FY2020
Annual Report

Meeting Military Medicine's Needs

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HJF in FY20

A Message from Joseph Caravalho, Jr., M.D., MG, U.S. Army (Ret.)

When this fiscal year began in October 2019, HJF was focused on advancing military medicine through our continued efforts with partners in the Department of Defense, the National Institutes of Health and other organizations, such as Leonardo DRS. We concentrated on research programs that benefit the warfighter, wherever they may be located around the world, knowing that what benefits the warfighter, ultimately benefits civilians as well.

We were helping the National Center for Disaster Medicine and Public Health in their "Stop the Bleed" campaign, working with the Walter Reed National Military Medical Center Pediatrics department to administer an art therapy program through a partnership with Tracy's Kids, and celebrating Walter Reed Army Institute of Research's Military HIV Research Program's 10th anniversary of the RV144 HIV vaccine study.

We were focused on continued modernization of our organization—launching new internal systems for Human Resources and Communications as well as delivering new services such as our Information Technology teams' Authority to Operate offering.

We made changes by welcoming new leadership as we organized our programs into four customer-driven portfolios. These efforts were made to increase access and efficiency and to better serve our customers. We started to bring our partners closer to us, too, by building out parts of our leased building to accommodate their offices and laboratories—again with the aim at better serving their needs.

And then, as the winter turned to spring, a new virus that first appeared in one region quickly became a pandemic. It refocused our efforts and moved us into a "warp speed" of response to ensure that what we do best is readily available and accessible for our customers. As we continued, without operational interruption, to advance our work with the important partners mentioned above, we also shifted our expertise to assist them in efforts targeting the coronavirus and the disease it causes, COVID-19.

This report showcases HJF's efforts in response to COVID-19 as well as our continued work advancing military medicine—because the work we do for military medicine translates into advances in the civilian world, too. Together, we will combat infectious diseases like COVID-19 and drive results in other areas of military medicine, as we do everything in our power to ensure that military heroes stay as healthy and safe as possible.

Joseph Caravalho, Jr., M.D.
President and CEO

Meeting Military Medicine's Needs

This section contains selected stories from our full FY20 Annual Report website found at https://www.hjf.org/ar-20.

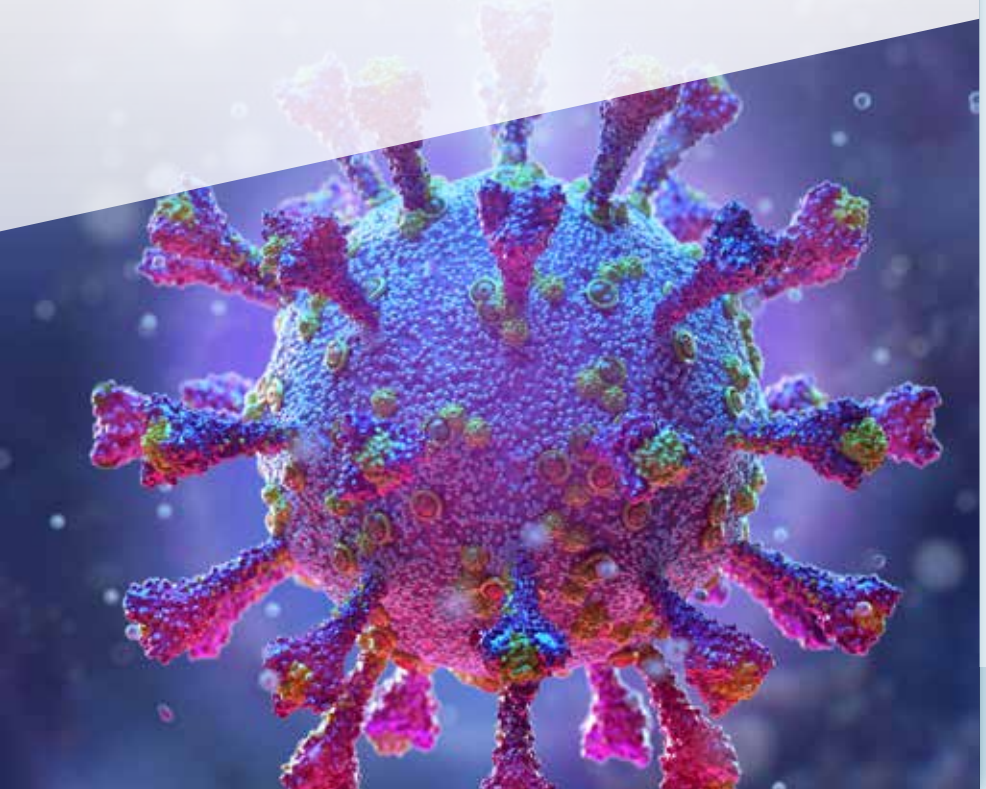
Since 1983, the Henry M. Jackson Foundation for the Advancement of Military Medicine has been a vital link—the "connective tissue"—between our military medical research partners and industry.

When the U.S. Congress authorized our creation, our purpose was to support research and education at the Uniformed Services University and throughout the military. Washington Senator Henry M. Jackson was influential in championing this legislation, and so, following his death, the organization was named in his honor. By providing exceptional scientific, administrative and program management services, we empower military medical researchers to make the medical discoveries our warfighters need.

Today, thanks to our mission and our workforce, we operate at the intersection of medicine and science. We are uniquely positioned to not only advance military medicine but bring those advancements to the public, through our ecosystem of industry partners, so others may benefit.

This year, we witnessed again how military medical research advances important scientific work for all. Shortly after the COVID-19 threat was identified, HJF joined its military partners and other medical researchers around the world in the race to find a vaccine and treatments. With significant experience studying HIV, Ebola, anthrax, malaria, SARS-CoV, MERS-CoV, H1N1 and Zika, HJF is especially well-positioned for studying infectious diseases. As you'll read in this FY20 Annual Report, HJF, in collaboration with the Walter Reed Army Institute of Research, is currently assisting with the development of a vaccine to prevent COVID-19.

HJF is driven to solve the biggest puzzles and hardest problems by using the resources necessary to support the mission. As we move through the COVID-19 pandemic, we continue to anticipate needs, respond at the pace of change and focus on continually adding value to military medical research.



184
New Awards in FY20

1295
Active Research Protocols in FY20

2743
Employees Worldwide

801
Patents in FY20

HJF Commits to Fighting Racism

As the country erupted in protests and marches this summer following the deaths of George Floyd, Breonna Taylor, Ahmaud Arbery and other Black people, the issue of systemic racism became the focus throughout the nation this year. With this stimulus, in 2020, HJF took a look at itself, asking tough questions and committing to fight systemic racism and unconscious bias within the organization.

Led by HJF's President and CEO, Joseph Caravalho, a series of employee focus groups aimed at gathering candid input from throughout the organization was the first step towards the goal to root out and fight racism within HJF. Joe also started an important conversation with teammates through an internal blog entitled "We Must Do Better," focused on shared concerns, individual thoughts and proposed actions to combat racism. Follow-on steps of HJF's action plan to fight racism were further defined after employees offered ideas, including making the focus on Diversity and Inclusion a full-time responsibility, through the establishment of a new position reporting directly to the CEO.

