Department of Health and Human Services
National Institutes of Health
National Center for Advancing Translational Sciences
34th Meeting of the
Advisory Council

Minutes of Virtual Meeting
September 28, 2023

The National Center for Advancing Translational Sciences (NCATS) Advisory Council held a meeting in open session on September 28, 2023, from 1:01 p.m. to 5:16 p.m. EDT, via National Institutes of Health (NIH) VideoCast and in Building 31, C-Wing, Conference Rooms F and G, 9000 Rockville Pike, Bethesda, MD. Joni L. Rutter, Ph.D., NCATS Advisory Council Chair, led the meeting. In accordance with Public Law 92-463, the session was open to the public.

Prior to the meeting, the NCATS Advisory Council met in closed session on September 28, 2023, from 11:02 a.m. to 12:24 p.m. EDT, for the review and consideration of grant applications.

NCATS ADVISORY COUNCIL MEMBERS PRESENT

Chair

Joni L. Rutter, Ph.D., Director, NCATS

Executive Secretary

Anna L. Ramsey-Ewing, Ph.D., Director, Division of Extramural Activities (DEA), NCATS

Council Members

Paul A. Harris, Ph.D.
Annie M. Kennedy, B.S.
Matthias Kretzler, M.D.
Kelly Marie McVearry, Ph.D., Ed.M.
Robin J. Mermelstein, Ph.D.
Keith J. Mueller, Ph.D.
Paula K. Shireman, M.D., M.B.A.
Annica M. Wayman, Ph.D.

***Ad Hoc* Council Members**

None present

Representative Members

None present

***Ex Officio* Members**

None present

Others Present

Renee Wegrzyn, Ph.D., Director, Advanced Research Projects Agency for Health (ARPA-H)
NCATS leadership and staff

I. CLOSED SESSION OF THE NCATS ADVISORY COUNCIL

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

Review of Grant Applications

The Council reviewed 68 research, research-related and training grant applications with primary assignment to NCATS for a requested amount of $52,494,322 in first-year direct costs. The Council concurred with the recommendations of the initial review groups. For the record, it is noted that applications with secondary assignment to NCATS were also considered.

II. ADJOURNMENT OF CLOSED SESSION OF THE NCATS ADVISORY COUNCIL MEETING

Joni Rutter, Ph.D. adjourned the closed session of the NCATS Advisory Council meeting on September 28, 2023, at 12:24 p.m. EDT.

III. CALL TO ORDER, OPEN SESSION

Dr. Rutter called the meeting to order and welcomed members and guests to the 34th meeting of the NCATS Advisory Council. Anna L. Ramsey-Ewing, Ph.D., conducted the roll call and reviewed the meeting agenda. She noted the meeting logistics and reminded attendees that the open session was being VideoCast.

IV. APPROVAL OF MINUTES: Anna L. Ramsey-Ewing, Ph.D., Executive Secretary, NCATS Advisory Council

Members unanimously approved the minutes from the May 2023 Council meeting.

V. CONFIRMATION OF DATES FOR FUTURE MEETINGS: Anna L. Ramsey-Ewing, Ph.D., Executive Secretary, NCATS Advisory Council

Dr. Ramsey-Ewing confirmed the schedule for the meetings of the NCATS Advisory Council for 2024 and 2025:

- January 18–19, 2024 (virtual meeting)
- May 23, 2024
- September 26, 2024
- January 30–31, 2025 (virtual meeting)
- May 22, 2025
- September 25, 2025

VI. DIRECTOR'S REPORT: Joni L. Rutter, Ph.D., Director, NCATS, Chair, NCATS Advisory Council

Dr. Rutter began by providing a recap of the May 2023 meeting. During that meeting, she conveyed that NCATS had a variety of COVID-19 updates, including completion of the Paxlovid use analysis and advances in real-world data on COVID-19 therapeutics. The ending of pandemic authorities was announced, and advances in the gene therapy programs were highlighted. The majority of the discussions focused on the NCATS 2024 Strategic Plan, which was in the early phase of development.

Dr. Rutter presented updates on NIH and NCATS staff changes, including staff and leadership transitions; made announcements; and reported on the fiscal year 2023 (FY23) budget. She discussed COVID-19-related activities and highlighted progress in some of the NCATS offices, divisions, and programs.

News and Announcements

Dr. Rutter highlighted recent NIH-wide and NCATS announcements and events.

- **NIH and NCATS Staff Changes, Recruitments, and Retirements.** Dr. Rutter reminded the Council that President Joseph R. Biden nominated Monica M. Bertagnolli, M.D., to become the new NIH director. Dr. Bertagnolli currently is the National Cancer Institute director, and her confirmation hearing with the U.S. Senate is scheduled for the coming months. Lawrence A. Tabak, D.D.S., Ph.D., is continuing to serve as NIH acting director.

  The NIH institutes and centers (ICs) and Office of the Director (OD) have several leadership positions open, and searches are in progress. The following positions have recently been filled: Karina L. Walters, Ph.D., M.S.W., Director, Tribal Health Research Office; Andrew A. Bremer, M.D., Ph.D., Director, Office of Nutrition Research; Jane Simoni, M.D., M.P.H., Director, Office of Behavioral and Social Sciences; Katherine (Kate) Klimczak, M.P.P., NIH Associate Director, Office of Legislative Policy and Analysis; and Jeanne Marrazzo, M.D., M.P.H., Director, National Institute of Allergy and Infectious Diseases. Dr. Rutter noted that Patricia Flatley Brennan, Ph.D., R.N., announced that she is retiring from federal service on September 30, 2023. Dr. Brennan had been director of the National Library of Medicine for the past 7 years and worked closely with NCATS on data science efforts.

  Dr. Rutter noted that NCATS has had several active leadership positions open across divisions and offices, some of which have been filled. Dominique Pichard, M.D., M.S., is director, Division of Rare Diseases Research Innovation (DRDRI). Dr. Pichard previously served as chief science officer at the International Rett Syndrome Foundation, is a physician by training, has been involved in both preclinical and clinical research areas, and is a rare disease advocate. Jeanita Pritchett, Ph.D., is the new scientific diversity officer, NCATS Office of the Director. Dr. Pritchett comes to NCATS with more than a decade of government experience at the National Institute of Standards and Technology (NIST), working as a bench researcher in chemistry and academic programs and as a program manager. She most recently has been the leader of NIST's Diversity, Equity, Inclusion and Accessibility efforts. Krishna Balakrishnan, Ph.D., M.B.A., has been named director, NCATS Office of Strategic Alliances (OSA), and has been with NCATS since 2011, bringing extensive leadership and technology development expertise. Dr. Balakrishnan has served as OSA's deputy and acting director.

