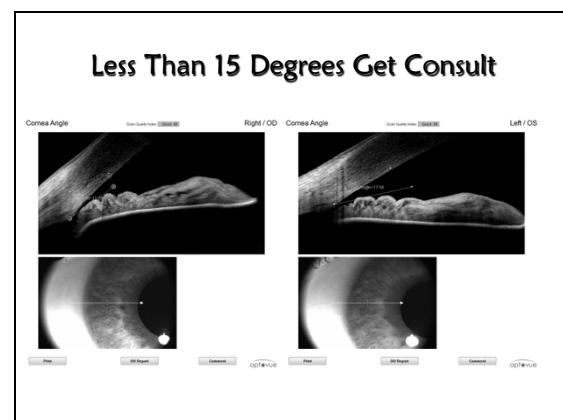
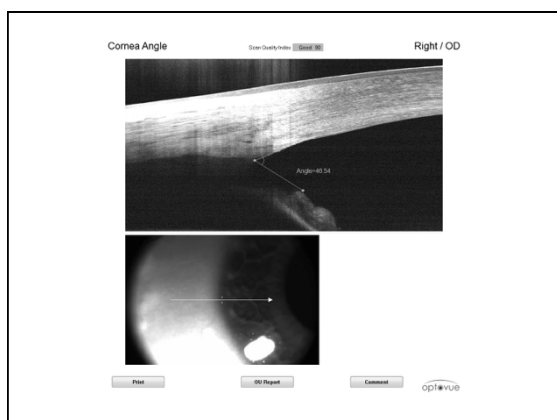
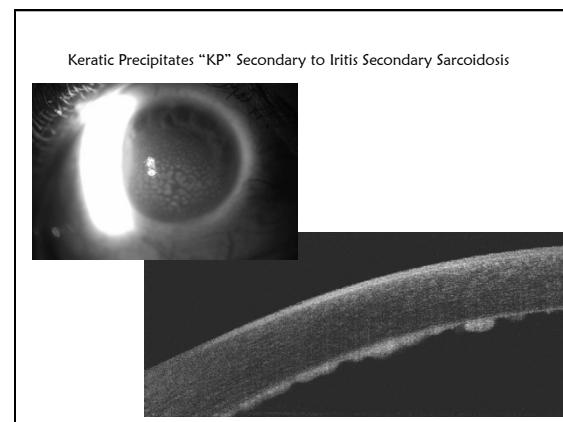
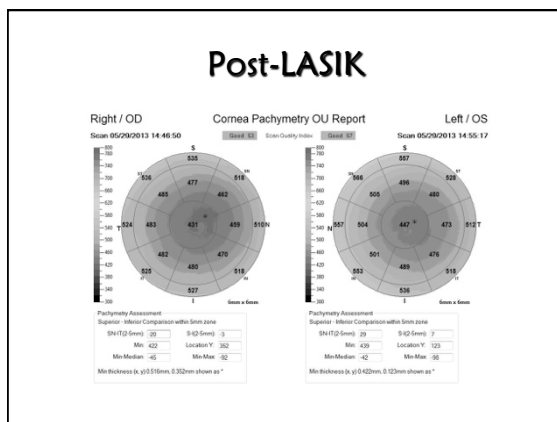
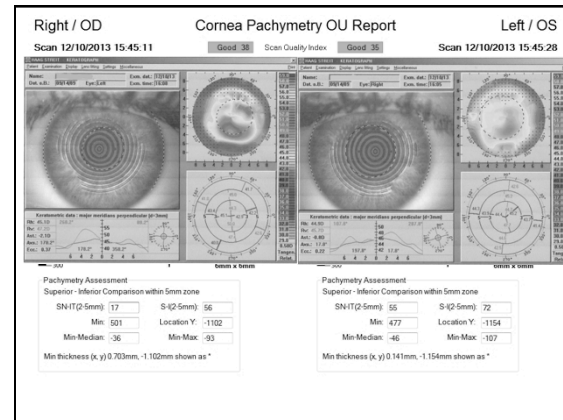
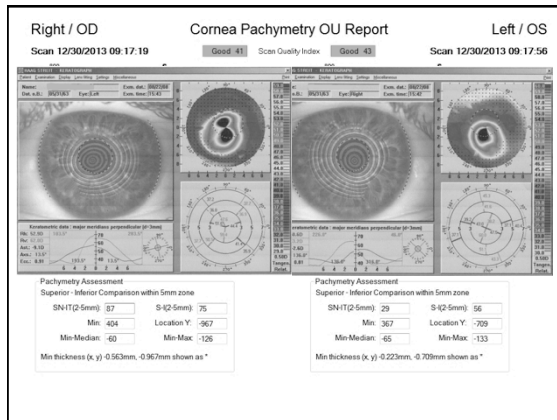


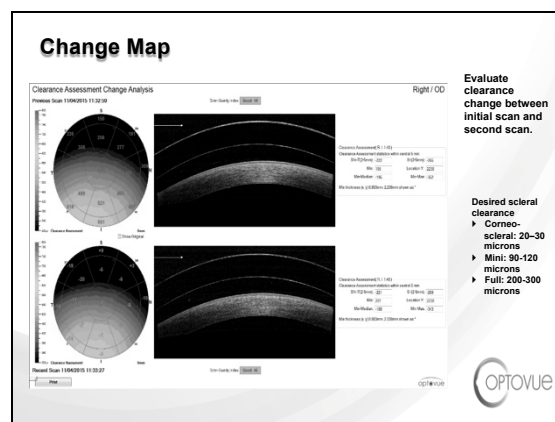
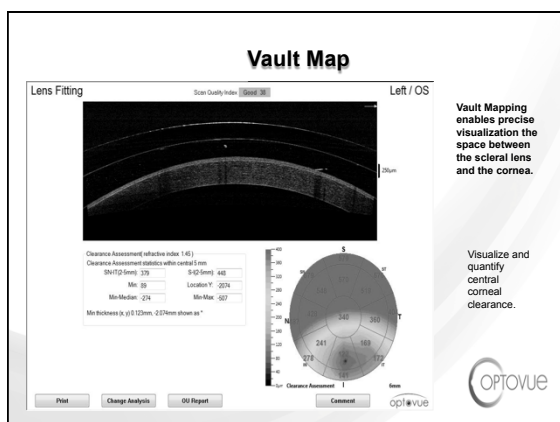
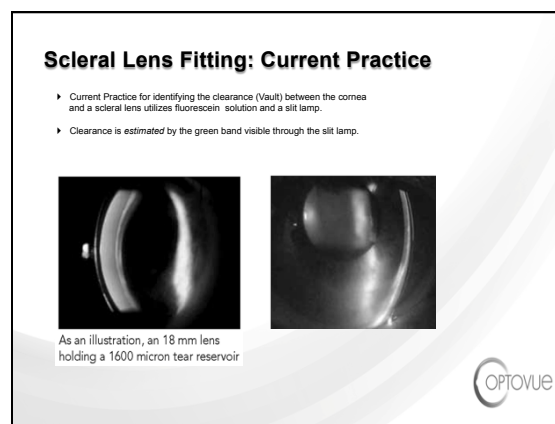
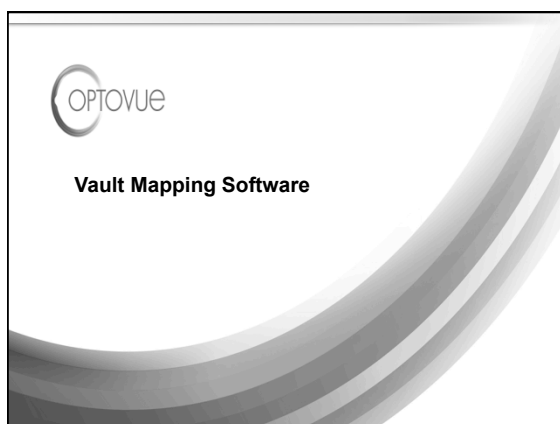
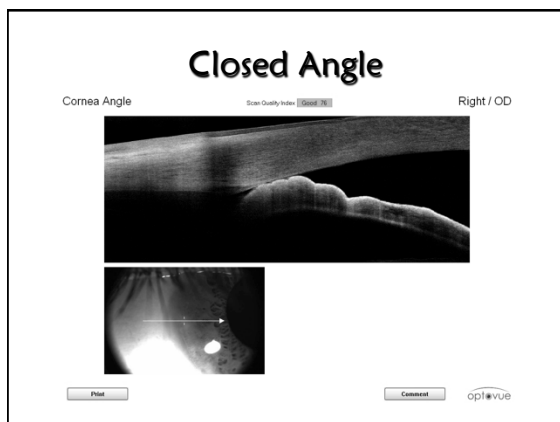


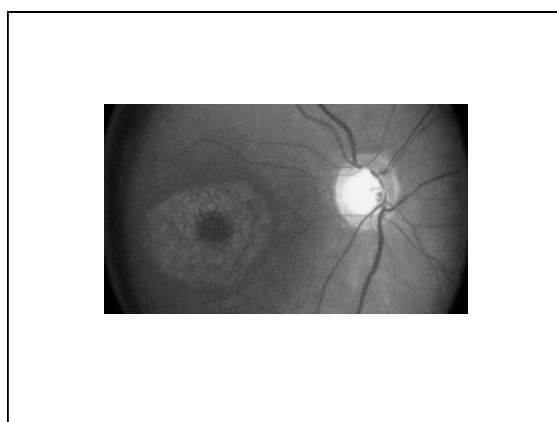
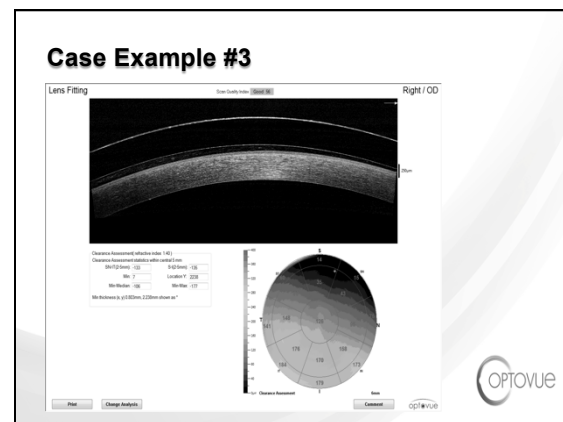
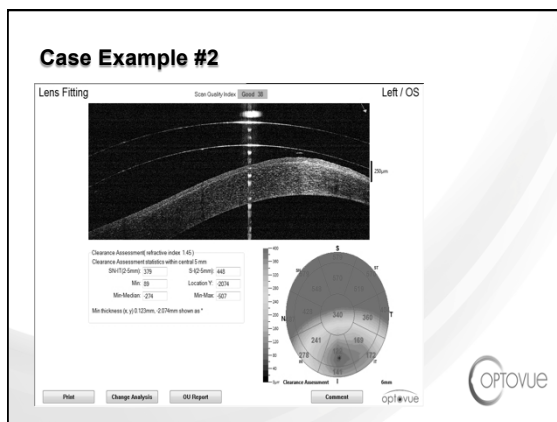
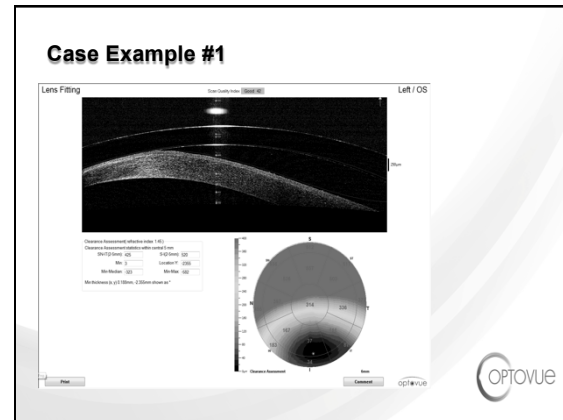
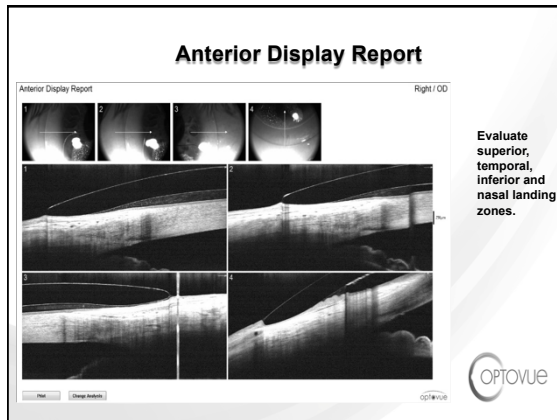


Not Just for the Posterior Segment









Revised Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy

American Academy of Ophthalmology Update

- ✓ Last recommendations were 2002 by the American Academy of Ophthalmology
- ✓ Improved screening tools and new knowledge about prevalence of toxicity have prompt the change
 - 1% after 5-7 years of use or a cumulative dose of 1000 grams (Plaquenil)
- ✓ There is no treatment for this condition
 - Therefore must be caught early
- ✓ Screening for the earliest hints of functional or anatomic change
- ✓ Plaquenil toxicity is not well understood

Revised Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy

American Academy of Ophthalmology Update

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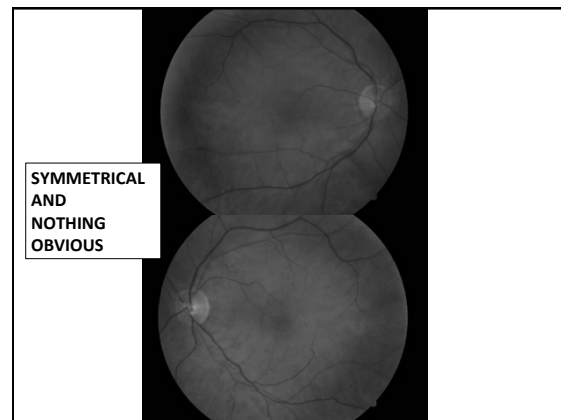
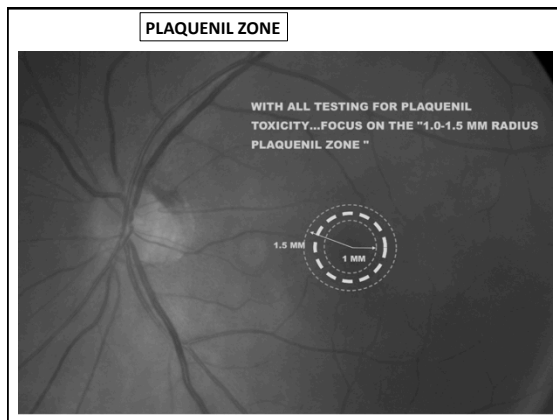
Revised Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy

Revised Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy

Revised Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy

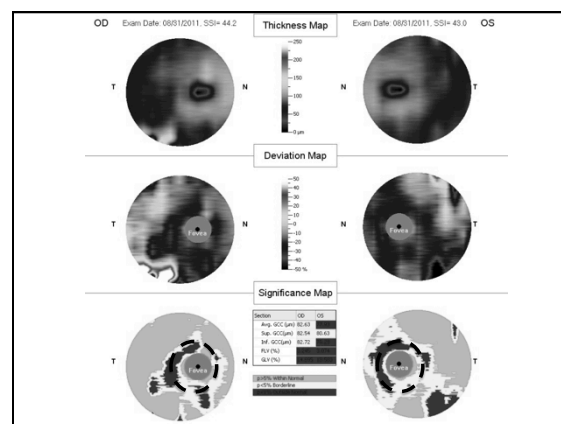
Revised Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy

Revised Recommendations on Screening for Chloroquine and Hydroxychloroquine Retinopathy



1-1.5 MM PERIMACULAR GCC THINNING THE FIRST SIGN OF PLAQUENIL TOXICITY

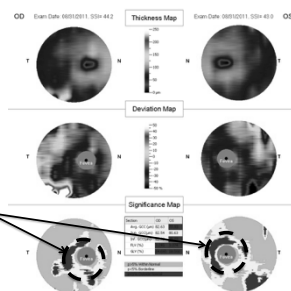
WHY? THICKEST LAYER OF GANGLION CELLS AND SMALLEST GANGLION CELLS AT THAT LOCATION. VERY SENSITIVE TO TOXICITY



WHAT DO YOU SEE ON THE SCANS?

- A. THINNING OF THE GCC IN THE PLAQUENIL ZONE
- B. MACULAR EDEMA
- C. COMPROMISED PIL
- D. NOTHING OF IMPORT

DO YOU SEE ANY PROBLEM IN THE PLAQUENIL ZONE?



WHAT DO YOU SEE ON THE SCANS?

- A. THINNING OF THE GCC IN THE PLAQUENIL ZONE
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DO YOU SEE ANY PROBLEM IN THE PLAQUENIL ZONE?

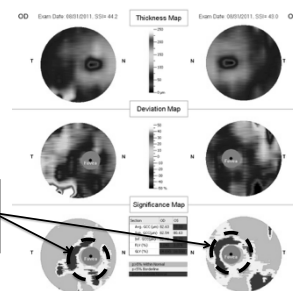
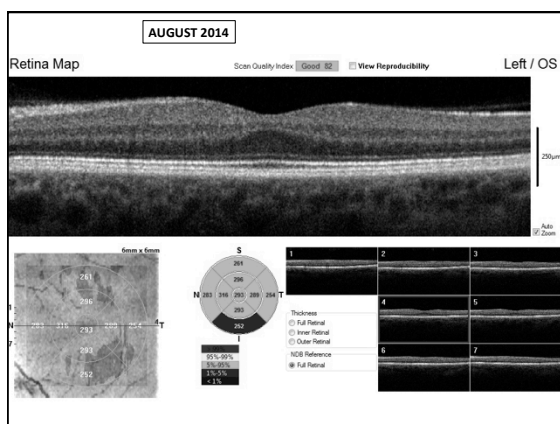
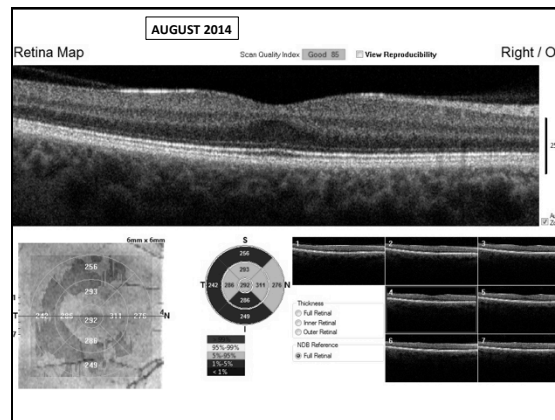
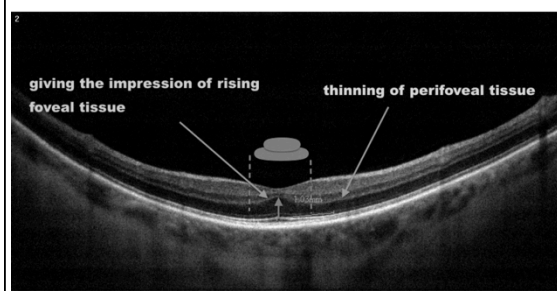
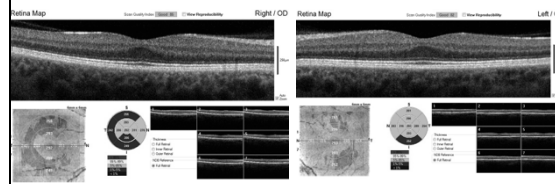


Figure 1 The flying saucer sign representing compromise of the perifoveal retinal tissue with maintenance of the foveal retinal tissue. From Chen E, Brown DM, Benz MS, et al. Spectral domain optical coherence tomography as an effective screening test for hydroxychloroquine retinopathy (the "flying saucer" sign). Clin Ophthalmol. 2010; 4: 1151–1158. Published online 2010 October 21. doi: 10.2147/OPTH.S14257



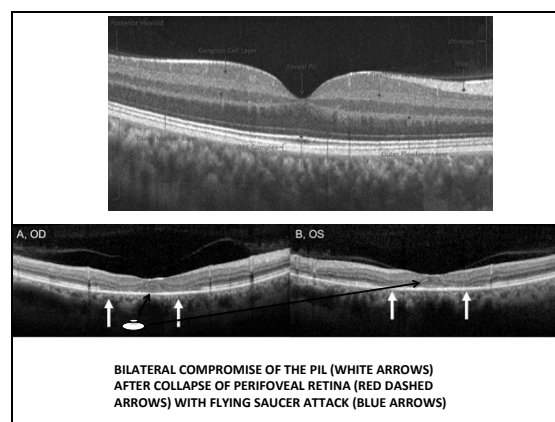
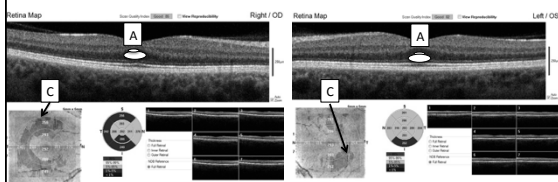
WHAT DO YOU SEE ON THE SCANS?

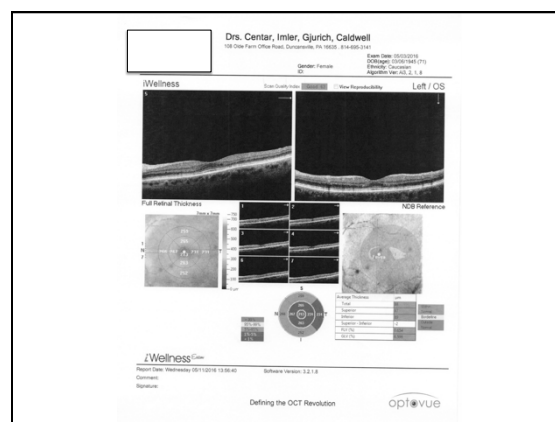
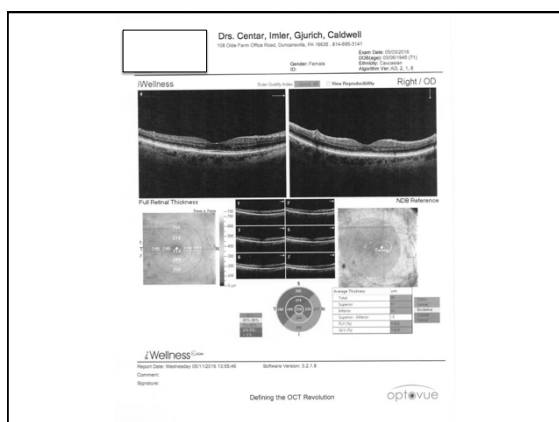
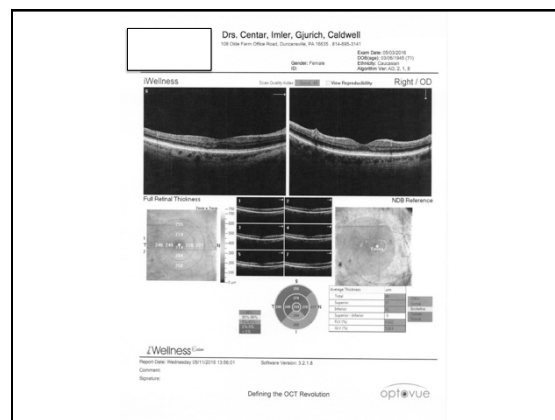
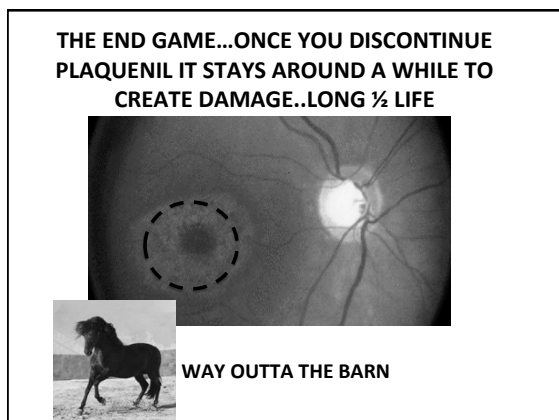
- A. THE FLYING SAUCER SIGN
- B. MACULAR EDEMA
- C. INCREASED PERIMACULAR RETINAL THINNING
- D. A AND C



WHAT DO YOU SEE ON THE SCANS?

- A. THE FLYING SAUCER SIGN
- B. MACULAR EDEMA
- C. INCREASED PERIMACULAR RETINAL THINNING
- D. A AND C





71 yo woman

✓ With Lupus and hypertension

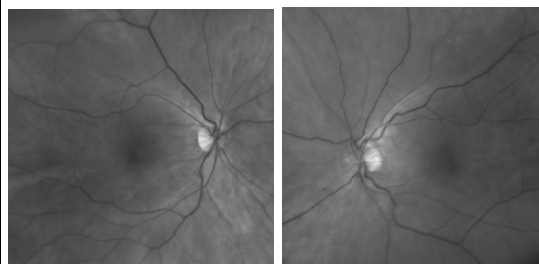
✓ Medications:

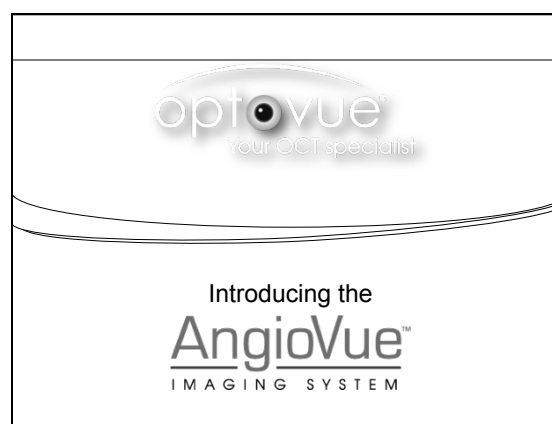
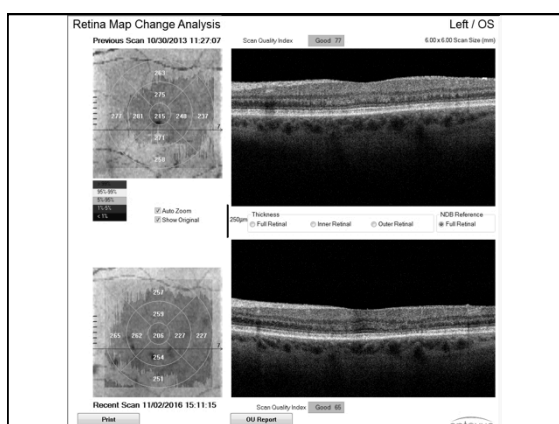
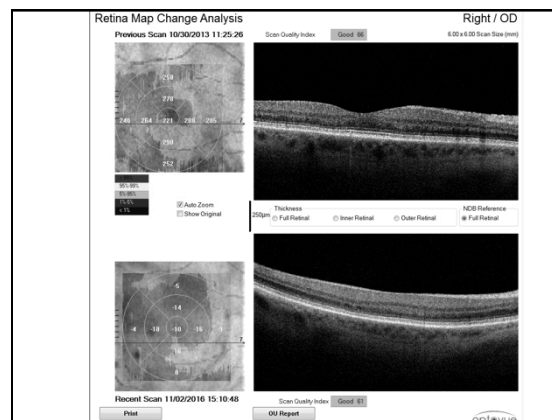
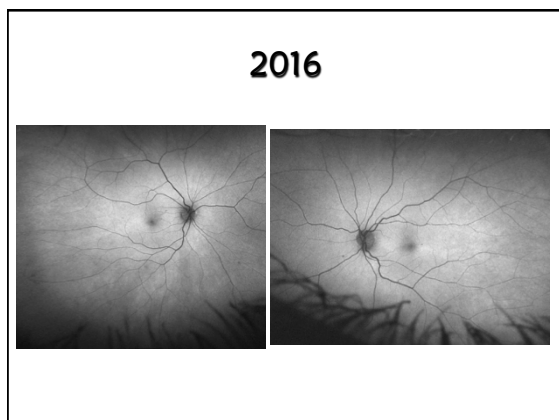
- ★ Colazapam
- ★ Plaquenil 200 mg BID, 15 years
- ★ 81 mg ASA
- ★ Prednisone
- ★ Losartin

✓ VA 20/25 OD/OS (mild cataracts)

✓ Patient was told to see an ophthalmologist in 2013

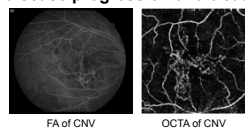
2016





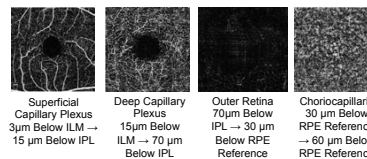
OCT Angiography: A New Approach to Protecting Vision

- ▶ **Non-invasive** visualization of **individual layers** of retinal vasculature
- ▶ Pathology **not obscured** by fluorescein staining or pooling
- ▶ Image acquisition requires **less time** than a dye-based procedure
- ▶ Reduced patient burden allows more frequent imaging to **better follow disease progression and treatment response**

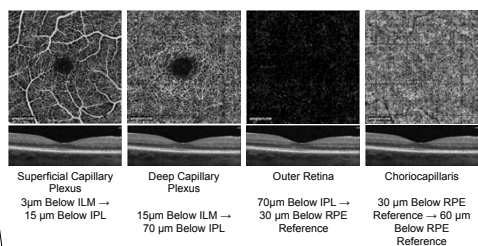


See The Vessels Like You've Never Seen Them Before!

- ▶ Segment retinal vasculature into individual layers
- ▶ Eliminate effects of dye-based blurring and pooling
- ▶ Isolate areas of interest
- ▶ View 3x3mm and 6x6mm scans

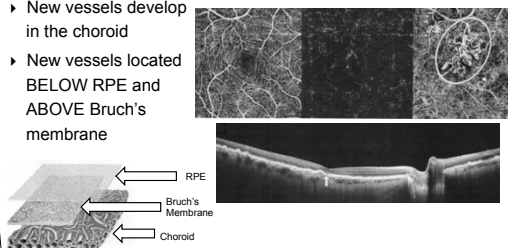


Normal Retinal Vasculature



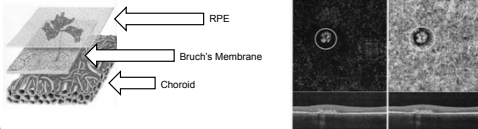
Type 1 "Occult" CNV

- ▶ New vessels develop in the choroid
- ▶ New vessels located BELOW RPE and ABOVE Bruch's membrane

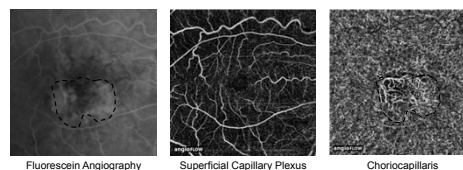


Type 2 "Classic" CNV

- ▶ New vessels develop in choroid
- ▶ New vessels located ABOVE the RPE a ABOVE Bruch's membrane



Type 2 "Classic" CNV



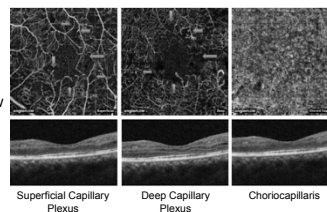
Follow Treatment More Closely with Non-Invasive Imaging



Previously diagnosed patient. Images courtesy of Bruno Lombroso, MD

Diabetic Retinopathy

- ▶ Retinal capillary non-perfusion – seen as blackened area without blood flow outside FAZ
- ▶ Microaneurysms
- ▶ Enlarged FAZ



Questions?

Hope You Enjoyed
Thank You!

Greg A. Caldwell, OD, FAAO
Diplomate, American Board of Optometry

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Lilly, PA 15938

Home Phone 814-884-3982

Mobile Phone 814-931-2030

E-mail: grubod@gmail.com

Education:

Pennsylvania College of Optometry, Philadelphia, PA 19141

- ◆ July 1996 - Residency in Primary Care/Ocular Disease
- ◆ May 1995 - Doctor of Optometry
- ◆ May 1992 - Bachelor of Science

Gannon University, Erie, PA 16541

- ◆ May 1992 - Bachelor of Science

Employment:

Optometrist, Gregory A. Caldwell, OD, PC April 1, 2008-Present

- ◆ Perform primary eye care
- ◆ Perform secondary eye care (dry eye management, glaucoma care, in office minor procedures)
- ◆ Concentrated experience in diagnosis and management of anterior and posterior segment ocular disease.
- ◆ Perform and interpret advanced diagnostic procedures.
- ◆ Triage and manage presenting ocular emergencies.
- ◆ Lecture at local, regional, national and international meetings

Staff Optometrist, Laurel Eye Clinic July 1996-March 31, 2008

- ◆ Concentrated experience in diagnosis and management of anterior and posterior segment ocular disease.
- ◆ Performed pre and post operative care for a variety of ocular surgeries (entropion/ectropion repair, dacryocystorhinostomy, scleral tunnel and clear corneal cataract extraction, corneal transplant, pars plana vitrectomy, macular hole, pneumatic retinopexy, retinal detachment, oculoplastic, argon laser, yag-laser, radial keratotomy [LASIK] laser in situ keratomileusis, bioptics and conductive keratoplasty.
- ◆ Performed and interpreted advanced diagnostic procedures.
- ◆ Triage and manage presenting ocular emergencies.
- ◆ Assisted with in office surgical procedures.

Resident, The Eye Institute at PCO July 1995-July 1996

- ◆ Primary Care/Ocular Disease, Module 1, Philadelphia, PA 19141

Licensure/Certifications:

- ◆ Diplomate, American Board of Optometry 1-23-2012 to 12-31-2021
- ◆ Drug Enforcement Administration (DEA) licensure
- ◆ Pennsylvania State Board Optometrist with therapeutic agents (TPA) licensure
- ◆ Pennsylvania State Board Optometrist with licensure in diagnostic pharmaceutical agents (DPA)
- ◆ Certification, Treatment and Management of Ocular Disease (TMOD)

Affiliations:

- ◆ Fellow of the American Academy of Optometry (FAAO), December 2000
- ◆ American Academy of Optometry
- ◆ Adjunct Faculty at Salus University the Pennsylvania College of Optometry
 - 1996 thru present
- ◆ Pennsylvania Optometric Association
- ◆ American Optometric Association
- ◆ American Optometric Student Association
 - Sustaining member

Expert or Consult Services:

- ◆ Utilization Review and a Peer Review Organization, Pennsylvania Workers' Compensation Act – October 2015- present
- ◆ Expert Witness/Consultant for professional licensure proceedings in the state of Pennsylvania 2007

Service to the Profession:

- ◆ *Chair* of the Pennsylvania Optometric Political Action Committee (POPAC), State and National Affairs Division, Pennsylvania Optometric Association, 2016 Administrative Year.
- ◆ Member of the Third Party Center, Health Care Division, Pennsylvania Optometric Association, 2016 Administrative Year.
- ◆ Member of the Legislative Affairs Committee, State and National Affairs Division, Pennsylvania Optometric Association, 2016 Administrative Year.
- ◆ Member of the Nominating and Evaluating Committee, Committee of the House of Delegates for the Pennsylvania Optometric Association, 2016 Administrative Year.
- ◆ **Trustee, American Optometric Association**, June 2015- June 2016 Administrative Year.
 - ◆ State liaison trustee to Kansas, Minnesota, Nebraska, Oklahoma, and Texas
 - ◆ College liaison trustee to the University of Houston College of Optometry, Northeastern State University Oklahoma College of Optometry, and University of the Incarnate Word The Rosenberg School of Optometry
 - ◆ Liaison trustee to Third Party Center (advocacy)

◆ **Service to the Profession (cont.):**

- ◆ Liaison trustee to Commission on Paraoptometric Certification
- ◆ Liaison trustee to Paraoptometric Resource Center
- ◆ Liaison trustee to Optometric Extension Program

- ◆ Board member, Commission on Paraoptometric Certification
- ◆ *Chair* of the Pennsylvania Optometric Political Action Committee (POPAC), State and National Affairs Division, Pennsylvania Optometric Association, 2015 Administrative Year.
- ◆ Member of the Third Party Center, Health Care Division, Pennsylvania Optometric Association, 2015 Administrative Year.
- ◆ Member of the Legislative Affairs Committee, State and National Affairs Division, Pennsylvania Optometric Association, 2015 Administrative Year.
- ◆ Member of the Nominating and Evaluating Committee, Committee of the House of Delegates for the Pennsylvania Optometric Association, 2015 Administrative Year.
- ◆ **Trustee, American Optometric Association**, June 2014- June 2015 Administrative Year.
 - ◆ State liaison trustee to Maryland, DC, Kentucky, Ohio, Virginia, and West Virginia
 - ◆ College liaison trustee to the Ohio State University College of Optometry
 - ◆ Liaison trustee to Communications and Marketing Group Executive Committee
 - ◆ Liaison trustee to Contact Lens and Cornea Section
 - ◆ Liaison trustee to Association of Schools and Colleges of Optometry
- ◆ *Chair* of the Third Party Center, Health Care Division, Pennsylvania Optometric Association, 2014 Administrative Year.
- ◆ *Chair* of the Pennsylvania Optometric Political Action Committee (POPAC), State and National Affairs Division, Pennsylvania Optometric Association, 2014 Administrative Year.
- ◆ Member of the Nominating and Evaluating Committee, Committee of the House of Delegates for the Pennsylvania Optometric Association, 2014 Administrative Year.
- ◆ Member of the Legislative Affairs Committee, State and National Affairs Division, Pennsylvania Optometric Association, 2014 Administrative Year.
- ◆ Member of the Health Care Reform Committee, Health Care Division, Pennsylvania Optometric Association, 2014 Administrative Year.
- ◆ **Trustee, American Optometric Association**, June 2013- June 2014 Administrative Year.
 - ◆ State liaison trustee to Arizona, Idaho, New Mexico, Utah, and Washington
 - ◆ College liaison trustee to Midwestern University- Arizona College of Optometry
 - ◆ Liaison trustee to Research and Information Center Executive Committee
 - ◆ Liaison trustee to Communications and Marketing Group Executive Committee
 - ◆ Liaison trustee to Vision Rehabilitation Section

◆ **Service to the Profession (cont.):**

- ◆ Liaison trustee to The College of Optometrists in Vision Development (COVD)
- ◆ Member of the Third Party Center Executive Committee, American Optometric Association, June 2012- June 2013 Administrative Year.
 - ◆ AOA Patient Access for Optometry Committee
 - ◆ AOA Accountable Care Organization and Patient Center Medical Home Committee
 - ◆ AOA Payers and Purchasers Committee
 - ◆ AOA TPC liaison to Florida, Georgia, North Carolina, Pennsylvania, South Carolina and West Virginia
- ◆ Item Writer for the American Board of Optometry Exam Team, January 4 -6, 2013. Spring Hill Suites Las Vegas Convention Center, Las Vegas, NV.
- ◆ *Chair* of the Third Party Center, Health Care Division, Pennsylvania Optometric Association, 2013 Administrative Year.
- ◆ *Chair* of the Pennsylvania Optometric Political Action Committee (POPAC), State and National Affairs Division, Pennsylvania Optometric Association, 2013 Administrative Year.
- ◆ Member of the Nominating and Evaluating Committee, Committee of the House of Delegates for the Pennsylvania Optometric Association, 2013 Administrative Year.
- ◆ Member of the Legislative Affairs Committee, State and National Affairs Division, Pennsylvania Optometric Association, 2013 Administrative Year.
- ◆ Member of the Health Care Reform Committee, Health Care Division, Pennsylvania Optometric Association, 2013 Administrative Year.
- ◆ Member of the Meetings and Events Committee, Administration and Planning Division, Pennsylvania Optometric Association, 2013 Administrative Year.
- ◆ Member of the Personnel Committee, Pennsylvania Optometric Association, 2013 Administrative Year
- ◆ Item Reviewer for the American Board of Optometry Exam Review Team, June 1-3, 2012. Atlanta Airport Marriott Gateway Hotel, Atlanta, GA.
- ◆ Caldwell, G.A., *Patient Access for Optometry-ER Diversion*. Optometric Seminar/Presentation, 2012, April 2, American Optometric Association, State Legislative and Third Party National Conference and the Congressional Advocacy Conference. Washington D.C.
- ◆ Item Reviewer for the American Board of Optometry Exam Review Team, January 13-15, 2012. Hilton Atlanta Airport, Atlanta, GA.
- ◆ *Chair* of the Pennsylvania Optometric Political Action Committee (POPAC), State and National Affairs Division, Pennsylvania Optometric Association, 2012 Administrative Year.
- ◆ Member of the Health Care Reform Committee, Health Care Division, Pennsylvania Optometric Association, 2012 Administrative Year.
- ◆ Member of the Legislative Affairs Committee, State and National Affairs Division, Pennsylvania Optometric Association, 2012 Administrative Year.
- ◆ Member of the Third Party Center, Health Care Division, Pennsylvania Optometric Association, 2012 Administrative Year.
- ◆ Member of the Diabetic Task Force, Clinical Care Division, Pennsylvania Optometric Association, 2012 Administrative Year.

◆ **Service to the Profession (cont.):**

- ◆ *Immediate Past-President* of the Board of Directors, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ *Chair* of the Health Care Reform Committee, Health Care Division, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ *Division Executive Officer (DEO)*, Administration and Planning Division, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ *Chair* of the Program Committee, Administration and Planning Division, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ *Chair* of the Personnel Committee, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ *Chair* of the Non-Dues Income Committee, Budget and Finance Division, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ Member of the Budget and Finance Committee, Budget and Finance Division, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ Member of the Diabetic Task Force, Clinical Care Division, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ Member of the Legislative Affairs Committee, State and National Affairs Division, Pennsylvania Optometric Association, 2011 Administrative Year.
- ◆ Member of the Third Party Center Executive Committee, American Optometric Association, June 2011- June 2012 Administrative Year.
 - ◆ AOA Patient Access for Optometry Committee
 - ◆ AOA Payers and Purchasers Committee
 - ◆ AOA TPC liaison to Florida, Georgia, North Carolina, Pennsylvania, South Carolina and West Virginia
- ◆ **President of the Board of Directors, Pennsylvania Optometric Association, 2010 Administrative Year.**
- ◆ Member of the AOA Optometric Database Team (OMDPT), American Optometric Association, 2010 Administrative Year.
- ◆ *Chair* of the Pennsylvania Diabetic Eye Health Alliance (PDEHA), Pennsylvania Optometric Association, 2010 Administrative Year.
- ◆ *Chair*, Strategic Planning Steering Committee, 2009 Strategic Planning for the Pennsylvania Optometric Association, August 5-November 21, 2009.
- ◆ Member, AOA President's Council Planning Committee 2009, Meeting on January 21-24, 2010. Hyatt Regency San Francisco, San Francisco, CA.
- ◆ *Board of Directors*, President-Elect, Pennsylvania Optometric Association, 2009 Administrative Year.
- ◆ *Division Executive Officer (DEO)*, State and National Affairs Division (Legislative Affairs Committee, Keyperson Committee, POPAC), Pennsylvania Optometric Association, 2009 Administrative Year.
- ◆ *Chair* of the Pennsylvania Diabetic Eye Health Alliance (PDEHA), Pennsylvania Optometric Association, 2009 Administrative Year.
- ◆ Liaison for Mid-Counties Optometric Society of the POA 2009.
- ◆ Liaison for Northern Optometric Society of the POA 2009.
- ◆ Optometric Advisory Committee Member for UPMC, Pennsylvania Optometric Association for 2009.
- ◆ Optometric Advisory Committee Member for Highmark, Pennsylvania Optometric Association for 2009.

◆ **Service to the Profession (cont.):**

- ◆ Member of the AOA Optometric Database Team (OMDPT), American Optometric Association, 2009 Administrative Year.
- ◆ *Chair and Founding member* of the Pennsylvania Diabetic Eye Health Alliance (PDEHA), Pennsylvania Optometric Association, 2008 Administrative Year.
- ◆ *Board of Directors*, Trustee, Pennsylvania Optometric Association, 2008 Administrative Year.
- ◆ *Division Executive Officer (DEO)*, Health Care Division (Eye Care Benefits, Quality Management, Healthy Eyes Healthy People), Pennsylvania Optometric Association, 2008 Administrative Year.
- ◆ Liaison for the Pennsylvania Paraoptometric Association (PPA) 2008
- ◆ Liaison for Mid-Counties Optometric Society of the POA 2008
- ◆ Liaison for Northern Optometric Society of the POA 2008
- ◆ Optometric Advisory Committee Member for UPMC, Pennsylvania Optometric Association for 2008.
- ◆ *Board of Directors*, Trustee, Pennsylvania Optometric Association, 2007 Administrative Year.
- ◆ *Division Executive Officer (DEO)*, Clinical Care Division (Clinical Care, Pediatric Care, Low Vision Care, Motor Vision), Pennsylvania Optometric Association, 2007 Administrative Year.
- ◆ Liaison for Mid-Counties Optometric Society of the POA 2007
- ◆ Advisory Panel Member for UPMC, Pennsylvania Optometric Association for 2007
- ◆ *Board of Directors*, Trustee, Pennsylvania Optometric Association, 2006 Administrative Year.
- ◆ *Division Executive Officer (DEO)*, Clinical Care Division (Clinical Care, Pediatric Care, Low Vision Care, Motor Vision), Pennsylvania Optometric Association, 2006 Administrative Year.
- ◆ *Chairperson* of Clinical Practice Committee, Clinical Care Division, Pennsylvania Optometric Association, 2006 Administrative Year.
- ◆ Liaison for Mid-Counties Optometric Society of the POA 2007
- ◆ *Chairperson* of Clinical Practice Committee, Clinical Care Division, Pennsylvania Optometric Association, 2005 Administrative Year.
- ◆ Examiner, National Board of Examiners in Optometry (NBEO), April 17-18, 2004, Philadelphia, PA.
- ◆ Examiner, National Board of Examiners in Optometry (NBEO), April 3-4, 2004, Columbus, OH.
- ◆ Member of Clinical Practice Committee, Clinical Care Division, Pennsylvania Optometric Association, 2004 Administrative Year.

- ◆ Lecturer, Southwest Para Optometric Society, August 20, 2003, Update on Refractive Surgeries, Johnstown, PA.
- ◆ Lecturer, Pennsylvania Optometric Association 2003 Spring Educational Program and PPA 25th Anniversary Celebration and Educational Program, June 7, 2003, CPOA Review, Intermediate level, 3.5 hours, Seven Springs Mountain Resort, Champion, PA.
- ◆ Examiner, National Board of Examiners in Optometry (NBEO), April 12-13, 2003, Philadelphia, PA.
- ◆ Examiner, National Board of Examiners in Optometry (NBEO), April 27-28, 2002, Chicago, IL.
- ◆ Supervising Examiner, National Board of Examiners in Optometry (NBEO), April 13-14, 2002, Philadelphia, PA.

◆ **Service to the Profession (cont.):**

- ◆ Examiner, National Board of Examiners in Optometry (NBEO), April 6-7, 2002, Columbus, OH.
- ◆ Referee for *Optometry*, Journal of the American Optometric Association
- ◆ Examiner, National Board of Examiners in Optometry (NBEO), May 5-6, 2001, Chicago, IL.
- ◆ Keyperson for Senator Jubilier, Pennsylvania Optometric Political Action Committee (POPAC), January 2000-2006.
- ◆ Examiner, National Board of Examiners in Optometry (NBEO), November 4-5, 2000, Philadelphia, PA.
- ◆ Preceptor for the Pennsylvania College of Optometry, fourth year externship program, August 1996-present

Advisory Board:

- Optometric Management Symposium on Contemporary Eye Care
 - Conference Chair 2013 with Joseph Sowka O.D., 9th Annual, Walt Disney World Resort at Disney's Contemporary Resort, December 6-8, 2013
 - Conference Chair 2014 with Joseph Sowka O.D., 10th Annual, Walt Disney World Resort at Disney's Yacht & Beach Club Resorts, December 5-7, 2014
 - Conference Chair 2015 with Joseph Sowka O.D., 11th Annual, Walt Disney World Resort at Grand Floridian, November 6-8, 2015
- International Vision Expo- East & West Conference Advisory Board Member
 - 2013, 2014, 2015 (resigned after completing 2015 duties)
- Allergan
 - Glaucoma advisory board, 2013, May 10, Atlanta, GA.
- SARcode Bioscience, lifitegrast ophthalmic solution, Consultant 2013
- Valeant Ophthalmics, Lacrisert (Hydroxypropyl Cellulose Ophthalmic Insert) Advisory Board. Consultant 2012
 - June 29, 2012, McCormick Place Convention Center, Chicago, IL.
 - October 26, 2013, Hyatt Regency, Phoenix, AZ.
- Optometric Advisory Committee, member for Highmark, Pennsylvania Optometric Association for 2009-present
- Optometric Advisory Committee, member for UPMC, Pennsylvania Optometric Association for 2007-present
- Pfizer Ophthalmics, Optometrist Glaucoma Advisory Board. Consultant, 2004 –2009.

Speaking Bureau:

Optovue	January 2012- 2015
Alcon Laboratories.	February 2004 – 2015
Allergan	June 2007-2015
Pfizer Pharmaceutical Group.	March 2004 – 2010
Novartis Ophthalmics.	April 2004 - 2006
Santen Pharmaceutical.	February 2003 – March 2004

Teaching Experience:

Clinical Instructor
Ocular Therapeutics Course 750B, 8 Credits
Pennsylvania College of Optometry, Philadelphia, PA
July 15, 2001

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits

Teaching Experience (cont.):

Pennsylvania College of Optometry, Philadelphia, PA
December 2-3, 2000

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits

Pennsylvania College of Optometry, Philadelphia, PA
June 10-11, 2000

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Pennsylvania College of Optometry, Philadelphia, PA
November 20-21, 1999

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Pennsylvania College of Optometry, Philadelphia, PA
July 17-18, 1999

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Pennsylvania College of Optometry, Philadelphia, PA
July 10-11, 1999

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Pennsylvania College of Optometry, Philadelphia, PA
June 12-13, 1999

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Pennsylvania College of Optometry, Philadelphia, PA
November 14-15, 1998

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Pennsylvania College of Optometry, Philadelphia, PA
October 24-25, 1998

Clinical Instructor
Master of Science in Clinical Optometry
Kongsberg, Norway [International](#)
June 15-26, 1998

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Pennsylvania College of Optometry, Philadelphia, PA
May 30-31, 1998

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Northeastern Eye Institute, Scranton, PA
July 12-13, 1997

Teaching Experience (cont.):

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Kilmore Eye Associates, Mechanicsburg, PA
May 3-4, 1997

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Kilmore Eye Associates, Mechanicsburg, PA
April 26-27, 1997

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Allegheny General Hospital, Pittsburgh, PA
April 12-13, 1997

Ocular Therapeutics Course 750B, 12 Credits
Allegheny General Hospital, Pittsburgh, PA
March 15-16, 1997

Clinical Instructor
Ocular Therapeutics Course 750B, 12 Credits
Allegheny General Hospital, Pittsburgh, PA
March 2, 1997

Publications:

Caldwell, G.A., *Managing the Complex Allergic Reaction*. Review of Cornea & Contact Lens. 2016, March, pages 24-29.

Caldwell, G.A., *Infection and Inflammation Management-Be Vigilant When Prescribing Oral Pharmaceutical Agents*, Optometry Times. 2012, April Volume 4, Number 4, page 20.

Caldwell, G.A., *Allergy Management-Use Pathophysiology to Guide Therapy*, Optometry Times. 2012, February Volume 4, Number 2, page 14.

Caldwell, G.A., *Girl Reports Blurry Vision 1 Year After Normal Eye Exam (Best's Disease)*. Primary Care Optometry News, What's Your Diagnosis?. 2011, Volume 16, Number 3: 24-26.

Caldwell, G.A., *Symptoms and Classification are Keys to Treating Allergies*, Optometry Times. 2011, February Volume 3, Number 2, pages 1 and 21.

Caldwell, G.A., *Patient Seeks Second Opinion for Subconjunctival Hemorrhage (Terson's syndrome)*. Primary Care Optometry News, What's Your Diagnosis?. 2009, 14(12): 24-26.

Presentations:

Caldwell, G.A., *Rheumatology, Thyroid Dysfunction and the Eye*. Everything Therapeutic: Houston. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. Lecture Presentation, 2016, June 4, University of Houston College of Optometry, Houston, TX.

Caldwell, G.A., *Glaucoma-Enough Pearls to Make a Necklace*. Everything Therapeutic: Houston. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2016, June 4, University of Houston College of Optometry, Houston, TX.

Presentations (cont.):

Caldwell, G.A., *Oral Antibiotics in Eye Care*. Everything Therapeutic: Houston. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2016, June 4, University of Houston College of Optometry, Houston, TX.

Caldwell, G.A., *Prescribing Oral Antivirals*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2016, April 6, Kremer Eye Center, Doubletree Suites, Mt. Laurel, NJ.

Caldwell, G.A., *Prescribing Oral Antibiotics*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2016, April 6, Kremer Eye Center, Doubletree Suites, Mt. Laurel, NJ.

Caldwell, G.A., *OCT- Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric seminar, 2 hours Continuing Education Approval, Cope approved. Lecture Presentation, 2016, April 1, Nebraska Optometric Association, Omaha, NE.

Caldwell, G.A., Sowka, J., *Current Topics in Glaucoma*. Optometric Seminar (TQ), 2 hours COPE Lecture presentation, 2015, November 6, The Optometric Management Symposium on Contemporary Eye Care, 11th Annual Meeting, Disney's Grand Floridian Resort, Lake Buena Vista, FL.

Caldwell, G.A., *Prescribing Oral Antivirals*. Optometric Seminar, 1 hour COPE Lecture presentation, 2015, November 6, The Optometric Management Symposium on Contemporary Eye Care, 11th Annual Meeting, Disney's Grand Floridian Resort, Lake Buena Vista, FL.

Caldwell, G.A., Offerdahl, T. (pharmacist), *Pharmaceutical Treatment of Anterior Segment Disease: A Collaborative Approach by an Optometrist and Pharmacist*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. 2015, November 2, Pennsylvania College of Optometry at Salus University Optometric Education, Hafter Student Community Center, Elkins Park, PA.

Caldwell, G.A., Devries, D., *Amniotic Membrane Workshop*. Optometric Seminar, 2 hours Continuing Education Approval. International Vision Expo 2014. Lecture Presentation, 2015, September 18, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. Lecture Presentation, 2015, September 12, New Mexico Optometric Association, Drury Plaza Hotel, Santa Fe, New Mexico.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2015, September 12, New Mexico Optometric Association, Drury Plaza Hotel, Santa Fe, New Mexico.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2015, September 12, New Mexico Optometric Association, Drury Plaza Hotel, Santa Fe, New Mexico.

Caldwell, G.A., *OCT- Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric seminar, 2 hours COPE Lecture presentation, 2015, June 6, Central New York Optometric Society of the New York State Optometric Association, Watertown, NY.

Presentations (cont.):

Caldwell, G.A., *Amniotic Membrane Workshop*. Optometric Seminar, 2 hours Continuing Education Approval., 2015, May 5, Lancaster County Optometric Society, Lancaster, PA.

Caldwell, G.A., *Prescribing Oral Antivirals*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2015, April 19, Nebraska Optometric Association, Lincoln, NE.

Caldwell, G.A., *Prescribing Oral Antibiotics*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2015, April 19, Nebraska Optometric Association, Lincoln, NE.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2015, April 19, Nebraska Optometric Association, Lincoln, NE.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2015, April 18, Nebraska Optometric Association, Lincoln, NE.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2015, April 18, Nebraska Optometric Association, Lincoln, NE.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. Lecture Presentation, 2015, April 18, Nebraska Optometric Association, Lincoln, NE.

Caldwell, G.A., Devries, D., *Amniotic Membrane Workshop*. Optometric Seminar, 2 hours Continuing Education Approval. International Vision Expo 2014. Lecture Presentation, 2015, March 20, Jacob K. Javits Convention Center, New York City, NY.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace* Optometric Seminar, 2 hours COPE Lecture presentation, 2014, December 6, The Optometric Management Symposium on Contemporary Eye Care, 10th Annual Meeting, Disney's Yacht & Beach Club Resort, Lake Buena Vista, FL.

Caldwell, G.A., *Prescribing Oral Antibiotics*. Optometric seminar, 1 hour COPE Lecture presentation, 2014, December 5, The Optometric Management Symposium on Contemporary Eye Care, 10th Annual Meeting, Disney's Yacht & Beach Club Resort, Lake Buena Vista, FL.

Caldwell, G.A., *OCT-Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. Lecture Presentation, 2014, November 18, West Michigan Optometric Association, Grand Rapids, MI.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2014, November 15, West Virginia Association of Optometric Physicians, Charleston, WV.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. Lecture Presentation, 2014, November 15, West Virginia Association of Optometric Physicians, Charleston, WV.

Presentations (cont.):

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace* Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. Lecture Presentation, 2014, November 1, Mississippi Optometric Association, Jackson, MS.

Caldwell, G.A., *Prescribing Oral Antivirals*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2014, November 1, Mississippi Optometric Association, Jackson, MS.

Caldwell, G.A., *Prescribing Oral Antibiotics*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2014, November 1, Mississippi Optometric Association, Jackson, MS.

Caldwell, G.A., *Complications in Anterior Segment Disease. Fundamentals of Anterior Segment Disease*. 5 hours. Bachelors of Science Completion for Singapore. Lecture presentation, 2014, October 3-5, Camden Medical Centre, Singapore. [International lecture](#).

Caldwell, G.A., *Scientific Applications in Anterior Segment Disease. Fundamentals of Anterior Segment Disease*. 5 hours. Bachelors of Science Completion for Singapore. Lecture presentation, 2014, October 3-5, Camden Medical Centre, Singapore. [International lecture](#).

Caldwell, G.A., *Applications of Diagnostic Tools in Anterior Segment Disease. Fundamentals of Anterior Segment Disease*. 5 hours. Bachelors of Science Completion for Singapore. Lecture presentation, 2014, October 3-5, Camden Medical Centre, Singapore. [International lecture](#).

Caldwell, G.A., *Pathophysiology of the Anterior Segment. Fundamentals of Anterior Segment Disease*. 5 hours. Bachelors of Science Completion for Singapore. Lecture presentation, 2014, October 3-5, Camden Medical Centre, Singapore. [International lecture](#).

Caldwell, G.A., Devries, D., *Amniotic Membrane Workshop*. Optometric seminar, 2 hours COPE Lecture presentation, 2014, September 20, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric seminar, 1 hour COPE Lecture presentation, 2014, September 17, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV

Caldwell, G.A., *Prescribing Oral Antivirals*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2014, July 16, Indiana Optometric Association Summer Seminar, Ritz Charles Hotel, Indianapolis, IN.

Caldwell, G.A., *Prescribing Oral Antibiotics*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2014, July 16, Indiana Optometric Association Summer Seminar, Ritz Charles Hotel, Indianapolis, IN.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2014, July 16, Indiana Optometric Association Summer Seminar, Ritz Charles Hotel, Indianapolis, IN.

Caldwell, G.A., *Lumigan 0.01%- Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2014, June 18, Accomac Inn, York, PA.

Caldwell, G.A., *Combigan and Alphagan 0.1%- Evaluating a Next Step Adjunctive Option*. Optometric Seminar/Presentation, 2014, June 11, Willow Restaurant, Pittsburgh, PA.

Presentations (cont.):

Caldwell, G.A., *Simbrinza- Management of Intraocular Pressure in 2013*. Optometric Seminar/Presentation, 2014, April 16, The Ohio State University College of Optometry, Columbus, OH.

Caldwell, G.A., *Lumigan 0.01%- Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2014, April 2, Isabella Restaurant, Wilkes Barre, PA.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Anterior Segment Pathologies*. Optometric Seminar, 2 hours Continuing Education Approval. International Vision Expo 2014. Lecture Presentation, 2014, March 28, Jacob K. Javits Convention Center, New York City, NY.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour Continuing Education Approval. International Vision Expo 2014. Lecture Presentation, 2014, March 28, Jacob K. Javits Convention Center, New York City, NY.

Caldwell, G.A., *Simbrinza- Management of Intraocular Pressure in 2013*. Optometric Seminar/Presentation, 2014, March 13, Ruth Chris Steakhouse, Atlanta, GA.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2014, January 25, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2014, January 25, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2014, January 25, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2014, January 25, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Anterior Segment Pathologies*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2014, January 25, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *Oral Analgesics/Narcotic Pharmaceuticals- How to Use Successfully for Ocular Pain*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2014, January 22, The Connecticut Association of Optometrists Winter CE Seminar, Sheraton Hartford South Hotel, Rocky Hill, CT.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2014, January 22, The Connecticut Association of Optometrists Winter CE Seminar, Sheraton Hartford South Hotel, Rocky Hill, CT.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2014, January 22, The Connecticut Association of Optometrists Winter CE Seminar, Sheraton Hartford South Hotel, Rocky Hill, CT.

Caldwell, G.A., *OCT- Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric seminar, 2 hours COPE Lecture presentation, 2014, January 15, Central New York Optometric Society of the New York State Optometric Association, Syracuse, NY.

Presentations (cont.):

Caldwell, G.A., *Rheumatology, Thyroid Dysfunction and the Eye*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, December 7, The Optometric Management Symposium on Contemporary Eye Care, 9th Annual Meeting, Disney's Contemporary Resort, Lake Buena Vista, FL.

Caldwell, G.A., *Simbrinza- Management of Intraocular Pressure in 2013*. Optometric Seminar/Presentation, 2013, November 20, Lidia's Restaurant, Pittsburgh, PA.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour Continuing Education Approval. 2013, November 15, Nova Scotia Association of Optometrists Vision Expo 2013, World Trade and Convention Center, Halifax, Nova Scotia, [Canada](#).

Caldwell, G.A., *Lumigan 0.01%- Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2013, November 6, Willow Restaurant, Pittsburgh, PA.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. 2013, November 4, Pennsylvania College of Optometry at Salus University Optometric Education, Hafter Student Community Center, Elkins Park, PA.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. 2013, November 4, Pennsylvania College of Optometry at Salus University Optometric Education, Hafter Student Community Center, Elkins Park, PA.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. 2013, November 4, Pennsylvania College of Optometry at Salus University Optometric Education, Hafter Student Community Center, Elkins Park, PA.

Caldwell, G.A., *Oral Analgesics/Narcotic Pharmaceuticals*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. 2013, October 30, Michigan Optometric Association Fall Seminar, Lansing Center, Lansing, MI.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. 2013, October 30, Michigan Optometric Association Fall Seminar, Lansing Center, Lansing, MI.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. 2013, October 30, Michigan Optometric Association Fall Seminar, Lansing Center, Lansing, MI.

Caldwell, G.A., *Prescribing Oral Antibiotics*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. American Academy of Optometry (AAO). Lecture Presentation, 2013, October 25, Washington State Convention Center, Seattle, WA.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. American Academy of Optometry (AAO). Lecture Presentation, 2013, October 26, Washington State Convention Center, Seattle, WA.

Caldwell, G.A., *Prescribing Oral Antivirals*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. American Academy of Optometry (AAO). Lecture Presentation, 2013, October 25, Washington State Convention Center, Seattle, WA.

Presentations (cont.):

Caldwell, G.A., *Lumigan 0.01% and The Drop Study*. Optometric Breakfast Seminar, 1 hour. American Academy of Optometry (AAO). Lecture Presentation, 2013, October 25, Washington State Convention Center, Seattle, WA.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours Lecture presentation, 2013, October 20, Salus University and University of Waterloo October CE 2013, The Waterloo Inn, Waterloo, Ontario, [Canada](#).

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours Lecture presentation, 2013, October 20, Salus University and University of Waterloo October CE 2013, The Waterloo Inn, Waterloo, Ontario, [Canada](#).

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, October 18, Tennessee Association of Optometric Physicians 112th TAOP Congress, The Park Vista Hotel, Gatlinburg, TN.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, October 18, Tennessee Association of Optometric Physicians 112th TAOP Congress, The Park Vista Hotel, Gatlinburg, TN.

Caldwell, G.A., *A Potpourri of Clinical Cases*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, October 2, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV

Caldwell, G.A., *OCT- Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, October 2, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric seminar, 1 hour COPE Lecture presentation, 2013, October 2, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV.

Caldwell, G.A., *OCT- Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, September 28, Minnesota Optometric Association 2013 Fall Meeting, Marriott Minneapolis Northwest, Brooklyn, MN.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace* Optometric seminar, 1 hour COPE Lecture presentation, 2013, September 27, Minnesota Optometric Association 2013 Fall Meeting, Marriott Minneapolis Northwest, Brooklyn, MN.

Caldwell, G.A., *Thyroid Dysfunction and the Eye* Optometric seminar, 1 hour COPE Lecture presentation, 2013, September 27, Minnesota Optometric Association 2013 Fall Meeting, Marriott Minneapolis Northwest, Brooklyn, MN.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, September 27, Minnesota Optometric Association 2013 Fall Meeting, Marriott Minneapolis Northwest, Brooklyn, MN.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2013, August, Southeastern District Local Society of the North Carolina State Optometric Society, Wilmington, NC.

Presentations (cont.):

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2013, August, Southeastern District Local Society of the North Carolina State Optometric Society, Wilmington, NC.

Caldwell, G.A., *Management of Intraocular Pressure in 2013*. Optometric Webinar-Presentation, 2013, August 22. Alcon, Simbrinza.

Caldwell, G.A., *Management of Intraocular Pressure in 2013*. Optometric Webinar-Presentation, 2013, July 19. Alcon, Simbrinza.

Caldwell, G.A., *Management of Intraocular Pressure in 2013*. Optometric Lecture Presentation, 2013, June 26, The Palm Restaurant, San Diego, CA.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2013, May 21, Western Pennsylvania Optometric Society of the POA, Four Points Sheraton, Mars, PA.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2013, May 14, J Corks Restaurant, Greensburg, PA.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2013, May 6, Duling-Kurtz House Restaurant, Exton, PA.

Caldwell, G.A., *Intraocular Pressure: Rethinking the Role of IOP in the Diagnosis and Management of Open Angle Glaucoma*. Optometric Seminar/Presentation, 2013, May 4, Academy for Eye Care Excellence, Residents Optometry Program, Alcon World Headquarters, Fort Worth, TX.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, May 3, Montana Optometric Association Annual Educational Conference and Exposition, Hilton Garden Inn, Missoula, MT.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2013, May 2, Montana Optometric Association Annual Educational Conference and Exposition, Hilton Garden Inn, Missoula, MT.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2013, May 2, Montana Optometric Association Annual Educational Conference and Exposition, Hilton Garden Inn, Missoula, MT.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2013, May 2, Montana Optometric Association Annual Educational Conference and Exposition, Hilton Garden Inn, Missoula, MT.

Caldwell, G.A., *Ocular Manifestations and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. Lecture Presentation, 2013, May 2, Montana Optometric Association Annual Educational Conference and Exposition, Hilton Garden Inn, Missoula, MT.

Caldwell, G.A., Wooldridge, R.P., *Management of Intraocular Pressure in 2013*. Optometric Webinar/Presentation, 2013, April 30. Alcon, Simbrinza.

Presentations (cont.):

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make another Necklace*. Optometric seminar, 1 hour WV credit lecture presentation, 2013, April 29, local society of the West Virginia Optometric Association, Muriale's Restaurant, Fairmont, WV.

Caldwell, G.A., *Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2013, April 29, Muriale's Restaurant, Fairmont, WV.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour PA licensure credit, Lecture Presentation, 2013, April 28, Mid-Counties Optometric Society of the POA, Allen Street Grille, State College, PA.

Caldwell, G.A., *Anterior Segment Case Presentations*. 20 hours. Bachelors of Science Completion. Lecture presentation, 2013, April 20-22, Beuth Hochschule fur Technik Berlin, Berlin, Germany. *International lecture*.

Caldwell, G.A., *Glaucoma- Using OCT to Diagnose, Manage and Treat*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2013, April 17, Wisconsin Optometric Association Spring Seminar, Hyatt Hotel in Green Bay, Green Bay, WI.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2013, April 17, Wisconsin Optometric Association Spring Seminar, Hyatt Hotel in Green Bay, Green Bay, WI.

Caldwell, G.A., *Glaucoma- Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2013, April 17, Wisconsin Optometric Association Spring Seminar, Hyatt Hotel in Green Bay, Green Bay, WI.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2013, April 17, Wisconsin Optometric Association Spring Seminar, Hyatt Hotel in Green Bay, Green Bay, WI.

Caldwell, G.A., *Intraocular Pressure: Rethinking the Role of IOP in the Diagnosis and Management of Open Angle Glaucoma*. Optometric Seminar/Presentation, 2013, April 11, Indiana University, College of Optometry, Bloomington, IN.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2013, April 7, Philadelphia/Bucks-Montgomery One Day Seminar, Annual Meeting, Philadelphia and Bucks Montgomery County Optometric Societies of the POA, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Caldwell, G.A., *Oral Analgesic/Narcotic Pharmaceuticals*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2013, April 7, Philadelphia/Bucks-Montgomery One Day Seminar, Annual Meeting, Philadelphia and Bucks Montgomery County Optometric Societies of the POA, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Caldwell, G.A., *Intraocular Pressure: Rethinking the Role of IOP in the Diagnosis and Management of Open Angle Glaucoma*. Optometric Seminar/Presentation, 2013, April 6, Academy for Eye Care Excellence, 4th year Optometry Student Program, Alcon World Headquarters, Fort Worth, TX.

Caldwell, G.A., *Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2013, March 27, Hyde Park Prime Steakhouse, Pittsburgh, PA.

Presentations (cont.):

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, March 17, South Carolina Optometric Physician Association, SCOPA Spring Meeting, Kiawah Island Resort Convention Center, Kiawah Island, SC.

Caldwell, G.A., *Glaucoma: Enough Pearls to Make a Pair of Ear Rings and Bracelet*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, March 17, South Carolina Optometric Physician Association, SCOPA Spring Meeting, Kiawah Island Resort Convention Center, Kiawah Island, SC.

Caldwell, G.A., *Rheumatology, Thyroid Dysfunction and the Eye*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, March 2, SECO 2013, Georgia World Congress Center, Atlanta, GA.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours COPE Lecture presentation, 2013, March 1, SECO 2013, Georgia World Congress Center, Atlanta, GA.

Caldwell, G.A., *Glaucoma: Enough Pearls to Make a Necklace*. Optometric seminar, 1 hour COPE Lecture presentation, 2013, February 6, Michigan Optometric Association, Winter Seminar, Kellogg Hotel & Conference Center, East Lansing, MI.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 1 hour COPE Lecture presentation, 2013, February 6, Michigan Optometric Association, Winter Seminar, Kellogg Hotel & Conference Center, East Lansing, MI.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make another Necklace*. Optometric seminar, 1 hour COPE Lecture presentation, 2013, February 6, Michigan Optometric Association, Winter Seminar, Kellogg Hotel & Conference Center, East Lansing, MI.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric seminar, 1 hour COPE Lecture presentation, 2013, February 6, Michigan Optometric Association, Winter Seminar, Kellogg Hotel & Conference Center, East Lansing, MI.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make another Necklace*. Optometric seminar, 1 hour COPE Lecture presentation, 2013, February 6, Michigan Optometric Association, Winter Seminar, Kellogg Hotel & Conference Center, East Lansing, MI.

Caldwell, G.A., *Intraocular Pressure: Rethinking the Role of IOP in the Diagnosis and Management of Open Angle Glaucoma*. Optometric Seminar/Presentation, 2013, February 1, SUNY Optometry School, New York City, NY.

Caldwell, G.A., *Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2013, January 21, Leeds Restaurant, Harrisburg, PA.

Caldwell, G.A., *Glaucoma Case Presentations*. 8 hours. Bachelors of Science Completion for Singapore. Lecture presentation, 2012, December 17, Camden Medical Centre, Singapore. [International lecture](#).

Caldwell, G.A., *Posterior Segment Case Presentations*. 16 hours. Bachelors of Science Completion for Singapore. Lecture presentation, 2012, December 15-16, Camden Medical Centre, Singapore. [International lecture](#).

Presentations (cont.):

Caldwell, G.A., *Anterior Segment Case Presentations*. 20 hours. Bachelors of Science Completion for Singapore. Lecture presentation, 2012, December 13-15, Camden Medical Centre, Singapore. [International lecture](#).

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. American Academy of Optometry (AAO). Lecture Presentation, 2012, October 26, Phoenix Convention Center, Phoenix, AZ.

Caldwell, G.A., *Intraocular Pressure: Rethinking the Role of IOP in the Diagnosis and Management of Open Angle Glaucoma*. Optometric Seminar/Presentation, 2012, October 25, Seasons 52 restaurant, Phoenix, AZ.

Caldwell, G.A., *Ocular Manifestations and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. American Academy of Optometry (AAO). Lecture Presentation, 2012, October 26, Phoenix Convention Center, Phoenix, AZ.

Caldwell, G.A., *Intraocular Pressure: Rethinking the Role of IOP in the Diagnosis and Management of Open Angle Glaucoma*. Optometric Seminar/Presentation, 2012, October 24, Seasons 52 restaurant, Phoenix, AZ.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2012, October 21, Southwestern Pennsylvania Optometric Society Fall Continuing Education Program, University of Pittsburgh at Johnstown, Heritage Hall in the Living and Learning Center, Johnstown, PA.

Caldwell, G.A., *Intraocular Pressure: Rethinking the Role of IOP in the Diagnosis and Management of Open Angle Glaucoma*. Optometric Seminar/Presentation, 2012, October 18, Vincenzo's Restaurant, Louisville, KY.

Caldwell, G.A., *Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2012, October 15, One Eleven, Greensburg, PA.

Caldwell, G.A., *Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2012, October 11, The Orchards Restaurant, Chambersburg, PA.

Caldwell, G.A., *Ocular Manifestations and Treatment of Allergic Disorders*. Optometric Seminar, Trinidad and Tobago Optometrist Association, Lecture Presentation, 2013, September 22, Trinidad and Tobago Convention Center, Trinidad and Tobago. [International Lecture](#)

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, Trinidad and Tobago Optometrist Association, Lecture Presentation, 2013, September 22, Trinidad and Tobago Convention Center, Trinidad and Tobago. [International Lecture](#)

Caldwell, G.A., *Ocular Manifestations of Systemic and Orbit Disease*. Optometric Seminar, Trinidad and Tobago Optometrist Association, Lecture Presentation, 2013, September 22, Trinidad and Tobago Convention Center, Trinidad and Tobago. [International Lecture](#)

Caldwell, G.A., *Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2012, October 1, Muriales Italian Restaurant, Fairmont, WV.

Presentations (cont.):

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric seminar, 1 hour COPE Lecture presentation, 2012, October 1, West Virginia Optometric Association, local society, Muriales Italian Restaurant, Fairmont, WV.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make another Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2012, September 16, Vermont's Optometric Association's Fall Conference 2012, Basin Harbor Club on Lake Champlain, Vergennes, VT.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2012, September 16, Vermont's Optometric Association's Fall Conference 2012, Basin Harbor Club on Lake Champlain, Vergennes, VT.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2012, September 16, Vermont's Optometric Association's Fall Conference 2012, Basin Harbor Club on Lake Champlain, Vergennes, VT.

Caldwell, G.A., *Primary Open Angle Glaucoma: Managing IOP in Clinical Practice*. Optometric Seminar/Presentation, 2012, September 12, L'Auberge Provencale, White Post, VA.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2012, August 16, Capital Grille, King of Prussia, PA.

Caldwell, G.A., *Rheumatology, Thyroid Dysfunction and the Eye*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2012, June 30, American Optometric Association, Optometry's Meeting, McCormick Place West Convention Center, Chicago, IL.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, June 30, American Optometric Association, Optometry's Meeting, McCormick Place West Convention Center, Chicago, IL.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 1 hour COPE Lecture presentation, 2012, June 28, American Optometric Association, Optometry's Meeting, McCormick Place West Convention Center, Chicago, IL.

Caldwell, G.A., Gross, Phil, *Health Care Reform, A Clinical Approach on How to Adopt and Integrate Incentive Programs, Quality Reporting, and Coding Changes into Your Practice*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2012, June 28, American Optometric Association, Optometry's Meeting, McCormick Place West Convention Center, Chicago, IL.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2012, June 13, Bellini's Italian Eatery, Clifton Park, NY.

Caldwell, G.A., *Rheumatology, Thyroid Dysfunction and the Eye*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2012, June 7, Georgia Optometric Association, 108th Annual Meeting, Hammock Beach Resort, Palm Coast, FL.

Caldwell, G.A., *Glaucoma: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, June 7, Georgia Optometric Association, 108th Annual Meeting, Hammock Beach Resort, Palm Coast, FL.

Presentations (cont.):

Caldwell, G.A., *OCT Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, June 7, Georgia Optometric Association, 108th Annual Meeting, Hammock Beach Resort, Palm Coast, FL.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2012, May 31, Francos Trattoria, McMurray, PA.

Caldwell, G.A., *Anti-Viral and Analgesic Oral Pharmaceuticals*. Optometric seminar, 4 hours COPE Lecture presentation, 2012, May 20, Credentialing Course for Oral Pharmaceuticals (24 hour course) via Pennsylvania College of Optometry, May 18-20, 2012, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Caldwell, G.A., McGreal, John, Sowka, Joseph, Wooldridge, Robert, *What's New in Glaucoma Symposium*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, May 3, Mountain West Council of Optometrists, Annual Congress, Caesar's Palace, Las Vegas, NV.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, May 3, Mountain West Council of Optometrists, Annual Congress, Caesar's Palace, Las Vegas, NV.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, May 3, Mountain West Council of Optometrists, Annual Congress, Caesar's Palace, Las Vegas, NV.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, April 15, Philadelphia and Bucks Montgomery County Optometric Societies of the POA, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, April 15, Philadelphia and Bucks Montgomery County Optometric Societies of the POA, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Caldwell, G.A., *Lastacraft and an Update on Allergic Conjunctivitis*. Optometric Seminar/Presentation, 2012, April 4, Capital Grill, Pittsburgh, PA.

Caldwell, G.A., *Glaucoma: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, March 19, Lehigh Valley Optometric Society of the POA, The Best Western Conference Center, Bethlehem, PA.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, March 18, Western Pennsylvania Optometric Society of the POA, Robert Morris University, Moon Township, PA.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2012, March 6, Buca-Del Vino, Pittston, PA.

Caldwell, G.A., *Lastacraft and an Update on Allergic Conjunctivitis*. Optometric Seminar/Presentation, 2012, March 5, Eleven Restaurant, Pittsburgh, PA.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2012, February 29, Morton's The Steakhouse, Pittsburgh, PA.

Presentations (cont.):

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, February 4, Delaware Optometric Association, Winter Thaw Meeting, Embassy Suites Hotel, Newark, DE.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2012, February 4, Delaware Optometric Association, Winter Thaw Meeting, Embassy Suites Hotel, Newark, DE.

Caldwell, G.A., *Anterior Segment Case Presentations for the Para-Optometric: Enough Pearls to Make a Necklace*. Para-Optometric seminar, 2 hours Lecture presentation, 2012, February 4, Delaware Optometric Association, Winter Thaw Meeting, Embassy Suites Hotel, Newark, DE.

Caldwell, G.A., *Glaucoma: Enough Pearls to Make a Necklace*. Para-Optometric seminar, 1 hour Lecture presentation, 2012, February 4, Delaware Optometric Association, Winter Thaw Meeting, Embassy Suites Hotel, Newark, DE.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2011, December 15, Elements Contemporary Cuisine, Pittsburgh, PA.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2011, December 1, Lidia's Restaurant, Pittsburgh, PA.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2011, November 17, Good Fellows Food and Spirits, Pittston, PA.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2011, November 16, North Western Optometric Society, Meadville Country Club, Meadville, PA.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours COPE Lecture presentation, 2011, November 5, The Optometric Management Symposium on Contemporary Eye Care, 7th Annual Meeting, Disney's Contemporary Resort, Lake Buena Vista, FL.

Caldwell, G.A., *Thyroid Dysfunction and the Eye*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2011, October 25, The Eye Center of Central PA, DeSalvo's Italian Restaurant, Williamsport, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2011, October 25, The Eye Center of Central PA, DeSalvo's Italian Restaurant, Williamsport, PA.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric seminar, 1 hour COPE Lecture presentation, 2011, October 16, Virginia Optometric Association, Fall Conference, The Wintergreen Resort, Wintergreen, VA.

Caldwell, G.A., *Glaucoma: Enough Pearls to Make a Necklace*. Optometric seminar, 1 hour COPE Lecture presentation, 2011, October 16, Virginia Optometric Association, Fall Conference, The Wintergreen Resort, Wintergreen, VA.

Presentations (cont.):

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. American Academy of Optometry (AAO). Lecture Presentation, 2011, October 15, John B. Hynes Veterans Memorial Convention Center, Boston, MA.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours Continuing Education Approval, Cope approved. American Academy of Optometry (AAO). Lecture Presentation, 2011, October 14, John B. Hynes Veterans Memorial Convention Center, Boston, MA.

Caldwell, G.A., *Glaucoma: Enough Pearls to Make Another Necklace*. Optometric seminar, 1 hour COPE Lecture presentation, 2011, October 9, New Hampshire Optometric Association, Annual Meeting, Sheraton Harborside Hotel, Portsmouth, NH.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric seminar, 2 hours COPE Lecture presentation, 2011, October 9, New Hampshire Optometric Association, Annual Meeting, Sheraton Harborside Hotel, Portsmouth, NH.

Caldwell, G.A., *OCT Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric seminar, 2 hours COPE Lecture presentation, 2011, October 8, New Hampshire Optometric Association, Annual Meeting, Sheraton Harborside Hotel, Portsmouth, NH.

Caldwell, G.A., *Glaucoma: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2011, October 8, New Hampshire Optometric Association, Annual Meeting, Sheraton Harborside Hotel, Portsmouth, NH.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2011, October 8, New Hampshire Optometric Association, Annual Meeting, Sheraton Harborside Hotel, Portsmouth, NH.

Caldwell, G.A., *PureMoist Opti-Free Multi-Purpose Disinfecting Solution, New Contact Lens Care Product*. Optometric Seminar/Presentation, 2011, October 6, Caffè Capri Restaurant, Boardman OH.

Caldwell, G.A., *Considerations in the Management of Elevated IOP*. Optometric Seminar/Presentation, 2011, October 3, Muriale's Italian Restaurant, Fairmont, WV.

Caldwell, G.A., *PureMoist Opti-Free Multi-Purpose Disinfecting Solution, New Contact Lens Care Product*. Optometric Seminar/Presentation, 2011, September 27, Kellogg Center, Galaxy Room, Michigan State University, East Lansing, MI.

Caldwell, G.A., *PureMoist Opti-Free Multi-Purpose Disinfecting Solution, New Contact Lens Care Product*. Optometric Seminar/Presentation, 2011, September 26, The Capital Grille Restaurant, Baltimore, MD.

Caldwell, G.A., *Anterior Segment Case Presentations*. Para-optometric Seminar, 2 hours lecture presentation, 2011, September 22, South Western Optometric Society, Off The Rak, Ebensburg, PA.

Presentations (cont.):

Caldwell, G.A., *PureMoist Opti-Free Multi-Purpose Disinfecting Solution, New Contact Lens Care Product*. Optometric Seminar/Presentation, 2011, September 13, Vallozzi's Restaurant, Greensburg, PA.

Caldwell, G.A., *PureMoist Opti-Free Multi-Purpose Disinfecting Solution, New Contact Lens Care Product*. Optometric Seminar/Presentation, 2011, July 27, McCormick and Schmick's Restaurant, Pittsburgh, PA.

Caldwell, G.A., *PureMoist Opti-Free Multi-Purpose Disinfecting Solution, New Contact Lens Care Product*. Optometric Seminar/Presentation, 2011, June 29, Ruth Chris Steakhouse, Parsippany, NJ.

Caldwell, G.A., *PureMoist Opti-Free Multi-Purpose Disinfecting Solution, New Contact Lens Care Product*. Optometric Seminar/Presentation, 2011, June 21, Leed's Restaurant, Harrisburg, PA.

Bloomenstein, Marc, Brujic, Mile, Caldwell, Greg, Devries, Doug and Karpecki, Paul (moderator), *Anterior Segment Rapid Fire Cases*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2011, June 18, Optometry's Meeting, 2011 American Optometric Association, Salt Palace Convention Center, Salt Lake City, UT.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2011, June 16, Optometry's Meeting, 2011 American Optometric Association, Salt Palace Convention Center, Salt Lake City, UT.

Caldwell, G.A., *OCT Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2011, May 5, Montana Optometric Association, 2011 Annual Educational Conference May 4-7, 2011. Crowne Plaza, Billings, MT.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hour COPE Lecture Presentation, 2011, May 5, Montana Optometric Association, 2011 Annual Educational Conference May 4-7, 2011. Crowne Plaza, Billings, MT.

Caldwell, G.A., *Glaucoma-Grand Rounds* Optometric Seminar, 1 hour POA Approval. Lecture Presentation, 2011, April 18, Mid-Counties Optometric Society of the POA, Allen Street Grille, State College, PA.

