**Department of Health and Human Services**
**National Institutes of Health (NIH)**
**Office of the Director (OD)**
**Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI)**

# Council of Councils Meeting
# September 1, 2015

# Meeting Minutes

## I. WELCOME

James M. Anderson, M.D., Ph.D., Chair of the NIH Council of Councils, welcomed participants, NIH staff members, and members of the public to the meeting of the Council of Councils. The meeting began at 8:15 a.m. on Friday, September 1, 2015, in Building 31, Conference Room 10, on the NIH Campus in Bethesda, Maryland.

Dr. Anderson noted that Drs. Emery N. Brown and Norbert J. Pelc were unable to attend the day's meeting. Drs. Marlene Belfort and Vivian S. Lee participated via teleconference. The meeting attendees are identified below.

Following introductions and announcements from Franziska B. Grieder, D.V.M., Ph.D., Executive Secretary for the NIH Council of Councils, Dr. Anderson reviewed the day's agenda. He referred Council members to the third Director's Report, included in their meeting books, which highlights upcoming meetings, funding opportunity announcements (FOAs), and other NIH news of interest.

### A. Attendance

#### 1. Council Members

***Council Members Present***

**Chair: James M. Anderson, M.D., Ph.D.,** Director, DPCPSI, OD, NIH
**Executive Secretary: Franziska B. Grieder, D.V.M., Ph.D.,** Director, Office of Research Infrastructure Programs (ORIP), DPCPSI, OD, NIH
**Philip O. Alderson, M.D.,** Saint Louis University, St. Louis, MO
**Sharon Anderson, M.D.,** Oregon Health & Science University, Portland, OR
**Marlene Belfort, Ph.D.,** University of Albany, Albany, NY
**Carlos D. Bustamante, Ph.D.,** Stanford University School of Medicine, Stanford, CA
**Molly Carnes, M.D., M.S.,** University of Wisconsin-Madison, Madison, WI
**Janice E. Clements, Ph.D.,** The Johns Hopkins University School of Medicine, Baltimore, MD
**Ana M. Cuervo, M.D., Ph.D.,** Albert Einstein College of Medicine, Bronx, NY
**Steven T. DeKosky, M.D.,** University of Florida College of Medicine, Gainesville, FL
**Judy E. Garber, M.D., M.P.H.,** Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA
**Lila M. Gierasch, Ph.D.,** University of Massachusetts, Amherst, MA
**Susan F. Goekler, Ph.D., M.C.H.E.S.,** Directors of Health Promotion and Education, Washington, DC

**Barbara J. Guthrie, R.N., Ph.D., F.A.A.N.,** Northeastern University, Boston, MA
**Nancy L. Haigwood, Ph.D.,** Oregon Health & Science University, Beaverton, OR
**Hakon Heimer, M.S.,** Cold Spring Harbor Laboratory, Providence, RI
**King K. Holmes, M.D., Ph.D.,** University of Washington, Seattle, WA
**Terry L. Jernigan, Ph.D.,** University of California, San Diego, La Jolla, CA
**Norma Sue Kenyon, Ph.D.,** University of Miami School of Medicine, Miami, FL
**Vivian S. Lee, M.D., Ph.D., M.B.A.,** University of Utah, Salt Lake City, UT
**Kimberly K. Leslie, M.D.,** University of Iowa Hospitals and Clinics, Iowa City, IA
**Guillermina Lozano, Ph.D.,** The University of Texas MD Anderson Cancer Center, Houston, TX
**Terry Magnuson, Ph.D.,** University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, NC
**Craig J. McClain, M.D.,** University of Louisville School of Medicine, Louisville, KY
**Keith A. Reimann, D.V.M.,** University of Massachusetts Medical School, Boston, MA
**James E. Schwob, M.D., Ph.D.,** Tufts University School of Medicine, Boston, MA
**Gilbert C. White, II, M.D.,** Blood Research Institute, BloodCenter of Wisconsin, Milwaukee, WI

***Council Members Absent***

**Emery N. Brown, M.D., Ph.D.,** Massachusetts Institute of Technology, Harvard Medical School, Massachusetts General Hospital, Cambridge, MA
**Norbert J. Pelc, Sc.D.,** Stanford University, Stanford, CA

**2. Liaisons**

**Janine A. Clayton, M.D.,** Director, Office of Research on Women's Health (ORWH), DPCPSI
**Paul M. Coates, Ph.D.,** Director, Office of Dietary Supplements (ODS), DPCPSI
**Robert W. Eisinger, Ph.D.,** Acting Director, Office of AIDS Research (OAR), DPCPSI
**David M. Murray, Ph.D.,** Director, Office of Disease Prevention (ODP), DPCPSI, OD
**William Riley, Ph.D.,** Director, Office of Behavioral and Social Science Research (OBSSR)
**Elizabeth L. Wilder, Ph.D.,** Director, Office of Strategic Coordination (OSC), DPCPSI

**3. *Ex Officio* Member**

**Lawrence A. Tabak, D.D.S., Ph.D.,** Principal Deputy Director, NIH

**4. Presenters**

**Philip E. Bourne, Ph.D.,** Director, Office of the Associate Director for Data Science, NIH
**Francis S. Collins, M.D., Ph.D.,** Director, NIH
**Robert W. Eisinger, Ph.D.,** Acting Director, OAR, DPCPSI
**Jack Harding, Ph.D.,** Health Scientist Administrator**,** Division of Comparative Medicine, ORIP, DPCPSI
**Malgorzata Klosek, Ph.D.,** Director, Division of Construction and Instruments, ORIP, DPCPSI
**Lawrence A. Tabak, D.D.S., Ph.D.,** Principal Deputy Director, NIH
**Elizabeth L. Wilder, Ph.D.,** Director, OSC, DPCPSI

### 5. NIH Staff and Guests

In addition to Council members, presenters, and Council Liaisons, others in attendance included NIH staff and interested members of the public.

### B. Meeting Procedures

Dr. Grieder reviewed the following:

- Council members are Special Government Employees during the days of Council meetings and therefore are subject to the rules of conduct governing Federal employees.

- Each Council member submitted a financial disclosure form and conflict of interest statement as a Federal requirement for membership on advisory councils. Financial disclosures are used to assess real and perceived conflicts of interest, and Council members must recuse themselves from the meeting during discussion of items for which conflicts have been identified.

