

INDIANA CLINICAL AND TRANSLATIONAL SCIENCES INSTITUTE

# 2020 Annual Report

*Improving Health from  
Individuals to Communities*





## A LETTER FROM OUR DIRECTORS

Can you imagine a world where a vaccine against COVID-19 exists?

Can you imagine a world where access to good health is available to all, as opposed to being dependent on where you live, the color of your skin or how much money you make?

Can you imagine being young, with aspirations of becoming a scientist able to cure a cancer and knowing there's a clear pathway to get there through available funding, mentorship and training?

Can you imagine clean living in a neighborhood previously polluted with lead, thanks to inexpensive test kits and resources for decontamination? Can you imagine our state, our nation and our world-free of opioid addictions?

Indeed, particularly in today's environment, it's hard to imagine a world free of these constant worries and seemingly insurmountable challenges that saturate our news headlines on a daily basis.

At the Indiana Clinical and Translational Sciences Institute, we imagine these realities every single day. Since our most recent annual report in 2018, we have continued to make meaningful progress by employing innovative strategies impacting the health and well-being in communities across Indiana, and even the world. We invite you to follow us on our journey below.

Sincerely,

**Sharon Moe, MD**  
Co-Director, Indiana CTSI  
Associate Dean, Clinical and  
Translational Sciences  
IU School of Medicine

**Sarah Wiehe, MD, MPH**  
Co-Director, Indiana CTSI  
Associate Dean, Community  
and Translational Sciences  
IU School of Medicine

# IMPROVE HEALTH IN INDIANA

At the Indiana CTSI, we envision Indiana as one of the nation's healthiest states. To achieve this vision, we bring together the state's brightest minds to solve the state's most pressing health challenges. When the COVID-19 pandemic hit, we were ready to respond.

## STATE HEALTH COMMISSIONER APPLAUDS INDIANA CTSI AND FSSA COLLABORATION

Imagine having the responsibility of making decisions around COVID-19 for the entire population of Indiana. It requires a team effort and making wise decisions based on research, evidence-based data and potential health impact.

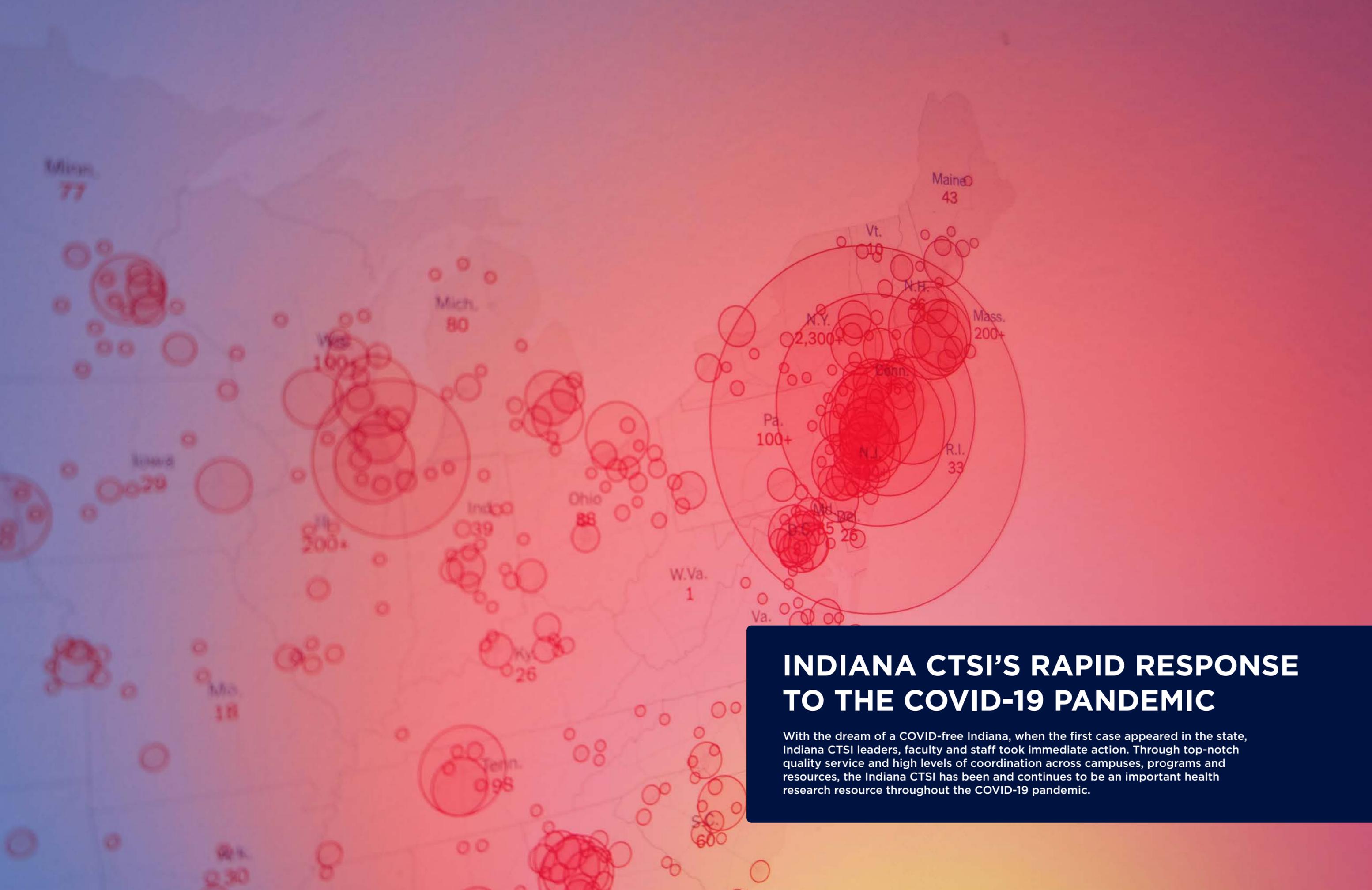
The Indiana Clinical and Translational Sciences Institute's (CTSI) Monon Collaborative partnered with the Indiana Family and Social Services Administration (FSSA) to establish WISE Indiana (Wellbeing Informed by Science and Evidence), a new initiative to engage the state's nationally-recognized thought leaders and researchers in supporting state leaders as they develop COVID-19 practices, programs and policies. FSSA Secretary Jennifer Sullivan, MD, MPH, said merging academia's best minds helps deliver reliable and timely data to decision-makers as they continue to respond to the pandemic and also ensures frontline responders have the newest emerging COVID-19 information.

