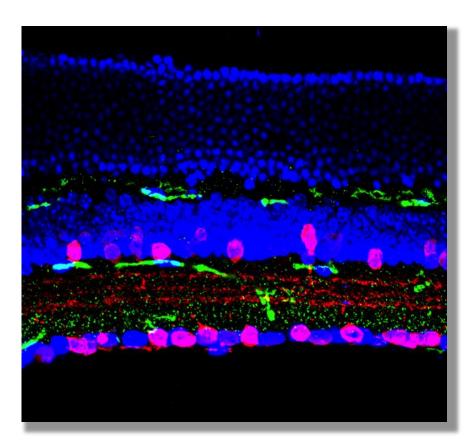


Doctoral Program in Vision Science

2020-21



http://www.sunyopt.edu/education/academics/graduate_programs http://www.sunyopt.edu/education/academics/graduate_programs/phd-in-vision-science http://www.sunyopt.edu/research/graduate_faculty

Overview

If you aspire to a career in vision research the Doctoral Program in Vision Science at SUNY College of Optometry provides the comprehensive training needed for professional success. Our Program combines a rigorous, intellectual platform of course study and research within an interactive, collegial community. We have developed a flexible curriculum that can be tailored to the needs of our individual students. Students come to our program with a broad range of interests and from diverse educational backgrounds including biology, psychology, optometry, mathematics, and engineering. Courses stress analysis and discussion of the primary literature and provide training in key skills necessary for a research career in academia or industry.

The labs of our top-ranked faculty study areas that push the boundaries of vision science, ranging from pure basic research to important clinical applications. Graduate students can find expert mentorship in molecular and cellular biology, ocular structure and function, retinal and cortical neurophysiology, attention, eye movements, neural plasticity, color, shape, motion, space, and 3D perception, visual cognition, development, disease processes, and a wide variety of clinically important topics. Students attend regular colloquia given by visiting scientists, participate in journal clubs, and

are encouraged to take full advantage of our location in New York City, which has the largest vision research community in the world.

On the next page is a complete list of our Program's research faculty,



which includes links to their individual or lab web pages.

Doctoral Research Mentors

Jose-Manuel Alonso, MD, PhD

Functional circuitry of the thalamus and visual cortex.

Alexandra Benavente-Perez, PhD, McOpt, MS

Visual control of eye growth. Changes in vision function in Alzheimer's disease and glaucoma. Biometric and physiological factors in human ocular perfusion.

Stewart Bloomfield, PhD

Functional roles of gap junctions in retinal physiology and pathology. Noval targets for neuroprotection in glaucoma, ROP, and ischemic retinopathy.

Robert McPeek, PhD

Neural mechanisms underlying attention and visually-guided actions.

<u>Tracy Nguyen, OD, PhD</u> Mechanisms of corneal diseases.

Mark Rosenfield MC Optom, PhD Myopia and retinal defocus.

Miduturu Srinivas, PhD

Gating and pharmacology of lens gap junction channels.

<u>David Troilo, PhD</u>

Visual development, accommodation, refractive error, and myopia.

Suresh Viswanathan, OD, PhD

Visual dysfunction in glaucoma and mild traumatic brain injury.

<u>Stefanie Wohl, Ph.D.</u> Roles of microRNAs in cell degeneration and regeneration.

<u>Qasim Zaidi, PhD</u>

Color and three-dimensional shape perception.



Key Components of the Doctoral Program

Our approximate 5-year program provides intensive training in vision research. All students take a year-long proseminar for breadth, followed by small group tutorials and seminars in which the student reads, thinks, writes, presents, and discusses important questions in vision science with our research faculty. Research training begins with two independent rotations in the first year, followed by concentrated work on a doctoral thesis project. The Program is well suited for students who want to master two areas of expertise under the joint mentorship of two faculty members.

From first year lab rotations, the qualifying exam, and the thesis defense, students receive regular guidance and mentoring and are evaluated at important milestones to ensure that they progress successfully through the Program. In addition, students attend journal clubs, weekly research colloquia, and additional community events, such as the VisioNYC seminar series, which brings together dozens of vision scientists in the New York metropolitan area. Key components of our Program include:

- One-on-one training with faculty for tutorials and research.
- Systematic development of a skillset necessary for career success as a scientist, including oral presentations, publication writing, grants applications and research technology.
- Two laboratory rotations in the first year, with opportunity for externships.
- Graduate stipend support currently at \$33,000 per year with full tuition remission.
- Students are expected to become accomplished teachers. This is accomplished through regular oral presentations and serving as teaching assistants.
- Access to the University Eye Center, one of the largest on-campus vision care clinics in the country.
- Support for travel expenses to present research at scientific conferences and meetings.
- Access to seminars and courses offered within the larger vision research community in New York City (Downstate, Stony Brook, NYU, Columbia University, Rockefeller University, Weill Cornell, Einstein).

