



An  
**OVERVIEW...**  
*MMRL's Far-Reaching Influence*



## MISSION STATEMENT

The Masonic Medical Research Laboratory is a not-for-profit institute dedicated to improving the health and quality of life for all. The Laboratory's primary mission is to conduct high quality basic and clinical research aimed at generating knowledge and information necessary for development of the medical cures and treatments of tomorrow. The Laboratory is also committed to providing education and training to basic scientists, clinical researchers and students who will perpetuate and extend the fight against disease.

## VISION STATEMENT

To be regarded as a world leader in medical research, dedicated to generating the knowledge necessary to develop innovative solutions to medical challenges facing society and providing a creative environment for the education and training of the innovators of tomorrow.



# THE IMPORTANCE OF MEDICAL RESEARCH IS RELEVANT TO EVERY HUMAN BEING...

The Masonic Medical Research Laboratory (MMRL) is one of the finest biomedical research centers in the world. As you review the enclosed literature, I hope that you will gain further appreciation for not only our scientific accomplishments but for the men and women who dedicate their lives to the fight against heart disease.

The MMRL is international in scope and benefit. Its significance goes beyond state, national or international borders. Truth be told, medical research saves lives and few missions have such global impact on the improvement of our human condition. Biomedical research is a key force for change in the world today, with important economic and social implications that will affect our children, grandchildren and future generations.

You may be particularly interested to know that for its size, there is no other laboratory whose cutting edge research is as productive and influential in the field of experimental cardiology. Today, the MMRL is rapidly becoming an international center for genetic screening of cardiac diseases, especially those involving cardiac arrhythmias. The MMRL is also leading the way in the development of innovative and effective pharmacologic treatment for Atrial Fibrillation, one of the greatest unmet medical needs in our society today.

As we prepare to celebrate our upcoming Golden Anniversary of service to humanity as a leading research institution, we are embarking on our *Campaign for Discovery*. The *Campaign* is about our hopes and dreams for the future and how we can bring them to fruition. It is about thousands, perhaps millions, of individuals afflicted with some form of heart disease who cling to the hope that a laboratory, like ours, can make a discovery that will lead to a treatment or cure to improve their quality of life. There has never been a better time to support and invest in medical research. We are on the threshold of a new era of discoveries that will change the face of medicine as we know it.

The Board of Directors, staff and I invite you to invest in our *Campaign for Discovery* and share in our dream for a better tomorrow.

*Through your thoughtful generosity and commitment, the promise and power of medical research will continue to provide hope and benefit to everyone.*



David F. Schneeweiss  
*President, Board of Directors*

**MASONIC MEDICAL RESEARCH LABORATORY**



## RESEARCH FOCUS

The Masonic Medical Research Laboratory (MMRL) has been committed to basic medical research aimed at finding solutions to diverse medical problems facing our society. Basic research is focused on fundamental mechanisms of cell function needed to sustain life in any living system. Unlike basic investigations, clinical research is patient-oriented, conducted on human subjects or on

*This knowledge is ushering in a new era that will change the face of medicine as we know it today.*

material of human origin such as blood or tissues in which the investigator interacts with human patients. This area of research delves more directly into mechanisms of human disease with a focus on the development of therapeutic interventions. With the recent introduction of a Molecular Genetics program, the MMRL is now integrally involved in clinical research specifically designed to identify the genetic basis for human disease responsible for abnormal rhythms of the heart, including Ventricular Tachycardia and Fibrillation, which can lead to sudden cardiac death, as well as Atrial Fibrillation, which can reduce quality of life and dramatically increase the risk of stroke.

Genetic and genomic research is quickly transitioning us from a society in which treatment is empiric to one in which therapy is based on the specific cause of the disease, tailored to the individual patient. This knowledge is ushering in a new era that will change the face of medicine as we know it today. It has been three decades since scientists first harnessed the power of DNA by placing it into bacteria to direct the production of human insulin and growth hormone. In the late 1980's, we witnessed



the identification of the structures of genes, which permitted for the first time the delineation of the genetic basis for inherited diseases. By the start of the 1990's, genes that increase the risk for breast and colon cancer were identified. In 1998, MMRL scientists in collaboration with investigators nationwide identified for the first time a gene responsible for sudden cardiac death due to Ventricular Fibrillation.