- **NCATS Budget At-a-Glance.** The overall budget for NCATS encompasses the Clinical and Translational Science Awards (CTSA) Program (68 percent) and all other activities (32 percent). The appropriations have been steadily increasing since FY20. In FY23, NCATS' enacted budget was $923 million. President Biden released the FY24 budget proposal in March 2023 and projects a flat budget across the federal government. The House and Senate Appropriations Committees proposed similar flat budgets for NCATS, and the center's leadership is preparing for various scenarios.

- **Congressional Briefing and Visits.** Dr. Rutter highlighted that NCATS has taken opportunities to visit with Congress during briefings on Capitol Hill to discuss and showcase ongoing programs and initiatives, including the Tissue Chips program. On July 11, 2023, Dr. Rutter visited Senator

John Boozman (R-Arkansas) and his staff and described the CTSA Program at the University of Arkansas for Medical Sciences (UAMS). During that visit, she also provided an update on work with the U.S. Food and Drug Administration (FDA) regarding tissue chips, some of which is being led by UAMS.

- **NCATS Website Redesign.** The NCATS website is being redesigned, and the updated version will be launched soon. The revised website will include new sections on impact and resources organized by audience; filters to sort research activities, funding, and news; refreshed organization and content; and clear statements about NCATS' purpose across the site. Dr. Rutter expressed appreciation to Emily Marti, M.A., chief of the Communications Branch, Office of Policy, Communications and Education (OPCE), and her staff for engaging NCATS stakeholders to solicit input to inform the new website.

Activities and Impact Across the Translational Science Pipeline

Dr. Rutter provided an update on COVID-19 research, NIH Common Fund initiatives, and other NCATS highlights.

- **Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV) Clinical Trials**. The metformin arm of ACTIV-6 opened for enrollment in July 2023 and is evaluating the final of five drugs during the 5-year study. This phase of the ACTIV-6 trial will evaluate a primary endpoint of time to recovery from acute symptoms, with a 6-month follow-up.

- **U.S. Department of Health and Human Services (HHS) Awards.** NCATS staff received HHS awards. Sarah Dunsmore, Ph.D. program director, Division of Clinical Innovation (DCI), received the Secretary's Commendation for Exceptional Service for exceptional service and leadership during the Public Health Emergency phase of the COVID-19 pandemic. She was recognized for her efforts to support the COVID-19 pandemic response through the ACTIV-6 decentralized clinical trials.

  NCATS staff also received the Secretary's Award for Distinguished Service (highest award granted by HHS) for the creation and establishment of a secure platform technology—the National COVID Cohort Collaborative (N3C) Data Enclave—to house COVID-19 patient electronic health records and make the data quickly accessible for COVID-related research. This effort required creativity, ingenuity, and close collaboration to rapidly develop and launch this national resource and make it available to the entire global research community at a time of great urgency. Dr. Rutter acknowledged N3C leaders Sam Michael, director, Automation and Compound Management, NCATS; Penny W. Burgoon, Ph.D., director, OPCE; and Kenneth R. Gersing, M.D., director of informatics, DCI, and the N3C team, including the wider extramural community.

  Matthew D. Hall, Ph.D., director, Early Translation Branch, and his team received the Secretary's Award for Meritorious Service (HHS's second highest award) for the creation and establishment of the COVID-19 OpenData portal. This contribution has pushed the boundaries of open science adoption at NIH, HHS, and beyond and has built the foundation for a transformative new platform of data sharing and drug repurposing that will accelerate discovery well beyond COVID-19.

- **Other NCATS Awards.** Dr. Hall received an Honorary Fellowship from the University of Sydney in Australia. This fellowship is the highest award bestowed on graduates from the university and

recognizes his work in supporting alumni relations for the university, as well as his outstanding scientific accomplishments.

- **2023 NIH Research Festival.** On September 18–22, 2023, the NIH Intramural Research Program hosted the NIH Research Festival, the program's first in-person event since the COVID-19 pandemic. During this week of activities, designed as a celebration of intramural research, NCATS Division of Preclinical Innovation presented 37 scientific posters, which was three times more posters than ICs of similar budget. Trainees at all career levels and non-trainee–level scientists participated.

- **Helping to End Addiction Long-term® Initiative, or NIH HEAL Initiative®, Native Collective Research Effort to Enhance Wellness (N CREW) Program.** NCATS is partnering with the National Institute on Drug Abuse (NIDA) on the NIH HEAL Initiative N CREW program to respond to the needs of the tribal communities. The aim is to support tribes and Native American–serving organizations to conduct locally prioritized research to address overdose, substance use, and pain and their intersections, along with mental health and other wellness factors. All funding for N CREW is provided by the NIH HEAL Initiative. NIDA has overall program oversight, and NCATS has other transaction and administrative review oversight.

- **Targeted Genome Editor Delivery (TARGETED) Challenge.** In September 2023, the NIH Director's Blog announced the launch of the Targeted Genome Editor Delivery (TARGETED) Challenge. The TARGETED Challenge is a multiphase prize competition funded through the NIH Common Fund as part of the NIH Somatic Cell Genome Editing Program. The goal is to deliver targeted therapies to hard-to-reach places in the body and understand how to innovate in this space to make gene editing a reality for a variety of diseases. Philip J. (P.J.) Brooks, Ph.D., deputy director, DRDRI, NCATS, and Walter J. Koroshetz, M.D., director, National Institute of Neurological Disorders and Stroke, co-developed this Challenge.

- **Complement Animal Research in Experimentation (Complement-ARIE).** The NIH Common Fund and 17 ICs, including NCATS, are planning the Complement-ARIE program to develop, standardize, validate, and use new approach methodologies (NAMs) that will transform the way the field conducts basic, translational, and clinical sciences. The goals of the program will be to better model and understand human health and disease outcomes across diverse populations, develop NAMs that provide insight into specific biological processes or disease states, validate mature NAMs to support regulatory use and standardization, complement traditional mammalian animal models, and make biomedical research more efficient and effective. The Common Fund will be hosting three public listening sessions in October to convene representatives from multiple sectors to gain insight into current opportunities and roadblocks in NAM development. Further details can be accessed from the Complement-ARIE Strategic Planning website. The Advisory Committee to the Director Working Group on Catalyzing the Development and Use of Novel Alternative Methods to Advance Biomedical Research will provide its recommendations on NAMs to NIH at the end of 2023. These recommendations will be integrated into Complement-ARIE.

