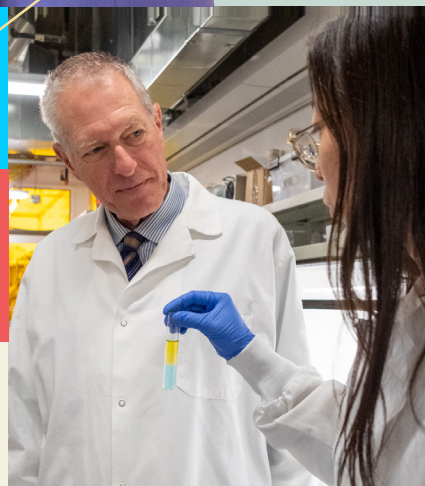
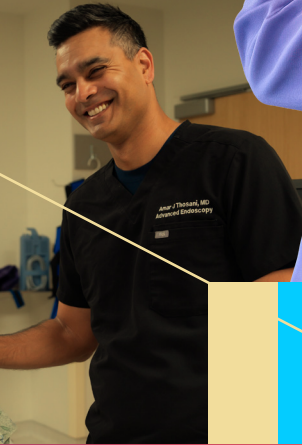
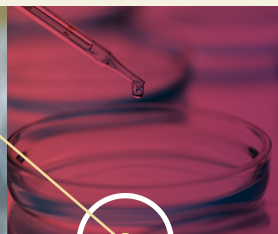




20 YEARS OF INNOVATION



2025
ANNUAL
REPORT



**THE
BEST IS
YET TO
COME**

HONORHEALTH®

Research Institute

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Tabitha Moe, M.D.

A MESSAGE FROM CEO MARK SLATER

Following our first 20 years of achievement, the best is yet to come

A glance at the Table of Contents on the opposite page and there are two words that immediately pop out: “new” and “first” — first in Arizona, first in the West, first in the U.S., and even first in the world.

Over the course of our first 20 years, HonorHealth Research Institute has propelled itself to the leading edge of medical and scientific discovery, applying that new knowledge to a wide field of clinical trials across a vast array of diseases and conditions, testing new drugs, devices and techniques aimed at saving and improving the lives of our patients.

Many of these studies are just in time for many of our patients who have otherwise exhausted all other conventional remedies and treatments. For many, our Research Institute is their last and best hope.

When we look at what we’ve accomplished in 20 years, including all the work we highlight throughout this Annual Report, we see that our physicians, nurses, scientists, staff, donors — and especially our patients — have all played a role in our collaborative approach, providing the very best in hospital and clinical care.

Whether in skin cancer, lung cancer, pancreatic cancer, solid tumors, heart disease — all among the world’s top killers — or among patients with digestive ailments, stroke risks and spine pain, these pages show how our teams of physicians and scientists already excel at the highest levels.

Still, we’re only getting started. As we encourage everyone to come together in our Institute without walls, this is not only a time of celebration, but a time to look forward.

The advent this past year of our new Center for Translational Science is the first of many innovative new programs and areas of expertise that we are adding to complement our five clinical research divisions: Oncology, Cardiovascular, Bariatric/GI, Neuroscience and Multispecialty.

Our Translational Science operations will help us extend our capabilities to go beyond testing the discoveries of others, to developing our own discoveries. And that process of discovery is



bound to accelerate as we stretch our wings and bring on more partners, such as Arizona State University’s new John Shufeldt School of Medicine and Medical Engineering.

Already we are looking forward to advances in Behavioral Health provided through our new partnership with ASU, paired with our ongoing collaborations with other brilliant scientists across the nation and around the globe.

This is on top of our ongoing partnerships in academic excellence, such as the laboratory cancer testing breakthroughs and other advances we are making in conjunction with colleagues at the University of Arizona College of Medicine-Phoenix.

It is a formidable power for good that we project. So, my optimistic call to arms should come as no surprise when I say, “The best is yet to come.”

Mark Slater, Ph.D.
Vice President of Research for HonorHealth
Chief Executive Officer of HonorHealth Research Institute

Celebrating a 20-year journey

Effective treatments power journey from community hospital to globally recognized center of innovation

Frank Tsai, M.D.



On Nov. 10, 2025, HonorHealth Research Institute celebrated its 20th anniversary.

So, what's changed in 20 years? Home to just two hospitals, HonorHealth was known in 2005 as Scottsdale Healthcare.

And if you were a Phoenix-area resident and had exhausted all current standard-of-care treatments for your cancer, your closest alternative was to travel to Tucson to access cutting-edge clinical trials.

"We had many patients driving down from Phoenix. Long days of therapy to get new investigational agents in Tucson," said Daniel D. Von Hoff, M.D., a world-renowned cancer researcher who was then the director of the Arizona Cancer Center at the University of Arizona.

"At the end of the day, they'd have to drive back up. It was very difficult. Some of the treatments were daily. We decided that we needed to make sure that new therapies were more easily available for these patients," added Dr. Von Hoff, who, among other positions and titles, is a former Chief Science Officer and an emeritus Virginia G. Piper Chair for Innovative Cancer Research at the HonorHealth Research Institute.

Scottsdale Healthcare was willing to help. Already operating since 2001 on the campus of Scottsdale Shea Medical Center, the Virginia G. Piper Cancer Center in 2005 became a launching pad for what originally was known as Scottsdale Clinical Research Institute at Scottsdale Healthcare.

Following the 2000 recruitment of Michael Gordon, M.D., FASCO, who since 2021 has been the Research Institute's Chief Medical Officer, the Institute's five research divisions began with Oncology studies. A year later, it added Cardiovascular and trauma research. Over time, the institute would add research divisions for Neuroscience, Bariatric/GI and Multispecialty (a platform for various up-and-coming disease research).

"This was about truly making an impact on the community where we could provide options and hope for patients and their families," recalled HonorHealth CEO Todd LaPorte, citing an example of the changes over time: "The therapies available for pancreatic cancer patients today have advanced tremendously from where they were 20 years ago."



On Jan. 4, 1984, HonorHealth marked a milestone with the opening of Scottsdale Memorial North, with First Lady Nancy Reagan at the ribbon-cutting.

Perhaps no one knows that better than Dr. Gordon, a pancreatic cancer survivor, who when he was diagnosed chose to be treated at the HonorHealth Research Institute, rather than any of the other premier hospitals or universities with which he has been affiliated over his career. Because of his own illness, Dr. Gordon has a heightened empathy for patients.

"There's no way to come through such a journey and not have a sense of, and appreciation for, all the wonderful things in life, as well as an appreciation for the challenges we face," said Dr. Gordon, who also serves as medical director of the Multispecialty Research Division. "Perhaps few are as challenging as a cancer diagnosis."

After the creation a decade ago of HonorHealth — a merger of Scottsdale Healthcare and the John C. Lincoln Health Network — the research enterprise morphed into the HonorHealth Research Institute, as it is known today.

One constant over the past two decades is HonorHealth Research Institute's pursuit of top-notch leadership, doctors, researchers and staff, and of state-of-the-art, innovative healthcare devices, drugs and techniques for patients, characterized by highly effective, leading-edge and safe clinical trials, sometimes the first in the world.

Institute gets its own CEO

A major inflection point came in 2007 with the appointment of Mark Slater, Ph.D., as CEO of the Research Institute and Vice President for Research at HonorHealth, providing a clear vision and philosophy to guide expansion into the future:

- An institute without walls, where collaboration is paramount.
- The best academic and scientific rigor matched to real-world community care.
- Nimble: fighting bureaucracy, eliminating obstacles, allowing innovation to proceed with urgency.

- Patient-centered strategic initiatives: leveraging the best science in pursuit of personalized medicine that addresses the unique circumstances of each patient.
- Commitment to compassionate care, treating every patient as we would want to be treated, combining the best science and care to give patients a fighting chance.

"My vision was — and remains — to create the kind of clinical research environment that I always wanted when I was a clinical scientist," Dr. Slater said. "I always come back to one thing, gratitude: for HonorHealth, our dedicated physicians, scientists and staff; for our donors, our partners, and, most of all, for the courage of our patients and their families."

Dr. Slater's vision has helped guide the development of the Institute's five research divisions and will help lead the way in the future as the Institute develops more research branches, such as the new expansion of laboratory science for the Center for Translational Science, and as the Institute establishes new partnerships, such as the recent affiliation with Arizona State University's new John Shufeldt School of Medicine and Medical Engineering, both on the bioscience campus in downtown Phoenix.

From small beginnings, the Institute has evolved into a powerhouse of nationally and internationally recognized research innovation, with virtually unlimited potential, Dr. Slater said: "The best is yet to come."

Oncology Research Division

Born to meet the needs of patients, the Oncology Research Division notched significant early wins: In 2007, the Debi and Jerry Bisgrove Research Pavilion was dedicated on the Shea campus, providing some of the institute's first laboratory space and clinical care facilities, and serving as a



bridge between the research bench and bedside treatments. Debi Bisgrove was the subject of some of the Institute's initial efforts to characterize, or profile, patient tumors by using the power of the human genome to unveil a patient's unique genetic vulnerabilities to various cancers and identify potential drugs to treat each individual's specific disease.

One such characterization led to the discovery of what is known as the hedgehog signaling pathway, so named because its molecular structure looks like the cartoon Sonic the Hedgehog. This pathway guides a chemical called vismodegib, which blocked abnormal cell growth in a number of human cancers, including basal-cell carcinoma, the most common skin cancer that, left untreated, can turn into a deadly malignancy. The Institute's initial first-in-human research with the world's first clinical trial patient (a local resident) showed that vismodegib could clear up even late-stage basal-cell skin cancers that had spread to other parts of the body, including the liver, bone and lungs.

Follow-up collaborative, larger-scale global clinical trials led to FDA's 2012 approval of vismodegib as an oral pill for the treatment of basal-cell carcinoma — the first drug developed through HonorHealth Research Institute to receive FDA approval. Remarkably, this drug was approved in less than 5 years; a fraction of the time it takes most cancer drugs to be approved.

Another early victory was the creation of "The Triplet," a combination of Abraxane, Gemcitabine and Cisplatin. Clinical trials would show a 71% response rate, meaning most advanced stage pancreatic cancer patients saw their tumors shrink, a finding that would lead to The Triplet becoming a new nationwide standard-of-care treatment for pancreatic cancer patients.

In addition to targeted therapies, the Institute is transforming cancer care through innovations in cellular therapies, which harness the power of the body's own immune system. One such therapy is called TIL, short for Tumor Infiltrating Lymphocytes, immune cells embedded in cancer that are too weak to defeat the tumor. TIL-containing tumors are removed from the patient, then the TILs are isolated, enhanced and

multiplied in a lab before being reintroduced back to the patient. The result is an army of billions of powerful immune cells to attack the cancer.

Cardiovascular Research Division

In 2006, on the heels of the Institute's cancer research, the Cardiovascular Research Division was established, and with it came a raft of significant breakthroughs in treating cardiovascular disease affecting the arteries and other vascular structures with innovative stents, heart valves, and devices to help the heart keep a healthy rhythm. Using minimally invasive techniques to route therapeutic devices via catheters through large blood vessels, the division has invented new ways to avoid the trauma of open-heart surgery.

One example of the many innovations with new types of stents, the Research Institute in 2024 was one of the first in the nation and the first in the Southwest to treat a patient with a stroke-prevention stent that eliminates blockages in neck arteries that could potentially cause a deadly stroke by depriving the brain of oxygen.

The Institute helped pioneer trials that led to the 2019 FDA approval of the MitraClip, a now common method of repairing the mitral valve, which prevents blood from regurgitating, or backing up, into the left atrium and lungs from the left ventricle, the largest of the heart's four chambers, which pumps oxygen-rich blood throughout the body.

Clinical trials at the Institute led to the 2025 FDA approval of the Tendyne Valve, an artificial replacement valve for the mitral valve.

In 2024, the Institute enrolled some of the nation's first J-Valve patients into a clinical trial. This device prevents blood from regurgitating from the aorta, the main artery that feeds oxygenated blood to the body, into the left ventricle, a condition that if left untreated could lead to heart failure and death.

Through the years, the Institute has been at the forefront of helping develop relatively non-invasive implants that help the heart maintain a strong, steady beat. Where once they were large, some connected by wires from outside the body to inside the heart that had limited battery life. Today's devices are small, wireless, and often reside completely inside the heart. Some devices can even be recharged from outside the body.

Neuroscience Research Division

Started in 2017, the Neuroscience Research Division, studies new treatments for diseases of the central nervous system and brain, including strokes and diseases of the immune system, and how they might affect other bodily systems such as muscles and the digestive tract.

The division quickly expanded to several HonorHealth hospital campuses, culminating in the 2021 opening of the Bob Bové Neuroscience Institute on the campus of Scottsdale Osborn Medical Center. The center is a beacon of hope for patients and their families facing some of the most challenging diseases of our time, including Guillain-Barré syndrome, a rapid-onset muscle weakness brought on by the immune system attacking the nerves. The division is also researching Parkinson's disease, dementia, migraine headaches and concussions.

It also is part of a first-of-its-kind global effort begun in 2021 to prevent Amyotrophic Lateral Sclerosis (ALS), another debilitating and eventually fatal muscle-weakening auto-immune disease, also known as Lou Gehrig's disease after the historically popular Major League Baseball player who died from this condition nearly a century ago. There still is no cure.