- Time has been allotted for discussion between the Council members and presenters, but time for comments from other meeting attendees is limited. The public may submit comments in writing; instructions are available in the *Federal Register* notice for the meeting, which was published on July 14, 2015.

- Minutes from the June 19, 2015, meeting have been published on the DPCPSI website. The minutes from this meeting also will be published there.

### C. Future Meeting Dates

The next Council meeting will be held on January 29, 2016. Other Council meetings in 2016 will be held on May 20 and September 9.

## II. UPDATE ON THE OFFICE OF AIDS RESEARCH

Dr. Robert Eisinger, Acting Director, OAR, provided an update on the Office of NIH AIDS Research, including an overview of scientific opportunities, the NIH's commitment to focus research to end the AIDS pandemic, NIH's overarching HIV/AIDS research priorities, and plans for future portfolio review and budgetary activities. Recent advances in the understanding of HIV pathogenesis, immune dysfunction, and viral reservoirs are leading to a possible successful vaccine, improved therapeutic strategies, and a potential cure for HIV/AIDS. These advances are leading to unprecedented scientific opportunities, and the NIH aims to ensure that AIDS research funding will support the highest AIDS research priorities. The OAR will serve an important role in the efforts to end the AIDS pandemic, develop an AIDS cure, and achieve an AIDS-free generation. To ensure that the OAR is prepared to take on this role, Dr. Tabak has established and chairs a small working group of NIH Institutes and Centers (IC) extramural and intramural leadership to address the scientific and programmatic role of OAR. In addition, a vigorous national and international search was launched on July 31, 2015, for a new OAR Director, led by search committee co-chairs Drs. Josephine Briggs, Director, National Center for Complementary and Integrative Health (NCCIH), and Griffin Rodgers, Director, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

The NIH has determined its AIDS research priorities for the next 3 to 5 years, which are to (1) reduce HIV incidence, including the development and testing of vaccines; (2) develop the next generation of HIV therapies with better safety and ease of use; (3) encourage research toward a cure; and (4) prevent and

treat HIV-associated comorbidities and co-infections. Basic research, health disparities, and training have been identified as important cross-cutting priority areas. The NIH based its newly developed guidelines for prioritizing AIDS research funding on a May 2014, report of the OAR Advisory Council HIV/AIDS Research Portfolio Review Working Group, as well as on the fiscal year (FY) 2015 Trans-NIH Plan for HIV-Related Research, which reflected input from the scientific and academic communities, scientific foundations, and community constituency groups, as well as input from NIH leadership. The guidelines are applicable to determining priorities for receiving AIDS funding, but will not be used to determine the scientific merit of grants, contracts, or intramural projects. A Notice in the *NIH Guide for Grants and Contracts* on August 12, 2015, informed the scientific community about the guidelines, which will be used to determine the use of AIDS funds beginning in FY 2016 and to standardize the pro-rationing of support across the ICs for projects containing both AIDS and non-AIDS components.

Dr. Eisinger described the areas of high-priority research. These include the development and testing of AIDS vaccine candidates, microbicides, Pre-Exposure Prophylaxis (PrEP), and strategies to improve HIV testing and entry into treatment; the development and testing of improved HIV treatments; and novel strategies for research toward a cure. Additional high priorities are the prevention and treatment of HIV-associated comorbidities, coinfections, and related complications; basic research on HIV transmission, pathogenesis, and immune dysfunction; research to reduce health disparities in incidence and treatment; and training to conduct high-priority research.

Medium-priority research areas encompass those projects in which HIV/AIDS is a meaningful component or which enhance knowledge about HIV. Examples of such projects are ones that (1) include people (or their biological specimens) who are living with HIV, are HIV exposed, and/or are at elevated risk for HIV infection as part of a broader sample or as a comparative cohort; (2) address health and social issues clearly linked with HIV and examine them in the context of HIV; (3) meaningfully includes HIV/AIDS (or simian immunodeficiency virus [SIV]) outcomes or endpoints; or (4) will advance HIV treatment or prevention, or will benefit HIV research through the development of tools, techniques, or capacity. Low-priority projects, which include projects or tools that are not directly focused on HIV, will not be supported with NIH AIDS funds.

Special areas of consideration include NIH-wide programs involving a component of HIV/AIDS research, such as Clinical and Translational Science Awards (CTSAs), National Primate Research Centers, and Cancer Centers. The OAR will work closely with the ICs to ensure that the appropriate level of AIDS dollars are provided to support important trans-NIH programs, as well as assist with the pro-rating of projects that include both AIDS and non-AIDS components through a standardized scheme.

Dr. Eisinger informed members that the OAR and a small panel of IC scientific staff will conduct an AIDS portfolio review of all grants, contracts, and intramural projects funded with AIDS dollars in FY 2014 and scheduled to recompete in FY 2016. Projects that are identified as “low priority” research will not be supported with AIDS funds when they recompete; such identified funds will go into a common high-relevance AIDS pool that all ICs will be eligible to request for high priority projects. The results of this portfolio review will be presented at the meeting of the Advisory Committee to the Director (ACD) to be held December 10–11, 2015.

New OAR processes in effect for FY 2016 include the revision of CSR Referral Guidelines and the restructuring of AIDS Integrated Review Group study sections, as well as a review of draft FOAs to ensure that FOAs and requests for proposals (RFPs) are properly aligned with the overarching AIDS research priorities. Following the FY 2016 Appropriation, the OAR, in consultation with the NIH Director, may utilize its 3 percent transfer authority to transfer AIDS funds between ICs. The OAR also will require that all new and competing renewal projects be aligned with the highest overarching AIDS priorities and pro-rated on the basis of their AIDS proportion.

OAR scientific staff will review all new projects reported into the NIH AIDS Research Information System for FY 2016 at the 3rd and 4th quarters to ensure all projects are aligned with the highest priorities and appropriately coded to both the Strategic Plan codes and the Special Interest Category Codes. Staff will work with the ICs to resolve any conflicts between priorities and coding.

For the FY 2017 trans-NIH AIDS budget, the OAR will provide guidance for development of the IC AIDS Budget Submissions. Each new, recompeting, and expanded initiative must be aligned to one or more of the overarching AIDS research priorities. The OAR will develop the NIH AIDS budget in consultation with the NIH Director and will provide each IC with a list of the initiatives that will be supported and their AIDS funding level.

