



Northwestern University
NUCATS
Clinical and Translational Sciences Institute



IMPACT REPORT 2022

NUCATS is supported by the NIH's National Center for Advancing Translational Sciences, grant UL1TR001422, as well as Northwestern University's Feinberg School of Medicine and Office for Research

A FUTURE CATALYZING, ACCELERATING AND TRANSFORMING TRANSLATION

Our activities at work, and the world around us, continue to change in ever more dynamic and fast-paced ways. Adapting to these changes has allowed the NUCATS Institute to thrive, and it is ongoing adaptation that will enable us to flourish in the future.

As one of more than 60 NIH National Center for Advancing Translational Science Clinical and Translational Sciences Award-funded hubs – with strong and generous institutional support from Northwestern – we continue to strengthen and create critical resources, training, and educational opportunities that our members rely on.

Since launching in 2008, the Northwestern University Clinical and Translational Sciences Institute has made an undeniable impact on the scientific landscape. We have supported more than 3,000 academic publications and annually, we facilitate more than \$1 million in competitive pilot research projects that seed new NIH applications.

This Impact Report details some of our accomplishments over the past year, which include:

- A transformative project that has started across Northwestern to disrupt and overcome systemic barriers that still impede the equitable career advancement of faculty from groups that have been historically excluded from biomedical research. This award from the NIH Faculty Institutional Recruitment for Sustainable Transformation Program, with generous added support from Northwestern, will enable hiring of new faculty in clusters covering topics from cells to community in the areas of cancer, cardiovascular, and neuro-behavioral sciences. Numerous NUCATS members played instrumental roles in applying for the grant, a process led by principal investigators Melissa Simon, MD, MPH; Eric Perreault, PhD; and Clyde Yancy, MD, MSc.
- With support from the NUCATS Institute and CTSA Trial Innovation

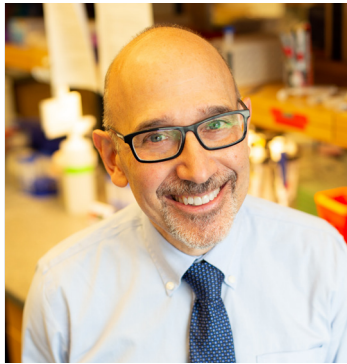


Photo by Eileen Molony

Network, NIH awarded Rod Passman, MD, a groundbreaking, clinical trial (REACT-AF) of a “temporal precision medicine” strategy using a wearable to manage stroke prevention for patients with atrial fibrillation. The trial will include more than 80 sites nationally.

- The creation of a new Research Ethics and Equity Consultation Service co-led by Seema Shah, JD, and Irene Blanco, MD, MS.
- The addition of a new Master of Science in Clinical Investigation (MSCI) course on community-engaged research and the inclusion of “Antiracist Strategies for Clinical and Translational Research” as a core course of the MSCI program.
- The Alliance for Research in Chicagoland Communities (ARCC) Community-Academic Anti-Racism Learning Collaborative expanded its diverse mix of community and academic partners to engage together in a supportive space to question, learn, and address how racism operates in research institutions and through their policies.

NUCATS remains committed to improving health for all, as well as advancing and advocating for diversity, equity, inclusion, belongingness, and anti-racism in all aspects of our work. With our community, national, and CTSA partners, we will persevere, learn, and adapt. We look forward to any feedback you have about our progress over the past year and are eager to hear how we can help your research have greater impact.

Richard D’Aquila
NUCATS Director

On the cover, clockwise from top left:

As a KL2 Scholar, **Lisanne Jenkins, PhD**, is examining the association between structural brain networks and neuropsychiatric symptoms such as disinhibition and apathy across multiple types of dementia. She also became one of the first faculty members to complete the NUCATS Mentor Training Certificate Program.

Ariel Thomas Sansing, a community engagement liaison; **Daniel Mendez**, Puerto Rican Cultural Center associate director; and **Jen Brown**, co-director of the Alliance for Research in Chicagoland Communities, were among dozens who attended an outdoor ARCC meeting in Uptown’s Margate Park. Mendez and PRCC are also members of the ARCC Steering Committee. Brown was recently appointed by the Patient-Centered Outcomes Research Institute as a member of its Advisory Panel on Patient Engagement.

