



Main Line Health®

LANKENAU INSTITUTE FOR MEDICAL RESEARCH

# CATALYST

SUMMER 2019

## RETURN ON INVESTMENTS IN RESEARCH

LIMR's strategy: Fill the gap between discoveries made in the lab and treatments administered in the clinic | [Page 3](#)

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**George C. Prendergast, PhD**

*The Havens Chair for Biomedical Research  
President and CEO  
Lankenau Institute for Medical Research,  
Main Line Health*

## ALL ABOUT “THE NEW”

A core theme running through this issue of *Catalyst* is LIMR’s relentless drive to create more effective medicines and improve patient care — that is, to keep moving forward, exploring and charting new territory.

As the research institute for Main Line Health, LIMR discovers new knowledge in the laboratory and through focusing on inventions discerns the best way to proactively advance those developments into the clinic. This focus on invention — the practical application of new knowledge — is part of LIMR’s operational DNA. Each article in this issue of *Catalyst*, our sixth edition of this newsletter, highlights a different angle of that continuing story.

In our cover story, you’ll read about just a few of LIMR’s patented and patent-pending new innovations in biopharmaceutical and medical device technologies. Some are already in use in the clinic or are in clinical trials, and others are at the proof-of-concept stage and ready for licensing out to biotechnology and pharmaceutical firms. Why is it crucial that LIMR invent? See “Return on Investments in Research,” starting on page 3, for the answer to that important question.

In this issue, you’ll also read about the cancer clinical studies that LIMR administers for Main Line Health. Clinical research advances medical knowledge and can give patients access to potential new treatments and therapeutic options before they are available to the general public. Indeed, institutions like Main Line Health that offer clinical studies are all about advancing “the new.” It signals that we remain ever questioning, testing, scrutinizing, developing new tools in our patient-care arsenal. For more on our oncology trials, see “New Frontiers: Advancing Cancer Care Through Clinical Research” on page 2.

Also in this issue, read about how LIMR investigators uncovered a potential new therapy for ulcerative colitis, a disease that affects almost 1 million Americans (*see the story on page 7*). And you’ll meet Becky Sassi, the new executive director of development for the Lankenau Medical Center Foundation, and read about her goals for LIMR (*see page 5*).

I hope you enjoy this issue, and if you would like to stay tuned to our updates, please bookmark our website at [limr.org](http://limr.org).

Until next time.



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### About Lankenau Institute for Medical Research (LIMR)

LIMR is a nonprofit biomedical research institute located on the campus of Lankenau Medical Center and is part of Main Line Health. Founded in 1927, LIMR’s mission is to improve human health and well-being. Faculty and staff are devoted to advancing innovative new approaches to formidable medical challenges, including cancer, cardiovascular disease, gastrointestinal disorders, autoimmune diseases, and regenerative medicine, as well as population health. LIMR’s principal investigators conduct basic, preclinical and translational research, using their findings to explore ways to improve disease detection, diagnosis, treatment and prevention. They are committed to extending the boundaries of human health through technology transfer and training of the next generation of scientists and physicians. For more information, visit [limr.org](http://limr.org).

### Stay updated on LIMR news via social media

 Facebook: [fb.me/LankenauInstituteforMedicalResearch](https://fb.me/LankenauInstituteforMedicalResearch)

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## New Frontiers: Advancing Cancer Care Through Clinical Research

For Nina Cruice, participating in a LIMR clinical trial has been a way for her to focus on something positive after her cancer diagnosis and treatment.

Cruice is in the Breast Cancer Weight-Loss (or BWEL) study, which is for patients who've been diagnosed with early-stage breast cancer and are interested in losing weight. Researchers are trying to determine if losing weight and exercising more lowers the risk of cancer recurrence.

"The trial has been like a lifeline to me," said the retired thrift and gift store manager of Riddle Hospital. "My daughter says the trial came along at just the right moment in my retirement. It's time for me to pay attention to myself and my own health."

