



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
**National Institutes of Health**



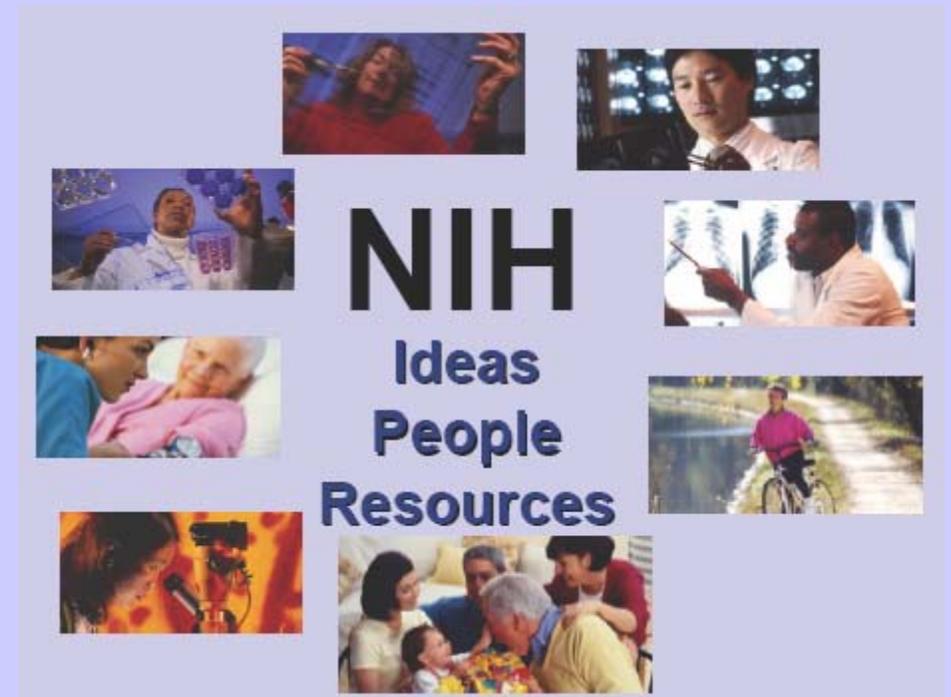
Not here to talk about SCIENCE but rather:

**PROCESS,**

**CULTURE,**

**RELATIONSHIPS,**

**TRENDS**



James Deye, PhD  
Program Director

In his remarks, von Eschenbach described a recent visit to a cancer center.

"I visited the Vanderbilt just two weeks ago," he said. "A relationship with the cancer center has been built with their mass spectrometer center to do proteomics for cancer. It doesn't even end there. The 28 mass specs that they have now, working effectively with the cancer center on that unbelievable research project, are now being linked to the most sophisticated, the most powerful computational opportunities at Oak Ridge. When you see that federal laboratory and that mass spec center focusing on the research programs of the cancer center, you recognize what an unbelievable opportunity that presents."





## In the News

### Alzheimer's Research



[Alzheimer's prevention trial early results](#)

- ▶ [Alzheimer's Disease Education & Referral Center](#)
- ▶ [9th International Alzheimer's Conference](#)

▶ [More Press Releases...](#)

### Health Issues

▶ [Menopausal Hormone Therapy](#)

### Medical Research Issues

- ▶ [Conflict of Interest Information](#)
- ▶ [NIH Roadmap](#)
- ▶ [Stem Cell Information](#)
- ▶ [HIPAA Privacy Rule](#)

### ▶ Health Information

A-Z index of NIH health resources, clinical trials, health hotlines, MEDLINEplus, drug information

### ▶ Grants & Funding Opportunities

Grants news, applications, grants policy, NIH Guide, award data, research training, research contracts, loan repayment programs, CRISP database, Small Business Research Programs

### ▶ News & Events

Press releases, media center, calendars, radio & video, media contacts

### ▶ Scientific Resources

Human Embryonic Stem Cell Registry, intramural research, special interest groups, library catalogs, journals, training, labs, scientific computing

### ▶ Institutes, Centers & Offices

The individual organizations that make up the NIH

▶ **Q&A**  
About NIH 

▶ **Career**  
Opportunities 

▶ **Visitor**  
Information 

▶ **Employee Information**

▶ **Información en español**

▶ **Search the NIH Web Site**

*Featured this week*

▶ **West Nile Virus Website**



NIH: Institutes, Centers & Offices - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Netscape Print Security Shop Stop

Bookmarks Netsite: <http://www.nih.gov/icd/> What's Related

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 U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
**National Institutes of Health**  
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# Institutes, Centers & Offices

**Quick Links**

- ▶ [OD](#)
- ▶ [NIDA](#)
- ▶ [NCI](#)
- ▶ [NIEHS](#)
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- ▶ [NIGMS](#)
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- ▶ [NIDDK](#)
- ▶ [CC](#)


**Office of the Director (OD)**  
 The Office of the Director is the central office at NIH for its 27 Institutes and Centers. The OD is responsible for setting policy for NIH and for planning, managing, and coordinating the programs and activities of all the NIH components. OD's program offices include the [Office of AIDS Research](#) and the [Office of Research on Women's Health](#), among others. [more >](#)

**NIH Institutes**


**National Cancer Institute (NCI)** - Established in 1937  
 NCI leads a national effort to reduce the burden of cancer morbidity and mortality. Its goal is to stimulate and support scientific discovery and its application to achieve a future when all cancers are uncommon and easily treated. Through basic and clinical biomedical research and training, NCI conducts and supports programs to understand the causes of cancer; prevent, detect, diagnose, treat, and control cancer; and disseminate information to the practitioner, patient, and public. [more >](#)


**National Eye Institute (NEI)** - Est. 1968  
 NEI conducts and supports research that helps prevent and treat eye diseases and other disorders of vision. This research leads to sight-saving treatments, reduces visual impairment

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Start 2:35 PM

## NIH Funding Opportunities

- [Funding Opportunities \(RFAs, PAs\) and Notices](#), as published in the *NIH Guide for Grants and Contracts: Current Weekly Publication*  
[Subscribe to Weekly E-Mail](#)
- [NIH Research Training Opportunities](#)
- [Small Business Funding Opportunities \(SBIR/STTR\)](#)
- [Selected Grant Programs](#)
- [NIH Roadmap Initiatives](#)

## Grant Application Submission

- [NIH Forms and Applications](#)
- [Receipt Dates & Application Submission](#)
- [Investigator/Grantee Resources](#)

## Awarded Grants Information

- [Award Data](#)
- [CRISP Database of Awarded Grants](#)

## Grants Policy and Guidelines

- [Grants Policy and Guidance](#)
- [Grants Compliance and Oversight](#)
- [Selected Grant Programs](#)
- [Laboratory Animal Welfare \(OLAW\)](#)
- [Human Subjects \(OHRP\)](#)
- [Intellectual Property Policy](#)
- [Peer Review Policy and Issues](#)

## Electronic Research Administration (eRA)

- [eRA Home Page](#)
- [NIH Commons](#)
- [iEdison: Invention Reporting](#)

## About OER - OER Resources

- [Introduction](#) to Extramural Research from Dr. Norka Ruiz Bravo
- [OER Outreach Activities](#)
- [OER Help and Other Resources:](#)
  - [Getting Help from OER](#)
  - [NIH Visitor Information](#)
  - [Staff Directories](#)

## Grants News Flashes

Dr. Zerhouni Announces the NIH Roadmap for Medical Research

### Other Site Resources:

- ▢ [Site Map](#)
- ▢ [Document Index](#)
- ▢ [Help Downloading Files](#)
- ▢ [Contact Us](#)

### Frequently Requested Links:

—Select Link Below—

- ▢ [Related Links](#)

# NIH GRANT MECHANISMS

<b>TYPE</b>	<b>CODE</b>	<b>YEARS</b>
<b>Regular research grant</b>	<b>R01</b>	<b>3-5</b>
<b>MERIT award</b>	<b>R37</b>	<b>8-10</b>
<b>Program project grant</b>	<b>P01</b>	<b>3-5</b>
<b>Conference grant</b>	<b>R13</b>	<b>1-5</b>
<b>Small grant</b>	<b>R03</b>	<b>2</b>
<b>Exploratory/developmental grant</b>	<b>R21</b>	<b>2</b>
<b>Phased Innovation award</b>	<b>R21/33</b>	<b>2/2-3</b>
<b>SBIR grant</b>	<b>R/U43/44</b>	<b>0.5/2</b>
<b>STTR grant</b>	<b>R/U41/42</b>	<b>1/2</b>

# Requests for Applications (RFA)

- Announcement describing an institute initiative in a well-defined scientific area
- Invitation to the field to submit research grant applications for a one-time competition
- Set-aside of funds for a certain number of awards
- Applications generally reviewed within the issuing institute

# Program Announcement (PA)

- Invites grant applications in a given research area
- May describe new or expanded interest in a particular extramural program
- May be a reminder of a continuing interest in a particular extramural program
- Generally has no funds set aside
- Applications reviewed in CSR along with unsolicited grant applications

# NIH Opportunities for Young Investigators

- National Research Service Individual Fellowship (F32)
- Howard Temin Bridging Award (K01)
- Clinical Oncology Research Career Development Award (K12)
- Transition Career Development Award (K22)
- Mentored Patient-Oriented Research Career Development Award (K23)
- Small Grant (R03)
- Academic Research Enhancement Award (R15)
- Exploratory/Developmental Grant (R21)

# Typical Timeline for a New Individual Research Project Grant Application (R01)

There are three overlapping cycles per year:

- **Submit** in **February** (June, October)
- **Review** in **June** (October, February)
- **Council** in **September** (January, May)
- **Award** in **December** (April, July)

Cycle 1----

Cycle 2----

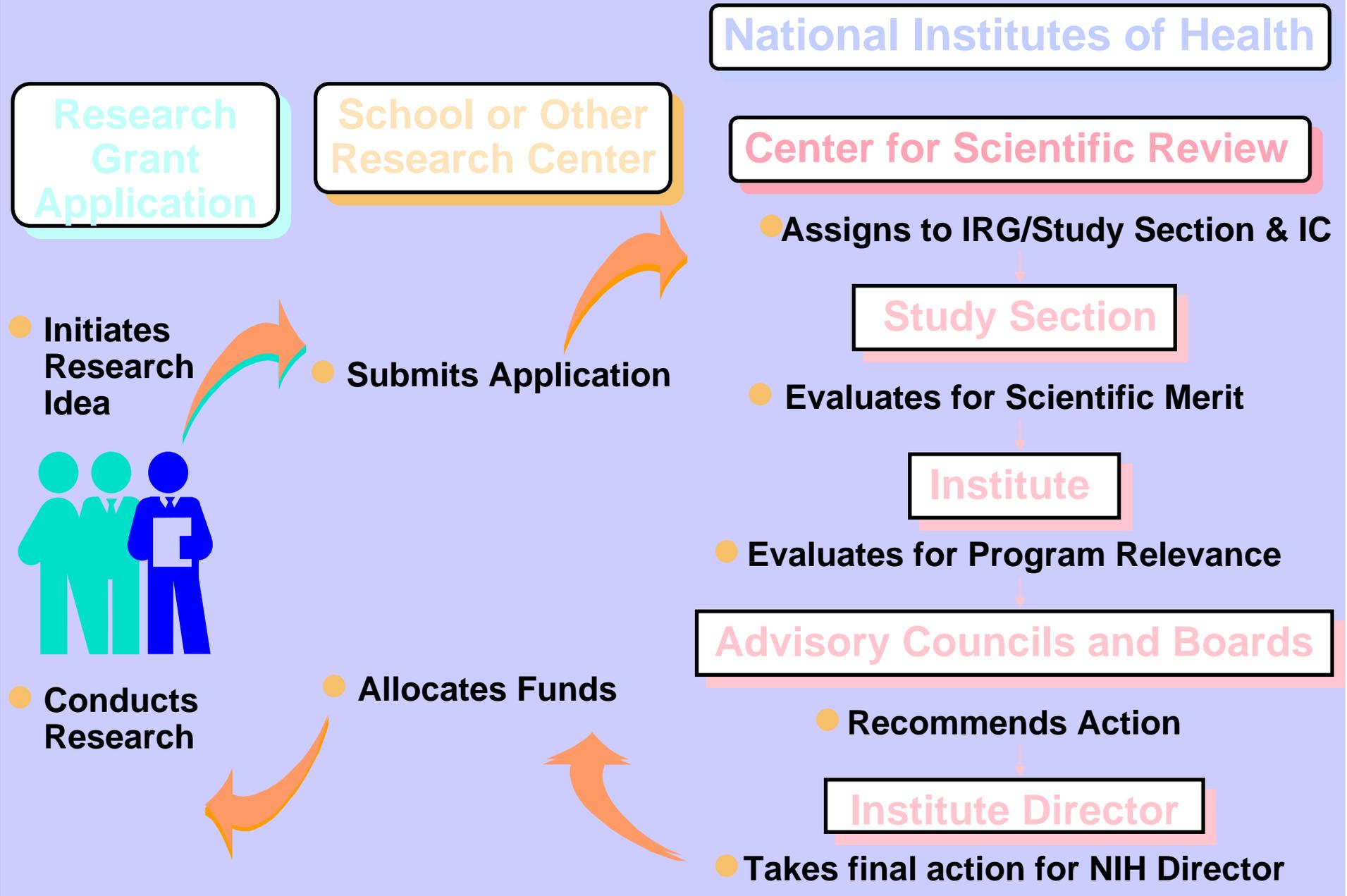
Cycle 3----

# *Applications Submitted to NIH*

- Approximately 80,000 grant applications are submitted to NIH each year, of which 25-30% are funded
- Competing grant applications are received for three review cycles per year



# Review Process for a Research Grant



# *Types of Scientific Review Groups*

## *Where are Applications Reviewed?*

### **GROUPS**

#### **CSR IRGs**

- Study Sections
- Special Emphasis Panels

#### **INSTITUTES**

- Scientific Review Groups
- Contract Review Committees

### **APPLICATIONS REVIEWED**

- Research Projects
  - Academic Research Enhancement Awards
  - Postdoctoral Fellowships
  - Small Business Innovation Research
  - Shared Instrumentation
- 
- Program Projects
  - Centers
  - Institutional Training Grants
  - Conference Grants
  - Career Awards
  - Small Grants
  - RFAs
  - Contracts

# Role of Scientific Review Administrator

- Performs administrative and technical review of applications
- Selects reviewers
- Manages study sections
- Prepares summary statements
- Determines acceptance of supplemental materials for review

# Role of Program Director

- **Advise Applicants:**
  - Application Process**
  - New or Revised Grant Applications**
- **Make Funding Recommendations**
  - Competing and Non-Competing Grants**
- **Attend Study Section Meetings**
- **Initiate or Encourage Interest in a Scientific Area of High Priority to the NCI through:**
  - Program Announcements, Request for Applications, Grant Exceptions, Workshops**

