TOGETHER FOR A HEALTHIER LOUISIANA

LOUISIANA CANCER RESEARCH CENTER

2019 ANNUAL REPORT

ON THE COVER

A. KIDNEY CANCER *Orange*

B. LIVER AND ADRENAL CANCERS *Green*

C. COLON AND COLORECTAL CANCERS *Royal Blue*

D. LUNG CANCER *White*

E. PANCREATIC CANCER *Purple*

F. BLOOD CANCER *Red*

G. MELANOMA/SKIN CANCERS *Black*

H. PROSTATE CANCER *Light Blue*

I. BONE CANCER *Yellow*

J. BREAST CANCER *Pink*

K. LYMPHOMA *Lime Green*

ONE GOAL…

Nobel Laureate George D. Snell observed in his 1980 Nobel Lecture, "Science is like a web, growing by interactions that reach out in time and space.

The Louisiana Cancer Research Center is a nexus point within the web of cancer science in the state. From our researchers, to our clinical trials networks, to our public policy advocates, our impact spreads out along these connections throughout the region.

In 2019 LCRC members made significant discoveries and attained important successes. Researchers found new treatments targets in childhood cancers and received renewed support from the National Cancer Institute to expand clinical trials networks. LCRC scientists made important discoveries on the impact circadian disruption has on cancer metastasis and the genetic components of some prostate cancers. You will learn about many of these in the following pages.

Every day, our researchers are making progress toward our shared goal of creating a healthier Louisiana. We are doing this through our ongoing efforts to improve cancer treatment, promote prevention, and expand access to care.

By joining together in working toward our common goal, our chances for success grow exponentially. Each of our partners possess their own particular strengths. Bringing these complementary components together, we are building a web of interactions that extend throughout Louisiana and the Gulf South.

The LCRC Board recently embarked on an updated strategic framework. The identified priorities align with our legislatively defined trajectory and will guide our course as we move forward.

Our important work could not be accomplished without our community. We thank our family of supporters and advocates in walking with us making these successes a reality.

Our important work could not be accomplished without our community. We thank our family of supporters and advocates in walking with us making these successes a reality.

Join with me as we reflect on the accomplishments of the previous year and look toward an exciting future of new successes. United by our common goal—translating our research from the bench to the bedside and beyond.

SVEN DAVISSON
Chief Administrative Officer
& Interim Chief Executive Officer

2019 BY THE NUMBERS

405
PUBLICATIONS RELEASED

$28.4
MILLION DOLLARS IN CANCER-RELATED NIH FUNDING

1,437
NEW CLINICAL TRIAL PATIENTS

STRONGER TOGETHER IN THE FIGHT AGAINST CANCER

LCRC CANCER FIGHTING TEAM WINS MORE GRANTS, EXPANDS CLINICAL TRIALS AND PREVENTION EFFORTS

A cancer diagnosis is devastating to patients and their loved ones. It occurs all too frequently in Louisiana, which suffers from some of the highest cancer rates in the country, with more than 25 thousand diagnoses a year. The LCRC brings together our state's brightest minds and strongest resources to discover new therapies to combat this deadly disease.

Teams of scientists from Tulane School of Medicine, LSU Health New Orleans, Xavier University and Ochsner Health System are at work, sharing resources and data. Each LCRC faculty member contributes unique insights that collectively makes for a strong research institution, which is competing successfully for national research dollars.

LCRC researchers conducted over $30 million of research in 2019, much of it funded by the National Cancer Institute and National Institutes of Health.

Trying to unlock the mysteries of a cancer cell is complex and challenging work. The questions and challenges are plentiful: What triggers its growth? What suppresses it? How is it influenced by genetics?

LCRC researchers are up to the challenge.

Patients in Louisiana and Mississippi are gaining access to this cutting-edge research through increased access to clinical trials, particularly through the growth of a statewide clinical trials network with a special emphasis on minority and underserved cancer patients.

Prevention is an important part of our multi-pronged attack. Thanks to the efforts of The Louisiana Campaign for Tobacco Free Living, 29 Louisiana municipalities are smoke-free. The rise of vaping-related illnesses and deaths in our state poses a serious health threat to communities and is a new focus.

From research labs to clinical trials to prevention, our cancer fighting efforts are unwavering.


LOUISIANA
CANCER
RESEARCH
CENTER

CANCER CELLS TURN TO CANNIBALISM TO SURVIVE CHEMOTHERAPY

Researchers from Tulane University School of Medicine have discovered that some cancer cells survive chemotherapy by eating their neighboring tumor cells.

The study, published in the Journal of Cell Biology (Tonnessen-Murray CA, Frey WD, Rao SG, Shahbandi A, Ungerleider NA, Olayiwola JO, Murray LB, Vinson BT, Chrisey DB, Lord CJ, Jackson JG. Chemotherapy-induced senescent cancer cells engulf other cells to enhance their survival. J Cell Biol. 2019 Nov 4;218(11):3827-3844.) suggests that this act of cannibalism provides these cancer cells with the energy they need to stay alive and initiate tumor relapse after the course of treatment is completed.

Chemotherapy drugs like doxorubicin kill cancer cells by damaging their DNA, but cells that survive initial treatment can soon give rise to relapsed tumors. This is a particular problem in breast cancers that retain a normal copy the gene TP53. Instead of dying in response to chemotherapy-induced DNA damage, these cancer cells generally just stop proliferating and enter a dormant but metabolically active state known as senescence. In addition to surviving chemotherapy, these senescent cancer cells produce large amounts of inflammatory molecules and other factors that can promote the tumor's regrowth. Chemotherapy-treated breast cancer patients with normal TP53 genes are therefore prone to relapse and have poor survival rates.

"Understanding the properties of these senescent cancer cells that allow their survival after chemotherapy treatment is extremely important," said Crystal A. Tonnessen-Murray, a postdoctoral research fellow in James G. Jackson's laboratory at Tulane School of Medicine.

In the new study, Tonnessen-Murray and colleagues discovered that after exposure to doxorubicin or other chemotherapy drugs, breast cancer cells that become senescent frequently engulf neighboring cancer cells. The researchers observed this surprising behavior not only in cancer cells grown in the lab, but also in tumors growing in mice. Lung and bone cancer cells are also capable of engulfing their neighbors after becoming senescent, the researchers discovered.

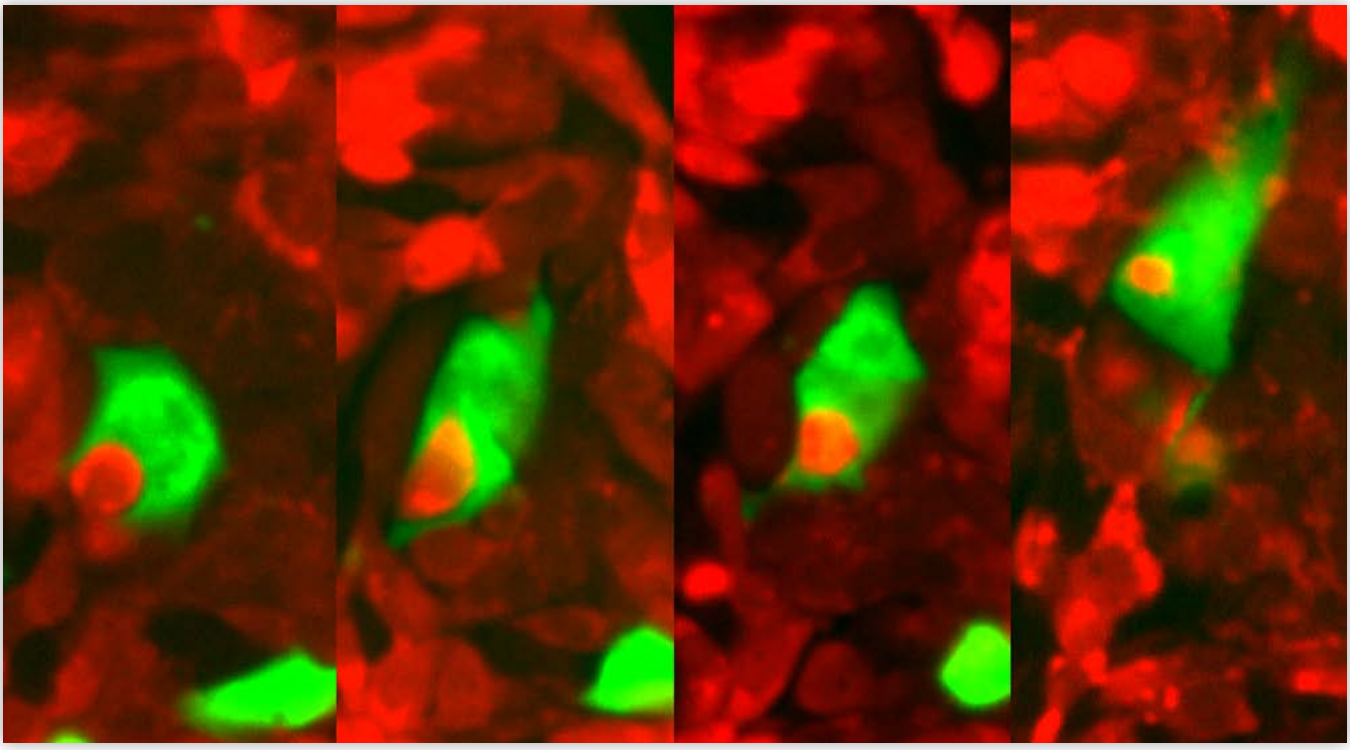
Tonnessen-Murray and colleagues found that senescent cancer cells activate a group of genes normally active in white blood cells that engulf invading microbes or cellular debris. After "eating" their neighbors, senescent cancer cells digested them by delivering them to lysosomes, acidic cellular structures that are also highly active in senescent cells.

Importantly, the researchers determined this process helps senescent cancer cells stay alive. Senescent cancer cells that engulfed a neighboring cell survived in culture longer than senescent cells that didn't. The researchers suspect consuming their neighbors may provide senescent cancer cells with the energy and materials needed to survive and produce factors that drive tumor relapse.

Understanding the properties of these senescent cancer cells that allow their survival after chemotherapy treatment is extremely important.

CRYSTAL A. TONNESSEN-MURRAY, PhD.
Postdoctoral Research Fellow in James Jackson's Laboratory
Tulane University School of Medicine

"Inhibiting this process may provide new therapeutic opportunities, because we know breast cancer patients with tumors that undergo TP53-mediated senescence in response to chemotherapy have poor response and poor survival rates," Jackson said.



