Mizzou on the International Stage

Oct ’21
Pig Kidney to Human

Jan ’22
Pig Heart to Human
Achieving Excellence in Student Success
Historic 6-year Graduation Rates

- All students: 2015: 69%, 2020: 73%
- Pell students: 2015: 57%, 2020: 62%
- African American students: 2015: 55%, 2021: 65%
- Hispanic/Latinx students: 2015: 59%, 2021: 67%
MizzouMade: Vibrant Student Experiences

- 35% of incoming students ranked in the top 10% of their class in 2020 as compared to 28% in 2015

- 95% of 2021 undergrad students have successful career outcome 6 months after graduation

- 2022 Freshmen class will be 23% higher than in 2017, with ~5,100 students
2021 NSF GRFP Fellows

Joshua Jones
Organismal Biology
Indiana University

Rachel Combs
Genetics
The Ohio State University

Alexander Harmata
Chemistry
University of Michigan

Cortney Howard
Psychology
Duke University

Phong Nguyen
Chemical Engineering
UC-Santa Barbara

Roland Oruche
Human Computer Interaction
University of Missouri-Columbia

Alaina Wilson
Human Development & Family Science
University of Missouri-Columbia

Most prestigious graduate fellowship in the United States
Student Success Projects

- 51 projects to receive funds
- Up to $100K per award
- Wide range of innovative projects:
  - 3D surgical model creation of human tissue to train biomedical and medical students
  - Extension projects include:
    - state-of-the-art virtual reality training systems for firefighter and law enforcement institutes
    - upgrading technologies to improve course delivery to regional Extension offices
  - Game-theory learning in the social sciences
Achieving Excellence in Research & Creative Works
Accelerated Research Growth

Phase I Expenditures per Faculty
- 2016: $100,000
- 2017: $110,000
- 2018: $120,000
- 2019: $130,000
- 2020: $150,000
- 2021: $180,000 (40% increase)

Phase II Expenditures per Faculty
- 2016: $30,000
- 2017: $40,000
- 2018: $50,000
- 2019: $60,000
- 2020: $70,000
- 2021: $100,000 (86% increase)
Accelerated Research Growth
Leading Indicators are Very Promising

Phase I Awards per Faculty
- 2016: $100,000
- 2017: $120,000
- 2018: $140,000
- 2019: $160,000
- 2020: $180,000
- 2021: $200,000
Increase: 72%

Phase II Awards per Faculty
- 2016: $20,000
- 2017: $30,000
- 2018: $40,000
- 2019: $50,000
- 2020: $60,000
- 2021: $80,000
Increase: 81%
**Accelerated Research Growth**

*Leading Indicators are Very Promising*

**Phase I Proposals per Faculty**

- **2016:** $600,000
- **2017:** $700,000
- **2018:** $800,000
- **2019:** $900,000
- **2020:** $1,000,000
- **2021:** $1,100,000

**Phase II Proposals per Faculty**

- **2016:** $55,000
- **2017:** $65,000
- **2018:** $75,000
- **2019:** $85,000
- **2020:** $95,000
- **2021:** $105,000

- **84% increase**
- **105% increase**
YOU ARE INVITED TO CELEBRATE THE GRAND OPENING OF THE ROY BLUNT NEXTGEN PRECISION HEALTH BUILDING.

TUESDAY, OCTOBER 19, 2021 | 10 AM
### MURR - A Leading Research University

**Supporting Cancer Research & Treatment**

MURR is the **most powerful** university reactor in the U.S. dedicated for research.

- **The only** U.S. provider of 5 life-saving medical isotopes used in cancer and cardiac drugs
- **MURR supplies more radioisotopes than the entire US DOE!**
- **Annual revenue for MURR will grow to $100M by ‘24**

Each week, MURR creates the active ingredients for:

<table>
<thead>
<tr>
<th>Product</th>
<th>Application</th>
<th>Doses</th>
</tr>
</thead>
<tbody>
<tr>
<td>QUADRAME®</td>
<td>bone cancer</td>
<td>1,000</td>
</tr>
<tr>
<td>TheraSphere®</td>
<td>liver cancer</td>
<td>2,000</td>
</tr>
<tr>
<td>LUTATHERA®</td>
<td>neuroendocrine tumors</td>
<td>500</td>
</tr>
<tr>
<td>I-131</td>
<td>thyroid cancer</td>
<td>1,000</td>
</tr>
<tr>
<td>RadioGenix®</td>
<td>cardiac &amp; bone scans</td>
<td>10,000</td>
</tr>
</tbody>
</table>

**Median survival period:**

- **8 mo without LUTATHERA® treatment**
- **Over 5 years with it!**
MU Faculty Named AAAS Fellows

Three 2021 American Association for Advancement of Science fellows

Lee-Ann H. Allen
Microbiology & Immunology
Department Chair
School of Medicine
“Outstanding contributions to our understanding of innate immunity...”

