

ANIMAL ACTION

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→ **Why Investment in
Non-Animal Science
is Crucial Now**

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From fellow to mentor: full circle of humane science | The next generation of innovators



The National Anti-Vivisection Society (NAVS) is dedicated to ending the exploitation of animals used in science.

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Dear Friends of NAVS,

As we continue our journey to free every animal from a life of experimentation, we must recognize that investing in smarter, more humane science is essential to achieving that goal. NAVS understood this as early as 1985, when it founded the International Foundation for Ethical Research (IFER), empowering scientists to drive meaningful change from within the research community.

Today, the partnership between NAVS and IFER remains rooted in that same vision—one that grows stronger each year. Your generous support enables NAVS to advance new approach methodologies (NAMs) by investing in and guiding high-impact scientific research through IFER, supporting the early-career researchers developing innovative, humane methodologies to replace animal models. In this way, our partnership advances our shared mission to accelerate the transition toward ethical, human-relevant science.

This commitment to scientific investment is what sets NAVS apart. More than four decades ago, NAVS recognized that lasting change would not come from advocacy alone, but from equipping scientists with the tools and support needed to lead a transformation within their own fields. That belief remains steadfast today. While it can be challenging for advocacy organizations to directly engage researchers, IFER bridges that gap—uniting scientists around the conviction that humane science is not only possible, but superior.

Together, we are helping to build a future where compassion and innovation go hand in hand—a future where the next generation of scientists no longer sees animal experimentation as the norm. With your continued support, we can expand this impact, accelerate progress, and bring us closer to a world where no animal suffers in the name of science.

Thank you for being part of this vital work.



Sally Draper
NAVS Executive Director



Lauren Stein, Ph.D.
IFER Executive Director



The Road to a Humane Future Goes Through Science

At NAVS, we have said that we stand at a Crossroads. In this moment, we are witnessing more momentum than ever before toward ending the use of animals in research and testing. A door has opened for lasting change—one that has never been wider—and it is our responsibility as advocates to ensure that change happens now.

It doesn't take long when reading NAVS communications to find the phrase "Advancing Science Without Harming Animals" alongside our logo. At our core, we exist to spare animals from lives of suffering. But we also recognize that the most effective way to achieve that goal is by embracing and advancing science itself. NAVS has long led the way in this effort, beginning with the founding of the International Foundation for Ethical Research (IFER) in 1985. More than four decades later, that partnership reflects a steadfast belief: meaningful progress requires strategic investment in humane science.

Through this partnership, NAVS helps provide scientists with the resources needed to develop and scale alternatives to animal use. To dismantle a system that has persisted for centuries, we must do more than oppose it—we must replace it. That means demonstrating that humane methods are not only possible, but often more effective, more efficient, and more relevant to human health.

Each year, we together support a new class of graduate fellows working on projects that push the boundaries of non-animal research. With every cohort, the impact grows. These fellows go on to become leaders in their fields—mentoring others, shaping research norms, and proving that innovation and compassion are not competing values, but complementary ones.

At the same time, we are seeing this shift begin even earlier. Through the Humane Science Award at the International Science and Engineering Fair (ISEF), NAVS recognizes high school students who pursue scientific discovery without harming animals. In 2025, awardees Grace Zhang and Audrey Howard were mentored by a former winner, Margaret Moe, in a lab dedicated to humane methods. For them, animal research was never even considered—it simply wasn't part of their understanding of what science should be.

This is what real change looks like. A new generation of scientists entering the field with different assumptions, different tools, and a different ethical foundation. A growing community of researchers proving that humane science is not the future—it is already here.

As we stand at this Crossroads, the path forward is clear. If we want lasting change, we must continue to invest in science that aligns with our values. By supporting innovation, empowering researchers, and inspiring the next generation, we are not just imagining a more humane future—we are building it.





The Brain & Neurological Disease

Understanding the human brain remains one of the greatest challenges in science. Conditions such as Alzheimer’s disease and psychiatric disorders affect millions worldwide, yet progress has been slow. One reason is that traditional animal models often fail to capture the complexity of the human brain, limiting the ability to translate discoveries into effective therapies.

