

P A R T



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LETTER FROM THE PRESIDENT

At the University of Utah, we know that innovative solutions come from unique partnerships. Collaboration is what drives the most creative approaches to urgent societal problems and advances knowledge to improve our communities and our world.

We also know that the U is rare among its peers in the co-location of a comprehensive research university and a vibrant academic medical center; there are less than two dozen such institutions in the country.

That's why we are focused on the

concept of One U—the opportunity for students, faculty, and staff to collaborate on scholarship, innovation, education, community partnerships and knowledge transfer. Together, there is so much we can do.

Our vision is a united campus working to serve the people of Utah as the University for Utah, making a difference as a model flagship university at the forefront of scientific research and higher education innovation.

The Center for Technology & Venture Commercialization (TVC) plays a central role in this vision. TVC facilitates innovative partnerships across the University of Utah and serves as a bridge connecting our discoveries and startups to entrepreneurs and investors throughout the state and beyond.

This annual report spotlights examples of how TVC is helping our world-class researchers turn ideas and concepts into products and businesses.

TVC is there from start to finish, guiding our faculty through invention management, patents and licensing, startup formation, equity management, and early stage funding.

The U, through TVC, is helping to position Utah on the national stage as a leader for investment and innovation—key components of a thriving economy.



-RUTH WATKINS
PRESIDENT, UNIVERSITY OF UTAH



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“As our network continues to grow, so does our impact...”



LETTER FROM THE EXECUTIVE DIRECTOR

People frequently ask which new invention or spinout excites me most. The cliché yet honest answer is that there are too many to count. All across our campus and community, great minds are constantly generating innovative ideas. It takes trusted relationships among many stakeholders to transform those ideas into successful companies and products. This is why I often answer by shining a spotlight on the incredible people with whom we work.

Having spent many years as an entrepreneur, I've learned that success in business can only be achieved by building and maintaining strong relationships with people that can guide you in overcoming challenges and support you in executing on opportunities. As TVC continues to expand our support for University innovations, we not only seek to strengthen our direct relationships, but also to serve as a connector and catalyst for a broader network of partnerships across our ecosystem.

TVC partnered this past year with individuals and groups from academia, industry and government – in Utah, across the United States, and throughout the world. Our deep and trusted relationships led to the creation of new companies, investments, and industry collaborations. We also strengthened our engagement with state and federal

legislators and agencies. As our network continues to grow, so does our impact, which in turn generates value for everyone whose lives are touched by the innovations developed at the University of Utah. This is why we chose Partnerships as the theme of this year's annual report.

On behalf of the TVC team, I'd like to extend our gratitude to those who have partnered with us to create a brighter landscape for innovation. The stories in this report highlight just a few of the numerous partners that make our work possible. I am excited to share what we've been working on and look forward to seeing new innovative ideas come to life this year with the support of partners old and new.

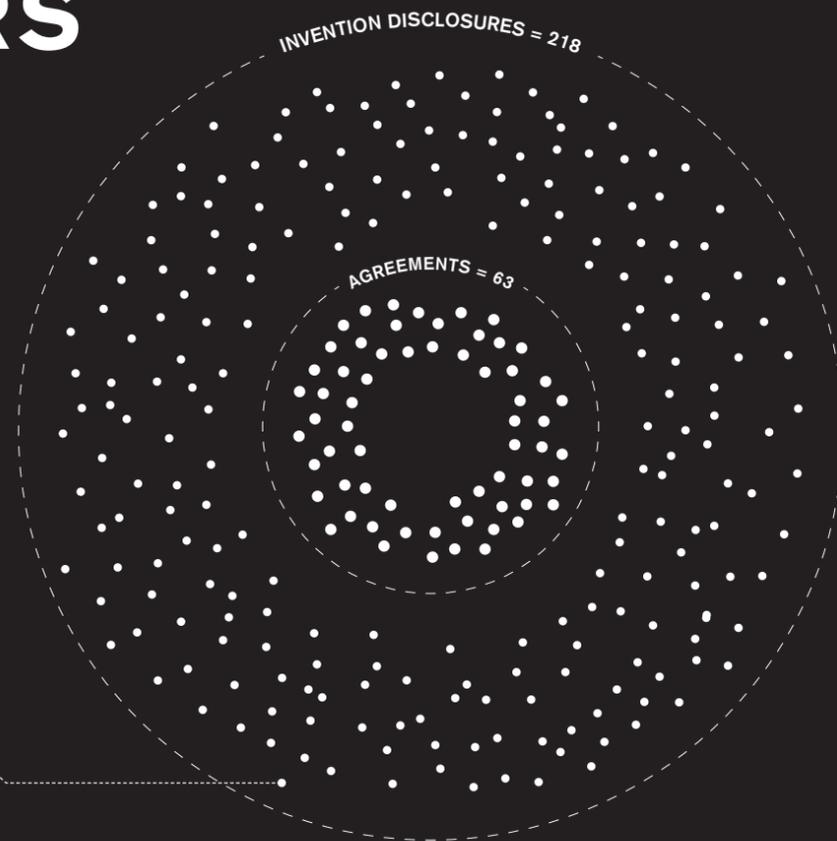
A handwritten signature in black ink, appearing to read "Keith Marmor". The signature is fluid and cursive, written in a professional style.

