

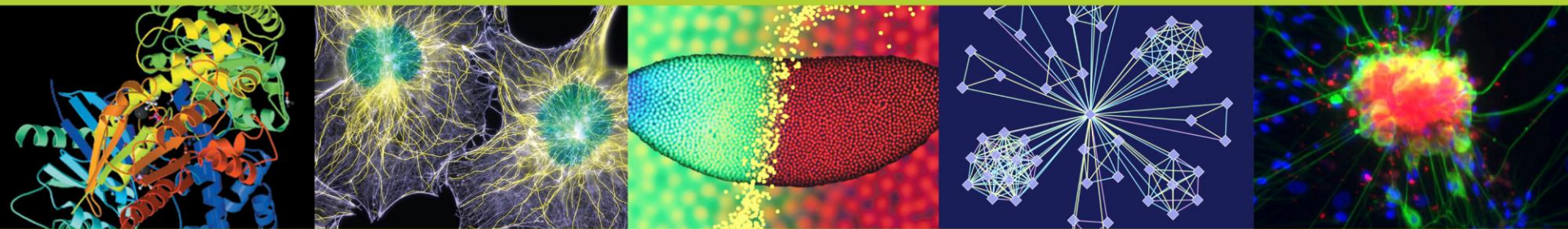


National Institute of  
General Medical Sciences



# Analysis of the National Centers for Systems Biology Program

Office of Program Planning, Analysis, and Evaluation  
January Council



# Introduction

- The National Centers for Systems Biology (NCSB) program is an NIGMS program that aims to “facilitate pioneering research, research training, and outreach programs in this area [Systems Biology] and therefore stimulate the field as a whole.”
- NCSB program established in 2004 using the P50 activity code
- Program assessment by external panel
  - Complex questions requiring multiple measures and subject matter expertise
  - Data and analytic support from NIGMS Office of Program Planning, Analysis, and Evaluation

# Assessment Questions

- Has the NCSB program met its goals?
  - Catalyze research in systems biology
  - Provide training and outreach for researchers
  - Develop and disseminate tools and techniques to address complex biological problems
- Is the NCSB program an efficient and effective way to support this work?
- What is the current state of maturity for systems biology?

# Types of Data Requested

- Bibliometric analyses
- Other outputs (software, datasets, web tools for community)
- Grant funding analyses
- Inclusion of comparator groups

# Publication / Citation Cost Analysis

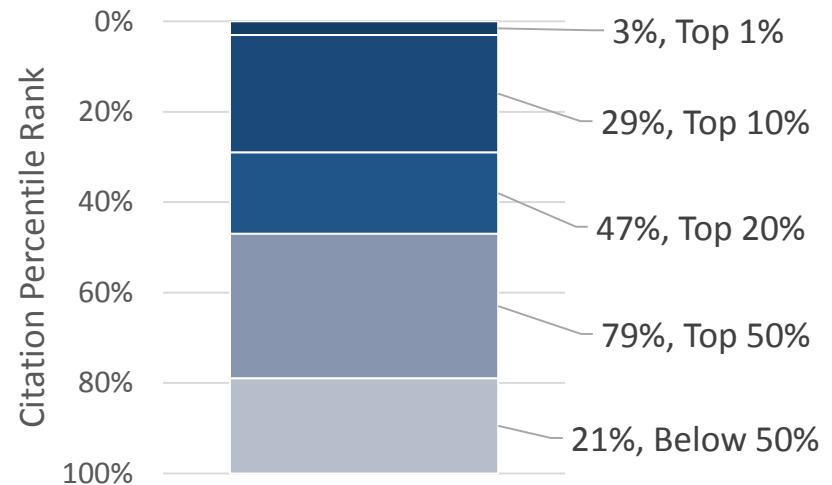
Efficiency and effectiveness of NCSB relative to other programs

Program	Activity	Cost per Publication	Cost per Citation	Citations / Publication
National Centers for Systems Biology (NCSB) (NIGMS)	P50	\$160,000	\$5,500	32
Physical Science - Oncology Centers (PS-OC) (NCI)	U54	\$132,500	\$6,000	25
National Centers for Biomedical Computing (NCBC) (Roadmap)	U54	\$131,000	\$5,500	32
Integrative Cancer Biology Program (ICBP) (NCI)	U54/U56	\$187,000	\$5,500	37
Quantitative Approaches to the Analysis of Complex Biological Systems (PA98-077) (NIGMS)	R01/P01	\$111,000	\$2,500	48

