Immune MATTERS

LA JOLLA INSTITUTE
FOR IMMUNOLOGY
FALL 2025

ARCHITECTS OF FUNDAMENTAL SCIENCE

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FALL 2025

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OUR MISSION

The Institute will engage in a world-class biomedical research program with a focus on the immune system. It will conduct, share, and partner such that the results of its discovery program will make outsized contributions to the betterment of human health.

STAY UPDATED! If you would like to receive email updates from La Jolla Institute for Immunology, please subscribe at **lji.org/signup** or contact us at **communications@lji.org** or **(858) 752-6645.**

FIGHTING DISEASE IS A

National effort

At La Jolla Institute for Immunology (LJI), we study the foundations of the immune system so we can combat disease as strategically as possible. We are guiding the development of new therapeutics that are effective, long-lasting, and personalized to work best for each person.

Our research, and the tools we have developed, have launched strategic national resources that fuel discovery across the United States. LJI scientists have developed the Immune Epitope Database (IEDB), which allows us to move quickly to address autoimmune diseases and emerging infectious diseases. We also run the Cancer Epitope Database and Analysis Resource (CEDAR) to study how immune cells target cancer, and the Database of Immune Cell Epigenomes (DICE) to investigate how genes control the immune system. Researchers across the nation use these resources to pursue new cancer immunotherapies and lifesaving vaccines.

We've also strengthened biomedical research by leading other scientists in national efforts. LJI scientists recently partnered with the international Immunological Genome Project (ImmGen) consortium to develop a new "spatial transcriptomics" resource to track immune-cell activities in different organs. My own lab leads America's SHIELD, a national consortium of scientists working to develop lifesaving vaccines against viral causes of cancer and birth defects.

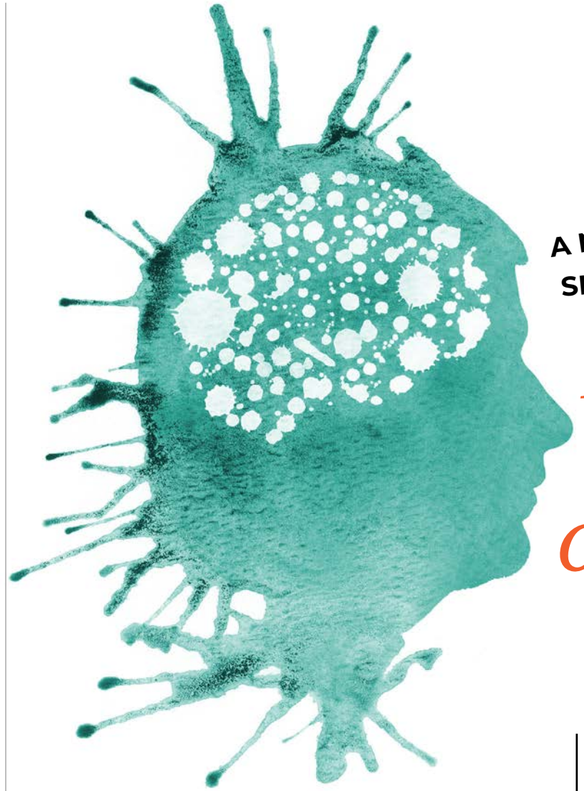
LJI supporters are leaders in our shared mission to fight disease and ensure humanity can benefit from cutting-edge medical advances. Funding from ARPA-H, the National Institutes of Health, the Department of Defense, and other government agencies empowers our scientists to take on the most pressing problems in human health. Federal sources provide 70 percent of our fuel for existing projects and our current scientists and staff.

Philanthropic funding is essential for the rest, and for anything new: new directions, new ideas, new hires to take us down new paths. Your gifts are critical in moving new therapies forward, and the best part of our work together is helping those discoveries unfold and enjoying the rippling positive impact.

Your support means everything to us.

Sincerely,

Erica Ollmann Saphire, Ph.D., MBA
Professor, President & CEO
La Jolla Institute for Immunology



A NEW LJI INVESTIGATION SHEDS LIGHT ON

Parkinson's disease development

Scientists at La Jolla Institute for Immunology (LJI) have discovered signs of Parkinson's disease that show up long before other clinical symptoms. This new research may open the door to creating earlier interventions for the disease. It may also help explain why Parkinson's disease is nearly twice as common in men as it is in women.

LJI Professor Alessandro Sette, Dr.Biol.Sci., led a recent investigation into the role that "self-reactive" T cells play in Parkinson's disease. In previous studies, Dr. Sette and his colleagues had found clues that these T cells can mistakenly target vulnerable brain cells and drive inflammation associated with Parkinson's disease.

The new study revealed that these T cells are most active during the "prodromal" period in Parkinson's—the years before a patient receives a diagnosis.

"This T cell immunity could be a marker for early Parkinson's treatment, even before people show symptoms. And there's reason to think that treating Parkinson's in the very early stages can lead to a better outcome."

LJI PROFESSOR ALESSANDRO SETTE, DR.BIOL.SCI.

Dr. Sette and his colleagues have also discovered that these potentially harmful T cells don't act exactly the same in men and women.

The researchers recently investigated how T cells react to PINK1, a protein that normally helps brain cells function. The team found that some people with Parkinson's have T cells that mistake PINK1 for a sign of disease. These T cells may target brain cells that express PINK1, contributing to inflammation and brain-cell death.

These misguided T cells are much more common in men. "The sex-based differences in T cell responses were very, very striking," says Dr. Sette. "This immune response may be a component of why we see a sex-based difference in Parkinson's disease." ◆

Stopping mosquito-borne viruses

Zika virus and dengue virus are close relatives. Both are mosquito-borne flaviviruses, and both specialize in infecting a host's dendritic cells.

But a new study led by scientists at LJI and UC San Diego and recently published in *Nature Communications* shows that these two viruses have vastly different ways of making us sick.

Zika virus uses stealth. It slips into our dendritic cells and blocks them from alerting nearby T cells to danger. The virus then infects new cells and spreads to new hosts as the immune system struggles to mount a counterattack.

Dengue virus prefers a shock-and-awe approach. It forces our dendritic cells to churn out molecules called pro-inflammatory cytokines, which send the immune system into overdrive. The virus spreads to new host cells as the body grapples with this overwhelming immune response.

"Understanding these differing infection strategies is key to developing lifesaving vaccines."

LJI PROFESSOR SUJAN SHRESTA, PH.D.

LJI Professor Sujan Shresta, Ph.D., and her team are working to develop vaccines that harness virus-fighting T cells to combat Zika virus, dengue virus, and other flaviviruses with pandemic potential. "Our ultimate goal is to develop vaccines against these very difficult viruses," says Dr. Shresta. ◆

Combating CMV infection

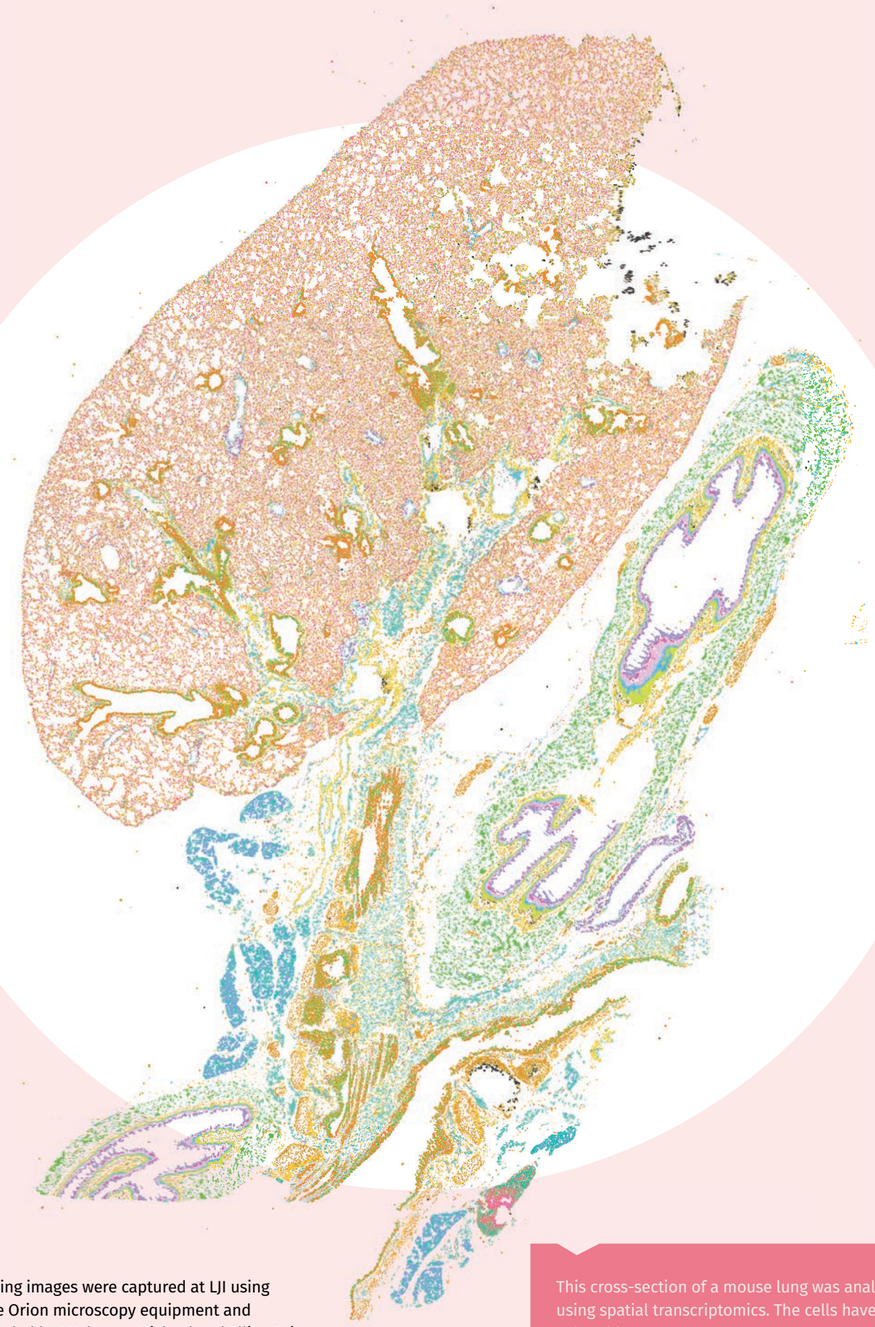
Scientists at LJI and research partners at the University of Pittsburgh have uncovered the inner workings of cytomegalovirus (CMV), a herpesvirus that causes devastating birth defects.