Continuing to Modernize HJF

This year, HJF continued to modernize its technology for improved efficiency, productivity and customer satisfaction. By implementing new services and technologies such as a new Human Resources Information System (HRIS) as well as a new intranet, HJF created better workflows and improved communication throughout the organization.

While the new intranet, called Compass, provides a one-stop-shop helping employees find tools and items easier, the HRIS rolled out in phases, giving employees access to even more information including organizational charts, improved timesheets, access to online workflows and more.

Additionally, an HJF COVID-19 task force was convened to develop and communicate internal HJF's response, including details on a re-engagement plan which incorporated phases based on CDC and local government recommendations. HJF transitioned to maximal teleworking, enabling many employees to work effectively from home due to the COVID-19 pandemic.

The Toughest Mission

Nearly 250,000 service members annually are expected to leave the military in the next five years. Some find it difficult to transition from a highly-structured environment that provides basic living requirements—housing, employment, healthcare and more—to a situation in which they must independently navigate new challenges. This transition can be even more daunting for those suffering from a mental health condition, post-traumatic stress disorder and traumatic brain injury.

To help address this information gap, a five-year study called The Veterans Metric Initiative: Linking Program Components to Post-Military Well-Being (TVMI Study) launched in 2015. The aim: to conduct collaborative, translational metrics-related research designed to improve the well-being of veterans and their families.

HEROES *of* MILITARY MEDICINE AWARDS

Heroes Honored in 10th Year of Awards

Since 2011, HJF has recognized individuals who have made outstanding contributions in military medicine for our nation's warfighters, veterans and civilians. Each year they are honored at the Heroes of Military Medicine (HMM) Awards Dinner. Unfortunately, due to the COVID-19 pandemic, HJF had to cancel the 10th anniversary of the HMM Awards Dinner.

While HJF was unable to recognize these individuals in person, we proudly honored three active duty service members, as well as a Hero of Military Medicine Ambassador Award.

Employee Highlights

We recently asked our employees to tell us which HJF colleagues inspire them through their dedication and passion for the HJF mission. These five employees are just a few examples of staff who demonstrate outstanding work and are always faithful to our mission, vision and values.

Mihret Amare

Associate Director of Programs and Operations; Emerging Infectious Diseases Branch
16 Years

In collaboration with the Emerging Infectious Diseases Branch of the Walter Reed Army Institute of Research, HJF is currently assisting with the development of a COVID-19 vaccine. Mihret Amare oversees all of the HJF efforts.

"I manage proposals, budgets, contracts, timelines and staffing to support the development of countermeasures for COVID-19 with a particular focus on the development of a safe and effective vaccine," Amare said.

In her role as Associate Director of Programs and Operations, Amare ensures that the vaccine development process advances as quickly as possible.

"The WRAIR team recently selected a lead candidate called the Severe Acute Respiratory Syndrome Coronavirus-2 Spike Ferritin Nanoparticle (SpFN), which is one of many vaccines currently in development," she explained.

Amare also leads an international portfolio of activities—the Joint West Africa Research Group and the Partnership for Research in the Middle East—now focused on COVID-19.

"We are leveraging these programs toward COVID-19 prevention and testing," she said.

Lianying Yan

Senior Research Assistant; Department of Microbiology and Immunology at the Uniformed Services University
17 years

Linda is a key member of the research teams in the Broder lab, which is funded by NIAID-NIH, DTRA and CEPI (The Coalition of Epidemic Preparedness Innovations), who consistently exceeds the highest expectations and always offers to help others whenever needed. She has been integral in the advancement of multiple research projects, including the development of recombinant viral glycoproteins and monoclonal antibodies that have facilitated cutting edge monoclonal antibody therapy and vaccine development programs against Nipah virus and Hendra virus, which are two emerging priority viruses.

Throughout her tenure, Linda has trained numerous graduate students, post-doctoral fellows, research assistants, staff scientists and even faculty members in molecular biology and biochemistry techniques and procedures. Linda's expertise and dedication are rivaled only by her compassion for fellow staff members. Indeed, on a recent capacity-building and training project at the Thai Red Cross Emerging Infectious Diseases Clinical Center in Bangkok, Linda quickly formed friendships with the post-docs, students and staff being trained and was critical to the program's success. Linda is a consummate team player and through her actions exemplifies the dedication and rigor that is key to scientific research.

– submitted by Roselyne Sang

What do you love most about your work? *I love having the opportunity as well as rising to the challenge of developing a vaccine for curing diseases and enhancing human life quality.*

What book have you recently enjoyed? *"The American Health Care Paradox: Why Spending More is Getting Us Less" by Elizabeth H. Bradley and Lauren A. Taylor.*

What are you passionate about? *I'm passionate about my judgement and decisions both being absolutely as accurate as possible.*

Marcus Hallman

Office Services Manager;
Home Office
9 years

Marcus and his team are always so helpful. They receive so many requests from employees in the building and address them all promptly and efficiently.

Through the COVID-19 restrictions, Marcus been approachable, responsive and helpful. He is so knowledgeable and always takes prompt action and follows through to ensure completion.

Thanks, Marcus! Appreciate the continuing and superb support!

– submitted by Ritu Dubey, Immigration Manager, Human Resources

What do you love most about your work? I enjoy being in a role where I can play a part in our HJF mission for the advancement of military medicine for our warfighters. I'm excited about being part of a company in which my teammates work together to achieve a common goal, which is our mission.

What are you passionate about? I'm very passionate about helping our youth achieve their goals, either through the teams I coach or my mentoring. There is nothing better than seeing a young person accomplish their goals and seeing them excited about their achievement.

If you could visit anywhere in the world you've never been, where would you go? Athens, Greece.

Celestine Imuraaget

TB Care and Treatment Coordinator;
KDF/WRP HIV PEPFAR PROGRAM, HJFMRI
9 Years

Celestine is a hardworking team player who always goes above and beyond what is asked of her, whatever it takes to resolve a problem. She has extraordinary communication skills and is an individual who demonstrates utmost professionalism and integrity.

She is well organized, responsible, knowledgeable and diligent about resolving and assisting colleagues with any issues that arise. She has demonstrated excellent leadership qualifications throughout the year in her line of work and can work under minimal supervision.

– submitted by Roselyne Sang

What do you love most about the work you do? I love the fact that I am able to know the outcomes of the work I do.

What book have you recently enjoyed? The last book I read was "Steps to High Performance" by Marc Effron.

What are you passionate about? My passion is to contribute to improve the quality of life of the patients.

Who would you most like to swap places with for a day? I would like to swap places with the chief executive officer.

Subramaniam Krishnan

Chief Science Strategist;
Austere environments Consortium for Enhanced Sepsis Outcomes
2 Years

Subbu is a great HJF teammate. As Chief Science Strategist for ACESO (the Austere environments Consortium for Enhanced Sepsis Outcomes), he always looks for ways to improve processes, increase our scientific output, and advance military medicine for the improvement of health to both the military and civilian populations.

In addition, Subbu is always advocating for ways to increase the awareness and reputation of ACESO, and HJF with it. He is great to work with, very responsive, dedicated, and hard-working.

– submitted by Gary Pettit, Director of PR, Communications

What do you love most about the work you do? Working on diagnostics and therapeutic solutions for infectious diseases in austere settings across the globe.