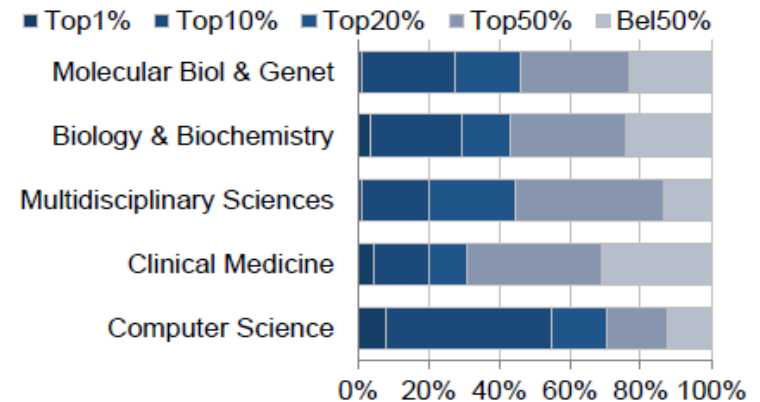
All costs rounded to nearest \$500

# NCSB Citation Impact: 2004- 2012

- Citation percentile ranks
  - Normalization based on publication year and field of journal
  - Relative representation of percentile ranks indicates over/under-enrichment of highly cited papers
- Differential effects in percentile-based impact by field



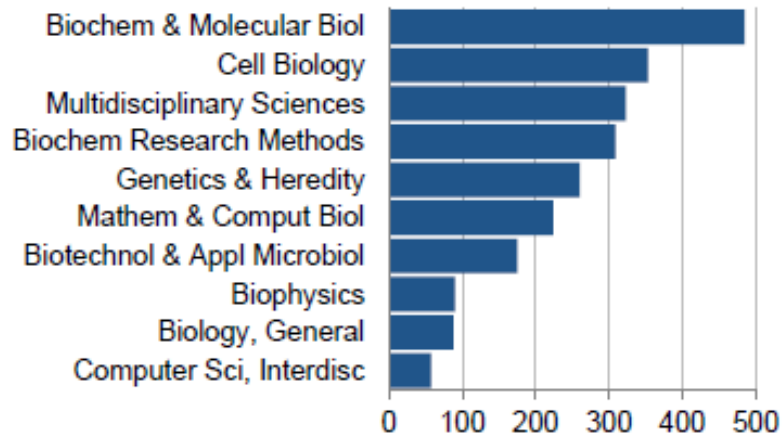
% Distribution of Articles per ESI Subject Category



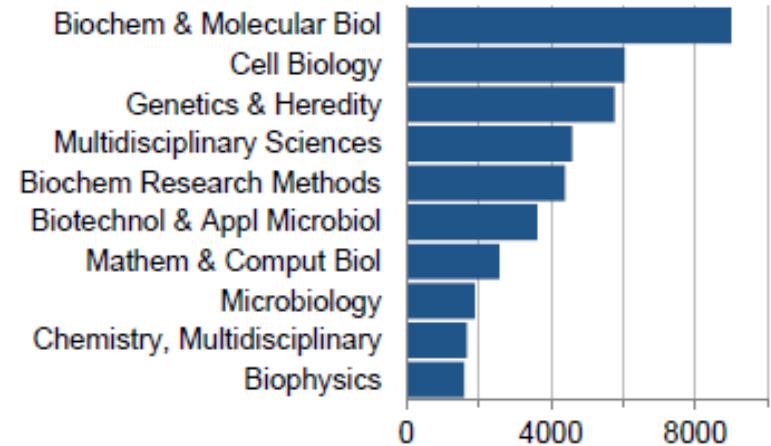
# Articles citing NCSB publications tend to appear in similar journal types

Spread of work into other fields

Articles per WOS Subject Category



Citing Articles per WOS Subject Category



- **Note:** Top 10 article categories (from Web of Science) are shown here.

# Publications arising from NCSB centers were more likely to include creation or use of products for the research community

Dissemination of tools and other resources for systems biology

Type of Product	NCSB Publications	R01/P01* Publications
Software	72	16
Dataset/Database	53	8
Web Tool	4	1
<b>Grand Total</b>	<b>129</b>	<b>25</b>

<b>Number of Overall Publications</b>	1,999	768
<b>% of Publications containing Product</b>	6.5%	3.3%

\*R01/P01 grants awarded under the NIGMS funding opportunity

“Quantitative Approaches to the Analysis of Complex Biological Systems”



