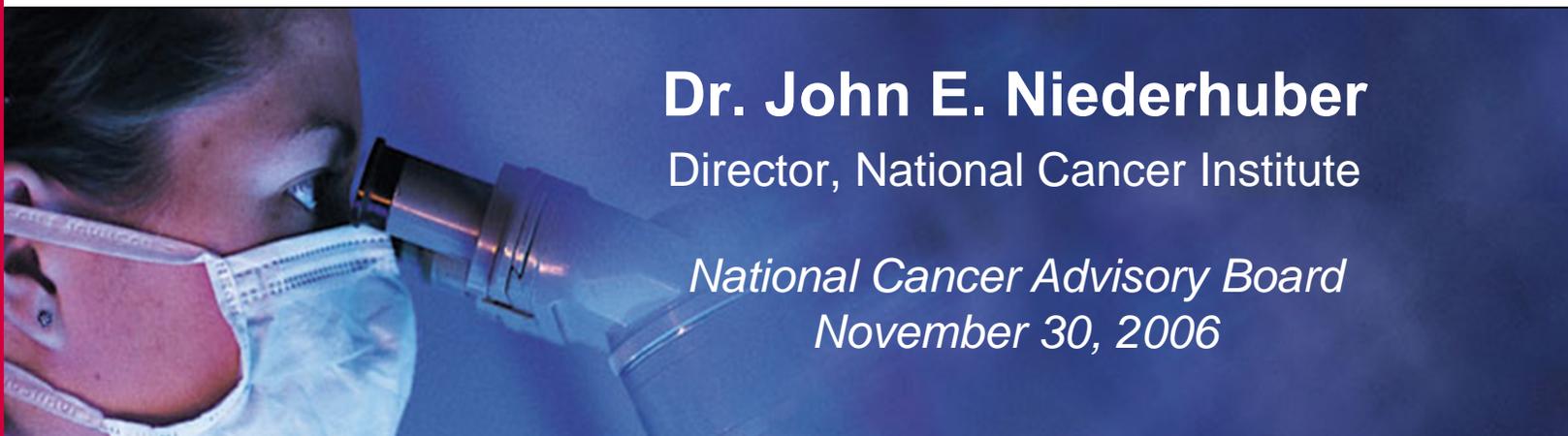




# Director's Update

**Dr. John E. Niederhuber**  
Director, National Cancer Institute

*National Cancer Advisory Board  
November 30, 2006*



# Director's Update

- **FY 2006 – Closing out the budget year**
- **FY 2007 – operating budget development**  
**FY 2007 – appropriation status**
- **Ongoing Scientific Initiatives**
  - **Crosscutting science projects**
  - **TARGET Initiative**

# 2006 – Final Quarter

- Mid-year increase in taps for utility costs of almost \$4 million
- End-of-year R01 payline: 12th percentile;  
\*R01 payline: 18th percentile
- 15% of competing pool reserved for exceptions
- Type 5s generally 2.35% below commitment of record
- SPOREs were about 6.1% below FY2005
- Centers were increased 3.9% from FY05
- Training 1% above the FY05 level

# **FY 2007 Operating Budget Development**

<b>FY 2006 obligations</b>	<b>\$4,790,059</b>
<b>FY 2007 President's Budget</b>	<b>\$4,753,609</b>
<b>Difference '06 to '07</b>	<b>- \$36,450</b>
<b>Percent Change '06 to'07</b>	<b>- 0.8%</b>

**(dollars in thousands)**

# FY 2007 Operating Budget Development

	<u>Amount (in thousands)</u>	<u>Percent change</u>
<b>Subtotal Available</b>	<b>-\$36,450</b>	<b>- 0.8%</b>
<b>Less:</b>		
• Potential NIH Director's 1% Transfer	?	
• Potential DHHS Secretary's Transfer	?	
• Increase in NIH Roadmap Contribution	<u>-14,548</u>	
<b>Subtotal Available</b>	<b>-50,998</b>	<b>-1.1%</b>
<b>NIH Taps/Assessments Increase (estimated)</b>	<u><u>-20,000</u></u>	
<b>Subtotal Available</b>	<b>-70,998</b>	<b>- 1.5%</b>

# FY 2007 Operating Budget Development

	<u>Amount</u> <u>(in thousands)</u>	<u>Percent</u> <u>change</u>
<b>Subtotal Available</b>	<b>- \$70,998</b>	<b>- 1.5%</b>
<b>NCI-wide Requirements:</b>		
• <b>Mandated Salary Increases</b>	<b>- 7,000</b>	
• <b>Rent/Lease/Utilities Increase</b>	<b>- <u>10,000</u></b>	
<b>Subtotal Available</b>	<b>- 87,998</b>	<b>-1.8%</b>

# FY 2007 Operating Budget Development

	<u>Amount</u> <u>(in thousands)</u>	<u>Percent</u> <u>change</u>
<b>Subtotal Available</b>	<b>- \$87,998</b>	<b>- 1.8%</b>
<b>Trans-NIH FY 2007 Initiatives:</b>		
• <b>Genes and the Environment</b>	<b>- 7,800</b>	
• <b>Pathways to Independence Career Program</b>	<b>- 1,800</b>	
<b>Subtotal Available</b>	<b>- 97,598</b>	<b>- 2.0%</b>
<b>NCI Director's Reserve</b>	<b>- 25,000</b>	
<b>Subtotal Available</b>	<b>-122,598</b>	<b>- 2.6%</b>

