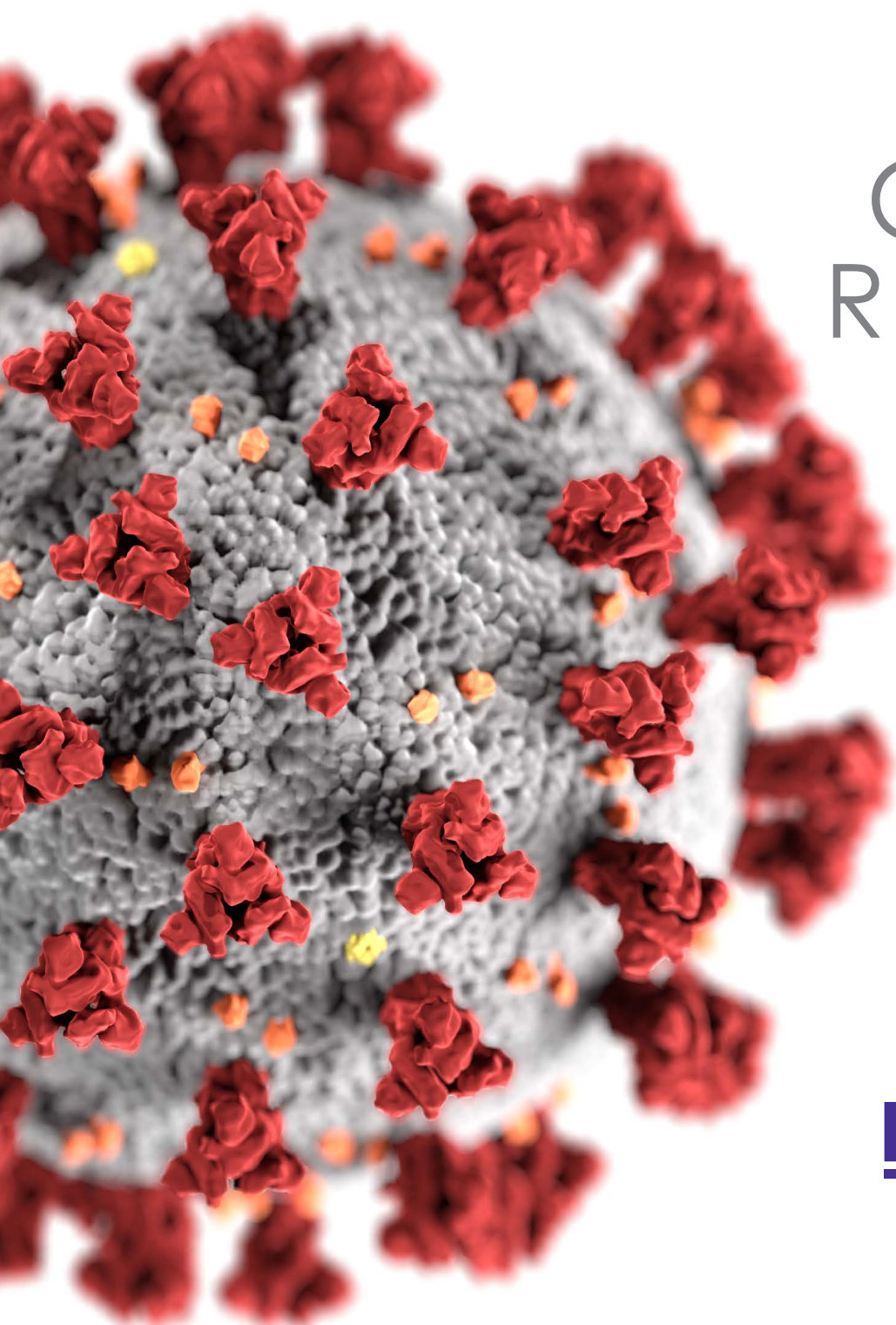


Inside RESEARCH

Summer 2020

SPECIAL EDITION:
COVID-19
RESPONSE



LSU Health
SHREVEPORT

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Faculty, staff and students at LSU Health Shreveport are actively engaged in research in a variety of biomedical areas, with concentrations in cancer, cardiovascular sciences, virology, neuroscience, tissue engineering and regenerative medicine, and addiction. A core part of the institution's mission, research on campus ranges from basic science to translational research and testing the latest therapies in clinical trials. The School of Graduate Studies helps to train future scientists, and our six centers, three of which are Centers of Excellence, further elevate the research portfolio.

The Office of the Vice Chancellor for Research supports these endeavors and is comprised of the Office for Sponsored Programs and Technology Transfer, Research Development and Management, Human Research Protections Program (HRPP), the Institutional Review Board (IRB), and the Research Core Facility.

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From the Chancellor



G.E. Ghali, DDS, MD, FACS, FRCS(Ed)

Chancellor, LSU Health Shreveport

Dear Friends,

I am honored to provide a brief intro letter for this special COVID-19 edition of Inside Research magazine.

I could not be more proud of all that our basic and clinical scientists (and their support teams) have accomplished during the past ninety days. We as a community are witnessing first-hand the value of having an academic medical center in our midst as the accomplishments shared in the pages ahead could not be achieved without a strong core of experts in a variety of fields.

I applaud their tireless efforts since the early days of COVID-19 leveraging their knowledge, national contacts and teamwork skills to favorably position our community in addressing this unprecedented pandemic.

I am confident LSU Health Shreveport will continue to play a key role in providing solutions to the challenges related to COVID-19. Enjoy the magazine and please continue to make the responsible choices of physical/social distancing, wearing a mask and washing your hands frequently.

