RESEARCH MATTERS

2020 ANNUAL REPORT

LOUISIANA
CANCER
RESEARCH CENTER

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DEAR FRIENDS,

There is no question that 2020 has been a challenging year on many fronts. A cancer diagnosis is devastating enough without the added risk of COVID-19.

The New Orleans metropolitan area was an early hot spot in the COVID-19 global crisis. Throughout the phased city and state response, the Louisiana Cancer Research Center provided support and critical research infrastructure.

Despite the fact that COVID significantly altered day-to-day activities, LCRC researchers were able to preserve their mission critical work. Many pivoted their activities to assist in the growing scientific response to quelling the pandemic. Member faculty were able to collect and provide critical convalescent samples to the National Institutes of Health.

LSU Health New Orleans, Tulane University School of Medicine, Xavier University of Louisiana, and Ochsner Health assisted the region by responding to the need for testing and therapeutic care.

As the year progressed, some of these activities led to funded research grants and the development of important resources for future research. As difficult and demanding as 2020 was, much good rose to the surface. Bench researchers, public and private, partnered to develop effective vaccines in a timeframe unprecedented in human history. It demonstrated the importance of basic research and the critical role research universities play in responding to crises on a regional and global level.

A lot can be said about the extraordinarily rich environment of the New Orleans region.

> The pandemic demonstrated the importance of basic research and the critical role research universities play in responding to crises on a regional and global level.

Not least of which is its diverse academic communities. The city has multiple universities and is one of the few with two medical schools. Sometimes it may appear that research is something distant and inscrutable. In times like these, however, it becomes apparent that the strong research presence in the region exponentially increases the ability to respond quickly and effectively to medical and other crises when they arise.

Sincerely,

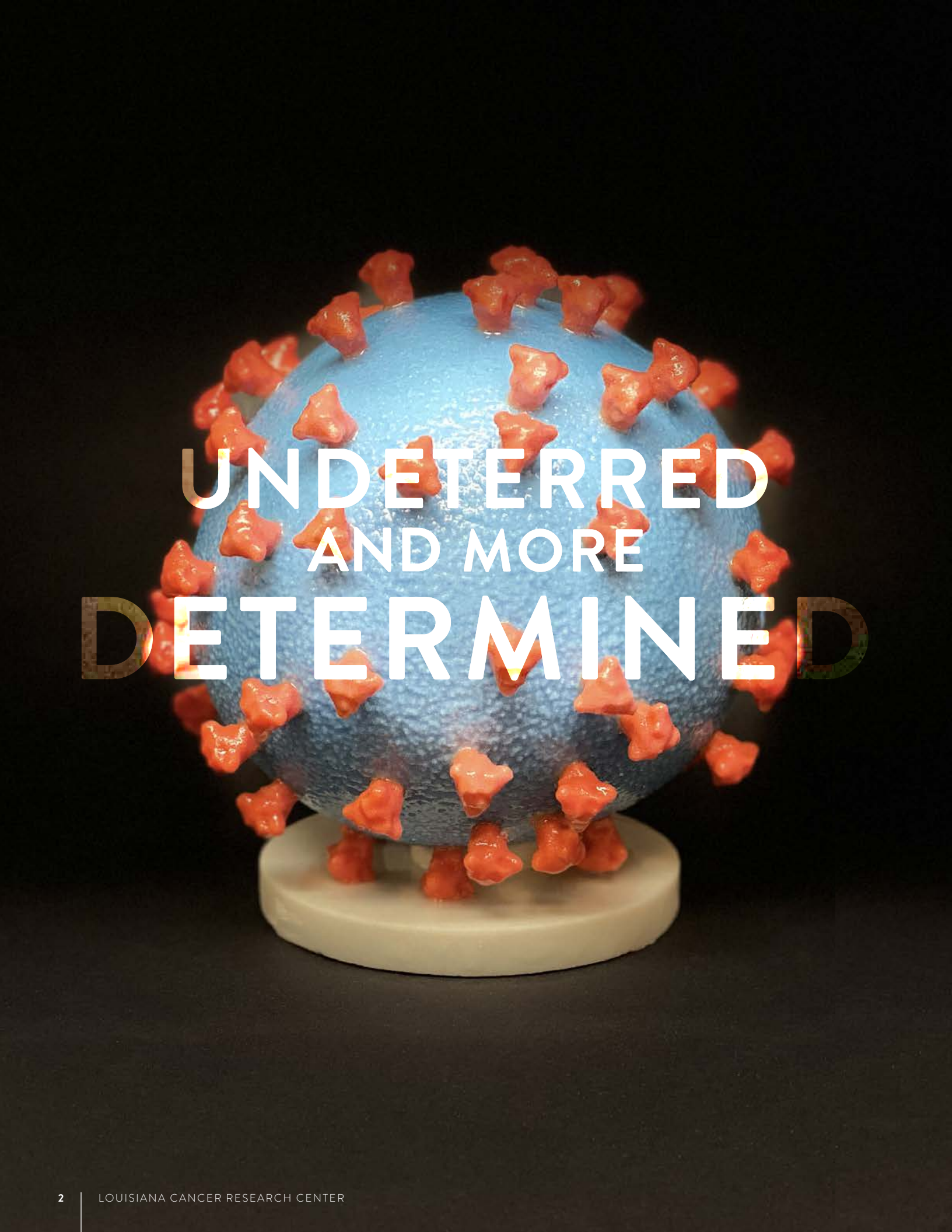
SVEN DAVISSON
Chief Administrative Officer
& Interim Chief Executive Officer

2020 BY THE NUMBERS

290
PUBLICATIONS RELEASED

$29
MILLION DOLLARS IN CANCER-RELATED NIH FUNDING

2,346
NEW CLINICAL TRIALS PATIENTS


UNDETERRED
AND MORE
DETERMINED

THE SPREAD OF COVID-19 POSED UNPRECEDENTED CHALLENGES FOR OUR NATION'S SCIENTISTS, INCLUDING CANCER RESEARCHERS AT THE LCRC. LITTLE WAS KNOWN ABOUT THE MYSTERIOUS VIRUS WHEN IT DESCENDED UPON COMMUNITIES LAST SPRING, PRESENTING DEADLY AND MYSTERIOUS THREATS, ESPECIALLY TO CANCER PATIENTS WHO ARE AMONG THE MOST VULNERABLE.

Our scientists rose to the challenge, immediately expanding their research focus to include COVID-19, supporting virus testing development and distribution, evaluating the risk and immune response of cancer patients and survivors, and supporting vaccine development and distribution.

Thanks to the collaborative efforts of the nation's research community, including the work of our scientists, doctors now know more about the coronavirus, there are vaccines, and strides have been made in treatment therapies. All the while, LCRC member scientists are forging ahead with their pre-COVID research, more dedicated than ever.

An unfortunate byproduct of the pandemic's necessary lockdowns is a reduction in the preventive care that is so important in Louisiana, a state with some of the highest cancer rates in the country. The number of cancer screenings and individual annual checkups in Louisiana is down, as it is throughout the country. Cancer waits for no one and advances in cancer research, including clinical trials are more critical than ever.

OUR SCIENTISTS ARE READY.

COVID AND CANCER IN LOUISIANA

THROUGH RESEARCH AND SUPPORT, LCRC MEMBERS ARE SEEKING TO LIMIT COVID-19'S EFFECT ON CANCER PATIENTS.

Over 7.3 percent of the COVID-19 cases in Louisiana involve people living with cancer. Theoretically, convalescent plasma contains protective antibodies that mitigates its effects. Yet, there is a large gap in our understanding of the mechanisms that drive immune responses and how these responses relate to the disease.

The Tulane University Convalescent Antibody and Immunity Network (TUCAIN) was established to evaluate the efficacy of convalescent plasma by studying a diverse cohort of COVID-19 survivors, including a large group of patients with malignancies. Using serial blood collections, researchers are studying the evolution and durability of the immune response over time. They then correlated these responses to patient outcomes and disease development using a "big data" systems biology approach.

They hope to determine if COVID-19 survivors develop long-term, antibody-based protection and if convalescent plasma has therapeutic potential. This research will hopefully pave the way for physicians and researchers to establish the basis for the development of new therapies and new vaccines that could help immunocompromised patients with cancer.

The LCRC Biospecimen Core Lab is also supporting this research by collecting samples from cancer patients who have recovered from Covid-19, said Melyssa Bratton, assistant director of the LCRC lab.

Nakhle Saba, MD, Tulane Associate Professor of Clinical Medicine, and a co-investigator on the TUCAIN project says the support of the LCRC biospecimen core lab team has been instrumental. "The core is critical to my research. They obtain consent from the patient, process blood, store some of it and are very flexible in sample supply." Dr. Saba is familiar with the resources of the lab and has acknowledged its assistance in many of his research publications.

