Report of Trans-NIH Research Conducted in Fiscal Year 2012

Report to Congress

National Institutes of Health

Department of Health and Human Services

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I. Introduction

Section 402A(c)(2)(B) of the Public Health Service Act (PHS Act) (42 U.S.C. 282a(c)(2)(B)), added to the PHS Act in Section 103(a) of the National Institutes of Health (NIH) Reform Act of 2006, requires that the Secretary of Health and Human Services submit an annual report to Congress identifying the percentage of funds made available by each national research institute and national center with respect to conducting or supporting research that involves collaboration between the institute or center and one or more other national research institutes or national centers (ICs). This sixth annual report provides the dollar amounts made available by each IC for conducting or supporting research that involves collaboration between that IC and one or more other ICs. This amount is expressed as the funds made available by each IC in FY 2012 for conducting or supporting trans-NIH research. In addition, the U.S. House of Representatives Report 109-687 accompanying the NIH Reform Act of 2006 recognizes that there may be collaborative work between ICs that may not be fully demonstrated in budgetary data, such as planning meetings, conferences, and day-to-day information exchange between programs. Accordingly, this report references examples of activities that fall under these categories.

II. Overview of Collaborations within NIH

The NIH is composed of 27 ICs, each having a distinct mission. However, leaders across the NIH recognize that scientific progress often comes at the interface of traditional boundaries. Therefore, there is considerable trans-NIH collaborative activity across IC boundaries at every level of NIH operations. Trans-NIH collaborative activities can be found in all disease areas and across basic, translational, and clinical research. These collaborations can be formal or informal and can involve sharing materials, specimens, or scientific expertise. Collaborations take place at any or all stages of a research project or program, including: 1) development of a concept, initiative, or plan; 2) funding; 3) conduct of the research in intramural laboratories; 4) management and administration of the project; and 5) assessment of results. Although some collaborations are the product of highly visible joint activities, such as the NIH Common Fund programs and the NIH Blueprint for Neuroscience Research, the vast majority of collaborative activities take place day-to-day in the office and in the laboratory. This report includes the activities of 24 of the 27 ICs. For reasons discussed below, the Clinical Center, the Center for Information Technology, and the Center for Scientific Review are not part of this report.

III. Scope of Report

Inclusions:

For the purposes of this report, a trans-NIH research collaboration is defined as a formally documented, science-based effort that includes two or more ICs. Within this defined cohort, two types of extramural collaborations are included in the budget figures presented in this report:

1) grants and contracts that are cofunded by two or more ICs, and 2) grants and contracts funded in response to collaborative Funding Opportunity Announcements (FOAs) developed and announced by two or more ICs. FOAs of this type include Requests for Applications (RFAs), Requests for Proposals (RFPs), and Program Announcements (PAs). A qualifying feature of these extramural collaborative FOAs is the formal participation by multiple ICs at the outset of the activity in developing and issuing the FOA.

NIH intramural program collaborations are also included in the budget figures. The intramural program is highly collaborative within NIH. In 2012, intramural investigators on 1,337 of 3,101 annual reports cited collaborators within other NIH ICs. In addition to collaborating on research, NIH intramural programs also jointly fund specific shared resources (e.g., imaging technologies and instrumentation) to minimize duplicative equipment and to conserve costs. Eligible intramural collaborative research projects are included within the "Total Collaborative Activities" column in Table 1.

Exclusions:

Informal collaborations between ICs are excluded from this report, although they occur within all programs and at all levels. Also excluded are grants funded in response to "Parent Announcements." These general announcements of guidelines for grant mechanisms (e.g., R01 grants) do not address scientific areas and, therefore, are outside the scope of the collaborative FOAs included in this report. As the list of excluded announcements continues to be refined, some ICs may have an apparent decrease in their collaborative activities due to projects being excluded for FY 2012 that were included in the previous years' reports. As in the previous reports, grants that provide shared resources have also been excluded from this report unless they are cofunded or funded in response to collaborative program initiatives.

