NJ acts

A HALF-DECADE OF NJ ACTS

Driving Translational Science for a Healthier Future

Table of Contents

Executive Summary

In 2019, the New Jersey Alliance for Clinical and Translational Science (NJ ACTS) was formed with a clear mandate: to accelerate the pace of medical discovery for better health care outcomes for all.

Six years later, NJ ACTS has excelled by every measure and is a leader in the state's efforts to advance clinical care and develop new therapies and treatments, with a second, even larger, nearly $50 million grant awarded to continue that work.
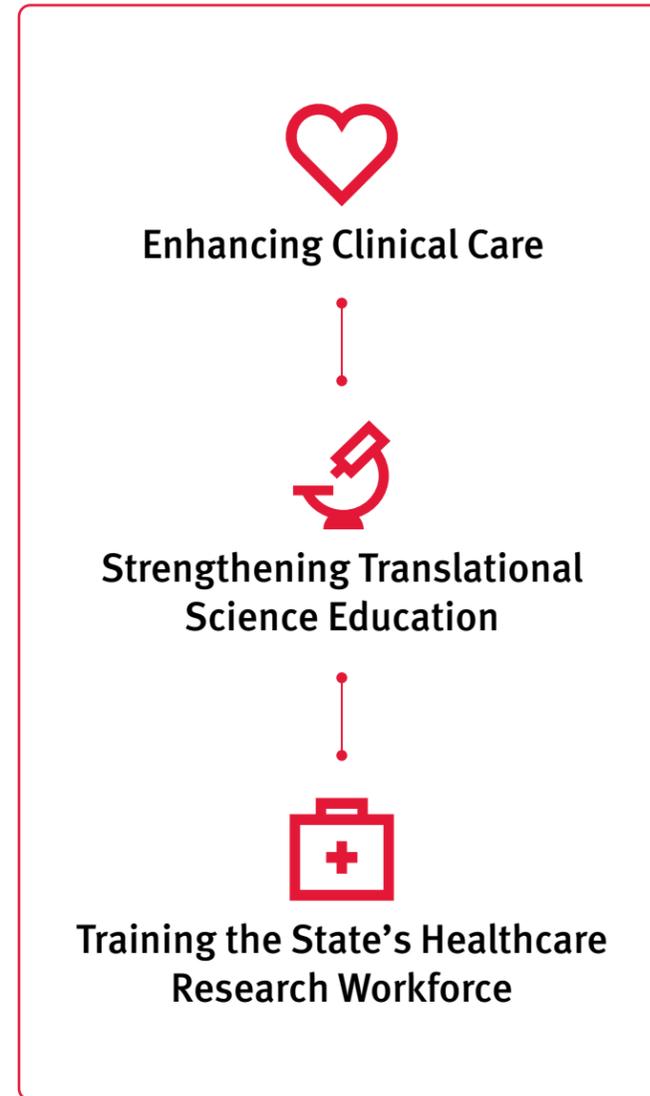
Founded with a $29 million grant from the National Institutes of Health (NIH) for joining the Clinical and Translational Science Awards (CTSA) Program, and coordinated by Rutgers Health, NJ ACTS is a partnership between Rutgers University, Princeton University, the New Jersey Institute of Technology and, more recently, RWJBarnabas Health, in conjunction with clinical, community, industry and academic collaborators.

Translational science, the process of turning research discoveries into real-world health solutions, has long been underutilized. On average, it takes 17 years for a new drug to be adopted into routine clinical practice, often because primary care physicians are unfamiliar with it. Recognizing this gap, the NIH launched efforts to study translational science, with the goal to understand and improve how discoveries are implemented. When translational science principles are implemented correctly, the discovery-to-practice timeline can be dramatically reduced.

With a network of institutes, schools and departments within its major partners, NJ ACTS leads the state's efforts to implement this vision. Unlike other institutes or centers, focusing on specific illnesses, NJ ACTS is disease agnostic.

Partners of the alliance actively engage patients, organizations and stakeholders in their endeavors, fostering trust, transparency and inclusivity.

Three pillars form the basis of this work:

Enhancing Clinical Care

Strengthening Translational Science Education

Training the State's Healthcare Research Workforce

With the support of the NIH's National Center for Advancing Translational Science, NJ ACTS has gained access to a diverse array of perspectives, resources and opportunities to tackle health care challenges more effectively. This, in turn, has attracted top talent to the state, fostered strategic partnerships and strengthened New Jersey's position as a premier academic health center.

New Jersey Alliance for Clinical & Translational Science

CLINICAL INSTITUTIONS
RWJUH
RWJBH Practices
University Behavioral Health Care
University Practice
University Hospital, Newark
Barnabas Hospitals
Barnabas Practice

RUTGERS HEALTH
SPH
RWJMS
NJ Medical School
School of Pharmacy
School of Dental Medicine
School of Nursing
SGS-BHS
SHP

NEW JERSEY INSTITUTE OF TECHNOLOGY
MT School of Management
Ying Wu College of Computing

Rutgers Institute for Translational Medicine & Science

RESEARCH INSTITUTES
IFH
Brain Health Institute
Cancer Institute of NJ
Institute for Infection & Inflammation
Global Health Institute
EOSHI
CABM
RITMS

PRINCETON
Department of Molecular Biology
School of Public & International Affairs
Princeton Neuroscience Institute

COMMUNITY PARTNERS

The CTSA Program

NJ ACTS is part of the NIH's CTSA network, more than 60 sites across the United States funded by the National Center for Advancing Translational Science.

The CTSA network seeks to accelerate the translation of research discoveries into improved care. Like NJ ACTS, other CTSA sites offer expertise, resources and partnerships at the national and local levels to improve the health of individuals and communities. The CTSA program educates, trains and supports the workforce at all levels.

In particular, the CTSA initiative trains and cultivates the translational science workforce; engages patients and communities; integrates special and underserved populations; increases the quality and efficiency of clinical and translational science research, especially multi-site trials; and advances the use of cutting-edge informatics.

In May 2024, NJ ACTS was extended with a new round of NIH funding – $47.5 million over seven years. Community and workforce development, particularly training of early career medical professionals, will be a priority.

As NJ ACTS enters its second half-decade, our researchers, clinicians and partners will excitingly redouble efforts to turn observations in the laboratory, clinic and community into interventions that will improve the health of individuals and populations – at home and far beyond.

A Note from the Director

The creation of NJ ACTS could not have come at a more opportune moment.

Six months after its launch, the world was confronted with a real-time translational science crisis – the COVID-19 pandemic. With extraordinary resilience, determination and adaptability, the consortium of research facilities, academic institutions, hospitals and community partners that comprise the alliance pivoted to address the global health challenge head on.

As thousands were dying in our hospitals, NJ ACTS launched the Health Care Worker and New Jersey Heroes Too programs and became the top recruiting site for the Moderna vaccine trial. These cohorts yielded invaluable scientific insights – not only in fighting the pandemic but also in generating knowledge that will guide responses to future health crises.

These achievements were made possible by the dedication and collaboration of our program leaders and staff. The unwavering support from Rutgers, especially Rutgers Health, and the leadership from Princeton and NJIT, has been instrumental to our success. Our external advisory board offered critical guidance through their experience, insight and wisdom.

For Rutgers, the collaboration has been extraordinary. NJ ACTS provides Rutgers Health with a platform to engage directly with the communities we serve, which, as the

State University of New Jersey, is at the heart of what we do. By actively involving patients, community organizations and stakeholders in our research endeavors, we ensure that our work is grounded in the lived experiences and needs of those we aim to serve.

By moving discoveries to practice to policy, we aim to dramatically decrease the research timeline, improve health outcomes, reduce inequities and understand why some, but not all, people acquire a disease or respond to therapy.

We are incredibly proud of what NJ ACTS has accomplished in its first five years. Now, with the award of a new seven-year grant focused on advancing translational science, we're poised to build on this strong foundation.

I extend my sincere appreciation to the NJ ACTS team, faculty participants and our many partners for their remarkable contributions to advancing clinical and translational research across the state.

REYNOLD A. PANETTIERI, JR., MD
Director, NJ ACTS

Partnerships With

750+

Community, Healthcare, Academic & Industry Organizations

800

Research Consultations (2019-2024)

300+

Peer-Reviewed Publications

325

Seminars, Webinars or Other Training Events

HIGHLIGHTS

2019 — 2025

76

Pilot Grants Awarded for Collaborative Research Projects, Totaling $3.5 Million

25+

Virtual Research Salons

5

Supplemental Awards Received, Worth Nearly $10 Million

50

Community Scientists Trained

17
KL2 Scholars

25
Predoctoral

13
Postdoctoral Trainees

72
Interns Supported

Launch of the

Clinical Research Data Warehouse

A Resource for Researchers, Clinicians & Health Professionals to Access Aggregated Clinical Data

Titles & Abstracts of Recent Patents Made Possible by NJ ACTS Support

01 Self-replicating RNA and uses thereof

The technology described herein is directed to compositions and methods for modifying and controlling the activity of cells by expression of proteins from self-amplifying RNA (saRNA). Also described herein are compositions and methods for modifying and controlling the activity of cells by expression of proteins from self-amplifying RNA that is substituted with chemically modified nucleotides.

02 Multi case-based reasoning by syntactic-semantic alignment and discourse analysis

Systems, devices, and methods discussed herein provide improved autonomous agent applications that are configured to generate a diagnosis for input symptoms from labels (e.g., diseases, illnesses, and/or conditions) associated with previously known cases. Extended discourse trees may be generated that identify multiple discourse trees corresponding to various fragment granularities (e.g., document, paragraph, sentence, phrase, word, etc.) of previously-known cases as well as rhetorical relations between those discourse trees. New symptoms can be provided (e.g., via the autonomous agent) as input. The input can be parsed to identify various fragments of the input and rhetorical relations between the fragments. These fragments can be matched to fragments of previously known cases by matching nodes of the extended discourse tree. If the rhetorical relations between the input fragments match the rhetorical relations indicated in the extended discourse tree of a previously known cases, the input may be classified with the same label as those previously known cases.

03 Modified Kisspeptin Receptor Agonists for Fatty Liver Disease

NAFLD (Non-alcoholic fatty liver disease) is a condition of excess fat in the liver, while NASH (Non-alcoholic steatohepatitis) is a more severe form of NAFLD that involves inflammation and liver cell damage. This invention provides a therapy for metabolic disorders such as NAFLD and NASH through the administration of a long-lasting synthetic analog of kisspeptin-10, a naturally occurring peptide found in the blood.

04 Method for Rapid Capture, Detection and Analysis of Viruses on Surfaces

Provided herein are, in various embodiments, methods and kits for assaying one or more virions. In certain embodiments, the methods and kits of the disclosure provide for the calculation of virion titer and/or virion infectivity. In still further embodiments, the disclosure provides for methods and kits for enhancing assaying of viruses such as SARS-CoV-2.