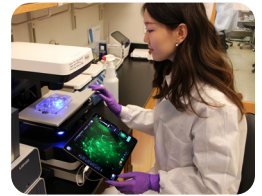
With support from NAVS and IFER, early-career scientists are rethinking how brain research is done by developing models built around human biology.

Several fellows are focused on Alzheimer’s disease. Yuhao (Lauren) Gao (Emory University) is using human brain organoids to study how the disease begins and spreads, offering new insight into its earliest stages. Alexis Feidler (University of Rochester) is addressing how to model aging in human cells, working to “age” stem cell-derived brain models so they better reflect adult biology.

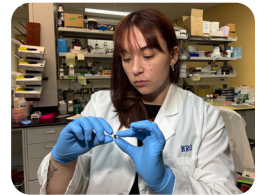
Cheick Sissoko (University of Cincinnati) is developing a human cell-based model of the blood-brain barrier, allowing researchers to study inflammation, barrier breakdown, and drug delivery in a system designed around human biology.

Other fellows are advancing understanding of brain development and function. Nisan Sele (Emory University) studies how the brain matures into early adulthood, a period when many psychiatric conditions first emerge. Dowlette Alam El Din (Johns Hopkins University) is developing lab-grown brain models to better understand how chemicals affect cognition and neural circuits.

Together, these researchers are advancing neuroscience through more predictive, human-relevant methods, improving the potential for meaningful patient outcomes.



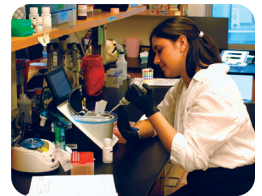
Yuhao (Lauren) Gao



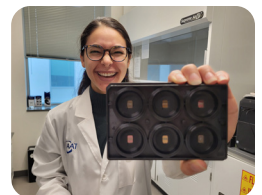
Alexis Feidler



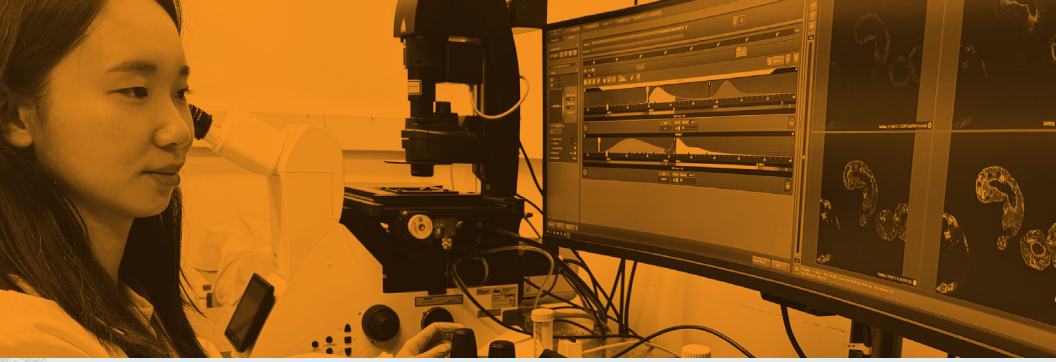
Cheick Sissoko



Nisan Sele



Dowlette Alam El Din



Gut Health, Immunity & Inflammation

The gut and immune system are deeply interconnected, influencing conditions that range from digestive disorders to chronic disease. Understanding these relationships requires models that can reflect the complexity of the human body, something traditional approaches often struggle to achieve.

Through collaboration between NAVS and IFER, fellows are developing systems that bring these interactions into clearer focus.

Virginia Bruno (University of Amsterdam) is studying how pain arises in the gut by developing a model that combines human gut cells, microbes, and nerve cells. Her work aims to better understand how pain signals are generated while moving away from methods that rely on animal testing.

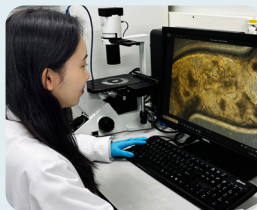
Eunho Choi (Korea Advanced Institute of Science and Technology) is advancing gut research through a colon-on-a-chip system that allows human cells and bacteria to interact over time. As she explains, differences between animal and human systems can lead to “unpredictable adverse effects and less efficacy,” reinforcing the need for human-based models.

Mingzhi Xu (Duke University) is exploring how chronic inflammation contributes to disease by developing an integrated system that models interactions between blood vessels and muscle. Her work focuses on conditions like rheumatoid arthritis and their link to cardiovascular disease.