-KEITH MARMOR
EXECUTIVE DIRECTOR, TVC

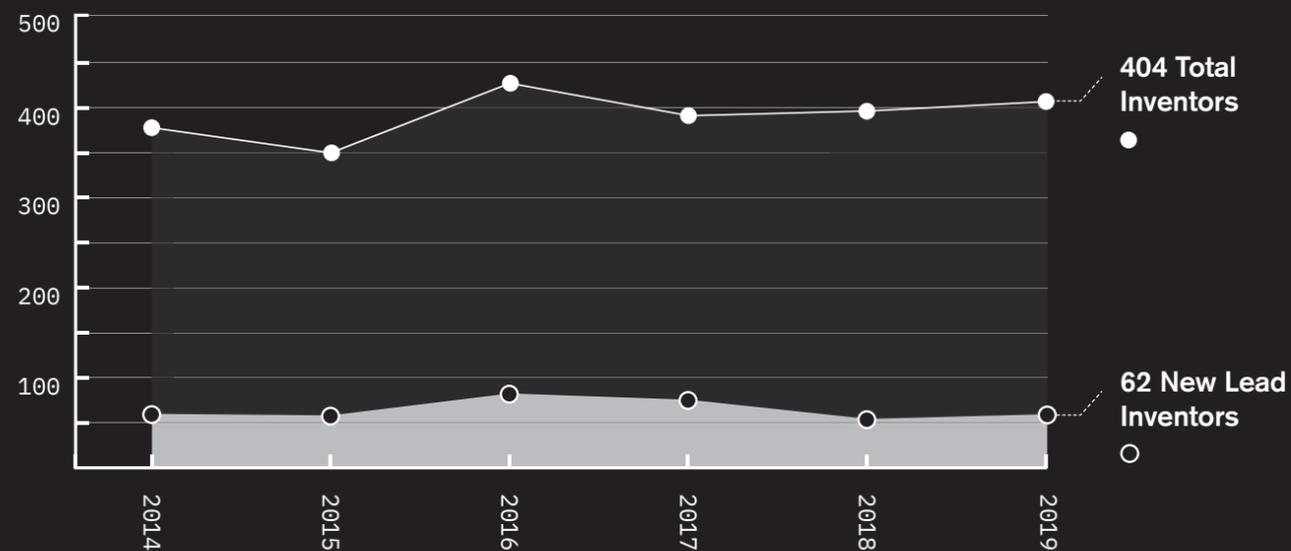
BY THE NUMBERS

2019 LICENSE FILINGS

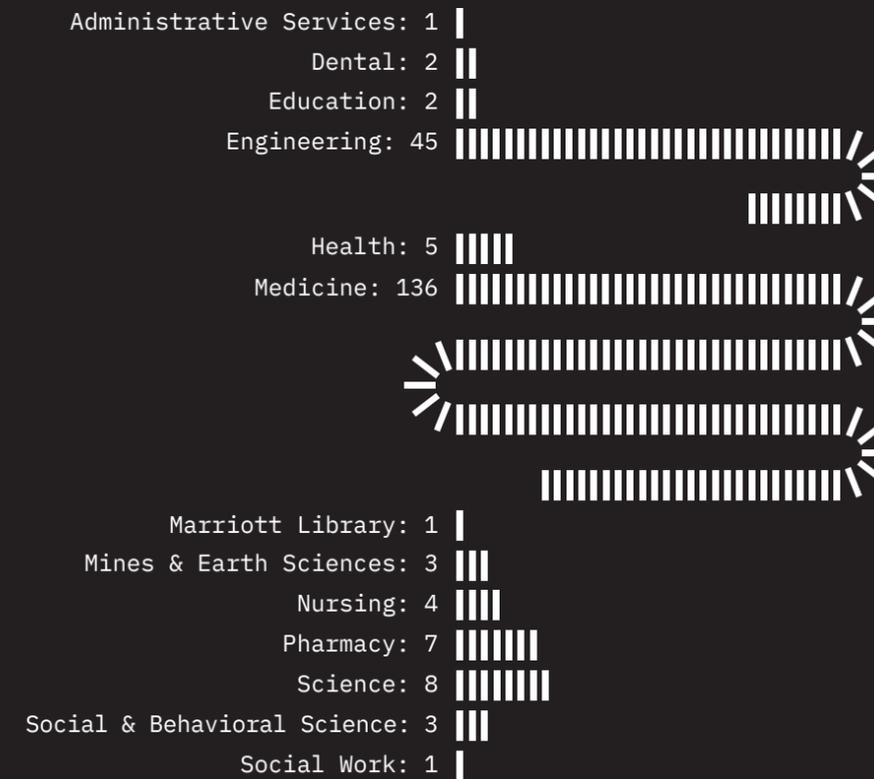
The smaller dots in this image represent the 218 inventions disclosed in 2019. As the invention progresses in development, the dot moves to the center and gains agreement status.



