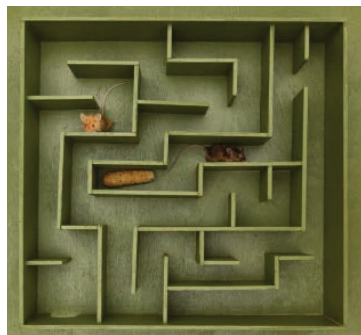


FisherFocus

Summer 2026

NEWS FROM THE SHERRILYN AND KEN FISHER CENTER FOR ENVIRONMENTAL INFECTIOUS DISEASES



Seeking to Understand the Brain Fog of Long-COVID

Why do certain infections produce persisting symptoms despite all signs of active infection having cleared? A Johns Hopkins scientific team is seeking answers following a Fisher Center multi-year award.

Dedicated to the clinical research of environmental pathogens which improves the diagnosis and treatment of these infections.

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Long COVID is defined as persistent symptoms, including neurological, respiratory, cardiac, and/or psychological symptoms, of at least three months duration following SARS-CoV-2 infection without alternative explanations. Cognitive impairments, ranging from brain fog and memory loss to anxiety and depression, are one of the top reported complaints in addition to fatigue. Moreover, long COVID symptoms are more common among women than men.

Initially, long COVID was seen in up to 30% of individuals, especially those who were hospitalized and suffered severe infection in the early pandemic years. While the rate of new cases of long COVID has declined over time, the Centers for Disease Control estimates that 5-6% of Americans continue to suffer the effects of long COVID. Estimates based on national data suggest that 24 million adults were at risk for adverse impacts of long COVID, placing the annual loss of productivity at \$218 billion due to long COVID among working-age adults. Additional costs are placed on healthcare systems, whereby those suffering from long COVID have a 50% greater rate of healthcare spending than those without this condition.

Some infections can leave people with long-lasting "brain fog" because the infections set off changes in how the brain and body communicate, even after the infection itself is gone. While the basis for these changes is not clearly defined, observations during an infection show that the immune system releases chemicals that can affect the brain, making its support cells more sensitive and slower to return to normal. Theories suggest that in some people, the barrier that usually protects the brain

becomes a bit leaky, allowing these immune signals to linger. Small blood vessels that supply the brain may also work less efficiently, so the brain does not get energy as smoothly as before, especially during mental effort. In some people, the immune system may remain activated or target the body's own tissues. Together, these effects can slow thinking, reduce concentration, and cause mental fatigue - much like



Andrea Cox, MD, PhD
Co-Principal Investigator
Professor, Johns Hopkins
School of Medicine
Division of Infectious Disease



Sabra Klein, PhD
Co-Principal Investigator
Professor, Johns Hopkins
Bloomberg School of Public Health
Molecular Microbiology and
Immunology (MMI)

a computer running in low-power mode - and the effects can persist for months or longer, even though standard scans and tests often appear to be normal. Dr. Andrea Cox and her team, in collaboration with other labs, have demonstrated immune cell changes in people with brain fog and memory impairment that increase in frequency over time in long COVID.

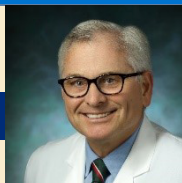
Dr. Cox and Dr. Sabra Klein, as co-principal investigators of the 2025

three-year Fisher Center Impact Award, propose to study further the immunobiology of neurologic long COVID. Since direct human studies are not feasible, Dr. Klein has developed a novel mouse model of mild-to-moderate disease following SARS-CoV-2 infection, the virus that causes COVID-19. This model has shown that after the acute phase of SARS-CoV-2 infection, female mice experience greater long-term memory deficits than males during the post-recovery phase of infection. Female mice also have more evidence of increased inflammation following SARS-CoV-2 infection than males.

Dr. Klein's mouse model is novel because it allows scientists to study long-lasting brain fog-like effects after infection without an ongoing virus in the brain, closely mirroring what happens in many people. Instead of focusing only on severe illness or direct brain infection, her model shows how a normal immune response, especially differences between males and females, can quietly reshape brain immune cells and behavior over time. This makes it especially powerful for understanding why thinking and memory problems can persist after people "recover," and why these problems affect some individuals more than others, even when standard tests show no apparent brain damage.

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MESSAGE FROM THE DIRECTOR



This July, my wife Karen and I welcomed our first grandchild. Thinking back more than 30 years to when our first child was born, I remember feeling equal parts excitement and fear. I was still building a career, still proving myself, still trying to understand where I fit - both as a father and as an academic physician. Today, the anticipation feels different. There is still excitement, but also perspective, and perhaps most importantly, the clarity that comes with time. My priorities are sharper, and what matters is more obvious.

In many ways, this new chapter keeps me grounded when I work with medical students, residents, fellows, and early-career investigators. Being around younger physicians and scientists keeps one honest in expressing uncertainty. It forces me to explain how I think about a problem. It reminds me of what it felt like to confront uncertainty for the first time. So much in medicine and science lands in gray rather than black and white. It underscores the responsibility we have to pass along not only knowledge, but judgment.

When I read medical journals thirty or forty years ago, I focused on how new findings might apply to my patients. Today, I still do that, but I also ask broader questions: how does this discovery apply to communities, to disease prevention, and potentially to the next emerging infectious disease?

The Fisher Center exists to support that continuum - from discovery to application, from trainee to independent investigator, from idea to impact. Early-career faculty often have bold ideas that are not yet fully developed or fine-tuned for traditional funding mechanisms. Trainees need mentorship - not only in research methods, but also in how to think carefully and critically, how to communicate clearly, and how to care for patients in ways that respect and acknowledge the human condition. Yet at the same time, we should embrace skepticism of the status quo.

A famous example is that for decades, physicians believed that stomach ulcers were caused primarily by stress or diet. It was not until Barry Marshall pursued the idea that a bacterium, *Helicobacter pylori*, was the culprit, transforming a chronic condition into one that could be cured with antibiotics.

Leadership in academic medicine is less about directing others and more about mentoring them - helping younger colleagues avoid predictable pitfalls, encouraging them, providing encouragement

when their grant applications are not funded, reminding them that setbacks are part of the process, and celebrating their successes when their work changes the standards of practice or prevents illness. Watching a trainee mature into a confident clinician or thoughtful scientist is one of the most meaningful parts of this stage of my career.

Infectious diseases remain a field defined by uncertainty, especially amid rising rates of antimicrobial resistance, emerging pathogens, and the ongoing challenge of keeping children and adults healthy and safe. Medicine evolves rapidly, not infrequently bewildering, as I can attest to the early days of the pandemic. Facts can change, and wisdom accumulates slowly. Our responsibility as clinicians and researchers at Johns Hopkins is to ensure that the next generation inherits both knowledge and wisdom.

Now that I have become a grandfather, I am reminded that legacy is not built solely on titles or publications, rather it is built through the people we teach, mentor, and support. The Fisher Center's mission is ultimately about investing in ideas, in discovery, and, most importantly, in the individuals who will carry this work forward. I am grateful for the support that enables the Center to continue mentoring, innovating, and preparing the next generation to build their own legacies.

Paul Auwaerter, MD



BreakOut

Fisher Center Welcomes Dr. Lucy Li



The Fisher Center is excited to welcome Dr. Lucy Li as Assistant Professor in the Fisher Center Discovery Program.

Lucy attended graduate and medical school at Washington University in St. Louis. There, she discovered an interest in fungal pathogens and researched virulence factors in the environmental *Cryptococcus neoformans*,

a cause of pneumonia and meningitis. Arriving in Baltimore for an internal medicine residency at the Johns Hopkins Hospital, after three years, Lucy joined the Division of Infectious Diseases for fellowship training in 2023. Her research interests include the environmental and community drivers of invasive fungal infections, with the aim of identifying predictors to improve early diagnosis of these often-devastating infections in patients with compromised immune systems. As part of the Sherrilyn and Ken Fisher Center and the Transplant Oncology Group within the Division of Infectious Diseases, Lucy will utilize her talents to enhance patient care for individuals who are immunosuppressed and therefore particularly vulnerable to fungal diseases.

Dr. Nicole Baumgarth Joins the Fisher Center Scientific Advisory Board



The Fisher Center is delighted that Dr. Nicole Baumgarth has agreed to lend her expertise by joining the Fisher Center Scientific Advisory Board.