Caldwell, G.A., *OCT Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric Seminar, 1 hour POA Approval. Lecture Presentation, 2011, April 11, Northern Optometric Society of the POA, DiSalvo's Italian Restaurant, Williamsport, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2011, April 10, Philadelphia County Optometric Society and Bucks-Montgomery Optometric Society, 2011 Spring Education, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations, Enough Pearls to Make Another Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2011, April 10, Philadelphia County Optometric Society and Bucks-Montgomery Optometric Society, 2011 Spring Education, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Presentations (cont.):

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2011, April 10, Philadelphia County Optometric Society and Bucks-Montgomery Optometric Society, 2011 Spring Education, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Caldwell, G.A., *Contact Lens Care-The Scientific Pillars of Comfort*. Optometric Seminar/Presentation, 2011, March 31, Renaissance-The Del Monte Lodge Hotel and Spa, Carmel Ballroom, Rochester, NY.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 3 hours COPE Lecture Presentation, 2011, March 6, The New Jersey Society of Optometric Physicians, 2011 Winter Education Series, Sheraton Hotel, Princeton, NJ.

Caldwell, G.A., *Anterior Segment Cases for the Para-Optometric, Enough Pearls to Make Another Necklace*. Para-Optometric Seminar, 2 hours, Lecture Presentation, 2011, March 6, The New Jersey Society of Optometric Physicians, 2011 Winter Education Series, Sheraton Hotel, Princeton, NJ.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2011, February 12, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *OCT Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2011, February 12, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations, Enough Pearls to Make Another Necklace*. Optometric Seminar, 2 hours, Lecture Presentation, 2011, February 12, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2011, February 12, The Denver Metro Optometric Society, Exempla St. Joseph Hospital, Denver, CO.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Webinar, 1 hour COPE Approval. Internet/Online Presentation, 2011, February 4, for the Pennsylvania Optometric Association, *inaugural webinar* for the POA.

Caldwell, G.A., *Managing the Ocular Surface Complications of Blepharitis: New Therapeutic Options for an Age Old Problem*. Optometric Seminar/Presentation, 2010, River City Restaurant, December 16, Wheeling, WV.

Caldwell, G.A., *Dry Eye-Science of Ocular Surface Health*. Optometric Seminar/Presentation, 2010, December 1, Lansing, Michigan-Vision Source Meeting, The Henry Center for Executive Development, East Lansing, MI.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2010, November, 11, Shula's Grill 347, Hotel Duval, Tallahassee, FL.

Caldwell, G.A., *New Insights in Glaucoma Management*. Optometric Seminar, 1 hour CE (PA) Lecture Presentation, 2010, November 4, Berks County Optometric Society, Green Hill Inn, Reading, PA.

Presentations (cont.):

Caldwell, G.A., *Dry Eye-Science of Ocular Surface Health*. Optometric Seminar/Presentation, 2010, October 27, Buffalo, New York-Vision Source Meeting, 78 Degrees West Restaurant, Williamsville, NY.

Caldwell, G.A., *Anterior Segment Case Presentations*. 20 hours. Masters of Optometry for Austria. Lecture presentation, 2010, October 15-17, Vienna, Austria. Lecture had simultaneous translation into German. International lecture.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2010, October 13, Savoy Bar & Grill, Albuquerque, NM.

Caldwell, G.A., *OCT Case Presentations to Help You Clinically with Interpretation and Everyday Usage*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2010, October 10, Southwestern Pennsylvania Optometric Society Fall Continuing Education Program, University of Pittsburgh at Johnstown, Heritage Hall in the Living and Learning Center, Johnstown, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2010, October 10, Southwestern Pennsylvania Optometric Society Fall Continuing Education Program, University of Pittsburgh at Johnstown, Heritage Hall in the Living and Learning Center, Johnstown, PA.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2010, October 9, EastWest Eye Conference, Cleveland Convention Center, Cleveland, OH.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2010, October 9, EastWest Eye Conference, Cleveland Convention Center, Cleveland, OH.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Para-optometric Seminar, 2 hours lecture presentation, 2010, September 26, Pennsylvania College of Optometry at Salus University, Elkins Park Campus, Elkins Park, PA.

Caldwell, G.A., *Rheumatology, Thyroid Dysfunction and the Eye*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2010, September 21, Western Pennsylvania Optometric Society, Robert Morris University, Moon Township, PA.

Caldwell, G.A., *Glaucoma Case Presentations*. 8 hours. Bachelors of Science Completion for Singapore. Lecture presentation, 2010, September 12, Alexandria Hospital, Singapore. International lecture.

Caldwell, G.A., *Dry Eye-Science of Ocular Surface Health*. Optometric Seminar/Presentation, 2010, June 30, Austyn's Restaurant, Marietta, OH.

Caldwell, G.A., *Contact Lens Care-The Scientific Pillars of Comfort*. Optometric Seminar/Presentation, 2010, June 11, Heritage Hills Resort, Ironwoods Windows Ballroom, York, PA.

Caldwell, G.A., *New Insights in Glaucoma Management*. Optometric Seminar, 2 hours CE (PA) Lecture Presentation, 2010, June 9, Northeastern Pennsylvania Optometric Society, Remington's Restaurant, Tunkhannock, PA.

Presentations (cont.):

Caldwell, G.A., *Contact Lens Care-The Scientific Pillars of Comfort*. Optometric Seminar/Presentation, 2010, May 17, Mid-Counties Optometric Society, Allen Street Grille, State College, PA.

Caldwell, G.A., *Dry Eye-Science of Ocular Surface Health*. Optometric Seminar/Presentation, 2010, May 13, Capital Grille, Philadelphia, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2010, May 11, Berks County Optometric Society, Green Hill Inn, Reading, PA.

Caldwell, G.A., *Anterior Segment Case Presentations*. 20 hours. Masters of Optometry for Poland. Lecture presentation, 2010, April 9-11, Warsaw, Poland. Lecture had simultaneous translation into Polish. International lecture.

Caldwell, G.A., *Anterior Segment Case Presentations*. 20 hours. Masters of Optometry for Poland. Lecture presentation, 2010, April 16-18, Warsaw, Poland. Lecture had simultaneous translation into Polish. International lecture.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour, Lecture Presentation, Southwest Pennsylvania Optometric Society (SWOS). Lecture Presentation, 2010, April, 5, Boulevard Grill, Johnstown, PA.

Caldwell, G.A., *Clarifying the Role of Preservatives in the Management of Patients with Glaucoma*. Optometric Seminar, 1 hour, Lecture Presentation, 2010, January 27, Lancaster County Optometric Society, Haydn Zugs, East Petersburg, PA 17520.

Caldwell, G.A., *Clarifying the Role of Preservatives in the Management of Patients with Glaucoma*. Optometric Seminar, 1 hour, Lecture Presentation, 2009, October 21, Northeast Optometric Society, Marvelous Mugs, Moosic PA.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations, Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours, Lecture Presentation, 2009, September 30, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Ocular Pathologies*. Optometric Seminar, 2 hours, Lecture Presentation, 2009, September 30, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour, Lecture Presentation, 2009, September 30, Vision Expo West, International Vision Expo & Conference, The Sands Convention Center, Las Vegas, NV.

Caldwell, G.A., *The Many Faces of Ocular Allergy*. Optometric Seminar, 1 hour, Lecture Presentation, 2009, September 27, Central Pennsylvania Optometric Society (CPOS) Fall CE Forum, The Hotel Hershey, Blue Mountain Room at the Harvest Resort, Hershey, PA.

Caldwell, G.A., *Glaucoma: Case Presentations to Help You Clinically*. Optometric Seminar, 1 hour, Lecture Presentation, 2009, September 27, Central Pennsylvania Optometric Society (CPOS) Fall CE Forum, The Hotel Hershey, Blue Mountain Room at the Harvest Resort, Hershey, PA.

Presentations (cont.):

Caldwell, G.A., *Posterior Segment Case Presentations*. 16 hours. Masters of Optometry for Switzerland. Lecture presentation, 2009, August 15-19, Alexandria Hospital, Singapore. [f lecture](#).

Caldwell, G.A., *Anterior Segment Case Presentations*. 20 hours. Masters of Optometry for Singapore. Lecture presentation, 2009, August 15-19, Alexandria Hospital, Singapore. [International lecture](#).

Caldwell, G. A., *Sharpening Your Posterior Segment Evaluation and Diagnosis*. Optometric Seminar, 2 hours Continuing Education Approval. Lecture Presentation, 2009, August 1, 31st Canadian Association of Optometrists Congress, Charlottetown, Prince Edward Island, Canada. [International lecture](#).

Caldwell, G. A., *Anterior Segment Cases: Things to Keep in the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 2 hours Continuing Education Approval. Lecture Presentation, 2009, July 31, 31st Canadian Association of Optometrists Congress, Charlottetown, Prince Edward Island, Canada. [International lecture](#).

Caldwell, G.A., *Now What Do I Do? Case Presentations to Sharpen Your Clinical Skills*. Optometric Seminar, 2 hours Continuing Education Approval. Lecture Presentation, 2009, July 9, Chillicothe, OH.

Caldwell, G.A., *Posterior Segment Case Presentations*. 16 hours. Masters of Optometry for Switzerland. Lecture presentation, 2009, May 27-30, Hotel Arte, Olten, Switzerland. [International lecture](#).

Caldwell, G.A., *Anterior Segment Case Presentations*. 20 hours. Masters of Optometry for Switzerland. Lecture presentation, 2009, May 27-30, Hotel Arte, Olten, Switzerland. [International lecture](#).

Caldwell, G.A., *Cornea*. Optometric seminar, 8 hours of 100 hour University of Waterloo Ocular Therapeutic Course, 2009, February 16, University of Waterloo-School of Optometry, Waterloo, ON, Canada. [International lecture](#).

Caldwell, G.A., *Lids, Lacrimal System, Conjunctiva, Episclera and Sclera*. Optometric seminar, 8 hours of 100 hour University of Waterloo Ocular Therapeutic Course, 2009, February 16, University of Waterloo-School of Optometry, Waterloo, ON, Canada. [International lecture](#).

Caldwell, G.A., *Orbital Disease*. Optometric seminar, 2 hours of 100 hour Ocular Therapeutic Course, 2009, January 26, Pennsylvania College of Optometry at Salus University, Elkins Park, PA.

Caldwell, G.A., *Ocular Manifestations of Systemic Disease (Thyroid, Diabetes, Hypertension, Rheumatology)*. Optometric seminar, 4 hours of 100 hour Ocular Therapeutic Course, 2009, January 26, Pennsylvania College of Optometry at Salus University, Elkins Park, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2008, November 2, Southwestern Pennsylvania Optometric Society Fall Continuing Education Program, University of Pittsburgh at Johnstown, Heritage Hall in the Living and Learning Center, Johnstown, PA.

Presentations (cont.):

Caldwell, G.A., *Ocular Disease Case Presentations, A Series of Clinical Pearls*. Optometric Seminar, 1 hour Continuing Education Approval, Cope approved. American Academy of Optometry (AAO). Lecture Presentation, 2008, October 25, Anaheim Convention Center, Anaheim, CA.

Caldwell, G.A., *Ocular Disease Case Presentations, A Series of Clinical Pearls*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2008, October 12, Western New York Society of Optometrists, Annual Therapeutic CE Seminar, 2008 Therapeutic Update, Salvatore's Italian Gardens, Depew, NY.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2008, October 12, Western New York Society of Optometrists, Annual Therapeutic CE Seminar, 2008 Therapeutic Update, Salvatore's Italian Gardens, Depew, NY.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2008, October 9, The Eye Center of Central PA, LaPrimavera Restaurant, Lewisburg, PA.

Caldwell, G.A., *A Potpourri of Clinical Cases*. Optometric seminar, 2 hours COPE Lecture presentation, 2008, October 6, Pennsylvania College of Optometry at Salus University, Hafter Student Community Center, Elkins Park, PA.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2008, October 6, Pennsylvania College of Optometry at Salus University, Hafter Student Community Center, Elkins Park, PA.

Caldwell, G.A., *Anterior and Posterior Segment Case Presentations: Enough Pearls to Make a Necklace*. Optometric seminar, 2 hours COPE Lecture presentation, 2008, October 5, New Hampshire Optometric Association, Annual Meeting, Sheraton Harborside Hotel, Portsmouth, NH.

Caldwell, G.A., *Glaucoma*. Optometric seminar, 3 hours (COPE 17321-GL and 18730-GL) Lecture presentation, 2008, October 5, New Hampshire Optometric Association, Annual Meeting, Sheraton Harborside Hotel, Portsmouth, NH.

Caldwell, G.A., *Dry Eye Disease-Scientific Findings That Will Help You Clinically*. Optometric seminar, 1 hour Lecture presentation, 2008, September, Lancaster County Optometric Society, Leed's Restaurant, Harrisburg, PA.

Caldwell, G.A., *Posterior Segment Case Presentations*. 16 hours. Bachelor of Science Program for Israel. Lecture presentation, 2008, August 12-14, Aquamare Beach Hotel and Spa, Pafos, Cyprus. [International lecture](#).

Caldwell, G.A., *Anterior Segment Case Presentations*. 20 hours. Bachelor of Science Program for Israel. Lecture presentation, 2008, August 10-12, Aquamare Beach Hotel and Spa, Pafos, Cyprus. [International lecture](#).

Blaustein OD, Bernard moderator. Panel members: Caldwell OD, Greg, Malloy OD, Kelly and Sowka OD, Joseph., *Clinical Challenges in Neuro-Ophthalmic Disease a Panel Discussion with Interactive Audience Participation*. Optometric Seminar, 3 hours COPE Lecture Presentation, 2008, June 8, Pennsylvania Optometric Association, Spring Educational Conference, Omni William Penn Hotel, Pittsburgh, PA.

Presentations (cont.):

Caldwell, G.A., *Ocular Potpourri; Anterior and Posterior Segment Case Presentations to Help You Clinically*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2008, June 7, Pennsylvania Optometric Association, Spring Educational Conference, Omni William Penn Hotel, Pittsburgh, PA.

Caldwell, G.A., *Ocular Potpourri; Anterior and Posterior Segment Case Presentations to Help You Clinically*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2008, May 18, New Mexico Optometric Association Convention, Spring Continuing Education Conference, Embassy Suites Hotel, Albuquerque, NM 87102.

Alcon OD Glaucoma Advisory Summit. Chair, Murray Fingeret, OD. Invited faculty, Greg Caldwell, OD, Michael Chaglasian, OD, Henry S. Edelhauser, Ph.D, Lok-Hou Pang, Ph.D, Rob Woolridge, OD. Caldwell, G.A., *Ocular Surface Disease and the Impact of BAK*. 2008, May 3-4. Hilton Dallas in Southlake Town Square, Southlake, TX 76092

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Lecture Presentation, 2008, April 2, Northern Pennsylvania Optometric Association, DiSalvo's Italian Restaurant, Williamsport, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2008, March 30, Glaucoma-Cataract Consultants, Spring Conference, Holiday Inn Meadowlands, Washington, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar. Lecture Presentation, 2008, March 14. Continuing Professional Education (CPE), March 13-16, 2008, Alcon Campus, Fort Worth, TX.

Caldwell, G.A., *Para-digm Advice for Glaucoma Medications*. Optometric Seminar, 1 hour Lecture Presentation, 2007, November 18, Para-Optometric Association, Hershey Lodge, Hershey, PA.

Caldwell, G.A., *Strategies for Minimizing Risk Factors for Your Contact Lens Patient: The Science and Facts*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, November 15, Lancaster County Optometric Society, Leed's Restaurant, Harrisburg, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2007, November 13, Western Pennsylvania Optometric Association, Greentree Marriott, Pittsburgh, PA.

Caldwell, G.A., *Anterior Segment Cases, Things to Keep in the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2007, November 11, Ophthalmology Associate of Fort Worth, Fall Optometric Continuing Education, Ridglea Country Club, Fort Worth, TX.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2007, November 11, Ophthalmology Associate of Fort Worth, Fall Optometric Continuing Education, Ridglea Country Club, Fort Worth, TX.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Anterior Segment Pathologies (antibiotics, antivirals and oral narcotics)*. Optometric Seminar, 2 hours COPE Lecture Presentation, 2007, November 11, Ophthalmology Associate of Fort Worth, Fall Optometric Continuing Education, Ridglea Country Club, Fort Worth, TX.

Presentations (cont.):

Caldwell, G.A., *Anterior Segment Cases, Things to Pull from the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 1 hour Continuing Education Approval, Cope ID:14682-SD. American Academy of Optometry (AAO). Lecture Presentation, 2007, October 27, Tampa Bay Convention Center, Tampa, FL.

Caldwell, G.A., *Grand Rounds Case: Quite Possibly the Worst Case of Meibomian Gland Dysfunction You Will Ever See (1 of 6 cases presented)*. Optometric Seminar, 2 hour Continuing Education Approval. American Academy of Optometry (AAO). Lecture Presentation, 2007, October 26, Tampa Bay Convention Center, Tampa, FL.

Caldwell, G.A., *Anterior Segment Cases, Things to Pull from the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, October 21, Henry Ford Optimeyes Educational Meeting, Troy Marriott, Troy MI.

Caldwell, G.A., *Strategies for Minimizing Risk Factors for Your Contact Lens Patient: The Science and Facts*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, October 21, Henry Ford Optimeyes Educational Meeting, Troy Marriott, Troy MI.

Caldwell, G.A., *Strategies for Minimizing Risk Factors for Your Contact Lens Patient: The Science and Facts*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, October 15, MCOS optometric society, Allegro Restaurant, Altoona, PA.

Caldwell, G.A., Cymbor, M. *Glaucoma Workshop (Gonioscopy, OCT, GDX, HRT, Case Presentations)*. 4 hours POA Approval. Workshop, Lab and Lecture Presentation, 2007, October, 14, Mid-Counties Optometric Association, The Laurel Eye Clinic, Duncansville, PA.

Caldwell, G.A., *Anterior Segment Cases, Things to Keep in the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 2 hours FOA Approval and Transcript Quality (TQ). Lecture Presentation, 2007, July 13, Florida Optometric Association (FOA) Summer CE Event, The Breakers Resort, Palm Beach, FL.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours FOA Approval and Transcript Quality (TQ). Lecture Presentation, 2007, July 13, Florida Optometric Association (FOA) Summer CE Event, The Breakers Resort, Palm Beach, FL.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2007, June 14, Kilmore Eye Associates, Mechanicsburg, PA.

Caldwell, G.A., *Ocular Disease Case Presentations, Anterior and Psterior Segment Cases*. Optometric Seminar, 2 hours Approval. Lecture Presentation, 2007, June 3, Centre de Perfectionnement et de Reference en Optometrie, Quebec City, Quebec, Canada. [International lecture](#).

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2007, May 23, Roholt Vision Institute, The Quarry Golf Club Conference Center, Canton, OH.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, April 24, Siedlecki Cataract and Vision Care, Marriott Niagara Hotel, Buffalo, NY.

Presentations (cont.):

Caldwell, G.A., *Anterior Segment Cases, Things to Pull from the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, March 25, Glaucoma-Cataract Consultants, Spring Conference, Holiday Inn Meadowlands, Washington, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar. Lecture Presentation, 2007, March 23. Continuing Professional Education (CPE), March 22-25, 2007, Alcon Campus, Forth Worth, TX.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2007, March 21, Ogle Bay Conference Center, Wheeling, WV.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, March 13, New York Optometric Society-Buffalo Local Society, Hilton Hotel, Buffalo, NY.

Caldwell, G.A., *Ocular Potpourri-Case Presentations*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2007, March 11, Diversified Ophthalmics Continuing Education, King's Island Convention Center, Mason, OH.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, March 11, Diversified Ophthalmic's Continuing Education, King's Island Convention Center, Mason, OH.

Caldwell, G.A., *Anterior Segment Cases, Things to Pull from the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2007, March 11, Diversified Ophthalmic's Continuing Education, King's Island Convention Center, Mason, OH.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2006, December 11, Lockkeepers Restaurant, Independence, OH.

Caldwell, G.A., *Anterior Segment Cases, Things to Pull from the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 1 hour Continuing Education Approval, Cope ID:14682-SD. American Academy of Optometry (AAO). Lecture Presentation, 2006, December 9, Denver Convention Center, Denver, CO.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2006, December 4, The Chop House, Charleston, WV.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2006, November 21, Visaggio's Restaurant, Enola, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace and Multi-Purpose Solution Update of Infection of Risk in Contact Lens Wearers in the Aftermath of Fusarium Keratitis*. . Optometric Seminar, 2 hours POA. Lecture Presentation, 2006, November 20, Corner Room Restaurant, State College, PA.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2006, November 14, Original Fish Market, Pittsburgh, PA.

Presentations (cont.):

Caldwell, G.A., *Ocular Potpourri-Special Attention to Laboratory Testing*. Optometric Seminar, 2 hours COPE Approval. Lecture Presentation, 2006, November 12, Robert Morris University, Coraopolis, PA 15108.

Caldwell, G.A., *Glaucoma; Enough Pearls to Make a Necklace*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2006, October 15, University of Pittsburgh at Johnstown, Johnstown, PA.

Caldwell, G.A., *Multi-Purpose Solution Update of Infection of Risk in Contact Lens Wearers in the Aftermath of Fusarium Keratitis*. Lecture Presentation, 2006, September 20, The Mountain View Inn and Conference Center, Greensburg, PA.

Caldwell, G.A., *Glaucoma*. Optometric Seminar, 1 hour COPE Approval. Lecture Presentation, 2006, September 20, New England College of Optometry, Boston, MA.

Caldwell, G.A., *Multi-Purpose Solution Update of Infection of Risk in Contact Lens Wearers in the Aftermath of Fusarium Keratitis*. Optometric Seminar, 1 hour Continuing Education Approval. Lancaster County Optometric Society (LCOS). Lecture Presentation, 2006, September 13, The Log Cabin Restaurant, Leola, PA.

Caldwell, G.A., *Multi-Purpose Solution Update of Infection of Risk in Contact Lens Wearers in the Aftermath of Fusarium Keratitis*. Optometric Seminar, 1 hour Continuing Education Approval. Mid-Counties Optometric Society (MCOS). Lecture Presentation, 2006, July 31, Fanelli's Italian Restaurant, Altoona, PA 16602.

Caldwell, G.A., *Ocular Potpourri Cases 1-20 Anterior and Posterior Case Presentations to Help You Clinically*. Optometric Seminar, 2 hours Continuing Education Approval, Cope ID:14214-AS. Pennsylvania College of Optometry Alumni Relations. Lecture Presentation, 2006, April 2, Sheraton Hotel, Station Square, Pittsburgh, PA 15120.

Caldwell, G. A., Murphy, F. T. (Rheumatologist), *"Eye Said Go To Your Rheum" Optometry/Rheumatology Case Presentations*. Dynamic Duos Optometric Seminar, 2 hours Continuing Education Approval COPE. 2006, March 26, Pennsylvania College of Optometry, Elkins Park, PA 19027.

Caldwell, G.A., *Ocular Potpourri Cases 1-20 Anterior and Posterior Case Presentations to Help You Clinically*. Optometric Seminar, 2 hours Continuing Education Approval, Cope ID:14214-AS. New Orleans Contact Lens Society. Lecture Presentation, 2006, March 18, New Orleans, LA.

Caldwell, G.A., *Global Risk Assessment "Risk Calculator" for Ocular Hypertension to Glaucoma*. Optometric Seminar, 1 hour Continuing Education Approval. Lancaster County Optometric Society (LCOS). Lecture Presentation, 2006, February 16, The Stockyard Inn, Lancaster, PA 17601.

Caldwell, G.A., *Anterior Segment Cases, Things to Pull from the Back of Your Mind While Looking at the Front of the Eye*. Optometric Seminar, 1 hour Continuing Education Approval,

Cope ID:14682-SD. American Academy of Optometry (AAO). Lecture Presentation, 2005, December 11, San Diego Convention Center, San Diego, CA.

Caldwell, G.A., *Staying Savvy with AMD*. Optometric Seminar, 1 hour Continuing Education Approval. Presidential Inauguration Pennsylvania Optometric Association. Lecture Presentation, 2005, November 19, Hershey Hotel, Hershey, PA 17033.

Presentations (cont.):

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Anterior Segment Pathologies*. Optometric Seminar, 2 hours Continuing Education Approval, Cope ID:11580-AS. Northwest Pennsylvania Optometric Society. Lecture Presentation, 2005, November 17, Safari Grille Steakhouse, Erie, PA, 16509.

Caldwell, G.A., *Posterior Segment Cases to Help You Clinically*. Optometric Seminar, 2 hours Continuing Education Approval. Central Pennsylvania Optometric Society (CPOS) Continuing Education Forum. Lecture Presentation, 2005, October 9, Hershey Hotel, Hershey, PA 17033.

Blaustein, B., Caldwell, G.A., Pagani, J.M., Young, V., *Clinical Challenges in Anterior Segment Disease*. Optometric Seminar, 3 hours Continuing Education Approval, Cope ID:14221-AS. OptoEast 2005. Lecture Presentation, 2005, September 18, Atlantic City Convention Center, Atlantic City, NJ 08401.

Caldwell, G.A., *Ocular Potpourri Cases 21-40 Anterior and Posterior Case Presentations to Help You Clinically*. Optometric Seminar, 2 hours Continuing Education Approval, Cope ID:14215-AS. OptoEast 2005. Lecture Presentation, 2005, September 17, Atlantic City Convention Center, Atlantic City, NJ 08401.

Caldwell, G.A., *Ocular Potpourri Cases 1-20 Anterior and Posterior Case Presentations to Help You Clinically*. Optometric Seminar, 2 hours Continuing Education Approval, Cope ID:14214-AS. OptoEast 2005. Lecture Presentation, 2005, September 17, Atlantic City Convention Center, Atlantic City, NJ 08401.

Caldwell, G.A., Caldwell, J.M., Malloy, K.A., *Wow...A Visual field Can Tell Me All That?!!* Optometric Seminar, 2 hours Continuing Education Approval, Cope ID: 14211-NO. OptoEast 2005. Lecture Presentation, 2005, September 16, Atlantic City Convention Center, Atlantic City, NJ 08401.

Caldwell, G.A. Corbin, Glenn, *Jump Starting Your Glaucoma Practice All You Need to Know and More*. 3 hours Continuing Education Approval. 2005 Pennsylvania Optometric Association Spring Education Program. Radisson Hotel, Camp Hill, PA. June 10, 2005.

Caldwell, G.A., *Posterior Segment Case Presentations*. Optometric Seminar, 16 hours. Master of Science Program in Berlin. Lecture presentation, 2005, May 21-22, TFH Berlin-University of Applied Science, Berlin, Germany. [International lecture](#).

Caldwell, G.A., *Posterior Segment Case Presentations*. Optometric Seminar, 1 hour Continuing Education Approval, Cope ID: 7432-AS. Southwest Pennsylvania Optometric Society (SWOS). Lecture Presentation, 2005, May, 16, Surf-n-Turf restaurant, Johnstown, PA.

Caldwell, G.A., *Sharpening Your Automated Visual Field Interpretation Skills*. Ophthalmic Assistant Seminar, 1 hour Continuing Education. Lecture presentation, 2005, May 14, Dave and Buster's, Homestead, Pittsburgh, PA 15120-5012.

Caldwell, G.A., *Posterior Segment Case Presentations*. Optometric Seminar, 16 hours. Master of Science Program in Singapore. Lecture presentation, 2005, March 1-2, Alexandria Hospital, Singapore. [International lecture](#).

Caldwell, G.A., *Glaucoma Panel Discussion*. Optometric Seminar, 1 hour Continuing Education Approval. Pennsylvania Optometric Local Society. Lecture Presentation, 2004, November, 15, The Inn at Moselem Springs, Fleetwood, PA.

Presentations (cont.):

Caldwell, G.A., *Anterior Segment Case Presentations Part 2*. Optometric Seminar, 1 hour Continuing Education Approval, Cope ID: 11574-AS. Course 321. OptoEast 2004. Lecture Presentation, 2004, October 30, Atlantic City Convention Center, Atlantic City, NJ 08401.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Treatment of Anterior Segment Pathologies*. Optometric Seminar, 2 hours Continuing Education Approval, Cope ID: 11580-AS. Course 329. OptoEast 2004. Lecture Presentation, 2004, October 30, Atlantic City Convention Center, Atlantic City, NJ 08401.

Caldwell, G.A., *Anterior Segment Case Presentations Part 1*. Optometric Seminar, 1 hour Continuing Education Approval, Cope ID: 7432-AS. Course 301. OptoEast 2004. Lecture Presentation, 2004, October 30, Atlantic City Convention Center, Atlantic City, NJ 08401.

Caldwell, G.A., *Glaucoma Panel Discussion*. Optometric Seminar, 1 hour Continuing Education Approval. Mid Counties Optometric Society (MCOS). Lecture Presentation, 2004, September, 20, The Corner Room, State College, PA.

Caldwell, G.A., *Now What Do I Do? Case Presentations to Sharpen Your Clinical Skills*. Optometric Seminar, 2 hours Continuing Education Approval. Cope ID: 12132-AS. Lecture Presentation, 2004, September 19, Pennsylvania College of Optometry, Elkins Park, PA 19027.

Caldwell, G.A., *Anterior Segment Case Presentations*. Optometric Seminar, 1 hour Continuing Education Approval, Cope ID: 7432-AS. Southwest Pennsylvania Optometric Society (SWOS). Lecture Presentation, 2004, April, 19, Surf-n-Turf restaurant, Johnstown, PA.

Caldwell, G.A., *Sharpening Your Posterior Segment Evaluation and Diagnosis*. Optometric Seminar, 2 hours Continuing Education Approval, Cope ID: 10954-PS. Course 2214. International Vision Expo 2004. Lecture Presentation, 2004, March 26, Jacob K. Javits Convention Center, New York City, NY.

Caldwell, G.A., *Anterior Segment Case Presentations*. Optometric Seminar, 1 hour Continuing Education Approval, Cope ID: 7432-AS. Course 1313. International Vision Expo 2004. Lecture Presentation, 2004, March 25, Jacob K. Javits Convention Center, New York City, NY.

Caldwell, G.A., Caldwell James, *Sharpening Your Automated Visual Field Interpretation Skills*. Optometric Seminar, 2 hours Continuing Education Approval, Cope ID: 10943-PD. Course 1116. International Vision Expo 2004. Lecture Presentation, 2004, March 25, Jacob K. Javits Convention Center, New York City, NY.

Caldwell, G.A., *A Comparison of Latanoprost, Bimatoprost, and Travoprost in Patients with Elevated Intraocular Pressure. Based on an article by Richard K. Parrish et al.* Optometric

Seminar, 1 hour Continuing Education Approval. Lancaster County Optometric Society (LCOS). Lecture Presentation, 2004, February, 19, The Log Cabin Restaurant, Leola, PA.

Caldwell, G.A., Caldwell, James, *Clinical Decision Making and Panel Discussion on Complicated Cases*. Optometric Seminar, 10 hours. Master of Science Program in Spain. Lecture presentation, 2003, December 13-14, Hotel NH Alberto Aguilera, Alberto Aguilera 18, Madrid, Spain 28001. Lecture had simultaneous translation into Spanish. Handouts and slides were translated into Spanish. International lecture.

Caldwell, G.A., *Case Presentations to Enhance Your Clinical Decision Making*. Optometric Seminar, 2.5 hours Continuing Education Approval. Central Pennsylvania Optometric Society (CPOS). Lecture Presentation, 2003, November, 17, The Tavern on the Hill, Harrisburg, PA.

Presentations (cont.):

Caldwell, G.A., Ballinger, Rex, *Clinical Decision Making and Panel Discussion on Complicated Cases*. Optometric Seminar, 10 hours. Master of Science Program in Singapore. Lecture presentation, 2003, October 21-22, Hotel Phoenix on Orchard, Singapore. *International lecture*.

Caldwell, G.A., *Oral Pharmaceutical Agents for the Optometrist*. Optometric Seminar, 2 hours Continuing Education Approval. Western Pennsylvania Optometric Society (WPOS). Lecture Presentation, 2003, September, 16, Sheraton Inn, Station Square, Pittsburgh, PA.

Caldwell, G.A., *Glaucoma Review*. Optometric Seminar, 5 hours. Master of Science Program in Spain. Lecture presentation, 2002, September 21, Hotel NH Alberto Aguilera, Alberto Aguilera 18, Madrid, Spain 28001. Lecture had simultaneous translation into Spanish. Handouts and slides were translated into Spanish. *International lecture*.

Caldwell, G.A., *Oral Therapeutic Agents for Optometrists*. Optometric Seminar, 2 hours Continuing Education Approval. Central Pennsylvania Optometric Society (CPOS) Continuing Education Forum VI. Lecture Presentation, 2002, September 15, Hershey Hotel, Hershey, PA 17033.

Caldwell, G.A., *Therapeutic Strategies for Corneal Disease and Injury Going Beyond Artificial Tears and Topical Antibiotics*. Optometric Seminar, 2 hours Continuing Education Approval. Cope ID: 7694-AS. 2002 Pennsylvania College of Optometry Cornea and Contact Lens Symposium. Lecture Presentation, 2002, June 23, Pennsylvania College of Optometry, Elkins Park, PA 19027.

Caldwell, G.A., *Introducing Conductive Keratoplasty(CK) and the Phakic Refractive Lens(PRL)*. Optometric Seminar, 1 hour Continuing Education Approval. Cope ID: 7695-AS. 2002 Pennsylvania College of Optometry Cornea and Contact Lens Symposium. Lecture Presentation, 2002, June 23, Pennsylvania College of Optometry, Elkins Park, PA 19027.

Caldwell, G.A., *Anterior Segment Grand Rounds*. Optometric Seminar, 1 hour Continuing Education Approval. Cope ID: 7432-AS. 2002 Maryland Optometric Association. Grand Round Presentation, 2002, June 2, Airport Marriot, Baltimore, MD.

Caldwell, G.A., *Review of Oral Medications for Optometrists with the Assistance of Anterior Segment Cases*. Optometric Seminar, 1 hour Continuing Education Approval. Cope ID: 7431-AS. 2002 Maryland Optometric Association. Lecture Presentation, 2002, June 2, Airport Marriot, Baltimore, MD.

Caldwell, G.A., *Ocular Manifestation and Treatment of Allergic Disorders*. Optometric Seminar, 1 hour Continuing Education Approval. Cope ID: 7433-AS. 2002 Maryland Optometric Association. Lecture Presentation, 2002, June 2, Airport Marriot, Baltimore, MD.

Caldwell, G.A., *Phakic Refractive Lens (PRL), Update on Refractive Surgery*. Optometric Seminar, 1 hour Continuing Education Approval. 2002 Pennsylvania Optometric Association, Mid Counties Optometric Society (MCOS). Lecture and Video Presentation, 2002, March 18, State College, PA.

Caldwell, G.A., *Posterior Segment Case Presentations*. Optometric Seminar, 15 hours. Master of Science Program in Spain. Lecture case presentation, 2002, March 9 and 10, Hotel NH Alberto Aguilera, Alberto Aguilera 18, Madrid, Spain 28001. Lecture had simultaneous translation into Spanish. Handouts and slides were translated into Spanish. *International lecture*.

Presentations (cont.):

Caldwell, G.A., *History is Said to be 90% of the Diagnosis...in This Case it was the SLE Finding That Finally Solved This Mystery*. Optometric Presentation. PCO Resident and International Graduates Seminar, 5 hours CE. Case Presentation, 2001, December 5, Pennsylvania College of Optometry, Elkins Park, PA 19027.

Caldwell, G.A., Cymbor, M., Des Groseilliers, D., *Getting to Work*. Optometric Student Presentation. 2001 Pennsylvania Optometric Association, Annual General Congress. Lecture presentation, 2001, June 7, Pennsylvania College of Optometry, Elkins Park, PA 19027.

Caldwell, G.A., *Ocular Usage of Systemic Medications and Ocular Side Effects of Systemic Medications*. Optometric Seminar, 1 hour Continuing Education Approval. 2001 Pennsylvania Optometric Association, Mid Counties Optometric Society (MCOS). Lecture Presentation, 2001, April 16, State College, PA.

Caldwell, G.A., *Management of Allergic Conjunctivitis*. Optometric Seminar, 1 hour Continuing Education Approval. 2000 Pennsylvania Optometric Association, Southwest Optometric Society (SWOS). Lecture Presentation, 2000, September 24, University of Pittsburgh at Johnstown, Johnstown, PA 15904.

Caldwell, G.A., *Photodynamic Therapy (PDT)*. Optometric Seminar, 1 hour Continuing Education Approval. 2000 Pennsylvania Optometric Association, Southwest Optometric Society SWOS). Lecture Presentation, 2000, September 24, University of Pittsburgh at Johnstown, Johnstown, PA 15904.

Blaustein, B., Cakanac, C., Caldwell, G.A. and Talbot-Bailey, J., *Clinical Challenges in Ocular Disease*. Course PC 104 TPA, 3 hours Continuing Education Approval. 2000 Pennsylvania Optometric Association Annual General Congress. Westin William Penn, Pittsburgh, PA. June 3, 2000.

Caldwell, G.A. and Nichamin, L.D., *Complications of Refractive Surgery*. Optometric Seminar, Lecture Presentation, Continuing Education Approval, 1999, June 14, Altoona, PA; 1999, June 16, Knox, PA and 1999, June 19, Brookville, PA.

Caldwell, G.A. and Nunneley, J., *Key Points of Success in Refractive Surgery*. Optometric Seminar, Lecture Presentation, 1999, April 5, Altoona, PA; 1999, April 6, Knox, PA and 1999, March 6, Brookville, PA.

Caldwell, G.A. and Nichamin, L.D., *Refractive Surgery for the New Millennium*. Optometric Seminar, Lecture Presentation, Continuing Education Approval, 1999, March 1, Altoona, PA; 1999, March 3, Knox, PA and 1999, March 6, Brookville, PA.

Caldwell, G.A., *Refractive Seminar*. Patient Seminar, Lecture Presentation, Monthly Presentations, August 1996 to December 2001 at Various Laurel Eye Clinic Offices.

Caldwell, G.A., *Aging Eye Seminar*. Patient Seminar, Lecture Presentation, Quarterly Presentation, December 1996 to December 2002 at Various Laurel Eye Clinic Offices.

Caldwell, G.A., *New Developments in the Topical Treatment of Glaucoma*. Grand Rounds Lecture Presentation, 1996, March, Pennsylvania College of Optometry, Philadelphia, PA 19141, B.Blaustein, Coordinator.

Caldwell, G.A., *New Caps, New Colors, New Bottles*. Grand Rounds Lecture Presentation, 1996, April, Pennsylvania College of Optometry, Philadelphia, PA 19141, B.Blaustein, Coordinator.

Poster:

Dzurinko, Victoria, OD, Caldwell, Greg, OD, FAAO, *Idiopathic Orbital Inflammatory Disease Presents as a Recalcitrant Viral Conjunctivitis*. 2002, December 12, American Academy of Optometry, Annual Meeting, San Diego, CA.

FDA Investigational Studies:

- ◆ Nichamin, Louis D.—Principal Investigator; Caldwell, Greg—Sub-Investigator for “A Study of the iStent Trabecular Bypass Micro Stent in Conjunction with Cataract Surgery in Subjects with Open-Angle Glaucoma.” Enrollment period August 2005 to present. Candidates are followed for two years. Laurel Eye Clinic, Brookville; Laurel Eye Clinic, Clearfield; Laurel Eye Clinic, Grove City.
- ◆ Nichamin, Louis D.—Principal Investigator; Caldwell, Greg—Sub-Investigator for the Bausch & Lomb IOL Clinical Study, Enrollment period December 1, 2002-December 31, 2002, candidates were followed for one year. Laurel Eye Clinic, Brookville.
- ◆ Nichamin, Louis D.—Principal Investigator; Caldwell, Greg—Conductive Keratoplasty Monovision Study, Refractec, Enrollment period September 2002-December 2002, candidates were followed for two years. Laurel Eye Clinic, Brookville; Laurel Eye Clinic, Altoona.
- ◆ Nichamin, Louis D.—Principal Investigator; Caldwell, Greg—Secondary Clinical Investigator, Toric IOL Study, Enrollment period June 2002-August 2004, candidates were followed for one year. Laurel Eye Clinic, Brookville; Laurel Eye Clinic, Altoona.
- ◆ Nichamin, Louis D.—Principal Investigator; Caldwell, Greg—Secondary Clinical Investigator, IOL Study, Advanced Vision Science, Enrollment period June 2002-January 2005, candidates are followed for three years. Laurel Eye Clinic, Brookville.
- ◆ Nichamin, Louis D.—Principal Investigator; Caldwell, Greg—Secondary Clinical Investigator, Phakic Refractive Lens, Medennium, Enrollment period August 2001-November 2002, candidates were followed for three years. Laurel Eye Clinic, Brookville; Laurel Eye Clinic, Altoona.

Services to the Community:

- ◆ Rotary Club, Altoona Sunrise, Altoona, PA, Casino Conference Center, Guest Speaker, A Q&A for the Optometrist, June 8, 2016.
- ◆ Caldwell, G.A., Boltz, M., **Smart Talk with Scott LaMar on WITF 89.5 and 93.3 FM**, Harrisburg, PA. Discussed “Save Your Vision Month” and the importance of yearly eye examinations, along with Kids Welcome Here and how to prevent digital eye strain.
- ◆ Board of Directors, **President**, Blair Clearfield Association for the Blind and Visually Handicapped, administrative year July 1, 2015-June 30, 2016.
- ◆ Board of Directors, **President**, Blair Clearfield Association for the Blind and Visually Handicapped, administrative year July 1, 2014-June 30, 2015.
- ◆ Board of Directors, **President**, Blair Clearfield Association for the Blind and Visually Handicapped, administrative year July 1, 2013-June 30, 2014.
- ◆ Board of Directors, **President**, Blair Clearfield Association for the Blind and Visually Handicapped, administrative year July 1, 2012-June 30, 2013.

Services to the Community (cont.):

- ◆ Rotary Club, Altoona Sunrise, Altoona, PA, Casino Conference Center, Guest Speaker, A Q&A for the Optometrist, as if you were sitting beside me on a plane, August 17, 2011.
- ◆ Board of Directors, **President**, Blair Clearfield Association for the Blind and Visually Handicapped, administrative year July 1, 2011-June 30, 2012.
- ◆ Board of Directors, Trustee, Blair County Association for the Blind and Visually Handicapped, Jan 1- June 30, 2011 Administrative Year.
- ◆ Board of Directors, Trustee, Blair County Association for the Blind and Visually Handicapped, 2010 Administrative Year.
- ◆ Board of Directors, Trustee, Blair County Association for the Blind and Visually Handicapped, 2009 Administrative Year.
- ◆ Rotary Club, Altoona Sunrise, Altoona, PA, Park Hills Country Club, Guest Speaker, Refractive Surgery Update, April 9, 2003.
- ◆ Eldorado Kiwanis Club, Altoona, PA, Guest Speaker, The Aging Eye, April 15, 2003.

Honors and Achievements:

- ◆ Power Couples in Optometry, O.D. Scene, February 2016, Optometric Management by Jack Schaeffer, OD, FAAO, Editor-in Chief.
- ◆ Albert Fitch Memorial Alumnus of the Year, 2015 Awardee, Salus University the Pennsylvania College of Optometry.
- ◆ Merit Award of the year 2013, for Pennsylvania Optometric Political Action Committee (POPAC), Pennsylvania Optometric Association.
- ◆ Optometrist of the Year 2012. Mid-Counties Optometric Society of the Pennsylvania Optometric Association
- ◆ Young OD of the Year 2003. Mid-Counties Optometric Society of the Pennsylvania Optometric Association
- ◆ Fellow of the American Academy of Optometry (FAAO), December 2000
- ◆ Honorable Mention at Graduation
- ◆ Clinical Honors for Externship Sites, PCO Pediatrics/Low Vision and Paul Lobby, O.D.
- ◆ Clinical Honors during third year as intern PCO, all quarters, Module 1
- ◆ Elected to the Gold Key Optometric Honor Society
- ◆ Beta Sigma Kappa (BSK) Honor Society



STATE BOARD OF OPTOMETRY
2450 DEL PASO ROAD, SUITE 105, SACRAMENTO, CA 95834
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CONTINUING EDUCATION COURSE APPROVAL APPLICATION

\$50 Mandatory Fee

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule, a detailed course outline and presentation materials (e.g., PowerPoint presentation). Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

Course Title Optovue OCT	Course Presentation Date 03/03/2017
-----------------------------	--

Course Provider Contact Information

Provider Name Andriana Foster K (First) (Last) (Middle)			
Provider Mailing Address Street 4661 N Shallowford Rd City Atlanta State GA Zip 30338			
Provider Email Address afoster@secostaff.com			
Will the proposed course be open to all California licensed optometrists?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

Instructor Name Joseph Pizzimenti (First) (Last) (Middle)		
License Number 4892	License Type Optometrist	
Phone Number (561) 542-0144	Email Address pizzisf@msn.com	

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Andriana K Foster
Signature of Course Provider

Date

SECO 2017 Course Application

Name of Program: SECO 2017

Sponsor of Event: SECO International

Dates of Program: March 1-5, 2017

Location of Program: Georgia World Congress Center in Atlanta, GA

Name of Course: Optovue OCT

Date of Course: March 3, 2017

Time of Course: 7:45AM – 8:45AM

Format of Course: Lecture course

Course Speaker: Joseph Pizzimenti, OD, FAAO

Course Description and Objectives: This course uses case examples to illustrate clinical applications of Optovue OCT instruments in the diagnosis, treatment, and management of various ocular diseases.

1. Discuss the history, technology, and principles of OCT.
2. Summarize the use of Optovue OCT instruments for diseases of the anterior segment.
3. Explain the use of Optovue OCT instruments for diseases of the macula.
4. Discuss the use of OCT for diseases of the vitreous and retina.
5. Understand the test results and be able to interpret the Optovue OCT analysis printouts.
6. Apply OCT in the diagnosis, management, and treatment of vitreo-retinal diseases and optic nerve diseases, including glaucoma.

Course Outline:

- I. Optical Coherence Tomography (OCT) Review
 - A. Understanding OCT as an Imaging Modality
 1. What is OCT?
 2. Who uses OCT?
 - a) Optometry/ophthalmology
 - b) Cardiology

- c) Oncology and other specialties
 - 3. How does OCT work? Basic Principles
 - a) An historical perspective: Time domain technology
 - b) Spectral domain technology
 - 4. Design and user interface
- B. En Face OCT Imaging
 - 1. Principles
 - 2. Clinical Applications
- C. Peripheral Retina: Wide-field OCT Imaging
 - 1. Principles
 - 2. Clinical Applications
- D. Anterior Segment OCT Imaging
 - 1. Principles
 - 2. Clinical Applications
- E. OCT Angiography
 - 1. Principles
 - 2. Clinical Applications

II. Interpretation of Results

- A. What am I looking at?
- B. How to interpret Retinal Thickness Map Analysis
- C. How to interpret Cross Sectional Retinal Cuts
 - 1. Anatomy of the cross section
 - a) Vitreoretinal interface structures
 - b) Inner retina structures c) Outer retina structures d) RPE
 - e) Choroid
 - (1) Deep Retinal/Enhanced Depth Imaging
 - (2) Swept Source Imaging

D. How to interpret Optic Nerve and Neural Data

1. Optic nerve cross section and disc analysis
2. Retinal nerve fiber layer (RNFL) thickness analysis
3. Ganglion Cell Complex Analysis (GCC)
4. Case Examples
 - a) Glaucoma
 - b) Congenital optic nerve disease
 - (1) Optic nerve pit
 - (2) Optic nerve drusen
 - c) Acquired optic nerve disease
 - (1) Disc Edema

E. What is the future?

1. Adaptive Optics OCT
 - a) Principles
 - b) Potential clinical applications

III. Diagnosis and Management: Clinical Case Examples

- A. Anatomy of vitreous/retina/choroid by En face OCT
- B. Macular microstructure and En face OCT in Macular Edema
- C. Appearance and Progression of Geographic Atrophy Predicted by En Face OCT and FAF
- D. En face OCT in Polypoidal Choroidopathy
- E. Wet ARMD
- G. Ocular Oncology
- H. Central serous chorioretinopathy
- I. Uveitis
- J. Vitreo retinal interface disorders
 1. Macular hole
 2. Epiretinal membrane
- K. Retinal Vascular Disease
 1. RVO
 2. RAO
 3. Diabetic retinopathy

4. Hypertensive retinopathy

Speaker CV:

Address: 9364 Lake Serena Drive, Boca Raton, FL 33496
Telephone: (561) 883-2718 Home
Mobile: (561) 542-0144
E-mail: Office: pizzimen@uiwtx.edu
Home: pizzisfl@gmail.com

Education

1989-1990 **University of Houston**
• Residency included advanced training in Ocular Disease, Primary Care, Low Vision, and Geriatric Optometry

1985-1989 **Illinois College of Optometry**
• Doctor of Optometry

1981-1985 **Drew University**
• B.A. in Chemistry

Professional Experience

2016-present **University of the Incarnate Word** **San Antonio, TX**
• Full-time Faculty Member and Attending Optometrist

1995-2015 **Nova Southeastern University** **Fort Lauderdale, FL**
• Full-time Faculty Member and Attending Optometrist

1998-2000 **West Palm Beach VA Medical Center** **West Palm Beach, FL**
• Attending Optometrist Consultant

1990-1995 **Pizzimenti Eye Center** **Elmwood Park, IL**
• Self employed in private optometric practice

1989-1990 **University of Houston, College of Optometry** **Houston, TX**
• Resident Faculty

Academic Appointments

2016-present **University of the Incarnate Word** **San Antonio, TX**
• Professor

1998-2000 Palm Beach, FL	West Palm Beach VA Medical Center	West
	<ul style="list-style-type: none"> • Attending Optometrist 	
1995 Lauderdale, FL	Nova Southeastern University	Fort
	<ul style="list-style-type: none"> • Initial Appointment as Assistant Professor • Currently Held Rank of Associate Professor 	
1989	University of Houston Houston, TX	
	<ul style="list-style-type: none"> • Resident Faculty 	

Administrative Appointments

2000-2015	Nova Southeastern University College of Optometry
	<ul style="list-style-type: none"> • Director, Interprofessional Education
1998-2000	Nova Southeastern University College of Optometry
	<ul style="list-style-type: none"> • Department Chair, Department of Clinics
1997-1999	Nova Southeastern University College of Optometry
	<ul style="list-style-type: none"> • Chief, Primary Care Clinics
1996-1999	Nova Southeastern University College of Optometry
	<ul style="list-style-type: none"> • Module Director, Primary Care Clinic

Teaching Assignments at Nova Southeastern University

2004-2015 Service	Director and Clinical Preceptor, Diabetes and Macular Disease
2000-2015 Osteopathic Medicine	Guest Lecturer, Geriatric Medicine, NSU College of
2004-2015 College of Allied Health	Instructor of Record: Ocular Diseases and Conditions, NSU
1999-2015	Module Conference Guest Lecturer
1996-2015	Resident Supervisor
1996-2015	Resident Conference Lecturer
1996-2015	Guest Lecturer, Low Vision Rehabilitation

1995-2015	Primary Care Clinic Preceptor
2014-2015	Physical Diagnosis Laboratory Instructor
2001-2002	Diabetes Eye Health Service Preceptor
2000-2001	Guest Lecturer, OTM III
2000-2001	OTM III, IV Laboratory, Guest Instructor
2001 (spring)	OTM IV Laboratory, Instructor
1995-1999	Module Conference Instructor

SECO 2017 Presents:

Optovue OCT

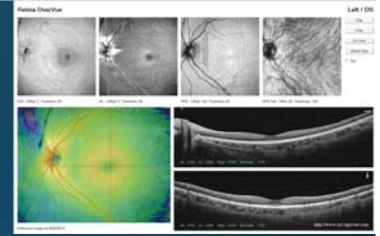
Joseph J. Pizzimenti, OD, FAAO

University of the Incarnate Word
pizzimen@uiwtx.edu



Financial Disclosures

- I have received honoraria from:
 - EyePromise
 - Thrombogenics
 - Genentech
- I have received consulting fees from:
 - Zeiss
 - EyePromise
- My financial relationships have no influence on the content of this course.

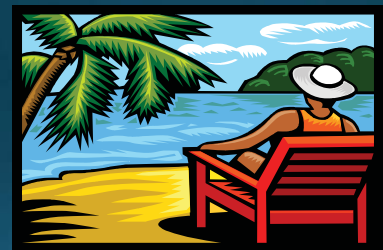


Course Goal

- To provide current, accurate information about optical coherence tomography (OCT), with an emphasis on clinical applications of Optovue OCT instrumentation.



Questions and Comments?



"Most major advances in the understanding of retinal diseases have been preceded by advances in imaging."

Richard Spaide, MD
NY Retina Consultants

Retinal imaging does
not
replace a dilated retinal examination.

Fundus Biomicroscopy and BIO



Milestones in Retinal Imaging

■ Fundus Photography	1920s
■ Fluorescein Angiography	1950s
■ B-Scan Ultrasound	1970s
■ ICG Angiography (Digital)	1980s
■ CSLO (HRT), SLP (GDX)	1990s
■ OCT first demonstrated	1991
■ High-res OCT	2001
■ Fourier (Spectral) Domain OCT	2006

Which one is right for my practice



• Factors to consider when purchasing new technology:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____



Which one is right for my practice



• Factors to consider:

- Patient base
 - Mode of practice
- Staff
 - Acceptance of new technology
- Networking capability/EMR Integration**
- Cost/ROI
- Space issues
- Future upgrades and data archiving system
- Support/training provided by company?
 - Installation and initial training
 - Periodic training



The Critical Question:

Will this technology improve patient care?

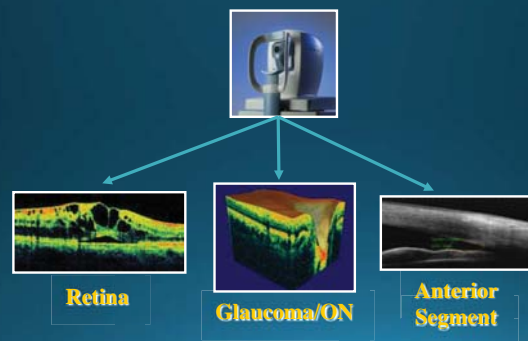
OCT: The Big Dog in PS Imaging



There are many treatments, but....

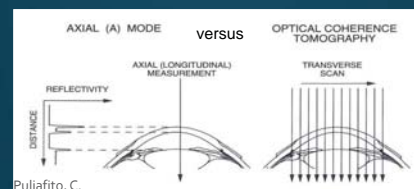
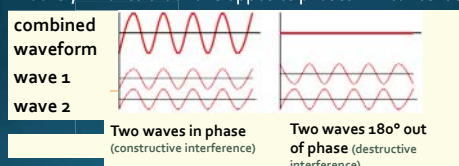


Spectral Domain OCT Clinical Applications



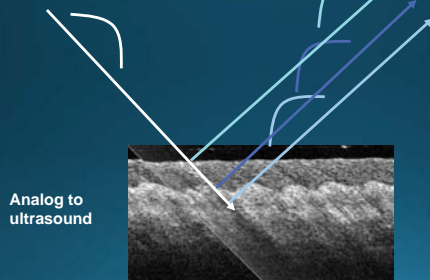
Principles of OCT

- How does OCT work?
- **Low-coherence interferometry**
 - 2 waves that coincide with the same phase amplify each other; 2 waves that have opposite phases will cancel out



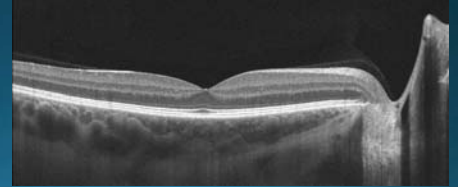
- Scan of the reflectivity of a sample as a function of depth is referred to as an **A-scan**.
- A **cross-sectional tomograph** is achieved by laterally combining a series of A-scans.
- Two-dimensional data sets are digitized by a computer and presented as a gray-scale or false-color image.

Optical coherence tomography



Posterior Segment Applications

- Vitreous/Vitreoretinal Interface
- Neurosensory retina, RPE/Bruch's
- Choriocapillaris/Deeper Choroid
- Optic Nerve/NFLA



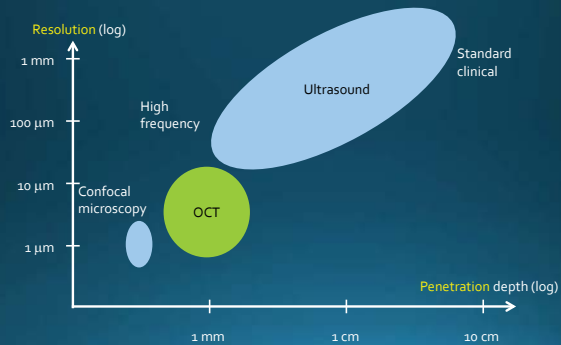
Coverage for OCT

- | | |
|----------------|-------|
| • Anterior Seg | 92132 |
| • Glaucoma/ON | 92133 |
| • Retina | 92134 |

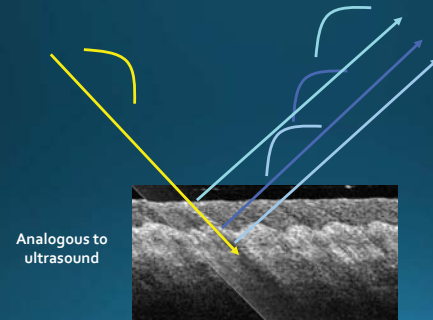
Coding Caveats

- These codes are only billed once, whether you scan both eyes or just one.
- 92133 and 92134 are mutually exclusive, so they cannot be billed on same day, regardless of diagnosis.
- In many areas, 92132 is also considered to be inappropriate to bill on the same day with either of the posterior segment procedures.
- Check your local LCD.

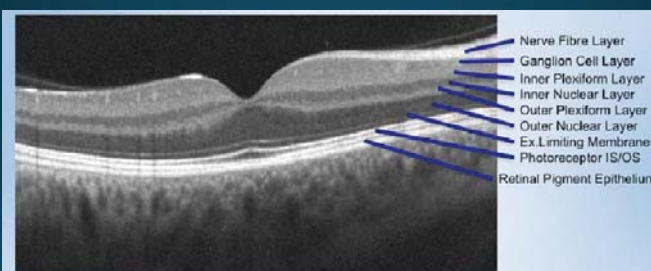
OCT vs. Other Imaging



Optical Coherence Tomography

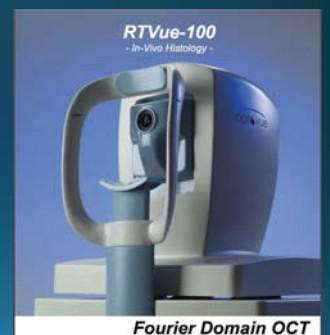


SD-OCT Healthy Macula w/Layers



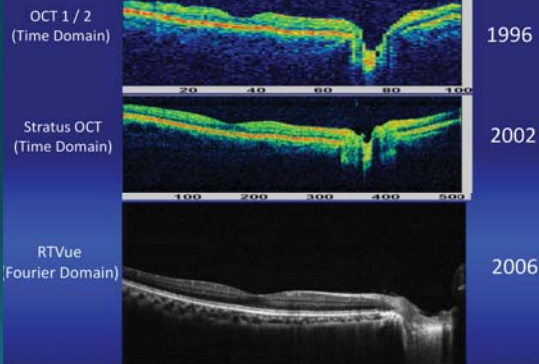
OCT Instruments: Optovue

- Established in 2003.
- Founded by some of the pioneers of OCT.
- The RTVue was brought to market in 2006.



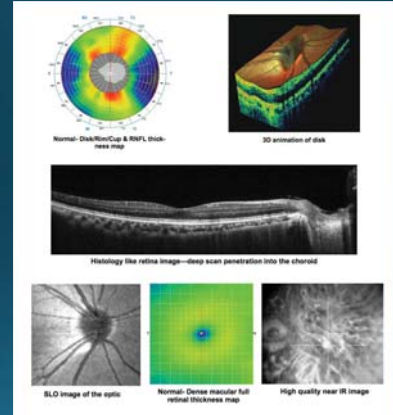
OCT History

Comparison of OCT Images



RTVue

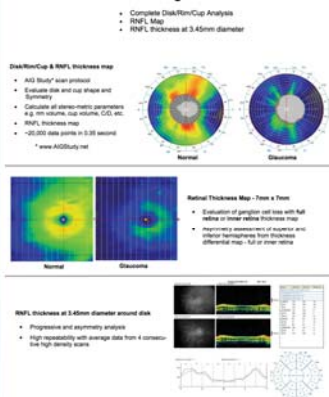
“Printout”



RTVue:

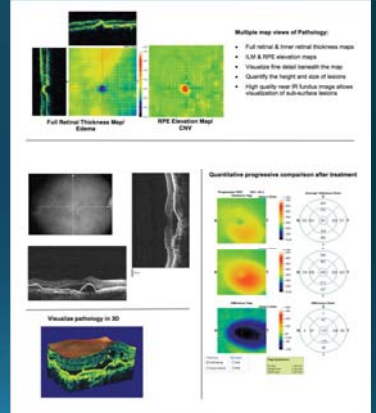
Glaucoma and Retina Analysis

Comprehensive Glaucoma Analysis with 3 in 1 registered scan



RTVue:
Retina Analysis

Case Example:
Wet AMD



Questions and Comments?

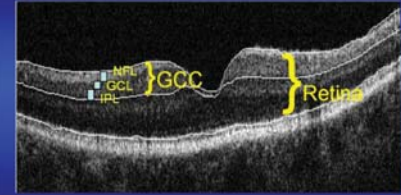


GCC

The ganglion cell complex (ILM – IPL)

Inner retinal layers provide complete Ganglion cell assessment:

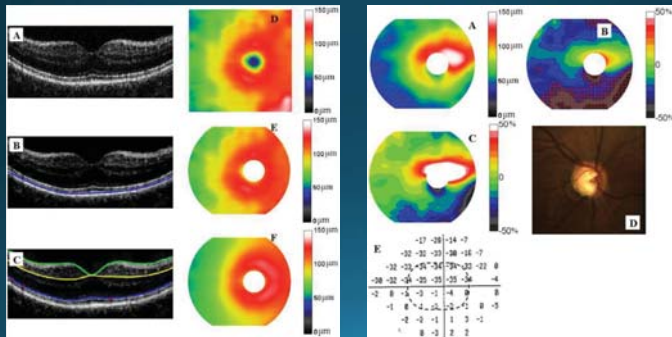
- Nerve fiber layer (g-cell axons)
- Ganglion cell layer (g-cell body)
- Inner plexiform layer (g-cell dendrites)



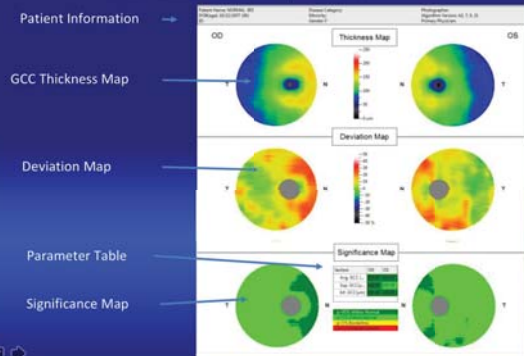
Images courtesy of Dr. Ou Tan, USC

RTVue: Case Example

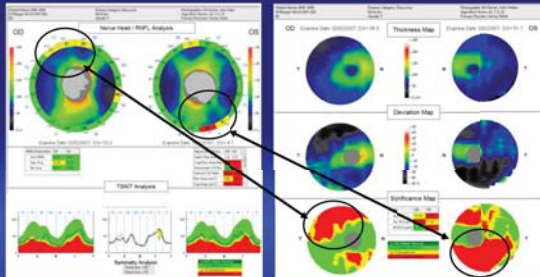
Ganglion cell complex (GCC) thickness in a glaucomatous eye



Ganglion Cell Complex (GCC) with Database comparisons

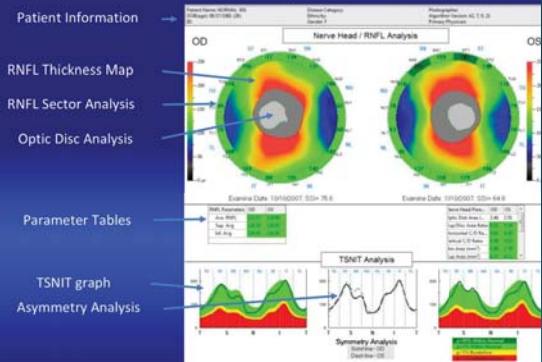


GCC Analysis may detect damage before RNFL



GCC and RNFL analysis will be correlated, however GCC analysis may be more sensitive for detecting early damage

Nerve Head Map (NHM4) with Database comparisons

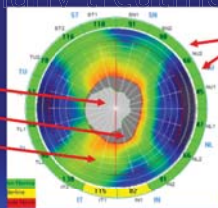


Glaucoma Analysis with the RTVue: Nerve Head Map

There are many treatments, but....

Provides

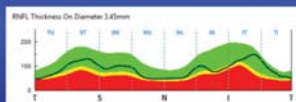
- Cup Area
- Rim Area
- RNFL Map



16 sector analysis compares sector values to normative database and color codes result based on probability values (p values)

p>5% Within Normal
p<5% Borderline
p<1% Outside Norm

TSNIT graph



Color shaded regions represent normative database ranges based on p-values

p>5% Within Normal
p<5% Borderline
p<1% Outside Norm

Glaucoma Analysis with the RTVue: Nerve Head Map Parameters

RNFL Parameters

RNFL Parameters	OD	OS
Ave. RNFL	78.46	78.47
Sup. Avg	72.44	77.85
Inf. Avg	84.47	79.09

Optic Disc Parameters

Nerve Head Para...	OD	OS
Optic Disk Area (...)	2.11	2.27
Cup/Disc Area Ratio	0.68	0.80
Horizontal C/D Ra...	0.89	0.95
Vertical C/D Ratio	0.86	0.93
Rim Area (mm ²)	0.68	0.46
Cup Area (mm ²)	1.43	1.81

All parameters color-coded based on comparison to normative database

p>5% Within Normal
p<5% Borderline
p<1% Outside Norm

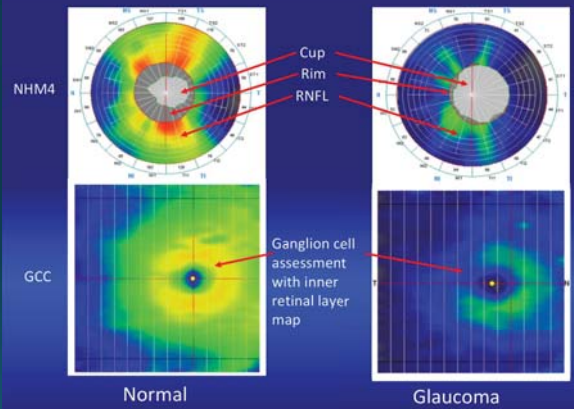
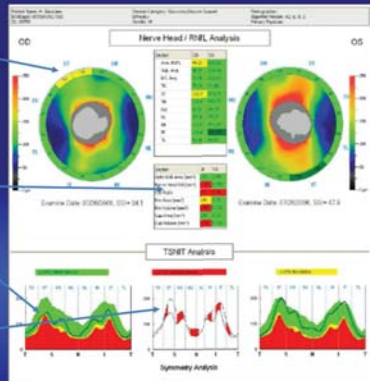
Early Glaucoma

Borderline Sector results in Superior-temporal region

Abnormal parameters

TSNIT dips below normal

TSNIT shows significant Asymmetry



Glaucoma Progression Analysis (Nerve Head Map of stable eye)

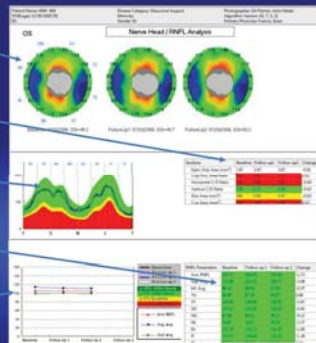
Thickness Maps

Change in optic disc parameters

TSNIT graph comparisons

Change in RNFL parameters

RNFL trend analysis

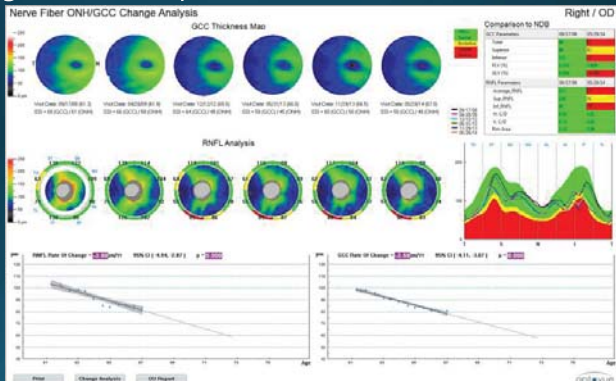


Avanti (move forward-*Ital.*)

- The next generation of RTVue.
- Visualize Peripheral Pathology with 3D Widefield Cube
- Assess Change Over Time with RNFL and GCC Trend Analysis
- Calculate IOL Power in Post-Refractive Surgery Patients with Total Cornea Power.

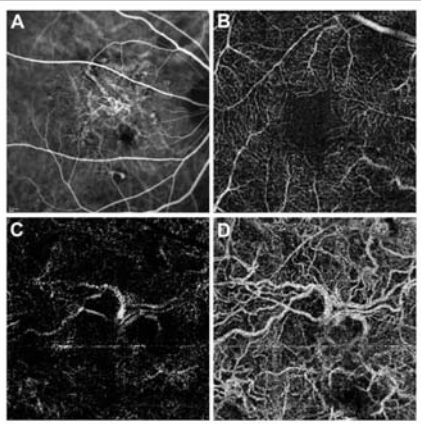


Avanti: Progression Analysis



Avanti: Angiovue

Case Example: CNV



OCT Instruments



iVue and iFusion: Features

- Includes Retina, Optic Disc and Anterior Segment Applications
- Create the System You Need with OCT + Fundus Camera Option

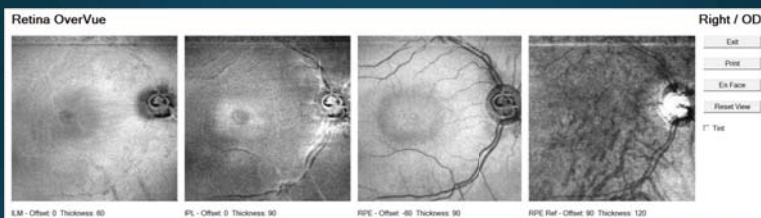


iScan: Features

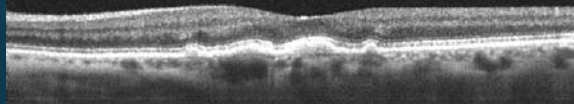
- Tech-friendly
 - performs all of the focus and alignment operations while talking the patient through the entire exam.
- Space-saving
 - tabletop system that is approximately the same size as a desktop compute; portable
- Two configurations
 - Essential (may be upgraded)
 - Comprehensive
 - Scan options identical to iVue



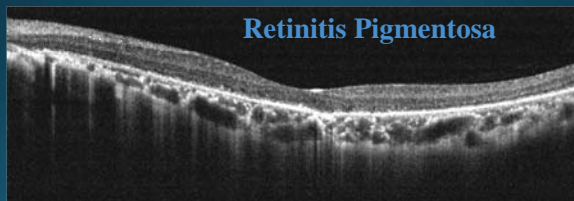
Vitreoretinal Disease



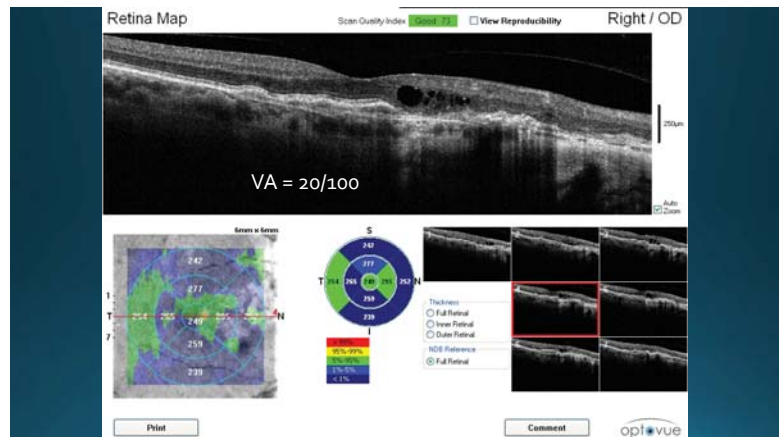
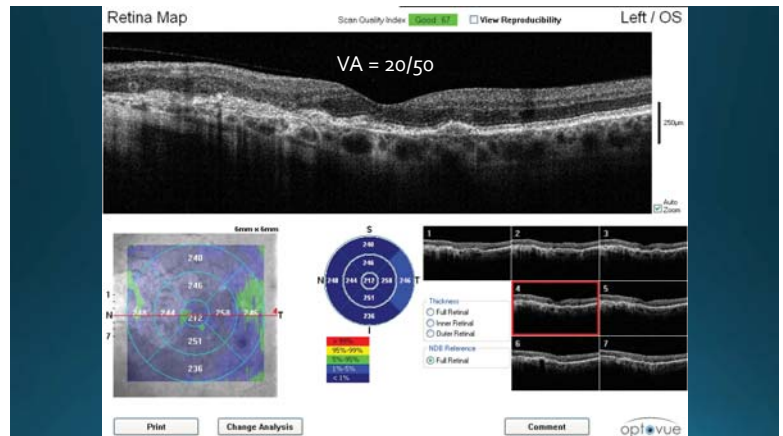
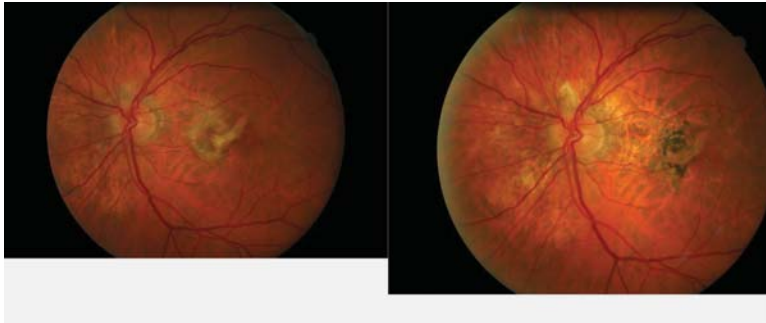
Dry AMD



Retinitis Pigmentosa



68 y/o WM



Case

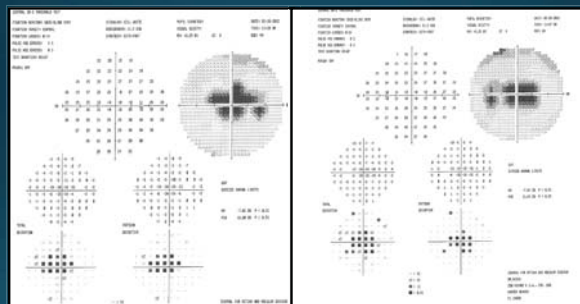
- 65 Year old Female
- Comes in with complaints of blurred and dimmed vision
- PMH: Rheumatoid Arthritis x 15 years
- OcHx: S/P CE and IOL OU

Ophthalmic Exam

- VA:
 - OD: 20/40 OS: 20/40
- IOP
 - OD: 14 OS: 13
- SLE:
 - OD: PCIOL OS: PCIOL
- DFE:
 - Bull's eye maculopathy

Additional Testing?

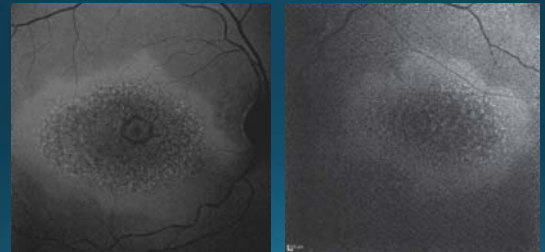
Visual Fields



Fundus Autofluorescence

While Angiography images BRB integrity, FAF captures metabolic activity.

Auto Fluorescence

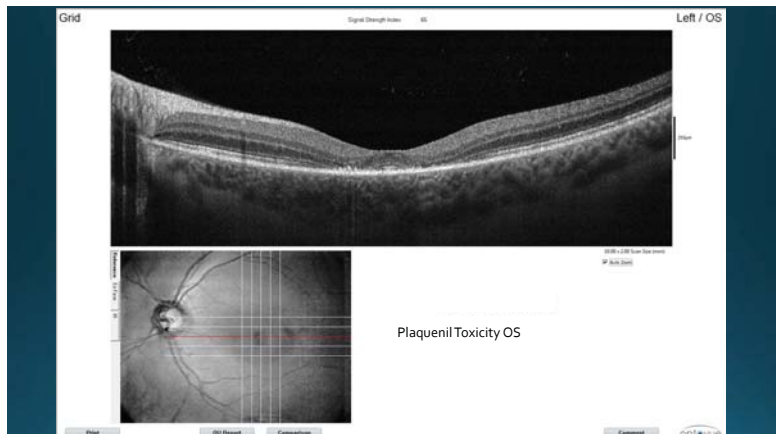
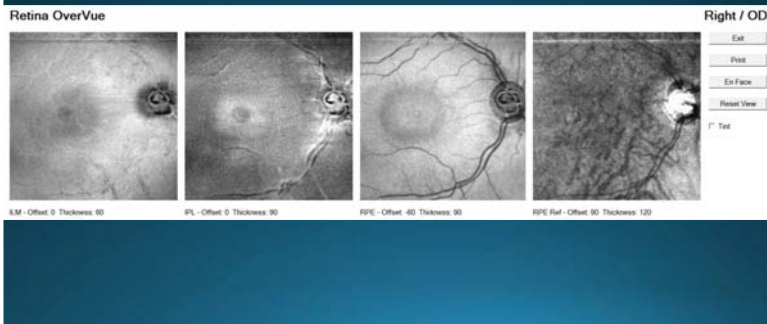


Likely Diagnosis?

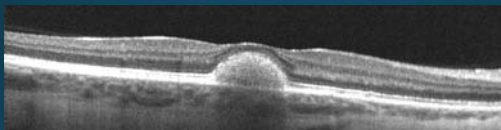
Plaquenil Maculopathy

- Co-management team includes eye care provider, rheumatology
- Testing guidelines for patients on Plaquenil
- Repeat testing

Plaquenil Toxicity



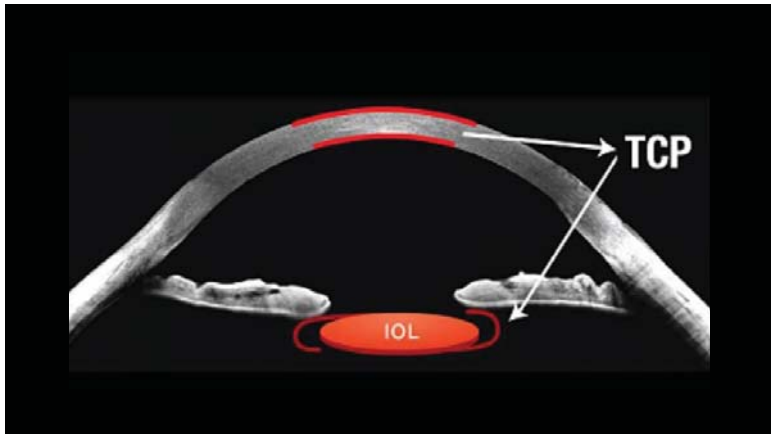
18 yo BF 20/80
Best's Disease-confirm with EOG



18 yo BF Best's Disease



- Anterior Segment OCT
- Cornea B-Scan: Visualize and measure corneal cross sections.
- Angle Scan: Visualize and measure angle parameters with quantification tools.
- Pachymetry Map: Quantify corneal thickness and track change over time.
- Total Cornea Power: Calculate both the front and back surfaces of the cornea to enhance post-refractive IOL calculation for greater confidence in surgical outcomes.



Cornea Advance

Angle Scan
Visualize and measure angle parameters.

Pachymetry Map
Easily quantify corneal thickness and track change over time.

Specialty Contact Lens Fitting
Cornea Advance includes the **exclusive Vault Mapping tool** that enables precise visualization of the lens-to-eye relationship for specialty lens fitting.

Vault Map
Visualize and quantify central corneal clearance.

Anterior Display Report
Evaluate superior, temporal, inferior and nasal landing zones.

