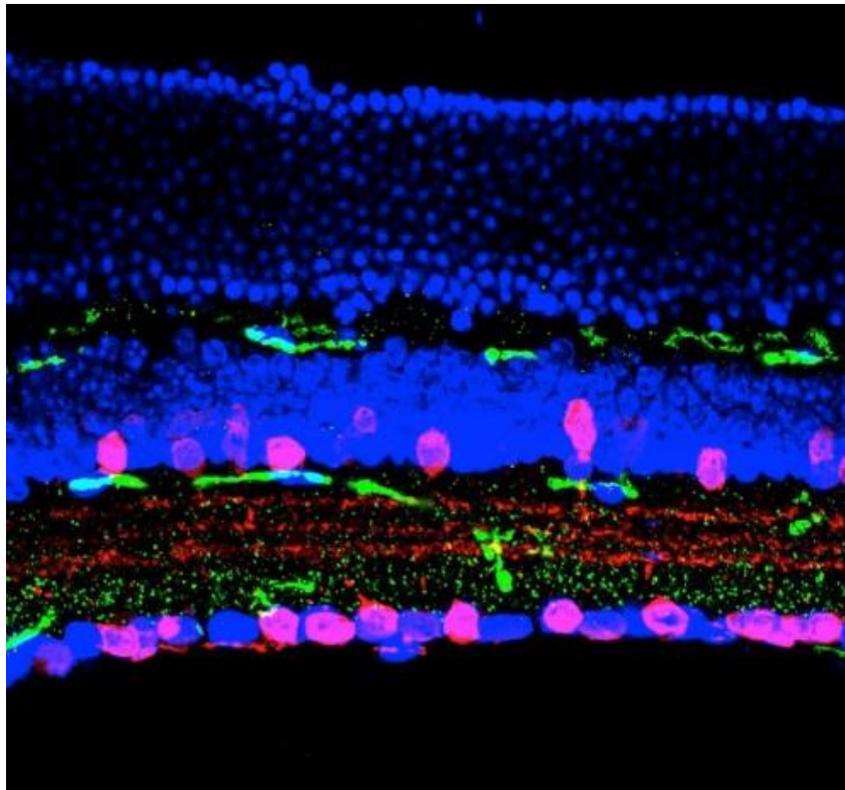


## Doctoral Program in Vision Science

2019-20



*The College is regionally accredited by the Middle States Commission on Higher Education (MSCHE). Its four-year professional degree program and residency programs are accredited by the Accreditation Council on Optometric Education (ACOE).*

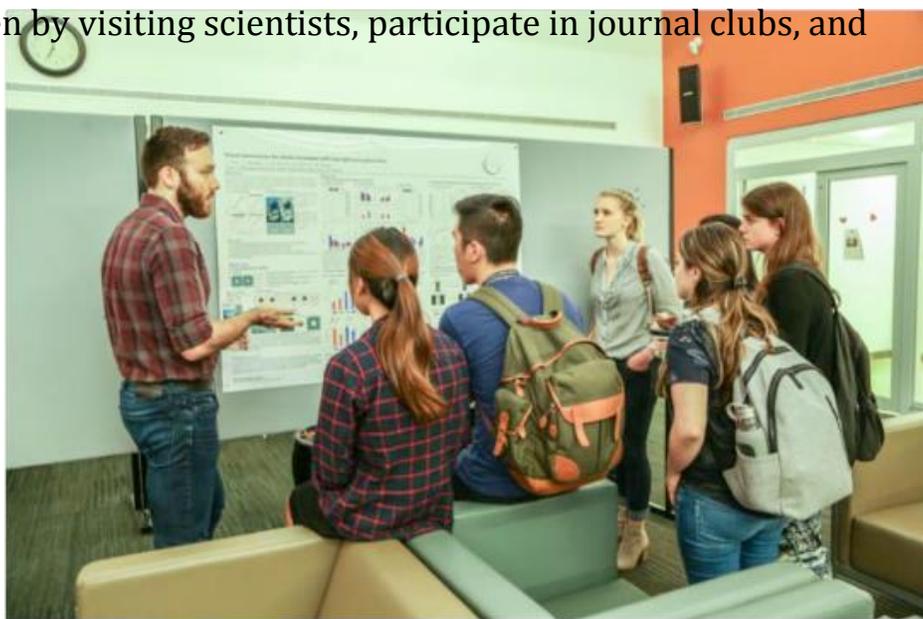
[https://www.sunyopt.edu/education/academics/graduate\\_programs](https://www.sunyopt.edu/education/academics/graduate_programs)  
<https://www.sunyopt.edu/research/research-faculty>

## 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.

[Robert McPeck, PhD](#)

Neural mechanisms underlying attention and visually-guided actions.