Dr. Baumgarth is the Peetz Family Professor and Bloomberg Distinguished Professor of Immunology and Infectious Diseases in the Johns Hopkins Bloomberg School of Public Health. She holds a primary appointment in the Department

of Molecular Microbiology and Immunology at the Bloomberg School and a joint appointment in the School of Medicine's Department of Molecular and Comparative Pathobiology. Dr. Baumgarth is also the inaugural director of the Lyme and Tickborne Diseases Research and Education Institute, where her research focuses on understanding tick biology, epidemiology, microbiology, and host immune defense.

With a doctorate in veterinary medicine and as a new member of the Fisher Center Scientific Advisory Board, Dr. Baumgarth will offer knowledge and experience in animal research, antibodies, host-pathogen interaction, host response, immunology and immunity, which will significantly supplement the varied expertise of the existing board members.

The Fisher Center welcomes Dr. Nicole Baumgarth and looks forward to her valuable input and mentorship.



Pictured (left to right): Drs. Olivia Kates, David Thomas, Amita Gupta, Paul Auwaerter and Shmuel Shoham

Dr. Paul Auwaerter Steps Down as Clinical Director of Infectious Diseases

After over 19 years of service as Clinical Director of Infectious Diseases at Johns Hopkins University School of Medicine, on October 1, 2025, Dr. Paul Auwaerter turned over the reins to Dr. John Baddley, Professor of Medicine in Clinical Excellence.

During his tenure as Clinical Director, among his many impactful contributions to improved patient care, Dr. Auwaerter has grown outpatient services exponentially through the founding of the Rockland Practice, pioneering innovations in inpatient service through recruitment of expert clinicians to augment traditional teaching services, developing the Outpatient Parenteral Antimicrobial Therapy (OPAT) Program, expanding Transplant and Oncology Infectious Diseases (TOID) services, and leading the Johns Hopkins POC-IT Guides that feature Hopkins' Antibiotic and HIV Guides, which are now a standard resource used globally by healthcare professionals. So many faculty members of Johns Hopkins have received clinical training from Dr. Auwaerter, whose rapport and compassion is a model.

His mentorship and leadership truly transformed the clinical approaches of the Division of Infectious Diseases.

Over 80 friends, family, and colleagues gathered on September 29 to celebrate Paul Auwaerter's service as Clinical Director of the Division of Infectious Diseases. Several faculty members, including Drs. David Thomas, Amita Gupta, Shmuel Shoham, and Olivia Kates gave heartfelt speeches and shared humorous anecdotes about their experiences with Paul over the past 19 years. Dr. Amita Gupta further graced the audience with her musical talents by singing a rap song, "Bug Busters," that she composed in Dr. Auwaerter's honor.

As Dr. Auwaerter has stepped down from his role as Clinical Director, he plans to continue his research

efforts, including Lyme disease vaccine efforts, leading the Fisher Center Discovery Program and providing evidence-based clinical decision-making for healthcare professionals. When asked if he is retiring, Dr. Auwaerter remarked, "As my hair greyed, I get that question frequently, but I enjoy seeing patients and teaching clinical medicine and infectious disease to the next generation. I don't consider it work. If I retire, I'd have to work at being retired."

The Division and the Fisher Center Advisory Board offer deep gratitude for his commitment to service, applause for his achievements, and best wishes as he applies his talents more closely to his practice, clinical scholarship, and leadership of the Fisher Center for Environmental Infectious Diseases.

RECENT EVENTS

SPONSORED BY THE FISHER CENTER

We're Going to Need More Seats!

Fisher Center Research Topics Meetings Surge in Interest

Established in 2013, the Fisher Center Research Topics Meetings have been an opportunity for FCDP awardees to present their research projects to a broad audience of students, trainees, faculty and professors from all schools, departments and divisions of Johns Hopkins University. Presenters are offered feedback at the beginning of their projects, with group discussion, as well as potential opportunities for collaboration with meeting attendees who are performing similar research. When Diane Lanham started as Fisher Center Research Manager in 2022, average total attendance was 22 guests, with 7 attending in-person and the remainder attending virtually.

Since then, total attendance has soared by 109% to an average of 46 attendees per meeting. While in-person attendance in 2022 and 2023 was likely negatively affected by the COVID-19 pandemic, it has increased by 246% from 7 in 2022 to an average of 27 attendees per meeting thus far in 2025. The Fisher Center Research Topics Meetings are the only research forums in the entire Division of Infectious Diseases. The increased popularity is due to increased outreach efforts and promotion, as well as the debut of our Fisher Center special “swap” events where individuals often visit the Fisher Center for the first time and express interest in attending future events.

Fisher Center Honors 2025 FCDP Awardees at Annual Reception



In keeping with annual tradition, the Fisher Center welcomed and honored the Fisher Center Discovery Program Awardees from 2025 with a reception held this past September. Attendees included Fisher Center Scientific Advisory Board Members, past and present FCDP Awardees and guests, who received abstracts of all 2025 awardee projects. Guests took advantage of the opportunity to meet other awardees and discuss common interests, troubleshoot challenges in their research proposals, and form potential collaborations. They also met Fisher Center Scientific Advisory Board members to discuss their projects.

Pictured (Left): 2025 Awardees: Shahbaz Khan, Andrew Karaba, Lucy Li, Ruth Howe, Gyanu Lamichhane. Not pictured: Andrea Cox, Sabra Klein, Nate Permpalung, Thomas Hart, David Dowdy, Seth Judson.

(Below) Guests enjoyed a variety of hors d'oeuvres. Pictured: Anya O'Neal, Andrew Karaba, David Dowdy, Andrea Cox, Ruth Howe, Paul Auwaerter, Lucy Li, Gyanu Lamichhane, Johan Melendez, Annie Antar and Amita Gupta



Beakers, Books and Binders: Inaugural Fisher Center “Swap” Debuts

The Fisher Center turns leftovers into lifelines.

On July 22, 2025, the Fisher Center sponsored the Inaugural Johns Hopkins Lab Supply Swap, co-sponsored by the Johns Hopkins Office of Climate and Sustainability. The brainchild of Diane Lanham, Fisher Center Research Manager, she was inspired to take action after witnessing dumpsters of usable laboratory supplies and equipment discarded as trash. Until her efforts this summer, there was no program at Johns Hopkins to reuse, recycle, or donate excess laboratory supplies, resulting in wasted money and increased landfill waste.



Left Photo: Lab staff from the School of Medicine collect biospecimen processing supplies
Center Photo: Dr. Annie Antar and her lab team show off their “haul.”
Right Photo: Dr. Max Rosario, Laura Clark & other staff look for biospecimen collection supplies

The first pilot event, open to only 12 departments/divisions, attracted donations from 13 labs totaling over \$31,000 and saved 703.68 lbs. of waste from landfills. On the day of the Swap, lab supplies were picked up by 17 labs, saving \$22,125.77 and 458.66 lbs. of waste; remaining items were placed in storage to be offered at the next Swap in January 2026.

Of note, the University of Texas at Austin held two campus-wide Lab Supply Swap events for a total of ~\$30,000. We exceeded that amount with only one swap event and the participation of only a few JH Divisions and Departments.

Due to the overwhelming success of this pilot event, as well as the positive feedback from participants, we plan to continue this program, with the partnership of Johns Hopkins Office of Climate and Sustainability, and expand outreach to all departments and divisions within Johns Hopkins University School of Medicine and Johns Hopkins Bloomberg School of Public Health.



Photo: Faculty and staff from the Division of Infectious Diseases peruse available books

Continuing with the theme of reducing waste, and coinciding with the start of a new school year, the Fisher Center sponsored the inaugural Fisher Center Book Swap, co-sponsored by the DMV Women’s Book Club. This event provided the opportunity for booklovers to donate unwanted books while picking up new reads – all free of charge. Also led by Diane Lanham and co-hosted by Arynne Wilburn (Johns Hopkins Infectious Disease Research Coordinator and head of the DMV Woman Book Club), our first Book Swap resulted in over 300 donated books, weighing over 300 lbs. and appraised at over \$2,100.