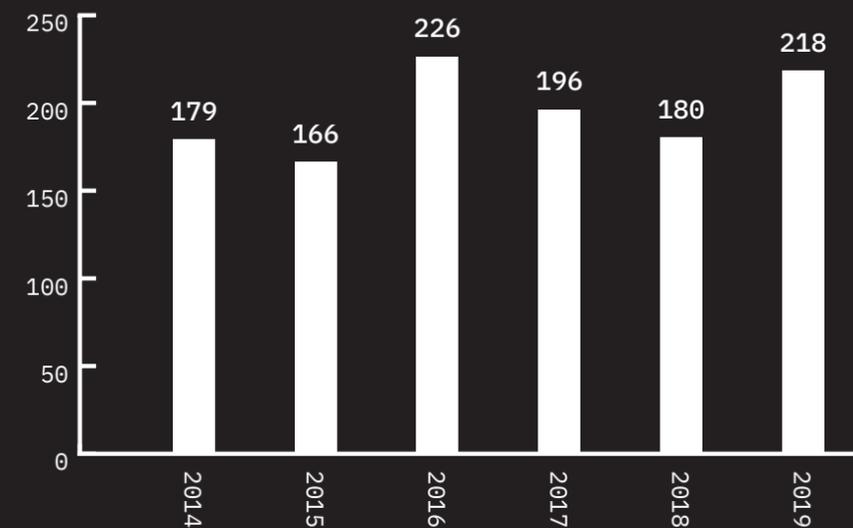
INVENTORS BY YEAR



2019 INVENTION DISCLOSURES BY COLLEGE



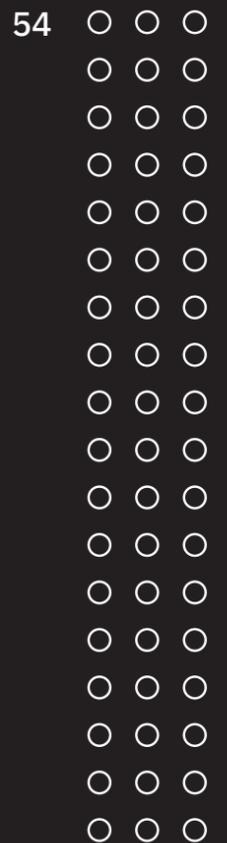
INVENTION DISCLOSURES BY YEAR



STARTUP BY LICENSE 2019



ISSUED U.S. PATENTS 2019





Pictured:
Michael Yu (sitting)
Yang Li (standing)



THE EVOLUTION OF A STARTUP

TVC is helping life-science company 3Helix transition from early-stage to growth

B

Biomedical engineering professor Michael Yu and his doctoral student Yang Li knew they had a promising technology when they first developed it in 2012. While at Johns Hopkins University in Baltimore, they invented a peptide that binds to collagen, the most abundant protein in the body. "Collagen is the key ingredient in tendons, ligaments, and muscles, and is crucial for many functions, including holding organs together," said Li, who is currently assistant research professor in biomedical engineering at the University of Utah. "Our peptide adheres only to degraded (or disease-disrupted) collagen, not healthy collagen, so it can indicate damaged tissue." Because collagen is so ubiquitous and vital for organ functions, any major health problem can be related to collagen damage. "We recognized the potential for research as well as diagnosis immediately."

Yu and Li moved from Hopkins to University of Utah in 2013, and part of what drew them to the U was its reputation for commercialization. "We were determined to spin our technology into a startup," said Yu, "so we were only interested in going to a university that would fully support us in bringing it to market. The U has such a good reputation for technology transfer, it made the choice much easier."

The U did not disappoint. "Within the first month, we were receiving help from TVC," said Yang. "They stepped in with advice and resources, even though they didn't own the intellectual property."

"We want to partner with all of our inventors, regardless of where their idea originated," said Keith Marmer, The Center for Technology & Venture Commercialization (TVC) executive director. "We take the long view in every relationship: if a faculty member feels supported, they will stay at the U and continue to innovate and invent." Yu and Li have done just this: since coming to the U, they have made five new invention disclosures. "Each time we disclose to TVC, we learn something new about what's patentable," said Li. "We then take that information back to our lab to design more effective paths for research."

To assist Yu and Li in launching their company, TVC staff introduced them to companies and senior entrepreneurs and laid out a blueprint for next steps. "We knew our customers would be researchers. Based on this, TVC helped us identify the fastest path to market," said Yu.

After a year of laying the groundwork, Yu and Li launched their company, 3Helix, Inc. (named for collagen's triple-helical structure) in 2015. In relatively short order, they validated the technology, developed a distribution plan, began manufacturing the peptide, and established themselves in their initial market. Fast-forward four years: 3Helix's products are now sold by 15 distributors worldwide and used in over 200 university and industrial labs (and counting).



TRANSITIONING FROM STARTUP TO GROWTH

In early 2019, the original agreement expired, and 3Helix came to TVC to renew it. This natural inflection point provided an opportunity for the two organizations to check in and review the company's fundamentals—including its target markets, growth strategy,

and leadership and succession plans. "What could have been just a rubber-stamping of the renewal ended up being an opportunity to put the company on a more sustainable trajectory," said Paul Corson, TVC's deputy director. "The first three years are

formative ones for any startup, so the renewal was a perfect time to reexamine initial assumptions—especially in light of advances they had made in their technology."

As part of this evaluation process, Corson introduced several of TVC's entrepreneurs in residence to Li and Yu. "Our entrepreneur-in-residence (EIR) program connects our inventors with experts in business, technology, and medicine, and who often have specific knowledge of the inventor's own field," said Corson.

Corson introduced Noah Nasser, a seasoned life sciences executive who has experience with collagen technology. Nasser started by asking Yu and Li a simple yet material question: "What problem are you trying to solve?" The answer helped the team clarify their path for market expansion.

Nasser also allayed fears about a potential obstacle. "We knew we wanted to expand into other markets, but we were concerned about navigating the regulatory landscape," said Li. "Noah essentially told us we were worrying too much. He explained that we pursue laboratory-developed tests, not FDA-cleared tests, which means a much more straightforward regulatory path." This simple piece of feedback saved the team months of work and heartache and potentially years of FDA regulation. "This is where the value of TVC really shines through—connecting us to experts who work in the real world and have taken technologies to market along much the same pathway," said Li. "Not having to reinvent the wheel is invaluable for any startup."