05 Extraction-Free Pathogen Testing Methods

The invention provides compositions and methods allowing for rapid, accurate, robust, and low-cost diagnosis of infectious diseases via extraction-free, direct PCR techniques.

06 Cell-Support Matrix Having Narrowly Defined Uniformly Vertically and Non-Randomly Organized Porosity and Pore Density and a Method for Preparation Thereof

The matrix suitable for preparation of cellular or acellular implants for growth and de novo formation of an articular hyaline-like cartilage. A gel-matrix composite system comprising collagen-based matrix having a narrowly defined porosity capable of inducing hyaline-like cartilage production from chondrocytes in vivo and in vitro.

The Power of Translational Science

WHY TRANSLATIONAL SCIENCE?

Translational science is the process of turning scientific discoveries into health improvements for a broad range of conditions and includes addressing barriers and inefficiencies in the research-clinical implementation continuum.

Bridging between laboratory discoveries and their application in clinical and community settings, translational science ensures that innovations in biomedical research produce better diagnostics, treatments, prevention strategies and outcomes. The emphasis focuses on moving traditional research, which typically focuses on understanding disease mechanisms, into real-world practice.

At its core, translational science is interdisciplinary, bringing together clinicians, researchers, public health experts, industry partners and communities to solve complex health problems. This collaboration helps researchers identify needs, test solutions, and implement them at scale. Whether it's refining mental health interventions or improving vaccine delivery, translational science is central to ensuring research does not stay confined to academic journals but reaches the patients who need it most.

In addition to accelerating medical progress, translational science also strengthens health equity by fostering community engagement and ensuring that solutions are relevant to all populations. During the COVID-19 pandemic, translational science played a vital role in rapidly developing and deploying diagnostics, treatments and vaccines.

Ultimately, translational science transforms the way we think about research – not as an end but a means to building a more dynamic, effective, inclusive pipeline of medical discovery and application.

NJ ACTS: The Basics

RESOURCES AND SERVICES

NJ ACTS is organized into element areas – resources and services, workforce development and training programs – that provide the alliance expertise and structure.

Regulatory
Regulatory and quality assurance support in all aspects of clinical research

Biomarkers
Assisting investigators with measurable indicators of biological states

Special Populations
Integrating Special Pops into research study design, research teams, and as participants

Workforce Development
Comprehensive and flexible training for a diverse workforce

Informatics
Integrates and enhances data from disparate clinical & research sources

Biostatistics, Epidemiology and Research Design (BERD)
Data analysis and management, epidemiology, and biostatistics services for investigators

Community
Engagement with the community to ensure that our efforts respond to their priorities

Team Science
Addressing scientific challenges by leveraging expertise of varied professional disciplines

Pilots
Fosters team and interdisciplinary research and inspires new methodologies

GREAT
Genetically informed Research, Education, And Treatment supports research with consultation

Element E
Advance clinical translatable science by addressing roadblocks

Clinical Research Centers/ Clinical Trials Office
Provides a centralized platform to plan, execute, and support all aspects of clinical studies

---

NJ ACTS supports clinical and translational research by providing funding, training, resources and services to help researchers collaborate, advance science and medicine, and improve the health of patients, communities and populations in New Jersey with a focus on research, training and workforce development.

TRAINING PROGRAMS

Associated with the original five-year grant were several training-related awards, including the Institutional Career Development Award (KL2) for new investigators and the Institutional Training Award (TL1) for graduate students and postdoctoral fellows.

These have been renewed for an additional five years. The seven-year grant extension facilitated the addition of new training programs, including the Clinical Research Experimental Summer Training (R25) initiative, designed to immerse medical and PharmD students in research experiences that advance their analytical and technical skills. These awards are only available to institutions with CTSA awards.

The extension also will facilitate the addition of a new postdoctoral training program (T32) and a new translational science platform in Pharmacoepidemiology.

TL1/T32
Supports students seeking an introduction to clinical and translational research

Research Education R25
Addressing scientific challenges by leveraging expertise of varied professional disciplines

KL2/K12
Supporting mentored research career development for clinical investigators

Institutional Contributions & Collaborations

NJ ACTS programs elevated translational research and science at and among partner institutions. These collaborations trained the next generation of research scientists, made resources and services available to partners statewide and forged new technology-driven initiatives.

"Through our combined initiatives we have built infrastructure capabilities that will impact translational science research well into the future."

ATAM P. DHAWAN
Senior Vice Provost for Research, NJIT

New Jersey Institute of Technology (NJIT)

BY THE NUMBERS

> "The KL2 Program allows me to have protected time to focus on writing manuscripts with my students, collecting pilot data and preparing R01 submissions."

JONATHAN GRASMAN
NJIT Assistant Professor, Department of Biomedical Engineering

15 Pilot Grants Awarded to Faculty, with More Than **90%** Funding Collaborative Projects

2 Career Development Awards

2 Fellowships (One Pre-Doc and One Post-Doc)

As part of its work within the alliance, NJIT developed the Center for Translational Research to convert lab research into beneficial, market-ready products and services. Innovative medical devices and biosensor technologies have been created, validate and translated to improve diagnosis and treatment of critical diseases and advance detection and remediation of pollutants. The center also serves as a hub for NJIT commercialization efforts.

Two NJIT junior faculty members have received mentored career development awards, providing training in clinical and translational research and career development. Donna Chen received an award as a predoctoral fellow for her work investigating functional brain connectivity after spinal cord injury. Stephanie Iring Sanchez, a trained biomedical engineer and human integrative physiologist, received a postdoctoral fellowship for her work in traumatic brain injury.

SAMPLE OF SUPPORTED PROJECTS

- "A Natural Language Processing Platform for Automated Information Extraction from EHR's for Clinical Decision Support & Investigative Research," is led by Dr. Yi Chen, the Henry J. Leir Chair in Healthcare in the Martin Tuchman School of Management at NJIT, and Dr. David Foran, Chief of Medical Informatics at the Rutgers Cancer Institute of New Jersey. The workflow and methods have been tested for their capacity to automatically cull biomarker data from pathology reports.

- "Apply Natural Language Processing and Deep Learning to Electronic Medical Record Management, Preprocessing and Decision Making," is led by Dantong Yu, Hurlburt Chair Professor at Martin Tuchman School of Management.

- Zhi Wei, a professor in the Department of Computer Science at NJIT, collaborated with Joseph Glessner, associate director of the Center for Applied Genomics at Children's Hospital of Philadelphia, to study deep learning methods for identifying copy number variants – repeated segments of DNA. This pilot award used supervised deep learning and image-based representations to strengthen CNV detection.

> "With the support of the KL2 award, I can dedicate myself to professional growth, leverage pilot data to secure research grants, foster numerous collaboration opportunities, and establish a cutting-edge research laboratory."

ELISA KALLIONIEMI
NJIT Assistant Professor, Department of Biomedical Engineering, Director of the Brain Stimulation Lab

Princeton University

BY THE NUMBERS

17 Pilot Grants for Faculty Research in Neuroscience, Computational Biology, Population Research, Genomics, Biological Engineering, Psychology and Molecular Biology

3 U.S. Patents Filed for Inventions Stemming Directly From NJ ACTS Pilot-Funded Collaborative Research

5 Graduate Students and Seven Postdoctoral Fellows Selected as NJ ACTS Institutional Training Program (T32) Fellows

14 Community-Focused Undergraduate Research Projects and Micro-Internships

"Participation in this alliance has encouraged innovation and collaboration, ensured that all research meets the highest ethical standards and has inspired an entrepreneurial spirit to bring biomedical research discoveries in the lab to patients and the public."

PETER SCHIFFER
Dean for Research,
Princeton University

SAMPLE OF SUPPORTED PROJECTS

- Quantifying change readiness and its impact on psychotherapy outcomes
- A testing platform for probing the role of dendritic structural plasticity in neuropsychiatric disorders
- Quantifying the dynamics of working memory in patients with schizophrenia

Princeton's participation in NJ ACTS has permeated throughout all facets of the collaboration, from student and early faculty trainees to faculty serving as mentors and co-leads for cores and faculty and staff participating in and leading trainings and symposia.

Pilots Program projects created collaborations throughout NJ ACTS; involved graduate students and postdocs, advancing their research; resulted in publications in premier journals, follow-on funding, inventions that were patented and a spin-off company.

Princeton's Program for Community Engaged Scholarship received funding from NJ ACTS for 14 community-focused undergraduate research projects and micro-internships related to population health and health care. These activities met the twin goals of increasing Princeton's involvement in health-related community engagement activities and Princeton's desire to support undergraduate students' education and experiences related to CTSA aims.

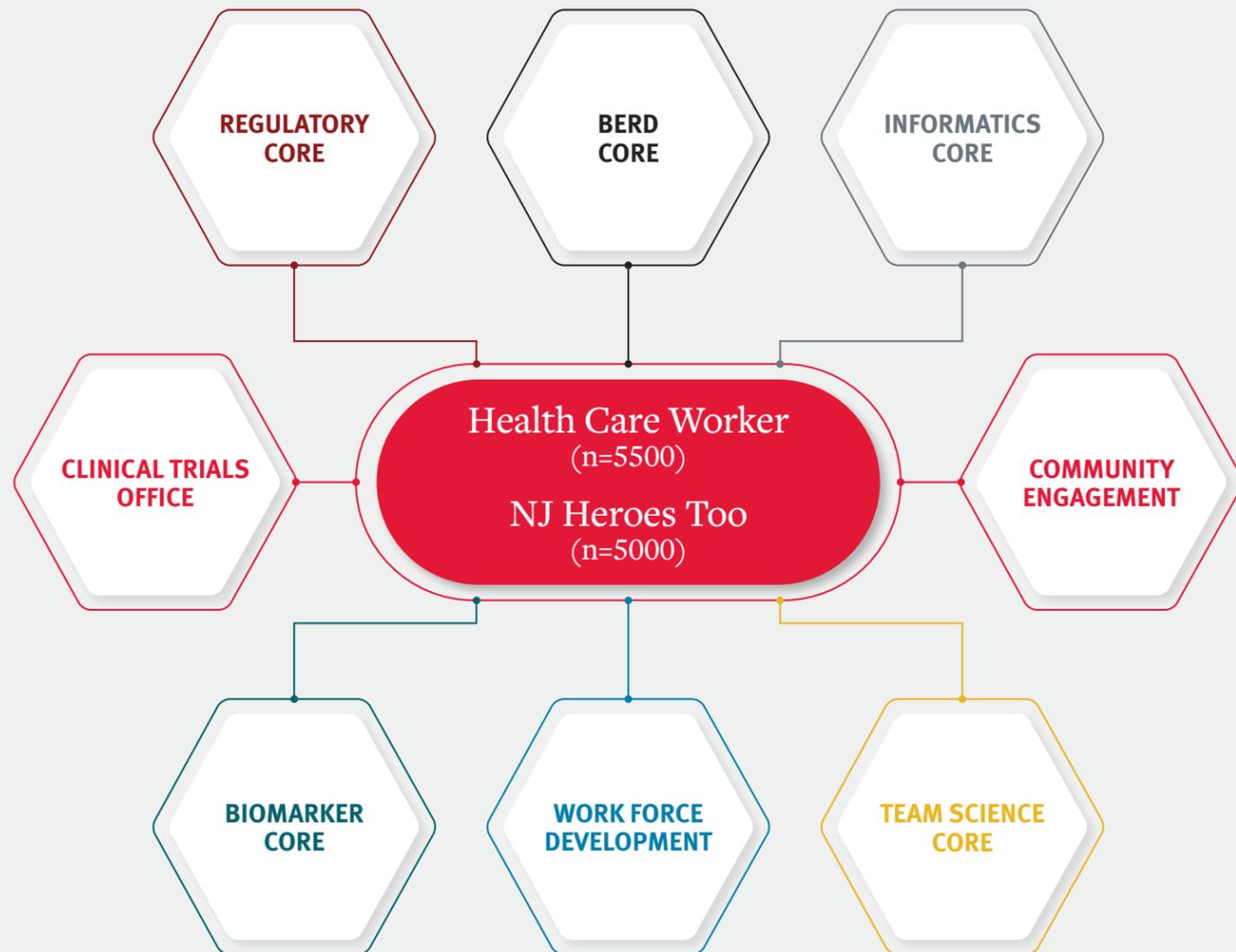# Accelerating Discovery During Crisis: The Case of COVID-19

