Dear Friends,

If asked to define the theme this edition of TGen Today conveys, I would say the art of humanity. The individuals profiled, the research, interactions, and purpose behind each story illustrates this through a mix of loss, determination, and driving one’s destiny. The stories—their stories—define not only where the Institute is today, but also where we are going, carried forward by the momentum created through past achievements and medical advances.

If you follow the celebrity featured on our cover, you will know that not even Lynda Carter Altman (a.k.a. Wonder Woman) could save her husband, Robert, from his fateful diagnosis. Lynda’s is a story about honoring a beloved spouse and partner, of making a difference for future generations faced with similar health challenges, and a deep belief that TGen and City of Hope can help accomplish both.

You’ll also read about Rick Stanton’s cancer journey which personifies how research and patient care are changing constantly. The shifts, some subtle, a few seismic, redefine with each advancement, the impact of precision medicine and how patients benefit. An advanced prostate cancer patient, Rick’s story finds him at the center of a TGen-led study designed to help aggregate his personal cancer data and perform subsequent analyses that could lead to a treatment that will save his life.

For Rick and TGen, the future is now.

You need look no further than the work of Drs. Cristian Tomasetti and Kamel Lahouel to believe greater advances are on the horizon.

Newly recruited to TGen and City of Hope, the pair bring a passion for merging mathematical modeling, statistical methods and machine learning to transform genomic data into new advances toward disease detection and a deeper understanding of a patient’s response to treatment. These highly sought mathematicians are making a name for themselves in the field of applied science, as their skills provide solutions in many areas of biomedical research.

Our feature on Dr. Vinodh Narayanan takes you inside the man’s heart and reveals a personal perspective on how the power of genomics can change lives for the better, and how he and his colleagues help those in search of much-needed answers when they visit TGen’s Center for Rare Childhood Disorders.

These are but a few of the stories that frame TGen’s current efforts as we explore new avenues of research and treatment breakthroughs.

In closing, I will say that I have never felt more optimistic that our work as part of the City of Hope enterprise will expand the boundaries of what’s possible in research and treatment. Beyond that, however, lies a far simpler truth: we could not have done it without your continued belief in TGen and your support of our work in precision medicine.

I hope you enjoy the read.

Best,

Erin Massey
Chief Development Officer, TGen Foundation
Vice President of Philanthropy, City of Hope
Power to the “PEOPLES”

TGen study offers path for late-stage cancer patients to leverage their own health data to guide their care

Rick Stanton thinks it might be the little things that count.

At a June virtual meeting of the cancer hackathon he’s participating in, he’s asking about a very little thing called an organoid. A lab-grown ball of his own prostate tumor cells, about as wide across as a strand or two of hair.

At the meeting, Payel Satterjee, Ph.D., explains how she and her team craft organoids from tumor cells, putting them against a carefully curated list of drugs to find promising “hits” against a patient’s unique cancer.

Maybe, Stanton thinks, an organoid could start bearing the brunt of what he’s had to endure for four years and counting. He’s an advanced prostate cancer patient, yes, but he’s also a surfer and a guitar player. His latest bout of chemotherapy, however, has left his fingers tingling too badly to play.

And now one of his doctors is talking about the possibilities of yet another new drug.

“But I’d rather have you test it,” he says, his lively face taking up center square in the Zoom discussion, “then, you know, then have me test it.”

“—then you go through the whole thing, yes, I understand that,” Satterjee, chief scientist at SEngine Precision Medicine, finishes Stanton’s sentence from her own square.

They laugh together. “Yeah,” Stanton says. “So it’s not just, oh wow, it didn’t work. Sorry, bud.”

In many ways, Stanton is like a lot of cancer patients. The endless blood draws, biopsies, scans, genetic testing, clinical trials, all of it creating a tidal wave of data that describes his unique cancer journey. He is nearing the end of the national guidelines for prostate cancer care, without a lasting response for his stage IV cancer.

But in another way Stanton is unique: he is the sole patient participant in TGen’s PEOPLES Protocol, a new study that shows how patients can direct their own tidal waves of data to guide their future treatment.

The protocol (PEOPLES stands for Patient Engagements, Operational Practices, and Laboratory Environment Standardization) allows Stanton to access his cancer data and request new analyses with the help of TGen researchers.

