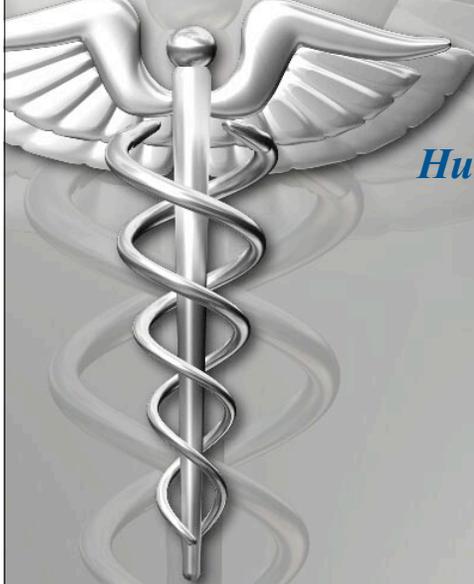


Delaware Science & Technology Council

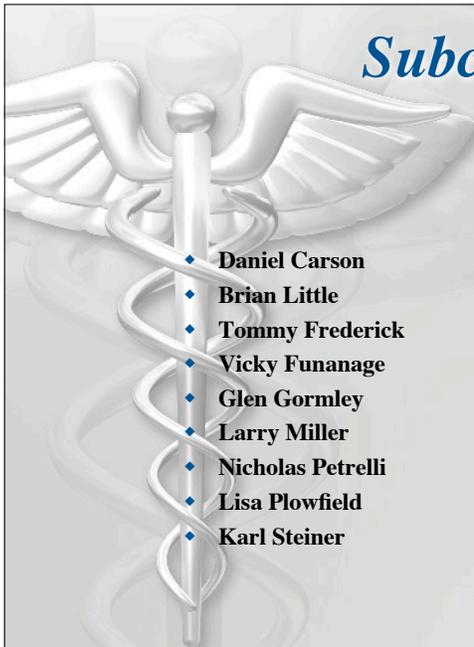


Human Health Subcommittee



Nicholas Petrelli, Chair
October 4, 2005

Subcommittee Members



- ◆ Daniel Carson
 - ◆ Brian Little
 - ◆ Tommy Frederick
 - ◆ Vicky Funanage
 - ◆ Glen Gormley
 - ◆ Larry Miller
 - ◆ Nicholas Petrelli
 - ◆ Lisa Plowfield
 - ◆ Karl Steiner
- UD - Biological Sciences
Christiana Care Health System
Delaware State University
AI DuPont Children's Hospital
AstraZeneca
Delaware Technical & Comm. College
Helen F. Graham Cancer Center
UD - Nursing
Delaware Biotechnology Institute



Introduction

- ◆ **National Health Problem**
- ◆ **Local Health Problem**
- ◆ **Progress to Date**
- ◆ **Future Initiatives**



Science & Technology Subcommittees

- ◆ **Human Health ***
- ◆ **Agriculture ***
- ◆ **Complex Environmental Systems/Ecosystem Health ***
- ◆ **Clean Energy ***
- ◆ **Nanotechnology**
- ◆ **Education ***

***Health Related**

Preventable Deaths

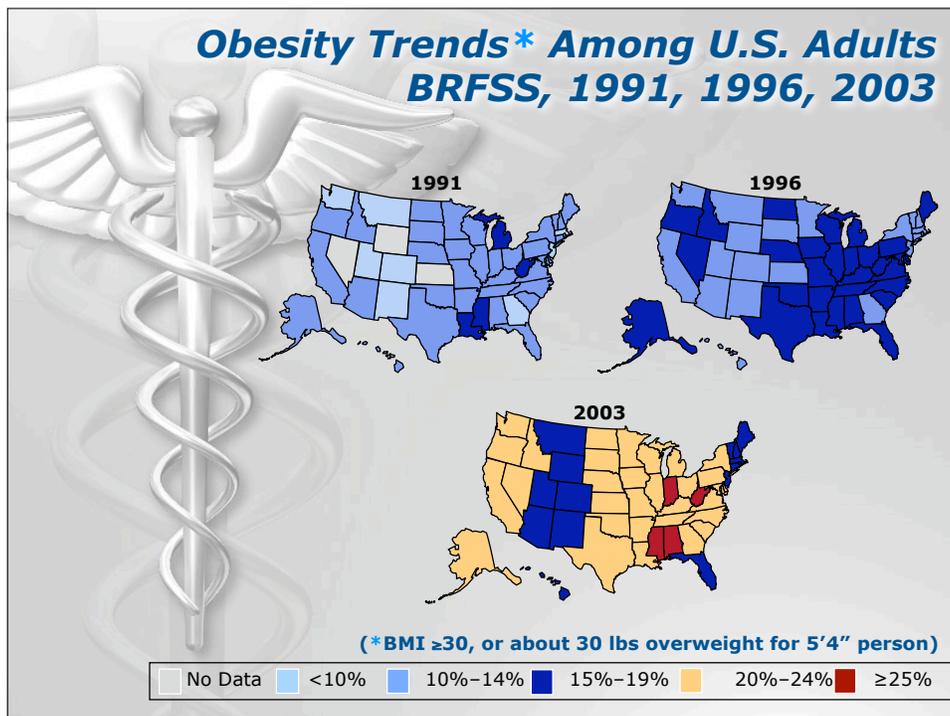
Second and Third Causes of Preventable Death:

