

RESEARCH MOVING WEST VIRGINIA FORWARD

Fred L. King
Vice President for Research
West Virginia University



ACADEMIC & RESEARCH PROGRAMS

- Academics:
 - 263 degree programs
 - Over 920 tenure track faculty
 - Over 3,170 graduate students
 - Over 30,000 undergraduate students
 - More than 6,000 degrees, awarded annually - 34% of which were graduate or professional degrees
- Research:
 - WVU conducts 87% of university-based research in West Virginia
 - \$104 million in externally sponsored research expenditures in FY 2017



CARNEGIE DOCTORAL UNIVERSITIES

- R1 – Highest Research Activity
 - West Virginia University, University of Pittsburgh, CMU
- R2 – Higher Research Activity
 - Duquesne University, Ohio University, College of William and Mary
- R3 – Moderate Research Activity
 - Clarkson University, Indiana University of PA, Robert Morris



CARNEGIE RESEARCH CORRELATES

- Ph.D.'s Awarded in
 - Humanities, Social Sciences, STEM, and Other
- Research Expenditures in
 - STEM and non-STEM
- Ph.D. non Faculty Research Staff and Postdocs
- Per Capita (Faculty Member) Research Expenditures
- Per Capita (Faculty Member) Research Staff and Postdocs



RESEARCH FOCUS AREAS

- Energy
- Water Stewardship
- STEM Education K-16
- Gravitational Wave Astrophysics
- Addressing Health Needs in WV and Appalachia
 - A criterion for selection was relevance to the State of West Virginia



ENERGY

- Established the WVU Energy Institute
- WVU ranked 34th in US DoE Funding in 2016
 - Pitt - 65, CMU - 46, Va Tech - 36
- University-Industry-National Lab Partnership Funded
 - Conversion of NG to Hydrogen and Carbon Fibers
- Chinese Energy Investment Corporation Partnership
 - Development of technologies for NG and Coal conversion



WATER STEWARDSHIP

- Institute of Water Science and Security (Basic) and Water Research Institute (Applied)
- Appalachian Freshwater Initiative
 - NSF Supported Statewide Effort Detecting and Understanding the Impact of Contaminants
- Rare Earth Elements in Acid Mine Drainage
 - DoE Funded Effort to Extract RRE's from AMD
- West Run Watershed
 - Local Model for Understanding and Managing Water Resources



IMPROVING STEM EDUCATION

- Center for Excellence in STEM Education
- CodeWV
 - Bringing Computer Science to Students in k-12
- WVU Teach
 - Preparing the next generation of WV Science Educators
- Developing a Robust STEM Workforce for WV
 - Ensuring that Employers find the Skilled Workers to Meet Their Needs



GRAVITATIONAL WAVE ASTROPHYSICS

- NSF Physics Frontier Center for Nanohertz Gravitational Wave Astrophysics (1 of only 10 PFC's)
 - A Partnership with the Green Bank Observatory
- WVU Researchers Part of the LIGO Detection
 - McWilliams (Astronomy) and Etienne (Mathematics)
- Pulsar Search Collaboratory
 - A National Network of High School Students Searching for Pulsars



Improving Health Through Knowledge WVU Health Sciences Center

*WV Forward: “...partnerships,
technology/innovation,
competitiveness, workforce
development...”*