Sincerely,

G.E. Ghali, DDS, MD, FACS, FRCS(Ed)
Chancellor, LSU Health Shreveport

From the Vice Chancellor for Research



Chris Kevil, PhD

Vice Chancellor for Research
Dean, School of Graduate Studies
Director/Principal Investigator,
Center for Redox Biology and
Cardiovascular Disease COBRE

Crisis can bring out the best in us as confirmed by the unified response of LSU Health Shreveport to the novel coronavirus pandemic and COVID-19 public health emergency. We are fortunate LSU Health Shreveport faculty researchers and clinicians pivoted immediately to the national frontline in battling the coronavirus with visionary leadership and support from Chancellor G. E. Ghali, MD.

While continuing their usual responsibilities, our faculty combined their considerable expertise in virology, infectious diseases, pulmonology and critical care medicine in the race to better understand SARS-CoV-2 and the ways it attacks patients. Their contributions locally, statewide and within the national scientific community earned accolades from patients, their family members, as well as state and national media and policy makers. This special edition of Inside Research offers readers glimpses of their significant contributions in response to the pandemic.

Among the impressive accomplishments of our faculty that are featured inside:

- The first academic COVID-19 testing lab in Louisiana, The Emerging Viral Threat Laboratory, was established with the support and expertise of the LSU Health Shreveport team in **less than two weeks**.
- Drawing further on faculty expertise, LSU Health Shreveport was first in Louisiana to gain approval as a clinical trial site to evaluate multiple COVID-19 potential treatments.
- Enhancing our outreach, the new Emerging Viral Threat Laboratory supports mobile COVID-19 testing across North Louisiana in medically underserved areas, where our state's most vulnerable populations often reside.

It has been my privilege to work with each outstanding colleague in this group of dedicated research professionals. Our team's work was encouraged and supported by the leaders of our institution and the State of Louisiana. Like our colleagues and collaborators around the world, our goal is to improve the lives of others through science.

In only a few weeks, COVID-19 and its devastating impacts have expanded biomedical research. We will be among those researchers studying it for months and years to come. I look forward to sharing with you more accomplishments and developments from the LSU Health Shreveport Office of Research in future editions of Inside Research. Meanwhile, please visit www.lsuhs.edu/coronavirus for additional information and updates about our COVID-19 response initiatives.

Thank you for your continued interest and support. Stay well.

Chris Kevil, PhD
Vice Chancellor for Research

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Director of Animal Resources

BY THE NUMBERS

- To date, the Serology Lab has completed a total of **2,219** serology tests and has tested **221** convalescent plasma donations. A team of residents and public health students have contacted more than **201** patients who have recovered from COVID-19 to see if they are interested in donating convalescent plasma, with approximately **50** agreeing to be tested to see if they are eligible donors.
- A total of **33,993** virology tests have been completed by the EVT Lab to date, with more than **14,402** of those tests samples coming from Caddo Parish.
- As of early July, the EVT Lab team has assembled **48,927** COVID-19 testing kits.

Learn more about the EVT Lab at
www.lsuhs.edu/EVTLab

Contact the EVT Lab:
EVTLab@lsuhsc.edu

Follow the EVT Lab on Twitter:
[@LSUHSEVTLab](https://twitter.com/LSUHSEVTLab)

LSU Health Shreveport Leads Louisiana Response for COVID-19 Testing and Research

LSU Health Shreveport was challenged and supported by leadership at the onset of the COVID-19 pandemic in the U.S. to play a key role in providing solutions. Over a period of just eight weeks, LSUHS mobilized its team of experts and utilized resources to create initiatives and programs that did not exist before the COVID-19 pandemic. Since early March, a COVID-19 Response Team comprised of LSUHS leadership, faculty physicians and researchers, and staff has been working around the clock to respond to the needs of our local community, state, country and the world due to this viral pandemic.

One of the first and most significant accomplishments of our institution was the establishment of the Emerging Viral Threat (EVT) Laboratory. With the support of Governor John Bel Edwards and the Centers for Medicare and Medicaid (CMS), scientists established the EVT Lab in 10 days in order to address the critical need for faster detection and processing of COVID-19 tests. The EVT Lab at LSUHS was the first in North Louisiana approved to conduct COVID-19 testing.

The Emerging Viral Threat (EVT) Lab is different from any other laboratory in the state because it does not only test to determine if a patient is COVID-19 positive, it also screens samples for other mutations of the virus. Data obtained from testing samples will be used for further COVID-19 research to better determine how to combat the virus.

“LSU Health Shreveport is proud to have nationally and internationally renowned NIH funded virologists on our faculty. Creation of the EVT laboratory brings together numerous regional experts to provide urgently needed COVID-19 testing solutions while allowing our community and state to be prepared for future viral threats when they occur,” said Dr. Chris Kevil, Vice Chancellor for Research.

“I am grateful to all those involved in securing and granting the approvals required to establish the EVT lab so quickly. Our research leadership, faculty and staff have worked tirelessly to reach this milestone of processing COVID-19 tests. Their efforts will play a key role in addressing the impact of this virus on the citizens of Louisiana,” stated Dr. G. E. Ghali, LSU Health Shreveport Chancellor.

The EVT Lab also offers serology testing, which is in high demand due to its accuracy in determining the number of COVID-19 cases that include those of people who have already recovered and were asymptomatic. Researchers established an Enzyme-linked immunosorbent assay (ELISA), a lab-based test that can determine the amount of COVID-19 antibodies in a patient sample. Antibodies are measured that bind against the receptor binding domain of the SARS-CoV-2 spike protein. This domain of the major glycoprotein mediates attachment to the host cell and is most diverse among different coronavirus strains and induces virus-neutralizing antibodies. Dr. Florian

Krammer, Professor of Microbiology at the Icahn School of Medicine at Mount Sinai in New York, was instrumental in providing the necessary reagents to the lab at LSUHS and allowing researchers to get the tests up and running quickly.

The LSUHS antibody testing is different from those that may be commercially available because it allows for the measuring of antibody titers, which shows the amount of antibodies in a person’s blood, and if linked to neutralization assays, could possibly determine whether somebody is immune.

