First Quarter 2024

Highlighting
Wistar People

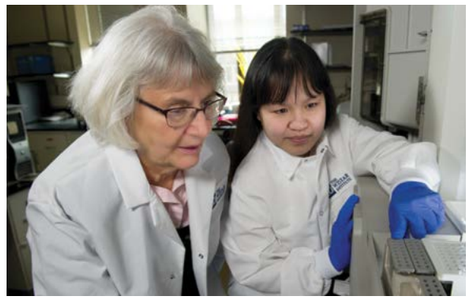
Understanding
Wistar Science

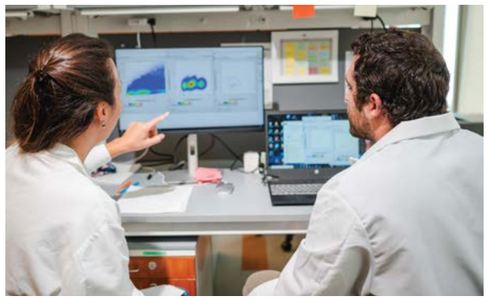
Celebrating
Wistar Successes

FOCUS

THE WISTAR INSTITUTE

Cover Photo:
Marie Stoltz is a research assistant in Wistar's Imaging Facility. Marie originally pursued a master's degree in fine art but made a career pivot to study biomedical science. After completing Wistar's Biomedical Technician Training Program, she went on to graduate from Wistar's Biomedical Research Technician Apprenticeship. At Wistar, she's gained valuable research experience and combines her love of art and science to train scientists on the advanced scientific microscopes and technology needed for their complex cancer and infectious disease research.





On the *Power of* Basic Research

Thinking back to COVID's early days, what has improved since then that might help us tackle future pandemics a bit faster?

I think we've proven that we have an infrastructure in drug companies that can go from discovery to delivery on a worldwide basis, in a matter of months. That's extraordinary. People really didn't think it was possible. Vaccine development is one of the slower processes that you can imagine – it often takes decades to bring a drug to market – but this took just one year.

What enables that kind of development to happen so quickly?

Funding – billions of dollars of funding. The president at the time launched a program called Operation Warp Speed that was funded by billions of dollars in taxpayer money. That enabled Moderna and Pfizer-BioNTech to create mRNA-based vaccines that were just an idea before COVID. Now we have a product that is estimated to have saved about 20 million lives worldwide. We were facing a completely new virus, and that public funding enabled a vaccine—which turned out to be a lifesaver—to be developed incredibly quickly.

Does Wistar's size and structure make it more nimble than other research organizations?

Without a doubt. Thinking back to the beginning of the pandemic, there was a moment early in 2020 when we didn't have anything. We didn't have vaccines, and we didn't have antivirals. Testing was nonexistent, and we didn't even know how best to treat these patients that would show up at the emergency room in acute respiratory failure. So, without all of that in place, by the end of 2020 Wistar had three experimental vaccine platforms for COVID. In the end, we had one that completed a phase one safety and feasibility study, but it didn't progress further because manufacturers like Pfizer-BioNTech and Moderna were far more advanced. But nonetheless, that strong collaborative culture and nimbleness that Wistar embodies enabled quick advancements in our labs.

You first trained as a physician, and then you moved into research. What attracted you to this line of work?

I truly enjoyed being in the clinic and seeing patients. My specialty was a hospital-based specialty in hematology, so that would have been my path. But there is one element – one component of my personality – that was ultimately a determinant: curiosity. I was naturally very curious. And I also remember the words of my clinical mentor. He once said, 'as a physician, you can save one life but as a scientist, you can save a million'. And to this day, I am very comfortable with the choice I made. I'm passionate about what I do and about asking new questions and pursuing that curiosity.

As a researcher and a CEO, you straddle two worlds: you pursue research, but you also run a major biomedical research organization. There's an advocacy and a political element to the work that you do, which is very different. What advice would you give scientists who aspire to also lead biomedical research organizations?

The only thing I would say to a younger version of myself is that it's all part of the same continuum. Stay true to your values, work hard, and contribute. Embrace the unexpected, connect the dots, and don't be disappointed when things don't seem to work. There is usually a far more complex, fascinatingly more complex biology behind the scenes that is to be discovered. And to advance the science, to make that contribution, there are lots of other tools that come into play. The advocacy, the fundraising, the ability to communicate clearly and effectively may not seem part of the lab, but they are. They are all part of the same continuum. That's the way I think about it.

If you're in Harrisburg, and someone asks you, 'Why is basic research important?' what would your answer be?

Basic research is the only ticket for innovation, and the only way in which we can advance. Not everyone may agree, especially in today's highly politicized, highly polarized climate. Sometimes I get a response like, 'Oh, that's fine, but the research should be in a drug company.' No. I disagree. Research should be accountable to and funded by public money. It should be scrutinized and accessible to everyone, not just driven by market considerations. That's why it must be a publicly funded process. Because in essence, it belongs to all of us, everybody that pays taxes. We all benefit.

Is the level of independence in places like Wistar the key to its innovation?

