BIOSPHERE

THE MAGAZINE OF UTAH'S LIFE SCIENCES INDUSTRY

2021
ISSUE

RISE OF THE BIO HIVE

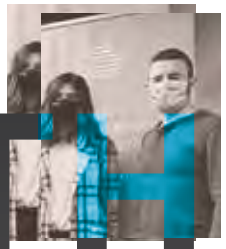
BEGINNINGS...
HOW IT ALL STARTED HERE

GOING, GOING GONE...PUBLIC
LIFE SCIENCES IPOs

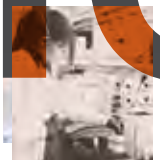
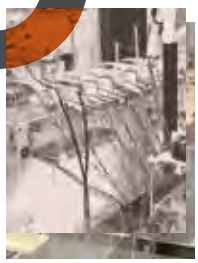
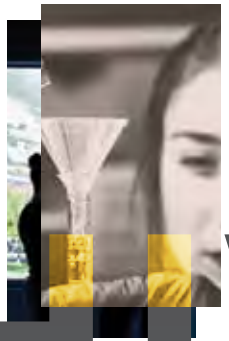
WOMEN LEADING LIFE SCIENCES
WHAT INSPIRES THEM

THE BIOHIVE VISION
BOLDLY BRANDING & BUILDING THE INDUSTRY





PRICE

COMMERCIAL REAL ESTATE
DEVELOPMENT AND INVESTMENT

LETTER FROM THE CHAIR

Welcome to BioUtah's 2021 Utah Life Sciences Magazine. You'll notice that our annual publication has a new name, Biosphere. The new name complements this year's theme, "The Rise of the BioHive" and reflects a new phase of opportunity, growth and visibility for Utah's vibrant life sciences industry. Biosphere will help carry that message.

We often joke that Utah's life sciences sector - one of the fastest growing in the nation - flies beneath the radar. But that's changing with BioHive— a bold new initiative, driven by BioUtah, to tell the story of the state's life sciences industry and raise its profile on the local, national and global stage.

Our feature article focuses on the vision and mission of BioHive and it's promise to both unite and ignite our expanding life sciences hub - a collective of more than 1,100 companies from Logan to St. George - all dedicated to bringing life-changing and life-saving technologies, diagnostics and therapies to patients.

Inside, we also turn a spotlight on the leaders (including inspiring women), companies, innovations and culture of entrepreneurship that, together, well-position our industry to succeed today and excel far into the future. Investors as well as our community partners are recognized. They all figure prominently in BioHive, supporting and financing startups and creating a bio-friendly business environment where cutting-edge enterprises can flourish.

In short, BioHive has arrived and we're proudly spreading the word. We invite you to turn the page to see what the "buzz" is all about!

Sincerely,

Randy Rasmussen
Chair
BioUtah Board of Directors

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LETTER FROM UTAH'S GOVERNOR

STATE OF UTAH

SPENCER J. COX
GOVERNOR

OFFICE OF THE GOVERNOR
SALT LAKE CITY, UTAH
84114-2220

DEIDRE M. HENDERSON
LIEUTENANT GOVERNOR

Dear Reader,

Utah is one of the top states in the nation for business to grow and thrive, making our economy one of the strongest in the nation. A key part of our growing economy is the life sciences industry. The life sciences industry in Utah has been named BioHive, coined to give instant recognition to the life sciences hub that has taken root in the Beehive state. My office is excited to promote this new brand far and wide.

Life sciences have become a strategic pillar of Utah's economy. The industry embodies entrepreneurship and innovation in their work to improve and save lives through advanced testing, novel technologies, and groundbreaking cures.

Utah is committed to elevating life sciences in our schools, research centers, and manufacturing facilities through targeted local and regional initiatives. These initiatives will help the life sciences industry in Utah continue to grow.

Utah is one of the best states in the nation to live, work, and raise a family. If your company is not in Utah, we encourage you to come visit the Beehive state. You won't want to leave once you do.

Sincerely,

Spencer J. Cox
Governor of Utah

A BLOCKBUSTER YEAR FOR UTAH'S LIFE SCIENCES

"Life sciences is a forward-looking industry that's been a source of strength and resilience to the rest of our economy. Life sciences jobs offer Utahns advanced career options in support of the healthcare sector and a variety of applications. That's what we're seeing in our latest research for COVID and prior years."

— Levi Pace, PhD, Senior Research Economist, Kem C. Gardner Policy Institute

Newly released data from the University of Utah's Kem C. Gardner Policy Institute shows that Utah's mature life sciences industry continues to experience strong growth relative to state and nationwide trends, even during the pandemic.[1]

Key Findings Include:

- Since 2007, life sciences growth has outpaced the rest of Utah's economy. In 2020, when the state experienced an overall 1.8% contraction in average employment, the life sciences industry experienced employment growth of 7.2%. **(Figure 1)**
- The number of life sciences jobs in Utah jumped 7.2% in 2020 - the second highest single-year growth among states. **(Figure 2)**
- In 2020, Utah's workforce concentration in life sciences reached 1.9% of all employees, first among states and more than double the national average of 0.9%. **(Figure 3)**

1. Pace, L, Burton, L, Growth Trends in Utah's Life Sciences Industry, Fact Sheet, Kem C. Gardner Policy Institute, 2021.

Figure 1. 2020 Employment Growth

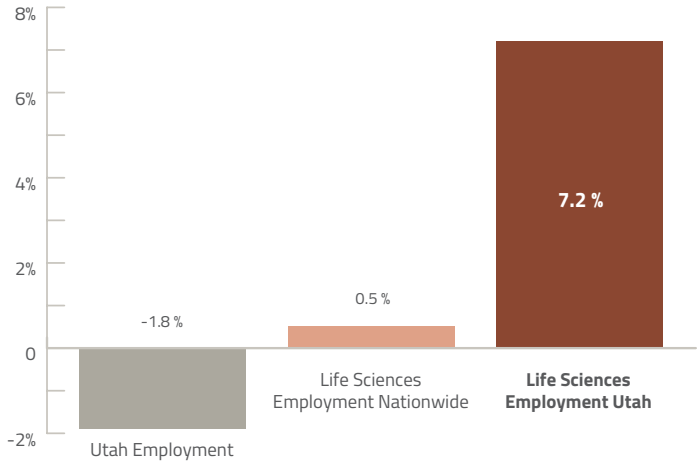
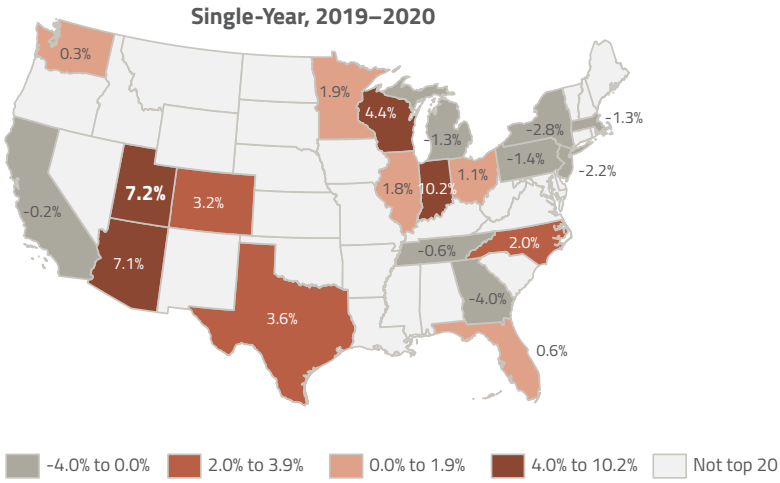
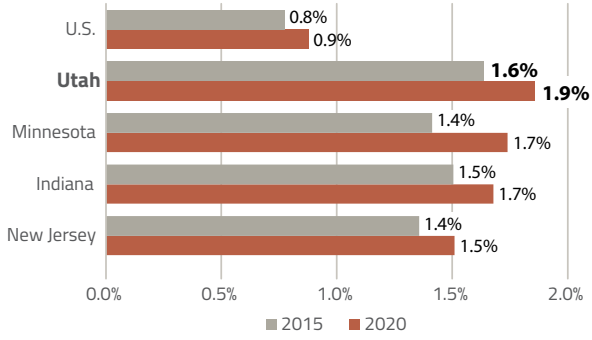


Figure 2. Life Sciences Industry Annual Job Growth
Percentage Change for States with the 20 Largest Life Sciences Industries



Note: Top 20 states selected by their 2020 life sciences employment level. Alaska and Hawaii, not shown, were not among the states providing the most life sciences jobs. Source: Kem C. Gardner Policy Institute analysis of data from the U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Figure 3. Life Sciences Workforce Specialization, 2015 and 2020
(Life Sciences Share of Total Employment in the Top 20 States)



Note: Employment shares represent all employees at life sciences companies, regardless of occupation. Top 20 states selected by their 2020 life sciences employment level. Source: Kem C. Gardner Policy Institute analysis of data from the U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

BEGINN

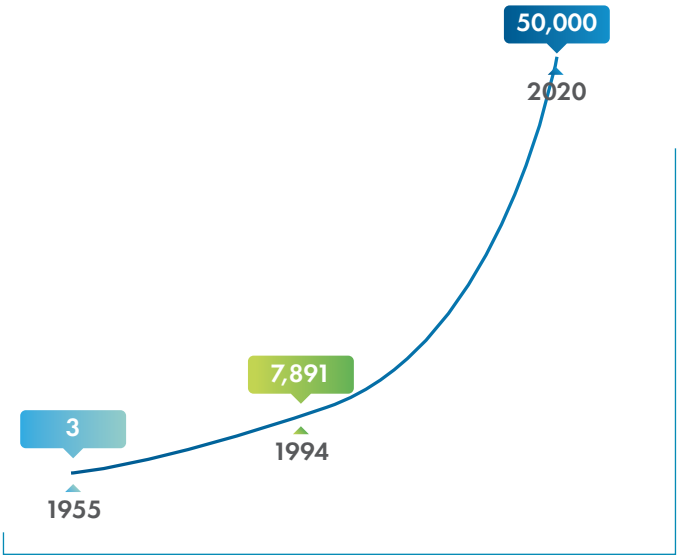
Nelson Labs 2021


Nelson Labs 1985

If the past is prologue, it should come as no surprise that the growth and success of Utah's life sciences industry today was seeded long ago by visionaries dedicated to medical innovation.

