TOGETHER WE DISCOVER

2025

Benaroya Research Institute
Virginia Mason Franciscan Health

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A LETTER FROM BRI LEADERSHIP

Dear BRI community,

For our team, there's nothing quite like the thrill of the data: that split second when you realize that you've discovered something new and impactful. There's a power in the moment when all the pieces come together — and you know that you've made a contribution that will help people.

At BRI, we live for those moments. They keep us motivated on the path of discovery.

Over the past year, BRI has made significant advances and discoveries. We've launched one of the first major efforts to screen for autoimmune diseases in primary care. We've taken steps toward preventing ulcerative colitis. We've expanded our understanding of healthy immune systems and have learned more about how and why lung diseases happen. In this publication, *Together We Discover*, you'll learn more about these advances and the people behind them.

We chose the name *Together We Discover* because our work wouldn't be possible without our scientists, donors, research participants, and community — all of whom play an important role in our work.

Right now, we need you more than ever. The scientific community in America is navigating deeply uncertain times. We are facing the potential of substantial budget cuts for National Institutes of Health funding for biomedical research. Cuts at this level don't just slow research progress — they can halt it altogether. They dishearten seasoned scientists and lead many early-career scientists to consider pursuing their scientific ambitions overseas or leaving the field altogether. They lead to a long-term loss of experience and missed discoveries that could change lives.

That's why we need every member of our community to keep standing with BRI. Donors, scientists, research participants, and community members: your work is important. Your efforts matter, and we deeply value your contributions.

No matter what the future holds, BRI remains committed to our mission to advance the science to predict, prevent, reverse and cure immune system diseases. We know that one day, together, we will achieve our vision of a healthy immune system for everyone.

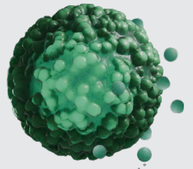
Thank you all for being part of BRI's community.

Jane Buckner, MD
President
Benaroya Research Institute

Margaret McCormick, PhD
Chief operating officer and executive director
Benaroya Research Institute

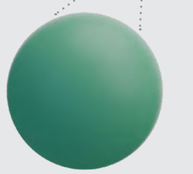
GUIDE TO THE IMMUNE SYSTEM

Learn more about key parts of the immune system that are foundational to BRI's research.

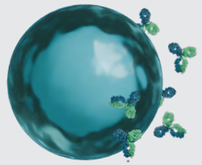


T CELLS are key players in the immune system. There are two main types: effector T cells and regulatory T cells. Effector T cells help start an immune response against germs like viruses and bacteria. They also teach the body how to recognize and fight the same germs in the future. Regulatory T cells help turn off the immune response once an infection is gone.

When T cells don't work properly, they can play a role in autoimmune diseases.

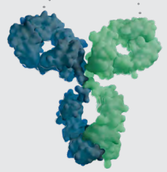


CYTOKINES are small proteins that help immune cells communicate. They send messages so cells know what's happening in the body and how to respond. These proteins play a big role in fighting infections and healing injuries by controlling inflammation and activating other immune cells to protect the body. Different types of cytokines have specific jobs, like increasing immune responses or calming them down to prevent damage to the body.



B CELLS are a type of white blood cell that helps protect your body from infections. They remember germs your body has seen before, so your immune system can fight them faster the next time it encounters them.

After you get a vaccine or an infection, B cells help start your body's immune response by working together with T cells. Then, when you're exposed to the same germ again, your immune system can respond quickly.



ANTIBODIES are special proteins made by B cells. They work like flags that help the immune system find and fight viruses, bacteria, and other germs. These flags can stop infections, sometimes before you even feel sick.

Doctors and scientists can use antibodies to help figure out who might get certain autoimmune diseases. Antibodies are easy to find in the blood and show that the immune system is attacking parts of the body.

DENDRITIC CELLS are a type of immune cell that helps start the body's defense against germs. They find and grab harmful invaders like bacteria or viruses, break them down, and show pieces of them to other immune cells so they know what to fight.

When dendritic cells don't work properly, they can be part of the problem in autoimmune diseases like lupus and inflammatory bowel disease.

Illustration credit: Brad Krajina (BK SciViz)

THE PATH TO IMMUNE SYSTEM DISEASE

At BRI, we study the journey from health to disease — and back again. Our scientists, clinicians, immunologists and geneticists work together to uncover how the immune system functions, what triggers it to lose tolerance, and how we can restore it to health. The path represents both an individual's journey and the way our research moves discovery into action — turning insights about the immune system into advances that return people to health and bring us closer to a future where everyone enjoys a healthy immune system.

Learn more: pages 14-17

Learn more: pages 6-9

Learn more: pages 12-13

Health

Pre-Disease

Disease

Genetic Risk | Trigger | Breaking Tolerance | Tissue Damage | Diagnosis | Treatment

