Division of Research & Innovation

The Division of Research and Innovation supports world-class research and discovery by University faculty, staff, and students, who are asking bigger questions and generating better answers every day. As the Mid-South's premier research university, the University of Memphis is a nationally recognized research institution with top ranked programs in over 30 disciplines.
Getting Started

• Externally funded research is critical to EVERY discipline. Regardless of your research topic, there are funding opportunities for you. The Division of Research and Innovation is here to help you establish and accelerate your research. Visit our Researchers website for more details and resources.

• The Division of Research & Innovation is comprised of the following units:
  • Research Development
  • Office of Sponsored Programs
  • Research Compliance
  • FedEx Institute of Technology
  • Integrated Microscopy Center
  • Animal Care Facility
  • Office of Technology Transfer
Steps to Research Success at UofM

• For Faculty new to campus, **Research Development** and the **Office of Sponsored Programs (OSP)** will likely be your first points of contact as you begin your research career at the UofM.

• **Research Development** and the **OSP** are the central research support teams responsible for the review, authorization and submission of proposals (grants, contracts, cooperative agreements, non-monetary) to external sponsors; as well as for the review and acceptance of all sponsored project award funds.

• We are located in 315 Administration Bldg. The easiest way to reach us is via e-mail at [OSP@memphis.edu](mailto:OSP@memphis.edu) or [researchdev@memphis.edu](mailto:researchdev@memphis.edu). Your message will be acknowledged within 24 hours.
The Project Lifecycle

1. Generate Idea
2. Locate Funding Opportunity
3. Develop Proposal
4. Finalize Proposal
5. Submit Proposal
6. Notification of Award
7. Negotiate/Accept Award
8. Manage Project
9. Close-out Award
Identify Funding Opportunities

• The **Office of Research Development** assists new faculty with their first proposals, organizes large proposals, organizes training, and helps with strategic growth of the UofM capacity.

• Research Development will contact all new faculty for a one-on-one introduction during your first semester. Contact Dr. Cody Behles ([cbehles@memphis.edu](mailto:cbehles@memphis.edu)) for questions about the functions of this office.

• **Get Training**
  • A calendar of all the training sessions for academic year 2020-2021. One-on-one sessions are also available on any topic as needed. Some recorded training content and slides are available at this link.
  • Compliance is critical, so also be sure to review the slides on **Research Compliance** and make sure you have completed all required trainings for human subject researcher, financial conflict of interest, export controls, and animal care and use.

• **Finding Funding**
  • You can sign up for a Grant Forward Account at [this link](http://example.com) and you can request a curated search for funding opportunities based on your publication history by emailing Cody.
    • Grant forward is a database we subscribe to for finding funding
Write Your Proposal

• You are the experts, and so you must write your proposal. Research Development will provide editing services (in-house or through partnerships), and review of key components including the narrative for NSF, NIH, and NEA grants. If you have questions, email cbehles@memphis.edu.
Submit your proposal

• **The Office of Sponsored Programs (OSP)** is the unit responsible for authorizing and submitting your external proposals to sponsors. Our team includes Pre-Award Services, Contract and Award Services, and Electronic Research Administration. OSP services include assistance with the following:

  • Proposal and Budget Review
  • Non-Financial Post Submissions
  • Contract Development
  • Award Setup
  • Subgrant/Subcontract Administration
  • Post-Award Management and Closeouts *(non-financial)*

*Note: All post-award financial activities is handled by the Office of Grants and Contracts Accounting (GCA).*
Submit your proposal

• **Cayuse SP**
  - Cayuse is the eRA system we use to route and track all externally funded proposals, contracts, and agreements. **All** proposals or research engagement that you submit need a Cayuse record. Steps to obtain Cayuse access are at: [memphis.edu/research/researchers/route_submit/era.php](http://memphis.edu/research/researchers/route_submit/era.php)

• **All** Cayuse proposals must include an internal budget, budget justification, abstract/scope of work, any subrecipient documents, and FCOI Responsible Personnel From (this form is located in the Conflicts of Interest section of the Cayuse proposal. **Note:** If your unit has a pre-award coordinator, you should contact her/him first for assistance with proposal and budget preparation.

