Akron Children's Hospital

Griffin, Canton

CONNECTING THE DOTS

2017 REBECCA D. CONSIDINE RESEARCH INSTITUTE ANNUAL REPORT

Akron Children's Hospital

Thank you for supporting the life-changing research taking place at Akron Children's Hospital.

You're helping us tackle the problems that most affect the health of children in our region – and beyond. Your support is critical for us to develop and deliver world-class care and conduct transformative research that gives our patients and families the best chance for a healthy life.

The 2017 Rebecca D. Considine Research Institute Annual Report gives you an inside look at our achievements in the last year, as well as the groundbreaking investigations carried out by our hospital team.

Together, we're connecting our patients to the very best care while making a marked difference in our communities, our country and our world.

Mya, Canton

WHAT'S THE POWER OF RESEARCH AT AKRON CHILDREN'S HOSPITAL?

It advances the health of our kids, connecting them to the latest and best care.

It links our organization to local talent, community stakeholders and national organizations. We join forces with the simple mission of leaving no stone unturned in our quest to make kids healthier and safer.

It bridges outcomes with community health. The result: It strengthens the well-being of northeast Ohio, as well as the health and well-being of children nationwide.

It connects children across the globe to Akron and our world-class specialists who are *the* experts on rare diseases.

At Akron Children's Hospital's Rebecca D. Considine Research Institute, it's our mission to unlock the power of research to advance knowledge and improve lives.

In this report, experience how we transform ideas into actions that uncover outcomes that directly impact the experience, care and treatment of the children we serve – and beyond.

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Keeping children healthy and safe has always been our passion at Akron Children's Hospital. Over the years, our providers have developed new ways to treat diseases, prevent injuries and advance pediatric standards of care.

When the Rebecca D. Considine Research Institute was founded, we were thrilled to provide a home for this groundbreaking work and establish an organization dedicated to integrating and expanding these efforts.

With the launch of the hospital's 2020 strategic plan, Akron Children's reaffirmed its primary goal of remaining an independent, integrated pediatric health care system that devotes all its resources to children. Achieving this vision depends on our ability to provide the most up-to-date, highest-quality care.

Research is a vital component of this plan, and we are excited by the renewed commitment to strategically expand research activities within our hospital system and accelerate opportunities for collaboration with outside academic and clinical organizations.

To spearhead these efforts, Michael Kelly, M.D., Ph.D., joined Akron Children's as chief research officer in 2017. We welcome Dr. Kelly as a true champion for children. He's brought an exciting, organization-wide focus that is strengthening the foundation of our institute and raising awareness of its achievements within the research community.

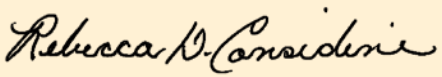
In this report, you'll see how our researchers are impacting lives at our hospital. We hope you will be inspired by their stories and the milestones they've reached in 2017.

We are continually amazed by the ever-expanding scope of what is possible through medical science, but we will never lose sight of the hope these advancements bring to children and their families.

We are grateful for all of our supporters, and we extend sincere thanks to our entire research team for continually challenging themselves and seeking new ways to deliver the very best care to our children.

Sincerely,

Bill Considine
CEO Emeritus
Akron Children's Hospital



Rebecca D. Considine

At the Rebecca D. Considine Research Institute, we're building a research program that will make a powerful impact on our patients and the entire Akron Children's Hospital enterprise.

Our kids deserve access to the latest, most cutting-edge treatments available. Treatments that will not only improve their well-being, but allow them to live a better life. One of the only ways we can achieve this is by developing a robust and expert research community that will help transform pediatric care, improve health and outcomes, grow our educational programs and strengthen the overall health of our communities today – and in decades to come.

In 2017, we embarked on this new journey. It definitely was a year of change. And our institute and scientists achieved impressive accomplishments in clinical, translational and basic research. This report will highlight some of our major research accomplishments and their impact on children and their families.

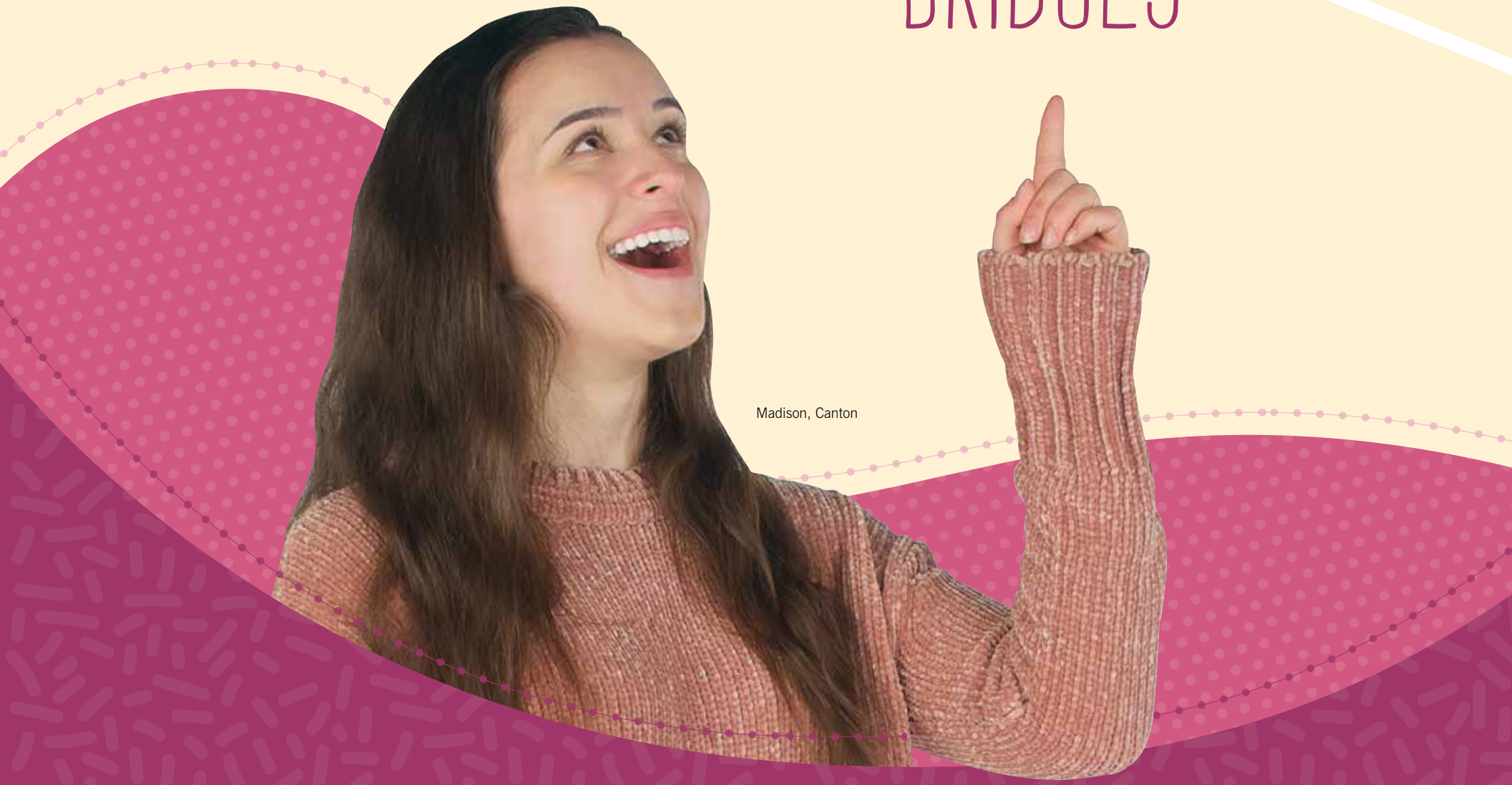
Research is true teamwork. It requires teams of people joining together to build regional awareness of the power of pediatric research throughout northeast Ohio. This includes the physicians and care staff at our hospital, scientists at regional and national academic centers, our community organizations and institutions, and the children and families who participate in research studies. Your partnership is also critical to help raise awareness of the need for research and strengthen the financial support required to effect true change in pediatric health care.

