PREPARED STATEMENT OF CHRISTOPHER P. AUSTIN, M.D.

Mr. Chairman, Ranking Member, and Members of the Committee:

Thank you for the opportunity to present to you the President's Budget request for the National Center for Advancing Translational Sciences (NCATS) for fiscal year (FY) 2015. The FY 2015 budget for NCATS is $657,471,000, which represents an increase of $25,075,000 over the FY 2014 level of $632,396,000. The request includes $471,719,000 for the Clinical and Translational Science Awards (CTSA) program and $29,810,000 for the Cures Acceleration Network (CAN).

TRANSLATIONAL RESEARCH

In recent years, biomedical research has led to significant advances in our understanding of human biology. We have sequenced the human genome, explored the potential of stem cells, and discovered RNA interference. All of these advances have been celebrated as holding enormous promise for improving human health, but the road from promise to tangible improvements in public health has been long, complex and full of obstacles. NCATS aims to turn these game-changing discoveries into treatments for patients by addressing the "translational sciences" needed to close the gap. Translational sciences comprise the process of turning observations in the laboratory and clinic into effective interventions that improve the health of individuals and the public — from diagnostics and therapeutics to medical procedures and behavioral changes.

NCATS takes a system-wide approach to diseases and the translational science process. It serves as an "adaptor" to connect basic, clinical and public health research and as a "convener" for disparate organizations that play roles in the process of turning discoveries into health improvements. Every NCATS initiative is a collaboration with

partners in the public, private, government or nonprofit sector. The Center is committed to *developing* technologies and paradigms that improve the efficiency and effectiveness of one or more steps in the translational process, *demonstrating* that these innovations work in specific use cases, and *disseminating* the translational advances widely to catalyze improvements in all translational efforts with the ultimate and critically important goal of improving health.

MISSION INTO ACTION

One NCATS initiative that exemplifies these goals is the Discovering New Therapeutic Uses for Existing Molecules program. This program matches academic research groups with pharmaceutical companies to explore new disease indications for investigational compounds that are no longer being pursued by the pharmaceutical companies. The aim is to address several challenges in the translation process: the need for treatments for the several thousand diseases that have no effective therapy, the complicated process of negotiating agreements between parties who want to work together, and the largely ad hoc process by which academic and pharmaceutical researchers develop collaborative projects. In FY 2013, NCATS funded nine projects covering eight disease areas, including Alzheimer's disease, Duchenne muscular dystrophy and schizophrenia. The program already has resulted in positive outcomes. Within three months of the grantees receiving funds, three compounds were being tested in humans for new uses—two to treat schizophrenia and one to treat Alzheimer's disease. In addition, the time to establish collaborations between industry and academics has been shortened to only 13 weeks from the more typical nine months to a year. NCATS will solicit a second group of projects in FY 2014.

The NCATS emphasis on innovation is central to its collaboration with the National Eye Institute and Organovo (which makes 3-D tissue printers) to develop 3-D, architecturally accurate eye tissue. Such tissues have the potential to accelerate the drug discovery process—enabling treatments to be developed faster and at a lower cost—by giving researchers a more accurate view of how drugs will behave in human cells before those drugs ever enter clinical trials.

NCATS serves as a catalyst to increase the efficiency of the translational ecosystem, as illustrated by the formation of a research team that included scientists from the Johns Hopkins School of Medicine and the NCATS Assay Development and Screening Technology Laboratory. This team developed new methods to overcome several translational roadblocks and was able to demonstrate their effectiveness by identifying a promising new compound that prevents the death of cells in the eye from glaucoma, a disease that can lead to blindness. Working together, the collaborators were able to solve a problem that none of them could address alone.

TRANSLATIONAL RESEARCH SPECTRUM

Strengthening and supporting the entire spectrum of translational research with the ultimate aim of improved public health is a top priority for NCATS, and the CTSA program is crucial for these efforts. The CTSA program develops new technologies, methods, resources and operational paradigms that catalyze clinical research progress, and supports the training and career development of translational researchers. In June 2013, the Institute of Medicine (IOM) issued a report following a review of the CTSA program. The report recommended that NCATS take a more active role in the program's

governance and direction, formalize the evaluation processes of the program, advance innovation in education and training programs, and ensure that the patient community participates in all phases of research. Since the publication of the report, the Center has increased programmatic and fiscal management of the grants that support the CTSA program and has streamlined the governance of the consortium, consulting closely with the CTSA Principal Investigators. A Working Group of the NCATS Advisory Council was established in December 2013 to provide input on measurable objectives for the program. The Working Group will submit its report to the NCATS Advisory Council in May 2014.

FOCUS ON RARE DISEASES

NCATS is deeply committed to developing treatments for rare diseases, which are defined in the U.S. as affecting fewer than 200,000 individuals. There are approximately 6,500 rare diseases, but only 250 have treatments. The NCATS Therapeutics for Rare and Neglected Diseases (TRND) program advances potential treatments for rare and neglected diseases to first-in-human trials, an approach known as "de-risking." This strategy makes new drugs more commercially attractive to biopharmaceutical companies, despite the small patient population that is characteristic of these diseases. For example, in 2013, a clinical trial was started to evaluate a drug candidate called cyclodextrin as a possible treatment for Niemann-Pick disease type C1 (NPC1), a rare and fatal genetic brain disease affecting children. A TRND-led team of more than 20 investigators from NIH, academia, a pharmaceutical company, and patient groups developed cyclodextrin as a treatment as well as an NPC biomarker to guide its clinical development. An Investigational New Drug application for cyclodextrin was approved by the FDA, and a Phase I clinical trial currently is ongoing.

CURES ACCELERATION NETWORK

CAN was authorized to advance the development of high-need cures and reduce significant barriers between research discovery and clinical trials. At NCATS, CAN is intended to advance initiatives designed to address scientific and technical challenges that impede translational research.

Currently, CAN supports the Tissue Chip for Drug Screening Program, which is a partnership with the Defense Advanced Research Projects Agency (DARPA) and the FDA to develop 3-D human tissue chips that accurately model the structure and function of human organs, such as the lung, liver and heart. These devices will enable researchers to predict harmful health effects of new drugs more accurately, thus addressing one of the main reasons that drug studies often fail.

NCATS has had success moving projects forward with its rare disease therapeutics program, but there are significantly fewer groups working on developing medical devices, for which there is a great need. NCATS could launch a comprehensive collaborative effort to accelerate device development as part of the next phase in the CAN program.

CONCLUSION

These projects are just a few examples of the exciting and innovative activities underway at NCATS. Though the Center is still relatively new, early successes demonstrate how its distinctive approaches can help solve some of the most challenging problems in translational science. We will build on our accomplishments over the past two years to accelerate our programs further in FY 2015. I look forward to sharing more of our achievements with you as NCATS continues to evolve.