The researchers captured the first-ever look at how CMV uses a piece of its molecular machinery, called GATE, to enter and infect human cells. The virus uses GATE like a key to sneak into the cells that line our blood vessels, triggering internal damage while preventing our immune system from recognizing the signs of infection.

"Previous attempts to generate a CMV vaccine have failed, but that was before we identified the GATE complex," says LJI Associate Professor Chris Benedict, Ph.D.

"We hope that new strategies targeting GATE will improve our chances of combating CMV infection, and also perhaps cleanse our bodies of this lifelong infection."

LJI ASSOCIATE PROFESSOR CHRIS BENEDICT, PH.D. ◆



These stunning images were captured at LJI using cutting-edge Orion microscopy equipment and software, funded by LJI donors Michael and Ellise Coit.

This cross-section of a mouse lung was analyzed using spatial transcriptomics. The cells have been colored by type.

At home in your organs

Each of our organs is like a special little habitat. Immune cells need to adapt to this habitat in order to defend it from infections, tumors, and other threats.

Some organs, like the liver, are more acidic. Some organs, like the lungs, come into constant contact with pollen, pollution, and pathogens from the outside world. And each organ has a different structure.

Scientists at La Jolla Institute for Immunology (LJI) are investigating which kinds of immune cells take the lead in defending different organs. LJI Assistant Professor Miguel Reina-Campos, Ph.D., has been working with experts in LJI's Microscopy and Histology Core to capture stunning images of immune cells in mouse tissues for a new research tool called ImmGenMaps.

ImmGenMaps is a great example of how LJI scientists advance medical research. The project is part of the Immunological Genome Project (ImmGen), founded and supported by the National Institutes of Health's National Institute of Allergy and Infectious Diseases. The initiative unites leading researchers from immunology and computational biology labs around the globe.

"This work is crucial to understanding how long-term immune protection is achieved across tissues with markedly different architectures," says Dr. Reina-Campos.

Few tissue environments are as complex as the maternal-fetal interface, the site at which a parent's immune cells interact with rapidly developing tissues—and immune cells—belonging to a fetus. In this cross-section of a mouse embryo at day 8.5 of gestation, the cells have been stained to display markers associated with immune cells (green) and epithelial cells (pink). This image helps shed light on the basic biology of pregnancy and gives researchers clues to how immune cells defend a developing fetus.

This cross-section of two mouse kidneys features different colors to indicate different cell types. This image is part of an important project to understand how immune cells activate and move through organs over time: ImmGenMaps. This field of research, called spatial transcriptomics, gives scientists an incredibly detailed look at how the body fights disease.

ON THE COVER

ARCHITECTS OF FUNDAMENTAL SCIENCE

LJI discoveries have led to an investigational therapy that aims to bring relief to patients with atopic dermatitis. This breakthrough was possible thanks to hardworking researchers and steady support for fundamental science.

Scientists at La Jolla Institute for Immunology (LJI) are working to cure all disease through the power of fundamental research. Digging deep into specific immune cells, LJI scientists reveal the hidden genes and molecules that keep us healthy.

This approach has proven transformative since the Institute's founding in 1988. Over the decades, scientists here have made groundbreaking discoveries across the spectrum of human health. LJI researchers have discovered key genes that drive cancer-fighting immune cells. They've uncovered how immune cells combat deadly pathogens. LJI labs have demystified autoimmune diseases, such as type 1 diabetes, and found clues about the immune system's role in Parkinson's disease.

Through their commitment to understanding the fundamental workings of immunity, LJI researchers have advanced medical science around the world and delivered hope to patients and their families.

"From our labs here in La Jolla, we punch way above our weight on the international stage. About 30 percent of our faculty are in the top 1 percent of scientists in their field."

LJI PROFESSOR, PRESIDENT & CEO
ERICA OLLMANN SAPHIRE, PH.D., MBA

It takes time, and big investments, to turn fundamental scientific discoveries into new drugs and therapies to help patients. LJI Professor and Director of Academic Affairs Michael Croft, Ph.D., knows that journey well.

"It's gratifying to see the work that you do as a fundamental immunologist—as a basic scientist—translated into human therapy," says Dr. Croft.

Dr. Croft joined the LJI faculty in 1996. Just a few years later, he proposed something that had never been tried before.

Dr. Croft's lab was investigating a molecule expressed by immune cells, called OX40. They had discovered that OX40 activity could drive harmful inflammation and fuel dangerous allergic conditions, such as asthma and atopic dermatitis (the most common form of eczema).

So, Dr. Croft approached Kyowa Kirin Co., Ltd., a longtime research partner of LJI, with the idea to treat harmful inflammation by using antibodies to block OX40 activity. Scientists at Kyowa Kirin

understood the importance of Dr. Croft's proposal. They worked closely with Dr. Croft as they undertook an antibody discovery program. This resulted in an antibody, KHK4083, now termed rocatinlimab, an investigational T cell rebalancing therapy that targets the OX40 receptor expressed on the surface of pathogenic T cells.

Kyowa Kirin, along with their partner Amgen Inc., is now conducting clinical trials to evaluate the long-term safety and efficacy of rocatinlimab in several immune-mediated diseases, including in adults and adolescents with moderate-to-severe atopic dermatitis.

> Bringing rocatinlimab to this stage has taken decades, and Dr. Croft has been there every step of the way, making fundamental discoveries that may lead to new treatment approaches for patients.

THE SPARK OF AN IDEA

Dr. Croft trained as an immunologist during the 1980s. This was a decade of big discoveries as new technologies made it possible to track down many key genes and molecules that enable our cells to fight disease.

By the late 1980s, scientists in San Diego were leading pioneering research into cytokines, a group of "messenger" molecules made by immune cells. Our T cells and other immune cells use special receptor proteins to sense cytokines and act on those messages.

Dr. Croft was fascinated by cytokines. The immune system is extremely complicated. There are more than 100 immune cell subtypes, and each cell subtype has a different job.

If you could decode cytokine messages, you might reveal how the whole system worked.

"I thought this was an area where, potentially, you could find molecules that might be instrumental in driving the activity of T cells in any situation," says Dr. Croft. "Whether it was T cells that were protecting against infectious diseases or cancer, or T cells that were driving autoimmunity."

MILESTONES IN FUNDAMENTAL SCIENCE

One particular group of cytokines caught Dr. Croft's eye: tumor necrosis factor (TNF) superfamily molecules. In 1996, Dr. Croft joined the LJI faculty and dedicated his lab to understanding TNF superfamily molecules and the T cell receptors that sense them.

Dr. Croft was especially interested in a TNF superfamily molecule called OX40 and its binding partner, OX40L. Dr. Croft's lab was the first to show that these molecules tell T cells to multiply quickly when they sense a potential threat. OX40 and OX40L also allow T cells to survive in the body for a long time and promote T cell "memory."