What book have you recently enjoyed? "A Woman of No Importance: The Untold Story of the American Spy Who Helped Win World War II" by Sonia Purnell, which I read for our HJF Break for Books series.

What do you love most about the work you do? Our collective commitment to advance military medicine. Love my colleagues at HJF!

Progress Through the Pandemic

HJF Fights COVID-19

Diagnostics + Testing

Epidemiology

Prevention

Treatment

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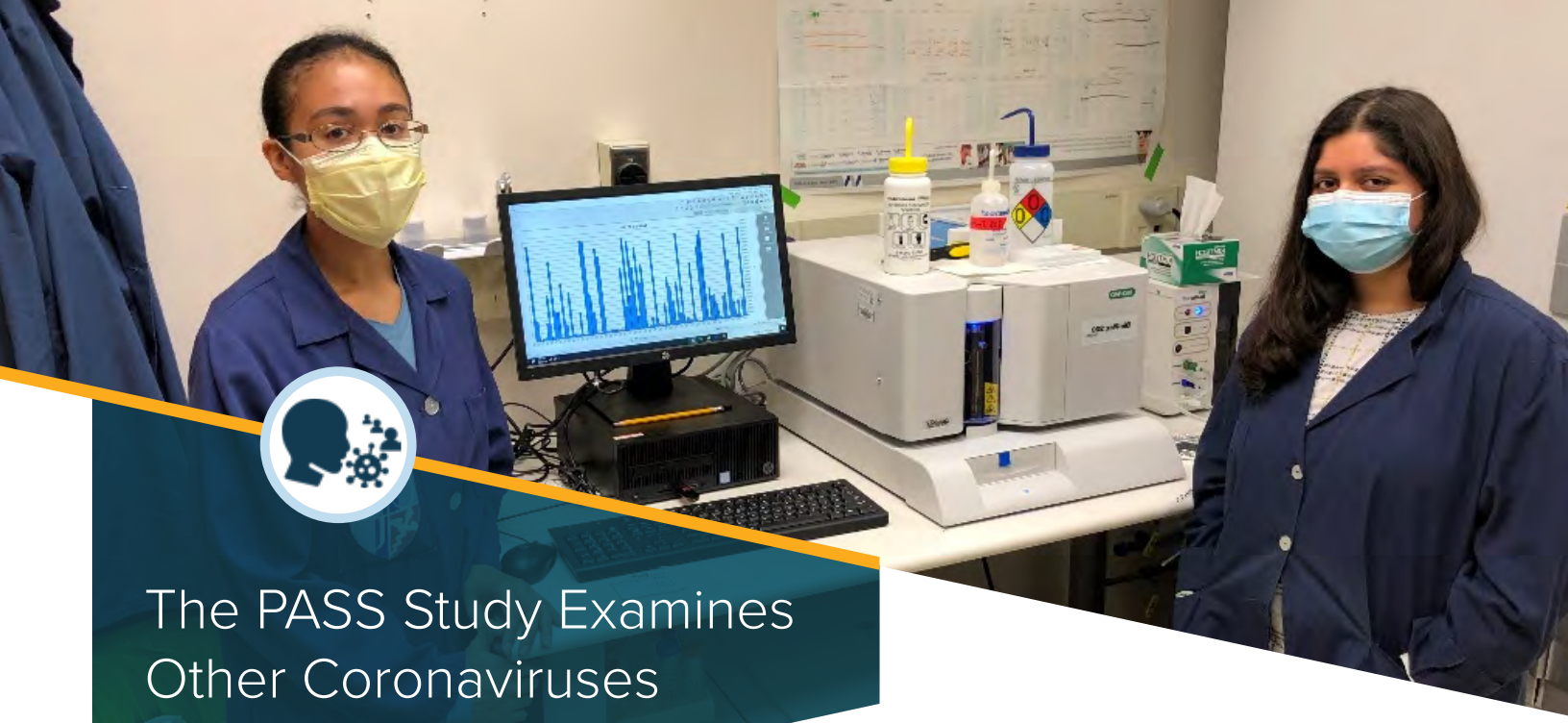
The Imperatives of Biological Defense

HJF supports the Molecular Diagnostics Department at the Biological Defense Research Directorate, which serves as a national resource providing testing and analysis for the presence of potential biological hazards. Part of the Naval Medical Research Center, the Directorate focuses on how to defend against the threat of biological and chemical warfare by conducting health and medical research, development, testing, evaluation, and surveillance to enhance deployment readiness of Department of Defense personnel worldwide.

The Molecular Diagnostics Department serves as a subject matter expert on biological warfare widely regarded throughout the DoD and other U.S. government agencies. As part of the U.S. government's response to the COVID-19 pandemic, it was approached by the Defense Biological Product Assurance Office, which is part of the Joint Program Executive Office for Chemical and Biological Defense and whose mission is to develop medical and physical countermeasures to protect the warfighter from chemical and biological threats.

The Directorate also focused on production of the CDC assays and evaluation of the logistics required, including providing sample extraction kits, viral transport medium production, and ancillary Taq Polymerase kits. Emphasis was changed to adapting the primer/probe sets of the Centers for Disease Control and Prevention to the standard formulation currently produced by the facility reducing the logistical burden and providing reagents in a format more familiar to current customers of the Defense Biological Product Assurance Office.

The Directorate is the sole DoD real time reagent production facility for PCR (polymerase chain reaction), which is a key component of COVID-19 detection kits. Its production facility has functioned since 2006. The reagents are used daily by the DoD (Pentagon Force Protection Agency, National Guard units, the U.S. Army Medical Research Institute of Infectious Diseases, National Guard units, and other DoD organizations), the National Institute of Allergy and Infectious Diseases at the National Institutes of Health, and DHS BioWatch. Annually, the Molecular Diagnostics Department produces in excess of 3.5 million reactions resulting in cost savings to the U.S. government of at least $44 million versus commercial vendors. The reagents support research and development activities in addition daily monitoring programs to detect the presence of biological warfare agents in environmental aerosol samples.



The PASS Study Examines Other Coronaviruses

While SARS-CoV-2 is a new virus in humans, there are other coronaviruses that have been present for a long time that commonly cause respiratory tract infections. Indeed, the human coronaviruses OC43, HKU1, 229E, and NL63 are the second most frequent cause of the common cold and are responsible for over 10 percent of all respiratory infections in adults and children during winter months.

The PASS (Prospective Assessment of SARS-CoV-2 Seroconversion) Study seeks to improve our understanding of the clinical manifestations and immune responses that occur after infection with SARS-CoV-2, the virus that causes COVID-19. The central question being asked by the study is: Does the presence of pre-existing antibody or T-cell responses to these common coronaviruses affect immune responses and/or disease severity during SARS-CoV-2 infection?

The PASS study, which started in August 2020, is a collaborative project being conducted by HJF, the Naval Medical Research Center Clinical Trials Center, the Infectious Diseases Clinical Research Program, and Department of Microbiology and Immunology at the Uniformed Services University of the Health Sciences. Other questions being addressed by the study include: How often do healthcare staff at Walter Reed National Military Medical Center acquire asymptomatic SARS-CoV-2 infection? What is the baseline prevalence and magnitude of antibody responses to the common coronaviruses? And are immune responses to SARS-CoV-2 altered by the presence of pre-existing antibody or T-cell responses to other coronaviruses?