Also excluded from this report are collaborative activities initiated and/or led through or funded by offices within the Office of the Director's (OD) Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI). This is consistent with this report's definition of a trans-NIH collaboration and with NIH's interpretation of the legislative language. Trans-NIH collaborations are central to the missions of all DPCPSI offices, and their efforts are critical to the synergy of inter-IC collaborations of all types. The six DPCPSI offices are as follows:

- The Office of Strategic Coordination (OSC) oversees collaborative efforts across the NIH to plan, implement, and manage the programs funded via the NIH Common Fund. These programs are not included because they are the subject of a separate report, the Common Fund Strategic Planning Report. All NIH ICs participate in these programs, and some ICs have contributed additional funds from their own appropriations. The IC funds are represented in this report, but the dollars appropriated to the Common Fund within the OD appropriation are not.

- The Office of Behavioral and Social Sciences Research (OBSSR) (a) leads the development of priorities for increasing the scope of and support for behavioral and social science research and training at the NIH; (b) coordinates research in the behavioral and social sciences across the 27 NIH ICs; (c) develops and facilitates new initiatives in partnership with the ICs; (d) provides leadership in disseminating findings from behavioral and social sciences

research and communicating the importance of such research in the acquisition, treatment, and prevention of disease and disability; and (e) advises key NIH officials on matters relating to behavioral and social science research.

- The Office of Research Infrastructure Programs (ORIP) is composed of the Division of Comparative Medicine, Division of Construction and Instruments, Science Education Partnership Awards, and the Office of Science Education. The ORIP (a) provides support for resource activities and research to identify, develop, characterize, and improve animal models for the study of human disease; (b) assists institutions in complying with the regulations and policies related to care and use of laboratory animals and supports the purchase of equipment for animal resources, transgenic animal resources, and similar activities; (c) provides high-quality, disease-free animal models and specialized animal research facilities for biomedical investigators; (d) supports the development and access to a wide range of research models; (e) supports research activities at National Primate Research Centers; (f) supports training and career development for veterinarians; (g) provides repositories for the storage and distribution of genetically altered animal models; (h) supports the breeding of and accessibility to scarce research animals; (i) supports grants for the acquisition of state-of-the-art instrumentation; (j) supports grants to expand, remodel, renovate, or alter existing research facilities or to construct new research facilities, including to improve laboratory animal facilities; and (k) coordinates science education activities at the NIH.

- The Office of Research on Women's Health (ORWH) (a) advises the NIH Director and staff on matters relating to research on women's health; (b) serves as the focal point for women's health research and the study of sex/gender factors at NIH; (c) promotes, stimulates, and supports efforts to improve the health of women through biomedical and behavioral research on the roles of sex and gender in health and disease; (d) ensures that women are appropriately represented in clinical studies supported by NIH; and (e) develops opportunities for the recruitment, retention, re-entry, and advancement of women in biomedical careers and advancement of careers for men and women in women's health research.

- The Office of Disease Prevention (ODP) includes the Office of Dietary Supplements. The ODP (a) provides overall coordination and guidance to the ICs concerning disease prevention and health promotion initiatives, policies, and activities; (b) collaborates in the formulation of research initiatives and policies that promote public health; and (c) stimulates, coordinates, and supports research on dietary supplements.

- The Office of AIDS Research (OAR) has unique authorities to plan, coordinate, evaluate, and submit budget estimates for the NIH AIDS research program. The OAR (a) coordinates the scientific, budgetary, legislative, and policy elements of the NIH AIDS research portfolio and sets the trans-NIH scientific priorities; (b) has established comprehensive trans-NIH planning, budgeting, and portfolio analysis processes to identify the highest priority areas of scientific opportunity, enhance collaboration, minimize duplication, and ensure that precious research dollars are invested effectively and efficiently; (c) prepares a Presidential bypass budget; (d) identifies emerging scientific opportunities and public health challenges that require focused attention, and manages and facilitates multi-Institute and trans-Institute activities to address those needs; (e) fosters research by designating funds and supplements to

jump-start or pilot program areas; (f) sponsors reviews or evaluations of research program areas; (g) supports a number of initiatives to enhance dissemination of research findings to researchers, physicians, institutions, communities, constituency groups, and patients; and (h) facilitates international AIDS research and training.