Bariatric/GI Research Division

The Bariatric/GI Research Division began in 2011, focused in part on helping patients achieve healthy weight, a growing challenge in a world where most American adults are overweight, and nearly 2 in 5 are considered obese.

The Institute is the first site in the nation to study genetic-based obesity. The division also studies digestive problems, such as GERD, blood-sugar abnormalities such as diabetes, and chronic inflammatory bowel diseases such as Crohn's Disease. In 2022, the division helped secure FDA approval of the first and only interleukin-23 drug to treat moderate to severe Crohn's Disease in adults.

Multispecialty Research Division

The Multispecialty Research Division began in 2022 as a place to organize research efforts that don't fall into any of the Institute's other four divisions.

While many of its functions began in 2019 — just in time for COVID pandemic studies into COVID-related pneumonia and high-risk adults — it since



has also adopted studies surrounding an interventional pulmonary program (2022), a pulmonary hypertension program (2023), and a rheumatology program (2024). It also has included studies related to spine pain and breast cancer surgery.

Back to the future: The next 20 years

In building for the future, one of the most promising developments is the Institute's new Center for Translational Science.

John Neil, M.D., HonorHealth's Chief Physician Executive and Network Strategy Officer, said the new Center will further cement HonorHealth's global reputation for delivering among the very best medical care: "We have served patients from all 50 states and more than 30 nations worldwide. Our new Center for Translational Science will build on our successes and exponentially increase the scientific rigor that is the backbone of our medical service."

Power of Philanthropy

At key points along the Research Institute's journey, significant multi-million-dollar philanthropic gifts from groups like Virginia G. Piper, the Starlight Foundation, Desert Mountain CARE and others provided funding for new research ideas and innovations that empowered the Institute to accelerate medical breakthroughs and improve patient outcomes.

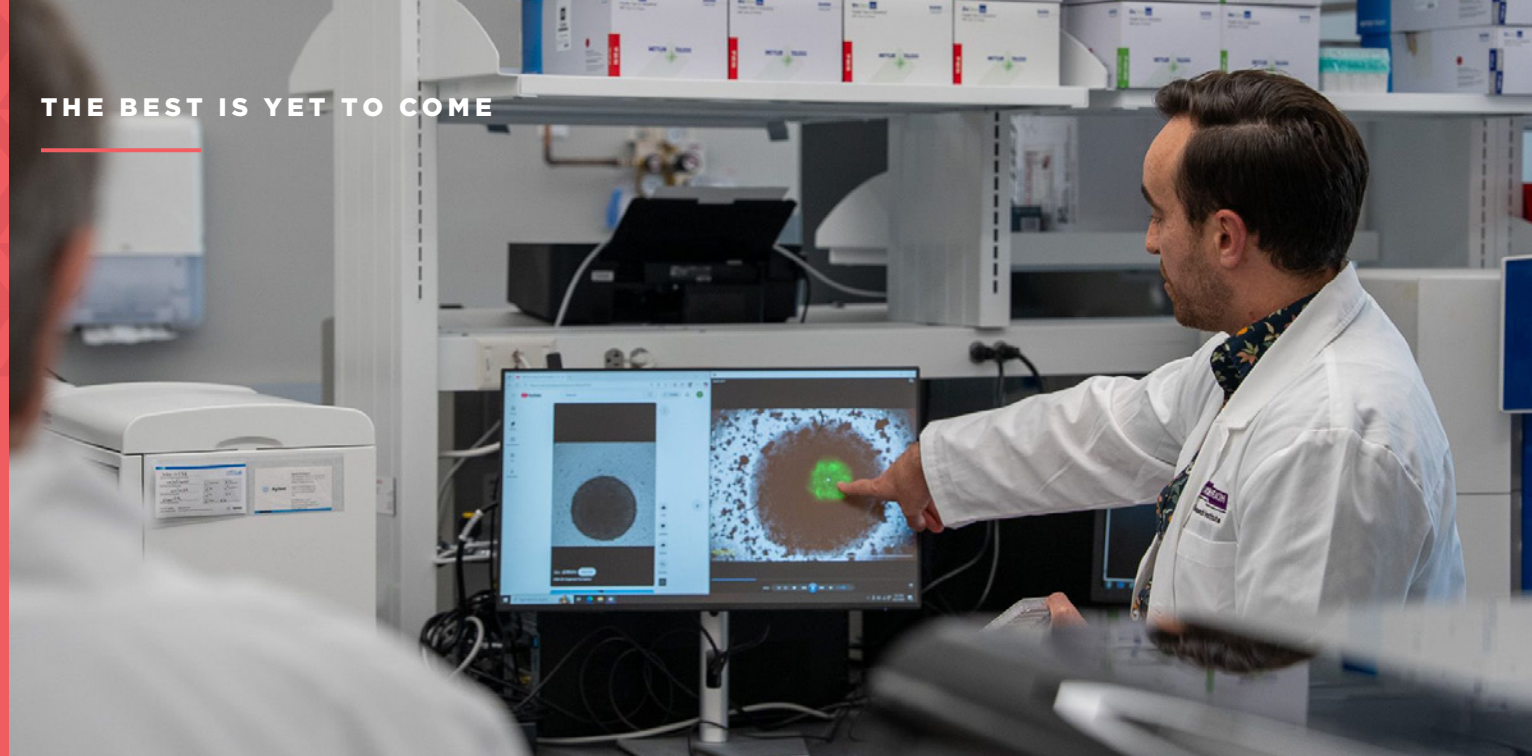
Eyes on the horizon

"We will continue to work collaboratively, telling the stories of not only what we accomplish here but also what we achieve in partnership with ASU and others," Dr. Slater said.

"We will continue to deepen our science and make sure it is well integrated with our clinical research, instead of relying on the clinical research alone. We will focus on individualized solutions and early identification and early intervention of diseases, and ultimately on disease prevention, which could help people live longer and healthier." ■

For more about HonorHealth Research Institute clinical trials: call 833-354-6667; or email clinicaltrials@HonorHealth.com.





HonorHealth creates new international Center for Translational Science

The new center is seen as a worldwide bridge among scientists, researchers and physicians in their pursuit of new diagnostics and therapeutics to benefit patients

In a move that could substantially transform the 21st Century biomedical research landscape of Arizona, the HonorHealth Research Institute has created its Center for Translational Science.

“The creation of HonorHealth Research Institute nearly 20 years ago was our way of putting HonorHealth on the frontier of providing our patients with world-class care,” said Todd LaPorte, CEO of HonorHealth, an integrated health system of nine acute-care hospitals and more than a hundred community clinics and medical practices. “With this new Center for Translational Science, we intend to further expand novel science and our abilities to work with academic institutions, universities, the private sector, government agencies and other hospital groups towards the substantial betterment of humanity.”

As the Research Institute enters its third decade, the Center for Translational Science is seen as a major investment by HonorHealth in its ability to bridge the gap between basic science discoveries and translating those discoveries into better ways to diagnose and treat diseases, bringing new hope and answers to patients and their families.

New laboratory opened in March 2025

Key to the success of the Center was the opening in March 2025 of a new laboratory in the heart of downtown’s Phoenix Bioscience Core, a 30-acre downtown campus that is home to dozens of biotech businesses and includes branches of all three Arizona public research universities.

This laboratory is helping the Center for Translational Science reach its goal of taking scientific breakthroughs at the HonorHealth Research Institute and translating them into new devices, drugs and preventative measures that will improve the lives of patients.

“Not only does this laboratory deepen our commitment to translational science and innovation, but its strategic location on the downtown bioscience campus is key to development of our collaborations with Arizona State University, the University of Arizona, and other public and private institutes and businesses,” said Mark Slater, Ph.D., HonorHealth Vice President of Research and CEO of HonorHealth Research Institute.

The laboratory for HonorHealth Research Institute’s Center for Translational Science is housed in 850 PBC, a 7-story building at 850 N. Fifth St. developed by Wexford Science + Technology, a nationwide real estate company exclusively focused on partnering with universities, academic medical centers, healthcare systems, and research institutions to create mixed-use knowledge communities built on a foundation of discovery, innovation, entrepreneurial activity, corporate engagement and community inclusion.

“This state-of-the-art facility compliments and builds on our two decades of investigational therapeutics and will help take the Institute to the next level in the coming decades,” Dr. Slater said. “It’s a part of the overall strategy of HonorHealth to reach out and have a presence across Maricopa County as we help Arizona realize its dream of being a national and international biotech leader, helping drive both economic and clinical benefits.”

Global impact of Institute’s research

Michael Gordon, M.D., FASCO, HonorHealth Research Institute’s Chief Medical Officer, agreed: “This new laboratory reinforces HonorHealth’s commitment to be a more panoramic player in delivering state-of-the-art and state-of-the-science care to our patients. It’s one thing to conduct clinical trials based on others’ research. It is another to strategize, devise and implement new treatments on the basis of evidence and conclusions that are drawn from your own laboratory-based research.

“The location of the lab puts us squarely in the midst of the Phoenix bioscience campus and allows us to be engaging with, and collaborating and partnering with, larger and more established institutions,” said Dr. Gordon, who specifically mentioned:

ASU’s new **School of Medicine and Medical Engineering**, intended to produce physician-leaders in health care by blending the disciplines of medicine, engineering, technology and humanities. In October 2024, HonorHealth was selected to be the school’s primary clinical affiliate.

- The new U of A **Center for Advanced Molecular and Immunological Therapies (CAMI)**, which is devoted to developing new strategies for the diagnosis, prevention and treatment of cancers, infectious diseases and autoimmune conditions;
- **Center for Applied NanoBioscience and Medicine** at the U of A College of Medicine-Phoenix.

Dr. Slater oversees hundreds of cutting-edge clinical trials in a comprehensive effort to help heal patients suffering with everything from cancer to cardiovascular disease to neurological conditions and more.

“Our vision for the new Center for Translational Science is as vast as the needs of our patients who look to us every day to help find ways to extend their survival and enhance their quality of life,” Dr. Slater said. “Over the past 20 years, we’ve established our research foundation, merging the best care and best science together to make a difference for patients right here, right now.”

Today, using new techniques and disciplines rooted in the molecular (DNA) basis of disease, the new Center for Translational Science will build on the Research Institute’s expertise in developing first-in-human clinical trials, immune-system therapies, cellular therapies, targeted therapies and others to develop treatments that attack diseases, while minimizing negative side effects that might compromise a patient’s health.

“This is a significant investment that is being made to promote and develop science that will make a difference across a wide spectrum of healthcare,” Dr. Slater said. “It’s a Center that will attract talent, technology and resources. It is a nexus for collaboration.”

Frederic Zenhausern, Ph.D., MBA, a senior scientist at HonorHealth Research Institute, and director of the Center for Applied NanoBioscience and Medicine at the U of A School of Medicine-Phoenix, said the new Center for Translational Science will provide the framework for integrating the efforts of physicians and scientists.

“I think it is a collaborative effort that will accelerate discoveries and advance therapies and drug-delivery systems,” said Dr. Zenhausern, who also is a Professor at the university’s Basic Medical Sciences and Biomedical Engineering. “I think it will have an impact validating academic discoveries for producing outcomes that could be delivered to the patient.” ■

From left to right: Gayle Jameson; Mark Slater, Ph.D.; Todd Laporte and Sunil Sharma, M.D.; Nicholas Schork, Ph.D.





Leading anti-cancer drug expert to head Institute's new Center for Translational Science

Dr. Sunil Sharma's medical prowess unifies basic scientific discoveries, translational drug development and clinical care to produce advanced treatments for patients

Sunil Sharma, M.D., MBA, one of the nation's leading experts in creating anti-cancer drugs, has been named director of HonorHealth Research Institute's new Center for Translational Science.

Dr. Sharma, who for more than three decades has been at the national forefront of research, drug and clinical trial design, has served at the Research Institute since 2017. He now will hold the Institute's title as Chief of Translational Research and Drug Discovery.

"The idea behind the Center for Translational Science is to have a broad set of what I call platform technologies that can be brought to bear on various disease sets; that will allow disease-specific clinicians and other specialists to come and work together through this new laboratory to help patients," said Dr. Sharma.

"This is a major commitment to transform HonorHealth Research Institute into a world-class leader in translational cancer research and to build external interfaces with significant partners and collaborators," Dr. Sharma said. "In order to do this, we are investing in the recruitment of a full basic and translational science team that will lead to this outcome. While this commitment is substantial, it is essential to develop a world-class, cross-cutting translational research program.

In his new position, Dr. Sharma will lead a team of scientists, faculty, research technicians, project managers, chemists, lab supervisors and other personnel as they take basic scientific laboratory discoveries and translate them into new therapeutics for patients.

"I can't think of a better person who is more qualified for this new endeavor — a true renaissance man who has the science, the clinical, the business and the innovation expertise and experience — than Dr. Sharma," said Mark Slater, Ph.D., Vice President of Research at HonorHealth and CEO of HonorHealth Research Institute.

"He's a brilliant scientist with a strong academic presence," added Dr. Slater, "who will lead in the development of grants, education and collaborations."

As part of a partnership announced in October 2024 between HonorHealth Research Institute and Arizona State University's new School of Medicine and Medical Engineering, Dr. Sharma will also hold a faculty appointment as an ASU Research Professor.

In April 2025, the new lab — dubbed the Sharma Lab — produced its first study, centered on a promising new treatment for pancreatic cancer, one of the most aggressive and difficult to treat of all malignancies.

