

PROGRESS TOWARD ACHIEVING
NATIONAL CANCER INSTITUTE (NCI) DESIGNATION

LOUISIANA CANCER RESEARCH CENTER



PERFORMANCE AUDIT SERVICES
ISSUED DECEMBER 13, 2017

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LOUISIANA LEGISLATIVE AUDITOR
DARYL G. PURPERA, CPA, CFE

December 13, 2017

The Honorable John A. Alario, Jr.,
President of the Senate
The Honorable Taylor F. Barras,
Speaker of the House of Representatives

Dear Senator Alario and Representative Barras:

This report provides the results of our performance audit on the Louisiana Cancer Research Center's (LCRC) progress toward achieving a National Cancer Institute designation.

The report contains our findings, conclusions, and recommendations. Appendix A contains LCRC's response to this report. I hope this report will benefit you in your legislative decision-making process.

We would like to express our appreciation to the management, staff, and Board of Directors of LCRC for their assistance during this audit.

Sincerely,

Daryl G. Purpera, CPA, CFE
Legislative Auditor

DGP/aa

LCRC NCI

Louisiana Legislative Auditor

Daryl G. Purpera, CPA, CFE



Progress Toward Achieving NCI Designation Louisiana Cancer Research Center

December 2017

Audit Control # 40160013

Introduction

Act No 41 of the 2002 First Extraordinary Session¹ created the Louisiana Cancer Research Center (LCRC). LCRC’s primary function is to conduct cancer research and education in the diagnosis, detection, and treatment of cancer in its pursuit of achieving National Cancer Institute (NCI)² designation. LCRC is a nonprofit organization that brings together four research and medical institutions as consortium partners. These consortium partners include:

Cancer is the leading cause of death related to disease in Louisiana, with 6,909 deaths annually.

Source: Centers for Disease Control and Prevention

- Louisiana State University Health Sciences Center in New Orleans (LSU HSC);
- Tulane University Health Sciences Center (Tulane HSC);
- Xavier University of Louisiana; and
- Ochsner Health System.

LCRC is governed by a Board of Directors (Board) comprised of six members from the consortium partners, two members from state agencies, and four community members.³ Since its inception in 2002, LCRC has received approximately \$144.2 million from state tobacco tax dedications for its Cancer Research Program. In addition, LCRC received \$92.4 million in State Capital Outlay funding to build and equip its facility.

Exhibit 1 LCRC Revenue Sources for Fiscal Years 2003 through 2017		
Category	Revenue (\$)	Revenue (%)
Tobacco Tax – Cancer Research Program	\$144,180,550	41.5%
Tobacco Tax – Cessation Program*	98,029,078	28.2
State Capital Outlay Funding	92,433,079	26.6
Lease Income	5,476,493	1.6
Other (Fundraising, Interest, etc.)	7,604,619	2.2
Total	\$347,723,819	100%
*R.S. 47:841.1(C)(1) dedicates tobacco tax proceeds for the creation of smoking cessation mass media programs and evidence-based tobacco control programs. Source: Prepared by legislative auditor’s staff using LCRC CPA reports.		

¹ Louisiana Revised Statute (R.S.) 17:1921

² NCI is the federal government’s principal agency for cancer research and training. It is part of the National Institutes of Health (NIH), one of 11 agencies that make up the federal Department of Health and Human Services (HHS).

³ See Appendix C for more information on Board composition and authority.

Exhibit 1 summarizes all sources of revenue, including revenue for LCRC's smoking cessation program, from fiscal years 2003 to 2017.

NCI awards its designation to U.S. institutions based on scientific merit.⁴ There are currently 69 NCI-designated cancer centers located in 35 states and the District of Columbia. The closest NCI-designated cancer centers to Louisiana include the M.D. Anderson Hospital in Houston, Texas; Harold C. Simmons Comprehensive Cancer Center in Dallas, Texas; and the University of Alabama Medical Center in Birmingham, Alabama. Of the 69 NCI-designated Cancer Centers, 30 have consortium arrangements that combine multiple institutions to pool their resources and integrate their collective scientific talent and knowledge.

Achieving NCI designation would provide many benefits to the state of Louisiana. It would allow LCRC and its consortium partners to compete for additional federal funding available only to NCI-designated cancer centers. NCI designation would also help LCRC's consortium partners expand their programs, grow their reputations, and improve their abilities to recruit and retain faculty and researchers. Having an NCI-designated cancer center in the state could also provide promising new cancer treatments that are more easily accessible to Louisiana residents, rather than having to travel out of state. Furthermore, an NCI-designated cancer center within the state could focus on the special needs of Louisiana, including the issue of health disparities.⁵

The objective of this audit was:

To evaluate the Louisiana Cancer Research Center's progress toward achieving NCI designation.

Overall, we found that while LCRC has made some scientific progress over the last 14 years, administrative structure changes are needed to advance LCRC toward achieving NCI designation. The issues we identified and the recommendations we developed to guide LCRC in achieving NCI designation are summarized on the next page and in more detail throughout this report. Appendix A contains LCRC's response to this report, and Appendix B details our scope and methodology. Appendix C outlines the composition of LCRC's Board of Directors and its authority. Appendix D provides a summary of requirements for NCI designation. Appendix E shows LCRC's scientific progress over the period of fiscal years 2003 through 2017. Appendix F provides a list of NCI-Designated Cancer Centers nationwide, listing their location, cancer focus, and year of NCI designation.

⁴ See Appendix D for the requirements that a cancer center must meet in order to apply for NCI designation.

⁵ The Centers for Disease Control and Prevention (CDC) defines health disparities as preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations resulting from multiple factors, including poverty, environmental threats, inadequate access to health care, and educational inequalities.

Objective: To evaluate LCRC's progress toward achieving NCI designation.

Since 2003, LCRC has received \$144.2 million from state tobacco tax proceeds for cancer research and \$92.4 million in State Capital Outlay funds to build and equip its facility. LCRC has made some scientific progress such as increasing its funding base and increasing enrollment of patients into cancer trials, as shown in Appendix E. However, changes to LCRC's administrative structure are needed to achieve NCI designation. Specifically, we found:

- **LCRC's Board of Directors (Board) has not hired a center director to lead LCRC toward NCI designation.** Although LCRC's Board has frequently discussed hiring a center director, the Board spent money on research at the individual institutions instead.
- **Although required by law and needed for NCI designation, LCRC's Board has not adopted a strategic plan. In addition, LCRC has not developed a written agreement that outlines how each institution will contribute to achieving NCI designation.** NCI requires a cancer center applying for NCI designation to provide its mission, vision, and research goals for the next five years and describe how these have been integrated into the research program's specific goals.
- **The composition of LCRC's Board and the competing interests of the consortium's partners may have contributed to LCRC's slow progression toward NCI designation.** Currently, LSU Health Sciences Center and Tulane Health Sciences Center control LCRC's Board because they have more seats than the other two consortium partners.
- **LCRC has not held meetings with its External Scientific Advisory Board since 2009 because it has not implemented many of the Board's previous recommendations.** According to LCRC staff and scientific leadership, there is no reason to bring the Advisory Board back until LCRC has implemented the Board's previous recommendations.
- **LCRC's Board has relied on declining and unstable state funding and has not actively pursued other revenue sources, such as fundraising and revenue from clinical activities, which affects its ability to achieve NCI designation.** State funding has declined by 27% since fiscal year 2005, and LCRC anticipates an additional 6% reduction to tobacco tax revenue in fiscal year 2018.
- **LCRC has had to reallocate funds from its cancer research program to help cover the expenses of operating its newly-built facility.** When LCRC's Board of Directors authorized the construction, it underestimated the future costs associated with operating the facility. As a result, LCRC has reallocated funding from cancer research to cover the facility's operating expenses.

- **While LCRC has increased its combined funding base, none of the consortium partners exceed the minimum funding base requirement in order to compete with other cancer centers seeking NCI designation.** NCI uses the funding base requirement as a measurement of a center's leadership and capacity to conduct competitive cancer research, and just meeting the minimum requirement is not enough because of the intense competition for federal funding from other cancer centers.

These issues are discussed in detail below, along with recommendations to help LCRC progress toward achieving NCI designation.

LCRC's Board has not hired a center director to lead LCRC toward NCI designation.

A key requirement in achieving NCI designation is the hiring of a center director who is a highly-qualified scientist and administrator and has the experience and expertise to establish a vision for LCRC, advance scientific goals, and manage a complex organization. In a consortium, the center director plays a major role in advancing the integration of the consortium partners (joint research and clinical activities) and has the appropriate authority over the consortium partners' cancer research and clinical activities as well as LCRC's discretionary funds (e.g., tobacco tax proceeds, private donations, and clinical revenues).

According to the External Scientific Advisory Board, the Board of Directors needs to consult with NCI to determine what kind of center director arrangement will be accepted, such as whether the director could be an employee of LCRC and have appointments at each consortium institution, or whether another arrangement should be established. In addition, granting the center director authority over all funding, scientific priorities, and allocation of space in LCRC's facility would require the Board and the consortium partners to relinquish some of their control over these decisions. This means that the role of the Board would have to change from actively managing such decisions to advising the center director.

Although LCRC's Board has frequently discussed hiring a center director, the Board spent money on research at the individual institutions instead. According to one Board member, the lack of a center director was positive because it forced the scientific leadership⁶ from each institution to collaborate. However, according to LCRC's scientific leadership, LCRC needs a center director to lead LCRC toward NCI designation because none of the scientific leaders have authority over the other consortium partners' cancer research programs. In addition, the External Scientific Advisory Board also advised LCRC to hire a center director.

