CANCER PREVENTION & RESEARCH
INSTITUTE OF TEXAS

MEMORANDUM

To:	**OVERSIGHT COMMITTEE MEMBERS**
From:	**WAYNE ROBERTS, CHIEF EXECUTIVE OFFICER**
Subject:	**FY 2017 REPORT ON PROGRAM MERIT AND PROGRESS PURSUANT TO TEXAS HEALTH & SAFETY CODE § 102.260(C)**
Date:	**FEBRUARY 21, 2018**

Summary

Fiscal year 2017 was another year of progress for CPRIT and its three programs: Academic Research, Prevention, and Product Development Research. Key metrics indicate that CPRIT is affecting Texas' national standing in both cancer research and the biomedical industry. Through fiscal year 2017 (FY 2017), CPRIT has awarded $1.886 billion, nearly 67% of the funds it estimates to be available for awards in its constitutional authorization. Texas Health and Safety Code § 102.260(c) requires the Chief Executive Officer to report at least annually to the Oversight Committee on the progress and continued merit of each research program. CPRIT's Academic Research Program, Prevention Program and Product Development Research Program showed progress and merit in FY 2017.

This report provides an overview illustrating the progress made in advancing CPRIT's mission to create and expedite innovation in cancer research and cancer prevention. Aligning program activities with the program priorities adopted by the Oversight Committee is a good gauge of progress and merit. This report highlights each program's implementation of the FY 2017 program priorities. CPRIT's FY 2017 *Annual Report* and quarterly *Achievements Report* provide more information on CPRIT awards.

With regard to progress made by individual grant projects within each of CPRIT's three programs, Texas Administrative Code § 703.21 requires all CPRIT grantees to submit progress reports at least annually. Outside experts evaluate these progress reports to ensure that the grantee has made sufficient progress and should continue work under the grant. To the extent that an expert reviewer determines that a grant project is not making sufficient progress, CPRIT may take a number of actions, including contract termination.

Academic Research Program

CPRIT's Academic Research Program supports innovative and meritorious projects that are discovering new information about cancer that can lead to prevention, early detection, and cures; translating new and existing discoveries into practical advances in cancer diagnosis and treatment; and increasing the prominence and stature of Texas in the fight against cancer.

In FY 2017, CPRIT's Academic Research Program awarded 118 grants totaling $210.39 million. The Oversight Committee approved awards across Academic Research as follows: Core Facilities Support Awards (11 applications awarded), Early Translational Research (7 applications awarded), High-Impact/High-Risk (19 applications awarded), Individual Investigator Research Awards (26 applications awarded), Individual Investigator Research Awards for Cancer in Children and Adolescents (7 applications awarded), Individual Investigator Research Awards for Computational biology (3 applications awarded), Individual Investigator Research Awards for Prevention and Early Detection (5 applications awarded), and Research Training Awards (5 applications awarded).

Academic Research Program Priorities

The Oversight Committee adopted the following FY 2017 program priorities for the Academic Research Program:

- Recruitment of outstanding cancer researchers to Texas;
- Investment in core facilities;
- A broad range of innovative, investigator-initiated research projects;
- Prevention and early detection;
- Computational biology and analytic methods;
- Childhood cancers; and
- Population disparities and cancers of importance in Texas.

The following table illustrates how many Academic Research grants awarded in FY2017 address the program priorities.

FY 2017 DATA BY ACADEMIC RESEARCH PROGRAM PRIORITIES*		
Priorities Addressed	Number of Grants	Award Amount
Recruitment of outstanding cancer researchers to Texas	35	$99,100,000
Investment in core facilities	11	$46,560,000
A broad range of innovative, investigator-initiated academic research projects	41	$38,770,000
Prevention and early detection	14	$21,260,046
Computational biology and analytic methods	14	$39,983,177
Childhood cancers	22	$46,478,271
Population disparities and cancers of importance in Texas (lung, liver, cervix cancers)	21	$40,896,125

**Some grants address more than one priority*

Thirty-five recruits accepted positions at Texas institutions in FY 2017, for a total of $99.1 million in recruitment grant awards for the year. CPRIT continues to build a critical mass of cancer researchers in Texas by supporting recruitment of cancer scientists and clinicians as cancer research scholars to academic institutions in Texas. This program has been highly successful in enhancing Texas' cancer research efforts and increasing the external visibility of the state in this field, which ultimately benefits the life sciences infrastructure in Texas.