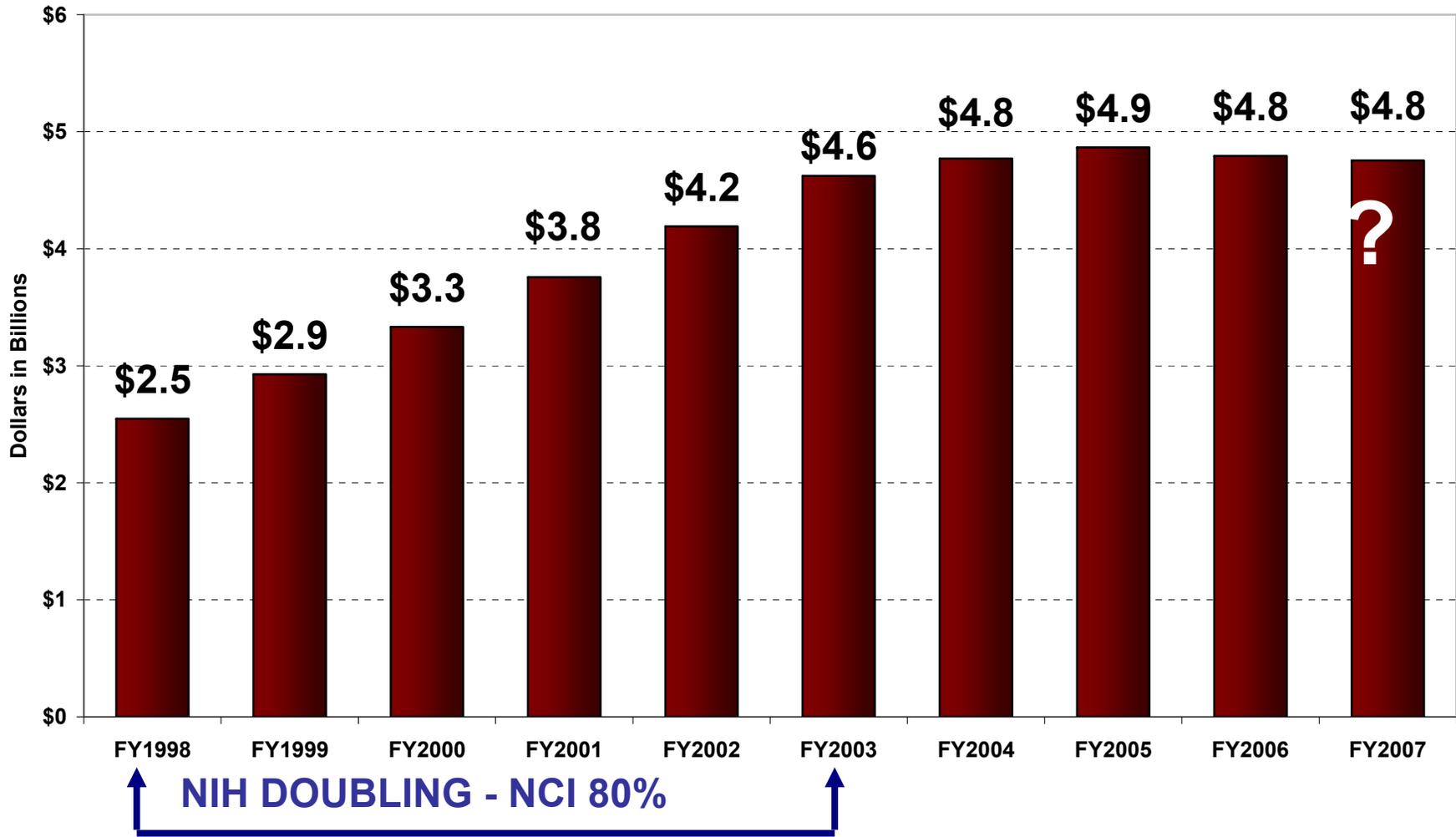
# FY 2007 Operating Budget Development

	<u>Amount (in thousands)</u>	<u>Percent change</u>
<b>Subtotal Available</b>	<b>- \$122,598</b>	<b>- 2.6%</b>
<b>Potential Recoveries/ Redeployments:</b>		
• Phaseouts/Reductions to ongoing programs	175,000	
• Impact on RPGs	<u>?</u>	
<b>Available for New Initiatives/ Expansions</b>	<b>52,402</b>	
• Amount available if Congress applies a 1% across-the-board reduction:	<b>\$4,866</b>	

# 2007 Appropriations Status

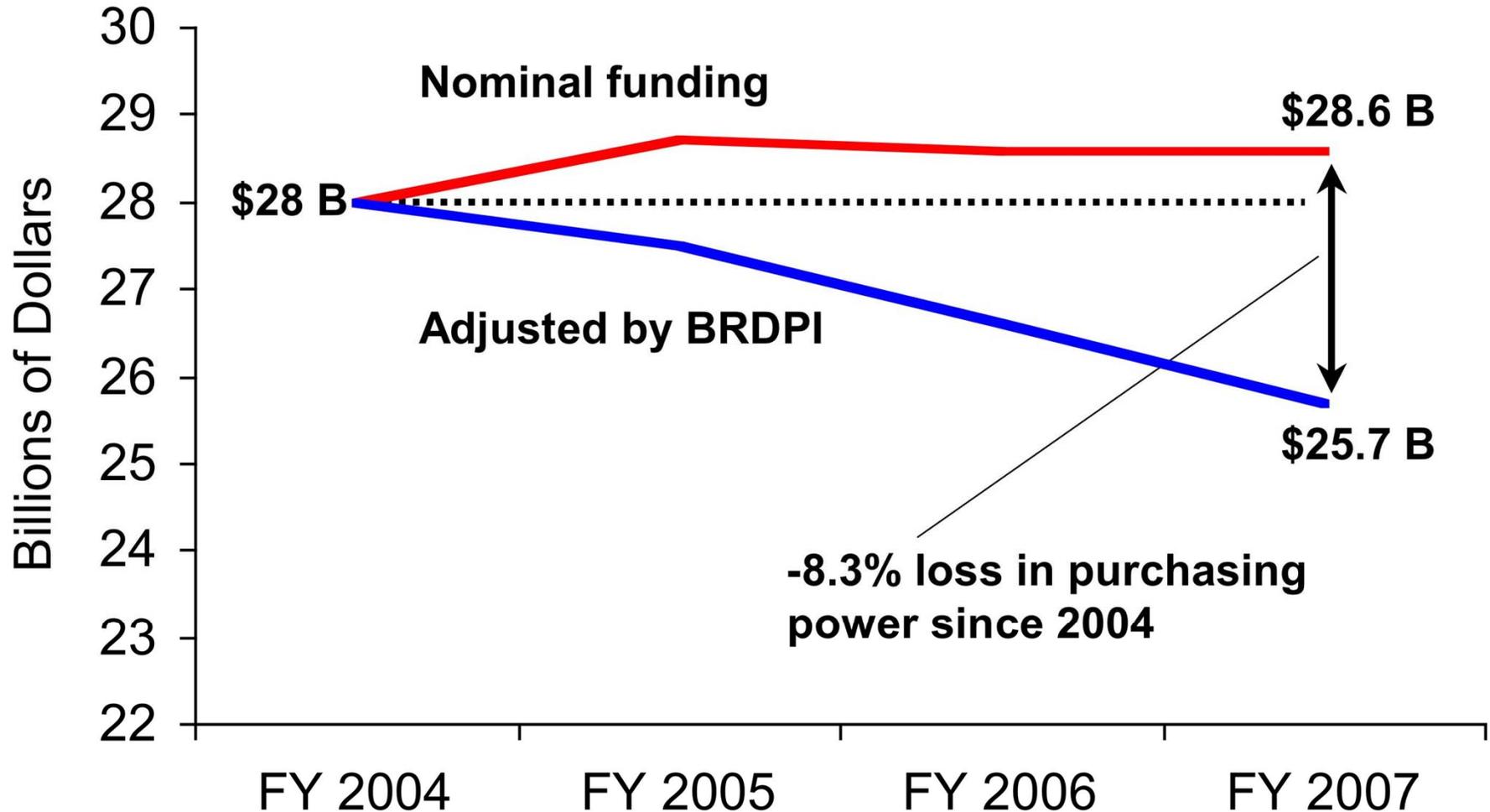
- President's Budget FY07 allocation to NCI: **\$4.754 B**
- House Approp. Comm. bill passed in June: **\$4.754 B**
- Senate Approp. Comm. bill passed in July: **\$4.999 B**
- NCI is operating through Dec. 8 under a Continuing Resolution, funded at the FY06 level
- House and Senate are now in recess and will return Dec. 5
- Congress is expected to pass another Continuing Resolution that will take us through **January or February of 2007.**