- ◆ Obesity
- ◆ Alcohol

Breast, Colon, Lung Cancers
Stroke
Diabetes
Hypertension
Cardiovascular Disease

(Life Style / Education)

Obesity Trends* Among U.S. Adults BRFSS, 1991, 1996, 2003



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

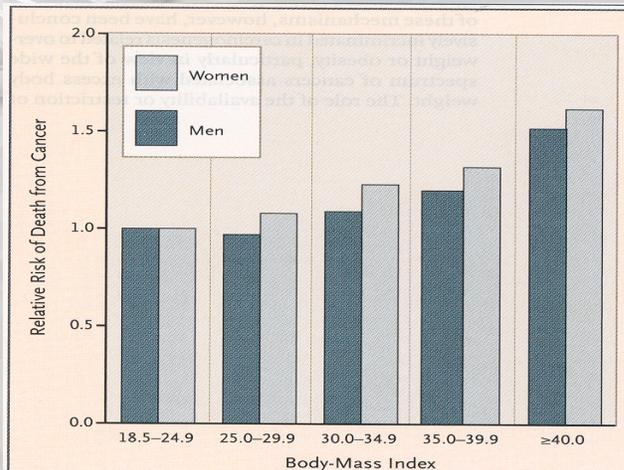
APRIL 24, 2003

VOL. 348 NO. 17

Overweight, Obesity, and Mortality from Cancer in a Prospectively Studied Cohort of U.S. Adults

Eugenia E. Calle, Ph.D., Carmen Rodriguez, M.D., M.P.H., Kimberly Walker-Thurmond, B.A., and Michael J. Thun, M.D.

Link between Obesity and Cancer



Contribution of Overweight and Obesity to Mortality from Cancer in the United States.

Data are from the Cancer Prevention Study II, 1982 through 1998.

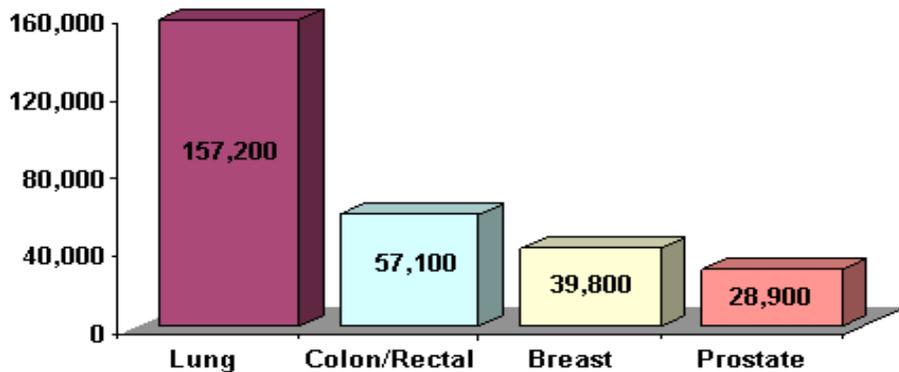
Lung Cancer Is Preventable

Tobacco is the #1 Killer in the U.S.

- > 400,000 Americans die each year from tobacco use
- 2 Jumbo Jet crashes each day

Lung Cancer Mortality

Estimated Mortality of Lung Cancer in 2003

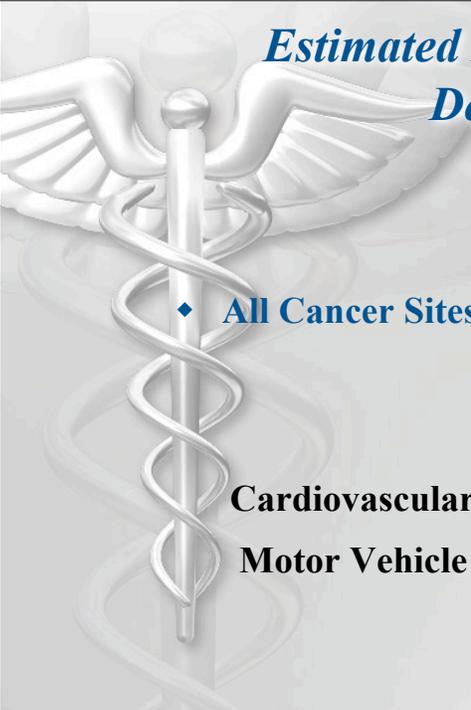




2005 Cancer Death Rate/100,000

- ◆ #1 Washington, DC
- ◆ #2 Louisiana
- ◆ #3 Kentucky
- ◆ #4 West Virginia
- ◆ #5 Mississippi
- ◆ #6 Delaware (2001 #4)*

***Delaware is improving**

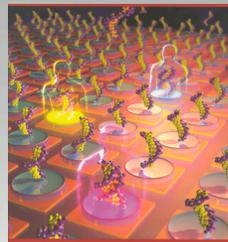


Estimated New Cancer Cases and Deaths in Delaware 2005

	<u>Cases</u>	<u>Deaths</u>
◆ All Cancer Sites	3800	1580
Cardiovascular		1918 (2002)
Motor Vehicle		147 (2004)