The BWEL study is one of about 50 clinical trials being administered by the Clinical Research Center (CRC) at LIMR. Researchers are studying new drugs — including promising new immunotherapies — as well as diagnostic tests and treatment methods for cancer patients. This includes cancers of the breast, brain, gastrointestinal tract, prostate, blood, head and neck, and lung, as well as gynecologic cancers. Researchers also are studying nonclinical issues, such as health disparities and the financial health of cancer patients.

"Our goal with clinical research is to give Main Line Health's oncology patients more tools in their arsenal to fight cancer," said Paul Gilman, MD, director of CRC. "Many treatments that are now standards of care were first proven to be safe and effective in clinical trials."

For patients, clinical trial participation may give them access to potential new treatments before they are widely available to the public. Their participation can also advance medical knowledge and help others who may develop cancer in the future. Perhaps most importantly, participants in clinical trials gain access to a high level of care and monitoring. Indeed, hospitals that conduct research are known to have the best patient outcomes.

### NCORP community site

Most of the cancer trials LIMR administers are part of the National Cancer Institute (NCI) Community Oncology Research Program (NCORP). In fact, Main Line Health is one of only 34 NCORP community sites in the United States. NCORP provides patients with access to NCI-sponsored cancer clinical trials studying screening, prevention and symptom management.

Main Line Health NCORP is led by principal investigator Albert DeNittis, MD, chief of radiation oncology at Lankenau Medical Center. "Research plays a vital role in patient



Nina Cruice (left), a patient participating in a cancer clinical trial being administered by LIMR, discusses her results with Lorie Matson, RN, CCRP, oncology program manager at Riddle Hospital.

outcomes," said Dr. DeNittis. "Based on research findings, we're able to offer patients at Main Line Health the very latest treatment options for their particular cancers."

As part of the BWEL study, Nina Cruice checks in with her coach about once a month, keeps a food log to track calories, and wears a Fitbit to monitor her activity level. In the process she has lost weight and inches and says she feels great. Thankfully, her cancer has not returned.

"By participating in a clinical trial I'm giving back to the health care community and paying it forward to future cancer patients," said Cruice. "Plus, it helps me focus on something other than my cancer, something positive that is having a beneficial outcome for me and could have for others, too."

For more on Main Line Health's cancer trials administered by LIMR, visit [mainlinehealth.org/cancertrials](http://mainlinehealth.org/cancertrials). ✨

**You have the opportunity to advance current and future patient care with a gift to LIMR's clinical trials program. A limited number of naming opportunities for the Clinical Research Center are available, and gifts of all sizes are appreciated.**



### LIMR'S STRATEGY: FILL THE GAP BETWEEN DISCOVERIES MADE IN THE LAB AND TREATMENTS ADMINISTERED IN THE CLINIC

## Return on Investments in Research

Oral medications to stimulate the immune system to destroy tumor cells. Antibody therapies to ward off diabetes, lupus, rheumatoid arthritis and inflammatory bowel disease. An injectable hydrogel-drug formulation to promote nonscarring, regenerative healing of a wound. A diagnostic test, now used widely by orthopedic surgeons, to detect joint infections during knee and hip replacements while the patient is still in the operating room. A blood test to predict a cancer patient's chance of developing severe nausea before he or she receives chemotherapy, helping oncologists provide the best supportive care.

These are just a few of the many biomedical inventions developed at LIMR in recent years.

**"We're excited to be able to report to our donors that their investments in LIMR's research initiatives are starting to bear fruit."**  
— George Prendergast, PhD

In addition to conducting biomedical research, LIMR's resident faculty create new biopharmaceutical and medical device technologies, particularly in the fields of cancer, cardiovascular disease, autoimmune disorders and regenerative medicine.

"LIMR is unique among U.S. biomedical research institutes in that it focuses more on invention than the acquisition of new knowledge, unlike peer organizations that are mainly academically oriented," said George Prendergast, PhD, president and CEO of LIMR. "The intellectual property we create is outlicensed to existing companies or spun out into new startup companies, as a mechanism to speed clinical and commercial development of our experimental medical therapies, tests and technologies." Indeed, during the past decade, LIMR has incubated many companies as part of its culture of innovation.