Indiana State Health Commissioner Kris Box, MD, FACOG, said it's critical that frontline leaders have the most updated information on COVID-19 as possible.



The pandemic response is the first project organized and implemented by WISE Indiana, which includes a daily case tracker and epidemiology information, expert responses to key virus related questions, and expert reviews of relevant and emerging literature.

*“The WISE Indiana partnership has allowed the state to get the most current information available into the hands of those who need it to best protect Hoosiers.”*



## INDIANA CTSI'S RAPID RESPONSE TO THE COVID-19 PANDEMIC

With the dream of a COVID-free Indiana, when the first case appeared in the state, Indiana CTSI leaders, faculty and staff took immediate action. Through top-notch quality service and high levels of coordination across campuses, programs and resources, the Indiana CTSI has been and continues to be an important health research resource throughout the COVID-19 pandemic.



### 3D PRINTING OF PPE

The Indiana CTSI sought to connect academic 3D printers and “innovation labs” across the state with Indiana organizations in need



### RAPID TURN-AROUND/ COVID-19 FUNDING

PDT leadership announced a special rapid turn-around COVID PDT that would quickly review grant submissions for research related to the pandemic



### COORDINATING HUB

The Indiana CTSI announced it would be the coordinating hub for the pandemic across its research partner universities



### BIOBANK SAMPLE COLLECTION

The Indiana Biobank announced it would collect COVID-19 samples in support of statewide research and beyond



### INSTITUTION REVIEW BOARD

The IRB for IUSM approved more than 100 research studies related to the pandemic, all designed to support local research related to helping find a cure or vaccine for COVID-19



### CLINICAL RESEARCH CENTER

The CRC is assisting with COVID-19 related clinical studies, by providing consent, clinical procedures and infusions

## SOME HIGHLIGHTS OF THE EFFORT INCLUDE:

### 3D PRINTING OF PPE

Personal protective equipment (PPE) has been in high demand throughout the COVID-19 pandemic, with early access limited by two major issues. First, major manufacturers needed time to retool and respond to the overwhelming need. Second, small healthcare organizations - as well as organizations who previously did not require PPE - struggled to break into the competitive PPE purchasing environment.

To address the need throughout the state, the Indiana CTSI sought to connect academic 3D printers and “innovation labs” across the state with Indiana organizations in need. Initial coordination was accomplished through the Indiana CTSI statewide network, which quickly grew to include Ivy Tech Community College and its 150-plus 3D printers. To connect maker groups to organizations in need, the Indiana CTSI hosted public PPE request forms and connected with healthcare/government organizations.

### TOGETHER, ACADEMIC PARTNERS CREATED AND DISTRIBUTED OVER:



100,000  
FACE MASKS



50,000  
FACE SHIELDS



15,000  
EAR GUARDS

as well as printed school desks, Plexiglass sneeze guards, and intubation boxes, among others.

This quick mobilization of statewide resources illustrates how strong communication across academic and healthcare institutions, as well as the desire to have a positive impact on the community, can lead to swift, positive action on a scalable level in times of crises.

