



Improving Health in Georgia

AND BEYOND





O U R I M P A C T

1,500 Investigators Assisted

- >4,200 instances of program support

3 Highest Instances of Program Support

- 1,350 from Georgia CTSA Clinical Research Centers (GCRCs)
- 1,000 from Biostatistics, Epidemiology, & Research Design Consults (BERD)
- 500 from Informatics

300 Future Clinical and Translational Scientists Trained

3,000 Publications

- >90,000 citations
- 2.4 times the average citation rate for comparable papers

350 Pilot Grants Awarded

- \$14 million in pilot grant funding
- >\$134 million in follow-on funding
- 10:1 return on investment



We are excited to share insights into the ongoing work of researchers at the Georgia Clinical and Translation Science Alliance (Georgia CTSA). Together for more than a decade, this Alliance supports a statewide group of investigators who successfully collaborate across institutions, often with colleagues throughout the Southeast region and with other CTSA hubs across the U.S., to turn observations in the laboratory, clinic and community into interventions that improve health.

The Georgia CTSA brings together four premier academic institutions - Emory University, Morehouse School of Medicine, the Georgia Institute of Technology and the University of Georgia – to leverage their complementary and unique strengths and resources to accelerate clinical and translational education, research, and community engagement.

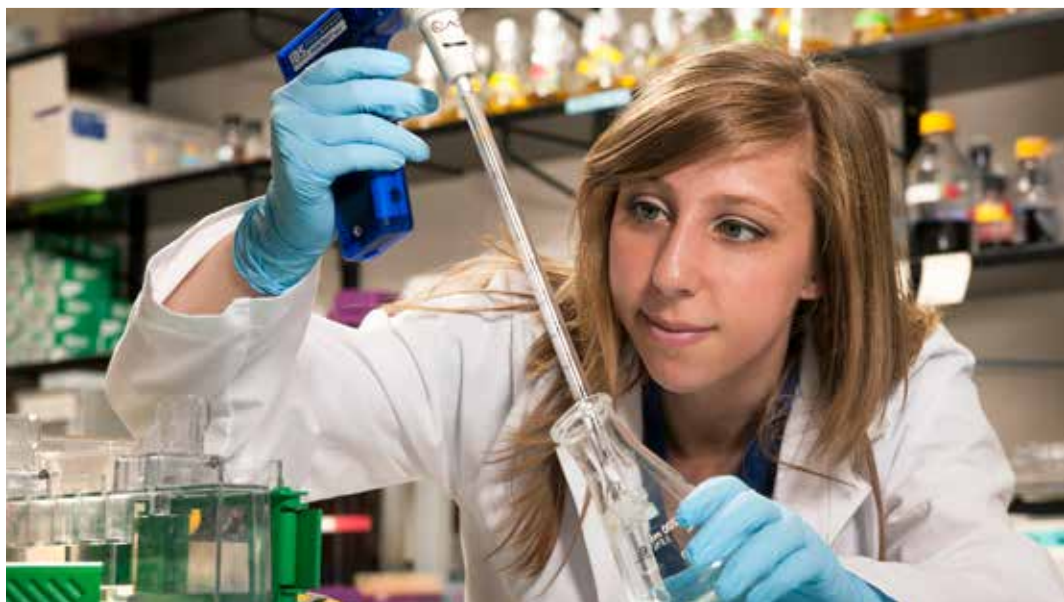
Funded through a \$51 million grant in 2017 from the National Center for Advancing Translational Sciences, part of the NIH Clinical and Translational Science Awards, the Georgia CTSA grew from the Atlanta Clinical & Translational Science Institute. This partnership had a decade of successful research collaboration before welcoming its new partner, the University of Georgia, and expanding to a statewide focus. The multi-institutional Georgia CTSA specifically focuses on:

- **Training the next generation of clinical investigators**
- **Translating new discoveries to advance health from the bedside to community**
- **Engaging the community in clinical research efforts.**

Over the past twelve years, this partnership has supported more than 1,500 investigators in over 300 research areas. These next pages highlight just a few of those stories – new clinical and translational investigators who are now actively engaged in research, medical discoveries and cutting-edge technology patented and in use today, and patients and communities who are already benefiting from the Alliance’s work. These accomplishments serve as inspiration and motivation for the entire Georgia CTSA community, as we grow the essential work of supporting our investigators through innovative initiatives to improve health in Georgia and beyond.

