

Tulane launches multidisciplinary Centers of Excellence aimed at complex research challenges

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Dr. Giovanni Piedimonte, vice president for Research (Photo by Paula Burch-Celentano)

Tulane University will fund three new multidisciplinary Research Centers of Excellence focused on personalized medicine, sex differences in medicine and emerging infectious diseases — all distinct research challenges relevant to the COVID-19 pandemic.

The centers are a new effort launched by the Office of Research to mobilize investigators from different fields of study across the university to focus on specific, complex research challenges facing society.

“Tulane Research Centers of Excellence will focus on convergence research, which is research driven by a specific and compelling problem that also deeply integrates investigators from different schools, backgrounds and expertise,” said Dr. Giovanni Piedimonte, vice president for research. “Given the global impact of the SARS-CoV-2 virus, the first cycle of the program will fund centers that initially focus on aspects of COVID-19, but their research missions are broad enough to continue well past the pandemic.”

The new centers include:

- Tulane Center of Excellence in Sex-Based Biology and Medicine (TCESBM) led by Dr. Franck Mauvais-Jarvis, Price-Goldsmith Professor of Nutrition at Tulane University School of Medicine.
- The Tulane Personalized Health Institute (TPHI) led by Dr. Lu Qi, HCA Regents Distinguished Chair and Professor at Tulane University School of Public Health and Tropical Medicine.
- The Center of Excellence for Emerging/Re-emerging Infectious Disease (CEERID) led by Dr. Rudolf “Skip” Bohm, associate director and chief veterinary medical officer at Tulane National Primate Research Center.

The centers will receive up to \$200,000 per year for three years. The goal is for each to compete for federal and private research funding to become self-sustaining.

While scientists and doctors have observed differences between men and women in diagnosis, treatment and prevention of diseases for years, the research community has been slow to fully address the issue. TCESBM seeks to rectify this by exploring and characterizing how biological sex is a fundamental genetic modifier of biology and medicine.

“What clinicians know about the diagnosis, treatment and prevention of disease originates from studies overwhelmingly conducted on male cells, male mice and men. Historically, for multiple reasons, including the purported safety of women and their offspring, women of childbearing age were excluded from clinical trials,”

Mauvais-Jarvis said. “As a result, medical research and care have been centered on male physiology. We assumed that male and female cells and animals were biologically identical, and evidence-based medicine was defined by clinical trials performed predominantly in men.”

TCESBM will initially focus on how biological sex influences COVID-19 and ways to reduce mortality. Studies have shown that the coronavirus is more deadly for men than women, and that men are twice as likely to need critical care.

Dr. Franck Mauvais-Jarvis, Dr. Rudolf “Skip” Bohm, and Dr. Lu Qi (photos by Paula Burch-Celentano and Sally Asher).

The center will include researchers from the schools of Medicine, Public Health and Tropical Medicine, and Science and Engineering.

The Tulane Personalized Health Institute (TPHI), which also features researchers from the same schools, will focus on interpersonal variability and population disparities in health, and translate the findings to disease prevention, diagnosis and treatment. Interpersonal variability refers to factors that are different among individuals — their genetics, epigenetics, metabolism, gut microbiome and other aspects — that have an impact on health and disease risks. The institute will explore how those interplay with environmental, social and population-level risk factors.

The institute will first concentrate on COVID-19 and later explore broad-based health problems.

“The goal of the precision or personalized medicine is to tailor the treatment and prevention as best they can to the person’s level by taking into account interpersonal variability,” Qi said. “TPHI will foster new population and experimental research landscapes in studying the life course and systems mechanisms of personalized health. We hope to develop precision diet, lifestyle, and pharmaceutical interventions and treatments to reduce disease burdens and health disparities.”

The Center for Emerging/Re-emerging Infectious Disease will leverage Tulane’s considerable institutional infrastructure and expertise in fighting disease outbreaks. Researchers from the School of Medicine, School of Public Health and Tropical

Medicine, and Tulane National Primate Research Center will work together using multiple experimental models created for COVID-19 research.

“CEERID will develop teams of researchers with varied experience in infectious disease research to focus on priority areas,” Bohm said. “The center will conduct pilot projects to generate high-quality preliminary data in areas of evolving research interest across several species, leverage existing research resources, and develop new resources to expand capabilities.”

The center will initially study how immunity from seasonal cold infections — caused by a different coronavirus — affects COVID-19 outcomes and responses to COVID vaccination in both animals and people. It will also work on developing new treatments and identifying biomarkers that make people more vulnerable to infection.