Some believe Utah's life sciences roots began with Willem Kolff and the artificial kidney in 1967 or the Jarvik Heart in 1973. Impressive to be sure, but Utah's rich history of medical discovery actually started much earlier. In the late 1950's and 1960's, Utah became a leading center of disposable medical devices because of three frustrated pharmaceutical representatives: Dale Ballard, Vic Cartwright and James (Jim) LeVoy Sorenson.

These three men joined together in 1955 to form Deseret Pharmaceutical Co., creating a disposable plastic catheter. The Utah company grew to be one of the nation's largest medical device companies at the time and traded on the New York Stock Exchange. In 1976, Deseret was sold



GROWTH OF LIFE SCIENCES EMPLOYEES IN UTAH

to Warner-Lambert who in turn sold it to Becton Dickinson in 1986. BD continues to operate the facility today.

INGS

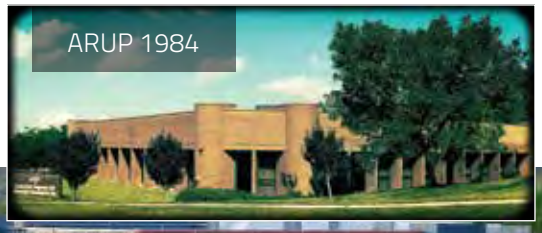
Deseret is said to have spawned many medical device companies in the state. One of those was Ballard Medical, launched in 1978 by Dale Ballard who had also co-founded Deseret. Ballard became best known for Trach Care, a line of respiratory suction catheter systems. Ballard was sold in 1999 to Kimberly Clark in a transaction valued at approximately $764 million. Kimberly Clark ultimately moved operations to Mexico.

Another was Sorenson Research, established in 1962 by Jim Sorenson, a Deseret co-founder. The growth of Sorenson was astounding and in 1980 with the assistance of his son-in-law, Gary Crocker, a recent Harvard Business School graduate, the company was sold to Abbott Labs for over $100 million worth of Abbott stock. That transaction made Sorenson the largest single holder of Abbott shares – shares which ultimately became worth billions. Today, ICU Medical occupies the former Abbott operations.

There were other generational links to Deseret, including Research Industries formed by Crocker in 1982. Research developed disposables for open heart surgery and became a public company, which Edwards Lifesciences ultimately acquired in 1997 for $240 million. Edwards was so pleased with its Utah experience that the company set up operations in the state and, ironically, took over the old Ballard Medical building in Draper where products from Research are still being made.

Utah Medical Products (UMP) was founded in 1978 and went public in 1982. UMP also had interactions with Sorenson Research, resulting in UMP licensing technology from Sorenson in 1982 – a license negotiated by then UMP CEO, Fred Lampropoulos. Lampropoulos went on to form Merit Medical, a company today with sales in excess of $1 billion.

"Many companies had connections to the early Deseret, Sorenson, UMP and Research Medical franchises, populated by experienced employees trained in these pioneering firms," explained Crocker, now president of Crocker Ventures. In fact, a 1994 Deseret News article estimated 70 companies could in some manner trace their roots to Deseret.



ARUP 1984

ARUP 2021

Merit CEO, Fred Lampropoulos commented, "Deseret Pharmaceutical was the mothership for the life sciences industry in Utah."

More growth followed. In 1985, TheraTech, Inc., arguably the first pharmaceutical company in Utah was co-founded by Dinesh Patel, Crocker, Dr. Bill Higuchi and Dr. Sung Wang Kim. TheraTech pioneered technology for delivering drugs via transdermal patch. In 2000, the company was sold to Watson Pharmaceuticals, Inc., in a transaction valued

at approximately $350 million. The products are still manufactured today by TEVA Pharmaceuticals located in the University of Utah's Research Park.

"TheraTech was probably the first "large" pharma company to go public in Utah," noted Patel, who currently heads up the Dinesh and Kalpana Foundation. "The acquisition by Watson Pharmaceuticals in 2000 for $350 million was one of the largest acquisitions in the state at that time. So many of TheraTech alums have gone on to bigger and better things."

NPS Pharmaceuticals led by Hunter Jackson followed shortly after TheraTech, as did Anesta, a University of Utah spin out, now owned and operated by TEVA.

Premier laboratories can trace their origins back several decades. In 1985, Nelson Labs was established by Dr. Jerry and Lynda Nelson. Originally housed at Research Park, Nelson Labs is now based in Taylorsville where the company has experienced significant growth as they work to meet the testing needs for the medical device and pharmaceutical industries.

Son, Jeffery Nelson assumed the reins of the company in 2006. In 2016, Nelson was purchased by Sotera Health. Since that time Nelson has grown to 14 facilities world-wide offering a comprehensive array of over 800 tests.

TheraTech 1993

Teva Pharmaceutical 2021

"We are regarded as a best-in-class partner with a strong track record of collaborating with customers to solve complex issues," said Nelson, who serves as chairman of Nelson Labs. "Our customers rely on our expertise to get their medical devices and pharmaceutical products to market."

"DESERET PHARMACEUTICAL WAS THE MOTHERSHIP FOR THE LIFE SCIENCES INDUSTRY IN UTAH."

- Fred Lampropoulos

Another local and renowned laboratory, ARUP Labs, had its start in 1984 as pathologists at the University of Utah found a way to serve more patients by expanding and operating as a nonprofit regional reference laboratory. Now a national nonprofit and academic reference lab at the forefront of diagnostic medicine, ARUP employs more than 4,000 workers and processes more than 50,000 specimens daily.

The growth story continued with BioFire Diagnostics, the Utah Human Genome Center, Myriad Genetics and a host of startups that would thrive and carry on the tradition of innovation.

A 1994 University of Utah study of the state's life sciences industry estimated there were 145 "biotech" companies in Utah employing approximately 7,891 workers in the medical device, laboratory and pharmaceutical sectors.

At present, according to the University of Utah's Kem C. Gardner Policy Institute, the industry employs close to 50,000 Utahns (130,000 direct and indirect).

In reflecting on this storied past, Crocker said, "We've come a long way since the early days of Deseret Pharmaceutical and the potential here for life sciences seems unlimited."


Our Expertise, Your Competitive Advantage
It's not the buildings, equipment, or automation from one contract manufacturer to another. They all fundamentally work the same at producing a quality part.
The difference between designing and delivering a good or industry-transforming medical device that advances your product program, even in the throes of a global pandemic, actually hinges more on the talented experts behind the curtain.
It's identifying, recruiting, and building the industry's most talented medical device manufacturing dream team to successfully deliver a new saliva diagnostic solution, so innovative, it changed industry testing protocols worldwide.
That's Spectrum.
Advancing your medical device product program means choosing the right outsourcing partner with the superhuman ability to handle the complexities of mass-scale medical manufacturing and global fulfillment.
Can our strategic industry knowledge, specialized skill, and proven business acumen transform, inspire, or advance your medical device program?
Yes. Yes, it can.
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spectrumsolution.com
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2021 Best of State Winner Science & Technology
Providing the test kits that keep MLB's stars on the field.
PROUD PARTNER OF MLB
Medical Device Engineering | Product Contract Manufacturing | Injection Molding | Chemical Formulation
Custom Packaging | Specialized Kitting | Global Distribution | Direct-to-Patient Fulfillment

PACK YOUR BAGS FOR *Utah*

THE SECRET IS OUT.

Utah is a great place to do business. Lower taxes, supportive regulatory environment, skilled workforce and a welcoming innovation hub are increasingly attracting companies to the state, including those in the life sciences.

Throw in major universities, access to the great outdoors and a host of cultural activities, and you have a winning combination that brings companies like Alucent Biomedical, Denali Therapeutics and Renalytix to Utah to work, play and prosper.

Alucent BIOMEDICAL

Alucent Biomedical

Utah wasn't top of mind when Alucent Biomedical was founded in Sioux Falls, South Dakota, by Avera Research Institute - part of the Sioux Falls Avera Health System. The company was focused on developing a revolutionary technology using a light-activated novel drug that would create a natural scaffold to treat peripheral artery disease (PAD), without the need for a permanent implant to keep vessels open.

Then Alucent hired Myles Greenberg, M.D., as its first full-time employee as president and CEO. Dr. Greenberg, who was already living in Utah, wanted to build a team that could take the company to the next level. But where would he find the talent he needed? The answer - right here in Utah.

"We set up in Utah in 2017 because we needed access to trained medical device and pharmaceutical personnel. We found that in abundance here – BioHive's thriving life sciences scene offers an amazing pool of talent with experience in the disciplines we need," said Greenberg. "We were able to assemble a professional team with the in-depth expertise needed to accelerate Alucent's progress toward helping patients suffering from vascular disease."

Now the company's lead product, the Vessel Restoration System with Photoactivated Linking, is starting human trials later this year. The company is also developing its Alucent NVS technology to enable patients with kidney disease to receive hemodialysis through a native arteriovenous fistula - the vascular access of choice due to longevity and lower complication rates.

DENALI

Denali Therapeutics

Denali Therapeutics is also eyeing Utah to bolster its talent pool and further advance its singular, passionate mission to DEFEAT neurodegenerative disease - think Alzheimer's, Parkinson's, ALS, and Hunter syndrome. Neurodegeneration is one of the most challenging, unmet needs of our

times, and Denali is taking on the fight by breaking through the historical barriers in discovery and development to deliver new, safe and effective medicines for people living with these chronic diseases.

The company, headquartered in South San Francisco and led by CEO and Utah native, Ryan Watts, is building a new, state-of-the-art biologics clinical manufacturing facility in Salt Lake City.

"We are excited to bring our important work to Utah," said Watts. "The Salt Lake City facility will provide Denali an opportunity to increase the flexibility and speed of advancing new investigational therapies into clinical trials."

Denali's Chief People Officer, Cindy Dunkle, added, "Utah also provides Denali access to a unique and expanded talent pool, particularly by leveraging expertise in the biologic science fields."

Today, this inventive company has a deep pipeline of investigational medicines rooted in novel insights into the genetics of neurodegeneration, including its proprietary brain delivery technology and biomarker-driven development. Denali believes these core scientific principles will increase the company's chances of success and help realize a future as a fully integrated global company serving patients.

"We look forward to joining Utah's growing and dynamic BioHive as we reach for the summit in defeating degeneration together!" added Watts.

renalytix™

Renalytix

As an avid skier, it was Utah's "greatest snow on earth" that first attracted Renalytix CEO, James McCullough, to Utah. But it didn't take long for him to discover that the state had a growing and dynamic life sciences industry with plenty of room to run. Exactly what his company needed. In 2019, McCullough made the move, relocating Renalytix headquarters from New York to Utah.