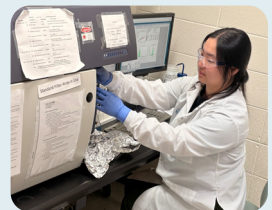
Together, these fellows are building tools that better reflect the interconnected nature of human biology, helping move research toward more accurate and humane approaches.



Virginia Bruno



Eunho Choi



Mingzhi Xu

Reproductive & Hormonal Health

Reproductive and hormonal systems influence development, aging, and quality of life, yet many of the biological processes behind them remain difficult to study. Traditional models often fall short in capturing how these systems function in the human body.

Through our work, NAVS and IFER are supporting researchers who are bringing new clarity to these challenges.

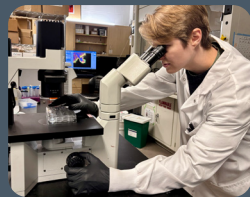
Elizabeth Marr (Tufts University) studies implantation, a critical stage in reproduction. Using human-based models, she examines how cells in the uterus communicate during early pregnancy and how inflammation may disrupt these signals, offering insight into infertility.

Eliska Rehurkova (Masaryk University) is focused on declining male fertility and the role environmental chemicals may play. By developing stem cell-based models of the human testis, she aims to better understand how chemical exposures affect reproductive health.

Cora Ferguson (University of Oregon) is studying how hormones influence tissue health, particularly in cartilage and osteoarthritis. Her work incorporates patient variability, which she notes is key to developing better treatments.

Filipa Ribeiro (University of Delaware) is developing human-based systems to study infections such as gonorrhea and chlamydia, aligning scientific progress with more compassionate approaches.

Together, these fellows are helping advance research that reflects the complexity and individuality of human health.



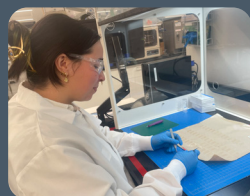
Elizabeth Marr



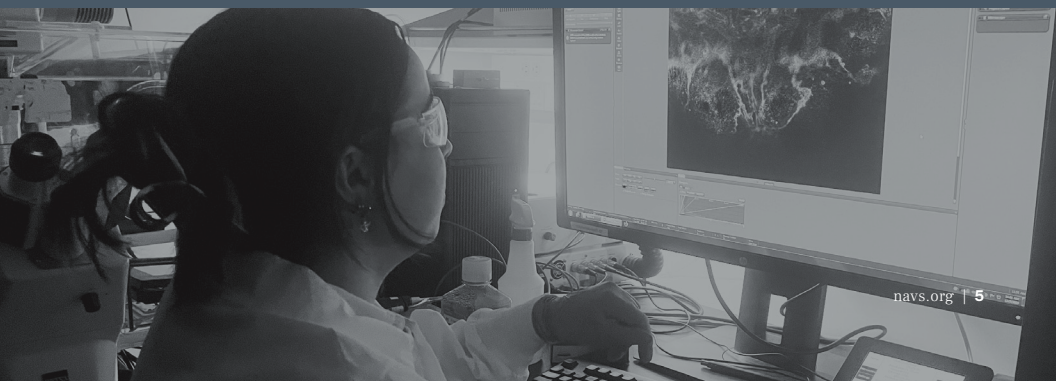
Eliska Rehurkova



Cora Ferguson



Filipa Ribeiro



Heart, Lung & Cancer Research

Diseases of the heart, lungs, and cancer remain leading causes of death worldwide. Advancing treatment requires models that more accurately reflect how these diseases develop and respond in the human body.

Through our work with IFER, NAVS is helping support researchers who are bringing that level of precision into the lab.

Zixie Liang (Yale University) is developing engineered human heart tissue using patient-derived cells and bioprinting technology. Her work allows researchers to study heart disease in ways that capture real differences between individuals, improving understanding of patient-specific outcomes.

Vikram Surendran (Wake Forest University) is focused on making human-relevant lung models more accessible. He is developing in vitro systems to study fibrosis, emphasizing reproducibility so these tools can be widely adopted and used to accelerate discovery.

Lucy Luo (Northwestern University) is using computational models built from human clinical data to study complex conditions such as lung transplant outcomes. Her work demonstrates how human-centered data can provide more meaningful insights where animal models fall short.