Stanton meets weekly to talk through how best to organize and present his data that have been collected so far. The group, led by TGen’s Nicholas Schork, Ph.D., also discusses new tests and analyses that could expand the range of treatment possibilities for Stanton.

The PEOPLES protocol was inspired in part by a growing “right to try” movement among patients, who advocate for access to experimental medicines or procedures for conditions not treatable by currently available drugs. Under the rubric of “compassionate care,” for instance, the U.S. Food and Drug Administration now offers an Expanded Access Program for patients and their doctors to apply for some of these treatments.

If these programs exist for drugs, thought Schork, why not for data?

“For many people who are in the later stages of their cancer, the treatment guidelines no longer apply,” he says. “If we’re OK with people trying drugs at end of life, we should at the very least be OK with them trying to explore their data for information that may help lead to a drug.”

Schork, along with his TGen colleagues Laura Goetz, M.D. and Schork, along with his TGen colleagues Laura Goetz, M.D.
McClisyke feels comfortable with data from his work as an e-commerce and tech marketing executive. But at this point in his career, McClisyke says, "I've been trained to understand my cancer and fight it, and it seems like I'm supposed to learn Ph.D. material in a few weeks just to know what's in this stuff means." Stanton says of McClisyke.

There's no recent precedent for how best to share research data with a patient, which is another reason why the PEOPLEs protocol is so important, says Schork. Genetic sequencing of tumors, for example, has become more frequent for patients. McClisyke is quick to point out that the idea that patients should have access to and control over their health data is nothing new. The PEOPLEs protocol, he says, shows that it's possible for a patient to gain access to their own data in a safe and ethical way.

For Stanton, the protocol has given him a path forward just as he reaches the end of standard care. "What the PEOPLEs protocol and TGen have enabled is a suite of analyses and multiple shots on goal that could save my life," he says. Not all patients will want to take Stanton's route of sharing his data in hackathons or drawing up battle maps. But the TGen team hopes that their protocol will help empower patients as they discuss their options with their healthcare team.

"Physicians may feel threatened when patients want to explore experimental testing strategies, because they (the physicians) often don't know how to order, let alone interpret, such tests," Dr. Kalpas and I want to encourage our colleagues to embrace such efforts and see the PEOPLEs protocol as a first step in normalizing this process for medical professionals," Goetz said.

"We don't doubt that there are patients out there who are perfectly willing to put this decision-making in their physicians' hands and trust them completely," Schork says. "But in an era of big data and the right to try, why not make an effort and say it's OK to cater to the interests of patients that would go to a little bit deeper?"
There’s a lot of power in attaching a name to a child’s disorder. Many families spend years in search of an answer, going from specialist to specialist without ever gaining an understanding of what is happening to their child. Since its inception, the center has enrolled more than 2000 participants and analyzed the genetics or genomics of more than 700 families.

“Even though it might not lead immediately to treatment, there’s a lot of power in attaching a name to a child’s disorder. Many families spend years in search of an answer, going from specialist to specialist without ever gaining an understanding of what is happening to their child,” he says. Following diagnosis, the focus shifts to understanding the biology behind the disorder and searching for specific treatments. Narayanan began a clinical research partnership with TGen in 2005. At the time, he worked at St. Joseph’s Hospital in Phoenix, where his Neurogenetics Clinic was based. He wanted to create a neurogenetics collaboration to probe the real nature of the pediatric neurological disorders at the genetic level, and it eventually morphed into TGen’s Center for Rare Childhood Disorders,” he says, which TGen launched in 2012 with Narayanan as its founding medical director. Narayanan moved his research lab to TGen in the summer of 2014.

“Diagnostic odyssey,” a process of moving through a dark cave, feeling the walls serve as daily reminders. The photographs of patient families he has seen are a catalogue of curiosity and compassion. While the complicated puzzle of patient families he has worked with over the years that cover his walls serve as daily reminders. "I am the luckiest pediatrician in the world," he announces. “I learn something new every day.”
On television, Lynda Carter Altman played Wonder Woman, a resilient, resourceful superhero. Through the iconic role, her likeness became synonymous with strength. Throughout the years, her representation has endured as a celebrated symbol of these characteristics.

In real life, she isn’t all that different from her legendary on-screen persona. When Robert, her husband of 37 years, became ill with myelofibrosis—a malfunction of cells in the bone marrow—Carter Altman was every bit as resilient, resourceful, and strong. She threw herself into understanding the disorder, what treatment options were available, and what lay ahead.

