



West Virginia INBRE

IDEA Network of Biomedical Research Excellence

Opportunity | Experience | Discovery

What is INBRE?

The IDeA Network of Biomedical Research Excellence (INBRE) is a competitive federal research program established by the National Institutes of Health in 2004.

Investigators at Marshall University—in partnership with researchers at West Virginia University—have been awarded significant INBRE funding to help increase West Virginia's competitiveness for federal biomedical research funding.

Through a network of partner institutions, the program impacts biomedical research at all levels and in all regions of the state.

Goals of the program in West Virginia are to:

- Help build biomedical research expertise and capacity;
- Assist faculty at the state's undergraduate institutions with development of biomedical research programs and competitiveness for external funding;
- Provide student research opportunities; and
- Help train the state's future workforce in science and technology.

Scientific Focus

The multidisciplinary research theme for INBRE in West Virginia is cellular and molecular biology, with a particular focus on cardiovascular disease and cancer.



ECONOMIC DEVELOPMENT IMPACT

In addition to resulting in life-changing discoveries and innovations, biomedical research through the INBRE program also serves as a catalyst for economic development, improving the quality of life for everyone.

Since 2004, the INBRE project in West Virginia has been awarded more than \$35 million in federal funds, resulting in an estimated overall economic impact of more than \$80 million.

Appalachian Cardiovascular Research Network (ACoRN)

ACoRN is a network of INBRE investigators at colleges and universities across West Virginia—all with expertise in cardiovascular disease and genetic analysis.

The scientific goal of the ACoRN research project is to discover genes that cause or predispose people to cardiovascular disease. This investigation is particularly relevant in West Virginia, which is fifth in the nation in deaths due to heart disease, first in the percentage of people who are overweight and first in the prevalence of diabetes.

INBRE funding for ACoRN totals \$1.8 million over five years.

Current ACoRN Projects

Marshall University

Genetic basis of familial combined hyperlipidemia:
Don Primerano, Ph.D.

West Liberty University

Molecular mechanism of atorvastatin: Robert Kreisberg, Ph.D.

Regulation of human endothelial cell genes by USF1:
Kenneth Cushman, Ph.D.

West Virginia University

Diet, gene expression and endothelial dysfunction in cardiac patients:
Sarah Knox, Ph.D.



Photo courtesy of Shepherd University.



Major Research Projects

These INBRE projects are based at a network of undergraduate institutions around the state, with mentors at either Marshall University or West Virginia University.

The undergraduate institution investigators were selected competitively for funding, following peer review by experts in the relevant fields of scientific study.

Each network research project is funded by INBRE up to \$125,000/year for three years.

Funded investigators must meet milestones related to presentation of research findings at state and national meetings, manuscript submissions and grant applications.

Current Major Research Projects

Alderson-Broaddus College

PI3K, AKT and ERR- α pathways in flavonoid-inhibiting tumorigenesis: Yi Charlie Chen, Ph.D. (Yon Rojanasakul, Ph.D., West Virginia University)

West Liberty University

Kinetic and molecular dynamics correlations in Cytochrome P450 2C9 mutants: Jarrett Aguilar, Ph.D. (Peter Gannett, Ph.D., West Virginia University)

Molecular actions of atorvastatin on progression of atheromatous plaques: Robert Kreisberg, Ph.D. (Nalini Santanam, Ph.D., Marshall University)