### RAPID TURN-AROUND/COVID-19 FUNDING

A critical resource in the fight against COVID-19 is funding for much needed research. The Indiana CTSI Project Development Teams (PDTs) typically offer pilot funding, collaboration opportunities and research advice on grant submissions. In the case of COVID-19, it only took five days for PDT leadership to announce a special rapid turn-around COVID PDT that would quickly review grant submissions for research related to the pandemic. They recently announced the funding of three important research projects related to mental health and COVID-19 totaling \$45,000.

## ◆ COORDINATING HUB

Just days into COVID-19, the Indiana CTSI announced it would be the coordinating hub for the pandemic across its research partner universities.

## ◆ BIOBANK SAMPLE COLLECTION

A few days after that, the Indiana Biobank, a signature program of the Indiana CTSI, announced it would collect COVID-19 samples in support of statewide research and beyond.

## ◆ INSTITUTION REVIEW BOARD (IRB)

In just over one month, the Institutional Review Board (IRB) for Indiana University School of Medicine quickly approved more than 100 research studies related to the pandemic, all designed to support local research related to helping find a cure or vaccine for COVID-19.

## ◆ CLINICAL RESEARCH CENTER

The Indiana CTSI Clinical Research Center (CRC) is assisting with COVID-19 related clinical studies, by providing consent, clinical procedures and infusions.

## WE'RE ALL IN FOR HEALTH AT THE INDIANA CTSI

The All IN for Health program saw a dramatic increase in participation during the first half of 2020, surpassing its major milestones of more than 20,000 online community members and nearly 10,000 Hoosier volunteers registered to take part in health research.



**+20,000 ONLINE COMMUNITY MEMBERS**  
**+10,000 HOOSIER VOLUNTEERS**

When the COVID-19 pandemic struck, the All IN for Health team began utilizing its one-of-a-kind volunteer registry to help researchers across the Indiana CTSI partner universities recruit for studies during a time when the need for health research has never been more important.

The All IN for Health team's efforts proved integral for the recruitment of more than 500 participants in just 20 minutes for the new TACTIC study (Tracking Asymptomatic COVID-19 Through Indianapolis Communities). TACTIC is the first of its kind study in the country imagined and launched by IU School of Medicine and Riley Hospital for Children at IU Health that tracks non-symptomatic prevalence of the novel coronavirus in Marion County.



"We have spent the last year-and-a-half upgrading the infrastructure of this volunteer registry, investing in the technology and pumping up our creative marketing of the All IN for Health program," said Jessica Hall, program director for All IN for Health and director of Marketing and Digital Engagement for the Indiana CTSI. "We built a solid foundation, so when COVID-19 hit, we were able to have a rapid response."

## INDIANA PANDEMIC INFORMATION COLLABORATIVE POOLS RESOURCES IN FIGHTING COVID-19



Indiana's COVID-19 effort is benefitting from the Indiana Pandemic Information Collaborative (IPIC), a statewide network of organizations committed to providing innovative, data-driven solutions. Professionals from across Indiana's government, community organizations, health systems, universities, biosciences industry and non-profits have been working to address the crisis by pooling resources and working together. The collaborative was created by Regenstrief Institute, an Indiana CTSI partner organization, and is led by its CEO, Peter Embí, MD, a member of the Indiana CTSI executive strategy team.

**“** *The main goal of this initiative is to create a single location for data related to the COVID-19 outbreak,”* said Dr. Embí. *“Allowing its many stakeholders to spend less time searching and collecting the data and more time using it to create solutions.”* **”**

### THE COLLABORATIVE IS WORKING IN A NUMBER OF DIFFERENT AREAS SUCH AS:

1

Development of interactive data dashboards, including <https://www.regenstrief.org/covid-dashboard/> with information that supplements the statistics from the Indiana State Department of Health.

2

Collecting and organizing standard information from health system-specific dashboards, as well as state and national dashboards, so it can be made available through a single reference point. This data collection is being supported by partners at the Indiana Hospital Association and health systems across the state.

3

The Data Standardization and Interchange group, led by the Indiana Health Information Exchange, is rapidly bringing in new hospitals and health systems to enable the flow of COVID-19 related testing and results.

# INDIANA CTSI MAKES PROGRESS TOWARD A STATE WITH HEALTH EQUALITY

As the COVID-19 pandemic continued to surge and spread it became apparent that some of the state's most vulnerable populations were being hit hardest by the disease, while at the same time, racial tensions increased and a greater awareness of the health disparities across America came front and center, prompting Indiana CTSI partner university researchers to do much more.



*Deb Litzelman, MD, and her team of WeCare Community Health Workers, CARE Addiction Recovery Coaches, and research team members*

## AT PURDUE UNIVERSITY: PURDUE RESEARCHERS USE NATIONAL SCIENCE FOUNDATION GRANT TO STUDY DIVERSITY AND INCLUSION IN ENGINEERING

Researchers at Purdue University are investigating how they can improve diversity and change behaviors around inclusion in several of its engineering programs. The purpose of the study is to collect data on how people view diversity.

