National Institute of
Arthritis and Musculoskeletal
and Skin Diseases

Minutes of Meeting

June 2, 2026

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

MINUTES OF THE 120th MEETING

I. CALL TO ORDER

The 120th meeting of the National Arthritis and Musculoskeletal and Skin Diseases Advisory Council (NAMSAC) was held on June 2, 2026. The meeting was chaired by Dr. Anna Mazzucco, Acting Director, National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS).

Attendance

Council members present:
Dr. Edward Botchwey, Associate Professor, Wallace H. Coulter Department of Biomedical Engineering, Georgia Institute of Technology
Ms. Ann Elderkin, Consultant, American Society for Bone and Mineral Research (ASBMR)
Dr. Karl Jepsen, Glancy Family Scholar and Professor of Orthopaedic Surgery and Bioengineering, Department of Orthopaedics, Department of Orthopaedic Surgery, University of Michigan
Dr. Douglas Kiel, Professor and Scientist, Hinda and Arthur Marcus Institute for Aging Research, Hebrew SeniorLife; Professor of Medicine, Harvard Medical School
Dr. Xiaojuan Li, Professor, Department of Biomedical Engineering, Lerner Research Institute, Cleveland Clinic
Dr. Elizabeth McNally, Elizabeth J. Ward Professor of Genetic Medicine, and Director, Center for Genetic Medicine, Northwestern University Feinberg School of Medicine
Dr. Rebecca Minnillo, Chief Program, Communications, and Development Officer, Society for Investigative Dermatology
Dr. Aimee Payne, Tenured Professor and Attending Physician, Department of Dermatology, Columbia University
Ms. Sharon Smith-Terry, President & CEO, Caufey Smith Productions
Dr. Melissa Spencer, Professor of Neurology and Program Director, Department of Neurology, David Geffen School of Medicine, University of California at Los Angeles
Dr. Jinoos Yazdany, Professor and Chief of Rheumatology, Division of Rheumatology, University of California, San Francisco
Dr. Sara Tedeschi, Assistant Professor, Harvard Medical School; Brigham & Women's Hospital, *Ad Hoc Member*
Dr. Meng (Gemma) Zhao, Assistant Professor, University of California, Davis, *Ad Hoc Member*

Staff and Guests

The following NIAMS staff and guests attended:

Staff

Dr. Anna Mazzucco
Ms. Laura Akins
Dr. Tamara Alliston
Dr. Kamil Barbour
Ms. Pamela Beheler
Dr. Alexey Belkin
Mr. Mark Brown
Ms. Tanisha Brown-Caines
Dr. Stephanie Burrows
Ms. La'Tanya Burton
Ms. Justine Buschman
Dr. Faye Chen
Dr. Dillon Chung
Ms. Robin DiLiello
Mr. Erik Edgerton
Ms. Jana Eisenstein
Dr. Mary Garcia-Cazarin
Dr. Melissa Green-Parker
Ms. Stephanie Herndon
Ms. Catherine Joffee
Ms. Kandace Kimber
Dr. Rebecca Lenzi
Dr. Marie Mancini
Dr. Su-Yau Mao
Dr. Aron Marquitz
Ms. Katrina Matthews
Ms. Sara Myers
Mr. Christopher Nee
Dr. Van Nguyen
Dr. Kristy Nicks
Dr. Giuseppe Pintucci
Dr. Susana Serrate-Sztein
Dr. Kriti Sharma
Dr. Raj Srinath,
Ms. Anamika Singh
Dr. Raj Srinath
Ms. Renee Strong
Ms. Yen Thach
Dr. Anita Undale
Mr. Herman Utama

Dr. Aneliya Velkova
Dr. Isaah Vincent
Ms. Lisa Walker
Dr. Robert Walker
Dr. Xibin Wang
Dr. Charles Washabaugh
Ms. Elisa Weiss
Ms. Shalanda Wellington
Mr. Patrick Wilson
Ms. Robin Wolz
Dr. Linda Yang
Dr. Xincheng Zheng

Guests

Dr. Jennifer Adjemian, NIH *All of Us* Research Program
Dr. Jonathan Bernstein, University of Cincinnati
Ms. Kelley Cardone, University of North Carolina
Dr. Emily Carifi, National Institute of Neurological Disorders and Stroke (NINDS)
Dr. Lindsey Criswell, National Human Genome Research Institute (NHGRI)
Dr. Alena Dabrazhynetskaya, Center for Biologics Evaluation and Research, U.S. Food and Drug Administration (FDA)
Dr. Bernard Dardzinski, Division of Cancer Treatment and Diagnosis, Cancer Imaging Program, National Cancer Institute (NCI)
Dr Nikhith Kalkunte, NIH Office of Legislative Policy and Analysis
Dr. Robert Hamer, University of North Carolina
Ms. Tonise Howell-Helms
Dr. Jungwoo Lee, University of Massachusetts
Dr. Julie Petersen, University of Nebraska Medical Center
Dr. Sheri Schully, NIH *All of Us* Research Program