# NCI's Congressional Appropriations, FY 1998 to FY 2007



# NIH's Challenge

Maintain Research Enterprise Vitality in Light of Reduced Purchasing Power and Increased Demand



Note: BRDPI is the Biomedical Research and Development Price Index

# Summary: NCI Myths and Facts

- **1,280 competing RPGs** in 2006 (↓ from 1,492 in 2004)
- **5,172 total RPGs** in 2006 (↑ from 5,070 in 2004)
- **\$324,000 average \$ per competing grant** in 2006 (↓ from \$346,000 in 2003)
- **7% of the competing pool** went to RFAs in 2006 (↓ from 9% in 2004)
- **5,679 individual investigators supported** in 2006 (↑ from 5,636 in 2004)
- **\$42.8M to Roadmap** in 2006 (↑ from \$16.2M in 2004)
- **\$60M in flexible dollars** (↓ from \$108M in 2005)

# Director's Update

- **FY 2006 – Closing out the budget year**
- **FY 2007 – operating budget development**  
**FY 2007 – appropriation status**
- **Ongoing Scientific Initiatives**
  - **Crosscutting science projects**
  - **TARGET Initiative**

# The Cancer Genome Atlas

- **First tumor types to be studied** announced Sept. 1:
  - Glioblastoma
  - Lung
  - Ovarian
- **Cancer Genome Characterization Centers** announced Oct. 16
- NHGRI announced **Cancer Genome Sequencing Centers** Nov. 20

# NCI Alliance for Nanotechnology in Cancer

- **1st Alliance meeting**: unprecedented gathering of over 200 scientists focused on cancer; Oct. 25-26, San Diego
  - 8 Centers for Nanotechnology Excellence;  
12 platform projects; 4 NCI-NSF Integrative Graduate Education and Research Traineeship Programs, plus PIs, co-PIs, post-docs, and students
  - 28 oral presentations and 75 poster presentations representing 6 major areas of focus
  - 4 technical sessions
  - Translational issues forums
  - Next Generation of nano-leadership
  - caBIG™

# Clinical Proteomic Technologies Initiative for Cancer

- **Clinical Proteomic Technology Assessment for Cancer**
  - 5 awards to lead institutions announced Sept. 2 (common human cancer type = breast cancer)
  - First benchmark study ongoing: protein mix study
- **Advanced Proteomic Platforms & Computational Sciences**
  - 14 awards (8 computational sciences, 7 advanced proteomic platforms) announced Sept. 27
- **Clinical Proteomic Reagents Resource**
  - RFPs anticipated in 2007

# Integrative Cancer Biology Program

- Currently supports 6 full and 3 planning centers
- Developed **validated siRNA library of cancer genes**
- Sponsored an **AACR symposium** in 2006
- Summer 2006 **integrative cancer biology** training program
- Summer 2006 Tumor Modeling Workshop
- Future meetings
  - December joint “Cancer Modeling meeting”
  - January “Cancer Data Integration Workshop”
  - June 2007, Cambridge ICBP/Cancer Systems Biology

# Office of Biorepositories and Biospecimen Research

- **First Generation Guidelines for NCI-Supported Biospecimen Resources** revised in response to the public comments
  - scheduled for Federal Register reposting Jan. 2007
- With the Rand Corp. built a prototype of a searchable **web-based tool for published bisospecimen research**
- **Biospecimen Research Network** collaborating with investigators at all 3 NCI campuses, Walter Reed Medical Center, private industry, and academic partners
  - RFP's for additional projects in development

# **TARGET: Therapeutically Applicable Research to Generate Effective Treatments**

- **Collaborative project of the NCI and the FNIH for target identification & validation for childhood cancers**
  - **Coordinated research efforts applying state-of-the-art technologies**
  - **Goal of major advances in target identification for 2 or more childhood cancers within 2 years of project initiation**

# General Principles in Implementation

- Move quickly to begin TARGET research projects
- Leverage ongoing NCI activities, including:
  - The Cancer Genome Atlas
  - SPECS (Transcriptomic profiling)
  - Children’s Oncology Group
- Leverage ongoing industry and research institute activities (e.g., through “in kind” support)
- Scientific oversight through BSA Subcommittee

# Areas for TARGET Initiative Research Focus

- **High-throughput array-based technologies** to comprehensively characterize genomic and transcriptomic profiles
- **Gene resequencing** to identify genes that are consistently altered in specific childhood cancers
- **High-throughput RNA interference (siRNA)** and small molecule screening methods to identify and validate therapeutic targets

