

Where Vision & Health Connect

For Outstanding Accomplishments in Vision Science Research

Botond Roska, MD, PhD, Receives 2018 Bressler Prize

Joshua D. Stein, MD, MS, Receives 2018 Pisart Award

Lighthouse Guild, the leading not-for-profit vision and healthcare organization, announced that Botond Roska, MD, PhD, is the recipient of the 2018 Bressler Prize, and Joshua D. Stein, MD, MS, is the recipient of the 2018 Pisart Award.

Dr. Roska's research interests are focused on understanding the structure and function of visual circuits. His work seeks to restore photosensitivity to retinas in retinal degeneration using cell type specific targeting of optogenetic tools. The overall objective is to find ways to repair visual dysfunction for patients with retinitis pigmentosa and other diseases of the retina.

Dr. Stein's research focuses on trends in the use of eye care services, patients' access to eye care services, patient outcomes after ocular surgery, the cost-effectiveness of different ocular interventions, and the quality of life of patients with ocular diseases. He uses large databases with the goal of improving patients' access to care and improving the quality and value of the eye care patients receive; his work also aims to reduce racial and other disparities in eye care among different population groups.

2018 Bressler Prize Recipient Botond Roska, MD, PhD

"Dr. Roska is being recognized for his innovative and outstanding research accomplishments," said Alan R. Morse, JD, PhD, President and CEO of Lighthouse Guild. "He is combining different disciplines to expand knowledge of the retina and different stages of visual processing. His scientific achievements are powerful, precedent-setting and establish new standards for retinal research."

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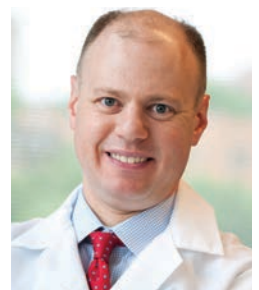


Botond Roska

2018 Pisart Award Recipient Joshua D. Stein, MD, MS

"Dr. Stein is being recognized for his outstanding contributions to understanding vision loss, treatment of eye disease and rehabilitation of people with vision loss," said Alan R. Morse, JD, PhD, President and CEO of Lighthouse Guild. "He is a pioneering vision researcher, whose findings have practical implications for clinical care and decision-making on how to best

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Joshua D. Stein

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Dr. Roska is Director at the Institute of Molecular and Clinical Ophthalmology Basel (IOB), Senior Group Leader at the Friedrich Miescher Institute (FMI) for Biomedical Research, and Professor at the Faculty of Medicine, University of Basel, Basel, Switzerland. He earned his MD at the Semmelweis University of Medicine in Budapest, and his PhD from the Department of Molecular and Cell Biology at the University of California, Berkeley. After being a Junior Fellow at Harvard University, he started his research group at the Friedrich Miescher Institute (FMI) for Biomedical Research in 2005. He became Director at IOB in 2018.

Dr. Roska said, “It is an honor to receive this prestigious award from Lighthouse Guild. As a scientist, I am committed to creating a link between basic science and medicine by converting our research on retinal processing into effective treatments for patients with retinal diseases. I look forward to continuing to work with other scientists in the field to advance vision science research and help restore vision to those impacted by retinal diseases.”

Since 2003, the Bressler Prize has annually recognized a mid-career vision clinician-scientist whose leadership, research and service have led to important advancements in the understanding of vision loss, treatment of eye disease, or the rehabilitation of people with vision loss.

Dr. Roska will receive a prize of \$54,000 and lead Lighthouse Guild’s annual Alfred W. Bressler Vision Science Symposium in New York City in the fall of 2018 where he will be joined by other clinicians and scientists who will present their latest findings in vision research. ■

The Bressler Prize and the Pisart Award will be presented to the recipients at the 2018 Alfred W. Bressler Vision Science Symposium to be held at The University Club of New York in October.

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allocate limited eye care resources and improve access to eye care services.”

Dr. Stein is an Associate Professor in the Department of Ophthalmology and Visual Sciences at the W.K. Kellogg Eye Center, University of Michigan. He received his MD from Jefferson Medical College, an MS in Evaluative Clinical Sciences from Dartmouth Medical School and an MS in Health and Healthcare Research from University of Michigan. He joined the faculty of the University of Michigan in 2007.