Nasser offered another key strategic insight to Li and Yu: use your revenue-generating clients to collect data. "We've been able to have our technology validated in a crowd-

sourced manner by hundreds of labs across the world," said Li.

TVC was also instrumental in helping 3Helix prepare a Small Business Innovation Research (SBIR) grant. SBIRs are non-dilutive funding awarded to companies seeking to commercialize products that have emerged from federally funded research. "SBIR awards are granted based on a company's market potential, so you need to present a realistic commercialization plan," said Li. "TVC's staff and advisors poked a thousand holes in the first version of our plan, but we rewrote it based on their feedback and ended up receiving a perfect impact score."

One of the most important—and yet most overlooked—elements of a viable startup is the management team, and TVC puts tremendous weight on installing an effective one. "An early-stage company's leadership is probably its biggest predictor of success," said Marmer. "If you find the right people to focus on growing the company, the scientists can focus on their areas of research and innovation."

Li and Yu understand this and are ready to transition the stewardship of 3Helix. "We've gotten the company to a point where we can hire an executive team, but we're taking our time to find the right people," said Yu. They've found the first person for their leadership team in Mike Kirkness, a specialist in collagen who also has two successful startups under his belt. Kirkness is overseeing day-to-day operations and developing a detailed business plan for smart, strategic growth over the next few years. "I did my Ph.D. research in collagen and have run several companies, so not a lot will fly over my head—on either the science or business side," said

"If you find the right people to focus on growing the company, the scientists can focus on their areas of research and innovation."

Kirkness. "But since I am remote right now (Kirkness is based in Vancouver), TVC has done something for me that I couldn't on my own: linked me into their Salt Lake City-based network and pre-vetted service providers. This has saved me a great deal of time, and I know that when I need an accountant or another professional service I won't have to go through trial and error to find the right company. I can trust them right off the bat and know that they'll do a good job."

The 3Helix team is also searching for a chief executive officer to lead the company. "Every company needs an investable CEO: a person with a proven track record who can recruit, manage, and fundraise," said Marmer. TVC is helping Yu, Li, and Kirkness find this person for 3Helix.

In addition, TVC will continue to help guide the company. "Old models for tech transfer programs cut off support to fledging companies too early, causing them to fail," said Marmer. "We've expanded our model to provide resources and advice over the long term."

So what's next for 3Helix? "Besides helping us shore up the foundation of our company, TVC also pushed us out of our comfort zone," said Li. "We're exploring new areas for application, including cosmetics. Collagen is a major component of our skin, so we think there's real promise in screening tools for new skin care products and treatments for skin that has been damaged by the sun and other environmental factors." But the founders' vision goes well beyond this. "We want our product to be in every hospital in the world," said Yu. "We think it has the power to directly improve and even save patients' lives by helping clinical pathologists and radiologists pinpoint and assess the diseased tissues with unprecedented insights. And we're confident we can realize this vision now that we have the foundational building blocks in place." •

Pictured:
Yang Li



A TOOL TO MAP THE “BEHAVIORAL GENOME”

Experts helping transform a big idea into a real world product

Pictured:
Chris Gregg



The Human Genome Project—a world-wide effort to map every gene of our species—was completed in 2003. In the 16 years that have followed, this comprehensive understanding of our genome has profoundly affected every aspect of medicine and life sciences, and it’s given rise to the field of precision medicine: medical care tailor-made for each patient.

Chris Gregg wants to create the same map—the “behaviorome”—for animal and human behavior. An associate professor of neurobiology and anatomy and adjunct assistant professor of human genetics at the University of Utah, Gregg has spent much of his career researching gene regulation in the brain, which involves identifying the mechanisms that tell our genes when to switch on and off.

Genes can change their activity in response to drugs, stress, or illness, or acquire mutations that impair gene functions. These effects are thought to contribute to changes in brain function that alter our behavior patterns. These patterns are so complex, however, that it’s been very hard to understand them and learn how different genes function to shape different behaviors.

Gregg and his lab believe that they have a new method that can help solve this problem. They developed specialized software that deconstructs complex behavior patterns into finite sequences that they call modules. Based on their research, the Gregg Lab found that different genes affect different modules.

This discovery provides a new way to make sense of behavior and figure out the underlying mechanisms that shape different patterns. In some cases, the software, named DEEPFEATS, is sensitive enough to tell the difference in behavior based on whether a gene mutation was inherited from an animal’s mother versus its father.

“Complex patterns of behavior are actually composed of highly reproducible sequences,” said Gregg. “DEEPFEATS applies an analytical approach to identify these sequences.”

How does Gregg find the signal in the noise when analyzing the nearly infinite data? “We first decide how to segment the behavior, then capture hundreds of features describing what the animal does and where it goes,” he said. “Next, we employ unsupervised machine learning in DEEPFEATS to define the modules of behavior. Finally, we quantify these modules and analyze their timing—deconstructing the architecture of very complex patterns to uncover phenotypic effects.”



DEEPFEATS can find modules for any data set for which you define starts and stops; it's very flexible."

Understanding how genetics drives complex behaviors has potentially very broad applications, and one area Gregg is especially excited about is analyzing patient behavior patterns. He wants to start with the big diseases: cancer, Alzheimer's, diabetes, obesity, and mental health. "We can work initially with populations at higher risk for these ailments," said Gregg. "Using precision behavioral medicine, we can discover novel subtypes of diseases, evaluate disease progression, and test whether different interventions are working effectively. If we can understand how people modify their behavior based on different circumstances, we can prescribe specific ways to help them do so in a positive way."

