BizTucson

SPECIAL REPORT 2022

THE REGION'S BUSINESS MAGAZINE

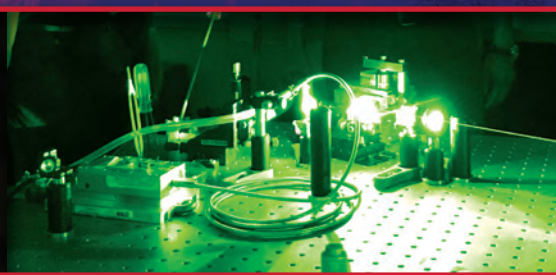
TECH LAUNCH ARIZONA

COMMERCIALIZING UNIVERSITY OF ARIZONA INVENTIONS

$1.6 BILLION IN ECONOMIC IMPACT

10 YEARS

THE UNIVERSITY OF ARIZONA
TECH LAUNCH ARIZONA



Arizona: Where innovators turn for what's next.

Congratulations, Tech Launch Arizona, on a decade of commercializing inventions from the University of Arizona's premier researchers and innovators! For ten years, Tech Launch Arizona has facilitated and fostered the movement of inventions, technologies and intellectual property from the laboratory into the marketplace. The Arizona Commerce Authority is proud to recognize this achievement and celebrate the economic impact it's contributed within the local community, region and state. Serving as a top commercialization hub, Tech Launch Arizona is among the many unique reasons why Arizona continues to be at the forefront of global advancement. Plus, the state offers a lifestyle that allows innovators to achieve their personal goals with endless outdoor activities, vibrant arts and culture, and an unmatched quality of life. It's this perfect balance that makes life better here.

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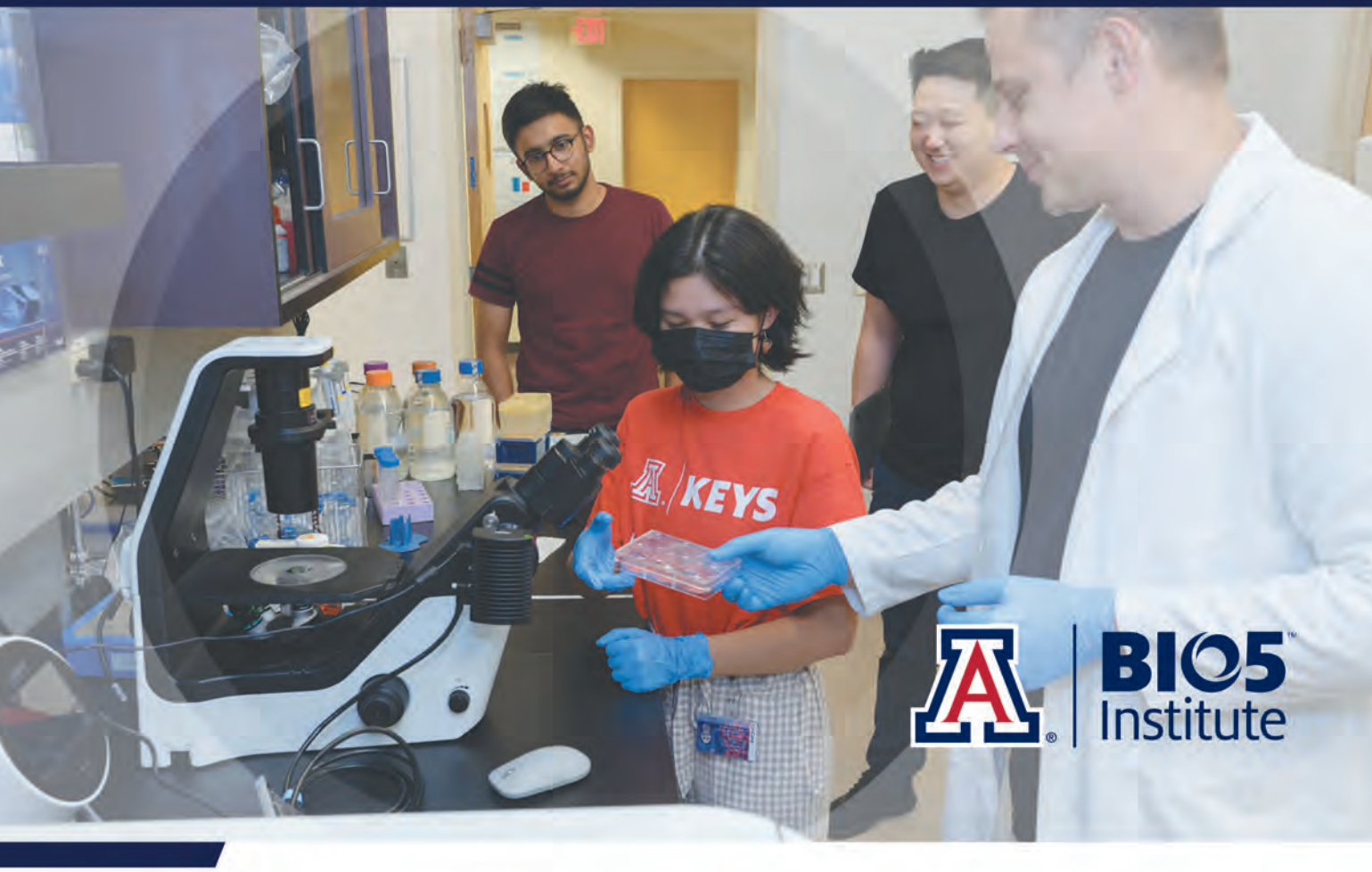
CONGRATULATIONS TO TECH LAUNCH ARIZONA ON 10 YEARS OF MAKING A BETTER WORLD

BIO5 is proud to partner with you in moving inventions stemming from university research, discovery, and technological innovation into the marketplace, creating lasting social and economic impact.



The BIO5 Institute at the University of Arizona brings together hundreds of scientists from across five disciplines - agriculture, engineering, medicine, pharmacy, and basic science - to find creative solutions to humanity's most pressing health and environmental challenges. This interdisciplinary approach is an international model of how to conduct collaborative research, and has resulted in disease prevention strategies, promising new therapies, innovative diagnostics and devices, and improved food sustainability.