Discussion Highlights

- AIDS remains a priority research concern because 50,000 new cases of AIDS have occurred in the United States every year for the past 20 years. Ten percent of the NIH budget supports AIDS research, and NIH leadership is actively managing the portfolio.. Research findings are resulting in potential opportunities to end the pandemic, and the intention is to ensure funds are targeted to the highest priority areas.

- The current portfolio review is covering the portfolio of those projects that will be recompeting in FY 2016. A similar portfolio review will be conducted for the next several years to continue to realign the portfolio, each time looking at which projects will be up for recompetition and determining whether or not they meet the high-, medium-, or low-priority guidelines.

- Reducing health disparities is one of the overarching AIDS research priorities.

## III. OPPORTUNITIES TO ENHANCE THE UTILITY OF COMMON FUND DATA RESOURCES

Dr. Betsy Wilder, Director, OSC, described an opportunity to enhance the utility of Common Fund data resources through a "Common Fund Data Mining Workshop" planned for the Spring 2016. The NIH generates a large amount of data through its support of Common Fund projects, which host multiple data portals and span such topics as epigenomics, extracellular RNA, genome tissue expression, human microbiome, knock-out mouse phenotyping, integrated network-based cellular signatures, metabolomics, and molecular bio-assay research. The workshop will address two items of potential concern with Common Fund datasets: (1) their levels of complexity and challenges in accessibility stymie the average user; and (2) datasets are not parallel, making it difficult to mine multiple databases to integrate the findings.

Discussion Highlights

- Good stewardship and maintaining valuable data are important. There is more incentive to maintain data resources when they are being used to support investigator-initiated research.

- The workshop will focus on Common Fund datasets, with initial aims of determining the best ways to democratize those data and identifying additional questions that an investigator could ask if multiple datasets could be mined at once. Participants will comprise an invited list of people who have been involved in the Common Fund programs and who can help the NIH in determining the next step for the data.

- In its evaluation and promotion of greater sustainability of resources, the NIH employs the underlying principle that data should be findable, accessible, interruptible, and reusable. Data integration and interoperation will become increasingly important in an era of translational science.

## IV. DATA SCIENCE AT NIH: OPPORTUNITIES AND CHALLENGES

Dr. Philip E. Bourne, Director, NIH Office of Data Science, described opportunities and challenges for data science at the NIH. Biomedical research has reached a point of significant change because of the swell of scientific data that has become available in digital form. The drivers for this change include the notion of a second "industrial revolution" that is occurring more quickly than expected with the advent of new technologies and the higher speed in data processing. For example, the Google car operates successfully because of the technological ability to process 750 megabytes of data per second. An exponential framework of the "6 Ds" (digitization, deception, disruption demonetization, dematerialization, democratization) explains how the digital camera—which was invented years ago, but shelved by Kodak—eventually transformed the imaging industry to one that is thoroughly different from 15 years prior. The digitization of data likely will experience a similarly radical change, and the NIH is considering how to address the expected levels of disruption. Another drive of change is that DREAM challenges and similar opportunities can bring forth unexpected people who make contributions to scientific problems, as seen in the example of a paper on a novel approach to pandemic modeling that was submitted by a 15-year-old high school student. One focus of the Office of Data Science is to enfold into its mission people who are not traditionally part of the NIH community, including computational scientists, computer scientists, statisticians, and the general public.

Scientific motivators include such activities as the Precision Medicine Initiative (PMI), from which large amounts of clinical data are expected from a longitudinal cohort of more than 1 million patients, with 40 terabytes of data collected for each patient over time. A network model from a comorbidity study of 6.2 million Danes across 15 years illustrates how data from the PMI could be used both as an analytic tool, to show how patients progressed to secondary conditions and the number who progressed, and as a predictive tool, particularly when incorporated with socioeconomic data.

In response to these opportunities, the NIH established the Office of Data Science, which aims to use data science to foster an open digital ecosystem that will accelerate efficient, cost-effective biomedical research to enhance health, lengthen life, and reduce illness and disability. Currently, 88 percent of all data that are generated in 1 year's worth of PubMed research papers are not deposited in any accessible resource; not all that data is useful, but some of it would be if it were accessible. The Office of Data Science is trying to address that loss of data, and the Big Data to Knowledge (BD2K) program is critical to the Office's mission. BD2K operates with a $100 million annual budget, of which approximately 20 percent supports training; it currently supports 12 Centers across the United States that further expand the network through additional partners. Dr. Bourne described how the BD2K Centers operate: one Center, ENIGMA, showed how a small number of genetic variants could be directly tied to a particular area of brain morphology through a large dataset of 30,000 longitudinal MRIs that included 13,000 patients with GWAS studies. During the conduct of its studies, ENIGMA worked across BD2K strategic areas of sustainability, workforce development and diversity, discovery and innovation, policy and process, and leadership.

The NIH has assumed a multifaceted approach of encompassing infrastructure, communities, and policies to ensure that the data available will enable leading-edge research to advance biomedical discovery and make a difference for patients. Infrastructure is envisioned as a conceptual model called the Commons, which provides the underpinning of the digital ecosystem and involves a series of digital objects that can

be identified. The Commons use existing infrastructures with a few rules to tie together digital objects, search capabilities, and computing platforms (e.g., public and private clouds, supercomputing). In BD2K, the Commons will provide the ability to index content provided by the BD2K Centers in a Data Discovery Index Coordination Consortium to ensure that the information is findable and usable. A current BD2K pilot project is testing a credit funding system to better match supply and demand and to facilitate measurement of how data in the Commons are used.

Work also is ongoing with several communities that emerge to solve problems encountered when working on complex diseases. For example, the Office convened a workshop that brought together biomedical researchers and game software developers, which brought forward new ideas on how to approach some of the data problems. Forthcoming policies address genomic data sharing, data citation, and the database of Genotypes and Phenotypes (dbGaP) in the cloud. In addition, workforce training is occurring in four areas that will be overseen by a BD2K Training Coordination Center: building a data science workforce, strengthening a diverse workforce to utilize data science, fostering collaborations, and enhancing NIH internal training in biomedical data science.