We don't have academic departments or the traditional structure of a university or college. We don't operate through layers and layers of bureaucracy. We've created a culture that I'm particularly proud of, where we're all the same. We all contribute. Nobody is 'special' because we're *all* 'special'. And that creates a community where we all respect our differences. We all respect that sense of independence, but we're all part of a whole, and we want to feel part of that whole. I think that smaller organizations like Wistar can achieve that type of sentiment.

Bold Science // Global Impact – The Campaign for Wistar

Wistar's global reputation and impact reflect a unique combination of strengths: a nimble organization that values collaboration above competition, where impact prevails over bureaucracy.

A once-in-a-century pandemic has shown the world that scientific freedom, agility and cooperation can rechart the course of human health when given ample capacity and investment. Our bold action now will propel long-lasting improvements to health and the life sciences through our biomedical research and educational initiatives.

Rooted in The Wistar Institute's strategic plan, the *Bold Science // Global Impact* Campaign for Wistar will enable a transformative investment to bolster and propel key new initiatives across our three foundational pillars:

BIOMEDICAL RESEARCH

Following the science and cultivating curiosity to find answers and identify solutions for today's most pressing scientific problems; our bold objectives include:

- Expand and ensure evergreen scientific talent.
- Ensure access to the most advanced technologies and research capabilities.
- Sustain and advance our focus on cancer, immunology and infectious diseases to develop the medicines of tomorrow, new life-saving vaccines and next-generation immunotherapeutics.

EDUCATION & TRAINING

Building a pipeline of talent through outreach, mentorship, and an investment in bright young minds; our bold objectives include:

- Secure sustainable funding for Wistar's core education and workforce development programs.
- Expand the continuum of Wistar educational programs to create a diverse, inclusive life sciences talent pipeline.

COLLABORATION

Taking a team science approach—locally and globally—that advances basic research discoveries to lifesaving clinical therapies; our bold objectives include:

- Broaden Wistar connections to clinicians, patients and specimens.
- Leverage internal award mechanisms and expand the Wistar Science Discovery Fund endowment to advance and accelerate Wistar discoveries into clinical trials with external collaborators.

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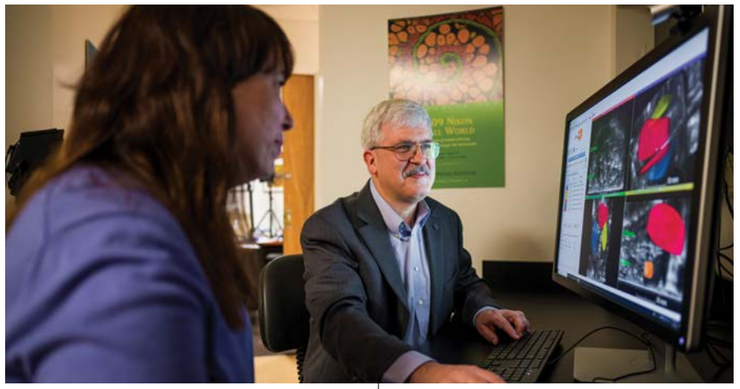
"With Wistar science we can fulfill both a dream and a promise. Where discovery solves big problems, knowledge improves lives and innovation creates new futures — this is our moment."

— Dario C. Altieri, M.D.
President and CEO, The Wistar Institute

Bold Achievements

With more than $52 million raised to date, the *Bold Science // Global Impact* Campaign for Wistar is already having a transformational impact on the Institute. Below are some of the bold achievements made possible through Campaign support thus far.

- Foundation of a new Center for Advanced Therapeutics devoted to the custom design and development of tailored next-generation immunotherapy-based medicines.
- Funding of a Pandemic Preparedness Program for emerging threats.
- Expansion of Cancer Center funding.



- Five newly created, endowed professorships in Cancer Research, Vaccines & Immunology, and HIV & Infectious Diseases.
- Significant technology acquisitions in Microscopy, Mass Spectrometry, and Spatial Profiling.
- Endowment of the Biomedical Research Technician Apprenticeship Program.
- Expansion of core educational cohorts, including: Biomedical Technology Training Program, high school program, and college programs.
- Launch of new International Postdoctoral Fellowship.
- Equipment acquisitions for the state-of-the-art Training Laboratory.
- Establishment of new Principal Investigator Accelerator Awards to fund innovative, early-stage research projects.

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Bold Opportunities

We invite you to be among the visionary donors to the *Bold Science // Global Impact* Campaign for Wistar. Contributions will fuel our remaining Campaign priorities including:

Scientific Talent Fund
Caspar Wistar Fellowship renewal
Technology Access & Advancement Funds
Endowed Dean of Biomedical Studies
Education endowments
Global Studies Program
Biomedical Technology Training Program expansion
High school program expansion
International Postdoctoral Fellowship
Clinical Collaboration Fund
Wistar Science Discovery Fund endowment expansion

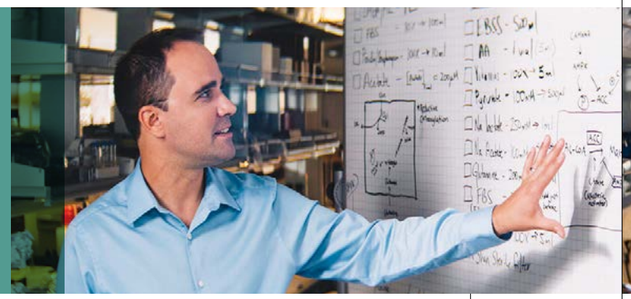
"I was fortunate to train in the laboratory of Dr. Walter Gerhard alongside amazing post-docs, all of whom went on to have successful scientific careers. Wistar is where I learned how to be a scientist, so it feels good to support the Bold Science// Global Impact Campaign for Wistar with a gift from my family."