II. INTRODUCTIONS/CONSIDERATION OF MINUTES/FUTURE COUNCIL MEETING DATES

Dr. Anna Mazzucco, Acting Director, NIAMS, called the 120th meeting of the NIAMS Advisory Council to order at 9:30 a.m. She welcomed Council members, NIAMS staff, and other attendees to the meeting and led participants in a round of introductions. Mr. Erik Edgerton, Acting Director of the Division of Extramural Affairs (DEA) and NAMSAC Executive Secretary, reviewed the meeting logistics. Members of the public may submit written comments to NIAMScouncilmail@mail.nih.gov up to 15 days following the meeting. Council members were reminded to recuse themselves from any application reviews that may constitute or appear to constitute a conflict of interest. Conflict of interest reporting updates are issued in June and October 2026 and February 2027. Council members have 30 days to respond to disclosure update requests.

The next NAMSAC meeting will be held on September 15, 2026, in a hybrid format. Going forward, spring Council meetings will be held in-person; the fall meetings will be hybrid, and the winter meetings will be all-virtual.

III. NIAMS DIRECTOR'S REPORT AND DISCUSSION

Dr. Mazzucco announced that Mr. Steven Taylor, President and Chief Executive Officer of the Arthritis Foundation, has stepped down from the Council. She thanked him for his service on behalf of the Institute. Council members Dr. Edward Botchwey and Ms. Ann Elderkin have agreed to extend their terms and Dr. Mazzucco thanked them for their continued dedication to NIAMS. For this meeting, NAMSAC continues its tradition of inviting researchers from the pool of mentored NIAMS K award grantees to serve as ad hoc Council members. This practice helps to both familiarize them with the Council and offer them the opportunity to provide input to the Institute from their important perspective as early-stage investigators (ESIs). Dr. Mazzucco welcomed Dr. Sara Tedeschi and Dr. Gemma Zhao as the ad hoc members for this meeting. Dr. Mazzucco also acknowledged the departure in February of Dr. Lindsey Criswell as NIAMS Director after her appointment was not renewed. Dr. Criswell was a strong advocate throughout her tenure for research and development across NIAMS' mission areas and helped successfully guide the Institute through transitions and challenging times, most notably the COVID-19 pandemic. Dr. Criswell's legacy will be felt in the ongoing collaborative projects that NIAMS participates in, some of which will be discussed during the day's meeting. Dr. Criswell will remain at NIH as chief of the Genomics of Autoimmune Rheumatic Disease Section in the National Human Genome Research Institute (NHGRI).

NIH and NIAMS Budget

Dr. Mazzucco updated the Council on the current status of the NIH and NIAMS budgets. In April, the overview of the President's proposed FY 2027 budget was released. The proposed budget calls for a 10.8% reduction in non-ARPA-H funding for NIH from FY 2026 enacted levels and a 7.2% decrease for NIAMS. The budget proposes consolidating the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism into a new National Institute of Substance Use and Addiction. The budget also calls for the closure of the National Institute on Minority Health and Health Disparities, the National Center for Complementary and Integrative Health, and the Fogarty International Center. Additionally, the National Institute of Environmental Health Sciences would be subsumed into the Centers for Disease Control and Prevention. In the coming months, the U.S. Senate and House of Representatives will be developing their own budget proposals for FY27, which must be reconciled and submitted to the President for signature after passage through Congress.

Dr. Mazzucco presented a snapshot of NIAMS funding by budget activity as of FY 2025 enacted levels. As is the case with most NIH Institutes and Centers (ICs), NIAMS devotes most of its

budget to supporting extramural research, while also supporting important research at the Institute itself via its intramural program.

Personnel Changes

In personnel news at the NIH level, Dr. Jonathan M. Green was recently appointed the new Chief Operating Officer at the NIH Clinical Center, the nation's largest hospital devoted solely to research. Dr. Green has served as director of the NIH Office of Human Subjects Research Protection since 2018, during which time he led the transition from IC-specific institutional review boards (IRBs) to a single NIH-wide IRB.

NIH and NIAMS Activities

NIAMS recently participated in two congressional briefings. The first was sponsored by the American Association of Immunologists and focused on advancements in combatting chronic diseases. The second briefing was sponsored by the Coalition of Skin Diseases and highlighted NIAMS' recent activities in skin diseases research among other topics. On May 8, NIAMS hosted a Congressional Tour Day at the NIH Clinical Center with the theme of "Discoveries in Technology," highlighting the work of NIAMS intramural and extramural researchers. Approximately 40 congressional staff members participated in the event.

