DEPARTMENT OF HEALTH AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH
NATIONAL CENTER FOR RESEARCH RESOURCES

NATIONAL ADVISORY RESEARCH RESOURCES COUNCIL MEETING MINUTES MAY 22, 2007

The National Advisory Research Resources Council convened for its 136th session at 8:00 a.m. on Tuesday, May 22, 2007, in Conference Room 10, Building 31. Dr. Barbara M. Alving, Director, National Center for Research Resources (NCRR), National Institutes of Health (NIH), presided as Chair. The meeting was open to the public until 1:00 p.m., at which time it was closed to the public for the review, discussion, and evaluation of grant applications as provided in Sections 552b(c)(4) and 552b(c)(6), Title 5, U.S. Code, and Section 10(d) of Public Law 92-463.

COUNCIL MEMBERS PRESENT

Dr. Nancy J. Brown
Dr. Valerie Copié
Dr. Kenneth G. Cornetta
Dr. Roland F. Hirsch, Liaison Member, DOE
Dr. Cynthia Keppel
Dr. Barbara Knowles
Dr. Henry Lewis III
Dr. Bettie Sue Masters
Dr. Mark V. Pauly
Dr. Richard A. Rudick
Dr. Janet L. Smith
Dr. Tilahun D. Yilma
Ms. Sheila C. Zimmet

COUNCIL MEMBERS ABSENT

Dr. Machi F. Dilworth, Liaison Member, NSF
Dr. Kelly Garcia
Dr. Kevin B. Johnson
Dr. Thomas J. Rosol
Dr. Arthur W. Toga
Dr. M. Roy Wilson (present for closed session via teleconference)
Dr. Stuart M. Zola (present for closed session via teleconference)

SPECIAL INVITED GUESTS FOR OPEN SESSION

Dr. Thomas F. Budinger, Professor, Department of Bioengineering and Electrical Engineering, University of California, Berkeley
Dr. Alan Krensky, Director, Office of Portfolio Analysis and Strategic Initiatives, Office of the Director, NIH
Mr. Robert J. Berendt, Consultant, Robert J. Berendt Associates, Washington, DC

STAFF OF OTHER NIH COMPONENTS

Dr. Norka Ruiz Bravo, OER/OD
Dr. Margaret Snyder, OER/OD
Dr. Meredith Temple-O'Connor, NIGMS

OTHERS PRESENT

Mr. Matthew Bailey, Government Relations Manager, National Association for Biomedical Research, Washington, DC
Ms. Jennifer Ball, Research Assistant, Humane Society of the United States, Washington, DC
Ms. Kathleen Conlee, Director of Program Management, Animal Research Issues, Human Society of the United States, Washington, DC
Dr. Glenn Kubiak, Sandia National Laboratories, Albuquerque, NM
Ms. Michelle Rodrigues, SRI International, Menlo Park, CA
Ms. Hollie E. Stephenson, Lewis-Burke Associates, LLC, Washington, DC

OPEN SESSION

I. Call to Order: Dr. Barbara M. Alving, Director, NCRR

Dr. Alving welcomed Council members and guests to the 136th meeting of the National Advisory Research Resources Council.

II. Consideration of Minutes: Dr. Barbara M. Alving

The minutes of the Council meeting held on January 18, 2007, were approved as written.

III. Tribute to Dr. Stephen E. Straus: Dr. Barbara M. Alving

Dr. Alving informed the Council that Dr. Stephen Straus, Director of the National Center for Complementary and Alternative Medicine (NCCAM), had died of brain cancer the week before. During his directorship at NCCAM, Dr. Straus built a comprehensive research enterprise, championing efforts to establish the efficacy and safety of complementary and alternative medicine practices and upholding the rigorous standards of science. Research on complementary and alternative medicine grew threefold, guided by Dr. Straus's vision of an evidence-based integrative approach to health care for the public. Dr. Straus was an internationally recognized scientist who was also a senior investigator at the National Institute of Allergy and Infectious Diseases (NIAID). His bench-to-bedside research yielded insights into the pathogenesis and management of several viral and immunological diseases. Dr. Alving noted that the NIH had lost a great leader and outstanding scientist, and she extended condolences to Dr. Straus's family and friends.

IV. New Council Members: Dr. Barbara M. Alving

Five new members of the Council were introduced: Dr. Nancy J. Brown, Dr. Valerie Copié, Dr. Henry Lewis III, Dr. Mark Pauly, and Dr. Janet L. Smith.

