



**Megan Collins, who helped launch the Vision for Baltimore Program, in the Charlotte R. Bloomberg Children's Center building in The Johns Hopkins Hospital**

## The Foreseeable Future

**S**EEING THE SMILE on a child's face after putting on a pair of glasses was the best part of her involvement in the Baltimore Reading and Eye Disease Study (BREDS), says Wilmer pediatric ophthalmologist Megan Collins, M.D., M.P.H. A collaboration between faculty from Wilmer's Dana Center for Preventive Ophthalmology and the Johns Hopkins School of Education, BREDS examined the effects on reading scores of prescribing and providing glasses to children in Baltimore City schools.

During this study, the BREDS team worked with approximately 300 students in 12 schools.

Her most recent project, Vision for Baltimore—a partnership

between Johns Hopkins, the Baltimore Health Department, Baltimore City Public Schools, Vision To Learn, Warby Parker and private foundations and

philanthropists—is exponentially more ambitious. The program's goal is to bring eye care directly into all the public elementary and middle schools across the city. Working with 50 schools and 20,000 children per year, the people powering the Vision for Baltimore program estimate they will accomplish this goal in three years.

Collins became involved in the launch of Vision for Baltimore after Johns Hopkins University President Ronald J. Daniels, J.D., LL.M., and then Baltimore Health Commissioner Leana Wen, M.D., discussed opportunities to work together to improve the

*(continued on page 2)*

# Letter from the Chief—Michael Repka, M.D., M.B.A.

IT IS A PRIVILEGE to work at Wilmer and take care of children with a diverse array of eye problems. The opportunities at Wilmer and Johns Hopkins are unique for patient care and scholarship, well-illustrated by the articles in this issue about the research work of Drs. Megan Collins and Jefferson Doyle. As you will see, their work ranges from improving health care delivery at a system level to researching basic mechanisms of eye disease. Projects like these initially require internal resources (time and grants) beyond what a clinical practice can sustain, making these efforts most likely to succeed in an academic setting where seed money is available, often through generous donations. Funds such as the Pediatric Discovery Fund provide the necessary support for these pilot projects, which we hope leads to larger, funded projects.

In addition to Drs. Collins and Doyle on the division faculty, I have been fortunate to be able to recruit Drs. Courtney Kraus and Edward Kuwera to join the Wilmer clinical faculty. Each of these young physicians is making a unique contribution to our mission in clinical care, research and teaching and will be highlighted in a future issue. Dr. David Guyton and I complete the active faculty. We are each delighted to discuss our current projects or to provide information about clinical issues should you have interest or questions. ■



**Foreseeable** *continued from page 1*

health of Baltimore's youth. Collins and her colleagues were finishing BREDS and were able to apply the knowledge they had gained toward making Vision for Baltimore a success.

While BREDS was a research study, Vision for Baltimore is a school-based public health program. Collins cites the critical link between health and academics as one reason for a recent shift toward school-based health care in some high-poverty cities. "Children who can't see, can't hear or can't breathe are going to struggle in school," says Collins. "Many families do not have the time or resources to take their child to an eye doctor in the community. So, why not bring the eye doctor directly to the school instead?"

The Vision for Baltimore program includes vision screening for all Baltimore City Public School students in pre-kindergarten through eighth grade. If a student fails a screening, Vision for Baltimore offers school-based eye exams. Once a parent or guardian signs a consent form, a child can see an eye doctor who comes to his or her school in a mobile vision clinic. An optometrist from the nonprofit Vision To Learn performs an eye exam and determines whether the child needs glasses. If so, the child can pick out the frames in a mini optical shop within the mobile clinic. The prescriptions are sent to Warby Parker, which donates all the eyeglasses for the program. The Vision To Learn optician returns a few weeks later to distribute the glasses and fit them on each child.

The strategies developed with Vision for Baltimore have become a springboard for a similar project in another city: Vision for Chicago, which is a study measuring the impact of glasses on academics and the impact of a professional development program on teacher engagement.

