

# University of Illinois Board of Trustees Retreat



**UNIVERSITY OF ILLINOIS**

**URBANA-CHAMPAIGN • CHICAGO • SPRINGFIELD**

**July 20, 2016**

**President Timothy Killeen  
Opening Remarks**

# Strategic Framework

**July 2016**

Timothy L. Killeen  
President

# **Pillar I – An Institution of and for Students**

**Michael Amiridis**  
**Chancellor UIC**

University of Illinois Strategic  
Framework  
Strategic Pillar I: An Institution of and  
for Our Students

UNIVERSITY OF ILLINOIS BOARD OF TRUSTEES RETREAT  
JULY 20, 2016  
UIC CHANCELLOR MICHAEL D. AMIRIDIS, PRESENTER

## **Pillar II – Research and Scholarship with Impact**

**Princess Imoukuede**

**Assistant Professor, Bioengineering UIUC**

## II. Research and Scholarship with Global Impact

Princess Imoukhuede, Ph.D.

Assistant Professor of Bioengineering



University of Illinois  
at Urbana-Champaign

# Overcoming health disparities via RELATIONSHIP EMPOWERMENT

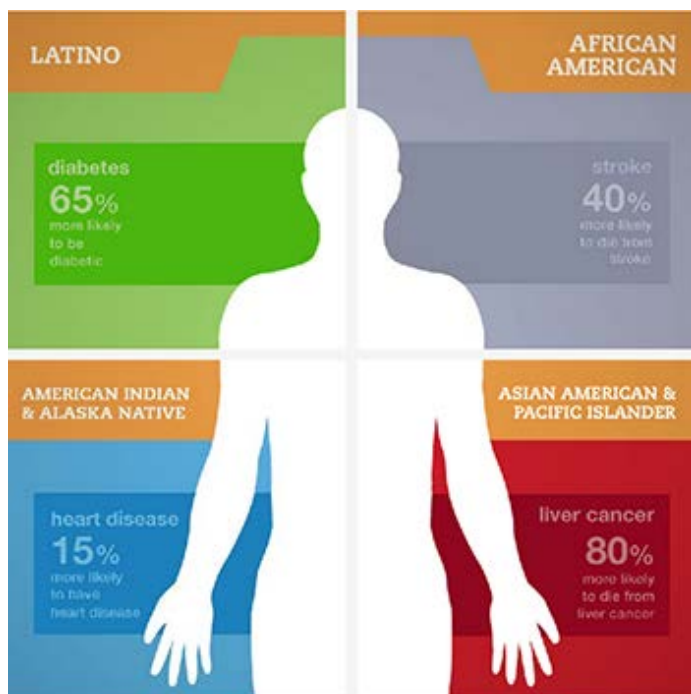


## Components

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

## Results

- Patients increased health literacy
- Improved disease management







# How does one move these researched practices to common practice?

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



Innovation,  
collaboration,  
entrepreneurship



Prof. Ruby Mendenhall:  
Sociogenomics - Social  
determinants of health

humanities  
and arts

- 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

Innovation, collaboration, entrepreneurship

sociotechnical problems

humanities and arts

research and development

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



## Tumor growth

~30,000 equations

$$\begin{aligned} \frac{d[\text{VEGFR1}]}{dt} &= k_{i,PLC_7}[\text{VEGFR1:PLC}_7] - k_{e,PLC_7}[\text{VEGFR1}][\text{PLC}_7] \\ &\quad + k_{d,PTPN}[\text{VEGFR1:p-PLC}_7;\text{PTPN}] \\ \frac{d[\text{PLC}_7]}{dt} &= k_{i,PLC_7}[\text{VEGFR1:PLC}_7] - k_{e,PLC_7}[\text{VEGFR1}][\text{PLC}_7] \\ &\quad + k_{d,PLC_7}[\text{PLC}_7;\text{PTPN}] \\ \frac{d[\text{PTPN}]}{dt} &= k_{i,PTPN}[\text{VEGFR1:p-PLC}_7;\text{PTPN}] - k_{e,PTPN}[\text{VEGFR1:p-PLC}_7];[\text{PTPN}] \\ &\quad + k_{d,PLC_7}[\text{PLC}_7;\text{PTPN}] \\ \frac{d[\text{VEGFR1:PLC}_7]}{dt} &= k_{i,PLC_7}[\text{VEGFR1}][\text{PLC}_7] - k_{e,PLC_7}[\text{VEGFR1:PLC}_7] \\ &\quad - k_{p,PLC_7}[\text{VEGFR1:PLC}_7] + k_{sp,PLC_7}[\text{VEGFR1:PLC}_7] \\ \frac{d[\text{VEGFR1:p-PLC}_7]}{dt} &= k_{p,PLC_7}[\text{VEGFR1:PLC}_7] - k_{dp,PLC_7}[\text{VEGFR1:PLC}_7] \\ &\quad - k_{i,PTPN}[\text{VEGFR1:p-PLC}_7];[\text{PTPN}] \\ &\quad + k_{i,PTPN}[\text{VEGFR1:p-PLC}_7;\text{PTPN}] \\ \frac{d[\text{VEGFR1:p-PLC}_7;\text{PTPN}]}{dt} &= k_{i,PTPN}[\text{VEGFR1:p-PLC}_7];[\text{PTPN}] \\ &\quad - k_{e,PTPN}[\text{VEGFR1:p-PLC}_7;\text{PTPN}] \\ &\quad - k_{d,PTPN}[\text{VEGFR1:p-PLC}_7;\text{PTPN}] \\ \frac{d[\text{PLC}_7;\text{PTPN}]}{dt} &= k_{d,PTPN}[\text{VEGFR1:p-PLC}_7;\text{PTPN}] - k_{d,PLC_7}[\text{PLC}_7;\text{PTPN}] \end{aligned}$$

## National Center for Supercomputing Applications (NCSA)



# II. Research and Scholarship with Global Impact: System-wide Collaborations Become the Standard

## Angiogenesis: blood vessel formation



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

Innovation, collaboration, entrepreneurship

sociotechnical problems

humanities and arts

research and development

## Tumor growth

~30,000 equations

$$\begin{aligned} \frac{d[\text{VEGFR1}]}{dt} &= k_{i,PLC_7}[\text{VEGFR1:PLC}_7] - k_{e,PLC_7}[\text{VEGFR1}][\text{PLC}_7] \\ &\quad + k_{d,PTPN}[\text{VEGFR1:p-PLC}_7:\text{PTPN}] \\ \frac{d[\text{PLC}_7]}{dt} &= k_{i,PLC_7}[\text{VEGFR1:PLC}_7] - k_{e,PLC_7}[\text{VEGFR1}][\text{PLC}_7] \\ &\quad + k_{d,PLC_7}[\text{PLC}_7:\text{PTPN}] \\ \frac{d[\text{PTPN}]}{dt} &= k_{i,PTPN}[\text{VEGFR1:p-PLC}_7:\text{PTPN}] - k_{e,PTPN}[\text{VEGFR1:p-PLC}_7] \cdot [\text{PTPN}] \\ &\quad + k_{d,PLC_7}[\text{PLC}_7:\text{PTPN}] \\ \frac{d[\text{VEGFR1:PLC}_7]}{dt} &= k_{i,PLC_7}[\text{VEGFR1}][\text{PLC}_7] - k_{e,PLC_7}[\text{VEGFR1:PLC}_7] \\ &\quad - k_{p,PLC_7}[\text{VEGFR1:PLC}_7] + k_{sp,PLC_7}[\text{VEGFR1:PLC}_7] \\ \frac{d[\text{VEGFR1:p-PLC}_7]}{dt} &= k_{p,PLC_7}[\text{VEGFR1:PLC}_7] - k_{sp,PLC_7}[\text{VEGFR1:PLC}_7] \\ &\quad - k_{i,PTPN}[\text{VEGFR1:p-PLC}_7] \cdot [\text{PTPN}] \\ &\quad + k_{e,PTPN}[\text{VEGFR1:p-PLC}_7:\text{PTPN}] \\ \frac{d[\text{VEGFR1:p-PLC}_7:\text{PTPN}]}{dt} &= k_{i,PTPN}[\text{VEGFR1:p-PLC}_7] \cdot [\text{PTPN}] \\ &\quad - k_{e,PTPN}[\text{VEGFR1:p-PLC}_7:\text{PTPN}] \\ &\quad - k_{d,PTPN}[\text{VEGFR1:p-PLC}_7:\text{PTPN}] \\ \frac{d[\text{PLC}_7:\text{PTPN}]}{dt} &= k_{d,PTPN}[\text{VEGFR1:p-PLC}_7:\text{PTPN}] - k_{d,PLC_7}[\text{PLC}_7:\text{PTPN}] \end{aligned}$$