Forum on Drug Discovery, Regulation, and Translation

Dr. Rutter noted that during the past 5 years, NCATS and then-NCATS Director Christopher P. Austin, M.D., have worked with the National Academies of Sciences, Engineering, and Medicine to establish the Forum on Drug Discovery, Regulation, and Translation. A framework for assessing clinical trial site readiness using this forum has been finalized and published. Three parallel papers describing this

framework have been developed; one, Site readiness practices–considerations for CTSA hubs, is published, and two are pending. The foundational common principles that make up the core of this framework are a culture of quality, person-centeredness, and clinical research literacy, and they span several domains, including research team, infrastructure, and data collection and management, as outlined in the site readiness publications. Dr. Rutter noted some recommendations for CTSA institutions and explained that a shared understanding of site readiness is expected to lower barriers to entry for clinical trial sites; maintain the confidence of trial sponsors, collaborators, and participants; and increase diversity.

NCATS Strategic Planning 2024–2029

Dr. Rutter briefly highlighted the status and timeline of the NCATS strategic planning process for developing the center's 2024–2029 strategic plan. NCATS has posted a request for information (RFI) for additional stakeholder input and has convened more than 50 roundtable sessions, engaged 1,150 individuals, and received more than 1,700 unique comments. Common priorities across stakeholder communities (i.e., CTSAs, NCATS, public roundtables, and the Rare Diseases Clinical Research Network) include collaboration and partnerships; data science; community engagement; workforce development; diversity, equity, inclusion, and accessibility (DEIA); and rare diseases. The next steps will be to evaluate this feedback based on the needs of the different communities and tailor it to NCATS programs. A draft framework is planned for the first quarter of 2024.

Summary

Dr. Rutter noted that President Biden nominates the NIH Director and that NCATS leadership is growing. NCATS staff have received the highest HHS Service Awards and have made several impactful advances, including enrolling participants in the ACTIV-6 metformin trial, with a parallel emulation trial in the N3C; completing and publishing the CTSA clinical trial site readiness framework; and co-leading a new Common Fund program: Complement-ARIE. The NCATS 2024–2029 Strategic Planning RFI was released. Other program updates included information about NCATS' DCI and Office of Drug Development Partnership Programs (ODDPP) and ARPA-H.

Discussion

Annica M. Wayman, Ph.D., asked about the diversity of the workforce as it relates to clinical trial readiness research teams and whether there were shortages. Dr. Rutter noted that the National Academies will be evaluating the makeup of the workforce and that this topic—to outline career development programs and engage and make recommendations to institutions to build their programs to help support and maintain the workforce—is on the agenda for an upcoming meeting.

Matthias Kretzler, M.D., commented on a new philosophy for determining clinical trial readiness based on the demands of the workforce. He noted that the NIH *All of Us* Research Program is developing powerful tools for reaching minority groups and bringing more studies to people and more people to studies in rare diseases. Dr. Kretzler expects that the CTSAs will play a critical role in testing innovative models and providing feedback, and he suggested considering staff scientists, as well as M.D./Ph.D.'s, when evaluating the clinical trial workforce.

Paul A. Harris, Ph.D., commented on the clinical trial readiness publications and how they will serve as maturity models over time and are a good investment.

Kelly Marie McVearry, Ph.D., Ed.M., who addresses clinical trial readiness for the Lupus Research

Alliance, highlighted a crisis in clinical trial readiness for rheumatology studies because the doctors who are members of the next generation of academic medicine are feeling pressure to be accepted into a tenure track position. She noted a need to have this discussion with the National Academies to elevate these types of clinical trials. Dr. Rutter will ensure that this crisis is highlighted in any future discussions with the National Academies.

Annie M. Kennedy, B.S., commented that clinical trial sites also become the delivery sites for innovative therapies because they have protocols in place for getting them to patients more quickly. She suggested translating standard operating procedures into protocols for therapeutic delivery that can be disseminated beyond a specific clinical trial site. Dr. Rutter agreed with this suggestion and noted two models of delivering different therapeutic modalities where this could potentially be implemented readily: (1) the Accelerating Medicines Partnership® (AMP) and AMP Bespoke Gene Therapy Consortium (BGTC) and (2) Platform Vector Gene Therapy (PaVe-GT).

Dr. Rutter will highlight the crisis in clinical trial readiness for rheumatology studies in any future discussions with the National Academies.

Dr. Rutter and NCATS will explore developing protocols for therapeutic delivery in the BGTC and/or PaVe-GT models that can be disseminated broadly.

VII. INVITED SPEAKER: ARPA-H—The Mission: Renee Wegrzyn, Ph.D., Director, ARPA-H

Renee Wegrzyn, Ph.D., discussed the mission of ARPA-H and highlighted current activities. ARPA-H was established in May 2022, and its mission is to accelerate better health outcomes for everyone. ARPA-H does not measure progress by the number of companies launched or the number of papers published but rather by measurable change in the quality of life of all Americans. ARPA-H focuses on accessibility, cost, and equity. The agency was established as an independent component of HHS within NIH, and the ARPA-H director reports directly to the HHS secretary. ARPA-H was granted $2.5 billion in initial appropriations, which is separate from the NIH appropriations. No internal research laboratories are in place, and the agency is disease agnostic. ARPA-H generally funds contracts rather than grants and has the ability to directly reimburse other federal agencies.

ARPA-H has unique structures and legal authorities that allow it to function like a business (i.e., quickly, nimbly, and decisively). Key features include bottom-up decision-making, accelerated contracting, a lean and nimble management structure, and flexible hiring. Program managers drive ideas and decision-making and serve the entire health ecosystem, composed of the public, health care providers, academia, industry, and other federal agencies, including NIH and the FDA, Centers for Medicare & Medicaid Services (CMS), and Health Resources and Services Administration.

Dr. Wegrzyn noted four organizational attributes that support the ARPA-H mission: problem-focused program managers, radical change, autonomy in decision-making, and term limits. Program managers are hired and bring a program idea that can be rapidly launched and also present new ideas in years 2 and 3 of their appointments, if applicable. The ARPA-H portfolio is a reflection of the program managers; the portfolio is dynamic and will change frequently. ARPA-H funds are not aligned with a single disease but allow the flexibility to fund areas of greatest impact. The program managers in the first cohort are at different stages of their careers, use different approaches to management, and are CEO-minded. Program managers can be problem solvers, dreamers, tinkerers, rookies, status quo challengers, and sages.

ARPA-H's approach to defining problems is based on the Heilmeier Catechism and includes the following questions: (1) What are you trying to do? What health problem are you trying to solve? (2) How does

this get done at present? Who does it? What are the limitations of present approaches? (3) What is new about our approach? Why do we think we can be successful at this time? (4) Who cares? If we succeed, what difference will it make? (5) What are the risks that may prevent you from reaching your objectives? What are the risks the program itself may present? (6) How long will it take? (7) How much will it cost? (8) What are our midterm and final exams to check for success? (9) To ensure equitable access for all people, how will cost, accessibility, and user experience be addressed? (10) How might this program be misperceived or misused, and how can we prevent that from happening?

