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Cancer Research Training and Career Development Opportunities Supported by the NCI

Jonathan S. Wiest, Ph.D.

Director, Center for Cancer Training
National Cancer Institute

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Presentation Outline

- Training the future scientific workforce
- NCI's Center for Cancer Training (CCT) and the extramural Cancer Training Branch (CTB) portfolio
  - Career Development (K) Awards and outcome evaluation of the program
  - National Research Service Award Program
  - Cancer Education and Career Development Programs

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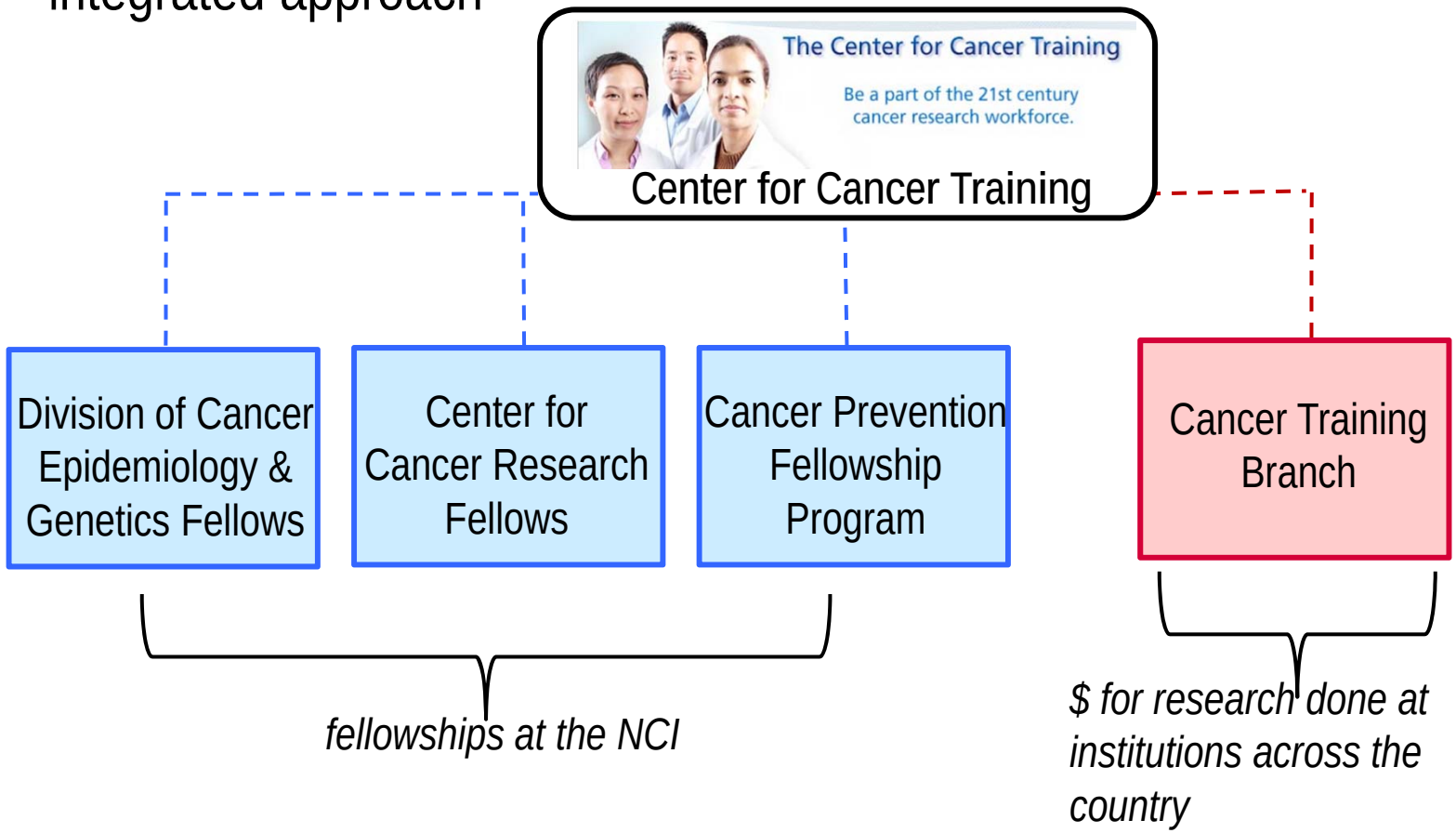
NCI's Center for Cancer Training (CCT)

CCT is catalyzing the development of a 21st century workforce capable of advancing cancer research through a scientifically integrated approach



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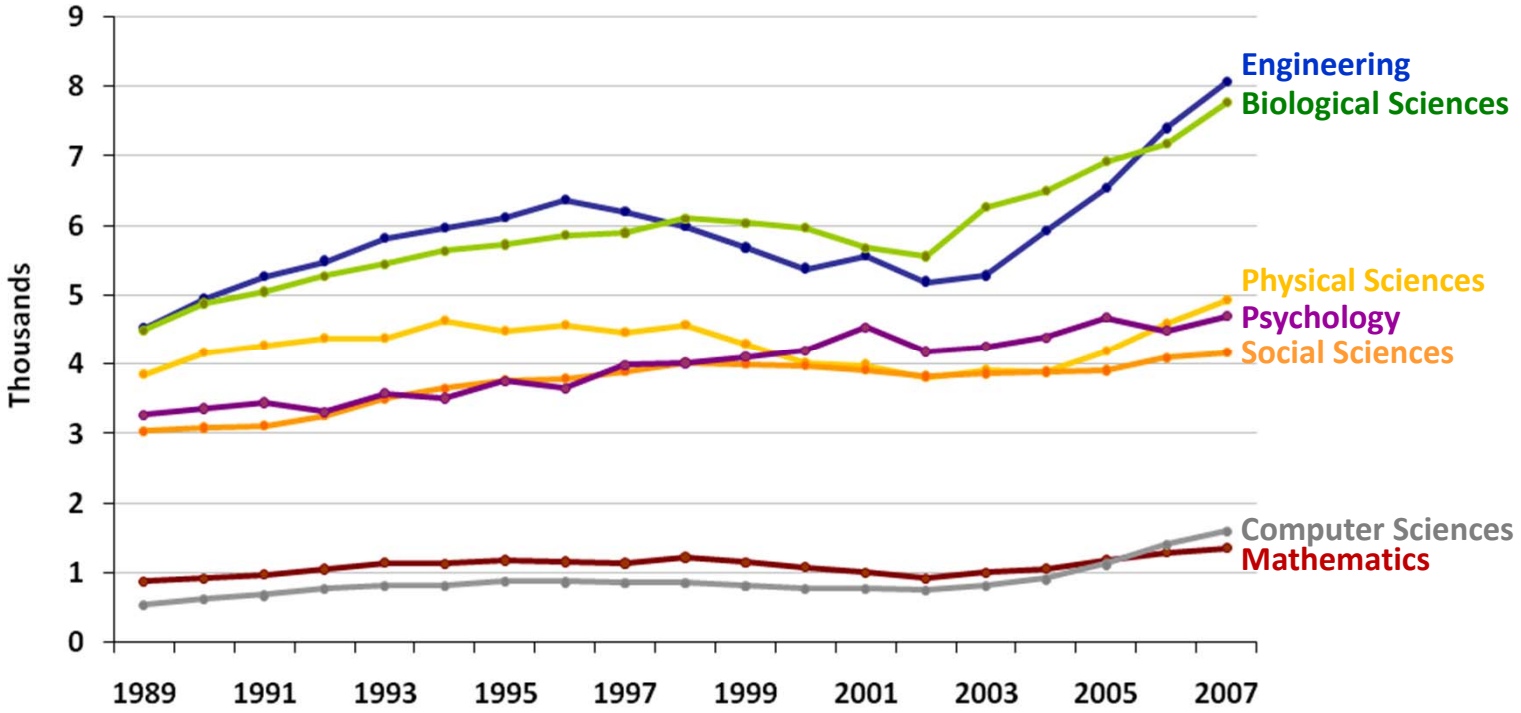
Future of Cancer Research: Success Depends on a Well-Trained Workforce

U.S. Science & Engineering Doctoral Degrees Earned, by Field, 1989-2007



NSF Science and Engineering Indicators: 2010, Chapter 2

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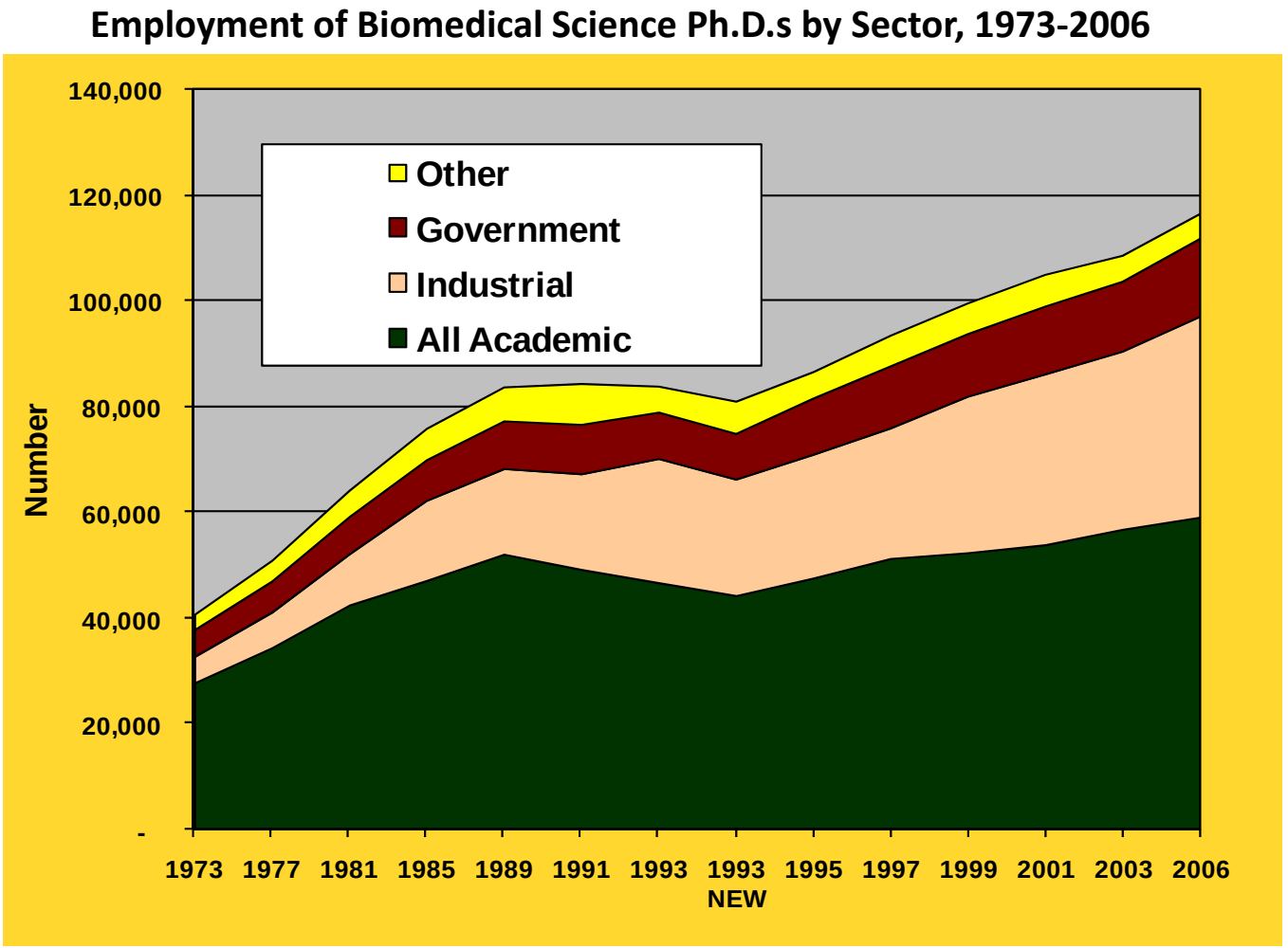
Future of Cancer Research: Success Depends on a Well-Trained Workforce



FASEB Education and Employment of Biological and Medical Scientists 2009, data source http://sestat.nsf.gov/

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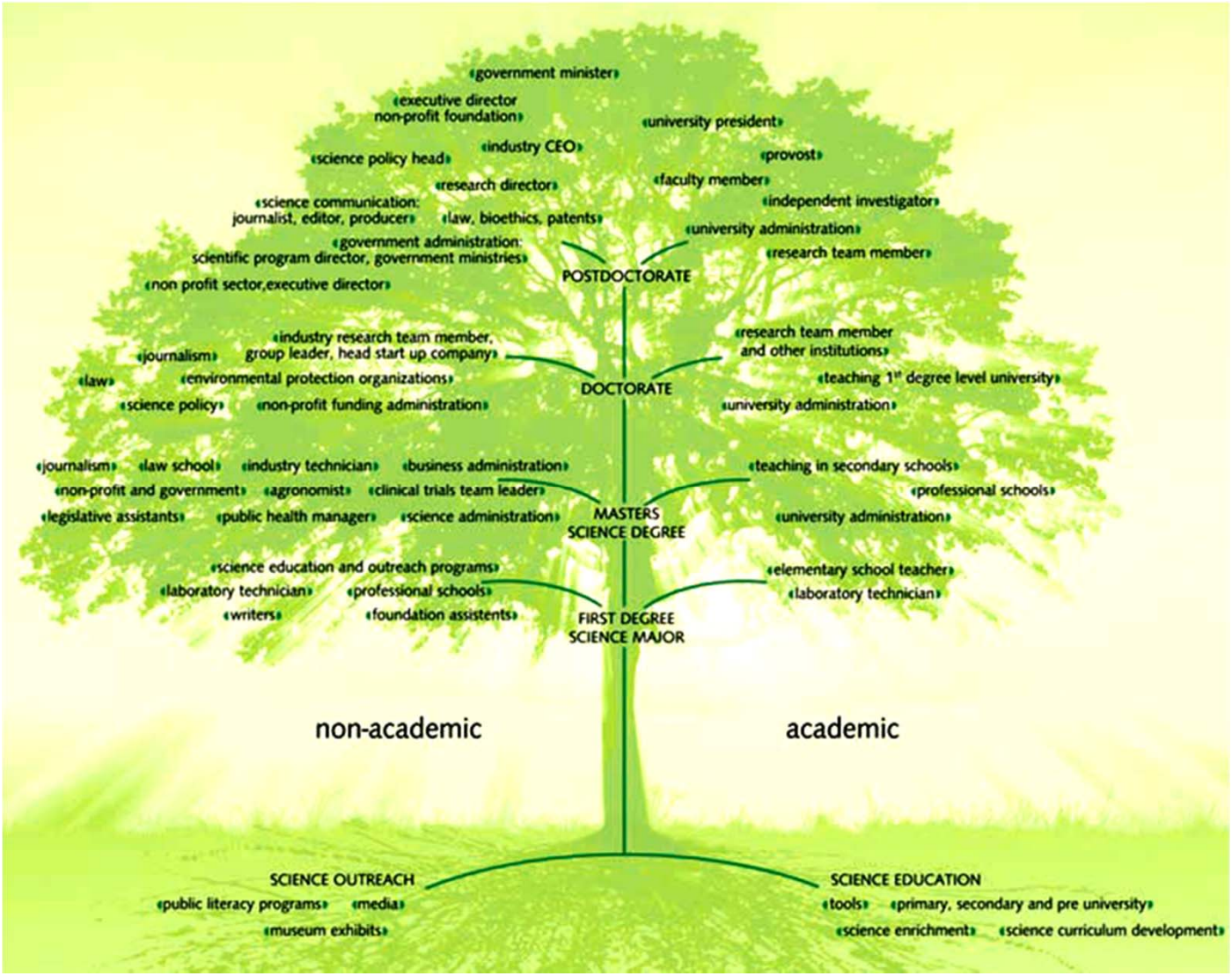
Future of Cancer Research: Success Depends on a Well-Trained Workforce