Dr. Bourne stated that BD2K activities include a series of big data workshops on such topics as standardization, particularly common data elements; data science career paths with the National Science Foundation; citizen science; and two workshops with the National Academies of Science, Engineering, and Medicine on big data inference and data science curriculum development. Other BD2K activities include incorporating reference datasets, such as the Human Microbiome, in the Commons; supporting the sustainability of data repositories; and developing a software hardening resource to facilitate more robust, Commons-compliant tools.

Discussion Highlights

- The biomedical research community's reward system should be reconsidered so as to provide credit for those who might produce a useful reference dataset that authors might download for their studies. Although appreciation is growing in academia regarding the value of people who are making good contributions in biomedical fields regardless of publication impact score, the academic culture should develop and increase acceptance of metrics that indicate the value of newer approaches to data scholarship compared to traditional scopes of scholarship.

- Training should support the scientific pipeline at all levels, and youth in particular, who use digital data every day, should be encouraged to enter the sciences as early as possible in the K–12 grade levels.

- Private data collections are encouraged to participate and share their data in the Commons environment. Greater incentives may be needed at the onset of projects to ensure that data are aggregated in a meaningful way. For example, genetic data are available currently because of requirements from the beginning that projects deposit sequences in GenBank. Such resources as electronic health records and social media also may be useful places to gather information. Other potential data sources, such as the Veterans Administration, are more resistant to share data because of patient de-identification concerns. Academic records also could provide information, but any access would need to be sensitive to privacy rules.

- Members discussed the level of expertise available through the NIH Center for Scientific Review to review K award applications of physician scientists working with large datasets.

- The National Library of Medicine may serve an important role in the future of the BD2K project to ensure that the big data initiative remains in the public domain to benefit all people.

## V. NIH UPDATE

Dr. Francis S. Collins, Director, NIH, provided an update of news of interest across the NIH. Dr. Collins reflected on the state of the budget, noting that in 1998 dollars, the NIH budget is 23 percent lower at the end of FY 2015 than it was in 2003 in terms of resources to support research; that decrease is reflected in funding success rates that are at historically low levels of 16–17 percent. The President's Budget for FY 2016 proposes an increase over the FY 2015 level, but the House Budget provides a greater increase, and the Senate proposed a $2 billion increase. Dr. Collins remarked on the uncertainty of whether Congress would pass a budget or a continuing resolution in September, given the Congressional discussions concerning the nuclear arms deal with Iran, sequestration, the funding of Planned Parenthood, and other topics.

The 21st Century Cures bill, which aims to accelerate the discovery, development, and delivery of cures, has been led by Representatives Fred Upton (R-MI) and Diana DeGette (D-CO). The bill has strong bipartisan support and passed the House with an Innovation Fund of $8.75 billion over 5 years. It raises the cap on the loan repayment program and seeks to reduce administrative burdens on researchers. The bill also requires a strategic plan, which the NIH is developing. The Senate is working on their own bill and plans to have a draft in the fall.

As an example of exciting innovations that can be developed when researchers from different disciplines collaborate, Dr. Collins described the human tissue chip. The chip is a novel way to better assess drug toxicity than the current standards, which involve toxicity testing with small and large animals, which can be costly and does not necessarily reflect human toxicity. The goal of the project was to develop biochips that could represent liver, heart, lung, and other important cell types to predict toxicity, and thus take the place of animal testing when drugs are put forward for possible human clinical use. Phase I projects were funded in 2012, and 3D microsystems representing human organ systems were successfully developed and seven projects explored the potential of stem cells to differentiate into multiple cell types. Phase II projects were awarded in 2014 to 11 institutions that will collaborate over 3 years on an integrated microphysiological system, including neurovascular, gut, liver, and kidney organs. Dr. Collins shared an example of a blood-brain barrier built on a chip by Dr. John Wikswo, Vanderbilt University, with neurons and glia separated from blood vessels by an appropriate membrane. The next step will be to connect different organs on a chip and determine the effects of a drug on the integrated system. The NIH recently held a meeting with the tissue chip investigators, academics, and industry representatives who expressed interest in expanding the research, developing partnerships, and commercializing the resulting product.

The PMI was announced by President Barack Obama in January 2015. The concept of a U.S. longitudinal cohort is not new, and prospects for broader application of knowledge of individual variability and application to prevention and treatment or "precision medicine" have been raised by recent advances in the biomedical arena, including basic research, technology development, genomics, proteomics, metabolomics, electronic health records, big data, and mHealth. Drs. Collins and Harold Varmus described the new initiative in an article published in the *New England Journal of Medicine,* and the latest information about the PMI is posted on the NIH's website (www.nih.gov/precisionmedicine). Following an influential National Research Council report called *Toward Precision Medicine* that provided momentum, a rigorous research program is needed, as well as recruitment of people from multiple disciplines to join this long-term, significant national effort.

The NIH is pursuing two components in precision medicine. (1) PMI-Oncology will apply tenets of precision medicine to cancer, taking advantage of an opportunity to apply, on a large scale, genomic

information about an individual tumor to make the best choice of therapeutics and also to make predictions about the likelihood of therapeutic response and long-term survival. It will use clinical trial models already established by the National Cancer Institute (NCI), including the NCI-MATCH, which focuses on solid tumors and lymphomas, and Lung-MAP, which concerns squamous cell lung cancer. These trials are collecting genomic and phenotypic information about cancer subtypes and therapeutic targets, testing combination therapies with the help of private-sector companies and working to understand and combat drug resistance. (2) The PMI also will create a national research cohort of 1 million or more volunteers, drawn from existing cohorts and new volunteers. Outreach to underrepresented groups could occur through federally qualified health centers that are supported by the government, keep electronic health records, and provide health care of millions of people. Participants will be considered partners and will be involved in the design and implementation of the PMI; able to share genomic data, lifestyle information, and biological samples; and able to choose how and when to participate in research studies. The result should be a different model for scientific research with engaged participants and open, responsible data sharing with privacy protections.

Dr. Collins stated that an ACD Working Group was formed in March 2015, to develop a vision for the PMI and advise on the design of the national research cohort. Four public workshops were held between April and July across the country and considered such topics as unique scientific opportunities for the national research cohort, digital health data, participant engagement and health equity, and mobile and personal technologies in personalized medicine. The Working Group advocates for an efficient and inclusive cohort, has strong consensus about secure but accessible data, endorses participant engagement, and supports innovative and interoperable technologies. The Working Group's report will be delivered to the ACD in September 2015.

