



National Arthritis and  
Musculoskeletal and  
Skin Diseases Advisory Council

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# **MINUTES OF MEETING**

**January 17, 2006**

**DEPARTMENT OF HEALTH AND HUMAN SERVICES  
PUBLIC HEALTH SERVICE  
NATIONAL ARTHRITIS AND MUSCULOSKELETAL  
AND SKIN DISEASES ADVISORY COUNCIL**

**MINUTES OF THE 58th MEETING**

**January 17, 2006  
8:30 a.m. to 4:00 p.m.**

**I. CALL TO ORDER**

The 58th meeting of the National Arthritis and Musculoskeletal and Skin Diseases Advisory Council was held on January 17, 2006, at the National Institutes of Health (NIH) Campus, Building 31, Conference Room 6. The meeting began at 8:30 a.m.

**Attendance**

Council members present

Dr. Graciela S. Alarcon  
Dr. Kevin Campbell (Ex Officio)  
Dr. Gena R. Carter  
Ms. Carmen Cheveres de Mummey  
Dr. Lee Green  
Dr. Bevra H. Hahn (participated via teleconference)  
Dr. Joshua Jacobs  
Dr. Brian L. Kotzin (participated via teleconference)  
Dr. Martin J. Kushmerick  
Ms. Patricia McCabe  
Dr. Jack E. Parr  
Dr. Lawrence G. Raisz  
Dr. Randy Rosier  
Dr. Steven L. Teitelbaum  
Ms. Sharon F. Terry  
Dr. Jouni J. Uitto

Council members not present

Dr. Robert J. Oglesby (Ex Officio)  
Dr. Raymond Scalettar  
Dr. John R. Stanley

## **Staff and Guests**

The following National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) staff and guests attended:

### Staff

Dr. Deborah Ader  
Mr. Luis Arvelo  
Dr. Janet Austin  
Dr. Carl Baker  
Dr. Michael Bloom  
Mr. Gahan Breithaupt  
Ms. Anne Connors  
Ms. Teresa Do  
Mr. Timothy Edgerton  
Mr. Ray Fleming  
Ms. Claire Gooding  
Ms. Valerie Green  
Dr. Elizabeth Gretz  
Dr. Steven J. Hausman  
Ms. Jane Hymiller  
Ms. Bonnie Jackson  
Dr. Stephen I. Katz  
Dr. Cheryl A. Kitt  
Dr. Gayle Lester  
Ms. Helen Lin  
Ms. Anita Linde  
Dr. Joan McGowan  
Ms. Leslie McIntire  
Mr. Robert Miranda-Acevedo  
Dr. Alan N. Moshell  
Ms. Melinda Nelson  
Mr. Craig Newcomb  
Dr. Glen Nuckolls  
Dr. John O'Shea  
Dr. James Panagis  
Ms. Tondalayo Royster  
Ms. Karin Rudolph  
Ms. Beverly Russell  
Dr. Susana A. Serrate-Sztein  
Dr. William Sharrock  
Dr. Richard Siegel  
Ms. Sheila Simmons  
Ms. Helen Simon  
Ms. Robyn Strachan

Ms. Yen Thach  
Mr. Michael Toland  
Dr. Madeline Turkeltaub  
Dr. Bernadette Tyree  
Mr. Jon Webster  
Dr. Ping Wang  
Dr. Yan Wang

Guests

Ms. Jane Bentoni  
Ms. Roberta Biegel  
Ms. Patti Brandt  
Ms. Gretchen Bretsch  
Mr. Dale Dirks  
Ms. Tanya Dougans  
Mr. Charles Frederick  
Ms. Christy Gilmour  
Ms. Leslie Hanrahan  
Ms. Karen Hasson  
Ms. Darlene Kerr  
Dr. Raynard Kington  
Dr. Story Landis  
Dr. Michael Lenardo  
Ms. Joan Manny  
Ms. Rebecca Minnillo  
Mr. Jon Retzlaff

Other NIAMS staff members and guests also were present. Dr. Stephen Katz, Director of the NIAMS, chaired the meeting.

II. CONSIDERATION OF MINUTES

A motion was made, seconded, and passed to accept the minutes of the 57th Council meeting, held on September 13, 2005.

III. FUTURE COUNCIL DATES

Future Council meetings have been confirmed for the following dates:

May 23, 2006  
September 26, 2006  
February 27, 2007  
June 12, 2007  
September 27, 2007

Council members were asked to note these dates and were informed that dates for Council meetings in 2008 will be finalized and relayed to them soon.

#### IV. DIRECTOR'S REPORT AND DISCUSSION

##### **NIAMShorttakes**

The NIAMShorttakes, prepared by Mr. Ray Fleming, focuses on changes within the NIAMS Intramural Research Program and introduces the Institute's new Scientific Director and Clinical Director. The Shorttakes also provides a detailed review of recent research advances and other updates; Dr. Katz encouraged Council members to read the Shorttakes, which is available online.

##### **New Council Members**

Dr. Katz welcomed four new members of the Council as well as one *ad hoc* member. *Ad hoc* member Dr. Kevin Campbell is the Roy Carver Biomedical Research Chair of Physiology and Biophysics and Neurology as well as the Interim Chair in the Department of Physiology and Biophysics and an Investigator with the Howard Hughes Medical Institute at the University of Iowa. Dr. Campbell brings expertise in issues related to muscle diseases and molecular medicine to the Council, and serves as Director of the Iowa Wellstone Muscular Dystrophy Research Center.

Ms. Carmen Cheveres de Mummey has served as a member of the National Psoriasis Foundation Board of Trustees, and as a member of the National Health Council, representing the Skin Disease Coalition. Dr. Lee Green is an Associate Professor in the Division of Health and Safety at Texas A&M University's College of Education and Human Development. He also serves as the Director of the University's Center for the Study of Health Disparities. Dr. Joshua Jacobs is the Associate Dean for Research Development, Associate Chairman for Academic Programs in the Department of Orthopedic Surgery, the inaugural Crown Family Professor of Orthopedic Surgery, and the Director of the Orthopedic Residency Program at Rush University Medical Center. Ms. Patricia McCabe is a Public Information Specialist for the U.S. Supreme Court and serves as the Chair of the Research Committee of the National Marfan Foundation Board of Directors. She also serves as an Advisor to the Social Behavioral Research Branch of the National Human Genome Research Institute.

##### **Personnel Changes**

Dr. John O'Shea has been appointed as the Institute's new Scientific Director of the Intramural Research Program. Dr. Dan Kastner has been appointed as Clinical Director of the NIAMS Intramural Program. Dr. Kastner heads the Genetics and Genomics Branch at the Institute. Dr. Katz recognized and thanked

Dr. Paul Plotz, for his leadership in serving as NIAMS' Acting Scientific Director of the Intramural Research Program.

