



We believe every individual has vision, and that eyesight is not a requirement to achieving a dream.

Our goal is to restore function to the blind and visually impaired.

To this end, we dedicate our research to investigating the functional implications of vision loss, access to interventions, optimizing rehabilitation therapies and developing assistive technology.

FELLOWSHIP PROGRAM HANDBOOK

<http://www.envisionus.com/research>

<http://research.envisionus.com/Fellowship-Program>

Since 1933, Envision, Inc. has strived to improve the quality of life and provide inspiration and opportunity for the blind and visually impaired (BVI), through employment programs, outreach, rehabilitation, education and research. Significant gaps exist, however, in our scientific understanding of vision loss and rehabilitation. The purpose of the Envision Research Institute (ERI) is to fill these gaps by carrying out applied and innovative research in BVI, with the goal of removing functional barriers for these individuals. Therefore, ERI dedicates our research to investigating the functional implications of vision loss, access to interventions, optimizing rehabilitation therapies, and developing assistive technology. The ERI Fellowship Program is an integral part of ERI's mission.

Visual impairment can have a profound impact on an individual's ability to function in daily life. Vision loss can range from mild to severe, including total blindness. Declines in visual function can have immediate impact on activities of daily living (ADLs) such as self-care and social interactions, visual task performance such as reading and navigating, safety such as falls and driving accidents, mental health coping including depression and isolation, and increases in assistive living or nursing home placement. Even early and moderate forms of visual impairment can result in disability in specific everyday visual function. Low vision is a visual impairment, visual acuity and beyond, that cannot be corrected with standard eye glasses, or by medical or surgical treatment resulting from many different ocular, neurological and systemic disorders. The major causes of chronic low vision and blindness in the United States include age-related macular degeneration, glaucoma and diabetic retinopathy. One in six Americans over the age of 45, representing 13.5 million older adults, report some form of visual impairment where 82% of BVI are 50 years of age or older. This prevalence increases with age and by the year 2030, the number of people who are age 60 and older with visual impairment is expected to more than double. The overall loss of independence in the BVI population also has a negative impact on caregivers. The economic burden of BVI has been estimated to be up to \$98 billion per year.

Agencies within the National Institutes of Health have identified specific research needs in BVI:

- Understanding the impact of Visual Impairment on functional ability;
- Providing for training, technical assistance and other interventions to maximize the full inclusion and integration into society, employment, independent living, family support, and economic and social self-sufficiency of individuals with BVI;
- Promoting the transfer of, use and adoption of rehabilitation technology for BVI individuals in a timely manner; and
- Ensuring the widespread distribution, in usable formats, of practical scientific and technological information.

The National Industries for the Blind (NIB) reports that more than 70% of individuals with BVI are unemployed. Understanding the impact of social trends, population and demographic shifts, and unemployment as well as underemployment will help chart a course on national policy and workforce development for those with vision loss including:

- Identify new areas of professional growth and emerging industries;
- Accessibility, cost and usability of new technologies;
- Cultural shifts that influence quality of life (personal life and work life);
- Health trends and other medical issues impacting those who are blind;
- Legislative trends and their impact on the BVI community;
- Social causes and movements that have potential for future impact; and
- Geographic and socioeconomic trends.

Envision Research Institute is uniquely positioned to investigate these needs and gaps in BVI-related research given our longstanding and direct contact with BVI populations. Research programs and projects are encouraged

to collaborate and integrate with Envision programs that serve the BVI population. This unique BVI environment fosters communication and collaboration, allowing researchers to quickly translate their knowledge into applications that can directly impact individuals who are BVI. In the other direction of information flow, researchers gain inspiration and valuable insight into impactful and meaningful questions by interacting with BVI individuals and the professionals that serve them. Envision and local programs that a Fellow could collaborate with to create mutually beneficial interactions are described next.

Envision Child Development Center

<http://www.envisionus.com/Pages/Services/ChildhoodDevelopment.aspx>

The ECDC provides comprehensive early intervention services for BVI children birth through age 5. A state-of-the-art childcare facility and preschool, the ECDC offers quality child care with the goal of maximizing each child's potential. Each classroom is comprised of at least one-third typically developing students to provide appropriate age-related mentoring and mainstreaming interactions.

Envision Vision Rehabilitation Center

<http://www.envisionus.com/Rehab/>

The mission of the EVRC is to enhance the independence of and enrich the quality of life for people who are BVI through the delivery of evidence based vision rehabilitation. Our staff consists of licensed and certified specialists in ophthalmology, optometry, orientation and mobility, physical therapy and occupational therapy. We work directly with individuals and their families, building independence and inspiring hope.