# Who Do You Contact & When?

	<b>Program</b>	<b>Review</b>
<b>Pre-Application</b>	+	+
<b>Review</b>	-	+
<b>Post-Review</b>	+	-
<b>Award</b>	+	-
<b>Renewal</b>	+	+

# PROACTIVE APPROACH

- **Discuss Ideas Before Writing**
- **Get Feedback As You Write the Application**
- **Suggest Study Section(s)**
- **Suggest Institute Assignment**
- **Submission of supplemental material to the Scientific Review Administrator**

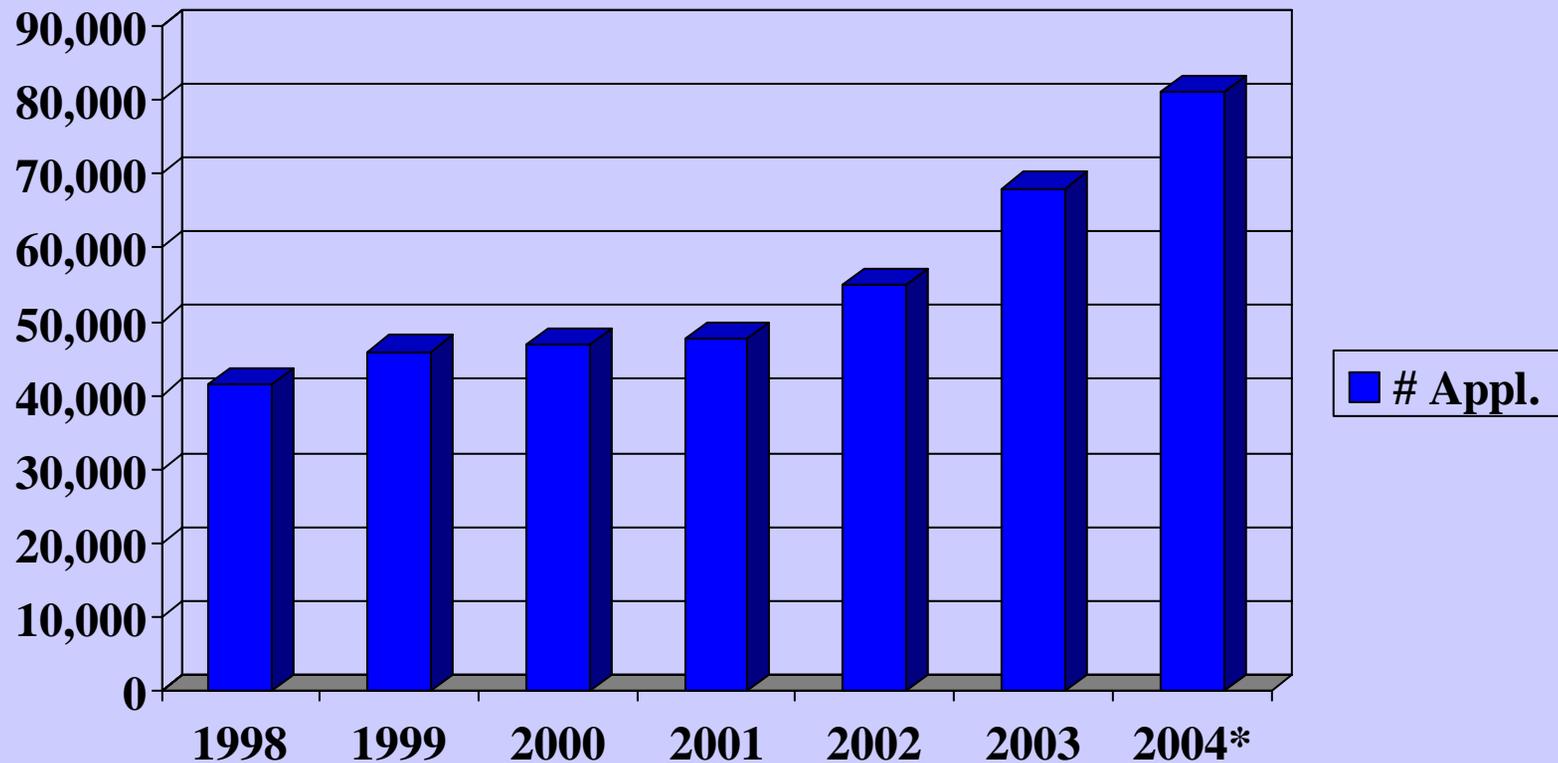
# Problem Areas in Clinical Research Grant Applications

- Lacks a testable hypothesis
- Unfocused specific aims (and **clinical** relevance)
- Poor prioritization of specific aims
- Lack of milestones and time tables
- Lack of critical assessment including alternative plans
- Lack of sufficient preliminary data
- Poor selection and documentation of study population

# Problem Areas in Clinical Research Grant Applications

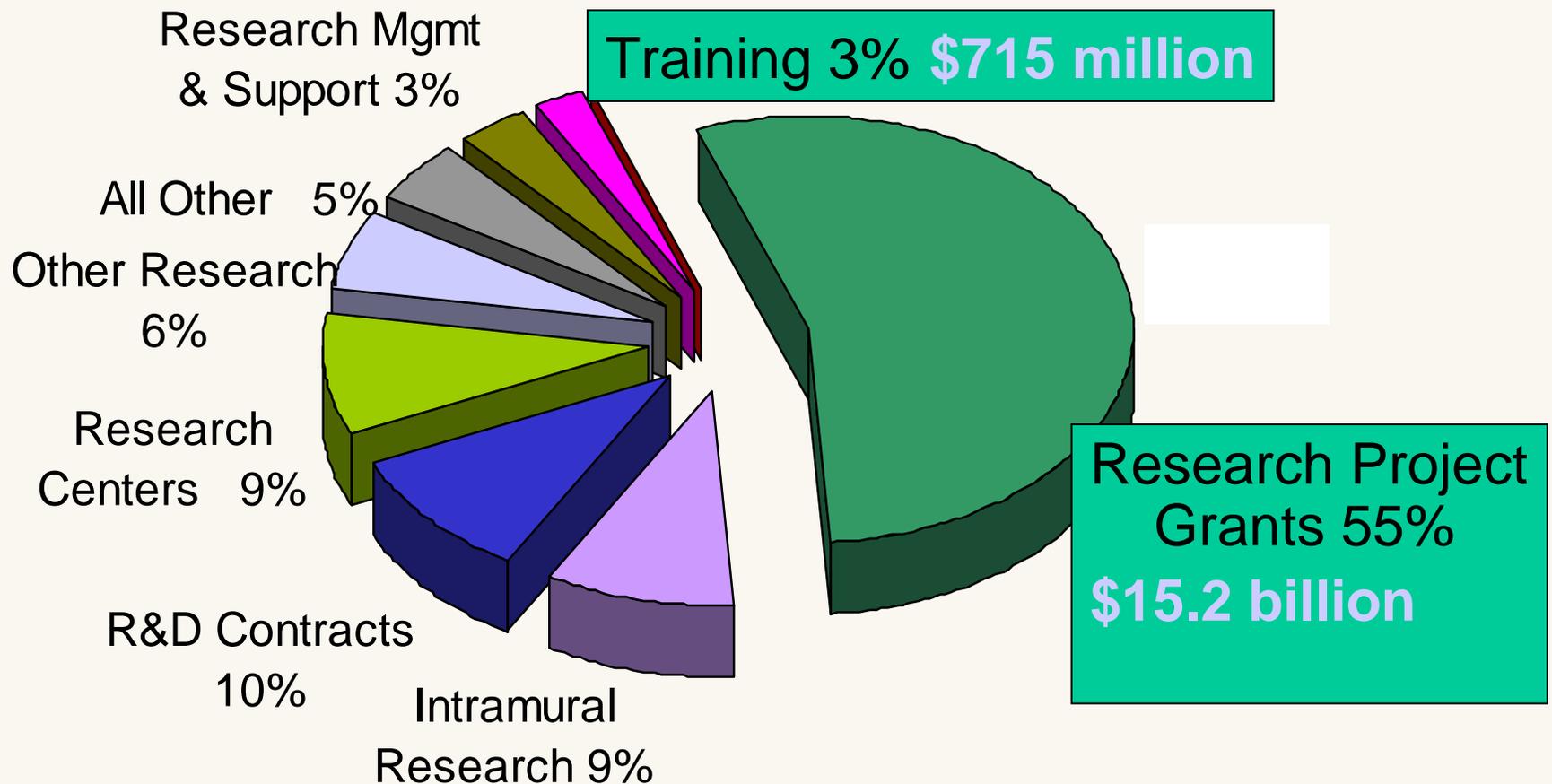
- Unclear relationship between laboratory and clinical studies
- Statistical power deficiencies
  - Clinical trial itself
  - Laboratory correlative studies
- Poor presentation style and proof reading
- Failure to follow PHS 398 instructions

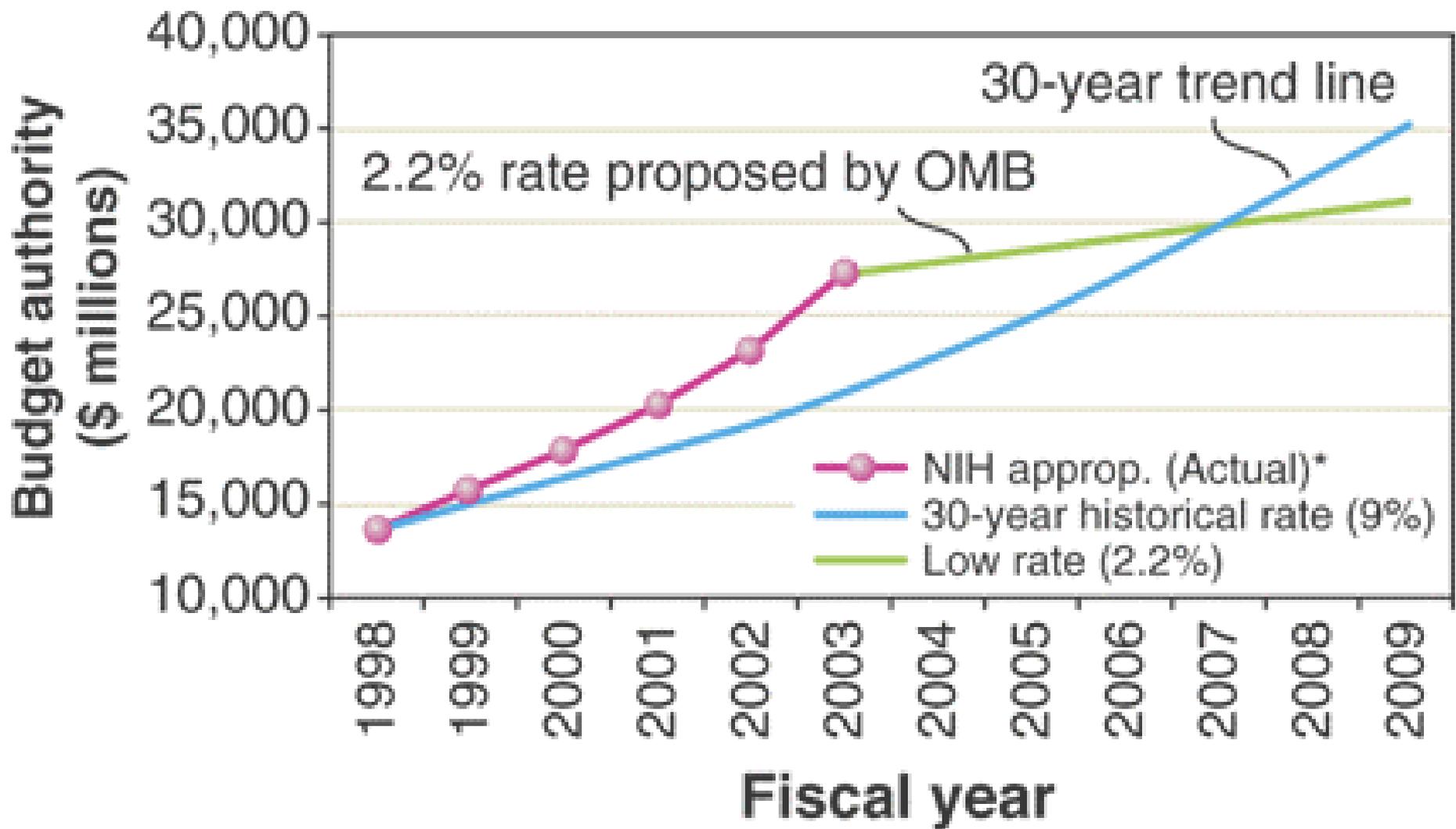
# APPLICATIONS RECEIVED BY FISCAL YEAR



\* projected

# FY 2004 President's Budget Request \$27.893 Billion



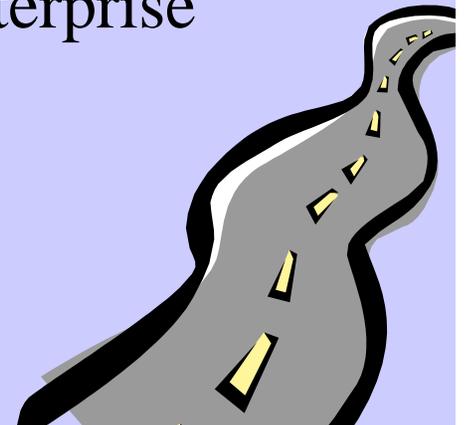


## NCI BUDGET PICTURE for 2004

FY 2003 Budget	\$4,592,000,000
Omnibus Bill Budget '04'	\$4,771,000,000
Difference = 3.9% increase	\$ 178,000,000
Less 2 set-asides, new money=	\$ 150,000,000
Less non-competing commitments (i.e. ~ 1.5% increase in RPG funds)	\$ 37,000,000

# NIH Roadmap

- Agency-wide effort to identify critical roadblocks and knowledge gaps that constrain rapid advances in biomedical research progress
- Themes:
  1. New Pathways to Discovery
  2. Multidisciplinary Research Teams of the Future
  3. Re-engineering the Clinical Research Enterprise





- ▶ [Overview](#)
- ▶ [NIH Roadmap Initiatives](#)
- ▶ [Funding Opportunities](#)
- ▶ [Funded Research](#)
- ▶ [Public Meetings and Workshops](#)
- ▶ [Frequently Asked Questions](#)
- ▶ [News and Information](#)
- ▶ [NIH Roadmap Institute and Center Liaisons](#)
- ▶ [Subscribe to the NIH Roadmap E-mail list](#)

## New Pathways to Discovery

- ▶ [Building Blocks, Biological Pathways, and Networks](#)
- ▶ [Molecular Libraries and Imaging](#)
- ▶ [Structural Biology](#)
- ▶ [Bioinformatics and Computational Biology](#)
- ▶ [Nanomedicine](#)