Dr. Croft also found that OX40 helps T cells remember allergens, so that when they sense an allergen again, they will multiply and release a flood of inflammatory cytokines. This inflammation ramps up quickly, blocking airways and sometimes causing an asthma attack or damaging skin tissues in a dermatitis flare-up.

That's when Dr. Croft made his proposal. "The data we generated in those first few years after joining LJI suggested OX40 could be a terrific target for therapy," says Dr. Croft.

CRAFTING A NEW KIND OF MEDICINE

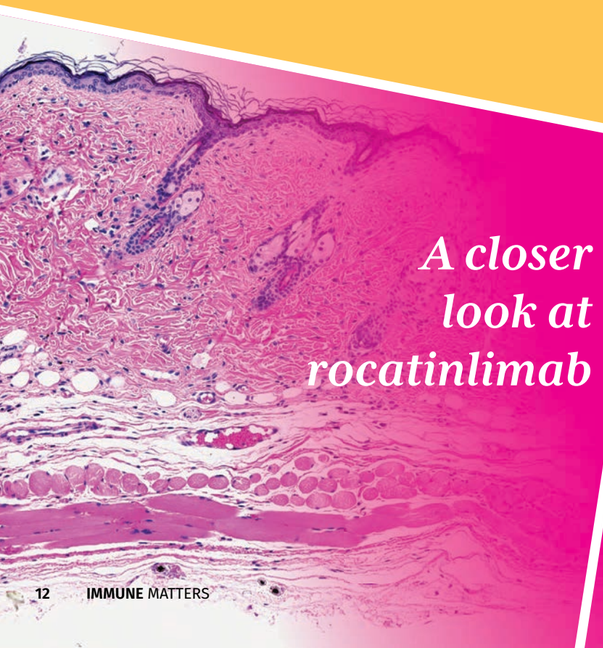
Dr. Croft's insights and proposal led to Kyowa Kirin's development of rocatinlimab, a monoclonal antibody therapy that blocks OX40-driven T cell responses. This intervention "rebalances" damaging T cell responses and dials back harmful inflammation.

"Our work with Dr. Croft over the years has been incredibly collaborative and supportive," says Rachel Soloff, Ph.D., Kyowa Kirin's Executive Director, Global Medical Affairs, Immunology. "Dr. Croft has been available to discuss the biology of OX40 and helped us understand how the OX40 pathway drives pathogenesis in inflammatory diseases."

By investigating "messenger" molecules and the fundamental workings of immune cells, Dr. Croft has sparked an entirely new field of medical research. In addition to Kyowa Kirin, several pharmaceutical companies are currently conducting clinical trials to test antibodies to OX40 or OX40L to treat inflammatory diseases such as asthma, prurigo nodularis, alopecia areata, hidradenitis suppurativa, and celiac disease.

Now, Dr. Croft is starting a new chapter himself. He will retire at the end of 2025, after 29 years on the LJI faculty. But he's not going far. He will continue to serve as an advisor and mentor for many early-career researchers and junior faculty at LJI. Dr. Croft has seen how fundamental science can lead to real change for patients, and he hopes to help other researchers follow that path.

"You need patience to be a research scientist," says Dr. Croft. "Results don't come quickly. Results take a little bit of luck, as well as good knowledge, good planning, and good science." ◆



A closer look at rocatinlimab

In March 2025, Kyowa Kirin and their partner in the development of rocatinlimab, Amgen Inc., released new top-line Phase III clinical trial data. The novel antibody approach led to statistically significant improvements for adult patients with moderate-to-severe atopic dermatitis (ROCKET-Ignite).

This study showed statistically significant improvements in the Eczema Area and Severity Index (EASI) and validated Investigator Global Assessment (vIGA) response.

References: https://clinicaltrials.gov/study/NCT05398445 and https://bit.ly/3U0XB9V

A PLACE IN

Immunology history

After 29 years, Dr. Michael Croft will retire from the LJI faculty

La Jolla Institute for Immunology (LJI) Professor and Director of Academic Affairs Michael Croft, Ph.D., didn't set out to become an immunologist. He earned his undergraduate degree in biology in England in the early 1980s. This was a time when scientists were just starting to examine the importance of specific molecules in controlling immune cells.

"Immunology was such a small field that I only had one lecture in immunology during my undergraduate degree, not one course, one *single* lecture," says Dr. Croft, who has served as a Professor, Scientific Director, and Director of Academic Affairs at LJI.

> The field of immunology has changed dramatically during Dr. Croft's career. His own research has revealed the inner workings of immune cells and sparked new clinical work to help patients.

"Mick's discoveries have led to Phase III clinical trials, and he is a widely sought consultant by both pharma and biotech," says LJI Professor and President Emeritus Mitchell Kronenberg, Ph.D. "In addition to his outstanding science, Mick has been an Institute leader and is absolutely dedicated to training and mentoring."

LJI Professor and Director of Academic Affairs Michael Croft, Ph.D.

Now, Dr. Croft is preparing to retire, and he's reflecting on his contributions to fundamental research and drug development. "I didn't plan to become an immunologist," he says. "But I certainly haven't regretted it for a minute."

As an undergraduate, Dr. Croft got his first chance to do hands-on immunology training during an

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internship at the pharmaceutical company Glaxo, now known as GSK. He found the work fascinating and went on to earn his Ph.D. in immunology at the University of Sussex. Dr. Croft then moved to San Diego to continue his training as a postdoctoral researcher at UC San Diego.

Dr. Croft soon started looking for a faculty position, and he didn't have to look far. LJI was recruiting leading immunologists from across San Diego and around the world. "I could see the quality of the investigators they had coming in," says Dr. Croft. "It seemed like a great opportunity."

In 1996, Dr. Croft started his own laboratory at LJI. He focused on studying "messenger" proteins from the tumor necrosis factor (TNF) and tumor necrosis factor receptor (TNFR) superfamily. This early research shed light on specific TNF molecules that influence T cells and drive inflammatory and autoimmune diseases. Dr. Croft also showed how these molecules allow T cells to protect against infectious agents or tumors.

Among his many discoveries, Dr. Croft revealed the importance of a TNF molecule called OX40, and its binding partner, OX40L. His lab found that OX40 molecules activate T cell responses and contribute to dangerous inflammation during allergic reactions. His research suggested that blocking OX40 activity may help treat conditions such as allergic asthma and atopic dermatitis (the most common cause of eczema).

This finding interested several pharmaceutical companies. Kyowa Kirin, Inc., pursued antibody therapies to block T cells from sensing OX40. One investigational therapy that came out of this work, called rocatinlimab, is currently being investigated for safety and efficacy in multiple Phase III clinical trials for adults and adolescents with atopic dermatitis.

Dr. Croft has continued to study the mechanics of OX40 over the years. His lab also shed light on TNF molecules, such as LIGHT, TWEAK, and others, which play a role in harmful inflammation as well. He recently proposed several combination therapies, ones he hopes will be tested in clinical trials in the future.

After 29 years on the LJI faculty, Dr. Croft says he is looking forward to retirement. Still, he plans to advise early career scientists at LJI. He's eager to see what the next generation of immunologists will discover.

> **"I've been surrounded by massively talented people that are my colleagues at LJI, and I've been lucky to have really terrific people come through my lab over the years."**
>
> LJI PROFESSOR AND DIRECTOR OF ACADEMIC AFFAIRS
> MICHAEL CROFT, PH.D.

"But there's still a lot we don't know. And that's why we need brilliant young people to carry on this research and to fill in the gaps. And hopefully this will lead to even more therapies for immune-based diseases. LJI has been my home for almost 30 years and has gone from strength to strength during that time. I look forward to great discoveries from the Institute and even more success." ◆

Processing power

MEET THE LJI SCIENTISTS CHANGING MEDICAL RESEARCH THROUGH ARTIFICIAL INTELLIGENCE

Ferhat Ay, Ph.D., is an Associate Professor at La Jolla Institute for Immunology (LJI). He isn't a wet-lab scientist. He doesn't dissect tissue or peer into microscopes.

And yet, Dr. Ay sees immune cells up close every day.

As a data scientist, Dr. Ay develops algorithms and bioinformatics tools at LJI to uncover the hidden lives of immune cells. His laboratory uses these tools to shed light on how different regions of the vast human genome contribute to cancer, autoimmune disease, and more.

It's a daunting task. "We work with single-cell datasets, where one cell at a time is measured for all sorts of molecular activity," says Dr. Ay. "These datasets are in the order of tens of millions, 100 million, data points or so."

No human could ever sort through such vast data. So, Dr. Ay became a leading expert in the use of artificial intelligence (AI) to understand the intricate workings of the human genome.

This isn't your everyday AI. Dr. Ay has seen the bizarre answers generated by ChatGPT and other popular AI platforms. Mistakes like those are not an option when you study real diseases that affect real people.

"We are working with tight margins," says Dr. Ay. "We don't have that kind of error tolerance."