Laura F. Gibson, PhD

**Senior Associate VP for Research and
Graduate Education**





HEALTH SCIENCES

School of
Dentistry

School of
Medicine

School of
Nursing

School of
Pharmacy

School of
Public Health



SIGNATURE PROGRAMS

Cancer

Women &
Children's Health

Critical Care/Trauma

Heart & Vascular

Neuroscience



CANCER INSTITUTE



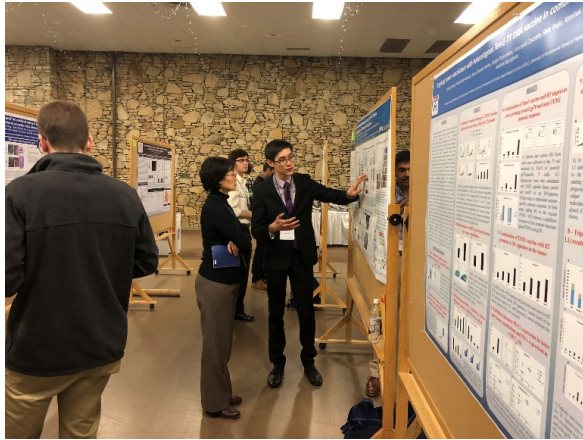
Richard Goldberg, MD
Director, WVU Cancer Institute
Laurence S. and Jean J. DeLynn Chair of Oncology

Manage Cancer in West Virginia and Appalachia

State of the art **clinical care** for patients & their loved ones

Research, education, and service

Address **health disparities**



CANCER INSTITUTE

Partnerships

- Bonnie's Bus for Screening mammography and new Lung Cancer Screening bus travels statewide
- 74 active clinical trials with industry partners

~40 positions approved for clinical recruitment = research partners

Technology/Innovation

- Collaborative trial of a genome-based blood test for colorectal cancer done on Bonnie's Bus

Competitiveness

- *NIH IDeA Program* – TME CoBRE (PI: Lockman – pending final funding decision): supports mentoring teams, 5 junior PIs and cores
- Active WV wide IDeA programs \$113M/\$251M economic impact
- CoBREs in Cancer (year 16), Neuro (completed – Spirou) and Stroke (year 4 Simpkins); pre-proposal call out for next thematic area and most competitive TEAM



WOMEN AND CHILDREN'S HEALTH



J. Philip Saul, MD
Executive Vice President, WVU Children's Medicine
Professor, Department of Pediatrics

**Enhance Child Health through Continued
Focus on Research in Rural and
Underserved Populations**



Regional Impact

WOMEN AND CHILDREN'S HEALTH

88,214

**UNIQUE
PATIENTS**

9,889

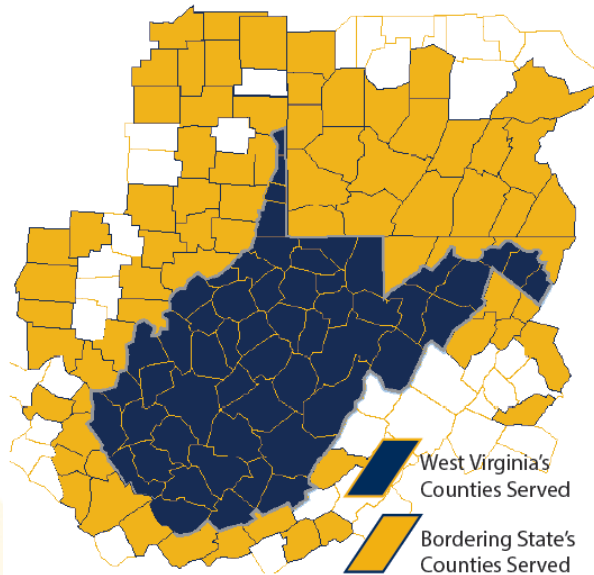
**SURGERIES
PERFORMED**

9,047

**ADMISSIONS &
OBSERVATIONS**

5,850

**BABIES
BORN**



Partnerships

- Environmental Influences on Child Health Outcomes (ECHO)

Technology/Innovation

- Areas of Research: Obesity, Perinatal issues, Neurodevelopment, Respiratory, and Child Health
- First Study Accessing Infant Exposure to Opioids and its Treatment – Fall 2018

Competitiveness

- Awarded Funding from IDeA States Pediatric Clinical Trials Network
- 77 Research Protocols



