

# VISION SCIENCES CENTER

## SAVE THE DATE!

1st Annual VSS Retreat

Wednesday, September 6, 11:30am-5:00pm

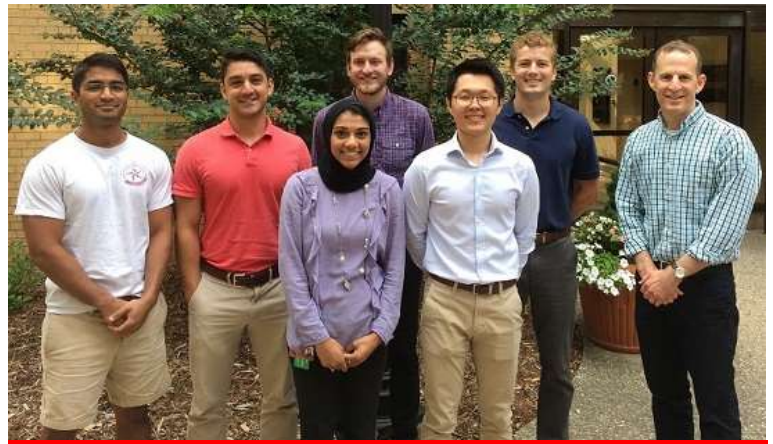
MORE INFORMATION TO FOLLOW

### Recent Grant Awards

This summer, the University of Louisville was awarded a 5 year (2017 – 2021), National Eye Institute Short-term Institutional Training Grant entitled “Summer Vision Sciences Training Program” (T35 EY026509). Brian Ceresa, Ph.D. Professor of Pharmacology and Toxicology, and Henry Kaplan, M.D., Professor and Chairman of Department of Ophthalmology and Vision Sciences are co-Principal Investigators on the grant. The objective of this program is to introduce budding young physicians to laboratory-based scientific research and with the goal of developing our next generation of physician scientists. This program is part of the larger UofL Summer Research Scholar Program.

For the initial year, 6 first or second years medical students were able to choose to work with one of our 20 University of Louisville faculty who do basic vision

science research. This year’s mentors were Drs. Borchman, McCall and Scott (Ophthalmology & Vision Science), Dr. Ceresa (Pharmacology/Toxicology), Dr Guido (Anatomical Sciences & Neurobiology) and Dr. O’Toole (BioEngineering). Their projects are as diverse as our faculty research programs and included nanoparticle synthesis, gene therapy for blinding eye disease and dissecting the central neuronal circuits. In addition to their work in the lab, our students participated in a weekly Vision Research Conference in which their faculty mentors discussed aspects of vision science related to their research. The capstone of the program was a minisymposium in which each student presented their findings.



*Photo: Participants in the 2017 T35 NEI Summer Vision Sciences Training Program. From left to right: Jay Patel, Sarag Abhari, Samra Ahmed, Andrew Donovan, Heegook Yeo, Christopher Greb, and Brian Ceresa.*

Look for our student’s poster presentations at Research!Louisville on September 12, 2017

Students and faculty interested in participating in this program in subsequent years should contact Brian Ceresa ([brian.ceresa@louisville.edu](mailto:brian.ceresa@louisville.edu)).

Participants (Left to right)	Mentor	Project
Heegook Yeo	Douglas Borchman	Dry eye and meibum lipids
Jay Patel	Brian Ceresa	Role of a novel anesthetic in corneal wound healing.
Andrew Donovan	William Guido	Investigation of cellular morphology in a brain area that contributes to attention, cortical rhythms, and epilepsy.
Simra Ahmed	Maureen McCall	Assessing the outcome of gene therapy for autosomal dominant retinitis pigmentosa
Christopher Greb	Martin O’Toole	Production and in vitro testing of drug-releasing particles to treat proliferative vitreoretinopathy
Sarag Abhari	Patrick Scott	Morphology of the Porcine Cornea

## Grants Continued

Aaron W McGee, PhD (ASNB), Joshua Trachtenberg, PhD,  
Xiangmin Xu, PhD  
National Institute of Health  
"Disinhibition and experience-dependent visual plasticity"

Henry J. Kaplan, MD (DOVS)  
Iridium Medical Technology Company, Ltd  
"Iridium-Retinal Prosthesis"

Bart Borghuis, PhD (ASNB)  
National Institute of Health  
"Understanding signal processing in retinal bipolar cell pathways"

Maureen McCall, Ph.D. (DOVS)  
Harvard School of Medicine  
"Gene Therapy for adRP"

Harpal Sandhu, M.D. (DOVS)  
UL-Kentucky Biomedical Research  
"Age Related Macular Degeneration and Immunosuppression: A  
Retrospective Cohort Study"

## Upcoming Colloquium Presentations

### Wednesday, September 6

1st Annual VSS Retreat  
11:30am-5:00pm  
Clinical Translational Research Building (rooms 101 and 102)  
[Complete details on page 3](#)