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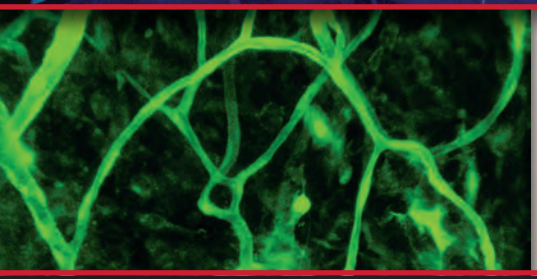


"We make a concerted effort to make people feel comfortable – to help them understand our support and provide insight into intellectual property and the opportunities for impact available through commercialization."

– Douglas Hockstad, Associate VP, Tech Launch Arizona

2012

David Allen hired to build and grow TLA.

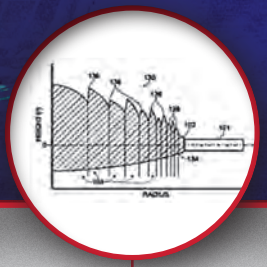
2013

Public-private partnership to build a Tucson Commercialization Network launched between TLA, the City of Tucson and Aztera.

First awards event held to recognize UArizona inventors, startups and ecosystem champions.

SinofoníaRx launched to commercialize medication management system.

Doug Hockstad joins TLA to lead licensing and intellectual property team.

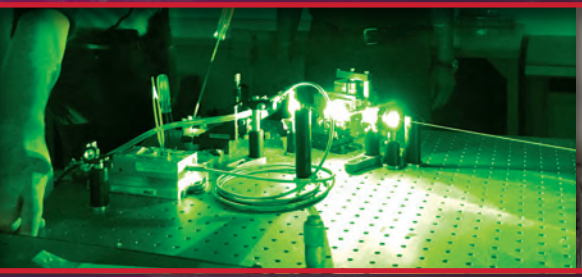


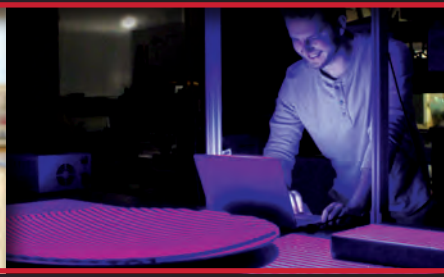
2015

TLA negotiates deal with Alcon to license trifocal lens.

Tech Launch Arizona Marks a Decade

From UArizona Minds to Marketplace





By Jay Gonzales

In the not-so-distant past, ground-breaking research conducted on the University of Arizona campus more often than not was destined for one place – academic journals.

But since 2012, Tech Launch Arizona has pushed open the door to move life-changing technology and inventions on a path to the consumer market. It's a turnaround in attitude and operation at UArizona which has resulted in benefits for multiple constituents – for consumers, for the university, for the researchers who devote their lives to their work, and for society.

"When TLA started, it was because university administration made a conscious decision to become as good at commercialization as it was at research," said Associate VP Douglas Hockstad, who has led Tech Launch Arizona since 2018 when he was promoted to replace David Allen, the organization's first vice president, who answered directly to the president of the UArizona. "We

continued on page 72 >>>

2016

UArizona designated National Science Foundation Innovation Corps site.

Commercialization Network project completes, and TLA hires Eric Smith as Network Manager.

2017

SinfoníaRx acquired by Tabula Rasa Healthcare

President Robbins arrives at the UArizona

UAVenture Capital launched to fund high-tech startups affiliated with UArizona.

2018

David Allen retires. Doug Hockstad assumes leadership of TLA.

UArizona ranks #66 among the top 100 worldwide universities for granted utility patents.

Rakhi Gibbons
Director of Licensing & Intellectual Property
Tech Launch Arizona

PHOTO: BRENT G. MATHIS

Technology Commercialization – Fiscal Year 2022	
Startups Launched	10
Royalties & Other Income	$10.4 million
Licenses & Options	116
Patents Filed	389
Patents Issued	87
Invention Disclosures	303
FY2021 Research Expenditures	$770 million

Source: Tech Launch Arizona

continued from page 71

university. "We were a top-tier research university, but we weren't great at getting it out" into the market.

Fast forward to fiscal year 2021. During that year, TLA executed 124 licenses related to inventions originating from university research, had 100 patents issued, and started 17 new companies. Since TLA began operating, 128 companies have been formed to commercialize UArizona inventions.

In a report produced earlier this year, an independent consulting group estimated that in the five years from fiscal 2017 to fiscal 2021, TLA had supported about 2,500 jobs, and generated $1.6 billion in economic activity, including $561 million in labor income and $59 million in tax revenues.

TLA's progress through the decade has been such that Tucson or the greater region, could develop into its own "Silicon Valley," said Betsy Cantwell, senior VP for research, innovation and impact at UArizona where TLA resides in the campus organization structure. She's not implying that Tucson will do what Silicon Valley does as an industry, but she said the region already has much of what it needs to build that type of "innovation ecosystem."

"We're not missing any pieces," she said. "We're just at the infancy stages in a lot of areas. But it's all starting to bubble."

Going commercial

Before TLA emerged to show the way to commercialization, the university's brilliant researchers, for the most part, focused primarily on publication. There was little to no focus on commercialization or generating the societal benefit from research as the end game for their work. They had to be convinced.

"There were a lot of different moving parts that we were orchestrating," said Allen, who was lured to UArizona from the University of Colorado where he ran its technology transfer

2019

Betsy Cantwell hired to lead Research, Innovation and Impact. TLA becomes part of RII.

UArizona ranks #39 among top 100 worldwide universities for granted utility patents.

arm. "The sum of it is the faculty and the community were ready, and the new administration came in and said, 'Here are the keys to the car. You go drive.'

"We laid down the roadmap of where we were going and we just gradually turned around the ship. But it doesn't turn around quickly."

Hockstad said faculty at the time were not focused on or trained to think that their work might have monetary value or a potentially huge impact on society.

"It's true everywhere that as faculty are being trained, as they're getting their Ph.D.s and they're doing their early research, they learn to focus on publication rather than translation," Hockstad said. "What's drilled into them is to publish to become recognized."

Beacon of success

Allen and Hockstad engaged local businessman Fletcher McCusker and his lifetime business partner Michael Deitch in the establishment of TLA, and they "scoured" the university for a technology that could become a beacon for what they hoped to achieve. McCusker and Deitch were fresh from the sale of a billion-dollar company they had taken public.