The company is thriving in its new home. It's KidneyIntelX™ solution helps to assess the risk of kidney disease progression in patients, allowing for more targeted and timely treatment. The test has received FDA Breakthrough Device Designation. FDA De Novo market authorization and Medicare coverage could come before year's end.

"Utah has created an incredible innovation ecosystem, so it was an obvious choice for Renalytix to establish operations in Utah as we continue to build a world-class operating team," said McCullough. "We have the great privilege of partnering with the University of Utah to enable the system-wide clinical implementation of KidneyIntelX, our platform for advancing kidney health and reducing the number of patients who need to undergo dialysis. We are grateful for the support of the Utah clinical community, including BioUtah and BioHive."

Kidney disease affects more people than cancer and heart disease combined. A Multi-Center Study found that KidneyIntelX was 72% more effective than the current standard of care in identifying early-stage patients at higher risk for disease progression.

GOING, GOING...

GONE PUBLIC

Pop the champagne! It's been a banner year for Utah life sciences companies making their way to the public markets. Life sciences companies typically have a varied investor base, including founders, angel investors and venture capitalists who help build the company. However, as a company matures, going public can generate the capital needed to reinvest in current operations, further fund R&D and expand.

Four Utah life sciences companies have gone public in the last year - Clene Nanomedicine, Owlet, Recursion and Sera Prognostics. While each of these companies is now publicly traded, their commitment to improving healthcare remains their guiding light.

Here are three of them at a glance.

SPAC Date: December, 2020
Funds Raised: $32M
Funds Raised Pre-SPAC: $155M
Market Capitalization: ~$500M (August 2021)
Headquarters: Salt Lake City, UT
Number of Employees: ~95

Clene, Inc.

It was December 30, 2020 and most people were focused on ringing in the New Year, but not Rob Etherington, Clene Inc. CEO. Etherington was focused on an important milestone for the company - the closing of its merger with the SPAC Tottenham Acquisition I Limited to form the combined, publicly traded company, Clene Inc. On New Year's Eve, Clene's common stock began trading on the Nasdaq under the symbol "CLNN".

Clene is a clinical-stage biopharmaceutical company that was founded in 2013 with a singular vision: to transform the treatment of serious neurodegenerative diseases.

"By creating the world's first public pure-play nanotherapeutic company, Clene is especially honored to bring forward the first neuro-reparative therapy candidate to potentially improve how patients see, move, walk and talk across Multiple Sclerosis (MS), Parkinson's, Amyotophic Lateral Sclerosis (ALS) and many other neurological diseases with Clene's lead asset, CNM-Au8," said Etherington.

CNM-Au8, orally administered, is currently being studied in multiple clinical trials for the treatment of MS, Parkinson's and ALS. Clene will see a read-out of its Phase 2 clinical data in people living with ALS later this year, with its Phase 3 registration trial in ALS and its Phase 2 MS clinical trials concluding by the end of 2022. Positive data from the trials could enable commercialization and bring new hope to patients suffering from these devastating conditions.

The combined company will also enable further clinical investigation of its second key asset, CNM-ZnAg, in a newly launched study for the treatment of COVID-19.

Owlet

Just shy of 10 years after its founding in 2012, a small team of Owlet executives on July 16, 2021, rang the bell at the New York Stock Exchange (NYSE) - officially listing the company on the exchange under the symbol "OWLT". Owlet went public through SPAC Sandbridge Acquisition.

The brainchild of a group of Brigham Young University students, Owlet is building the connected nursery ecosystem of the future. The company is best known for its flagship product, the Owlet Smart Sock, which uses pulse oximetry technology to track a baby's heart rate and oxygen while sleeping. Owlet has grown its suite of products to include a nursery camera and a sleep learning platform for infants and their parents.

While celebrating its place on the NYSE, the company also announced it has now monitored over one million babies, collecting an average of 11.5 billion heart beats per night to create a massive health data set to spur further research. To recognize this milestone, the company will donate $1 million in Smart Socks by the end of next year through nonprofit organizations it partners with. A far cry from the days when the company paid interns in pizza.

"As we enter this new chapter as a public company, it's exciting to see the accelerated momentum and impact Owlet will have," said Kurt Workman, Owlet CEO and co-founder. "We'll be able to reach more parents and more babies as we continue to expand internationally, offering new technologies, products and services to truly help them through this journey. Our mission is to provide babies and parents across the globe with access to health-sensing technology like Owlet."

Owlet's products are available in the U.S. and many countries around the world, sold on owletcare.com, as well as at retailers, including Target, Buy Buy BABY, Best Buy, Amazon and Walmart.

SPAC Date: July, 2021
Funds Raised: $135M (through SPAC and PIPE investment)
Funds Raised Pre-SPAC: $48M
Market Capitalization: $1.03B
Headquarters: Lehi, UT
Number of Employees: ~194

Recursion

IPO Date: April, 2021
Funds Raised: $501.8 (including underwriter's option)
Funds Raised Pre-IPO: $430M
Market Capitalization: $4.3B
Headquarters: Salt Lake City, UT
Number of Employees: ~330

Recursion

Co-founder and CEO Chris Gibson, PhD, will tell you that from its earliest days, the Recursion story was unlikely. The company was founded in 2013 by Gibson, a University of Utah graduate student, along with a second student and professor Dean Y. Li. They say they were underdogs and it felt that way. That was then.

Today, Recursion is publicly traded on the Nasdaq under the symbol "RXRX," having celebrated its listing on the exchange April 16, 2021 when it rang the opening bell from its headquarters in the Gateway in downtown Salt Lake City's west side.

Recursion is a clinical-stage biotechnology company decoding biology by applying machine learning and artificial intelligence to transform the drug discovery process.

"Incredible early investors like Lux Capital, Obvious Ventures, Epic and DCVC helped us realize that we, the early employees of Recursion, weren't alone in our belief that we could change the way drug discovery works. Recursion wasn't built to be acquired — it was built to take a big swing at an audacious, important mission to decrease the cost and increase the speed of drug discovery," said Gibson.

"The shift to becoming a public company increases visibility of what Recursion is trying to achieve, as well as heightens the potential for us to join forces with others who share our beliefs that change in the industry is possible. We hope the shift to being a public company further develops our scope and ultimately allows us to serve more patients, which is what drives everything we do at Recursion."

The company has offices in Salt Lake City, Utah, Milpitas, California and Toronto and Montreal in Canada. The company is in the process of doubling the size of its headquarters in Salt Lake City.

BREAKING THROUGH THE FDA

Innovative medical devices and diagnostics can get to patients and providers sooner under the U.S. Food and Drug Administration's (FDA) Breakthrough Device Program. The program provides a special regulatory Breakthrough Device Designation for medical products that have the potential to more effectively treat or diagnose serious or life-threatening conditions.

Utah companies, such as DiscGenics, IONIQ Sciences, PhotoPharmics and Renalytix, have been granted Breakthrough Device status for their novel medical technologies. The designation allows for priority FDA review, which can help fast-track to market cutting-edge medical advances.

DiscGenics™

DiscGenics, a privately held, clinical stage Utah based biopharmaceutical company is developing a groundbreaking cell therapy, known as IDCT (rebonuputemcel) for the treatment of chronic low back pain caused by degenerative disc disease (DDD). The condition is estimated to affect approximately one in four of adults in the U.S. and accounts for nearly 60 percent of prescription opioid usage nationwide.

The treatment is a homologous and allogeneic injectable disc cell therapy currently under evaluation in two parallel clinical trials in the U.S. and Japan for its effectiveness in reducing pain and disability associated with disc degeneration. The American study is a prospective, randomized, double-blind, controlled clinical trial being conducted at 12 sites across the country, including The SMART Clinic in Draper.

In August 2019, the FDA granted IDCT its Breakthrough Device Designation.

"With IDCT, we have the potential to help millions of patients worldwide and we are honored to be stewards of this game changing medical innovation," said DiscGenics Chairman and CEO, Flagg Flanagan. "The Breakthrough Designation for IDCT is an important recognition of that potential and validates the daily collaboration and innovation among our amazing, hardworking team here in Utah."

With this designation, DiscGenics may benefit from early and frequent communication with the FDA, become eligible for Accelerated Approval and Priority Review programs, as well as a rolling review application process for marketing licensure. Each benefit potentially provides DiscGenics an opportunity to accelerate development and expedite approval of its proprietary treatment. making the therapy available to patients as quickly as possible.

Originally located at the University of Utah's Research Park, DiscGenics moved to Salt Lake City's Northwest Quadrant International Center where the company recently completed construction and received a Certificate of Occupancy on its new 19,500 square foot manufacturing space within its headquarter facility. The site includes research and development space and a cGMP allogeneic cell manufacturing facility built in anticipation of future commercial demand for IDCT.

IONIQ SCIENCES

Another local company is innovating how physicians detect cancer. IONIQ Sciences is developing non-invasive methods for detecting changes in the body's electrical properties that can show the presence of cancer in just 20 minutes. Research shows that lives and money can be saved when cancer is detected at its earliest, most-treatable stages.

"Over the last 15 years, we have worked with 24 premier institutions around the world and accumulated a substantial library of clinical evidence of more than 20 million data points from 1,200 subjects resulting in a Breakthrough Device Designation from the FDA in February 2020 for our IONIQ ProLung Test," explained company CEO Jared Bauer. "From this foundation, we have transitioned from developing a single lung cancer test to developing a Multi-Cancer Screen."

Company leaders envision a world where cancer is no longer feared – where it is readily treatable and no longer a financial burden. Because early detection is critical to effective treatment, the IONIQ team will not be satisfied until the scourge of cancer has been eliminated.

PhotoPharmics

PhotoPharmics, a Utah company and a pioneer in specialized phototherapy, received FDA Breakthrough Device Designation for the company's non-invasive Specialized Phototherapy Device in April 2020.

"Our at-home, non-invasive device is an adjunct therapy for the treatment of Parkinson's disease and will likely be prescribed concurrently with standard dopaminergic therapy," said PhotoPharmics CEO, Kent Savage. "Our focus is to help people with Parkinson's improve function and return to what they enjoy doing most. This recognition by FDA is an important validation of our work."

According to the Parkinson's Foundation, Parkinson's is the fastest growing neurodegenerative disease with over 60,000 Americans diagnosed.

The company is marshalling the financing for a pivotal phase 3 study of its technology and expects to start recruiting for that trial sometime later this year.

renalytix™

"Our leadership team has 30-plus years of research and experience in the field of phototherapy," Savage said. "We previously developed specialized light solutions now widely used to regulate circadian rhythms in seasonal affective disorder, sleep disorders, anxiety, and depression (acquired by Philips-Respironics in 2007)."

