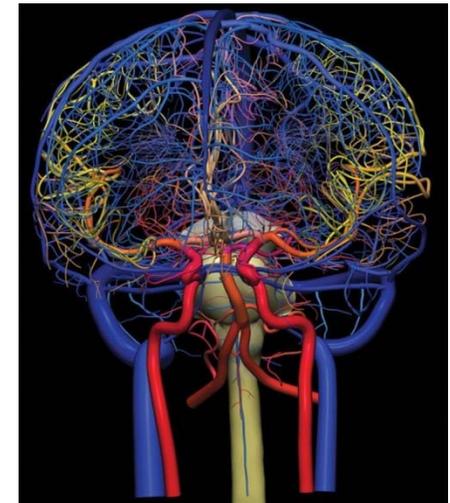


Parallel Portfolio Analyses across NIH Institutes are important tools to foster strategic collaboration on scientific areas of shared interest

Case study: NINDS-NHLBI cerebrovascular portfolio comparison

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Objectives

NINDS and **NHLBI** share an interest in funding extramural research related to cerebrovascular research (CVR).

Goals:

Perform a comparative portfolio analysis on CVR in order to:

- 1) characterize the diversity of research topics funded in the field by the two ICs
- 2) identify scientific gaps and/or overlaps
- 3) identify areas for potential collaborations.

Primary Analysis

QVR automated search criteria

- Primary awards only
- All currently active awards
- Abstract/Summary Statement contain the following key words:
 - Cerebrovascular OR
 - Neurovascular OR
 - Blood Brain Barrier OR
 - Cerebral blood flow OR

Secondary Analysis

- Abstracts and Specific Aims of all awards retrieved by the QVR search were read by staff in order to eliminate grants unrelated to CVR that were pulled from the search (“false positives”).
- Related grants were then sorted by:
 - 1) funding mechanism
 - 2) research type (defined below)
 - 3) focus on specific disease (e.g. stroke, hypertension etc.)
 - 4) focus on a research topic (e.g. angiogenesis, gene expression etc.)

Definition of research type

Basic-Basic: studies aimed at understanding the structure and function of the normal cerebrovascular system (whether *in vitro*, in animals, or in humans).

Disease-Basic: studies aimed at understanding disease mechanisms (whether *in vitro*, in animals, or in humans).

Translational: studies aimed at developing or testing diagnostics, therapeutic agents, or preventive interventions, either in animals or humans.

Clinical Research: all applied research in humans, including clinical trials.

R01 is the major mechanism by which both ICs fund cerebrovascular research

	Number of Awards funded		\$s invested	
	NINDS	NHLBI	NINDS	NHLBI
R01	187 (59.7%)	43 (75%)	\$70.2M (63.6%)	\$22.2M (71%)
R21	34 (10.9%)	2 (3.5%)	\$6.6M(5.9%)	\$0.4M(1.2)
Other R's	27 (8.6%)	1 (2%)	\$8.9M(8.1%)	\$0.3M(0.9%)
K's	30 (9.6%)	2 (3.5%)	\$4.5M(4.1%)	\$0.2M(0.6%)
F's	20 (6.4%)	3 (5%)	\$0.9M(0.8%)	\$0.1(0.3%)
P's	10 (3.2%)	0 (0%)	\$12.0M(10.9%)	\$0M(0%)
U's	4 (1.3%)	5 (9%)	\$6.9(6.3%)	\$8.1M(26%)
DP1	1 (0.3%)	0 (0%)	\$0.4M(0.4%)	\$0M(0%)
SC	0 (0%)	1 (2%)	\$0M(0%)	\$0.1(0.3%)
Total	313	57	\$110.4M	\$31.4M

IC investments in cerebrovascular research based on research type

Categories	Number of Awards funded		\$'s Invested	
	NINDS	NHLBI	NINDS	NHLBI
Basic-Basic	42.00 (13.4%)	19.25 (33.8%)	\$11.0M (9.9%)	\$6.6M (21.0%)
Disease-Basic	173.00 (55.3%)	12.75 (22.4%)	\$57.6M (52.2%)	\$4.2M (13.4%)
Translational	80.25 (25.6%)	7.0 (12.3%)	\$14.2M (12.9%)	\$2.6M (8.3%)
Clinical Research	17.75 (5.7%)	18 (31.6%)	\$27.6M (25.0%)	\$18.0M (57.3%)
Total	313	57	\$110.4M	\$31.4M