Immunologists need incredibly precise AI tools. LJI scientists are leading the way in building and testing those tools for a new era of research.

HOW TO TEACH A MACHINE

LJI Professor Bjoern Peters, Ph.D., has been part of the AI revolution since the very beginning. His team has spent the last 20 years developing sophisticated AI tools called machine learning models.

Machine learning models "learn" from scientific datasets. They sort through data to find patterns and trends, then try to complete the pattern if any data are missing. "Machine learning is about learning from examples," says Dr. Peters.

The more data you input, the smarter the model gets. A good machine learning model can make startlingly accurate predictions and help answer complicated scientific questions.

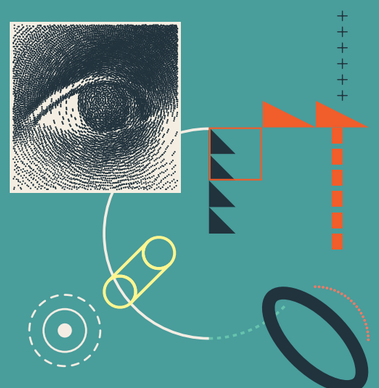
Dr. Peters is currently using a machine learning model to study bacterial pneumonia. His model harnesses existing data to learn how T cells recognize protein markers, called epitopes, on *Streptococcus pneumoniae* bacteria. The model then looks for patterns to predict where scientists might find bacterial epitopes that they haven't studied yet.

"This bacterium makes around 2,000 proteins," says Dr. Peters. "With epitope prediction, we can look for the proteins that are most easily recognized by the immune system." Once Dr. Peters has those predictions, he can collaborate with other scientists to measure actual T cell responses in a lab setting.

This kind of AI approach makes it possible for scientists to narrow the scope of a big project, saving them valuable time and funding.

Of course, AI tools are only as good as the data they learn from. Quality control is key. Dr. Peters works closely with curators who comb through scientific papers to find epitope data related to viruses, bacteria, and allergens. The team makes sure every data point is accurate and well defined before it ever meets an AI tool.

Dr. Peters and his colleagues offer these data freely through the Immune Epitope Database (IEDB). In fact, the IEDB is only one of several LJI-hosted databases powering new AI approaches to vaccine research and much more.



machine learning models: AI tools that are "trained" on scientific datasets to learn to spot complex patterns and make predictions. Useful for analyzing huge genomic datasets.

large language models: AI models that analyze written language and generate answers that mimic human communication. ChatGPT is based on a large language model.

NEW DISCOVERIES FUEL VACCINE RESEARCH

LJI Research Assistant Professor Alba Grifoni, Ph.D., is using AI to study viruses with pandemic potential. Her goal is to help guide the development of "universal vaccines" that protect against entire viral families.

Dr. Grifoni investigates what a family of viruses has in common, then helps develop vaccines that boost T cell responses that fight those common targets.

In a recent paper, Dr. Grifoni extracted IEDB epitope data to compare how human T cells recognize different coronaviruses. If T cells can recognize common cold coronaviruses, then they should be able to recognize SARS-CoV-2 (the coronavirus that causes COVID-19). After all, the two viruses ought to share some family resemblance.

Dr. Grifoni used AI in a different way for this study. Rather than make predictions, Dr. Grifoni used AI to weed out irrelevant datapoints. She didn't want the massive SARS-CoV-2 dataset (big outbreaks equals big datasets) to throw off the whole analysis.

Dr. Grifoni's study revealed a hidden set of similarities between SARS-CoV-2 and other coronaviruses. She hopes future vaccines will be able to boost T cell responses against these shared targets to give us significant "pan-coronavirus" immunity.

"The idea is that if a new coronavirus emerges, we may not be able to protect people from infection, but we might be able to protect them from hospitalization," says Dr. Grifoni.

AI + CELL IMAGES

LJI Assistant Professor Miguel Reina-Campos, Ph.D., uses AI tools to investigate how specialized T cells defend our tissues from cancers and other threats.

For this research, Dr. Reina-Campos needs to analyze microscopy images from tissue samples. Many, many tissue samples. "Our task is to find patterns in those images," says Dr. Reina-Campos. "So we use an AI software that leverages a trained dataset—a trained model—to find these patterns."

Once the AI software identifies an unusual pattern, Dr. Reina-Campos and his team can zoom in to study that bit of tissue in more detail themselves. Dr. Reina-Campos can even use AI to add more layers of information. "We can use AI to classify cell types, decode their language, and understand how they interact with one another," he says. "Are the cells fighting, competing, or cooperating?"

Establishing cellular connectivity networks enables Dr. Reina-Campos and his team to see the bigger picture and understand how immune cells work together.

Dr. Reina-Campos is currently working with a global team called the Immunological Genome Project (ImmGen) to use AI tools to map the daily lives of all immune cells in mouse tissues. This project, called ImmGenMaps, is key to understanding how our immune cells jump into action to fight tumors and other threats.

AI IN THE DOCTOR'S OFFICE

LJI scientists are using AI to make breakthroughs in personalized medicine, too.

LJI Bodman Family Assistant Professor Tal Einav, Ph.D., develops algorithms that give AI tools their predictive power. His work may lead to real advances in the doctor's office.

In a recent study, Dr. Einav put a new machine learning model to work to pinpoint key differences between people who are "strong responders" to annual flu vaccines and people who are "weak responders."

Dr. Einav discovered that the best way to predict how a person will respond to an upcoming flu vaccine is to measure their antibody responses to the flu vaccine strain used the year before, and the year before that—and the year before that.

Dr. Einav thinks it may be possible to develop blood tests so clinicians can identify which patients are strong flu vaccine responders and which are weak vaccine responders and offer them different vaccine options based on their responder type. "The hope is that we could take a drop of your blood and say, right now, 'Which are you going to be?'" Dr. Einav explains. "That's the dream."

Dr. Ay imagines a future where these kinds of AI tools are part of a doctor's toolbox. As he uses AI to explore the genome, he sees doctors harnessing similar tools to help their patients.

"Let's say you're a doctor working with a kid who has a rare disease, or a mutation of unknown significance," says Dr. Ay. "If we can develop these types of AI models, we can enable clinician-scientists to put data in context in a way they never could before." ◆

WHY WOULD A VIRAL INFECTION SPARK SYMPTOMS OF AN AUTOIMMUNE DISEASE?

LJI ASSISTANT PROFESSOR DANIELA WEISKOPF, PH.D., (LEFT) WITH RIMJHIM AGARWAL, UC SAN DIEGO GRADUATE STUDENT IN THE WEISKOPF LAB

Daniela Weiskopf, Ph.D., Assistant Professor at La Jolla Institute for Immunology (LJI), is investigating how a mosquito-transmitted virus called Chikungunya virus can trigger chronic, severe joint pain. Dr. Weiskopf has discovered that people who develop this joint pain produce a large number of inflammatory CD4+ T cells that closely resemble the T cell signature of rheumatoid arthritis, an autoimmune disease. Even weirder, this chronic joint pain, which carries the clinical name "chronic Chikungunya virus disease," mainly strikes women.

"So many people, mostly women, have chronic disease following Chikungunya virus infection. This has an impact on the workforce and impacts the economy. And there's no treatment."

LJI ASSISTANT PROFESSOR DANIELA WEISKOPF, PH.D.

Dr. Weiskopf's research comes at a pivotal time when many mosquito-borne viruses, including Chikungunya, are spreading into new parts of the globe.

"Historically, Chikungunya was considered an emerging virus. Now, all of Latin America has been exposed," says Dr. Weiskopf. "These mosquitoes are traveling farther north, and we need to know what's going on with this virus before it arrives in the United States." ◆

SCAN THE QR CODE BELOW TO READ MORE ABOUT DR. WEISKOPF'S WORK:

What the nose knows

DR. CAROLYN MODERBACHER IS PIONEERING A NEW TECHNIQUE TO STUDY LUPUS USING NASAL SWABS

Lupus knows no bounds. In most autoimmune diseases, inflammatory immune cells attack a specific organ and one organ only. For example, in type 1 diabetes, T cells start killing cells in the pancreas.

But lupus is a "systemic" autoimmune disease, which means it prompts harmful immune cells to cause widespread damage. Lupus can strike anywhere: the joints, kidneys, skin, brain, and more. Lupus can even harm a person's reproductive organs and increase the risk of miscarriage during pregnancy.

LJI Instructor Carolyn Moderbacher, Ph.D., is taking advantage of lupus's systemic nature. She's working with lupus patients to hunt down key immune cells in their nasal passages. By swabbing tissue deep within the nose, Dr. Moderbacher hopes to uncover exactly how immune cells drive this mysterious disease.