Study results were presented that same month in Chicago at the annual meeting of

the 58,000-member American Association for Cancer Research (AACR), the world's largest professional organization of cancer investigators, caregivers and patient advocates.

Study findings indicate that a newly discovered drug, RMC-6236, also known as Daraxonrasib, is a powerful inhibitor of RAS (including KRAS, NRAS and HRAS). These are commonly mutated cancer-causing genes that drive the formation of many types of tumors, including pancreatic cancer. This study evaluated the effectiveness of RMC-6236 in patient-derived pancreatic tumors harboring KRAS mutations.

It is yet another example of Dr. Sharma's prowess.

"Dr. Sharma has had an illustrious career as a drug discoverer, and drug developer and as a phenomenal and caring physician," said Michael Gordon, M.D., FASCO, Chief Medical Officer of HonorHealth Research Institute.

"Dr. Sharma is one of the strongest partners and colleagues that I've personally had over the past 20 years," Dr. Gordon said. "I know him as an outstanding clinician who is focused and dedicated to the care of his patients, and as an outstanding researcher, always challenging himself to look for better options. And where better options don't exist, challenging himself to figure out something completely new."

In association with his new position, Dr. Sharma also will hold the Virginia G. Piper Distinguished Chair in Innovative Cancer Research, a position previously held by Daniel D. Von Hoff, M.D., one of the world's leading experts in pancreatic cancer. Dr. Von Hoff had mentored Dr. Sharma since his post-doctorate fellowship under Dr. Von Hoff at the University of Texas San Antonio. Created in 2019, the Distinguished Chair carries an endowment to help fund Dr. Sharma's innovative cancer research and clinical trials at HonorHealth Research Institute.

"I'm happy to take on this role as part of my career-long desire to help patients and advance medicine," Dr. Sharma said of his new position as director of the Center for Translational Science. "HonorHealth has been so great to me. I want to contribute not only to the success of HonorHealth, but I also want to convey my excitement about the future of HonorHealth Research Institute."

Dr. Sharma's multiple positions

In 2017, Dr. Sharma also joined the Phoenix-based Translational Genomics Research Institute (TGen) as Deputy Director of Clinical Sciences, Professor, and Head of Applied Cancer Research and Drug Discovery Division. In 2019, he was named TGen's Physician-In-Chief, also succeeding Dr. Von Hoff.

In recent years, Dr. Sharma broadened his research and clinical portfolio beyond his specialty of gastrointestinal cancers (colon, pancreatic) to include drug development

— immunotherapeutic treatments in particular — for COVID-19, Alzheimer's disease, memory performance, and other cancers, including breast and ovarian cancer.

Dr. Sharma also is a Professor of Medical Oncology at City of Hope, a world-renowned comprehensive cancer center based in greater Los Angeles.

Dr. Sharma's extensive background

Prior to HonorHealth, Dr. Sharma served as Deputy Director of Huntsman Cancer Institute (HCI) in Salt Lake City, a National Cancer Institute-designated Comprehensive Cancer Center. At Huntsman, he co-lead the Experimental Therapeutics Program, where he developed new treatments, including image-guided and targeted drug delivery systems.

He also worked as a physician in the Division of Gastrointestinal Oncology at Memorial Sloan Kettering Cancer Center in New York. And he built a phase I clinical trial program at the Nevada Cancer Institute in Las Vegas.

In addition to his clinical pursuits, Dr. Sharma has worked with a number of pharmaceutical companies, including: Swiss-based Novartis, where he helped develop *ceritinib*, one of the most widely used lung cancer treatments; Merck & Co.'s *pembrolizumab*; and Bristol-Myers Squibb's *nivolumab*, the latter two immunotherapy drugs, both of which help the body's own immune system attack cancer cells. He also has started multiple biotechnology companies, including Iterion Therapeutics, Stingray Therapeutics and Black Canyon Bio. These companies are developing novel cancer drugs, cancer vaccines and cell therapies for the treatment of cancer.

Dr. Sharma, a Fellow of the American College of Physicians, earned his medical degree at the University of Delhi in New Delhi, India, and his MBA from the University of Massachusetts, Amherst.

Bridging academia and clinical research

Frederic Zenhausern, Ph.D., MBA, a senior scientist at HonorHealth Research Institute, and director of the Center for Applied NanoBioscience and Medicine at the University of Arizona College of Medicine-Phoenix, said the new laboratory headed by Dr. Sharma provides an opportunity to blend university academia and the clinical efforts of HonorHealth and its collaborators.

"I think it will have an impact validating academic discoveries for producing outcomes that could be delivered to the patient," said Dr. Zenhausern, who also is a Professor at the university's Basic Medical Sciences and Biomedical Engineering. A primary example is his study of nanovesicles from plants as a targeted and less toxic delivery system for new drug therapeutics. "I think this new laboratory will be a collaborative effort that will accelerate discoveries and advance therapies and drug-delivery systems." ■



Sunil Sharma, M.D., MBA

Big-data longevity specialist boosts HonorHealth Research Institute's efforts to help patients lead longer, more productive lives

Dr. Schork joins the Research Institute's new Center for Translational Science, emphasizing new technologies to intercept disease before symptoms even appear

Nicholas J. Schork, Ph.D., an international authority on human longevity and health maintenance, has joined HonorHealth Research Institute as Research Director of Longevity, Prevention and Interception.

Dr. Schork heads a unique laboratory that is part of the Research Institute's newly created Center for Translational Science, and his appointment is part of a significant push on the part of the Institute to expand its collaborations and the realm of precision medicine possibilities; providing specific answers to individual patients with rare or difficult to treat diseases.

"It's all about optimizing people's health," said Dr. Schork, who has trained and worked at some of the nation's prominent health research facilities.

"Disease is not like an on and off switch; one day you have disease and the next day you magically do not. There are processes that unfold over time that contribute to disease or reflect the pathobiology behind the illness," he said. "Research focusing on interception tries to understand those processes to the point where one can intervene on them, preventing the more serious manifestations of a diagnosis."

How medical interception works

For example, before treating a patient with a medication once they develop a specific cancer, physicians in the future might use new high-tech monitoring of a person's genome or some type of bodily fluid such as blood, saliva or even cerebrospinal fluid to find biomarkers that would indicate early on who might be at risk of cancer.

Such advanced interception warning signs also might be attained through the use of wearable devices, imaging protocols – or anything that might allow frequent monitoring to provide critical and actionable information. The physician might then recommend specific actions or medications for an individual to take to avoid the development

of cancer altogether, before it actually occurs and puts their overall health at risk.

Dr. Schork said he also will employ the use of Artificial Intelligence to interrogate large electronic health records with billions of points of data to synthesize complex information and offer recommendations based on identifying patterns invisible to human clinicians.

"Early AI evaluations show the potential to improve diagnostic accuracy, reduce errors, and personalize care pathways, provided they are validated in rigorous clinical settings," he said, pointing to the need for clinical efforts to bolster translational discoveries, and translational science to be practiced with patients in the clinical settings.

HonorHealth leadership enthusiastic

In welcoming Dr. Schork and his expertise to HonorHealth, Michael Gordon, M.D., FASCO, Chief Medical Officer of the Research Institute, said: "Ultimately, it's all about living longer, living better, reducing the risk of disease and promoting longevity. We want to emphasize prevention and interception – whether it's intercepting in the evolution of cardiovascular disease or intercepting in the evolution of cancer – we want to find more and more sensitive ways to diagnose disease earlier; to intervene before people develop a symptomatic disorder that compromises their function; their ability to live."

Sunil Sharma, M.D., MBA, FACP, Director of the Center for Translational Science, said, "I have known Dr. Schork for several years now. He is a true renaissance man, and I deeply value his unique investigational abilities, scientific rigor and imagination. In his new role, working alongside me at the Center, his computational genius will be a game-changing force for innovation at our Research Institute." ■



HonorHealth hires new experts

Precision Medicine pioneer to forge links throughout HonorHealth Research Institute, emphasizing disease prevention

Laura Goetz, M.D., MPH, one of the nation's leading advocates for moving new translational laboratory discoveries into clinical practice where they can immediately benefit patients, has been named HonorHealth Research Institute's first Research Director of Precision Medicine.

In her new position, within the Research Institute's Center for Clinical Investigations, Dr. Goetz will develop protocols emphasizing disease prevention for all five of the Institute's research divisions: Oncology, Cardiovascular, Neuroscience, Bariatric/GI, and Multispecialty, which includes the Institute's newest research efforts. These protocols will also involve, enhance and complement the practices and interests of physicians who are part of HonorHealth's network of hospitals and community clinics.

Having directed residency programs for newly minted med school graduates at the University of California, San Francisco, and at Scripps Clinic in La Jolla, Dr. Goetz hopes to foster strong educational and clinical bonds with students at Arizona State University's new School of Medicine and Medical Engineering, developing disease prevention perspectives that might help guide a whole new generation of physician engineers.

Dr. Goetz will work closely with the Institute's new Center for Translational Science, and especially with Nicholas J. Schork, Ph.D., an international authority on human longevity and health maintenance, who is the Institute's Research Director of Longevity, Prevention and Interception. (See facing page.) Dr. Goetz is focused on patients in the clinic, while Dr. Schork is focused on identifying and developing advanced technologies for treating and preventing diseases.

For more than a decade, Dr. Goetz and Dr. Schork – partners professionally and personally – have attempted to create preventive medicine programs, yielding mixed results, in part, because there is less money to be made in keeping people healthy, as opposed to practicing what they call "illness care," treating patients after they have already developed significant symptoms.

HonorHealth's dedication to prevention

"What we've realized, talking with HonorHealth Research Institute for the past year, is that there really is the interest, opportunity, resources and infrastructure to implement true preventive medicine strategies in a way that will be transformative and meaningful for patients," Dr. Goetz said. "At HonorHealth Research Institute, where they already marry research to clinical practice, we found a philosophy we hadn't experienced in other places. The HonorHealth mission clearly meshed with what we want to do in focusing on prevention, longevity and healthspan."

Healthspan reflects years actively engaged in life, as opposed to lifespan, which might include years, even decades, lingering in a retirement home.

Their focus, Dr. Goetz said, will be on improving treatment effectiveness, reducing side effects, and encouraging patients to feel that their unique differences are going to be understood, and that those differences are actually going to motivate tailored approaches to improve their outcomes – precision medicine.

HonorHealth leadership encouraging

Michael Gordon, M.D., FASCO, Chief Medical Officer of the Research Institute, agreed, saying: "Nik and Laura are here to accelerate transformative care by taking advantage of new advances; to ensure that we can all live our best lives for as long as possible."

"So much of medicine is directed toward treating the disease after it has already started to harm patients. But what if you could identify what we call 'pre-disease!' " said Dr. Gordon, using the example of finding a genomic biomarker that could identify blood clots and even break them up in the bloodstream before they could cause a stroke.

Sunil Sharma, M.D., MBA, FACP, Director of the Institute's Center for Translational Science, said, "I am so looking forward to the guidance and sensitivity to patients' needs that Dr. Goetz will bring to our enterprises. I am very enthusiastic about how she will contribute to precision medicine and our goal of creating new methods of early disease detection, and even disease interception, stopping the disease before debilitating symptoms can even develop." ■

HonorHealth collaborations with the ASU John Shufeldt School of Medicine and Medical Engineering expected to dramatically increase

When the first class joins in the summer of 2026, the ASU John Shufeldt School of Medicine and Medical Engineering will solidify the HonorHealth system as its primary clinical affiliate, providing ASU students with hands-on training experience at HonorHealth hospitals and other medical facilities, improving health outcomes in Arizona communities, and ensuring a high standard of clinical excellence.

For ASU researchers, this affiliation means the opportunity to draw on a vast patient population, while physicians and scientists at HonorHealth Research Institute develop “next-generation research” by tapping into the ASU’s highly regarded faculty, globally recognized innovation culture, and the university’s advanced computer infrastructure.

“As our research portfolio grows — particularly in genomics, proteomics, and AI-driven analytics — the need for scalable computational capacity becomes essential,” said Chad Adams, MPH, AVP, and Chief Operating Officer for the HonorHealth Research Institute. “Our affiliations with ASU are deepening, and the projects underway are positioning our Institute for a significant leap forward in research capability.”

Spurred by the Research Institute’s investment in developing its Center for Translational Science, projects already are underway in cancer, children’s research, behavioral health and individual patient health assessments.

“What we are building with HonorHealth Research Institute is something Arizona has never had before — a medical school where physician-engineers are educated inside a living research ecosystem, which is patient-focused and committed to our community,” said Sarah “Holly” Hollingsworth Lisanby, M.D., DLFAPA, founding dean of the ASU John Shufeldt School of Medicine and Medical Engineering.

“Beginning with our inaugural class in summer 2026, every student will be trained not just to treat patients, but to advance the science and technology that makes treatment better for generations to come,” said Dr. Lisanby, who also is an internationally renowned psychiatrist and innovator of neuromodulation technologies. ■



Sarah “Holly” Hollingsworth Lisanby, M.D.