West Virginia State University

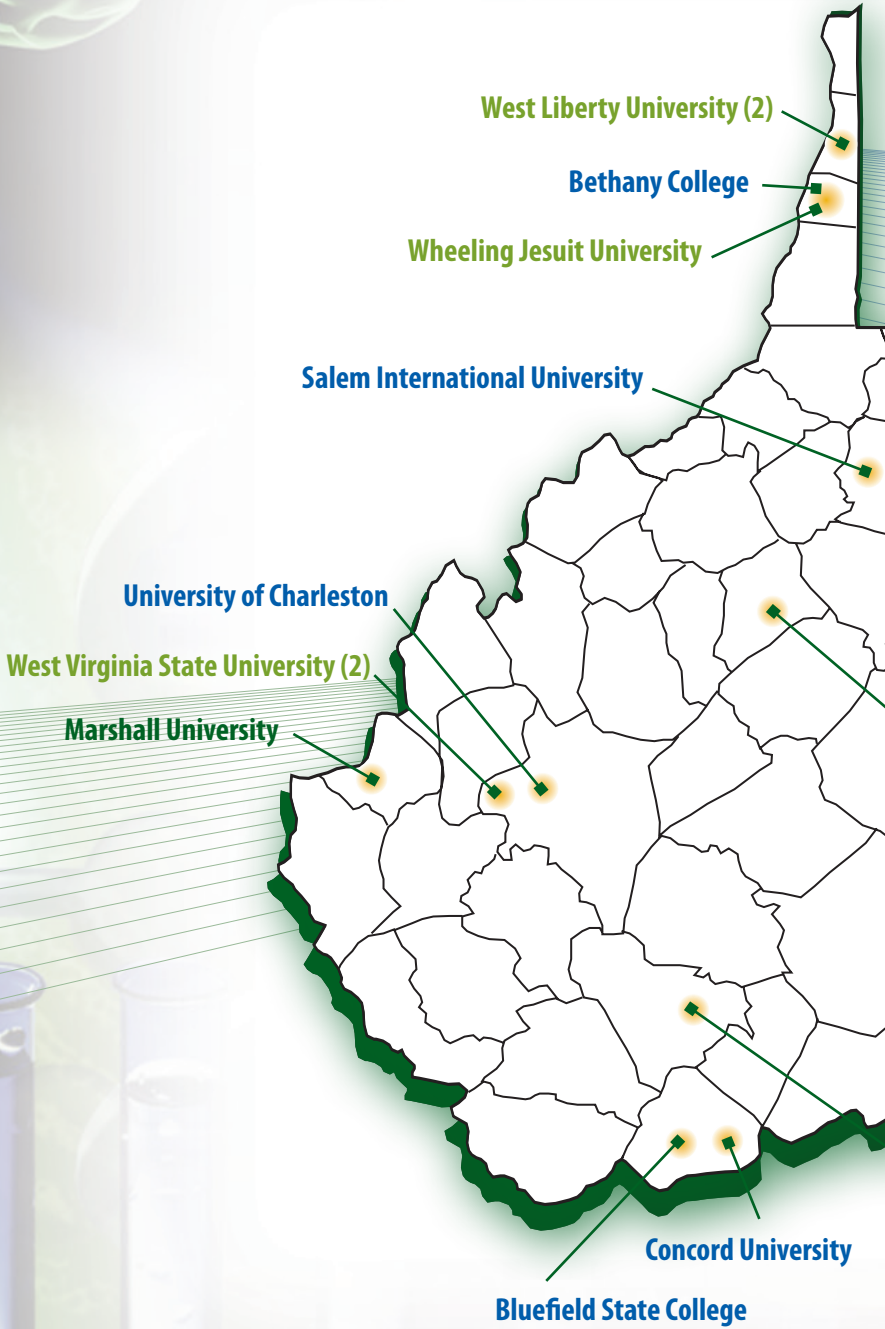
Sex steroid hormones and epigenetics in meningiomas: Gerald Hankins, Ph.D. (Maiyon Park, Ph.D., Marshall University)

Mechanotransduction, intracellular signaling and vascular biology: Robert Harris, Ph.D. (Eric Blough, Ph.D., Marshall University)

Wheeling Jesuit University

A mechanism for c-Src activation in ovarian cancer: Robert Shurina, Ph.D. (Scott Weed, Ph.D., West Virginia University)

