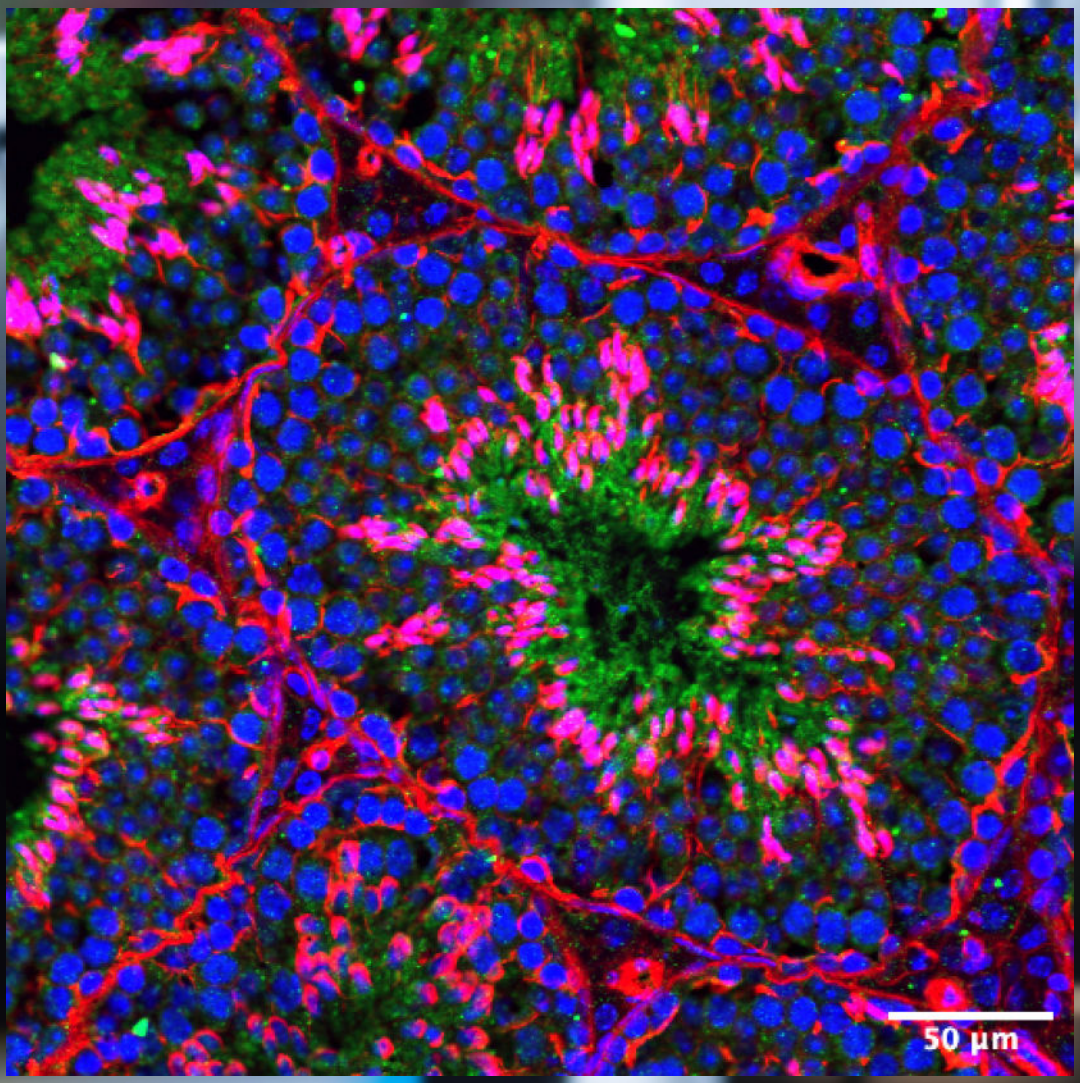
MMRI
Masonic Medical Research Institute

Annual Report

ACKNOWLEDGING THE ACHIEVEMENTS OF OUR INCREDIBLE SCIENTISTS AND STUDENTS



2022

Our Mission

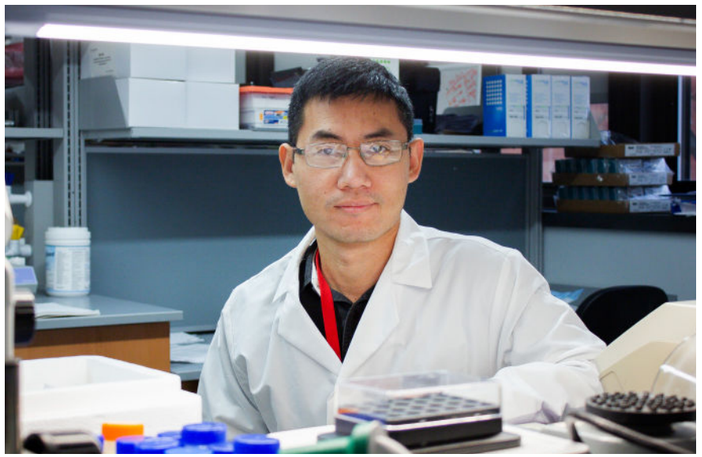
The Masonic Medical Research Institute (MMRI) is dedicated to improving the health and quality of life for all humankind. The Institute's primary mission is to conduct high-quality basic biomedical and clinical research aimed at generating knowledge and information necessary for understanding molecular mechanisms of disease and the development of medical cures and treatments of tomorrow. The Institute is also committed to providing education and training to basic scientists, clinical researchers and students who will perpetuate and extend the fight against disease worldwide.

Our Vision

The Institute's vision is to build scientific teams that can combine molecular biology, chemistry, computation, technology and engineering to create novel approaches to understanding and deciphering the causes of disease. Using this knowledge, we will advance basic research to clinical application, therapeutics and cures. To this end, the Institute will foster an environment of creativity, risk-taking, and open sharing of data and research. Finally, this new model will seek collaborations, both within the Institute and worldwide, in our mission to combat disease.

Our Values

- **Propelling** the understanding of medical science through innovation and groundbreaking research and investigation.
- **Fostering** teamwork and collaboration, institutionally and worldwide, to combat disease.
- **Empowering** scientists to take risks and act boldly on ideas with transformative potential.
- **Sharing** of ideas, data and knowledge to drive biomedical progress, therapeutics and cures.
- **Building** an inclusive community.



2022 Annual Report cover-page image taken by Zhiqiang Lin, Ph.D., of a previously known heart-specific Cre mouse line (Myh6-Cre) activates tdTom reporter in the testis.

In the image, blue, red and green fluorescence signals indicate nuclei, tdTom and MYH6 protein, respectively.

Zhiqiang Lin earned his Ph.D. from Peking University in 2008 and continued his postdoctoral studies at Harvard in 2013. In 2018, Dr. Lin was recruited to MMRI as an assistant professor and principal investigator.

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BOARD OF DIRECTORS

BOARD MEMBERS

MMRI is governed by a Board of Directors. The Board of Directors consists of 15 distinguished Freemasons elected to a three-year term by the Grand Lodge of the State of New York, Free & Accepted Masons. Their selection is based upon their outstanding business and professional experience. Board members serve without compensation.

Front row from left to right:
RW Alvaro F. Quiroga-Sanchez
Past President

RW Richard J. Miller Jr., Esq.
Member

RW Pasquale Imbimbo, Jr.
Vice President

RW Robert A. Hewson, DPM
President

RW Vincent Cunzio, CPA
Treasurer

RW James D. Swan, Jr.
Secretary

RW Frank R. Williams
Member

Back row from left to right:
RW Sheldon B. Richman, Esq.
Member

RW David F. Schneeweiss
Chairman of the Board

RW Paul A. Guerrero, CMR
Member

RW Paul G. Huck, Esq.
Member

RW Peter R. Gray, M.D., Ph.D., FACC
Member

RW Virgilio S. Quijano
Member

Not Photographed
RW David D. Goodwin
Member

RW Paul E. Mossberg
Member

Emeritus
John P. Chang, R.Ph.
Paul N. O'Neill
Laurence I. Sussman
Victor G. Webb
Albert J. Wright, III

UPDATE

From Our Board President

To the Grand Lodge,

I am pleased to report that 2022 was another successful year at the Masonic Medical Research Institute. Like you, we are recovering from the COVID pandemic. Thanks to a dedicated staff and strong leadership, we have recovered well and are looking forward to much success in the coming years.

2022 saw the completion of our renovations. Our building, which opened in 1958, has now been essentially rebuilt from the sub-basement to the vivarium on the third floor. This is no small accomplishment. We are grateful to VIP Structures for their fine work, to RW Jim Swan, secretary of the board of directors, and to Curt Fowler, facilities manager, for overseeing this project. We are also grateful to our scientific and administrative staff for their patience. The Masonic Medical Research Institute is now the envy of many institutions worldwide.

COVID impacted our ability to recruit and hire world-class talent as well. We are now happily seeing a surge of new, talented individuals into our ranks at the MMRI. These new individuals will complement our existing staff and will contribute to our ongoing success.

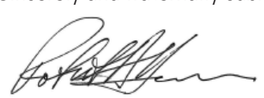
Dr. Kontaridis, our executive director and director of research, continues to demand the highest scientific standards. She continues to develop collaborations across New York State and the globe. We have reestablished a long-standing relationship with the Lupus and Allied Disease Association (LADA). Thanks to their generous support we are already making significant discoveries into the pathogenesis of systemic lupus erythematosus.

Our scientific staff continues to apply for and receive grants from the National Institutes of Health (NIH), American Heart Association (AHA), Department of Defense (DOD) and New York State. These grants have become much more difficult to receive due to COVID and our struggling national economy. Grants only cover approximately 80% of the cost of doing research. This leaves our development team with the monumental task of making up the difference. Relief of some of this shortfall comes from Masons, like you, from across New York State. Additionally, the concordant bodies have been extremely generous, specifically, Royal Arch Chapter, Consistory, the Eastern Star, and many others. Several specific lodges and districts have and continue to provide necessary support. We have also been blessed with many estates. Please consider including us in your estate planning. We are extremely grateful to every group and individual who has donated to us since our inception in 1958.

We continue to work with Grand Masters from all jurisdictions within the United States and some from around the world. We are providing awareness worldwide of the great and necessary work being done at MMRI and encouraging them to help us in our mission of "improving the health and quality of life for all humankind."

So, as you can see, we have the people, we have the facility, and we have New York State Masons. With a formula like that, we can continue to produce the world-class research that the Masonic Medical Research Institute is famous for, that you expect, and of which you can be proud.

Sincerely and fraternally submitted,



RW Robert A. Hewson, DPM

UPDATE

From Our Executive Director

Dear Members and Supporters,

As the Executive Director of the Masonic Medical Research Institute, I am pleased to present our Annual Report for the fiscal year ending December 31, 2022. It is my honor to share with you the remarkable achievements of our dedicated researchers, staff, and collaborators during the past year. Indeed, despite the economic, emotional, and hiring challenges posed by the post-COVID-19 landscape in 2022, MMRI continued to make significant progress toward fulfilling its mission to advance biomedical research and discovery. We are proud to report that our research programs remained productive and innovative, with a particular focus on cardiovascular disease, autoimmunity, and neurocognitive disorders.

Our investigators made notable contributions to the field, with several publications in high-impact journals, numerous presentations at national and international conferences, and collaborations with leading institutions across the globe. We also made significant progress in identifying and understanding the causes of disease and worked towards developing new therapies and treatments for our community's worst ailments. In recognition of these efforts, our scientists were awarded $1.6M in new, highly competitive federal and foundational research grants for their projects this year, including three pilot award grants totaling $150K from our local supporters of our lupus research, the Lupus and Allied Diseases Association, Inc. These awarded funds are on top of the already garnered $1.4M multi-year grants previously awarded to our scientists, bringing totals to $3M in grant resources for our scientists in 2022 alone. In addition to these funds, the Battle Within Foundation (BWF) and MMRI also announced a collaboration to further the scientific understanding of PTSD. In support of this work, which was provided in memory of Lady Joanne Kessler, who passed away in December 2021, BWF pledged to raise $250,000 to support four start-up projects for PTSD at MMRI in the coming year.

This past year also brought MMRI success in philanthropy, raising over $1.3M in generous donations. Charitable contributions are critical and support MMRI's vital research mission. Notably, non-estate/non-planned giving gift donations increased by 62% this year, with over 400 new/first-time donors who were both Masons and non-Masons alike, attesting to our gained notoriety within the community and across the country. Our development team also launched the MMRI 1958 Club Program this year, paying special tribute to our founding year and providing members with yearly commemorative and collectible pins that describe the year-by-year successes of MMRI (join today)! As well, and in keeping with our theme of sustainability for the Institute, MMRI created a holding company this year, preparing us for the future and providing MMRI opportunity for investment in for-profit ventures that will not only support the Institute financially but will also build the research, pharma and biotech industries in Utica, NY as well. Indeed, our first venture, a company conducting state-wide quality assurance testing, is slated to launch in the spring of 2023!

In the summer of 2022, MMRI also completed its multiyear renovations, which first broke ground in 2017. What we have proudly built is a state-of-the-art research facility that houses cutting-edge science, equipment, and staff. Moreover, these renovations have attracted top talent to the region and to MMRI, growing our Institute from 17 at the project's start to the 50+ people we have today. What's next you may wonder- well, we are working to continue our expansion efforts with continued recruitment of top-talent administration, staff, and scientists to fill our new space and to further the growth of our research efforts!

Importantly, MMRI remains proud and committed to community partnership, outreach, and education. In this regard, MMRI launched several new branding and marketing initiatives in 2022, each designed to increase public awareness regarding the importance of biomedical research and the impact MMRI has had on human health. These efforts included collaborations with local schools, public lectures, and the development of educational resources for students and the public. In addition, MMRI ran another successful Summer Fellowship internship program for undergraduate and graduate students in 2022, an initiative that was once again 100% supported by our donors. This program provides our students hands-on experience in cutting-edge research, which will hopefully lead to a lifelong passion for science. Finally, the Eighth Masonic District Association of Manhattan, through its funding of the endowed Halfond-Weil Postdoctoral Fellowship Fund, again provided a $50,000 award to a top-talented MMRI postdoctoral fellow this year. For 2023, this fellowship was awarded to Dr. Saravanakkumar Chennappan, a fellow in my laboratory whose project is focused on elucidating the role of a novel gene in the development of Noonan Syndrome.

Taken together, none of these accomplishments this year would have been possible if not for the generous support of our donors and partners. We are deeply grateful for your ongoing commitment to MMRI, which has allowed us to pursue our mission with passion and dedication. We are excited about the opportunities that lie ahead and look forward to continuing to work together toward a healthier and brighter future for all.

Sincerely and with gratitude,

Maria I. Kontaridis, Ph.D.
Executive Director
Gordon K. Moe Professor and Chair
Biomedical Research and Translational Medicine
Director of Research
Masonic Medical Research Institute

MEET THE TEAM

MMRI Administrative Leadership

Maria I. Kontaridis, Ph.D.
Executive Director
Gordon K. Moe Professor and Chair of Biomedical Research and Translational Medicine
Director of Research
Molecular Cardiology and Signaling

Jason McCarthy, Ph.D.
Scientific Operations Director
Associate Professor
Imaging and Nanomedicine

Lisa Cooper, CPA
Finance Director

Stephen F. Izzo
Principal Development Officer

Varun Balaji
IT Director

Curt Fowler
Facilities Manager

Michael Mayo
Controller

Carrie DiMaria
Human Resources Manager

Administrative Team

Compliance
Kele Piper
Compliance Officer

Development, Marketing & Communications
Kayliegh Caruso
Marketing & Communications Associate

Anthony Cucci
Fraternal Relations & Development Associate

Tony Gilbert
Communications & Marketing Associate

Shannon Olney
Development Administrative Assistant

Shannon Smith
Data Analyst

Victoria Wenke
Marketing & Communications Assistant

Executive Assistant
Terri Cronin
Executive Assistant to Executive Director

Facilities
Edgardo Colon
Lead Maintenance Mechanic

John DeMarco
Senior Maintenance Technician

Tom Lloyd
Facilities Associate

Richard Thomas
Security

Finance
Nicole Knoblock
Procurement, Contracts, and Assistant Events Coordinator

Victoria Ogrodnik
Accountant

Grants
Jessica Densten
Grants Administrator/Faculty Administrative Assistant

Crystal Jadwick
Grants and Payroll Administrator

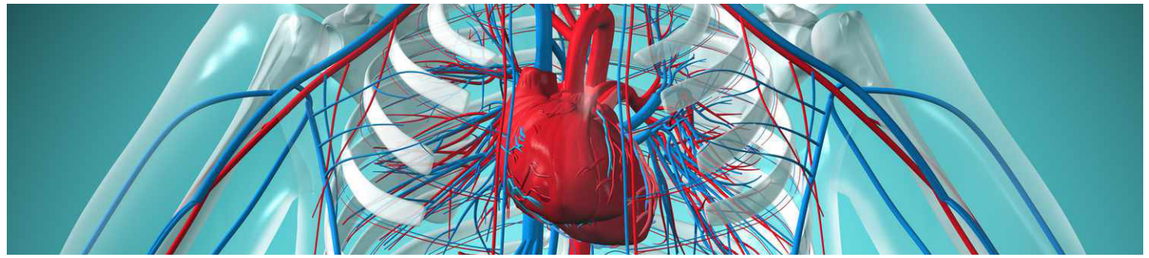
Eleanor Kuszmar
Grant Administrator

Information Technology
Tom Massaro
IT Specialist

Adam Rosic
IT Specialist

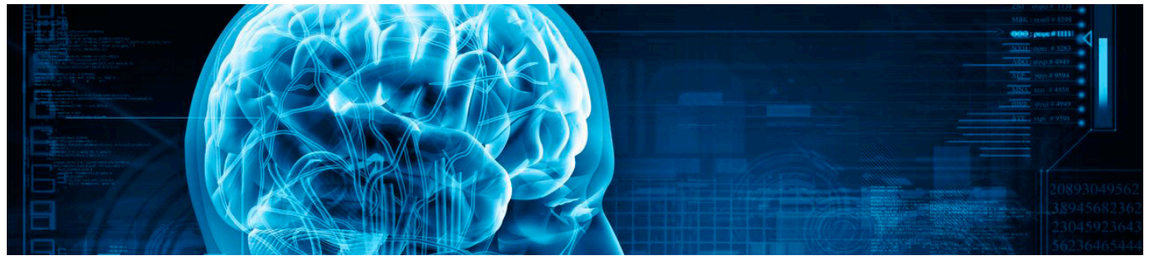
Scientific Writer
Coralie Poizat, Ph.D.
Adjunct Faculty and Scientific Writer

WHAT MAKES US BEAT?