TVC entrepreneur in residence Beth Hoburg, a specialist in organizational behavior, immediately recognized DEEPFEATS' potential applications for the workplace. "My job is to create environments that will support people adopting new behaviors so that they can adapt to their surroundings," said Hoburg. "I've been looking for a tool like DEEPFEATS for years—something that will help me understand how different people react to changes in their environment." And she sees even broader implications. "Understanding human behavior on a micro-scale can help in any realm of our daily lives that is pattern- and behavior-driven: education, parenting, even saving for retirement," she said. "Providing guidance in these arenas based on a deeper understanding of each person's genetic composition could be revolutionary. This isn't about controlling behavior: it's about fostering environments that encourage people to act in beneficial ways."



Pictured:
Jerry Rudisin (sitting)
Chris Gregg (standing)

PARTNERING EARLY WITH TVC

Once Gregg was ready to share his tool, he went to TVC for guidance and commercial validation. "The challenge for faculty inventors is always to determine the value of any piece of research," he said. "Things we think have no value may actually have broad applications outside the lab, but if we don't recognize it, it becomes lost knowledge. I'm especially fearful of this because it happened to me earlier in my career. I needed TVC to help

assess the commercial potential of my work so that I could decide whether to move forward with it."

In April, Gregg presented his idea to a roundtable of entrepreneurs in residence (or EIRs) and TVC staff. They offered him multiple perspectives—all informed by their decades of experience developing and commercializing products. "Everyone present immediately saw the vast potential that the technology offers—not just as applied to mouse models, which

are widely used in medical research—but to many areas of individual and social behavior," said Jerry Rudisin, an EIR and key advisor to Gregg during the early phases of the company's formation. "We immediately talked about things like possible use of DEEPFEATS in the analysis of pedestrian and vehicular traffic behaviors for urban planning, or for managing livestock in commercial ranching or wildlife conservation. It was clear that Chris and his team have developed a very profound and valuable innovation. The trick would be in identifying the first few addressable target markets on which to focus."

"The DEEPFEATS project is a good example of our new strategy for cultivating strong startups," said Paul Corson, deputy director of TVC. "We partner as early as possible with the inventor. Then we expedite the process, enriching it with the right expertise at the right time. Chris came to TVC before he had officially disclosed his idea, which meant we could develop a commercialization strategy in parallel with intellectual property protection, all while he continued his research."

Because the potential commercial value of DEEPFEATS is so broad, TVC's advisors recommended narrowing the initial target market to the most obvious one: neuroscientists and behavior researchers. "Researchers from multiple institutions were already asking Gregg for permission to use the software for their own research with mice," said Rudisin. "This indicated that there was one possible market, but we needed to answer a lot of questions first: Was the research industry a good place for a commercial product? And, if so, how big could the market ultimately be? What resources would be needed to ready the software for external use and to pursue com-

mercialization? What other market or markets might be even better places to deliver real value from DEEPFEATS?"

Rudisin had many meetings with Gregg over a four-month period and helped him develop a roadmap for commercializing the software. "Frankly, I am not a business person and don't know how to build a business," Gregg

actual, consumer-focused product: it's cloud-based and has a beautiful user interface. If it had not been for TVC, I probably would not even have pursued the project. But now we've got a pretty cool product and some big plans!"

Early responses are helping validate the market demand: DEEPFEATS was the August cover story of prestigious

"Things we think have no value may actually have broad applications outside the lab, but if we don't recognize it, it becomes lost knowledge."

said. "TVC's amazing insight was to pair me with experts in technology startups. Now, I can lean on Jerry to help chisel out a path forward and answer all my questions. There simply is no replacement for experience."

TVC helped Gregg translate his concept for DEEPFEATS into something tangible. "Before I met with TVC, all I really had was a blurry vision of what it could be," said Gregg. "With Jerry's mentorship, we developed an

academic journal *Cell Reports*. "The positive press tells me that we really do have something," said Gregg. "Thanks to TVC, we have turned a theoretical concept into a tool that can hopefully help offer a new approach for solving a wide range of problems at the fundamental level." •

THE POWER OF NEVER GIVING UP

A collective of researchers, clinicians, entrepreneurs, and TVC staff come together to make a 40-year pursuit a reality



Pictured:
Jerry Gleich (sitting)
Kristin Leiferman (standing)

G

erald Gleich, doctor and professor of internal medicine and dermatology at the University of Utah, has been researching eosinophils—white blood cells that play a role in the body’s immune system—for almost fifty years. While at the Mayo Clinic in the 1970s, Gleich suspected that a higher-than-normal number of eosinophils in a person’s blood, tissue, or organs could be unhealthy. “In the 1970s, many researchers thought an abundance of eosinophils could actually have positive properties,” said Gleich. “But I discovered they make a major basic protein, a toxic molecule that damages tissues and causes inflammation.” Gleich realized his discovery had profound implications on the understanding of a whole host of diseases. But, at the time, there was no ready means to translate this concept knowledge into patient care.

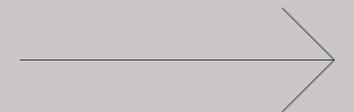
In 2001, Gleich and his wife and professional collaborator, Kristin Leiferman, doctor and specialist in dermatology and immunodermatology, moved from Minnesota to the University of Utah. Leiferman herself has a long track record with eosinophils and has a special interest in the diagnosis of allergy-related inflammation. At the U, they continued to study eosinophil-related diseases and focused their research on eosinophilic esophagitis (EoE), an inflammation of the esophagus caused by an abundance of eosinophils in the esophageal lining. It was here that they had a breakthrough that could potentially lead to the development of a diagnostic test: they identified that an acidic compound could bind to the major basic protein. If a patient swallowed the compound, x-ray-like images would reveal tissue inflamed by the eosinophils’ major basic protein.