As we look to the future, your support will be more crucial than ever. Thank you for partnering with us on this journey.

Sincerely,

Michael Kelly, M.D., Ph.D.
Chief Research Officer
Akron Children's Hospital

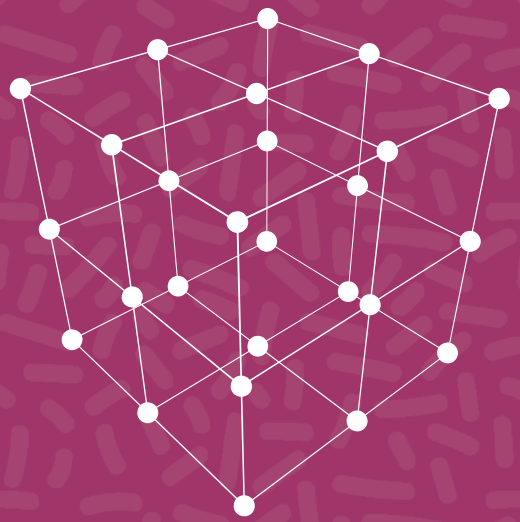
BRIDGES



Madison, Canton

BREAKTHROUGHS

Research that joins medical partners



Animation Innovation

Improving orthopedic treatment through computer modeling

A hard fall. An awkward landing. Sometimes, that's all it takes for a normal day at the gym to turn into a long-term orthopedic injury.

A dislocated kneecap, or patellar instability, is one such injury. It occurs when a force applied to the knee causes the kneecap to slide out of position. Many children can be treated through rehab. But about one-third will have recurring issues with dislocation. These cases often require surgery. But currently, there is no standard for treatment.

"There are widely different procedures a surgeon can choose from," said John Elias, Ph.D., senior research scientist at Cleveland Clinic Akron General, who has studied patellofemoral disorders for more than 20 years. "There's a lot of anecdotal reports and some studies about each procedure, but there's not a lot of hard science to determine who should be treated with what."

Kerwyn Jones, M.D., pediatric orthopedic surgeon and chairman of Akron Children's department of pediatric orthopedics, is hoping he can help Dr. Elias change that. And it all starts with imaging.

They're working to improve upon the standard MRI by developing computer simulations that give surgeons deeper insight into how and why a dislocation is occurring.

To accomplish this, a series of MRI images are taken while the child puts pressure on the knee using a device similar to a leg press machine. This lets clinicians and researchers see how the kneecap moves against resistance.

"Data gathered from MRIs are compiled into a computer model, which in turn becomes a computer animation of the child's problem," Dr. Jones explained. "Anyone can watch the animation and see what's happening to the kneecap as a patient moves their leg."

The goal of the research, which has received funding from the National Institutes of Health, is to help surgeons determine the best course of treatment for each patient based on anatomy and data. It's the result of more than a decade of collaboration between Dr. Jones and primary investigator Dr. Elias. Their fellow contributors include physical therapists, MRI technicians and surgeons from Johns Hopkins Hospital in Baltimore who worked with Dr. Elias before he came to Akron in 2008.

Dr. John Elias

Dr. Kerwyn Jones

"This is a good example of how a patient care problem led to research that increased collaboration among hospitals and even the community through government funding," said Dr. Jones. "Our collaboration has resulted in numerous publications in peer-reviewed journals and presentations at national meetings. The results of the research were taken back to the patient bedside and improved patient care."

For the children receiving treatment, that means a return to running, jumping and playing – without the fear of recurring injuries.

Joining forces to make the biggest impact for pediatric cancer patients

The world of pediatric oncology is coming together.

Physicians and researchers from different institutions are joining forces to discover how to improve outcomes and the overall quality of life for children and teens facing serious or life-threatening diseases.

It's one of the key reasons Akron Children's Hospital joined Cincinnati Children's Hospital Medical Center's Advanced Cancer Therapies Network in 2014.

"As a single institution, we can make a modest impact," said Sarah Rush, M.D., director of neuro-oncology; Shannon E. Wilkes Targeted Therapy Program; and pediatric neuro-oncologist at Akron Children's. "But by working together, we get larger sample sizes in our studies. Our patients also gain access to phase one clinical trials, which are more limited. It's something we couldn't do as effectively as a single institution."

In a recent study, Dr. Rush and researchers from Cincinnati Children's performed analysis on tissue samples from low-grade brain tumors to see if there were any findings suggesting the tumor could come back.

"It's really looking at changes in the gene makeup – looking for changes in the tumor that would suggest something different about it compared to normal," said Dr. Rush. "It would help us to better understand the tumors these kids have and allow us as providers to deliver targeted education about outcomes and treatment plans to families."