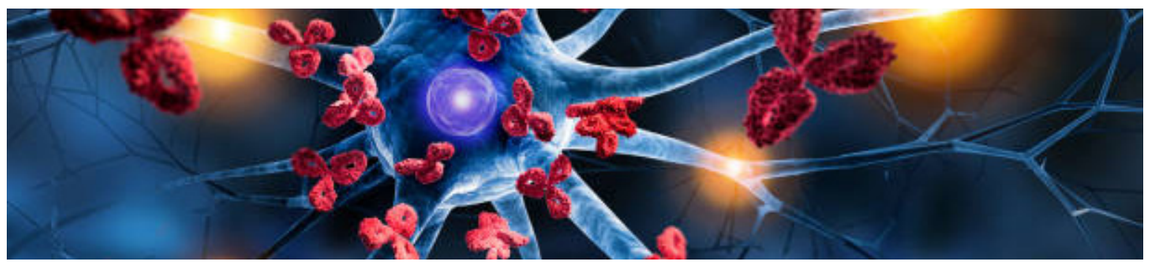
Cardiovascular

Our teams are working to understand the molecular and genetic effects that lead to the onset of congenital heart disease, adult-stage heart failure, diabetes-associated cardiovascular disease, cardiac inflammation, cardiomyopathies, atherosclerosis, thrombosis, and arrhythmias. We use myriad of novel approaches and technologies, including genetic mouse models, human inducible pluripotent stem cells, single cell RNA sequencing, nanotechnology, and gene therapy.



Neurocognitive

Our teams are working to identify novel genes and causal factors associated with the development of autism, Alzheimer's, Parkinson's, and post-traumatic stress disorder. Specific projects also focus on understanding the environmental, genetic and socioeconomic consequences increased incidence of autism in upstate NY, as well as determining the molecular and genetic links between neurocognitive anomalies and cardiovascular disease.



Autoimmunity

Our teams are working to identify novel genes and pathways leading to the development of autoimmune disorders, including systemic lupus erythematosus (SLE), Type I diabetes, rheumatoid arthritis and psoriasis. We are working to understand the molecular targets affected by these genetic changes and are striving to identify better diagnostics and develop novel therapies for treatment, with the goal of finding potential cures for these disorders.

MMRI Scientific Leadership

Maria I. Kontaridis, Ph.D.
Executive Director
Gordon K. Moe Professor and Chair of Biomedical Research and Translational Medicine
Director of Research
Molecular Cardiology and Signaling

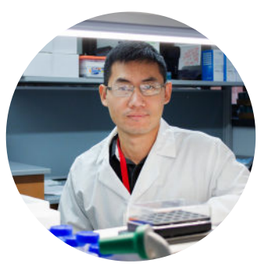
Jason McCarthy, Ph.D.
Scientific Operations Director
Associate Professor
Imaging and Nanomedicine

Research Faculty

Gary Aistrup, Ph.D.
Research Assistant Professor
EC Coupling and Electrophysiology

Adife Gulhan Ercan-Sencicek, Ph.D.
Instructor
Autism and Molecular Genetics

Chase Kessinger, Ph.D.
Assistant Professor
Pulmonary Embolism and Venous Thrombosis



Zhiqiang Lin, Ph.D.
Assistant Professor
Diabetes and Obesity

Coralie Poizat, Ph.D.
Adjunct Faculty and Scientific Writer
Cardiomyopathy and Heart Failure

Nathan Tucker, Ph.D.
Assistant Professor
Genomic Decryption

Sathya Dev Unudurthi, Ph.D.
Instructor
Cardiac Inflamation

Postdoctoral Fellows
Saravanakkumar Chennappan, Ph.D.
Joyce Bernardi, Ph.D.
Khanh Ha, Ph.D.
Myles Hodgson, Ph.D.
Samantha Le Sommer, Ph.D.
Luana Nunes Santos, Ph.D.
Yan Sun, Ph.D.

Research Associates
Michelle Hulke, Ph.D.
Associate Computational Biologist II

Ryan Pfeiffer
Research Associate

Bing Xu, Ph.D.
Research Associate/Surgeon

Research Assistants
Daniel Baez
Zackery Caporale
Jeffrey Cheng
Rena Collandra
Amanda Davenport
Mayurika Desai
Donna Le
Levi Legler
Emily Marshall
Yuriy Milobog
Steven Negron
Katherine Nelson
Tracy Rosati
Vaea Salt-Bernard
Caroline Sheldon
Sandy Thai
Emma Zupan

Sr. Nanomaterials Scientist
Jagathesh Bose Rajendran, Ph.D.

Affiliated Faculty
Zhen Ma, Ph.D.
Jennifer Peterson, Ph.D.
Ben Bovin, Ph.D.
Max Majireck, Ph.D.

Animal Care
Damian Bohler, LATG
Animal Research Facilities Manager

Laura Coon
Sr. Animal Care Technician

Chelsea Coyne
Animal Care Technician

Kayla Traskos
Animal Care Technician

Electrophysiology
Robert Goodrow, Jr.
Electrophysiology Core Manager & Research Associate

Fluorescence-activated Cell Sorting (FACS)
Samantha Le Sommer, Ph.D.
FACS Core Manager

Gene Therapy
Zhiqiang Lin, Ph.D.
Gene Therapy Core Manager

Genetics
Nathan Tucker, Ph.D.
Genetics Core Manager

Ryan Pfeiffer
Genetics Core Co-Manager

Histology/Imaging/Surgery
Chase Kessinger, Ph.D.
Histology/Imaging/Surgery Core Manager

SCIENTIFIC CORES

ANIMAL CARE
Damian Bohler, LATG
Animal Research Facilities Manager

The Animal Care Department is a support unit for animal-based research at MMRI. Our mission is to provide the best possible veterinary and humane care for the laboratory animal species used by researchers at our institution. We are licensed by the United States Department of Agriculture (USDA), hold a New York State, Department of Health (NYS DOH) license and we hold an assurance with the Office of Laboratory Animal Welfare (OLAW) as part of the Public Health Service (PHS) Policy.

GENE THERAPY
Zhiqiang Lin, Ph.D.
Gene Therapy Core Manager

The core provides services of packaging Adenovirus, Adeno-associated virus (AAV) and Lenti virus, which are convenient tools for expressing gene of interest in cultured cells or mice. For tissue specific gene delivery studies, we can package heart specific, adipose tissue specific or liver specific AAV vectors. AAV vectors are safe and have been widely used in gene therapy drugs and clinical trials.

GENETICS CORE
Nathan Tucker, Ph.D.
Assistant Professor
Genetics Core Manager

Ryan Pfeiffer
Genetics Core Co-manager

The ultimate goal of our Genetics Core is to identify the factors that are responsible for disease. This knowledge will facilitate the development of gene-specific therapies and cures for heart failure, congenital heart disease, and arrhythmias. It also provides us the opportunity to identify individuals at risk for sudden cardiac death.

ELECTROPHYSIOLOGY
Robert Goodrow
Electrophysiology Core Manager

The electrophysiology core utilizes cardiac and neuronal cells and tissues to study heart or brain electrical activity, respectively. Data is used to understand and compare normal and abnormal heartbeats or arrhythmias, as well as determine signaling functions in neuronal cells of the brain. Techniques include voltage-clamping, utilizing single cells for cardiac ionic channel currents, and utilizing tissues for action potential recordings.

FACS
Samantha Le Sommer, Ph.D.
Postdoctoral Fellow
FACS Core Manager

The Flow Cytometry Core (FCC) at MMRI provides instrumentation and expertise in a broad range of basic and medical science disciplines. Samples are prepared by individual investigators, who then deliver samples to the core for flow cytometric analysis, cell labeling, or cell sorting.

HISTOLOGY, IMAGING & SURGERY
Chase Kessinger, Ph.D.
Assistant Professor
Histology, Imaging & Surgery Core Manager

The Imaging Core was developed to facilitate the non-invasive analysis of preclinical models of disease. The imaging suite is outfitted with state-of-the-art equipment for small animal in vivo imaging using fluorescence, x-ray computed tomography, and ultrasound. The Histopathology Core provides a range of histological services, including tissue fixation and processing, paraffin and cryosectioning, common and advanced histological stains, as well as immunohistochemistry and fluorescence staining. The Surgical Core provides a range of small animal cardiovascular focused surgical services including MI myocardial infarction – heart attack; TAC transaortic constriction – heart failure; IR ischemic reperfusion – heart attack; Various chronic vascular surgeries to induce blood clots - DVT; and Pressure-volume loops – heart failure. Other surgical procedures can also be requested. The core offers large animal (i.e., pig models) surgical assistance in the newly established large animal facility which opened in the summer of 2021.

Research Impact

We would like to introduce you to some of the extraordinary scientists at Masonic Medical Research Institute who are advancing healthcare through scientific discovery. Their interests range from lupus to COVID, to heart disease. These women and men are true innovators.

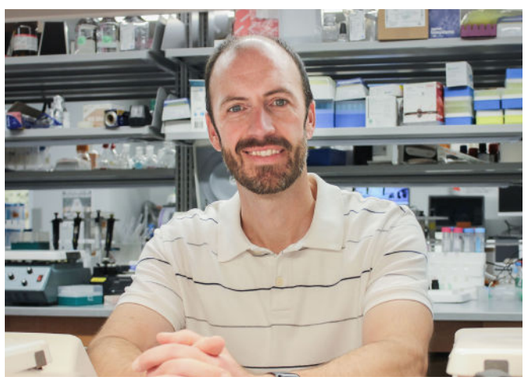
Published in *Osteoporosis International*, April 2022

Preventing Bone Loss after Severe Injury

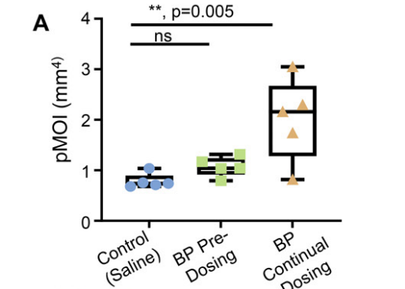
Researchers examine potential therapeutic interventions to prevent the loss of bone (osteoporosis) or the formation of bone within muscle as a result of severe injuries.

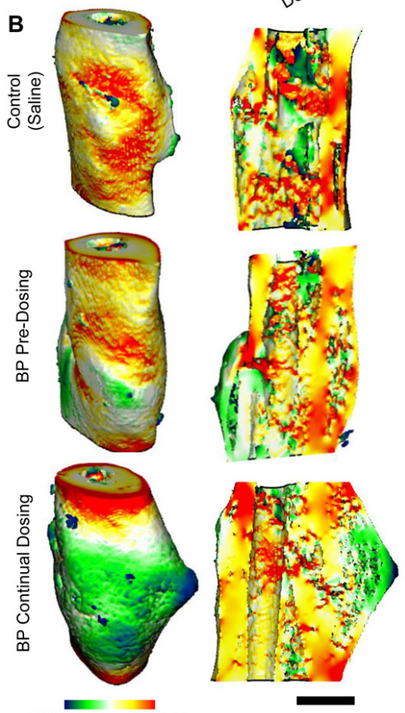
In severe trauma cases, where a patient is subject to extensive injuries, such as a burn, blast, head or spinal cord injury, the body's response mechanisms are sometimes dysregulated, which results in the loss of bone or the formation of bone in sites that it should not exist, including the muscle. Therapeutics are thus needed to prevent this occurrence and restore the natural balance within these tissues. Bisphosphonates are drug molecules that are known to modulate these processes, but the time window in which they should be given to patients after an injury is unknown. In 2022, a team including Jason McCarthy, Ph.D., Associate Professor and Scientific Operations Director at MMRI, challenged conventional thinking about the optimal time to initiate bisphosphonate therapy in patients following a trauma–and the answers may have the potential to shift the clinical management of these patients.

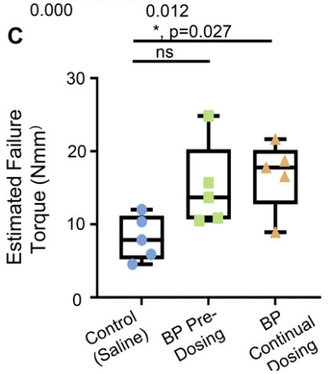
"Our study utilized mouse models of severe injury, in conjunction with sensitive measurements of repair," said McCarthy. **"We wanted to test the ability to reduce injury-induced bone loss and soft tissue calcification."** The team's discovery, published in *Osteoporosis International*, demonstrated that if administered at the time of injury, bisphosphonates prevented severe injury-induced bone loss and soft tissue calcification, but did not interfere with bone repair or remodeling. However, if administered between 7-21 days post-injury, these drugs localized to sites of active biomineralization, leading to impaired fracture remodeling and increased soft tissue calcification.



Jason McCarthy, Ph.D.





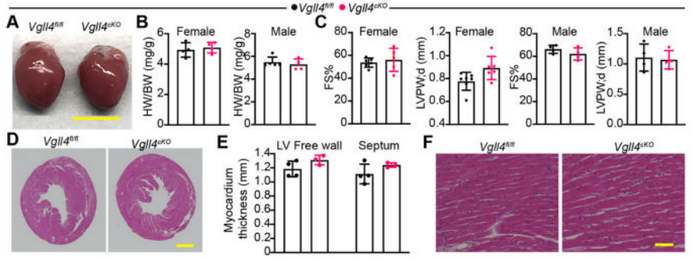


Published in *Cells*, September 2022

Never Stop Searching

Congenital heart disease is one of the most common types of birth defects and the leading cause of pediatric morbidity and mortality. Occurring in 1% of live births, researchers continue to search for ways to remedy aberrant heart development.

Every day research is being conducted around the world, and new theories are being tested, broken, or proven to be correct. Zhiqiang Lin, Ph.D., Assistant Professor at MMRI, and his team worked many hours in 2022 to understand the molecular mechanisms controlling heart development. Their research led to the discovery of a gene critical for normal heart development, VGLL4.



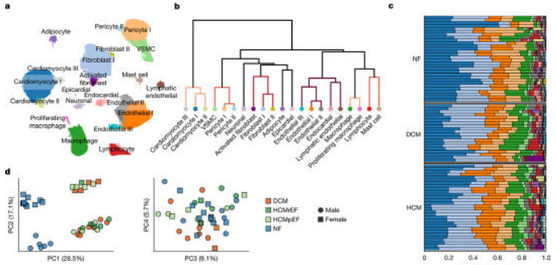
To understand the VGLL4 function in the heart, his group generated two VGLL4 loss-of-function mouse lines: a germline *Vgll4* depletion allele and a cardiomyocyte-specific *Vgll4* depletion allele. Their data showed that VGLL4 was required for embryo development but that it was dispensable for myocardial growth. Dr. Lin, who led the team which included collaborators from the Harvard Stem Cell Institute, said **"Thanks to continued support through donations and grants, we can continue to research congenital heart disease and lower the morbidity and mortality rates"**.