Dr. Nancy J. Brown is the Robert H. Williams Professor of Medicine and Pharmacology at Vanderbilt University. She is nationally known for her research on blood pressure regulation and has been recognized for her commitment to promoting research among young physicians. She is a founder and former director of the Master of Science in Clinical Investigation program and was recently appointed Associate Dean for Clinical and Translational Scientist Development in the School of Medicine.

Dr. Valerie Copié is an Associate Professor of Biochemistry at Montana State University. Her laboratory specializes in nuclear magnetic resonance structural biology research. She has been the recipient of several awards, including an NIH NSRA Post-Doctoral Fellowship and an NSF-CAREER Advancement Award.

Dr. Henry Lewis III is the Professor and Director of Research Programs in the College of Pharmacy at Florida A&M University. His prior appointments include serving as Dean of the Colleges of Pharmacy at both Florida A&M and Texas Southern University, as well as serving as Interim President of Florida A&M. Dr. Lewis is the principal investigator for the Research Centers in Minority Institutions program at Florida A&M. His area of research interest is in sickle cell anemia.

Dr. Mark V. Pauly is the Professor of Health Care Systems, Business and Public Policy, Insurance and Risk Management, and Economics at the Wharton School of the University of Pennsylvania. He has focused much of his research on the individual insurance market, particularly how it might be used in combination with tax incentives to expand health insurance coverage. In addition to continuing his research on the private insurance market in the United States, he is studying the options for private health insurance in developing countries.

Dr. Janet Smith is a Professor of Life Sciences and Biological Chemistry at the University of Michigan. Her research focuses on understanding biological processes through the knowledge of the structures of key protein molecules. Dr. Smith has been a visiting scientist at the European Molecular Biology Laboratory and the European Synchrotron Radiation Facility in Grenoble, France, and brings her expertise as a lecturer at numerous international schools on structural biology and synchrotron radiation.

V. Personnel Update: Dr. Barbara M. Alving

Division of Biomedical Technology

- **Dr. Fred K. Friedman** joined NCRR in February 2007 as a Health Scientist Administrator. Dr. Friedman received his Ph.D. in chemistry from Columbia University in New York. He began his NIH intramural career as a Staff Fellow at the National Institute of Diabetes and Digestive and Kidney Diseases, studying hemoglobin structure-function, and then moved to the National Cancer Institute (NCI), where he was a Principal Investigator. His research was focused in the areas of macromolecular structure-function and mechanisms of drug and carcinogen metabolism.

- **Dr. Olga D. Brazhnik** joined NCRR in March 2007 as a Computer Scientist/Health Scientist Administrator. Dr. Brazhnik joins NCRR from the NIH Office of the Chief IT Architect, where she worked as a Computational Scientist, focusing on data and knowledge integration and collaborative technologies. Dr. Brazhnik earned her Ph.D. in polymer science from Moscow State University in Russia. Throughout her dual career in science and IT, she worked as the Chief Database Architect for Epidemic Outbreak Surveillance and COHORT projects with the U.S. Air Force Surgeon General's Office, contributed to the creation of several bioinformatics databases (ESTAP, DOME, SeedGenes) at Virginia Bioinformatics Institute, and conducted theoretical and computational multidisciplinary research at the James Franck Institute at the University of Chicago, Virginia Tech, and the Institute of Applied Physics of the Russian Academy of Sciences.

Office of Science Policy and Public Liaison

- **Ms. Shelly M. Pollard** joined NCRR in December 2006 as a Public Affairs Specialist. Ms. Pollard comes to NCRR from the NIH Office of the Director, Office of Communications and Public Liaison. She also has worked as a Budget Analyst at the National Institute of Mental Health, and she participated in the NIH Management Intern Program.

Office of Grants Management

- **Ms. Ruthann (Rudy) Rand** joined NCRR in March 2007 as a Grants Management Specialist. Ms. Rand comes to NCRR from the Center for Scientific Review, where she has worked since 1999.

VI. Legislative Update: Dr. Barbara M. Alving

On May 21, 2007, Dr. Alving participated in a FY 2008 Senate Appropriations Subcommittee Theme Hearing entitled, "A New Vision for Medical Research." Other Institute and Center (IC) Directors also participated, including Dr. Anthony

Fauci from NIAID, Dr. Patricia Grady from the National Institute of Nursing Research, Dr. John Niederhuber from NCI, and Dr. John Ruffin from the National Center on Minority Health and Health Disparities (NCMHD). This was one of five theme hearings that the Senate has held, and it was the first time in a decade that the Subcommittee heard testimony from individual IC Directors on the missions and goals of their ICs. Senator Harkin, Subcommittee Chair, led discussion in which many perceptive questions were raised. Dr. Alving was asked about efforts to train more investigators for the future, as Senator Harkin was especially concerned about the scientific research pipeline. Funding for the primate centers also was discussed.