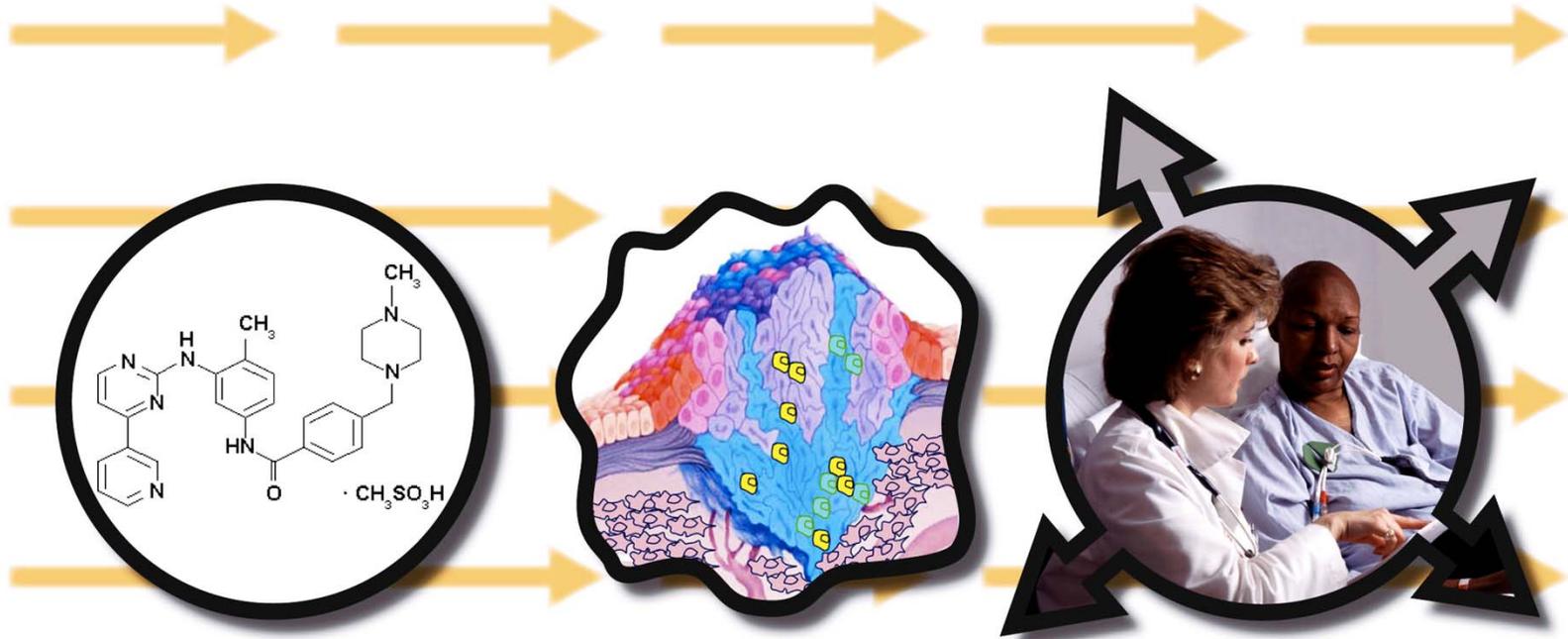
# **ALL Pilot Project for TARGET Initiative**

- **Collaboration between Children's Oncology Group (COG), St. Jude Children's Research Hospital, and NCI**
- **High resolution genomic and transcriptomic profiles for ~ 240 leukemia cases**
- **Resequencing of ~ 200 genes to initiate in first 6 months of 2007**
- **Experience will inform similar efforts for TARGET Initiative**

# Anticipate TARGET Initiative Awards in Four Areas

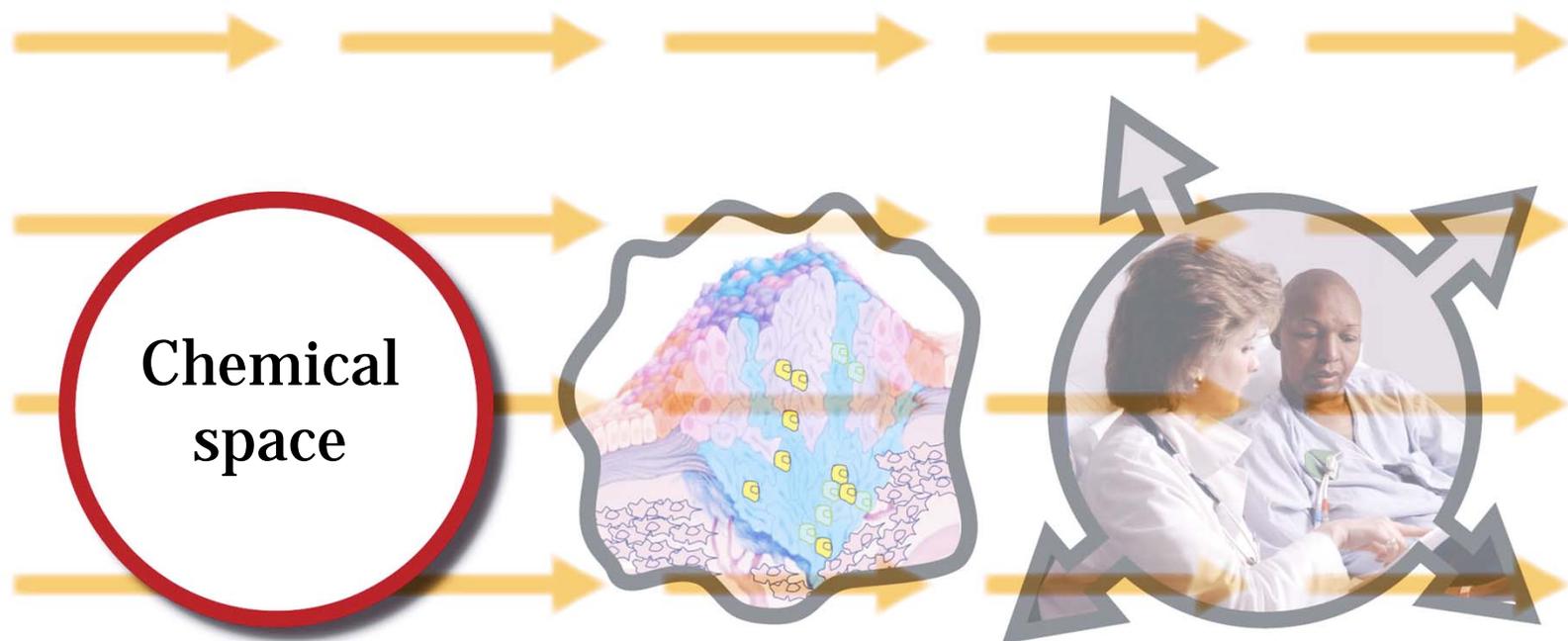
- Awards for the following research areas:
  - Tumor/sample component with associated disease expertise
  - Genomic/transcriptomic characterization
  - DNA sequencing
  - RNAi and small molecule screens
- Anticipate that awards will generally be cooperative agreements or contracts and that data sharing policy will be similar to that used for TCGA

