

## Twenty-nine projects approved by OCAST for funding

**June 20, 2019**

The Oklahoma Center for the Advancement of Science and Technology (OCAST) this week awarded \$1,624,100 for 29 research and development projects to drive innovations in infectious disease, sensors, therapeutics, biotechnology, energy and other industries critically important to Oklahoma's economy. This number is down from the 74 projects OCAST was able to fund last year and well below the average annual award number of 65 due to no new appropriated funding specifically for OCAST research programs for Fiscal Year 2020. OCAST has documented a 32-year cumulative 22:1 return on investment of state-appropriated dollars throughout its history. That means for every dollar of public funds invested in OCAST, the agency returns \$22 to Oklahoma's economy and, in an average year, supports the creation of more than 1,500 high-tech, high-wage jobs. The reduction in projects funded by OCAST in FY2020 represents a potential loss to the state of more than \$133 million and as many as 750 jobs.

"Each of our programs was created with a goal of supporting science and technology R&D through facilitating collaboration between state government, universities, start-up companies and established large-scale firms to develop an entrepreneurial environment that supports technology-based economic development. These projects reflect the outstanding research taking place around the state and demonstrate that Oklahoma science and technology is globally competitive," said OCAST executive director Michael Carolina.

"At OCAST we've established benchmarks and implemented best practices in our peer-reviewed grant funding, our strategic partnerships and collaborations and our post-doctorate and internship programs that support our mission of growing and diversifying the state's economy," stated Carolina.

Successful applicants, organizations and projects titles follow:

### Health Research Postdoctoral Fellowship

Zoltan Ungvari, OUHSC	Irradiation Induced Cognitive Decline: Role of Endothelial Senescence
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### Oklahoma Health Research

Karina M. Shreffler, OSU	Enhancing Maternal-Fetal Bonding to Promote Healthy Pregnancies and Reduce Adverse Perinatal Outcomes
Nathaniel D. Jenkins, OSU	The Role of Genetic Polymorphisms on the Pharmacokinetics and Pharmacodynamics of Caffeine: Implications for Cardiometabolic Function
Calin Prodan, OUHSC	Thrombotic and Inflammatory Mechanisms in Traumatic Brain Injury
Liangzhong Shawn Xiang, OU	Real-Time Dosimetry in External Beam Radiation Therapy with X-Ray Acoustic Computed Tomography
Shanteri Singh,OU	The Development of Daptomycin Analogs
Jie Wu, OUHSC	Deciphering Bypass Mechanisms of Resistance to SHP2 Inhibition
Shaoning Jiang, OUHSC	Fetal Epigenetic Programming of Mitochondrial Biogenesis in Diabetes During Pregnancy: the Role of AMPK and microRNA-130b
Josh Ramsey, OSU	Targeted Delivery of a Reactive Oxygen Species Generator for Treatment of Hormone Refractory Prostate Cancer
Roger G. Harrison, OU	Novel Targeted Protein Drug Conjugates for Treating Metastatic Breast Cancer Combined with Immunostimulation and mTOR Inhibition

Qinggong Tang, OU	Real-time Epidural Anesthesia Guidance Using Multi-contrast Optical Coherence Tomography Needle Probe
Yu Feng, OSU	Understanding the Effects of Sphero-Cylinder Drug Particle Shape to Enhance Small-Airway Drug Delivery for Better Emphysema Treatment Outcomes
Natarajan Aravindan, OUHSC	Cre-conditional RD3-loss Driven Neuroblastoma Mouse Model: Novel Tool for Preclinical Studies on Disease Evolution

#### Intern Partnerships

Surendra Singh, TU w/Infinite Composites Technologies	Design and Development of Composite Pressure Vessels
Travis Reed, XploSafe LLC	Commercial scale production of XploSafe's new biodegradable sorbents for consumer, industrial and municipal water treatment
Peter J. Hawrylak, TU w/Prescor	Building an Enterprise Resource Planning (ERP) System and SolidWorks Finite Element Analysis (FEA) of Tools for Tank Head Manufacturing
Keith Symcox, TU w/Marshall Brewing	Development of Analytical Methods for Marshall Brewery

#### Oklahoma Applied Research Support

Kedar Pai, Plasma Bionics LLC	Cold Atmospheric Plasma Device for Sterilization of Laparoscopic Instruments
Bhishma R. Sedai, MITO Material Solutions LLC	Novel Hybrid Nano-Additives with Improved Compatibility for Thermosetting Resins
Jamey D. Jacob, OSU w/Vigilant Aerospace Systems	Validation of Radar-Based Detect-and-Avoid System
Ashish Ranjan, OSU w/Pinnacle Animal Health LLC	Minimally Invasive Animal Sterilization
Yu Mao, OSU	Omniphobic Nanocoatings for Liquid Repellent Fabrics
Arif Rahman, MaxQ Research	Development of Nano-Porous Recyclable Cellulose Thermal Insulation
Guolong Zhang, OSU w/AltBiotics LLC	Small-Molecule Compounds as Novel Antibiotic Alternatives

#### Plant Science Research

Kristen Baum, OSU	Assessing Honey Bee Health and Crop Productivity Across a Gradient of Land Uses
Ming Yang, OSU	A New Leucine-Rich Repeat Receptor-Like Kinase In Stomatal Lineage Regulation
Charles Chen, OSU	Drought Induced Global Changes of Chromatin Structure in Bread Wheat
Niels Maness, OSU	A System for Podophyllotoxin Production to Extract Value From Eastern Red Cedar
Gail Wilson, OSU	Managing Microbial Interactions for More Efficient and Resilient Bermuda Grass