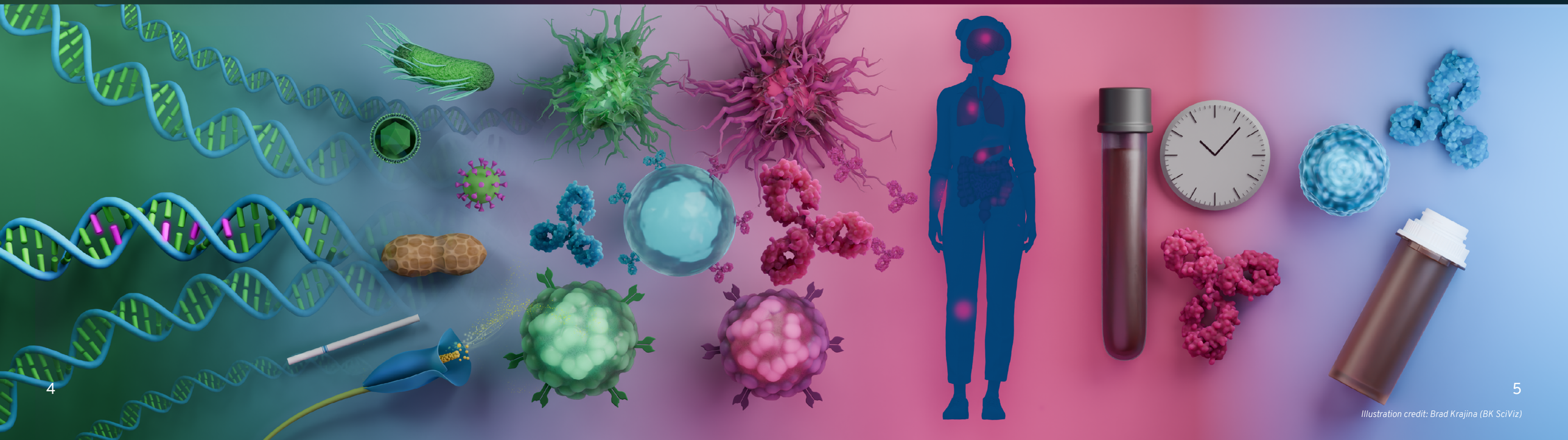
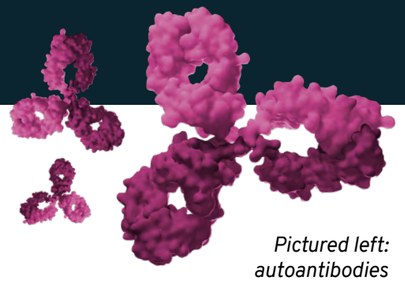


Illustration credit: Brad Krajina (BK SciViz)

PRE-AUTOIMMUNITY:

TAKING STEPS TOWARD PREVENTING ULCERATIVE COLITIS



Pictured left: autoantibodies

By Adam Lacy-Hulbert, PhD

BRI Center for Systems Immunology
Director and member

At BRI, predicting and preventing autoimmune diseases is our ultimate goal.

These are chronic, lifelong diseases — so curing or preventing them altogether would be life-altering. It would mean fewer days of dealing with health challenges instead of doing the things you love, fewer days of debilitating pain, fewer medical bills, and much more.

Much of my work focuses on an autoimmune disease called ulcerative colitis (UC), one of the most common forms of inflammatory bowel disease. And about a year ago, I read about a finding that was so exciting, I stopped what I was doing and rushed down the hall to tell James Lord, MD, PhD. The paper described an autoantibody that appears as early as 10 years before a person develops UC — and it could open the door to predicting and preventing UC.

We immediately began designing studies to determine what role this autoantibody could play in UC — and ultimately — if we could target it to stop the disease before it starts. Now, we're chipping away at three important questions.

QUESTION 1: DOES EVERYONE WITH UC HAVE THIS AUTOANTIBODY? AND DOES ANYONE WITHOUT UC HAVE THIS AUTOANTIBODY?

We scoured hundreds of samples from several sources, including BRI's gastrointestinal disease and healthy control biorepositories, and consistently detected this autoantibody in people with UC but rarely in those without the disease. These findings are consistent with data from the original study in Japan and a follow-up in New York, helping to build the case that it could be a good predictor of the disease.

QUESTION 2: DOES THE AUTOANTIBODY CAUSE UC?

Sometimes autoantibodies are just markers or by-products of disease and don't actually cause it. Other times, they do cause disease. When that's the case, targeting that autoantibody may help treat or prevent a disease.

A study designed by Kayla Fasano, a graduate student in my lab, examined the autoantibody and a group of proteins it attacks, called alpha-V integrins. These proteins are supposed to help activate a protein called transforming growth factor beta, which normally keeps inflammation in check and supports healing. But in UC, this process doesn't work the way it should. Kayla found that the autoantibody's attack made it difficult for the protein to function, which strongly suggests it plays a role in UC.

I've been studying the role alpha-V integrins play in maintaining a healthy immune system for 25 years, so beginning to understand their role in UC is very exciting.

QUESTION 3: CAN TARGETING THIS AUTOANTIBODY TREAT OR PREVENT UC?

This is the most important question. We've begun diving deeper into Kayla's findings to examine the specific cells and processes that lead to UC. We're hoping to define a clear road map of the immune system changes that occur before a person develops UC, something we call a "preclinical state of colitis."

This work is similar to what BRI did to map the preclinical stages that lead to type 1 diabetes (T1D). It provided the basis for finding ways to slow the progression from early indications of disease to actual disease onset and enabled widespread screening. These efforts also paved the way for developing the first-ever medicine to delay the onset of an autoimmune disease. We hope to use T1D as a road map to make similar strides in UC.

Predicting UC could lead to faster diagnoses and earlier treatments. We are poised to start exploring ways to slow or even prevent UC — and what's really exciting is that Dr. Lord already has some ideas for medicines that might be able to do this.

For a fundamental biologist like myself, this research is the best of both worlds. We get to dive into really basic questions that help us understand the underlying mechanisms of the immune system. Every question we ask is directly relevant to a disease and to helping those who live with it.