Discussion Highlights

- The NIH spent $76 million in FY 2014 on grants that involved the use of fetal tissue in some way, mostly on grants for which the fetal tissue component was only a small part.

- The PMI could facilitate the Tissue on a Chip project. The transformation of a generic human chip to one from the individual would ensure an engaged set of research participants.

- The NIH was encouraged not to exclude children or pediatric populations from new initiatives on the basis of consent issues, many of which have been reasonably well addressed. The types of samples to be collected and the frequency of exams are areas of greater concern in pediatric research.

- Participant engagement remains a central element for the NIH. It was noted that the Lacks family has become staunch supporters of maintaining the HeLa cells for research as issues surrounding consent and family notification have been resolved in a public manner.

- Social media (e.g., Facebook) or other public venues (e.g., Ancestry.com) could be utilized as recruitment vehicles to reach the PMI cohort of 1 million people. The intent is that those recruited will be partners with the researchers and expected to participate throughout the project.

- The NIH was encouraged to consider the role of intrauterine life and pregnancy complications as predictors of long-term health outcome and also to remain sensitive to the unintended consequences of turning resources into molecular trials that might result in a loss of standard trials, where a traditional approach has realized a major positive impact on health outcomes.

## VI. CONCEPT CLEARANCE #1: PLANNING FOR FY16 NEW DIRECTIONS IN ENVIRONMENTAL INFLUENCES ON CHILD HEALTH AND DEVELOPMENT PROGRAM

Dr. Lawrence A. Tabak, Principal Deputy Director, NIH, presented a proposal for the redirection of FY 2016 National Children's Study (NCS) funds. Dr. Tabak stated that the FY 2015 Appropriations included $165 million for the NCS and directed the NIH to continue to support the mission and goals of the NCS, with flexibility on how to carry this out. A concept on the redirection was presented to the Council in January 2015, FOAs were released in March, and applications have been reviewed with awards to be made in September. The FY 2015 funds would be distributed among three initiatives to support studies of environmental influences on child development and pediatric diseases, for an estimated budget of $143.9 million.

Dr. Tabak described the development process of the concept. An IC Working Group co-led by Dr. Clayton, ORWH, helped develop the details of the plan, coordinate outreach activities, and craft the FOAs. Stakeholder roundtables were held in mid-July and included more than 20 pediatric, environmental health, epidemiology, and other advocacy groups. In addition, approximately 400 participants attend three webinars in late July. A request for information (RFI) received 190 responses that included comments on the importance of the pregnancy/prenatal time period, basic research and training, data standardization and harmonization, and the Institutional Development Award (IDeA) states network, as well as questions on the eligibility of specific cohorts.

The overarching goal is to leverage extant cohorts to investigate the longitudinal impact of prenatal, perinatal, and postnatal environmental exposures on pediatric health outcomes with high public health impact. Multiple synergistic longitudinal studies will be supported by using extant cohorts, representing variable environmental exposures, sharing standardized research questions, and focusing on four key pediatric outcomes related to (1) the upper and lower airway; (2) obesity; (3) pre-, peri-, and postnatal outcomes; and (4) neurodevelopment. Core elements that will be addressed across all longitudinal studies are demographics, typical early development, epigenetic influences on early childhood development, and environmental factors. In addition, recruitment plans should be robust enough to address racial and ethnic minority health issues, and a balance should be maintained between a robust characterization of environmental factors and health-related endpoints. Studies may leverage additional features, such as using existing tissue banks collected across pregnancy; validating new technologies, tools, and approaches for environmental and pediatric monitoring; using systems approaches to develop multi-variable models to predict disease development; and recruiting women during subsequent pregnancies to compare outcomes of first and second children. An IDeA States National Pediatric Clinical Research Network will be established to address access gaps for rural children through a national network for pediatric research embedded at IDeA locations, as well as to link existing IDeA state centers with experts in clinical trials.

Dr. Tabak said that IC staff are developing additional plan details. In terms of existing cohorts, responsive datasets will include cohorts of pregnant women, and both high-risk and non-high risk cohorts, and requirements include information on data/samples/cohorts, a research plan, evidence that the cohort could be re-contacted, and participation in prospective data collection efforts. A Coordinating Center will provide the organizational framework for the management, direction, and coordination of all sites; train staff; and work with the Data Analytics Center to ensure data acquisition, protocol, and data analysis pipeline standardization. The Coordinating Center will be overseen by a Steering Committee as well as a Scientific Advisory Board composed of external experts. The Data Analytics Center will leverage the Children's Health Exposure Analysis Resource (CHEAR), a network of laboratory hubs supported by the FY 2015 program that has supported comprehensive analytical services to measure environmental exposures, to provide data science, laboratory, and statistical and informatics analytics. Options

considered for the Data Analytics Center are for the CHEAR resources to contribute specific expertise on the exposure core element or to establish a separate Data Analytics Center to coordinate and manage the data needs. IDeA hubs, which will be open to IDeA states awardees, will augment pediatric clinical trials initiated by other entities to improve access to relevant populations, accelerate overall accrual, and support advances in pediatric clinical research. Their focus will encompass clinical trials, and local teams will receive specific training on conducting high-quality pediatric clinical trials. The prospective data collection should address the core elements. Research investigating the four focus areas and studies initiated within the Network will be encouraged.

Governance models are being considered, including the recruitment of an expert in pediatric epidemiology to serve as a program manager who would report either to the NIH Director or to a relevant IC Director; for either option, internal and external Boards also would be involved. Dr. Tabak reviewed the timeline for the concept review and application process, with the Council's review of applications completed in September 2016.

Discussion Highlights

- The NIH was encouraged to make full use of electronic health records by tying long-term longitudinal datasets with the records to better ensure that data would be collected for the future, even if specific studies are closed over time.

- The initial data collection will involve only existing cohorts, but the expectation is that future cohorts will help expand the collection to broader representation related to socioeconomic status, geography, and racial and ethnic issues.

- The NIH is aware of many of the existing cohorts, including the number of participants and geographic distribution. Opportunities exist for other partnerships and cohorts as well.