Dr. Stein said, “It is a great privilege to receive this prestigious award from Lighthouse Guild, given the organization’s unparalleled commitment to preventing vision-threatening eye diseases and improving the lives of patients with compromised sight. We are joined in our commitment to help people with vision loss gain access to high quality health care services that enable them to lead full and productive lives. I look forward to continuing to work with my colleagues to advance this important mission.”

Through his research in health services and as an early pioneer in “big data” analyses in the field of ophthalmology, Dr. Stein and his team have published innovative analyses of large databases, particularly those involving healthcare claims data. Dr. Stein’s research tackles important health care structural and financing questions critical to providing high-quality cost-effective eye care services. His work has provided significant insight and improvement in a number of areas.

The Pisart Award recognizes an early career vision clinician or scientist whose noteworthy, innovative and scholarly contributions in vision science have the potential for substantial influence in the understanding of vision loss, treatment of eye disease or the rehabilitation of people with vision loss.

As the 2018 Pisart Award recipient, Dr. Stein will receive a \$32,000 prize at Lighthouse Guild’s annual Alfred W. Bressler Vision Science Symposium in the Fall. ■

Vision Rehabilitation after a Stroke: The Importance of Occupational Therapy

Stroke, or cerebrovascular accident (CVA) is a variety of disorders characterized by the sudden onset of neurological deficits caused by vascular injury to the brain. This damage in the brain disrupts blood flow, limits oxygen supply to surrounding cells and leads to brain tissue death or infarction. It is the third leading cause of death in the United States and a leading cause of chronic disability among adults. Depending on the location of the stroke, people may experience loss of motor, neurological and perceptual function, as well as double vision, blurring, headaches, or inability to detect obstacles.

Vision Rehabilitation Projects Manager Yu-Pin Hsu, EdD, OTR/L, SCLV, explained that as many as two thirds of people who have had a stroke experience some changes to their vision. How a person is affected depends on where the stroke occurred in the person's brain.

Occupational therapists (OTs) assist people who suffer from stroke to regain their independence in their activities of daily living. Not only do OTs address the loss of motor and neurological impairments through the provision of interventions, they can advise on environmental modifications, so that people with visual deficits can use their functional vision to live safely and independently.

Visual field deficit (VFD) is the most common visual loss associated with stroke, and homonymous hemianopsia is the type of VFD occurring most often. Hemianopsia affects half of the visual field. Homonymous hemianopsia is a visual field loss on the same side of both eyes.

Not only can stroke affect the visual field, it can also affect visual attention. Hemi-inattention describes a patient's tendency to ignore objects on one side of the visual field and can occur with or without a VFD. Neglect is a complex deficit



Stroke can affect visual attention, causing a person to ignore objects (such as food) on the left side of the visual field.

occurring when a person is unable to locate objects surrounding them or their own body (right vs left).

The first thing someone needs to learn who has experienced vision loss from a stroke is awareness, said Dr. Hsu. Awareness of what has happened and why, for example, they bump into things, trip over objects or don't see all the traffic in the street, only some of it. Rehabilitation can begin with marking items in the home, creating contrast and making sure that the lighting is suitable. But as far as vision rehabilitation goes, that may just be the beginning.

Learning new ways of seeing things is paramount to vision rehabilitation, but it's hard work and takes practice. For example, learning to scan the environment so that you don't bump into things and so that you see all the traffic in the street is a skill that an OT can teach. If you have a stroke, patients should make sure they receive a thorough vision exam and, if necessary, referral for vision rehabilitation and occupational therapy. ■

‘Eccentric Viewing’ to Improve Vision

It is not unheard of for a Bridge player whose vision is plagued with a central scotoma (a blind spot in the middle of their central vision), to be still playing without anyone being aware of their disability. This person may be someone with, for example, Age-related macular degeneration or Stargardt’s disease.