Dr. Alving directed Council members to the Legislative Update in their binders for a review of several recent activities affecting NIH and NCRR.

VII. Budget Update: Dr. Barbara M. Alving

Dr. Alving noted that the President's budget was now available, and she then highlighted several recent activities related to it:

The President signed the Revised Continuing Appropriations Resolution of FY 2007, also known as the Joint Resolution, on February 15, 2007. The Joint Resolution replaces the three previously enacted continuing resolutions, provides funding through the end of FY 2007, and places a moratorium on earmarks. The goals of the Joint Resolution are to reverse a decline in new NIH research project grants (R01s), support first-time investigators, and expand funding for high-risk, high-impact research. Dr. Alving noted that the decline in new R01s had not been a major issue for NCRR, because these constitute a relatively small proportion of the NCRR portfolio.

The FY 2007 Joint Resolution provides NCRR with an increase of $34 million over the FY 2007 Congressional Justification estimate. It also includes the direct funding of the NIH Roadmap/Common Fund, which allows ICs to keep their Roadmap allocations in their budgets. NCRR has committed $10 million per year toward the Clinical and Translational Science Awards (CTSA), and—because of the direct funding of the NIH Roadmap/Common Fund—NCRR has provided the CTSA program with an additional $6.629 million from the allocation it was able to keep.

There will be some changes in programs; some have been redesigned with a lower funding commitment level. NCRR has approached the shifts in budget carefully. For example, the National Heart, Lung, and Blood Institute (NHLBI) will assume responsibility for some activities in the National Gene Vector Laboratories. In addition, the Joint Resolution reflects a one-time boost of $34 million for the Shared Instrumentation and High-End Instrumentation grant programs, the only two NIH programs providing essential equipment that is too expensive to be supported through individual research grants to NIH-supported investigators.

Because these grants are funded for only one year, this increase will not generate outyear commitments.

No funds were appropriated to NCRR for extramural construction.

VIII. Five-Year Strategic Planning and May 2 Workforce Planning Retreat: Dr. Barbara M. Alving; Mr. Robert J. Berendt, Strategic Planning Consultant

The advent of the CTSA program and the need for a new strategic plan presents a perfect opportunity to explore ways NCRR can fulfill its charge to transform clinical and translational research. The 2009-2013 plan will provide a valuable framework to strengthen NCRR's matrix of research programs during a very critical time.

Dr. Alving reported that the strategic planning process for 2009–2013 will involve clearly defining NCRR and its purpose, as well as working with the community to develop a strategic plan. Planning will be facilitated by Mr. Robert J. Berendt, a strategic planning consultant, who will ensure a transparent and comprehensive planning process. Mr. Berendt has worked with NCRR on previous strategic plans, and he is working with other ICs, including the Fogarty International Center, NIGMS, and National Institute of Environmental Health Sciences, and with other agencies, such as the Agency for Healthcare Research and Quality and the National Institute of Standards and Technology.

As a first step, senior staff attended a retreat on May 2 to discuss ways to integrate programs and to ensure that a strong workforce is in place to successfully accomplish NCRR program goals. Key discussions focused on how current NCRR programs support translational science and how these ongoing efforts can be integrated into the CTSA program.

The next step will involve working with the Advisory Council and NCRR stakeholders to identify scientific trends and the needs of the research community. Council members also are invited to participate in a strategic planning forum this December to help identify and prioritize recommendations. Integration across program lines will be emphasized. More information about the strategic planning process is available on the NCRR Web site at www.ncrr.nih.gov/strategic_plan/.

It is intended that the strategic plan will be a living document updated each year, and NCRR will continually seek input from Council throughout the process.

IX. Future Meeting Dates: Dr. Barbara M. Alving

The next Council meeting will be held on Tuesday, September 11, 2007.

X. NCRR Focus on Translational Research: Dr. Barbara M. Alving; Dr. Douglas M. Sheeley, NCRR: Dr. Franziska B. Grieder, NCRR; Dr. John D. Harding, NCRR; Dr. Shelia A. McClure, NCRR

CTSA Update: Dr. Barbara M. Alving

Dr. Alving reported that since the launch of the CTSA program, progress within and across CTSA institutions is already becoming apparent. Academic centers are developing new curricula, revamping organizational structures, initiating new pilot programs, and creating new partnerships with other medical and research disciplines.