Anterior Segment Imaging

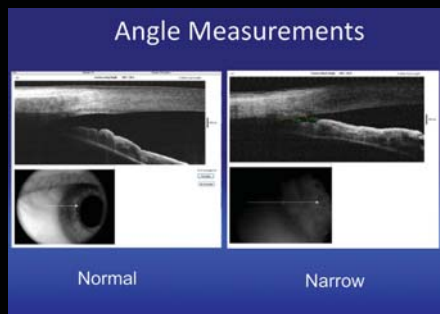
Images courtesy of Martha Leen, M.D. & Paul Kremer M.D. Achieve Eye and Laser Specialists, Silverdale, WA

Anterior Segment Imaging

Angle Structures

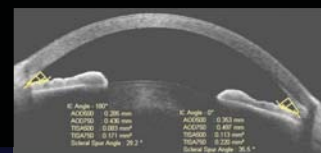
- Scleral spur (red arrow)
- Schlemm's canal (blue arrow)
- Schwalbe's line (green arrow)

Anterior Segment OCT



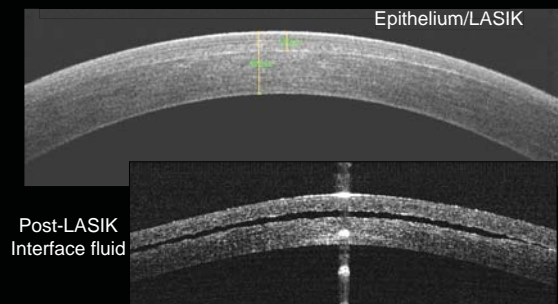
Glaucoma Care – High-resolution OCT Imaging

Irido-Corneal Tools

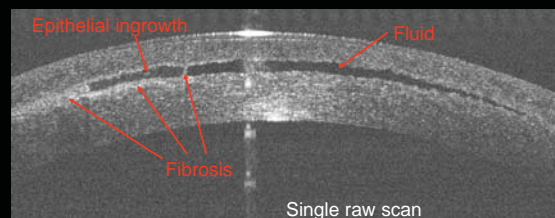


Narrow anterior
chamber angle

Anterior Segment Applications of OCT: Refractive Sx Follow-up

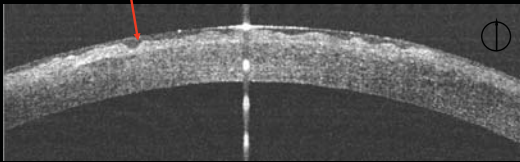
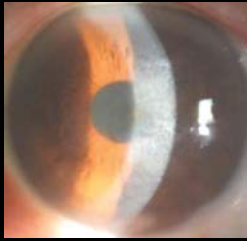


Post-LASIK interface fluid & epithelial ingrowth



Reis-Bucklers Dystrophy

Dramatic epithelial masking

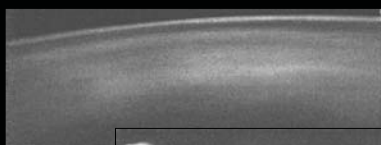


PKP

Conductive Keratoplasty (CK)

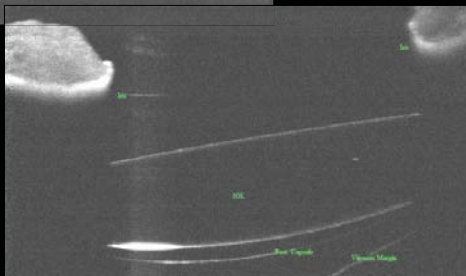


CK Scar

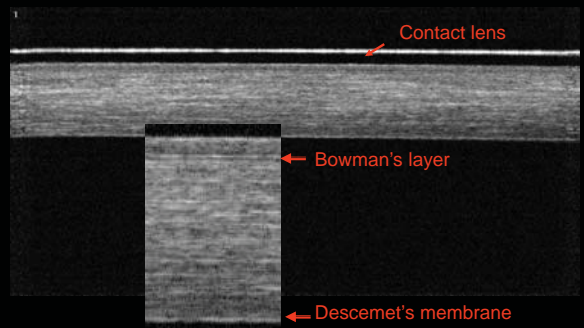


Anterior capsule and lens

IOL



OCT in CL Care

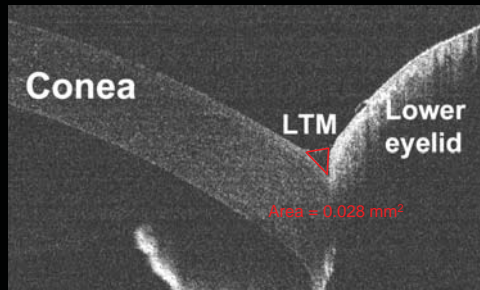


Contact lens

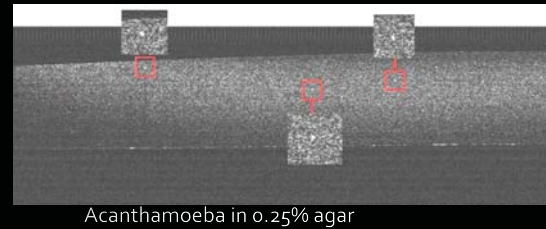
Bowman's layer

Descemet's membrane

Lower Tear Meniscus



Higher resolution helps visualize pathogens



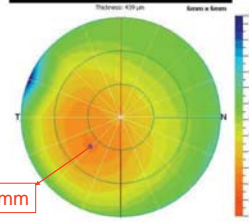
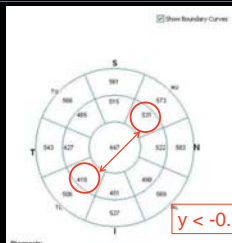
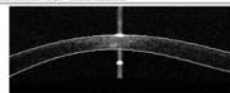
Keratoconus

SN - IT = 113 > 48

Minimum 403 < 470

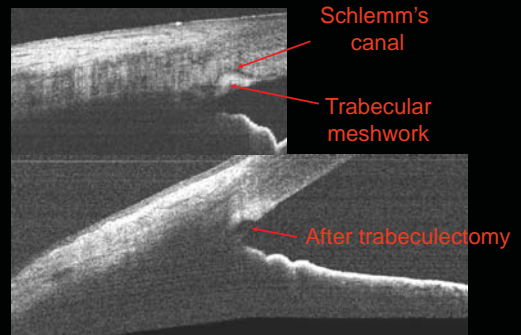
Minimum - Median = -66 < -63

Keratoconus	
2 - 4 mm 4 - 6 mm	
2. Dural / Hemisphere Analysis	
→ N2 - T5	114 68
→ T5 - T1	64 34
→ T1 - N4	-34 -13
→ Superior - Inferior	-38 -132
Minimum thickness within 4 mm diameter circle	
→ Minimum = 403 µm	
→ Minimum - Median = 48 µm	
→ Minimum - Maximum = -122 µm	
Minimum thickness: 403 µm - Location indicated as *	

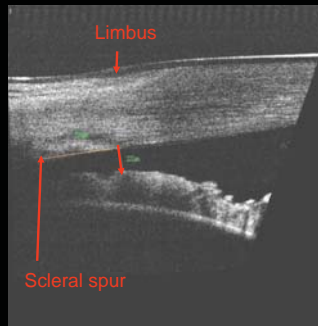


y < -0.72 mm

Trabecular Meshwork



Narrow angle after PI

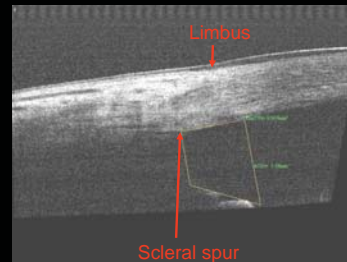


Angle Opening
Distance **500 μm**
anterior to
scleral spur
(AOD 500)

Occludable angle
AOD 500 < 190 μm

Radhakrishnan S, Goldsmith
J, Huang D, et al. *Arch
Ophthalmol* 2005

Normal Angle



Trabecular
meshwork-Iris
Space Area

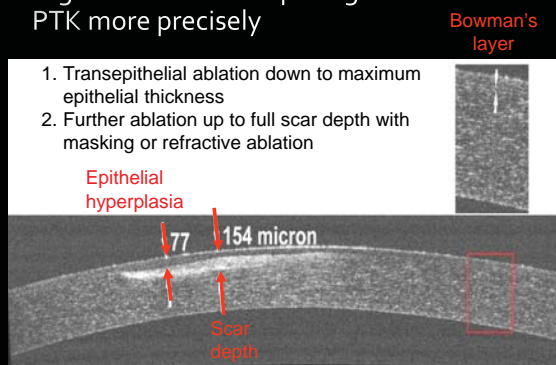
750 μm
anterior to
scleral spur
(TISA750)

Occludable angle
TISA750 < 0.17 mm^2

Radhakrishnan S, Goldsmith
J, Huang D, et al. *Arch
Ophthalmol* 2005

Higher resolution helps to guide PTK more precisely

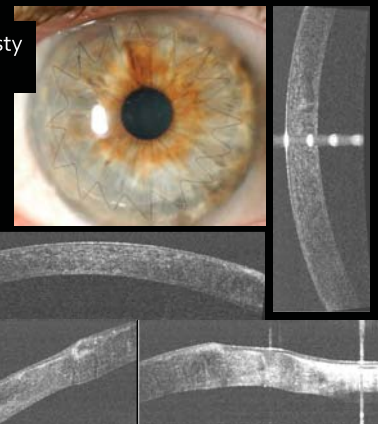
1. Transepithelial ablation down to maximum epithelial thickness
2. Further ablation up to full scar depth with masking or refractive ablation



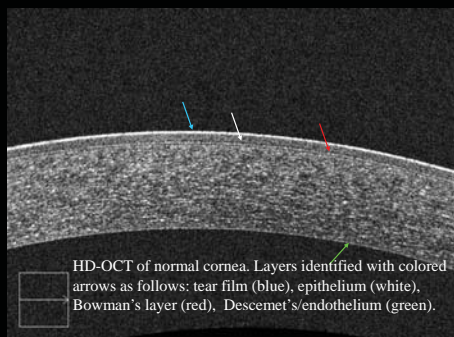
Lamellar Keratoplasty 3 months post-op

Graft preparation
with Descemet's
peel produces a
clear interface

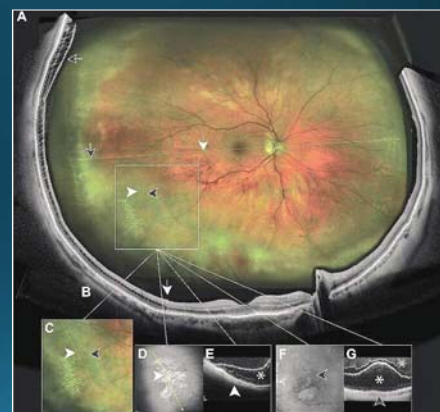
UCVA 20/30
at 6 months



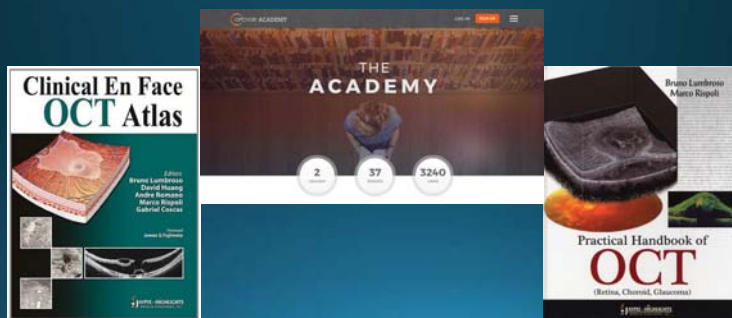
Anterior Segment Imaging



Coming Soon?



<http://academy.optovue.com/>



Conclusions

- SD-OCT is here to stay and will one day be as common in our offices as the slit lamp.
- Select an OCT instrument based on your practice needs and future upgrades.
- OCT, along with traditional examination techniques has and will continue to save vision.

Thank you!

- For spending your precious time with me.
- Joe
- pizzimen@uiwtx.edu



Joseph J. Pizzimenti, O.D., F.A.A.O.

Professor University of the Incarnate Word

Address: 9364 Lake Serena Drive, Boca Raton, FL 33496
Telephone: (561) 883-2718 Home
Mobile: (561) 542-0144
E-mail: Office: pizzimen@uiwtx.edu
Home: pizzisfl@gmail.com

Education

- 1989-1990 **University of Houston**
- Residency included advanced training in Ocular Disease, Primary Care, Low Vision, and Geriatric Optometry
- 1985-1989 **Illinois College of Optometry**
- Doctor of Optometry
- 1981-1985 **Drew University**
- B.A. in Chemistry
-

Professional Experience

- 2016-present **University of the Incarnate Word** **San Antonio, TX**
- Full-time Faculty Member and Attending Optometrist
- 1995-2015 **Nova Southeastern University** **Fort Lauderdale, FL**
- Full-time Faculty Member and Attending Optometrist
- 1998-2000 **West Palm Beach VA Medical Center** **West Palm Beach, FL**
- Attending Optometrist Consultant
- 1990-1995 **Pizzimenti Eye Center** **Elmwood Park, IL**
- Self employed in private optometric practice
- 1989-1990 **University of Houston, College of Optometry** **Houston, TX**
- Resident Faculty
-

Academic Appointments

- 2016-present **University of the Incarnate Word** **San Antonio, TX**
- Professor

1998-2000	West Palm Beach VA Medical Center <ul style="list-style-type: none">• Attending Optometrist	West Palm Beach, FL
1995	Nova Southeastern University <ul style="list-style-type: none">• Initial Appointment as Assistant Professor• Currently Held Rank of Associate Professor	Fort Lauderdale, FL
1989	University of Houston <ul style="list-style-type: none">• Resident Faculty	Houston, TX

Administrative Appointments

2000-2015	Nova Southeastern University College of Optometry <ul style="list-style-type: none">• Director, Interprofessional Education
1998-2000	Nova Southeastern University College of Optometry <ul style="list-style-type: none">• Department Chair, Department of Clinics
1997-1999	Nova Southeastern University College of Optometry <ul style="list-style-type: none">• Chief, Primary Care Clinics
1996-1999	Nova Southeastern University College of Optometry <ul style="list-style-type: none">• Module Director, Primary Care Clinic

Teaching Assignments at Nova Southeastern University

2004-2015	Director and Clinical Preceptor, Diabetes and Macular Disease Service
2000-2015	Guest Lecturer, Geriatric Medicine, NSU College of Osteopathic Medicine
2004-2015	Instructor of Record: Ocular Diseases and Conditions, NSU College of Allied Health
1999-2015	Module Conference Guest Lecturer
1996-2015	Resident Supervisor
1996-2015	Resident Conference Lecturer
1996-2015	Guest Lecturer, Low Vision Rehabilitation
1995-2015	Primary Care Clinic Preceptor
2014-2015	Physical Diagnosis Laboratory Instructor
2001-2002	Diabetes Eye Health Service Preceptor
2000-2001	Guest Lecturer, OTM III
2000-2001	OTM III, IV Laboratory, Guest Instructor
2001 (spring)	OTM IV Laboratory, Instructor
1995-1999	Module Conference Instructor

1996-2015

Low Vision Laboratory, Instructor

Professional Awards and Achievements

- ICO Alumni Achievement Award, 2009
 - World Council of Optometry Senior Fellowship, 2006
 - President's Faculty Scholarship Award Winner, 2001, 2004, 2005
 - Invited Participant, AOA/AO Summer Research Conference, 2002
 - Clinical Preceptor of the Year Teaching Award, 1995-1996, 1996-1997, 1997-1998
-

Professional Service

- President, Optometric Retina Society 2012-present
 - World Council of Optometry Fellowship Committee, 2006-present
 - Chair, Florida Optometric Association Healthy People Committee, 2007-present
 - Course Monitor, American Academy of Optometry, 2010-2013
 - Faculty Liaison, Fellowship of Christian Optometrists, 2005-present
 - Chair, Evaluation and Promotions Committee, 2008, 2010
 - Faculty Liaison, Florida Board of Optometry, 1998-2013
 - Fellow Member, American Academy of Optometry, 1997-present
 - Sustaining Member, AOSA, 1996-present
 - Examiner, National Board of Examiners in Optometry, 1992- Present
 - Member, American Optometric Association, 1989-present
 - Speaker, American Optometric Student Association Annual Conference, 1999
 - Appointed Member, ASCO/SIG Clinic Directors Group, 1997-2000
 - Faculty Liaison, Southern Council of Optometry, 1996-1997
 - Associate Dean Search Committee, 1999, appointed by Dean
 - Committee on Admissions, 1997-2000, appointed by Dean
 - Team Member, Strategic Plan, 1997 COE Report, appointed by Dean
 - Team Member, Clinic Section, 1997 COE Report, appointed by Dean
 - Team Leader, Faculty Section, 1997 COE Report, appointed by Dean
 - Chair, Faculty Council, 1996-1997, 1997-1998, elected
-

Scholarly Activities

Academic Fellowship and Diplomate

- Fellow, American Academy of Optometry, 1997-present
- Fellow, Optometric Retina Society, 2004-present

- Diplomate, American Board of Optometry, 2012-present
- Senior Fellow, World Council of Optometry, 2007
- Senior Advisor, Thesis Committee for V. K. Emery, PhD Candidate, Georgia Institute of Technology, 2004-2006

Manuscript Referee and Journal Editorial Boards

- Clinical Eye and Vision Care, 1995-1998
- Optometry, Journal of the AOA, 1995-2013
- Review of Optometry, 1995-Present
- Internet Journal of Allied Health Science and Practice, 2005-present
- Eye Care Review, 2007-2011
- Advanced Ocular Care, 2013-present

Invited Professional Presentations

- Aging Sensitivity Workshop, Miami Area Geriatric Medical Conference, 1996
- Anterior and Posterior Segment Disease, Miami Area Geriatric Medical Conference, 1996
- Clinical Case Challenges, Nova Southeastern University and FOA, 1997
- Functional Testing in Geriatric Optometry, Miami Area Geriatric Medical Conference, 1997
- Ocular Disease Grand Rounds, AOSA, 1999
- Acquired Macular Disorders, Miami Area Geriatric Medical Conference, 2000
- Functional Testing Workshop, Miami Area Geriatric Medical Conference, 2000
- Low Vision Workshop, Miami Area Geriatric Medical Conference, 2001
- Lid, Adnexa, and Orbital Disease Grand Rounds, Miami Area Geriatric Medical Conference, 2001
- Low Vision Rehabilitation of the Geriatric Patient, Miami Area Geriatric Medical Conference, 2001
- Acquired Maculopathy, Annual Concentrated Ocular Therapeutics Course, Nova Southeastern University, 1996-Present
- Medical Management of Clinical Cases, Annual Concentrated Ocular Therapeutics Course, Nova Southeastern University, 1996-Present
- Glaucoma Workshop, Annual Concentrated Ocular Therapeutics Course, Nova Southeastern University, 1996-Present
- Masters Program in Ocular Disease, Krems, Austria, 2007, 2009
- Several Lectures at Nova Southeastern University Continuing Education Programs, 1996-present
- Geriatric Optometry, Polish Optometric Association, Poznan, Poland, 2007
- An Optometrist's Guide to AMD, Polish Optometric Association, Poznan, Poland, 2007
- Posterior Segment Disease, Masters Program in Ocular Disease, Madrid, Spain, 2007
- Posterior Segment Disease, Masters Program in Ocular Disease, Tel Aviv, Israel, 2010
- Posterior Segment Disease, Masters Program in Ocular Disease, Singapore, 2013

Scientific Advisory Boards and Speaker Alliances

- Alcon
 - Carl Zeiss Meditec
 - MSS Ophthalmic Services
 - Notal Vision
 - Vision Service Plan
 - Zeavision
 - Thrombogenics
 - Nicox
-

Published Abstracts and Scientific Poster Presentations

- Multiple Sclerosis Masquerading as Infectious Optic Neuropathy. Joseph Pizzimenti. Optometry - Journal of the American Optometric Association 06/2008; 79(6): 310–311.
- “Steroid Blindness” in an Older Male With Ischemic Vascular Disease. Joseph Pizzimenti. Optometry - Journal of the American Optometric Association 06/2008; 79(6): 324.
- Electrooculography and Optical Coherence Tomography Reveal Late-Onset Best Disease. Ravie Makati, Diana Shechtman, Eulogio Besada, Joseph J Pizzimenti. Optometry and vision science: official publication of the American Academy of Optometry 09/2014.
- New Technologies Enable Earlier Detection of Exudative Age-Related Macular Degeneration. E. Sanders, D. Schectman, J. Pizzimenti, J. Arnaeo. Optometry - Journal of the American Optometric Association, Volume 78, Issue 6, Pages 294-294, 2007.
- Amblyopia? Don't bet on it! T. Sagmiller, J. Pizzimenti, S. Rowe, Optometry - Journal of the American Optometric Association, Volume 77, Issue 6, Pages 276-277, 2007.
- Multifocal Electroretinography Reveals Late-Onset Cone Dystrophy. J. Pizzimenti, A. Woods, L. Vollmer, M. Fendick. Optometry - Journal of the American Optometric Association, Volume 78, Issue 6, Pages 292-293, 2007.
- Retinal Microstructure Imaging in the Enhanced S-Cone Sensitivity Syndrome. J. Pizzimenti, T. Sagmiller. Optometry - Journal of the American Optometric Association, Volume 78, Issue 6, Pages 295-295, 2007.
- Comparison of Perimetry, Contrast Sensitivity, and Visual Acuity in Patients with Diabetes. Pizzimenti, J. et.al, AOA, 2004**
- Hemianopic Anosognosia Associated With Calcarine Cortex Infarct, Pizzimenti, J. and Szlyk, J., AOA 2001
- SWAP and Nerve Fiber Analysis in the Management of Papilledema, Pizzimenti, J., Falco, L., and Kabat, A, AOA 2001
- Emergency Room Medicamentosa Retards Healing of Corneal Abrasion: Valdes, D. and Pizzimenti, J., SECO 2001
- Bilateral Asymmetric Papilledema Secondary to Cerebrovascular Malformation, Falco, L., Pizzimenti, J. and Kabat, A., SECO 2001

- Special Management Considerations for Recurrent Corneal Erosion on a Patient With Oculocutaneous Albinism and Epithelial Basement Membrane Disease, Carroll, E. and Pizzimenti, J., SECO 2001
 - Homonymous Hemianopic Hypoplasia: A Case Report, Pizzimenti, J. and Reynolds, S., AAO 2000
 - Treatment of Herpes Simplex Lid Lesions with Topical Penciclovir, Pizzimenti, J., Espejo, A., and Dominguez, V., AAO 2000
 - Steroid Induced Glaucoma and Cataract Secondary to Application of Topical Corticosteroid to Eyelids, Booras, K., and Pizzimenti, J., AAO 2000
 - Radiologic Findings in Metastatic Carcinoma to the Orbit, Pizzimenti, J., Zimmelman, S., and Bernardo, A., AAO 2000
 - Central Serous Chorioretinopathy Following Epidural Steroid Injection, Pizzimenti, C. and Pizzimenti, J., AAO 2000
 - Primary Care and Low Vision Rehabilitation of the Angioid Streaks Patient, Canavan, K. and Pizzimenti, J., SECO 2000
 - Metastatic Carcinoma to the Lacrimal Gland, Bernardo, A. and Pizzimenti, J., SECO 2000
 - Acquired Vertical Alternating Nystagmus Associated With Manifest Latent Nystagmus, Shallo-Hoffmann, J., Visco, F., Ficarra, A., Pizzimenti, J., and Erbe, L., INOS 2000
 - Differential Diagnosis of an Elevated Choroidal Mass, Mollega, R.A., and Pizzimenti, J., SECO 1997
 - Accommodative Response to PRIO Computer Vision Tester Versus Printed Text, Sorkin, R., Reich, L., and Pizzimenti, J., COVD, October, 2001
-

Research Activities

- Accommodative Response to PRIO Computer Vision Tester Versus Printed Text, Sorkin, R., Reich, L., and Pizzimenti, J., IRB approved, non-funded
- The Effect of Lutein on the Incidence of Age-related Macular Degeneration in a Non-AMD Older Study Population, Pizzimenti, J., Gorman, N., Crossman, S., Ficarra, IRB approved, non-funded
- Eye Health and Vision Care for Patients with Diabetes: Comparing Usual Care to a Targeted Intervention in a Randomized Controlled Trial, Wagner, H., Pizzimenti, J., Daniel, K., Pandya, N., IRB approved, funded
- Relationship Between Fitness Levels and Eye Health in Individuals with Type 2 Diabetes, Stern, D., Pizzimenti, J., IRB approved, funded
- An Investigation of Modalities of Feedback, Oliver, P., Jacko, J., Pizzimenti, J., IRB approved, funded
- The Study of the Effectiveness of Rehabilitation and Wellness Programs for People Living With Multiple Sclerosis: A Randomized Controlled Trial, PI: Lou, J. Collaborators: Kelleher, W., Oliver, P., and Pizzimenti, J., IRB approved, funded

Research Fellowships, Awards, and Grants

President's Faculty Scholarship Award, Nova Southeastern University, 2001
The Study of the Effectiveness of Rehabilitation and Wellness Programs for People Living With Multiple Sclerosis: A Randomized Controlled Trial

President's Faculty Scholarship Award, Nova Southeastern University, 2004
Eye Health and Vision Care for Patients with Diabetes: Comparing Usual Care to a Targeted Intervention in a Randomized Controlled Trial

President's Faculty Scholarship Award, Nova Southeastern University, 2005 Relationship Between Fitness Levels and Eye Health in Individuals with Type 2 Diabetes, National Science Foundation, 2003

An Investigation of Modalities of Feedback

PI: P. Oliver, OD, MS

Co-investigator: J. Pizzimenti, OD, J. Jacko, PhD

Publications

Electrooculography and Optical Coherence Tomography Reveal Late-Onset Best Disease.
Ravie Makati, Diana Shechtman, Eulogio Besada, Joseph J Pizzimenti . Optometry and vision science: official publication of the American Academy of Optometry 09/2014;

The importance of vitamin D in systemic and ocular wellness. Stuart P. Richer, Joseph J. Pizzimenti. Journal of Optometry. 01/2013; 6(3):124–133.

The "Double-Layer Sign": In Vivo Imaging of Polypoidal Choroidal Vasculopathy. Jamie M St Martin, Julie Rodman, Joseph J Pizzimenti, Eva Duchnowski. Optometry and vision science: official publication of the American Academy of Optometry 10/2013.

Central corneal thickness measurements obtained with anterior segment spectral domain optical coherence tomography compared to ultrasound pachymetry in healthy subjects.
Lori Vollmer, Joseph Sowka, Joseph Pizzimenti, Xinha Yu, Optometry, 2012

Use of multifocal ERG and OCT for diagnosing Stargardt's disease. Lori A Vollmer, Diana L Shechtman, Albert D Woods, Joseph J Pizzimenti Clinical and Experimental Optometry 05/2011; 94(3):309-13.

Serpiginous choroiditis in a herpes-positive patient. Julie Rodman, Joseph Pizzimenti
Optometry and vision science: official publication of the American Academy of Optometry 03/2011; 88(6):776-80.

Cystoid macular edema as a result of immune-recovery uveitis. Richard Guzak, Julie Rodman, Joseph Pizzimenti. Optometry and vision science: official publication of the American Academy of Optometry 02/2011; 88(2):E344-51

In vivo diagnostic imaging of ocular toxocariasis. Julie Rodman, Joseph Pizzimenti Clinical and Experimental Optometry 04/2009; 92(2):146-9.

Wagner H, Pizzimenti J, Daniel K, Pandya N, Hardigan P. Eye on Diabetes: A Multidisciplinary Patient Education Intervention. The Diabetes Educator (In press). 2008

- Pelino C, Pizzimenti J. Factor V Leiden Gene Mutation: A Clinical Perspective on Ocular and Systemic Sequelae of Thromboembolic Disease. *Eye Care Review*, December 2007, pp. 29-34.
- Bade, A. Pizzimenti, J. Interdisciplinary Management of Diabetic Eye Disease: A Global Approach to Care. *The Internet Journal of Allied Health Sciences and Practice*. Jan 2007, Volume 5 Number 1.
- Leonard V, Jacko J, Pizzimenti J. An investigation of handheld device use by older adults with age-related macular degeneration. *Behaviour and Information Technology*, Volume 25, Number 4, July-August 2006, pp. 313-332(20).
- H. Abdal, J. Pizzimenti, C. Purvis. The eye in sleep apnea syndrome. *Sleep Medicine*, Volume 7, Issue 2, Pages 107-115, 2006.
- Pizzimenti, Joseph J, Nickerson, Maritza M., Pizzimenti, Claire E., Kasten-Aker, Ann G. Selective Laser Trabeculoplasty for Intraocular Pressure Elevation After Intravitreal Triamcinolone Acetonide Injection. *Optometry & Vision Science*. 83(7):421-425, July 2006.
- Shechtman D, Reynolds S, Pizzimenti J. AMD Gets A New Image: Early detection of exudative (wet) age-related macular degeneration. *Review of Optometry*. August 2007.
- Pizzimenti JJ, Daniel, KP: Central Serous Chorioretinopathy After Epidural Steroid Injection, *Pharmacotherapy* 2005;25(8):1141-1146.
- Pizzimenti, J. Roberts, E. The low vision rehabilitation service. Part two: Putting the program into practice. *The Internet Journal of Allied Health Sciences and Practice*. July 2005. Volume 3, Number 3.
- Pizzimenti JJ, Gao, H, Zimmerman, SS: Atypical Radiologic Findings in Demyelinating Optic Neuritis, *Journal of the American Osteopathic Association* (In review)
- Pizzimenti, JJ: A New Paradigm in Continuing Professional Education: Implications for Optometry, *Optometric Education* 2005; 30(3):91-94.
- Leonard V, Jacko J., Pizzimenti, J. An exploratory investigation of handheld computer interaction for older adults with visual impairments. *Proceedings of the 7th international ACM SIGACCESS conference on Computers and accessibility*. Baltimore, MD, USA. SESSION: Evaluating accessibility table of contents Pages: 12 – 19. Year of Publication: 2005.
- Paula J. Edwards, Leon Barnard, V. Kathlene Emery, Ji Soo Yi, Kevin P. Moloney, Thitima Kongnakorn, Julie A. Jacko, François Sainfort, Pamela R. Oliver, Joseph Pizzimenti, Annette Bade, Greg Fecho, Josephine Shallo-Hoffmann. Strategic design for users with diabetic retinopathy: factors influencing performance in a menu-selection task. *Proceedings of the 6th international ACM SIGACCESS conference on Computers and accessibility*. Atlanta, GA, USA. SESSION: Designing for individuals with visual impairments. Pages: 118 – 125. Year of Publication: 2004.
- Reynolds, SA, Woods, AD, Pizzimenti JJ: Bilateral Internuclear Ophthalmoplegia as the Presenting Sign of Multiple Sclerosis: An Interdisciplinary Approach to Diagnosis and Management, *The Internet Journal of Allied Health Sciences and Practice*, July 2004, Volume 2 Number 3.
- Pizzimenti JJ: The Low Vision Rehabilitation Service Part One: Understanding Low Vision. *The Internet Journal of Allied Health Sciences and Practice*. 2003. Volume 1 Number 1.
- Pizzimenti JJ: Annual Symposium on Diabetes: A Comprehensive Update for the Primary Health Care Provider"-Review. *The Internet Journal of Allied Health Sciences and Practice*. 2003. Volume 1 Number 2.

Sorkin RE; Reich LN; Pizzimenti J: Accommodative response to PRIO Computer Vision Tester versus printed text. Optometry 2003 Dec; 74(12):782-6.

State Board Of Optometry Licensing

Florida, 2000, Active

Texas, 2016, Active

Memberships/Associations/ Professional Appointments

American Academy of Optometry Fellow

Florida Optometric Association

Optometric Retina Society, Fellow

American Board of Optometry, Diplomate



STATE BOARD OF OPTOMETRY
2450 DEL PASO ROAD, SUITE 105, SACRAMENTO, CA 95834
P (916) 575-7170 F (916) 575-7292 www.optometry.ca.gov



CONTINUING EDUCATION COURSE APPROVAL APPLICATION

\$50 Mandatory Fee

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule, a detailed course outline and presentation materials (e.g., PowerPoint presentation). Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

Course Title <u>Optovue OCT Learning Lab</u>	Course Presentation Date <div>03/03/2017</div>
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Course Provider Contact Information

Provider Name <u>Andriana</u> <u>Foster</u> <u>K</u> (First) (Last) (Middle)			
Provider Mailing Address Street <u>4661 N Shallowford Rd</u> City <u>Atlanta</u> State <u>GA</u> Zip <u>30338</u>			
Provider Email Address <u>afoster@secostaff.com</u>			
Will the proposed course be open to all California licensed optometrists?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

Instructor Name <u>Joseph</u> <u>Pizzimenti</u> (First) (Last) (Middle)		
License Number <u>4892</u>	License Type <u>Optometrist</u>	
Phone Number (<u>561</u>) <u>542-0144</u>	Email Address <u>pizzisfl@msn.com</u>	

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Andriana K Foster
Signature of Course Provider

2/7/2017

Date

SECO 2017 Course Application

Name of Program: SECO 2017

Sponsor of Event: SECO International

Dates of Program: March 1-5, 2017

Location of Program: Georgia World Congress Center in Atlanta, GA

Name of Course: Optovue OCT Learning Lab

Date of Course: March 3, 2017

Time of Course: 2:45PM – 3:45PM

Format of Course: Hands-on learning lab

Course Speaker: Joseph Pizzimenti, OD, FAAO

Course Description and Objectives: This workshop will provide clinically useful information about the Optovue family of optical coherence tomography (OCT) instruments.

1. Discuss the technology, and basic principles of Spectral-Domain OCT.
2. Summarize the procedure of Optovue OCT for diseases of the anterior segment.
3. Explain the procedure of Optovue OCT instruments for diseases of the macula.
4. Discuss the procedure of Optovue OCT for diseases of the vitreous and retina.
5. Understand the Optovue OCT test results and be able to interpret analysis printouts.
6. Apply Optovue OCT in the diagnosis, management, and treatment of vitreo-retinal diseases and treatment of optic nerve diseases, including glaucoma.

Course Outline:

- I. Introduction to Optical Coherence Tomography (OCT)
 - A. Understanding the Principles and Procedure of OCT
 1. What is OCT, and how does it differ from and complement other ophthalmic imaging methods?
 2. How does OCT work? Basic Principles
 - a) Low coherence interferometry

- b) Spectral domain technology
- c) Instrument design and user interface

II. Using OCT to Streamline Workflow and Enhance Patient Care

A. En Face OCT Imaging

- 1. Principles and procedural steps
- 2. Clinical Applications
- 3. Case Examples
 - a) Epiretinal membrane
 - b) Choroidal neovascularization

B. Peripheral Retina: Wide-field OCT Imaging

- 1. Principles and procedural steps
- 2. Clinical Applications
- 3. Case Examples
 - a) Retinoschisis
 - b) Retinal detachment

C. Anterior Segment OCT Imaging

- 1. Principles and procedural steps
- 2. Clinical Applications

D. Central Retina/Macula

- 1. Principles and procedural steps
- 2. Clinical Applications
- 3. Case Examples
 - a) Macular edema
 - b) Geographic atrophy

E. OCT Angiography

- 1. Principles and procedural steps
- 2. Clinical Applications
- 3. Case Examples

- a) Exudative AMD
- b) Polypoidal choroidopathy

III. Application and Interpretation of Optovue OCT Test Results

- A. What am I looking at?
- B. How to interpret Retinal Thickness Map Analysis
- C. How to interpret Cross Sectional Retinal Cuts
 - 1. Anatomy of the cross section
 - a) Vitreoretinal interface structures
 - b) Inner retina structures c) Outer retina structures d) RPE
 - e) Choroid
 - (1) Deep Retinal/Enhanced Depth Imaging
 - (2) Swept Source Imaging
- D. How to interpret Optic Nerve and Neural Data
 - 1. Optic nerve cross section and disc analysis
 - 2. Retinal nerve fiber layer (RNFL) thickness analysis
 - 3. Ganglion Cell Complex Analysis (GCC)
 - 4. Case Examples
 - a) Glaucoma: assessing change over time with RNFL and GCC Trend Analysis
 - b) Congenital optic nerve disease
 - (1) Optic nerve pit
 - (2) Optic nerve drusen
 - c) Acquired optic nerve disease
 - (1) Disc Edema

SECO 2017 Presents: Optovue OCT Workshop

Joseph J. Pizzimenti, OD, FAAO
University of the Incarnate Word
pizzimen@uiwtx.edu

Financial Disclosures

- I have received honoraria from:
 - EyePromise
 - Thrombogenics
 - Genentech
- I have received consulting fees from:
 - Zeiss
 - EyePromise
- My financial relationships have no influence on the content of this course.

Course Goal

- To provide hands-on experience with optical coherence tomography (OCT), emphasizing the operation, capabilities, and clinical applications of Optovue OCT instrumentation.

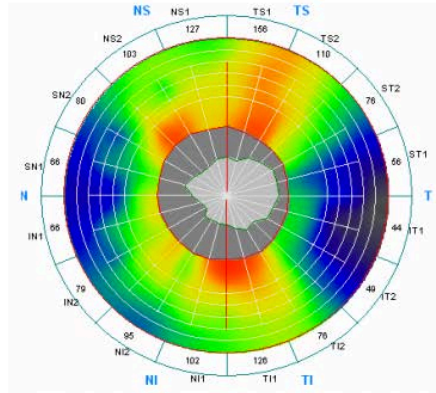


OCT Instruments: Optovue

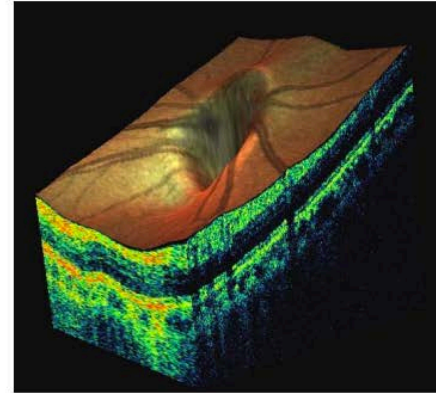
- Established in December, 2003.
- Founded by some of the pioneers of Optical Coherence Tomography.
- The RTVue was brought to market in 2006.



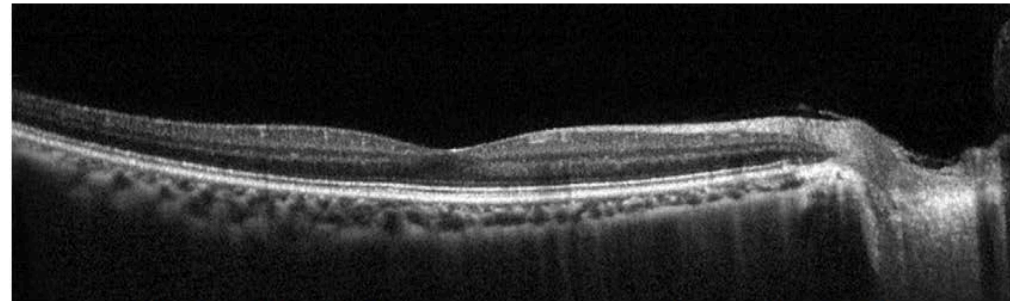
RTVue



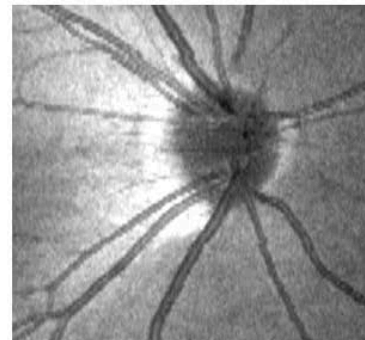
Normal- Disk/Rim/Cup & RNFL thickness map



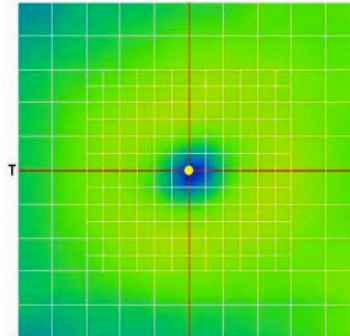
3D animation of disk



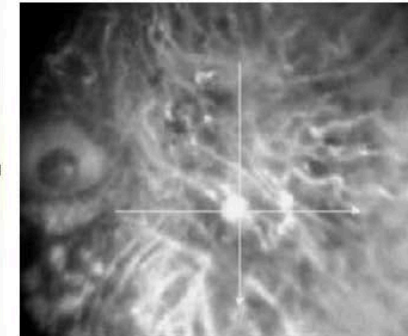
Histology like retina image—deep scan penetration into the choroid



SLO image of the optic



Normal- Dense macular full
33 retinal thickness map

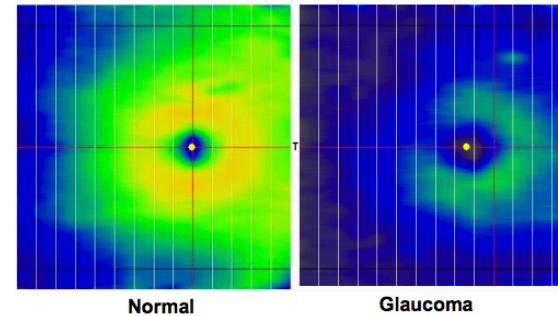


High quality near IR image

Glaucoma and Retina Analysis

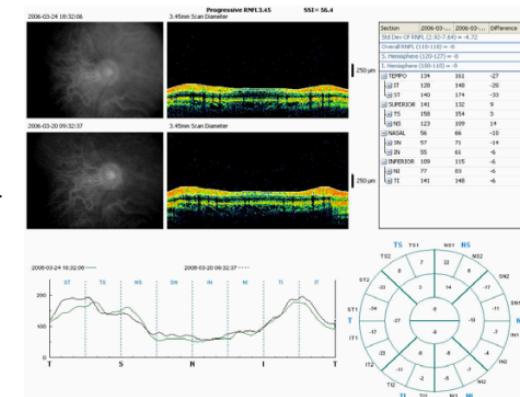
- Complete Disk/Rim/Cup Analysis
- RNFL Map
- RNFL thickness at 3.45mm diameter

* www.AIGStudy.net

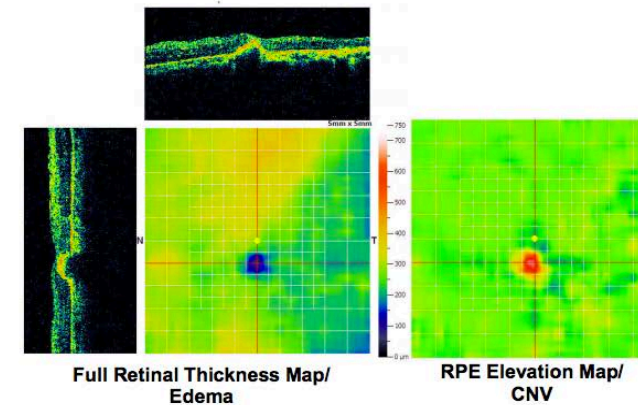


- Evaluation of ganglion cell loss with **full retina** or **inner retina** thickness map
- Asymmetry assessment of superior and inferior hemispheres from thickness differential map - full or inner retina

- Progressive and asymmetry analysis
- High repeatability with average data from 4 consecutive high density scans

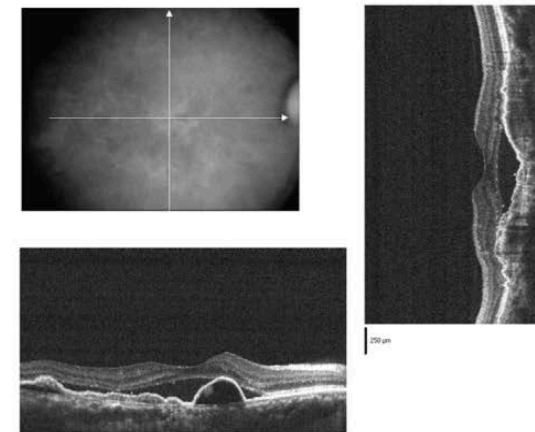


RTVue: Retina Analysis

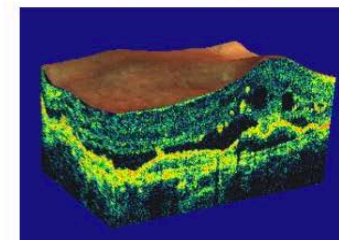


Multiple map views of Pathology:

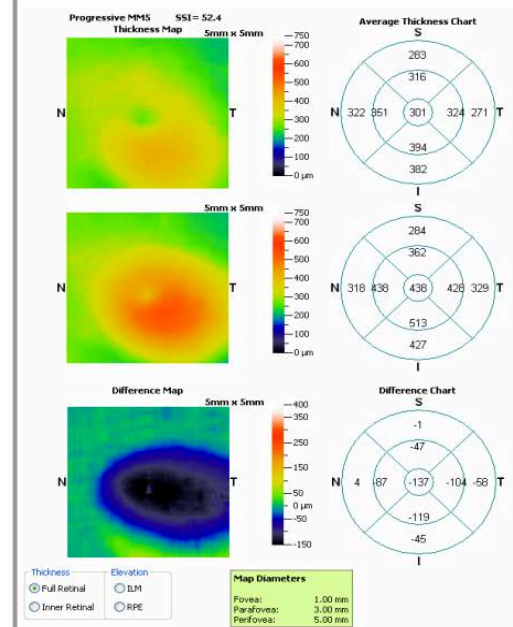
- Full retinal & Inner retinal thickness maps
- ILM & RPE elevation maps
- Visualize fine detail beneath the map
- Quantify the height and size of lesions
- High quality near IR fundus image allows visualization of sub-surface lesions



Visualize pathology in 3D



Quantitative progressive comparison after treatment

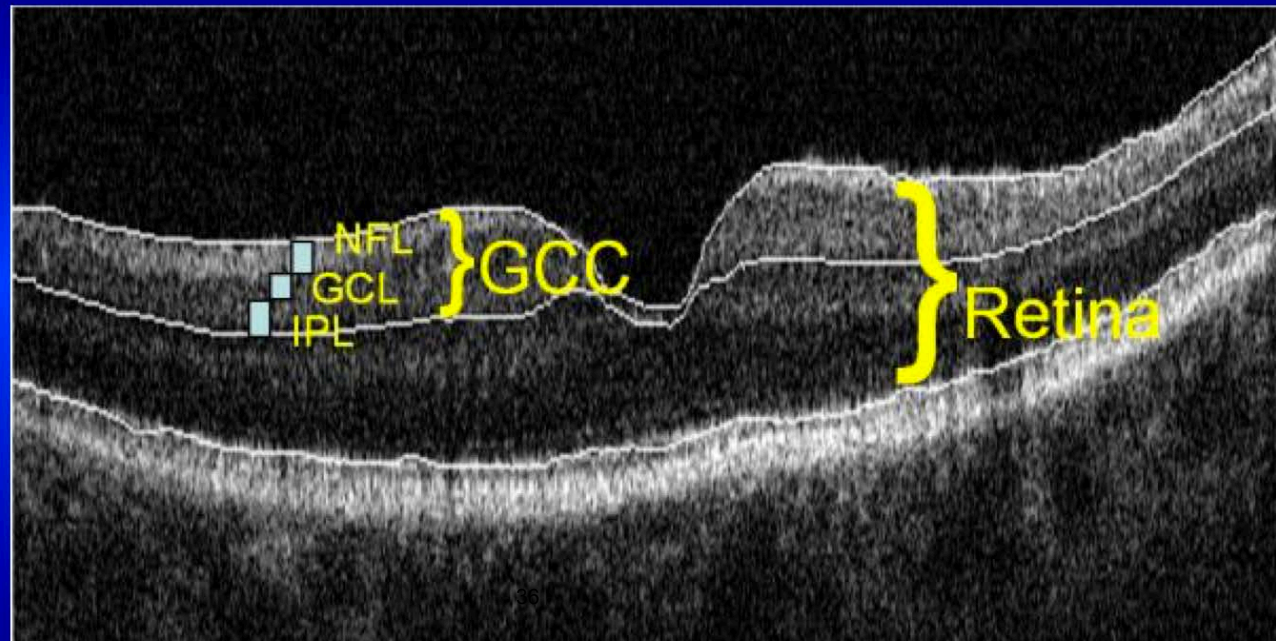


GCC

The ganglion cell complex (ILM – IPL)

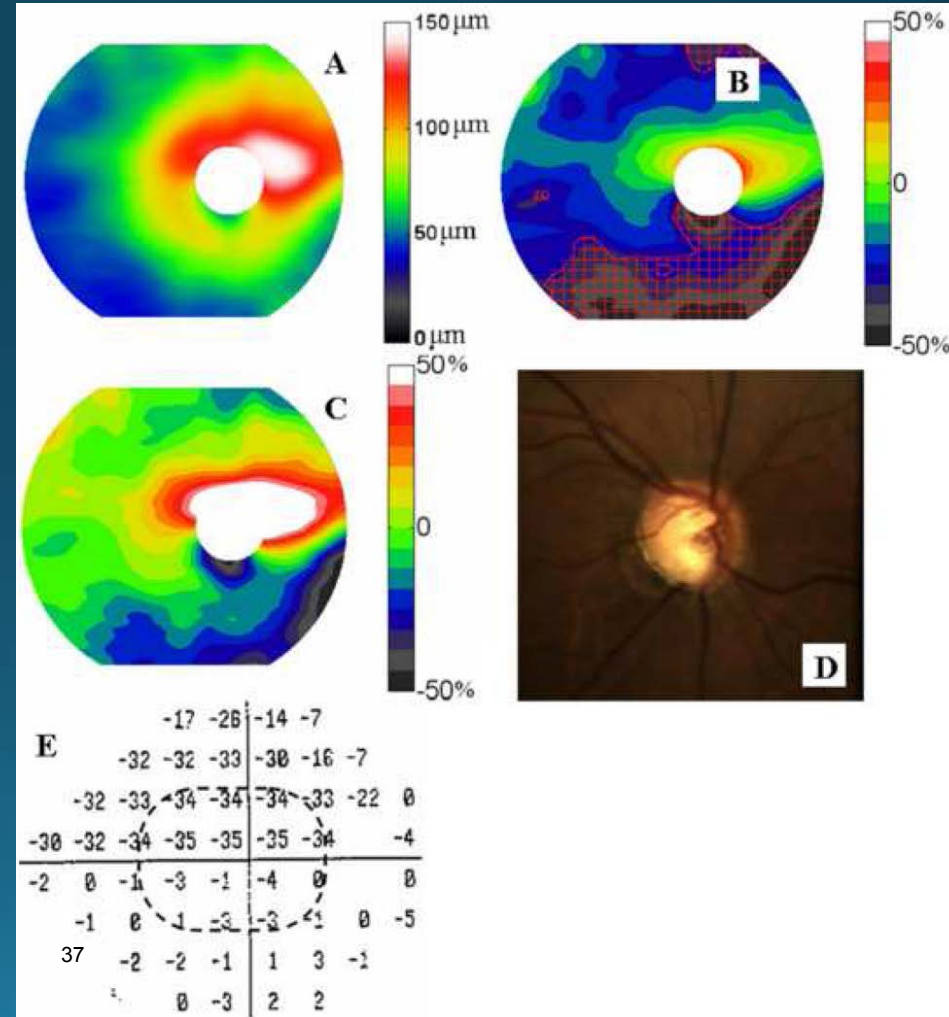
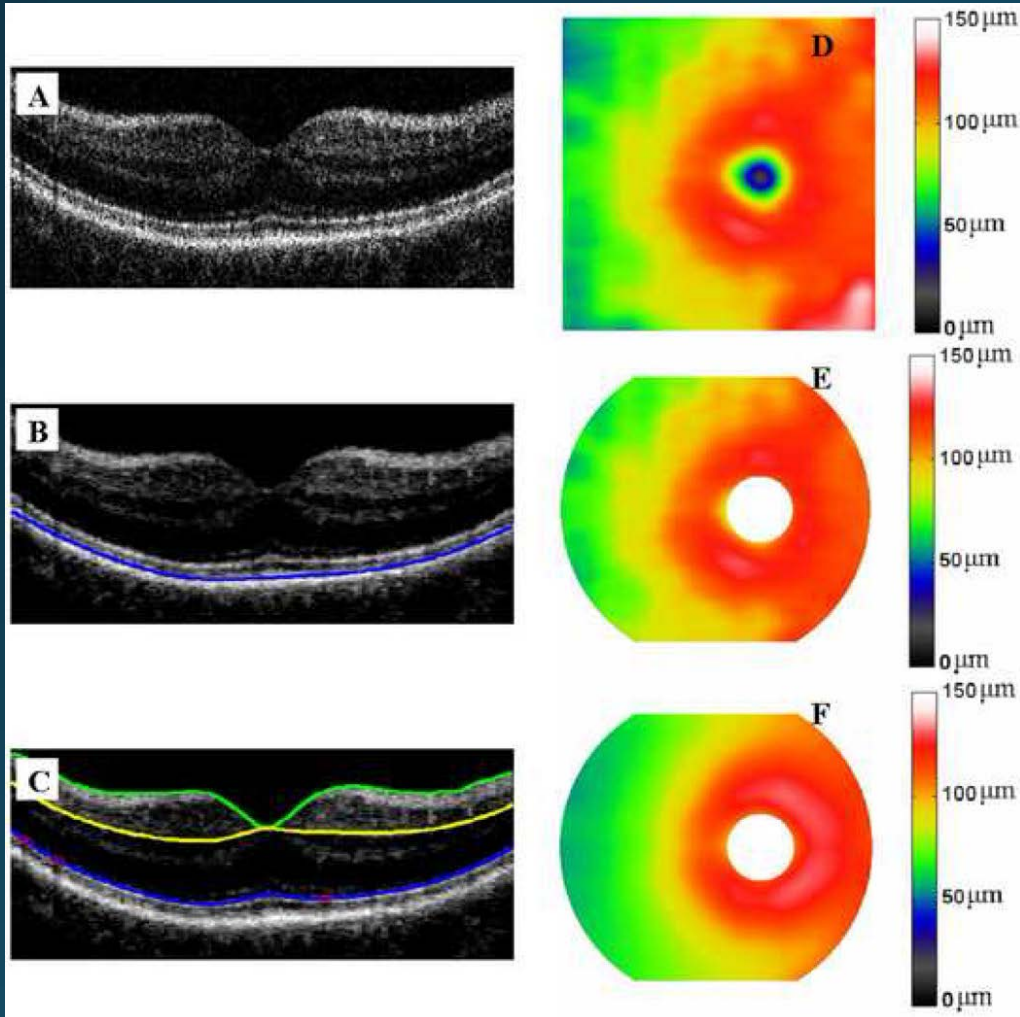
Inner retinal layers provide complete Ganglion cell assessment:

- Nerve fiber layer (g-cell axons)
- Ganglion cell layer (g-cell body)
- Inner plexiform layer (g-cell dendrites)



RTVue:

Ganglion cell complex (GCC) thickness. The GCC was defined as the combination of nerve fiber, ganglion cell, and inner plexiform layers.

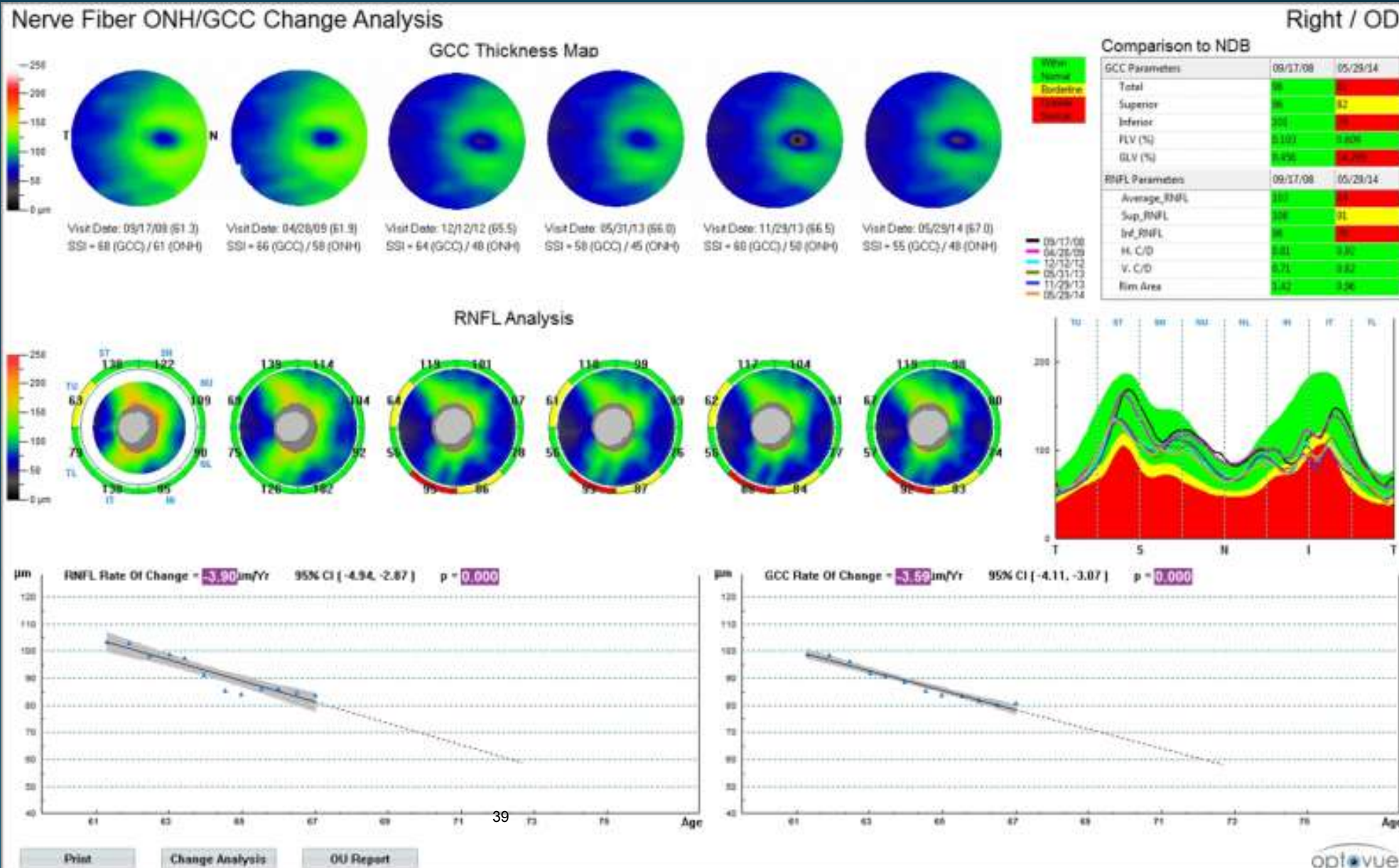


Avanti

- The next generation of RTVue.
- Visualize Peripheral Pathology with 3D Widefield Cube
- Assess Change Over Time with RNFL and GCC Trend Analysis
- Calculate IOL Power in Post-Refractive Surgery Patients with Total Cornea Power.

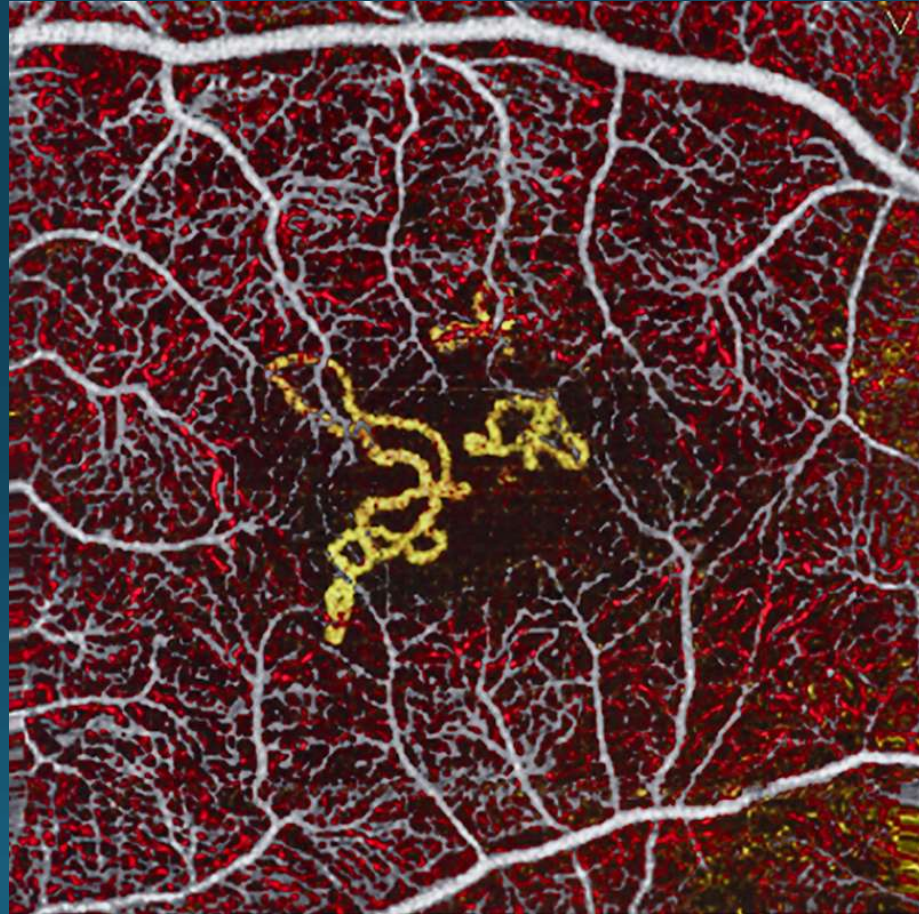


Avanti: Progression Analysis



Avanti: Angiovue

Case Example: CNV



OCT Instruments



iVue and iFusion: Features

- Includes Retina, Optic Disc and Anterior Segment Applications
- Create the System You Need with OCT + Fundus Camera Option



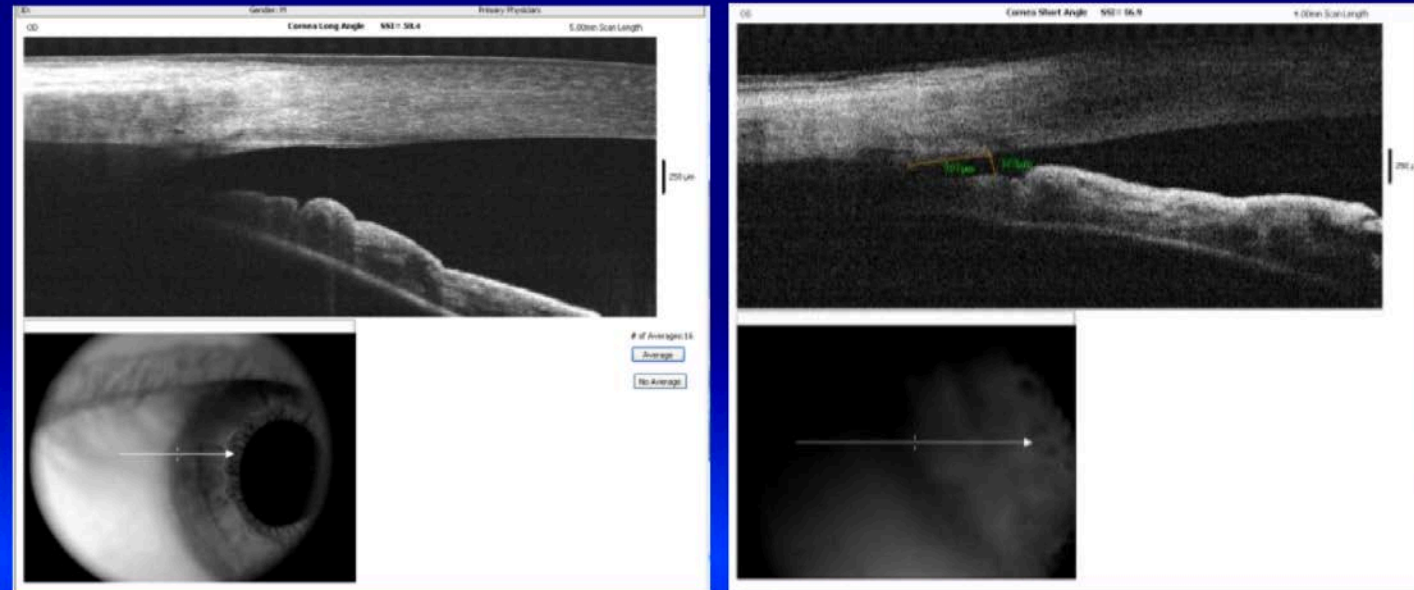
iScan: Features

- Tech-friendly
 - performs all of the focus and alignment operations while talking the patient through the entire exam.
- Space-saving
 - tabletop system that is approximately the same size as a desktop compute; portable
- Two configurations
 - Essential (may be upgraded)
 - Comprehensive
 - Scan options identical to iVue



Anterior Segment OCT

Angle Measurements

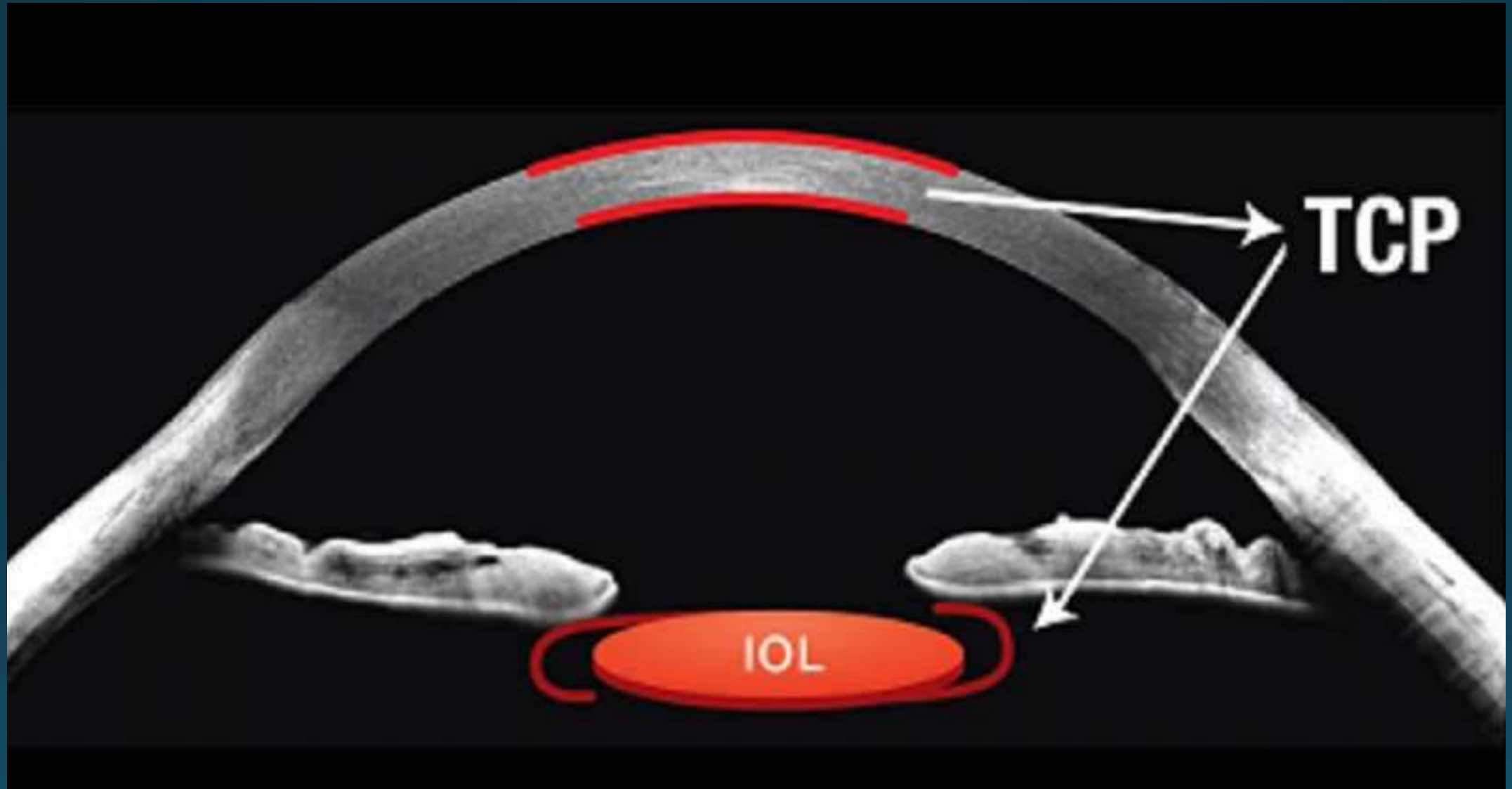


Normal

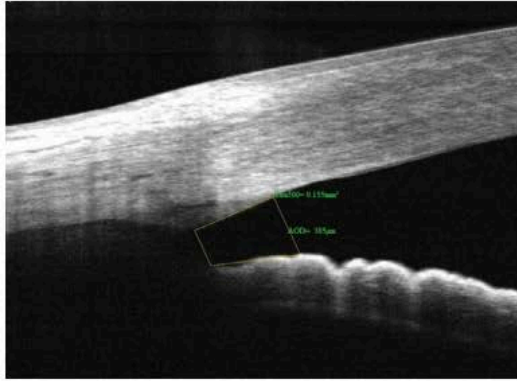
Narrow

Cornea Advance Software

- Anterior Segment OCT
- Cornea B-Scan: Visualize and measure corneal cross sections.
- Angle Scan: Visualize and measure angle parameters with quantification tools.
- Pachymetry Map: Quantify corneal thickness and track change over time.
- Total Cornea Power: Calculate both the front and back surfaces of the cornea to enhance post-refractive IOL calculation for greater confidence in surgical outcomes.

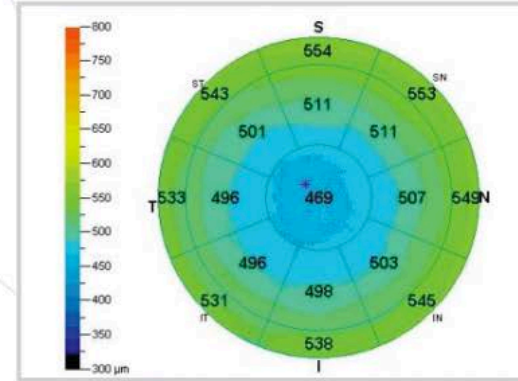


Cornea Advance



Angle Scan

Visualize and measure angle parameters.

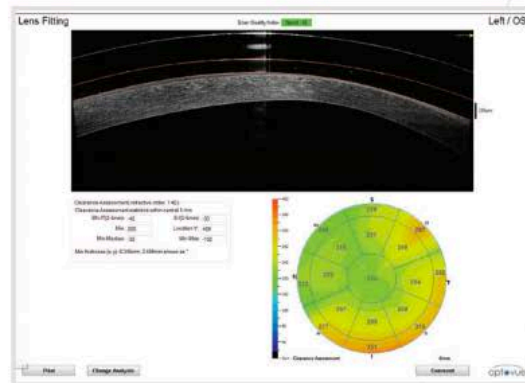


Pachymetry Map

Easily quantify corneal thickness
and track change over time.

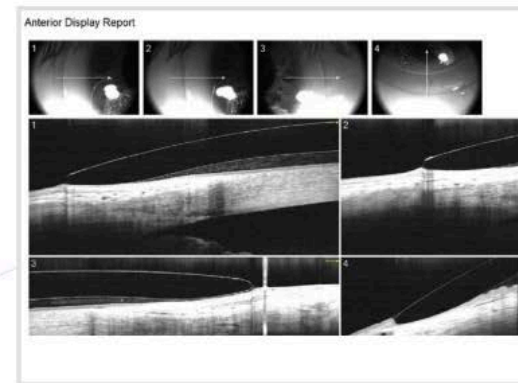
Specialty Contact Lens Fitting

Cornea Advance includes the **exclusive Vault Mapping tool** that enables precise visualization of the lens-to-eye relationship for specialty lens fitting.



Vault Map

Visualize and quantify⁴⁷
central corneal clearance.



Anterior Display Report

Evaluate superior, temporal, inferior and nasal landing zones.

Workshop Instructions

- Be sure to scan and be scanned with each Optovue OCT instrument.
- Work with different software features, especially OCTA and Cornea/Ant Seg.
- I will circulate to answer your questions during the hands-on.

Conclusions

- SD-OCT is here to stay and will one day be as common in our offices as the slit lamp.
- Select an OCT instrument based on your practice needs and future upgrades.
- OCT, along with traditional examination techniques has and will continue to save vision.

Thank you!

- For spending your precious time with me.
- Joe
- pizzimen@uiwtx.edu



Joseph J. Pizzimenti, O.D., F.A.A.O.

Professor University of the Incarnate Word

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Telephone: (561) 883-2718 Home
Mobile: (561) 542-0144
E-mail: Office: pizzimen@uiwtx.edu
Home: pizzisfl@gmail.com

Education

- 1989-1990 **University of Houston**
- Residency included advanced training in Ocular Disease, Primary Care, Low Vision, and Geriatric Optometry
- 1985-1989 **Illinois College of Optometry**
- Doctor of Optometry
- 1981-1985 **Drew University**
- B.A. in Chemistry
-

Professional Experience

- 2016-present **University of the Incarnate Word** **San Antonio, TX**
- Full-time Faculty Member and Attending Optometrist
- 1995-2015 **Nova Southeastern University** **Fort Lauderdale, FL**
- Full-time Faculty Member and Attending Optometrist
- 1998-2000 **West Palm Beach VA Medical Center** **West Palm Beach, FL**
- Attending Optometrist Consultant
- 1990-1995 **Pizzimenti Eye Center** **Elmwood Park, IL**
- Self employed in private optometric practice
- 1989-1990 **University of Houston, College of Optometry** **Houston, TX**
- Resident Faculty
-

Academic Appointments

- 2016-present **University of the Incarnate Word** **San Antonio, TX**
- Professor

1998-2000	West Palm Beach VA Medical Center <ul style="list-style-type: none">• Attending Optometrist	West Palm Beach, FL
1995	Nova Southeastern University <ul style="list-style-type: none">• Initial Appointment as Assistant Professor• Currently Held Rank of Associate Professor	Fort Lauderdale, FL
1989	University of Houston <ul style="list-style-type: none">• Resident Faculty	Houston, TX

Administrative Appointments

2000-2015	Nova Southeastern University College of Optometry <ul style="list-style-type: none">• Director, Interprofessional Education
1998-2000	Nova Southeastern University College of Optometry <ul style="list-style-type: none">• Department Chair, Department of Clinics
1997-1999	Nova Southeastern University College of Optometry <ul style="list-style-type: none">• Chief, Primary Care Clinics
1996-1999	Nova Southeastern University College of Optometry <ul style="list-style-type: none">• Module Director, Primary Care Clinic

Teaching Assignments at Nova Southeastern University

2004-2015	Director and Clinical Preceptor, Diabetes and Macular Disease Service
2000-2015	Guest Lecturer, Geriatric Medicine, NSU College of Osteopathic Medicine
2004-2015	Instructor of Record: Ocular Diseases and Conditions, NSU College of Allied Health
1999-2015	Module Conference Guest Lecturer
1996-2015	Resident Supervisor
1996-2015	Resident Conference Lecturer
1996-2015	Guest Lecturer, Low Vision Rehabilitation
1995-2015	Primary Care Clinic Preceptor
2014-2015	Physical Diagnosis Laboratory Instructor
2001-2002	Diabetes Eye Health Service Preceptor
2000-2001	Guest Lecturer, OTM III
2000-2001	OTM III, IV Laboratory, Guest Instructor
2001 (spring)	OTM IV Laboratory, Instructor
1995-1999	Module Conference Instructor

1996-2015

Low Vision Laboratory, Instructor

Professional Awards and Achievements

- ICO Alumni Achievement Award, 2009
 - World Council of Optometry Senior Fellowship, 2006
 - President's Faculty Scholarship Award Winner, 2001, 2004, 2005
 - Invited Participant, AOA/AO Summer Research Conference, 2002
 - Clinical Preceptor of the Year Teaching Award, 1995-1996, 1996-1997, 1997-1998
-

Professional Service

- President, Optometric Retina Society 2012-present
 - World Council of Optometry Fellowship Committee, 2006-present
 - Chair, Florida Optometric Association Healthy People Committee, 2007-present
 - Course Monitor, American Academy of Optometry, 2010-2013
 - Faculty Liaison, Fellowship of Christian Optometrists, 2005-present
 - Chair, Evaluation and Promotions Committee, 2008, 2010
 - Faculty Liaison, Florida Board of Optometry, 1998-2013
 - Fellow Member, American Academy of Optometry, 1997-present
 - Sustaining Member, AOSA, 1996-present
 - Examiner, National Board of Examiners in Optometry, 1992- Present
 - Member, American Optometric Association, 1989-present
 - Speaker, American Optometric Student Association Annual Conference, 1999
 - Appointed Member, ASCO/SIG Clinic Directors Group, 1997-2000
 - Faculty Liaison, Southern Council of Optometry, 1996-1997
 - Associate Dean Search Committee, 1999, appointed by Dean
 - Committee on Admissions, 1997-2000, appointed by Dean
 - Team Member, Strategic Plan, 1997 COE Report, appointed by Dean
 - Team Member, Clinic Section, 1997 COE Report, appointed by Dean
 - Team Leader, Faculty Section, 1997 COE Report, appointed by Dean
 - Chair, Faculty Council, 1996-1997, 1997-1998, elected
-

Scholarly Activities

Academic Fellowship and Diplomate

- Fellow, American Academy of Optometry, 1997-present
- Fellow, Optometric Retina Society, 2004-present

- Diplomate, American Board of Optometry, 2012-present
- Senior Fellow, World Council of Optometry, 2007
- Senior Advisor, Thesis Committee for V. K. Emery, PhD Candidate, Georgia Institute of Technology, 2004-2006

Manuscript Referee and Journal Editorial Boards

- Clinical Eye and Vision Care, 1995-1998
- Optometry, Journal of the AOA, 1995-2013
- Review of Optometry, 1995-Present
- Internet Journal of Allied Health Science and Practice, 2005-present
- Eye Care Review, 2007-2011
- Advanced Ocular Care, 2013-present

Invited Professional Presentations

- Aging Sensitivity Workshop, Miami Area Geriatric Medical Conference, 1996
- Anterior and Posterior Segment Disease, Miami Area Geriatric Medical Conference, 1996
- Clinical Case Challenges, Nova Southeastern University and FOA, 1997
- Functional Testing in Geriatric Optometry, Miami Area Geriatric Medical Conference, 1997
- Ocular Disease Grand Rounds, AOSA, 1999
- Acquired Macular Disorders, Miami Area Geriatric Medical Conference, 2000
- Functional Testing Workshop, Miami Area Geriatric Medical Conference, 2000
- Low Vision Workshop, Miami Area Geriatric Medical Conference, 2001
- Lid, Adnexa, and Orbital Disease Grand Rounds, Miami Area Geriatric Medical Conference, 2001
- Low Vision Rehabilitation of the Geriatric Patient, Miami Area Geriatric Medical Conference, 2001
- Acquired Maculopathy, Annual Concentrated Ocular Therapeutics Course, Nova Southeastern University, 1996-Present
- Medical Management of Clinical Cases, Annual Concentrated Ocular Therapeutics Course, Nova Southeastern University, 1996-Present
- Glaucoma Workshop, Annual Concentrated Ocular Therapeutics Course, Nova Southeastern University, 1996-Present
- Masters Program in Ocular Disease, Krems, Austria, 2007, 2009
- Several Lectures at Nova Southeastern University Continuing Education Programs, 1996-present
- Geriatric Optometry, Polish Optometric Association, Poznan, Poland, 2007
- An Optometrist's Guide to AMD, Polish Optometric Association, Poznan, Poland, 2007
- Posterior Segment Disease, Masters Program in Ocular Disease, Madrid, Spain, 2007
- Posterior Segment Disease, Masters Program in Ocular Disease, Tel Aviv, Israel, 2010
- Posterior Segment Disease, Masters Program in Ocular Disease, Singapore, 2013

Scientific Advisory Boards and Speaker Alliances

- Alcon
 - Carl Zeiss Meditec
 - MSS Ophthalmic Services
 - Notal Vision
 - Vision Service Plan
 - Zeavision
 - Thrombogenics
 - Nicox
-

Published Abstracts and Scientific Poster Presentations

- Multiple Sclerosis Masquerading as Infectious Optic Neuropathy. Joseph Pizzimenti. Optometry - Journal of the American Optometric Association 06/2008; 79(6): 310–311.
- “Steroid Blindness” in an Older Male With Ischemic Vascular Disease. Joseph Pizzimenti. Optometry - Journal of the American Optometric Association 06/2008; 79(6): 324.
- Electrooculography and Optical Coherence Tomography Reveal Late-Onset Best Disease. Ravie Makati, Diana Shechtman, Eulogio Besada, Joseph J Pizzimenti. Optometry and vision science: official publication of the American Academy of Optometry 09/2014.
- New Technologies Enable Earlier Detection of Exudative Age-Related Macular Degeneration. E. Sanders, D. Schectman, J. Pizzimenti, J. Arnaeo. Optometry - Journal of the American Optometric Association, Volume 78, Issue 6, Pages 294-294, 2007.
- Amblyopia? Don't bet on it! T. Sagmiller, J. Pizzimenti, S. Rowe, Optometry - Journal of the American Optometric Association, Volume 77, Issue 6, Pages 276-277, 2007.
- Multifocal Electroretinography Reveals Late-Onset Cone Dystrophy. J. Pizzimenti, A. Woods, L. Vollmer, M. Fendick. Optometry - Journal of the American Optometric Association, Volume 78, Issue 6, Pages 292-293, 2007.
- Retinal Microstructure Imaging in the Enhanced S-Cone Sensitivity Syndrome. J. Pizzimenti, T. Sagmiller. Optometry - Journal of the American Optometric Association, Volume 78, Issue 6, Pages 295-295, 2007.
- Comparison of Perimetry, Contrast Sensitivity, and Visual Acuity in Patients with Diabetes. Pizzimenti, J. et.al, AOA, 2004**
- Hemianopic Anosognosia Associated With Calcarine Cortex Infarct, Pizzimenti, J. and Szlyk, J., AOA 2001
- SWAP and Nerve Fiber Analysis in the Management of Papilledema, Pizzimenti, J., Falco, L., and Kabat, A, AOA 2001
- Emergency Room Medicamentosa Retards Healing of Corneal Abrasion: Valdes, D. and Pizzimenti, J., SECO 2001
- Bilateral Asymmetric Papilledema Secondary to Cerebrovascular Malformation, Falco, L., Pizzimenti, J. and Kabat, A., SECO 2001

- Special Management Considerations for Recurrent Corneal Erosion on a Patient With Oculocutaneous Albinism and Epithelial Basement Membrane Disease, Carroll, E. and Pizzimenti, J., SECO 2001
 - Homonymous Hemianopic Hypoplasia: A Case Report, Pizzimenti, J. and Reynolds, S., AAO 2000
 - Treatment of Herpes Simplex Lid Lesions with Topical Penciclovir, Pizzimenti, J., Espejo, A., and Dominguez, V., AAO 2000
 - Steroid Induced Glaucoma and Cataract Secondary to Application of Topical Corticosteroid to Eyelids, Booras, K., and Pizzimenti, J., AAO 2000
 - Radiologic Findings in Metastatic Carcinoma to the Orbit, Pizzimenti, J., Zimmelman, S., and Bernardo, A., AAO 2000
 - Central Serous Chorioretinopathy Following Epidural Steroid Injection, Pizzimenti, C. and Pizzimenti, J., AAO 2000
 - Primary Care and Low Vision Rehabilitation of the Angioid Streaks Patient, Canavan, K. and Pizzimenti, J., SECO 2000
 - Metastatic Carcinoma to the Lacrimal Gland, Bernardo, A. and Pizzimenti, J., SECO 2000
 - Acquired Vertical Alternating Nystagmus Associated With Manifest Latent Nystagmus, Shallo-Hoffmann, J., Visco, F., Ficarra, A., Pizzimenti, J., and Erbe, L., INOS 2000
 - Differential Diagnosis of an Elevated Choroidal Mass, Mollega, R.A., and Pizzimenti, J., SECO 1997
 - Accommodative Response to PRIO Computer Vision Tester Versus Printed Text, Sorkin, R., Reich, L., and Pizzimenti, J., COVD, October, 2001
-

Research Activities

- Accommodative Response to PRIO Computer Vision Tester Versus Printed Text, Sorkin, R., Reich, L., and Pizzimenti, J., IRB approved, non-funded
- The Effect of Lutein on the Incidence of Age-related Macular Degeneration in a Non-AMD Older Study Population, Pizzimenti, J., Gorman, N., Crossman, S., Ficarra, IRB approved, non-funded
- Eye Health and Vision Care for Patients with Diabetes: Comparing Usual Care to a Targeted Intervention in a Randomized Controlled Trial, Wagner, H., Pizzimenti, J., Daniel, K., Pandya, N., IRB approved, funded
- Relationship Between Fitness Levels and Eye Health in Individuals with Type 2 Diabetes, Stern, D., Pizzimenti, J., IRB approved, funded
- An Investigation of Modalities of Feedback, Oliver, P., Jacko, J., Pizzimenti, J., IRB approved, funded
- The Study of the Effectiveness of Rehabilitation and Wellness Programs for People Living With Multiple Sclerosis: A Randomized Controlled Trial, PI: Lou, J. Collaborators: Kelleher, W., Oliver, P., and Pizzimenti, J., IRB approved, funded

Research Fellowships, Awards, and Grants

President's Faculty Scholarship Award, Nova Southeastern University, 2001
The Study of the Effectiveness of Rehabilitation and Wellness Programs for People Living With Multiple Sclerosis: A Randomized Controlled Trial

President's Faculty Scholarship Award, Nova Southeastern University, 2004
Eye Health and Vision Care for Patients with Diabetes: Comparing Usual Care to a Targeted Intervention in a Randomized Controlled Trial

President's Faculty Scholarship Award, Nova Southeastern University, 2005 Relationship Between Fitness Levels and Eye Health in Individuals with Type 2 Diabetes, National Science Foundation, 2003

An Investigation of Modalities of Feedback

PI: P. Oliver, OD, MS

Co-investigator: J. Pizzimenti, OD, J. Jacko, PhD

Publications

Electrooculography and Optical Coherence Tomography Reveal Late-Onset Best Disease.
Ravie Makati, Diana Shechtman, Eulogio Besada, Joseph J Pizzimenti . Optometry and vision science: official publication of the American Academy of Optometry 09/2014;

The importance of vitamin D in systemic and ocular wellness. Stuart P. Richer, Joseph J. Pizzimenti.
Journal of Optometry. 01/2013; 6(3):124–133.

The "Double-Layer Sign": In Vivo Imaging of Polypoidal Choroidal Vasculopathy. Jamie M St Martin, Julie Rodman, Joseph J Pizzimenti, Eva Duchnowski. Optometry and vision science: official publication of the American Academy of Optometry 10/2013.

Central corneal thickness measurements obtained with anterior segment spectral domain optical coherence tomography compared to ultrasound pachymetry in healthy subjects.
Lori Vollmer, Joseph Sowka, Joseph Pizzimenti, Xinha Yu, Optometry, 2012

Use of multifocal ERG and OCT for diagnosing Stargardt's disease. Lori A Vollmer, Diana L Shechtman, Albert D Woods, Joseph J Pizzimenti Clinical and Experimental Optometry 05/2011; 94(3):309-13.

Serpiginous choroiditis in a herpes-positive patient. Julie Rodman, Joseph Pizzimenti
Optometry and vision science: official publication of the American Academy of Optometry 03/2011; 88(6):776-80.

Cystoid macular edema as a result of immune-recovery uveitis. Richard Guzak, Julie Rodman, Joseph Pizzimenti. Optometry and vision science: official publication of the American Academy of Optometry 02/2011; 88(2):E344-51

In vivo diagnostic imaging of ocular toxocariasis. Julie Rodman, Joseph Pizzimenti Clinical and Experimental Optometry 04/2009; 92(2):146-9.

Wagner H, Pizzimenti J, Daniel K, Pandya N, Hardigan P. Eye on Diabetes: A Multidisciplinary Patient Education Intervention. The Diabetes Educator (In press). 2008

- Pelino C, Pizzimenti J. Factor V Leiden Gene Mutation: A Clinical Perspective on Ocular and Systemic Sequelae of Thromboembolic Disease. *Eye Care Review*, December 2007, pp. 29-34.
- Bade, A. Pizzimenti, J. Interdisciplinary Management of Diabetic Eye Disease: A Global Approach to Care. *The Internet Journal of Allied Health Sciences and Practice*. Jan 2007, Volume 5 Number 1.
- Leonard V, Jacko J, Pizzimenti J. An investigation of handheld device use by older adults with age-related macular degeneration. *Behaviour and Information Technology*, Volume 25, Number 4, July-August 2006, pp. 313-332(20).
- H. Abdal, J. Pizzimenti, C. Purvis. The eye in sleep apnea syndrome. *Sleep Medicine*, Volume 7, Issue 2, Pages 107-115, 2006.
- Pizzimenti, Joseph J, Nickerson, Maritza M., Pizzimenti, Claire E., Kasten-Aker, Ann G. Selective Laser Trabeculoplasty for Intraocular Pressure Elevation After Intravitreal Triamcinolone Acetonide Injection. *Optometry & Vision Science*. 83(7):421-425, July 2006.
- Shechtman D, Reynolds S, Pizzimenti J. AMD Gets A New Image: Early detection of exudative (wet) age-related macular degeneration. *Review of Optometry*. August 2007.
- Pizzimenti JJ, Daniel, KP: Central Serous Chorioretinopathy After Epidural Steroid Injection, *Pharmacotherapy* 2005;25(8):1141-1146.
- Pizzimenti, J. Roberts, E. The low vision rehabilitation service. Part two: Putting the program into practice. *The Internet Journal of Allied Health Sciences and Practice*. July 2005. Volume 3, Number 3.
- Pizzimenti JJ, Gao, H, Zimmerman, SS: Atypical Radiologic Findings in Demyelinating Optic Neuritis, *Journal of the American Osteopathic Association* (In review)
- Pizzimenti, JJ: A New Paradigm in Continuing Professional Education: Implications for Optometry, *Optometric Education* 2005; 30(3):91-94.
- Leonard V, Jacko J., Pizzimenti, J. An exploratory investigation of handheld computer interaction for older adults with visual impairments. *Proceedings of the 7th international ACM SIGACCESS conference on Computers and accessibility*. Baltimore, MD, USA. SESSION: Evaluating accessibility table of contents Pages: 12 – 19. Year of Publication: 2005.
- Paula J. Edwards, Leon Barnard, V. Kathlene Emery, Ji Soo Yi, Kevin P. Moloney, Thitima Kongnakorn, Julie A. Jacko, François Sainfort, Pamela R. Oliver, Joseph Pizzimenti, Annette Bade, Greg Fecho, Josephine Shallo-Hoffmann. Strategic design for users with diabetic retinopathy: factors influencing performance in a menu-selection task. *Proceedings of the 6th international ACM SIGACCESS conference on Computers and accessibility*. Atlanta, GA, USA. SESSION: Designing for individuals with visual impairments. Pages: 118 – 125. Year of Publication: 2004.
- Reynolds, SA, Woods, AD, Pizzimenti JJ: Bilateral Internuclear Ophthalmoplegia as the Presenting Sign of Multiple Sclerosis: An Interdisciplinary Approach to Diagnosis and Management, *The Internet Journal of Allied Health Sciences and Practice*, July 2004, Volume 2 Number 3.
- Pizzimenti JJ: The Low Vision Rehabilitation Service Part One: Understanding Low Vision. *The Internet Journal of Allied Health Sciences and Practice*. 2003. Volume 1 Number 1.
- Pizzimenti JJ: Annual Symposium on Diabetes: A Comprehensive Update for the Primary Health Care Provider"-Review. *The Internet Journal of Allied Health Sciences and Practice*. 2003. Volume 1 Number 2.