Before examining the fruits of this strategy, a bit of background may be helpful. The field of biotechnology today sports an increased demand to yield health care return on investment — which is a solid and credible business expectation. The problem is that traditional academic research focuses almost exclusively on acquiring and validating new knowledge. End of story. The task of translating those findings into commercial products is left up to others, such as biotechnology and pharmaceutical firms.

This gap — between discoveries made at the lab bench and actual therapies for patient care — is what LIMR's strategic initiative is meant to fill. And its growing pipeline of patented and patent-pending inventions, as well as its



A new therapy developed by LIMR Deputy Director Susan Gilmour, PhD (*left*), and her team, including Kelsey Mariner, biomedical research assistant, kills tumor cells by blocking their ability to take up a crucial nutrient for their growth.

technologies already employed in the clinic, offer strong validation for this unique vision. Following are just a few of LIMR's recent inventions and their development status.

**Cancer therapies**

- Researchers, including those at LIMR, discovered that the IDO1 enzyme drives about half of all human cancers, effectively shielding the growing tumor from the body's immune attackers. LIMR researchers and NewLink Genetics Corp. developed **indoximod**, an immunotherapy drug that is in clinical trials. By blocking IDO1, indoximod restores the ability of the immune system to recognize cancer cells, including metastatic cells, and kills them. This approach offers the potential to fight many types of human cancer.
- LIMR's Deputy Director Susan Gilmour, PhD, and a colleague from the University of Central Florida developed and patented a drug therapy that kills tumor cells by blocking the action of **polyamines**, a nutrient that is vital for cell growth and survival. Notably, solid tumors have an enormous appetite for polyamines. The drug therapy developed by Dr. Gilmour and her team blocks the ability of solid tumor cells to take up this nutrient. Their preclinical proof-of-concept studies

have demonstrated anti-tumor efficacy in several experimental systems, including melanoma, breast, ovarian, colorectal and pancreatic cancers.

- LIMR scientists, including Assistant Professor U. Margaretha Wallon, PhD, (*pictured on the cover of this issue*) developed a simple blood-based test called **MyNauseaRisk** that reliably predicts which cancer patients will experience severe nausea after chemotherapy, even before treatment begins. This is an important diagnostic tool because not all chemotherapy patients will experience nausea. Knowing which patients to administer anti-nausea medication to ahead of time enables improved care and allows patients to return to normal activities after treatment. The patented test is available at Main Line Health and has showed a 90 percent accuracy rate.

- Taking a precision-medicine approach, LIMR researcher Janet Sawicki, PhD, in collaboration with Genisphere LLC, developed a **nanotherapy** that specifically eradicates metastatic ovarian tumor cells. In this disease, drug resistance occurs commonly, usually as a result of tumor cells evolving ways to kick the drug out of the cell. When researchers added a cancer-killing drug to their nanocarrier, they enabled durable accumulation of the drug in tumor cells and not in healthy cells. Their preclinical studies demonstrated the ability to kill tumors while retaining the health of normal cells.

**Autoimmune disease therapies**

- In the last issue of *Catalyst*, you read about LIMR's discovery of the role the RhoB gene plays in promoting autoimmune diseases, such as rheumatoid arthritis (RA), diabetes and lupus, as well as diabetic retinopathy and macular degeneration. LIMR investigators were awarded a patent on their **anti-RhoB antibody** that shows therapeutic efficacy in preclinical studies.
- The enzyme IDO2, discovered at LIMR, has been identified as an essential promoter of autoimmune disease. In animal studies of RA, administration with an **anti-IDO2 antibody** developed at LIMR blocked disease development without affecting normal immune function. LIMR has been awarded two patents on this new therapeutic technique.

**To help commercialize its inventions for clinical advancement,** LIMR has contracted recently with L2C Partners LLC and with the technology transfer office at Thomas Jefferson University (TJU), the latter of which will serve as broker for LIMR's most mature intellectual property. L2C Partners, a Wynnewood, Pa.-based company, specializes in

commercialization services for nonprofit research centers and educational institutions. In their role, they will also help LIMR expand its invention culture into the arenas of clinical and population health research at Main Line Health. Both TJU and L2C will provide vital help to advance LIMR's invention and discovery efforts.