“I knew we had something, but we still weren’t able to gain any traction,” said Gleich. “I needed to find an advocate who could help me advance the research and development of the test.”

Gleich and Leiferman found their champion in Kathryn Peterson, a doctor and associate professor of gastroenterology with University of Utah Health. Peterson had heard about the work Gleich and Leiferman were doing and approached them about a potential collaboration.

“In my gastroenterology practice, I had been seeing more and more cases of EoE,” said Peterson. “I was becoming alarmed at the number of endoscopies my patients were having to undergo to pinpoint what was triggering their condition.” Endoscopies—procedures in which a camera is attached to a flexible tube and inserted in a patient’s throat—can be painful, time-consuming, and inconclusive, all of which can discourage patients from undergoing the procedure. “I kept seeking an alternative—or at least supplemental—diagnostic method.”

Peterson teamed up with Gleich and Leiferman and assembled a multidisciplinary team across campus to pursue the development of a diagnostic test. “Were Kathy not Kathy, none of this would have happened,” said Leiferman. “Driven by her deep concern for her patients, she was able to marshal the forces and energy to propel the project forward.”



They also had established collaborations with Leonard Pease, an assistant professor of chemical engineering with an interest in biomedical engineering. He and his graduate student, Hedieh Saffari, took on the project of figuring out how to get a picture of the basic material binding to the acidic material. And Leiferman—who manages the immunodermatology laboratory for the U—advanced the process for staining the tests to identify the protein.

Coming to the University of Utah proved fortunate for many reasons because, “we found knowledgeable, talented people who were all interested in helping,” said Gleich. “This project had a lot of unsung heroes—researchers, professors, and clinicians who were interested in improving patient health and comfort.” The deans and chairs of dermatology, chemical engineering, and other departments all understood our vision and supported our work.”

MOVING FROM LAB TO STARTUP WITH TVC’S HELP

As soon as they knew their idea had the potential to be more than an idea, Gleich and his colleagues went to TVC. “Once we knew the diagnostic test had promise, we approached TVC to help move it forward,” Gleich said. “And we relied on them to protect the intellectual property so that we could continue development.”

As with most commercialization efforts, the process was anything but linear, but Gleich, his colleagues, and TVC’s staff never took their eyes off the goals. “TVC’s technology managers were good stewards throughout,”

“It all comes back to improving patients’ lives. The faster we have a joint agreement, the faster we can get to market, the faster everyone wins.”

Gleich said. “We still had a lot of work to do to advance the test, and they gave us the space to do this. But they were also responsive enough not to let things die.”

As the test continued to be lab developed, Gleich started thinking about a partner to help him commercialize it. He approached a longtime professional colleague, Steve Tullman. Tullman is the founder and managing member of NeXeption, a holding company for bioscience spinouts based outside of Philadelphia.

“I’ve been working with Jerry on and off for twenty years, and I’ve seen firsthand how he has dedicated his career to understanding eosinophil-related disease,” said Tullman. “Someone with less fortitude and determination would have given up long ago and pursued another specialty. But Jerry never gave up because he has always kept the patient foremost in mind. And Kristin has made breakthrough efforts in the pathology. So I

was very excited when they told me they were getting close to developing a diagnostic.”

That Gleich and Leiferman were working with TVC was also reassuring to Tullman. “I’ve known Keith (Marmer, executive director of TVC) for a while, and I knew he would remove barriers to get the deal done,” said Tullman. “Research at universities across the country is sitting still for reasons that have nothing to do with the science, but Keith sees the big picture and understands how things work on campus and off. He knows that if you start by being reasonable and transparent, you’ll identify a pathway forward.” TVC brokered the deal between the university and NeXeption: NeXeption would create a subsidiary—NexEos—specifically to commercialize the EoE diagnostic test.

The establishment of the company was a significant milestone, but success was anything but guaranteed.

To help shepherd the process during the early months of company formation, TVC brought in entrepreneur in residence, Bill Rusconi, to consult with both Gleich and NeXeption. With a background in molecular biology and gastroenterology, Rusconi knew what lay ahead, especially along the regulatory pathway. “Having licensed products at two former life science companies, I was able to outline the

various ‘swim lanes’ of the process,” Rusconi said. And he explained how medical reimbursement considerations play into the design of clinical trials. “For any medical diagnostic, there is a difference between the technical buyer, financial buyer, and payer,” said Rusconi. “If you have a good understanding of your reimbursement parameters, you will have a better sense of how to structure your trials.”



Pictured:
Theresa Mansi
(left),
Steve Tullman
(right)

Rusconi’s deep understanding of the commercialization process helped him establish trust immediately with NeXeption and NexEos. “We were able to overcome various fail points in the early development of the deal because we spoke the same language,” he said.

NexEos is now fully established and has hit early company milestones: they’ve raised private funding and applied for two Small Business Innovation Research Grants from the National Institutes of Health. Company CEO Theresa Mansi appreciates TVC’s “we’re all in this together” approach.

“TVC takes the long view when working with its licensees, and treats us as partners rather than adversaries,” said Mansi. “They begin with the premise that both sides want the same thing (which we do). It all comes back to improving patients’ lives. The faster we have a joint agreement, the faster we can get to market, the faster everyone wins.”