To conduct the study, investigators are recruiting up to 300 staff who work at Walter Reed National Military Medical Center. Study subjects are being followed over the course of one year with monthly antibody testing, frequent symptom questionnaires, and testing for COVID-19 whenever a subject is symptomatic. Laboratory assays to be done on blood samples include measurement of pre-existing antibodies to the common coronaviruses and assessment of cross-reactive T-cell responses to SARS-CoV-2 proteins. The study is using a novel multiplex coronavirus antibody test developed by Dr. Eric Laing and Dr. Christopher Broder that simultaneously measures antibodies specific for SARS-CoV-2, SARS-CoV-1 (the virus that causes Severe Acute Respiratory Syndrome), MERS (the virus that causes Middle East Respiratory Syndrome), and the four common coronaviruses that routinely circulate in the United States.

The investigators hope that results obtained from this study will inform strategies for diagnostic testing, risk stratification, vaccine design, and antibody-based therapies for SARS-CoV-2 as well as for future novel coronaviruses.

3-D Printing to Create PPE

In the early weeks of the COVID-19 pandemic, HJF employee Betsy Weissbrod, a Medical Illustrator at the Val G. Hemming Simulation Center, designed and developed personal protective equipment (PPE) using 3-D printing. With this equipment in short supply and high demand, Weissbrod created a design that could be used by healthcare providers and researchers.

The Val G. Hemming Simulation Center is part of the Uniformed Services University of the Health Sciences and is recognized as the nation's premier simulation center for the development and application of medical simulation programs. The simulations allow health care personnel to develop and maintain the skills necessary to perform medical tasks that are high-risk or high consequence for patient safety and therefore, are done in simulated medical procedures.

Check out the video describing the 3-D Printing at https://www.hjf.org/ar-20.

Vaccine for a Deadly Spike Protein

HJF scientist Dr. Gordon Joyce spent much of 2020 focused on understanding and documenting the structural biology of the novel coronavirus, SARS-CoV-2. As the head of the Structural Biology Lab at the Walter Reed Army Institute of Research, he successfully produced the most detailed atomic level view of the structure of the SARS-CoV-2 spike protein receptor binding domain, which is the part of the virus that binds to the lungs. This detailed understanding of the structure has been critical to vaccine discovery and development efforts.

In related work, Dr. Morgane Rolland, an HJF viral geneticist with the U.S. Military HIV Research Program, conducted genetic analysis of sequences from more than 27,000 individuals infected with SARS-CoV-2 and found that the virus has mutated minimally since its initial outbreak. Her work suggests that one vaccine would be sufficient to combat global infections.

Their research is part of the coronavirus vaccine development at the Emerging Infectious Diseases Branch of the Walter Reed Army Institute of Research. Led by Army researcher Dr. Kayvon Modjarrad, these efforts have developed a vaccine candidate known as SpFN (Spike Ferritin Nanoparticle). The SpFN vaccine is unique among other COVID-19 vaccines in development because the nanoparticle's multifaceted surface has been engineered to present specific pieces of the coronavirus spike protein (the part of the virus that attaches to the lungs) to the immune system many times over to elicit a strong immune response.

"The emergence of coronaviruses in human populations is accelerating and we need to be prepared for the eventuality that the current coronavirus mutates or other coronaviruses arise," said Dr. Modjarrad. "That's why we need a vaccine, like the one we're developing, that can be used to protect broadly against all coronaviruses."

The researchers are taking a strategic long-term approach to vaccine development. In the future, the vaccine might be adapted so that different faces of the nanoparticle present different coronaviruses to the immune system at the same time. In addition, the vaccine platform could pave the way for a universal vaccine to protect against not only the current virus, but also other known and unknown coronaviruses that could arise.

HJFMRI Receives Grant from the Bill & Melinda Gates Foundation

HJF Medical Research International (HJFMRI), a wholly owned subsidiary of HJF, was awarded $1.3 million by the Bill & Melinda Gates Foundation to support antenatal, intrapartum and postnatal care in the Kenya Child Health and Mortality Surveillance (CHAMPS) and Antenatal/Postnatal Research Collective (ARC) network. This cutting-edge research will address current antenatal and postnatal COVID-19 research gaps in understanding the burden of COVID-19 in pregnant women and newborns, associated risk factors, and associated maternal morbidity and mortality in Western Kenya.

"Determining the likelihood of adverse pregnancy outcomes associated with maternal COVID-19 is an essential and urgent matter at this time, and HJFMRI is proud to support the study in the CHAMPS and ARC platforms to determine this likelihood," said HJF President and CEO Joseph Caravalho, M.D. "The research will help medical communities understand the risks—and potential methods to mitigate those risks—for infected mothers and their newborns."

This study precedes the ARC (Antenatal/Postnatal Research Collective) Study, a new four-year initiative aimed at improving antenatal care and postnatal care through risk stratification and reducing maternal and infant mortality. The study is also funded by the Gates Foundation through a collaborative effort between multiple governmental and non-governmental organizations. COVID-19 surveillance will be implemented as a precursor to the full implementation of the ARC study. It will monitor the impact of COVID-19 on pregnancy and newborns' outcomes, with additional considerations of maternal anemia and co-infection with HIV, tuberculosis or malaria. The study will also look at the birth outcomes and the health of infants born to individuals who tested positive for COVID-19 and the rate, or possibility, of transmission from mother to child.

The CHAMPS Network was established with the aim to develop a long-term network of high-quality sites to collect robust and standardized longitudinal data with the overarching objective of understanding and tracking the preventable causes of childhood death globally. The CHAMPS Network's objective—to provide accurate and timely data for decision-making on the causes of stillbirths and deaths among children under age five—will help provide answers needed to support the goal of significantly reducing child deaths in lower-resource countries. This new research will enable CHAMPS to investigate risks to women and children in relation to the COVID-19 disease.