The **External Scientific Advisory Board** consists of scientific leaders from NCI-designated cancer centers nationwide that provides objective evaluation and advice on the direction of LCRC.

Source: Prepared by legislative auditor's staff using information provided by LCRC.

⁶ LCRC's scientific leadership consists of scientific co-directors from LSU HSC and Tulane HSC, and associate directors from Xavier University and Ochsner Health System.

According to the Office of Cancer Centers at NCI, if a center director is hired and the goal of obtaining NCI designation is officially established, it can take five to 10 years or even longer to obtain NCI designation. Even after hiring a center director, it may take LCRC more than five years before one of the consortium institutions can apply for the initial designation,⁷ because it takes time to develop a vision, hire more researchers, and document collaboration among consortium partners. For example, the University of Kentucky Markey Cancer Center hired a nationally-recognized physician-scientist as a center director in 2009 but was not able to become NCI-designated until 2013. The University of Kansas Cancer Center hired a nationally-recognized breast cancer researcher and pathologist as a center director in 2004 but didn't obtain NCI designation until 2012.

Recommendation 1: LCRC's Board should consult with NCI concerning what kind of center director arrangement will be accepted. For example, it should inquire as to whether the center director could be an employee of LCRC and have appointments at each consortium institution, or if another arrangement should be established. LCRC's Board should grant appropriate authority to the center director upon hiring one.

Summary of Management's Response: LCRC's Board agrees with this recommendation and states that it has developed an approved job description that specifies sufficient authority for the future director to be afforded the best opportunity for success. See Appendix A for LCRC's full response.

Although required by law and needed for NCI designation, LCRC's Board has not adopted a strategic plan.

R.S. 17:1926 requires LCRC's Board to present a strategic plan to the Joint Legislative Committee on the Budget, the Louisiana Board of Regents, and the Department of Economic Development no later than February 1 of each year. In addition, NCI requires a cancer center applying for NCI designation to provide its mission, vision, and research goals for the next five years and describe how these have been integrated into the research program's specific goals.

However, LCRC's Board has not developed a strategic plan. In 2014, the Board paid a total of \$70,000 to a consulting firm to develop a strategic plan. A draft was developed in February 2015, but the Board has never adopted it because it was put on hold pending the completion of the facility construction. According to the Board, in lieu of the strategic plan, they annually approved Goals and Objectives for LCRC.

The Board of Directors must identify within LCRC's strategic plan which consortium partner will apply for initial NCI designation. NCI requires that a cancer center initially obtain NCI designation as a stand-alone cancer center. That cancer center can then apply as a consortium during the NCI designation renewal process, which occurs every five

⁷ Per NCI requirements, only one of LCRC's consortium partners can apply for initial NCI designation then can seek designation renewal as a consortium five years later.

years. The stand-alone cancer center must perform research and not merely transfer funds to other partners who perform research.

LCRC is a consortium with four partners. While LCRC receives tobacco tax dedications and distributes funds to the consortium's partners, it does not conduct research itself. Therefore, one of the consortium partners, not LCRC, will have to apply for initial NCI designation. At some point, the Board needs to develop a plan that identifies how LCRC will achieve initial and consortium NCI designations, establish goals and time frames in order to achieve designation, and identify resources and commitments from each consortium partner needed to achieve NCI designation.

LCRC has not developed a written agreement outlining how each institution will contribute to achieving NCI designation. Although only one consortium partner will apply for initial NCI designation, the mission of LCRC is to obtain NCI designation for its consortium partners. Therefore, LCRC consortium partners need to have a formal, written agreement in place to ensure the stability and integration of the consortium partnership as required by NCI. The agreement should describe ongoing tangible institutional commitments (such as direct financial support of cancer research, hiring researchers, providing equipment, etc.); a process for resolution of differences among consortium partners; and a common planning and evaluation process in areas such as recruitment, clinical trials, etc. While each consortium partner provides institutional support to their institutions, they have not developed a formal agreement outlining their institutional commitments to LCRC.

Recommendation 2: LCRC's Board should adopt a strategic plan that includes how LCRC will achieve initial and consortium NCI designations, establish time frames for goals, and identify resources and commitments from each consortium institution.

Summary of Management's Response: LCRC's Board agrees with this recommendation and states that under the direction of the Board, the Chief Administrative Officer has been engaged in the developing of a branding strategy and communication plan for promotion of LCRC's vision. See Appendix A for LCRC's full response.

Recommendation 3: LCRC's Board should ensure that consortium partners have a formal written agreement describing ongoing tangible commitments to LCRC, a process for resolution of differences, common planning and evaluation process, etc.

Summary of Management's Response: LCRC's Board agrees with this recommendation and states that each partner institution makes significant contributions in additional support of their cancer research programs, which are collectively the cancer research programs of the LCRC. See Appendix A for LCRC's full response.

The composition of LCRC’s Board and the competing interests of the consortium’s partners may have contributed to LCRC’s slow progression toward NCI designation.

Currently, LSU HSC and Tulane HSC each have two seats on LCRC’s Board, while the other two consortium partners only have one seat each. Originally, R.S. 17:1923 established LSU HSC and Tulane HSC as equal partners with alternating chairmanship and vice-chairmanship positions on LCRC’s Board. In 2008 and 2010, LCRC added Xavier University and Ochsner Health System as consortium partners respectively;⁸ however, the structure of the Board has not been changed to grant each consortium partner an equal number of seats. According to various LCRC stakeholders, this uneven composition has created a situation where LSU HSC and Tulane HSC have more influence over decision-making of the Board, making it difficult to unite all consortium partners together to ensure strategic collaboration among them, including creating a strategic plan.

In addition, the four consortium partners are also competitors that compete for limited state, federal, and private funds for their institutions. As a result, Board members from the consortium partners face a dual loyalty conflict of interest – to act in the best interest of LCRC or in the best interest of the institutions they represent and work for. For example, the Board decides how much funding will be provided to each consortium partner. Currently, the Board distributes funding to partners based on a fixed percentage that it established instead of making funding contingent on each partner’s scientific progress – similar to NCI requirements.⁹ Exhibit 2 summarizes the amount of funding budgeted for each institution by LCRC in fiscal year 2018.

Exhibit 2 LCRC Budget for Consortium Partners Fiscal Year 2018		
Consortium Partner	Amount (\$)	Amount (%)
LSU HSC	\$1,024,308	41%
Tulane HSC	1,024,038	41
Xavier University	463,735	18
Ochsner	-	0
Total	\$2,512,081	100%
Note: Ochsner has clinical cancer research, but limited laboratory-based cancer research. Therefore, LCRC does not provide funding for cancer research to Ochsner.		
Source: Prepared by legislative auditor’s staff using information provided by LCRC.		

Matter for Legislative Consideration 1: The legislature may wish to consider changing the composition of LCRC’s Board by granting one seat to each consortium partner. This would help ensure that the consortium’s partners operate as equals when deciding key issues.

⁸ R.S. 17:1924 (5) (6) gives LCRC’s Board authority to add consortium partners.

⁹ NCI requires NCI-designated cancer centers to submit progress reports on their grant awards that describe what was accomplished.

Matter for Legislative Consideration 2: The legislature may wish to consider eliminating the statutory requirement of alternating the chairmanship and vice-chairmanship positions between LSU HSC and Tulane HSC on LCRC's Board. This will allow the entire Board to determine which members will serve in these positions based on LCRC's needs at the time, such as sufficient time to devote to these positions, fundraising ability, expertise, etc.

LCRC has not held meetings with its External Scientific Advisory Board since 2009 because it has not implemented many of the Board's previous recommendations.

One of the requirements for NCI designation is for a cancer center to have a formal standing External Scientific Advisory Board that meets at least once yearly and provides objective evaluation and advice to the center director regarding the direction of the center. In its application, NCI requires the applicant to include a discussion of External Scientific Advisory Board recommendations, actions taken in response to those recommendations, and reasons why recommendations were not implemented. However, LCRC has not met with its External Scientific Advisory Board since 2009 because it has not implemented many of the Advisory Board's recommendations. According to LCRC staff and scientific leadership, there is no reason to bring the Advisory Board back until LCRC has implemented the Board's previous recommendations. For example, in 2009 the External Scientific Advisory Board advised LCRC on issues that it needed to address, including hiring a center director and integrating Xavier and Ochsner into LCRC's consortium. However, LCRC's Board has not yet hired a center director.