Here are snapshots of some of the collaborations in the works:

■ **Justin Moser, M.D., is an associate clinical investigator in the Cancer Research Division of HonorHealth Research Institute, and an Associate Research Professor at ASU. Dr. Moser specializes in a rare cancer that starts in the pigment, or coloration, of the eye known as uveal or ocular melanoma. He is working with Jia Guo, Ph.D., an Associate Professor in ASU’s School of Molecular Sciences, where he has worked on spatial proteo-transcriptomics of a potential treatment called Belzutifan.**

■ **University and Institute officials are planning how the Institute will access and integrate with ASU’s high-performance supercomputing infrastructure. This is expected to be an especial boon to Nicholas J. Schork, Ph.D., an international authority on human longevity and health maintenance, who last year joined the Institute as Research Director of Longevity, Prevention and Interception. Dr. Schork is working to bring the largest genetics and genomics database to bear in discovering new ways to understand human health.**

■ **One of the Institute’s investigator-initiated clinical trials represents one of the Institute’s largest data-generation efforts to date and will rely on ASU analysis of more than 3,000 biological samples collected over the course of the study.**

■ **Institute researchers also are using ASU supercomputing to analyze genomic data, focusing on individual disease prevention and health.**

Interventional Neuropsychiatric Research is an initial research collaboration between the Research Institute and ASU

Dr. Lysianne Beynel is first recruit

Among the most anticipated of collaborations between HonorHealth Research Institute and Arizona State University centers on Behavioral Health.

One of the first new hires in this research space is Lysianne Beynel, Ph.D., who later this year will head the Research Institute’s new Interventional Neuropsychiatric Research Program.

Dr. Beynel specializes in Transcranial Magnetic Stimulation (TMS), a brain stimulation technique for patients suffering from psychiatric disorders, such as depression, who don’t respond to anti-depressants or psychotherapy.

Originally from Bordeaux, France, Dr. Beynel has built up her expertise as she moved from an internship in the Berenson-Allen Center for Non-Invasive Brain Stimulation at Harvard University, to her post-doctoral studies and advanced research at Duke University, to specialized research at the National Institutes of Mental Health, and now to HonorHealth.

Dr. Beynel follows mentor to Arizona

It was at Duke that she met her mentor, Sarah Hollingsworth “Holly” Lisanby, Ph.D., an internationally renowned psychiatrist and innovator of neuromodulation technologies, who now is the founding dean of ASU’s new School of Medicine and Medical Engineering, which will open later in 2026 on the downtown Phoenix biomedical campus.

After Duke, where she remains a professor emeritus, Dr. Lisanby became director of the Division of Translational Research at the NIH’s National Institute of Mental Health (NIMH). At NIH, Lisanby founded and directed the NIMH Noninvasive Neuromodulation Unit (Lisanby Lab), a clinical translational research laboratory, specializing in the development of innovative brain stimulation tools to measure and modulate neuroplasticity to improve mental health.

As she followed in her mentor footsteps from Duke to NIH to HonorHealth, Dr. Beynel has perused her own specialized research in brain stimulation.

In the Lisanby Lab at NIH, Dr. Beynel advanced research into TMS, a non-invasive technique that uses magnetic fields to induce electrical currents in the



Lysianne Beynel, Ph.D.

brain. These currents can modulate neuronal activity and regulate brain regions impacted by psychiatric disorders, such as the dorsal-lateral prefrontal cortex.

Dr. Beynel aims to improve TMS efficacy through two complementary approaches:

■ First, she proposes to administer TMS concurrently with psychotherapy, with the goal of engaging the targeted neural network during stimulation and thus to enhance therapeutic effects. She recently demonstrated the feasibility of this approach and its efficacy in a meta-analysis.

■ Second, Dr. Beynel also wants to keep exploring the integration of TMS with real-time fMRI (functional Magnetic Resonance Imaging) neurofeedback, which will allow researchers to observe brain activity while it is being magnetically stimulated, and to apply TMS only when the brain is in an optimal functional state.

More specifically she aims to apply this second technique to patients with post-traumatic stress disorders or anxiety disorders, conditions often associated with dysregulation of the amygdala, an almond-shaped cluster of neurons located deep within the brain that, when threatened, governs the “fight or flight” emotional responses. By using information from functional connectivity, this approach will allow to indirectly modulate the activity of the amygdala, a deep brain region that is not directly accessible with TMS.

Research Institute advantages

A huge advantage in moving to HonorHealth Research Institute, Dr. Beynel said, is the ability to test her research with a larger and more diverse array of people seeking help: “What I value the most about HonorHealth is having access to patient populations.”

At the Research Institute, she has three main goals:

■ Optimize patient care by exploring new ideas and new approaches to better and more quickly help patients.

■ Teach other researchers and clinicians how to use TMS and how to analyze fMRI data so that more researchers can use fMRI rather than scalp measurement.

■ Raise awareness and remove the stigmas surrounding mental health and new treatments, such as using psychedelics to more rapidly address aspects of depression.

“Brain circuitry changes over time,” Dr. Beynel said. “The longer you wait, the longer it takes to feel better, and the less change there is of recovery.” ■

Brain stroke victims chances for recovery improves thanks to data-driven medical care

Treatments are being guided by more than 1 million data points amassed in recent years as part of a Research Institute stroke analysis program known as HALO

More patients are surviving and recovering from the most common and severe form of brain stroke thanks to data-driven treatment methods based on the amassing of more than 1 million variables in an HonorHealth Research Institute program known as HALO, which stands for HonorHealth Acute neuroLogical Outcome.

Ischemic stroke, as opposed to bleeding caused by blunt force trauma, occurs when a blood vessel supplying oxygen to the brain is obstructed because of a blood clot — typically formed in the heart or an artery in the neck. Such blockages, responsible for 87% of all strokes, often result in permanent disability or death.

“I think HALO may be the most comprehensive stroke database in the world,” said Shashvat Desai, M.D., a specialist in vascular and interventional neurology, describing the HALO stroke registry.

Each HonorHealth stroke case produces more than 330 clinical, imaging, and administrative data points that cover everything from age, sex, ethnicity and occupation to how the patient was evaluated, diagnosed, managed, and eventually discharged. Such data has been collected about more than 3,000 HonorHealth stroke patients over the past three years, leading to more than 1 million recorded variables.

“HALO was started because — over the past decade — brain stroke treatment has undergone a dramatic transformation from a *diagnosable* disease to a *highly treatable* disease,” Dr. Desai said. “With this amazing transformation there was, of course, a need for robust bookkeeping; to develop a database where we can monitor and track how patients are doing... how new treatments are affecting stroke care, and how we can improve.”

HALO integrates data across four perspectives: scientific advances, quality improvements, collaboration and innovation.

Most blood clots cleared quickly

About one of every eight of the more than 800 stroke patients treated annually at HonorHealth centers undergo a procedure called mechanical thrombectomy, a minimally invasive procedure that uses suction tools and stents to reopen blocked blood vessels.

One measure of success is if a blockage can be cleared is a so-called “first pass” of these tools in the first 30 minutes of starting the procedure. Time is critical, as more brain cells die the longer an area of the brain is deprived of oxygen. Dr. Desai said HonorHealth completes this “first pass” clearance in a majority of such operations.

This procedure is crucial to minimize brain damage and improve the chances of patients regaining independent function after a stroke, said Dr. Desai, who presented his initial HALO findings last month at the 11th European Stroke Organization Conference 2025 in Helsinki, Finland.

Much of this data will be increasingly beneficial in an era of Artificial Intelligence, he said.

Helping prevent secondary strokes

“Data is the new gold rush in many ways. We can mine it and create new knowledge leading to new treatments. This helps us remain competitive in research but also improve the quality of care for HonorHealth patients,” said Dr. Desai, noting that HALO data already is helping prevent secondary strokes, which happen to about 20 percent of all patients.

Programs similar to HALO are being developed at major stroke centers around the world, and Dr. Desai is working to ensure that the data they produce can be shared, producing better outcomes for patients.

“We hope this serves as a strong foundation to improve our ability to conduct clinical trials,” he said, “which eventually translates to better treatments for patients.” ■

Shashvat Desai, M.D.



Ashutosh Jadhav, M.D., Ph.D.

Stroke patient is first in Arizona to receive new treatment to clear blocked blood vessels in the brain

A stroke patient at HonorHealth Research Institute is the first in Arizona to receive a new investigational treatment that targets platelets — rather than traditional clotting proteins — to help reopen blocked blood vessels in the brain.

The drug, BB-031, represents the first new stroke medication in nearly 30 years. Stroke symptoms can include sudden weakness, difficulty speaking, confusion, vision loss, or loss of balance. Stroke is the fourth leading cause of death in the United States, claiming more than 160,000 lives each year, and remains the nation’s leading cause of long-term disability among adults.

As part of a national clinical trial, HonorHealth Research Institute is one of only a handful of sites to offer this novel therapy, and the only site in Arizona.

“We’ve been without an alternative for a long time,” said Ashutosh Jadhav, M.D., Ph.D., HonorHealth’s Medical Director of both Stroke Services and Endovascular Neurosurgery. “There is a great deal of excitement that we may be able to expand our tool kit and give every patient the best chance possible. This represents a completely new approach to treating ischemic stroke.”

Option beyond current treatments

There are two major types of strokes:

- Hemorrhagic stroke: caused by bleeding in the brain.
- Ischemic stroke: caused by a blocked blood vessel. This is the most common type of stroke, affecting 85 percent of stroke patients.

The clinical trial called RAISE (**R**ecanalization in **A**cute **I**schemic **S**troke), focuses on ischemic stroke, a medical emergency where every minute counts.

The first patient at HonorHealth received the study drug after being found ineligible under these current standard therapies:

- A clot-dissolving medication, which must be given within 4.5 hours of symptom onset.
- A mechanical thrombectomy, a catheter-based procedure generally performed within 24 hours at specialized centers.

“Many patients arrive too late or have medical conditions that prevent them from receiving the existing treatments,” Dr. Jadhav said. “That’s why expanding options is so critical.”

How the new drug works

Developed by Basking Biosciences Inc., BB-031 is an RNA aptamer designed to inhibit von Willebrand Factor (vWF) — a key protein involved in platelet adhesion. By targeting this pathway, the drug may extend the treatment window and increase the number of patients who can safely receive therapy.

Aptamers are small, lab-designed molecules made from nucleic acids. Compared with antibodies, they are more stable, easier to produce, and do not require animal-based manufacturing. The platform also allows for a rapid reversal agent should excess bleeding occur.

“This opens the door for patients who may not have any other options,” said Dr. Jadhav. “The potential advantages are tremendous.”

Patients across the HonorHealth network with suspected stroke are transported to the Bob Bové Neuroscience Institute at HonorHealth Scottsdale Osborn Medical Center for advanced care and research opportunities. ■



Anne Hatch, D.O.

First patient in the world treated for muscle-weakness disease

Myasthenia Gravis most often attacks young women and older men, often leaving them unable to properly care for themselves

The first patient enrolled in a planned international clinical trial has been treated at HonorHealth Research Institute with a new type of immune therapy for those with a rare muscle-weakness disease known as Myasthenia Gravis.

In an odd medical twist, this auto-immune disease — in which antibodies interfere with the connection between nerves and muscles — most often strikes young women in their 20s and 30s, and older men in their 60s and 70s, though it can affect others.

The disease affects fewer than 200 in every 1 million people. Symptoms range from droopy eyelids, problems chewing, general fatigue, difficulty swallowing and even problems breathing when the muscles surrounding the lungs are weakened. Patients often find it difficult to conduct basic hygiene and grooming; things as simple as brushing their teeth, taking a shower and getting dressed.

“It’s kind of exciting,” said Anne Hatch, D.O., Principal Investigator for this international clinical trial, which will consider the safety and effectiveness of a drug called Remibrutinib, manufactured by Novartis Pharmaceuticals of Basel, Switzerland.

Dr. Hatch explained that, for the first time in this disease, the drug will target B cells, a type of white blood cell that makes antibodies. While usually an important part of the body’s immune system, she said, in Myasthenia Gravis malfunctioning white blood cells interfere with the messaging between the nervous system and muscles in what is known as the neuro-muscular-junction pathway.

“This new drug blocks a different part of the pathway than before,” Dr. Hatch said. “Hopefully, with this new mechanism of action, the patient’s symptoms will improve.”

Aiming for FDA approval

If successful, this Phase III clinical trial could lead to the drug being approved by the FDA for Myasthenia Gravis. The treatment has already been approved for some types of cancer.

Trial participants must be 18-75 years old with a confirmed diagnosis of Myasthenia Gravis. They must be able to breathe without a respirator and be able to safely swallow the oral medication. A patient’s progress could be followed for up to 5 years. ■

“This new drug blocks a different part of the pathway than before. Hopefully, with this new mechanism of action, the patient’s symptoms will improve.”

— ANNE HATCH, D.O.

Kristin Miriam Diaz La Madrid



Woman breathes easier after enrolling in clinical trial

Growing up in the Philippines of southeast Asia, Kristin Miriam Diaz La Madrid was diagnosed with an auto-immune disease known as Myasthenia Gravis (MG) when she was only 9 years old, a very young age for developing this debilitating neurological disorder.

This rare muscle-weakness disease — in which antibodies interfere with the connection between nerves and muscles — most often strikes young women in their 20s and 30s, and older men in their 60s and 70s, though it can affect others. The disease affects fewer than 200 in every 1 million people.

“My initial symptoms were difficulty in walking, chewing and swallowing, changing clothes, brushing my hair, having blurred vision and slurred speech,” said Kristin, 31, who now lives with family in Mesa, Ariz. “Through the years, I have developed difficulty in breathing, weakness when the weather is hot, and having grip weakness with my hands.”