### September 13, 2017, 4pm



Bart Borghuis, PhD  
Assistant Professor  
Department of Anatomical Sciences  
& Neurobiology  
'Understanding signal processing in retinal neural circuits'

### October 11, 2017, 4pm



Henry Kaplan, MD  
Professor and Chair  
Department Ophthalmology & Visual Sciences  
Director, Kentucky Lions Eye Center  
'Restoration of cone photoreceptor  
function in Retinitis Pigmentosa'

### November 15, 2017, 4pm



Ronald Gregg, PhD  
Professor and Chair  
Department of Biochemistry and Molecular  
Genetics  
TBA

### About the colloquium and newsletter:

We want to hear from you for our Visual Sciences Center bi-monthly newsletter. This lets us highlight your research as well as seminars in Vision Sciences. Please send us information about new research initiatives, outside speakers of interest and any grant awards.

A busy September will follow the summer break. Starting in October we will continue to meet on the second Wednesday of the month in the DOVS basement conference room of the KY Lions Eye Center.

If you know of others that would like to be a part of the Center, please have them send us an email.

Contact us:

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UofL Visual Sciences Retreat (VSR) 2017  
September 6, 2017

Our visual sciences community at UofL continues to expand and has become one of the largest in academic universities. Our research efforts are housed within the departments of: Ophthalmology & Visual Sciences, Anatomical Sciences & Neurobiology, Biochemistry & Molecular Genetics, Pharmacology & Toxicology, Psychological & Brain Sciences and Bioengineering. We are supported by both Federal agencies (NIH, DOD) as well as Research to Prevent Blindness.

We will hold a **Visual Sciences Retreat (VSR)** that will highlight the research topics being explored at UofL. We will discuss the resources present in our vision science community as well as the specific topics of the research in our laboratories. Our goal is to continue to increase awareness and foster collaborations within our vision community. VSR-2017 will be held on Wednesday, September 6 2017 in the Clinical Translational Research Building (rooms 101 and 102)

### Meeting Schedule:

- |            |   |
|------------|---|
| 11:30 am   | Lunch (to be provided)  |
| 12:00-4:00 | 10 minute presentations - 15 laboratories   |
| 4:00-5:00  | Keynote address presented by Dr. Jose-Alain Sahel<br>"Cone- directed strategies in retinal dystrophies"                       |
| 5:30-7:30  | Reception for all participants at home of<br>Drs. Maureen McCall and Ronald Gregg<br>1289 Everett Avenue, Louisville KY 40204 |

### Laboratory presentations:

DOVS – H Kaplan, D Dean, M McCall, D Borchman, H Shao, S Tamiya, Q Li, Q Lu, W Wang  
 ASNB – W Guido, B Borghius, A McGee, M Bickford  
 BMB – R Gregg  
 Pharm – B Cerea

### Format of each 10 minute presentation:

1. Three (3) slides
  - a. resume/background of PI and list of pre-/post-doctoral and/or graduate students
  - b. subjects/questions laboratory is investigating
  - c. techniques and resources laboratory employs
2. Each speaker should speak for 7 minutes and leave 3 minutes for discussion
3. Booklet with slides from each laboratory will be distributed at the meeting

### Jose-Alain Sahel, MD



Dr. José-Alain Sahel is the chair of the Department of Ophthalmology at the University of Pittsburgh, School of Medicine, Director of the UPMC Eye Center, and the Eye and Ear Foundation Chair of Ophthalmology. Dr. Sahel is the founder and director of the Vision Institute in Paris and currently a professor at the Sorbonne's medical school Université Pierre-et-Marie-Curie.

## Publications

Synaptic organization of striate cortex projections in the tree shrew: A comparison of the claustrum and dorsal thalamus.  
Day-Brown JD, Slusarczyk AS, Zhou N, Quiggins R, Petry HM, Bickford ME.  
J Comp Neurol. 2017 Apr 15;525(6):1403-1420.

The mouse pulvinar nucleus: Organization of the tectorecipient zones  
Zhou N, Maire PS, Masterson SP, Bickford ME  
Visual Neuroscience / Volume 34 / 2017; DOI: <https://doi.org/10.1017/S0952523817000050>  
Published online: 27 June 2017, E011

Effects of Mesenchymal Stem Cell-Derived Exosomes on Experimental Autoimmune Uveitis.  
Bai L, Shao H, Wang H, Zhang Z, Su C, Dong L, Yu B, Chen X, Li X, Zhang X.  
Sci Rep. 2017 Jun 28;7(1):4323. doi: 10.1038/s41598-017-04559-y. PMID:28659587

The HMGB1-CXCL12 Complex Promotes Inflammatory Cell Infiltration in Uveitogenic T Cell-Induced Chronic Experimental Autoimmune Uveitis. Yun J, Jiang G, Wang Y, Xiao T, Zhao Y, Sun D, Kaplan HJ, Shao H.  
Front Immunol. 2017 Feb 14;8:142. doi: 10.3389/fimmu.2017.00142. eCollection 2017 PMID: 28261206

