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“BUILD YOUR OWN DREAMS, OR SOMEONE ELSE WILL HIRE YOU TO BUILD THEIRS.”

— Farrah Gray

Stay up-to-date with news about UCI’s innovations and commercially-promising technologies.
Find this issue of Rising Tide at innovation.uci.edu/news
If you have story ideas, contact the editor-in-chief: connorj@uci.edu

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BioEngine Annual Device Symposium / June 2019
During the fourth annual Biomedical Device Design Symposium hosted at the Cove, CenSyn, a UCI startup company that developed an ultra-portable electroencephalogram device to allow for rapid monitoring of brain health and function, takes home the BioEngine Summer Fellowship Award. This award includes a $15,000 cash prize and enrollment into Applied Innovation’s Wayfinder program.

Women Talk Tech / June 2019
The Small Business Development Center @ UCI Beall Applied Innovation features its first Women Talk Tech Forum at the Cove @ UCI Beall Applied Innovation, which highlights leading women tech entrepreneurs discussing leadership, business growth and trends in tech and life sciences.

SBA Awards / June 2019
Director of the Small Business Association, Orange County/Inland Empire District Office J. Adalberto Quijada stands with UCI Beall Applied Innovation Executive Director and UCI Chief Innovation Officer Richard Sudek, who received the 2019 Small Business Association District Director Award during the 56th annual Small Business Week Awards held at the Disneyland Hotel in Anaheim.

Student Startup Fund Showcase / May 2019
Patrick Dumas, CEO of Waterborne Skateboards, talks about the benefits of Applied Innovation’s Student Startup Fund to UC Irvine students at the ANTentrepreneur Center, located on the UCI campus. The Student Startup Fund helps cover specific project-related expenses of up to $1,000 to develop entrepreneurial concepts for students and recent alumni.

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From Bench to Business: Faculty Experiences / June 2019
UCI faculty members and entrepreneurs Kyriacos Athanasiou, Elliot Botvinick and Michelle Khine of the Henry Samueli School of Engineering, and Weian Zhao of the Department of Pharmaceutical Sciences, discuss the resources they utilized at Applied Innovation during the inaugural From Bench to Business: Faculty Experiences event, hosted by Applied Innovation.

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First Master of Innovation and Entrepreneurship Program in UC System Starts in Fall at UCI

The 9-Month Curriculum Has Recently Gained Popularity at UCI as Applications Pour in for Fall Quarter.

As of fall 2019, UC Irvine (UCI) once again sets its sights toward the future as it now offers the first Master of Innovation and Entrepreneurship degree in the UC system.

Through UCI’s Paul Merage School of Business, the nine-month program provides students with both academic and real-world experience in entrepreneurship as well as a host of resources within the UC system and Orange County community.

“Based on the number and quality of applications and the high acceptance rate of our offer, there clearly is a lot of interest in this program,” said Chris Bauman, Paul Merage faculty director of the Master of Innovation and Entrepreneurship program. “We see this as an opportunity for the Merage school to partner with a new part of the business community. We see the entrepreneurial space being a vital part of the economy, and full of opportunities to work on exciting and important ideas.”

The Master of Innovation and Entrepreneurship offers extensive, integrated and immersive academic and practical experience for students looking to embark on careers as innovators, whether they choose to start their own company, work for a startup or develop an innovative idea or project within an established company.

The program features classes in both an academic and non-academic setting that focus on identifying new venture opportunities through lean startup methodology, developing a business model, preparing a business plan, crafting a pitch, assembling a team, raising the necessary finances – including venture capital – and launching a new business.

Richard Sudek, UCI Beall Applied Innovation executive director and UCI chief innovation officer, will be teaching a key course on entrepreneurship during the winter quarter as part of the program’s curriculum. In his course, Sudek will focus on an overview of starting a company and challenges that entrepreneurs will face, like attracting funding, building a team and selecting partners.

“I have taught entrepreneurship in other business schools, however, I’m most excited about this program because the faculty and courses are being coordinated,” said Sudek. “And that rarely happens to the degree that it is here.”

Students will also be encouraged to attend regular events and workshops hosted at the Cove @ UCI Beall Applied Innovation*, such as investor screenings, pitch events, Wayfinder* showcases and multiple entrepreneur speaker series. They will have access to local, regional and statewide entrepreneurial communities as well as the opportunity to attend off-site trips to Silicon Valley, San Diego and Los Angeles.

