II. Research and Scholarship with Global Impact

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Overcoming health disparities via RELATIONSHIP EMPOWERMENT

Components
• AA patients 60+ years
• Emphasis on doctor-patient relationship, not just patient
• Web-based intervention

Results
• Patients increased health literacy
• Improved disease management

From: Familiesusa.org
How does one move these researched practices to common practice?

National Center for Supercomputing Applications (NCSA) Blue Waters: FASTEST supercomputer on a university campus

Prof. Ruby Mendenhall: Sociogenomics - Social determinants of health

- Mobile app?
- ...did not have Illinois resources

- Work with sociologists to expand “RELATIONSHIP EMPOWERMENT?”
- ...did not have Illinois resources
Illinois is a powerhouse of discovery, problem solving, innovation, & creative production...

...what’s possible?

II. Research and Scholarship with Global Impact
II. Research and Scholarship with Global Impact: Illinois Has Resources for Innovation

1. Build a System-wide culture of innovation, collaboration, entrepreneurship, and thoughtful risk-taking
2. Identify a set of significant sociotechnical problems that the System is particularly well suited to solve
3. Highlight the centrality of the humanities and arts in the human experience
4. Forge new research development partnerships around the world

Angiogenesis: blood vessel formation

~30,000 equations

Tumor growth

National Center for Supercomputing Applications (NCSA)
II. Research and Scholarship with Global Impact: System-wide Collaborations Become the Standard

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Angiogenesis: blood vessel formation
II. Research and Scholarship with Global Impact: Curing Sickle Cell Disease

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Transplanted stem cells to cure sickle cell disease

Cell transplantation
Donor: P.J. Hearns & Recipient: Kamia Quinones
II. Research and Scholarship with Global Impact: Understanding Tumor Heterogeneity

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Grand Challenge
Tumor heterogeneity:

Some patients respond
Some patients do not

New imaging tools for personalized medicine

Beckman Institute
Carl Woese Institute for Genomic Biology

Oslo University Hospital
II. Research and Scholarship with Global Impact: System-wide Collaboration can Enable Clinical Advancement

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Grand Challenge
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Oslo University Hospital

Jumenna & Sauvage (2013) Nature

Engineering-based Medicine: Urbana
II. Research and Scholarship with Global Impact: Enabling Public-Private Partnership & Commercialization

EnterpriseWorks Incubator

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New imaging tools for personalized medicine

Ensuring patients get the right drugs the first time

Bench

Bedside

Oslo University Hospital
II. Research and Scholarship with Global Impact: Sustaining Scholarship

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Christy Lleras, PhD

Ruby Mendenhall, PhD

Kathryn Clancy, PhD

Human & Community Development
- Diverse families
- Poverty/inequality
- Social justice
- Child & adolescent development

Sociology, Urban Planning & African American Studies
- Race and residential housing patterns
- Social networks
  - Racial microaggressions
  - Genomics

Women’s Studies & Anthropology
- Endometrial function
- Stress, immunity & fertility
- Female reproductive physiology
II. Research and Scholarship with Global Impact: Collaboration sheds light on enduring problems

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- Reproductive consequences of psychosocial stress
- Relationship between social ties, community cohesion, and health for African-American women and girls in high-poverty neighborhoods
II. Research and Scholarship with Global Impact

...what’s possible?

Research collaborations stretching across the System

Tackling Tough Problems:
• Tumor heterogeneity + Personalized medicine
• Curing Sickle Cell

Sustaining scholarship & shedding new light on enduring questions

Bench to Bedside: Public-Private Partnerships