A major goal of the CTSA initiative is to develop a national consortium of CTSA institutions that will work together to transform the discipline of clinical and translational research across the country. NIH/NCRR will oversee consortium-wide activities that are generated through trans-NIH CTSA subcommittees and their respective topic-specific CTSA committees. Since January, these committees have met and begun to identify their objectives and focus.

NARRC members are invited to visit CTSAWeb.org to stay informed of CTSA activities. This Web site provides information about upcoming events, ensures access to CTSA resources, and enhances communication. Features and services offered by the site are growing as the CTSA program expands and evolves.

The next set of CTSA applications are under review, and investigators and institutions have received their scores. Council members may be asked to review these applications before the September meeting. NCRR expects to fund up to eight awards in September 2007. Applications for FY 2008, which now allow for multiple principal investigators, will be due October 24, 2007, and be awarded in June 2008.

Dr. Alving reminded Council members of NCRR's long-standing commitment to enhancing research from basic discovery to clinical applications. NCRR Divisions are exploring opportunities to enhance interactions among their translational programs and the CTSA Consortium to further capitalize on research investments.

Biomedical Technology: Discovery to Practice: Dr. Douglas M. Sheeley, Health Scientist Administrator, Division of Biomedical Technology, NCRR

Dr. Sheeley discussed Biomedical Technology Research Resources (BTRRs), which serve as engines for translation of advances in physical sciences to biomedical research. Several modes of translation are available, including direct distribution, workshops, commercialization, and partnerships with clinical researchers. BTRRs are multidisciplinary and collaborative. Since 1962, the BTRR program has awarded 188 grants, and it has a long history of applications to both discovery and clinical research. BTRRs have made seminal contributions

in computation, imaging, microscopy, nuclear magnetic resonance, crystallography, and mass spectrometry. At present, 50 BTRRs are active.

Dr. Sheeley reviewed three ongoing translational projects:

- *In vivo Raman spectroscopy in the operating room during partial mastectomy.* This technique was performed by the Laser Biomedical Research Center at the Massachusetts Institute of Technology, in collaboration with Dr. Joseph Crowe at Cleveland Clinic. Normally, a surgeon removes tissue around a tumor to ensure the margins are appropriate for surgery. Here, a Raman probe within the biopsy needle assessed the margins *in vivo.* This technique allowed the team to distinguish among normal, fibrocystic, and cancerous tissues and to identify a site where the margin was not appropriate. As this technique becomes trusted, it will allow real-time decision making during an operation.

- *Closed-loop guidance and control for prostate intervention.* Developed by the National Center for Image-Guided Therapy at Brigham and Women's Hospital, this technique combines spectroscopy and computational methods to plan and carry out diagnostic and therapeutic procedures. Imaging was used to map prostate tissue and identify where a biopsy could be taken, and computers were used to drive a robot that could operate within the confined space of a 3-tesla MRI scanner. This allowed plans to be developed and revised in real time and could significantly improve outcomes in diagnosis and treatment.

- *Mass spectroscopy for diagnosis and research into congenital disorders of glycosylation.* This technique, developed by the Mass Spectrometry Resource for Biology and Medicine at the Boston University School of Medicine, combined expertise in carbohydrate characterization with experience in diagnosing disease. Children affected by general disorders of glycosylation present with symptoms of varying types and severity. Because of this complexity and the number of disorders, diagnoses are difficult and children often are misdiagnosed. The technique developed within this BTRR improved upon traditional diagnostic methods by using mass spectrometry to see precisely what glycoforms of a protein were present.

BTRR-developed technologies represent a significant investment in technological infrastructure that is leveraged not only by investigators, but also by NIH programs. One example is the Alliance of Glycobiologists for the Detection of Cancer Risk, led by the Cancer Biomarkers Research Group within the Division of Cancer Prevention at NCI. This alliance works to identify new biomarkers, provide clinical validation, and develop clinical tests. Built around the NCRR Glycomics Centers and the NIGMS Consortium for Functional Glycomics, the Alliance represents a direct translation of BTRR technologies to clinical applications.

Dr. Sheeley concluded his presentation by discussing ways BTRRs can advance the goals of the CTSA program. BTRRs can become a part of the CTSA community and fully engage the process now under way, bringing the experience and perspectives of physical science. BTRRs also can work to understand unmet technological needs, provide access to highly developed infrastructure, and provide training for physicians and scientists. They also can form partnerships with clinical researchers to bring relevant technologies forward and make them transparent, trusted tools in both the research and health care delivery communities.

