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: OCT Angiography

Provider Name: Kaiser Permanente c/o Dr. Wendy Friedman

☑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

OPTOMETRY

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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	**Course Presentation Date**
OCT Angiography	09/17/2016

Course Provider Contact Information

Provider Name

Wendy (First) Friedman (Last) _____ (Middle)

Provider Mailing Address

Street 393 East Walnut St **City** Pasadena **State** CA **Zip** 91188

Provider Email Address Wendy.L.Friedman@kp.org

Will the proposed course be open to all California licensed optometrists?	☒ YES ☐ 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?	☒ YES ☐ 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

Nadia (First) Waheed, MD (Last) _____ (Middle)

License Number _____	**License Type** _____
Phone Number (617) 636-7950	**Email Address** nwaheed@tuftsmedicalcenter.org

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.

Signature of Course Provider *Date* 1/9/17

KAISER PERMANENTE®

Southern California Permanente Medical Group
Professional Education
393 East Walnut
Pasadena, California 91188
(626) 405-4644

Recurring and Board Use Only			
Receipt #	Payor ID	Beneficiary ID	Amount
1-1670	1509266	1509266	300

November 21, 2016

Dear California Board of Optometry,

This letter is to correct the missing application pieces for the 2016 Ophthalmology Symposium at the Disneyland Hotel on Saturday, September 17, 2016

Enclosed is
- a check for $300.00
- a detailed summary of each course
- outlines for each course
- powerpoint slides – which can also be viewed on the website (link below)

The reason the application was late

The delay was due to not knowing the status of one of our speakers (Nadia Waheed, MD) so the agenda wasn't finalized.
She was originally scheduled to speak twice in the morning but then she informed us she was asked to present at a different symposium on the same day in San Diego. We didn't know until very close to the symposium if she would have to cancel or would be able to switch to an afternoon slot or she would only speak once and have another colleague take her other slot. What was finally settled upon is she would switch to the afternoon slot and give the other slot away to her colleague.

Your letter requested a CV for Dr. Garrick Chak.

He was the chair of the committee and introduced the day and all the speakers – he didn't give any presentation.

Below is the link to our registration website that has more information and shows that Southern California Permanente Medical Group (accredited by the Institute for Medical Quality/California Medical Association (IMQ/CMA) to provide continuing medical education for physicians – and they have approved this symposium for ***6.5 AMA PRA Category 1 Credit(s)™***
https://www.signup4.net/public/ap.aspx?EID=PHYE530E&OID=50

I can email you soft copies (if you prefer) or if you need any more information, please feel free to contact me.

Sincerely,

Wendy Friedman
Meeting Planner
393 East Walnut, Pasadena, CA 91188 626) 405-4644 wendy.L.friedman@kp.org

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August 15, 2016

Dear California Board of Optometry,

This letter is to request continuing education credits for the

2016 Ophthalmology Symposium
at the
Disneyland Hotel
1150 Magic Way, Anaheim, CA 92802

Saturday, September 17, 2016

Enclosed is a check for $50.00

Below is the link to our registration website that has more information and shows that Southern California Permanente Medical Group (accredited by the Institute for Medical Quality/California Medical Association (IMQ/CMA) to provide continuing medical education for physicians – and they have approved this symposium for ***6.5 AMA PRA Category 1 Credit(s)™***
https://www.signup4.net/public/ap.aspx?EID=PHYE530E&OID=50

If you need any more information, please feel free to contact me.