"There was a small group of us who really believed," McCusker said. "Doug Hockstad was a believer. He saw it happen at Michigan. (UArizona President) Bobby Robbins was a believer. He saw it happen at Stanford. Betsy Cantwell was a believer. She knew that you could meet the goals of both research and commercial activity. That small group of tenacious people just wouldn't let go of the dog bone, and I think faculty members were won over and they saw the opportunities they created for them."

The search for a marketable technology uncovered medical software developed at the R. Ken Coit College of Pharmacy designed to help insurance payers and physicians track and monitor prescriptions to mitigate dangerous drug interactions. The technology developed by UArizona researcher Kevin Boesen attracted $4 million in investment and a company was formed. That company, SinfoníaRx, was sold in 2017 for $130 million.

"I think people were skeptical until they saw our first couple of exits," McCusker said. "We've truly made a dozen or more faculty into millionaires because they've been able to advance their company."

Over time, Hockstad said, campus researchers have come to understand the possibilities of their work. They don't always have an eye toward commercialization or a goal of getting rich, he said. But as they see the success stories of fellow faculty members, they become more aware of what TLA can do for them and their inventions.

"I don't know if there ever was a line in the sand that we crossed" to demonstrate what Tech Launch Arizona can do, Hockstad said. "The difference is that when we started, more or less everyone that we talked to felt that we had a lot to prove. Now, I would say, the majority feeling on campus isn't that we have a lot to prove, it's about how we can help them and work them through the process."

A marketing team headed by Paul Tumarkin has been instrumental in conveying the message that TLA is there to help.

"We're making sure that we're telling the right story internally at the university, that we're reaching out to faculty and helping them understand what we do and how we can help them," said Tumarkin, assistant director for marketing and communications. "We survey our inventors every year and the vast majority are happy with the service we provide and would recommend working with us to their colleagues. The next phase for us is to ensure that we continue to grow the numbers of university innovators engaged in the process and keep evolving our innovation culture."

One-stop shop

Together, Allen and Hockstad built a one-stop shop for faculty members doing research and any UA staffers engaged in innovation that might have a commercial market. One of the key moves was embedding TLA licensing managers in the colleges where intellectual property – or IP – is produced, such as the colleges of Engineering, Optical Sciences, Medicine, Science, and Life Sciences and Agriculture, said Rakhi Gibbons, director of licensing for TLA.

These specialized team members are physically located in the colleges' offices and are close advisers to the faculty. They also keep an eye out for work that might have legs in the market.

"The licensing managers, because they're embedded, usually have a pretty good idea what the faculty and the college are working on," Gibbons said. "They're there, walking the halls with them. So, we start with a conversation. We sit down with the researcher and we talk about what they're working on. And then our job is to think about that re-

continued on page 74 >>>

10 YEARS TECH LAUNCH ARIZONA

TIMELINE

2020

TLA signs its 100th startup, GenetiRate 2, LLC

Alcon secures approval for trifocal lens in Europe and U.S. for patient use.

2021

UArizona rises to #28 among top 100 worldwide universities granted utility patents.

2022

TLA celebrates its 10th anniversary.

Bruce Burgess
Director of Venture Development
Tech Launch Arizona

PHOTO: BRENT G. MATHIS

continued from page 73

search and find an application for it that could benefit the public in some way."

There are many ways that inventions get to market with the help of TLA. After first performing some due diligence on the invention, the technology can be protected with a patent, copyright or trademark. The rights to the technology can then be licensed to a company – either a startup or an existing company – that will carry on continued development and, eventually, produce a product. If a startup is the best path, the inventor will typically take a role in that company, possibly as a leader or as a technology adviser while a more experienced executive runs the new company.

Because great researchers are not always savvy entrepreneurs, TLA licensing managers walk them through the process from start to finish, from hiring attorneys to handle the legalities of everything from company formation and governance to filing IP protection to licensing agreements.

"The licensing managers are involved throughout that entire continuum," Gibbons said. "Once we've identified a company, the licensing manager leads the transaction, eventually resulting in a license agreement. A license agreement gives a company the right to use our patents for that particular technology, to go and commercialize it."

If the decision is to take the invention to market via a startup rather than a license to an existing company, a group headed by Bruce Burgess, director of venture development, steps in and works on a plan to form a strong startup team that can lead the company and raise the venture capital needed.

The expertise in this area is specific, said Burgess, a longtime entrepreneur with a number of startups under his belt. For the most part, it's expertise that the faculty members don't have.

"They may say, 'I've thought about possibly starting a company around this, but I really don't know how,' " Burgess said. "That's where the licensing manager will tap me on the shoulder and say the faculty member would really like to have a conversation, and we'll sit down and start to have that dialogue."

During the whole process, TLA staff examines everything from assessing the viability of an invention, its uniqueness in the patent landscape, whether it can be protected and how, and whether there's a market.

Hockstad said, "We make a concerted effort to make people feel comfortable – to help them understand our support and provide insight into intellectual property and the opportunities for impact available through commercialization."

Biz

10 Years at Tech Launch Arizona	
Invention Disclosures	2,455
Exclusive Licenses & Options	492
Total Startups	128
Total U.S. Patents Issued	535
Royalties & Other Income	$46.9 million

Source: Tech Launch Arizona


WONDER
MAKES US INNOVATE
Wonder helps us ask questions that matter to society and figure out how to answer those questions. The College of Science is proud to partner with the innovators at Tech Launch Arizona to create lasting social and economic impact.
—Carmala Garzione, PhD
Dean of The University of Arizona College of Science
LEARN MORE ABOUT THE COLLEGE OF SCIENCE AT SCIENCE.ARIZONA.EDU
UNIVERSITY OF ARIZONA
College of Science

Doug Hockstad
Associate VP
Tech Launch Arizona

PHOTO: BRENT G. MATHIS

From Computer Engineer to Commercialization

Doug Hockstad Leads Tech Launch Arizona to Prosperity

By Jay Gonzales

There was a point in his professional career when Doug Hockstad, like so many others, was at a crossroads – one path continuing toward his life's work and the other in a direction still relatively unknown.

A computer engineer, he had worked in the software industry. He had worked in established companies and a startup. He even had worked overseas.

After what Hockstad called the "dot bomb" of the early 2000s, he left the startup and got his first taste of technology transfer. Thanks to his software experience, he was hired to help launch a software licensing program at the University of Michigan that would help in commercializing inventions from the university.