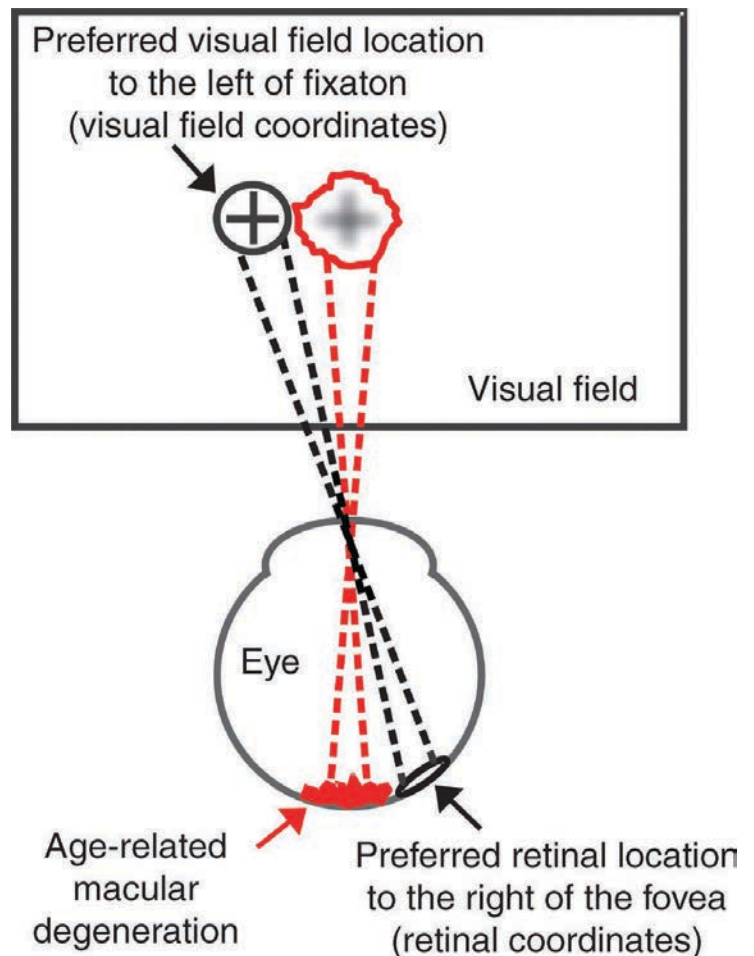
The Bridge player might be employing “Eccentric Viewing”, a technique taught by occupational therapists (OT) in which the person looks around the blind spot in order to view the subject using their peripheral vision.

The loss of central vision makes it difficult to see the words on a page or the details of a face, yet the peripheral vision remains intact.

At Lighthouse Guild, this skill, eccentric viewing, is taught by occupational therapists such as Inna Babaeva, who works as part of our Vision Rehabilitation team to identify patients who want to learn the technique.

Ms. Babaeva explained that this technique can improve the quality and speed of reading and other activities that rely on central vision, such as writing, reading music, watching TV and playing cards. She has had a number of Bridge players among her patients.

People with central vision loss tend to see the target of viewing more clearly if they look slightly away from it in order to view it with another and more clear portion of their visual field. During evaluation the best location for viewing is identified. This position, their Preferred Retinal Location (PRL) varies from person to person.



Patients are given a set of exercises to improve her or his visual skills and eye movement. In addition to the training, a low vision optometrist, working with the OT identifies appropriate magnification devices.

Doing exercises with an emphasis on eccentric viewing to move images into their PRL helps patients to “rewire their brains”. They learn to achieve the correct position with less effort, and improve the clarity of what they are seeing, of especial importance for reading. Practicing these exercises at home is tiring, but necessary for success. ■

Indoor Map Learning for the Visually Impaired

Trip planning is useful for all travelers, but especially important for people who are visually impaired because they can learn maps and routes prior to their upcoming journey. Many of the existing methods have limitations: (1) they typically use special visualization interfaces that are costly; and (2) they mainly focus on outdoor navigation due to the availability of existing online map and GIS databases. These limitations often make trip planning unfeasible for most people with visual impairment. We propose a novel trip-planning framework for indoor scenarios. Indoor accessible maps are generated, and an app allows users to learn building layouts and travel directions prior

to their travel by rehearsing their routes on their device. This trip-planning method could be easily adapted to other indoor scenes and will encourage users with visual impairment to travel easily and independently.