In May, NIAMS hosted its annual two-day Forum for Clinical Mentored K Awardees, bringing together established clinician-scientists with cohorts of NIAMS K-award grantees. This year's forum included third-year NIAMS K awardees, an intramural program research scholar, mentors, and representatives from professional and advocacy groups in NIAMS mission areas. The forum offered networking opportunities and the chance to interact with experienced investigators and NIAMS leadership and staff. The overall purpose of the forum is to support these early-career researchers as they advance in their careers.

Dr. Mazzucco highlighted a series of NIH-level policy updates. First, it was recently announced that NIH will no longer require applicants to request written permission and/or document receipt of permission in the application process for Conference Grants (R13) and Conference Cooperative Agreements (U13).

Effective May 25th, 2026, basic experimental studies involving humans (BESH) are no longer considered clinical trials under NIH definitions and will not have to adhere to requirements for clinical trials. They must continue to follow all applicable policies, laws, and regulations related to medical research. This change was made as part of NIH's ongoing efforts to reduce administrative burden. NIH is also harmonizing its definition of "intervention" with the definition under the Common Rule. This definition includes both physical procedures by which information or biospecimens are gathered and manipulations of the subject or the subject's environment that are performed for research purposes. The overarching goal of this change is to better align federal agencies with the Common Rule.

Following feedback from the research community, NIH delayed the timeline for NIH’s implementation of new requirements for the use of Common Forms in applications. The use of

the Common Forms for biographical sketches and other related components is now required for all submissions as of May 8, 2026. The delay provided more time for the extramural community to update internal systems and policies to better ensure compliance.

Dr. Mazzucco relayed another NIH policy change designed to increase efficiency and reduce administrative burden. Effective for applications submitted for due dates on or after May 25, 2026, applicants and recipients are required to utilize the new, simpler format for Data Management and Sharing Plans. The new format is considered a pilot and will be revised throughout the coming year as appropriate.

NIH has announced an updated policy on late submission of competitive applications that ends the practice of Continuous Submissions, modifies acceptable reasons for late submission, and prohibits late submission for certain categories of applications. Continuous Submissions were designed to provide flexibility for investigators serving as reviewers on review panels but resulted in delays and inefficiencies. Participation in an NIH review panel within four weeks before or after a due date is the only pre-authorized reason for a late submission under the new policy.

To conclude the policy updates, Dr. Mazzucco provided an update on the backlog of peer review meetings caused by the lapse in appropriations earlier this year. NIH has announced that the modifications that were made to peer review practices for applications submitted for the January 2026 and May 2026 Advisory Councils will remain in place for the October 2026 Advisory Council.

Dr. Mazzucco highlighted several new Notices of Funding Opportunity (NOFOs). NIAMS recently published a NOFO under the NIH Helping to End Addiction Long-term (HEAL) Initiative. The HEAL INTERACT Data Coordination and Integration Center NOFO invites applications to establish a Data Coordination and Integration Center for the NIH HEAL Initiative. The INTERACT program builds upon the work of the NIAMS-led Back Pain Consortium (BACPAC) to advance the diagnosis and treatment of back pain and advance understanding of chronic pain across musculoskeletal diseases.

NIAMS also recently announced a NOFO under the auspices of the NIH Chemical Countermeasures Research Program (CCRP), titled Promoting a Basic Understanding of Chemical Threats to Skin. The goal of this funding announcement is "to solicit basic research applications to investigate the pathological mechanisms of skin injuries caused by toxic Chemicals of Concern identified as public health threats by the United States Government."

NIAMS recently announced the NOFO for the next cycle of grants for its R03 Small Grant Program for Mentored Research Career Development. The purpose of this program is to enhance the capability of scientists, including NIAMS K awardees, to conduct research as they transition to fully independent investigators. The R03 grant can be used for pilot and feasibility studies, secondary analysis, and development of new research technologies, among other types of shorter-term activities.

In addition to these NOFOs, NIAMS also recently published a Highlighted Topic on "Advancing Research into the Cause and Treatment of Rare Skin Diseases." Dr. Mazzucco reminded the Council that NIH's Highlighted Topics are a new centralized and simplified resource to inform the research community of particular areas of scientific interest to NIH. Highlighted Topics are a mechanism for NIH to spotlight topics that are research priority areas for ICs, as well as topics that may overlap or fall outside of commonly understood IC mission areas, and to identify new or emerging research topics. They are also designed to help foster more investigator-initiated research. In addition to the Highlighted Topic of rare skin diseases, NIAMS participates in a number of other currently active Highlighted Topics.