Teachers are key allies in making Vision for Baltimore and Chicago successful. "We are trying to incorporate vision care into the culture of schools so that teachers will ask, 'Are you in your seat? Do you have your glasses on?'" says Collins. ■

## Announcement:

The Wilmer Eye Institute is the 2018 Readers' Choice Winner for Best Pediatric Vision Care in *Baltimore's Child* magazine.

# Connecting the Dots in Tissue Disorder Research

**W**ILMER'S NEW PEDIATRIC ophthalmologist, Jefferson Doyle, M.D., Ph.D., M.H.S., came face to face with his future profession at 4 years old. "I tripped and fell through a glass door, lacerating my nose and face. I needed extensive reconstructive surgery," he explains. "After that, I developed an eye turn and saw a fantastic ophthalmologist for many years who made a lasting impression," says Doyle.

He credits this formative experience as a factor in his decision to become a pediatric ophthalmologist—but not the only one. "I thought what better area than pediatrics, where you can keep a working functional knowledge of all aspects of the eye," Doyle says. His area of research—connective tissue disorders (CTDs)—affects multiple parts of the eye, including the cornea, lens, retina and sclera (the white of the eye).

Doyle uses a metaphor to explain connective tissue to his patients. "A building is made up of bricks, just like tissue is made up of cells. Connective tissue is the cement in between cells that holds them together," he says. "In some tissues, like bone, the cement needs to be rigid. In other tissues, like the sclera or the aorta, it has to be more flexible." CTDs have in common a defect in the integrity of this "cement."

Doyle chose to focus on the CTD Marfan syndrome because of its ocular complications, including dislocation of the crystalline lens

and excessive elongation of the eye, both of which can cause severe nearsightedness. The excessive growth can also cause patients' retinas to tear and detach, all of which can lead to visual impairment or blindness.

Because Marfan syndrome is a systemic disorder, it also affects other organs in the body. "The most common cause of death is aortic rupture," says Doyle. "The aorta dilates too much—which results in aneurysm formation—and just like an over-expanded balloon, it can burst. This was historically thought to be due to an inherent weakness in patients' aortas."

If the problem is a weakness in the tissue, limited treatment options exist. In a discovery that Doyle calls seminal, however, his colleagues at Johns Hopkins showed that aortic aneurysm progression in Marfan syndrome occurs because the Marfan genetic mutation triggers an abnormal growth process in the aorta.

By targeting this process, they were able to develop a new medical treatment for the disorder. Since this discovery, Doyle has co-authored a series of research papers with these colleagues, which have shed further light onto the mechanisms driving Marfan syndrome, and related CTDs, and have led to the identification of several new therapeutic strategies.

Doyle is now looking to map



**Jefferson Doyle in an exam room at the Wilmer Eye Institute**

his research in the cardiovascular system onto the eye. As with the aorta, doctors had assumed that lens dislocation, eye elongation and retinal detachment in Marfan syndrome occur because of a structural weakness of ocular tissues. "Maybe, though, they result from a fundamental dysregulation of eye growth—which we want to therapeutically target," says Doyle. "It's an exciting time for CTD eye research."

Doyle sees patients with CTDs as well as a range of other genetic conditions that affect the eye. "I love getting to integrate my knowledge of genetics, the eye and the rest of the body," says Doyle. "And I love working with the kids. It brings a smile to my face every day, and hopefully sometimes to theirs too!" ■



For information on how to support the Wilmer Eye Institute, contact:

Libby Bryce Bell  
Wilmer Development Office  
Email: [wildev@jhmi.edu](mailto:wildev@jhmi.edu)  
Phone: 410-955-2020

Editor, writer: Jessica Wilson  
Designer: Max Boam

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## We're in your neighborhood

**Wilmer Eye Institute at The Johns Hopkins Hospital**  
1800 Orleans St.  
Baltimore, MD 21287

**Johns Hopkins Bayview Medical Center**  
4940 Eastern Ave.  
Baltimore, MD 21224

**Bel Air**  
620 Boulton St.  
Bel Air, MD 21014

**Bethesda**  
Bethesda Crossing, West Tower  
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Bethesda, MD 20814

**Columbia**  
Medical Pavilion at Howard County  
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Columbia, MD 21044

**Frederick**  
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Frederick, MD 21702

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**White Marsh**  
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White Marsh, MD 21236