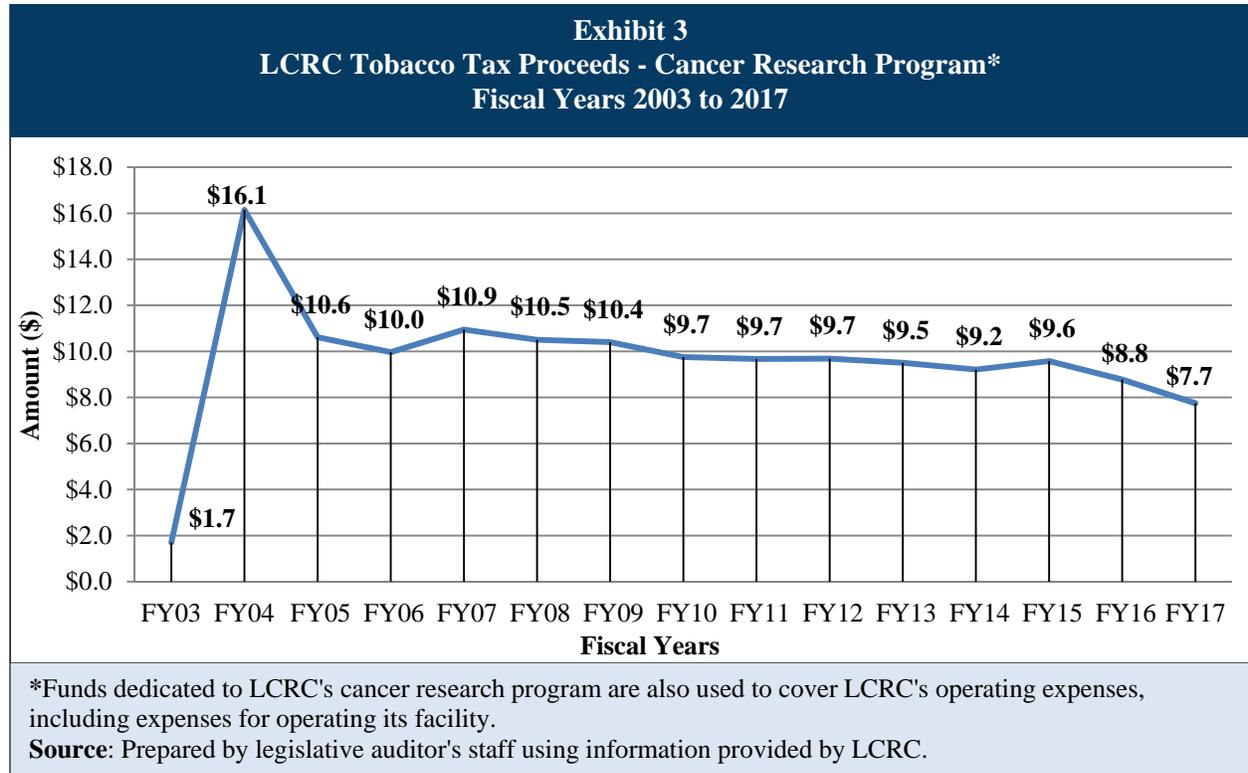
Recommendation 4: Once LCRC's Board starts demonstrating progress toward implementing the External Scientific Advisory Board's previous recommendations, it should reengage the Advisory Board for guidance toward the NCI designation.

Summary of Management's Response: LCRC's Board agrees with this recommendation. See Appendix A for LCRC's full response.

LCRC's Board has relied on declining and unstable state funding and has not actively pursued other revenue sources, such as fundraising and revenue from clinical activities, which affects its ability to achieve NCI designation.

LCRC's Board relies on declining and unstable state revenues to operate LCRC. Since its inception in 2002, LCRC's operations have been funded primarily by statutorily-dedicated tobacco tax proceeds as authorized by R.S. 47:841.1(C)(1). As shown in Exhibit 3, from fiscal years 2003 through 2017, LCRC has received a total of \$144.2 million in tobacco tax proceeds for its cancer research program and used it to cover its operating and research program expenses. However, state funding has declined by 27% since fiscal year 2005, and LCRC has been using its operating reserves to cover the difference. In addition, because LCRC anticipates

an additional 6% reduction to tobacco tax revenue for fiscal year 2018, it has reduced the amount it gives to institutions for research by 15% and will absorb the rest through decreasing operational services.



In the past, LCRC’s Board identified major gaps in LCRC’s long-term financial viability. The Board concluded that without finding other revenue streams any decrease in tobacco tax proceeds would have a huge impact on LCRC operations. Specifically, LCRC needs funding to recruit researchers, buy equipment, etc. Other NCI-designated cancer centers have more diversified revenue streams. For example, the University of Kansas Cancer Center’s state funding accounted for only 7% of its total funding during the period of 2007-2012, as shown in Exhibit 4.

Exhibit 4		
The University of Kansas Cancer Center		
Total NCI Investment 2007-2012		
Funding Sources Actuals	2007-2012	%
Funding from outside agencies (NIH, etc.)	\$238,268,100	51%
University	72,073,182	15
Kansas Bioscience Authority	47,194,678	10
Private philanthropy	40,978,206	9
State of Kansas support	33,800,000	7
Johnson County Education & Research Triangle*	25,895,685	5
The University of Kansas Hospital	12,000,000	3
Revenue from research services	2,229,001	<1
Midwest Cancer Alliance	2,100,000	<1
Total	\$474,538,852	100%
*The Triangle is a partnership between Johnson County, the University of Kansas, and Kansas State University to create economic stimulus and a higher quality of life through new facilities for research and additional degree opportunities.		
Source: Prepared by legislative auditor's staff using information from the University of Kansas website.		

LCRC's Board has not conducted clinical activities to generate revenue that could offset declining tobacco tax proceeds. In 2009, LCRC's Board identified undeveloped joint clinical activities, such as clinical trials¹⁰ and clinical care, to cancer patients as a major gap in LCRC financial viability. However, LCRC has still not addressed this issue and does not receive any revenue from clinical activities, which is essential to becoming a self-supporting institution through clinical revenue from patients and/or insurance companies. However, neither LSU HSC¹¹ nor Tulane HSC¹² own hospitals; Xavier University does not operate a cancer center; and Ochsner Health System generates clinical revenues to sustain its own operations. In addition, LCRC's Board has not developed joint clinical activities among the consortium partners. As a result, LCRC does not receive any clinical revenue to reinvest back into its cancer research program.

LCRC's Board does not actively seek fundraising revenue. Since its inception in 2002, LCRC has generated a total of \$2.6 million (or 0.7% of total revenues) from fundraising. Its annual fundraiser *Saks Fifth Avenue's Key to the Cure* is the only fundraiser that directly benefits LCRC. Other fundraising events provide funding directly to the consortium's partners. For example, the *Cancer Crusaders* annual fundraising events support research at the LSU HSC and Tulane HSC. The External Scientific Advisory Board advised LCRC on multiple occasions that fundraising is essential to the long-term success of a cancer center. According to NCI, fundraising plays an enormous role in funding research in NCI-designated cancer centers nationwide. For example, as shown in Exhibit 4, the University of Kansas Cancer Center raised \$40.9 million (or 9%) in private philanthropy from 2007 to 2012, which was crucial in obtaining NCI designation in 2012. However, LCRC's consortium partners stated that they have to

¹⁰ Clinical trials are research studies that involve people.

¹¹ LSU HSC clinical trials had been held in Charity Hospital in New Orleans since 1994, but the hospital was privatized in 2013. Currently, LSU has a partnership with Community Oncologists for clinical trials (Mary Bird Perkins Cancer Center, Our Lady of the Lake Cancer Center, Willis-Knighton Medical and Cancer Center, Children's Hospital, etc.), but the hospitals do not share clinical revenue with LCRC.

¹² Tulane Medical Center was acquired by Hospital Corporation of America in 1995.

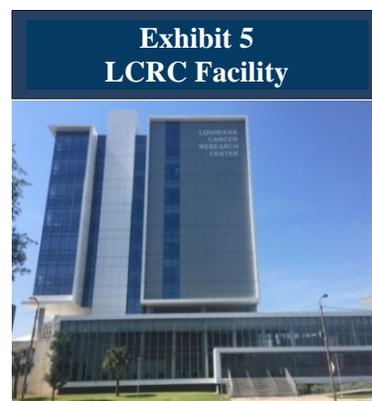
compete for a limited number of private donors who already provide support to their institutions. Therefore, fundraising for LCRC itself would divert funding away from their institutions.

Recommendation 5: LCRC's Board should develop and support LCRC joint clinical activities and fundraising efforts.

Summary of Management's Response: LCRC's Board agrees with this recommendation and states that it believes that the lack of revenue support from clinical activities, while a challenge, can be creatively met over time. LCRC also states that it has recently engaged a consultant with deep knowledge of the Louisiana fundraising environment to assist in developing that activity. See Appendix A for LCRC's full response.

LCRC has had to reallocate funds from its cancer research program to help cover the expenses of operating its newly-built facility.

