FASI | FOOD ALLERGY SCIENCE INITIATIVE

2024-2025

IMPACT REPORT

ACCELERATING RESEARCH. DISCOVERING THE CURE.

FOODALLERGYSCIENCE.ORG

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Your Impact, Our Mission

Carlos Bosques, Ph.D.

A Letter from FASI's Chief Executive Officer

Dear Friends and Supporters,

Each year, as we reflect on our journey together, I am struck by the power of our community – the quiet steadfast force behind every breakthrough we achieve in our mission to create a world without food allergies.

This past year has been one of extraordinary momentum. Thanks to your unwavering support, we have expanded the frontiers of food allergy research, welcomed one new principal investigator, and continued discovering breakthroughs that will transform the lives of those living with food allergies. Together, we are building the path to a cure.

Behind each statistic in this report is a child attending school with a little more confidence, a parent sleeping a little more soundly, a physician with better tools, and a researcher with renewed purpose.

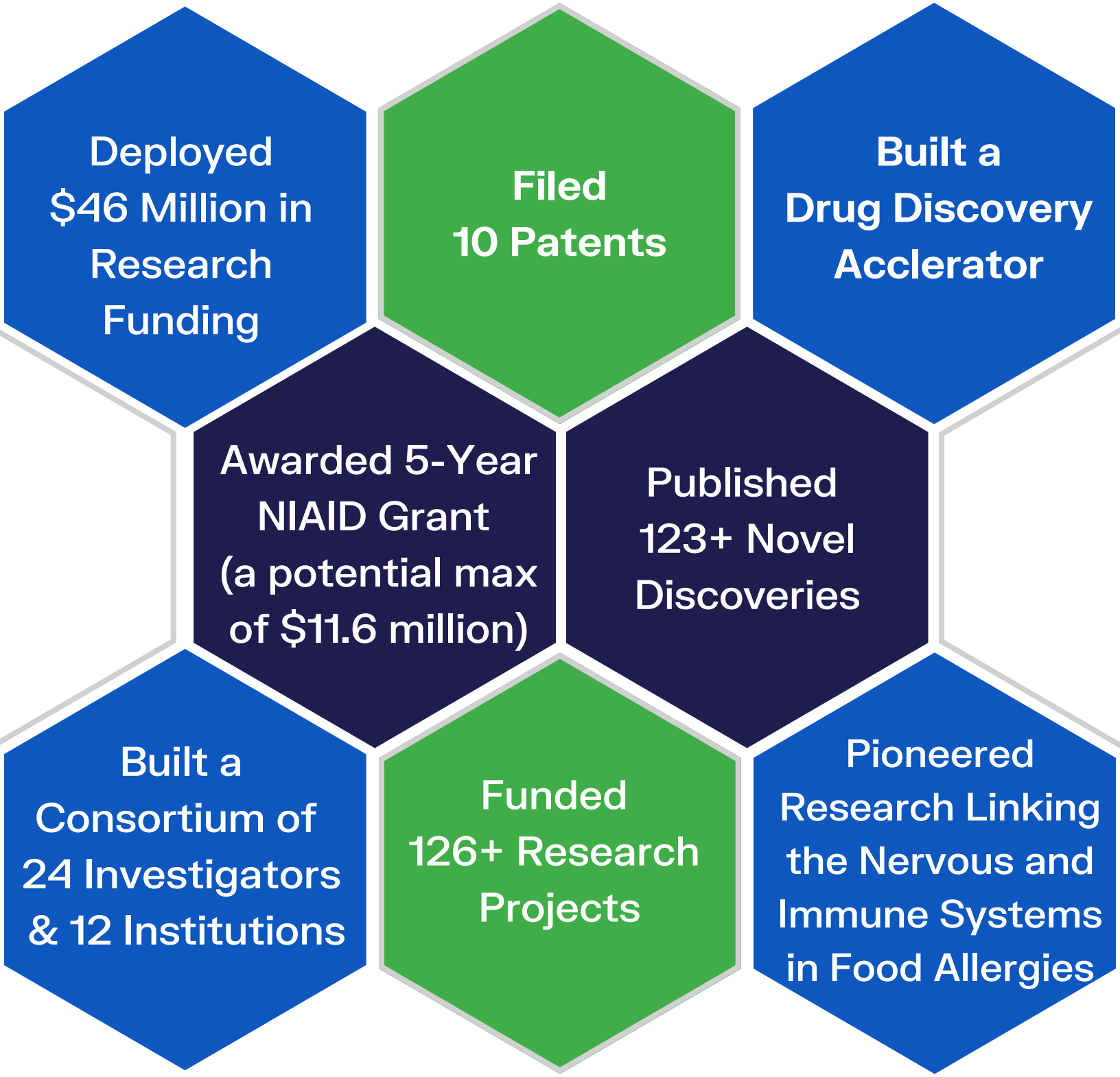
Yet, our work is far from done. Food allergies continue to affect over 220 million people world-wide, with life-threatening reactions on the rise. FASI is committed to advancing transformative research for a better tomorrow.

On behalf of our Board of Directors, staff, and the families we serve, thank you. Your generosity fuels hope, and your belief in our mission makes all the difference.

With gratitude,

Your Investment at Work

Since Inception, The Food Allergy Science Initiative has:



A Year of Growth and Progress

This year, we strengthened our foundation to accelerate discovery, expanded our reach, and advanced our mission through collaboration.

$4.4M DEPLOYED

23 PUBLICATIONS

13 PROJECTS FUNDED

4 PATENTS FILED

1ST NIH GRANT FUNDED

1 NEW FASI INVESTIGATOR FUNDED

1ST DRUG DISCOVERY PROGRAM LAUNCHED

Leadership Highlights:
Ning Drako Appointed to the Board

"We are helping entire communities.