The team also validated ELISA assays by developing a neutralization assay, which measures the neutralization of ‘pseudotyped’ VSV virions. These are viruses that mimic SARS-CoV-2 on the outside by expressing the SARS-CoV-2 Spike receptor protein in the viral envelope but contain harmless (not disease causing) genetic information that allow easy measurement of infection in the lab. This unique testing ability was possible through collaboration with Dr. Benhur Lee, Professor of Microbiology at Mount Sinai.

“The serology lab will aid the convalescent plasma therapy clinical trial that is ongoing at LSU Health Shreveport and throughout the community. By identifying the amount of antibody in donated plasma, we can select the most effective plasma to be used to treat infected patients,” said Dr. Matthew Woolard, O’Callaghan Family Endowed Professor in Microbiology and Associate Professor in the Department of Microbiology and Immunology. “In the future, we hope to use this serology assay to better determine who has been infected and understand the scope of the COVID-19 pandemic in North Louisiana.”

COVID-19 CLINICAL TRIALS

LSU Health Shreveport First Louisiana Site Approved for Three COVID-19 Clinical Trials

LSU Health Shreveport was the first institution in Louisiana and among the first in the U.S. to enroll patients in three clinical trials studying possible treatments for COVID-19 patients. In April, critical care and emergency medicine faculty at the LSU Health Shreveport School of Medicine joined the Department of Anesthesia at Massachusetts General Hospital (MGH) and the Division of Cardiology in the Department of Medicine at University of Alabama at Birmingham (UAB) to become one of the first centers in the country to enroll patients in an international study testing the use of inhaled nitric oxide to improve outcomes for COVID-19 patients with severely damaged lungs, using gas to effectively “kill” coronavirus in the lungs and improve delivery of oxygen to injured tissues.

“This is a wonderful collaboration with highly regarded institutions in the U.S. as well as sites in Europe. We have tremendous confidence that this therapy will alter the devastating effects of COVID-19, but we must test it. If results show promise, and since this gas is already FDA approved, wide spread use could begin immediately,” shared **Dr. Keith Scott**, Professor of Pediatrics and Principal Investigator for the inhaled nitric oxide clinical trials at LSU Health Shreveport. “I am fortunate to have my esteemed colleague and Professor of Emergency Medicine, **Dr. Steven Conrad** working alongside me on this trial as he brings immense research experience and knowledge in working with critically ill patients.”

In May, LSU Health Shreveport became one of five sites in the world involved in a clinical trial that assesses inhaled nitric oxide as a treatment for patients with mild to moderate cases of COVID-19. This clinical trial in particular will monitor patients with mild to moderate

cases of COVID-19 to see how they respond to inhaled nitric oxide as a treatment. Preventing disease progression in spontaneously breathing patients with mild to moderate disease could help to reduce the number of severe cases and deaths, which in turn lessens demand on healthcare resources such as critical care physicians and nurses.

These nitric oxide clinical trials are sponsored by Dr. Lorenzo Berra, Medical Director of Respiratory Care at Massachusetts General Hospital. MGH reports that preliminary data suggests that inhaled nitric oxide could have a virus-killing effect on COVID-19 due to the genomic similarities between this virus and those that caused the SARS and MERS outbreaks, and studies during the SARS outbreak in 2004-2005 demonstrated that nitric oxide was effective in killing that virus.

The third clinical trial that began at LSU Health Shreveport in April involves convalescent plasma therapy. This investigative therapy uses convalescent plasma from individuals who have recovered from COVID-19. It is possible that convalescent plasma contains antibodies to SARS-CoV-2 (the strain of coronavirus that causes COVID-19) and might be effective against the infection. Use of convalescent plasma has been studied in outbreaks of other respiratory infections, including the 2009 H1N1 influenza virus pandemic, 2004 SARS-CoV-1 epidemic, and the 2012 MERS-CoV epidemic. On April 4, the first convalescent plasma therapy in Louisiana was provided to a critically ill COVID-19 patient by LSU Health Shreveport physicians and researchers. The transfused plasma was donated hours earlier that same day by two people at LifeShare Blood Center in Shreveport.

Both individuals who donated plasma at LifeShare had fully recovered from COVID-19. Although promising, convalescent plasma has yet to be definitively shown to be effective in COVID-19.

There is a need for donations of convalescent plasma to be able to perform this therapy. The current criteria for convalescent plasma donations is that a person must be 14 days post-recovery of COVID-19 with a positive antibody test.

At LSU Health Shreveport, **Dr. Ricky Bass**, Professor of Internal Medicine and Pediatrics, is generating the registry of convalescent plasma donors and **Dr. Matthew Woolard**, O'Callaghan Family Endowed Professor in the Department of Microbiology and Immunology, is collaborating with LifeShare Blood Center in Shreveport to define antibody titers.

“Because of the LSU Health Shreveport Emerging Viral Threat Lab and its serology testing platform, we are uniquely able to identify potential convalescent plasma donors in collaboration with LifeShare to produce this potentially lifesaving therapy for the entire regional community,” said Dr. Kevil.



Inhaled Nitric Oxide

What is nitric oxide?

In humans, nitric oxide is naturally generated by blood vessels and by some brain cells as well. It helps to regulate blood pressure, engulfs invading toxins, and prevents platelets in the blood from forming clots that may be significantly compromised during times of stress including infection thus warranting the need for a supplemental supply. When inflammation, emphysema or a disease like cystic fibrosis attacks the lungs, the large blood vessels and tiny capillaries that deliver oxygen constrict. Inhaled nitric oxide also relaxes those vessels, increasing the transfer of oxygen to the blood and easing the heart's workload.

What is known about nitric oxide as a treatment for COVID-19?