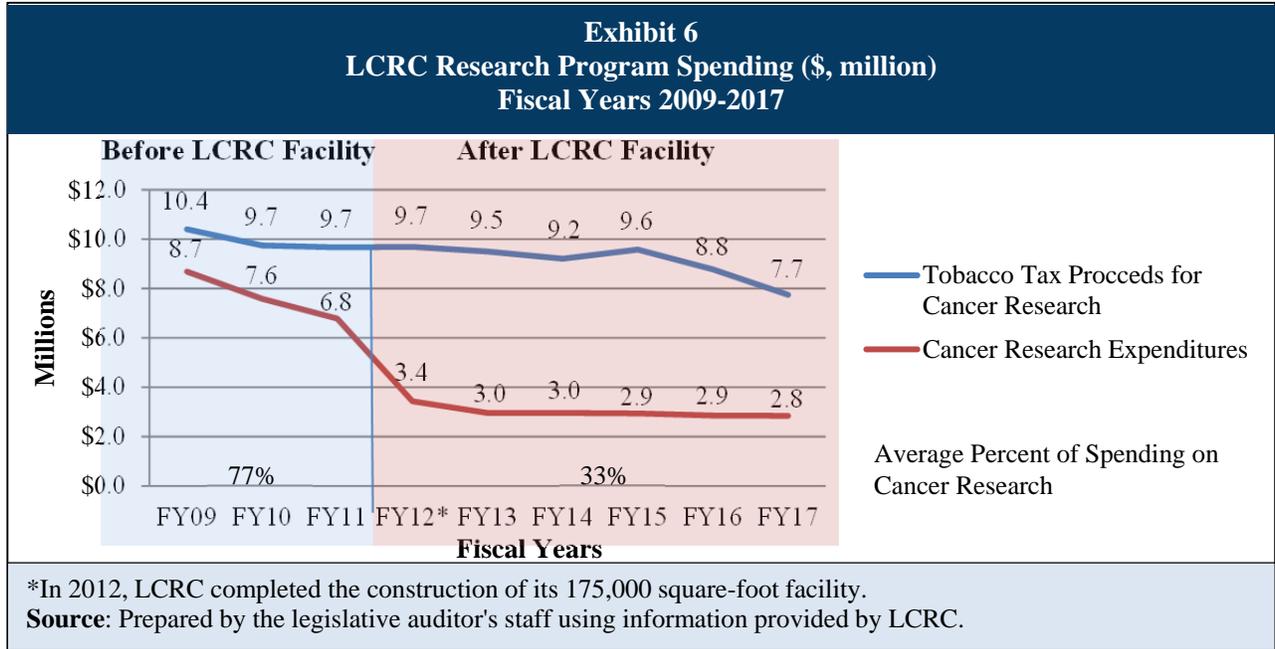
In 2012, LCRC completed construction of its new 175,000 square-foot facility,¹³ which currently houses researchers from LSU HSC, Tulane HSC, and Xavier University.¹⁴ When LCRC's Board authorized the construction, it underestimated the future costs associated with operating the facility. As a result, LCRC has reallocated funding from cancer research to cover the facility's operating expenses. From fiscal year 2012 through fiscal year 2017, LCRC spent on average only 33% of tobacco tax proceeds dedicated to its cancer research program on cancer research, as shown in Exhibit 6.



Source: LCRC.

¹³ During the 2008 Regular Legislative Session, the legislature authorized \$102 million in state capital outlay funds for construction of the 175,000-square-foot facility for LCRC. In 2017, LCRC completed the build out of two floors that will provide additional research and clinical trials space.

¹⁴ Ochsner has clinical cancer research, but limited laboratory-based cancer research. Therefore, it has no researchers at LCRC facility.



According to LCRC stakeholders, the construction of the facility was very disruptive to the Board, taking their attention away from progressing toward NCI designation. Furthermore, various stakeholders stated that LCRC did not need a new facility because each consortium partner had space at their own institution, which would have been sufficient for the purpose of NCI designation. According to some Board members we spoke with, LCRC’s facility was built to encourage collaboration among scientists from different cancer focuses and institutions. However, the Board underestimated the cost of operating the facility post-construction. As a result, the Board has had to reallocate funds from research, which would include funding for recruitment of new researchers and a center director. Reallocating money from research is compounded by declining tobacco tax proceeds. In 2014, LCRC started generating lease income from the consortium partners based on their occupancy of the LCRC facility. While LCRC generated a total of \$5.5 million in lease income from FY14 to FY17, this revenue is not enough to offset LCRC’s annual expenses to operate the facility.

Recommendation 6: LCRC’s Board should look for different funding opportunities to sustain operations of its facility in order to avoid reallocating funding from cancer research.

Summary of Management’s Response: LCRC’s Board agrees with this recommendation. See Appendix A for LCRC’s full response.

While LCRC has increased its combined funding base, none of the consortium partners exceed the minimum funding base requirement in order to compete with other cancer centers seeking NCI designation.

NCI requires that an applicant institution have at least \$10 million in annual direct costs of peer-reviewed, cancer-related funding. NCI uses the funding base requirement as a measurement of a center's leadership and capacity to conduct competitive cancer research. While LCRC has increased its combined funding base to \$17.9 million,¹⁵ only one consortium partner can apply for initial designation and must meet the minimum requirement of \$10 million in funding base. However, just meeting the minimum requirement is not enough to receive NCI designation because of the intense competition for federal funding from other cancer centers. For example, the University of Kentucky Markey Cancer Center has approximately \$25.4 million in funding base, while the Dan L. Duncan Comprehensive Cancer Center has approximately \$86.0 million in funding base. While LCRC needs to continue increasing its combined funding base, the Board needs to also ensure that at least one of the partners' funding base exceeds the minimum requirement in order to compete with other cancer centers seeking designation.

In addition, because of Hurricane Katrina in 2005, LCRC consortium partners lost 16 researchers who contributed a total of \$22.2 million in funding from fiscal years 2003 to 2006 and, according to these institutions, would have continued contributing scientifically and financially into the future if they stayed. After Hurricane Katrina, LCRC's consortium partners were only able to recruit junior staff who came without funded federal grants. Because of this, it took time for the consortium's partners to rebuild their funding base. Since fiscal year 2006, LCRC's scientific leadership has been able to recover and further grow its funding base. However, according to the scientific leadership, LCRC is at a critical point right now, and without additional revenue to recruit cancer researchers its funding base will decline.¹⁶

Recommendation 7: Once a center director is hired, LCRC's Board should work with the center director to determine which consortium partner will apply for initial NCI designation and to ensure that this consortium partner exceeds the minimum of \$10 million in funding base in order to compete with other cancer centers and receive NCI designation.

Summary of Management's Response: LCRC's Board disagrees with this recommendation and states that LCRC does not mirror the traditional consortium model and intends on working with NCI to determine the organization model that is optimal for LCRC's success. See Appendix A for LCRC's full response.

¹⁵ We did not perform accuracy and completeness testing of funding base information because the source documents required for testing are stored at the consortium partners' locations. In addition, we assumed that 100% of funding base is cancer related.

¹⁶ Funding is used to recruit and support researchers. Established researchers bring in grant funding, which makes them attractive candidates for other institutions. As a result, the institution needs funding to keep their own researchers and recruit new ones.

LLA Additional Comments: As stated in the report, NCI requires that a cancer center initially obtain NCI designation as a stand-alone cancer center. According to the Director of the Office of Cancer Centers at NCI, cancer centers cannot apply for the initial designation as a consortium, so LCRC's partner with the largest funding base should apply for NCI designation first. This partner must meet all requirements as a stand-alone cancer center when applying. That cancer center can then apply as a consortium during the NCI designation renewal process.

APPENDIX A: MANAGEMENT'S RESPONSE



Mr. Daryl G. Purpera, CPA, CPE
Louisiana Legislative Auditor
1600 N. Third Street
Baton Rouge, LA 70804

November 28, 2017

Dear Mr. Purpera,

The Board appreciates the opportunity to respond to the recommendations contained in the performance audit report of the Louisiana Cancer Research Center (LCRC). While the LCRC Board concurs with many of the report's recommendations, there are a few points that we feel need clarification.

As highlighted in the report, cancer is a leading cause of death in the state. Louisiana consistently ranks as one of the highest in the nation in terms of cancer incidence and mortality. There are projected to be over 24,000 new cancer diagnoses this year.¹ That is sixty-six Louisiana residents and their families who are personally affected by the disease every day.

Multiple peer-reviewed studies have shown that patients with access to National Cancer Institute (NCI) designated cancer centers have improved outcomes. The Louisiana Legislature created the Louisiana Cancer Research Center with the vision for improving the health of Louisianans through *conducting research and education in pursuit of achieving National Cancer Institute designation*. This pursuit has already brought benefit to cancer patients in Louisiana through basic research, bringing new cancer treatments to the state, and increasing access to clinical trials, especially for minority patients and underserved populations.

Since inception, external grants funding to LCRC researchers has increased significantly. Participation in clinical trials has steadily increased. Currently, LCRC's researchers account for over 80% of Federal cancer research funding to the state and 90% of NCI grants. This represents almost \$30 million in cancer-related research investment brought in to the state annually. According to independent economic impact assessments, these Federal funds generate \$80 million in economic activity,² produce \$60 million in local economic growth, and create approximately 400 jobs.³ These accomplishments have occurred in spite of major impediments to our progress as described below.

In the aftermath of hurricane Katrina several of our most distinguished researchers chose to relocate their research programs outside of the state. The difficulties over the last several years in funding higher education in the state have made it even more difficult to recruit and retain prominent faculty. Following the two back-to-back increases to the state's tobacco tax, collections under the Tobacco Tax Health Fund, which funds the LCRC, have declined by 28%. LCRC's cancer research and cessation programs were negatively impacted further by this drastic decline in collections (revenue) because the tax increases and expansions of 2015 and 2016 contribute to the state General Fund which resulted in no allocation to the Tobacco Tax Healthcare Fund. The impact of this decline in revenue has been significant—coming at the same time we are bringing online the recently fully completed research center building.