“This masters is applied and designed to have students constantly interacting with entrepreneurs and investors,” said Sudek. “This is not simply a series of lectures or classes. This is really exposing the entrepreneurs to what it’s like to really start a business; it’s well beyond theory.”

For more information about the Master of Innovation and Entrepreneurship degree program, visit merage.uci.edu/programs.

*Resources Mentioned in This Story

Events at the Cove
innovation.uci.edu/events

Wayfinder
innovation.uci.edu/programs/wayfinder/incubator

The Research Translation Group manages over 1,000 inventions from UCI researchers spanning the areas of engineering, medicine and life sciences, physical sciences, communications and computer sciences. These innovative technologies are available for licensing.

AVAILABTE TECHNOLOGIES

Coming Down the Pipeline

SOME OF UCI’S TOP AVAILABLE TECHNOLOGIES CURATED BY UCI BEALL APPLIED INNOVATION’S RESEARCH TRANSLATION GROUP

The invention is a novel method that tracks the position of probes and objects deep inside tissues, with unprecedented 3D precision. Data obtained from optical techniques are combined with that provided through ultrasound methods, and provides accurate localization in 3D space, along with precise anatomical structure. Such a combined method is crucial for precision-sensitive applications such as anesthetic drug delivery.

Bruce Tromberg, Ph.D. / Beckman Laser Institute

PRECISE TRACKING OF SUBSURFACE TISSUE PROBES AND OBJECTS

Tech ID #: 20160

VACCINES AGAINST HERPES SIMPLEX VIRUS INFECTION

The invention is a novel way to prevent the symptoms of herpes simplex infections. The technology is a vaccine that targets the virus to prevent the disease from manifesting.

Lzbahr BenMohamed, Ph.D. / School of Medicine

Tech ID #: 20669

MODULAR WIRELESS LARGE BORE VACUUM ENDOSCOPE

Though kidney stones are a prevalent problem that affects more than 10 percent of the population and costs the U.S. economy upwards of $15 billion annually, the complete removal of stone fragments is difficult to achieve without surgical interventions. Researchers at UCI have developed a novel vacuum endoscope which, when combined with standard kidney stone ablation procedures, is capable of completely removing the resulting fragments.

Richard Sudek, UCI Beall Applied Innovation executive director and UCI chief innovation officer, will be teaching a key course on entrepreneurship during the winter quarter as part of the program’s curriculum. In his course, Sudek will focus on an overview of starting a company and challenges that entrepreneurs will face, like attracting funding, building a team and selecting partners.

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Christopher C.W. Hughes
Vascular Biologist
Christopher C.W. Hughes Grows Organ Tissues

HE AND HIS FELLOW COLLABORATORS ARE UNLOCKING REAL WORLD SOLUTIONS THROUGH INNOVATION IN VASCULARIZED TISSUE.

Christopher C.W. Hughes, Ph.D., is getting the scientific community’s blood pumping.

Hughes, a professor of molecular biology and biochemistry in the School of Biological Sciences and a professor of biomedical engineering at the Henry Samueli School of Engineering, is working with collaborators to develop new technologies aimed at improving anti-cancer drug screening and precision medicine.

“VERY FEW OF THE THINGS THAT WORK IN MICE EVER WORK IN PEOPLE.”

— Christopher C.W. Hughes, Ph.D.

Very few of the things that work in mice ever work in people.

A vascular biologist, Hughes has worked with blood vessels for a long time—since he was a graduate student in London, through a postdoc at Harvard and as a research scientist at Yale. In 1996, he came to UC Irvine (UCI) and continued his work on the immune system’s interactions with blood vessels. He then started a side project—mechanisms underlying how blood vessels grow—which eventually became the Hughes Lab’s primary focus.

Around 15 years ago the lab developed ways to grow blood vessels in culture using beads coated in endothelial cells—the cells that line the inside of blood vessels. The beads are embedded in a protein-rich gel and, after stimulation, blood vessels grow out from the beads in a starburst pattern. This method has turned out to be a useful tool for the lab and has provided new insights on the genes that regulate the process of angiogenesis, or the formation of new blood vessels. The procedure is now the standard in the field for studying angiogenesis.