Sincerely,

Wendy Friedman
Meeting Planner
393 East Walnut
Pasadena, CA 91188
626) 405-4644

wendy.L.friedman@kp.org

KAISER PERMANENTE®

33rd Annual Southern California Kaiser Ophthalmology Symposium

Disneyland Hotel

1150 Magic Way, Anaheim, CA 92802

Saturday, September 17, 2016

7:00 am – 7:45 am	**Registration/Continental Breakfast**
7:45 am – 8:00 am	**Welcome/Opening Remarks** Garrick Chak, MD Symposium Chair, Kaiser Permanente, West Los Angeles
8:00 am – 8:45 am	**How to Avoid Being Burned by Pseudoexfoliation** Pratap Challa, MD Associate Professor of Ophthalmology, Duke Eye Center, Duke University
8:45 am – 9:30 am	**Update on Diagnosis and Management of Challenging Cornea Cases** Natalie Afshari, MD Professor of Ophthalmology, Shiley Eye Institute, UC San Diego
9:30 am – 9:45 am	**BREAK**
9:30 am - 11:30 am	**TECHNICIAN BREAKOUT SESSION: Helpful Need-to-Know Facts** Bobbi Ballenberg, COMT Clinical Manager, Jules Stein Eye Institute, UCLA
9:45 am – 10:30 am	**ROCK Inhibitors and Glaucoma** Pratap Challa, MD Associate Professor of Ophthalmology, Duke Eye Center, Duke University
10:30 am -11:30 am	**ROCK Inhibitors and Cornea** Natalie Afshari, MD Professor of Ophthalmology, Shiley Eye Institute, UC San Diego
11:30 am – 12:30 pm	**LUNCH**
12:30 pm – 1:15 pm	**Select Innovations in Pediatric Retina** Irena Tsui, MD Assistant Professor of Ophthalmology, Jules Stein Eye Institute, UCLA
1:15 pm – 2:00 pm	**Pearls for Scleral Fixated Intraocular Lenses** Irena Tsui, MD Assistant Professor of Ophthalmology, Jules Stein Eye Institute, UCLA
2:00 pm – 2:15 pm	**BREAK**
2:15 pm – 3:00 pm	**OCT Angiography** Nadia Waheed, MD Associate Professor of Ophthalmology, New England Eye Center, Tufts
3:00 pm – 3:55 pm	**Diabetic Macular Edema Pearls, Updates from Protocol T and DRCRnet** Nadia Waheed, MD Associate Professor of Ophthalmology, New England Eye Center, Tufts
3:55 pm – 4:00 pm	**Closing Remarks**

3:05 pm – 3:50 pm
OCT Angiography
SPEAKER: Nadia Waheed, MD

DETAILED SUMMARY: Optical Coherence Tomography (OCT) is an established medical imaging technique that has been instrumental in the diagnosis and management of many retinal diseases. OCT angiography is a new frontier that evaluates blood flow of the retina non-invasively. Evidence based guidance on the new developments in OCT will allow more detailed examination of these conditions resulting in better and safer patient care.

Currently, most Ophthalmologists use retinal angiography- which involves invasive fluorescein dye that is administered intravenously to assess retinal blood flow. Ophthalmologists are unaware of recent advances in technology, or what is needed in order to integrate the technology into their clinical practices.

We need to study the recent evidence; determine if /when we want to consider use in SCPMG and learn the techniques and skills to perform OCT.

OBJECTIVES - At the end of this activity, participants should be able to:

- Develop and implement a plan to incorporate advance techniques and use OCT in clinical practice

TOPICAL OUTLINE

1. OCT Angiography
    a. Introduction
        i. Procedure
    b. Case Studies
    c. Sensitivity and specificity
        i. False negatives
        ii. Study
        iii. Characteristics of lesion
    d. Diabetic retinopathy
    e. Advantages
2. Summary

Optical Coherence Tomography Angiography (OCTA): Ready for Prime Time?

Nadia K Waheed, M.D.

Director, Boston Image Reading Center
Associate Professor of Ophthalmology
New England Eye Center
Tufts Medical Center
Tufts University School of Medicine
Boston, MA USA

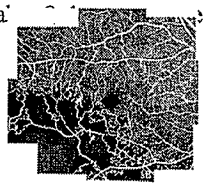
New England Eye Center | Tufts Medical Center | Tufts School of Medicine

Financial Disclosures

- Optovue (S), Nidek (S), Zeiss (contracted research), Topcon (contracted research)
- Genetech (C), Regeneron (C), Eleven (C), Janssen (C)

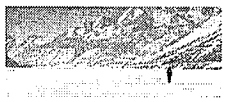
What is OCT Angiography?

- A non invasive way of performing retinal angiography without the use of extraneous dyes
- Done using newer generation OCT machines
- Ta[illegible]



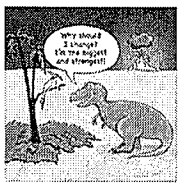
OCTA: How is it done?

