



MARSHALL'S STRATEGIC VISION - *Our Bold Constellation for the Future*

Status Update For: Advance economic development through the Marshall Institute for Interdisciplinary Research and other initiatives



Overview

Creation of the Marshall Institute for Interdisciplinary Research

Throughout the Marshall University Strategic Initiatives, specific objectives have been established for enhancing research and scholarship to evolve a sustainable platform for enhancing research productivity and funding, while elevating Marshall's stature and regional influence on economic development. Strategic investments have been made by the university, and Marshall is now poised to leverage these resource investments through the creation of the [Marshall Institute for Interdisciplinary Research](#) (MIIR). Similar institutes are features of many successful research universities, and the formation of this endowment-based institute at Marshall will have a dramatic, timely and strategic impact by developing a self-sustaining research enterprise that will spur economic development through the attraction of a cadre of nationally prominent researchers dedicated to producing breakthrough discoveries that will launch new business ventures. The institute will catalyze interdisciplinary research activity across the university and generate revenue for the university through a commitment to commercializing viable intellectual property. Perhaps as importantly, investments in MIIR and the hiring of experienced, successful researchers within the institute will have significant collateral benefits for research-active, tenure-track faculty members at the university and will accelerate their competitiveness for future external grant funding.

MIIR is a major focus of Marshall's Research Trust Fund Plan, which has the following goals:

Plan Goal 1: *Increase the number of full-time, grant funded researchers at Marshall University by a minimum of nine scientists within the next five years.*

Potential Outcome(s):

- Establishment of MIIR as a non-profit 501(c)3 entity within the Marshall University Research Corporation

To learn more visit this Strategic Initiative at:

<http://www.marshall.edu/president/strategic/InterdisciplinaryResearch.asp>

- Increase in full-time research-active scientists directly employed by MIIR and the Marshall University Research Corporation
- Increase in the number of research-active faculty holding traditional academic appointments within the university
- Increase in the number of competitive grant submissions and grant-funded researchers
- Increase in total competitive grant funding for Marshall University
- Increase in overall research funding for programs and facilities at Marshall University
- Increase in patent filings
- Increase in licensed patents and business startups
- Collateral (indirect) research productivity gains in departments and colleges elsewhere in the university

Strategies for Achieving Goal:

- Recruit and hire a research-active MIIR senior scientist/director who will have the following responsibilities:
 - ✓ Recruit, hire and build an interdisciplinary team of top-tier research scientists required to fulfill the mission of MIIR
 - ✓ Recruit, select, charter and chair a Council of Scientific Advisors (a “RAND-like” entity of national and international innovators) to serve MIIR
 - ✓ Develop and implement the scientific vision and plan for the institute, consistent with its financial development
 - ✓ Develop the institute policies for reinvestment of recaptured compensation and indirect cost distribution generated by research activities within the institute
 - ✓ Work with the university president, the senior vice president for development/CEO of the Marshall University Foundation and the vice president for research to increase the MIIR endowment fund
 - ✓ Maintain a vigorous externally-funded research program
 - ✓ Manage the goals and performance of the institute staff
- Foster research collaboration between MIIR and faculty within the university
- Increase the competitiveness of research-active faculty for grant funding by leveraging the resources (e.g., scientific expertise, equipment, etc.) developed within MIIR
- Focus the majority of research investments in applied areas of research that have the potential to yield patentable discoveries
- Retain the services of a research/technology transfer expert to improve/accelerate discovery disclosure reporting, provide patent assistance for scientists, develop external technology partnerships and accelerate new venture startups

Progress Measures:

- Hiring of MIIR senior scientist/director

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- Number of new, full-time research-active scientists directly employed by MIIR and the Marshall University Research Corporation on an annual basis and the number of new scientists added
- Recruitment of Council of Scientific Advisors members and the constitution and activation of the council
- Number and value of successful competitive grant submissions by year; number of grant-funded researchers by year; and the trend for both metrics over the previous five years
- Total value of competitive grant funding within MIIR and the trend over the previous five years
- Overall research funding for programs and facilities involving MIIR by year and the trend over five years
- Increase in the number of new MIIR patent disclosures and filings per year over a five year continuum
- Increase in the number of MIIR patents licensed and the number of business startups on an annual basis and over a five-year continuum
- Growth in similar metrics for the university *per se* that reflect collateral (indirect) research productivity gains in departments and colleges elsewhere in the university
- Number of new research-active faculty holding traditional academic appointments that have been added annually to the university and the net retained