Georgia CTSA Principal Investigators: Henry M. Blumberg, MD, KL2 and TL1, Emory University; Bradley G. Phillips, PharmD, University of Georgia; Elizabeth Ofili, MD, MPH, Morehouse School of Medicine; Andrés J. García, PhD, Georgia Institute of Technology; and W. Robert Taylor, MD, PhD, Contact Principal Investigator, Emory University

Training the Translational Workforce



“The evaluation showed how the program’s training positively impacted the careers of clinical and translational scientists. Trainees expressed value in learning from peers and mentors who are dedicated to improving the translation of scientific discovery into effective interventions for human health. Many stated the program was essential for their career as an independent investigator.”

*Dawn Comeau, PhD
Executive Committee Member
Research Education Program
Emory University*

“For the grant writing course, I used what I was planning to submit for my K award. The instructors gave me really good critical feedback. That grant was the one that ultimately ended up being funded.”

That quote from a trainee was included in a recent paper, “Building Diverse Careers in Clinical and Translational Research: Evaluation of a Certificate Program in Translational Research (CPTR)”, in the *Journal of Clinical and Translational Science*. The paper analyzed the Certificate Program in Translational Research offered by the Georgia CTSA. The program grows investigators’ skills in translating their findings from the laboratory, clinic and research settings to improve the health of patients in the community.

Authored by the Georgia CTSA Research Education Program Executive Committee members, the paper reported outcomes among trainees in the CPTR including trainee publications, grants, achievement of curricular competencies, and careers in clinical and translational research. Trainees were also interviewed as part of the qualitative evaluation about their sustained careers.

The study found that all graduates of the program had continued in careers that encompassed translational research. Graduates had also published extensively and received both public and private grant funding. Of the program’s impact, one trainee noted, “When I applied for my fellowship, the only thing that they asked me about was my experience with the certificate program.” Both the quantitative data and the trainee interview results led the authors to conclude that “programs such as the Certificate Program in Translational Research are needed to train investigators to advance biomedical discoveries into population health.”

>332
publications
by trainees

>\$21.3
million grants
received



Shaping Career of Physician Scientist

*“I completed the Georgia CTSA Certificate Program in Translational Research to learn more about translating novel therapeutics from the bench to patients.”
Patrick Carriere, PhD*

Patrick Carriere, PhD, a 2016 graduate of the Georgia CTSA Certificate Program in Translational Research program and a 2018 graduate of the PhD program in Biomedical Sciences at the Morehouse School of Medicine, believes the training he received ignited his ongoing interest in a career that encompasses clinical and translational research.

With a research focus in cancer, Dr. Carriere initially concentrated on the role of natural products that could reduce the risk of toxicity in cancer treatment regimens. He then developed an interest in the clinical and translational aspects of cancer research. Noted Doug Paulsen, PhD, a member of the Georgia CTSA Research Education Program Executive Committee, “Patrick has been one of our strongest students. The Georgia CTSA Certificate Program in Translational Research program had a significant impact on his career choice.”

Linking Research with Humanity of Patients

Speaking about his experience in the program, Dr. Carriere described a remarkable encounter during a clinical preceptorship where an older African American patient lacked trust with the idea of clinical research. Dr. Carriere said, “As I processed the very human side of medicine and better understood the critical role clinical research played in improving health care outcomes, I relished the idea of using my gifts to bridge research and medicine as a physician scientist. Clinical training would enhance my perspective as a researcher, yielding more nuanced, patient-centered research questions aimed at achieving health equity.”



“Clinical training enhanced my perspective as a researcher, yielding more nuanced, patient-centered research questions aimed at achieving health equity.”