# Bringing Science to Patients



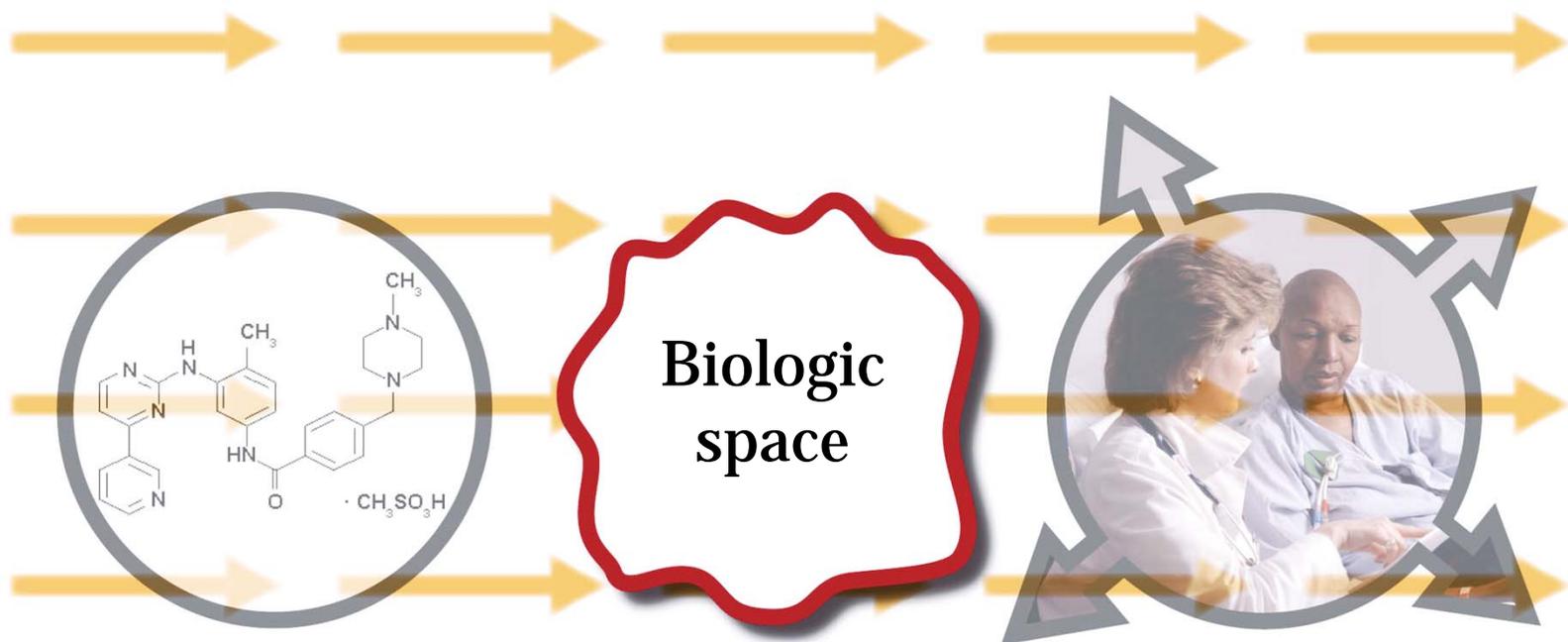
- What are we asked to do?

# Bringing Science to Patients



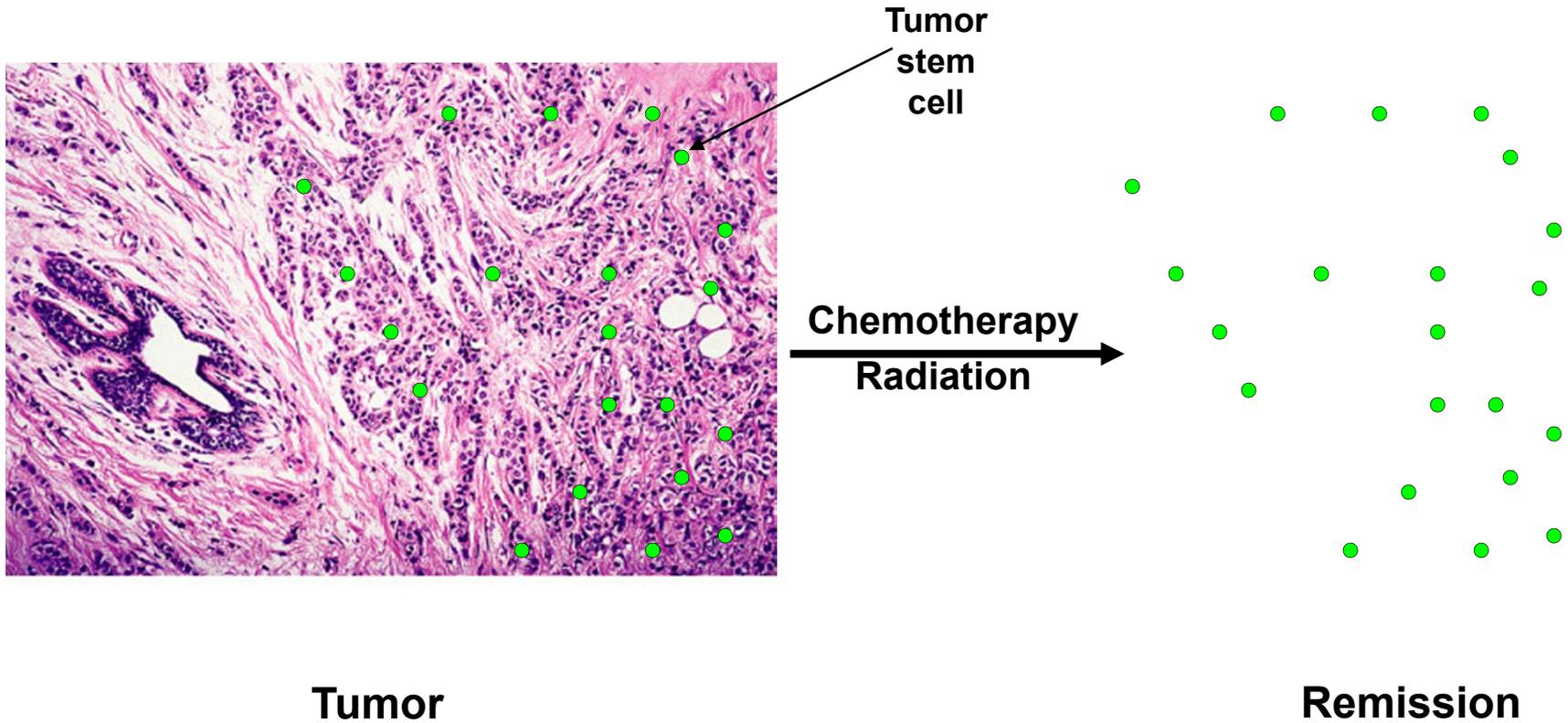
- **Molecular Targets Development Program**
- **Connectivity mapping**
- **Complete chemical library space**
- **Developing chemistry resource: re-engineering molecules**