EXPANDING CANCER CLINICAL TRIALS IN LOUISIANA, MISSISSIPPI

LSU Health New Orleans has been awarded a $13.6 million grant by the National Cancer Institute to expand its successful statewide clinical trials network with a special emphasis on minority and underserved cancer patients. Principal Investigator Dr. Augusto Ochoa, Director of LSU Health New Orleans Stanley S. Scott Cancer Center, and his team will develop a new entity by combining LSU Health New Orleans' previously funded Gulf South Minority/Underserved NCI Community Oncology Research Program (NCORP) with Ochsner's Community NCORP. Primary partners of the new Gulf South Minority/Underserved Clinical Trials Network NCORP will be LSU Health New Orleans Stanley S. Scott Cancer Center, LSU Health Shreveport Feist Weiller Cancer Center, Mary Bird Perkins Cancer Center and Ochsner Cancer Center.

The new Clinical Trials Network will provide cancer care and access to clinical trials for more than 50% of newly diagnosed cancer patients in the region, expand the number of sites offering access to clinical trials from 22 to 42 and increase the proportion of minority patients participating in NCORP trials. It will also take advantage of the clinical subspecialties at the primary affiliate sites, utilize the valuable samples in biorepositories to advance research in health disparities and treatment, as well as expand its partnerships with community health organizations.

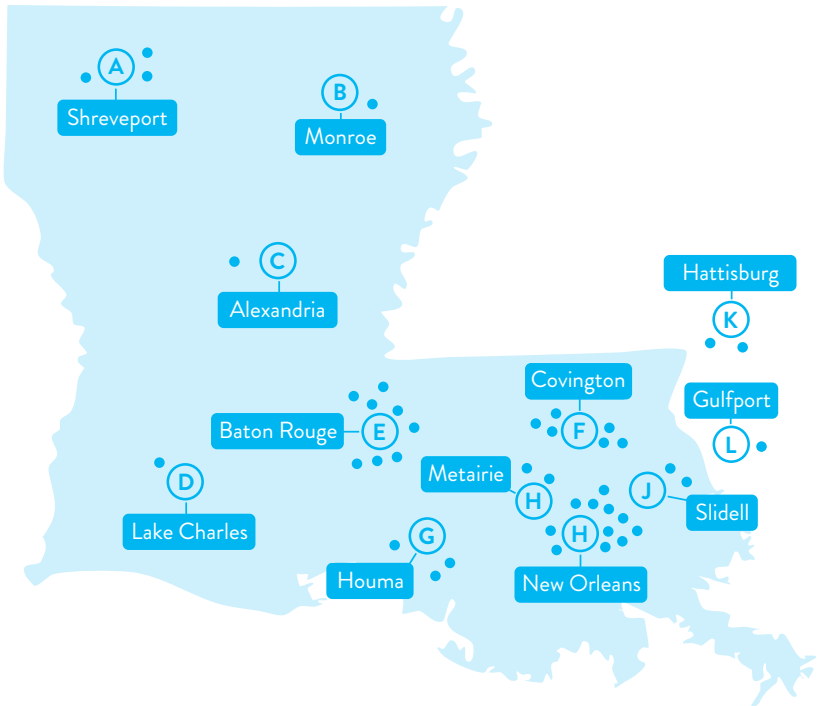
Dr. Augusto Ochoa, Co-Director, LCRC, Director, Stanley S. Scott Cancer Center, LSU Health New Orleans.

"This funding recognizes the expertise of LSU Health New Orleans and our partners in cancer research and care," notes Larry Hollier, MD, Chancellor of LSU Health New Orleans. "It will allow us to bring access to the latest advances in cancer care to even more Louisiana people diagnosed with this devastating disease."

Major health providers in the region including the Southeast Louisiana Veterans Health Care System in New Orleans, Woman's Hospital in Baton Rouge and the Christus Health community sites will also participate.

"A decade ago we started building this network with Mary Bird Perkins and LSU Health Shreveport," recalls principal investigator Augusto Ochoa, MD, Director of LSU Health New Orleans Stanley S. Scott Cancer Center. "It was recently named a recipient of the Platinum Award by the NCI for being a leading organization in enrolling cancer patients into clinical trials. Last year alone, we enrolled more than 1,300 patients in Louisiana, and when combined with Ochsner, it was close to 1,500. We are the largest cancer clinical trials network in the state. With the addition of Ochsner, this new clinical trials network holds a hopeful future for our cancer patients. We will continue to build cancer care throughout the state through team efforts such as the Gulf South CTN."

THE GULF SOUTH CLINICAL TRIALS NETWORK



A. SHREVEPORT
LSU Health Sciences Center Shreveport

Willis Knighton Medical Center

CHRISTUS Highland Medical Center

B. MONROE
UH Conway Medical Center

C. ALEXANDRIA
CHRISTUS Saint Frances Cabrini Hospital

D. LAKE CHARLES
CHRISTUS Saint Patrick Hospital

E. BATON ROUGE
The NeuroMedical Cancer-Clinic

LSU Health Baton Rouge North Clinic

Mary Bird Perkins Our Lady of the Lake Cancer Center

Louisiana Hematology Oncology Associates LLC

Medical Oncology LLC

Women's Hospital

Ochsner Health Center – Summa

Medical Center of Baton Rouge

F. COVINGTON
Mary Bird Perkins Cancer Center

Northsore Oncology Associates

Lallie Kemp Regional Medical Center – Independence

Ochsner Hematology Oncology North Shore Covington

Ochsner Health Center – Covington

G. HOUMA
Mary Bird Perkins Cancer Center at Terrebonne

Oncology Center of the South Inc.

H. METAIRIE
East Jefferson General Hospital

Robert Veith MD LLC

I. NEW ORLEANS
University Medical Center New Orleans

LSU Healthcare Network/ St. Charles

Children's Hospital New Orleans

LSU Health Sciences Center New Orleans

Ochsner Medical Center – Kenner

Ochsner Medical Center – Jefferson

Ochsner Medical Center – West Bank

Ochsner Baptist Medical Center

West Jefferson Medical Center (Marrero)

Culicchia Neurological Clinic (Marrero)

Touro Infirmary

J. SLIDELL
St. Tammany Hospital Service District #2

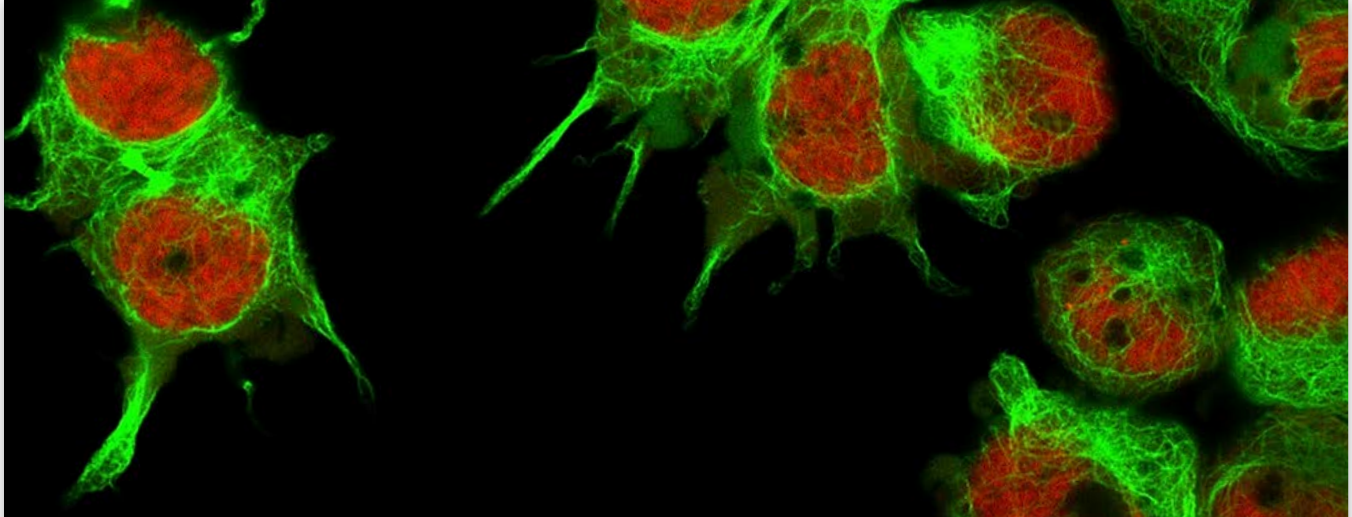
Slidell Memorial Hospital

Ochsner Hematology Oncology North Shore

K. HATTIESBURG (MISSISSIPPI)
Forrest General Hospital Cancer Center

Hattiesburg Clinic – Hematology/Oncology Clinic

L. GULFPORT (MISSISSIPPI)
Gulfport Memorial Hospital



RESEARCH FINDS NEW Rx TARGET FOR CHILDHOOD CANCER

Research led by Michael Lan, PhD, Professor of Pediatrics and Genetics at LSU Health New Orleans School of Medicine, found that a compound named 5'-iodotubercidin (5'-IT) suppresses the growth of neuroblastoma cells and identified a potential new therapeutic approach for the disease. The paper was published in the April 12, 2019, issue of the *Journal of Biological Chemistry*.

Neuroblastoma is the most common non-brain solid tumor in children. It is a cancer of neuroendocrine cells – cells that have characteristics of both nerve cells and hormone-producing cells. Neuroblastomas start in immature nerve cells, called neuroblasts, of the sympathetic nervous system. They form when there are abnormal changes in the genes controlling the development of these young cells into specialized cells. While some neuroblastomas resolve on their own, others can be fatal. The objective of the research was to find a new drug for the treatment of aggressive neuroblastoma tumors.

Dr. Lan's laboratory studies a DNA-binding protein, INSM1, made from the gene that regulates the development of immature or undifferentiated neuroendocrine cells. INSM1 is activated by another protein called N-Myc, and both are overproduced in neuroblastoma.

"Too much N-Myc occurs in roughly 30% of neuroblastoma tumors and strongly correlates with advanced-stage disease and poor outcome," Lan notes. "INSM1 has emerged as a critical factor in neuroblastoma cell growth."

The researchers were looking for a compound that would suppress excessive INSM1 and discovered that 5'-IT inhibits INSM1 protein expression and also affects cellular signaling molecules leading to neuroblastoma cell death.

