

# **Creating Synergies: A Framework for Research Excellence at Mississippi State University**

*Mississippi State University's legacy and success is built on a foundation of learning, service, and research. We are helping advance Mississippi and the world as reflected by the Carnegie Foundation recognizing MSU as an elite research university with the highest level of research activity. MSU recognizes the magnitude of challenges facing our state, nation, and world. We welcome these challenges as opportunities to make a positive impact with real world solutions.*

*Our research opportunities embrace and compliment the goals contained in Mississippi State's strategic plan. Working together, we can achieve our vision by creating an entrepreneurial ecosystem within which to grow research, scholarship and creative activities. We will build on our legacy as one of the nation's preeminent land-grant institutions, while at the same time embracing a diverse and multifaceted role as a comprehensive research university in the 21st Century.*

*Our people are our greatest asset. With our people working together, we can find synergies that will enable solutions to improve quality of life for the state, our nation, and across the globe. Our approach will connect faculty, staff, and students across disciplines and will foster collaboration among departments, colleges, centers, and institutes. These opportunities also recognize a funding environment that will be highly reliant on large, transdisciplinary efforts in the future. This diversity of research and creative endeavors at MSU is a fundamental strength that has led to national and international recognition, and will do so even more in the future. MSU has a long-standing commitment to global activity and has placed a renewed focus on internationalization of its research, academic, and outreach programs.*

To take advantage of innate strengths of the university and new opportunities for local, national, and international leadership, MSU must wisely and strategically invest resources. To ensure success, we will use a deliberate approach based on principles of continuous quality improvement to help identify opportunities, organize our efforts, and measure success. In this document, we have identified **opportunities for synergy** that will drive decisions over the next five years as Mississippi State continues to serve its essential role as a change agent at home, across the nation, and around the world. These opportunities for synergy will also provide students with an academic experience that is second to none combining classroom concepts with applied research designed to solve real-world issues.

# **Opportunities for Synergy**

## Addressing Disparity

In a state that faces many challenges to availability and affordability, MSU will take a leadership role in addressing and improving:

- Quality Education
- Better Health
- Nutritious Food
- Economic Opportunity
- Social Disparities
- Community Engagement

## Bringing Autonomy to the Mainstream

Autonomous mobility has been a historic strength, and MSU will capitalize on this history to become internationally prominent in:

- Aerial, Terrestrial, and Subsurface Applications
- Robotics
- Artificial Intelligence
- Augmented reality
- Precision Agriculture

## Securing our Future

Security is a fundamental human need, and comes in a wide range of forms. MSU, as a land-grant university, recognizes its role in performing research that enhances resilience and assures our future, and will focus upon:

- Information Security
- Energy
- Food
- Water
- Public Health and Safety
- Infrastructure

## Leading in the 21<sup>st</sup> Century Economy

As the state's leading university, MSU plays a prominent role in economic development. MSU will continue to expand this role through research and corporate engagement that focuses upon:

- Advanced Manufacturing/Materials
- Sustainable/Renewable Products
- Entrepreneurship and Family Business
- Logistics
- 21<sup>st</sup> Century Technologies

All of these areas have substantial existing or potential inter-relationships; MSU will embrace the synergy that will come from collaboration within and across these priority areas.

## **Continuous Quality Improvement**

Because MSU's research portfolio is significant, leading effective change requires a deliberative approach. We need to determine:

- Where are we now?
- Where are we going?
- How do we get there?

The questions of where we are now and where we are going need to be addressed quantitatively and qualitatively, and in a collaborative fashion. And our progress needs to be periodically assessed. We will address these items by looking at funding success, impact on the scientific community in terms of scholarship, and overall impact on solving the problems that are so critical for society. Assessment will take place on a periodic basis and will do so in a collaborative way that engages all segments of the academic and research enterprise.

We will utilize various strategies to advance our research, scholarship, and creative activity portfolio and move the needle on making an impact on society with our work. These strategies will be designed, developed and deployed collaboratively, and refined, adjusted and changed based on an assessment process that is also collaborative.

## **Portfolio Advancement Strategies**

Building on the foundation of research support currently in place, MSU will use a collaborative approach to develop and refine strategies for creating synergies and advancing our research, scholarship and creative activity portfolio. These strategies may include the following:

- Investing in Faculty Recruitment, Retention and Support
  - Incentivize research-productive faculty with salary increases
  - Hire faculty with expertise that aligns with opportunities
  - Increase expectations for faculty research productivity
  - Increase support for high-risk/high-reward endeavors
  - Increase support for proposal development and submission, including grant writing in these areas
  - Invest in relevant faculty professional development
  - Incentivize participation of current faculty based on opportunities
  - Evaluate promotion and tenure policies that can hinder success in achieving these goals
- Promoting Interdisciplinary Teams
  - Use of chairs and professorships to hire internationally prominent faculty to promote and lead the growth of synergies
  - Work together to build performance outcomes for faculty on interdisciplinary teams
  - Explore joint faculty appointments across colleges and departments
  - Develop faculty team science and team dynamics skills

- Communicating our Strengths and Contributions
  - Share our success stories with media to illustrate the innovation, capability, and the student experience Mississippi State has to offer
  - Develop a high-end digital marketing-oriented presentation of the MSU research, scholarship and creative activity portfolio
  - Supporting faculty in learning to communicate research to multiple audiences
  - Identifying ways Research Can Impact Policy Development and Changes at the State and National Levels
  - Foster a scholarship of engagement
  
- Strengthening Collaboration between Centers and Academic Units
  - Engage deans and department heads in center evaluation
  - Involve centers in faculty hiring
  - Increase awareness across centers and colleges of new hires
  - Market centers to academic units
  - Address F&A distribution challenges
  
- Creating an Innovation Ecosystem
  - Recognize the value and necessity of funded research
  - Recognize entrepreneurship as a vital function of the university
  - Reduce real and perceived barriers across campus
  - Increase broader adoption of technology and tools to collaborate and remain competitive
  
- Prepare students and researchers with knowledge to take advantage of opportunities for synergy
  - Develop opportunities to collaborate among researchers and educators on nascent fields of study that emerge from synergistic research and educational programs
  - Supporting and Fostering Graduate and Undergraduate Research
  - Integrating Global Research and Education to Achieve Results
  - Partnering with K-12 and Community College Programs to Develop a Pipeline of Talent, and Serve as a Change Agent for Education