



Across the State University System of Florida, faculty, researchers, and students have been actively engaged in research to address a variety of issues associated with the COVID-19 pandemic. The System has utilized its strengths across disciplines to help the state, country, and world respond to the pandemic. This document highlights activities and initiatives from each of the 12 State University System Institutions as of October 2021. These examples are only a small snapshot intended to demonstrate the breadth of research occurring across the System in a wide array of disciplines ranging from psychology to medicine to engineering. Institutions have initiated nearly 200 projects and received \$45 million in federal funding to support their research efforts.

## System Collaboration

- **FSU, UF, and USF** partnered in the OneFlorida Clinical Research Consortium to conduct clinical trials and observational studies.
- **UF and UCF** collected data from COVID patients to study the breakthrough cases of the delta variant.
- **UF and FSU** created PANDEMIC (Program to Alleviate National Disparities in Ethnic and Minority Immunizations in the Community), aiming to increase vaccinations in underserved communities.

## Spread of the Infection

- **FAU** published a study that used qualitative visualizations to demonstrate the effectiveness of face masks over face shields.
- **FAU, FGCU, and FIU** are studying various factors that relate to the spread of COVID.
- **UNF** studied the spread of COVID-19 in correctional facilities and proposed solutions to reduce the transmission of the infection within correctional institutions.
- **UWF** developed models to propose procedures for crowd management and the design of the built environment to help reduce the spread of COVID-19.

## Manufacturing & Product Development

- **FCGU** is developing technologies aimed at preserving vaccines during delivery to make them more available worldwide.
- **UCF** developed a disinfectant spray that continuously kills viruses on surfaces for up to seven days.
- **UNF** physicists and engineers are developing technology to extend the shelf life of portable rapid detection tests.
- **USF** created a new technology that can disinfect N95 masks for healthcare workers who may face a shortage of this protection in their workplaces.

## Social Challenges

- **FAMU** and **FIU** are partnering with local entities to conduct research to promote testing and vaccination in underserved communities.
- **FSU** conducted a study on single mothers in resource-scarce environments to understand their decision-making around childcare and schooling during the pandemic.
- **FSU** published research on anti-Asian discrimination and hate crimes that escalated during the pandemic.
- **NCF** partnered with the Multicultural Health Institute to allow students to study minority health disparities.
- **UNF** studied the social determinants for the low telehealth utilization, which can mitigate telehealth disparities for minority populations.

## Economic Recovery and Workforce

- **FAMU** is developing programs to assist entrepreneurs, businesses, and communities in their economic recovery efforts.
- **UCF** investigated employees' responses to workplace cybersecurity policies to share with business and cybersecurity groups to mitigate cyber threats in remote work environments.

## Positioning the State University System for Future Research Opportunities

State University System research resulting from the COVID-19 pandemic has positioned the System for additional future research opportunities. Universities conducted various studies to understand this pandemic and have proposed solutions to help mitigate its effects, which can help prepare for and address future pandemics. Further, multiple institutions have addressed how vulnerable and underserved populations can gain increased access to testing and vaccines. Studies have also positioned universities to explore research opportunities beyond public health, such as economic development and organizational response to changes resulting from COVID-19. Finally, research in response to COVID-19 has increased collaboration among departments within universities, between universities across the System, and with local partners to help solve issues caused by the pandemic. Continued cooperation will continue to expand research in a variety of areas, which can help the System secure more resources to support research.

For additional information regarding these research initiatives and other federally funded research projects currently underway across the System, please refer to the following pages.

## **Florida Agricultural and Mechanical University**

### **FAMU Innovation Center – COVID Response**

Researchers are examining the impacts of COVID-19 and how to help accelerate economic recovery and revitalization. The FAMU Innovation Center was funded through an Economic Development Administration's University Center program grant via the U.S. Department of Commerce. The Center will align university programs and partner with state and local entities to provide technical assistance to businesses, entrepreneurs, and manufacturers.

### **FAMU Center for Health Disparities Research**

Drs. Karam F. A. Soliman and Sandra Suther of the College of Pharmacy and Pharmaceutical Sciences lead a community partnership to expose social determinants and behavioral and ethical factors that may influence COVID-19 vaccination among racial, ethnic, and vulnerable community populations in Gadsden County, Florida. Based on this research, FAMU will implement a behavioral intervention utilizing the Center for Disease Control's Community-Based Organizations COVID-19 Vaccine Toolkit and The Toolkit for Community and Faith-Based Organizations. This work is funded by the National Institutes of Health/National Institute on Minority Health and Health Disparities.

