

## **ERI ANNOUNCEMENTS & COMING EVENTS**

### **Capital Campaign Kick-Off, October 3, 2011**

All ERI members are invited and encouraged to attend a celebration of ERI and the official kick-off of our capital campaign for space in WIMR II. Our event will take place in WIMR (second floor mezzanine) beginning at 12:30pm on Monday, October 3rd. ERI Advisory Board members and University dignitaries will attend and speak, so please help the ERI have a positive showing of member support. This event will commence our campaign to raise \$5 million to secure our full allocation of space for an ERI home in the second tower of the Wisconsin Institutes for Medical Research. As light refreshments will be provided, RSVPs are necessary. Respond here to attend: [slinck@vision.wisc.edu](mailto:slinck@vision.wisc.edu)

### **ERI Seminar Noon to 1:00pm, September 13, 2011**

#### **Visual Motion Perception**

**Bas Rokers, PhD** (Psychology) *Understanding 3D motion perception*

**Amir Assadi, PhD** (Mathematics) *Unifying perception of 3D motion and spatial form: the MSTd neural circuit hypothesis*

**Room 2180 Mechanical Engineering**, 1513 University Avenue; hourly parking in Lot 17

RSVP for pizza lunch by Monday, September 12: [gmstirr@wisc.edu](mailto:gmstirr@wisc.edu)

### **ERI Seminar Noon to 1:00pm, October 11, 2011**

#### **Glaucoma in Dogs and Humans**

**Paul Miller, DVM** (Surgical Sciences, VetMed) *Are humans a good model for glaucoma in dogs?*

**Todd Perkins, MD** (Ophthalmology & Visual Sciences) *Angle closure and tubes for severe glaucomas*

**Room 3001A WIMR** (Wisconsin Institutes for Medical Research)

RSVP for pizza lunch by Monday, October 10: [gmstirr@wisc.edu](mailto:gmstirr@wisc.edu)

\*Full 2011-12 ERI Seminar Series schedule: <http://www.vision.wisc.edu/seminars.html>

### **3rd Annual Vision Science & Visual Art Poster and Gallery Session, October 18, 2011**

Plan to participate and to attend the ERI's annual event—gathering faculty and students showcasing vision science research and visual art works. The ERI distinguished guest lecture features Mr. Gordon Gund, Chairman and co-founder of Foundation Fighting Blindness, sharing his remarkable personal story and his insights from a lifetime of vision research advocacy and philanthropy.

**Online registration is open:** <http://www.surveymonkey.com/s/RegisterAttend-Present2011>

**Register before October 10<sup>th</sup>!**

**Who:**

- Eye Research Institute members and associated scientists, researchers, postdocs, & graduate students
- Center for Visual Cultures members, art and art history faculty, and associated graduate students & postdocs; other individuals with vision science or visual art interests

#### **Work accepted for display:**

- **vision science posters** new or previously presented at a recent conference [no abstracts required]
- **visual art work** thematically or philosophically related to eyes, sight, vision, perception
- **awards** for "Best Student Presentations"

**When:** Tuesday, October 18, 2011

2:30pm to 3:00pm

poster and art display setup

3:00pm to 4:30pm

presenters at posters & art displays (judges circulating)

#### **Reception & Refreshments**

4:30pm to 4:45pm

Awards Presentation

4:45pm to 5:45pm

**Mr. Gordon Gund**, distinguished guest speaker

***History and Progress of the Foundation Fighting Blindness***

**Where:** Health Sciences Learning Center Atrium, 750 Highland Avenue  
Lecture in HSLC Room 1306, Medical Alumni Lecture Hall

### **ERI On the Road!**

On September 22<sup>nd</sup> the ERI will conduct a program for vision professionals in the greater Chippewa Valley area. In an after-clinic-hours event in Eau Claire, ERI members **Yijun Huang** and **Aparna Lakkaraju** (Ophthalmology & Visual Sciences) will present "News From the Battle Against Macular Degeneration." Susan Linck, ERI's development specialist, will discuss the ERI mission and upcoming activities. Thanks to ERI member Dr. Tom Dow and the staff at the Chippewa Valley Eye Clinic for assistance in arranging this opportunity to spread the word about ERI to professionals in other parts of Wisconsin. If you have connections in outlying parts of Wisconsin and can help us arrange similar presentations, please contact Susan: [slinck@vision.wisc.edu](mailto:slinck@vision.wisc.edu).