Published in *Nature*, June 2022

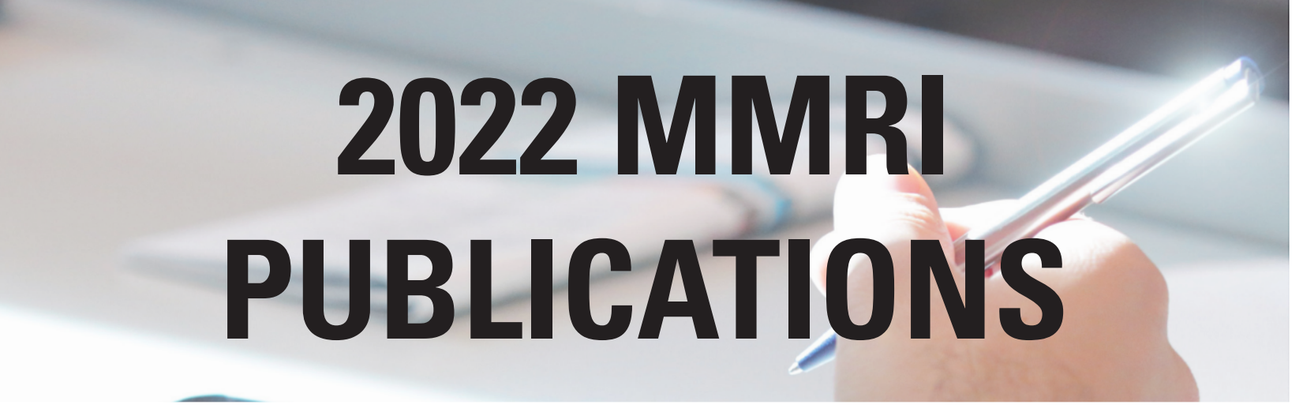
Mapping The Heart

By studying individual cardiac cells from heart failure patients, researchers have identified molecular signatures that point to biological mechanisms of disease.

Dr. Nate Tucker, Ph.D. of MMRI was part of a team of researchers led by Patrick Ellinor, M.D., Ph.D. from the Broad Institute at Harvard and MIT. The team generated detailed maps of different cell types within the heart that are involved in two major causes of heart failure: dilated and hypertrophic cardiomyopathy (DCM and HCM). Their findings were published in the summer of 2022 in the journal *Nature* and suggest specific cell types and biological mechanisms that could be targeted by new treatments.



This research was a continuation of a study in 2020, the map was built upon a molecular survey of 600,000 nuclei found in the human heart. With heart failure being the number one cause of death in the US and across the world, it remains critical that our researchers continue looking for novel treatments to prevent this devastating disease.



2022 MMRI PUBLICATIONS

All of our publications are published on high profile, top tier peer review journals.

Deep learning enables genetic analysis of the human thoracic aorta. Pirruccello JP, Chaffin MD, Chou EL, Fleming SJ, Lin H, Nekoui M, Khurshid S, Friedman SF, Bick AG, Arduini A, Weng LC, Choi SH, Akkad AD, Batra P, **Tucker NR**, Hall AW, Roselli C, Benjamin EJ, Vellarikkal SK, Gupta RM, Stegmann CM, Juric D, Stone JR, Vasan RS, Ho JE, Hoffmann U, Lubitz SA, Philippakis AA, Lindsay ME, Ellinor PT. *Nat Genet.* 2022 Jan;54(1):40-51. doi: 10.1038/s41588-021-00962-4. Epub 2021 Nov 26. PMID: 34837083; PMCID: PMC8758523.

Clinico-histopathologic and single-nuclei RNA-sequencing insights into cardiac injury and microthrombi in critical COVID-19. Brener MI, **Hulke ML**, Fukuma N, Golob S, Zilinyi RS, Zhou Z, Tzimas C, Russo I, McGroder C, **Pfeiffer RD**, Chong A, Zhang G, Burkhoff D, Leon MB, Maurer MS, Moses JW, Uhlemann AC, Hibshoosh H, Uriel N, Szabolcs MJ, Redfors B, Marboe CC, Baldwin MR, **Tucker NR**, Tsai EJ. *JCI Insight.* 2022 Jan 25;7(2):e154633. doi: 10.1172/jci.insight.154633. PMID: 34905515; PMCID: PMC8855793.

Increased atrial effectiveness of flecainide conferred by altered biophysical properties of sodium channels. O' Brien S, Holmes AP, Johnson DM, Kabir SN, O' Shea C, O' Reilly M, Avezzu A, Reyat JS, Hall AW, Apicella C, Ellinor PT, Niederer S, **Tucker NR**, Fabritz L, Kirchhof P, Pavlovic D. *J Mol Cell Cardiol.* 2022 May;166:23-35. doi: 10.1016/j.yjmcc.2022.01.009. Epub 2022 Feb 1. PMID: 35114252.

A rare etiology of tetralogy of Fallot with pulmonary atresia: Renpenning syndrome. Kaymakçalan H, **Ercan-Sençiçek AG**, Cebeci AN, Dong W, Yalım Yalçın AS. *Anatol J Cardiol.* 2022 Feb;26(2):149-150. doi: 10.5152/AnatolJCardiol.2021.554. PMID: 35190366; PMCID: PMC8878915.

JACC: Basic to Translational Science Top Reviewers 2021: With Appreciation. Annex BH, Bristow MR, Frangogiannis NG, Kelly DP, **Kontaridis MI**, Libby P, Robb MacLellan W, McNamara CA, Mann DL, Pitt GS, Sipido KR. *JACC Basic Transl Sci.* 2022 Feb 28;7(2):192. doi: 10.1016/j.jacbts.2022.01.007. PMID: 35257046; PMCID: PMC8897159.

The seventh international RASopathies symposium: Pathways to a cure-expanding knowledge, enhancing research, and therapeutic discovery. Kontaridis MI, Roberts AE, Schill L, Schoyer L, Stronach B, Andelfinger G, Aoki Y, Axelrad ME, Bakker A, Bennett AM, Broniscer A, Castel P, Chang CA, Cyganek L, Das TK, den Hertog J, Galperin E, Garg S, Gelb BD, Gordon K, Green T, Gripp KW, Itkin M, Kiuru M, Korf BR, Livingstone JR, López-Juárez A, Magoulas PL, Mansour S, Milner T, Parker E, Pierpont EI, Plouffe K, Rauen KA, Shankar SP, Smith SB, Stevenson DA, Tartaglia M, Van R, Wagner ME, Ware SM, Zenker M. *Am J Med Genet A.* 2022 Jun;188(6):1915-1927. doi: 10.1002/ajmg.a.62716. Epub 2022 Mar 9. PMID: 35266292; PMCID: PMC9117434.

24 Published Articles

Single-cell technologies to decipher cardiovascular diseases. Abplanalp WT, **Tucker N**, Dimmeler S. *Eur Heart J.* 2022 Nov 14;43(43):4536-4547. doi: 10.1093/eurheartj/ehac095. PMID: 35265972; PMCID: PMC9659476.

Engineered Cell-Derived Vesicles Displaying Targeting Peptide and Functionalized with Nanocarriers for Therapeutic microRNA Delivery to Triple-Negative Breast Cancer in Mice. Bose RJ, Kumar US, Garcia-Marques F, Zeng Y, Habte F, **McCarthy JR**, Pitteri S, Massoud TF, Paulmurugan R. *Adv Healthc Mater.* 2022 Mar;11(5):e2101387. doi: 10.1002/adhm.202101387. Epub 2021 Dec 17. PMID: 34879180; PMCID: PMC8891081.

mTOR Modulation of IKr through hERG1b-Dependent Mechanisms in Lipotoxic Heart. Aromolaran KA, Do J, Bernardi J, Aromolaran AS. *Int J Mol Sci.* 2022 Jul 22;23(15):8061. doi: 10.3390/ijms23158061. PMID: 35897638; PMCID: PMC9329916.

Distinct Stress-Dependent Signatures of Cellular and Extracellular tRNA-Derived Small RNAs. Li G, Manning AC, Bagi A, Yang X, Gokulnath P, Spanos M, Howard J, Chan PP, Sweeney T, Kitchen R, Li H, Laurent BD, Aranki SF, **Kontaridis MI**, Laurent LC, Van Keuren-Jensen K, Muehlschlegel J, Lowe TM, Das S. *Adv Sci (Weinh).* 2022 Jun;9(17):e2200829. doi: 10.1002/advs.202200829. Epub 2022 Apr 4. PMID: 35373532; PMCID: PMC9189662.

Mitochondria and the future of RASopathies: the emergence of bioenergetics. Kontaridis MI, Chennappan S. *J Clin Invest.* 2022 Apr 15;132(8):1-5. doi: 10.1172/JCI157560. PMID: 35426371; PMCID: PMC9017150.

Single-cell technologies to decipher cardiovascular diseases. Abplanalp WT, **Tucker N,** Dimmeler S. *Eur Heart J.* 2022 Nov 14;43(43):4536-4547. doi: 10.1093/eurheartj/ehac095. PMID: 35265972; PMCID: PMC9659476.

Mutation spectrum of congenital heart disease in a consanguineous Turkish population. Dong W, Kaymakcalan H, Jin SC, Diab NS, Tanıdır C, Yalcin ASY, **Ercan-Sencicek AG**, Mane S, Gunel M, Lifton RP, Bilguvar K, Brueckner M. *Mol Genet Genomic Med.* 2022 Jun;10(6):e1944. doi: 10.1002/mgg3.1944. Epub 2022 Apr 28. PMID: 35481623; PMCID: PMC9184665.

19 MMRI Scientists

Determining the pharmacologic window of bisphosphonates that mitigates severe injury-induced osteoporosis and muscle calcification, while preserving fracture repair. Saito M, Moore-Lotridge SN, Uppuganti S, Egawa S, Yoshii T, Robinette JP, Posey SL, Gibson BHY, Cole HA, Hawley GD, Guelcher SA, Tanner SB, **McCarthy JR**, Nyman JS, Schoenecker JG. *Osteoporos Int.* 2022 Apr;33(4):807-820. doi: 10.1007/s00198-021-06208-7. Epub 2021 Oct 31. PMID: 34719727; PMCID: PMC9530779.

Increased atrial effectiveness of flecainide conferred by altered biophysical properties of sodium channels. O' Brien S, Holmes AP, Johnson DM, Kabir SN, O' Shea C, O' Reilly M, Avezzu A, Reyat JS, Hall AW, Apicella C, Ellinor PT, Niederer S, **Tucker NR**, Fabritz L, Kirchhof P, Pavlovic D. *J Mol Cell Cardiol.* 2022 May;166:23-35. doi: 10.1016/j.yjmcc.2022.01.009. Epub 2022 Feb 1. PMID: 35114252.

The Storage Conditions of High-Fat Diet Are the Key Factors for Diet-Induced Obesity and Liver Damage. Yi C, Li D, Guo X, Wang J, Liu C, Lu G, **Sun Y**, Huang H, Hong S, Li J. *Nutrients.* 2022 May 26;14(11):2222. doi: 10.3390/nu14112222. PMID: 35684023; PMCID: PMC9182774.

Single-nucleus profiling of human dilated and hypertrophic cardiomyopathy. Chaffin M, Papangeli I, Simonson B, Akkad AD, Hill MC, Arduini A, Fleming SJ, Melanson M, Hayat S, Kost-Alimova M, Atwa O, Ye J, Bedi KC Jr, Nahrendorf M, Kaushik VK, Stegmann CM, Margulies KB, **Tucker NR**, Ellinor PT. *Nature.* 2022 Aug;608(7921):174-180. doi: 10.1038/s41586-022-04817-8. Epub 2022 Jun 22. PMID: 35732739.

Transcriptome variation in human tissues revealed by long-read sequencing. Glinos DA, Garborcauskas G, Hoffman P, Ehsan N, Jiang L, Gokden A, Dai X, Aguet F, Brown KL, Garimella K, Bowers T, Costello M, Ardlie K, Jian R, **Tucker NR**, Ellinor PT, Harrington ED, Tang H, Snyder M, Juul S, Mohammadi P, MacArthur DG, Lappalainen T, Cummings BB. *Nature.* 2022 Aug;608(7922):353-359. doi: 10.1038/s41586-022-05035-y. Epub 2022 Aug 3. PMID: 35922509.

Bacterial cancer therapy: A turning point for new paradigms. Mayakrishnan V, Kannappan P, Tharmalingam N, **Bose RJC**, Madheswaran T, Ramasamy M. *Drug Discov Today*. 2022 Aug;27(8):2043-2050. doi: 10.1016/j.drudis.2022.03.007. Epub 2022 Mar 15. PMID: 35304339.

Sex-specific responses to slow progressive pressure overload in a large animal model of HFpEF. Eaton DM, Berretta RM, Lynch JE, Travers JG, **Pfeiffer RD, Hulke ML**, Zhao H, Hobby ARH, Schena G, Johnson JP, Wallner M, Lau E, Lam MPY, Woulfe KC, **Tucker NR**, McKinsey TA, Wolfson MR, Houser SR. *Am J Physiol Heart Circ Physiol*. 2022 Oct 1;323(4):H797-H817. doi: 10.1152/ajpheart.00374.2022. Epub 2022 Sep 2. PMID: 36053749; PMCID: PMC9550571.

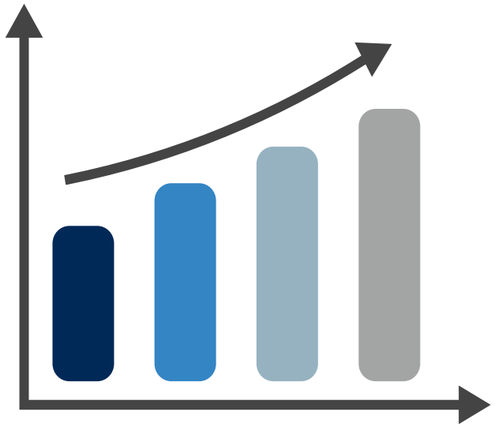
21 Different Journals

Depletion of VGLL4 Causes Perinatal Lethality without Affecting Myocardial Development. Sheldon C, Farley A, Ma Q, Pu WT, **Lin Z**. *Cells*. 2022 Sep 10;11(18):2832. doi: 10.3390/cells11182832. PMID: 36139407; PMCID: PMC9496954.

Increased osteoclastogenesis contributes to bone loss in the Costello syndrome Hras G12V mouse model. Nandi S, **Chennappan S**, Andrasch Y, Fidan M, Engler M, Ahmad M, Tuckermann JP, Zenker M, Cirstea IC. *Front Cell Dev Biol*. 2022 Oct 18;10:1000575. doi: 10.3389/fcell.2022.1000575. PMID: 36330334; PMCID: PMC9624175.

Biallelic PRMT7 pathogenic variants are associated with a recognizable syndromic neurodevelopmental disorder with short stature, obesity, and craniofacial and digital abnormalities. Cali E, Suri M, Scala M, Ferla MP, Alavi S, Faqeih EA, Bijlsma EK, Wigby KM, Baralle D, Mehrjardi MYV, Schwab J, Platzer K, Steindl K, Hashem M, Jones M, Niyazov DM, Jacober J, Littlejohn RO, Weis D, Zadeh N, Rodan L, Goldenberg A, Lecoquierre F, Dutra-Clarke M, Horvath G, Young D, Orenstein N, Bawazeer S, Vulto-van Silfhout AT, Herenger Y, Dehghani M, Seyedhassani SM, Bahreini A, Nasab ME, **Ercan-Sencicek AG**, Firoozfar Z, Movahedinia M, Efthymiou S, Striano P, Karimiani EG, Salpietro V, Taylor JC, Redman M, Stegmann APA, Laner A, Abdel-Salam G, Li M, Bengala M, Müller AJ, Digilio MC, Rauch A, Gunel M, Titheradge H, Schweitzer DN, Kraus A, Valenzuela I, McLean SD, Phornphutkul C, Salih M, Begtrup A, Schnur RE, Torti E, Haack TB, Prada CE, Alkuraya FS, Houlden H, Maroofian R. *Genet Med*. 2023 Jan;25(1):135-142. doi: 10.1016/j.gim.2022.09.016. Epub 2022 Nov 18. PMID: 36399134.

The G213D variant in Nav1.5 alters sodium current and causes an arrhythmogenic phenotype resulting in a multifocal ectopic Purkinje-related premature contraction phenotype in human-induced pluripotent stem cell-derived cardiomyocytes. Calloe K, Geryk M, Freude K, **Treat JA**, Vold VA, Frederiksen HRS, Broendberg AK, Frederiksen TC, Jensen HK, **Cordeiro JM**. *Europace*. 2022 Dec 9;24(12):2015-2027. doi: 10.1093/europace/euac090. PMID: 35726875.



In 2022 we hit **OVER 100** publications since 2018!!

GRANT HIGHLIGHTS

$3.2 Million Grant Will Fund Lin Lab's Study on the Heart's "Cardiac Innate Immune Response"

The National Institutes of Health (NIH) awarded $3.2 million to the lab of Zhiqiang Lin, Ph.D., to study cardiac innate immune response. In particular, the study will examine what happens after a heart attack when the body mounts an inflammatory response to heal the injury. While initially protective, over time, excessive inflammation can cause even more damage to the tissue, contributing to heart muscle cell death. In collaboration with Dr. Jason McCarthy of MMRI, Dr. Lin's team seeks to define the roles of the genes YAP and IRF2BP2 in response to cardiac stress. NIH grants are highly competitive, marking a particular point of distinction both for Dr. Lin and MMRI.