Sorkin RE; Reich LN; Pizzimenti J: Accommodative response to PRIO Computer Vision Tester versus printed text. Optometry 2003 Dec; 74(12):782-6.

State Board Of Optometry Licensing

Florida, 2000, Active

Texas, 2016, Active

Memberships/Associations/ Professional Appointments

American Academy of Optometry Fellow

Florida Optometric Association

Optometric Retina Society, Fellow

American Board of Optometry, Diplomate



STATE BOARD OF OPTOMETRY
2450 DEL PASO ROAD, SUITE 105, SACRAMENTO, CA 95834
P (916) 575-7170 F (916) 575-7292 www.optometry.ca.gov



CONTINUING EDUCATION COURSE APPROVAL APPLICATION

\$50 Mandatory Fee

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule, a detailed course outline and presentation materials (e.g., PowerPoint presentation). Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

Course Title <u>Zeiss Cirrus OCT</u>	Course Presentation Date <div>03/03/2017</div>
---	---

Course Provider Contact Information

Provider Name <u>Andriana</u> <u>Foster</u> <u>K</u> (First) (Last) (Middle)			
Provider Mailing Address Street <u>4661 N Shallowford Rd</u> City <u>Atlanta</u> State <u>GA</u> Zip <u>30338</u>			
Provider Email Address <u>afoster@secostaff.com</u>			
Will the proposed course be open to all California licensed optometrists?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

Instructor Name <u>Ian</u> <u>Gaddie</u> <u>Ben</u> (First) (Last) (Middle)		
License Number <u>520309</u>	License Type <u>Optometrist</u>	
Phone Number <u>(502) 423-8500</u>	Email Address <u>ibgaddie@bellsouth.net</u>	

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Andriana K Foster
Signature of Course Provider

2/7/2017

Date

SECO 2017 Course Application

Name of Program: SECO 2017

Sponsor of Event: SECO International

Dates of Program: March 1-5, 2017

Location of Program: Georgia World Congress Center in Atlanta, GA

Name of Course: Zeiss Cirrus OCT

Date of Course: March 3, 2017

Time of Course: 6:30AM-7:30AM

Format of Course: Lecture course

Course Speaker: Ian Ben Gaddie, OD, FAAO

Course Description and Objectives: This course will review the most common applications of the Zeiss Cirrus OCT for diagnosing and managing glaucoma. We will review the OCT report, looking for artifacts in scans as well as clinical correlation of cases where the Cirrus OCT was utilized in the management of actual glaucoma patients and suspects.

1. To understand how to read an OCT RNFL and GCC printout
2. To identify artifacts and issues with scan acquisition to recognize the limitations of some scans diagnostically.
3. To use case examples to demonstrate how OCT imaging is used to make the diagnosis and monitor for progression in glaucoma suspects and patients.

Course Outline:

Types of OCT in use today in the United States

- a. Time Domain OCT (TD OCT)
 - i. Lower resolution
 - ii. Slower scan speed
 - iii. Shallow depth/no enhancement available

- b. Spectral Domain OCT (SD OCT)
 - i. Faster scan speeds
 - ii. Exponential increased detail features
 - iii. Greater resolution than TD OCT (2-3 microns)
 - iv. Image registration used for true progression analysis
- c. Swept Source OCT (SS OCT)-pre clinical approval work
 - i. Nerve and posterior pole in one scan feature
 - ii. Greater resolution than SD OCT (2-3 microns)
- II. Clinical utilization of SD OCT in glaucoma management
 - a. RNFL Measurement
 - i. RNFL Thickness
 - 1. By Quadrant
 - 2. By Clock-hour
 - ii. Guided progression analysis utilizing image registration and lock in
 - iii. Reference database for comparisons
 - b. ONH Tomographical measurements
 - i. Neuro-retinal rim measurements
 - ii. Vertical integrated rim volume
 - iii. Optic nerve size
 - 1. Helpful for identifying disc asymmetry secondary to optic nerve head size differences
 - c. Ganglion Cell Layer Analysis (GCC)
 - i. Segmenting out the Ganglion cell bodies and dendrites
 - 1. Some companies include the axons which represent the RNFL
 - 2. Some companies only do full retinal thickness which is not as sensitive or specific as GCC.
 - ii. Look out for other retinal diseases that can cause retinal thinning and artefactual GCC thinning
 - 1. Retinal dystrophies
 - 2. Choroidal dystrophies
 - 3. AMD

4. VMT
5. ERM
- iii. Using progression analysis to look at GCC progression
- iv. Correlating GCC and RNFL for diagnostic purposes
- III. Case series on utilization of OCT and reading OCT reports
 - a. Case 1
 - b. Case 2
 - c. Case 3
 - d. Case 4

Speaker's CV:

CURRENT: [4001 Fox Meadow Way](#)
 Prospect, KY 40059
 (502) 429-5544
ibgaddie@bellsouth.net

LICENSURE: Oklahoma Lic. # 2216
 • Anterior Segment Laser Certified
 Kentucky Lic. #1374 DT

EDUCATION: • Laser Certified
 University of Kentucky 1989-1993
Bachelor of Science

University of Alabama at 1993-1997
 Birmingham School of Optometry
Doctor of Optometry-May 1997

RESIDENCY: Ocular Disease Residency
 Triad Eye Medical Clinic and Cataract Institute, Tulsa OK
 Northeastern State University 1997-1998
 College Of Optometry

FELLOWSHIP: Medical Glaucoma and Laser Therapy
Triad Eye Medical Clinic, Cataract and Laser Institute
Northeastern State University 1998-1999
College of Optometry
Tulsa and Tahlequah, Oklahoma

CURRENT: Gaddie Eye Centers Louisville, KY
Owner and Director July 1999 – Current

SECO 2017 Course Application

Name of Program: SECO 2017

Sponsor of Event: SECO International

Dates of Program: March 1-5, 2017

Location of Program: Georgia World Congress Center in Atlanta, GA

Name of Course: Zeiss Cirrus OCT Learning Lab

Date of Course: March 4, 2017

Time of Course: 1:15PM – 2:15PM

Format of Course: Hands-on learning lab

Course Speaker: Ian Ben Gaddie, OD, FAAO

Course Description and Objectives: This lab will offer hands on experience with the Zeiss Cirrus including image acquisition and interpretation. Common pitfalls in imaging and experience reading the reports will be emphasized.

1. To understand how to read an OCT printout and clinical correlation
2. To understand how to acquire and image with the Zeiss Cirrus
3. How to identify image artifacts and ways to improve image acquisition.

Course Outline:

- I. Learning about the basics of the Zeiss Cirrus OCT
 - a. Operating the instrument
 - b. Scan protocols
 - c. Patient alignment
- II. Different protocols for glaucoma
 - a. RNFL
 - b. Tomography
 - c. Ganglion cell analysis
 - d. Progression analysis

- III. Identification and elimination of artifacts in obtained scans
 - a. Blinking
 - b. Floaters
 - c. Vitreous Syneresis
 - d. Small pupil artifact
 - e. Large Optic nerves
 - f. Small optic nerve
 - g. Parapapillary atrophy
 - h. Choroidal Crescents
 - i. Scleral crescents
 - j. High myopia
 - k. Laser macular grid
- IV. Patient examples
 - a. Glaucoma suspect with high IOP
 - b. Glaucoma Suspect with normal IOP
 - c. Glaucoma suspect with normal IOP and large ONH OU
 - d. Glaucoma suspect with asymmetric ONH cupping attributable to difference in optic nerve size
- V. Imaging practice of all attendees
- VI. Summary and review
- VII. Question and Answer session

Speaker CV:

CURRENT: [4001 Fox Meadow Way](#)
Prospect, KY 40059
(502) 429-5544
ibgaddie@bellsouth.net

LICENSURE: Oklahoma Lic. # 2216

- Anterior Segment Laser Certified
Kentucky Lic. #1374 DT
- Laser Certified

EDUCATION: University of Kentucky 1989-1993
Bachelor of Science

University of Alabama at 1993-1997
 Birmingham School of Optometry
Doctor of Optometry-May 1997

RESIDENCY: Ocular Disease Residency
 Triad Eye Medical Clinic and Cataract Institute, Tulsa OK
 Northeastern State University 1997-1998
 College Of Optometry

FELLOWSHIP: Medical Glaucoma and Laser Therapy
 Triad Eye Medical Clinic, Cataract and Laser Institute
 Northeastern State University 1998-1999
 College of Optometry
 Tulsa and Tahlequah, Oklahoma

CURRENT: Gaddie Eye Centers Louisville, KY
 Owner and Director July 1999 – Current

Zeiss Cirrus OCT Learning Lab

1-hour course Outline-Lab

COPE Category-Glaucoma/Lab

Ian B. Gaddie, O.D.

July 29, 2016

- I. Learning about the basics of the Zeiss Cirrus OCT
 - a. Operating the instrument
 - b. Scan protocols
 - c. Patient alignment
- II. Different protocols for glaucoma
 - a. RNFL
 - b. Tomography
 - c. Ganglion cell analysis
 - d. Progression analysis
- III. Identification and elimination of artifacts in obtained scans
 - a. Blinking
 - b. Floaters
 - c. Vitreous Syneresis
 - d. Small pupil artifact
 - e. Large Optic nerves
 - f. Small optic nerve
 - g. Parapapillary atrophy
 - h. Choroidal Crescents
 - i. Scleral crescents
 - j. High myopia
 - k. Laser macular grid
- IV. Patient examples
 - a. Glaucoma suspect with high IOP

- b. Glaucoma Suspect with normal IOP
 - c. Glaucoma suspect with normal IOP and large ONH OU
 - d. Glaucoma suspect with asymmetric ONH cupping attributable to difference in optic nerve size
- V. Imaging practice of all attendees
- VI. Summary and review
- VII. Question and Answer session

Zeiss Cirrus OCT SECO 2017

Ben Gaddie, OD
Gaddie Eye Centers
Louisville, KY

Financial Disclosures:

Ian Benjamin Gaddie, O.D.

- Allergan
- Alcon
- Aerie
- Sensimed
- Reichert
- Diopsys
- Bausch and Lomb
- Akorn
- Sun
- Zeiss
- Heidleberg
- Shire

OCT Utility in Glaucoma

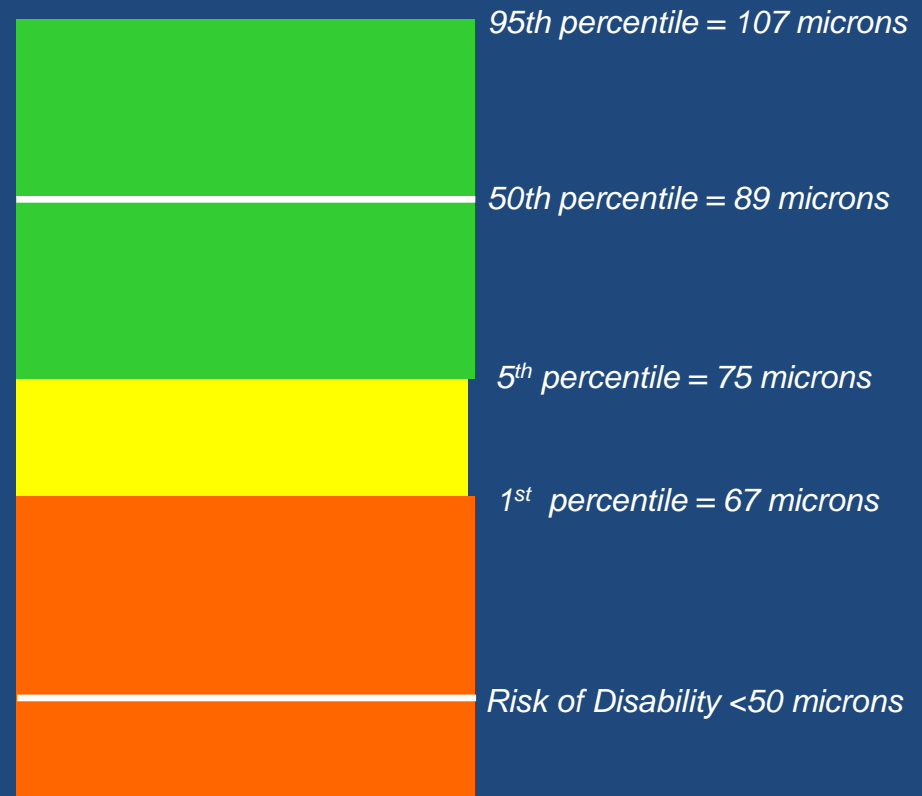
- RNFL Analysis
 - RNFL Asymmetry
- Ganglion Cell Layer Analysis
- Optic Nerve Size
 - Optic Nerve Asymmetry
- Normative Databases
- Neuroretinal Rim Tomography
- RNFL Progression (not discussed here)



OCT and Progression

- *Just like perimetry, the average patient can lose a third of his/her RNFL or neuro-retinal rim and still be inside the OCT normal range.*
- *Normal person losses 2um/decade due to aging*

Normal ranges for Average RNFLT



¹ Carl Zeiss Meditec. Cirrus HD-OCT: How to read the Cirrus Reports. .

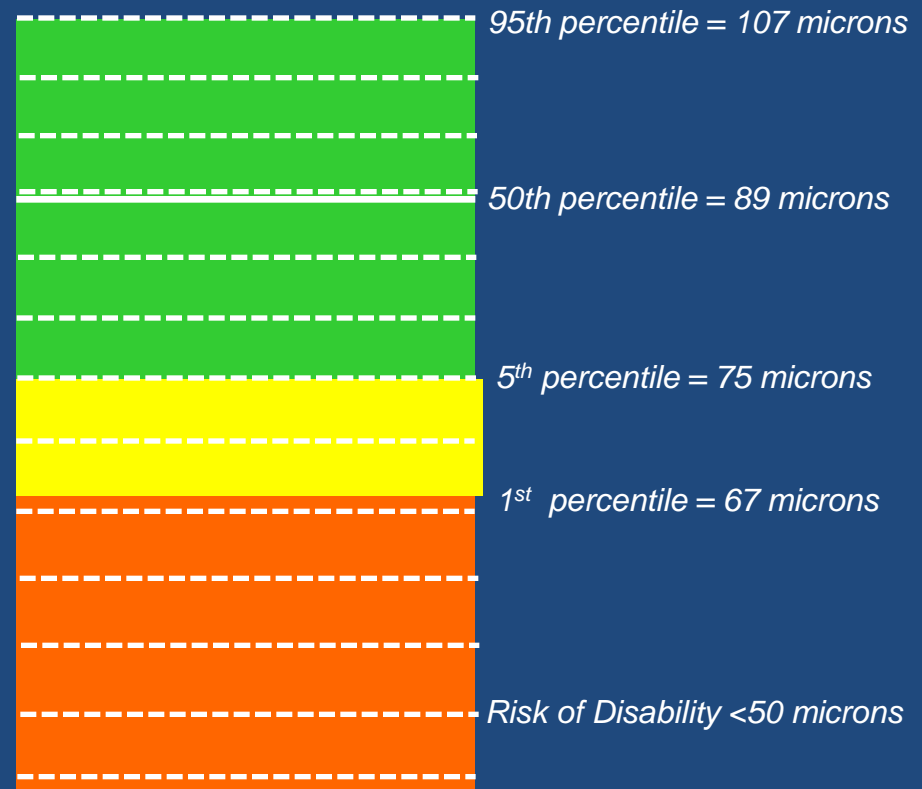
Values shown are for a 69 year old normal.¹

SDOCT measurements are highly reproducible.

2-4 Steps in Range

Normal significance Limits for Average RNFLT

- We can measure multiple steps of statistically significant change while a glaucoma suspect still is in the green normal range.*



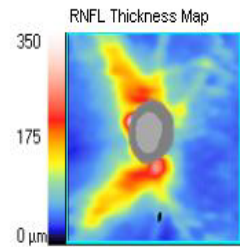
- Leung et al. Ophthalmology 2009;116:1257*
- Roh et al. Ophthalmology 2013;120:969*
- Wong et al. Optom Vis Sci 2014;92*
- Matlatch et al, IOVS Sep 2014 .*

Values shown are for a 69 year old normal.

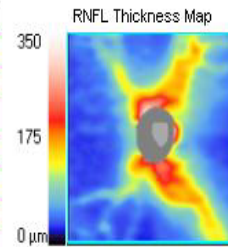
ONH and RNFL OU Analysis: Optic Disc Cube 200x200

OD

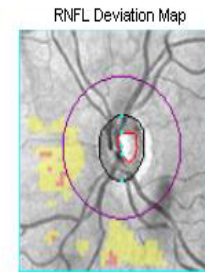
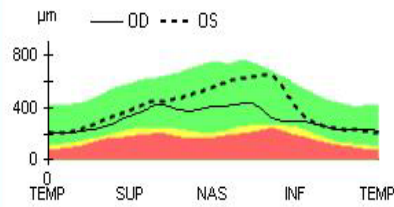
OS



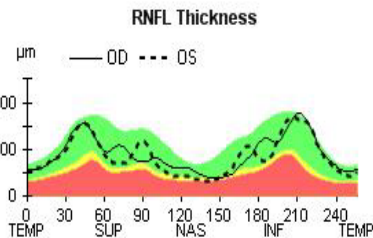
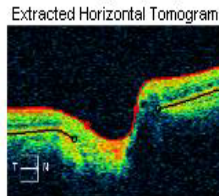
	OD	OS
Average RNFL Thickness	91 μm	86 μm
RNFL Symmetry	90%	
Rim Area	1.37 mm^2	1.37 mm^2
Disc Area	2.24 mm^2	1.71 mm^2
Average C/D Ratio	0.62	0.44
Vertical C/D Ratio	0.66	0.46
Cup Volume	0.275 mm^3	0.091 mm^3



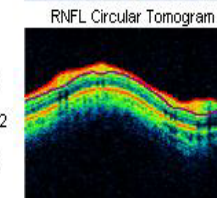
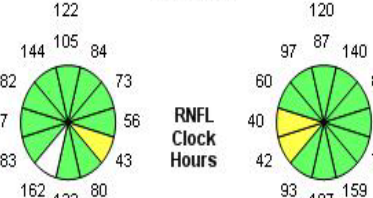
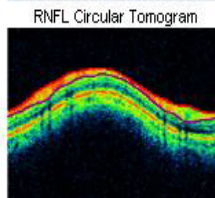
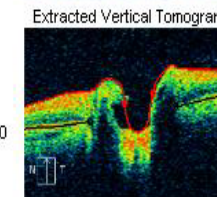
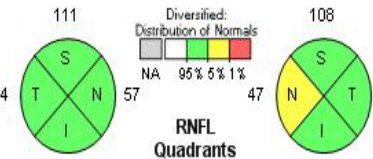
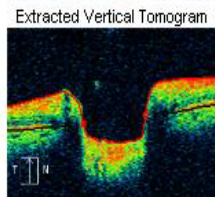
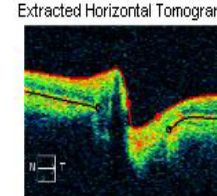
Neuro-retinal Rim Thickness



Disc Center(-0.12,0.21)mm



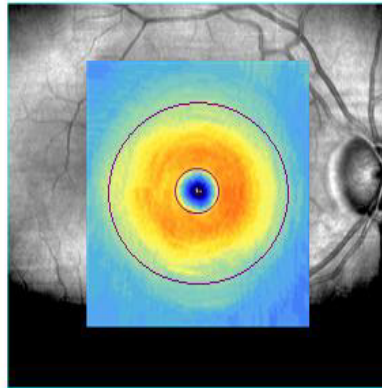
Disc Center(0.00,0.12)mm



Ganglion Cell OU Analysis: Macular Cube 512x128

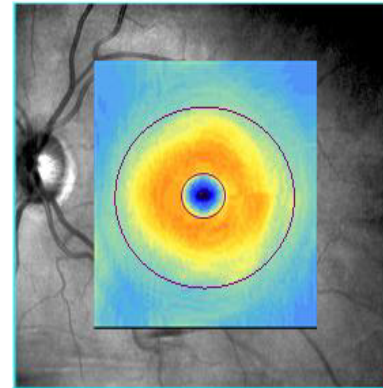
OD ● OS ●

OD Thickness Map



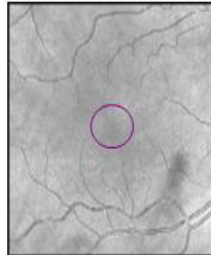
Fovea: 255, 63

OS Thickness Map

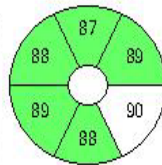


Fovea: 252, 65

OD Deviation Map



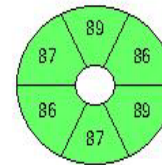
OD Sectors



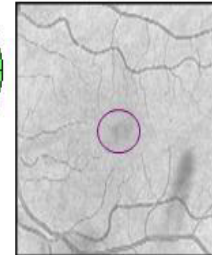
Diversified
Distribution
of Normals

95%
5%
1%

OS Sectors

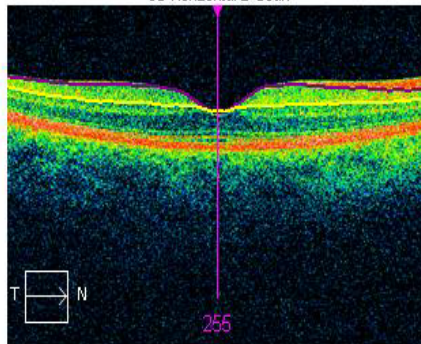


OS Deviation Map

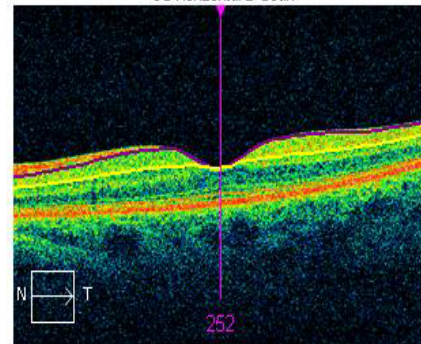


	OD μm	OS μm
Average GCL + IPL Thickness	88	87
Minimum GCL + IPL Thickness	89	88

OD Horizontal B-Scan

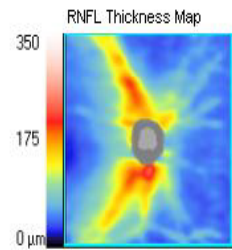


OS Horizontal B-Scan

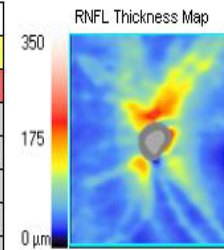


ONH and RNFL OU Analysis: Optic Disc Cube 200x200

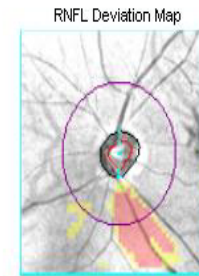
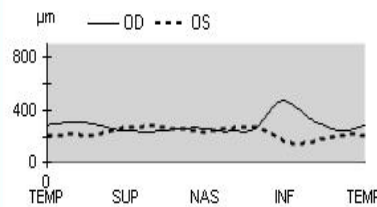
OD ● ● OS



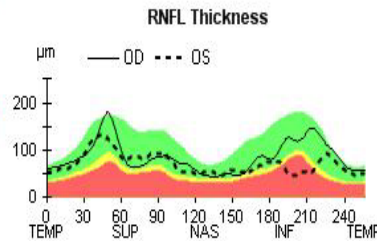
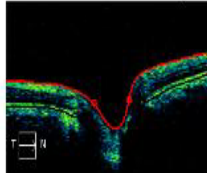
	OD	OS
Average RNFL Thickness	86 μm	72 μm
RNFL Symmetry	57%	
Rim Area	0.88 mm ²	0.64 mm ²
Disc Area	1.23 mm ²	0.97 mm ²
Average C/D Ratio	0.54	0.59
Vertical C/D Ratio	0.45	0.61
Cup Volume	0.115 mm ³	0.127 mm ³



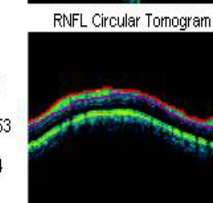
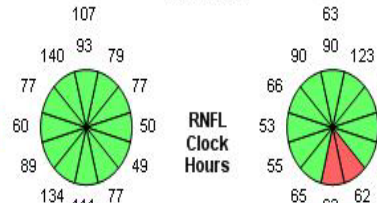
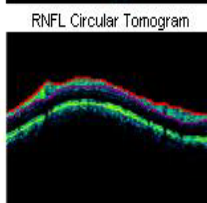
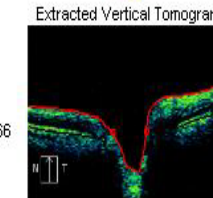
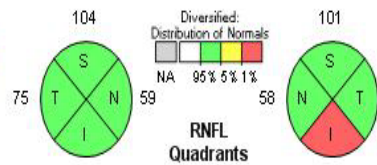
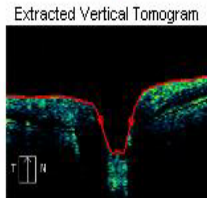
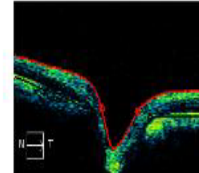
Neuro-retinal Rim Thickness



Disc Center(-0.06,-0.03)mm
Extracted Horizontal Tomogram

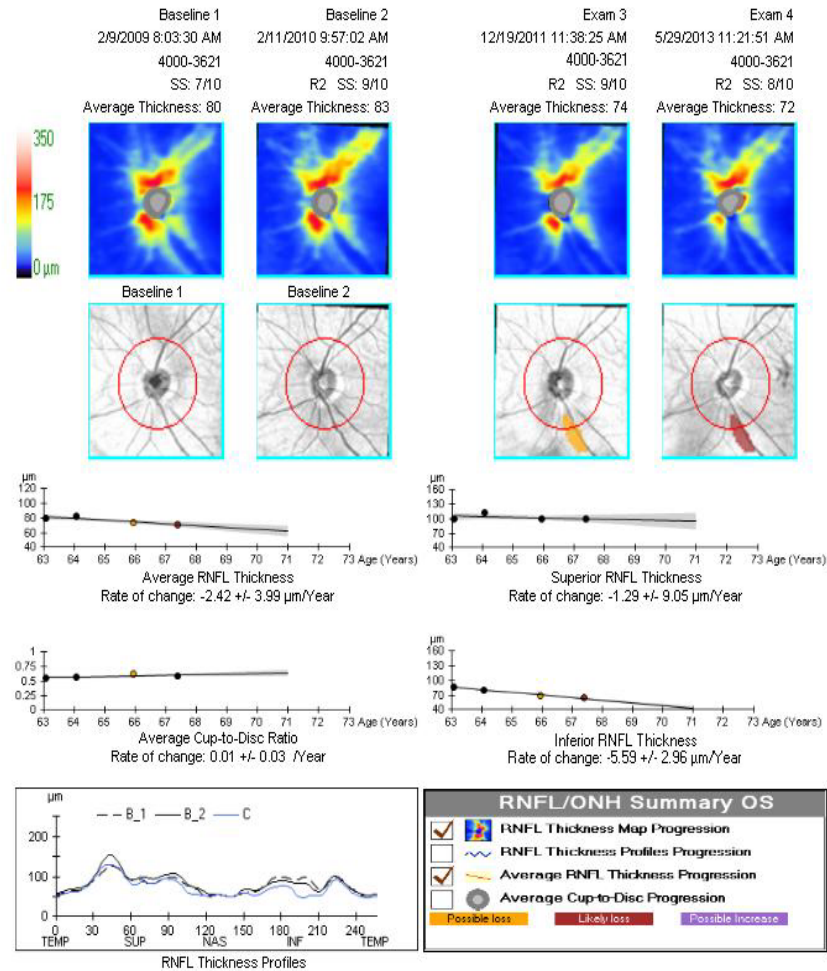


Disc Center(0.00,0.00)mm
Extracted Horizontal Tomogram



Guided Progression Analysis: (GPA™)

OD ☐ OS ☒



Comments

Doctor's Signature

Analysis Edited: 5/29/2013 11:24 AM

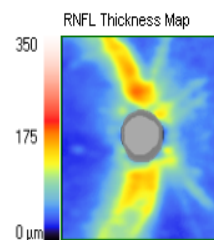
SW Ver: 6.0.2.81
Copyright 2012
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All Rights Reserved
Page 1 of 2

Looking at Disc Asymmetry By Disc Size

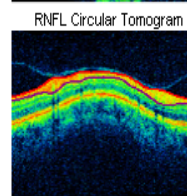
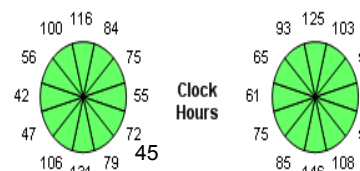
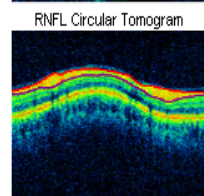
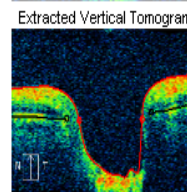
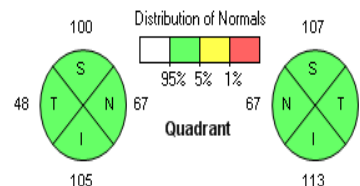
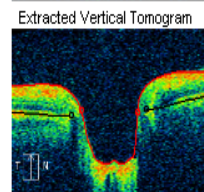
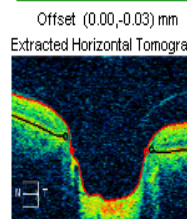
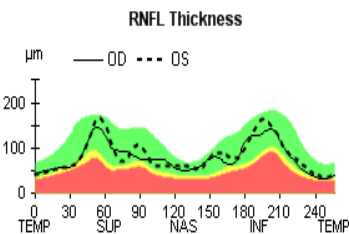
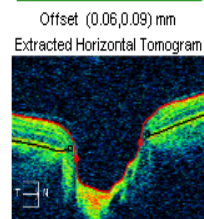
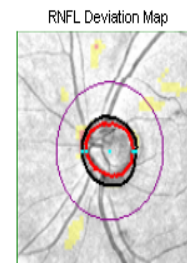
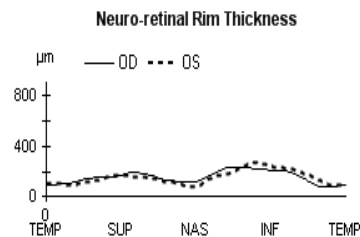
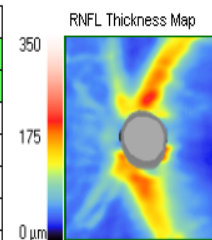
ID: 1213400303 Exam Date: 8/27/2010 8/27/2010 Oculic Eye Centers
 DOB: 4/16/1951 Exam Time: 3:29 PM 3:30 PM
 Gender: Male Technician: Operator, Cirrus
 Doctor: Signal Strength: 9/10 9/10

RNFL and ONH: Optic Disc Cube 200x200

OD ● ● OS



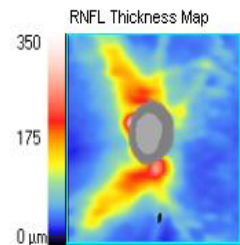
	OD	OS
Average RNFL Thickness	80 μm	84 μm
RNFL Symmetry	95%	
Rim Area	0.70 mm^2	0.78 mm^2
Disc Area	1.95 mm^2	2.42 mm^2
Average C/D Ratio	0.79	0.81
Vertical C/D Ratio	0.75	0.74
Cup Volume	0.746 mm^3	1.119 mm^3



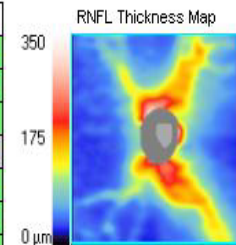
ONH and RNFL OU Analysis: Optic Disc Cube 200x200

OD

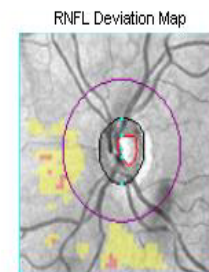
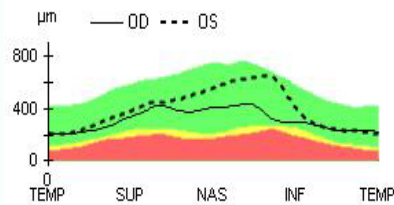
OS



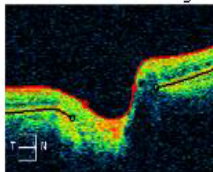
	OD	OS
Average RNFL Thickness	91 μm	86 μm
RNFL Symmetry	90%	
Rim Area	1.37 mm^2	1.37 mm^2
Disc Area	2.24 mm^2	1.71 mm^2
Average C/D Ratio	0.62	0.44
Vertical C/D Ratio	0.66	0.46
Cup Volume	0.275 mm^3	0.091 mm^3



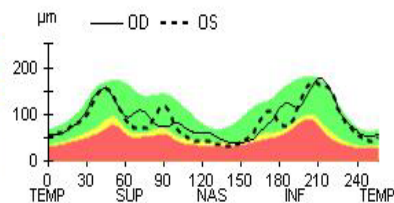
Neuro-retinal Rim Thickness



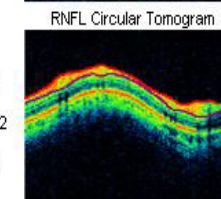
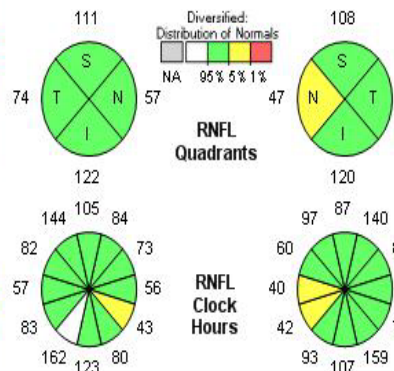
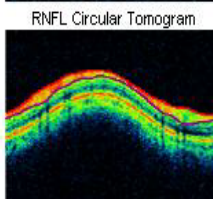
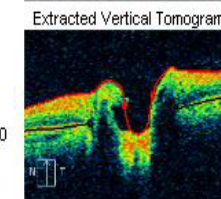
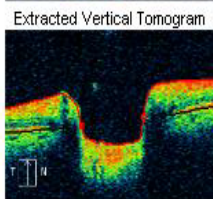
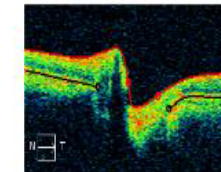
Disc Center(-0.12,0.21)mm
Extracted Horizontal Tomogram



RNFL Thickness



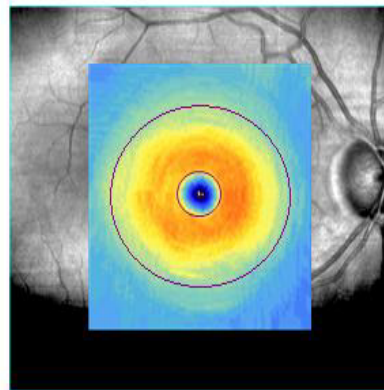
Disc Center(0.00,0.12)mm
Extracted Horizontal Tomogram



Ganglion Cell OU Analysis: Macular Cube 512x128

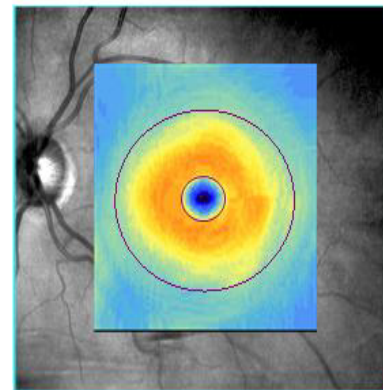
OD ● OS ●

OD Thickness Map



Fovea: 255, 63

OS Thickness Map

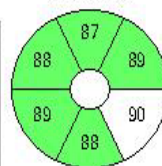


Fovea: 252, 65

OD Deviation Map



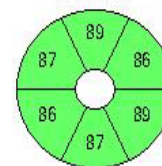
OD Sectors



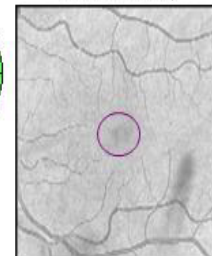
Diversified
Distribution
of Normals

95%
5%
1%

OS Sectors

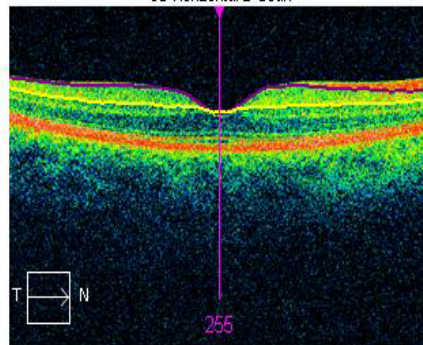


OS Deviation Map

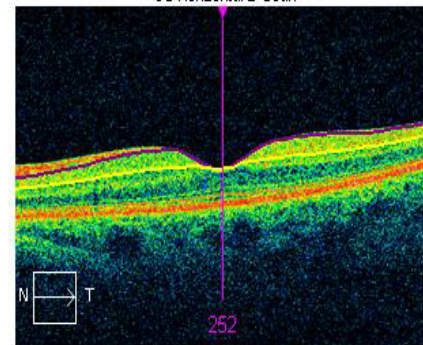


	OD μm	OS μm
Average GCL + IPL Thickness	88	87
Minimum GCL + IPL Thickness	89	88

OD Horizontal B-Scan



OS Horizontal B-Scan



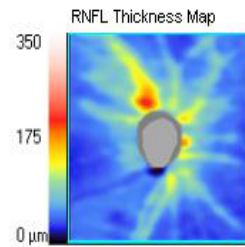
Obvious Case Examples!



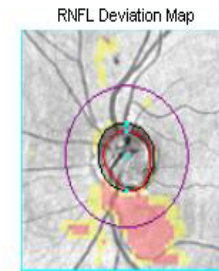
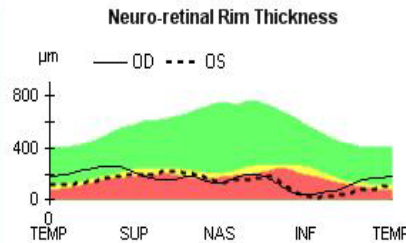
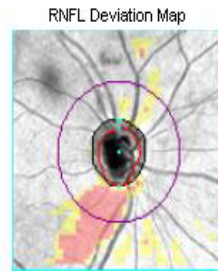
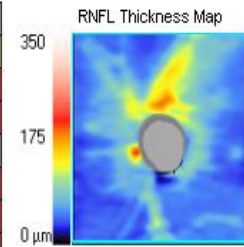


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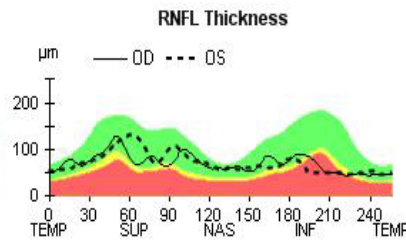
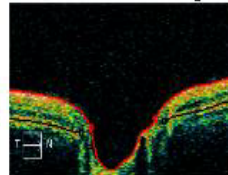
ONH and RNFL OU Analysis: Optic Disc Cube 200x200 OD ● OS ●



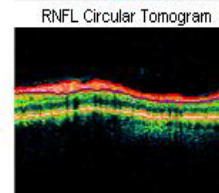
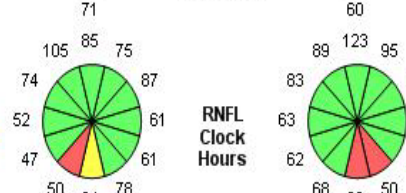
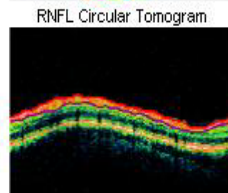
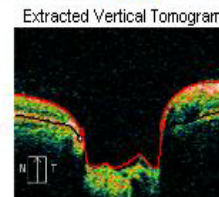
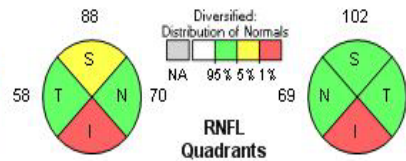
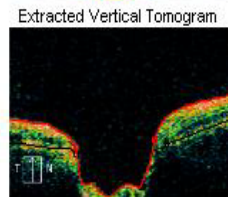
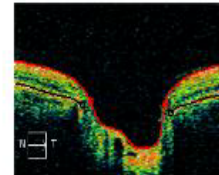
	OD	OS
Average RNFL Thickness	72 μm	72 μm
RNFL Symmetry	66%	
Rim Area	0.72 mm^2	0.64 mm^2
Disc Area	1.95 mm^2	2.10 mm^2
Average C/D Ratio	0.80	0.84
Vertical C/D Ratio	0.87	0.88
Cup Volume	0.642 mm^3	0.781 mm^3



Disc Center(0.00,0.00)mm
Extracted Horizontal Tomogram

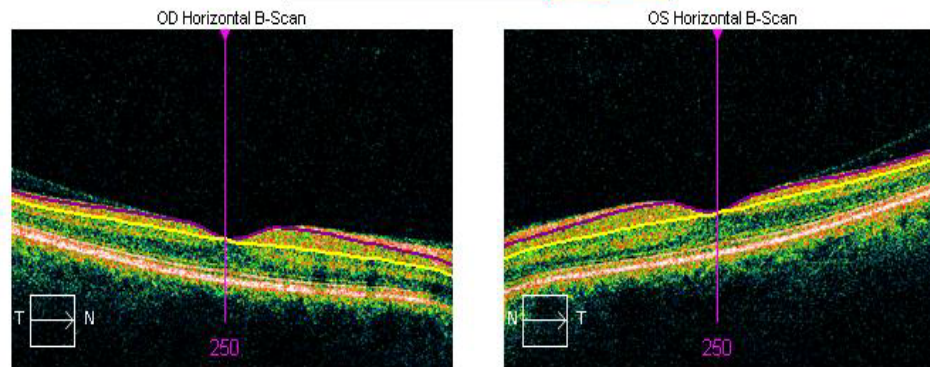
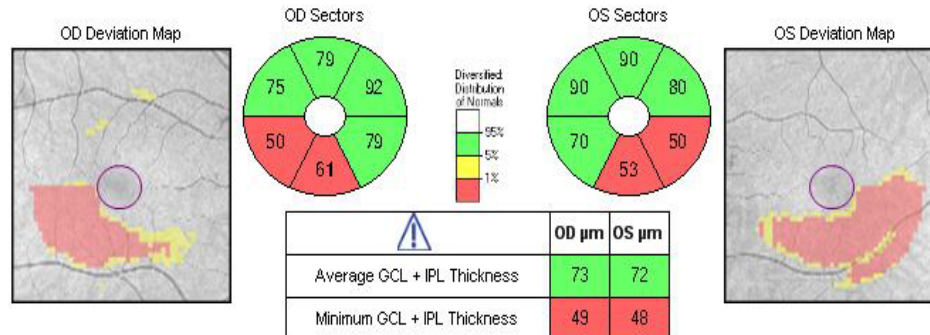
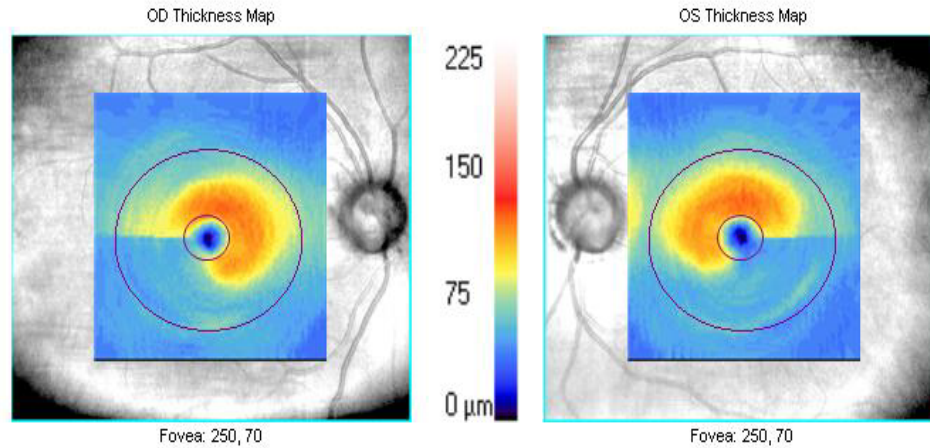


Disc Center(-0.03,-0.12)mm
Extracted Horizontal Tomogram



Ganglion Cell OU Analysis: Macular Cube 512x128

OD ● ● OS

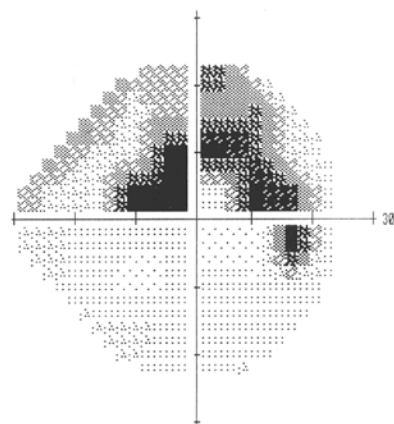
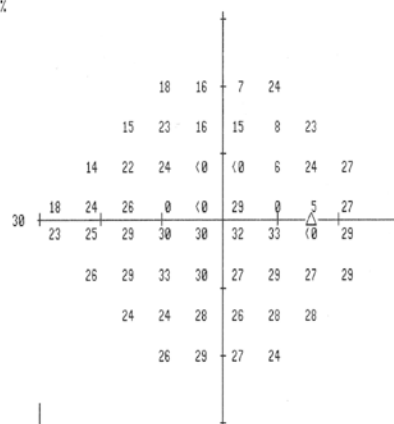


FOVER: OFF

STIMULUS: III, WHITE
BACKGROUND: 31.5 ASB
STRATEGY: SITA-STANDARD

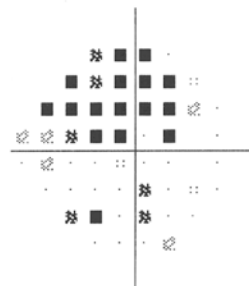
PUPIL DIAMETER:
VISUAL ACUITY:
RX: +4.75 DS DC X

DATE: 06-25-2012
TIME: 2:04 PM
AGE: 60



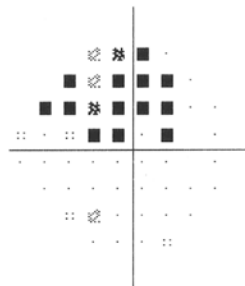
				-9	-11	-20	-2				
				-13	-6	-13	-14	-20	-4		
				-14	-8	-6	-33	-33	-25	-5	-1
-8	-5	-5		-32	-34	-3	-31			-3	
-3	-5	-2	-2	-3		-1	1			-1	
	-3	-2	1	-2		-5	-2	-3	0		
		-6	-6	-3		-5	-2	-2			
			-3	-1		-2	-6				

TOTAL DEVIATION



			-7	-10	-18	-1			
			-12	-5	-12	-12	-19	-3	
			-13	-7	-5	-32	-31	-23	-4
			-7	-4	-3	-30	-33	-1	-30
			-2	-3	0	-1	-1	1	3
				-2	-1	3	-1	-2	1
					-5	-5	-1	-3	-1
						-1	1	-1	-4

PATTERN DEVIATION



GHT
OUTSIDE NORMAL LIMITS

VFI 74%

MD -8.41 DB P < 0.5%

PSD 11.22 DB P < 0.5%

○ < 5%
 ● < 2%
 ■ < 1%
 ■ < 0.5%

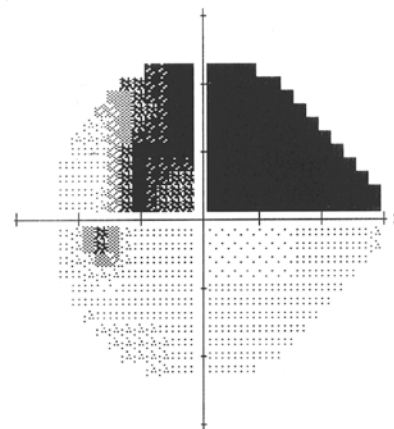
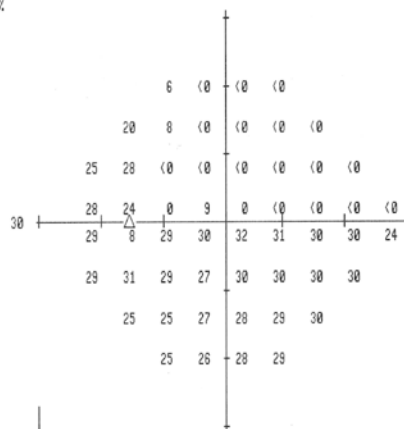
GADDIE EYE CENTERS
7635 SHELBYVILLE ROAD
LOUISVILLE, KY 40222
(502) 423-8500
FAX (502) 339-0571

FOVER: OFF

STIMULUS: III, WHITE
BACKGROUND: 31.5 ASB
STRATEGY: SITA-STANDARD

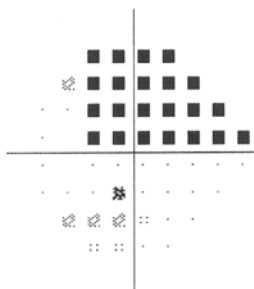
PUPIL DIAMETER:
VISUAL ACUITY:
RX: +4.25 DS DC X

DATE: 06-25-2012
TIME: 2:14 PM
AGE: 60



				-20	-29	-29	-29		
		-7	-21	-31	-31	-31	-30		
	-4	-1	-32	-33	-33	-33	-32	-30	
	-2		-31	-23	-32	-34	-33	-31	-29
-1		-3	-2	-1	-2	-1	0	-3	
-1	1	-2	-4	-2	-2	-1	1		
	-5	-5	-4	-3	-2	0			
		-4	-4	-1	0				

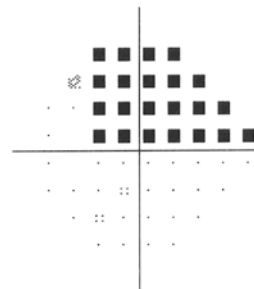
TOTAL DEVIATION



:: < 5%
 ✂ < 2%
 ✂ < 1%
 ■ < 0.5%

$$\begin{array}{cccc|cccc} & & -20 & -28 & -28 & -28 & & \\ & -6 & -20 & -30 & -30 & -30 & -29 & \\ -3 & 0 & -31 & -31 & -32 & -32 & -31 & -29 \\ -1 & & -30 & -22 & -31 & -33 & -32 & -30 & -28 \\ \hline 0 & -2 & -2 & & 0 & -1 & -1 & 1 & -2 \\ 0 & 2 & -1 & -4 & -1 & -1 & 0 & 2 & \\ & -4 & -4 & -3 & & -2 & -1 & 1 & \\ & & -3 & -3 & & -1 & 1 & & \end{array}$$

PATTERN DEVIATION



GHT
OUTSIDE NORMAL LIMITS

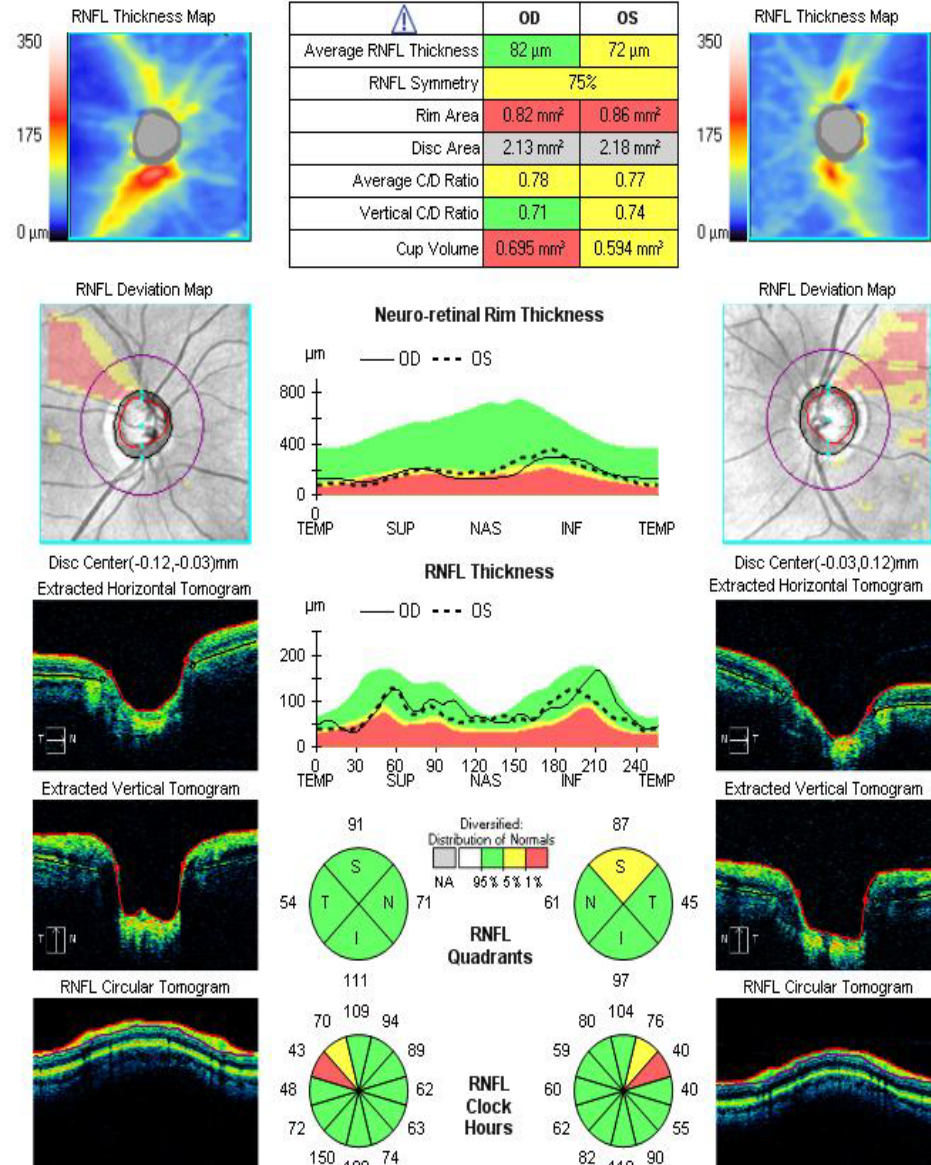
VFI 57%

MD -13.52 DB P < 0.5%

PSD 15.24 DB P < 0.5%

GADDIE EYE CENTERS
7635 SHELBYVILLE ROAD
LOUISVILLE, KY 40222
(502) 423-8500
FAX (502) 339-0571

ONH and RNFL OU Analysis: Optic Disc Cube 200x200 OD ● ● OS

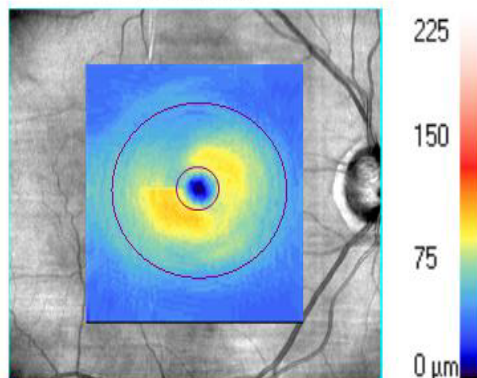


Gender: Male Serial Number: 4000-3621 4000-3621
 Doctor: Signal Strength: 10/10 9/10

Ganglion Cell OU Analysis: Macular Cube 512x128

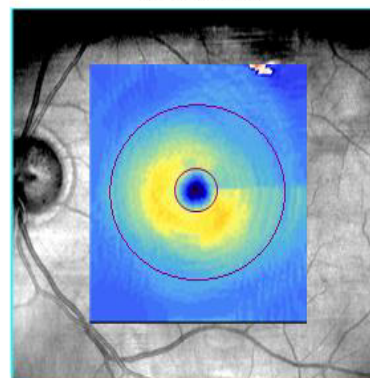
OD OS

OD Thickness Map



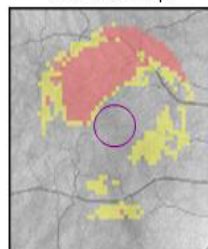
Fovea: 265, 62

OS Thickness Map

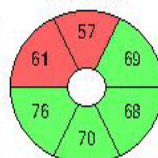


Fovea: 252, 63

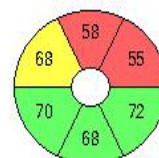
OD Deviation Map



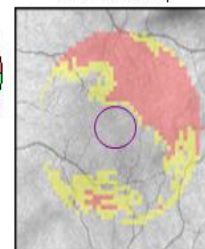
OD Sectors



OS Sectors

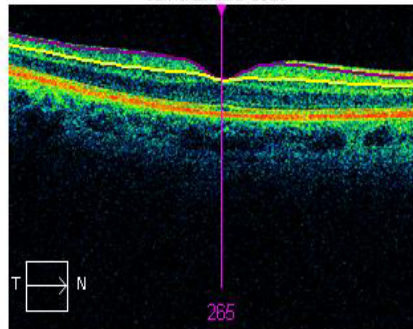


OS Deviation Map

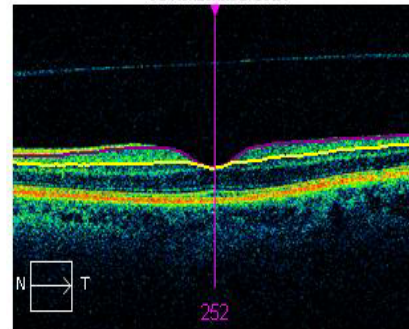


	OD μm	OS μm
Average GCL + IPL Thickness	67	65
Minimum GCL + IPL Thickness	55	56

OD Horizontal B-Scan



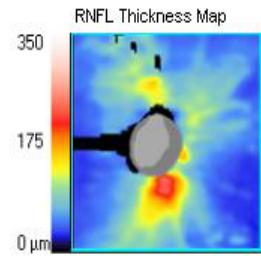
OS Horizontal B-Scan



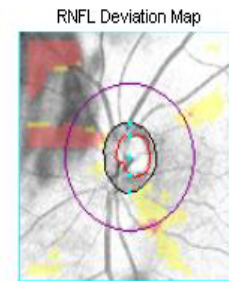
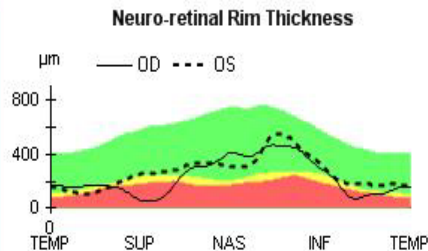
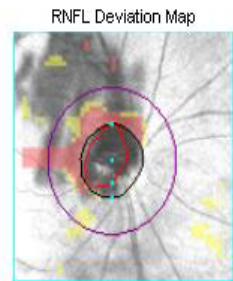
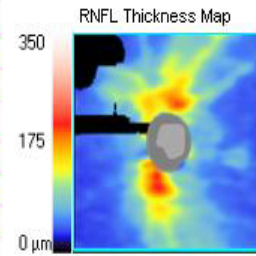
Common OCT Imaging Problems

Floater/Vitreous Syneresis and Condensation

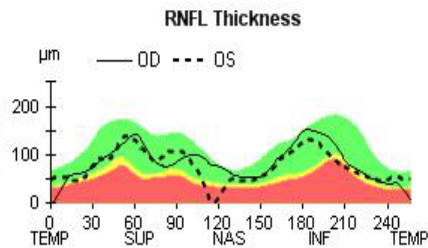
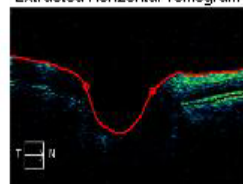
ONH and RNFL OU Analysis: Optic Disc Cube 200x200 OD ● OS ●



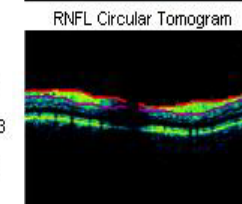
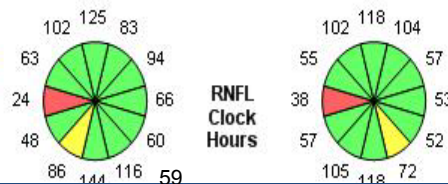
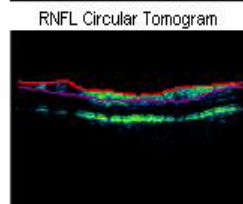
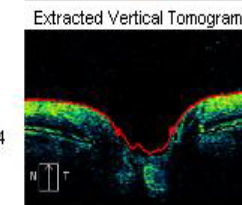
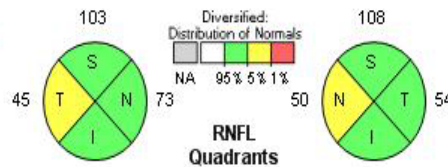
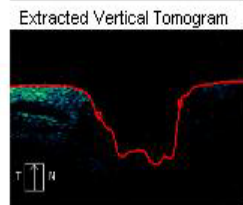
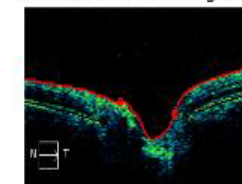
	OD	OS
Average RNFL Thickness	84 μm	77 μm
RNFL Symmetry	78%	
Rim Area	1.07 mm ²	1.07 mm ²
Disc Area	2.24 mm ²	1.79 mm ²
Average C/D Ratio	0.72	0.63
Vertical C/D Ratio	0.79	0.62
Cup Volume	0.454 mm ³	0.212 mm ³



Disc Center(-0.36,-0.06)mm
Extracted Horizontal Tomogram

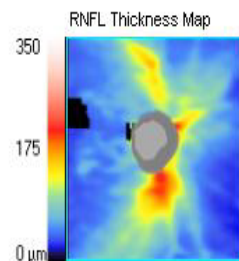


Disc Center(-0.03,0.03)mm
Extracted Horizontal Tomogram

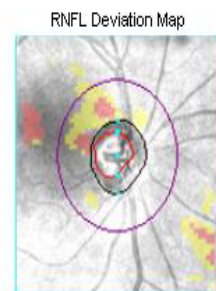
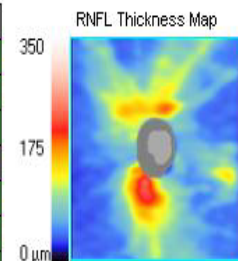


ONH and RNFL OU Analysis: Optic Disc Cube 200x200

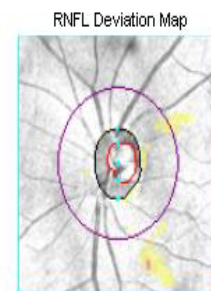
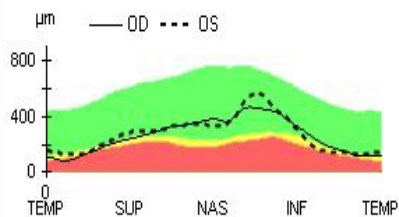
OD ● ● OS



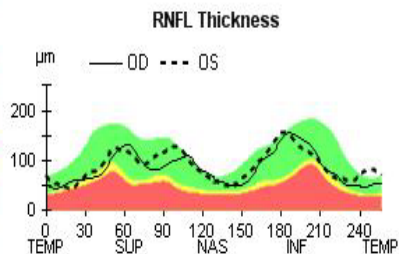
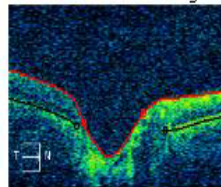
	OD	OS
Average RNFL Thickness	86 μm	91 μm
RNFL Symmetry	90%	
Rim Area	1.15 mm^2	1.06 mm^2
Disc Area	2.03 mm^2	1.68 mm^2
Average C/D Ratio	0.65	0.61
Vertical C/D Ratio	0.63	0.59
Cup Volume	0.281 mm^3	0.170 mm^3



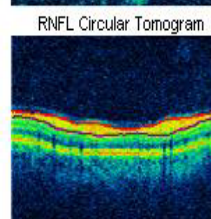
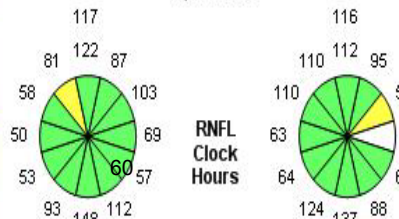
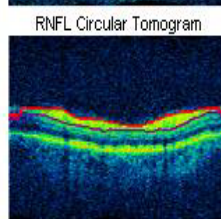
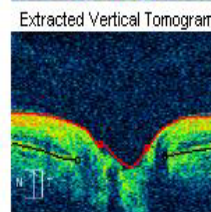
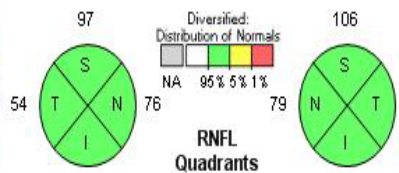
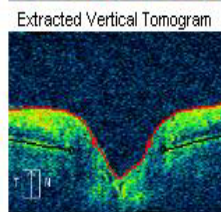
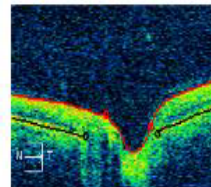
Neuro-retinal Rim Thickness



Disc Center: (-0.06, 0.24) mm
 Extracted Horizontal Tomogram

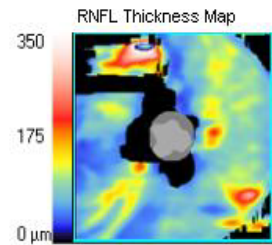


Disc Center: (-0.12, 0.06) mm
 Extracted Horizontal Tomogram

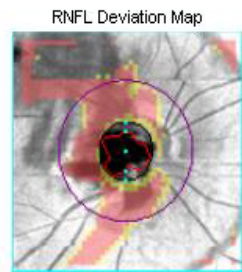
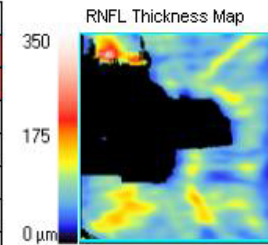


Pathological Myopia

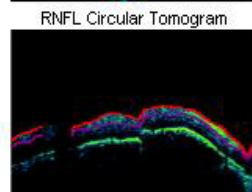
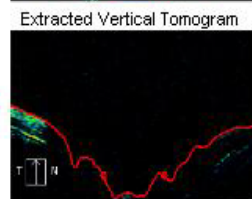
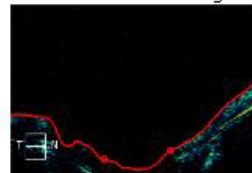
ONH and RNFL OU Analysis: Optic Disc Cube 200x200 OD ● ● OS



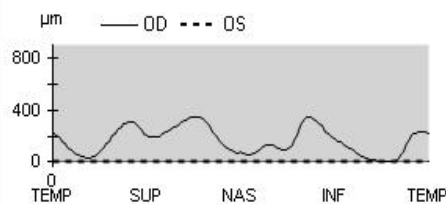
	OD	OS
Average RNFL Thickness	77 μm	58 μm
RNFL Symmetry	-56%	
Rim Area	0.63 mm ²	0.00 mm ²
Disc Area	1.59 mm ²	0.00 mm ²
Average C/D Ratio	0.76	0.00
Vertical C/D Ratio	0.71	0.00
Cup Volume	0.236 mm ³	0.000 mm ³



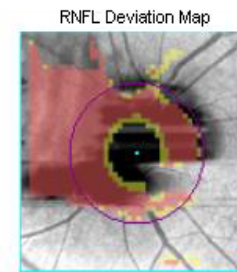
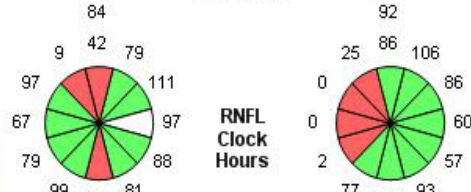
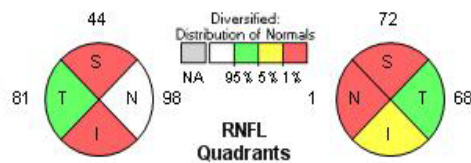
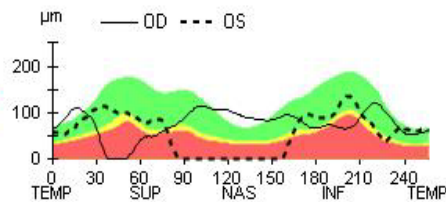
Disc Center(-0.09,0.06)mm
Extracted Horizontal Tomogram



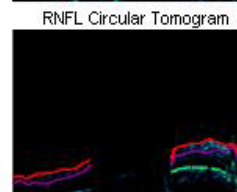
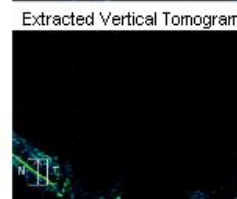
Neuro-retinal Rim Thickness



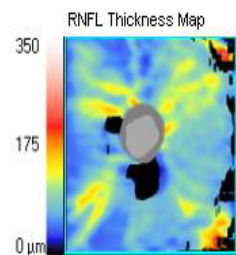
RNFL Thickness



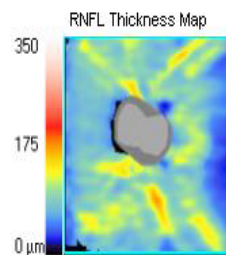
Disc Center(0.00,0.00)mm
Extracted Horizontal Tomogram



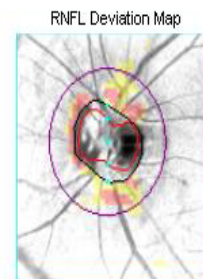
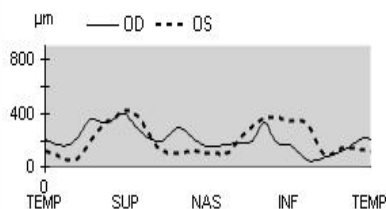
ONH and RNFL OU Analysis: Optic Disc Cube 200x200 OD ● ● OS



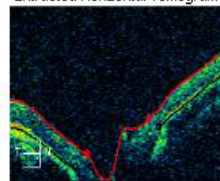
	OD	OS
Average RNFL Thickness	78 μm	93 μm
RNFL Symmetry	-31%	
Rim Area	0.93 mm ²	1.04 mm ²
Disc Area	2.09 mm ²	2.92 mm ²
Average C/D Ratio	0.72	0.79
Vertical C/D Ratio	0.68	0.61
Cup Volume	0.253 mm ³	0.367 mm ³



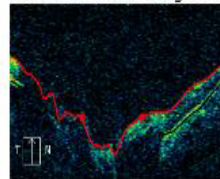
Neuro-retinal Rim Thickness



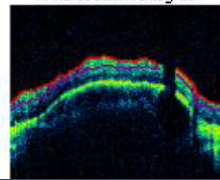
Disc Center(-0.33,0.36)mm
Extracted Horizontal Tomogram



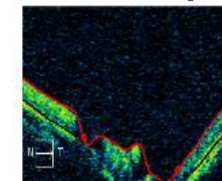
Extracted Vertical Tomogram



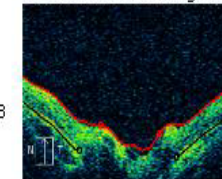
RNFL Circular Tomogram



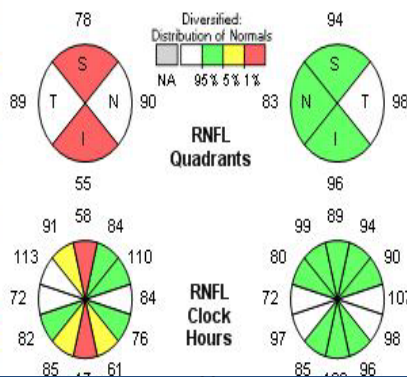
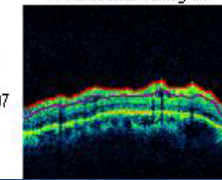
Disc Center(-0.30,0.42)mm
Extracted Horizontal Tomogram



Extracted Vertical Tomogram



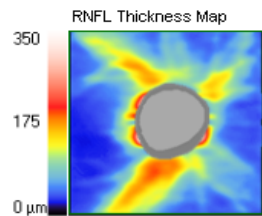
RNFL Circular Tomogram



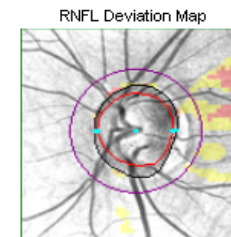
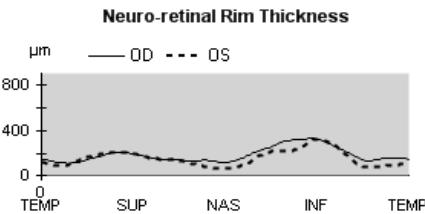
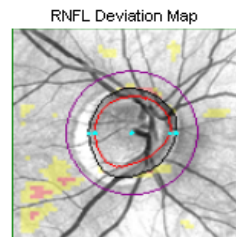
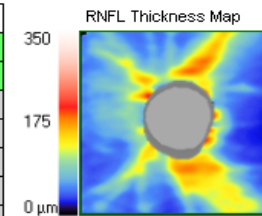
Very Large Optic Nerves

RNFL and ONH: Optic Disc Cube 200x200

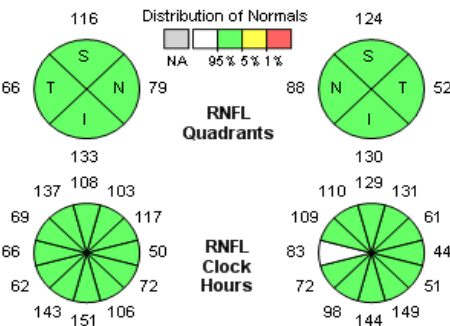
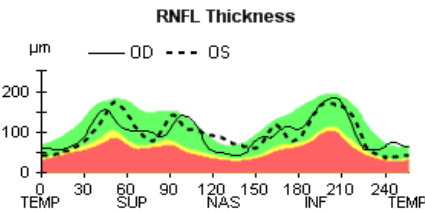
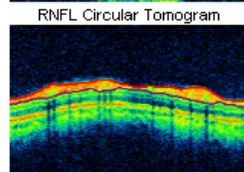
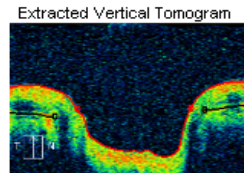
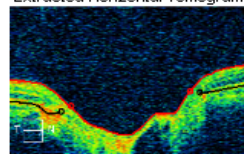
OD ● OS



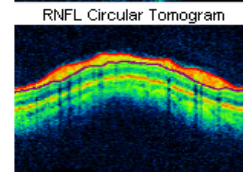
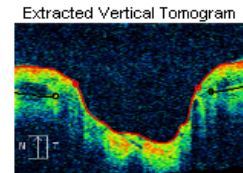
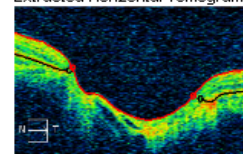
	OD	OS
Average RNFL Thickness	99 μm	98 μm
RNFL Symmetry	84%	
Rim Area	1.31 mm^2	1.12 mm^2
Disc Area	4.46 mm^2	4.43 mm^2
Average C/D Ratio	0.83	0.85
Vertical C/D Ratio	0.78	0.78
Cup Volume	1.399 mm^3	1.579 mm^3

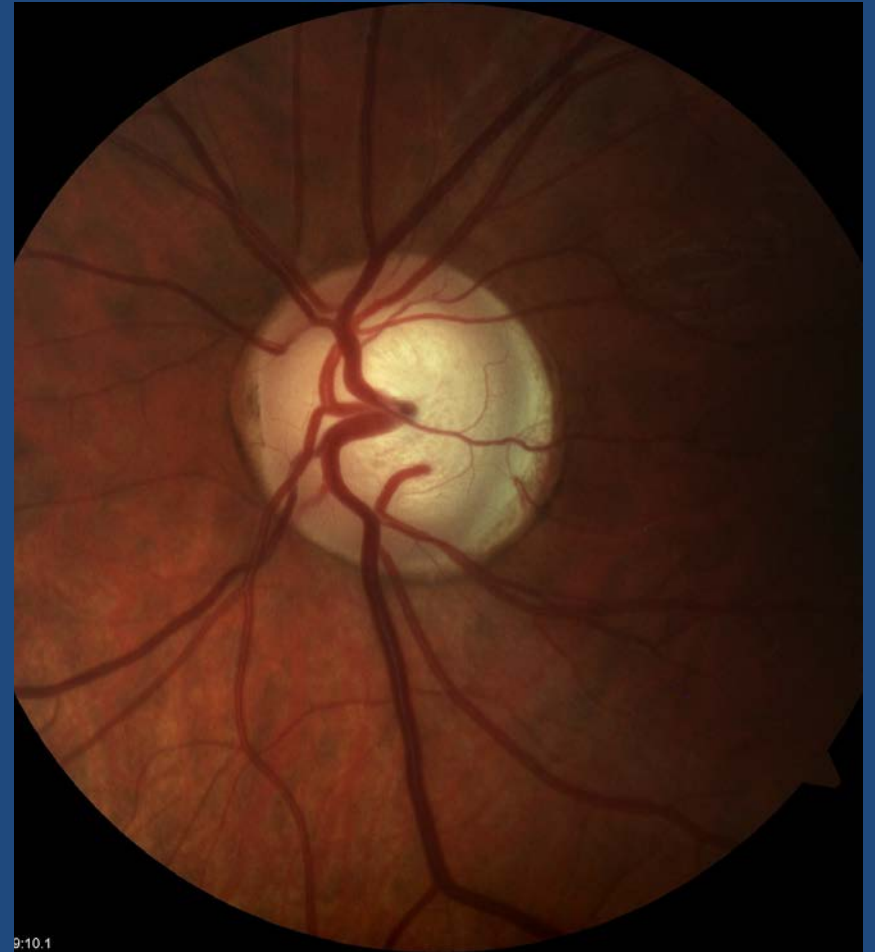


Disc Center (0.15,0.06) mm
Extracted Horizontal Tomogram



Disc Center (0.03,0.12) mm
Extracted Horizontal Tomogram





Glaucoma versus red disease: imaging and glaucoma diagnosis

Gabriel T. Chong and Richard K. Lee

Purpose of review

The use of ophthalmic imaging for documentation and diagnosis of ocular disease is rising dramatically. Optical coherence tomography (OCT), confocal scanning laser tomography (CSLT), scanning laser polarimetry (SLP) and photographic imaging of the optic nerve head (ONH) are currently used to document baseline characteristics of the ONH and for diagnosing glaucoma and glaucoma progression secondary to loss of retinal nerve fiber layer (RNFL). Imaging modalities typically provide information on ONH and RNFL characteristics which are outside of the normal (relative to normative databases) in red lettering or boxes, whereas ONH and RNFL characteristics within the normal range are presented in green.

Summary

Ophthalmic imaging is an important adjunct to clinical diagnosis but the results from imaging devices need to be assessed critically relative to artifacts of imaging and the limitations of the technology and its normative databases.

Summary

Ophthalmic imaging is an important adjunct to clinical diagnosis but the results from imaging devices need to be assessed critically relative to artifacts of imaging and the limitations of the technology and its normative databases.