Lunan Liu (New York University) is applying organoid and organ-on-a-chip systems to study pancreatic cancer. By integrating these models with artificial intelligence, his research aims to improve how therapies are tested and refined.

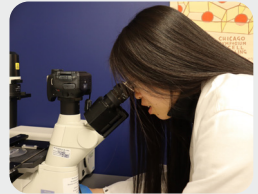
Together, these fellows are helping reshape how serious diseases are studied, advancing research that is more predictive, more accessible, and more closely aligned with human biology.



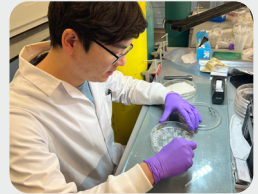
Zixie Liang



Vikram Surendran

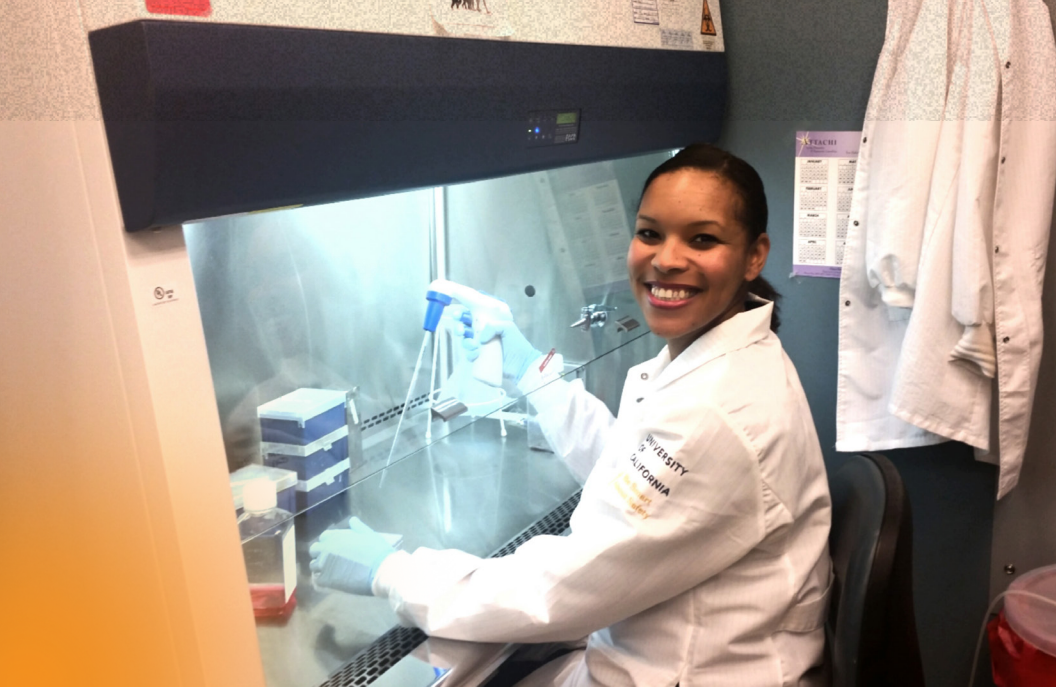


Lucy Luo



Lunan Liu





From Fellow to Forerunner: Dr. Nicole Sparks' Path to Humane Science

When Dr. Nicole Sparks became the inaugural IFER Graduate Fellow, she was at a pivotal stage in her career. With IFER's support, she began building the foundation for what would become a leading body of work in humane, human-relevant science.

Today, Dr. Sparks is an Assistant Professor in the Department of Environmental and Occupational Health at the University of California, Irvine. She leads a research lab that uses human embryonic stem cell models to study how environmental exposures affect early human development. Her work focuses on pollutants such as air pollution, tobacco-related products, and endocrine-disrupting chemicals, and how they influence embryonic bone formation.

Using advanced omics and molecular techniques, her lab investigates how these exposures interfere with normal bone development at the cellular level. At the same time, her research advances non-animal, human-based models that offer more accurate and ethical approaches to studying human health.

Dr. Sparks credits her IFER fellowship as a defining moment in her journey. During her graduate training, she developed a human-based developmental bone toxicity model that continues to serve as the scientific foundation of her lab today. That early investment allowed her to pursue innovative ideas and establish independence as a researcher.