*Patrick Carriere, PhD
2018 Graduate
Morehouse School
of Medicine*

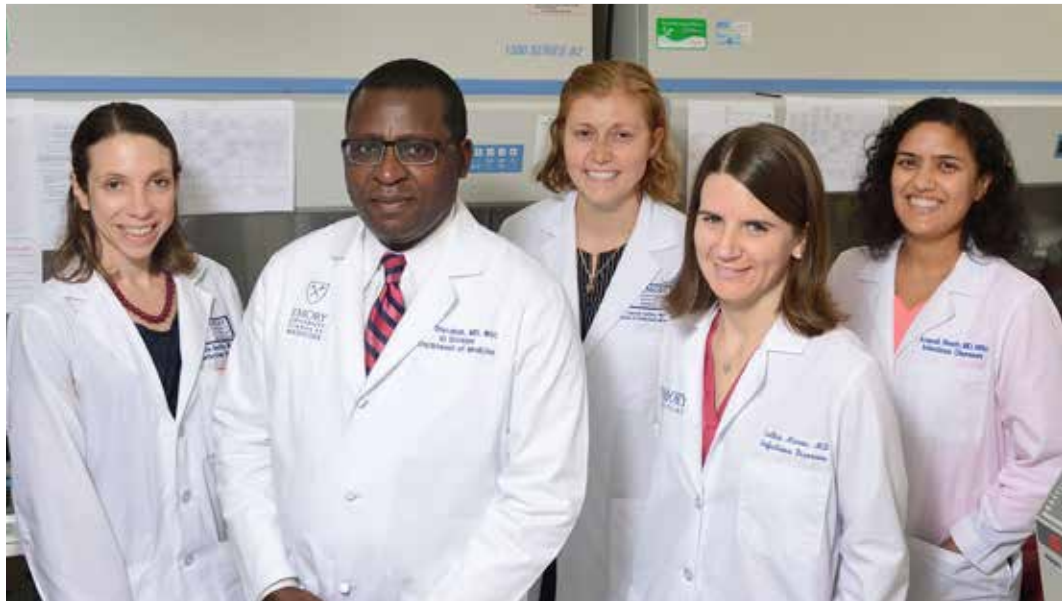
56

Certificate Program
in Translational
Research students

22%

underrepresented
minority

Noteworthy Research & Achievement



“We are proud of the accomplishments of our former trainees and how they have assumed leadership positions in the Georgia CTSA. Former trainees also direct the Georgia CTSA Pediatrics program (Dr. Anne Fitzpatrick, former KL2 Scholar and MSCR graduate) and the Georgia CTSA Clinical Research Centers - GCRCs (Dr. Greg Martin, MSCR graduate).”

*Henry M. Blumberg, MD
Principal Investigator,
KL2 and TL1
Emory University*

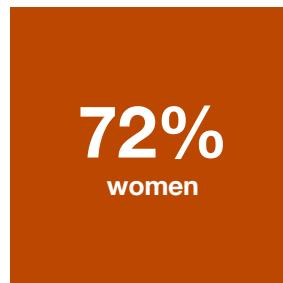
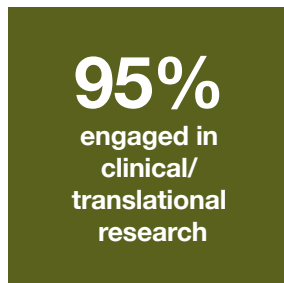
The Georgia CTSA has supported the research of hundreds of investigators statewide over its 12-year history. Recently the spotlight has shown brightly on two of its own leaders for their exemplary research efforts in their respective fields.

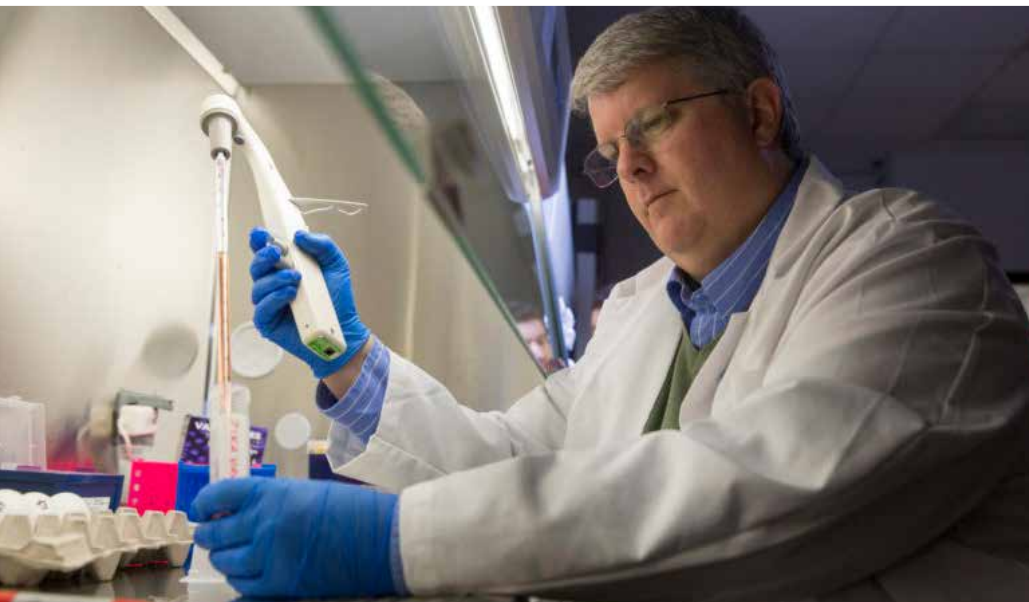
Igho Ofotokun, MD, MSc, and Pamela Bhatti, PhD are both members of the leadership team for the Georgia CTSA Research Education program and serve on its Executive Committee. They are also former Georgia CTSA KL2 Scholars, MSCR graduates, and are now KL2 Co-Directors. These investigators’ professional efforts have received recent acclaim.