Arnold H. Zea, PhD, Associate Professor of Microbiology at the LSU Health Stanley S. Scott Cancer Center serves as co-director of the LCRC Biospecimen Core Lab. He leveraged his experience to direct a new biospecimen repository for scientists studying immune responses to COVID-19 at the LSU School of Medicine. Dean Steve Nelson, who also serves as vice-chair of the LCRC, made it a priority to secure the necessary resources to get the LSU lab up and running. Within just a few months of the start of the pandemic, the facility was in compliance with CDC and NIH guidelines and registered nurses were already consenting patients and collecting an array of samples including but not limited to saliva, nasal swabs, blood, and stool. The samples are collected from COVID-19-positive patients hospitalized at University Medical Center in New Orleans. The lab is a useful resource for LSU scientists in their efforts to unlock the mysteries of the coronavirus infection and immunity. Not only will this lab support research during the current pandemic, but it is also envisioned as an established resource in the event new pandemics arise in the future.

The LCRC Biospecimen Core Lab plays a vital role supporting researchers with specimen collection and storage.

As part of a separate endeavor, an LSU team led by Augusto Ochoa, MD, Director of LSU Health New Orleans Stanley Scott Cancer Center began collecting blood samples from COVID-19 convalescent patients in collaboration with the National Cancer Institute. Dr. Ochoa is also scientific co-director of the LCRC. The LCRC served as one of the study's collection sites, loaning space on its fifth floor of the building to support the effort. (See article, p. 6)

An Ochsner Cancer Institute retrospective study confirmed that patients with cancer are at increased risk of death from COVID-19. This finding provides increased urgency to the necessity of creating and adopting new strategies to protect this population in future outbreaks.

Published this October in the prestigious oncology journal Cancer, the study *Multivariate Mortality Analyses in COVID-19: Comparing Patients With Cancer and Patients Without Cancer in Louisiana* is the largest study of its kind to date. It is the first multivariate analysis study comparing COVID-19-positive patients with cancer versus patients without cancer. It was an observational analysis that included 36 different Ochsner Health hospitals and clinics across Louisiana.

Both the study and the published article were written by Principal Investigator Michael Lunski, MD, a Hematology/Medical Oncology fellow at Ochsner Medical Center in New Orleans.

"Although patient-derived data from the COVID-19 pandemic is constantly changing, it is clear that the cancer patient population is at increased risk compared to those without cancer," said Dr. Lunski. "Because we now have data showing that patients on active therapy are at an even more increased risk, extra efforts to protect these patients must be made."

In the study's cohort of patients with cancer who were also infected with COVID-19, the mortality rate was 21.2%. In the non-cancer group, the COVID-19 mortality rate was 8.7%. Furthermore, patients with cancer who are 65 years of age or older and those with certain comorbidities have the greatest risk of death, and patients with cancer and a history of smoking are four times more likely to die from COVID-19.

Additionally, this is the first study that suggests cancer patients receiving recent cancer-directed therapy are at increased risk of death. It shows that recent cancer-directed therapy, type of cancer and disease progression also played roles in mortality.

In light of the study's findings, Dr. Lunski advises that people not delay their medical care including routine cancer screenings.

Xavier University campus served as a site for free community COVID-19 testing in New Orleans. Photo: Sophia Germer

INVESTIGATING COVID'S VARYING EFFECTS

LCRC researchers from LSU Health New Orleans teamed up with scientists at the National Cancer Institute (NCI) to study the antibodies of those who recovered from COVID-19. Specifically, scientists are trying to find out why some patients get well and have no major health problems while others are hospitalized on ventilators or do not survive the disease.

Their work is part of an ongoing worldwide effort to understand differences between patients who fare very well, even though they are COVID-19 infected, and the individuals who do not recover as well.

"This sample collection from COVID-19 convalescent patients is part of ongoing research projects by several of our investigators and is part of a collaboration with the Director of the National Cancer Institute," says Augusto Ochoa, MD, Director of LSU Health New Orleans Stanley Scott Cancer Center. "Our researchers and those at the NCI are trying to determine which type of immune response — type of antibodies or immune cells — is important to kill the virus and cure the disease."

"Part of the serum will be sent to the NCI, and the remainder will stay at LSU Health New Orleans for the ongoing research," adds Dr. Ochoa. "The NCI is also trying to validate the many tests that are being offered to make sure the information provided is accurate and can help guide the development of new vaccines or new treatments."

Dr. Augusto Ochoa (top photo) and scientists from LSU Health New Orleans teamed up with the National Cancer Institute to study why some patients get very sick from the coronavirus while others have mild or no symptoms.

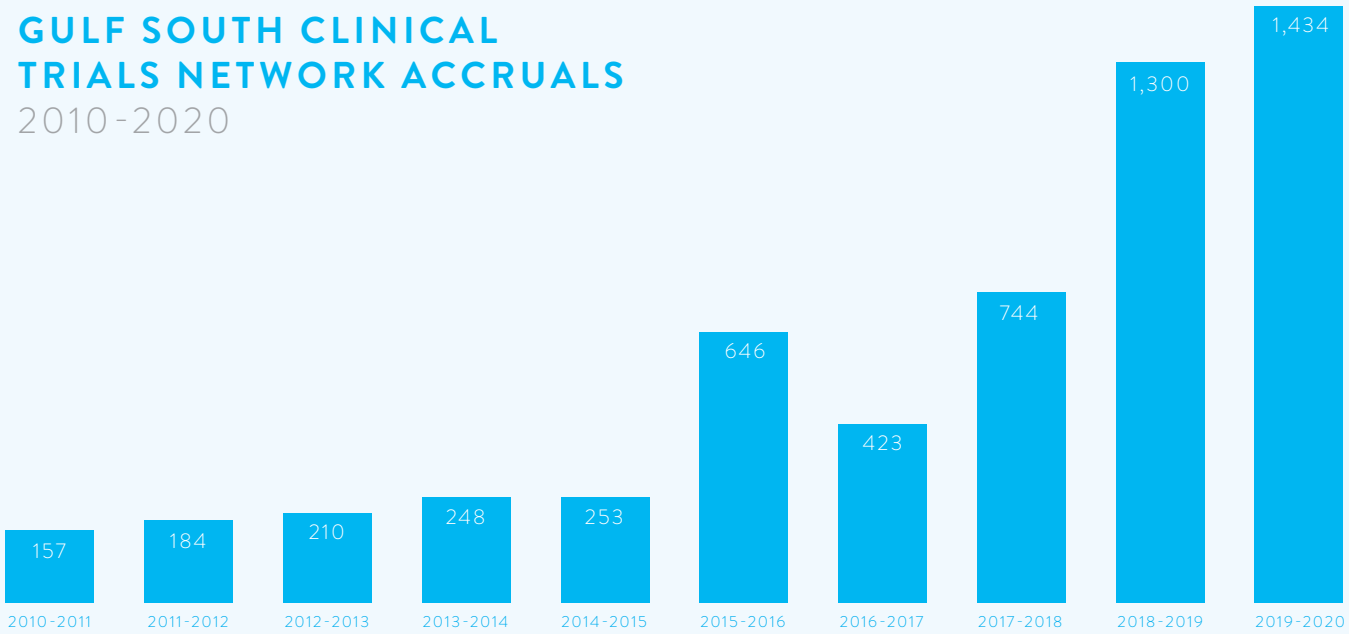
ADVANCING CLINICAL TRIALS IN A PANDEMIC

The Gulf South Cancer Clinical Trials Network is a group of hospitals and doctors in the Gulf South region that have joined together to provide local, convenient access to the most advanced clinical trials available today.

With the onset of COVID-19, enrolling patients in clinical trials posed significant challenges by disrupting the normal workflow of research operations and patient access to normal clinic environments.

Despite these challenges, The Gulf South NCI (NATIONAL CANCER INSTITUTE) Community Oncology Research Program (NCORP), was able to modify its usual approach of enrolling patients by incorporating the use of virtual technologies to screen, enroll, and maintain clinical trials patients. While the program, like most NCORP's throughout the country, had an initial decrease in the number of patients, the new technologies continued their mission and maintained pre-COVID-19 accrual rates.

GULF SOUTH CLINICAL TRIALS NETWORK ACCRUALS
2010-2020



The success of the clinical trials program is due in great part to the commitment and dedication of the physicians and nurses who are constantly searching for better treatments for their patients. Their work has been rewarded by the National Cancer Institute, which named several to important leadership roles. Among them are Dr. Scott Delacroix and Dr. Jessie Gills, who lead the LSU Health Genitourinary Oncology Program. They offer a large number of important clinical trials for bladder, prostate and kidney cancers. Dr. Delacroix has been named to the National Cancer Institute's Genitourinary Steering Committee, while Dr. Gills serves on the NCI Bladder Task Force. Both surgeons have been recognized as leading physician investigators by NCI for their contribution to cancer care and as high accruing investigators nationally. Currently, Dr. Delacroix and Dr. Gills are the leading enrolling physicians on several national clinical trials.

Other LSU clinicians who have gained recognition by the National Cancer Institute include Dr. Amie Jernigan – who has been named to the NCI's Gynecological Cancers Taskforce. In addition, Dr. Augusto Ochoa has been named to the board of directors of the Alliance for Clinical Trials group.

With the help of the Gulf South Clinical Trials Network, cancer patients can take part in National Cancer Institute supported studies right here in the state of Louisiana, closer to home, family and work.

