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IMPACT

YEAR IN REVIEW



2021

ANNUAL REPORT

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FROM THE CEO

This past year we faced ongoing and new challenges with creativity, resilience and resolve.

As COVID-19 numbers fluctuated, MRIGlobal's deep expertise for predicting, preventing and managing infectious diseases continued to impact the pandemic in significant ways.

Building on our success developing mobile laboratory solutions and bio-containment systems, we expanded our portfolios to provide more options for outlying testing, vaccination and quick transport to needed medical intervention.

Our leadership at the National Renewable Energy Laboratory focused on reducing waste and renewing resources, charting a course toward a cleaner, healthier planet.

Our vision to meet the growing demand for human and animal health research services and increased volume in engineering projects manifested in newly renovated, enhanced facilities on our main campus.

Our success in meeting and surpassing plan targets is built on a strong strategic plan designed to better utilize resources and position us for future growth in multiple market opportunities.

These accomplishments were bolstered by generous donor investment in our ongoing capital campaign, now at 75% of goal.

I'm eternally impressed with the MRIGlobal team's ability to lift each other, our partners, and our community. It's through their dedication that we meet our mission to use science and technology to create solutions for a safer, healthier, more sustainable world.

I hope you'll appreciate the many highlights of our work, showcased in this edition of IMPACT.

Thomas M. Sack, Ph.D.

President and Chief Executive Officer

MRIGlobal's emerging infectious disease services span all stages of the product development process, from research to the development of methods, platforms, and molecular and immunological assays. These services provide a turnkey, outsourcing solution for commercial companies and government agencies seeking to accelerate product development into later clinical verification and validation phases.

TESTING PRODUCTS DESIGNED TO COMBAT COVID-19

Leading clients through therapeutic device testing and regulatory approval is part of the many diagnostic services available in MRIGlobal's CLIA* certified lab.

Among the many devices MRIGlobal tested were commercial air purifiers to rapidly deactivate SARS-CoV-2 in the air and UV-C lights designed to sanitize smartphones and other handheld devices. MRIGlobal expertise in stability testing and method validation propelled another client to achieve FDA approval on the first over-the-counter, point-of-care molecular test for COVID-19. This test can be performed at the place of sample collection, providing results in minutes.

IMPACT: Point-of-care molecular testing enables more timely care decisions and greater infection control.

**College of American Pathologists, Clinical Laboratory Improvement Amendments*

PROPELLING COMMERCIAL CLIENTS THROUGH RADx FUNDED PRODUCT DEVELOPMENT

MRIGlobal enjoys long-standing, strong relationships with government agencies like the National Institutes of Health (NIH). These relationships have positioned us as a partner of choice for dozens of companies funded by NIH's Rapid Acceleration of Diagnostics (RADx) initiative.

RADx makes it possible for commercial businesses to scale and bring to market a wide range of point-of-care tests for COVID-19 and other emerging infectious diseases with Emergency Use Authorization. Our lab experts validated technologies ranging from saliva testing and nasal swab devices to rapid polymerase chain reaction (PCR) equipment, increasing the country's capacity to meet broader demand for testing.

MRIGlobal's pharmaceutical science team brings unique solutions from drug discovery to manufacturing. Our innovative ideas solve problems at the forefront of medicine in order to improve the lives of patients.

MRIGlobal is an industry leader in engineering, deploying, and staffing modular, portable laboratories for accurate infectious disease detection, surveillance, and response. For 20 years, MRIGlobal has partnered with the U.S. Department of Defense with mobile laboratory solutions to support global health and environmental detection of pathogens.

INTRODUCING VESTA, NEXT GENERATION MOBILE LAB SOLUTION

Building on its portfolio of mobile laboratory solutions, MRIGlobal introduced its newest model, Vesta.

MRIGlobal engineers custom designed two Vesta units and a sample transit van for the Kansas Department of Health and Environment. The units are enabling the state to bring COVID-19 testing and vaccines to residents living in rural areas far from medical facilities. Vesta is built on a heavy-duty box truck chassis and is capable of running on- or off-grid, with all of the equipment necessary to amplify and detect specific

MOVING HIV-1 VACCINE DEVELOPMENT FORWARD

Human Immunodeficiency Virus (HIV-1) interferes with the body's ability to fight infection and causes AIDS. It remains one of the world's greatest health challenges, with 38 million living with HIV or AIDS globally. Though treatments to slow the progression of HIV-1 have improved, to date no vaccine exists to prevent it.

MRIGlobal's expertise in pharmaceutical science fostered significant contributions to HIV-1 vaccine development. With its proficiency in synthesis of active pharmaceutical ingredients, MRIGlobal's research advanced a novel, investigatory immunogen (cells to stimulate broadly neutralizing antibodies) through development.