The team presented its findings during an international pediatric neurological meeting in 2018. And the outcomes gave way to an opportunity to further explore this question in a larger sample size.

"Not only are we helping patients here in Akron and the rest of Ohio, we're impacting the broader medical field, as well," said Dr. Rush.

Dr. Sarah Rush with patient Hannah Tringhese.

Dr. Michael Kohrman

CONNECTING EPILEPSY PATIENTS WITH NEW CLINICAL TRIALS

At Akron Children's Hospital's pediatric epilepsy program, Michael Kohrman, M.D., director of pediatric neurology, is offering new clinical trials – and new hope – to patients with refractory epilepsy.

"Childhood epilepsy is usually easy to treat, but 25 to 30 percent of patients don't respond to current medications," explained Dr. Kohrman. "Of those patients, about 90 percent have associated developmental issues. The treatment landscape for refractory epilepsy hasn't changed for decades. It continues to be a major problem. So, there's real excitement here in bringing new drug therapies that can potentially help this group of kids."

Dr. Kohrman is involved in a number of industry-sponsored, multi-center trials assessing safety and efficacy of a number of anticonvulsant drugs. These trials include studying current drugs with new indications while others are seeking to bring new drugs to market.

"We're connecting the safety of patient care along with our ability to offer new and novel therapies," said Dr. Kohrman. "The role of these trials is to extend what we learn from studying patients beyond our own patients to impact the greater epilepsy community."

Dr. Richard Hertle with patient Taylor Maynard. Dr. Hertle's research focuses on vision disorders such as nystagmus and convergence insufficiency.

Theory Truth

Bringing clarity to understanding and treatment of vision disorders

For parents, knowledge is power. And having evidence-based knowledge in hand helps them choose the right resources to treat their children's health care conditions.

Conditions like convergence insufficiency. The vision disorder makes it hard for the child's eyes to converge or turn in together during reading or close work, which makes tasks like these, close eye-hand work, or using computers and tablets difficult. It has been hypothesized that, in addition to reading problems, these children may also have more problems with near-related attention.

Further hypotheses have stated that treating a child's convergence insufficiency will also improve reading and attention. But there's little evidence-based research to support this theory. It's why Richard Hertle, M.D., FAAO, FACS, FAAP, director of pediatric ophthalmology at Akron Children's, and a cohort of nine national academic centers, supported by the National Eye Institute, embarked on a five-year investigation to test this hypothesis.

"This is the first study to examine the role of the disorder of convergence insufficiency in reading and attention," said Dr. Hertle. "An abnormal eye system movement has been blamed by eye care professionals for associated reading disabilities and attention disorders. As a result, attempts have been made to improve attention and reading in children by treating their eye movement systems."

Nearly 500 children were enrolled by the nine clinical centers in the Randomized Clinical Trial; Convergence Insufficiency Treatment Trial: Attention and Reading Trial (CITT-ART), sponsored by the National Eye Institute, which is part of the National Institutes of Health. All children had convergence insufficiency and normal attention and reading.

The preliminary outcome showed that there was no difference in attention and reading skills between those treated for convergence insufficiency versus those control patients treated with placebo.

"I think the parental choice of resources to help their children can be directly guided by this kind of research," explained Dr. Hertle. "If their child has convergence insufficiency, they now know that treating it will not make their child read or attend better. If they're counseled by a professional in some other way, there is now evidence that this is not the case."

Dr. Hertle said these outcomes provide the groundwork to develop a follow-up study in children who do have documented abnormal reading and attention and convergence insufficiency, which he noted is a small population.

"This study speaks to Akron Children's willingness to invest in research to gain more knowledge to help kids," said Dr. Hertle. "It shows a real commitment to the community to make health better."

Assisting Dr. Hertle in his convergence insufficiency research is Dr. Tawna Roberts, pictured here with patient Delaney Chambers.

CARE

COMMUNITIES

Research that connects the regions we serve

Tatum, Canton

Protocol Pro-2-Cool™

Can cooling the brain help treat concussions?

What if there was a device available on the sidelines that athletic trainers could use to help a young athlete with a concussion – as soon as the injury occurred?

As part of a partnership with area school districts, community members and equipment manufacturer TecTraum, Akron Children's Hospital is investigating a cool new solution for this hot-button injury.

"We're evaluating whether cooling the brain after injury is a more effective concussion treatment than our current standard of care, which is brain rest," said Alex Lesak, MPH, clinical research program coordinator.

"Brain rest" means refraining from strenuous physical and mental tasks that could make symptoms worse. But while the standard of care gives the brain time to heal, it doesn't treat the swelling or inflammation that can occur after a concussion.