# Bringing Science to Patients

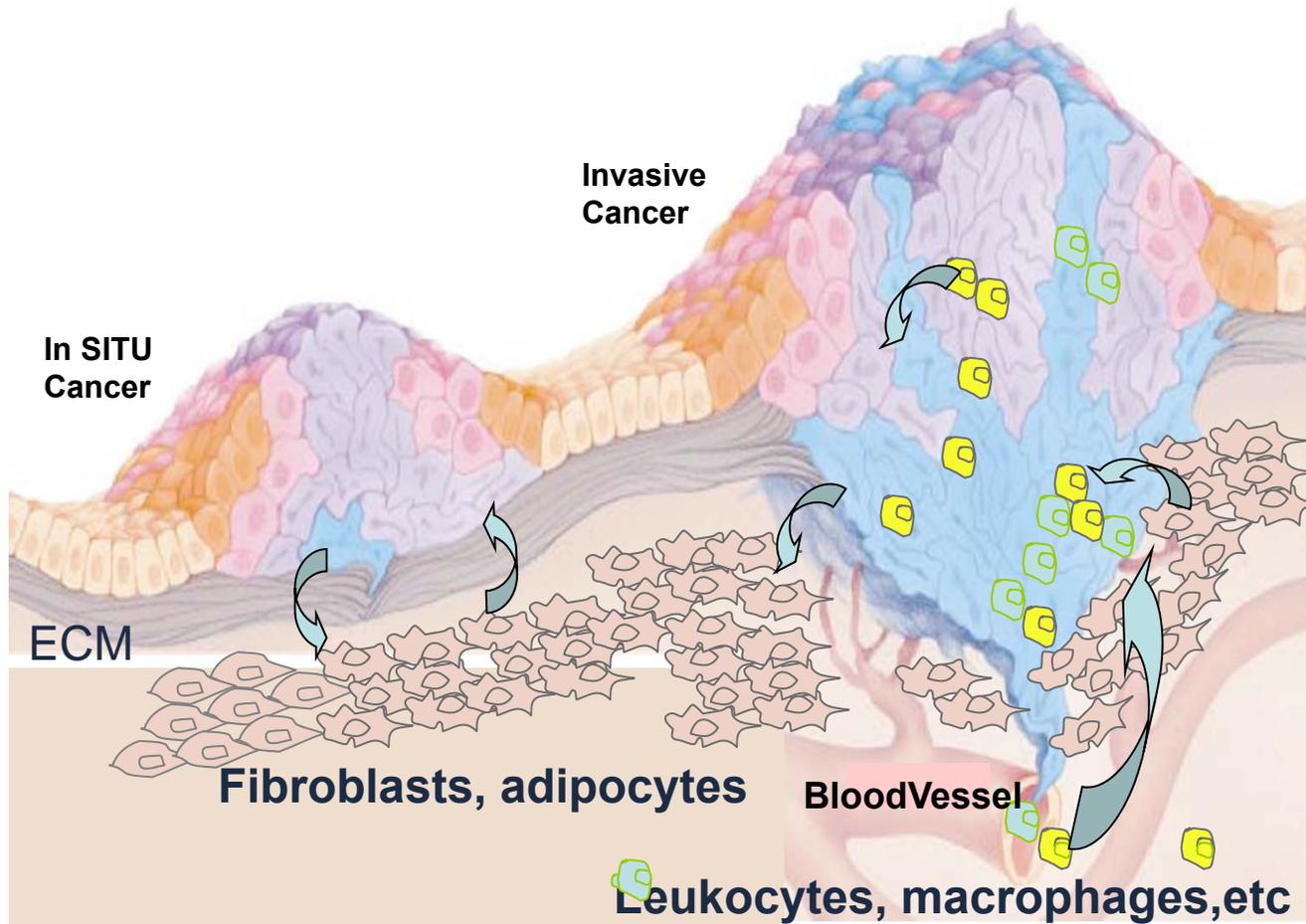


- **Signal pathways that become abnormal**
- **Tissue microenvironment, angiogenesis, cancer activated fibroblasts**
- **Cancer stem cells and stem cell “niche”**