Inhaled nitric oxide had previously been suggested to decrease original SARS-CoV infectivity over a decade ago, but its effect on SARS-CoV-2 remains unknown. Moreover, research from LSU Health Shreveport has shown that nitric oxide is a strong protector against tissue hypoxia, which occurs during severe COVID-19 infection. In Italy, the gas was used under less controlled study conditions; however, the treatment appeared to dramatically boost oxygen levels in the blood of COVID-19 patients, said Dr. Lorenzo Berra, the critical-care specialist at Massachusetts General Hospital who is leading these inhaled nitric oxide clinical trials in which LSU Health Shreveport is a collaborator. However, it will take more rigorous testing to clarify how much nitric oxide helps, he said.

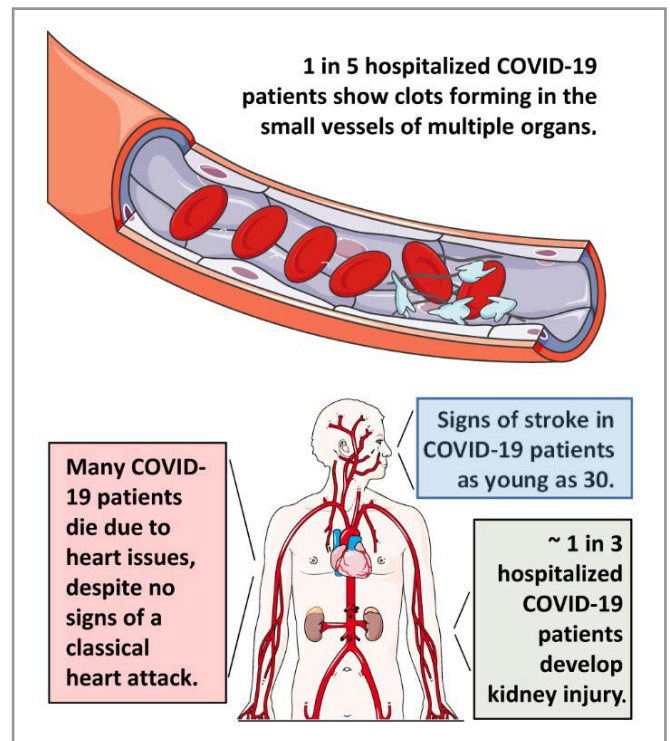
Center for Cardiovascular Disease and Sciences Looks to Study COVID-19 and Cardiovascular Conditions

The SARS-CoV-2 virus that causes COVID-19 has caused a worldwide pandemic, affecting over 4.5 million people in over 180 countries. Hospitalization rates for COVID-19 are worsened by the presence of preexisting cardiometabolic conditions, such as hypertension (49.7%), obesity (48.2%), diabetes mellitus (34.6%), and cardiovascular disease (27.8%)¹. In Louisiana, the top underlying conditions in COVID-19 deaths are hypertension (60%) and diabetes (nearly 40%). In addition to these conditions, race appears to play a major role in COVID-19 disease severity. African Americans have disproportionately high hospital admission rates and mortality rates despite similar rates of COVID-19 infection between Caucasians and African Americans¹. As of mid-April, African Americans accounted for 60% of COVID-19 related deaths, compared to 30% for Caucasians. However, the mechanisms underlying the enhanced prevalence of COVID-19 in these patients remain poorly understood.

Although primarily a respiratory disease, approximately 1 in 5 COVID-19 inpatients show signs of widespread blood clot formation within their vessels, limiting the ability of the cardiovascular system to supply tissues of the body with needed oxygen and nutrients. Pathology reports from multiple studies from across the world have shown clots in the small blood vessels of the lung, liver, kidney, heart, and brain from COVID-19 patients. These clots block blood flow to these vital organs resulting in symptoms resembling heart attacks and strokes, as well as signs of damage to multiple organs. Not surprisingly, patients showing signs of this widespread clotting issue experience more severe COVID-19 symptoms and are at a significantly elevated risk of death due to COVID-19. Furthermore, it remains unknown what long-term organ damage these patients will incur due to this COVID-19 driven clotting issue.

Researchers in the Center for Cardiovascular Diseases and Sciences (CCDS) are currently working to establish a variety of studies to better understand the link between COVID-19 and cardiovascular conditions. In collaboration with scientists from the University of Iowa, **Dr. Steven Bailey**, Professor and Chairman of Internal Medicine, is initiating a clinical trial to determine the

best dose of the anti-clotting drug enoxaparin to reduce clot formation in COVID-19 patients and improve clinical outcome. As part of the inhaled nitric oxide trial to treat COVID-19 respiratory dysfunction, **Dr. Keith Scott**, **Dr. Steven Alexander**, Professor of Molecular and Cellular Physiology, and **Dr. Chris Kevil** will examine whether this treatment also affects inflammation and clotting in these patients. Collaborative studies being assembled by **Dr. Paari Dominic**, Associate Professor of Cardiology and Assistant Director of the CCDS in Clinical and Translational Research, **Dr. Wayne Orr**, Professor and Director of the Research Division for Pathology and Director of the Center for Cardiovascular Diseases and Sciences, **Dr. Chris Kevil**, and **Dr. Gopi Kolluru**, Assistant Professor of Research in Pathology, will assess whether African Americans and diabetic patients are at an enhanced risk for COVID-19 related clotting complications and will identify novel biomarkers to better allow physicians to identify patients at risk of developing these clogged blood vessels before they occur. **Dr. Karen Stokes**,





The EVT Lab at LSU Health Shreveport

Associate Professor of Molecular and Cellular Physiology and Assistant Director of the CCDS, established the new CCDS Biorepository and is working to build a biobank of blood from COVID-19 patients to provide researchers with valuable clinical samples to study how COVID-19 infection results in these cardiovascular issues. Lastly, a research team of **Dr. Wayne Orr**, **Dr. Matthew Woolard**, and **Dr. Jeremy Kamil**, Associate Professor of Microbiology and Immunology, have begun to establish a Viral Complications Core that will allow researchers at LSU Health Shreveport to grow the SARS-CoV-2 virus and study how it affects cells of the blood vessels, heart, and lungs.