"Taken together, we developed a unique INSM1 promoter-driven reporter assay to identify drugs that specifically inhibit INSM1 promoter activity," concludes Lan. "The identification of new signaling pathways that control the proliferation of aggressive neuroblastoma suggests new options for combination therapy of neuroblastoma patients."

According to the American Cancer Society, neuroblastoma accounts for about 6% of all cancers in children. There are about 800 new cases of neuroblastoma each year in the United States. The average age of children when they are diagnosed is about 1 to 2 years. In rare cases, neuroblastoma is detected by ultrasound even before birth. Nearly 90% of cases are diagnosed by age 5. In about two of three cases, the disease has already spread to the lymph nodes or to other parts of the body when it is diagnosed.

The identification of new signaling pathways that control the proliferation of aggressive neuroblastoma suggests new options for combination therapy of neuroblastoma patients.

The research team also included Chiachen Chen, PhD, Mary B. Breslin, PhD., Jessie J. Guidry, BS, in the Departments of Pediatrics, Genetics, Biochemistry and Molecular Biology at LSU Health New Orleans School of Medicine.

The research was supported by National Cancer Institute, the Louisiana State University Research Enhancement Program, LSU Health New Orleans School of Medicine and Children's Hospital, New Orleans.

While insufficient sleep has been shown to have a litany of adverse endocrine effects, a study presented at the Endocrine Society's 2019 Annual Meeting by Dr. Muralidharan Anbalagan, Assistant Professor of Structural and Cellular Biology at Tulane University, revealed the possible dangers of dim light exposure at night that could cause breast cancer to metastasize to the bones.

STUDY REVEALS DIM LIGHT AT NIGHT MAY PROMOTE BREAST CANCER METASTASIS TO BONE

Muralidharan Anbalagan, PhD, assistant professor of structural and cellular biology at Tulane, showed for the first time in a mouse study that exposure to artificial dim light at night may contribute to the spread of breast cancer to the bones.

"To date, this is the first report that circadian disruption, via exposure to artificial dim light at night-induced suppression of nighttime melatonin production, increases the formation of bone metastatic breast cancer," said Anbalagan. "This is important, as many patients with breast cancer are exposed to light at night as a result of lack of sleep; stress; night shift work; and excess light in the bedroom from mobile phones, iPads, laptops, televisions, night lights, and even street lights."

According to the NCI, more than 150,000 American women had breast cancer that metastasized in 2017. When breast cancer spreads, it often goes to the bones, where it causes severe pain and fragility.

In this preliminary study funded by the Louisiana Clinical and Translational Science Center (LACATS) in collaboration with the Louisiana Cancer Research Center (LCRC) and the Tulane Center for Circadian Biology, the researchers created a mouse model of bone metastatic breast cancer.

They injected estrogen receptor-positive human breast cancer cells with a low propensity to grow in bones into the shinbone of female mice. Like humans, the mice used in this study produce a robust nighttime circadian melatonin signal. This signal has been shown to produce strong anti-cancer actions and also promote sleep.

All mice were kept in bright light for 12 hours each day. One group of three were in complete darkness the other 12 hours, allowing them to produce high levels of endogenous melatonin at night. Another group spent 12 hours in bright light followed by 12 hours in dim light at night - less that that produced by a night light or cell phone display - which suppressed their nocturnal melatonin production.

Imaging showed that mice exposed to a bright light/dim light cycle had much larger tumors and increased bone damage compared with mice kept in a standard bright light/complete dark cycle.

"For the first time, our research demonstrated that dim light at night suppression of the circadian nighttime melatonin signal stimulated breast cancer bone metastasis. It also identified the importance of an intact nocturnal circadian melatonin anti-cancer signal in suppressing bone-metastatic breast tumor growth," said Anbalagan.

Circadian disruption by light at night is not only a risk factor in cancer, but also other metabolic diseases.

MURALIDHARAN ANBALAGAN, PHD
Assistant Professor of Structural & Cellular Biology
Tulane University School of Medicine

The goal is to reveal key players involved in promoting breast cancer growth in bone and the role of melatonin receptors. Anbalagan reminds everyone that the circadian system is extremely important for overall health. "Circadian disruption by light at night is not only a risk factor in cancer, but also other metabolic diseases," he said.

SMOKING CESSATION SUCCESS FEATURED AS NATIONAL MODEL

The Centers for Disease Control and Prevention (CDC) has featured a smoking cessation case study of LSU Health New Orleans' Louisiana Tobacco Control Initiative in its Million Hearts® Tobacco Cessation Change Package released nationally this month. It is one of only eight in the package.

The case study provides a road map of how to successfully incorporate smoking cessation into clinical care in health systems. The protocol the program developed and implemented includes education and training at every level. Between 2009 and 2011, the initiative contributed to a 9.5% relative decrease in the smoking prevalence of primary care patients and increased the relative odds of a six-month sustained quit rate by 1.5% for each clinical intervention delivered. The case study also shares lessons learned – the need for dedicated staff at each hospital; implementation flexibility and using data to keep a persistent call for change; and the need to create and sustain buy-in among the health system, clinicians and patients for treatment of tobacco use as an integral component of quality care.

The CDC's Office of Smoking and Health has declared 2019 the Year of Cessation. "The LA-TCI is thrilled to have our work highlighted and to contribute to the systematic improvements in tobacco use and dependence treatment," notes Michael Celestin Jr., PhD, MA, CHES, CTTS, Director of the LA-TCI, a program of LSU Health New Orleans School of Public Health. "Adapting and implementing tools like ours contribute to the wave of activities catalyzed by OSH's Year of Cessation and help support the Million Hearts® goal to reduce tobacco use by 20% as part of their targeted approach to cardiovascular disease prevention."

CDC's Tobacco Cessation Change Package offers a set of evidence-based changes aimed at improving the delivery of clinical interventions for the treatment of tobacco use and dependence. Each of the five focus areas (key foundations, equipping care teams, screening, treatment, and referral and follow-up) contains actionable, specific change ideas for integrating tobacco dependence treatment into routine clinical care.

Million Hearts® is a national initiative to prevent 1 million heart attacks and strokes in five years. CDC co-leads Million Hearts® with the Centers for Medicare & Medicaid Services. Interestingly, LSU Health New Orleans emeritus professor Jack Strong, MD, was the first to link smoking to atherosclerosis, a major cause of cardiovascular disease.

According to the CDC, tobacco use is the leading preventable cause of disease and death in the United States and is a significant driver of health care costs.

More than 16 million people in the U.S. live with at least one serious disease caused by smoking. Additionally, approximately 480,000 deaths and more than $300 billion in health care and lost productivity costs are attributable to smoking every year.

For more information about the Million Hearts® initiative and to access resources, visit http://millionhearts.hhs.gov. For more information about LSU Health New Orleans Louisiana Tobacco Control Initiative, visit https://sph.lsuhsc.edu/service/latci/.

NU-LITE CHOOSES LCRC FOR ANNUAL CHARITY PROGRAM

Nu-Lite Electrical Wholesalers in New Orleans donated over $13,000 to the LCRC as part of its annual charity program. Nu-lite is one of the leading commercial construction distributors in the New Orleans area and has frequently donated to cancer-related causes. Several of the companies' employees and their family members were diagnosed with cancer in the last year alone. "We not only had two of our employees get diagnosed with breast cancer within a month of each other, we had a stage 4 lung cancer, a skin cancer and a prostate cancer diagnosis," said Jennifer Gray, Nu-Lite representative. The company partnered with its vendors on a five-week campaign called "Who Dat Wearing Pink,' during which vendors distributed a portion of their sales and Nu-lite underwrote the cost of almost a thousand t-shirts to promote giving.

STUDY FINDS POTENTIAL ROLE FOR PERSONALITY PSYCHOLOGY IN CANCER CARE

Men who are neurotic or introverted are more likely to be distressed after their prostate cancer diagnosis, according to a new study by researchers at Tulane University.

The findings suggest those personality traits are important factors in how men responded to the bad health news. The results of the study led by Laura Perry, a Tulane doctoral student in health psychology, are published in the journal *Psycho-Oncology*.

The researchers surveyed 212 men with prostate cancer about their tendencies on five well-established personality traits. These men also reported on their degree of emotional distress, including symptoms of anxiety, depression, and thoughts of suicide.

Findings showed that emotional distress was more common among participants with certain personality tendencies—neuroticism, defined as a tendency to be emotionally unstable and experience negative emotions; or introversion, a tendency to be withdrawn, reserved, and inhibited.

The study found that 37 percent of participants had at least one form of emotional distress (anxiety, depression, or suicidal thoughts). Those who were neurotic or introverted were more than twice as likely to experience emotional distress compared to the rest of the sample. These effects of personality could not be explained by other factors, such as participants' age, education level, or health characteristics.

"Someone who is neurotic may tend to interpret an event, such as a prostate cancer diagnosis, as a more significant threat to their well-being," Perry says. "Someone who is introverted may be less likely to seek support from friends and family during their illness. In either scenario, these individuals may be less equipped to cope with the emotional burden of cancer."

The study suggests a potential role for personality psychology in cancer care. Perry says future studies are needed to investigate whether assessing personality tendencies during routine appointments could strengthen patient care.

Someone who is introverted may be less likely to seek support from friends and family during their illness.

LAURA PERRY
Tulane Doctoral Student in Health Psychology

Prescott Deininger PhD, Co-Director, LCRC, Director, Tulane Cancer Center, Tulane University Health Sciences Center

DEININGER INVITED TO GIVE KEYNOTE ADDRESS TO LOUISIANA ACADEMY OF SCIENCES

The mission of the LAS—since 1927—has been to unite the scientists of Louisiana for the purpose of encouraging research and education in all branches of science, to encourage and conduct scientific discussions, and to be an active voice representing science in both higher education and K-12 in Louisiana.

"This was an incredible opportunity to help raise awareness of our cancer research efforts among institutions of higher learning across the state," said Deininger. "I was honored not only to have been invited to deliver the keynote address, but also to highlight and promote biomedical research—specifically cancer research—right here at home as a career choice to bright young Louisiana students."

Lead study author Dr. Oliver Sartor says the study provides support for expanding testing to include an increased number of prostate cancer patients.

STUDY FINDS GENETIC RISKS ASSOCIATED WITH PROSTATE CANCER ARE UNDERESTIMATED

Over 17% of prostate cancer patients are born with genetic variants that can be associated with a higher risk for various cancers, according to a study in JAMA Oncology by researchers from Tulane and genetics firm Invitae. (Piper Nicolosi, Elisa Ledet, Shan Yang, et al. Prevalence of Germline Variants in Prostate Cancer and Implications for Current Genetic Testing Guidelines, JAMA Oncol. 2019;5(4):523-528.)