## Research Teams of the Future

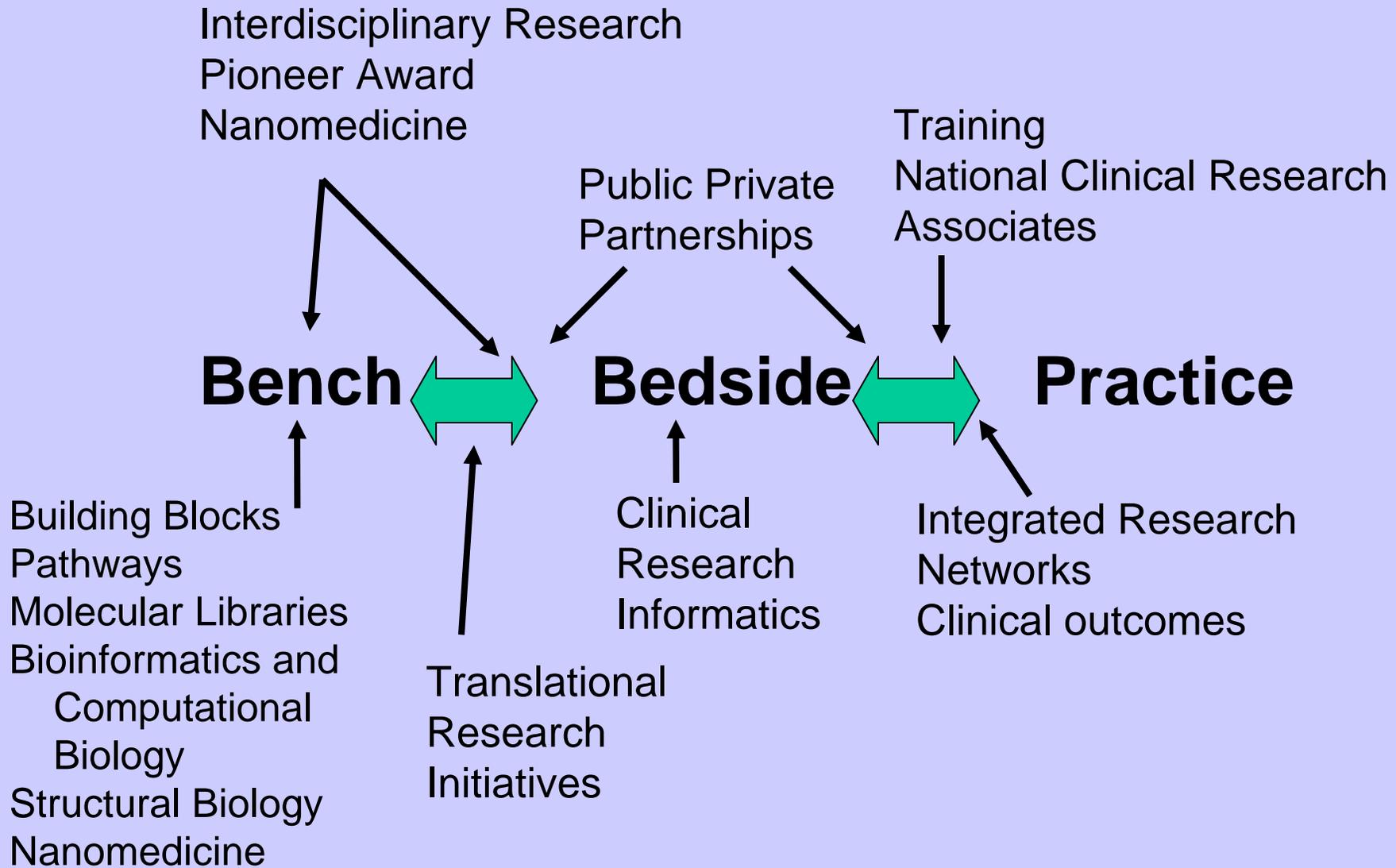
- ▶ [High-Risk Research](#)
- ▶ [Interdisciplinary Research](#)
- ▶ [Public-Private Partnerships](#)

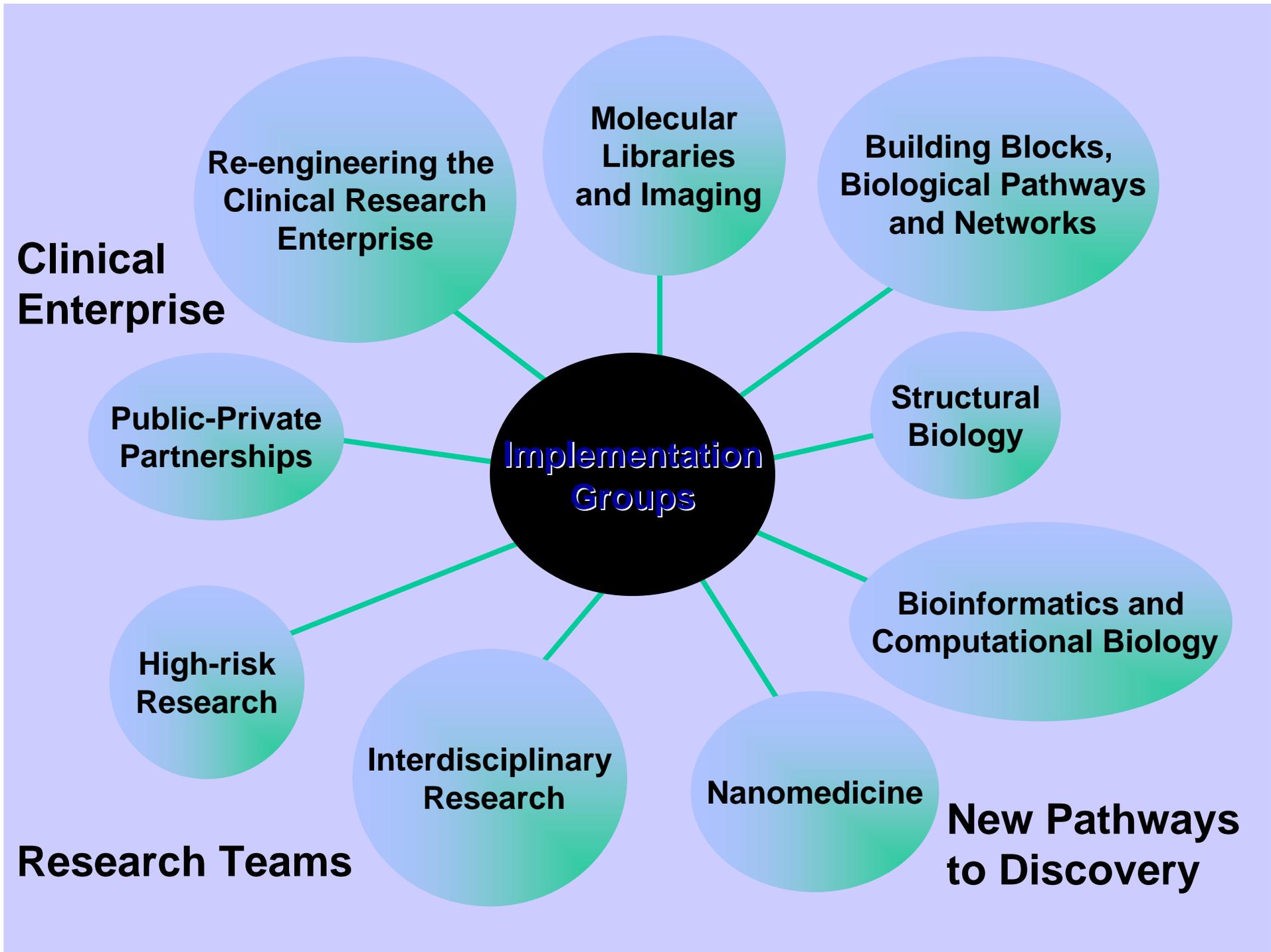
## Re-engineering the Clinical Research Enterprise

## What's New

- ▶ [PA: Molecular Libraries Screening Instrumentation – SBIR/STTR](#)
- ▶ [RFA: Interdisciplinary Health Research Training: Behavior, Environment and Biology \(Re-issuance\)](#)
- ▶ [RFA: Pilot-Scale Libraries for High-Throughput Screening](#)
- ▶ [RFA: New Methodologies for Natural Products Chemistry](#)
- ▶ [Notice: Novel Preclinical Tools for Predictive ADME-Toxicology](#)
- ▶ [Notice: Planning Grants for Regional Translational Research Centers, Pre-Application Meeting](#)

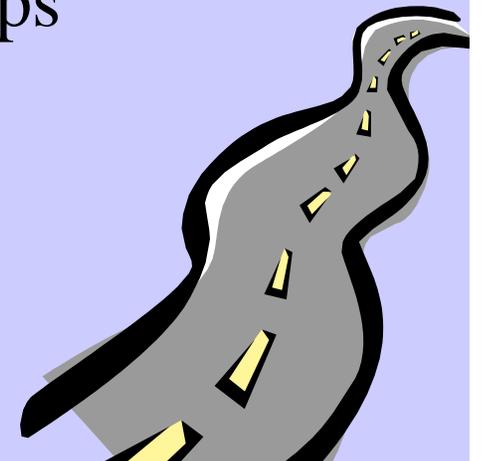
# NIH Roadmap Strategy





# New Pathways to Discovery

- Favor integrative approaches to systems biology
- Quantitative analyses of dynamic genome wide expression patterns and their controls
- Comprehensive analyses of complex molecular networks and their regulation
- Genes/environment/lifestyles relationships



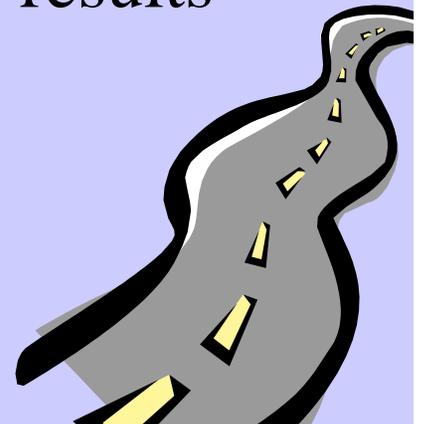
# Research Teams of Future

- Overcome structural/cultural barriers to multidisciplinary team science
- Establish inter-disciplinary undergraduate and graduate programs
- Create better mechanisms for multi-disciplinary team funding without compromising R01 research
- Better support for high risk/high impact research
- Key to the system remains the creative individual!



# Re-engineering Clinical Research Enterprise

- Develop a national clinical research infrastructure
- Develop standardized clinical research data systems
- Maximize access to patients, data, and biospecimens
- Create AHCs/community research partnerships to facilitate rapid cycle evaluations
- Ensure dissemination and implementation of results



# Roadmap Funding

dollars in millions

	<b>FY04</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>	<b>Total</b>
Pathways to Discovery	<b>64</b>	<b>137</b>	<b>169</b>	<b>182</b>	<b>209</b>	<b>188</b>	<b>948</b>
Research Teams	<b>27</b>	<b>39</b>	<b>44</b>	<b>92</b>	<b>96</b>	<b>93</b>	<b>390</b>
Clinical Research	<b>38</b>	<b>61</b>	<b>120</b>	<b>174</b>	<b>214</b>	<b>227</b>	<b>833</b>
<b>Total</b>	<b>128</b>	<b>237</b>	<b>332</b>	<b>448</b>	<b>520</b>	<b>507</b>	<b>2,172</b>

**0.34% 0.63%**

**~0.9%**

**To be competed for in a common pool  
of initiatives by all researchers from every discipline**



# The Nation's Investment in Cancer Research

A Plan and Budget Proposal for Fiscal Year 2006

[When We Reach Our Challenge Goal](#)

[Director's Message](#)

[Eliminating the Suffering and Death Due to Cancer](#)

[Our Strategic Investments for Fiscal Year 2006](#)

[Cancer Prevention, Early Detection, and Prediction](#)

[Overcoming Cancer Health Disparities](#)

[Strategic Development of Cancer Interventions](#)

[An Integrated Clinical Trials System](#)

[Advanced Technologies](#)

[Integrative Cancer Biology](#)

[Molecular Epidemiology](#)

[Building Research Teams of the Future](#)



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[Valuable World Wide Web Locations](#)

[Previous Plans and Budgets](#)



# NCI Alliance for Nanotechnology in Cancer

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Nanotechnology:  
Critical Endeavor  
in Cancer

Nanotechnology  
Centers of Excellence

Multidisciplinary  
Research Teams

Nanotechnology  
Platforms for Cancer  
Research

Nanotechnology  
Characterization  
Lab (NCL)

## Nanotech Highlights

**RFA-CA-05-024** **NEW**  
**Centers of Cancer  
Nanotechnology  
Excellence**

Posted December 2, 2004

**NEW**

## Funding Opportunities

Please visit the Funding Opportunities section of this website often to view specific research and training opportunities.

### **NOTICE: NCI Alliance for Nanotechnology in Cancer**

#### **PRE-APPLICATION MEETING**

**December 14, 2004**

**9:00 am - 5:00 pm ET**

Natcher Conference Center, Balcony A

NIH, Main Campus

Bethesda, Maryland

[\[more info\]](#)

### **RFAs: CENTERS OF CANCER NANOTECHNOLOGY EXCELLENCE**

**RFA Number:** RFA-CA-05-024

**Key Dates:**  Letter of Intent Receipt Date: February 25, 2005

Application Receipt Date: March 25, 2005

### **MULTIDISCIPLINARY CAREER DEVELOPMENT IN CANCER NANOTECHNOLOGY RESEARCH**

**RFA Number:** RFA-CA-05-025

**Key Dates:**  Letters of Intent Receipt Date: Not Applicable

Application Receipt Date: March 25, 2005



## NCI Alliance for Nanotechnology in Cancer

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Nanotechnology:  
Critical Endeavor  
in Cancer

Nanotechnology  
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### Nanotech Highlights

**RFA-CA-05-024**  
**Centers of Cancer  
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Excellence**

**NEW**

Posted December 2, 2004

**NEW**

## Nanotechnology Seminar Series

The National Cancer Institute is organizing a series of lectures that will feature speakers from throughout the cancer research community. These distinguished speakers will share their innovative perspectives on current research and development efforts in the field of nanotechnology and their application to cancer diagnosis, treatment and prevention.

Each event in the Seminar Series is available for viewing via webcast on the day of the event and archived through the NCI Alliance for Nanotechnology website below.