In the Extramural Program, Dr. Carl Baker, Chief of the Cell Regulation and Translation Section in the Laboratory of Cellular Oncology at the National Cancer Institute's Center for Cancer Research, has been named as NIAMS' Acting Program Director for Skin Biology and Skin Diseases. Dr. Michael Bloom has joined the NIAMS as a Scientific Review Administrator. Before joining the NIAMS, he worked at Human Genome Sciences, Inc. Mr. Michael Toland has accepted the position of Science Management Coordinator for the NIAMS Extramural Program.

In the Office of the Director, Ms. Anita Linde has been named Director of the Office of Science Policy and Planning. Before serving in this capacity, she was a Special Assistant to the Director in the NIH Office of Communications and Public Liaison. Mr. Luis Arvelo, formerly of the Indian Health Service, is now a Management Analyst in the Management Policies, Programs, and Initiatives Branch.

Before providing the Council with an update on the budget and congressional activity, Dr. Katz noted that he has been asked to serve on the National Aeronautics and Space Administration's National Advisory Council. He also congratulated Council member Ms. Sharon Terry, President and Chief Executive Officer of the Genetic Alliance, on receiving an honorary doctorate degree from Iona College.

### **Update on Budget and Congressional Activity**

In Fiscal Year (FY) 2005, the NIAMS funded 244 new and competing continuing applications, for a success rate of 20.2 percent; the overall NIH success rate is estimated to be 22.3 percent. A table displaying actual dollar levels by budget category for FY 2005 is available on the NIAMS Web Site at <http://www.niams.nih.gov/an/budget/budget05.htm>.

After a series of continuing resolutions, the NIH has received an appropriation for FY 2006. The initial conference level for the NIH was essentially at the original President's Budget request of \$28.7 billion; however, all discretionary accounts have received an across-the-board reduction of 1 percent. Therefore, the net amount for the NIH is approximately 28.5 billion. The net amount proposed for the NIAMS is \$507.9 million, including funds to be transferred for Roadmap activities. This amount represents a decrease of \$3.2 million below the FY 2005 level.

To help ensure the availability of an adequate pool of funds for new and competing continuation awards, the NIH has directed that the noncompeting commitment for every research project grant (RPG) will be reduced by 2.35

percent from the FY 2006 commitment of record. This reduction will be applied to all remaining years of the grant. Other mechanisms have been reduced to below FY 2005 levels as well. At this time, an overall success rate of approximately 18.4 percent is estimated (the success rate is determined by the number of applications paid and by the number of applications received). Because the funding levels are not yet final, the Institute has developed an interim funding plan for FY 2006, which is available on the NIAMS Web Site. It is anticipated that some of the interim paylines will improve when the full budget picture becomes clearer.

Dr. Katz reminded Council members that the Institute makes its budget information and related decisions as transparent as possible, and detailed budget tables and policies are posted on the NIAMS Web Site as soon as they can be shared with the public. Decisions made based on conversations during previous Council meetings (e.g., the decision not to accept new program projects) will help maintain the payline in FY 2006.

The President's Budget request for FY 2007 is scheduled to be released on February 6, and details cannot be shared until that time. This topic will be discussed at the next Council meeting.

### **Highlights of Recent Scientific Advances**

- Two major studies have been reported in the last 1.5 years from the Safety of Estrogens in Lupus Erythematosus National Assessment (SELENA) Trial, which was funded by NIAMS. One involved women of childbearing age, the other was conducted in postmenopausal women. In both, no statistically significant differences were observed in the occurrence of flares between women with stable or mild disease on hormone therapy and those taking placebo. Severe flares occurred in about 7 percent of the women regardless of whether they received oral contraceptives or placebo. The rate of mild-to-moderate flares and disease complications were similar in the two groups. The studies were led by Drs. Jill Buyon (New York University School of Medicine) and Michelle Petri (Johns Hopkins University).
- Initial studies funded by the NIAMS on outcomes following severe leg injuries showed no difference in functional outcome whether the leg was spared or not. A 7-year outcome assessment led by Dr. Ellen MacKenzie of Johns Hopkins University assessed whether previously determined risk factors had an impact on functional outcomes. Patient characteristics that were significantly associated with poor long-term outcomes included older age, female gender, race other than white, lower education level, living in a poor household, current or previous smoking, low self efficacy, and health status before injury. This effort is one of the first long-term and largest prospective assessments on the outcome of major lower leg injuries.

- Studies on postnatal muscle-derived stem cells as well as muscle repair and regeneration are being led by Dr. Johnny Huard of Children's Hospital of Pittsburgh. These researchers demonstrated the proliferation of muscle stem cells in mice that maintained their functional and phenotypic integrity.
- Recent multidisciplinary studies are providing new strategies for treating degenerative cartilage conditions. A team of researchers led by Rice University's Dr. Antonios Mikos has developed new cartilage biodegradable polymers that can be administered as a liquid that turns into a semi-rigid gel after several minutes in the body. This semi-rigid gel acts as a template for newly grown cartilage and is designed to break down over time.
- Studies led by Dr. Richard Spritz at the University of Colorado Health Sciences Center focusing on the genetics of vitiligo will be extended to examine the correlation between the disease and associated autoimmune diseases.

### **Highlights of Recent and Upcoming Activities**

Dr. Katz briefly described three new Senator Paul D. Wellstone Muscular Dystrophy Cooperative Research Centers that have been funded (the first three Centers were awarded in 2003 at the University of Washington, University of Pittsburgh, and University of Rochester):

- The University of Pennsylvania (co-directed by Dr. H. Lee Sweeney of the University of Pennsylvania and Dr. Kathryn Wagner of Johns Hopkins School of Medicine), which will explore new strategies for treating a variety of muscular dystrophies.
- Children's National Medical Center (co-directed by Drs. Eric Hoffman and Diana Escolar of Children's National Medical Center), which will study biochemical pathways that contribute to Duchene muscular dystrophy.
- The University of Iowa (co-directed by *ad hoc* Council member Dr. Kevin Campbell and Dr. Steven Moore, both of the University of Iowa), which will explore therapeutic strategies for different muscular dystrophies.

Dr. Katz also noted that in collaboration with the National Institute of Neurological Disorders and Stroke (NINDS), the NIAMS recently launched other initiatives related to muscular dystrophy, including two new programs in translational research.

In addition, the NIH/Industry Bone Quality Initiative Meeting, led by Drs. Gayle Lester and Joan McGowan of the NIAMS, was held on December 14-15, 2005, and garnered a great deal of interest across the NIH, U.S. Food and Drug Administration (FDA), and the pharmaceutical industry.