With support from the NUCATS Institute and CTSA Trial Innovation Network, **Rod Passman, MD**, the Jules J. Reingold Professor of Electrophysiology, was awarded a \$37 million grant to study wearables and stroke prevention in patients with atrial fibrillation.

KL2 Scholar alumna **Sadiya Khan, MD, MSc**, is principal investigator of two R01s, a U01, and a U63 grant. Her exceptional early career success was highlighted as part of the inaugural NUCATS Institute “Science in Translation” podcast.

Led by **Susanna McColley, MD**, and **Nia Heard-Garris, MD, MSc**, “Antiracist Strategies for Clinical and Translational Research” became a core class of the Institute’s Master of Science in Clinical Investigation program.

Mercedes Carnethon, PhD, and **Ravi Kalhan, MD, MS**, both co-directors of the Center for Education and Career Development, are leading a first-of-its-kind longitudinal study to track and analyze lung health in Millennials at the peak of their lung health. The national 40-site study will follow 4,000 adults for approximately five years to evaluate how their lifestyles affect respiratory health.

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www.nucats.northwestern.edu

75%

THREE IN FOUR INVESTIGATORS WHO PARTICIPATED IN A NUCATS STUDIO HAVE HAD THEIR GRANT **FUNDED**

16

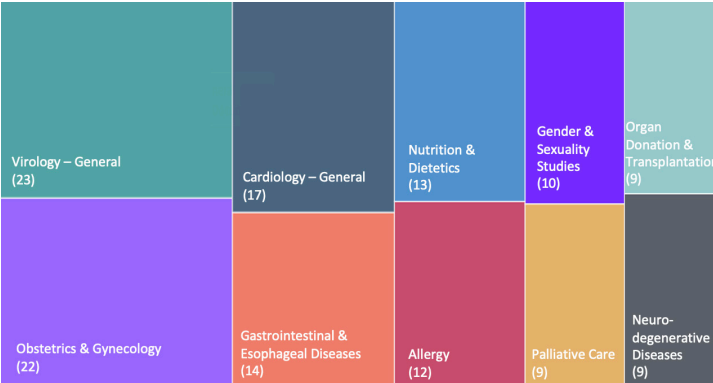
NUCATS HOSTED 11 FIRST-SUBMISSION GRANT DEVELOPMENT AND IMPLEMENTATION STUDIOS AND 5 FULL-TEAM **STUDIO CONSULTATIONS** IN FY 22

454

454 SCIENTIFIC **PAPERS** WERE SUPPORTED BY NUCATS LAST YEAR

3,000

SINCE LAUNCHING IN 2008, NUCATS HAS SUPPORTED MORE THAN 3,000 **PUBLICATIONS**, WHICH HAVE BEEN CITED BY ACADEMIC AND POLICY EXPERTS THROUGHOUT THE WORLD



VIROLOGY TOPPED THE 10-MOST-POPULAR **SUBJECT AREAS** PUBLISHED BY NUCATS-SUPPORTED RESEARCHERS LAST YEAR

17,100

SINCE 2017, MORE THAN 17,100 PEOPLE HAVE ENGAGED WITH WEB-BASED **TEAMSCIENCE.NET** TRAININGS

\$800M

IN THE PAST 3 YEARS, BCC AND NUDACC BIOSTATISTICIANS HAVE HELPED SUBMIT MORE THAN 340 PROPOSALS TOTALING MORE THAN \$800 MILLION IN **POTENTIAL FUNDING**

\$1M

NUCATS ANNUALLY SUPPORTS MORE THAN \$1M IN **PILOT RESEARCH FUNDING** THAT SEEDS NEW NIH APPLICATIONS

2,000+

NUCATS-SUPPORTED PUBLICATIONS WERE FEATURED IN MORE THAN 2,000 **NEWS ARTICLES** AND 14,000 TWEETS LAST YEAR

1,000

SINCE 2008, CURRENT AND FORMER KL2 SCHOLARS HAVE CONTRIBUTED TO MORE THAN 1,000 ACADEMIC PUBLICATIONS

NURTURE INITIATIVE TO CHANGE EQUITY LANDSCAPE

A transformative grant awarded to Northwestern will study how to disrupt systemic barriers that impede the equitable career advancement of biomedical science faculty from underrepresented populations. The award allows for “cluster hiring” and the advancement of a university-wide culture of inclusive excellence. The Northwestern University Recruitment to Transform Under-Representation and achieve Equity (NURTURE) program, is one of only 11 NIH Faculty Institutional Recruitment for Sustainable Transformation (FIRST) awards to date.