HEART AND VASCULAR INSTITUTE



Vinay Badwhar, MD, FACS, FACC
Executive Chair, WVU Heart & Vascular Institute
Gordon F. Murray Professor and Chair, Dept. of Cardiovascular &
Thoracic Surgery, WVU School of Medicine

**Provide the Best Possible Heart and Vascular Care
for the People of WV**

Partnerships

- Expand our outreach throughout the state and region with local hospitals and clinics – 13 to date

Technology/Innovation

- First in the nation device for aortic valve repair
- Named or primary in over 10 patent applications
- 10 national clinical trials brought to WVU



ROCKEFELLER NEUROSCIENCE INSTITUTE



Ali Rezai, MD
Executive Chair, Vice President of Neurosciences
Rockefeller Neuroscience Institute
Associate Dean, John D. Rockefeller IV tenured professor in Neuroscience
WVU School of Medicine

**Transform the Lives of People through
Innovation in Patient Care, Research, and
Education**



ROCKEFELLER NEUROSCIENCE INSTITUTE

Partnerships – West Virginia Accelerator (WVA) Innovation Model

- Academic, private, public, industry model of partnership
- Deliver innovative, translational and commercial solutions



Recent Recruitments; **Dr. Randy Nelson** – Chair Neuroscience Basic Science Dept. July 2018 and partner to develop a Neuro undergrad program/pipeline

Dr. Courtney DeVries (with CTSI/CI) – Asst. VP faculty mentoring in Res. And Grad. Ed. Office



WEST VIRGINIA CLINICAL AND TRANSLATIONAL SCIENCE INSTITUTE

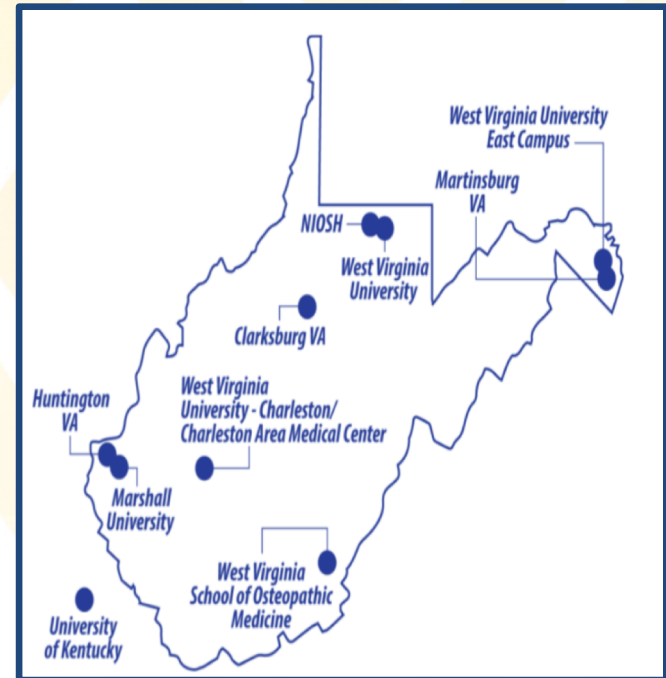


The WVCTSI is an academic home and a catalyst for clinical and translational research that targets priority health areas including addiction and resulting emerging epidemics (such as hepatitis C), cancer, cardiovascular disease, and chronic lung disease

