

# Texas: Global Life Science Powerhouse



[www.thbi.com](http://www.thbi.com)

Texas is one of the leading life science states in the country and continues to outpace national growth for the industry. We must continue to protect and grow the life science industry in this state.

## Did you know:

- Texas is home to more than 5,500 life science businesses and 228,353 employees in related fields
- Academic R&D Expenditures of nearly \$3.3 billion
- Nearly \$1.2 billion in NIH Funding
- 4,704 patent awards to Texas inventors
- \$1.5 Billion in bioscience venture capital investments

*The mission of the Texas Healthcare & Bioscience Institute (THBI) is to research, develop, and advocate policies and actions that promote biomedical science, biotechnology, agriculture and medical device innovation in Texas.*



TEXAS BIOMEDICAL  
RESEARCH INSTITUTE

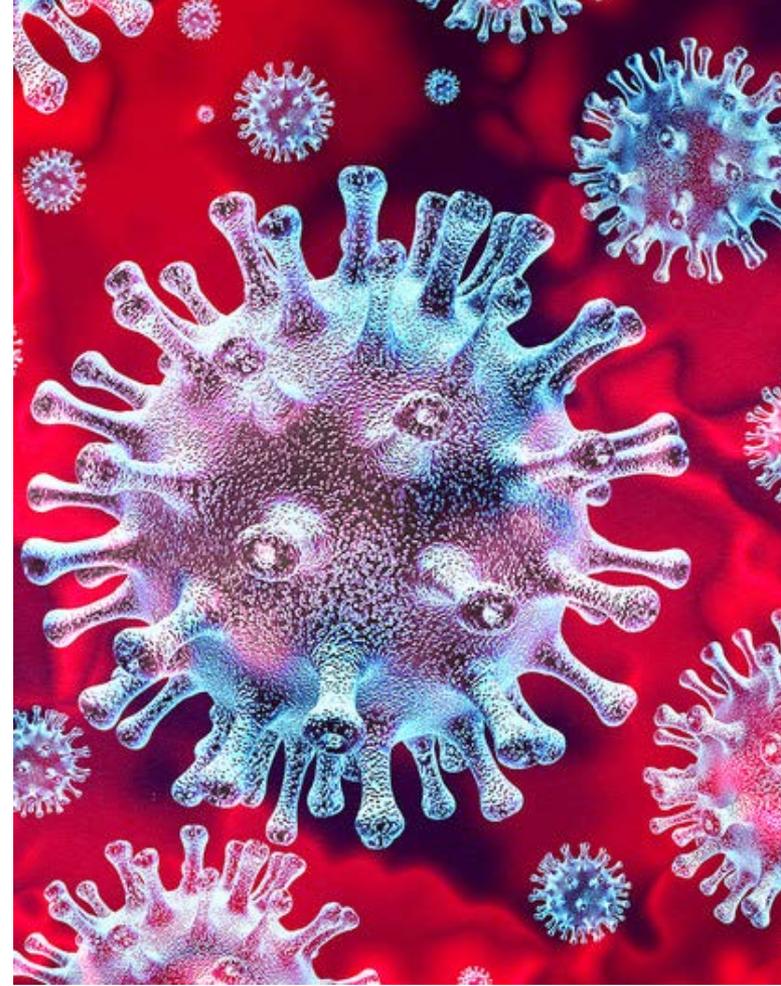
**THE BOLD PATHWAY  
TO DEFEATING  
INFECTIOUS DISEASES**

A SCIENTIFIC  
REVOLUTION

# OUR PASSION & OUR MISSION

**Texas Biomedical Research Institute** is an independent, not-for-profit, research institute with a strong history of collaborating with partners worldwide to develop breakthroughs in biomedicine. We have contributed to the world of science and human health for nearly 80 years.

Texas Biomed pioneers and shares scientific breakthroughs that protect you, your families and our global community from the threat of infectious diseases.



# WHAT'S AT STAKE

- Infectious diseases are increasing, constituting more than a quarter of all deaths worldwide annually.
- Infectious disease outbreaks have tripled since 1980 and “super bugs” are becoming more resistant to our current treatment arsenal.
- Covid-19 underscores how each and every person suffers from an infection at some point in their lives.
- Our population is aging, thus increasing our vulnerable population.