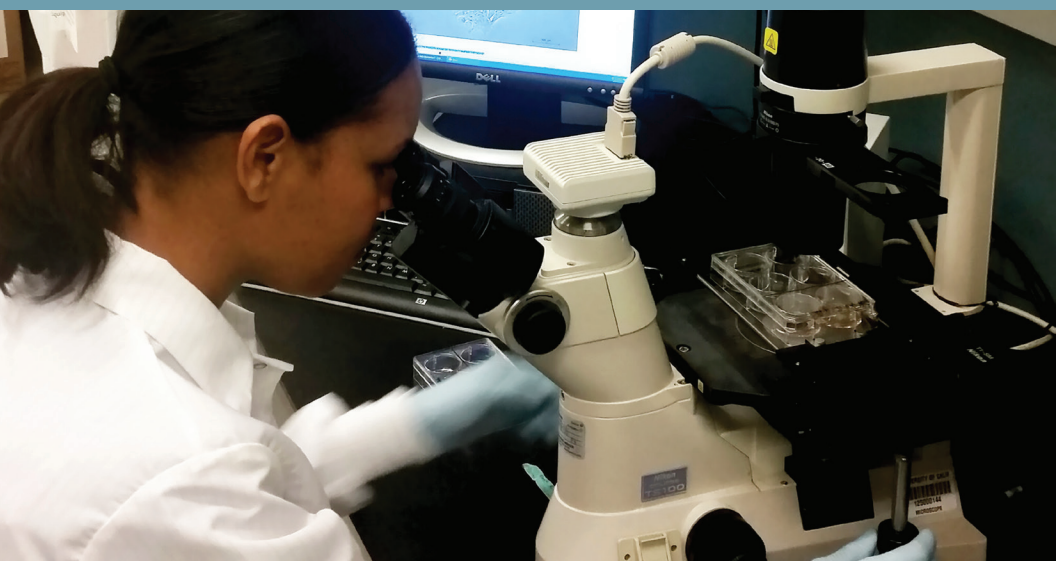
Her career has since been marked by significant achievements. She has received the TRDRP (Tobacco-Related Disease Research Program) Dissertation Award, the UC Chancellor's Postdoctoral Award, and the NIEHS MOSAIC K99/R00 Pathway to Independence Award, a special NIH grant designed to facilitate the transition of postdoctoral researchers from underrepresented groups into tenure-track faculty positions in environmental health sciences. Most recently, she was awarded a \$1.9 million Outstanding Investigator Award (MIRA, R35) from the National Institute of General Medical Sciences. This honor recognizes both the impact of her research and her leadership in the field.

Beyond her scientific contributions, Dr. Sparks is helping to shape the future of research. Her work in epigenetics is deepening understanding of how environmental exposures influence gene regulation and long-term health outcomes. As a former IFER fellow and now a member of its Scientific Advisory Board, she also plays a key role in mentoring and guiding the next generation of humane scientists.

Her journey highlights the long-term impact of supporting early-career researchers. What begins as a fellowship can grow into a career that transforms both science and scientific practice.

For current and future fellows, Dr. Sparks offers simple but powerful advice: love what you do, stay flexible, embrace failure as part of growth, and lean on your community. She also encourages scientists to celebrate their milestones and take care of themselves along the way.

Dr. Sparks' story is a testament to what is possible when promising researchers are given the support to pursue humane science. Through our strategic partnership with IFER, NAVS does more than support human-relevant research. We help build the leaders who are bringing a more ethical and effective future for science to fruition.





Rethinking Research: Dr. Woojung Shin's Path to Humane Science

For many scientists, the path to humane research begins with difficult questions about long-standing practices. For Woojung Shin, Ph.D., that journey began early in her career and led her to become a leader in developing innovative, non-animal research methods.