Ofotokun, Professor of Medicine, Division of Infectious Diseases at Emory University, is one of the principal investigators of a 7-year, \$17 million grant from the National Institutes of Health (NIH) to study chronic conditions related to HIV infection. He is also the principal investigator for a 5-year, \$7.49 million SCORE grant from the NIH to a team at Emory examining influences biological sex plays in the prevention, presentation, treatment and outcomes of disease in humans.

Pamela Bhatti, PhD, Associate Professor and Associate Chair for Innovation and Entrepreneurship, School of Electrical and Computer Engineering, Georgia Institute of Technology, was awarded an Outstanding Interdisciplinary Activities Award by Georgia Tech. Bhatti was acknowledged for her profound contributions to the field of cochlear-implant research. She was also recognized for her extensive research in neurosciences and electrophysiology, as well as work with entrepreneurs. In addition, Bhatti has been named Editor-in-Chief of the *IEEE Journal of Translational Engineering in Health and Medicine*.

KL2 Graduates





Re-imagining the Flu Vaccine

More than 79,000 people died from influenza during the 2017-2018 season according to estimates from the Centers for Disease Control and Prevention. Mortality from the flu could decrease significantly given a 7-year, up to \$130 million, National Institutes of Health grant awarded to a team headed by the University of Georgia. The team also includes members from Emory University, the Georgia Institute of Technology and 12 other academic and research centers, to develop a new, more advanced influenza vaccine.

Ted M. Ross, Georgia Research Alliance Eminent Scholar of Infectious Diseases in UGA's College of Veterinary Medicine and Director of UGA's Center for Vaccines and Immunology, will lead the project to develop a more advanced influenza vaccine designed to protect against multiple strains of influenza virus in a single dose. The vaccine could be administered once every five to ten years, instead of annually, and could especially benefit vulnerable populations including children, the elderly or people with weakened immune systems.

Dr. Ross and his team are currently studying how people of different ages and health status respond to the seasonal influenza vaccine in collaboration with the Georgia CTSA Clinical Research Centers (GCRCs) UGA Clinical and Translational Research Unit. "We need to know how people react to the current commercial seasonal influenza vaccine in order to design improved universal influenza vaccines," Ross says. "The next generation of universal influenza vaccines needs to work in all populations of people; the young, the elderly, pregnant women, people with diabetes or heart disease, immunocompromised people."



"The studies we are performing at the Georgia CTSA Clinical and Translational Research Centers (GCRCs) will help us understand people's response to influenza vaccination."

*Ted M. Ross, PhD
GRA Eminent Scholar and
Director of the Center for
Vaccines and Immunology
University of Georgia*

Georgia CTSA Clinical Research Centers (GCRCs)

6,000
outpatient
study visits

100
active studies

6
GCRCs
Research Sites

Pilot Grants Fuel Research



■

“The Pilot Grants program gave me resources to collect preliminary data and helped immensely in my ability to obtain subsequent funding and awards. It’s an excellent mechanism to start a project and to help young investigators launch their careers.”

*Jennifer Felger, PhD
Associate Professor,
Department of Psychiatry
and Behavioral Sciences
Emory University*

A 1000% return – unheard of in the stock market, but that’s the return on investment at which outside sources in the grant funding arena have supported the projects of investigators funded through the Georgia CTSA Pilot Grants program over the past 12 years. The pilot grants are an excellent mechanism for junior faculty, new collaborations, or extending work along the translational research spectrum.

Investigators like Jennifer Felger, PhD, often attribute their success to support by the Pilot Grants program. Dr. Felger is a former Georgia CTSA KL2 Scholar who received a pilot grant for her work on depression. Affecting approximately 20% of the population over their lifetimes, depression is a leading cause of disability worldwide. The Pilot Grants program helped this junior faculty member advance an idea. Receiving resources as a junior investigator and evidence of institutional support were key aspects of Dr. Felger’s ability to successfully obtain R01 funding.

Dr. Felger’s research, titled Inflammation-Related Alterations in Corticostriatal Connectivity in Depression: Reversal with Levodopa, resulted in four publications from funding and two subsequent grants funded. She was also recognized with the Klerman Award for Clinical Research for her outstanding clinical and basic research. Dr. Felger says, “The Georgia CTSA pilot grant was key in moving my work from T0 to T1 space to establish mechanistic links between symptoms and biomarkers. My overarching goal is to establish endpoints for future T2 and T3 discovery.”