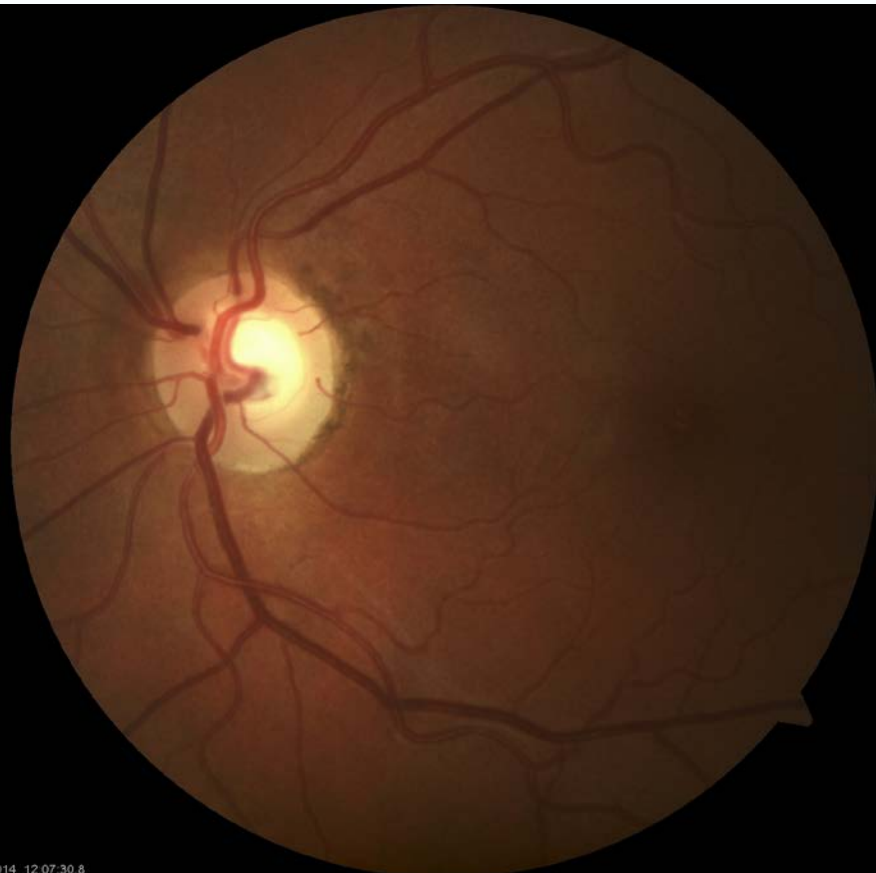
Keywords

confocal scanning laser tomography, glaucoma, imaging, optical coherence tomography, peri-papillary, scanning laser polarimetry

Case 1.1.6



12/4/2014 12:06:59.2

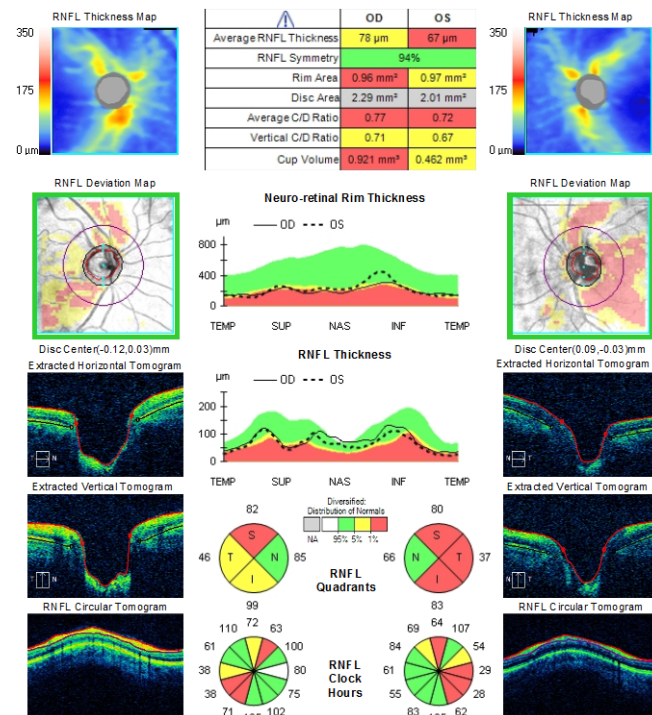


12/4/2014 12:07:30.8

Case 1.1.6

ID: 16308615 Exam Date: 7/28/2014 7/28/2014 Gaddie Eye Centers
 DOB: 4/29/1982 Exam Time: 10:41 AM 10:43 AM
 Gender: Female Serial Number: 5000-3158 5000-3158
 Technician: Operator, Cirrus Signal Strength: 8/10 5/10

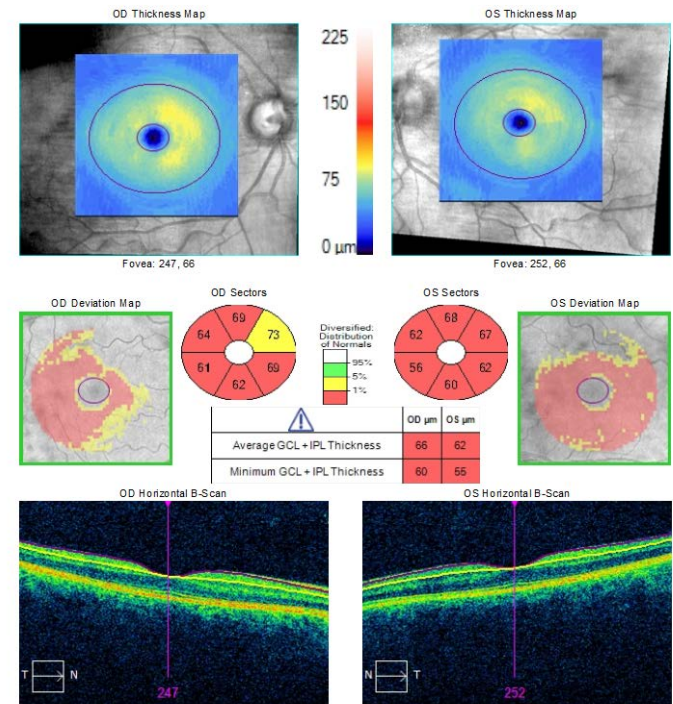
ONH and RNFL OU Analysis: Optic Disc Cube 200x200 OD OS



Comments: _____ Doctor's Signature: _____
 CIRUS
 SW Ver 6.5.0.772
 Copyright 2012
 Carl Zeiss Meditec, Inc
 All Rights Reserved

ID: 16308615 Exam Date: 7/28/2014 7/28/2014 Gaddie Eye Centers
 DOB: 4/29/1982 Exam Time: 10:41 AM 10:42 AM
 Gender: Female Serial Number: 5000-3158 5000-3158
 Technician: Operator, Cirrus Signal Strength: 9/10 8/10

Ganglion Cell OU Analysis: Macular Cube 512x128 OD OS



Comments: _____ Doctor's Signature: _____
 CIRUS
 SW Ver 6.5.0.772
 Copyright 2012
 Carl Zeiss Meditec, Inc
 All Rights Reserved

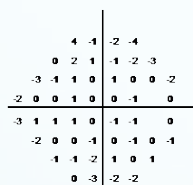
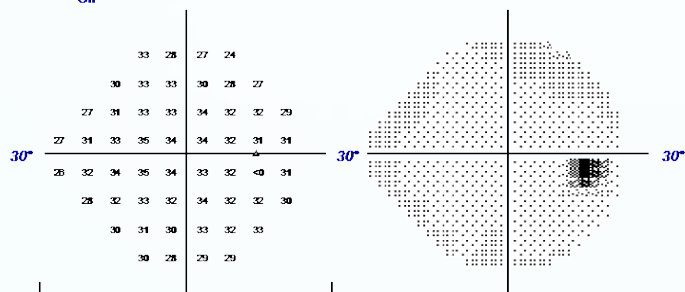
Case 1.1.6 24-2

OD Single Field Analysis Central 24-2 Threshold Test

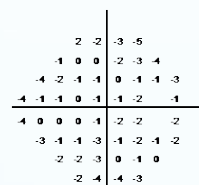
Fixation Monitor: Gaze/Blind Spot
 Fixation Target: Central
 Fixation Losses: 0/13
 False POS Errors: 0%
 False NEG Errors: 3%
 Test Duration: 04:50
 Fovea: Off

Stimulus: III, White
 Background: 31.5 asb
 Strategy: SITA-Standard
 Pupil Diameter: 5.4 mm *
 Visual Acuity:
 Rx: +1.00 DS DC X

Date: Jun 25, 2014
 Time: 10:30 AM
 Age: 32



Total Deviation



Pattern Deviation

GHT: Within Normal Limits

MD: -0.24 dB
 PSD: 1.38 dB
 VFI: 100%

○ P < 5%
 ⊗ P < 2%
 ⊛ P < 1%
 ■ P < 0.5%



Comments

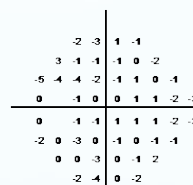
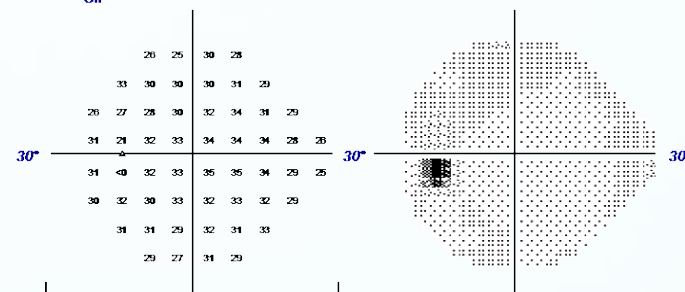
Signature

OS Single Field Analysis Central 24-2 Threshold Test

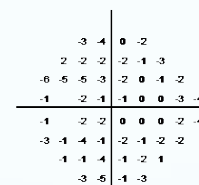
Fixation Monitor: Gaze/Blind Spot
 Fixation Target: Central
 Fixation Losses: 0/14
 False POS Errors: 1%
 False NEG Errors: 0%
 Test Duration: 04:33
 Fovea: Off

Stimulus: III, White
 Background: 31.5 asb
 Strategy: SITA-Standard
 Pupil Diameter: 5.1 mm *
 Visual Acuity:
 Rx: +1.00 DS DC X

Date: Jun 25, 2014
 Time: 10:36 AM
 Age: 32



Total Deviation



Pattern Deviation

GHT: Within Normal Limits

MD: -0.87 dB
 PSD: 1.66 dB
 VFI: 99%

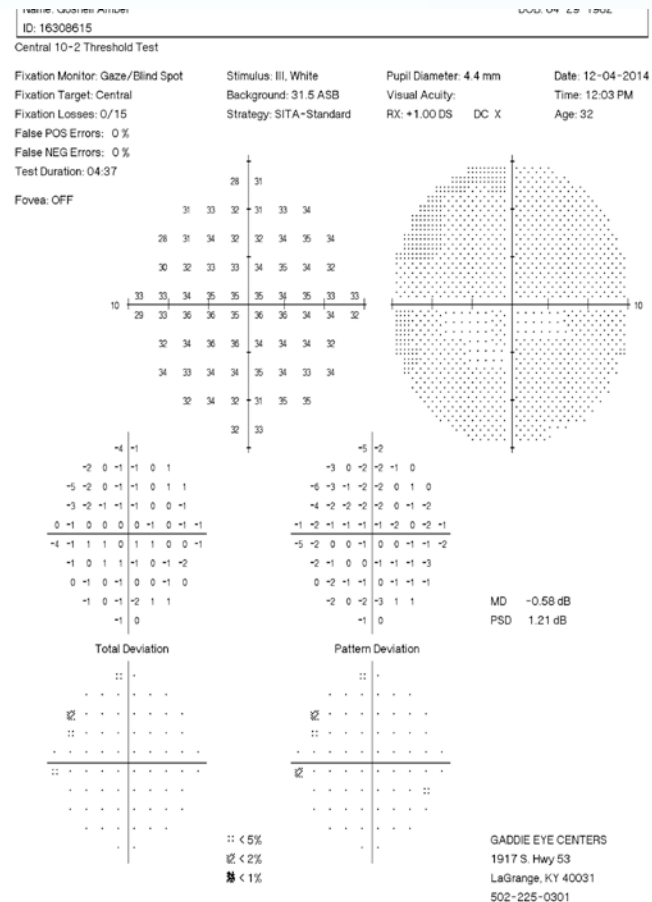
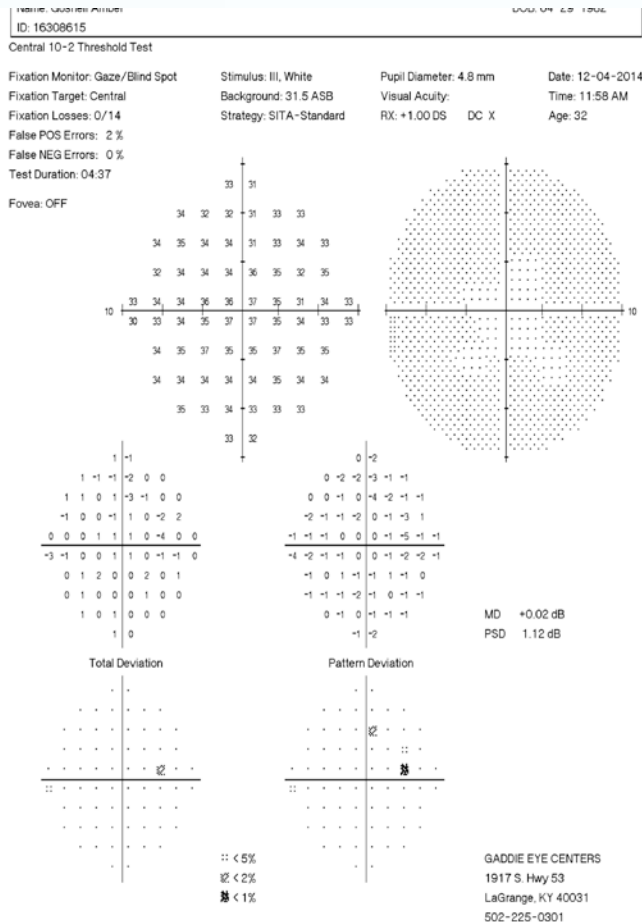
○ P < 5%
 ⊗ P < 2%
 ⊛ P < 1%
 ■ P < 0.5%



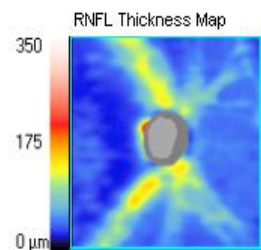
Comments

Signature

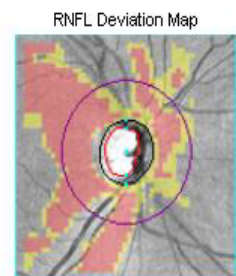
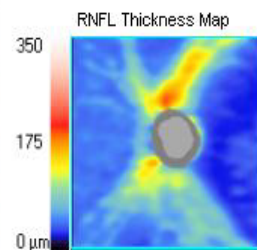
Case 1.1.6 10-2



ONH and RNFL OU Analysis: Optic Disc Cube 200x200

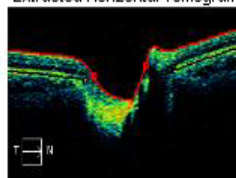
OD ● **OS** ●


	OD	OS
Average RNFL Thickness	60 μm	66 μm
RNFL Symmetry	81%	
Rim Area	0.92 mm^2	0.97 mm^2
Disc Area	1.76 mm^2	1.96 mm^2
Average C/D Ratio	0.70	0.70
Vertical C/D Ratio	0.77	0.71
Cup Volume	0.326 mm^3	0.351 mm^3

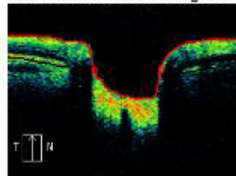


Disc Center(-0.03,0.15)mm

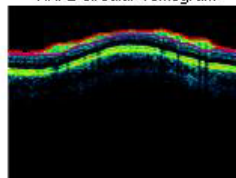
Extracted Horizontal Tomogram



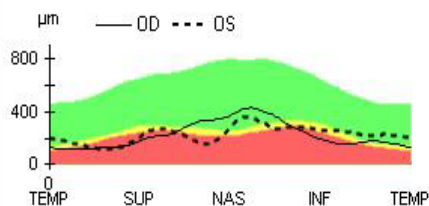
Extracted Vertical Tomogram



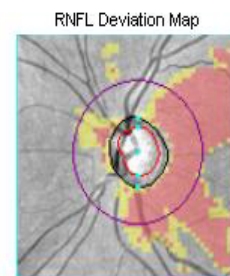
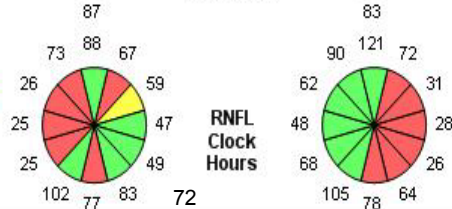
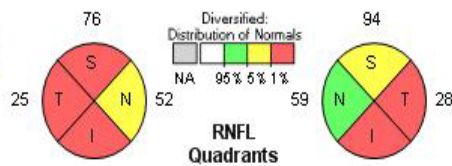
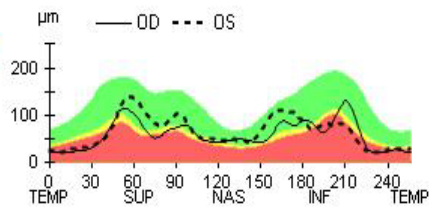
RNFL Circular Tomogram



Neuro-retinal Rim Thickness

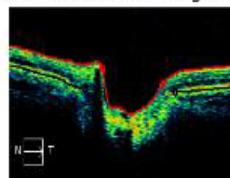


RNFL Thickness

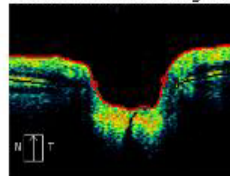


Disc Center(0.24,0.15)mm

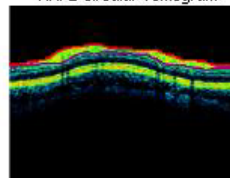
Extracted Horizontal Tomogram



Extracted Vertical Tomogram

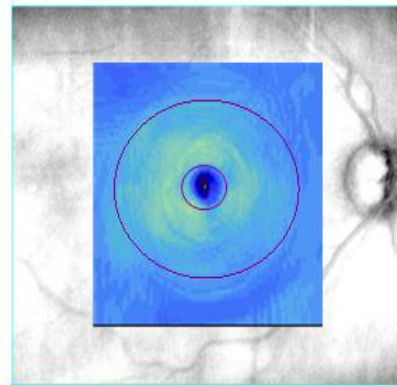


RNFL Circular Tomogram



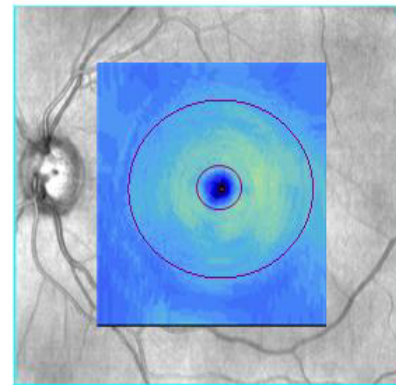
Ganglion Cell OU Analysis: Macular Cube 512x128**OD** ● ● **OS**

OD Thickness Map



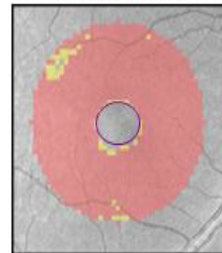
Fovea: 251, 61

OS Thickness Map

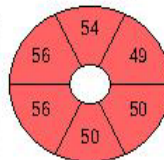


Fovea: 274, 61

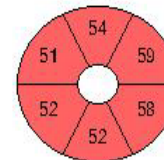
OD Deviation Map



OD Sectors



OS Sectors

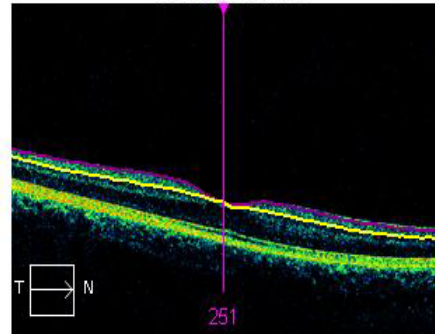


OS Deviation Map

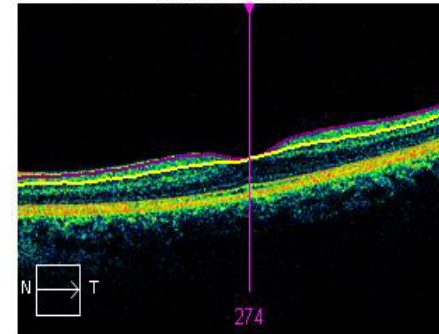


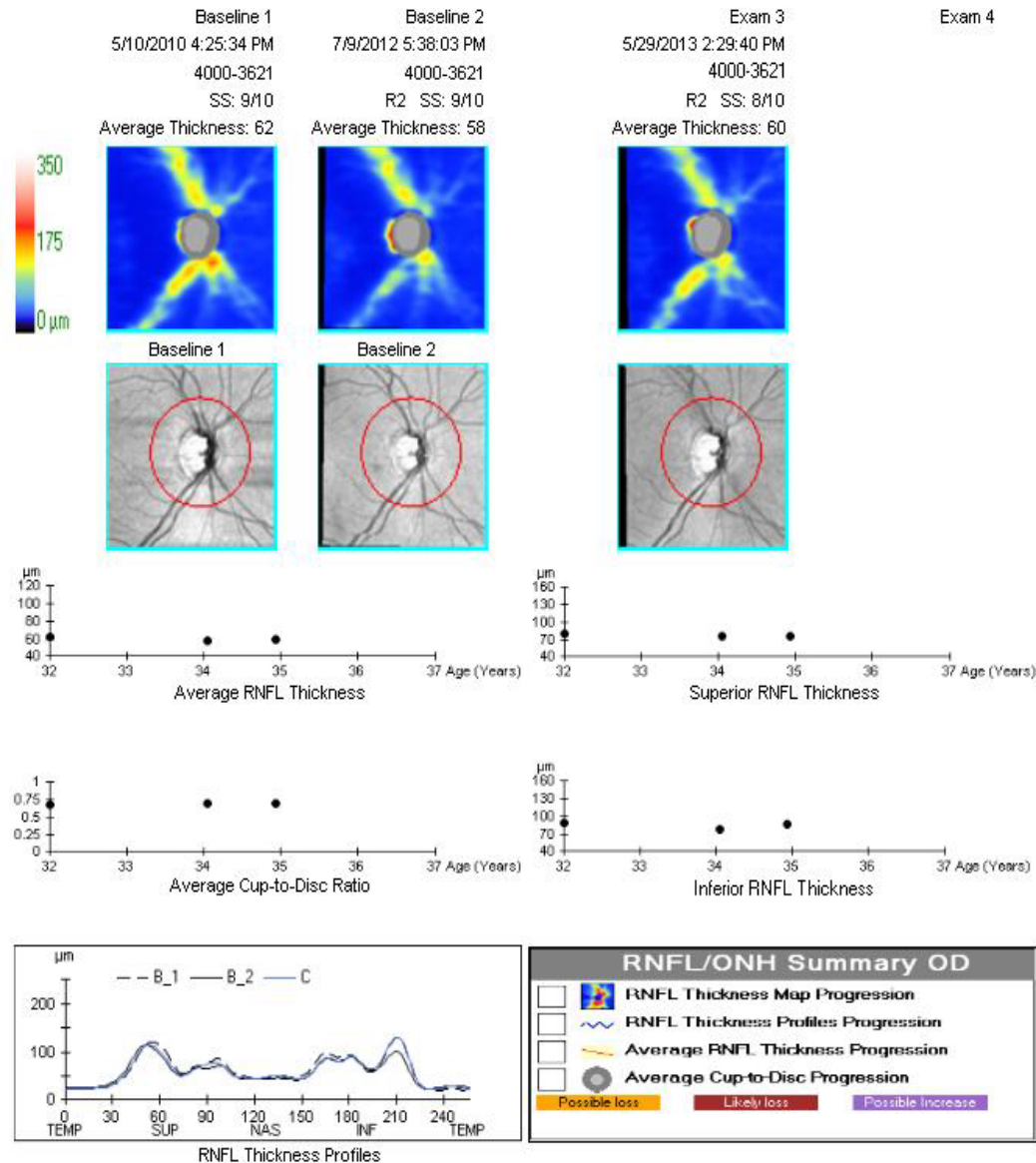
	OD μm	OS μm
Average GCL + IPL Thickness	52	54
Minimum GCL + IPL Thickness	48	51

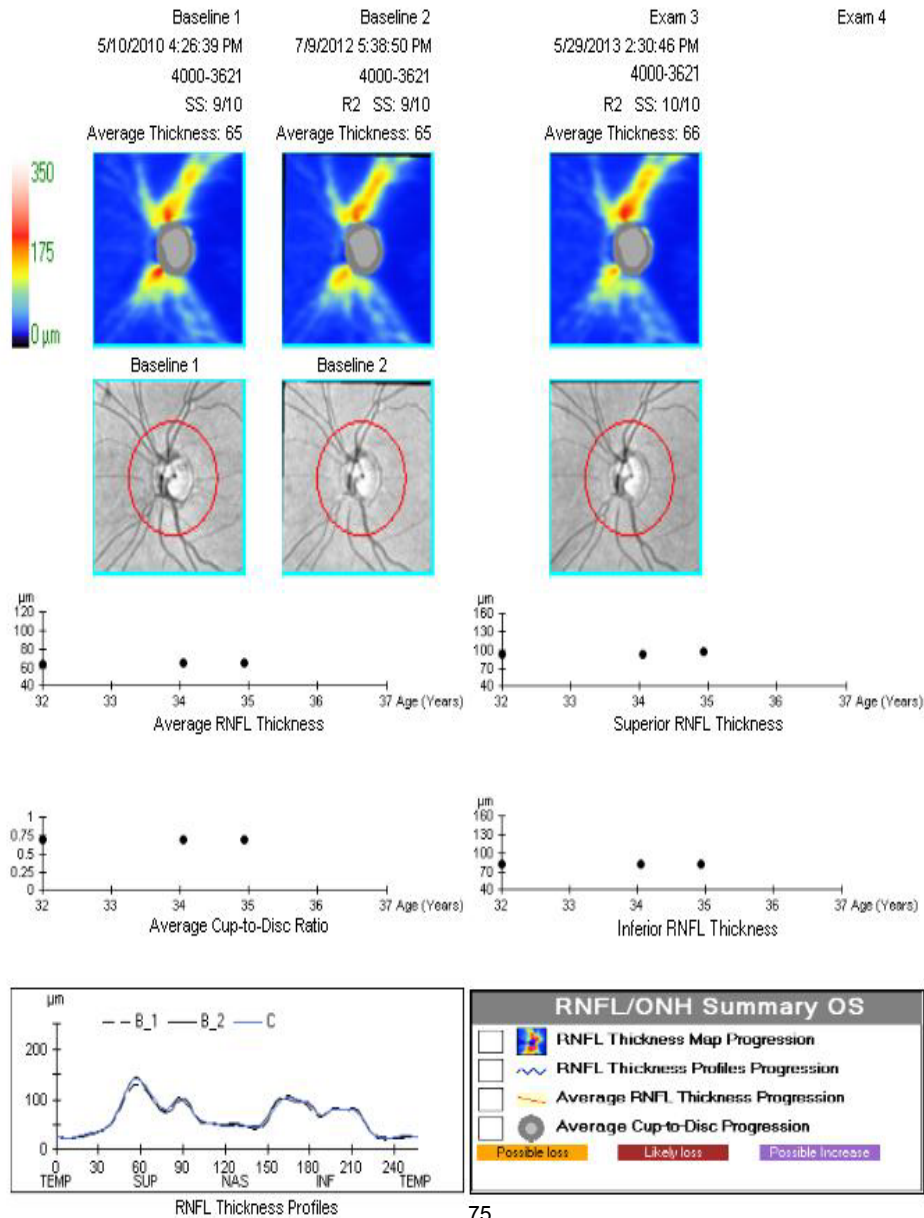
OD Horizontal B-Scan



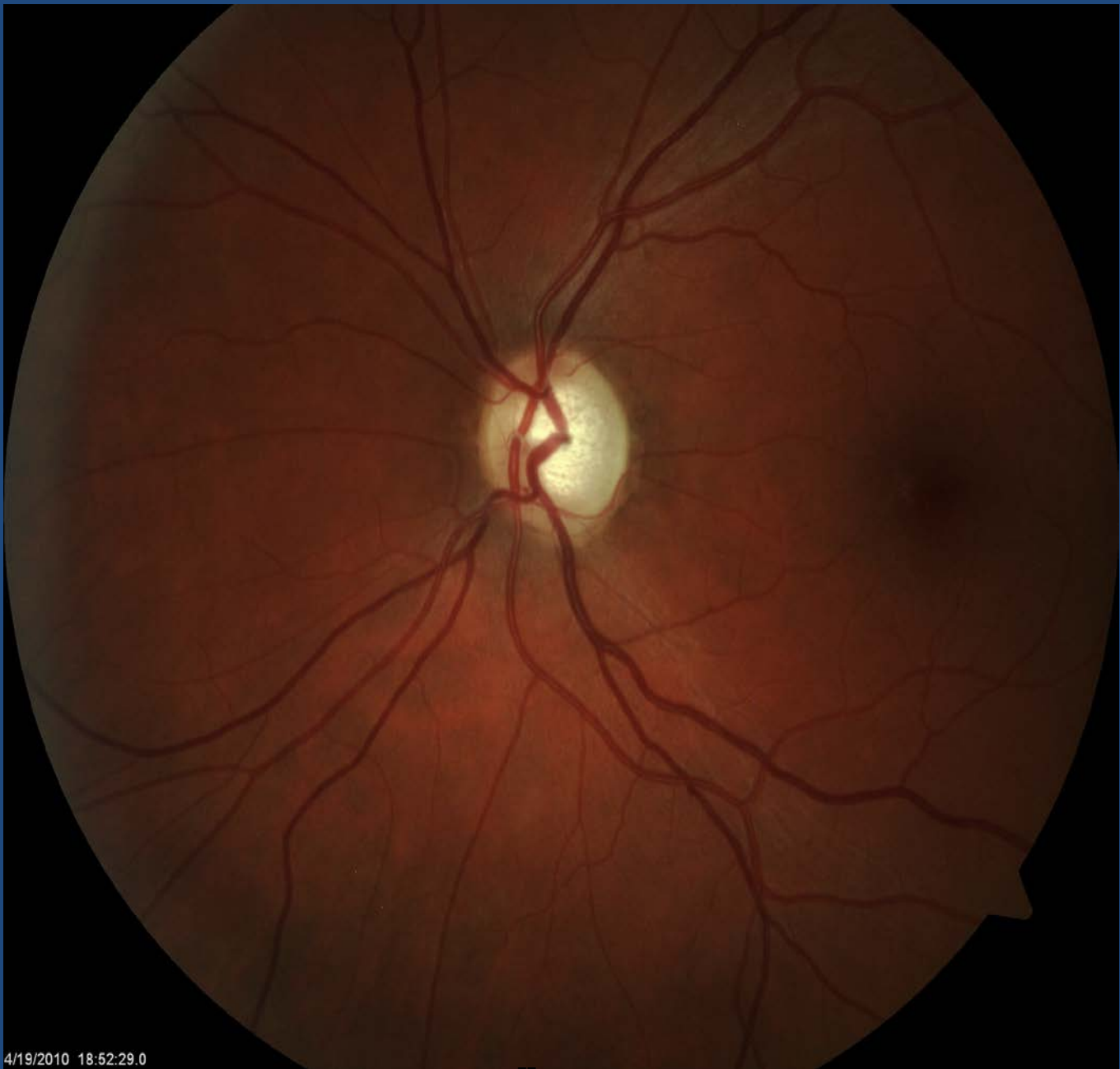
OS Horizontal B-Scan











4/19/2010 18:52:29.0

ID:

CENTRAL 24-2 THRESHOLD TEST

FIXATION MONITOR: GAZE/BLIND SPOT

FIXATION TARGET: CENTRAL

FIXATION LOSSES: 1/11

FALSE POS ERRORS: 5 %

FALSE NEG ERRORS: 0 %

TEST DURATION: 03:13

FOVER: OFF

STIMULUS: III, WHITE

BACKGROUND: 31.5 ASB

STRATEGY: SITA-FAST

PUPIL DIAMETER:

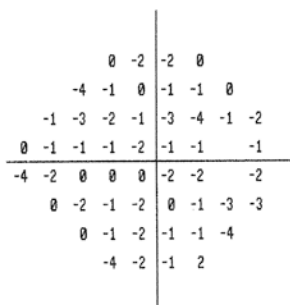
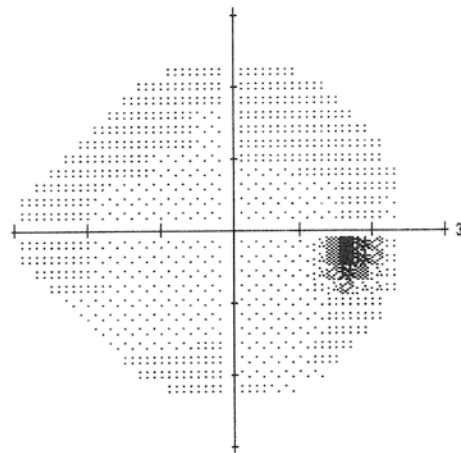
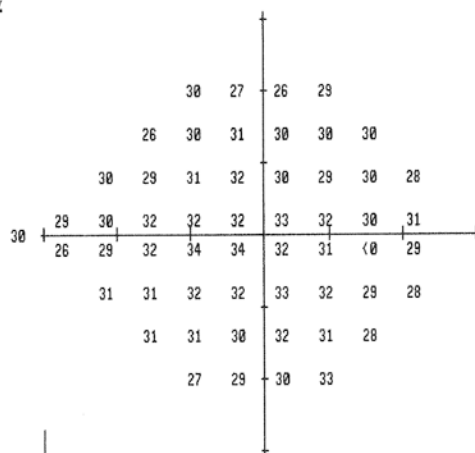
VISUAL ACUITY:

RX: +0.75 DS -3.25 DC X 2

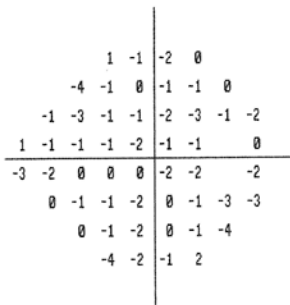
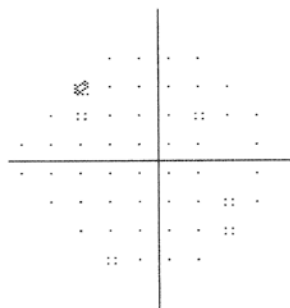
DATE: 07-25-2012

TIME: 4:07 PM

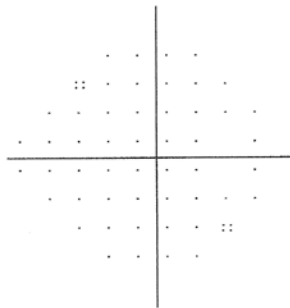
AGE: 34



TOTAL DEVIATION



PATTERN DEVIATION

GHT
WITHIN NORMAL LIMITS

VFI 100%

MD -1.40 DB P < 10%

PSD 1.20 DB

:: < 5%

⊗ < 2%

⊠ < 1%

■ < 0.5%

CENTRAL 24-2 THRESHOLD TEST

FIXATION MONITOR: GAZE/BLIND SPOT

FIXATION TARGET: CENTRAL

FIXATION LOSSES: 1/10

FALSE POS ERRORS: 1 %

FALSE NEG ERRORS: 0 %

TEST DURATION: 02:36

FOVER: OFF

STIMULUS: III, WHITE

BACKGROUND: 31.5 ASB

STRATEGY: SITA-FAST

PUPIL DIAMETER:

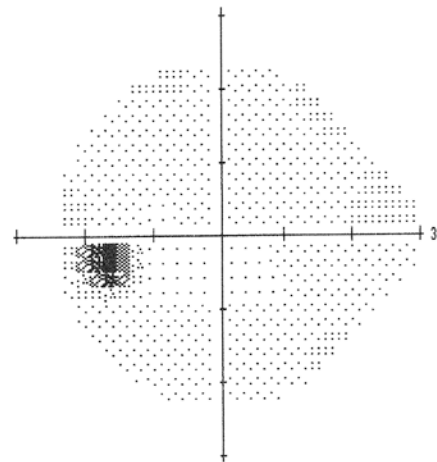
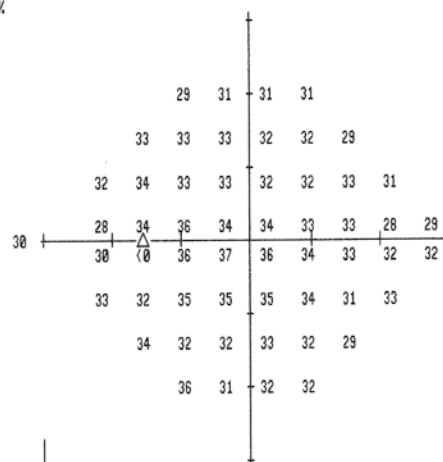
VISUAL ACUITY:

RX: +0.50 DS -1.75 DC X 78

DATE: 07-25-2012

TIME: 4:12 PM

AGE: 34


$$\begin{array}{cccc|cccc} & & & & & & & \\ & & & & & & & \\ & & 1 & 2 & 2 & 2 & & \\ & 3 & 2 & 2 & 1 & 1 & -1 & \\ 1 & 2 & 1 & 0 & -1 & -1 & 1 & 1 \\ -4 & & 3 & 0 & 0 & -1 & 0 & -3 \quad 0 \\ \hline -1 & & 2 & 3 & 1 & 0 & 0 & 1 \quad 3 \\ 2 & 0 & 2 & 2 & 1 & 1 & -1 & 2 \\ & 2 & 0 & -1 & 1 & 0 & -2 & \\ & & 5 & 0 & 1 & 1 & & \end{array}$$
$$\begin{array}{cccc|cccc} & & -2 & 0 & 0 & -1 & & \\ & 1 & 0 & 0 & -2 & -2 & -4 & \\ -2 & 0 & -1 & -2 & -3 & -3 & -2 & -2 \\ -6 & & 0 & -2 & -2 & -3 & -2 & -6 & -3 \\ \hline -4 & & 0 & 0 & -1 & -2 & -2 & -2 & 1 \\ -1 & -2 & -1 & -1 & -1 & -2 & -4 & 0 & \\ & 0 & -2 & -3 & -1 & -2 & -4 & & \\ & & 2 & -3 & -1 & -1 & & & \end{array}$$

GHT

WITHIN NORMAL LIMITS

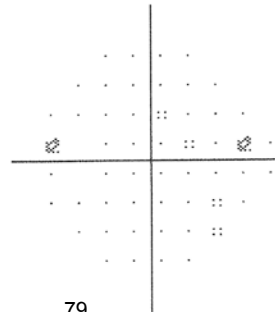
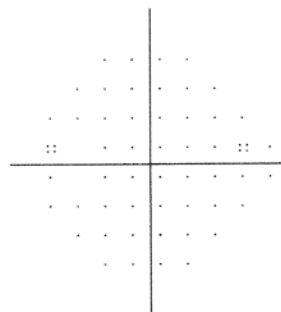
VFI 100%

MD +0.69 DB

PS0 1.56 DB

TOTAL DEVIATION

PATTERN DEVIATION



$\therefore < 5\%$

2%

 $\Delta < 1\%$

ID:

CENTRAL 24-2 THRESHOLD TEST

FIXATION MONITOR: GAZE/BLIND SPOT

FIXATION TARGET: CENTRAL

FIXATION LOSSES: 2/13

FALSE POS ERRORS: 4 %

FALSE NEG ERRORS: 0 %

TEST DURATION: 04:09

FOVER: OFF

STIMULUS: III. WHITE

BACKGROUND: 31.5 ASB

STRATEGY: SITA-STANDARD

PUPIL DIAMETER:

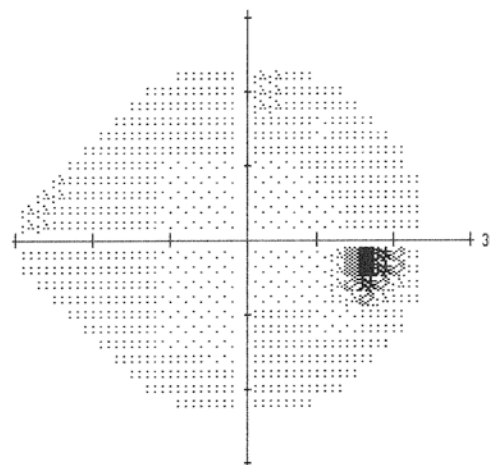
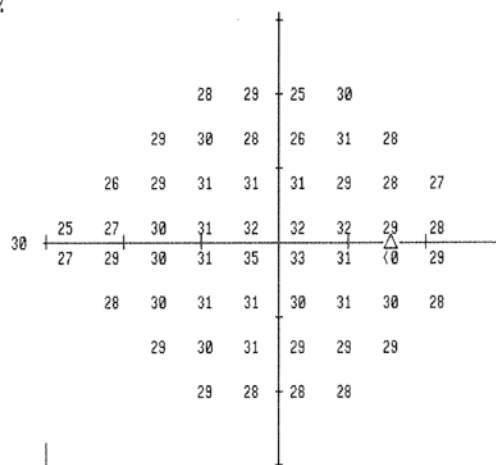
VISUAL ACUITY:

RX: +0.75 DS -3.25 DC X 2

DATE: 05-29-2013

TIME: 1:54 PM

AGE: 34



-1	1	-3	2
-1	0	-2	-4
-4	-3	-1	-1
-3	-3	-2	-2
-2	-2	-2	-2
-2	-2	-2	-3
-2	-2	-1	-3
-1	-2	-3	-3

0	1	-3	2
-1	0	-2	-4
-3	-2	-1	-1
-3	-3	-2	-2
-1	-1	-2	-2
-2	-1	-1	-2
-1	-1	0	-3
-1	-2	-3	-2

GHT

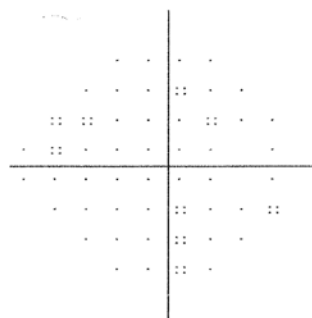
WITHIN NORMAL LIMITS

VFI 100%

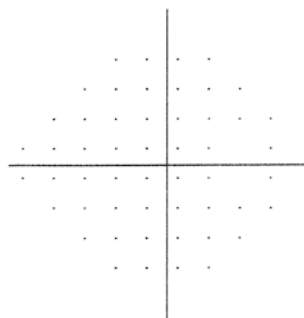
MD -1.90 DB P < 10%

PSD 1.23 DB

TOTAL DEVIATION



PATTERN DEVIATION



:: < 5%

X < 2%

X < 1%

X < 0.5%

ID:

CENTRAL 24-2 THRESHOLD TEST

FIXATION MONITOR: GAZE/BLIND SPOT

FIXATION TARGET: CENTRAL

FIXATION LOSSES: 1/14

FALSE POS ERRORS: 5 %

FALSE NEG ERRORS: 0 %

TEST DURATION: 04:01

FOVEA: OFF

STIMULUS: III. WHITE

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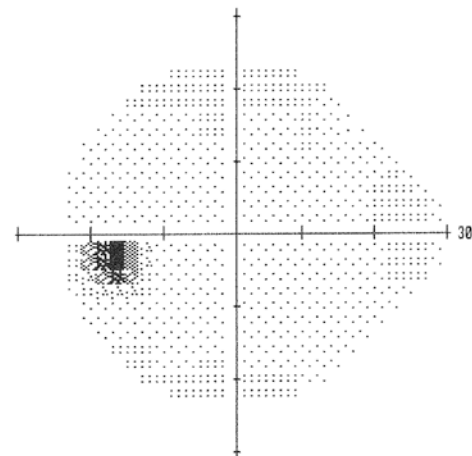
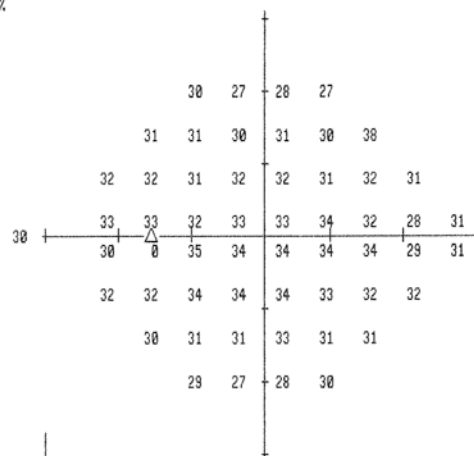
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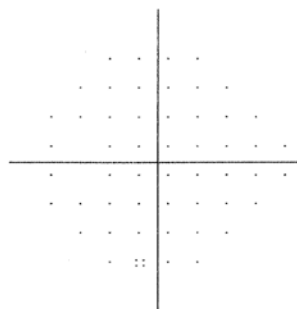
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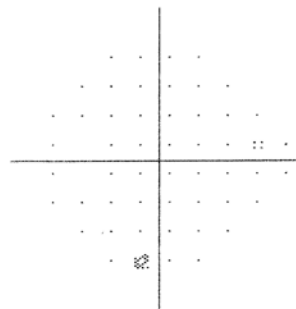
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PATTERN DEVIATION



GHT

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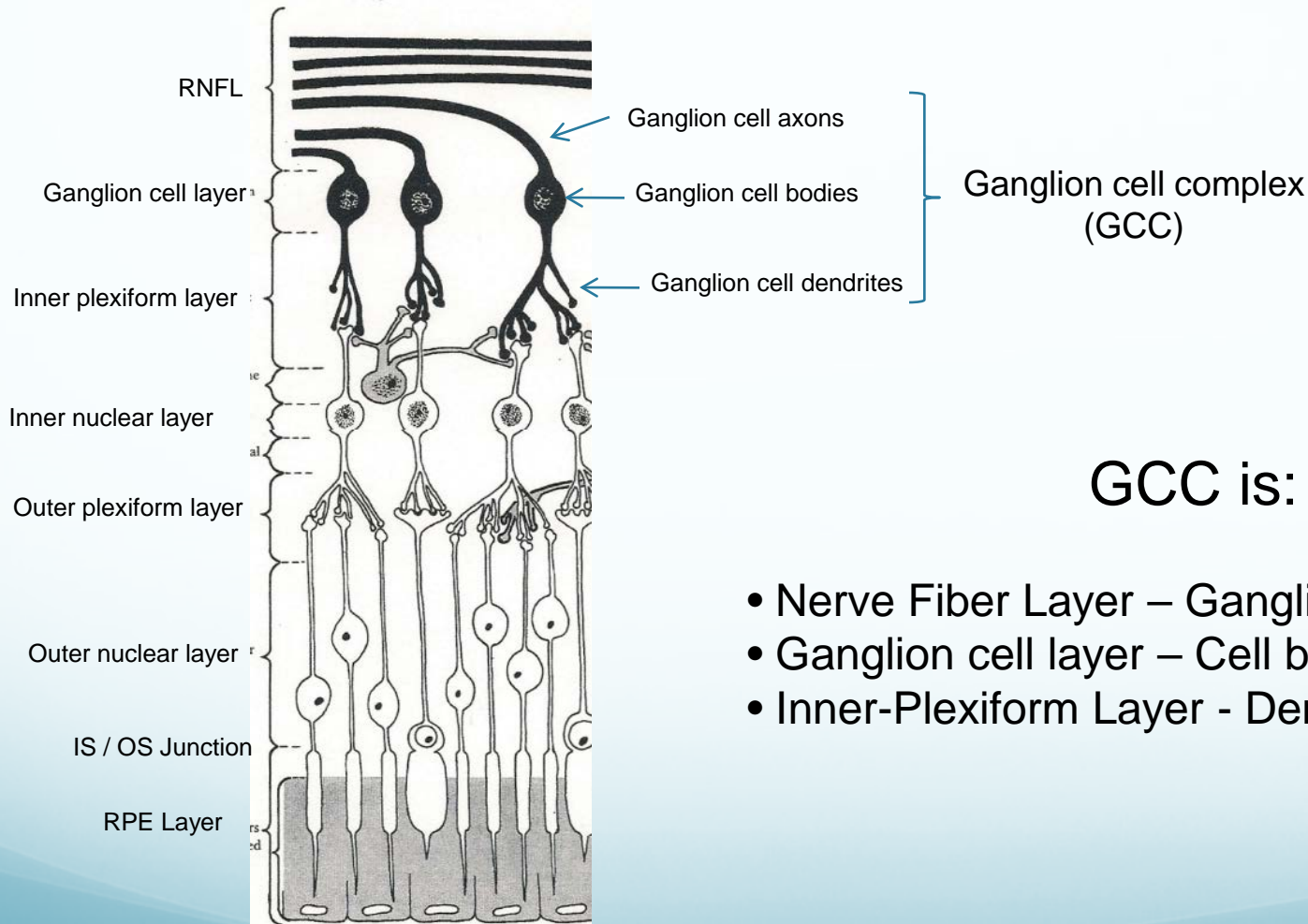
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Retinal Ganglion Cells extend through three retinal layers

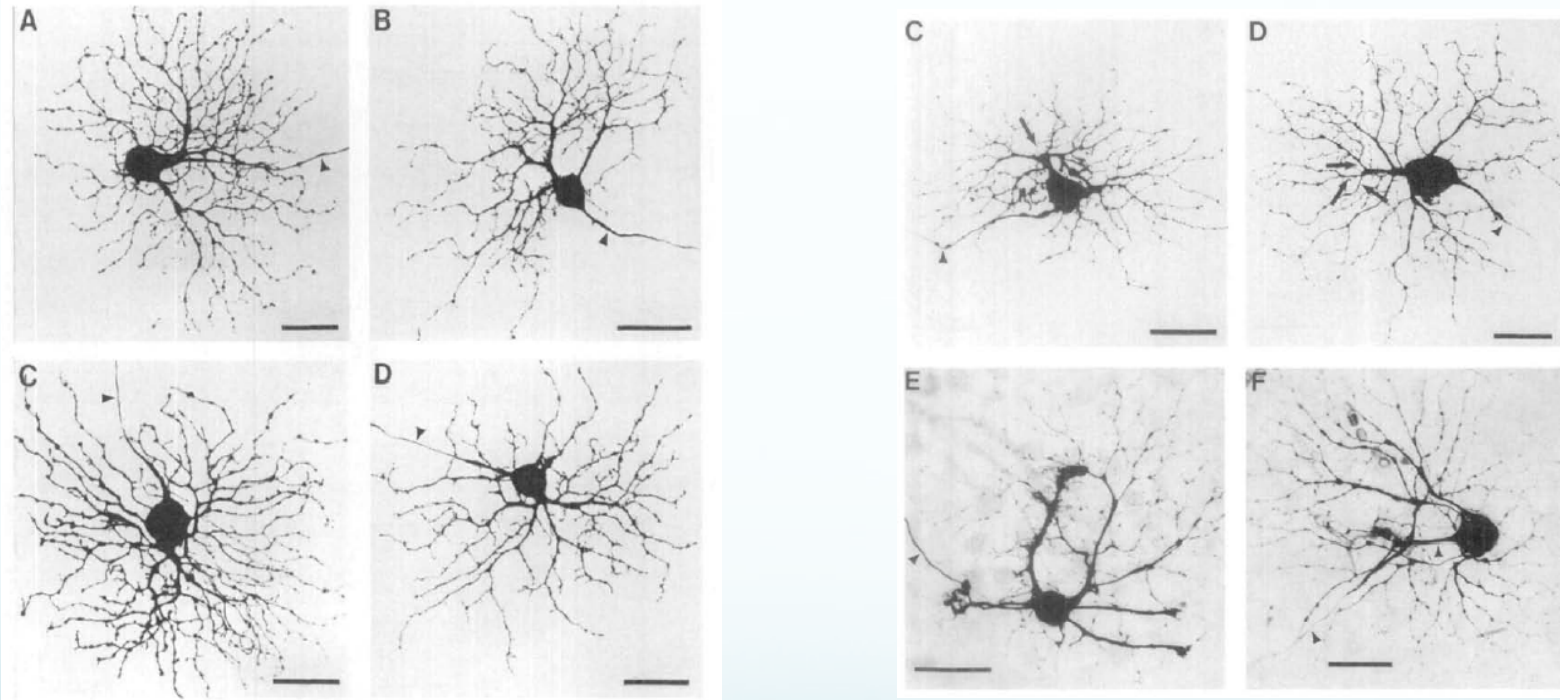


GCC is:

- Nerve Fiber Layer – Ganglion cell axons
- Ganglion cell layer – Cell bodies
- Inner-Plexiform Layer - Dendrites

Dendritic Shrinkage

- The first structural change from glaucoma was a shrinkage of the ganglion cell dendritic fields



Normal Ganglion cells (Primate)

Glaucoma model Ganglion cells (Primate)

**Morphology of Single Ganglion Cells in the
Glaucomatous Primate Retina**

Arthur J. Weber,¹ Paul L. Kaufman,² and William C. Hubbard²

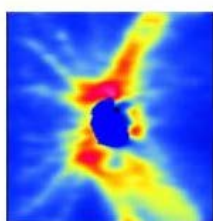
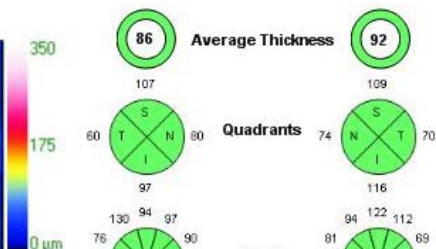
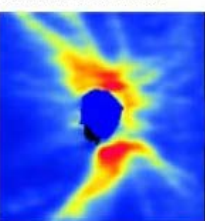
IOVS, November 1998, Vol. 39, No. 12



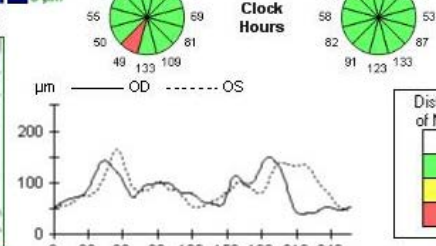
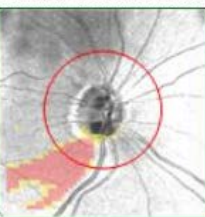
RNFL Thickness Analysis: Optic Disc Cube 200x200

OD ● ● OS

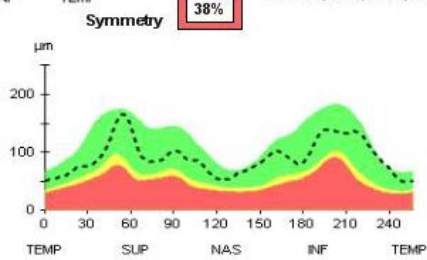
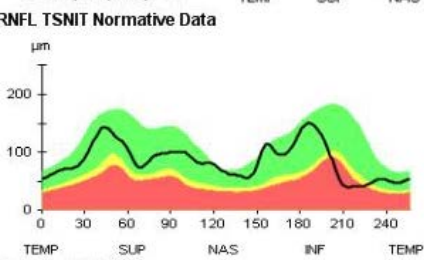
RNFL Thickness Map



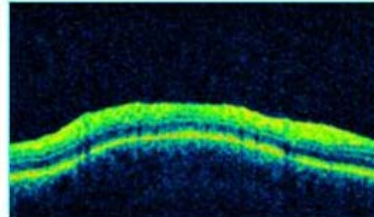
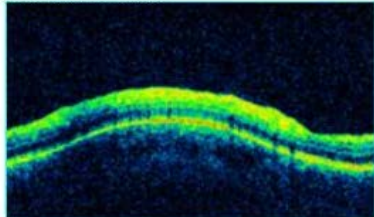
RNFL Thickness Deviation



RNFL TSNIT Normative Data

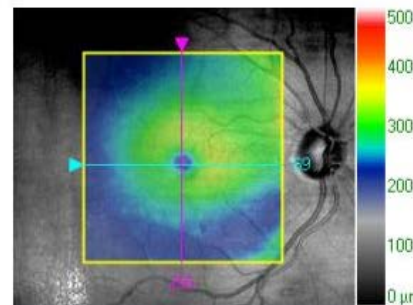


Extracted RNFL Tomogram

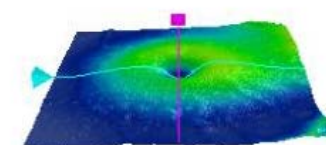
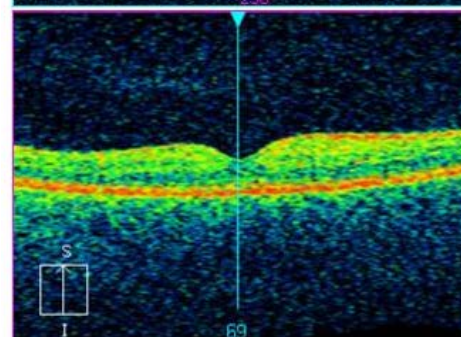
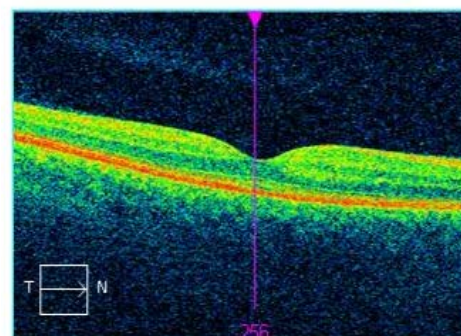
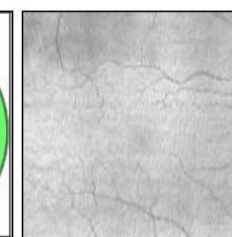
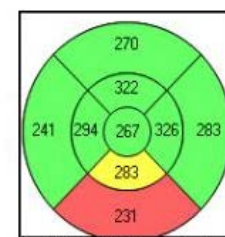


Macula Thickness : Macular Cube 512x128

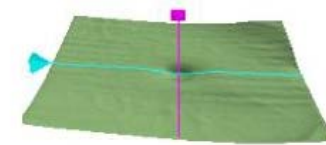
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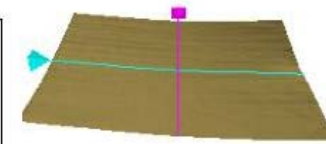
Overlay: ILM - RPE Transparency: 50 %



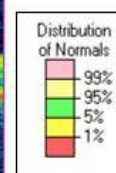
ILM - RPE



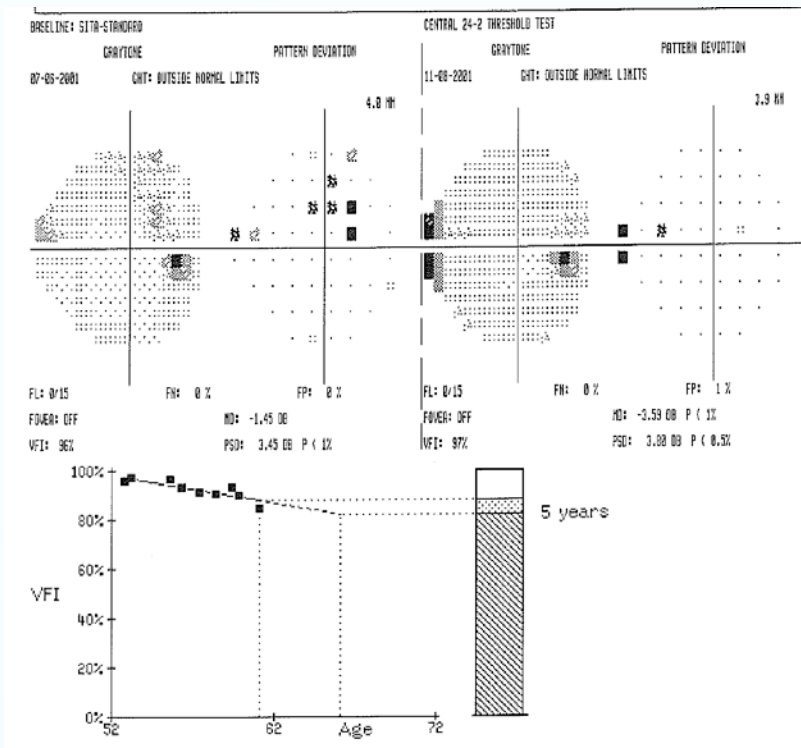
ILM



RPE



	Central Subfield Thickness (μm)	Cube Volume (mm³)	Cube Average Thickness (μm)
ILM - RPE	267	9.5	264

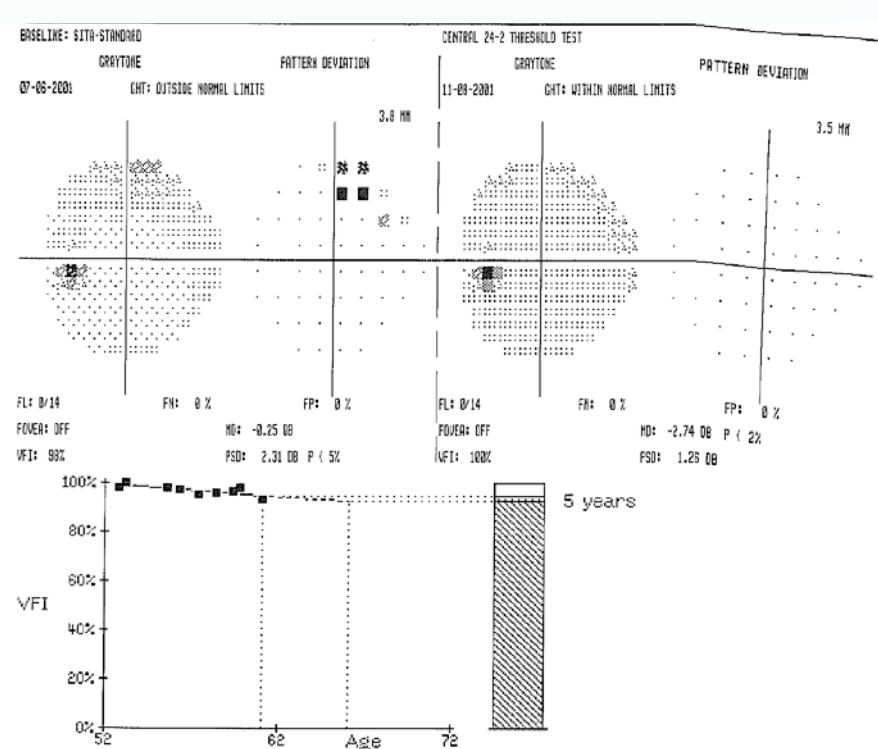
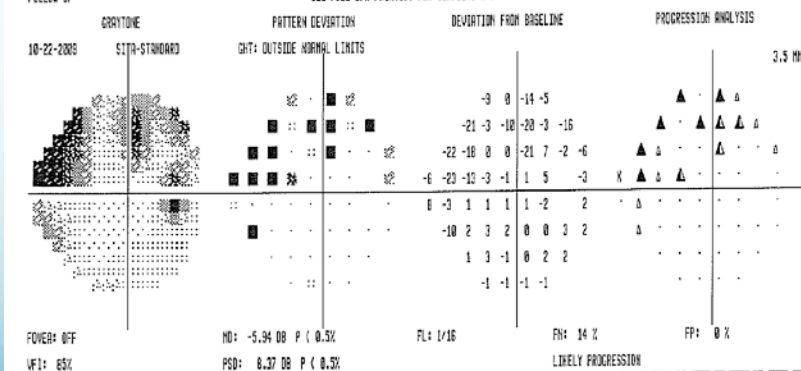


RATE OF PROGRESSION: -1.2 ± 0.6 %/YEAR (95% CONFIDENCE)

SLOPE SIGNIFICANT AT $P < 1\%$

FOLLOW-UP

SEE FULL GFA PRINTOUT FOR COMPLETE ANALYSIS

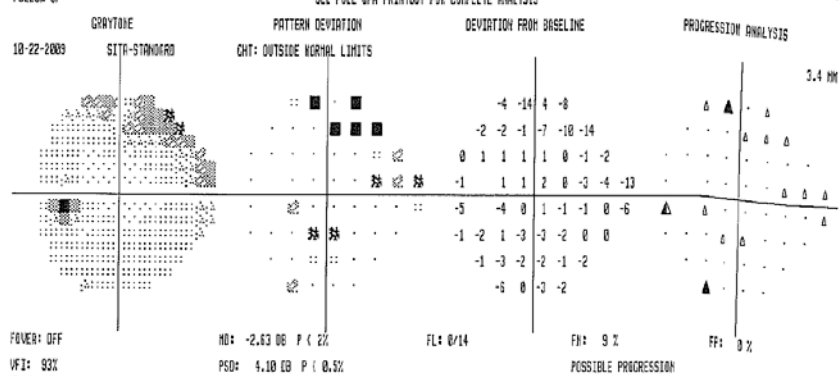


RATE OF PROGRESSION: -0.5 ± 0.4 %/YEAR (95% CONFIDENCE)

SLOPE SIGNIFICANT AT $P < 5\%$

FOLLOW-UP

SEE FULL GFA PRINTOUT FOR COMPLETE ANALYSIS



Macular Vulnerability Zone

Prog Retin Eye Res. 2013 January ; 32C: 1–21. doi:10.1016/j.preteyeres.2012.08.003.

Glaucomatous damage of the macula

Donald C. Hood^{a,b,*,1}, Ali S. Raza^{a,c,1}, Carlos Gustavo V. de Moraes^{d,e,1}, Jeffrey M. Liebmann^{d,e,1}, and Robert Ritch^{d,f,1}

Department of Psychology, Columbia University, New York, NY 10027-7004, USA

Department of Ophthalmology, Columbia University, New York, NY 10027-7004, USA

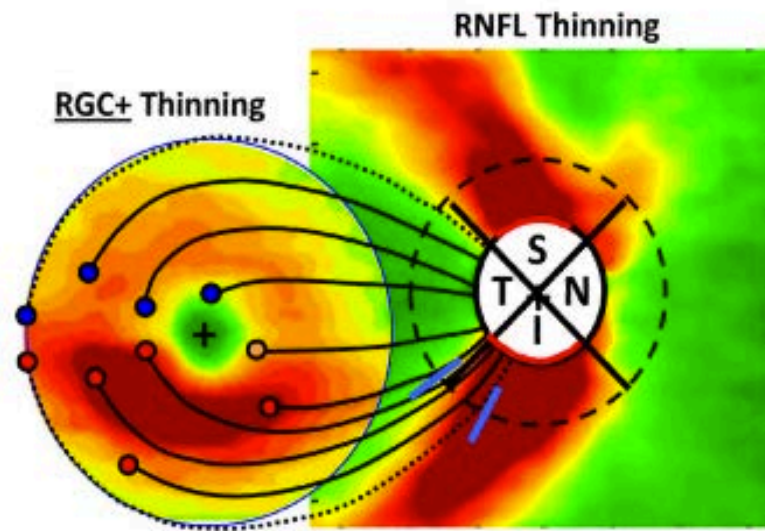
Department of Neurobiology and Behavior, Columbia University, New York, NY, USA

Einhorn Clinical Research Center, New York Eye and Ear Infirmary, New York, NY, USA

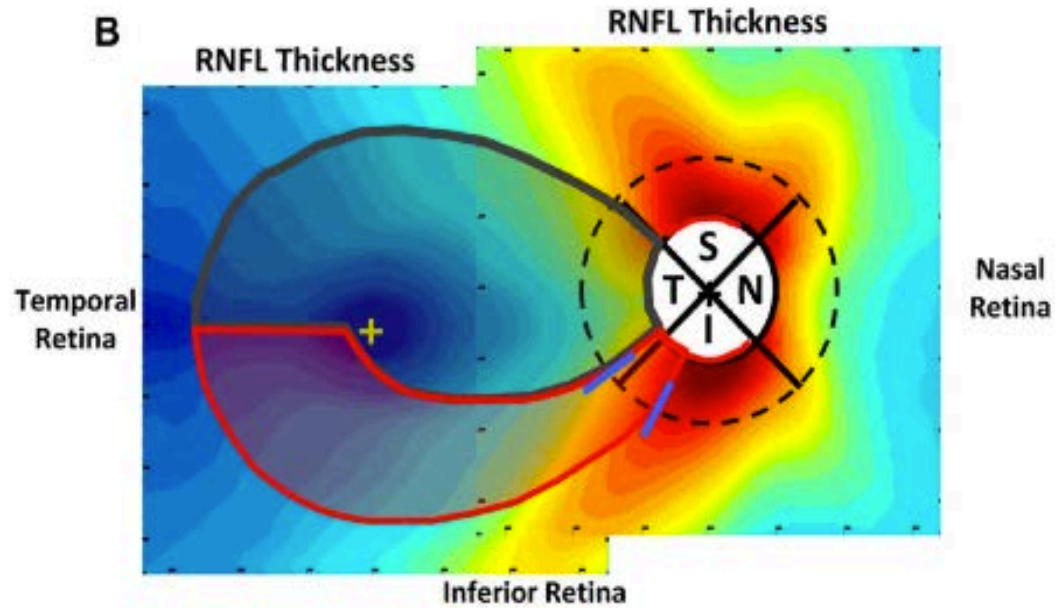
Department of Ophthalmology, New York University, New York, NY, USA

Department of Ophthalmology and Visual Science, New York Medical College, Valhalla, NY, USA

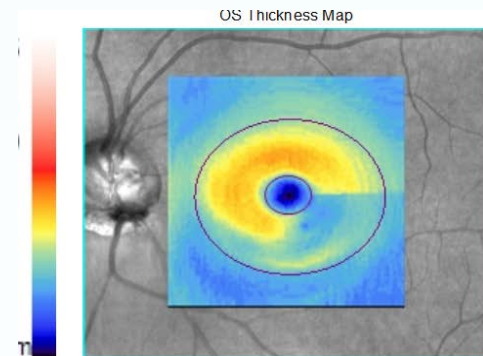
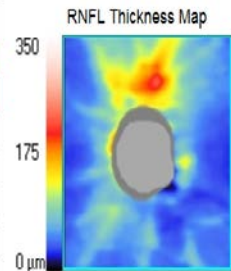
A



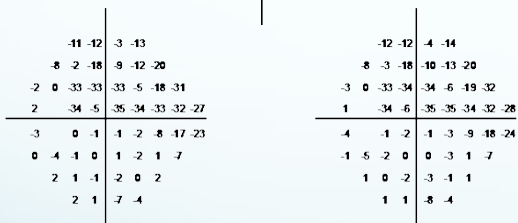
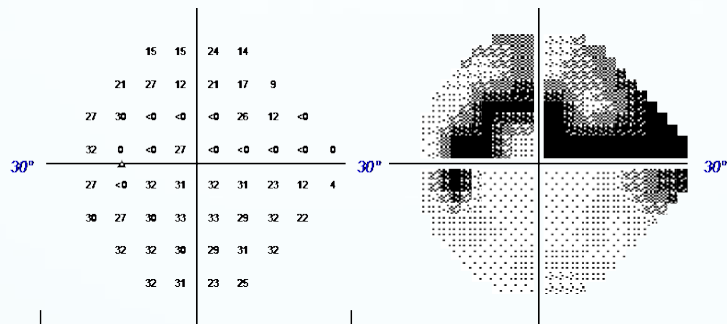
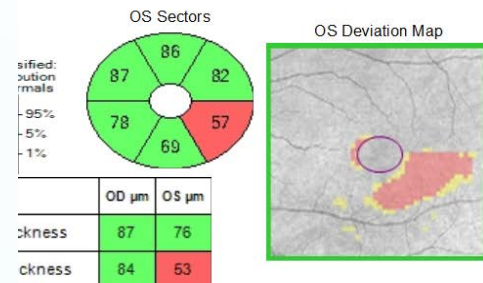
B



	OD	OS
Average RNFL Thickness	105 μ m	89 μ m
RNFL Symmetry	53%	
Rim Area	1.47 mm ²	1.26 mm ²
Disc Area	2.36 mm ²	4.35 mm ²
Average C/D Ratio	0.61	0.84
Vertical C/D Ratio	0.59	0.77
Cup Volume	0.196 mm ³	1.097 mm ³



Fovea: 262, 66



GHT: Outside Normal Limits

MD: -10.13 dB P < 0.5%

PSD: 14.00 dB P < 0.5%

VFI: 67%

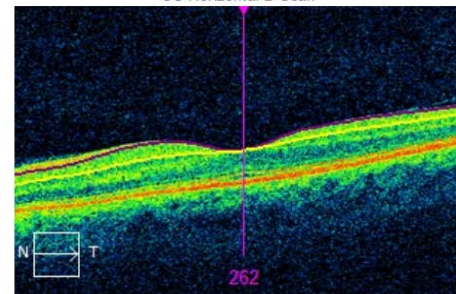
Total Deviation

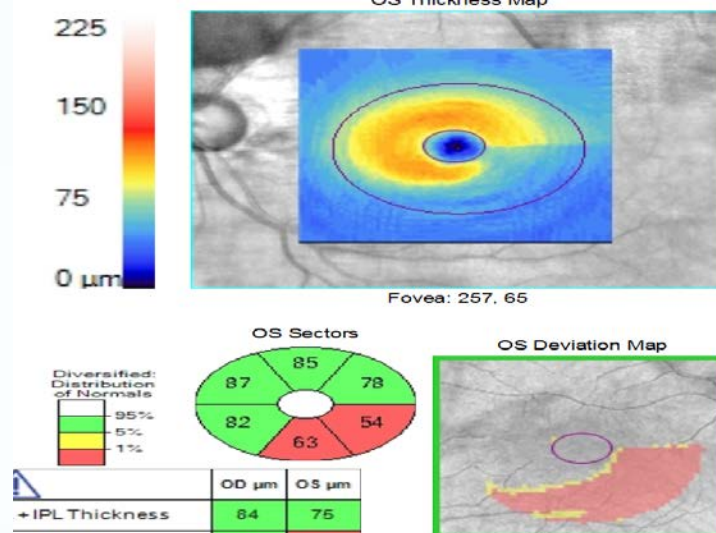
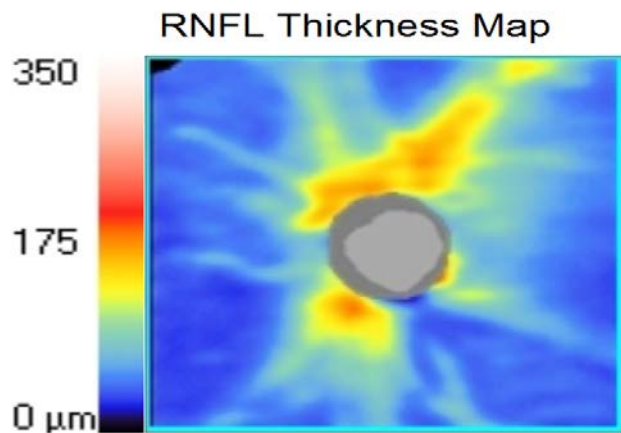
Pattern Deviation



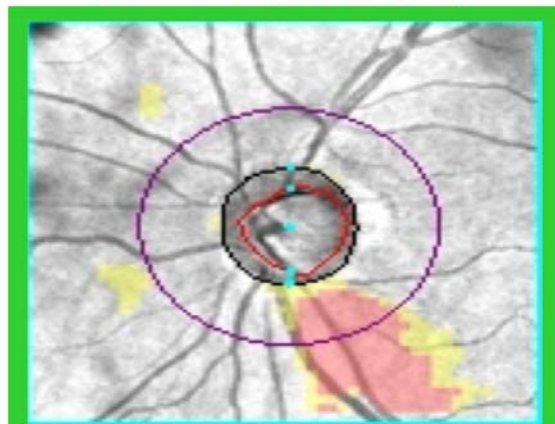
- P < 5%
- P < 2%
- P < 1%
- P < 0.5%

OS Horizontal B-Scan





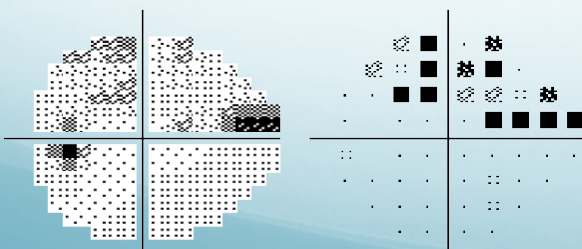
RNFL Deviation Map



Graytone

Pattern Deviation

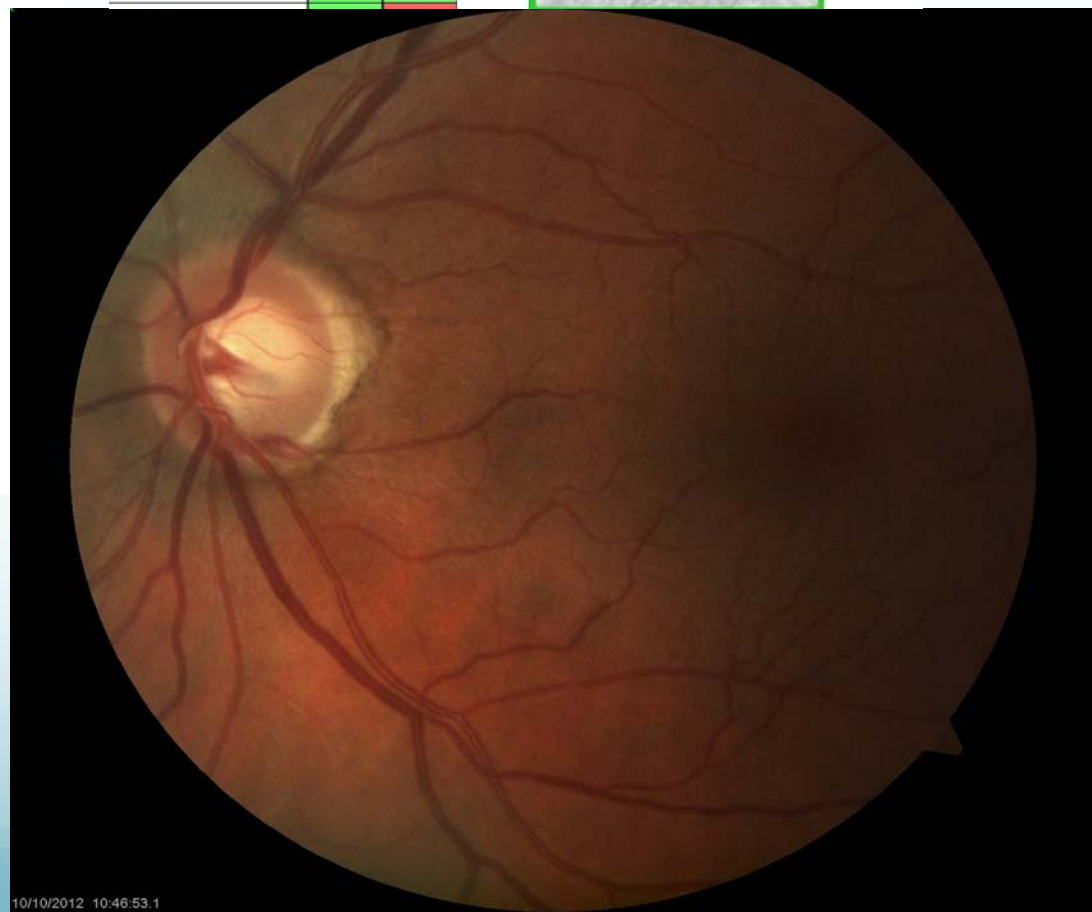
Sep 18, 2012 GHT: Outside Normal Limits
SITA-Standard



FL: 0/15
Fovea: Off
VFI: 91%

FN: 0%

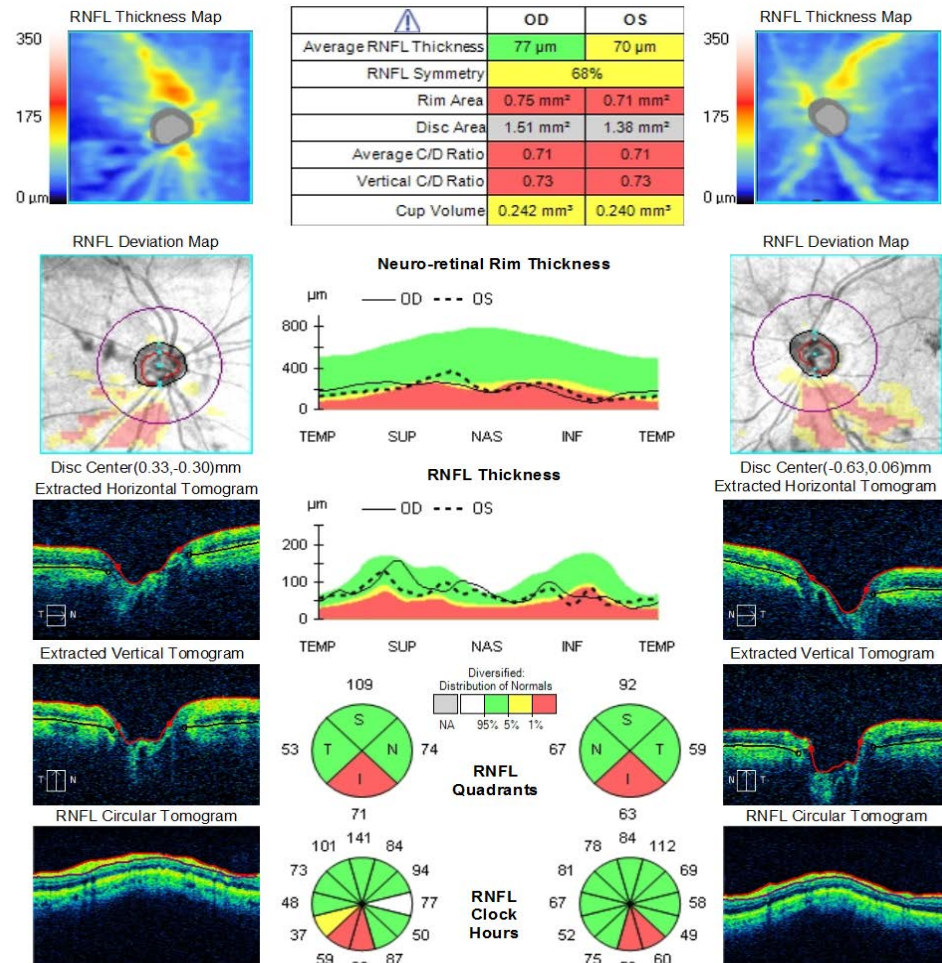
MD: -3.93 dB P < 1%
PSD: 5.51 dB P < 0.5%



Case 1.1.2

ONH and RNFL OU Analysis: Optic Disc Cube 200x200

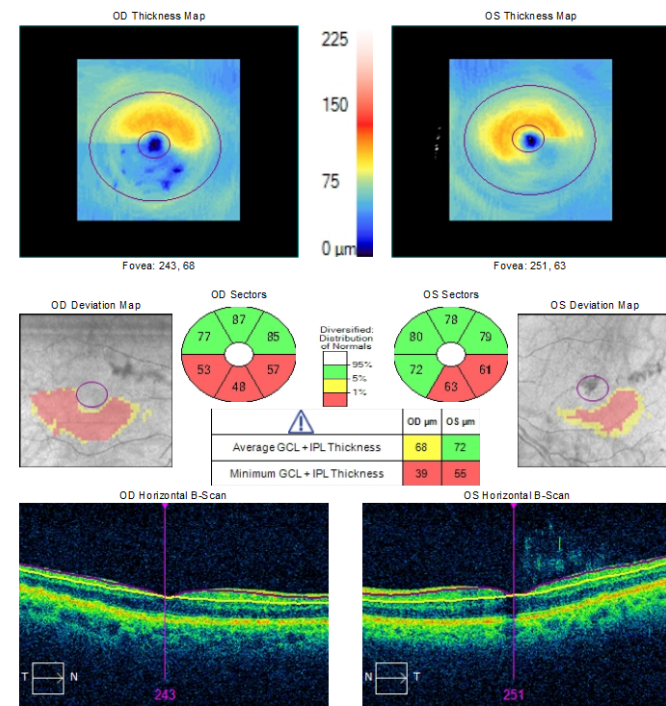
OD ● ● OS



ID: 9740341 Exam Date: 2/18/2015 2/18/2015 CZMI
 DOB: 3/13/1941 Exam Time: 4:19 PM 4:20 PM
 Gender: Male Serial Number: 5000-3593 5000-3593
 Technician: Operator, Cirrus Signal Strength: 7/10 8/10

Ganglion Cell OU Analysis: Macular Cube 512x128

OD ● ● OS



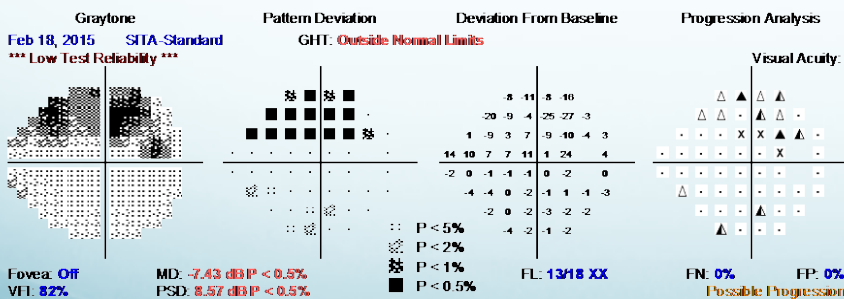
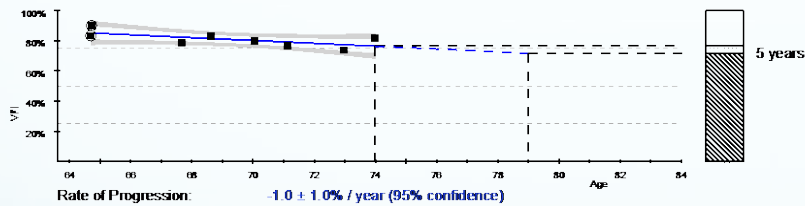
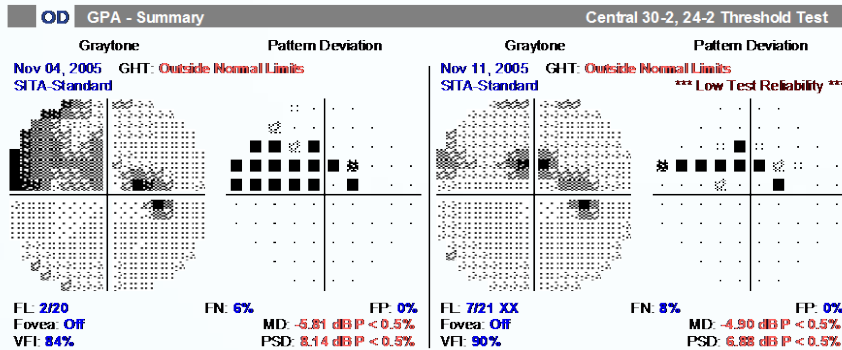
Comments

Doctor's Signature

CIRRUS
 SW Ver 6.5.0.772
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Case 1.1.2

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(502) 423-8500

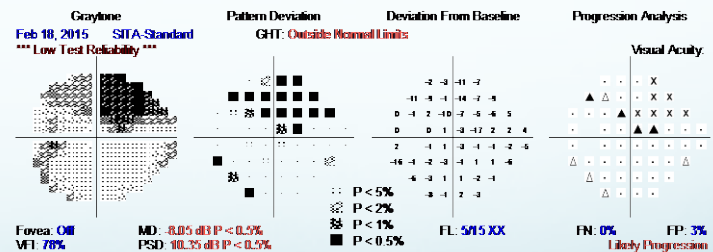
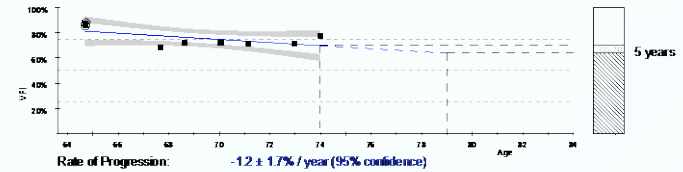
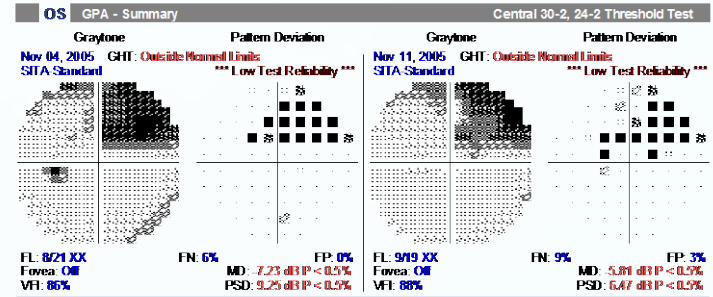


△ P < 5% Deterioration ▲ P < 5% (2 consecutive) ▲ P < 5% (3+ consecutive) X Out of Range

Comments: Signature:



635 Shelbyville Rd Louisville, KY 40222
(502) 423-8500



△ P < 5% Deterioration ▲ P < 5% (2 consecutive) ▲ P < 5% (3+ consecutive) X Out of Range