— Paul A. Offit, M.D.
Director, Vaccine Education Center and Professor of Pediatrics, Children's Hospital of Philadelphia
Maurice R. Hilleman Professor of Vaccinology, Perelman School of Medicine, University of Pennsylvania

BOLD IDEAS CHANGE LIVES. BOLD SUPPORT MAKES IT POSSIBLE.

Deadly Breast Cancer *with No Known Causes*

Wistar scientists' research uncover the mysteries of triple-negative breast cancer



Triple-negative breast cancer is a menace. This dangerous variant of breast cancer (usually abbreviated as TNBC) is called "triple-negative" because it lacks any of the three main types of marker — progesterone receptors, estrogen receptors or *HER2* proteins — that are normally targeted in breast cancer treatment; the absence of those markers makes the cancer more difficult to treat, a problem exacerbated by TNBC's distinctive aggression.

But Zachary Schug, Ph.D. — an associate professor at The Wistar Institute and a member of the Molecular and Cellular Oncogenesis Program in the Ellen and Ronald Caplan Cancer Center — has shown how TNBC can be made vulnerable to the body's immune system. The research is early, but the paper "Acetate acts as a metabolic immunomodulator by bolstering T-cell effector function and potentiating antitumor immunity in breast cancer," from *Nature Cancer* shows how TNBC can be knocked down with a one-two punch.

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Schug's lab focuses on cancer metabolomics, the study of how our cells metabolize nutrients. Cancer cells need to metabolize nutrients just like normal cells, but as part of cancer's development, cell metabolism changes.

In particular, Schug's team has looked at how cancer metabolizes acetate — and how that acetate metabolism can be targeted. To target TNBC's acetate metabolism, Schug and his co-authors silenced the gene *ACSS2* (a gene that enables TNBC to metabolize acetate) with either a drug or with precision CRISPR-Cas9 gene editing, which can manually "turn off" genes.

Their one-two punch treatment works by first impairing the cancer's metabolism; that's the uppercut. Next, because the disrupted metabolism can't process the acetate, excess acetate forms around the cancer, which then alerts the immune system of something wrong. When the immune cells arrive on the scene, that's the knockout blow.

"Basically, we've proved that the immune system can take advantage of acetate that the tumor can't process. It kicks the cancer while it's down," said Schug. "In fact, the immune system does this so well that it remembers how to attack TNBC in the future — even if that tumor's *ACSS2* gene is still active."

The Schug lab is hopeful for the future of *ACSS2*-inhibition research after these promising initial results. Future directions include testing the treatment in combination with existing breast cancer therapies in hopes that the therapies will synergize. As they plan their next steps, Zach Schug and his team have but one goal: put triple-negative breast cancer down for the count.

"We are proud to see Dr. Schug's innovative research come to fruition in his impactful publication. This groundbreaking work moves the field of breast cancer research forward immensely and we look forward to seeing where it leads."

— Susanna Greer, Ph.D.

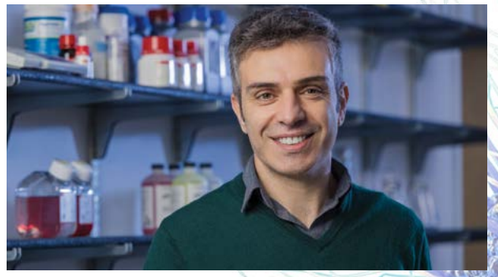
Chief Scientific Officer at the V Foundation for Cancer Research. Dr. Schug was awarded a V Scholar Grant in 2019.

New Principal Investigators *join The Wistar Institute*

The Wistar Institute is pleased to welcome three new Principal Investigators who came aboard in late 2023. We look forward to the collaborations their research will bring in this new year.

Computational biologist Avi Srivastava, Ph.D., joined Wistar as an assistant professor in the Ellen and Ronald Caplan Cancer Center. As part of the Gene Expression and Regulation Program, Dr. Srivastava brings an expertise in advanced computational methods that can be used to establish powerful predictive research tools in cancer biology.

Jesper Pallesen, MBA, Ph.D., joined Wistar as an assistant professor in the Vaccine & Immunotherapy Center. With a background in virology, immunobiology, and structural biology, Dr. Pallesen uses cryo-electron microscopy; computational modeling; and atomic-level analysis of protein structures to discern the underlying architecture of proteins and viruses — an understanding that is crucial to his goal of developing vaccine-design technology.