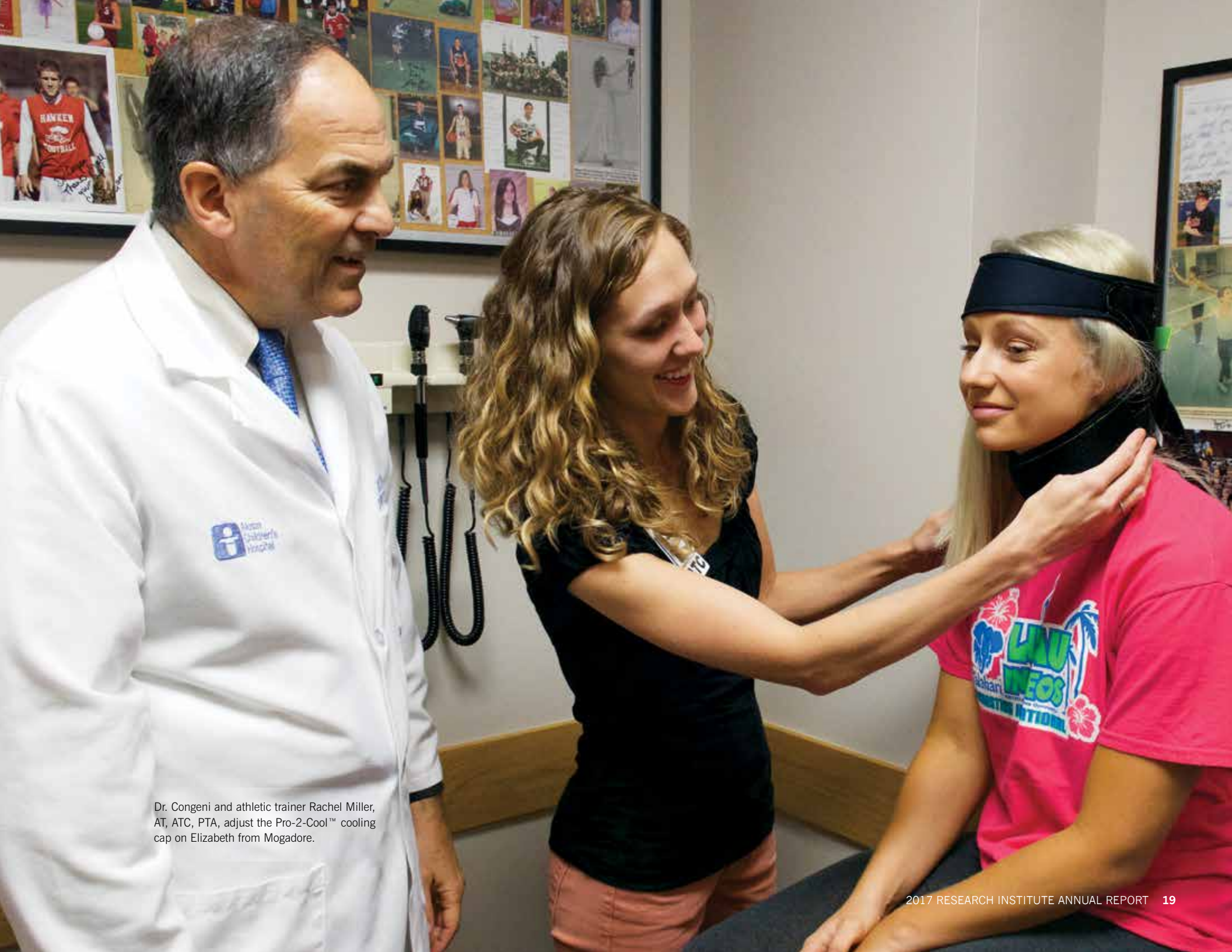
"Much of our initial treatment at sporting events is to ice the injured part of the body – a knee or ankle – to reduce inflammation," said Joseph Congeni, M.D., director of sports medicine at Akron Children's. "But nobody has looked at trying that with concussions."

Until now, that is. With the help of TecTraum's Pro-2-Cool™ device, Akron Children's athletic trainers are working with 11 school districts across the greater Akron area to evaluate if cooling the brain after injury can shorten the course of a concussion and reduce the risk of long-term side effects.

To test the treatment, an athlete diagnosed on the sidelines of a sporting event wears a special cooling cap that wraps around their forehead and neck. Connected to the portable Pro-2-Cool™ device, the cap cools blood flow to the brain without lowering the student's overall body temperature.

"This is the largest research study Akron Children's has ever done involving trainers and sports medicine," said Sheila Schrack, the hospital's lead athletic trainer. "It's been great because while most of our research efforts have been in the hospital, this is an outreach effort that directly involves the schools we're partnered with."

With more than 3 million concussions diagnosed each year, the results of this study have the potential to help student athletes worldwide.



Dr. Congeni and athletic trainer Rachel Miller, AT, ATC, PTA, adjust the Pro-2-Cool™ cooling cap on Elizabeth from Mogadore.

Education Empowerment

Nurturing Families Program seeks to improve the health of children through parental education

Sometimes, the best way to help children involves helping their parents.

A new collaboration between the Rebecca D. Considine Research Institute, Akron Children's Hospital's external affairs department and Akron Children's Family Child Learning Center is hoping to prove that confident, well-educated parents will raise happier, healthier children.

Thanks to a two-year, $420,000 grant donated by Kohl's Cares, Akron Children's has launched the Nurturing Families Program to help better educate parents across our community.

The program was formed in direct response to the hospital's Community Health Needs Assessment and provides a new, multidisciplinary approach to parenting education and support.

"The thought was that if we can increase parent knowledge in areas of a child's growth and development, we can strengthen families and increase a parent's sense of efficacy," said Annette Sues-Mitzel, DNP, APRN-CNS, scientific and operations director for Akron Children's Center for Population Health Services Research.

The program will teach parenting skills, as well as childhood growth and development milestones, to parents across Summit County. The goal of this specialized curriculum is to help parents build confidence and make better decisions in raising their children. And its success and impact will be measured by parents themselves, who the research institute will survey, asking them to rank factors such as empathy, understanding, self control and discipline.

It's all done in the spirit of giving parents the extra support and resources they need to make the best decisions for their children – improving the health of our community, one family at a time.

Cesley Hayes, community program assistant at Akron Children's, with 4-year-old Lilly during a Nurturing Families Program session.

(From left) Kathleen Brauer, RN, with Melissa Arden and her daughter, Olivia. Brauer was one of the key nurses assisting with the Mahoning Valley human milk cream-based fortifier study.

Feeding Flourishing

Studying a new fortifier to feed our smallest patients – and improve outcomes

For the littlest patients in our Neonatal Intensive Care Units (NICUs), growth is everything. But what if there was a better way to help them grow stronger and healthier?

A team of physicians and nurses at our NICU in Boardman is helping to uncover that answer.

In 2015, they embarked on a multi-year, multi-site study sponsored by Prolacta Bioscience®. Its objective: to see if a human milk cream-based fortifier could support faster growth, shorter hospital stays and decreased cases of bronchopulmonary dysplasia (BPD) for micropreemies. These newborns weigh 1,250 grams or less.

“Babies don’t do well if they get non-fortified mother’s milk,” said Linda Cooper, M.D., neonatologist at Akron Children’s Hospital Mahoning Valley. “They don’t get enough minerals, electrolytes, fat and so on. They must obtain these through fortifiers, all of which are cow’s milk-based.”

Dr. Cooper said for years this worked well. But in the 1990s and 2000s, premature babies became younger, smaller and more fragile. Their stomachs couldn’t tolerate the cow’s milk protein as easily.

“It’s why Prolacta Bioscience® looked into fortifying human milk with human milk,” explained Dr. Cooper. “The cream fortifier has already been studied for safety, but now they’re studying it for growth and brain development. It’s very innovative and cutting edge.”

Dr. Cooper and Jennifer Manning, D.O., neonatologist at Akron Children’s Hospital Mahoning Valley, embarked on the first-ever study conducted in the Valley with the support of NICU nurses, the research institute and a clinical research nurse.

