

## 2009-2021 John S. Dunn Collaborative Research Award Program Recipients

### 2009

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#### ***T-cell Mediated Delivery of Gold Nanoparticles for Externally Triggered Photothermal Cancer Therapy***

Rebekah Drezek, Rice University  
Aaron Foster, Baylor College of Medicine

#### ***Synthetic Tuning of a Breast Cancer-controlling Network***

Oleg Igoshin, Rice University  
Michael Mancini, Baylor College of Medicine  
Gabor Balazsi, UT M. D. Anderson Cancer Center

#### ***Development of High Resolution Endoscopes for In Vivo Imaging of the Inner Ear***

Tomasz Tkaczyk, Rice University  
John Oghalai, Baylor College of Medicine

#### **Event**

#### ***Early Disease Detection: Biomarker Discovery to Clinical Application***

John McDevitt, Rice University  
Christie Ballantyne, Baylor College of Medicine  
David Gorenstein, UT Health Science Center at Houston

### 2011

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#### ***Developing Split Protein Biocatalysts and Reporters for Translational Systems and Synthetic Biology***

Jonathan Silberg, Rice University  
Lynn Zechiedrich, Baylor College of Medicine  
Anthony Maresso, Baylor College of Medicine

#### ***A Bio-Nano-Chip for Salivary Anticonvulsant Drug Assay in Epilepsy Patients***

Giridhar Kalamangalam, UT Health Science Center at Houston  
John McDevitt, Rice University

#### ***Engineered, Affordable Glycans as New Antimicrobials***

George Bennett, Rice University  
Mary Estes, Baylor College of Medicine

#### **Event**

#### ***Multicellular Self-Organization Meeting***

Amina Qutub, Rice University  
Oleg Igoshin, Rice University  
Gábor Balazsi, MD Anderson Cancer Center  
Waleed Gaber, Texas Children's Hospital

### 2010

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#### ***Single Cell Dynamics of The White/Opaque Epigenetic Switch in Candida albicans***

Matthew Bennett, Rice University  
Kresimir Josic, University of Houston  
Michael Gustin, Rice University

#### ***Molecular Activated Stealth Chemotherapy (MASC) Nanoparticles for Cancer Treatment***

Rebekah Drezek, Rice University  
Liz Bikram, University of Houston

#### ***Structure Determination of Novel Targets Identified from a Multi-drug Resistant Pathogen***

Yousif Shamoo, Rice University  
Cesar Arias, University of Texas Health Science Center at Houston

#### **Event**

#### ***Planning a Center for NeuroEngineering***

Peter Saggau, Baylor College of Medicine  
Steven Cox, Rice University  
Richard Baraniuk, Rice University  
Nitin Tandon, University of Texas Health Science Center at Houston  
Robert Raphael, Rice University

### 2012

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#### ***New Antimicrobials Through MEP Pathway Inhibition***

Janet Braam, Rice University  
Heidi Kaplan, University of Texas Medical School

#### ***Multi-layered Cardiac Patches from Dynamic Surfaces***

Jeffrey Jacot, Rice University  
Rafael Verduzco, Rice University  
Iki Adachi, Baylor College of Medicine/Texas Children's Hospital

#### ***Metabolic Signatures of Cancer Stem Cells***

Ching Lau, Baylor College of Medicine  
Ka-Yiu San, Rice University

#### **Event**

#### ***Telehealth Research Institute: Mission, Strategy, and Structure***

Robert Satcher, University of Texas MD Anderson Cancer Center  
Jan Odegard, Rice University  
Michael Twa, University of Houston  
Cindy Farach-Carson, Rice University

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### 2013

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#### ***Enhanced Cancer Detection through Development of Novel Immunoprobes***

Kathleen Beckingham, Rice University  
Robert Bast, University of Texas MD Anderson Cancer Center

#### ***Non-invasive MR Colonoscopy and Early Detection of Colon Cancer by Targeted Hyperpolarized Silicon Nanoparticles***

