Health Disparities in the Commonwealth: Obesity and Cardiovascular Diseases A Compelling Example
UK NIH Funding Aligns with Health Disparities in the Commonwealth

NCI = National Cancer Institute; NIDA = National Institute for Drug Abuse; HLBI = Heart, Lung and Blood Institute; DDK = Diabetes, Digestive Diseases and Kidney
NIH COBRE on Obesity and Cardiovascular Diseases: Historical Perspective of Center Development

NIH Construction Grant

5th floor, CTW Partnership begins

2003

2004 Brilliant Idea

2008 Phase 1 COBRE funded

2013 Phase 2 COBRE funded
NIH Center of Biomedical Research Excellence (COBRE) on Obesity and Cardiovascular Diseases

• **Objectives**
  – Identify mechanisms linking obesity to CV disease, two health disparities that are rampant in the Commonwealth
  – Develop a multidisciplinary research Center around this theme
  – Use this as a platform to develop promising junior investigators to compete for NIH grant support (“graduates”)

• **Plan**
  – Mentoring,
  – Develop core facilities to optimize research enterprise,
  – Strategic hiring,
  – Pilot Projects
### Progress during Phase 1

<table>
<thead>
<tr>
<th>Junior PI</th>
<th>Graduate</th>
<th>Grants Funded</th>
<th>Funding (millions)</th>
<th>Publications</th>
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<tr>
<td>Dennis Bruemmer</td>
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<td>3 (2 R01s, 1 ADA)</td>
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<td>Greg Graf</td>
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<td>$3.7</td>
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<td>Lisa Tannock</td>
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<td>4 (3 R01s, 1 VA Merit)</td>
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<td>Jianhua Shao</td>
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<td>Shuxia Wang</td>
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<td>Victoria King</td>
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<td>Kevin Pearson</td>
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<td>Zhenyu Li</td>
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<td>Changcheng Zhou</td>
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<td><strong>TOTALS</strong></td>
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<td>28</td>
<td><strong>$36</strong></td>
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</table>

- Have now graduated 12 out of 12 at a rate of 100%, or 2.4 investigators/year
- Graduates have multiple grants (2.25/investigator)
- 2.5 publications/investigator/year
Cost Effective Investment of Research

NIH Phase I COBRE Award $10.5 million

Junior Investigator and Mentor Funding: $72 million

NIH Phase 2 COBRE Award $11.3 million

UK Investment $400,000 (VPR)

UK Investment $250,000 (VPR)

= $94 million
Funding is impressive, but it is the research and its impact that matters...

• An Example of our research:
  Childhood obesity and its impact on cardiac function
Project 2: Brandon Fornwalt, MD/PhD

Susan Smyth, MD/PhD
Professor and Division Chief Cardiology, Dept Internal Med COM

Brandon Fornwalt, MD/PhD
Assistant Professor Dept Pediatrics, COM

David Randall, PhD
Professor Dept Physiology COM
Pediatric Obesity is Prevalent

NOTE: Obesity is defined as body mass index (BMI) greater than or equal to sex- and age-specific 95th percentile from the 2000 CDC Growth Charts.
Pediatric Obesity is Associated with Early Mortality

MRI Techniques: Increased Subcutaneous and Visceral Adiposity in Obese Children in the Commonwealth

16 yr, Healthy

16 yr, Obese

Subcutaneous Fat

Visceral Fat

Note: these are on the same scale
Obese Children Have Impaired Cardiac Strain

Preliminary, unpublished data: $p = 0.03$
Challenge

Impact on Health
- Prevention/lifestyle changes
- Clinical practice evolution
- Therapeutics

Disparities
- Prevention/lifestyle changes
- Clinical practice evolution
- Therapeutics

Opportunity
- Focused application of knowledge
- Translational, interdisciplinary “team” research

Knowledge
- Potential to improve human health

Time
Basic scientists: appetite control, obesity-induced diabetes, cardiovascular disease, liver dysfunction, dementia, cognition decline, behavioral aspects of obesity

Physician scientists: bench to bedside

Population scientists: behavioral aspects of obesity

New Faculty Recruits

Lisa Cassis                     Linda Dwoskin          Olivier Thibault
Pharm/NS                            Pharm Sci                 Pharm/NS                      Sanders Brown
Greg Graf                Charlotte Peterson                  Paul Murphy            Stefan Stamm           Greg Graf                Charlotte Peterson             Nancy Webb              Mike Bardo
Pharm Sci                       Pharm Sci                       Health Sci                        Pharm/NS                      Psych
Lisa Tannock
Endocrine
Phil Kern
Endocrine
Terrie Lennie
Nursing
Kevin Pearce
Family Medicine
Ann Vail
Agriculture
Alison Gustafon
Agriculture
Nancy Schoenberg
Behavioral Sci
Jim Zilliak
Business/Economics