Then came the crossroads.

"I always assumed it would be a temporary role. I would do it for a while, then I would eventually go back to industry and do what I had been doing," Hockstad said. "After a couple of years, I had an opportunity to go back to industry.

"I realized I had to make a decision whether I was going to continue my career as I had envisioned it all my life or was I going to stay doing this. After a little soul searching I just realized that the decision would set the direction for the rest of my life. I really enjoyed what I was doing and the people I was working with, and I chose to stay on and keep doing that."

A dozen years later, Hockstad found himself at the University of Arizona in a similar role, but in an organization in its infancy.

"I had been watching Arizona – kind of out of the corner of my eye – for a couple of years," Hockstad said. "It never made sense to me that Arizona, as a top-tier research institution, was not showing up on the commercialization results that I would expect for that level of institution."

Tech Launch Arizona was formed under the administration of then-President Ann Weaver Hart. David Allen was hired to lead the new unit and get the office off the ground to start bringing UArizona research and technology into the market.

"I reached out (to Allen) and said, 'I want to understand what you're doing.' He reached back out to me and said, 'you need to apply for this role.' So I did and that was that. I saw it as an opportunity to be a part of something brand new, something that was going to really change, not just the university, but the region."

It was the beginning of a team that has since made a huge economic impact on the university, the researchers and inventors on campus, students diving into the tech transfer field, and the overall regional economy.

"Doug's a remarkable leader," said Betsy Cantwell, senior VP for research and innovation at UArizona. She heads the Office for Research, Innovation and Impact where TLA reports.

"We got Doug from Michigan, which is a place where they really look at this holistic package and value proposition," Cantwell said. "Doug and his team try really hard to measure the investors' portfolios in the companies we spin out as startups. They work directly with Tech Parks (Arizona) on physical locations, making sure we have places in Tucson and in Southern Arizona for our startups. They're very focused on impact measures that don't just serve the university."

"Doug has been an excellent team leader and team builder internally," said Paul Tumarkin, TLA's assistant director for marketing and communications. "I think he understands every job in the office very well and is a great facilitator in that way. He also is very innovative, and he's outward-looking and forward-looking at the possibilities and seeing where we can go next."

Though TLA was essentially new when Hockstad arrived, he knew that his decision to stay in technology transfer and to do it at UArizona was the right move. In 2018, Allen retired and Hockstad moved into the leadership role.

In 10 years, TLA has started more than 125 companies, had an economic output in the billions, and has given researchers and inventors on campus an outlet for their life's work that barely existed at UArizona prior to TLA's formation.

"There was never a time where I thought we can't do this," Hockstad said. "There was never a time where I thought this is a bigger bite than I expected. We knew what we were getting into, but we also knew what steps we had to take to make it happen." Biz

The following are companies that Tech Launch Arizona helped to commercialize inventions created by UArizona faculty and staff. Some already existed and others were startups launched specifically to commercialize UArizona inventions. All have acquired licenses for technologies that they are taking forward.

Alcon

Category: Optics
Year Licensed: 2019
David J. Endicott, CEO
Inventor: Jim Schwiegerling

Schwiegerling developed an implantable replacement lens for the eye that allows for mid-range as well as near and far vision and may eliminate the need for glasses or contacts for some. Alcon incorporated the technology into its novel trifocal intraocular lens, PanOptix. Alcon's PanOptix lenses have now been implanted in over 1 million eyes around the world.

Participating Unit: James C. Wyant College of Optical Sciences

www.alcon.com

Avery Therapeutics

Category: Health/Medical
Year Licensed: 2017
Jordan Lancaster, CEO
Inventors: Steven Goldman, Jordan Lancaster, Jennifer Koevary

A startup company dedicated to advancing tissue-engineered therapeutics to treat diseases and injuries to human muscle. Avery's lead product, MyCardia, is a tissue-engineered heart graft developed to treat heart failure and is currently in the pre-clinical development phase.

Participating Units: College of Medicine – Tucson, BIO5 Institute, Sarver Heart Center

averytherapeutics.com

continued on page 81 >>>

Arizona Discoveries have a better chance to become Arizona Cures when we work together.

Congratulations to Tech Launch Arizona on 10 Years of building collaborations.

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Launching an Innovation Ecosystem

Tech Launch Arizona Posts $1.6 Billion in Economic Output

By Jay Gonzales

Though its decade at the University of Arizona may only be a blip in the school's 137-year history, Tech Launch Arizona's economic impact is already immense.

As the university's technology transfer arm, TLA's work to advance intellectual property, patents, licenses, and startups – and the resulting impact on the region's economy in the form of metrics like jobs and tax revenues – are making it a key component to developing what Betsy Cantwell calls an "innovation ecosystem" for the region and beyond.

"I'm absolutely convinced we will develop more and more startups here in the region, some of which will become unicorn powerhouse companies," said Cantwell, senior VP for research, innovation, and impact at UArizona, where TLA reports in the campus organization structure.

A study of TLA for the five years from July 2016 through June 2021 determined that its work had generated $1.6 billion in economic output. The figure includes about $561 million in labor income, $59 million in tax revenues and more than 2,500 jobs supported.

The future is even brighter, the study indicates. Over the next 10 years, TLA is projected to generate another $4.7 billion in economic output, $1.6 billion in labor income and $172 million in tax revenues.

In the 10 years TLA has operated, there have been more than 125 startup companies formed, more than 490 licenses signed, and more than 500 patents issued to protect university research and technology, clearly establishing it as a driver of the overall economic development of the region.

"Harvard, Stanford and other places have been at this for 50, 60, 70 years," said UArizona President Dr. Robert C. Robbins. "It's part of our mission to develop new companies in the region, new job opportunities, to help the economy of Southern Arizona and to also give our students opportunities to stay here."

The general nature of the research being commercialized through TLA means that it is actually in its infancy when it comes to having massive regional economic impact, said Associate VP Doug Hockstad, who joined TLA in 2013 and was promoted to head the office in 2018 when the original VP, Dave Allen, retired.

Many of the inventions, particularly new therapeutic drugs and other inventions in the life sciences, take years to get the approvals needed to go to market. They also require venture capital – an area where TLA also has an economic impact by attracting investment from inside and outside Arizona.