Prevention Program

CPRIT's Prevention Program supports effective, evidence-based prevention programs to underserved populations in the state. The Prevention Program grants help Texans reduce the risk of cancer, identify cancers earlier, and assist people in finding cancer treatment. These efforts ease the burden of cancer in Texas. Texas has seen a decrease in death rates from cancer by 7% between 2009 and 2014, which translates to nearly 6,800 averted deaths.

The Oversight Committee approved 17 grants during FY 2017 totaling $26 million. By the end of FY 2017, CPRIT has supported $195.1 million in 189 Prevention Program grants. Ninety

Prevention Program projects were active during the fiscal year. Of the 90 projects actively providing programs and services to Texans, 79% focused on clinical service delivery, 9% on professional education and training and 12% focused on public education and outreach.

In addition to the impact on the health of Texans, Prevention Program grants improve the healthcare system and foster collaborations. Health system improvements include reducing wait times for diagnostic testing and the number of people lost to follow-up, implementing patient reminder systems, enhancing electronic medical records, and training community health care workers to educate and navigate people through the system. These grants stimulate greater collaboration among academic institutions, community organizations, and clinics.

Prevention Program Priorities

The Oversight Committee adopted the following FY 2017 Prevention Program priorities:

- Populations disproportionately affected by cancer incidence, mortality, or cancer risk prevalence;
- Geographic areas of the state disproportionately affected by cancer incidence, mortality, or cancer risk prevalence; and
- Underserved populations.

CPRIT released 10 Prevention Program RFAs in FY 2017 including one on Colorectal Cancer Prevention Coalitions and another on Cancer Prevention and Navigation to Clinical Services. The table below reflects how active projects in FY 2017 address Prevention Program priorities.

FY 2017 FUNDING BY PREVENTION PROGRAM PRIORITIES*		
Priorities Addressed	Number of Grants	Award Amount
Prioritize populations disproportionately affected by cancer incidence, mortality, or cancer risk prevalence.	11	$14,229,009
Prioritize geographic areas of the state disproportionately affected by cancer incidence, mortality, or cancer risk prevalence.	10	$15,068,341
Prioritize underserved populations.	17	$26,043,833

** Some grants address more than one priority.*

Product Development Research Program

CPRIT's Product Development Research Program funds innovative and scientifically meritorious product development projects with the potential of translating research discoveries into commercial products that can benefit cancer patients. During FY 2017, the Oversight Committee approved three Product Development Research awards totaling $41.1 million.

CPRIT has made 32 Product Development Research awards totaling $329.6 million through FY 2017. Fourteen CPRIT-funded company projects conducted clinical trials in FY 2017, reaching cancer patients in Texas with innovative, early stage treatments. The Product Development Research program benefits not only cancer patients, but like CPRIT's recruitment grants, the Product Development Research awards are a vital component in building the life sciences infrastructure and community in Texas. Twenty-one companies with CPRIT-funded projects have connections with Texas institutions.

Additionally, through August 31, 2017, CPRIT companies raised $1.37 billion in follow-on funding from other investors, indicating private sector confidence in the high quality, merit-based peer review and due diligence review process. These follow-on investments and activities testify to the quality of the CPRIT-funded projects and CPRIT's review process.

Product Development Research Program Priorities

The Oversight Committee adopted the following FY 2017 Product Development Research Program Priorities:

- Supporting development of novel projects that offer therapeutic or diagnostics not currently available, i.e., disruptive technologies;
- Funding projects addressing large or challenging unmet medical needs;
- Investing in early stage projects when private capital is least available;
- Stimulating commercialization of technologies developed at Texas institutions;
- Supporting new company formation in Texas or attracting promising companies to Texas that will recruit staff with life sciences expertise, especially experienced C-level staff to new life science companies in Texas; and
- Providing appropriate return on Texas taxpayer investment.