**UIC** UNIVERSITY OF ILLINOIS AT CHICAGO

**ILLINOIS** UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



Dimitri Azar MD, MBA  
Dean, UIC College of Medicine



Masuko Ushio-Fukai, PhD



Princess Imoukhuede, PhD  
[pii@illinois.edu](mailto:prii@illinois.edu)



Mark Rosenblatt MD, PhD, MBA, Head UIC Ophthalmology

### University of Illinois Angiogenesis Symposium

September 19, 2014: 1-5 pm

UIC Ophthalmology Lion Research Building Conference Room  
1905 W. Taylor Street, Chicago, IL 60612



Ying Liu, PhD



Wawrzyniec Dobrucki, PhD



Robert Chang, PhD



Tohru Fukai MD, PhD

# II. Research and Scholarship with Global Impact: Curing Sickle Cell Disease

Innovation,  
collaboration,  
entrepreneur-  
ship

sociotechnical  
problems

humanities  
and arts

research and  
development

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

Transplanted stem cells to cure sickle cell disease

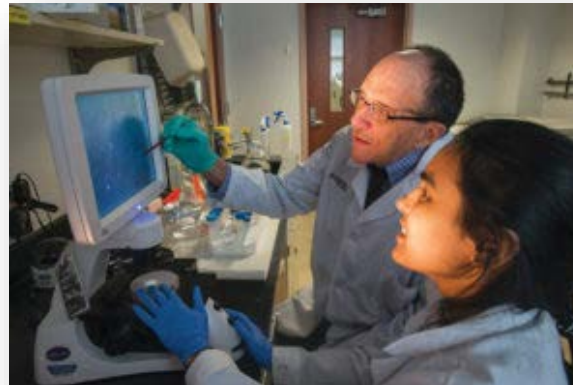


Cell transplantation  
Donor: P.J. Hearn &  
Recipient: Kamia Quinones

Damiano Rondelli, MD



Victor Gordeuk, MD



# II. Research and Scholarship with Global Impact: Understanding Tumor Heterogeneity

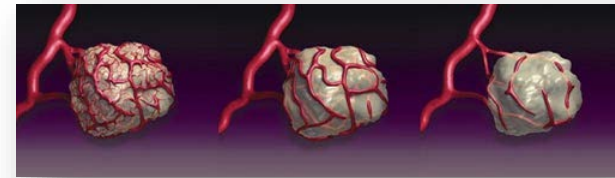
Innovation,  
collaboration,  
entrepreneurship

sociotechnical  
problems

humanities  
and arts

research and  
development

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



**Some patients respond**  
**Some patients do not**

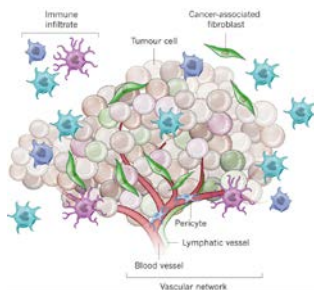
**Beckman Institute**



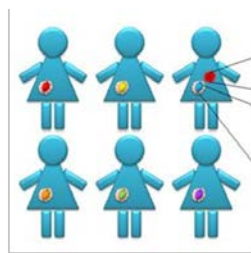
**Carl Woese Institute  
for Genomic Biology**



**Grand Challenge**  
**Tumor heterogeneity:**

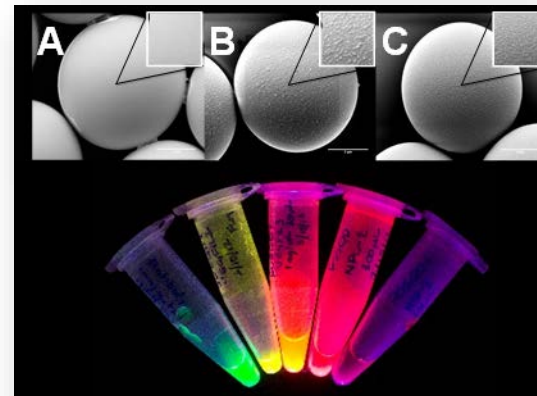


*Junttila & Sauvage (2013) Nature*



Oslo University Hospital

**New imaging tools for  
personalized medicine**



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

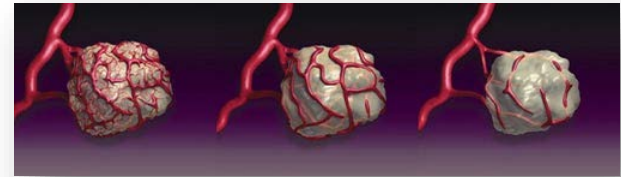
Innovation, collaboration, entrepreneurship