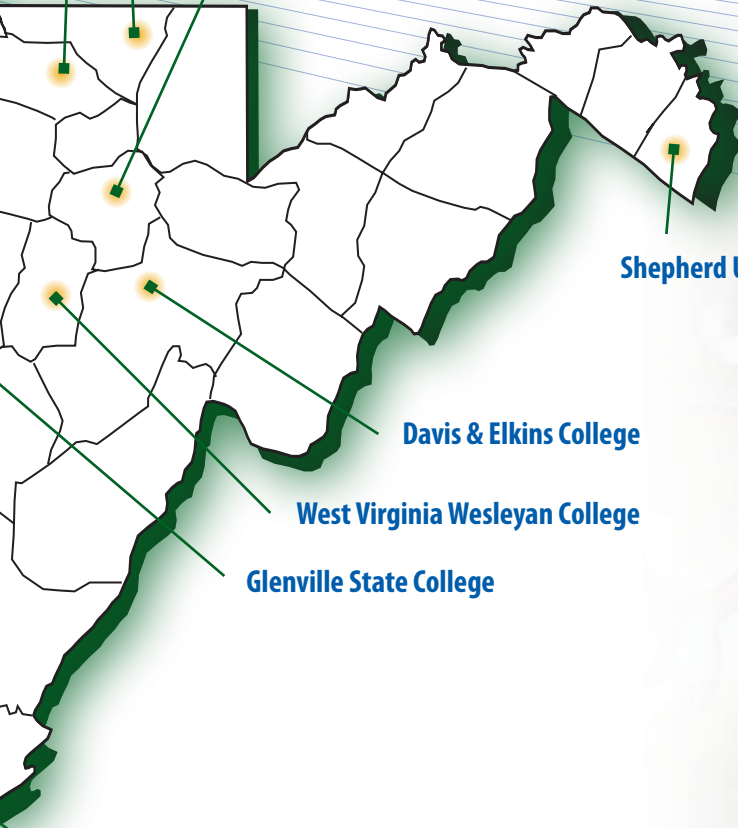
West Virginia INBRE Participating Institutions



Fairmont State University

West Virginia University

Alderson-Broaddus College



Shepherd University

Davis & Elkins College

West Virginia Wesleyan College

Glenville State College

Mountain State University

LEAD Institutions
MAJOR Research Projects
PARTNER Institutions

Faculty Research Development Award Program

This INBRE program helps faculty at the undergraduate institutions enhance their research skills by providing funding for pilot projects.

These projects are funded for one year for up to \$50,000 each.

Funds from this program also are available for workshops and professional development, for travel to present research results at national and international meetings, and for equipment purchases.

Current Faculty Research Development Projects

Alderson-Broaddus College

Kaempferol inhibits angiogenesis in prostate cancer cells:
Haitao Luo, Ph.D.

Bluefield State College

Effect of stress on pathogenesis and immunity during Chlamydia genital infection: Tesfaye Belay, Ph.D.

Shepherd University

Modeling, verification and simulation of molecular biology system processes – Petri Nets: Seung-yun Kim, Ph.D.

University of Charleston

D-Cycloserine transdermal gel formulation development:
Gagan Kaushal, Ph.D.

Investigating the allosteric signaling in guanosine monophosphate synthase: Rebecca Linger, Ph.D.

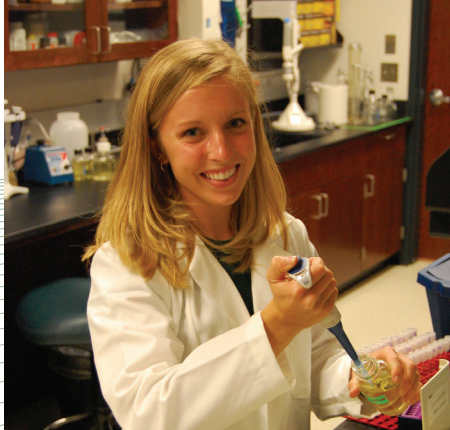
West Liberty University

Regulation of human endothelial cell genes by USF1:
Kenneth Cushman, Ph.D.

West Virginia Wesleyan College

Isolation of potential lead compounds from nontraditional sources: Luke Huggins, Ph.D.

Allelic exchange mutagenesis in Borrelia burgdorferi:
Melanie Sal, Ph.D.



Summer Research Program

This component of the INBRE program provides students at the undergraduate institutions research opportunities in labs at Marshall University and West Virginia University.

During the nine-week program, participants work on a biomedical research project with mentors and graduate students at one of the lead institutions.