Animal Models: The Rosetta Stone of Translational Research: Dr. Franziska B. Grieder, Director, Division of Comparative Medicine, NCRR; Dr. John D. Harding, Health Scientist Administrator, Division of Comparative Medicine, NCRR

Dr. Grieder pointed out that the Rosetta Stone used three different scripts and two languages to communicate among government, priests, and various officials. Since the development of the smallpox vaccine based on similarities between the cowpox and smallpox viruses, animal models have served in a similar way to facilitate discoveries and their translation to clinical applications. Animal models have contributed to advances against infectious diseases and to development of surgical procedures, drug safety evaluations, anesthesia techniques, and diagnostic testing. The NCRR supports many animal models, including rodents, primate species, zebrafish, and such lower models as *C. elegans* and *Drosophila.* Researchers strive to use the lowest model possible to obtain the results they seek.

Contrary to the popular conception of drug discovery as a linear process, it is often an integral process, where several stages influence each other. Discoveries feed both upstream and downstream to influence future developments. At the center of this process is knowledge, which is based on information and which enables the entire process. Animal models provide a foundation for knowledge, allowing investigators to collect usable data at various stages of drug discovery and development.

Dr. Harding illustrated these points by discussing the dopamine transporter and cocaine addiction. The biology of cocaine addiction has been studied by using animal models, primarily rodents and nonhuman primates. Research in these models has shown that cocaine inhibits the dopamine transporter, and researchers have developed a cocaine analog, Altropane®, to visualize the dopamine transporter in monkeys. These data led to patent licensing, commercial development, and preclinical testing of Altropane-based single photon emission computed tomography and positron emission tomography imaging for patients with Parkinson's disease or attention deficit hyperactivity disorder (ADHD). Altropane is now in Phase III trials as a diagnostic tool for Parkinson's disease and in Phase II trials as a diagnostic tool for ADHD. This work was made possible by the use of animal models.

Dr. Grieder pointed out the large amount of overlap among NCRR-funded programs, such as the CTSAs, National Primate Research Centers, and NCRR training grants for veterinarians (T32, T35). These programs provide several opportunities for collaboration. For example, two CTSAs are co-located with National Primate Research Centers and engage in ongoing interactions with them. To further incorporate animal models in translational research, the Division of Comparative Medicine plans to:

- train translational scientists through animal resource tutorials, publications, Web-based tools, and rotations of fellows to the Division;

- hold annual conferences to share information; and

- conduct pilot collaborative projects between investigators from CTSAs and animal resource centers.

Translational Research: Developing the Research Environments for Success and Inclusion: Dr. Shelia A. McClure, Health Scientist Administrator, Division of Research Infrastructure, NCRR

Dr. McClure outlined the programs within the Division of Research Infrastructure that provide resources to enhance the competitiveness of investigators in developing institutions and that provide funding to expand, remodel, and renovate existing research facilities or construct new research facilities. The major programs include the Research Centers in Minority Institutions (RCMI) program, the Institutional Development Award (IDeA) program, and the Facilities Improvement Program (FIP). Collectively, these programs have been crucial in developing research infrastructure in support of translational research in minority institutions, small developing institutions, and large academic health centers in all 50 states and Puerto Rico.

Examples of research activities and infrastructure that facilitate the inclusion of diverse groups of institutions and individuals in translational research were described. Some of these activities included:

- *Comprehensive Centers on Health Disparities*, cooperative agreements in the RCMI program that provide resources to recruit experienced investigators to minority institutions and their research teams. This program fosters research among academic health centers, community health providers, and lay communities in such areas as HIV/AIDS, diabetes, chronic kidney disease, and stroke. In some cases, NCRR has collaborated with categorical ICs, such as NIAID, National Institute of Mental Health, National Institute of Neurological Disorders and Stroke, NHLBI, and NCMHD, providing support for these centers.

- *IDeA Centers of Biomedical Research Excellence*, such as the center for Alaskan Native Health Research at the University of Alaska, Fairbanks, that focuses on cultural understanding of perceptions of weight and diabetes; biomarkers of dietary intake and diet records; and nutrients and contaminants in Yup'ik food sources.

- *IDeA Networks of Biomedical Research Excellence*, such as the Appalachian Cardiovascular Research Network at Marshall University in West Virginia, where studies focus on the genetic basis of familial hyper-triglyceridemia and on the identification of gene targets for preventive and therapeutic interventions.

- *IDeANet*, a networking project that enhances IT infrastructure for health research and training, thereby supporting research and collaboration among researchers across the nation. NCRR supports appropriate staff, information technology hardware and software, and access for high-bandwidth biomedical science applications.

- *The RCMI Translational Research Network*, a cooperative research network that will facilitate clinical and translational research in such areas as cancer, cardiovascular disease, HIV/AIDS, diabetes, renal disease, and other diseases that disproportionately affect minority populations. This network will enhance the capability for collaborations among NCRR programs and with the broader community.