- Members appreciated the NIH's investment in the IDeA program and noted the time needed for solid development of the IDeA hub infrastructure. IDeA applications that include an international cohort would need to clearly articulate why the study of that cohort offers unique opportunities. Recipients of CTSAs who reside near IDeA states could help to build the IDeA network more successfully and more quickly.

- The Data Analytics Center should complement and interface with existing Coordinating Centers, and is not intended to interfere with or impede the Coordinating Centers' role and responsibilities for existing studies. In addition, analysts, statisticians, and other data experts should be involved early in the networking of existing cohorts to help set realistic expectations about what activities are possible.

## VII. DRAFT FRAMEWORK FOR NIH STRATEGIC PLAN

Dr. Tabak presented a draft framework for the NIH Strategic Plan. An NIH-wide 5-year scientific Strategic Plan was mandated by the continuing resolution Omnibus H.R. 83–346 (enacted December 16, 2014), and Section 1021 of the pending 21st Century Cures Act reiterates and expands the requirement to ensure (1) an emphasis on strategic focus areas that consider return on investment and (2) that rare and pediatric diseases and maintaining the biomedical workforce remain as priorities.

The goals of the Strategic Plan are to develop a "living document" that will help guide the NIH in fulfilling its mission over the next 5 years; articulate approaches and opportunities that are forward-

looking and inspirational in nature; and identify major trans-NIH themes that will advance biomedical research. The Strategic Plan should clearly articulate the highest priorities of the NIH overall, describe how the NIH will achieve the highest priorities, and serve as a living document that will require refinement throughout its lifecycle. It will not describe all the many important things that the NIH does and will do in the future. It also will not address priorities of the individual ICs, each of which has its own strategic plan.

The Strategic Plan has been developed initially with the involvement of NIH senior leadership, and further refined by a Working Group of the ICs that includes five DPCPSI representatives. The Working Group receives IC feedback weekly and serves a critical role in developing the contents and research examples. More than 80 "call-out" examples have been received. The NIH ACD has reviewed the overall Plan, provided positive comments, and advocated for additional emphasis on the interconnected nature of the research, and the inclusion of clinical methodologies, data science, and workforce retention. Dr. Collins is monitoring progress carefully and will oversee development of the final document.

Dr. Tabak described components of the draft framework, which includes an overview of NIH's mission and research portfolio, as well as a succinct description of emergent opportunities—in fundamental science, health promotion and disease prevention, and treatments and cures—and what the NIH needs to realize as the potential of those opportunities. Two principles, setting priorities and enhancing stewardship, will unify the Plan. Setting research priorities will encompass several factors, such as the level to which research incorporates the disease burden, fosters scientific opportunities, advances research opportunities presented by rare diseases, and considers the value of permanently eradicating a pandemic. The Plan also will stress principles to enhance stewardship, including the importance of recruiting and retaining an outstanding research workforce, enhancing workforce diversity, encouraging innovation, optimizing approaches to inform funding decisions, enhancing impact through partnerships, ensuring rigor and reproducibility, reducing administrative burden, and employing risk management strategies.

The Plan will highlight examples of recent breakthroughs in research and stewardship. Examples of research discoveries are microbial diversity studies that led to new clustered, regularly interspaced, short palindromic repeats (CRISPR) genome editing technology, and breakthroughs in cancer immunotherapy following the discovery of commonalities in the pathways and processes that lead to abnormal tissue growth in various cancer types. The NIH's commitment to maintaining the NIH Clinical Center's role as an important hub for rare disease research—particularly in facilitating intramural-extramural collaborations, accelerating new therapeutic discoveries, and supporting the Undiagnosed Diseases Network—provides an example of NIH's priority setting. The NIH's participation in the Accelerating Medicines Partnership—a partnership with the U.S. Food and Drug Administration, 10 pharmaceutical companies, and nonprofit organizations to develop new diagnostics and treatments by identifying and validating promising biological targets—illustrates how the NIH works to enhance stewardship.

The NIH solicited public input through a RFI that closed on August 16. Approximately 460 responses were received, providing mostly positive comments on the framework. Suggestions spanned numerous topics, such as greater emphasis on implementation and interdisciplinary science, promotion of "big data" use, increased emphasis on population health, changes to the peer-review process, and comments relevant to specific diseases. In addition, feedback received from three webinars held in August focused on topics of workforce training, patient partnerships, peer review, more explicit inclusion of behavioral and social sciences, basic versus applied research, systems approaches, interdisciplinary research, and the process for developing the Plan. Dr. Tabak reviewed the timeline for the Plan's development, which includes reviews by the public, the scientific community, other stakeholders, and decision makers and ensures submission to Congress in mid-December 2015.

Discussion Highlights

- The NIH will request each IC to refine their strategic plan over time to reflect the initiatives of the overall NIH Strategic Plan, thus ensuring commonality across the NIH while maintaining flexibility in the decisionmaking processes.

- The NIH Strategic Plan should provide a clearer distinction between setting priorities and enhancing stewardship. It also should elucidate other types of effects, including innovation and economic progress.

- The NIH considers various data, including the burden of disease, to measure change and ascertain effectiveness of scientific research.

## VIII. REVIEW OF GRANT APPLICATIONS

This portion of the meeting was closed to the public, in accordance with the provisions set forth in Sections 552(b)(c)(4) and 552(b)(c)(6), Title 5, U.S. Code and Section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. Appendix).[1] Members were instructed to exit the room if they deemed that their participation in the deliberation of any matter before the Council would represent a real or perceived conflict of interest. Members were asked to sign a conflict-of-interest/confidentiality certification to this effect. The *en bloc* vote for concurrence with the initial review recommendations was affirmed by all Council members present. During the closed session, the Council concurred with the review of 68 ORIP applications with requested first-year direct costs of $19,213,330. The Council also concurred with the review of 80 Common Fund (Early Independence Award) applications with requested first-year direct costs of $19,235,200.

## IX. COUNCIL OPERATING PROCEDURES

Dr. Anderson described changes in the Council's operating procedures. In addition to Common Fund Transformative Research and Early Independence Award applications, the Council now will also review the Common Fund Pioneer and New Innovator Award applications. The Council of Council's Operating Procedures document has been revised to reflect these changes.

Vote

A motion to approve the changes to the Council's Operating Procedures was forwarded and seconded. The motion passed unanimously.