RESEARCHERS IDENTIFY MARKER THAT MAY PREDICT WHETHER LUNG CANCER IS LIKELY TO SPREAD

Non-small cell lung cancer (NSCLC) is the most commonly diagnosed cancer and the leading cause of cancer death worldwide. More than half of NSCLC patients die after developing metastases. There are no tests currently that would allow doctors to identify patients where more aggressive therapy could reduce mortality. Researchers at Tulane University have identified a protein on tumor-derived extracellular vesicles that indicates if a NSCLC tumor is likely to metastasize, according to a study in *Science Advances.*

The protein could be used as a biomarker to develop a rapid, minimally invasive test to catch these cancers early when they are more treatable, said study author Tony Hu, PhD, Weatherhead Presidential Chair in Biotechnology Innovation at Tulane University School of Medicine.

"The goal of any cancer diagnosis and treatment is to catch it early," said Hu. "This information could help diagnose patients who are at high risk for having their cancer metastasize, and treatment could be tailored to account for that. Not all patients have the same type of tumor, and if you can target therapy to address a particular tumor, you can improve outcomes."

Most patients with NCSLC aren't diagnosed until their primary tumor has metastasized to other parts of the body. However, even patients diagnosed with non-metastatic NSCLC tumors of the same stage can often have very different treatment outcomes. A marker that could identify which patients are likely to develop metastatic NSCLC would aid in selecting those patients who should receive different treatment approaches to reduce their risk of metastasis and improve odds for long-term survival. However, no biomarkers identified to date have adequate sensitivity, specificity or reproducibility for this purpose, and most require tumor samples that require invasive procedures that are not suitable for repeated analyses.

All cells shed extracellular vesicles, small membrane particles that carry proteins, RNA and other molecules. These vesicles can bind to and transfer their contents to specific cell types to change the behavior of these cells. Extracellular vesicles shed by cancer cells can alter the environment of both adjacent and distant cells to establish metastatic niches that promote the invasion and growth of circulating tumor cells. Study researchers evaluated proteins carried by extracellular vesicles shed by NSCLC cells to determine which might serve as markers for metastatic NSCLC cells. Hu and his team identified a protein that was highly expressed on extracellular vesicles of metastatic but not non-metastatic NSCLC cells. This could predict which NSCLC patients were at increased risk for metastasis when its expression was analyzed on extracellular vesicles isolated from their blood.

The next goal of Hu's team is to incorporate the biomarker profiling with their well-developed nanoplasmonic detection assay for a rapid clinical translation.

Tony Hu, PhD, is the Weatherhead Presidential Chair in Biotechnology Innovation at Tulane University School of Medicine. (Photo by Sally Asher, Tulane University)

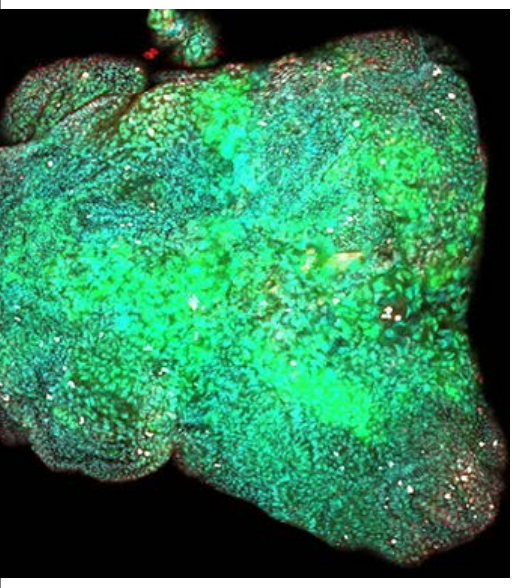
FRUIT FLIES HELP SHED LIGHT ON TUMOR FORMATION, MIGRATION AND GROWTH

What can the common fruit fly teach us about cancer?

"Over the last few decades, the fruit fly - *Drosophila melanogaster* - has become a successful model for studying human cancers," said Wu-Min Deng, PhD, professor of biochemistry and molecular biology and the Gerald and Flora Jo Mansfield Piltz Professor of Cancer Research at Tulane.

In fact, Deng says many cancer-related genes in humans are named after genes in flies, where they were first identified, and the model is helping to shed light on how tumors form, how they migrate, and how they behave.

"It's not a well-known model for cancer studies, because they don't look like humans," said Deng, "but the genetic simplicity and vast arsenal of genetic tools available in *Drosophila* provide a unique opportunity to address questions regarding cancer initiation and progression that would be extremely challenging in other model systems."



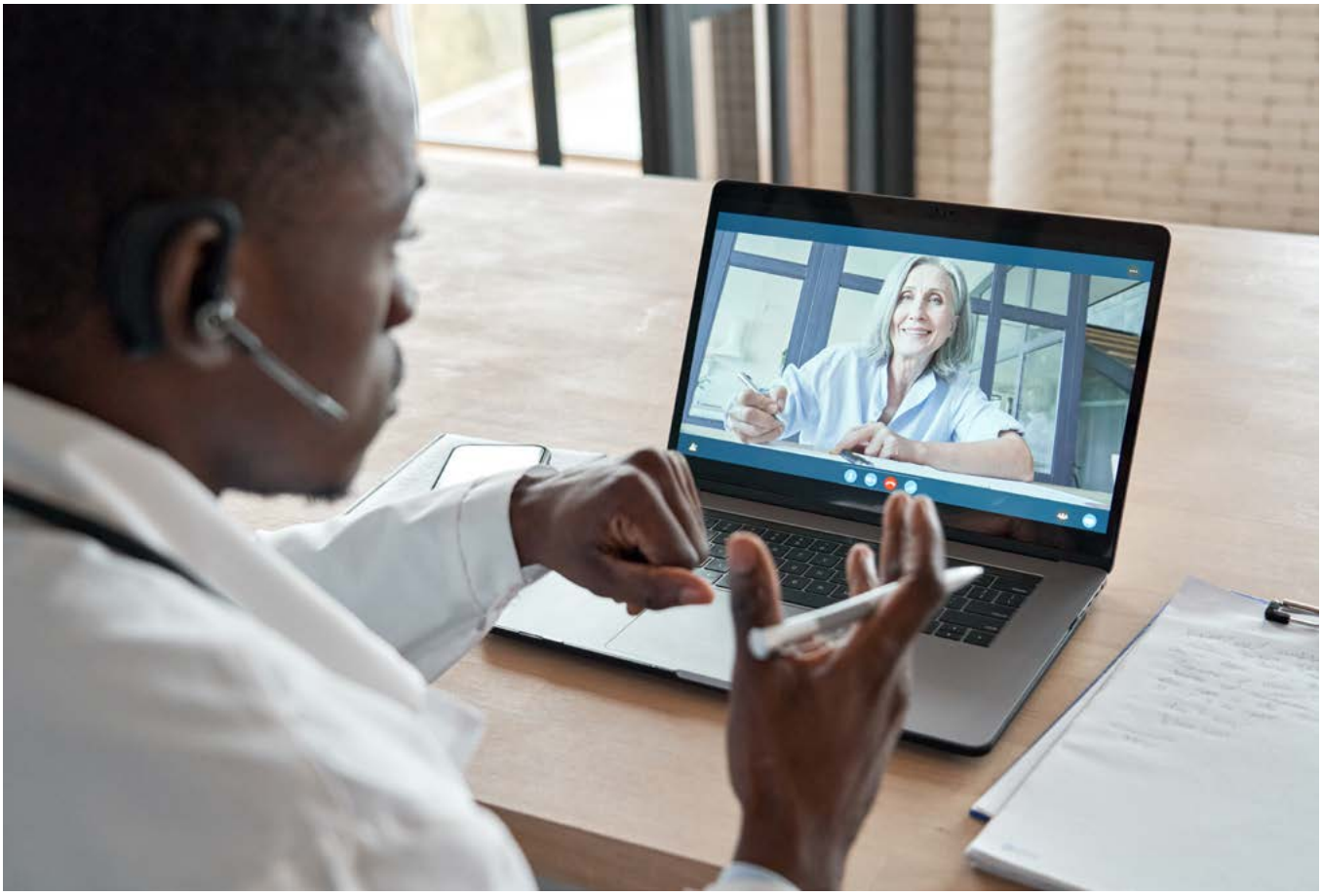
A Drosophila tumor induced by Dr. Wu-Min Deng's research team helps to answer questions about how cancerous cells form, grow and metastasize. (Photo provided by Dr. Wu-Min Deng, Tulane University)

The simplicity of the *Drosophila* model is just one of its advantages, according to Deng. While its genetic makeup is much simpler than other organisms, many of the genes and pathways involved in human disease, particularly cancer, play similar roles in the fly, making it an excellent option for biologic discovery. Their systems are easier to manipulate, allowing researchers to generate mutations and target overexpression more easily. And because their life cycle is very short and they reproduce quickly, Deng's team can induce tumors to grow within a couple of days and manipulate fly larvae to carry the same tumor as the parent.

"We use a few different fruit fly tissues to model growth regulation and tumor formation," said Deng. "Ovary is one. Ovaries produce functional eggs for the next generation. The process is very elaborate and involves interaction between several different cell types within the organ. But the process is also regulated by other systems, so this collaboration can be analyzed. We study what kind of cell types are there, the different genes expressed, and what kinds of signaling might be involved. We feel this project will be a good resource to the field."