Progress to Date

Biomedical Research Program

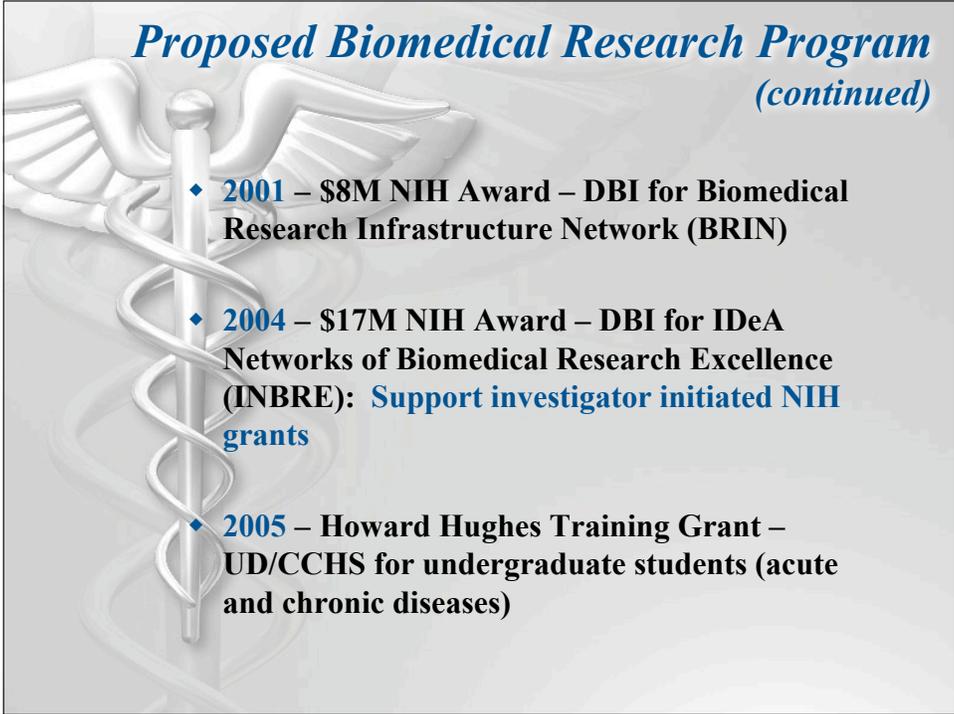


Proposed Biomedical Research Program

INFRASTRUCTURE IN PLACE:

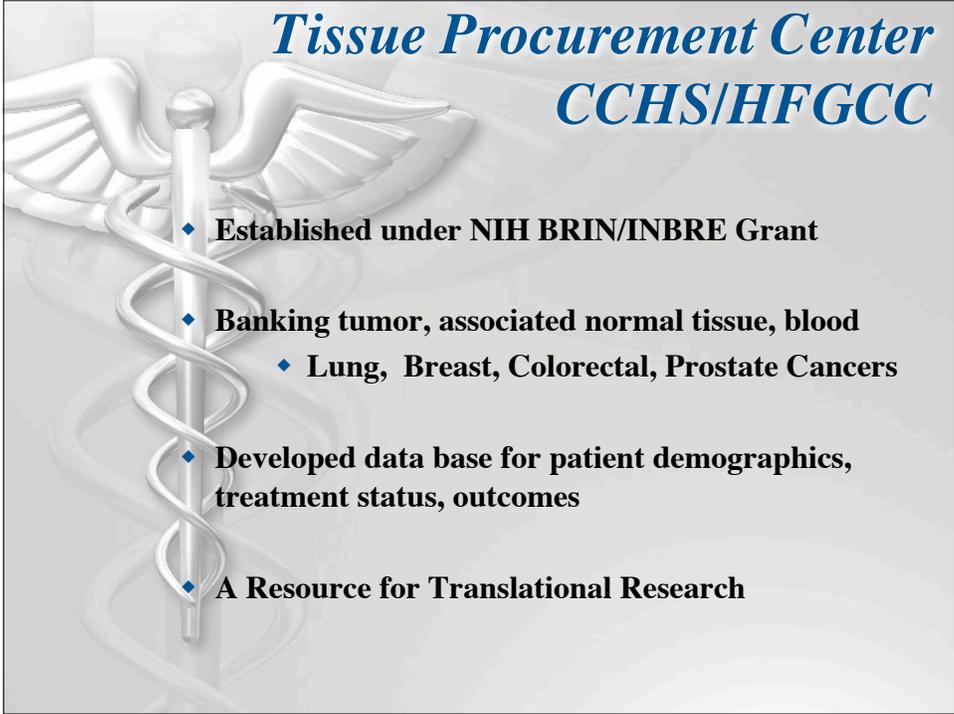
- ◆ CCHS and HFGCC → Nationally recognized for health care (i.e. diabetes, cardiovascular, trauma, cancer, joint replacement)
- ◆ A.I. duPont Children's (Nemours) – NIH \$10M COBRE** to establish a center for pediatric research
- ◆ 2004 – \$29M NIH Research Grants to Delaware Institutions (\$25M to UD)

****Center of Biomedical Research Excellence**



Proposed Biomedical Research Program (continued)

- ◆ **2001** – \$8M NIH Award – DBI for Biomedical Research Infrastructure Network (BRIN)
- ◆ **2004** – \$17M NIH Award – DBI for IDeA Networks of Biomedical Research Excellence (INBRE): **Support investigator initiated NIH grants**
- ◆ **2005** – Howard Hughes Training Grant – UD/CCHS for undergraduate students (acute and chronic diseases)