A tree full of the fruits of opportunity: A new paradigm for education, training and career paths in the natural sciences. EMBO reports 3, 10, 906–910 (2002)

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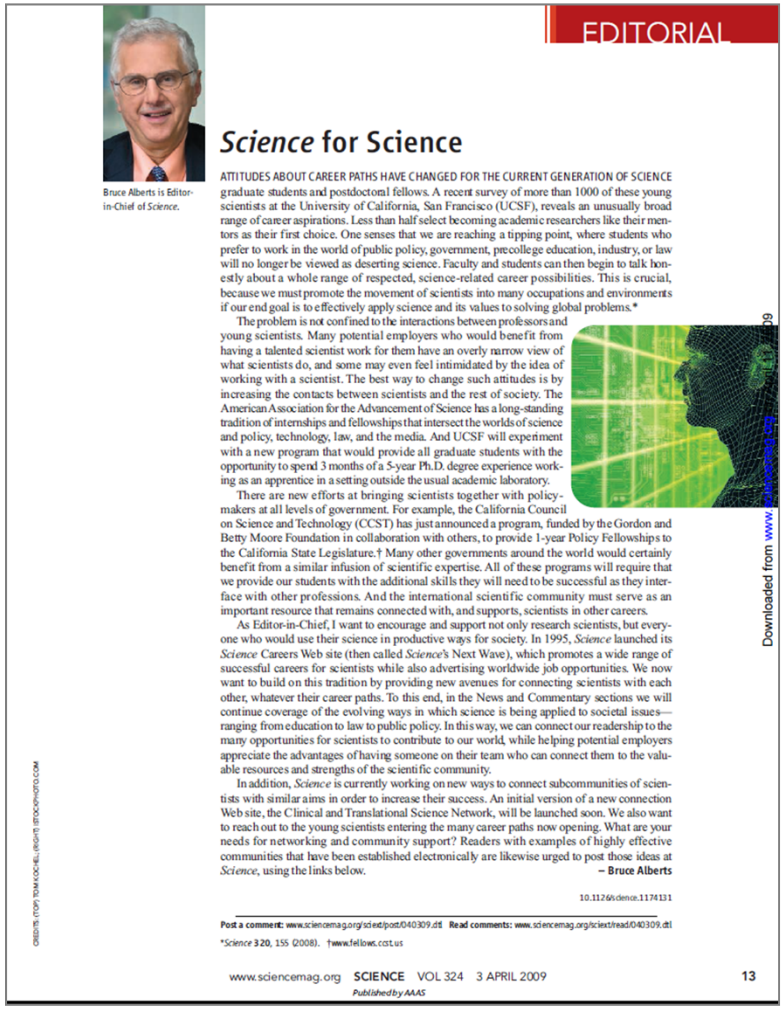
A New Cancer Research Workforce



EDITORIAL

Bruce Alberts is Editor-in-Chief of *Science*.

Science for Science

ATTITUDES ABOUT CAREER PATHS HAVE CHANGED FOR THE CURRENT GENERATION OF SCIENCE graduate students and postdoctoral fellows. A recent survey of more than 1000 of these young scientists at the University of California, San Francisco (UCSF), reveals an unusually broad range of career aspirations. Less than half select becoming academic researchers like their mentors as their first choice. One senses that we are reaching a tipping point, where students who prefer to work in the world of public policy, government, precollege education, industry, or law will no longer be viewed as deserting science. Faculty and students can then begin to talk honestly about a whole range of respected, science-related career possibilities. This is crucial, because we must promote the movement of scientists into many occupations and environments if our end goal is to effectively apply science and its values to solving global problems.*

The problem is not confined to the interactions between professors and young scientists. Many potential employers who would benefit from having a talented scientist work for them have an overly narrow view of what scientists do, and some may even feel intimidated by the idea of working with a scientist. The best way to change such attitudes is by increasing the contacts between scientists and the rest of society. The American Association for the Advancement of Science has a long-standing tradition of internships and fellowships that intersect the worlds of science and policy, technology, law, and the media. And UCSF will experiment with a new program that would provide all graduate students with the opportunity to spend 3 months of a 5-year Ph.D. degree experience working as an apprentice in a setting outside the usual academic laboratory.

There are new efforts at bringing scientists together with policy-makers at all levels of government. For example, the California Council on Science and Technology (CCST) has just announced a program, funded by the Gordon and Betty Moore Foundation in collaboration with others, to provide 1-year Policy Fellowships to the California State Legislature.† Many other governments around the world would certainly benefit from a similar infusion of scientific expertise. All of these programs will require that we provide our students with the additional skills they will need to be successful as they interface with other professions. And the international scientific community must serve as an important resource that remains connected with, and supports, scientists in other careers.

As Editor-in-Chief, I want to encourage and support not only research scientists, but everyone who would use their science in productive ways for society. In 1995, *Science* launched its *Science* Careers Web site (then called *Science*'s Next Wave), which promotes a wide range of successful careers for scientists while also advertising worldwide job opportunities. We now want to build on this tradition by providing new avenues for connecting scientists with each other, whatever their career paths. To this end, in the News and Commentary sections we will continue coverage of the evolving ways in which science is being applied to societal issues—ranging from education to law to public policy. In this way, we can connect our readership to the many opportunities for scientists to contribute to our world, while helping potential employers appreciate the advantages of having someone on their team who can connect them to the valuable resources and strengths of the scientific community.

In addition, *Science* is currently working on new ways to connect subcommunities of scientists with similar aims in order to increase their success. An initial version of a new connection Web site, the Clinical and Translational Science Network, will be launched soon. We also want to reach out to the young scientists entering the many career paths now opening. What are your needs for networking and community support? Readers with examples of highly effective communities that have been established electronically are likewise urged to post those ideas at *Science*, using the links below.

– Bruce Alberts

10.1126/science.1174131

Post a comment: www.sciencemag.org/scied/post/040309.dtl **Read comments:** www.sciencemag.org/sciext/read/040309.dtl

Science **320**, 155 (2008). †www.fellows.ccst.us

Published by AAAS

"One senses that we are reaching a tipping point, where students who prefer to work in the world of public policy, government, precollege education, industry or law will no longer be viewed as deserting science…This is crucial because we must promote the movement of scientists into many occupations and environments if our end goal is to effectively apply science and its values to solving global problems."

- Bruce Alberts
Editor in Chief, *Science*

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Training and Career Development Grants Supported by NCI's Cancer Training Branch

~ $163 M per year, 17 award mechanisms

Mentored career development awards	K01, K07, K08, K23, K25
Independent career development awards	K05, K18, K24
Transition awards	K22, K99
Institutional awards for career development, cancer education, and training	K12, R25E, R25T, T32, T90/R90
Individual fellowships	F32, F33

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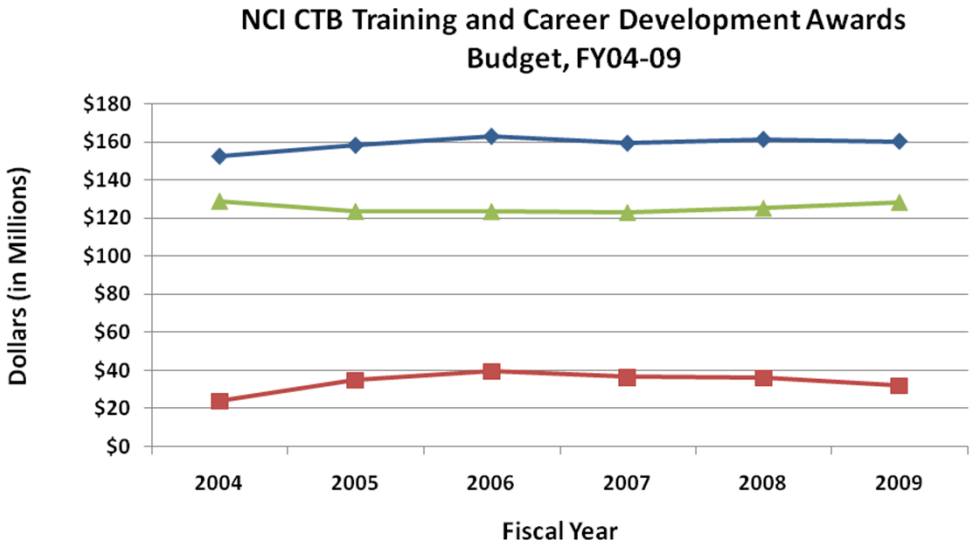
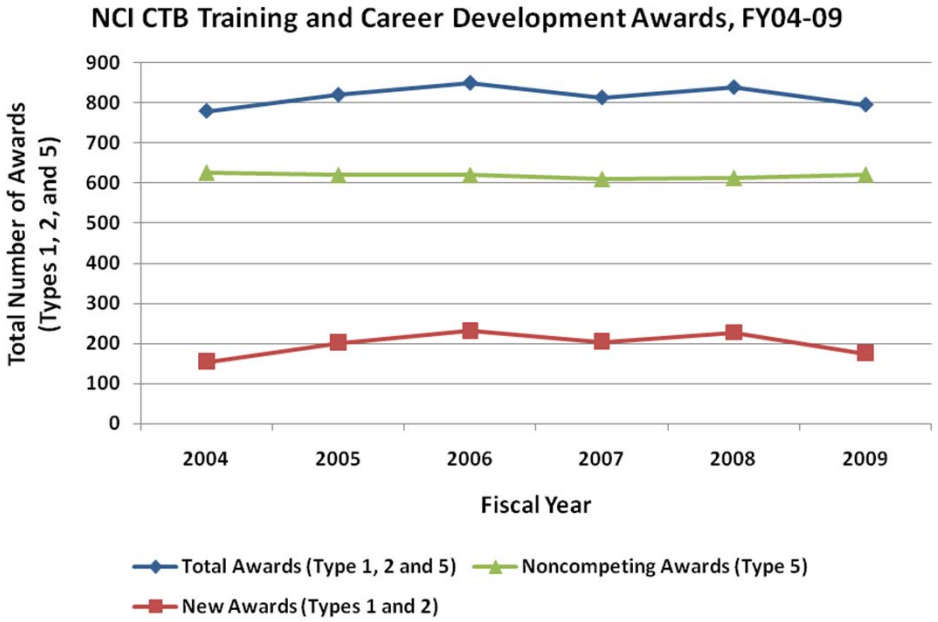
Cancer Training Branch Awards





Does not include ARRA awards and does not include Type 3 and 7 awards (supplements or change of institution)