Joining an impressive list of innovative life sciences companies in Utah, Renalytix's KidneyIntelX™ platform was granted Breakthrough Device Designation by the FDA in May, 2019. The designation recognized the platform as a device that provides more effective treatment or diagnosis of the life-threatening and irreversibly debilitating disease of the kidneys. It is a breakthrough technology and has *no* FDA-approved alternatives in the U.S.

Importantly, KidneyIntelX provides clinicians and their patients with a proven prognostic tool that accurately predicts those patients at the highest risk for kidney disease progression.

"We built KidneyIntelX to be focused on driving population kidney health and to achieve the highest level of quality and compliance standards in diagnostics," said Renalytix CEO, James McCullough. "With our announced large healthcare partnerships, including University of Utah, Mount Sinai Health System and Atrium Wake Forest, we will rapidly expand prognostic testing of at-risk diabetic kidney disease patients to help maintain kidney health."

BioFire Manufacturing, Salt Lake City, Utah

FFKR ARCHITECTS | Science + Technology Studio

FFKR Architects Science + Technology Design Studio focuses on emerging growth industries in the market sectors of science, technology, biomedical instrument manufacturing, lab space, research and development facilities, and clean room design.

BioFire Diagnostics, Salt Lake City, Utah

We can directly assist with the planning, programming and expansion efforts of capital improvements for companies with highly specialized technical requirements including labs, clean room spaces, manufacturing areas, and support spaces.

Our body of work ranges from small renovations to major new laboratory facilities. We bring to each project a commitment to achieving the goals and aspirations of the client. We are known for our ability to collaborate with scientists, researchers, and administrators, and to facilitate consensus among project stakeholders.

The value of working with the Science + Technology Design Studio is that we assist our clients in the design of exemplary facilities that are cost-effective to construct and maintain; with flexibility for future expansion, both physically and technologically in an era of rapid change.

www.FFKR.com | 801-521-6186 | sciencetechstudio@ffkr.com

FFKR ARCHITECTS

RISE OF THE BIO HIVE

It was February of 2020. Recursion CEO, Chris Gibson, was in his office. Across town, Jared Bauer, CEO of IONIQ Sciences was in his. They didn't know each other, but they were thinking the same thing - how do we get the word out about Utah's booming life sciences industry?

Then they met and it was an instant mind meld.

"We both felt strongly that the industry needed a brand and that we needed to be big and bold about it", said Gibson. "So we conceived of 'BioHive' as a way to bring the public and private sectors together and to strategically brand Utah's dynamic life sciences ecosystem to raise its profile here at home and abroad."

Leading up to the BioHive founding, Gibson and Bauer consulted with BioUtah, the state's premier trade association for the life sciences. They also reached out to industry and government stakeholders to get their input.

"It was overwhelmingly positive," said Bauer.

BioUtah would house the new branding initiative. "BioHive, a DBA of BioUtah, would become the megaphone for our industry message and a mechanism to include parts of the community that typically do not participate directly with a trade association," said Kelvyn Cullimore, president and CEO of BioUtah.

BioHive tells the story of Utah's exceptional life sciences hub, which includes over 1,100 companies. The industry itself is diverse with strengths in medical devices, diagnostics, genomics, therapeutics and digital health technology.

To come up with the winning brand name, Gibson and Bauer held a friendly competition between their employees for a $500 prize. Names like Bio Nerds got a laugh, and there were others such as Epic Tech and Bio Range, but in the end, both companies, in separate competitions, hit on 'BioHive'. Gibson and Bauer each wrote checks.

"BioHive just fit the bill," added Bauer. "It reflected the industry's fundamental grounding in science - Bio - as well as the exceptional work ethic and enterprise of Utah, the BeeHive state."

As the name started circulating, it seemed to resonate. Importantly, BioHive wasn't just about the future of Utah's life sciences. It was also a nod to the past, a recognition that the ecosystem BioHive celebrated today had evolved through decades of passion and the hard work of many.

The Time Was Right

The concept of a brand for the industry wasn't new. Utah's life sciences leaders had for some time talked about building an identity and broadening inclusion of stakeholders for the flourishing sector. Governor Gary Herbert had designated life sciences as a strategic economic cluster, but still, there was a lack of fresh data to fully capture the state's life sciences landscape.

"Those of us on the ground saw that something special was happening here," noted Cullimore. "Startups were sprouting, our medical device, diagnostic and biotechnology companies were expanding and creating jobs, and others were relocating to Utah. Yet, we couldn't quantify it. And if we couldn't quantify it, how could we sell it?"

That began to change with a 2018 study by the University of Utah's Kem C. Gardner Policy Institute. The study looked at the economic impact of Utah's life sciences industry and found that of the 20 largest life sciences communities in the nation, Utah was the fastest growing (2012-2017). An updated fact sheet from the Institute shows that Utah has retained a high standing, number two, in life sciences growth for 2020. Over the period from 2012 to 2020, Utah fell short of being named number one by just six one hundredths of a point. Furthermore, national studies have solidified Utah as a top-tier state for life sciences innovation and employment. The Biotechnology Innovation Organization's 2020 TEConomy report showed that Utah was one of only four states with concentrations in three life sciences subspecialties: drugs and pharmaceuticals, medical devices and research, and testing and medical laboratories. In the Advanced Medical Technology Association's 2021 study on the economic impact of the medical technology industry, Utah ranks consistently in the top ten for medical device manufacturing.

The totality of the data was potent, but beneath the numbers was more good news. Notably, Utah had created a culture of collaboration and discovery that set it apart from more well-known tech regions on the coasts. Individual companies were getting the attention of investors. They were raising funds, successfully commercializing life-changing products and making a splash to message from. The larger community was also rallying around the industry. Governor Spencer Cox came on board as did community partners, such as the Governor's Office of Economic Opportunity (Go Utah), Salt Lake City Mayor's Office, University of Utah's Partners for Innovation, Ventures, Outreach & Technology (PIVOT) Center, EDCUtah and World Trade Center Utah. The creation of BioHive would be a team effort, with credit going to all these organizations and more.

The industry had achieved a critical mass and BioHive would, in a word, generate the 'buzz' to put the nation's fastest-growing life sciences hub on the map.

"When we looked around at the tremendous momentum, growth and innovation taking place in our ecosystem, we knew the time was right to launch BioHive" said Gibson.

A Million People Pointing to the Same Stage

With all the stars aligned - a catchy turn of phrase, support from public and private partners and the industry stats to back it up - BioUtah formally revealed the BioHive brand at its November 2020 Utah Life Sciences Summit.

"It was in the midst of the pandemic," recalled Cullimore. "Bauer, Gibson and the interim director of BioHive, Katelin Roberts, CEO of LineLogic, stood at our virtual Summit podium and announced that we were all going to be part of something bigger than ourselves. It was an exciting moment."

BioUtah, which has been adding more and more members to its roster, actively represents the industry interests, while the BioHive initiative is designed to incorporate the broader life sciences community, including support industries as well as the interests of public and government entities. It coalesces the voices of all these stakeholders into a broader communication strategy for this life sciences hub and telegraphs expectations of what the future will hold.

Roberts put it this way, "The brand reminds us that we're more than just individual companies, we're a collective working side-by-side to innovate, to improve healthcare and give patients hope the world over."

Uniting the industry under a single BioHive banner creates a larger stage from which to tell the story. That stage, in turn, ignites a force that's greater than the sum of its parts - the proverbial rising tide lifting all boats.

"When we join forces as a cohesive community and create a formidable stage, it's really powerful," said Bauer.

"We want a million people pointing to the same stage, hearing the same consistent message and feeling like they are all invited to be a part of it," stressed Gibson. "Not only does this stage give individual companies a platform to stand on, but suddenly the audience becomes a lot larger, which increases our ability to expand the ecosystem and succeed."

What then? BioHive becomes a magnet for venture capital, talent and strengthening the workforce. It also gives Governor Cox, state and local officials and the entire 'halo' of supply-chain businesses a simple, compelling narrative with which to promote Utah's life sciences. Think Silicon Slopes for high-tech and BioHive for life sciences - a complicated subject at once becomes easy to understand.

The real genius of BioHive is that it doesn't just tell the story of Recursion, or Merit Medical, or Stryker or any one enterprise. Instead, it unites and reflects the industry as a whole - from academic research centers, entrepreneurs and established global companies, to real estate, investment and intellectual property law firms. All are part of the BioHive. BioHive pride is catching on as life sciences companies from Logan to St. George fly the BioHive banner at their facilities. The banners symbolize a crossroads for the industry. Gibson and Bauer have given this a great deal of thought. In their view, BioHive provides a unique opportunity for the industry to define what kind of innovation hub it wants to be. The industry has matured, but it's still young enough to be intentional about choosing its direction. For instance, BioHive could choose to focus on mentorship, workforce, diversity and inclusion.

BioHive is governed by an 11 member public/private board of directors. It is sustained by sponsorships, including $600,000 in matching funds from the State of Utah to help seed the initiative.

The era of BioHive is here and here to stay. It may not be a household name…yet…but it's off to a remarkable start and already making a name for itself.

LOCAL ROOTS

Originally transplanted from Idaho, BioFire Diagnostics has established deep roots in Utah over the past two decades. BioFire's partnerships with local university researchers, ground-breaking technologies, and exponential growth have strengthened Utah's health sciences ecosystem.

FROM THE BEGINNING, BioFire's product development has centered around molecular polymerase chain reaction (PCR) technologies. Our groundbreaking work has set a new standard for infectious disease diagnostics across a spectrum of syndromic diseases.

For instance, the BioFire® Respiratory 2.1 (RP2.1) Panel recently became the first COVID-19 test to receive FDA authorization outside the Emergency Use Authorization pathway. In addition to this remarkable achievement, BioFire has a robust pipeline of game-changing panels and instruments on the near horizon.

200%
GROWTH IN UTAH-BASED EMPLOYEES FROM 2015-2020

1 MILLION
SQUARE FEET FACILITY SPACE IN UTAH

2 MEGAWATTS
OF SOLAR ENERGY PRODUCED AT THE NEW UTAH FACILITIES

BIOFIRE
BY BIOMÉRIEUX

GLOBAL REACH

BioFire's second fully dedicated manufacturing site, awarded Most Outstanding Commercial/Manufacturing Project in Utah by Utah Construction and Design Magazine

BioFire has a large presence in Utah, with six facilities and 2,800 employees. But it is supported and strengthened by the global reach of its parent company, bioMérieux, a global leader in in vitro diagnostics for over 55 years. bioMérieux operates with a deep commitment to improving public health worldwide. To that end, bioMérieux contributed half of its 2019 dividends, or $22 million, to efforts to respond to the COVID-19 health crises.