Someday we will not need a nut policy in schools or on airplanes. Restaurants and public venues will not pose such a threat. Today, what we do can mean life or death for a child with severe food allergies.

We need to do something about this now or we will never make progress towards a cure, and that is what FASI is doing"

Ning holds a SB in Mathematics from the Massachusetts Institute of Technology (MIT) and a SM from the MIT Sloan School of Management. Her professional background includes leadership roles in sales and product marketing at IBM and Sun Microsystems, as well as serving as Director of Development at the International School of the Peninsula.

An active member of the global education and alumni communities, Ning has held numerous volunteer positions at the American School in Japan and serves on the MIT Alumni Association Board of Directors.

A mother of three, Ning became deeply involved in food allergy advocacy and research through her personal experience raising a daughter with multiple severe food allergies.

Living in constant fear and managing the challenges that come with severe food allergies sparked her passions for increasing awareness, advancing research, and supporting affected families. Ning's journey led her to the Food Allergy Science Initiative (FASI), where she is an active and ardent supporter.

Partnership Highlights:
FASI Selected for ARPA-H Investor Catalyst Hub

BENEFITS OF BEING A SPOKE

Funding: First access to new grants

Speed: Significantly faster award execution than traditional government contracts

Access: Networking opportunities with members, government, and other strategic stakeholders

Influence: Provide feedback & input into ARPA-H funding areas and priorities

Information: Access to an open library of resources and public goods that draw on the insights from ARPANET-H

FASI was selected as a member of the ARPA-H Investor Catalyst Hub, a national network launched by the Advanced Research Projects Agency for Health (ARPA-H) to accelerate bold, scalable health solutions.

This prestigious designation places FASI alongside leading organizations across the country working to fast-track transformative innovations. **As part of the Hub, FASI gains access to new federal funding pathways, faster contracting mechanisms, and national networks of collaborators.**

It is a powerful validation of our approach—and a catalytic step toward translating food allergy science into real-world treatments.

By joining the ARPA-H network, we are amplifying our ability to do what we do best: push the boundaries of science to deliver lasting change for families living with food allergies.

Project SAFE Seminar Series: Insights into the Allergy Epidemic

10
Speakers

934
Registrants

FASI's **Project SAFE:**

(**S**cience of **A**djuvants in **F**ood and the **E**nvironment)

FASI offered a series of free, live 30-minute seminars throughout the year. Each session provided listeners with valuable information from leading experts in the field.

This series explored a critical question driving FASI's mission: Why are food allergies rising so rapidly? By examining how shifts in our food system and environment affect the immune and nervous systems, these sessions brought timely insights to our community.

You can watch the entire recorded series here: **foodallergyscience.org/seminar-series/**

2024 FASI Symposium

Understanding Body Defenses Against the Chemical Environment

May 31st, 2024

12 Speakers | **281** Registrants

FASI hosts an annual scientific symposium, one of the largest meetings dedicated to food allergy research. The event brings together industry partners, community members, and scientific experts from around the world to collaborate and share cutting-edge discoveries advancing the field.

Highlights from our 2024 Symposium included Dr. Albert-László Barabási's work using network medicine and AI to map links between food chemicals, genes, and disease; Dr. Timothy Moran's studies on how airborne exposures contribute to food allergy risk; and Dr. Thomas Hartung's innovations in AI-driven toxicology to improve food safety.

Please Join us for our 2025 Annual Scientific Symposium!

This year, we will explore the intricate crosstalk between the immune and nervous systems—shedding light on how these networks influence food intake, aversions, and disorders. While food allergies have traditionally been studied through an immunological lens, emerging FASI research suggests a deeper connection to the nervous system—one that may unlock new insights into why some individuals develop life-threatening allergic responses while others do not.

Our discussions will delve into how immune responses shape our relationship with food, from taste perception to allergic reactions, paving the way for innovative approaches to treatment. The program will feature leaders in the field and provide an opportunity for collaboration with colleagues working on advancing the science of food allergy and beyond.

Register here:

foodallergyscience.org/fasi-symposium/

141

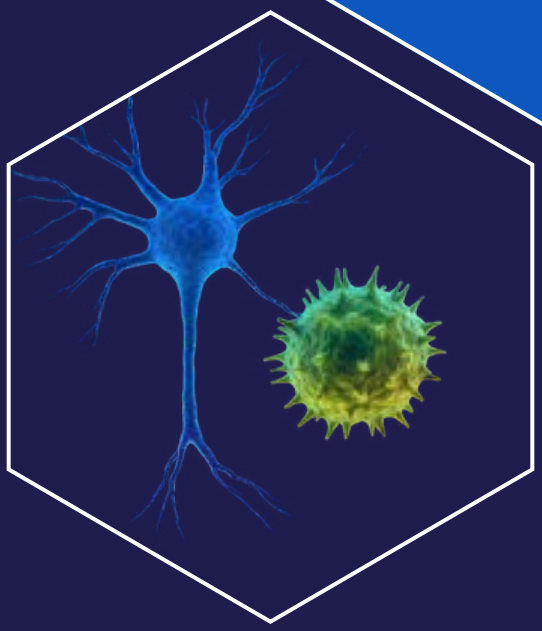
already registered!

Foundational Research Highlights

Advances in care have transformed lives, but no cure exists. FASI is dedicated to moving science forward to eliminate food allergies.

“To develop a cure, we need to understand the disease. And to understand the disease, we need to know its normal biological counterpart. Every disease is an abnormal version of some biological function.”

