FALL 2019

CURRENTS

Grand Lodge of New York

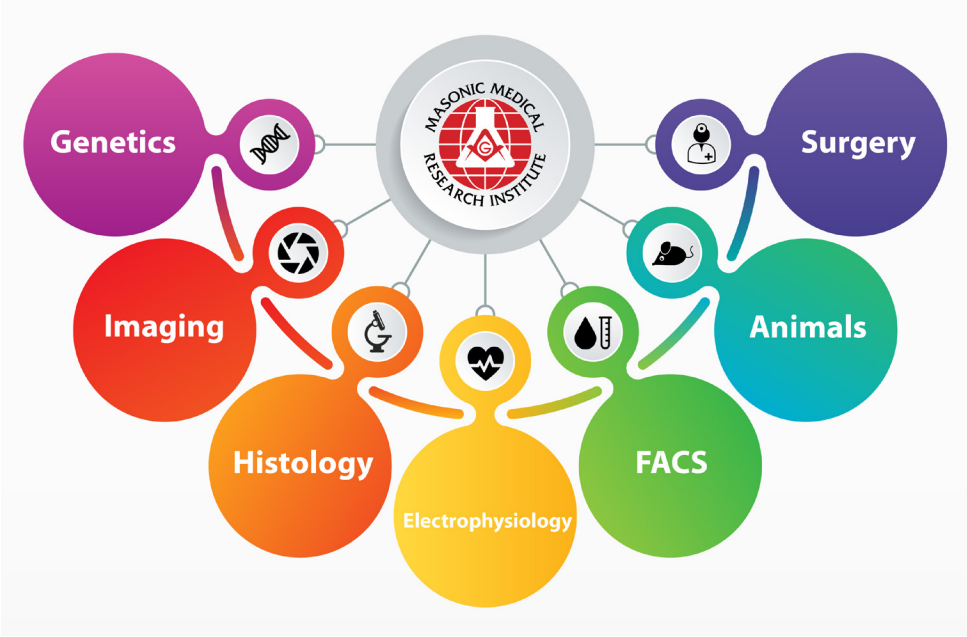
A publication of the Masonic Medical Research Institute

IN THIS EDITION

MMRI Explores Its Core Facilities

Medical research primarily requires two things: qualified scientists and state of the art facilities. Here at MMRI, we have both. In addition to the various scientific research disciplines, and in an effort to facilitate the success of scientists' research endeavors, MMRI has seven core facilities; genetics, imaging, histology, electrophysiology, FACS (Fluorescence-activated cell sorting), animals, and surgery. Through recent renovations and expansion, MMRI research facilities are among the most sophisticated and advanced in the Central New York State area. The diverse range of core facilities allows MMRI to expand beyond the normal research expected from a small institution. All labs are fee for service to all in house faculty, as well as to neighboring researchers and institutions.

"To conduct state of the art research, we need state of the art technologies at our fingertips in order to pursue our efforts to cure and treat diseases" said Maria Kontaridis, Director of Research at MMRI."



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Genetics

The genetics core at MMRI aims to understand and identify the mutations that cause diseases. The state of the art equipment that makes up the lab allows scientists to study and investigate DNA and RNA sequences. By looking at the specific genetic makeup of a patient, our faculty can better locate and make a more accurate and specialized diagnosis on why a disease occurs. Researchers can identify known and novel genetic mutations in a particular area, making it possible to create gene-specific therapies and cures for the diseases in question.

Imaging

The imaging core uses advanced technology to non-invasively analyze disease and target areas in small genetically modified animals. The equipment can process 2D and 3D optical images, x-ray, and ultrasound images. This technology allows researchers to track their diseases linearly with fluorescent and bioluminescent reporters. A linear approach to research encourages the study and progression of a disease over time. Therefore, scientists can identify where the disease begins, how it grows, whether or not it spreads within the body, and when or how fast it does so. By capturing a high resolution ultrasound or x-ray image, it enhances the clarity and accuracy in which the image can be studied.