- Speed
- Resolution



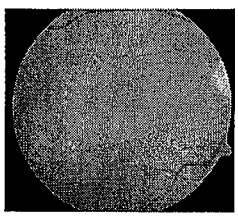
Pressing Questions

- Why OCTA? What does it do better than what we have now?
  - Does it detect disease prior to or better than standard imaging modalities
  - Does it allow for better follow up
  - Does it drive better treatment options
  - Does it improve prognosis

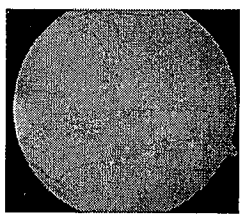


Case 1

78 yo with h/o wet AMD OD, dry AMD OS

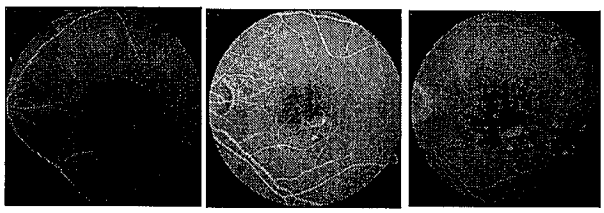


20/40



20/60

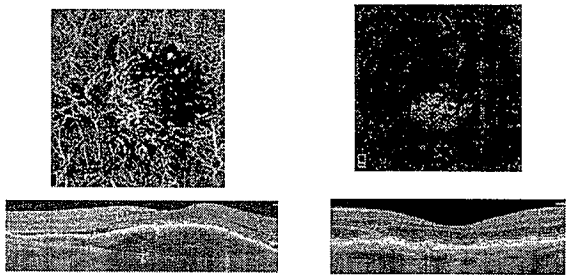
Fluorescein Angiography



Case 1

OCTA

OD OS



Case 1

What evidence do we have to back this?

- Hanutsaha P, et al Ophthalmology. 1998 Sep;105(9):1632-6 432 fellow eyes with neovascular changes on ICG in 11% of eyes with clinically and fluorescein angiographically nonsuspicious drusen. The subgroup of patients with spots or plaques on ICG-V had a higher chance of having exudative changes develop over an average 21 months follow up (27% vs 10%)

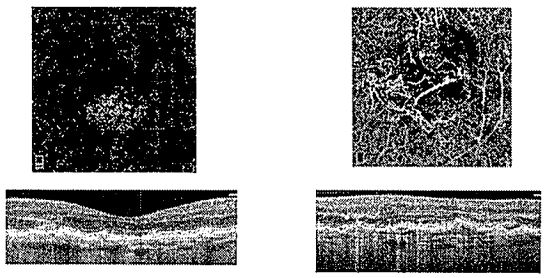
Case 1

2 months later

Va 20/80 OS

Case 1

OS OS 2 months later

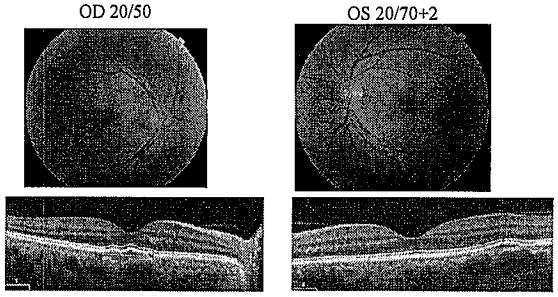


20/60 20/80

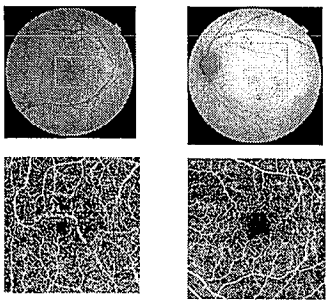
Case # 2

- 58-year-old Asian man followed for dry AMD

OD 20/50 OS 20/70+2



Neovascular 'Dry' AMD



Optical Coherence Tomography Angiography of Asymptomatic Neovascularization in Intermediate Age-Related Macular Degeneration