The research - the largest study to date on the genetics of prostate cancer - also found that guidelines for genetic testing at the time of the study missed a substantial number of patients, suggesting broader testing is warranted.

"This research shows the genetic risks associated with prostate cancer have been underestimated and provides support for expanding testing to include an increased number of patients," said lead author Dr. Oliver Sartor. "Expanding the use of genetic testing can inform treatment strategies and potentially suggest treatment with targeted therapies or clinical trials. Testing can also provide valuable information for families, allowing for increased screening among those at risk that can potentially help prevent additional cancer deaths."

Previous research has shown that approximately 12% of men with certain genetic variants have an increased risk of developing prostate cancer and may also be at risk for more aggressive disease. Relatives, including females who carry these variants, can also be at increased risk for other cancers, including breast, ovarian, pancreatic, uterine and/or colon cancers.

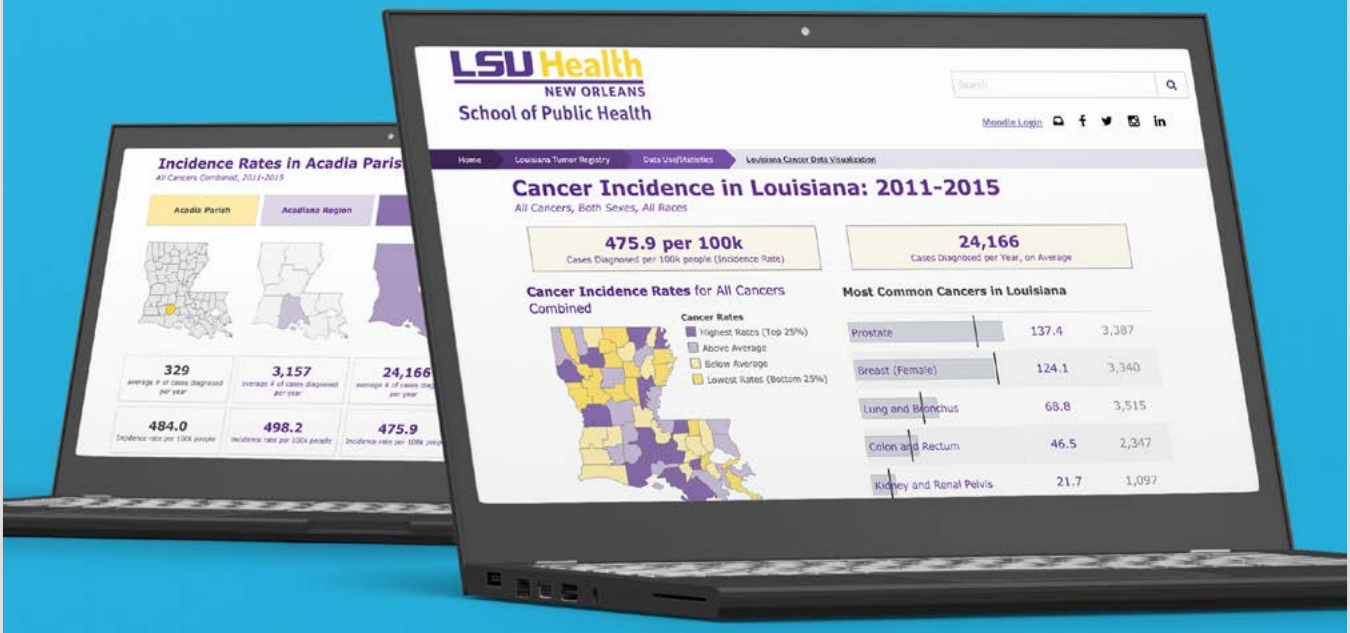
The study reviewed medical records between 2013 and 2018 for 3,607 men with a personal history of prostate cancer. Unlike previous studies in hereditary prostate cancer, inclusion in the study was not dependent on Gleason score, ethnicity, family history or stage of disease. The study included the largest number of prostate cancer patients and the largest sampling of non-Caucasian patients studied to date.

Results showed that among men with a personal history of prostate cancer, pathological variants were identified in 620 of 3,607 patients (17.2%). Almost 31% of those variants included the BRCA1/2 genes, which are associated with breast and ovarian cancers. Pathologic variants in HOXB13, a gene associated only with prostate cancer risk, were identified in 30 (4.5%) patients and this represents an important subset not covered by current guidelines.

Examination of provided family histories indicated that 37% of individuals with pathologic variants in this cohort would not have been approved for testing using the family-based guidelines at the time of study. Guidelines since have been revised to rely more heavily on Gleason scores for identifying patients for genetic testing. However, Gleason scores were an imperfect predictor of pathogenic variants in this dataset. Furthermore, Gleason scores require biopsy and are not always readily available to practitioners or family members who want genetic testing.

This research shows the genetic risks associated with prostate cancer have been underestimated and provides support for expanding testing to include an increased number of patients.

OLIVER SARTOR, MD
C.E. & Bernadine Laborde Professor of Cancer Research



TUMOR REGISTRY LAUNCHES NEW INTERACTIVE RESOURCE

LSU Health New Orleans Louisiana Tumor Registry has launched a new, user-friendly, interactive, online tool to provide easier access to cancer information in Louisiana. To our knowledge, Louisiana Cancer Data Visualization provides the most complete information of any online state-specific, cancer resource tool in the United States.

This new resource provides a comprehensive picture of cancer statistics in the state in a visual format. It includes an overview, information about types of cancer, cancer stage, cancer survival, pediatric cancers, as well as regional and parish data. Users can clearly see incidence rates, cases diagnosed per 100k people, as well as an average number of cases diagnosed per year. It includes mortality counts and rates, too. Filters give users the option to easily access the data of interest. Hovering over a parish on the maps displays its rates, which are also color-coded. Darkest colors denote highest rates, with lower rates displayed in lighter and lighter shades. The site also includes changes over time, comparisons to state and national rates, and differences by age, sex and race.

As opposed to a static, 100+ page publication, the intent is to make it easier for people to find what they are looking for. The tool was designed to be used by everyone from members of the general public to health professionals, elected officials and policy-makers, as well as journalists.

"Reducing suffering and death from cancer using cancer data is the vision of the Louisiana Tumor Registry (LTR,)" notes Xiao-Cheng Wu, MD, Professor of Public Health and Director of LSU Health New Orleans Louisiana Tumor Registry. "While working hard to collect complete, high-quality and timely data, we also seek ways to make LTR data more accessible. We launch this data visualization website hoping it will enhance the use and dissemination of cancer data contributing to the efforts of conquering cancer."

"We are incredibly excited to share this interactive, user-friendly data visualization with Louisiana," adds Lauren Maniscalco, MPH, Liaison, LSU Health New Orleans Louisiana Tumor Registry. "Understanding the full scope of the disease is so incredibly important. This comprehensive tool allows us to visualize cancer in Louisiana. We hope that this tool will be your first stop for Louisiana cancer statistics."

LSU Health New Orleans' Louisiana Tumor Registry is supported by the National Cancer Institute's SEER Program, the Centers for Disease Control and Prevention's National Program of Cancer Registries and the State of Louisiana.

EXPANDING PRECISION MEDICINE BEYOND CANCER, ACROSS CAMPUSES

Marc Matrana MD, Medical Director, Ochsner Precision Cancer Therapies Program

The Ochsner Precision Cancer Therapies Program (PCTP) continues to have an enormous impact in precision medicine and lead early phase clinical trials in the Gulf South. Ochsner plans to build on this success by expanding coordinated precision medicine beyond the scope of cancer and across its many campuses.

BACKGROUND

The Ochsner PCTP began two and half years ago as a unique partnership between Ochsner Health System and the Translational Genomics Research Institute (TGen) of Phoenix, Arizona to create the only dedicated early phase cancer clinical trials program between Houston and Birmingham. Since its April 2017 inception, the PCTP has opened more than 100 early phase clinical trials and enrolled over 250 cancer patients in early phase treatment studies. In many cases, enrollment in these trials have been life-changing for patients, giving patients new treatment options and ultimately new hope.

NGS AND STATEWIDE MOLECULAR TUMOR BOARD

The PCTP continues to offer free-of-charge advanced Next Generation Sequencing (NGS) to nearly every patient with advanced solid malignancies and lymphomas through its unique partnership with STRATA Oncology. The PCTP is expected to sequence its 2,000th patient this year. The PCTP, in conjunction with Ochsner Molecular Pathology and the Ochsner LSU Health Shreveport—Feist-Weiller Cancer Center, hosts the monthly Louisiana statewide virtual molecular tumor board to review the most complex and intriguing sequencing results, assisting clinicians in interpreting results and pairing patients with most appropriate therapies based on the underlying genetics of their tumors. Interested healthcare professionals are welcomed to submit cases and to attend in-person or virtually.

NEW DEPUTY DIRECTOR

PCTP Director Marc Matrana, MD, MSc, FACP was pleased to welcome new Deputy Director, Daniel Johnson, MD who transitioned from MD Anderson Cancer Center to Ochsner in August. A native of the New Orleans region, Dr. Johnson brings with him competitive grant-funding, impressive experience in the areas of immunotherapy (especially in melanoma) and novel clinical trials aimed to overcome immunotherapy resistance while minimizing immune-mediate adverse events.

AWARDS, ACCOLADES AND PRESENTATIONS

The Ochsner PCTP was awarded the Association of Community Cancer Centers (ACCC) coveted Innovation Award in 2018 and Dr. Matrana was awarded the Spirit of Leadership Award in 2019. Dozens of peer-reviewed publications and poster presentations have come out of program in this year. Research findings from the PCTP was presented at the American Association of Cancer Research (AACR) meeting in Atlanta, the American Society of Clinical Oncology (ASCO) annual meeting in Chicago and the Journal of the Advanced Practitioner in Oncology (JADPRO) annual meeting in Seattle, among several other national meetings in 2019.

NEW PRECISION MEDICINE INSTITUTE

Given the success of the PCTP, Ochsner leadership plans to build a Precision Medicine Institute to align genomic testing across medical disciplines and campuses, while providing education and resources for providers. Key Ochsner leaders completed a course at Harvard last year aimed at teaching hospital executives how to create precision medicine programs. The core leadership team also visited some of the leading precision medicine programs in the nation. Dr. Matrana is actively recruiting an administrative lead, as well as other key personnel for the new program.