Histology

Histology is the study of the microscopic structure of tissues. The histology core provides the highest quality specimen for data collection and analysis. The technologies in the lab allow the processes of sectioning tissue, fluorescent staining, paraffin and cryosectioning. By gaining access to the microscopic data of diseased tissue, scientists can get to the root of the problem. Instead of focusing on the broad scope of the disease, histology centers in on the internal, possibly missed information, found in the smallest parts of organ and body tissue.

Electrophysiology

The electrophysiology core allows scientists to study the electrical activity of the heart, which pertains to the flow of ion currents, including sodium, calcium, and potassium. Electrophysiology tests change in these currents and within the channels of the heart. Disruptions to these levels within a cell can cause heart rate changes, arrhythmias, and heart attacks. By tracking these changes, researchers can evaluate how to maintain, reduce, or reverse the fluctuations in ions and limit their adverse effects.

FACS

FACS, which stands for Fluorescent-activated cell sorting, is a form of cell sorting of cell groups. It enables researchers to identify, isolate, and track cells as they change in relation to disease, development, drug treatment, or other factors. With a plethora of cells and cell types, FACS allows scientists to label and sort cells by assigning them different colored dyes. A mixture of cells enters the machine, which processes and divides the cells into their equivalent color categories, generating a pure population of cells that maximizes accuracy of data acquistion.

Animals

The small animal full-barrier core facility houses genetically modified mice and rats that replicate human disease models. The purpose of this core is to identify how diseases occur and how they function *in vivo* (inside a living organism). Animal research is critical to advancing efforts to understanding diseases and finding cures to resolve human disease.

Surgery

The surgery core enables MMRI to conduct expert surgeries that reproduce and treat human disease, including heart attacks, arrhythmias, and high blood pressure. By creating conditions that reproduce human disease in genetically modified mice, scientists can control and study how these processes happen, what effects they have, and what new drug therapies can be used to combat, cure, or treat disease.

These recently renovated and

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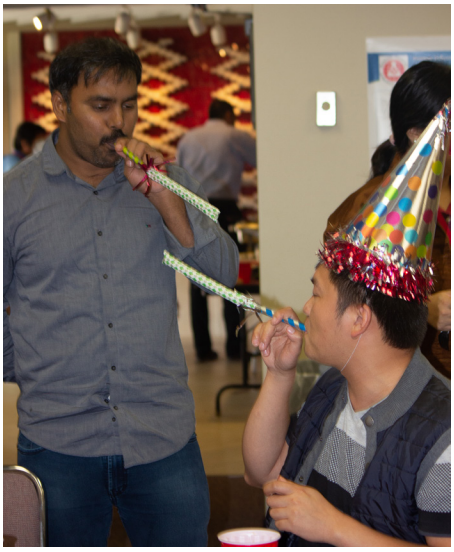
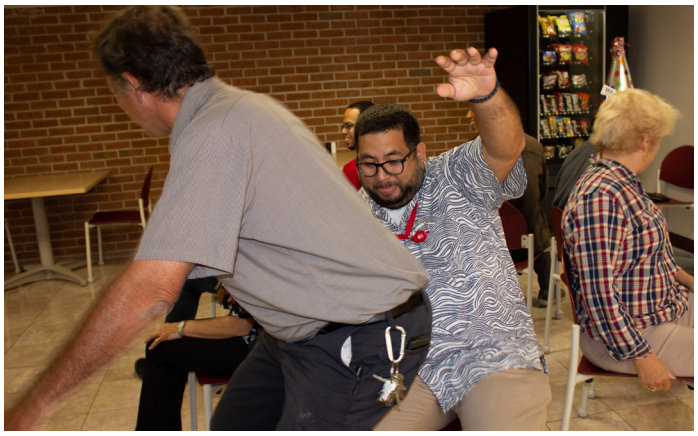
expanded core facilities illustrate how rapidly MMRI has grown. For the future, the Institute also seeks to develop a bioengineering core that will expand our research team with a biostatistician and bioengineer. A biotech lab would make it possible to use 3D modeling to build organs and tissues for academic research or, some day, replacement surgery. These technological advancements made possible with a high-tech biomedical 3D printing system, marks the future of scientific research and MMRI hopes to be at the forefront of this new age.