The principal investigators are **Melissa Simon, MD, MPH**, Vice Chair for Research in the Department of Obstetrics and Gynecology and Director of the Center for Health Equity Transformation (contact PI); **Eric Perreault, PhD**, Associate Dean for Research Administration and Oversight and Professor of Biomedical Engineering and of Physical Medicine and Rehabilitation; and **Clyde Yancy, MD, MSc**, Feinberg Vice Dean for Diversity and Inclusion, Chief of Cardiology in the Department of Medicine, and NUCATS Associate Director of Diversity and Inclusion.

The five-year NIH award will enable hiring 15 new tenure-track faculty covering a spectrum of research from “Cells to Community” in three scientific neighborhoods: cancer; cardiovascular; and brain, mind, and behavior. NIH funding is generously supplemented by Feinberg’s Dean’s Office and Northwestern’s Office of the Provost. Several NUCATS members will play instrumental roles in NURTURE. **Susanna McColley, MD**, co-leads NURTURE’s Faculty Development Core. **Kristi Holmes, PhD**, co-leads NURTURE’s Evaluation Core and leads evaluation at NUCATS. **Richard D’Aquila, MD**, will serve as chair of NURTURE’s Institutional Transformation and Accountability Committee, charged with sustainably disseminating lessons learned University-wide.



MELISSA SIMON
NURTURE PI



ERIC PERREAULT
NURTURE PI



CLYDE YANCY
NURTURE PI



USING SMART WATCHES TO BOOST PRECISION MEDICINE

With support from the NUCATS Institute and CTSA Trial Innovation Network, **Rod Passman, MD**, the Jules J. Reingold Professor of Electrophysiology, was awarded a \$37 million grant to study wearables and stroke prevention in patients with atrial fibrillation.

“NUCATS was instrumental in helping with the design of the study and attending to the myriad of details needed for the grant submission,” says Passman. “The organizational expertise and oversight provided by several of the stellar staff at NUCATS was invaluable.”

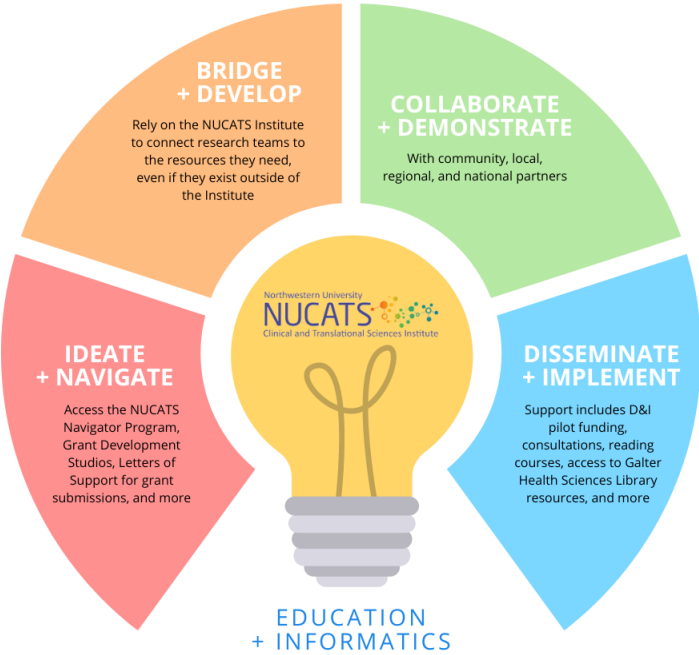
Passman first approached the Institute in 2017 wanting to build on an already piloted strategy. The timing coincided with the newly launched Trial Innovation Network, a now well-established initiative designed to leverage the CTSA consortium for multi-site studies (www.trialinnovationnetwork.org). Using TIN liaisons at NUCATS, Passman engaged in an initial year-long TIN consultation, which was followed by support from the Trial Innovation Center at Johns Hopkins and Tufts, as well as the Recruitment Innovation Center at Vanderbilt.

The seven-year study, called the Rhythm Evaluation for AntiCoagulaTion (REACT-AF) trial, relies on Apple Watches and an accompanying iPhone app to target blood-thinning medication use for a limited period of time and only in response to a prolonged episode of atrial fibrillation (AFib). The study will enroll its first of 5,400 patients before July 2023.