Dr. Wegrzyn detailed the ARPA-H model. The program manager is provided the resources to launch a program, solicit ideas from the community, and fund teams of performers with different approaches to solving the health-related challenge. Funding mechanisms include contracts, cooperative agreements, and other transactions. The goal is to have one team reach graduation (solve the challenge) and transfer the project out of the agency to partners (e.g., NCATS, private industry) who can scale the solution for large, diverse communities everywhere.

ARPA-H's Project Accelerator Transition Innovation Office (PATIO) is focused on increasing the odds of survival at each step of the life cycle. PATIO will provide resources to program managers to help with efforts related to assessing the market, identifying possible performers, performing due diligence, de-risking, driving adoption, protecting intellectual property and forming a company, transitioning investments, and providing access to key customers and investors.

Dr. Wegrzyn explained that the initial focus areas are (1) health science futures (i.e., expanding what is technically possible), (2) scalable solutions (i.e., reaching everyone quickly), (3) proactive health (i.e., keeping people from becoming patients), and (4) resilient systems (i.e., building integrated health care systems). She highlighted examples of current programs within these focus areas. Novel Innovations for Tissue Regeneration in Osteoarthritis (NITRO) is a 5-year program focused on noninvasive bone and cartilage repair to determine whether joints can heal themselves. A clinical trial is a component, and equitable access is a requirement. The Precision Surgical Interventions program is focusing on developing technology that will allow the surgeon to observe the tumor margins from the operating room and overall is evaluating whether surgeries fixed problems flawlessly the first time. The Biomedical Data Fabric Toolbox is designed to break the silos of research and clinical institutes where data are housed and difficult to access.

ARPA-H recently announced the ARPA-H Health Innovation Network (ARPANET-H) to establish an interconnected health care innovation network for the United States. ARPANET-H meets a statutory requirement set by Congress that ARPA-H have three geographic sites around the country and will act as a hub and spoke network to recruit all 50 states to the network. The Operations Hub is located in the Capital region for close proximity to CMS and the FDA to transition capabilities. The Customer Experience Hub will be located in Dallas, TX and the Investor Catalyst Hub will be based in the greater Boston area. Dr. Wegrzyn noted that partners and performers can work with ARPA-H through the open broad agency announcement or program managers.

Discussion

Dr. Kretzler commented that ARPA-H's reliance on venture capital investments could inadvertently result in those investments serving the well-resourced areas rather than those in need. Dr. Wegrzyn explained that the project managers are ensuring that clinical trials linked to programs (e.g., NITRO) are representative of the demographic of the disease being studied. The ARPANET-H Investor Catalyst Hub is not creating a venture capital pipeline of funding but is seeking investors that would benefit from

returns beyond the financials to the communities they serve. ARPA-H has other creative options, such as directly reimbursing FDA and fixing the cost of drugs for communities in need.

Paula K. Shireman, M.D., M.B.A., asked how treatments would be delivered in rural communities, which generally are underserved. Dr. Wegrzyn noted that the performers applying to the NITRO program, for example, would be required to bring their solutions to the rural setting. The proposal is active, teams are still to be assembled, and the participating hospitals still need to be determined. Surgeons working in rural areas are serving on the advisory boards and will be end users for any technologies developed.

Because it appears that ARPA-H is supporting cancer, diabetes, and Alzheimer's disease, and not rare diseases, Ms. Kennedy asked how resources are prioritized or allocated to ensure the acceleration of better health outcomes for all people. Dr. Wegrzyn mentioned that she had discussions with members of Congress about any issues that ARPA-H would not compromise on. She is insistent that no funds be linked to a specific disease and confirmed that no language on supporting cancer, diabetes, or Alzheimer's disease is contained in authorizing documents on ARPA-H. Market analysis is performed to ensure that the private sector is not already addressing any gaps that a program manager has identified. The NIH has a de-conflicting process to ensure that projects are not funded in duplicate and that investments are unique. A portfolio map identified rare diseases, maternal health, and pediatrics as gaps, but ARPA-H requires a champion, program manager to run projects in those areas.

VIII. CLEARANCE OF CONCEPT: Presentation and Discussion

The NCATS Advisory Council received presentations on one renewal concept that NCATS is considering supporting. At the end of the presentation, the members discussed the proposal and voted on whether to approve of NCATS' moving forward with the concept. Discussants for the concept were assigned prior to the meeting.

Introduction of Office of Special Initiatives (OSI) Concept: Danilo A. Tagle, Ph.D., M.S., Director, OSI, NCATS

Danilo A. Tagle, Ph.D., M.S., explained that the OSI mission is to address translational problems with innovative solutions through disruptive technologies and novel partnerships with patient advocacy groups and other government agencies. The programs and initiatives within OSI are intended to be catalytic and transformative, resulting in a paradigm shift in the field. The renewal concept being proposed leverages NCATS investments in tissue chip technology over the past 10 years.

Tissue Chips in Space 2.0—CLDs and Beyond Concept: Danilo A. Tagle, Ph.D., M.S., Director, OSI, NCATS

Dr. Tagle presented a renewal concept for Tissue Chips in Space 2.0—Commercial Low Earth Orbit (LEO) Destinations (CLDs) and Beyond. The renewal concept of the Tissue Chips in Space program encompasses developing multi-organ integrated platforms closely approximating human body-on-chip systems; establishing the use of induced pluripotent stem cell (iPSC)–derived organ-specific cell types from diverse groups of people, including those from National Aeronautics and Space Administration (NASA) and commercial astronauts to serve as their own avatars; and incorporating advancements in 3-D microfabrication and tissue chip technology—such as culture life beyond 6 months—and automated and miniaturized platforms.

OSI proposes Tissue Chips in Space 2.0 to improve disease outcomes by translating observations from biomedical research experiments in space into interventions that benefit the health of individuals and the public on Earth. This program has resulted in translational benefits of biomedical research in LEO

and in space, including the protein crystallization of the *KRAS* oncogene and improved production processes for the monoclonal antibody Keytruda. Tissue chips have enabled diseases and human conditions to be modeled that may be difficult or would take longer to complete on Earth.