## X. CONCEPT CLEARANCE #2: MODERNIZATION OF ANIMAL RESEARCH FACILITIES: SUPPORT FOR EQUIPMENT AND SPECIALIZED RESEARCH

Dr. Malgorzata Klosek, Director, Division of Construction and Instruments, ORIP, DPCPSI, presented a funding concept to modernize equipment and specialized research in animal research facilities. The NIH offers a unique program to support the infrastructure of animal research facilities. ORIP manages the Developing and Improving Institutional Animal Resources program, which was established in 1989 under

[1] For the record, it is noted that members absented themselves from the meeting when the Council discussed applications (a) from their respective institutions or (b) in which a conflict of interest may have occurred. This procedure applied only to applications that were discussed individually, not to "*en bloc*" actions.

the G20 grant funding mechanism. The grants fund renovations and upgrades of facilities, including equipment (e.g., HVAC, autoclaves, cage-washers, and cages), but do not support regular maintenance. ORIP issues a Program Announcement with a single receipt date per year and an award budget up to $500,000. In each of FYs 2013 and 2014, the program's total budget was $6.2 million, with about 65 applications received and about 15 awards made.

To ascertain the program's impact on NIH-funded animal model research, ORIP queried multiple sources, including an in-house assessment, ORIP RFI, Strategic Plan workshops, and input from G20 applicants and awardees. The inquiry found pressing needs for both specialized equipment (e.g., tagging equipment, quarantine cages, animal colony management equipment, and research instruments) and facilities to support specialized research (e.g., gnotobiotic facilities, phenotyping/genotyping facilities, surgical suites, and behavioral monitoring facilities). The conclusion was that with available funds, the program can broaden its reach and magnify its benefits to NIH-supported animal model research.

Dr. Klosek proposed a concept to publish two FOAs in FY2016 and subsequent years: (1) equipment for animal research facilities to serve specific research needs, with a budget between $35,000 and $250,000, and 10 to 20 awards expected per year; and (2a) revisions to Center Grants for modernization of animal research facilities, with a budget up to $500,000, and 5 to 10 awards per year; and in subsequent years to replace the option (2a) with (2b) modernization of an animal research facility to serve specific research needs, with a budget up to $2 million, and 2 to 3 awards expected per year.

Discussion Highlights

- Competitive renewals would be available to Center grants funded under P and some U mechanisms (competitive renewals were formerly called competitive supplement). The number of institutions that would be eligible to apply for the competitive renewal grants is greater than the number of institutions that ever applied to the G20 program during the past 10 years.

- Applicants who respond to the first FOA will be required to list the NIH-funded grants and grants funded by other Federal agencies, as well as which research programs at the institution would benefit from the purchase of proposed modernizations.

- The program concerns the renovation and update of existing facilities and cannot be used for new buildings.

Vote

A motion to approve the "Modernization of Animal Research Facilities: Support for Equipment and Specialized Research" was forwarded and seconded. The motion passed unanimously.

## XI. UPDATE ON THE EARLY INDEPENDENCE AWARDS

Dr. Wilder presented recommendations for eligibility adjustments to the Common Fund Early Independence Award (EIA). The EIAs have been made for the past 4 years. The award program aims to support creative young scientists to pass almost immediately from completing a Ph.D. to running their own laboratories. Candidates must receive their terminal research degree or complete medical residency within 12 months of the application submission date. Only two applications per institution, as defined by the DUNS number, may be submitted. In addition, the candidate and host institution must "match up" with each other and prepare the application together, with the candidate providing the research plan and the institution providing the facilities and environment section. The focus in the application and review process is on the quality of the candidate and the support and commitment of the host institution.

The Common Fund program considered whether the EIA initiative is fostering earlier independence for awardees. An operational definition, rather than a title, was used to distinguish who is independent and who is not. If the intent of the EIA is to allow earlier independence, the candidates would be expected to move from a non-independent position to an independent position. Analyses of the independence status of applicants and awardees at the time of application were conducted and indicated that a significant percentage of applicants already were independent, and that the review process was enriching a percentage of independent candidates.

Dr. Wilder presented recommendations to change the eligibility criteria for the EIA. At the time of application, the recipient must not yet have assumed an independent position (functionally defined). This will narrow eligible applicants to the originally intended pool. In addition, the institution must describe explicitly the position that will be provided if an award is made and what position, if any, will be available if an award is not made. How the award will foster the independence of the awardee also must be described.

Discussion Highlights

- Members expressed overall enthusiasm for the EIA eligibility change to limit awards to those who are not independent at the time of application, which reflects the original intent of the program.

- A variety of models were considered before the EIA was launched, and the institutional commitment to the young investigators—including guarantee of a position and space in which to work, as well as a mentoring component—was deemed highly important.

- The eligibility change disallows potential applicants who already are established in academic positions and meet eligibility criteria for an R01 award. The EIA provides a special opportunity for the best young researchers who would not have the ability to apply for an R01. The pool is expected to be small as most young researchers benefit from postdoctoral training.

- There is an opportunity for qualitative interviewing to ascertain from the institutions the impact and value of the award. NIH site visits have found a committed effort by institutions to integrate the awardee into the local community.

- The program was encouraged to evaluate the demographics and diversity of applicants and awardees and to identify opportunities to stem the leak of women and minorities from research careers at the postdoctoral level. An average of 1 to 2 underrepresented minorities receive the award in a given year; there does not appear to be a bias against minorities. Women comprise approximately 50 percent of the applications and 30 percent of the awards.

- The EIA is a visible award that enables investigators to commence their research program much faster that would otherwise be possible. Awardees include both M.D.s and Ph.D.s. Funding is $250,000 in direct costs per year for 5 years.

## XII. CONCEPT CLEARANCE #3: HIV/AIDS VACCINE SCHOLARS PROGRAM

Dr. Jack Harding, Division of Comparative Medicine, ORIP, DPCPSI, presented a Program Announcement concept on the HIV/AIDS Vaccine Scholars program. The development of an AIDS vaccine remains a high priority for the NIH. New approaches to vaccine development, including understanding key aspects of immunology and pathogenesis, require nonhuman primate (NHP) preclinical

models. There is a need to increase the number of early-stage investigators who use NHP models and who can collaborate with scientists and clinicians in designing human trials. Moving early-stage investigators to positions of independence is a high priority for the NIH, and the ORIP and the NIH Office of AIDS Research are collaborating on a joint initiative to develop a HIV/AIDS Vaccine Scholars program. The purpose of this initiative is to help early-stage investigators who are using NHP models in the area of AIDS vaccine research attain independence.