> The genetic simplicity and vast arsenal of genetic tools available in *Drosophila* provide a unique opportunity to address questions regarding cancer initiation and progression that would be extremely challenging in other model systems.
>
> **WU-MIN DENG, PhD**

Deng moved his lab to Tulane from Florida State University a little over a year ago. Since his arrival, he has begun to explore opportunities to interact and hopefully collaborate with fellow LCRC researchers using other model systems. His team is currently working on a project looking at how cell growth is regulated normally and how disruption can lead to tumor formation in the *Drosophila* model. "I am very fortunate to have a group of people in my lab who have worked tirelessly to make this project possible," said Deng.



VIRTUAL VISITS FOR CANCER PATIENTS

Physicians are used to helping their patients navigate the complicated world of cancer treatment, but COVID-19 added another dimension. With the pandemic, patients began wanting to know about the risks associated with receiving treatment, the possibility of bringing the virus home to their families, and what delaying treatment could mean for their prognosis.

"Virtual visits allowed us to reassure patients and continue providing care during this extraordinary time with the same level of personal attention and human connection as a typical office visit," said John Cole, MD, Ochsner hematologist/oncologist and LCRC scientific associate director. Ochsner encouraged cancer patients to use virtual video visits to minimize the risk of exposure to the virus during the pandemic's height in the spring and as clinically appropriate moving forward. As of December, Ochsner had completed more than 15,000 virtual visits with cancer patients since the start of the pandemic in March.

"Cancer does not follow stay-at-home orders, and it won't wait for the pandemic to be over," Dr. Cole said. "So, we have to continue treating our patients while protecting them from the coronavirus. Telemedicine has allowed us to do that."

A virtual visit is a secure video appointment with healthcare providers via a smartphone, tablet or computer. Using Ochsner's MyChart app, cancer patients can speak with their physicians from the comfort and safety of their own homes. Virtual visits eliminate the need to brave the elements, fight traffic, or even walk down hallways to receive care.

"We've seen a great deal of success with patients and physicians alike expressing high levels of satisfaction with virtual visits," said Dr. Cole. "We're always looking for new ways to improve and expand the delivery of patient-centered care. The pandemic has obviously presented unprecedented challenges, but the practice of medicine is often about adapting and overcoming the unforeseen."

Over the last few years, the demand for virtual care for the growing population of cancer patients and survivors has been steadily increasing. The pandemic certainly accelerated the adoption of the technology by many, and Ochsner's ability to rapidly accommodate the influx of users has ensured important and time-sensitive care has not been put off.

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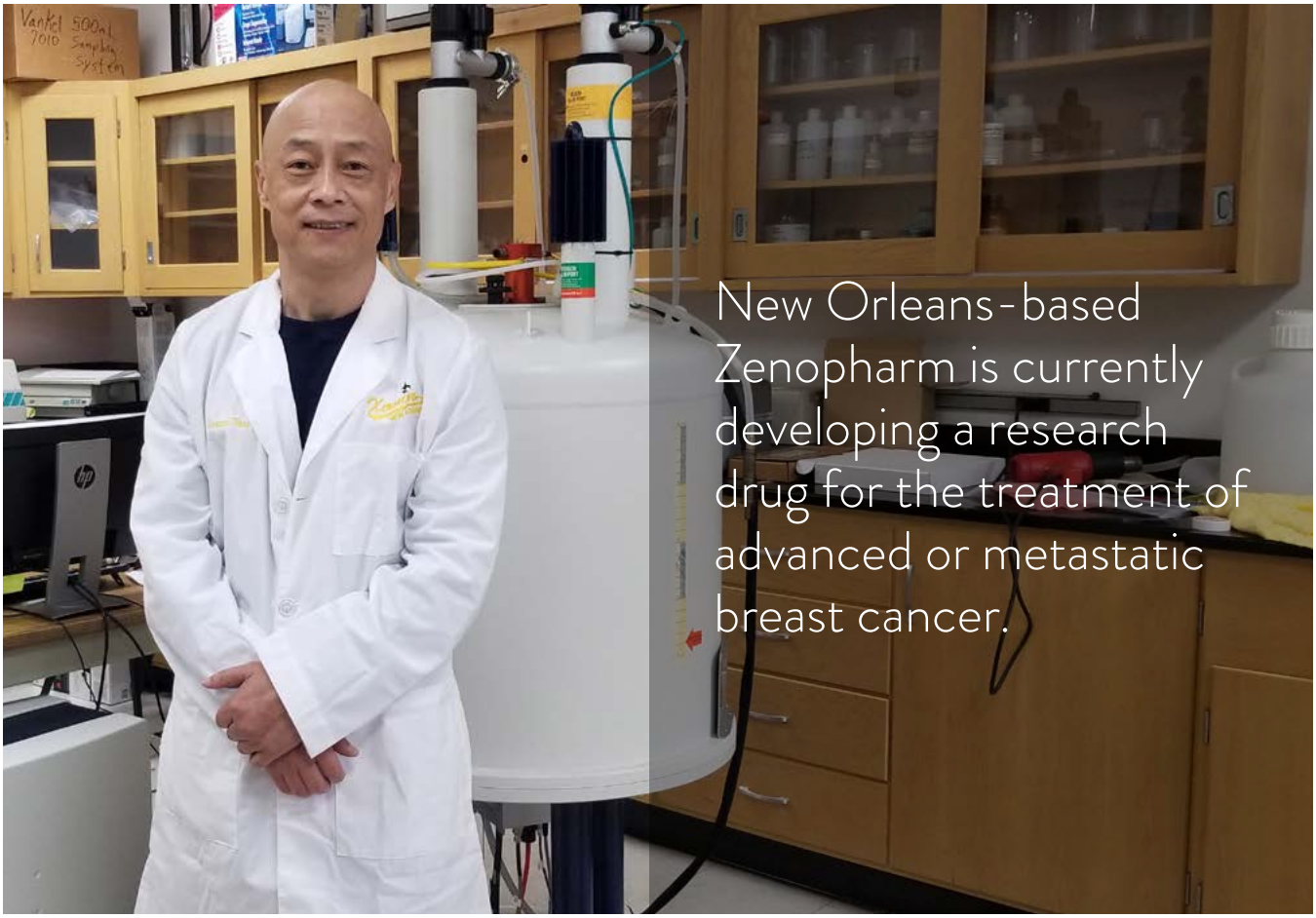
>
> **JOHN COLE, MD**
> OCHSNER HEMATOLOGIST/ONCOLOGIST AND LCRC SCIENTIFIC ASSOCIATE DIRECTOR



Dr. Guangdi Wang founded Zenopharm in 2012. He is a member of the LCRC faculty and a professor of chemistry at Xavier University of Louisiana.

STARTUP ADVANCES TO CLINICAL TRIALS

A New Orleans startup is well on its way to becoming an international player in the race to improve breast cancer hormonal therapies. Zenopharm, a small research firm led by Dr. Guangdi Wang recently received a $4 million investment to fund a phase 1 clinical trial of research drug ZB716 for patients with ER+/HER2 metastatic or advanced breast cancer. Dr. Wang is Principal Investigator and Program Director of Xavier's RCMI Cancer Research Center and a LCRC faculty member.

ZB716 is an alternative to Fulvestrant, long considered the gold standard of therapies to inhibit cancer causing proteins called estrogen receptors that trigger the spread of cancer cells. Although it is a safe and effective drug, Fulvestrant is not tolerated by some patients and can only be administered via injection and in small doses.

Worldwide competition is fierce to develop the first oral selective estrogen receptor degrader (SERD). Dr. Wang believes ZB716 will prove to be an effective SERD. So does its major new investor.

The discovery caught the eye of investors at EnhancedBio, a Korean-based drug development company, which sent representatives to New Orleans in early 2020 to enter into a collaborative agreement with Zenopharm. Enhanced Bio has funded the first phase of clinical trials at a site in Seattle and two in South Korea.

Dr. Wang's team set out to develop a drug that he says, "maintains the same approach as Fulvestrant but with a better weapon." They focused on developing an oral drug whose dosages could be tailored to each patient. Because it has better bioavailability, ZB716 can also reach more cancerous tissues resulting in a more immediate impact on patient survival.

"We tweaked the molecule to retain the strongest part of Fulvestrant's pharmacological action," Dr. Wang explained. "But with ZB716 we can adjust the oral dose so that it has a higher direct exposure level."

The patented discovery culminates 25 years of breast cancer research by the Xavier University team, which has relied on collaborative input from LCRC colleagues. "You have to have collaboration to complement your skill set, especially in the early development," Dr. Wang insisted. He is grateful for input from LCRC faculty members Dr. Lucio Miele, head of genetics at the Stanley S. Scott Cancer Center at LSU Health New Orleans, Matthew E. Burow, PhD, at the Tulane Cancer Center Program and Bridgette Collins-Burow, MD, PhD, also at Tulane School of Medicine. The New Orleans BioInnovation Center has provided crucial business consulting support.

"I am cautiously optimistic," Dr. Wang says, acknowledging the highly competitive arena he is working in. "Our approach is very different. There are SERDS in clinical trials, but none has been granted FDA approval," he says. "There is still a window of opportunity for us to prove that our drug is safe."