Taking a Break with MMRI's 1st Annual Picnic

On September 11th, our staff took a break from their labs and offices to enjoy the first annual MMRI staff picnic. The picnic was catered by Boneyard BBQ in Utica, and was accompanied by MMRI Family Feud, a comedic roast, and other outdoor games. "The picnic was a great time to catch-up and show appreciation for the talented staff, and I look forward to making this an annual event at MMRI" said Maria Kontaridis, Director of Research.

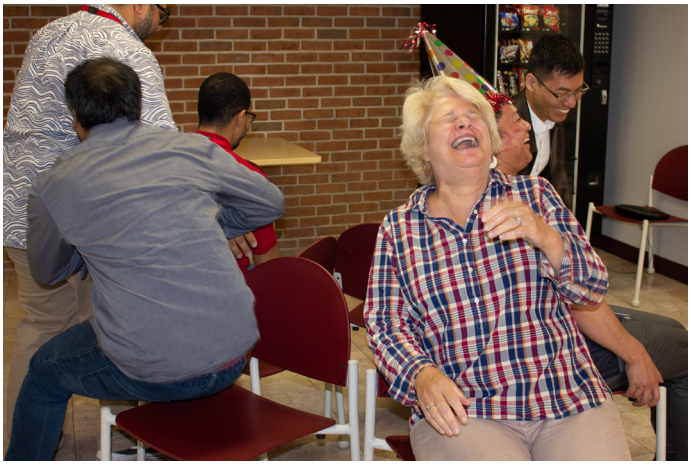


Bose Rajendran, Ph.D., and Khanh Ha, Ph.D., Postdoctoral Fellows, were the life of the party.



MMRI staff gets cozy with the classical game of musical chairs.

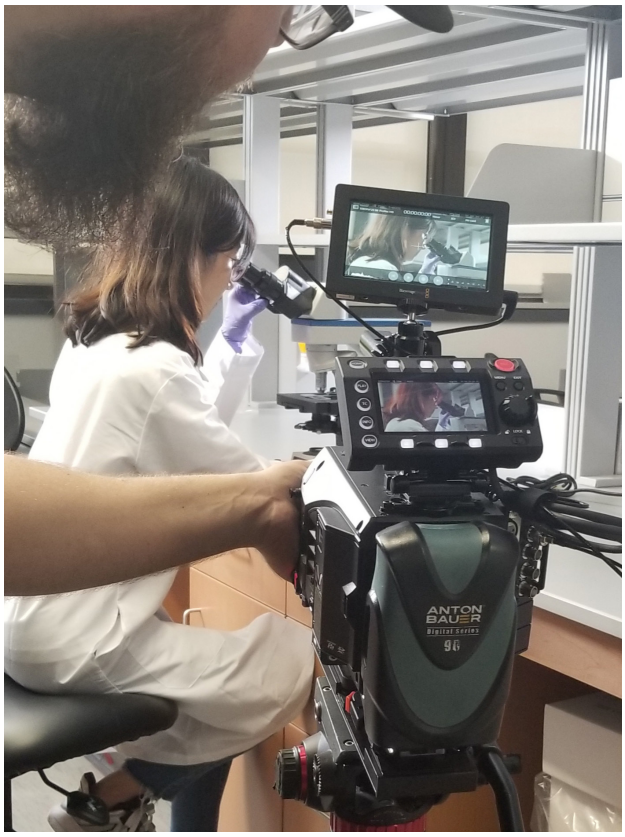
Maria Kontaridis, Ph.D., MMRI Director of Research, let loose with an amusing game of telephone.



MMRI staff gets cozy with the classical game of musical chairs.

Steven Negron, Research Technician, and Nermin Dizdarevic, IT Assistant, got competitive with a game of ladder ball.