Books not picked up at the event were consigned by a local bookseller, with all proceeds from sales donated to The John G. Bartlett Specialty Clinic Patient Assistance Fund. This fund provides support for uninsured or underinsured patients of Johns Hopkins Hospital’s Infectious Diseases. Due to the popularity of this event, now renamed “Books for Bartlett”, we hope to make it an

annual or semi-annual occurrence to raise funds for financially challenged patients in the Johns Hopkins Division of Infectious Diseases.

In our ongoing efforts to save resources and money and reduce waste, the success of the lab supply swap led to office supplies as the next target. This October, Diane Lanham led an office supply swap for employees and students at Johns Hopkins, allowing them to donate unneeded or unwanted office supplies and “shop the swap” for needed items. Participation in this event was overwhelming, with over \$13,100 worth of donated supplies weighing over 900 lbs. Items leftover after the event were either kept for new staff and faculty in the ID Division, donated to Johns Hopkins Hospital System, or donated to local area schools. In total, the inaugural Fisher Center swap events in 2025 have saved over \$46,300 and over 1900 lbs. of waste.



Left photo: School of Medicine staff look for printer cartridges
Center photo: Alexis Kington of Neuroimmunology shows off her “haul”
Right photo: Yana Li from Neuroscience made three trips to collect supplies

Seeking to Understand the Brain Fog of Long-COVID

continued from page 1

Dr. Klein also has mouse models that help assess the effects of genetic and hormonal differences between males and females on infection outcome. The causes of long COVID remain poorly defined, motivating the team to determine the drivers of neurological long COVID and its recovery from it, potentially providing novel strategies for treatment.

Together, Drs. Cox and Klein hope to gain further understanding of these post-infectious neurological changes and, with that understanding, begin to explore methods to reverse and heal this brain dysfunction.

Fisher Center Accolades

Diane Lanham, Fisher Center Manager, Wins Leadership Award



Since 2023, the Johns Hopkins School of Medicine Division of Infectious Diseases has given Staff Service Awards to recognize the contributions of exceptional staff serving across patient care, research, and core services. Four Awards are given in three categories (Performance Excellence, Quality, Safety, and Service Excellence, and Leadership) following nominations by faculty and staff supervisors.

The 2024 Leadership Award was given to Diane Lanham, Manager of the Fisher Center. Diane was recognized due to her dedication, as well as initiatives that demonstrated exceptional management capabilities, independence and providing guidance and mentorship to others, while fostering a healthy and improved work environment within the Division and the University.

The Fisher Center Wins a “Green Office” Sustainability Award

In an ongoing effort to promote sustainable and environmentally friendly practices, Diane Lanham (Fisher Center Manager) applied to the JH Office of Sustainability for “Green Office Certification.” Approval was granted upon meeting 18 metrics for the Sherrilyn and Ken Fisher Center for Environmental Infectious Diseases. The certification program creates a platform to recognize and support sustainability champions who engage colleagues and encourage departmental sustainability efforts that minimize environmental impacts throughout everyday workflow, and save money through financially responsible practices of reuse, recycling and reducing waste.



Fisher Center’s ongoing green initiatives include, offering recycling options, encouraging energy conservation, reducing single-use disposable items, promoting JH’s sustainable programs, and reducing overall waste. Last May, the Fisher Center was honored at the Green Office Certification Awards ceremony, sponsored by the Johns Hopkins Office of Sustainability.



Awards and Honors

New Fisher Center Faculty, Dr. Lucy Li, Receives NIH NIAID K-Award



Dr. Lucy Li has received an NIH-funded K08 Award (\$183,000 in direct costs annually for 5 years). The K08 Award is a highly competitive research training and career development award widely recognized as the cornerstone for early-career medical scientists with demonstrated aptitude to develop into independent investigators. Dr. Li's project seeks to understand which risk factors lead to environmental fungal infection, especially in people with weakened immune systems.

Invasive fungal infections (IFIs) are a significant public health concern, affecting 13 million people worldwide each year and leading to over 1.5 million deaths. Local factors are thought to be crucial risk factors for IFIs, particularly for molds and endemic fungi such as *Aspergillus*. However, our ability to identify individuals at risk for, or infected with, IFIs is limited by our incomplete understanding of how specific factors influence the distribution and spectrum of disease. This proposal is designed to elucidate the impact of spatial and social determinants on IFI risks and consequences, and thereby improve clinical care for IFIs.

Details of her project can be found at: <https://reporter.nih.gov/project-details/11214695>



Dr. Werbel Receives Career Development Award

Dr. William Werbel, assistant professor in the Division of Infectious Diseases, and 2025 Fisher Center Discovery Co-Investigator Awardee, received the 2025 American Society of Transplantation (AST) Clinical Science Career Development Award in August during the 2025 World Transplant Congress. This honor is given to an early-career investigator with demonstrated contributions to the field and a bright future in transplant medicine. Service to AST is also taken into consideration.



Dr. Elisa Ignatius Receives ATIP Award from Johns Hopkins

Congratulations to Dr. Elisa Ignatius, a prior Fisher Center Awardee, on receiving a \$50,000 Accelerated Translational Incubator Pilot Program (ATIP) award from the JHU Institute for Clinical and Translational Research (ICTR).

The ATIP provides funds to initiate, implement, and complete early- or mid-stage projects intended to advance the development of new therapies, devices, or approaches to clinical research. ATIP employs a milestone-driven approach that requires collaboration among the clinicians and scientists necessary to complete projects. This program anticipates that funded projects will, within the strict 12-month funding period, produce tangible results that will lead to the next stage of development.

Dr. Ignatius' project builds on her extensive work studying non-tubercular mycobacterial infections that afflict more than 86,000 people in the US annually, particularly older women, for reasons that are not well understood. These challenging infections require three to five antibiotics administered simultaneously to achieve a successful cure; however, many of these medications pose a risk for significant toxicities. One risk includes cardiac arrhythmias precipitated by the treatment, which require repeated electrocardiograms (ECGs). She seeks to reduce the burden of obtaining these serial electrocardiograms by providing personal ECG devices that can be used at home and monitored remotely.

Fisher Center Research Awards Help Investigators Gain Preliminary Data That Then Leads to Additional Research Funding

Dr. Thomas Hart Wins NIH/NIAID K Award



Dr. Hart received a \$250,000 two-year grant from the National Institutes of Health (NIH) for his project entitled “Epidermal Growth Factor (EGF) as an environmental cue of *B. burgdorferi* gene regulation.” Dr. Hart’s project aims to advance understanding of how host-pathogen interactions influence the course of Lyme disease.

To successfully transmit from a tick and infect a host, Lyme disease spirochetes (*Borrelia burgdorferi*) must sense surrounding changes as they leave the tick midgut and enter the mammalian host, where they begin feeding on blood.

EGF is a naturally occurring protein that stimulates cell growth, proliferation, and differentiation, playing a key role in wound healing and tissue repair. Dr. Hart and his team have recently discovered that EGF induces specific gene expression that plays a role in facilitating the successful transmission of bacteria to mammals such as rodents, deer and of course, humans.

Dr. Hart is a 2025 Fisher Center Discovery Awardee for *Exploring Borrelia burgdorferi* host sensing as a Lyme disease vaccine target. Together, these two awards should provide important insights into the mechanisms of Lyme disease transmission.

“Lyme disease, caused by the bacterium *Borrelia burgdorferi* (Bb), is the most common tick-borne illness in the U.S., affecting nearly 500,000 people annually. Despite its prevalence, no human vaccine is available, and current treatments don’t always prevent serious complications. To fight this disease, we need to better understand how Bb infect the human host after transmission from a tick. The work proposed here aims to lay the foundation for an innovative new vaccine, targeting a potential mechanism of host adaptation by Bb.

—Thomas Hart, PhD

“This K22 award will provide me with the time and structure needed to train and develop professionally so that I may meet my career goal of becoming an independent investigator focusing on host-pathogen interactions shaping vector-borne disease pathogenesis.

—Thomas Hart, PhD



FCDP Awardees Receive 2025 Willowcroft Foundation Grants

The Willowcroft Foundation, established by Lewis Parker, provides grant funds to advance research from Johns Hopkins faculty focusing on basic biomedical, disease-oriented, or translational infectious disease or oncology research. The Foundation awarded five grants in 2025.