## RESEARCH NEWS

### ERI Collaborative Team Funded by National Eye Institute

Results from studies to determine the genetic basis for the BigEye Mouse phenotype, supported by a 2009-10 ERI Rapid Response Initiative grant to PI **Christopher Bradfield** (Oncology) and collaborators **Dick Dubielzig** (Pathobiological Sciences, VetMed), **Anna Shen** (Oncology) and Norman Drinkwater (Oncology), have enabled these same collaborators to receive a four-year NEI (NIH) award toward "Identification and Characterization of the Mouse PPCD1 Gene." The PPCD1 (initially termed "BigEye") mouse arose from a spontaneous mutation in Dr. Bradfield's mouse colony and exhibits a particular class of corneal abnormality affecting the corneal endothelium, with patterns of cytokeratin expression remarkably similar to those observed in human corneal endothelial dystrophies – notably posterior polymorphous dystrophy (PPD), and the sporadic condition of iridocorneal endothelial syndrome (ICE). Secondary phenotypes observed in PPCD1 mice include corneal neovascularization, retinal ganglion cell loss, and photoreceptor loss, all significant causes of blindness in humans. Work will focus on providing a molecular explanation for the murine PPCD1 phenotypes with hopes of shedding light on the human disease.

### Study Will Refine Microwave Lenses Used in Communication Technology

A grant from the National Science Foundation to ERI member **Hongrui Jiang** (Electrical and Computer Engineering) and colleague Nader Behdad brings three years of funding to their project titled "Microfluidically-tunable metamaterial lenses for wideband, high-power, phased-array applications." The lenses involved in this project function to reconfigure metallic liquid distribution in order to focus the electrical field, changing the refractive index much like optical ray tracing or focusing of light rays. The microfluidic mechanism will be used to rapidly adjust lens response in tunable, true-time-delay microwave lenses that are essential to the phased-array technology of future wireless systems, radio spectra, and solar power transmission.

### Work on Visual Memory Supported by NIH

ERI member **Vanessa Simmering** (Psychology) has received two years of NIH funding for a project entitled "Understanding Visual Memory Capacity Using Neural Field Modeling." She will study development of visual memory in early childhood, specifically seeking to understand how changes in brain structure may lead to improvements in children's ability to remember multiple items simultaneously. Visual memory is known to have a limited capacity of only 4 to 5 items in adults and 1 to 2 items in preschoolers. In this project, Dr. Simmering will incorporate a type of computational model, dynamic neural fields, to simulate how this limitation could arise through weaker connections between excitatory and inhibitory brain areas early in development. She will test this hypothesis by looking more closely at the nature of children's memory for individual visual features. By understanding how visual memory develops in the majority of the population, she hopes that future research can address how this system differs in individuals with disorders that affect visual cognition – including autism, Williams Syndrome, schizophrenia, attention deficit disorder, Alzheimer's, and other dementias.

### Gaze Plays a Significant Role in Remote Telepresence Systems

With three years of NSF support to advance "Embodied Mediated Communication in Collaborative Work," ERI member **Bilge Mutlu** (Computer Sciences) will be exploring how robots might allow people to have presence at remote locations and interact directly with others despite great distances. Recent developments in wireless networking and robotics have led to an emerging genre of communication interfaces known as *mobile remote presence systems* (MRPs), which Dr. Mutlu describes as technology that allows people to "log-on" to a local robot – providing them with the ability to hear, observe, and physically navigate as if "present" in the local environment and to present themselves via video and audio (e.g., as an executive attending a staff meeting at a remote branch of a company). The ability for these piloted robots to use gaze effectively will be important for navigation and communication, augmenting spontaneous and informal interactions often critical to successful collaborations and team-building. This project will focus on how visual gaze and other factors of robotic presence will affect ways in which people perceive, think, feel, and interact with one another.

## NEW PUBLICATIONS/CURRENT LITERATURE

These are among recent publications by ERI members, including Epubs and print publications from July to early September 2011. The list is organized alphabetically by first-listed ERI author name, highlighted in bold. As we do not have full access to all publication resources for each discipline, we may have missed one of your publications. If so, please accept our apologies and send us your citations for inclusion in the next issue.

Gallagher CL, Johnson SC, Bendlin BB, **Chung MK**, Holden JE, Oakes TR, Brooks BR, Konopacki RA, Dogan S, Abbs JH, Xu G, Nickles RJ, Pyzalski RW, DeJesus OT, Brown WD. A longitudinal study of motor performance and striatal [18F] fluorodopa uptake in Parkinson's disease. *Brain Imaging Behav.* 2011 Sep;5(3):203-11.

**Danis RP, Hubbard LD.** Imaging of diabetic retinopathy and diabetic macular edema. *Curr Diab Rep.* 2011 Aug;11(4):236-43.

Karlstam L, Hertel E, Zeiss C, Ropstad EO, Bjerkas E, **Dubielzig RR**, Ekesten B. A slowly progressive retinopathy in the Shetland Sheepdog. *Vet Ophthalmol.* 2011 July;14(4):227-38. Epub 2011 Apr 18.