¹ Garg S, Kim L, Whitaker M, et al. Hospitalization rates and characteristics of patients hospitalized with laboratory-confirmed coronavirus disease 2019 - covid-net, 14 states, march 1-30, 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69:458-464

researching the virus and how patients were being affected by it. The patient demographics in Louisiana are very different compared to the patient demographics of research findings that have come out of Italy and China, and Dr. Cornelius wanted to explore this further. Her IRB-approved study is using patient demographics data and lab test results to determine what could lead to a worse outcome in some people with the goal of determining better treatments for these patients. Data from hospitals in Shreveport, Monroe, and New Orleans will be analyzed and provide insight to how COVID-19 has affected people across the state of Louisiana.

DAS181

Dr. Robert Holladay, Associate Professor of Clinical Medicine, is the Principal Investigator at LSUHS of a multicenter trial looking at treatment to prevent viral entry into the cells. Sponsored by Ansun Biopharma, this study builds on recent clinical evidence showing efficacy of DAS181, the Company's investigational recombinant sialidase for the treatment of severe COVID-19 infection. DAS181 has received both Fast Track and Breakthrough Therapy Designation from the FDA.

"DAS181 is a fusion protein which works as an enzyme to remove sialic acid from the surface of the host cell. Sialic acid is one of the receptors that are required for viral entry. By removing the sialic acid, we hope that this will decrease infection by SARS-CoV-2," said Dr. Holladay.

This is a 1:1 randomized study comparing it to placebo and is a substudy from an earlier study looking at its use to prevent influenza and parainfluenza infections. The drug is delivered by nebulizer therapy twice a day. To be enrolled, subjects must be 18 and older with known SARS-CoV-2 infection, bilateral pulmonary infiltrates on chest imaging, and hypoxia. The subjects cannot be on mechanical ventilation to start, however, it may be continued if they require mechanical ventilation.

Additional Clinical Trials Led by LSU Health Shreveport Faculty Studying Various Aspects of COVID-19

LSU Health Shreveport faculty members that specialize in a variety of disciplines are leading additional clinical trials to study COVID-19 and its impact.

COVID-19 Prognosis Factors

Dr. Angela Cornelius, Associate Professor of Emergency Medicine, is using her experience as a member of the LSU Health Shreveport Strike Team that assisted with COVID-19 response in New Orleans to better understand what clinical parameters influence disease outcomes. In addition to caring for COVID-19 positive patients at West Jefferson Memorial Hospital, Dr. Cornelius was

Telehealth Visits and COVID-19 Knowledge

Dr. Connie Arnold, Professor of Medicine, and **Dr. Terry Davis**, Professor of Medicine and Pediatrics, are working on a collaborative and quality improvement project with Dr. Michael Wolf at Northwestern Feinberg School of Medicine in Chicago. With monitored assistance of medical students, Master of Public Health (MPH) students, and online survey platforms, a telehealth and COVID-19 knowledge, attitude and behavior survey with patients, and a telehealth survey for providers is being administered. A goal of 1,000 recorded responses has been set with metrics in place to hopefully achieve by June 30. Patient survey responses will reflect a statewide demographic based on those who seek care at Ochsner LSU Health Shreveport. The data will be analyzed over time revealing the changes in the public concern regarding the reopening of society. These known concerns will aid physicians in directly addressing with patients and in improving communication with the public.

SARS-CoV-2 Viral Genome Sequencing

Viral genome sequencing is another important component of COVID-19 research because mutations occur as the virus copies itself and spreads, just as a typist might make a typo. These mutations can serve as fingerprints that helps scientists better understand how the virus is spreading, and how effective social distancing and shelter in place orders have been. **Dr. Jeremy Kamil**, Associate Professor of Microbiology and Immunology, and **Dr. John Vanchiere**, Professor of Pediatrics, are leading an investigator initiated research trial focusing on COVID-19 viral genome sequencing. Their research has determined that the lineages of SARS-CoV-2 (the coronavirus that causes COVID-19) present in Louisiana are of surprisingly lower diversity than most, if not any other, state in the U.S. The EVT Lab has already obtained complete viral genome sequences for 159 Louisiana



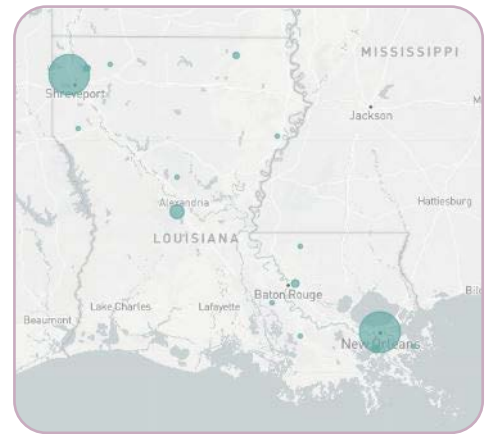
Viral Genome Sequencing

SARS-CoV-2 genomes. These data have already shed light on where the virus infecting our area came from by analyzing the specific pattern of mutations that are present in the viruses in our region. Although the COVID-19 pandemic started in China, these results show the virus accounting for the Louisiana outbreak came from an outbreak in Europe.