### **COVID-19 Related Research and Additional Funding Opportunities**

Funding under the Economic Development Administration's University Center CARES Act Supplemental Award has provided FAMU with the ability to expand support for startups and minority businesses. The award also allowed FAMU to identify new commercialization of research prospects and support program opportunities. These activities have already resulted in recent submissions to the Economic Development Administration and Minority Business Development Agency. Additionally, space industry engagement led to the identification of new approaches presented to NASA leadership for consideration. The supplemental funding received from the National Institutes of Health will expand FAMU's College of Pharmacy and Pharmaceutical Sciences' continued research efforts to address health disparities among minority communities and other disadvantaged groups. Upon collaborating with the various communities and agencies, it is anticipated that these efforts will increase vaccination compliance and prepare the communities to adjust to any future health-related threats. The aim is to focus on behavioral intervention by implementing and utilizing the Center for Disease Control's Community-Based Organizations COVID-19 Vaccine Toolkit and The Toolkit for Community and Faith-Based Organizations.

## **Florida Atlantic University**

### **Face Shield or Face Mask to Stop the Spread of COVID-19?**

Drs. Siddhartha Verma and Manhar Dhanak of the FAU College of Engineering and Computer Science conducted research comparing the effectiveness of face shields and face masks in reducing the spread of droplets. The study found that face shields and face masks with a valve were less effective at reducing the spread of droplets. This work was published in the Journal Physics of Fluids.

### **FAU COVID Transmission Modeling System Using Computational Epidemiology**

Dr. Jason Hallstrom, professor at the FAU College of Engineering and Computer Science, is collaborating with the City of West Palm Beach to use cutting-edge computational epidemiology to help tackle COVID-19. This project will simulate virus transmission using realistic, contextualized models based on how people move and interact within the city. By integrating evidence-based models of COVID-19 transmission with hyper-local mobility data, the project can provide place-specific forecasts of disease transmission and real-time insights into how mobility changes within the city affect the local population's susceptibility to a future outbreak.

### **COVID-19 Coronavirus Testbed and Knowledge Base Construction and Personalized Risk Evaluation**

Drs. Xingquan Zhu and Michael DeGiorgio with the FAU College of Engineering and Computer Science collaborated with Dr. Massimo Caputi with the FAU College of Medicine to create a COVID-19 coronavirus testbed, knowledgebase, and personalized risk evaluation tool for individuals to assess their infection risk in a dynamic environment. This testbed and knowledgebase will provide information for modeling outbreaks and COVID-19 mutation to aid the public in understanding its spread and mitigating its effects. The project will also provide a predictive tool to combine demographics, policies, regional infections, and individual information for personalized risk evaluation.

### **COVID-19 Related Research & Additional Funding Opportunities**

Research projects at FAU have received several pilot funds through different mechanisms. These pilot funds have resulted in preliminary data being used to pursue more substantial federal funds, as is already happening with some of the projects. In addition, the university has created a COVID biorepository that produces data and material for subsequent studies that will address the prevention, mitigation, and treatment of COVID. FAU's partnership with Memorial Healthcare Systems is creating a multi-project data science initiative that evaluates hospital data to inform hospital procedures and their improvements to increase the survival of COVID patients.

## **Florida Gulf Coast University**

### **COVID-19 Testing in Men**

Dr. Scott Michael, a professor with the FGCU Department of Biological Sciences, conducted a pilot study to test whether SARS-CoV-2 can be detected in men infected with COVID-19 and any relationship with the severity of the disease. Researchers examined if the virus can be detected in semen to determine if it can be transmitted sexually. Preliminary results, consistent with prior findings, suggest that the virus is not present in semen during the acute or convalescent phase of COVID-19. This work was published in the Journal of Assisted Reproduction and Genetics.