## **Highlights of Information Dissemination Efforts**

The NIAMS partnered with the Arthritis Foundation in launching a new pediatric rheumatic diseases CD-ROM. The resources available on the CD-ROM include: (1) a collection of PDF files of selected patient education brochures; (2) professional education resources, including information from the Arthritis Foundation's *Primer on Rheumatic Diseases*; (3) professional educational resources on osteogenesis imperfecta from the NIH Osteoporosis and Related Bone Diseases ~ National Resources Center; and (4) web links to resources from the NIH and other federal and nonprofit organizations.

The curriculum supplement for middle school students, presented to the Council at a previous meeting by Dr. Barbara Mittleman of the NIAMS, will be launched in collaboration with the NIH Office of Science Education in early 2006.

A trans-NIH working group has been formed to understand what the NIH community is doing to reach American Indian and Alaska Native populations. A successful meeting that focused on identifying best practices for communicating with communities within these populations was held in collaboration with the NIAMS, other NIH Institutes, and the NIH Council of Public Representatives.

The NIAMS has added to the number of publications now available in Spanish. For example, a Spanish-language version of Fast Facts, an easy-to-read publication series, has been developed. Ten of these are in production on subjects including gout, rheumatoid arthritis, acne, psoriasis, and many other common diseases of interest to the Institute.

## **Discussion**

Council member Dr. Jouni Uitto, Professor and Chair of the Department of Dermatology and Cutaneous Biology at Jefferson Medical College, asked if the NIAMS has plans to reinstitute the P01 mechanism. Dr. Katz indicated that this will depend on the budget, and likely will not occur in 2006 or 2007. Dr. Uitto then asked whether the money being used to fund the muscular dystrophy and skin research centers is from the same pool of funds that had been used for the P01 awards. Dr. Katz explained that the Wellstone Centers are congressionally mandated, and these funds do not come from the same source as those previously used to fund the P01s.

Dr. Lawrence Raisz, Council member and Director of the University of Connecticut Center for Osteoporosis at the University of Connecticut Health Center, asked if there has been any outcry in Congress over the reduction in NIH funding. Dr. Katz commented that Congress passed the budget, although there was a motion on the floor to add money to the budget that did not pass. There are tensions surrounding NIH budget-related issues, and some have questioned how active certain communities have been in recent years in terms of garnering

support for biomedical research. Ms. Terry expressed disappointment in the groups that usually lead the charge for NIH funding, noting that among these organizations, there has been disorganization and infighting because of competition for decreasing available funds.

V. ENABLING THE TRANSITION TO INDEPENDENCE FOR YOUNG INVESTIGATORS: A NEW K/R PROGRAM

NINDS Director Dr. Story Landis described discussions held at a retreat of Institute and Center (IC) Directors last March that focused on how to manage in times of smaller budget increases. There was general recognition that it is critical to continue supporting the influx of new investigators into the system. As a result of these discussions, the NIH New Investigators Committee was established. The Committee is chaired by Dr. Landis and Dr. Norka Ruiz Bravo, Deputy Director, NIH Office of Extramural Research.

The Committee was charged with developing a list of action items that have the potential to: (1) increase and maintain a healthy cohort of new and talented, NIH-supported, independent investigators; and (2) facilitate an investigator's ability to receive his or her first R01 award earlier in his or her research career. A number of reports focus on different issues related to this question and have been reviewed by the Committee, including the National Research Council's 2005 report *Bridges to Independence: Fostering the Independence of New Investigators in Biomedical Research*.

The Committee's principal recommendation is that the NIH develop and implement a standardized career transition award program to promote the initiation of independent research careers. This award would provide 5 years of support—Phase I would provide 1-2 years of mentored support for advanced fellows through a K mechanism, and Phase II would provide 3 years of independent research support contingent upon an independent faculty position (or faculty position equivalent) through an R mechanism. The goal is to create a tenure-track position at a university or medical school. This award would be open to M.D.s, Ph.D.s, and M.D./Ph.D.s., as well as to both U.S. citizens and non-citizens.

The Committee is working to develop appropriate wording to make it clear that at the time the person initiated the award, they would require the appropriate visa status to stay in the country and continue the project for which the R would be funded. Dr. Landis commented that Committee members discussed the inclusion of non-citizens at length, and the consensus was that some of the most promising scientists are, at the time of their training, non-citizens. To deny them the opportunity to participate in this program would be a detriment to the greater research enterprise.

In response to a question from Council member Dr. Bevra Hahn, Professor in the Department of Medicine at the University of California, Los Angeles, School of Medicine, Dr. Landis explained that both the K and R components of this program must be carried out in the United States. It is anticipated that a Program Announcement related to this award will appear at the end of January 2006 or beginning of February 2006.

Dr. Steven Teitelbaum, Professor at Washington University School of Medicine and a NIAMS Advisory Council member, noted that one of the major difficulties in supporting a research program is funding foreign trainees. He explained that if non-citizens are going to be encouraged to participate in this program, a logical extension may be to do so with training grants as well. Dr. Landis replied that current legislation precludes the participation of non-citizens in training grants. Dr. Katz added that most postdoctoral students are trained under research project grants, not training grants. By including non-citizens, this program is a clear departure from similar training activities.

Dr. Landis indicated that the program may be modified slightly in its first few years of existence. The reviews of the applicants will be within the Institutes, not at the Center for Scientific Review (CSR). It is hoped that multiple Institutes will work together to develop shared Institute Review Panels when possible. Additionally, it is planned to fund 170 individuals with these awards across the NIH in 2007. Larger Institutes are expected to fund more of these awards than smaller Institutes.

Council member Dr. Martin Kushmerick, Professor in the Department of Radiology at the University of Washington, asked for the rationale behind bypassing the CSR review. Dr. Landis explained that most Institutes have review panels that examine mentored awards. The Committee's consensus was that at least for the initial several years, because this is a new mechanism and Institutes expressed concern about how these individuals would relate to Institute missions, review for this mentored award should be kept within the respective Institute. Dr. Landis added that there is no requirement for an institutional commitment other than mentoring the career of the awardee during the R phase. Implementing this program will be different from any of the other programs at the NIH, and each IC council should carefully consider how it should be implemented at their respective IC.