> "I'm absolutely convinced we will develop more and more startups here in the region, some of which will become unicorn powerhouse companies."
>
> – Betsy Cantwell
> Senior VP, Research,
> Innovation & Impact
> University of Arizona

"We strongly feel the more that we grow this region, the more small companies, medium companies and large companies that we have, the more investment we'll see coming in," Hockstad said. "There will be more reasons for companies to stay here, and perhaps more importantly, more reasons for graduates to stay.

"The old adage is, 'Go to the coast to find the money.' They won't have to do that because it's going to be here. We're starting to see that more. We have at least a half dozen venture funds in Arizona now."

One of those is UAVenture Capital, a fund started by local businessmen Fletcher McCusker and longtime business partner Michael Deitch specifically to fund startups associated with the university and usually launched through TLA. The idea to establish the fund was pressed by Robbins when he took the president's job in 2017. McCusker had just engineered a $130 million sale of a company, SinfoníaRx, that was borne from a University of Arizona innovation.

Robbins "kind of nonchalantly asked me, 'Can you do it again?' I go, 'Yeah.' He says, 'No, can you do it again and again and again.' He said we need a fund, some risk capital to help these startup companies get off campus," McCusker recalled.

UAVenture Capital has invested $30 million into 11 companies that have

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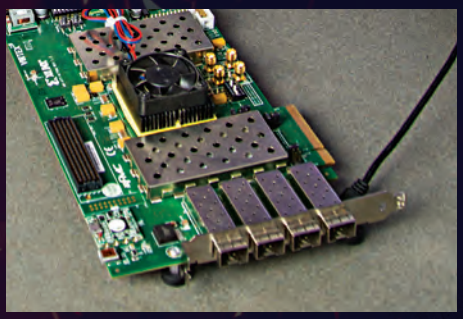
Codelucida

Category: Computers/Software
Year Licensed: 2014
Shiva Planjery, CEO
Inventors: Shiva Planjery, Bane Vacic, David Declercq



Codelucida empowers the future of data storage with enhanced speed, reliability, and lower power usage. Codelucida develops software that enables flash-memory-based devices to have higher capacities, higher reliability, and faster speeds using less power at lower costs. These ultimately improve the efficiency and reliability of data centers, servers, and mission-critical storage that incorporate flash memories.

Participating Unit: College of Engineering
codelucida.com

eSight

Category: Optics/Health
Year Licensed: 2019
Brian Beardsley, CEO
Inventors: Hong Hua, Jason Kuhn

To help the legally blind and those with low vision to function in daily life, Hua and Kuhn invented a wedge-shaped prism eyepiece design that provides both high resolution and a large exit pupil. The technology, which offers an image quality that has not been previously achieved, was licensed to eSight Corporation for its eSight 3 product.

Participating Unit: James C. Wyant College of Optical Sciences
esighteyewear.com

continued on page 82 >>>

emanated from the university, McCusker said.

Cantwell sees all of this as the start of the innovation ecosystem.

She spent a portion of her educational and professional life in northern California, where she witnessed the development of Silicon Valley as a poster child for an innovation ecosystem. She holds a doctorate in mechanical engineering from the University of California, Berkeley. She worked in a technology firm in the area and she also studied how Silicon Valley developed.

"When it started it was nothing," Cantwell said. "Stanford was nearby, but that area did not even have silicon until Fairchild Semiconductor started there. There was a NASA base and a university."

For the Tucson region to continue to establish itself as an ecosystem, Cantwell said, organizations and interests from all sectors, public and private, must contribute. The work done at TLA demonstrates that all things are possible.

"First, you've got to have the ideas. Then you've got to have the support

continued on page 82 >>>

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IMAGE: COURTESY FREEFALL AEROSPACE

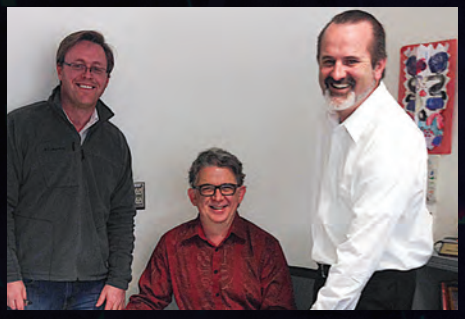
FreeFall Aerospace

Category: Aerospace
Year Licensed: 2018
Doug Stetson, Co-Founder, President & CEO
Inventors: Chris Walker, Ira Smith

FreeFall's revolutionary intelligent antenna system will enable the 5G Era. FreeFall's unique 3-dimensional phased array antenna can provide high data rate communication at virtually any frequency at a fraction of the size and cost of any existing solution.

Participating Unit: College of Science

www.freefallmovingdata.com



Illustrative Mathematics

Category: Education
Year Licensed: 2014
William McCallum, CEO
Inventors:
William McCallum, Cody Patterson, Ellen Whitesides

Illustrative Mathematics is a not-for-profit company that provides common-core compatible lesson plans for K-12 math courses. With carefully crafted lesson plans and tasks, math concepts are taught intuitively. Additional supporting materials are provided online for teachers and industry professionals.

Participating Unit: College of Science

illustrativemathematics.org

continued on page 87 >>>

continued from page 81

system that Doug's unit (TLA) provides to perfect patents, create the IP," she said. "You've got to have an ecosystem within the university that allows them to get started. You've got to bring funders to the table early. They've got be able to find reasonably inexpensive labor. They've got to have places to go. They've got to have support services for startup companies. And they've got to have the right regulatory and legal environment."

Some of those pieces are already working within UArizona.

TLA has a strong partnership with the university's Tech Parks Arizona, even moving into the new building known as The Refinery at the Tech Parks at the Bridges where both units can work in close proximity. Tech Parks provides space and facilities for startups to get their businesses going in an environment where they can still be close to the university where many of the technologies are developed.

Tech Parks has 83 startup companies operating through its University of Arizona Center for Innovation, the university's affiliated startup incubator.

"It's really key that we're in lockstep with Tech Launch Arizona and the entire ecosystem," said Carol Stewart, VP of Tech Parks Arizona. "I think people are figuring it out. They're watching us and they're like, 'There is something pretty grand going on.' "

Over the long haul, Hockstad said, the type of ecosystem developing with organizations like TLA and Tech Parks and with full support of one of the region's largest entities and employers, the university can feed on itself by keeping students and researchers within the region as a foundation for the economy, even if not all the newly formed companies succeed.