# Cancer Stem Cells



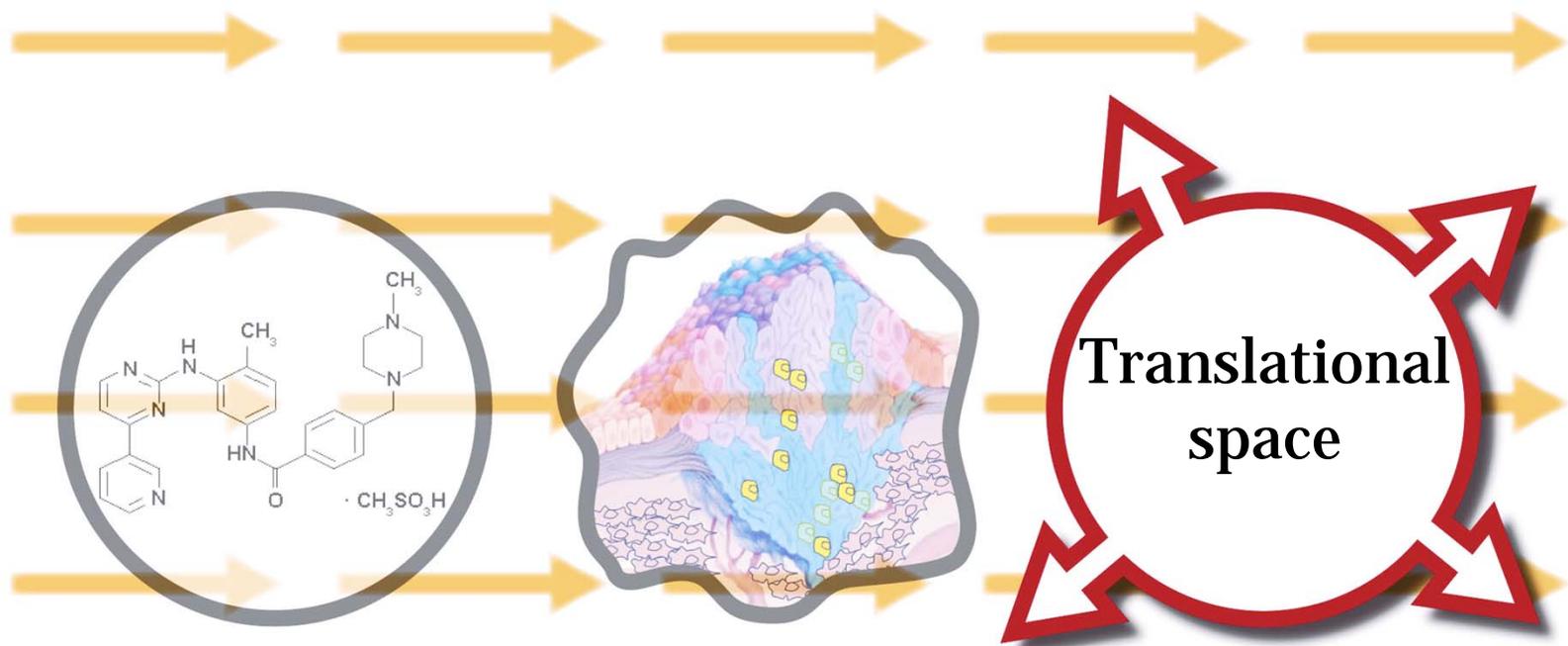
# Tumors are “organs” composed of many interdependent cell types that contribute to tumor development and metastasis



# NCI Stem Cell Mini Retreat

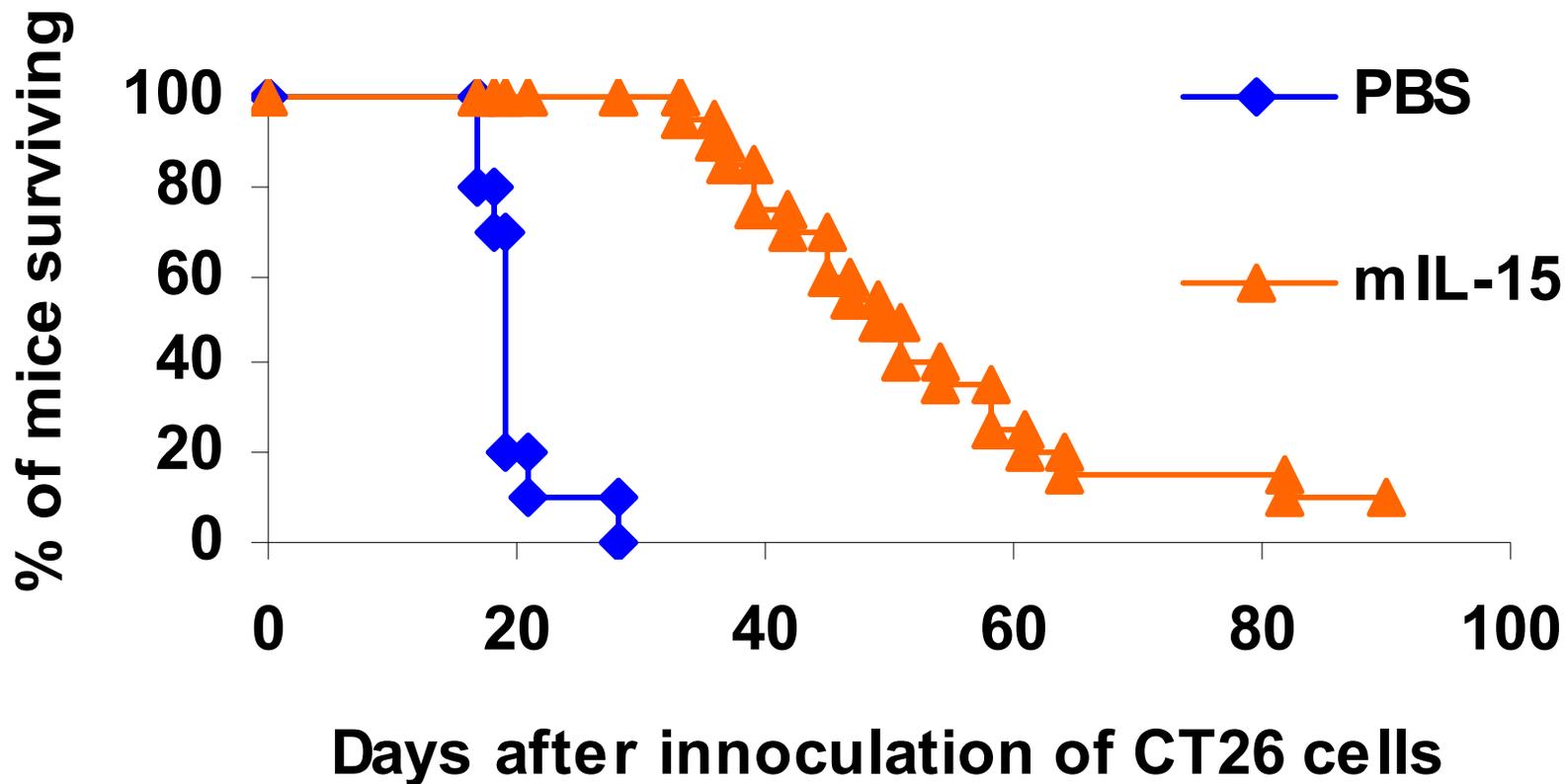
- Nov. 1, 2006; chaired by Dr. Mary Hendrix
  - 21 intramural & extramural presenters
- Breadth of science presented — from yeast genetics to animal models
- Need for unified definitions, characterization of cells, markers, assays, role of the microenvironment
- Implication to clinical trial design: need surrogate markers for ablation of tumor stem cells, rather than tumor regression