Leveraging LCRC support, our members make significant contributions toward building a healthier Louisiana. Tulane University has developed an outstanding prostate cancer focus group that includes clinicians, leading clinical trials, and basic researchers in genetics and signaling. LSU Health Sciences Center has formed a statewide clinical trials network Gulf-South – NCI Community Oncology Program (Gulf South – NCORP) that includes LSU-New Orleans, Mary Bird Perkins in Baton Rouge, and LSU – Shreveport. Xavier University’s partnership with LCRC made possible their establishment of an RCMI funded Center for Cancer Research to support research to improve health outcomes for individuals with cancer, especially those from minority populations. Due in large part to joining the LCRC, Xavier University has increased its NIH funding from 10th to 5th highest among historically black colleges and universities. Ochsner was also awarded an NCORP grant to increase accrual of cancer patients and maintain data quality on prevention and cancer control, treatment, and cancer care delivery trials. This leverages Ochsner’s integrated health network and improves availability of clinical trials with special emphasis on women, children, underserved and minority patients, while enhancing training for oncology research staff.

The LCRC is at an inflection point in its history. With the completion of the research center building, recruitment of new leadership, and the finalization of strategic planning, the LCRC is actively preparing for the next phase of its mission. This makes the outside assessment conducted by the Legislative Audit team particularly timely.

Specific discussions of each recommendation are included below:

Recommendation 1: LCRC’s Board of Directors should consult with NCI concerning what kind of center director arrangement will be accepted. For example, inquire as to whether the center director could be an employee of LCRC and have appointments at each consortium institution, or if another arrangement should be established. LCRC’s Board of Directors should grant appropriate authority to the center director upon hiring one.

The Board agrees with this recommendation. The LCRC Board has had extensive discussions regarding the recruitment of a single scientific director. They have approved a job description that specifies sufficient authority for the future director to be afforded the best opportunity for success. As has occurred in the past, the Board and LCRC leadership will consult at critical points with NCI staff for guidance.

It should be noted that recruitment of a center director and investment in member cancer centers are not mutually exclusive. In the aftermath of hurricane Katrina, the LCRC’s External Scientific Advisory Board recommended an emphasis be placed on investment in recruitment of scientists (and alternately recruiting and developing junior faculty) to the member Cancer Centers. Despite the impediments noted above, the LCRC has been successful in recruiting new faculty; and has been particularly successful in recruiting promising new junior faculty.

Recommendation 2: LCRC’s Board of Directors should adopt a strategic plan that includes how LCRC will achieve initial and consortium NCI designations, establish time frames for goals, and identify resources and commitments from each consortium institution.

The Board agrees with this recommendation. As noted in the audit, since inception as part of its cooperative endeavor agreement with the state, the LCRC has submitted goals & objectives. Though annual, these reflected a multi-year approach to furthering the LCRC's mission and were accepted by the state as meeting the statutory requirement. As the research center building approached completion and occupancy, the Board has actively engaged in strategic discussions toward finalizing the strategic plan drafted by the consultant.

Though in draft form, the Board did identify specific actionable items and acted upon them accordingly. In 2016 the Board successfully recruited a new Chief Administrative Officer (CAO)—the first such to have extensive experience at an NCI-designated cancer center. Under the direction of the Board, the CAO has been engaged in the development of a branding strategy and communication plan for promotion of the LCRC's vision.

Recommendation 3: LCRC's Board of Directors should ensure that consortium partners have a formal written agreement, describing ongoing tangible commitments to LCRC, a process for resolution of differences, common planning and evaluation process, etc.

The Board agrees with this recommendation. It is important to highlight that each partner institution makes significant contributions in additional support of their cancer research programs which are collectively the cancer research programs of the LCRC. Specific contributions include faculty package support, providing startup funding, support for research and/or grant administration, and investments in some highly specialized equipment. Their investment in excess of \$10 million annually to the cancer research programs should be fairly acknowledged.

Matters of Legislative Consideration 1 & 2: Composition and chairship of the LCRC Board

The Board welcomes the opportunity to work with legislators to ensure the most productive and beneficial Board composition. Given the consortium structure of the LCRC and the fact that the majority of funding occurs within the partner institutions by way of faculty salary and support, it is critical that representatives of the partner institutions have active roles in leading and guiding the Center and its mission. The Board has expanded on the Board membership originally envisioned in the legislation to include increased public input and oversight of LCRC. The current Board composition includes four very active and engaged community members whose contributions are beneficial.

Recommendation 4: Once LCRC's Board of Directors starts demonstrating progress toward implementing the External Scientific Advisory Board's previous recommendations, they should reengage the advisory board for guidance toward NCI designation.

The Board agrees with this recommendation.

Recommendation 5: LCRC's Board of Directors should develop and support LCRC joint clinical activities and fundraising efforts.

The Board agrees with this recommendation. As noted in the audit report, neither of the LCRC's two largest partners owns a hospital. It is correct that, unlike many NCI cancer centers, the LCRC does not receive revenue support from direct clinical activities. The Board agrees that this is a challenge, but feels it is one that can be creatively met over time. The Board is currently in discussion with partner hospitals to determine if mutually beneficial opportunities can be identified

This lack of clinical revenue makes other sources of support even more crucial. The Board has previously identified the future role that philanthropy could play in lending support to the LCRC mission. The Board has already approved creation of a development initiative and this fall engaged a consultant with deep knowledge of the Louisiana fundraising environment to assist in developing that activity.

Recommendation 6: LCRC's Board of Directors should look for different funding opportunities to sustain operations of its facility in order to avoid reallocating funding away from cancer research.

The Board agrees with this recommendation. See discussion above.

Recommendation 7: Once a center director is hired, LCRC's Board of Directors should work with the center director to determine which consortium partner will apply for initial NCI designation and to ensure that this consortium partner exceeds the minimum of \$10 million in funding base in order to compete with other cancer centers and receive NCI designation.

The Board respectfully disagrees with this recommendation. The LCRC represents a unique opportunity to help create a new model for a cancer center. The LCRC does not mirror the traditional consortium model and our leadership intends to work closely with leadership at NCI to determine the organizational model that is optimal for our success while at the same time, perhaps, helping to shape the multi-institutional integrated cancer center of the future.

Sincerely,



Sven Davisson
LCRC Chief Administrative Officer

¹ American Cancer Society

² Families USA

³ United for Medical Research

APPENDIX B: SCOPE AND METHODOLOGY

This report provides the results of our performance audit of the Louisiana Cancer Research Center (LCRC). We conducted this performance audit under the provisions of Title 24 of the Louisiana Revised Statutes of 1950, as amended. This audit covered the time period July 1, 2016, through June 30, 2017, although our analysis included historical information going back to 2003. The audit objective was:

To evaluate the Louisiana Cancer Research Center's progress toward achieving NCI designation.

We conducted this performance audit in accordance with generally accepted *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. To answer our objective, we reviewed internal controls relevant to the audit objective and performed the following audit steps:

- Researched and reviewed relevant state statutes and regulations relating to LCRC.
- Researched requirements for NCI designation.
- Researched board governance best practices.
- Interviewed LCRC staff, selected Board of Directors (Board) members, consortium partners, scientific leadership, and other stakeholders.
- Analyzed funding sources of LCRC and consortium partners and faculty loss due to Hurricane Katrina.
- Reviewed External Scientific Advisory Board reports to LCRC.
- Observed LCRC's Board meetings and Scientific Leadership meetings.
- Discussed and provided the results of our analysis to LCRC administration.
- Had a conference call with the Office of Cancer Centers at NCI.

APPENDIX C: LCRC'S BOARD OF DIRECTORS COMPOSITION AND AUTHORITY

R.S. 17:1923 established the composition of the LCRC's Board of Directors (Board), which consists of the following:

- Senior vice president for health sciences of Tulane University Health Sciences Center;
- Senior Louisiana State University Health Sciences Center representative appointed by the President of the Louisiana State University System;
- Member appointed by the Senior Vice President for Health Sciences of Tulane University Health Sciences Center;
- Member appointed by the President of the Louisiana State University System from the Louisiana State University Health Sciences Center;
- Secretary of the Department of Economic Development, or his designee;
- Chairman of the Louisiana Board of Regents, or his designee; and
- Other persons as may be appointed by the unanimous consent of the Board.

The Senior Vice President for Health Sciences of Tulane University Health Sciences Center and the senior Louisiana State University Health Sciences Center representative appointed by the President of the Louisiana State University System shall serve as the chairperson and vice chairperson on an alternating annual basis according to the bylaws.

The governance board of the center shall have authority¹⁷ to:

- Sue and be sued, including the right to recover all debts owing to the center, and to retain legal counsel therefor.
- Actively seek and accept donations, bequests, and other forms of financial assistance for educational and research purposes from any public or private person or agency and comply with rules and regulations governing grants from the federal government or any other person or agency which are not in contravention of the constitution and laws of the state.

¹⁷ R.S. 17:1924

- Purchase and maintain equipment and make improvements to facilities necessary for the use of the center.
- Approve the appointment of such administrative officers and other personnel as the governance board deems necessary and designate their titles. The compensation of all officers and employees shall be fixed by the governance board and the officers so appointed shall serve at the pleasure of the governance board.
- Adopt, amend, and repeal rules and regulations necessary or proper for the business of the center.
- Enter into contracts and agreements with other agencies and entities with respect to cooperative enterprises and undertakings relating to or associated with the purposes of the center.
- Perform such other functions as are necessary or incidental to the supervision and management of the center.
- Employ the proceeds of all donations, grants, and requests made to the center so as to affect the purposes of and in accordance with the terms and conditions of such donations, grants, and requests.