The budget numbers exclude collaborative efforts coordinated through the NIH Clinical Center because the Clinical Center budget is funded through a mandatory contribution from the ICs as a standard percentage of the intramural IC budgets. However, it is important to note that the Clinical Center coordinates a range of trans-NIH activities, including the highly successful Bedside-to-Bench awards program. This program is supported through a number of Offices within the NIH OD, in addition to voluntary contributions from 14 ICs in 2012. The Bedside-to-Bench awards program was created to speed translation of promising laboratory discoveries into new medical treatments by encouraging collaborations among basic scientists and clinical investigators. Since the Bedside-to-Bench program began over 14 years ago, 209 collaborative projects have received funding, representing partnerships among multiple ICs and extramural NIH grantees. Additionally, the Clinical Center is planning to "open its doors" to the extramural community through a grant mechanism that partners an extramural investigator (PI) with an investigator in the NIH intramural program (co-PI) who will use the Clinical Center and its resources with the goal of conducting collaborative research projects aligned with the NIH mission and its efforts to enhance the translation of basic biological discoveries into clinical applications that improve health.

Other trans-NIH activities are coordinated through centers of excellence established within the Clinical Center to better integrate a number of scientific areas or services within the NIH community. The Center for Neuroscience and Regenerative Medicine (CNRM) focuses on the discovery of methods to better intervene and prevent the long-term consequences of traumatic brain injury. The CNRM is a collaboration between NIH and the Uniformed Health Services. The goal is discovering new diagnostic tools (especially using imaging at the NIH) and treatment paradigms for both military and civilian brain trauma victims. The Clinical Center's Center for Interventional Oncology focuses on expanding ways to use advanced imaging technologies for diagnosing and treating localized cancers in ways that are precisely targeted and minimally or non-invasive. Magnetic resonance imaging, positron emission tomography, computed tomography, and combinations of these approaches guide the devices for diagnosis and treatment. The Center for Infectious Disease Imaging is a collaborative program that seeks to use advanced anatomic, functional, and molecular imaging methods to identify and assess the manifestations and progression of infectious disease. The Imaging Sciences Training Program provides trainees with a background in state-of-the-art methodology in imaging technology, while working collaboratively in a variety of research disciplines between the Clinical Center and various ICs. In addition, the Clinical Center coordinates the development and maintenance of the Biomedical Translational Research Information System (BTRIS), a repository of clinical research data from the Clinical Center's electronic health record systems and from five other ICs. BTRIS serves as a trans-NIH resource that supports intramural access to data for answering research questions.

Additional exclusions from this report are the following: 1) collaborative efforts coordinated through the Center for Information Technology, whose mission is to provide, coordinate, and manage information technology and to advance computational science; 2) IC mandatory

contributions to the development and maintenance of shared databases developed by the National Library of Medicine; 3) the Center for Scientific Review, which has a wholly collaborative mission as the portal for NIH grant applications and their review for scientific merit; 4) activities involving NIH collaboration with other agencies within HHS (these types of activities are included in the Report on NIH Collaborations with Other HHS Agencies); 5) collaborations between individual ICs and private sector partners; and 6) collaborations that are not supported through the ICs' budgets. The latter category includes a number of major NIH efforts, such as the National Children's Study, the Special Statutory Funding Program for Type 1 Diabetes Research, and the Superfund program. These are collaborative efforts by design, jointly planned and managed by multiple ICs. However, as with activities supported through the Common Fund, the fact that they are not supported through the IC budgets precludes their inclusion in the totals and percentages that are presented in Table 1.