Workforce Innovation Center

<https://www.envisionus.com/Workforce-Innovation-Center>

A joint initiative by Envision, Inc. and LCI, the William L. Hudson BVI Workforce Innovation Center is dedicated to improving the lives of individuals who are blind or visually impaired by providing experiential training and job placement opportunities in desired career fields. The Center is also focused on providing accessibility expertise to businesses around the United States to guide companies toward a more accessible and inclusive workplace for all.

Envision University

<http://www.envisionuniversity.org/>

Envision University provides continuing education opportunities for vision rehabilitation providers and a forum for research dissemination through the semi-annual Envision Conference, Grand Rounds and online CE courses.

Envision Community Programs

<https://www.envisionus.com/youth-programs>

<https://www.envisionus.com/adult-programs>

<https://www.envisionus.com/arsi-expressive-arts-center>

Kids with vision loss often feel isolated from their schoolmates, so Envision provides youth programs to help children remain confident and independent in their homes, schools and communities. Envision also provides monthly Adult Support Group meetings bring adults with vision loss together to socialize and receive information that relates to their needs. Programs include presentations, discussions, and visits by motivational speakers with content to address mobility issues, independence, community engagement and resources. Finally, Envision provides artistic explorations designed to transform the lives of individuals of all ages with vision loss and blindness, including those with intellectual and developmental disabilities, by enhancing one's sense of purpose in life through the arts.

Envision Industries

<http://www.envisionus.com/Pages/Manufacturing/Industries.aspx>

Envision is the nation's second largest employer of individuals who are blind or vision impaired. Employees with vision loss work in manufacturing, retail, print, customer service and administrative careers.

IDP & NIAR (Industry and Defense Programs & National Institute for Aviation Research)

http://www.wichita.edu/Industry_and_Defense

<http://www.wichita.edu/niar>

The IDP's researchers and trainees are well versed in providing innovative solutions utilizing combinations of commercial off the shelf and state-of-the-art technologies to many different industries including healthcare. The National Institute for Aviation Research (NIAR) was established in 1985 and has an annual research budget of over \$180 million. In 2020, the Division of Industry and Defense Programs (IDP) was created, which houses NIAR and the newly established National Institute for Research and Digital Transformation (NIRDT), and includes over 1200 researchers, technicians and trainees in applied learning and research opportunities. NIRDT was established to include applied learning in the areas of data storage and computing, software and application development, cybersecurity and forensics research, as well as emerging industrial and healthcare technologies.

Local Academic Institutions

<http://www.wichita.edu>

<https://www.kumc.edu/school-of-medicine/campuses/wichita.html>

<http://kansascom.kansashsc.org/>

The Wichita State University (WSU) is a public research university governed by the Kansas Board of Regents part of the Kansas University System. The university offers more than 60 undergraduate degree programs in more than 200 areas of study in six colleges. The university's graduate school offers 44 master's degrees in more than 100 areas and a specialist in education degree. It is classified among "R2: Doctoral Universities – High research activity" and the engineering program ranks in the top 30 of the National Science Foundation's ranking of U.S. college engineering R&D expenditures. The University of Kansas School of Medicine-Wichita opened in 1971 to provide hands-on clinical training to medical students in their third and fourth years. In 2011, KU School of Medicine-Wichita expanded to a full, four-year campus. KU School of Medicine-Wichita is community-based with more than 1,000 volunteer faculty inside three partner hospitals (Robert J. Dole VA Medical Center, Wesley Medical Center, and Ascension Via Christi). As the first and only osteopathic medical school in Kansas, Kansas College of Osteopathic Medicine is deeply committed to serving the diverse medical needs of our communities to ensure access to high-quality care for all. We work closely with local hospitals and clinics to provide a direct connection to local and experienced physicians so our osteopathic medical students can make an impact on their community. We've also partnered with Medical Intelligence 10 (MI10) to develop a curriculum that trains students to become not just osteopathic physicians but leaders in their chosen field of medicine.

ENVISION FELLOWSHIP PROGRAM

Envision Fellows are among the best investigators; innovative and out to change the world. They take their diverse educational backgrounds and apply them creatively to improve the quality of life and independence for the blind and visually impaired through their research endeavors. Partnering with mentors at Envision and around the world at renowned educational, government, research and medical institutions, Envision Fellows are on the successful track to independent and impactful research careers.