Illustration credit: Brad Krajina (BK SciViz)

KAYLA FASANO

Graduate student, BRI Center for Systems Immunology

Helping the next generation of researchers hone their expertise and build their portfolios is a key priority at BRI. Graduate students — like Kayla Fasano of the University of Washington (UW)'s immunology program — are a driving force in BRI's work.

"The opportunity to work at BRI was one of the reasons I chose the UW's immunology program. BRI is laser-focused on asking research questions that improve people's health," Kayla says.

"Working in BRI's Gut Immunity Program has enabled me to do exactly what I'd hoped for in my doctoral studies — build our collective understanding of basic biology that could lead to improving the health and lives of people living with difficult diseases." — Kayla Fasano

PIONEERING EARLY SCREENING FOR AUTOIMMUNE DISEASES

By Cate Speake, PhD
BRI Center for Interventional Immunology
Scientific director and associate member

Mammograms catch breast cancer early. Blood pressure screenings help prevent strokes and heart disease. Screening and early detection save lives — but they remain relatively unexplored for autoimmune diseases, even though one in 13 Americans live with one.

BRI is working to change that in a new study backed by a generous donation from the Jolene McCaw Family Foundation.

We're piloting a simple blood test in two Virginia Mason Franciscan Health clinics to screen for autoantibodies — proteins that can show up in the bloodstream months or even years before autoimmune diseases like type 1 diabetes (T1D), rheumatoid arthritis (RA), or celiac disease develop.

This type of test provides vital health information: If you know you're on track to develop T1D, you can watch for early warning signs, which can help prevent a life-threatening complication called diabetic ketoacidosis. With RA, early detection can mean faster treatment and milder symptoms.

Autoimmune diseases often take months or even years to diagnose. Tests aren't always definitive, and symptoms can come and go or mimic other conditions. This type of screening could also help patients get diagnosed faster and get the care they need sooner.

Our study is exploring two key questions: What steps would it take to make these tests accessible in primary care clinics? And is widespread screening feasible?

So far, this screening has been well-received by patients and providers. We've also identified a few ways to make testing and results-sharing even smoother.

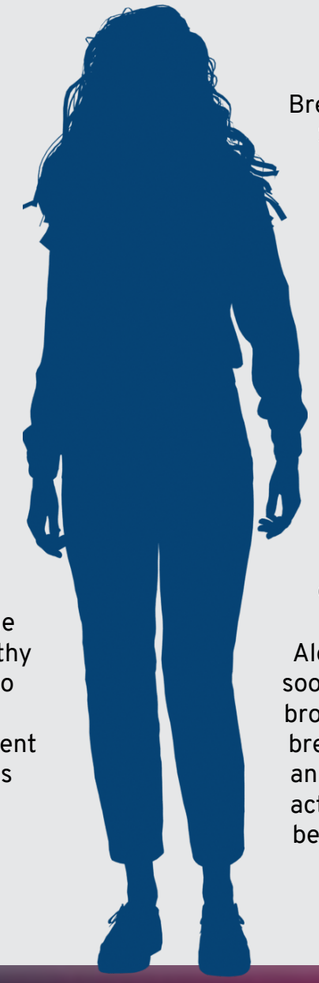
For me, what's most exciting is that once this study is complete, we can take what we learn and start implementing it in more clinics. This will move us toward making autoimmune disease screening a routine part of primary care. Our ultimate goal is to make screening for autoimmunity simple and accessible, providing earlier diagnosis and maybe even stopping the progression of disease altogether.

Scan the QR code to the left or visit bri-news.short.gy/kBwcTq to learn more about autoimmune disease.

BREAKING TOLERANCE

Most people are born with immune systems that maintain a delicate balance called tolerance. Tolerance means the immune system knows what to fight — like germs — and what to leave alone, such as healthy tissues in your joints or pancreas.

But this balance can be disrupted. Some people's genetics make them more prone to losing tolerance. For others, a trigger — like an infection or wildfire smoke — can upset the system. When that happens, the immune system mistakes healthy tissue for a threat and begins to attack. This is called breaking tolerance. It's the pivotal moment when the immune system shifts from protecting the body to harming it.



Breaking tolerance often happens quietly. Symptoms may be subtle, varied, and slow to appear, which is why it can take months or even years to get a diagnosis. Over time, however, broken tolerance can lead to autoimmune diseases, asthma, allergies, and other immune-related conditions.

At BRI, we're shifting the paradigm from treating disease to early intervention. By screening for antibodies and other early immune markers, we aim to identify people at risk long before symptoms appear — when there's still time to change the course of disease.

Along this path, our goal is to intervene sooner, restoring tolerance before it's fully broken and ultimately preventing it from breaking at all. Each point on the path offers an opportunity to detect, understand, and act earlier — turning scientific discovery into better health for everyone.