Dr. Landis then discussed another revolutionary award—the National Institute of Environmental Health Sciences (NIEHS) is piloting an Outstanding New Environmental Scientist (ONES) Award R01 pilot program intended for first-time R01 applicants. Individuals with faculty appointments that are tenure track or equivalent and who have fewer than 8 years of postdoctoral experience are eligible to apply. Applicants are expected to devote at least 50 percent of their time and effort to the award, which can last for up to 5 years and up to \$400,000 in direct costs during years 1-2 and up to \$275,000 in years 3-5. Only one

application per school or college within a university will be accepted. The NIEHS intends to commit \$3.6 million in total costs to fund approximately six awards in FY 2006.

It is generally recognized that the time required for review of an initial application and then review of a revised application has been a significant impediment. The CSR is engaged in an experiment in 40 study sections that move the application time back, the study section date up, and promise to get the reviews for new investigators out within 1-2 weeks. This may result in not having to skip a round before needing to submit a revised application. The goal is to make this a general policy if this pilot study is effective.

In an effort to increase the likelihood that new investigators will get their first R01, a number of individual Institutes identify new investigators and give them high program priority at their council meetings. Some NIH Institutes have an increased payline for R01s for new investigators (e.g., the National Heart, Lung, and Blood Institute; the National Institute of Biomedical Imaging and Bioengineering [NIBIB]). The rationale behind this approach is that experienced investigators have learned some of the strategies for grant writing, and the differential in application scores may not reflect a difference in the quality of the science between applications from experienced and new investigators. Dr. Katz commented on the ideal number of new investigators per year for R01s. Each Institute approaches this issue differently, and this may be a topic for discussion at a future Council meeting.

Dr. Katz noted that the NIAMS has made a commitment to fund at least four of these awards if there are suitable, high-quality applications.

## VI. REVIEW OF MEMORANDUM OF UNDERSTANDING FOR COUNCIL OPERATIONS

Dr. Steven Hausman, NIAMS Deputy Director, explained that the Memorandum of Understanding (MOU) for Council Operations between the NIAMS and the Advisory Council is reviewed every January. The MOU addresses: (1) applications brought to the attention of the Council, (2) actions that the Council can take, (3) actions that are not necessary to fund grants with any action by the Council, and (4) en bloc concurrence. Dr. Hausman briefly described each of these points, and copies of the MOU were distributed to Council members.

A motion was made, seconded, and passed to accept the MOU for Council Operations.

## VII. THE STUDY OF OSTEOPOROTIC FRACTURES (SOF)

Dr. Katz noted that this presentation was brought to the Council so that Council members could hear about what a long-term NIAMS investment has resulted in and what the level of cooperation has been between NIH Institutes in this effort. Dr. Joan McGowan, Chief of the NIAMS Musculoskeletal Diseases Branch, explained that the goal of the Study of Osteoporotic Fractures (SOF) is to determine the risk factors for osteoporotic fractures in older women. The study is enjoying its 20<sup>th</sup> anniversary in 2006. From its inception, the SOF was a collaboration between the National Institute on Aging (NIA) and the NIAMS. A renewal of the SOF is coming up for the Council's consideration at the June 2006 meeting. The NIAMS originally supported three of the five components of the SOF. At this point in the study, the participants are very old, and many of the study's specific aims have shifted to the oldest subjects, so the NIA will be taking over primary assignment of all SOF grants. The NIAMS will continue to be a substantial supporter, however.

The SOF has five components, including a coordinating center at the University of California, San Francisco, headed by Dr. Steve Cummings. Clinical sites are located at: (1) the University of Maryland (led by Dr. Marc Hochberg), (2) the University of Pittsburgh (led by Dr. Jane Cauley), (3) Kaiser Permanente in Portland, OR (led by Dr. Theresa Hillier), and (4) the University of Minnesota (led by Dr. Kristine Ensrud). A total of 9,704 participants were recruited from population-based listings in four U.S. metropolitan areas. Originally, all subjects were Caucasian—Dr. McGowan commented that at the time the SOF was designed, the group that was observed to have the highest incidence of fractures (Caucasians) was targeted. By the mid 1990s however, there was a great deal of interest in examining a low fracture incidence group, so a cohort of African American women distributed at each of the four sites was added.

All of the women were 65 and older during the SOF recruitment period of 1986-1988. Some participants are now over 100 years old; 4 years ago, the average study subject age was 83 years. Study subjects have had clinical visits every 2 years during the study.

Dr. McGowan described the following findings, contributions, and observations resulting from the SOF:

- Almost all types of fractures are “osteoporotic.”
- Bone mineral density (BMD) of the hip is the best predictor of all types of fractures.
- The architecture of the hip predicts hip fracture strongly and independently of hip BMD.

- Several risk factors have been identified, including weight loss, nulliparity, and a parental history of hip fracture.
- Very low endogenous estradiol is associated with a high risk of fracture and a low risk of breast cancer.
- Common medications such as benzodiazepines, antidepressants, selective serotonin reuptake inhibitors, narcotics, antiepileptic drugs, etc., are associated with the increased risk of falls and fractures.
- The relationship of BMD and fracture is similar in African American and white women, but at every level of BMD, fracture rates are 30-40 percent lower in African American women.
- Regular exercise decreases overall mortality, fractures, and cognitive decline.

Dr. McGowan discussed the future of the SOF. One primary effort will be sustaining and actively using the SOF resources, including SOF Online, a public Web site and process for releasing SOF anonymized data to the broader research community. The site provides approximately 6,000 variables collected over seven patient visits. Users can browse these variables by category or perform variable searches, viewing search results in a convenient longitudinal format of variable availability across visits. Users also can link to the study data collection forms, as well as view descriptive statistics (e.g., means or frequency distributions). Dr. McGowan noted that the promotion of SOF Online has resulted in the formation of 10 active collaborations with non-SOF investigators.

Aims for the 2006 SOF renewal include: (1) determining why some women have high physical and cognitive function into the 9<sup>th</sup> and 10<sup>th</sup> decades of life, (2) conducting longitudinal studies of falls and hip fractures, (3) examining biological determinants of musculoskeletal function, and (4) testing the role of inflammation in physical and cognitive aging. In response to a question from Dr. Hahn, Dr. McGowan indicated that approximately 2,500 women still come to the clinic as part of the study.

#### VIII. BONE QUALITY INITIATIVE: PUBLIC/PRIVATE PARTNERSHIP

Dr. Gayle Lester, Health Science Administrator in the NIAMS Musculoskeletal Diseases Branch, noted that the definition of osteoporosis is evolving. A 1993 NIH Consensus Development Conference defined osteoporosis as “a skeletal disorder characterized by decreased bone mass and architectural deterioration leading to an increased risk of fracture.” Seven years later, another NIH Consensus Development Conference defined the condition as a “skeletal disorder characterized by compromised bone strength leading to an increased risk of fracture. Bone strength represents integration of density and quality.”