Pilot Grants have funded more than 350 projects totaling over \$14 million. Pilot Grant recipients have subsequently received \$134 million in extramural funding as a result of the preliminary work funded by the Pilot Grants program. The Pilot Grants program has also led to the issuance of 10 new patents leading to innovative medical practices and technologies.

10:1
ROI

\$14
million funded

\$134
million in
follow-on
funding



Research Community Unites at Annual Conference

3D printed medical devices and bio printing for tissue mimics – these sound like science fiction to most, yet those topics were just two of many recently discussed to benefit patients at the 2nd Annual Georgia Clinical and Translational Science Conference. More than 230 attendees participated from academic institutions and community organizations across the state.

The two-day conference featured multiple speakers, with its keynote presentation delivered by Michael G. Kurilla, MD, PhD, Director, Division of Clinical Innovation, National Center for Advancing Translational Sciences (NCATS) at the National Institutes of Health. Numerous breakout sessions highlighted twenty abstracts and eight featured talks in the areas of statewide health, innovation of healthcare technology and translating basic science. Participants attended networking sessions throughout the conference focused on building connections across institutions and subject areas.

Dr. Steven Beach and Dr. Gene Brody from UGA's Center for Family Research, winner of the Presidents' Award of Distinction for Team Science, presented "An Introduction to the Center for Family Research at the University of Georgia and a Glimpse at Its Translational Science." The Team Science Award of Distinction for Early Stage Research Teams winner, a combined Emory and Georgia Tech research team, presented "Characterizing Diabetes Screening Systems for Design, Evaluation, and Disparity Identification." Researchers were also recognized for their poster or oral presentations of the best new clinical and translational research in Georgia.

Given the conference's success, its reach is expanding to neighboring CTSA's. The first Southeast Regional Clinical and Translational Science Alliance Conference will be on February 27 – 29, 2020 at Callaway Resort and Gardens. In addition to the annual conference, 1,400 people also collaborated and networked at 24 additional opportunities throughout the year including TEAMS Mentoring, Blue Sky Groups, Speed Networking, and Team Science workshops.



"I made numerous connections who I will be working with for additional coverage of their important research."

Annual Conference attendee

236
attendees

100
poster
presentations

Cutting-Edge Informatics Thrusts Research Forward



“Access to these data sources significantly improves our researchers’ ability to conduct condition-specific studies and find potential partners for multi-site studies.”

*Jon Duke, MD, MS
Co-Director, Informatics
Georgia Tech*

Making therapeutic breakthroughs on disease, like cancer and Alzheimer’s, requires access to large amounts of patient data for research, eventually leading to new therapies and diagnostics. Georgia CTSA is delivering access to clinically relevant data to its investigators by funding and developing several data infrastructure initiatives.

One such critical data access service allows investigators to retrieve patient counts based on a multi-variable query at a single institution, such as Emory University or Morehouse School of Medicine. This service was invaluable to the research work of Dr. Cassandra Quave, Assistant Professor of Dermatology and Human Health at Emory University. Dr. Quave’s work focuses on medical ethnobotany and anti-infective drug discovery, and she used the service to determine study feasibility for ‘Botanical dietary supplements for Healthspan’.

A health record data search is often one of the first steps for researchers to determine the possibility of successfully recruiting a special population for a study. Investigators can determine how many patients are in the health systems who meet their particular study criteria. Those patients’ information, using clean and anonymized data, can then be recruited for the researchers’ work.

For multi-site patient counts to determine study feasibility, the Georgia CTSA brings real-time cohort exploration and discovery to its researchers. Using a web interface in a HIPAA-compliant manner, researchers can conduct searches on over 125 million patient records from over 40 leading academic medical research centers nationwide.

125
million patient records

40
academic medical research centers nationwide



Bridging the Gap from University Innovation to Commercialization

CellScope Oto™ co-developed by Emory/GT faculty Dr. Wilbur Lam. Georgia CTSA funded clinical of assessment smartphone otoscope.

Innovation and research are prized in the academic community – but investigators and entrepreneurs often need assistance to transform the results of their work. One program unique to the Georgia CTSA is Innovation Catalyst which accelerates translation of novel health technologies from concept to bedside by connecting innovators with Georgia CTSA translational resources.

As part of training interdisciplinary research teams in needed skills for translation and commercialization of health technologies, the Georgia CTSA has partnered with Biolocity to offer the Bench2Market Series that provides commercialization guidance to the university research community.

