



CANCER PREVENTION & RESEARCH
INSTITUTE OF TEXAS

Recent Grantee News and Advances



- The University of Texas MD Anderson Cancer Center has been selected for a leading role in a new federal initiative to advance treatments using the body's immune system to fight cancer. As part of a \$215 million public-private partnership announced by the National Institutes of Health, MD Anderson will receive funding to help identify and test chemical signatures in the body that will predict which patients will benefit from immunotherapy approaches pioneered by [CPRIT Scholar James Allison](#). The partnership is the first initiative announced under the Trump Administration involving the national Cancer Moonshot. Under the initiative, MD Anderson will get \$11 million over five years to conduct tumor analysis and immune monitoring in immunotherapy clinical trials conducted by multi-institutional networks. The analysis and monitoring attempts to identify biomarkers that could guide future treatment.



- A multi-institutional team led by [CPRIT scholar Erez Lieberman Aiden](#) (assistant professor of genetics at Baylor College of Medicine and a senior scientist at Rice University's [Center for Theoretical Biological Physics](#)) has created the first high-resolution 4-D map of genome folding, which tracks an entire human genome as it folds over time. The report, which could lead to new ways of understanding genetic diseases, appears as the cover article of the October issue of the journal *Cell* (171:305-320, 2017). [This](#) work is important to understanding how the gene is regulated. If stretched out from end-to-end, the DNA in each cell would be over six feet long. But the DNA must fold to fit inside the cell's nucleus, which is less than a thousandth of an inch wide. This folding is not merely a way of packing a long DNA strand into a tiny space—the folding pattern is different for each organ. This compact folding leads the genome to bend back upon itself, so that two pieces that lie far apart along the DNA molecule — like a gene and its regulatory element — can come within close proximity. Having a better understanding of where these loops occur in different cell types may lead to a better understanding of gene regulation. Earlier this year Aiden received a \$3.3 million award from the National Institutes of Health to establish one of eight new mapping centers for NIH's Encyclopedia of DNA Elements Project.

- CPRIT supported research reported in the journal *Neoplasia* found that individuals with certain types of bacteria in their gut may be more likely to respond well to cancer immunotherapy. CPRIT grantee Dr. Andrew Koh, associate professor of Pediatrics and Microbiology, The University of Texas Southwestern Medical Center, analyzed the gut bacteria of 39 melanoma patients who were treated with immunotherapies and found a strong association between a good response and the presence of a particular type of bacteria. This research suggests there are certain beneficial bacteria needed to optimize the effectiveness of checkpoint inhibitors. These bacteria somehow prime an individual's immune system to facilitate its attack on cancer cells. While these observations do not establish a firm causal connection between gut microbes and immunotherapy efficacy, they may lead to a probiotic cocktail that could be given along with immunotherapy to enhance the chance of response.
- A UT Southwestern team has made a potentially paradigm shifting discovery in the stimulation of cancer cell growth. A century-old observation known as the Warburg Effect indicates that cancer is fueled exclusively by glucose (sugar) with lactate produced as a waste product. In contrast the Southwestern team reports in the journal *Cell* that lactate is not only a waste product but is a fuel source consumed by growing lung cancer cells. This finding represents a major shift in how researchers view cancer metabolism and opens a new avenue of study for therapies and imaging techniques for lung cancer. This research was supported in part by a CPRIT Investigator Initiated Research Award to Dr. Ralph DeBerardinis and is important because understanding the lactate pathway could help to find therapeutic targets for lung cancer. Lactate uptake could also have predictive value when used as an imaging tracer. An important factor in these new discoveries is the collaboration between scientists and the clinical team. Working closely with medical personnel in Radiology, Pathology, Pharmacy, Anesthesiology, and the surgical team, researchers analyzed the metabolism of tumors during surgeries to remove tumors. This approach provides important insights that may not occur in laboratory-based experiments.



- A CPRIT prevention grant to Texas Tech University Health Sciences Center at El Paso developed a culturally sensitive, bilingual breast cancer screening, education and navigation program that recruited nearly 2,000 women and achieved an 86 percent diagnostic completion rate. In addition, 11 cancers were identified and all women were successfully navigated into treatment through program protocols and case management.



- Immatics U.S. Inc. enrolled initial patients in a Phase I trial at MD Anderson of IMA201. This investigational immunotherapy uses Immatics' proprietary ACTengine® technology to genetically engineer a patient's own T-cells to activate these cells to attack solid tumors. The study will include up to 16 patients with relapsed and/or refractory squamous non-small cell lung cancer or head and neck squamous cell carcinoma, for which no standard of care therapy is available. Phase 1 clinical trials are typically intended to provide initial human safety and efficacy data. The primary objective of this study is to determine safety and tolerability of IMA201 in the target patient population. Secondary objectives include assessing anti-tumor activity and time-dependent clinical outcomes. Immatics also announced the completion of its Series E financing, raising \$58 million to support ongoing clinical studies and further develop its pipeline of novel cancer immunotherapies. CPRIT awarded the company a product development grant in February 2015.



- Aravive Biologics, Inc. was honored as the 2017 "Innovator of the Year" by YTEXAS, at their 4th Annual YTEXAS ReLO Awards on September 29, 2017. YTEXAS is an organization that accelerates CEO connectivity and corporate presence for companies that are newly relocated to Texas. The ReLO Awards honor the 'Featured 50' notable corporate relocations from the previous 5 years. Aravive was selected in recognition of the potential offered by its novel cancer therapy. The company, formerly known as Ruga Corporation, is developing therapies to treat malignancies while sparing normal healthy cells. Its lead program focuses on the GAS6/AXL pathway to treat both acute myeloid leukemia (AML) and a variety of solid tumors. CPRIT awarded Aravive a product development grant in November 2015.



- Pelican Therapeutics entered a service agreement with Selexis, a pharmaceutical development services firm specializing in cell therapies. Pelican and Selexis will collaborate to advance PTX-35, Pelican's lead product candidate, into clinical development. PTX-35 stimulates the action of Memory CD8+ cytotoxic T-cells, a class of T-cell responsible that kills tumor cells. PTX-35 is intended to be used in combination with other immunotherapies to extend the duration of their tumor killing activity. Pelican will use Selexis' proprietary technology to develop research cell banks that express the drugs Pelican is developing. CPRIT awarded the company a product development grant in May 2016.



- A CPRIT award to The Rose in Houston increased the availability and access to preventive breast cancer screening in ten rural communities using mobile mammography vans and community partnerships. The short-term impact is that many women who otherwise would not have received a screening mammogram did. The long-term impact is that women in these rural areas have been educated about the importance of breast health and early detection and have found a healthcare resource in their community through the partnerships.