BREAKTHROUGHS IN PHARMACOGENOMICS

As pairing individualized genomic data to personalized therapies for patients becomes more routine, the field of pharmacogenomics is emerging as a critical component of providing the most cutting-edge patient care. Ochsner is meeting the challenge of pharmacogenomics by forming a multi-disciplinary governance committee of diverse stakeholders to oversee pharmacogenomic programs across the system. The committee plans to pilot a program that would overlay artificial intelligence software into the EPIC electronic health record system, allowing providers to import genomic data that would then trigger advisories and provide guidance for prescribing based on a patient's individualized genetic makeup. In addition, the system is actively recruiting for a lead pharmacist to oversee the quickly expanding pharmacogenomics program.

CONCLUSIONS

Precision medicine is quickly changing the landscape of nearly every medical specialty. Ochsner's Precision Cancer Therapies Program is meeting the challenge of precision medicine in the oncology realm, while the system's new Precision Medicine Institute will provide solutions for patients and providers across disciplines and geographies.

LCRC CLINICAL TRIAL ADDRESSING CANCER HEALTH DISPARITIES:

FOSTERING SHARED DECISION-MAKING ABOUT PROSTATE CANCER SCREENING AMONG CLINICIANS AND AFRICAN AMERICAN MEN

Prostate cancer (PrCa) has the highest incidence and second mortality rate among all male cancers in USA and the incidence of PrCa is about 60% higher in black men than in whites. Although the prostate specific antigen (PSA) blood exam has been the standard screening for early detection of PrCa, concerns about overdiagnosis and side effects associated with unnecessary treatment, the 2018 revised clinical guidelines recommend against routine PSA-screening. The guidelines now recommend a shared decision making (SDM) process where men are educated about PrCa risks and screening, discuss the benefits and limitations of PSA-testing with their healthcare providers, and then make an informed personal choice about whether to be tested.

Margarita Echeverri, MSc, PhD, Associate Professor, Xavier University, College of Pharmacy

Considering providers time restrictions during medical encounters and differences in patient-provider communications approaches (particularly with minority patients), the goal of this project is to provide evidence regarding the applicability of SDM during the clinical encounters of African American (AA) men. The project will assess the efficacy of a decision aid (training) about PSA- screening, among 200 AA men, 40+ years old, with no history of PrCa, and who receive primary care services at different clinical sites (Tulane Medical Center, University Medical Center and Access Health Louisiana).

This 4-year randomized clinical trial is one component of the Research Centers at Minority Institutions program at Xavier University of Louisiana (PIs Dr. Gene D'Amour and Dr. Guangdi Wang) that is funded by NIH NIMHD. This studies Principal Investigator Dr. Margarita Echeverri (Xavier) and Co-Investigator Dr. Michael Hoerger (Tulane) expect that the results of this project can be scaled to primary care practices across the U.S. and may be adapted to other types of cancer where guidelines have included decision-making. Most importantly, this study should result in more effective PrCa screening practices by AA men that should reduce cancer mortality.

XAVIER CANCER RESEARCH INTERNSHIP SUMMER 2019

Summer 2019 marked the sixth year Xavier University's Louisiana Cancer Research Center Program hosted four rising seniors from the New Orleans Charter Science and Mathematics High School, Taylor Lonzo, Skye Robinson, Jyra Davis and Kaitlyn Perkins

Our Cancer Research Interns worked 25 hours per week for two months in various research labs on Xavier Campus and at the LCRC where they learned the scientific process by doing experiments, collecting data and keeping a lab notebook. They also attended weekly scientific seminars at Xavier that discuss current research projects in other Xavier labs. At the completion of their internships, Taylor, Skye and Kaitlyn presented and defended their research at the Xavier summer research poster session and at the science fair at SciHigh.

The primary benefit of this internship is the exposure of young people to STEM research in a university setting. The goal of the program is to provide early exposure to research and to encourage the interns to enter a STEM track as freshmen in college.

This program has been well received by both student interns and faculty advisors and Xavier University plans to continue this success with bright and talented high school interns in the future.

THE PANCREATIC CANCER DETECTION CONSORTIUM

The Pancreatic Cancer Detection Consortium (PCDC), a group of eight teams supported by an NIH U01 grant mechanism, shares the main objective to develop and test new molecular and imaging biomarkers to improve the detection of early stage pancreatic ductal adenocarcinoma (PDAC) and its precursor lesions; this could identify individuals who are at high risk of developing PDAC and are candidates for early intervention. Ochsner Cancer Institute is a part of the team led by the City of Hope Comprehensive Cancer Center and the Translational Genomics Research Institute (TGen). The specific focus of the team is to discover, develop and validate noncoding microRNA biomarkers in bodily fluids (specifically, plasma and exosomes isolated from whole blood) for the very earliest stages of invasive PDAC.

Ochsner has just entered the third year of its funding.
To date, the following has been accomplished:

- Established robust methods for exosome isolation and small RNA sequencing.
- Isolated RNA from more than 800 tissue and plasma specimens (including ~250 matched pair of tissue and plasma samples from the same patients), many of which were subsequently used for small RNA sequencing.
- Compared performance of various small RNA-Sequencing platforms to identify the most optimal sequencing approach that worked for tissue, cell-free and exosomal-small RNA sequencing, on a Novaseq sequencer.
- Completed small RNA-sequencing on more than 800 specimens from tissue, plasma (cell-free) and exosomes, in patients with precancerous lesions, PDAC and controls.
- Collected more than 2000 specimens (retrospective and prospectively) from patients with PDAC, precancerous lesions and controls.

Key results to date include:

- In order to obtain insights into the differences between normal mucosa, IPMN and cancers, both at the tissue and plasma levels, the Ochsner team has performed an unsupervised principal component analysis on all the miRNAs that were identified. It was noted that a panel of 20-30 miRNA biomarkers can successfully discriminate between the three groups, which is remarkable, and highlights that miRNA expression profiles are significantly different in tissues from patients with PDAC compared to IPMNs and normal mucosa.
- The team next interrogated the differential expression of specific miRNAs that are up and down- regulated between tissue, plasma and exosomes in patients with PDAC, IPMNs and healthy controls. As a result, it has thus far identified panels of ~25 miRNAs that are significantly and differentially and/or commonly expressed between the tissue, cell-free and exosomal fractions. These are still early data, and Ochsner is in the process of performing additional QC and sequencing to finalize the most optimal panel of biomarkers that can be moved forward for the validation steps.
- Furthermore, using the differentially expressed miRNAs at tissue, plasma and exosome levels, the team has plotted heatmaps that can distinguish healthy control subjects from patients with IPMNs and PDAC, supporting the original hypothesis that cell-free and exo-miRNAs might serve as valuable diagnostic markers and highlight the fact that the biomarker discovery efforts using small RNA-sequencing are already quite successful.
- Lastly, the Ochsner team has developed early preliminary data supporting that a combination of cell-free and exo-miRNAs indeed offer a higher sensitivity and specificity for PDAC diagnosis, compared to each of these biomarkers individually.

In summary, the preliminary sequencing data analyzed thus far is very encouraging and provides Ochsner with confidence on the feasibility of identifying a miRNA-based classifier for the non-invasive disease and early detection of PDAC.

RESEARCH FOR THE

CURE Gala

The Louisiana Cancer Research Center's annual Research for the Cure fundraiser transformed Canal Place in downtown New Orleans into the perfect setting for an elegant evening of dining, dancing and shopping. Close to two dozen shops opened their doors to guests who browsed between bites from New Orleans' finest restaurants and caterers, danced to music from two separate bands and bid on silent auction items, all the while supporting the LCRC's unique consortium of the state's cancer research powerhouses: LSU Health New Orleans, Tulane University School of Medicine, Xavier University of Louisiana and Ochsner Health System.

A dedicated committee of over 70 volunteers worked tirelessly on the event, led by Co-chairs Sue Singer and Barbara Greenberg. Honorary Chairs for the 2019 gala were broadcasters Angela Hill, Karen Swensen and Saks General Manager Carolyn Elder.

Approximately 600 supporters turned out for the event raising over $140,000, donations that will directly support the Louisiana Cancer Research Center.

Left to right: Dr. John Cole, LCRC Associate Director talks to a Research for the Cure patron; **left to right:** Sven Davisson, LCRC Chief Administrative Officer and Lisa Manzella, General Manager of Canal Place.

Above: Patrons mingle at the 2019 Research for the Cure Gala; **above right:** Dr. Augusto Ochoa, LCRC Co-Director, Sue Singer and Barbara Greenberg, 2019 Research for the Cure Co-Chairs, Dr. Prescott Deininger, LCRC Co-Director; **right:** Carolyn Elder, Karen Swensen and Angela Hill, 2019 Research for the Cure Honorary Chairs; **far right:** Reagan Charleston with sister, Reina; **below right:** Motown Review by ELS entertains the gala patrons; **below:** Diane Franco, Dr. Thomas Wiese, LCRC Associate Director and Sandra Pulitzer, 2019 Research for the Cure Entertainment Chair;

THE LOUISIANA CAMPAIGN FOR TOBACCO-FREE LIVING (TFL)

GOAL 1
PREVENT INITIATION AMONG YOUTH AND YOUNG ADULTS

GOAL 2
ELIMINATE EXPOSURE TO SECONDHAND SMOKE

GOAL 3
PROMOTE CESSATION RESOURCES

GOAL 4
ELIMINATE TOBACCO-RELATED HEALTH DISPARITIES

TFL GOAL 1
PREVENT INITIATION AMONG YOUTH AND YOUNG ADULTS

From age restrictions to flavor bans, Next Era (a statewide youth movement of The Louisiana Campaign for Tobacco-Free Living) has been instrumental and effective in educating their community on tobacco control. In 2019, our student members have volunteered a total of 1,245 hours of community education and outreach.