The following below depicts the program priorities fulfilled by the three Product Development Research grants awarded in FY 2017.

FY 2017 FUNDING BY CPRIT PRODUCT DEVELOPMENT RESEARCH PROGRAM PRIORITIES*		
Priorities Addressed	# Grants	Award Amount
Funding novel projects that offer therapeutic or diagnostics not currently available, i.e., disruptive technologies	3	$41,144,783
Funding projects addressing large or challenging unmet medical needs	3	$41,144,783
Investing in early stage projects when private capital is least available	1	$8,998,067
Stimulating commercialization of technologies developed at Texas institutions	3	$41,144,783
Supporting new company formation in Texas or attracting promising companies to Texas that will recruit staff with life sciences expertise, especially experienced C-level staff to new life science companies in Texas	1	$8,998,067
Providing appropriate return on Texas taxpayer investment	3	$41,144,783

** Some grants address more than one priority.*

Diversity Initiatives

Cancer is an equal opportunity disease; it does not discriminate. However, those that fall within a certain demographic, geographic area, or genetic profile may have unequal cancer experiences and likelihood of survival. CPRIT has made addressing cancer disparities a high priority, funding prevention projects targeting the historically underserved and emphasizing cancer research efforts affecting minority populations. While building a cancer-fighting ecosystem in Texas, CPRIT is aware that reaching diverse populations includes building a workforce within this ecosystem that reflects diversity. I highlight the following four examples demonstrating CPRIT's commitment to addressing cancer disparities.

MHP Salud Colonia Outreach Program

The Rio Grande Valley (RGV) located along the U.S.-Mexico border is home to high rates of colorectal and breast cancer and the highest rates of cervical cancer incidence and mortality in the state. MHP Salud, a national nonprofit organization that implements and runs Community

Health Worker, or Promotor(a) programs, uses CPRIT funds to implement a Colonia Outreach Program for education on cancer screening in the RGV colonias. The organization, in partnership with Nuestra Clinica Del Valle (NCDV), has developed an effective system to ensure eligible patients receive culturally and linguistically appropriate education on colorectal, breast, and cervical cancer screening. NCDV refers patients to a MHP Salud Promotor(a) who provides health insurance navigation to patients prior to their screening.

NCDV integrates the Promotor(a) into its process; as a result, the collaboration is successfully improving screening rates and making lasting changes for the RGV community. Since starting the program in May 2015, nearly 3,400 individuals in the RGV colonias and surrounding areas of Hidalgo and Starr county have received one-on-one, Promotor(a)-facilitated outreach and education related to cancer screening at NCDV's eleven clinics. The CPRIT-funded program has successfully identified cancers in the target community:

- 506 breast cancer screenings completed with 29 positive results identified;
- 246 cervical cancer screenings completed with 3 positive results identified; and
- 455 colorectal cancer screenings completed with 5 positive results identified.

This project provides one of Texas' most vulnerable and underserved communities access to education, screening services, and care, including appropriate insurance enrollment when cancer is diagnosed.

<u>The Asian American Health Coalition - HOPE Clinic</u>

Houston's foreign-born Asian population is fast-growing, increasing 48% between 2000 and 2010. More than 4,000 refugees settled in Harris County between 2011 and 2012. The growing ethnic Asian populations in Houston face significant cancer disparities. The incidence and mortality rate of liver cancer in the local Asian population is 69% and 36% higher, respectively, compared to Harris County overall. Breast cancer is the leading cancer diagnosis among Asian American women; however, as an ethnic group, Asian American women are the least likely to receive a mammogram. Similarly, although colorectal cancer is among the three most commonly diagnosed cancers for Asian Americans, this group has the lowest colorectal cancer screening rates of all ethnic groups. Cervical cancer also affects Asian populations disproportionately. The American Cancer Society reports that the Vietnamese have the highest incidence and mortality rates of cervical cancer. Lung cancer is the leading cause of cancer deaths for Asian American women and second leading cause for Asian American men.

