

NextGen 
PRECISION HEALTH



FACULTY & RESEARCH UPDATE

UM System Research Aligned to Precision Health



\$120M

**New Awards for
Research Projects
(since March 2017)**



\$70M

**New Awards for
Research Projects
(since March 2019)**

Leadership Recruitments



Richard Barohn

**Executive Vice Chancellor for Health Affairs at MU Health Care
Scientific Director, NextGen Institute**

- Formerly with the University of Kansas Medical Center
- Dr. Barohn will play a major role in strategically advancing the missions of MU Health Care and the MU School of Medicine.
- Will coordinate multi-investigator extramural proposals; develop new industry partnerships; expand state and federal support for NextGen; develop and execute concepts for philanthropic support; and develop sustained investment models from MU Health Care to support NextGen

Faculty Research Leads



**JEFFREY
BRYAN**

Professor of Oncology
*College of Veterinary
Medicine*

**Cancer
Faculty Research Lead**

Research includes epigenetic biomarkers of lymphoma in dogs, targeted imaging and therapy of cancer, immunotherapy of cancer, and clinical studies in companion dog for translation to humans.



**JULIE
KAPP**

Associate Professor of
Health Management and
Informatics
School of Medicine

**Population Health
Faculty Research Lead**

Researches the fields of epidemiology, public health, health program and policy evaluation, health promotion, and disease prevention (particularly cancer).



**KERRY
MCDONALD**

Professor of
Pharmacology and
Physiology
School of Medicine

**Cardiovascular
Faculty Research Lead**

Research interests include regulation of muscle contraction, cardiac contractility, heart failure and exercise physiology.



**DAVID
SCHULZ**

Professor of Biological
Sciences
College of Arts and Science

**Neurological
Faculty Research Lead**

Research is focused on how loss of input to neural networks changes the properties of these neurons, and how spinal cord injury and multiple sclerosis changes the neural networks below the injury.



**THOMAS
SPENCER**

Professor of Animal
Sciences and Obstetrics,
Gynecology, and Women's
Health
*CAFNR and School of
Medicine*

**Basic & Emerging
Research Lead**

Translational research focuses on the physiological and genetic pathways that regulate the establishment and maintenance of pregnancy in livestock, including infertility, which can be translated to humans.



**JOHN
SPERTUS**

Professor and Daniel J.
Lauer Missouri Endowed
Chair of Metabolism and
Vascular Disease Research
UMKC

**Precision Health Care
Delivery**

Real world research targeting the most appropriate therapeutic approach for a particular individual based on their clinical pattern, profile and risk factors.



**ROB
PAUL**

Professor of
Behavioral Neuroscience
and Director, Missouri
Institute of Mental Health
UMSL

**Precision Imaging
Analysis**

Research involves sophisticated analysis of MRI imaging done for a variety of disorders, conditions, and health-related questions.

2021 NextGen Strategic Recruitment



Carolyn Anderson, Professor
College of Arts and Science, Chemistry
Formerly with University of Pittsburgh
PHI Focus Area: Radiopharmaceuticals
Research focused on development of novel radiometal tracers for diagnostic imaging and targeted radiotherapy of cancer, pulmonary, and cardiovascular diseases.



Barry Edwards, Associate Professor
School of Medicine, College of Arts and Science (Biochemistry)
Formerly with University of Pittsburgh
PHI Focus Area: Radiology
Research interests include development optical probes for optical imaging of enzyme activity and the development of phage displayed and combinatorial peptide libraries for discovery of ligands for molecular imaging



Rudolph Navari, Professor and Chair
School of Medicine, Hematology and Medical Oncology
Formerly with University of Alabama at Birmingham
PHI Focus Area: Oncology
Research focused on the prevention of chemotherapy-induced nausea; engineering micellular nanoparticles to overcome drug resistance; and engineering tumor markers for colon cancer.



Brett Froelinger, Professor
College of Arts and Science
Formerly with Medical University of South Carolina
PHI Focus Area: Addictions
Investigates the causes and consequences of nicotine dependence and evaluating novel pharmacological and behavioral interventions for the treatment of smoking addiction.

NextGen Spinal Cord Injury/Disease Research Program

- \$1.5M in funding each year
- Supported research areas include:
 - Injury or disease prevention
 - Imaging technology
 - Surgical or gene therapy
 - Physical, occupational or vocational rehabilitation



Acute and Chronic Hypoxia



DAVID KLINE
professor,
biomedical sciences



EILEEN HASSLER
professor,
biomedical sciences

\$2.9M 

Plasticity of NTS Output Neurons in
Acute and Chronic Hypoxia

Source: NIH National Blood and Heart
Institute

- Low oxygen levels are tied to heart failure, sleep apnea and other conditions.
- This project is determining how the brain regulates oxygen levels using rat studies.