sociotechnical problems

humanities and arts

research and development

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



**Some patients respond**  
**Some patients do not**

Chicago

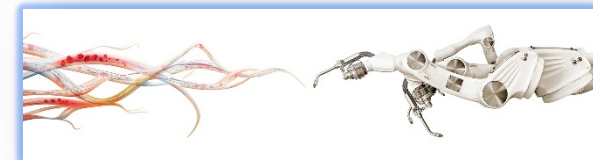
Rockford



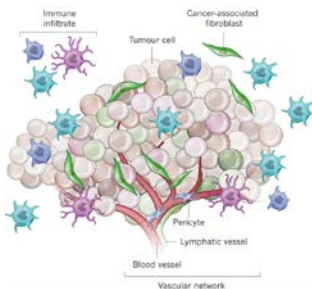
Peoria



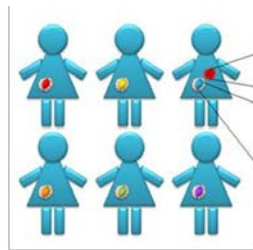
**Engineering-based Medicine: Urbana**



## Grand Challenge Tumor heterogeneity:

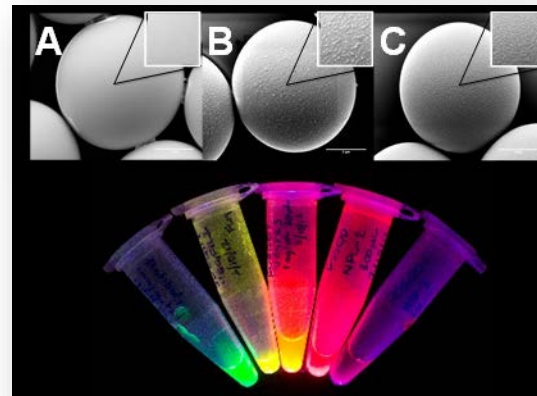


Junttila & Sauvage (2013) Nature



Oslo University Hospital

## New imaging tools for personalized medicine



# II. Research and Scholarship with Global Impact: Enabling Public-Private Partnership & Commercialization

Innovation, collaboration, entrepreneurship

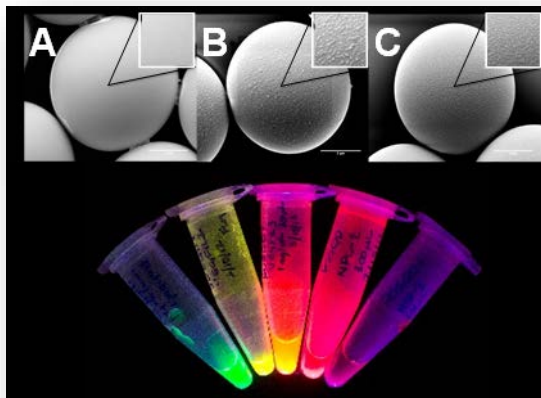
sociotechnical problems

humanities and arts

research and development

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

## New imaging tools for personalized medicine

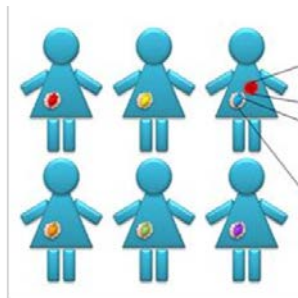


Bench

## EnterpriseWorks Incubator



## Ensuring patients get the right drugs the first time



Oslo University Hospital



Bedside



# II. Research and Scholarship with Global Impact: Sustaining Scholarship

innovation,  
collaboration,  
entrepreneur-  
ship

sociotechnical  
problems

humanities  
and arts

research and  
development

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

Christy Lleras, PhD



## Human & Community Development

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

Ruby Mendenhall, PhD



## Sociology, Urban Planning & African American Studies

- Race and residential housing patterns
- Social networks
  - Racial microaggressions
- Genomics