Eosinophil-related maladies, once considered rare, have become increasingly prevalent: eosinophilic esophagitis alone affects an estimated 300,000 people in the United States. For NexEos and Gleich, diagnosing EoE is just the beginning. The test has the potential to identify and diagnose other diseases in which eosinophils are the drivers of inflammation, such as eosinophilic asthma and eosinophilic gastroenteritis. “It’s a wonderful thing to see what you always knew was possible finally take shape,” said Gleich. “Whatever the next years may bring, TVC will be a ready and willing partner.” •



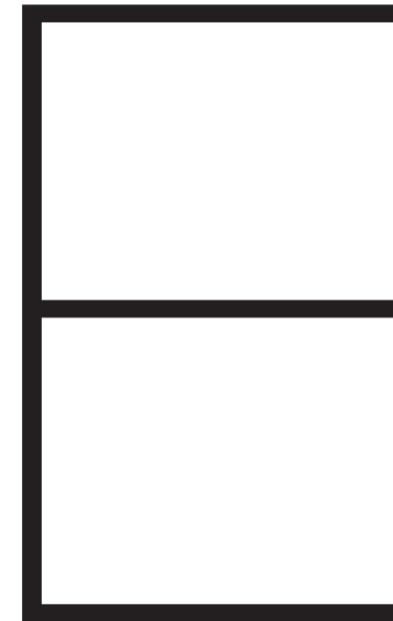
Pictured:
Kristin Leiferman
(left)
Jerry Gleich
(right)

TVC'S ENTREPRENEUR IN RESIDENCE PROGRAM

Outside experts provide real-world insights to expand and accelerate the commercial potential of the U's technology pipeline and startups



Pictured:
Beth Hoburg



Every day, university inventors develop breakthrough technologies in the physical and life sciences. These inventions have the power to impact patient care, industrial practices and beyond. And it's TVC's job to help bring them to market. Turning inventions into commercial products, however, requires a deep understanding of each target industry. To bridge this commercialization gap, TVC developed an entrepreneur in residence (EIR) program.

The EIR program connects University of Utah inventors with seasoned executives from industry to draw on their experience commercializing technologies in that field. Their decades of experience allow EIRs like Beth Hoburg to evaluate technologies using real-world insights and connections from industry, and help to guide inventions along a smoother path to market. With an MS in Physical Chemistry, as well as an MBA, Beth spent her career focused on operations, strategy development, and organizational change. As an EIR, Beth began working directly with inventors, where she could draw on industry, product, and strategic insights to help propel their research in new and sometimes surprising directions.

Evaluating an inventors' portfolio benefits EIRs as well. As each invention is assessed, an EIR is also hoping to identify one or more technologies to potentially spin into a startup company. Research consistently shows that startups led by entrepreneurs achieve more success than those led by faculty, and the EIR program helps match the best entrepreneurs with the right faculty and technology. EIRs are highly motivated to partner and collaborate closely with

U faculty to raise capital, recruit a team, and put time and resources into growing a company around technology developed here. In Beth's case, she was also drawn to TVC's portfolio of spinouts and decided an early-stage existing startup was a better fit. "I am fascinated with the research being done by all of the incredible inventors at the U, but my background and experience lend themselves best to a small, young startup looking to grow," said Beth. Within six months of engaging with TVC, Beth became the new CEO of Majelco Medical, Inc., where she looks forward to leading the company to a new level of success.

Finding the right CEO, however, is just one element of growing a successful startup. To assist the EIRs (and other CEOs of university startups), TVC developed STARTUP 360™ in 2017. This program connects entrepreneurs with a full suite of consultants and business advisors, as well as specific industry contacts. EIRs can access experts in law, insurance, banking, marketing, intellectual property, venture capital and more. These resources help expedite the multitude of aspects of starting up a company, surrounding the CEO with resources that would otherwise be difficult and expensive to identify.



The entrepreneur in residence program—together with STARTUP 360™—helps fulfill TVC’s mission of establishing and supporting university startups. By installing accomplished entrepreneurs as CEOs and offering them comprehensive support services, TVC is greatly improving their odds of succeeding over the long term.

Following are profiles of three entrepreneurs in residence.

ANDY OLSON

ANDY OLSON IS A TVC ENTREPRENEUR IN RESIDENCE AND CEO OF INHERENT BIOSCIENCES

After successfully exiting four biotech companies and positioning a fifth for acquisition, Andy Olson wanted to find a promising technology to bring to market. He started his search at the U.

“Utah is in a golden age of biosciences right now, and the U’s research is helping drive much of this,” said Olson. “For my next company, I wanted to find an emerging life science tech that would solve a clinical problem and significantly improve the diagnostic yield.” Academic centers like the U that are attached to major health systems are often the best places to find promising technologies, and Olson knew that partnering with the faculty on laboratory-developed tests would be a good path to market.

Olson reached out to TVC, which in turn provided him with a list of technologies in his area of specialization (reproductive treatments), as well as what stage of development each was in. “This highly curated information helped me quickly narrow the list to those technologies that seemed like a good fit,” he said. TVC set up introductions with the respective faculty members, and Olson found a good

match with relative ease. “This was so much more efficient and effective than trying to research technologies and professors on my own.”

The resulting company, Inherent Biosciences, was established earlier this year. As CEO, Olson will help steer the technology to market as a diagnostic test, target an accessible market and establish clinical utility. “Once we’ve gathered about a year’s worth of clinical data, we can submit it to the FDA,” he said. “Considering that it takes, on average, 17 years for a new clinical product to become the standard of care, I think we will be able to significantly shortcut the process.”