OD *Depth-encoded OCTA* OS

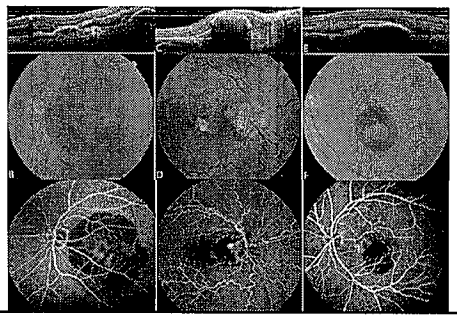
OCTA: Sensitivity and Specificity

- Investigated CNV qualities on OCTA
- Sensitivity and specificity of CNV detection by OCTA using FA as the gold standard:
  - Sensitivity = 4/8 (50%)
  - Specificity = 20/22 (91%)
- Sensitivity close to 100% in type 1 CNV

	4	2	6
	4	20	24
	8	22	30

- de Carlo TE, Bonini Filho MA, Chin AT, Adhi M, Ferrara D, Baumal CR, Witkin AJ, Reichel E, Duker JS, Waheed NK. Ophthalmology 2015 Jun;122(6):1228-38.
- Bonini Filho MA, de Carlo TE, Ferrara D,Adhi M, Baumal CR, Witkin AJ, Reichel E, Duker JS, Waheed NK.. JAMAOphthalmol 2015 Aug;133(8):899-906.

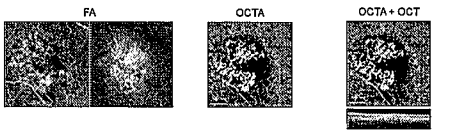
OCTA in CNV: False Negatives



Multi-Center Study

- Purpose
  - To determine the sensitivity of en face OCTA alone or en face OCTA combined with embedded structural OCT for detecting Type 1 NV
  - To compare these techniques to the detection using FA and high resolution line structural OCT as the reference standard
- Methods
  - Type 1 NV occurring in nvAMD, CSC, PCN, and PCV
  - OCTA (AngioVue) imaging performed and concomitant FA and OCT imaging within 7 days were included
  - 115 eyes of 100 patients with Type 1 NV included in the study
  - FA/OCT as reference standard

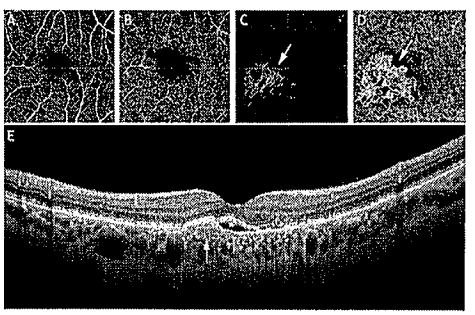
Sensitivity of OCTA+OCT > FA Alone



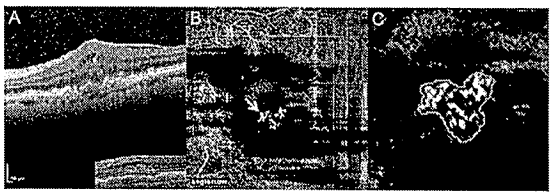
Two Masked Graders	Two Masked Graders	Two Masked Graders
Identified Type 1 NV : 70/105 eyes Sensitivity: 66.7% (Moderate Agreement)	Identified Type 1 NV: 70/105 eyes. Sensitivity: 66.7% (Good Agreement)	Identified Type 1 NV: 90/105 eyes. Sensitivity: 85.7% (Good Agreement)

Inoue M, Jung JJ, Balaratnasingam C, Dansingani KK, Dhrami-Gavazi E, Suzuki M, de Carlo TE, Shahlaee A, Klufas MA, El Maftouhi A, Duker JS, Ho AC, Maftouhi MQ, Sarraf D, Freund KB. Invest Ophthalmol Vis Sci. 2016 Jul 1;57

OCTA of CNV: Type 1

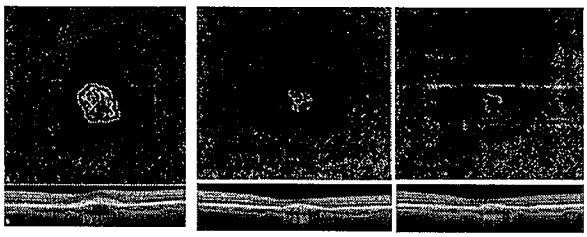


OCTA of CNV: Type 3



Kuehlewein L, Dansingani KK, de Carlo TE, Bonini Filho MA, Iafe NA, Lenis TL, Freund KB, Waheed NK, Duker JS, Sadda SR, Sarraf D. OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY OF TYPE 3 NEOVASCULARIZATION SECONDARY TO AGE-RELATED MACULAR DEGENERATION. Retina. 2015;35:2229-35.