SUPPORT CANCER RESEARCH IN LOUISIANA

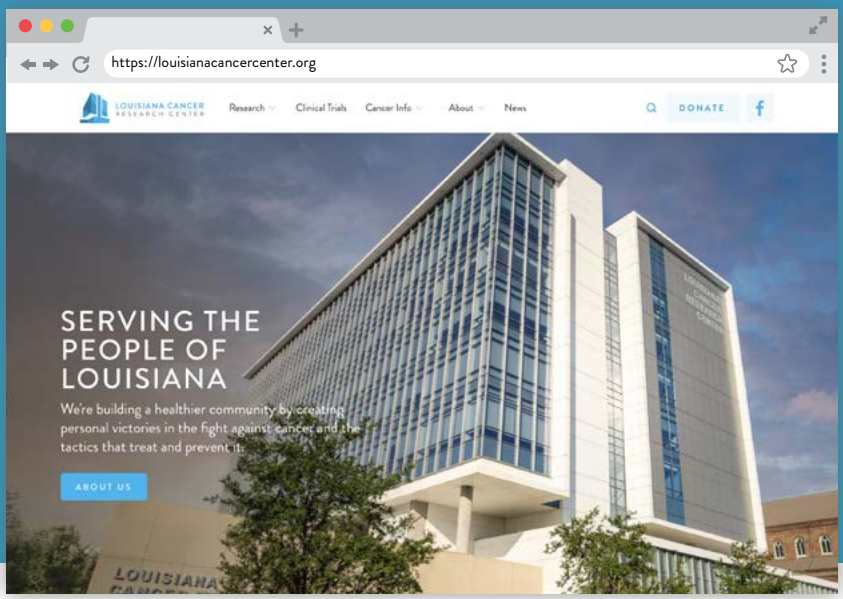
Your donation to the LCRC directly supports the cancer research efforts of our partner institutions LSU Health, Tulane School of Medicine, Xavier University of Louisiana, and Ochsner Health.

LCRC scientists have not slowed their research efforts, even during a pandemic. In fact, they remain more committed than ever to finding new means of treating and preventing cancer, which claims thousands of lives each year in our state.

NEW WEBSITE FOR ONLINE GIVING

LOUISIANACANCERCENTER.ORG

The LCRC launched a new website in October, which offers enhanced information about the Center's mission, cancer screenings, clinical trials, economic impact, and medical terminology. A dedicated fundraising page now allows donors to give online at a variety of levels.



WHY I GIVE: KEITH CLEMENT

Keith Clement is a builder and knows what it takes for big projects to come together.

He was involved in construction of the Louisiana Cancer Research Center in New Orleans and insists "a cure to cancer will be discovered in this building."

"Everyone is somehow affected by cancer," Keith says. His own mother courageously fought breast cancer for seven years, before succumbing to the disease. "It was heartbreaking to watch her experience such a wide variety of side effects." When asked why she continued with chemotherapy and a clinical trial, his mother said she was doing it for her daughter, her granddaughters, and future generations in hopes of finding a cure.

With tens of thousands of new diagnoses every year in Louisiana, many families share Keith's personal connection to the ravages of cancer. He feels empowered in the fight, knowing that the work of LCRC researchers will help someone with cancer.

It certainly does require a team to pursue advances that support cancer therapies. Donor support like Keith's makes it possible.

JOIN US

RESEARCH FOR THE CURE 2021

Mark your calendars and get your tickets! The pandemic forced us to cancel last year's Research for the Cure, our most important fundraising initiative of the year. Our volunteer committee is energized and more excited than ever as we plan for the 2021 Gala, which will take place once again in downtown New Orleans. Research for the Cure transforms Canal Place into the perfect setting for an elegant evening of dining, dancing, and shopping. Over two dozen of the city's finest restaurants and caterers provide delicious food, drinks, and desserts. Canal Place shops open their doors to guests and donate a portion of sales to LCRC's cancer research mission.

Sponsorships are available. Visit the website for tickets and updates about what promises to be one of 2021's best events.

RESEARCHFORTHECURE.ORG

THE BIOSPECIMEN CORE LAB PERSEVERES THROUGH 2020

2020 presented many challenges for the LCRC Biospecimen Core Laboratory (BCL), which were consistently met and overcome using data-driven safety measures, all the while focusing on its mission of obtaining high-quality human samples to further cancer research.

The core began 2020 with a new assistant director when the pandemic hit the United States. In March, for safety reasons, the BCL staff pivoted to a work-from-home model. During the months of March-May, LCRC administrators worked tirelessly to obtain personal protective equipment for staff so that when we returned to the hospitals to collect samples, we would be adequately protected. The lab also updated its processes per CDC and NIH guidelines to enhance safety protocols during tissue collections and blood processing. On June 15, 2020, staff returned to the hospitals and began operations for the first time since the initial lockdown.

During 2020 the BCL core added several new investigators to its protocol, including Dr. Shawn McKinney, a breast cancer surgeon at LSU Health, Dr. James Watson, a GI cancer surgeon at LSU Health, Dr. Erik Castle, a urologic cancer surgeon at Tulane, and Dr. Ramsy Abdelghani, an interventional pulmonologist at Tulane. Even during a global pandemic, the BCL obtained consents from 180 patients and collected tissue from 90 of these patients and blood from 146.

The BCL has continued to distribute patient samples to investigators. Of significance, the BCL is collecting tissues for an NCI-supported clinical trial, the MOONSHOT trial, spearheaded locally by Dr. Augusto Ochoa at LSU Health, which aims to collect tissue from patients with locally advanced cancer. The DNA from this tissue is sequenced and patients are followed clinically so that if their cancer recurs, more tissue can be retrieved for comparative sequencing. It could offer clues to certain cancer's ability to evade treatment over time.

In a separate study, the BCL is collecting samples from cancer patients who have recovered from Covid-19 for a Tulane study on how this set of patients' immune cells respond to the virus.

STEVE NELSON, MD, APPOINTED TO LCRC BOARD

Steve Nelson, MD, CM, Dean of the LSU Health New Orleans School of Medicine, was named vice-chairman of the LCRC board of directors in July 2020 succeeding LSU Health Chancellor Larry H. Hollier, M.D. who rotated between vice chairman and chairman for 15 years.

As vice-chairman, Dr. Nelson will work closely with current LCRC Board Chairman Dr. Lee Hamm, senior vice president and dean of the Tulane University School of Medicine. The LCRC board provides valuable guidance and oversight of LCRC research and cessation programs in support of its mission to achieve NCI Cancer Center designation.

After graduating with honors from the State University of New York at Stony Brook, Dr. Nelson earned his medical degree at McGill University where he was a University Scholar. He completed his residency in internal medicine at the Johns Hopkins Hospital as well as a clinical fellowship in pulmonary medicine and a research fellowship in pulmonary medicine. He also completed a fellowship in environmental health sciences at the School of Hygiene and Public Health at Johns Hopkins.

Dr. Nelson's major clinical interests include lung immunology and infectious diseases. His research interests are primarily directed toward understanding how diseases undermine and disrupt normal immune mechanisms and determining the potential of biological response modifiers to provide innovative approaches to both the prevention and treatment of these diseases.

The LCRC is a collaborative effort to foster innovation and discovery in order to improve the care of patients with cancer throughout Louisiana and beyond.

In 2019, Dr. Nelson received the Spirit of Charity Award dedicated to continuing the mission and legacy of Charity Hospital. Each year, it is presented to a physician whose career began or was nurtured in Charity Hospital and who has made a significant contribution to medicine. The award recognized Dr. Nelson's enormous contributions to medicine over the years—shaping generations of physicians through undergraduate and graduate medical education, conducting biosciences research on some of society's toughest health issues, taking care of patients, and serving the community through outreach programs.

In 2020, in response to the COVID-19 pandemic, Dr. Nelson established the COVID-19 Research Lab at LSU Health School of Medicine. He initiated an effort to better understand and treat the disease through development of a COVID research program that began with the funding of pilot research grants. In support of this research initiative, he also established a COVID Biorepository as a centralized resource that collects and provides biospecimens from COVID-19 patients and uninfected control samples to support future scientific investigations.

Dr. Nelson has been continuously funded by the NIH since 1981 and has been awarded more than $45 million in research funding during his career. Dr. Nelson has authored or co-authored over 245 journal papers, eight books/monographs, 31 book chapters, 15 audio-visual scientific presentations and 250 abstracts presented at both national and international scientific symposia.

Healthier Air for Louisiana's Third-Largest City

The city of Shreveport became smoke-free on August 8, 2020, thanks in part to the efforts of the Campaign for Tobacco-Free Living (TFL), a prevention program of the LCRC. TFL partnered with other state, local, and national organizations to convince elected officials in the state's third largest city to go smoke-free in all workplaces, including bars and gaming facilities. Shreveport is the 30th municipality in Louisiana to pass a comprehensive indoor smoke-free ordinance. Implementation date for comprehensive smoke free law will take effect August 1, 2021.

Louisiana's Smoke-Free Air Act has banned smoking in most public places and workplaces since 2007 but it does not include bars and gaming facilities.