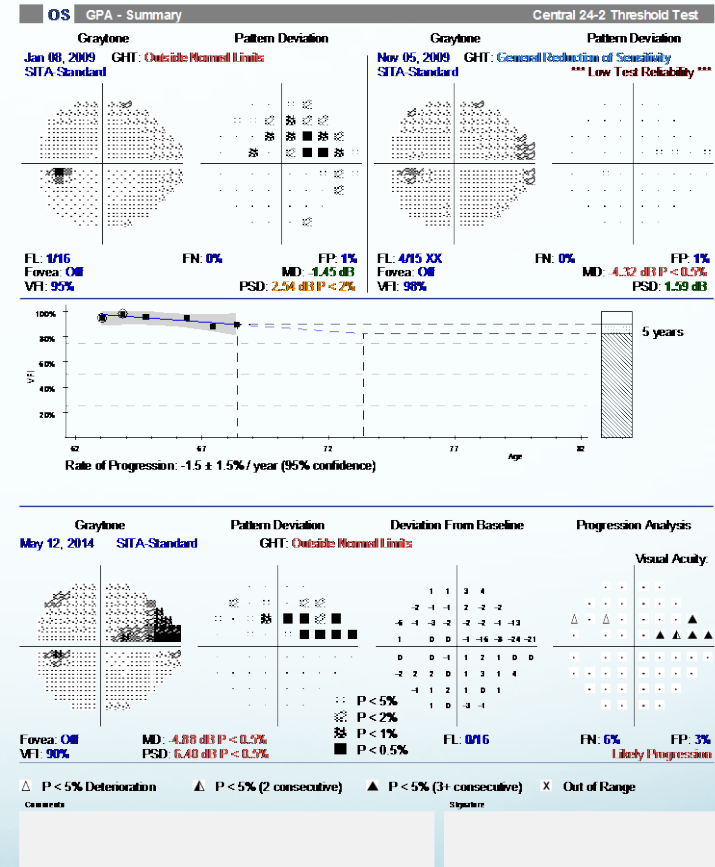
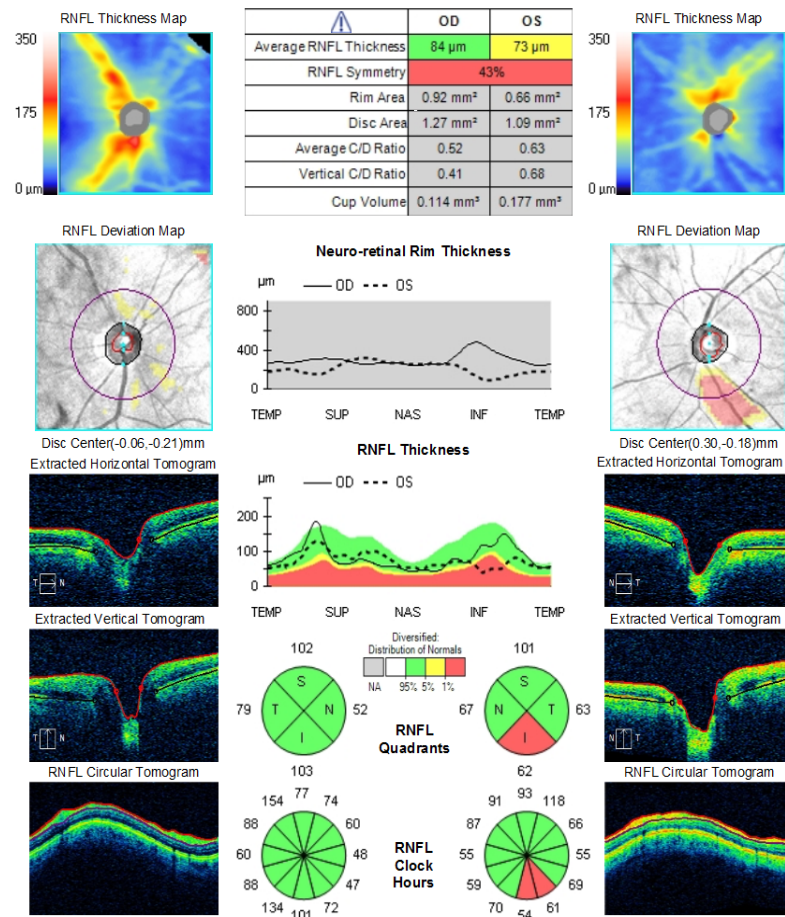
Comments:

Signature:



Case 1.1.3

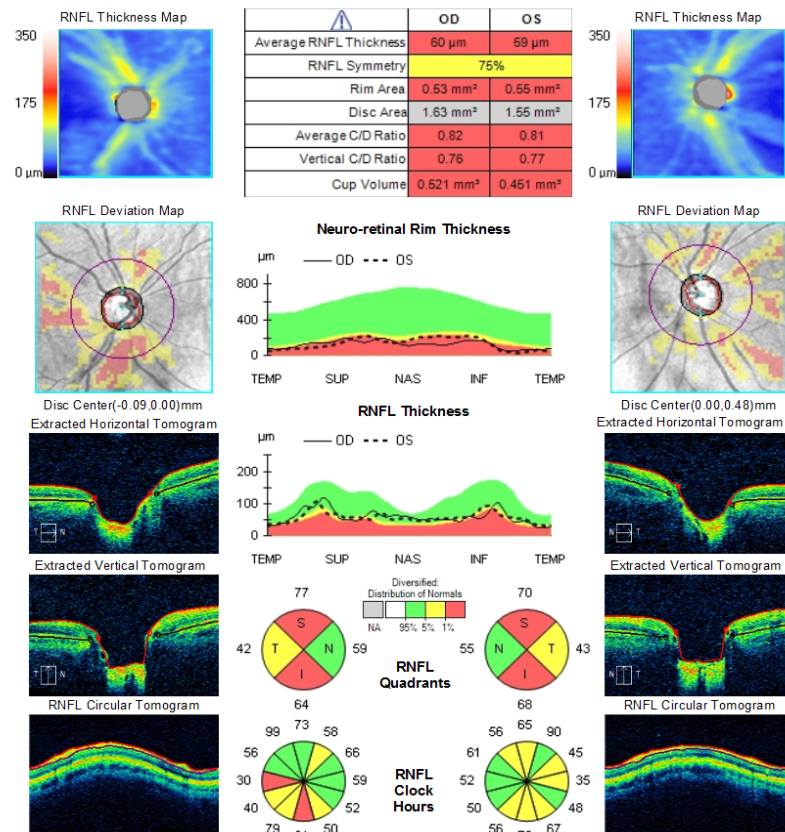
ONH and RNFL OU Analysis: Optic Disc Cube 200x200 OD ● ● OS



Case 1.1.5

ID: 996755807 Exam Date: 1/19/2015 1/19/2015 CZMI
 DOB: 10/6/1932 Exam Time: 10:46 AM 10:47 AM
 Gender: Male Serial Number: 5000-3593 5000-3593
 Technician: Operator, Cirrus Signal Strength: 9/10 9/10

ONH and RNFL OU Analysis: Optic Disc Cube 200x200 OD OS



Comments

Doctor's Signature

CIRRUS
 SW Ver: 6.5.0.772
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an1

7

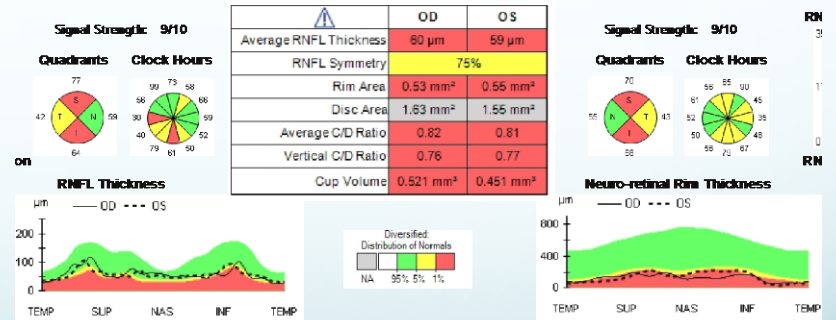
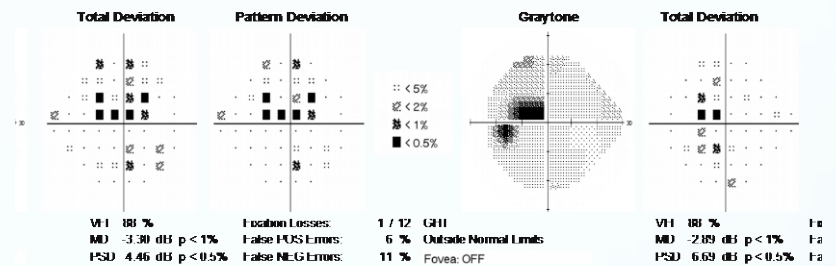
HFA Exam Dates Cirrus Exam Dates
 Date: 1/19/15 (OD) 1/19/15 (OS) Date: 1/19/15 (OD) 1/19/15 (OS)
 Time: 9:56 AM (OD) 10:06 AM (OS) Time: 10:46 AM (OD) 10:46 AM (OS)

Gender: Male

1 and Cirrus ONH Combined Report

2 SITA-Fast

24-2 SITA-Fast



Physician's Signature

HFA 24-2
 HFA 24-2
 Cirrus SW Ver: 6.5.0

Case 1.1.5

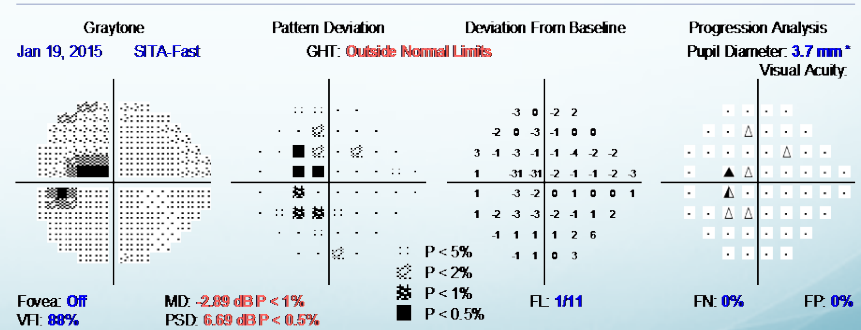
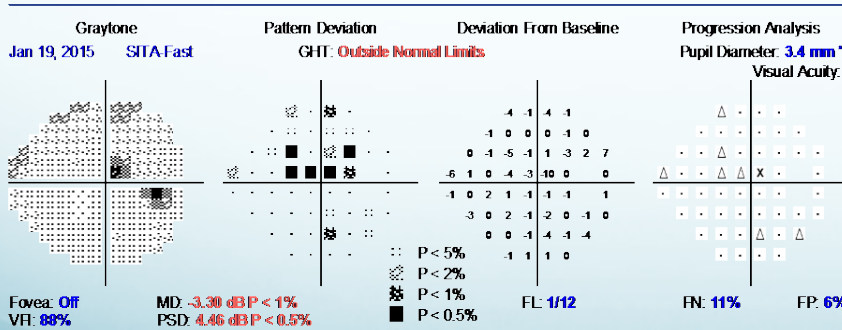
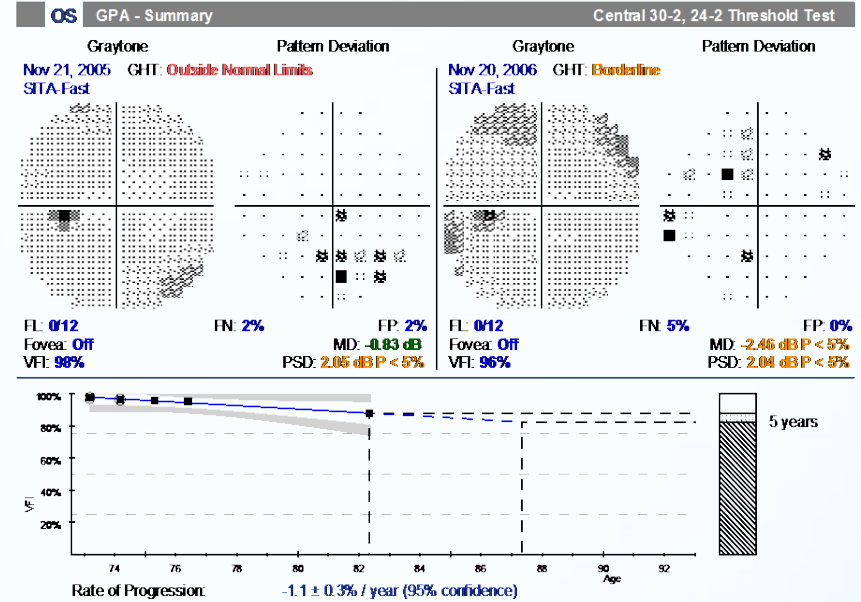
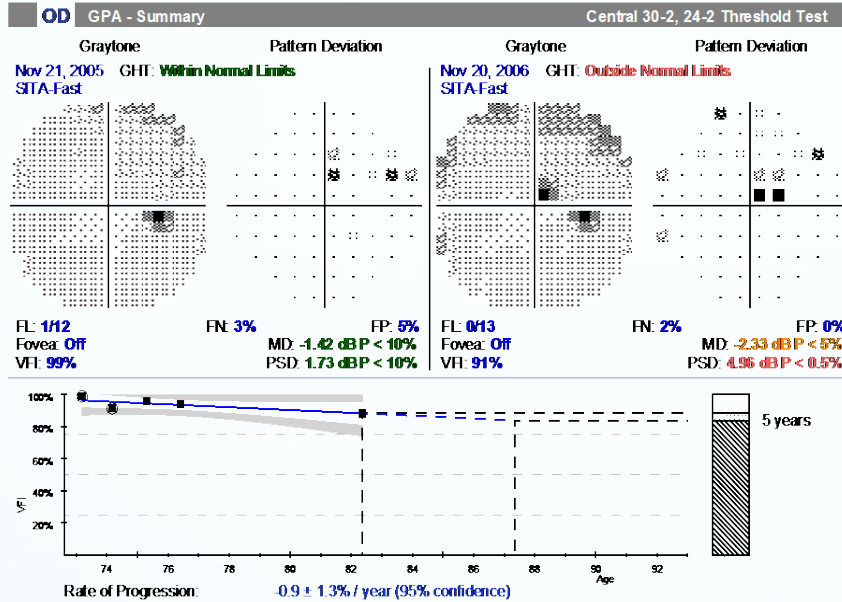
1/19/2015

omments

Case 1.1.5

635 Shelbyville Rd Louisville, KY 40222
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(502) 423-8500

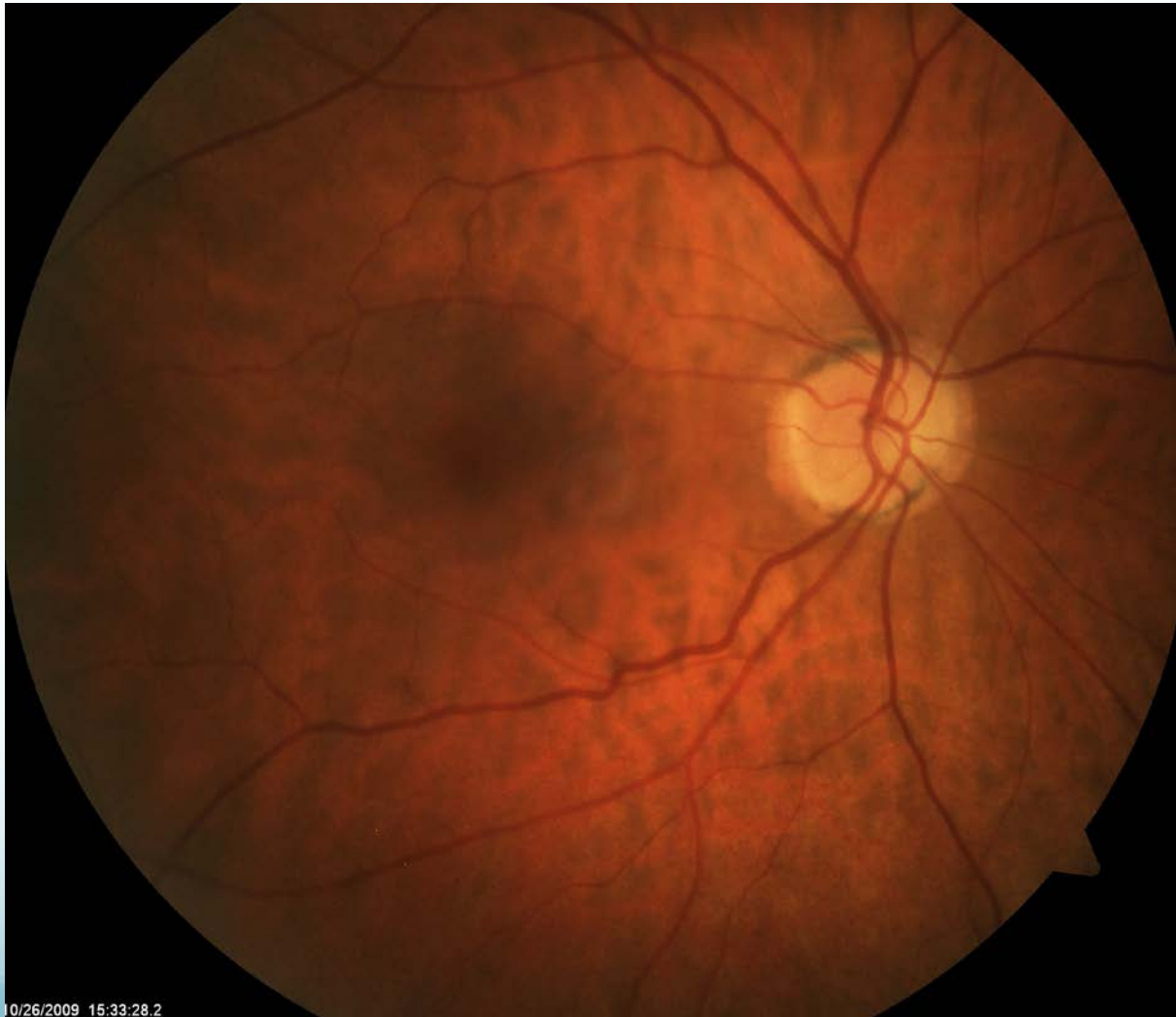


ZEISS

ZEISS

Optic Nerve Applications of OCT

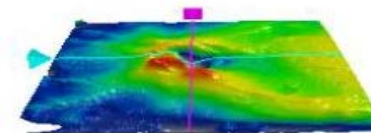
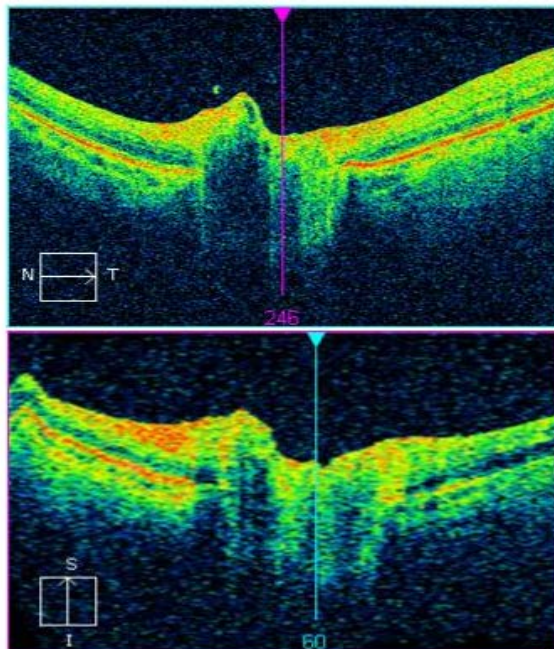
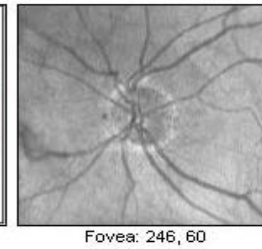
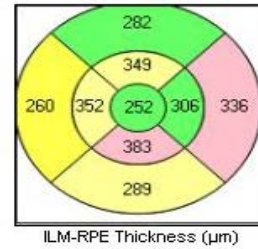
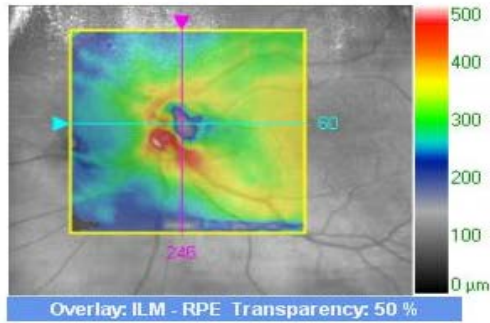




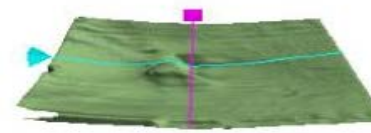
10/26/2009 15:33:28.2

Macula Thickness : Macular Cube 512x128

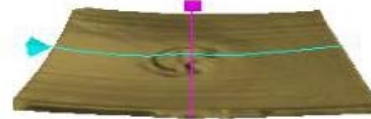
OD ☐ OS ☒



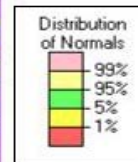
ILM - RPE



ILM



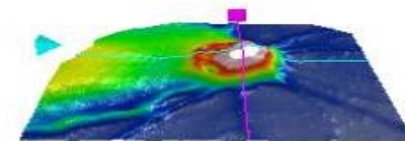
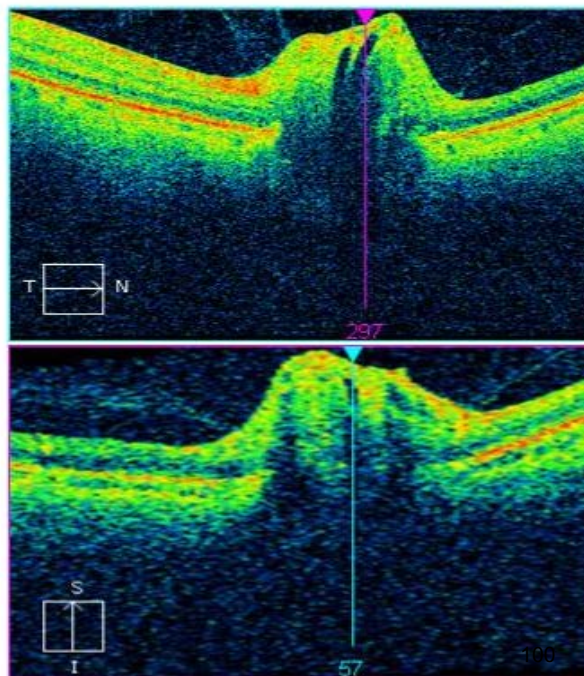
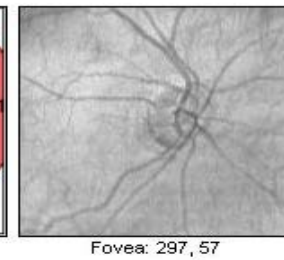
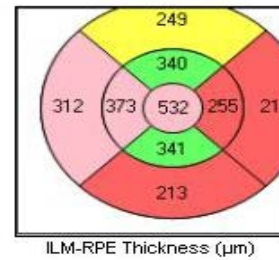
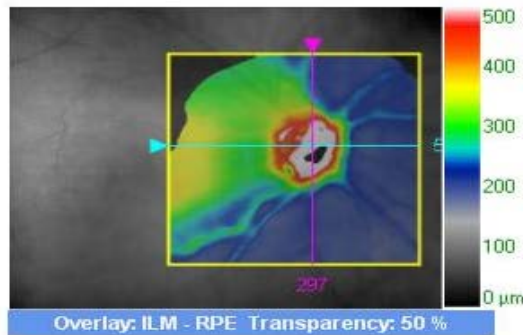
RPE



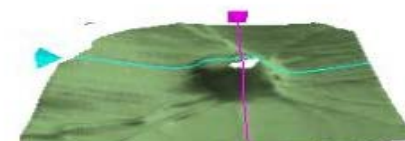
	Central Subfield Thickness (μm)	Cube Volume (mm³)	Cube Average Thickness (μm)
ILM - RPE	252	10.7	296

Macula Thickness : Macular Cube 512x128

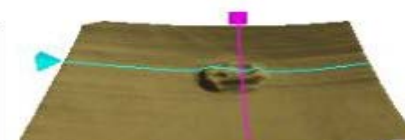
OD ● | ○ OS



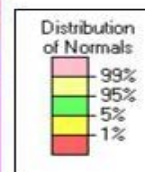
ILM - RPE



ILM

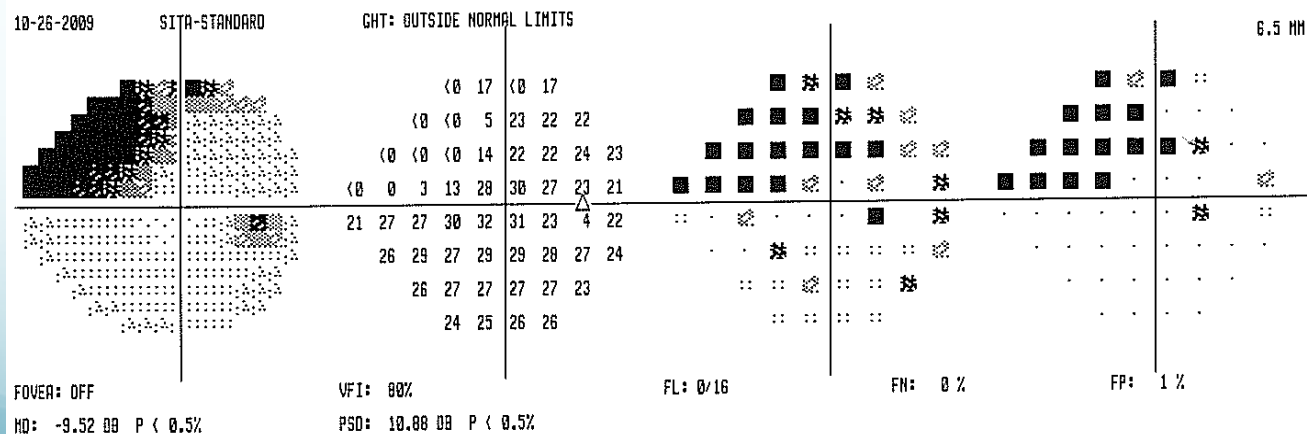
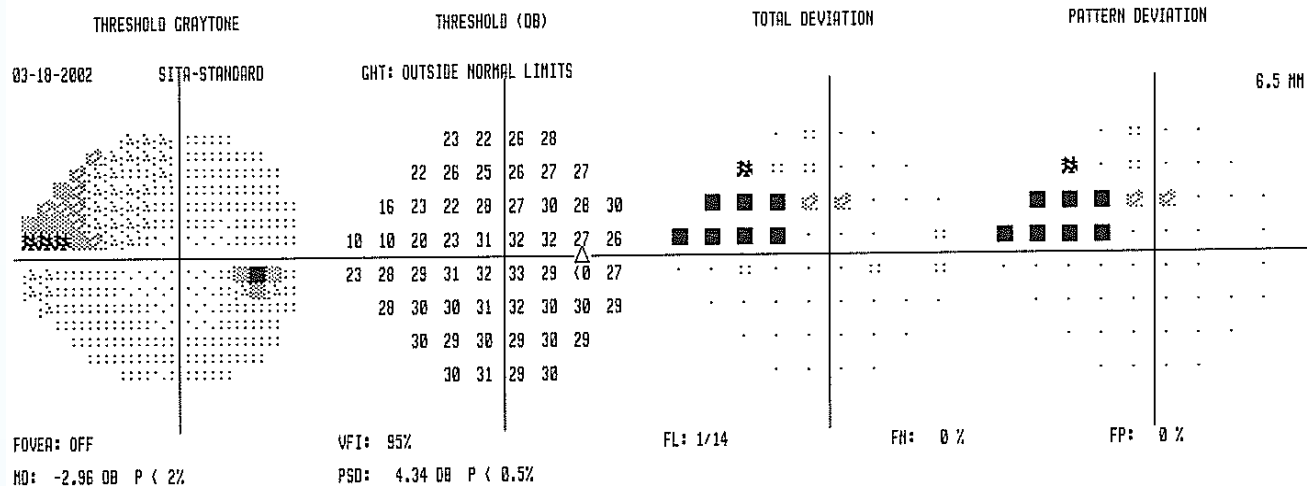


RPE

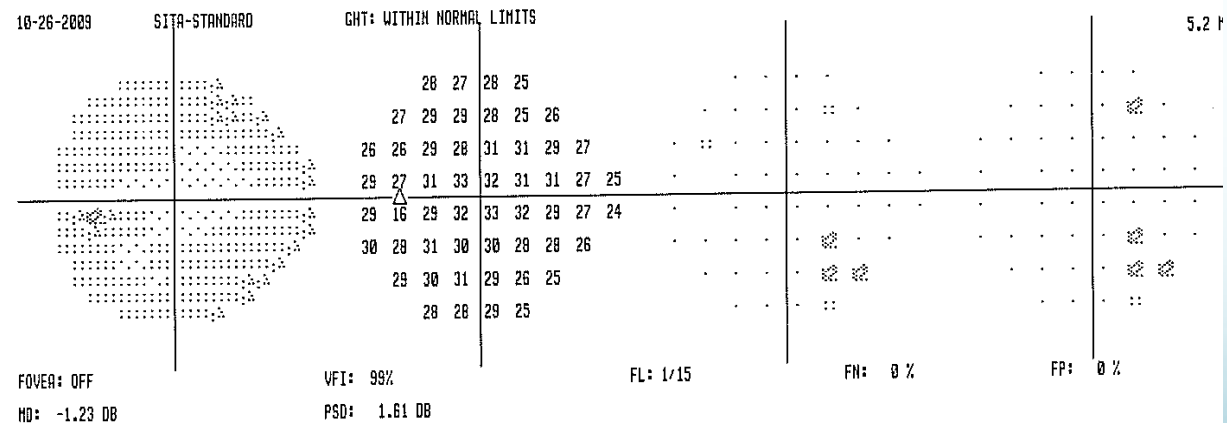
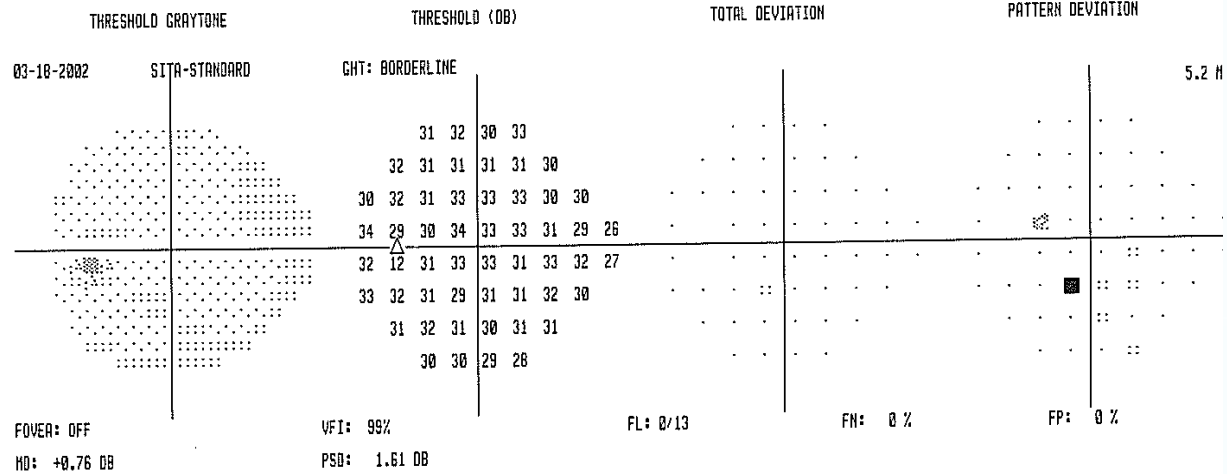


	Central Subfield Thickness (μm)	Cube Volume (mm^3)	Cube Average Thickness (μm)
ILM - RPE	532	9.0	251

CENTRAL 24-2 THRESHOLD TEST



CENTRAL 24-2 THRESHOLD TEST







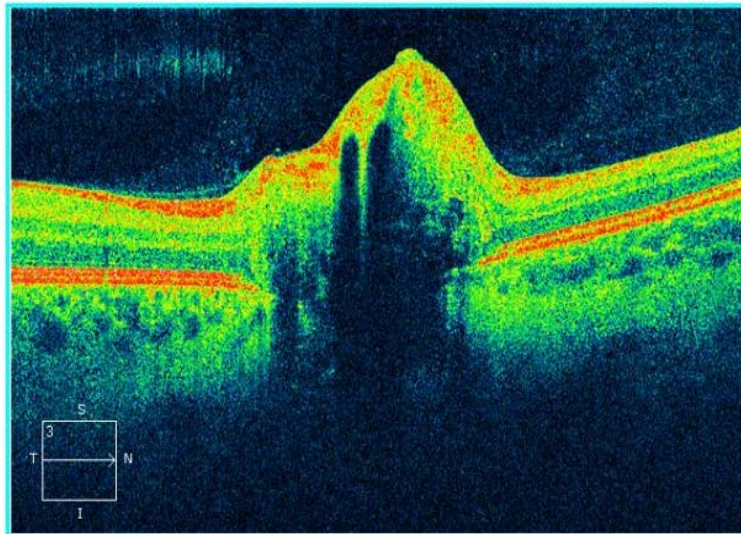
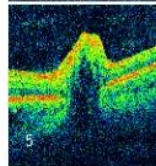
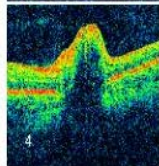
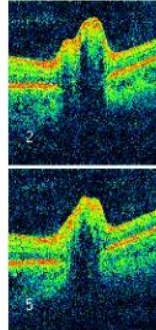
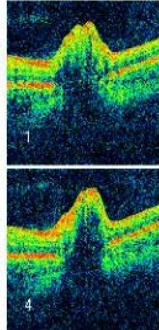
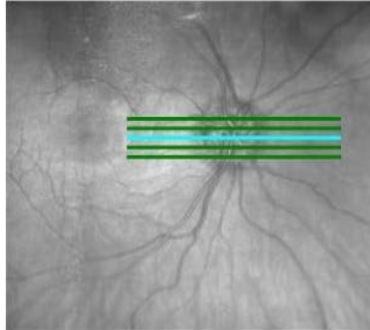
High Definition Images: 5 Line Raster

OD ● | ○ C

Scan Angle: 0°

Spacing: 0.25 mm

Length: 6 mm



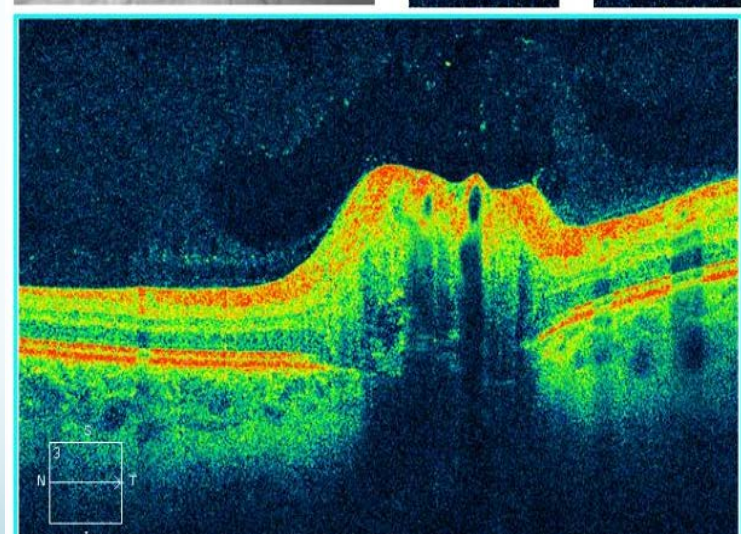
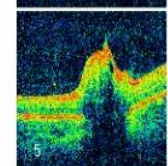
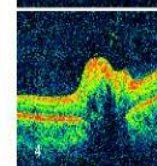
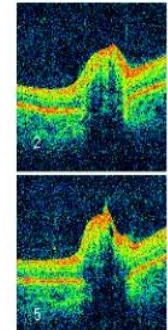
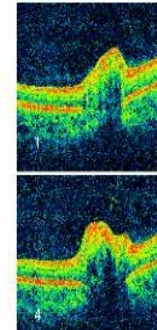
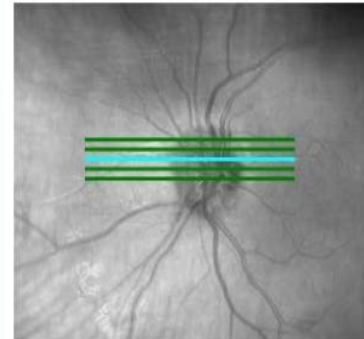
High Definition Images: 5 Line Raster

OD ○ | ● OS

Scan Angle: 0°

Spacing: 0.25 mm

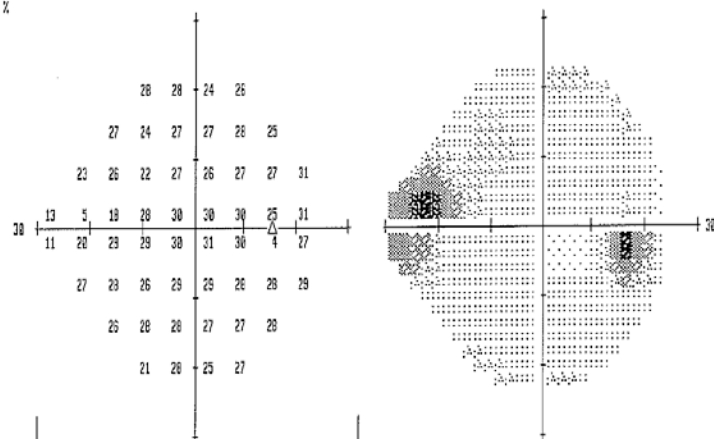
Length: 6 mm



CENTRAL 24-2 THRESHOLD TEST

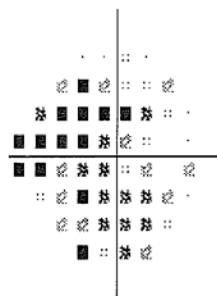
FIXATION MONITOR: GAZE/BLIND SPOT
 FIXATION TARGET: CENTRAL
 FIXATION LOSSES: 0/11
 FALSE POS ERRORS: 0 %
 FALSE NEG ERRORS: 0 %
 TEST DURATION: 04:06

FOVER: OFF



-2	-2	-5	-3
-5	-9	-5	-4
-8	-6	-11	-6
-16	-27	-15	-5
-16	-12	-4	-5
-4	-4	-3	-5
-5	-5	-5	-6
-10	-3	-7	-5

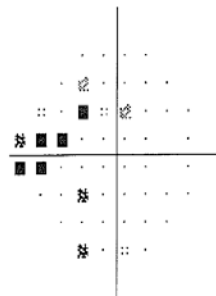
TOTAL DEVIATION



● (5%
 ■ (2%
 ■ (1%
 ■ (0.5%

1	2	-2	0
-2	-5	-1	-1
-5	-3	-6	-3
-13	-23	-12	-3
-15	-9	-1	-2
-1	-1	-5	-2
-2	-1	-2	-2
-7	0	-3	-1

PATTERN DEVIATION



DHT

OUTSIDE NORMAL LIMITS

VFI 93%

MD -6.27 DB P < 0.5%

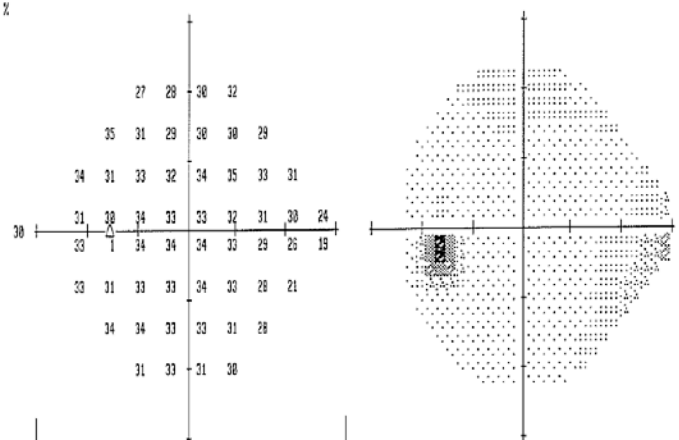
PSD 4.66 DB P < 0.5%

GRADIE EYE CENTERS
 7635 SHELBYVILLE ROAD
 LOUISVILLE, KY 40222
 (502) 423-8500

CENTRAL 24-2 THRESHOLD TEST

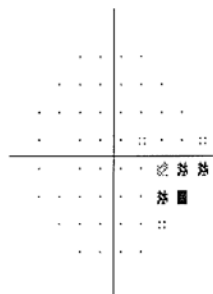
FIXATION MONITOR: GAZE/BLIND SPOT
 FIXATION TARGET: CENTRAL
 FIXATION LOSSES: 2/10 XX
 FALSE POS ERRORS: 16 % XX
 FALSE NEG ERRORS: 4 %
 TEST DURATION: 03:08

FOVER: OFF



-2	-1	0	2
4	0	-2	-1
2	-1	0	-2
-1	1	-1	-2
1	0	0	-1
1	-1	0	-1
1	1	0	-2
0	1	0	-1

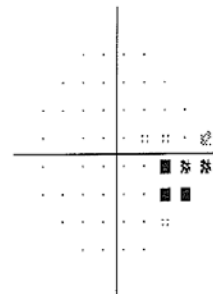
TOTAL DEVIATION



● (5%
 ■ (2%
 ■ (1%
 ■ (0.5%

-3	-2	-1	1
3	-1	-3	-2
1	-2	-1	-3
-2	0	0	-2
0	-1	-1	-1
0	-2	-1	-2
0	0	-1	-3
-1	0	-1	-2

PATTERN DEVIATION



*** EXCESSIVE HIGH FALSE POSITIVES ***

DHT

OUTSIDE NORMAL LIMITS

VFI 96%

MD -1.17 DB

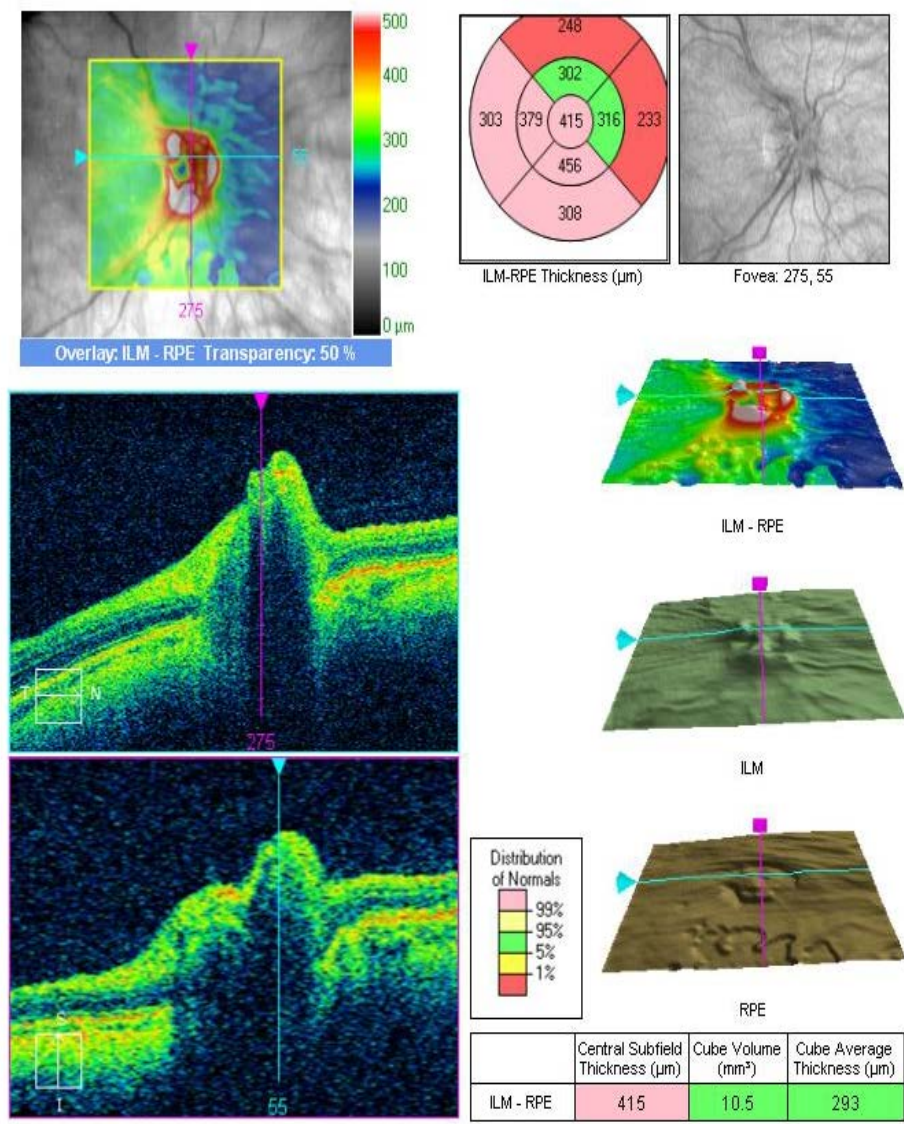
PSD 2.57 DB P < 2%

GRADIE EYE CENTERS
 7635 SHELBYVILLE ROAD
 LOUISVILLE, KY 40222
 (502) 423-8500



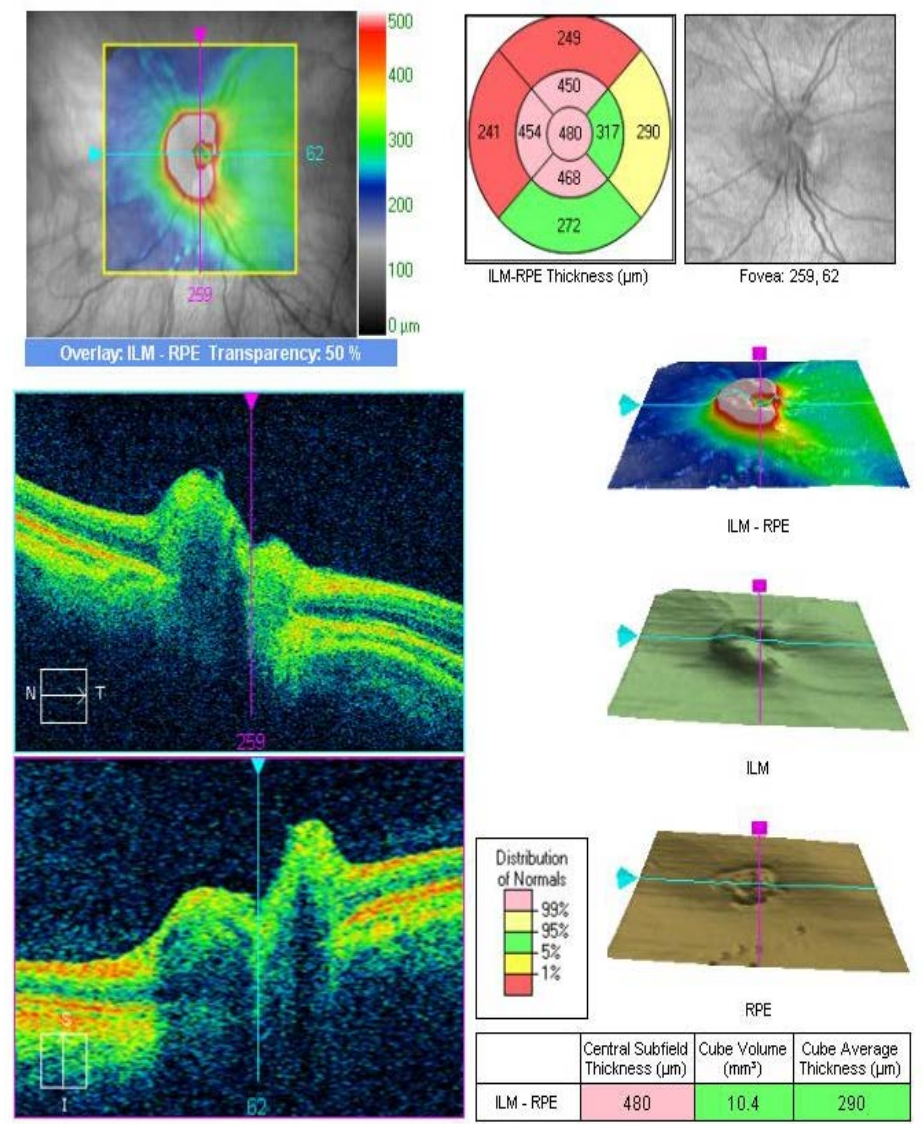
Macula Thickness : Macular Cube 512x128

OD ● | ○ OS



Macula Thickness : Macular Cube 512x128

OD ○ | ● OS



CENTRAL 24-2 THRESHOLD TEST

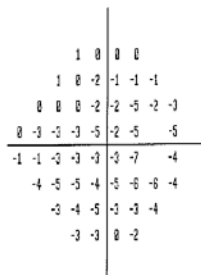
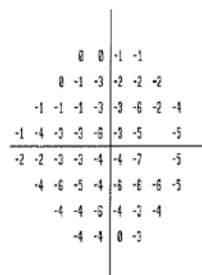
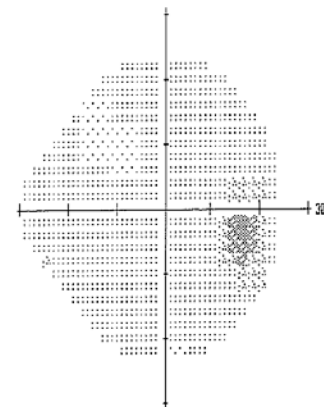
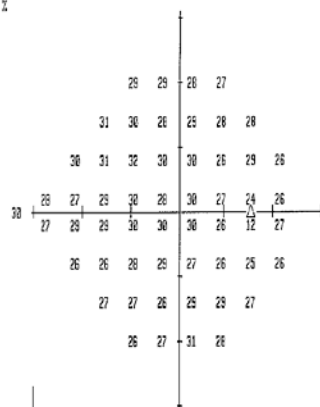
FIXATION MONITOR: GAZE/BLIND SPOT
 FIXATION TARGET: CENTRAL
 FIXATION LOSSES: 0/11
 FALSE POS ERRORS: 4 %
 FALSE NEG ERRORS: 0 %
 TEST DURATION: 03:00

STIMULUS: III, WHITE
 BACKGROUND: 31.5 ASB
 STRATEGY: SITA-FAST

PUPIL DIAMETER:
 VISUAL ACUITY:
 RX: +3.25 DS -4.25 DC X 33

DATE: 07-20-2009
 TIME: 11:12 AM
 AGE: 39

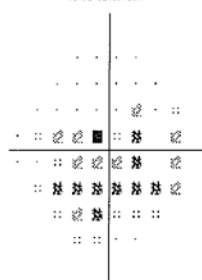
FOVER: OFF



CNT
 OUTSIDE NORMAL LIMITS
 VFI 94%
 MD -3.35 DB P < 1%
 PSD 1.95 DB P < 5%

TOTAL DEVIATION

PATTERN DEVIATION



0 (5%
 1 (2%
 2 (1%
 3 (0.5%

GRODIE EYE CENTERS
 7635 SHELBYVILLE ROAD
 LOUISVILLE, KY 40222
 (502) 423-8500

CENTRAL 24-2 THRESHOLD TEST

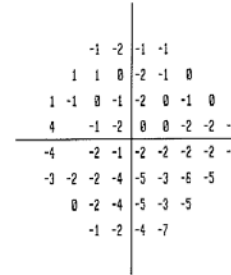
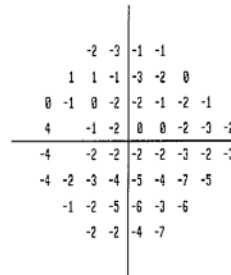
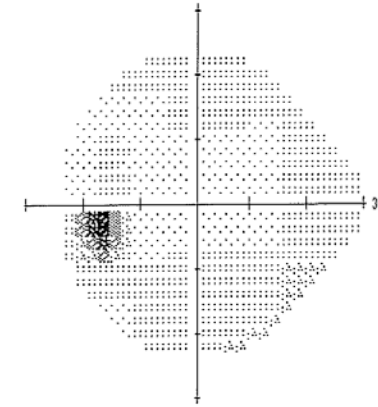
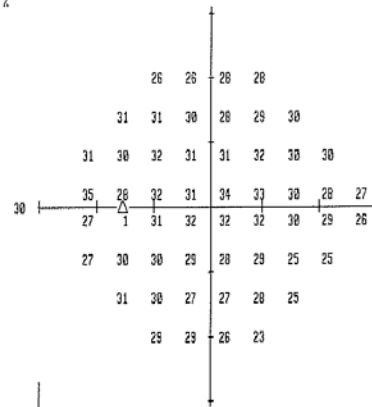
FIXATION MONITOR: GAZE/BLIND SPOT
 FIXATION TARGET: CENTRAL
 FIXATION LOSSES: 2/10 XX
 FALSE POS ERRORS: 6 %
 FALSE NEG ERRORS: 0 %
 TEST DURATION: 03:15

STIMULUS: III, WHITE
 BACKGROUND: 31.5 ASB
 STRATEGY: SITA-FAST

PUPIL DIAMETER:
 VISUAL ACUITY:
 RX: +1.75 DS -3.75 DC X 80

DATE: 07-20-2009
 TIME: 11:17 AM
 AGE: 39

FOVER: OFF



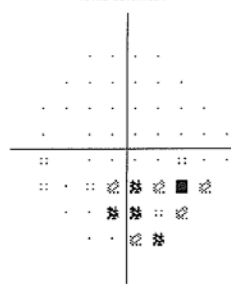
+++ LOW TEST RELIABILITY +++

CNT
 BORDERLINE

VFI 97%
 MD -2.25 DB P < 5%
 PSD 2.07 DB P < 5%

TOTAL DEVIATION

PATTERN DEVIATION

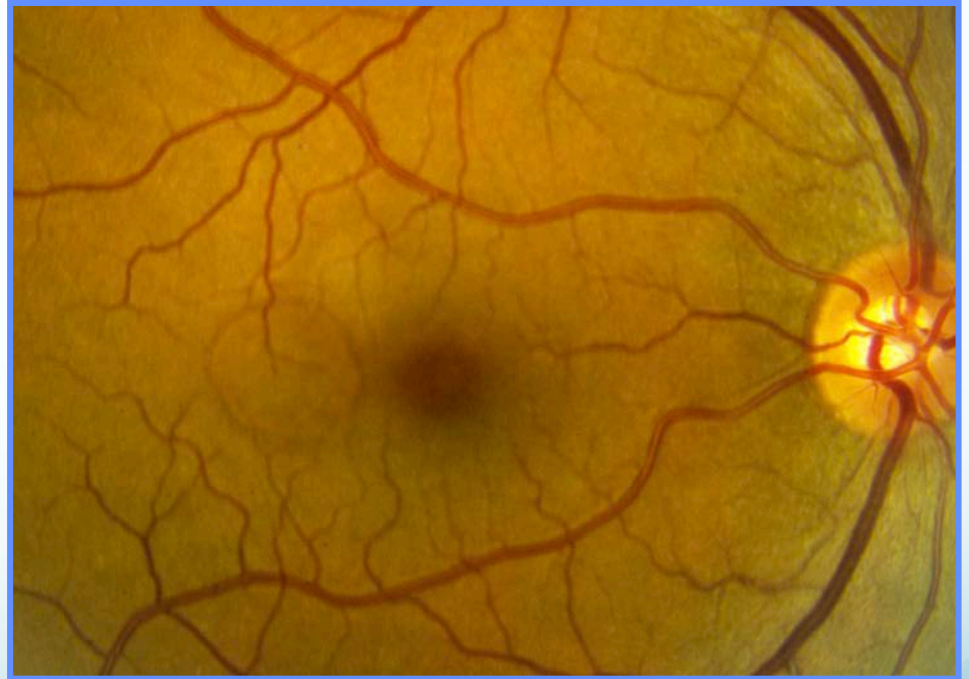
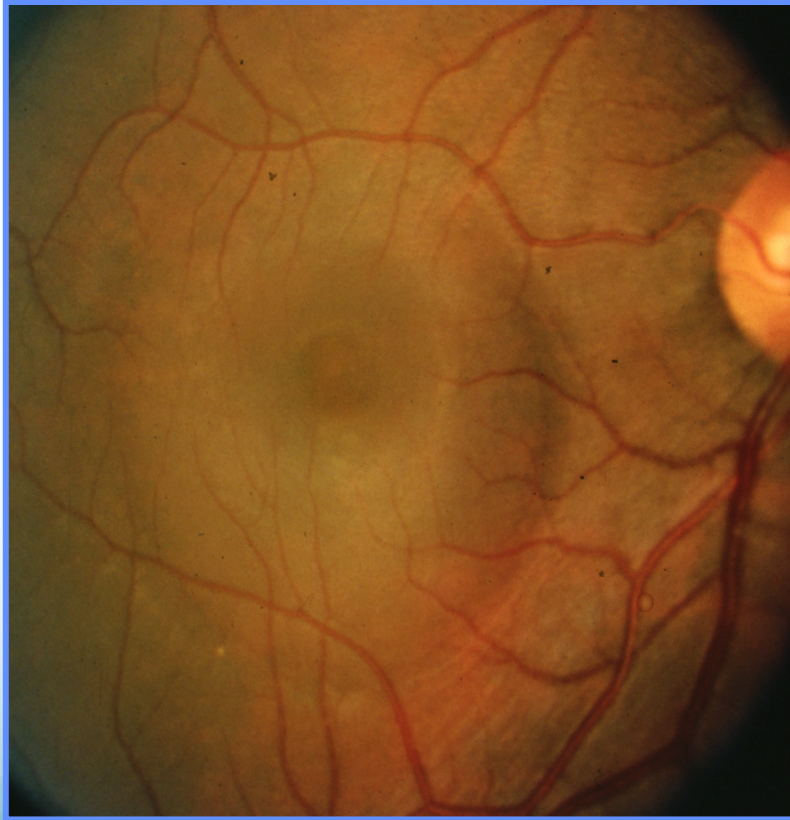


0 (5%
 1 (2%
 2 (1%
 3 (0.5%

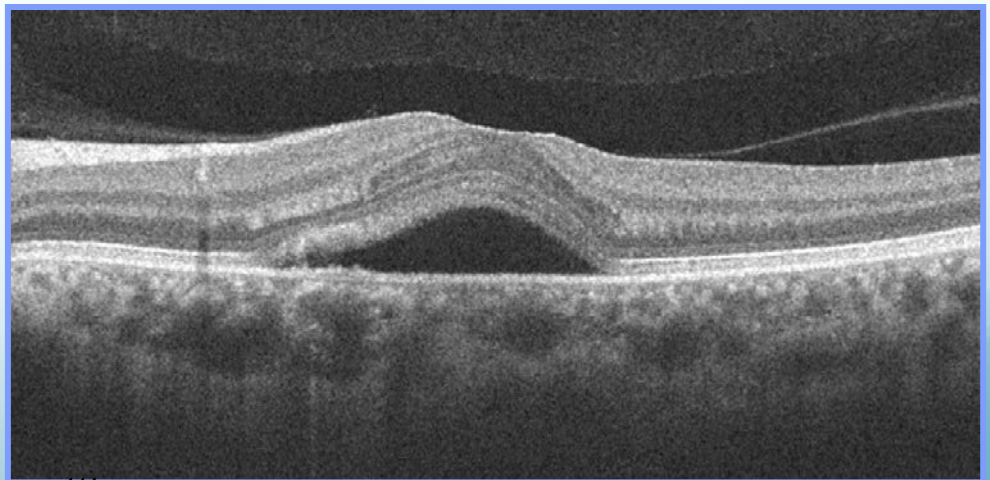
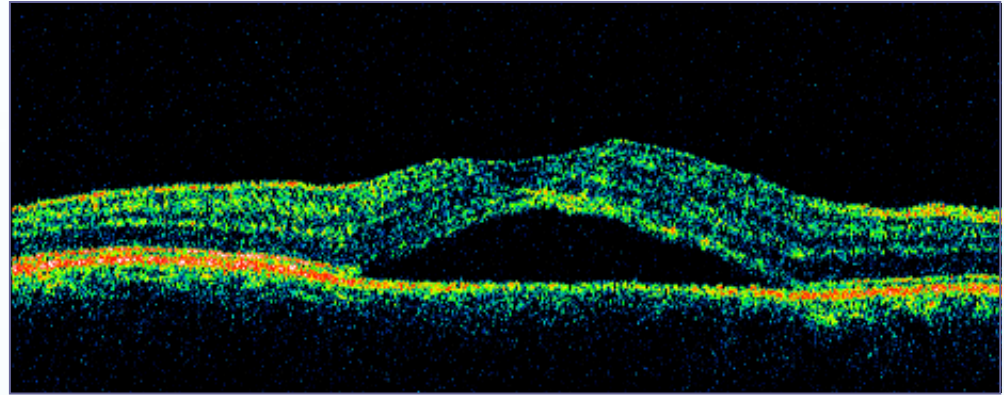
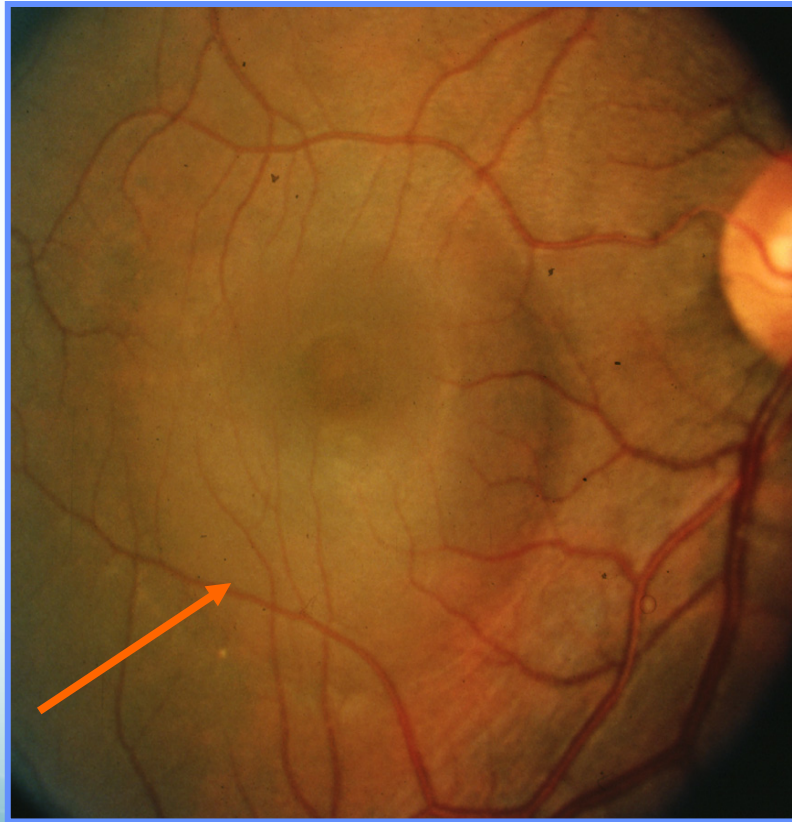
GRODIE EYE CENTERS
 7635 SHELBYVILLE ROAD
 LOUISVILLE, KY 40222
 (502) 423-8500

Recognizing Macular Edema

Where is the Fluid?



Where is the Fluid?



Central Serous Chorioretinopathy (CSR)



44 y/o Female: Notes blur in the LE X 1 mo
BCVA: 20/25



Vision Distortion OD x 4 days

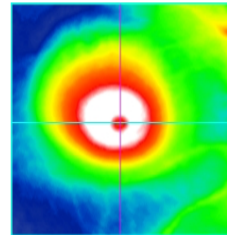


Numerical Values

Macula Thickness OU: Macular Cube 512x128

OD ● ● OS

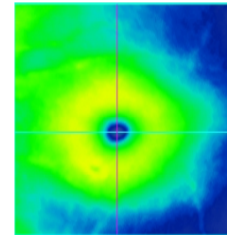
OD ILM-RPE Thickness Map



Fovea: 249, 66



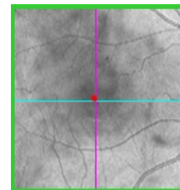
OS ILM-RPE Thickness Map



Fovea: 234, 71

Normative data is not available. Patient age < 18.

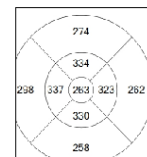
OD OCT Fundus



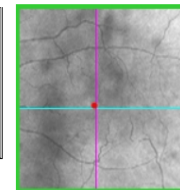
OD ILM-RPE Thickness



OS ILM-RPE Thickness



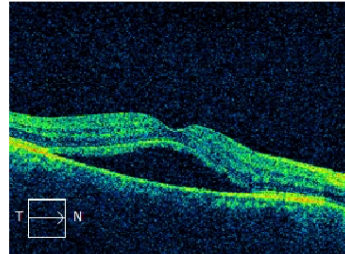
OS OCT Fundus



ILM - RPE	OD	OS
Thickness Central Subfield (μm)	505	263
Volume Cube (mm^3)	11.3	10
Thickness Avg Cube (μm)	313	277

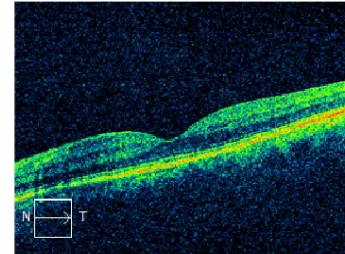
OD Horizontal B-Scan

BScan: 66



OS Horizontal B-Scan

BScan: 71



Central Serous

37 WM

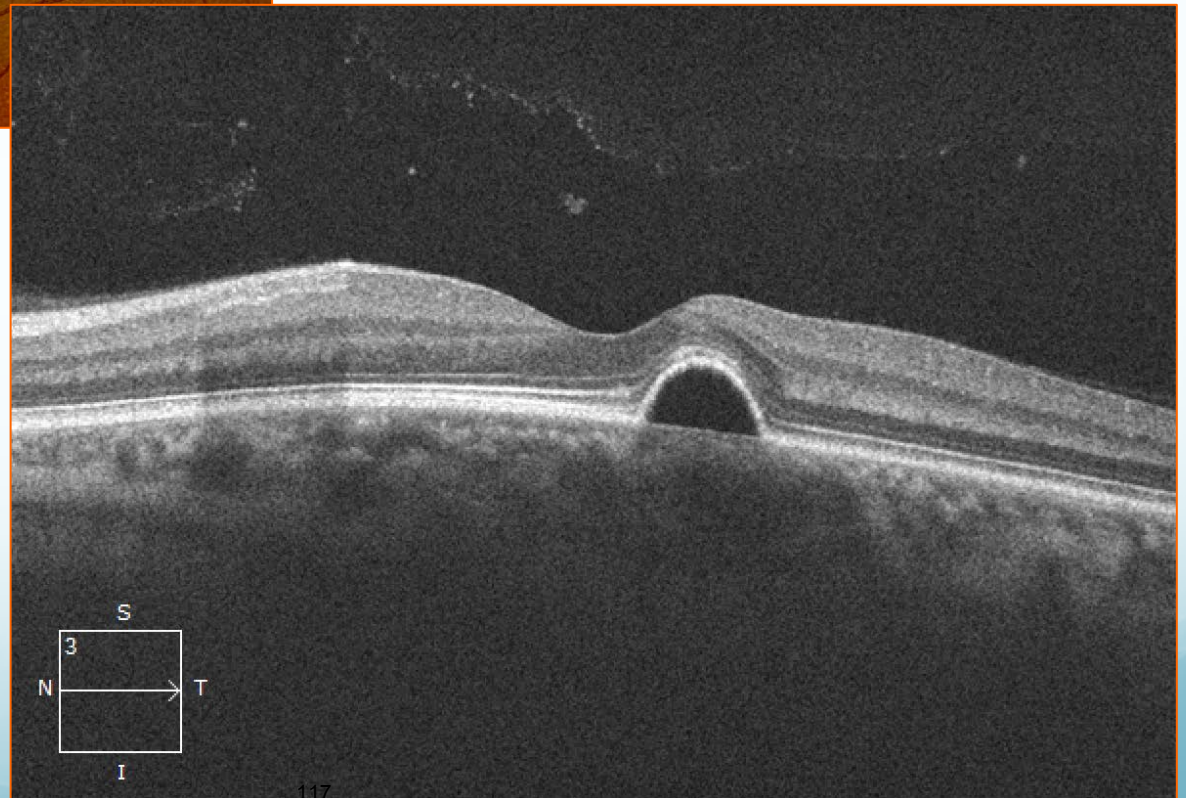
20/80 BCVA





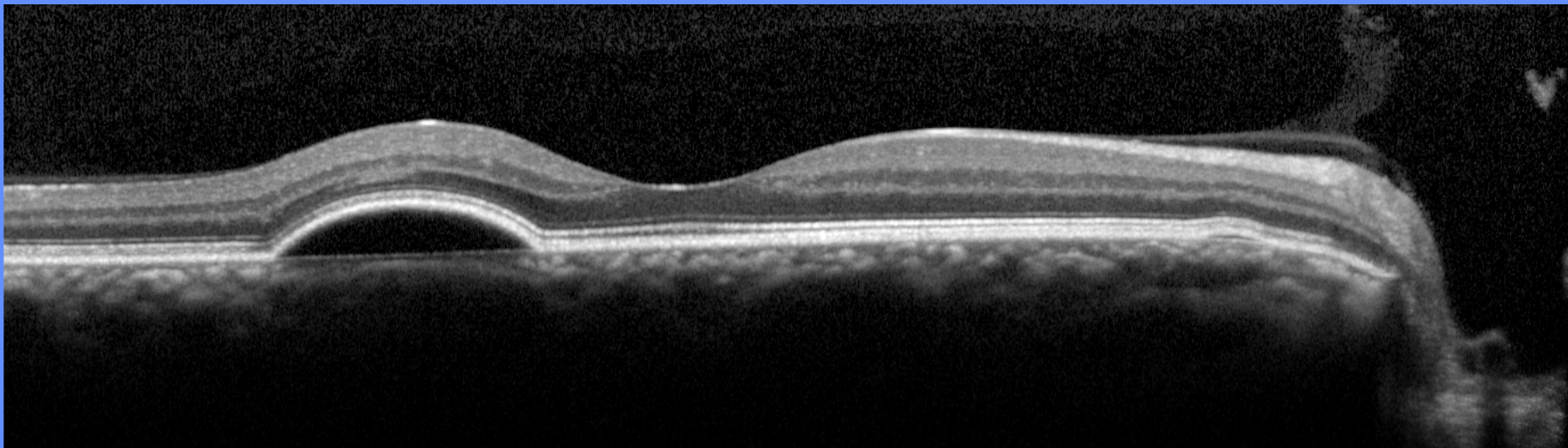


PED involving fovea

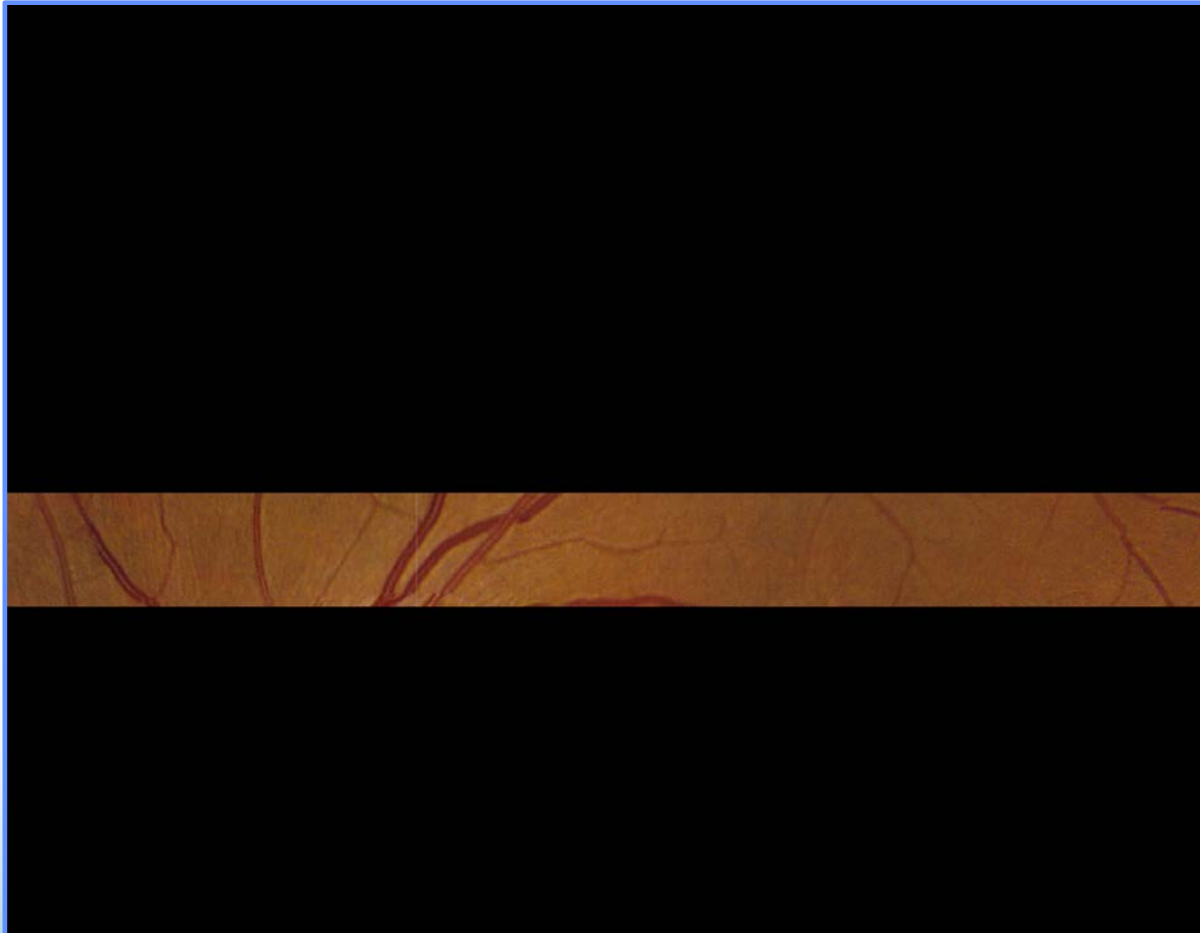


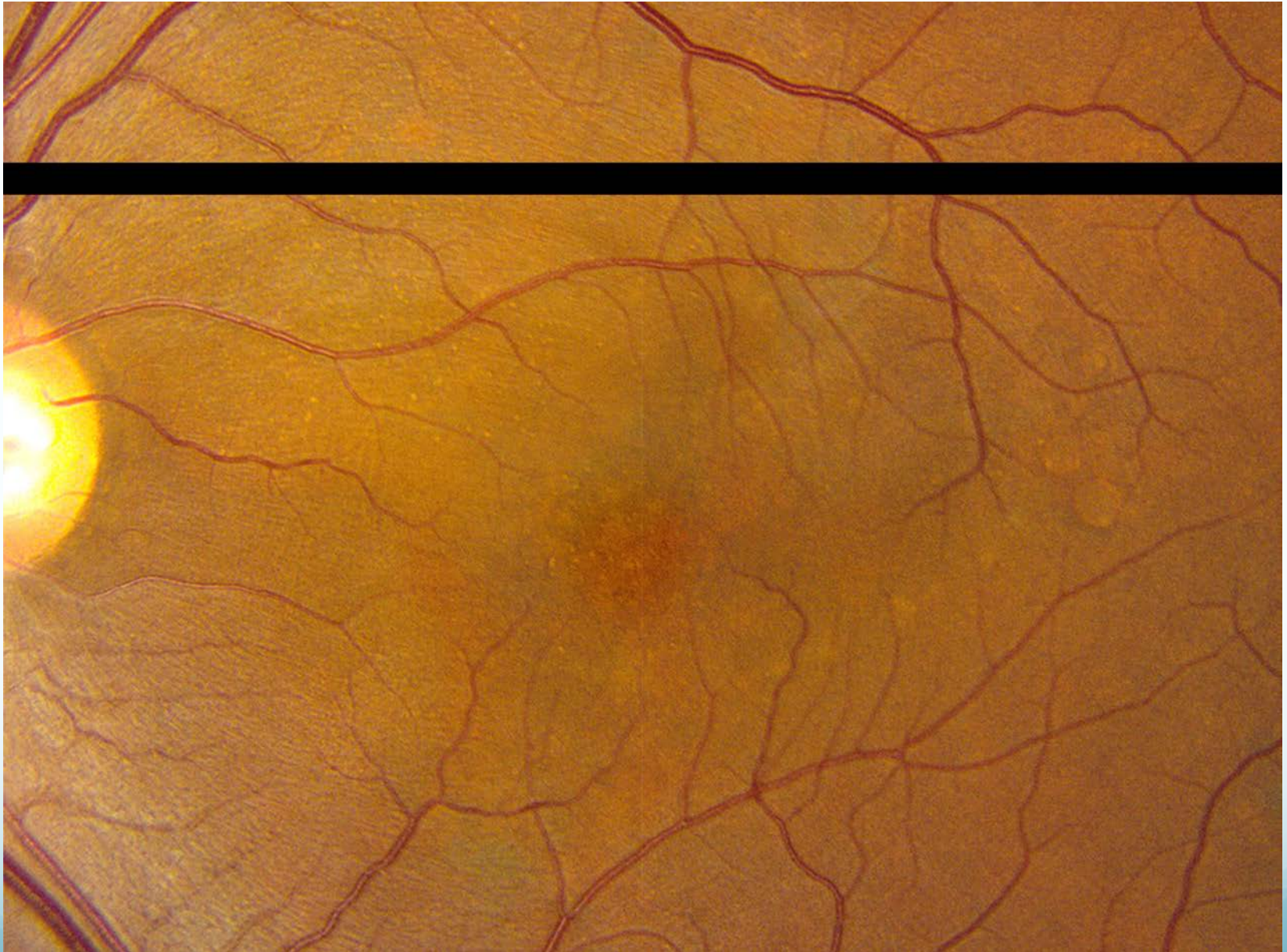
RPE Detachment

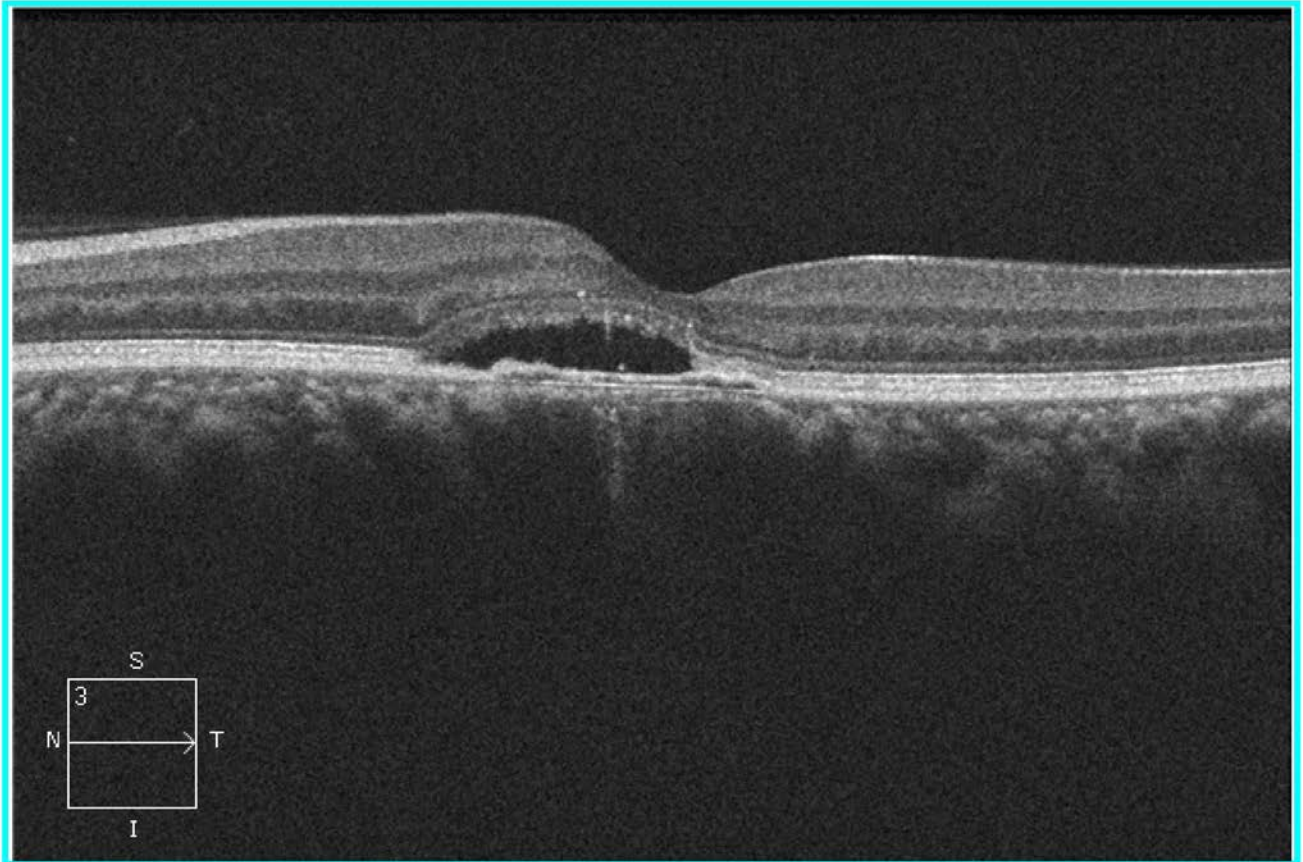
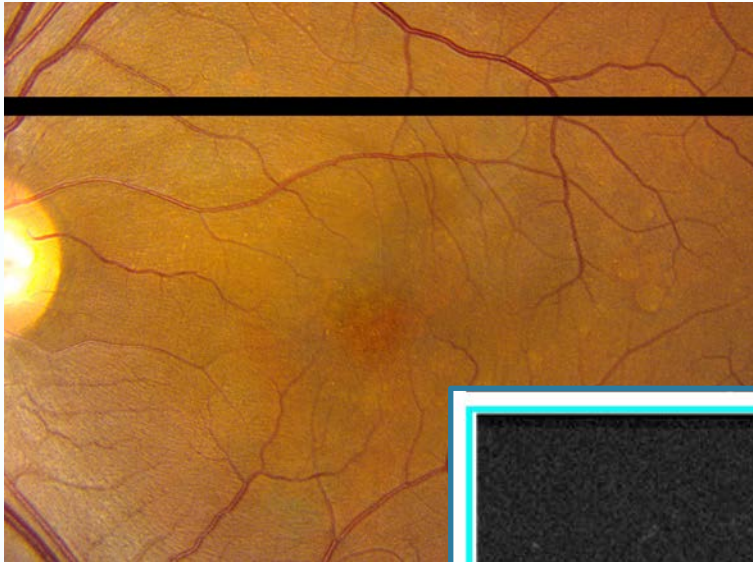


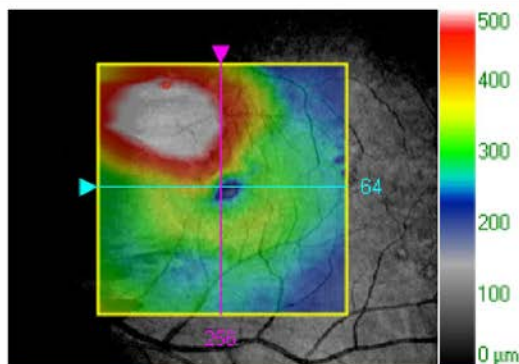


Daryl: 4/20/2010



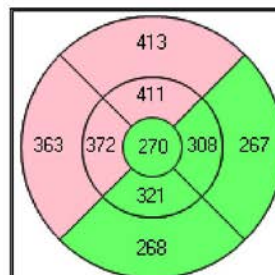
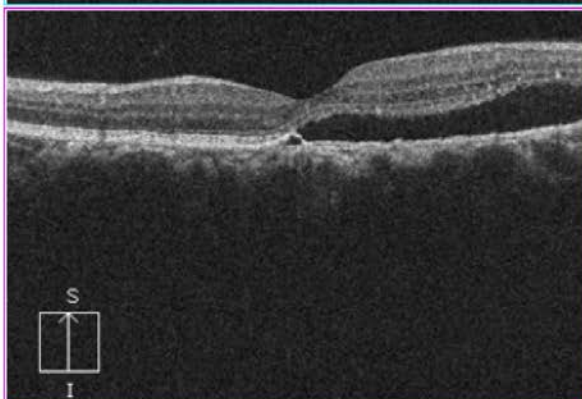
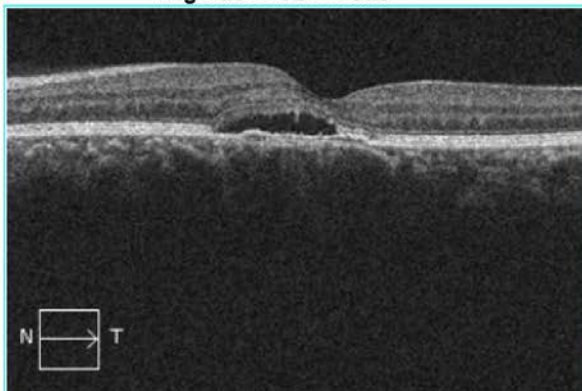




