NextGen
PRECISION HEALTH
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.
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.

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 micellar 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.

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.
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

- 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.

DAVID KLINE
professor, biomedical sciences

EILEEN HASSE
professor, biomedical sciences

$2.9M

Plasticity of NTS Output Neurons in Acute and Chronic Hypoxia

Source: NIH National Blood and Heart Institute
New Methods for Computational Modeling of RNA Structures

• 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

- 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.

XIAOQIN ZOU
professor, physics

Structure Prediction and In Silico Screening of Protein-Peptide Interactions

Source: NIH General Medical Sciences
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

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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 MADDAI
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

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# Philanthropy Update

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* 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
• 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 in 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).
Missouri Solutions Campaign

ORTHOPEDIC CHALLENGES
MEET MISSOURI SOLUTIONS

HEART HEALTH CHALLENGES
MEET MISSOURI SOLUTIONS
Missouri Solutions Campaign
Missouri Solutions Campaign

FROM SCOTT FAUGHN

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

RURAL HEALTH CHALLENGES MEET MISSOURI SOLUTIONS

NextGen Precision Health Institute

Missouri Times Whispering Gallery

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

Comprehensive partnership focused on Cardiovascular and Neurosciences

NextGen Audio/Visual Systems