Asian immigrants and refugees can be hard to reach because of differences in language, habits, customs, and values. Barriers to accessing prevention and quality health services include

linguistic isolation, insufficient health information, and a shortage of ethnically sensitive and culturally competent health facilities. With a staff that speaks more than 22 languages, CPRIT grantee HOPE Clinic is uniquely suited to serve Asian immigrants living primarily in Southwest Houston as well as refugees that may come from elsewhere in the city. HOPE Clinic provides primary and preventive care for approximately half of Houston's Asian refugees.

HOPE Clinic provides linguistically and culturally competent prevention and related education services to address breast, cervical, and liver cancer. As recently as 2013, 73% of HOPE Clinic patients were best served in a language other than English. Among other evidence-based strategies, HOPE Clinic uses the Chronic Care Model from the National Health Disparities Collaboratives to develop a comprehensive, cost effective and high-quality cancer control program. Projects for Asians and refugees incorporate tailored strategies for reaching out to distinct ethnic groups with special expertise. HOPE Clinic providers offer clinical evidence-based services such as clinical breast exams, mammography, diagnostic mammograms, Pap tests, colposcopies, Hepatitis B screenings, and vaccines to prevent Hepatitis B and the Human Papilloma Virus (HPV). Translators, patient educators, care coordinators, and outreach staff provided by HOPE Clinic complement education and outreach strategies tailored to the multicultural target population.

Focusing on Cancers of Significance in Texas

All CPRIT academic research RFAs include information regarding the Oversight Committee's program priorities. These priorities have driven interest in research focused on population disparities and three cancers of high importance in Texas – lung cancer, liver (hepatocellular) cancer, and cervical cancer. CPRIT has awarded 59 research grants in the past two years (17% of the CPRIT academic research awards made between fiscal years 2015 and 2017) targeting these cancers of significance and addressing the population disparities.

Liver cancer is becoming the fastest-rising cause of cancer-related deaths in the country, and Texas has the highest death rate from liver cancer of any state. Many Texans, including a disproportionate number of Hispanics and African Americans, have Hepatitis C, Hepatitis B, or alcoholic liver disease, which are known risk factors for liver cancer.

Collaborating investigators at the four Texas NCI-designated cancer centers – Baylor College of Medicine, The University of Texas MD Anderson Cancer Center, The University of Texas Southwestern Medical Center, and The University of Texas Health Science Center at San Antonio – created the Texas Hepatocellular Carcinoma Consortium (THCCC). These institutions house the expertise to study the eradication of liver cancer in Texas and throughout the world.

With CPRIT funding, the investigators are developing an ecosystem of collaborative research institutions and forming the epicenter for liver cancer research.

Cancer Research Recruitment and Training Diversity Initiatives

CPRIT's Academic Research Program works with academic centers located in geographic regions with a limited number of federal and CPRIT cancer research awards. Recent CPRIT Scholar recruitment awards to Texas Tech University Health Sciences Center at El Paso, Texas Tech University Health Sciences Center, and The University of Texas Health Science Center at Tyler are early indicators of the growing cancer research programs in these areas.

CPRIT's Research Training Awards to nine Texas institutions of higher learning facilitate the training of the next generation of outstanding cancer researchers. CPRIT encourages individuals from underrepresented racial and ethnic groups, individuals with disabilities, and individuals from disadvantaged backgrounds to participate in CPRIT's training programs. In addition to predoctoral and postdoctoral research training, potential opportunities include undergraduate summer research internship programs, particularly those directed at recruiting underrepresented minorities. Twenty percent of the trainees supported by CPRIT Research Training Awards are from racial and or ethnic backgrounds currently underrepresented in academic research. This provides a diverse pool of highly trained scientists available to address the state's and the nation's basic, population-based, clinical, and translational cancer research needs.

Conclusion

CPRIT's three programs show merit and progress and should continue operations. The work conducted under the purview of CPRIT's programs is part of an iterative cycle with observations emerging from the laboratory making their way to the public and back again to the laboratory. Essential players in this cycle are basic scientists, physician scientists, clinical researchers, product development entrepreneurs, public health professionals, health care providers, patients, community organizations, early stage companies, and research institutions across Texas.