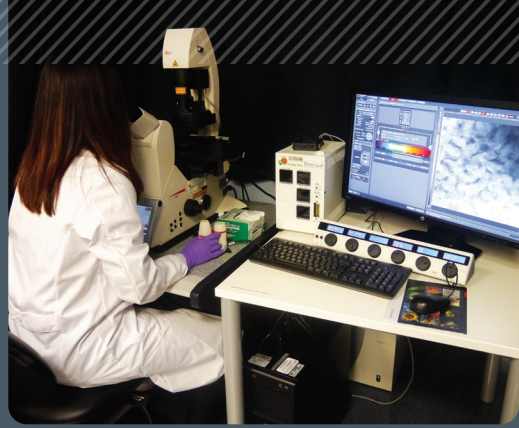
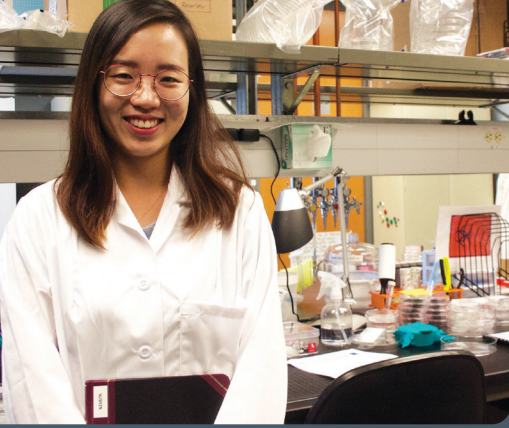
Today, Dr. Shin is an Assistant Professor in the Department of Bio and Brain Engineering at the Korea Advanced Institute of Science and Technology (KAIST). She also serves on the Scientific Advisory Board of IFFER. Her perspective on animal research has evolved significantly over time.

During her early training, Dr. Shin viewed animal experimentation as a standard part of biomedical research. As a master's student, she believed animal studies were often more efficient and informative than cell-based models. Like many young scientists, she followed established norms and conducted numerous experiments involving mice.

Some experiments were unsuccessful. Others required the use of many animals. These experiences left a lasting impression and led her to question whether animal models were truly the best approach.

"I must admit to my ignorance regarding alternatives to animal use in research," she reflected. "At that time, I perceived animal experimentation as essential."

That perspective began to shift when Dr. Shin started her Ph.D. at The University of Texas at Austin. She made a deliberate decision to join a lab that did not rely on animal models. What began as an ethical consideration quickly became a scientific one.



As she explored new approaches and applied for the IFER Graduate Fellowship, she recognized the biological differences between animals and humans and how those differences can limit the ability of animal studies to predict human outcomes. This realization reshaped her understanding of research.

Rather than viewing alternatives as optional, she came to see human-relevant models as essential to advancing science. Developing systems that better reflect human biology could address scientific, ethical, and economic challenges associated with animal experimentation.

From 2016 to 2018, Dr. Shin was an IFER Graduate Fellow—a program NAVS supports to cultivate the next generation of leaders in humane science. The fellowship helped shape her research direction and strengthened her commitment to humane science at a critical stage in her career. By supporting early-career researchers, NAVS and IFER together encourage innovative thinking and help drive progress toward more effective and ethical research methods.

Today, Dr. Shin leads her own lab at KAIST, where she continues to develop advanced models that better represent human biology. She is also dedicated to mentoring students and young scientists, encouraging them to think differently about how research can be conducted. Among those she mentors is current IFER fellow Eunho Choi, whose work on colon-on-a-chip systems reflects the same commitment to human-relevant, non-animal research and demonstrates how this approach is being carried forward to the next generation.

“Animal use in biomedical research is not a ‘must,’” she explains. “We must explore ways to reduce, replace, and refine animal experiments.”

Dr. Shin’s journey highlights the impact of education, mentorship, and early support in shaping the future of science. Through impact-focused programs like the IFER Fellowship, NAVS helps empower scientists who are advancing humane and scientifically robust approaches to research.

As Dr. Shin continues her work as a researcher, mentor, and advisor, her story reflects a growing shift in the scientific community. With the right support, the next generation of researchers is building a future where discovery no longer depends on animal suffering.

Driving Change from Within: NAVS, IFER, and the Future of Humane Science

For decades, progress toward ending animal testing has depended on advocacy, education, and persistence. Today, that work is entering a new phase. Humane science is no longer only being discussed from the outside. It is being shaped from within by the institutions that define how research is conducted.

A key example of this shift is the Foundation for the National Institutes of Health (FNIH) Validation and Qualification Network (VQN).