### **Wastewater Monitoring for SARS-CoV-2 at FGCU and Lee County, Florida**

Dr. Scott Michael ran PCR tests on wastewater sludge samples provided by Lee County wastewater treatment plants and throughout the Florida Gulf Coast University campus. Results were often positive, consistent with the known presence of the virus in the community or on campus. Data provided a quantitative measure of the levels of the COVID-19 virus in the community. To provide continual information on the state of the pandemic, sequential testing over time will reveal if infection incidence is increasing, decreasing, or remaining the same.

### **Long-term Virus Preservation**

Drs. Arsalan Mirjafari and Scott Michael are researching solutions to current temperature-sensitive vaccine storage and distribution, which have served as a barrier to global immunization programs. This project will aim to provide a viable solution for ambient temperature preservation of viruses for extended periods. The proposed formulation development will effectively stabilize various viruses.

### **COVID-19 Related Research and Additional Funding Opportunities**

Florida Gulf Coast's research on organic-ion-based technology led to an NIH award and research efforts have already translated into external funding. Given the initial success of the COVID-19 surveillance project, faculty-led student projects on air and wastewater monitoring of the FGCU campus will continue through the academic year. The presence of the virus in air and wastewater will be coordinated with virus testing of students and employees on campus. The goal is to minimize disruption of academic activity and perhaps even predict areas of campus where transmission is most likely to occur.

## **Florida International University**

### **Community-Engaged Research on COVID-19 Testing Among Underserved or Vulnerable Populations**

Dr. Marianna Baum with the FIU College of Public Health and Social Work is leading a project which aims to improve understanding of COVID-19 health disparities and enhance access in vulnerable or underserved populations. FIU collaborated with Borinquen Health Care Center to deploy a mobile testing unit to assess the prevalence and identify disparities in COVID-19 diagnostic testing uptake and effectiveness. Researchers will also test alternative approaches to obtain samples, assess barriers to testing, and collaborate with community partners and leaders to enhance COVID-19 testing.

### **Molecular Mimicry in COVID-19**

Dr. Giri Narasimhan is leading a project that leverages advances in machine learning and artificial intelligence to build a working pipeline to detect molecular mimicry in the SARS-CoV-2 virus. The project team expects the molecular mimicry pipeline to facilitate the detection of a pathogen in case of a new outbreak caused by a new pathogen and help explain the various clinical symptoms and health outcomes of COVID-19. This work was funded by the National Science Foundation.

### **Reducing the Spread of COVID-19 through Contact Tracing**

Dr. Deborah Goldfarb of the College of Arts and Sciences is researching the influence of age on contact tracing interviews. This study implemented enhanced interview protocols with memory-enhancing techniques for children or the elderly to improve contact tracing. The enhanced protocol increased the number of contacts reported by more than 50% compared to the control protocol. The project team has created a publicly available website that allows individuals to conduct contact tracing interviews using the techniques developed in these studies.

### **COVID-19 Related Research and Additional Funding Opportunities**

COVID-19 related research has demonstrated that the university's researchers can quickly come together to address challenging themes in real-time to effectuate impactful solutions. The pandemic has provided opportunities for intradepartmental/intra-college research collaborations, often in non-traditional research areas, that have enabled researchers to work together. COVID-19 funded projects span a broad spectrum of disciplines at the institution, including public health, psychology, computer science, immunology, architecture, and engineering. The awarding of six National Science Foundation RAPID awards and three National Science Foundation I-Corp awards related to COVID-19 is indicative that rapidly responding to pandemic challenges is possible and positions FIU to pursue further funding opportunities in these critical areas. FIU has a successful track record and portfolio of research in areas of health disparities, and the COVID-19 pandemic has differentially impacted populations based on socioeconomic factors. With two National Institutes of Health-funded centers focusing on health disparities and training programs, such as NeighborhoodHelp, FIU is well-positioned to continue to pursue research funding addressing COVID-19 and its consequences.

## **Florida Polytechnic University**

### **Use of Nanomedicine, Biosensors, and Artificial Intelligence to Diagnose and Combat COVID-19**

Dr. Ajeet Kaushik, Assistant Professor of Chemistry, published work showing that manipulative nanomedicine – delivering drugs to a highly specific part of the body – can provide a safer, more precise, and more effective way to treat patients grappling with multiple diseases and symptoms as a result of COVID-19. Dr. Kaushik has also published several scientific papers in 2020 and 2021 that explore the use of nanomedicine, biosensors, and artificial intelligence to diagnose and combat COVID-19. The World Health Organization (WHO) has added nine of these papers to its database of global literature on coronavirus disease.

