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TGen Today

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Powering Science

Empowering Life

TGen's Dr. Winnie Liang is a trailblazer, both literally and scientifically.

Ever since her days playing in the woods near her childhood home in Cherry Hill, N.J., Dr. Liang has pursued her curiosities with science and nature — always following her instincts in her quest to find solutions.

Her elevation to TGen's Director of Scientific Operations parallels her climb to some of the world's top backpacking treks, from the highlands of Peru to the base of some of the tallest mountains in the Himalayas.

Dr. Liang's own brush with cancer has instilled in her an ever-greater sense of urgency to do whatever she can, as fast as she can, and to explore the best possible treatments for patients, while seeing as much of the world as possible

on her own two feet.

And by joining TGen, Dr. Liang has found fulfillment both professionally and in her private aspirations.

"It wasn't until I came to Arizona that I really had the opportunity to experience all the possibilities," she said.

At 7 years old, she remembers receiving summer mailings that first introduced her to basic scientific analyses, such as measuring rainfall. She loved playing outside with her friends, constantly exploring the woods and her neighborhood until sunset.

In high school, Dr. Liang's favorite class was biology. Her teacher challenged her with college-level course material, a step up that gave Dr. Liang confidence when she entered Pittsburgh's Carnegie Mellon University.

Parallel Paths

A summer college internship landed her at The Jackson Laboratory in Bar Harbor, Maine, where she fell in love with hiking in nearby Acadia National Park.

When she graduated Carnegie Mellon with a degree in the Biological Sciences, she wasn't sure what she wanted to do. But like so many turns in her life, her next steps just seemed to flow.

"It was really just out of serendipity and luck," she said, when a fellow Carnegie Mellon grad, Dr. Dietrich Stephan, recruited her to work at the Children's National Medical Center in Washington, D.C.

There Dr. Liang was first introduced to the science of gene expression profiling, a molecular test that measures the activity of genes to create a global picture of

cellular function.

Under Dr. Stephan's guidance, Dr. Liang was part of the development of the National Institute of Neurological Disorders and Stroke (NINDS)/National Institute of Mental Health (NIMH) Microarray Consortium, which conducted expression profiling for scientists funded by NINDS or NIMH federal grants. This service, under the National Institutes of Health (NIH), became a part of TGen.

When Drs. Stephan and Liang joined the first wave of scientists at TGen's launch, they brought the consortium with them. It was the launch pad for TGen's Neurogenomics Division, and helped propel Dr. Liang's study of Alzheimer's disease.

Dr. Liang's ambition eventually found her working full time at TGen while pursuing graduate studies at Arizona State University, eventually earning a Ph.D. in Molecular and Cellular Biology. Rather than leave TGen for her post-doctoral fellowship, Dr. Liang chose to take advantage of an opportunity, stemming from her graduate work, to evaluate the effect of a gene called GAB2 in Alzheimer's disease under TGen's Dr. Kendall Van Keuren-Jensen, now an Associate Professor of Neurogenomics and Co-Director of TGen's Center for Noninvasive Diagnostics.

To this day, Dr. Liang remains a key member of the Arizona Alzheimer's Consortium (AAC), a group of hospital and academic scientists, who have helped make the Grand Canyon State one of the global leaders in researching this memory-robbing disorder.

In 2007, continuing her love for hiking, backpacking, traveling and volunteering, Dr. Liang joined the Arizona Wilderness Coalition, a group of nearly 2,000 individuals, businesses and partner organizations responsible for helping protect nearly 3 million acres of wilderness in Arizona through bipartisan federal legislation in 1984 and 1990. Some of her favorite places to hike in Arizona include the Superstition Wilderness, the McDowell Sonoran Preserve, Salome Wilderness, and Aravaipa Canyon.

Struck by Cancer

In the summer of 2009, Dr. Liang's world was suddenly in doubt. It started with frequent bouts of exhaustion and a series of brief fevers and itchiness, graduating to chest pains — all dismissed as something else. One morning, she woke with a large lump in her neck. A trip to the doctor prompted a CT scan, a visit to the emergency room and admission to a hospital, all in the same day. Diagnosis: stage IV Diffuse Large B-Cell Lymphoma (DLBCL), a type of blood cancer.

While chances for survival decline with late stage cancer, fortunately there is an established chemo-immunotherapy regimen for DLBCL known as R-CHOP. Following six rounds of treatments, Dr. Liang saw her cancer diminish, and in 2015 she celebrated a major milestone by going cancer-free for five years. And she's still going strong.

As a teenager, she had wanted to see the world, but her mother counseled her to wait until retirement. "I respected her opinion but decided that I would make no plans to wait." Following her bout with cancer, and with many of her friends involved with raising families, Dr. Liang was emboldened to set out on her own.