### ▶ January 13, 2005

#### Esther H. Chang, Ph.D.

Professor of Oncology and Otolaryngology  
Georgetown University Medical Center  
Lombardi Comprehensive Cancer Center

Location: Building 31, Room 6C10  
NIH Bethesda, Maryland

Time: 2:00pm - 3:00pm ET

### ▶ February 24, 2005

#### Robert S. Langer, Ph.D.

Kenneth J. Germeshausen Professor of Chemical and Biomedical Engineering  
Massachusetts Institute of Technology



**Nanomedicine Center Concept Development Awards (PN1)**

RFA-RM-04-018

PI Name	Institution Name	Title
BAKER, JAMES R	UNIVERSITY OF MICHIGAN AT ANN ARBOR	<a href="#">Nanoscale Investigation of Membranes</a>
BAO, GANG	GEORGIA INSTITUTE OF TECHNOLOGY	<a href="#">Nanomachines for RNA Synthesis and DNA Re</a>
BRIANT, CLYDE L	BROWN UNIVERSITY	<a href="#">Biocompatibility at the Nanoscale</a>
CHIU, WAH	BAYLOR COLLEGE OF MEDICINE	<a href="#">Center for Protein Fold Machinery</a>
CROWE, JAMES E	VANDERBILT UNIVERSITY	<a href="#">Immunomodulation on Nanoscale</a>
EATON, DOUGLAS C	EMORY UNIVERSITY	<a href="#">Center for Development of Biological Nanosensors</a>
GILBERT, SUSAN P	UNIVERSITY OF PITTSBURGH AT PITTSBURGH	<a href="#">The Biology of Mitotic Motors-A Nanomedicine Consortium</a>
GILLIS, KEVIN D	UNIVERSITY OF MISSOURI COLUMBIA	<a href="#">A Nanomedicine Center for Molecular Membrane Physiology</a>
HO, CHIH-MING	UNIVERSITY OF CALIFORNIA LOS ANGELES	<a href="#">Nanotech Visualization/Control of Reversible Apoptosis</a>
ISACOFF, EHUD	UNIVERSITY OF CALIFORNIA BERKELEY	<a href="#">Berkeley Nanomedicine Center in Membrane Signaling</a>

Research

Nanotechnology  
Characterization  
Lab (NCL)

Nanotech Highlights

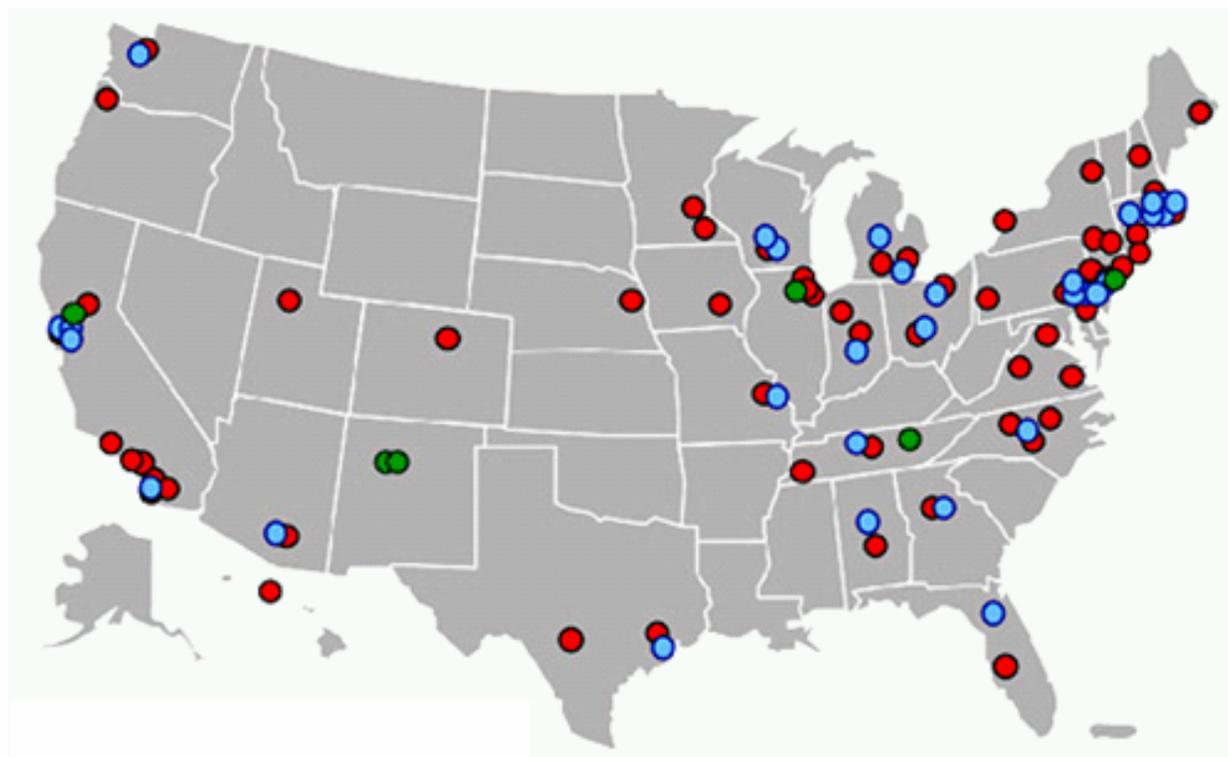
**RFA-CA-05-024** **NEW**  
Centers of Cancer  
Nanotechnology  
Excellence  
Posted December 2, 2004

**RFA-CA-05-025** **NEW**  
Multidisciplinary Career  
Development in Cancer  
Nanotechnology Research  
Posted December 1, 2004

**RFA-CA-05-026** **NEW**  
Cancer Nanotechnology  
Platform Partnerships  
Posted November 30, 2004

**NCI Alliance for  
Nanotechnology in Cancer** **NEW**  
**PRE-APPLICATION MEETING**  
**December 14, 2004**  
**9:00 am - 5:00 pm ET**  
Natcher Conference Center  
NIH, Main Campus

Select Map View



- NCI Cancer Centers**
- NCI-Funded Nanotech Projects**
- DOE Nanoscale Science Research Centers**
- All Centers**

# BIOENGINEERING RESEARCH PARTNERSHIPS

RELEASE DATE: November 18, 2003 PA NUMBER: PAR-04-023

EXPIRATION DATE: August 23, 2006

In the context of this program, a **partnership is a multi-disciplinary research team** that applies an integrative, systems approach to develop knowledge and/or methods to prevent, detect, diagnose, or treat disease or to understand health and behavior. The partnership **must include appropriate bioengineering or allied quantitative sciences** in combination with biomedical and/or clinical components. The Principal Investigator (PI) also serves as the project manager and must be capable of leading the proposed effort. A BRP may **propose design-directed, developmental,** discovery-driven, or hypothesis-driven research at universities, **national laboratories**, medical schools, large or small businesses, or other public and private entities or combinations of these entities. It is expected that a BRP will have a well-defined goal or deliverable that will be achieved

## Extension of Bioengineering Research Grant (BRG) Program Announcement ([PA-02-011](#))

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**Notice Number:** NOT-EB-04-003

### Key Dates

Release Date: October 08, 2004

### Issued by

National Institute of Biomedical Imaging and Bioengineering (NIBIB), (<http://www.nibib.nih.gov>)

National Cancer Institute (NCI), (<http://www.nci.nih.gov>)

National Center for Research Resources (NCRR), (<http://www.ncrr.nih.gov>)

National Eye Institute (NEI), (<http://www.nei.nih.gov>)

National Heart, Lung, and Blood Institute (NHLBI), (<http://www.nhlbi.nih.gov>)

National Human Genome Research Institute (NHGRI), (<http://www.genome.gov>)

National Institute on Aging (NIA), (<http://www.nia.nih.gov>)

National Institute of Allergy and Infectious Diseases (NIAID), (<http://www.niaid.nih.gov>)

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), (<http://www.niams.nih.gov>)

National Institute of Biomedical Imaging and Bioengineering (NIBIB), (<http://www.nibib.nih.gov>)

National Institute of Child Health and Human Development (NICHD), (<http://www.nichd.nih.gov>)

National Institute on Drug Abuse (NIDA), (<http://www.nida.nih.gov>)

National Institute on Deafness and Communication Disorders (NIDCD), (<http://www.nidcd.nih.gov>)

National Institute of Dental and Craniofacial Research (NIDCR), (<http://www.nidcr.nih.gov>)

National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), (<http://www.niddk.nih.gov>)

National Institute of Environmental Health Sciences (NIEHS), (<http://www.niehs.nih.gov>)

National Institute of General Medical Sciences (NIGMS), (<http://www.nigms.nih.gov>)

National Institute of Mental Health (NIMH), (<http://www.nimh.nih.gov>)

National Institute of Neurological Disorders and Stroke (NINDS), (<http://www.ninds.nih.gov>)

National Institute of Nursing Research (NINR), (<http://ninr.nih.gov/ninr>)

National Library of Medicine (NLM), (<http://www.nlm.nih.gov>)

# Exploratory/Developmental Grants (R21)

- **UTILIZED FOR PILOT OR FEASIBILITY STUDIES TO SUPPORT NOVEL, HIGH RISK/HIGH PAYOFF RESEARCH**
- **MINIMAL PRELIMINARY DATA REQUIRED**
- **SHORT TERM RESEARCH PROJECTS (UP TO TWO YEARS)**
- **LIMITED FUNDS (100,000 – 250,000 DIRECT COSTS)**
- **NON-RENEWABLE BUT INITIATIVE MAY INCLUDE OPTION OF SUPPORT THROUGH R33 MECHANISM**

# Small Grants Program (R03)

- **SUPPORTS PRELIMINARY SHORT TERM STUDIES TO TEST NEW IDEAS**
- **FUNDS LIMITED TO \$50,000 DIRECT COSTS**
- **SHORT TERM RESEARCH PROJECTS (UP TO TWO YEARS)**
- **TIME INTERVAL FROM APPLICATION TO FUNDING IS SHORTENED**
- **INSTITUTE REVIEW COMMITTEE**
- **NON-RENEWABLE GRANTS**

# Small Business Programs

**SBIR: Set-aside Program for Small Business Concerns to engage in Federal R&D-- with potential for commercialization.**

**STTR: Set-aside Program to facilitate cooperative R&D between Small Business Concerns and U.S. Research Institutions-- with potential for commercialization.**

Department of Health & Human Services  
NATIONAL INSTITUTES OF HEALTH  
**National Institute of Biomedical  
Imaging and Bioengineering**

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The National Institute for Biomedical Imaging and Bioengineering (NIBIB) is the newest of the research institutes at the National Institutes of Health (NIH). The NIBIB is authorized by law H.R. 1795 ([P.L. 106-580](#)) which was signed by President William Clinton on December 29, 2000.

The mission of the NIBIB is to "improve health by promoting fundamental

**What's New?**

[NIH and NSF Sponsor  
Conference on Bridging  
the Sciences](#)

[World Technology  
Evaluation Center  
\(WTEC\) Panel on R&D  
in Biosensing Now  
Available](#)

[Revised PHS Forms  
Now Available](#)

[Final Report of the  
NIH/NSF/NASA Group  
on Image-Guided  
Interventions,  
May 13-14, 2004](#)

Department of Health & Human Services  
NATIONAL INSTITUTES OF HEALTH  
**National Institute of Biomedical  
Imaging and Bioengineering**

News & Events

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**NIST**  
National Institute of  
Standards and Technology  
U.S. Department of Commerce



**Interagency Workshop on Research at the Interface  
of the Life Sciences and Physical Sciences  
May 10, 2004**

On May 10, 2004, an "Interagency Workshop on Research at the Interface of the Life Sciences and Physical Sciences" was held in Room 6C6 of Building 31 on the NIH Main Campus in Bethesda, Maryland. The meeting was held in response to language in the House reports accompanying the FY2004 Labor-Health and Human Services (L-HHS) and

interfaceagendafinal.pdf (application/pdf Object) - Mozilla

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**Research at the Interface of the Life and Physical Sciences:  
Bridging the Sciences**

**Agenda**

**Tuesday, November 9, 2004  
Holiday Inn Select Hotel  
Bethesda, Maryland**

8:00 a.m.	Welcome and Orientation (Conference Coordinators)
8:15	Charge to Participants: Dr. Arden Bement (NSF) and Dr. Elias Zerhouni (NIH)
8:30	Breakout Session I: Opportunities and Grand Challenges for Research at the Interface
9:45	Break
10:15	Plenary Session I: Summary Reports from the Three Breakout Groups and

8.5 x 11 in 1 of 1

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IMAGE-GUIDED INTERVENTIONS  
WORKSHOP

BETHESDA, MARYLAND  
MAY 13-14, 2004



8.5 x 11 in

1 of 44



Division of Cancer Treatment and Diagnosis

# Radiation Research Program

▶ [Radiation Oncology Sciences Program \(ROSP\)](#)

▶ [RRP Staff](#)

▶ [Site Map](#)

Radiation Research Program  
Division of Cancer Treatment and Diagnosis  
National Cancer Institute  
6130 Executive Boulevard  
Suite 6000  
Rockville, MD 20892

Email any research-related

## About RRP

- [Radiation Research Program](#)
- [Clinical Radiation Oncology](#)
- [Oncology Outreach](#)
- [Radiotherapy Development Branch](#)
- [Molecular Radiation Therapeutics Branch](#)
- [Medical Physics](#)

## Initiatives/Interest Areas

- [Workshop Reports](#)
- [Initiatives](#)
- [Other NIH Sites](#)