Timeline of Study

Year

- 1 2-3 Laboratory Rotations (Sept Aug) Proseminar: Introduction to Vision Science Journal Club Annual Oral Presentation
- 2 Select Dissertation Advisor & Committee Tutorials/Seminars Journal Club Annual Oral Presentation
- 3 Submission of Dissertation Proposal Tutorials/Seminars Journal Club Qualifying Exam Conference Presentations Annual Oral Presentation
- 4 Annual Dissertation Committee Meeting Journal Club Conference Presentations
- 5 Dissertation & Oral Defense Ph.D. in Vision Science



General Areas of Current Research

Cell Biology and Ocular Pharmacology

This group studies the functioning of various components of the eye, using primarily cell and molecular biology approaches. Research interests of this group include: cornea and cell signaling pathways, gap junctions and the interactions of tear proteins and the cornea.

Visual Optics

This group studies accommodation, wave front aberrations of the eye, pupil dynamics, optics and composite prismatic, binocular vision, optical visual control of eye growth and emmetropization, and development of refractive errors.

Visual Neuroscience

This group studies the neural basis of visual function using electrophysiological and computational methods. Research interests include

synaptic transmission in the retina, gap junctions in the eye, color processing by retinal and cortical neurons, evolution of color vision, 3-D shape extraction by cortical neurons, neural connectivity, cortical feedback to thalamus, effective state of neural responses, neural effects of glaucoma



and myopia, and the control of eye movements.

Psychophysics and Visual Perception

This group focuses on functional aspects in human vision ranging from lowlevel detection to high-level perception. Research interests include color vision, visual adaptation, spatio-temporal vision, space perception, 3-D shape perception, visual learning, visual rehabilitation, reading, eye movements, and visual deficits due to retinal diseases such as glaucoma, myopia and diabetes.

Clinical Research

Clinician scientists and researchers at the college conduct research studies of our patient population at the University Eye Center. Areas of research include vision rehabilitation, binocular vision, imaging, disease, contact lenses, presbyopia, myopia, amblyopia, glaucoma, and traumatic brain injury.

SUNY College of Optometry

The State University of New York State College of Optometry, founded in 1971 by legislative act, is dedicated to the education of optometrists, the advancement of eye and vision care through research and graduate education, and to the care of communities through the provision of comprehensive visual health services. The College is a Center of Excellence within the State University of New York (SUNY) system and is the only institution of its kind in New York State and the surrounding region. The College of Optometry attracts highly talented students with leadership potential, interested in optometry and in the health sciences, from across North America and abroad.

The SUNY College of Optometry is located in the heart of New York City at 33 West 42nd Street, opposite the historic New York Public Library and beautiful

Bryant Park. The College's home is an 18-story facility. The newly renovated three-floor, 20,000 square-foot Center for Student Life and Learning opened in 2013. This dynamic new space includes a large preclinical procedures laboratory, classroom and study space, a large seminar room, lounges, event space and a fitness center.

The College's academic, professional and research programs are characterized by innovation, defined by their impact and are supported by a faculty of high quality and dedication. As an urban campus, the College strongly embraces its public service mission of clinical care by providing routine, medical and



specialized eye care services to tens of thousands of patients each year. The <u>University Eye Center</u> (UEC), the College's patient care facility, provides nearly 75,000 patient visits each year. In addition to primary eye care, the UEC is well known for its unique clinical services including traumatic brain injury, infant vision, pediatrics, visually related learning disabilities, vision rehabilitation, ocular disease and special testing, vision therapy, specialty contact lenses and laser refractive surgery. The UEC is a unique resource for the New York metropolitan area and the nation.

A hallmark of the SUNY College of Optometry is its commitment to discovery leading to the advancement of vision care through research. SUNY Optometry has an internationally recognized faculty engaged in cutting-edge research in eye and vision science. Research at the college is organized under the Graduate Center for Vision Research (GCVR). The GCVR oversees all programs supporting basic, translational, and clinical research at the college including the different graduate programs leading to the following single and combined degrees: Ph.D., OD/MS, OD-Ph.D, Residency-MS and Residency-Ph.D.



Mentors

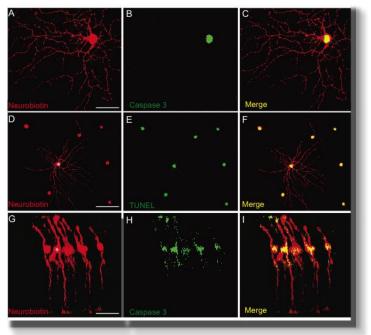
Jose-Manuel Alonso, MD, PhD

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Benjamin Backus, PhD

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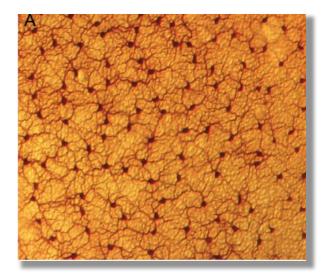
Alexandra Benavente-Perez, PhD, McOpt, MS