The Tissue Chips in Space program is a partnership among NCATS, NASA, the Center for the Advancement of Science in Space, and the International Space Station (ISS) National Laboratory to model age-related diseases under microgravity and to translate that understanding to improve human health on Earth. With this partnership, automation and miniaturization requirements for spaceflight created technological innovation for tissue chip hardware and instrumentation. The program had several successful launches from 2018 to 2023, with the final launch on March 14, 2023, which evaluated cardiomyopathy. The purpose of this renewal is to further deploy tissue chips as models of accelerated aging and to develop interventions/countermeasures to mitigate aging effects on Earth and in space.

In terms of areas of emphasis, NCATS will partner with NASA (and the European Space Agency), the current ISS National Laboratory and future CLDs, other NIH ICs, and other agencies. OSI will provide support for tissue chips to be deployed in the changing space station landscape for when the current ISS National Laboratory is decommissioned (by 2030) and replaced by CLDs—such as from Axiom Station, Orbital Reef, or Starlab—and will position tissue chips to be the biomedical experiment of choice beyond LEO as discussions are underway between NCATS and NASA for the Artemis III moon landing mission, as well as part of the ExoMars mission to study the effects of long-duration space flight on the human body in preparation for a mission to Mars.

NCATS has been the leader in the United States and internationally in supporting the development and widespread usability and adoption of tissue chips and 3-D microfabricated tissue constructs. NCATS serves as the HHS/NIH liaison to NASA in exploring how space and Earth-based biomedical research can benefit human health here on Earth, as well as address the challenges of health in LEO and during deep space exploration missions.

The expected impact of the Tissue Chips in Space program is a better understanding of human cellular responses to spaceflight and utilizing the LEO environment for disease modeling and to study accelerated aging. It is anticipated that this research will provide key insights into the control and optimization of stem cell differentiation, proliferation, expansion, and maturation and the genomic/epigenomic integrity of stem cell populations; increase use of exosome-based therapies for tissue repair and wound healing; lead to the development of therapeutics and countermeasures for physiological changes associated with the aging process; accelerate the development of personalized avatars or you-on-a chip for precision medicine; and increase 4-D bioprinting capabilities for whole-organ production in regenerative medicine.

Success for this renewal concept will include advancement in the utility of tissue chips to model accelerated aging, development of tissue chip avatars for use in precision medicine, and development of various countermeasures against aging and radiation exposure for terrestrial use.

Discussion

Matthias Kretzler, M.D., expressed his support for this program renewal and noted that solutions developed in space for the benefit of space-related health should be funded by NASA. Dr. Kretzler emphasized maintaining the co-funding structures. Dr. Tagle explained that the field is entering a new era in space medicine and space exploration because NASA is exploring ways to commercialize these areas. The replacement for the ISS National Laboratory will be achieved primarily through private funding. NCATS is in the process of determining the best partnership opportunities.

Paula Shireman, M.D., M.B.A., expressed her enthusiasm for the concept and emphasized benchmarking systems well against *in vivo* models, as well as the iPSC models.

Members unanimously approved the Tissue Chips in Space 2.0—CLDs and Beyond concept.

IX. PROGRAM UPDATE: Division of Clinical Innovation (DCI): Michael G. Kurilla, M.D., Ph.D., Director, DCI, NCATS

Michael G. Kurilla, M.D., Ph.D., provided an update on DCI activities and focused on the CTSA Program. The CTSA Program currently includes 64 hubs, 16 of which are funded by new UM1 awards. Dr. Kurilla provided a brief summary of the first year of UM1 awards. Overall, a 14 percent average increase in total funding was reported across the hubs relative to the UL1 awards from the previous year. Dr. Kurilla noted that declines in funding were reported in two of the new awards, but these declines were relatively minor. Twelve of the 16 hubs received K12 awards, and several institutions deferred the awards until the following year to better align with their academic calendars. Dr. Kurilla noted that approaches for implementing K12 awards differed across institutions, which led to challenges in reporting and monitoring compliance. Dr. Kurilla acknowledged Andrew D. Kelly, M.B.A., budget officer, Office of Administrative Management, NCATS, for his work in modeling projections for future funding.

Division of Clinical Innovation Staff Updates

Dr. Kurilla presented a summary of staff updates for FY23 and shared an overview of new staff, including Kris Bough, Ph.D., program officer, CTSA Program Branch; Patrick H. Brown, Ph.D., chief, Education and Training Section, CTSA Program Branch; Francisco Levya, M.D., Ph.D., Sc.M., medical officer, CTSA Program Branch; Robin M. Wagner, Ph.D., M.S., director, Office of Program Evaluation, Analysis, and Reporting; Tiffany Ward, operations coordinator, Clinical Affairs Branch; and Ken Wiley, Jr., Ph.D., chief, Clinical Research and Resources Section, Clinical Affairs Branch. Dr. Kurilla remarked that these staff will help facilitate increased coordination and harmonization of activities across DCI.

Recognitions and Awards

Dr. Kurilla remarked that the N3C team recently received the Secretary's Distinguished Service Award for their efforts in addressing the implications of Paxlovid rebound and eligibility requirements. Dr. Kurilla also recognized individuals from the CTSA Program who recently joined the National Academy of Medicine and underscored the impact of CTSA's strong leadership team. Dr. Kurilla also highlighted recent accomplishments by CTSA investigators and scholars.

- **Investigator Awards.** Cynthia Morris, Ph.D., M.P.H., professor and assistant dean, Oregon Health & Science University, was awarded the Association for Clinical and Translational Science (commonly known as ACTS) Clinical and Translational Research Distinguished Educator Award and the Rebecca Jackson Award for Outstanding Achievement in Education Innovation. Paule V. Joseph, Ph.D., CRNP, was awarded the Brilliant New Investigator Award and the inaugural American Academy of Nursing/National Academy of Medicine Fellowship. Jeffrey W. Kelly, Ph.D., was awarded the Breakthrough Prize in Life Sciences.

- **Faculty Position.** Steven M. Dubinett, M.D., recently was named dean of the David Geffen School of Medicine at the University of California, Los Angeles.

- **"40 Under 40" Honorees.** Galise Thomas, J.D., M.S., was selected to *Crain's Cleveland Business* Forty Under 40 Class of 2022. Omolola Adeoye-Olatunde, Pharm.D., M.S., was recognized as one

of the 2023 National Minority Quality Forum's 40 Under 40 Leaders in Health. Clare Harrop, Ph.D., was named by Spectrum as a 40 Under 40 Rising Star for Autism Research.

Clinical and Translational Research Awards Program Consortium Activities (FY24)

Dr. Kurilla provided an overview of current R03 awards, which are intended to support K scholars. The current awardees reflect a broad research portfolio, including de-implementation science and advanced chronic eye disease treatments.