Dr. Lester described the limitations of BMD measurements. Age and previous fracture history predict future fracture risk independent of BMD. A large number of “osteopenic” women fracture and high BMD alone does not protect from fracture if bone quality is impaired. With regard to the effect of treatments on fracture risk, an increase in spine BMD with therapies varies and is not consistent with a decrease in vertebral fracture risk. Change in BMD underestimates the effect on fracture risk, and explains between 4 and 30 percent of the reduction in fracture risk. Reductions in fracture risk with anti-resorptive treatment occur before maximum BMD gains.

The Combined Workshop on Bone Quality, held on May 2-3, 2005, involved participants from the NIAMS, NIBIB, American Society for Bone and Mineral Research (ASBMR), and Institut National de la Santé et de la Recherche Médicale (French Institute of Health and Medical Research [INSERM]). The workshop focused on the clinical significance of new imaging methods as alternatives to or in combination with bone densitometry. Experts evaluated existing and developing technologies, and discussed ways to incorporate these new technologies into clinical trials. Discussions were held between the NIH, FDA, ASBMR, the Foundation for the NIH (FNIH), and scientists from pharmaceutical and biotechnology fields following the workshop. Industry scientists expressed the need for surrogate markers for osteoporosis clinical trials, such as better indices of bone strength and quality and fracture resistance. These discussions also identified areas of common interest that may lead to partnerships to address these joint needs.

As a followup to the May 2-3 workshop, an Industry-NIH Roundtable on Bone Quality was held at an ASBMR meeting on September 25, 2005. The purpose of this roundtable was to: (1) determine interest levels in possible partnerships, (2) discuss the need for a followup meeting to the Combined Workshop on Bone Quality, and (3) establish working groups and a planning committee for this followup meeting. There was sufficient interest in partnering, and a December 2005 Bone Quality Initiative Meeting was planned. The planning group for this meeting developed an index of existing cohorts, designed potential joint projects, designed interim standardization projects for new technologies, and developed an index of the status of current assessment technologies.

The numerous sponsors of the December 14-15, 2005, Bone Quality Initiative Meeting included federal organizations such as the NIAMS and National Institute of Dental and Craniofacial Research as well as a number of pharmaceutical companies. The meeting brought industry representatives together with NIH, FNIH, and other interested parties to detail possible joint initiatives and assess the needs, opportunities, obstacles, and challenges related to the development of partnerships. Participants included 12 academic scientists, 2 FDA officers, 10 NIH Program Officers, 4 ASBMR representatives, and 2-3 representatives from each company (a total of approximately 30 participants from 10 companies).

Participants discussed the need for better outcome measures for osteoporosis and considered what factors might be predictive of future fractures.

Dr. Lester explained this initiative from both the public and private perspectives. From NIH's point of view, projects tied to this initiative must involve open competition, peer review for grants or contracts, and transparency. The FNIH facilitates public-private partnerships with NIH Institutes, and flexibility in the partnerships to meet the needs of the osteoporosis community is key. From the industry point of view, in addition to the need for better outcome measures for osteoporosis and identifying factors that may predict future fractures, acceleration of the drug development process and the importance of partnerships and alignment with FDA guidance are important areas of emphasis.

Joint needs were identified at the December meeting. They include: (1) defining bone quality with standardization and validation for bone quality measurements (BQMs), (2) creating a publicly available dataset of BQMs with guidance as to what constitutes a meaningful change, (3) developing criteria to determine whether BQM can be a marker for treatment efficacy, together or independent of BMD, (4) identifying better pathways for Phase III studies, and (5) reaching consensus on validation and helping inform FDA regulatory pathways. Future plans related to this initiative include renaming the initiative as the "Collaborative Initiative on Bone Strength," developing standardization criteria for image acquisition and software used for secondary analyses, establishing quality control protocols for use of these technologies, and assisting in testing novel analyses and modeling relationships.

Dr. Lester noted that current pitfalls include a lack of standard images, a host of unevaluated assumptions, unexplained parameters, and insufficient power with existing data. However, if the Initiative can move forward on some of these projects with strong partnerships, it may be possible to address these pitfalls with a better understanding of what is being measured and which of these technologies might be preferable.

Dr. Raisz commented that the issues surrounding use of MRI versus CT must be addressed. He asked whether there are plans for a single study to compare MRI and CT on the same bone. Dr. Lester explained that this type of effort would likely require a new cohort, and that the Initiative is not yet at that point. Dr. Raisz also asked about biochemistry. Dr. Lester indicated that bone quality includes biochemistry with regard to the minerals and the bone turnover, and some of the imaging methods such as Raman spectroscopy measure the biochemical status of the minerals. Dr. Raisz also asked if there are plans to standardize biochemical markers. Dr. Lester replied that there is great interest in doing so, but it is not one of the Initiative's first steps.

Dr. Teitelbaum asked about the peer review system and the role of industry. Dr. Lester commented that there are some tremendous scientists in industry who

could serve very well as peer reviewers in this particular area. It is unclear how widely they are being used in the peer review process at present. In general, academic scientists may not be as familiar with the problems that are faced by industry with regard to application of these technologies to clinical trials. Dr. Katz emphasized that any money spent on NIH grants must undergo NIH peer review. Dr. Lester noted that none of the private sector collaborators influences the selection of the particular sites that would conduct a study, whether by grant or contract.

#### IX. OFFICE OF PORTFOLIO ANALYSIS AND STRATEGIC INITIATIVES (OPASI)

Dr. Raynard Kington, Principal Deputy Director of the NIH, explained that a more coordinated effect on the management of the overall portfolio of NIH-funded research is needed. As a result, the Office of Portfolio Analysis and Strategic Initiatives (OPASI) was formed. The Office represents a new approach to assuring that the NIH is effective and efficient in meeting its mission.

OPASI also is driven by repeated comments from Congress and various advocacy groups that relate to the theme of managing the portfolio. First and foremost is the continuing criticism directed at how the NIH reports to the public about how much money is spent on diseases, populations, or areas of research. The recent Institute of Medicine report and comments from Congress and the public have pushed the NIH to do a better job in this regard. In addition, there has been a sense that the NIH has not been effective in scanning the horizon of scientific opportunity and public health needs in terms of setting priorities at the NIH level. Developing and implementing the NIH Roadmap highlighted the fact that there are research areas that fall between or cut across ICs; there is a need for big-picture management and funding, as well as a mechanism for deciding which of those topics needs to be addressed. In essence, the NIH mission is so broad, and there are so many areas of converging science, that a more integrated approach for evaluating the cross-cutting part of the portfolio is needed.