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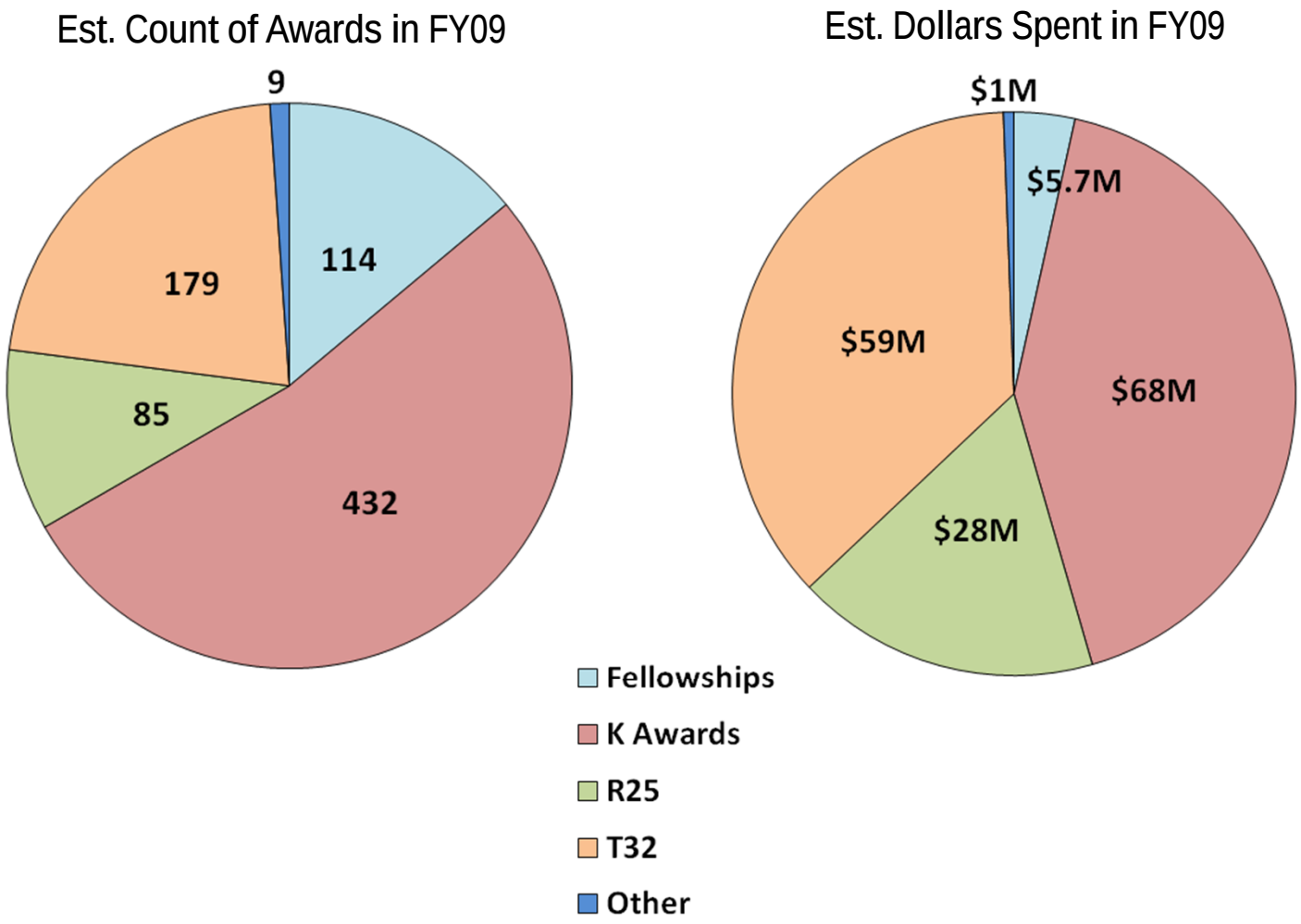
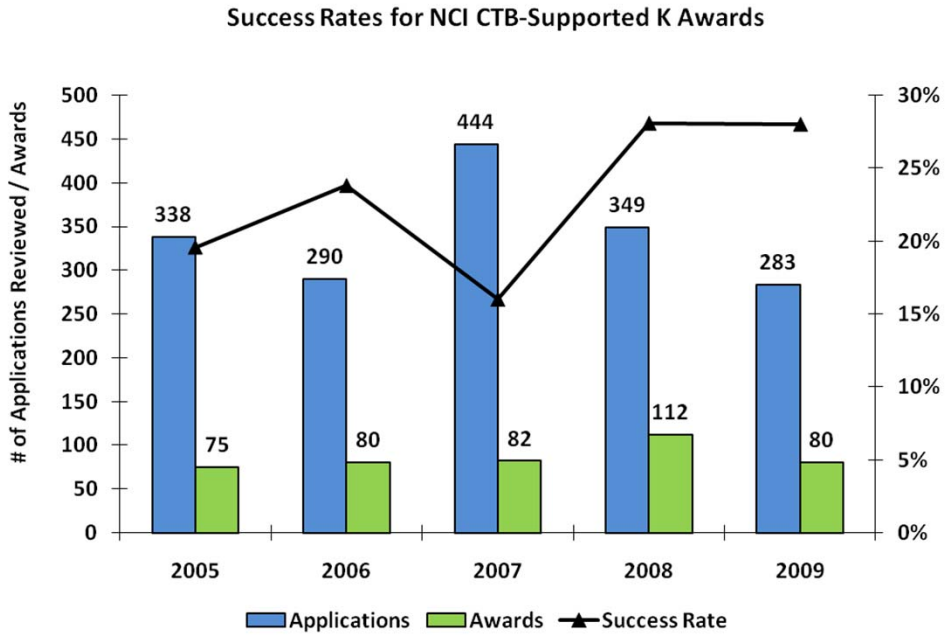
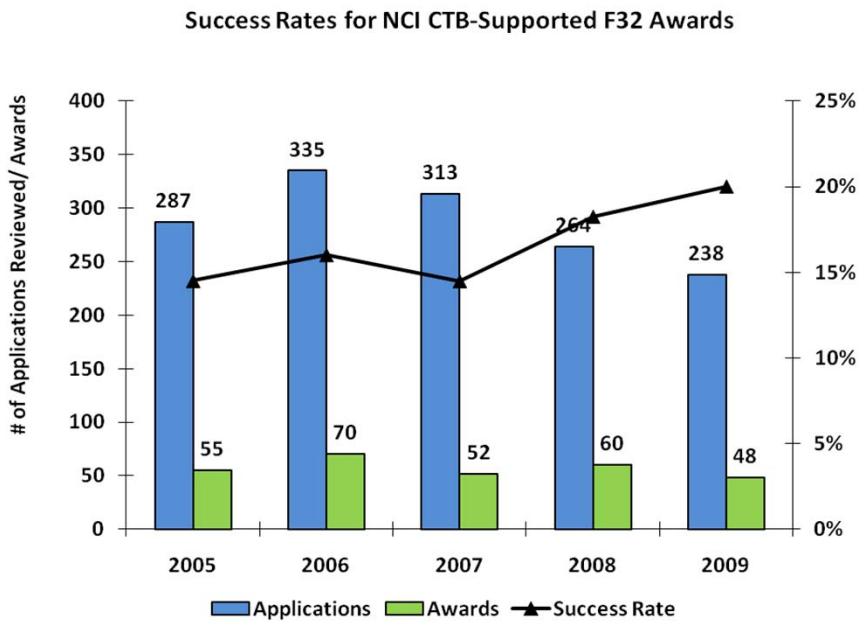
Breakdown of the CTB Portfolio by Activity

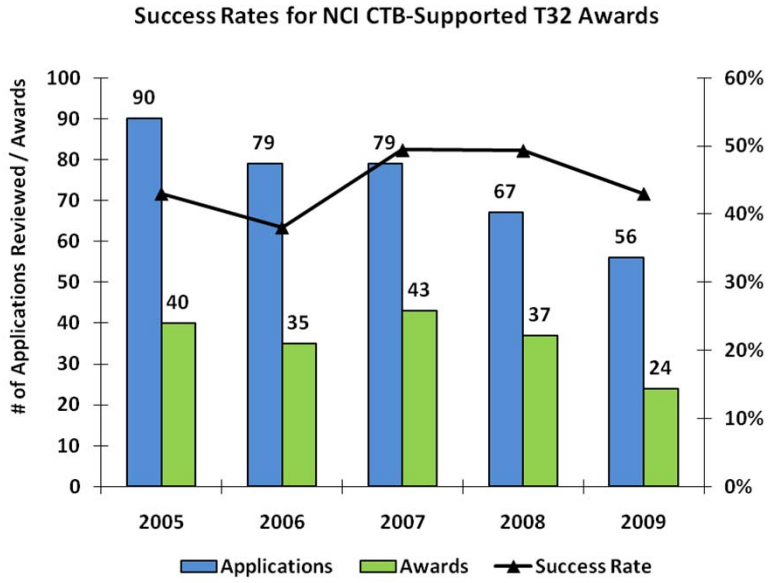


Does not include ARRA awards

CTB Success Rates for New and Competing Applications







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Training, Career Development, and Education Support: Budget by NIH ICs

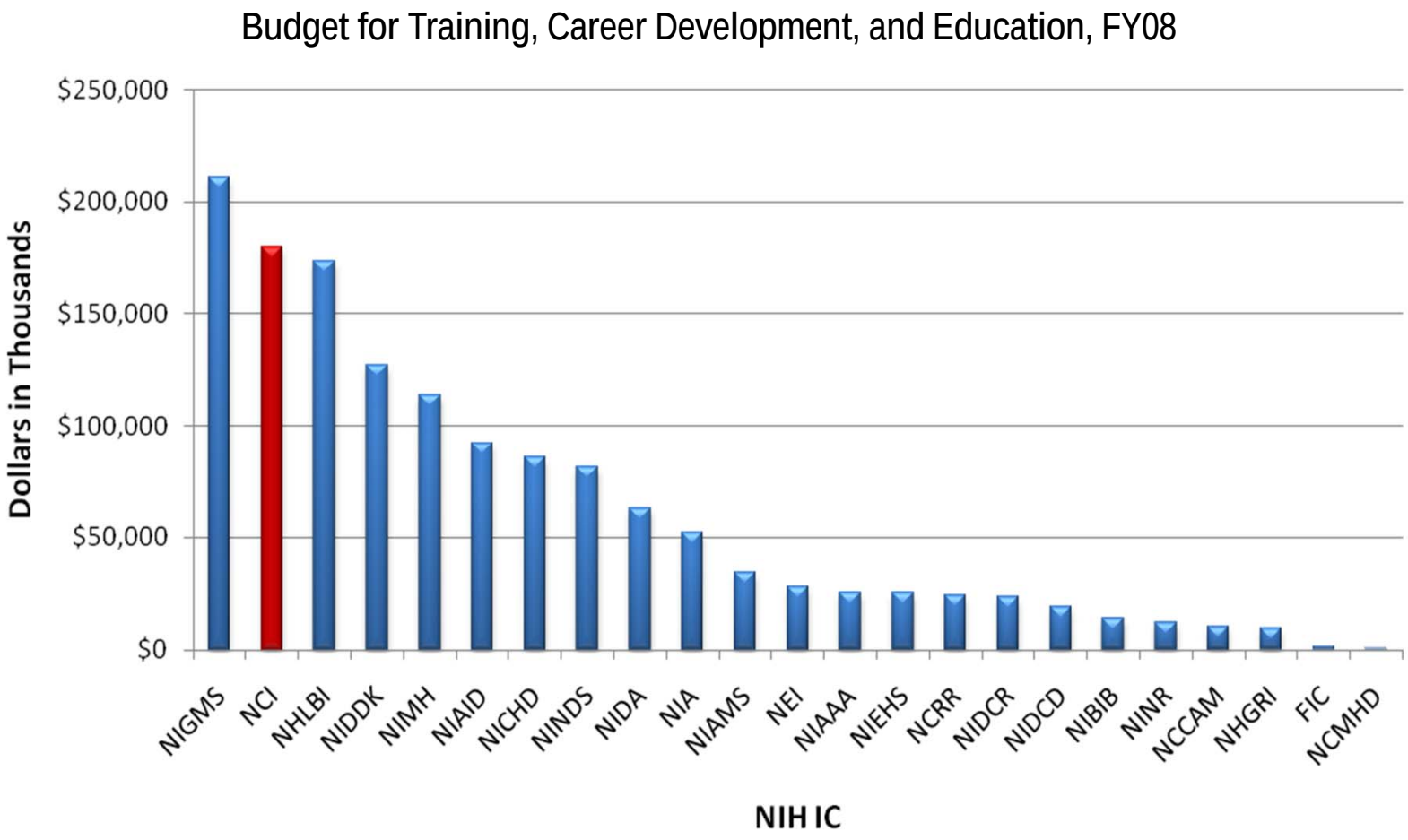

Chart generated from budget-by-mechanism data from NIH RePORT site. Research Careers, Cancer Ed., and Total Training were combined for each IC

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Training, Career Development, and Education Support: % of Total Budget by NIH ICs

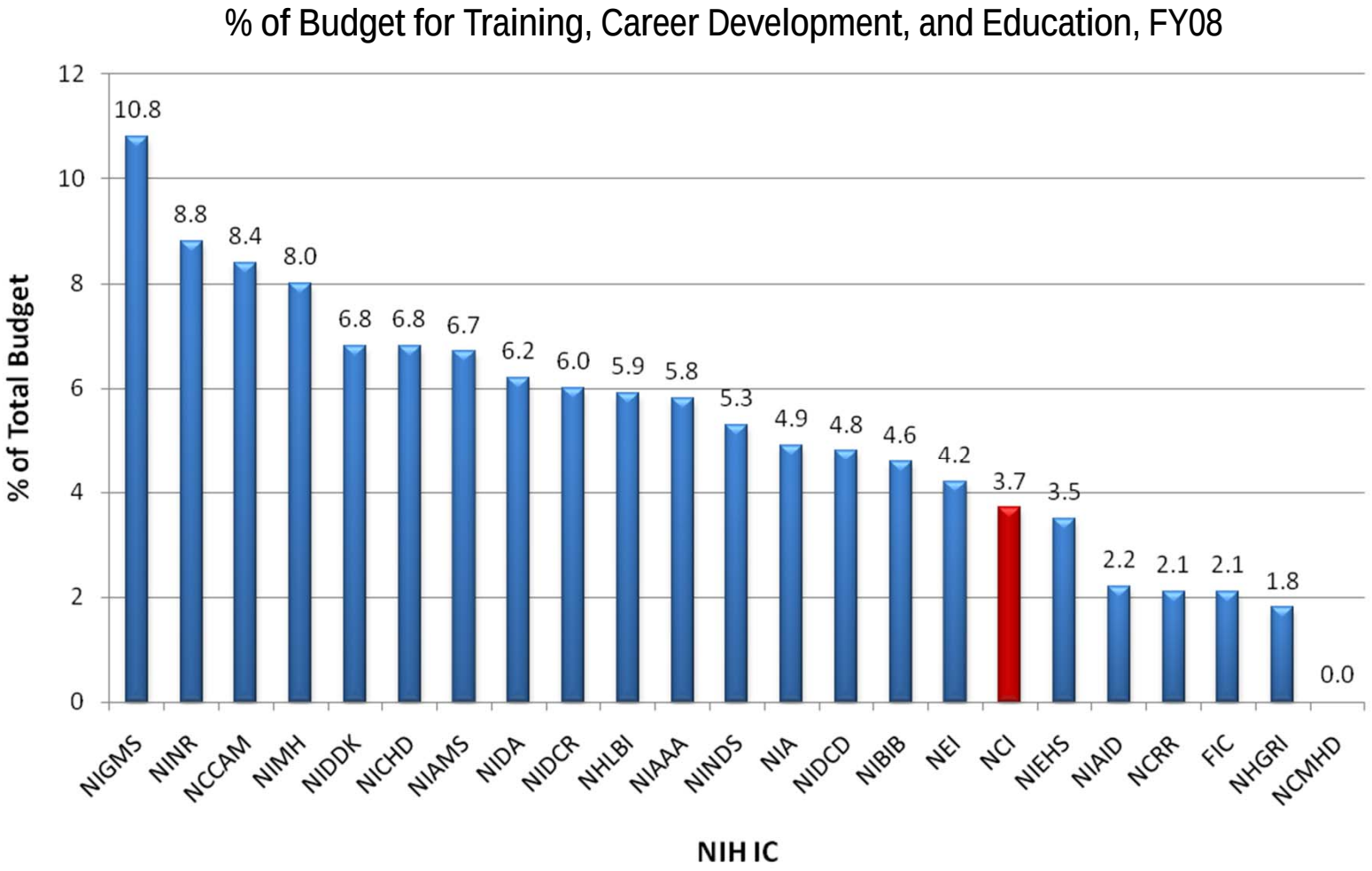

Chart generated from budget-by-mechanism data from NIH RePORT site. Research Careers, Cancer Ed., and Total Training were combined and divided by the total IC budget.