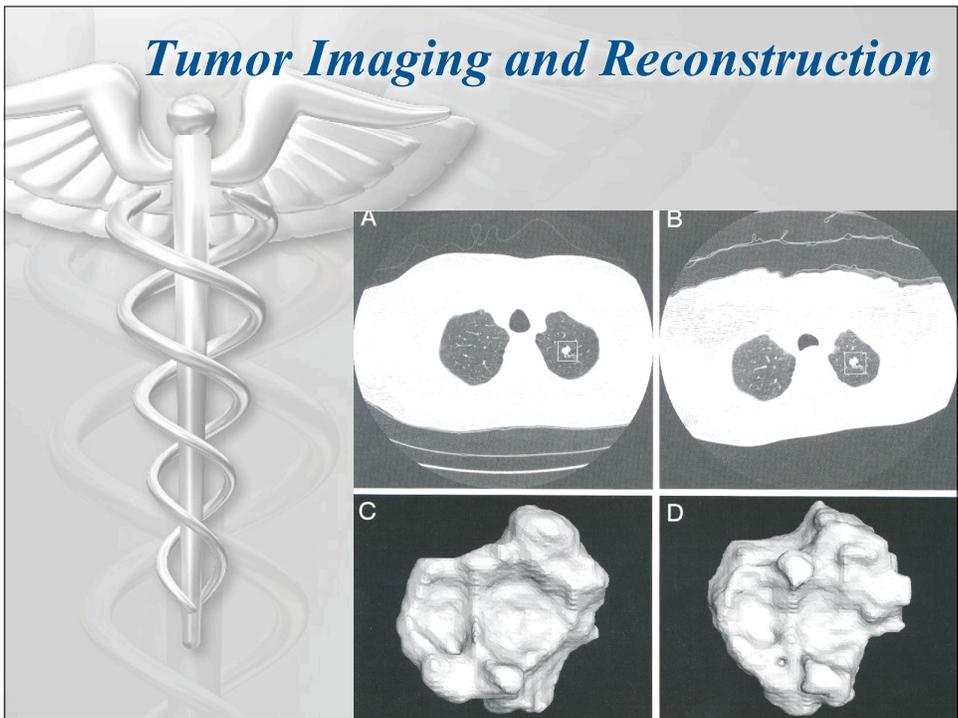
Tissue Procurement Center *CCHS/HFGCC*

- ◆ **Established under NIH BRIN/INBRE Grant**
- ◆ **Banking tumor, associated normal tissue, blood**
 - ◆ **Lung, Breast, Colorectal, Prostate Cancers**
- ◆ **Developed data base for patient demographics, treatment status, outcomes**
- ◆ **A Resource for Translational Research**

*Three-Dimensional Lung Imaging
DBI & HFGCC*



Tumor Imaging and Reconstruction



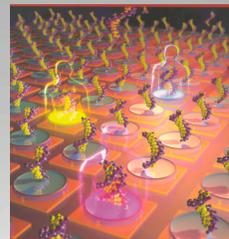
HFGCC ▶UD-DBI / TJU/ Nemours

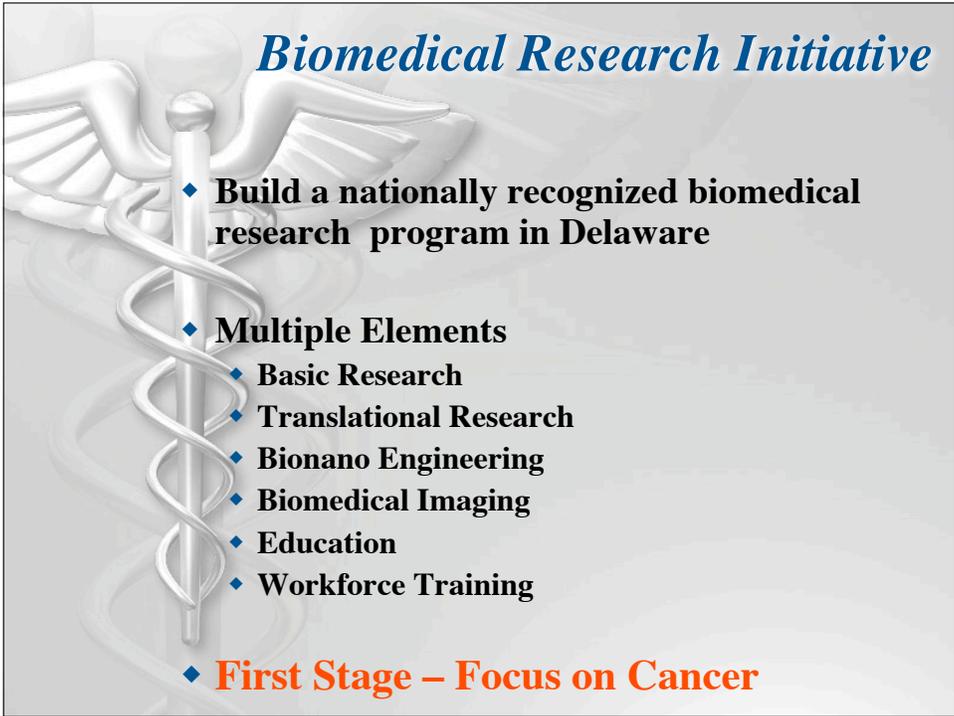
Collaborative Efforts Towards Translational Research

- ◆ Cynthia Carson, PhD - *Prostate* Cancer Bone Metastases
- ◆ Mary E. Miele, PhD - Human *Melanoma* Associated Antigen Family A
- ◆ Scott Waldman, PhD - GCC *Colorectal* tumor marker
- ◆ Eric Kmiec, PhD - DNA Oligonucleotides Chemo Sens. Cells
- ◆ Leslie Krueger, PhD - EBV& c-MYC in *Breast* Cancer
- ◆ Deni Galileo, PhD - Chick Embryo model *Brain/Breast* Cancer