> "The BioFire Respiratory Panel 2.1... is the first SARS-CoV-2 diagnostic test that will be permitted to be marketed beyond the public health emergency."
>
> —Lauren-Jei McCarthy, FDA

160+
COUNTRIES SERVED

$1.9 MILLION
IN CONTRIBUTIONS TO UTAH ORGANIZATIONS IN 2020

13,000
BIOMÉRIEUX EMPLOYEES GLOBALLY

BFR0001-4992-01

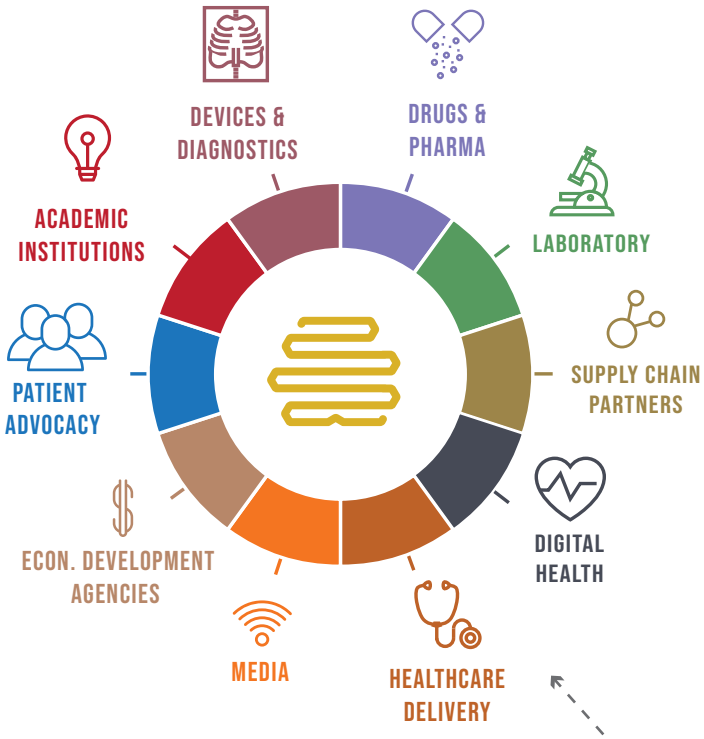
46%

AVERAGE WAGES IN LIFE SCIENCES ARE 46% HIGHER THAN OTHER INDUSTRIES

130,000+
DIRECT AND INDIRECT JOBS

#2 IN NATION

FROM 2012-2020, UTAH'S LIFE SCIENCES INDUSTRY WAS THE SECOND FASTEST GROWING IN THE NATION



biohive

THE WORLD OF BIOHIVE

3/2/10

3 UTAH CITIES RANK IN THE TOP 10 BEST PERFORMING LARGE CITIES. 2 UTAH CITIES RANK IN THE TOP 5 BEST PERFORMING SMALL CITIES.

#1

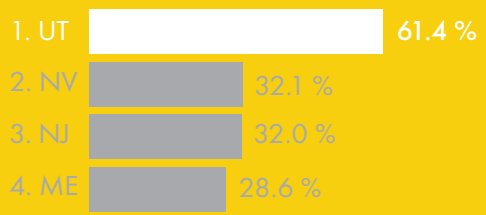
UTAH HAS THE BEST STATE ECONOMY IN THE NATION

#8

UTAH IS #8 IN THE NATION FOR TOTAL MEDTECH REVENUE GENERATED

#1

UTAH IS #1 IN THE NATION FOR ACADEMIC LIFE SCIENCES R&D GROWTH 2016-2018



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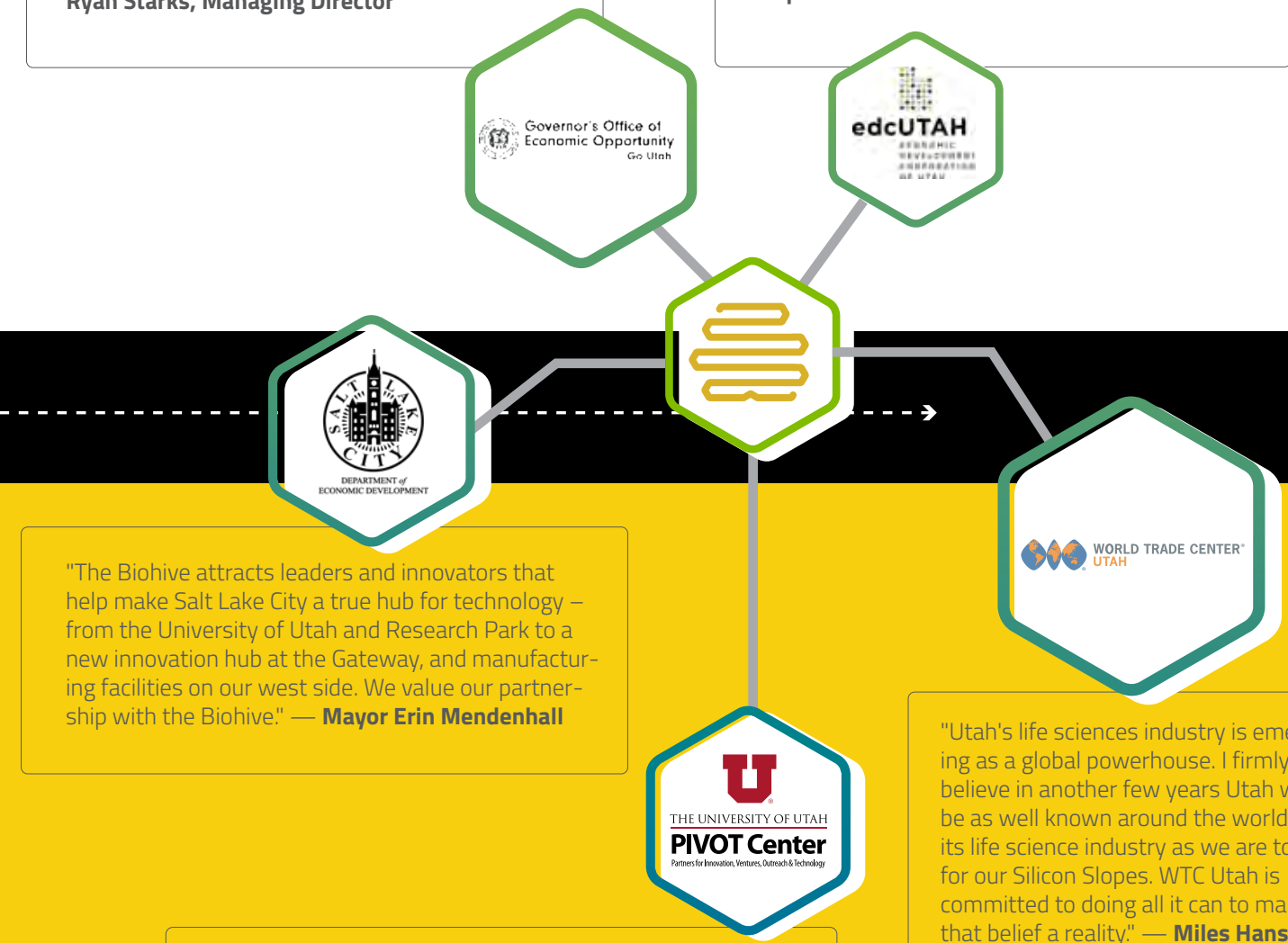
COLLABORATION IS CHARACTERISTIC OF UTAH'S BIOHIVE

"From ideation to commercialization and beyond, a good dose of teamwork is important to the success of our industry," said Jared Bauer, CEO at IONIQ Sciences and co-founder of BioHive. "Our community partners are important members of the BioHive team."

"Go Utah is a proud sponsor of BioHive. Our partnership with BioHive proved invaluable when we worked together to address the COVID-19 pandemic and will continue to benefit both our state's economy and public health worldwide." — **Ryan Starks, Managing Director**

"BioHive is an engaging brand that puts a spotlight on the innovations arising in Utah's life sciences industry. It will accelerate the industry's economic impact through attracting talent and venture capital investment." — **Theresa Foxley, President & CEO, Economic Development Corporation of Utah**

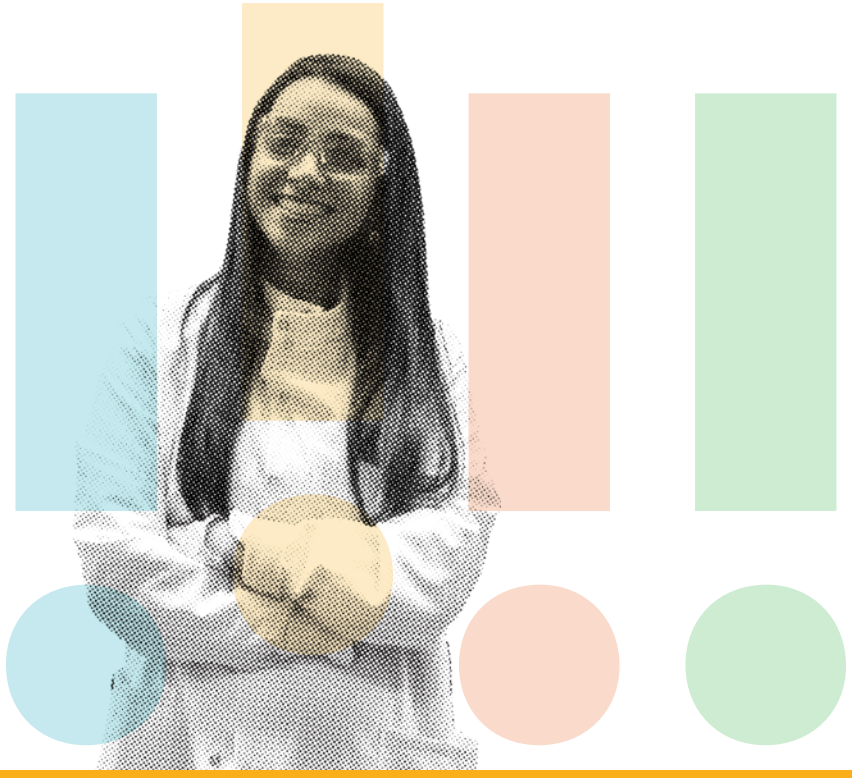


"The Biohive attracts leaders and innovators that help make Salt Lake City a true hub for technology – from the University of Utah and Research Park to a new innovation hub at the Gateway, and manufacturing facilities on our west side. We value our partnership with the Biohive." — **Mayor Erin Mendenhall**

"Utah's life sciences industry is emerging as a global powerhouse. I firmly believe in another few years Utah will be as well known around the world for its life science industry as we are today for our Silicon Slopes. WTC Utah is committed to doing all it can to make that belief a reality." — **Miles Hansen, President & CEO World Trade Center Utah**

"PIVOT has been proud to partner with BioUtah for years to foster a community of innovation in the life sciences. Their BioHive initiative provides a new and exciting vehicle for furthering that effort in a big way. We are pleased to be part of the BioHive." **— Keith Marmer, DPT, MBA, Chief Innovation and Economic Engagement Officer, University of Utah**

Your idea could save lives. You need R&D funding.