The importance of moving research quickly from the lab to patients was evidenced in late 2019, with the onset of the COVID-19 pandemic. Although NJ ACTS was a few months old at the time, its leadership recognized the urgency of the moment and the potential for the new collaboration to save lives.

In April 2020, Rutgers researchers, with NJ ACTS partners, launched the Rutgers Corona Cohort, which provided platforms for interventional and observational clinical research to explore new drug treatments, antibody testing and long-term health tracking of health care workers at University Hospital in Newark and Robert Wood Johnson University Hospital in New Brunswick, and non-health care workers. Data from the cohort provided evidence about the efficacy of Personal Protective Equipment and other virus-fighting tools and assessed how infection affected patient microbiomes. It also served as rationale for vaccine trials led by Moderna and Johnson & Johnson.

As part of these efforts, Rutgers Health was the second-largest global recruiter of participants for the Johnson & Johnson trial, and the cohort's saliva samples helped win approval from the Food and Drug Administration (FDA) for the first at-home test for COVID-19.

Building Cohorts

REGULATORY CORE

BERD CORE

INFORMATICS CORE

CLINICAL TRIALS OFFICE

Health Care Worker
(n=5500)

NJ Heroes Too
(n=5000)

COMMUNITY ENGAGEMENT

BIOMARKER CORE

WORK FORCE DEVELOPMENT

TEAM SCIENCE CORE

Rutgers' Saliva Test: A Pandemic Game-Changer

One of the most impactful pandemic responses to emerge from Rutgers was the development of the first saliva-based COVID-19 test, granted FDA emergency use authorization on April 13, 2020.

Created by RUCDR Infinite Biologics (part of the Human Genetics Institute at Rutgers-New Brunswick), the test was co-developed by Jay Tischfield, the Duncan and Nancy MacMillan Distinguished Professor of Genetics, and the late Andrew Brooks, RUCDR's longtime scientific director, with contributions from over 100 RUCDR staff.

The saliva test offered a simpler alternative to nasal swabs. Isolated patients could provide samples without direct contact with healthcare providers, reducing disease spread and conserving PPE during severe shortages. It quickly became a critical tool in the national COVID-19 response.

The test emerged within a broader Rutgers effort to fight COVID-19, including the creation of the Rutgers Corona Cohort, which tracked nearly 800 healthcare workers at University Hospital in Newark and Robert Wood Johnson University Hospital in New Brunswick to assess exposure, treatment strategies, antibody responses and long-term health effects of the virus.

Biomarkers

Biomarkers are measurable characteristics of the body that can indicate normal or abnormal processes, conditions or diseases; they are useful for developing drugs, evaluating and guiding treatment plans and identifying patient populations.

The NJ ACTS Biomarker Core, created in 2019, brings together experts in molecular and cellular biology and immunology to promote and support nonontological translational research by identifying state-of-the-art approaches to tackle research questions in infectious and non-infectious diseases.

The core's services span assistance in experimental design and project development, scientific collaboration and consultation.

The Biomarker Core was instrumental in processing COVID-19 samples and in researching the transmissibility and long-term effects of the pandemic. For instance, core experts developed several COVID-specific immunological tests, using full-service, high-throughput COVID-19 Enzyme-Linked Immunosorbent Assay testing techniques.

The Biomarker Core also investigated the cognitive, neural and immunological consequences of COVID-19 in older African Americans and how they relate to risk for Alzheimer's disease and contributed to developing models and biomarkers that predict risk for severe disease in children and adolescents.

Core activities sought to correlate the clinical outcome of convalescent plasma treatment of COVID-19 with the properties of donor plasma. As a result of their ground-breaking work, the NJ ACTS Biomarker Core was invited to serve as reference lab for the NIH RECOVER (short for Researching COVID to Enhance Recovery) pediatric cohort.

As a result of the Biomarker Core's COVID-19-related work, two patent applications were filed to protect academic assets and to pave the way for their commercialization:

1. SARS-COV-2 Polypeptides, Anti-SARS-COV-2 Antibodies and Uses Thereof

2. Methods of Diagnosing, Prognosing, and Treating Multisystem Inflammatory Syndrome in Children (MIS-C) and Severe COVID-19, and Apparatuses Thereof

NJ HEROES TOO

Recognizing the differences in access to COVID-19 testing across communities, the alliance launched the New Jersey Healthcare Essential Worker Outreach and Education Study - Testing Overlooked Occupations (NJ HEROES TOO), a collaboration with 22 community-based and health care organizations.

The program's goal was to improve COVID-19 awareness among often-overlooked health care workers, such as nursing assistants and custodial staff from Black and Latino communities, and in the local community.

BY THE NUMBERS

5,327
Individuals Completed the Screener

1,100
Individuals Eligible to Participate

404
Individuals Requested a Test

### 234
Individuals Completed Testing

Researchers involved in the program sought to better understand COVID-19 testing patterns for all Americans and vulnerable populations and strengthen data on differences in infection rates, disease progression and outcomes. The initiative's results emphasized the critical need to address social determinants of health, revealing that participants encountering greater pandemic-related challenges were less likely to complete the testing process. The project highlighted the significance of engaging community partners throughout all phases, ensuring their insights and expertise were pivotal to both research and implementation.

The program's best practices were integrated into the Spring 2024 undergraduate curriculum of the Rutgers-Newark School of Public Affairs and Administration, within the Special Topics in Public Service-Building Community Bridges course. The program received additional exposure for the health advocacy efforts when its organizers were honored by NJ HEROES TOO community partner, The NAACP-New Brunswick Area Branch in 2024 at their annual luncheon, entitled: "Power of Unity: Thriving Together."

NJ HEROES TOO was part of the NIH's RADx-UP program, a consortium of 144 research projects throughout the United States to help speed innovation in the development and implementation of COVID-19 testing.

OTHER PROJECTS

- To enhance efficacy of ventilators, an essential emergency room tool during the pandemic, two groups of researchers at Princeton used artificial intelligence to calibrate a more cost-effective and rapidly deployable ventilator that could be assembled with replaceable "off-the-shelf" parts.

- Pan Xu, an NJIT assistant professor in the Ying Wu College of Computing, studied COVID vaccine data from Minnesota to improve COVID-19 vaccine equity.

- Xu, working with colleagues in China, developed algorithms to help public health officials adjust vaccine distribution policies. The models were designed to combat potential biases in distribution so that actual vaccination rates approached target rates.
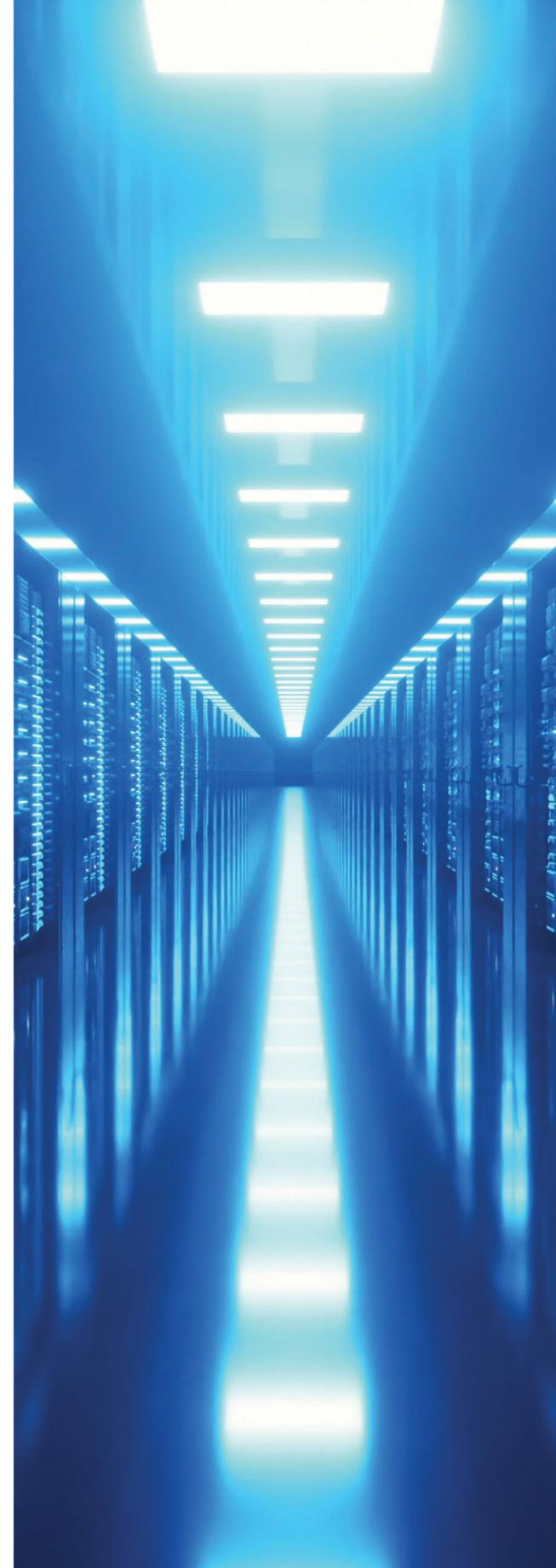
Strengthening the Research Pipeline