“The goal of this project is to investigate systemic barriers to increasing diversity and inclusion in engineering,” said Andrew Brightman, director of the pre-doctoral training program for the Indiana CTSI. “We started with two programs that did a comparative analysis as part of the research, and researchers found that simply asking questions about race and diversity changes an individual’s level of awareness.”

Increasing diversity and inclusion in biomedical engineering could shift the culture and climate within the program for engineers being trained. Heightened awareness of racial disparities encourages those not directly affected by these issues to become more aware of the lack of inclusion that exists within the engineering and medical fields.

“Purdue Researchers found that simply asking questions about race and diversity changes an individual’s level of awareness.”



Brownsyne Tucker-Edmonds, MD



Sylk M. Sotto, EdD



Lauren Nephew, MD

Lauren Nephew, MD, who is mentored by Dr. Tucker-Edmonds, received a grant to study racial disparities and outcomes specifically for hepatocellular carcinoma.

Cases are on the rise of hepatocellular carcinoma in the U.S. and disproportionately so in Black patients. It is the most common liver cancer, with death rates also much higher in Black patients than in other patient populations. Nephew’s study set out to discover which factors influence treatments for all types of liver cancers, such as a patient’s economic stability or access to education.

Through her study, Nephew hopes to understand why Black patients are less likely to receive proper treatment for hepatocellular carcinoma and to find a way to reduce these disparities. “We want to know what we can do to see improvements in mortality rates for Black patients in Indiana,” Nephew said. “The KL2 program provides a good opportunity to refine my research and communicate data so that this issue can be resolved.”

## AT INDIANA UNIVERSITY: INDIANA CTSI ESTABLISHES A RACIAL DISPARITIES TASKFORCE

The Indiana CTSI provides funding for special research fellowships for early career investigators in clinical and translational research. Brownsyne Tucker-Edmonds, MD, is the leader of one of these groups, known as KL2s, who are newly trained clinicians focused on a career in clinical and translational research. Dr. Tucker-Edmonds, Director of Diversity and Inclusion at IU School of Medicine, was also a KL2 scholar. In her role, she works toward eliminating racial health disparities and advancing social justice within the medical field.

The Indiana CTSI co-directors have recently established a racial disparities taskforce at IU School of Medicine to be led by Tucker-Edmonds and Sylk M. Sotto, EdD. Dr. Sotto is the Vice Chair for Faculty Affairs, Development, and Diversity in the Department of Medicine at IU School of Medicine. The taskforce will establish a framework to evaluate programs that enhance diversity and inclusion in both leadership and research endeavors.

“The IU School of Medicine taskforce will establish a framework to evaluate programs that enhance diversity and inclusion in both leadership and research endeavors.”

## AT UNIVERSITY OF NOTRE DAME: THE IMPACT OF A BACKPACK PROGRAM ON FOOD-INSECURE COMMUNITIES

The University of Notre Dame has partnered with Cultivate Food Rescue to create Food for Families, a project that provides families in South Bend, Indiana, with access to healthy meals. Food for Families collects food from local vendors that has been prepared, but not served. The not-for-profit organization, along with the help of several volunteers, fights to end hunger in northern Indiana communities, most consisting of under-represented populations. Notre Dame and Cultivate believe the backpack program can help eliminate child hunger, as well as improve school attendance and behavioral and academic outcomes. The Food for Families program is supported by an award from the Indiana CTSI.

“*Notre Dame and Cultivate believe the backpack program can help eliminate child hunger, as well as improve school attendance and behavioral and academic outcomes.*”

## MONON COLLABORATIVE COMMUNITY IMPACT HUBS DELIVER RESOURCES TO ADDRESS HEALTH INEQUITIES

Listening and understanding – these are two of the most powerful components for designing and delivering solutions to complex problems. And, they form the foundation for the Monon Collaborative’s Community Impact Hubs, an initiative created by the Indiana CTSI that connects community organizations and resources to address health inequities across the state.

Community Impact Hubs provide a platform that brings together community and translational researchers to listen, understand and identify serious health and social determinant challenges in the community. This is being accomplished through monthly online learning modules and data gathering that ultimately leads to improved economic, educational and health outcomes. The initial focus of the community impact hubs has been bringing together the Indianapolis faith-based community.

“This learning community is perfect timing,” said Rev. Dr. Charlesfontaine Macon of Allen Chapel AME Church in Indianapolis. “You’re helping the African American community through identifying resources we don’t know about and sharing those resources. That’s really what it’s all about. In unity lies our only hope.”



As a next step, researchers will determine where funding opportunities exist to follow identified health priorities that surfaced from feedback and discussions. Religious Studies Professor David Craig, PhD, Indiana University School of Liberal Arts at IUPUI and research affiliate with the Indiana CTSI, has been leading the congregational learning community and said staying healthy depends on these critical connections.

“People living in vulnerable areas may be disconnected from many resources and services needed for good health,” he said. “Health care institutions may have no knowledge of community health assets and social and cultural barriers. But when there is listening and learning going on, profound changes can occur.”