The LSUHS COVID-19 viral genome sequencing has been a collaborative effort with the help of Dr. Vaughn S. Cooper and Daniel Snyder at the Microbial Genome Sequencing Center (MiGS). MiGS sequenced the viral genomes out of directly out of patient RNA samples that were purified by **Dr. Rona Scott**, Mingyu Ding Professor of Microbiology and Immunology, and her team in the EVT Lab. Because the viral RNA makes up a vanishingly tiny amount of the RNA present in clinical samples, the team at MiGS made use of a highly sensitive technology called “hybridization capture” that is used to sequence human genomes from ancient DNA found in Neanderthal bone fragments. Importantly, this sequencing work contributes to a worldwide effort to fight the pandemic. By submitting the results to the Global Initiative on

To learn more about clinical trials at LSU Health Shreveport, visit www.lsuhs.edu/research/clinical-trials

This history of the virus represented on the map to the right, shows the evolutionary relationships of hCoV-19 (or SARS-CoV-2) viruses from the ongoing novel COVID-19 pandemic based on virus samples that have been sequenced in Louisiana.



Sharing All Influenza Data (GISAID) database, LSUHS researchers are making it possible for scientists to analyze our Louisiana data in the context of international sequencing efforts.

Work from genomic epidemiologists at Nextstrain.org helps visualize the diversity of viral lineages, and to visualize transmission chains as the virus has spread around the world. In Louisiana, LSU Health Shreveport is leading the state in the number of GISAID contributions that make up the genomic epidemiology data set for Louisiana, and thanks to our partners at MiGS, the EVT Lab sequences also make up the largest number of high-quality genomes from our state. Although the number of viral lineages is remarkably limited at this time, our scientists are continuing to obtain viral genome sequences.

As travel increases and people emerge from lockdown, Drs. Kamil and Vanchiere expect to see new lineages arrive in Shreveport: “It’s not a matter of if, but when.” However, Dr. Kamil notes that even though “mutations” sound scary, none of these mutations make the virus more dangerous: “There is only one strain of SARS-CoV-2. It is scary enough already. These mutations simply provide a “name tag” or a “scuff mark” on the genome that helps us understand where it came from, how many times it was introduced in a community, and how it is spreading in our region.”

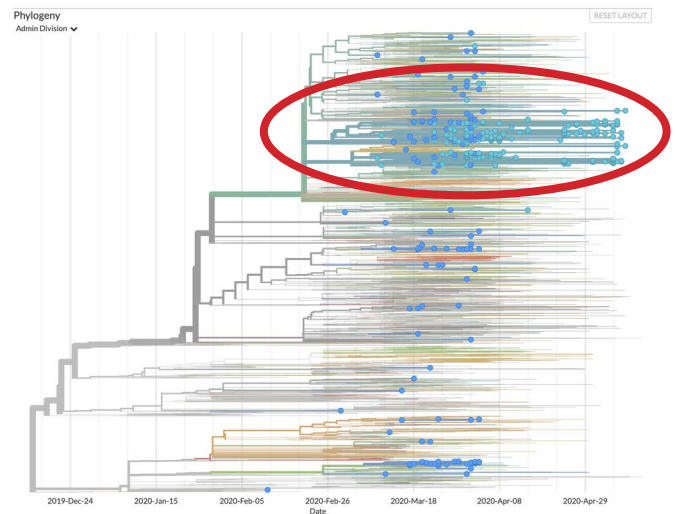
What is important is that the diversity of genomes detected in an area can give public health experts “a report card” for how well the control measures and social distancing are working.

“Louisiana provides an interesting situation in which seeing more diversity of viruses would be a bad sign. It means you are not preventing the virus from getting around,” said Dr. Kamil.

Genomic epidemiology of novel coronavirus - North America-focused subsampling

Maintained by the Nextstrain team. Enabled by data from GISAID

Showing 366 of 4183 genomes sampled between Feb 2020 and May 2020. Filtered to Louisiana (225) Texas (141).

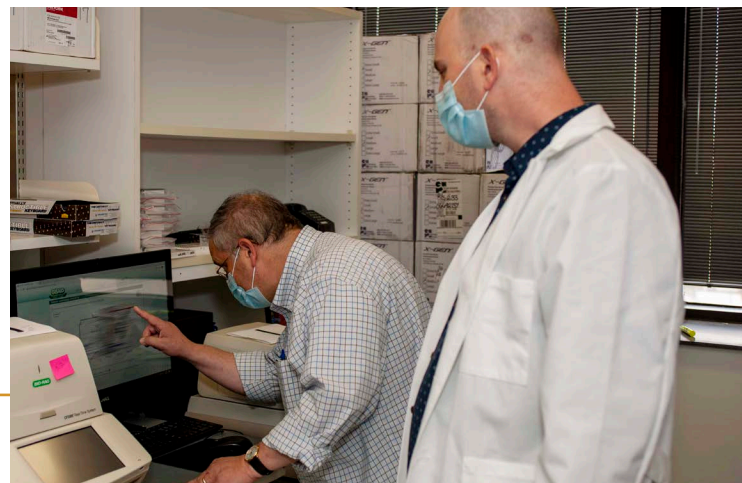


Genomes sequenced in Louisiana (noted by teal blue dots) vs. Texas (noted by royal blue dots). There is immense scientific interest in Louisiana COVID-19 cases due to low lineage diversity, or a “highly structured” outbreak.

GRAPHIC CREDIT

Nextstrain.org and GISAID.org, Dr. Emma Hodcroft (University of Basel, Switzerland), and the laboratories of Dr. Robert F. Garry, Jr. (Tulane University) and Dr. Kristian G. Anderson (Scripps Research), in addition to the CDC/Ochsner Health, for the New Orleans sequences.

Viral Genome Sequencing





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Meeting Community Needs with Mobile Testing

Testing is an important aspect of fighting the COVID-19 pandemic and with the capabilities of the Emerging Viral Threat Lab, our Partners in Wellness mobile cancer screening vans, and many community partners and supporters, LSU Health Shreveport was able to quickly establish a mobile COVID-19 testing initiative for medically underserved citizens in our region. Since the end of April, more than 20 testing sites have been held across North Louisiana and nearly 1,700 tests have been administered.

The efforts of LSU Health Shreveport and the Emerging Viral Threat Lab to expand COVID-19 testing to rural and medically underserved areas in Caddo Parish and north Louisiana would not have been possible without the support of community partners and corporate donations.