New Methods for Computational Modeling of RNA Structures



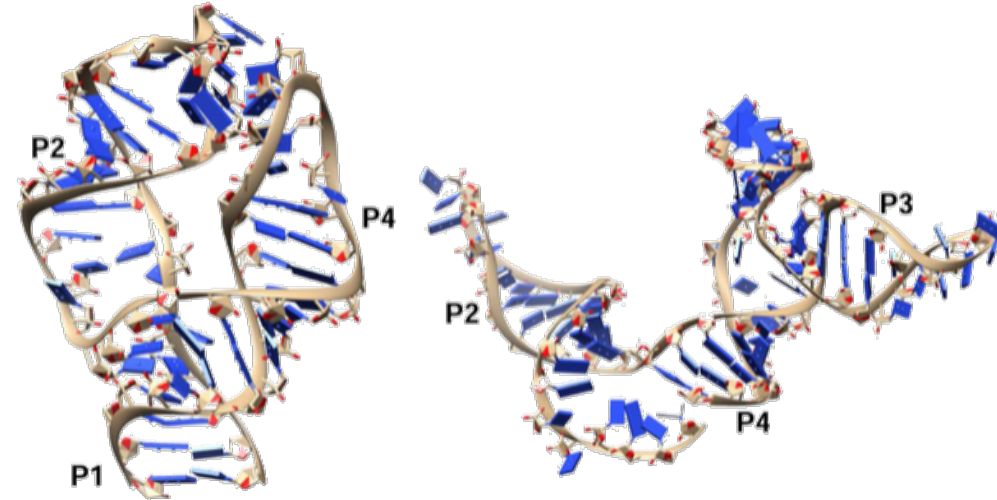
SHI JIE CHEN

*curators' distinguished
professor, physics*

\$2.2M 

New Methods for
Computational
Modeling of RNA
Structures

Source: NIH General
Medical Science



- RNA structures hold the key to medical breakthroughs because the RNA molecule controls information flow in cells.
- Dr. Chen's lab is developing ground-breaking computational techniques to model RNA structures and design new therapeutics.

Protein-Peptide Interactions



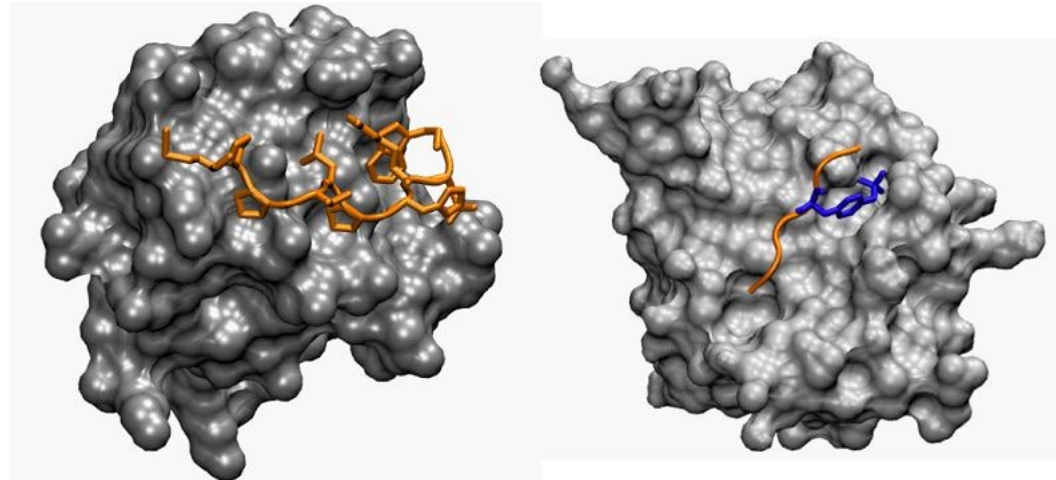
XIAOQIN ZOU
professor, physics

\$1.9M 

Structure Prediction and
In Silico Screening of
Protein-Peptide
Interactions

Source: NIH General
Medical Sciences

- Peptides, the building blocks of proteins, are being used to create new medicines.
- Dr. Zou is creating new ways to screen many varieties of peptide structures to save time and money in therapy development.