## Research Links

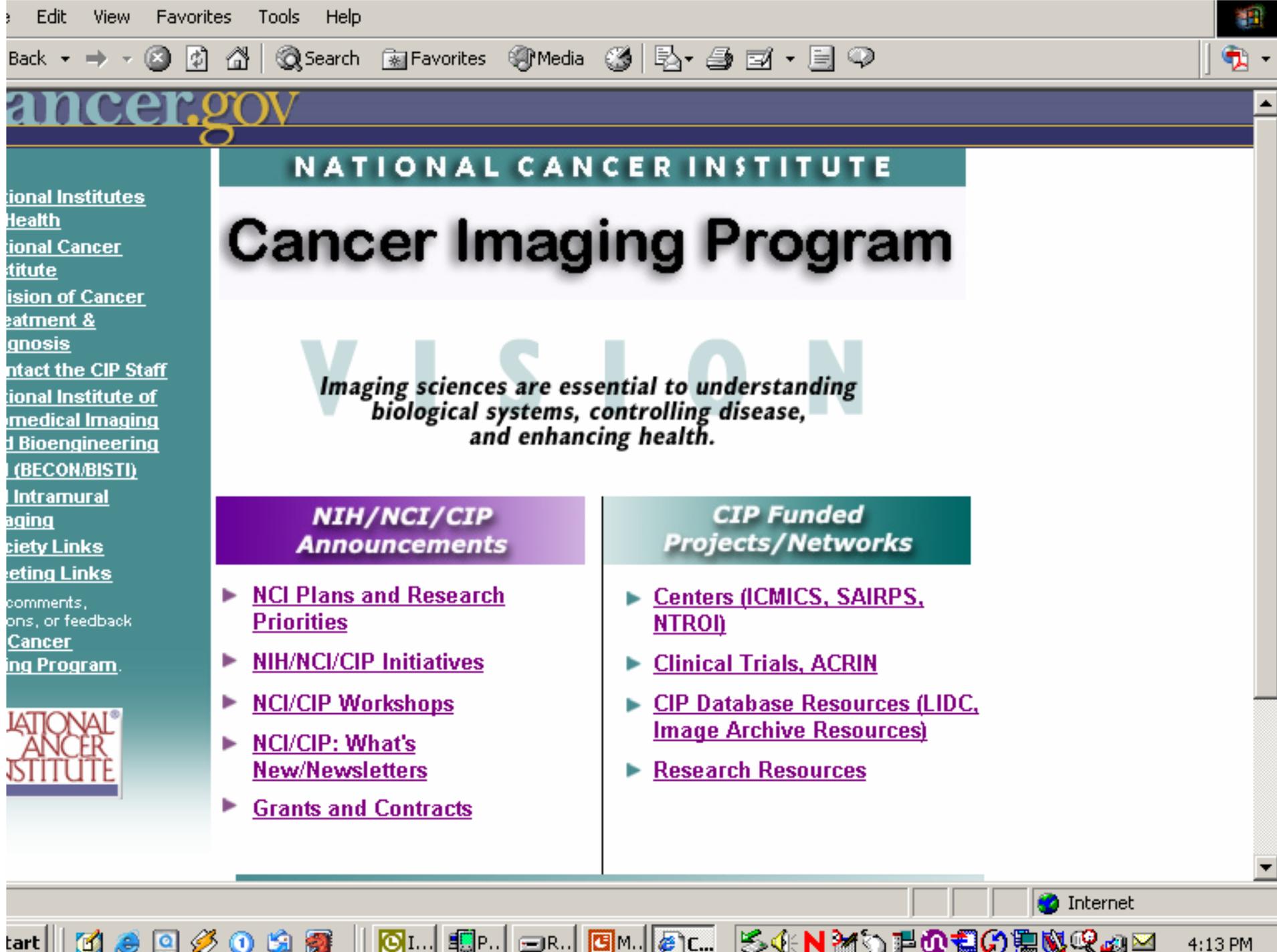
## Grant and Contract Funding

- [Fiscal Year Grant Dollars \(1998 - 2002\)](#)
- [Cooperative Planning Grant for Cancer Disparities Research Partnership](#)
- [Applying for an NIH Grant?](#)
- [Information for New Grantees](#)
- [Grants Involving Clinical Trials](#)
- [Human Research Protection](#)
- [NCI Extraordinary Opportunities](#)

## Clinical Trials

- [Federal Resources](#)
- [Other Web Resources](#)
- [Cancer Centers Supported by NCI](#)





# Cancer Imaging Program

**VISION**

*Imaging sciences are essential to understanding biological systems, controlling disease, and enhancing health.*

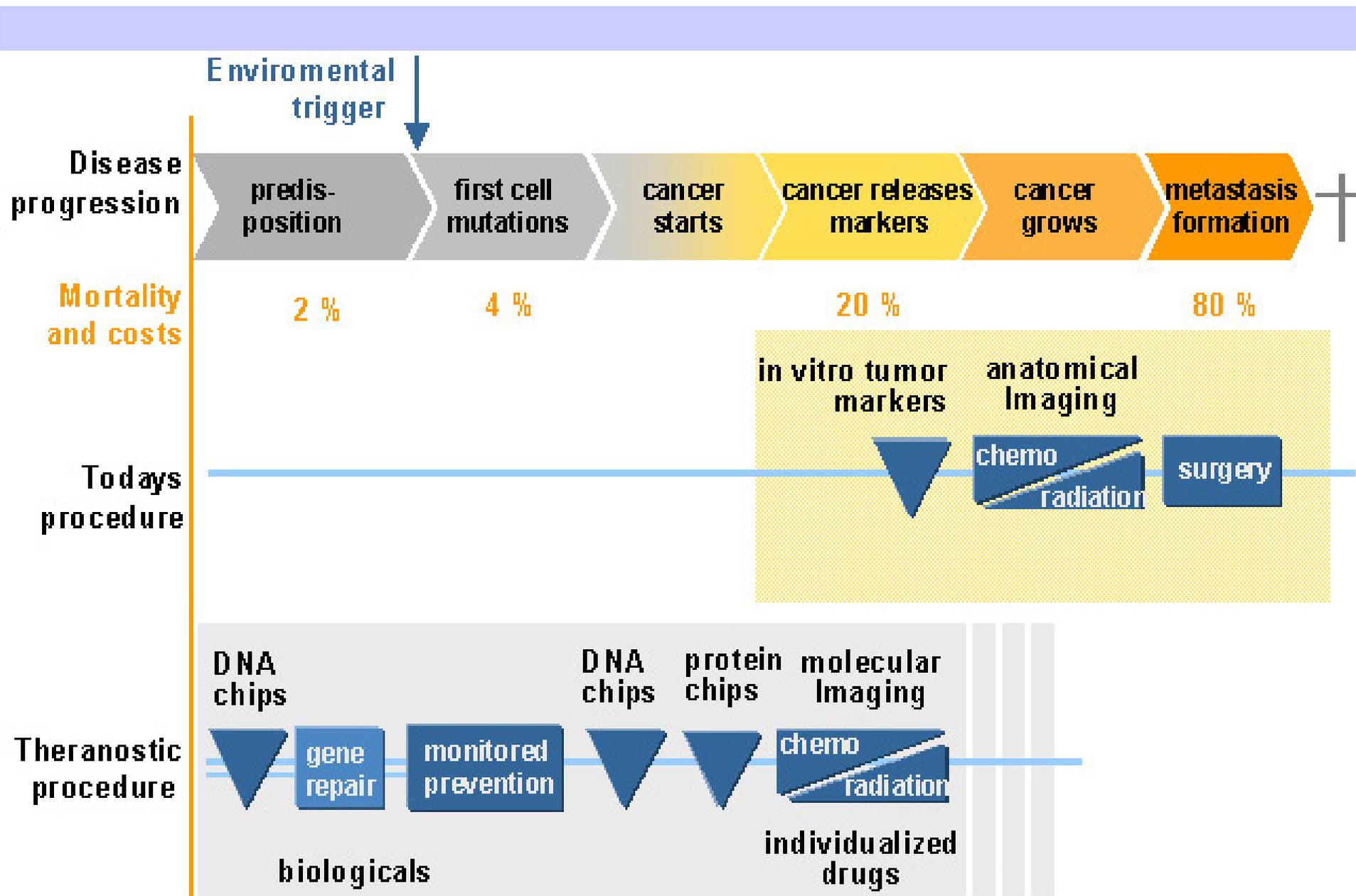
## NIH/NCI/CIP Announcements

- ▶ [NCI Plans and Research Priorities](#)
- ▶ [NIH/NCI/CIP Initiatives](#)
- ▶ [NCI/CIP Workshops](#)
- ▶ [NCI/CIP: What's New/Newsletters](#)
- ▶ [Grants and Contracts](#)

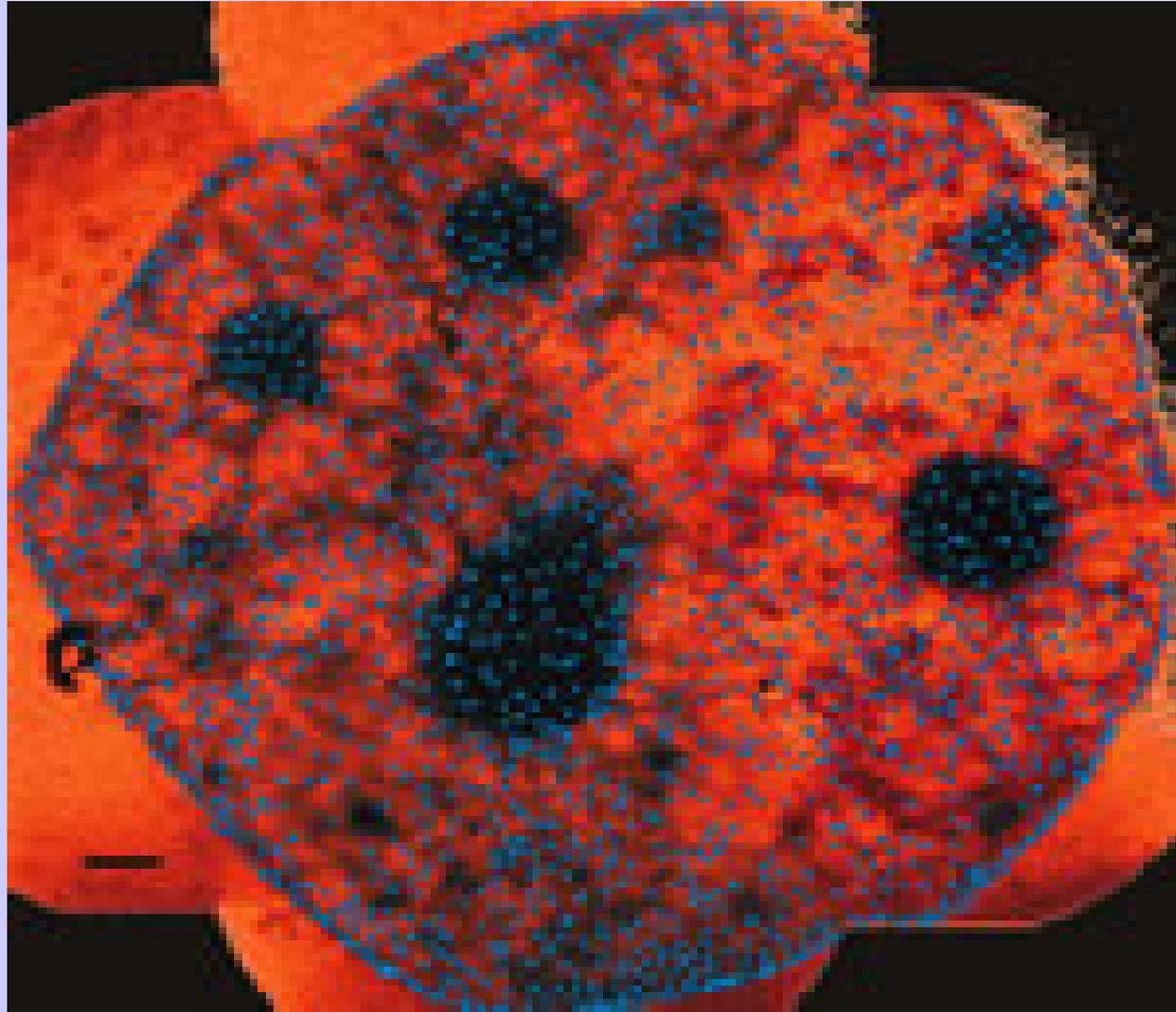
## CIP Funded Projects/Networks

- ▶ [Centers \(ICMICS, SAIRPS, NTROI\)](#)
- ▶ [Clinical Trials, ACRIN](#)
- ▶ [CIP Database Resources \(LIDC, Image Archive Resources\)](#)
- ▶ [Research Resources](#)





from SIEMENS Corp WEB site



Caption: This image of a human mammary cell was produced using soft X-ray microscopy at Lawrence Berkeley National Laboratory. The blue dots label proteins of the nuclear pore complex, through which molecules enter and exit the nucleus.