Dr. Andrew Karaba received a \$50,000 one-year grant for his project, entitled, The Impact of immunosuppression on RSV Antibody Generation and Function After Vaccination. Dr. Karaba's project aims to quantify the antibody response to respiratory syncytial virus (RSV) vaccines in a national cohort of immunosuppressed patients and healthy patients and determine how immunosuppressive medications and vaccine type impact this response. RSV in immunosuppressed patients can lead to severe respiratory infections, including hospitalization and ICU care. Dr. Karaba's team hypothesizes that immunosuppressed patients have weaker antibody responses to RSV vaccines than healthy patients, and that an adjuvanted vaccine can help induce stronger responses. Dr. Karaba is a 2025 Fisher Center Discovery Awardee for Assessing Immunity against Highly Pathogenic Avian Influenza in Immunocompromised Persons.



Dr. Jamie Spangler received a \$50,000 one-year grant for her project titled Targeted inhibition of cancer metastasis using engineered bispecific antibodies. Dr. Spangler's project aims to engineer and optimize new bispecific antibodies (BsAbs) that specifically target cancer metastasis, and to characterize their therapeutic utility in cellular and animal models of disease. Dr. Spangler's study will particularly focus on highly aggressive cancers for which current clinical therapies are insufficient, namely triple-negative breast cancer (TNBC) and pancreatic ductal adenocarcinoma (PDAC). Dr. Spangler was the Co-Investigator Awardee of a 2021 FCDP award for a Point-of-need platform for population-scale monitoring of SARS-CoV-2 neutralizing antibodies (PI: Dr. Netz Arroyo).

The Fisher Center congratulates Dr. Karaba and Dr. Spangler on their achievements!

FCDP Awardees Receive Johns Hopkins Discovery Awards

Established in 2015, the Johns Hopkins Discovery Awards fund innovative, collaborative research or creative projects. These grant awards provide funds to cross-divisional teams, comprising faculty and/or non-faculty members from at least two schools or university affiliates, who are poised to make essential discoveries or creative works. Johns Hopkins Discovery awards are intended to spark collaboration between faculty/staff, foster novel interactions within JHU, and explore new areas of collaborative work, with the expectation that these awards will spark new, synergistic interactions between investigators across the institution and lead to work of the highest quality and impact.

In 2025, out of 274 proposals, 38 Johns Hopkins University Discovery Awards were given to interdisciplinary faculty teams of 142 individuals. Three of the winners were past or present Fisher Center Awardees. All teams received \$150,000 JHU Discovery Awards for a 12-month project.



Dr. Jamie Spangler



Dr. Yuka Manabe



Dr. Kimia Ghobadi



Dr. Malcolm Brock

Dr. Jamie Spangler (2021 FCDP Awardee) and Dr. Yuka Manabe (FCDP Scientific Advisory Board) are co-investigators of a project seeking to *develop a rapid and low-cost test to diagnose malaria* (Principal Investigator: Dr. Jane Carlton).

Dr. Kimia Ghobadi (2023 FCDP Awardee) is a co-investigator who will study *how smart room monitoring using artificial intelligence and 3-D simulation can decrease falls in healthcare settings*. (Principal Investigator: Dr. Erik Hoyer).

Dr. Malcolm Brock (2024 FCIA Awardee) is the Principal Investigator of a project looking to expand knowledge of predisposing risks for autonomic dysfunction caused by chemotherapeutic agents.

FCDP Awardee Biomedical Engineer Dr. Jamie Spangler Receives President's Frontier Award

Dr. Jamie Spangler, Associate Professor in the Biomedical Engineering and Chemical and Biomolecular Engineering Departments, was delighted to receive \$300,000 in research funding for her groundbreaking work in molecular immunoengineering.

When Dr. Jamie Spangler walked into the Johns Hopkins University Board of Trustees meeting on December 11, 2025, she thought she was just there to give a presentation on her work with the Johns Hopkins Center for Translational ImmunoEngineering (JH-TIE). Instead, she walked out with a President's Frontier Award, \$300,000 in research funding, and a glass of sparkling cider.

"I actually pride myself on the fact that I'm literally never surprised by anything. I would say this is easily the first time that I've been surprised in so many ways." — Dr. Jamie Spangler

Dr. Spangler is not just an internationally recognized leader in molecular immunoengineering—she helped define the field. Her groundbreaking work has created novel approaches to engineering cytokines, antibodies, and other proteins, allowing for greater control of the body's immune responses. This includes engineering molecules and protein platforms that do not exist in nature, leading to new therapeutic strategies that would otherwise be impossible. Dr. Spangler's innovations have a wide range of potential uses, including cancer immunotherapy, tissue regeneration, and treating infectious and autoimmune diseases, a testament to the potential for research to save lives.

With this in mind, Johns Hopkins leaders—with a consulting panel of experts from universities at Penn, Princeton, Stanford, and Yale in enthusiastic agreement—saw Dr. Spangler as the obvious choice to receive one of the university's top honors: the President's Frontier Award, an annual prize given to a faculty member making transformative contributions to their field.

After Dr. Spangler finished her presentation, Johns Hopkins University President Ron Daniels called her back up to the podium. At that moment, over 30 of her coworkers, students, mentors, and family members filed into the room.



Dr. Jamie Spangler receives a toast to her receipt of the President's Frontier Award
(Photo credit: Will Kirk, Johns Hopkins University)

"Jamie, the cross-cutting interdisciplinary methods that you pioneered at the intersection of structural biophysics, biomolecular engineering, and translational immunology have already accomplished so much. Your work represents not just a single breakthrough, but an inflection point in the way we understand and treat complex diseases. One that stands to give us the ability to rewire the human immune system, to resist and even reverse disease processes. ... [Your innovations] are not only defining the field of molecular immunoengineering with your colleagues, but they are truly helping us chart new pathways to Hopkins' founding goal: bringing the benefits of discovery to the world."

— Dr. Ron Daniels

"It is so fabulous to know someone like you who embodies what I think are the best attributes of Hopkins, and that long arc of history to get to today is wonderful. ... Immunology is one of the key future pieces of this institution and of science more broadly ... and you are right at the forefront with your colleagues in doing it. I can't actually wait to see what is next."

— Dr. Ted DeWeese, dean of the medical faculty and CEO of Johns Hopkins Medicine



Dr. Spangler was utterly stunned by the award—and by the arrival of her mother, who had avoided any suspicion by switching her phone's location to a spare device in Chicago.

The President's Frontier Award was launched in 2015 thanks to a generous gift from trustee Louis J. Forster, Arts & Sciences Class of 1982, SAIS '83. Joining the ranks of the 10 previous winners, Dr. Spangler has more than 70 publications and 13 patents under her belt, as well as industry uptake of her lab's technologies. Her innovations have also influenced real-world pharmaceutical research and development, with one of her autoimmune patents licensed for drug development. Beyond her scientific contributions, Dr. Spangler is also a respected teacher, mentor, and leader who regularly gives back to the Baltimore community through STEM education programs. After the surprise, several of Dr. Spangler's peers gave toasts in her honor, including Dr. Jennifer Elisseeff, Head of Johns Hopkins University Department of Chemical and Biomolecular Engineering.

When asked, Dr. Spangler said she will use the funding to continue her lab's immunoengineering research. She aims to propel her lab into the next frontier of immune engineering by developing next-generation therapeutic modalities—including antibody–drug conjugates, engineered immune cell therapies, programmable delivery systems, and protein-based tools for tissue regeneration. Her long-term vision is to build a transformative platform for designing immune-modulating molecules that redefine the therapeutic landscape and open new avenues for treating human disease.

“This is such a critical time to be supporting science and to be supporting translation, especially in the protein engineering field. I really, really hope to be able to use this money to further the translation of our discoveries and bring those to people, bring those to society, and just bring those to the world.”

— Dr. Jamie Spangler

“It really brings me back to the beginning, ... scheming of how I was going to get Jamie here at Hopkins. It was tough competition. And so, I was there in the lobby telling her how Hopkins is the best place to be and you're going to love it and all the great collaborations and its great, great researchers. And still to this day, when I travel, people will say, ‘You got Jamie. We had an offer for her!’”