# Bringing Science to Patients



- **Animal models**
- **First in human studies—targets and biomarkers inform drug development**
- **Molecular imaging**

# IL-15 Prolonged Survival of Mice Bearing CT26 tumor

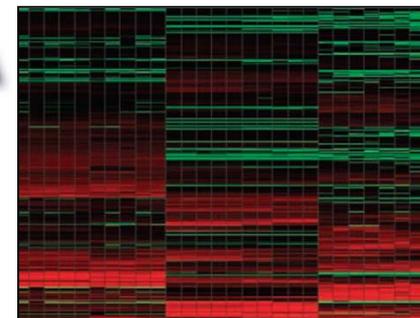
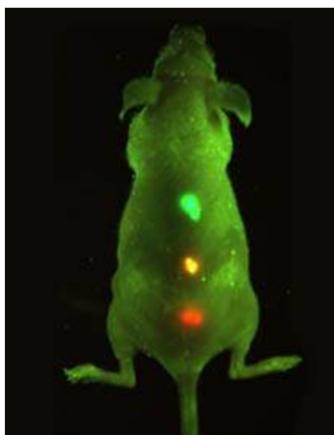
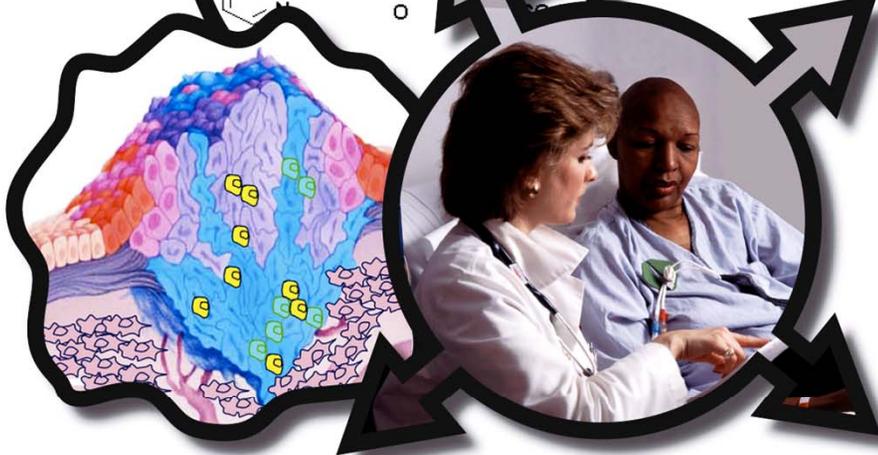
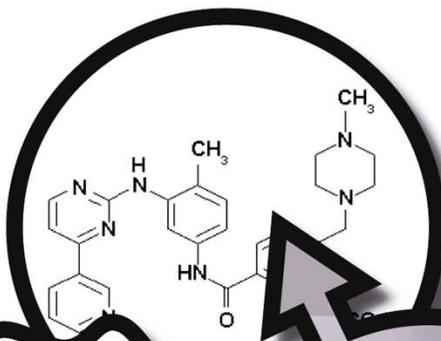
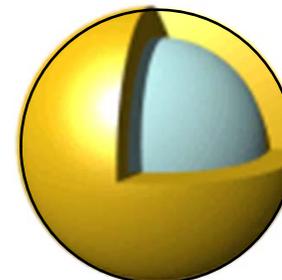
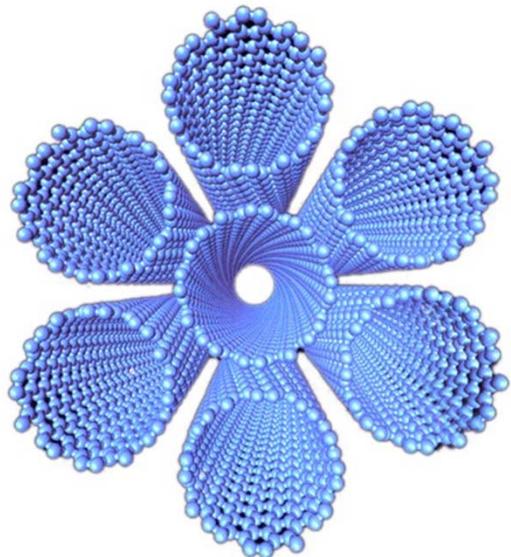


At time of tumor appearance, mice injected with **5 $\mu$ g of IL-15 daily for two weeks** or received no treatment.

# Production and Testing of IL-15

- IL-15 was discovered in the NCI **intramural program**
- IL-15 is being developed for clinical use at NCI-Frederick, under the leadership of Dr. **Steve Creekmore**
- IL-15 will undergo testing in humans at the **NIH Clinical Center**

# A Continuum of Science



# Ongoing Scientific Initiatives

- **Computational biology**
- **Cancer stem cells**
- **Lung Cancer Program**
- **Population sciences (epi and prevention)**
- **Breast Cancer Stamp pre-malignancy program**
- **Trans-Institute Angiogenesis Research Program (TARP)**

# National Cancer Institute

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



