



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

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### Overview

Advancing human intellectual capital development and economic development are inseparable prerequisites for progress in the 21<sup>st</sup> Century. According to [2003 U.S. census data](#), fewer than 17% of West Virginians 25 years of age or older are college educated. The national average is above 25%, which serves to underscore the critical imperative for the State of West Virginia to raise the educational achievement level of the state's workforce in the coming decades and to [retain these people](#) in the workforce.

The term "intellectual capital" encompasses the knowledge, talent, and skill levels of the workforce and the capacity of that workforce to adapt and transition skill sets as new advances and innovations alter the global marketplace. This term also includes the vast warehouse of stored knowledge and information as well as know-how embedded in information repositories and business networks and organizations.

Increasingly, the demand for highly skilled knowledge workers is rising, while the demand for middle-skilled workers engaged in repetitive/sequential tasks or knowledge work is declining due to automation and overseas outsourcing. Research- and technology-based economic development requires highly skilled knowledge workers, ranging from doctoral- to college-educated workers. These individuals are engaged in the genesis of new knowledge, particularly in applied fields of discovery that can be commercialized and advance new enterprise developments. The research laboratories involved are incubators for new highly skilled knowledge workers, which include undergraduate students, graduate students and postdoctoral fellows engaged in research under the tutelage of senior research scientists and mentors.

In this new era, the "Age of the Commerce of Ideas," the expectations of the workforce differ dramatically from that of the 20<sup>th</sup> Century Industrial Age. Interdisciplinary integration, creative thinking and innovation predominate in this paradigm over the former emphasis on assembly-line thinking and processes. Areas of opportunity for Marshall University to catalyze research- and technology-based economic development are considerable; however, focusing and building on the strengths of the University will be critical to the success of this endeavor. One area of focus that leverages existing strengths is research that contributes to the growth of the bioscience employment sector in West Virginia. According to a [2008 study](#), the Bioscience Sector contributes \$7.2 billion annually to the state's economy. Patented breakthrough discoveries at Marshall (see below) are already developing into new business ventures and high-value job growth in the Advantage Valley corridor.

The goals of this signature initiative are to advance:

- Educational Innovation – expanding/elevating the intellectual resource base of the state & region
  - ♦ Developing and Maximizing Human Potential
- WV Intellectual Infrastructure Development
  - ♦ Expanded "Knowledge Economy" workforce
- Human Capital Expansion
  - ♦ *Advanced Student Learning and Success*
  - ♦ *Graduates Educated for 21st Century Thinking and Learning*
- Healthy Communities That Work, Adapt and Prosper
  - ♦ Reduced morbidity and mortality from preventable diseases
    - ♦ Civically responsible, engaged citizenry

To learn more visit this Strategic Initiative at:

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

## Priority Areas

- Establish and Fully Fund the Marshall Institute for Interdisciplinary Research (MIIR)

- ◆ Synopsis
- ◆ *Alignment with State Priorities*
  - ◆ State Economic Goals
  - ◆ Vision 2015
- ◆ *Infrastructure Development*
  - ◆ *Robert C. Byrd Biotechnology Science Center*
    - ◆ Biotechnology Facility - Videos
      - Overview Video
      - Dedication Video
      - Dedication Highlights Video
      - Visual Tour
    - ◆ Internet-2 Cyberinfrastructure
    - ◆ *Forensic Science Annex*
      - ◆ Forensic Science Center Tour
      - ◆ Forensic Research Video
      - ◆ Forensic Symposium
      - ◆ Interview with Terry Fenger –Director of Forensic Science
      - ◆ Forensic Science Center: Biotechnology in action
    - ◆ Applied Engineering and Advanced Technology Complex
  - ◆ *Funding Sources*
    - ◆ *ESRE Grant: \$10 million public-private funds (\$5-million authorized for MU in the 2007 Budget Bill)*
    - ◆ *Public Investment – WV Research Trust Fund*
    - ◆ *Private Philanthropy – Five-Year, \$20-million Goal Established*
  - ◆ *MIIR Plan*
    - ◆ *Economic Impact Summary*
    - ◆ *Endowment Funding Plan*
    - ◆ *Formation of MURC 501(c)3 Subsidiary*
    - ◆ *Core Scientific Personnel*
      - ❖ Senior Research Scientist/Institute Director
      - ❖ *Research Scientists (8)*
  - ◆ *MUBOG-Approved Strategic Plan for MIIR Research*



- **Research-(Technology-) Based Economic Development**

Since 2005, patented research discoveries at Marshall University have created new business ventures and new employment opportunities in West Virginia. Bioscience and transportation sectors of the economy have been the principal beneficiaries. These advances herald a new era in the Tri-State region and the early-stage realization of high-value job growth derived from research conducted at Marshall University. Commercialization of Marshall University technology has taken place at the following start-up companies:

- Vandalia Research – Licensed large-scale DNA synthesis technology. Vandalia recently successfully closed a second round of venture financing.
- Ecer Technologies, LLC - Licensed technology for Ceramic Light (LECD).
- Progenesis Technologies® – Licensed a biomanufacturing process for alginates, a commercially important class of polysaccharides currently extracted from natural sources by a laborious process.
  - ◆ MIST – Medical Information Systems Technology, LLC markets a unique software package for monitoring preeclampsia (high blood pressure for pregnant women.)
- Plan, pilot and Launch the Marshall/West Virginia Science Technology Engineering Math (S.T.E.M.) Academy

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