MRIGlobal experts manufactured Sulfo-SIAB sodium salt, a compound to connect two components that together will be used as an HIV-1 vaccine immunogen. Under strict Good Manufacturing Practices, MRIGlobal produced materials needed for FDA regulatory filing approval, closing the gap on the day when a vaccine is available.

IMPACT: MRIGlobal's research moves HIV-1 vaccine development forward, combatting a disease that continues to impact the globe.



genetic sequences, such as from a virus, in saliva or blood samples on site. Vesta can be quickly adapted with cold storage for vaccine distribution and allows ample space for multiple technicians to work in a safe laboratory environment. The accompanying transit vehicle features special flooring to allow easy tie down of cargo, racks to store and deliver laboratory cargo, and height to accommodate personnel to stand inside.

When the mission is complete, Vesta can be quickly packed and moved on to the next location.

IMPACT: Vesta reaches people most in need, with limited access to diagnostic testing and vaccine distribution.





INCREASING OPTIONS FOR SAFE TRANSPORT OF HIGHLY CONTAGIOUS PATIENTS

Governments and other institutions have the capability to completely isolate patients with an infectious disease while traveling by air with MRIGlobal's Containerized Bio-Containment System (CBCS). When critically ill patients need to transport, CBCS safely delivers and alleviates contagion spread within the aircraft.

During the early stages of the COVID-19 pandemic, it was apparent that large aircraft would not be as readily available to continue needed mission operations that traditionally use MRIGlobal's CBCS.

To fill that need, MRIGlobal developed a compact version compatible with a variety of smaller aircraft, including the B-757, B-767, and B-777. The more flexible Modified Portable Biocontainment Care Module design allows for transport of two patients and two caregivers. It also opens access to more remote airfields where smaller aircraft can land.

IMPACT: Flexible, smaller bio-containment units provide more options to quickly transport patients to needed medical intervention.



PREPARING WARFIGHTERS WITH ADVANCED AUGMENTED REALITY TRAINING

MRIGlobal is collaborating with JPL CBRN SOF* to expand the use of augmented reality technology for anytime/anywhere device familiarization, operations, and maintenance training for the warfighter.

In a continuing partnership with ForgeFx Simulations, MRIGlobal engineers are developing Microsoft HoloLens training applications for a series of field-deployed CBRN sensors. The technology enables soldiers to experience flexible, self-directed, multi-user, and remote device training with or without (i.e. virtual hologram) access to the CBRN sensors.

IMPACT: Improved technology designed by MRIGlobal engineers helps soldiers more efficiently and proficiently train for operational missions.

**The Joint Project Lead for Chemical, Biological, Radiological, and Nuclear Special Operations Forces*



CLINICAL INSIGHTS WITH WEARABLE SENSOR TECHNOLOGY

Safeguarding the health and readiness of our military is crucial.

In a partnership with the Defense Threat Reduction Agency (DTRA) and JPEO, MRIGlobal engineers designed a scalable data acquisition platform that can be used with a smartwatch to monitor soldiers for early signs of infection. The system was initially rolled out to collect, transmit, process, and visualize data for up to 200 soldiers. Data collected from the sensors are processed through DTRA's predictive health algorithm. Ultimately the technology will allow the military to track infection progression in an outpatient setting around the clock and guide clinical decisions to protect the health and preparedness of our soldiers.

ATHENA SHOWCASED AT HIGH-LEVEL TRAINING EXERCISE

Athena – MRIGlobal's gold-standard mobile laboratory launched in 2020 – continues to impress. The unit, along with our latest sample storage container, was showcased as a guest lab and command center at a military expeditionary biological and chemical analysis exercise in Florida in April. MRIGlobal engineers demonstrated the labs for a contingent of high-level military, national intelligence, and FBI personnel.

IMPACT: MRIGlobal's leadership in creating mobile laboratories sets the standard in the national intelligence and military community.

ENERGY

Since 1977, MRIGlobal has managed and operated the National Renewable Energy Laboratory (NREL) under a contract with the U.S. Department of Energy (DOE). MRIGlobal and Battelle Memorial Institute own and govern the Alliance for Sustainable Energy LLC (Alliance) which holds the current contract to manage NREL.

PARTNERING WITH INDUSTRY, GOVERNMENT AND ACADEMIA

NREL was awarded with a record performance score by DOE, and earned record levels of publications, patent awards, and records of invention while meeting aggressive scientific program goals and milestones. Funding and business volume also rose to record levels, aided by all-time high non-DOE funding. NREL has a cumulative \$1 billion in partnership projects, and nearly 900 active agreements with more than 600 unique partners in industry, government, and academia.