The Division of Research Infrastructure has played and will continue to play a major role in translational and community-based research. Future initiatives and activities will focus on: 1) developing community-based research infrastructure to promote interdisciplinary, multisite collaborations among academic researchers across programs, community health care providers, and community partners; 2) promoting collaborations across NCRR, NIH, other federal programs and non-federal programs; and 3) facilitating the development of a young and diverse group of clinical investigators to improve health outcomes for all generations to come.

XI. Office of Portfolio Analysis and Strategic Initiatives: Dr. Alan M. Krensky, Director, OPASI

Dr. Krensky reviewed the NIH Reform Act of 2006, which establishes a Division of Program Coordination, Planning, and Strategic Initiatives, establishes a Common Fund to support trans-NIH research, creates a Council of Councils to guide trans-NIH priorities, establishes a Scientific Management Review Board to oversee evaluation or organizational structures and authorities used for improvements, and initiates a public process to review potential organizational changes. The Common Fund, which will subsume the NIH Roadmap, represents

about 1.7% of the NIH budget, or $483 million. Congress recently voted to fund OPASI directly.

Dr. Krensky then discussed the vision and goals for OPASI, which aims to give NIH ICs the tools, methods, and information necessary to improve management of their large and complex scientific portfolios. With several other routes of input, the Office will identify emerging areas of scientific opportunity or public health challenges and will accelerate investments in these areas, focusing on those that involve multiple ICs. In addition, OPASI will coordinate and make more effective use of NIH-wide evaluation processes.

The Director of OPASI reports directly to the NIH Director and is advised by a steering committee of IC Directors. OPASI comprises three divisions. The Division of Resource Development and Analysis will analyze and assess public health needs and burdens of illness to evaluate NIH portfolios. The Division of Strategic Coordination will work across all ICs to coordinate NIH-wide planning and provide an incubator space for trans-NIH initiatives such as the Roadmap. The Division of Evaluation and Systematic Assessments will plan, conduct, coordinate, and support program evaluations for ICs, trans-NIH initiatives, and compliance with the law. Dr. Krensky assured Council members that OPASI is not a 28th IC; rather, it is a services organization of, by, and for the existing 27 ICs.

The success of OPASI will be measured in its ability to fill gaps, eliminate redundancies, and add value to strategic planning and the NIH portfolio. Science is first among the factors for success. Other factors include evidence-based planning, transparency, communication, and the ability to manage change.

XII. Evaluation Report for Biomedical Technology Research Resources Program: Dr. Thomas F. Budinger, University of California, Berkeley

Dr. Budinger discussed recommendations from an expert panel of senior scientists, which met on April 13, 2007, to evaluate the BTRR program. This panel was charged with evaluating the effectiveness of the program, evaluating the impact of the program in the scientific fields it represents, and examining the five components of the BTRRs.

The panel concluded that:

- The BTRR program has been a unique tool in furthering the NIH mission and has provided a means for integration among physicists, engineers, biologists, and physicians. The BTRR program is not easily replaced by Roadmap initiatives or NCI P50 awards.

- The flexibility of the program is a strength, but reviewers need to be instructed about how to evaluate applications based on the five components of

technology research and development, collaboration, service, dissemination, and training. For example, reviews of BTRRs that are strong in service, such as those offering synchrotron light source activities, should weigh service accordingly, whereas other programs might receive more weight in technology research and development.

- Funding has been level relative to 1975 dollars, which means providing mechanisms to increase distribution and talent relative to the CTSAs could occur only through cancellation and attrition. The panel thought that this would be a mistake.

- The BTRR program should be the entity to provide technology to enhance CTSAs. However, addressing this need should not distract from successful BTRRs that specialize in basic science. To lose such BTRRs in order to enhance translation would harm the future evolution of new technologies.

- Computational informatics and systems biology need more attention. New instrumentation and measurements on patients and samples generate massive amounts of data in genomics, proteomics, and metabolomics. These data must be related to phenotype and used to form hypotheses related to clinical science.

- It is not clear that BTRRs attract the best investigators. It may be that investigators do not understand the philosophy of the BTRR program and, therefore, turn away due to their fear of service requirements. Experts in a core technology may be too junior to launch full-scale BTRRs. Roadmap initiatives may have attracted would-be BTRR investigators. NCRR should verify these suspicions, investigate methods to better advertise the program, institute "pre-programs" or a two-phase mechanism similar to the P20/P50 mechanism used by NCI, and place more emphasis on R01 initiatives.