Filippo Veglia, Ph.D., joined Wistar as an assistant professor in the Ellen and Ronald Caplan Cancer Center. As part of the Immunology, Microenvironment and Metastasis Program, Dr. Veglia focuses his work on glioblastoma, the most lethal form of brain cancer, to understand how it functions at the foundational level in the hopes that he can uncover potential weaknesses that, once identified, could be targeted.

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Dr. Louise Showe *Reflects on 40 Years at Wistar*

Enter Dr. Louise Showe's office, and you'll see the evidence of a life lived at the intersection of family and science.

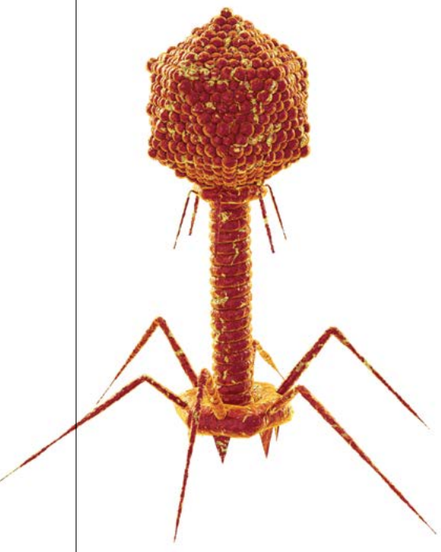
A photo taken by her son of a Florida panther hangs on her door. Drawings from her grandkids are tacked prominently above the credenza or sit nestled on her desk, perched amongst binders of research data and stacked manilla folders. The walls are adorned with abstract paintings and black-and-white photos. A pastel-colored vase sits on the windowsill. This is clearly an office that has developed a unique personality, one that has been curated by the woman who has inhabited it for the bulk of her career at Wistar.

A career, it turns out, that wasn't even part of her plan.

Dr. Showe arrived at Wistar somewhat by chance. | CONTINUED

"I was working at CHOP, and the phone rang. I picked it up this voice on the other end said, 'would you like a job?' And I said, 'I already have a job!'," she recalls, laughing.

And now, 40 years after that fateful call, Dr. Showe has finally decided the time is right to hang up her lab coat and retire from The Wistar Institute.



A skill in demand

In 1975, Dr. Louise Showe received her graduate degree in Biology from the University of Pennsylvania, before venturing to *Biozentrum der Universität Basel* in Basel, Switzerland for her postdoctoral work. While in Switzerland, she focused on researching bacteriophage – viruses that infect and replicate in bacteria cells – and brought that expertise back to Penn, and eventually to Children's Hospital of Philadelphia.

When she received the unsolicited job offer to join Wistar, she had been working as a researcher in the Hematology department at CHOP for only eight months. But that research background in bacteriophage development had given her the experience Wistar needed to clone and characterize genes including those rearranged genes involved in chromosomal translocations evident in a variety of cancers. "Wistar specifically sought me out because we had the tools to map these chromosomal rearrangements, but Wistar did not have the expertise needed to clone them," she explains. "At that time the only laboratories successfully doing genomic (gene) cloning were laboratories who knew how to manipulate bacteria and bacteriophage to make the reagents that you needed to perform that cloning."

It took time to convince her that Wistar was the ideal place for her research, and in the end, The Wistar Institute won. "The science at Wistar was so exciting and it fit in very well with my expertise and my goals," she recalls. "I also liked the size of Wistar, the administrative support and the ability to interface at all levels of the organization. It was an environment where I felt I could make an impact and change things."

So, in 1983, Dr. Showe left CHOP and joined Wistar, bringing with her a rigor that surprised some people.

"The first thing I did was check all the benches in the lab to make sure they were level," she explains. "They thought I was crazy, but when you're screening the libraries [of bacteriaphage], they're on these small agarose plates. If the benches aren't completely level, it can really mess up the screening process."

In fact, it wasn't long before Dr. Showe determined why Wistar had been having such trouble performing genetic cloning in the first place. "They had invested in automated washing systems to clean the glassware, but it left some sort of residue that affected the bacteria so that they couldn't successfully grow the bacteriophage. We had solved that problem while I was in the lab in Switzerland, so I had them immediately install a glass still to make the water for preparing the growth medium and start hand washing and sterilizing any glassware used to generate the cultures and extracts needed for the genomic cloning."

An evolving career

Since first joining the Institute, Showe has seen five directors and many changes at Wistar, but it's still clear she loves her science and the impact she's made here.

"I've always been really interested in developing technology," she admits, "and I get a lot of satisfaction from doing that and seeing other people use those technologies to solve other problems."

In fact, Showe founded the Genomics Core at Wistar in 1995 and formed the first bioinformatics group in her lab to help understand that genomics data.

Dr. Showe has spent the latter part of her career developing biomarkers to predict whether a lung nodule detected by CT scan is benign or malignant based on gene expression in a simple blood sample. Reflecting on the work, she says, "the lung cancer work was a big challenge and I think we've contributed to the expanding interests of using signals in peripheral blood to understand a variety of biomedical problems."

It's that kind of problem-solving that has kept Dr. Showe engaged in her work. "When I go to sleep at night, I'm still trying to work out problems in my head," she continues. "I'll ask myself, 'What am I missing?' So, quitting has been complicated – there are not many 83-year-olds in the Institute, and it is certainly not necessarily the best path to take."