Pratip Bhattacharya, University of Texas MD Anderson Cancer Center  
Daniel Carson, Rice University

#### ***High-content Quantitative Imaging and Flow-based Remodeling of in vitro Vascularized Engineered Tissues***

Jordan Miller, Rice University  
Mary Dickinson, Baylor College of Medicine

#### ***Imaging the Delivery and Therapeutic Response of Protease-activated Virus Nanotherapeutics***

Junghae Suh, Rice University  
Eva Seveck, University of Texas Health Science Center-Houston

#### ***Rapid Fungemia and Bacteremia Screening Via Ultraspecific Detection of Nucleic Acid Biomarkers***

David Zhang, Rice University  
John Holcomb, University of Texas Health Science Center at Houston

#### **Event**

#### ***Plasmon-hybrid Superstructures for Functionally Biomimetic Light-Driven Processes***

Christy Landes, Rice University  
Stephan Link, Rice University  
Neal Waxham, University of Texas Medical School-Houston  
Richard Willson, University of Houston

### 2014

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#### ***Local Dual Delivery of Antifungals and Growth Factors for Treatment of Necrotizing Invasive Mold Infections***

Antonios Mikos, Rice University  
Dimitrios Kontoyiannis, University of Texas MD Anderson Cancer Center

#### ***Nanoparticle Prophylaxis Protection from Chemotherapy Ototoxicity and Hearing Loss***

Fred Pereira, Baylor College of Medicine  
James Tour, Rice University

#### ***Identifying the Molecular Basis of CO<sub>2</sub>chemosensitivity Via Microfluidic Characterization and Cell Sorting***

Jacob Robinson, Rice University  
Russell Ray, Baylor College of Medicine

#### ***Maximizing Therapeutic Gain from Metallic Nanoparticle-radiation Interaction Via Rational Design***

Eugene Zubarev, Rice University  
Sunil Krishnan, University of Texas MD Anderson Cancer Center

#### **Event**

#### ***TMC-GCC Collaborative Workshop: Regenerative Medicine in Neuroscience and Neuroengineering***

Charles S. Cox, Jr., University of Texas Health Science Center at Houston  
Jane Grande-Allen, Rice University  
Behnaam Aazhang, Rice University  
Benjamin Deneen, Baylor College of Medicine

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2015

***Engineering E. coli for Temperature Independent and Light-activated Secretion of Colanic Acid to Enable Fundamental and Translational Studies of a Novel Gut Microbiota-mediated Longevity Pathway***

Jeffrey Tabor, Rice University  
Meng Wang, Baylor College of Medicine

***Mini Mechanobiology: Mechanical Testing and Organ Culture of Rodent Heart Valves***

Jane Grande-Allen, Rice University  
Dianna Milewicz, University of Texas Health Science Center Houston

***Linking Transcriptional Regulation of Signaling Pathway Components to Embryonic Patterning***

Aryeh Warmflash, Rice University  
Ido Golding, Baylor College of Medicine

***Genes in Context: Using Genome Editing to Reveal how Molecular, Neural, and Social Factors Orchestrate Variation in Drosophila Aggressive Behavior***

Julia Saltz, Rice University  
Herman Dierick, Baylor College of Medicine

**Event**

***Symposium on Membrane Biophysics***

Michael Zhu, University of Texas Health Science Center Houston  
James McNew, Rice University  
Ted Wensel, Baylor College of Medicine  
Jim Briggs, University of Houston

2016

***Quantitative Assessment of Liver-Directed In Vivo Genome Editing with CRISPR/Cas9***

Gang Bao, Rice University  
William Lagor, Baylor College of Medicine

***Monitoring Intracellular Temperature in Cancer Cells Using Metal Complexes***

Angel A. Marti-Arbona, Rice University  
Steven Curley, Baylor College of Medicine

***Decoding the Gene Regulatory Mechanism Underlying Fate Determination of Hematopoietic Stem Progenitor Cells***

José Onuchic, Rice University  
Yun (Nancy) Huang, Institute for Biosciences and Technology, Texas A&M-HSC