“Indoor Map Learning for the Visually Impaired”. Presented at the 32nd Annual International Technology and Persons with Disabilities Conference Scientific/Research Proceedings and published in the *Journal on Technology and Persons with Disabilities*. Hao Tang, Tayo Amuneke, Juan Lantigua, Huang Zou, William Seiple*, Zhigang Zhu, 2017, Vol.5 [22]. ■

Stargardt Macular Dystrophy: Changes in Fixation When Asked to Look Straight Ahead

When central vision is lost due to Stargardt Macular Dystrophy, a person commonly uses a new location in their healthy peripheral retinas for fixation of objects. We explored whether this new peripheral location or the original, diseased location of the fovea (the area in the center of the retina that we use for best acuity) is used as the perceptual center of the visual world. Using microperimetry, fixation was measured under two different instructions: “look at the cross” and “look straight ahead, even if you do not see the cross”. If a person fixates using the diseased, non-seeing fovea with the instruction to “look straight ahead,” spatial representation of the visual world has not been re-mapped to the peripheral retina.

We found that peripheral locations were predominantly used to fixate under the viewing condition “look at the cross”. However, when

asked to “look straight ahead,” 89% of the eyes had fixations at, or close to the fovea. That is, despite using peripheral retina to see the fixation target, most people did not think of this location as the center of their visual world. This finding emphasized that reliable assessment of visual function during evaluations of disease progression or in therapeutic intervention trials requires consistent instructions and monitoring of fixation.

“Stargardt Macular Dystrophy: Changes in Fixation When Asked to Look Straight Ahead”. Published in *Ophthalmology Retina*. Mary Lou Jackson, MD, William Seiple*, PhD (2017). Vol. 1 Issue 6, Nov. – Dec. 2017, pp 524-530.

*William Seiple, PhD, is Vice President of Research at Lighthouse Guild. ■

An Innovative Vision Rehabilitation eLearning Program

Vision rehabilitation is the standard of care for patients who are losing their vision and ophthalmologists are key to improving access to care for these patients. Recognizing this, Lighthouse Guild provides eyecare professionals with free access to an eLearning program.

The eLearning program is designed to provide an introduction to vision rehabilitation and a basic understanding of strategies and devices that help patients with low vision to maximize residual vision and improve functioning in daily activities. It is self-paced, divided into ten modules, and can be completed in approximately two hours.

Dr. Alan R. Morse, President and CEO of Lighthouse Guild, said, “Low vision is a public health issue that affects the health, economic well-being and productivity of individuals as well as society as a whole. It is important that eyecare professionals understand how vision rehabilitation can help their patients avoid the negative impacts of vision loss, such as depression, falls, higher utilization of healthcare resources and social isolation. Providing patients with information about vision rehabilitation options and initiating referral to services as early as possible in the treatment process is crucial to improving a patient’s quality of life.”

The program reviews basic terminology, demonstrates the impact of vision loss on daily activities, and discusses vision rehabilitation services, including low vision evaluation and devices, the range of rehabilitative services that help patients integrate adaptive techniques and devices into daily activities, and the role of behavioral health and support services. It also provides the ophthalmologist with approaches for identifying and referring patients who need vision rehabilitation, and tips for discussing low vision diagnoses and driving cessation. Optical principles and use of low vision devices are also discussed.



The program demonstrates the impact of vision loss on daily activities.

The program is accessible from the Lighthouse Guild website lighthouseguild.org/ce or on the One Network of the American Academy of Ophthalmology (AAO) website. aao.org

Dr. Morse said, “Orthopedic specialists, neurologists and cardiologists routinely refer their patients for rehabilitation to address physical health issues. However, patients with low vision are too often not referred for rehabilitation, use of vision assistive equipment (adaptive devices), training in daily activities and support services they need to live full and productive lives.” ■

Concept Development in Infants and Toddlers

“The formation of concepts in infants and toddlers usually occurs naturally through play and an interest in their environment,” says Linda Gerra, EdD, Director of Children’s Vision Programs at Lighthouse Guild. Vision plays a dominant role in how young children organize and make sense of the environment. Eighty percent of learning is through vision and therefore vision (or the lack of it), has a major impact on concept development in young children.

What is Concept Development?

Concept development is understanding the characteristics, qualities, and functionality of people, places and objects. As information is gathered, concepts become clearer. These structures are formed from social interactions, language development, and experiences.

Mental images of individuals born blind are less accurate than those of persons with sight. The incidental learning acquired through use of



When explaining concepts to children with blindness, use real objects not replicas.

vision is missing. Visual information is constantly available for children with sight, providing them with immediate data on all kinds of concepts (size, color, shape, position, quality, etc.).

Children with blindness interact with their environment by integrating touch or sound to develop a view of the world. They receive the most information through objects that are near to them, that can be obtained easily or through objects that are presented to them. As children develop language skills, information, can, of course, be provided through explanation, description, and comparisons.