That vast knowledge and institutional memory have been a benefit to younger colleagues, who see Dr. Showe as a mentor. "I meet frequently with many young researchers," she says. "I've always told them you have to pick your battles and never make it personal. You can speak your mind, but you have to decide what's really important and put your focus there."

When asked what she'll do once she's no longer in the lab, Dr. Showe chuckles and explains that her daughter has been asking that question for quite some time. *'Do you have a plan, Mom?'* Well, we're still thinking about what's next, but I don't think I'll be sitting around knitting."

The Wistar Institute's Flagship Biomedical Technician Training **Fuels the Life Science Workforce**

Celebrating 25 Years of Teaching Students How to Contribute to Biomedical Research

For 25 years, The Wistar Institute's Biomedical Technician Training (BTT) Program has been teaching students how to contribute to biomedical research. The one-of-a-kind, award-winning program is intentionally inclusive with cohorts for community college students as well as adults looking for new opportunities with careers in the life sciences. Wistar's BTT Program incorporates coursework in cell and molecular biology as well as hands-on laboratory training to teach students widely used techniques in biomedical research and the biotechnology industry. The BTT Program has been feeding the biomedical workforce for more than two decades.

At the beginning, the Program's journey was a way to fill a workforce need for lab technicians at Wistar. But it has grown to include many local biomedical academic and industry labs. And its success has informed additional programs in Wistar's **Hubert J.P. Schoemaker Education and Training Center.**

Dean of Biomedical Studies and Wistar force-of-nature Dr. Kristy Shuda McGuire oversees high-tech, industry-informed, rigorous courses and programs that translates into real-world, in-demand skills for the life science industry.

Wistar's education and training programs serve high school, undergraduate and graduate students as well as postdoctoral fellows.

"We are so excited to have the BTT Program entering its 25th year—a quarter century of training," said Dr. Kristy Shuda McGuire. "I want to thank our Dr. Bill Wunner, Wistar professor emeritus, for the foresight to develop this program and the dedication to keep it going for over 20 years. He taught me how to really support students participating in the Program."

"We carry on Bill's legacy by continuing to ensure we are teaching the right skills to meet the needs for the expanding life science workforce. We continually push ourselves to improve outcomes for both students and our regional economy. Our BTT Program graduates are sought after."

Dean Shuda McGuire knows better than anyone that many students who enter the BTT Program to become lab technicians decide they love this work so much, or it opens their eyes to things they never dreamed they could accomplish. They go on to four-year colleges and universities and even graduate or professional programs, having learned that a career in biomedical science is accessible.

The BTT Program's biggest change came during the COVID-19 Pandemic when Dr. Shuda McGuire faced what all academicians faced – a shutdown that pre-empted a new cohort from starting what was then a two-summer program. Her response? She wrote a grant to pilot an accelerated one-summer version of the BTT Program. And the results have continued to meet or exceed the program's strong historical outcomes.

With support from a National Science Foundation Advanced Technological Education grant, Dr. Shuda McGuire has expanded the BTT Program to more community colleges in the region. In addition to students from Community College of Philadelphia, the BTT Program now recruits students from Montgomery County Community College, Bucks County Community College, and Delaware County Community College (which also serves Chester County) in Pennsylvania, and Camden County College in New Jersey.

Under Dean Shuda McGuire's leadership, all Wistar's education and training programs have expanded and become even more relevant to the workforce needs of the life science sector.

The Wistar Institute & Cheyney Collaboration launched in 2021—a first between the nation's first biomedical research institute and the nation's first historically Black college or university (HBCU). Cheyney students learn laboratory skills during a semester-long Biomedical Research Methods course where they come to Wistar's Training Lab one day per week and then have the opportunity to complete