Dr. Moderbacher's pioneering approach recently won her a Lupus Innovation Award and nearly $450,000 in funding from the Lupus Research Alliance, the world's largest private funder of lupus research. "This research could be transformative, and it's really exciting to have the funding to move it forward," says Dr. Moderbacher, who works in the lab of LJI Professor and Chief Scientific Officer Shane Crotty, Ph.D.

In this Q&A, Dr. Moderbacher reveals how her work may uncover a new side of autoimmune disease.

The Crotty Lab usually focuses on immunity to infectious diseases. How did you end up studying autoimmunity in lupus?

Dr. Moderbacher: Autoimmunity is sort of the other side of the same coin. Instead of trying to get a better immune response to vaccines, to treat autoimmune disease you're trying to dampen an overexuberant, and misdirected, immune response.

I've always been interested in lupus because it's an extremely complex disease where we have no targeted therapies or approaches that work in the majority of patients. I wanted to see if we could take some of the techniques that we had developed in the Crotty Lab, specifically for studying SARS-CoV-2 vaccine responses, and apply them in the context of autoimmunity to answer some important questions about lupus-specific B and T cells.

What's the connection between the nasal passages and lupus?

A: The thing with lupus is that the disease is mediated by self-reactive antibodies, or "autoantibodies." We know these autoantibodies develop in lymphoid tissue, but lymphoid tissues are not very well characterized in lupus patients, largely because it is difficult to access and repeatedly sample these sites.

However, one place you have lymphoid tissue is deep within your nasal passages. Last year, in a groundbreaking study published in *Nature*, the Crotty Lab demonstrated the power of a simple nasal-swab procedure to collect immune cells and even measure SARS-CoV-2-specific immune cells from nasal lymphoid tissue in SARS-CoV-2-vaccinated or infected individuals.

So I thought: Maybe we can find lupus-driving immune cells in nasal lymphoid tissue of lupus patients. Not only is nasal swabbing a novel technique to sample immune cells in humans, but it allows for repeated sampling. With this technique, we can potentially monitor lymphoid tissues over time to track disease progression in patients, which is key for such a complex and dynamic disease like lupus.

Your project is ongoing, but can you share any of the results you've gathered so far?

A: Well, the big question at first was whether we could even get useful samples from this tissue, and the short answer to that question is: yes, we definitely can.

To date, we've enrolled 10 lupus patients with the help of our collaborating UC San Diego rheumatologists. Several of these participants have nearly completed a year of monthly sampling. The data we've collected from these nasal swabs show striking differences in the immune cell populations in lupus patients compared with swab samples from healthy controls.

Similarly, there are significant differences in immune cells collected from nasal swabs compared with immune cells isolated from the blood of lupus patients. Together, these data tell us that we are likely seeing lupus-specific immune cells in nasal swab samples. These cells are not found in the blood, so we've essentially identified multiple immune cell populations in nasal lymphoid tissue that have never before been studied in lupus.

Collecting longitudinal samples from the same lupus patients has also revealed some tantalizing bits of data. For example, we collected nasal swab samples and blood from a patient before and after they received a B cell-depleting therapeutic. We have been able to observe dramatic differences in B cells between the blood and nasal lymphoid tissue. And we were able to measure this effect over multiple time points post-treatment. Additional data from other donors show an increase in certain immune cell populations that seem to coincide temporally with disease flares, suggesting we might be capturing lupus-driving immune cells from our swab samples.

> "We think this holds a lot of potential for utilizing nasal swabs as a means of monitoring responses to treatment or disease flares in lupus patients, in addition to furthering our fundamental understanding of how specific immune cell populations drive autoimmune disease."
>
> LJI INSTRUCTOR CAROLYN MODERBACHER, PH.D.

Lupus is nearly 10 times more common in women than men. Could your research help us understand the reasons for this sex-based difference?

A: The sex bias in lupus is always in the back of my mind. A lot of autoimmune diseases are much more common in female patients, and we don't know why. Genetics is likely a large component of the female bias in lupus. Genetics could be driving fundamental differences in immune cells in women, which could cause autoimmune disease under the right conditions.

My project aims to identify and understand lupus-specific immune cells in patients. If we can identify these disease-driving cells, then we can start to ask what genetic factors might be working together in those specific cells to make them more pathogenic than immune cells from people without autoimmune disease. This work could identify even more potential targets for new lupus therapeutics. ◆

Institute

NEWS

SHANE CROTTY, PH.D.

La Jolla Institute for Immunology (LJI) Professor and Chief Scientific Officer Shane Crotty, Ph.D., has been elected to the **American Academy of Arts and Sciences** in recognition of his leadership in immunology and his breakthroughs in understanding the fundamental aspects of the immune system.

ERICA OLLMANN SAPHIRE, PH.D., MBA

LJI Professor, President & CEO Erica Ollmann Saphire, Ph.D., MBA, has been named as the **8th Annual San Diego Genius Award Honoree** by **Mainly Mozart** for her scientific legacy, innovation, and "Genius in the Spirit of Mozart" in San Diego.

ALESSANDRO SETTE, DR.BIOL.SCI.

LJI Professor Alessandro Sette, Dr.Biol.Sci., has received the **Order of Merit of the Italian Republic** for his outstanding research and leadership in the field of immunology. Dr. Sette has also won the **2025 William Procter Prize for Scientific Achievement** from **Sigma Xi, The Scientific Research Honor Society**.

RIMJHIM AGARWAL

UC San Diego Graduate Student Rimjhim Agarwal of the Weiskopf Lab at LJI has been named a **2025–2026 ARCS Scholar** by the **San Diego Chapter of the Achievement Rewards for College Scientists (ARCS) Foundation**. Agarwal was selected for her promising contributions to immunology and her academic performance as part of a small cohort of doctoral students awarded the merit-based fellowship.

JOB ROCHA

UC San Diego Graduate Student Job Rocha has won the **2025 BioLegend Graduate Fellowship in Immunology** to support his autoimmune disease research at LJI. This prestigious fellowship was granted by the **Program in Immunology**, a joint initiative between LJI and UC San Diego.

CUREBOUND *increases support for LJI cancer research projects*

La Jolla Institute for Immunology (LJI) scientists are advancing new cancer research programs thanks to nearly $1.9 million in cumulative funding from the San Diego philanthropic organization Curebound, granted from 2022 to 2024. The 2024 grants are supporting innovative cancer studies in four LJI laboratories and fueling research collaborations across San Diego.

LJI SCIENTISTS AND STAFF RAN, RODE, AND SPUN IN THE CUREBOUND CANCER CHALLENGE ON AUG. 2, 2025.

PREBYS FOUNDATION *Prebys Foundation invests in promising LJI projects*

LJI is honored to be among the seven San Diego institutions selected to receive $1 million in rapid-response funding from Prebys Foundation. This timely investment strengthens our ability to retain early- and mid-career scientists whose work forms the backbone of long-term discovery in human health.

Shifts in federal research priorities and funding mechanisms can influence the pace and direction of scientific progress. This philanthropic support helps ensure that promising research continues without interruption—particularly in areas such as autoimmune disease, cancer, and infectious diseases, where uninterrupted inquiry is essential to progress.

We're deeply grateful to Prebys Foundation for their strategic leadership and for investing in the people behind the science. Prebys Foundation continues to be a global model for high-impact, visionary philanthropy.

BIGHORN

LJI Board Member Emeritus Larry S. Spitcaufsky graciously invited LJI to lead a research presentation series from January to March at the prestigious BIGHORN community in Palm Desert, generously underwriting programming alongside fellow members. The series featured discussions with LJI Assistant Professor Miguel Reina-Campos, Ph.D.; Associate Professor Sonia Sharma, Ph.D.; and Professor, President & CEO Erica Ollmann Saphire, Ph.D., MBA, and was held at The Hub, BIGHORN's premier venue.

MEET THE NEWEST MEMBERS OF

LJI's Board of Directors

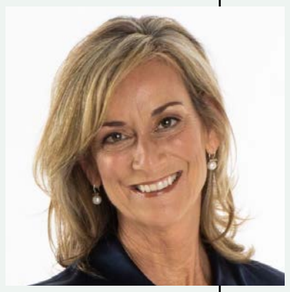
KIM KAMDAR, PH.D.

is a Managing Partner at Medical Excellence Capital. For over 20 years, Dr. Kamdar has played a role in cutting-edge therapeutic start-ups and companies that create promising molecular and companion diagnostics to support personalized medicine. Dr. Kamdar has helped establish and lead over a dozen companies, including Truvian Sciences, where she was the founding CEO and now serves as Board Chair. Dr. Kamdar also helped create Seraphina Therapeutics, where she currently serves as Chair.

Dr. Kamdar has been part of Domain Associates since 2005, where she became a Partner in 2010. Prior to working with Domain, Dr. Kamdar was a Kauffman Fellow at MPM Capital, where she was involved in the firm's investments in TransForm Pharmaceuticals, Portola Pharmaceuticals, and Affymax. Dr. Kamdar was also an early investor in and helped to create numerous companies, including Syndax Pharmaceuticals, Singular Genomics, and Pleno.