Masonic Medical Research Institute's New Feature Video



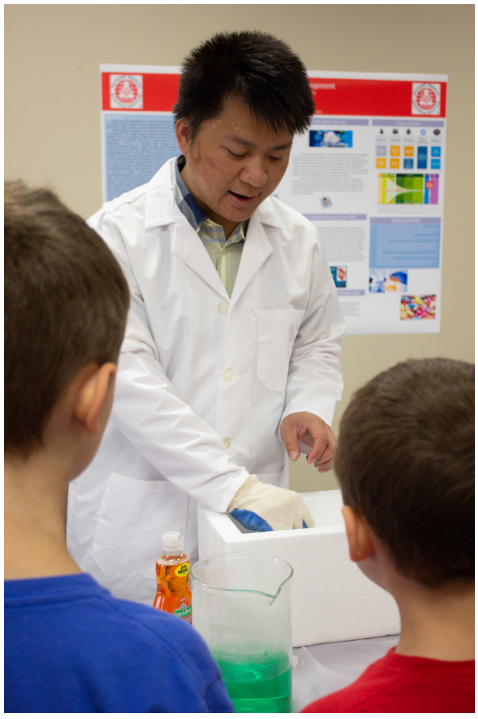
Mohawk Valley Pictures captured b-roll of MMRI labs for the new feature video.

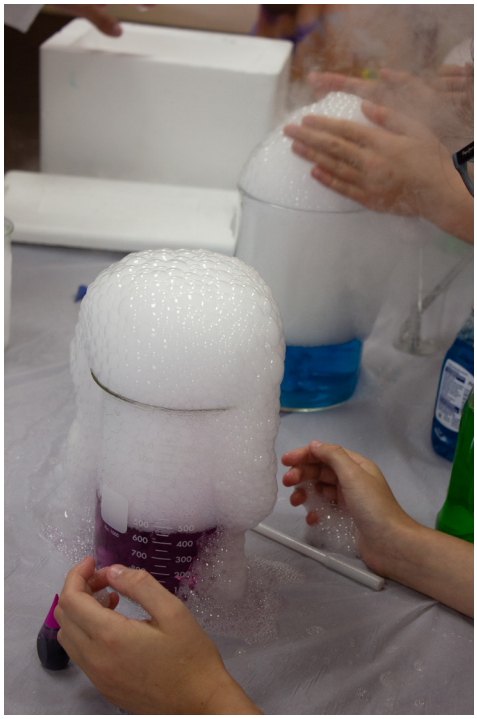
MMRI teamed up with Mohawk Valley Pictures this summer to begin filming a new development video focusing on the Institute, its mission, and more importantly, the research. The video showcases the newly renovated facility and state of the art equipment, while highlighting researchers and their work, and the vision of our Board and Director of Research. Along with the full length video, several short "sizzle" videos will focus in on a particular area of research. We look forward to this opportunity to expand the outreach, awareness, and vision of MMRI in an exciting and timeless way.

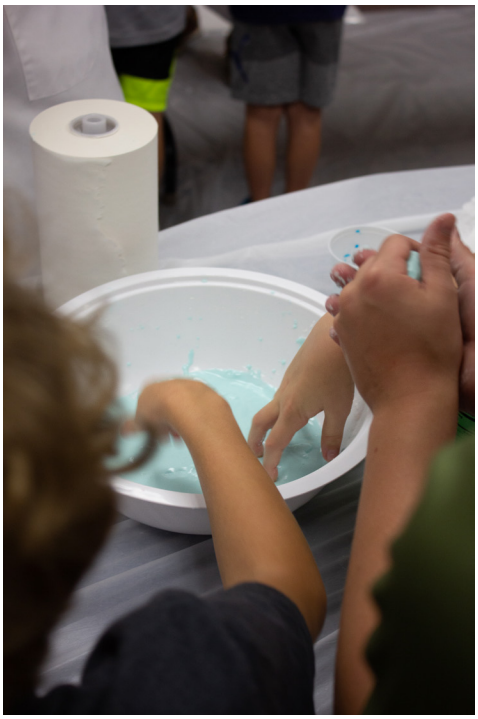
Check out our website (www.mmri.edu) or the MMRI Facebook page for the full video, coming soon!

Teaching the Next Generation

In July, the Masonic Care Community's Childcare Summer Program visited our facility for an educational, hands-on science fun day! The children got to experience and learn about science in an engaging and quite colorful way. They participated in making their own slime, playing with oobleck (a substance that is liquid when being poured, but solid when acted on with force) and experimenting with dry ice bubbles.







Masonic Medical Research Institute Postdoctoral fellow, Khanh Ha teaches the Masonic Care Community's Childcare Summer Program kids some hands-on science.