An Urgent Need for Ventilators

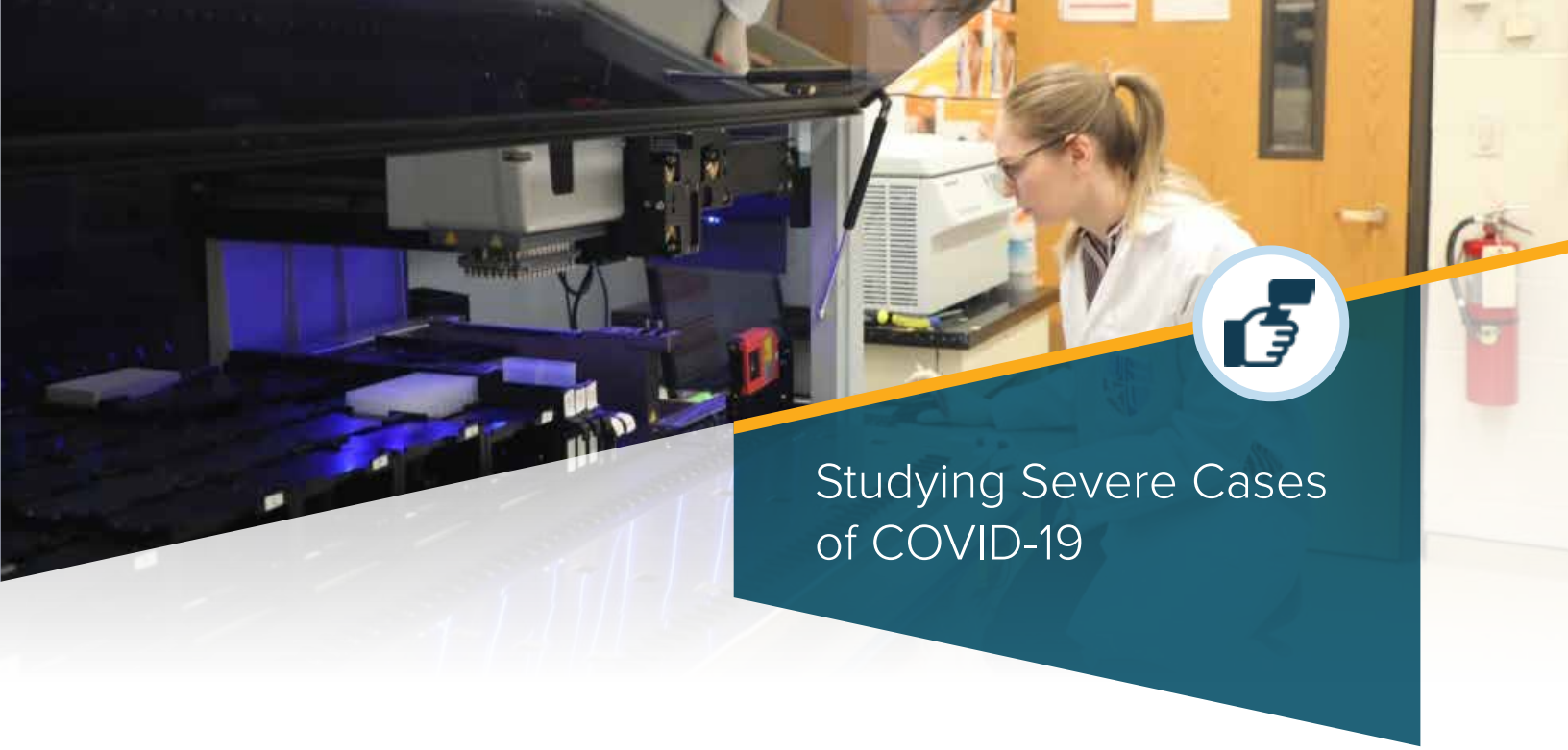
The COVID-19 pandemic ushered in a grim reality that hospitals all over the globe may not have sufficient numbers of ventilators to care for the onslaught of critically ill patients. Moreover, manufacturers were not expected to be able to meet the demand for traditional ventilators in the timely manner required to save lives.

In response to this global health crisis, the Defense Health Agency in the Department of Defense, created the "Vulcan Innovator Challenge" to develop easily manufactured, low cost ventilators. Over the course of seven days, 172 innovative ideas were submitted by industry, universities, government agencies, and individuals, all with the singular focus to design a ventilator to fill the impending gap in capacity and save lives.

Two panels of experts in the fields of engineering and critical care anesthesiology, medicine, and surgery selected five of the most promising designs for further evaluation. Following selection and prototype development, we aimed to evaluate the frontrunning limited performance ventilators in an *in vivo* system, including a clinically relevant model of acute respiratory distress syndrome.

The Uniformed Services University of the Health Sciences, including its Department of Anesthesiology and the Defense and Veterans Center for Integrative Pain Management, with the support of HJF and the Department of Defense Joint Acquisition Task Force, provided opportunity for five prototypes selected by the Vulcan Innovator Challenge to be evaluated in a large animal lab. The testing consisted of four parts. Parts one and two evaluated, selected and measured ventilator parameters in a mechanical test lung and in healthy 70-100 kg swine, respectively. The ventilator parameters evaluated included positive end-expiratory pressure, peak inspiratory pressure, tidal volume, respiratory rate, and fraction of inspired oxygen. Part three evaluated the ventilator's ability to adjust minute ventilation to control hyper or hypoventilation in a healthy animal. Part four evaluated the ventilator's ability to maintain adequate controlled ventilation in a 70-100 kg swine with induced acute respiratory distress syndrome.

In response to the global crisis, many well-intentioned innovators developed new designs or fabricated ventilators out of other devices. The media and general public celebrated the innovations as solutions to fill the gap, yet it also revealed how difficult it is to develop safe, low cost, easily manufactured ventilators. Preliminary results revealed several design flaws in the prototypes, which required refinement of the devices. While the prototypes developed and evaluated through the Vulcan Innovator Challenge may be viable last-resort alternatives in severely resource-strained environments, rigorous monitoring and well-trained operators are even more important than with conventional ventilators.



Studying Severe Cases of COVID-19

HJF supported immunological COVID-19 research led by scientists from The American Genome Center and the Precision Medicine Initiative for Military Medical Education and Research, which are both part of the Uniformed Services University of the Health Sciences. Their work was part of the COVID Human Genetics Effort, which is a global consortium combining the efforts of more than 50 sequencing hubs and hundreds of hospitals and scientists.

Participating centers from the United States and around the globe provided samples to study genetic determinants of susceptibility to severe COVID-19 infection. Dr. Clifton Dalgard and his team from The American Genome Center rapidly performed human genomic DNA isolation from residual clinical tissue material and high-throughput, whole genome sequencing to study the genetic influences to COVID-19 disease. In addition to genomic profiling, the team generated DNA templates for T and B lymphocyte repertoire analysis to investigate T cell receptor repertoires for SARS-CoV-2 specific antigens and monitor immunologic response to SARS-CoV-2 infection or vaccine.

Following sequencing, Dr. Matthew Wilkerson and his team from the Precision Medicine Initiative for Military Medical Education and Research conducted primary genome data analysis, which involved sequence alignment, variant calling, and integrated quality analysis to ensure high, uniform sequencing data performance across the cohort and concordance with expected sample properties. These genome data analysis workflows were conducted with high urgency on its on-premise High-Performance Compute platform to meet the immediacy of the project and public health need.

The researchers published two papers in the journal Science ("Inborn errors of type 1 IFN immunity in patients with life-threatening COVID-19" and "Autoantibodies against type 1 IFNs in patients with life-threatening COVID-19"), which reported that individuals with severe forms of COVID-19 disease can present with compromised type 1 interferon (IFN) responses based on their genetics. Type 1 IFN responses are critical for protecting cells and the body from more severe disease after acute viral infection. These findings help to explain why some people with no underlying conditions develop a disease more severe than others in their age group and may also provide a molecular explanation for why more men die from the disease than women.

In addition to Dr. Dalgard and Dr. Andrew Snow from the Uniformed Services University of the Health Sciences, who are co-authors on both papers, HJF employees Miranda Tompkins, Camille Alba, Christopher Luthers, Daniel Hupalo, John Rosenberger, Gauthaman Sukumar, Matthew Wilkerson, and Xijun Zhang, along with graduate student Bradly Bauman in Dr. Snow's lab, also participated in the research and served as co-authors.

On the Frontlines of COVID-19 with HJF Employees

Brian Agan, Ph.D.