- **Clinical and Translational Research Awards Collaborative Innovation Awards (CCIA).** Only one CCIA award was made in 2023, which likely reflects disruptions to research during the COVID-19 pandemic. The award is focused on the integration and interoperability of complex data and tissues from the human brain. Dr. Kurilla emphasized that this topic represents a key area for future development in data science. He also highlighted representative publications from a recent CCIA project that was focused on social determinants of health, frailty, and functional status to identify vulnerable patients and improve risk adjustment.

- **Trial Innovation Network (TIN).** Dr. Kurilla briefly highlighted outcomes of TIN from the past 7 years. He noted that 20 NIH ICs have been engaged in this effort. More than 400 requests for network support have been received, and 94 percent of CTSAs submitted proposals. Return of value for the patient remains an important area of consideration within the Recruitment Innovation Center. Dr. Kurilla highlighted the Treatments Against RA and Effect on FDG PET/CT (TARGET) trial, which completed enrollment within the projected time and became a repeat customer for a new grant submission. TheTIN 2.0 was recompeted successfully in summer 2023, and the first in-person meeting will be held in November 2023. Themes of the recompetition include expanding participation, reducing consent and regulatory burdens, testing tools for clinical trial efficiency, promoting training and education, and disseminating tools. Multicenter trial support and cross-TIN service activities will be continued.

- **Administrative Supplements.** Dr. Kurilla remarked that the CTSA Program receives co-funding from several ICs for training programs and various research topics, including bioethics.

Clinical and Translational Research Awards Researcher Spotlight

Dr. Kurilla highlighted rising leaders within the CTSA Program.

- **Institutional Mentored Career Development Award (KL2) Scholars.** Jennifer Andersen, Ph.D., a KL2 scholar, is performing faith-based health screenings in the Republic of the Marshall Islands. This work is addressing health disparities through community engagement. Gregory L. Peck, D.O., M.P.H., FACS, a KL2 scholar, is exploring the use of community engagement with preventive care to decrease risk factors for chronic diseases before the need for hospital-based care or emergency surgery. Carolyn Bramante, M.D., M.P.H., a former KL2 scholar, was the lead investigator of the COVID-OUT trial, which led to a 42 percent reduction in the development of "long COVID" following treatment for acute COVID-19.

- **Clinical Research Training Awards (TL1) Trainees.** Andrew L. Rainey, Ph.D., a TL1 trainee, is conducting a multistate assessment of population normalization factors for wastewater-based epidemiology of COVID-19. Sally G. Eagleton, Ph.D., a TL1 trainee, is focused on improving screening and referrals for federal nutrition program participation using electronic health records. Zack Dyer, M.P.H., a former TL1 trainee, was awarded the Ruth L. Kirschstein National

Research Service Award Individual Predoctoral Fellowship, and his work is focused on developing an explicit framework of structural racism.

- **Diversity/Re-Entry Supplement Awards.** Seven awards were made in FY23. Dr. Kurilla highlighted work by current and former awardees. Laika Aguinaldo, Ph.D., a current awardee, is leveraging machine learning to study neurocognitive predictors for the subsequent emergence of substance use. Ketrell McWhorter, Ph.D., M.B.A., ACE-CPT, a current awardee, is studying pediatric obesity and sleep in children in Appalachia. Demetria M. McNeal, Ph.D., M.B.A., CPTD, a former awardee, is performing research focused on peripheral artery disease in African Americans.

Clinical and Translational Research Awards Program News

- **Predicting Mortality.** Researchers at the Vanderbilt University Medical Center CTSA used artificial intelligence (AI) to derive body composition using data from chest computed tomography scans. This approach can predict mortality from multiple causes.

- **Improving Trial Enrollment.** Researchers at the University of California, Los Angeles CTSA have used AI for translation of consent documents, which could help improve enrollment in NIH-funded trials. In the past, translation of such documents has imposed a barrier to enrollment, particularly in multi-ethnic communities.

- **COVID-19 Variants in Wastewater.** Researchers at the University of California, Davis CTSA developed statistical methods using wastewater to quantitate threshold levels for the estimation of community COVID-19 transmission. This project involves collaboration across multiple sectors and suggests the potential for more rapid and comprehensive public health guidance.

- **Transforming Smartphones into Medical Devices.** Investigators from the University of California, San Diego CTSA are developing an innovative solution for democratizing the monitoring of blood pressure through a low-cost smartphone attachment. This work involves coordination between engineers and physicians, and such devices could be applied for clinical trials in the future.

- **Health Record Databases and Environmental Exposure.** The University of North Carolina at Chapel Hill CTSA is combining data sets to demonstrate a link between particulate matter and cardiovascular morbidity, as monitored via hospital procedures.

Clinical and Translational Research Awards Program Impact

- **C-dots Pilot Award.** A CTSA pilot award was granted in 2007 for the development of preclinical models using ultrasmall tumor-targeting core-shell silica nanoparticles. This work led to two FDA Investigational New Drug Applications for the multimodal platform and optical particle probe in 2011 and 2014, respectively. This platform is now being used in multiple clinical applications.

- **CTSA publications.** A bibliographic analysis revealed that more than 118,000 CTSA publications were released between 2006 and 2021. Of these publications, 13 percent have been referenced in policy documents, which is 30 percent greater than non-CTSA health-related publications. These metrics also correlate with NIH's approximate potential to translate (APT) score.

Discussion

Paula Shireman, M.D., M.B.A., asked about an analysis of COVID-19 policies that reference CTSA publications. Dr. Kurilla explained that because the analysis was conducted through 2021, opportunities for such correlations were limited. He remarked that the analysis of policy documents is complex and sometimes involves entities outside of the United States. Dr. Shireman noted that the FDA docket can be used as a tool for analyses. Dr. Rutter added that the CTSA Program has been referenced in documents related to preparedness for future pandemics.

X. PROGRAM UPDATE: Office of Drug Development Partnership Programs (ODDPP): Christine M. Colvis, Ph.D., Director, ODDPP, NCATS; Tyler F. Beck, Ph.D., Program Director, ODDPP, NCATS

Christine M. Colvis, Ph.D., noted that the overall goals of ODDPP are to develop partnerships that promote innovations, fill gaps in preclinical translational science from early discovery through early-stage clinical trials, and develop technologies and strategies to improve DEIA in health care. Each ODDPP program corresponds to a different stage of the drug development pipeline. Dr. Colvis reported updates on some of the programs.