2019 NEXT ERA HIGHLIGHTS

230 STUDENTS

13 CHAPTERS

COLLECTED **2,267** MESSAGE CARDS

2019 PARTICIPATING SCHOOLS AND ORGANIZATIONS

REGION 2

BAKER HIGH SCHOOL

REGION 3

WEST ST. MARY

HANSON HIGH SCHOOL

REGION 4

WESTGATE HIGH SCHOOL

REGION 5

IOWA HIGH SCHOOL

WINNFIELD HIGH SCHOOL

JENA HIGH SCHOOL

REGION 6

BOOKER T. WASHINGTON HIGH SCHOOL

REGION 8

BASTROP HIGH SCHOOL

WINNFIELD HIGH SCHOOL

REGION 9

ST. HELENA COLLEGE AND CAREER HIGH SCHOOL

PRIDE YOUTH GROUP

The **Iowa Next Era group** put together a video package about the importance of tobacco control and the dangers of vaping. The video was produced in partnership with the Region 5 Louisiana Office of Public Health Medical Director, Dr. Cavanaugh and the Calcasieu Parish Police Jury. It is being used as an educational vehicle to run targeted public health messages on Calcasieu Parish's local government channel (C-Gov).

KICK BUTTS DAY 2019

On March 20, 2019, TFL along with the Next Era youth held Kick Butts Day events across the state from a healthy picnic at Westgate to presentations before the St. Mary Parish Council to a rally in Ruston. These events provided high school students to promote healthy tobacco-free lifestyles. The teens seized the moment to stand up and speak out against tobacco use.

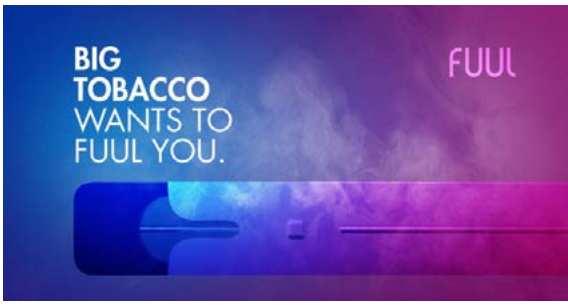
Above, left: Next Era group attending the Louisiana Sugar Cane Festival in New Iberia, LA; ***Above, center:*** Winnfield High School students Ahlysia, Hezekiah, Terriuna and Brela attended and gave a statement on how they are fighting Big Tobacco to not be the "replacement generation" ***Above, right:*** West St. Mary High School students presenting to the St. Mary Parish Council and receiving a Proclamation from the Council

"I CARE ABOUT MY COMMUNITY TOO MUCH TO NOT TRY AND IMPROVE IT—CLEAN AIR IS A HUGE PART OF THAT. I HOPE EVERYONE WILL SEE HOW MUCH WE CARE ABOUT HEALTH YAIR AND HOW WE CAN WORK TOGETHER TO CREATE HEALTHIER AIR FOR EVERYONE." -Austin, Winnfield Senior High School

THE VAPING EPIDEMIC OF 2019

In 2019, national attention was focused on the increased hospitalizations and deaths as a result of vape use among young people. Nationally, the Centers for Disease and Control reported **2,561 hospitalizations** as a result of Evali, a lung injury as a result of vape use. These hospitalizations were reported from all 50 states, including U.S. territories – the District of Columbia, Puerto Rico and Guam. **55 deaths** were confirmed related to Evali. In Louisiana, **34 hospitalizations** were reported to the Louisiana Department of Health Infectious Disease and **2 deaths**. The heightened awareness created an uptick in the number of presentations provided by TFL staff. A total of **22 presentations** were conducted by TFL staff in 2019. The majority of presentations were given to middle and high school students, school districts and associations, parent teacher associations and other youth service agencies, faith-based institutions and health care providers.

TFL has produced media and community outreach educational materials to address the epidemic. On October 31st TFL released a new social media campaign called *FUUL* in addition to the release of a special report co-produced by the Louisiana Department of Health's Well-Ahead Louisiana program. The report titled *E-Cigarette Use Among Youth in Louisiana* resulted in **15 news, radio and newspaper interviews conducted by TFL staff**.



HEALTHIER AIR FOR ALL

HealthierAirForAll.org

TFL GOAL 2
ELIMINATE EXPOSURE TO SECONDHAND SMOKE

In 2019, there were eleven **(11) municipalities** that passed comprehensive indoor smoke-free policies, helping create healthier air for its residents. Those municipalities include Angie, Ponchatoula, Pineville, Ruston, Cullen, Boyce, Fenton, Athens, Reeves, Oak Grove, and Natchez. The actions of these cities helped increase the total percentage of Louisiana protected from secondhand smoke to **22.51% of Louisiana residents**.

There are a total of **twenty-nine (29) municipalities** that are smoke-free.

TFL made significant progress in 2019, but there is much work left to do. The TFL regional managers and the TFL team continues to educate Louisiana about the dangers of secondhand smoke and promote healthier air for all.

Above: Tank and the Bangas

MUSICIANS FOR A SMOKE-FREE LOUISIANA

TARRIONA BELL Tank and the Bangas, 2019 Grammy Nominee

"I am so happy that New Orleans is smoke free because I have a lot of musicians friends and singers and they leave out with bronchitis and things. You know this city is built around music and we need to protect our artists. I'm so happy it is smoke free!"

TODD O'NEILL

"I am very supportive of the smoke free movement and excited Ponchatoula chose to go smoke free in bars where I work. Having to play in smoky bars hurts my voice and is bad for my health and my performance. I can't always ask for a smoke free gig because gigs are limited. There have been times after playing, when we open the truck and trailer (with the equipment) and it smells awful. We have to let it air out for days. Imagine what that same smoke is doing to my lungs, heart and overall health!"

BENNY MAYGARD 2019 BR Blues Festival musicians

"Well, fortunate bars in New Orleans are now nonsmoking. So it's been a while since I have done a lot of playing in bars that allowed smoking. But I am a harmonica player, so I process a lot of air. And believe me it's like night and day being in a world where I don't have to inhale all that cigarette smoke. I used to get home, my lungs would ache and my eyes would ache from the smoke. So I'm all for smoke-free myself."

TFL GOAL 3
PROMOTE CESSATION RESOURCES

2019 ANNUAL QUITLINE DATA

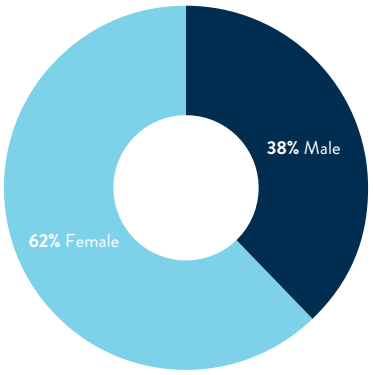
(January – December 2019)

In 2019, a total of **4,283 registered tobacco users received services** from the Louisiana Tobacco Quitline

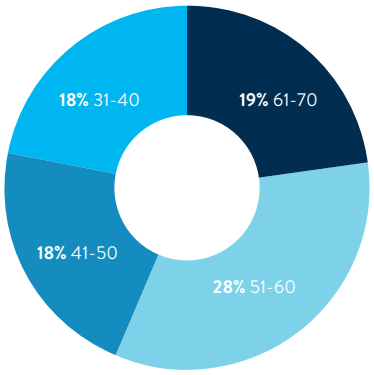
(1-800-Quit-Now). Quitline services offers approved pharmacotherapies along with phone counseling, web-based coaching, or an integration of both conducted by a certified Tobacco Treatment specialist. Of the total participants serviced, **2,306 (54%)** were eligible and enrolled into the Smoking Cessation Trust services.

These infographics illustrate the demographics of Louisiana residents seeking to quit tobacco.

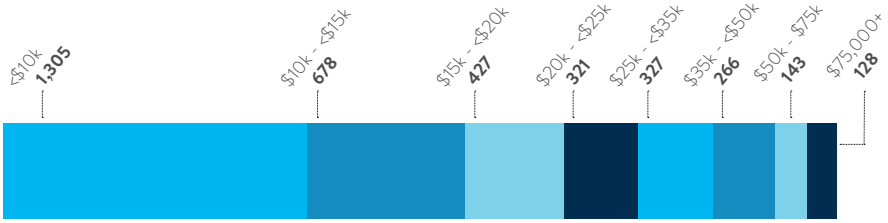
GENDER



AGE

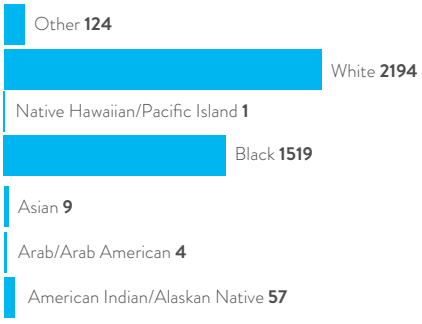


HOUSEHOLD INCOME

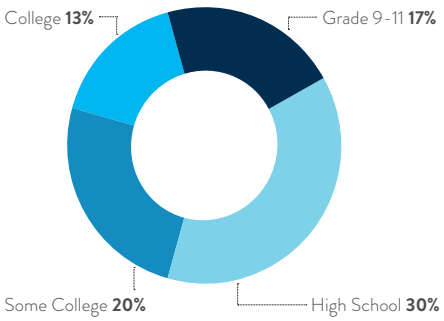


REFERRAL SOURCE

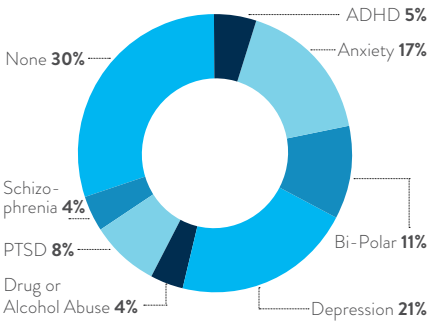
RACE/ETHNICITY



EDUCATION



MENTAL/BEHAVIORAL HEALTH



TFL GOAL 4
ELIMINATE TOBACCO-RELATED HEALTH DISPARITIES

The African American Male Cessation campaign and initiative ran in six urban markets in 2019. – New Orleans, Baton Rouge, Shreveport, and introduced in Alexandria, Monroe and Opelousas. TFL's partnership with the Communities of Color Network has been instrumental at the grassroots level. The African-American Male Cessation initiative creative was utilized among a variety of media outlets to reinforce the benefits of quitting tobacco. These media include paid radio advertisements and social media promotion, which saw significant engagement metrics.

TFL recognizes 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.