## **ANATOMICAL**

**large scale structures**

**organ function**

## **BIOLOGICAL**

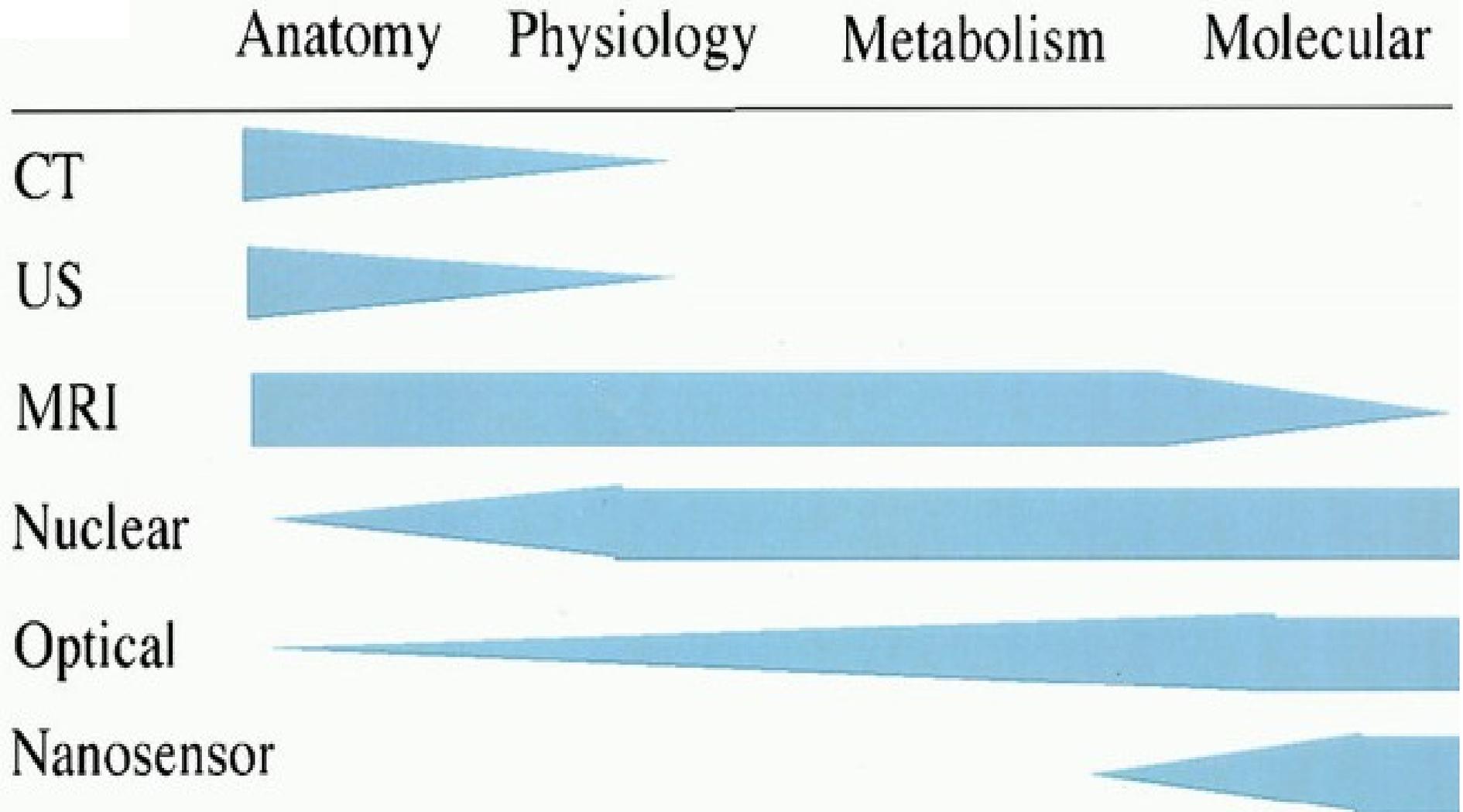
**physiology**

**metabolism**

**biochemical**

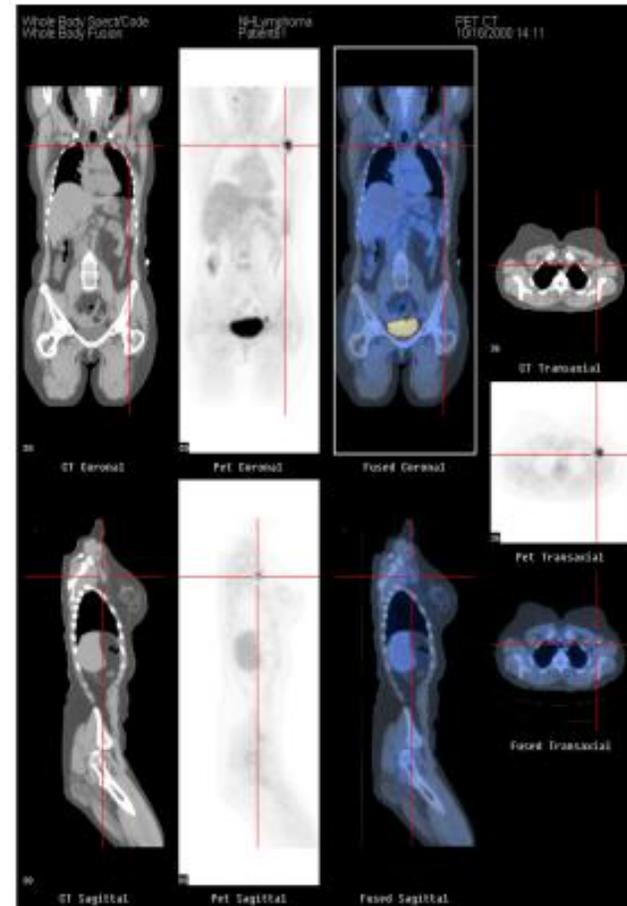
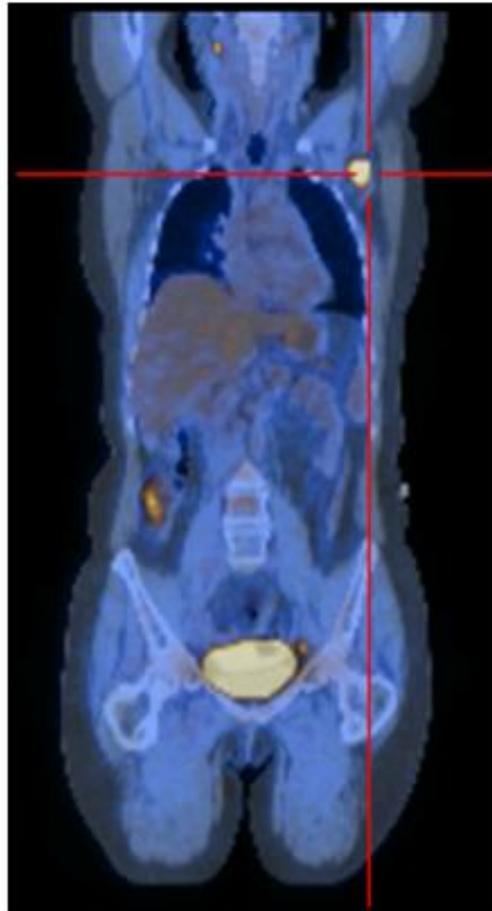
**genotypic**

# Imaging modalities



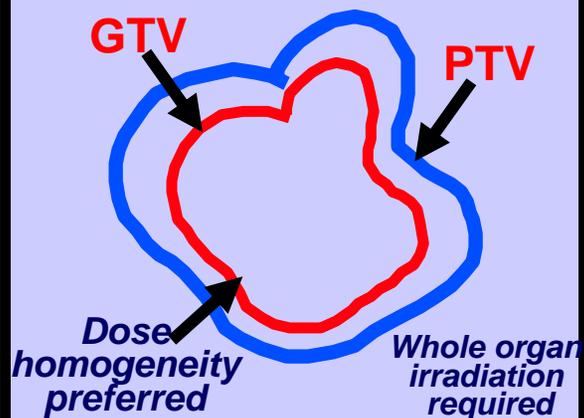
# Hybrid Imaging: PET and CT

## General Electric Medical Systems



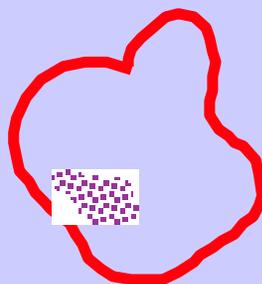
# Biological imaging provides a basis for a paradigm change in 3D treatment planning

## Classical Anatomical Planning



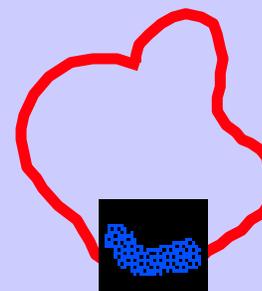
## Molecular Imaging

- MRS/PET •  
(choline/citrate, PSA, EGFR)



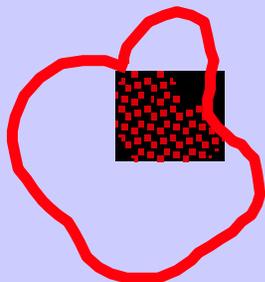
## Cellular Imaging

- PET/MRS •  
(IUdR, MIB1, Apoptosis)



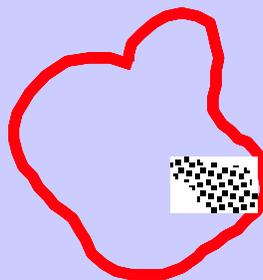
## Tissue Effects Imaging

- MRS/PET •  
(Hypoxia, Angiogenesis)

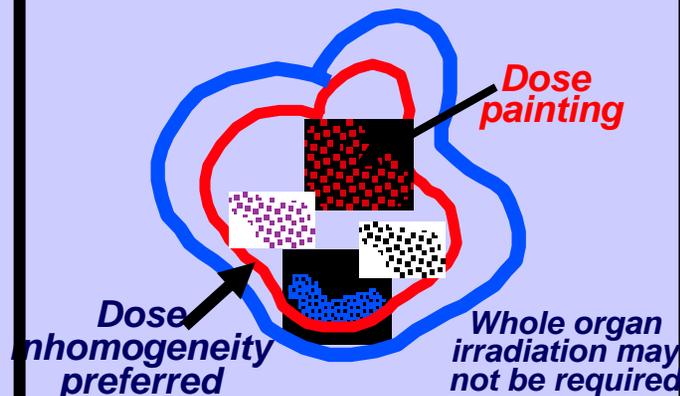


## Monoclonal Antibody Imaging

- SPEC/PET •



## IMRT Planning Based on Biological Imaging



# Cancer Imaging

( RRP EFFORTS)

**With new funding in 2005, NCI will be able to advance imaging technology development and use by:**

- Expanding the discovery, design, and development of novel imaging agents and devices.
- Integrating molecular and functional imaging methods into therapeutic clinical trials.
- Increasing clinical trials of imaging methods and technologies.
- Accelerating the development and clinical testing of image-guided interventions.

# Molecular Targets of Prevention and Treatment

## (RRP EFFORTS)

**NCI will use new funding in 2005 to:**

- Distinguish and use cellular targets for the discovery of new anti-cancer agents.
- Develop assays to identify possible treatments for cancer.
- Acquire large libraries of natural and synthetic compounds.
- Develop a translational research program that will closely link molecular imaging, cancer signatures and molecular targets.
- Facilitate the steps necessary to turn a compound into a targeted drug ready for clinical use.

## **TRANSLATIONAL RESEARCH INITIATIVES**

- o Signal transduction
- o Angiogenesis
- o Invasion and metastases
- o Cell-cycle control
- o Apoptosis
- o Immune effectors
- o Antimutagenesis at specific mutated genes
- o Antioxidation response elements

Many of these are studied with radiolabeled-techniques and others are studied as predictors of radiosensitivity or as indicators of the effectiveness of radiation therapy

# PHYSICS TODAY

SEPTEMBER 2002



SPECIAL ISSUE: PHYSICS FIGHTING CANCER

## Radiopharmaceutical Therapy

NIST radioactivity standards  
for radiolabelled, tumor-specific  
monoclonal antibodies

$^{90}\text{Y}$  Zevalin

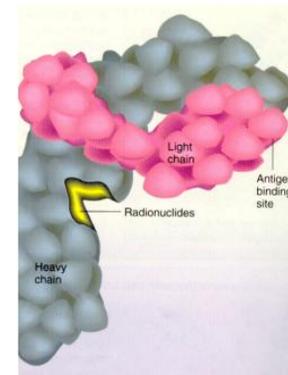
$^{131}\text{I}$  Bexxar

$^{166}\text{Ho}$

$^{177}\text{Lu}$

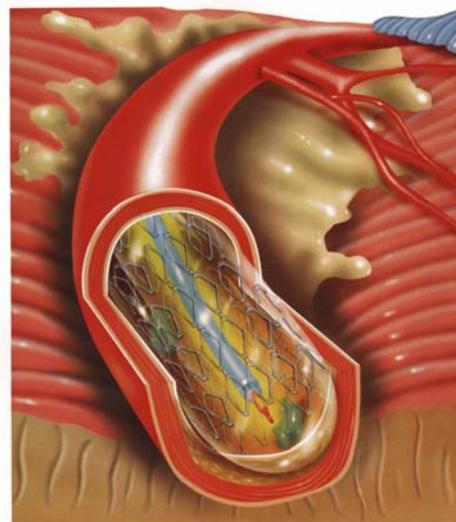
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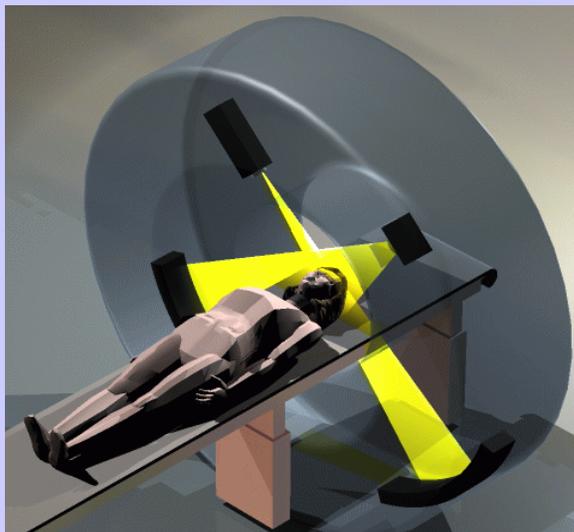


# PHYSICS TODAY

APRIL 2000



RADIATION-TEMPERED ARTERIES

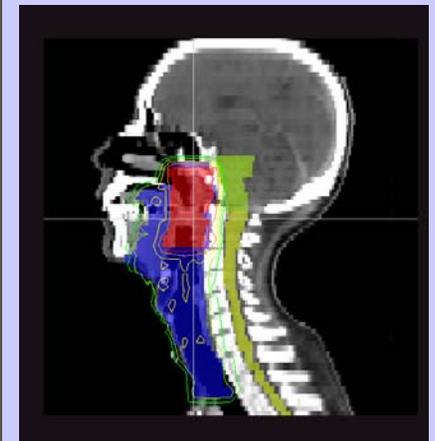
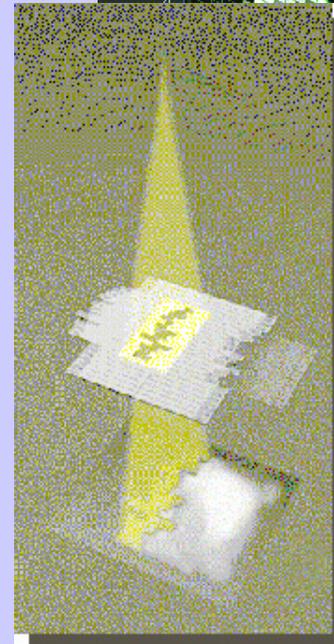
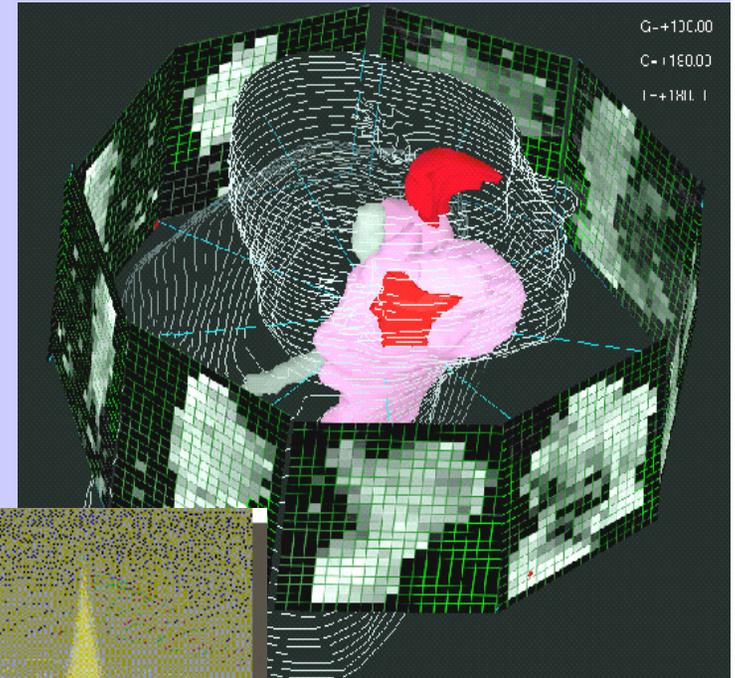