PHOTOS

1. The mobile COVID-19 testing team visited David Raines Community Health Center in Gilliam, La., on May 1.

2. Members of the Louisiana National Guard help assembly “stay healthy” kits.

3. Cars wait in line to receive free COVID-19 testing at Woodlawn High School on May 2.

4. Dr. G. E. Ghali with Mr. Mark Evans from the Shreveport-Bossier Committee of One Hundred, Inc., which donated \$7,500 in support of the community COVID-19 testing efforts.

5. Mr. Allen Organick at mobile COVID-19 testing announcement press conference on April 24.

6. The District 8L Lions Club donated equipment and PPE to the EVT Lab with a grant received from the Lions Club International Foundation.

7. U. L. Coleman Companies donated \$10,000 to support COVID-19 testing of first responders in Shreveport-Bossier. Pictured: Cole Guthrie, SVP of Development, U. L. Coleman Companies; Linc Coleman, President/CEO, U. L. Coleman Companies; David Lester, CFO, U. L. Coleman Companies; Dr. G. E. Ghali, Chancellor LSU Health Shreveport; and Dan Charchian, VP of Property Management/Operations, U. L. Coleman Companies

8. EVT Lab team members and Louisiana National Guard conduct free COVID-19 testing at David Raines Community Health Center on April 25.



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Realizing the need for more COVID-19 testing in rural and medically underserved locations in Caddo Parish, the **Caddo Parish Commission** approved the allocation of \$175,000 to support mobile COVID-19 testing in areas identified with the greatest need. The request, originally introduced by **Commissioner Steven Jackson**, was approved by the Caddo Commission on April 10 and the partnership officially began on April 25 with the first mobile testing site being held at David Raines Community Health Center in the MLK neighborhood.

“The Caddo Parish Commission is proud to support the efforts of LSU Health Shreveport and to provide more testing for COVID-19 in our communities. Through this partnership, we hope to see greater access to medical resources, and ultimately, data that will move us closer to a vaccine and treatment of this disease,” said **Caddo Commission President Mario Chavez**.

LSU Health Shreveport also received a \$125,000 gift from **Inferno Manufacturing Corporation** to support mobile COVID-19 testing efforts, which is being used in combination with the Caddo Parish Commission grant to deploy mobile testing units in rural areas within Caddo Parish, and has allowed LSUHS to expand its testing sites across north Louisiana.

Mr. Allen Organick, owner of Inferno Manufacturing Corporation in Shreveport, read the story about Caddo Parish Commission’s emergency mobile testing grant. He called Commissioner Stephen Jackson to praise the

CONTINUED ON NEXT PAGE

SPECIAL THANK YOU TO

Mobile COVID-19 Testing Supporters:

Caddo Parish Commission
 Inferno Manufacturing Corporation
 David Raines Community Health Centers
 U. L. Coleman Companies
 Shreveport-Bossier Committee
 of One Hundred, Inc.
 Louisiana National Guard
 City of Shreveport
 One Hundred Men of Shreveport
 Shreveport Public Assembly & Recreation
 (SPAR)
 Integrity Family Medical Center
 Caddo Parish Schools
 Tensas Health Clinics
 Caddo-Vivian Branch Parish Health Unit
 Catahoula Parish FQHC
 CommuniHealth Clinics
 Hilton Hotel in Downtown Shreveport and
 River Bend Rotary Club *for their donation
 of hygiene products and masks included
 in “stay healthy” kits provided to everyone
 tested at mobile COVID-19 testing sites.*

EVT Lab Donations:

SWEPCO and American Electric Power *for
 the generous donation of N95 masks and
 gloves for EVT Lab staff.*
**John Chidlow Jr., PhD, LSU Health
 Shreveport School of Graduate Studies
 alumnus and CEO of Innolyzer Labs, LLC in
 Shreveport, who donated 20 gallons of hand
 sanitizer.**

Luminess Cosmetics *for donating 5,000
 face shields to be worn by LSUHS medical
 students, faculty and first responders who
 are involved in COVID-19 testing around the
 community.*

**Griggs Enterprises Inc., Giuseppe’s
 PastaCaffè, and Sid Potts Inc.** *for providing
 lunch to EVT Lab staff.*

District 8L Lions Club *for their donation
 of masks and essential equipment needed
 for virology and serology testing, and
 3D-printed materials.*

MOBILE TESTING

action taken by the Commission and asked him how he could personally support these efforts. Mr. Organick was immediately connected with **Chancellor, Dr. G. E. Ghali**, and **Vice Chancellor of Research, Dr. Chris Kevil**, who explained the need for increased COVID-19 testing in Caddo Parish and beyond.

“The health sciences center is very appreciative of this generous gift from Mr. Organick and Inferno Manufacturing Corporation. It will be put to invaluable use in expanding the access to both viral and antibody testing, particularly in underserved areas of north Louisiana,” stated **Dr. Ghali**.

Inferno’s gift will ensure that the mobile testing program will quickly reach areas most affected by COVID-19.

Mr. Organick commented, “People who serve essential roles in our community such as grocery and retail service, nursing homes, and other healthcare services deserve our respect and gratitude. When I read that the Parish had committed to expanding testing, I knew it was going to help a lot of people. But I wanted to make sure we could help even more. My hope is that other business owners will support the research and outreach activities of LSU Health Shreveport. Local businesses have the power to act with speed for the public good.”

Another local business that shared their support for the testing efforts of LSU Health Shreveport was **U. L. Coleman Companies**, which donated \$10,000 to make COVID-19 testing available to first responders in north Louisiana. As U.L. Coleman Companies leadership evaluated options to meet needs in the community related to COVID-19, it determined that support of testing would not only impact the health of our community, but its ability to return to work based on testing data.