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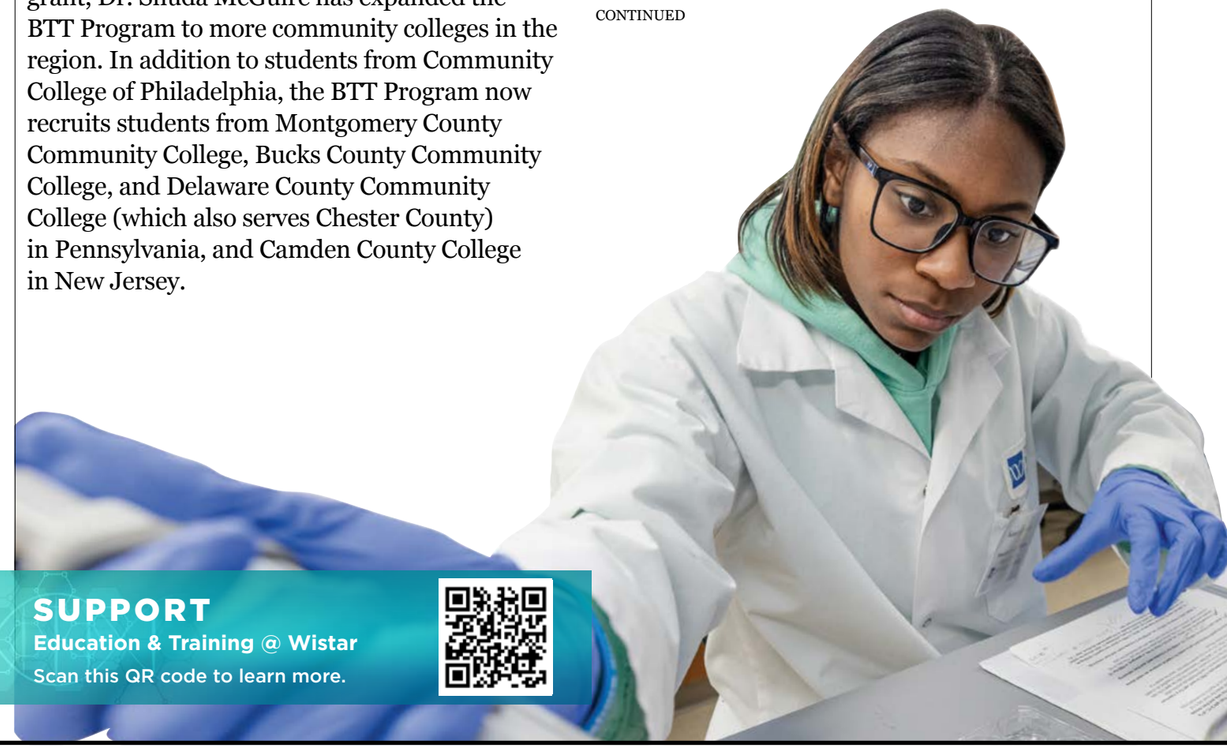

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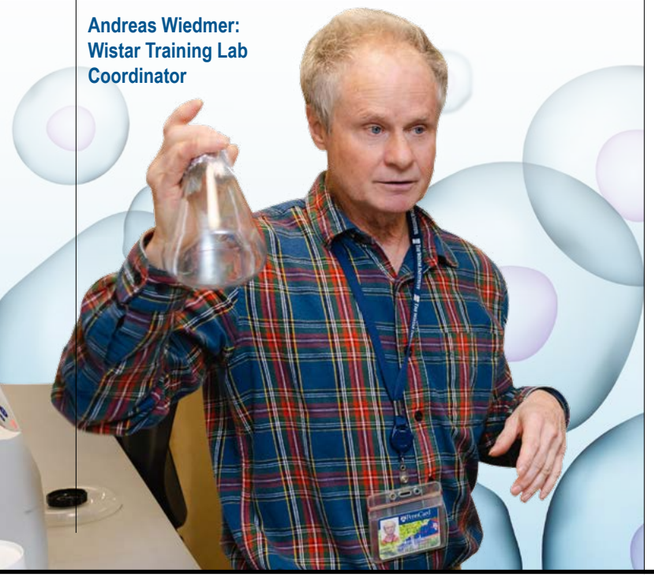
summer internships. **Wistar's Research Experiences for Undergraduates (REU) Program,** funded by another National Science Foundation grant, started in 2023 to bring students from across the country to Wistar each summer. Like the BTT Program, this program begins with hands-on laboratory training during a two-week Orientation to introduce students to biomedical research. Students are then placed in Wistar labs with the goal of inspiring and preparing them for graduate programs in biomedical research.

"How better to measure the BTT Program's success than to exponentially grow the program with immense benefits for our life science community," said Dr. Shuda McGuire. "But we couldn't do it without local, state, federal, academic, nonprofit, pharma, and biotech collaborators. These collaborators help us provide greater access to more students as they prepare for rewarding careers."

The cross-sector collaborations have made the BTT Program stronger by providing opportunities to share resources, research knowledge, and best teaching practices. And the industry-academia-community relationships spur hiring and economic development in Philadelphia. You could say Wistar's BTT Program ignited this regional collaboration of community colleges, nonprofits, biotechnology companies, the Commonwealth of PA, the federal government, and business councils.



Andreas Wiedmer: Wistar Training Lab Coordinator

An impassioned educator and scientist, Dr. Shuda McGuire could enthuse on about the BTT Program and its possibilities to affect lives, but she'd rather Andreas Wiedmer, Wistar Training Lab Coordinator, tell you.

Andreas Wiedmer emigrated from Switzerland where he was a nurse. In 2001 he became part of the second BTT Program class. He completed the program in 2002 and went to work as a research assistant and lab manager in the lab of Wistar's Dr. Paul Lieberman. In the Lieberman Lab Andreas worked with several high school, undergraduate and graduate students over his 20-plus years. Now, Andreas teaches students in Wistar's High School Summer Program for Biomedical Research, BTT Program and REU Program. While he's preparing reagents in the Training Lab, Wistar scientists from across the Institute come looking for Andreas' help and insight on experiments they are running.

"I came to the U.S. and knew I needed marketable skills to enter the job force," said Andreas. "I trained at Wistar and then I never left. I committed to helping students gain valuable hands-on laboratory experience tracking them into life science jobs. I'm proof there is a career pathway to our Philadelphia biotechnology industry and in my 20-odd years, I'm still passionate about this work."