# *RADIATION ONCOLOGY PHYSICS EFFORTS*

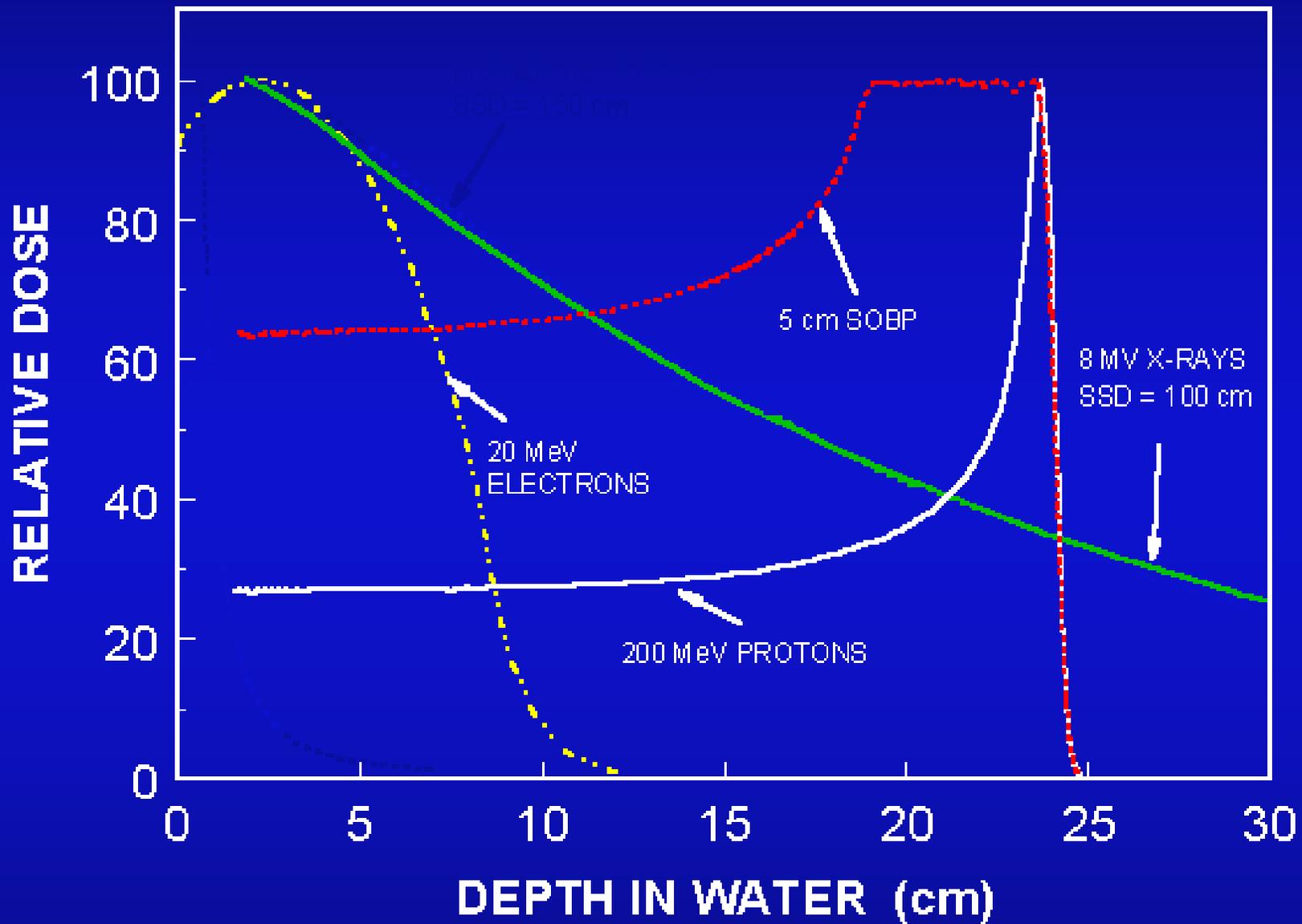
- **IMRT (Intensity Modulated Radiation Therapy)**
- **BRACHYTHERAPY**
- **RIT (Radio-Immuno-Therapy)**
- **MULTI-DISCIPLINARY**

# *Technical Advances in Radiation Oncology*

- **3D CRT** treatment plans
  - increased number of radiation beams angled/shaped to conform to target volume.
- Must now be referred to as “conventional” 3DCRT as a more advanced form of 3DCRT, called **intensity modulated radiation therapy (IMRT)**, has already emerged.

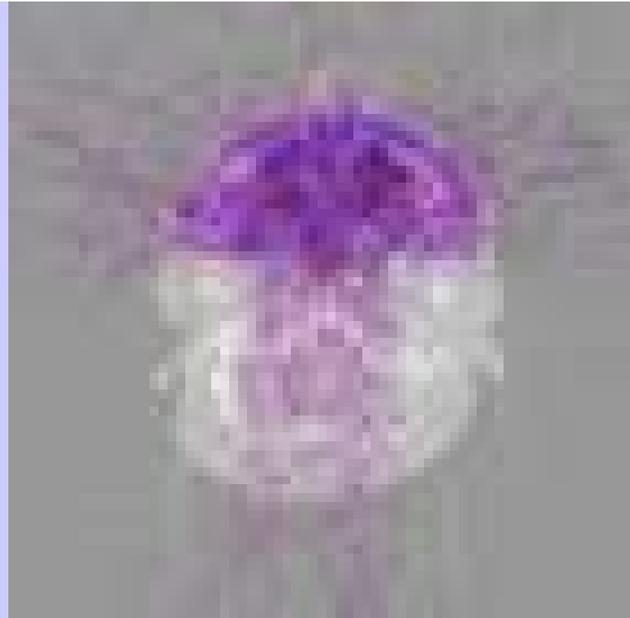




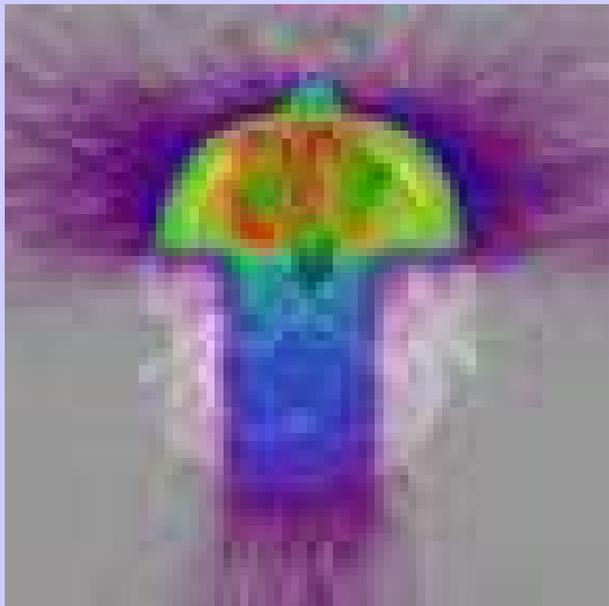




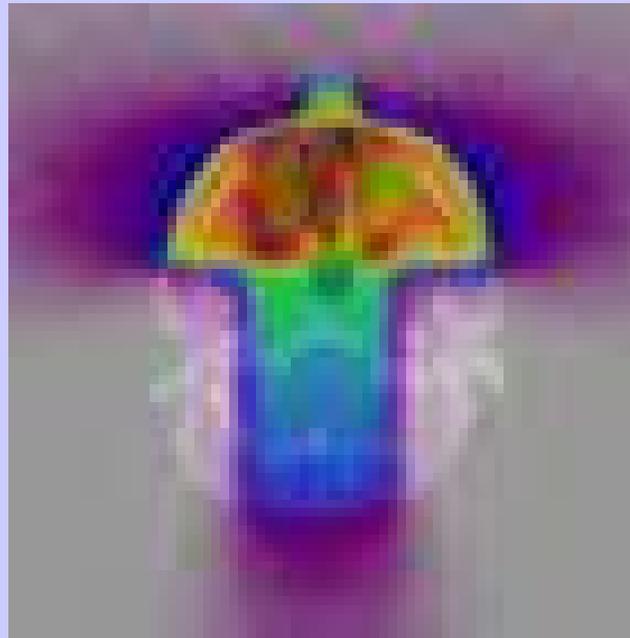
E-4



E-5



E-6



E-7

PEREGRINE  
LLNL

Table 1. X-ray and neutron whole-body dose equivalent (mSv) per unit calibration dose (cGy)

Radiation type	X-ray beam energy		
	6 MV	18 MV	25 MV
X-ray	$8.0 \times 10^{-3}$	$6.5 \times 10^{-3}$	$1.0 \times 10^{-2}$
neutron	0.0	$4.6 \times 10^{-2}$	$7.6 \times 10^{-2}$

Table 3. The estimated total whole-body dose equivalent (mSv) from a total delivered dose of 70.00 Gy at isocenter

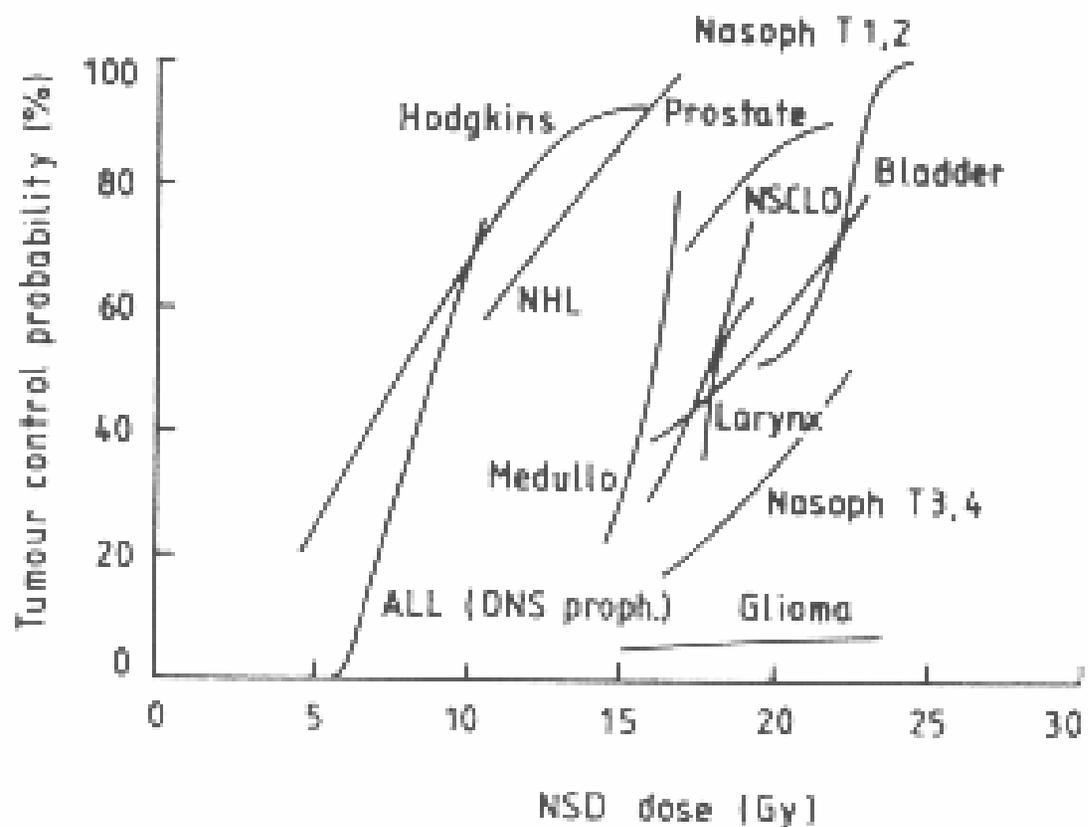
	6 MV		18 MV		25 MV	
	no wedges	wedges	no wedges	wedges	no wedges	wedges
Conventional	67	134	368	551	602	903
MLC Modulated	190	—	1029	—	1686	—
Tomotherapy	543	—	2977	—	4876	—

Table 4. The estimated percent likelihood of a fatal secondary cancer due to a 70.00 Gy course of radiation therapy

	6 MV		18 MV		25 MV	
	no wedges	wedges	no wedges	wedges	no wedges	wedges
Conventional	0.3% (0.03%)	0.7% (0.07%)	1.8% (0.2%)	2.8% (0.3%)	3.0% (0.3%)	4.5% (0.5%)
MLC Modulated	1.0% (0.1%)	—	5.1% (0.5%)	—	8.4% (0.8%)	—
Tomotherapy	2.7% (0.3%)	—	14.9% (1.5%)	—	24.4% (2.4%)	—

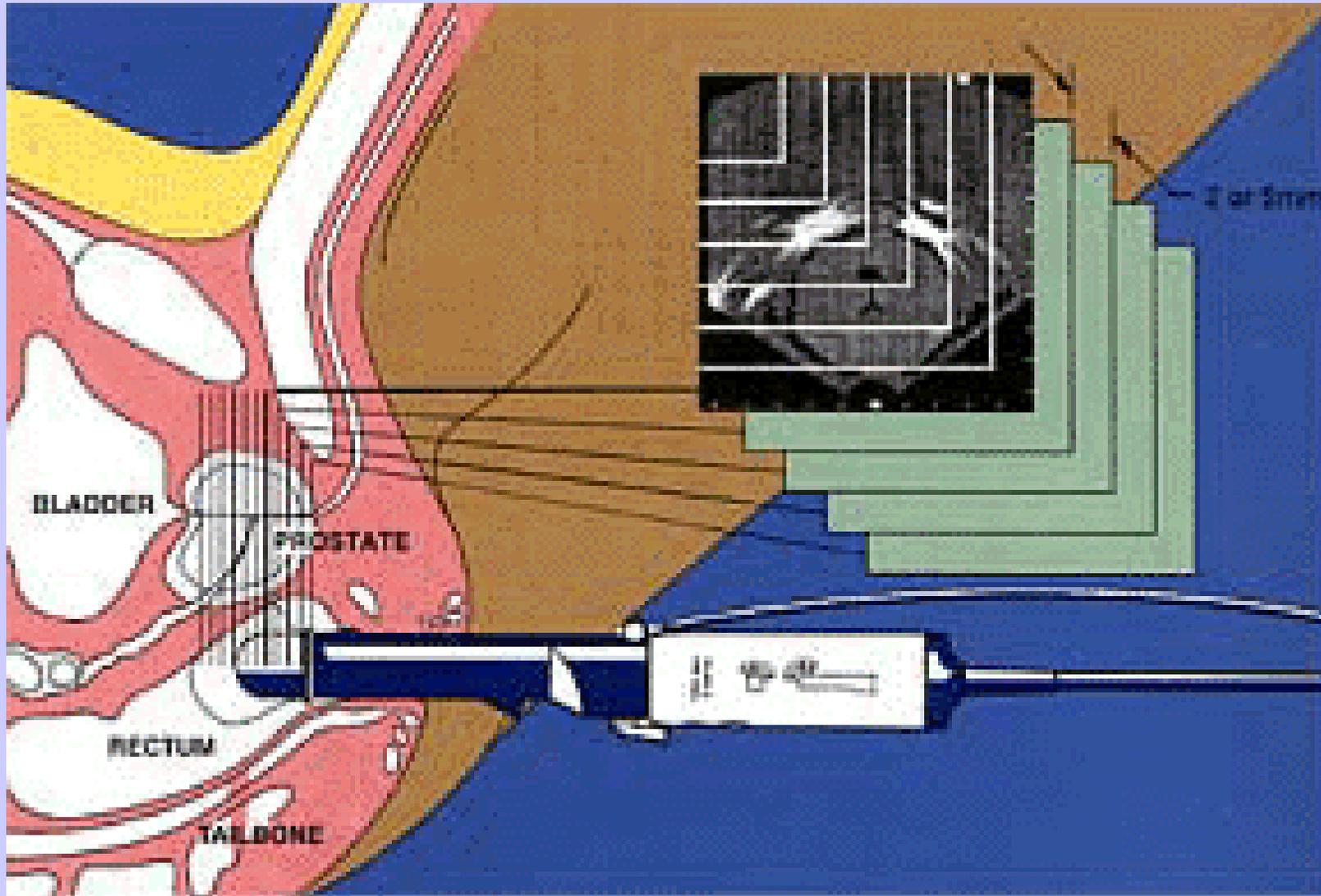
Values in parentheses are the estimated percent likelihood of a fatal leukemia.