As primary project manager ahead of grant submission, NUCATS brought together local experts from Northwestern University Feinberg School of Medicine, the Bluhm Cardiovascular Institute, Office for Sponsored Research, and CTSA consortium partners.

“The idea of REACT-AF persisted because of Dr. Passman’s belief that temporal precision medicine holds the potential to be paradigm shifting,” says NUCATS Director Richard D’Aquila. “This large, multi-site project also relied on the collaborative nature of groups like the Bluhm Clinical Trials Unit, TIN, and NUCATS Institute.”

NUCATS COLLABORATES FROM IDEATION TO IMPLEMENTATION



The Northwestern University Clinical and Translational Sciences Institute provides scientists with consultative resources and expertise to accelerate how quickly transformative scientific discoveries make their way from the lab to patients and communities. It is our goal to continually increase the quality, safety, efficiency, and speed of innovative clinical and translational research.

As one of more than 60 NIH National Center for Advancing Translational Sciences Clinical and Translational Science Award-funded hubs, we continue to strengthen and create critical resources, training, and educational opportunities that our members rely on to navigate the scientific landscape from ideation to implementation.

COMMUNITY ENGAGEMENT, ANTIRACIST STRATEGIES FOCUS OF NEW MASTER'S IN CLINICAL INVESTIGATION COURSES

A new elective course in the NUCATS Institute's Master of Science in Clinical Investigation (MSCI) program explores the role of community engagement in clinical investigation, including its merits and challenges. Students are exposed to the history and principles of community-engaged research, including the philosophical orientations that underlie the field, such as critical consciousness and feminism, its various manifestations as participatory/action research, its application through an array of community-based participatory methods, and its delivery through community-academic partnerships.

The course is led by Community Course Co-Director **Pedro Serrano, MPH, CPH**, a public health practitioner-scholar with the Department of Research at the CORE Center of Cook County Health; and Academic Course Co-Director **Gregory Phillips II, PhD, MS**, assistant professor in the Department of Medical Social Sciences and founder of the research program in Evaluation, Data Integration, and



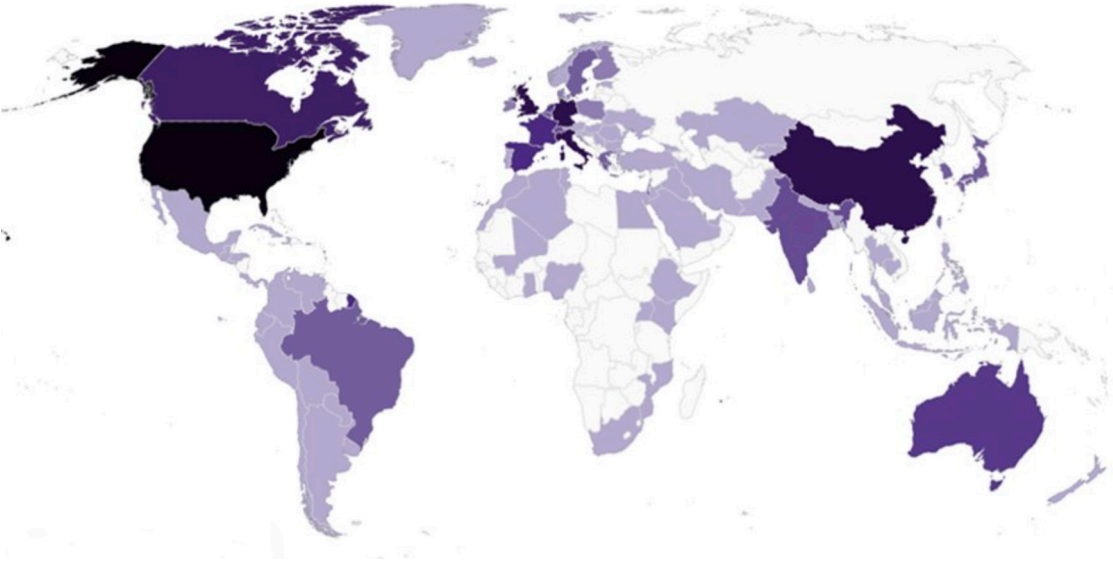
Following a successful pilot, the NUCATS Institute has made "Antiracist Strategies for Clinical and Translational Research," a core class of the MSCI program. The course provides an overview of how anti-Black racism can be perpetuated in clinical research, how to spot these patterns, and how students can actively address them. It is co-led by Nia Heard-Garris, MD, MSc, left, and Susanna McColley, MD.