Dr. Mazzucco concluded the Director's Report by spotlighting the recent publication of the NIH Strategic Plan for Disability Health Research for FYs 2026-2030. The strategic plan represents a comprehensive roadmap to advance innovative and responsible research to promote the health and wellbeing of Americans with disabilities. The plan's strategic goals and priorities span four topic areas: research, workforce, resources and infrastructure, and stewardship. Cross-cutting themes include whole-person health, inclusion of people with disabilities in research, interdisciplinary collaboration, and technology. This strategic plan is important for NIAMS since a number of the conditions in the NIAMS purview are associated with devastating and long-term disabilities.

Discussion

Dr. Elizabeth McNally expressed her opinion that the biosketches are non-informative in their current format and have additional presentation issues such as small font size and overabundance of regulatory boilerplate. The primary purpose of the biosketch is to introduce the investigator and their accomplishments, and the current format is failing at that objective.

Dr. Karl Jepsen raised the issue of the ongoing funding impacts of last year's government shutdown and asked Dr. Mazzucco to comment on the budget plans for the current fiscal year before it concludes. Dr. Mazzucco acknowledged the challenges and said she believes NIAMS is on track to issue its awards this year in a timely fashion.

Dr. Aimee Payne brought up an ongoing concern that the NIH data sharing policy and federal patient privacy policy have had contradictory impacts by preventing the use of deidentified specimens in large academic repositories due to lack of informed consent, even in cases where re-identification of patients would not be possible.

Dr. Xiaojuan Li said she had heard from researchers in the community who are struggling with NIH's shift away from payline-based funding decisions and asked whether that change is being reconsidered and if there is an official channel to provide feedback. Dr. Mazzucco said she expects that the NIH's Unified Funding Strategy will continue to be evaluated over time. She encouraged researchers to stay in close contact with NIAMS program officers throughout the application process to ensure applications remain aligned with NIAMS and NIH priorities. Funding meritorious science has always been the goal of the review process, and that continues to be the case. Dr. Mazzucco emphasized that the new review framework allows ICs to consider researcher career stage and other researcher-specific factors. Dr. McNally asked Dr. Mazzucco to

expand on how she sees the role of the Council under the new framework. Dr. Mazzucco said the Council's role is unchanged as the programmatic aspects of the unified funding strategy will have already been taken into account by staff before the Council review stage. The Institute remains open to any feedback from the Council at the Council review phase. Dr. McNally said it could be beneficial for the Council to hear more about those internal programmatic assessments. Dr. Mazzucco said that the NIAMS Strategic Plan is an important guidepost during those discussions, as is an analysis of an application in the context of the Institute's current portfolio. NIAMS would be happy to provide more information to Council as staff continues to implement the new funding strategy. Dr. Jinoos Yazdany said it would be helpful if NIAMS could provide data on the percentage of applications that would have been funded under the traditional payline approach but may no longer be funded under the unified strategy. This would help the community see the practical impact of the change. Dr. Faye Chen said the NIH Data Book is a good resource for basic statistics on extramural grants applications and awards, including IC-specific success rates.

Dr. Douglas Kiel said he would like to see longitudinal information on how NIAMS' budget has been distributed in recent years in order to see if there are any trends and what might be driving those trends. Dr. Mazzucco said she would be glad to provide that information.

Dr. Mazzucco discussed with the Council members some of the challenges that the community is dealing with navigating the funding-related changes that are taking place at NIH and answered questions related to the modified peer review process that will continue through October. In response to a question from Dr. Sara Tedeschi, NIAMS staff described the post-application logistics and timeline in the context of the perspective of early-stage investigators. Dr. Chen encouraged investigators to reach out to the program officer listed on the summary statement with any questions related to the statement.

IV. *ALL OF US* RESEARCH PROGRAM

Dr. Mazzucco introduced Dr. Sheri Schully, Deputy Chief Medical and Scientific Officer, and Dr. Jennifer Adjemian, Senior Advisor for Data Science, to present on the NIH *All of Us* Research Program. Dr. Kamil Barbour, NIAMS Program Director, and Dr. Lindsey Criswell, NHGRI, also participated in the session to present on the Systemic Lupus Erythematosus Driver Project that made use of the *All of Us* Cohort Study.

Dr. Schully provided an overview of the *All of Us* Research Program. The program was formally established as part of the 21st Century Cures Act of 2016 and began operations in 2018. The mission of the program is to accelerate discoveries, drive innovation and efficiency, reduce costs, and advance the field of precision medicine and deliver real-world impact. *All of Us* achieves this mission by striving to develop a nationally representative longitudinal cohort of over one million participants, creating one of the largest and richest biomedical datasets, and catalyzing a vibrant research ecosystem. *All of Us* currently has enrolled over 881,000 consented participants, almost 600,000 of whom who have completed the initial steps of the program. The participants come from all 50 states and the repository has collected over 617,000 biosamples.