In addition to her entrepreneurial leadership, Dr. Kamdar previously served as Research Director at Novartis, where she built and led a team focused on the biology, genetics, and genomics of model organisms. Dr. Kamdar also leads the Medical Excellence Research Innovation Trust (MERIT), a philanthropic fund with the mission to advance translational biomedical research for the benefit of humanity. She is the author of 10 papers and the inventor listed on seven patents. She is currently an External Advisory Board Member for the NIH-supported Scripps Research Translational Institute, led by Eric Topol, M.D.

ROBIN TOFT



is a Limited Partner at How Women Invest and a Senior Advisor and Global Life Science & Boardroom Diversity Leader with ZRG Partners. Toft has served on multiple for-profit and nonprofit boards, currently sitting on the boards of Curebound and the American Cancer Society's CEOs Against Cancer San Diego chapter.

Toft is the former founder and CEO of Toft Group, now a ZRG Partners company. As CEO, she combined her expertise in the life-sciences industry with a passion for building game-changing management teams. She successfully sold Toft Group to ZRG Partners in 2019. Toft is a long-time champion of diverse executive teams, and she has built a reputation for recruiting women and underrepresented candidates into top roles and overcoming unconscious bias in hiring. Prior to founding Toft Group in 2010, Toft served as a biotech executive for more than 20 years.

Toft founded We Can Rise Inc. in 2020 with the goal of inspiring high-potential career women to pursue their ambitions and work collaboratively with men to build healthier companies that change the world. Toft has authored multiple books to help professionals accelerate their executive careers, including ***WE CAN: The Executive Woman's Guide to Career Advancement*** and ***Ignite Your Board Career: Board IQ Playbook***.

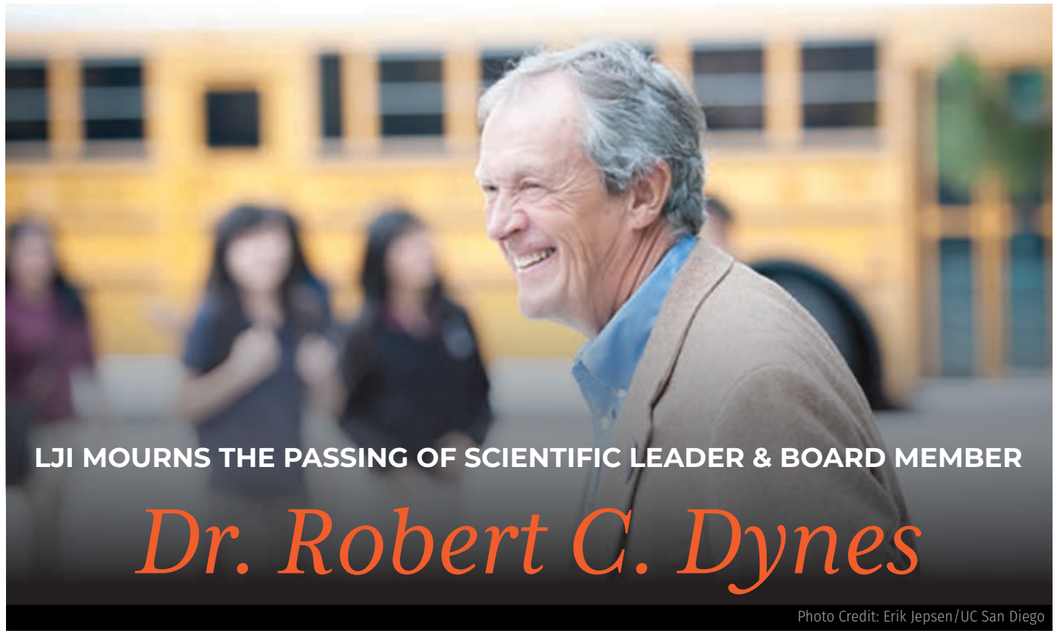


Photo Credit: Erik Jepsen/UC San Diego

Robert C. Dynes, Ph.D., a member of the LJI Board of Directors, passed away this June at the age of 82. Dr. Dynes was a renowned physicist and outspoken advocate for research and public education. He was best known for his leadership in the University of California (UC) system and his unwavering support for San Diego's research community.

Dr. Dynes played a leadership role in establishing the La Jolla Institute for Immunology (LJI) facility at UC San Diego's Science Research Park, and he served for many years as a dedicated member of LJI's Board of Directors.

> **"Bob Dynes was a remarkable leader, scientist, and educator whose contributions extended far beyond any single institution."**
>
> LJI PROFESSOR, PRESIDENT & CEO
> ERICA OLLMANN SAPHIRE, PH.D., MBA

"Bob's service to La Jolla Institute for Immunology as a dedicated member of our Board of Directors was characterized by his wisdom, thoughtfulness, and a deep belief in the power of science to improve human health," says LJI Professor, President & CEO Erica Ollmann Saphire, Ph.D., MBA.

Dr. Dynes was a first-generation college graduate. He studied math and physics at the University of Western Ontario before earning his doctorate in physics from McMaster University in 1968. He began his career at AT&T's Bell Laboratories, where he pioneered new research into transistors and the use of lasers in communications technologies.

Dr. Dynes joined the faculty of the physics department at UC San Diego in 1991 and was named UC San Diego Chancellor five years later. He went on to serve as President of the University of California system from 2003 to 2008, where he oversaw 10 university campuses and numerous affiliated programs.

Along the way, Dr. Dynes remained an outspoken advocate for San Diego's research community. With his support, LJI opened its cutting-edge research facility at Science Research Park in 2006. Dr. Dynes was an invaluable member of the LJI Board of Directors from 2009 until his passing.

"Bob was a mentor who taught me many things about leading a scientific organization," says LJI Board Member, President Emeritus, and Professor Mitchell Kronenberg, Ph.D. "He will be greatly missed." ◆

TRIBUTE

TO LEARN MORE ABOUT RECENT EVENTS, GO TO LJI.ORG/EVENTS

FEB 4, 2025

SPARK

THE TULLIE AND RICKEY FAMILIES SPARK AWARDS FOR INNOVATIONS IN IMMUNOLOGY

On February 4, 2025, LJI hosted a celebratory reception marking eight years of The Tullie and Rickey Families SPARK Awards for Innovations in Immunology. Held in the Ishizaka Seminar Room and Atrium, the event honored the 2025 SPARK award winners and recognized the donors who make the program possible, with remarks from program co-benefactor Tom Tullie, MBA, a member of the LJI Board of Directors.

LEFT TO RIGHT, BACK TO FRONT: ERIK EHINGER, PH.D.; KELLY SHAFFER; LAURA HINOJOSA; HSUEH-HAN "DUPON" LU; LJI PROFESSOR, PRESIDENT & CEO ERICA OLLMANN SAPHIRE, PH.D., MBA; LJI VICE PRESIDENT OF ADVANCEMENT KELSEY DALE, CFRE, CSPG; ABHIJIT CHAKRABORTY, PH.D.; SPARK PROGRAM MANAGER SIERRA FELT-MORALES; TOM TULLIE, MBA; AMPARO MARTÍNEZ PÉREZ, PH.D.; GELE NIEMEYER; NIRMALYA DASGUPTA, PH.D.; JUDY TULLIE; ANNIE ELONG NGONO, PH.D.; MARIA INÊS MATIAS, PH.D.; BARBARA DONNELL, MA; RIMJHIM AGARWAL; LJI ASSISTANT PROFESSOR DANIELA WEISKOPF, PH.D.; SARA MCARDLE, PH.D.; JULIE BUREL, PH.D.; CHEN SUN, PH.D.; AND KAZUMASA SUZUKI, M.D., PH.D.

Global Autoimmune Institute

Empowering Solutions

In Spring 2025, the Global Autoimmune Institute (GAI) sponsored and participated in impactful in-person and virtual programs at LJI to connect scientific discovery directly with patients, clinicians, and advocates. Learn more about GAI by visiting autoimmuneinstitute.org

MAR 6, 2025

LEAD Day

On March 6, 2025, the inaugural Lectures, Empowerment, and Awareness in Autoimmune Disease (LEAD) Day took place at LJI, anchored by the first Walter and Jean Boek Leadership in Research Award Lecture—presented as part of the Walter and Jean Boek Seminar Series led by Global Autoimmune Institute Assistant Professor Sam Myers, Ph.D. TIME100 Health Pioneer Georg Schett, M.D., delivered the award lecture, sharing his internationally recognized work on CAR T cell therapy as a potential reset for the autoimmune system. LEAD Day was conceived by Global Autoimmune Institute Founder and LJI Board Member Sandy Boek Werness, J.D., who joined Dr. Schett, Dr. Myers, and clinician Monica Guma, M.D., Ph.D., for an expert panel discussion.