NEW LCRC FACULTY

MURALIDHARAN ANBALAGAN, PhD

ASSISTANT PROFESSOR OF STRUCTURAL & CELLULAR BIOLOGY, TULANE UNIVERSITY SCHOOL OF MEDICINE

Dr. Anbalagan received his Ph.D. from the University of Madras, Tamilnadu, India in 2005 and then came to the U.S. as a postdoctoral fellow at the University of Louisiana at Monroe, where he worked on the molecular biology of prostate cancer and the role of calcitonin and its receptor. In 2007, Dr. Anbalagan joined Tulane University's Department of Structural and Cellular Biology as a postdoc in Dr. Brian Rowan's laboratory, where he investigated the effects of the novel peptidomimetic dual Src and pretubulin inhibitor KX-01 in experimental models of breast cancer. In 2014, Dr. Anbalagan was promoted to instructor and became Histology Lab Director for T1 medical students, and in 2018, he was promoted to assistant professor in the Department of Structural and Cellular Biology at Tulane. In collaboration with the Tulane Circadian Biology Center, Dr. Anbalagan started to work on circadian disruption of melatonin signal by dim light exposure at night and breast cancer metastasis to bone. He is interested in understanding how estrogen receptor α (ERα) phosphorylation impacts bone development and bone turnover. His research will determine the role of ERα phosphorylation in bone homeostasis at all ages.

CARTER DAVIS, MD

DEPARTMENT OF HEMATOLOGY/ ONCOLOGY, OCHSNER HEALTH SYSTEM

Carter Davis, MD joined the University of Queensland Ochsner Clinical School faculty in 2019.

Dr. Davis earned his medical degree at Louisiana State University School of Medicine in New Orleans. He completed residency training internal medicine at Duke University Medical Center. He subsequently completed fellowship training in hematology and medical oncology at Duke, with a research focus in hematologic malignancies. Dr. Davis is board certified in Internal Medicine and is a member of the Gayle and Tom Benson Cancer Center at Ochsner Medical Center's Department of Hematology/Oncology as part of the hematologic malignancies/bone marrow transplant program.

HONG LIU, PHD

ASSISTANT PROFESSOR OF BIOCHEMISTRY & MOLECULAR BIOLOGY, TULANE UNIVERSITY SCHOOL OF MEDICINE

Dr. Liu received his master's degree in molecular biology and biochemistry from Sichuan University in 2001 and his P.D. in cell biology from Florida State University in 2009. While at FSU, he studied cell cycle regulation using budding yeast as a model system. He then moved to the University of Texas Southwestern Medical Center for his postdoctoral training, where he focused on the mechanisms underlying chromosome segregation. He came to Tulane in 2015 to pursue independent research. His interests include understanding how chromosome instability contributes to aging and aging-related diseases. Aneuploidy is one of the hallmarks in cancer cells. It is known to promote the development of cancer. A major cause of aneuploidy is derived from chromosome missegregation in mitosis. Therefore, a better understanding of the mechanisms of proper chromosome segregation will help decipher the underlying causes of cancer and provide theoretical bases for clinical applications. Dr. Liu's long-term goal is to understand the molecular mechanisms that govern precise chromosome segregation.

WU MIN-DENG, PhD

PROFESSOR OF BIOCHEMISTRY & MOLECULAR BIOLOGY, GERALD & FLORA JO MANSFIELD PILTZ ENDOWED PROFESSOR OF CANCER RESEARCH, TULANE UNIVERSITY SCHOOL OF MEDICINE

Dr. Deng received a bachelor's degree from Sichuan University in 1991, a master's degree from Shanghai Institute of Cell Biology in 1994, and a PhD from the University of Edinburgh in 1997. After completing his postdoctoral training at the University of Washington, Dr. Deng joined Florida State University in 2003 as an assistant professor. From there, he was promoted to associate professor in 2009 and to full professor in 2014. He joined Tulane's faculty as a professor of biochemistry and molecular biology in 2019. Using the genetically tractable Drosophila model, Dr. Deng's research focuses on fundamental questions in cancer and developmental biology. Understanding how the tissue microenvironment contributes to neoplastic tumor transformation and progression, as well as how growth and tissue homeostasis are regulated during development and tumorigenesis are areas of particular interest. His team's work has led to the development of novel concepts, such as tissue "tumor hotspots" and "compensatory cellular hypertrophy," as well as publications in high-impact journals. Dr. Deng has served as an ad hoc member on multiple NIH study sections, and on the editorial boards of the *Journal of Genetics and Genomics and Scientific Reports*.

QIANG SHEN, MD, PhD

PROFESSOR, DEPARTMENT OF GENETICS, LSU HEALTH NEW ORLEANS

Dr. Qiang Shen joins the LCRC as an LSU faculty member in Genetics at the Stanley S. Scott Cancer Center.

He obtained his medical degree and initial training in China, obtained his Ph.D. in Cell Biology at the University of Texas Medical Branch, then completed his postdoctoral fellowship at Baylor College of Medicine, in Houston, Texas and then obtained a faculty position at MD Anderson Cancer Center. Dr. Shen now joins us from MD Anderson Cancer Center with expertise and publications covering a number of cancers, including breast, colorectal and pancreatic. His research also focuses on cancer metabolism and anticancer drug development. His current research focuses on transcription factors (STAT3, AP-1), kinases (glucose metabolism enzymes, HIPK4), ion channels and related signaling (KCNK5, TRPM7, MCU) in the development and progression/ metastasis of breast and other cancers, and the development of targeted small molecule anti-cancer drugs for preventive and therapeutic purposes (targeting STAT3, AP-1, Bax, HIPK4, and NRF2/RHOA/ ROCK pathway, etc.). Dr. Shen has authored/ co-authored 59 peer-reviewed publications and is a co-inventor of 2 international and U.S.A. patents.

CHRISTOPHER TREVINO, MD

ASSISTANT PROFESSOR OF MEDICINE, SECTION OF HEMATOLOGY & MEDICAL ONCOLOGY, TULANE UNIVERSITY SCHOOL OF MEDICINE

Dr. Trevino graduated medical school from Baylor College of Medicine in Houston, Texas, then completed his residency training in neurology at the University of Vermont Medical Center in Burlington, Vermont. He subsequently returned to Houston where he completed his sub-specialty fellowship training in neuro-oncology at the University of Texas - MD Anderson Cancer Center. As a neuro-oncologist, he diagnoses and treats patients with primary brain tumors, metastatic brain tumors, and primary CNS lymphoma. He believes in a comprehensive approach to cancer care and works with a team of

neurosurgeons, radiation oncologists, pathologists, radiologists, and social workers to care for his patients. Dr. Trevino also manages the neurologic complications of cancer and cancer treatments, including treatment of leptomeningeal carcinomatosis with intrathecal chemotherapy.

QIUYANG ZHANG, PhD

ASSISTANT PROFESSOR OF STRUCTURAL & CELLULAR BIOLOGY, TULANE UNIVERSITY SCHOOL OF MEDICINE

Dr. Zhang received a bachelor degree in biology from Shaanxi Normal University, China, in 1987. Later that year, she was appointed assistant professor at Shaanxi University of Chinese Medicine and was promoted to lecturer in 1994 and associate professor in 2002. Dr. Zhang received a Master of Science degree in 2001 and a PhD in 2004 from Xi'an Jiaotong University School of Medicine and then joined the faculty there as an associate professor in the Department of Anatomy and Histology and Embryology. In 2005, she started her postdoctoral training in molecular biology at Eastern New Mexico University and then in cancer genetics at Loyola University in Chicago. In 2006, Dr. Zhang joined George Washington University as a research scientist in the Department of Biochemistry and Molecular Biology. In 2009, she joined Tulane University School of Medicine as a postdoctoral fellow in molecular cancer biology in the Department of Structural & Cellular Biology. She was promoted to instructor in 2014 and assistant professor in 2018. Dr. Zhang's research interests include reproductive biology, cancer biology, and inflamm-aging.

BIOSPECIMEN CORE UNDER NEW MANAGEMENT

The LCRC's Biospecimen Core Laboratory began the new year by welcoming a new Assistant Director, Dr. Melyssa Bratton. Dr. Bratton previously served as Xavier University's Cell, Molecular Biology, and Bioinformatics Core Manager.

The LCRC Biospecimen Core Laboratory is a repository of thousands of tumor samples. With patient consent, tumor samples, blood, and other relevant materials are collected during surgery or clinic visits. Over 6,000 cancer patients authorized their doctors to contribute their tissue to further LCRC cancer research. The lab stores thousands of samples including prostate, kidney, breast and colorectal. LCRC scientists use the samples in their ongoing cancer research.

Dr. Bratton earned her Ph.D. in Biochemistry from the University of Mississippi Medical Center. She then moved to Tulane University in New Orleans where she studied the effects of endocrine disrupting chemicals' effects on estrogen receptor (ER) biology and the roles these chemicals might play in ER-dependent breast cancer. She was also involved in projects concerning drug resistance in breast cancer, in dissecting molecular mechanisms of drug resistance and triple negative breast cancer.

In her first month on the job, she has been working with an IT team to migrate the Core's data to a state-of-the-art software program that will make patient sample entry and querying much more efficient.

Dr. Bratton has published over thirty peer-reviewed journal articles and intends to serve as the Core's assistant director and as a scientific liaison for the LCRC. She hopes to leverage her scientific background to facilitate dialog between researchers interested in using the Biospecimen Core to both expand the Core's user base as well as increase the impact the core might have on the greater research community.