TFL Regional Manager Feamula Bradley said the ordinance will protect employees from the harmful effects of secondhand smoke, which contains potential cancer-causing chemicals. Bradley says the fact that the ordinance is comprehensive means workers in the bar, entertainment, and gaming industries will finally be protected. "This ordinance will protect gaming workers and individuals that actually work on the casino floor as well as those who work in bars," she explained.

According to the American Lung Association, the rate of new lung cancer cases in Louisiana is significantly higher than the national rate and costs the state almost $1.85 billion in health care costs annually.

The Shreveport City Council's meeting was held online due to the Covid-19 pandemic. It did not deter the determination of those working towards healthier air for all. "We worked with the community, our regional coalition, volunteers, supporters, and bar and gaming employees to provide virtual testimony and letters to each council person," explained TFL Associate Director Shawna Shields.

It is believed to be the first smoking ban in the country to be enacted in a virtual setting.

THE LOUISIANA CAMPAIGN FOR
TOBACCO-FREE
LIVING

TFL GOAL 1

PREVENT INITIATION AMONG YOUTH AND YOUNG ADULTS

Next Era, a statewide youth movement of The Louisiana Campaign for Tobacco-Free Living, has been instrumental and effective in educating their communities on tobacco control. In 2020 our youth completed 60 hours of community service hours.

2020 NEXT ERA HIGHLIGHTS

63 STUDENTS

10 CHAPTERS

COLLECTED **447** MESSAGE CARDS

2020 PARTICIPATING SCHOOLS AND ORGANIZATIONS

REGION 1

Ignite Youth Ministry Group

REGION 2

Baker High School

REGION 3

Hanson High School

REGION 4

Westgate High School

REGION 5

Iowa High School
Girlie Girls

REGION 6

Jena High School

REGION 7

Booker T. Washington High School
Alpha Esquires

REGION 8

Pre-K and Beyond

"Secondhand smoke affects me in that my dad is a smoker. He has smoked for so long that he has developed the dreaded smoker's cough. I hate to see him suffer but he acts as if he can't quit.

I support a smoke-free Louisiana because no one should have to choose between making a living and dying."

AUSTIN
Winnfield Senior High School

Above: Dejah J, Emily E, and Travarius T
Left: Alayna P., Dashantae D., Genesis G., Jenny P., and Taylor B.

COMMUNITY EVENTS

February 11, 2020 - Next Era students at Jena High School started off the year with a Healthier Air For All event, where they set up an informational table at a local high school game and gathered support cards from the community.

On February 19, 2020 Westgate High School students had the opportunity to present to the Iberia Parish School Board about their efforts on Next Era and the work they are doing with Healthier Air For All.

TRANSITION

The COVID-19 pandemic hit us hard at the beginning of the year, but Next Era has done its best to keep moving forward. The Next Era program began transitioning to virtual youth engagement, campaign, and program objectives.

VIRTUAL E-HANG

To assist with the transition of the Next Era Advocates we decided to hold Virtual E-Hangs to recruit new anti-smoking youth.

As cigarette butts and vape pods are a litter problem, on April 22, 2020, Next Era hosted a special Earth Day E-Hang, with a special guest lecturer. Julia O. Weigel, an environmental engineer, talked about the environment, climate change, and showed students websites that calculated their carbon and water footprints. Twenty-three screens attended this event.

HAFA CAMPAIGN EFFORTS

Next Era students conducted a virtual presentation to the Health Iberia Coalition. Zack (Baker High School) and Jamie (Hanson High School) delivered a Healthier Air For All presentation. Westgate High School students Genesis, Jayvyn, and Zach gave their personal testimonies.

With the virtual setting being the only safe interaction for Next Era Advocates, the team designed and implemented virtual support cards for community members to share support online.

Next Era students, Zach, Genesis, and Jayvyn from Westgate High School, earned an opportunity to participate in a radio interview with Positively Iberia on 1240 KANE AM out of Lafayette, LA. The students spoke passionately about the ills of smoking. The campaign message of “Healthier Air For All” was broadcast to over 200,000 people.

HEALTHIER AIR FOR ALL

HealthierAirForAll.org

TFL GOAL 2
ELIMINATE EXPOSURE TO SECONDHAND SMOKE

In 2020, TFL continued to increase the number of comprehensive clean indoor air policies in Louisiana municipalities, with the addition of the city of Shreveport. Shreveport became the 30th municipality in the state to protect its residents from the dangers of secondhand smoke, with the passage of a comprehensive clean indoor air policy.

The Shreveport ordinance is significant because it was the first time a municipality voted virtually on a comprehensive clean indoor air policy. Additionally, its passage increased the number of Louisiana residents protected from the dangers of second-hand smoke to 1,402,843 residents, representing 30% of the state's total population.

The TFL team continues to educate Louisiana residents about the dangers of secondhand smoke and promote the Healthier Air For All brand. There is a great need to continue working with communities and grow from 30 smoke-free communities to a state where all residents are protected from secondhand smoke.

MUSICIANS FOR A SMOKE-FREE LOUISIANA

11

SMOKE-FREE HOSPITALITY EDUCATION EVENTS

1 on-site, 10 virtual

"The (smoke free) experience has been great because as I am a musician who goes into that environment (smoking), knowing it can be unhealthy. A lot can happen between my health, my vocals, my body, my equipment, all that! So, it's been a big help (smoke free). Thanks, TFL for making that happen all over the state, it's BIG. Keep it going!"

CHUBBY CARRIER

Grammy Winner, Bayou Swamp Band

544

REGISTERED MEMBERS

Up from 475 in 2019

"I am grateful to perform in clean air and a smoke-free environment. In the past, I struggled getting through a full show because of the smoke, coughing and the feeling of being suffocated. And not forget the stench that settled in my clothes. Performing in smoke-free environments is GOLDEN!"

TONYA BOYD CANNON

Finalist, NBC's *The Voice*

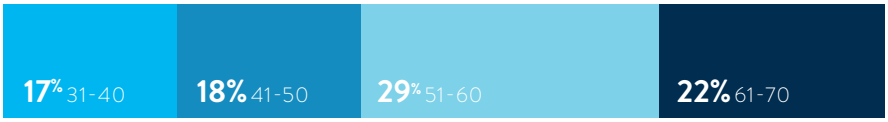
TFL GOAL 3
PROMOTE CESSATION

A total of **2,873 registered tobacco users received services** from the Louisiana Tobacco Quitline (1-800-Quit-Now). Quitline services offers approved pharmacotherapies along with phone counseling, web-based coaching, or an integration of both conducted by a certified tobacco treatment specialist. Of the total participants serviced, **1,623 (56%)** were eligible and enrolled into the Smoking Cessation Trust services and **1,582 (55%)** utilized the Text2Quit® coaching support service in their quit attempt.

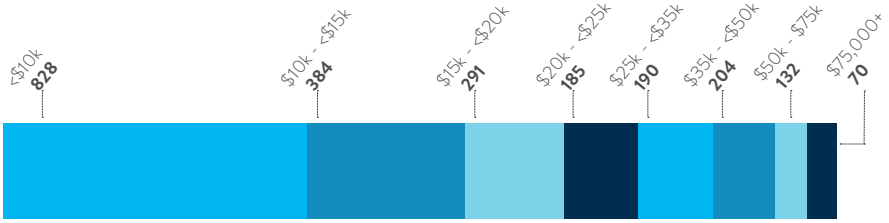
CESSATION

GENDER

AGE

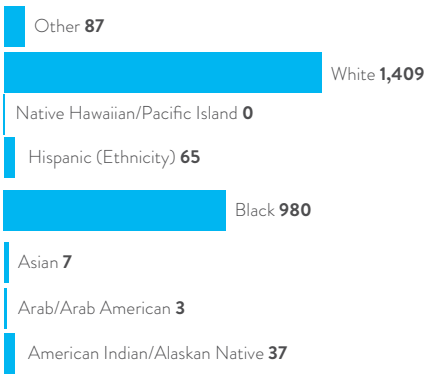


HOUSEHOLD INCOME

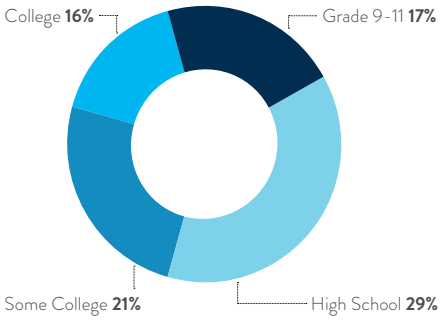


REFERRAL SOURCE

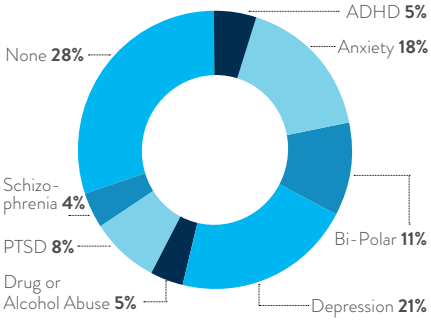
RACE/ETHNICITY



EDUCATION



MENTAL/BEHAVIORAL HEALTH

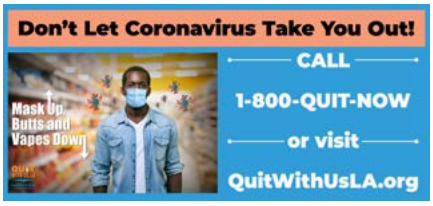


TFL GOAL 4
ELIMINATE TOBACCO-RELATED HEALTH DISPARITIES

The African-American Male Cessation initiative (AAMCI) was put in place to increase awareness and utilization of cessation resources and services by African American males throughout Louisiana. It was utilized among a variety of media outlets to reinforce the benefits of quitting tobacco. These media include paid radio advertisements, billboard placements, and social media promotion, which saw significant engagement metrics. AAMCI initially started in urban markets of New Orleans, Baton Rouge, Shreveport. In 2020 TFL was excited to introduce the Initiative to Alexandria, Monroe, and Opelousas.