## CARE PROGRAMS CONTINUE TO GROW ENROLLMENTS DURING COVID

It's been five years since launching the initial community-based WeCare program, developed to reduce Indiana's infant mortality rate by partnering with community organizations and providing health coaches to women during all stages of pregnancy and after. The program has been so successful at improving high-risk health outcomes for over 2,500 women and their infants in Central Indiana, two subsequent programs - CARE (a Community-based Addiction Reduction program) and CAREPlus - were started to expand the breadth of services targeting infant health issues related to the ongoing opioid crisis.

"WeCare Community Health Workers (CHWs) and CARE Addiction Recovery Coaches (coaches with additional training as Addiction Recovery Coaches, or ARCs) provide all the wrap-around services like food, housing, clothing, and electronics that aid in children's schoolwork. This ratcheted up 2,000 percent during COVID," said Regenstrief scientist Debra Litzelman, MD, MA, and primary investigator of the Care programs. "But our biggest challenge remained how to successfully employ resources and assist in recovery treatments for women with substance and behavioral disorders during COVID."



Treatment programs are typically most successful when delivered through in-person environments. COVID-19 has changed this scenario and mandated WeCare CHWs and CARE ARCs be creative in how they deliver services. Dr. Litzelman said they have been able to maintain ongoing training and supervision seamlessly during this time through ECHO (Extension for Community Healthcare Outcomes) conferences, constant phone calls, texting, and instant messaging. CHWs and ARCs have also provided cribs, food, gift cards, diapers, other necessities at participants' homes and other "COVID-safe" drop-off locations.

"We pivoted overnight from face-to-face meetings to electronic sessions, and to my amazement, we are continuing to successfully enroll participants," she said. "Our CHWs and ARCs are needed now more than ever before. Participants are very hesitant about going out, even to get life essentials and are hunkering down at home. We hired additional coaches to reach more women and children and continue to strive to have a positive impact."

The CARE programs are funded in part by the Indiana CTSI, Indiana State Department of Health, IU Addictions Grand Challenge and the Richard M. Fairbanks Foundation.

“*People living in vulnerable areas may be disconnected from many resources and services needed for good health. Health care institutions may have no knowledge of community health assets and social and cultural barriers. But when there is listening and learning going on, profound changes can occur.*”

## GROW RESEARCH TALENT

In addition to improving health in Indiana, the Indiana CTSI has continued to achieve its aims of growing research talent and accelerating the translation of research from the bench to the community, in a variety of innovative ways, since being established in 2008.



7.2k

Our directors, managers and staff have assisted more than 7,200 researchers through 23,000 service offerings.

600

We have trained more than 600 future clinical and translational scientists.

1.5k

Over 1,500 peer-reviewed publications have cited the Indiana CTSI for its support.

## SUMMER PROGRAMS INSPIRE YOUNG PEOPLE TO PURSUE CAREER PATHS AS SCIENTISTS

More than 200 students have gained valuable hands-on experience through the Indiana Clinical and Translational Sciences Institute's K-12 STEM (Science, Technology, Engineering and Mathematics) Program in the last two years. The program is led by Elmer Sanders, director of K-12 education outreach, a recent full-time addition to the Indiana CTSI team. The full immersion summer internship is comprised of three separate but related programs that serve high school students in grades 10-12.

- Students in Indianapolis Project SEED (Summer Experience for the Economically Disadvantaged) receive stipend support from the American Chemical Society
- Students in the Future Scientist Program receive stipend support from the IU Simon Cancer Center
- Students in Indianapolis Project STEM receive stipend support from Indiana CTSI collaborators or participate as unpaid volunteers



Elmer Sanders, K-12 education outreach



Grace Vlasak, Project STEM participant

One recent participant in the Indiana CTSI's Project STEM program, Grace Vlasak, is headed to Yale this fall, beginning her dream of becoming a scientist. She said she's certain her participation in the Indianapolis Project STEM was an invaluable contribution to her Yale application.

"The opportunity to develop and present independent research gave me confidence as a student and as a scientist," Vlasak said. "My program mentors offered me the opportunity to explore my interest in research and supported me as I developed as a scientist myself."

## KEEPING FAMILIES SAFE FROM LEAD POISONING THROUGH INDIANA CTSI'S IMPRS PROGRAM

Heidi Beidinger-Burnett, PhD, an expert in public health, assistant professor in Notre Dame's Eck Institute for Global Health, and Indiana CTSI's Community Health Partnerships program liaison at Notre Dame, has spent the last several years addressing dangerously high lead levels in neighborhoods around South Bend, Indiana.

The COVID-19 pandemic brought a new and unexpected opportunity to contribute to her research when she learned she would need to develop plans to work virtually with her Indiana Medical Student Program for Research and Scholarship (IMPRS) students, Shania James and Seth Losiewicz.



Shania James



Seth Losiewicz

IMPRS is designed to enrich IU medical student education and research experience by offering health research participation in a variety of settings.