Ruslan Medzhitov, Ph.D.
FASI Scientific Founder, & Sterling Professor of Immunobiology at Yale University School of Medicine



Decoding Why the Body Turns Food into an Enemy

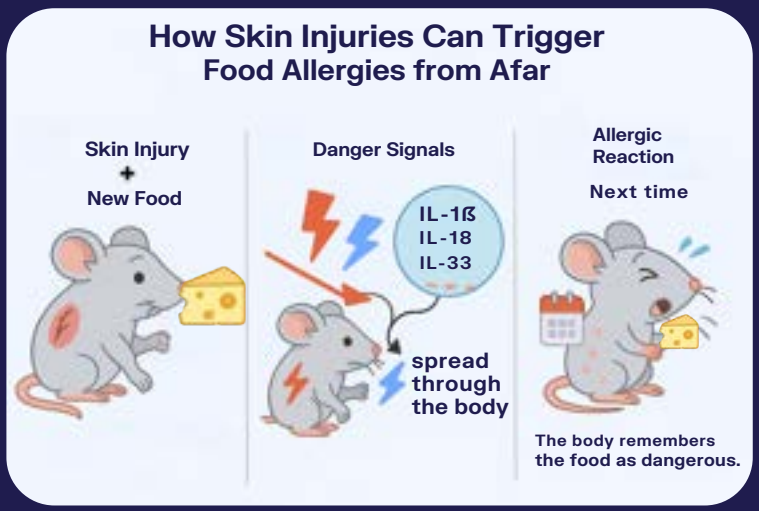
In 2024, FASI was awarded a first-of-its-kind P01 grant from the National Institute of Allergy and Infectious Diseases to study why the body mistakenly thinks food is poison—and how to stop it. This prestigious grant provided $2.3 million in funding for the first year and FASI expects to receive this amount from the NIAID annually for five years (a potential maximum of $11.6 million), contingent on availability of funds. This landmark project is led by Drs. Ruslan Medzhitov, Stephen Liberles, and Daniel Mucida, in collaboration with Rockefeller University and Beth Israel Deaconess Medical Center.

This year, FASI was awarded $2.3M in year two funding—an important milestone in advancing this groundbreaking research.

Ever wondered if and how chronic skin conditions, such as eczema, are linked to food allergies?

Skin Injury Can Trigger Allergic Reactions to Food

Andrew Wang, M.D., Ph.D., A.B.
Yale School of Medicine



Waizman et al., Sci Immunol. 2025;10(106):eadn0688.

Dr. Wang and his team discovered how food allergies might start. They damaged the skin of mice in different ways—like with small cuts or sunlight—and then gave them a new food they had not eaten before.

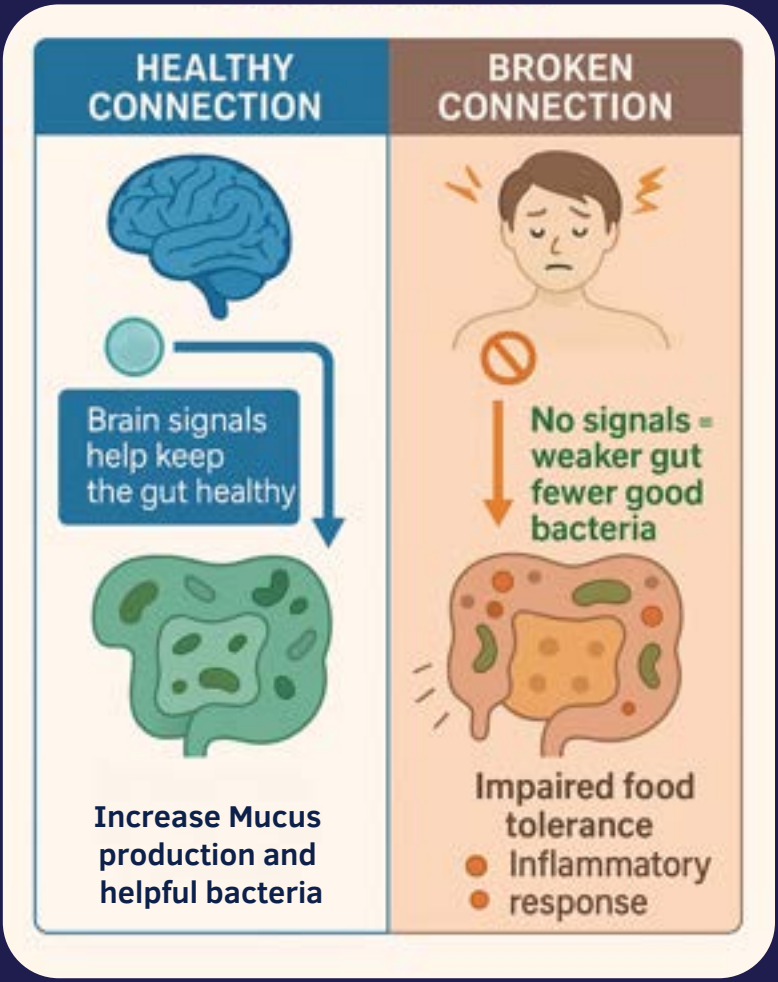
When the food was eaten close to the time of the skin injury, the mice's immune systems remembered it. Later, when the mice ate that food again, they had an allergic reaction.

This showed that an allergy can start even if the food and the skin injury happen in different places on the body. The injuries caused the body to send out warning signals, which activated a special kind of immune cell that helps cause allergies.

This research may suggest that one way parents could reduce the risk of food allergies is to delay the introduction of novel foods until active skin injuries have resolved. It also raises the possibility of blocking these cell-types to treat or prevent food allergies.