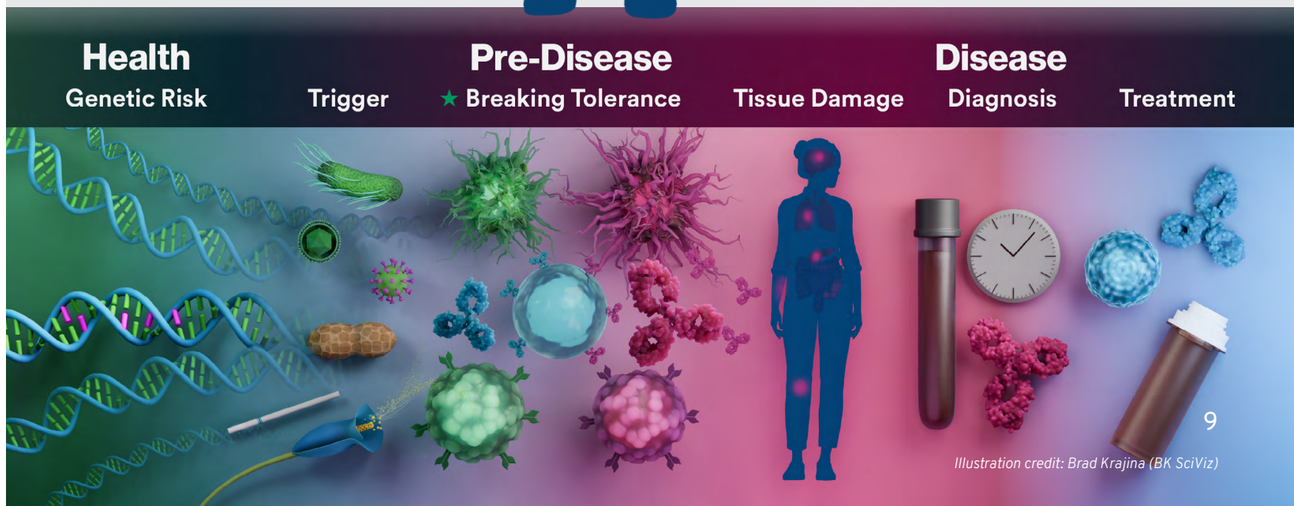


Illustration credit: Brad Krajina (BK SciViz)

BRI FACULTY

MEMBERS

BRI members serve as the core of our scientific staff.

Estelle Bettelli, PhD
Center for Fundamental Immunology
Member

Jane Buckner, MD
Center for Translational Immunology
Member
President, BRI

Allyson Byrd, PhD
Center for Systems Immunology
Assistant member

Daniel J. Campbell, PhD
Center for Fundamental Immunology
Center director and member

Karen Cerosaletti, PhD
Center for Translational Immunology
Center director and associate member

Carla Greenbaum, MD
Center for Interventional Immunology
Center director and member

Kurt Griffin, MD, PhD
Center for Interventional Immunology
Associate member

Jessica Hamerman, PhD
Center for Fundamental Immunology
Member
Director, BRI academic affairs

Oliver Harrison, DPhil
Center for Fundamental Immunology
Associate member

Eddie James, PhD
Center for Translational Immunology
Assistant member

Bernard Khor, MD, PhD
Center for Translational Immunology
Associate member

Bill Kwok, PhD
Center for Translational Immunology
Member

Adam Lacy-Hulbert, PhD
Center for Systems Immunology
Center director and member

Peter Linsley, PhD
Center for Systems Immunology
Member

S. Alice Long, PhD
Center for Translational Immunology
Member

James Lord, MD, PhD
Center for Translational Immunology
Research associate member

Sandra Lord, MD
Center for Interventional Immunology
Clinical director
Director, BRI Clinical Research Center

Meg Mandelson, PhD, MPH
Center for Interventional Immunology
Director, pancreatic cancer research

TOGETHER WE DISCOVER

Carmen Mikacenic, MD
Center for Translational Immunology
Associate member

Peter Morawski, PhD
Center for Fundamental Immunology
Research assistant member

John Ray, PhD
Center for Systems Immunology
Assistant member

Cate Speake, PhD
Center for Interventional Immunology
Scientific director and associate member

Caroline Stefani, PhD
Center for Systems Immunology
Research assistant member

Soo Jung Yang, PhD
Center for Translational Immunology
Research assistant member

Steven Ziegler, PhD
Center for Fundamental Immunology
Member
Director, BRI external collaboration

EMERITUS

BRI's emeritus faculty are retired members who have a distinguished record of research.

Gerald Nepom, MD, PhD
Emeritus member

Thomas Wight, PhD
Emeritus member

AFFILIATE

BRI affiliate members hold appointments with collaborating institutions and are strongly engaged in BRI's research.

Matthew C. Altman, MD, MPhil
Center for Systems Immunology
Affiliate investigator

Jeffrey Carlin, MD
Center for Interventional Immunology
Affiliate investigator

Mariko Kita, MD
Center for Interventional Immunology
Affiliate investigator

Richard Kozarek, MD
Center for Interventional Immunology
Clinical member

Uma Malhotra, MD
Center for Interventional Immunology
Affiliate investigator

Rebecca Partridge, MD
Center for Interventional Immunology
Affiliate investigator

DISEASE: TISSUE DAMAGE

TISSUE-SPECIFIC AUTOIMMUNITY:

STUDYING DISEASES IN THE TISSUES WHERE THEY HAPPEN

By Carmen Mikacenic, MD

BRI Center for Translational Immunology

Associate member

When you get a cut, the healing process starts with inflammation. Your body sends in immune cells to fight off germs and then starts to make new skin cells. If the cut is deep or doesn't quite heal properly, you might develop a scar.

The same thing can happen in the lungs. A variety of things can trigger inflammation, like a bacterial or viral infection, an autoimmune disease like rheumatoid arthritis or sarcoidosis, or many other causes. If it persists over time, some people develop lung scarring, known as pulmonary fibrosis. The lungs become stiff, making it challenging for them to function properly.