"Information about preventing lead-based poisoning is either non-existent, inconsistent or not based on solid empirical research," said Beidinger-Burnett. "Shania and Seth's team worked to figure out what kinds of things we can say to moms and dads, evidence-based suggestions for what they can do right now to start mitigating exposure in their home."

The two second-year IU School of Medicine students are taking classes on opposite sides of the state: James is enrolled at the IU School of Medicine Evansville campus, while Losiewicz studies on the school's Gary campus, but the pair were able to collaborate with Beidinger-Burnett and several other colleagues through regular virtual meetings. Beidinger-Burnett assigned the team tasks around primary data collection, investigating evidence-based mitigation strategies to prevent lead-based poisoning in the home. They combed through peer-reviewed journals and health department websites and also interviewed health leaders in several states, analyzing relevant information to determine ease of understanding data for average consumers.

Beidinger-Burnett says their next step is helping families imagine a life worry-free from lead contamination by publishing the results of their systematic literature review.

“ They are also developing mitigation strategy cards that have practical, research-based suggestions for families to rid their home’s paint, dust, or soil of lead, by covering the soil with pea gravel or bushes to make sure the lead is not exposed. ”

## WODICKA APPOINTED CO-DIRECTOR OF INDIANA CLINICAL AND TRANSLATIONAL SCIENCES INSTITUTE

George R. Wodicka, PhD, was named the new Indiana Clinical and Translational Sciences Institute (CTSI) co-director representing the Purdue University campus. The Dane A. Miller Head and Professor of Biomedical Engineering at Purdue has been involved with the Indiana CTSI from its inception, but his new role brings opportunities to expand his impact.



George R. Wodicka, PhD

For over a decade, Dr. Wodicka has provided leadership through the Indiana CTSI’s Medical Technology Advance Program (MTAP), previously known as Biomedical Engineering and Nanomedicine Program, often referred to as BEAN. The program trains and assists investigators to develop medical technologies and speed their progress towards clinical implementation. Since its inception, nearly 300 translational research projects have been assisted by the CTSI’s MTAP.

Wodicka is leading the development of the first Wearable and Point-of-Care Devices Research Laboratory for the integrated design and first-in-human evaluation of non-invasive technologies for health monitoring. The Laboratory will be a nexus for clinicians and technology developers from across the state to evaluate approaches, rapidly improve and refine designs, and bring medical products to patients in need at an unprecedented rate.

“ There is a critical need in Indiana for a place to test and evaluate early-stage noninvasive medical technologies, for example wearable, ambulatory, connected, and point-of-care devices, and refine them for widespread use. ”

## INDIANA CENTER FOR BIOMEDICAL INNOVATION SECURES MILLIONS IN FUNDING FOR STARTUP COMPANIES



The Indiana Center for Biomedical Innovation (ICBI), a program of the Indiana CTSI, is helping researchers realize their dreams of commercializing life-saving ideas through startup companies. Just four short years after being established, the ICBI has received millions of dollars in external funding supporting those imagining a future free of dozens of diseases now debilitating the lives of thousands.

The program currently supports 14 resident startup companies, a handful of which have already graduated and moved into their own business space. One of the ICBI startups, Scioto Biosciences, received a \$26 million investment in August 2020 from a microbiome company located in South Korea. Scioto Biosciences is focused on developing new drugs that change the gut bacteria (microbiome) into substances that affect the brain.

“The ICBI has received about \$26 million in external funding in the last four years,” said Jaipal Singh, PhD, director of the ICBI. “We received another \$26 million for Scioto Biosciences, totaling more than \$50 million in external funding. That’s even more impressive when you consider the initial funding to start the ICBI was about \$500,000.”

**\$500,000 → \$50 MILLION**  
**IN START-UP FUNDING, IN JUST 4 SHORT YEARS**

Another ICBI start-up, Genezen Laboratories, was named the fastest growing company in central Indiana by the Indianapolis Business Journal in July 2020, with revenue growth of 424% between 2017 and 2019. Genezen is a gene therapy company, offering services needed to make gene therapy a reality for patients.



## ACCELERATING THE TRANSLATION OF RESEARCH TO THE COMMUNITY

Speeding research from the bench to individuals and then onto the community is the heart of a translational scientist's job. It's at the core of what the Indiana CTSI supports and enables and here are some of the highlights from the past two years.

## WATCH INDIANA CTSI'S ACCOMPLISHMENTS ONLINE

Visit: <https://indianactsi.org/news-events/video-stories/> to view the videos below.

### INDIANA CTSI-SUPPORTED MEDICINE EARNS FDA APPROVAL FOR TREATMENT OF AMYLOIDOSIS



IU School of Medicine faculty researchers Merrill Benson, MD, talks about FDA-approved drug, Inotersen, developed with support from the Indiana CTSI. The drug is a treatment for amyloidosis, a rare disease occurring when amyloids (proteins) get folded abnormally and build up in a patient's organs, causing them to begin to shut down.