"We all know that every day is a blessing and I want to take advantage of that while I can. The places I've had the privilege of visiting in the last few years have been incredibly amazing," she said, recalling trips to Cusco, Peru, once the capital of the Inca Empire, and hiking the Inca Trail, which ends at Machu Picchu, the high mountain ruins considered one of the Seven Wonders of the World. She also trekked through the Annapurna (Goddess of the Harvests) Conservation Area, home of the Annapurna massif, which at 26,545 feet is the world's 10th highest and one of the most dangerous peaks, in the Himalayas of north-central Nepal.

"It's beautiful, joyful and grounding to have the opportunity to widen my lens through interacting with people from different backgrounds, experiencing different countries, learning about other cultures, seeing breathtaking places, and

recognizing the connection we all have with one another. I never expected to be able to experience so much already, and I am immensely grateful," said Dr. Liang, who at the end of this summer will climb the 19,341-foot Mount Kilimanjaro, the highest peak in Africa.

Redoubling Efforts

Since her cancer scare, Dr. Liang also has branched out from neuroscience disorders to study cancer. She recently worked with TGen President Dr. Jeffrey Trent in collaboration with Mayo Clinic, Memorial Sloan Kettering Cancer Center and others on a significant study, funded by Stand Up To Cancer and the Melanoma Research Alliance, of a rare type of skin cancer known as acral melanoma.

Dr. Liang has always wanted to help patients. In high school, she considered going to medical school but research appealed to her more because she thought she could impact more patients. Her desire to find new treatments as soon as possible initially attracted her to TGen, whose translational mission is exactly that. And since her illness, her empathy has only multiplied.

"You have the experience of how it feels to have no answers and living each day with uncertainty," she said. "I told myself when I was sick that, if I ever get through this, I want to do more to help others in need."

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Dr. Liang after hiking the Inca Trail, which ends at Machu Picchu, Peru, considered one of the Seven Wonders of the World



Upcoming Events Benefitting TGen:

To learn more about these events, please call the TGen Foundation at 602-343-8411 or visit: tgen.org/events

Focus on Lyme Charity Golf Classic [Flagstaff, AZ]

July 10, 2017

Raising funds move TGen's LymeSeq rapid diagnostic for Lyme disease closer to clinical trials.

www.focusonlyme.org

Purple Pansies | Casa Nuova Italian Restaurant [Alpharetta, GA]

July 30, 2017 | Customer Appreciation Day

September 24, 2017 | Eighth Annual Gala

Both events benefit pancreatic cancer research at TGen.

www.purplepansies.org

Seena Magowitz Golf Classic [Boston, MA]

August 26-28, 2017

A blockbuster weekend of baseball, golf and discovery in historic Boston, benefiting pancreatic cancer research.

www.seenamagowitzfoundation.org

11th Annual Terri Link Memorial Fund Golf Tournament [Statham, GA]

September 29, 2017

A fun best-ball tournament benefiting groundbreaking research into Adrenocortical Carcinoma at TGen

www.tgen.org/events

Key to the Cure [Phoenix, AZ]

October 6, 2017

Fashion fights cancer with a high-energy runway show, benefiting women's cancer research at TGen.

www.tgen.org/events

Barrett Jackson Collector Car Auction [Las Vegas, NV]

October 19-21, 2017

Steve Darnell and the team from WelderUp auction their custom Cancer Car "Rat Rod" to benefit TGen's pediatric cancer research.

www.barrett-jackson.com

StepNOut 5K Walk Run Dash [Scottsdale, AZ]

November 5, 2017

Come out for a fun, family-friendly fitness event, benefiting pancreatic cancer research.

www.tgen.org/events

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Since 2010, using next generation genomic sequencing, Dr. Liang has specialized in helping other scientists at TGen as head of the institute's Collaborative Sequencing Center, using precision medicine to provide the best treatment recommendations for physicians and their patients.

Now, as Director of Scientific Operations, she is hoping to help other TGen scientists in a variety of ways, from identifying resources, improving communication, and coordinating staff needs with fundraising efforts at the TGen Foundation, to name a few. TGen has never had this position before, and Dr. Liang plans to keep it flexible and organic: proactive rather than reactive.

"Having seen the changes that TGen has gone through in the past few years, I thought there was a need for someone whose priority is to support the amazing scientific staff and faculty we have at TGen," she said. "My goal is to be a resource. When challenges or roadblocks are encountered, sometimes there may be no obvious possibility for a solution, but I plan to tackle these so our scientists can focus on what we do best — innovative research and translating findings to the clinic to help patients today. I hope we continue to expand our impact, and I think that is something that seems more likely because of our alliance with City of Hope."

Above all, Dr. Liang plans to continue following her instincts and curiosity and being true to her self — the same advice she would give to young scientists — in addition to recognizing that through teamwork, collaboration, integrity and compassion, we all can achieve amazing things.

"Even in the face of uncertainty and challenges," she said, "the world is truly each person's oyster. Our lives and livelihoods are what we make of it."



Dr. Liang in the foothills of Nepal's Annapurna