**HUMAN TISSUES IN MICE**

Around this time, Hughes met Steve George, M.D., Ph.D., then professor and chair in the Department of Biomedical Engineering at UCI (and now at UC Davis), and they began discussing the need for more complex and physiological models of angiogenesis.

George had a plastic surgeon approach him about a problem he needed solved: when plastic surgeons remove tissues, there typically remains an empty void. The hope was to find some way to engineer a generic tissue that could be used to fill in these voids, complete with a vascular network that would allow it to integrate with the patient’s body.

George, a bioengineer, asked Hughes to collaborate with him on this need. They used the tools developed for the angiogenic model and created what they called pre-vascularized tissues—tissues with a vascular network but without blood flow. After a few years, they grew pre-vascularized human tissues in a petri dish and grafted them into a mouse, where human blood vessels could then connect to and integrate with the mouse’s own vascular system.

Their work developing pre-vascularized tissues would set in motion their next big collaborative effort.

**WHAT IF?**

Hughes, George and the researchers in their labs had put years of work into their collaborative project and were ready for a new challenge. They had developed pre-vascularized tissues, but did not have blood flow in their model. At first, they laughed at the idea of adding blood flow to their vascular model— as it had not been done before—but soon, they sketched out how they could accomplish just that.

To strengthen the team, Hughes and George sought help from world-class microfluidics expert Abe Lee, Ph.D., professor at the School of Engineering and current chair for the Department of Biomedical Engineering.

Together, Hughes, George and Lee wrote a grant proposal to bring their idea to life and received funding through the American Recovery and Reinvestment Act of 2009 (ARRA), a stimulus package enacted to preserve and create jobs in response to the Great Recession.

After two years, the team achieved their goal of flowing blood through their vascular system, though later tests proved that a formulated liquid with the same composition as liquid blood—essentially a salt solution with proteins and without blood cells—worked best for their model.

**MICROPHYSIOLOGICAL SYSTEMS**

Since the team successfully created a miniature human vascular network, the next step was to grow tissue cells within the blood vessel matrix to more accurately mimic the natural processes of tissue growth in the human body. This would create a microphysiological system (MPS), or a simulation of physiological systems in the body at a very small scale.

The team can place any one of the nearly 200 types of cells that comprise the human body within the blood vessel matrix and grow vascularized micro organs (VMOs)—small masses of lab-grown organ tissues—that receive nutrients from the lab-grown vascular system. This allows researchers to test drugs on the VMO and understand how it affects a real organ.
The Hughes Lab’s primary focus is to understand the mechanisms underlying how living blood vessels (red) and vessels in and around the tumor. The Hughes Lab has developed a vascular micro-organism (VMO) and a vascular micro-tissue (VMT) that allow for large-scale drug screening while other standard models are stopped the development of blood and has tested anti-angiogenesis drug compounds.

Both were major accomplishments in validating this as a viable drug development model.

SOLVING A PROBLEM

The standard method for initial drug screenings uses single cell types, often growing as a single layer of cells in a petri dish. Because human biology is far more complex than a single layer of cells, there is a vast disconnect between the initial testing and the end result. Very little in the simple models mimics the human body.

Similarly, the animal models—typically mice—used to test drug compounds are often not representative of human biology. "Mice are warm-blooded, they’re complex three-dimensional organisms, but they’re very, very different to humans in many ways," said Hughes. "The things that are obvious to a layperson, like a mouse is really tiny... scientists somehow don’t see as being an issue, when really they are. Mice have been incredibly useful, but they’ve also led us down the wrong path. ... Very few of the things that work in mice ever work in people."

To find a better solution, Hughes and his team are working to definitively prove that their VMOs and VMTs are better analogs for human body activity, and will improve drug testing and drug discovery. Early data have shown that tumor cells in the VMT are similar on a cellular level to those taken from a patient’s tumor, while other standard models are not, showing promise that the VMT is a more accurate model.

ARACARI BIOSCIENCES

A few years ago, Hughes noticed that people at meetings and pharmaceutical companies expressed interest in the team’s MPS and decided they should commercialize it. The team met with Associate Director of Licensing Alvin Viray, J.D., at UCI Beall Applied Innovation, to establish an exclusive license agreement from UCI to develop the technology that makes their MPS possible.