Kathryn Clancy, PhD



## 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

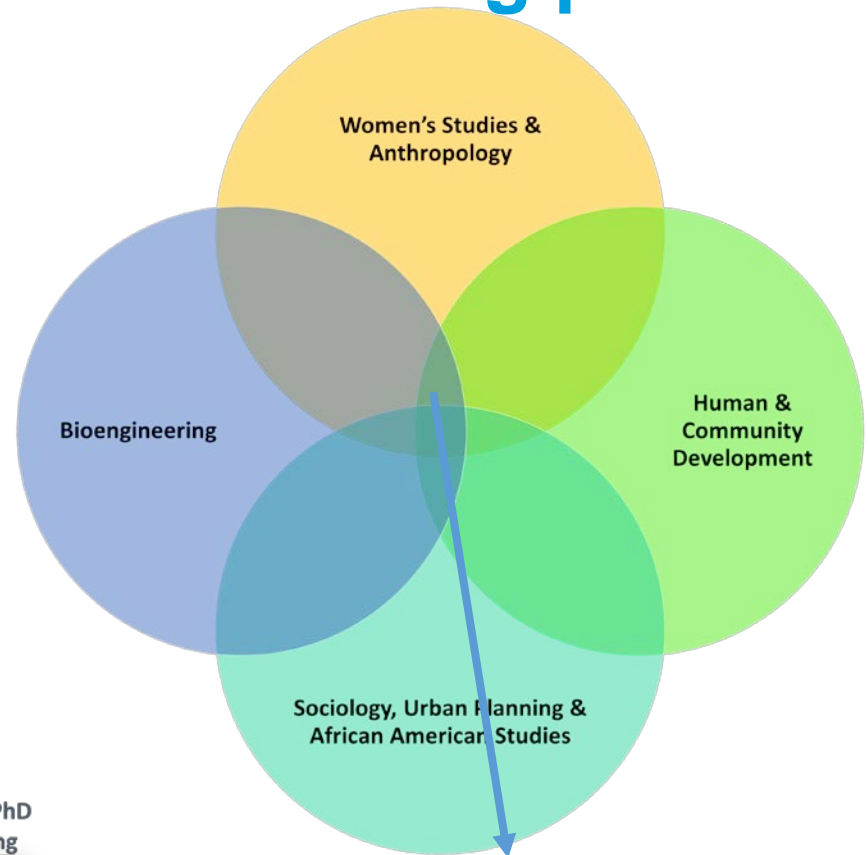
Innovation, collaboration, entrepreneurship

sociotechnical problems

humanities and arts

research and development

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



Kathryn Clancy, PhD  
Anthropology &  
Women's Studies



Christy Lleras, PhD  
Human & Community  
Development



Ruby Mendenhall, PhD  
Sociology & African  
American Studies



Princess  
Imoukhuede, PhD  
Bioengineering



- 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

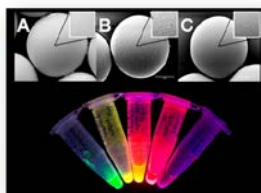
*...what's possible?*

Innovation,  
collaboration,  
entrepreneur-  
ship



Research collaborations  
stretching across the System

sociotechnical  
problems



Tackling Tough Problems:

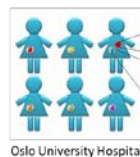
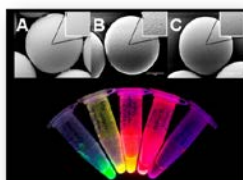
- Tumor heterogeneity + Personalized medicine
- Curing Sickle Cell