“I am so grateful we have an institution like LSU Health Shreveport which is able to address this pandemic in numerous ways. As a property owner dealing with thousands of tenants, supporting testing for our first responders is an honor because of the services and sacrifices they make each day, but particularly during this pandemic,” stated **Linc Coleman, President & CEO of U.L. Coleman Companies**.

“I deeply appreciate the support of U.L. Coleman Companies, as well as all who have contributed to our testing efforts. Every dollar contributed is critical to our expansion of COVID-19 testing, which is an expensive endeavor when delivered at the accuracy level provided by our Emerging Viral Threat and Serology labs,” shared **Dr. Ghali**.



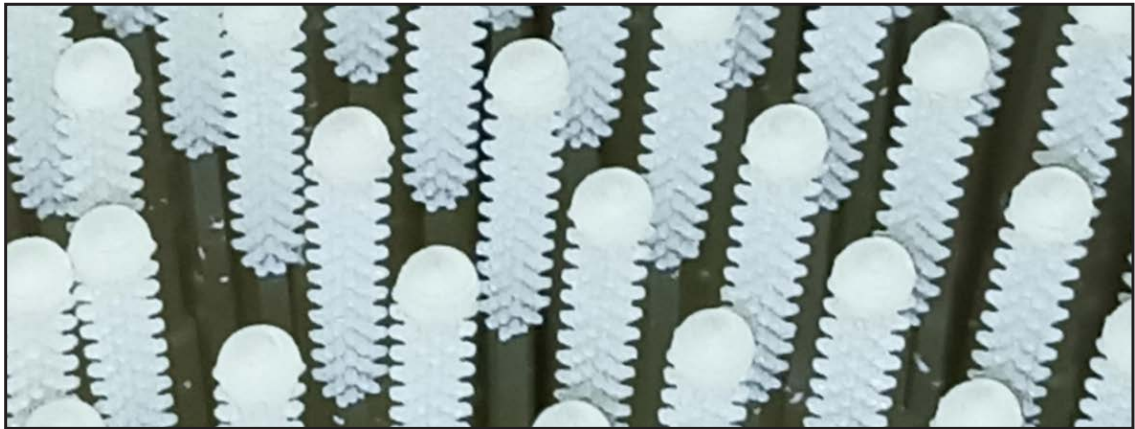
Staff of the Emerging Viral Threat Outreach Team administered COVID-19 testing and training on administering testing to select Shreveport and Bossier fireman who in turn tested the remainder of their respective fire departments.

District 8L Lions Club, comprised of 21 clubs located throughout north Louisiana, recently received a grant from the Lions Club International Foundation to assist with emergency services for medical supplies needed to combat the COVID-19 pandemic. When the Lions Club learned about the COVID-19 research and community testing efforts being led by the EVT Lab at LSU Health Shreveport, they did not hesitate to offer their support. In addition to donating 300 medical grade masks, the Lions Club facilitated acquiring three pieces of important equipment needed by the EVT Lab: an INTEGRA 12 Channel VIAFLO, a Heratherm™ General Protocol Microbiological Incubator, and a LulzBOT TAZ Workhorse 3D Printer.

“The Lions Club is honored to be able to provide the Emerging Viral Threat Lab with critical protective gear and equipment needed to continue their COVID-19 testing endeavors. We are proud to support the work that LSU Health Shreveport is doing in response to the COVID-19 pandemic, which is so important in our community and beyond, and synonymous with important values of the Lions Club International,” said **Terry Harkey, District Governor District of Lions Clubs International District 8L**.

INNOVATION

3D Printing Provides Solutions for COVID-19 Needs



The COVID-19 pandemic has produced many medical challenges, which LSU Health Shreveport has risen to meet. Among the most important goals for clinicians and scientists has been to determine whether a patient is infected with COVID-19. While the LSUHS COVID-19 Response Team very rapidly created the EVT Lab in Shreveport, there have been national shortages for testing supplies, which have threatened the ability of such testing labs to perform tests. A crucial part of COVID-19 test kits is the nasal swabs, which have been in short supply as the demand for COVID-19 testing has increased around the United States and internationally. These swabs need to be prepared from specific materials and must have particular shapes to ensure accuracy for specimen collection.

Fortunately, scientists at LSU Health Shreveport were able to utilize existing research and design facilities at the institution to 3D print resin polymer nasal swabs which can be used by the EVT Lab. As part of a national cooperative with the University of South Florida (USF) Health, Northwell Health, New York's largest healthcare provider, and Formlabs, LSU Health Shreveport has obtained the printing files for a patented

swab design, becoming the first in Louisiana to produce these patented 3D-printed swabs. **Dr. Steven Alexander**, Professor in the Department of Molecular and Cellular Physiology, is leading the effort and started to produce these 3D-printed nasal swabs in large numbers using a technique called photopolymer laser printing. This light activated printing technique can produce medical devices which are chemically inert, sterile and compatible with accurate testing procedures. Dr. Alexander's lab has started swab production with photoprinting occurring throughout the day and night. His lab has the capability to produce 324 of the swabs in one day and has ramped up production significantly over the past couple of weeks.

"This type of printing enables us to make even the most sophisticated testing tools available anywhere and the workflow is increasing so that hopefully soon we may not only meet our own needs, but perhaps other hospitals in the area," said Dr. Alexander. "The COVID-19 pandemic has fundamentally challenged how we work, but 3D printing can really help overcome problems with the availability of medical supplies, shipping and delivery which help to ensure continuity of medical testing and care."



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May 5, 2020

Thank you to everyone who participated in the Community Foundation of North Louisiana's Give for Good Day on May 5 and supported LSU Health Shreveport. LSUHS donors gave a total of **\$38,765.61** to support causes at our health sciences center, with at least **\$25,000** designated to the LSU Health Shreveport COVID-19 Support Fund, which enhances our testing, research and patient care efforts.



— COVID-19 —
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