Deputy Director; Infectious Disease Clinical Research Program at the Uniformed Services University of the Health Sciences
HJF employee since 2005

As an HJF employee and Deputy Director of the Infectious Disease Clinical Research Program at the Uniformed Services University of the Health Sciences, Brian Agan oversees a team of 120 that is highly focused on COVID-19.

"My role is to help direct our efforts in response to COVID-19 and support the leadership team, investigators, clinical research managers, site teams, data center, analysts, and other staff as they engage with several COVID-19 studies," he said.

In response to the COVID-19 pandemic, these researchers activated an observational, longitudinal cohort study ("Epidemiology, Immunology and Clinical Characteristics of Emerging Infectious Diseases with Pandemic Potential") at six military treatment facilities within the United States and will be expanding to others.

"This study is capturing longitudinal clinical and laboratory data, as well as specimens, from patients with suspected or confirmed COVID-19, as well as those with high risk exposure to better understand the natural history of SARS-CoV-2 infection, including the clinical, virologic, and immunologic determinants of severe disease," said Agan, who now serves as study principal investigator.

Gordon Joyce, Ph.D.

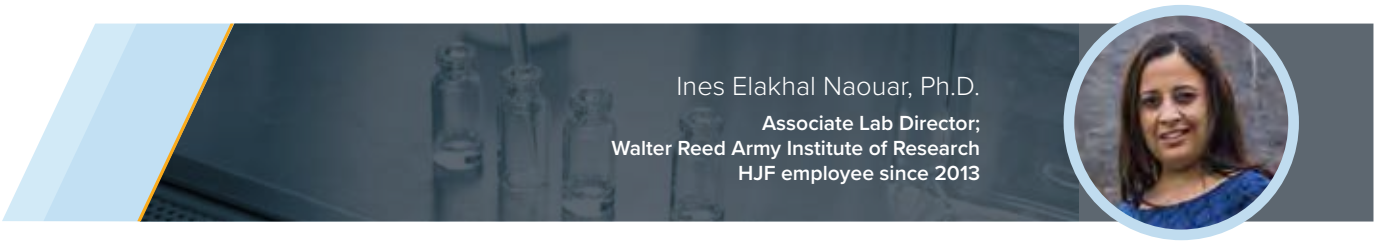
Chief of Structural Biology; Walter Reed Army Institute of Research
HJF employee since 2016

Gordon Joyce, Ph.D., who is an HJF employee and Chief of Structural Biology at the Walter Reed Army Institute of Research (WRAIR), has been working diligently to advance research efforts to prevent and treat COVID-19. Early in the pandemic, he produced the most detailed atomic level view of the structure of the SARS-CoV-2 spike protein receptor binding domain—the part of the virus that binds to the lungs.

"This detailed understanding of the structure has been critical to vaccine discovery and small molecule development efforts," said Joyce.

Along with the WRAIR team, which is led by Dr. Kayvon Modjarrad, the Director of its Emerging Infectious Diseases Branch, Joyce and his colleagues have developed a vaccine candidate which is built on a Spike Ferritin Nanoparticle (SpFN) platform. WRAIR's scientists are taking a strategic long-term approach to their vaccine development efforts. They expect the ferritin vaccine platform to pave the way for a universal vaccine to protect against all known and unknown coronaviruses that could arise in the future.

Joyce is also working on a collaboration with the University of Maryland to investigate nano-bodies generated by sharks after vaccinations. He and other scientists are exploring these antibodies' potential to neutralize the virus. The structural biology group is also supporting efforts at WRAIR to identify novel therapeutics for COVID-19. They have also determined the structures of multiple neutralizing monoclonal antibodies in complex with the SARS-CoV-2 spike protein receptor binding domain. This information serves to define novel sites of vulnerability that can be exploited to treat COVID-19.



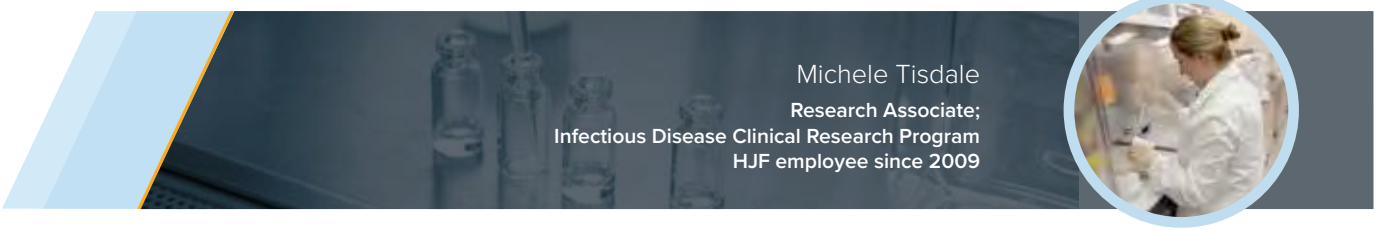
Ines Elakhal Naouar, Ph.D.

Associate Lab Director;
Walter Reed Army Institute of Research
HJF employee since 2013

Dr. Ines Elakhal Naouar has been helping prepare the diagnostics laboratories at the Walter Reed Army Institute of Research to support COVID-19 surge testing for the Military and the national capital area. The institute's Diagnostics and Countermeasures Branch, which is led by Dr. Sheila Peel, is supported by HJF.

In January 2020, there were very few assays or tests available for SARS-CoV-2 diagnosis. A rapid response team, including Dr. Elakhal Naouar, immediately sought to develop an algorithm-based approach to correctly classify individuals currently infected with COVID-19 and those with prior exposure. First, they identified and deployed an assay under Emergency Use Authorization for clinical testing in April 2020.

In parallel, Dr. Elakhal Naouar leads development of a high throughput assay and other molecular assays to assess viral clearance and to use in vaccine studies. The multiplex assay they developed has shown to be sensitive and specific for SARS-CoV-2 with good clinical performance. She and her team are working to transition and validate the assay on a commercially available platform, which will automate extraction and amplification for quicker, high-throughput results.



Michele Tisdale

Research Associate;
Infectious Disease Clinical Research Program
HJF employee since 2009

Last spring the USNS Comfort was stationed in New York City for approximately one month to help the city cope with the coronavirus pandemic. A Mercy-class hospital ship of the U.S. Navy, the Comfort initially treated non-coronavirus patients and later began accepting patients who had contracted the COVID-19 disease.

Among those assisting with the operations for the USNS Comfort was Michele Tisdale, a Research Associate with the Infectious Disease Clinical Research Program and an HJF employee. Tisdale helped obtain more than 400 specimens from the ship in a secure lab.

"I was able to assist in collection as well as train and assist in processing and storage of the lab specimens," Tisdale said.

Tisdale also supports a clinical trial known as Protocol 124 that is focused on Remdesivir, an antiviral medication being used as a treatment for COVID-19. Tisdale collects laboratory specimens and helps manage the storage of plasma, serum and swabs in a controlled environment.

"The hope is that this clinical trial will lead to more patients receiving an effective treatment that shortens the length of their hospital stay," she said.

Susan Banks, RN

Registered Nurse;
Infectious Disease Clinical Research Program
HJF employee since 1998

Susan Banks, RN, is one of HJF's programmatic support teammates working with the Infectious Disease Clinical Research Program on COVID-19 research. Her worksite is one of many enrolling subjects in the Adaptive COVID-19 Treatment Trial (ACTT). Nine subjects have been enrolled and five subjects have completed the trial. In addition to ACTT, Banks participated in a study looking at the seroprevalence of novel coronavirus antibodies among personnel deployed on the USNS Mercy and her sister ship the USNS Comfort during early months of the pandemic.