TGen and City of Hope were there to help. Tragically, Altman passed away last year when his myelofibrosis transformed into secondary acute myeloid leukemia (sAML), a rare blood cancer with limited treatment options. As his caregiver, Carter Altman experienced first-hand the unique challenges associated with treating and managing a rare cancer and the need for improved timely diagnosis and treatment.

In September, she provided a philanthropic gift to accelerate critical research at TGen and City of Hope (COH) aimed at helping patients and families experiencing diagnosis and treatment challenges of this blood disorder.

Families Can’t Wait

Lynda Carter Altman helping fund and advocate for blood cancer research

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A Book with Two Pages

Because people often show no symptoms in the early stages of myelofibrosis, doctors initially monitor the disease. Essentially, you wait. Watch to see what happens. Test again in a few months. And so on.

When the disease eventually advances to sAML, it’s often a case of too little, too late, given existing treatment options and the medical field’s relatively limited knowledge of the mechanisms that lead to disease transformation.

“It just doesn’t make any sense to me that you watch it until it’s going to kill you,” Carter Altman says bluntly. “Then you hurry up and do something. It doesn’t make any sense to me to approach a disease, this kind of potential cancer, and then you’re just going to watch it until it turns deadly.”

To complicate matters further, Robert got sick during the COVID lockdowns. “Not being able visit the doctor in person was very frustrating,” Carter Altman elaborates. “So, I’m calling Dr. Trent to get answers.”
Early detection of disease progression—identifying the critical transition point when myelofibrosis has advanced to the deadly secondary acute myeloid leukemia (sAML)—is critical to finding effective treatments.

Now, Carter Altman’s quest for answers has transitioned to helping other families in the same situation. “It’s basically a book with two pages,” Trent says, displaying a gift for explaining complex science in accessible terms. “The first page, it’s all focused on early detection, early detection.”

Despite advances in medical research, patients and their families still lack information and options to identify the problem early, detect critical transitions of the disease, and target these transition points for a cure. Early detection of disease progression—identifying the critical transition point when myelofibrosis has advanced to the deadly sAML—is critical to finding effective treatments.

Using ultra-rapid, whole genome sequencing, TGen researchers hope to reduce the window for returning results to clinical teams from two weeks to two days.

That two-day turnaround can provide much-needed answers much faster for a patient and their loved ones, regrettably something that comes next. As Carter Altman notes, “I just want the truth, and I want it in real-time. We want a cure, of course, but in the meantime, we want to improve the quality of life and keep it from moving on to the next stage.”

For the medical teams treating patients, early detection provides a larger window for intervention.

“The second page is on therapy to prevent and eventually cure sAML,” Trent continues. The overarching goal of this program is to develop new genetic tests and initiate clinical trials with new drugs designed for the disease. As Carter Altman says, “I’ve gone from mentor to student.”

New methods of analyzing individual cells allow scientists to measure molecules like miR-142 and other gene changes even when the events are very rare. This enhances the ability to identify the disease early. Using a series of samples collected over time from the same patients spanning the period they transitioned from myelofibrosis to sAML, this research may help clinicians detect disease early.

“We generate incredible amounts of information,” Marcucci continues, “Collaborating with mathematicians as a part of our diagnostic team to create mathematical modeling increases our accuracy on knowing when and how the disease will evolve.”

This is the bench to bedside back to the bench in action. “It’s actually these mathematicians that do an extraordinary job of refining our search. While there’s an incredibly important laboratory component—you get to generate all the data—I give real credit to the fact that we can do some things now with mathematics applied to the wealth of genomic data that are extraordinary,” Trent adds.

Therapy – Finding A Silver Bullet

Caligiuri always wanted to be a physician. His specialization at the intersection of immunology and cancer resulted from a chance occurrence with a patient.

“I had an experience in medical school,” he explains. “A patient was receiving his transplanted kidney. He couldn’t make urine. It was serious. I was allowed to give him an experimental drug that reversed the rejection and allowed the kidney to make urine. It was amazing.”

For Caligiuri, the right drug at the right time for the right patient was inspiring. “At that moment, I said I want to be in transplant immunology,” he reflects. “I went into a lab to focus on curing leukemia with immune therapy. This was a perfect intersection.”