- LIMR researchers created a bold new **diagnostic test** for anti-NMDA receptor encephalitis (ANRE), a serious autoimmune disease depicted in the 2016 docudrama "Brain on Fire." ANRE can lead to seizures, hallucinations, confusion, memory loss, uncontrollable body movements, and can even be fatal. ANRE can be cured if it's identified early and appropriately treated, but identification cannot be performed in most clinical laboratories. Until now. (*See the story on page 6.*)

These are just a few of the biomedical innovations recently developed at LIMR. Others include an anti-rabies antibody, a diagnostic test and a potential new vaccine for Lyme disease, and novel treatments for macular degeneration, among several others. Noted Dr. Prendergast, "We're excited to be able to report to our donors that their investments in LIMR's research initiatives are starting to bear fruit." ✨

DEVELOPMENT

LANKENAU MEDICAL CENTER FOUNDATION'S NEW EXECUTIVE DIRECTOR OF DEVELOPMENT DISCUSSES HER ROLE IN CONNECTING DONORS AND RESEARCHERS

At the Intersection of Powerful Narratives



Rebekah "Becky" Sassi, Executive Director of Development, Lankenau Medical Center Foundation

Rebekah "Becky" Sassi joined the Lankenau Medical Center/LIMR team as executive director of development for the Lankenau Medical Center Foundation in 2018. With more than 25 years of fundraising experience, Sassi brings to Lankenau an

exceptionally strong skill set in development.

She previously served as executive director of our sister foundation at Main Line Health's Riddle Hospital, where she reinvigorated philanthropy. Prior to Riddle, Sassi served for 19 years as director of institutional advancement for Philadelphia's historic Walnut Street Theatre. Leadership Philadelphia named her one of 76 Culture Connectors in the region.

**Q: Welcome to Lankenau and LIMR! What drew you to health care development?**

**Sassi:** One of my favorite quotes comes from the 15th-century Italian humanist and teacher Vittorino da Feltre: "Not everyone is called to be a lawyer, a physician, a philosopher, to live in the public eye. Nor has everyone outstanding gifts of natural capacity. But all of us are created for a life of social duty. All of us are responsible for the personal influence which goes out from us."

As a fundraiser, I occupy that unique space between the practitioner and the philanthropist. I can think of no better way to support the health and well-being of our community

than by connecting LIMR researchers with donors who share their passion for advancing new approaches to solving today's most difficult medical challenges.

**Q: How are you planning to advance philanthropic initiatives for research at Main Line Health?**

**Sassi:** Much of fundraising is about listening and making connections: listening to our LIMR researchers share what they require to continually push the boundaries of discovery; listening to donors to learn what's important in their lives and the lives of their family members. When those narratives intersect, connections can be made — and that's what compels powerful and important work to happen.

**Q: While meeting with LIMR's scientific investigators these past few months, what has struck you as most salient for donors and others interested in research advancements to know?**

**Sassi:** Since joining the Lankenau team, I have learned so much about LIMR that I did not know before. The incredibly rich history of scientific discovery that has happened here since its founding in 1927 serves as a strong springboard for the groundbreaking work taking place in LIMR's labs today. Equally powerful to me is the fact that many of our researchers are also clinicians, or partner with clinicians, who see patients and are able to employ their scientific findings directly to bolster the extraordinary care provided daily at Main Line Health. ✨

## Updates from LIMR Researchers

LIMR Clinical Professor **William A. Gray, MD**, system chief of the Division of Cardiovascular Disease at Main Line Health, led an international, 65-site clinical trial that found that a new type of peripheral arterial stent, called Eluvia, is significantly more effective than the prior standard of care. The results were presented simultaneously at two international biomedical meetings and published in the prestigious medical journal *The Lancet*. Based on the strength of this trial's results, the FDA approved the Eluvia stent for general use two days after the presentations and publication.