One of the biggest challenges around COVID-19 has been safely interacting with patients and participants, while still providing them with the best care possible. Banks strives to maintain the human aspect of being a nurse, while at the same time adhering to all the restrictions and safety guidelines to protect the patients and herself.

Ultimately, Banks hopes her efforts on the front lines of the COVID-19 research leads to identifying the ways this virus presents itself as well as to identify the most effective treatments. The goal of the second study is to aid in finding the best ways to test for this virus, which in turn will help the DoD better screen active-duty service members.

Financials

This section contains selected stories from our full FY20 Annual Report website found at https://www.hjf.org/ar-20.

Our mission is to advance military medicine. HJF is proud to report that 98.7 percent of HJF's expenses go directly to our mission. As a nonprofit organization, federal agencies and a public accounting firm audit HJF regularly.

Funding Sources

(Greater than $50,000)

ABBVIE

ACCELEVIR DIAGNOSTICS LLC

ALCAMENA STEM CELL THERAPEUTICS

ALLIANCE FOR CLINICAL TRIALS IN ONCOLOGY FOUNDATION

BETH ISRAEL DEACONESS MEDICAL CENTER

BOSTON UNIVERSITY

BOSTON VA RESEARCH INSTITUTE

BRIGHAM AND WOMENS HOSPITAL

CDC FOUNDATION

CENTERS FOR DISEASE CONTROL AND PREVENTION

CHRISTOPHER AND DANA REEVE FOUNDATION

DESIGN INTERACTIVE

ELI LILLY AND COMPANY

EMBODY

EMORY UNIVERSITY

FOUNDATION FOR A SMOKE FREE WORLD

GATES FOUNDATION

GILEAD SCIENCES

HENRY M JACKSON FOUNDATION OF THE ADVANCEMENT OF MILITARY MEDICINE

LEIDOS

LIMMATECH BIOLOGICS AG

MCCORMICK FOUNDATION

MICROBIOTIX

NATICK CONTRACTING DIVISION

NATIONAL AGENCY FOR THE CONTROL OF AIDS

NATIONAL ENDOWMENT FOR THE ARTS

NATIONAL INSTITUTE ON DRUG ABUSE

NATIONAL MULTIPLE SCLEROSIS SOCIETY

NATIONAL INSTITUTION OF ALLERGY AND INFECT DISEASES

NATIONAL INSTITUTION OF GENERAL MEDICAL SCIENCES

NATIONAL INSTITUTION OF NEURO DISORDERS AND STROKE

NAVAL SUPPLY FLC SINGAPORE OFFICE

NEWPORT BRAIN RESEARCH LABORATORY

ORTHOPAEDIC TRAUMA ASSOCIATION

PACIRA PHARMACEUTICALS, INC

PARSONS GLOBAL SERVICES

PATH

PROFECTUS BIOSCIENCES

PRESIDENT AND FELLOWS OF HARVARD COLLEGE

ROBERT MAPPLETHORPE FOUNDATION

TECHNOLOGY HOLDING LLC

TERAIMMUNE

THE GENEVA FOUNDATION

THE RESEARCH FOUNDATION FOR THE STATE UNIVERSITY OF NEW YORK

THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

THE WASHINGTON HEADQUARTERS SERVICES ACQUISITION DIRECTORATE

TRACEY'S KIDS

UES

UNIFORMED SERVICES ACADEMY OF FAMILY PHYSICIANS

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

UNITED CONCORDIA

UNIVERSITY OF COLORADO

UNIVERSITY OF MIAMI

UNIVERSITY OF PENNSYLVANIA

UNIVERSITY OF PITTSBURGH

UNIVERSITY OF WISCONSIN

U.S. ARMY CONTRACTING COMMAND ABERDEEN PROVING GROUND

U.S. ARMY MED RES ACQUISITION ACTIVITY

U.S. ARMY WARFIGHTER REFRACTIVE SURGERY RESEARCH

WALTER REED ARMY INSTITUTE OF RESEARCH

ZOOLOGICAL SOCIETY OF LONDON INSTITUTE OF ZOOLOGY

Consolidated Statement of Activities (Unaudited)

Year ended September 30, 2020

Revenues

Contributions	$744,587
Grants and contracts	485,364,457
Investment Income	2,018,893
Licensing fees and other	4,050,344
Net assets released from restrictions and transfers	—
Total revenues	**492,178,281**

Expenses

Program Services

Research grants and contracts	469,954,200
Other program activities	11,841,237
Endowment and similar programs	2,574,521
Education projects	1,575,131
Total program services	**485,945,089**
Total support services	5,375,374
Total expenses	**491,320,463**
Change in net assets	**857,818**
Net assets, beginning of year	**139,884,177**
Cumulative effect of a change in accounting principle related to revenue recognition	**2,287,810**
Net assets, end of year	**$ 143,029,805**

The financial information expressed here represents unaudited statements for fiscal year 2020. As a nonprofit organization, federal agencies and a public accounting firm audit HJF regularly.

For a complete copy of the latest financial statement, contact:
Chief Financial Officer
Henry M. Jackson Foundation for the Advancement of Military Medicine
6720A Rockledge Drive, Suite 100
Bethesda, MD 20817

Consolidated Statement of Financial Position

(Unaudited)

As of September 30, 2020

Assets

Cash and cash equivalents	$ 62,533,823
Grants and contracts receivable, net	114,068,472
Prepaid expenses and other current assets	7,267,283
Investments	52,872,221
Property and equipment, net	11,086,387
Other Assets	4,974,894
Total Assets	**$ 252,803,080**

Liabilities and Net Assets

Accounts payable and accrued expenses	$ 58,003,422
Accrued leave and benefits	20,989,116
Deferred revenue	14,049,291
Deferred rent	7,280,785
Other payables	9,450,661
Total Liabilities	**109,773,275**

Net Assets

Without donor restriction	95,937,359
With donor restriction	47,092,446
Total Net Assets	**143,029,805**
Total Liabilities and Net Assets	**$ 252,803,080**

Leadership

This section contains selected stories from our full FY20 Annual Report website found at https://www.hjf.org/ar-20.