Future Initiatives

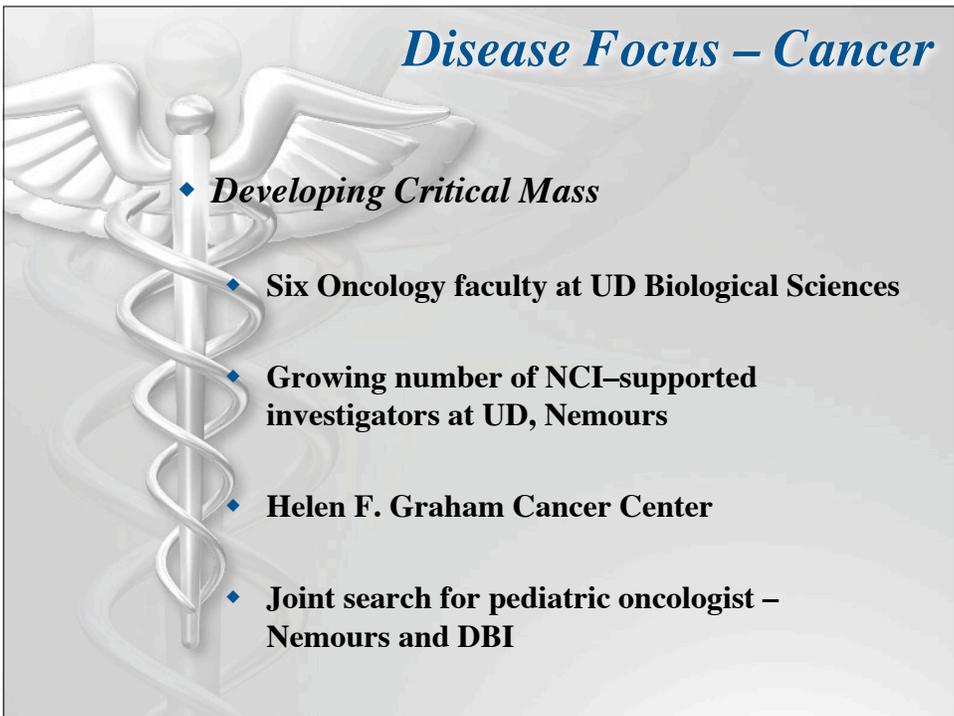
Biomedical Research Program





Biomedical Research Initiative

- ◆ **Build a nationally recognized biomedical research program in Delaware**
- ◆ **Multiple Elements**
 - ◆ **Basic Research**
 - ◆ **Translational Research**
 - ◆ **Bionano Engineering**
 - ◆ **Biomedical Imaging**
 - ◆ **Education**
 - ◆ **Workforce Training**
- ◆ **First Stage – Focus on Cancer**



Disease Focus – Cancer

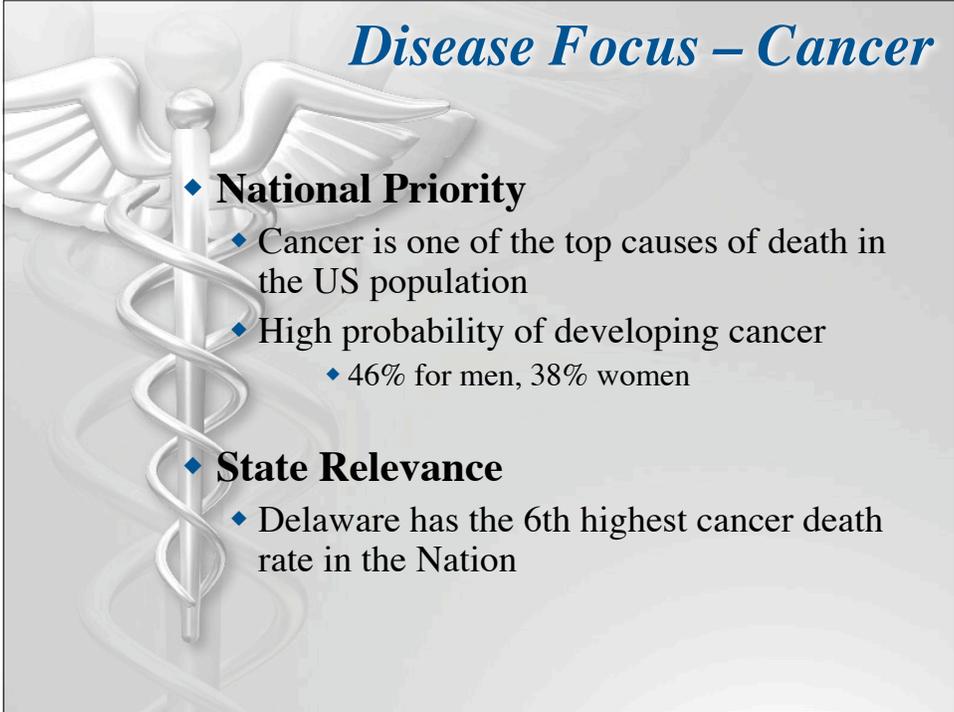
- ◆ ***Developing Critical Mass***
 - ◆ **Six Oncology faculty at UD Biological Sciences**
 - ◆ **Growing number of NCI-supported investigators at UD, Nemours**
 - ◆ **Helen F. Graham Cancer Center**
 - ◆ **Joint search for pediatric oncologist – Nemours and DBI**



