

# Portfolio Analysis for Strategic Planning Progress Review Groups

Portfolio Analysis Workshop

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## Outline

- What were Progress Review Groups (PRGs)?
- What was the PRG process?
- What was the role of Portfolio Analysis in the PRG process?
- What were roadblocks and limitations to portfolio analysis?
- What tools / lessons arose from the PRG experience?
- From PRGs to Provocative Questions

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## What were Progress Review Groups?

- An approach to soliciting external expert advice
  - Assessed the current NCI portfolio
  - Assessed the state of the science, identifying knowledge gaps, barriers to progress, and research priorities
  - Recommended activities to speed progress
- Development of report specifying a national agenda of research priorities
- Experts included scientists, clinicians and advocates

## Outline

- What were Progress Review Groups (PRGs)?
- What was the PRG process?
  - Goals of each phase
  - Completed PRGs
  - PRG methodology
  - Examples
- What was the role of Portfolio Analysis in the PRG process?
- What were roadblocks and limitations to portfolio analysis?
- What tools / lessons arose from the PRG experience?
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# What was the PRG process?

## Phase I: Recommendation

- Prepare PRG report outlining
  - State of the science
  - Top research priorities
  - Resources needed
  - Benchmarks for progress



## Phase II: Implementation

- Establish implementation strategy outlining approaches, applications, and resources to address PRG recommendations
- Implement, promote, and monitor plan



## Phase III: Reporting

- Assessment of progress made in addressing PRG recommendations
- Develop Progress Report summarizing progress and evolving needs

# Completed NCI PRGs

## Phase I

### Recommendation

- Breast cancer (1998)
- Prostate cancer (1998)
- Brain tumor (with NINDS) (2000)
- Colorectal cancer (2001)
- Pancreatic cancer (2001)
- Leukemia, lymphoma, and myeloma (2001)
- Lung cancer (2001)
- Gynecologic cancers (2001)
- Kidney and bladder cancers (2002)
- Stomach and esophageal cancers (2002)
- Sarcoma (2004)



## Phase II

### Implementation

- Pancreatic cancer (2001)
- Brain tumor (2002)
- Leukemia, lymphoma, and myeloma (2002)



## Phase III

### Reporting

- Breast cancer (2004)
- Prostate cancer (2004)
- Pancreatic cancer (2007)
- Colorectal cancer (2008)

Reports available online:

<http://planning.cancer.gov/library.html>

## PRGs Completed by Other ICs/Organizations

- NIDDK Bladder Research (2001)
  - <http://www2.niddk.nih.gov/Research/Reports/ConferenceReports/2001/bladder-research.htm>
- NINDS Stroke (2002)
  - [http://www.ninds.nih.gov/find\\_people/groups/stroke\\_prg/](http://www.ninds.nih.gov/find_people/groups/stroke_prg/)
- Trans-HHS Cancer Health Disparities (2004)
  - <http://planning.cancer.gov/library.html>
- **LIVESTRONG** Young Adult Alliance Adolescent and Young Adult Oncology (2006)
  - <http://planning.cancer.gov/library.html>

# What was the PRG method?

## Phase I

### Recommendation

- Appoint leadership team
- Leadership meeting
- Recruit PRG members
- Planning meeting
- Roundtable meeting
- Present to leadership/  
release report



## Phase II

### Implementation

- Establish internal working group
- Map initiatives & projects to recommendations
- Prepare proposal for addressing recommendations (response)
- Response meeting
- Prepare & promote implementation strategy
- Identify measures of progress



## Phase III

### Reporting

- Collect progress data
- Develop Progress Report
- Discuss progress with PRG
- Revise & promote implementation strategy

## Example: PRG Recommendation Areas

- Priority areas from the Pancreatic PRG report
  - Health of the Field and Overarching Issues
  - Tumor Biology
  - Risk, Prevention, Screening, and Diagnosis
  - Therapy
  - Health Services Research
  - Scientific Toolkit

## Example: Measures of Progress

- Increased funding and number of projects
- Specialized Programs of Research Excellence (SPOREs)
- Research training in pancreatic cancer
- Increased number of investigators
- Distribution of institutions conducting research
- Pancreatic Cancer Research Map