A key focus for NJ ACTS is providing platforms, resources, staff and training for scientists to streamline the collection, processing and sharing of health data between and among researchers. Several organizational units were created to manage this process.
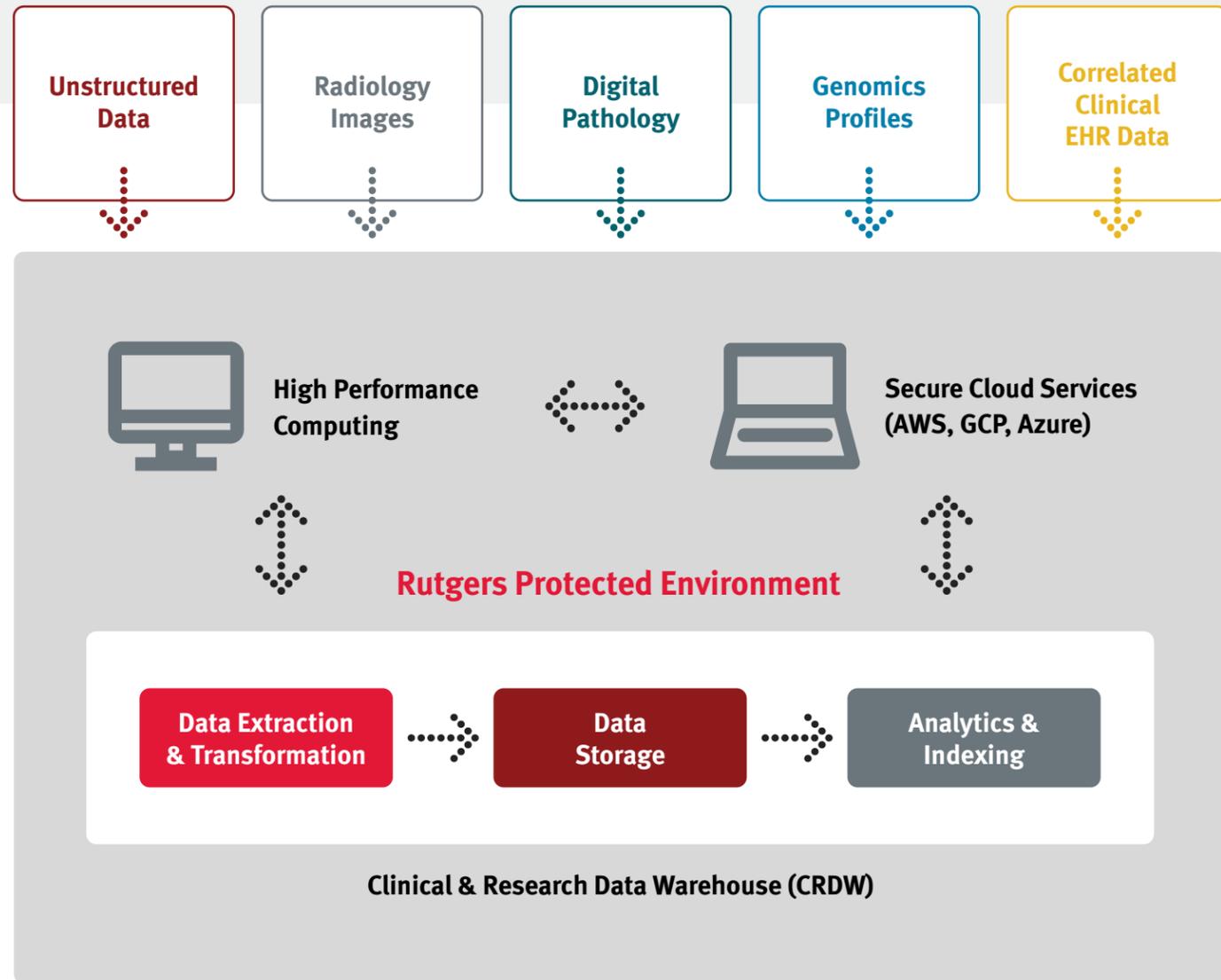
Informatics

The informatics service within NJ ACTS integrates, enhances and expands data access from disparate clinical and research sources for researchers and augments analytics capabilities and training across the research enterprise.

The Clinical and Research Data Warehouse (CRDW) is the cornerstone of the Informatics Core; the CRDW provides a secure computing environment, equipped with state-of-the-art analytic tools and access to high-performance computing. Built in collaboration with RWJBarnabas Health and Rutgers Office of Information Technology, the CRDW links research data sets to clinical data, applying machine learning and natural language processing to facilitate data analysis. A self-service data center also was created to strengthen information sharing and security.

The CRDW is connected to several data sources, including the RWJBarnabas Health EPIC electronic medical records, clinical trial management systems, tumor registries, biospecimen repositories, and cutting-edge medical imaging and genomics.

The Informatics Core also conducts CRDW training, programs for clinical fellows on research techniques, reporting, surveillance and care delivery improvement and a certificate in clinical informatics and data science based on completion of three badges awarded to learners.

| Unstructured Data | Radiology Images | Digital Pathology | Genomics Profiles | Correlated Clinical EHR Data |

High Performance Computing

Secure Cloud Services (AWS, GCP, Azure)

Rutgers Protected Environment

| Data Extraction & Transformation | Data Storage | Analytics & Indexing |

Clinical & Research Data Warehouse (CRDW)

Biostatistics, Epidemiology and Research Design (BERD)

The BERD core was created to enhance clinical and translational research by providing professional, high quality study design, quantitative and qualitative data analysis, survey research and data management services, methodologies development and group and individual training and instruction in biostatistics, epidemiology and research design.

Providing educational opportunities to develop basic skills in and understanding of study design and data analysis is a primary goal of BERD. In addition to presenting in-person workshops, training is available to subscribers online.

Since its launch, BERD has supported more than 710 clinical and translational projects and research efforts within NJ ACTS partner schools, institutes, departments and hospitals, work

that has resulted in more than 80 conference presentations and grant proposals.

Development of research tools is another focus area. During the COVID-19 pandemic, BERD supported the creation of web-based technologies to enable survey participants to register, consent and participate with limited or no human contact. BERD also manages resources to assist in data capture, management and analysis and serves as an institutional resource for applications such as REDCap, Qualtrics, PASS Sample Size and Power Analysis software, R statistical software and SAS.

These efforts were built with a focus on ensuring quality skills-based training opportunities for trainees, particularly junior faculty and other investigators across the NJ ACTS and larger Rutgers and RWJBarnabas Health communities.

Machine Learning & Artificial Intelligence

NJ ACTS is applying artificial intelligence (AI) and big data to revolutionize mental health, chronic disease and precision medicine, with a particular focus on understanding heterogeneity in mental illness. To that end, alliance researchers have created infrastructure, software, methods and other support services for researchers and those in the broader scientific community who work on similar goals. During the first five years, the AI and Machine Learning Core at Princeton – Machine Learning Approaches to Mental Illness and Chronic Disease – used machine learning to identify the structure of mental illness and its relationship to chronic illness.
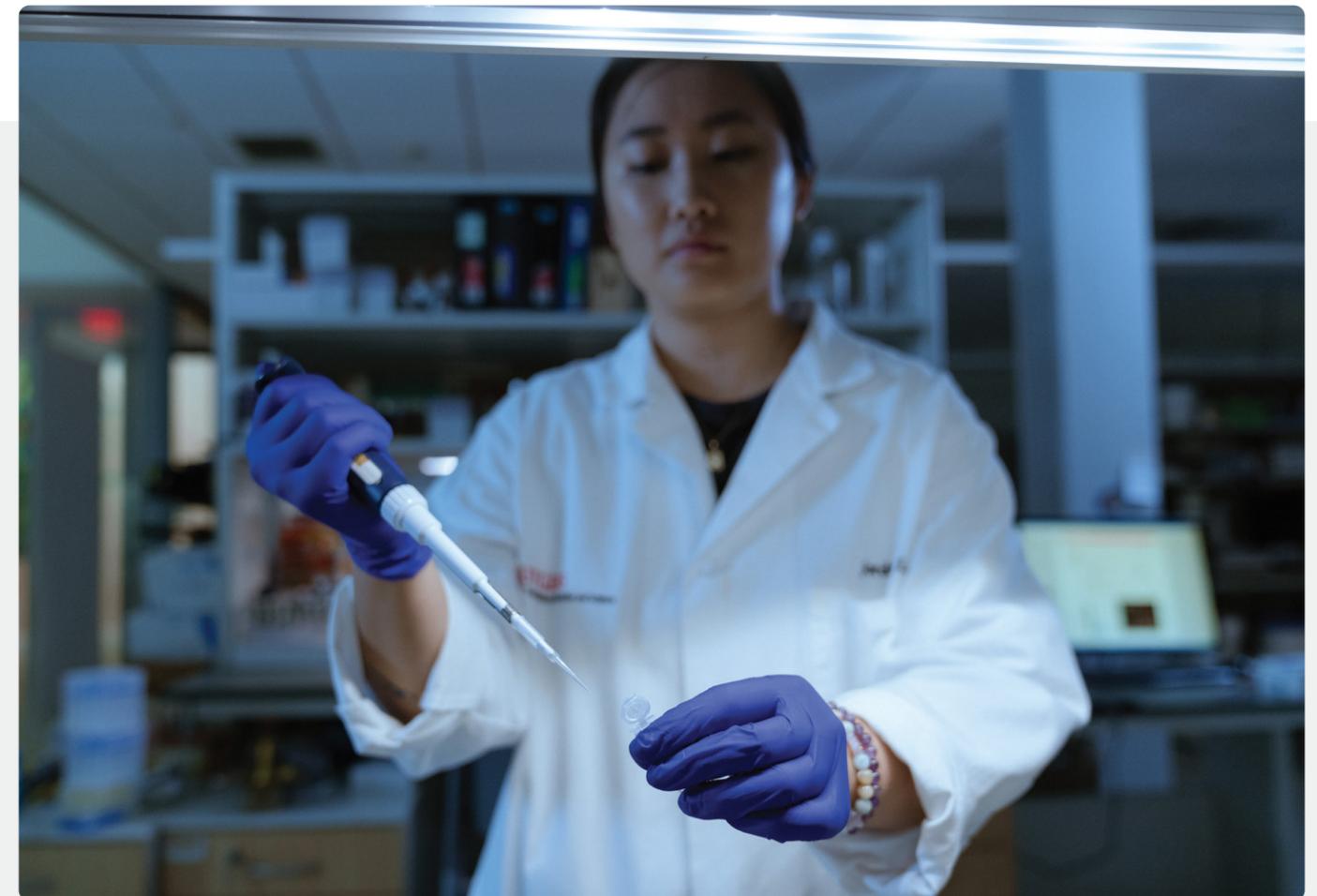

Workforce Training

Through the Workforce Development Core, NJ ACTS has developed education and training programs to meet the needs of the entire translational science workforce. Focus areas include clinical research coordination, team science, community science, data science and lab-to-market studies.

Alliance institutions have also developed undergraduate, master degree and certificate programs, such as the master of science degree

in clinical and translational science and the master of science degree in clinical research management at the Rutgers School of Health Professions and the Princeton Neuroscience Institute's summer internship program.