“We can recognize potential applications that they might have never thought of.”

Olson credits TVC with helping him every step of the way and is especially grateful for the introductions the staff made to professional service providers. “TVC connected me to a law firm that has a practice specifically for health science startups,” he said. A company’s early stages are very intellectual property-intensive, and this was especially the case for Inherent Biosciences. “We were combining two IP portfolios from two different

institutions,” Olson said. “The law firm helped me draft and negotiate the option agreement. The first two questions investors always ask are, ‘What’s your IP portfolio, and who is your general counsel?’ Being able to answer both of these questions with confidence means the conversation will continue.”

Understanding that startups are usually cash-poor in their earliest stages, law firms that work with STARTUP 360™ have agreed to defer billing until the startup has secured its first round of funding. This has made all the difference for Olson. “I didn’t have the capital or the legal counsel to be able to do this myself,” he said. “The

deferred payments mean I can use the limited capital I have right now to build the business.”

Although TVC referred the firm to Olson, the University and the law firm do not have a formal agreement, and this is to everyone’s benefit. “The law firm is not being paid by TVC, so I know that they are acting in the best long-term interest of their client (me),” said Olson. “This goes a long way toward establishing trust.”



KEVIN MAHER

KEVIN MAHER IS A TVC ENTREPRENEUR IN RESIDENCE SPECIALIZING IN GEOSCIENCE AND ENGINEERING TECHNOLOGIES

Kevin Maher has dedicated his entire career to preserving and improving the quality of our natural resources. He worked for decades with municipalities to build water systems, and with oil and gas companies to treat mining waste. "As an engineer, I have always tried to work on projects that provide a net-benefit for society," said Maher.

When Maher wanted to find his next opportunity, he went to TVC. "We're entrepreneurs because we want to create something," Maher said. "It's only logical that we would go looking for our next big idea where those ideas coexist with the people who can help realize them."

That's not to say Maher didn't have some initial reservations. "I was worried TVC would be an opaque bureaucracy, and I'd be wasting my time," he said. However, his experience has

been quite the opposite. "TVC has structured the program to cut out any unnecessary steps. EIRs can see new and emerging technologies immediately and up close. And the structure encourages both parties—TVC and the EIRs—to be diligent and proactive."

TVC has allowed Maher to test-drive a wide swath of innovations coming out of the U's physical science and engineering departments. "I get an inside look into the technologies that appeal to me, but TVC also allows me the space and the time to determine whether I'm the right fit—in terms of vision, values, and goals—with the faculty inventor. If they are going to entrust us to being stewards of their life's work, they need to be sure that we're the right person, too."

As Maher evaluates the techs, he also provides real-world feedback, which can be invaluable for faculty whose experience is typically academic. "I've had a long career, so I can tell pretty quickly if a technology will have commercial legs.

A mechanical engineering professor showed me a system he had developed to treat wastewater produced from oil and gas drilling. I told him he has a great technology, but his price point is ten times that of comparable solutions on the market. He thanked me for helping him not waste his time and he immediately stopped working on the tech. This is the value of the outside perspective that we bring."

In addition, Maher said this same dynamic often works in reverse. "Professors can get too close to their research to realize that they have actually developed something quite innovative. We can recognize potential applications that they might have never thought of."



Pictured:
Kevin Maher



Pictured:
Jerry Rudisin

JERRY RUDISIN

JERRY RUDISIN IS A TVC ENTREPRENEUR IN RESIDENCE SPECIALIZING IN SOFTWARE TECHNOLOGIES

For Jerry Rudisin, a company's ultimate success is always rooted in its marketing plan. "I view everything through a marketing lens," said Rudisin. "I've been a full-time CEO for four companies, and each was in a different domain." But I was successful because I was able to define a defensible market segment for each and move the company in that direction."

what market need they will satisfy, you'll go a long way toward building a sustainable business."

As a TVC EIR, Rudisin was a crucial early advisor to Chris Gregg, associate professor of neurobiology, anatomy, and human genetics. Gregg presented his idea—mapping the human behavioral genome—to a group of TVC staff and EIRs, and Rudisin was immediately hooked. "The boldness of Chris's idea is breathtaking," Rudisin said. "The technology has so many potential applications, which is part of what makes it exciting." But ideas can die if they have too many possibilities, so Rudisin knew the first thing to do was identify an initial target market. He helped Gregg develop a commercial strategy and business plan in pursuit of that market (academic researchers), and continued to advise him until Gregg hired a CEO in July. "I went to TVC because faculty members generally don't know how to start companies," said Gregg. "I had no way of finding people who were experienced in this realm, so getting linked up with TVC's mentors right away was a huge step for generating and keeping up momentum." (You can read more about Gregg's company, DEEPFEATS, on page 11.)

According to Rudisin, "DEEPFEATS is just one example of how far out in front the U is, especially in genetics. And TVC is helping companies like these set the tone for innovation and development." •

Rudisin joined TVC's entrepreneur in residence program in 2018 and advises the TVC staff and faculty on a broad range of technologies and companies. Regardless of the issue, he always takes a "marketing-first" approach.

"No matter the product or service, I firmly believe you need to define the right commercial strategy before you do anything else," said Rudisin. "If you can articulate what's innovative about a company's product, what their wraparound services are, and

CONTACT US

University of Utah

Center for
Technology & Venture
Commercialization

615 Arapeen Drive,
Suite 310
Salt Lake City, UT
84108

(801)581-7792





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