LEFT TO RIGHT: LEAD DAY PANELISTS GEORG SCHETT, M.D.; MONICA GUMA, M.D., PH.D.; SANDY BOEK WERNESS, J.D.; AND GLOBAL AUTOIMMUNE INSTITUTE ASSISTANT PROFESSOR SAM MYERS, PH.D.

MAR 19, 2025

LIVE FROM THE LAB

On March 19, 2025, LJI hosted a *Live from the Lab* webinar featuring Associate Professor Sonia Sharma, Ph.D., who shared how her lab uses metabolic profiling to uncover early cellular signals that drive autoimmune disease. The conversation was moderated by GAI Founder and LJI Board Member Sandy Boek Werness, J.D.

APR 17, 2025

Life WITHOUT DISEASE EVENT SERIES

On April 17, 2025, new LJI faculty recruit Assistant Professor Miguel Reina-Campos, Ph.D., headlined *Life Without Disease*, which focused on his research into specialized immune cells that detect and destroy tumors. The evening also celebrated the vital role of philanthropic partners in advancing this work—most notably Curebound, whose support was reflected both in Dr. Reina-Campos's presentation and in poster sessions spotlighting Curebound-funded projects led by early-career scientists. Guests gathered in the LJI Atrium for live music, refreshments, and conversation with Dr. Reina-Campos, Institute leadership, and fellow supporters.

LEFT TO RIGHT: LJI PROFESSOR, PRESIDENT & CEO ERICA OLLMANN SAPHIRE, PH.D., MBA, ALONGSIDE REINA LAB DONORS ROBERT AND PAIGE VANOSKY AND LJI ASSISTANT PROFESSOR MIGUEL REINA-CAMPOS, PH.D.

LEFT TO RIGHT: LJI ASSISTANT PROFESSOR MIGUEL REINA-CAMPOS, PH.D., WITH CUREBOUND DIRECTOR OF RESEARCH AND IMPACT JUDITH POHLA, MPH, AND LJI PROFESSOR, PRESIDENT & CEO ERICA OLLMANN SAPHIRE, PH.D., MBA

MAY 9, 2025

On May 9, 2025, LJI welcomed leadership and members of The Heights Golf Club for a special check presentation with the Sharma Lab, celebrating a collective milestone—more than $200,000 raised by club members since 2018 through nearly 10 fundraisers supporting precision immunotherapy cancer research. The event followed the March 14, 2025, Bingo for a Cure Tournament, whose proceeds benefit the lab of LJI Associate Professor Sonia Sharma, Ph.D., and its efforts to improve the safety and effectiveness of immune checkpoint blockade therapies for patients with solid tumors.

LEFT TO RIGHT: SWING FOR A CURE CHAIRPERSON CAROL RUD; LJI ASSOCIATE PROFESSOR SONIA SHARMA, PH.D.; THE HEIGHTS GOLF CLUB GENERAL MANAGER PAUL DEVINE; AND SWING FOR A CURE ADVISORY BOARD MEMBER CAROLE TESSICINI

MAY 29, 2025

On May 29, 2025, LJI's Center for Sex-based Differences in the Immune System convened *The Double X Factor: Summit for the Future of Women's Health*, bringing together leaders in biotech, venture capital, government, and academia to advance the future of women's health. The program opened with remarks from LJI Board Member and WHAM CEO Carolee Lee, who was also featured in the panel discussion with industry experts LJI Board Member Kim Kamdar, Ph.D., and Sabrina Martucci Johnson, alongside LJI Center Director and Associate Professor Sonia Sharma, Ph.D. With moderation by LJI Professor, President & CEO Erica Ollmann Saphire, Ph.D., MBA, participants explored bold opportunities for cross-sector collaboration and discussed the urgency of investing in women's health as a scientific and economic imperative.

LEFT TO RIGHT: KIM KAMDAR, PH.D.; CAROLEE LEE; LJI PROFESSOR, PRESIDENT & CEO ERICA OLLMANN SAPHIRE, PH.D., MBA; SABRINA MARTUCCI JOHNSON; AND LJI ASSOCIATE PROFESSOR SONIA SHARMA, PH.D.

La Jolla Institute for Immunology wishes to express its gratitude

FOR THE SUPPORT OF THE FOLLOWING ORGANIZATIONS & GOVERNMENTAL ENTITIES:

Aligning Science Across Parkinson's (ASAP)
American Association for Cancer Research
American Association for Immunologists
American Association for Laboratory Animal Science
American Cancer Society
American Diabetes Association
American Heart Association
American Lung Association
Arthritis National Research Foundation
Bill & Melinda Gates Foundation
Breakthrough T1D
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La Jolla Institute | VANGUARD GIVING SOCIETY

With your contribution of $1,000 or more to La Jolla Institute for Immunology, you are joining our **Vanguard** and asserting your role at the forefront of the next breakthroughs in medical research. Our researchers are dedicated to harnessing the immune system to fight diseases ranging from asthma to Zika virus disease, so that one day we can all live free of the symptoms and hardships of the conditions that afflict us. Your support ensures our scientists have the resources they need to accelerate the pace of their discoveries and turn "someday" into today. As a member of LJI's Vanguard Giving Society, you are taking an active role in leading the way to ***Life Without Disease®***.

van·guard | a group of people leading the way in new developments or ideas

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**In Memoriam*

If you have any questions about membership benefits, please reach out to Vice President of Advancement Kelsey Dale, CFRE, CSPG, at **kdale@lji.org, 858.752.6542**. More information can also be found at **lji.org/giving-society**

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**In Memoriam*

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**In Memoriam*

Endowment: LJI's edge for the future

THE NEXT 40 YEARS BEGIN NOW

During the early chapters of our nearly 40-year history, philanthropy played a limited role in La Jolla Institute for Immunology's (LJI) revenue model. While LJI scientists were already making bold, field-shaping discoveries, the scale and speed of their work remained vulnerable to the constraints of traditional funding sources. About a decade ago, then-President and Chief Scientific Officer Mitchell Kronenberg, Ph.D., a globally celebrated immunologist whose own research has shaped the field, recognized that sustaining and expanding this caliber of research would require intentional and strategic philanthropic giving. With the backing of the Institute's Board of Directors, Dr. Kronenberg made a decisive investment in LJI's future: channeling a deliberate share of institutional focus and resources into integrating philanthropy into the Institute's long-term strategy by creating and building out the Advancement Department.

As part of this effort, Dr. Kronenberg recruited now-Vice President of Advancement Kelsey Dale. She joined LJI in 2016 to strategically grow the Institute's philanthropic enterprise. Under her leadership, the Institute has cultivated a robust community of donors who have generously contributed tens of millions of dollars in collective private support. Today, LJI is deeply grateful for its growing network of philanthropic partners across the country and around the globe.

Among the most powerful outcomes of this growing momentum has been the establishment of the Institute's endowment.

WHAT IS AN ENDOWMENT, AND WHY DOES IT MATTER?

An endowment is a permanent fund invested to generate income for an institution year after year. At LJI, that income has been allocated by donors to support core priorities, such as faculty recruitment, scientific leadership, and emerging research technologies.

Endowed funds are one of the most powerful tools available to research institutions like LJI. As a permanent source of funding, an endowment allows the Institute to plan ahead, swiftly pursue new opportunities, and sustain excellence in an ever-shifting funding landscape. In a research environment often shaped by rigid grant cycles and fluctuating government priorities, an endowment offers both stability and agility. It empowers LJI to chart its own course and pursue bold research that might otherwise go unexplored.

THE FIRST STEPS: A LEGACY OF LEADERSHIP

LJI's endowment journey began in earnest in 2016 with the establishment of the Johnson Endowed Leadership Fund. Spearheaded by Franklin "Pitch" Johnson and Catherine Johnson, this seven-figure commitment was designed to give the Institute's President the ability to pursue unanticipated but promising scientific opportunities.

Pitch Johnson is one of biotech's most iconic venture capitalists, a co-founder of Asset Management Company, and an early backer of Amgen. He understood that transformative science often depends on early, flexible investment.

As part of his original commitment, Pitch Johnson included an endowment-matching component to invite others to join him in building a foundation for scientific leadership at LJI. In 2021, LJI Board Member Richard "Dick" S. Bodman, MSIM, BSE, CPA, and Karna S. Bodman answered that call by establishing the Bodman Leadership Fund to match half of the Johnsons' investment. The other half came from the Jaime *z"l* and Sylvia Liwerant Fund of the Jewish Community Foundation, led by Sylvia Liwerant to honor the life of her late husband. Her gift established The Liwerant Family Endowed Research Technology Fund in memory of Jaime Liwerant *z"l*, designated to support high-impact scientific-equipment investments across LJI.