Lung scarring is very difficult to stop once it begins, and there's no known way to reverse it. That's why my lab focuses on understanding how lung inflammation leads to scarring. The ultimate goal is to develop ways to reverse or prevent lung scarring, and to understand why some — but not all — people with lung inflammation develop scarring.

Pictured right: inflammation from an infection triggered in the lungs

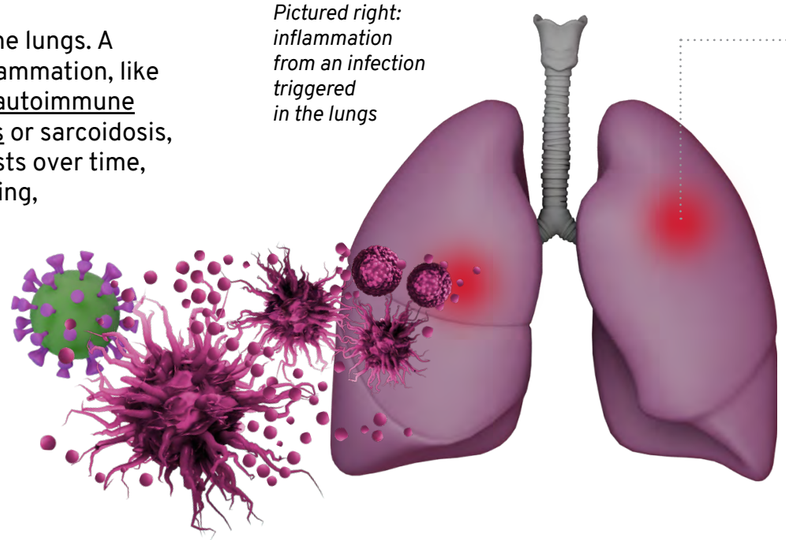


Illustration credit: Brad Krajina (BK SciViz)

TOGETHER WE DISCOVER

TISSUE SAMPLES TO UNDERSTAND THE EARLY STAGES OF LUNG DISEASES

Traditionally, scientists have studied immune system diseases by looking at blood samples because they are relatively easy to collect. But they've also known that studying tissue affected by disease provides more information. The problem is that tissue is hard to come by — it's more feasible to collect and study blood samples than tissue from an internal organ, like the lungs or joints.

Until recently, most tissue samples used to study lung inflammation came from people whose scarring was so severe they needed a lung transplant and then donated their diseased organ for biomedical research. These organs provided good insight into the end stage of disease but not its earlier stages.

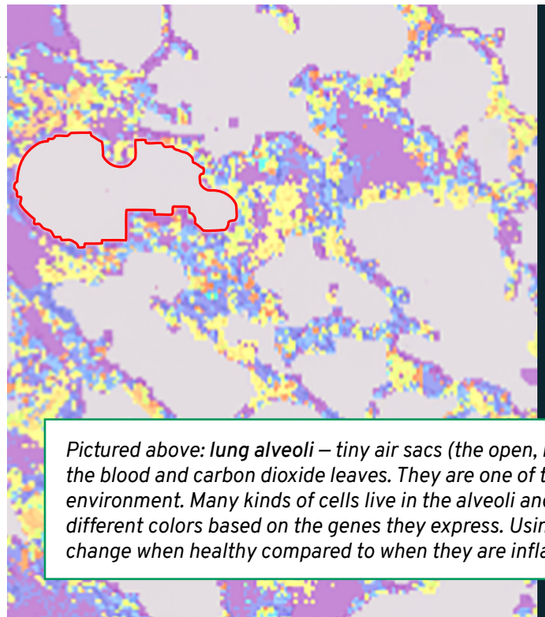
A newer minimally-invasive lung biopsy technique called cryobiopsy is providing tissue samples that give my team crucial visibility into the inflammatory patterns of earlier-stage lung disease. We're thankful for the patients at Virginia Mason Franciscan Health who, after having a cryobiopsy, choose to donate extra tissue to research at BRI. Studying these samples will help us understand why lung scarring begins or worsens.

SPATIAL TRANSCRIPTOMICS YIELDS LARGE DATA SETS FROM TINY SAMPLES

The tissue samples left over from a cryobiopsy are tiny and each one is precious. We're working with an exciting state-of-the-art technology that enables us to glean as much information as possible from each sample. This technology, called spatial transcriptomics, enables us to ask a whole new set of questions about the location of cells and how they interact with each other, such as:

- What is each cell doing?
- Which cells are next to each other?
- How do cells interact with one another?
- Which genes are expressed in various cells?
- How do changes in cells impact lung function over time?
- How do cells differ in lung tissue with and without scarring?

This work should provide crucial data about which immune cells contribute to the development of lung scarring — and pave the way for targeted treatments to stop it.



WHAT IS SPATIAL TRANSCRIPTOMICS?

Spatial transcriptomics is a cutting-edge technology that lets scientists pinpoint each cell's exact location in tissue, identify active genes, and understand cell interactions. By mapping gene activity and behavior, BRI researchers can better understand how immune diseases start and progress.

We're currently using spatial transcriptomics to study lung and immune system diseases.

*Pictured above: **lung alveoli** — tiny air sacs (the open, light-purple spaces in the image, see red outline) where oxygen enters the blood and carbon dioxide leaves. They are one of the few places in the body where the immune system meets the outside environment. Many kinds of cells live in the alveoli and can change when there is inflammation. In the image, cells are shown in different colors based on the genes they express. Using spatial transcriptomics, BRI scientists study how lung cells look and change when healthy compared to when they are inflamed.*

HEALTH

STUDYING HEALTH TO UNDERSTAND DISEASE

WHY STUDY HEALTHY IMMUNE SYSTEMS?