McCarthy Lab Awarded Multiple NIH Grants

Jason McCarthy, Ph.D., Scientific Operations Director and Associate Professor of Cardiovascular Medicine at MMRI, won several competitive grants from the National Institutes of Health (NIH). To highlight three examples:

- An R21 grant from the NIH will fund two years of research with $222,160 per year, addressing the need for cost-effective biomaterials to promote bone growth in clinical situations. The proposal will test natural grafting materials derived from platelets, called polyphosphates.
- A five-year research grant from the NIH, funding $168,246 per year, will seek to deliver targeted immunosuppressive agents to the graft endothelium to prevent rejection in lung transplantation.
- Similarly, another study aims to determine if inorganic polyphosphate-impregnated synthetic periosteum drives allograft osteointegration. This study is being funded through a 2-year, $55,314-per-year R21 NIH grant.

Lupus and Allied Diseases Association

Kathleen Arntsen, President and CEO, of the Lupus and Allied Diseases Association, Inc., is a champion for lupus awareness, research, and advocacy. The Association is a longtime partner and supporter of lupus research here at MMRI. During Lupus Awareness Month, LADA generously funded an additional $150,000 to help us continue our studies into the causes of and cures for lupus.

LADA and MMRI representatives

2022 MULTI YEAR FEDERAL, FOUNDATION & PHARMACEUTICAL GRANT FUNDING

National Institutes of Health R01 Research Grant

01/01/18 – 12/31/22 • $753,797/year
(Kontaridis, PI; McCarthy, Co-Inv.)

Role of RhoA in the Molecular Pathogenesis of Heart Disease
This project is designed to investigate the cellular interactions responsible for the promotion of fibrosis in the injured heart.

National Institutes of Health K01 Research Grant

04/01/18 – 05/31/23 • $167,400/year
(Tucker, PI)

Defining the functional variation underlying atrial fibrillation risk
Goals of this project include: 1) Generating epigenomic maps of the human left atrium, 2) comprehensively evaluating functional variation at top AF association loci using massively parallel reporter assays, and 3) Identifying the left atrial gene targets of AF association loci using allelic imbalance measurements by allele-specific in situ hybridization and targeted RNA-sequencing. Combined with previously acquired ion channel data and multiscale computer modeling/ predictive simulations. My role is to perform the cardiomyocyte experiments which will then be incorporated into a multiscale computer model.

Department of Veterans Affairs (IPA) Intergovernmental Personnel Act

04/01/19 – 09/30/23 • $10,312.50/year
(Menick, PI; McCarthy, Co-Inv.)

Regulatory Role of HDAC in Post-MI Ventricular Remodeling
This work will give us new molecular insights into the role of class I HDACs in regulating M1>M2 macrophage polarization and possibly open a novel site-directed therapeutic approach to improve post-MI remodeling, ventricular function, and survival.

National Institutes of Health R01 Research Grant

02/01/20 – 01/31/24 • $62,269/year
(Henke, PI; McCarthy, Co-Inv.)

The Monocyte/Macrophage Role in Experimental Deep Vein Thrombosis Resolution and Vein Wall Injury
Monocyte/macrophages (Mo/MØ) are the primary leukocyte directing two key pathobiologic processes: venous thrombosis resolution and the associated vein wall fibrotic injury. Mo/MØ are classified by their inflammatory or anti-inflammatory functions, which is a dynamic process in vivo. In this proposal, we will: 1) Define the origin and phenotype of Mo/MØ in the thrmbosed vein with sex, age, and thrombogenic model variation; 2) Directly determine the Mo/MØ mediated mechanisms of VT resolution and vein wall injury; and 3) Determine if systemic Mo/MØ polarization or local exogenous modulation of thrombus environment can promote VT resolution and vein wall healing.

National Institutes of Health R01 Research Grant

04/01/20 – 04/30/22 • $43,435/year
(Feinberg, PI; McCarthy, Co-Inv.)

LncRNA SNHG12, vascular senescence, and atherosclerosis
LncRNA SNHG12 plays a critical role in key aspects of the vascular endothelial inflammation or senescence in the context of atherosclerosis. To help explore the pathobiology and mechanisms of this lncRNA in the setting of disease, we will generate nanomaterials targeted to these lesions for the site-specific delivery of a gapmeR to SNHG12.

In 2022 we had over **$2.9 million** in federal, foundation and pharmaceutical grants.

National Institutes of Health R01 Research Grant

04/01/20 – 04/30/22 • $43,435/year
(Feinberg, PI; McCarthy, Co-Inv.)

miR-615, AKT/eNOS signaling, and angiogenesis
MicroRNA miR-615 has been described to control angiogenesis in a range of ischemic cardiovascular disease models such as myocardial and limb ischemia. To help explore the pathobiology and mechanisms underlying key aspects of the angiogenesis in the context of myocardial and limb ischemia, we will generate nanomaterials targeted to these tissues for the site-specific delivery of an anti-miR to miR-615-5p.

Onconova Therapeutics

04/17/20 – 04/16/22 • $60,943/year
(Kontaridis, PI)

Treatment of cardiac hypertrophy using RAF1 inhibitors.
The major goal of this project is to characterize the role of RAF1 signaling in cardiomyocyte hypertrophy with an aim of identifying potential therapeutic targets.

National Institutes of Health R01 Research Grant

01/01/21 – 12/31/23 • $32,746/year
(Schoenecker,PI; McCarthy, Co-Inv.)

Severe Trauma Provokes Pathologic Continuum of Plasmin Activation
The major goal of this project is to test our transformative hypothesis that implicates inappropriate early convalescent activation of plasmin, the principle protease of the fibrinolytic system, not only as a key event that initiates pathologic coagulation and inflammation, but also results in a prolonged loss of plasmin activity that is required for proper tissue homeostasis and repair in late convalescence.

American Heart Association Transformational Grant Award

01/01/21 – 12/31/23 • $99,995.50/year
(Kontaridis, PI; Ercan-Sencicek, Co-Inv.)

The role of PTPN11 mutations in autism and heart pathogenesis
This project will determine how PTPN11 mutations affect signaling cascades responsible for both brain and cardiac cell differentiation and development, leading to the onset of congenital heart disease with autism spectrum disorder.

American Heart Association Diversity Supplement Award

07/01/21 – 06/30/2023 • $66,554/year
(Santos, PI)

The in vivo function of novel PTPN11 mutations in autism and heart pathogenesis
Research Supplement to Promote Diversity in Science.

National Institutes of Health R01 Research Grant

08/15/21 – 07/31/23 • $74,137/year
(Feinberg, PI; McCarthy, Co-Inv.)

miR-181b, endothelial cells, and vascular inflammation
The major goals of this proposal are to identify and evaluate how endothelial miR-181b regulates the DNA damage response, senescence-associated vascular inflammation, and atherosclerosis.

SUNY Upstate Medical University Intramural Pilot Research Grant

08/31/21 – 08/02/22 • $15,000
(Auerbach, PI; Cordeiro, PI)

Cardiac Electrical Safety of Antidepressants in Long QT Syndrome

SUNY Upstate Medical University Intramural Pilot Research Grant

08/31/21 – 08/02/22 • $15,000
(Hess, PI; Tucker, PI)

Circulating transcriptional biomarkers of preclinical cardiac dysfunction: The HeartGENIE Project

Department of Defense Lupus Impact Award

09/30/21 – 09/29/25 • $187,500/year
(Kontaridis, PI)

Elucidating the Functional Mechanisms by Which the Protein Tyrosine Phosphatase SHP2 is Involved in the Pathogenesis of Systemic Lupus Erythematosus
The project will determine the signaling pathways and mechanisms by which SHP2 functions to induce lupus pathogenicity.

National Institutes of Health Academic Research Enhancement Award

12/01/21 – 07/31/22 • $35,000/year
(Deo, PI; Tucker, Co-Inv.)

Role of Cardiac Purkinje System in Long QT Syndrome
The long QT syndrome (LQTS) is a heritable or acquired cardiac disease characterized by prolongation of the QT interval on the ECG and increases the risk of developing spontaneous polymorphic ventricular tachycardia (VT) and sudden cardiac death in young patients. Our general hypothesis is that prolongation of inherently longer action potentials in the His-PS in response to loss of repolarizing current IKr together with modulation of electrical excitations within the PS network makes the ventricular conduction system a preferable arrhythmia-prone substrate in LQTS. A systematic study will be conducted to investigate the mechanisms by which PS contributes to arrhythmias (specifically LQT2) using experimental characterizations in transfected cardiomyocytes (CMs), combined with previously acquired ion channel data and multiscale computer modeling/ predictive simulations. My role is to perform the cardiomyocyte experiments which will then be incorporated into a multiscale computer model.

National Institutes of Health R01 Research Grant

12/15/21 – 11/30/26 • $640,967/year
(Lin, PI; McCarthy, Co-Inv.)

YAP and IRF2BP2 regulation of cardiomyocyte innate immune responses
YAP and IRF2BP2 play important roles in modulating the innate immune response within cardiomyocytes. Insights into the function of these proteins may potentiate novel therapeutic options for the sequelae of a number of cardiovascular insults including myocardial infarction and sepsis.

Halfond-Weil Postdoctoral Fellowship

01/01/22 - 12/31/22 • $50,000
(Ha, PI)

Iron Oxide Nano-Platform Targeting Lesional Macrophages for Immune Checkpoint Inhibitor Treatment of Atherosclerosis

American Heart Association Innovative Project Award

01/01/22 - 12/31/22 • $23,439/year
(Tsai, PI; Tucker, Co-Inv.)

The causal role of atrial fibrillation in right heart dysfunction: mechanisms of atrial-ventricular cell signaling
This project aims to assess the effects of chronic atrial fibrillation on right ventricular function through a novel mouse model which knocks out Lkb1 in the heart. Dr. Tucker's laboratory will characterize the single cell transcriptomic profiles of atrial and ventricular cells in response to the gene knockout.

Lupus and Allied Diseases Association, Inc.

02/01/22 - 12/31/23 • $50,000
(Kontaridis, PI)

Use of cardiosphere-derived human exosomes as therapeutic agents in SLE
The project will highlight the importance of EVs in treatment of SLE and will identify exosomes as a potential new therapeutic approach to treating lupus patients.

Lupus and Allied Diseases Association, Inc.

02/01/22 - 12/31/23 • $50,000
(Kontaridis, PI)

Gain-of-function mutations in SHP2 enhance inflammatory macrophage (Mo) activation in SLE
This project will determine whether SHP2 differentially regulates the pathogenesis of SLE through its regulation of the JAK-STAT and PI3K-AKT signaling pathways, inducing activation of Mϕ and mediating production of cytotoxic cytokines, respectively.

Lupus and Allied Diseases Association, Inc.

02/01/22 - 08/31/23 • $50,000
(McCarthy, PI)

Cell-Specific Inhibition of the RhoA Pathway as a Target in Lupus Nephritis
In this proposal, we will utilize advanced materials engineering concepts to generate targeted drug delivery vehicles for the cell-specific modulation of the RhoA pathway in lupus nephritis (LN). These nanomaterials will deliver either classical small molecule inhibitors of downstream targets of this protein, or cutting-edge oligonucleotide-based drugs, capable of selectively increasing or decreasing protein production (antisense oligonucleotides, ASOs, or modified RNA, modRNA), directly to injured podocytes, epithelial cells, or fibroblasts within the kidney. This will provide for the manipulation of this pathway in a cell-based manner within a diseased animal, affording insight into the contribution of RhoA in each cell type to the progression of LN.

American Heart Association Institutional Research Enhancement Award

04/01/22 – 03/31/24 • $38,500/year
(Majireck, PI; Ha, Co-Inv.)

CD47-Targeted Nano-Immunotherapy for Treatment of Atherosclerosis

National Institutes of Health R21 Research Grant

06/03/22 – 05/31/24 • $222,160/year
(McCarthy, PI; Schoenecker, PI)

Mechanistic insights into polyphosphate-mediated osteoinduction
There is an urgent need for the creation of cost-effective biomaterials to promote bone growth in clinical situations where fractures are not healing properly or where extra bone is required, such as in spinal fusion. This proposal is designed to determine if a natural grafting material derived from platelets, called polyphosphates, are superior to currently available grafting agents. Given the relative availability of polyphosphates as compared to other bone grafting material, the results of these investigations have the potential to greatly impact public health as they will provide a more cost-effective and efficient alternative to currently available products.

National Institutes of Health R21 Research Grant

06/04/22 – 04/30/24 • $55,314/year
(Schoenecker, PI; McCarthy, PI)

An inorganic polyphosphate-impregnated synthetic periosteum drives allograft osteointegration
Bone allografts have transformed clinical practice in orthopaedics by providing an alternative source of osteoconductive material in lieu of autograft, yet despite their success there remains a significant need to improve osteointegration between the allograft and host bone. This proposal will investigate if application of a 'synthetic periosteum' comprised of polyphosphates contained within a hydrogel to the outer surface of a structural allograft, can maximize the biologic potential and drive osteointegration while limiting inflammatory toxicity. Compared to previously proposed biological constructs, this hydrogel-polyphosphate construct is designed to be cost-effective, shelf-stable, and result in limited toxicity and host-rejection, thereby making it promising for clinical translation.

SUNY Poly Sigma Xi

06/15/22 - 06/14/23 • $1,000
(McCarthy Lab)

Ultrasound-assisted disulfide bond formation: a powerful tool for cyclization of fluorogenic peptide.

National Institutes of Health U01 Research Grant

09/01/22 – 06/30/27 • $168,246/year
(McCarthy, PI; Atkinson, PI)

Targeted delivery of immunosuppressive agents to the graft endothelium for the prevention of rejection in lung transplantation
Lung transplantation is an established therapy for patients with end stage pulmonary failure, yet survival rates after lung transplantation lag behind those observed after transplantation of other solid organs (SOT). Unlike other SOTs where the initiation of rejection depends on cell trafficking to graft-draining lymphoid organs, in the lung, lymphocyte priming occurs in the lung graft itself. Utilizing this knowledge, we will investigate the efficacy of bi-functional nanoagents capable of preventing immune cell infiltration and priming while concomitantly eliciting immunosuppression, with the overall goal of inducing graft tolerance.

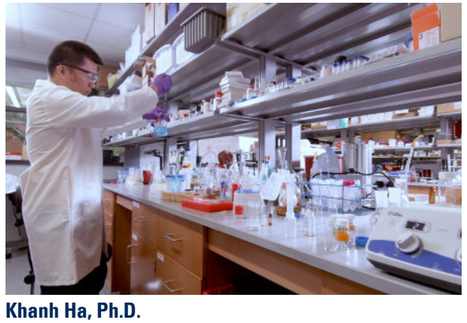
MMRI SCIENCE IN ACTION

POST-DOCTORAL FELLOWS

Dr. Khanh Ha Awarded American Heart Associate Research Grant

Postdoctoral Fellow Khanh Ha, Ph.D. and Associate Professor of Chemistry at Hamilton College, Max Majireck received a prestigious grant award from the American Heart Association (AHA) for their project entitled, "CD47-Targeted Nano-Immunotherapy for Treatment of Atherosclerosis." This AHA Institutional Research Enhancement Award (AIREA), totaling $154,000, is a multi-year grant that aims to identify a new type of drug delivery system that targets the plaques found in atherosclerosis, a leading cause of death in adults worldwide.

Researchers will use fluorescent and magnetic nanoparticles delivered to macrophages, a key cell type in our immune system, to target CD47, a protein found on the surface of many cells. CD47 may play a key role in stimulating macrophages to consume the undesired dead cells and other cellular debris that make up deadly atherosclerotic plaques. "To receive this award on the first submission is a huge feat, as the competitiveness for such awards is high." Said Dr. Ha.



Khanh Ha, Ph.D.

Making New Treatments for Lupus

3% of the US has an autoimmune disease. This means that for every 100,000 people, around 150 of them have lupus, and of those 150 people, >90% of these cases are women. Finding advanced treatments for lupus has become a top priority for postdoctoral fellow, Samantha Le Sommer, of the Kontaridis Lab.

Dr. Le Sommer's recent studies focus on understanding how SHP2, a phosphatase, which is a group of enzymes that help maintain balance within the immune system, affects development and progression of lupus in patients. Previously, the Kontaridis lab identified that patients with lupus have increased SHP2 activity in their immune cells. When SHP2 is inhibited or deleted in T cells of mice, lifespan in lupus mice increases by more than 50%, to levels near normal lifespan. "Lupus mice without SHP2 in their T cells live relatively normal lives and have less severe lupus," said Le Sommer.

Samantha Le Sommer, Ph.D.

'22 SUMMER FELLOWS

For over 50 years, our annual MMRI Summer Fellowship offers undergraduate and graduate students the unique experience to study closely alongside leading scientists in a working laboratory. The scholarship-based program provides ten weeks for fellows to participate in cutting-edge scientific research at MMRI.

At the conclusion of each summer program, Fellows present their science projects to a lay audience, which includes dignitaries, parents, clinicians, and scientists from the community. In addition, Fellows enjoy a variety of valuable experiences, both in and out of the laboratory, that they can add to their portfolio. Alumni of the Summer Fellowship have flourished in careers of science, medicine, technology, business, and several Fellows have even returned to MMRI for internship or post-graduate opportunities.

In 2022, we had the pleasure of accepting eleven Fellows, each bringing a fun, energetic, and passionate spirit to our MMRI labs! Their dedication to their research made for an impressive summer filled with groundbreaking research!