“Our nurses did an amazing job,” said Dr. Manning. “It was a long study, and they did an excellent job of keeping patients blinded to who received the fortifier. Our nurse practitioners were fantastic in collecting data and samples. It was an important and rewarding experience for our entire unit.”

In fact, the patient recruitment and enrollment process was so successful, Prolacta extended the study for the Mahoning Valley unit to enroll more patients. As the study remains ongoing until 2019, the team is eagerly awaiting the outcomes.

“We’re all looking forward for results so we can validate the cream fortifier and get the product we need to deliver the best possible care to our babies,” said Dr. Manning.

Melissa and Eric Arden with their daughter, Olivia. Olivia spent seven days in Akron Children’s NICU at St. Elizabeth Boardman Hospital and 15 days in the Special Care Nursery at Akron Children’s Hospital Mahoning Valley.

GROUNDBREAKING RESEARCH

Jude, Canton

GLOBAL REACH

Investigations that unite a global community

Trials Triumph

Uncovering answers for patients with mitochondrial disease

What would you do if a you or a loved one was diagnosed with a disease for which there's no proven treatment?

This is a daily reality faced by people with mitochondrial disease. Since mitochondria generate the energy our cells need to function, their failure leads to cell and organ damage.

But Bruce Cohen, M.D., FAAN, director of the NeuroDevelopmental Science Center and pediatric neurologist at Akron Children's Hospital, is working to change this.

"There are more than 270 orphan mitochondrial diseases and no FDA-approved treatments," said Dr. Cohen. "Mitochondrial diseases affect about 1 in 2,000 people, so their impact on quality of life and patient health is very real."

Patients from across the world depend on Dr. Cohen for his expertise in the field – and for access to cutting-edge research.

In a current study, Akron Children's is enrolling patients in a clinical trial to test a new medication to treat mitochondrial myopathy – a condition that causes muscle loss. The outcomes of the trial could shift the standard of care for people with this condition.

"There are two drugs that are close to being on the launching pad to treat mitochondrial disease. This is one of them," said Dr. Cohen. "If it works, there will finally be a treatment. We will never prescribe a medication that's not proven to be effective. So the only way we can know this for certain is to participate in a very thorough, very methodical clinical investigation."

Akron Children's is one of about a dozen institutions participating in the international trial, ranking in the No. 2 spot in terms of enrollment to-date. It's a feat that Dr. Cohen says makes him proud.

"The mitochondrial program at Akron Children's is a major component of the research institute," he said. "What we've been able to do in last seven years is prove to the world that, though we're a smaller institution, Akron Children's mitochondrial research efforts can compete head-to-head with the big guys like Stanford, Baylor and Massachusetts General Hospital. That's a big accomplishment."

And an even bigger win for patients of all ages with mitochondrial disease.

WHAT IS MITOCHONDRIAL DISEASE?

Almost all cells in the body have mitochondria, which are tiny power plants that produce the body's essential energy. When someone has a mitochondrial disorder, it means that something – usually a genetic defect – is preventing the mitochondria from working correctly. Nearly all body functions – growth, muscle control, digestion, and brain, heart, lung and kidney function – can be affected.

Akron Children's is part of the North American Mitochondrial Disease Consortium, sponsored by the National Institutes of Health. In this collaborative, 18 of the largest clinical programs in the U.S. and Canada look into the causes and treatments of mitochondrial disease. Akron Children's is the second-largest contributing member, particularly to its two largest program components: its registry and biobank.

Dr. Cohen with patient John Hunter. John, who has mitochondrial myopathy, is one of the patients currently enrolled in Dr. Cohen's study.

BRINGING NYSTAGMUS RESEARCH AND TREATMENT TO A GLOBAL COMMUNITY

Richard Hertle, M.D., FAAO, FACS, FAAP, director of pediatric ophthalmology at Akron Children's, has made it his mission to find a cure for nystagmus, a condition that causes involuntary, rapid movement of the eyes.

"There's this obsession to understand. It's why I pursued a career in research," explained Dr. Hertle. "The more research we do, the more questions we uncover. It's paradoxical. It fuels a continued drive to cure this disease."

Today, Dr. Hertle is working on clinical investigations focusing on the natural history of nystagmus, as well as surgical and medical treatment protocols. His work has taken him across the globe from the U.K. to India, and patients from more than 100 countries come to Akron Children's for his care.

"I belong to a global family of research doctors studying rare diseases," said Dr. Hertle. "There's an international community that's really interested in advancing the treatment of nystagmus from where it's been the last 30 years. We're advancing it and sharing that knowledge with this international community."

Dr. Murthy examines patient Elijah Bell's ears as his mother, Colleen Bell, looks on.

Brainpower Groundbreaking

Forging the new frontier of tissue engineering

Invasive procedures. Tissue rejection. Lifelong maintenance. How can we spare a child with an ear anomaly the risks and hurdles involved in the process of recreating his or her ear?

By growing a new one – one that will look and behave just like a normal ear, made from the child's own tissue.

It's a science called tissue engineering, which Ananth Murthy, M.D., FACS, director of pediatric plastic and reconstructive surgery at Akron Children's Hospital, believes is the future of regenerative medicine.

"Imagine being able to generate a new bone to replace one that's been destroyed by cancer, or a hip, or even create blood vessels," said Dr. Murthy, who's spearheading this groundbreaking study with Qing Yu, Ph.D., staff scientist at Akron Children's. "There are so many different potential applications."

One in about 5,600 children is born with some form of external ear anomaly. These affect the structure and appearance of part of or the entire ear. On average, Akron Children's sees one to two impacted children each week.

For the last 50 years, the gold standard has been to recreate the ear framework with the patient's own rib cartilage. More recently, a newer option involves recreating the ear using a polymer called polyethylene.

"Those are the two choices right now, and neither of them are particularly great," said Dr. Murthy. "We knew we needed to develop something better."

Dr. Murthy and Dr. Yu are working closely with Northeast Ohio Medical University, partners in the U.S., and collaborators in Germany and Japan to bring this idea to life. Dr. Yu said that the results are promising and they hope to move into preclinical trials within the next few years.

"To regenerate a tissue-engineered ear, firstly, the patient's own ear cartilage cells will be isolated from the microtia remnants (usually discarded in surgery)," said Dr. Yu. "In the laboratory, the expanded cartilage cells, called chondrocytes, will then be combined with a 3D-printed, biodegradable, polymeric, ear-shaped implant. The engineered ear scaffold can then be implanted by our surgeons in the operation room to complete the ear reconstruction."