Stress Can Hurt Your Microbes and Gut Health

Could our emotional state, such as stress, impact our gut health?



Ivan de Araujo, D. Phil.
Max Planck Institute

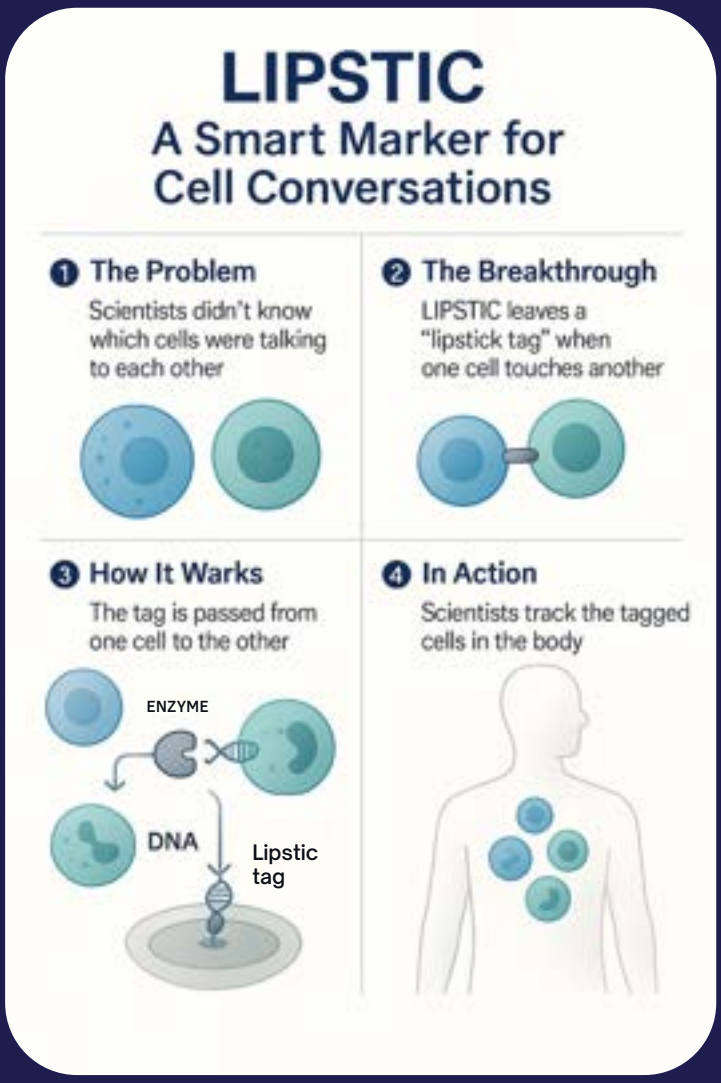
Chang et al., Cell. 2024;187(19):5393–5412.e30.

Dr. Araujo and his team found that when the brain is stressed, it sends signals down a special nerve called the vagus nerve, which connects the brain to the gut. These signals tell the gut to make protective mucus and help grow healthy bacteria like *Lactobacillus*. But when this connection is broken—by taking out a special part of the gut or turning off certain nerve signals—these good changes do not happen. As a result, guts are leakier, have fewer good bacteria, weaker immune systems, and get sick more easily.

Your gut has to make a split-second decision with every bite: is this food friend or foe?

Watching Cells in Action Reveals Which Immune Cells Respond to Food in Different Ways

Dan Mucida, Ph.D.
HHMI, Rockefellar University



Dr. Daniel Mucida and his team are using a cool new tool called LIPSTIC to watch immune cells in the gut and see how they react to food. This tool works like a pretend lipstick mark—it leaves a little "smear" when two cells touch, helping scientists know which ones are talking to each other.

Campos Canesso et al., Science. 2025;387:eado5088

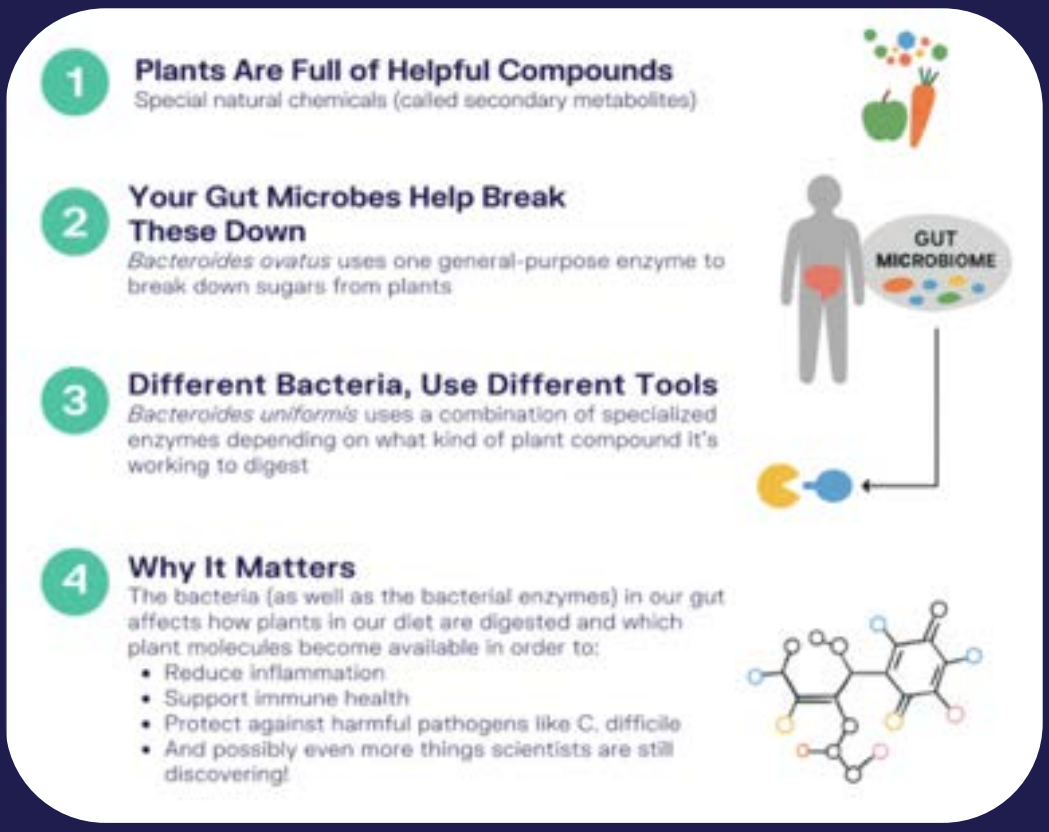
Thanks to LIPSTIC, scientists can now watch these cells in real time and ask big questions like: Which cells are sending signals? What messages are they sharing? Some cells help calm the body's response to food, while others make it stronger. **This discovery helps scientists understand how different immune cells work—and could lead to new ways to prevent food allergies in the future.**