The mission of OPASI is to:

- Provide the NIH and its constituent ICs with the methods and information necessary to manage their large and complex scientific portfolios.
- Identify and assess important areas of emerging scientific opportunities or rising public health challenges and integrate that information into decisionmaking processes for some pieces of the priority-setting practice of the NIH.
- Link the process of better scanning to a mechanism for allowing the NIH to accelerate investments in selected areas with a focus on those that cut across the missions of ICs or those that fall between the missions of ICs.

- Integrate evaluation processes that already occur at the NIH and understand best practices and disseminate that information to assist ICs.

Dr. Kington reviewed OPASI's organizational chart, which includes three major Divisions.

**Division of Resource Development and Analysis (DRDA).** The DRDA will be the intellectual home for a number of activities that have become much more sophisticated and complex now that new tools, particularly knowledge management tools, are available. For example, it now is possible to consistently categorize the grants that the NIH funds according to more than 200 categories. It is hoped that by 2008, almost the entire portfolio of NIH-funded grants will be categorized using this method. The DRDA also will house integrated information on public health needs and burden of illness. There is a large amount of data available, but no one place where the data are integrated, readily available, and linked with some assessment of the NIH portfolio.

**Division of Evaluation and Systemic Assessments (DESA).** The DESA will serve a similar role as the DRDA, but for evaluation functions. It will integrate the "big picture" evaluations of Government Performance and Results Act (GPRA), Program Assessment Rating Tool (PART), and trans-NIH initiatives with evaluation activities that are occurring at the IC level. The goal of the DESA is not to carry out evaluations of ICs, but to compliment them. The Division likely will be a repository for those evaluations and allow the entire NIH to learn from all of the experimentation and evaluation that occurs at the IC level. It is hoped that this will raise the performance level of the NIH in terms of this activity. It also will link into a process that will allow scientific priority-setting to be connected to this evaluation arm.

**Division of Strategic Coordination.** The DSC will serve as the home for an institutionalized version of the NIH Roadmap. It will provide an incubator space for trans-NIH initiatives such as the Roadmap that cut across the missions of ICs or fall between these missions. It will facilitate a process of scanning the horizon and reaching out to the scientific community and other sources to determine how the scientific landscape is changing and what that means for investments at the NIH level.

Dr. Hahn asked if this system will be compatible with the Centers for Disease Control and Prevention (CDC) and other health-related agencies of the federal government. Dr. Kington explained that a series of briefings are being held with each of NIH's sister agencies that have similar portfolio challenges. CDC and other agencies are interested in trying to determine how these resources might be applicable in other settings. Dr. Kington emphasized, however, that these tools are being designed for use at the NIH. OPASI was designed to fill a need at the NIH, but is open to collaborative work with other agencies.

One of the first tasks for OPASI will be solicitation of ideas for concepts (i.e., initiatives that would fall within the designed criteria of inclusion in the OPASI mission). This solicitation will be cast very widely and will involve asking the scientific community in a structured way that is similar to the series of meetings held in planning the Roadmap. The process also will be open to other sources for nominations of initiatives. There will be a process by which the proposals are flushed out, in stages, with input from both a Council of Councils and the Advisory Committee to the Director. The OPASI Council of Councils will be formed because all of these initiatives ultimately will be funded through individual ICs, and there is a need for council members from the ICs to participate in this process. OPASI will be asking for nominations—two scientific representatives and one public representative—from each of the IC councils. From these nominations, an individual from each IC council will be selected to serve on the Council of Councils. The Council of Councils will provide input at the second stage of culling out the list of proposed OPASI initiatives, after which a shorter list will be submitted to the NIH Director. With the scientific leadership of the IC Directors, an Advisory Committee then will provide input, and a short list of initiatives will be funded based on this process and the availability of funds.

Dr. Katz informed Council members the OPASI planning process is similar to the overall planning processes in place at the Institute level. Dr. Kington agreed, adding that attempts were made to parallel what is happening at the ICs so that this process would not be disruptive. Once the short list of initiatives to fund has been finalized, a lead IC will assume overall responsibility for implementation of each initiative. No grants would be awarded directly from OPASI; all grants ultimately would be funded through individual ICs (there will be a common fund that would fund these initiatives).

These initiatives will be reviewed annually; there will be major reviews at years 3 and 4, and similar to the cycle for IC initiatives, there will be an initial 5-year commitment, and then a decision will be made as to whether a second cycle will be necessary. Under no circumstances would an initiative remain with OPASI for more than two funding cycles. At the conclusion of year 5 or the second funding cycle, initiatives will either: (1) compete for funding with all of the other initiatives in the ICs, (2) transition to a permanent home at an IC, or (3) stop, if it is deemed unsuccessful. Dr. Kington emphasized that OPASI is intended to be an integrative space rather than a permanent home for any initiative.

OPASI does not represent a transfer authority; it involves a set-aside of the NIH portfolio to address the portion of needs that must be met to fulfill the NIH mission. OPASI will build upon the Roadmap fund, which is about 1 percent in 2006, and will be growing to a maximum of 1.8 percent depending on the status of the NIH budget. OPASI's rate of growth will be determined annually by the IC Directors in collaboration with the NIH Director. NIH leadership will ensure that this Office does not in any way disrupt ongoing funded scientific opportunities. Dr. Kington characterized OPASI as a bold but necessary step that recognizes that

the world is in flux, scientific horizons are more complex, the amount of data needed to analyze to help set portfolios is more complex, the structure of NIH is more complex, and more sophisticated tools and processes to recognize complexity are necessary.

Dr. McGowan noted that the NIAMS has struggled at times with “pruning” in order to identify exciting new directions and shuffle funds to those areas. She asked how the NIH will prune all of the other areas it already is committed to so that the OPASI initiatives can be added. Dr. Kington explained that pruning is inherent in this process, and that OPASI initiatives will stay within the Office for an average of no more than 7 years. Having a set-aside that is known and that can be planned for years in advance provides a fair amount of room for the ICs. The ICs should be leading the pruning efforts as part of their missions.

In response to a question from Dr. Raisz, Dr. Kington explained that the set-aside for OPASI is in addition to the Roadmap set-aside. Both will become part of a common fund. The full range of available mechanisms will be used to fund OPASI initiatives, and similar to the Roadmap, it is predicted that the majority of these will be in the form of R01s.