• For assistance setting up your Cayuse account contact [cayusesupport@memphis.edu](mailto:cayusesupport@memphis.edu)

**Avoid Same-Day Submissions and Help Avoid Costly Mistakes by Routing your Final Proposal to OSP Five (5) Business Days before the Sponsor Deadline**
Submit your proposal

**Cayuse 424**

Most federal proposals are submitted via Cayuse 424. This system-to-system submission portal offers full support for federal grants posted by NIH, AHRQ, CDC, USDA, ONR, DoE with full support for over 99% of Grants.gov and Research.gov opportunities. NSF Proposals are also supported by Cayuse 424. However, OSP currently submits all NSF proposals via FastLane/Research.gov.

For access to sponsor portals or access and questions with Cayuse 424, please contact cayusesupport@memphis.edu.
Award Acceptance and Management

- Only the University Signatory, the President or the Executive Vice President for Research & Innovation is authorized to sign **all** grant and contract agreements; including non-monetary agreements such as Data Use Agreements, Material Transfer Agreements, and Non-Disclosure Agreements. *Please remember that Faculty do not have the authority to bind the University.*

- Any Notification of Award or Grant/Contract Acceptance should be sent to **ospawards@emphis.edu**.
Award Acceptance and Management

• **OSP** assists faculty throughout the Project Lifecycle, including:

  • Handle progress report submissions, budget revision requests requiring sponsor approval, request for carryforward, and request for no-cost extensions

  • Issue subawards, and manage grant and contractual changes throughout lifecycle; amendments/modifications, PI-changes, and changes in scope of work

  • Manage final report closeouts and relinquishments/institutional transfers (incoming and outgoing)
Tips For Success

• Involve Research Development and OSP early at osp@memphis.edu

• Route your final proposal to OSP at least five (5) business days before sponsor deadline. Please ensure you have access to Cayuse and other sponsor portals by contacting cayusesupport@memphis.edu

• Send any award notices or contract agreements that you may receive directly from sponsors to ospawards@memphis.edu. Please remember do not sign and agreements or certifications on behalf of the University
Tips For Success

• Review the final Award Notices of Award and Contract Agreements

• Once the project account is setup, ensure expenses are changed accurately. Please work directly with OSP for any questions on budget revisions after award setup at ospawards@memphis.edu

• Ensure PI and key personnel efforts are accurately charged. PI will be required to submit Effort Certifications. Any substantial decrease in effort usually requires prior approval from sponsor

• Ensure PI and key personnel maintain up-to-date Current and Pending Support documents
Tips For Success

• Consider/anticipate the need early in the project/budget year for any Carryforward or No-Cost Extension Requests

• Submit Progress Reports on-time

• Avoid excessive spending toward the end of a project/budget year

• Maintain Compliance

• When in Doubt... Contact osp@memphis.edu
Meet our Team

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Please visit memphis.edu/research for full list of our services and key contacts by responsibility.
Research Compliance

To promote a campus-wide environment of responsible conduct for research complying with requirements from funding agencies such as the National Institutes of Health (NIH), National and Science Foundation (NSF), responsible conduct of research training is available to the entire University of Memphis community.
Our Focus: Making Things Go Right

Primarily in:

• Human Subjects Research (IRB)
• Financial Conflict of Interest (FCOI)
• Institutional Animal Care and Use Committee (IACUC)
• Export Controls
• Research Misconduct
• Responsible Conduct of Research
• Data management, acquisition, sharing and ownership, HIPAA
“Driven by Doing”

• Interpretation and Implementation of Standards, Policies, and Procedures
• Program Administration
• Communication, Education, and Training
• Monitoring, Auditing, and Internal Reporting Systems
• Investigations and Remedial Measures
• Discipline for Non-Compliance
Animal Care and Use

• Animal Care and Use Program provides facilities and services on campus to support research involving animals. Program services include
  • Assistance with protocol development
  • Veterinarian, veterinary technician, and husbandry services
  • Training for researchers (students, faculty, staff)

• Institutional Animal Care & Use Committee (IACUC) provides oversight, guidance, and approval for all research involving animals at the University

• Contacts
  • Dr. Karyl Buddington, Director
  • Dr. Amy de Jongh Curry, IACUC Chair
Meet Our Team

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FedEx Institute of Technology