"We have to make sure every single step makes sense and that it's safe and effective," continued Dr. Yu. "Everything has to be well-documented and deliberate. It's painstaking, but rewarding."

"Our major priority is and has always been good science," added Dr. Murthy. "To do so, we have great support from the Rebecca D. Considine Research Institute, as well as close collaboration with partners in our region and around the world, who are passionate and motivated to make this happen."

2017 BY THE NUMBERS

RESEARCH STUDIES

579
ACTIVE STUDIES

- **359 investigator-initiated studies**
- **95 Children's Oncology Group-sponsored studies**
- **63 industry-sponsored studies**
- **62 other**

125
NEW RESEARCH STUDIES

STUDIES BY CENTER

- **530 Population Health Services research**
- **29 Brain, Mitochondrial and Muscle Health research**
- **20 Vision Sciences research**

137
CLINICAL TRIALS

- **1,412 patients enrolled**
- **19 new clinical trials**
  - 14 new drug trials
  - 5 new non-pharmacologic trials

PUBLICATIONS AND PRESENTATIONS

Cam, Canton

143
RESEARCH PUBLISHED

- 136 articles in peer-reviewed journals and professional publications
- 7 book chapters
- 10 percent increase from 2016; 68 percent increase in 5 years

156
RESEARCH PRESENTED

- 68 national presentations
- 59 international presentations
- 29 local and regional presentations
- 15 percent increase from 2016

RESEARCHERS AND FOCUS AREAS

Research is part of the fabric of Akron Children's. It's embedded in our culture and spans the entire enterprise, with more than 200 investigators in 53 departments participating in scientific investigations.

218
PRINCIPAL INVESTIGATORS

Of these principal investigators:

- 60 percent - M.D. and D.O.
- 13 percent - Ph.D., PharmaD and PsyD
- 14 percent - nurses (RN, CNP)
- 13 percent - other specialties

53
DEPARTMENTS ENGAGED IN RESEARCH

70 percent of the research conducted at Akron Children's is by teams in these 10 departments and specialties:

- Emergency Medicine
- Hematology/Oncology
- NeuroDevelopment Science Center
- Orthopedics
- Pediatric Intensive Care Unit
- Pulmonary Medicine
- Palliative Care
- Surgery
- Vision Center
- Rheumatology

NURSING RESEARCH

39 **Active studies with a nurse as principal investigator**

10 **New research studies with a nurse as principal investigator**

18 **Research published by nurses in peer-reviewed journals and professional publications**

- 14 journal articles published by nurse researchers
- 2 abstracts published by nurse researchers
- 2 books and book chapters authored by nurse researchers

47 **Research presentations by nurse researchers**

- 10 international
- 27 national
- 10 regional

4th **Annual Nursing Research and Patient Services Research Awards presented during Nursing Grand Rounds: Spotlight on Nursing Research 2017**

- Excellence in Nursing Research: Meghan Weese, MSN, RN, CPN, NEA-BC
- Novice in Nursing Research: Neil McNinch, MS, RN
- Patient Services Research: Bonnie Powell, MSRC, RRT-NPS

1st **Inaugural Published Author Award Recognition event held**

- 44 nurses and respiratory therapists recognized

KEY ACCOMPLISHMENTS

- Recruited Chief Research Officer Michael Kelly, M.D., Ph.D., a nationally recognized physician scientist in pediatric cancer.
- Approved a plan to increase numbers of senior scientists to provide scientific guidance and mentoring to junior research faculty and trainees.
- Consolidated two research centers to optimize resource sharing and collaboration.
- Expanded our mitochondrial research focus to address more pediatric neurological disorders.
- Launched our first community-based device trial study.
- Established criteria for research credentialing.
- Started implementing clinical trial management software (CTMS) system to streamline research planning, performance and reporting.
- Reorganized research institute infrastructure to facilitate resource sharing, minimize redundancy and optimize staff utilization.
- Established interdisciplinary work teams and launched operational new leader training for 25 staff to align the research institute's mission, vision, operations, facilities and strategic goals.
- Improved the accuracy and efficiency of pre-study feasibility analysis.
- Implemented study-specific cost centers to assess resource allocation and needs.
- Brought on 62 research students and 14 research volunteers. Several also served as actors in the Austen Simulation Center to support training of hospital employees.
- Recruited 16 new providers to the research institute, including 13 new to Akron Children's.

RESEARCH EDUCATION OPPORTUNITIES

To instill an awareness and appreciation of pediatric research, Akron Children's offers several research education opportunities for students, physicians and nurses at all stages of career development.

The research institute also helps students in university and college programs meet research curriculum requirements and gain pediatric research experience while providing volunteer opportunities to assist with research activities.

Education opportunities for Akron Children's staff engaged in research and for those interested in getting started

- Building a Culture of Research
- Research Fundamentals
- Research Credentialing
- Nursing Research Scholar Program
- Pediatric Residency Research/Scholarly Activity Project

Research education programs tailored to university and college students

- Summer Pediatric Research Program
- Pediatric Hematology Oncology Research Internship
- Pediatric Hospital Medicine Fellowship
- Research Student Practicum Experience
- Research Institute Internships and Co-ops

Kirstin, Canton

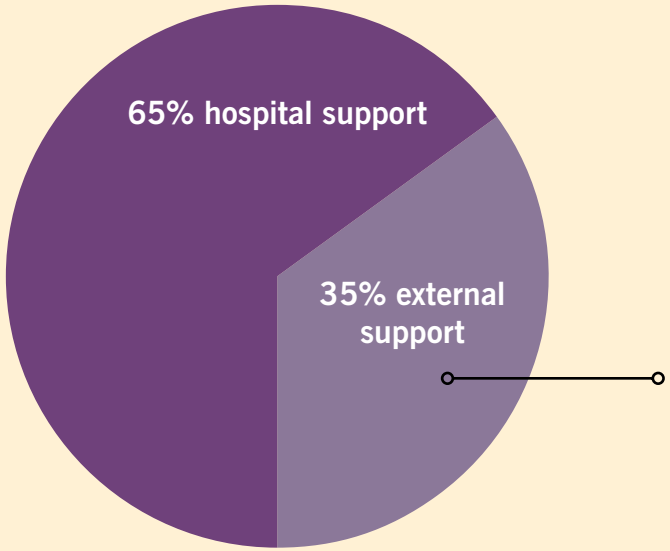
2017 FINANCE AND GIVING

RESEARCH FUNDING

Collaboration is at the heart of our work. It allows us to create connections with the children and families we serve, with communities we are in and with those who help make research possible through their financial support.