Complementing these course offerings are certifications for faculty mentoring NJ ACTS-funded fellows and scholars.

The Genomics Research, Education & Training Core

Because diseases present heterogeneously across populations and patients respond differently to therapies, genetically informed approaches to research and treatment are a critical aspect of precision medicine.

The **Genomics Research, Education and Training** (GREAT) Core, created in 2024, facilitates incorporation of genetically informed approaches into research by providing easily accessible consultations, clinical and translational study design, and data analysis.

The core promotes training of clinicians and promotes the use of genetic information in study design, subject ascertainment and analysis.

The core also provides educational opportunities for clinical and translational researchers to develop basic skills and understanding in genetic study design and data analysis, and provides consultation and community education on genetic counseling, evaluation and testing services and informed consent. The core works with the NJ ACTS Biostatistics Core to augment more standard statistical analysis when studies include genetics.

Training the Next Generation of Translational Scientists

NJ ACTS is committed to developing learners, from undergraduates to early career investigators, and has created programs designed for each group.

To provide guidance to the cohorts in each program, the NJ ACTS's Academy of Mentors includes nearly 200 faculty with experience as scholars and mentors, with research programs and expertise relevant to clinical and translational science and experience working across disciplines.

PREDOCTORAL FELLOWSHIP (T32)

The T32 Predoctoral Training Program, a graduate student program, seeks to prepare future generations of translational researchers to leverage the principles of translational science to more efficiently and effectively identify, disseminate and implement solutions to current health challenges. The goal of the fellowship is to enhance career development beyond that encountered in typical predoctoral programs by focusing on the knowledge and expertise needed to conduct translational team research across disciplines.

POSTDOCTORAL FELLOWSHIPS (TL1)

Launched in 2019, the Institutional Training Program at NJ ACTS is a funded, linked award designed to support research training experiences for pre- and postdoctoral trainees interested in clinical and translational science careers. This program – initially for both predoctoral and postdoctoral fellowships and renewed in 2024 for predoctoral training – equips trainees with enhanced knowledge, skills and abilities, providing a broad introduction to clinical and translational research alongside their existing research programs. The program is customized to each trainee against a backdrop of didactic learning, including for-credit courses, seminars, workshops and experiential learning opportunities across the three academic partners.

Past fellows have received additional funding for their work, including the highly competitive NIH D-SPAN Award in neuroscience. Alumni have published research in premiere scientific journals and five have already become assistant professors.

JUNIOR FACULTY DEVELOPMENT (K12)

The K12 Early Career Development Program supports junior faculty by providing mentored research, didactic and experiential training in clinical and translational science, and a community of faculty colleagues from across the NJ ACTS network. The goal of the NJ ACTS-mentored Career Development Program is to expand the pool of well-trained and productive investigators in the biomedical sciences with a focus on clinical and translational research.

The two-year program provides a tailored approach for each scholar that comprises intensive research experiences, a core curriculum and elective courses, and extensive mentoring. Alumni have gone on to secure major federal, foundation and industry research grants.

K12 Scholars become part of the Society of Scholars, a community of like-minded junior scientists within the NJ ACTS alliance.

For instance, the NJ ACTS Clinical Research Experiential Summer Training (CREST) Program provides training to summer research medical and pharmacy students, immersing them in research experiences that advance their analytical and technical skills and stimulates their pursuit of advanced research training. Ultimately, CREST offers an approach to build a well-trained and diverse workforce prepared to address challenges in clinical and translational science.

TEAM SCIENCE PROGRAM

The Team Science initiative seeks to advance life-changing research by creating strong collaborations with and between professionals of varied expertise. Through this process, Team Science accelerates scientific innovation and the translation of scientific findings into effective policies and practices.

NJ ACTS's Team Science Program offers seminars, credentialling and a consultation service. A lecture series explores how complex research teams are formed, along with the successes and challenges associated with team dynamics.

"My research by nature includes a variety of disciplines, which is what piqued my interest in learning more about the field of team science. The course taught me about team evolution (from multidisciplinary to transdisciplinary ones) and the ways leadership influences team dynamics and output."

KRISTINE SCHMITZ
Assistant Professor, Division of Population Health Quality and Implementation Sciences, Department of Pediatrics, RWJMS; NJ ACTS K12 Mentored Career Development Award Scholar

Advancing Health for All Through Community Engagement

NJ ACTS draws leading academic, industry and community groups together to understand and address the health needs of New Jersey, particularly by targeting underserved populations and addressing health equity. Central to this is engagement with communities to ensure that research efforts respond to real-world priorities and needs.

Overseeing these efforts is the NJ ACTS Community Engagement Core, which advances health equity by building strong community partnerships and translating research into practical health solutions. Its mission is to encourage and facilitate research in New Jersey with the community, in the community and for the community, with impact beyond the state's borders.

COMMUNITY ENGAGEMENT CORE

The Community Engagement Core is advancing community-driven research and partnerships, including:

- **The Partnership for Engagement in Research Studies (PARTNERS):** A community partner-driven advisory board, PARTNERS ensures community needs and voices are integrated into programmatic endeavors.

- **Community Engagement Virtual Salons (CEVS):** CEVS connects researchers with patients, community members and health care stakeholders to generate research questions, identify evidence gaps and define outcomes meaningful to research participants.

- **Community Scientist Program:** By fostering partnerships between community members and investigators, the Community Scientist Program provides training in ethics and responsible research practices and seeks to create network opportunities for researchers and community scientists. Initiatives include a diabetes LIFEMAP team, which seeks to optimize the collection of social determinants of health to enhance care through a patient-centered, data-driven approach.

- **CIRTification Program:** Launched in Spring 2022 with the Rutgers Institutional Review Board, the CIRTification program trains and empowers participants to provide researchers with timely expert feedback, ensuring that projects are culturally sensitive, relevant and aligned with community needs.

INTEGRATING SPECIAL POPULATIONS

To improve health through research, it's necessary to include representatives from all populations, including from communities that have historically been excluded from such research. These special populations include children, older adults, low-income individuals, incarcerated and justice involved individuals, as well as people living with opioid use disorder, HIV/AIDS or serious mental illness and others.

The Integrating Special Populations (ISP) Core supports researchers in these efforts with data resources, research team development, and partnerships and collaborations across the NJ ACTS network.

For instance, ISP conducts consultations with researchers, including trainees and early-stage investigators, offering guidance, expertise and resources in designing studies appropriate for the special population of interest.

Additionally, the ISP core has expertise working with information from Medicare, Medicaid and other big data sources, and provides guidance on integrating these large data bases into research.

Finally, the ISP core works to connect NJ ACTS researchers with a shared focus on addressing challenges particular to special populations and seeks to bridge gaps between clinical research findings and translating effective practices into large-scale health systems.

Research Acceleration & Commercialization Support

In addition to training current and future translational health care workers, NJ ACTS funds early-stage research and fosters groundbreaking discoveries through several initiatives.

PILOT PROGRAM

Pilot Program projects provide a path to sustainable, extramurally funded independent research across the alliance, spur scholarly publications and help commercialize academic assets. Originally funded only through the NIH, subsequent support from the New Jersey Health Foundation enabled a significant expansion of the program.

Between 2019 and 2024, NJ ACTS supported 44 pilot projects involving 91 investigators from alliance institutions and community collaborators. Projects have been awarded in several categories, including translational and clinical science; methodologies and infrastructure; valued partnerships; and process innovation.

Several projects have produced compounding effects, leading to funding beyond the NJ ACTS program. For example, in 2021, Alexander V. Neimark, a Distinguished Professor in the Rutgers Department of Chemical and Biochemical Engineering, received an NJ ACTS pilot award to develop computational models to explore COVID-19 virus mechanisms. Mentored clinical scientist researchers assisted with the computational needs of the project. Preliminary data from the pilot award laid the foundation for two National Science Foundation grants totaling $800,000.

Other notable pilot projects and awardees include:

- Xiaoyang Xu, an assistant professor of chemical and materials engineering at NJIT, together with Yuanxiang Tao, a professor in the Department of Anesthesiology at the Rutger New Jersey Medical School, explored the development of a new long-acting local anesthetics and its application in chronic pain. The result was a peer-reviewed paper co-authored by 13 people representing four institutions that addressed the management of persistent postsurgical and neuropathic pain. The authors reported that injectable poly lactic-co-glycolic acid (PLGA)-coated ropivacaine represents a new and highly promising avenue in pain management.

- Joshua Babu, a Princeton undergraduate, participated in a funded project that sought to enhance participant enrollment by using translational science-based approaches. His research provided the foundation for his acceptance as a Rhodes Scholar and to Harvard Medical School.

- Zemer Gitai of Princeton, along with Rutgers microbiologists Emanuel Goldman and Wlodek Mandecki, received a pilot award in 2019 for their project, "A FRET-based HTS to identify antibacterial drug leads targeting ternary complex formation in E. coli." This collaboration was foundational for the creation of ArrePath, a newly formed biotechnology company, applying deep phenotypic insights and machine learning to the discovery of new anti- infectives. ArrePath has generated a proprietary AI/ML platform to identify a unique class of small molecules with a mechanism of action distinct from current antibiotics.

- Howard Stone, the Neil A. Omenn '68 University Professor of Mechanical and Aerospace Engineering, and research scholar Maksim Mezmericher, identified a system to store vaccines and life-saving drugs at room temperature, eliminating the need for expensive refrigeration or freezing. The project has received substantial additional funding, including $200,000 through the Philadelphia-based University City Science Center's Proof-of-Concept Program; $100,000 from the Princeton University Intellectual Property Accelerator Fund; and $50,000 from the New Jersey Health Foundation's Innovation Grant program.

CLINICAL RESEARCH COORDINATION

Translating academic innovation into health care and public health solutions is a key goal of NJ ACTS, as is improving the quality, efficiency and volume of clinical trials. Several initiatives foster these efforts.

- **Clinical Research Centers:** Rutgers Health boasts five Clinical Research Units, located in New Brunswick (2), Piscataway and Newark (2). The centers provide investigators with access to trained clinical research staff as well as clinical space to conduct study visits and procedures. In addition to adult centers in Newark and New Brunswick, there are specialized centers at the Rutgers School of Dental Medicine and the Environmental and Occupational Health Sciences Institute, and for pediatric studies in New Brunswick.

- **Clinical Trials Office:** The Clinical Trials Office improves the quality and efficiency of trials conducted by Rutgers investigators by centralizing administrative functions, such as contract and budget negotiation,

Medicare coverage analysis and partner hospital agreements, and by harmonizing processes and procedures. Using Deep6 AI Cohort Builder, a tool used to analyze electronic medical records and identify eligible patients for clinical trials, the office conducts feasibility assessments to ensure work can be successfully implemented before significant resources are spent. This includes ensuring trials have enough patients within medical record systems to meet protocol criteria.