Launched as part of the NIH's Complement-ARIE program, the VQN is a public-private partnership designed to accelerate the adoption of New Approach Methodologies (NAMs). These human-based, non-animal tools represent a fundamental change in biomedical research, with the goal of identifying and validating methods that can support regulatory acceptance and replace animal testing at scale.

NAVS, through our partnership with IFER, is now part of that effort.

In late 2024, IFER joined the VQN as a Design Phase Partner, contributing to the Community Engagement and Training workstream. This role helps shape how NAMs are communicated, understood, and adopted across the scientific community.

For the first time, NAVS and IFER are not only advocating for change. We are helping guide the decisions that define how that change happens. At the VQN table, IFER works alongside organizations such as the FDA, EPA, and major pharmaceutical companies, influencing how research approaches are prioritized and evaluated.

NAVS and IFER maintain a clear position: NAMs should replace animal testing, not complement it. That means moving beyond frameworks that treat animal data as the benchmark and instead advancing models built to reflect human biology.

For NAVS supporters, this represents a powerful shift. Humane science is no longer at the margins. It is shaping the future of research at its core.



The NAVS Humane Science Award: Where the Future Begins

For many scientists, the journey into research begins long before graduate school or even college. It starts with curiosity, a question, or a first opportunity to explore how science can make a difference.

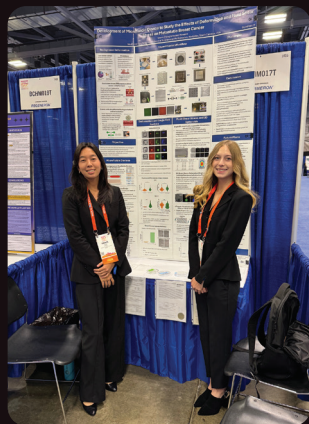
For a growing number of students, it also begins with a different understanding of what science should look like. Rather than seeing animal research as the default, these young researchers are learning from the start that human-relevant models are not the alternative. They are the future.

The NAVS Humane Science Award helps reinforce that perspective. Presented each year at the Regeneron International Science and Engineering Fair (ISEF), the award recognizes high school students whose work demonstrates scientific excellence while advancing approaches that do not rely on animals. At a formative stage in their education, this recognition helps shape how students think about both innovation and ethics.

That impact is already visible in students like Grace Zhang and Audrey Howard (South Carolina Governors School for Science and Mathematics | Hartsville, SC). Their journey began with a shared curiosity and a desire to make a difference, leading them to spend a summer in a Clemson University lab studying how breast cancer spreads using microfluidic systems. From their first days in the lab, they were building devices and running experiments independently, gaining hands-on experience with models that reflect the human body.

Encouraged by their mentor and supported by peers, they presented their work locally before advancing to ISEF, where they were awarded the NAVS Humane Science Award.

“We weren’t expecting it at all,” Grace recalled. “When they called our names, we just looked at each other and screamed.”



For both students, the recognition reinforced that their approach to science mattered. “It was so inspiring,” Grace said. “It motivates us to keep looking for alternatives to animal testing.” Audrey shared a similar perspective, noting how the experience helped shape how she thinks about research moving forward.

Last year’s award also recognized Aadi Nishant Bhensdadia (Pine View School | Osprey, FL) for his project, MicroHeart, a heart-on-a-chip platform designed to model human cardiac tissue. Like Grace and Audrey, Aadi approached his work with determination and purpose, teaching himself complex techniques and building a system with real potential to improve drug development.

What connects these students is not just talent, but mindset. They are entering science with the expectation that models should reflect human biology, and that relying on animals is not a necessity, but a limitation to move beyond.

For many recipients, this recognition marks the beginning of a longer path. Students who are introduced to humane science at this stage often carry those values forward into college and graduate training. Over time, they become the IFER fellows supported by NAVS and emerge as the scientists advancing their respective fields.

That trajectory is already taking shape. The same principles seen in student projects today were also reflected in the work of former IFER fellows like Dr. Nicole Sparks and Dr. Woojung Shin.

By supporting programs like the Humane Science Award, NAVS is helping shape that future from the very beginning. It is an investment not just in individual students, but in a new way of thinking about science itself.





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With your support, we are accelerating progress toward a future where animals are no longer used in research. Thank you for being part of the change.



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