"One of the things that I believe is that if we can create an ecosystem here where graduates can go right to a company or can feel comfortable going into a startup, that's to everyone's benefit because even if that startup fails, there's another startup company or medium-sized or large company that they can go to. We get to retain a lot of our incredibly intelligent students," Hockstad said, "and then we create an ecosystem that kind of feeds on itself as companies launch and/or fail and/or succeed."

Biz

THE UNIVERSITY OF ARIZONA

THE BRID

THE UNIVERSITY OF ARIZONA

TECH PARKS ARIZONA

Contact Peter Loya
Director of Community and Government Relations
peter@uatechpark.org | 520.382.2484

Visit www.techparks.arizona.edu and www.boyercompany.com for more information.

TECH PARK AT GES

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The Bridges, the newest UA Tech Park, sits on 65 acres within a larger 350-acre mixed-use development in central Tucson. This location is prime real estate being minutes away from the talent and research at the University of Arizona, downtown Tucson, and Tucson International Airport.

The University of Arizona partnered with The Boyer Company to develop the first building, The Refinery. This Class A office space was completed in 2021. Build-to-suit projects are also available at this strategic location.

JOIN THIS 'LIVE, WORK, PLAY, LEARN AND STAY' TECH COMMUNITY TODAY!

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Contact Matt Jensen
Project Manager at The Bridges | 801.366.8029

WONDER MAKES US TURN GENIUS IDEAS INTO

GENUINE IMPACT

"As we commercialize our technology in Neuro-ID, it transforms how I teach our MBA and Master's in MIS students. I can ground examples not out of a textbook, but out of what is happening every day in our company."

- Joe Valacich, Munsinger Professor of Entrepreneurship and Innovation, Co-founder Neuro-ID

THE UNIVERSITY OF ARIZONA
Eller College of Management

NEURO-ID received Tech Launch Arizona's ***STARTUP OF THE YEAR*** award in 2020.

eller.arizona.edu

continued from page 82

Neuro-ID

Category: Software/Cybersecurity
Year Licensed: 2015
Jack Alton, CEO
Inventors: Joseph Valacich, Jeffrey Jenkins

In a face-to-face interaction, you evaluate how a person answers a question, not just what they say. Their tone of voice and their body language provide you with additional signals about the quality of the response and their state of mind. Neuro-ID's technology enhances online forms by revealing how questions are answered, not just what the answer is. In other words, the company enables its customers to read the digital body language of those interacting with their online forms.

Participating Unit: Eller College of Management

neuro-id.com

NeuTherapeutics

Category: Health/Medical
Year Licensed: 2021
Robert Diaz Brinton, Founder and President
Inventors: Roberta Diaz Brinton, Kathleen Rodgers, Yu Jin Kim, Heidi Mansour

NeuTherapeutics is developing a new therapy for Alzheimer's disease designed to restore cognitive function in early-stage patients. The therapy is now proceeding through a Phase 2b clinical trial. The team found that the neurosteroid allopregnanolone, or allo, used to treat women with postpartum depression, promotes connectivity between neural networks required for cognitive function by generating new neurons and synapses in patients with the early stages of the disease.

Participating Units: College of Medicine – Tucson, College of Pharmacy, UA Center for Innovation in Brain Science, BIO5 Institute

www.neutherapeutics.com

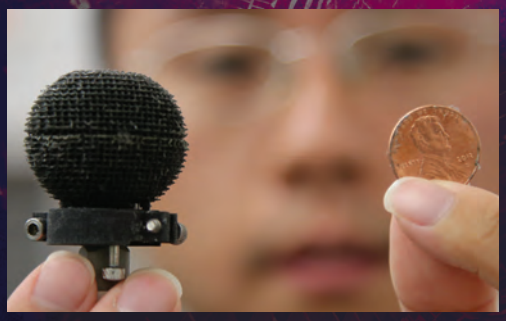
LUM.AI

Category: Computer Science
Year Licensed: 2017
Kevin McLaughlin, CEO
Inventors: Gustave Von Hahn-Powell, Mihai Surdeanu, Marco Valenzuela

LUM.AI focuses on mitigating the innovation slowdown caused by information overload. The company applies natural language processing technology to augment R&D investments by distilling libraries of unstructured text and revealing mechanisms that matter.

Participating Unit: College of Science

lum.ai



Lunewave

Category: Optics/Engineering
Year Licensed: 2017
John Xin, Co-Founder and CEO
Inventors: Hao Xin, Shufang Su, Min Liang, Siyang Cao

Lunewave develops cutting-edge antenna and sensor technology for wireless communications and autonomous vehicle applications. The company has developed two products, including an automotive radar sensing system and a high-speed antenna originally invented at the University of Arizona.

Participating Unit: College of Engineering

www.lunewave.com

continued on page 89 >>>

THE UNIVERSITY OF ARIZONA
FORGE

CONGRATULATIONS TECH LAUNCH ARIZONA

ON 10 YEARS OF INVENTIONS, DISCOVERIES, AND STARTUPS

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Finding Opportunities and Resources to Grow Entrepreneurs

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PROGRAMS

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- **FORGE Communities**
- **FORGE Ahead**

learn more at forge.arizona.edu

continued from page 87

Regulonix

Category: Health/Medical
Year Licensed: 2018
Rajesh Khanna, Chief Scientific Officer
Inventors: Rajesh Khanna, May Khanna, Vijay Gokhale, Reena Chawla, Erik Dustrude, Todd Vanderah

Regulonix is developing a non-opioid-based compound for chronic pain reduction. The team observed a synergistic effect when the compound was combined with morphine or gabapentin, a promising sign that the compound could also be used in a dose-reduction strategy for painkillers that have negative side effects, including opioids, while maintaining high levels of pain relief.

Participating Units: College of Pharmacy, College of Medicine – Tucson, BIO5 Institute, UArizona Health Sciences, UArizona Cancer Center
www.regulonix.com

SaiOx

Category: Health/Medical/Devices
Year Licensed: 2020
Manny Teran, CEO
Inventors: Sairam Parthasarathy, Marvin Slepian

SaiOx was founded to bring the benefits of heliox – a mixture of helium and oxygen – to those experiencing difficulty breathing. Heliox is less dense than air, thereby decreasing airflow resistance and allowing patients to breathe easier. This new respiratory assist device is small and portable, making it ideal for use in any setting, from intensive care units to the home.

