

NEWS



Research to
Prevent Blindness

FALL 2019

Nobel News

Congratulations to RPB Stein Innovation Awardee Gregg Semenza, MD, PhD, on being named a recipient of the 2019 Nobel Prize in Medicine! Dr. Semenza, a professor of genetic medicine at Johns Hopkins University School of Medicine, will receive his Nobel Prize in December 2019 for his work discovering how cells sense and adapt to oxygen availability.

RPB is thrilled that Dr. Semenza is applying his Nobel-caliber knowledge and skills to vision research through his RPB grant, in which he's exploring new treatments for excessive blood vessel growth in conditions such as age-related macular degeneration and diabetic macular edema.



Nobel Laureate Dr. Gregg Semenza (right) and a colleague work in his lab at Johns Hopkins University School of Medicine.

The Bottom Line for Uveitis

When treating uveitis, clinicians typically hope to minimize the use of steroids in treating the condition, but little has been done to directly compare the effectiveness of non-steroid drug options. Two medications in particular, methotrexate and mycophenolate mofetil, are commonly used for uveitis. The medications have a number of differences, one of them



being cost (with mycophenolate mofetil being more expensive).

RPB-supported researchers at the University of California, San Francisco, School of Medicine, with colleagues from other institutions around the world, undertook a multi-site clinical trial to compare the effectiveness of the medications and found that among adults with various forms of uveitis, the medications performed similarly, with methotrexate having a higher success rate overall, particularly for patients with posterior uveitis and panuveitis. The study indicates that for some uveitis patients, effectiveness and cost-effectiveness go hand-in-hand.



Dry Eyes?

If you experience,

- irritated, burning eyes;
- blurred vision that clears with blinking; and/or
- discomfort when reading, watching television or using the computer for extended periods of time

you may have dry eye – a common condition that develops when the eye does not produce enough tears, does not create the proper kind of tears, or when tears evaporate too quickly.

Talk to your eye care specialist about treatment options; it's important to address dry eye, not only for comfort, but to help protect the outer surface of your eyes and maintain eye health.



Corneal Healing: Stat!

A new gel can immediately seal off the cornea (the clear outer layer of the eye) after an injury, as well as ultimately reduce the need for invasive corneal repair surgery, including corneal transplantation. Called GelCORE, the unique material was recently developed at the University of California, Los Angeles (UCLA), Samueli School of Engineering with colleagues from Harvard Medical School, including RPB Stein Innovation Awardee Reza Dana, MD, MSc, MPH.

According to UCLA, this adaptable biomaterial starts out clear and viscous enough to be applied from a dropper or syringe. Then, following short exposure to visible blue light, the material hardens to the approximate density of the cornea. Corneal cells gradually grow into the material, allowing for both short-term and long-term healing. The research team plans to start human clinical trials of GelCORE in 2020.



Research to Prevent Blindness

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Special Focus: Blood Vessels

Well-functioning blood vessels are integral to eye health. Here we take a closer look at recent cutting-edge blood vessel research and its implications for the diagnosis and treatment of eye diseases.

Protecting the Blood-Retinal Barrier

RPB-supported researchers at the University of Michigan Medical School know that many eye diseases, including diabetic retinopathy and macular degeneration, exhibit increased permeability of blood vessels in the retina. Eye injections targeting a specific cytokine, vascular endothelial growth factor (VEGF), have transformed care for these diseases. However, not all patients respond well to anti-VEGF treatments. For these patients, new research out of Michigan may prove useful.



Dr. David Antonetti uses a centrifuge in his lab at the University of Michigan Medical School.

Researchers, including RPB Stein Professorship recipient David Antonetti, PhD, have shown that inhibiting a specific molecule called atypical protein kinase C (aPKC), either genetically or pharmacologically, reduces increased vessel permeability and blocks inflammation. The result could be a new treatment option for blinding diseases such as diabetic retinopathy, particularly for patients who don't respond well to anti-VEGF treatments. The findings are part of Dr. Antonetti's two-decade-effort to protect and restore the blood-retinal barrier that is essential for sight.

From the Sky to the Eye

RPB-supported researchers at the University of Rochester have achieved an incredible scientific feat. Using a technique pioneered in astronomy, called adaptive optics, combined with ultrafast imaging technology, the research team, which includes RPB Career Development Awardee Jesse Schallek, PhD, has developed a way to track and image single blood cells in any blood vessel at the back of the eye. As a result, researchers are studying microscopic capillaries (the smallest blood vessels) in detail for the first time. This is important because many vascular diseases of the eye are believed to begin in the capillaries. The researchers hope that the technology will ultimately provide opportunities for early detection of eye diseases that precedes even the most sophisticated clinical imaging technology available today.

A GIFT TO RPB CAN SAVE SIGHT

Research to Prevent Blindness, Inc. (RPB) is the only public foundation supporting research aimed at treating, preventing or curing all diseases that damage and destroy vision. Your support is critical to the success of our efforts. Contributions totaling up to one million dollars within a calendar year are matched, effectively doubling your gift. ALL GIFTS AND BEQUESTS ARE TAX DEDUCTIBLE.

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