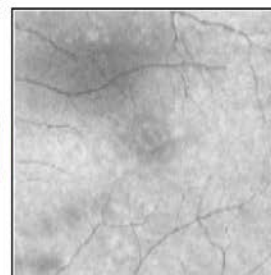


Overlay: ILM - RPE Transparency: 50 %

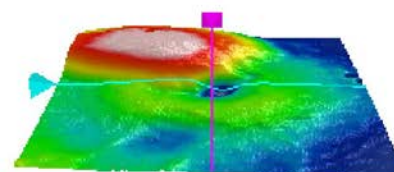
High-definition mode



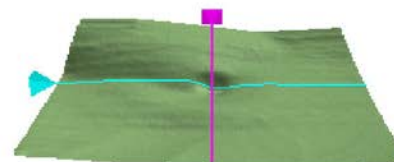
ILM-RPE Thickness (μm)



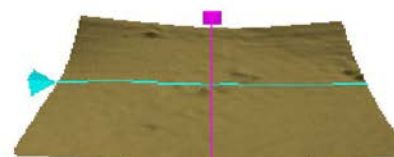
Fovea: 268, 66



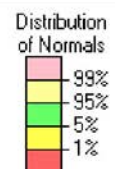
ILM - RPE



ILM



RPE



	Central Subfield Thickness (μm)	Cube Volume (mm^3)	Cube Average Thickness (μm)
ILM - RPE	270	11.8	329

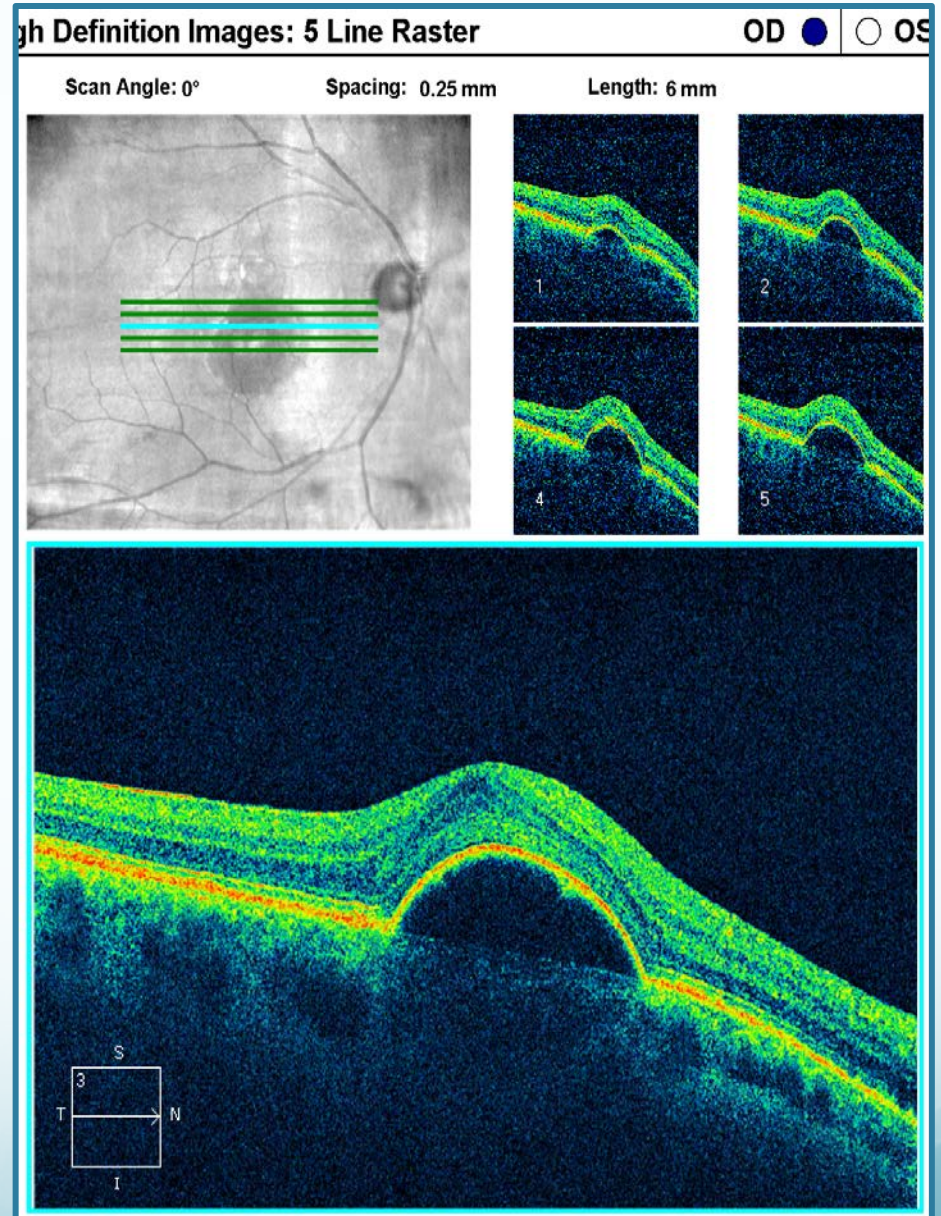
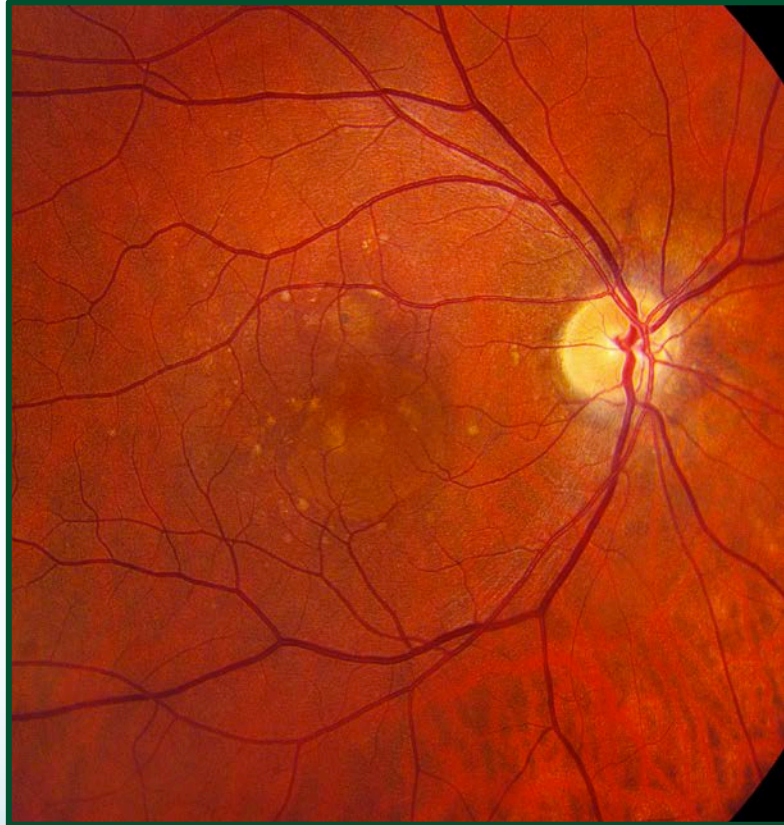
53 y/o Hispanic Male

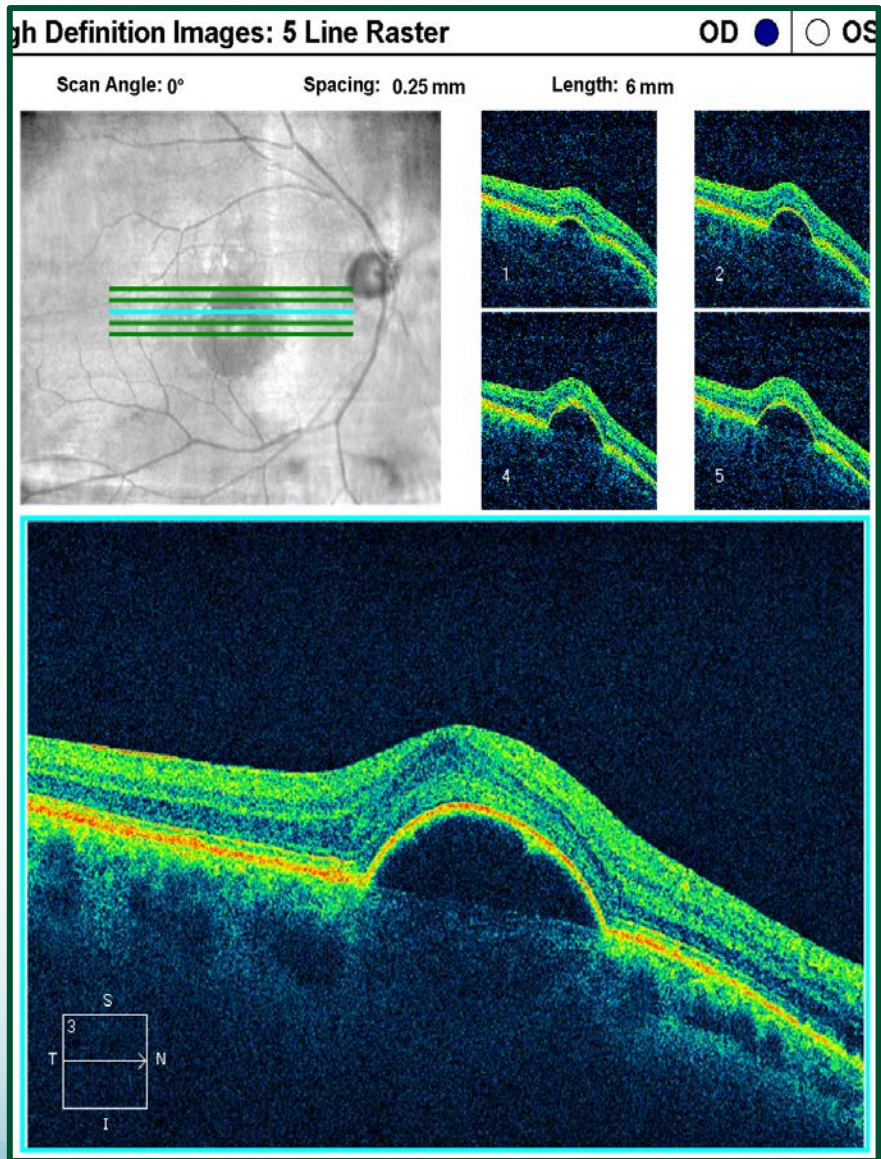
2012
20/20 VA



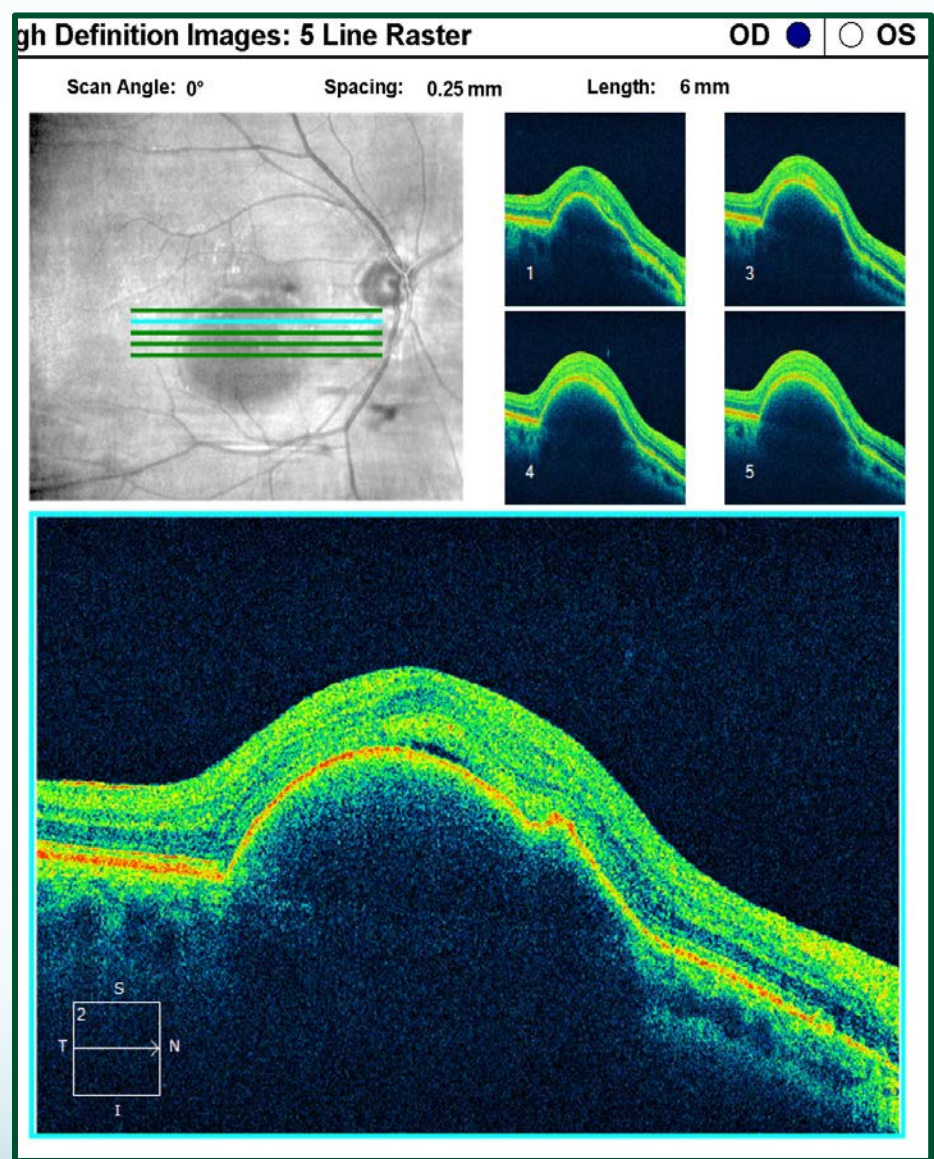
53 y/o Hispanic Male

PED





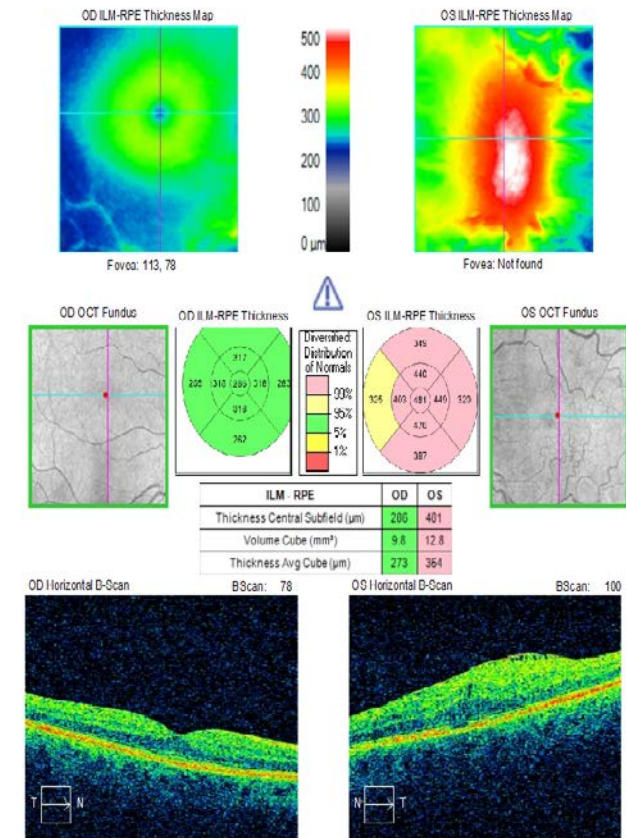
8/2012



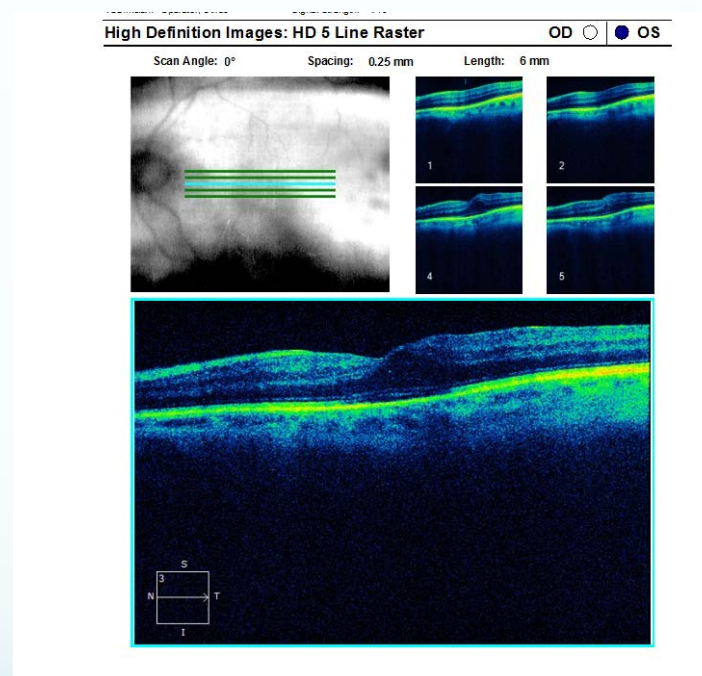
2/2014

Post Cat CME

Macula Thickness OU: Macular Cube 200x200 OD ● OS



78 WM
Cataract Sx 3 mos ago
Glaucoma PGA + AGN
20/80 BCVA

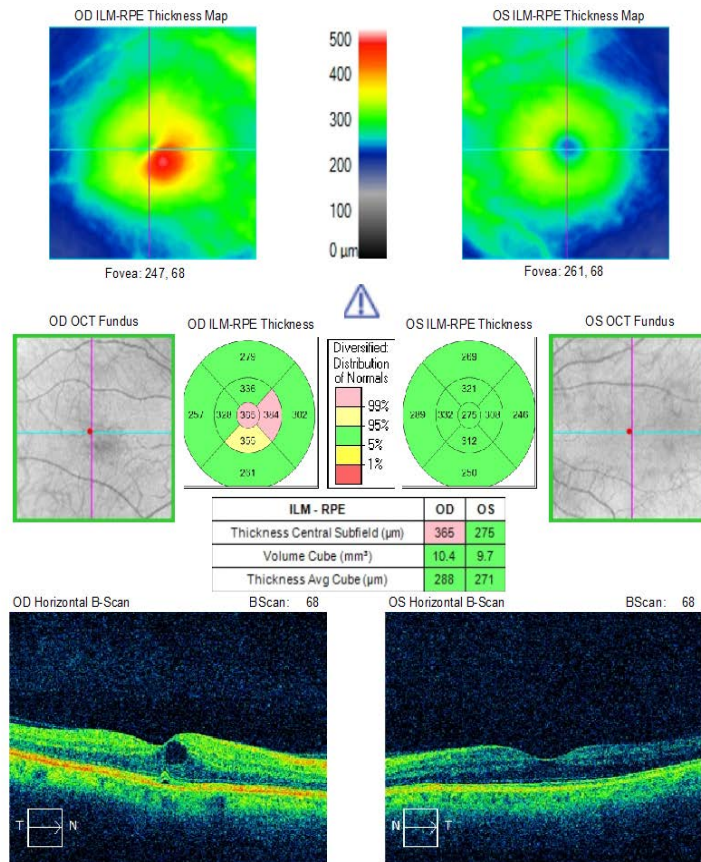


Cat Sx 3 mos ago

VA 20/80

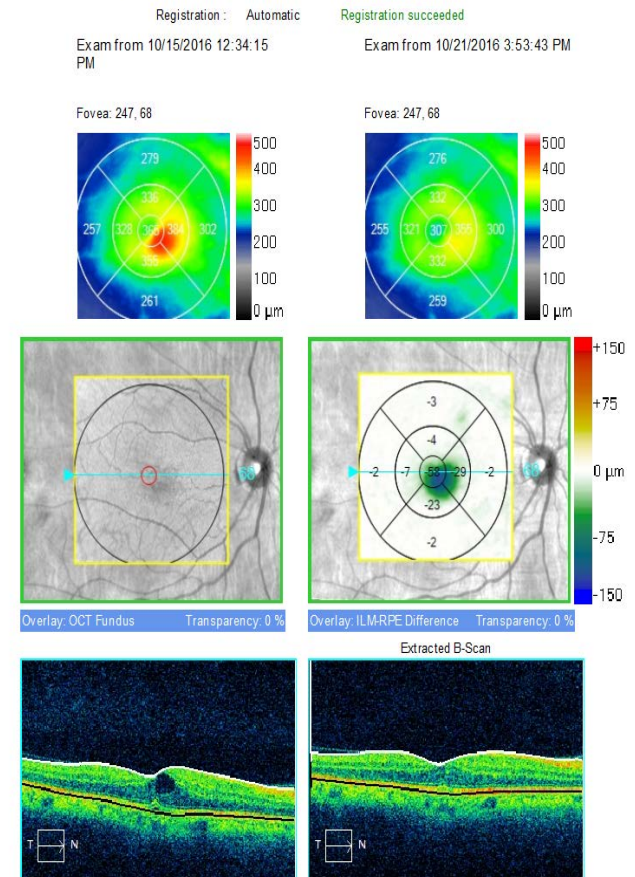
Macula Thickness OU: Macular Cube 512x128

OD ● ● OS



Macular Change: Macular Cube 512x128

OD ● ○ OS



After Topical NSAID



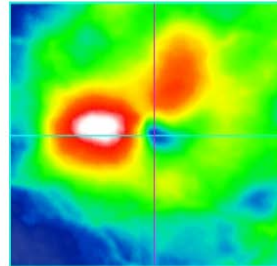
Diabetic Macular Edema

VA 20/20 OU

Macula Thickness OU: Macular Cube 512x128

OD ● | ● OS

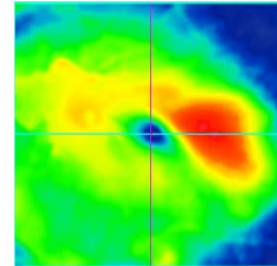
OD ILM-RPE Thickness Map



Fovea: 270, 65



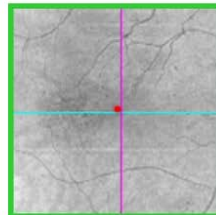
OS ILM-RPE Thickness Map



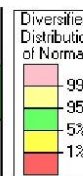
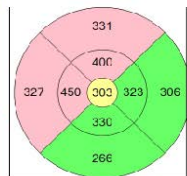
Fovea: 255, 64



OD OCT Fundus



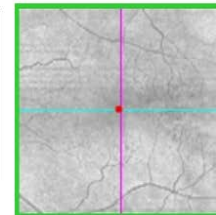
OD ILM-RPE Thickness



OS ILM-RPE Thickness

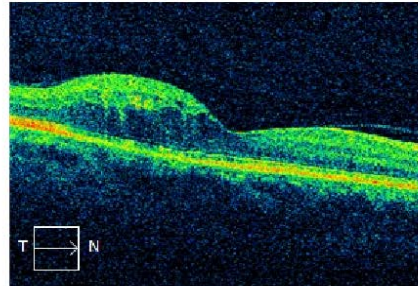


OS OCT Fundus



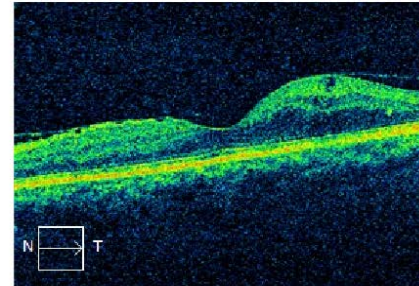
ILM - RPE		
Thickness Central Subfield (μm)	OD	OS
	303	279
Volume Cube (mm²)	11.1	11
Thickness Avg Cube (μm)	310	304

OD Horizontal B-Scan



BScan: 65

OS Horizontal B-Scan

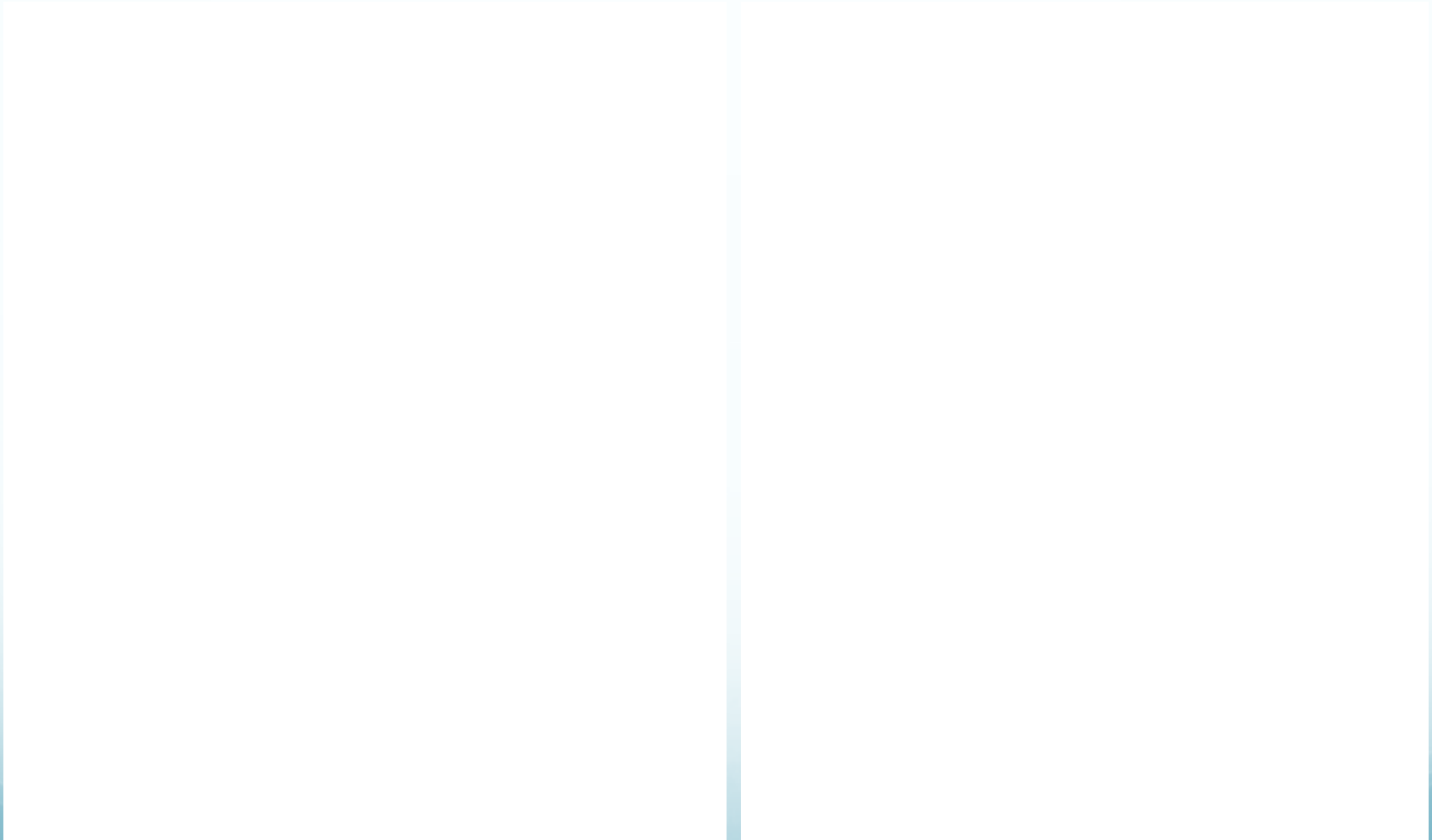


BScan: 64

VMT



Vitrectomy/Membrane Peel OS



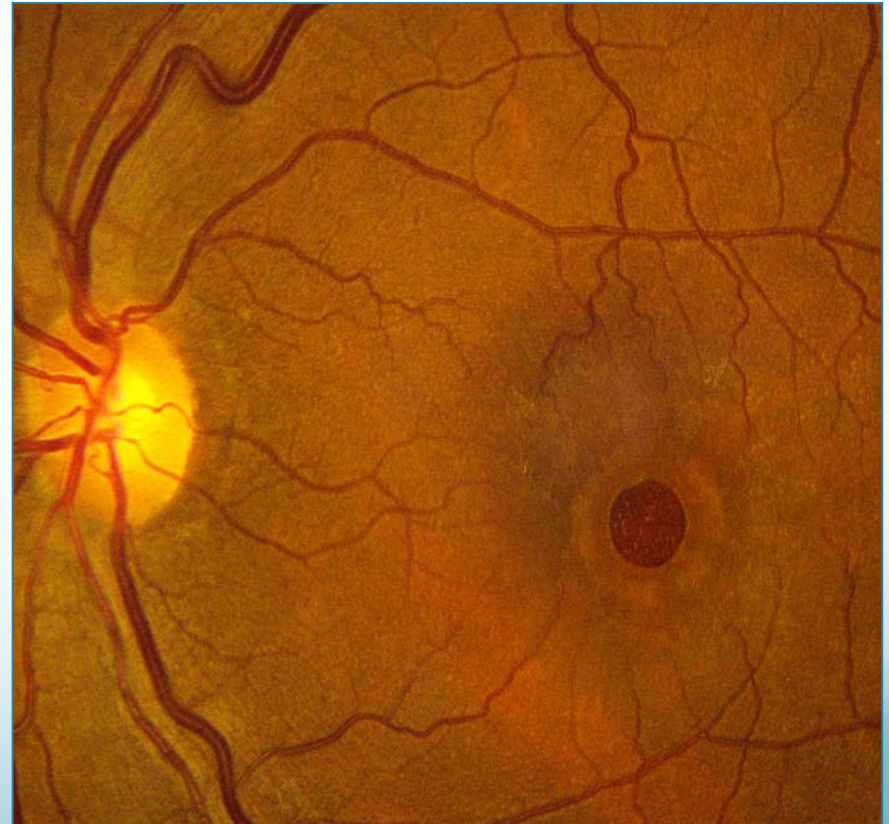
65 y/o White Female

↓ VA RE X 6 Wks, ↓ VA LE X > 1 Yr

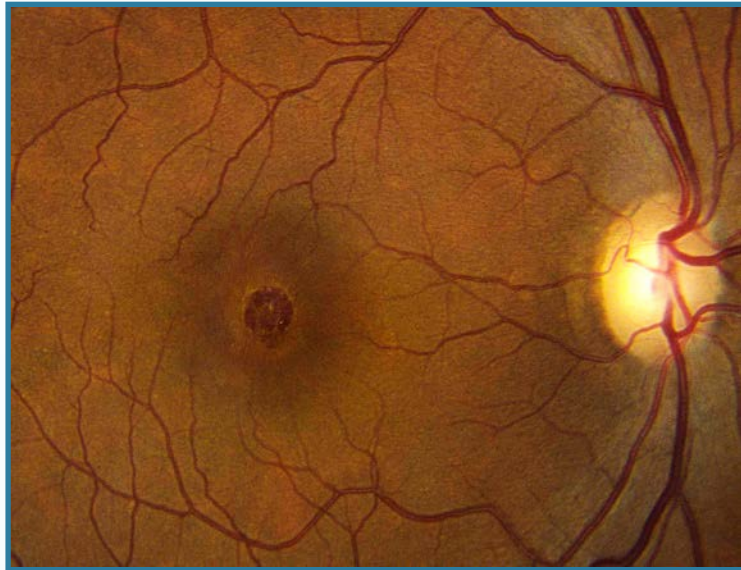


20/100

135



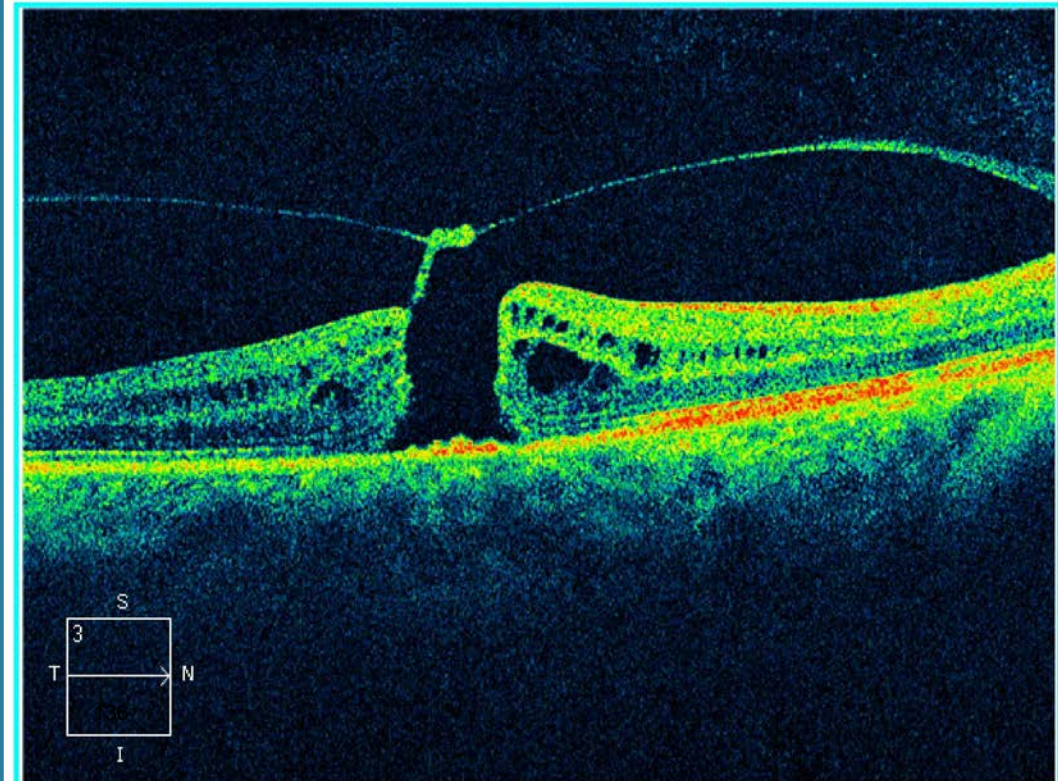
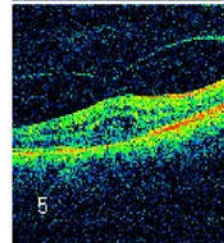
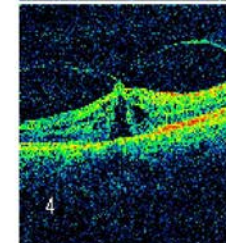
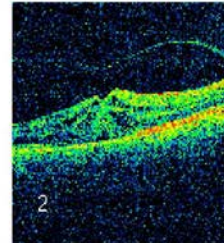
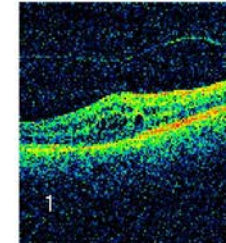
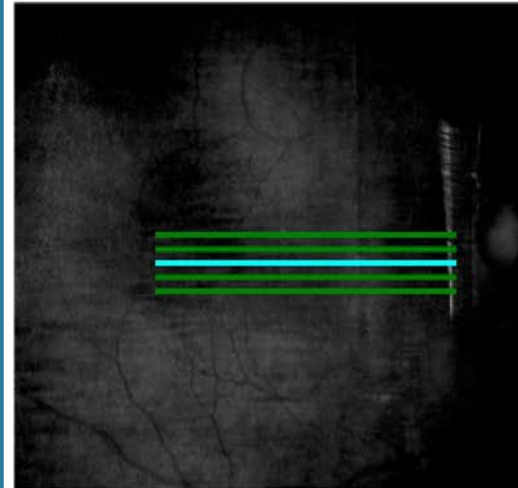
20/400



Scan Angle: 0°

Spacing: 0.25 mm

Length: 6 mm

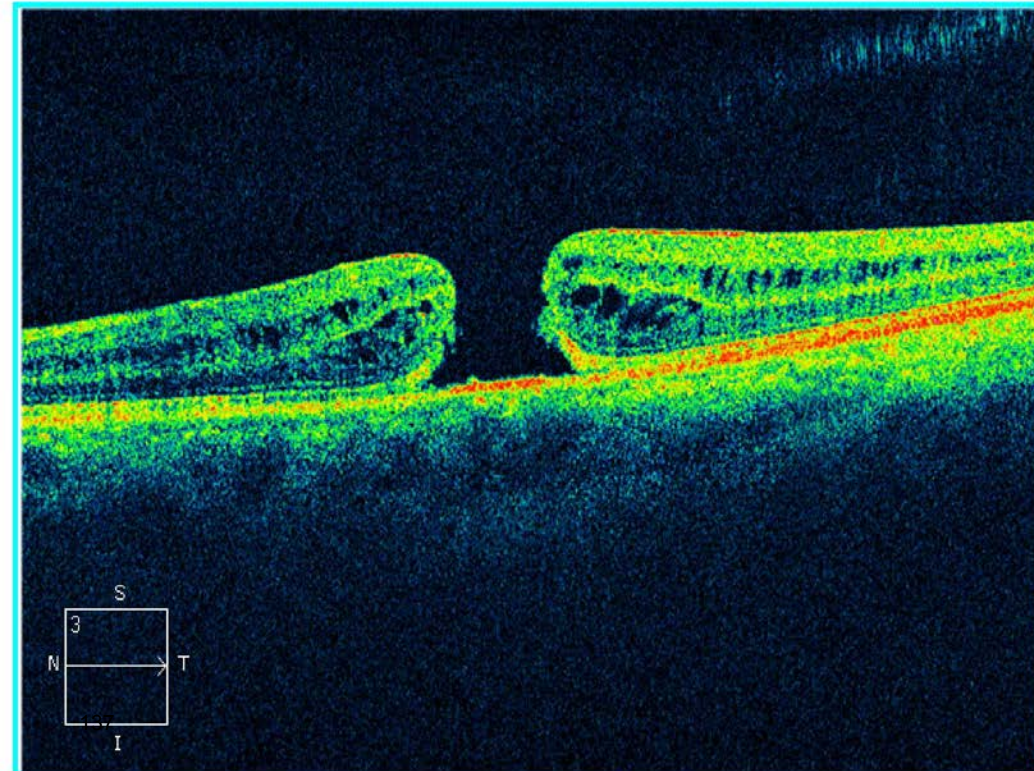
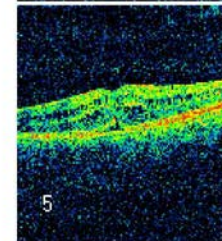
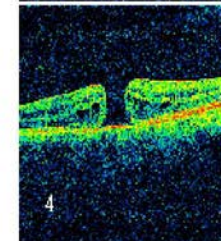
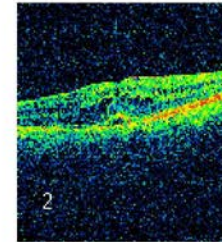
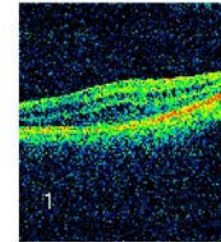
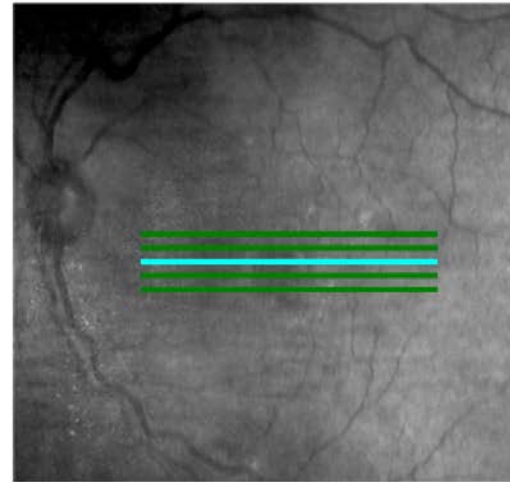


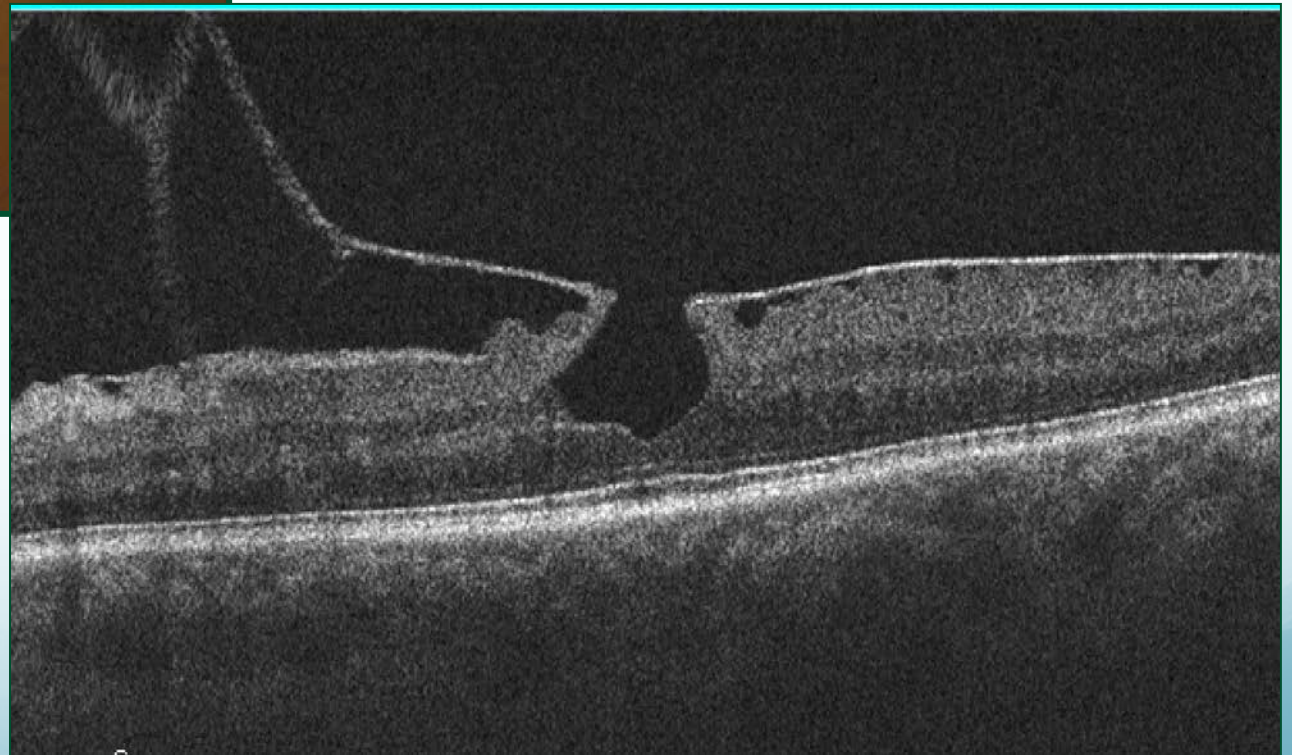
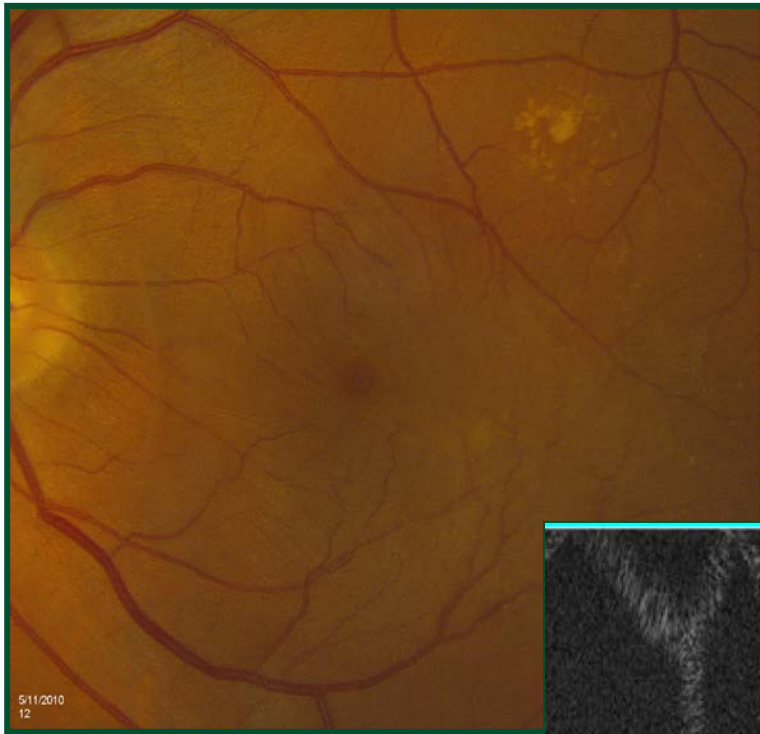


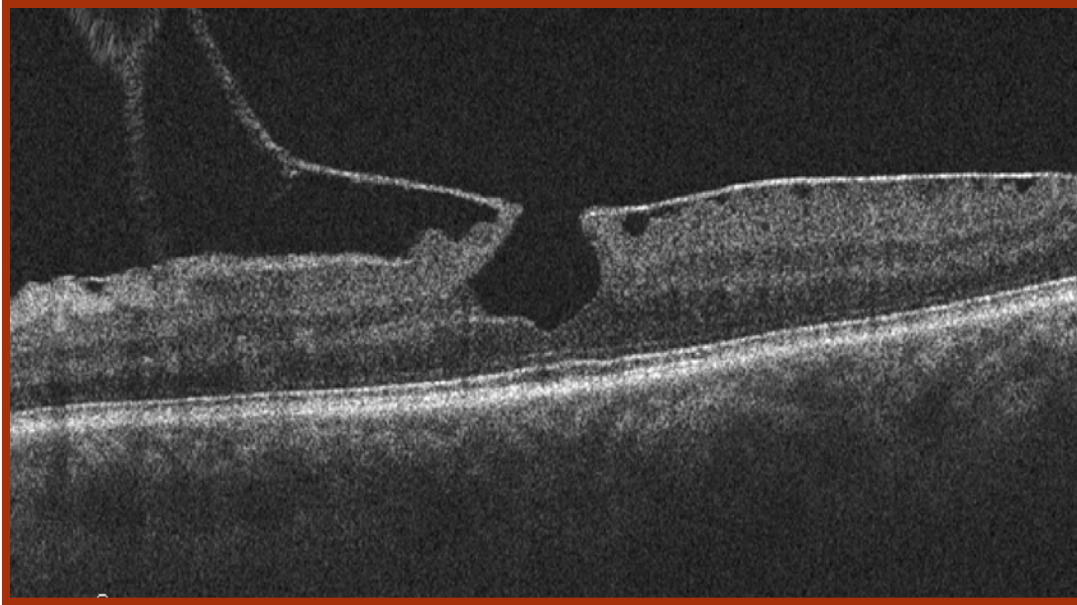
Scan Angle: 0°

Spacing: 0.25 mm

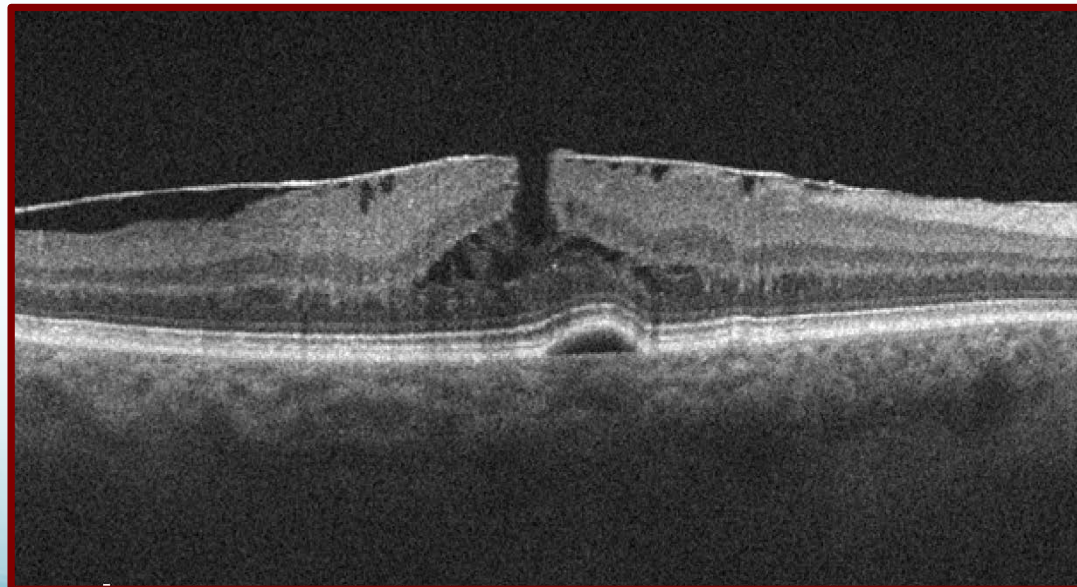
Length: 6 mm



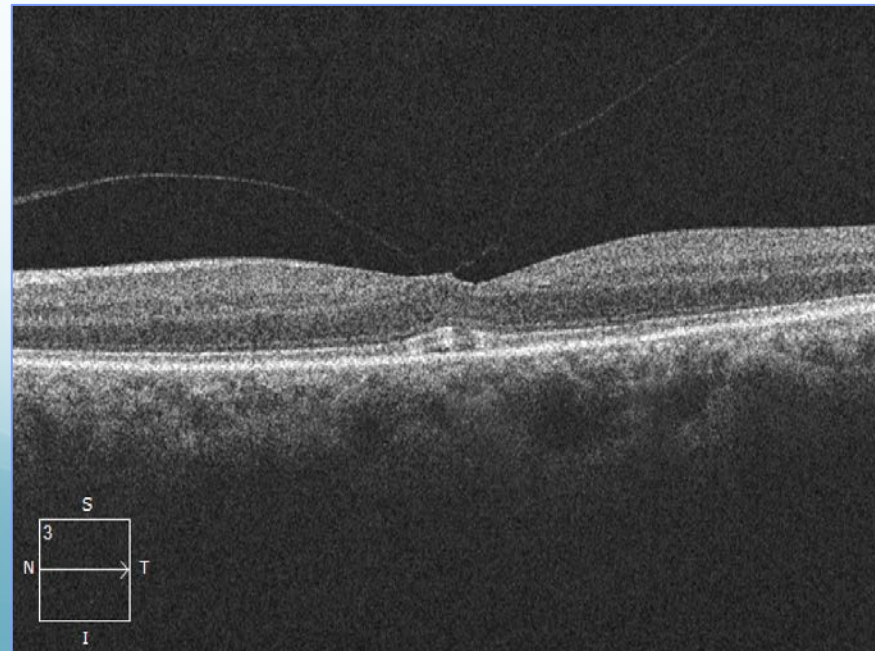
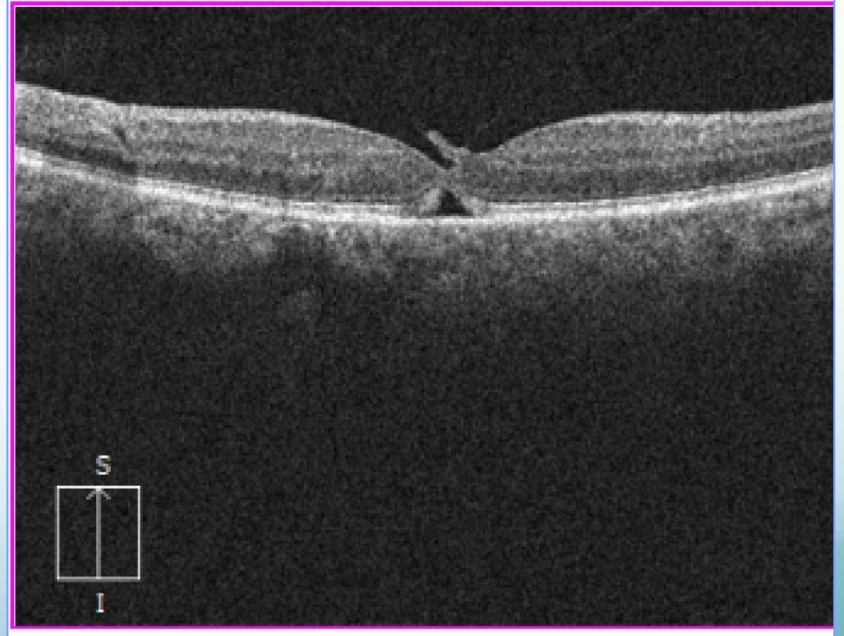
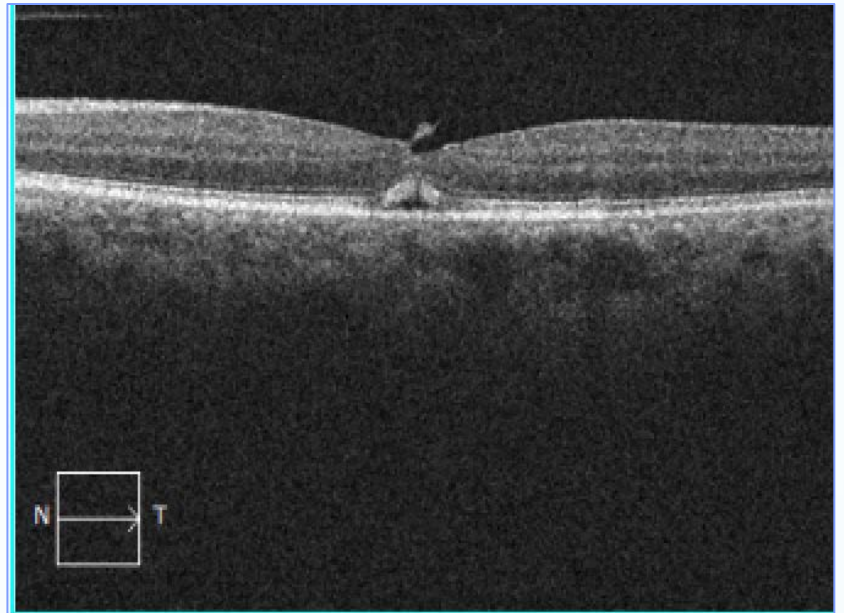
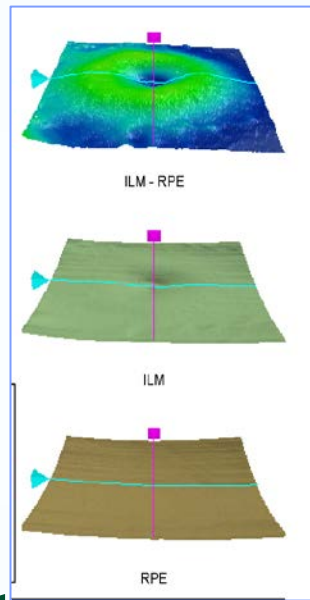
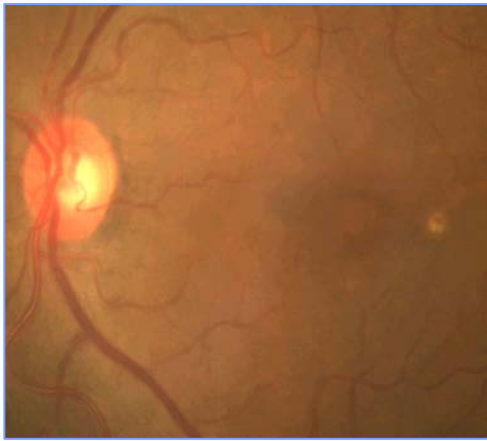




Both are Pseudohole



Lamellar Hole

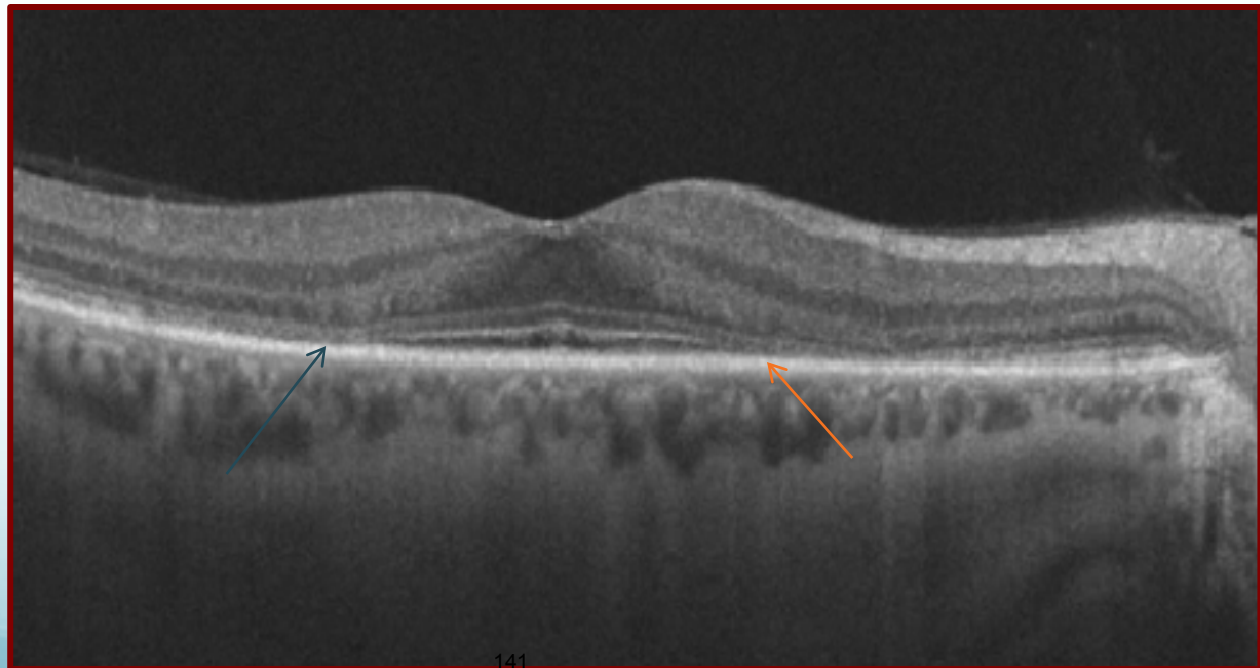
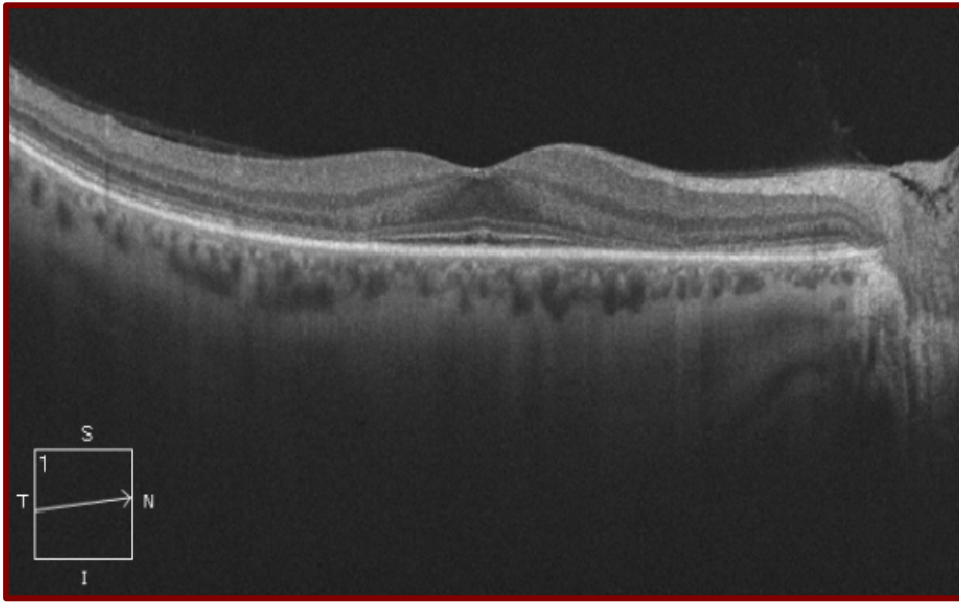


7/27/2014

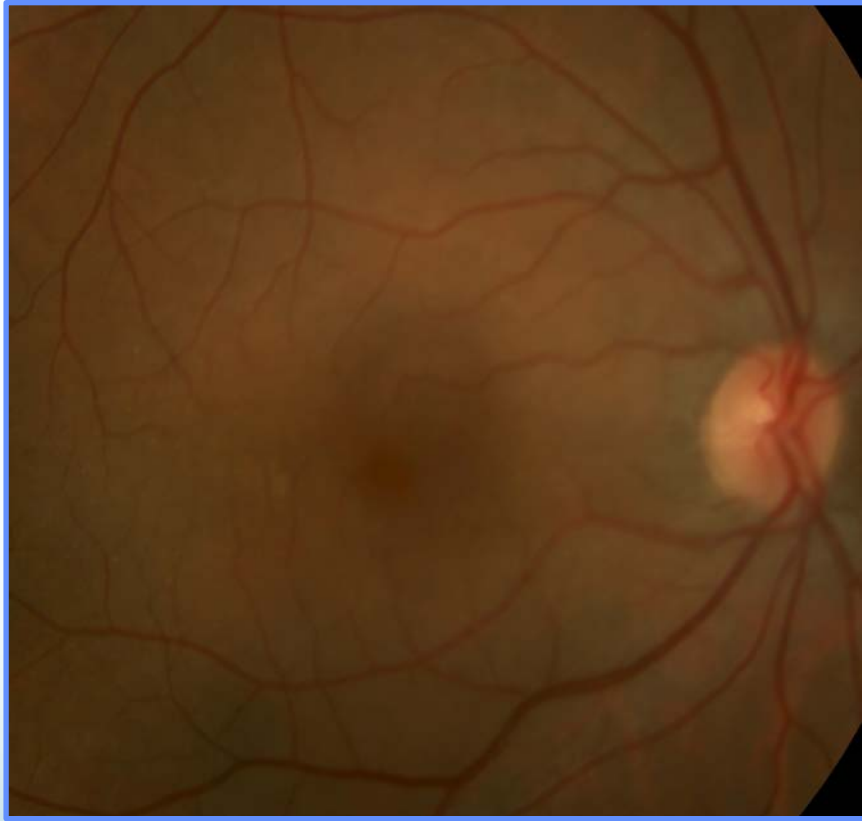
65 y/o Hispanic Female

VA: 20/40

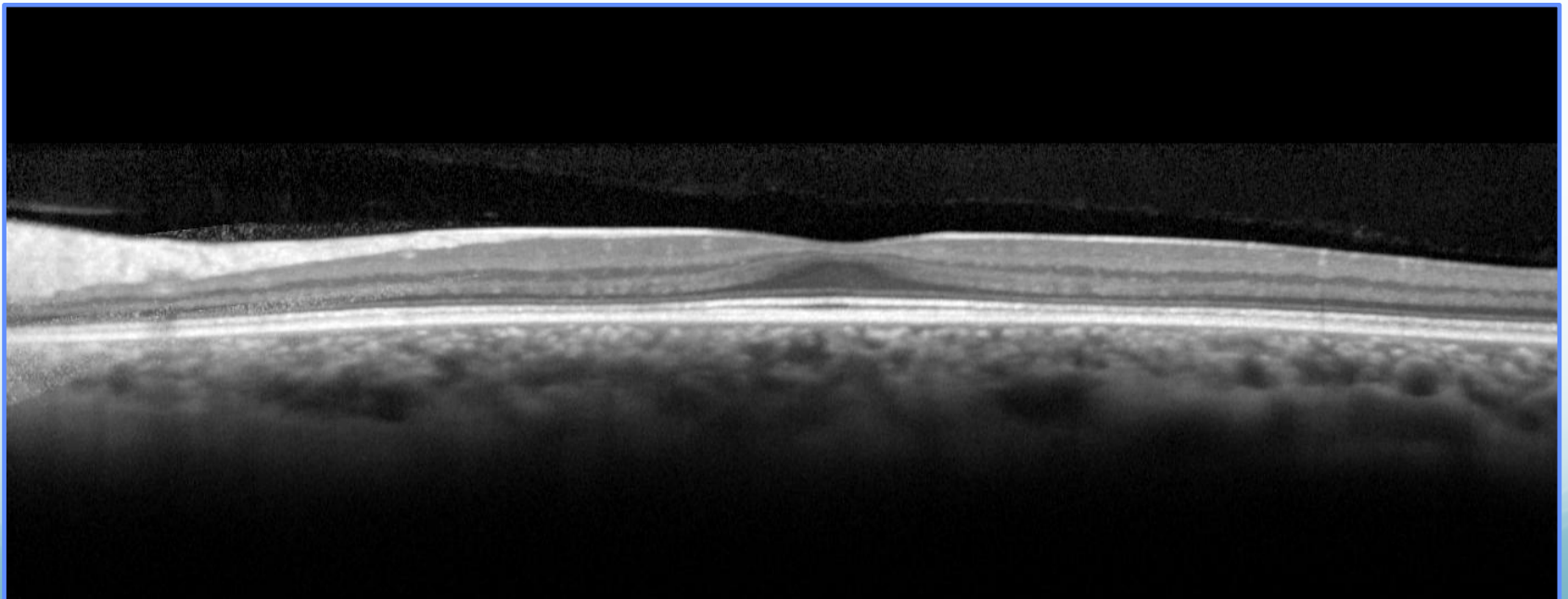
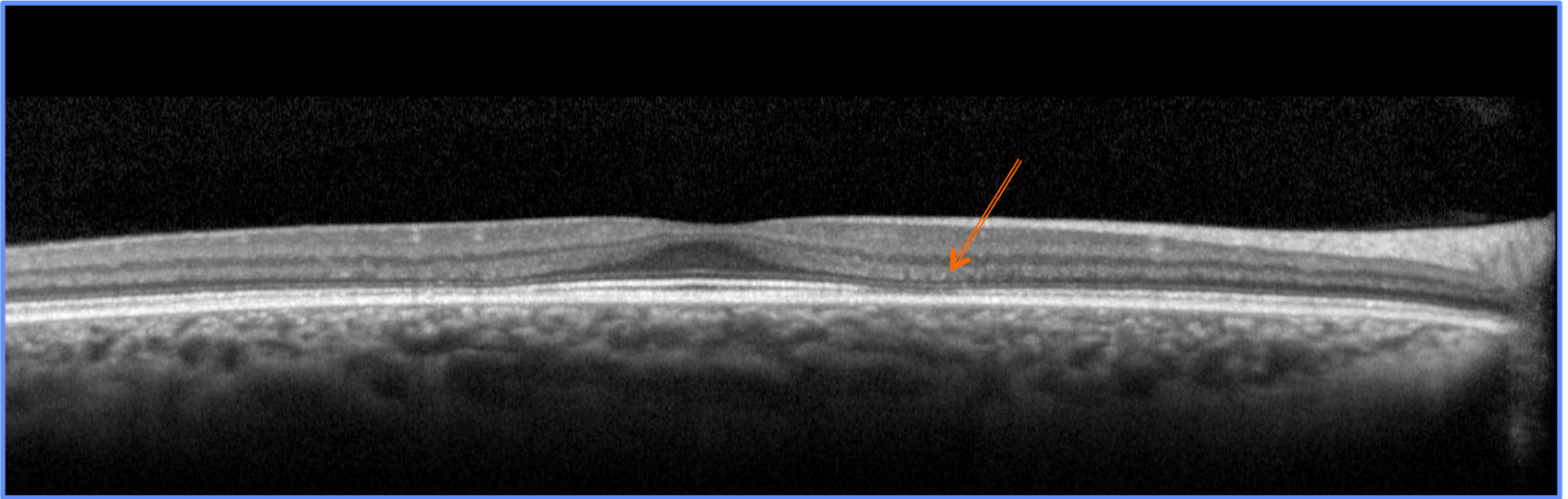
Plaquenil Toxicity

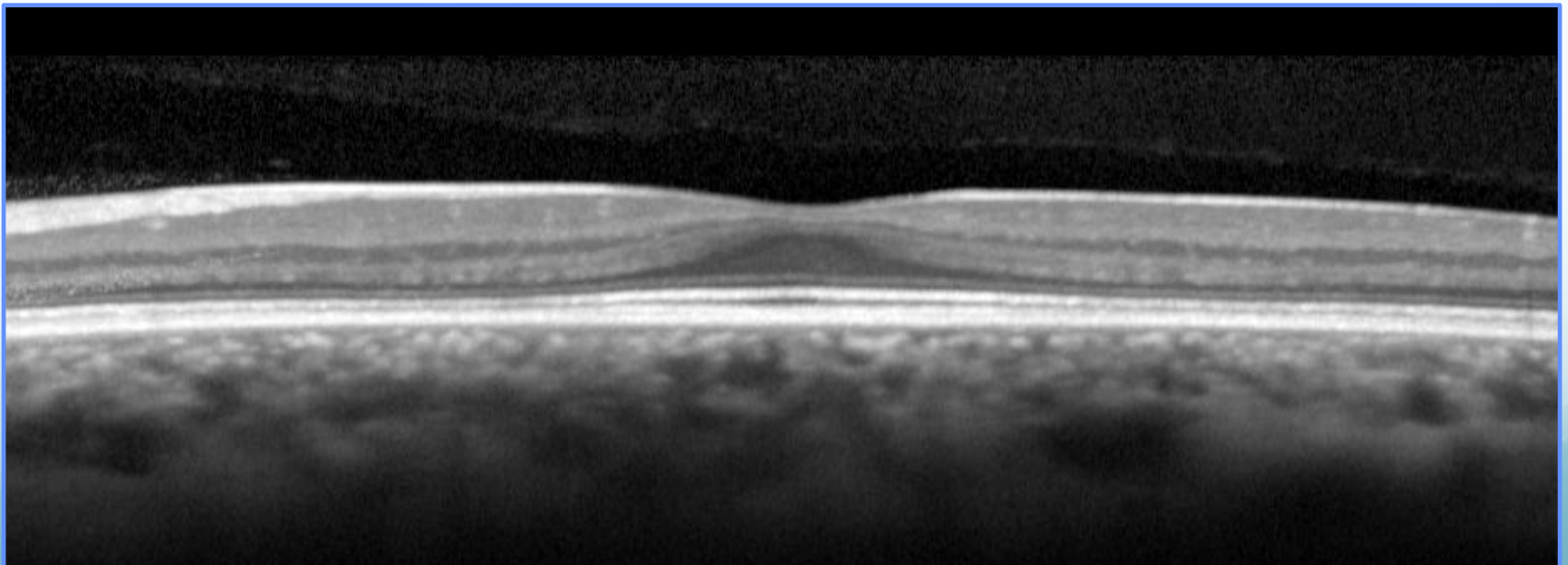
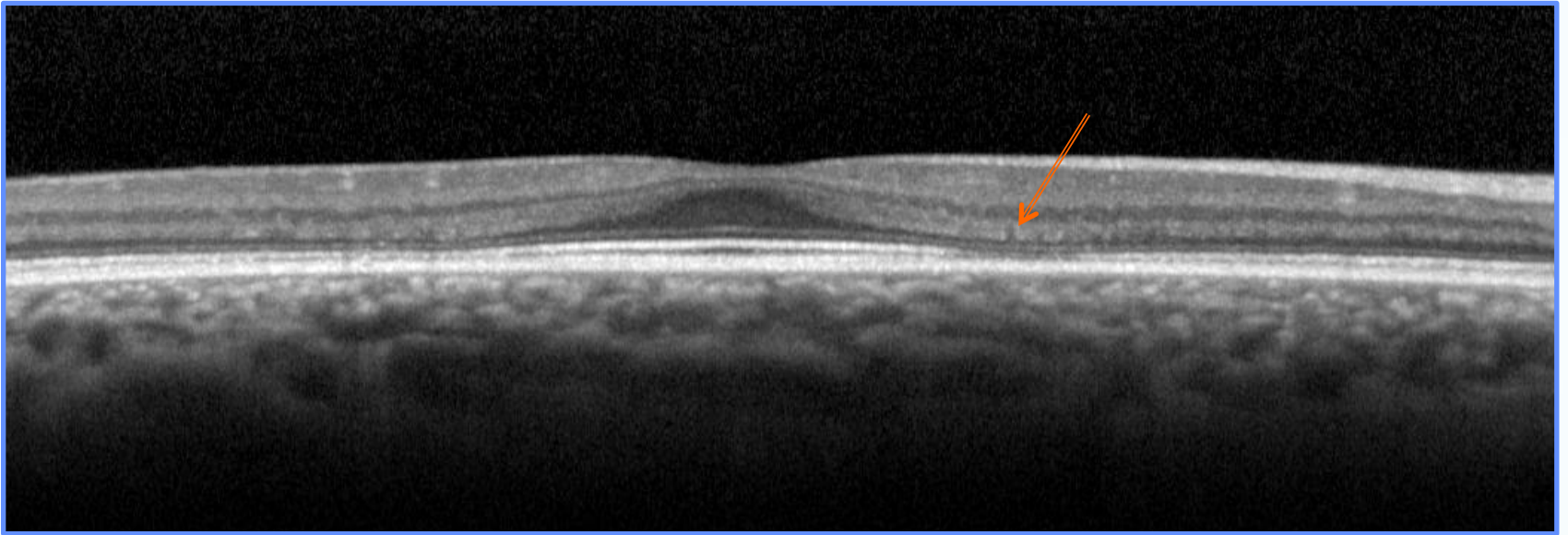


Plaquenil Toxicity

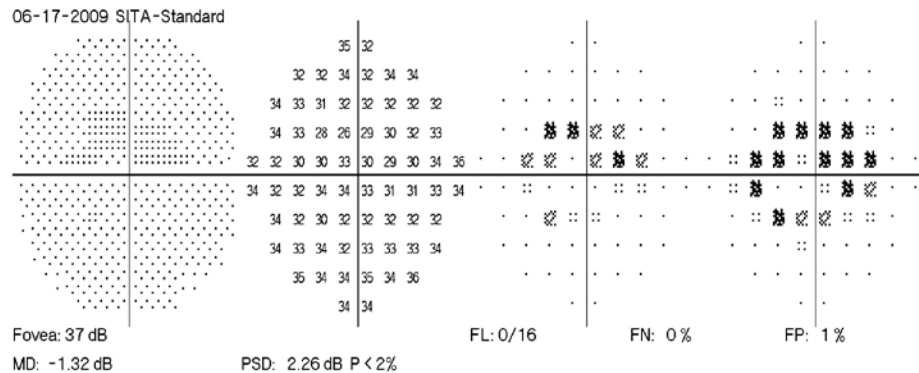
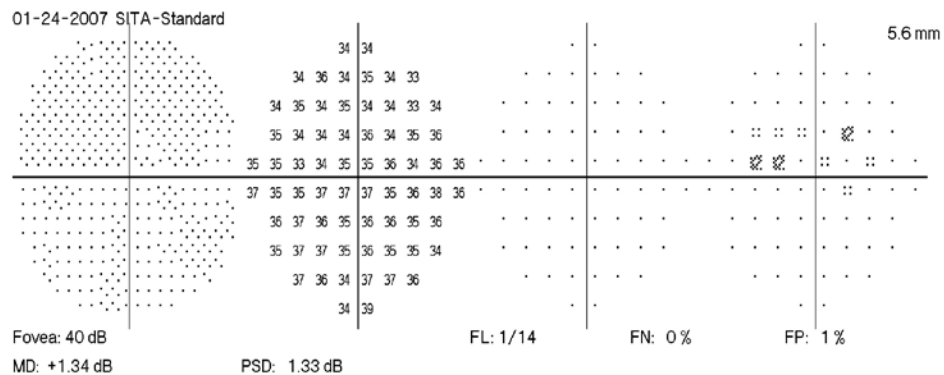
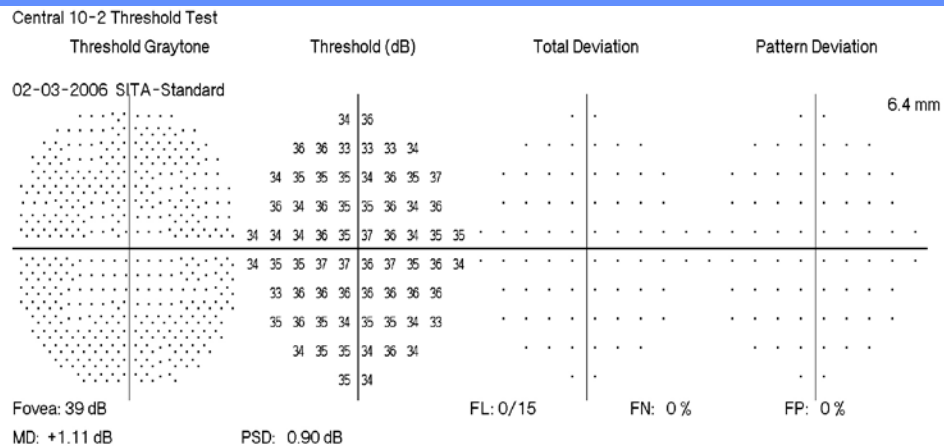


1/13/2010





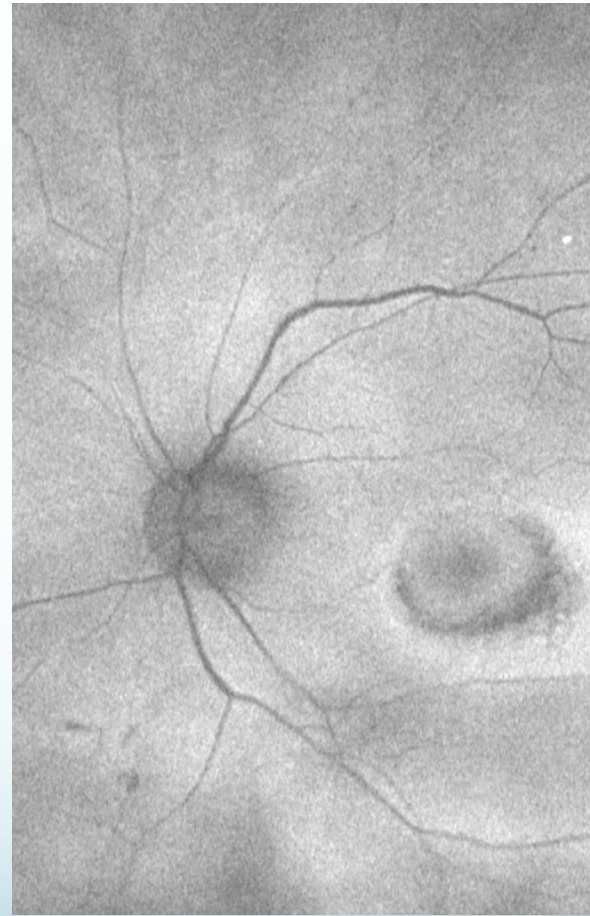
Paracentral Scotomas

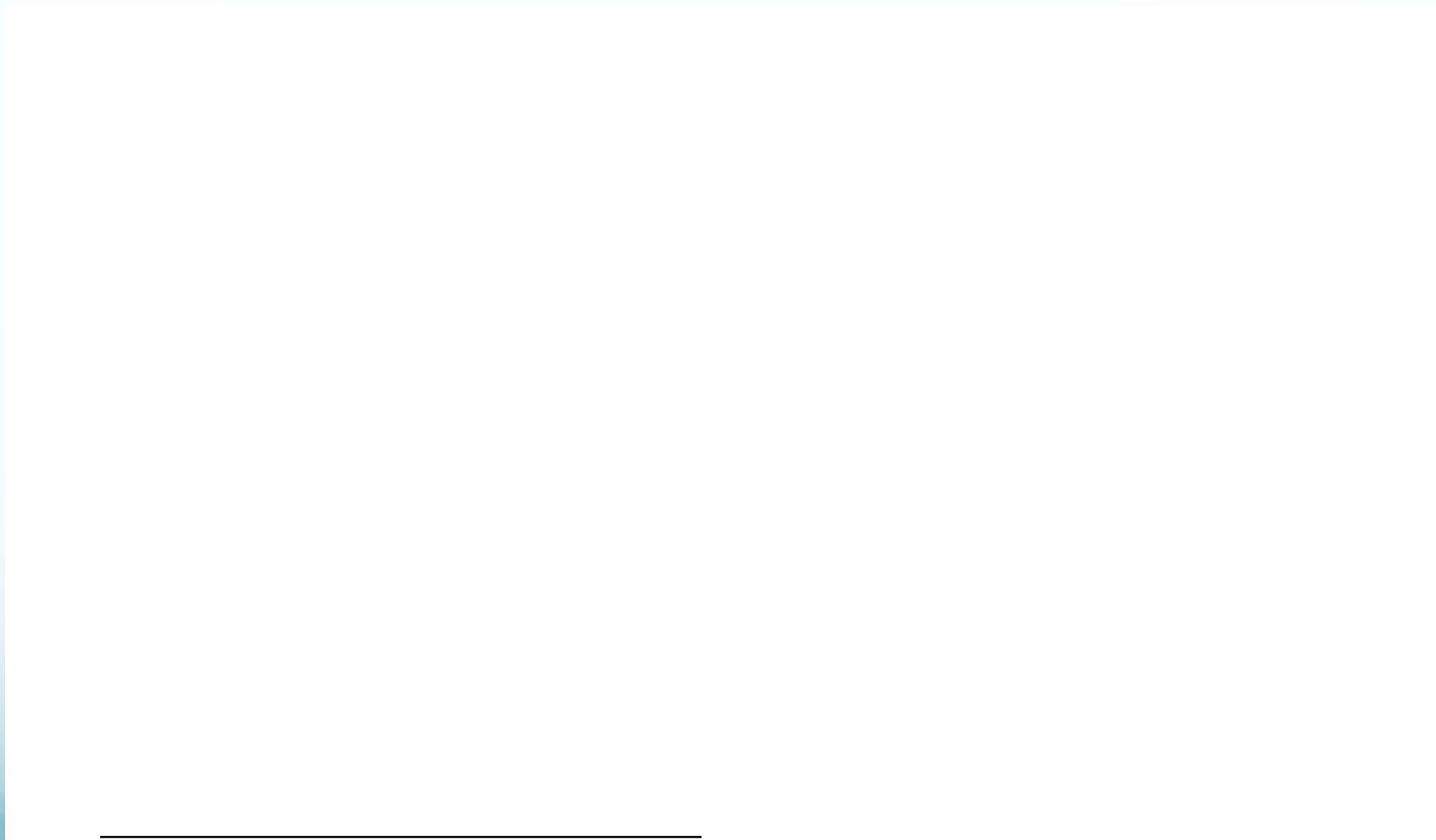


Plaquenil Toxicity



Plaquenil Toxicity





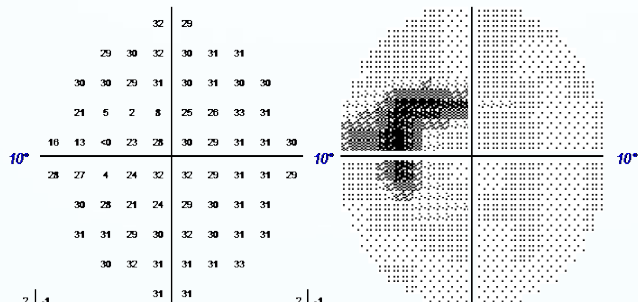
OD Single Field Analysis

Central 10-2 Threshold Test

Fixation Monitor: Gaze/Blind Spot
 Fixation Target: Central
 Fixation Losses: 1/19
 False POS Errors: 7%
 False NEG Errors: 8%
 Test Duration: 07:28
 Fovea: Off

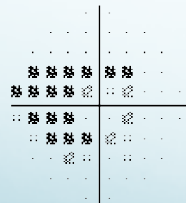
Stimulus: III, White
 Background: 31.5 asb
 Strategy: SITA-Standard
 Pupil Diameter: 4.5 mm *
 Visual Acuity:
 Rx: -1.500 DS DC X

Date: Jan 23, 2014
 Time: 1:42 PM
 Age: 66

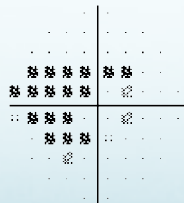


2	1	31	31	2	1
-2 -1 1	0 0 1			-2 0 1	0 1 1
-2 -2 -2 1	2 -1 1 -1			-2 -2 -2 0	2 -1 1 -1
-11 -27 -31 25	5 -6 0 0			-11 -27 -30 24	-7 -6 1 0
-15 -19 -35 -10 -5	-3 -5 -2 -1 -1			-15 -19 -35 -9 -5	-3 -4 -2 0 -1
-4 -6 -29 -10 -1	-1 -5 -2 -1 -3			-4 -6 -29 -9 -1	-1 -4 -1 -1 -2
-3 -5 -12 -9	-4 -3 -2 -1			-2 -5 -12 -9	-4 -2 -1 -1
-1 -2 -4 -3	-1 -3 -1 -1			-1 -1 -3 -3	-1 -2 -1 0
-1 0 -1	-1 -1 1			-1 0 -1	0 0 1
0	0			0	0

Total Deviation



Pattern Deviation



MD: -5.21 dB P<1%
 PSD: 8.34 dB P<1%

□ P<5%
 ■ P<2%
 ■ P<1%



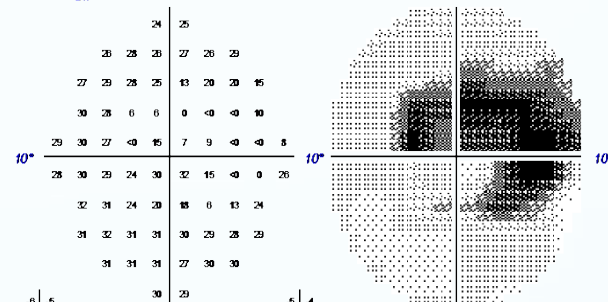
OS Single Field Analysis

Central 10-2 Threshold Test

Fixation Monitor: Gaze/Blind Spot
 Fixation Target: Central
 Fixation Losses: 0/21
 False POS Errors: 0%
 False NEG Errors: 0%
 Test Duration: 08:25
 Fovea: Off