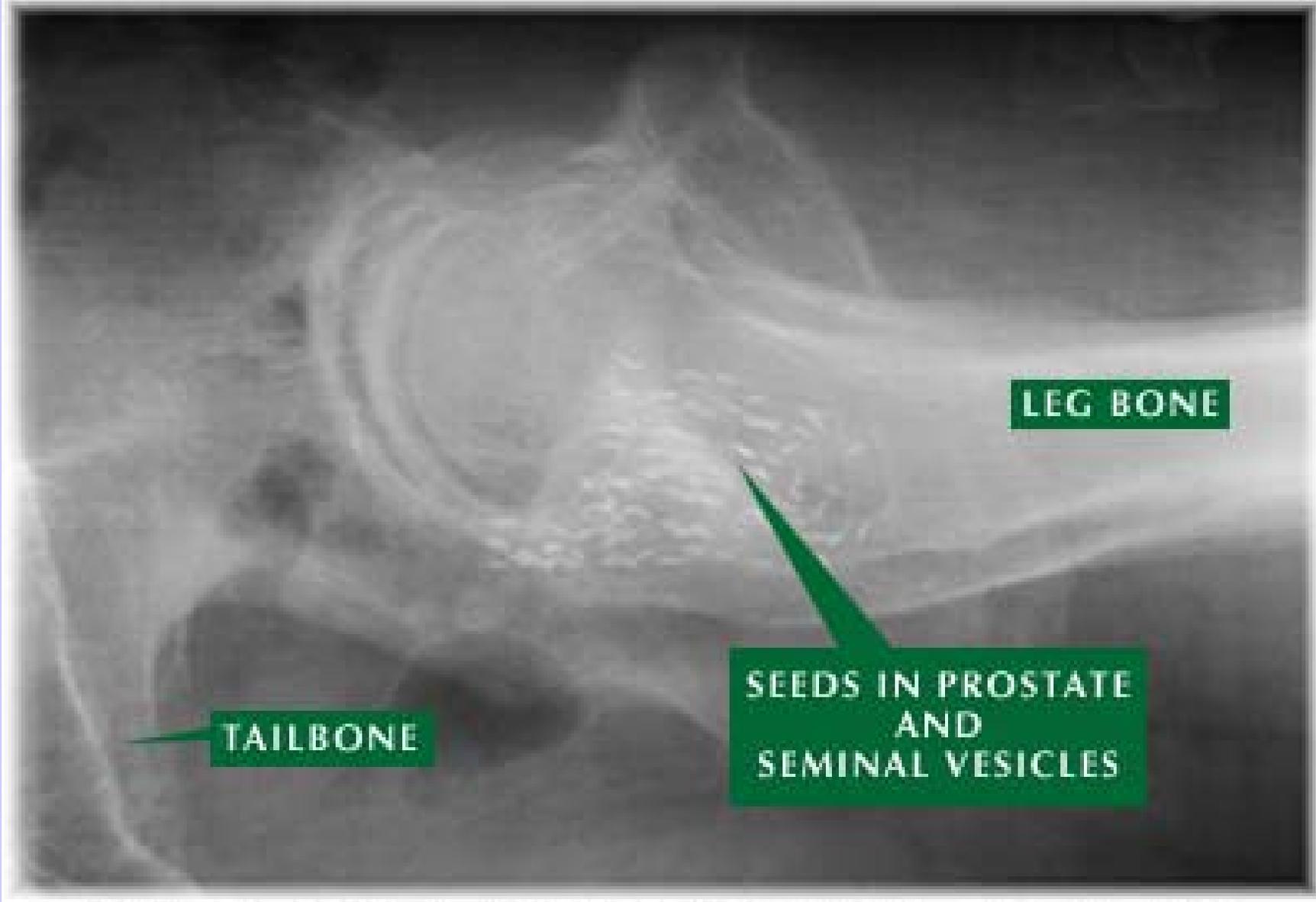
# *RADIATION ONCOLOGY PHYSICS EFFORTS*

- IMRT (Intensity Modulated Radiation Therapy)
- BRACHYTHERAPY
- RIT (Radio-Immuno-Therapy)



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
National Institutes of Health





U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
National Institutes of Health



# RADIOISOTOPES in MEDICINE and BIOLOGY

- There will be a real growth in isotope use
- Expected shortages of some major isotopes will occur
- There is a lack of a reliable supply of research isotopes
  - produced at a reasonable cost
- The DOE infrastructure is uncertain
- There is an over-dependence on foreign radionuclide production
- There is a fundamental lack of support for the basic science that drives the application of radiotracers in biomedical research and clinical practice

## **WORKSHOPS sponsored by RRP (1999 – 2004)**

- TRANSLATIONAL RESEARCH IN RADIATION ONCOLOGY**
- RESEARCH IN MEDICAL PHYSICS**
- LATE EFFECTS OF RADIATION THERAPY**
- BRACHYTHERAPY**
- MONTE CARLO CALCULATIONS IN RADIATION THERAPY**
- MOLECULAR and CELLULAR BIOLOGY of  
MODERATE DOSE (1- 10 Sv) RADIATION and  
POTENTIAL MECHANISMS of RADIATION PROTECTION**
- OPERATIONS RESEARCH APPLIED TO RADIATION THERAPY**

### Genomics and Evolution

Shirley Tilghman, Princeton University

[Epigenetics: Building Flexibility into the Genome](#)

Hao Li, University of California, San Francisco

[Deciphering the Regulatory Code of the Genome](#)

Richard Lenski, Michigan State University

[Experiments with Digital Organisms](#) (video will sync two minutes into talk)

### Biological Networks

Andrew Murray, Harvard University

[Can Physics Save Biology?](#) (video unavailable)

Stanislas Leibler, Rockefeller Institute

*Molecular Tinkering in Biological Networks*

Drew Endy, MIT

[Existing and Synthetic Bacteriophage](#) (video will sync 30 seconds into talk)

### Biomolecular Dynamics

Susan Lindquist, MIT



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## **FIND** grant opportunities

Grants.gov provides organizations with the ability to search for Federal government wide grant opportunities. The Office of Federal Financial Management recently issued a [policy directive \(.pdf\)](#) requiring that all Federal agencies post grant opportunities online as of November 7. Access [Search Grant Opportunities](#) to begin your search.

Do you want to register to receive email notifications of new grant postings from FedGrants.gov? Access [Receive Grant Opportunity Notification](#).

If you are an individual looking for information on government benefits, refer to [GovBenefits.gov](#), the official government benefits website, a free, confidential tool that helps individuals find government benefits they may be eligible to receive.

# Federal Grant Opportunities



[Grantor](#) | [Applicant](#)

This site gives grantors a means to post solicitations for grants. It also gives applicants a single site for obtaining these solicitations.

For support or questions, please contact FedGrants support at [support@fedgrants.gov](mailto:support@fedgrants.gov) or call the FedGrants Help Desk at (301) 589-1017



From: Deye, James A.(NIH/NCI)  
To: Deye, James A.(NIH/NCI)  
Cc:  
Subject: FW: Grants.gov Opportunities Posting Update

Sent: Tue 7/20/2004 7:51 AM

The following grant opportunity postings were made on the Grants.gov Find Opportunities ("FedGrants") service:

NSF  
Office of Budget, Finance and Award Management  
Headquarters  
Enhancing the Mathematical Sciences Workforce in the 21st Century  
Grant  
<http://www.fedgrants.gov/Applicants/NSF/OIRM/HQ/04-600/listing.html>

NSF  
Office of Budget, Finance and Award Management  
Headquarters  
Collaborative Research in Chemistry  
Grant  
<http://www.fedgrants.gov/Applicants/NSF/OIRM/HQ/04-601/listing.html>

HHS  
National Institutes of Health  
National Institutes of Health  
NON-INVASIVE IMAGING FOR DIABETIC RETINOPATHY  
Grant  
<http://www.fedgrants.gov/Applicants/HHS/NIH/NIH/RFA-EY-04-001/listing.html>

HHS  
National Institutes of Health



## ERA Commons

### *Computer Retrieval of Information on Scientific Projects*

.... Click the Release Notes link below for a list of changes ....

CRISP (Computer Retrieval of Information on Scientific Projects) is a searchable database of federally funded biomedical research projects conducted at universities, hospitals, and other research institutions. The database, maintained by the Office of Extramural Research at the National Institutes of Health, includes projects funded by the National Institutes of Health (NIH), Substance Abuse and Mental Health Services (SAMHSA), Health Resources and Services Administration (HRSA), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDCP), Agency for Health Care Research and Quality (AHRQ), and Office of Assistant Secretary of Health (OASH). Users, including the public, can use the CRISP interface to search for scientific concepts, emerging trends and techniques, or identify specific projects and/or investigators. Below you will be able to access additional general information about the CRISP database, as well as obtain answers to



Quick Search

### Welcome to the ICRP, a database of cancer research funded by US and UK organizations.

The International Cancer Research Portfolio (ICRP) puts cancer research at your fingertips. Cancer research funders from the United States and the United Kingdom have joined together in a partnership to classify their cancer research portfolios using the Common Scientific Outline (CSO). Based on this unified classification system, the ICRP allows users to search, browse and sort cancer research by [Type of Cancer](#), [Area of Research](#), or [Funding Organization](#).

To learn more about this joint initiative, follow the links to the right.

#### Participating ICRP Partner Organizations:

- [About the International Cancer Research Portfolio](#)
- [About the Common Scientific Outline](#)
- [About the Common Scientific Outline Partners](#)
- [Frequently Asked Questions](#)
- [Updates and Features](#)



## SBIR/STTR Collaboration Opportunities and Research Partnerships (CORP)

### Submitting your SBIR/STTR CORP Data:

Are you in need of an area of expertise or in search of a collaborative partner to work on an SBIR/STTR? The purpose of this site is to foster collaborative opportunities within the SBIR/STTR Programs. If you are looking for a research partner or looking to partner with a small business, [Click Here to submit your needs or capabilities to NIH for inclusion below](#). Once reviewed, the information will be added to this list. **Submissions of items unrelated to the SBIR/STTR programs will not be accepted.**

**Disclaimer Note:** Information contained on this CORP site neither constitutes nor should be inferred to be an endorsement or recommendation by the National Institutes of Health.

If you have any questions or comments, please contact [Ms. Jo Anne Goodnight](#), NIH SBIR/STTR Program Coordinator.

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APS Meetings 2004 Archives - Mozilla

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http://www.aps.org/meet/archives/index.cfm Search

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## APS Meetings

### Meetings Program Archives

Meeting Announcements | Meetings Calendar

**2004 Meetings**

<a href="#">2004</a>	<a href="#">Opportunities in Biology for Physicists</a>	January 31 - February 1
<a href="#">2003</a>	<a href="#">March Meeting 2004</a>	March 22-26
<a href="#">2002</a>	<a href="#">New England 2004</a>	March 26-27
<a href="#">2001</a>	<a href="#">Joint 2004 Spring Texas Section Meeting 2004</a>	April 1-3
<a href="#">2000</a>	<a href="#">Ohio Section Spring 2004</a>	April 16-17
<a href="#">1999</a>	<a href="#">April 2004</a>	May 1-4
<a href="#">1998</a>	<a href="#">Northwest Section Spring 2004</a>	May 21-22
<a href="#">1997</a>	<a href="#">The 35th Meeting of the Division of Atomic, Molecular and Optical Physics</a>	May 26-29
<a href="#">1995 &amp; 1996</a>	<a href="#">57th Gaseous Electronics Conference</a>	September 26-29
<a href="#">1993 &amp; 1994</a>	<a href="#">Texas Section Fall</a>	October 7-9
<a href="#">multimedia presentations</a>	<a href="#">Four Corners Section Fall</a>	October 15-16
<a href="#">centennial audio</a>		

http://www.aps.org/meet/calendar.cfm

# PHYSICS TODAY

SEPTEMBER 2002



SPECIAL ISSUE: PHYSICS FIGHTING CANCER

## Radiopharmaceutical Therapy

NIST radioactivity standards  
for radiolabelled, tumor-specific  
monoclonal antibodies

$^{90}\text{Y}$  Zevalin

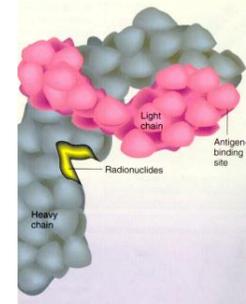
$^{131}\text{I}$  Bexxar

$^{166}\text{Ho}$

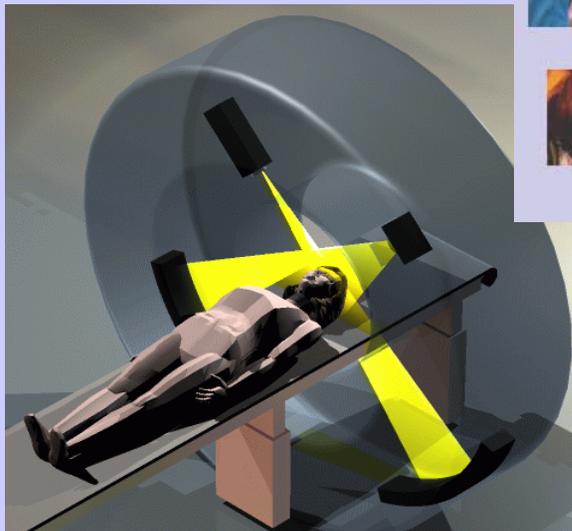
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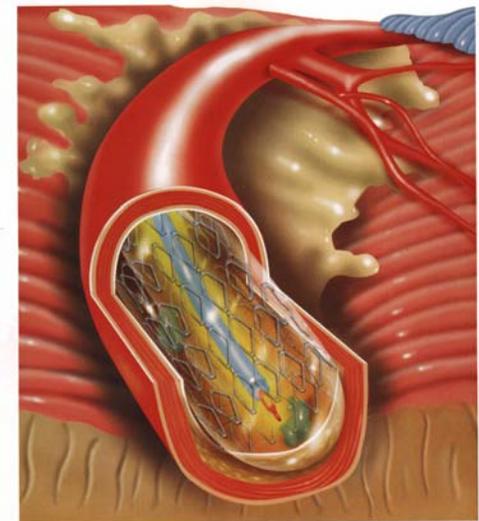


**NIH**  
Ideas  
People  
Resources



# PHYSICS TODAY

APRIL 2000



RADIATION-TEMPERED ARTERIES