Disease Focus – Cancer

- ◆ ***Developing Critical Mass***

- ◆ Center for Translational Cancer Research (CTCR) at DBI
- ◆ Growing activities at DSU, Wesley and DTCC
- ◆ Opportunities for joint programs with TJU



Disease Focus – Cancer

- ◆ **National Priority**

- ◆ Cancer is one of the top causes of death in the US population
- ◆ High probability of developing cancer
 - ◆ 46% for men, 38% women

- ◆ **State Relevance**

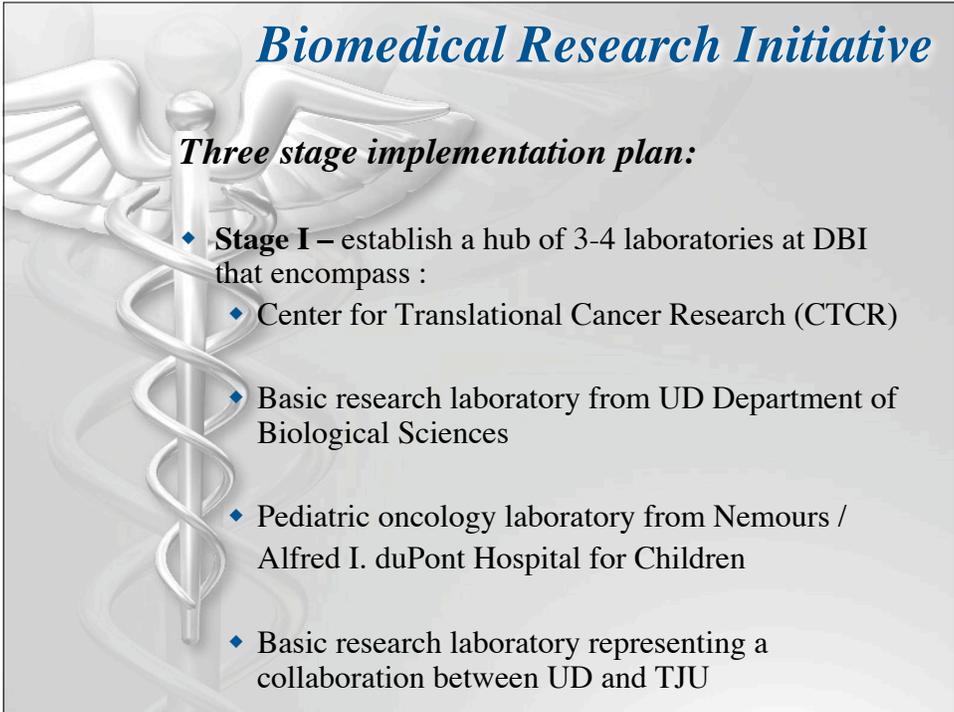
- ◆ Delaware has the 6th highest cancer death rate in the Nation



Biomedical Research Initiative

Program Development

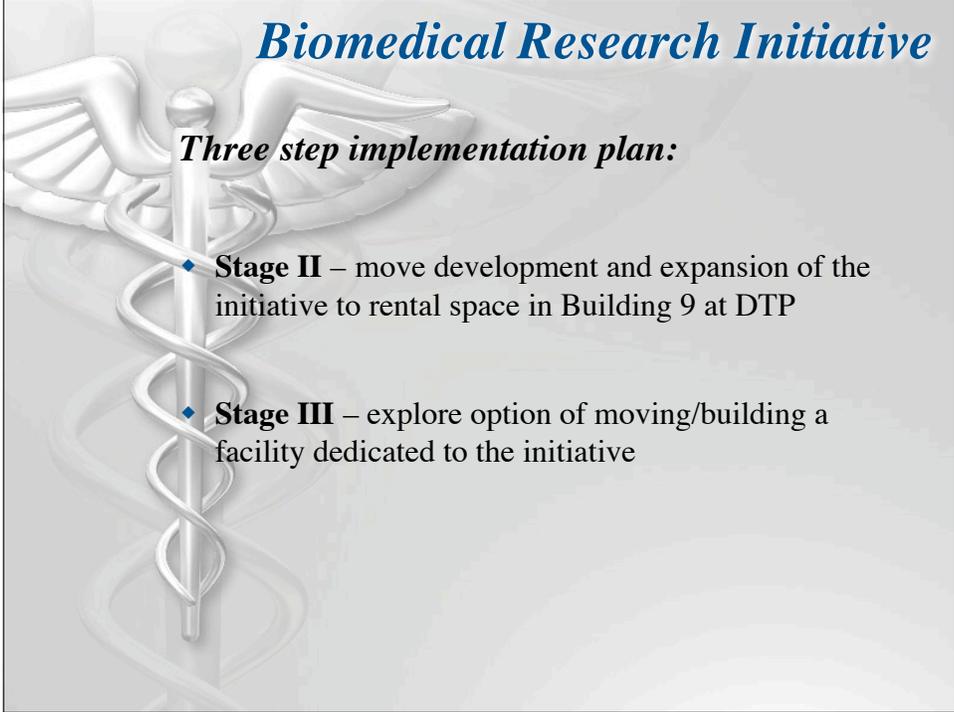
- ◆ **Bring together clinicians, pathologists, scientists, students of CCHS, HFGCC, Nemours, UD, DBI (Start Here!)**
- ◆ **Early targeted areas:**
 - ◆ **Cancer (lung, breast, prostate) *Start Here!!***
 - ◆ **Virtual reality based medical imaging**
 - ◆ **Gene therapy Huntington's Disease**
 - ◆ **Cancer epidemiology (socioeconomic issues)**