MMRI Invests in Planned Giving Development

Masonic Medical Research Institute (MMRI) welcomes with great excitement, David Stiles, the new Senior Director of Major and Principal Gifts. David joins MMRI from the University of Oxford where he served as Associate Vice President of Development and Director of Planned Giving. David joined MMRI in July, where he is reaching out to members within the Masonic community, as well as non-masons, who may be interested in supporting the cutting-edge medical research taking place at MMRI.

For the past 10 years, David worked for the University of Oxford North American Office in New York. Originally hired as Director of Planned Giving, he worked closely with the University's 38 colleges in developing and leading the Planned Giving program and its promotion of gifts via bequests, trusts, retirement assets, real estate, personal property and more. As Associate Vice President of Development, he worked extensively with the University's Mathematical, Physical and Life Science Division, and its 10 departments including chemistry, physics, biological science, mathematics, earth science and more.

David grew up on Long Island and graduated with a Bachelor's Degree in History from Stony Brook University. Later, he went on to receive a Master's in Public Administration (MPA), with a focus on healthcare, from Long Island University.

After graduating, he worked as Regulatory Compliance Manager for a managed care organization affiliated with a Brooklyn hospital. After several years, he moved into healthcare fundraising, working at Beth Israel Medical Center and later, the New York Eye and Ear Infirmary in Manhattan. In 2004, he entered the world of higher education fundraising serving as Associate Director of Planned and Major Gifts at Columbia University's Teachers College.

David continues to reside on Long Island and will focus much of his attention on the Masonic communities in New York City, Long Island and the surrounding downstate areas. Though based on the Island, he looks forward to making regular visits to MMRI for meetings and coordination with scientific and administrative staff.

After a decade of promoting Oxford science, David was eager to focus his fundraising efforts on worthwhile US based initiatives. MMRI's mission to improve the health and quality of life for all humankind, along with its commitment to expand its world class research in heart disease, lupus, autism, diabetes and more, under the direction of leading scientists was very appealing to David.

While our 60 years of research into heart disease is well known within the Masonic community, David is eager to reach out to both our membership and the wider, non-Mason audience, in describing the cutting-edge research taking place at MMRI.

David Stiles, Senior Director of Major and Principle Gifts

Lodge Presentations

Does your lodge have a program every meeting? Masonic Medical Research Institute can help!

We have all been to lodge, chapter and council meetings that have left us wanting more discussion, information and time with our Brothers and Sisters. Our meetings are meant to be more than just a time to read the minutes and vote to pay the bills.

MMRI's development team members, Bro. Alex Simon and Bro. Anthony Cucci have been traveling around the state giving informational presentations about the cutting-edge research being done at MMRI.

If you are interested in having MMRI visit your next meeting, please reach out to Bro. Anthony Cucci.

acucci@mmri.edu

315.624.7492

JOIN MMRI

CORNERSTONE SOCIETY WITH A DEFERRED GIFT

Charitable Bequests: Retain control, leave lasting impact

In your will or other estate plans, you can name MMRI as the beneficiary of a portion of your estate, or of particular assets in your estate. Many of the most powerful gifts with an enduring impact have been bequests, including Brother Duff M. Neely whose bequest help transform the second and third-floor laboratory spaces.