- Although the program has been outstanding overall, NCRR should make a concerted effort to provide metrics for the quality and significance of BTRR contributions, beyond the number of collaborators, publications, and other items required from BTRR directors. NCRR should determine whether innovations, trainee records, the contributions of collaborators, and new technologies disseminated by BTRRs are of major significance to the NIH mission and essential for the future.

- A BTRR external advisory committee should be implemented to assist Council and NCRR leadership in evaluating the balance and quality of individual BTRRs, as well as the integration of BTRRs with CTSAs. This committee also can help staff develop metrics for assessing the quality of BTRRs and develop methods to encourage BTRR collaborations with industry, foundations, and federal and state agencies. The panel is not suggesting that the recommended committee review proposals, but it is

suggesting that the committee provide assistance to the Council for applications that are more difficult to review.

Following further discussions among the panel, the Council, and NCRR leadership, NCRR will inform the evaluation panel of the actions taken in response to these recommendations.

XIII. Cryopreservation Meeting Report: Dr. William F. Rall, Health Scientist Administrator, Division of Comparative Medicine, NCRR

Dr. Rall updated the Council on the workshop entitled "Achieving High-Throughput Repositories for Biomedical Germplasm Preservation," which was co-sponsored by the National Institute of Child Health and Human Development and held April 10–11, 2007, in Natcher Conference Center on the NIH Campus. The workshop brought together 75 participants from the United States and United Kingdom. These participants included experts from several disciplines, including cryobiology, animal germplasm, husbandry, animal health, biosecurity, reproduction, and genetics, as well as resource managers, industry representatives, U.S. Department of Agriculture staff, and NIH intramural and extramural staff. The workshop, which focused on five animal models used for translational research, yielded five recommendations:

- Encourage the development of high-throughput and scaleable technologies for germplasm collection, evaluation, processing and cryopreservation.

- Establish multi-disciplinary teams to establish new approaches to the collection, cryopreservation, and distribution of germplasm for high-priority translational species.

- Support research on biosecurity of cryopreserved animal germplasm, and the detection and elimination of laboratory animal pathogens that might compromise research findings.

- Support research to address long-standing bottlenecks to cryopreservation of animal germplasm, such as cold shock, chilling injury, protocol optimization, male-to-male variation.

- Support novel "high-risk/high-return" preservation technologies that are not dependent on freezing or cryopreservation and break new ground.

The advisory group for the workshop developed a commentary based on this workshop and submitted it for publication in *Biology of Reproduction.*

XIV. Regional Meetings Update: Dr. W. Fred Taylor, Health Scientist Administrator, Division of Research Infrastructure, NCRR

Dr. Taylor discussed two workshops designed to foster collaborative, community-based clinical and translational research. The first was held May 15, 2007, in Bethesda, in conjunction with the AHRQ 2007 Practice Based Research Network National Research Conference. The second will be held in Los Angeles in September 2007. These workshops aim to identify strategies and best practices to facilitate sustainable, community-based, clinical and translational research and to address health disparities in underserved populations. Workshop participants include academic health researchers, community health care providers, community advocacy organizations, state and local public health departments, and other federal agencies that support health research and health care, including AHRQ, the Centers for Disease Control and Prevention, the Health Resources and Services Administration, and the Indian Health Service. The information gathered from the first workshop will be presented before the January 2008 Council meeting.

XV. Concept Clearances: Dr. Gregory K. Farber, Health Scientist Administrator, Division of Biomedical Technology, NCRR

Dr. Farber provided an update on the Biomedical Informatics Research Network (BIRN) and presented two concept clearances related to data-sharing infrastructure. The BIRN program aims primarily to provide an infrastructure that will allow researchers to share data and the tools to analyze those data. The program is supported through four U24 awards, but the BIRN infrastructure is ready to accept users from outside the institutions involved in the current awards. The Center for Information Technology at NIH has used the BIRN infrastructure to federate data in the National Database for Autism, version 1.0 of which is now available to NIH intramural researchers and the Autism Centers of Excellence. Version 1.1 will be available to the public in October 2007.

NCRR is requesting clearances for two funding opportunity announcements (FOAs) to support users who either have substantial biomedical imaging data or who have new tools they want to share with the community. These announcements will support work in areas outside biomedical imaging.

- The first FOA will focus on data ontology for many users working in areas where none is available. The FOA will facilitate the description of the vocabularies these people use for their data sets and the construction of an ontology to allow others to use their data.

- The second FOA will focus on data and tool federation. To use a sophisticated infrastructure like BIRN or NCI's caBIG, new users must format data appropriately and learn how to use key components of that infrastructure.