Biomedical Research Initiative

Three stage implementation plan:

- ◆ **Stage I** – establish a hub of 3-4 laboratories at DBI that encompass :
 - ◆ **Center for Translational Cancer Research (CTCR)**
 - ◆ **Basic research laboratory from UD Department of Biological Sciences**
 - ◆ **Pediatric oncology laboratory from Nemours / Alfred I. duPont Hospital for Children**
 - ◆ **Basic research laboratory representing a collaboration between UD and TJU**



Biomedical Research Initiative

Three step implementation plan:

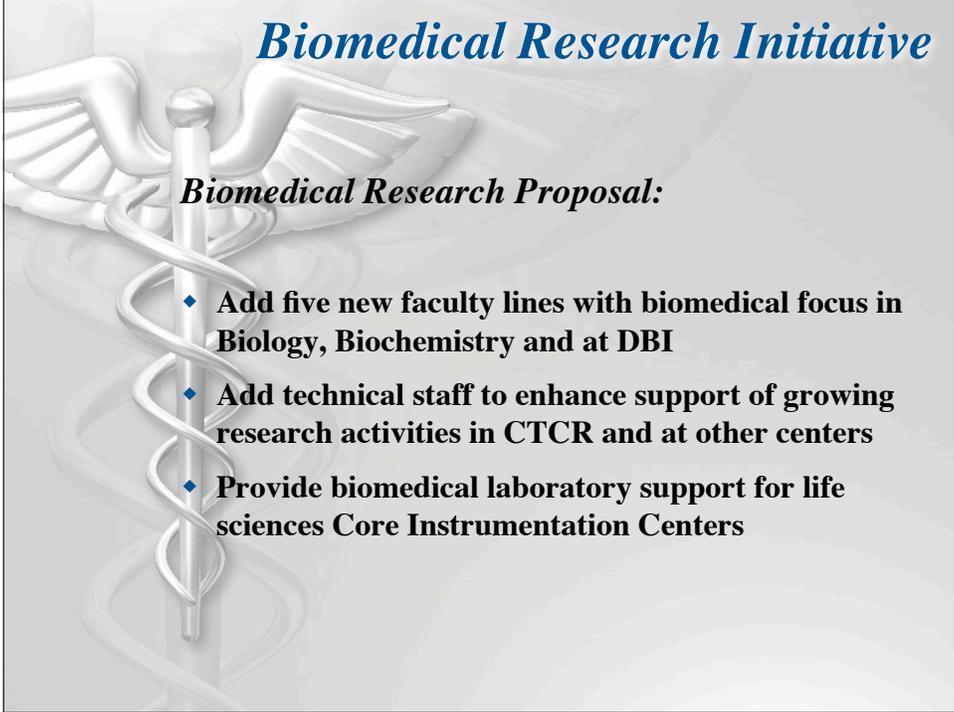
- ◆ **Stage II** – move development and expansion of the initiative to rental space in Building 9 at DTP
- ◆ **Stage III** – explore option of moving/building a facility dedicated to the initiative



Biomedical Research Initiative

Implementation

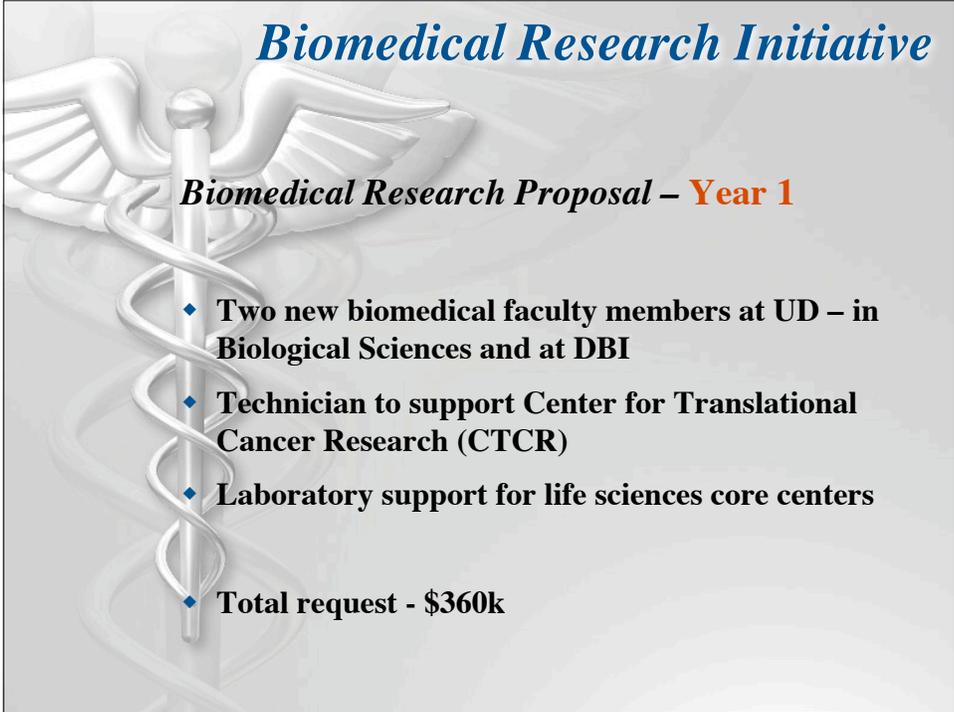
- ◆ **Launch a multi-year initiative to strengthen biomedical research capability across the State**
- ◆ **Pursue appropriate funding mechanisms –**
 - ◆ Initial funding (\$35M): NIH-BRIN/INBRE (DBI), COBRE (Nemours)
 - ◆ Additional funding from NIH, NCI Program projects (prostate cancer): NIH COBRE (CCHS, Nemours)
 - ◆ Public, private, foundation sources
- ◆ **Build on existing strengths to establish critical mass at all Delaware Institutions**
 - ◆ **Start with Initiative at UD/DBI**