Executives

Joseph Caravalho, Jr., M.D., MG, U.S. Army, Ret.
President and Chief Executive Officer,
serving HJF since 2017

Elizabeth "Betsy" Folk
Executive Vice President and Chief Operating Officer,
serving HJF since 1992

Catherine M. Clark, J.D.
Senior Vice President, General Counsel and Secretary,
serving HJF since 2015

Cynthia L. Gilman, J.D.
Senior Vice President, Strategic Initiatives,
serving HJF since 2007

Michael Stambaugh, GPHR, SPHR
Senior Vice President and Chief Human Resources
Officer, serving HJF since 2018

Corey Hastings, MBA, CPA
Senior Vice President, Chief Financial Officer
and Treasurer, serving HJF since 2018

Merlin Robb, M.D.
Vice President and Chief Medical Officer,
serving HJF since 2001

La Shaun J. Berrien, Ph.D.
Vice President for Research Administration,
serving HJF since 2005

Jessica A. Bejarano, J.D.
Vice President and Chief Ethics and
Compliance Officer, serving HJF since 2018

Rizwan A. Jan, CISSP, PCIP, CTPRP
Vice President and Chief Information Officer,
serving HJF since 2016

Hilary Longo
Vice President, Communications,
serving HJF since 2018

Andrea M. Stahl, Ph.D., Colonel, U.S. Army, Ret.
Director of HJF Component, Uniformed Services
University, serving HJF since 2019

Sandhya Vasan, M.D.
Director of HJF Component of Military HIV
Research Program (MHRP) & Emerging Infectious
Disease Branch, serving HJF since 2011

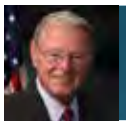
Tiffany Hamm, Ph.D.
Senior Director, Global Operations Portfolio,
serving HJF since 2003

Council of Directors

Philip A. Odeen

U.S. Senator Jim Inhofe (R-Oklahoma) is the chairman of the Senate Armed Services Committee. He has a long history of public service, beginning with his service in the U.S. Army to his current role in the United States Senate.

In addition to his role on the Armed Services Committee, Sen. Inhofe is also a member of the Environment & Public Works Committee, the Commerce Committee and the Small Business Committee. Prior to serving the people of Oklahoma in the U.S. Senate, Sen. Inhofe served in the U.S. House of Representatives, the Oklahoma House and Senate and as Mayor of Tulsa, Oklahoma.



U.S. Senator Jim Inhofe (R-Oklahoma)

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U.S. Senator Jack Reed (D-Rhode Island)

U.S. Senator Jack Reed (D-Rhode Island) is the ranking member of the Senate Armed Services Committee. After graduating from the United States Military Academy in 1971, he received an active-duty commission in the Army.

Over the course of his military career, he earned the Army Commendation Medal with Oak Leaf Cluster, Ranger Tab, Senior Parachutist Badge, and Expert Infantry Badge. He later earned a master's in public policy from Harvard's John F. Kennedy School of Government and a law degree from Harvard Law School in 1982.

He served three terms in the Rhode Island State Senate and three terms in the U.S. House of Representatives. Sen. Reed was elected to the U.S. Senate in 1996.

U.S. Representative Salud Carbajal (D-California)

Representative Salud Carbajal, a Democrat who serves California's 24th congressional district, is a member of the House Committee on Armed Services.

He attended the University of California, Santa Barbara and Fielding Graduate University, where he earned a master's in organizational management. Rep. Carbajal also served in the United States Marine Corps Reserve for eight years.

Before his election to the U.S. House of Representatives in 2016, he served on the Board of Supervisors for Santa Barbara County.

U.S. Representative Scott DesJarlais (R-Tennessee)

Representative Scott DesJarlais is currently serving his fourth term in Congress representing Tennessee's fourth congressional district. He serves on several committees in the House, including Oversight and Government Reform, Armed Services, Agriculture, Subcommittee on Readiness, and Subcommittee on Seapower and Projection Forces. He is also a member of the House Freedom Caucus as well as the GOP Doctors Caucus.

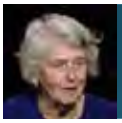
Rep. DesJarlais earned degrees in chemistry and psychology from the University of South Dakota and went on to receive his M.D. from the University of South Dakota School of Medicine.

Richard W. ("Tom") Thomas, M.D., D.D.S., MG, U.S. Army, Ret.

Dr. Thomas is the sixth President of the Uniformed Services University of the Health Sciences. He is responsible for the academic, research and service mission of the University. He advises the assistant secretary of defense for health affairs and the four surgeons general on a wide array of issues related to graduate health professions, education and health care research.

He retired from the Army in May 2016 at the rank of Major General. He is a physician and dentist whose last assignment was Chief Medical Officer and Director of the Defense Health Agency Healthcare Operations Directorate.

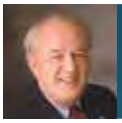
He graduated from West Virginia University (WVU) on an ROTC scholarship in 1981. He is a graduate of the WVU School of Dentistry and served in the U.S. Army Dental Corps before receiving his M.D. from the WVU School of Medicine in 1994. He earned a master's degree in Strategic Studies from the U.S. Army War College in 2006.



The Honorable Beverly Byron

The Honorable Beverly Byron served seven successive terms in Congress as a Democratic representative from Maryland.

She was the first woman to head a subcommittee of the House Armed Services Committee, chairing the Military Personnel and Compensation Subcommittee, where she oversaw more than 40 percent of the Department of Defense's budget. She also chaired the House Special Panel on Arms Control and Disarmament. She was named to the Defense Base Closure and Realignment Commission in 1993.



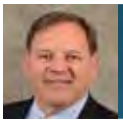
The Honorable John H. Dressendorfer

The Honorable John H. Dressendorfer retired as Vice President of Government Affairs at L-3 Communications Corp. Previously, he was Vice President of Government Relations for Titan Corp., which L-3 acquired in 2005.

Prior to working with Titan Corp., he was Vice President of Government and External Affairs for the American Forest & Paper Association. He was President and Founder of the lobbying firm Dressendorfer Laird. He also served as a Special Assistant to the President for Legislative Affairs under President Reagan and was an Assistant to Secretary of Defense Melvin Laird during the Nixon administration.

Marine Corps General John ("Jay") Paxton, Jr., Ret.

Marine Corps General John ("Jay") Paxton, Jr., Ret., joined the Council of Directors in 2017. He served as the 33rd Assistant Commandant of the Marine Corps before retiring in 2016. As the second-highest ranking officer in the Marine Corps, he played a critical role in ensuring the health and wellbeing of Marines. With deployments to locations worldwide, he emphasized, advocated and recommended priorities for the Marine Corps.



Thomas W. Weston, Jr., CPA

Mr. Weston currently serves as the Senior Vice President and Chief Financial Officer of ECS Federal, LLC, which is based in Fairfax, Virginia. ECS is a leading provider of advanced technologies and solutions in the cloud, cybersecurity, artificial intelligence, machine learning, and IT modernization areas. Mr. Weston leads all accounting and finance initiatives for the company and plays a key role in driving the strategic direction of ECS through both organic growth and a focused mergers and acquisitions program. In addition, Mr. Weston oversees the contracts, procurement and corporate facility functions at ECS.

Prior to his work at ECS, Mr. Weston was Executive Vice President, CFO, Treasurer and Secretary of Acentia, LLC, a company focused largely in health care IT services in the federal industry. Mr. Weston served on the Acentia Board of Directors and led the sale of Acentia to a large publicly traded company in April 2015.

Gail R. Wilensky, Ph.D.

Dr. Wilensky is an economist and senior fellow at Project Hope with more than 30 years of experience in health sciences. She directed the Medicare and Medicaid programs and served in the White House as a senior advisor on health and welfare issues to President GHW Bush. Wilensky was on the Board of Regents of the Uniformed Services University of the Health Sciences (USU). She also co-chaired the Department of Defense Task Force on the Future of Military Health Care. Wilensky received a bachelor's degree in psychology and a Ph.D. in economics at the University of Michigan and has received several honorary degrees.

The Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.
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Phone: 240-694-2000 | Fax: 240-694-3100

www.hjf.org