Participating Units: College of Medicine – Tucson, College of Engineering, BIO5 Institute

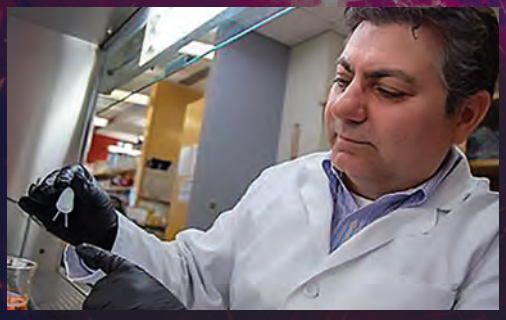
saiox.webflow.io

Phytocentric Solutions

Category: Agriculture/Life Sciences
Year Licensed: 2021
Bibiana Law, CEO
Inventors: Sadhana Ravishankar, Govindaraj Dev Kumar, Lubin Zhu, Bibiana Law

PhytoCentric Solutions has developed proprietary natural antimicrobial products for consumer applications. The startup also provides testing services to the food industry.

Participating Units: College of Agriculture & Life Sciences, BIO5 Institute



Procyon Technologies

Category: Health/Medical
Year Licensed: 2019
Inventors: Klearchos Papas, Robert Johnson, Steven Neuenfeldt

Procyon provides an implantable chamber fabricated from biocompatible synthetic membranes designed to hold allogeneic cells and protect them from immune rejection. Such cell therapy devices are designed to improve cellular viability and function through the delivery of oxygen. The same devices are suitable for holding sensors or acting as a subcutaneous drug delivery system.

Participating Units: College of Medicine – Tucson, BIO5 Institute

procyon-technologies.com

continued on page 93 >>>

Moving Tech to Market

Firms Illustrate TLA Commitment to Innovation

By Jay Gonzales

For 10 years, Tech Launch Arizona has paved the way for inventions developed at the University of Arizona to make their way into the commercial markets either by way of existing companies who have licensed the technologies, or by way of startup companies founded to commercialize specific inventions. TLA's work has resulted in the formation of over 125 of those startups since 2012.

The following three companies are examples of the commitment TLA and the university have made to commercialize technologies developed around campus.

Reglagene

Reglagene is developing an efficacious, safe and orally administered brain cancer therapy. The therapy is designed to treat a wide variety of cancers, including glioblastoma, the deadliest brain cancer, and brain metastases resulting from breast and lung cancers – the two cancers most likely to metastasize into the brain, said Reglagene CEO Richard Austin.

"The innovation of new and better therapies for the treatment of brain tumors has been slow," Austin said. "After the first diagnosis of a brain tumor, most patients live less than a year."

TLA matched Austin, who has a Ph.D. in organic chemistry and an MBA in pharmaceutical management, with one of the technology's inventors, Laurence Hurley, who holds a Ph.D. in medicinal chemistry. They and university researcher Vijay Gokhale founded Reglagene in 2018 to continue development of brain cancer therapies originally discovered in the R.K. Coit College of Pharmacy and the BIO5 Institute with TLA's support. Hurley is now the company's CSO and Gokhale is VP of discovery.

"TLA played a crucial role in Reglagene's founding," Austin said. "TLA continued to support the company as we became operational, including mentorship, business coaching, grant-writing training, pitch training, and organizing pitch opportunities in front of investors."

> "TLA has been instrumental in identifying new inventions, assessing the commercial viability of new technologies and building a strong, engaged network of commercialization partners."
>
> – Moe Momayez
> Interim Head
> UArizona Mining and Geological Engineering Department

The company remains based in Tucson, opening the door for opportunities to contribute to the overall economic development of the region.

"These businesses (launched by TLA) provide primary jobs that often are the reason many UArizona grads can stay in Tucson," Austin said. "Due to the wealth of new technology coming out of UArizona, TLA is positioned to have an even greater impact in the future through even more company formations, especially as the talent base of experienced technology entrepreneurs grows in our region."

Auxilium Technology Group

Arizona residents are likely familiar with the ever-present mine tailings – the massive piles of waste materials that are a byproduct of the mining industry, which historically has been one of the region's largest economic drivers.

A solution developed at UArizona and trademarked as Entail is a highly efficient extraction process aimed at pulling out useful materials from what has otherwise been treated as waste to minimize the environmental impact of the tailings.

"Auxilium's mission is to be the benchmark and ignite a sustainable tailing repurposing industry on a global scale," said one of the inventors, Moe Momayez, a professor and interim department head in the Mining and Geological Engineering Department in the