Ms. Terry remarked that OPASI likely will push the NIH to a greater focus on health, and expressed concern that the opportunities for public involvement in the initiative identification and selection process might be too sporadic and not focused enough. She also noted that each IC likely would prefer to have a scientific council member rather than a lay council member representing them on the OPASI Council of Councils. Dr. Katz replied that it is not necessarily true that each IC would prefer to have a scientific representative rather than a lay representative. Regardless, this process will not put an onus on each IC Director to select a single individual to represent their respective IC council. Rather, there will be a balance at the Council of Councils between those who represent the scientific community and those who represent the lay community. Dr. Kington stressed that there are multiple opportunities for the public to provide input and enough flexibility in the process to ensure that this occurs. The process was designed with lessons learned from the Roadmap planning process—one of the messages in the evaluation of the Roadmap planning process was that there was not enough public input.

Dr. Hahn asked about sunseting OPASI initiatives. Dr. Kington replied that this has been emphasized during the planning process, and that no initiative will remain with OPASI for more than two funding cycles. Only a small proportion of initiatives are expected to reach a second cycle of funding. Dr. Katz agreed, noting that it is critical from IC and overall NIH perspectives that the expectations of OPASI initiatives and their future beyond the Office be clearly defined and understood.

Dr. Teitelbaum asked about the review process for OPASI initiatives. Dr. Kington explained that the nature of the reviews will depend on the initiatives themselves, and that some initiatives will require special panels while others will be reviewed through more traditional methods. In addition, the CSR is working on creative approaches for addressing activities such as OPASI initiatives.

X. PARTICIPATION OF NIH GRADUATE PARTNERSHIP PROGRAM FOR DOCTORAL STUDENTS IN MEDICAL SCIENTIST TRAINING PROGRAMS

Dr. Richard Siegel, Chief of the Immunoregulation Unit in the NIAMS Autoimmunity Branch, described the NIH Graduate Partnership Program's (GPP) Medical Scientist Training Program (MSTP), a trans-NIH initiative designed to allow students conducting Ph.D. research in the NIH Partnership Program to become full-fledged medical scientist trainees. Recent National Academy of Sciences and Federation of the American Societies for Experimental Biology (FASEB) reports call for more training of physician-scientists. M.D./Ph.D. trainees are very successful; they constitute 2 percent of medical school graduates in the grant world and yet receive 30 percent of NIH grant funding awarded to physicians.

Currently, about 370 GPP students are training at the NIH and partner institutions in 14 partnership programs (some of which are general, some of which are specific to discipline). Of these, six are currently enrolled in medical schools (five are receiving MSTP funding) and two have been accepted to medical schools (a number are currently applying). Dr. Siegel characterized these individuals as a remarkable and diverse group of students.

Current programs providing training to combined M.D./Ph.D. trainees are funded by the National Institute of General Medical Sciences (NIGMS), whose MSTP is funding 150 trainees per year at 41 medical schools in 23 states. These are 6-8 year training slots, and although laboratory training grants cover some of these costs, there are no mechanisms for students in GPPs to participate in MSTPs (medical schools understandably are not willing to give up their training slots to students who are not conducting the bulk of their research at the medical school). A number of alternative training programs and loan repayment programs exist, but these are not designed for combined intramural/extramural training.

The new program supplements the \$50 million MSTP for GPP students. GPP students accepted to funded MSTPs would be eligible to receive funding for combined degree training from the extramural division of the Institute in which they are working towards their Ph.D. The NIGMS will provide training slots and administer this program, so it is in essence a cost-free program that involves a transfer of funding. The NIGMS will provide the peer review of the program as well. The NIGMS has negotiated a discount with each medical school that is 25-40 percent less than the student would pay on their own. Because these

students are funded during their Ph.D. work intramurally, there is a much smaller extramural commitment (2-4 years of extramural funding versus 6-8 years).

This program has been under development for approximately 1 year and has been discussed with and approved by the NIH Office of the General Council, NIH IC Directors, and others. Students can enter this program either from undergraduate programs, medical schools, or from within the GPP—they must be accepted by the GPP and MSTP programs independently. Initially, this program will not be extended beyond students at the 41 medical schools that have NIGMS MSTPs.

It is anticipated that this program will be approximately the same size as an average MSTP, with 4-8 students per year at the NIH, with Institutes being asked to opt-in to fund and set a limit on the maximum number of students they will fund. Funding is tied to the individual student, so there would be no commitment unless a student was actually training at an Institute. The program is requesting 2-3 slots from smaller Institutes and 4-6 slots from larger Institutes. Each slot would constitute a cost of approximately \$46,000 per year, with complete M.D./Ph.D. training for about \$80,000-\$150,000.

It is hoped that this program will start in the fall of 2006 and be available to some of the students currently training at the NIH. The program is open to students currently in the GPP who are accepted by MSTPs. Institutes would be given 6-9 months lead time before activating funding. Although this is multi-institutional training, which can be very challenging to implement successfully, the NIH has had success with partnership programs that bridge institutions (e.g., Oxford and Cambridge). A good advising system is in place, and the training plans will be developed and approved by the mentors and the GPP. Scientific Directors must approve GPP mentors for graduate students.

Dr. Siegel concluded his remarks by describing some of the advantages of this program, including: (1) it will allow NIH intramural researchers and the NIH Clinical Center to participate in a formal M.D./Ph.D. physician-scientist training program for the first time; (2) it will increase the quality of graduate trainees in intramural research laboratories; (3) it increases the likelihood of trainees staying in areas of Institute mission and returning to the NIH; and (4) it will increase the number of high-quality physician-scientists in the country.

Dr. Raisz noted that this appears to be different than a traditional MSTP because students will be doing graduate work first and then going through 4 years of medical school. Dr. Siegel explained that some of the students already are in medical school and have been granted leave from their medical school to earn their Ph.D. As the program becomes more well known, it is anticipated that some students would apply to the full program directly from the undergraduate program. Dr. Siegel noted that academically, the best track is to have students start with the first 2 years of medical school and then pursue their Ph.D.

Dr. Katz noted that the Washington University has a very successful MSTP, and asked whether their graduates would agree to having their Ph.D. work done offsite at the NIH. Dr. Teitelbaum commented that the Washington University's MSTP is the "jewel" of its medical program. Faculty at the Washington University compete for these students to work in their laboratories because these are the best students. In discussions leading to the formation of this program, there was resistance on the part of faculty to give these students up to the NIH. Dr. Michael Lenardo, Senior Investigator and Chief of Molecular Development of the Immune Systems Section at the National Institute of Allergy and Infectious Diseases, indicated that there now are many ways to bridge institutions that will facilitate this type of combined degree training. Dr. Teitelbaum agreed, adding that if this process can be carried out in a collaborative manner in which university investigators work closely with the NIH, it will be a success.

Dr. Lenardo added that this program will gain a great deal of traction in the future as awareness is raised. Building virtual faculties with institutions that are geographically spread out, even across different countries and continents, is a new idea that challenges the model of students coming to one institution and only being affiliated with that institution. He added that leadership at the Washington University appears to be embracing this program.