Technical Assistance.

The launch of the MSCI Community Engagement course follows on the heels of a second successful year of "Antiracist Strategies for Clinical and Translational Research." The new core MSCI class provides an

overview of how anti-Black racism can be perpetuated in clinical research, how to spot these patterns, and how students can actively address them as they conduct research projects. The course is led by **Nia Heard-Garris, MD, MSc**, and **Susanna McColley, MD**.

NUCATS MEMBERS CITED 1,687 TIMES IN 10 LANGUAGES



NUCATS Institute members continue to make a global impact. During the past year (June 20-21), NUCATS-supported research discoveries received 1,687 citations. Those citations occurred in 10 languages and in 105 nations.

BECKER, BROWN EXPAND IMPSCI EFFORTS AT NUCATS

In about the same amount of time it takes to brew a pot of coffee, another American has died of an opioid overdose. Northwestern researchers believe implementation science (ImpSci) can help.



SARA BECKER

Co-PI of new ImpSci grant

Sara Becker, PhD, and **C. Hendricks Brown, PhD,** are multiple principal investigators of a new \$15.8 million, five-year implementation science center grant. Other principal investigators include Mark McGovern of Stanford (prime) and Will Becker of Yale.



C. HENDRICKS BROWN

Co-PI of new ImpSci grant

The new Research Adoption Support Center is funded as part of the National Institute on Drug Abuse (NIDA) HEAL Data2Action Program, which is designed to promote real-time use of data to inform services for opioid use disorder and pain management.

Brown and Becker are also on the leadership team of a \$10 million P50 NIDA grant focused on dissemination and implementation of effective addiction services.

NEW RESEARCH ETHICS AND EQUITY SERVICE LAUNCHED

With the increased use of research ethics consultation services at Clinical and Translational Sciences Award hubs, issues related to equity are frequently emerging as investigators strive to make their research more inclusive.



SEEMA SHAH

Ethics lead and co-director of CREEC

Given the centrality of the principle of justice in research ethics, the NUCATS Institute has launched a new service that integrates both ethics and equity. Co-directed by **Seema Shah, JD,** (ethics lead) and **Irene Blanco, MD,** (equity lead) the Clinical Research Ethics and Equity Consultation (CREEC) Service provides advice and concrete recommendations for researchers related to diversity, equity, and inclusion, as well as ethics.



IRENE BLANCO

Equity lead and co-director of CREEC

This critical support to research teams, which is available at any point in the lifecycle of research, will better address challenging issues of equity and ethics.

NUCATS, CHICAGO STATE PARTNER FOR SCIENCE AND THE CITY

NUCATS and Chicago State University held three symposia as part of a new initiative to further a mission jointly developed by leaders at both universities: to foster cross-institution biomedical collaborations in research, training, and education and to accelerate the development of a diverse and inclusive biomedical workforce.

The initial Science and the City symposia focused on topics ranging from drug discovery to genomics.

Susanna McColley, MD, director of the NUCATS Institute's Multidisciplinary Training Program in Child and Adolescent Health



Michael Danquah, MS, PhD, chair of Pharmaceutical Sciences at Chicago State University College of Pharmacy

(TL1) program, sees great synergy between Chicago State's College of

Pharmacy and Northwestern University Feinberg School of Medicine's Department of Pharmacology led by **Alfred George, MD**.

"The NUCATS Institute's TL1 Science Immersion Program has provided opportunities for PharmD students to work in translational research settings for several years, introducing students to research careers and fostering professional development," she says. "Extending this success to create new opportunities, including enhanced pathways from PharmD to PhD, is an overarching goal for this and future symposia and other activities."

LISTEN TO THE NEW NUCATS PODCAST

Hear from NUCATS member investigators, staff, and trainees who are dedicated to accelerating how fast we can move a transformational finding in the lab into a treatment, cure, or strategy that will improve human health. Discover how Institute members use the tools and resources available through NUCATS to Catalyze, Accelerate, and Transform translational science. Listen to "Science in Translation" wherever you get your podcasts.