OCTA: Size of Lesion

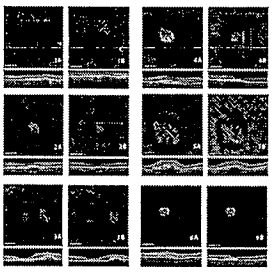


CNV 1 Week Post-Injection

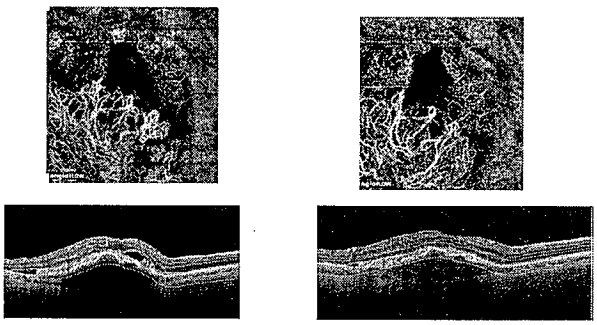
CNV 3 Weeks Post-Injection

CNV Treatment Effect: Size of lesion

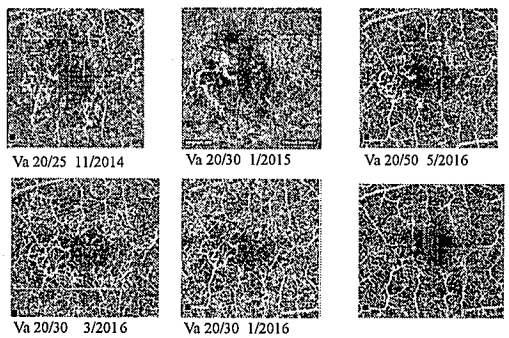
CHARACTERIZING THE EFFECT OF ANTI-VASCULAR ENDOTHELIAL GROWTH FACTOR THERAPY ON TREATMENT-NAIVE CHOROIDAL NEOVASCULARIZATION USING OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY



OCTA: Characteristics of Lesion



Neovascular 'Dry' AMD

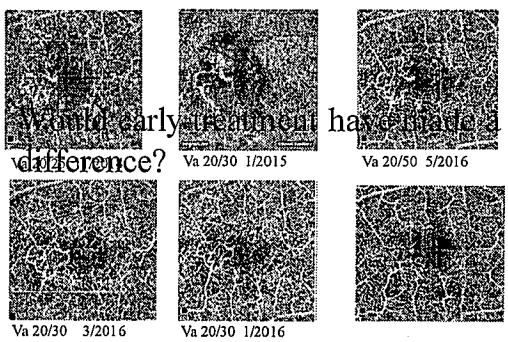


Va 20/25 11/2014 | Va 20/30 1/2015 | Va 20/50 5/2016

Va 20/30 3/2016 | Va 20/30 1/2016

Neovascular 'Dry' AMD

Would early treatment have made a difference?



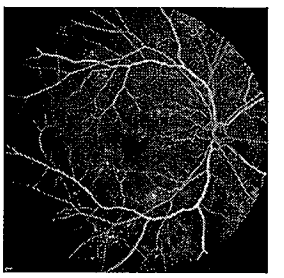
Va 20/30 1/2015 | Va 20/50 5/2016

Va 20/30 3/2016 | Va 20/30 1/2016

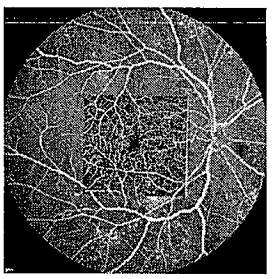
Pressing Questions in Wet AMD

- Does it detect CNV prior to or better than standard imaging modalities ✓
- Does it allow for better follow up ✓
- Does it drive better treatment options ?
- Does it improve prognosis ?