Today, he is recognized as a leading researcher in immunology, lymphoma, and leukemia. At City of Hope, he dedicates himself to developing the next generation of cancer therapies.

While TGen, led by Trent, develops the ultra-rapid genome sequencing, COH focuses on therapeutic avenues targeted to the cells that drive the transition to sAML. Most promising is a systematic, pre-clinical battery of tests necessary to advance the miR-142 inhibitor drug, CTC-412, that could replace the action of a missing signal in defective cancer cells. The human clinical trial that is planned could add years to a patient’s life.

“Molecularly, it’s basically the result of one cell misbehaving because of one or a few mutated genes that in turn wreak havoc on neighboring cells causing more genes to mutate until the disease evolves to fatal sAML,” Caligiuri explains. “We want to keep that from happening—basically returning normal gene function to the cells before the process gets out of control—allowing the patient to stay alive and not develop sAML.”

“We are looking for a silver bullet,” Cedru-MiR-142 is able to correct the lack of miR-142 and to prevent transformation in some cases successfully treat disease that has already happened altogether.”

“The cure for cancer is going to come by preventing it,” Caligiuri states, “utilizing genomic sequencing in normal individuals will someday soon identify those likely to develop cancer and precision therapeutics will prevent it from happening altogether.”

It is a wild concept to imagine: being able to know what cancers you will likely develop and begin prevention therapy before it emerges.

Marcucci’s distinguished career has been based on the belief that AML is the “prototype of how cancer and how cancer develops,” which means this research may ultimately extend the trials and treatments developed now.

As the financial cost of genomic technology falls, deployment of data-intensive, whole genome testing will inevitably become the standard of care. As this approach enters the mainstream, the companion challenge will be to deploy the tests early and rapidly. This will require increased efficiencies at every step of the process.

This work supported by Lynda Carter Altman will provide a comprehensive demonstration of how to achieve the genomics-based care for all cancer patients in the future. “Rapid genome testing is really something remarkable,” Carter Altman says. “If we can get those tests down to 2 days and do it in a way that is more cost-effective and more accessible, well, you can have an earlier diagnosis. The earlier you can treat the cancer, the better your chances of survival.”

That is a remarkable legacy for any family to leave.
Math as Medicine
Using mathematical modeling, machine learning and more to detect cancer at its earliest stages

DR. CRISTIAN TOMASETTI’S FAVORITE uncle—the one his son is named after—died very quickly from his cancer.

“At the hospital, his aunt pointed him to his uncle’s room. There, he found four people in beds. It looked at each one of them and I came out and said to her, ‘Look, this is the wrong room, he’s not here.’ And my aunt told me, oh, no, he is in there. I went back in and she told me which bed, and looking at him I then recognized him.”

Almost every cancer researcher has a personal story like this. Tomasetti acknowledges, one that provides powerful motivation for the work that they do. But Tomasetti almost wasn’t a cancer researcher.

BEFORE VESALIUS CONDUCTED THE dissections that led to his groundbreaking Renaissance volume of human anatomy, our understanding of the human body was based on animal dissections—mainly of dogs and pigs—made by Galen, a second-century Greek physician. For example, most physicians used bloodletting on their patients based on the wrong understanding of the cardiovascular system, while others believed the uterus was made up of many small compartments rather than a single cavity. Before Robert Hooke glimpsed under a microscope the peculiar square compartments within a slice of cork, the notion of a “cell” was murky. And before the genomic revolution took hold in the early 2000s, scientists were blind to much of a cell’s contents and their impacts on human health.

It’s these great leaps forward that Tomasetti considers as he and his colleagues embark on what they believe is another revolution in medicine. But instead of a scalpel or a microscope, his unique team at Translational Genomics Research Institute (TGen), part of City of Hope, is wielding the tools of mathematics.

“The era of genomic medicine gives clinicians the ability to look at the human body in a more powerful, precise way. But what it brought with that are three billion letters per copy of DNA per cell,” he adds, “which looks like a big mess,” says Tomasetti, who leads TGen’s Division of Integrated Cancer Genomics and serves as the new Director of both the Center for Cancer Prevention and Early Detection and the Division of Mathematics for Cancer Evolution and Early Detection at City of Hope.

The scientists showed that pieces of tumor DNA, circulating in the bloodstream, could help physicians decide whether follow-up chemotherapy would be right for their patients who have undergone surgery for stage II colon cancer.