LIMR Professor **Charles Antzelevitch, PhD**, gave two talks at the 14th International Dead Sea Symposium on Innovations in Cardiac Arrhythmias and Heart Failure in October. His talk "Genetics and Cellular Mechanisms Underlying Arrhythmogenesis in Brugada Syndrome" was part of the first Lankenau-Israel Strategic Alliance Symposium sponsored jointly by Lankenau Medical Center and Israel Heart Society. LIMR Professor **Gan-Xin Yan, MD, PhD**, also spoke at the conference. His talk was on genetic and cellular mechanisms underlying the cardiac disorder early repolarization syndrome.



At the Lupus Research Alliance Forum for Discovery meeting in New York in November, LIMR Associate Professor **Laura Mandik-Nayak, PhD**, presented her research on the enzyme IDO2, discovered at LIMR, as a novel therapeutic target for the autoimmune disease lupus.



LIMR Professor **Peter Kowey, MD**, co-chaired the Medtronic Stroke Focus Group in New York City in December. In attendance were electrophysiologists and stroke neurologists from around the world. The group's goal is to provide guidance to physicians regarding prevention and treatment of strokes in patients with cardiac arrhythmia.

## NEWS

### LIMR investigators create test for autoimmune encephalitis, isolate auto-antibodies



**L**IMR investigators created a simple diagnostic test for anti-NMDA receptor encephalitis (ANRE), an autoimmune disorder that can lead to serious psychiatric symptoms. The researchers also isolated and cloned auto-antibodies that may help elucidate the underlying

mechanisms of the inflammatory brain condition that occurs when the body's immune system attacks brain cells.

ANRE can lead to seizures, hallucinations, confusion, and uncontrollable body movements, and can even be fatal. About 30 percent of patients are children and teens, and females are affected more often than males. ANRE can be cured if it's identified early and appropriately treated, but the only currently available diagnostic test cannot be performed in most clinical laboratories.

To address this, LIMR Professor **Scott Dessain, PhD** (*above right*), and his team created a simple ANRE assay that can be adapted for use with common clinical laboratory techniques. "Our discovery will help doctors to more easily identify patients who have this treatable neurological and psychiatric disease," said Dr. Dessain, the Joseph and Ray Gordon Chair in Clinical Oncology and Research.

In a companion study, the Dessain team, including biomedical research assistant Chandana Kattala (*above left*), isolated and cloned NMDA receptor auto-antibodies from a patient. The auto-antibodies provide standards for the diagnostic test the researchers described. These studies were supported by a grant from the National Institutes of Health. ✨

**George Prendergast, PhD** (*right*), and LIMR Professor **Janet Sawicki, PhD**, took calls during an all-day TV broadcast at NBC10 about cancer and cancer research last November. The American Association for Cancer Research, which sponsored the event, had invited Drs. Prendergast and Sawicki to be on the panel of cancer experts answering viewers' questions. During this exciting day, Dr. Prendergast also was interviewed on camera about the latest advances in cancer research.



## BASIC RESEARCH



LIMR Professor James Mullin, PhD (*center*), researches potential new therapeutic approaches to several gastrointestinal disorders, including ulcerative colitis. He is assisted by Liz Scimeca, biomedical research assistant (*left*), and Sunil Thomas, PhD, research assistant professor.

### LIMR Scientists Uncover Potential New Therapy for Ulcerative Colitis

**U**lcerative colitis (UC), a disease that affects nearly 1 million Americans, can significantly impact quality of life by causing abdominal pain, weight loss, fatigue and frequent diarrhea, among other symptoms. It has been blamed partly on the typical Western diet, which in some individuals can promote a low-grade chronic inflammation of the gut. Whatever the causes, it's clear that patients with UC are at an increased risk of colorectal cancer.

Those diagnosed with UC currently are prescribed anti-inflammatory drugs and immune suppressors whose unpleasant side effects, such as opportunistic infections, and lack of efficacy in certain individuals, limit treatment quality.

LIMR researchers and their colleagues set out to determine a way to prevent and perhaps better treat UC. They studied experimental mice that had been treated to develop UC and administered to them an antibody to Bin1, a protein that LIMR researchers had previously identified may be involved in cancer and UC.

"The animals treated with the Bin1 antibody had no signs of UC, while those in the other group did show signs of UC," said James Mullin, PhD, LIMR professor and one of the study's authors. "We found that our Bin1 antibody appeared to decrease the expression of several inflammatory agents in the colon."