Eligibility

A Fellow must have received, at the start of their Fellowship, a PhD, MD, OD, OTD, JD, MSW, MPH or similar professional degrees at an accredited institution. BVI research is multi- and interdisciplinary, thus the topic of the professional degree is less important than the educational experiences that can support the proposed training and research to be carried out during the Fellowship.

Training and Education Objectives

Envision Fellowships are funded for up to two years, pending satisfactory performance at an annual review. The main focus of the Fellow is to develop and carry out a research project with their mentor(s) that extends their skills and is consistent with the mission of Envision, while taking specific advantage of the unique combination of environment and resources available through the ERI. The research and training plan (Individual Development Plan) is to be written by the Fellow in the first few months of the fellowship, and the plan may incorporate up to three months of off-site training and project development in the first year at an external institution under a mentor who agrees to be an external mentor. The external mentor, therefore, will agree to support the Fellow's activities that are consistent with the mission of Envision (as stated in a mentor letter attached to the application). Fellows are required to spend the first few months of their Fellowship at Envision for the purpose of getting immersed into the Envision and BVI community. Dual-housing assistance can be provided during visits to the external mentor's location.

Specific fellowship training objectives include:

- Ethical Conduct of Research
- Scientific or Technical Writing Skills
- Grant Writing Skills
- Oral Presentation Skills
- Project Management Skills
- Fundamental Knowledge of Low Vision and Blindness Rehabilitation
- Discipline specific Conceptual Knowledge in the Fellows' topical area of interest/expertise

Specific training objectives can be attained at both the external mentor's institution and at the ERI, with approval of the final training plan by the ERI Executive Director. Fellows are expected to attend and present at relevant conferences each year, including the Envision Conference. Staying current in relevant topics will include attendance at various symposia and journal clubs, as well as attendance at Envision Grand Rounds. Fellows are encouraged to develop their grant writing skills by submitting an application for external funding at the beginning of their second year.

Application and Selection Process

Letter of Intent and Letters of Reference

ERI will put out a call for Letters of Intent and references to apply. After internal review, top candidates will be reviewed by a scientific advisory panel and, if necessary, external ad-hoc reviewers with expertise in the relevant topic areas.

The Letter of Intent (with not more than 1500 words) should contain the following:

- Description of the applicant's academic and research background as it relates to BVI research
- Description of a research project that the applicant is interested in pursuing at ERI
- Proposed fellowship start date

If desired, External mentor(s) should submit a letter that indicates agreement to support the Fellow in the following:

- Support Fellow in writing an Individual Development Plan (IDP)
- Timely interaction to design and carry out research project
- Access to resources in mentor's laboratory as appropriate
- Allow opportunities for project management experience

- Promote training in oral and written presentation of research
- Ensure Fellow integration and participation in research community activities
- Acknowledgement of ERI affiliation and support when disseminating Fellow's research

Period of Support

Fellowship awards are limited to a maximum of 2 years duration. Requests for additional time or a break in time must be strongly justified. Such events include sudden loss of a mentor's services, accident, illness, or other personal situations which prevent the Fellow from pursuing training or research activities in an effective manner for a significant period of time. In the unlikely event of a difficulty that may arise during the Fellowship period, the matter should be promptly discussed with the mentor. If the problem involves the mentor the matter should be discussed with the Executive Director of ERI.

Conditions: Outside employment, during regular Fellowship hours, must be approved by the mentor and Executive Director of ERI. Publications and presentation of discoveries by awardees are governed by the same policies that apply to all ERI staff.

Fellowship Program Administration

Mentor: The mentor is the individual with whom the Fellow interacts with on a regular basis to design and carry out the research project. A Fellow may have multiple mentors if it benefits their training and a mentor collaboration plan is articulated. Fellows may travel up to three months in the first year to receive training at an external mentor's institute.

Advisory Panel: The ERI Advisory Panel is composed of scientists who review the applications for Fellowships. The ERI Advisory Panel also provides strategic guidance to ensure that the Fellowship Program is consistent with helping Fellows achieve their maximum development during their training and research experience at ERI as well as to ensure that Fellowship research is consistent with ERI's goals and functions. The Fellowship Program is constantly under review and the Executive Director with the Advisory Panel welcomes any input from current Fellows on how to improve the program.