- **Identifying Investigators:** A vetting committee suggests possible matches between qualified principal investigators and study sponsors. These may come from the CTSA Trial Identification Network, which identifies sites through the CTSA network for broad-based national studies.

- **Regulatory Knowledge and Support:** This unit provides the NJ ACTS community with tools, training and resources to educate investigators, research staff and trainees about human subject research. It also offers regulatory and quality assurance assistance in all aspects of clinical research – from preclinical requirements to first-in-human studies and beyond. Educational seminars, webinars, virtual cafés and in-service programs on common regulatory topics are available to investigators. The regulatory unit has conducted 119 consultations since April 2021, with most consults focused on preparation of IRB submissions.

- **On-going Monitoring and Support:** On-going recruitment for open studies is evaluated in a prospective manner via the OnCore clinical trial management system. Monthly accrual reports from OnCore are distributed to study

teams to help them meet recruitment goals. An "Accrual Early Warning" dashboard allows chief technology officer recruitment specialists to periodically reach out to study teams that are having difficulty.

COMMERCIALIZATION

Established in late 2019, the five-year Rutgers Optimizes Innovation (ROI) program – funded by the NIH Research Evaluation and Commercialization Hub (REACH) – helped catalyze creativity, innovation and an entrepreneurial spirit with and for NJ ACTS.

Over the five years of the REACH award, the ROI program reviewed 80 eligible technologies, awarded $4.8 million to 33 projects (11 of which remained active in early 2025), resulting in four exclusive licenses and one option agreement with five startup companies, and 13 Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) program applications.

Funded technologies received $14.4 million in follow-on funding for continuation of research and development, 28% of which was venture capital funding received by startups.

The Rutgers-based Health Advance Fund, which succeeded the REACH grant, continues to focus on the translation of biomedical innovations through entrepreneurial training and support to academic innovators. The Health Advance Fund also provides commercialization funding to assist the development of early-stage life sciences technologies and make them more attractive for continued follow-on investments from industry partners and external investors.

PUBLICATIONS

NJ ACTS publications have greater-than-typical citation rates compared with publications in the same field and year, including many outliers with impressive citation counts, according to Altmetric, which tracks the online reach of published research across social media, news outlets and other platforms.
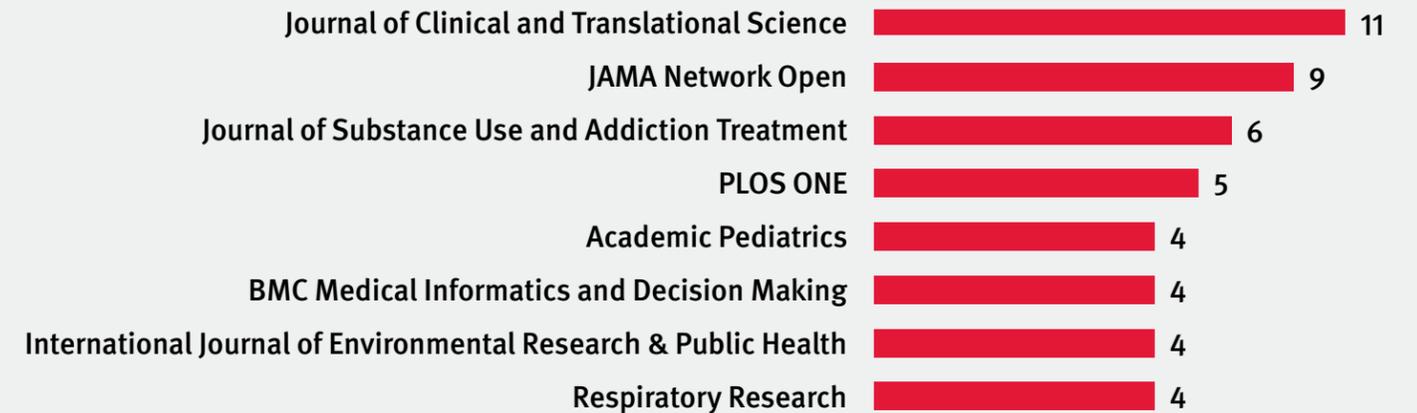

Top Journals with Most Citations

Journal	Citations
JAMA Network Open	541
Current Genomics	266
AIDS and Behavior	236
American Journal of Psychiatry	171
BMC Infectious Diseases	163
Environment International	145
Cell Communication and Signaling	109
Cancer Cell	96
Journal of the American Medical Informatics Association	72
Cell Systems	70
Circulation	70

TOP 3 ARTICLES WITH MOST CITATIONS	TIMES CITED
Habehh H, & Gohel S. (2021). Machine learning in healthcare. *Current Genomics*. 22(4), 291-300. doi: 10.2174/1389202922666210705124359	266
Bennett TD, Moffitt RA, Hajagos JG, et al. (2021). Clinical characterization and prediction of clinical severity of SARS-CoV-2 infection among US adults using data from the US National COVID Cohort Collaborative. *JAMA Network Open*. 4(7):e2116901. doi: 10.1001/jamanetworkopen.2021.16901	218
Jaiswal J, LoSchiavo C, & Perlman DC. (2020). Disinformation, misinformation and inequality-driven mistrust in the time of COVID-19: Lessons unlearned from AIDS denialism. *Aids and Behavior*. 24:2776-2780. doi: 10.1007/s10461-020-02925-y	199

Top Journals with Most Publications

Journal	Publications
Journal of Clinical and Translational Science	11
JAMA Network Open	9
Journal of Substance Use and Addiction Treatment	6
PLOS ONE	5
Academic Pediatrics	4
BMC Medical Informatics and Decision Making	4
International Journal of Environmental Research & Public Health	4
Respiratory Research	4

A full list of publications can be found on page 57.

The Future of NJ ACTS: Expanding Our Impact

In May 2024, the NIH officially extended the NJ ACTS program with a seven-year, $47.5 million award to build and improve upon infrastructure that promotes clinical and translational science in the state.

It also awarded three five-year training programs: Mentored Career Development (K12); the Pre-doctoral Institutional Training Grant (T32); and the Short-term Educational (R25) support program. NJ ACTS also could secure a Post-doctoral Institutional Training Grant and up to two High Impact Specialized Innovation Programs in Clinical and Translational Science awards.

The Next Phase of the NJ ACTS Program

- Launching and promoting clinical trials – specifically, highly complex nononcologic trials such as gene therapy – and promoting Rutgers as a site for sponsors.

- Expanding networks for community-engaged research.

- Bolstering diverse workforce development, such as training in dissemination and implementation.

- Advancing machine learning projects and generative artificial intelligence capabilities by building on achievements such as the development of algorithms for automated detection of COVID-19 from chest X-rays and detecting adverse responses to medications.

- Incorporating genetics and biomarkers in research projects.
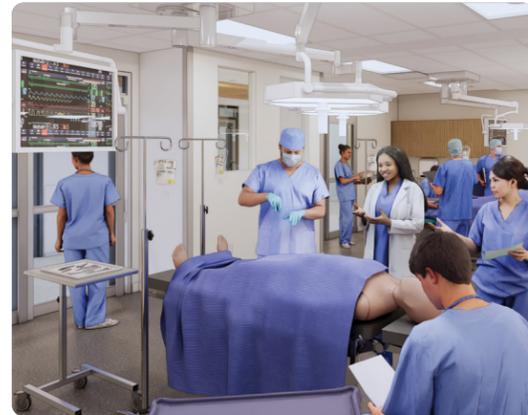
"The new $47.5 million NJ ACTS grant marks a pivotal moment for Rutgers Health, providing unprecedented support over seven years to drive clinical translational science forward.

This grant, which was already the first of its kind for New Jersey, amplifies our ability to conduct vital clinical trials and train the next generation of scientists who will ensure New Jersey residents have access to the latest treatments. It aligns perfectly with New Jersey's status as a global leader in medicine, furthering our commitment to innovation and improving health care outcomes."

BRIAN STROM
Rutgers Health Chancellor

Acknowledgements

NJ ACTS Participating Leads, Co-Leads and Staff (2019-present)

We recognize the efforts and creative contributions of our program leads, co-leads and staff.