NUCATS NAMES 3 KL2 SCHOLARS

Amanda Becker, MD, Pediatrics; **Carol Haywood, PhD**, Medical Social Sciences; and **Lajja Desai, MD**, Pediatrics, comprised the 2022 cohort of KL2 scholars. Scholars receive two years of mentorship, education, and career development opportunities to help them conduct novel clinical and translational research and prepare for future independent funding.

GALTER LIBRARY COLLABORATES WITH CERN AND NNLM

An award to Northwestern and the European Organization for Nuclear Research (CERN) will enhance capabilities of data management and sharing for National Institutes of Health-funded researchers through the Generalist Repository Ecosystem Initiative (GREI). This modernization of the data ecosystem aligns with the NIH Strategic Plan for Data Science and includes search and discovery of NIH-funded data in a set of seven generalist repositories.

Over the past several years, CERN and Northwestern's Galter Health Sciences Library have partnered with the Invenio Open Source Community to develop a turnkey,



scalable, and top-of-the-class user experience software that forms a strong sustainable foundation for one of seven repositories that comprises the GREI. This state-of-the-art software is also the foundation for an about-to-be-implemented upgrade of Galter's own repository, DigitalHub, which is being renamed PRISM.

Galter was also named the National Evaluation Center (NEC) for the Network of the National Library of Medicine (NNLM). The NEC is charged with coordinating assessment of the impact, efficacy, and value of NNLM activities, services, and resources — with special focus on assessing network member engagement and understanding its impact on people who experience health disparities or are underrepresented in biomedical research. Galter is a next-generation information powerhouse and the only library embedded within a CTSA hub, a synergistic partnership which yields tremendous benefits for Northwestern and beyond.

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ARCC LAUNCHES ANTI-RACIST LEARNING COLLABORATIVE

A new tool developed by the Alliance for Research in Chicagoland Communities (ARCC) aims to support researchers and community-academic research partnerships in learning and implementing strategies to integrate racial equity and anti-racism into their partnerships and research design, conduct, leadership, and impact.

The Anti-Racist Community-Academic Research Reflective Practice Tool was developed by community and academic partners of the ARCC Steering Committee, the ARCC Anti-Racism Taskforce, and participants in the ARCC Community-Academic Anti-Racism Learning Collaborative, in partnership with the Equity Institute of the Evanston/North Shore YWCA.

Although research creates knowledge that can transform and improve lives,

investigators must also acknowledge, understand, and address the history and legacy of research, research practices, and healthcare that contribute directly to systemic racism, racial health inequities, and the underrepresentation of Black Indigenous People of Color (BIPOC) in research participation and leadership. This requires the intentional focusing of resources and power to BIPOC and other marginalized communities most experiencing the impacts of the root causes of health inequities.

Research partners must also directly examine, reflect on, and address issues of bias and racism in engaged research and partnerships themselves to ensure that they do not perpetuate and deepen inequities and community distrust. This tool provides guiding questions to assist with this.



PUBLIC HEALTH FOCUS OF NUCATS LECTURE SERIES

The NUCATS Institute and Institute for Public Health and Medicine continue to co-sponsor a monthly seminar series highlighting new discoveries and ongoing research at the intersection of translational research and public health. Guests have included (top-left, clockwise) **Patricia Franklin, MD** (outcomes research and measurement science), **Marquita Lewis-Thames, PhD** (rural health outcomes), **Leah Welty, PhD** (epidemiology of preventable analytic errors), and **Rupal Mehta, MD** (heart-kidney synergy).



COMMUNITY-ENGAGEMENT TOOLKIT COMING IN SPRING 2023

To more fully support community-engaged research and as a direct response to requests from community organizations, the Northwestern University Clinical and Translational Sciences Institute is supporting the expansion of **teamscience.net** to include a toolkit designed to promote equity in community-engaged research.

As part of this comprehensive Team Science Community Toolkit —

which will launch in spring of 2023 — an interactive decision calculator was designed for community stakeholders to evaluate the merits of entering into a particular research partnership. The toolkit includes resources and tools — like checklists, templates, interactive tools, tutorial videos, and more — intended to help inform and empower community-based organizations to better advocate for the needs of their organization and

constituency in research partnerships, while familiarizing academic partners with the norms of equitable community-engaged research.

This groundbreaking initiative, which was co-developed in concert with community partners, further establishes Northwestern and NUCATS as a national leader in the dissemination of Team Science resources.