PARTNERSHIP & EXTERNAL RELATIONS UPDATE

Siemens Healthineers Fast Brain MRI



- Partnership with Siemens will enable push-button brain exams, with multiple orientations and all relevant contrasts – in only five minutes.
- This fast exam is more tolerable for patients, and helps reduce motion-related artifacts and the need for rescans and sedation
- Opportunities to pursue pediatric and TBI and PTSD research

Partnerships



Improving healthcare delivery and operational efficiency



Radio Isotope production for cancer therapies



Clinical decision support tools



NextGen Cryo Electron Microscopy Suite

NextGen Precision Health Institute Advisory Board



TOM ATKINS, III
Owner & President,
Atkins Investments



MIKE BROWN
Chairman, CEO &
President, Euronet
Worldwide



SOBIN CHANG
CEO, Aquavit
Pharmaceuticals



TED DAY
Owner & CEO, Mo-Sci
Corporation



STEVE ELLEBRACHT
Partner, Isotherapeutics
Group



JIM FITTERLING
Chairman & CEO, Dow
Chemical



DICK FLANIGAN
Senior Vice President,
Cerner ITWorks



GARY FORSEE
Retired UM System
President &
Chairman/CEO, Sprint



PATRICIA HALL
Director, Harry S. Truman
Memorial Veteran's
Hospital



MICHAEL JONES
Private Practice, Vice
President, Tri-State
Gastroenterology
Associates, PSC



KAMALA MADDALI
President & Founder,
Health Collaborations



JOHN NACKEL
Founder & Partner,
Wavemaker Three-Sixty
Health



TOM O'HALLORAN
Founding Director,
Chemistry of Life
Processes Institute,
Northwestern University



DAVID PACITTI
President, Siemens
Medical Solutions USA



DONN RUBIN
Founding President &
CEO, BioSTL



BILL VANJONACK
Principal, Pioneer CR,
LLC

Support for NextGen

State



- Passed budget May 8
- Includes \$10M for the NextGen facility out of the budget stabilization fund
- Money only available if the federal government provides additional funding relief to Missouri
- Funds would also restore \$36M core cut

Federal



- House and Senate Conference:
 - ~\$15M for first year (\$12.3M for construction).
 - Potential for \$2.7M/year for the next 19 years.
- President signed the bill in 2019
- Next Steps:
 - VA will release RFP
 - Apply to RFP and receive funds for partnership

NG PHI Construction and Instrumentation

Purpose	Source	Amount	Comments
Construction	UM System	\$40,000,000	
Construction	MU	\$50,000,000	
Construction	State of Missouri	\$20,000,000	
Construction	VA	\$12,300,000	Pending
Construction	Philantropy	\$11,200,000	
Construction	Siemens	\$4,500,000	
Instrumentation	UM System	\$10,000,000	
Instrumentation	Siemens	\$6,100,000	
Instrumentation	TFS	\$11,200,000	Pending
	Total	\$165,100,000	
	Total Required	\$220,800,000	

Philanthropy Update

	Construction	Program
Value of Contributions Received	\$11.2M	\$10.9M*
Value of Outstanding Proposals	\$12.9M	\$1.5M
Planned Proposals	\$9.8M	\$6M



* Gift total pending confirmation of incoming estate gift proceeds being used for comparative oncology and translational medicine research – gift booked at \$10.56 million



INFRASTRUCTURE & OPERATIONS UPDATE

Building Update



April 2020



May 2020

- Construction Continued with only minor COVID-19 disruptions
- Exterior wall framing started in April
- Major building systems equipment installed in April
- June 2020 Topping Off

Progress on Plans to Populate NextGen Building



Pursuing recruits

*Informatics, muscular dystrophy,
multiple sclerosis, maternal-fetal
medicine*



Discussion with industry partners

to move into Innovation Tower



Preliminary plans to buildout 4th floor

*for Clinical Translational Trials
Center (“Dry” lab research)*

NextGen 
PRECISION HEALTH



Missouri Solutions Campaign



Missouri Solutions Campaign



Columbia Regional Airport

Missouri Solutions Campaign



FROM SCOTT FAUGHN

Events, mailbag, tips, and updates can be emailed to scott@themissouritimes.com.



BUZZ

— The Senate put out Sen. **Ed Emery's** charter bill instead of Sen. **Bill Eigel's** because the floor leader is ill. Sen. **Caleb Rowden** very much wants to pass a charter bill, but it seems likely that issue is more primed for next session.

From the number of Republicans who filibustered Emery's bill, it would appear the next charter bill has an uphill climb.

— The story heading into **Lincoln Days** this weekend will be Greitens and **Clean Missouri**. On Clean Missouri, will a Republican donor step up and fund this campaign? And will the House just take the Senate bill without the changes they wanted?



Partnerships



Connectivity and applications



Advanced imaging technologies

The Medtronic logo, consisting of the word "Medtronic" in white, bold, sans-serif font, set against a dark blue rectangular background.

Medtronic

Comprehensive partnership focused on
Cardiovascular and Neurosciences



NextGen Audio/Visual Systems