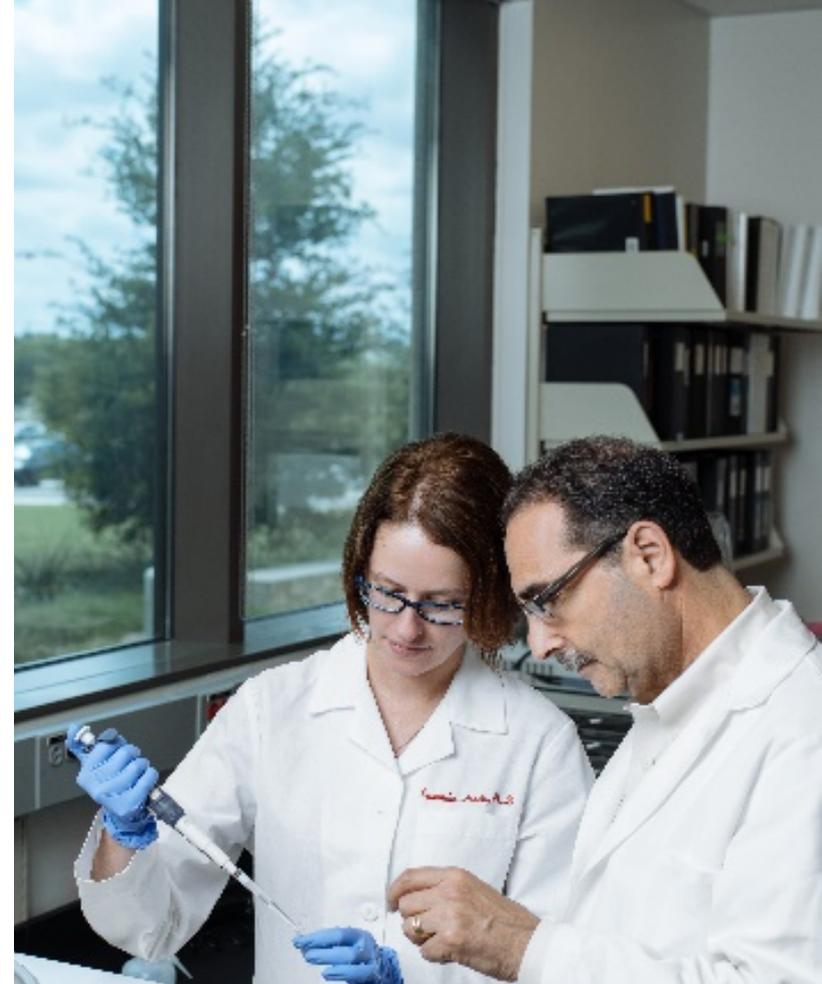
# Unique Resources in Effort to Combat ID

- Only privately-owned BSL-4
- Five fully outfitted BSL-3 facilities
- Southwest National Primate Research Center



# SUCCESSSES

- Hep C cure and Hep B vaccines now in use today, saving millions of lives.
- Ebola virus therapies now in use in the DRC
- Mechanisms involved in infections of the world's deadliest pathogens.
- Discoveries in TB diagnostics, therapies & vaccines.
- New tools in the fight against drug-resistant malaria.
- New animal models for HIV, Zika, Ebola, TB, hepatitis



# COVID-19 Working Group



Dr. Deepak Kaushal



Dr. Jean Patterson



Dr. Luis Giavedoni



Dr. Ricardo Carrion



Dr. Jordi Torrelles



Dr. Luis Martinez-Sobrido

## EHS

- Dr. Anthony Wang
- Dr. Beata Clapp

## SNPRC/Vivarium Support

- Tyneshia Camp
- Allison Whigham

## Biocontainment Program

- Anysha Ticer
- Heather Guenther
- Dr. Andrew Hayhurst
- Dr. Jordi B. Torrelles

## Maintenance

- Matt Majors
- Mark Behr
- Brianna Melendez

## Financial Support

- Eddie Meza
- Bruce Edwards

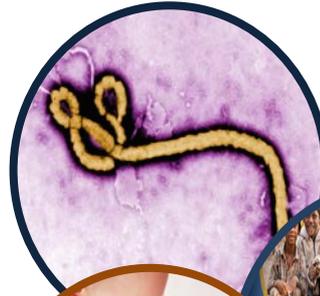
## Media Support

- Lisa Cruz
- Ja'Nise Solitaire

# COVID-19 Scientific Approach @Texas Biomed

## Host-Pathogen Interactions

The basic biology of infection in humans and animals



## Population Health

Correlates of disease susceptibility or resistance



## Disease Intervention and Prevention

Development of diagnostic tests, treatments and vaccines to prevent, reduce the severity, or cure infection



# COVID-19 Projects

## (Complete/In Progress)

- Production of viral stocks and complete genomic analyses to ensure consistency across all experiments on SARS-CoV-2 at Texas Biomed.
- ABSL3 and ABSL4 study to determine the best non-human primate species for modeling human disease.