Awards made under these announcements will allow users to modify existing tools or data so that they can use emerging NIH-funded data-sharing infrastructures. The FOAs have been discussed throughout NIH, and many ICs appear willing to participate in both FOAs.

The Council agreed with these concepts.

XVI. Chimpanzee Management Plan Working Group Report: Dr. Barbara M. Alving; Ms. Sheila C. Zimmet, Associate Dean, Weill Medical College of Cornell University

In 1995, NCRR initiated a breeding moratorium on NCRR-owned and supported chimpanzees. The Chimpanzee Management Plan Working Group was formed soon after to periodically assess the need for chimpanzees in research. This working group is a fact-finding body composed of nongovernment members with a wide range of scientific and nonscientific expertise. Three Council members—Dr. Barbara Knowles, Dr. Stuart M. Zola, and Ms. Sheila C. Zimmet—serve on the working group.

The last time this issue was considered, NCRR decided to extend the moratorium through December 2007, with the intent to consider the issue prior to that date. As reported by Ms. Zimmet, the Working Group met on March 19, 2007, at which time the breeding moratorium was one of several issues discussed. The group discussed the demographics of research chimpanzees; the use of chimpanzees in hepatitis research; an October 2006 meeting on chimpanzees held at Emory University; and the NCRR funding situation, including expected and existing obligations and the costs associated with long-term care of the chimpanzees.

The U.S. population of research chimpanzees numbers 1,000, 50% of which are owned and supported by NCRR. Because of age or infectious disease, not all the chimpanzees in the research population are available for research. Fifty-nine births per year would be needed to maintain the current population of chimpanzees. Without any new births, the research chimpanzee population would cease to exist in 30 years. Development of hepatitis B vaccine represents a success story for the use of chimpanzees in research, as chimpanzees provided the only model for this work. Chimpanzees also might be the appropriate research model for other emerging infectious diseases, pharmacokinetics, pharmacodynamics, comparative genomics, and monoclonal antibody evaluation.

The Working Group agreed unanimously that the research chimpanzee population is an invaluable research tool that provides the only model for certain essential research, and that lifetime support of research chimpanzees is essential. The group also noted, however, that NCRR funding is flat to slightly reduced, and it pointed out that any recommendation that includes breeding or expanding the resource should include ideas for non-NCRR funding. Although the Working Group did not make a specific recommendation on the moratorium, it did suggest that each

Primate Center pursue alternative funding options and develop comprehensive business plans. Such business plans would include plans for retirement of chimpanzees no longer being used for research, partnerships with pharmaceutical companies, consolidation of primate resources, and a consortium approach with other federal and/or nonprofit organizations.

Dr. Alving noted that NCRR agrees with the importance of chimpanzees to biomedical research and recognizes its fiduciary responsibilities to maintain the health and well-being of the animals in its care. The Center is committed to lifetime care for these chimpanzees, but it also must fulfill its commitments to support other programs and resources. After careful review and discussion, the NCRR has determined that it does not have the financial resources to support the breeding of the chimpanzees it owns or supports. NCRR will continue to honor its commitment to care for these animals, including the federal sanctuary.

CLOSED SESSION

This portion of the Council meeting was closed to the public in accordance with the determination that it was concerned with matters exempt from mandatory disclosure under Sections 552b(c)(4) and 552b(c)(6), Title 5, U.S. Code and Section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. Appendix 2).

Council members discussed procedures and policies regarding voting and confidentiality of application materials, Committee discussions, and recommendations. Members absented themselves from the meeting during discussion of and voting on applications from their own institutions or other applications in which there was a potential conflict of interest, real or apparent.

XVII. Application Review

The Council reviewed 166 applications (with total direct costs of $94,980,855). The Council concurred with the review of all applications.

ADJOURNMENT

The Council adjourned at 2:00 p.m. on May 22, 2007.

CERTIFICATION

We hereby certify that, to the best of our knowledge, the foregoing minutes and supplements are accurate and complete.

Barbara Alving 8/09/07

Dr. Barbara M. Alving
Chair, National Advisory Research Resources Council
and
Director, National Center for Research Resources, NIH

Date

Louise Ramm 8/09/07

Dr. Louise E. Ramm
Executive Secretary, National Advisory Research Resources Council
and
Deputy Director, National Center for Research Resources, NIH

Date

These minutes will be formally considered by the Council at its next meeting; corrections or notations will be incorporated into the minutes of that meeting.

Attachment:
Council Roster

NOTE: Open Session materials are available from the Executive Secretary or the Committee Management Office, NCRR.