Happy 25th Anniversary to Wistar's Biomedical Technician Training (BTT) Pre-apprenticeship Program which set the Institute on a trajectory to carry out workforce development initiatives that have infused biomedical talent into the region's life science workforce by leading class after class of promising students to attain the skills and experience needed to contribute to the growing biomedical science workforce.

From Lab to Laptop: The Interdisciplinary World of Computational Biology

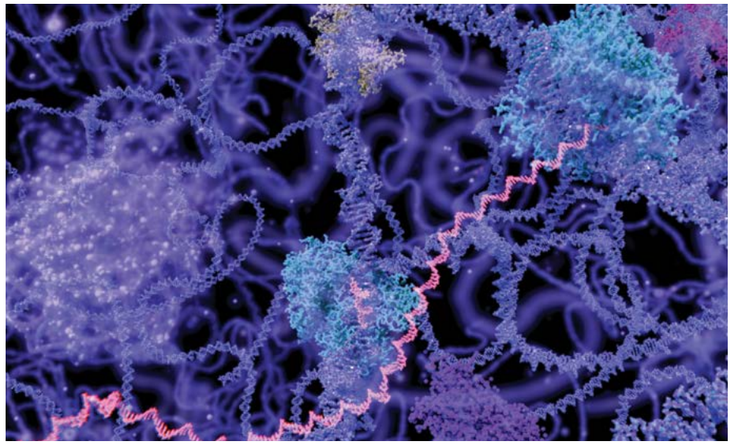
A Q&A with Wistar's Dr. Avi Srivastava

Wistar's Dr. Avi Srivastava seamlessly integrates elements of computer science and traditional biology into his new computational biology research lab. By combining wet and dry lab approaches — experimental biology and computational data — he can be innovative in research derived from both worlds. Here's how he does it.

What is computational biology?

Computational biology is different for different people. For me, the fine line between bioinformatics and computational biology is a live question, but we can think about computational methods intersecting with biology in two basic ways.

The first element is existing methods. These are open-source tools that exist on the internet as downloadable, which can then be applied to data and generate something useful. When scientists talk about "mining" datasets, they're using tools like this on a particular dataset. This large area of research takes a good deal of resources, and many scientists interact with computational elements of research on this level. | CONTINUED



Let's define open source. "Open source" means "freely accessible." An example might be an algorithm that can analyze RNA data in bulk to look for a particular pattern associated with something, maybe a disease biomarker. Scientists can simply download that algorithm, execute it on the dataset they're interested in, and interpret the results. So, using these existing methods to answer questions about biological data is the first component of computational biology.

The second component would be the actual *development* of those tools. Someone has to develop them, right? And I relish in developing new methods; that's who I am. Every software method in the field of biology needs to be informed biologically, through experimentation. That's how you make these tools better. It's not just sitting in your room on your laptop coding for hours — it's getting in the lab to understand how the biology behind the code works.

Once you understand the tools' foundations and limitations, you can modify lab experiments and refine methods. This process complements itself through experimenting, collaborating, and refining. Computational biology loops from lab to code to lab — a virtuous circle that continues to improve, because the field moves so fast.

How long has computational biology existed and when did it emerge as a field?

I think that computational biology grew out of computer science. Now, computer science has been around for ages; we can go all the way back to Turing machines, or even further. But I think that the Human Genome Project in the 1990s really opened a lot of scientists' eyes to the power of combining computer science with biological research.

The Human Genome Project developed enormous data sets, and back then, the sequencing technologies weren't advanced enough to sequence long segments of DNA. So, scientists began to ask themselves how they could chop up the human genome into segments of DNA for sequencing and then reassemble the human genome from those chunks. To do that, they turned to computer methods.

Think of it like file compression, when you email a picture and it loses some image quality: that's what scientists did to the human genome, and I believe that's the time computational biology came into its own. Since then, the field has matured and tech has improved, and our ability to "see" more of the genome has improved too, because we can process more data.

Software and code can change very quickly. How do you stay up-to-date on all the new developments in the field?

Staying current in the field is one of the million-dollar questions in computational biology, and I don't know that anyone has cracked it. Because with software and open-source code, things do move fast, and scientists want to use the best, latest methods to answer their research questions.

In my experience, you have to orient your lab around reading papers efficiently. Rather than spending an hour on *every* paper and discussing it in-depth, I like the setup where I have my lab discuss four papers in an hour when reviewing the literature. In general, we keep 15 minutes a paper to get a broader sense of the method, what's new, and how we can learn from it — and then we selectively discuss relevant papers in-depth. It's not a perfect solution, but it helps you get a broader perspective of the way the field is growing.

The pace of the science makes computational biology exciting, in part because the changing tech is a challenge in its own right, and scientists like me love a good challenge.

What do you see as the Srivastava Lab's role in such a dynamic research landscape?

Computational biology methods should be adjustable and easy to use, but I think the field needs better tools and better support for those tools. When I say "support," I mean that if I download software and it doesn't work except in one specific circumstance, then that tool has very limited use for the broad scientific community. It's a big problem when some papers can't even be replicated using the same methods because of a lack of support from the developers. With well-supported tools, researchers can utilize the method effectively, which is necessary for reproducing and verifying results.