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Extramural: Career development (K) awards and an outcome evaluation of the program

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Career Development (K) Awards Program Goals

- Supports mentored career development for early-stage investigators
- Facilitate transition from mentored research to an independent career
- Support quantitative scientists and engineers pursuing biomedical or behavioral research
- Provide protected time for newly independent investigators to develop their research programs
- Provide protected time for mid-career or established investigators to conduct cancer research and serve as mentors

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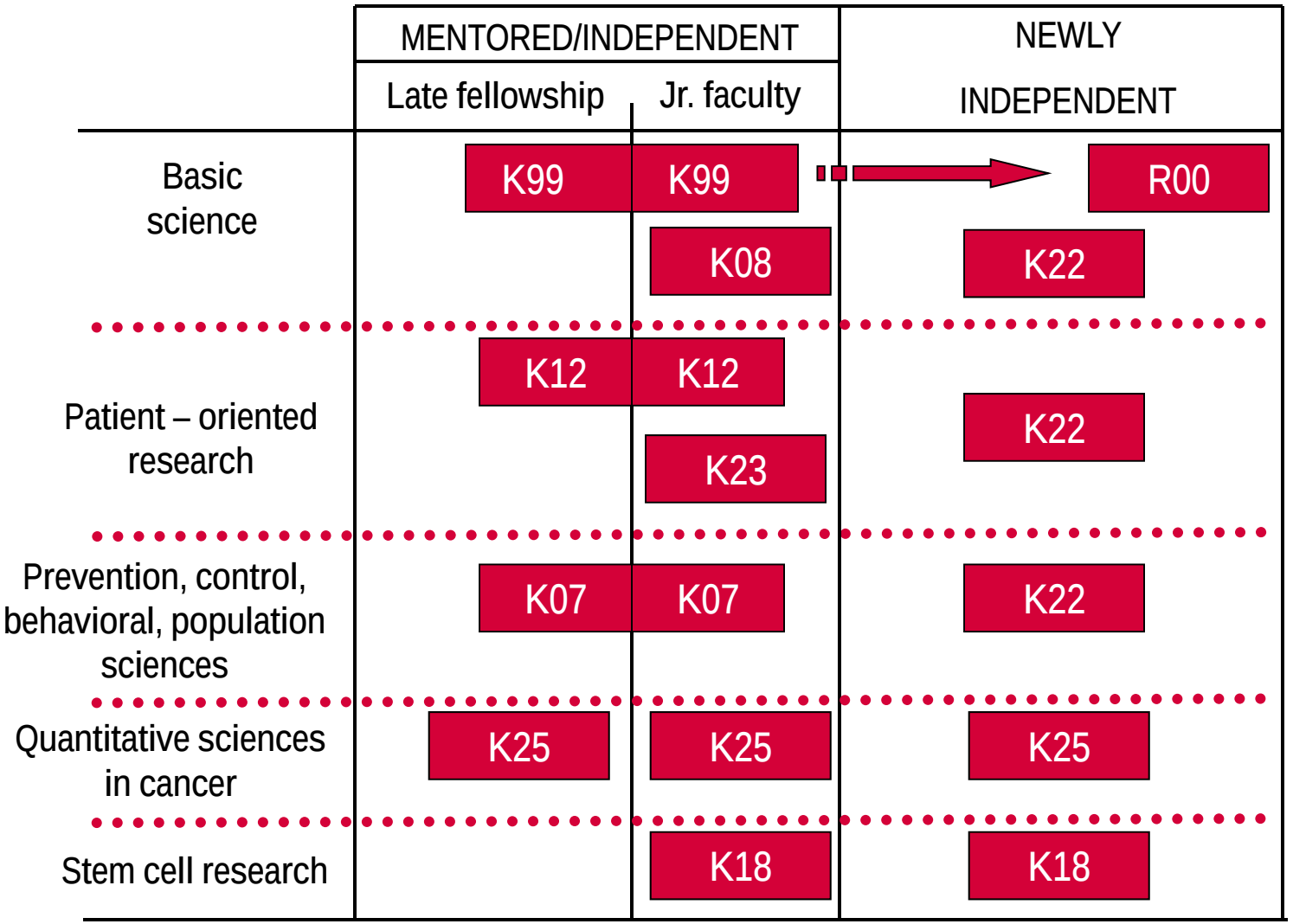
K Awards: Mentored and Newly Independent



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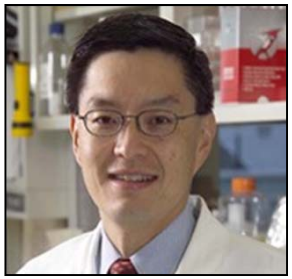
Career Awards Academic Success Stories:



William Pao, MD, PhD
Vanderbilt University
•Associate Professor of Medicine
• Ingram Associate Professor of Cancer Research

Aminah Jatoi, MD
Mayo Clinic
• Professor of Oncology

Kimberly Stegmaier, MD
Dana Farber
•Assistant Professor of Pediatrics
• Attending Physician, Pediatric Oncology

H. Charles Manning, PhD
Vanderbilt University
•Assistant Professor of Radiology, Biomedical Engineering, and Neurosurgery
• Faculty Director of Molecular Imaging

	K24		
R01	R01		
		R01	
K08	R21		RC1 (Challenge)
		L40 (Loan	
K12 Scholar	K23	Repayment)	R01
T32 Postdoc	F32	K08	K25
T32 Predoc	T32 Postdoc	T32 Postdoc	T32 Postdoc

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Evaluation Approach: A Two-Phase Process

- **Phase I: Feasibility (design) study** – assess the feasibility of evaluating NCI's K program ✓
  - ✓ Explore literature, resources, data, and performance measures to conduct subsequent evaluation
  - ✓ Identify key evaluation questions
  - ✓ Develop evaluation plan, methodology, and budget
  - ✓ Pilot data

- **Phase II: Outcome evaluation** – conduct a full-scale evaluation of NCI's K program to determine program outcomes and impact

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K Awards Outcome Evaluation Key Questions

1. What are the characteristics and demographics of NCI K program awardees?

2. What are the outcomes of NCI K awardees?

3. What impact does having an NCI K award have on career outcomes? How do NCI K awardees compare to unsuccessful applicants or participants in other similar career development programs?

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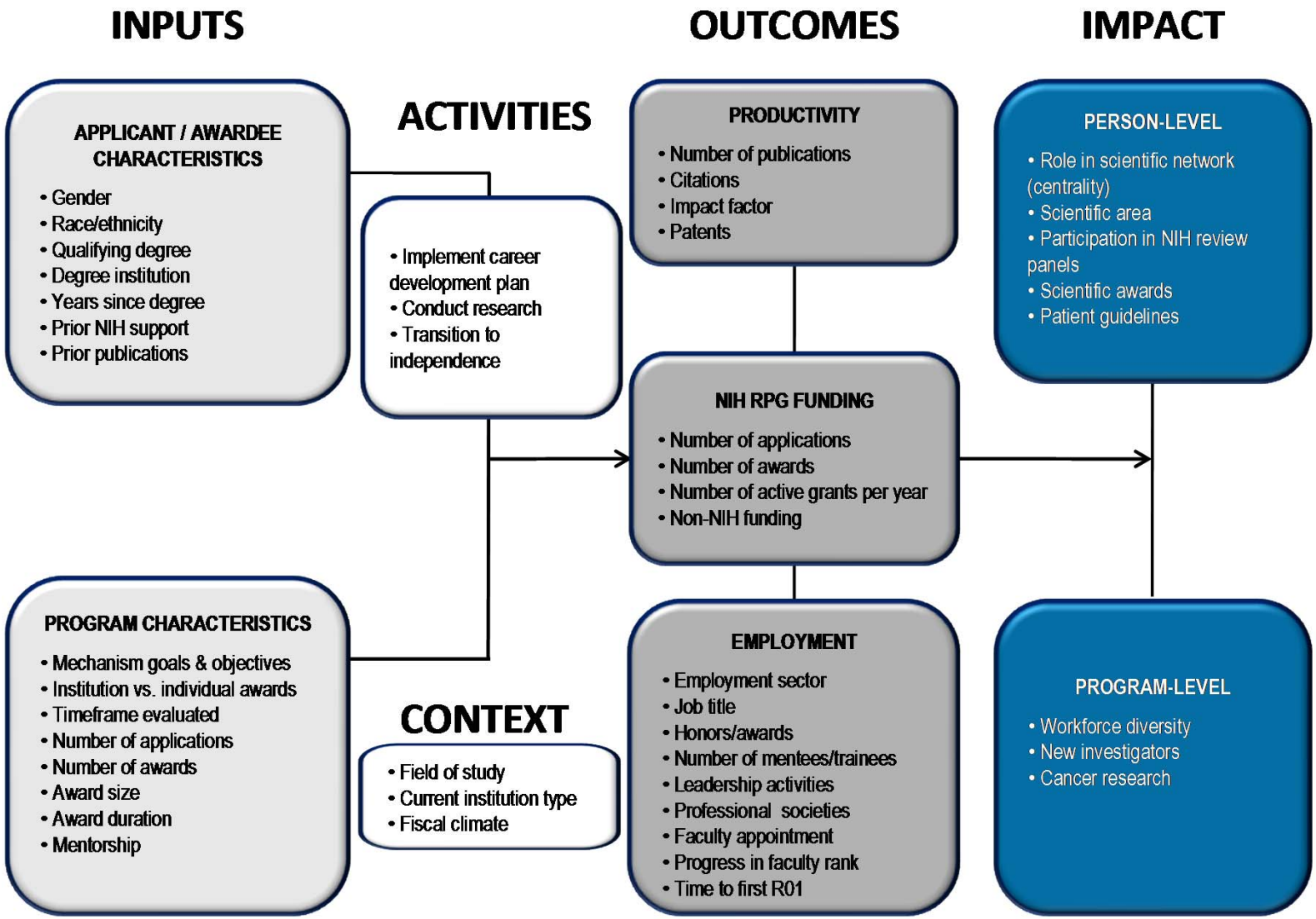
Framework for K Awards Outcome Evaluation



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Extramural: National Research Service Awards (NRSA) Program

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National Research Service Awards Program

- In 1974, Congress enacted the National Research Act, creating the National Research Service Award (NRSA) program
- Legislation authorized support for individual and institutional training at the predoctoral and postdoctoral levels through NRSA
- F32: Supports mentored cancer research training for individuals with a doctoral degree
- T32: Supports institutional programs to train predoctoral and postdoctoral fellows in biomedical and behavioral research
- F33: Supports established fellows who wish to make major changes in the direction of their research

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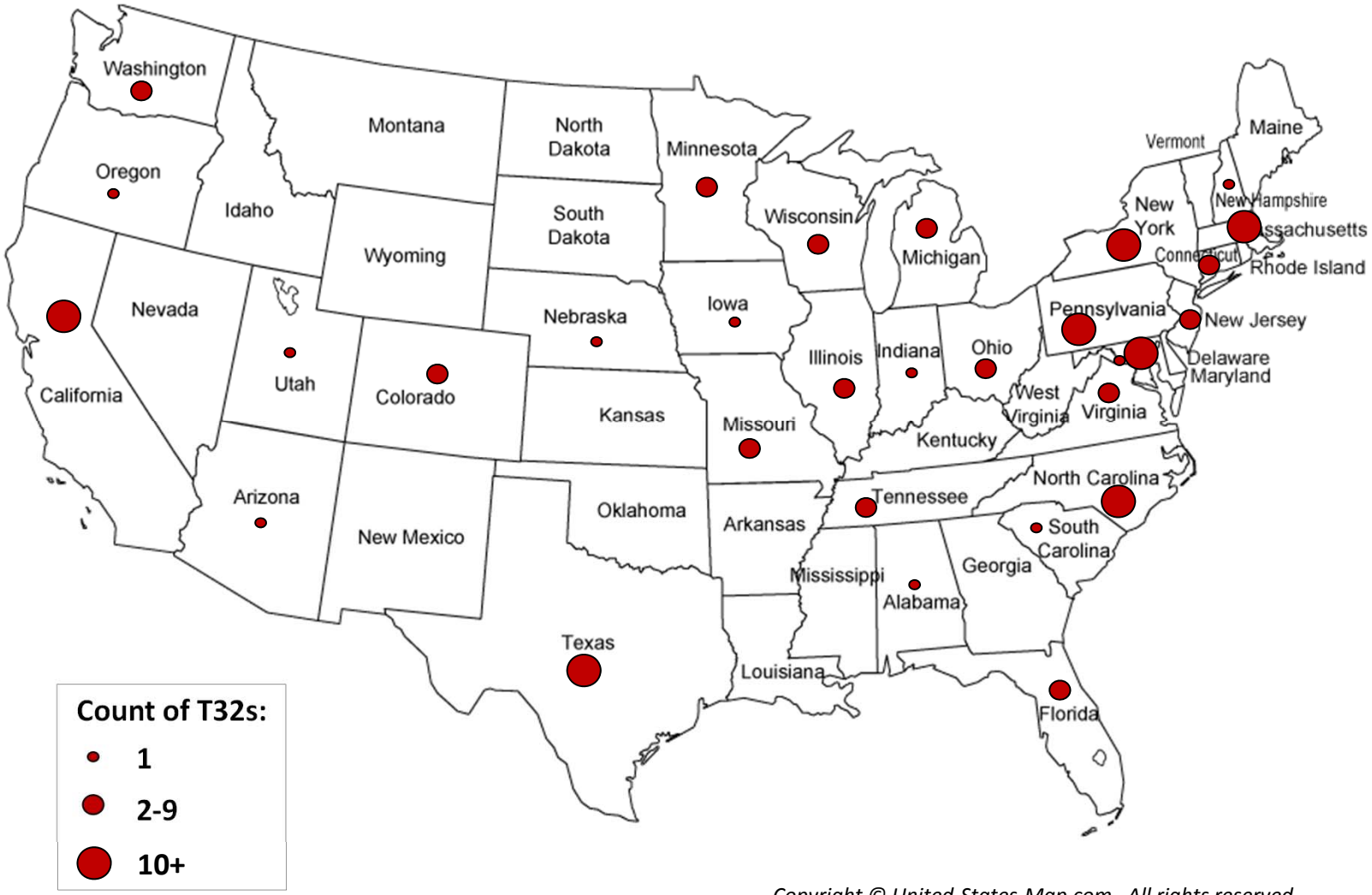
Geographical Representation of NRSA Institutional Training Grants (T32s)