[Tracy Nguyen, OD, PhD](#)

Mechanisms of corneal diseases.

[Jordan Pola, PhD](#)

The control of smooth pursuit eye movements.

[Mark Rosenfield MC Optom, PhD](#)

Myopia and retinal defocus.

[Harold A. Sedgwick, PhD](#)

Perception of spatial layout in low vision.

[Miduturu Srinivas, PhD](#)

Gating and pharmacology of lens gap junction channels.

[David Troilo, PhD](#)

Visual development, accommodation, refractive error, and myopia.

[Suresh Viswanathan, OD, PhD](#)

Visual dysfunction in glaucoma and mild traumatic brain injury.

[Stefanie G. Wohl, Ph.D.](#)

The role of microRNAs in retinal glia function

[Qasim Zaidi, PhD](#)

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 \$35,676 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 low-level 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 [University Eye Center](#) (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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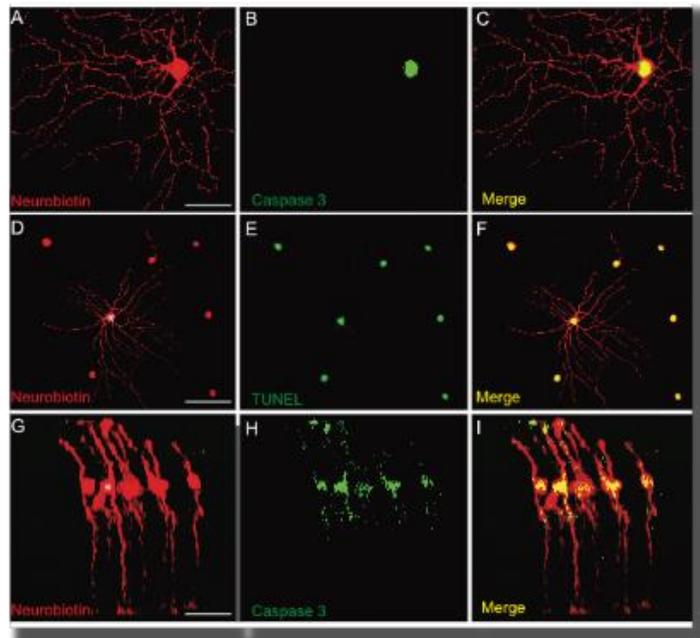
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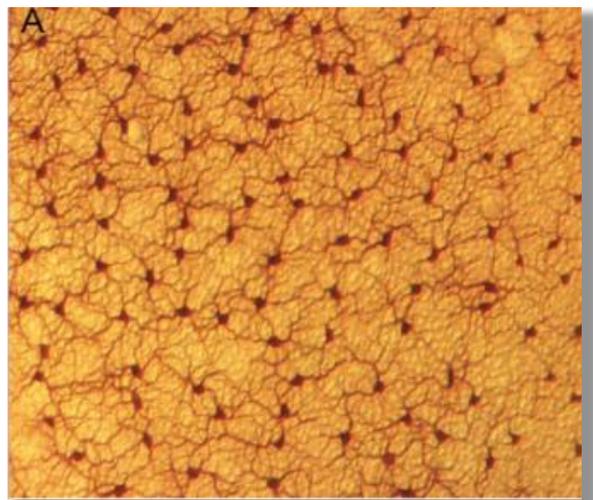
**Alexandra Benavente-Perez, PhD, McOpt, MS**

Ansel TV, Nour AK, Benavente-Perez A. (2016). The Effect of Anesthesia on Blood Pressure Measured Noninvasively by Using the Tail-Cuff Method in Marmosets (*Callithrix jacchus*). *J Am Assoc Lab Anim Sci.* 55(5):594-600.