The turn of the century witnessed the crowning achievement of decades of painstaking work with the completion of the Human Genome Project, which identified every gene in the human body. This milestone shifted the spotlight from genetics to genomics, the study of the human genome represented by the entire set of human genes. Genomic analysis is today used to identify the cause of disease as well as to develop better diagnostic tests and treatments. The melding of genomics with drug therapy has given way to pharmacogenomics, a field of study that holds promise for identifying which medication at what dose is best for each individual patient afflicted with a given disease. The use of standard dosing of medications for disease in all individuals will soon be relegated to the footnotes of history, as the gene-directed therapy takes hold with the genetic make-up of an individual dictating the specific approach to treatment.

MMRL research is divided into three disciplines that work closely together: molecular genetics, molecular biology and electrophysiology. Our goal is to correlate basic mechanisms of arrhythmia with signs and symptoms of cardiac disease in patients so as to formulate more precise diagnostic criteria and more specific treatments and cures.



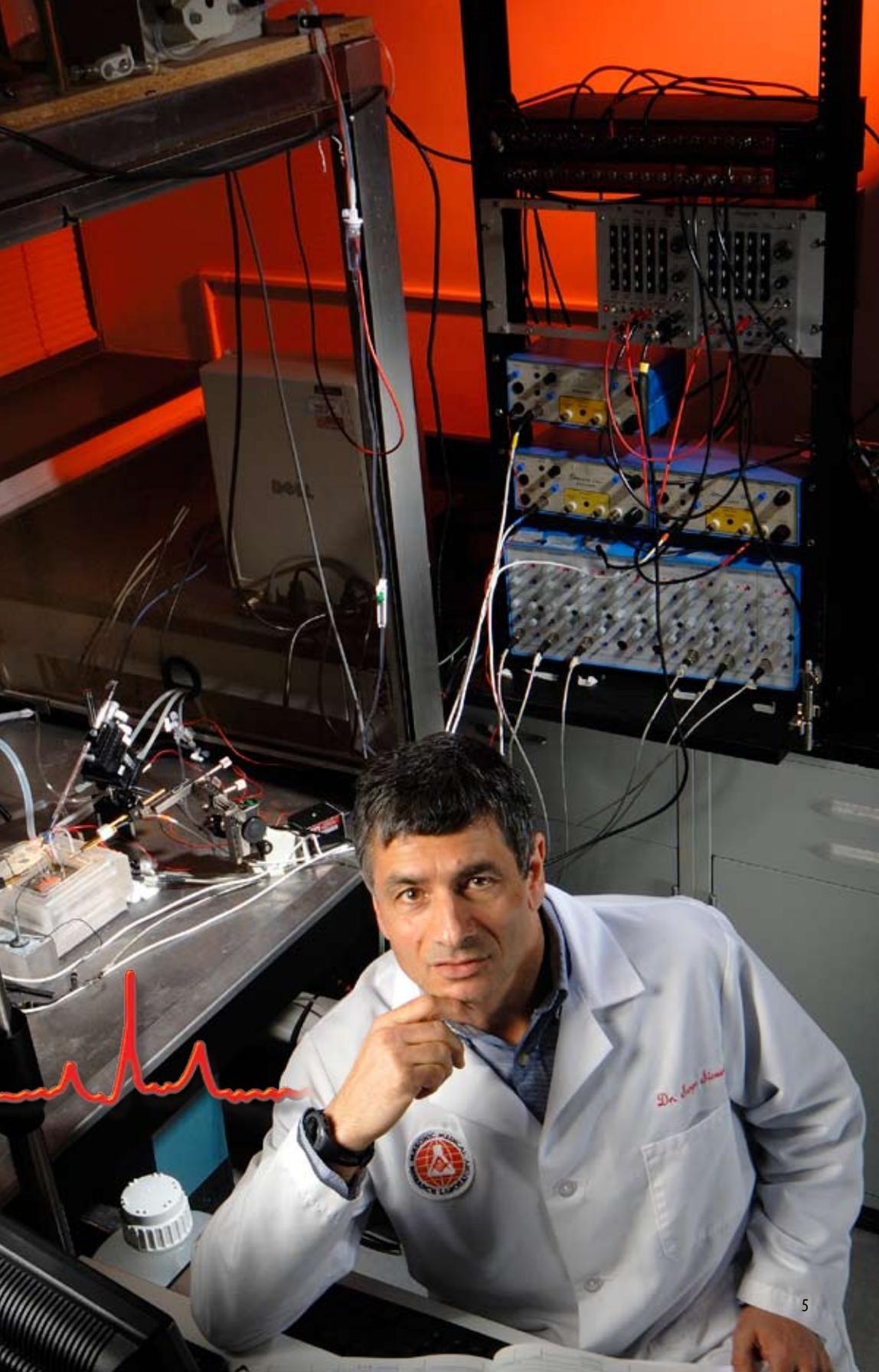
## MMRL SCIENTIFIC ACHIEVEMENTS



- ♥ MMRL scientists have either discovered or unraveled the mechanisms of the majority of known cardiac arrhythmias
- ♥ MMRL research has played an important role in the implementation of devices like the pacemaker, implantable cardioverter defibrillator (ICD), automatic external defibrillator (AED) and ablation therapy
- ♥ MMRL continues to play a major, and in some cases, a pivotal role in the development of heart medications
- ♥ MMRL scientists discovered a new sub-population of heart cells named M cells that have revolutionized our understanding of the function of the heart in health and disease
- ♥ MMRL scientists have uncovered the basis for the J wave and T wave of the ECG, thus providing cardiologists a more accurate means of diagnosing cardiac disease
- ♥ MMRL formed a worldwide consortium of scientists that discovered the first gene responsible for Sudden Cardiac Arrest
