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.

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).

### Recent Grant Awards

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

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:
Editor: Maureen McCall, Ph.D.
mo.mccall@louisville.edu
Administrative staff: Erin Moody
erin.moody@louisville.edu

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
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
            “Cone-directed strategies in retinal dystrophies”
5:30-7:30  Reception for all participants at home of
            Drs. Maureen McCall and Ronald Gregg
            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
ASNBL – 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

Dr. 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.
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.

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.

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.

Functional Conversion and Dominance of γδ T Subset in Mouse Experimental Autoimmune Uveitis.

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.


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


Ex Vivo Model for the Characterization and Identification of Drywall Intraocular Foreign Bodies on Computed Tomography

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.

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.

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.

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)

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

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________ (circle one)

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