## Outline

- What were Progress Review Groups (PRGs)?
- What was the PRG process?
- What was the role of Portfolio Analysis in the PRG process?
  - Portfolio analysis in each phase
  - Coding framework
  - Examples
- What were roadblocks and limitations to portfolio analysis?
- What tools / lessons arose from the PRG experience?
- From PRGs to Provocative Questions

## What was the role of portfolio analysis in the PRG process?

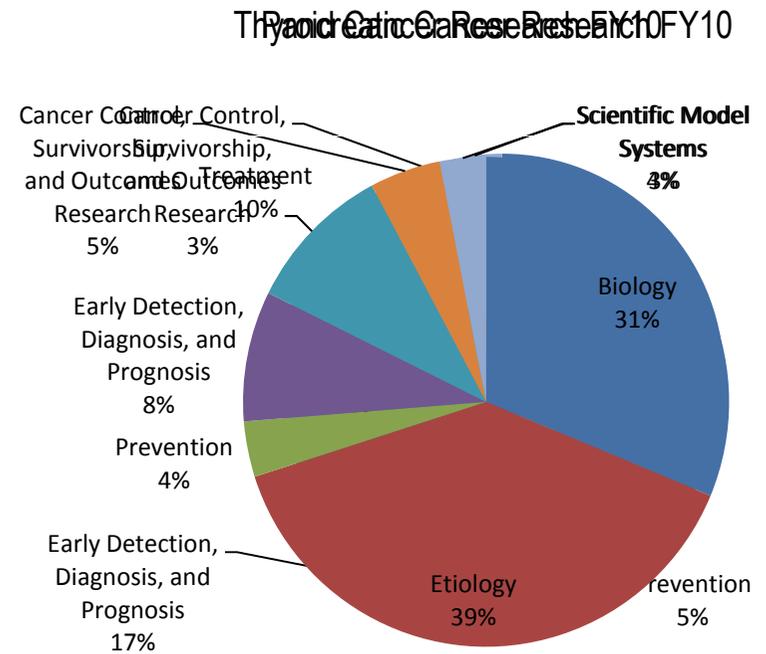
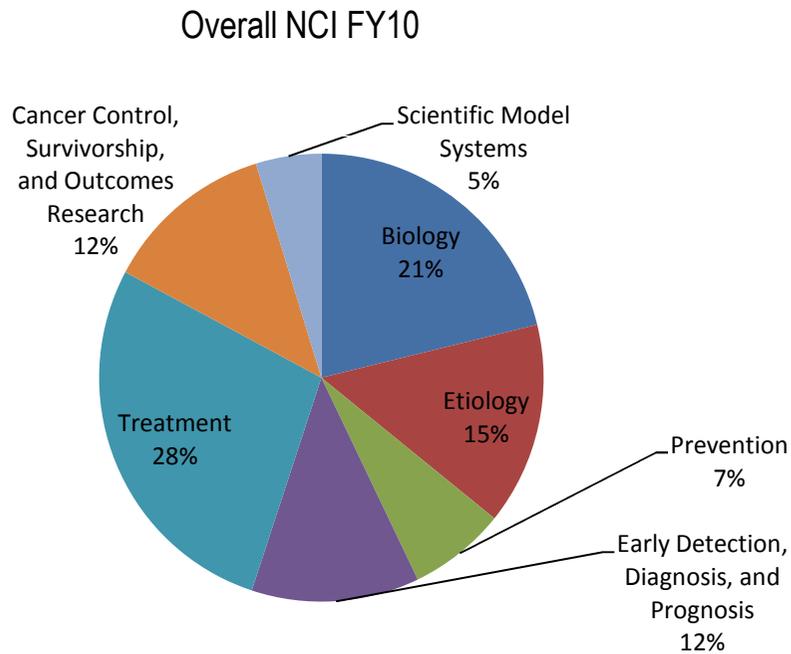
- Phase I, Recommendation
  - Document current portfolio to inform deliberations
    - By disease site
    - By type of research
- Phase II, Implementation
  - Map the current portfolio and proposed activities/strategies to the PRG research priorities identified in Phase I
- Phase III, Reporting
  - Map post-PRG activities to PRG priorities
  - Assess trends over time in activities relevant to priorities

## Portfolio Analysis: Defining Types of Research – Common Scientific Outline

- Classification system organized into seven broad areas of scientific interest in cancer research
  - Biology
  - Etiology
  - Prevention
  - Early Detection, Diagnosis, and Prognosis
  - Treatment
  - Cancer Control, Survivorship, and Outcomes Research
  - Scientific Model Systems
- Used by organizations in the International Cancer Research Partnership (ICRP)
- Provides common framework for collective portfolio analysis and coordinated strategic planning