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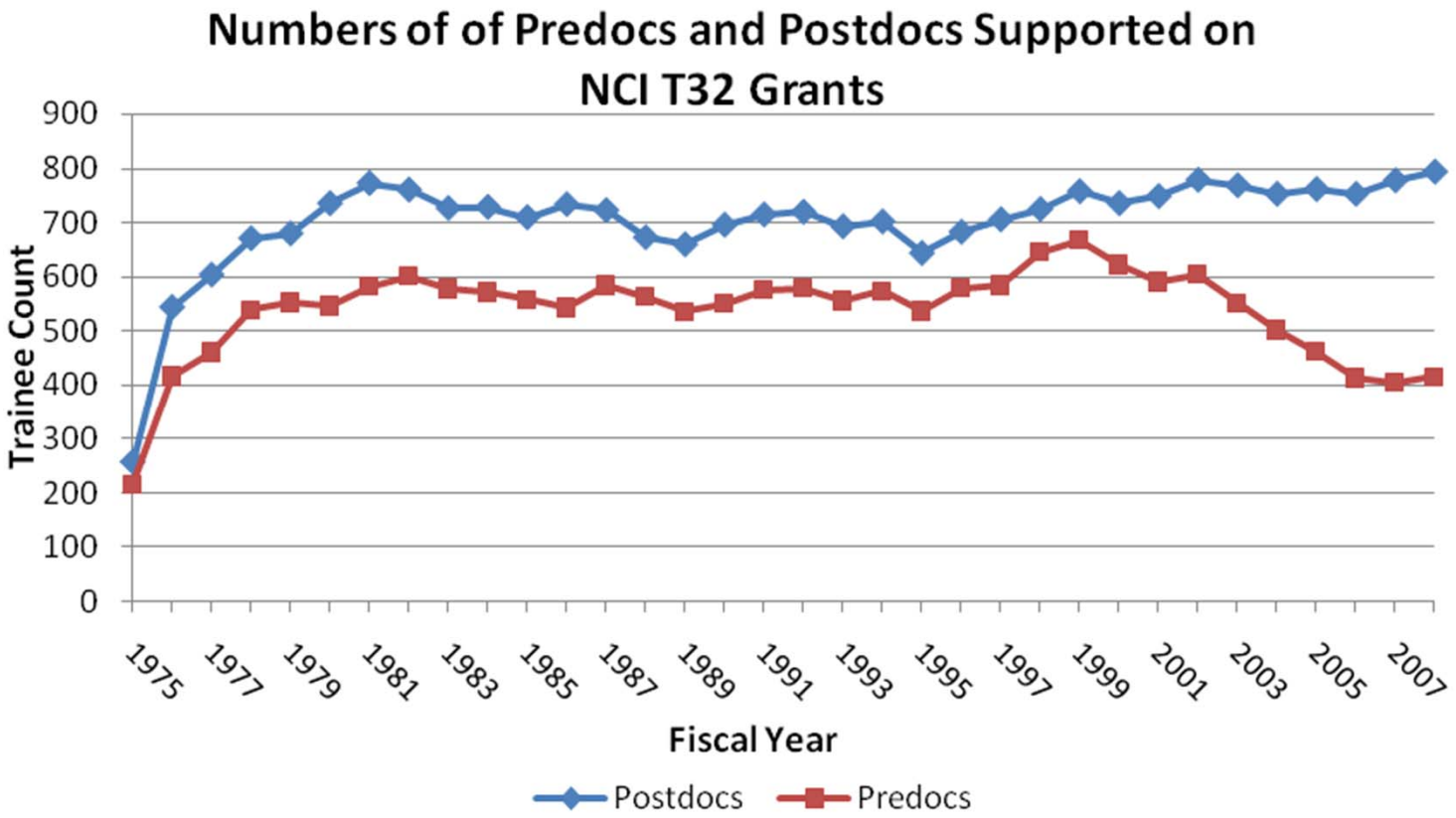
NRSA T32 Trainees



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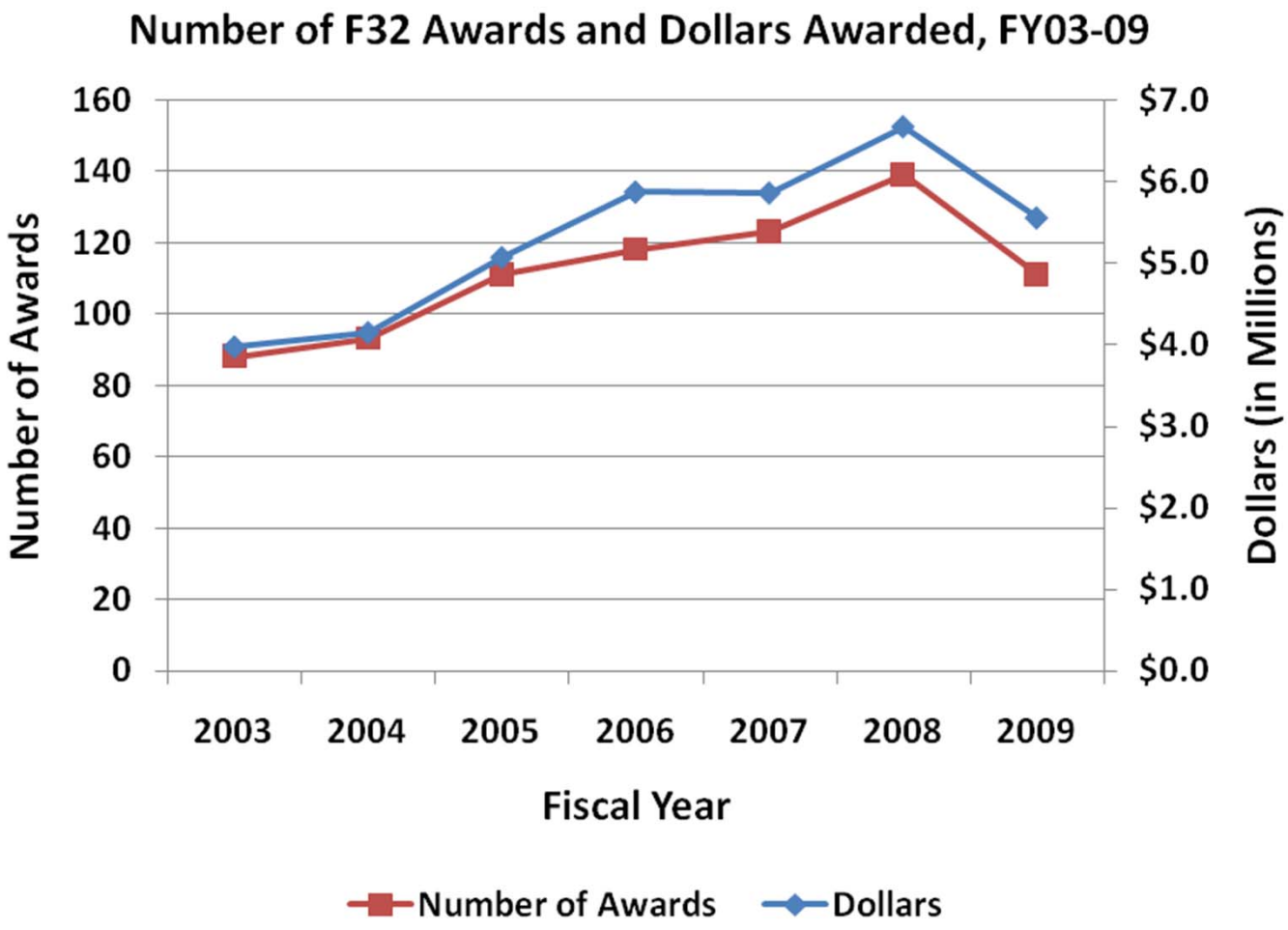
CTB F32 Awards, FY03-09



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Extramural: Cancer Education and Career Development Programs

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R25T and R25E Programs

R25T

- Cancer Education and Career Development Program (R25T)
  - an institutional award to develop curriculum
  - training predoctoral and postdoctoral fellows in interdisciplinary and collaborative settings
  - particularly applicable to cancer prevention and control, epidemiology, nutrition, and behavioral and population sciences

R25E

- Cancer Education Grants Program (R25E) supports research in cancer education and dissemination of cancer science and healthcare delivery
  - Supports education and dissemination research in integrative science (i.e., computational or systems biology, etc.)

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R25E Program, cont.

- R25E can be used to support:
  - Innovative educational programs motivating biomedical and health science students to pursue cancer-related careers
  - Short courses to update scientists in new methods, technologies, and findings
  - Training of clinicians and community health care providers in evidence-based cancer prevention and control approaches
  - Development of effective, innovative dissemination approaches to translate knowledge gained from science (discovery) into public health, and community applications (delivery)

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http://cancer.gov/cct

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The People Who Do The Work!

- CCT OD
  - Evelyn Fling
  - Angela Jones
  - Julie Mason
  - Peggy Rhoades
- CCT CTB
  - Ming Lei
  - Sonia Jakowlew
  - Susan Lim
  - Nancy Lohrey
  - Dorkina Myrick
  - Susan Perkins

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Questions to Consider

- Should we continue to “enforce” the Postdoc:Predoc ratios on T32 grants?
- Is the number of Career Development Awards too large and confusing to the extramural community?
- How should we spend our money?

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Thank You!

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ARRA

- Supported 110 2-year administrative and competitive supplements for K grants, T32s, and R25Ts at a total cost of ~ $10.6M for the two years (FY09-10)
- Supported 13 P30s for 2 years at a total cost of ~ $17M
- 32 states represented

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Mechanism Distribution

Mechanism	Number of Awards
F32	111
F33	1
K01	47
K05	20
K07	112
K08	76
K12	18
K22	28
K23	40
K24	18
K25	23
K99	47
R25E	42
R25T	43
T32	179

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F32 Grants

FY	Number of Awards	Dollars
2003	88	$3,968,356
2004	93	$4,144,382
2005	111	$5,063,896
2006	118	$5,863,237
2007	123	$5,852,296
2008	139	$6,662,231
2009	111	$5,547,559

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Award	Award Type	Name	Discipline	Career Stage
F32	Fellowship	NIH-NRSA	• All Cancer Research	• Postdoctoral and Clinical Fellows
F33	Fellowship	NIH-NRSA	• All Cancer Research	• Established Investigators
T32	Institutional Training	NIH-NRSA	• All Cancer Research	• Established Investigators
K08	RCA	NIH	• Basic Sciences • Translational Research	• Postdoctoral and Clinical Fellows • Non-tenured Junior Faculty
K18	RCA	NIH	• Basic science • Clinical Science • Patient-Oriented Research • Translational Research	• Independent Junior Faculty • Established Investigators
K23	RCA	NIH	• Clinical Science: Patient-Oriented Research • Translational Research	• Non-tenured Junior Faculty with a Clinical Degree
K24	RCA	NIH	• Clinical Science: Patient-Oriented Research	• Midcareer Investigators
K25	RCA	NIH	• All Cancer Research	• Postdoctoral to Senior Faculty Quantitative Scientists
K99/R00	RCA	NIH	• Basic Sciences	• Postdoctoral Fellows
Total #		9	•	
			Please note that we also have substantial additional NCI-specific rules for a number of the mechanisms including T32.	

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Award	Award Type	Name	Discipline	Career Stage
K05	RCA	NCI[#]	• Cancer Prevention, Control, Behavioral and Population Sciences	• Established Investigators
K07	RCA	NCI[$]	• Cancer Prevention, Control, Behavioral and Population Sciences	• Postdoctoral Fellows • Non-tenured Junior Faculty
K22	RCA	NCI[%]	• Cancer Prevention, Control, Behavioral and Population Sciences • Basic Sciences (MD's and Federal Postdoctoral Fellows only)	• New Faculty in First Independent Research Positions
K12	Institutional Training	NCI[^]	• Clinical Science: Patient-Oriented Research • Translational Research	• Established Investigators
R25T	Institutional Training	NCI[&]	• Cancer Prevention, Control, Behavioral and Population Sciences • Transdisciplinary Sciences	• Established Investigators
R25E	Education	NCI[*]	• All Cancer Research	• Established Investigators

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FY09 T32s (Type 2 and 5)

UNIVERSITY	# OF T32's	PRE FTTP	POST FTTP
HARVARD UNIVERSITY (Including BETH ISRAEL	16	27	105
JOHNS HOPKINS UNIVERSITY	10	26	54
SLOAN-KETTERING INSTITUTE FOR CANCER RES	8	4	42
UNIVERSITY OF TEXAS MD ANDERSON CAN CTR	8	8	39
UNIVERSITY OF NORTH CAROLINA CHAPEL HILL	7	18	37
UNIVERSITY OF PENNSYLVANIA/WISTAR INSTITUTE	7	20	37
VANDERBILT UNIVERSITY	6	12	23
DUKE UNIVERSITY	5	7	30
STANFORD UNIVERSITY	5	14	30
UNIVERSITY OF MICHIGAN AT ANN ARBOR	5	11	12
UNIVERSITY OF WASHINGTON	5	25	22
NORTHWESTERN UNIVERSITY	4	10	12
OHIO STATE UNIVERSITY	4	0	26
UNIVERSITY OF CALIFORNIA IRVINE	4	8	15
UNIVERSITY OF CALIFORNIA LOS ANGELES	4	11	20
UNIVERSITY OF CALIFORNIA SAN DIEGO	4	17	15
UNIVERSITY OF MINNESOTA TWIN CITIES	4	10	15
UNIVERSITY OF WISCONSIN MADISON	4	25	13
ROSWELL PARK CANCER INSTITUTE CORP	3	9	4
UNIVERSITY OF CALIFORNIA SAN FRANCISCO	3	0	26
UNIVERSITY OF PITTSBURGH AT PITTSBURGH	3	6	9
UNIVERSITY OF TEXAS SW MED CTR/DALLAS	3	2	12
WASHINGTON UNIVERSITY	3	1	23
BAYLOR COLLEGE OF MEDICINE	2	0	10
COLUMBIA UNIVERSITY HEALTH SCIENCES	2	9	10
FRED HUTCHINSON CANCER RESEARCH CENTER	2	2	9
NEW YORK UNIVERSITY SCHOOL OF MEDICINE	2	5	14
UNIV OF MED/DENT NJ-R W JOHNSON MED SCH/UNIV	2	1	7
UNIVERSITY OF ALABAMA AT BIRMINGHAM	2	1	9
UNIVERSITY OF CALIFORNIA BERKELEY	2	8	7
UNIVERSITY OF CHICAGO	2	8	9
UNIVERSITY OF CINCINNATI	2	6	9
UNIVERSITY OF FLORIDA	2	4	7
UNIVERSITY OF SOUTHERN CALIFORNIA	2	5	8
VIRGINIA COMMONWEALTH UNIVERSITY	2	1	9
WAKE FOREST UNIVERSITY HEALTH SCIENCES	2	6	10
YALE UNIVERSITY	2	9	3
ALBERT EINSTEIN COL OF MED YESHIVA UNIV	1	3	8
BURNHAM INSTITUTE FOR MEDICAL RESEARCH	1	0	7
CASE WESTERN RESERVE UNIVERSITY	1	3	4
CHILDREN'S HOSPITAL LOS ANGELES	1	0	2
COLORADO STATE UNIVERSITY-FORT COLLINS	1	6	3
DARTMOUTH COLLEGE	1	5	2
GEORGETOWN UNIVERSITY	1	4	6
H. LEE MOFFITT CANCER CTR & RES INST	1	0	6
INDIANA UNIV-PURDUE UNIV AT INDIANAPOLIS	1	2	6
INSTITUTE FOR CANCER RESEARCH	1	0	10
MAYO CLINIC COLL OF MEDICINE, ROCHESTER	1	3	2
MEDICAL UNIVERSITY OF SOUTH CAROLINA	1	0	6
MOUNT SINAI SCHOOL OF MEDICINE OF NYU	1	5	9
OREGON HEALTH AND SCIENCE UNIVERSITY	1	2	3
PENNSYLVANIA STATE UNIV HERSHEY MED CTR	1	3	4
PRINCETON UNIVERSITY	1	8	5
RICE UNIVERSITY	1	6	0
ROCKEFELLER UNIVERSITY	1	5	5
SALK INSTITUTE FOR BIOLOGICAL STUDIES	1	0	6
ST. JUDE CHILDREN'S RESEARCH HOSPITAL	1	0	6
STATE UNIVERSITY NEW YORK STONY BROOK	1	7	4
TUFTS MEDICAL CENTER	1	0	4
UNIV OF MASSACHUSETTS MED SCH WORCESTER	1	2	4
UNIVERSITY OF ARIZONA	1	6	4
UNIVERSITY OF CALIFORNIA DAVIS	1	0	4
UNIVERSITY OF COLORADO DENVER	1	0	5
UNIVERSITY OF IOWA	1	3	3
UNIVERSITY OF MIAMI SCHOOL OF MEDICINE	1	0	6
UNIVERSITY OF NEBRASKA MEDICAL CENTER	1	6	2
UNIVERSITY OF ROCHESTER	1	0	6
UNIVERSITY OF TEXAS MEDICAL BR GALVESTON	1	1	3
UNIVERSITY OF UTAH	1	2	7
UNIVERSITY OF VERMONT & ST AGRIC COLLEGE	1	6	0
UNIVERSITY OF VIRGINIA CHARLOTTESVILLE	1	9	4
WAYNE STATE UNIVERSITY	1	5	0
WEILL MEDICAL COLLEGE OF CORNELL UNIV	1	3	7
TOTAL	189	441	905