— Dr. Jennifer Elisseeff

Dr. Spangler was the Co-Investigator Awardee of a 2021 FCDP award for a Point-of-need platform for population-scale monitoring of SARS-CoV-2 neutralizing antibodies (PI: Dr. Netz Arroyo), work that contributed to the President's Frontier Award.

The Fisher Center congratulates Dr. Spangler on her outstanding and well-deserved achievement!

Adapted from: Johns Hopkins University Hub, Dec. 12, 2025, by Claire Goudreau

Prior Fisher Center Awardee Honored with Lifetime Achievement Award



In October, Dr. Cynthia Sears, Professor of Medicine and Oncology, was honored by the Infectious Diseases Society of America (IDSA) with the Alexander Fleming Award for Lifetime Achievement, which is widely considered the most prestigious award given by the professional society of 13,000 members.

Dr. Sears launched her career studying diarrheal diseases, and her interest in the gut microbiome led to discoveries that have helped illuminate how gut microbial communities influence immune responses that promote tumor development. In a landmark study, Dr. Sears characterized the immune response to *Bacteroides fragilis*, a bacterium that thrives in the low-oxygen environment of the colon. Her study found that specific immune responses guided by T helper cells induce inflammation that promotes tumor growth, and that this process is common across several cancer types.

In subsequent studies of this process, Dr. Sears made novel and essential contributions to the field by identifying an association between colorectal cancer and immune responses to several types of gut bacteria, including the environmental pathogen *Clostridioides difficile*. This foundational work in understanding the microbiome's role in cancer is critical for identifying biomarkers that can forecast cancer risk and can lead to the development of therapeutic strategies that are tailored to an individual's unique microbial makeup for more personalized treatment approaches.

Dr. Sears' work has been published in high-impact-factor journals, including *Science*, *Nature*, *Nature Medicine*, *Nature Cancer*, *Proceedings of the National Academy of Sciences*, *Annals of Internal Medicine*, *Cancer Journal*, and the *Journal of Infectious Diseases*.

Perhaps her most significant imprint on the field is in her role as a dedicated mentor for dozens of junior faculty, postdoctoral fellows, and students, where she sparks curiosity and enthusiasm and inspires early-career researchers in their pursuit of rewarding and successful careers. Dr. Sears is an elected member of the American Association for the Advancement of Science and an inducted member of the American Association of Physicians.

In 2013, Dr. Sears was one of the first recipients of a Fisher Center Award, intended for high-risk efforts, to examine whether antibiotic use alters the normal bacterial flora sufficiently to predispose the body toward tumor formation. The research yielded important insights that informed her research efforts over the next decade.

Adapted from: Johns Hopkins Medicine Matters, October 23, 2025, by Kelsey Bennett

FCDP Awardees Receive Large GlaxoSmithKline Award

Congratulations to FCDP Awardees on receiving a 3.5-year, \$5,840,174 grant award from GlaxoSmithKline for their project studying respiratory syncytial virus infection.



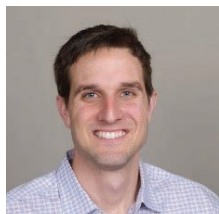
Pictured left to right: Andrew Karaba, MD; Andrea Cox, MD; William Werbel, MD

Respiratory syncytial virus (RSV) is a significant cause of morbidity and mortality in infants, older adults, and patients with weakened immune systems. The focus of this study will be to determine whether individuals with weakened immune systems may benefit from receiving two doses of a new RSV vaccine rather than the currently FDA-approved single dose. The research builds on the extensive and sophisticated analytics available within the Division of Infectious Diseases. Dr. Karaba's lab will measure antibody levels using partially automated neutralization assays. Beyond typical antibody measurements, the team will plumb a deeper understanding of the immune response coordination set in motion by the vaccine. Dr. Justin Bailey has developed tools to study key RSV F antigenic sites and B cell responses, while Dr. Cox is using advanced flow cytometry to assess T cell function and metabolism. Dr. Werbel is leading a multidimensional analysis to determine which demographic, clinical, and immunological factors are associated with the best responses.

The results of this study could inform future vaccine strategies for these vulnerable populations.

Moving On Up!

Dr. Seth Judson Joins UCLA as Assistant Professor



Upon leaving his position as a post-doctoral fellow in the Division of Infectious Diseases at Johns Hopkins in Spring 2025, Dr. Seth Judson joined the University of California, Los Angeles, as an Assistant Professor-in-Residence in the Division of Infectious Diseases. He currently leads an interdisciplinary research group focused on translating the eco-epidemiology of emerging zoonotic and vector-borne viruses into actionable tools for decision-

makers. Dr. Judson completed an infectious disease fellowship and a Master of Health Science in clinical investigation at Johns Hopkins University and an internal medicine residency at the University of Washington. He received his MD at UCLA and a Bachelor of Science in Biology with Honors and Distinction at Stanford University. He is a 2025 Fisher Center award recipient and has already prepared two papers examining risk factors for West Nile Virus.

Dr. Netz Arroyo Joins UNC Chapel Hill as Associate Professor



Upon leaving his position as Associate Professor of Pharmacology and Molecular Sciences at Johns Hopkins in July 2025, Dr. Netz Arroyo joined the University of North Carolina at Chapel Hill as an Associate Professor in the Department of Chemistry. He has established the Netz Lab, where his research focuses on engineering bioaffinity receptors for continuous sensing, the design and fabrication of biosensor platforms, continuous real-time therapeutic monitoring in vivo, glucometer-based immunoassays for disease screening, and

interfacial electrochemistry applied to biosensing. Dr. Arroyo's work allows an individual to be able to monitor key molecules in their body as they go about their daily life, empowering informed decisions about their diet, fitness, medical treatments, and overall health: Designing and fabricating implantable biosensors, creating metabolism-responsive drug delivery systems, and developing personalized diagnostic platforms for cutting-edge health care.

Dr. Arroyo was the Awardee of a 2021 FCDP award for a Point-of-need platform for population-scale monitoring of SARS-CoV-2 neutralizing antibodies. The Fisher Center congratulates Dr. Arroyo on his new position and wishes him the best of luck in his future endeavors!

Dr. Sanjay Jain Joins Cincinnati Children's as Director of Infectious Diseases



Sanjay Jain, Vice Chair of Basic & Translational Research, departs Johns Hopkins

After more than 20 years, Sanjay Jain, vice chair for basic and translational research in the Department of Pediatrics, departed Johns Hopkins on Nov. 30 to assume the role of Director of the Division of Infectious Diseases at Cincinnati Children's Hospital Medical

Center. He is now also the founding and co-director of Cincinnati Children's Center for Molecular Imaging and Precision Medicine, continuing to shape the future of pediatric infectious disease care at the national and international levels.

Dr. Jain was a clinical fellow in pediatric infectious diseases at Johns Hopkins Children's Center before joining its faculty in 2005. He was named a professor of pediatrics, radiology and radiological science and international health in 2017. He also served as the director of the Center for Infection and Inflammation Imaging Research and was a member of the Center for Tuberculosis Research.

He is internationally recognized for pioneering work at the intersection of infectious diseases, imaging and translational research, which he will continue at the Cincinnati Children's. Dr. Jain's contributions have advanced the understanding of tuberculosis, central nervous system infections and pediatric infectious diseases, and have led to new treatment strategies for patients. His work has been continuously funded by the National Institutes of Health (NIH). Notably, he is the recipient of the prestigious NIH Director's New Innovator Award and the NIH Director's Transformative Research Award. Dr. Jain is also co-Principal Investigator of the 2024 Fisher Center Impact Award entitled A Genetic Vulnerability due to Ion Channelopathies is Required for Neuroinflammation to cause Post-COVID Cognitive Impairment/Brain Fog

Dr. Jain's research is internationally recognized for developing and applying advanced imaging technologies to study high-containment pathogens, including Mycobacterium tuberculosis and SARS-CoV-2. His lab has pioneered novel radiopharmaceutical tracers that are now progressing into early-phase human studies. At Cincinnati Children's, Dr. Jain will lead the Division of Infectious Diseases with a focus on fostering cross-disciplinary research, enhancing translational opportunities and accelerating discovery.

The Fisher Center wishes Dr. Jain the very best as he begins this exciting new chapter!