Each student in the program is paid a salary of \$4,200.

The program culminates in a Summer Research Symposium with oral and poster presentations of research findings by participants, and a keynote address from a nationally recognized speaker.

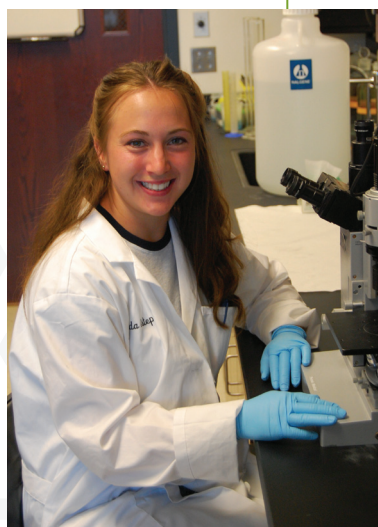
Summer Research Program student projects have focused on a variety of topics, including genes associated with high blood cholesterol; how cancer cells make new blood vessels; neurobiology regulating food intake; and how air pollution contributes to high blood pressure.

Current Summer Research Program Institutions

Alderson-Broaddus College
Bethany College
Bluefield State College
Concord University
Davis & Elkins College
Shepherd University
University of Charleston
West Virginia State University
West Virginia Wesleyan College
Wheeling Jesuit University

INBRE Summer Fellow

Dawn Turner, Ph.D., Mountain State University



Health Sciences & Technology Academy - INBRE

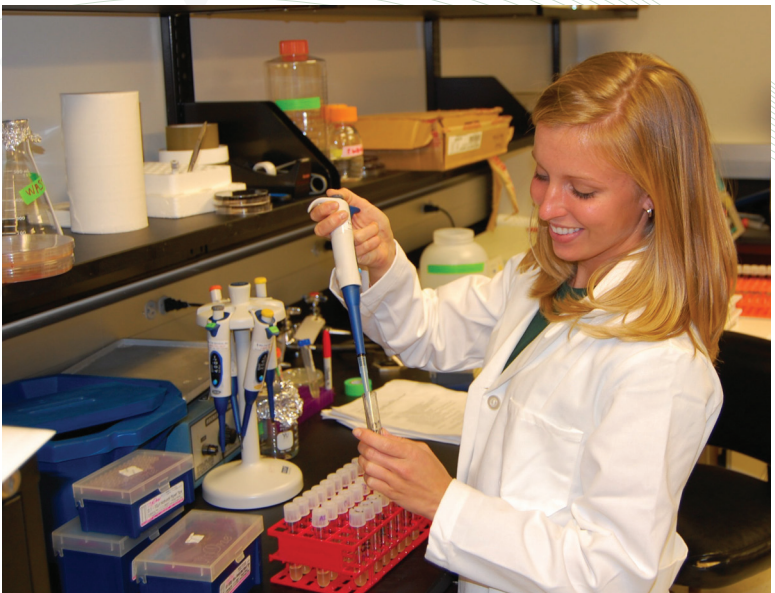
The Health Sciences & Technology Academy (HSTA) is a community-based math and science program for ninth-12th grade students in 26 West Virginia counties. The program targets minority and under-represented students in rural communities, with the goal of encouraging them to pursue a college education in the health sciences.

HSTA-INBRE is a “bridge program” designed to recruit students from this pool of high-achieving high school graduates to attend one of the INBRE network institutions in West Virginia.

Former HSTA students who enroll in a network institution are eligible to be paid for their work with mentors in INBRE-funded labs—\$10/hour for a maximum of 20 hours per week for up to 35 weeks during the school year.

Current HSTA-INBRE Institutions

Alderson-Broaddus College
Bethany College
Bluefield State College
Concord University
Fairmont State University
University of Charleston
West Liberty University
West Virginia State University
West Virginia Wesleyan College
Wheeling Jesuit University



West Virginia INBRE Leadership



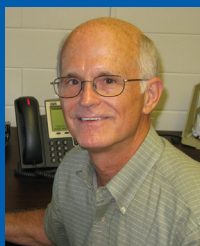
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