While living in the Philippines, she was prescribed Pyrodistigmine Bromide and Mestinon three times a day to control

her symptoms and disease progression.

Following research conducted by her family, Kristin was enrolled in April in an international clinical trial at HonorHealth Research Institute, which is evaluating the safety and effectiveness of a drug called Remibrutinib, manufactured by Novartis Pharmaceuticals of Basel, Switzerland. She is under the care of Principal Investigator Anne Hatch, D.O., who works in the Research Institute’s Neuroscience Research Division.

Since starting the trial, Kristin has experienced some improvement in her breathing, now with a capacity of up to 80%, from 60%. She is now able to walk on a treadmill and do Zumba exercise.

“I’m hoping for a cure, and to be cured, of Myasthenia Gravis so I could live a productive life,” said Kristin, who neither works nor attends school.

If successful, this Phase III clinical trial could lead to the drug being approved by the FDA for MG. The treatment has already been approved for some types of cancer.

Institute is first of 50 sites worldwide to treat patients in new melanoma clinical study

New therapy uses modified immune-system T cells to target PRAME, a peptide commonly found in difficult-to-treat melanoma skin cancer tumors

HonorHealth Research Institute treated the first patient in a 50-site international clinical trial that will test a new type of therapy aimed at difficult-to-treat melanoma, an aggressive type of skin cancer.

This new therapy targets PRAME, a peptide commonly found in melanoma tumors. The therapy uses the patient's own manufactured and enhanced immune system T cells to create billions of new patient specific cells to attack melanoma, even after the cancer has spread to other parts of the body.

"We are excited about the potential of this new type of cellular therapy," said Justin Moser, M.D., an associate clinical investigator in the Research Institute's Cancer Research Division.

"Patients with advanced stage melanoma that has spread to other parts of the body, and who have exhausted other possibilities, might now have new options, giving them and their loved ones renewed hope," said Dr. Moser, who also is an associate research professor at Arizona State University's new School of Medicine and Medical Engineering.

Called SUPRAME, this clinical trial of nearly 360 patients will test an engineered T cell receptor (TCR), T cell therapy, called ACTengine[®] designed by Immutics, a clinical-stage biotechnology company located in Houston, Texas. Also known as IMA203 TCR-T, this is the world's first TCR therapeutic targeting PRAME.



Justin Moser, M.D.

T cells from the patient's blood are removed and re-engineered in a laboratory to target the specific patient's cancer cells that contain PRAME. These new customized cells are then multiplied by the billions and infused back into the patient to hunt down and destroy the cancer. The therapy requires only one dose.

Results published in *Nature Medicine*

This Phase III trial is based on a Phase I trial of patients in which the engineered cells were shown to be safe and effective, with minimal side effects. Initial study results were published April 9 in the scientific journal *Nature Medicine*:

"Here we report a non-prespecified interim analysis of IMA203, an autologous TCR T product targeting a PRAME-derived peptide presented by HLA-A*02:01, in a first-in-human dose-escalation trial (NCT03686124)," according to the published paper, "Autologous T cell therapy for PRAME+ advanced solid tumors in HLA-A*02+ patients: a phase 1 trial."

Results from the early phase clinical trial showed a response rate of 54%, with a median duration of response of more than 1 year. A subgroup of 12 out of 26 patients showed a more than 50% reduction of tumor lesions and a median progression free survival of 13.4 months.

In addition, unlike some cell therapies, the turn-around time for manufacturing the ACTengine modified T cells and returning them to the patient is only approximately 2 weeks.

"We are tremendously grateful for all the dedicated professionals at clinical institutions in the United States and Europe who support us in our mission of delivering the power of T cells to patients with cancer," said Cedrik Britten, Immutics' Chief Medical Officer. ■

New technique uses ultrasound to activate drugs targeting pancreatic cancer

Method helps drugs become active at the site of the tumor, while reducing potential toxicity throughout the rest of the body

In a quest for ever-more-effective treatments for pancreatic cancer, HonorHealth Research Institute is combining the power of targeted drugs and ultra-sound technology to shrink the tumors of patients whose cancer has not spread to other parts of the body but is too advanced to allow safe surgical removal.

Acoustic Cluster Therapy (ACT) uses tiny clusters of gas bubbles and oil droplets that make up PS101, which is combined with a modified version of FOLFIRINOX, an FDA-approved combination of four drugs: leucovorin calcium (folinic acid), fluorouracil, irinotecan hydrochloride, and oxaliplatin.

In this relatively small pilot clinical trial, HonorHealth Research Institute was the first site in the world to administer this treatment in pancreatic cancer.

The agent PS101 is infused into the bloodstream. High-frequency ultrasound is then applied in and around the pancreas tumor, causing PS101 to form larger ACT bubbles that are temporarily lodged in capillaries, the ultra-small blood vessels throughout the body where the fuel of oxygen is exchanged for the waste of carbon dioxide.

The high-frequency ultrasound is followed by low-frequency ultrasound, which induces oscillation of the lodged ACT bubbles, enhancing the delivery of the chemotherapy directly to the cancer. The gas bubbles eventually dissolve into the blood.

"This process increases the amount of drug that reaches the tumor, increasing its effectiveness, without increasing the amount of drug affecting the rest of the body, where it potentially could cause systemic toxicity," said Erkut Borazanci, M.D., medical director of the Research Institute's Oncology Research Division. "If the patient's tumor shrinks, these patients then might be candidates for surgical removal of the tumor, which gives them the best chance for survival."

Dr. Borazanci is quick to praise the teamwork of the oncology researchers working with an interventional radiology team, the personnel who run the ultra-sound and imaging equipment; ultra-sonographers and radiographers: "It's not just a simple infusion. You're getting all these other doctors and technicians involved to help the patients. I really appreciate what they're doing."

On average, pancreatic cancer patients with locally advanced tumors have a modest survival of only 14-20 months, said Dr. Borazanci, who nevertheless is hopeful for his patients in this study, which follows the success treating liver cancer that started from colorectal cancer using ACT, which is made by EXACT Therapeutics based in Oslo, Norway.

Institute personnel (Erin Pierce, Matt Siegel, Katie Morgan, S. Danielle Legrand and Dr. Borazanci) along with the makers of ACT presented their study with a poster abstract presentation at a scientific conference, "Advances in Pancreatic Cancer Research — Emerging Science Driving Transformative Solutions," Sept. 28-Oct. 1 in Boston, sponsored by the American Association for Cancer Research (AACR).

"This cutting-edge and innovative treatment approach immediately stood out to us, as it reflects the level of care and innovation we strive to deliver at HonorHealth Research Institute," said Erin Pierce, MSN, APRN, FNP-C, a Nurse Practitioner and Associate Clinical Investigator, who is the lead author of the abstract. "It offers real potential to provide patients with borderline and locally advanced pancreatic cancer a path to qualify for a curative surgery." ■



From left to right: Denisha Hamblin; Crystle Gloria; Maria Arvayo; Dr. Jason Low; Dr. Borazanci; Katie Morgan; Bryan Hopp; Erin Pierce

Patient at HonorHealth Research Institute is first in the world to receive new immunotherapy against solid tumors

Anti-cancer drug developed by Trutino Biosciences uses the body's own immune system to fight cancer; engineered to have minimum side effects



Justin Moser, M.D.

For the first time, a patient has received a new type of drug, ODC-IL2, designed to enhance the immune system's ability to target and destroy solid tumors in adults while minimizing toxicity throughout the body, according to HonorHealth Research Institute and Trutino Biosciences.

This first-in-human clinical trial marks a pivotal milestone in the clinical development of Trutino's proprietary On-Demand Cytokine (ODC) platform, in which Interleukin 2 (IL-2) activates a patient's own tumor-killing T cells locally, while striving to minimize systemic off-target cytokine toxicity.

This Phase 1/1b clinical trial at HonorHealth Research Institute is based on preclinical studies that demonstrated robust anti-tumor activity in murine syngeneic tumor models with improved safety, compared to traditional IL-2 therapies.

Justin Moser, M.D., an associate clinical investigator in the Oncology Research Division of HonorHealth Research Institute, said his team plans to treat at least 20 patients with ODC-IL2, while up to 50 patients will be treated internationally.

"We are, without question, privileged to be the first in the world to offer this potentially revolutionary new drug to our patients. Historically, IL-2 could provide long term benefit to some patients with cancer but was extremely toxic. The ability to offer our patients the potential benefits of IL-2 without the side effects is very exciting," said Dr. Moser, who also is a board member of the Arizona Skin Cancer Foundation.

If successful in demonstrating the safety and effectiveness of this drug at various doses, a larger Phase II clinical trial will further evaluate its potential.

"The dosing of our first patient is a critical milestone in the advancement of ODC-IL2," said Dr. Phillip Kim, Ph.D., MBA, the CEO and President of Trutino Biosciences. "Our On-Demand Cytokine platform represents a new paradigm in cytokine therapies, and we are optimistic about its potential to address significant unmet needs in oncology. We are grateful to the patients, clinical teams, and collaborators who make this progress possible."

Eligible patients are being enrolled internationally, and the first patient was successfully dosed on Jan. 6, 2025. Preliminary reports indicate no significant drug-related adverse events. ■

Lower doses of common steroid shows 'no differences' in treating newly diagnosed myeloma

HonorHealth Research Institute investigators urge lowering doses of dexamethasone in treatment of this blood cancer

Dexamethasone, a steroid commonly used in the treatment of myeloma, a blood cancer, could be given to patients at a lower dose than in historic treatments with no loss of effect, according to a new study and an editorial by HonorHealth Research Institute investigators published in the journal *Blood*.

In the past, effective doses of dexamethasone were as high as 40 mg, 4 days a week. Contemporary treatment regimens have shown that 40 mg just once a week is just as effective, and with less toxicity.

In a national study of 541 patients titled *Dexamethasone dose intensity does not impact outcomes in newly diagnosed multiple myeloma: a secondary SWOG analysis*, researchers concluded that "there were no differences" in outcome between patients who received 40 mg to 60 mg weekly versus those who required dose reductions and even discontinuation of dexamethasone. This evidence suggests that dosing below 40 mg weekly does not decrease efficacy, but does produce major benefits for quality of life.

"Given the many toxicities and unclear benefits of dexamethasone in the era of modern treatment regimens, dexamethasone dose reduction during (newly diagnosed multiple myeloma) NDMM induction warrants further prospective studies," the paper concluded. Importantly, the paper said, patients receiving lower doses were "associated with lower mortality than higher doses."

In an accompanying editorial in *Blood*, investigators at HonorHealth Research Institute concluded, "dexamethasone-sparing strategies can reduce steroid-induced toxicity and allow for patients to continue long-term myeloma treatment with improved quality of life."

Susan Harding, a Nurse Practitioner at HonorHealth Research Institute who specializes in Hematology and Oncology — and one of the authors of the editorial, *Down with Dex!* — said, "Although the exact dosing and role of dexamethasone in contemporary treatment of multiple myeloma needs clearer definition, this



Joseph Mikhael, M.D.

Susan Harding,
MSN, APRN, NP-C

study suggests that further reduction of this agent and its toxicity are possible. It is time to go down with dex!"

Steroids, used alone and in combination with other drugs, have played an important role in the treatment of myeloma, and dexamethasone is the most commonly prescribed corticosteroid for this cancer.

However, steroids cause a wide range of side effects, affecting nearly every system of the body, including: insomnia, sexual dysfunction, personality changes and mood swings, hyperactivity, dizziness, headaches, difficulty concentrating, weakened muscles and bones, weight gain and blurred vision.

"Minimizing these side effects and managing them quickly can help contribute to the successful treatment of myeloma," said the other author of the editorial, Joseph Mikhael, M.D., director of Myeloma Research and Consultant Hematologist at HonorHealth Research Institute, and Chief Medical Officer for the International Myeloma Foundation. He also is a Professor at the Translational Genomics Research Institute. ■



Patient with advanced skin cancer in remission for more than a year following clinical trial

There are nearly 40,000 U.S. cases of cutaneous squamous cell carcinoma each year that advance to stages that are difficult to treat and life-threatening

A common and unsightly skin cancer that can turn deadly has been undetectable for more than a year in a patient treated with a new targeted immune therapy in a clinical trial at HonorHealth Research Institute.

Wayne Futch, 73, of Phoenix, developed a type of skin cancer known as cutaneous squamous cell carcinoma, following a career in pool-maintenance that regularly exposed him to hours of strong sunlight. Despite wearing sunscreen and protective clothing, Mr. Futch's face was disfigured by skin cancer. He lost his right eye following more than 60 radiation treatments that ultimately failed to rid him of the malignancy.

"It disfigured my face," Mr. Futch said of the cancer and radiation treatment. "I knew I needed to take some different action, because the radiation was not getting rid of it."

It was then that Mr. Futch said he learned of a new clinical trial for his type of skin cancer at HonorHealth Research Institute. He enrolled in the clinical trial in September 2023. Mr. Futch was infused with a new type of drug that substantially shrank his tumor in just 8 weeks and left him with no detectable cancer after 12 weeks.

"I haven't had any cancer since (the trial). I don't have any pain, other than the nerve damage done by the radiation," said Mr. Futch, who after high school hitchhiked to Phoenix from southern California, married and has remained in the Valley of the Sun ever since. "I feel confident that if (the cancer) ever comes back again, that they'll detect it and get rid of it, because they did it once already."