Summer Fellows: Yashi Agarwal, Anna Burkhartzmeyer, Hannah Bochniak, Jeffrey Cheng, Aaron Farley, Catherine Hagearty-Mattern, Che Ku Kyet, Dominick Lomonaco, Yuriy Milobog, Gianna Sisti, Ryan Soron, Sandy Thai.

2022 Summer Fellow, Aaron Farley, was published as a co-author in the prestigious journal *Cells*!

Aaron Farley joined our 10-week Fellowship as an undergraduate at SUNY Polytechnic Institute where he is studying Biology. While at MMRI, Aaron spent his summer in the lab of Dr. Zhiqiang Lin, where he worked on a project focused on congenital heart disease.

This study revealed a new function for a gene called VGLL4 in cardiac development. His findings showed that this gene is required for embryo development but is dispensable for myocardial growth. To understand the VGLL4 function in the heart, the authors generated two VGLL4 loss-of-function mouse lines: a germline VGLL4 depletion allele and a cardiomyocyte-specific VGLL4 depletion allele. The analysis of the embryos revealed that VGLL4 knockout embryos had reduced body size, malformed tricuspid valves, but normal myocardium and normal heart function. With this discovery, medical researchers now have useful new information about heart cell development, and the role of this gene in mediating congenital heart disease in patients.

Being published as a co-author as an undergraduate is a rare accolade and we are extremely proud -way to go, Aaron!

Catherine Hagearty-Mattern, Back Again!

Catherine Hagearty-Mattern, an undergraduate at SUNY Polytechnic Institute, spent 2021 at MMRI as an Independent Study student. When it came time for the summer, she couldn't think of anywhere else she'd rather be than at MMRI to continue her research efforts!

She applied for and was chosen as one of our eleven Fellows for the 2022 summer. "During my independent study at MMRI through SUNY Poly, I learned about methods for imaging blood clots, especially those that employ targeted fluorescent nanogents," said Catherine. Her Summer Fellowship allowed her to continue this research and work on a scientific poster for the SUNY Poly Student Project Showcase, which will take place in April 2023. Catherine is a recipient of the competitive Grant in Aid of Research (GIAR) from Sigma Xi, SUNY Poly's scientific research honor society. Way to go, Catherine!

MMRI IN THE COMMUNITY

INSTITUTE NEWS

The MMRI Wins 'Great Place to Work' Certification

MMRI has been officially named "a great place to work," by the nonprofit institute, Great Place to Work.® This is the team behind FORTUNE ® magazine's '100 Best Companies to Work For' list. Great Place to Work® applies rigorous standards and detailed methodology when certifying an organization with this distinction. The certification process includes an anonymous and confidential survey from MMRI employees, analysis of employee demographics, and a thorough comparison checked against similar organizations across the US.

"We couldn't be more excited!" said MMRI Human Resources Manager, Carrie DiMaria, SPHR, SHRM-SCP. "We are so thankful to our employees for all the ways they each significantly contribute to our outstanding culture and employee experience at MMRI. By the way, we're hiring!"

AHA BCVS and ISHR

Maria Kontaridis, Ph.D., Executive Director and Gordon K. Moe Professor and Chair of Biomedical Research and Translational Medicine at the MMRI, received several prestigious honors this year. She was named a Fellow of the International Society for Heart Research (ISHR), as well as was elected to Vice Chair of the American Heart Association's Basic Cardiovascular Sciences Council Leadership Committee (AHA BCVS). The two announcements made in 2022 are particularly distinguished within the medical and scientific communities. The ISHR fellowship is voted upon only once every three years, making it a rare honor. The AHA BCVS is a progressive role, meaning that Dr. Kontaridis will also be the next Chair for this AHA committee in 2024.

Governor Spotlights MMRI in State of the State Address

MMRI started the year with a "shout-out" from the Governor of New York in January 2022. In her State-of-the-State address, Governor Kathy Hochul specifically named MMRI as an asset to Central New York. She even advocated funding for the Institute, which would bring jobs and economic prosperity to the region.

Mohawk Valley Gives - With Staff Giving at the Forefront

MMRI participated in "Mohawk Valley Gives" Day on September 20, and our staff gave big for this matching-gift effort, donating over $7,100 to support the Institute's research. Mohawk Valley Gives is sponsored by the Community Foundation, which has been a longtime supporter of MMRI science and our annual Summer Fellowship.

AHA Walk and Fundraiser

In working to create a world free of heart disease and stroke, MMRI staff and friends raised money and walked in the 2022 America's Greatest Heart Run and Walk in Whitesboro, NY.

Thanksgiving Reminder that We're Thankful for Our MMRI Team!

Pi Day might be on March 14th (3/14), but at MMRI, we have Pie Day in November! That's because MMRI team members get treated to a "pie" of their choice for Thanksgiving as a thank-you for their work. Pumpkin? Apple? Lemon Merengue? No matter the preference, we had all our favorite goodies lined up and ready to hand out to staff just before Thanksgiving. The pies were also a thank-you from MMRI leadership to celebrate a successful 2022.

Boilermaker

MMRI practices what we preach, and our research efforts need healthy scientists! Every July, Team MMRI participates in the Boilermaker, a celebrated favorite in the Utica community. It has earned the title: "The Best 15K in the USA," for bringing together runners and walkers from around the world and helping support the local community.

Team Gives Big for 'Stuff the Bus' Toy Drive

The jolly MMRI team shared their holiday cheer by donating toys for kids in need. On December 8, 'Stuff the Bus' visited the MMRI campus for a special toy pickup from the MMRI staff.

Food Drive for Veterans in Need

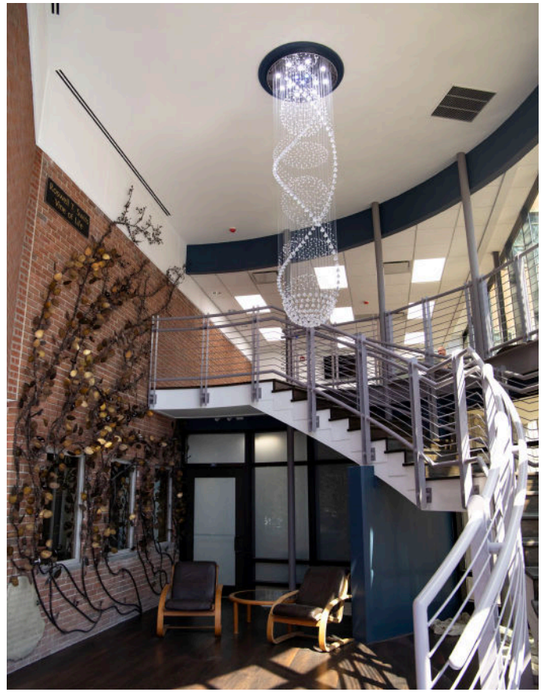
Military veterans should not be forgotten, so the MMRI team raised funds and gathered food for veterans in need in November.

RENOVATIONS COMPLETED AND NEW SPACES SPARKLE IN 2022

The multiyear overhaul of the lab and administrative space at MMRI, which started back in 2017, was completed in the summer of 2022. During that time, the Institute grew from 17 staff at the project's start to over 50+ today, thereby acknowledging the continued need for MMRI to expand along with its increasing success as a preeminent research institute. Providing a dramatic improvement both in function and aesthetics, the refurbishment added to the existing facility new spaces for research, experiments, offices, and meetings.

VIP Structures, a design and engineering firm based in Syracuse, spearheaded the project as lead contractor. VIP even became a donor to the MMRI, giving two gifts of $10,000 each in 2021 and 2022.

The refurbished space includes a curvy atrium leading from the ground-floor labs to the cafeteria above, centered with an eye-catching chandelier. The chandelier was installed for a surprisingly affordable price thanks to the ingenuity (and frugality!) of Facilities Manager, Curt Fowler. Special ceremonies and ribbon-cutting events welcomed the final rooms completed in the building overhaul, including the Research Wing dedicated to brothers and fellow major-gift donors, R.W. Franklin Steinberg and R.W. Stephen Steinberg.



Helix chandelier

BASEMENT LAB SPACES *BEFORE* AND *AFTER*

PHILANTHROPIC HIGHLIGHTS

STORIES OF GIVING

Human Technologies Supports Autism Research

In May, Human Technologies donated $5,000 to help support autism research. The nonprofit organization is headquartered across the street from the MMRI campus and has been our neighbor since the 1950s. Human Technologies takes pride in employing people with disabilities in several states and works closely with MMRI's community partner, the Kelberman Center, which provides services for the autistic community.

Humphreys Gift Does Double Duty

Lois and Ralph Humphreys generously donated $25,000 for a "matching gift campaign" to motivate others to give. Our 12-Days of Giving campaign generated an additional $12,000 in donations for medical research in December that was matched by the Humphreys' generous gift. Ralph started R.B. Humphreys, Inc., a regional and long-distance trucking company based in Rome specializing in refrigerated products, in 1961.

Mele Plays "Music to the Ears" of MMRI Summer Fellows

The Mele family has been building ornate music boxes, jewelry boxes, and finely crafted cases since 1912 when patriarch Emidio founded Mele & Co. The Mele name is a fixture in Utica, where for many years the company maintained a thriving manufacturing center. Today, the tunes of a Mele music box are "music to the ears" of MMRI Summer Fellows, thanks to a recent grant supporting the program. In 2022, as part of a competitive grant process, the Mele Family Fund awarded MMRI $19,500 to help boost the 2023 Class of Summer Fellows.

Administered through The Community Foundation of Herkimer & Oneida Counties, Inc., the Mele Family Fund supports organizations in Central New York, like the MMRI, that support education and health. Since 2009, the Mele Family Fund has awarded grants to local community organizations totaling more than $2.7 million.

Thank You To Our 2022 Summer Fellow Donors

M&T Bank/Partners Trust Bank *Charitable Fund of The Community Foundation*
The Cerny Family
Burrows Foundation
Mr. Gary T. Forrest
RW Walter Leong
RW Vincent Cunzio, MMRI Treasurer
Utica Lodge #47 F. & A.M.
Drs. Atul & Amita Butala *The Alap Butala Endowed Fellowship*

CORNERSTONE SOCIETY MEMBERS

Members of MMRI's Cornerstone Society have committed to supporting the Institute's work through a planned gift.

L. G. Barnum
James E. Benson
Gill R. Calderon
Joyce A. Clark
George Filippidis[4]
John William Foster
Bruce H. Gleason
Peter R. Gray
Paul & Joyce Guerrero[1]
Robert J. Henderson
David C. Hochman
Matthew C. Jenison
Don & Maria Jensen
Mandell Safer
Ron Olson
Laverne Poussaint
Sheldon B. Richman[1]
Dan Robinson
Jonathan B. Rossi
Cheryl M. Roy
Mandel Safer
David F. Schneeweiss[1]
Patrica K. Townsend
Patricia J. White
David B. White

Legend of Footnotes:
Deceased*
Board of Directors[1]
MMRI Staff/Employee[2]
Community Advisory Committee[3]
Trustee of Hall and Home[4]

JOIN MMRI'S CORNERSTONE SOCIETY

UNLOCK THE POSSIBILITIES OF TODAY AND TOMORROW.

"Planned giving to MMRI through the Cornerstone Society gives you the assurance that your gift will be used to advance the groundbreaking work of our dedicated scientists. For me, my planned contributions are a way to give back to my community through a legacy gift that ensures my donation will be used to benefit MMRI long into the future."

Frank R. Williams
MMRI Board of Directors Member

Questions? Please contact our Gift Planning Department at 1-315-624-7492 or 1-908-477-7966 or email: development@mmri.dev.

1958 CLUB MEMBERS

Members of MMRI's 1958 Club, launched in 2022 to commemorate the year of the Lab's completion, have committed to long-term support of the Institute through a monthly recurring gift of $19.58.

Christopher J. Anderson
Barrry Bihrle
Howard E. Bonsaing
William Boyer
Kenneth P. Bruielly
Wade A. Caler
Craig E. Cobb
Ernest Curtis
Walter E. Darrh
Robert C. Dievendorf
Michael E. Driver
Konstantinos Drosatos
Elaine B. Eckart
George Filippidis[4]
Albert Frohlich
Vincent S. Giambalvo
Harold W. Grant
Paul A. Guerrero[1]
Gregory Gulick
Jay Hambacher
Robert L. Hogan
Christopher J. Hough[4]
Paul G. Huck[1]
Edward D. Hudson
Pasquale Imbimbo[1]
Gerald F. Irwin
Theodore H. Jacobsen
Richard J. Kessler
John M. Konrad
Chris Kontaridis
Bernard M. Lowe
Naaman Lowry
Robert E. Meade
David Modiano
Paul E. Mossberg[1]
Everett L. Nelson
Joseph A. Phillips
Joseph R. Rossi
Frederick C. Sanford
Michael Savoie
Richard J. Scheller
Charles G. Smithers
Gustavo Teran
Angelina Teran
Spiro H. Triantafilis
Benedetto Vitullo
Frederick I. Waldron
Scott Washburn
A. H. Williams
Gerald T. Wright

JOIN THE 1958 CLUB!

MMRI's exclusive donor Club!

Make a donation to our 1958 Club in 2023 and receive this year's one-of-a-kind club pin.

You'll also be invited to special events, get access to 1958 Club members-only merchandise and much more!

Interested in learning more?
Contact Stephen F. Izzo, Development Director, at 908-447-7966 or stephenizzo@mmri.edu.

MMRI and the Masonic Tradition

"Charity," personified in marble at the Masonic Temple in Philadelphia, is a cherished value among all Masons. The forward-thinking Masons who founded the MMRI foresaw the value to humanity that our medical research provides. We're thankful to the many Masons and Masonic organizations that generously support our work.

Healing the Brave: MMRI and BWF Team Up to Fight PTSD

The Battle Within Foundation is a nonprofit based in Kenmore, New York that advocates for veterans and brings awareness to the ravages of post-traumatic stress disorder (PTSD). Although not a Masonic organization, The Battle Within was founded by Masons and veterans. These friends and brothers saw one of their dearest friends struggle with depression related to PTSD, the eponymous "battle within." Shockingly, PTSD-associated suicide is the leading cause of death among American military members, even outpacing causes emanating from war, cancer, and heart disease.

Called to action and determined to change the public's perception of the topic, the founders of The Battle Within Foundation have accomplished much in a short time. The Foundation was granted the right to design and erect the nation's first-ever permanent memorial to victims of veteran suicide on the Heroes Walk at The Buffalo and Erie County Naval & Military Park. They also raise public PTSD awareness each year with Memorial Day services throughout the state.

In 2022, the Battle Within Foundation (BWF) and MMRI announced a collaboration to further the scientific understanding of and causes for PTSD. MMRI has long been a distinguished center for the research of neurocognitive disorders, so a study on PTSD seemed like a natural fit. BWF and the Grand Lodge of New York pledged to raise $250,000 for research on PTSD and kicked off their campaign with a donation of $25,000 to MMRI in May 2022.

The funds garnered for the donation were collected from tributes made directly to BWF in memory of Lady Joanne Kessler, who passed away in December 2021. She was the wife of Most Worshipful Richard J. Kessler, the Grand Master of New York Masons. Her wish was to support this vital cause for veterans with PTSD.

Read more about the Battle Within Foundation at the web link here: thebattlewithinfoundation.com/general-8

Shelley Richman Leads the Way in Service and Giving

Right Worshipful (R.W.) Brother Sheldon ("Shelley") Richman leads by example as a role model for proactive philanthropy and intentional giving.

A Mason since 1968, the same year he graduated from Brooklyn Law School, R.W. Richman's Masonic career has been as prestigious as his law career. He maintains active memberships both in New York (Shakespeare Lodge No. 750), where he chairs the Grand Lodge Committee on the George Washington Masonic National Memorial, and in Virginia (Andrew Jackson Lodge No. 120), where he chairs the Grand Lodge Committee on Code Commission. He served as a Masonic ambassador in each Grand Lodge -- as the Grand Representative of the Grand Lodge of Pernambuco (Brazil) for the Grand Lodge of New York and as the Grand Representative of the Grand Lodge of Oregon for the Grand Lodge of Virginia. In 2016, the Grand Master of Virginia recognized Brother Richman's Masonic Labors by conferring on him the George Washington Distinguished Service Award.

R.W. Richman recognized MMRI's contributions to medicine and science, and he has become an advocate for the Institute's mission. He was elected a member of the MMRI Board of Directors in 2015 and continues to serve both the Institute and our Grand Lodge. R.W. Richman was a founder and is a champion of the MMRI's Cornerstone Society, through which donors

pledge future support to the Institute. He has also penned fundraising appeal letters for MMRI and even appeared in Cornerstone Society advertisements.

"So what is the Cornerstone Society?" Just as a cornerstone is integral to the foundation of a building, so too are the members of the Cornerstone Society integral to the stability and longevity of the MMRI. Cornerstone members pledge to include MMRI in their legacy through a documented bequest. Their pledges amplify their own legacies through MMRI's current work and future research.

Pat Imbimbo and Peter Gray

R.W. Pat Imbimbo and R.W. Peter Gray, both MMRI board members, spread the word about MMRI's good work. Here they are pictured at the Shrine Family Day at Glens Falls, NY, in August. Brother Imbimbo is a champion in fundraising for autism research, and he shares his message at lodges and Masonic events.