Their findings are already having a significant impact, as a recent study led by Lahouel and Tomasetti demonstrates. The scientists showed that pieces of tumor DNA, circulating in the bloodstream, could help physicians decide whether follow-up chemotherapy would be right for their patients who have undergone surgery for stage II colon cancer.

They used data from patients who were already undergoing surgery, but it also helped certain patients avoid unnecessary chemotherapy—without affecting their survival. “So here is an example where sequencing data from a blood sample plus mathematics really made a big difference in physical and financial terms for the lives of these people, as half of the patients were spared chemotherapy,” Tomasetti explains.

“The team hopes to uncover similar ways to monitor and personalize cancer treatment, but they are also gearing up for a major project to improve the early detection of cancer with a simple blood test.”

When a cell sheds fragments of DNA into the bloodstream, the fragment can look different depending on whether it came from a cancer cell or a healthy cell, he explains.

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As applied mathematicians, Tomasetti and colleagues like TGen’s research assistant professor Kamel Lahouel, Ph.D., (at right in the photo) are some of the first generation of researchers to use mathematical tools to model the evolution of cancer and to predict cancer’s response to treatment.

This work is changing our “model of reality” of how cancer evolves. Tomasetti says. “Twenty years ago, we didn’t have the data to build these models, or not to the degree that we can build them today. But now that we have information on the behavior of cells and their DNA, this model has become much more precise,” Lahouel adds.

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The analysis helped identify patients who could benefit from further treatment, but it also helped certain patients avoid unnecessary chemotherapy—without affecting their survival. “So here is an example where sequencing data from a blood sample plus mathematics really made a big difference in physical and financial terms for the lives of these people, as half of the patients were spared chemotherapy,” Tomasetti explains.

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When a cell sheds fragments of DNA into the bloodstream, the fragment can look different depending on whether it came from a cancer cell or a healthy cell, he explains.
The researchers are now developing algorithms to detect and understand these differences, which could include the length of the fragments and the pattern of genetic “letters” at the end of each fragment, among other features.

In the next nine months, Tomasetti says, the team plans to screen 100,000 healthy people via a simple blood test to look for these cancer fragments that might show up long before a cancer diagnosis.

“The reason why cancer is such a terrible disease today is usually because it’s discovered late and then your options are not very good,” he explains. “But if we can have something like a blood test once a year that can find cancer at a very early stage, then your options are not very good, and then your options have gone away.”

Tomasetti says, “But suddenly mathematicians start having a power and the ability to see things that many traditionally trained M.D.’s might not.”

But he stresses that he and his colleagues “would be nowhere” without their collaborators with the clinicians and lab scientists. And Lahouel says working at TGen has given him “a lot of flexibility from the lab side.”

“SO WHAT’S A MATHEMATICIAN LIKE Tomasetti—or one like Lahouel—doing in a place like a cancer research institute?”

Tomasetti, who came to the United States from Italy, had always thought he might do something with math. “It’s kind of in my blood, in my family,” he explained. “But in Italy it can be hard to do something with it beyond teaching high school.”

He thought he might go into financial or economics mathematics, and he began his Ph.D. studying probabilistic tools applied to chaos theory. But with two children and concerns about finding a job in “pure math,” he looked for applications and found cancer research.

“When I saw that I fell in love with it,” he recalls, “because I thought this is something where I can use the tools I like to work with and may be able one day to have a real impact on the health of people.”

Lahouel grew up being 100 percent sure he was going to be an astronomer working only on theoretical problems. By the time he met Tomasetti, he was working on the theoretical side of statistical learning but the cancer applications proved too intriguing to pass up.

“A lot of time you have great mathematicians who build sophisticated shiny models, and then find a real-life problem that fits their model. Here it’s completely different,” Lahouel says. “Most of the time we start building a model, think it’s great, and then find it rarely works the first time. You learn to adapt.”

Meanwhile, the field of cancer research is in the midst of its own adaptation, still adjusting to the idea of mathematicians like Tomasetti and Lahouel leading a transformation in how studies are conceived and carried out.

“For a long time, mathematicians were brought in as statisticians, usually not involved in the design of a study,” Tomasetti says. “But suddenly mathematicians start having a power and the ability to see things that many traditionally trained M.D.’s might not.”