Individual Development Plan (IDP): Upon entry into the program, the Fellow will develop an IDP for tracking progress throughout the training program. The IDP addresses professional development needs in light of career objectives. The IDP is reviewed semi-annually and adjusted as needed. The Fellow will work with the mentor(s) and the Research Program Manager of ERI to write this plan. The IDP has the following content:

1. Short term (first year after fellowship) and long term (5 to 10 years from now) career goals
2. Conceptual/Skill Development goals (derived from training/education plan and career development sections of the fellowship application)
3. Research activity goals (derived from the research plan of the fellowship application including stating your research project goals/aims)
4. Professional and Personal Communication Skills goals (elaborate on planned professional presentations, written documents (e.g., grant/funding application) and other professional opportunities for enhancing your personal communication skills)

Financials/Benefits

Stipend: Fellows receive a stipend to defray living expenses during the training and research experience. Stipend levels are consistent with recommended Federal NIH rates (e.g. Fiscal Year 2022 NIH NRSA stipend levels – <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-22-132.html>)

Health Insurance Stipend: An annual health insurance stipend (\$5,000 or less) is provided to allow the Fellow to purchase personal health insurance.

Research Funds/Travel: Fellows will submit anticipated expenses as part of their IDP to support research costs and any equipment needed. Fellows should include travel costs and housing supplements required to facilitate training at an external mentor(s) institution in the proposed expenses.

Visa: International Fellows will be issued a J-1 Visa as a Research Scholar if necessary.

Other Benefits: As the Fellow is not an employee, they are not eligible to participate in Envision's retirement plan or other Envision employee benefit plans. Fellows do not accrue vacation or sick leave, but are allowed time off at the discretion of their mentor(s) and the Executive Director of ERI.

Taxes: Since Fellowships are considered awards for training and education, stipends are not subject to Social Security, Medicare deductions, nor can IRA or other tax-related deductions be taken. Section 117 of the Internal Revenue Code applies to the tax treatment of scholarships and fellowships. Non-degree candidates are required to report as gross income any monies paid on their behalf for stipends or any course tuition and fees required for attendance. The taxability of stipends in no way alters the relationship between Fellows and Envision. Stipends are not considered salaries. In addition, recipients of individual Fellowships are not considered to be in an employee-employer relationship with Envision solely as a result of the Fellowship award. The interpretation and implementation of the tax laws are the domain of the IRS and the courts. Envision takes no position on what the status may be for a particular taxpayer, and it does not have the authority to dispense tax advice. Individuals should consult their local IRS office about the applicability of the law to their situation and for information on their tax obligations.

Although stipends are not considered salaries, this income may still be subject to Federal and, sometimes, State income tax. Envision is not required to issue a Form 1099, but does provide an annual letter of documentation of stipend received. This letter will function as a reminder to the fellow that some tax liability may exist. Fellows are reminded that, even though Envision does not issue a Form 1099, they still are required to report stipends as income.

Email applications and queries to:

ron.schuchard@envionus.com

Subject: Fellowship

RECENT FELLOWSHIPS

The Unknown Importance of the Mouth in Visually Impaired Children's Learning of Objects

A pencil and a Lego are more than objects that can be felt and seen; a pencil is a means of communication; a Lego is a building block to represent real objects in the world. Blind or visually impaired children lag behind sighted peers in this critical developmental milestone: using objects in conventional ways. Two risk factors that limit BVI children's cultural use of objects were investigated: whether/when these children's mouthing of objects needs to be discouraged in favor of hand skills development, and what is the typical development of these children's ability to pay attention to how social partners use objects? Results determined when intervention is needed, and designing strategies for promoting these children's healthy development.

FELLOW: Andrea Urqueta Alfaro, PhD; <https://research.envisionus.com/Team/Andrea-Urqueta-Alfaro,-PhD>

EXTERNAL MENTOR: Joshua Miele, PhD; Smith-Kettlewell Eye Research Institute

SPONSOR: LC Industries; <http://www.lcindustries.com/>

Visual Fixation and Function in Central Vision Loss

Intact central vision is critical for activities of daily living including reading, driving, face recognition, etc. With central vision loss, several changes in the visual system ensue including the use of an eccentric preferred location in the retina for performing various visual tasks and an increase in the amplitude of involuntary fixational eye movements. Dr. Arun Krishnan aims to understand the eye movement pattern and residual visual function in people with central vision loss. His findings will help vision scientists better understand the central visual impairment that is pivotal for devising rehabilitation strategies in the future.

FELLOW: Arun Krishnan, PhD; <https://research.envisionus.com/Team/Arun-Kumar-Krishnan,-PhD>

EXTERNAL MENTOR: Susana Chung, OD, PhD; University of California, Berkeley

SPONSOR: Bosma Enterprises; <http://www.bosma.org/>

Improving Public Transportation Accessibility: Using Cognitive Task Analysis Techniques to Generate Design Recommendations and Create Prototypes of Design Concepts

The primary aim of this project is to improve public transit accessibility for blind and visually impaired passengers by creating design recommendations for effective mobility and orientation training procedures, and sociotechnical systems; and developing prototypes of design concepts.