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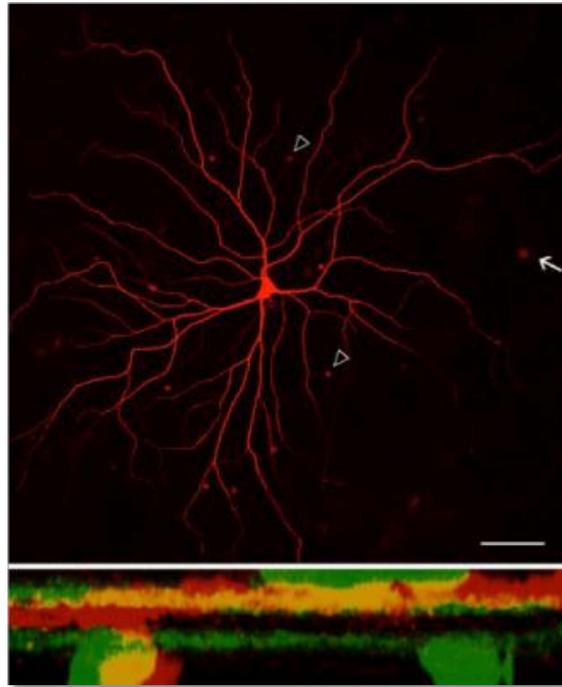


**Stewart Bloomfield, PhD**

Akopian A, Kumar S, Ramakrishnan H, Viswanathan S, Bloomfield SA. (2016). Amacrine cells coupled to ganglion cells via gap junctions are highly vulnerable in glaucomatous mouse retinas. *J Comp Neurol.* Jul 13.

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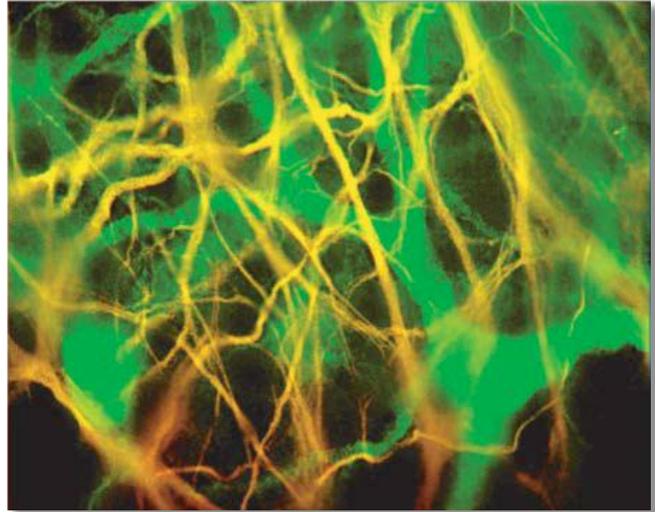


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**Robert McPeck, PhD**

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## **Tracy Nguyen, OD, PhD**

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## **Jordan Pola, PhD**

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## **Mark Rosenfield, MCOptom, PhD**

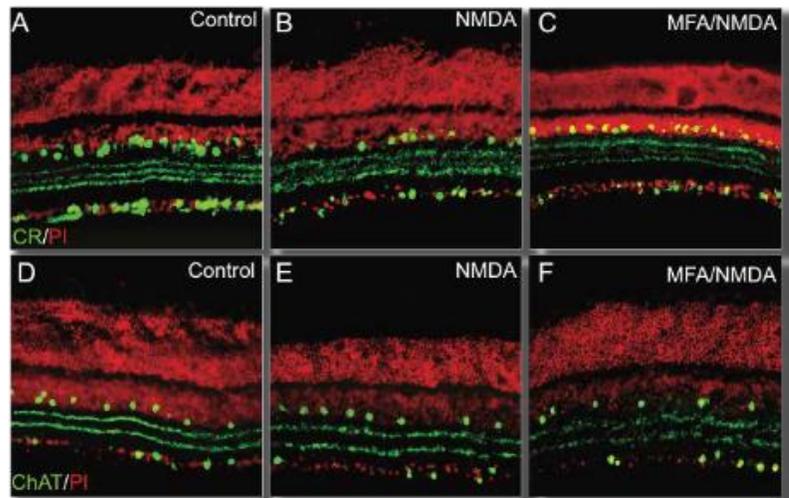
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### Harold A. Sedgwick, PhD