A NEW ERA OF ENDOWED VISION

Endowment momentum has continued into 2025. Board Member Tom Tullie, MBA, and Judy Tullie established The Tullie Family Endowed Nexus Fund in February to support LJI's shared research core facilities. These centralized technology hubs power every lab at LJI, as well as labs across the Torrey Pines Research Mesa and those far beyond. The research cores are essential for speed, collaboration, and innovation, and this new fund ensures the Institute can continue to invest in talent and technology when the need is most urgent.

A MATCHING OPPORTUNITY FOR THE FUTURE

To further accelerate growth, an LJI Board member and their family launched a $750,000 endowment match in the summer of 2025. With this opportunity, a new generation of philanthropic partners is invited to invest in LJI's long-term future. Every new gift to the Institute's endowment is being matched, dollar for dollar, up to $750,000. As of July 31, 2025, this opportunity has already inspired new gifts from the following supporters:

LJI Board Member Barbara Donnell, MA
Katya and James Hazel
Kaitlin Hewell
Eleanor Mosca
Joshua M. Nelson
Raydene and Peter St. Clair

—and more are expected to follow.

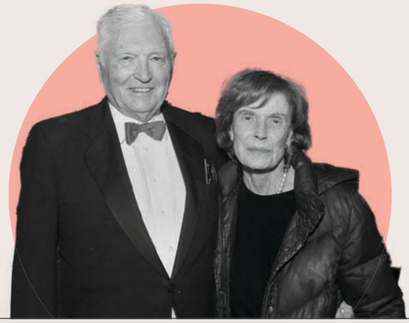
Building on this momentum and leveraging the match, LJI has launched the Bridge Initiative with leadership funding from the Arvin Gottlieb Charitable Foundation. This $10 million effort rests on two pillars: the Beacon Fund, LJI's endowment that secures the Institute's long-term strength, and the President's Priority Fund, which provides flexible resources to sustain scientific progress in today's fluctuating federal funding climate.

BUILDING A LEGACY TOGETHER

Endowment-building at LJI is still in its early phase, but its promise is already profound. These gifts represent more than financial security. They are a declaration of faith in the Institute's mission, a safeguard for its independence, and a commitment to the discoveries still to come.

"As we look ahead to the next 40 years and beyond, endowment is what allows this Institute—where world-class science is matched by a highly collaborative, human-centered culture—to extend our scientific reach, take bolder steps, and continue changing lives in perpetuity."

LJI PROFESSOR, PRESIDENT & CEO
ERICA OLLMANN SAPHIRE, PH.D., MBA ◆



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If you would like to ensure that LJI remains at the forefront of discovery for the decades ahead and generations to follow, we invite you to become part of this legacy. To learn more about contributing to the Institute's endowment and having your gift matched, please visit **donate.lji.org/endowment** or contact

Kelsey Dale, CFRE, CSPG
Vice President of Advancement
kdale@lji.org
858.752.6542

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The donor list represents lifetime contributions to LJI as of July 31, 2025.

**In Memoriam*

La Jolla Institute | BONSAI LEGACY SOCIETY

Members of La Jolla Institute for Immunology's (LJI) ***Bonsai Legacy Society*** are among the Institute's most important benefactors. Gifts that qualify for this special recognition help build a lasting legacy, one that fuels scientific discovery and advances the Institute's mission.

The ***Bonsai Legacy Society*** honors individuals who share a commitment to bettering human health through world-class biomedical research. By including LJI in your will, trust, or other estate plans, you are investing in the future of research and ***Life Without Disease®***.

If you have made plans to include LJI in your estate, we encourage you to let us know so we can welcome you to ***LJI's Bonsai Legacy Society***.
Please reach out to:

Jessica Chadwell
Advancement Officer, Manager of LJI's Bonsai Legacy Society
jchadwell@lji.org | 858.752.6678

More information about planned gifts can be found at **lji.org/plannedgiving**

We are pleased and honored to thank the members of LJI's ***Bonsai Legacy Society***, whose generosity helps advance groundbreaking research and brings us closer to ***Life Without Disease®***:

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The donor list above represents Bonsai Legacy Society members as of July 31, 2025.

**In Memoriam*

A LEGACY OF QUIET GENEROSITY:

Dick & Marla Hess

A RADIANT MARLA HESS SHARES A LAUGH WITH LJI FACULTY AT AN INTIMATE GATHERING IN RANCHO SANTA FE, JUNE 1, 2022 —A PRIVATE EVENING OF CONVERSATION, CURIOSITY, AND QUIET GENEROSITY.

Some of the most consequential philanthropic investments in an institution's history arrive without headlines or ribbon cuttings. By the quiet design of their donors, they come without ceremony.

A letter. A line in a will. And then quietly and permanently, the trajectory of scientific discovery shifts. The bequest of Dick and Marla Hess was that kind of gift.

In 2024, La Jolla Institute for Immunology (LJI) became the beneficiary of a $5 million estate gift from the late Marla and Dick Hess of Rancho Santa Fe, marking both the largest single commitment and the most significant estate gift in Institute history.

> The Hesses' bequest carries exceptional potential as well as the enduring imprint of two lives shaped by service, humility, and an unshakable belief in the power of giving.

The Hesses were introduced to LJI by friends in Board leadership. True to form, they made their philanthropic decisions with measured discretion. They were values-driven donors who asked thoughtful questions, gave strategically and actively through their donor-advised fund, and quietly transformed research, eschewing the attention that often follows generosity of such magnitude. This tribute reflects their wishes and honors the unassuming grace that defined their generosity.

Dick, who passed away in 2016, built a life defined by public service and community leadership. Marla, who passed in November 2023, brought equal devotion and discernment to the causes she championed. She faced cancer with quiet courage and continued to give, even through treatment. Their approach was thoughtful, deliberate, and grounded in a deep care for others. Together, Marla and Dick lived their values—and their giving reflected the best of them.

Their legacy gift places LJI among a select group of organizations they chose to support in perpetuity, with several based in the San Diego region. At LJI, the impact of their generosity will be felt for generations to come.

We are profoundly grateful to Marla and Dick Hess. Their gift honors the spirit in which they lived: generously, humbly, and with hearts turned toward the future. ◆

SPARK | THE TULLIE AND RICKEY FAMILIES SPARK AWARDS FOR INNOVATIONS IN IMMUNOLOGY

Championing emerging leaders in immunology

Now in its ninth year, The Tullie and Rickey Families SPARK Awards for Innovations in Immunology continues to serve as a powerful launchpad for bold avenues of research at La Jolla Institute for Immunology (LJI). Through this philanthropically funded program, LJI's most promising immunologists receive $30,000 to pursue independent, high-risk, high-reward projects—ideas with the potential to transform how we understand, prevent, and treat disease. The award helps recipients generate critical proof-of-concept data, positioning them to compete for larger, long-term funding and advance novel approaches in immunology.

Program impact at a glance

Thanks to the generosity of nearly **250 donors nationwide**, the Tullie and Rickey Families SPARK Awards program has raised over **$1.81 million** to support novel research by emerging scientists. This visionary funding has fueled **53 innovative projects**, allowing researchers to investigate immunological approaches that could translate into real-world medical advances.

This impact goes far beyond the lab bench. Below are figures that reflect the significant achievements of The Tullie and Rickey Families SPARK Awards for Innovations in Immunology since its launch in Fall 2017.

33 SPARK winners earned promotions or new positions
after receiving project funding

14 independent laboratories
have been established by SPARK winners

$12.2 million+ in follow-on funding secured
by SPARK winners through competitive granting agencies

1 highly cited
SPARK winner ranks among the prestigious top 1% of immunologists worldwide in research citations

Program update

Thanks to a three-year partnership with the Joe W. and Dorothy Dorsett Brown Foundation, SPARK is launching the **Brown Foundation Reignite Round**, giving finalists another chance to refine their pitches with expert feedback. In science, biotech, and venture capital, success comes through persistence and iteration. The Foundation is also providing three years of funding for the **SPARK Pitch Bonus Award**, granting an extra $5,000 for the top-ranked winner.

Accelerate the next breakthrough in immunology

The Tullie and Rickey Families SPARK Awards for Innovations in Immunology empowers the next generation of scientific leaders and offers donors a rare chance to fuel bold early-stage research with the potential to transform human health. By making a gift, you will directly support the 2026 cohort of Tullie and Rickey Families SPARK Awards finalists. With your support, rising researchers gain the freedom to build new experimental models, investigate uncharted immune pathways, and test groundbreaking concepts. This kind of catalytic impact is only possible because of the visionary donors who share our mission of a future defined by ***Life Without Disease®***.

To learn how you can make a lasting impact on the careers of young scientists and ignite the next breakthroughs in medical research, scan the QR code below or visit **lji.org/SPARK**

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