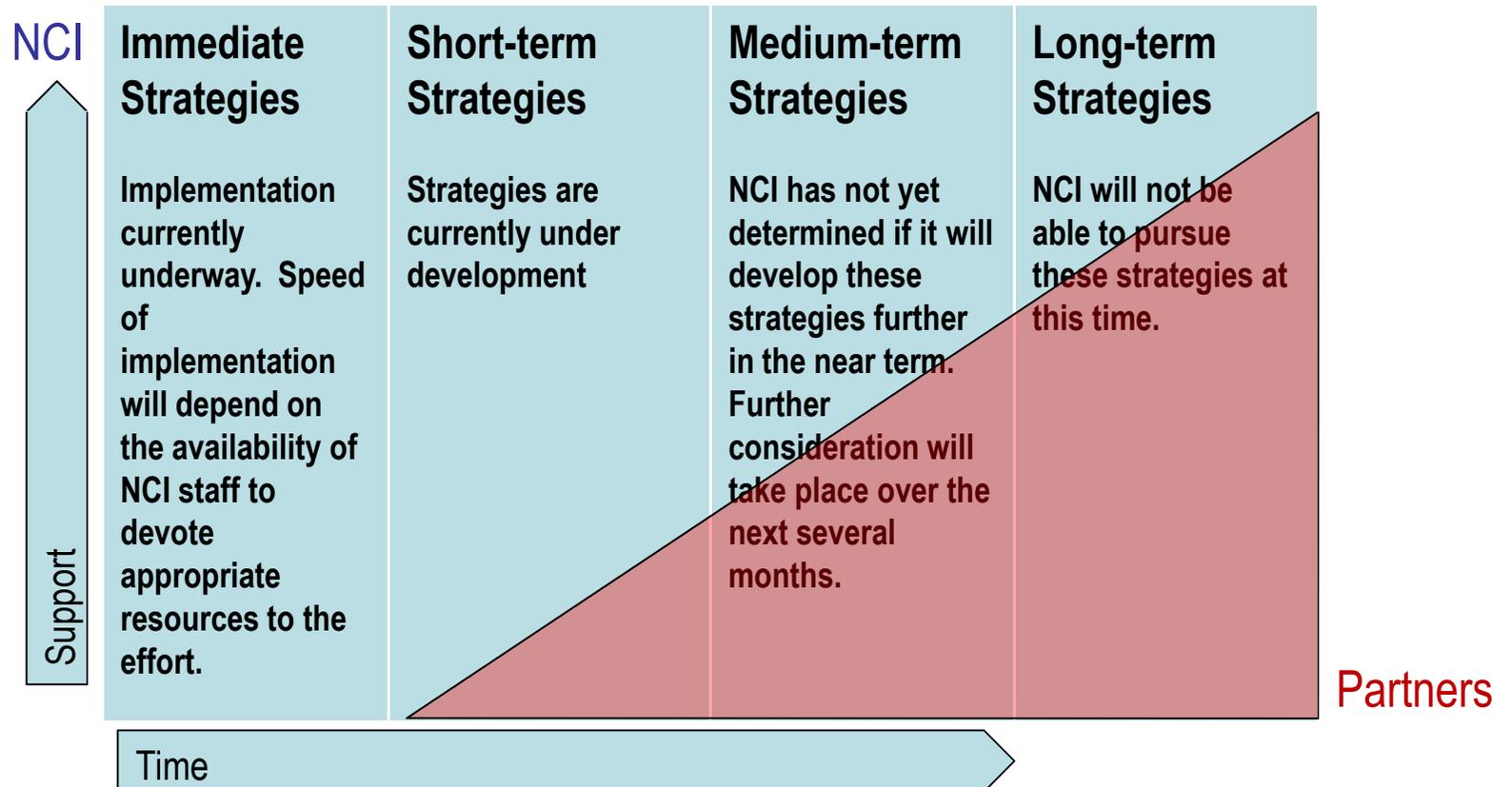
# Portfolio Analysis: Informing Recommendations

- *How much of your funding is focused on prevention?*
- *What research are you doing on pancreatic cancer?*