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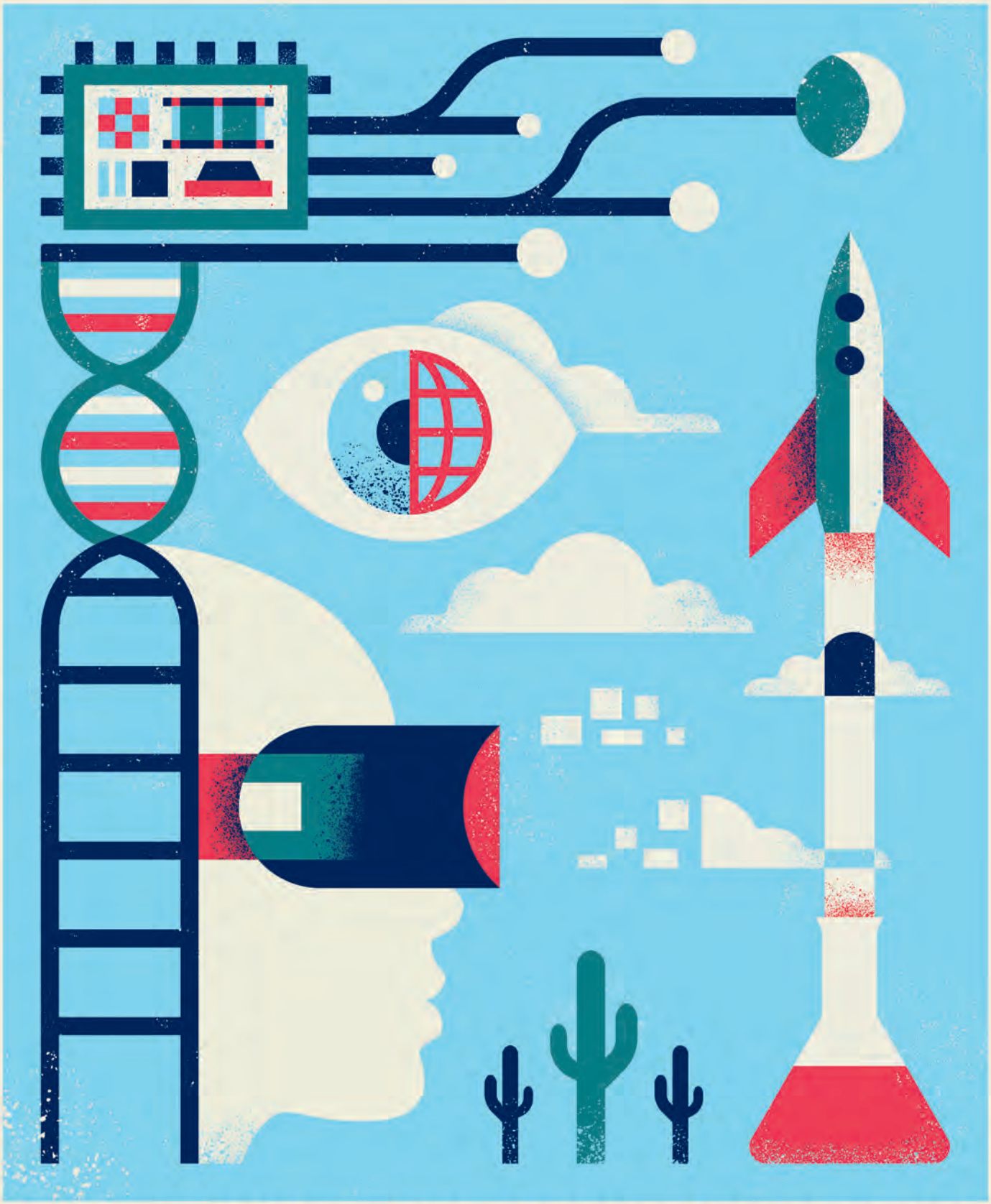

TRANSFORMING BREAKTHROUGH DISCOVERIES INTO REAL-WORLD SOLUTIONS

We congratulate Tech Launch Arizona on 10 years of harnessing our "bear down" determination to commercialize the incredible inventions made possible by University of Arizona innovators.

THE UNIVERSITY OF ARIZONA
Research, Innovation & Impact

Celebrating Tech Launch's 10 years

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continued from page 90

UArizona College of Engineering.

"Mining companies use our solutions to minimize the environmental impact of mine tailings while achieving net-zero emission and decarbonization goals," Momayez said.

He added that TLA helped in the formation of the company through mentoring, access to technology and other programs.

"Auxilium is constantly working with TLA on not only exploring the commercial opportunities of new technologies, but also leveraging TLA's extensive network to foster company growth plans," Momayez said.

Auxilium was one of two companies selected by BHP, an Australian mining company that is one of the largest in the world, to develop solutions to maximize the value of waste while minimizing the environmental impact.

"The mining sector is a significant contributor to the economy of the state of Arizona with an estimated total economic impact of more than $6.5 billion," Momayez said. "TLA has been instrumental in identifying new inventions, assessing the commercial viability of new technologies and building a strong, engaged network of commercialization partners."

UAVenture Capital

With all the knowledge and innovation on the UArizona campus fueling the development of life-changing technology, there emerged a basic need that UArizona President Robert C. Robbins identified when he arrived on campus in 2017 – investment capital.

Almost as soon as he arrived, Robbins challenged businessman Fletcher McCusker to develop a source of venture capital funding for the technologies that Tech Launch Arizona was working to commercialize.

"He said we needed a fund, some risk capital to help these startup companies come off campus," McCusker said.

His answer was to establish UAVenture Capital specifically to support the companies and technologies moving toward commercialization with assistance from Tech Launch Arizona.

TLA Associate VP Doug Hockstad

continued on page 94 >>>

continued from page 89

Science of Sport

Category: Education/Engineering
Year Licensed: 2014
Ricardo Valerdi, Chief Scientist, Founder
Inventor: Ricardo Valerdi

Science of Sport is a not-for-profit company developing sports-based STEM curriculum for K-12 students and teachers. Through partnerships with professional sports teams, Science of Sport provides camps to engage students as they learn how STEM subjects find real-world applications in sports, with a particular focus on disadvantaged and underserved communities.

Participating Unit: College of Engineering

sciencesport.org

SinfoníaRx

Category: Health/Medical/Software
Year Licensed: 2014
Kevin Boesen, Founder
Inventors: Kevin Boesen, Kevin Barber, Rose Martin, Nicole Scovis, Jason Reddick, James Kloster, Ann Kerschen, Martin Pelger, Matthew Smith, David Armena Amaya

SinfoníaRx technology is a medication therapy management software for Medicare, Medicaid, MMP, exchanges and commercially insured patients. Every time a patient fills a prescription, their medication profile is reviewed for potential medication related problems. The company uses targeted outreach to address need areas including safety concerns, adherence to national consensus treatment guidelines, adherence to prescribed medication regimens, and cost savings opportunities. The company was acquired by Tabula Rasa Healthcare Inc. in 2017.

Participating Unit: College of Pharmacy

sinfoniarx.com

continued from page 93

now counts as many as six venture capital funds in Arizona. It was easy to see that it was needed, Robbins said.

"We can go get capital from the Bay Area or Boston, but they're going to want the companies to move there," Robbins said. "We want to keep them here. We need some local working capital that will encourage people to stay here around the university and develop their companies."

UAVenture Capital has invested $30 million into 11 companies launched through Tech Launch Arizona, McCusker said.

"We're more than just a research university," McCusker said. "There are programs that start as research here that have unbelievable commercial appeal, and what was missing was venture capital. We're providing that missing link now. We've become intimately involved with the university and, moreover, with Tech Launch Arizona."

Biz

Tech Launch Arizona By the Numbers

Economic Impact Study February 2022	Fiscal Years 2017-2021	Projected 2022-2031
Jobs Supported (Measured in Job Years)	10,781	31,533
Labor Income	$561 million	$1.6 billion
Economic Output	$1.6 billion	$4.7 billion
Tax Revenue Generated	$59 million	$172 million

Source: Tech Launch Arizona

Happy 10th Anniversary Tech Launch Arizona!

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