Susan Renoe
Associate Vice Chancellor
Office of Research
“Commitment to strengthening the societal impacts of science and engineering...”

Cheryl S. Rosenfeld
Biomedical Sciences Professor
College of Veterinary Medicine
“Distinguished contributions to the fields of reproductive biology and endocrine disruption...”
MizzouForward & RISE UP

Lei Lei
Associate Professor, Obstetrics, Gynecology & Women’s Health
School of Medicine | Start Date: 3/2022

Jae-Wook Jeong
Professor, Obstetrics, Gynecology & Women’s Health
School of Medicine | Start Date: 7/2022

Stephen Sheinkopf, PhD
Executive Director, Thompson Center
Start Date: 09/2021

Gerhard Hildebrandt, MD
Director, Hematology & Medical Oncology | Director, Ellis Fischel Cancer Center | Start Date: 07/2022

Cherian Verghese, MD
Program Director, Hematology & Medical Oncology Fellowship
Start Date: 09/2021

Mitchell Goldman, MD
Senior Associate Dean, Graduate Medical Education
Start Date: 01/2022

Parvesh Kumar, MD
Associate Dean, Clinical & Translational Research
Start Date: 05/2021

Jean Ricci Goodman, MD
Griffin Endowed Chair, Obstetrics, Gynecology & Women’s Health
Start Date: 12/2021

Stephen Barnes, MD
Chair, Department of Surgery
Start Date: 08/2021

Melissa Terpstra, PhD
Director, NextGen Imaging
Start Date: 10/2021

Ai-Ling Lin, PhD
Vice Chair, Research of Radiology
Start Date: 08/2021

Jullie Pan, MD, PhD
Director, MRI
Start Date: 08/2021

Zachary Berndsen, PhD
Assistant Professor, Department of Biochemistry
Start Date: 06/2022

Clarissa Durie, PhD
Assistant Professor, Department of Biochemistry
Start Date: 12/2021
MU Presidential Awardees

Kelli Canada
Intercampus Collaboration

Glen Cameron
Thomas Jefferson

Ashley Givens
Intercampus Collaboration

Brett Johnson
Early Career - Humanities and Social & Behavioral Sciences

Ron Kelley
Community Engagement

Clark Peters
Intercampus Collaboration

Wendy Reinke
Sustained Career - Humanities, Social & Behavioral Sciences

Zheng Yan
Early Career - STEM
Thank You, Vice Chancellor Gary Ward

17 Years of Service to MU

Under his leadership as Chief Operating Officer, he oversaw:

- 21 departments, 1,900 employees, a $300M annual budget
- Nearly $3B in large construction projects since 2006
- MU’s efforts to increase the use of green energy, reducing greenhouse gas emissions by 62% since 2008

“I got into higher education because it’s not about making money. It’s about doing things better for mankind. I swore to myself that if I ever had the opportunity, I would be a good steward of state and family resources. We have a lot of students who, along with their families, are making great sacrifices to go here.” —Gary Ward

Inside Columbia Magazine, May 2020
Thank You!
Researchers with many firsts in the world:

- 1st swine model for a human disease
- 1st for in vitro fertilization in swine
- 1st gene editing in swine
- 1st FDA-approved swine for food use
- 1st seven examples of gene knockouts

- The only center producing genetically engineered swine, more than the rest of the world combined
- 1st to develop genetically modified swine to create organs that are less resistant to human rejection
- 22 AAU institutions use our swine models for research

The New York Times

In a First, Man Receives a Heart From a Genetically Altered Pig
— January 10, 2022
Inclusion, Diversity and Equity Progress

- MU is at **67th** %-tile among AAUs for % of Black T/TT faculty (~4%)
- MU is at **67th** %-tile among AAUs for % of Black undergraduate students (~7%)
- MU is at **75th** %-tile among AAUs for % of Pell students (22%)
- **31** Black faculty hired since 2017
  - Represents **9.8%** of all T/TT faculty hires
- **24** Hispanic/Latinx faculty hired since 2017
  - Represents **7.6%** of all T/TT faculty hires
Building on MURR Potential

MURR is the most powerful university reactor in the U.S. dedicated for research.

- The only U.S. provider of 5 life-saving medical isotopes used in cancer drugs and cardiac drugs.
- MURR supplies more radioisotopes than the entire US DOE.
- Two new FDA decisions expand access to more cancer patients.