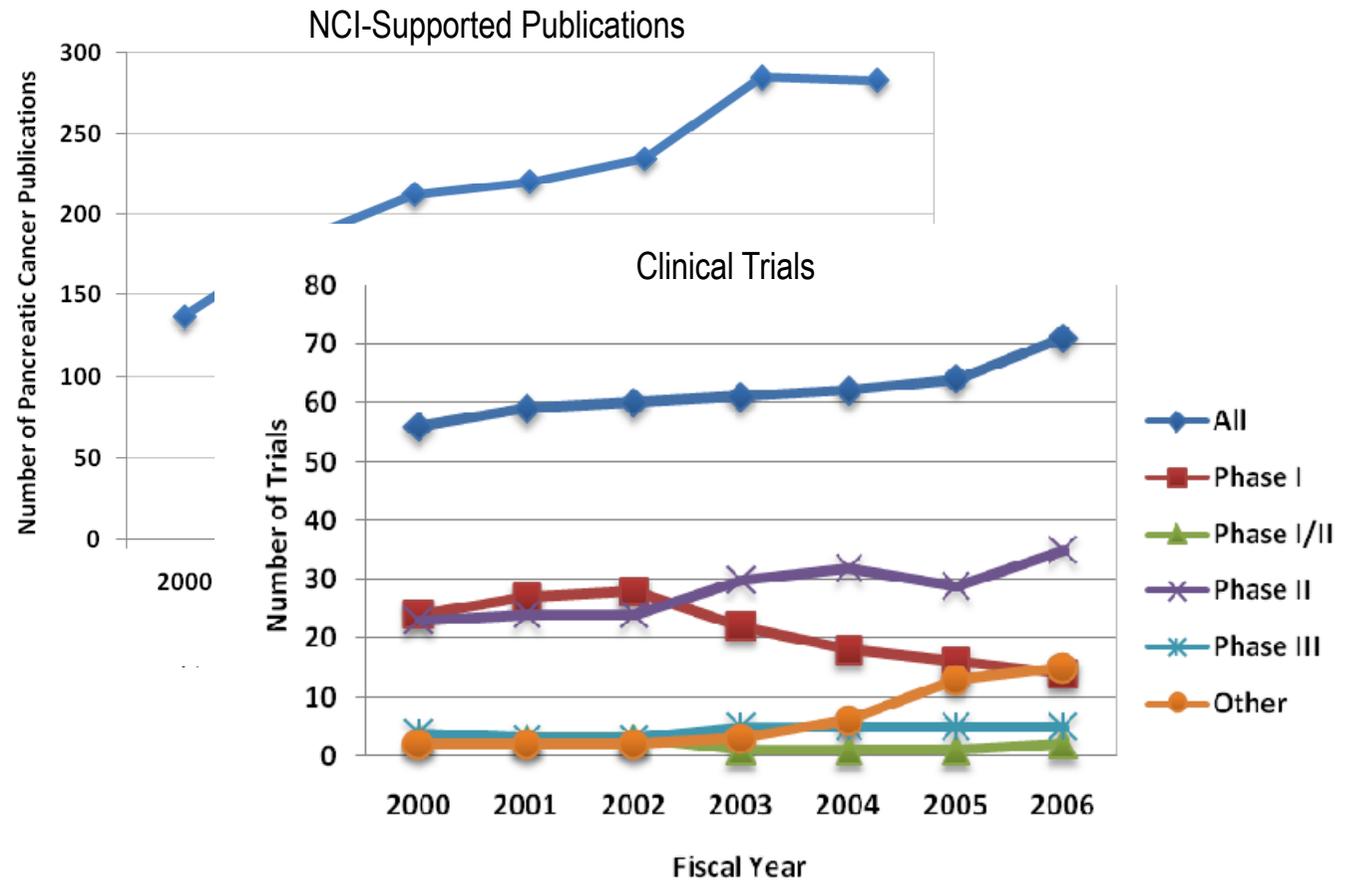


# Portfolio Analysis: Mapping Implementation Activities

- Ongoing
- New
- Proposed

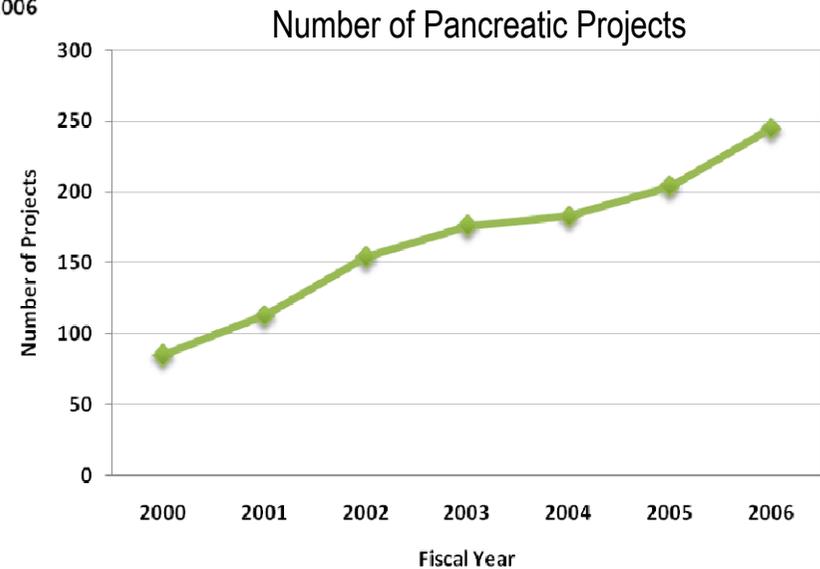