Life Insurance: Designate MMRI as a beneficiary

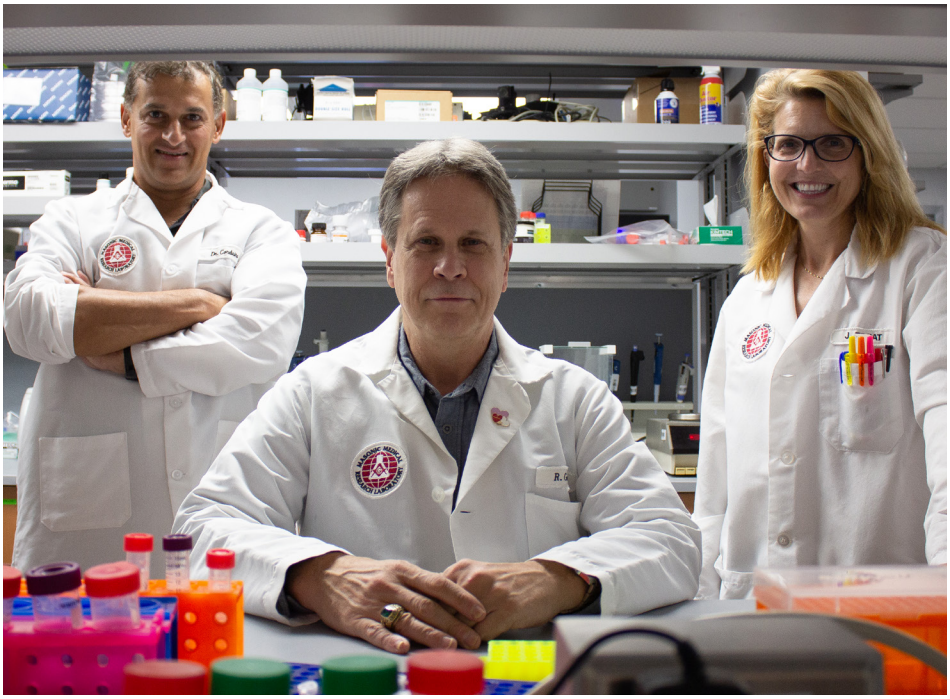
You may consider giving a paid-up policy to MMRI by transferring the ownership of your policy and receive a charitable income tax deduction equal to the policy's cost basis.

Not-For-Profit Corporation
Tax Exempt Under 501(C)(3) of the IRS Code Federal Tax ID 13-5648611
New York State Charities Registration Number 037227
Florida State Charities Registration Number CH36722

For more information contact: David Stiles, Senior Director of Major & Principal Gifts
dstiles@mmri.edu

Cordeiro Lab Publishes Article in Biochemical Pharmacology

Scientists from the Masonic Medical Research Institute (MMRI), in collaboration with Nanion Technologies, recently published a study in Biochemical Pharmacology that addressed the deficiencies in potassium (K+) currents in human induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs). "HiPSCs have transformed medical research; it is a tool that can provide treatment strategies through precise analysis of the genetic makeup of a patient's disease" said Dr. Jon Cordeiro, Research Scientist at the MMRI. The article is now available online in Biomedical Pharmacology.



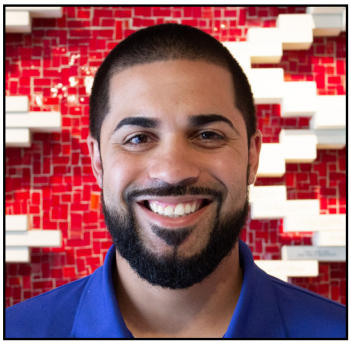
Members of the Cordeiro Lab (from left to right) Jon Cordeiro, Ph.D., Robert Goodrow and Jacqueline Treat celebrates the success of using Stem Cell Technology to uncover the cause of human disease

HiPSCs are stem cells derived from human skin or blood that can be transformed into different cell types such as cardiomyocytes, the muscle cells of the heart. These hiPSC-CMs can then be used for several applications, including safety pharmacology. "However, while potentially useful in many aspects of research, hiPSC-CMs do not fully develop into mature adult heart cells, and they are deficient in several important K+ currents," said first author Jacqueline Treat. "Deficiencies in K+ currents suggest that the repolarization reserve in the cells is low, limiting their ability to beat normally and potentially leading to the development of cardiac arrhythmias, or irregular heartbeats," added co-author Robert Goodrow. In this study, MMRI scientists determined whether stimulation of hiPSC-CMs with an activator of two different types of K+ channels, namely the transient outward K+ current (Ito) and the rapid delayed rectifier K+ current (IKr), could improve the repolarization reserve and generate more functionally mature heart cells. The experiments focused on the field of science known as electrophysiology, the study of electrical properties of biological cells and tissues.

The findings suggest that the activator compound only enhances the IKr current, but not the Ito, in hiPSC-CMs. Nonetheless, IKr enhancement alone improves the repolarization reserve in hiPSC-CMs and more fully differentiates the heart cells. In addition, their findings also made a serendipitous discovery that in hiPSC-CMs - only one K+ channel is induced by the dual activator; the same activator drives activation of both channels in mature heart cells. This data indicates that conclusions on pharmacological effects between hiPSC-CMs and mature adult heart cells need to first be vetted.