The study's findings were built on years of basic research on the Bin1 gene at LIMR, suggesting a radically different approach to reduce or eliminate UC severity by restoring normal colon tissue character.

**"We found that our Bin1 antibody appeared to decrease the expression of several inflammatory agents in the colon." — James Mullin, PhD**

#### Immunotherapeutic effect

But that wasn't the only beneficial impact of the Bin1 antibody. Sunil Thomas, PhD, research assistant professor at LIMR and lead author of the study, noted that the antibody also appeared to prevent formation of lesions in the colon in part by stopping the rupture of lymphoid follicles, a condition often seen in UC. Lymphoid follicles, which are present in lymph glands throughout the body and are an important part of the immune system, contain lymphocytes, cells that hunt and destroy invading organisms such as bacteria and viruses.

"By helping to improve the integrity of the lymphoid follicles, the antibody triggered a beneficial immune-stimulating effect," said Dr. Thomas. "We believe this study showed that multiple factors are involved in UC development and offers a potential new immunotherapy for the disease."

This research was funded by the Janssen Research Foundation, the Wawa Foundation, and the Women's Board of Lankenau Medical Center. In keeping with LIMR's mission to help turn discoveries in the lab into treatments, LIMR has developed a Bin1 antibody-based therapy and has made it available for licensing by biotechnology companies. ✨

You can fund this type of research. Please see the inside back cover for ways to contribute to LIMR's work.

## Helping to Advance Scientific Breakthroughs at LIMR

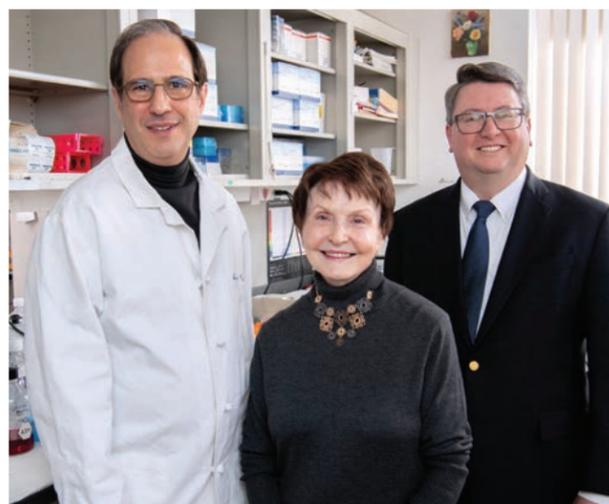
Linda Waddell of Narberth, Pa., has been connected with Lankenau Medical Center for many years, as a donor, volunteer and currently an officer of the Lankenau Women's Board and its Hamper Shop Auxiliary. However, it wasn't until early 2018 that this former senior marketing executive of Verizon Corp. had the opportunity to attend a John D. Lankenau Society event and hear LIMR scientists speak in detail about their work.

She was incredibly impressed with the research underway, and in particular, fascinated by LIMR's immunotherapy and stem cell research programs. Waddell said, "While I don't have millions of dollars to donate to either of these fields, I was happy to find a place where my donation can make a difference by helping with necessary funding for these research initiatives."

To that end, Waddell made a first-time gift to LIMR in 2018 of more than \$30,000 to support the work of LIMR President and CEO George Prendergast, PhD, a world-renowned cancer research scientist.

Noted Dr. Prendergast, "LIMR has been the fortunate recipient of research grants to support our work over the years, but it's even more meaningful to us when someone like Linda, who is so devoted to her community and uses her time and energy to better local organizations, understands the importance of the work we are doing and then acts on it to make an investment to further it."

Waddell's gift is a significant boon to LIMR. Philanthropic donations—of any size—support necessary research expenses, such as equipment and technology, supplies, and scientists' and research assistants' time.



During her visit, Ms. Waddell also met Alexander Muller, PhD (*left*), a researcher who is part of a team at LIMR that is developing new immunotherapies to treat cancer.