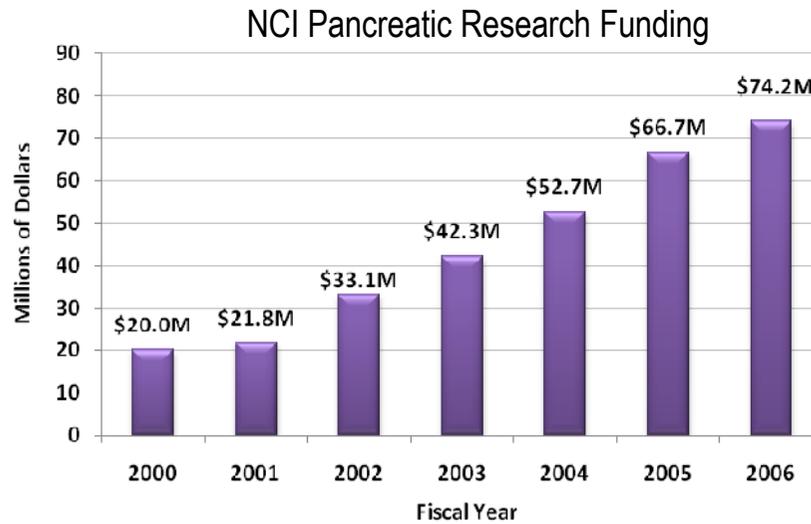


# Portfolio Analysis: Progress Reporting



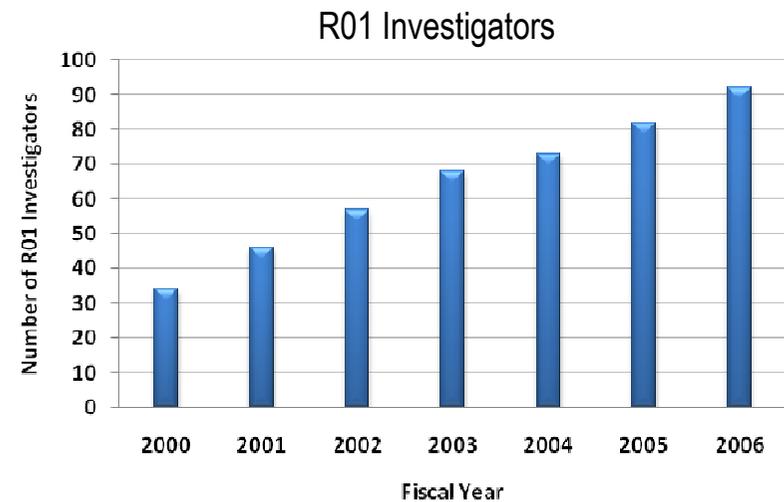
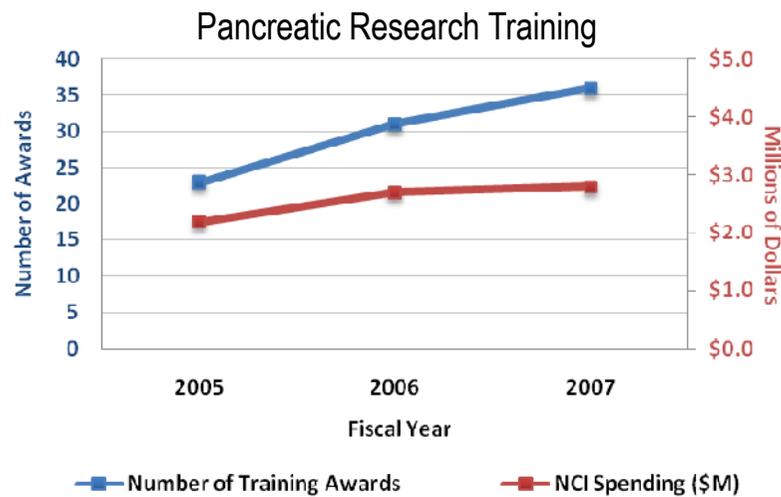
# Example: Progress Reporting