How does the gut microbe extract health-boosting molecules from dietary plants?

Happy Apple, Happy Microbes, Happy Gut!

Dr. Rakoff-Nahoum and his team examined how the gut microbiome extracts health-boosting molecules from dietary plants, and found that different groups of bacteria use distinct enzymes to break down complex plant molecules into useful compounds that help regulate gut health and enhance resistance against pathogens.

Seth Rakoff-Nahoum, M.D., Ph.D.
Boston Children's Hospital, Broad Institute



Kuziel et al., Cell. 2025;188(7):1967–1983.e22.

Translational Research Highlights

Translating discovery into treatment: bridging biology and breakthroughs for food allergies.

Predicting Success to Peanut Oral Immunotherapy

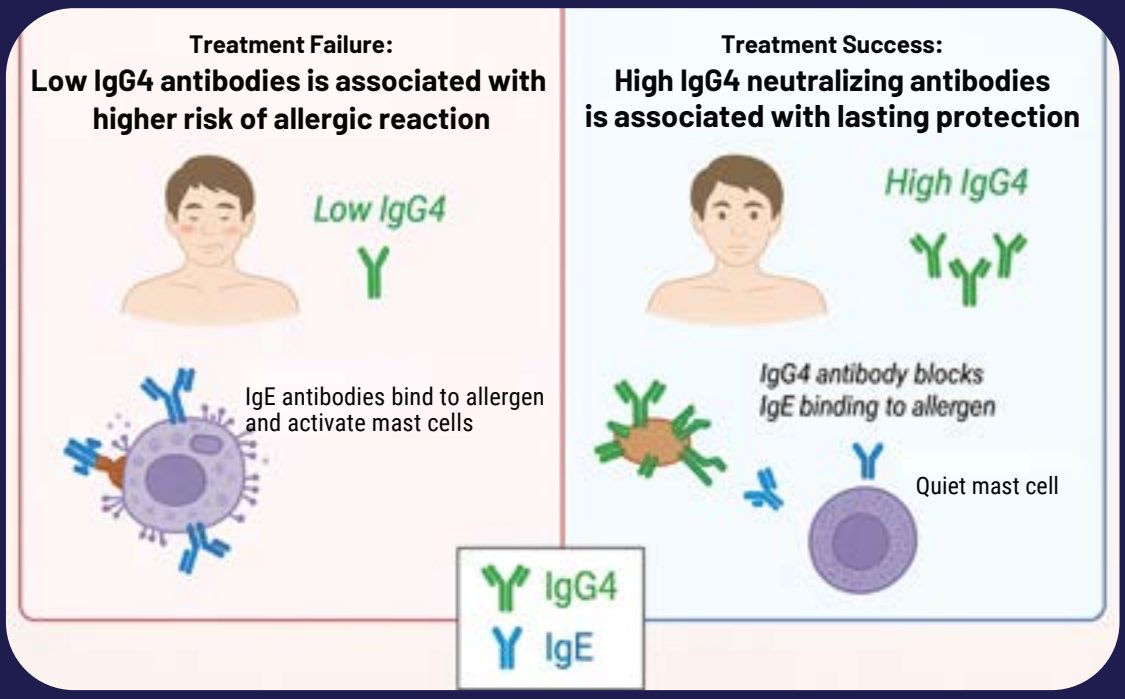
Could there be safer options to oral immunotherapy while maintaining a lasting protection after treatment stops?

Sarita Patil, M.D.
Mass General Brigham Hospital
Harvard Medical School

Only a fraction of patients undergoing peanut oral immunotherapy maintain lasting protection after stopping treatment. Safer tests—beyond oral food challenges—are needed to better identify who remains at risk.

Dr. Patil and her team discovered that patients with lasting protection have higher levels of protective allergen-specific IgG4 antibodies compared to patients that lost protection. These findings demonstrated that protective allergen-specific IgG4 antibodies blocked harmful IgE antibodies from binding to allergens, thus preventing allergic reactions when these antibodies were tested in mice.

These findings could lead to diagnostics to monitor whether peanut allergy treatments are working, and may one day reduce the need for oral food challenges.



Keswani et al., J Allergy Clin Immunol. 2024;153(6):1611–1620.e7.