TFL's partnership with the Communities of Color Network has been instrumental at the grassroots level, hosting in-person events pre-COVID-19 and using Facebook Live and email during the pandemic to provide educational materials and information to partners, community members, and others. Continued partnership with the Smoking Cessation Trust (SCT) is used to promote available cessation resources offered.

TFL continues to recognize the importance and challenges of reaching disparate populations, such as African American males and is dedicated to seeking methods to overcome these challenges to increase the health of all Louisiana residents through tobacco cessation.



LCRC NEW FACULTY

ERIK CASTLE, MD

PROFESSOR OF UROLOGY
TULANE UNIVERSITY
SCHOOL OF MEDICINE

Dr. Castle earned his MD from the University of Texas Southwestern Medical School in 1998 and went on to complete a surgical internship at Truman Medical Center/ St. Luke's Hospital in Kansas City, MO, from 1998-2000. Following internship, he completed his urology residency at the University of Kansas Medical Center (2000-2003), serving as chief resident in his final year. Dr. Castle then completed a one-year fellowship in laparoscopic and reconstructive urologic surgery at the Mayo Clinic in Arizona (2003-2004). Dr. Castle's surgical expertise includes minimally invasive urologic oncology, including robot-assisted radical cystectomy, prostatectomy, retroperitoneal lymph node dissection, and partial nephrectomy. He has performed many of these procedures as demonstrations internationally. He pioneered robot-assisted radical cystecomy in 2005 and robot- assisted RPLND in 2008. He also served on the Early Detection of Prostate Cancer panel for the National Comprehensive Cancer Network. Dr. Castle's research interests include prostate cancer, bladder cancer, and kidney cancer.

AUDREY DANG, MD

ASSISTANT PROFESSOR OF RADIATION ONCOLOGY, TULANE UNIVERSITY SCHOOL OF MEDICINE

Dr. Audrey Dang is a New Orleans native. She earned her Bachelor of Sciences degree in Cellular and Molecular Biology and Asian Studies at Tulane University and her MD at Tulane School of Medicine. Following medical school, she completed a preliminary Internal Medicine intern year at Ochsner Clinic Foundation and a residency in Radiation Oncology at the University of California, Los Angeles, where she served as a chief resident in her final year. Dr. Dang treats all types of oncologic malignancies. However, she has a special interest in breast cancer, central nervous system cancers, genitourinary cancers, and head and neck cancers. Her research has focused on finding novel methods to treat prostate and head and neck cancers, in particular radiation de-escalation for Human Papilloma Virus-positive oropharyngeal cancer and condensing the standard course of prostate cancer radiation by utilizing stereotactic body radiation therapy (SBRT) techniques. She has presented numerous research abstracts at regional, national and international meetings. Additionally, she has authored and co-authored multiple research publications in high impact journals. She earned an award from the Radiosurgery Society for her research in prostate cancer in 2018.

HARI K. KOUL, MSc, PhD, FACN, FASN

PROFESSOR OF UROLOGY, STANLEY S. SCOTT CANCER CENTER

Dr. Hari Koul is internationally recognized as one of the leading translational researchers in urologic diseases. His research interests are focused around understanding the pathophysiology of prostate cancer and benign GU oncology. Dr. Koul's research is currently focused on identifying molecular targets and for developing small molecules to overcome therapy resistance in solid tumors in general and prostate and pancreatic cancer and addressing prostate cancer health disparity in particular. Dr. Koul earned MSc (Biochemistry) from Kashmir University-Srinagar, India and PhD (Biochemistry) from PGI, Chandigarh, India. Dr. Koul received postdoctoral training (1991-1994) at the UMASS Medical School, in Worcester, MA. He was promoted to a junior faculty position at UMASS Medical School and continued to work there until 1996. Dr. Koul served as senior staff scientist and founding member of Urology Research team at Henry Ford Health Sciences Center, Detroit MI from 1996-2003, when he was recruited as professor and founding program director of urology research at the University of Colorado Denver, School of Medicine. In 2013, Dr. Koul was recruited to LSUHSC-S as professor with tenure and served as head of biochemistry and molecular biology department (2013-2016). He served as associate director for basic and translational research of the Feist Weiller Cancer Center.

MARK SIDES, MD, PhD

ASSISTANT PROFESSOR OF MEDICINE, TULANE UNIVERSITY SCHOOL OF MEDICINE

Dr. Mark Sides received his PhD in biomedical sciences from Tulane in 2010, with a concentration in Epstein Barr virus in pulmonary fibrosis working within the Lung Biology Group. He completed a postdoctoral fellowship, also at Tulane, with a concentration in the Epstein Barr virus and cancer therapeutics. He received his MD from Tulane in 2015, followed by an internal medicine residency at the University of Texas Medical Branch in Galveston, where he received the Dame Cicely Saunders Award for compassionate care of his patients. He continued at UTMB for a medical oncology fellowship and was selected Outstanding Fellow of the Year in his final year. He is board-certified in internal medicine through ABIM and board-eligible for medical oncology. Dr. Sides recently joined Tulane's Section of Hematology and Medical Oncology to specialize in thoracic oncology, taking a longitudinal approach, including a smoking cessation initiative, a lung cancer screening program, direct patient care, and clinical trials. His basic science research interests include identification of markers for adverse outcomes to immunotherapy, pathogenesis of lung cancers in non-smokers, changes to the tumor microenvironment by viral infection, and continued therapies specific to virus-driven cancers.

TONY YE HU, PhD

WEATHERHEAD PRESIDENTIAL CHAIR IN BIOTECHNOLOGY INNOVATION, DIRECTOR, CENTER OF CELLULAR AND MOLECULAR DIAGNOSIS, PROFESSOR OF BIOCHEMISTRY & MOLECULAR BIOLOGY AND BIOMEDICAL ENGINEERING, TULANE UNIVERSITY SCHOOL OF MEDICINE

Tony Hu, PhD, recently joined Tulane University School of Medicine as the Weatherhead Presidential Chair in Biotechnology Innovation, and he leads the school's newly created Center of Cellular and Molecular Diagnosis. Hu's research focuses on developing and validating highly sensitive blood tests that rely on nanotechnology-based strategies to find previously undetectable biomarkers of diseases. These diagnostics can also be used to develop personalized medicine tailored to a patient's specific genetic strain of disease. Hu's research aims to fill current unmet clinical needs for early disease detection, better predictors of disease progression and real-time monitoring of therapy response to improve patient outcomes. Hu received his PhD in biomedical engineering from the University of Texas at Austin, where he focused on developing nanomaterials as biosensors for disease diagnosis. He has published more than 70 journal articles and has received 10 U.S. and international patents in this area since his first faculty appointment in 2011. Three of his innovations have been licensed by US-based companies and are under development for commercialization.

STATEMENT OF FINANCIAL POSITION

Year ended June 30, 2020 (with comparative financial information as of June 30, 2019)

ASSETS

	2020	2019
Cash & Cash Equivalents	23,517,025	18,093,348
Investments	13,388,907	12,708,647
Receivables - Grants	5,458,861	7,832,361
Receivables - Other	2,530,273	2,476,732
Property and Equipment	86,415,429	88,229,531
Prepaid Expenses	75,255	75,936
Deposits	52,400	52,400
TOTAL ASSETS	**131,438,150**	**129,468,955**

LIABILITIES AND NET ASSETS

LIABILITIES	2020	2019
Accounts Payable	4,631,607	2,698,144
Accrued Liabilities	107,921	97,272
TOTAL LIABILITIES	**4,739,528**	**2,795,416**

NET ASSETS	2020	2019
Without Donor Restrictions	4,530,784	4,504,570
With Donor Restrictions	122,167,838	122,168,969
TOTAL NET ASSETS	**126,698,622**	**126,673,539**
TOTAL LIABILITIES AND NET ASSETS	**131,438,150**	**129,468,955**