- ♥ MMRL scientists have discovered gene defects responsible for the Long QT syndrome and Short QT syndrome which take the lives of many children and young adults in their prime
- ♥ MMRL scientists discovered a treatment for people at high risk for Brugada syndrome
- ♥ MMRL scientists designed and created the first experimental model of Brugada syndrome
- ♥ MMRL scientists were instrumental in providing the first direct evidence linking Sudden Infant Death syndrome (SIDS) to abnormal heart rhythms
- ♥ MMRL scientists discovered a new clinical entity associated with Sudden Cardiac Arrest



*MMRL is committed to basic medical research aimed at finding solutions to diverse medical problems facing our society*



## WHY HEART DISEASE RESEARCH IS OUR PRIORITY



*Please request our brochure on MMRL Research and Scientific Achievements for more detailed information.*

The Masonic Medical Research Laboratory is world renowned for its studies of the electrical activity of the heart, especially as it applies to abnormal heart rhythms known as cardiac arrhythmias. Heart disease continues to be the #1 killer of men and women in the United States and most industrialized countries. In most cases, cardiac arrhythmias claim more lives than any other mechanism of death. For these reasons, the Laboratory has made the study of cardiac arrhythmias its major focus along with sudden cardiac arrest and cardiovascular diseases. MMRL scientists are also addressing one of the greatest unmet needs in our society today, pharmacological treatment of Atrial Fibrillation (AF).

AF is the most common symptomatic abnormal heart rhythm. Over 2.2 million Americans are afflicted with the disease and its incidence is increasing, in part, related to increasing age of the population. The risk of stroke from AF is estimated to be 1.5% for those 50-59 years of age, and approaches an incredible 30% for those 80-89 years of age. In recent years, the MMRL has contributed importantly to identification of the genetic basis for Atrial Fibrillation and the mechanisms responsible for the development of this arrhythmia. MMRL investigators are actively engaged in research to develop a novel pharmacologic approach to the treatment of AF.