By Cate Speake, PhD
BRI Center for Interventional Immunology
Scientific director and associate member

BRI's vision is to create a healthy immune system for everyone. But first we need to answer an important question: What, exactly, does a healthy immune system look like?

Think about it this way: when you're walking down the street, no two people look exactly alike. It's the same with the immune system. There are a lot of differences, especially among healthy immune systems.

In 2019, BRI launched the Sound Life Project (SLP) to better understand the range of healthy immune systems. The research team set out to build a robust library of samples from people with no history of immune system disease so that we could use these samples to paint a more detailed picture of a healthy immune system. This picture would lead to a better understanding of which immune system differences are part of typical aging and which differences tip the scale toward autoimmune diseases like rheumatoid arthritis or lupus.

During this two-year project, the SLP team collected blood samples and health surveys from 100 people. The study focused on two age groups: 25-35 and 55-65. Both of these groups have fully developed immune systems, and the older age group is at the age when some aspects of immunity begin to wane.

These samples and data are now stored in BRI's repositories, where our scientists use them to better understand the immune system in health and disease.

"We're excited for what's to come as we further outline what defines a healthy immune system."

— Jane Buckner, MD, BRI president

BRI's Megan Smithmyer, PhD, led the first of what is expected to be many discoveries from SLP data, detailing different immune system characteristics or "immunotypes" of individuals who participated in the study (read more on the next page). We plan to continue monitoring all SLP study participants to see how the immune system changes over time — and to answer questions like whether certain immunotypes make people more likely to develop autoimmune or inflammatory diseases.

Illustration credit: Brad Krajina (BK SciViz)

SOUND LIFE PROJECT DATA REVEALS INTRIGUING PATTERNS ABOUT THE IMMUNE SYSTEM

By Megan Smithmyer, PhD
BRI Center for Interventional Immunology
Staff scientist

I was halfway around the world in Zambia on a global health fellowship when I first had the opportunity to study human samples from a biorepository. I was part of a team working to better understand the correlation between mothers with HIV and preterm births — and I saw firsthand how using human samples could lead to exciting discoveries that impact human health. I had to leave Zambia because of the pandemic, but I was thrilled to join BRI in 2021 and be part of an institute with robust biorepositories and a strong focus on translational research.

I teamed up with BRI bioinformatician Alex Hu, PhD, and together we started mining the SLP data to find meaningful patterns among 174 different types of immune cells. We found that people in our study generally fit into one of four groups called "immunotypes" — and one immunotype was particularly interesting for several reasons:

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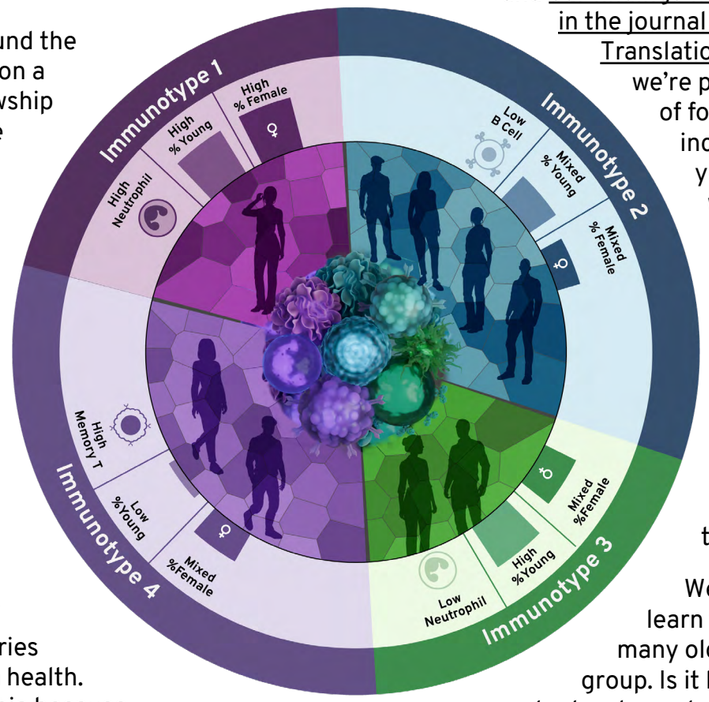
- **It was almost all women.** Autoimmune diseases disproportionately impact women, and about 80% of people with autoimmune disease are female.
- **There were almost no older people** in this group.
- When we ran a lab test that simulates a bacterial infection, **the group had certain immune cells with a very strong response.**

We completed this study in the spring of 2025, and our findings were published in the journal Science Translational Medicine. Now, we're planning a number of follow-up studies, including a study of younger women who may have this interesting immunotype. We hope to zero in on why their immune systems look older than they actually are and how their immune systems respond to infection.



We'd also like to learn why there weren't many older people in this group. Is it because they go on to develop autoimmune disease and therefore wouldn't have been studied in the SLP? Or do they simply shift into a different immunotype as they age?

This study could provide a lot of insight into what happens in the immune system before someone develops a disease. Scientists don't currently have much data on this because most research happens in people who already have an autoimmune disease. Contributing to research that helps us understand how people develop disease — and that may help prevent it — is really fascinating to me.