So what’s a mathematician like Tomasetti—or one like Lahouel—doing in a place like a cancer research institute? On the health of people.

The researchers are also working on ways to optimize the technology behind the test so it will be less expensive than other genetic screening tools. “We are really at the forefront in this space, with a potential to disrupt the market, if we do this study,” Tomasetti says.

The updates to MindCrowd were made possible by a 5-year, $60 million NIH grant from the National Institutes of Health. Huentelman and colleagues are also taking the project aimed at finding the factors that affect smartphone access and use by rural areas, in particular, “should be a big focus of our work,” Huentelman notes. "For a long time, mathematicians were brought in as statisticians, usually not involved in the design of a study," Tomasetti says. "But suddenly mathematicians start having a power and the ability to see things that many traditionally trained M.D.'s might not."

But he stresses that he and his colleagues "would be nowhere" without their collaborators with the clinicians and lab scientists. And Lahouel says working at TGen has given him “a lot of flexibility from the lab side.”

"We can participate in optimizing the experiments, and people are very open to including mathematical ideas in their lab work," he says. "I don't know of another cancer center today that has a group of mathematicians of this size essentially all focused on working on cancer evolution and early detection," Tomasetti adds. "I think we have built a little bit of a powerhouse at TGen and City of Hope. That's unique, and I think this will pay back in terms of the difference we will make."
A UNIVERSAL CORONAVIRUS VACCINE?

Could the SARS-CoV-2 vaccine reawaken previous antibody responses and point the way to a universal coronavirus vaccine? The findings of a study published earlier in Cell Reports suggest it’s possible.

A new analysis of the antibody responses to a COVID-19 vaccine suggests the immune system’s history with other coronaviruses, including those behind the common cold, shapes a patient’s responses.

What’s more, the antibody responses to these different coronaviruses appears to follow different paths. Over the course of 140 days following vaccination, the response to common cold coronaviruses started early but diminished over time. The response to SARS-CoV-2 continued to get stronger and stronger over time.

“The findings could help fine-tune the design of future vaccines, perhaps leading to a universal coronavirus vaccine,” said TGen’s John Altin, Ph.D., a Professor in TGen’s Metabolic and Fibrotic Disorders Program.

Altin and colleagues are now looking more closely at the antibodies that target the two conserved regions-alters that are not able to get fat transport out of the liver.

“Proximity is power with these new technologies,” said Nicholas Bannister, Ph.D., Associate Professor in TGen’s Integrated Cancer Genomics Division, and Director of TGen’s new Center for Single Cell and Spatial Multomics. “The vaccine technology brings all the genomic identification power of single-cell sequencing to a study, with the added benefit of maintaining the structure and integrity of the tissue. Proximity defines everything.”

So far, PEMT is the only gene that has been implicated in the choline deficiency-related disease, NASH. Low PEMT expression in the liver may implicate choline deficiency, as a result of decreased transport out of the liver.

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DNA IN BLOODSTREAM HELPS GUIDE TREATMENT OPTIONS

A recent study by an international team including TGen and City of Hope investigators, Karam Vafadari, Ph.D., and Cristian Tomaescu, Ph.D., provided real-world evidence that ctDNA in the bloodstream can help clinicians decide whether chemotherapy or targeted therapies are needed for their patients after surgery for stage II colorectal cancer.

Their findings, published in the New England Journal of Medicine, suggest it is possible to tell by using small fragments of genetic material shed into the bloodstream (called circulating tumor DNA or ctDNA) from the patient’s tumor.

“TBLA participants leave with a foundational understanding of the biotechnological research process,” said Kristen Kauz, Manager of Education and Outreach at TGen. “The symposium serves as a nod to their backgrounds in an effort to develop foundational skills by placing them alongside faculty and staff.”

A SUMMER OF SCIENCE

On July 29, the 16th class of Helios Scholars at TGen, the flagship internship program at TGen, celebrated a summer of science by showcasing their work at a day-long scientific symposium.

The symposium was the capstone of the eight-week program that supports students from all backgrounds in their efforts to develop foundational skills by placing them alongside faculty and staff. The symposium was the capstone of the eight-week program that supports students from all backgrounds in their efforts to develop foundational skills by placing them alongside faculty and staff. The symposium was the capstone of the eight-week program that supports students from all backgrounds in their efforts to develop foundational skills by placing them alongside faculty and staff.