Dr. Schully highlighted an upcoming data release this summer that will be the world's largest and most diverse whole-genome sequence dataset. She also provided a general overview of the program's tiered access data infrastructure that provides public access to general and aggregated data along with registered and controlled tiers for researchers, the latter of which provides access to genomics data. Dr. Schully highlighted the Research Projects Directory, which is a public-facing dashboard that provides descriptions of active research projects within the program. The upgraded Researcher Workbench provides access to powerful cloud computing tools and includes a Data Explorer for building cohorts and datasets.

One of the important accomplishments of *All of Us* is its ability to enable a new biomedical research paradigm in which research and replication studies can be started in less than two hours for researchers at institutions with data use agreements. Since all data in the program has been deidentified, no IRB approval is needed to conduct studies. Access to the data itself is free, but researchers have to pay for compute cost. Researchers are provided with $300 in compute credits to start their analysis. *All of Us* currently has over 23,000 registered researchers from over 1,400 organizations, which has led to over 1,350 publications that use *All of Us* data. Dr. Schully presented a snapshot of *All of Us* participants and the kinds of diseases and conditions that are represented in large numbers. Importantly, data from *All of Us* has led to new discoveries in arthritis, dermatitis, scoliosis, osteoporosis, and other conditions. *All of Us* maintains a Publication Directory that offers AI summaries of publications so the lay reader can better understand study findings. Dr. Schully expects the pace of discovery to increase due to the addition of genomics data in 2022. The program has returned DNA results to over 270,000 participants and *All of Us* data has helped inform the development of a new clinical DNA test by Massachusetts General Hospital.

Dr. Schully highlighted several partnered research studies in which *All of Us* participants volunteer to join studies funded by other NIH ICs. *All of Us* plans on making partnered research studies open to extramural investigators in the coming months. Granting access to research-ready participants can be a huge cost-saver in terms of study startup costs. In a similar vein, *All of Us* has announced an upcoming X01 Resource Access Award titled Accelerating Discovery through Partnered Research with *All of Us* to Analyze Participant Biospecimens. This initiative will initially grant access to plasma, serum, and genomic DNA specimens, but may expand to other samples later on.

Dr. Adjemian provided greater detail on the *All of Us* data portfolio and research opportunities. The new Curated Data Repository (CDR) Version 9 is expected to be released by July, which will increase the number of participants with data to approximately 747,000, including approximately 535,000 whole-genome sequences and 467,000 participants linked to electronic health records (EHR) data. The release will see expansion of data across all core research data types: EHR, surveys, physical measurements, digital health information, genomics, and biospecimens. The update also will include the first release of clinical notes data on participants and new environmental and geospatial data will be released in a following update. The update will constitute the world's largest public dataset of Fitbit data and will have over 14,000 long-read genome sequences. Dr. Adjemian underscored the longitudinal nature of the *All of Us* Research Program. Although the program was only established in 2018, it contains a great deal of EHR and wearable data going back much further in time. The update contains new reporting

of race and ethnicity subcategories which will allow for deeper analyses of health outcomes. The increased wearables dataset is unique in the field in size and scope and Dr. Adjemian is excited about its potential for new studies.

Dr. Adjemian described in more depth the Exploring the Mind partnered research study that Dr. Schully briefly mentioned in her remarks. This study is a collaboration with the National Institute of Mental Health with the goal of assessing cognitive functions, such as attention span, decision-making, reward valuation, and the ability to recognize emotions, to better understand how health conditions affect behavior. Over 36,000 participants have completed at least one Exploring the Mind task, and data from this study are also made available to all researchers on the Researcher Workbench. Along with the future addition of environmental and geospatial data, *All of Us* is in the process of developing a Controlled Tier Plus (CT+) access tier in order to allow researchers access to richer datasets that require a more secure environment. An updated public-facing Data Roadmap will be issued in the coming months to keep the research community abreast of planned additions and updates.

Dr. Adjemian shared data snapshots to highlight the broad range of conditions that can be studied using *All of Us* Research Program data, including NIAMS' conditions of interest. *All of Us* can offer sizeable numbers of participants with rarer conditions due to the overall size and diversity of the cohort. Dr. Adjemian believes the *All of Us* Research Program data can help advance NIAMS' research priorities, such as mapping known and novel associations between genotypes and phenotypes, leveraging genomic data in the context of regenerative medicine research, and making use of AI and machine learning technologies for large-scale predictive modeling, among other possibilities.