Illustration credit: Brad Krajina (BK SciViz)

MEET A SOUND LIFE PROJECT PARTICIPANT

By Austin Cresap
Sound Life Project participant

My name is Austin Cresap. I'm originally from California and consider Santa Barbara my hometown. After coming up to Seattle one summer for a visit, I instantly fell in love. I've now lived here for nearly 12 years and share my life in the city with my husband.

I first heard about the Sound Life Project (SLP) through a close friend who works in diabetes research. She thought it might be a good fit for me, and when I learned more, I knew I wanted to be part of it.

For me, joining the project came down to something simple: If I can give blood to help others, why wouldn't I? We all see people around us facing challenges every day, and I know my individual ability to help only goes so far. Donating blood is something simple I can do to support meaningful discoveries that will improve the lives of others.

A typical SLP study visit is quick. I show up, check in, and am greeted with snacks (always a perk!). First, BRI's research team and I review any changes in my health history and study updates. Then, they take my blood, validate my parking, and send me on my way. Throughout the entire process, the research team checks in with me often to make sure I'm comfortable, which I always appreciate.

During my time participating in the SLP, I've gotten to know BRI's nurses and other staff — Archie Barash, Arlene Colmenares, Deric Khuat, and others. We talk about books, life updates, and more. Every interaction has been so warm and personal. Members of the research team remember details about my life beyond my chart, and they share stories from their own lives too. Those connections have been one of the most rewarding parts of participating.

If someone is considering getting involved in research, I'd tell them this: It doesn't take much time, but it can make a huge difference. So many of us want to contribute to meaningful change in the world, and this is a concrete way to do it.

I'm grateful to be part of the SLP and BRI's work. It's been an enriching experience, and I look forward to continuing to contribute to BRI's research in whatever ways I can.

"I believe in science and the power of continued learning. Supporting BRI means supporting work that helps us better care for one another." — Austin Cresap

Pictured above: a BRI scientist places participant samples into our biorepositories

BRI BIOREPOSITORIES

BRI's biorepositories are home to over **350,000 samples** from more than **14,000 participants.** These samples span **11 areas of research** and help our scientists learn more about how and why diseases of the immune system happen, while also supporting the development of improved diagnostic tests and treatments for people living with these conditions.

Our biorepositories include:

- Allergies and Asthma
- Cancer
- Down Syndrome
- Gastrointestinal Disease
- Healthy Control
- IgA Nephropathy
- Neurologic Disease
- Pulmonary Disease
- Rheumatic Disease
- Type 1 Diabetes
- Vaccine and Infectious Disease

"I support all scientific inquiry and research, and I'm grateful for the opportunity to contribute in any way I can — especially to projects that have the potential to improve people's lives."

— Travis Coleman, BRI Rheumatic Disease Biorepository participant

Interested in joining a BRI biorepository?

Scan the QR code above or visit bri-news.short.gy/dJouDn to contact our team and learn more.

HOPE FOR A FUTURE WITHOUT DIABETES

By Kristi and John Pangrazio
BRI supporters

We've been married for 56 years. While we agree on much in our shared life, we are definitely aligned in our desire to support the mission of BRI.

We appreciate learning about BRI's latest research, attending events, and hearing the scientists speak about their research and progress.

Like so many BRI supporters, autoimmune diseases affect our loved ones, and type 1 diabetes (T1D) is especially close to our hearts. The mission to predict, prevent, reverse and cure immune system diseases is what drew us to BRI when we learned about it in 2003 — and what inspired Kristi to serve on BRI's board for many years.

Now, more than two decades later, we're still passionate about finding causes and cures. Supporting BRI's Innovation Fund is one way we're contributing to this goal. The Innovation Fund brings together scientists from different fields to introduce new research tools to BRI and use them to answer exciting new questions.

Honestly, they had us at "innovation." Innovation is the future and it's how we'll find those causes and cures. And at BRI, it's the collaborative efforts of brilliant minds who take on some of the greatest challenges of our time.

We've seen this firsthand in BRI's progress against T1D over the past 20 years. We've witnessed the brilliance of Carla Greenbaum, MD, Alice Long, PhD, and Cate Speake, PhD, and the advances they have made together. It's heartening to see advances like predicting T1D and taking steps toward preventing it — and to reaffirm to loved ones that hope is real.

Our greatest desire is that BRI will eventually cure T1D, and we'll know that our gifts helped pave the way. Like all autoimmune diseases, T1D is constant, lifelong and fatiguing. But we know the BRI team. We know their motivation and tenacity. The brilliant scientists won't stop their relentless search for causes and cures of autoimmune diseases. Supporting their hard work and innovation — well, that's a very smart investment.

"I'd like to express my gratitude to the people who invest in the Innovation Fund. It allows us to bring tools to BRI that keep our institute on the forefront of research and accelerates our progress."

— Oliver Harrison, DPhil
Spring 2024 BRI Innovation Fund recipient

INNOVATION FUND LEADS TO EXCITING PROGRESS AT BRI

The Innovation Fund supports teams of at least two BRI scientists in developing new technologies and using them to answer key research questions. These tools then become available across BRI. By backing bold, early-stage ideas, the fund fosters collaboration and accelerates discovery. In just two years, it has already driven exciting projects and strengthened BRI's research capabilities.

FALL 2023: GROWING HUMAN BETA CELLS AND STUDYING THEM WITH STATE-OF-THE-ART IMAGING TOOLS

Eddie James, PhD
Center for Translational Immunology
Assistant member

Caroline Stefani, PhD
Center for Systems Immunology
Research assistant member

The Innovation Fund helped the James Lab **establish infrastructure to produce beta cells at BRI**, giving scientists direct access to study the cells involved in type 1 diabetes. Dr. Stefani used advanced microscopy to capture detailed 3D images and real-time videos of the cells.