***Cellular Level, Functional Brain Imaging Using Multi-probe, Snapshot Image Spectroscopy***

Tomasz Tkaczyk, Rice University  
Kimberley Tolia, Baylor College of Medicine

**Event**

***TMC-GCC Collaborative Symposium: Metabolism in Cancer***

Pratip Bhattacharya, MD Anderson  
Dan Carson, Rice University  
Arun Sreekumar, Baylor College of Medicine  
Daniel Frigo, University of Houston

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2017

***Development of High-Throughput Genetic Strategies to Dissect Microbiome Impact on Host Physiology***

Buck Samuel, Baylor College of Medicine  
Joff Silberg, Rice University  
Grant Hughes, University of Texas Medical Branch

***Developing and Deploying Genetically Encoded Indicators for Imaging Voltage Dynamics in the Mammalian Auditory System***

Robert Raphael, Rice University  
Francois St-Pierre, Baylor College of Medicine

***Host Targeted Therapeutics to Combat Drug-Resistant Pathogens***

Ashok Chopra, University of Texas Medical Branch  
Tor Savidge, Baylor College of Medicine/Texas Children's Hospital

**Event**

***Texas Medical Center Hematopoiesis and Inflammation Symposium***

Emily Mace, Baylor College of Medicine  
Stephanie Watowich, MD Anderson  
Pamela Wenzel, University of Texas Health Science Center, Houston

2018

***Understanding Pathogenic Determinants in Enterococcus faecium***

Natasha Kirienko, Rice University  
Barbara Murray, UT Health Science Center at Houston

***Unraveling How Gut Microbiota Influence Form and Function in the Developing Enteric Nervous System***

Rosa Uribe, Rice University  
Anne Marie Krachler, UT Health Science Center at Houston

***Photo-induced Epigenetic Remodeling in Mammalian Cells***

Yubin Zhou, Institute of Biosciences and Technology  
Han Xiao, Rice University

***An Auditory Virtual Reality to Illuminate Learning and Memory***

Caleb Kemere, Rice University  
Matthew McGinley, Baylor College of Medicine

**Event**

**None**

2019

***Visualizing Cell and Molecular Transitions that Contribute to Abnormal Craniofacial Development***

George Eisenhoffer, MD Anderson  
Jacqueline Hecht, UT Health Science Center at Houston

***DNA Hydroxymethylation Signatures in Neonatal Opioid Addiction***

Jonathan Davies, Baylor College of Medicine  
Deqiang Sun, Institute of Biosciences and Technology

***Hormone Memory: Epigenomic Impacts of Estrogen Exposure on Later Life Metabolism***

Wenbo Li, UT Health Science Center at Houston  
Zheng Sun, Baylor College of Medicine

2020

***An AI-Assisted Smart Wound Dressing for Expedited and Personalized Wound Healing***

Taiyun Chi, Rice University  
Swathi Balaji, Baylor College of Medicine

***CRISPR/Cas9-based epigenome editing to dissect the mechanistic causality between DNA methylation and immune phenotype***

Isaac Hilton, Rice University  
Andrew Dinardo, Baylor College of Medicine

***Region-specific and Brain-wide Gene Therapy for Neurodevelopmental Disorders***

MingShan Xue, Baylor College of Medicine  
Jerzy Szablowski, Rice University

2021

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***Targeting Dysbiosis and Intestinal Barrier Dysfunction in Malnutrition***

Peter Melby, University of Texas Medical Branch  
Robert Britton, Baylor College of Medicine

***Decipher Electrophysiological and Transcriptomic Signatures of the Sinoatrial Node in Response to Aging***

Jun Wang, UT Health Science Center at Houston  
Xiaolong Jiang, Baylor College of Medicine

***Engineering Microenvironments to Enhance Direct Cardiac Reprogramming Efficiency***

Renita Horton, University of Houston  
Todd Rosengart, Baylor College of Medicine