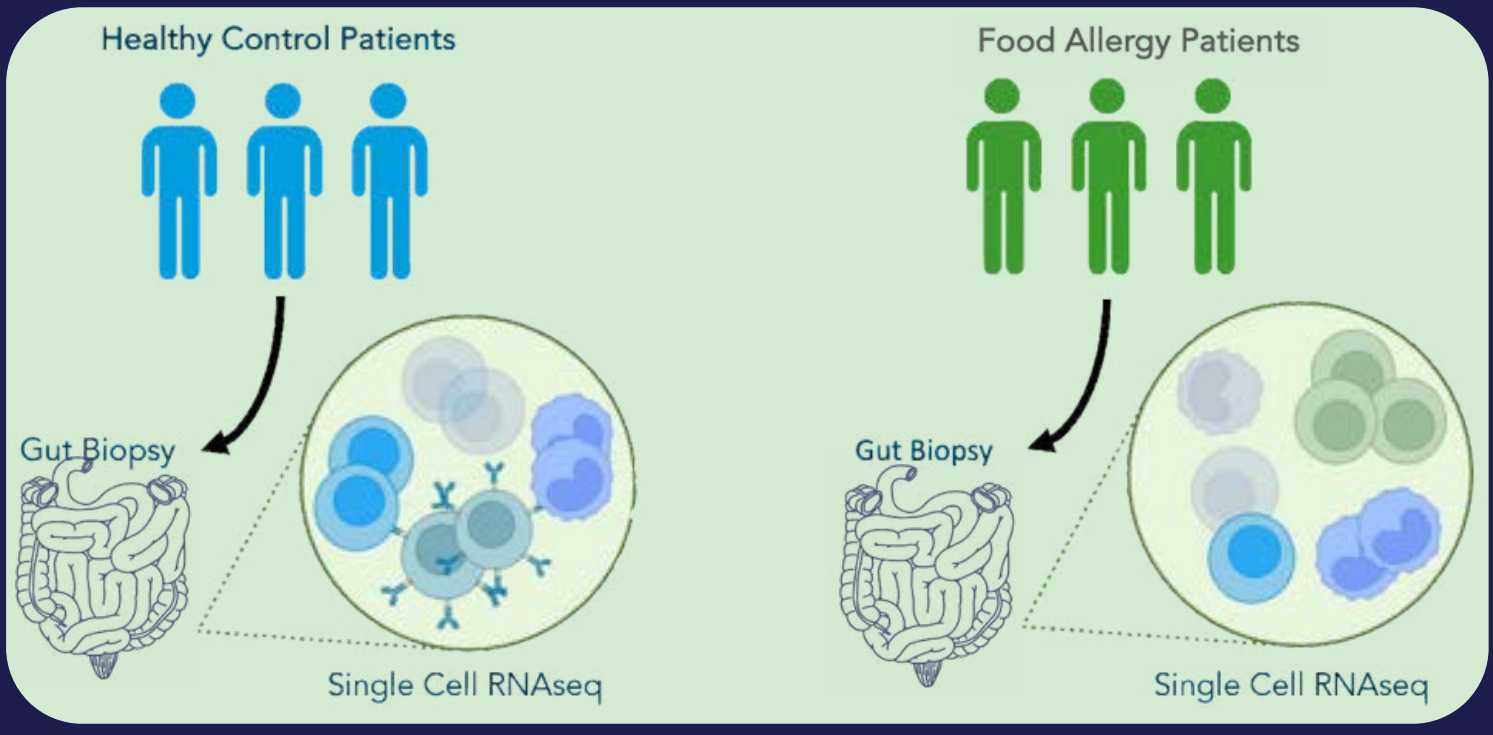
Charting The Gut Microbiome of People with Food Allergies