“Being a Helios Scholar helped me solidify the vision for my future,” said Emmy Abraham, a Maricopa County, Arizona, who attended the University of Arizona as a neuroscience and cognitive science major. “It allowed me to join a lab focused on a field I’m driven to, apply and strengthen my lab skills, and learn more about a topic I hope to continue researching as my educational and professional career unfolds.”

BREAKING DOWN THE RESEARCH FOR A LAY AUDIENCE

Karam Vafadari, Ph.D., (left) and Patrick Pirrotte, Ph.D., (second from left) join Arizonan host Tomy Teng for the discovery that suggests that glymphatic, the active ingredient in the majority of herbicides, can cross the blood-brain barrier. The collaborative work between ASU’s Vafadari and TGen’s Pirrotte (and their colleagues), show for the first time that glymphatic infiltrates the brain and weakens the level of certain molecules involved in inflammation. Their work suggests that exposure to this herbicide may be involved in neuroinflammation, a hallmark of many neurodegenerative disorders, including Alzheimer’s Disease.

THAT’S A WRAP

June 24 marked the closing day of the 5th annual TGen Bioscience Leadership Academy (TBLA). The two-week program allows 20 qualified Arizona high school students the chance to explore a variety of careers within biomedical research.

TBLA faculty and administrative experts share career advice and provide hands-on opportunities that enable students to gain a more in-depth understanding of translational research and the impact it has on clinical trials and precision medicine.

“TBLA participants leave with a foundational understanding of the biotechnological research process,” said Kristen Kauz, Manager of Education and Outreach at TGen, “and we hope that serves as the spark to ignite their passion to pursue a career in science or medicine.”

To learn more or become a sponsor of TBLA, please contact Kristen Kauz at kkauz@tgen.org.

RACHMAN NAMED SYF OF HUMAN RESOURCES, CHIEF PEOPLE OFFICER

The Translational Genomics Research Institute (TGen), part of City of Hope, today announced the appointment of Paige Bachman, JD, as the Institute’s Senior Vice President of Human Resources and Chief People Officer. Bachman will lead the development and execution of TGen’s overall talent strategy.

“We are thrilled to have such a highly experienced and compassionate person lead TGen’s Human Resources team,” said Tess Burleson, MBA, CPA, TGen’s Chief Operating Officer and President of TGen Accelerators. “ Paige is an important addition to TGen’s future in attracting and retaining the highest quality talent in this increasingly competitive environment.”

Bachman brings more than 25 years of strategic and tactical HR experience to his role at TGen, including a strong background in employment law with decades of experience in its science and healthcare as well as in strategy, compensation, and operations.

Her prior roles include serving as in-house attorney for Bariellohn, where he handled employment law matters across the U.S., Latin America, Europe and Asia. He also has held Chief and senior human resources leadership positions for multiple healthcare institutions, including Memorial Hermann Healthcare in Houston, Texas, Ascension Health in Oklahoma City and Kansas, and, most recently, Phoenix Children’s Hospital.

“I am extremely excited to join the team at TGen, and look forward to helping this great organization meet the challenges that lie ahead. It is a privilege to have the opportunity to work alongside people who are doing such important and transformative work,” said Bachman.

Bachman’s experience includes service as a Peace Corps volunteer in the Dominican Republic and in Uruguay, working alongside community leaders to develop clean water delivery systems and to advance locally owned micro-busineses. He has also held multiple non-profit board positions, including serving as Chairman of Goodwill Industries of Tuba.

He is a graduate of the University of Arizona in Tucson in New York and No. 5 from the New England School of Law in Boston, Massachusetts.
Step-N-Out is a family-friendly event that unites our communities both locally and across the country in the fight against pancreatic cancer.

If you live in Arizona or want to travel, join us as we turn the Valley purple this November and create a world where patients with pancreatic cancer thrive. If you live out of state, you can join us virtually and step out in your community in your own way whether that’s hiking a trail, hitting a gym or walking your city.

If you choose to participate, consider creating a team with your friends, coworkers or family.

The in-person activities consist of a 5K run/walk, a 1-mile Fun Run, and an exciting Kids’ Dash.

Register at tgen.org/step

Supporting Pancreatic Cancer Research at TGen

SUNDAY, NOVEMBER 6 | SCOTTSDALE, AZ