### **COVID-19 Related Research and Additional Funding Opportunities**

Students in capstone projects have developed apps and devices to assist medical personnel in treating patients with COVID-19. A team of senior computer science students at Florida Polytechnic University developed an app that uses gaze-tracking software to help improve communication between patients who cannot speak and their care providers. Other senior students developed a thermo-regulatory transport device for biological samples. The device will hold biological samples at a steady temperature for up to a week, improving the testing process for viruses such as COVID-19.

## **Florida State University**

### **Low-Income Single Mothers' COVID-19 School and Care Decisions**

Dr. Melissa Radey from the College of Social Work and Joedrecka Brown Speights, M.D., with the College of Medicine, collaborated on a project funded by the FSU Office of Research Development Collaborative Collision Seed Fund. The researchers examined mothers' decision-making processes around childcare and schooling during the COVID-19 pandemic and how socioeconomic context contributes to these decisions. Findings showed that approximately half of the mothers' selected home-based care while the other half selected site-based care for fall 2020, suggesting that mothers made decisions primarily based on constraints - safety or financial need - and many described feeling that they had "no choice" in their selection. These findings illustrate the importance of identifying ways to assist resource-limited mothers in making childcare decisions and supporting them in executing those decisions, especially during emergency situations like the current pandemic.

### **The Impact of the Pandemic on Prejudice, Hate Crimes, and Victimization**

Drs. Brendan Lantz and Marin R. Wenger, with the College of Criminology and Criminal Justice, studied hate anti-Asian hate crimes and victimization during the pandemic using a web-based survey. Study findings document the extent of anti-Asian bias victimization and fear of victimization during the pandemic; a general reluctance among Asian hate crime victims to report their experience to the police; the substantial, negative impact of hate crime victimization and fear of victimization on individual mental health during the pandemic; and the wide-ranging impact of the COVID-19 pandemic on hate crime victimization experiences among the non-Asian population, in addition to the Asian population. The team has secured a \$236,985 grant from the National Science Foundation to continue their work.

### **COVID-19 Information Outreach for the Homeless and People with Opioid Use Disorders**

Dr. Margaret Zimmerman of the College of Communication and Information led a project that developed a program focused on COVID-19 safety with volunteers and professionals directly serving people who experience homelessness and who are at a higher risk for using opioids. The goal of disseminating these materials was improving health information access for patrons and the public relating to COVID-19, assisting with providing access to health information for those experiencing homelessness and opioid use disorder, and providing training and resources relating to COVID-19 for the benefit of librarians, community health workers, and other health information intermediaries. The curriculum has been disseminated to 37 different organizations, including public libraries in the Florida panhandle and Atlanta area, health information teams at the University of North Carolina Chapel Hill and the University of North Carolina Greensboro, and numerous resource centers and homeless shelters.



## **COVID-19 Related Research and Additional Funding Opportunities**

Competing for external research funding is no small task under the best of circumstances, and federal funding in particular often relies upon demonstrating proof of concept with preliminary data/results and showing a history of successful collaborations between different academic disciplines. However, it is somewhat difficult to show proof of concept and successful collaboration on problems that didn't exist prior to late fall 2019. Thus, the unprecedented nature of the COVID-19 pandemic necessitated that FSU invest significant internal funds to help build new teams and conduct pilot projects exploring problems that humanity had never previously encountered.

As of September 2021, the university has invested over half a million dollars in exploratory projects through our Collaborative Collision Seed Fund and Council on Research and Creativity. These projects represent 31 different Colleges, Departments, or Research Centers, extending far beyond the biomedical and public health fields expected of pandemic research. Reports from these researchers have shown numerous examples of new external grant proposals to continue work, including several \$1 million or higher proposals submitted to the National Institutes of Health October 5th funding cycle. In addition to planned proposals, FSU is beginning to see an increase in the number of awards resulting directly from our internal investments, such as the National Science Foundation award recently made to Drs. Lantz and Wenger in our College of Criminology and Criminal Justice. Notably, COVID is a secondary focus of this award, showing that the investment in COVID-related projects is being leveraged to secure funding in a much wider range of topics and will have a sustained impact on the university's funding portfolio even after the need for COVID-related research decreases.