APPENDIX D: NCI DESIGNATION REQUIREMENTS

The National Cancer Institute (NCI) at the National Institutes of Health awards P30 Cancer Center Support Grants (CCSG) and accompanying NCI designation to certain U.S. institutions for them to become cancer centers based on scientific merit. To receive the award, institutions must demonstrate strength in six essential characteristics:

Six Essential Characteristics of NCI-Designated Cancer Centers	
Characteristic	Description
Institutional Commitment	<p>The NCI requires institutional commitments of parent institutions to the Cancer Center, such as:</p> <ul style="list-style-type: none"> • An organizational status for the Cancer Center that is comparable or superior to that of departments. • Funding from the institution and consortium partners. • Research, clinical, and administrative space and positions. • A commitment to facilitate clinicians to participate in clinical trials. • A commitment to facilitate research by clinician scientists. • Etc. <p>The stability of a consortium is demonstrated via provisions of formal written agreements, the record of tangible contributions of each consortium institution to the Center.</p>
Center Director	<p>NCI requires that the center director be a highly-qualified scientist and administrator with leadership experience, expertise, and authority appropriate for establishing a vision for the center, advancing scientific goals, and managing a complex organization. In a consortium, NCI expects that the director will play a major role in integration of the partner institutions into cancer research and other activities of the Cancer Center.</p>
Transdisciplinary Collaboration and Coordination	<p>NCI requires the Cancer Center to promote innovative and interactive research opportunities through the formation of formal scientific research programs comprised of groups of researchers who share common scientific interests and goals and participate in competitively funded research and in publications and other interactive activities. Inter- and intra-programmatic collaborations are important, as well as collaborations with other NCI-designated Cancer Centers and other external partners.</p>
Cancer Focus	<p>NCI requires a Center to demonstrate a clearly-defined scientific cancer focus, which is done in part through formal scientific research programs. Each program must have at least seven (7) fully cancer-focused, peer-reviewed funded research projects equivalent to an NIH R01* from a minimum of five (5) different, independent researchers to be eligible.</p>
Organizational Capability	<p>NCI requires a Center and its consortium partners to have an organizational structure that effectively promotes collaborative scientific interactions both within the Center and with consortium partner institutions, other NCI-designated Cancer Centers, and other external partners. The center should have standing External Advisory Committee appropriately balanced for basic laboratory; clinical; prevention, cancer control, and population science; and administrative expertise. The committee should meet at least once yearly and provide objective evaluation and advice in a consensus report to the Center Director.</p>
Physical Space	<p>NCI requires a Center to describe the physical facilities dedicated to cancer research, shared resources, and administration and indicate how the Center facilitates access to shared resources and other services.</p>
<p>*R01 grant is the most common type of research project grant. For the purposes of the NCI designation, R01-equivalence equals a project funding for three (3) years minimum with at least \$125,000 direct costs per year. Source: Prepared by legislative auditor’s staff using the Funding Opportunity Announcement PAR-17-095 for P30 Cancer Center Support Grants to support NCI-designated Cancer Centers.</p>	

In addition, an applicant institution must have a funding base of at least \$10 million in annual direct costs of peer-reviewed, cancer-related funding. However, a cancer center can only apply as a consortium of institutions if one of the partner institutions has been NCI-designated previously. For consortium NCI-designated cancer centers, the funding base of the center will be the sum of the funding bases of all participating institutions.

Several basic principles apply to consortium arrangements in the context of the NCI designation:

- (1) **Each consortium partner must contribute continuing tangible commitments to the Center.** These may include direct financial support of cancer research, protected cancer research time to support programmatic goals, etc.
- (2) **Each member institution adds strategic value** to the research mission of the cancer center, i.e., holds a portfolio of peer-reviewed cancer related research grants that contribute to the center's scientific goals.
- (3) At the time of application for a CCSG, **the partnering institutions already function as one cohesive cancer center.** Their research must be integrated (as evidenced by a history of collaboration, including joint grants and publications), and mechanisms must exist for including geographically dispersed members in programmatic activities.
- (4) **A formal, written agreement is in place** to ensure the stability and integration of the consortium partnership. NCI specifies what should be included in the agreement. For example, some of the requirements that should be included:
 - A process for resolution of differences at the highest levels of institutional leadership.
 - Ongoing, tangible institutional commitments to the cancer center from all consortium partners.
 - Reasonable access to shared resources for all members.
 - Center director oversight of CCSG-supported shared resources, including those located in partner institutions.

APPENDIX E: LCRC SCIENTIFIC PROGRESS

FY	Cancer Research Progress Indicators					
	Number of publications	Number of joint publications	Number of awarded qualifying grants	Amount of awarded qualifying grants	Number of patients placed in therapeutic cancer trials	Number of patients placed in cancer prevention trials
FY03	N/A	N/A	43	\$5,637,306	N/A	N/A
FY04	N/A	N/A	52	\$10,548,029	N/A	N/A
FY05	N/A	N/A	61	\$12,197,525	N/A	N/A
FY06	N/A	N/A	58	\$14,117,762	N/A	N/A
FY07	157	15	57	\$16,061,315	N/A	N/A
FY08	227	8	75	\$17,203,562	N/A	N/A
FY09	249	39	87	\$21,865,542	N/A	N/A
FY10	343	167	74	\$22,898,607	N/A	N/A
FY11	337	153	72	\$23,537,276	N/A	N/A
FY12	317	81	70	\$23,644,068	N/A	N/A
FY13	309	79	48	\$25,063,315	42	431
FY14	285	14	58	\$22,136,031	93	519
FY15	345	9	48	\$23,860,468	156	1,125
FY16	369	28	35	\$15,239,103	200	308
FY17	360	19	35	\$17,936,737	340	232

Notes:

1. We assumed that 100% of awarded qualifying grants are cancer related.
2. We did not perform accuracy and completeness testing of awarded qualifying grants because the source documents required for this testing are stored at consortium partners locations.
3. Amount of qualifying grants also includes one-time post-Katrina and American Recovery and Reinvestment Act funding.

Source: Prepared by the legislative auditor's staff using information provided by LCRC.

APPENDIX F: NCI-DESIGNATED CANCER CENTERS AS OF AUGUST 2017

NCI-designated Cancer Centers are institutions dedicated to research in the development of more effective approaches to prevention, diagnosis, and treatment of cancer. There are three types of NCI-designated Cancer Centers:

- **Cancer centers** - conduct some combination of laboratory, clinical, or population-based research.
- **Comprehensive cancer centers** - conduct research in each of three major areas: laboratory, clinical, and population-based research, as well as substantial transdisciplinary research that bridges these scientific areas.
- **Basic laboratory cancer centers** - conduct only laboratory research and do not treat patients.

There are 13 Cancer Centers, 49 Comprehensive Cancer Centers, and 7 Basic Laboratory Cancer Centers.

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
1	Comprehensive	Abramson Cancer Center	University of Pennsylvania	Philadelphia, PA	Breast Cancer Cancer Control Cancer Therapeutics Hematologic Malignancies Immunobiology Melanoma and Cutaneous Malignancies Pediatric Oncology Radiobiology and Imaging Tobacco and Environmental Carcinogenesis Tumor Biology Tumor Virology	N/A	1974

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
2	Center	Albert Einstein Cancer Center	Albert Einstein College of Medicine	Bronx, NY	Biology of Colon Cancer Cancer Epidemiology Experimental Therapeutics Stem Cells, Differentiation and Cancer Tumor Microenvironment & Metastasis	1972	N/A
3	Comprehensive	Alvin J. Siteman Cancer Center	Washington University School of Medicine and Barnes-Jewish Hospital	St. Louis, MO	Breast Cancer Research Cell-to-Cell Communications in Cancer Hematopoietic Development & Malignancy Oncologic Imaging Prevention & Control Solid Tumor Therapeutics Tumor Immunology	2001	2004
4	Comprehensive	Arizona Cancer Center	University of Arizona	Tucson, AZ	Cancer Imaging Cancer Prevention and Control Therapeutic Development	1978	1990
5	Comprehensive	Barbara Ann Karmanos Cancer Institute	Wayne State University School of Medicine	Detroit, MI	Molecular Imaging and Diagnostics Molecular Therapeutics Population Studies and Disparities Research Tumor and Microenvironment	N/A	1978
6	Center	Cancer Therapy & Research Center	University of Texas Health Science Center at San Antonio	San Antonio, TX	Cancer Development & Progression Cancer Prevention & Population Science Experimental & Developmental Therapeutics	1993	N/A

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
7	Comprehensive	Case Comprehensive Cancer Center	Case Western Reserve University	Cleveland, OH	Basic Sciences Breast Cancer Cancer Genetics Cancer Imaging Cancer Prevention, Control & Population Research Developmental Therapeutics GU Malignancies Hematopoietic Disorders	1987	1998
8	Comprehensive	Chao Family Comprehensive Cancer Center	University of California, Irvine	Orange, CA	Cancer Prevention & Prognosis Chemical & Structural Biology Onco-Imaging & Biotechnology Systems, Pathways & Targets Research	1994	1997
9	Comprehensive	City of Hope Comprehensive Cancer Center	Beckman Research Institute	Duarte, CA	Cancer Control & Population Sciences Cancer Immunotherapeutics Developmental Cancer Therapeutics Hematologic Malignancies Molecular Oncology	1981	1998
10	Basic	Cold Spring Harbor Laboratory Cancer Center	Cold Spring Harbor Laboratory Cancer Center	Cold Spring Harbor, NY	Cancer Genetics Gene Regulation & Cell Proliferation Signal Transduction	1987	N/A
11	Comprehensive	Dan L Duncan Comprehensive Cancer Center	Baylor College of Medicine	Houston, TX	Breast Cancer Cancer Biology Cancer Cell & Gene Therapy Cancer Prevention & Population Sciences Nuclear Receptor Pediatric Cancer Viral & Molecular Oncogenesis	2007	2015