AVERAGE YR OF T32	16.3
MEDIAN AGE OF T32	14.5

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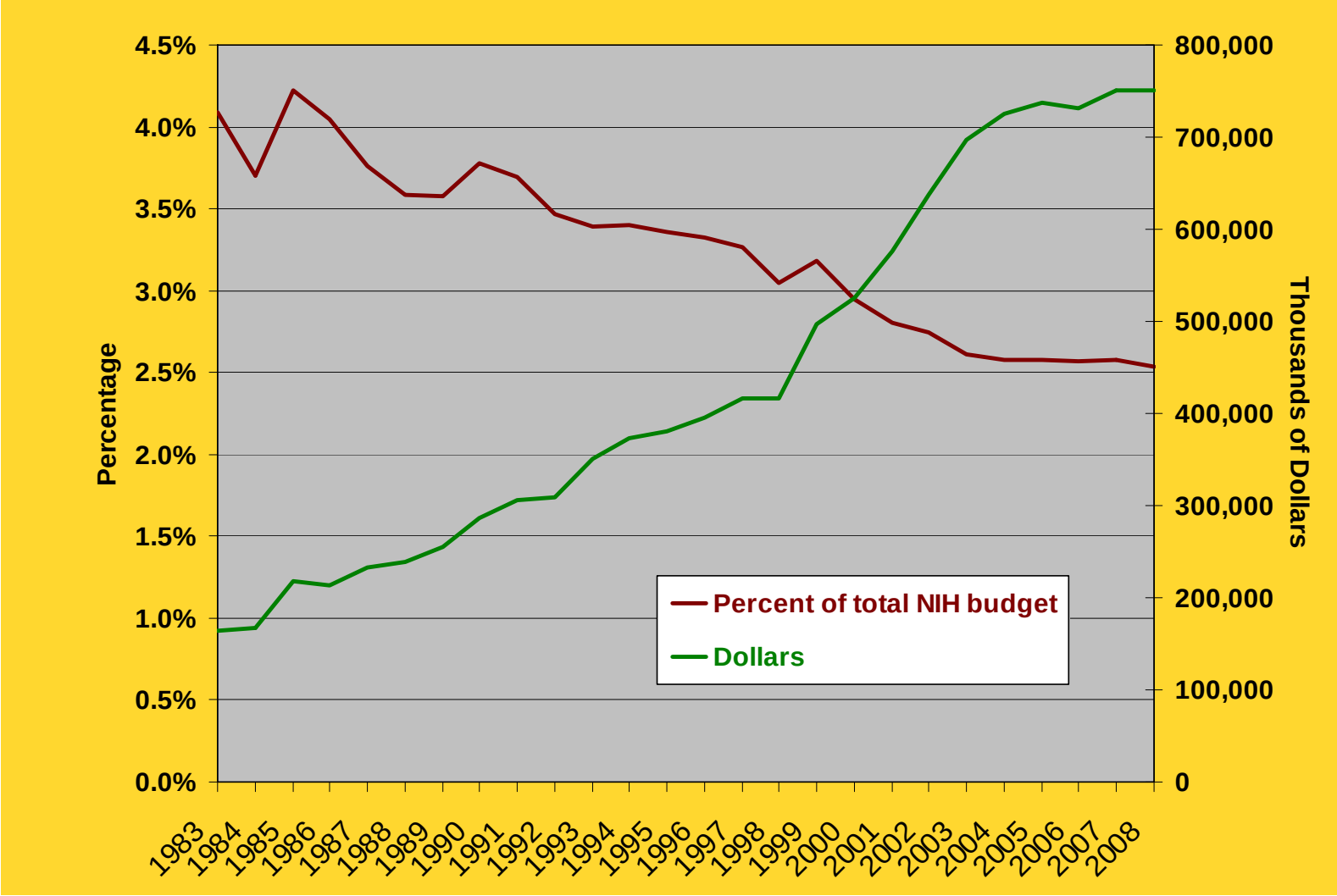
NIH Spending on Training Grants and Fellowships

FASEB



Source: http://officeofbudget.od.nih.gov/UI/HistoricalBudgetRequests.htm

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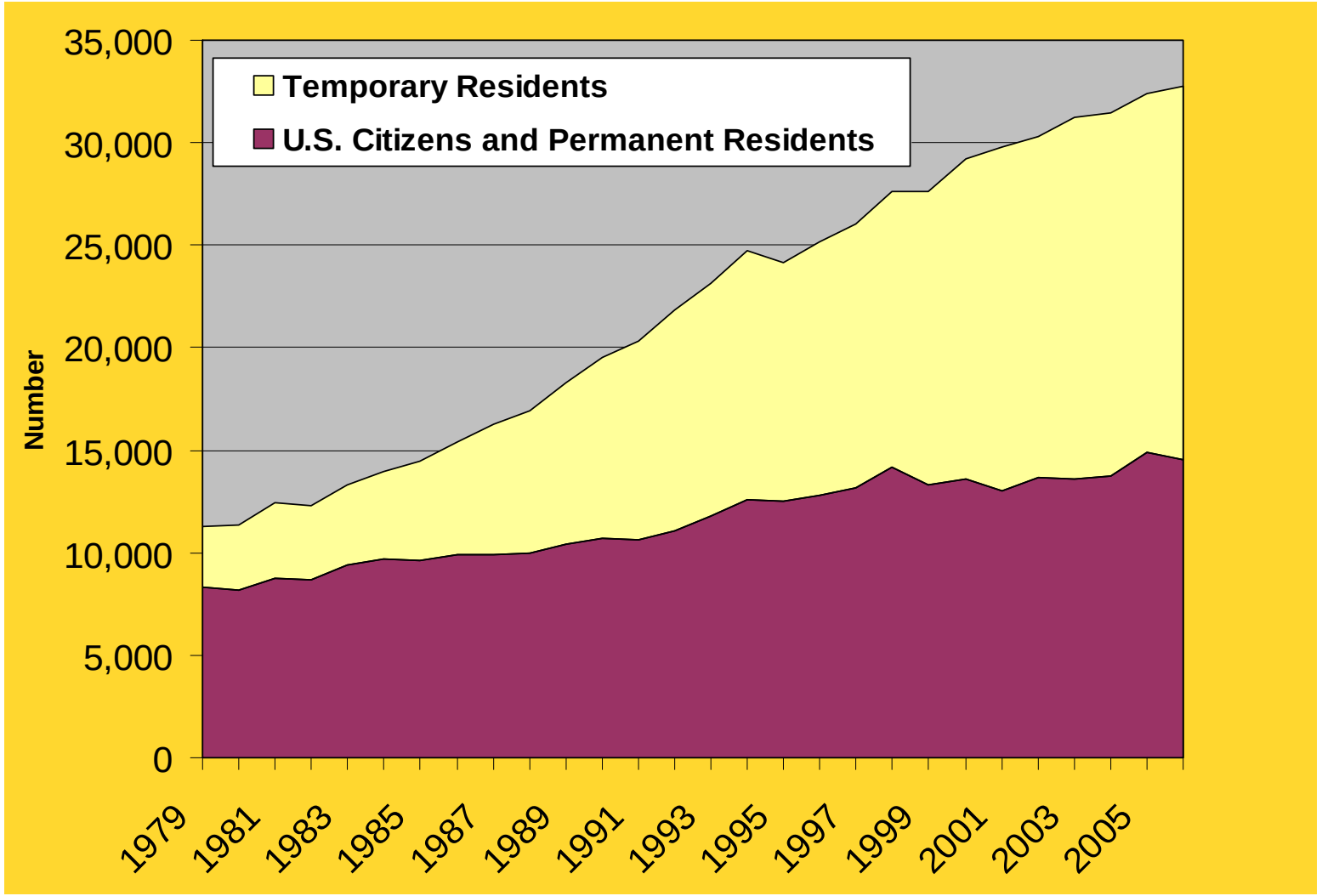
Biological and Medical Sciences Postdocs by Citizenship/Visa Status

FASEB



Source: http://www.nsf.gov/statistics/gradpostdoc/

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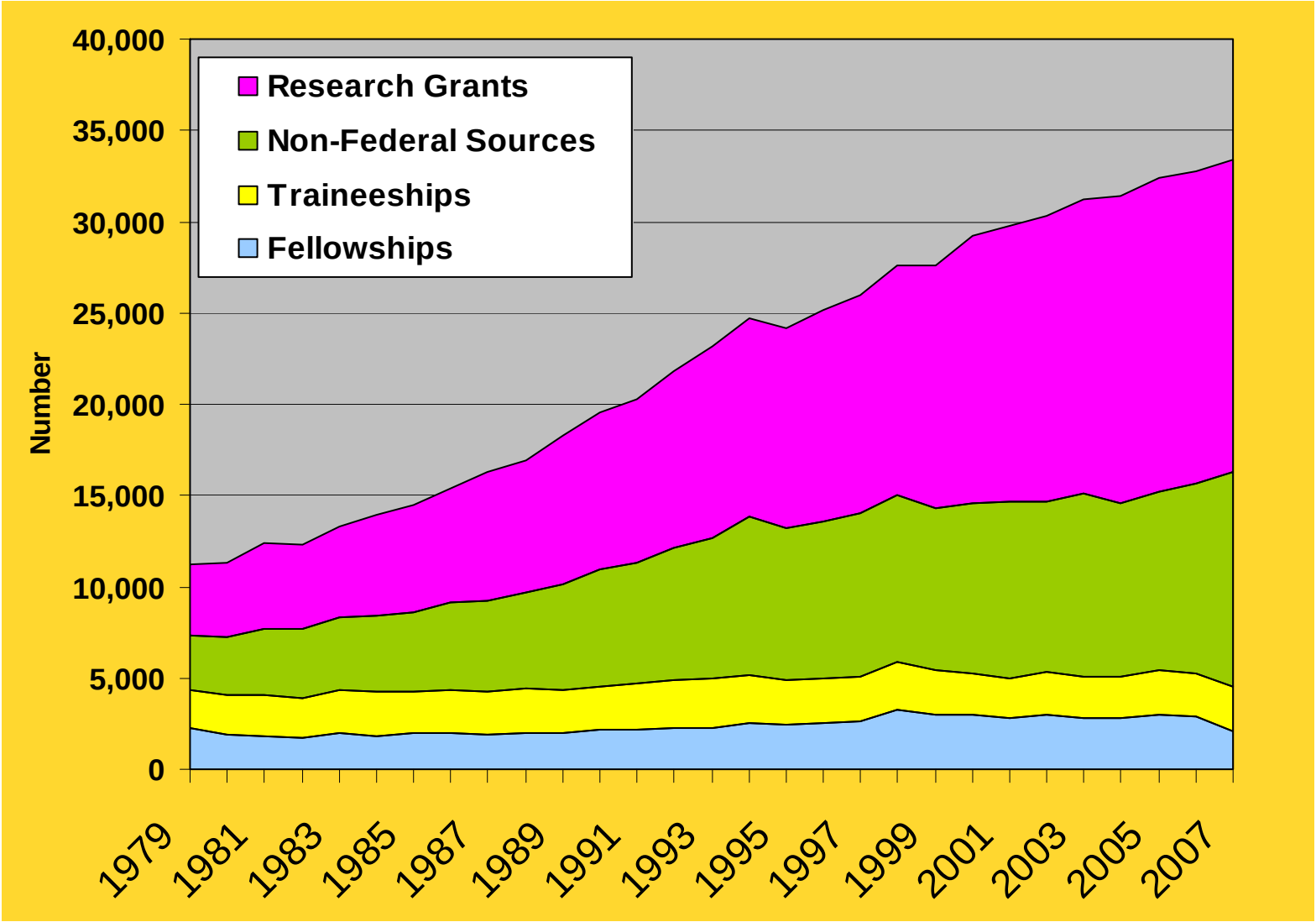
Biological and Medical Sciences Postdocs by Source of Support