Driver Projects are another option offered by *All of Us* to take a deeper dive into strategic priorities, pilot ideas, or perform a landscape analysis in preparation for a potential partnered research study. One ongoing Driver Project is on systemic lupus erythematosus (SLE), and Dr. Adjemian invited Dr. Barbour to present on this project. Dr. Barbour said the project was initiated by Dr. Criswell during her tenure as Director in order to develop best practices for researchers using *All of Us* data to study this very complex condition. The Driver Project team is a collaboration involving NIH representatives, academic researchers, and contractors from RTI International, and was funded by Dr. Criswell's lab at NHGRI. The team built off of existing literature on algorithms developed to identify and study SLE patients using EHR data. In addition to recommending guidelines to researchers on how to use *All of Us* cohorts, the Driver Project also aims to perform descriptive analyses to better understand SLE data in *All of Us*, identify availability of data sources by SLE cohorts, and explore how SLE cohorts differ by demographic and clinical characteristics. Dr. Barbour described how the project team developed four cohort definitions for the purposes of the analysis and presented summary demographic and health data snapshots for each cohort. The cohorts were participants with 2+ diagnosis codes, participants with 4+ diagnosis codes, a contemporaneous cohort (2 or more SLE codes with at least one being within 2 years prior to *All of Us* consent), and a post-consent cohort of individuals receiving at least 2 diagnosis codes after *All of Us* enrollment. The Driver Project team identified study designs best suited for each cohort and the strengths and limitations of each cohort for research. The team is currently preparing to submit their best practices manuscript for publication in *Arthritis & Rheumatology* and is working to assess the impact of future data

releases and the possibility of a partnered research study. Dr. Criswell highlighted that *All of Us* has announced that lupus will be a subject of one of the Clinical Notes demonstration projects, which will provide an opportunity to validate these cohorts. The work of the Driver Project will also be translated into a Featured Workspace so that researchers will be able to apply it to future studies.

Discussion

Dr. McNally asked if *All of Us* has a mechanism for tracking family members who are enrolled as participants. Dr. Schully said that the program does not explicitly track family relations, although it might be possible to tease that out from genetic data. She suggested that would be a good topic for a partnered research study. Ms. Elderkin asked for Dr. Schully to comment on the funding status of *All of Us*. Dr. Schully said the program's original funding from the 21st Century Cures Act expires at the end of the current fiscal year. After that, the program expects to be funded at $122M, which essentially allows for maintenance of the existing data, but would not allow for new data acquisition and platform updates. Dr. Schully hopes the community can continue to spread the word about the importance of the program in order to achieve additional funding in future appropriations. Dr. Schully also fielded clarifying questions about how the X01 biospecimen program will be funded and whether information on specimen handling is available. Dr. Schully said the X01 will be funded by other ICs and will be part of an upcoming Highlighted Topic. Metadata on specimen history and other information is available.

V. MoTrPAC PRESENTATION

Dr. Mazzucco welcomed Dr. Wendy Kohrt, Chair of the Executive and Steering Committees for the Molecular Transducers of Physical Activity Consortium (MoTrPAC), to deliver the presentation on this NIH Common Fund initiative and her work as a PI in the program. MoTrPAC was established in 2016 and is co-managed by NIAMS, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), and the National Institute on Aging (NIA). The initial goals of the program were to develop a mapping of the molecular responses to exercise and, where possible, connect these changes to the health benefits of physical activity; to interrogate how responses vary by age, sex, body composition, and fitness level; to develop and maintain a user-friendly public data resource for investigators; and to develop a biorepository for animal and human samples. Dr. Kohrt provided an overview of the consortium's governance structure and component sites and units, which are located at institutions throughout the country. For example, the specimen biorepository is maintained at the University of Vermont while the Bioinformatics Center is based at Stanford University. Dr. Kohrt discussed the timeline for the consortium startup, which was significantly impacted by the COVID-19 pandemic. MoTrPAC ultimately completed enrollment of the highly active cohort in mid-2023 and completed enrollment of the sedentary cohort of the intervention arm last May.

Dr. Kohrt described the activities of the Preclinical Animal Study Sites (PASS), which performed acute exercise and progressive training studies in rats with phenotyping and subsequent tissue sample collection for molecular analysis. The first major publications from MoTrPAC emerged from the animal training studies. These papers reported large numbers of differentially expressed, exercise training-regulated features, including some surprising findings,

such as some of the largest number of transcript changes being seen in the adrenal gland and the colon. The studies found profound sex differences across tissues, time courses, and direction of regulation changes. Further research will be needed to understand why these sex differences are occurring and the impact on health. Dr. Kohrt believes one of the major strengths of MoTrPAC is it will be able to compare animal and human data across the three common tissues collected across species (skeletal muscle, adipose tissue, and blood), age and sex differences, similar exercise and training protocols, and the same multi-omic analyses.