Technology/Innovation

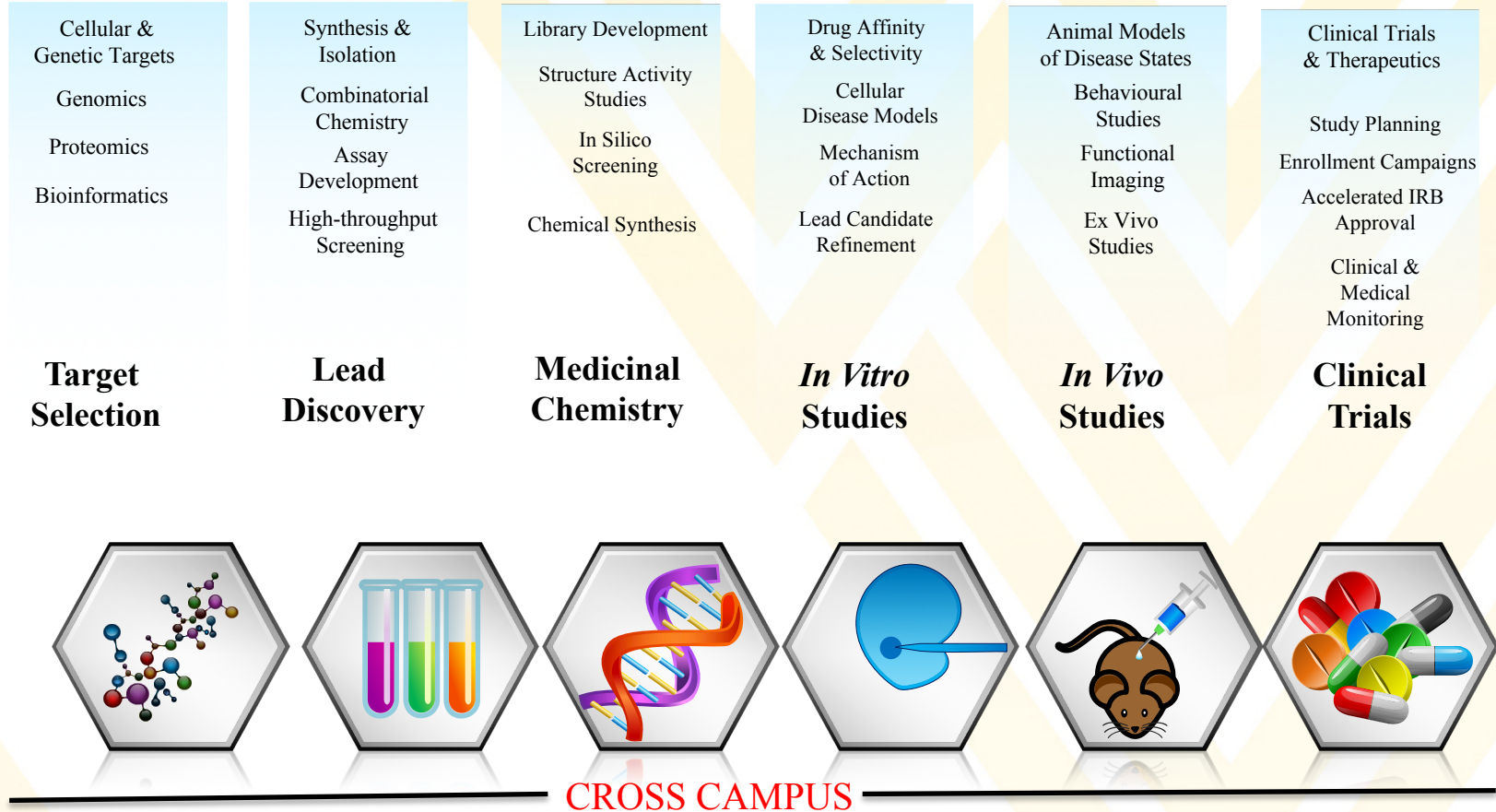
- 86-site West Virginia Practice-Based Research Network – moved “inquiry” into primary care sites
- 64 practice and policy changes
 - R03 and K Award focused writing groups WVCTSI Research Scholars Program and focused mentoring program
 - Launch Pad Pilot Grant RFA to further develop entrepreneurial biomedical research projects
 - Collaboration with the RNI on application to fund deep brain stimulation treatment for opioid addiction
 - Collaboration with WVPBRN on pulmonary rehabilitation clinical trial proposal – involved Cabin Creek Health System’s Grace Anne Dorney Pulmonary Rehab clinic