Beyond proposals, these projects have also resulted in countless publications, conference presentations, and media engagements, all of which serve to build the reputation of FSU researchers. While having a longer-term return on investment, these products significantly increase the chances of successful future proposals. They also have the benefit of increasing the reputation of the overall research community at FSU, part of a virtuous cycle that in turn further enhances the funding prospects of individual researchers.

## **New College of Florida**

### **Social Networks in the Times of COVID-19**

Dr. Steven Graham, Associate Professor of Psychology, conducted research aimed at understanding the experiences of LGBTQ+ people during the COVID-19 pandemic. Due to stigma and prejudice, people who identify as LGBTQ+ may seek out or create spaces in which they feel safer. If these safer spaces become unavailable, it is important to understand how social interaction patterns change for the people who use them.

### **Student Research Opportunities with the Multicultural Health Institute**

Two New College students worked as interns for the Multicultural Health Institute as part of the Florida Alliance for Health Professions Diversity Scholars Program. The program allowed students to pursue individual research programs, which benefited their academic pursuits (including theses research) while assisting the local community, specifically to address minority health disparities and assist with tasks such as contact tracing. One student's research focused on health disparities in the local Haitian community, while the other focused on community aid in addressing local food insecurities during the pandemic.

### **COVID-19 Related Research and Additional Funding Opportunities**

The relationship between the Multicultural Health Institute and New College has strengthened due to projects created in response to the pandemic. The National Endowment for the Humanities has awarded a federal grant to New College for an ongoing project exploring medicine, health, and society. This grant will continue to strengthen the academic and programmatic bond between our organizations. New College continues to seek additional funding to grow those programs, including pandemic preparation and response and addressing health disparities in the local community. Some 4<sup>th</sup>-year students are also using the pandemic as grounds for new research into how organizations, such as schools, non-profits, and local governments, have adapted and will continue to adapt to shifting expectations and the "new normal." Some faculty are looking to follow suit, which could position them for opportunities for federal funding in the social sciences.

## **University of Central Florida**

### **Exploring the Cyber Behaviors of Temporary Work-From-Home Employees**

Dr. Mindy Shoss, Associate Professor of Psychology, led a research team that investigated how employees behaved when faced with getting their jobs done remotely amid cyber threats. Their data found that 67% of participants indicated at least one instance where they knowingly failed to follow cybersecurity policies, primarily due to prioritizing completing a task easily over adhering to cybersecurity policies. The investigators are sharing their findings with business groups and local and national cybersecurity groups.

### **Intensive Care Unit Delirium in the COVID-19 Pandemic**

Dr. Brian Peach, Assistant Professor of Nursing, is leading research examining the psychological aftereffects of ICU admission for COVID-positive and COVID-negative respiratory failure. The study aims to better understand why some survivors experience post-traumatic stress, anxiety, depression, sleep disturbances, and increased alcohol usage or other substances. If triggers can be identified, a treatment program to assist ICU survivors with recovery could not only help improve patients' well-being but save thousands in medical costs with reduced readmission rates.

### **Rapid Acting Disinfectant Spray for Slowing the Spread of COVID-19**

An interdisciplinary team (engineering and medicine), led by Drs. Sudipta Seal and Griffith Parks, developed a nanoparticle-based disinfectant that can continuously kill viruses on surfaces for up to seven days. The team is now partnered with Kismet Technologies, a Central Florida-based manufacturing company, to continue the work necessary to get the disinfectant to market, which requires more research. The next phase of the study will look at how the disinfectant performs outside of the lab in real-world applications. The team is in talks with a local hospital network to test the product in their facilities. This work was supported with funding from the U.S. National Science Foundation, Kismet Tech, and the Florida High Tech Corridor.

### **COVID-19 Related Research and Additional Funding Opportunities**

There are several ways the coronavirus has positioned UCF to improve and increase research. From a process perspective, the university learned that physical distance does not necessarily mean functional distance. For over 18 months, researchers and staff conducted lab meetings, trainings, classes, and even patient care activities using new, remote-mediated methods. Additionally, new methods to schedule time in the lab and facilitate communication are more commonplace. Similarly, the pandemic required the university to learn, very quickly, more about cloud-based storage and analysis systems and improved methods to ensure data security.