humanities  
and arts



Sustaining scholarship  
& shedding new light  
on enduring questions

research and  
development



Bench to Bedside: Public-  
Private Partnerships

Bench

Bedside

# **Pillar III – A Healthy Future for Illinois**

**Sara Rusch  
Regional Director  
College of Medicine at Peoria**

## Pillar Three

A Healthy Future for Illinois and the  
Midwest

# Setting the Stage

# Defining Health

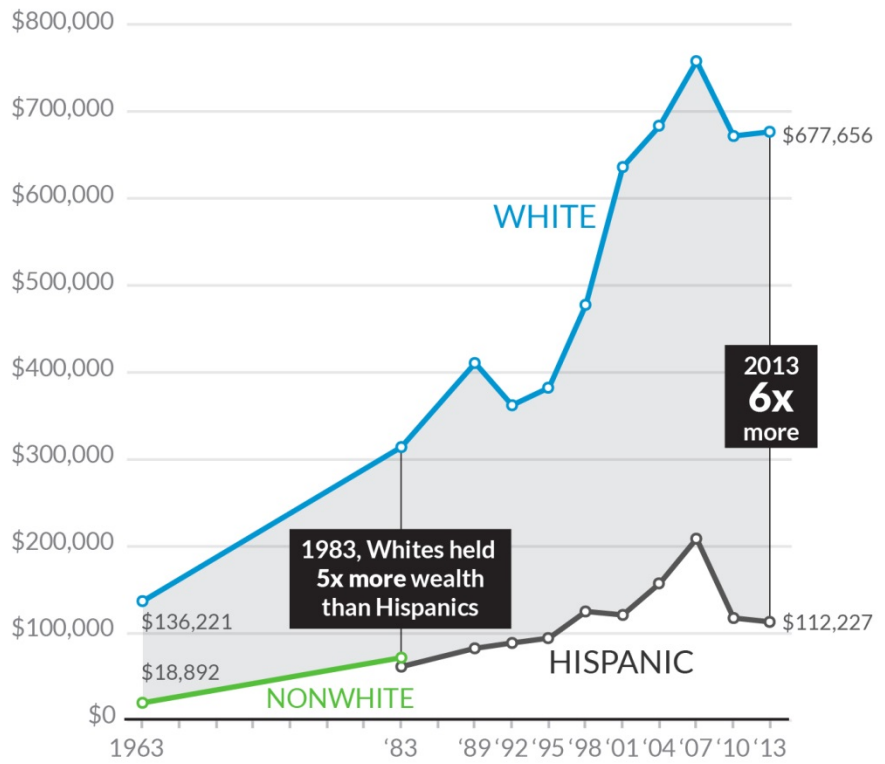
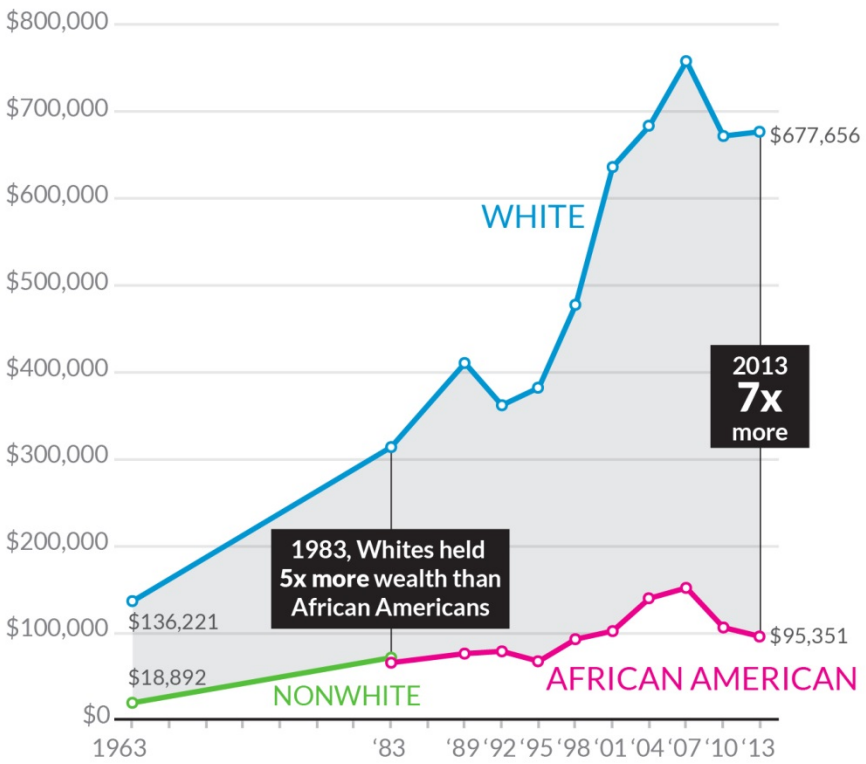
- A state of complete mental, physical and social well-being and not merely the absence of disease or infirmity World Health Organization

## The single strongest predictor of health is socioeconomic status

- Those with higher socioeconomic status have the most power and resources, and on average live longer and healthier lives.
- Those with lower socioeconomic status are exposed to many health threats over which they have little or no control – less education leading to insecure and low paying jobs, mounting debt, poor child care, poor quality housing, less access to healthy food, unreliable transportation, and noisy and violent living conditions.