Biomedical Research Initiative

Biomedical Research Proposal:

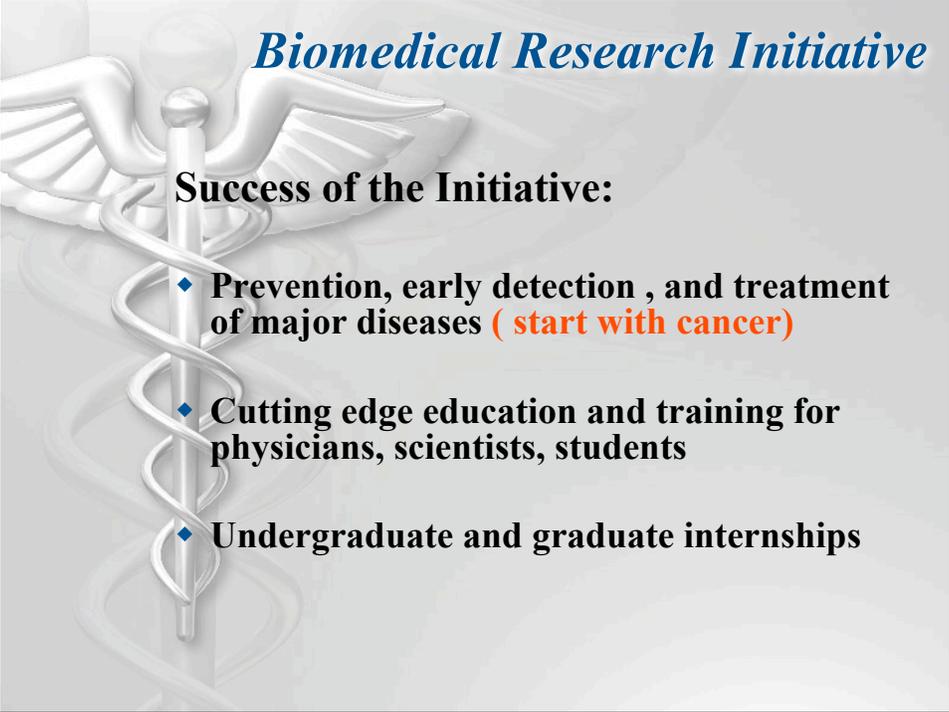
- ◆ **Add five new faculty lines with biomedical focus in Biology, Biochemistry and at DBI**
- ◆ **Add technical staff to enhance support of growing research activities in CTCR and at other centers**
- ◆ **Provide biomedical laboratory support for life sciences Core Instrumentation Centers**



Biomedical Research Initiative

Biomedical Research Proposal – Year 1

- ◆ **Two new biomedical faculty members at UD – in Biological Sciences and at DBI**
- ◆ **Technician to support Center for Translational Cancer Research (CTCR)**
- ◆ **Laboratory support for life sciences core centers**
- ◆ **Total request - \$360k**



Biomedical Research Initiative

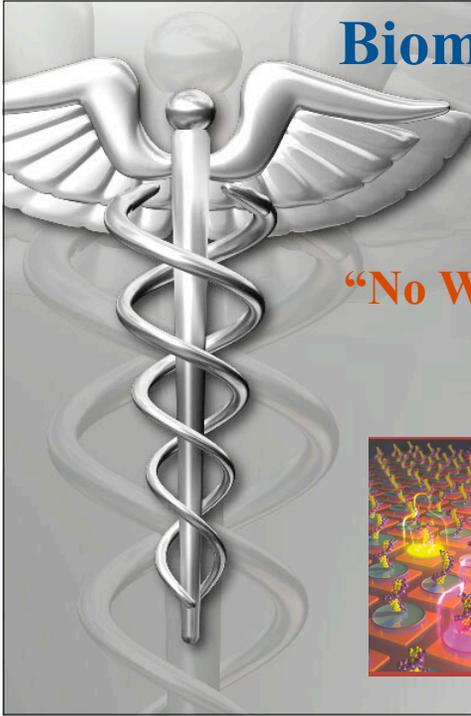
Success of the Initiative:

- ◆ **Prevention, early detection , and treatment of major diseases (**start with cancer**)**
- ◆ **Cutting edge education and training for physicians, scientists, students**
- ◆ **Undergraduate and graduate internships**



Biomedical Research Initiative *(continued)*

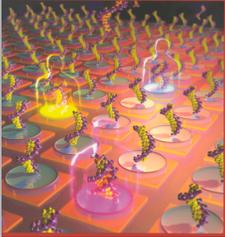
- ◆ **Establish an environment for medical, scientific, and educational recruitment and leadership**
- ◆ **A new source of economic development would be catalyzed**
- ◆ **Better quality of life in Delaware**



Biomedical Research Program

↓ ↓ ↓

“No Walls Medical School”



National Center For Research Resources