There have been benefits from a content perspective as well. The need to address the impact of the spread of infection from a multidisciplinary perspective has managed to

rekindle a major cross-campus effort in infectious diseases research. The challenge presented by the pandemic has inspired many of the investigators to look at new ways of conceptualizing work. For example, the university has developed a clinical laboratory improvement amendments lab to assist in testing and screening in the current pandemic and prepare for future pandemics that now seem increasingly likely. Similarly, UCF has worked closely with its partners in the tourism industry to develop new products, processes, and procedures to reduce the overwhelmingly negative impact of this virus and future viruses. Many of the partnerships begun during this period of crises will continue to grow and develop into future conjoint projects, better positioning UCF to respond to the multidisciplinary needs that future funding opportunities require.

Finally, this time has provided UCF with an opportunity to work more closely with health care and social service agencies to improve the community. Early in the pandemic, when masks and protective equipment were in short supply, UCF was asked to provide equipment to workers providing services to homeless children and families. Similarly, the university quickly put its 3D printers to use printing face masks and other protective gear for local hospitals and other facilities. The work with these groups has strengthened UCF's position in the great Central Florida community, providing scaffolding to continue to build research working with those groups who remain committed to developing expanded partnerships.

## University of Florida

### **Delta variant epidemiology of vaccine breakthrough cases in Florida**

University of Florida professors Marco Salemi, Ph.D., and Michael Lauzardo, MD, partnered with UCF to study the Delta variant and breakthrough cases. The COVID-19 genomic epidemiology network was created to collect all positive samples from UF Clinical Pathology labs. Investigators analyzed hundreds of SARS-CoV-2 samples per week and found that approximately 45% of Delta-infected vaccinated patients exhibited a viral load above the transmissibility threshold. Several Delta variant transmission pairs between fully vaccinated individuals were identified through contact tracing and confirmed by phylogenetic analysis. These findings demonstrate that while current vaccines are extremely effective in reducing morbidity and mortality, they do not prevent a viral load presumably capable of transmission in a significant fraction of subjects in cases of breakthrough infections. Efforts to characterize the immune response in vaccinated individuals with breakthrough infections are underway at our university.

### **OneFlorida Clinical Research Consortium**

University of Florida Professors Betsy Shenkman, Ph.D., and David Nelson, MD, partnered with USF and FSU in the OneFlorida Clinical Research Consortium. This consortium is a collaborative research network and infrastructure serving the research interest across the state of multiple health systems, state agencies, and community groups, researchers, clinicians, informatics experts, and patients and caregivers. Since the onset of the COVID-19 pandemic, OneFlorida has served as a pivotal network for rapidly activating and implementing COVID-19 clinical trials and observational studies. In addition, OneFlorida has supported several ongoing research studies and funded grant applications for COVID-19 research by Florida researchers at UF and throughout the state.

### **PANDEMIC (Program to Alleviate National Disparities in Ethnic and Minority Immunizations in the Community)**

Dr. Linda Cottler, Ph.D. partnered with FSU to create PANDEMIC to increase the uptake of vaccinations for COVID-19 and influenza. PANDEMIC will examine the spectrum of promising interventions to increase COVID-19 and influenza vaccine uptake in underserved populations within rural, urban, and tribal areas. Additionally, the program will implement strategies to improve vaccine uptake in areas and populations of high need. At least one toolkit based on evidence from the interventions will be developed as a shared resource for further dissemination.

### **COVID-19 Related Research and Additional Funding Opportunities**

The University of Florida is well-positioned to continue to compete for additional funding opportunities related to COVID-19, including pandemic preparedness. To date, UF researchers have obtained over \$26.4M in federal funding for COVID-19-related research and over \$88.1M in total COVID-19 research funding. These COVID-related