ALLERBIOME: IDENTIFYING CELLULAR MARKERS OF FOOD ALLERGY

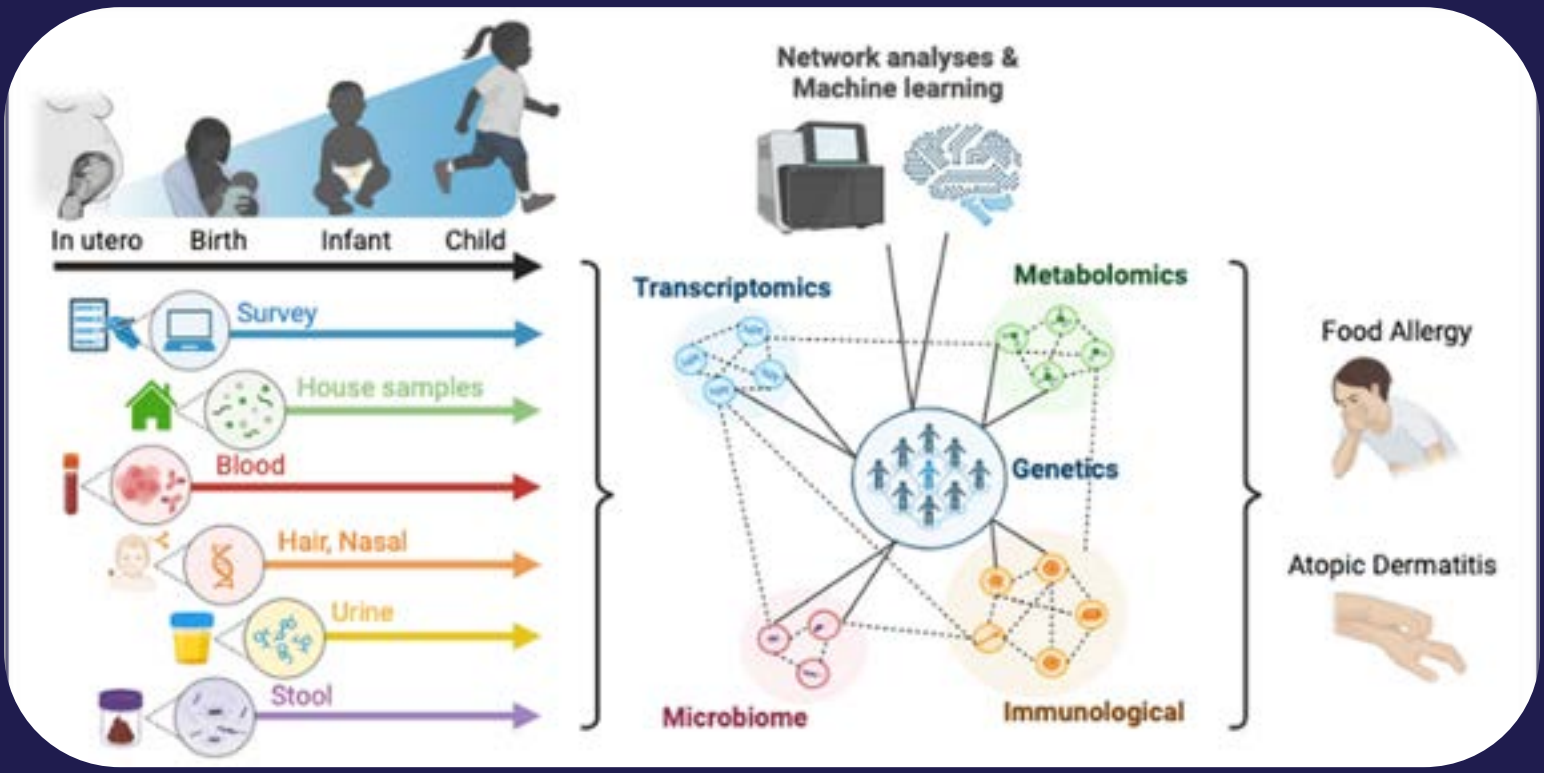
FASI investigators are analyzing gut biopsies, stool samples, and blood from food allergic patients to gain insight into which immune or gut features are associated with positive clinical outcomes. Specially, we are examining:

- How do the cellular landscapes and gut microbes differ between food allergic and non-allergic individuals?
- How does the communication change between gut cells and microbes in food allergic individuals?
- Can a microbial intervention improve food allergy outcomes?

Ramnik Xavier, M.D.
Broad Institute,
Harvard Medical School



SUNBEAM: Understanding How Allergies Begin in Early Life



The SUNBEAM Birth Cohort Study is following 2,500 children from before birth through age 3 to learn why some develop atopic disordeers like food allergy and eczema.

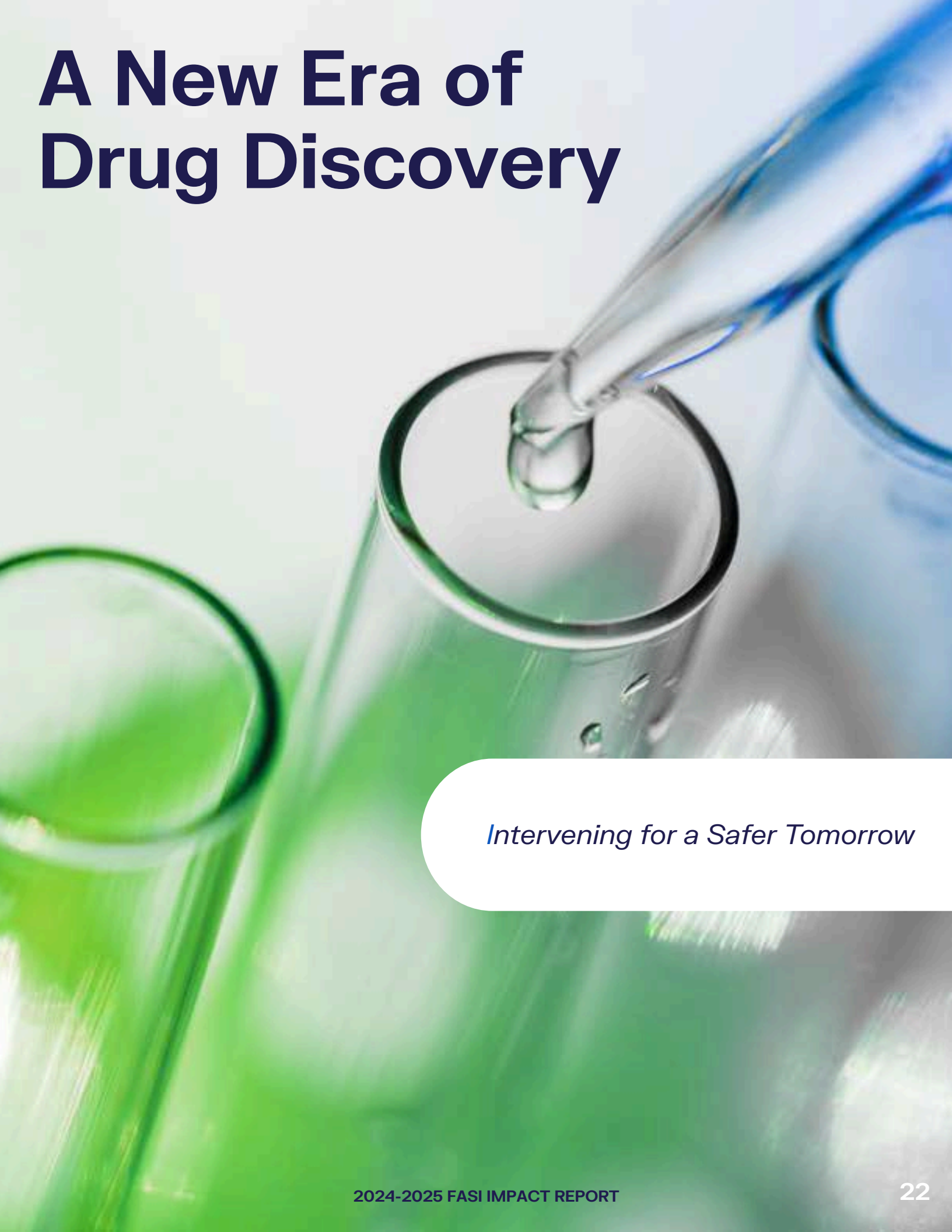
FASI was invited by the NIH/NIAID to support this pivotal study examining how genes, the immune system, microbes, and everyday exposures shape allergy risk early in life.