Pat Imbimbo and Peter Gray

Royal Arch and Paul Huck

In 2022, The Grand Chapter State of New York Royal Arch Masons, The Royal Arch Masons Medical Research Foundation, and Grand High Priest (2019) and MMRI Board member, M.E. Paul G. Huck together committed to support the histology suite of the MMRI. The histology core makes possible the study of micro-sized tissue samples at the MMRI. Gifts from the Royal Arch Masons to MMRI research over the years approach nearly $2 million.

Seventh District

The Seventh District Foundation of Manhattan granted MMRI $20,000 in October to purchase a Cytospin centrifuge, which is used to 'spin' multiple cell-samples onto slides for assessment and testing. Since 2010, the Foundation's combined gifts to MMRI research total $200,000.

Duff Neely and Steinberg brothers/dedication

Many Masons remember MMRI in their estate, leaving a legacy that benefits untold millions of people for years to come. In June, officers of the Grand Lodge of New York attended a ceremony at MMRI to recognize posthumous gifts of Duff Neely ($2.2 million gift) and brothers Franklin Steinberg and Stephen Steinberg ($6 million gift).

Giving From Across The USA

MMRI is supported by Masons from across the USA and around the world. A great example: In 2022, the Masonic Grand Lodge Charities of Rhode Island, Inc., donated $5,000 to MMRI, just a portion of its giving to the Institute that totals more than $72,000 since 2014. The Grand Lodge of Connecticut and the Connecticut Freemasons Foundation, Inc., donated an additional $15,000 to MMRI in February, bringing their total giving to the Institute to more than $146,000 since 2014. The MMRI team takes it as a point of pride to receive recognition and support from numerous individual Masons and Masonic Grand Lodge jurisdictions far from the Institute's labs in Utica, New York. We thank them for their support and encourage others to help us "improve the health and quality of life for all humankind."

'22 HONOR ROLL

Your donations make a difference!

Thanks to gifts made from January 1, 2022 to December 31, 2022, we've furthered our mission to make lives better for people and advance research.

Thank you for your dedicated support.

Planned Gift and Estate Contributions

$50,000+
Donald F. Braun
Gizella Freund
Esther Garbe
Hazel Lindenbaum
Frederick Stahl
John & Emma Van Gorden Trust

$10,000-$24,999
Louis E. & Frances B. Beatty Charitable Trust
Ann W. Chadwick
Elizabeth T. Heim & Margaret Rigby Trust
Edgar Hollwedel
John S. Jones
William R. Motz
Franklin O.L. and Stephen N. Steinberg
William R. Wright

$1,000-$9,999
James I. Dominy
Richard L. Moore
Douglas L. Rehlaender Trust
Ralph Sabin
Angeline R. Schad Trust
Michael C. Wicks

Organizational Contributions

$150,000-$200,000
Lupus & Allied Diseases Association, Inc.

$50,000-$99,999
M&T Bank
The Community Foundation of Herkimer & Oneida Counties, Inc.

$25,000-$49,999
Ingram Family Foundation
Masonic Brotherhood Foundation, Inc.
The Battle Within Foundation
Wildermuth Memorial Foundation

$10,000-$24,999
Burrows Foundation
Connecticut Freemasons Foundation, Inc.
German Masonic Charitable Foundation
Grand Lodge of Connecticut
Knickerbocker Lodge #182 F. & A.M.
Mele Family Fund
Second Kings Charities Fund, Inc.
The Seventh District Foundation
VIP Structures, LLC

$5,000-$9,999
Ancient Landmarks #358
Cunzio[1] & Company, Inc.
Fifth Manhattan Masonic District Association Endowed Fund
Franklin Lodge # 22 F. & A.M.
Human Technologies Corporation
Masonic Grand Lodge Charities of Rhode Island, Inc. F. & A.M.
Medford Square Club, Inc.
RAM Medical Research Foundation
Reliance Lodge #776 F. & A.M.
Utica Lodge #47 F. & A.M.

$2,500-$4,999
Ancient Temple Lodge #14 F. & A.M.
Aspen Insurance
Hinman Straub
James H. Wurz, Jr. & Edward T. Wurz, Sr. Foundation
Robert D. Flickinger Charitable Foundation

$1,000-$2,499
Alera Group Company
AmazonSmile Foundation
AmeriCu Credit Union
Ameritrade Clearing
B. Green Construction Corporation
Bank of Utica
The Benevity Community Impact Fund
Colonial Craftsmen's Club of Colonial MA
The Community Foundation of Greater Buffalo
Delta Hotels by Marriott Utica
DoubleTree by Hilton Utica
Network For Good
Order of the Eastern Star, Oneida Lake Chapter #123
PJ Green
Shekomeko Lodge #458 F. & A.M.
Staffworks
Towpath Lodge #1193 F. & A.M.

$500-$999
Athelstane Lodge #839 F. & A.M.
BonterraTech
CEM Corporation
Columbian Lodge A.F. & A.M.
Give Lively Foundation Inc.
Heslin, Rothenberg, Farley, & Mesiti, P.C.
Inspiration Lodge #109 F. & A.M.
The Louis & Linda Leogrande Charitable Foundation
North Fork Sanitation Inc.

PJ Grace Consulting Associates, Inc.
St. Lawrence Masonic Charities, Inc.
Sylvan Lodge #41 F. & A.M.
Tritown Lodge #472 F. & A.M.
Wantagh Morton Lodge #63 F. & A.M.

$100-$499
Alice Edwards Circle
Allentown, LLC
Apollo - King Solomon's Lodge #13 F. & A.M.
The Blackbaud Giving Fund
Central Square Masonic Lodge #622 F. & A.M.
Chemung Valley-Waverly Lodge #350 F. & A.M.
Copernicus Sister Circle
Cornerstone Lodge #178 F. & A.M.
DF & HF Schneeweiss Charitable Trust
Doylestown Lodge #245 F. & A.M.
Evening Star Chapter 82 OES
Ever Ready Engine Company #3
Exelon Corporation
Garibaldi Lodge #542 F. & A.M.
Global Foundries' Colleagues of Stacy Krauss
Hiram-Union Chapter #53
IBM Employee Services Center
Job's Daughters International Grand
Guardian Council of DelMar
Kennedy Baseball Group
Masonic Service Bureau of Greater Rochester NY, Inc.
New Jersey Scottish Rite Association
NY Freemasons
Panorama
PayPal
Philip F. Johnson Trust
Philo Lodge #243 F. & A.M.
Price Chopper Supermarkets
Trinity Sister Circle
Webster Lodge #538 F. & A.M.
Wood ETC, Inc.

Individual Contributions

$25,000-$49,999
Atul & Amita Butala
James & Nancy Buterbaugh
Ralph & Lois Humphreys

$10,000-$24,999
Marjorie A. Chase
Gary Forrest
Robert Good & Deloris Kile
Sheldon B. Richman[1]
Eleanor R. Wagner

$5,000-$9,999
Vincent Cunzio[1]
John & Cynthia DeTraglia
Ronald & Cecelia Gouse
David Hochman
Maria Kontaridis[2] & Patrick Thrailkill
Jean Lenihan
Dan Posel
Michael Siegel & Barbara Caldwell
Bertram Woodside

$2,500-$4,999
Anonymous
Tricia & Renier Brentjens
Brian J. Gaffney[3]
Richard[1] & Carol Miller
David[1] & Hallie Schneeweiss
Helmut Walter

$1,000-$2,499
Anonymous
Sidney[3] & Susan Blatt
Arthur Bowen
Bruce Brand
Steven Carr
Patricia Clemons
James Finke
Blake Ford
Clark Forster
David[1] & Marci Goodwin
Courtney Hanrahan
Robert[1] & Cathy Hewson
Paul Huck[1] & Susan Trainer Huck
Griffith Jones
Doug Jones
Joseph & Shirley Jung
Michael[3] W. & Jennifer Kelberman
Georgios & Marlene Kremydas
Warren Kuhle
Joseph Manzi
Marybeth McCall[3] & Frank Dubeck[3]
Byron Moak
Paul Mossberg[1]
John & Patricia Mulhall
Linda Peck
Daniel Perkins
Kenneth Pollard
Louis R. Rosenthal
William Sandmeyer
Brian & Sally Ann Singer
Howard Thrailkill
Dale & Eve Van de Wal[3]

$500-$999
Gary Adams
Anonymous (2)
Bart E. Bodkin & Diane Karnavas
Jean M. Breed
Joyce Ann Clark
John & Lynne Cochran
Walter Dabulewicz
David Faux
Edward Glick
Carolyn Gray
Paul[1] A. & Joyce Guerrero
Betty Hank
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Suzanne V. Ware
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$100-$499
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William W. Abraham
Robert Agazzi
Willard Allen
Dale Allen
Joseph & Lorraine Altmann
Wayne Anderson
Anonymous (11)
Antonio Arocho
Jay Austin
Kenneth & Janice Avery
Janice S. Avery
Shirley G. Aylsworth-Bloomer
Carmelo & Antoinette Balbi
Norman D. Baldwin*
David Barnello
Paul Barrera
Richard Barth
Brian Bartle
Joseph Bastadjian
Duncan & Shari Jean Bellinger
Scott Bensink
John Benton
Jonathan Bernard
David Betz
Daniel Biery
Robert J. Bishop
Allan F. Blackmar
Nicholas Blais
Rickey Blake
Richard Blankfein
Catherine Infante Boccabella
Damian Bohler[2]
Gregory & Cheryl Bolton
Howard Bonsaing
David Bowman
Allen Boyce
William Boyer
Robert Bradley
Sterling Brisbin
Robert & Kathleen Bruno
Charles Bunke
Leighton Burns
Kathleen Bush
Jose & Dolores Cajigal
Edward & Patricia Callaghan
Jose Capella
Karen E. Carey[3]
Angelo Carlino
Dale & Cynthia Carlson
David Carr
Steven Carrobis
James & Delores Caruso
Anthony & Carol Catania
Michael A. & Cynthia Chaplin
Sarah Chung
William & Barbara Clarke
Michael Clough
Craig & Susan Cobb
Kevin Cobb
Lynn Cohen
Gladys Cohen
Marie Conicelli
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Robert Conn
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Bernie & Eileen Cooper
Harold & Sandra Cooper
Lisa Cooper[2]
Darrin Corrigeux
Leroy Crispell
William Crooks
Anthony Cucci
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Jay Cummings
Robert Dalton
Chester Damon
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Richard & Patricia De Armond
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Lees & Susie Divine
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Konstantinos Drosatos
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Alan Druckman
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Lawrence & Linda Egnaczyk
Catherine L. Ellsworth
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Virginia & J. Richard Emmert
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Angelo Fernandez
Frank Ferrandiz
Helga Fielitz
George Filippidis[4] & Viki Skliris
Michael & Phyllis Finocchio
Raymond Fleming
Glenn & Leah Foley
John Foster
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Richard Frame
Giacomo Franci
Robert Froehlich
Albert Frohlich
Vladimir & Malvina Fulman
Gary Galbreath
Robert Gallagher
John & Joanna Ganger
Roland Gassler
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Robert Geddis
Arnold & Lieselotte Geisler
Claudia Gemmer
Michael George
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Rosemarie Gift
Robert Gilligan
Henry Gim
Bruce & Elizabeth Gleason
Clark Glenwood
James & Elaine Glover
Bruce Gordon
Harold Grant
Jean Gray
Philip Greenberg
Harry & Phyllis Greenberg
Michael & Laura Grenadier
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In Memory of Joanne Kessler
Donald Harrison
Howard E. Bonsaing
Clark M. Forster

In Memory of George W. Koch, Sr.
Barbara & George W. Koch, Jr.

In Memory of Louis R. Koch
Barbara & George W. Koch, Jr.

In Memory of Ekaterini Kontaridis
Joanna Slater

In Honor of Maria Kontaridis[2]
Carrie DiMaria[2]
Thomas Massaro[2]
Anna D'Ambrosio[3]
Yan Sun[2]
Bing Xu[2]
Darlene G. Stromstad[3]
Curt Fowler[2]
Karen E. Carey[3]
Eve M. Van de Wal[3]

In Honor of the Kosciuszko Lodge #1085 F. & A.M.
David Estes

In Memory of Eric Kunz
Richard C. Kunz

In Memory of Derek Lake
Carl Romans

In Memory of Karol Lanning
Harold W. Lanning

In Honor of Farncomb LeGresley
Thomas Barrie

In Memory of Bernice & Alex Lowry
Naaman Lowry

In Memory of William R. Luchtenberg
Dorothy V. Luchtenberg

In Memory of Roger J. Lynch
Nancy P. Lynch

In Memory of David Mabie
Robert J. Mabie

In Honor of Morad Mahpour
Barry Depot
Shelli Carol

In Honor of Barry Mallah
Louise O'Connell-Carmiciano
Bernie Cooper
Adam J. Mallah
Harry Greenberg
Louis R. Rosenthal
Jordan A. Mallah

In Memory of Jan Martin
Roger C. Viadero

In Memory of Manton C. Martin
Rosemarie Gift

In Memory of David M. May
Chemung Valley-Waverly Lodge #350
F. & A.M.

In Memory of Carmello Merlino
Cornerstone Lodge #178 F. & A.M.

In Memory of J. Bradley Millet
David F. Millet

In Memory of David Montanye
Hiram-Union Chapter 53

In Memory of Joe Moody
Edward N. Pedersen

In Memory of Earl Moran
Gordon C. Moran

In Memory of Clarence Moray
William A. Morehouse

In Honor of Louis Naagy
Lynda Green
Sara Johnsen

In Memory of Mr. Thomas J. Nazario
Michael A. Minarczyk

In Memory of Martin Neff
Leonard Kanchuger

In Memory of Hughes Neely
Thomas H. Neely

In Memory of Edward S. Newsham
June M. Newsham

In Honor of North Woods Lodge #849 F. & A.M.
Jeffrey H. Owen

In Memory of Ivan Obolensky
Robert M. Shields

In Memory of Clarence Odell
Frederick W. Schaper

In Memory of Ray Ormsby
Damon E. Ormsby

In Memory of Kurt Ott
Lorraine F. Altmann

In Memory of David E. Otteni
Kevin Jordan
Carl E. Sadley
Robert A. Bruno
Patrick J. Sheeley

In Memory of my Parents & Grandparents
Thomas & Leslie Schmeelk

In Memory of Paul, my Grandfather
Daniel Perkins

In Honor of Ellwood & Martha Pfeil
Robert E. Pfeil

In Memory of Walter E. Poesl
Ernest T. Poesl

In Memory of James D. Price, Sr.
James D. Price, Jr.

In Memory of Erna Puckhaber
Copernicus Sister Circle

In Honor of Nicole Purcell
Jonathan Shelton

In Memory of Linda Reeves
Charles A. Reeves

In Honor of Sheldon B. Richman
Terry Hilton

In Memory of Juana Rivera
Antonio E. Arocho

In Honor of Clyde Robbins
Lance M. Gundersen

In Memory of Rodney L. Robinson
Chemung Valley-Waverly Lodge #350
F. & A.M.

In Honor of Theresa Rosenthal
John M. Leventhal

In Memory of Lawson Rutherford
George J. Lapinsky

In Memory of Alvin Saltzbart
Sandra C. Helde

In Honor of David F. Schneeweiss[1]
Hallie Schneeweiss

In Memory of Fred Schneeweiss
David[1] & Hallie Schneeweiss

In Memory of Jim Schwab
Lynn B. Cohen

In Memory of William Schwartz
Madelyn Schwartz

In Memory of Fred Seyford
Jean Seyford

In Honor of Ruth Sharpe
Deb Sharpe

In Memory of Robert Shelmidine
John J. Whitney

In Honor of Sally Singer
Daniel G. Lort
Steven R. Shearer
Piers A. Vaughan

In Honor of Mrs. Kenneth Smead, Jr.
Jonathan Smead

In Honor of Louise Smith
Frank E. Smith

In Memory of Robert A. Smith
Carmen A. Smith

In Memory of Roland Spector
Philip Darvin

In Memory of Ronald J. Steiner
C. F. William Maurer

In Memory of David & Anne
Stevenson
Lynnette Saeger

In Honor of Laurence Sussman
Harvey M. Holtz

In Memory of Henry Tepper
Elliott I. Tepper

In Memory of William Thomson
Allan E. Reynolds

In Memory of Alexandra Triantafilis
Spiro H. Triantafilis

In Memory of Bernard Tronel
Louis G. Retailleau

In Memory of Kristin Marie Underkoffle
Carl F. Tomanelli

In Memory of John B. Vale
Chemung Valley-Waverly Lodge #350
F. & A.M.

In Memory of Kenneth Valentine
Craig A. Valentine

In Memory of Marilyn Verna Coe Darrh
Walter E. Darrh

In Memory of David Vilmar
John Sikorak

In Memory of George E. Voulgaris
Suzanne M. Voulgaris

In Honor of Gus Vourvoulas
Bethel 7

In Memory of Harold E. Waite
Elizabeth R. Waite

In Memory of George Wambolt
Rose Wambolt

In Memory of L. Katherine Wharmby
Anonymous

In Memory of Vincent Whiteman
Larry V. Whiteman

In Honor of Frank R. Williams
Oriental-Faxton Lodge #224 F. & A.M.