The Bench2Market series includes 11 different sessions covering topics on how to take technology and products from the lab to commercial success. The series explores market opportunities, legal and intellectual property issues, patent strategies and venture capital concepts. Panel discussions are led by industry experts and investors that share their insights and lessons learned through first-hand experience. The series is free and open to entrepreneurs in the life sciences, as well as faculty, staff, graduate students, post-doc, residents and fellows. Events are held monthly on either the Emory or Georgia Tech campus with 20 – 30 attendees at each event. Participants who attend seven or more sessions receive a Georgia CTSA Entrepreneurship Certificate.



“The Bench2Market Series covers topics on how to take ideas from the lab to commercial success and explore market opportunities surrounding entrepreneurial and innovative ideas.”

*Gayathri Srinivasan, PhD
Executive Director, Office of
Corporate Relations
Emory University*

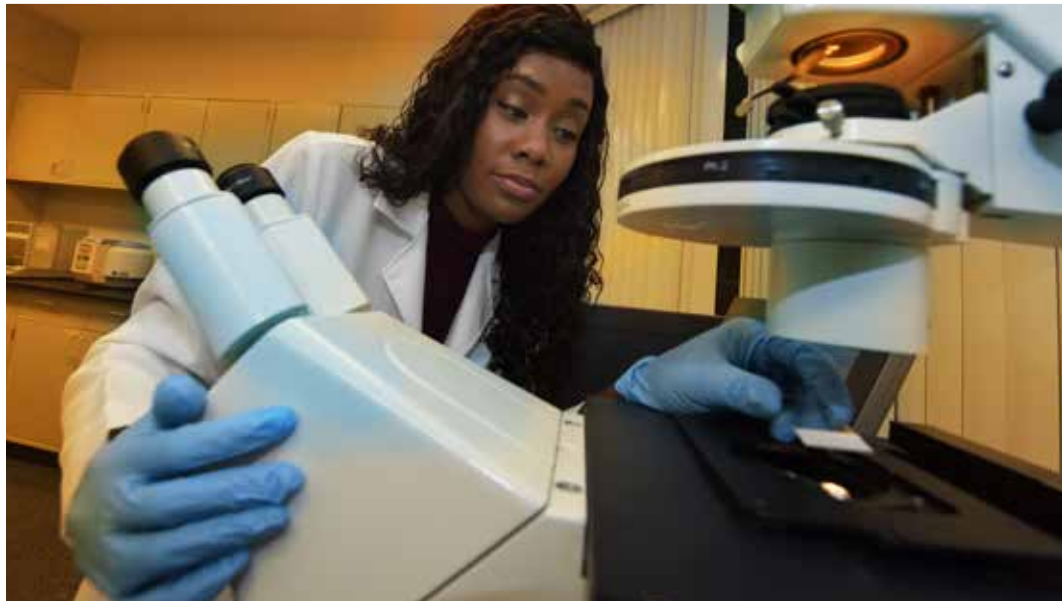
Biolocity

\$6.2
million awarded

>\$32.7
million in
follow-on funding

3
products
on market

Multiple Institutions Lead to Stronger Publications



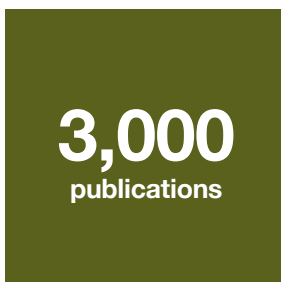
“These innovative evaluation methods can be exported across the CTSA consortium and to other large grants. We have established a national bibliometric workgroup among the CTSA-wide Evaluation & Continuous Improvement group that has worked to share useful metrics for all CTSA’s based upon our methods.”

*Eric Nehl, PhD
Director, Evaluation & Continuous Improvement
Emory University*

A team at Georgia CTSA has found one way to assess its goal of translating investigators’ findings from the laboratory to the community: studying the publication and citation output resulting from CTSA support. Since 2007, Georgia CTSA has supported the science behind over 3,000 publications which have been cited over 90,000 times.

A project led by Nikki Llewellyn, PhD, Research Projects Manager, Georgia CTSA Evaluation & Continuous Improvement program, used Web of Science to measure national CTSA publication impact, including a longitudinal and comparative analysis. First, the team assessed the citation impact scores for all Georgia CTSA-supported publications. Georgia CTSA’s average score of 2.4 signifies that Georgia CTSA publications are cited 2.4 times as often as comparable papers, with some papers accumulating hundreds to thousands of citations. In addition, Georgia CTSA’s average score is higher than those of its individual academic partners, indicating that our partnership is impactful beyond what each institution is doing individually.