Adapted from: <https://scienceblog.cincinnatichildrens.org/sanjay-jain-appointed-director-division-of-infectious-diseases/>

A MOMENT OF SCIENCE

DEVELOPING RAPID DIAGNOSTIC TESTS FOR INFECTIOUS DISEASES



Yuka Manabe, director of the Center for Innovative Diagnostics for Infectious Diseases, aims to improve global health with point-of-care tests that give rapid results.

If you've ever taken an at-home diagnostic test for COVID-19, you can partially credit the progress of point-of-care technology to the Johns Hopkins University Center for Innovative Diagnostics for Infectious Diseases (CIDID). This center, primarily funded by federal agencies such as the National Institutes of Health, the Centers for Disease Control and Prevention and the Department of Defense, is dedicated to accelerating the development and review of rapid diagnostic tests that could be used worldwide for a wide range of infectious diseases, to improve global public health.

In addition to developing tests for COVID-19, center staff have played a role in creating rapid diagnostic tests for gonorrhea, chlamydia, and syphilis, and have participated in the clinical study for the first point-of-care diagnostic test for molecular hepatitis C diagnosis, approved by the Food and Drug Administration in June 2024.

Leading these efforts is physician Yuka Manabe, a professor of medicine in the Department of Medicine Division of Infectious Diseases, who is passionate about bringing tests to consumers worldwide. During the COVID-19 pandemic, she and her colleagues were involved in the national effort to bring rapid diagnostic tests for SARS-CoV-2 to market. Now, they're helping companies retool or expand these testing platforms for other diseases.

Not only does the center develop its own diagnostic tests (Dr. Manabe says one of its tuberculosis tests with high sensitivity costs less than \$2), but it also consults with external companies and evaluates the tests they have developed. The top considerations on its checklist are accuracy, cost and speed; as studies have shown that most people are willing to wait only 20–30 minutes for a test result. The test also has to be easy to use; companies must show that untrained people can follow the self-testing instructions correctly. Additionally, all test materials must be nontoxic; environmentally friendly components are preferred.

Currently, the team is either working on or evaluating rapid diagnostics for conditions such as sexually transmitted infections, acute febrile illness, sepsis, respiratory infections and tuberculosis. The Center also funds companies to accelerate diagnostic development in these areas of interest and supports faculty test-development efforts at Johns Hopkins.

"It's almost like a dating service," Dr. Manabe says. "We try to link up people who have technology that would apply to a disease that we know has a clinical need. We're agnostic to all of the diagnostic technologies we see. We want all of them to cross the finish line because in a capitalist market, the more competition there is, the lower the price goes for the consumer. And that's good for everyone."

From: Johns Hopkins <https://www.hopkinsmedicine.org/news/publications/dome/january-february-2025>, 02/01/2025, by Karen Blum

FCDP AWARDEE DEVELOPS PROGRAM FOR INTRAVENOUS THERAPY AT HOME TO IMPROVE TREATMENT OF LONG-TERM INFECTIONS

Using a multidisciplinary team of health professionals, the Johns Hopkins Outpatient Parenteral Antimicrobial Therapy Service, established by Dr. Paul Auwaerter and currently led by Dr. Sara Keller, has significantly lowered hospital readmissions.



Dr. Keller, a previous FCDP awardee, remembers the concern she felt when patients receiving long-term home intravenous antibiotic therapy for infections after heart valve surgeries and joint replacements were readmitted due to communication slip-ups.

"In the hospital, some of these patients got daily blood draws and had very frequent monitoring of the levels of drug in their body. At home, some of their weekly labs could be missed because they were not being received by the appropriate teams in this timely fashion."
– Sara Keller, MD

She believes that without the structure and safety procedures of the inpatient world, treatment outside the hospital requires a multidisciplinary team of healthcare professionals to ensure patients are getting the appropriate care. Designed to meet this goal, the Outpatient Parenteral [Intravenous] Antimicrobial Therapy (OPAT) Service was launched at Johns Hopkins in 2021 under the leadership of Paul Auwaerter. Since then, with Dr. Keller assuming a leadership role, the program has treated more than 3,700 patients, mainly from East Baltimore, and, in three years, the OPAT team has lowered hospital readmission rates from nearly 30% to 18%.



The program is a collaborative effort among The Johns Hopkins Hospital, Johns Hopkins Bayview Medical Center, the Department of Medicine's Division of Infectious Diseases and Johns Hopkins Care at Home. The program's success lies in evidence-based practices founded in a decade of Dr. Keller's research on health care quality improvement, which has mainly been supported by more than \$25 million in grants from the Centers for Disease Control and Prevention and the Agency for Healthcare Research and Quality at the U.S. Department of Health and Human Services.

"In addition to physicians, our team members include nurses and infectious disease-trained pharmacists who can help with things like therapeutic drug monitoring and adjusting drug levels," Dr. Keller says. "We also have members of the team who are medical office coordinators and pharmacy technicians." Such supervised collaboration allows patients to recover safely at home or in a skilled nursing facility while avoiding the costs of a more extended hospitalization and the risk of acquiring additional infections.

Dr. Keller has spent years studying ways to improve this process. After completing her residency in internal medicine at Johns Hopkins, she completed fellowships in infectious diseases at the University of Pennsylvania and at the Penn Center for Healthcare Improvement & Patient Safety. When she returned to Johns Hopkins, she started building a team of physicians, nurses and pharmacists who could work together in post-discharge follow-up care, monitoring medication toxicity and adjusting therapy if needed.

"Our patients have many different comorbidities - everything from heart failure, necessitating ventricular assist devices, to very poorly controlled diabetes. About 10% also have a history of substance use disorders, and we have collaborations with addiction medicine about how best to manage them," explains Dr. Keller.

Patients discharged to skilled nursing facilities also require attentive care coordination, points out Paul Auwaerter, "We don't really have privileges at these facilities, yet care is being rendered there by in-house physicians who don't have our expertise as infectious disease physicians. Fundamental to the success of OPAT is excellent communication among clinicians, nurses and pharmacists, regardless of the treatment location."

Dr. Auwaerter says the service has also reduced some physicians' workload by providing highly skilled nurses and pharmacists who can quickly review test results and respond to calls. "The improved communication and the ability to help supervise treatment on all levels really complement one another for the patient."

As part of OPAT's ongoing quality improvement efforts, Dr. Keller is researching how to prevent central line-associated bloodstream infections in patients needing antimicrobial therapy. Additionally, she is evaluating the experience of patients who are discharged and have to continue complicated regimens of oral antibiotics outside of the hospital setting. "We're looking into how to incorporate those people into the program, as well as continuing to work with addiction medicine and case management to build additional supports for our patients," she says.

Adapted From: Johns Hopkins Medicine News, on 4/17/2025, by Linell Smith

RISK FACTORS IDENTIFIED FOR POOR OUTCOMES AFTER WEST NILE VIRUS INFECTION



Older age, chronic kidney disease, and cerebrovascular disease are linked to increased risk for paralysis and death after West Nile virus infection.

West Nile virus (WNV) is the leading mosquito-borne infection in the US, causing West Nile fever or West Nile neuroinvasive disease (WNND) with substantial morbidity and mortality. Older age, certain

(624 females [50%]; mean age, 55 +/-17 years) and 1127 (47%) who were consistent with WNND (691 males [61%]; mean age, 59 +/-17 years). Risk factors associated with WNND included increased age, male sex, chronic kidney disease, cerebrovascular disease, hematologic malignant neoplasms, immune suppressant treatment, hypertension, alcohol-related disorders, and multiple sclerosis. Significant risk factors associated with mortality were WNND (for 30-day mortality), increased age, chronic kidney disease and cerebrovascular disease.

In this cohort study of patients with WNV infection, multiple comorbidities were identified as risk factors associated with WNND, and patients who developed WNND had increased mortality risk. Targeted prevention strategies and countermeasures for high-risk individuals may substantially reduce morbidity and mortality.

"Our findings reveal that an aging population in the US, with a rising prevalence of comorbidities and immunosuppression, may be at particularly high risk for severe West Nile disease, and these populations could benefit from targeted preventative measures and future vaccines, if they become available," explains Dr. Judson.

Drs. Judson and Dowdy are recipients of a 2025 Fisher Center Discovery Award.