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<td>LUTATHERA®</td>
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**Median Survival Period:**

8 months without Lutathera® treatment

Over 5 years with it

| I-131 | Thyroid Cancer | 1,000 doses |
| RadioGenix® | Cardiac & Bone Scans | 10,000 doses |
Molecular Imaging Center Boosts MURR

Interdisciplinary research next door to MURR

- Expands on MURR’s radiopharmaceutical success to create the next generation of agents that can see and/or treat cancer.
- Translates new treatments through clinical trials from mouse to companion animals to humans.
- NIH-funded research to develop novel agents with new radionuclides for metastatic melanoma.
Future Plans for Research Investments

3 Major Expansions Planned

**MURR West** (approved)
- Build by 2024
- Cost: $20M

**DOE Isotope Facility**
(contract expected to be finalized)
- Build by 2024
- Cost: $27M

**MURR NextGen** (concept development phase with state, federal and industry partners)
- Build by 2031
- Cost: $800M
High-level Grants Increase

Since June 2021:

- 17 NSF grants totaling ~$6M
- 16 NIH grants totaling ~$25M, individual awards range $1M-$3.3M
- 3 Dept. of Ed grants totaling $13M, individual awards range $1M -$8M
- $4.9M NASA grant
- $1.7M Dept. of Energy grant
- $1.4M Office of Naval Research competitive grant
- 11 USDA NIFA competitive grants, including a $5.3M award
- $8.7M Patient-Centered Outcomes Research Institute grant
- 2 Dept. of Defense grants
# Targeted Hiring and Recruiting

## Science and Engineering Frontiers
- Advanced Materials, Manufacturing and Construction
- Advanced Measurement Science, Imaging and Analysis
- Artificial Intelligence, Computing and Communications
- Critical Infrastructures
- Energy, Environment and Earth Sciences
- Geospatial and Location Services
- And others

## NextGen Precision Health
- Cancer
- Cardiovascular and Metabolic Disorders
- Infectious Disease
- Maternal, Infant and Child Health
- Neuroscience, Neurodegenerative Diseases
- And others

## Social Science, Humanities and the Arts Frontiers
- Health, Educational and Economic
- Humanities in the 21st Century
- Opportunities and Disparities
- Prevention Science
- And others

- Build on existing strengths
- Cluster hires
- Attract federal research funding
- Work in key priority areas for NIH, NSF, DOE, DOE
Strategic Recruiting Update

MizzouForward:
- 215 applicants as of Jan. 26 for 150 new positions
- 117 reviewed by advisory committees
- 9 have and 17 will visit campus for in-person interviews
- 2 hired, starting in spring/summer, in negotiations with 2
- These candidates, on average:
  - PIs with 2+ in federal grants and $500K+ annual grant expenditures
  - Have additional funding from other sources
  - Serve as co-investigators on other federal grants
- November 2021 launch

RISE-UP in School of Medicine:
- 12 hired
- 3 in negotiations
- January 2021 launch
Investing in Undergraduate Student Success

- Advising
- Honors College
- Undergraduate Research
- Internships and Career Services
- Missouri Scholars Academy
- $5M for new instrumentation and software
Investing in Graduate Student & Postdoc Success

- Professional development
- Teaching preparation
- Research proposal preparation
- Graduate fellowship preparation
- Post-doctoral fellowship preparation
Expanding Postdoc Initiatives

- **Preparing Future Faculty – Postdoctoral Program for Faculty Diversity (PFFFD):** Increases pipeline of underrepresented faculty by offering 2-year fellowships.
- **Research Excellence Program:** Recruits postdocs to assist faculty with research, helping them secure more external funding.
- **Office of Graduate Student and Post-Doc Support:** Hire a staff of 2 to support graduate students and post-doctoral fellows to seek national fellowships.

### Applications for PFFFD

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
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<tbody>
<tr>
<td>2021</td>
<td>314</td>
</tr>
<tr>
<td>2020</td>
<td>233</td>
</tr>
<tr>
<td>2019</td>
<td>219</td>
</tr>
<tr>
<td>2018</td>
<td>160</td>
</tr>
<tr>
<td>2017</td>
<td>128</td>
</tr>
</tbody>
</table>

Increased postdoc program investments to more than $2.7M annually
Enhancing Faculty Success, Retention & Collaboration
Increase Faculty Support & Collaboration

- Competitive salaries and startup funds
- Performance-based salary increases
- Programs to improve retention, honors & awards, professional development
- Support for proposal development, pre-award, post-award services
- New and enhanced postdoctoral programs
Awards and National Academies