Janet Alder, PhD, T32

Lauren Aleksunes, PharmD, PhD, WFD, R25

Tracy Andrews, BERD

Farah Anwar, Clin Res, Reg

Katherine Aquino, PhD, T32

Judith Argon, Admin

Cesar Bandera, Clin Res

Emily Barrett, PhD, MA, Leadership/E

Alicja Bator, Com

Cynthis Blitz, PhD, Eval

Justin Blucher, Clin Res

Tania Booster, Com

Casandra Burrows, Admin

Jonathan Carter, Clin Res

Jeffrey Carson, MD, BERD

Reggie Caudill, PhD, Pilots

John Chan, MD, K12

Yi Chen, PhD, Informatics

Ying Chen, Informatics

Wenjin Chen, Informatics

Shawn Chester, PhD, NJIT Liaison

Ana-Maria Chubinidze, Admin

Jonathan Cohen, MD/PhD, AI/ML

Sharon Cook, BERD

Dalton Conley, PhD, MPA, MS, ISP

Benjamin Crabtree, PhD, Com

Stephen Crystal, PhD, ISP, Informatics

Anda Cytroen, T32/TL1

Karen D'Alonzo, PhD, MSN, Com

Pamela Dahlen, Admin, Pilots

Kylie Davidson, ISP

Nathaniel Daw, PhD, AI/ML

Atam Dhawan, PhD, Leadership

Danielle Dick, PhD, T32 Postdoc

Nataki Douglas, MD, PhD, T32 Postdoc

Mila Dunbar, Admin

Yasheca Ebanks, WFD, R25

Mark Einstein, MD, Leadership

Nir Eyal, MBA, Ethics

Nancy Fielder, PhD, Reg

David Foran, PhD, Informatics

Noelle Foster, PhD, Informatics

Bianca Freda, MPH, Admin

Rebecca Freiday, Admin

Sunanda Gaur, MD, Clin Res

Celine Gelinas, PhD, Reg, R25

James Geller, PhD, MS, Com, Informatics

Maria Gennaro, MD, MSc, Biomarkers

Penelope Georges, WFD

Panagiotis Georgopoulos, PhD, ISP

Tobias Gerhard, PhD, BERD, RC2

Ralph Gigliotti, Team

Barbara Gladson DeMarco, PT, OT, PhD, WFD

Noreen Goldman, DSc, MSc, MA Team

Anthony Gonzalez, Admin

Marsha Gordon, Com

Judith Graber, PhD, MS, BERD

Jonathan Grasman, PhD, Pilots

Patricia Greenberg, MS, BERD

Valentina Guerrini, PhD, Biomarkers

Perry Halkitis, PhD, MS, MPH, BERD

Ethan Halm, MD, MS, MPH, K12

Johannes Haushofer, PhD, Informatics

Gary Heiman, PhD, MS, GREAT

Natalia Herman, ISP

Diane Hill, PhD, Comm

Daniel Horton, MD, MSCE, Team

Shawna Hudson, PhD, Leadership/Com

Joseph Jaeger, DrPH, MPH, RWJBH Liaison

Olga Jarrin Montaner, PhD, RN, ISP/WFD

Willian Jester, Admin

Manuel Jimenez, MD, MS, Com

Nandina Jose, MD, WFD

Vlad Kholodovych, PhD, Informatics

Howard Kipen, MD, MPH, Clin Res

Ilene Ladd, Admin

Sangeeta Lamba, MD, MS HPEd, Admin

Edmund Lattime, PhD, Team

Robert Laumbach, MD, MPH, TL1

Samuel Lee, Clin Res

Doreen Lechner, PhD, WFD

Daniel Lima, Com

Yong Lin, BERD

Branimir Ljubic, PhD, Informatics

Doreen Loh, Informatics

Shou-En Lu, BERD

Van Ly, MS, Informatics

Thomas Mackie, PhD, MPH, Com

Monica Magalhaes, PhD, Ethics

John Maher, Admin

Richard Marlink, MD, WFD

Tina Marottoli, T32

Ryan Massout, Admin

Natale Mazzaferro, BERD

Antonina Mitrofanova, PhD, T32

Dirk Moore, PhD, BERD

Maral Mouradian, MD, K12

Jennifer Mulle, PhD, MHS, GREAT

Judith Neubauer, PhD, Reg

Yael Niv, PhD, MA, Pilots

Abby Notterman, JD, MS, Pilots

Daniel Notterman, MD, Leadership

Molly Nowels, ISP

Eliana Obando, Clin Res

Reynold Panettieri, MD, Leadership

Biju Parekkadan, PhD, Team

Kristi Parker, Team

Carlos Pato, MD, PhD, GREAT

Michele Pato, MD, GREAT

Shivana Pinto Pereira, Admin

Kristina Plazonic, Informatics

Hannah Pomales, ISP

Arnold Rabson, MD, Pilots

Sally Radovick, MD, KL2

Nancy Reichman, PhD, Team

Nancy Reilly, Clin Res

Denise Rodgers, MD, Com

Jason Roy, PhD, BERD

William Russell, Clin Res

Jessica Salvatore, PhD, GREAT

Kathleen Scotto, PhD, TL1/T32

Soko Setoguchi, MD, DrPH, TL1

Tracey Sharp, KL2/K12

Sherri Gzemski, Clin Res

Steven Silverstein, PhD, ISP

Frank Sonnenberg, MD, Informatics

Brandon Stewart, PhD, MS, BERD

Ann Stock, PhD, WFD

Brittany Sullivan, Com

Barbara Tafuto, PhD, WFD

Alfred Tallia, MD, MPH, Com

Elizabeth Tawa, Admin

Rahul Ukey, Biomarkers

Christina Varghese, Clin Res

Stephen Vatner, MD, KL2

James Bar von Oehsen, PhD, Informatics

Guiling Wang, PhD, Pilots

Samuel Wang, PhD, Pilots

Anoja Wariswathana, Clin Res

Zhi Wei, PhD, BERD

Frederic Wondisford, MD, KL2

Michael Yedidia, PhD, Com

Dantong Yu, PhD, MA, WFD

KEY:

Admin – Administration

Com – Community Engagement

Clin Res – Clinical Research Center/Clinical Trials Office

BERD – Biostatistics, Epidemiology and Research Design

E – Element E Translational Sci Projects

ISP – Integrating Special Populations

Reg – Regulatory Knowledge

WFD – Workforce Development

R25 – Short Term Research Training

T32/TL1 – Pre- and Post-doctoral Training Program

K12/KL2 – Early Career Investigator

Acknowledgements

Early Career Investigators (KL2 and K12) (2019-present)

Christina Amaro, PhD
Qiana Brown, PhD, MPH
Aaron Dallman, PhD, OTR/L
Chintan Dave, PhD
Anthony Deo, MD, PhD
Sarah Fadem, PhD
Jonathan Grasman, PhD
Sara Heinert, PhD, MPH
Elisa Kallioniemi, PhD
Elissa Kozlov, PhD
Tsung-Po Lai, PhD
Yingci Liu, DDS, MS
Gregory Peck, DO, MPH
Emily Rosenfeld, DO
Kristine Schmitz, MD
Ankit Shah, MD
Aayush Visaria, MD

Pre-and Postdoctoral Trainees (TL1/T32)

Nedine Abdelhamid
Ellen Acosta, PhD
Abigail Armstrong, PhD
Svetlana Bagdasarov
Andrew Boreland, PhD
Isabel Brandtjen
Alexandra Burr, PhD
Michael Campbell
Chloe Cavanaugh, MD, PhD
Morgan Chaney, PhD
Donna Chen, PhD
Ryan Dikdan, MD, PhD
Erin Gallert, MS
Bassel Ghaddar, MD, PhD
Allison Glasser, DPH
Andrew Guanaccia, PhD
Esmet Hegazi, PhD
Emily Hyde
Stephanie Iring-Sanchez, PhD
Anotnia Kaz
Rebecca Kim Yip, PhD
Sophia Koval
Susan Leggett, PhD
Krystal Lum, MS, PhD
Sarah Lundell
Camden MacDowell, MD, PhD
Courtney McDermott, PhD
Jennifer Miles, PhD
Allison Miller
Shane Neibart, MD, MS
Callan O'Shea
Emma Schweitzer
Devin Simpkins, PhD, MSc
Christos Suriano, PhD
Hima Tallam
Brandon Trejo
Alex Yonk, PhD
Thomas Zajdel, PhD

Academy of Mentors (2019-present)

We thank the faculty from Rutgers, Princeton and NJIT who have served as mentors. Their commitment is crucial in developing the next generation of translational scientists and researchers.

Name	
Janet Alder, PhD	K/T
Lauren Aleksunes, PharmD, PhD	K/T
David Alland, MD	K/T
Steven An, PhD	K/T
Cande Ananth, PhD, MPH	K/T
Eddy Arnold, PhD	K/T
Gary Aston-Jones, PhD	K/T
Sophie Astrof, PhD	K/T
Gopal Babu, PhD	K/T
Elisa Bandera, MD, PhD	K/T
Nicholas Bello, PhD	K/T
Christina Marie Bergey, PhD	T
Purnima Bhanot, PhD	K/T
Kasia Biesczad, PhD	K/T
Raymond Brige, PhD	K/T
Martin Blaser, MD	K/T
Linda Brzustowicz, MD	K/T
Christoph Buettner, MD, PhD	K/T
Joel Cantor, ScD	K/T
Ioana Carcea, MD, PhD	T
Jeffrey Carson, MD	K/T
Theresa Chang, PhD	K/T
Shishir Chundawat, PhD	T
Patrick Clifford, PhD	K/T
Peter Cole, MD	K/T
Paul Copeland, PhD	K/T
Benjamin Crabtree, PhD	K/T
Stephen Crystal, PhD, MA	K/T
Brian Daniels, PhD	K/T
Subhajyoti De, PhD	K/T
Dominic Del Re, PhD	K/T
Cristine Delnevo, PhD, MPH	K/T
Katie Devine, PhD, MPH	K/T
Emanuel DiCicco-Bloom, MD	T
Maria Gloria Dominguez Bello, PhD	K/T
Nataki Douglas, MD, PhD	K/T
Cheryl Dreyfus, PhD	K/T
Paul R Duberstein, PhD	K/T
David Dubnau, PhD	K/T
Cecile Feldman, DMD, MBA	K/T
Daniel Fine, DO	K/T
Bonnie Firestein, PhD	K/T
Patricia Fitzgerald-Bocarsly, PhD	K/T
David Foran, PhD	K/T
Joel Freundlich, PhD	K/T
Shridar Ganesan, MD, PhD	K/T
Maria Gennaro, MD, MSc	K/T
Tobias Gerhard, PhD	K/T
Andrew Gow, PhD	K/T
William W. Graves, PhD	T
Grace L. Guo, PhD, MBBS	K/T
Perry Halkitis, PhD, MS, MPH	K/T
Ethan Halm, MD, MPH, MBA	K/T
Gary Heiman, PhD, MS	K/T
Roger Howell, PhD	K/T
Shawna Hudson, PhD	K/T
Estela Jacinto, PhD	K/T
James Morgan-Hurley, PhD	T
Mi-Hyeon Jang, PhD	K/T
Olga Jarrin Montaner, PhD, RN	K/T
Peng Jiang, PhD	K/T
Manuel Jimenez, MD, MS	K/T
Yoon-Seong Kim, MD/PhD	K/T
Howard Kipen, MD, MPH	K/T
Marc Klapholz, MD	K/T
Evan Kleiman, PhD	K/T
Lawrence Kleinman, MD, MPH	K/T
Ah Ng Tony Kong, PhD	K/T
Anna Konova, PhD	K/T
Sergei Kotenko, PhD, MS	K/T
Bart Krekelberg, PhD, MSC, MA	K/T
Jerome Langer, PhD	K/T
Debra Laskin, PhD	K/T
Edmund Lattime, PhD	K/T
Robert Laumbach, MD, MPH	K/T
Steven Levison, PhD	K/T
Lisa Lewis, PhD, RN	K/T
Steven Libutti, MD	K/T
Peter Lobel, PhD	K/T
Steven Malin, PhD	K/T
Sharon Manne, PhD	K/T
Chiara Manzini, PhD	K/T
Richard Marlink, MD	K/T
Michael Matise, PhD	K/T
Bozena Michniak-Kohn, PhD, MRPharmS	K/T
James Millonig, PhD	K/T
Tamara Minko, PhD	K/T
Antonina Mitrofanova, PhD	K/T
Prabhas Moghe, PhD	K/T
Alan Monheit, PhD	K/T
M. Maral Mouradian, MD	K/T
Jennifer Mulle, PhD, MHS	K/T
Lia Nower, JD, PhD	K/T
Pamela Ohman Strickland, PhD	K/T
Bishr Omary, MD, PhD	K/T
Reynold Panettieri, MD,	
Zhiping Pang, PhD	K/T
Carlos Pato, MD, PhD	K/T
Michele Pato, MD	K/T
Daniel Pilch, PhD	K/T
Abraham Pinter, PhD	K/T
Loredana Quadro, PhD	K/T
Arnold B. Rabson, MD	K/T
Narayanan Ramasubbu, PhD	K/T
Nancy Reichman, PhD	K/T
Troy A. Roepke, PhD	K/T
Diana Roopchand, PhD	K/T