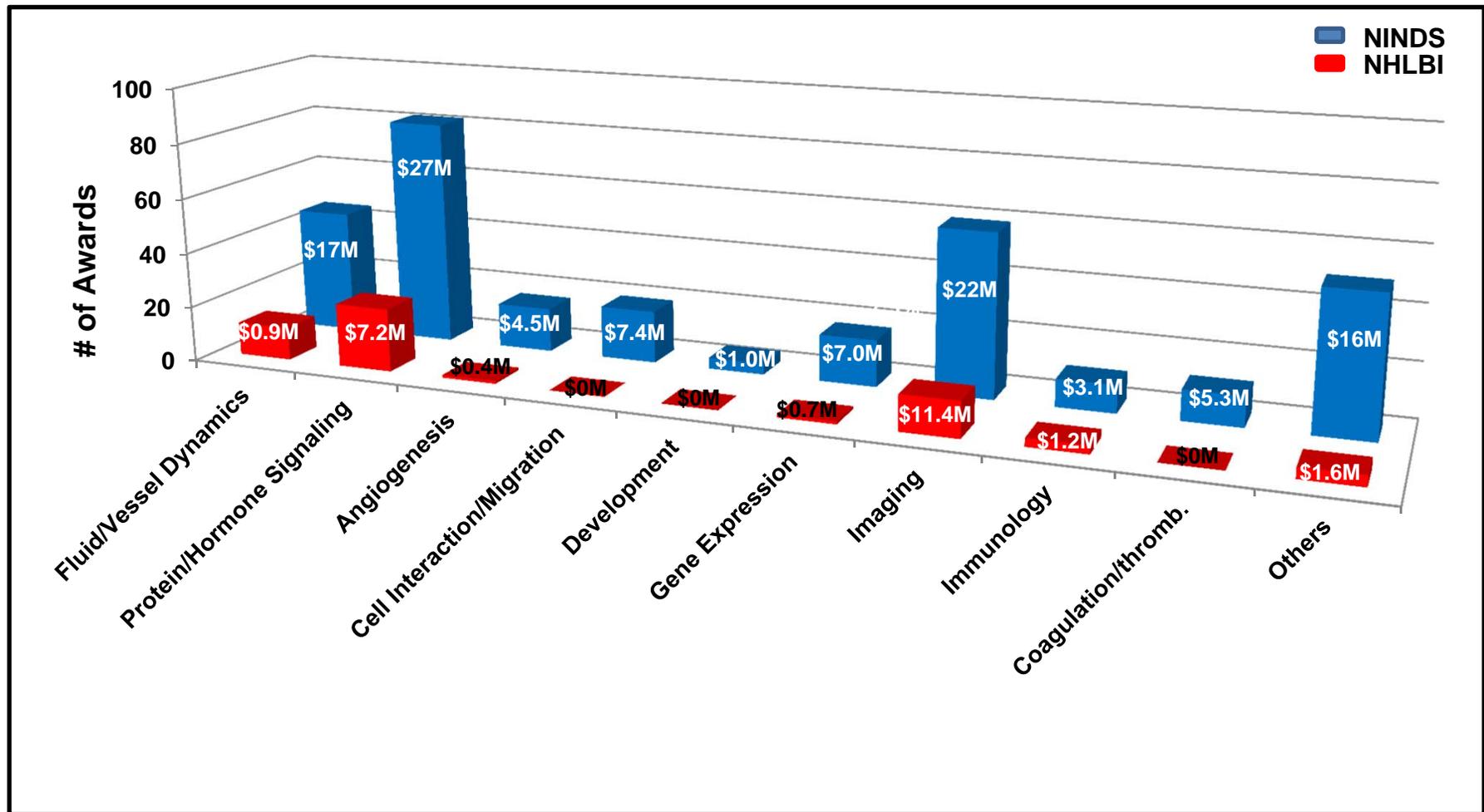
By number of awards:

- More than 50% of NINDS awards are disease-basic, while the majority of NHLBI awards are split between basic-basic (34%) and clinical (32%) research.

By \$s invested:

- Proportional to the number of awards, NINDS invests >50% of CVR funds in disease-basic research.
- Despite funding a similar number of basic-basic and clinical awards, NHLBI invests >57% of its CVR funds on clinical research.