New Honors and Awards Office

Will hire a staff of 5 to work with deans and chairs to:

- Create a database for prestigious and highly prestigious external awards.
- Host info sessions for department chairs and deans on external awards.
- Identify appropriate faculty for awards.
- Provide support and write faculty nominations.
- Create a long-term plan for improving the pipe-line for all awards.
## Expansion Goals for Support Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Strategic Proposal Development**             |  - Grant development teams with technical writers, illustrators, specialists in NIH, NSF and DOD projects.  
  - **10 additional staff by end of fiscal year.** | 
| **Research Development Fellows**               |  - Workshops, consultations and engagement with funding agencies.  
  - **4 additional staff by end of fiscal year.** | 
| **Pre- and Post-Award Support**                 |  - **10 additional staff by end of fiscal year.** | 
| **Office of Research Analytics**               |  - Offering critical competitive intelligence for proposals and federal agency budget priority analysis.  
  - **2 additional analysts by end of fiscal year.** | 
| **High Performance Computing**                 |  - **$7M investment in staff and hardware.**  
  - **6 additional staff by end of fiscal year.** |
Enhancing Robust Research
Increase Research, Innovation and Impact

Build a more robust research enterprise through investments in:

- Core facilities, high-performance computing, clinical research support.
- Research development and collaboration programs.
- New buildings as well as upgraded facilities and instruments.
- Strategic industry partnerships (strengthening existing ones and developing new ones).
Become Leader in Key Research Areas

- Animal models for biomedical research, reproductive biology
- Diagnostic imaging and radiopharmaceuticals
- Cardiovascular physiology
- Geospatial intelligence and data science
- AI and data analytics
- Influenza and emerging infectious disease research
- Plant Science, biotechnology, agronomy
- Health, education and economic disparities
- Prevention science and addiction research
- Rural medicine
- Broader impacts and outcomes
Top Capital Project Reflects Research Focus

Developing Pillars in Radiopharmaceuticals and Animal Science & Health

- $358 M project total
- $104M from state (federal stimulus dollars)
- Dollar-for-dollar match from MU

Enhance MU’s unique assets

- MURR, College of Veterinary Medicine, Animal Resources Center, College of Agriculture

Will establish new facilities to grow research in:

- nuclear medicine
- artificial intelligence
- advance materials
Forward Together

By working together, we can:

- create student, faculty and staff success,
- achieve excellence,
- serve our community, state and the nation.
<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Details</th>
<th>Start Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patrick O’Hara</td>
<td>Assistant Vice Chancellor for Health Systems, <em>Advancement</em></td>
<td>9/2021</td>
</tr>
<tr>
<td>Chris Riley-Tillman</td>
<td>Interim Dean, <em>College of Education &amp; Human Development</em></td>
<td>11/2021</td>
</tr>
<tr>
<td>Noah Manring</td>
<td>Dean, <em>College of Engineering</em></td>
<td>5/2021</td>
</tr>
<tr>
<td>John Middleton</td>
<td>Assistant Vice Chancellor, <em>Office of the President</em></td>
<td>8/2021</td>
</tr>
<tr>
<td>Cooper Drury</td>
<td>Interim Dean, <em>College of Arts &amp; Sciences</em></td>
<td>6/2021</td>
</tr>
<tr>
<td>Desiree Reed-Francois</td>
<td>Director of Athletics</td>
<td>8/2021</td>
</tr>
</tbody>
</table>
Boldest Investment in our History

~$1.5B over 10 years.
Investments in people, ideas and infrastructure.

Investment areas:

- $350M+ Recruit 150 T/TT faculty by 2026
- $200M+ Startup for 150 T/TT faculty
- $200M+ Infrastructure, instrumentation for research
- $100M+ Research Investment programs
- $75M+ Faculty & staff success programs
- $75M+ Student success programs
- $500M+ Performance increases for faculty, staff
Accelerating our Push for Excellence

To do so, we need to...

**Students**
- Invest in additional student success programs.

**Faculty & Staff:**
- Celebrate and support existing faculty.
- Increase compensation.
- Invest in faculty success programs.
- Retain our top faculty and staff, while strategically investing in new hires.
- Measure our performance against AAU benchmarks.
- Hire staff in key areas to support our mission.

**Infrastructure:**
- Invest in new infrastructure, instruments and core facilities.
Grand Challenge Area I:
   Improve and Save Lives through NextGen Precision Health

Grand Challenge Area II:
   Harness the Frontiers of Science and Engineering for a Sustainable World

Grand Challenge Area III:
   Promote a Civil and Equitable Society through Ideas, Policies and Culture