This and other groundbreaking research at MMRI continues to expand, both in terms of its capabilities as well as its scientific and technological advancements. "Our research continues to push the field of cardiology and it remains at the forefront of scientific discovery. We are proud of the work, and importantly, our investigators, who work hard every day to make a difference and save people's lives" said Maria Kontaridis, the Gordon K. Moe Professor and Chair of Biomedical Research and Translational Medicine and MMRI's Director of Research.

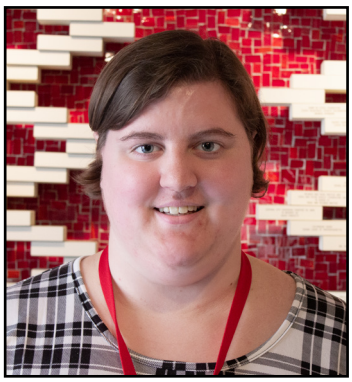
Masonic Medical Research Institute Welcomes New Staff



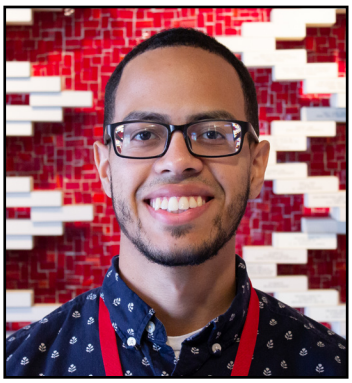
Edgardo Colon
Maintenance Technician

MMRI welcomed Edgardo Colon in July, as the new Maintenance Technician. At MMRI, Ed works to ensure that the building is running safely and effectively inside and out, and that all systems are corresponding correctly. Ed is excited to be working at MMRI to gain experience and knowledge in an ever growing field. He looks forward to being a part of the expansion and growth of MMRI, by helping with renovations and daily new improvements.

Christina Poplaski
Receptionist



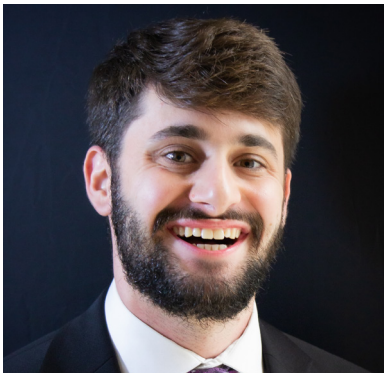
Christina Poplaski joined MMRI as the new Receptionist in July. Christina is the first face visitors see, and is responsible for managing the phone, processing packages, distributing mail, and maintaining office supplies inventory. Previously, she worked at Utica College as an Administrative Assistant II for the Nursing and Physical Therapy programs. With her passion for nonprofit organizations and interest in accounting, Christina is and continues to be a valuable asset to the MMRI team. This fall, Christina started taking online college courses for accounting.



Steven Negron
Research Technician

Steven Negron joined MMRI as a Research Technician in August. He works with Dr. Zhiqiang Lin managing mouse colonies, performing basic molecular biology procedures and maintaining different types of cell cultures. Steven graduated from Medaille College with a BS in Biology and has lived in Utica for most of his life. MMRI stood out to Steven because of his interest in biology research and the chance to gain experience from a team of distinguished individuals. Working with Dr. Lin on his obesity studies has been an educational and interesting experience thus far, and Steven looks forward to continuing his research towards discovering and creating effective ways to combat disease.

Expanding of the Development Team



Anthony Cucci, Assistant Director of Development

The new Assistant Director of Development, Anthony Cucci, has hit-the-ground running since starting in June. Anthony is the first to hold this position where he assists the Director of Development, Alex Simon, with fundraising and philanthropic endeavors. Cucci works to spread the MMRI mission by visiting Masonic lodges and attending events, where he shares the vision of the Institute. MMRI was founded by Freemasons, and the fraternity involvement is an important and unique aspect of the Institute. Anthony, who has extensive experience with Masonry, has been a valuable asset to approaching this unique side of MMRI's foundation.