The investigational drug is an engineered derivative of the long-proven, but highly toxic, anti-cancer drug known as Interleukin-2 (IL-2). The drug is designed to remain inactive in the periphery until it selectively releases fully potent IL-2 in the tumor microenvironment to stimulate anti-tumor immunity with reduced toxicity.

The clinical trial (NCT05660384) is evaluating the investigational drug as a monotherapy and in combination with pembrolizumab in patients with immunotherapy sensitive advanced or metastatic solid tumors who have failed standard of care treatment, including checkpoint inhibitor therapy.

"This drug is designed to be inactive upon infusion and only activated within the tumor, which means that we have the potential to get all of the benefit of IL-2 with much better safety," said Justin Moser, M.D., an associate clinical investigator in HonorHealth Research Institute's Cancer Research Division and Associate Research Professor at Arizona State University School of Medicine and Advanced Medical Engineering. "We are overjoyed with the benefit that this patient received, especially given the very limited treatment options available for patients with immunotherapy refractory squamous cell carcinoma."

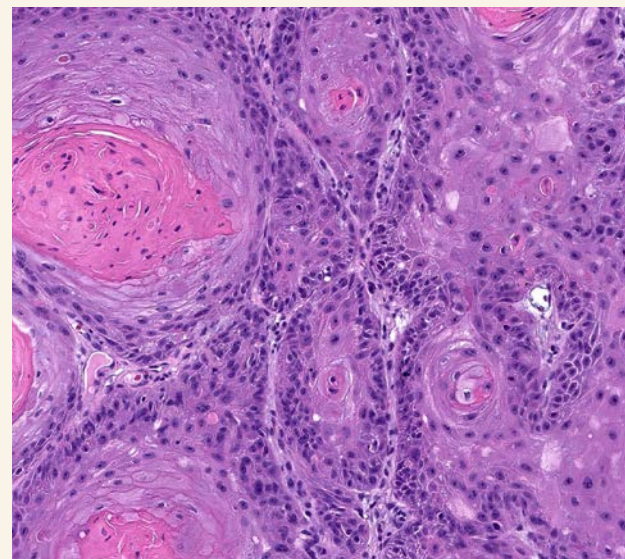
1 million Americans diagnosed annually

Cutaneous squamous cell carcinoma is a cancer of the outer layer of skin, though it can also develop in other parts of the body. More than 1 million U.S. patients across all stages are diagnosed annually, and nearly 7,000 succumb to this disease when it becomes advanced or metastatic.

When detected early, cases of cutaneous squamous cell cancer can be treated effectively with surgery, radiation, curettage (scraping), or cryotherapy (freezing with liquid nitrogen). For cases that progress to advanced disease, systemic therapy is required. Checkpoint inhibitors are approved for these cases, but for patients whose disease fails this treatment, there are currently no consistently effective therapies.

Incidence tripled in three decades

The incidence of cutaneous squamous cell carcinoma has tripled over the past three decades, owing to an aging population and cumulative sun damage, but also because of improved methods of skin cancer screening and detection. ■



Erkut Borazanci, M.D.

Sunil Sharma, M.D.

Institute presents new findings in quest to conquer aggressive pancreatic cancer

Promising results of RMC-6236, in combination with other drug treatments, presented at annual meeting of AACR

HonorHealth Research Institute's new downtown Phoenix laboratory has produced its first study, centered on a promising new treatment for pancreatic cancer, one of the most aggressive and difficult to treat of all malignancies.

Study results were presented April 29 in Chicago at the annual meeting of the 58,000-member American Association for Cancer Research (AACR), the world's largest professional organization of cancer investigators, caregivers and patient advocates.

Study findings indicate that a newly discovered drug, RMC-6236, also known as Daraxonrasib, is a powerful inhibitor of RAS (including KRAS, NRAS and HRAS). These are commonly mutated cancer-causing genes that drive the formation of many types of tumors, including pancreatic cancer. This study evaluated the effectiveness of RMC-6236 in patient-derived pancreatic tumors harboring KRAS mutations.

New: Center for Translational Science

According to this initial study to emerge from the Research Institute's new Center for Translational Science laboratory, RMC-6236, when combined with other proven pancreatic cancer drugs, is a promising new agent against RAS, particularly KRASG12X. Existing KRASG12C inhibitors are unable to target other mutations and often have the unintended result of making patient tumors drug resistant.

"The fibrotic tumor microenvironment in pancreatic cancer exacerbates therapy

resistance, and combining RMC-6236 with other therapies could overcome both intrinsic and acquired resistances," according to Taylor Bargenquast, a clinical research technician and lead author of the study abstract, which she presented at AACR.

"These results demonstrate the efficacy of RMC-6236 when combined with other therapeutic agents in a pancreatic cancer model — a three dimensional model of pancreatic cancer cells derived from patient biopsies," said Sunil Sharma, M.D., director of the Center for Translational Science and the senior author of the study abstract.

"The combination of RMC-6236 with standard chemotherapy and targeted therapies enhances its anti-tumor activity, suggesting a promising strategy for improving therapeutic outcomes in pancreatic cancer," said Erkut Borazanci, M.D., another of the study's authors, and medical director of the Institute's Oncology Research Division.

52,000 Americans expected to die

Pancreatic cancer is the third-leading cause of cancer-related death in the U.S., after lung and colorectal cancers, and is expected to contribute this year to the deaths of nearly 52,000 Americans.

Contributing to this study — *Evaluating the efficacy of RAS(ON) inhibitor RMC-6236 combined with chemotherapy and other targeted therapies in 3D models involving patients with KRAS-mutated pancreatic cancer* — was the Phoenix-based Translational Genomics Research Institute (TGen), part of City of Hope.

The study suggests that human clinical trials are warranted to further evaluate the safety and effectiveness of RMC-6236. ■



Jonathan Moore, M.D.



Multispecialty Research Division expands efforts to give chronic lung disease patients more options and hope

Among the most prominent research areas of the Institute's Multispecialty Research Division are those dealing with chronic lung diseases, especially Pulmonary Hypertension (PH), which is high pressure within the blood vessels of the lungs.

PH has a variety of causes, including abuse of methamphetamines. The condition is characterized by the narrowing and stiffening of blood vessels in the lungs. This condition builds up pressure, making it more difficult for the right side of the heart to push blood through the lungs so it can be oxygenated, returned to the left side of the heart, and pumped to the rest of the body, enabling oxygen to be combined with nutrients to fuel the muscles and other critical bodily functions.

PH is an incurable and progressive disease that over time leads to worsening right-heart failure, often accompanied by significant disability, and death. Some forms of PH, such as those associated with left-heart disease or interstitial lung disease, currently have no FDA-approved treatments, which is why the clinical trials provided by the Institute are so important to making progress with these patients.

Based at HonorHealth's John C. Lincoln Medical Center in north-central Phoenix, the PH studies and other chronic lung disease programs are overseen by Jonathan Moore, M.D., a pulmonologist and critical care physician.

Pulmonary Rehabilitation expanding

The programs include clinical trials, and a growing pulmonary rehabilitation service for those with a variety of chronic lung diseases, including patients with PH, chronic obstructive pulmonary disease (COPD), those suffering the lingering effects of COVID (often referred to as long-COVID), and others.

Currently serving more than 40 patients at John C. Lincoln, the classes — which include exercise, education, nutritional support, and even social-work counseling — are expected to expand later in 2026 to HonorHealth's Scottsdale Shea Medical Center. The program includes 36 sessions aimed at improving exercise and breathing capacities.

Pulmonary Center of Excellence planned

In addition, later in 2026, Dr. Moore and others will pursue an accreditation and application process with the Pulmonary Hypertension Association (PHA), making the Institute a national Center of Excellence for the study of chronic lung diseases. PHA is comprised of physicians, patients, patient advocates and others looking to advance pulmonary science.

Clinical Trials give patients new hope

Among the studies planned to provide patients with state-of-the-art treatments are new clinical trials, including one sponsored by Tectonic Therapeutic, a biotechnology company based in Watertown, Mass., that focuses on proteins and antibodies that modulate the activity of G-Protein Coupled Receptors (GPCRs). The company is a spinoff of Harvard Medical School.

"Our drugs are designed to lower the blood pressure in the lungs, which in turn lessens the pressure on the right side of the heart. They're not cures. If you stop taking them, the blood pressure will go back up," Dr. Moore said.

"The right side of the heart can accommodate that pressure to a certain extent," he said. "But once it exceeds a critical threshold, the right side of the heart will start to dilate and fail. As it fails, it can no longer generate pressure, and the patient starts to suffer the symptoms of heart failure." ■



Rahul Doshi, M.D.

Institute performs first-of-its-kind procedure in the West to treat heart's atrial fibrillation

By now, many have seen the commercials with NBA legend Kareem Abdul-Jabbar explaining the importance of seeing your doctor if you suspect you are suffering from atrial fibrillation, a condition that each year contributes to the death of nearly 158,000 Americans.

But what can doctors do about this progressively worsening condition, often called AFib, in which the heart can start beating rapidly out of control, at an irregular pace, potentially leading to heart failure or stroke?

At HonorHealth Research Institute, Cardiac Electrophysiologist Rahul Doshi, M.D., performed one of the nation's first procedures to control AFib using a new type of catheter that can deliver two different types of electrical energy — or ablation — to destroy the damaged part of the heart that is triggering the abnormal heartbeats. It does this without harming any of the heart's healthy tissue. Destroying the damaged tissue helps restore the heart's regular rhythm.

As part of a clinical trial, Dr. Doshi used an Abbott TactiFlex pulse field ablation (PFA) catheter — threaded from a leg through large blood vessels to the heart — to deliver a precision high-

amplitude, microsecond-pulsed electric field, scarring the damaged part of the heart without the use of extreme heat or cold. Using the same catheter, he also was able to easily switch to radiofrequency ablation, which has traditionally been used to treat AFib by scarring the damaged part of the heart using heat.

"This catheter ablation system allows for the safety and efficacy of pulse field ablation while maintaining both the precision and flexibility of point-by-point ablation, and the flexibility to switch between pulse field ablation and traditional radiofrequency ablation," said Dr. Doshi, a specialist in the Research Institute's Cardiovascular Research Division.

"This provides us with an opportunity to expand the use of this ablation energy across a much broader group of patients and capitalize on better outcomes," he said. "Through clinical trials, we remain committed to advancing cutting edge technology and innovative therapy to improve patient care."

What are the symptoms of AFib

Symptomatic episodes of AFib may involve heart palpitations, fainting, lightheadedness, loss of consciousness, shortness of breath or chest pain.

The procedure, performed by Dr. Doshi at HonorHealth's Scottsdale Osborn Medical Center, is the first in the Western U.S. among the clinical trial's 32 sites nationwide. The purpose of this study is to show that the new technology is well tolerated and able to treat atrial fibrillation.

According to the U.S. Centers for Disease Control and Prevention, AFib affects more than 10 million Americans, or nearly 4.5% of the adult U.S. population, leading annually to more than 450,000 hospitalizations and contributing to nearly 158,000 deaths. ■



HonorHealth Research Institute announces appointment of Dr. Tabitha Moe as Medical Director of its Cardiovascular Research Division

Dr. Tabitha Moe has accepted the role of Medical Director of the Cardiovascular Research Division for the HonorHealth Research Institute. In this capacity, Dr. Moe will lead the division's collaborative, multidisciplinary

and interdisciplinary research activities.

"We are excited at the vision that Dr. Moe brings to the Cardiovascular Research Division, and look forward to cross-divisional collaborative research opportunities in the future," noted Dr. Michael Gordon, Chief Medical Officer of the Research Institute. "The ability to build and grow our Cardiovascular Research activities toward the betterment of health for all of our patients is a critical goal of the Institute."

In reflecting on HonorHealth's new relationship with the Arizona State University John Shufeldt School of Medicine and Medical Engineering, Dr. Nikhil Iyengar, Program Director of HonorHealth's Cardiovascular Diseases Fellowship Program, said, "The goal of every research institution should be to augment future therapies for patients and create an infrastructure to ensure that future generations of physicians can implement and benefit from this task. Dr. Moe has the skills and is uniquely situated to advance research now and in the future."

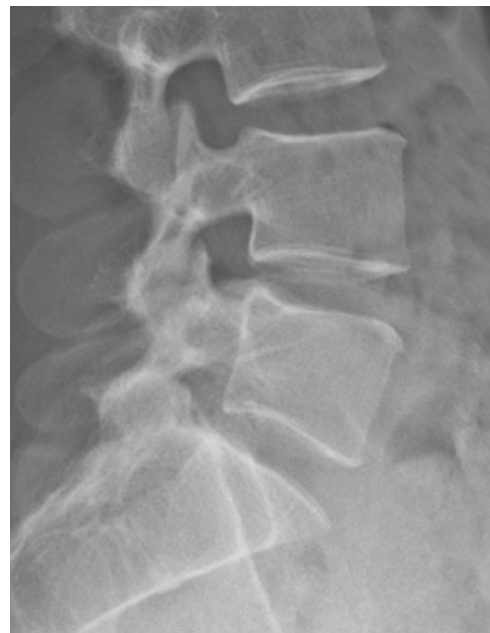
Dr. Moe, the Assistant Program Director for the HonorHealth Cardiovascular Diseases Fellowship Program, is an Associate Professor of Medicine at ASU's new medical school, which will open in downtown Phoenix in 2026. She also holds faculty appointments at the University of Arizona College of Medicine - Phoenix.