Time Interval for Assessing Progress: 2008–2013 with annual summaries of progress

Plan Goal 2: *Develop interdisciplinary research clusters and focus endowment investments in research areas that:*

- ⊙ *Build on existing institutional strengths and add to the critical mass of researchers;*
- ⊙ *Involve multiple grant funding agencies/sources with reasonable probability for the awarding of funding on an ongoing, competitive basis; and*
- ⊙ *Offer the potential for breakthrough, patentable discoveries that will enhance research-based economic development.*

Potential Outcome(s):

- Assuming private donor gifts will support the development of two research clusters, the university's directed research endowment plan will be concentrated initially on one or two areas of interdisciplinary research that are strengths at Marshall, resulting in research clusters in biomedical/biotechnology/bionanotechnology or/and transportation technology/logistics
- Characterization of the complex interactions between environmental and genetic factors (both genomic and epigenetic) responsible for the chronic diseases in Appalachia
- Increased product development in one or more of the following areas: bio-manufacturing and niche areas of applied biomolecular research and bionanotechnology, which include

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the development of nanostructured, nanocrystalline and advanced electronic materials (DNA and RNA), nanostructured materials for cellular energy capture and delivery, bioenergy processes that yield alternative fuels/energy production, functionalized nanostructured materials for chemical-biosensor applications, nanomaterials in environmental pollution detection, monitoring and remediation, and functionalized nanostructures for targeted therapeutic agent delivery in medicine

Strategies for Achieving Goal:

- Cultivate donors interested in gifting to one or both of these research areas
- Attract and hire core research scientists with the expertise and commitment to contributing to research advances in these priority areas
- Build and advance the development of strong, interdisciplinary research teams within MIIR and the university, and develop advantageous collaborations across the university and with researchers at other institutions both domestically and internationally

Progress Measures:

- Annual private gift totals supporting research at Marshall and matched by the West Virginia Research Trust Fund
- Total endowment funds dedicated to research in biomedical/biotechnology/ bio-nanotechnology/bioenergy
- Total endowment funds dedicated to research in transportation technology/logistics
- Hiring and retention of new full-time research scientists working in these areas
- Productivity of assembled interdisciplinary research teams as measured by grant activity, personnel hiring, peer-reviewed publications and patent applications

Time Interval for Assessing Progress: 2008–2013 with annual summaries of progress

Plan Goal 3: *Increase the overall non-base budget for research and the number of non-base funded positions within Marshall University's research enterprise, while increasing the retention and employment of college graduates.*

Potential Outcome(s):

- Increase in redirected F&A funding generated by MIIR scientists to support research within MIIR
- Increased employment of college-educated research technicians and research support personnel
- Increased employment of research associates and postdoctoral fellows
- Increased employment of personnel skilled in business, financial and entrepreneurial aspects of new venture startups emanating from licensed research patents
- Increased graduate (masters and doctoral) student employment (paid tuition/fee waivers and enhanced stipend support)

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- Increased undergraduate student participation in research
- Increased internal competitive mini-grant funding for undergraduate students engaged in research
- Increased overall direct and indirect employment within the bioscience sector through research conducted at Marshall University

Strategies for Achieving Goal:

- To generate greater discretionary revenues to invest in employing additional research personnel, 75% of F&A funds earned from grants will be returned to MIIR scientists for investment in needed personnel and equipment and 100% of recaptured salaries from grants will be returned to MIIR scientists for the same purpose
- Increase personnel support from grants and contracts
- Participate in the growth/expansion of existing private-sector businesses through intellectual capital creation and retention
- Attract new business investment in research-related enterprises
- Increase philanthropic support for research through endowment and non-endowment gifts

Progress Measures:

- Level of annual discretionary revenues for research investment
- Formulation of five-year business plans with defined accountability measures for making strategic and sustainable research development investments
- Direct and indirect employment growth attributed to the university's research enterprise

Time Interval for Assessing Progress: 2008–2013 with annual summaries of progress

Plan Goal 4: *Increase the number of Ph.D. programs at Marshall University by at least one program.*

Potential Outcome(s):