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Stewart Bloomfield, PhD

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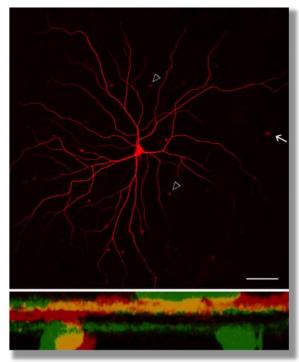
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Kenneth Ciuffreda, OD, PhD

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Philip B. Kruger, OD, PhD

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Robert McPeek, PhD

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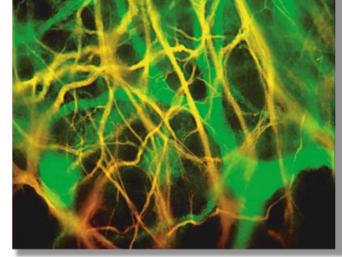
Jordan Pola, PhD

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Kathryn Richdale, OD, PhD

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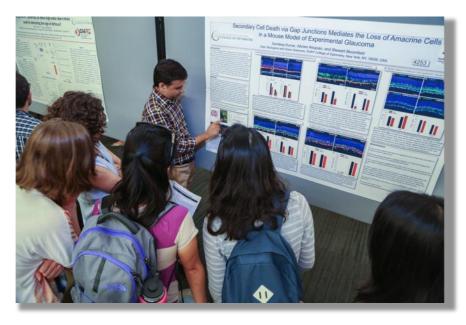


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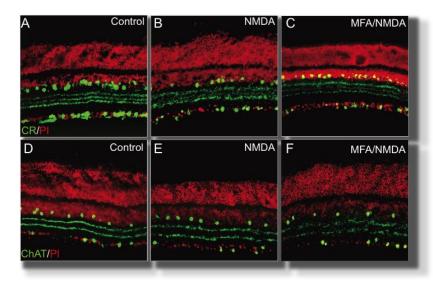


Mark Rosenfield, MCOptom, PhD

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Harold A. Sedgwick, PhD

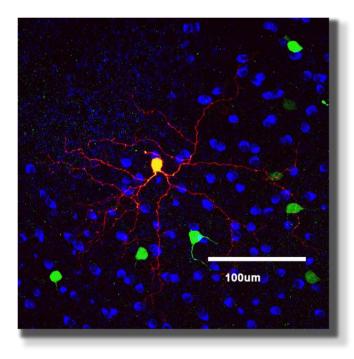
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David Troilo, PhD

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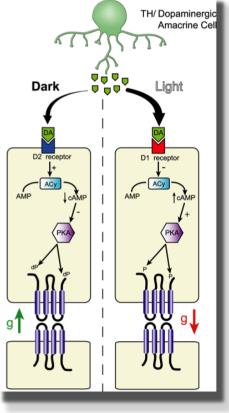
Suresh Viswanathan, OD, PhD

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Qasim Zaidi, PhD

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Applying to the Doctoral Program

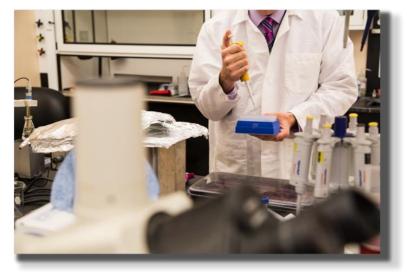
Requirements for Admission

To apply, applicants must submit an online application using the following web link:

https://www.sunyopt.edu/education/admissions/graduate_programs/phd_in_vision_science_application

An applicant must have completed the following requirements to be considered for admission to the Doctoral Program in Vision Science:

- Baccalaureate or
 professional degree
- Graduate Record
 Examination (general



aptitude tests **institutional code 2897**). For information about GRE test locations and dates please visit the <u>Education Testing</u> <u>Service</u> website.

- Competence in both written and spoken English. Applicants whose native language is not English must submit Scores on the Test of English as a Foreign Language (TOEFL) or the Test of Spoken English.
- Three letters of recommendation emailed directly from the recommender as a pdf file with a valid signature to <u>gradadmissions@sunyopt.edu</u> or mailed directly from the recommender to:

The Office of Graduate Admissions SUNY College of Optometry 33 West 42nd Street, Room 1134 New York, NY 10036

• Official transcripts of all college and postgraduate courses sent to the above address.

Important Dates for Admission

- The deadline for completed applications for fall admission to the Doctoral Program in Vision Science is **February 15**.
- Applicants are notified no later than **April 1** and are required to respond with a decision no later than **April 15**.

Application Fee

There is a \$75 <u>application fee</u> for the Doctoral Program in Vision Science.

Admissions and Financial Aid

All doctoral PhD students receive a full tuition waiver and a graduate stipend currently at \$35,676 per year. The application process is highly competitive and both U.S. and international students are encouraged to apply. As vision

science encompasses a broad area of disciplines, our students come from many different educational backgrounds including: biology, neuroscience, psychology, mathematics, physics, engineering, and optometry.



Contact Information

Briana Aizin Graduate Program Coordinator Graduate Center for Vision Research State University of New York College of Optometry 33 West 42nd Street New York, NY, 10036 <u>baizin@sunyopt.edu</u> 212-938-5540