The Program Announcement will use the R25 grant mechanism to solicit applications from institutions that have primate capabilities to support up to three candidates for 3 years. Candidates must be early-stage investigators by the NIH's definition, specifically that they have not previously competed successfully as a PD/PI for a substantial independent research award (i.e., R01); can have competed successfully for an R03 or R21; and must be within 10 years of completion of the terminal degree. Associate professors or tenured faculty are not eligible. In addition, a candidate must have research space and support from the host institution. Examples of research topics include tests of new vaccines in NHP pre-clinical models; strategies to block early events in viral transmission, focused on understanding early virus-host interactions; new challenge models in NHPs for vaccine trials, including development of multi-clade SHIVs and HIV-adapted viruses; and B cell and mucosal immunity in NHP vaccine models.

Dr. Harding said that in addition to the applicants' being early-stage investigators, an advisory committee comprised of experts in NHPs and in human studies is required. Each early-stage investigator will be funded at approximately $350,000 total costs per year, for up to 3 years. A modest allowance will be provided to the institution for administering the program and supporting the advisory committee. The expected funding for FY 2016 is $1.5 million, supporting four to six early-stage investigators per year, and at least two sites supported per year. Dr. Harding noted a possible expansion in FY 2017 to include more early-stage investigators and possibly more sites. In addition to the standard yearly NIH progress reports, the advisory committee and NIH staff will assess the progress at the end of the second year, to help early-stage investigators plan for the third year of support.

Discussion Highlights

- The concept is not limited to a specific model, and investigators conducting research using off-site models would be eligible to apply.

- The total funding of $350,000 includes direct and indirect costs. Early-stage investigators may have other funding support, such as R21 or K awards that will help leverage the R25 award. Past efforts to engage early-stage investigators in HIV vaccine research using nonhuman primates have been successful.

Vote

A motion to approve the "HIV/AIDS Vaccine Scholars program" was forwarded and seconded. The motion passed unanimously.

## XIII. RETIRING COUNCIL MEMBER PERSPECTIVES

Dr. Clements, Dr. White, Dr. Schwob, Dr. DeKosky, Dr. McClain, Dr. Goekler, and Dr. Haigwood reflected on their experiences serving on the Council of Councils, offered suggestions to improve the ability of Council members to give their input, and provided advice to new Council members.

Dr. Clements reflected on the different focus of the Council compared with other advisory boards and encouraged the NIH to provide more orientation to new Council members to acclimate them more quickly to their roles and responsibilities.

Dr. White expressed appreciation for the enriching experience and for how much he learned, particularly about the Common Fund, which fosters research across the NIH ICs. He commented favorably on the Council's processes and transparency, which were evident, for example, in the Chimpanzee Research Use Panel, and reflected on the positive interactions with DPCPSI staff and on an exceptional operation.

Dr. Schwob echoed Dr. White's comments and suggested that the benefits of the Common Fund program could be even more broadly distributed if, for example, the IC Directors and staff emphasize the Common Fund initiatives that are available when they attend annual meetings of the scientific societies that share relevant topical concerns.

Dr. DeKosky agreed that the Council's activities are quite different from those of other councils or review committees, particularly in terms of the much broader topical issues and global approach. He attended the introduction session for new members for the past 2 years and noted how attending both years helped him to function better as a Council member. He recommended more dissemination about the Council's purview, expertise, and activities to the NIH investigator community, as well as extension of member terms to 4 years or renewal on the Council, which would help to reduce the amount of training needed for members.

Dr. McClain stressed information dissemination as an important role of the Council, with members providing valuable trans-NIH information to individual ICs, fellow academicians and administrators, and Congress. Members also could serve as conduits to raise the NIH's awareness of issues extant in the external community.

Dr. Goekler reiterated the significant learning curve involved in serving as a Council member and expressed appreciation to the NIH staff for their accessibility, helpfulness, and patience throughout the learning process. She also noted the value in having a public representative present on the Council and expressed a desire to see greater racial/ethnic diversity.

Dr. Haigwood appreciated the learning opportunity provided by serving on the Council and also noted the chimpanzee decision as a specific example of how the Council raised awareness of the need for further education and ongoing sensitivity in how people understand the value of research components. She remarked on the balance that the NIH maintain between enthusiasm for the latest technologies and approaches provided by the Common Fund program and adequate support for basic research. She thanked Dr. Anderson and DPCPSI staff for their leadership and dedication to the NIH mission.

## XIV. CLOSING REMARKS

Dr. Anderson informed the Council of its future role in advising on sexual and gender minority research at the NIH. He stated that Dr. Collins had charged the Sexual and Gender Minority (SGM) Research Coordinating Committee with developing and coordinating possible research and training opportunities at the NIH as a result of the recommendations of the Institute of Medicine's (IOM) report on lesbian, gay, bisexual, and transgender health issues. The NIH 2016-2020 Strategic Plan to Advance Research on the Health and Well-being of Sexual and Gender Minorities will be released for public comment. Based on the IOM's recommendation, an Office of SGM Research is being proposed within DPCPSI. Dr. Karen Parker, an NCI employee, is on detail to DPCPSI to help stand-up the new office. Council members were encouraged to express their interest in serving on an SGM Working Group.

Dr. Anderson thanked the Council members and speakers for their contributions at this meeting. He reminded the members that the next Council meeting will be held on January 29, 2016.

## XV. ADJOURNMENT

Dr. Anderson adjourned the meeting at 3:10 p.m. on September 1, 2015.

## XVI. CERTIFICATION

I hereby certify that, to the best of my knowledge, the foregoing summary minutes are accurate and complete.

10-22-2015

James M. Anderson, M.D., Ph.D.
Chair, NIH Council of Councils
Director, DPCPSI, OD, NIH

Date

10.22.2015

Franziska B. Grieder, D.V.M., Ph.D.
Executive Secretary, NIH Council of Councils
Director, ORIP, DPCPSI, OD, NIH

Date