- One or more new Ph.D. programs in high-demand fields

Strategies for Achieving Goal:

- Generate a self-sustaining funding base for the operation of one or more new Ph.D. programs
- Examine areas of opportunity, evaluate and prioritize them
- Assemble the core faculty and physical resources required to deliver a program of excellence

Progress Measures:

- Funding, leadership, a comprehensive business plan and an action plan for the start-up and operation of the program

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- Curriculum development and approval
- Implementation of the program and Ph.D. student enrollment
- Graduation of degree candidates and engagement of graduates in research-related career paths

Time Interval for Assessing Progress: 2013–2015 with annual summaries of progress

Plan Goal 5: *Improve technological digital reference support for internationally competitive research programs.*

Potential Outcome(s):

- Campus Internet-2 access for inter-institutional database sharing
- Campus-wide access to National Supercomputing Resources
- Increase data warehousing and cataloging capacities
- Increase digital research journal subscriptions in priority fields
- Improve the Marshall University Research Corporation service platform and the array of automated/integrated electronic services (e.g., e-purchasing, e-PAR's, etc.)

Strategies for Achieving Goal:

- Increase annual and one-time funding available for technology resource and infrastructure development through a combination of grants, and public and private funding
- Increase annual and one-time funding available for digital information (e.g., library holdings) and resources through a combination of grants, and public and private funding
- Continue efforts to expand the integrated database capabilities and utilities provided by Marshall's enterprise software platform

Progress Measures:

- Amount of increases in annual and one-time funding available for technology resource and infrastructure development through a combination of grants, and public and private funding
- Annual funding increases in base and one-time funding available for digital information (e.g., library holdings) and resources through a combination of grants, and public and private funding
- Evidence of expanded database capabilities and services provided within the Marshall University Research Corporation by Marshall's enterprise software platform

Time Interval for Assessing Progress: 2009–2015 with annual summaries of progress

Plan Goal 6: *Expand the physical infrastructure available to support research in these and related fields.*

Potential Outcome(s):

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- New ~\$60 million academic and research building (Marshall University Applied Engineering and Advanced Technology Research Complex)
- Increase in state-of-the-art research laboratory space to support the continued development of the research enterprise
- Expansion in bioengineering and biomedical engineering research base

Strategies for Achieving Goal:

- Determining location of the building (Current thinking is that this building will be located between the Byrd Biotechnology Science Center and the engineering laboratory building on the Huntington campus)
- Obtaining funding for planning this capital project
- Obtaining funding for the construction of this capital project through a combination of grants, and public and private sources

Progress Measures:

- Acquisition of funds for planning
- Acquisition of funds for building construction
- Acquisition of base funds for opening and operating this building

Time Interval for Assessing Progress: 2011–2015 with annual summaries of progress

Update

MIIR has been incorporated as a 501(c)3 subsidiary of the Marshall University Research Corporation. Its growth and sustainability will be provided by the following sources of funds:

- \$3 million from the State's Eminent Scholars Recruitment and Enhancement (ESRE) program
- Spending at 4.5% from an initial \$5 million allotment to the MIIR endowment provided by Marshall's private match to the ESRE grant
- Fundraising to earn the \$15 million state match from the West Virginia Research Trust Fund (Fundraising is targeted at \$20 million. The contributions will accumulate over five years, and the overmatch will be available to draw down any remaining funds in the trust fund after year five. As the state and private funds accumulate in the MIIR endowment, the spending rate on endowment proceeds will be reviewed and adjusted annually to ensure that the principal is not invaded. The endowment proceeds spending rate is estimated to average 4.5% annually.)
- At the projected grant activity levels, return of 65% of the F&A to MIIR will make significant additional funding available

MIIR staffing commenced with the hiring of a director/lead research scientist, Dr. Eric Kmiec, and the first staff scientist, Dr. Joan Wilson. The director is responsible for advancing his own nationally recognized research program and has the primary responsibility of developing the scope and stature of MIIR through the recruitment of additional research scientists and

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personnel. The focus is on hiring nationally prominent researchers with a proven track record in entrepreneurship and research development.

In years three and four, the balance of the initial nine members of the scientific staff will be hired. By year five, the MIIR endowment will have reached the \$36 million target, and hiring of additional scientists will be possible, while preserving the endowment principal.

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