### INDIANA CTSI HELPS DESIGN A MEDICAL DEVICE TO KEEP PEOPLE WITH SICKLE CELL DISEASE SAFE



With design assistance from the Indiana CTSI, Indiana University Health nurse Abi Huskins has created a new medical device that keeps people with sickle cell safer by providing a more enclosed, transparent cover for their port sites.

### INDIANA CTSI PARTNERSHIP 3D INNOVATIONS LAB USES TECHNOLOGY TO IMPROVE HUMAN HEALTH



Brian Overshiner, BS, RT, is the head medical 3D printer technician at the IU Health 3D Innovations Lab. Through a partnership with the Indiana CTSI, his team is finding ways to implement digital technology into medical practice.

## LISTEN TO THE HEALTHCARE TRIAGE PODCAST



The Indiana CTSI proudly disseminates the Healthcare Triage podcast, hosted by Aaron Carroll, MD, MS, and director of career development, education and research training programs at the Indiana CTSI. Carroll is also a health sciences researcher and pediatrician for IU School of Medicine. He writes for The New York Times and has authored several books, including most recently, the Bad Food Bible.

## SOME HIGHLIGHTS OF A RECENT PODCAST EPISODE INCLUDE:

Anantha Shekhar, PhD, MD, founding director of the Indiana CTSI talks about the importance of translational research to society and why personalized medicine is putting researchers on the forefront of future developments in healthcare.

Visit: <https://indianactsi.org/news-events/podcasts/> to listen to the podcast.

## NOTRE DAME RESEARCHERS STUDY CANCER IMMUNOTHERAPY AND THE DENGUE VIRUS VACCINE

Two postdoctoral scholars from the University of Notre Dame have received Postdoctoral Training Awards in Translational Research from the Indiana CTSI. The fellowship is designed to provide an "opportunity to be mentored in research-intensive multidisciplinary settings toward the goal of developing careers in translational research."

Recipients of the Indiana CTSI fellowship are Guido Camargo España, PhD, postdoctoral research associate of biological sciences, and Jesus Alonso, PhD, postdoctoral research associate of chemistry and biochemistry. Currently, there is a dengue vaccine that has shown efficacy in treating patients who have already been infected with the dengue virus, which is caused by a mosquito. However, the same vaccine, when given to those who have never contracted the dengue virus, can have harsher effects if those people eventually contract the virus.

About 3 billion people in 100 countries around the world are at risk for the deadly dengue virus.

"There are certain unobservable variables affecting dengue vaccine trials," said Camargo España. "Therefore, our goal with this research is to simulate these trials using agent-based computational models to better understand what those variables are and how they impact our estimates of the effect of the vaccine."

Alonso's research will involve developing a structure-guided design and characterization of a T cell receptor that is used in cancer immunotherapy for treating metastatic melanoma, or skin cancer that has spread to other areas of the body.



Guido Camargo España, PhD



Jesus Alonso, PhD

“ We know that in Parkinson’s disease, often the misfolded protein is aSyn. So we asked if HYPE could modify aSyn, and if so, what are the consequences? ”

## PROTEIN SHOWS PROMISE IN TREATING PARKINSON’S DISEASE

The true cause of Parkinson’s disease is still a mystery to researchers, which is what makes it so difficult to treat. Although researchers do know that in many patients, a protein called alpha-synuclein (aSyn) tends to aggregate in brain cells. But a different protein could help stop that aggregation.

HYPE, is a key regulator of whether cells live or die under stress. In order to work properly, proteins need to fold in the correct shape. When cells are stressed, their proteins can become misfolded, at which point they can aggregate and become toxic. Cells sense stress by assessing the amount of misfolded proteins within them.

“We know that in Parkinson’s disease, often the misfolded protein is aSyn. So we asked if HYPE could modify aSyn, and if so, what are the consequences?” said Seema Mattoo, PhD, an assistant professor of sciences at Purdue University. The study – published in the Journal of Molecular Biology – shows that HYPE does modify aSyn, which had never been seen before – and that this new modification, called AMPylation, decreases aggregation.



Seema Mattoo, PhD (Purdue University photo)

Research led by Seema Mattoo, PhD, assistant professor of biological sciences, identifies a protein that could be used to treat or prevent Parkinson’s disease.

That means HYPE could possibly have a therapeutic effect on Parkinson’s disease. Just imagine a world with answers to Parkinson’s! The research was funded in part by the Indiana CTSI.

# HERE TO HELP YOU NAVIGATE YOUR RESEARCH DREAMS

Scientists by training, Indiana CTSI research navigators are located at each one of the Indiana CTSI partner campuses throughout the state. Their role is to help researchers and other interested people find their way around the Indiana CTSI. Navigators help identify potential collaboration partners, pilot funding training and any necessary services that can help turn your research dream into reality.

To connect with an individual campus navigator, use the contact information provided below.