This support is critical for us to develop and deliver world-class care and conduct transformative research that gives our patients and families the best chance for a healthy life.

Together we are working to develop newer and safer medications, therapies and prevention strategies to keep kids healthy.



$6,300,000 TOTAL RESEARCH FUNDING

- 69% industry funding
- 26% federal grants
- 5% Akron Children's Hospital Foundation support

17 EXTERNAL GRANT AWARDS – 7 NEW, 10 CONTINUATIONS

- 53 percent private
- 47 percent state and federal

10 GRANTS AWARDED TO RESEARCHERS BY THE AKRON CHILDREN'S HOSPITAL FOUNDATION = $90,120

COLLABORATORS, PARTNERS AND SPONSORS

The most imaginative, productive research often results from the connections we forge inside the research, medical and academic communities. We're honored to spotlight those who joined forces with our hospital investigators in 2017 in their quests to improve the health and well-being of our children.

ACADEMIC PARTNERS

Columbia University
George Washington University
Kent State University
Northeast Ohio Medical University (NEOMED)
Salus University
The Ohio State University
The University of Akron
University of Arizona
University of South Florida
University of Texas Medical Board
Vanderbilt University
Washington University

FOUNDATIONS

Akron Children's Hospital Foundation
American Nurses Foundation
American Psychological Foundation
Barth Syndrome Foundation
Children's Oncology Group Foundation
Cystic Fibrosis Foundation
Daisy Foundation
Great Lakes Hemophilia Foundation
Laerdal Foundation
MedEvac Foundation
Ohio Children's Hospital Association Foundation
Ohio Lions Eye Research Foundation
Pediatric Epilepsy Research Foundation
The Kulas Foundation

GOVERNMENT

Canadian Institute of Health Research
National Institutes of Health (NIH)
NIH National Cancer Institute
NIH National Clinical Trials Network
NIH National Eye Institute
NIH National Heart, Blood and Lung Institute
NIH National Institute of Allergy and Infectious Disease
NIH National Institute of Diabetes and Digestive and Kidney Diseases
NIH National Institute of General Medical Science
NIH National Institute of Neurological Disorders and Stroke

MEDICAL PARTNERS

All Children's Research Institute
Boston Children's Hospital
British Columbia Children's Hospital
Children's Hospital of Los Angeles
Cincinnati Children's Hospital Medical Center
City of Hope Comprehensive Cancer Center
Cleveland Clinic Akron General Medical Center
Colorado Children's Hospital
Queen's University and Kingston General Hospital Research Institute

Seattle Children's Research Institute
The Ann & Robert H. Lurie Children's Hospital of Chicago
The Hospital for Sick Children Research Institute, Toronto
The Research Institute at Nationwide Children's Hospital
University of Kansas Medical Center
Weill Cornell Medicine

INDUSTRY SPONSORS

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Eisai Pharmaceuticals
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Stealth BioTherapeutics Inc.
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UCB Biosciences Inc.
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Vertex Pharmaceuticals Inc.
Wellstat Pharmaceuticals

ORGANIZATION PARTNERS

Advanced Cancer Therapy Network
Agency for Healthcare Research
American Academy of Ophthalmology
American Society for Surgery of the Hand
American Thrombosis and Hemostasis Network
Austen BioInnovation Institute of Akron
Blood Center of Wisconsin
Children's Oncology Group
Commission on Accreditations of Medical Transport Systems
Cystic Fibrosis Foundation Therapeutics Inc.
Hattie Larlham
Hemostasis & Thrombosis Research Society
Jaeb Center for Health Research Inc.
National Cord Blood Program, New York Blood Center
National Marrow Donor Program
New Leaf Center
PALISI Network
Pediatric Orthopaedic Society of North America
Pediatric Trials Network

IDEAS ACTIONS

Donors are the link to transforming patient care

Our kids are our future.

And support from our donors allows our research institute to tackle the problems that most affect the health of children in our region. Together, we're building a research community that transforms pediatric care and improves health outcomes through both prevention of disease and the development of better and safer therapies.

"We're investing in the future of science. It's becoming the responsibility of the community and parents to move science forward."

– Gwen Lopez-Cohen, M.D., physician and mother of four, whose youngest has a rare mitochondrial disease. Gwen and her husband, Brett Cohen, made an endowed gift to help grow the Center for Brain, Mitochondrial and Muscle Health Research.

Studying the healing power of music

Akron Children's is known for its commitment to family-centered care. Thanks to a $120,000 grant from the Kulas Foundation, we're investigating the effects of music on mothers of patients in the Neonatal Intensive Care Unit.

This new research uses a Pacifier Activated Lullaby® device to study how engaging mothers in music therapy activities, including recording lullabies, impacts maternal symptoms of stress disorders.

Broadening access to clinical trials

St. Baldrick's Foundation works to help find cures for childhood cancers and give survivors long, healthy lives.

It's helping Akron Children's through a grant that allows the Showers Family Center for Childhood Cancer and Blood Disorders to hire another clinical research associate. This researcher will work to gain more access to clinical trials for cancer patients, bolstering our efforts to uncover new insights, advancements and treatments to fight childhood cancer.

Paying it forward

Gift of friendship endows the Dr. Richard Champion Urological Research Fund

It was a gift to honor friendship.

In 2017, M. Yaqub Mirza, Ph.D., president and CEO of Sterling Management Group Inc. in Herndon, Virginia, made a $40,000 gift through his family and his affiliates to the Dr. Richard Champion Urological Research Fund at Akron Children's Hospital. It came after a conversation with his friend Richard H. Champion, Dr. Champion's son.

"I was aware of Dr. Mirza's generosity in funding a wide variety of charitable endeavors," said Champion, whose father served as a pioneering urologist at Akron Children's for many years, establishing residency programs that trained a generation of urologists in pediatric surgical techniques. "It's borne of the tenets of his faith and the good fortune he's experienced in his business endeavors."

Dr. Mirza's gift endowed the research fund, granting funding in perpetuity.

"My wife specialized in pediatrics," explained Dr. Mirza. "She told me stories of when she did not have medicine available at the hospital she worked in. She would use her income to buy medicine because she could not see little souls suffering."