Key areas of focus include:

- Collecting samples like blood, saliva, stool, and dust from children and parents
- Tracking how antibodies develop over time and signal emerging allergies
- Identifying microbes linked to protection or increased risk
- Studying why some children outgrow allergies while others do not

This research is laying the groundwork to understand and prevent allergic diseases.

A New Era of Drug Discovery



Intervening for a Safer Tomorrow

From Discovery to Treatment: Launching a Bold New Chapter

FASI's Drug Discovery Accelerator (DDA) is transforming groundbreaking research into real treatments for food allergies.

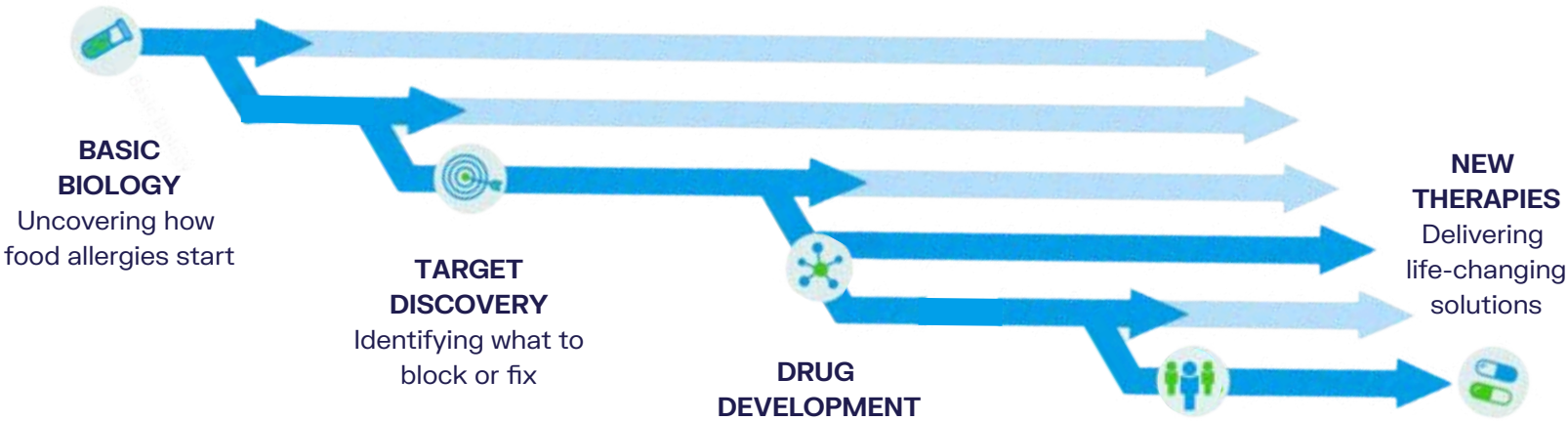
Integrating drug discovery experts into our team and collaborating with top scientists and industry partners.

Identifying novel therapeutic targets by leveraging advanced tools and research to pinpoint key pathways in food allergies.

Launching our first drug discovery program, focused on developing disease-modifying therapies

Strengthening strategic partnerships with biotech and pharmaceutical companies to accelerate translation.

From Discovery to Cure: Our Roadmap



FASI's Game-Changing Targets to Stop Food Allergies

Blocking allergy signals at the start
Treatments stopping chemical signals that cause allergic reactions.

Blocking allergic memory
New treatments to target special immune cells to prevent the body from making allergy antibodies like IgE.

Turning off the cells that cause allergic reactions
Therapies to block certain immune cells to stop reactions.

Strengthening the gut to prevent allergies
Therapies that help the gut heal and stay balanced so it can better block allergy triggers.

Teaching allergy cells to stay calm
New treatments to help allergy cells ignore triggers—without needing the actual food.

Calming the nerve-immune connection
New treatments quiet nerve signals that tell immune cells to cause inflammation.

MAJOR ADVANCES IN FOOD ALLERGY TREATMENT—FUELED BY YOU

In FY 2025, The DDA has:

- Initiated diligence on over 50 targets and produced 4 novel drug concepts
- Convened first meeting of the FASI Drug Discovery Advisory Council (DDAC)
- Filed four patent applications
- Leveraged findings from foundational research to advance the nomination of innovative drug candidates
- Advanced one drug discovery program to target validation studies

Executive and Scientific Leadership

We are grateful for the leadership of our Boards, Councils, Principal Investigators, Partners and Internal Team as together they support FASI's vision and mission.

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The following ways can help support our mission:

- **Partner with us by renewing your gift**
- **Follow us on Social Media**
- **Share our mission/organization with others**
- **Attend our Seminar Series & Annual Symposium**

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FASI | FOOD ALLERGY SCIENCE INITIATIVE

Thank you for enabling our mission and making the work at FASI possible.

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