Acknowledgements

Vanessa Routh, PhD	K/T	Martin Yarmush, MD, PhD	K/T
Junichi Sadoshima, MD, PhD	K/T	Michael Yedidia, PhD	K/T
Amrik Sahota, PhD	K/T	David Zald, PhD	K/T
Padmini Salgame, PhD	K/T	Huaye Zhang, PhD	K/T
Jessica Salvatore, PhD	K/T	Steven Zheng, PhD	K/T
Harini Sampath, PhD	K/T	Wei-Xing Zong, PhD	K/T
Hilary Samples, PhD, MHS	K/T	Jonathan Cohen, MD, PhD	K/T
Karen A. Schindler, PhD	K/T	Danelle Devenport, PhD, MSc	K/T
Stephan Schwander, MD, PhD	K/T	Mohamed Donia, PhD	K/T
Kathleen Scotto, PhD	K/T	Noreen Goldman, DSc, MSc, MA	K/T
Soko Setoguchi, MD, DrPH	K/T	Andrea Graham, PhD	K/T
Mark Siracusa, PhD	K/T	Bryan Grenfell, DPhil	K/T
Phoebe Stapleton, PhD	K/T	Yibin Kang, PhD	K/T
Michael Steinberg, MD, MPH	K/T	Colleen Murphy, PhD	K/T
Ann M. Stock, PhD	K/T	Celeste M. Nelson, PhD	K/T
Brian Strom, MD, MPH	K/T	Daniel Notterman, MD	K/T
Jag Sunderram. MD	K/T	Alexander Ploss, PhD	K/T
Vadim Ten, MD, PhD	K/T	Joshua Rabinowitz, MD, PhD	K/T
Andrew Thomas, PhD	K/T	Jean Schwarzbauer, PhD	K/T
Charlotte Thomas-Hawkins, PhD, RN	T	Jared Toettcher, PhD	K/T
Sanjay Tyagi, PhD	K/T	Olga Troyanskaya, PhD	K/T
Stephen Vatner, MD	K/T	Samuel Wang, PhD	K/T
Michael Verzi, PhD	K/T	Sergei Adamovich, PhD	K/T
Chongyi Wei, DrPH	K/T	Bharat Biswas, PhD	K/T
Eileen White, PhD	K/T	Yi Chen, PhD	K/T
Bing Xia, PhD	K/T	Bryan Pfister, PhD	K/T
Shuo Xiao, PhD	K/T	Zhi Wei, PhD	K/T
Chaoyang Xue	K/T		

Publications

1. Serum cAMP levels are increased in patients with asthma. An SS, Cao G, Ahn K, Lee J, Jung DY, Denlinger L, Fahy J, Israel E, Moore W, Phillips B, Mauger D, Wenzel S, Panettieri RA Jr. J Clin Invest. 2025 JAN 7:E186937. PMID: 39774028 DOI: 10.1172/JCI186937

2. Nuclear instance segmentation and tracking for preimplantation mouse embryos. Nunley H, Shao B, Denberg D, Grover P, Singh J, Avdeeva M, Joyce B, Kim-Yip R, Kohrman A, Biswas A, Watters A, Gal Z, Kickuth A, Chalifoux M, Shvartsman SY, Brown LM, Posfai E. Development. 2024 Nov 1;151(21):dev202817. PMID: 39373366 PMCID: PMC11574361 DOI: 10.1242/dev.202817

3. Intragenic DNA inversions expand bacterial coding capacity. Chanin RB, West PT, Park RM, Wirbel J, Green GZM, Miklos AM, Gill MO, Hickey AS, Brooks EF, Bhatt AS. Nature. 2024 Oct; 634(8032):234-242. PMID: 36945655 PMCID: PMC10028968 DOI: 10.1101/2023.03.11.532203

4. Genetic and environmental interactions contribute to immune variation in rewilded mice. Oyesola O, Downie AE, Howard N, Barre RS, Kiwanuka K, Zaldana K, Chen YH, Menezes A, Lee SC, Devlin J, Mondragón-Palomino O, Souza COS, Herrmann C, Koralov SB, Cadwell K, Graham AL, Loke P. Nat Immunol. 2024 Jul;25(7):1270-1282. PMID: 36993484 PMCID: PMC10055251 DOI: 10.1101/2023.03.17.533121

5. Antiviral fibrils of self-assembled peptides with tunable compositions. Dodd-O J, Roy A, Siddiqui Z, Jafari R, Coppola F, Ramasamy S, Kolloli A, Kumar D, Kaundal S, Zhao B, Kumar R, Robang AS, Li J, Azizogli AR, Pai V, Acevedo-Jake A, Heffernan C, Lucas A, McShan AC, Paravastu AK, Venkataram Prasad B. V., Subbian S, Král P, Kumar V. Nature Communications. 15, Article number: 1142 (2024). 07 February 2024. doi.org/10.1038/s41467-024-45193-3

6. Efficient prime editing in two-cell mouse embryos using PEmbryo. Kim-Yip RP, McNulty R, Joyce B, Mollica A, Chen PJ, Ravisankar P, Law BK, Liu DR, Toettcher JE, Ivakine EA, Posfai E, Adamson B. Nat Biotechnol. 2024 Feb 6. doi: 10.1038/s41587-023-02106-x. Online ahead of print.

7. Porous biomaterial scaffolds for skeletal muscle tissue engineering. Kozan NG, Joshi M, Sicherer ST, Grasman JM. Front Bioeng Biotechnol. 2023 Oct 3;11:1245897. PMID: 37854885 PMCID: PMC10579822 DOI: 10.3389/fbioe.2023.1245897

8. Denoising sparse microbial signals from single-cell sequencing of mammalian host tissues. Ghaddar B, Blaser MJ, De S. Nat Comput Sci 3, 741–747 (2023). DOI: 10.1038/s43588-023-00507-1

Publications

9. Buprenorphine Utilization and Prescribing Among New Jersey Medicaid Beneficiaries After Adoption of Initiatives Designed to Improve Treatment Access. Treitler P, Nowels M, Samples H, Crystal S. JAMA Netw Open. 2023 May 1;6(5):e2312030. PMID: 37145594 PMCID: PMC10163388 DOI: 10.1001/jamanetworkopen.2023.12030

10. Clustering of single-cell multi-omics data with a multimodal deep learning method. Lin X, Tian T, Wei Z, Hakonarson H. Nat Commun. 2022 Dec 13;13(1):7705 PMID: 36513636 PMCID: PMC9748135 DOI: 10.1038/s41467-022-35031-9

11. Abatacept, Cenicriviroc, or Infliximab for Treatment of Adults Hospitalized With COVID-19 Pneumonia A Randomized Clinical Trial. O'Halloran JA, et al. JAMA. 2023 Jul 25;330(4):328-339. PMID: 37428480 PMCID: PMC10334296 DOI: 10.1001/jama.2023.11043

12. Association Between Housing Affordability and Severe Maternal Morbidity. Muchomba FM, Teitler J, Reichman NE. JAMA Netw Open. 2022;5(11):e2243225. PMID: 36413368 PMCID: PMC9682423 DOI: 10.1001/jamanetworkopen.2022.43225

13. Racial and Ethnic Disparities in Buprenorphine and Extended-Release Naltrexone Filled Prescriptions During the COVID-19 Pandemic. Nguyen T, Ziedan E, Simon K, Miles J, Crystal S, Samples H, Gupta S. JAMA Netw Open. 2022 Jun 1;5(6):e2214765. PMID: 35648400 PMCID: PMC9161014 DOI: 10.1001/jamanetworkopen.2022.14765

14. Targeting hepatic kisspeptin receptor ameliorates nonalcoholic fatty liver disease in a mouse model. Guzman S, Dragan M, Kwon H, de Oliveira V, Rao S, Bhatt V, Kalemba KM, Shah A, Rustgi VK, Wang H, Bech PR, Abbara A, Izzi-Engbeaya C, Manousou P, Guo JY, Guo GL, Radovick S, Dhillo WS, Wondisford FE, Babwah AV, Bhattacharya M. J Clin Invest. 2022 May 16;132(10):e145889. PMID: 35349482 PMCID: PMC9106350 DOI: 10.1172/JCI145889

15. Characteristics, Outcomes, and Severity Risk Factors Associated With SARS-CoV-2 Infection Among Children in the US National COVID Cohort Collaborative. Martin B, DeWitt PE, Russell S, Anand A, Bradwell KR, Bremer C, Gabriel D, Girvin AT, Hajagos JG, McMurry JA, Neumann AJ, Pfaff ER, Walden A, Wooldridge JT, Yoo YJ, Saltz J, Gersing KR, Chute CG, Haendel MA, Moffitt R, Bennett TD. JAMA Netw Open. 2022 Feb 1;5(2):e2143151. PMID: 35133437 PMCID: PMC8826172 DOI: 10.1001/jamanetworkopen.2021.43151

16. Risk of Cardiovascular Outcomes in Patients with Type 2 Diabetes After Addition of SGLT2 Inhibitors Versus Sulfonylureas to Baseline GLP-1RA Therapy. Dave CV, Kim SC, Goldfine AB, Glynn RJ, Tong A, Patorno E. Circulation. 2021 Feb 23;143(8):770-779. PMID: 33302723 PMCID: PMC7902404 DOI: 10.1161/CIRCULATIONAHA.120.047965

17. Municipality-Level Variation in Severe Maternal Morbidity and Association With Municipal Expenditures in New Jersey. Muchomba FM, Teitler J, Kruse L, Reichman NE.JAMA Netw Open. 2021 Nov 1;4(11):e2135161. PMID: 34792591 DOI: 10.1001/jamanetworkopen.2021.35161

18. Clinical Characterization and Prediction of Clinical Severity of SARS-CoV-2 Infection Among US Adults Using Data From the US National COVID Cohort Collaborative. Bennett TD, Moffitt RA, Hajagos JG, Amor B, Anand A, Bissell MM, Bradwell KR, Bremer C, Byrd JB, Denham A, DeWitt PE, Gabriel D, Garibaldi BT, Girvin AT, Guinney J, Hill EL, Hong SS, Jimenez H, Kavuluru R, Kostka K, Lehmann HP, Levitt E, Mallipattu SK, Manna A, McMurry JA, Morris M, Muschelli J, Neumann AJ, Palchuk MB, Pfaff ER, Qian Z, Qureshi N, Russell S, Spratt H, Walden A, Williams AE, Wooldridge JT, Yoo YJ, Zhang XT, Zhu RL, Austin CP, Saltz JH, Gersing KR, Haendel MA, Chute CG; National COVID Cohort Collaborative (N3C) Consortium. JAMA Netw Open. 2021 Jul 1;4(7):e2116901. PMID: 34255046 PMCID: PMC8278272 DOI: 10.1001/jamanetworkopen.2021.16901

19. Black and Latinx Community Perspectives on COVID-19 Mitigation Behaviors, Testing, and Vaccines. Jimenez ME, Rivera-Núñez Z, Crabtree BF, Hill D, Pellerano MB, Devance D, Macenat M, Lima D, Martinez Alcaraz E, Ferrante JM, Barrett ES, Blaser MJ, Panettieri RA Jr, Hudson SV. JAMA Netw Open. 2021 Jul 1;4(7):e2117074. PMID: 34264327 PMCID: PMC8283554 DOI: 10.1001/jamanetworkopen.2021.17074