Comparing distribution of research topics funded by each IC



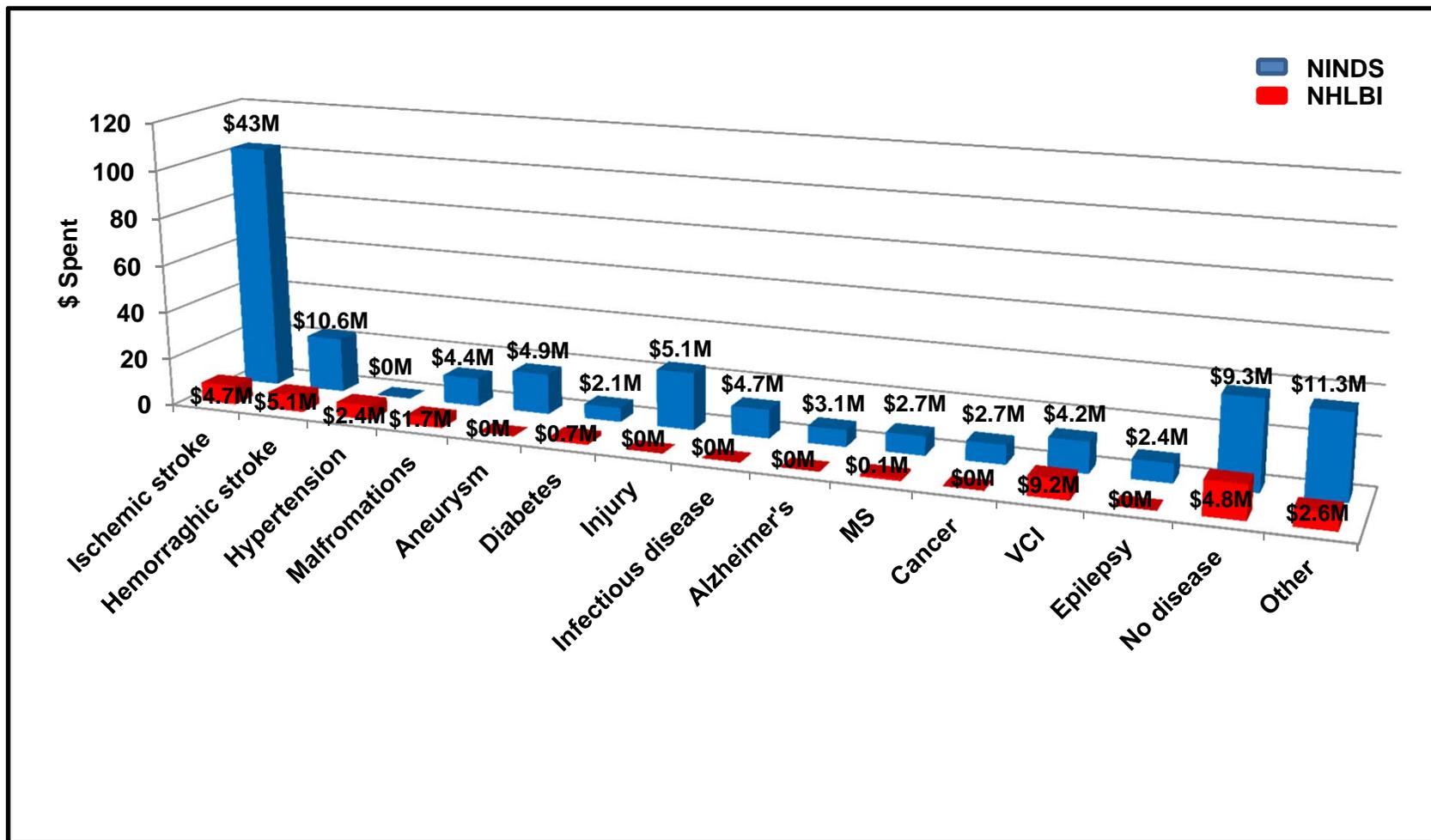
By number of awards:

- Signaling (26% NINDS; 40% NHLBI of total funded CVR awards).
- Imaging (19% NINDS; 23% NHLBI), and
- Fluid dynamics (14% NINDS; 21% NHLBI) were the most studied research topics in both ICs.

By \$s invested:

- Proportional to the number of funded awards, **NINDS** invests most \$s in the area of Signaling (24.3% of total funded CVR awards), Imaging (20%), and Fluid dynamics (15%).
- Unproportionally to the number of funded awards, **NHLBI** invests most \$s in the area of Imaging (36% of total funded CVR awards), Signaling (23%), and Immunology (4%).

Comparing awards by disease focus funded by each IC



By number of awards:

- Stroke is the most studied disease within the CVR portfolio in both ICs (40% NINDS; 26% NHLBI of total funded CVR awards).
- Both NINDS and NHLBI fund a significant number of awards on diseases unique to their ICs mission (e.g. Alzheimer's disease for NINDS and Hypertension for NHLBI).

By \$s invested:

- Both ICs invest most \$s on stroke research (48% NINDS; 31% NHLBI of total funded CVR awards).
- Unproportionally to the number of funded awards, **NHLBI** invests 29% of CVR-related funds on VCI.

Summary

- NINDS funds a greater number of awards/invests more \$'s into cerebrovascular research.
- Cerebrovascular research portfolios funded through NINDS or NHLBI are in some aspects distinct in the various categories.
 - NINDS CVR portfolio has more diverse research topics not funded by NHLBI
 - NINDS more disease-basic, while the majority of NHLBI awards are split between basic-basic and clinical research.
 - The majority of stroke-related grants are funded through NINDS.
 - The majority of hypertension-related grants are funded through NHLBI.

Conclusions

- Trans-IC portfolio analysis facilitates identification of potential gaps and overlaps in research fields of common interest, fostering collaboration and enabling strategic decisions on how to best enable, manage, connect, and synergize IC investments to further scientific knowledge in such areas.

Lessons learned from comparative portfolio analysis

- We identified the need to agree on common definitions for research categories and use the same search terms as essential for initiating and conducting meaningful portfolio comparisons between different ICs.
- The number of false-positives pulled from the QVR search emphasizes the need for manual verification by staff.