At the age of 18, Anthony joined the Mohawk Valley Chapter of

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DeMolay, an international fraternal youth group. After one meeting, Anthony hit the ground running; "I went to a meeting and I loved it, I mean I loved it, it was amazing" said Anthony. He served as Master Counselor, which is equivalent to a chapter president, and as the State Senior Counselor. In recognition of his outstanding commitment he received the Degree of Chevalier, the highest honor an active DeMolay can achieve. Anthony is currently a member of the Oriental Faxton Lodge #224 in Utica, and a noble of the Ziyara Shrine.

Anthony began his professional career at Saratoga Center for Rehab and Skilled Nursing Care, where he served as the Director of Customer Service and Grievance Compliance Officer. He later moved to the Turning Stone Resort Casino working as concierge of the lodge. Before coming to MMRI, Anthony was the Guest Services Manager at DoubleTree by Hilton Hotel Utica.

As a lifelong Utica resident, he graduated from Whitesboro High School and from Mohawk Valley Community College (MVCC) with an Associates in General Studies and Liberal Arts. While at MVCC, Anthony also studied sign language interpretation. He graduated with a Bachelors in Business Administration in Hotel/Resort Hospitality Management from SUNY Delhi in 2016. As a student, he was a member of the Tri-Atelier Fraternity, served as President of Student Senate, and as a voting member of the College Council and a President Search Committee. Anthony continues to support his alma mater by acting as the Alumnus Director of the College Association at Delhi (CADI).

While at MMRI Anthony hopes to bring the message of MMRI to all masons across the country, and the world. "I believe that the work being done here truly embodies the Masonic principles and teachings" Anthony said. With his knowledge of Masonry and its correlation to the position at MMRI, Anthony has been able to and continues to help establish and enhance Masonic relations both regionally and nationally.

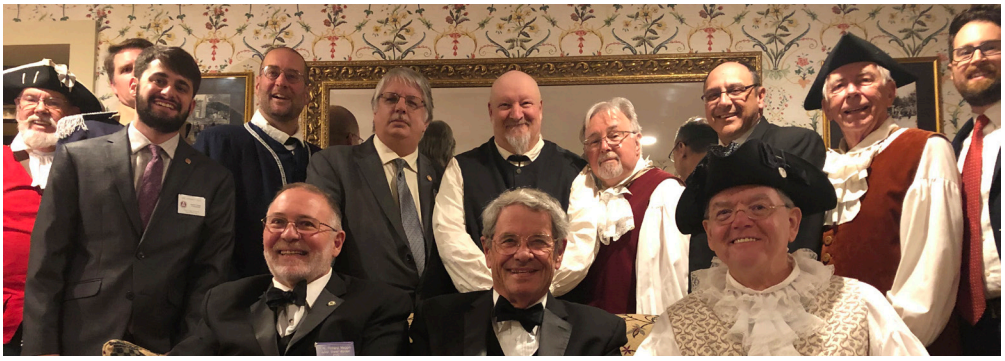
MMRI on the Road

In September of this year, Development team members Anthony Cucci and Alex Simon traveled to the Grand Lodge of Masons in Massachusetts, and the Grand Lodge of the District of Columbia. The purpose of the visits was to thank both jurisdictions for their support of MMRI and for us to explore possible partnerships and funding opportunities for the research conducted by MMRI faculty.

"We are so grateful for these jurisdictions supporting MMRI. We are an international charity of Freemasons around the world. I look forward to strengthening these partnerships and reaching out to more Masonic organizations across this country," said Anthony Cucci, Assistant Director of Development at MMRI.

Anthony and Alex will be attending the Conference of Grand Masters of North America this February in Louisville, KY and hope to continue growing the giving participation of Masonic organizations.

(Above: Left to Right) Bro. Alex Simon, Director of Development; R.·.W.·. Michael D. Nicholas, Sr., Deputy Grand Master of DC; Bro. Anthony Cucci, Assistant Director of Development



(Above) Bro. Alex Simon, Director of Development and Bro. Anthony Cucci, Assistant Director of Development met with the Grand Line of the Grand Lodge of Massachusetts and Colonial Craftsmen's Club

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