Now, this funding will help bring new treatment advancements for children with urological conditions for years to come.

"God has blessed us very much," said Dr. Mirza. "The way we can thank Him is to be good to His creatures."

"The health and well-being of our children is one of the most important things that we can attempt to achieve in life," added Champion. "Only through them can the future be made bright."

Tanveer Mirza and Dr. M. Yaqub Mirza

Connect our patients to the most cutting-edge care

To support the hospital's research program or its investigators, contact Luann Maynard, senior major gifts officer, at 330-543-8340 or lmaynard@akronchildrens.org.

In 2017, donors contributed **$169,049** to the Rebecca D. Considine Research Institute Fund.

In 2017, donors contributed **$215,064** to Akron Children's research funds.

REBECCA D. CONSIDINE RESEARCH INSTITUTE | CENTERS OF RESEARCH

Through the Rebecca D. Considine Research Institute, we're developing a cohesive research community at Akron Children's Hospital. Scientists and clinicians can partner, share ideas and benefit from the strength and synergy of the group. In the spirit of this cohesion, our institute is made up of three distinct research centers.

CENTER FOR POPULATION AND HEALTH SERVICES RESEARCH

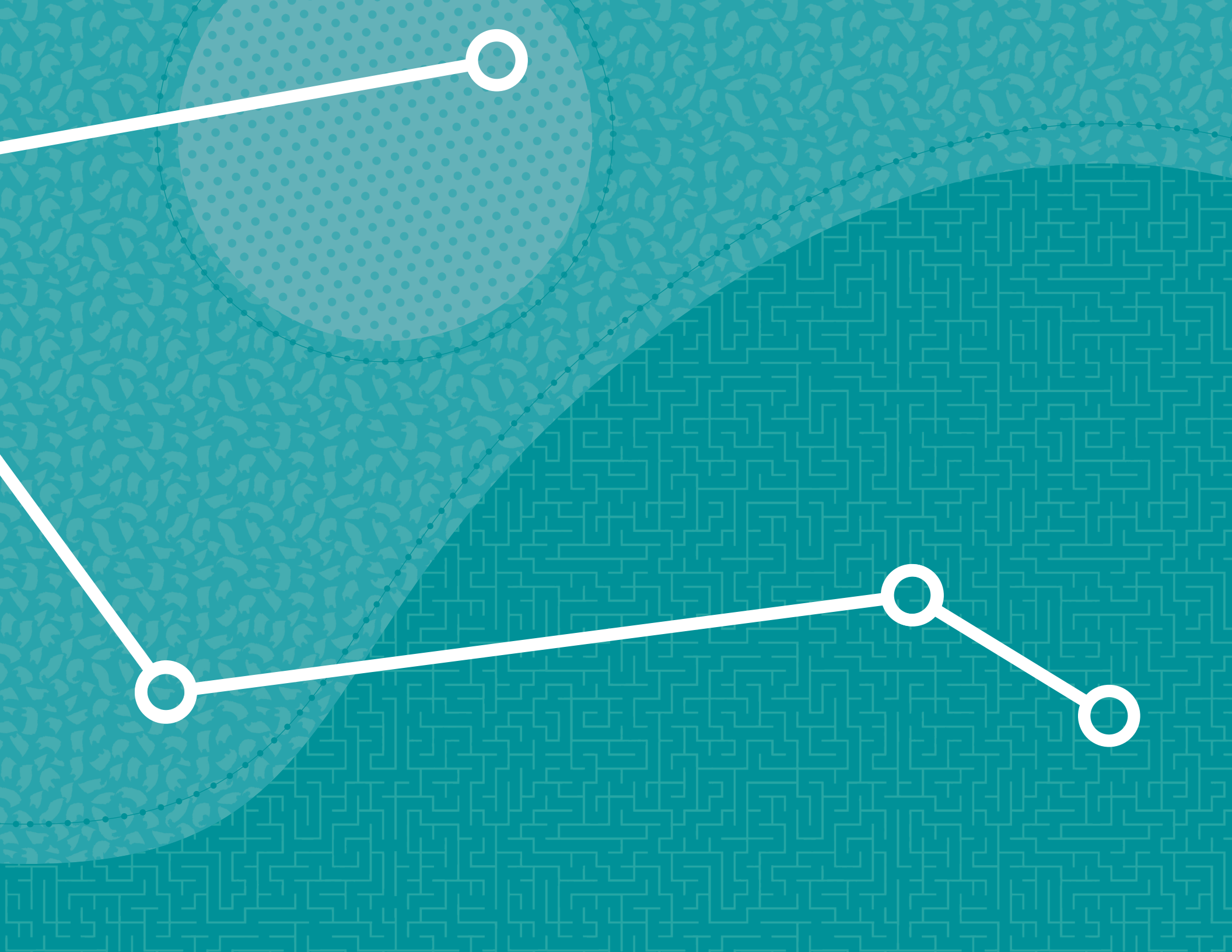
Performs research to inform best practices, optimize outcomes and improve health equity within and across the community. Focus areas include: acute and chronic diseases such as asthma, endocrine, oncology, orthopedics and palliative care, as well as overall community and population health research.

BRAIN, MITOCHONDRIAL AND MUSCLE HEALTH RESEARCH

Performs clinical trials and other research designs for the evaluation and development of new diagnostic and treatment regimens for a variety of diseases related to mitochondrial disorders, epilepsy, headache, autism, post-traumatic stress, mTBI/concussion, cognitive disorders and musculoskeletal disorders/injuries/deformities in pediatric and some adult populations. The Center works with the Neurodevelopmental Science Center, Sports Medicine, Orthopedics and Radiology to develop collaborative efforts in decreasing morbidity and mortality related to pediatric diseases. Focus areas include: cognitive, developmental and behavioral pediatric brain disease; epilepsy; autism; traumatic brain injury (mTBI)/ concussion; post-traumatic stress disorders; muscular and mitochondrial disease.

VISION SCIENCES RESEARCH

The Vision Science Research Center is committed to advancing ophthalmology research to discover and develop new and more effective treatments in eye care through basic, translational and clinical research. Research interests are diverse and cover a wide range of ophthalmologic problems. Focus areas include: developing ocular motor system (strabismus, nystagmus); developing visual brain (amblyopia); pediatric glaucoma and cataracts; retinopathy of prematurity; craniofacial and other genetic disorders.



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