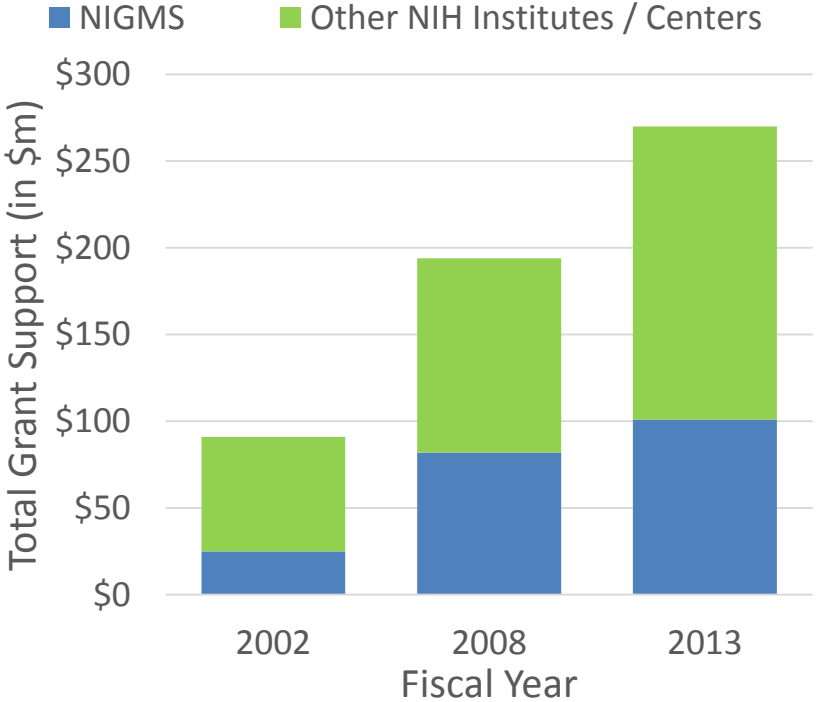
# NIH has a handful of funding opportunities that target Systems Biology research (2008-2015)

Activity Code	Closed	Open	Total
F30	2		2
P01	1		1
P50	4	1	5
P60	1		1
R01	13	2	15
R21	4		4
Supp	1		1
T32	2	1	3
U01	1	1	2
U19	3		3
U24	1		1
U54	1		1
<b>Grand Total</b>	<b>34</b>	<b>5</b>	<b>39</b>

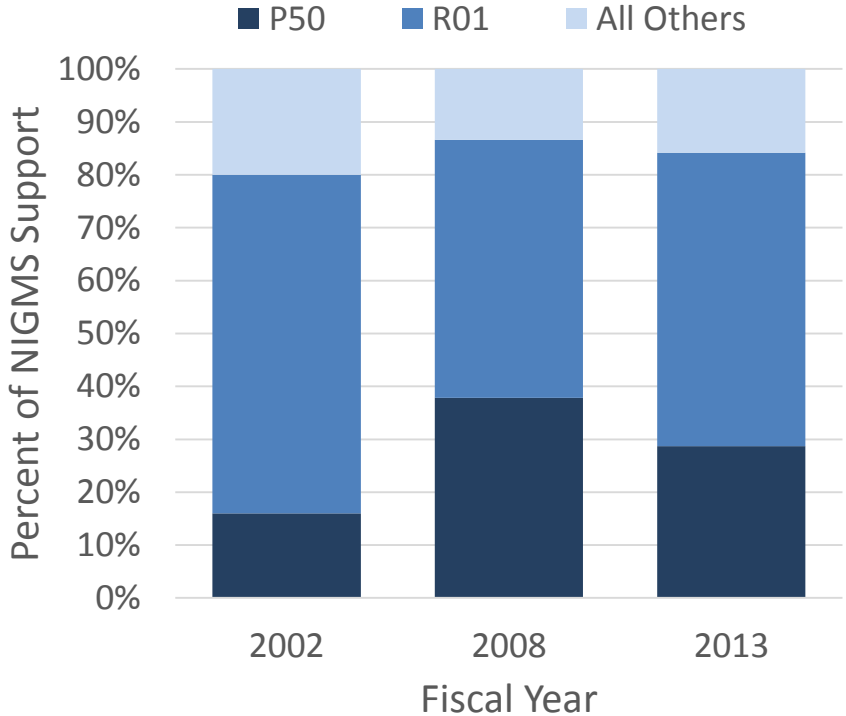
There are 30 unique FOAs (9 reissues) relevant to systems biology. Institutes supporting this research include: NCI, NHLBI, NIA, NIAA, NIAID, NIAMS, NICHD, NIDA, NIDCD, NIGMS and NIMH.