In Memory of Arlene Zeno
Lawrence S. Zeno

Legend of Footnotes:
Deceased*
Board of Directors[1]
MMRI Staff/Employee[2]
Community Advisory Committee[3]
Trustee of Hall and Home[4]

UPDATE

From Our Finance Director

To the Grand Lodge

The year 2022 proved to be one with many changes for MMRI. While 2021 provided booming markets, capital grant cash, and windfall revenues related to the Covid-19 pandemic (in the form of testing services and Federal loan forgiveness), 2022 was much different. During 2022, even though the financial markets and these one-time revenue sources declined, the Institute understands its position and has undertaken several steps to insulate itself from the vulnerabilities of market and funding uncertainties and looks forward to a very optimistic future.

Specifically, the Institute has created a holding company that will be investing in for-profit ventures to not only support the Institute financially but also align with its mission to enhance community health and well-being. The first of such endeavors coincides to New York State's roll out of a recreational cannabis program in that MMRI will be investing in a venture to provide statutorily required and comprehensive product testing to ensure products are safe and properly labeled. The facility is dependent on the timing of the State's retail market licensing (which is anticipated in mid-2023), but the testing laboratory's centralized location, as well as its proximity to producers in the farmlands of Upstate New York, make it uniquely positioned for success.

In addition to the entrepreneurial endeavors being developed, the Institute will also be refinancing its significant debt of nearly $12M, which will in turn release collateralized investment obligations and provide the capital necessary to sustain operations and allow for continued investment in cash-generating activities. These activities include enhancing the Institute's Development, Marketing and Communications (DMC) Department to greatly increase philanthropy and planned giving. This will be done by hiring internal expertise and engaging with external consultants and community advisors who will expand the awareness of the Institute to both the Masonic and non-Masonic constituents far beyond the borders of New York State. As MMRI continues to rebrand and re-invent itself into a well-respected and recognized name in cutting-edge biomedical research, philanthropy continues to be a significant focus and Management realizes there are many opportunities to be seized as a result of investing in its DMC capacity and staff.

The lifeblood of the Institute continues to be the numerous research grants received from Federal and non-profit agencies. The number of applications and awards has been increasing and this is expected to continue. Also expected is the collection of nearly $4M in state capital grant funding related to the lab reconstruction of the past few years, the final phase of which was the renovation of the Genetics Laboratory, which was completed in 2022. Now that construction is completed, the recruitment of additional researchers is the final piece necessary to achieve significant increases in grant funding and realizing existing capital awards.

Nothing is ever certain in this uncertain world, but biomedical research is something that will never become obsolete or irrelevant. While there are many unknowns in the years ahead, MMRI has proactively taken steps to a) find external sources of revenues, b) refinance its debt and free up collateralized resources, c) use these resources to invest in revenue-generating philanthropic and commercial capacity and d) increase research staffing to assure maximum grant revenues. The Management and Board of Directors has been strategically moving the Institute toward self-sustainability over the past several years, and they have every intention to ensure the means are there to continue in perpetuity.

Sincerely,

Lisa Cooper

Lisa Cooper, CPA
Finance Director

Lumsden McCormick LLP
CERTIFIED PUBLIC ACCOUNTANTS

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p: 716.856.3300 | f: 716.856.2524 | www.LumsdenCPA.com

INDEPENDENT AUDITORS' REPORT

The Board of Directors
Masonic Medical Research Laboratory,
dba Masonic Medical Research Institute

Report on the Audit of the Financial Statements

Opinion

We have audited the consolidated balance sheets of Masonic Medical Research Laboratory, dba Masonic Medical Research Institute (the Institute) as of December 31, 2022 and 2021, and the related consolidated statements of activities, functional expenses, and cash flows for the years then ended, and the related notes to the consolidated financial statements.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Institute as of December 31, 2022 and 2021, and the changes in its net assets and cash flows for the years then ended, in accordance with accounting principles generally accepted in the United States of America (GAAP).

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards,* issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Institute and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

2021 Financial Statements Restated

As discussed in Note2 to the financial statements, the 2021 financial statements have been restated to correct a misstatement. Our opinion is not modified with respect to this matter.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with GAAP; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Institute's ability to continue as a going concern for one year after the date the financial statements are issued.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Institute's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements as a whole. The accompanying schedule of expenditures of federal awards, as required by Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance) is presented for purposes of additional analysis and is not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with GAAS. In our opinion, the schedule of expenditures of federal awards is fairly stated, in all material respects, in relation to the financial statements as a whole.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated March 29, 2023 on our consideration of the Institute's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, grant agreements, and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Institute's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Institute's internal control over financial reporting and compliance.

Lyman & McCormick, LLP

March 29, 2023

Consolidated Balance Sheets

December 31,	2022	2021
Assets		
Current assets:		
Cash	$ 659,701	$ 702,927
Receivables (Note 3)	912,091	3,846,045
Prepaid expenses and other assets	261,151	157,992
	1,832,943	4,706,964
Investments (Note 4)	26,572,015	32,555,820
Split-interest agreements (Note 5)	5,556,562	6,937,223
Property and equipment, net (Note 6)	16,421,328	16,557,355
Cash value of life insurance	1,097,262	1,079,758
Interest in Analytical Testing Center of Central New York LLC (Note 7)	309,377	-
	$ 51,789,487	$ 61,837,120
Liabilities and Net Assets		
Current liabilities:		
Current portion of long-term debt (Note 8)	$ 11,943,158	$ -
Accounts payable	168,599	684,648
Accrued expenses	332,932	287,760
Deferred revenue	96	12,601
	12,444,785	985,009
Long-term debt (Note 8)	-	11,943,158
Charitable gift annuities (Note 5)	135,225	139,331
Net assets:		
Without donor restrictions	25,901,816	33,550,158
With donor restrictions (Note 10)	13,307,661	15,219,464
	39,209,477	48,769,622
	$ 51,789,487	$ 61,837,120

Consolidated Statements of Activities

For the years ended December 31,	2022	2021
Net assets without donor restrictions:		
Revenues, gains and support:		
Contributions:		
Masonic Brotherhood Foundation, Inc.	$ 51,125	$ 47,302
Legacies and bequests	333,774	871,111
Grants	1,990,765	4,748,356
Other	359,329	389,404
Laboratory service fees	-	1,589,622
Paycheck Protection Program loan forgiveness (Note 9)	-	703,322
Investment earnings (losses), net	(1,693,173)	2,927,989
Analytical Testing Center of Central New York allocations	(33,806)	-
Other income	9,015	25,893
Net assets released from restrictions	649,734	327,271
Total revenues, gains, and support	1,666,763	11,630,270
Expenses:		
Program services - research and education	6,343,210	6,656,679
Management and general	2,260,152	2,054,846
Public relations and development	711,743	639,632
Total expenses	9,315,105	9,351,157
Change in net assets without donor restrictions	(7,648,342)	2,279,113
Net assets with donor restrictions:		
Contributions	305,330	243,299
Change in value of split-interest agreements	(1,023,705)	1,279,676
Investment earnings (losses), net	(543,694)	947,393
Net assets released from restrictions	(649,734)	(327,271)
Change in net assets with donor restrictions	(1,911,803)	2,143,097
Change in net assets	(9,560,145)	4,422,210
Net assets - beginning (Note 2)	48,769,622	44,347,412
Net assets - ending	$ 39,209,477	$ 48,769,622

Consolidated Statements of Functional Expenses

For the years ended December 31,	2022				2021			
	Program Services	Supporting Services			Program Services	Supporting Services		
	Research and Education	Management and General	Public Relations and Development	Total	Research and Education	Management and General	Public Relations and Development	Total
Salaries	$ 2,370,845	$ 1,068,666	$ 363,059	$ 3,802,570	$ 2,501,690	$ 994,176	$ 376,792	$ 3,872,658
Payroll taxes and fringe benefits	599,948	285,737	97,647	983,332	583,932	241,811	88,843	914,586
Total salaries and related expenses	2,970,793	1,354,403	460,706	4,785,902	3,085,622	1,235,987	465,635	4,787,244
Research expenses	894,869	-	-	894,869	1,405,024	-	-	1,405,024
Buildings and grounds operations	201,935	51,375	7,050	260,360	199,236	71,052	7,127	277,415
Equipment and repairs	90,581	19,758	1,730	112,069	101,918	24,701	2,089	128,708
Office expenses	82,771	86,658	54,025	223,454	58,949	109,210	29,292	197,451
Conferences, travel and meals	112,019	46,788	29,187	187,994	30,213	44,228	5,148	79,589
Professional fees and outside services	10,631	380,196	46,389	437,216	12,788	289,533	11,325	313,646
Publicity, promotion and sponsorships	18,134	5,804	74,522	98,460	5,113	-	86,915	92,028
Insurance	69,453	54,123	2,461	126,037	54,381	36,083	1,966	92,430
Depreciation	1,524,509	154,169	18,970	1,697,648	1,502,163	137,464	18,542	1,658,169
Interest	362,496	95,132	12,022	469,650	199,925	52,471	6,631	259,027
(Gain) loss on disposal of property and equipment	-	(11,000)	-	(11,000)	-	37,724	-	37,724
Miscellaneous	5,019	22,746	4,681	32,446	1,347	16,393	4,962	22,702
	$ 6,343,210	$ 2,260,152	$ 711,743	$ 9,315,105	$ 6,656,679	$ 2,054,846	$ 639,632	$ 9,351,157

Consolidated Statements of Cash Flows

For the years ended December 31,	2022	2021
Operating activities:		
Change in net assets	$ (9,560,145)	$ 4,422,210
Adjustments to reconcile change in net assets to net cash flows from operating activities:		
Paycheck Protection Program loan forgiveness	-	(703,322)
Depreciation	1,697,648	1,658,169
(Gain) loss on disposal of property and equipment	(11,000)	37,724
Net realized and unrealized (gains) loss on investments	3,087,358	(2,866,028)
(Gain) loss on beneficial interest in split-interest agreements	1,376,555	(1,160,400)
Increase in cash value of life insurance	(17,504)	(31,614)
Interest in Analytical Testing Center of Central New York	(309,377)	-
Changes in other operating assets and liabilities:		
Receivables	2,933,954	(774,986)
Prepaid expenses and other assets	(103,159)	55,532
Accounts payable	(516,049)	287,108
Accrued expenses	45,172	(192,254)
Deferred revenue	(12,505)	(3,465)
Net operating activities	(1,389,052)	728,674
Investing activities:		
Property and equipment purchases	(1,550,621)	(1,258,905)
Proceeds from sales of investments	15,916,292	8,211,872
Purchases of investments	(13,019,845)	(9,083,353)
Net investing activities	1,345,826	(2,130,386)
Financing activities:		
Proceeds from Paycheck Protection Program loan	-	703,322
Net change in cash	(43,226)	(698,390)
Cash - beginning	702,927	1,401,317
Cash - ending	$ 659,701	$ 702,927

Notes to Consolidated Financial Statements

1. Summary of Significant Accounting Policies:

Organization:

The accompanying financial statements include the accounts of Masonic Medical Research Laboratory, dba Masonic Medical Research Institute (the Institute) and its controlled subsidiary Three Pillars Innovation, Inc. (TPI). All significant intercompany accounts and transactions have been eliminated in the accompanying financial statements.

The Institute, located in Utica, New York, is dedicated to improving the health and quality of life for all humankind. The Institute's primary mission is to conduct high-quality, basic biomedical research aimed at generating knowledge and information necessary for development of the medical cures and treatments of tomorrow. From June 2020 through June 2021, the Institute performed COVID-19 testing and generated laboratory service fee revenue to support the needs of the local healthcare system and to obtain positive COVID-19 samples used for research to determine the long-term effects of the virus on the heart and other organs.

TPI, a for-profit corporation, was established in 2022 as a holding company to invest in various entrepreneurial ventures with the goal of creating a sustainable cash flow to the Institute.

Subsequent Events:

The Institute has evaluated events and transactions for potential recognition or disclosure through March 29, 2023, the date the financial statements were available to be issued.

Cash:

Cash in financial institutions may exceed insured limits at various times during the year and subject the Institute to concentrations of credit risk.

Investments:

Investments represent marketable securities stated at fair value on a recurring basis as determined by quoted prices in active markets. Investment securities are exposed to interest rate, market, and credit risks. Due to the level of risk associated with certain investment securities and the level of uncertainty related to changes in the value of investment securities, it is at least reasonably possible that changes in values in the near term could materially affect the amounts reported in the accompanying financial statements.

Split-Interest Agreements:

The Institute receives contributions in the form of split-interest agreements which consist primarily of charitable gift annuities, charitable remainder trusts, and beneficial interests in perpetual trusts. The assets are invested in marketable securities and are stated at fair value as determined by quoted prices in active markets. Distributions from the trusts are made periodically, and represent unrestricted investment income.

The Institute administers a charitable gift annuity plan whereby donors may contribute assets in exchange for the right to receive a fixed dollar annual return during their lifetimes. A portion of contributed assets is considered to be a charitable contribution for income tax purposes for the donor. The difference between the amount provided for the gift annuity and the liability for future payments, determined on an actuarial basis, is recognized as a contribution with donor restrictions at the date of the gift. Upon the death of the annuitant (or last joint annuitant), the remaining net assets are available for use by the Institute. State mandated reserves related to charitable gift annuity agreements are maintained at the required level.

The Institute is also a remainder beneficiary in charitable trusts administered by other trustees. Pursuant to the agreements, assets are recorded at the present value of the estimated future benefits to be received based on the life expectancy of the income beneficiaries using appropriate discount rates. Subsequent changes in value are recorded as change in value of split-interest agreements in the statements of activities.

The Institute is a beneficiary of perpetual trusts administered by independent organizations. Under the terms of the trusts, the Institute has irrevocable rights to receive portions of the income earned on the trust assets in perpetuity.

Property and Equipment:

Property and equipment is stated at cost or fair market value at the date of donation, net of accumulated depreciation. Depreciation is computed by the straight-line method over estimated service lives.

Net Assets:

The Institute reports information regarding its financial position and activities according to two classes of net assets: net assets without donor restrictions and net assets with donor restrictions.

Net assets with donor restrictions include those whose use has been limited by donors to a specific time period, purpose, or those to be maintained in perpetuity by the Institute.

Contributions:

Contributions, including unconditional promises to give, are reported at fair value at the date the contribution is made. Contributions are recorded as restricted if they are received with donor stipulations that limit their use. When a donor restriction expires, net assets with donor restrictions are reclassified as net assets without donor restrictions and reported in the statements of activities as net assets released from restrictions. Donor restricted contributions whose restrictions are met within the same year as received are reported as contributions without donor restrictions in the accompanying statements of activities.

Unconditional promises to give that are expected to be collected within one year are recorded as contributions receivable at their net realizable value. Unconditional promises to give that are expected to be collected in future years are recorded at the present value of estimated future cash flows. The discounts on those amounts are computed using an appropriate interest rate applicable to the year in which the promise is received. Amortization of the discount is included in contribution revenue.

The Institute also receives grants from governments and nonprofit organizations. These conditional contributions are recognized as revenue when allowable expenditures are incurred or other grantor conditions are met. The grant awards and reimbursements are subject to various compliance and financial audits by the funding source. Management believes no significant adjustments to recognized amounts are necessary. In 2021, the Institute recognized $3,000,000 of grant revenue from Empire State Development and amounts totaling $3,000,000 are included in receivables on the accompanying 2021 consolidated balance sheet.

Laboratory Service Fees and Related Receivables:

Through June 2021, laboratory service fees were recognized for COVID-19 tests performed based on contract prices and terms established with a local healthcare system. Payment from the healthcare system was generally due within 90 days of billing.

Functional Expense Allocation:

The Institute's costs of providing its various programs and activities have been summarized on a functional basis in the statements of functional expenses. Accordingly, certain costs have been allocated among the programs and supporting services benefited. Those costs include depreciation, which is allocated on an estimated square footage basis, and certain other expenses allocated based on employee time and effort.

Tax Status:

The Institute is a 501(c)(3) corporation generally exempt from income taxes under Section 501(a) of the Internal Revenue Code.

TPI is taxed as a C-corporation and files separate federal and state corporation tax returns. TPI has estimated net operating loss carryforwards of approximately $10,000. No tax benefits have been reported in the financial statements.

Use of Estimates:

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Reclassifications:

The financial statements for the year ended December 31, 2021 have been reclassified to conform with the presentation adopted for 2022.

2. Prior Period Adjustment:

During 2022, the Institute re-evaluated its recurring estate gifts and determined it is the beneficiary of several irrevocable split-interest agreements. Accordingly, the financial statements for 2021 have been retroactively restated, which resulted in an increase in split-interest agreement assets and net assets totaling $5,337,039 as of January 1, 2021, and change in value of split-interest agreements totaling $1,152,887 in 2021 to recognize the change in the fair value at December 31, 2021.