Technology innovation funding coming Fall 2021

The Utah Innovation Center announces a new funding pilot program for Utah Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) applicants and winners called Utah Technology Innovation Funding (UTIF).

Phase I Applicants
Microgrants for eligible Utah small businesses to offset the costs of writing an SBIR/STTR proposal

Phase I Winners
Nonrecourse loans for eligible Utah small businesses to help bridge the gap between Phase I and Phase II SBIR/STTR R&D efforts

Schedule a consultation to find out if the SBIR/STTR program is right for you:

Go-Utah.FYI/UICHours

Governor's Office of Economic Opportunity
UTAH INNOVATION CENTER

business.utah.gov/utah-innovation-center
innovationutah@utah.gov

FUELING ENTREPRENEURSHIP IN THE BIOHIVE

Innovation is driven by the vision of people whose creative minds work on developing fresh ideas to tackle problems that exist in the world and find solutions to solve them.

In Utah, those visionaries are leading the way in numerous industries, including technology, business and life sciences, among others. And many of those leaders are fueling an entrepreneurship boom in the state's BioHive ecosystem.

altitude ▲ lab

Founded in June 2020, Altitude Lab has become a launchpad for the next generation of diverse startup founders to find community and build the solutions that will serve a radically changing patient population. Altitude provides the physical infrastructure and a community of experts, investors and mentors to help entrepreneurs navigate the unique challenges of the healthcare industry.

Altitude recognizes that while all healthcare founders struggle to find and fund the infrastructure, talent and support necessary to succeed, underrepresented founders are further disadvantaged because they lack access to the critical networks required to achieve these same goals, explained executive director Chandana Haque.

"Diversity builds robust economies, innovative businesses, smarter communities and a healthier world," she said. "That's why we need places like Altitude Lab."

To bridge these gaps, Altitude provides residents with access to the latest molecular and cell biology technologies. Resident startups spend **40 days a year with leading national venture capitalists** as well as participate in healthcare-specific workshops and professional networking opportunities.

Southern Utah is home to Atwood Innovation Plaza, founded in 2017 on the campus of Dixie State University (DSU). It was named after Lindsay Atwood, a serial entrepreneur from St. George who donated significantly to catalyze innovation through the establishment of the plaza. Housed in the former East elementary school across from the university stadium, the Plaza is presently incubating over two-dozen companies with plans to ultimately grow to three-dozen companies. Many of the companies are life sciences based. One of those companies is Soft Cell Bio Research.

Soft Cell was founded in 2014 to explore L-form bacteria, a type of bacteria that shed their cell walls and become largely invisible both to the immune system and to the many antibiotics that target cell walls. Their mission is to develop laboratory tests that can detect largely hidden bacteria in blood, along with their sensitivity to antibiotics.

Atwood Innovation Plaza plays a key role in advancing innovation not only on the DSU campus, but throughout Southern Utah by hosting quarterly pitch competitions and providing resources, such as Utah's largest Makerspace, an Intellectual Properties Protection Office and Business Resource Center for early stage entrepreneurs.

BioInnovations GATEWAY

Another example of entrepreneurial innovation is BioInnovations Gateway (BiG) - a unique life science incubator fueling both entrepreneurship and workforce development. Since 2009, BiG has made economic development dreams come true for early-stage life sciences companies. While a member of the incubator, entrepreneurs can preserve research and operating capital by utilizing over 25,000 square feet of private and shared laboratory space, state-of-the-art equipment, engineering prototype labs, 3-D printers, and conference facilities, thereby shortening the time to market. Entrepreneurs also have access to mentors and other opportunities to develop their leadership capabilities.

Unlike other incubators with similar resources, BiG's workforce training begins in high school - increasing the skills and knowledge of its participants. Its student training and internship programs represent a fundamental value proposition for Utah and the success of the life sciences industry as the state looks to address the current workforce shortage affecting companies across all sectors.

Governor's Office of Economic Opportunity
Go Utah

For its part, the state provides a major catalyst for technology innovation through the Utah Innovation Center housed within the Governor's Office of Economic Opportunity. The experienced team offers guidance and mentors Utah small businesses and entrepreneurs to receive research and development dollars through the federal Small Business programs, with a win rate almost double the national average.

"It's an honor to work with Utah companies developing impactful technology," said Innovation Center director Linda Cabrales. "Seeing the momentum of the life sciences community within the BioHive is truly remarkable and we're pleased to provide support to help Utah companies find R&D funding."

The Innovation Center helps drive opportunities for Utah's technology innovation ecosystem by supporting Utah small businesses in their efforts to successfully compete and win R&D funding and commercialize life-changing technologies that benefit the nation and the world.

Innovation Center services are available statewide free of charge offering a one-stop solution for Utah startups and emerging companies working in the technology innovation sphere.

HEALTH
UNIVERSITY OF UTAH

In October 2020, the University of Utah Therapeutic Accelerator Hub (U2TAH) launched with the charge of enabling innovative, emerging therapeutic discoveries to reach patients with unmet medical needs in a more efficient and timely manner. Partnering with the university and aligned with the Partners, Innovation, Ventures, Opportunities and Technologies (PIVOT) Center, U2TAH is today poised to improve the institutional goal of improving health through novel science.

The U's rich history of scientific discovery and Utah's national leadership in the number of fresh start-ups both suffer because technology licensed to these new ventures is immature and funding for early-stage technologies is difficult to obtain. Too many discoveries fall into the "valley of death" where they fall to the underfunded stage of pre-clinical development, often languishing without support. U2TAH is focused on moving products beyond the research stage, supporting them through preclinical work and developing an IND (investigational new drug) application-ready program.

U2TAH efforts will also enhance the U of U's visibility and reputation, create a culture of innovation and know-how in therapeutics, attract industry partners and funding while providing a pathway to substantial, ongoing revenue for the university.

Lastly, for researchers in the Orthopaedic Department at the University of Utah's medical school, innovation is essential for fulfilling its mission of improving care for orthopaedic patients. Doctors envisioned a place where clinical and research faculty, residents, fellows, students, entrepreneurs and industrial partners could gather to collaborate, ideate, design, manufacture, test and commercialize innovations that improve patient outcomes.

The result was the Louis S. Peery Orthopaedic Innovation Center (OIC), which launched in the fall of 2020. The innovation life cycle starts with brainstorming and ideation meetings before the OIC product development team, then translates those ideas into computer aided design (CAD) models and drawings for fabrication.

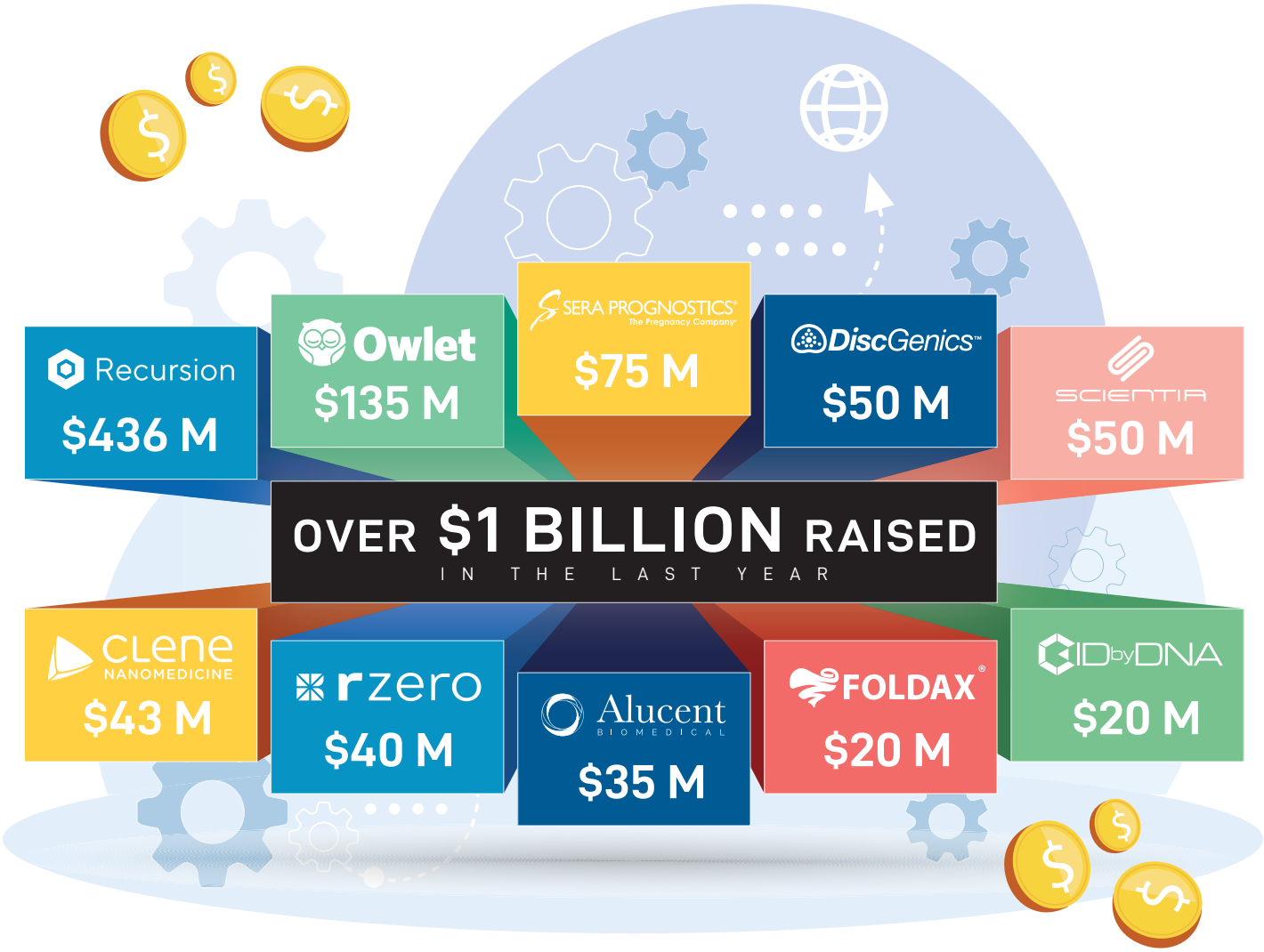
Models are then produced at the OIC Prototype Shop located in the USTAR Innovation Center, where the latest machine tools and manufacturing equipment are used to build prototypes of implant systems and surgical instrumentation. Biomechanical and robot testing is conducted as needed to demonstrate safety and effectiveness. Additionally, the OIC product development team and project collaborators work cooperatively to complete required design verification and validation activities and secure FDA clearance for clinical and commercial use of the technologies it develops.