Functional Conversion and Dominance of  $\gamma\delta$  T Subset in Mouse Experimental Autoimmune Uveitis.  
Liang D, Nian H, Shao H, Kaplan HJ, Sun D. J Immunol. 2017 Feb 15;198(4):1429-1438. doi: 10.4049/jimmunol.1601510. Epub 2017 Jan 9. PMID: 28069804

A Missense Mutation IN GRM6 Reduces but Does Not Eliminate MGLUR6 Expression or Rod Depolarizing Bipolar Cell Function.  
Peachey NS, Hasan N, FitzMaurice B, Burrill S, Pangeni G, Karst SY, Reinholdt L, Berry ML, Strobel M, Gregg RG, McCall MA, Chang B.  
J Neurophysiol. 2017 May 10;jn.00888.2016. doi: 10.1152/jn.00888.2016

Pembrolizumab for Recurrent Conjunctival Melanoma. Kini A, Fu R, Compton C, Miller DM, Ramasubramanian A.  
JAMA Ophthalmol. 2017 Jul 13. doi: 10.1001/jamaophthalmol.2017.2279. PMID: 28715523

Restoration of Cone Photoreceptor Function in Retinitis Pigmentosa HJ Kaplan, W Wang and DC Dean Accepted for publication in TVST, July 2017

EGFR-mediated apoptosis via STAT3 Jackson NM, Ceresa BP. Exp Cell Res. 2017 Jul 1;356 (1):93-103. PMID: 28433699

Ex Vivo Model for the Characterization and Identification of Drywall Intraocular Foreign Bodies on Computed Tomography  
Syed R, Kim SH, Palacio A, Nunery WR, Schaal S. Retina. 2017 Jun 6. doi: 10.1097/IAE.0000000000001731. [Epub ahead of print]  
PMID: 28613214

Corrigendum to "Combined medial canthopexy and lateral tarsal strip for floppy eyelid syndrome" Compton CJ, Melson AT, Clark JD, Shipchandler TZ, Nunery WR, Harold Lee HB. Am J Otolaryngol. 2017 May - Jun;38(3):370. doi: 10.1016/j.amjoto.2017.01.029. Epub 2017 Feb 2. No abstract available. PMID: 28162794

## Recent Additions &amp; Accomplishments



*James Whitley, Fellow in Dr. Martha Bickford's lab  
Department of Anatomical Sciences and Neurobiology*

James Whitley (East Tennessee State University, 2016) is working on the synaptic organization of the visual sector of thalamic reticular nucleus. He plans to enter a Ph.D. program in Fall 2018.

Thomas Gordon (UofL, 2017), a V. J. and D. L. Molfese Summer Neuroscience Research Scholar and is using optogenetics to determine the cortical cell types activated by the tectorecipient regions of the dorsal lateral geniculate nucleus. He plans to enter an M.D./Ph.D. program in Fall, 2018. Thomas is a fellow in Dr. Martha Bickford's lab.

Dr. Na Zhou successfully defended her dissertation on June 23, 2017. She will continue as a postdoc while she is interviewing for a postdoctoral position elsewhere.



*Dr. Na Zhou, Fellow in Dr. Martha Bickford's lab; Department of Anatomical Sciences and Neurobiology  
With her dissertation committee: (left to right – D. Magnusen (ASNB), M. Bickford (ASNB), Heywood Petry (PBS) & W. Guido (ASNB)*

Feilan Chen, MD, PhD is associate professor of laboratory animal center of Chongqing Medical University. Her research interests focus on immune pathogenesis of uveitis and experimental autoimmune uveitis. Dr. Chen is a visiting scholar in Dr. Shao's lab.

Juanjuan Li, MD is a chief attending Ophthalmologist in the Department of ophthalmology at No.2 People's Hospital of Yunnan Province, Kunming, China. Her specialty is ocular fundus diseases, and her research includes retinal ischemic diseases, endemic ocular disease, multi-modal Imaging examination and congenital retinal disease. Dr. Li is a visiting scholar in Dr. Shao's lab.



*Dr. Lei Jin, fellow in Dr. Wei Wang's lab; Dept. of Ophthalmology and Visual Sciences  
with Dr. Wei Wang*

Lei Jin, MD is an Associate Chief Physician of Ophthalmology, at the Third People's Hospital of Dalian Affiliated to Dalian Medical University, Dalian, China. Dr. Lei Jin is the postdoctoral fellow, visiting scholar from Dalian Eye hospital in China. She will join Dr. Wang, Dr. Dean and Dr. Liu's stem cell research team to work on cornea and retinal neovascularization using animal models.

I am grateful for the care and scientific endeavors provided at the University of Louisville Department of Ophthalmology & Visual Sciences!

Enclosed is my gift of: \$25 \$50 \$100 other \_\_\_\_\_  
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\_\_\_\_ Please contact me regarding other giving opportunities to benefit UofL Health Sciences