IN MEMORIUM

MARIANNE COHN

Marianne Cohn passed away on Thursday, October 17, 2019. Mrs. Cohn was a New Orleans civic leader and philanthropist who regularly volunteered and supported the Louisiana Cancer Research Center (LCRC) and many other organizations over the years. Mrs. Cohn was known by many for her warmth and elegance, but also for her generosity, compassion, and commitment to her civic endeavors; she began her first philanthropic endeavor at the age of 17. Mrs. Cohn's commitment to the LCRC and its mission was on display in her obituary. Acknowledgements were suggested in the form of contributions to The Louisiana Cancer Research Center and National Jewish Health of Denver, Colorado

STATEMENT OF FINANCIAL POSITION

Year ended June 30, 2019 (with comparative financial information as of June 30, 2018)

ASSETS

	2019	2018
Cash & Cash Equivalents	18,093,348	16,576,059
Investments	12,708,647	12,243,442
Receivables - Grants	7,832,361	3,460,611
Receivables - Other	2,476,732	756,636
Property and Equipment	88,229,531	91,807,920
Prepaid Expenses	75,936	64,456
Deposits	52,400	52,400
TOTAL ASSETS	**129,468,955**	**124,961,524**

LIABILITIES AND NET ASSETS

LIABILITIES	2019	2018
Accounts Payable	2,698,144	3,686,832
Accrued Liabilities	97,272	87,359
TOTAL LIABILITIES	**2,795,416**	**3,774,191**

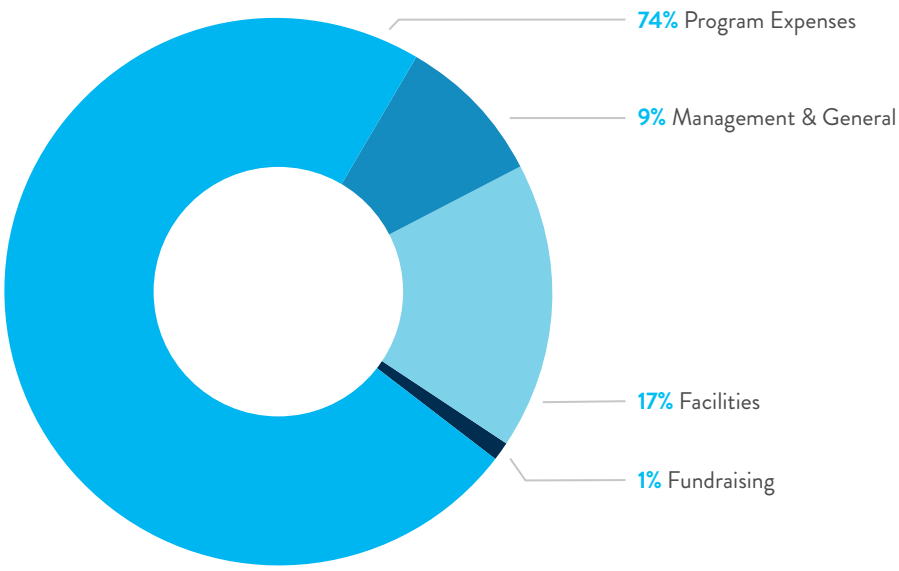
NET ASSETS	2019	2018
Without Donor Restrictions	4,504,570	3,417,615
With Donor Restrictions	122,168,969	117,769,718
TOTAL NET ASSETS	**126,673,539**	**121,187,333**
TOTAL LIABILITIES AND NET ASSETS	**129,468,955**	**124,961,524**

STATEMENT OF ACTIVITIES

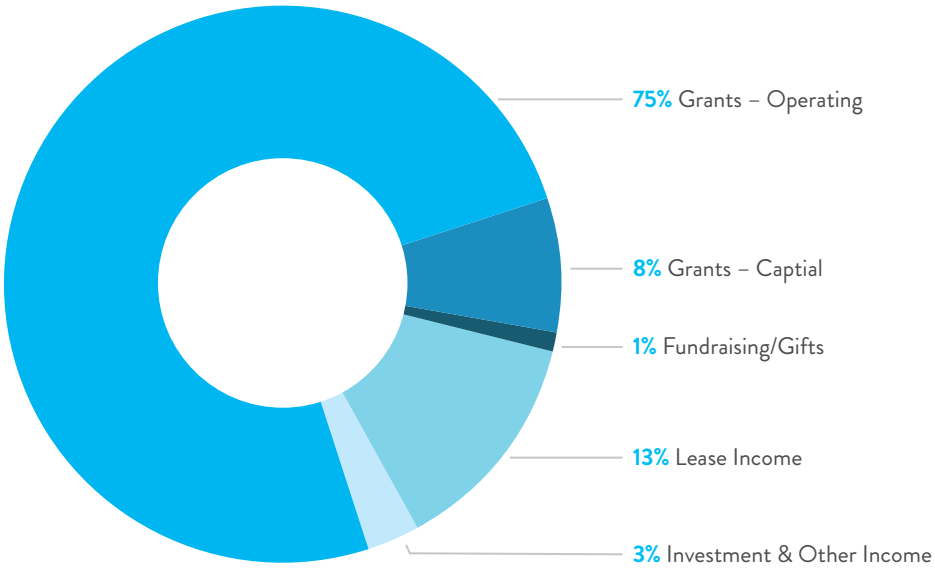
Year ended June 30, 2019 (with comparative financial information as of June 30, 2018)

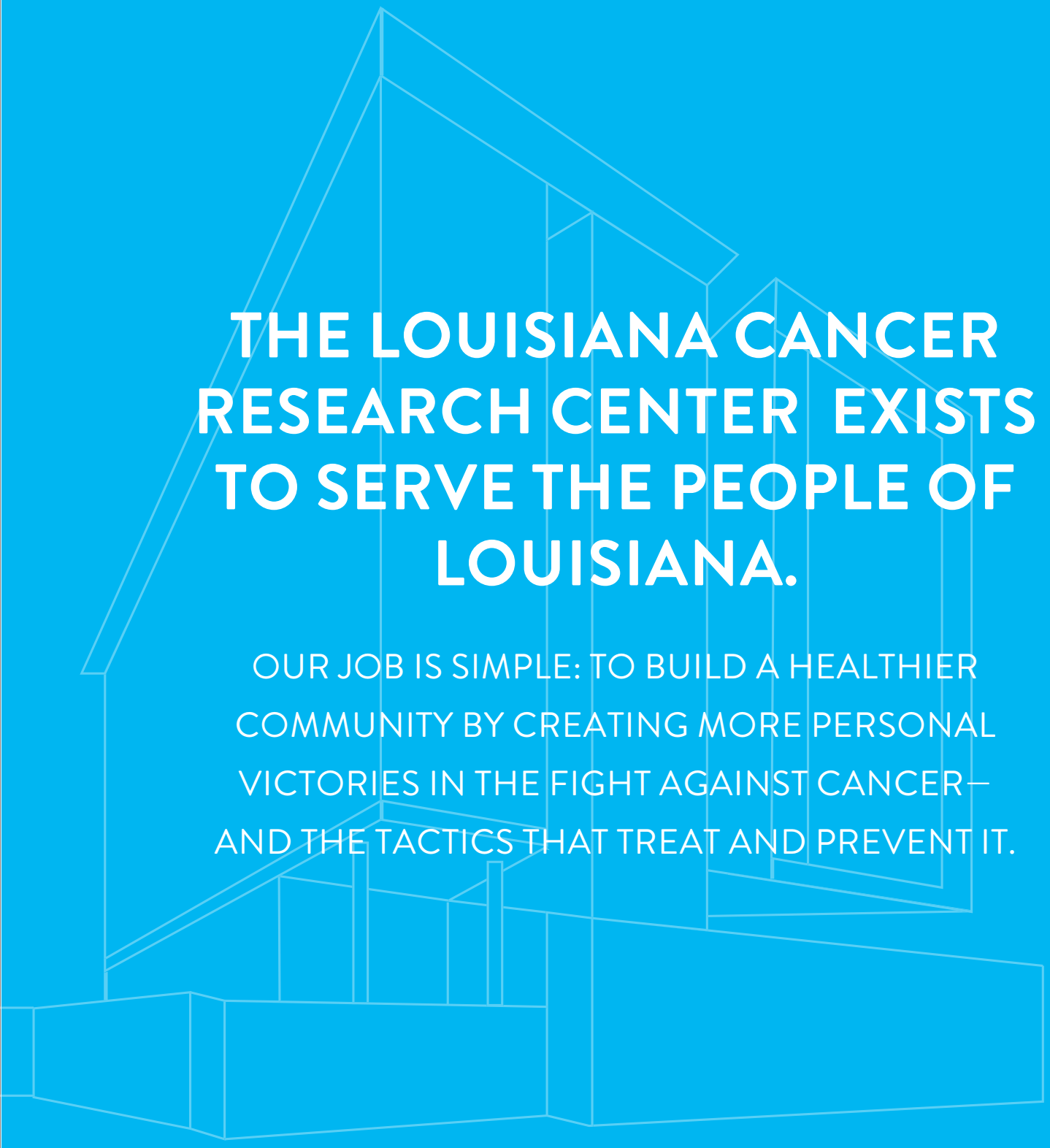
REVENUES			2019	2018
	WITHOUT DONOR RESTRICTIONS	WITH DONOR RESTRICTIONS	TOTAL	TOTAL
Grants		19,441,757	19,441,757	14,231,791
Lease Income	2,956,178		2,956,178	3,680,056
Investment Income	13,678	663,940	677,618	232,264
Other	57,449		57,449	205,306
Fundraising & Contributions	218,259		218,259	202,949
Net Assets Released from Restrictions	15,706,446	(15,706,446)	-	-
TOTAL REVENUES	**18,952,010**	**4,399,251**	**23,351,261**	**18,552,366**
EXPENSES				
Research Expenses	4,795,782		4,795,782	5,201,129
Cessation/TFL Expenses	4,656,990		4,656,990	4,693,560
Louisiana Cancer Strategy	111,382		111,382	363,218
Salaries and Related Benefits	1,013,739		1,013,739	788,231
Operating Services	3,196,295		3,196,295	2,986,916
Supplies	45,413		45,413	26,496
Professional Services	241,165		241,165	371,895
Travel & Meeting Expenses	5,666		5,666	1,132
Depreciation	3,635,529		3,635,529	3,623,337
Fundraising Expenses	128,522		128,522	96,786
Other	34,572		34,572	37,206
TOTAL EXPENSES	**17,865,055**		**17,865,055**	**18,189,906**
INCREASE (DECREASE) IN NET ASSETS	**1,086,955**	**4,399,251**	**5,486,206**	**362,460**
NET ASSETS, BEGINNING OF YEAR	3,417,615	117,769,718	121,187,333	120,824,873
NET ASSETS, END OF YEAR	**4,504,570**	**122,168,969**	**126,673,539**	**121,187,333**

OPERATING EXPENSES 2019



FUNDING SOURCES 2019





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.

I am very supportive of the smoke free movement and excited Ponchatoula chose to go smoke free in bars where I work. Having to play in smoky bars hurts my voice and is bad for my health and my performance. I can't always ask for a smoke free gig because gigs are limited. There have been times after playing, when we open the truck and trailer (with the equipment) and it smells awful. We have to let it air out for days. Imagine what that same smoke is doing to my lungs, heart and overall health!

– TODD O'NEILL

LSU Health NEW ORLEANS

Tulane University SCHOOL OF MEDICINE

Xavier University of Louisiana

Ochsner Health System

QUIT WITH US, LA 1.800.QUIT.NOW QuitWithUsLa.Org

State of Louisiana

THE LOUISIANA CAMPAIGN FOR TOBACCO-FREE LIVING
A Program of the Louisiana Cancer Research Center and the Louisiana Public Health Institute