The FedEx Institute of Technology is an advanced technology and research organization that functions as a catalyst for interdisciplinary research and innovation in emerging technologies by supporting cross-campus research innovation clusters. These clusters focus on areas such as intelligent systems, drones, cyber security testing, biologistics, autonomous vehicles, robotics, smart biomaterials, additive manufacturing and precision medicine.
Our Mission

• The FedEx Institute of Technology is the hub for technology & research innovation for Memphis and the Mid-South. The Institute enjoys a unique innovation partnership with FedEx, sponsoring the Institute for advanced research purposes as it serves as the applied research arm for the University of Memphis. Through cutting edge-interdisciplinary research clusters, workforce development trainings in emerging technologies, and work with leaders & experts in local Memphis tech industry, the Institute showcases the UofM’s innovation capabilities. The Institute is also home to the Office of Technology Transfer, which manages the UofM’s patent repository & licensing operations.

• Catalyst for interdisciplinary research and innovation in emerging technologies
• Leader in high-tech and emerging technology workforce development in Memphis
• Develop communities for emerging technologies for our region
Creating Innovation: Research Clusters

• CLUSTER FOR THE ADVANCEMENT OF CYBER SECURITY & TESTING (CAST)
  • Working on the front lines of the cyber war to provide new solutions to software testing expertise

• BIOLOGISTICS RESEARCH CLUSTER
  • The first research group in the country dedicated to solving the challenges of this emerging and dynamic field

• DRONES ROBOTICS & NAVIGATION ENABLED SYSTEMS (DRONES) CLUSTER
  • Provides proactive leadership in the emerging field of unmanned systems to bring new technologies to commercial markets

• ADDITIVE MANUFACTURING RESEARCH CLUSTER
  • Using cutting edge facilities at the UofM, cluster is investigating metallic additive manufacturing and business processes

• TECHNOLOGY COMMERCIALIZATION
  • Tech development grants and P2P program are building a new generation of innovators in Memphis

• DATA SCIENCE RESEARCH CLUSTER
  • Projects are dedicated to exploring ways to help industry use big data and analytics to solve problems and create new opportunities

• AGRICULTURE & FOOD TECHNOLOGIES RESEARCH
  • Brings together a core group of scientists from Biology, Chemistry, Computer Science, Engineering and Health to work on theoretical, experimental and applied approaches to contemporary food and agriculture challenges.

• SMART CITIES RESEARCH CLUSTER
  • FedEx Institute of Technology and the City of Memphis partnered on challenges facing our city, utilizing cutting-edge emerging technologies
Building A Brighter Future Together

• INTERNATIONAL LEADER IN EMERGING TECHNOLOGIES & RESEARCH
  • Czech Academy of Sciences Research Partnership
  • “Roxo” – SameDay Bot Pilot Test Site
  • ATHENA{techne} All Women’s Hackathon

• GROWING & RETAINING TALENT
  • UMRF Research Park
  • UMRF Ventures Inc
  • Patents2Products (P2P) Deep Science Entrepreneur Postdoc Program
  • Industry Postdoc Partnerships

• CUTTING-EDGE RESEARCH
  • Blockchain
  • VR & 3D Imaging
  • Named Data Networking
  • Additive Manufacturing
  • Autonomous Vehicles

• CUSTOMIZED TRAINING
  • FedEx Academy Partnership
  • Renewal Tenet Transformation
  • Emerging Technologies Training
  • System Testing Excellence Program (STEP)
  • Consultant Partnerships & Diversified Growth
Collaborative Interdisciplinary Research

The Institute continues its strategic approach to building corporate, community and research engagement in each of its Research Innovation Clusters.

• **REGIONAL PRESENCE**
  - **Lightning Talks**: Kick-off event to familiarize researchers and the Memphis community of the research focus
  - **Monthly Meetings**: Interdisciplinary cluster fellows discuss their progress and stay abreast of the latest trends in the cluster of research
  - **Progress Reports**: Written and verbal evidence of research progress throughout the funding period
  - **Research Workshops**: Forum for cluster fellows, the academic community, and corporate partners to discuss the work of the clusters
  - **Community Engagement**: Events and workshops to provide the Memphis community with opportunities to interact with world-class researchers in emerging technologies and see that Memphis is on the forefront of innovation