# Average Family Wealth by Race/Ethnicity, 1963-2013

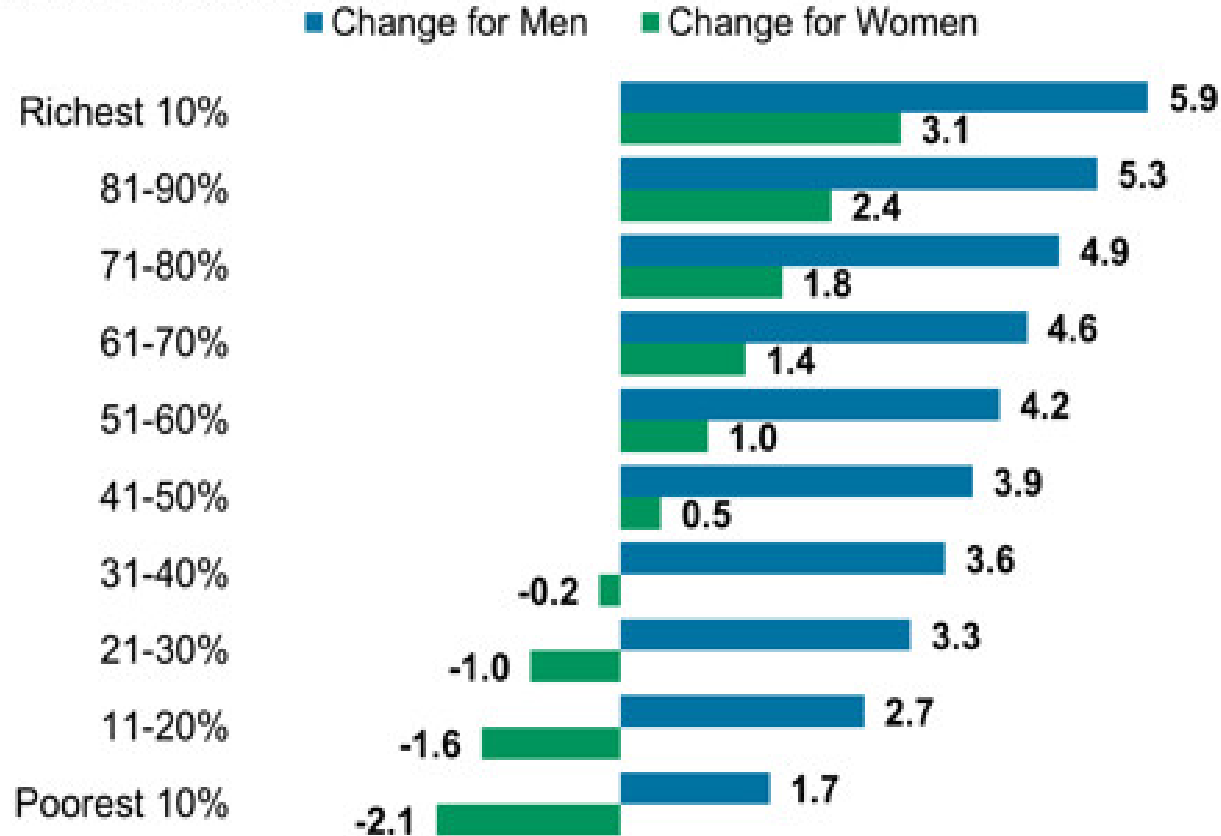


Sources: Urban Institute calculations from Survey of Financial Characteristics of Consumers 1962 (December 31), Survey of Changes in Family Finances 1963, and Survey of Consumer Finances 1983-2013.

Notes: 2013 dollars. No comparable data are available between 1963 and 1983. African American/Hispanic distinction within nonwhite population available only in 1983 and later.

# Change in Life Expectancy

Change in average additional life expectancy (in years) at age 55, by income, between cohorts born in 1920 and 1940



Source: Barry Bosworth, Brookings Institution | WSJ.com

# Healthy Future

- Education that prepares students for fiscally and emotionally rewarding jobs
- Create and sustain well paying job opportunities
- Excellence in healthcare – training, delivery, research and outcomes
- Commitment to the communities we serve

# Strategic Framework Pillar Three

A Healthy Future for Illinois and the Midwest

# A Healthy Future

## A Transformative Goal

1. Develop and invest in our human capital
2. Be a powerful engine for statewide and regional economic development
3. Be a national model for professional training, affordability, access and positive outcomes in healthcare
4. Improve college readiness and outcomes
5. Promote strong civic engagement among students, faculty, staff and residents of Illinois

# Develop and Invest in Human Capital



# Develop and Invest in Human Capital

- Educate students who are entrepreneurial, next generation leaders.
- Expose students to the rigor of cutting edge research and scholarship
- Create a culture that values personal health and well being
- Collaborate with other universities to encourage degree completion