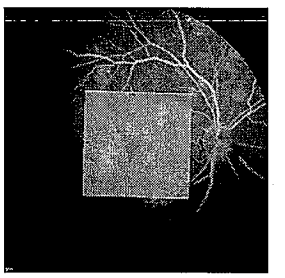
OCTA in Diabetic Retinopathy



OCTA in Diabetic Retinopathy



OCTA in Diabetic Retinopathy



Advantages of OCTA

- Multidimensional imaging modality
  - OCTA provides all the information that you would get in a regular OCT, AND provides vascular information
  - The vascular information is cross-registered with the structural information
- Depth Resolved
  - Can separate out the superficial from the deep layers of vasculature
- Non-Invasive
  - Repeat at multiple visits and to closely monitor patients
- Fast
  - Acquisition times are 3-4s per eye.
  - Total time in room is 10 mins

Summary

- OCTA is an imaging modality in its infancy
  - First OCTA device approved in US in 2016, in Europe in 2014
- Research will expand use in clinical practice and will allow us to better understand and better treat choroidal neovascularization in AMD

Acknowledgements

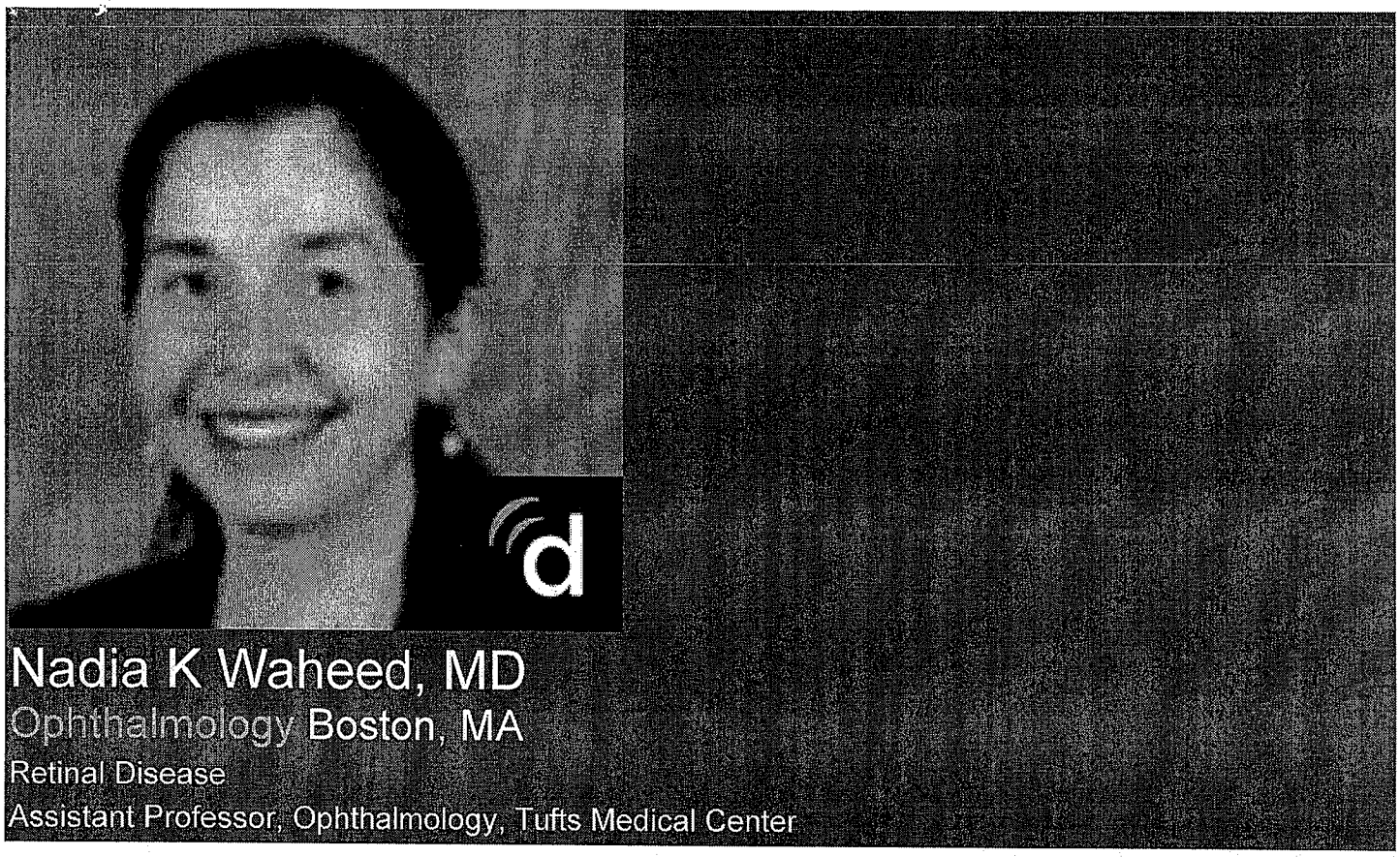
Dr Jay S Duker's lab at the New England Eye Center