FASEB



Source: http://www.nsf.gov/statistics/gradpostdoc/

National Cancer Institute

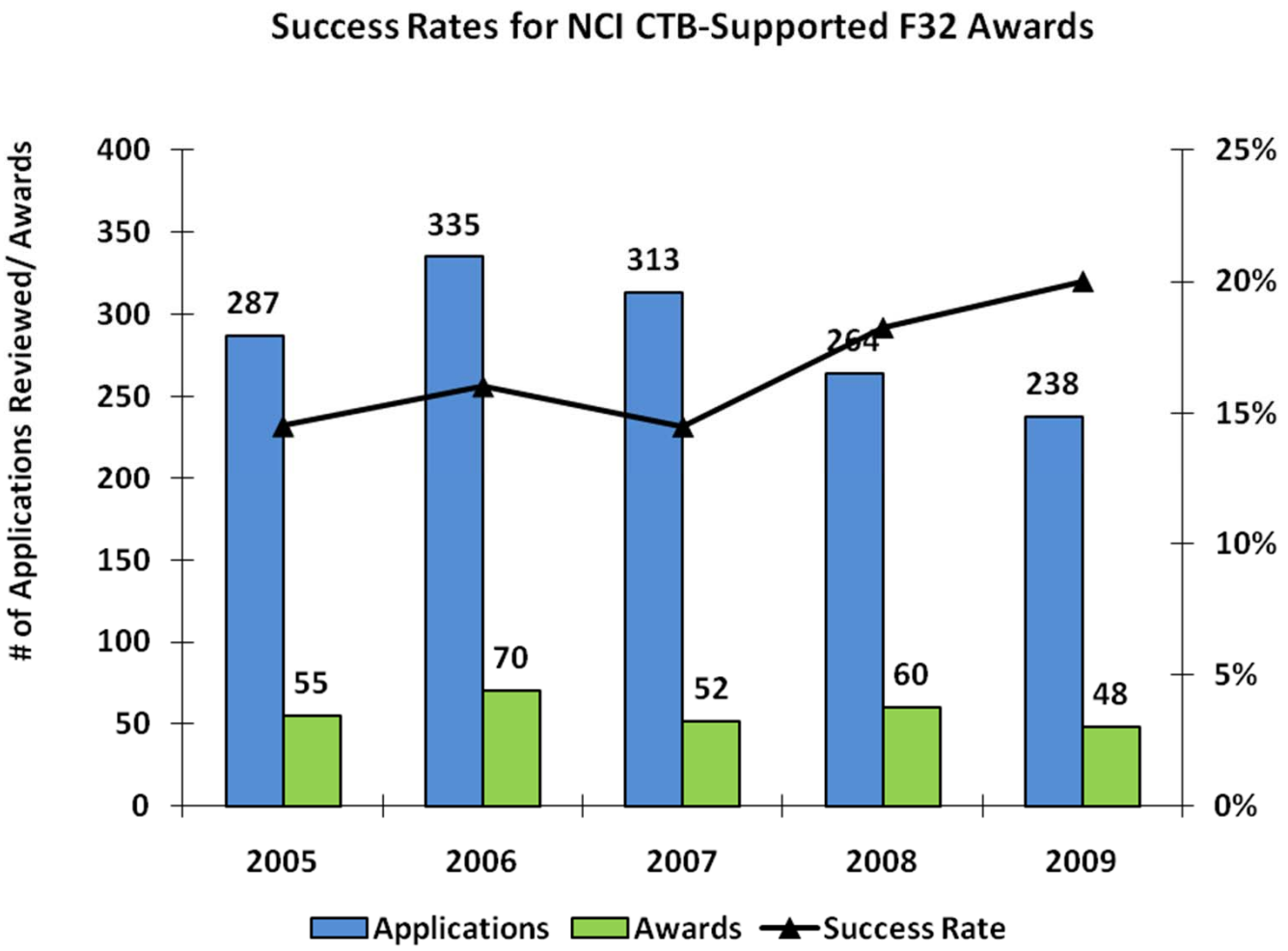
Training Grant Awards to Current NCAB Members

BOARD MEMBER	Grant(s)	PROJECT TITLE
Carolyn D. Runowicz, M.D. 201	R25CA064506-03	REDUCING RISKS FOR CERVICAL CANCER IN INNER CITY TEENS
Anthony Atala, M.D. 2012	K12DK083015-01	CAREER DEVELOPMENT IN UROLOGIC RESEARCH AT WAKE FOREST UNIVERSITY
Bruce Allan Chabner, M.D. 2012	K12CA087723-09	CLINICAL RESEARCH CAREER DEVELOPMENT PROGRAM
	T32CA071345-10	TRAINING PROGRAM IN CANCER BIOLOGY
Victoria L. Champion, D.N.S. 2014	R25CA117865-06	TRAINING IN RESEARCH FOR BEHAVIORAL ONCOLOGY AND CANCER CONTROL PROGRAM
Donald S. Coffey, Ph.D. 2012	T32CDK007552-24	UROLOGY RESEARCH TRAINING GRANT
	K03HD038642	BIOCHEMICAL REGULATION OF PROSTATIC GROWTH
Waun Ki Hong, M.D. 2014	T32CA009666-17	RESEARCH TRAINING IN ACADEMIC MEDICAL ONCOLOGY
Judith S. Kaur, M.D. 2012	R25CA151142-01	ALASKA NATIVE CANCER PAIN MANAGEMENT PROJECT
	R25CA138303-01A1	NATIVE CIRCLE CANCER RESEARCH DISSEMINATION PROJECT
	R25CA077410-10	NATIVE NETWORK CANCER RESOURCES CENTER
	R25CA080988	NATIVE WOMEN ENJOYING THE BENEFIT (Native Web)
H. Kim Lyerly, M.D. 2014	T32CA093245-09	TRANSLATIONAL RESEARCH IN SURGICAL ONCOLOGY
	K12CA100639-06	CLINICAL ONCOLOGY RESEARCH CAREER DEVELOPMENT PROGRAM
	K24CA35437-05	DENDRITIC CELL BASED IMMUNOTHERAPY
Daniel D. Von Hoff, M.D., F.A.C.P. 2010	R25CA068647-15	METHODS IN CLINICL CANCER RESEARCH WORKSHOP
	R25CA082242-08	METHODS IN CLINICL CANCER RESEARCH WORKSHOP EUROPE

YELLOW INDICATES ACTIVE GRANTS

National Cancer Institute

CTB Award Success Rates for New and Competing Applications: F32 Fellowships



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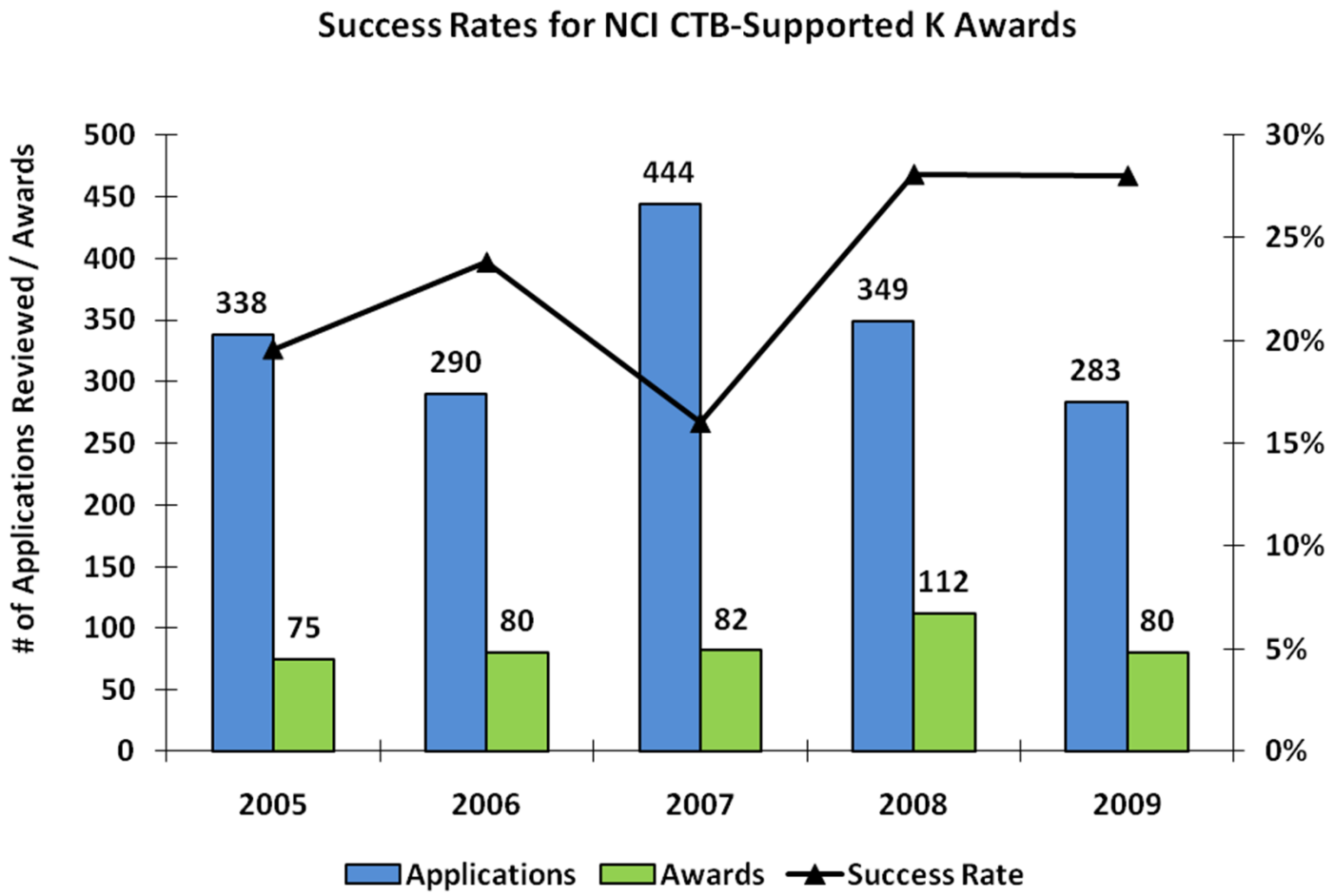
CTB Award Success Rates for New and Competing Applications: Career Development (K) Awards



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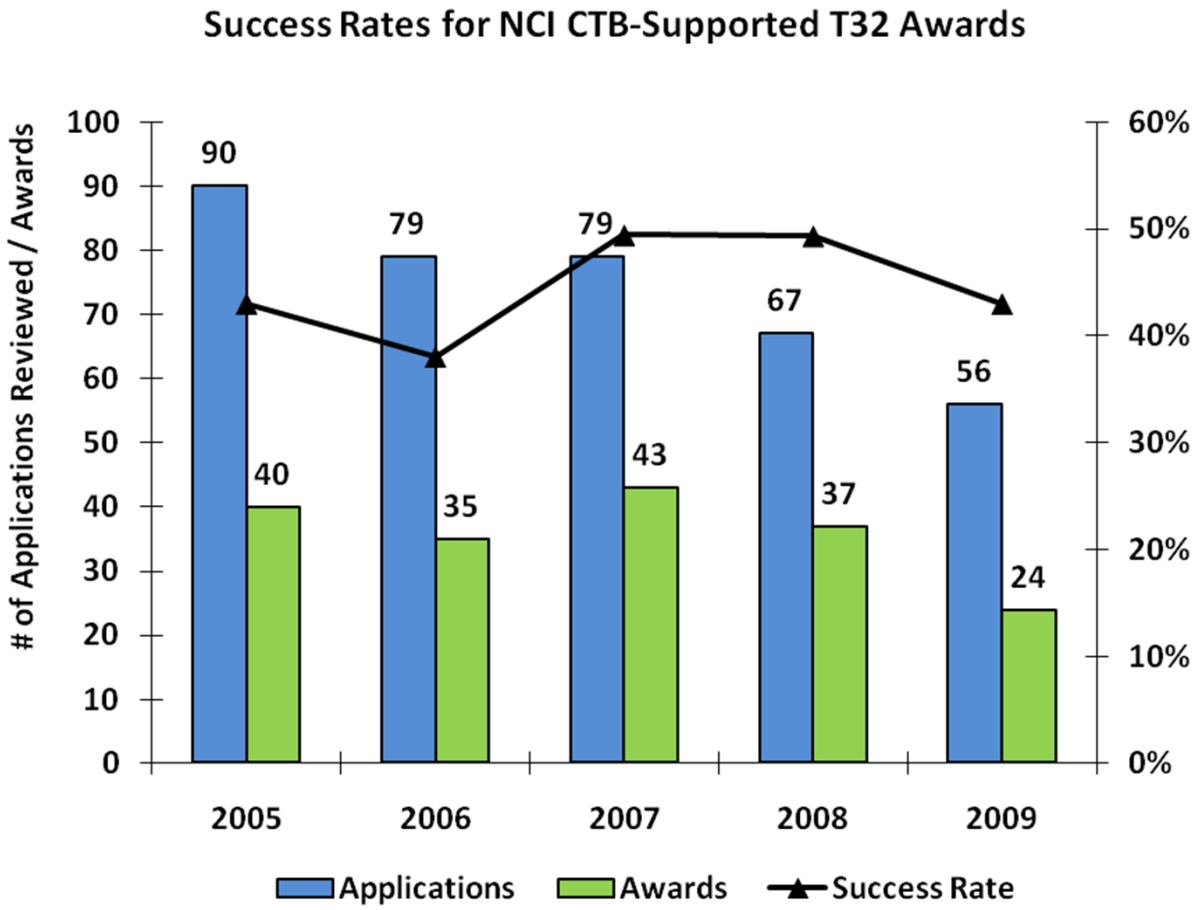
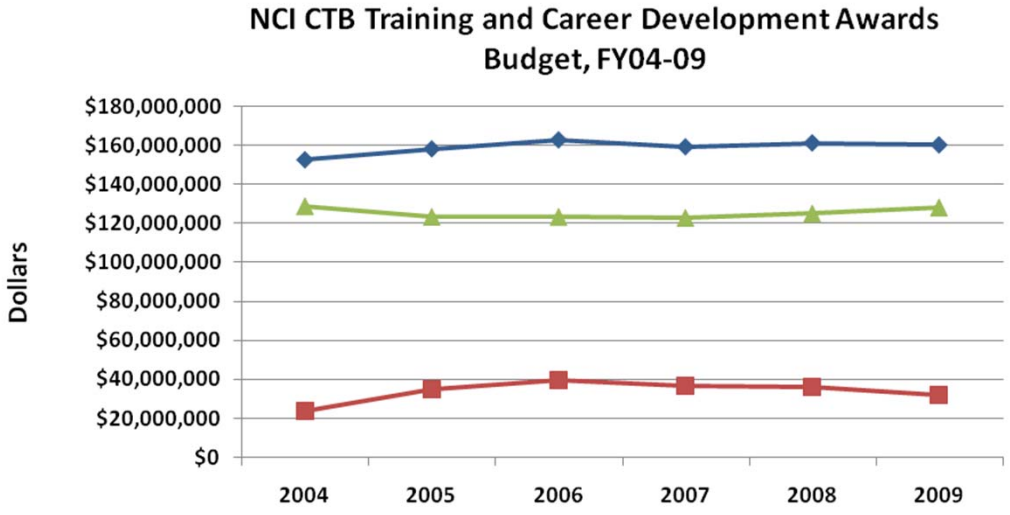
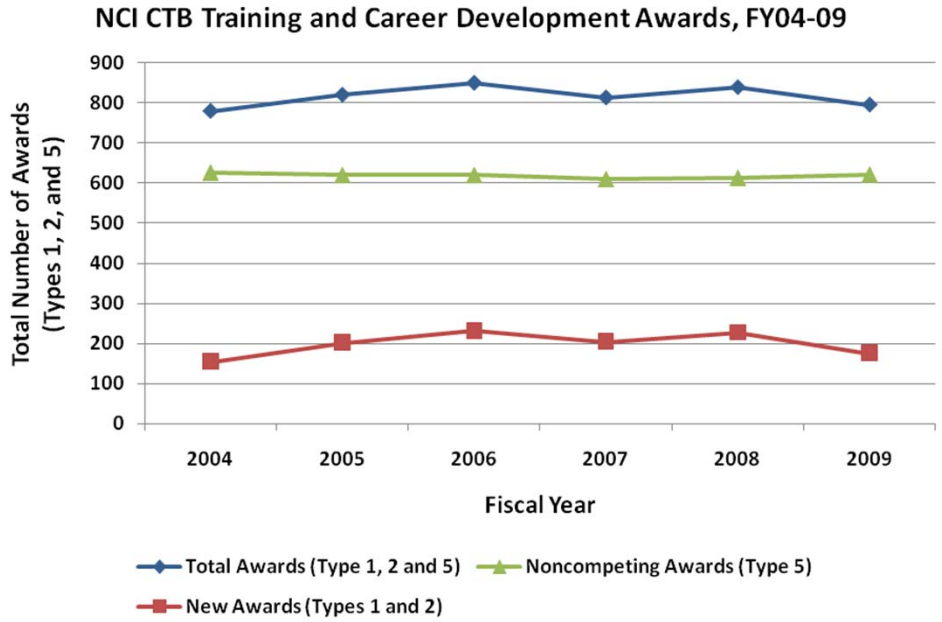
CTB Award Success Rates for New and Competing Applications: T32 Training Grants