## ***IU Bloomington Navigator — Joel A. Ybe, PhD***

Phone: 812-856-4882  
Email: jybe@indiana.edu

## ***Purdue University Navigator — Tommy Sors, PhD***

Phone: 765-494-1678  
Email: tsors@purdue.edu

## ***University of Notre Dame Navigator — Melanie DeFord***

Phone: 574-631-8805  
Email: mdeford@nd.edu

## ***IU School of Medicine/IUPUI Navigator — Lane Coffee, PhD, MS***

Phone: 317-278-2150  
Email: rlcoffee@iu.edu

## ***IU School of Medicine-Evansville Navigator — Kara Garcia, PhD***

Phone: 812-909-7230  
Email: karagarc@iu.edu

## ***Regenstrief Data Navigator — Anna Roberts, MIS***

Phone: 317-274-9197  
Email: annarobe@regenstrief.org

If your inquiry is not campus specific, email [navigate@indianactsi.org](mailto:navigate@indianactsi.org).

The Indiana Clinical and Translational Sciences Institute is located on the Indiana University School of Medicine Campus at 410 W. 10th St. Indianapolis, IN 46202 317-278-CTSI (2874) [info@indianactsi.org](mailto:info@indianactsi.org)

## **INDIANA CTSI FUNDING OPPORTUNITIES**

The Indiana CTSI provides research funding through its member institutions and public/private partnerships for a variety of community projects, collaborative grants, core services and training.

Eligibility: Faculty from all participating institutions, community and academic partners.

For more information: Visit [indianactsi.org/funding](http://indianactsi.org/funding).

## **PROJECT DEVELOPMENT TEAMS**

Project Development Teams help advance translational research projects for individuals and teams by providing

advice, resources, services and training needed for external and internal grant submissions. They can also help create competitive communications strategies for grants and lay public.

Eligibility: Researchers in translational and clinical research at all Indiana CTSI institutions.

For more information: Visit <http://indianactsi.org/pdt>.

## **EDUCATIONAL OPPORTUNITIES**

The Indiana CTSI's Career Development, Education and Research Training (CERT) Program provides career development, education, research training and grant award opportunities for students, staff, fellows, and faculty to launch successful careers in clinical and translational research.

Opportunities include:

- Early-career development awards (KL2s)
- Pre-doctoral and post-doctoral fellowships (TL1s)
- Master's, Graduate certificate, and PhD minor degree programs in clinical research and implementation science
- Indiana Medical Student Program for Research and Scholarship (IMPRS), summer internships in clinical and laboratory sciences for medical students
- MD/MS program, Medical Student Training Applied to Research (MedSTAR)
- Indiana CTSI undergraduate summer internships to provide students with experience in translational research and an opportunity to work with Indiana CTSI-affiliated faculty mentors located at IUPUI
- K-12 STEM and Indy Project SEED programs offer summer internships in clinical and laboratory sciences for high school science students including low-income students
- Clinical Research Staff Education provides training for research coordinators in clinical and translational sciences best practices
- Education programs, training, educational tools, and online training modules
- Independent Investigator Incubator (I3) mentorship and other mentoring resources
- Ethics training in the responsible conduct of research and human subjects research

Learn more about these opportunities online at <https://indianactsi.org/researchers/education-training/>.

## **SPECIAL THANKS**

The Indiana Clinical and Translational Sciences Institute would like to thank the following organizations for sharing their support, funding and expertise with us.

*Ascension/St. Vincent in Evansville*

*BioCrossroads*

*City of South Bend*

*Cook Biotech*

*Cook Medical*

*Corteva AgroSciences*

*Cultivate Food Rescue*

*Deaconess Hospital*

*Elanco*

*Eli Lilly and Company*

*Eskenza Hospital*

*Family Social Services Administration*

*Health Alliance of St. Joseph County*

*Ice Miller*

*Indiana Biosciences Research Institute*

*Indiana State Department of Health*

*Ivy Tech*

*IU Health*

*LifeOmic*

*Lilly Endowment Inc*

*Moi University*

*Parkview Health*

*Purdue Extension Services*

*Regenstrief Foundation*

*Regenstrief Institute*

*Richard M. Fairbanks Foundation*

*Roche*

*Roudebush VA Hospital*

*South Bend Community School Corporation*

*St. Joseph County Department of Health*

*State of Indiana*

*Takeda*

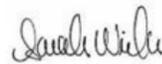
*Unity Biotechnology*

As we close out our 2020 Indiana CTSI annual report, we want to remind you that we are all in this together and that any progress we are making is your progress, too. We thank you for your support and your engagement as we continue to realize our vision of making Indiana a healthier state.

Sincerely,



**Sharon Moe, MD**  
Co-Director, Indiana CTSI  
Associate Dean, Clinical and  
Translational Sciences  
IU School of Medicine



**Sarah Wiehe, MD, MPH**  
Co-Director, Indiana CTSI  
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