*The MMRL has contributed to the identification of the genetic basis for Atrial Fibrillation and the mechanisms responsible for the development of this arrhythmia.*

The MMRL has long been a major player in the development of heart medications that work together with devices such as the pacemaker, implantable cardioverter defibrillator (ICD) and automatic external defibrillator (AED) to prevent sudden death during a heart attack. Our innovative cardiac research and breakthroughs are published in the finest medical journals.



E. Burdick

## SHARING DREAMS FOR TOMORROW

*Among the noble purposes to which the Freemasons have applied their efforts and resources none can be viewed with greater pride than that of the Masonic Medical Research Laboratory.*

### A LOOK BACK AND A LOOK INTO THE FUTURE...

As we celebrate our Golden Anniversary, we wish to share with you where we have been so that you may gain an appreciation for where we want to go over the next 50 years.

Our medical research has spanned the globe bringing relief to those who are afflicted with heart disease. It is a continuation of our legacy that



*The MMRL circa 1958*

began as the Masonic Foundation for Medical Research and Human Welfare in 1947. It was decided that no matter how much money was raised each year, if devoted to treatment, it would be a drop in the bucket. If directed to fundamental research, it conceivably could be instrumental in wiping out a disease and thus make unnecessary major capital expenditures for hospitals and equipment to treat the victims of disease.

From those humble beginnings, the Foundation devoted its financial resources to the defeat of Rheumatic Fever. At that time, Rheumatic Fever killed five times as many children every year as all of the infectious diseases of childhood combined, including Polio! As acrippler of children, no other childhood disease was comparable to Rheumatic Fever.

*Our philosophy then as now remains unchanged; money spent on treatment benefits the patient, money spent on research benefits humanity.*

With the advent of powerful antibiotics, Rheumatic Fever was finally defeated. Encouraged by our success, the Foundation sought a new challenge and decided to build and equip our own medical research facility on the grounds of what is now the Masonic Care Community in Utica, New York. Dedicated in 1958, the Masonic Medical Research Laboratory (MMRL) has flourished into one of the most highly respected cardiology centers in the world.

Many Americans and citizens of the world with heart disease are alive

today due to the application of basic research and more recently clinical findings emanating from the Masonic Medical Research Laboratory, under Dr. Charles Antzelevitch, Executive Director and Director of Research. What we have accomplished is testament to those who had a dream called the MMRL and to those friends of the Laboratory who understood the potential of medical research. Continuity of medical research, then as now, is critically dependent on the available financial resources.

The quality of life that we have come to expect is a direct result of those who supported medical research before us. The torch has passed and it is up to our generation to ensure that this life-saving research continues for the next generation and for those who follow.

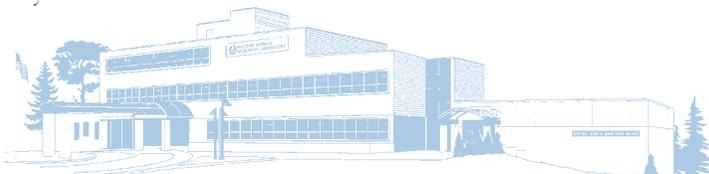
*We invite you to share in our dream  
and join our growing family of friends.*

We have great expectations for the future. Our *Campaign for Discovery* is about hopes and dreams, a better quality of life for us, our children and the generations to come. To achieve these goals, we must begin today to lay the foundation for a better tomorrow. All contributions, regardless of size, help us to continue to delve into the mysteries of life and discover the cures and treatments of tomorrow.

To make a tax-deductible gift to our *Campaign for Discovery*, please call our donation hotline at 1-888-888-6675 or go to [www.mmrl.edu](http://www.mmrl.edu) click on support and make a donation using your credit card (MasterCard or VISA) on our secure website. You may also make a check payable to the Masonic Medical Research Laboratory and mail to 2150 Bleecker Street, Utica, NY 13501. Another way you can help ensure a healthier tomorrow for each of us as well as future generations is by including the Masonic Medical Research Laboratory in your Will. For more detailed information regarding estate planning, planned giving or named gift opportunities, please contact the Development Office and request our brochure entitled, *Ways to Give*.