- Increased funding and number of projects



# Example: Progress Reporting

- Research training in pancreatic cancer
- Increased number of investigators





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# Roadblocks and Limitations to Portfolio Analysis

- Framework for classifying types of research
- Disease coding challenges around percent relevance estimates
- Time and effort for expert classification
  - Coding
  - Mapping to recommendation areas
- Best approach to summarizing or assessing current portfolio
  - Identifying scientific nuances that may differentiate projects
  - Identifying gaps
- Difficulty in interpreting/understanding the current portfolio

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  - Lessons from the PRGs
  - Impact of the PRGs
  - Additional resource resulting from the PRGs
- From PRGs to Provocative Questions

## What lessons arose from the PRGs?

- Importance of allowing outside groups to share views on scientific priorities
- Value of a type of research framework (CSO)
- Limits around planning science
- Common priorities across disease areas
- Balancing investigator-initiated science and targeted initiatives

## What was the impact of the PRGs?

- Shaping research directions and outcomes
  - Modification of existing programs or activities
  - Creation of new programs or activities
  - Exception funding for research projects addressing PRG priorities
- Promoting collaboration
  - PRG recommendations were not directed at NCI alone or entirely within NCI's scope
- Establishing an effective process
  - Opportunity for outside input and feedback
  - Broadened perspectives

# Expanding the Reach of PRGs: PRG Spinoff Product

- Snapshots

- Concise documents

- Disease specific information
- Investment information
- NCI initiatives
- Research advances

- Audience

- Advocates, research community, public
- Decision makers and program staff
- International research partners

- Use and Impact

- Background preparation
- Congressional legislative materials
- Advocacy organization newsletters

<http://www.cancer.gov/aboutnci/servingpeople/cancer-statistics/snapshots>

National Cancer Institute

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
National Cancer Institute

### A Snapshot of Lung Cancer

**Incidence and Mortality Rate Trends**

Lung cancer is the second most common cancer and is the primary cause of cancer-related death in both men and women in the United States. The overall mortality rate for lung and bronchus cancer rose steadily through the 1980s and peaked around 1993. The trends in lung cancer incidence and mortality rates have closely mirrored historical patterns of smoking prevalence, after accounting for a lag period. Because the prevalence of smoking peaked later in women than in men, incidence and mortality rates for men have dropped in the past decade but have remained stable for women. Mortality rates are highest among African-American males, followed by white males.

It is estimated that approximately \$10.3 billion is spent in the United States each year on lung cancer treatment.

Source for incidence and mortality data: Surveillance, Epidemiology, and End Results (SEER) Program and the National Center for Health Statistics. Additional statistics and charts are available at <http://seer.cancer.gov>.

1. Cancer Trends Progress Report <http://springerpub.com/progressrpt>, © 2009 SEER.

**Trends in NCI Funding for Lung Cancer Research**

The National Cancer Institute's (NCI) investment in lung-cancer research increased from \$242.9 million in fiscal year (FY) 2006 to \$281.9 million in FY 2010. In addition, NCI supported \$69.3 million in lung cancer research in FY 2009 and 2010 using funding from the American Recovery and Reinvestment Act (ARRA).<sup>2</sup>

Source: NCI Office of Budget and Finance <http://nci.nih.gov/budget>.

2. The estimated NCI investment is based on funding associated with a broad range of cancer-related scientific activities. For additional information on research planning and budgeting at the National Institutes of Health (NIH), see <http://www.nih.gov/about>.