research activities span the full spectrum of basic, translational, and clinical research, including virology, immunology, bioinformatics, and data sciences, interventional treatment trials, and observational cohort studies. The unique clinical research capabilities of the OneFlorida Clinical Research Consortium, the National Center for Advancing Translational Sciences-supported UF Clinical and Translational Science Institute (CTSI), and the interdisciplinary efforts of UF's research community have allowed the enrollment of over 2,700 subjects onto over 450 IRB-approved COVID-19 studies. The University of Florida has also established a COVID-19 biorepository containing over 40,000 specimens collected from COVID-19 tested patients, facilitating ongoing and future research studies using these valuable specimens. The proximity and integration of the university with a major health system (UF Health) on a single contiguous campus optimally positions UF to bring to bear the full strengths of the university's research capabilities against the pandemic problem. This is evident by the breadth of research studies addressing SARS-Cov-2 virology and the COVID-19 pandemic across many of the colleges of our university. In addition to the significant intellectual, environmental, and physical resources that UF has invested in COVID-19-related research, the university has also been an instrumental partner with the state of Florida in addressing the public health issues and infectious disease control measures of importance throughout the pandemic response. The UF Health Screen, Test, and Protect program has worked coordinately with the Florida Department of Health to implement a rapid screening, testing, and protective program to limit viral transmission and provide readily accessible COVID-19 testing and care. The university has also facilitated access to state-of-the-art clinical trials to COVID-19+ patients and safely collected and disseminated biospecimens from COVID-19+ patients to researchers through the university's biorepository. The University of Florida has worked with the Florida Department of Health and the U.S. Department of Health and Human Services to increase monoclonal antibody treatment awareness and uptake in underserved populations within the state, leveraging mobile clinical units, telehealth, and community stakeholder partnerships.

Additionally, UF has embarked on a large-scale initiative in artificial intelligence (AI) education, research, and faculty recruitment, which strategically positions UF to leverage the power of AI in predicting, preparing for, and ideally preventing future pandemics. The overall research strategy is guided by a UF COVID-19 Research Task Force that met weekly during the early phase of the pandemic and currently meets monthly in collaboration with Florida State University to amplify the impact of ongoing research activities and bring awareness to funding opportunities. In summary, the University of Florida is well-positioned to maintain its impactful leadership role and funding competitiveness in driving COVID-19-related and future pandemic research.

## University of North Florida

### **Telehealth Disparity: Investigating the Predictors for Low Utilization among Minority Populations**

Drs. Cynthia White-Williams and Di Shang conducted a study funded by the Gates Foundation that investigates social determinants of health, health status, and behavioral health causes of low telehealth utilization. The researchers are examining cross-cultural factors, gender differences, and other social factors that contribute to inequities in access and health outcomes. This work will inform socially and culturally sensitive interventions to promote equity in technology-enabled healthcare among minority populations.

### **SARS-CoV-2 Rapid Detection**

Drs. Steve Stagon and Lev Gasparov and a group of UNF researchers are developing a technology based on surface-enhanced Raman spectroscopy to detect the presence of the SARS-CoV-2 virus. The projects are particularly focused on addressing the stability and shelf-life of the sensor substrate to ensure the efficacy of portable and rapid detection. The team has engineered a storage mechanism to extend the shelf-life out to meaningful timeframes—months instead of days—and is testing the sensitivity of different portable spectrometers to successfully detect the virus causing COVID-19.

### **Targeted Release in the COVID-19 Correctional Crisis**

Dr. Brenda Vose, Associate Professor in Criminology and Criminal Justice, conducted research on the coronavirus' impact on incarcerated individuals and correctional facilities. Her research found that with fewer inmates, correctional facilities can comply with social distancing guidelines, introduce enhanced cleaning measures, and make necessary institutional adjustments. In so doing, they can limit the transmission of COVID-19 within correctional institutions, ensure the safety of staff and their charges, and enable prisons and jails to better accommodate the needs of the inmate population.

### **COVID-19 Related Research and Additional Funding Opportunities**

The University of North Florida's research portfolio focuses on social and behavioral research, as illustrated in the example projects listed above. Many federal agencies and non-profit funders are interested in socio-behavioral mechanisms that have successfully mitigated the pandemic and the impacts of the pandemic on different segments of society. The university's researchers moved quickly during the early months of the pandemic to collaborate with various partners, including state and federal agencies, to identify research and launch several studies. The university acquired external funding support for some of these studies, but many researchers used university resources or their own time and effort. One example is the Gates Foundation-funded COVID-19 Research Consortium competition. The UNF team was one of only 15 awarded, among Johns Hopkins, Harvard, Michigan, and UT-Austin.