# Projects in Progress

## Research Timeline

Week 1:  
begin  
growing  
the virus  
3/13

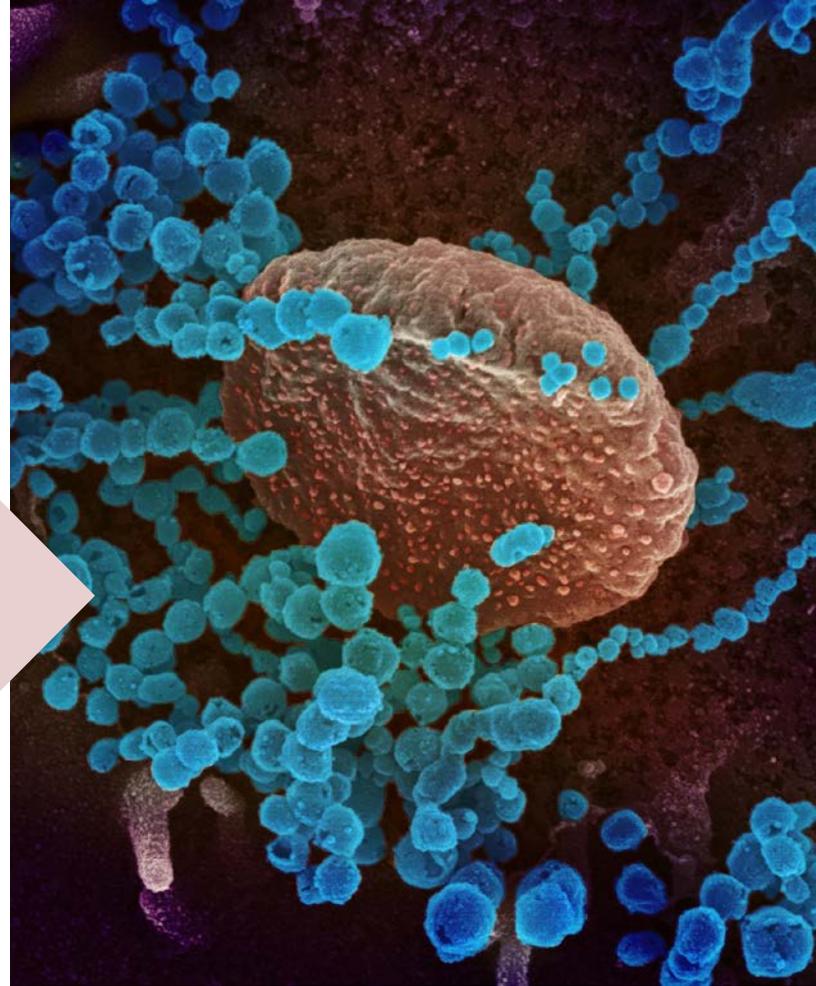
Week 2-4: live  
animal model  
studies  
3/23

Beyond –  
additional studies  
commence with  
known animal  
model available



Regulatory  
complete  
3/20

Week 4-6:  
Data  
analysis



# COVID-19 Projects - Planned

- Mice and guinea pigs are being infected with SARS-CoV-2, virus isolated, and re-infected to the same species to drive mutations in the virus that make it adapted to infected mice and guinea pigs.
- Study of SARS-CoV-2 disease and immunity in a transgenic mouse model that expresses the human ACE2 receptor (the receptor for SARS-CoV-2). This provides a small rodent model for rapid screening of vaccines and therapeutics.
- Studies of immune function in elderly rhesus macaques and determine if re-infection is possible. These studies will determine why the elderly are more susceptible to COVID-19.
- Variety of SARS-CoV-2 grants in preparation for NIH submission and contracts with industry partners.
- Feasibility discussions with a local and national groups to study disinfectant efficacy, decontamination protocols, the impact of SARS-CoV-2 infection on pregnancy and heart disease and potential diagnostic tests.
- Texas Biomed is participating in a rapid response pilot grant to study the role of a polybasic furin cleavage site in SARS-CoV-2 biology and therapeutic implications.

# Challenges

## Not IF but WHEN

- Another pandemic will happen
- Susceptible populations increasing
- Must learn from our current challenges to develop better answers (PROactive not REactive)
- Infectious diseases impact everyone

## Resource needs

- Greater public awareness and engagement in science
- Bench to market
- Science must be collaborative – pharma, academia, military, government, nonprofits
- R&D is expensive and requires investment in preparedness at federal, state and local levels

# Urgency For Answers

- The extraordinary cost estimates both financial and in loss of life associated with COVID-19 and the overall rise in infectious diseases, accelerates the urgency for new approaches to diagnostics, therapies and vaccines.
- Texas Biomed can help!