3. For more information regarding ARRA funding at NCI, see <http://www.cancer.gov/aboutnci/recovery/recoveryfunding>.

**Examples of NCI Activities Relevant to Lung Cancer**

- The Cancer Genome Atlas (TCGA) is accelerating the feasibility of systematically identifying the major genomic changes involved in 20 cancers using state-of-the-art genomic analysis technologies. TCGA researchers are hoping to identify genomic changes that divide lung cancers into molecular subgroups that distinguish between lung squamous cell carcinomas and adenocarcinomas, and between lung cancer in smokers and nonsmokers. <http://cancer.gov/tcga/>
- The Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial is determining whether certain cancer screening tests reduce deaths from prostate, lung, colorectal, and ovarian cancers. The lung cancer component of the PLCO is investigating whether regular chest X-rays will reduce deaths from lung cancer in both men and women. <http://dcp.cancer.gov/plco>
- Environment and Genetics in Lung Cancer Etiology (EDGE), a collaboration between scientists from the United States and Italy, aims to identify the genetic and environmental determinants of both lung cancer and smoking and to elucidate determinants of successful therapy and long-term survival. <http://edge.cancer.gov/>
- NCI supports two Lung Cancer Epidemiology Consortia, the International Lung Cancer Consortium and the Genetic Epidemiology of Lung Cancer Consortium. These consortia promote collaborative research and sharing of data from ongoing and completed lung cancer studies. <http://icpc-grants.cancer.gov/Consortia/15/aboutlung.html>
- The NCI-supported National Lung Screening Trial compared two ways of detecting lung cancer—low-dose helical computed tomography (CT) and standard chest X-ray—to determine the effects of these screening techniques on lung cancer mortality. <http://www.cancer.gov/clinicaltrials/nci09w01751a1e>
- Eight lung-cancer-specific Specialized Programs of Research Excellence (SPOREs) are promoting interdisciplinary research and moving basic research results from the laboratory to the clinical setting. <http://trp.cancer.gov/sporelung.htm>
- The "What You Need to Know About" Lung Cancer booklet provides information about lung cancer diagnosis, staging, treatment, and comfort care. Information specialists can also answer questions about cancer at 1-800-4-CANCER. <http://www.cancer.gov/cancerpublications/lyncbk>
- The NCI Lung Cancer Home Page provides up-to-date information on lung cancer treatment, prevention, genetics, causes, screening, testing, and other related topics. <http://www.cancer.gov/cancerpublications/lyncbk>

**Selected Advances in Lung Cancer Research**

- Results of a case-control study suggest that chronic inflammation from infection with *Cytomegalovirus pneumoniae* may promote lung cancer development. <http://dx.doi.org/10.1158/1078-0432.CCR.09-1110>, <http://www.ncbi.nlm.nih.gov/pubmed/20501758>
- Initial results of the National Lung Screening Trial (NLST) show 20 percent fewer lung cancer deaths among current or former heavy smokers screened by low-dose helical CT compared with those screened by chest X-ray. <http://www.ncbi.nlm.nih.gov/pubmed/21714641>
- Several genome-wide association studies have found that a genetic locus associated with an increased risk of lung cancer in smokers is also associated with lung cancer risk in nonsmokers. <http://dx.doi.org/10.1158/1078-0432.CCR.09-1110>, <http://www.ncbi.nlm.nih.gov/pubmed/20700438>
- A phase I clinical trial demonstrated that an experimental drug called PF299804 is well tolerated and may have antitumor activity in patients with advanced lung cancer. <http://www.ncbi.nlm.nih.gov/pubmed/21220471>

**NCI Lung Cancer Research Portfolio**

Data source: The NCI-funded Research Portfolio. Only projects with assigned scientific area codes are included. A description of research projects can be found on the NCI-funded Research Portfolio Web site at <http://www.cancer.gov/research>.

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# From PRGs to Provocative Questions

- Last PRG in 2004, some reporting is ongoing
- Process has been used by other ICs and organizations
- Provocative Questions
  - A new model for managing part of NCI's research portfolio
  - Workshops and website to solicit input from the research community
  - Define and solve the major or unsolved or neglected problems in cancer research

Varmus and Harlow (2012). Provocative questions in cancer research. *Nature*, 481, 436-437.  
<http://www.nature.com/nature/journal/v481/n7382/pdf/481436a.pdf>

Questions?