Dr. Kohrt transitioned to describing the human clinical studies and the three MoTrPAC cohorts: sedentary adults, highly active adults, and adolescents. The sedentary cohort participants were randomized into endurance training, strength training, and control arms. The highly active arm has a similar structure but does not have an intervention component. The adolescents' arm is a cross-sectional comparison of low activity endurance exercise versus highly active participants. Some of the low-activity adolescents were randomized into an exercise intervention trial. The final enrollment figures were slightly below the target in terms of total enrollees for the sedentary and active cohorts, and the sedentary cohort was not able to achieve male-female balance, with females outnumbering male participants 2:1. When the pandemic interrupted enrollment, the decision was made to treat the cohorts that had been enrolled pre-suspension as a pilot study. Dr. Kohrt reviewed the eligibility criteria for the cohorts and demographic figures for participants enrolled into the post-suspension cohorts. There were 8 serious adverse events in the sedentary cohort, six of which were not related to study procedures or intervention, and no serious adverse events in the other cohorts. This suggests a good safety profile in the context of thousands of hours of exercise and numbers of procedures. Dr. Kohrt said the loss to follow-up figures were relatively low given the burden of the protocol, approximately 14% in the sedentary cohort and 6% in the other two cohorts, and most of the dropouts occurred prior to the start of the intervention.

Dr. Kohrt described the MoTrPAC clinical protocols themselves in greater detail, including the acute endurance and resistance exercise bouts, the biospecimen collection schedule, and the intervention protocol. She highlighted some of the findings from the descriptive data produced from the adult sedentary protocols, including cardiovascular measures, biomarkers, and results of cycling-based exercise testing. The intervention led to significant improvement in many of the metrics, with results being consistent across sex and age groups. Biospecimen collection was successful in terms of number of samples and timeliness. Dr. Kohrt announced that the study's first pre-suspension molecular landscape paper, titled "Multi-Omic, Multi-Tissue Responses to Acute Exercise in Sedentary Adults: Findings from the Molecular Transducers of Physical Activity Consortium," will soon be in review at *Nature Medicine*. Dr. Kohrt directed any interested parties to the MoTrPAC.org website for more information on the protocols and resources for collaboration. She also directed researchers to the MoTrPAC Data Hub, the consortium's data repository.

Dr. Kohrt closed the presentation by highlighting approaching funding challenges that the consortium faces as it approaches the end of the 10-year Common Fund funding period at the end of the calendar year. MoTrPAC will need to seek other sources of funding to complete biospecimens research and molecular analysis and maintain the consortium's infrastructure.

Discussion

Dr. Kiel asked about bone data from the rodent studies. Dr. Kohrt said bone biospecimens are retained in the biorepository and are available for ancillary study. Dr. Li asked if MoTrPAC included any imaging. Dr. Kohrt replied that DXA scans for body composition were the only form of imaging done as part of the protocols, although there are some issues related to harmonization and standardization across sites. Dr. Mazzucco asked Dr. Kohrt if she saw any promising research avenues from the molecular findings. Dr. Kohrt said that the sheer volume of data means that much of the consortium's initial analyses will be high-level overviews, with the goal of piquing the interest of researchers with more specific focus areas. Dr. Kohrt said that the unexpected adrenal responses have been of particular interest to her. Dr. Kohrt also discussed with Council members plans to add a longitudinal component to MoTrPAC and the consortium's role as a reference database for future studies using the MoTrPAC intervention with other demographic or condition-specific subgroups.

VI. INTRAMURAL RESEARCH PROGRAM (IRP)

Dr. Mazzucco welcomed Dr. Tamara Alliston, NIAMS Scientific Director, to deliver her presentation on the NIAMS IRP. The IRP currently includes 207 individuals, including investigators conducting studies across the research spectrum, researchers from all career stages, as well as administrative support staff, technicians, and summer students. The IRP represents approximately 11% of the NIAMS budget, or about $78M. The IRP has five high-level strategic priorities: trans-NIH collaborations, communication of research findings and outreach, resource management, career development, and scientific leadership. Dr. Alliston provided an overview of IRP leadership and organizational structure, which includes a Clinical Program, Office of Scientific Operations, Office of Science and Technology, and an Administrative Management Branch. Key components of the Clinical Program are the Rheumatology Fellowship and Rheumatology and Dermatology Consult Services. The Office of Scientific Operations manages the IRP's career development and training initiatives. Dr. Alliston highlighted the IRP's tenured and tenure track investigators and their research focus areas.

Dr. Alliston described the important role of the Board of Scientific Counselors (BSC) in conducting oversight of the NIAMS IRP and reviewing and evaluating the impact of the science conducted in the IRP. The four investigators reviewed at the most recent BSC meeting all received 'Outstanding' reviews. Dr. Alliston described in greater detail the collaborative nature of research in the NIAMS IRP and how it helps achieve one of the NIH's goals of breaking down silos on campus. The NIAMS IRP had collaborations with 19 NIH ICs in the last calendar year.