FELLOW: Güler Arsal, PhD; <https://research.envisionus.com/Team/Guler-Arsal,-PhD>

EXTERNAL MENTORS: Alex Chaparro, PhD; Embry-Riddle Aeronautical University
Paul Ward, PhD; University of Northern Colorado

SPONSOR: ibvi (Industries for the Blind and Visually Impaired); <https://ibvi.org/>

Transcranial Brain Stimulation and Visual Rehabilitation

The overall goal of this project is to better characterize activity in the brain and plastic changes in retinotopic reorganization as a function of visual disease. Transcranial brain stimulation is a potential tool for triggering plasticity and may be viable in low vision rehabilitation for enhancing residual vision.

FELLOW: Rajkumar Raveendran, OD PhD; <https://research.envisionus.com/Team/Rajkumar-Raveendran>

EXTERNAL MENTOR: Ben Thompson, PhD; University of Waterloo, Ontario Canada

SPONSOR: LC Industries; <http://www.lcindustries.com/>

Revised Section 503 of the Rehabilitation Act of 1973 Regulations on Employer HR Policies and Procedures

Using statistical analysis of responses from employers and BVI individuals, the overall goal of this policy and employment-related project is to measure the progress that has been made to improve employment outcomes for the BVI community since the Section 503 of the Rehabilitation Act of 1973 regulations update. Results will inform HR professionals and BVI advocates on how to proceed in developing effective HR policies and procedures.

FELLOW: Marco Tarantino, JD; <https://research.envisionus.com/Team/Marco-Tarantino,-JD>

EXTERNAL MENTOR: Michael Stein, JD; Harvard Law School

SPONSOR: National Industries for the Blind; <http://www.nib.org/>

Advanced Driver Assistance Systems for Senior Drivers with Impaired Vision

This project aims to explore how assistance and automated technologies can support the safety and mobility needs of senior drivers with vision loss. This project explores the impact of age-related central vision loss on driving. Furthermore, the project aims to explore driving assistance technologies for older drivers with central vision loss to assist with hazard detection and avoidance.

FELLOW: Jing Xu, PhD; <https://research.envisionus.com/Team/Jing-Xu,-PhD>

EXTERNAL MENTOR: Alex Bowers, PhD; Mass Eye and Ear, Harvard University

SPONSOR: Bosma Enterprises; <http://www.bosma.org/>

Evaluating Orientation and Localization Abilities in Individuals with Sensory Impairment

Vision and hearing are the most important senses when navigating space or interacting with others. For individuals with vision impairment and especially those with dual sensory impairment (concurrent vision and hearing impairment), it becomes more difficult to determine the locations of objects or people in the environment. Results will identify critical patterns of localization in individuals with sensory impairment.

FELLOW: Yingzi Xiong, PhD; <https://research.envisionus.com/Team/Yingzi-Xiong,-PhD>

EXTERNAL MENTORS: Gordon Legge, PhD; University of Minnesota

Peggy Nelson, PhD; University of Minnesota

SPONSOR: ADS, Inc.; <http://www.adsinc.com>

Coping with Vision Loss

The aim of this study is to analyze the grieving process from the perspective of people with low vision using a qualitative approach to explore the factors that facilitate the acceptance of visual rehabilitation. It is necessary to consider that low vision involves a significant loss of the ability to see and is irreversible. This loss is complex and has a wide impact, and the natural response to a loss is grief.

FELLOW: Emma Rangel Medina; <https://research.envisionus.com/Team/Emma-Rangel-Medina>

EXTERNAL MENTOR: NA

SPONSOR: Pitt Plastics, Inc.; <https://pittplastics.com/>

Analysis of Functional Vision of People with Low Vision Using Different Models of Augmented Reality Devices

The working principle of augmented reality is that real-world image is captured with the input devices like a camera and send the image to a processor for creating augmented content. Then, the content will be sent to the augmented reality browser which later displays the image on the screen such as head-mounted display or smartphone screen. The purpose of this research is to analyze the functional vision of people with low vision using three different models of augmented reality devices while performing simulated daily living activities.

FELLOW: Sarika Gopalakrishnan, PhD; <https://research.envisionus.com/Team/Sarika-Gopalakrishnan,-PhD,-FAAO>

EXTERNAL MENTOR: Robert Massof, PhD; Johns Hopkins University

SPONSOR: Dave Sharma Family