A board-certified cardiologist, and one of only five board-certified Adult Congenital Cardiologists in Arizona, Dr. Moe's clinical practice and scholarship span adult congenital heart disease, heart failure, pulmonary hypertension, and preventive cardiology.

She currently leads or co-leads seven active clinical trials across heart failure, pulmonary hypertension, and primary prevention/lipidology at the Institute. She has more than 25 years of experience in clinical trials, and has produced more than 50 peer-reviewed scientific publications.

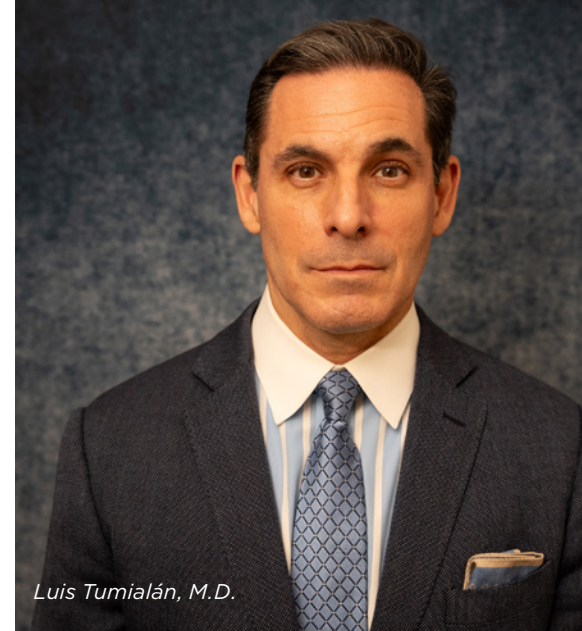
Dr. Moe's primary research interests include: cardiovascular disease in pregnancy, single-ventricle physiology and its long-term sequelae, and pulmonary arterial hypertension. She regularly presents at regional and national conferences and is dedicated to trainee education, mentorship, and advancing patient-centered, evidence-based cardiology.

Research Institute patient receives new type of lumbar spine disc repair, alleviating pain and restoring range of motion



For the first time in Arizona, and only the second time in the U.S., HonorHealth Research Institute treated a patient with a new type of lumbar spine disc repair that provides immediate relief of pain and maintains the patient's full range of motion.

Called a PerQdisc, this replacement system is designed to substitute the leaking jelly cushion material (the nucleus pulposus) in the center of our disc spaces, in between the building blocks of our spines. Like a flat tire, when there is a tear in the annulus and the jelly leaks out, the disc depressurizes and a person can experience pain.



Luis Tumialán, M.D.

For years, physicians have either fused the vertebrae, limiting motion, or inserted a substitute artificial disc, which is a more extensive surgery. Insertion of a PerQdisc is a new less-invasive procedure that preserves the outer part of the disc, preserves motion, maintains mobility, and restores functionality while preventing any further deterioration of the spine.

"If the loss of jelly results in a deflated disc and causes pain, why can't we just pressurize the jelly again and alleviate the pain?" asked Luis Tumialán, M.D., an ASU School of Medicine and Medical Engineering neurosurgeon who specializes in spine and neurosurgery as part of the HonorHealth Research Institute's Neuroscience Research Division. "The answer has to be yes!"

Addresses pain in the lower back

For now, the procedure is limited to the space between the L2 and L3 vertebrae, between the L3 and L4 vertebrae, and between the L4 and L5 vertebrae; all three in the lower lumbar region, which are the most common parts of the spine for such deterioration to occur.

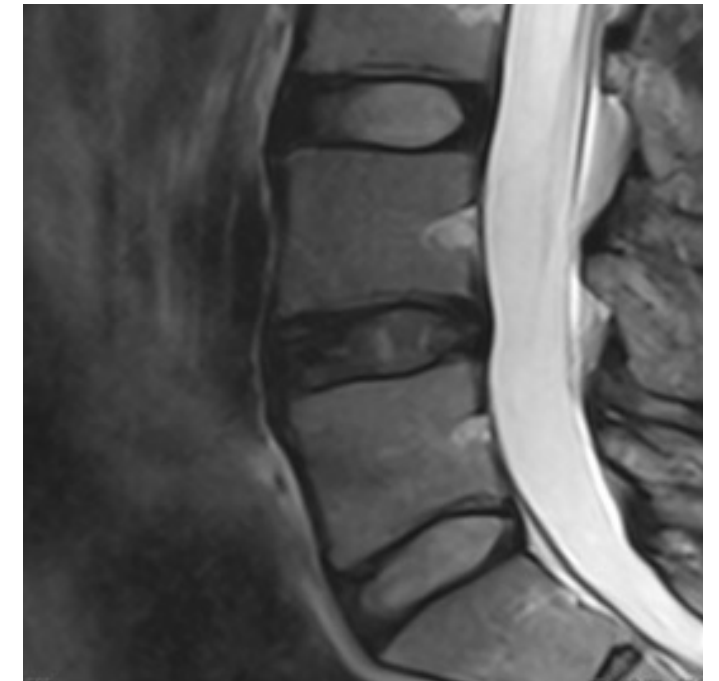
Using a metallic straw about 6mm in diameter, Dr. Tumialán takes out the original jelly material and fills it back up with a type of small balloon filled with a silicone substitute: "What we're doing is we are using silicone to re-pressurize the disc and in doing so we alleviate the mechanical compression of the disc and decrease the pain."

The simplicity of this one-visit procedure, which allows the patient to go home and resume normal activities the same day, begs the question of why it hasn't been done previously.

Dr. Tumialán said physicians have advocated for such a procedure for decades, but only now has a San Antonio, Texas, manufacturer, Spinal Stabilization Technologies, been able to perfect the right materials and technique to make it work.

Procedure for middle-aged patients

The procedure is intended for those in their middle years, those 25 to 50 years old. Those younger than 25 generally don't experience much deterioration, and



those older than 50 may experience so much deterioration that this procedure is no longer available to them.

"After the age of 25, any of us can start to degenerate in our discs. We need to capture those patients early, the patients who we would ordinarily say, look, there's nothing we can do for you right now. Come back when you are worse," said Dr. Tumialán, who has studied the procedure as it has been developed over the past five years in Europe and elsewhere. "With the PerQdisc, there's something that we can do for them now."

In the case of Dr. Tumialán's first patient, a middle-aged woman from Los Angeles, she was considering getting married, but the disc pain she was experiencing was giving her second thoughts about her engagement.

"It was weighing on her," the doctor said. "Something that's under-recognized is the degree to which chronic pain can cause depression."

Dr. Tumialán said his job was made easier because his patient is an engineer and has a sophisticated understanding of the strength of materials and how they can weaken over time.

"She grasped how a weakened element of a structure (the disc) can detrimentally impact the structural integrity of the entire spine and how that can lead to pain. So, this procedure resonated with her, once I explained the logic behind it," he said.

The patient was treated in November under the Institute's DISCPAIN1 clinical trial. She has returned for observation and is doing great, Dr. Tumialán said: "She is also now engaged and preparing to embark on a whole new chapter of her life." ■

For more about HonorHealth Research Institute clinical trials: call 833-354-6667; or email clinicaltrials@HonorHealth.com.

HonorHealth Research Institute's Chief Medical Officer is recognized by the world's leading organization for cancer doctors

Michael S. Gordon, M.D., Chief Medical Officer of HonorHealth Research Institute, was named a Fellow of the American Society of Clinical Oncology (FASCO), the world's leading professional organization for physicians and oncology professionals caring for people with cancer.

"The title of FASCO is a recognition bestowed upon ASCO members who have shown extraordinary dedication for their voluntary efforts that benefit the Society, the specialty of oncology, and most importantly, the patients whom we serve," according to a letter signed by Clifford A. Hudis, M.D., FASCO, ASCO's Chief Executive Officer.

Mark Slater, Ph.D., Vice President of Research for HonorHealth and CEO of HonorHealth Research Institute, said that without question Dr. Gordon deserves ASCO's FASCO recognition.

"Dr. Gordon is a powerhouse of innovation whose impact on the quality of research practiced at our Research Institute is beyond measure," Dr. Slater said. "His FASCO recognition reflects the high degree of caring and compassion for our patients, which he imbues in all of our advanced clinical trials. Plus, he is a highly effective ambassador for the Institute as we navigate our multitude of biomedical science collaborations.

"Dr. Gordon's remarkable record of accomplishment in advancing new therapies provides hope for cancer patients, reflects his scientific and clinical leadership, and embodies an Institute model of the innovative physician-scientist," Dr. Slater said. "Dr. Gordon is a recognized leader in the field, attracting patients and collaborators from across the globe to HonorHealth Research Institute to advance tomorrow's cancer innovations today."

Dr. Gordon has served as the Chief Medical Officer of the HonorHealth Research Institute since 2021, helping supervise the Research Institute's five major divisions governing Cancer, Cardiovascular Disease, Bariatrics/GI, Neuroscience and Multispecialty research.

He also is the Research Director of the Multispecialty Research Division, which includes pulmonology, rheumatology, infectious disease (including COVID-19), and other emerging areas of biomedical research. And, as

part of the medical staff at HonorHealth since 2000, Dr. Gordon has served on numerous committees servicing the Research Institute's Clinical Trials Programs.

Dr. Gordon said he was honored and humbled to have been selected as an ASCO Fellow and to have received the vaunted designation of FASCO.

"It is indeed a privilege to be mentioned among some of the nation's and world's leading oncologists," said Dr. Gordon. "I have to believe that this recognition is due in large part to the amazing body of work compiled by all of my extremely talented colleagues at HonorHealth Research Institute."

Dr. Gordon's record of leadership

Dr. Gordon is a respected innovator and leader in a variety of biomedical research areas and has helped develop a number of new cancer treatments. He is a board certified specialist in both solid and blood cancers, approaching his work from a unique perspective: not only as a physician, but also as a scientist and as patient, having been diagnosed and treated for an early stage pancreatic cancer in 2021. His overarching goals are to promote not only the best science but also provide the best care for patients.

He also has served in key leadership capacities for the Arizona Center for Cancer Care, the University of Arizona Cancer Center and the University of Arizona College of Medicine-Phoenix.

Prior to moving to Arizona, Dr. Gordon worked and trained at major institutions, including: Indiana University School of Medicine, Cornell University Medical College, Memorial Sloan-Kettering Cancer Center, and the University of Chicago Hospital and Clinics.

Dr. Gordon's new FASCO title will be recognized May 31 at the 2025 annual meeting of ASCO at McCormick Place Convention Center in Chicago.

Founded in 1964 and based in Alexandria, Vir., ASCO represents a network of more than 50,000 oncology professionals worldwide dedicated to providing the highest-quality resources in education, policy, the pioneering of clinical research, and advancing care for patients with cancer. ■



Chief Medical Officer outlines where the Institute has been, and what's ahead for the next 20 years

For Chief Medical Officer Michael Gordon, M.D., FASCO, 2025 was a great year, witnessing both a substantial enrollment of new patients, and seeing an increase in the number of collaborations across the HonorHealth Research Institute's five research divisions (Oncology, Cardiovascular, Bariatric/GI, Neuroscience and Multispecialty).

"I think that, when we look back in 20 years, we're going to see 2025, and our 20-year anniversary, as what I would call a transformative year," Dr. Gordon said. "I think it's about opening doors to the future, based upon the decisions that we made and the confluence of activities."

Chief among those activities was the confirmation of the relationship between HonorHealth and the new John Shufeldt School of Medicine and Medical Engineering, ASU's new medical school in downtown Phoenix, which Dr. Gordon calls the fulfillment of a promise HonorHealth leaders made a quarter century ago when he first arrived at the Research Institute.

Back when HonorHealth was still Scottsdale Healthcare, many physicians — especially at the Scottsdale Shea Medical Center campus — wanted the healthcare organization to model itself after academic institutions so that its activities could more easily align with research at universities, he recalled.

The institution already was the Phoenix-area extension of the Arizona Cancer Center located primarily at the U of A's Tucson campus. As such, Scottsdale Healthcare was the site of the Arizona Cancer Center - Greater Phoenix Area and posted incremental improvements over time, playing a crucial role in the development of the Molecular Profiling Institute and the International Genomics Consortium, which later became the Translational Genomics Research Institute (TGen).

"We were ahead of the game in terms of how community oncologists tried to understand the biology of tumors in order to improve treatment options," said Dr. Gordon, adding that the skin cancer prevention efforts launched by the late David Alberts, M.D., a former director of the Arizona Cancer Center, were headquartered on the Institute's Shea campus.

Coining a phrase: 'Nouveau Academica'

"I think it took us 15 years to get our feet firmly planted on the ground as we developed research and multiple disciplines," Dr. Gordon said. "I had coined the phrase that we were 'Nouveau Academica' — nouveau because we didn't yet have a true academic partner."

The evolution of the new ASU medical school, expected to open later in 2026, and its relationship with HonorHealth, he said, "represents the quenching of a thirst that has beset us in the desert for so many years, and now situates HonorHealth as a juggernaut, transforming patient care through clinical investigations and outstanding research."

He added: "The novelty of medical engineering: understanding the biology of how doctors are going to think and behave and care for patients in the next generation, becomes so crucial to ensuring that doctors do not render themselves pieces of computers by burying their heads into their laptops and electronic medical records."

Instead, new technologies will assist physicians to provide better care for their patients.