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
12	Comprehensive	Dana-Farber / Harvard Cancer Center	Dana-Farber Cancer Institute	Boston, MA	Biostatistics and Computational Biology Program Breast Cancer Program Cancer Cell Biology Program Cancer Epidemiology Program Cancer Genetics Program Cancer Immunology Program Cancer Risk & Disparities Program Cutaneous Oncology & Melanoma Program Gastrointestinal Malignancies Program Gynecologic Cancers Program Kidney Cancer Program Leukemia Program Lung Cancer Program Lymphoma & Myeloma Program Neuro-Oncology Program Outcomes Research Program Prostate Cancer Program Translational Pharmacology & Early Therapeutic Trials Program	N/A	1973
13	Basic	David H. Koch Institute for Integrative Cancer Research at MIT	Massachusetts Institute of Technology	Cambridge, MA	Cancer Biology Cell and Systems Biology Engineering Science & Technology Molecular Genetics & Immunology	1974	N/A

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
14	Comprehensive	Duke Cancer Institute	Duke University Medical Center	Durham, NC	Cancer Control & Population Sciences Cancer Genetics & Genomics Developmental Therapeutics Hematologic Malignancies & Cellular Therapies Neuro-Oncology Radiation Oncology & Imaging Solid Tumor Therapeutics Tumor Biology Women's Cancer	N/A	1972
15	Comprehensive	Fox Chase Cancer Center	Fox Chase Cancer Center	Philadelphia, PA	Cancer Biology Cancer Prevention & Control Developmental Therapeutics Immune Cell Development & Host Defense	N/A	1974
16	Center	Fred & Pamela Buffett Cancer Center	University of Nebraska Medical Center	Omaha, NE	Cancer Genes & Molecular Regulations Gastrointestinal Cancer Program Molecular Biochemical Etiology Program	1999	N/A
17	Comprehensive	Fred Hutchinson / University of Washington Cancer Consortium	Fred Hutchinson Cancer Research Center	Seattle, WA	Biostatistics and Computational Biology Cancer Basic Biology Cancer Epidemiology, Prevention & Control GI Cancer Global Oncology Hematologic Malignancies Immunology & Vaccine Development Prostate Cancer Women's Cancer	N/A	1976

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
18	Comprehensive	Georgetown Lombardi Comprehensive Cancer Center	Georgetown University Medical Center	Washington, DC	Breast Cancer Cancer Prevention & Control Experimental Therapeutics Molecular Oncology	1974	1990
19	Comprehensive	Harold C. Simmons Comprehensive Cancer Center	University of Texas Southwestern Medical Center	Dallas, TX	Cancer Cell Networks Chemistry & Cancer Development & Cancer Molecular Therapeutics	2010	2015
20	Comprehensive	Herbert Irving Comprehensive Cancer Center	College of Physicians & Surgeons Columbia University	New York, NY	Breast Cancer Cancer Epidemiology Cancer Genetics & Epigenetics Cancer Regulatory Networks Lymphoid Development & Malignancy Neuro-Oncology Prevention, Control & Disparities Prostate Cancer	1972	1979
21	Comprehensive	Holden Comprehensive Cancer Center	University of Iowa	Iowa City, IA	Cancer Epidemiology Cancer Genomics & Cell Growth Cancer Immunology & Immunotherapy Cancer Signaling & Experimental Therapeutics Free Radical Cancer Biology Tumor Imaging	2000	2001
22	Center	Hollings Cancer Center	Medical University of South Carolina	Charleston, SC	Cancer Control Cancer Genes & Molecular Regulation Cancer Immunology Developmental Cancer Therapeutics	2009	N/A
23	Comprehensive	Huntsman Cancer Institute	University of Utah	Salt Lake City, UT	Cancer Control & Population Sciences Cell Response & Regulation Experimental Therapeutics Nuclear Control of Cell Growth & Differentiation	1986	2015

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
24	Center	Indiana University Melvin & Bren Simon Cancer Center	Indiana University Melvin & Bren Simon Cancer Center	Indianapolis, IN	Breast cancer Cancer Prevention & Control Experimental & Development Therapeutics Hematopoiesis, Microenvironment & Immunology Tumor Microenvironment & Metastases	1999	N/A
25	Basic	Jackson Laboratory Cancer Center	The Jackson Laboratory Cancer Center	Bar Harbor, ME	Genetic Models for Precision Cancer Medicine	1983	N/A
26	Comprehensive	Jonsson Comprehensive Cancer Center	University of California at Los Angeles	Los Angeles, CA	Cancer and Stem Cell Biology Cancer Molecular Imaging Cancer Nanotechnology Gene Regulation Healthy & At-Risk Populations Patients & Survivors Signal Transduction & Therapeutics Tumor Immunology	N/A	1976
27	Center	Laura and Isaac Perlmutter Cancer Center at NYU Langone	New York University Langone Medical Center	New York, NY	Breast Cancer Cancer Immunology Environmental & Molecular Carcinogenesis Epidemiology & Cancer Control Genitourinary Cancers Growth Control Melanoma Stem Cell Biology	1975	N/A
28	Center	Markey Cancer Center	University of Kentucky	Lexington, KY	Cancer Cell Biology & Signaling Cancer Prevention & Control Drug Discovery, Delivery & Translational Therapeutics Redox Injury & Repair	2013	N/A

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
29	Comprehensive	Masonic Cancer Center	University of Minnesota	Minneapolis, MN	Carcinogenesis & Chemoprevention Cell Signaling Genetic Mechanisms of Cancer Immunology Prevention & Etiology Transplant Biology & Therapy Tumor Microenvironment	N/A	1998
30	Center	Massey Cancer Center	Virginia Commonwealth University	Richmond, VA	Cancer Cell Signaling Cancer Molecular Genetics Cancer Prevention & Control Developmental Therapeutics Radiation Biology & Oncology	1975	N/A
31	Comprehensive	Mayo Clinic Cancer Center	Mayo Clinic	Rochester, MN	Cancer Immunology & Immunotherapy Cancer Prevention & Control Cell Biology Developmental Therapeutics Gastrointestinal Cancer Gene & Virus Therapy Genetic Epidemiology & Risk Assessment Hematologic Malignancies Neuro-oncology Women's Cancer	N/A	1973

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
32	Comprehensive	MD Anderson Cancer Center	University of Texas	Houston, TX	Behavioral & Health Disparities Research Brain Cancer Breast Cancer Cancer Genetics & Epigenetics Cell Biology & Signal Transduction Clinical Cancer Prevention Epidemiology Gastrointestinal Cancers Genitourinary Cancer Gynecological Cancers Head & Neck Cancer Hematological Malignancies Immunology Lung Cancer Melanoma Metastasis Research Radiation Oncology, Physics & Biology Stem Cell Transplantation & Cellular Therapy Targeted Therapy	N/A	1971
33	Comprehensive	Memorial Sloan-Kettering Cancer Center	Memorial Sloan Kettering Cancer Center	New York, NY	Clinical Research Developmental & Stem Cell Biology Experimental Therapeutics Genomic Integrity Imaging & Radiation Sciences Immunology & Transplantation Molecular Structure Regulation of Cell Behavior Survivorship, Outcomes & Risk	N/A	1971

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
34	Comprehensive	Moffitt Cancer Center	Moffitt Cancer Center	Tampa, FL	Cancer Biology & Evolution Cancer Epidemiology Chemical Biology & Molecular Medicine Health Outcomes & Behavior Immunology	1998	2001
35	Comprehensive	Moore's Comprehensive Cancer Center	University of California, San Diego	La Jolla, CA	Cancer Biology & Signaling Cancer Genomes & Networks Cancer Prevention Hematologic Malignancies Reducing Cancer Disparities Solid Tumors & Therapeutics	1978	2001
36	Comprehensive	Norris Cotton Cancer Center	Dartmouth-Hitchcock Medical Center	Lebanon, NH	Cancer Control Cancer Epidemiology & Chemoprevention Cancer Imaging & Radiobiology Cancer Mechanisms Immunology & Cancer Immunotherapy Molecular Therapeutics	1978	1990
37	Comprehensive	Ohio State University Comprehensive Cancer Center	The Ohio State University	Columbus, OH	Cancer Control Experimental Therapeutics Innate Immunity Molecular Biology & Cancer Genetics Molecular Carcinogenesis & Chemoprevention Viral Oncogenesis	N/A	1976
38	Comprehensive	OHSU Knight Cancer Institute	Oregon Health & Science University	Portland, OR	Cancer Biology Cancer Prevention & Control Hematologic Malignancies Solid Tumors	1997	2017
39	Basic	Purdue University Center for Cancer Research	Purdue University Center for Cancer Research	West Lafayette, IN	Cell Identity & Signaling Chemical & Structural Biology Drug Delivery & Molecular Sensing Medicinal Chemistry	1978	N/A