Dr. Alliston highlighted two IRP research projects that resulted in noteworthy publications over the past year. The first was research on DOCK8 deficiency by the lab of Dr. Heidi Kong, which leveraged the IRP's stable, long-term funding to investigate this rare and often fatal disease of immunodeficiency. Dr. Kong's recent study published in *Cell Host & Microbe* found reduction of skin virome following hematopoietic stem cell transplant. The second research highlight was led by Dr. Tasha Morrison, an Independent Research Scholar at NIAMS under a program designed for early-career researchers. Dr. John O'Shea served as mentor. Dr. Alliston described

Dr. Morrison's work exploring the relationship between the UGCG enzyme and NK cell differentiation. Dr. Alliston reported that several past IRP fellows have recently taken independent roles at academic institutions and noted successful placement of postbac scholars at MD and PhD programs across the country.

The NIAMS IRP's multi-IC Genomics Core is seen as the flagship program of its type at NIH, and NHLBI and NIDDK have decided to move their genomics sequencing activities under the umbrella of NIAMS' genomics section. The 2026 NIAMS IRP Retreat took place May 28-29 and was attended by over 200 participants with five keynote speakers. Dr. Alliston concluded the presentation by flagging open positions in the program at the postbac, postdoc, and independent investigator levels. The Institute is particularly seeking a medical dermatologist to join the IRP's world-renowned Dermatology Consult Service at the Clinical Center and NIAMS' Dermatology Branch.

Discussion

Dr. Botchwey asked whether the NIAMS IRP sees a role for itself on the topics of tissue engineering and human organoids, particularly in the context of regenerative medicine. Dr. Alliston acknowledged a significant need for these kinds of technologies that goes beyond the capacity of the NIAMS community. She expressed excitement about work coming out of ARPA-H on this front. The NIAMS IRP is also keeping an eye on related efforts at the National Center for Advancing Translational Sciences (NCATS) and potential opportunities for collaboration.

VII. SYSTEMS BIOLOGY MAPPING INFECTION AND INFLAMMATION IN CHRONIC DISEASE

Dr. Mazzucco provided an update on NIAMS' ongoing involvement in the Accelerating Medicines Partnership (AMP). In terms of chronic diseases, there remains a need to better understand the molecular drivers of heterogeneity of immune responses and to build a deeper understanding of shared molecular mechanisms across chronic diseases to better develop targeted therapies. The AMP initiative is a longstanding public-private partnership between the NIH, the Foundation for NIH, and private sector partners. NIAMS has been involved in several other AMP initiatives since its inception, including AMP-RA/SLE and the Systems Biology Data Platform (SysBio). Several years ago, the National Institute on Aging funded six R21 pilot projects to test the feasibility of cross-disease systems biology analyses using AMP program data. Dr. Mazzucco presented findings from the pilot studies, which produced promising findings while underscoring the challenges of harmonizing data across repositories in order to perform molecular analysis. The AMP Systems Biology of Inflammation (SBI) in Chronic Diseases is a concept being developed to identify causal immune/inflammatory mechanisms for chronic diseases in order to accelerate the discovery of novel precision medicine targets and biomarkers leveraging the SysBio interoperable data ecosystem. The concept aims to increase interoperability of AMP data, fill in critical data gaps, identify peripheral immune/inflammatory signatures of disease endotypes, and build predictive models of dysregulation by diseases and stages. The ultimate goal is to provide value to the research community by developing a federated data ecosystem with related tools and resources. Dr. Mazzucco noted that this concept

has been developed via a collaborative process with other NIH ICs, other federal partners, and the private sector.

VIII. CLOSED SESSION

This portion of the meeting occurred during closed session.

X. REVIEW OF APPLICATIONS

The 120th National Arthritis and Musculoskeletal and Skin Diseases Advisory Council met in person on June 2, 2026. Eleven Council members and three Ad-Hoc Council members attended virtually. En bloc concurrence was unanimously approved for 1376 primary and 2023 secondary applications. The total cost requested in year - 01 for all applications was $386,321,848.

XI. ADJOURNMENT

The 120th National Arthritis and Musculoskeletal and Skin Diseases Advisory Council adjourned at 4:02 p.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.

TIMOTHY E. EDGERTON -S
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Date: 2026.07.24 15:01:54 -04'00'

Erik Edgerton
Executive Secretary, National Arthritis and Musculoskeletal and Skin Diseases Advisory Council
Acting Director, Division of Extramural Activities
National Institute of Arthritis and Musculoskeletal and Skin Diseases

Anna E. Mazzucco -S
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Anna E. Mazzucco, Ph.D.
Acting Chair, National Arthritis and Musculoskeletal and Skin Diseases Advisory Council
Acting Director, National Institute of Arthritis and Musculoskeletal and Skin Diseases