'A dynamic bridge' with ASU

"This opportunity is going to catapult us into the next generation," he said. "This past year, we recognized that, as a partner with ASU, we needed to invest in the infrastructure that would form a dynamic bridge between HonorHealth and ASU."

It was not enough to hope that progress could be made simply by doctors and researchers banging into each other accidentally: "There had to be intent to develop collaborations."

As a result, the Institute's new Center for Translational Science will — like grains of sand that nudge oysters into making pearls — help advance the Institute's partnership with ASU, which for 10 years in a row has been named America's top college for innovation. The partnership will, Dr. Gordon predicted, become the envy of the nation.

This, in turn, will help draw the best and brightest to the Institute's already outstanding faculty, especially since positions are not singularly dependent on winning grants to continue. Dr. Gordon praised the HonorHealth Foundation for providing much of the funding needed for the Institute's investigator-initiated research.

"This is another way that we will distinguish our program," he said. "It's an investment in the people who want and choose to focus on making a difference for the patient's we serve." ■

Bariatric/GI Research Division is part of a first-in-human clinical trial of a new device to help patients suffering from GERD

Gastroesophageal reflux disease (GERD), which affects 1 in 5 people in the U.S., is a condition in which stomach acid repeatedly flows back up into the esophagus. This backwash, known as acid reflux, can irritate the lining of the esophagus. Left untreated, it can lead to esophageal cancer.

This condition is caused by a malfunction of either of two esophageal sphincters — one at the top, and one at the bottom, of the esophagus. Risk factors include age and obesity. If these ring-shaped muscles are too weak, they allow stomach acid to flow back up to the esophagus and into the mouth.

GERD is most commonly treated with medication. But when medications no longer work, GERD has been treated with a 1- to 3-hour surgery called a fundoplication, in which the top of the stomach is wrapped around the bottom of the esophagus, reinforcing the lower esophageal sphincter to keep stomach acid from backing up into the esophagus. Common long-term side effects, however, include difficulty swallowing, bloated belly and difficulty vomiting.

HonorHealth Research Institute's Bariatric/GI Research Division has been part of a first-in-human clinical trial that used a new, less-invasive device called the "Omega Cuff". Shaped like the Greek letter Ω, this device also wraps around the lower esophageal sphincter, but not all the way; only about two-thirds of the way. This allows food to pass smoothly into the stomach while preventing acid from flowing back into the esophagus.



James Swain, M.D.

No need to alter anatomy

"It's a device that stops reflux without having to manipulate the stomach and potentially cause secondary problems. We don't have to alter the anatomy of the stomach," said James Swain, M.D., medical director of the Bariatric/GI Research Division. "It's an innovative way to stop reflux, and hopefully it will lead to a finding that there are fewer side effects using this device than fundoplication."

The cuff is placed laparoscopically on top of the lower esophageal sphincter muscle, just above the stomach.

"It reinforces it, but it doesn't go all the way around, so it's a little more forgiving," said Dr. Swain, adding, "The cuff offers GERD patients a new option for relief beyond medications or lifestyle changes, providing hope for millions affected by this condition."

Early studies have shown patients with the Omega Cuff reporting significant relief from GERD symptoms and improved quality of life, with some no longer taking acid-reflux medication and enjoying a greater variety of foods again. ■

Advantages Over Traditional Treatments

Less Invasive: The laparoscopic procedure used for the Omega Cuff does not require extensive surgery and is designed to minimize complications associated with traditional GERD surgeries, such as Nissen fundoplication.

Preserves Normal Function: The device allows for normal swallowing and does not interfere with the digestive process, which is a common issue with other surgical options.

Long-term Solution: As a permanent implant, the Omega Cuff aims to provide lasting relief from GERD symptoms without the need for ongoing medication.

HonorHealth Research Institute accelerates impactful medical innovation development with HonorHealth Innovations

HonorHealth Research Institute is recognized as a premiere international clinical testing destination site for innovative drugs, medical devices and technologies advanced by an international array of leading biomedical companies and organizations. In addition to this critical role in evaluating promising innovations, the Institute also has become the partner of choice for medical innovation development.

Through HonorHealth Innovations (H2I), a recent spinoff of the Institute, innovative concepts and technologies arising within the HonorHealth Research Institute or externally with partners, can find the early-stage development support that is critical to nurturing these advances to realization of their full potential and commercialization.

Together, the Research Institute and H2I provide a platform for accelerating impactful medical innovation across the full cycle: from discovery, through development and commercialization, to generate resource returns that support further discovery and care at HonorHealth.

"We are making medical innovation and development a bigger part of our Institute's activities in a way that will not only benefit our patients right here and now, but also will benefit the Institute and thereby a broader spectrum of the community in the future," said Mark Slater, Ph.D., CEO of the Institute and Vice President of Research for the broader HonorHealth network. "This work significantly extends the Research Institute's impact."

Dr. Avancha leads HonorHealth Innovations

Helping lead the charge in this endeavor is Kiran Avancha, Ph.D., who previously was the Institute's Chief Operating Officer. He now is Chief Innovation Officer for the entire HonorHealth network at HonorHealth Innovations.

"We are trying to nudge HonorHealth Research Institute into a new era; from being primarily a service-providing Institute to being more of an innovation focused Institute," said Dr. Avancha, who helps direct HonorHealth's Innovation Venture Fund.

A look at some of the technologies that have come out of this initiative highlights the incredible value of accelerating medical innovation to provide impactful options for patients and their healthcare providers:



Kiran Avancha, Ph.D.

- A novel neuroscience diagnostic for early detection of neurological disorders.
- A new immunotherapy molecule for the treatment of colorectal cancer, which in the U.S. is the second deadliest cancer after lung cancer, and is now the leading cause of cancer death in young adults.
- Bioengineering student entrepreneurs have developed innovative phototherapy technologies for common complications in newborns and hand-held E.E.G. devices for real time brain function assessment on location through this collaboration.
- Remarkably, Dr. Avancha and colleagues have advanced a small molecule and successfully showed its effectiveness in treating a rare childhood genetic disease, MCT8 deficiency, also known as Allan-Herndon-Dudley Syndrome (AHDS).

Although AHDS was first described in 1944 and became one of the first syndromes to undergo genetic mapping in 1990, there previously had been no treatment for this disorder, which results in brain defects in boys during pregnancy. A clinical trial under special FDA approval has successfully treated a mother carrying twin male fetuses with MCT8 deficiency. These boys are now more than 2 years old and are healthy and developing normally. These truly amazing results emphasize the value of medical innovation in providing realistic hope for even the most challenging illnesses.

In addition to providing new hope and options for patients, these collaborations also help with the formation and development of new companies, elevating and expanding our Arizona bioscience sector. This, Dr. Slater notes, is HonorHealth Research Institute's innovation strategy: to create and facilitate a full, self-perpetuating, collaborative, research and innovation development cycle that benefits investigators and innovators, HonorHealth and partners, companies and our economy, and most of all patients, locally and globally. ■



Fourth Annual HonorHealth Research Institute Symposium

Celebrating a Legacy of Research

The HonorHealth Research Institute marked its 20th anniversary during its fourth annual symposium in Scottsdale, Arizona. This milestone event celebrated not only another year of collaboration and inspiration, but also two decades of advancing innovative care for communities around the world.

The symposium reflected the dedication of the Institute's researchers and staff, the generosity of its donors, and a shared commitment to advancing research that connects and impacts lives. The program featured keynote remarks, presentations highlighting ongoing work across the Institute, and opportunities to foster new collaborations and partnerships.

Keynote speaker Hannah Edwards, a researcher specializing in inter-professional teams and leadership, delivered insightful remarks on the importance of effective teamwork, cultivating a healthy workplace culture, and its direct impact on patient outcomes. Additional presenters included a grateful patient, Holly Lisanby, M.D., founding dean of the ASU School of Medicine and Advanced Medical Engineering, as well as recognition of outstanding staff through awards.

As the Institute reflects on 20 years of progress, the symposium serves as both a celebration of past achievements and a catalyst for future innovation. With a continued focus on collaboration, discovery, and patient-centered impact, HonorHealth Research Institute remains committed to advancing the next generation of research and care. ■



2025 Statistics for HonorHealth Research Institute

In 2025, the HonorHealth Research Institute delivered transformative advancements in research and innovation, enhancing patient care. By integrating the latest scientific discoveries with clinical excellence, the Research Institute achieved remarkable successes, driving better outcomes while elevating the standard of care.

NUMBER OF
CLINICAL TRIALS

322

NEW CLINICAL
TRIALS
INITIATED

77

RESEARCH INSTITUTE
CLINIC PATIENT VISITS



4,838

THE NUMBER
OF ACTIVE
INVESTIGATORS

139

FDA NOVEL
THERAPY
APPROVALS

3

NUMBER OF
PUBLICATIONS

172

Cardiovascular Research

Participants in the last 5 Years | 831

Clinical Trials | 58

New Clinical Trials Initiated | 21

HRI Clinic Patient Visits | 980

FDA Novel Therapy Approvals | 1

Active Investigators | 57

Publications | 37

Multispecialty Research

Participants in the last 5 Years | 111

Clinical Trials | 14

New Clinical Trials Initiated | 4

HRI Clinic Patient Visits | 103

Active Investigators | 10

Cancer Research

Participants in the last 5 Years | 3230

Clinical Trials | 176

New Clinical Trials Initiated | 35

HRI Clinic Patient Visits | 4,029

FDA Novel Therapy Approvals | 1

Active Investigators | 23

Publications | 87

Neuroscience Research

Participants in the last 5 Years | 418

Clinical Trials | 64

New Clinical Trials Initiated | 13

HRI Clinic Patient Visits | 485

FDA Novel Therapy Approvals | 1

Active Investigators | 35

Publications | 48

Bariatrics/GI Research

Participants in the last 5 Years | 284

Clinical Trials | 10

New Clinical Trials Initiated | 4

HRI Clinic Patient Visits | 246

Active Investigators | 14

International team led by HonorHealth Research Institute and U of A develop 3D chip platform for laboratory testing in cancer research

Cancer research laboratory tests can now be done using micro-physiological systems mimicking the human physiology, allowing greater predictive accuracy for human patient responses, thanks to an international scientific team led by HonorHealth Research Institute and the University of Arizona.

Their findings from a simulated radiation treatment for lung cancer are summarized in a paper published in the scientific journal *iScience* entitled: *A human 3D culture-organ-on-chip platform for investigating the tumor microenvironment response to ionizing radiation*.

"We can be more precise and accurate than we've been. And eventually, better understand some of the mechanisms that drive the complex human tumor microenvironment (TME) interactions and how to guide treatment," said Frederic Zenhausern, Ph.D., MBA, senior author of the paper, a senior scientist at HonorHealth Research Institute, and professor and director of the

Center for Applied NanoBioscience and Medicine at the University of Arizona College of Medicine - Phoenix.

"Studying complex human responses ... requires advanced in vitro (laboratory) systems," according to the paper. "Here, we present the Apparatus to Simulate Tumor Environment and Reproduce Organs in an Interactive and Dynamic System (ASTEROIDS), which integrates three-dimensional cell culture with organ-on-chip technology. These results demonstrate that ASTEROIDS faithfully reproduces TME-level organization and responses, establishing its feasibility as a pre-clinical human model."

While the simulation described in the paper focused on lung cancer, the technology can be applied to any solid tumor, Dr. Zenhausern said: "This platform will play a significant role moving forward."

This technology aligns with new FDA policies, under the FDA Modernization Act 2.0, to reduce

animal testing in the development of advanced molecular therapies and other drugs with more human-relevant methods using multiple approaches, including AI-based computational models, organ-on-chip, and organoid testing in laboratory settings (so-called New Approach Methodologies or NAMs).

ASTEROIDS technology is also under joint product development with Japan's Mitsubishi Gas Chemical Company Inc. for future commercialization to improve the efficacy of translating the results of pre-clinical models to human clinical outcomes.

Characterization of ASTEROIDS

The 3D nature of ASTEROIDS combines cell culture and organ-on-chip technology, supports long-term cell viability and tissue barrier integrity, enables cell-to-cell communication and tumor-immune crosstalk, and provides a human-relevant platform for therapy testing.

"This TME provides a unique biological landscape, including multiple properties through its three-dimensional cellular morphology, the biochemical signaling governing the interaction of its multi-cellular components, and the mechanical forces occurring during tumor initiation, progression, invasion, and dissemination," the paper said.

The three-dimensional design enables the ASTEROIDS platform to act in a spatial organization that closely mimics the actions and reactions of a living organism, according to the paper: "We showed that the ASTEROIDS allowed the mechanical and biochemical interactions between the different cells, thus recapitulating key tissue hallmarks commonly described with in vivo (living cell) observations."

National and international contributors

Led by Dr. Zenhausern and U of A Assistant Professor Dr. Jerome Lacombe, this multi-institutional collaboration integrates expertise from radiobiologists, oncologists and engineers to deliver an interdisciplinary advance in medicine.

Support for this study came from: National Cancer Institute (NCI), National Institute of Allergy and Infectious Diseases (NIAID), St. Joseph's Foundation, Helios Education Foundation, Valley Research Partnership Program, and the HonorHealth Research Institute Rare Cancer Initiative supported by Desert Mountain CARE.

Additional support was provided by Mitsubishi Gas Chemical Company.

Also contributing to this study's research were researchers at University of Geneva, Georgetown University, St. Joseph's Hospital and Medical Center, and Mitsubishi Gas Chemical Company. ■



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