• **NATIONAL PRESENCE**
  - **National Conferences**: Our researchers are speaking at nationally recognized institutions on the topics and the concept of FedEx Institute Research Cluster
  - **Collaborations**: Along with incorporating interdisciplinary research and practices, researchers are fostering strong relationships with businesses and community partners throughout the region who know the value of innovation and understand the advantages of being first to implement those innovations

• **INTERNATIONAL PRESENCE**
  - **Silk Road Hospitality**: is a leading hospitality provider, with eleven operational sites offering luxury accommodation and entertainment, as well as value for investors.
  - **DayaMed**: Biologistics industry disrupter and FedEx collaborator, DayaMed is establishing their North American headquarters in the University District for advancements in research, student employment, seed entrepreneurship at the UofM.
  - **Minute School**: Minute School is a cross-platform software application that helps students get better marks in minutes. With a concept-focused teaching structure, Minute School provides short lessons, practice questions and AI-assessed feedback for school courses.
Imagine a place where the success of a company matters as much as the identity of the community they call home. Two innovations that emerged from the FedEx Institute of Technology were the UMRF Research Park, located in the heart of the University District, and UMRF Ventures, located both inside the Institute as well as a larger operation located on the Park Avenue Campus. These initiatives are changing the conversation about what innovation means in Memphis.

The Research Park has established the University District as a technology innovation hub, enhanced the community we serve, attracts global talent and creates a new avenue for companies to engage with the UofM. Phase 1 is housed at 460 S. Highland.

The UofM leveraged the power of American industry in collaboration with the dynamic innovation of higher education to create a public-private partnership called UMRF Ventures. Ventures is an innovative model that brings together the students who will define the future workforce for our city, impacting the local economy and the companies that call it home. Through this relationship, we are negating the impact of declining public education funding for higher education by bringing back to the region corporate dollars that previously had gone overseas. This is empowering the next generation of professionals by eliminating student loan debt before it ever starts.

Today, UMRF Ventures, as a wholly owned subsidiary of the University of Memphis Research Foundation, is serving several clients. From the start, the UofM recognized the importance of preventing student exploitation and adopted the key principle of paying students above minimum wage. As such, the bulk of its revenues are being used for student wages, from $15-$30 an hour, to ensure a sustainable living wage. Its profits are returned to the University of Memphis Research Foundation in the form of dividends, which are then used to fund vital research efforts and professorships.
Emerging Technology Training

Working to introduce emerging technologies and training to our region to attract and retain technology organizations and innovators to the Mid-South.

- **Advanced Technical Skills Series:**
  - Python
  - Game Developers/Unity
  - Machine Learning/Data Sciences/R
  - WordPress
  - WebWorkers
  - Data Management Association (DAMA)
  - MEMPass/Power BI
  - Memphis Game Developers
  - PHP
  - Agile Practitioners
  - MemphisDevOps
  - AIGA Memphis
  - NetSquared
  - Code Connectors

- **Emerging Innovation Series:**
  - Mobile Crowd Sourcing
  - Artificial Intelligence & ML: Loaded & Ready for K-12 Classrooms
  - STEM Funding Workshop
  - Massive Adoption Hackathon
  - The Art & Science of Digital Medicine
  - Digital Transformation at FedEx
  - Tech Camp (Hackathon)
  - Memphis Game Developers Game Jam / Competition
  - Faculty Workshops
  - Intellectual Property (IP) Workshop
  - Unmanned Aerial Systems Drones Racing & Demonstration
  - Intensive VR/Unity 2-Day Workshop
  - Lab Tours: Nanomaterials Lab; AI/Machine Learning Lab; Additive Manufacturing Lab, AutoID Lab
  - Commercializing University Research w/ Leon Sandler, MIT
  - Soft Robotics Workshop
  - Community of Research Scholars (CoRS) Lightning Talks
  - Building Bold New Realities: AR, VR, XR
  - Guidelines for Digital Inclusion w/ Mark West, UNESCO
Emerging Technology Training

The Institute continues its commitment to creating deep impact in advanced technology research and skills development in Memphis. To bring the city together and enhance workforce development, it is essential we partner with organizations committed to advancing technology in Memphis.
Growing Regional Technology Workforce