National Cancer Institute

Cancer Training Branch Awards

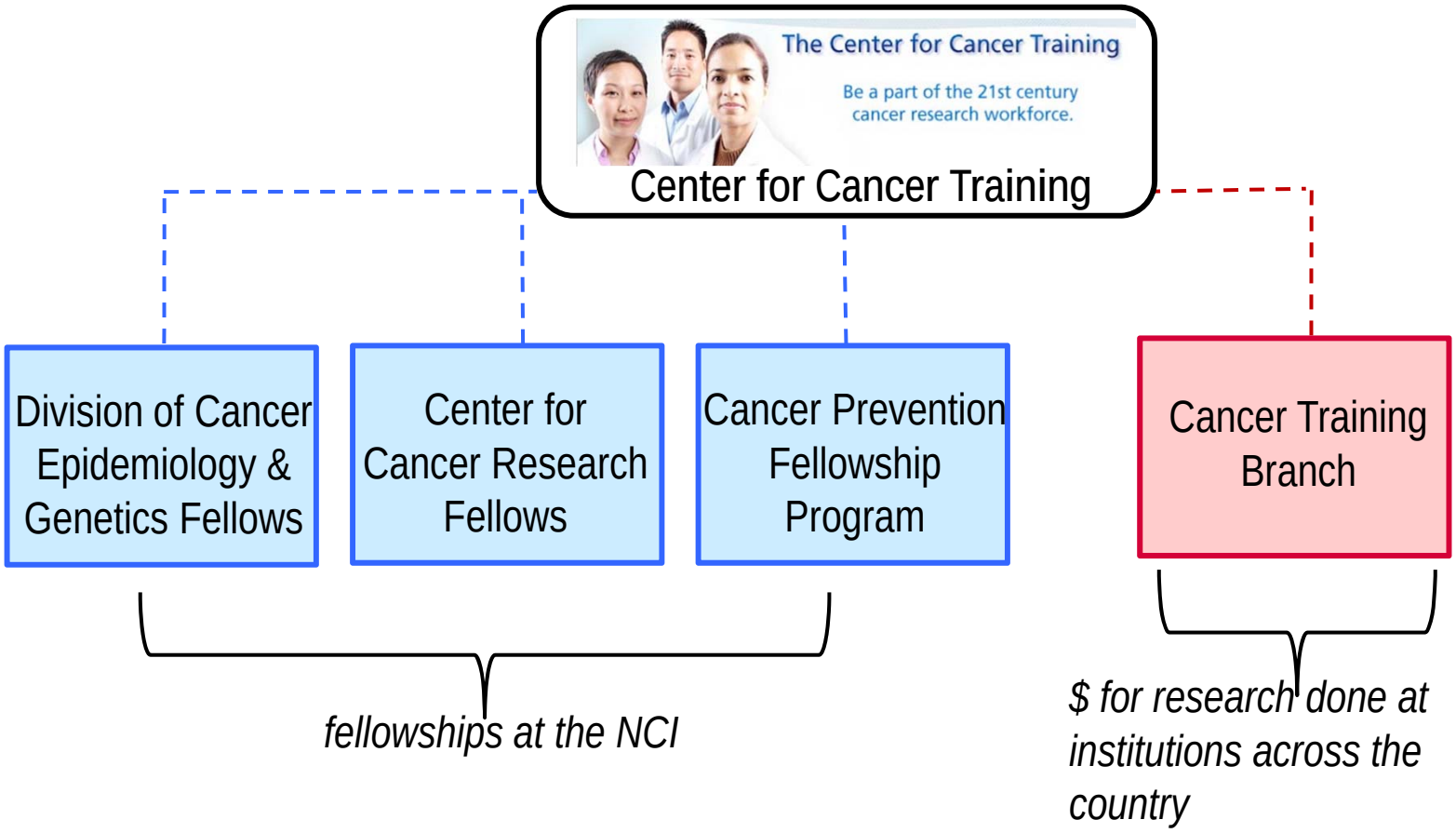




Does not include ARRA awards and does not include Type 3 and 7 awards (supplements or change of institution)

National Cancer Institute

Center for Cancer Training (CCT): An Overview of NCI's Intramural Training Programs



National Cancer Institute

Trainees in the Intramural Program

Total Fellows In NCI - 1440	
CRTA1	9
CRTA2	179
CRTA3	34
CRTA4	20
CRTA5	297
CF	3
PF	13
SD	2
SF	10
VF	498
SCRTA	375

CCR - 1273	
CRTA1	8
CRTA2	166
CRTA3	12
CRTA4	12
CRTA5	225
CF	0
PF	11
SD	2
SF	9
VF	478
SCRTA	350

DCEG - 91	
CRTA2	9
CRTA3	6
CRTA4	7
CRTA5	28
CF	1
PF	2
SF	0
VF	13
SCRTA	25

DCCPS - 14	
CRTA2	1
CRTA3	8
CRTA4	0
CRTA5	5

DCP - 2	
CRTA2	0
CRTA3	2

DCTD - 8	
CRTA1	1
VF	7

OD - 52	
CRTA2	3
CRTA3	6
CRTA4	1
CRTA5	39
CF	2
SF	1

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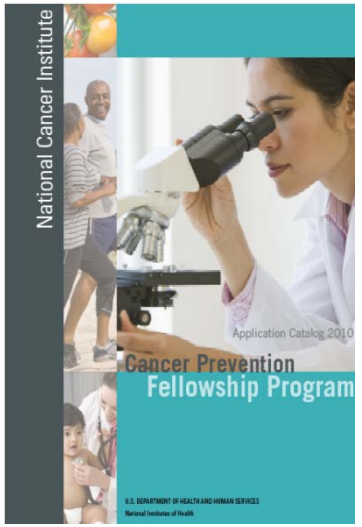
Intramural: Cancer Prevention Fellowship Program

National Cancer Institute

Cancer Prevention Fellowship Program

- Multidisciplinary postdoctoral fellowship program provides a strong foundation for scientists and clinicians to train in the field of cancer prevention research
- Disciplines represented among current fellows include epidemiology, basic science, behavioral science, medicine, nutrition, communication, geography, religious studies
- Program components include:
  - Master of Public Health degree
  - Mentored research
  - Summer curriculum in cancer prevention
  - Cancer prevention and control colloquia
  - Grant writing workshops
  - Professional development training (leadership, oral presentations, etc.)



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Intramural: Center for Cancer Research Training and Fellowship Programs

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Center for Cancer Research Training and Fellowship Programs

- 1-5 year postgraduate, doctoral, and postdoctoral fellowships and clinical training in basic, translational, and clinical research and HIV/AIDS
- Summer Cancer Research Interns (CRI) Program to promote diversity
- Selected specialty programs and partnerships:
  - Interagency Oncology Task Force Research and Regulatory Review Fellowships
  - Johns Hopkins University partnership in drug discovery technologies
  - Clinical investigator development program
  - Technology transfer fellowships

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Center for Cancer Research Opportunities for Scientific and Professional Development

- Courses and Workshops
  - Translational Research in Clinical Oncology
  - Redox Biology
  - Cancer Biotechnologies
  - Statistical Analysis of Research Data
  - Grant Writing
  - Scientific Management Training
  - Teaching in Medical Education
  - Cancer Scientific Writing
- Fellows Editorial Board
- CCR-FYI Fellows Annual Colloquium & CCR-FYI Steering Committee

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Intramural: Division of Cancer Epidemiology and Genetics Fellowship Program

National Cancer Institute

Division of Cancer Epidemiology and Genetics Fellowship Program

- Primary focus within NCI for national and international population-based research
- Opportunities for summer and graduate students, postdoctoral and research fellows
- Research – etiological analyses, study design, methods
- Develop a research plan with mentor(s)
- Attend NCI seminars, career development workshops and training courses, Fellows' Training Symposium, Fellows' Colloquium, grant writing workshops

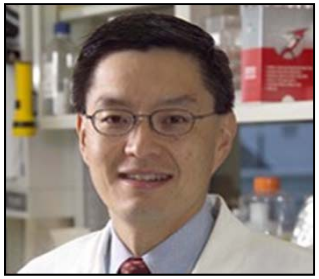
National Cancer Institute

Spotlight on the Howard Temin Pathway to Independence Award in Cancer Research (K99/R00)

- Goal
  - To facilitate a timely transition from a mentored postdoctoral research position to a stable independent research position
- Candidate
  - Postdoctoral or clinical fellow with <5 years postdoctoral experience
  - No citizenship requirement
- Scientific Discipline
  - Cancer research with direct human cancer relevance
- Support
  - K99 Mentored phase 1-2 years (salary up to $100K/year) and research expenses ($30K/year)
  - R00 Independent phase 3 yrs (up to $249K/year)

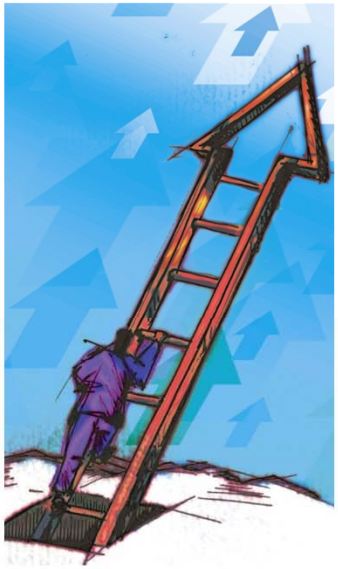
National Cancer Institute

Career Awards Academic Success Stories: William Pao, M.D., Ph.D.



Vanderbilt University School of Medicine

- Associate Professor of Medicine
- Ingram Associate Professor of Cancer Research
- Assistant Director, Personalized Cancer Medicine



R01

K08

K12 Scholar

T32 Postdoc

T32 Predoc

❖ Identifying genes involved in pathogenesis of lung tumors and stratifying tumors into clinically relevant molecular subsets

❖>50 publications

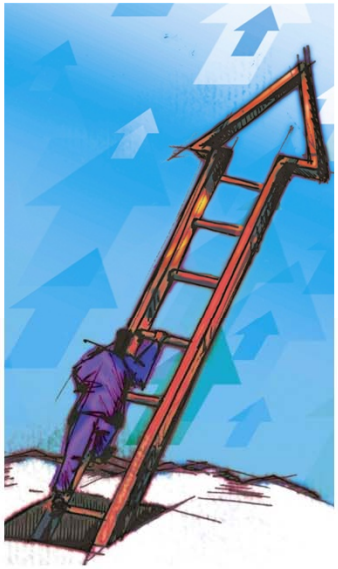
❖ Stand Up To Cancer (SU2C) recipient of high risk, high reward cancer research grant

National Cancer Institute

Career Awards Academic Success Stories: Aminah Jatoi, M.D.

Mayo Clinic

- Professor of Oncology



K24

R01

R21

K23

F32

T32 Postdoc

❖ Clinical and translational studies on palliative cancer care

❖>120 publications

❖ Published 28 manuscripts with 16 young investigators from highly diverse backgrounds

❖Serves on numerous NIH grant review committees

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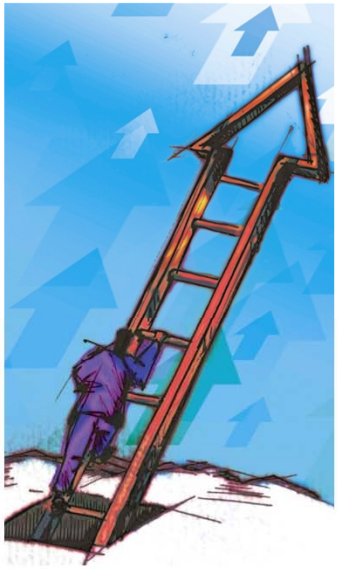
Career Awards Academic Success Stories: Kimberly Stegmaier, M.D.

Dana Farber Cancer Institute
- Assistant Professor of Pediatrics
- Attending Physician, Pediatric Oncology



R01

L40 (Loan Repayment)

K08

T32 Postdoc

❖ New approaches to small molecule library screening with the goals of identifying candidate therapies for malignancies and new tool compounds for exploring pathways of oncogenesis

❖>20 publications

❖Stand Up To Cancer (SU2C) recipient of high risk, high reward cancer research grant

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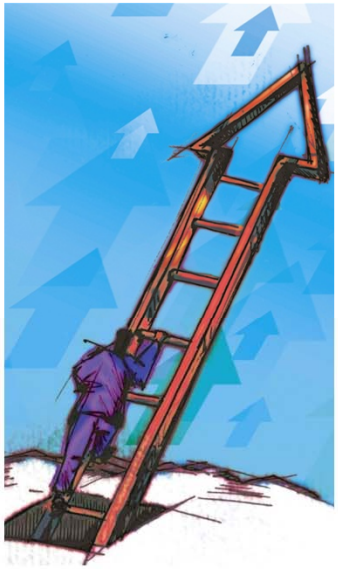
Career Awards Academic Success Stories: H. Charles Manning, Ph.D.

Vanderbilt University School of Medicine
- Assistant Professor of Radiology, Biomedical Engineering, and Neurosurgery
- Faculty Director of Molecular Imaging



RC1 (Challenge)

R01

K25

T32 Postdoc

❖ Developing, validating, and translating non-invasive molecular imaging metrics to assess disease progression and response to therapy

❖>30 publications

National Cancer Institute

Presentation Outline

- Training the future scientific workforce
- NCI's Center for Cancer Training (CCT) and the extramural Cancer Training Branch (CTB) portfolio
  - Career Development (K) Awards and an evaluation of the program
  - National Research Service Award Program
  - Cancer Education and Career Development Programs
- Overview of intramural programs coordinated by NCI's Center for Cancer Training (CCT)
  - Cancer Prevention Fellowship Program
  - Center for Cancer Research Training and Fellowship Programs
  - Division of Epidemiology and Genetics Fellowship Program