## XI. NIAMS LONG-RANGE PLAN

Dr. Katz introduced this presentation by explaining that in 1999, each Institute was directed to formulate a long-range plan. The NIAMS developed a plan to cover the years 2000-2004, and in the process obtained a tremendous amount of input from the scientific community, the lay community, and industry. Since that plan was developed, NIAMS Program Directors have assessed what has been done with the plan. During the years of robust NIH budget increases, there was not a great need to examine the plan closely because much of it was being fulfilled by the initiatives that the Institute was funding. In 2004, the NIAMS started putting together another long-range plan, partly to help guide the Institute in times of tighter budgets.

Ms. Anita Linde, Director of the NIAMS Office of Science Policy and Planning, reiterated that there is a history of developing strategic plans at the NIH and at individual ICs, both across the various programmatic areas as well as to specific areas of research such as health disparities. Ms. Linde discussed four key questions that form the basis for the new NIAMS long-range plan.

**Why did the NIAMS develop this plan?** The NIAMS developed its long-range plan as a way to identify longer term research opportunities, needs, and gaps that are specific to the NIAMS mission areas. The plan is intended to be a broad scientific outline to help guide future program decisions, potential new initiatives, and collaborations, not just across the different NIAMS program areas, but potentially with other Institutes and outside partners. In many ways as a result of

tighter budgets, the Institutes of the NIH have a heightened responsibility to look very systematically across the breadth and depth of their research portfolios to identify areas that are particularly in need of support and stimulation.

**How will the Institute use this plan to guide future efforts?** Clearly, this type of plan is meant to be one of a myriad of inputs that feed into the Institute's larger strategic planning and priority-setting processes. It will help shape future decisions in terms of initiatives that the NIAMS supports and funds. It is meant to provide a very broad framework for thinking about NIAMS' research priorities going forward. The plan is one of the mechanisms that will be used to describe research progress being made in communicating with the various public organizations that have an active interest in NIAMS activities across its research and training programs.

**How have past plans been used?** Health disparities plans and the prior 5-year strategic plan have been made public. These types of plans are used by the NIAMS to signal to the research communities, professional organizations, and patient groups particular areas of priority and scientific need that the Institute anticipates pursuing. It is a framework for helping to systematically catalog and describe the accomplishments being made collectively across the different program areas.

**How does the plan align with goals at the NIH level and the trans-agency level?** Crosscutting areas of research have been articulated in the plan. This is a major emphasis of some of the Roadmap initiatives as well as OPASI in examining basic translational and clinical research across the spectrum. In terms of the larger landscape, there is a corporate commitment to having as much transparency and openness as possible in the research priority-setting process. The development of these types of long-range plans helps fulfill this commitment.

Ms. Linde briefly described the process used to develop the new long-range plan. The NIAMS hosted a series of planning meetings in six core areas of research that included representatives from both scientific and lay communities. The results of these discussions were supplemented with a Web-based canvass. The NIAMS posted a notice on its Web site, and contacted all of its funded investigators and various constituency groups to alert them at the early stage. NIAMS extramural program staff played a critical role in helping to analyze and integrate that input as the plan was being developed.

Ms. Linde indicated that this was being presented to the Council to specifically solicit their input at this stage, with the understanding that the plan is still a work in progress. Once Council input is incorporated, the plan will be posted on the NIAMS Web site for a public comment period of 45-60 days to obtain a round of feedback before the plan is finalized. The final long-range plan will be presented to the Council at a future meeting.

Dr. Katz asked that Council members respond in the next few weeks to the following questions before the long range plan is posted for public review:

- Are the most promising scientific opportunities in a given field/discipline covered?
- Are the most pressing public health needs in a given field/discipline represented?
- Are the biggest challenges/roadblocks to advancing research addressed?

Dr. Katz emphasized that this plan is not meant to dictate or design what the scientific community should do. Rather, it provides some guidance to all of NIAMS' communities as to what the Institute considers as important areas. The next steps are to: (1) incorporate input from the Council (January/February), (2) post the revised plan for public comment (March/April), (3) further refine the plan based on public comment (May), and (4) present the final plan to the Council and post it on the NIAMS Web Site.

Council member Dr. Gena Carter, a radiologist and patient advocate, noted that the plan appropriately includes osteoarthritis, which is a significant concern for many Americans. Osteoarthritis in many cases is preventable but does not receive a great deal of exposure. Dr. Katz added that osteoarthritis does not have a strong constituency that is pushing for research in this area, despite the fact that it affects so many Americans. NIAMS initiatives focused on osteoarthritis have been generated because the Institute, the scientific community, and industry recognize that it is an important issue. Dr. Carter also commented that the plan addresses the topic of genomics in an appropriate and lay-friendly manner. She noted that on page 43 of the document, there is mention of regenerating cells, and the term "embryo" is used. She asked how the Institute plans to address the resulting public reaction to the inclusion of this word. Dr. Katz stated that the Institute took a scientific view in generating the plan, and the terms "embryo" and "embryonic cells" are commonly associated with animal studies.

Dr. Hahn commented that the issue of economics and cost effectiveness may be missing from the plan. She asked whether greater emphasis should be placed on these issues, or whether it should be left to another agency (e.g., the Agency for Healthcare Research and Quality [AHRQ]). She also noted that it will be critical to avoid duplicative research efforts. Dr. Katz added that vigilance on the part of Program Directors is very important in this regard, because once an application has gone through peer review, it is very difficult to not fund the work. Some NIAMS Program Directors have interceded early on these cases to prevent duplicative research efforts. In terms of cost effectiveness, the Institute does fund work in this area, and certain cost effectiveness studies have been very helpful to the musculoskeletal communities. Those types of long-term studies are very

expensive, but not out of the realm of NIAMS' responsibility—they cannot simply be relegated to the AHRQ.

Dr. Raisz asked about the timeframe for Council members to respond to the long-range plan. Ms. Linde asked that Council members provide feedback within the next 2-3 weeks so that input can be incorporated into the plan and it can be posted on the Internet for public review and comment.

## XII. CONSIDERATION OF APPLICATIONS

The Council reviewed a total of 549 applications in closed session requesting \$131,005,802 and recommended for \$131,344,867.

## XIII. ADJOURNMENT

The 58th National Arthritis and Musculoskeletal and Skin Diseases Advisory Council Meeting was adjourned at 4:00p.m. Proceedings of the public portion of this meeting are recorded in this summary.

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

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Cheryl A. Kitt, Ph.D.  
Executive Secretary, National Arthritis  
and Musculoskeletal and Skin Diseases  
Advisory Council

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