Yes, we need to make sure programs and tools work properly, but providing support when building them allows diverse applications by allowing scientists to adapt these tools to their own research questions.

When programs are tweaked and iterated upon, scientists can get creative and research flourishes — but that can only happen if those tools are built in a way that lets scientists tweak them easily.

I will support those kinds of innovative alterations in the way I go about developing tools, but also by keeping the user in mind and providing tutorials, instructional PDFs, videos, etc. That takes time, but if you're invested in your methods, providing that support can make them even more impactful.

What excites you about the field and your work in it?

We talked about this computational biology "loop" — code feeds into the wet lab, which feeds into the code, and so on. I'm very excited to be at Wistar working on both sides of that loop; many scientists focus on one or the other, but my lab is focused on bringing both the lab *and* the code to the fore simultaneously.

That's an exciting space to be in because we have so much room for interdisciplinary discovery and collaboration. I can work with computer scientists who want to learn more about biology, and I can work with biologists who want to learn more about coding.

My lab is interested in the epigenome — how the genome is modified — because it's important for so many different processes and disease states across cell types. By focusing on the computational *and* the biological, I think we have a tremendous opportunity to build tools that will give us a more detailed understanding of the epigenome's complexities.

Justinian Society Honors Wistar President for Civic Engagement and Leadership

Wistar president and CEO Dr. Dario C. Altieri was honored in October by the Justinian Foundation and Society of Philadelphia (attorneys and judges of Italian-American ancestry who promote civics and education) for exemplifying the finest qualities of scholarship, leadership and integrity. Dr. Altieri's experience working alongside academic, federal, local government, pharma, and key life science stakeholders has helped shape the culture of biotechnology in Philadelphia.

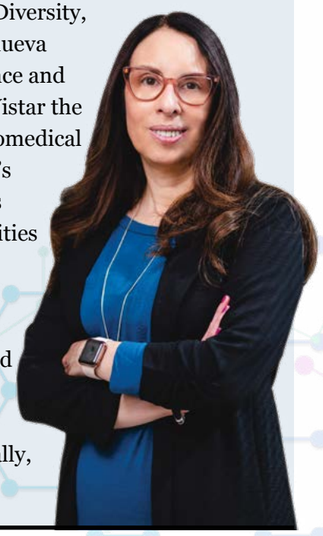
Wistar 2023 Awards *Wrap-up*

Dr. Altieri Admired for Taking Wistar to New Heights

The *Philadelphia Business Journal* named Wistar president and CEO Dr. Dario C. Altieri among the city's Most Admired CEOs in 2023. Under his leadership, Wistar has steadily grown in research impact and innovation, developed a diverse and well-trained workforce, and created an inclusive ecosystem for life sciences in the Greater Philadelphia region. Not only has he earned the respect and admiration of the business community, his Wistar colleagues concur with the selection. "Dario's leadership has taken Wistar to new heights," a fellow faculty member shared. "I can speak for all faculty here when I say that we're lucky to have such a stellar leader."

Diversity in Business Honoree Works to Advance Global Collaboration in Scientific Discovery

Renowned Wistar melanoma researcher Dr. Jessie Villanueva was named among 21 top diverse business leaders by the *Philadelphia Business Journal* for the publication's 2024 Diversity in Business Awards. As Wistar associate director of Diversity, Equity and Inclusion, Dr. Villanueva champions diversity of experience and global collaboration in giving Wistar the advantage at the forefront of biomedical research. Discoveries by Wistar's highly diverse team of scientists representing nearly 25 nationalities have led to the development of vaccines and monoclonal antibodies, as well as the identification of genes associated with different types of cancer, tackling scientific needs that affect communities not just locally, but around the globe.



(L-R) Drs. Maureen Murphy, Cori Bargmann and Amelia Escolano.

Helen Dean King Award Celebrates Women in Science

Wistar's 2023 Helen Dean King Award, which honors distinction in biomedical research by female scientists, was presented in November to Dr. Cori Bargmann of The Rockefeller University for her exploration of genetic and neural circuit mechanisms that influence decisions. The award's namesake was a well-respected geneticist and member of Wistar's research staff from 1908 to 1950.

Scientist, Teacher and Mentor Dr. Maureen Murphy Honored for Outstanding Research

Dr. Maureen Murphy—one of the foremost experts on the genetics of the p53 tumor suppressor protein and its impact on cancer risk, particularly for those of African and Ashkenazi Jewish descent—is the inaugural recipient of Wistar's Outstanding Researcher Award. Highly regarded among faculty colleagues and trainees as a scientist, teacher and mentor, Dr. Murphy stewards Wistar's ambitious biomedical research as deputy director of the Ellen and Ronald Caplan Cancer Center, associate vice-president for Faculty Affairs, and as the Ira Brind Professor and Program Leader of Wistar's Molecular and Cellular Oncogenesis Program.

"Imagine a job where you know that your work will one day benefit the lives of others. I can't imagine anything better."
–Dr. Maureen Murphy

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