INVESTORS TAKE NOTICE

Gone are the days when investors flew over Utah on their way to the biotech coasts of California and Massachusetts. Utah's life sciences industry has been discovered.

Cutting-edge medical technology, highly acclaimed research centers and an educated workforce are increasingly gaining the attention of national investment firms eager to bet on the state's burgeoning life sciences sector. That's good news for healthcare innovation and good news for the state's economy.

Here's what they're saying.



BioVentures (Wellesley, Mass.)

BioVentures invests in the development and commercialization of medical technologies that create high-quality, efficient solutions for patients and providers. Utah is a perfect example of regional expertise and business leadership initiatives combined with brilliant entrepreneurs, driven scientists, a talented workforce and an outstanding healthcare infrastructure.

"The Utah life sciences startup ecosystem is inspiring to me as an investor. The motto, "if you build it, they will come" is alive and well in Utah. I am continuously impressed by the growing opportunities across life sciences from early stage and growth, through multinational global companies."

"We have made investments in Utah-founded companies and I continue to see innovative technologies from trusted relationships that I've built over the years."

— Jenny H. Barba, MBA, MHSA
Venture Partner and Principal

Genoa Ventures (San Francisco, Calif.)

Genoa Ventures is an early-stage venture capital fund focusing its investments in companies innovating at the convergence of biology and technology. Utah's life sciences success mirrors the Genoa investment thesis - leveraging partnerships between the University of Utah's medical centers and its bioengineering and engineering departments.

Much of the ecosystem success is due to the commitment of Keith Marmer of the Partners for Innovation, Ventures, Outreach & Technology (PIVOT) Center and Kelvyn Cullimore, President and CEO of BioUtah, who Genoa congratulates for creating an environment of collaboration and innovation.

"I am impressed with the biology ecosystem support within the University of Utah and the efforts to forge partnerships with venture capital funds and entrepreneurs to translate innovations out of the university to industry. I've seen a lot of leading activity coming out of the U. Success for these activities has long been rewarded with innovative companies like Myriad Genetics, BioFire and Recursion Pharmaceuticals."

— Vikram Chaudhery, PhD
Principal

UnityPoint Health Ventures (Kansas City, Mo.)

UnityPoint Health Ventures invests financially and strategically in early-stage healthcare companies. Utah is positioned to continue its ascent as a top life sciences hub due to its top-rated universities, world class hospitals, unparalleled quality of life, track record of building billion-dollar companies and broadly shared entrepreneurial spirit. UnityPoint strongly believes this ecosystem will continue to attract innovators, provide opportunity and produce the next generation of life sciences companies.

"Having lived in Utah for several years, I experienced first-hand the valuable resources available within the healthcare innovation space. If I were building another early-stage life sciences company, Utah is where I would want to be."

— Austin R. Duke
Senior Venture Associate

Investors Close to Home

Utah life sciences companies also benefit from a number of local investors who fund seed and early-stage life sciences companies.

- Crocker Ventures
- Intermountain Ventures
- Med Mountain Ventures
- Med Therapy Biotech
- Med Venture Holdings
- Mountain Pacific Venture Partners
- Park City Angels
- Utah Innovation Center (SBIR/STTR grants)
- Weild & Co.

WOMEN
ARE LEADING THE WAY IN
LIFE SCIENCES

To be successful as a woman in a heavily male-dominated field such as life sciences requires exceptional determination to overcome obstacles, strong self-confidence to stay motivated in the face of numerous challenges, and the courage to stay the course when doubt rears its ugly head.

Utah's life sciences industry is filled with extraordinary female leaders and innovators who are helping to build one of the most talent-laden and productive environments in the Mountain West. Here, they share their insights on what guided them to careers in Utah's exploding BioHive hub.

"My grandmother, as an entrepreneur, and my mother, as a nurse, were role models during my formative years. They inspired me to pursue my passion for innovation in healthcare and instilled in me the resolution to pursue leadership roles in life sciences," explained **Lisa Dunlea, President and CEO at Xablecath Inc.** "I was always told that I could make a difference, providing I had the courage to make mistakes, humility to change direction when warranted and fortitude to hold my ground as needed."

As a self-described compassionate person and an engineering geek, she was drawn to the life sciences because it was "incredibly rewarding!"

"It has given me the opportunity to develop new technologies that solve real world problems, making a difference to improve and save lives," she said.

Dunlea touts inclusion as the key to providing opportunities to a wide array of talented individuals who can drive the industry to even greater heights.

"The engagement of and contribution from both men and women are crucial in our industry, as well as that of all ethnicities and orientations," she said. "We simply cannot create the best technologies and solutions without including everyone at the innovation table and it must be a round table to ensure equality of all voices."

For **Ivy Estabrooke, Vice President of Operations and Corporate Affairs for IDbyDNA**, the opportunity to have an impact on human health was the strongest motivation to join the life sciences industry – a field that provides an express opportunity to develop new medical innovations that can improve the lives of people on a global scale.

Estabrooke said women bring diverse perspectives, different leadership styles and insight into challenges faced only by other women.

"Entire components of human health and conditions are only applicable to women - childbirth, menopause, breast cancer, menstruation, endometriosis - to name a few," she said. "Having women involved in the development, regulation and delivery of diagnostics and treatment results in better solutions for women."

These diverse perspectives must be encouraged, cultivated and incorporated into strategic decision making within companies in order for women to truly benefit.

Speaking on retention of women in the industry, she said in order to encourage women to stay in the life sciences, companies need to demonstrate their commitment to supporting and promoting women.

"As a mother of a newborn, recently returning to work and a promotion into our organization's senior leadership, I can attest to the importance of working at a company that provides both opportunities and the support to assure that women can achieve and grow professionally, while still supporting the realities of complex lives," Estabrooke said.

For **Light Line Medical Chief Executive, Vicki Farrar**, what makes the industry so attractive is the accelerated pace of discovery prompting major breakthroughs happening almost daily with long-term impacts that drive future growth across the globe.

"I wanted to be a part of that," she said. Farrar stated that women bring to bear attributes that support innovation in the life sciences space that are unique and important to advancing the work of the industry.

"Women in general have curious minds, strong attention to detail and a strong will to win, which are excellent foundations to work in this industry," she said. Farrar believes that to strengthen the pipeline of female talent, the life sciences industry needs to offer more scholarships for women in science as a way to help motivate young women to come into the field.

As a young girl, **Martina Gaspari, Consulting Senior Scientist at GeneSTAT Molecular Diagnostics**, was fascinated with discovery and always wanted to understand "how things worked". In the last year of her master's degree, she studied abroad at the University of Stockholm.

"During this time, my passion for discovery became well-defined," she said. "I knew I wanted to be a scientist."

She believes that research is more likely to produce new ideas with a diverse team that includes women. "Women are excellent multitaskers - moving projects forward and staying focused on the goal, while not missing important details," Gaspari said. "Women will also speak up about ethical concerns."

She also believes mentorship is key. "I owe a lot of my success to my first mentor as an undergraduate," she said.

"Female students thrive seeing other women tackling the world of science. Having a close mentor allows them to envision themselves as scientists and innovators, while also being moms if that is what they want."

Libble Ginster, President and CEO, Fluidx Medical Technology, chose to pursue a career in life sciences both for the challenge associated with its complexity, the excitement of innovation and advancements in medicine, as well as the ability to help others and improve people's lives.

She said women inherently bring unique skill sets related to team dynamics, company culture and leadership style to the workplace.

"Women are generally very detail oriented – they lead by doing," Ginster said. "Women in life sciences are passionate about their work and their quest to help others. They also bring a unique management style - often building collaborative, inclusive team cultures and embracing diverse sets of ideas."

She said the best way to get more young women and girls to consider a career in life sciences is through education - encouraging them to pursue STEM programs in school, along with raising awareness of internship opportunities particularly with women in mind.

Another C-suite industry leader, **Lisa Justesen, COO at Soft Cell Bio,** believes women often employ a more collective-oriented perspective when tackling a problem that frequently results in deeper examination.

"In my experience I have seen women approach the life sciences with a sense of humility which allows us to accept when we are wrong and go in a different direction," she said.

"This humility promotes a more collaborative and diverse team that provides for more in-depth exploration."

Recursion President and COO Tina Larson tracks her interest in life sciences back to her early days in the industry.

"I was originally attracted to life sciences more than twenty years ago as a young biochemical engineer," she said. "I was intrigued by the chance to positively impact people's lives while doing cool science. My first job was on a team figuring out how to make a new, life-saving cancer treatment. I loved the feeling that my work could have such a deep impact on someone's life. I was hooked."

When speaking with young women about a STEM career, she asks them if they would like to have a positive impact on people's lives? If the answer is yes, then she explains being an engineer or scientist is a perfect career choice.

"We need to help young women make the connection between a career in life sciences and their ability to do great things for society," Larson said.

"Solving the challenges of global health and wellness requires all perspectives and voices," she said. "Women have always played a pivotal role in securing the well-being of our communities - it is natural for women to significantly impact the life sciences industry."

For **Andrea Kendell, Chief Financial Officer North America & Vice President of Finance Global Manufacturing at BioFire Diagnostics,** she gets a great sense of pride to be able to talk to friends, family and external partners about the company's products and the impact they have on healthcare providers and patient outcomes.

She added that women in life sciences bring hope, encouragement, energy and new ways of problem-solving to historically male-dominated science, engineering and leadership positions.

"If your population all looks the same, you will not drive a need for change, inclusion and different perspectives," Kendell said.