The full publication of their study can be found at: <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2842586>

Adapted from: HealthDay News (Dec. 16, 2025) by Lori Solomon

comorbidities, and immunosuppression increase risk for severe West Nile disease and mortality, according to a study published online Dec. 10 in JAMA Network Open.

Seth D. Judson, M.D., from University of California, Los Angeles (formerly of Johns Hopkins University), and David Dowdy, M.D., Ph.D., from Johns Hopkins University, assessed risk factors associated with West Nile neuroinvasive disease (WNND) and mortality among adults with West Nile virus (WNV) infection using deidentified electronic medical record data from the TriNetX research network (January 2013 to December 2024). This retrospective cohort study included patients from 65 health care organizations from across the US. Data were accessed from March 28 to April 30, 2025. Primary outcomes were WNND development and all-cause mortality (at 30 days, 90 days, and overall). These data are essential additions to clinical knowledge, as a national assessment of the effects of West Nile virus has not been conducted in recent years.

The researchers identified 3,064 patients with a diagnosis of WNV infection. Those with demographic data included 1249 (53%) who were consistent with West Nile fever

Fisher Center Welcomes New School of Medicine Scholarship Awardees

The Arthur Lawrence Fisher, MD. Scholarship Fund was established in 2010 by Ken and Sherri Fisher in memory of Arthur Lawrence Fisher, School of Medicine alumnus from the class of 1900, and Ken Fisher's grandfather. This award supports up to five Fisher Scholars each year. The Fisher Center offers a warm welcome and congratulations to the new 2025-2026 Arthur Lawrence Fisher, MD. Scholarship recipients:



Jordan Benderoth
Class of 2027



Benjamin Eke
Class of 2028



Michael Gold
Class of 2026



Viviane Liao
Class of 2026

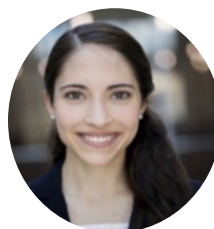


Sophia Zhao
Class of 2028

FISHER CENTER 2025 DEPARTMENT OF MEDICINE PROFESSOR FELLOWSHIP AWARDEE

Through the generous gift from Sherrilyn and Ken Fisher, the Department of Medicine Professor Fellowship endowment supports the ACGME-accredited postdoctoral Johns Hopkins Infectious Diseases Fellowship program. This funding provides the foundation for support the clinical and research training of a clinical fellow whose clinical and research interests most closely align with the mission of environmental infectious diseases. The Fisher Center extends a warm welcome and congratulations to the 2025 Department of Medicine Professor Fellowship Awardee:

Dr. Jillian Peters



Dr. Jillian Peters is a third-year fellow in the Division of Infectious Diseases at the Johns Hopkins University School of Medicine. She graduated from Harvard University with a degree in neurobiology, while also pursuing her interest in bioethics. She then attended medical school at The Warren Alpert Medical School of Brown University, where she also studied global health. She completed an internal medicine residency at Johns Hopkins and is excited to continue her training in Infectious Diseases at Hopkins.

Dr. Peters is passionate about emerging and zoonotic pathogens, particularly viral hemorrhagic fevers, both in the United States and internationally. Understanding the epidemiology of these pathogens can help target public health resources to at-risk populations, improving detection and preventing deadly outbreaks.

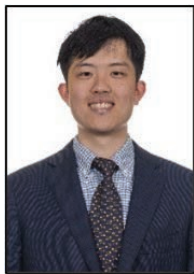
Dr. Peters' research focuses on epidemiologic and translational research on emerging viral pathogens, particularly filoviruses such as Ebola. She seeks to define the seroprevalence, characterize the longitudinal persistence of antibodies against these viruses, and elucidate risk factors that may help predict who is at risk of exposure. She further plans to compare results from an innovative assay that measures antibodies with those from standard testing to determine the test performance characteristics of this new assay. By doing so, she hopes to improve the specificity and usability of this novel assay that has the potential to revolutionize emerging pathogen surveillance.

Fisher Center 2025 Fisher Fund for Summer Infectious Disease Research Awardees

Thanks to the generosity of Sherrilyn and Ken Fisher, the inaugural Fisher Fund for Summer Infectious Disease Research was established in 2024. The current 2025 Awardees were all from the Johns Hopkins University School of Medicine, Class of 2028, having finished their first year of medical school and were able to spend the summer conducting infectious disease research. The Fisher Center extends congratulations to the 2025 Fisher Fund Summer Infectious Disease Research Award recipients:



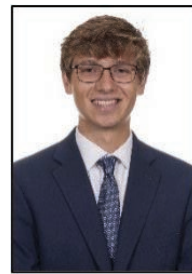
Arnav Khera, BS



Eric Mao, BA



Ellie Rose Mattoon



Omar Montalvo, BS



Anahita Nimbalkar, BS



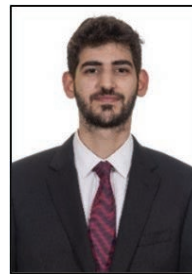
Amaya Razmi



Jonathan Shiferaw, BS



Grace Suh, BS



Tarek Zieneldien Eid, BS

Fisher Center Discovery Program 2025 Awardees

The Fisher Center Discovery Program (FCDP) awards grants to Johns Hopkins faculty to facilitate clinical or translational research on environmental infectious diseases, post-infectious conditions, and antimicrobial resistance. The mission of FCDP is four-fold: 1) to provide resources for pilot or clinical studies that may lack traditional funding mechanisms, 2) to provide expertise, resources, and mentorship opportunities for pilot or clinical studies that may lack traditional funding mechanisms, 3) to promote novel, cross-disciplinary collaborative clinical research among schools of the Johns Hopkins University and with non-Johns Hopkins University research partners, and 4) to facilitate the careers of early career researchers by providing funds for projects joined with more senior investigator(s) capable of providing hands-on training and mentoring in the science of clinical investigation.

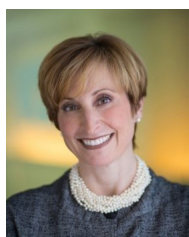
Fisher Center Discovery Program 2025 Awardees

The Fisher Center congratulates the following research team on their 2025 FCIA award:



Project Title: Immunobiology of neurologic long COVID

Co-Principal Investigator: Andrea Cox, MD, PhD
Professor
Johns Hopkins School of Medicine
Division of Infectious Disease



Co-Principal Investigator: Sabra Klein, PhD
Professor
Johns Hopkins Bloomberg School of Public Health
Molecular Microbiology and Immunology (MMI)

Co-Investigators: Andrew Pekosz, PhD
Jennifer Liu, PhD
Mattlyn Young, BS

The response to the new request for applications for the FCDA resulted in such an exceptional number of quality applications that the FCDP Scientific Review Board offered partial funding for two FCDAs (in addition to the four that are typically funded), made possible by the joint support of Sherrilyn and Ken Fisher and other donors.

The Fisher Center congratulates the following research teams on their 2025 FCDA awards:



Project Title: Repurposing Acyltransferase Inhibitors for Toxoplasma Drug Development

Principal Investigator: Shahbaz Khan, PhD
Research Associate
Johns Hopkins Bloomberg School of Public Health
Molecular Microbiology and Immunology (MMI)

Co-Investigators: Isabelle Coppens, BVSc, PhD
Susan Michaelis, PhD
Theresa A. Shapiro, MD, PhD
Shweta Pillai, BS



Project Title: Impact of neighborhood-level environmental and social determinants of health on invasive fungal infection risk

Award Applicant: Lucy Li, MD, PhD
Assistant Professor*
Johns Hopkins School of Medicine
Division of Infectious Disease
**was Post-doctoral Fellow at the time of application*



Principal Investigator: Nitipong "Nate" Permpalung, MD, MPH
Associate Professor
Johns Hopkins School of Medicine
Division of Infectious Disease

Co-Investigators: Christine Durand, MD
Christopher Chute, MD
Frank Curriero, PhD



Project Title: Predicting West Nile virus risk in Maryland using machine learning and local data

Award Applicant: Seth Judson, MD, MHS
Post-doctoral Fellow*
Johns Hopkins School of Medicine
Division of Infectious Disease
**was Post-doctoral Fellow at the time of application; has since moved to UCLA as Assistant Professor-in-Residence*



Principal Investigator: David Dowdy, MD, PhD
Professor
Johns Hopkins Bloomberg School of Public Health
Epidemiology