# Including non-targeted support, Overall NIH-wide support for Systems Biology research has increased

### NIH-Wide Support for Systems Biology Research

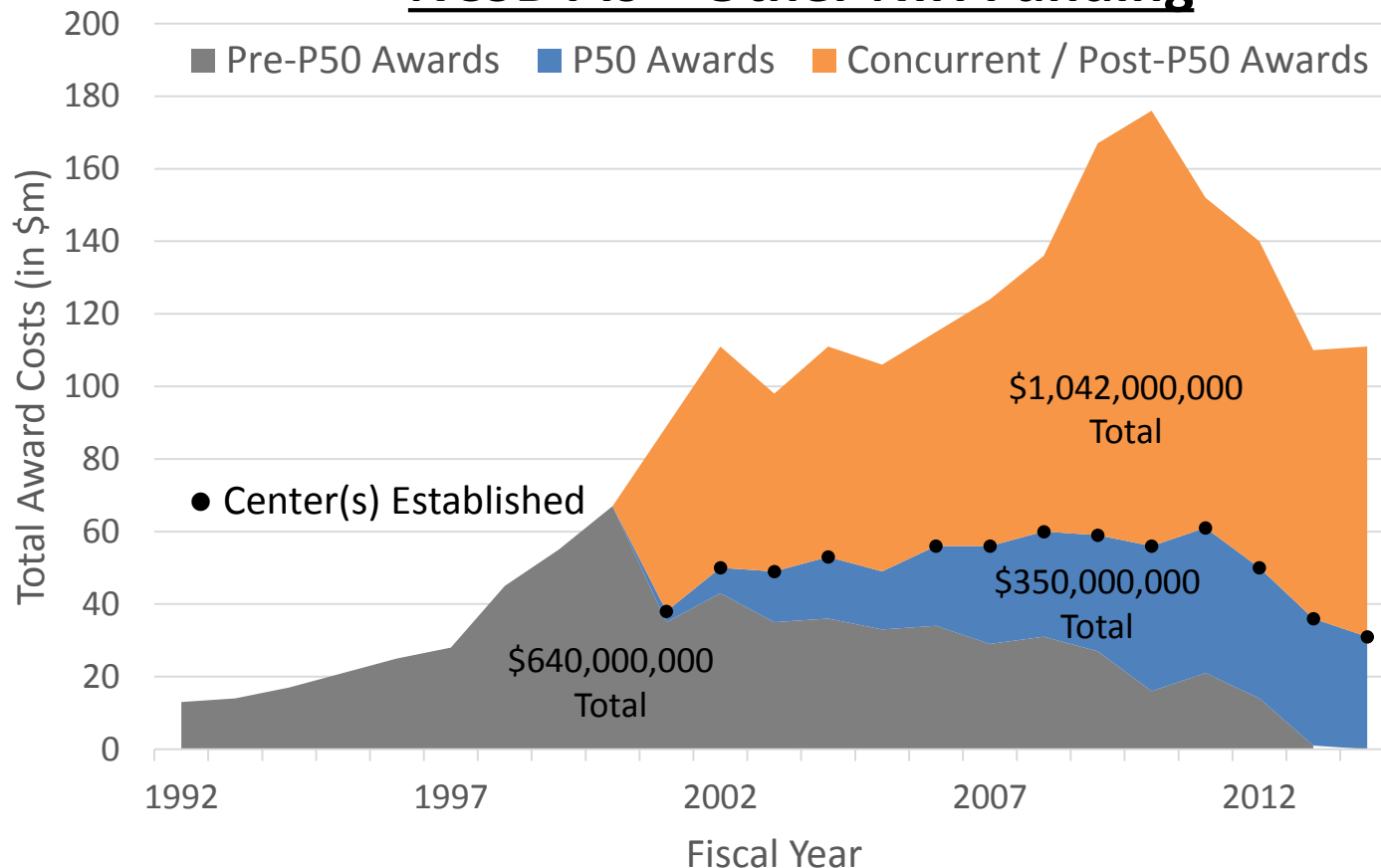


### Types of NIGMS Support for Systems Biology Research



# Systems Biology investigators have seen an increase in overall funding

## NCSB PIs – Other NIH Funding



# Systems Biology investigators funded from a number of sources NIH-wide

Activity	Total Support (2001-2014)
R01	\$272,000,000
U54	\$80,000,000
P01	\$76,000,000
T32	\$43,000,000
P30	\$28,000,000
R37	\$27,000,000
U01	\$19,000,000
P41	\$19,000,000
PN2	\$13,000,000
P50	\$11,000,000

## NCSB PIs - Other NIH Funding