3. Receivables:

	2022	2021
Contributions:		
Grants	$ 291,753	$ 3,320,334
Others	571,990	483,945
Accrued interest	46,620	21,759
Other receivables	1,728	20,007
	$ 912,091	$ 3,846,045

4. Investments:

	2022	2021
Cash and cash equivalents	$ 1,053,981	$ 1,891,519
Mutual funds	3,668,205	4,677,957
Equity securities	20,772,775	24,870,268
U.S. government securities	1,077,054	1,116,076
	$ 26,572,015	$ 32,555,820

The following summarizes investment return and its classification in the consolidated statements of activities:

	2022	
	Without Donor Restrictions	With Donor Restrictions
Dividends and interest	$ 566,316	$ 195,364
Net realized gains	145,407	37,657
Net unrealized losses	(2,506,336)	(764,086)
Distributions from other perpetual trust assets	101,440	-
	$ (1,693,173)	$ (531,065)

	2021	
	Without Donor Restrictions	With Donor Restrictions
Dividends and interest	$ 676,990	$ 227,114
Net realized gains	437,045	136,763
Net unrealized gains	1,706,796	585,424
Distributions from other perpetual trust assets	107,158	-
	$ 2,927,989	$ 949,301

5. Split-Interest Agreements:

	2022	2021
Charitable gift annuities	$ 292,359	$ 367,633
Beneficial interest in charitable remainder trusts	3,513,775	4,365,752
Other perpetual trust assets	1,683,390	2,124,174
Pooled income funds	67,038	79,664
	$ 5,556,562	$ 6,937,223

Liabilities associated with the above charitable gift annuity assets totaled $135,225 and $139,331 at December 31, 2022 and 2021. Distributions received from the agreements totaled $191,563 and $233,947 in 2022 and 2021.

6. Property and Equipment:

	2022	2021
Buildings and improvements	$ 18,642,999	$ 16,197,169
Equipment	8,049,961	8,022,039
Furniture and fixtures	189,832	189,832
Vehicles	43,326	75,076
Construction in progress	-	938,191
	26,926,118	25,422,307
Less accumulated depreciation	10,504,790	8,864,952
	$ 16,421,328	$ 16,557,355

7. Interest in Analytical Testing Center of Central New York LLC:

TPI is a 50% member of Analytical Testing Center of Central New York LLC (ATCCNY), a limited liability company operating a cannabis testing laboratory in New York State. TPI's membership in ATCCNY is accounted for on the equity method.

Financial position and results of operations of ATCCNY for the year ended December 31, 2022 is summarized below:

	2022
Total assets	$ 290,071
Total liabilities	$ 14,499
Total equity	$ 275,572
Total revenue	$ -
Excess of expenses over revenue	$ (67,611)
Member contributions	$ 343,183

8. Long-Term Debt:

The Institute has available a $12,000,000 bank revolving line note to finance renovations of its building completed in 2020. The note carries interest at 1% below prime and is secured by specific Institute investments valued at $16,183,000 at December 31, 2022 ($16,833,000 at December 31, 2021). The original note was due in October 2021 and was renegotiated to monthly interest-only payments through October 2023, at which time the principal balance is due. Amounts outstanding at December 31, 2022 and 2021 totaled and $11,943,158.

9. Paycheck Protection Program Loans:

In 2021, the Institute received a loan totaling $703,322 from the Small Business Administration (SBA) under the Paycheck Protection Program (PPP) of the Coronavirus Aid, Relief and Economic Security (CARES) Act, in response to the COVID-19 pandemic declared by the World Health Organization. The loan was forgiven by the SBA in September 2021 and income was recognized.

10. Net Assets with Donor Restrictions:

Net assets with donor restrictions are for the following purposes or periods:

	2022	2021
Subject to expenditure for research or other purposes	$ 3,117,194	$ 3,237,723
Subject to the passage of time	3,803,758	4,826,121
Other perpetual trust assets	1,683,390	2,124,174
Subject to the Institute's spending policy and appropriation:		
Investment in perpetuity (including amounts above the original gift value of $3,007,271), which, once appropriated, is expendable to support research (see Note 11)	4,703,319	5,031,446
Total net assets with donor restrictions	$ 13,307,661	$ 15,219,464

11. Endowment Assets:

The Institute's restricted endowment assets arise from donor-restricted endowments invested in perpetuity. The Institute has adopted investment and spending policies for endowment assets that attempt to provide returns sufficient to address the purposes of the assets over the long-term. The Institute seeks to distribute up to 5% of total endowment market value annually, while maintaining the purchasing power of the endowment assets over the long-term.

The Institute has interpreted the New York Prudent Management of Institutional Funds Act (NYPMIFA) as requiring the preservation of the fair value of the original donor restricted endowment gift as of the gift date, absent explicit donor stipulations to the contrary. As a result of this interpretation, the Institute classifies as perpetual endowment (a) the original value of gifts donated to the perpetual endowment, (b) the original value of subsequent gifts to the perpetual endowment, and (c) accumulations to the perpetual endowment made in accordance with the direction of a donor gift instrument at the time the accumulation is added to the fund.

Investment earnings of non-trusteed perpetual endowment funds are monitored and appropriated for expenditure by the Institute in a manner consistent with the standard of prudence prescribed by NYPMIFA. In accordance with NYPMIFA, the Institute considers the following factors to appropriate or accumulate donor-restricted endowment funds:

- Duration and preservation of the fund
- Purposes of the Institute and the fund
- General economic conditions
- Possible effects of inflation and deflation
- Expected total return from income and appreciation of investments
- Other Institute resources
- When circumstances would otherwise warrant, alternatives to expenditure of the endowment fund, giving due consideration to the effect that such alternatives may have on the Institute
- Investment policy of the Institute

Investment gains (losses) related to the donor-restricted endowment are reported as increases (decreases) to net assets with donor restrictions until appropriated and expended in accordance with the Institute's spending policy. The Institute's restricted endowment assets activity for the years ended December 31, 2022 and 2021 is as follows:

	2022	2021
Endowment assets – beginning balance	$ 5,031,446	$ 4,464,050
Investment gains (losses), net of custodian fees	(328,127)	567,396
Endowment assets – ending balance	$ 4,703,319	$ 5,031,446

12. Retirement Plan:

The Institute sponsors a defined-contribution retirement plan covering substantially all full-time employees. The plan allows for discretionary employer matching contributions of up to 10% of salaries. The Institute's contributions to the plan amounted to $226,925 and $235,793 in 2022 and 2021.

13. Related Party Transactions:

The Institute receives voluntary contributions of New York State Masons through Masonic Brotherhood Foundation, Inc. In addition, other Masonic organizations throughout New York State contribute directly to the Institute. During the years ended December 31, 2022 and 2021, the Institute received contributions of $51,125 and $28,980 for operations through Masonic Brotherhood Foundation, Inc.

In addition, at December 31, 2022 and 2021, Masonic Brotherhood Foundation, Inc. held in a custodial account $709,574 and $811,186 of bequests on behalf of the Institute. Pursuant to accounting guidance, the investments remain as part of the foundation's net assets with all investment income disbursed to the Institute for its operations. Accordingly, such bequests are not recorded in the Institute's financial statements. Disbursements of investment income made to the Institute for 2022 and 2021 totaled $24,437 and $18,322.

The Institute is party to an agreement with Grand Lodge of Free and Accepted Masons of the State of New York (the Grand Lodge). The Grand Lodge provides services to promote the Institute's fundraising objectives for an annual fee of $1 per Grand Lodge member through December 31, 2022. Annual expenses totaling $29,440 and $30,900 were incurred for the years ended December 31, 2022 and 2021.

The Institute's facilities are located on land owned by Masonic Care Community (MCC). The Institute pays a $1 annual fee to the trustees of MCC for use of this land. Utilities and ground maintenance expenses related to the facilities are charged by MCC and totaled $188,959 and $187,966 for 2022 and 2021 and amounts totaling $27,248 and $13,283 are included in accounts payable on the accompanying balance sheets at December 31, 2022 and 2021. Additionally, the Institute leased a separate building from MCC through November 2021 and recognized expense totaling $21,000 in 2021.

14. Cash Flows Information:

Net cash flows from operating activities reflect cash payments for noncapitalized interest totaling $469,650 and $258,108 for the years ended December 31, 2022 and 2021.

15. Financial Assets Available for Operations:

The Institute obtains financial assets generally through grants, contributions and fundraising efforts. The financial assets are acquired throughout the year to help meet the Institute's cash needs for general expenditures. The Institute's financial assets available within one year of the balance sheet date to meet cash needs for general expenditures consist of the following at December 31, 2022 and 2021:

	2022	2021
Cash	$ 659,701	$ 702,927
Receivables	912,091	3,846,045
Investments	26,572,015	32,555,820
Less: investments restricted to expenditure for research or other purposes	(3,117,194)	(3,237,723)
Less: investments subject to the Institute's spending policy and appropriation	(4,703,319)	(5,031,446)
Less: investments held as collateral for bank debt	(16,182,975)	(16,832,826)
	$ 4,140,319	$ 12,002,797

16. Risks and Uncertainties:

The Institute is involved in legal proceedings which, in the opinion of management, will not have a material adverse impact upon the financial position of the Institute.

Supplementary Information
Schedule of Expenditures of Federal Awards

For the year ended December 31, 2022

Federal Grantor/Pass-Through Grantor/Program Title	Assistance Listing Number	Grantor Number	Expenditures
Research and Development Cluster:			
U.S. Department of Defense:			
Direct award:			
Military Medical Research and Development	12.420	LR200032	$ 180,084 [1]
U.S. Department of Veteran Affairs:			
Direct award:			
Intergovernmental Personnel Act	64.XXX	n/a	11,465
U.S. Department of Health and Human Services:			
Passed through The Brigham and Women's Hospital, Inc.:			
Cancer Biology Research	93.396	190838	24,049
Direct awards:			
Cardiovascular Diseases Research	93.837	102368	402,138 [2]
Cardiovascular Diseases Research	93.837	140187	189,585
Cardiovascular Diseases Research	93.837	146810	568,549
			1,160,272
Passed through The Brigham and Women's Hospital, Inc.:			
Cardiovascular Diseases Research	93.837	148207	15,767
Cardiovascular Diseases Research	93.837	115141	64,424
Cardiovascular Diseases Research	93.837	148355	23,494
			103,685
Passed through Norfolk State University:			
Cardiovascular Diseases Research	93.837	145530	38,185
Passed through Regents of the University of Michigan:			
Blood Diseases and Resources Research	93.839	144550	57,077
Direct awards:			
Arthritis, Musculoskeletal and Skin Diseases Research	93.846	079085	47,252
Passed through Vanderbilt University Medical Center:			
Arthritis, Musculoskeletal and Skin Diseases Research	93.846	0809014	30,378
Passed through the University of Florida:			
Allergy and Infectious Diseases Research	93.855	170075	23,549
Passed through Vanderbilt University Medical Center:			
Biomedical Research and Research Training	93.859	126062	32,283
Total Expenditures of Federal Awards			$ 1,708,279

[1] *Includes subrecipient award of $21,249*
[2] *Includes subrecipient award of $7,927*

Notes to Schedule of Expenditures of Federal Awards

1. Summary of Significant Accounting Policies:

Basis of Presentation:

The accompanying schedule of expenditures of federal awards (SEFA) presents the activity of all federal award programs administered by Masonic Medical Research Laboratory, dba Masonic Medical Research Institute (the Institute), an entity defined in Note 1 to the Institute's basic consolidated financial statements. Federal awards received directly from federal agencies, as well as federal awards passed through from other governmental agencies, are included on the SEFA.

Expenditures are calculated as required by the Uniform Guidance or the applicable program and do not constitute actual program disbursements.

Basis of Accounting:

The Institute uses the accrual basis of accounting for each federal program, consistent with the consolidated financial statements.

The amounts reported as federal expenditures generally were obtained from the appropriate federal financial reports for the applicable programs and periods. The amounts reported in these federal financial reports are prepared from records maintained for each program, which are periodically reconciled with the Institute's financial reporting system.

Indirect Costs:

The Institute has elected not to use the 10% de minimis indirect cost rate as allowed under the Uniform Guidance. Rather, the Institute applies an indirect cost rate as permitted by the grant agreements.

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INDEPENDENT AUDITORS' REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

The Board of Directors
Masonic Medical Research Laboratory,
dba Masonic Medical Research Institute

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of Masonic Medical Research Laboratory, dba Masonic Medical Research Institute (the Institute), which comprise the balance sheet as of December 31, 2022, and the related statements of activities, functional expenses, and cash flows, for the year then ended, and the related notes to the financial statements and have issued our report thereon dated March 29, 2023.

Report on Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the Institute's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. Accordingly, we do not express an opinion on the effectiveness of the Institute's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

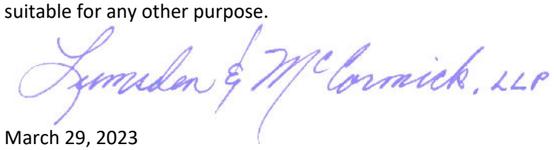
Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses or significant deficiencies may exist that have not been identified.

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Institute's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Institute's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Institute's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.



March 29, 2023

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INDEPENDENT AUDITORS' REPORT ON COMPLIANCE FOR EACH MAJOR FEDERAL PROGRAM AND ON INTERNAL CONTROL OVER COMPLIANCE REQUIRED BY THE UNIFORM GUIDANCE

The Board of Directors
Masonic Medical Research Laboratory,
dba Masonic Medical Research Institute

Report on Compliance for Each Major Federal Program

Opinion on Each Major Federal Program

We have audited the compliance of Masonic Medical Research Laboratory, dba Masonic Medical Research Institute (the Institute) with the types of compliance requirements described in the OMB *Compliance Supplement* that could have a direct and material effect on each of the Institute's major federal programs for the year ended December 31, 2022. The Institute's major federal programs are identified in the summary of auditors' results section of the accompanying schedule of findings and questioned costs.

In our opinion, the Institute complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended December 31, 2022.

Basis for Opinion on Each Major Federal Program

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America (GAAS); the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States (*Government Auditing Standards*); and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Our responsibilities under those standards and the Uniform Guidance are further described in the Auditors' Responsibilities for the Audit of Compliance section of our report.

We are required to be independent of the Institute and to meet our other ethical responsibilities, in accordance with relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on compliance for each major federal program. Our audit does not provide a legal determination of the Institute's compliance with the compliance requirements referred to above.

Responsibilities of Management for Compliance

Management is responsible for compliance with the requirements referred to above and for the design, implementation, and maintenance of effective internal control over compliance with the requirements of laws, statutes, regulations, rules and provisions of contracts or grant agreements applicable to the Institute's federal programs.

Auditors' Responsibilities for the Audit of Compliance

Our objectives are to obtain reasonable assurance about whether material noncompliance with the compliance requirements referred to above occurred, whether due to fraud or error, and express an opinion on the Institute's compliance based on our audit. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS, *Government Auditing Standards*, and the Uniform Guidance will always detect material noncompliance when it exists. The risk of not detecting material noncompliance resulting from fraud is higher than for that resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Noncompliance with the compliance requirements referred to above is considered material, if there is a substantial likelihood that, individually or in the aggregate, it would influence the judgment made by a reasonable user of the report on compliance about the Institute's compliance with the requirements of each major federal program as a whole.

In performing an audit in accordance with GAAS, *Government Auditing Standards*, and the Uniform Guidance, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material noncompliance, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the Institute's compliance with the compliance requirements referred to above and performing such other procedures as we considered necessary in the circumstances.
- Obtain an understanding of the Institute's internal control over compliance relevant to the audit in order to design audit procedures that are appropriate in the circumstances and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control over compliance. Accordingly, no such opinion is expressed.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and any significant deficiencies and material weaknesses in internal control over compliance that we identified during the audit.

Report on Internal Control Over Compliance

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A material weakness in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A significant deficiency in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the Auditors' Responsibilities for the Audit of Compliance section above and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies in internal control over compliance. Given these limitations, during our audit we did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses, as defined above. However, material weaknesses or significant deficiencies in internal control over compliance may exist that were not identified.

Our audit was not designed for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, no such opinion is expressed.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Lyman & McCormick, LLP

March 29, 2023

MASONIC MEDICAL RESEARCH INSTITUTE

Schedule of Findings and Questioned Costs

For the year ended December 31, 2022

Section I. Summary of Auditors' Results

Financial Statements

Type of auditors' report issued:	*Unmodified*
Internal control over financial reporting:	
• Material weakness(es) identified?	No
• Significant deficiency(ies) identified?	None reported
Noncompliance material to financial statements noted?	No

Federal Awards

Internal control over major programs:	
• Material weakness(es) identified?	No
• Significant deficiency(ies) identified?	None reported
Type of auditors' report issued on compliance for major programs:	*Unmodified*
Any audit findings disclosed that are required to be reported in accordance with 2 CFR 200.516(a)?	No

Identification of major programs:

Name of Federal Program or Cluster	Amount
Research and Development Cluster	$ 1,708,279

Dollar threshold used to distinguish between type A and type B programs:	$750,000
Auditee qualified as low-risk auditee?	Yes

Section II. Financial Statement Findings

No findings were reported.

Section III. Federal Award Findings and Questioned Costs

No findings were reported.

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