Project Title: Exploring *Borrelia burgdorferi* host sensing as a Lyme disease vaccine target

Principal Investigator: Thomas M. Hart, PhD
Assistant Professor
Johns Hopkins Bloomberg School of Public Health
Molecular Microbiology and Immunology

Co-Investigators: Jiani Wang, MS



Project Title: Assessing Immunity against Highly Pathogenic Avian Influenza in Immunocompromised Persons

Principal Investigator: Andrew Karaba, MD, PhD
Assistant Professor
Johns Hopkins School of Medicine
Division of Infectious Disease

Co-Investigators: William A. Werbel, MD, PhD
Andrew Pekosz, PHD
Moreno Rodrigues, PhD
Shreya Arondekar, MS



Project Title: A search for synergistic drug combinations to treat environmentally acquired non-tuberculous mycobacterial diseases

Award Applicant: Ruth Howe, MD
Post-doctoral Fellow
Johns Hopkins School of Medicine
Division of Infectious Disease

Principal Investigator: Gyanu Lamichhane, PhD
Associate Professor
Johns Hopkins School of Medicine
Division of Infectious Disease

Co-Investigators: Binayak Rimal, PhD
Chandra Panthi, MLT



10 Years Later: Fisher Center Discovery Program Awardees

Where are they now?

One of the goals of the FCDP mission is to facilitate the careers of early-career researchers (faculty or trainees) by providing funding for projects in collaboration with a more senior investigator who can provide hands-on training and mentoring in the science of clinical investigation. Due, at least in part, to the funding provided by the Fisher Center and the knowledge and experience gained through their FCDP research project, the following FCDP Awardees have advanced their careers through 1) graduation from their education program, 2) academic promotion, or 3) relocation to another institution for more challenging opportunities or advanced positions.

Ten years after completing their FCDP projects, here is an update on our 2013 awardees. The Fisher Center extends its congratulations and best wishes for the future endeavors of all FCDP awardees:



Charles Haines, MD, PhD, was a postdoctoral fellow (2010-2013) when he served as an applicant awardee of the 2013 FCDA for “Does Disruption of Host Microbiota Modify Colorectal Cancer Risk?” (PI: Cynthia Sears).

Dr. Haines is currently Co-Founder & President and the leader of development programs for IDBiologics, Inc., in Nashville, TN. The mission of IDBiologics is to discover and develop human monoclonal antibodies (mAbs) for the prevention and treatment of infectious diseases. Dr. Haines has secured five USG grants totaling \$38 million. He was formerly an Engagement Manager consultant for McKinsey and Company and a Field Operations Officer for the World Health Organization (WHO).



Christopher Heaney, PhD, MS, was an Assistant Professor in Environmental Health and Engineering at the Johns Hopkins Bloomberg School of Public Health when he served as Principal Investigator for the 2013 FCDA, titled “Evolutionary dynamics of multidrug-resistant *Staphylococcus aureus* (MDRSA),

a zoonotic pathogen of clinical significance, among industrial food animal production workers.” Dr. Heaney is currently an Associate Professor with additional joint appointments in Epidemiology and International Health, Division of Global Disease Epidemiology and Control. Most recently, among many achievements, he and his team developed a saliva-based test that accurately detects SARS-CoV-2 antibodies from small saliva samples.



Megan Reller, MD, PhD, MPH, was an Assistant Professor in pathology, medicine and international health at Johns Hopkins University School of Medicine when she served as Principal Investigator for the 2013 FCDA of Detection of Unrecognized Tick-borne

Febrile illness in the Upper Midwest and Northeast US. Since completing her project, she received a PhD in clinical investigation at Johns Hopkins University. In 2016, Dr. Reller joined Duke University School of Medicine. She currently serves as Associate Professor of Medicine and Associate Research Professor of Global Health. Her current projects include research on severe viral lower respiratory tract infections, rickettsial infections and dengue infection diagnosis.



Aaron Milstone, MD, MHS, was an Assistant Professor in Medicine, Pediatric Infectious Diseases at Johns Hopkins University School of Medicine when he served as Principal Investigator for the 2013 FCDA of Development and Clinical

Evaluation of Laboratory Methods to Identify Reduced Antiseptic Susceptibility in Organisms Causing Healthcare-Associated Infections. Dr. Milstone has now been promoted to Professor in Pediatrics at Johns Hopkins University School of Medicine with joint appointments in Epidemiology and Health Policy and Management at the Johns Hopkins Bloomberg School of Public Health. As a pediatric epidemiologist, Dr. Milstone specializes in the treatment of infectious diseases in children. He serves as an associate hospital epidemiologist at The Johns Hopkins Hospital and the pediatric lead for infection prevention for the Johns Hopkins Health System. His research interests focus on antibiotic resistance and the prevention of healthcare-associated infections. He led numerous clinical trials, including the Pediatric SCRUB Trial and the TREAT PARENTS Trial, testing strategies to avoid the transmission of organisms and healthcare-associated infections. He is the principal investigator of the Bright STAR Collaborative, guiding hospitals nationwide to reduce over-testing to reduce antibiotic use and resistance. Dr. Milstone is a fellow of the American Academy of Pediatrics, the Infectious Diseases Society of America, the Pediatric Infectious Diseases Society, and the Society for Healthcare Epidemiology of America. His many other professional honors include the Pediatric Infectious Diseases Society's 2014 Young Investigator Award, the inaugural 2013 Caroline B. Hall Clinical Innovation Award, and the Society for Healthcare Epidemiology of America 2018 Mentor Scholar Award, and the 2023 Johns Hopkins Medicine Armstrong Award for Excellence in Quality & Safety.



Sarah Sutter, MD, MSc, was a research fellow (2011-2013) and served as an applicant awardee of the 2013 FCDA for *Clostridium difficile*: Impact of colonization versus transmission on development of infection (PI: Trish Perl). Dr. Sutter

is currently a Full Professor in Epidemiology in Infectious Diseases at University Hospital Basel, Switzerland, Division of Infectious Diseases & Hospital Epidemiology. In 2014, Dr. Sutter became a private lecturer at the University of Basel, before receiving a tenure-track professorship in infection epidemiology in 2018. In February 2023, Dr. Sutter became a full clinical professor at the University of Basel's Faculty of Medicine. From 2015 to 2019, she served as the head physician of the consultant service at the Clinic for Infectious Diseases and Hospital Hygiene at the University Hospital Basel, Switzerland, before becoming Head of the Department of Hospital Hygiene and Deputy Chief Physician, where she served from 2020 – 2023. From April 2023 to May 2024, she was Chief Physician ad interim and Head of the Department of Hospital Hygiene at the University Hospital Basel. Since June 2024, Dr. Sutter has been Chief Physician and heads the Department of Infection Prevention and Control. From 2020, she headed the Expert Group on Infection, Prevention and Control of the Swiss National Covid-19 Science Task Force. After the Task Force was disbanded in March 2022, she joined the Scientific Advisory Board.



Trish Perl, MD, MSc, was a professor in the Division of Infectious Diseases at Johns Hopkins School of Medicine when she served as Principal Investigator for the 2013 Fisher Center Discovery Award for *Clostridium difficile*: Impact of colonization versus transmission on development of infection.

Since 2016, Dr. Perl has served as a Professor in the Department of Internal Medicine at the University of Texas Southwestern Medical Center. She is the H. Ben and Isabelle T. Decherd Chair in Internal Medicine, in Honor of Henry M. Winans, Sr., MD. Dr. Perl specializes in general infectious diseases and is an internationally recognized expert in infections acquired in health care settings, antimicrobial-resistant infections, respiratory infections, and endocarditis.



+ RECENT PUBLICATIONS

Bloch EM, Jacobs JW, Vannier E, Wormser GP, Gelfand JA, Sikand VK, Heller HM, Sood SK, Kirkman L, Johnson JE, Marcos LA, Lemieux JE, Smith RP, Woolley AE, Perry WA, Polgreen PM, Beekmann SE, Sullivan DJ, **Auwaerter PG**, Krause PJ. Guidance on the management of asymptomatic blood donors who test positive for Babesia. Clin Infect Dis. 2025 Dec 26:ciaf721. doi: 10.1093/cid/ciaf721. Epub ahead of print

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