SPRING 2024: GENOME ENGINEERING TO BUILD HIGHLY ACCURATE LAB MODELS AND EXAMINE HUMAN T CELLS

Jane Buckner, MD
Center for Translational Immunology
Member

Oliver Harrison, DPhil
Center for Fundamental Immunology
Associate member

Dr. Buckner and Dr. Harrison are using **CRISPR-Cas9 to study gene changes in immune cells linked to autoimmune diseases**, improving disease models and engineering immune cells to either fight disease or suppress damaging immune responses in conditions like ulcerative colitis.

FALL 2024: IMPLEMENTING DUAL BACTERIAL/HOST-RNA SEQUENCING TO CHARACTERIZE MUCOSAL-ASSOCIATED MICROBES

Allyson Byrd, PhD
Center for Systems Immunology
Assistant member

James Lord, MD
Center for Translational Immunology
Research associate member

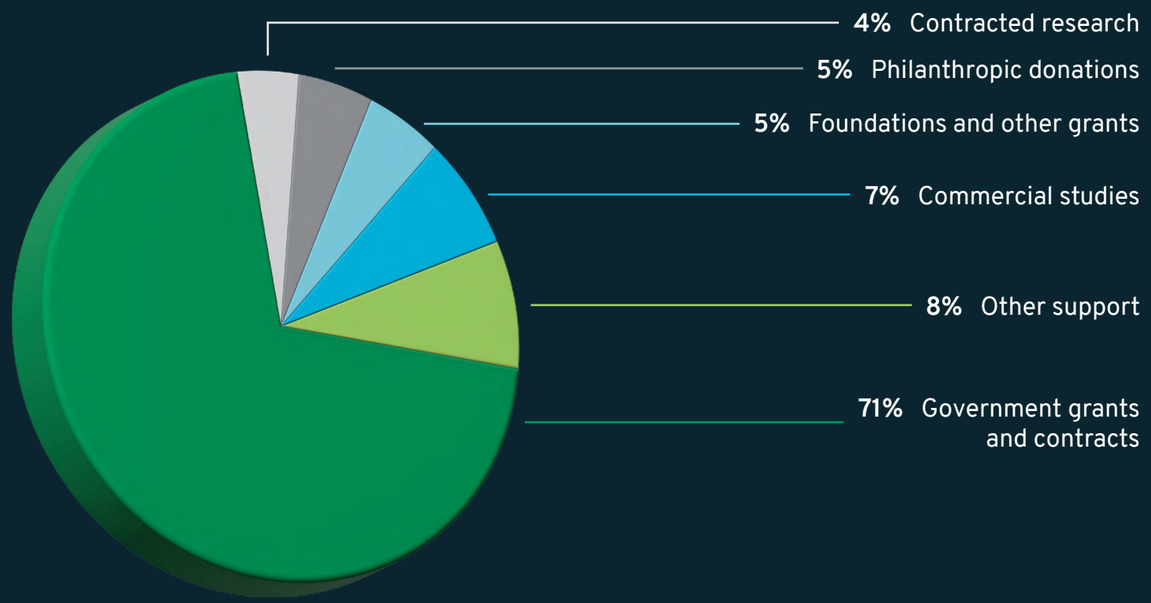
Dr. Byrd and Dr. Lord are testing sequencing **methods on gut biopsies to study how bacteria and human cells interact in inflammatory bowel disease**, aiming to better understand how these interactions may cause and contribute to Crohn's disease beyond what stool samples can show.

Make a donation to support the BRI Innovation Fund by scanning the QR code to the left or visiting benaroyaresearch.org/donate-now.

BRI BY THE NUMBERS

For nearly 70 years, BRI scientists have worked to better understand the immune system to improve lives affected by diseases like type 1 diabetes and rheumatoid arthritis. From the start, we knew collaboration was essential. Thanks to partners in science, government, industry, and our generous donor community, we're making progress toward better treatments with fewer side effects — and personalized medicines that address the root causes of immune system diseases.

2025 BRI COMPONENTS OF SUPPORT | $80 MILLION



2024-2025 AWARDS AND RECOGNITION

Jane Buckner, MD

Top Doctor*

Seattle Magazine, 2024

**Three years running*

Adam Lacy-Hulbert, PhD

Health Care Leadership Researcher of the Year Award

Puget Sound Business Journal, 2024

Carmen Mikacenic, MD

Outstanding Investigator Award

Washington Association of Physicians and Western Society for Clinical Investigation, 2025

Benaroya Research Institute
Virginia Mason Franciscan Health

ABOUT BRI

Progress against one immune system disease is progress against them all

At BRI, we study the immune system and the many diseases that impact it — including autoimmune diseases, allergies, asthma and cancer. Our research aims to build a deep understanding of how the immune system works in both health and disease, uncovering how disorders begin and how to rebalance the immune system back to health.

As a nonprofit institute within Virginia Mason Franciscan Health, we work closely with doctors and patients to accelerate the path from innovative lab discoveries to life-changing care.

OUR MISSION	Advance the science to predict, prevent, reverse and cure diseases of the immune system
OUR VISION	A healthy immune system for everyone
OUR VALUES	Persistent inquiry; innovation and agility; constant collaboration; integrity and respect

CONNECT WITH US

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Virginia Mason Franciscan Health