Myriad Genetics Senior Vice President, Government Affairs and Public Policy, Kim Linthicum, came to a career in life sciences after landing a job working on Capitol Hill where she handled the healthcare portfolio for a U.S. House member.

"The intersection of policy and innovative science led me to pursue a government affairs role in-house for several life sciences companies and I continue to passionately advocate for life sciences innovations that can improve human health," she said.

"Women tend to be more in tune with their bodies and general health and this translates to a greater passion and energy for the innovation life sciences delivers," she explained. "Women also possess a greater degree of empathy. While at times labeled as "emotional" in the workplace, the empathy that women possess enables them to see the full spectrum touched by life sciences – whether it's the position of the clinician, the patient, the family member or the caretaker."

Andrea Mazzochi, Co-founder and CEO at Known Medicine, said she was exposed to healthcare through her parents' careers at an early age.

"This exposure normalized childhood discussions around medical terminology, biology, and biomedical engineering advances," she said. "In life sciences, the opportunity to expand my own skills and continue to learn the complexities of the human body, while also being able to help people and advance medicine was and remains extremely compelling."Regarding having more women in the field, she said diversity is incredibly important in the workplace and is often lacking in the biotech

industry. "Including people of all genders and backgrounds drives more creative and inclusive solutions to our world's problems," Mazzochi said. "It has been well-recognized that healthcare solutions have historically been race and gender exclusive. By having diverse teams, which include women, we can improve healthcare for everyone."

She said bolstering support for female students early on can help more young women consider careers in life sciences. "It has been shown that interest in STEM drops off in high school for many women," she said. "Being inclusive in the classroom and providing supplemental programs and opportunities outside of school can help encourage many of these students to stay engaged and follow a life sciences path."

For **Katelin Roberts, General Partner and COO at Med Mountain Ventures and Interim Executive Director at BioHive**, she serendipitously found her way into life sciences following her own prior health crisis.

"Working in this industry is personal to me. The mission matters. We are improving patient lives and creating a huge economic engine while doing so," she said. "If we do it right, we can create opportunities for those working in the industry while improving people's lives. It's the essence of doing good while doing well."

On bringing more young women into life sciences, she's excited about the BioHive initiative that draws attention to the industry. Roberts notes there are so many wonderful career choices in the discipline. "You don't have to be a scientist to work in life sciences," she explains. "Good people are needed in every department."

Finally, **Tara Saucedo, Senior Director, Global Purchasing at Stryker**, and a former U.S. Army officer said she was attracted by the mission of the life sciences industry and the chance to make a positive impact on individual lives and society.

Regarding what women bring to the industry, she said women play a large role within the customer base and being able to reflect that diversity within the workforce increased the ability to relate to customers and patients.

"Women bring a diverse perspective to identifying needs of providers and patients and delivering solutions," Saucedo said. "In life sciences, women have an opportunity to contribute to all areas, from product design and development to quality, regulatory and sales."

"Opportunities to make a real difference in people's lives are endless," she said. "We need to do a better job educating young women on career opportunities in the sector, then provide mentoring, networking and support as they navigate career decisions."

Matt Pearl and his sister Alex, near their home in Park City, Utah. Both have Fanconi Anemia, a very rare genetic condition.

A VOICE FOR RARE DISEASE PATIENTS

Imagine spending days visiting doctors, getting lab tests, then getting more, trips to the emergency room and hospital stays. All are part of the lives of those living with rare disorders and the family and friends that care for them.

A rare disease is generally considered to be a disease that affects fewer than 200,000 people in the U.S. at any given time. Rare diseases are also sometimes called orphan diseases. How many rare diseases are there? There are approximately 7,000 rare diseases, affecting an estimated 25 million to 30 million Americans.

The mantra of the National Organization for Rare Disorders - **"Alone we are rare. Together we are strong."** - reflects the impetus behind a law passed in 2020 by the Utah legislature to establish a Utah Rare Disease Advisory Council (RDAC).

For Matt Pearl and his sister, Alexandra, who live in Park City, Utah, the RDAC is welcome news. Both have Fanconi Anemia (FA), a very rare genetic condition that is an inherited DNA-repair disease that may lead to bone marrow failure (aplastic anemia), leukemia, and/or solid tumors. There are less than 1,000 individuals with FA in the U.S., and only about five individuals with FA in the state of Utah.

"I don't want to die and I don't want my sister or my friends to die," said Matt. "I am 24, Alex is 26 and the average age of those with Fanconi Anemia is only 33, due to complications that need to be better understood. It is critical for all available resources to work together to find answers that improve quality of life and offer the best chance of survival to all affected with rare diseases. I hope to always fight to make a difference and I appreciate the vital addition of the Utah RDAC."

Under the umbrella of Utah's Department of Health, the aim of the advisory council is to bring stakeholders together - policymakers, patients, caregivers, physicians, nurses, insurers, manufactures and researchers - to make a difference for patients with rare disease.

"These patients, both diagnosed and undiagnosed, face unique challenges in accessing medical care and critical services," said Kim Hart, newborn screening manager, Utah Department of Health. "The RDAC will give rare disease advocates a unified voice and raise awareness about the needs of this community throughout state government and the public at large."

In July, BioUtah, the non-profit trade association for the state's life sciences industry, was awarded a grant by the health department to administer the RDAC. Since then, the department has engaged in a selection process to formally appoint council members.

"We're grateful to the Utah Department of Health for providing BioUtah with this grant to help implement the RDAC," said Kelvyn Cullimore, president and CEO of BioUtah. "This is an effort we've supported since legislation was first introduced to establish a council. We're excited to get the council up and running to empower our rare disease community and create a platform for patients and families to have a strong voice in state government and throughout our healthcare system."

Rare diseases are present across a broad spectrum of medical conditions. For example, there are more than 500 types of rare cancers and numerous genetic conditions. Answers and treatments aren't easy to come by. It can take years to get an accurate diagnosis, let alone an effective treatment (if there is one) and only a handful of rare diseases are well-understood.

In many ways, the life sciences sector is at the forefront of fighting back, developing the technologies and therapies to help better identify and manage rare disease. Pharma companies that have taken an interest in the Utah RDAC include CSL Behring, Horizon Therapeutics, Pfizer and Vertex.

"As we continue to develop new rare disease innovations that address unmet medical needs or enhance current treatments, advisory councils help us better understand the patient experience, which is so essential to informing the next stage of medical research," said Paul Perreault, CEO and managing director of CSL Limited.

"Currently, there are no treatments for the vast majority of the estimated 7,000 known rare diseases," added Cullimore. "Much remains to be done. We need to deepen our knowledge about these conditions and support critical research to jump start solutions."

Utah joins 20 other states who have already created an RDAC.

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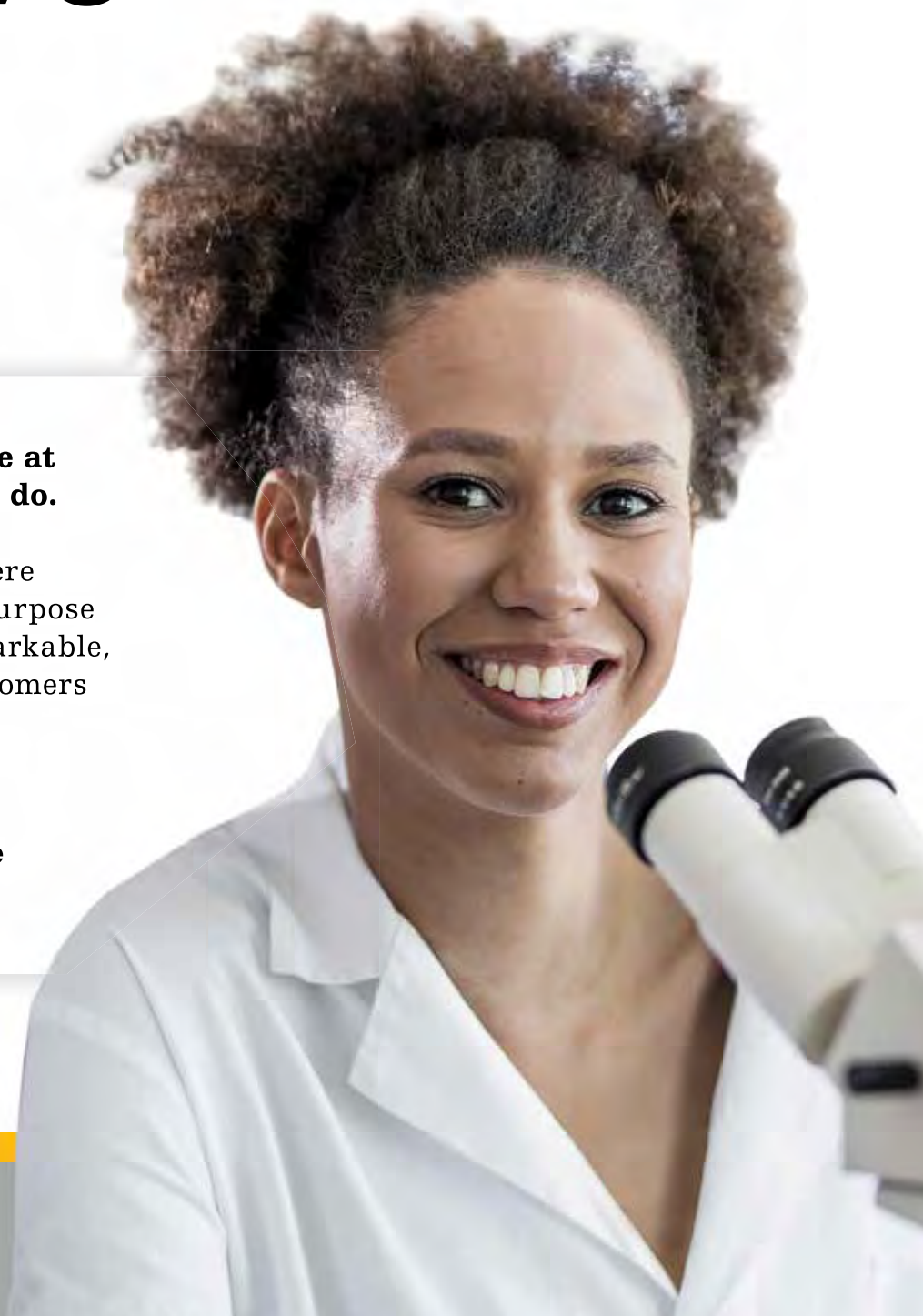

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