George Prendergast, PhD, welcomed donor Linda Waddell into his lab recently to demonstrate the research that her generous contributions helped to fund.

**"It's inspiring to me to have the ability to help advance scientific research in my own backyard that has the potential for impact on a global level."**  
— Linda Waddell

"I hope my story will inspire others in our community to consider a gift to LIMR and, in so doing, have the opportunity to participate meaningfully in its vital research program, especially in an age of decreasing public funding for such programs," she said. "It's inspiring to me to have the ability to help advance scientific research in my own backyard that has the potential for impact on a global level."

Along with her volunteer roles at Lankenau, Waddell has served on numerous nonprofit boards and committees, including the Pennsylvania chapter of Recording for the Blind and Dyslexic, the Philadelphia branch of the International Dyslexia Association, American Insight, the Montgomery County Foundation, and the Narberth Community Library Board of Trustees.

Her commitment as both volunteer and donor to Lankenau Medical Center and LIMR will continue to help advance scientific breakthroughs and the best standards in patient care for years to come. ✨

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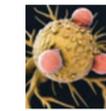
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## Your Investments in Research at LIMR Can Have a Significant Impact

You can designate one of the Lankenau Institute for Medical Research's special funds to help precisely target your contributions to health care research that matters to you.



### Immunotherapy Pioneer Fund

Immunotherapy entails the prevention or treatment of disease with substances that manage the immune system's capabilities to clear disease, rather than attack the disease itself. LIMR has spearheaded unique studies of disease modifier pathways that impact immunity and cancer progression, developing new drugs to target them. Your generous contributions to this fund will help us to continue to advance these innovative directions.



### Regenerative Medicine Vision Fund

Regenerative medicine deals with new processes of replacing, engineering or regenerating human tissues to restore or establish normal function. LIMR is privileged to have one of the pioneers in regenerative medicine, Professor Ellen Heber-Katz, PhD, who has discovered an experimental drug approach that may eliminate a need for stem cell transfer. Your contributions to the Regenerative Medicine Vision Fund will help further her research, enabling her and her team to continue groundbreaking work on this approach that holds enormous promise for the future of health care.



### Biotechnology Innovation Fund

This fund supports work on biological molecules engineered by LIMR scientists that can enhance the diagnosis, prognosis and treatment of disease. Your generous contributions to this fund can help advance the work of our researchers including, for example, our studies on targeted nano-carrier therapeutics as experimental treatments for cancer, and our work on cloned human antibodies as treatments for infectious disease, cancer and neurological illnesses.



### Cardiovascular Breakthrough Fund

Cardiovascular disease accounts for nearly 800,000 deaths in the United States every year, or about one of every three deaths. Additionally, about 92 million American adults are living with some form of heart disease or the after-effects of stroke. LIMR is home to world-renowned cardiovascular researchers. Your gift to this fund will further research that could benefit the lives of millions of heart disease and stroke patients.

### LIMR Unrestricted Fund

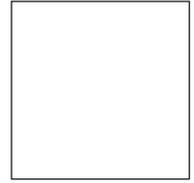
Unrestricted gifts to LIMR are important in enabling opportunities to target your gift where our doctors and scientists believe it could have the greatest impact.

To donate to LIMR, please use the reply envelope inserted in this publication. You also can donate online at [limr.org](http://limr.org), and click on Supporters. Or call Rebekah Sassi, executive director of the Lankenau Medical Center Foundation, at 484.476.8067 or email [sassir@mlhs.org](mailto:sassir@mlhs.org).



**LANKENAU INSTITUTE FOR MEDICAL RESEARCH**

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To learn more, visit [mainlinehealth.org/lmcgiving](http://mainlinehealth.org/lmcgiving) or call 484.476.8070.

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Main Line Health® is an integrated health system serving the Philadelphia region, with more than 2,000 physicians, one quaternary and three tertiary care hospitals, a wide network of patient care locations and community health centers, specialized facilities for rehabilitative medicine and drug and alcohol recovery, a home health service, and a biomedical research institute. Collectively, Main Line Health's physicians, care teams, health care facilities, and researchers provide patients with primary through highly specialized care as well as access to clinical trials.