Merath KM, Chang B, **Dubielzig RR**, Jeannotte R, **Sidjanin DJ.** A spontaneous mutation in Sreb2 leads to cataracts and persistent skin wounds in the lens opacity 13 (lop13) mouse. *Mamm Genome.* 2011 Aug 21. [Epub ahead of print]

Wu Y, Field AS, **Duncan ID**, Samsonov AA, Kondo Y, Tudorasu D, Alexander AL. High b-value and diffusion tensor imaging in a canine model of dysmyelination and brain maturation. *Neuroimage.* 2011 July 12. [Epub ahead of print]

Wang Y, Piao JH, Larsen EC, Kondo Y, **Duncan ID.** Migration and remyelination by oligodendrocyte progenitor cells transplanted adjacent to focal areas of spinal cord inflammation. *J Neurosci Res.* 2011 July 25. [Epub ahead of print]

Ajeti V, Nadiarykh O, Ponik Sm, Keely PJ, **Eliceiri KW**, Campagnola PJ. Structural changes in mixed Col/CoV collagen gels probed by SHG microscopy: implications for probing stromal alterations in human breast cancer. *Biomed Opt Express.* 2011 Aug 1;2(8):2307-16.

Buschke DG, Squirrell JM, Ansari H, Smith MA, Rueden CT, Williams JC, Lyons GE, Kamp TJ, **Eliceiri KW**, Ogle BM. Multiphoton flow cytometry to assess intrinsic and extrinsic fluorescence in cellular aggregates: applications to stem cells. *Microsc Microanal*. 2011 Aug;17(4):540-54.

Gangaputra S, Won Pak J, Peng Q, **Hubbard LD**, Thayer D, Krason Z, Joyce J, **Danis RP**; for the Studies of the Ocular Complications of AIDS Research Group. Transition from film to digital fundus photography in the longitudinal studies of the ocular complications of AIDS. *Retina*. 2011 Aug 18. [Epub ahead of print]

Kiland JA, Gabelt BT, **Kaufman PL**. Relationship of aqueous outflow resistance to age and total volume perfused in rhesus and cynomolgus monkeys. *Invest Ophthalmol Vis Sci*. 2011 Aug 29;52(9):6820-4.

Almasieh M, Lieven CJ, **Levin LA**, Di Polo A. A cell-permeable phosphine-borane complex delays retinal ganglion cell death after axonal injury through activation of the pro-survival extracellular signal-regulated kinases 1/2 pathway. *J Neurochem*. 2011 Sep;118(6):1075-86. Epub 2011 Aug 12.

Ji S, Nagapl U, Liao W, Liu CC, de Pablo JJ, **Nealey PF**. Three-dimensional directed assembly of block copolymers together with two-dimensional square and rectangle nanolithography. *Adv Mater*. 2011 Aug 23;23(32):36927-7.

**Nork TM**, **Dubielzig RR**, Christian BJ, **Miller PE**, Cao J, Zimmer EP, Wiegand SJ. Prevention of experimental choroidal neovascularization and resolution of active lesions by VEGF trap in nonhuman primates. *Arch Ophthalmol*. 2011 Aug;129(8):1042-52.

Chu U, Hakipour A, Ramachandran S, **Ruoho A**. Characterization of 4-nitrophenylpropyl-N-alkylamine interactions with sigma receptors. *Biochemistry*. 2011 Sep 6;50(35):7568-78. Epub 2011 Aug 9.

Soto BL, Hank JA, Darjatmoko SR, **Polans AS**, Yanke EM, Rakhmilevich AL, Seo S, Kim K, Reisfeld RA, Gillies SD, Sondel PM. Anti-tumor and immunomodulatory activity of resveratrol in vitro and its potential for combining with cancer immunotherapy. *Int Immunopharmacol*. 2011 August 18. [Epub ahead of print]

**Populin LC**, Rajala AZ. Target modality determines eye-head coordination in non-human primates: implications for gaze control. *J Neurophysiol*. 2011 Jul 27. [Epub ahead of print].

**Sorensen CM**, **Sheibani N**. Anti-vascular endothelial growth factor therapy and renal thrombotic microangiopathy. *Arch Ophthalmol* 2011 Aug;129(8):1082.

**We invite your feedback on this newsletter for the ERI membership.  
Please respond with comments at: [Insights Feedback](#)**

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### About ERI *InSights*

The UW Eye Research Institute will distribute *InSights* every other month. Its purpose is to build ERI community, advancing member connections and collaborations by sharing research and educational activities as well as member accomplishments and honors (including those of their lab associates and students). We welcome news of research advances, scholarly publications, grant awards, educational and professional honors, available lab positions, or shared equipment/services. If you have an item you wish to submit for possible inclusion, please send it to Gail Stirr at [gmstirr@wisc.edu](mailto:gmstirr@wisc.edu)