TRAINING TARGETS CORPORATE & PUBLIC AUDIENCES

- SAS Programming 1: Essentials
- SAS Programming 2: Data Manipulation Techniques
- SAS Programming 3: Advanced Techniques and Efficiencies
- SAS SQL 1: Essentials
- SAS Enterprise Guide 1: Querying and Reporting
- SAS Macro Language 1: Essentials
- CAST Cybersecurity Foundational Certification
- Developing Ethereum Smart Contracts with Solidity – Level 1
- Additive Manufacturing for Industry
- Intensive Virtual Reality Workshop
- Cyber Security Annual Summit
- FBI: Cybersecurity Workshop
- Systems Testing Excellence Program (STEP)
- Data Science Summit: Memphis Data
- Design Thinking Workshop
- Memphis Innovation Bootcamp
- Immersion in R for Data Science
- Advanced R for Data Science
- CodeCrew Hackathon
- ATHENA {techne} 3-Day Hackathon
- HackMemphis 2-Day Hackathon
- SQL Saturday (Hackathon)
- Give Camp (Hackathon)
- Memphis Game Jam
- Agile Academy
- Data Focused Workshop
- DevOps Roadshow
- Business Architecture
- Lean Portfolio Management
- Organizational Change Management
The Office of Technology Transfer (OTT)

Housed in the Institute, OTT works closely with faculty researchers to identify commercially valuable inventions being developed in their labs.

• FOR RESEARCHERS
  • We invest in and protect promising innovations and huge breakthroughs by University researchers.

• FOR INDUSTRY
  • We license valuable intellectual property (patented and copyrighted inventions) to local and national companies.

• 2019-2020 TECH GRANTS
  • The Office of Technology Transfer (OTT) extended a Call for Proposals on October 1, 2019 to fund grants for FY20. 15 grants were selected and funded.

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<tr>
<th>Patent Number</th>
<th>Title of Invention</th>
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<th>Inventor(s)</th>
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<tr>
<td>10,091,105</td>
<td>Efficient Forwarding Information Base Caching System And Method</td>
<td>10/02/2018</td>
<td>Yaoqing Liu, Lan Wang</td>
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<tr>
<td>10,182,499</td>
<td>Multilayer Additive Printed Circuit</td>
<td>01/15/2019</td>
<td>Bashir L. Morshed</td>
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<td>10,243,346</td>
<td>Mitigation Of Adverse Effects Of Geomagnetically Induced Currents On Transformers</td>
<td>03/26/2019</td>
<td>Mohd Hasan Ali</td>
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<tr>
<td>10,258,717</td>
<td>Compositions And Methods For Enhancing Healing And Regeneration Of Bone And Soft Tissue</td>
<td>04/16/2019</td>
<td>Isaac Rodriguez</td>
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<tr>
<td>10,388,178</td>
<td>Affect-sensitive Intelligent Tutoring System</td>
<td>08/20/2019</td>
<td>Art Graesser, Sidney D’mello</td>
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Additional Disciplinary Research Centers

- Center for Applied Earth Science and Engineering Research (CAESER) – Transforming and strengthening communities by improving social and environmental conditions through research and collaboration. (Dr. Brian Waldron)

- Center for Smart Biomaterials – Developing implantable materials to release drugs with an external signal (e.g., a magnet) allowing clinicians to better time and target local drug delivery (Dr. Joel Bumgardener)

- Center for Information ASSURANCE – Providing world-class research, training, and career development for Information Assurance professionals and students by organizing community events, special purpose conferences, and vendor-specific training programs (Dr. Dipankar Dasgupta)

- Institute for Intelligent Systems (IIS) – Advancing the state of knowledge and capabilities of intelligent systems, including psychological, biological, and artificial systems. Researchers from the cognitive sciences, biology, communication sciences & disorders, computer science, education, engineering, linguistics, philosophy, physics, and psychology are involved. (Dr. Art Graesser & Dr. Alistair Windsor)

- Mobile Data to Knowledge (MD2K) – A National Institutes of Health Center of Excellence Developing new strategies to analyze and leverage the increasingly complex biomedical data sets, often referred to as Big Data. One of only 12 Centers of Excellence across the country, each tackling a different, specific data science challenge (Dr. Santosh Kumar)

- Systems Testing Excellence Program (STEP) – Advancing the science and industry best practices of software testing through work with FedEx and the Department of Defense (Dr. Robin Poston)

- SENSORIUM – Delivering the next generation chemical sensors through multidisciplinary, fundamental discovery combined with early stage development. (Dr. Erno Lindner)
Meet Our Team

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