Next, the program evaluated all 64 CTSA hubs operating across the country. Results revealed that the Georgia CTSA is a particularly strong hub in terms of both publication output and citation impact. In terms of the return on investment for publication efficiency and influence, the study found that per million dollars awarded the Georgia CTSA has the 4th highest rate for cumulative publications and the 2nd highest rate of cumulative citations. In addition, multi-institutional hubs like the Georgia CTSA had higher rates of publications and citations compared to single-institutional hubs. “When researchers collaborate in a multi-institutional hub setting, they create high-quality science. This is another reason that our cross-institutional partnership is vital to the success of the Georgia CTSA,” said Llewellyn.





Forming Partnerships to Improve Population Health

Multiple connections and partnerships are vital to making an impact in the community health arena. Research, community and practice leaders hear this important message through the Biennial Community Engagement Research Program Forum designed to disseminate best practices and promote multidisciplinary community engaged research and practice models through partnerships that are mutually beneficial, sustainable and that improve population health. Sponsored by the Georgia CTSA every two years, the 2019 forum was themed One Georgia: Building Bridges to Improve Quality Access for Optimal Health.

The forum welcomed multiple experts from a wealth of interests, including academia, non-profits, foundations and the community. Tabia Henry Akintobi, PhD, MPH, Professor and Associate Dean, Morehouse School of Medicine and Director, Georgia CTSA Community Engagement, began the event by sharing the forum’s mission, “Moving the needle to advance population health.”

Attendees had the opportunity to listen to a range of leading speakers including Rashad Richey, PhD. Dr. Richey is a political and social strategist with an Atlanta media presence whose commentary often reaches a national audience. He stressed in his remarks, “Meaningful research solves problems.”

Recent forum participants attended several breakout sessions to exchange research, information and opportunities while discussing building stronger community-academic research partnerships, grants, and evaluations. Poster sessions presented initiatives and interventions led by subject expert leaders. Roundtables also provided opportunities for collaboration on community health challenges including the opioid epidemic, cardiovascular, HIV/AIDS, maternal and child health disparities and health equity. Keynote speaker, Richard A. Williams, MD, 117th President, National Medical Association, summed up the session by saying, “This forum is something that needs to be replicated all over the country.”



“We need to ask the right questions, connect patients to the appropriate resources, and equip our provider workforce and health-care team with the knowledge and tools to meet individual needs as well as the collective needs of the populations we serve.”

*Keisha R. Callins, MD, MPH
Community Health Care
Systems*

600
attendees

50
breakout sessions
and roundtables

Strengthening Underserved Populations and Community-University Partnerships



“By conducting these workshops and seeding these partnerships using culturally and contextually competent training and technical support, we aim to increase the capacities of our community partners and academic researchers in developing research projects that better address community health and wellness needs.”

*Tabia Henry Akintobi,
PhD, MPH
Director, Community
Engagement Program
Morehouse School of Medicine*

Community health organizations continuously fight on the front lines to further the health of their unique populations. To aid in these efforts, the Georgia CTSA led a Community Engagement Grant Writing Academy, a two-session grant writing class that includes an overview discussion of the components of community engagement research. Participants defined a research interest and developed the framework for the methodology, plan, and budget. The attendees learned the skills needed to write a competitive community engagement research grant.

The organizations who attended the 2019 Grant Writing Academy reflect the significant group of entities attempting to address community health and wellness challenges. “The Community Engagement Grant Writing Academy allowed me to change my writing style to be more direct. Writing in a way that was clearer and more succinct helped my grant applications to be universally accepted and appreciated. I was able to connect with and learn from other organizations,” says Karla Blaginin, academy participant and subsequent community grant recipient. She believes in the importance of advocating for health in the communities where everyone is offered a role in the process, as well as the interrelationship of research and the community. Her goal is “to create a sustainable model of participatory research in the community. An environment where a partnership exists between institutions and the community, where energy and intellectual exchange are equally rewarded.”

Investments have also been made to provide funding to community-based organizations who partner with academic researchers at Georgia CTSA institutions to conduct community-led or informed health initiatives, research, or dissemination-focused projects. Funding is complemented by technical assistance to support both the projects and the new or scaling partnerships. Projects have focused on tobacco and opioid use, cancer, childhood obesity, mental health, and cardiovascular disease.