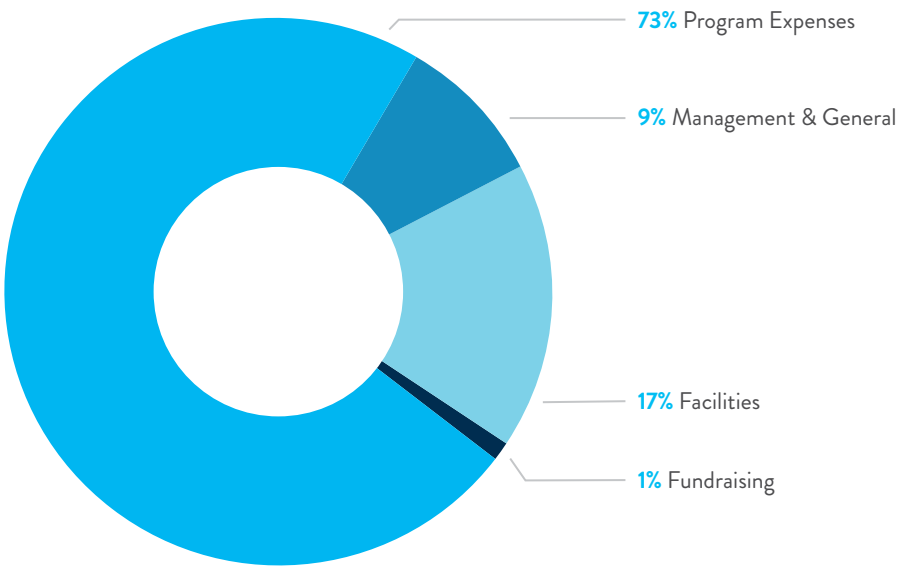
LOUISIANA CANCER RESEARCH CENTER

STATEMENT OF ACTIVITIES

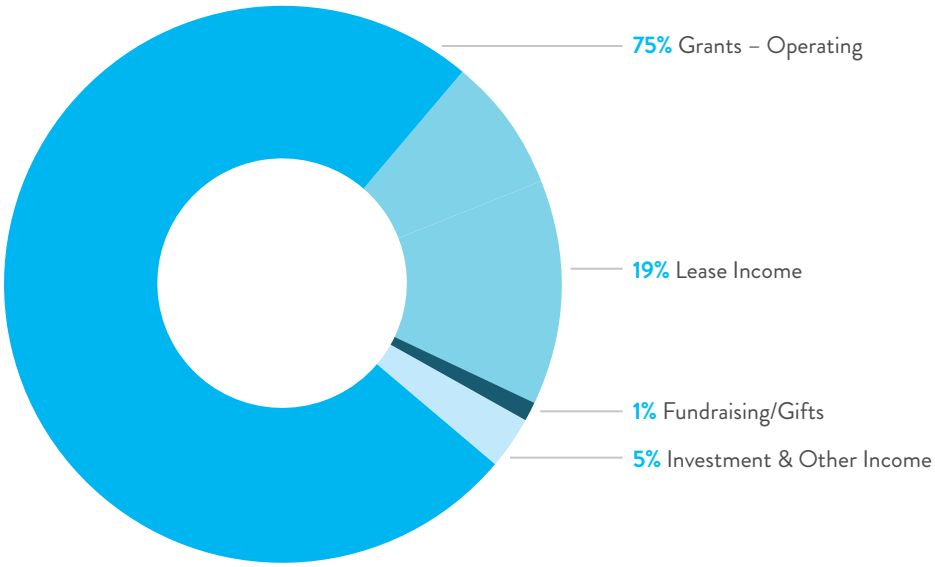
Year ended June 30, 2020 (with comparative financial information as of June 30, 2019)

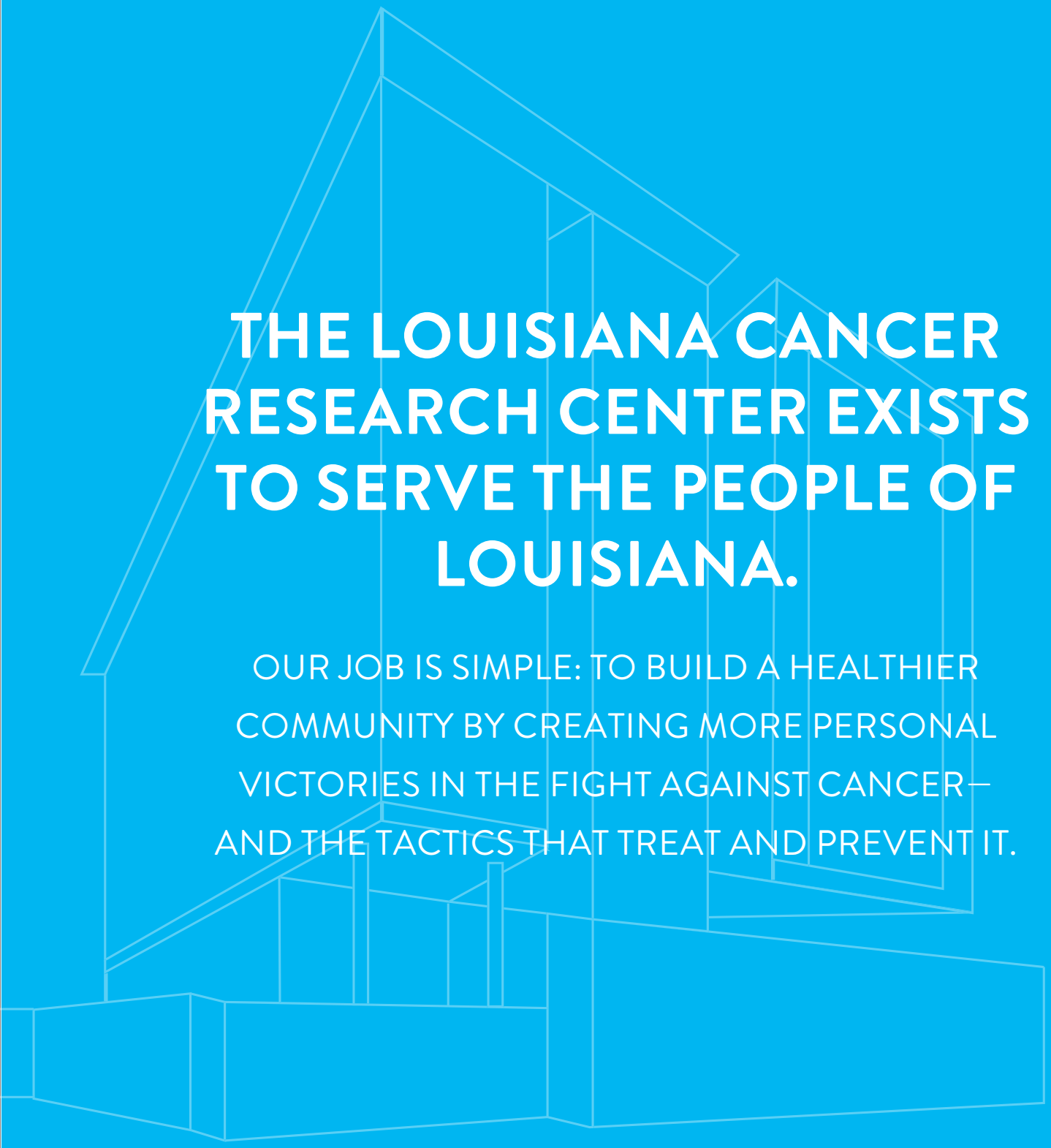
REVENUES	WITHOUT DONOR RESTRICTIONS	WITH DONOR RESTRICTIONS	2020 TOTAL	2019 TOTAL
Grants		13,931,811	13,931,811	19,441,757
Lease Income	3,525,619		3,525,619	2,956,178
Investment Income	10,664	866,845	877,509	677,618
Other	65,709		65,709	57,449
Fundraising & Contributions	151,536		151,536	218,259
Net Assets Released from Restrictions	14,799,787	(14,799,787)	-	-
TOTAL REVENUES	**18,553,315**	**(1,131)**	**18,552,184**	**23,351,261**
EXPENSES				
Research Expenses	5,543,110		5,543,110	4,795,782
Cessation/TFL Expenses	4,675,190		4,675,190	4,656,990
Louisiana Cancer Strategy	25,570		25,570	111,382
Salaries and Related Benefits	1,053,252		1,053,252	1,013,739
Operating Services	3,389,876		3,389,876	3,196,295
Supplies	62,286		62,286	45,413
Professional Services	348,123		348,123	241,165
Travel & Meeting Expenses	1,763		1,763	5,666
Depreciation	3,360,757		3,360,757	3,635,529
Fundraising Expenses	61,982		61,982	128,522
Other	5,192		5,192	34,572
TOTAL EXPENSES	**18,527,101**		**18,527,101**	**17,865,055**
INCREASE (DECREASE) IN NET ASSETS	**26,214**	**(1,131)**	**25,083**	**5,486,206**
NET ASSETS, BEGINNING OF YEAR	4,504,570	122,168,969	126,673,539	121,187,333
NET ASSETS, END OF YEAR	**4,530,784**	**122,167,838**	**126,698,622**	**126,673,539**

OPERATING EXPENSES 2020



FUNDING SOURCES 2020





THE LOUISIANA CANCER RESEARCH CENTER EXISTS TO SERVE THE PEOPLE OF LOUISIANA.

OUR JOB IS SIMPLE: TO BUILD A HEALTHIER COMMUNITY BY CREATING MORE PERSONAL VICTORIES IN THE FIGHT AGAINST CANCER— AND THE TACTICS THAT TREAT AND PREVENT IT.