**Dr. Charles Antzelevitch**  
*Executive Director and  
Director of Research*



## HELPING HUMANKIND THROUGH EDUCATION

The Masonic Medical Research Laboratory is also an educational institution with close ties to Utica College, Upstate Medical University at Syracuse, New York and other medical schools nationwide. The educational programs of the Laboratory include a Summer Fellowship, Undergraduate, Predoctoral and Postdoctoral Research Training Programs.

*Many graduates of these programs have gone on to become eminent scientists and physicians the world over.*



The MMRL is honored to have the support of the business community and local foundations for the Summer Fellowship Program. This program, initiated in 1960, provides an opportunity for undergraduate students of biology, physiology, biochemistry, medicine and other life sciences to participate in research under staff guidance. The ten week program is designed to educate, instill scientific curiosity and guide our youth in making career decisions.

The Undergraduate Program is conducted in association with Utica College. The Predoctoral Research Training Program is administered in affiliation with Upstate Medical University at Syracuse. Students are awarded a Ph.D. degree upon successful completion of their coursework at Upstate Medical University at Syracuse and their research work at the Laboratory.

The Postdoctoral Research Training Program, the most intensive of the three, provides an opportunity for scientists and physicians from all over the world to spend a period of one to several years as postdoctoral research trainees or fellows. Many graduates of these programs have gone on to become eminent scientists and physicians the world over. Over 500 students have been trained at the Laboratory.

## SUMMER FELLOWSHIP PROGRAM

### *Letter of Appreciation*

*I would like to sincerely thank The Max, DeTraglia, Max and Sullivan Donor Advised Fund of The Community Foundation of Herkimer and Oneida Counties for their continued support of the Summer Fellowship Program at the Masonic Medical Research Laboratory.*

*This summer I participated in an ongoing research project in the Molecular Biology lab under the direction of Dr. Alejandra Guerchicoff.*

*Through my experiences, I have gained practice in the techniques of tissue sample preparation, SDS-Polyacrylamide Gel Electrophoresis (SDS-PAGE) and Western Blotting.*

*My experience has extended into the Genetics and Electrophysiology programs as well. I have had the opportunity to observe experiments performed by various researchers and peers. The flexibility of the Summer Fellowship has allowed me to have those experiences, and therefore given me new perspective on the applications and importance of my own work, as well as that of others. I enjoyed being part of a program that is open to students and willing to teach through extended mentorship and hands-on learning.*

*This program taught me how to approach science and learning from a critical perspective. It also taught me to be thorough in my examination of problems and the execution of their solutions. This will serve me well in medical school.*

*Your contribution to the program has provided me the opportunity of being directly involved in the ethical aspects of science and research. I thank you for this opportunity and hope that you continue to support students in this valuable program.*



**Ashwini Nayak**

*The Community Foundation of  
Herkimer and Oneida Counties, Inc.  
2006 Summer Fellow*

## DONOR ACKNOWLEDGEMENT

The important strides of scientific achievements that we have made in the past have improved the quality of life for all humankind, but much remains to be done. The health of Americans and citizens of the world tomorrow depends upon medical research discoveries made today. The success of our mission, and that of similar laboratories throughout the world, is critically dependent on our base of support. The generosity of our friends and colleagues and our success in garnering grants from the National Institutes of Health (NIH) and the American Heart Association (AHA) has contributed immeasurably to the important achievements of our institute.

*We would not be here today if not for the support of caring and charitable individuals.*

Each charitable gift helps to ensure the success of our research, thereby improving the quality of health for future generations. Charitable bequests are pivotal in our ability to move forward in conquering the diseases that afflict humankind.



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RELEVANT TO EVERY HUMAN BEING...



MEDICAL RESEARCH  
SAVES LIVES





*Scientific and medical advances are being realized at the Masonic Medical Research Laboratory thanks to caring individuals and organizations who recognize that only through an investment in medical research can we look forward to a healthier tomorrow.*



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