NREL – READY FOR THE FUTURE

One of the three key pillars of NREL's vision for the next decade is developing a circular economy for energy materials. This critical objective focuses on reducing waste and preserving resources through the design and manufacture of materials and products with reuse, recycling, and upcycling in mind from the start.

For example, even renewable energy technologies, such as wind turbine blades and solar panels, do not last forever, and planning for their end of life is an important part of the equation. Most wind turbine blades are currently constructed from thermoset resins, which are difficult to recycle. NREL researchers and partners have developed blades made using thermoplastic resins that are more recyclable, perform better, and are easier to repair.

NREL research to develop and improve an enzyme—originally discovered in bacteria—that more effectively breaks down plastic bottles. This discovery moves scientists closer to solving the problem of an ever-growing amount of discarded plastics that take centuries to biodegrade.

Through NREL research, we are charting a course toward a cleaner, healthier planet.



COMMUNITY

Our effort to nurture future generations of problem solvers through Science, Technology, Engineering, and Math (STEM) disciplines continues to expand. In 1956, MRIGlobal's president, Dr. Charles Kimball, spearheaded a regional effort to create Science Pioneers, Inc., a non-profit organization that supports the annual Greater Kansas City Science and Engineering Fair (GKCSEF). Today, MRIGlobal continues Dr. Kimball's legacy as the presenting sponsor for the GKCSEF, reaching thousands of students over the years.

MRIGlobal has sponsored and coached the Paseo Academy of Fine and Performing Arts FIRST Robotics team since its beginning in 2006, impacting the lives of hundreds of students in Kansas City. At the collegiate and post-graduate level, MRIGlobal has partnered with Kansas City University of Medicine and Bioscience since 2014. Our scientists serve as adjunct professors and provide research opportunities for students in the areas of neurodegenerative and infectious disease, cancer, Zika virus, and bioterrorism.

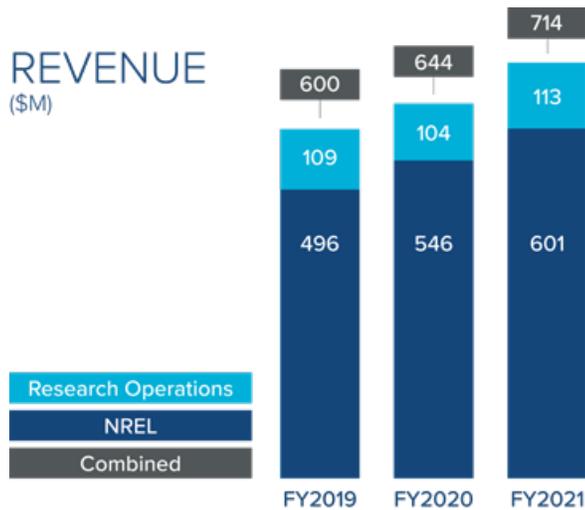
MRIGlobal engages a growing future scientific workforce through network partnerships with KC STEM Alliance, Prep KC, KC Scholars, and Missouri's Show Me Careers program for educators.

Our influence extends far beyond the Kansas City area. Scientists and researchers are frequently invited to speak at colleges across the country, serve on university faculty or mentor STEM students in the U.S. and as far away as Zimbabwe and Liberia, where MRIGlobal is actively engaged in research.

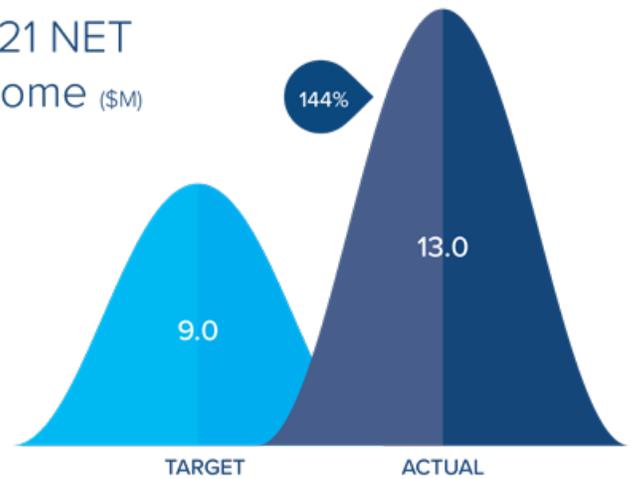
In the Gaithersburg, Maryland community where MRIGlobal has an office and lab, staff are engaged in local and regional science fairs, networking and mentorship activities from Boy Scout troops to graduate-level organizations that inspire and empower women in the field of science.

IMPACT: MRIGlobal is driving STEM education in the community to cultivate the next generation of problem solvers.





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