IV. Percentage of Funds made Available in Fiscal Year 2012 by each National Research Institute or Center for Conducting Trans-NIH Research

Table 1 presents the percentage of FY 2012 funds made available by each research IC for conducting trans-NIH research. The IC dollar amounts presented in this table represent the sum of collaborative activities in three areas: extramural grants, extramural contracts, and intramural research projects. Section III of this report describes the categories of extramural grants and contracts that are included.

Intramural collaborations are identified through the NIH Intramural Database (http://intramural.nih.gov/index.tml). As with extramural projects, reporting on intramural projects is limited to formal collaborations between two or more ICs. In each case, the total FY 2012 budget for a collaborative intramural research project is credited wholly to the lead IC because the database does not identify effort or budget from individual ICs.

It is also important to note that NIH reorganized in FY 2012. The reorganization abolished the National Center for Research Resources (NCRR) and created the National Center for Advancing Translational Sciences (NCATS). This reorganization resulted in transferring several of NCRR's programs to the NIH OD. For purposes of this report, NCRR will no longer be reported, NCATS appears as a new institute beginning in FY 2012, and any programs, collaborations, and co-funded programs transferred to the OD will not be reported per the Exclusions above.

Examples of collaborative activities across ICs that are not fully demonstrated in budgetary data are available at http://dpcpsi.nih.gov/collaboration/index.aspx. The activities are grouped within the following categories: 1) committees, working groups, and task forces; 2) conferences, workshops, and meetings; and 3) educational campaigns and clearinghouses. The list is intended to illustrate the range of collaborative activities, both extramural and intramural, and is not meant to be exhaustive.

V. Conclusion

The NIH has a strong commitment to collaborative research among the ICs, as evidenced by joint efforts at all levels. Although many inter-IC collaborative activities are typically not as visible as Common Fund and other high-profile trans-NIH collaborations, Table 1 illustrates that

a substantial percentage of the ICs' budgets supports collaborative activities. Because many categories of collaborations are excluded from this report, the obligations presented in Table 1 represent significant underestimates of the actual level of trans-NIH collaborative commitments.

Table 1: IC Collaborative Activity Financial Summary – FY 2012

(000)

Funding IC	Total IC Actual Obligations Adjusted	Total Collaborative Activities	Percent for Collaborative Activities
FIC	$ 69,540	$ 54,331	78.1%
NCATS	$ 574,564	$ 14,687	2.6%
NCCAM	$ 126,810	$ 43,345	34.2%
NCI	$ 4,954,789	$ 898,730	18.1%
NEI	$ 692,142	$ 68,748	9.9%
NHGRI	$ 498,535	$ 117,286	23.5%
NHLBI	$ 3,025,059	$ 356,717	11.8%
NIA	$ 1,112,891	$ 130,616	11.7%
NIAAA	$ 452,496	$ 96,179	21.3%
NIAID	$ 4,414,104	$ 711,313	16.1%
NIAMS	$ 527,851	$ 72,448	13.7%
NIBIB	$ 336,369	$ 111,366	33.1%
NICHD	$ 1,294,526	$ 307,913	23.8%
NIDA	$ 1,044,006	$ 218,753	21.0%
NIDCD	$ 410,705	$ 39,367	9.6%
NIDCR	$ 401,553	$ 78,006	19.4%
NIDDK	$ 1,771,043	$ 273,790	15.5%
NIEHS	$ 664,944	$ 87,621	13.2%
NIGMS	$ 2,427,425	$ 297,564	12.3%
NIMH	$ 1,456,368	$ 340,877	23.4%
NIMHD	$ 275,630	$ 44,551	16.2%
NINDS	$ 1,603,504	$ 232,615	14.5%
NINR	$ 143,720	$ 32,493	22.6%
NLM	$ 336,733	$ 16,682	5.0%
NIH	**$ 28,615,307**	**$ 4,646,002**	**16.2%**

An acronym list of NIH ICs can be found at http://grants.nih.gov/grants/acronym_list.htm.