PARTNERSHIPS



NEW INFRASTRUCTURE

Experimental Therapeutics Platform – continuum of capacity and expertise
Support complex efforts, multiple investigators/teams, in house vs. outsource - IMPACT



Workforce Development: PhD PROGRAMS

School of Medicine

- Biochem./Molecular Biology
- Cancer Cell Biology
- Cellular/Integrative Phys.
- Exercise Physiology
- Immuno/Microbial Path
- Neuroscience
- Clinical & Translational

School of Pharmacy

- Pharmaceutical/
Pharmacological Sciences
- Health Services/
Outcomes Research

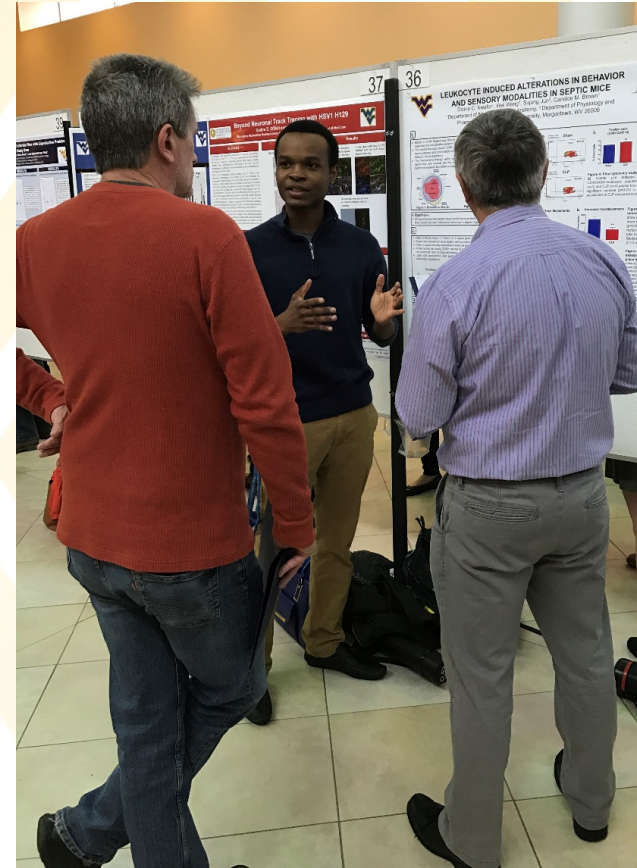
School of Nursing

- Nursing Research

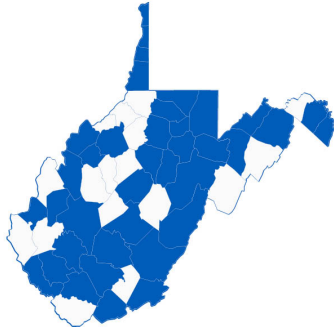
School of Public Health

- Epidemiology
- Occupational/Environmental
Health Sciences
- Social/Behavioral Sciences

~160 PhD students



HEALTH SCIENCES GRADUATE STUDENTS



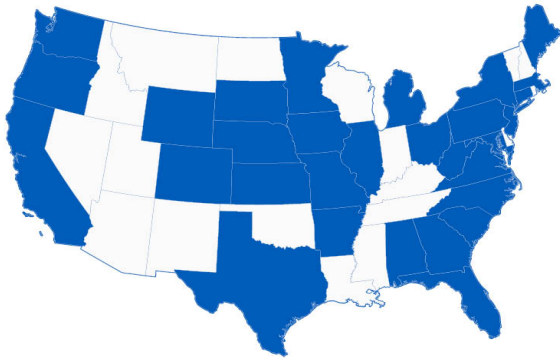
552
Students

30
states

38
counties

61%
WV resident

39%
non-resident



73%
female

27%
male

**~20% of 1st year medical students will be engaged in research
Summer 2018 (MU and SoM)**

**Academic and patient care/community/state missions connected
– research and training**

Questions

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