- **Illuminating the Druggable Genome (IDG).** IDG is a Common Fund program, the goal of which is to improve understanding of the properties and functions of understudied proteins within druggable protein families. Three protein families are studied: ion channels, G-protein-coupled receptors, and kinases. Understudied proteins refer to those with few or no publications and/or lack of R01 funding. Karlie R. Sharma, Ph.D., program director, ODDPP, NCATS, leads the IDG program and established the NCATS Small Grant Program (R03) for seed grants to support collecting preliminary data to inform applications for larger grants. The first R03 was awarded in 2019, and 98 have been awarded over the course of the program. Of the 98 R03 awardees, 40 percent to 50 percent received a subsequent R01 or R21 award. The target landscape was expanded to include an R03 for examining understudied proteins that are associated with rare diseases. Twenty-one awards were made for FY23 on understudied proteins in rare diseases, including systemic lupus erythematosus, Myhre syndrome, Sotos syndrome, eosinophilic esophagitis, Moyamoya disease, and alveolar rhabdomyosarcoma. Three receipt dates are upcoming: October 17, 2023; January 16, 2024; and July 15, 2024.

- **Awards Supporting Cutting-Edge Technology for Translational Science (ASCETTS).** ASCETTS supports early-stage technology development projects for translational science and requires a future plan that describes how the technology will be used in the real world. Kihwa Kang, Ph.D., program director, ODDPP, NCATS, leads this program. Two receipt dates are upcoming: June 19, 2024, and June 19, 2025.

- **LitCoin.** The main goals of LitCoin are to incentivize data and knowledge sharing and build machine-readable, AI-ready knowledge from free text at inception rather than *post hoc*. In the LitCoin framework, the author submits an abstract and uploads the text to the LitCoin portal. The natural language processing (NLP) algorithms generate a machine-readable knowledge graph or network that represents the abstract text, which is displayed to the author for verification. Knowledge graphs accompany manuscripts accepted for publication and are incorporated into a machine-readable foundational graph. The LitCoin NLP Pilot Design Challenge ended, and two first prize winners and one second prize winner were announced. The Foundational Knowledge Graph contract was awarded to RTI International and is funded by the NIH HEAL Initiative. NCATS is partnering with the NIH Office of Data Science and Strategy to

receive assistance from a Data and Technology Advancement Scholar, Aaron Bernstein, Ph.D., M.Phil., to work with LitCoin.

- **Minimizing Bias and Maximizing Long-Term Accuracy of Predictive Algorithms in Healthcare Challenge.** NCATS is partnering with the NIH Office of the Director to launch this challenge. Karlie Sharma, Ph.D., and Christine Cutillo, MMCi, NCATS, Office of the Director, are leading this effort. The first-place team, Team Interfair, has been announced and was selected for its comprehensive solution to this challenge.

Biomedical Data Translator Program

Tyler F. Beck, Ph.D., provided an overview of the Biomedical Data Translator (Translator).

- **Purpose and Structure.** The aim is to help surface knowledge from a vast array of biomedical data to assist investigators in finding new relationships between data points that are relevant to their research. Translator uses knowledge graphs, which are large groups of conceptual data points connected through different types of relationships. The information is structured to traverse the data and present to the user the relevant connections between these pieces of information. These connections represent relationships found in many different sources, including those supported directly by NIH, PubMed, the Genetic and Rare Diseases (GARD) Information Center, and PubChem, along with public databases that are not supported directly by NIH, such as Kimball and Reactome. Having a single language to describe concepts across all of biomedical science is a huge undertaking. NCATS has created several new standards as part of the Translator Consortium over the last few years, some of which are starting to be used in other large data science programs.

- **Architecture.** Translator is a system of software tools currently built by 14 teams, all funded through the Other Transactions Authority (OTA). The consortium comprises several different types of teams with different functionalities. These teams include the knowledge provider teams tasked with searching for and collecting data from databases around the web and from autonomous relay agents, which are sophisticated reasoning tools that act as the graphs the knowledge provider teams serve up. NCATS' intramural team built the autonomous relay system, where potential results are sorted and combined as necessary into a set of potential answers for the user.

- **User Interface**. Over the course of the feasibility and development phases of Translator, efforts have focused on building an alpha version of the user interface. The user interface interacts with the autonomous relay system to display results that can be explored, including the evidence behind the results and the source of the results. That interface is being built by a contracted company that worked closely with the Translator teams and with user groups to design the front end for Translator.

- **Timeline**. Feasibility for this program was demonstrated in 2019, and the development phase started. The competitive prototyping phase began in January 2020, and this was part of the final application process. After winners were selected in May 2020, full development of the system began. In addition to the development research teams, the user interface development team is in year 2 of the 3-year funding period. The development phase of Translator represented a new start for the consortium, with several brand-new teams and many of the previous teams self-reorganizing to new collaborations during the application process. In September 2023, NCATS released the first public alpha version of the Translator system. This version allows users to ask a

set of specific questions about the system. Users receive potential answers to these questions, along with the associated evidence and provenance.

- **Relay Meetings**. Translator hackathons, now called relay meetings, convene two or three times annually (in person and virtually) and are true working meetings. Attendees are expected to make progress toward consortium-wide goals. Each session has defined deliverables to track the progress. The most recent meeting was held in Potomac, Maryland, and the group tested the idea of allowing *ad hoc* working sessions in the breakout rooms when they were not needed for a scheduled session.

- **User Base.** The main user base will be translational researchers—particularly rare disease researchers—who may be searching for support for laboratory-based observations; be in an early career stage, with exciting new ideas; or be built-in users. The second user base is data scientists and collaborators who wish to contribute data to Translator and make use of the knowledge graphs.

- **Translator Alpha Release**. An alpha release is an early version of software, typically unstable, but useful for showing what the software can do. Components include templated queries about drugs and disease, gene regulations, and drugs and regulation, as well as result scoring. Major user interface improvements are in progress. Dr. Beck demonstrated Translator queries and provided examples of results.

- **Translator User Interface**. Dr. Beck demonstrated queries in the demonstration website of Translator and provided examples of results. He noted that the website is marked with a disclaimer: "This system is for research purposes and is not meant to be used by clinical service providers in the course of treating patients."

- **Translator for Precision Medicine Research**. The University of Alabama, Birmingham Hugh Kaul Precision Medicine Institute is a member of the Translator Consortium. Its team of translational researchers works closely with clinicians who treat patients with very rare or highly refractory conditions. The analysts use Translator to identify potential treatments for these patients, write research reports about the results, and provide these suggestions to patients' physicians for evaluation.

- **Translator and Rare Disease**. SHINE (Sleep Disturbances, Hypotonia, Intellectual Disabilities, Neurological Disorders, Epilepsy) Syndrome is an extremely rare neurological disorder. Translator returned potential treatments, which resulted in measurable improvements in both motor and behavioral skills for a patient.