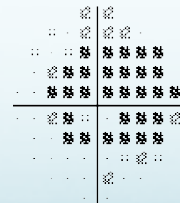
Stimulus: III, White
 Background: 31.5 asb
 Strategy: SITA-Standard
 Pupil Diameter: 4.1 mm *
 Visual Acuity:
 Rx: -2.750 DS DC X

Date: Jan 23, 2014
 Time: 1:51 PM
 Age: 66

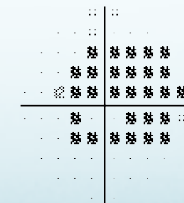


-0	-5	30	29	-0	-5
-4 -3 -5	-4 -5 -2			-3 -1 -3	-3 -3 -1
-4 -2 -4 -7	-19 -12 -17			-2 -1 -2 5	-17 -10 -15
-2 -4 -26 -27	-33 -35 -34 -22			0 -2 -25 -25	-31 -33 -33 -20
-2 -2 -6 -36 -15	-26 -24 -35 -34 -23			-1 0 -4 -33 -16	-25 -22 -33 -33 -22
-3 -2 -4 -10 -3	-2 -15 -35 -33 -6			-1 0 -3 -5 -2	0 -10 -33 -31 -4
0 -2 -9 -13	-16 -25 -20 -5			1 0 -7 -11	-14 -26 -15 -7
-1 -1 -2 -2	-2 -3 -4 -3			1 1 0 0	-1 -1 -2 -1
-1 -1 -1	-4 -2 -1			1 1 1	-3 0 1
-2	-2			0	0

Total Deviation



Pattern Deviation



MD: -11.15 dB P<1%
 PSD: 11.88 dB P<1%

□ P<5%
 ■ P<2%
 ■ P<1%





Vitelliform Degeneration

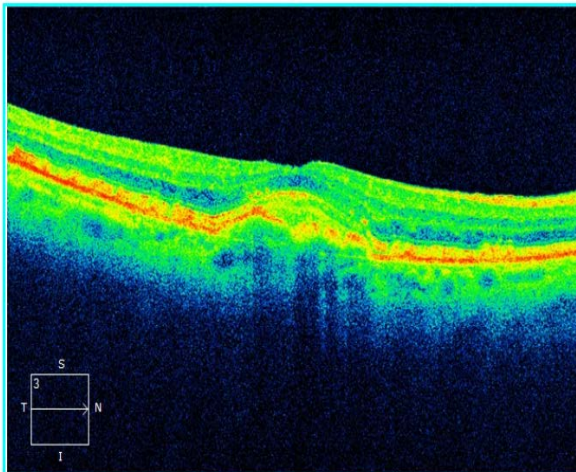
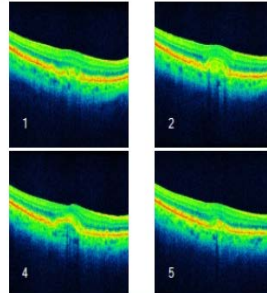
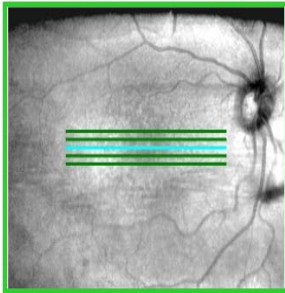
High Definition Images: HD 5 Line Raster

OD ☒ OS ☐

Scan Angle: 0°

Spacing: 0.25 mm

Length: 6 mm



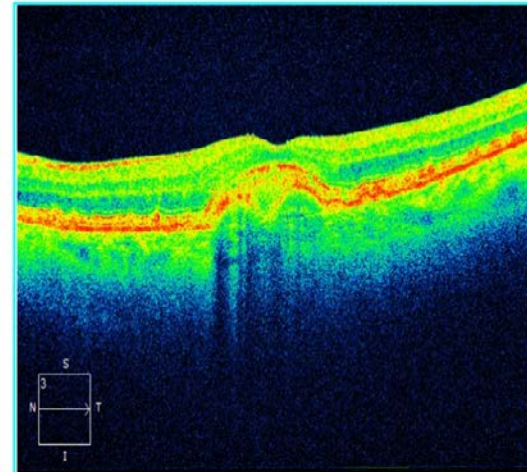
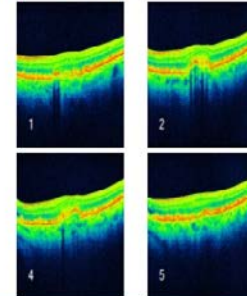
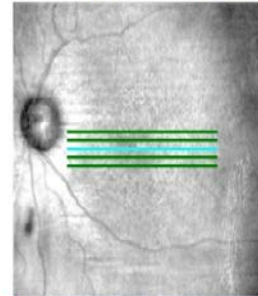
High Definition Images: HD 5 Line Raster

OD ☐ OS ☒

Scan Angle: 0°

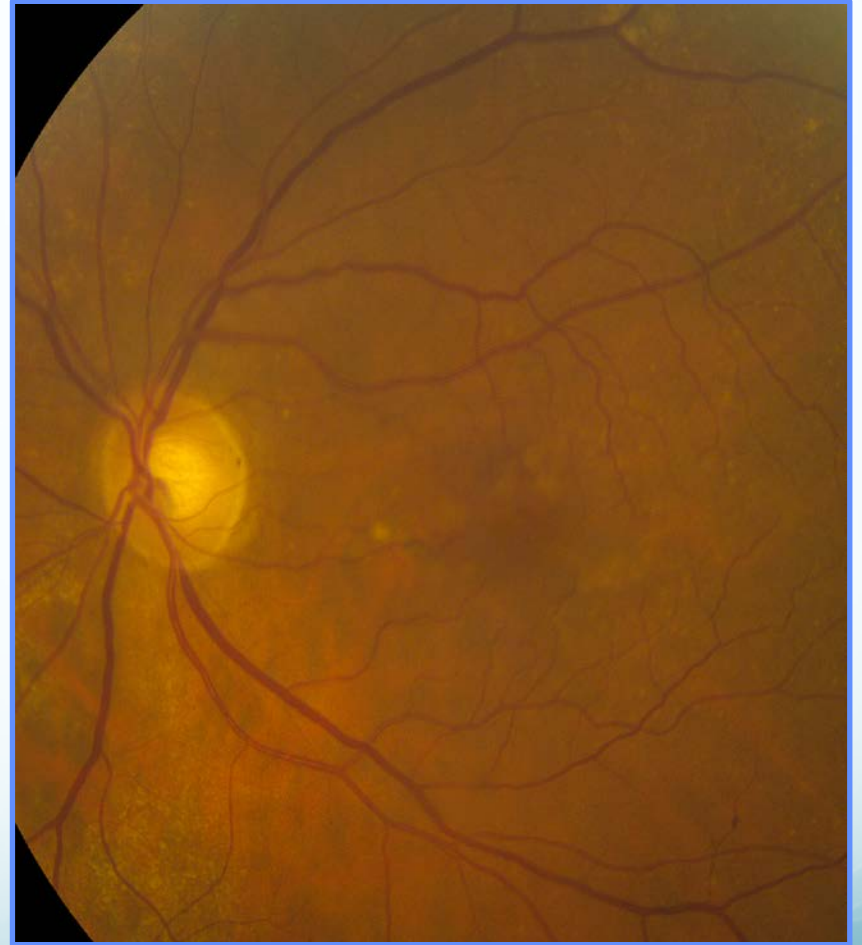
Spacing: 0.25 mm

Length: 6 mm



Early AMD

Dry AMD



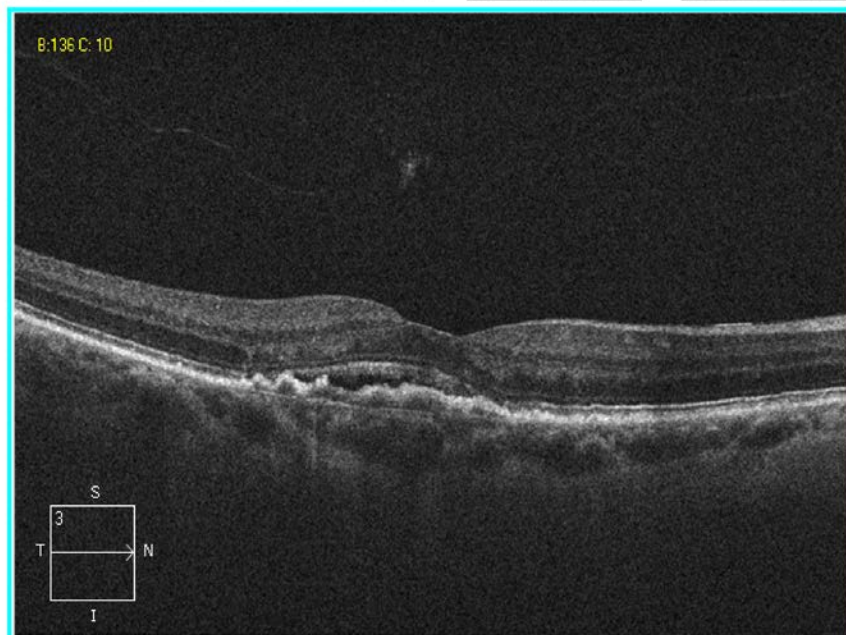
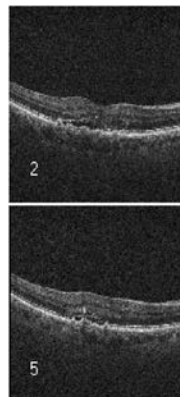
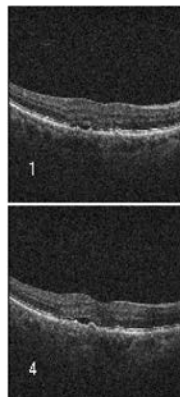
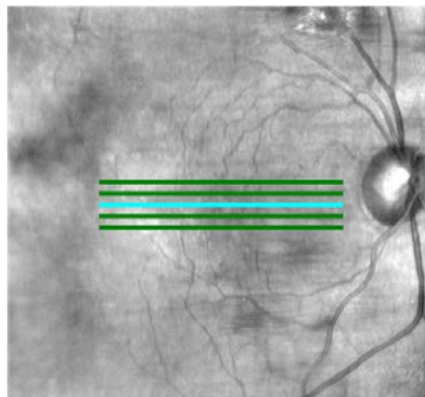
High Definition Images: HD 5 Line Raster

OD ☒ ☐ C

Scan Angle: 0°

Spacing: 0.25 mm

Length: 6 mm



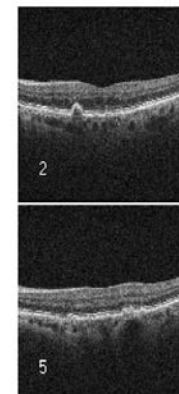
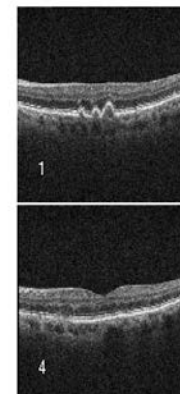
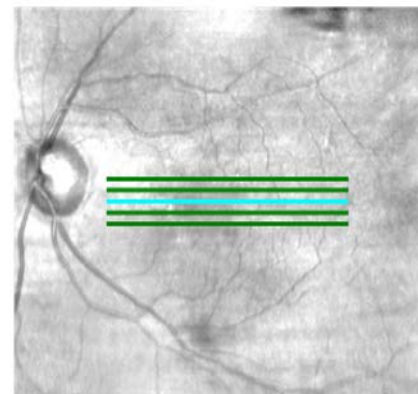
High Definition Images: HD 5 Line Raster

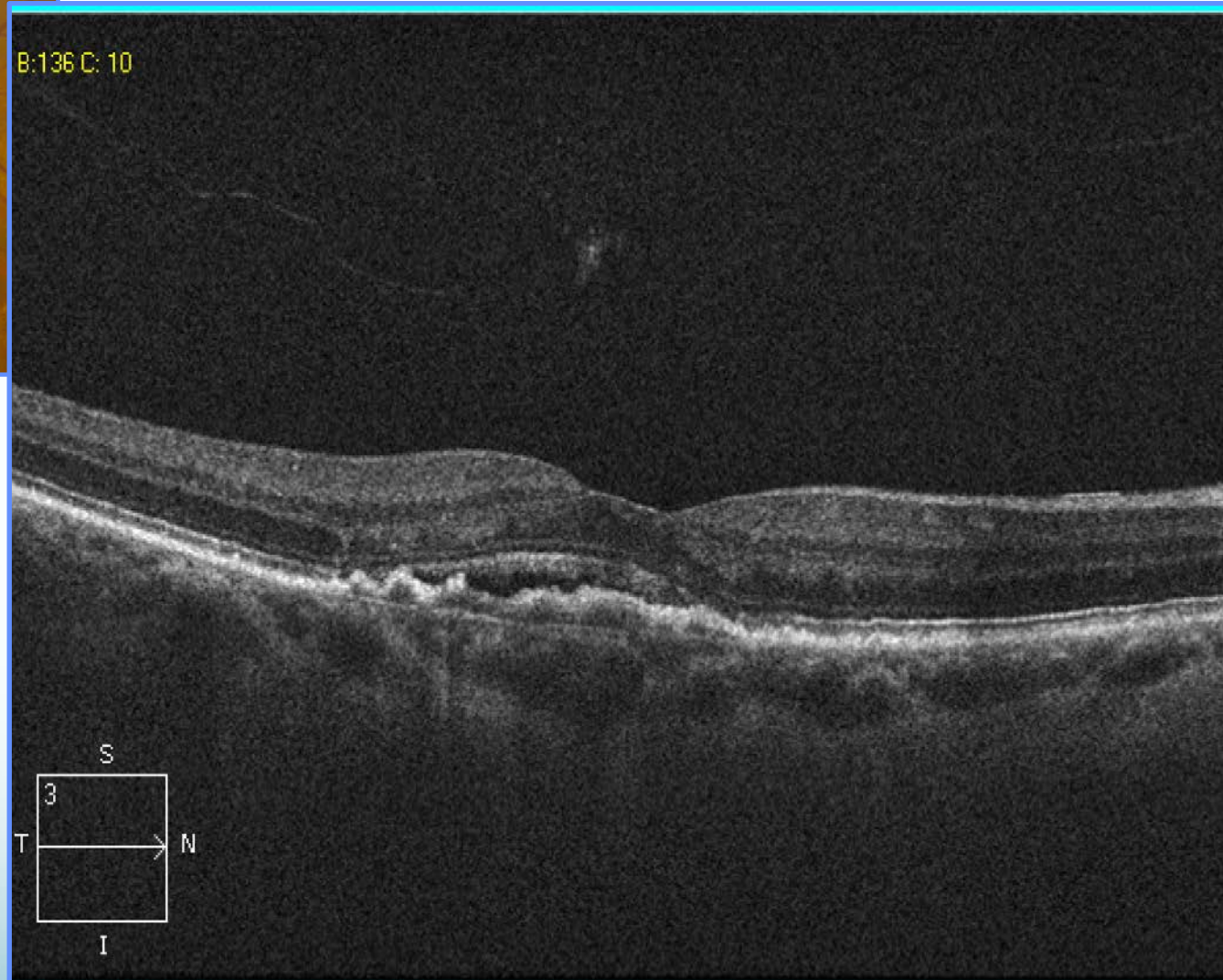
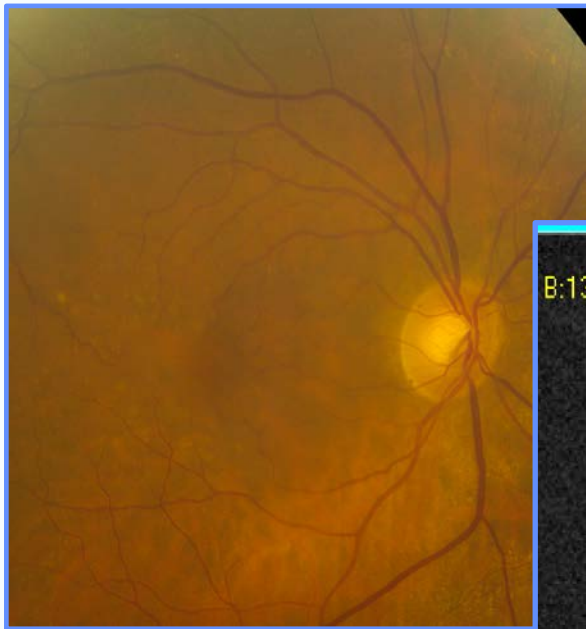
OD ☐ ☒ C

Scan Angle: 0°

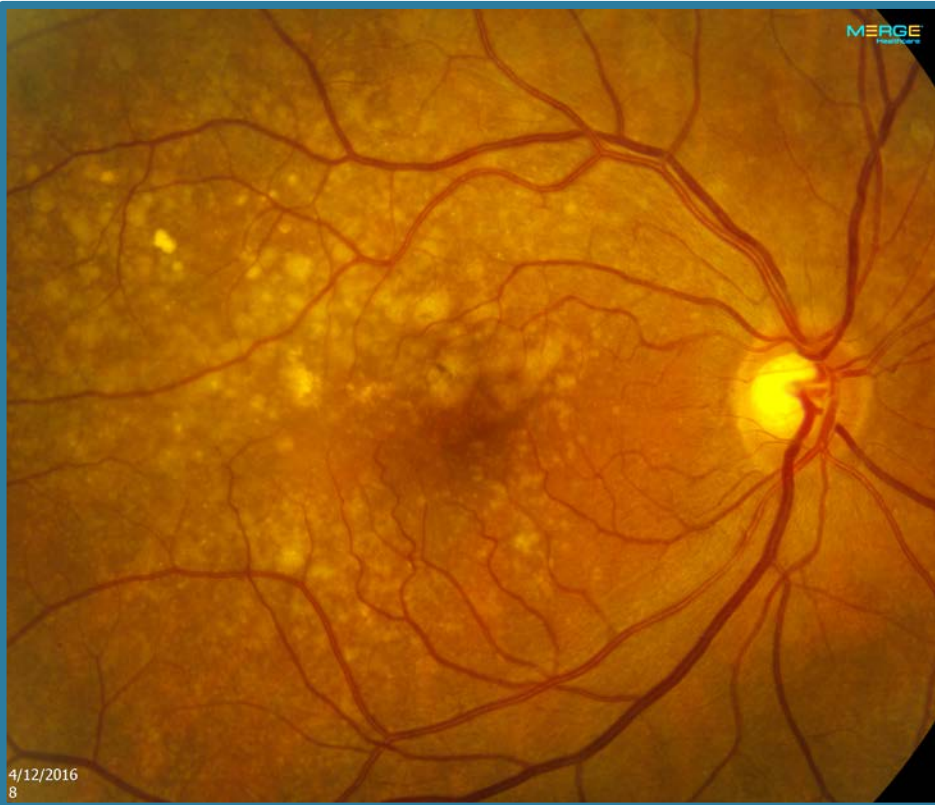
Spacing: 0.25 mm

Length: 6 mm

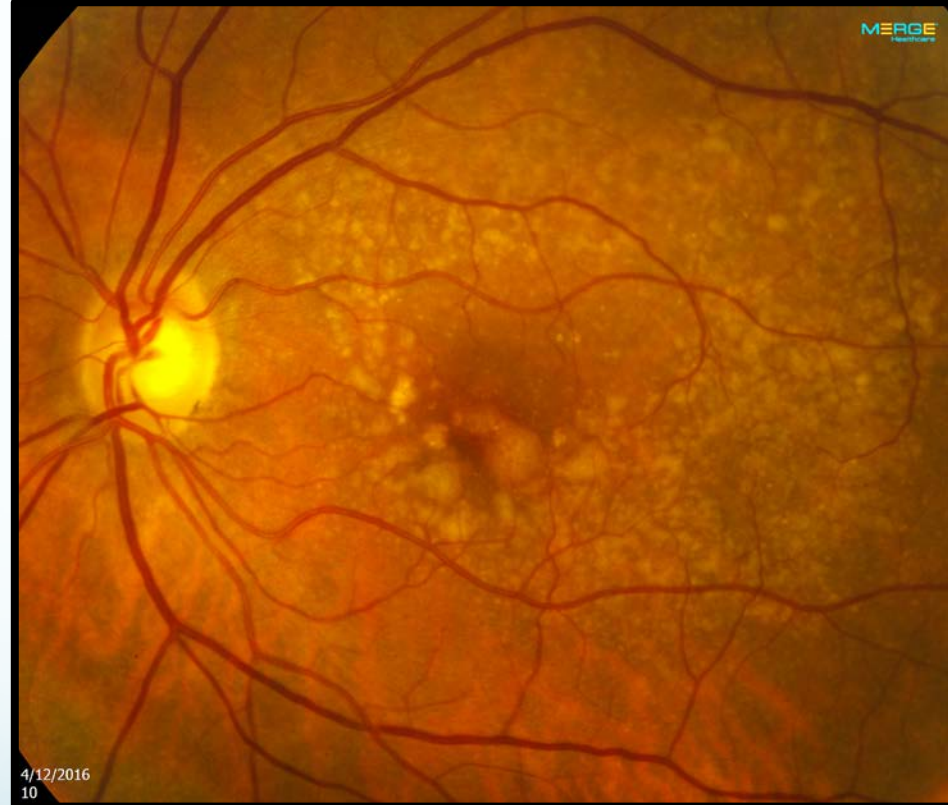




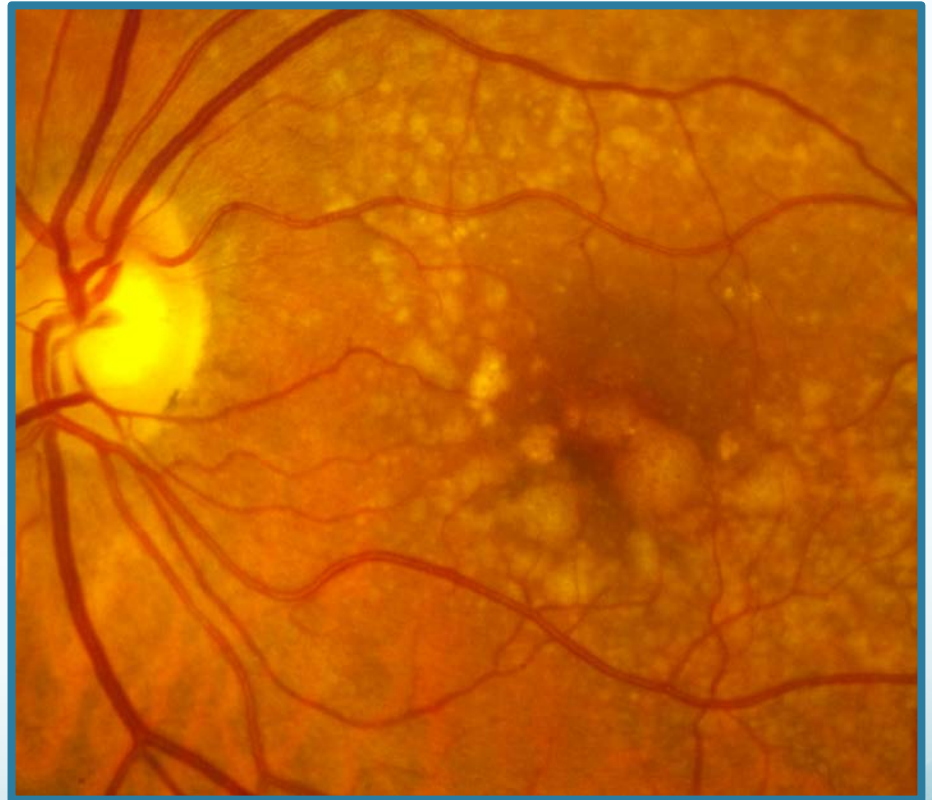
74 yo Hispanic Female



20/20

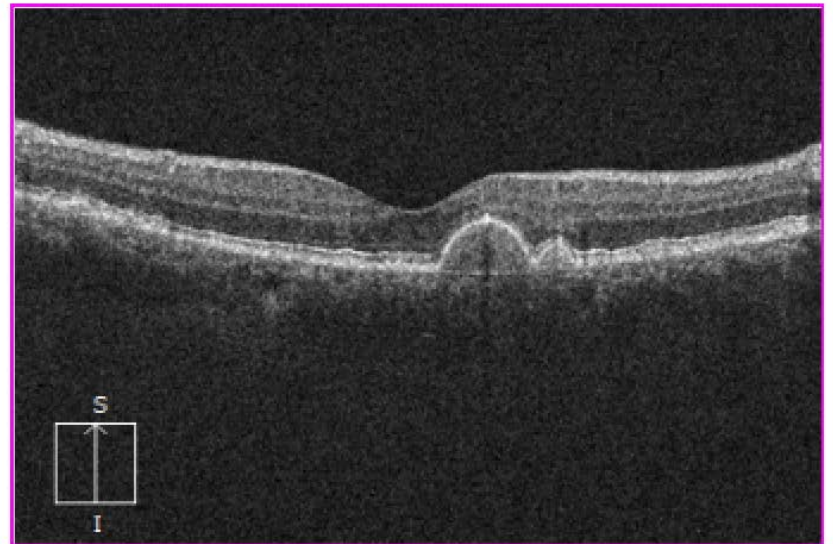
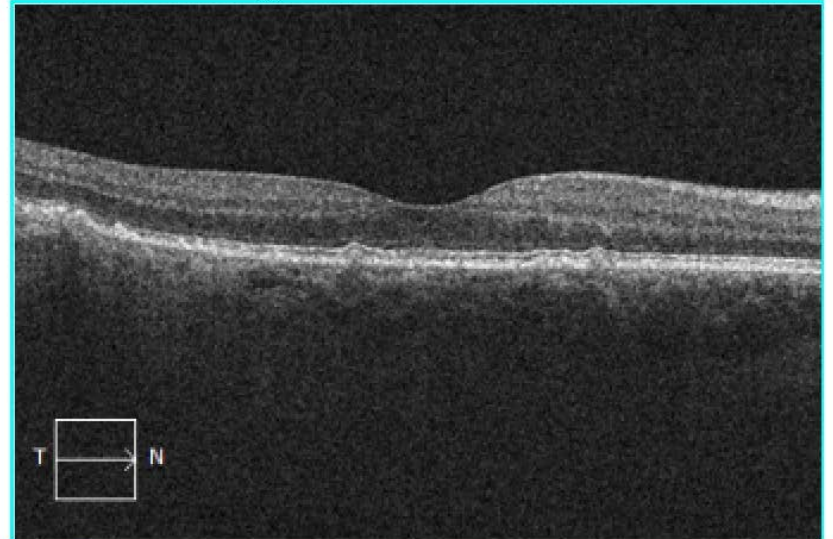


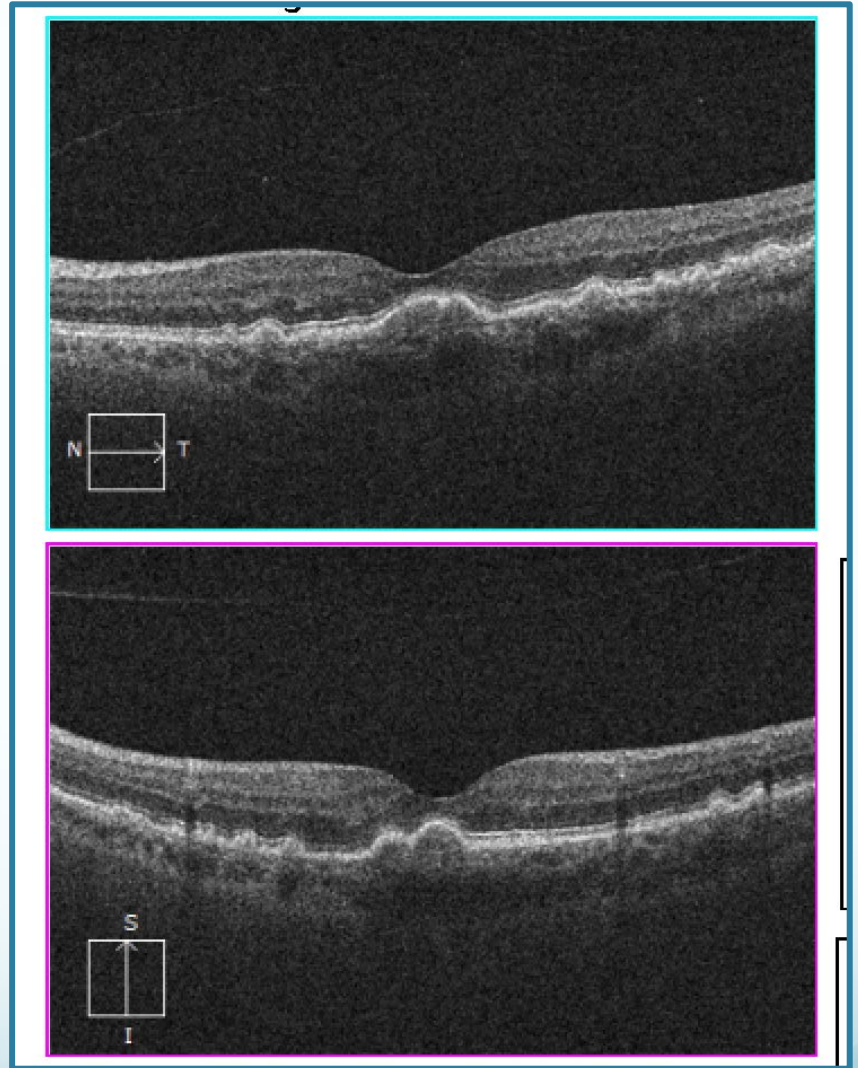
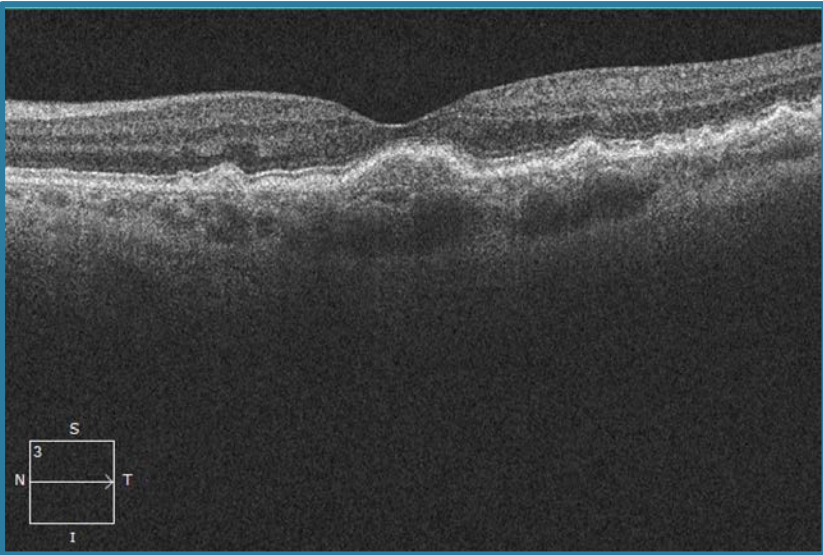
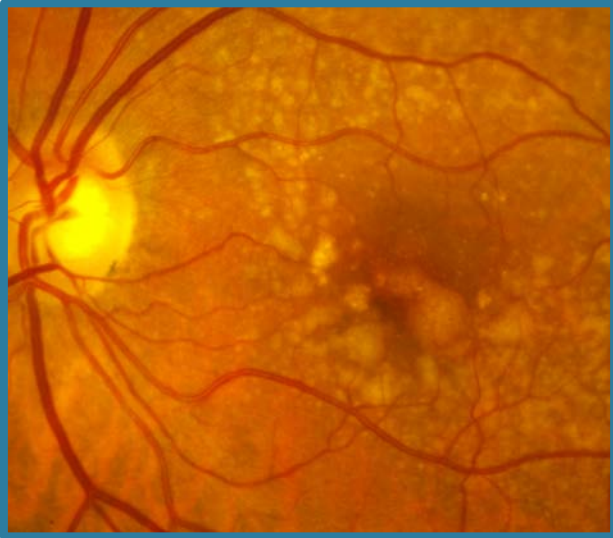
20/25





High-definition mode

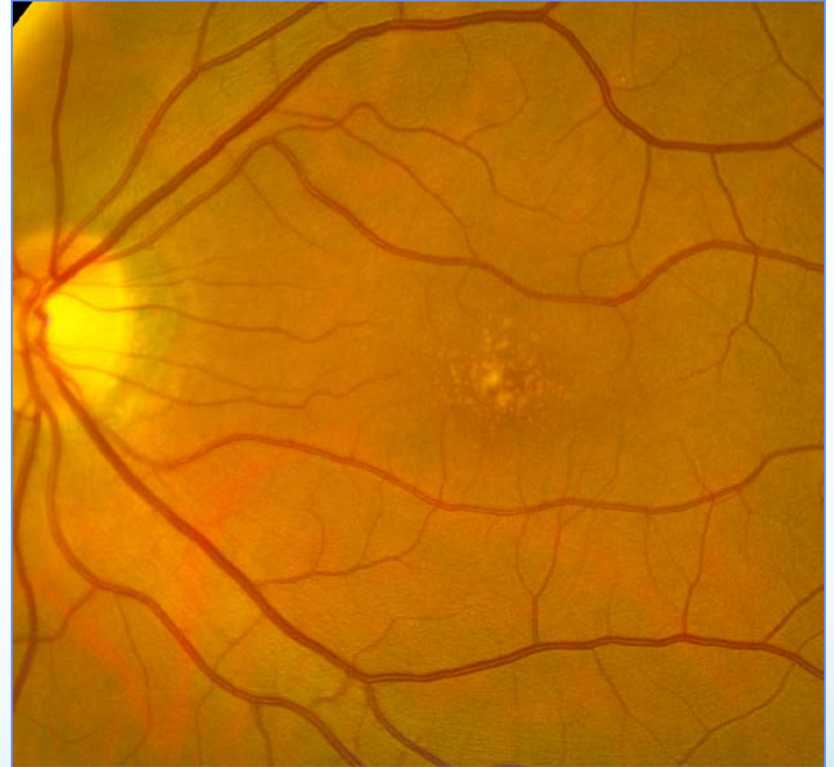




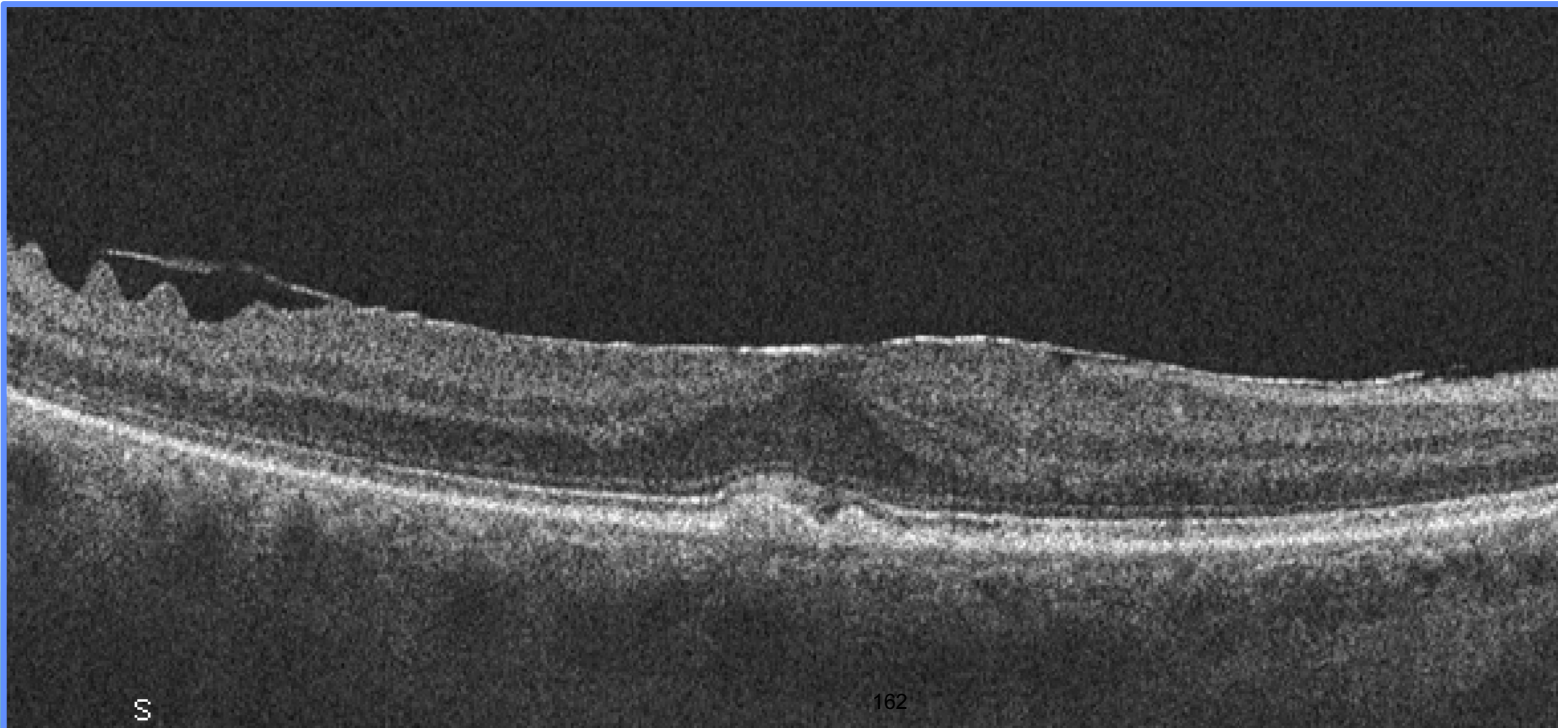
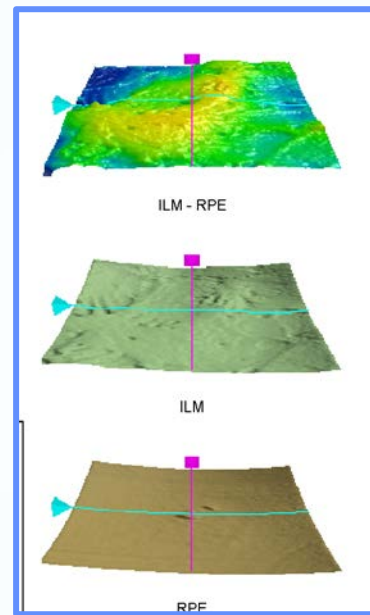
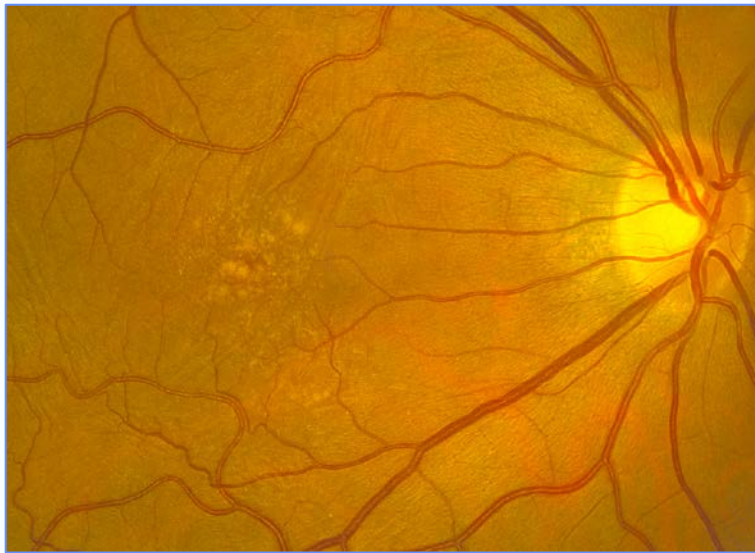
20/30



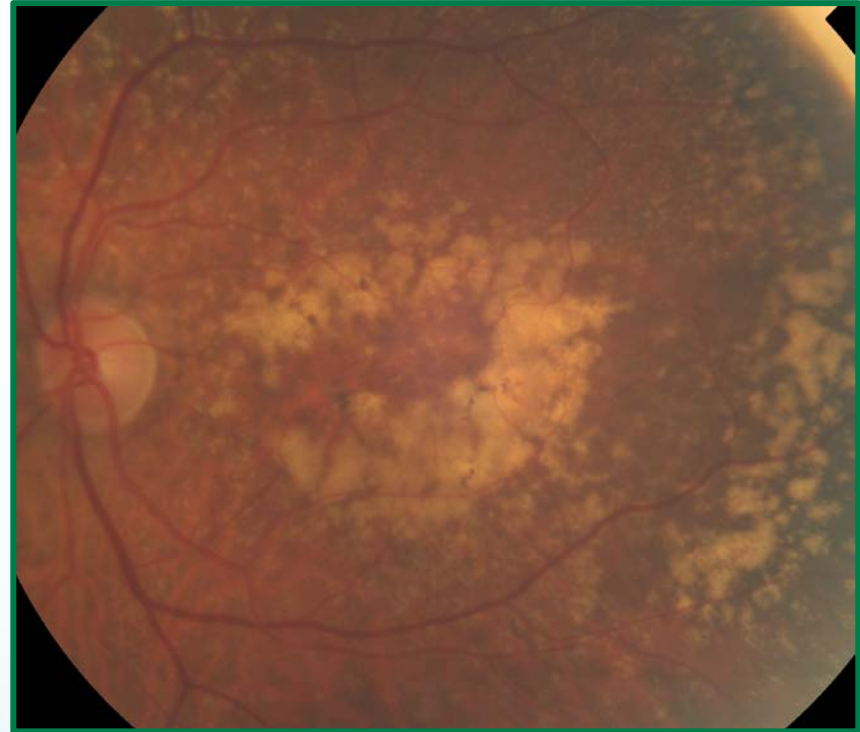
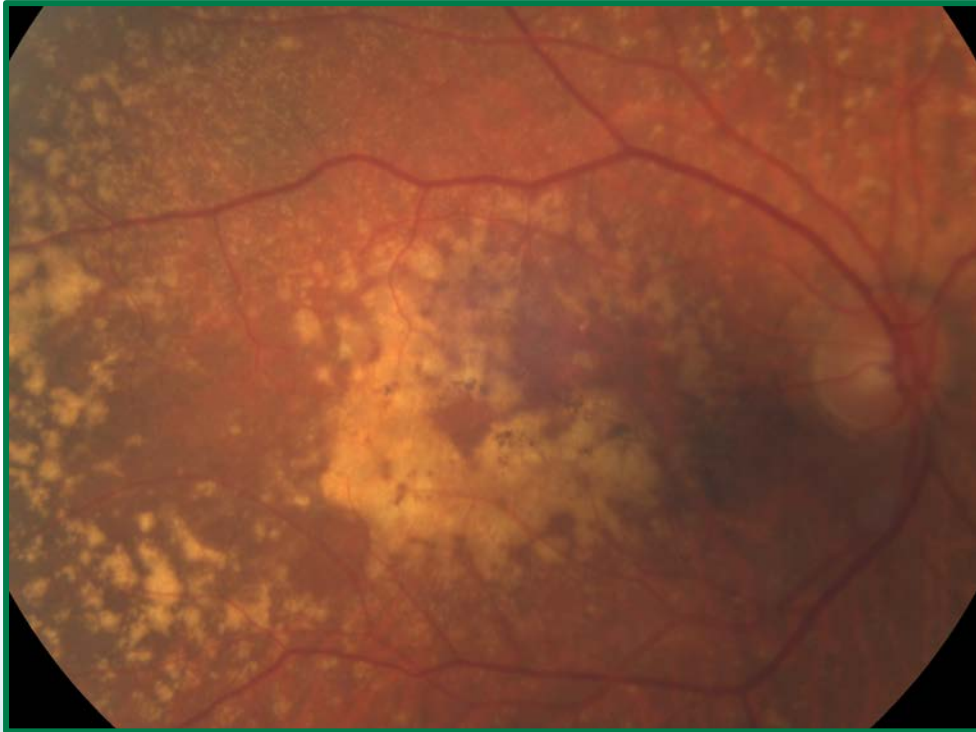
20/20

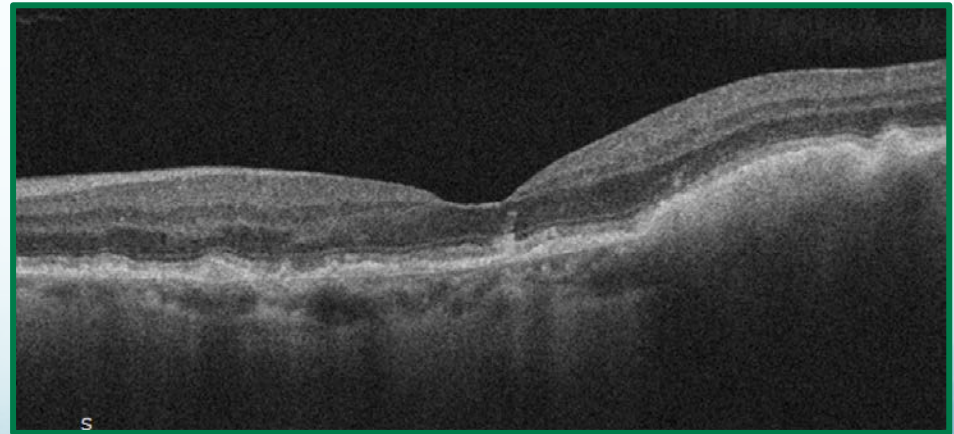
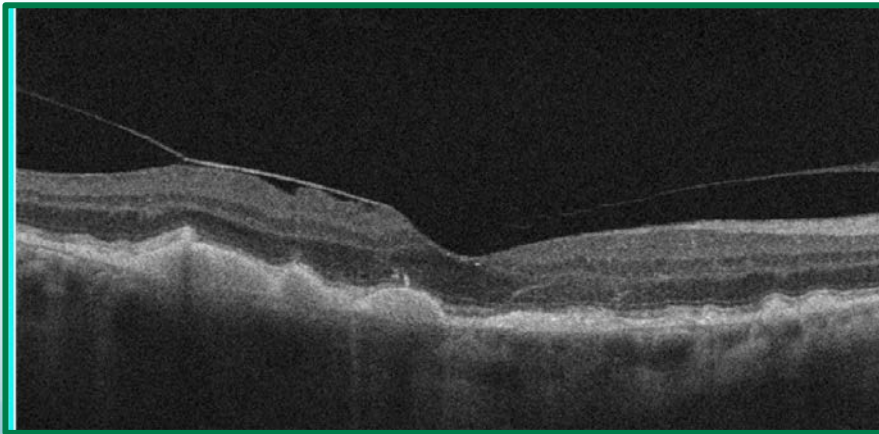
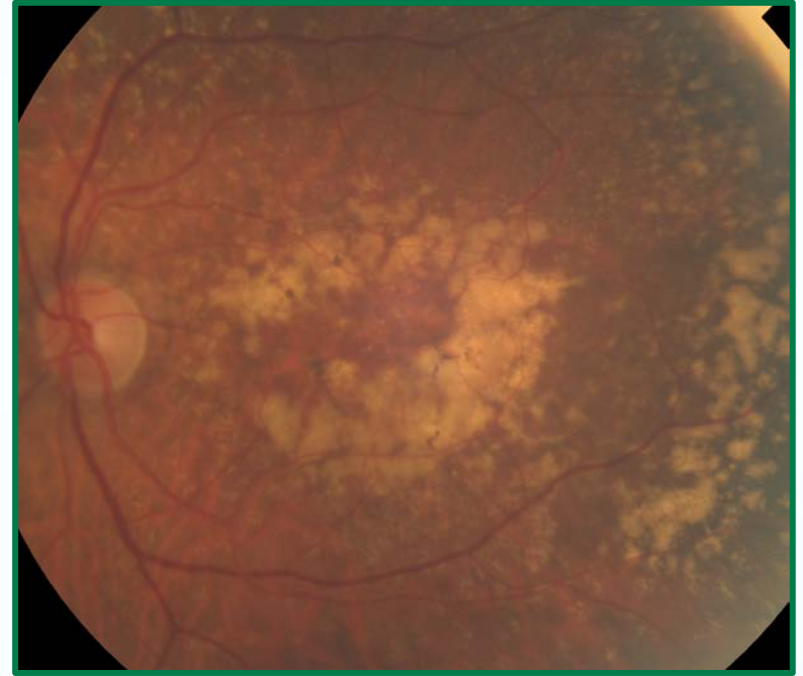
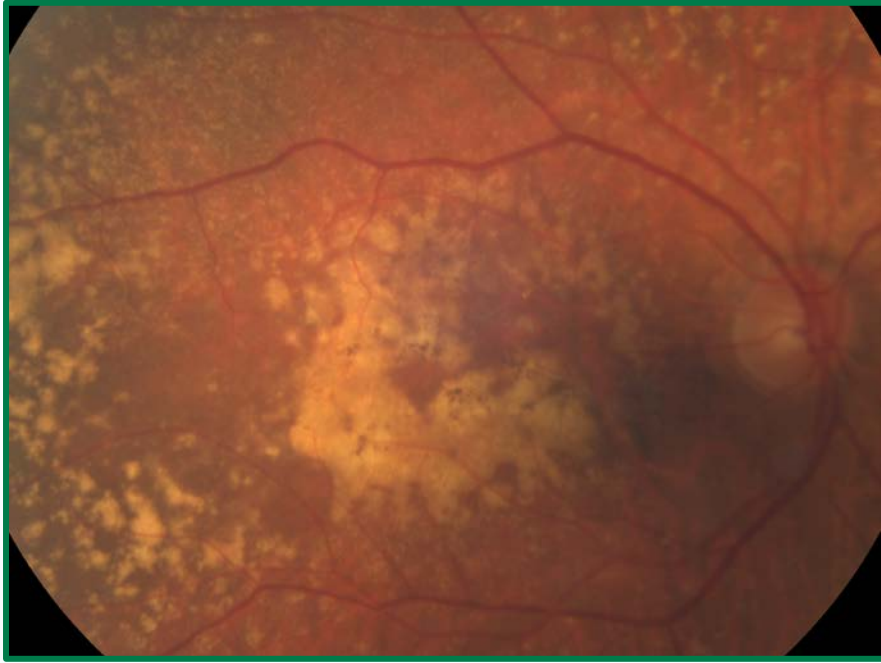






Severe Dry AMD





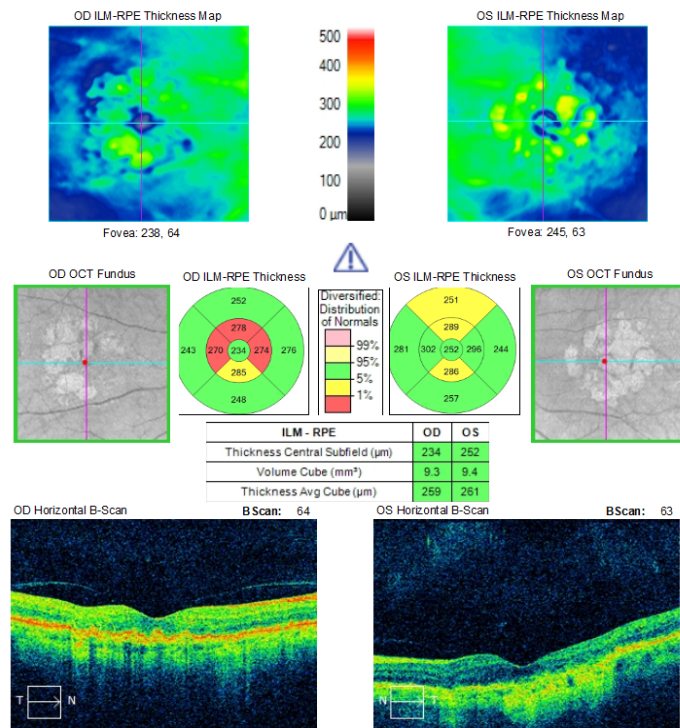
Moderate/Severe Atrophic AMD



ID: 1367743895 Exam Date: 1/25/2016 1/25/2016 CZMI
 DOB: 1/6/1930 Exam Time: 2:03 PM 2:05 PM
 Gender: Female Serial Number: 5000-3593 5000-3593
 Technician: Operator, Cirrus Signal Strength: 10/10 8/10

Macula Thickness OU: Macular Cube 512x128

OD OS



Comments

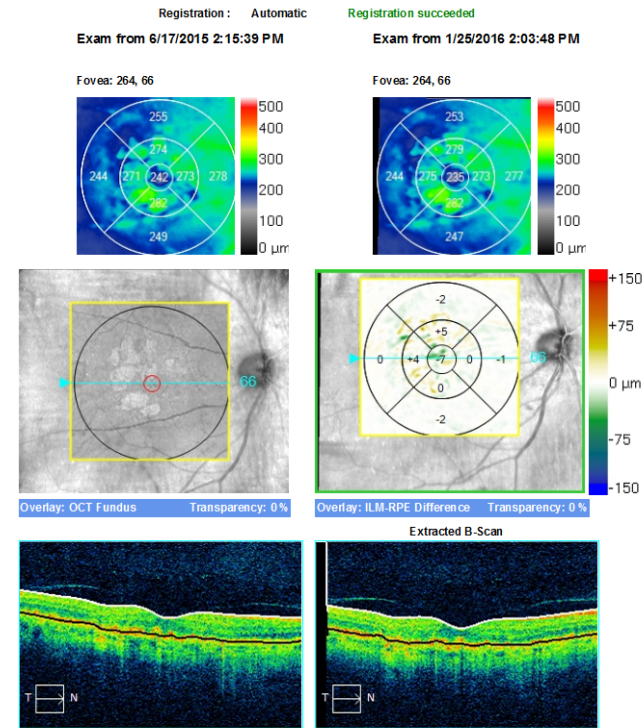
Doctor's Signature

CIRRUS
 SW Ver: 7.5.0.56
 Copyright 2014
 Carl Zeiss Medtec, Inc
 All Rights Reserved

ID: 1367743895 Exam Date: 6/17/2015 1/25/2016 CZMI
 DOB: 1/6/1930 Exam Time: 2:15 PM 2:03 PM
 Gender: Female Serial Number: 5000-3593 5000-3593
 Technician: Operator, Cirrus Signal Strength: 10/10 10/10

Macular Change: Macular Cube 512x128

OD OS



Comments

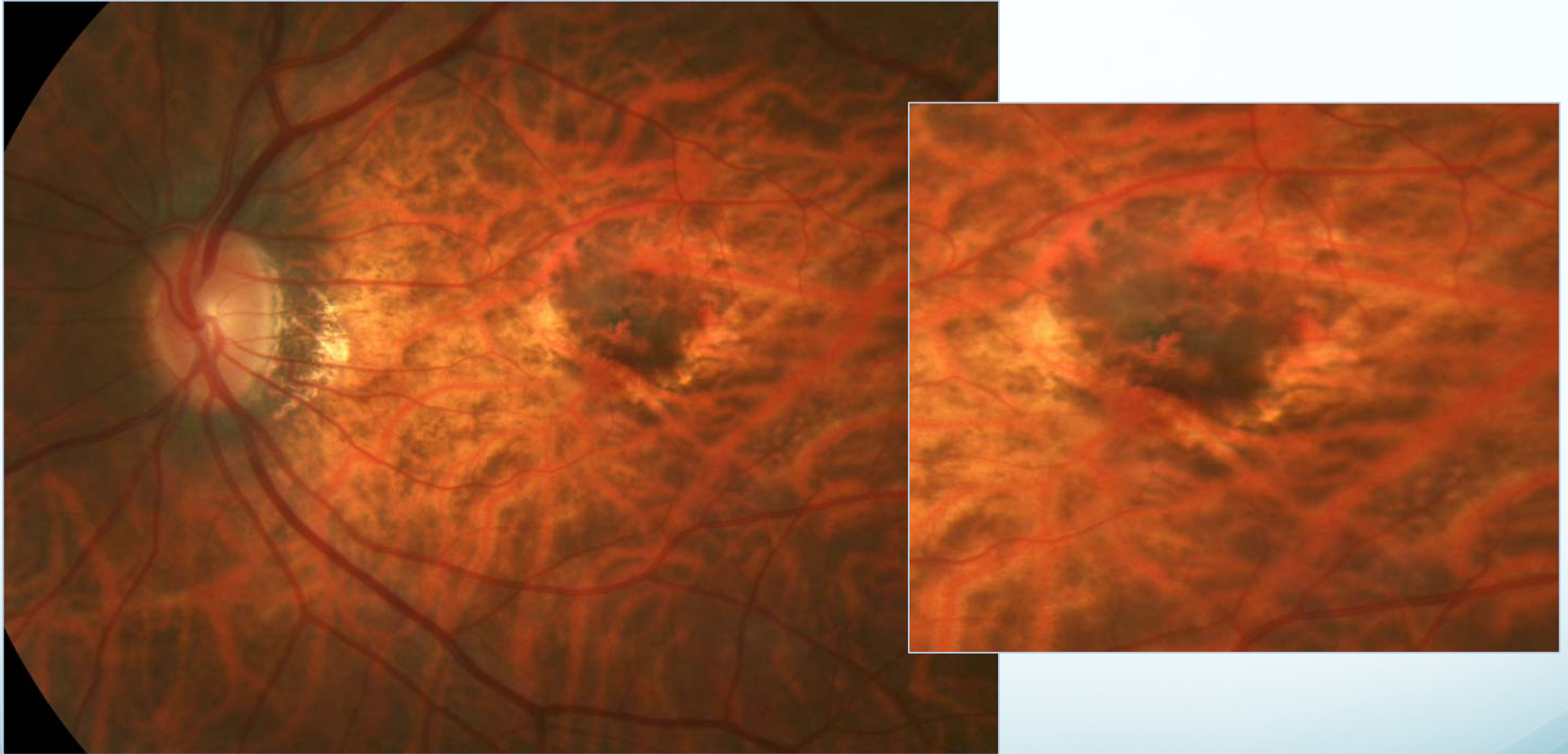
Doctor's Signature

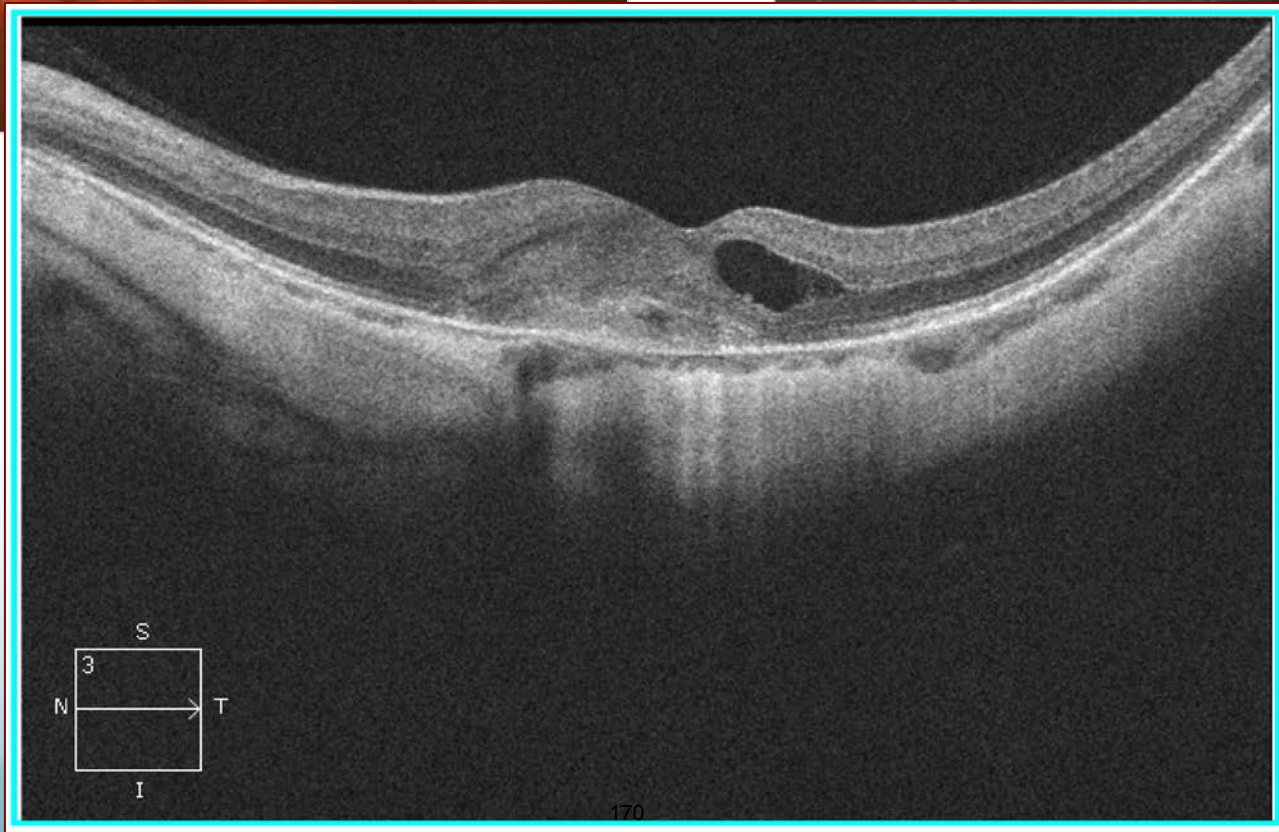
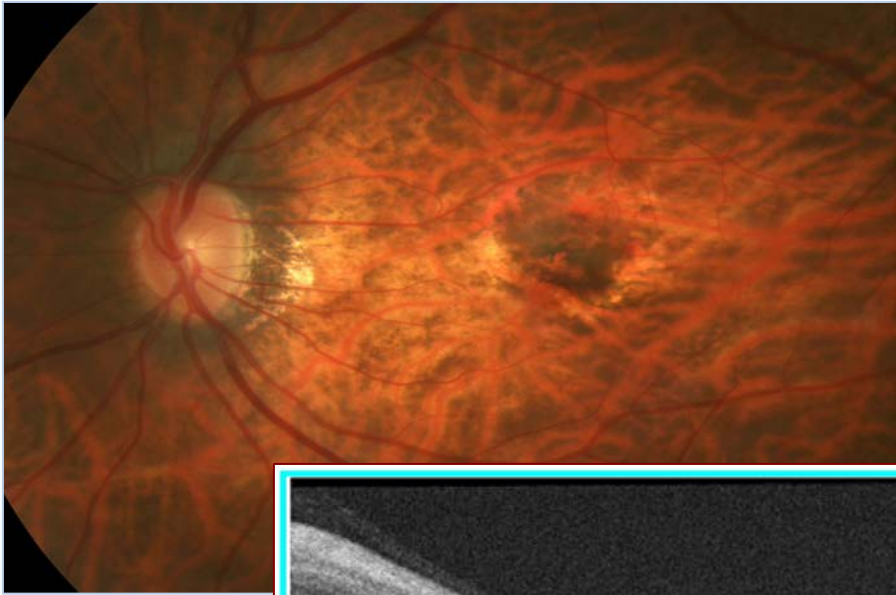
CIRRUS
 SW Ver: 7.5.0.56
 Copyright 2014
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 All Rights Reserved

Multiple PED's in dAMD

Choroidal Neovascularization (CNV)

Degenerative Myopia with CNV





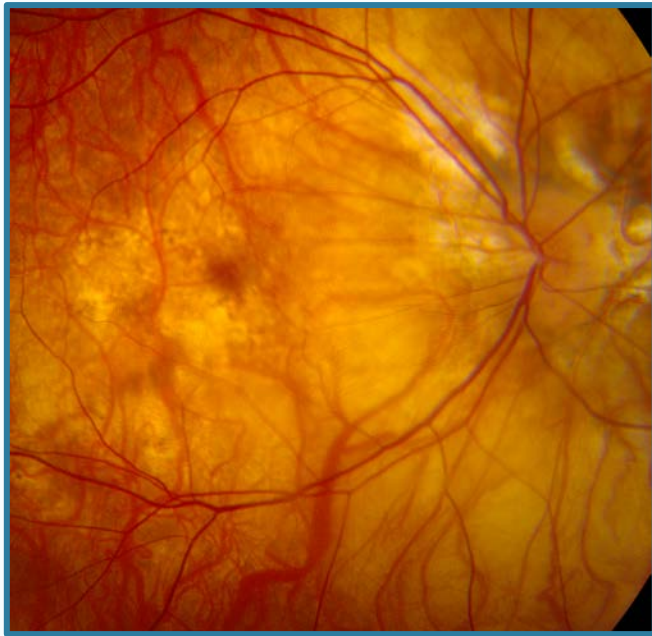
42 yo High Myopia: ~ -22.50 DS



20/40



20/40



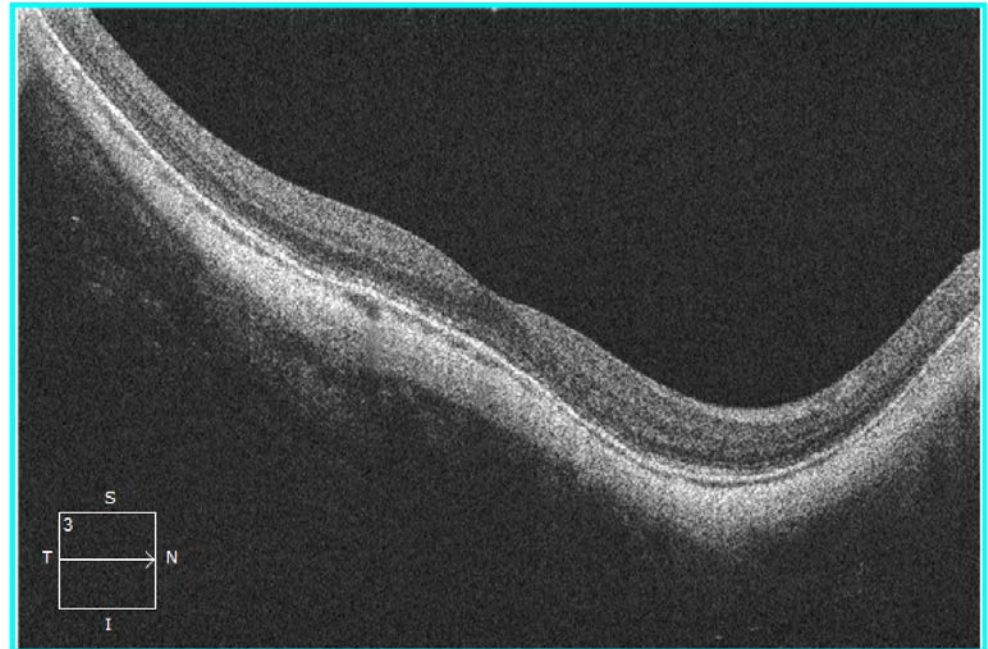
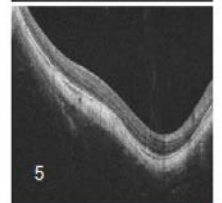
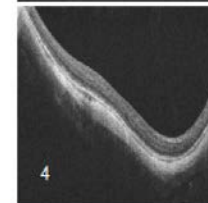
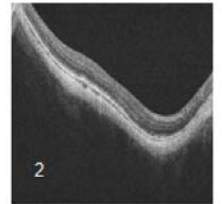
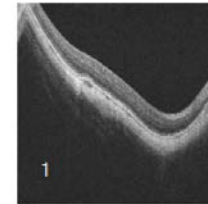
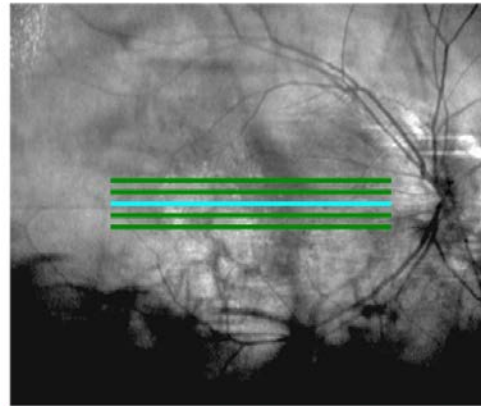
High Definition Images: 5 Line Raster

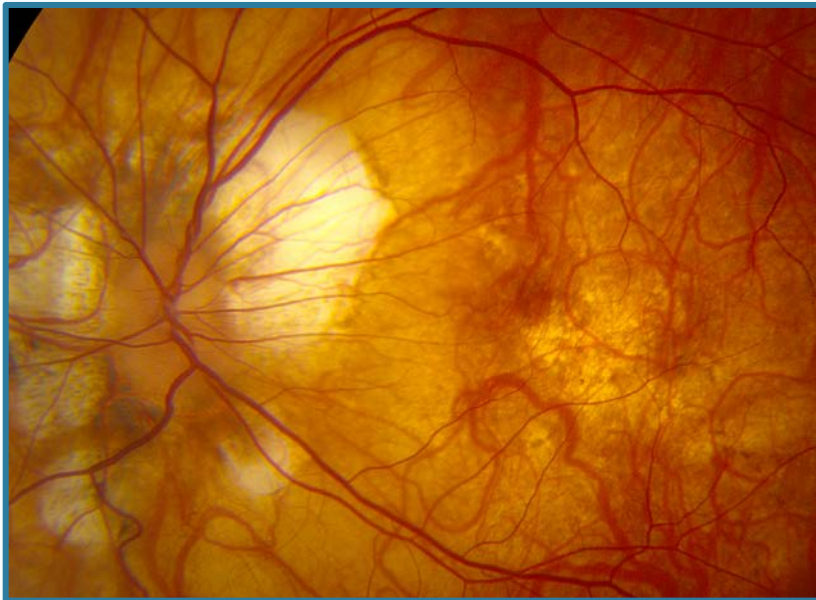
OD ☒ OS ☐

Scan Angle: 0°

Spacing: 0.25 mm

Length: 6 mm





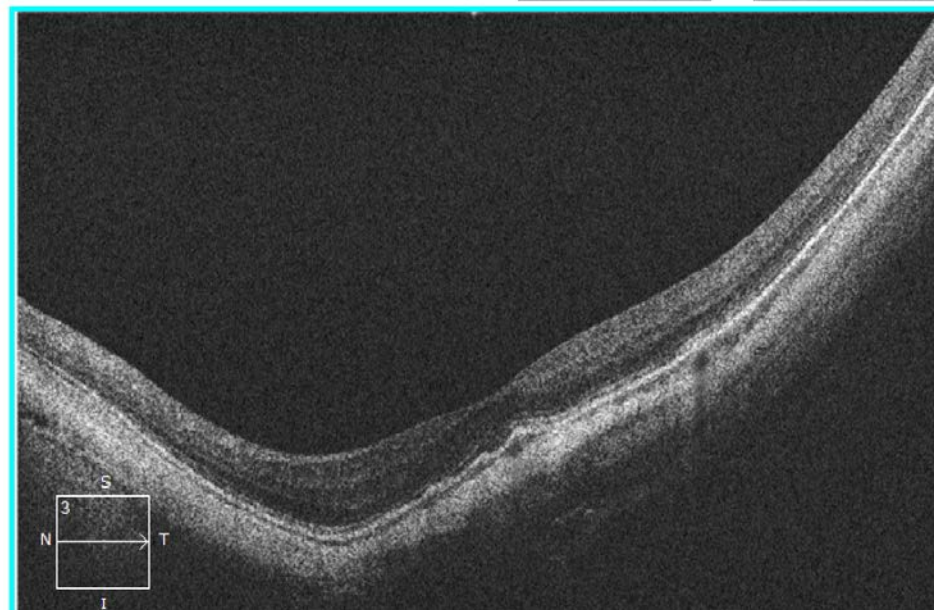
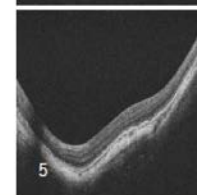
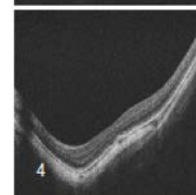
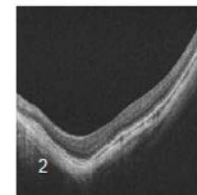
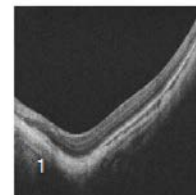
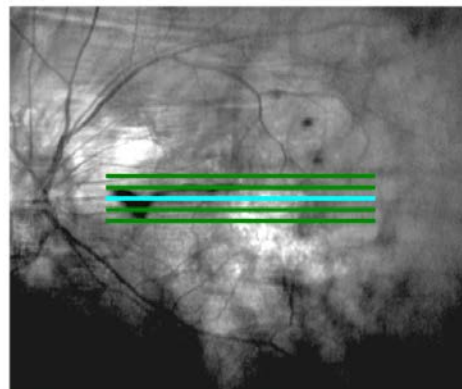
High Definition Images: 5 Line Raster

OD ☐ OS ☒

Scan Angle: 0°

Spacing: 0.25 mm

Length: 6 mm



CURRICULUM VITAE
IAN BENJAMIN GADDIE, O.D., F.A.A.O.

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Prospect, KY 40059
(502) 429-5544
ibgaddie@bellsouth.net

LICENSURE: Oklahoma Lic. # 2216
•! Anterior Segment Laser Certified
Kentucky Lic. #1374 DT
•! Laser Certified

EDUCATION: University of Kentucky 1989-1993
Bachelor of Science

University of Alabama at 1993-1997
Birmingham School of Optometry
Doctor of Optometry-May 1997

RESIDENCY: Ocular Disease Residency
Triad Eye Medical Clinic and Cataract Institute, Tulsa OK
Northeastern State University 1997-1998
College Of Optometry

FELLOWSHIP: Medical Glaucoma and Laser Therapy
Triad Eye Medical Clinic, Cataract and Laser Institute
Northeastern State University 1998-1999
College of Optometry
Tulsa and Tahlequah, Oklahoma

CURRENT: Gaddie Eye Centers Louisville, KY
Owner and Director July 1999-Present

I authorize the validity of this CV and am responsible for it's content:
_____ **6/7/2015**

CERTIFICATIONS: Board Certified in Optometry; American Board of Optometry; Active Diplomate Status 2014-Present

**HOSPITAL
STAFF APPT:** W.W. Hastings Indian Health Service Hospital
Cherokee Nation Hospital, Tahlequah OK
1997-1999

Norton's Carroll County Memorial Hospital
Carrollton, KY
2001- Present

Baptist Northeast Hospital
LaGrange, KY
2002-2010

AFFILIATIONS: American Optometric Association
American Academy of Optometry: Fellow, Ocular Disease
Optometric Glaucoma Society; President 2012-Present
Kentucky Optometric Association; President 2011-2012
Greater Louisville Optometric Society

APPOINTMENTS: Adjunct Assistant Professor of Optometry
Northeastern State University College of Optometry
Tahlequah, OK

**Co-Chairman, Conference Advisory Board, Vision Expo
East and West**

Chairman, Continuing Education Committee
Kentucky Optometric Association

Immediate Past Chairman, Continuing Education Committee
American Optometric Association

Kentucky Medicare Carrier Advisory Committee Member

Legislative Committee Chairperson, Kentucky Optometric
Association 2015-Present

ADVISORY: Allergan Advisory Board/Consultant/Clinical Research (see
poster reference below)

Essilor of American Advisory Board

Bausch and Lomb Advisory Board/Consultant

Reichert, Inc Advisory Board/Consultant

Alcon Glaucoma Advisory Board

**EDITORIAL
BOARDS:**

Review of Optometry
Primary Care Optometry News
Optometric Management
Optometry Times

AWARDS:

President's Award, Kentucky Optometric Association
April, 2011

Oklahoma Association of Optometric Physicians
Hall of Fame Inductee, September 2011

Educator's Award, Colorado Optometric Glaucoma
Society, Denver CO April 2014

Kentucky Optometric Association Optometrist of The
Year Award. April, 2015

TEXTBOOKS:

Gaddie IB, Alexander LJ. **Congenital and Acquired Anomalies of The Optic Nerve Head.** In Alexander, LJ. Primary Care of the Posterior Segment, 3d Edition. East Norwalk, CT: Appleton and Lange; 2002.

POSTERS:

Intraocular Pressure Following Laser In-situ Keratomileusis: A Pilot Study. American Academy of Optometry Annual Meeting, Clinical Sciences Section, Poster. December 1998. San Francisco, CA.

Keratocyte-The Architectural Cornerstone to Stromal Health and Transparency? American Academy of Optometry Annual Meeting, Poster. December 1998. San Francisco, CA.

Systemic Therapy in Ocular Surface Disease. American Academy of Optometry Annual Meeting, Course. 2006.

Safety and Efficacy of Optive in Contact Lens Wearers with Dry Eye. American Academy of Optometry Annual Meeting, Clinical Sciences Section, Poster. November 2008. Anaheim, CA.

PUBLICATIONS: Complete listing available upon request for non-peer reviewed manuscripts and articles

Realini TR, Zangwill LM, Gaddie IB, et al. Normative Databases for Imaging Instruments. J Glaucoma 2015; 24:480-483).

Bloomenstein MR, Gaddie IB, Karpecki P, Morris S. Understanding biocompatibility: the importance of study design, methods, and proper interpretation. *Cornea* 2012;31(12):1507.

Jackson MA, Burrell K, Gaddie IB, Richardson SD. Efficacy of a new prescription-only medical food supplement in alleviating signs and symptoms of dry eye, with or without concomitant cyclosporine A. *Clin Ophthalmol* 2011;5:1201-6.

Nichols KK, Morris S, Gaddie IB, Evans E. Epinastine 0.05% ophthalmic solution in contact lens-wearing subjects with a history of allergic conjunctivitis. *Eye & Contact Lens* 2009 35 (1).

Gaddie, Ian B., Pack, Charles E., II, "Intraocular Pressure Following Laser In-Situ Keratomileusis: A Pilot Study". Presented at the 1998 Annual Meeting of the American Academy of Optometry. *The Journal of the American Academy of Optometry*, Volume 75, Number 12s, December 1998.

Gaddie IB, Bennett D. Cystoid Macular Edema associated with the use of Latanoprost. *J Am Optom Assoc* 1998; 69(2): 122-8.

Gaddie IB, Bloom S. Idiopathic retinal venous-choroidal anastomosis. *Retina* 1998; 18(5): 483-485.

Bartlett JD, Boan K, Corliss D, Gaddie IB. Efficacy of silicone punctal plugs as adjuncts to topical pharmacotherapy

of glaucoma-a pilot study. *J Am Optom Assoc* 1996; 67(11): 664-68.

Porter JD, Stava MW, Gaddie IB, Baker RS. Quantitative analysis of eyelid movement metrics reveals the highly stereotyped nature of monkey blinks. *Brain Res* 1993; 609(1): 159-66.

Porter JD, Stava MW, Bruekner JL, Gaddie IB, Baker RS. Types and time course of the alterations induced in monkey blink movements by botulinum toxin. *Exp Brain Res* 1993; 96(1): 77-82

INVITED LECTURES: Over 300 state, national and international continuing education meetings. Listing available by request. 2011 and 2012 Meetings listed below.

**University of California-Berkeley School Of Optometry
Berkeley, CA
Glaucoma Update and Certification Training
6 Hours CME January 9, 2011**

**SECO-Annual Meeting
Atlanta, GA
Glaucoma CME
Laser Surgery CME
6 hours total CME February 3-5, 2011**

**Vision Expo East
New York, NY
Glaucoma, Dry Eye, New Technology CME
8 hours total CME March 17-19, 2011**

**Mountain West Council of Optometry
Las Vegas, NV
Glaucoma, Dry Eye, Neuro CME
6 hours total CME April 21-22, 2011**

**National Vision Corporation
Dallas, TX
Glaucoma, Dry Eye CME
4 hours total CME June 5, 2011**

American Optometric Association Annual Meeting

**Salt Lake City, UT
Glaucoma, Dry Eye, New Technology CME
8 hours total CME June 15-18, 2011**

**Florida Optometric Association
Orlando, FL
Glaucoma, Optic Nerve, Blepharitis CME
6 hours total CME July 22-23, 2011**

**Virginia Eye Associates
Quarterly CME Program
Virginia Beach, VA
Glaucoma, Laser Surgery CME
4 hours total CME August 4, 2011**

**Orange County Optometric Society
Irvine, CA
Glaucoma, Dry Eye, New Technology
4 hours total CME August 7, 2011**

**Banzai Group Meeting
Memphis, TN
Glaucoma, Selective Trabeculectomy
4 hours total CME September 9, 2011**

**Vision Expo West
Las Vegas, NV
Optic Nerve Disease, Glaucoma, Dry Eye
8 hours total CME September 22-24, 2011**

**Kentucky Optometric Association
Frankfort, KY
Laser surgery for cataract, glaucoma, and minor surgical procedures
12 hours total CME September 29-30, 2011**

**Great Western Council of Optometry Annual Congress
Portland, OR
Glaucoma, Optic Nerve Disease, and Dry Eye
8 hours total CME October 6-8, 2011**

**Optometric Glaucoma Society Annual Meeting
Boston, MA
Moderator: New Ideas in Glaucoma
2 hours total CME October 11, 2011**

**Oklahoma Association of Optometric Physicians
Tulsa, OK
Glaucoma, Optic Nerve Disease, and New Technology
4 hours total CME October 14, 2011**

**East West Eye Conference
Cleveland, OH
Glaucoma, Optic Nerve Disease and Dry Eye
6 hours total CME October 20-21, 2011**

**West Coast Optometric Glaucoma Symposium
Irvine, CA
Glaucoma
4 hours total CME December 2-3, 2011**

**National Board of Examiners in Optometry
Charlotte, NC
Clinical models for testing laser surgical proficiency
NO CME. January 12-13, 2012**

**Optometric Glaucoma Society Resident's Program
Dallas, TX
Glaucoma
NO CME. 6 hours of presentations. February 3-4, 2012**

**SkiVision Annual Meeting
Snowmass, CO
Glaucoma, Dry Eye and Optic Nerve Disease
4 hours total CME February 17-18, 2012**

**SECO Annual Meeting
Atlanta, GA
Glaucoma, Laser Surgery
4 hours total CME March 1-3, 2012**

**New Jersey Association of Optometric Physicians
Newark, NJ
Glaucoma, Optic Nerve Disease, Laser Surgery for Glaucoma
6 hours total CME March 4, 2012**

**Vision Expo East
New York, NY
Glaucoma, New Technology, Contact Lens Advancements, Dry Eye
8 hours total CME March 22-24, 2012**

East Coast Optometric Glaucoma Symposium

Washington, DC
Glaucoma
6 hours total CME April 13-14, 2012

Ontario Optometric Association
Toronto, Ontario Canada
Glaucoma, Dry Eye, New Technology
6 hours total CME April 20-21, 2012

Tropical CE Meeting
St. Andrews, Scotland
Glaucoma, Dry Eye and Practice Management
10 hours total CME June 7-12, 2012

American Optometric Association Annual Meeting
Chicago, IL
Glaucoma
4 hours total CME June 27-30, 2012

Kentucky Optometric Association Surgical Training Meeting
Frankfort, KY
Laser surgery for cataract, glaucoma and surgical procedures
12 hours total CME July 12-13, 2012

Midwest Optometric Glaucoma Symposium
Chicago, IL
Glaucoma
4 hours total CME July 13-14, 2012

Aran Eye Associates Annual Meeting
Key West, FL
Glaucoma, Dry Eye and Optic Nerve Disease
6 hours total CME August 9-11, 2012

University of Houston College of Optometry
Houston, TX
First Year Student Orientation Meeting on Future of Optometry
No CME. August 17, 2012

Vision Expo West
Las Vegas, NV
Glaucoma, Dry Eye, New Technology
7 hours total CME September 6-8, 2012

Central Indiana Optometric Society

Indianapolis, IN
Glaucoma, Dry Eye
3 hours total CME October 16, 2012

Tayfour Eye and Laser Center Annual Meeting
Windsor, Ontario Canada
Glaucoma, Optic Nerve and Dry Eye
6 hours total CME October 18-19, 2012

Optometric Glaucoma Society Annual Meeting
Phoenix, AZ
Moderator, Glaucoma
2 hours total CME October 23, 2012

AllDocs Annual Meeting
Cancun, MX
Glaucoma, Glaucoma Laser Surgery
4 hours total CME November 2-4, 2012

Wisconsin Optometric Association Fall Meeting
Milwaukee, WI
Glaucoma, Optic Nerve and Dry Eye
4 hours total CME November 9-10, 2012

Review of Optometry New Technology Symposium
Philadelphia, PA
Glaucoma and Dry Eye
4 hours total CME November 30, 2012

Maryland Optometric Association
Baltimore, MD
Glaucoma, Optic Nerve Disease and Dry Eye
6 hours total CME December 1, 2012

West Coast Optometric Glaucoma Symposium
Irvine, CA
Glaucoma
4 hours total CME December 14-15, 2012

REFERENCES: **Paul Karpecki, O.D.**
 Koeffler Eye Center
 Lexington, KY

Murray Fingeret, O.D.
 Professor of Optometry
 State University of New York

Chief, Optometry Section
Brooklyn VAMC
Brooklyn, NY