# Be a Powerful Engine for Economic Development throughout the State





# Be a Powerful Engine for economic development through out the state

- Leverage University excellence in education, research and innovation to improve the health of the communities near our universities and the communities we serve throughout the State
  - Public Private partnerships
  - Innovation Network with innovation cities
  - Reengineered Extension
  - Agriculture and Agribusiness
  - Identify partners who will work with faculty to accelerate translation and commercialization of ideas

# Create National Models for Professional Training, Affordability, Access and Positive Outcomes in Healthcare



# Create National Models for professional training, affordability, access and positive outcomes in healthcare

- Forge new connections within our remarkable health sciences and healthcare ecosystem
- Partner to improve quality of life and equity of care
- Test and implement care delivery models focused on population health and high quality/cost effective care
- Increase patient access to primary, specialty and acute care services at our Chicago hospital
- Work for health equity

# Improve college readiness through connections with K-12 and community colleges

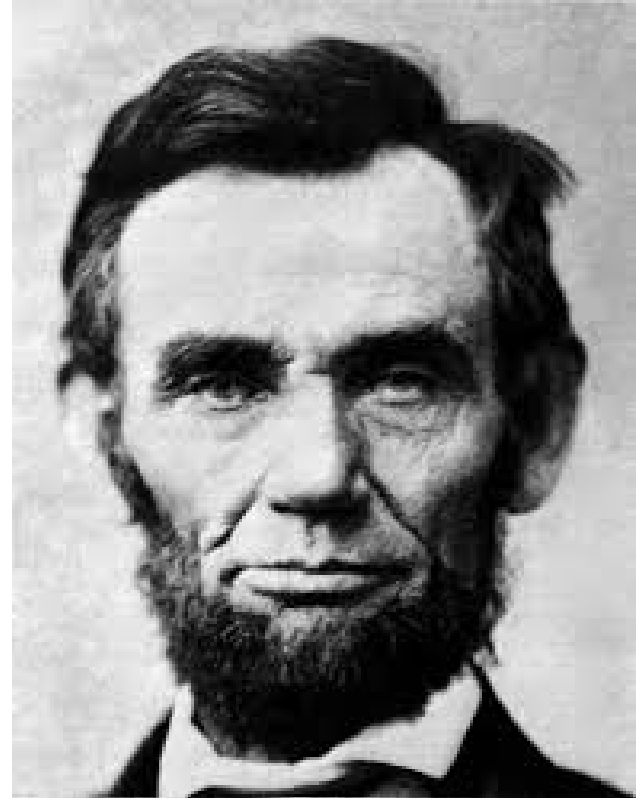


# Improve college readiness through connections with K-12 and community colleges

- Enhance access and success for all students in the state
  - Foster predictable, streamlined transfer protocols
  - Lead an initiative to strengthen the college pipeline

# Civic Engagement among students, faculty, staff and residents of Illinois

- “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.”  
—Margaret Mead



# Civic Engagement among students, faculty, staff and residents of Illinois

- Encourage critical discussion of civic values and responsibilities
- Explore the establishment of a Lincoln Institute of Government to draw together those with a focus on public policy research and civic leadership
- Explore how to better connect System activities to civic engagement – coursework, service learning
- Make the University the go to source for policy and application on key issues affecting community health.

# **Pillar IV – Tomorrow's University Today**

**Megan Styles  
Assistant Professor  
Environmental Studies UIS**



# Pillar IV

## Tomorrow's University Today





**affordability,  
access, and  
completion**

**University-  
state compact**

**financial  
sustainability**

**technology  
platform**

**environmental  
sustainability**

“We can’t wait for better times to get started – there will always be obstacles and challenges.”





**MORE**  
— with —  
**LESS**  
— is —  
**MORE**





It is always easier to  
talk about change  
than to make it.

Alvin Toffler

# **Individual Declaration Statements**

## **Afternoon Schedule**

**12:30pm - Board Meeting Recess**

**12:40pm - Begin Breakout Discussions**

**2:00pm - Return thumb drives**

**2:10pm - Regular Meeting Resumes**

**4:00pm - Wrap-up Discussion**

# University of Illinois Board of Trustees Retreat



**UNIVERSITY OF ILLINOIS**

**URBANA-CHAMPAIGN • CHICAGO • SPRINGFIELD**

**July 20, 2016**