Dr Jim Fujimoto's lab at Massachusetts Institute of Technology

Dr Philip Rosenfeld, Bascom Palmer Eye Institute

Talisa DeCarlo; Daniela Ferrara; Mehreen Adhi; Caroline Baumal; Andre Witkin; Eric Moult Woo Jhon Choi; ByungKun Lee; Ben Potsaid; Vijaysekhar Jayaraman

Support: Macula Vision Research Foundation (MVRF); NIH (R01-EY011289-27, R01-EY013178-12, R01-EY018184-05, R44EY022864-01, R01-CA075289-16, R01-NS057476-05, R44-CA101067-05, R44-EY022864-01), AFOSR (FA9550-10-1-0551 and FA9550-10-1-0063), Research to Prevent Blindness, Massachusetts Lions Clubs, DFG (DFGGSC80-SAOT).



Nadia K Waheed, MD

Ophthalmology Boston, MA

Retinal Disease

Assistant Professor, Ophthalmology, Tufts Medical Center

Office Address

- Tufts Medical Center

800 Washington Street
Boston, MA 02114

Phone:(617) 636-1648

Education & Training

- Massachusetts Eye & Ear InfirmaryResidency
- Aga Khan Medical CollegeMedical School

Certifications & Licensure

- MA State Medical License2004 - 2017
- OH State Medical LicenseActive through 2013

- NH State Medical LicenseActive through 2013
- American Board of OphthalmologyOphthalmology

Awards, Honors, & Recognition

- CMS Meaningful Use Stage 1 CertificationeClinicalWorks EHR, eClinicalWorks LLC, 2013

Clinical Trials

- Eplerenone for Central Serous Chorioretinopathy: A Pilot StudyStart of enrollment: 2013 May 01Witkin, A.J.,Waheed, N.K.,Rogers, A.H.,Baumal, C.R.,Weber, M.L.,Reichel, E.,Duker, J.S.

Publications & Presentations

- PubMed
- Subretinal hyperreflective material imaged with optical coherence tomography angiography.Dansingani, K. K.,Tan, A.,Gilani, F.,Phasukkijwatana, N.,Novais, E.,Querques, L.,Waheed, N. K.,Duker, J. S.,Querques, G.,Yannuzzi, L. A.,Sarraf, D.,Freund, K. B.; Am. J. Ophthalmol.. 2016 Jun 29.
- Three-Dimensional Enhanced Imaging of Vitreoretinal Interface in Diabetic Retinopathy Using Swept-Source Optical Coherence Tomography.Adhi, M.,Badaro, E.,Liu, J. J.,Kraus, M. F.,Baumal, C. R.,Witkin, A. J.,Hornegger, J.,Fujimoto, J. G.,Duker, J. S.,Waheed, N. K.; Am. J. Ophthalmol.. 2015 Nov 10.
- Choroidal neovascularization analyzed on ultra-high speed swept source optical coherence tomography angiography compared to spectral domain optical coherence tomograph...Novais, E. A.,Adhi, M.,Moult, E. M.,Louzada, R. N.,Cole, E. D.,Husvogt, L.,Lee, B.,Dang, S.,Regatieri, C. V.,Witkin, A. J.,Baumal, C. R.,Hornegger, J.,Jayaraman, V.,Fu...; Am. J. Ophthalmol.. 2016 Feb 07.
- 28 more in this section...Join now to see the full profile

Press Mentions

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- Ophthalmic Surgery, Lasers and Imaging RetinaMay 2016
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