Concepts through Engagement

Beginning concepts are systematically taught through structured experiences. Children must be guided to engage and explore consistently available objects and activities. If a child only has the experience of sitting in a chair in his classroom, the kitchen in his home, or his family’s living room, he will form an incorrect concept of “chairness”. In reality, there are hundreds of styles of chairs; they look and feel different, but they are all chairs.

Dr. Gerra emphasizes that when working with children with blindness, a person should use real objects, not replicas or models. She suggests **building** concepts into children’s daily routines, such as a cooking activity, where they can learn about individual ingredients, measuring and creating something. **Exploring** concepts through role play, such as pretending to take a bus or a train, further enhances concept development. Finally, **expanding** concepts by providing choices. Which do you want, the big truck or the little truck? All help to complete concept formation. ■

Lighthouse Guild Highlights

President and CEO **Alan R. Morse, JD, PhD**, recently authored with Joseph L. Fontenot, MD; Mark D. Bona, MD; Mona A. Kaleem, MD; William M. McLaughlin, Jr., DO; Terry L. Schwartz, MD; John D. Shepherd, MD; Mary Lou Jackson, MD and others. (2018). "Vision Rehabilitation Preferred Practice Pattern[®]", *Ophthalmology*, Vol. 125, Issue 1, P228–P278.

Dr. Morse also authored, with Vice President of Research **William H. Seiple, PhD**, and **Bruce Rosenthal, OD**, Chief of Low Vision Services; Olga Overbury; Tiffany Arango; and J. Vernon Odom (2018). "Effects of Lighting on Reading Speed as a Function of Letter Size". *American Journal of Occupational Therapy*, Vol.72, 1-7. doi:10.5014/ajot.2018.021873

COO **Mark G. Ackermann** with co-authors (2017), The Angiogenesis Foundation white paper "Improving Long-Term Patient Outcomes for Exudative Age-related Macular Degeneration".

Dr. Seiple also recently authored with Mary Lou Jackson (2017), "Stargardt Macular Dystrophy: Changes in Fixation When Asked to Look Ahead", *Ophthalmology Retina*, Vol.1, Issue 6, Nov.-Dec. 2017, pp 524-530. He also recently authored, with Hao Tang, Tayo Amuneke, Juan Lantigua, Huang

Zou and Zhigang Zhu (2017), "Indoor Map Learning for the Visually Impaired", *Journal on Technology and Persons with Disabilities*, 2017, Vol. 5 [22].

Leslie Jones, DMA, Executive Director, The Filomen M. D'Agostino Greenberg Music School, presented "Music for the Child with Low Vision" at Precision Ophthalmology 2017: Fighting Childhood Blindness, The Edward S. Harkness Eye Institute of Columbia University Medical Center.

Yu-Pin Hsu, EdD, OTR/L, SCLV, Vision Rehabilitation Projects Manager, presented "Vision Rehabilitation in Patients with Stroke," at New Technologies for Patients with Vision Disorders, October, 2017.

Dr. Hsu and Occupational Therapist **Inna Babaeva, PhD, OTR/L**, presented "A Client-centered Approach to Low Vision Rehabilitation" at the New York State Occupational Therapy Association Conference in Albany.

Judy Farrell, GuildNet VP, Government Affairs, presented "The Present and Future of Long Term Care" at the Long Term Care Community Coalition's annual event.

Maggie Walters, Program Manager, Education and Training, presented "Coordinating Access to Vision Rehabilitation" at the New York State Society on Aging annual conference in Saratoga Springs. ■

Lighthouse Guild Offers Continuing Education Programs for Occupational Therapists

- **New!** Low Vision Assessment for Occupational Therapy (.2 CEUs)
- Low Vision in Older Adults: Foundations for Rehabilitation, 2nd Edition Full Course (.8 CEUs)
- Modifying the Environment for Low Vision (.15 CEUs)
- Understanding Low Vision (.25 CEUs)
- Selecting Low Vision Devices (.2 CEUs)
- Improving Performance for Low Vision (.2 CEUs)
- **Coming in 2018!** Meeting the Needs of Children with Low Vision

Register at store.aota.org or through lighthouseguild.org/ce.

Learn more about our eLearning programs and resources at lighthouseguild.org/ce