## University of South Florida

### **KidCOVE Clinical Trial of Pediatric COVID-19 Vaccine**

Dr. Carina Rodriguez from the Morsani College of Medicine led the clinical trials for the Moderna COVID-19 vaccine for children ages six months to less than 12 years old. The KidCOVE study enrolled more than 100 pediatric participants locally to test the vaccine against a placebo for safety and immune responses over the next 14 months. This study is helping to provide critical information about the safety, reactogenicity, and immune responses observed with the vaccine in children and ultimately will produce the evidence the Food and Drug Administration needs to consider the vaccine for children. Data on the safety and efficacy of the vaccine between the ages of 5 to 12 is expected in the coming months.

### **Sterilization Mechanism of Corona Discharge for Masks and Environment**

An interdisciplinary team led by Drs. Ying (Sarah) Zhong and Libin Ye, developed a new technology that could address the mask shortages for healthcare workers. This technology will help keep wearers safer by disinfecting and recharging the masks' static protection that effectively block microdroplets carrying the virus. The team developed a new, patent-pending technology that can rapidly sterilize and electrostatically recharge the masks to their original filtration efficiency. Handheld devices to sterilize surfaces in homes, hospitals, and other public areas, such as restaurants, schools, and public transportation, are also in development.

### **Planning for Hurricane Shelter Operations during a Pandemic**

Dr. Jennifer Marshall led an interdisciplinary team of public health and psychology researchers spotlighting the complicated nature of disaster planning amid a pandemic, especially in areas of the country prone to hurricanes and where social distancing would be challenging in a public storm shelter. Their work led to the discovery of the compounding stress on the disaster workforce. A separate project led by College of Behavioral and Community Sciences faculty members Dr. Kristin Kosyluk and Dr. Jerome Galea specifically looked at the strain on frontline doctors, nurses, paramedics, police, and social workers, and developed "TABATHA" (Tampa Bay Area Treatment & Health Advisor), a chatbot capable of screening pandemic responders for levels of distress and directing them to mental health services. In addition to publishing their work, Dr. Marshall's team created a [website](#) to share insights and best practices to better support disaster workers nationwide.



## **COVID-19 Related Research and Additional Funding Opportunities**

The University of South Florida's innovative and collaborative culture has provided a unique opportunity to leverage institutional research strengths, scholarly expertise, and extensive experience in collaborating with external partners to quickly respond to the current COVID-19 crisis as well as future pandemics. The USF Pandemic Response Research Network (PRRN) was formed to create a strategic structure that continues to evolve to meet the challenges of COVID-19. The research areas within the network are:

1. Biomedical research, including basic research in therapeutics, diagnostics, vaccines, epidemiology, surveillance, and microbiome;
2. Behavioral, socioemotional and educational well-being;
3. Environmental consequences of pandemics;
4. Communication technology and transformation; and
5. Manufacturing, innovation, and entrepreneurship.

This network has had a tremendous impact on the research and scholarship output associated with the faculty clusters within the research hubs. The network catalyzed the submission of 156 COVID-19 related proposals totaling approximately \$52 million. Notably, these proposals were submitted across 57 academic departments belonging to six colleges across the university. The proposal submissions have resulted in over \$6 million in grants directly related to COVID-19 projects. Innovation and translation elements of the network have yielded 53 invention disclosures for COVID-19 related technologies. Additionally, two licenses are currently under negotiation, and USF faculty formed three startup companies within the first 12 months of the pandemic.

## **University of West Florida**

### **Viral Infection Propagation through Air-Travel**

Dr. Ashok Srinivasan with the Department of Computer Science led research on behavioral and social interaction patterns in crowded locations, which impact public health, such as the spread of epidemics, including COVID-19. Researchers developed models to suggest subtle changes to procedures for crowd management and the design of the built environment. This approach can reduce the infection risk with less disruption to human activities. For example, researchers suggested small changes to airline boarding procedures and airport security queues that could substantially reduce COVID-19 spread risk. Future work aims to identify and alleviate the specific vulnerabilities of underserved groups to COVID-19.

### **COVID-19 Related Research and Additional Funding Opportunities**

The University of West Florida continues with the research listed through the National Science Foundation and, after analyzing the results, UWF may pursue avenues for more enhanced additional funding for the study.