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
40	Comprehensive	Robert H. Lurie Comprehensive Cancer Center	Northwestern University	Chicago, IL	Cancer & Physical Sciences Cancer Cell Biology Cancer Control & Survivorship Cancer Prevention Hematologic Malignancies Signal Transduction in Cancer Translational Research in Solid Tumors Tumor Invasion, Metastasis & Angiogenesis Women's Cancer	N/A	1997
41	Comprehensive	Roswell Park Cancer Institute	Roswell Park Cancer Institute	Buffalo, NY	Cell Stress and Biophysical Therapies Experimental Therapeutics Genetics Genitourinary Cancers Population Sciences Tumor Immunology & Immunotherapy	N/A	1974
42	Comprehensive	Rutgers Cancer Institute of New Jersey	Rutgers Biomedical and Health Sciences	New Brunswick, NJ	Cancer Pharmacology & Preclinical Therapeutics Cancer Prevention & Control Carcinogenesis & Chemoprevention Cell Death & Survival Signaling Clinical Investigations Genomic Instability & Tumor Progression	1997	2002
43	Basic	Salk Institute Cancer Center	Salk Institute	La Jolla, CA	Growth Control & Genomic Stability Metabolism & Cancer Mouse Models & Cancer Stem Cells	1973	N/A

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
44	Basic	Sanford Burnham Prebys Medical Discovery Institute	Sanford Burnham Prebys Medical Discovery Institute	La Jolla, CA	Cell Death & Survival Networks Tumor Initiation & Maintenance Tumor Microenvironment & Metastasis	1981	N/A
45	Center	Sidney Kimmel Cancer Center at Thomas Jefferson University	Thomas Jefferson University	Philadelphia, PA	Biology of Breast Cancer Biology of Prostate Cancer Cancer Cell Biology & Signaling Gastrointestinal Cancer Molecular Biology & Genetics	1995	N/A
46	Comprehensive	Sidney Kimmel Comprehensive Cancer Center	Johns Hopkins University	Baltimore, MD	Brain Cancer Breast Cancer Cancer Biology Cancer Immunology Cancer Molecular & Functional Imaging Cancer Prevention & Control Chemical Therapeutics Gastrointestinal Cancer Hematologic Malignancies & BMT Prostate Cancer Upper Aerodigestive Cancer Viral Oncology	N/A	1973
47	Comprehensive	St. Jude Children's Research Hospital	St. Jude Children's Research Hospital	Memphis, TN	Cancer Genetics, Biochemistry, & Cell Biology Cancer Prevention & Control Developmental Biology & Solid Tumor Hematological Malignancies Neurobiology & Brain Tumor	1977	2008

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
48	Comprehensive	Stanford Cancer Institute	Stanford University	Stanford, CA	Cancer Biology Cancer Epidemiology Cancer Imaging & Early Detection Cancer Prevention & Control Cancer Stem Cells Immunotherapy of Cancer Lymphoma Radiation Biology Translational Oncology Program @Stanford	2007	2016
49	Center	Tisch Cancer Institute	Icahn School of Medicine at Mount Sinai	New York, NY	Cancer Immunology Program Cancer Mechanisms Research Program Liver Cancer Research Program Cancer Prevention & Control Research Program	2015	N/A
50	Comprehensive	UAB Comprehensive Cancer Center	University of Alabama at Birmingham	Birmingham, AL	Cancer Cell Biology Cancer Chemoprevention Cancer Control & Population Science Experimental Therapeutics Inflammation, Immunology & Immunotherapeutics Neuro-Oncology	N/A	1971
51	Comprehensive	UC Davis Comprehensive Cancer Center	University of California, Davis	Sacramento, CA	Biomedical Technology Cancer Therapeutics Comparative Oncology Molecular Oncology Population Sciences & Health Disparities Prostate Cancer	2002	2012

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
52	Comprehensive	UCSF Helen Diller Family Comprehensive Cancer Center	University of California, San Francisco	San Francisco, CA	Breast Oncology Cancer Control Cancer Genetics Cancer, Immunity, & the Microenvironment Developmental Therapeutics Hematopoietic Malignancies Neurologic Oncology Pediatric Malignancies Prostate Cancer Tobacco Control	N/A	1999
53	Comprehensive	UNC Lineberger Comprehensive Cancer Center	University of North Carolina Chapel Hill	Chapel Hill, NC	Breast Cancer Cancer Cell Biology Cancer Epidemiology Cancer Genetics Cancer Prevention & Control Clinical Research Immunology Molecular Therapeutics Virology	1975	1990
54	Comprehensive	University of Chicago Comprehensive Cancer Center	University of Chicago Comprehensive Cancer Center	Chicago, IL	Advanced Imaging Cancer Prevention & Control Hematopoiesis & Hematological Malignancies Immunology & Cancer Molecular Mechanisms of Cancer Pharmacogenomics & Experimental Therapeutics	1973	2008
55	Comprehensive	University of Colorado Cancer Center	University of Colorado Cancer Center	Aurora, CO	Cancer Cell Biology Cancer Prevention & Control Developmental Therapeutics Hormone Related Malignancies Lung Head & Neck Cancers Molecular Oncology	1988	1997

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
56	Center	University of Hawaii Cancer Center	University of Hawaii at Manoa	Honolulu, HI	Cancer Biology Cancer Epidemiology Cancer Prevention & Control	1996	N/A
57	Center	University of Kansas Cancer Center	University of Kansas	Kansas City, KS	Cancer Biology Cancer Control & Population Health Cancer Prevention Drug Discovery, Delivery & Experimental Therapeutics	2012	N/A
58	Comprehensive	University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center	University of Maryland	Baltimore, MD	Experimental Therapeutics Hormone Responsive Cancers Molecular & Structural Biology Tumor Immunology & Immunotherapy Viral Oncology	2008	2016
59	Comprehensive	University of Michigan Comprehensive Cancer Center	University of Michigan	Ann Arbor, MI	Biomedical Prevention Breast Oncology Cancer Cell Biology Cancer Genetics Experimental Therapeutics Gastrointestinal Oncology Head & Neck Oncology Hematologic Malignancies/BMT Molecular Imaging Prostate Oncology Radiation Sciences Socio-Behavioral Tumor Immunology & Host Response	1988	1991

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
60	Comprehensive	University of New Mexico Cancer Research & Treatment Center	University of New Mexico, Albuquerque	Albuquerque, NM	Cancer Control & Disparities Cancer Genetics, Epigenetics & Genomics Cancer Therapeutics: Technology, Discovery & Targeted Delivery Translational Cancer Cell Biology & Signaling	2005	2015
61	Comprehensive	University of Wisconsin Carbone Cancer Center	University of Wisconsin Carbone Cancer Center	Madison, WI	Cancer Control Cancer Genetics Cell Signaling Chemoprevention Experimental Therapeutics Human Cancer Virology Imaging & Radiation Sciences Tumor Microenvironment	N/A	1973
62	Comprehensive	UPMC Hillman Cancer Center	UPMC Hillman Cancer Center	Pittsburgh, PA	Biobehavioral Medicine in Oncology Program Brain Tumor Program Cancer Epidemiology, Prevention & Control Program Cancer Immunology Program Cancer Virology Program Head & Neck Cancer Program Lung Cancer Program Melanoma Program Molecular & Cellular Cancer Biology Program Molecular Therapeutics & Drug Discovery Program Prostate Cancer Program	N/A	1990

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
63	Comprehensive	USC Norris Comprehensive Cancer Center	University of Southern California	Los Angeles, CA	Cancer Control Research Cancer Epidemiology Epigenetics & Regulation Gastrointestinal Cancers Molecular Genetics Translational & Clinical Sciences Tumor Microenvironment	N/A	1973
64	Center	UVA Cancer Center	University of Virginia	Charlottesville, VA	Cancer Cell Signaling Program Chemical & Structural Biology Program Immunology/Immunotherapy Program Molecular Genetics & Epigenetics Program Women's Oncology Program	1987	N/A
65	Comprehensive	Vanderbilt-Ingram Cancer Center	Vanderbilt University	Nashville, TN	Breast Cancer Cancer Epidemiology Cancer Health Outcomes & Control Gastrointestinal Cancer Genome Maintenance Host-Tumor Interactions Signal Transduction & Chemical Biology Translational Research & Interventional Oncology	1995	2001
66	Comprehensive	Wake Forest Comprehensive Cancer Center	Wake Forest University Health Sciences	Winston-Salem, NC	Cancer Prevention & Control Cell Growth & Survival Cellular Damage & Defense Clinical Research	1972	1990
67	Comprehensive	Winship Cancer Institute of Emory University	Winship Cancer Institute of Emory University	Atlanta, GA	Cancer Genetics & Epigenetics Cancer Cell Biology Discovery & Developmental Therapeutics Cancer Prevention & Control	2009	2017

No.	Cancer Center Type	NCI-Designated Cancer Center Name	Institution Name	Location	Cancer Focus*	Designation Year	Designation Year for Comprehensive Status
68	Basic	Wistar Institute Cancer Center	The Wistar Institute Cancer Center	Philadelphia, PA	Gene Expression & Regulation Molecular & Cellular Oncogenesis Tumor Microenvironment & Metastasis	1972	N/A
69	Comprehensive	Yale Cancer Center	Yale University School of Medicine	New Haven, CT	Cancer Genetics & Genomics Cancer Immunology Cancer Prevention & Control Developmental Therapeutics Molecular Virology Signal Transduction	N/A	1974

*Reported in 2014.
Note: Some cancer centers at first achieve NCI-designated cancer center status, and then they achieve comprehensive status. However, other cancer centers received comprehensive status from the beginning.
Source: Prepared by legislative auditor’s staff using information from National Cancer Institute and the Tisch Cancer Institute.