Dr. Beck noted that the Translator Consortium has been discussing the potential use of large language models, such as ChatGPT, and evaluating the possibility of integrating these tools. He acknowledged the Translator team, as well as the NCATS Information Resources Technology Branch team, and thanked them for their support. Dr. Beck invited attendees to visit the Translator demonstration website.

Discussion

Matthias Kretzler, M.D., suggested exploring creative ways to support robust responses to solicitations, such as allocating funds or leveraging from other sources.

XI. CLEARANCE OF CONCEPTS: Presentation and Discussion

The Council received presentations on one renewal concept and one new concept that NCATS is considering supporting. At the end of the presentation, the members discussed the proposal and voted on whether to approve of NCATS' moving forward with the concept. Discussants for the concept were assigned prior to the meeting.

Introduction of the Office of Drug Development Partnership Programs (ODDPP) Concepts: Christine M. Colvis, Ph.D., Director, ODDPP, NCATS

Dr. Colvis provided a brief review of ODDPP activities and introduced the office's renewal concept. ODDPP develops partnerships that promote innovations, fills gaps in the preclinical space ranging from early discovery through early-stage clinical trials, and develops technologies and strategies to improve DEIA in health care.

Biomedical Data Translator Performance Phase Concept: Tyler F. Beck, Ph.D., Program Director, ODDPP, NCATS

Tyler Beck, Ph.D., presented a renewal contract concept for the Biomedical Data Translator performance phase. Hundreds of biomedical data sources exist but have not been well aligned to allow researchers to explore and make connections among them. Biomedical researchers do not always know where to go to find critical information relevant to their work. Such processes as drug discovery and drug interaction prediction are not well modeled in software and entail significant upfront preclinical expenses.

NCATS proposes this renewal concept to significantly improve and build on the capabilities of the recently released Biomedical Data Translator System through enterprise-level software engineering and data science research. The objectives of the Biomedical Data Translator performance phase are to incorporate additional templated queries and enhance system functionality. Efforts will focus on developing enterprise-level software, building user trust, and allowing the developer-user to be onboarded.

The expectation is that links from the GARD Information Center website will continue to expand and drive traffic. The LitCoin knowledge graphs will be easily integrated, and monthly active users will grow to nearly 2,000. NCATS recognizes that true translation requires an understanding of biology at all levels, from the molecular level to the population level. The long-term (audacious) goal is that the Biomedical Data Translator will be used by researchers as often as PubMed.

The Biomedical Data Translator is unique within NCATS in both its scope and requirements. Research funding will be provided through other transaction authority. Funding for the Biomedical Data Translator user interface will be provided through a contract. The recent alpha version release showed the potential of and excitement for Translator. Plans are to implement major functionality and quality improvements during the proposed funding period.

For this contract concept, reviewers are being asked to consider the scientific, technical, and programmatic significance of the goals of the proposed research and development activity; the availability of the technology and other resources necessary to achieve the required goals; and the extent of identified practical, scientific, and clinical uses for the anticipated results.

Discussion

Dr. Harris expressed his support for this renewal concept. He agreed with the goal to professionalize and then harden the software but suggested performing this task on the underlayer first and keeping the user experience flexible.

Dr. Kretzler emphasized matching the overall concepts currently emerging with the ability to continuously bring in new data sets.

Members unanimously approved the Biomedical Data Translator performance phase concept.

Introduction of Office of Strategic Alliances (OSA) Concept: Krishna Balakrishnan, Ph.D., M.B.A., Director, OSA, NCATS

Dr. Balakrishnan invited Karlie Sharma, Ph.D., to present the OSI/ODDPP concept.

Addressing Health Inequities in Clinical Diagnostics Concept: Karlie R. Sharma, Ph.D., Program Director, ODDPP, NCATS

Dr. Sharma presented a new Small Business Innovation Research grant concept on Addressing Health Inequities in Clinical Diagnostics. Clinical laboratory assays and point-of-care devices often utilize nonbiological parameters as a proxy for diversity. Self-reported race or ethnicity does not correlate with diversity of populations. The percentage of European contribution to several African American samples within the continental United States varies tenfold, from 3.5 percent in the isolated Gullah-speaking Sea Islanders from South Carolina to 35 percent in Seattle. Clinical laboratory assays and point-of-care devices that utilize nonbiological parameters often fail minority patient populations. Biological attributes of diverse patient populations are often overlooked during assay and device development. Inadequate attention to the biological diversity of patient populations during the development phase has led to the release and utilization of many assays and devices that work best for only select populations.

NCATS proposes this concept to broadly address health inequities and disparities in the clinical assay and point-of-care device space. Investigators will be expected to develop diagnostics that meet or exceed the quality of existing diagnostics and will be encouraged to consider aspects of social determinants of health during the development process.

This research aligns with other health disparities activities across the ICs and addresses a known problem in health care processes. Academies are working to move away from nonbiological parameters in medicine. NCATS expects that this initiative will identify several clinical assays and devices that fail to incorporate diverse patient groups and relevant nonbiological parameters and will correct these to ensure the best and most equitable treatment for all patients. Support would be provided to small businesses that are developing assays and devices to address health inequities, with the long-term outcome being the release of new or corrected assays or devices that address health inequities and disparities in the clinical assay and point-of-care device space broadly.

Discussion

Annica Wayman, Ph.D., expressed her support for the concept, which addresses a gap in care. She emphasized ensuring that the grantees engage diverse communities on a routine basis and have a good plan for technology uptake. Dr. Wayman also asked how to address existing practices and diagnostic tools that are damaging to the health of communities. Dr. Sharma explained that applicants will be asked to have a plan describing how they would replace such practices and tools.

Kelly Marie McVearry, Ph.D. suggested including the use of AI tools and software in the notice of funding opportunity, given that investigators will be integrating AI into any devices they develop. Dr. Rutter added that using an AI tool could provide insight into biases.

ODDPP will consider including AI tools and software in the concept.

Members unanimously approved the Addressing Health Inequities in Clinical Diagnostics concept.

XII. PUBLIC COMMENTS

Comments from the public were accepted until October 14, 2023 (15 days after the meeting) and will be appended to the minutes.

XIII. ADJOURNMENT OF THE OPEN MEETING

Dr. Rutter thanked the participants for their input. The next meeting is scheduled for January 18–19, 2024, and is planned as a virtual session. Dr. Rutter adjourned the meeting on September 28, 2023, at 5:16 p.m. EDT.

XIV. CERTIFICATIONS

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

Joni L. Rutter. Ph.D.
Chair, NCATS Advisory Council
Director, National Center for Advancing Translational Sciences, NIH

Date

Anna L. Ramsey-Ewing, Ph.D.
Executive Secretary, NCATS Advisory Council
Director, Division of Extramural Activities, NCATS

Date