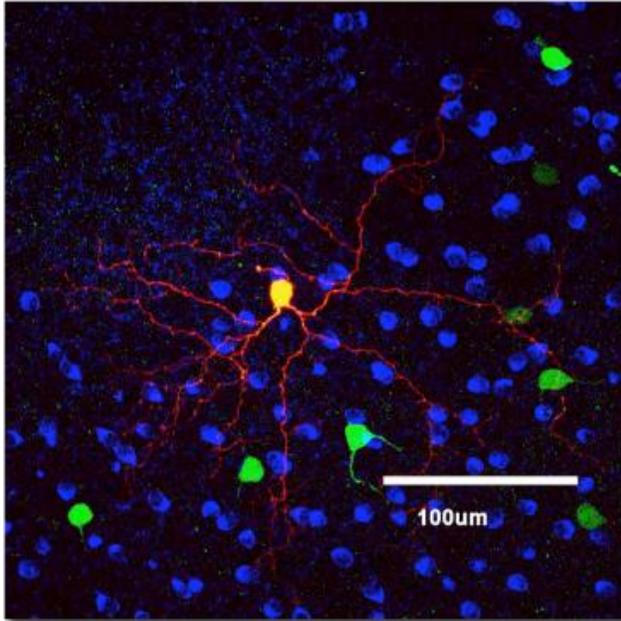
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### Miduturu Srinivas, PhD

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### David Troilo, PhD

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## Suresh Viswanathan, OD, PhD

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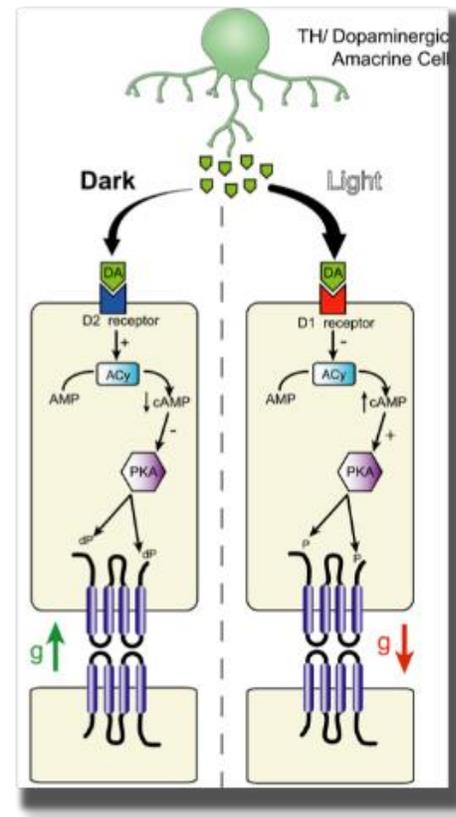
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## Stefanie G. Wohl, PhD

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Wohl, S. G. and Reh, T.A., 2016. miR-124-9-9\* potentiates Ascl1-induced reprogramming of cultured Müller glia. *Glia* 64, 743-762.

### **Qasim Zaidi, PhD**

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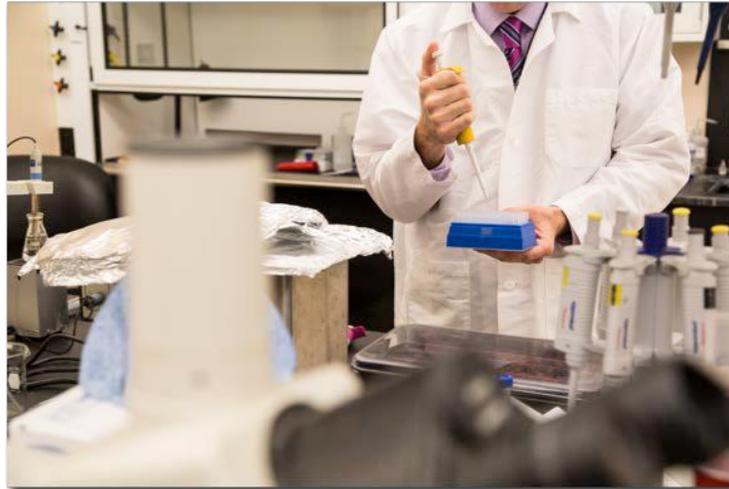
# Applying to the Doctoral Program

## 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](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 [Education Testing Service](#) 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 [gradadmissions@sunyopt.edu](mailto:gradadmissions@sunyopt.edu) or mailed directly from the recommender to:  
Ms. Debra Berger  
Graduate Center for Vision Research  
SUNY College of Optometry  
33 West 42<sup>nd</sup> 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 **January 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 [application fee](#) 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

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33 West 42nd Street  
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