37
partnerships
funded

>\$.4
million
awarded

500
leaders engaged
and trained
annually

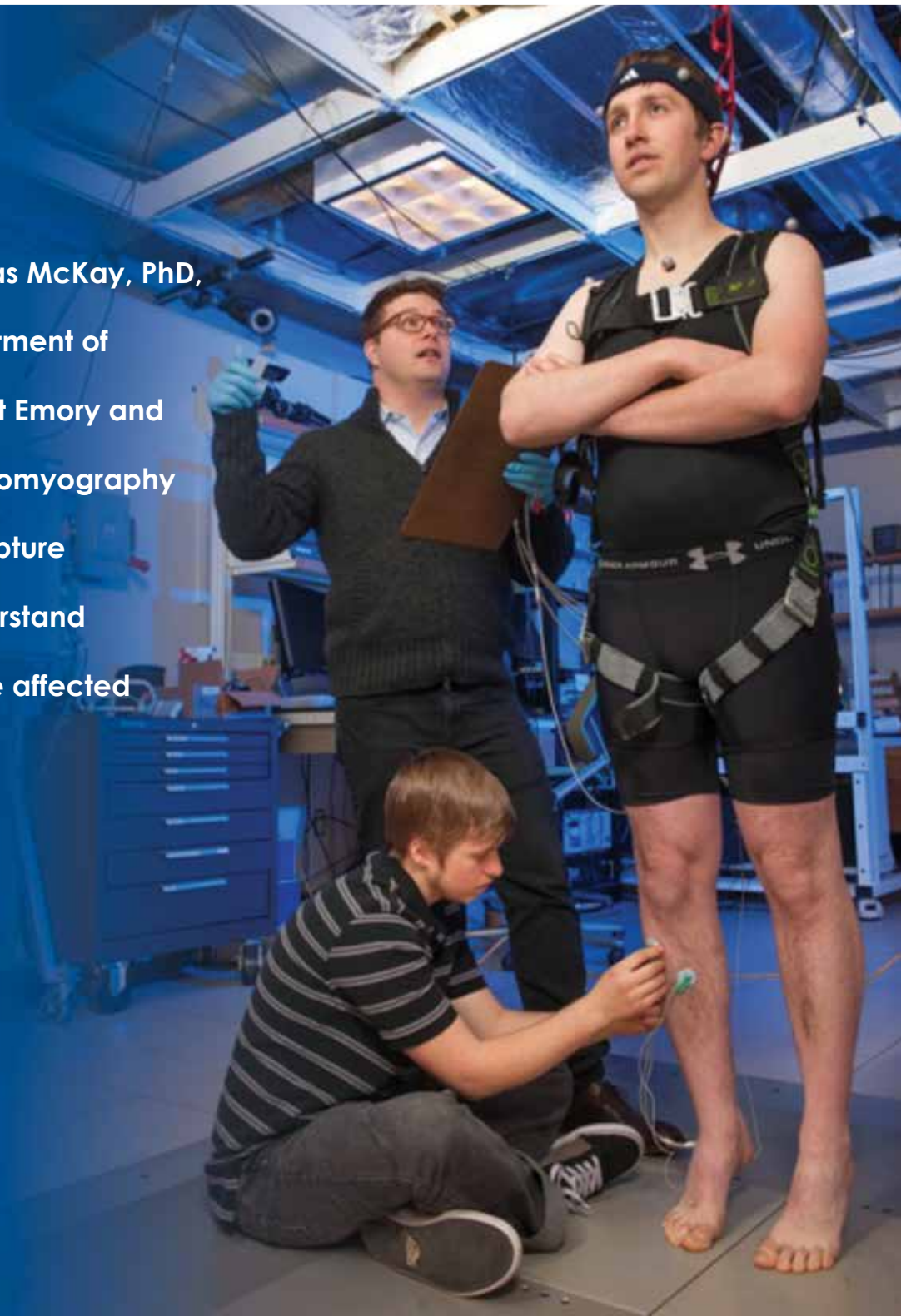


The Georgia Clinical & Translational Science Alliance (Georgia CTSA), funded through the National Center for Advancing Translational Sciences, part of the NIH Clinical and Translational Science Awards, shares a common vision to translate laboratory discoveries into treatments for patients, engage communities in clinical research efforts, and train the next generation of clinical investigators. Translation is the process of turning observations in the laboratory, clinic, and community into interventions that improve the health of individuals and the public.

To improve health in Georgia and beyond, the Georgia CTSA provides:

-  Funding opportunities
-  Biostatistics & informatics consultations
-  Community engagement & partnership
-  High-impact, emerging innovation & translation practices
-  Dedicated research units
-  Regulatory, recruitment, & trial strategies
-  Training, career, & workforce development

Former KL2 scholar J. Lucas McKay, PhD,
Wallace H. Coulter Department of
Biomedical Engineering at Emory and
Georgia Tech, uses electromyography
and kinematic motion capture
techniques to better understand
how balance and gait are affected
in Parkinson's disease.



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