Hughes, George, Lee and Professor Emeritus G. Wesley Hatfield formed the biotech startup company now known as Aracari Biosciences, named after a kind of toucan, courtesy of Hughes, a birderwatcher. The pharmaceutical industry has realized it needs better models and large companies are excited about this platform.

Hughes, George, Lee and Professor Emeritus G. Wesley Hatfield formed the biotech startup company now known as Aracari Biosciences, named after a kind of toucan, courtesy of Hughes, a birderwatcher. The pharmaceutical industry has realized it needs better models and large companies are excited about this platform.

"We can put liver cells in and create a micro liver. We can add cardiomyocytes and create heart tissue. We can use neurons and astrocytes and create neural tissue," said Hughes. Their model, often referred to as an organ-on-a-chip, gets its name from computer chips, as the fabrication process is the same for both.

There has also been tremendous interest in cancer research, so the team started to grow tumor cells within the vascular system and created three-dimensional vascularized micro tumors (VMTs), each with their own blood supply. The team has tested anti-cancer drugs and confirmed that medicines were traveling through the vascular system to reach and affect the tumor, and has tested anti-angiogenesis drugs and confirmed that they stopped the development of blood vessels in and around the tumor.

"It can now cost up to $2.5B to bring just one drug to market," Hughes said.

Aracari Biosciences is positioning themselves in the preclinical phase of drug screenings so that their results can fill in the inadequacies of mice models and either stop the development of bad drugs early on, or validate drugs that don’t show promise in mice models but do show promise in the MPS.

The company currently acts as a contract research organization, performing in-house testing of drugs being developed by large pharmaceutical companies. Aracari Biosciences’ next phase will be to sell assembled and pre-validated platforms to outside companies so that they can run their own tests. Eventually, Aracari Biosciences will focus on personalized medicine, where a physician takes a biopsy from a patient and sends a sample to Aracari Biosciences. The sample is grown into multiple VMTs and tested against a number of preapproved drugs to determine each drug’s efficacy on the patient’s tumor. The physician uses this information to make an informed decision on which drug to prescribe for their patient with a high level of confidence that the drug will be effective.

The latter business requires FDA approval and so Aracari Biosciences has already begun conducting preliminary studies to validate the model and show superiority over existing methods of drug screening.

A TEAM EFFORT

Hughes, who received the 2019 UCI Innovator of the Year award, credits his lab’s many successes to the extremely talented students and postdocs he has worked with over the years. Their hard work, along with the long-term collaboration between George, Lee and their respective labs, has resulted in the development of what may become the new standard in precision medicine and more accurate drug discovery and validation.

Hughes with Enrique Laverya, UCI provost and executive vice chancellor, and Richard Sudek, UCI chief innovation officer and executive director of UCI Beall Applied Innovation, at the 2019 UCI Innovator Awards ceremony.

Learn more about the Hughes Lab and their research projects at faculty.sites.uci.edu/hugheslab.
In the United States, the path to learning a second language often begins as early as preschool and makes its way toward high school and college in the form of in-depth conversational speaking sequestered behind classroom walls, or as a brief exchange program overseas. Unless that language is a person’s native tongue, completely absorbing and retaining another language can prove difficult unless that person lives within the native-speaking country or household.

Quinn Taber, Immerse CEO, knows this experience all too well. For three years, he worked with several charitable organizations and volunteered in refugee camps in Lebanon, Jordan, Iraq and much of the Middle East, attempting to communicate in one of the hardest known languages: Arabic. From literal hands-on experiences of daily life, like shopping with his host family in the local marketplace, to holding a respectable conversation as an exemplary student in a classroom, Taber realized the effects of complete immersion.

“I was in a street market with a refugee buddy, and this Bedouin woman literally said ‘apple’ in Arabic,” said Taber. “I was like ‘huh?’ and then she throws it at me … she takes a bite and then sticks it in my mouth and sure enough that became front-of-mind, both long- and short-term memory, for the rest of my life. I never will forget that term because I’ve got all these different ways to retain and retrieve it.”

According to a National Highway Institute study on “Principles of Adult Learning and Instructional Systems Design,” adults retain approximately 10 percent of what is seen, 30-40 percent of what is seen and heard and 90 percent of what is seen, heard and done. Additionally, one 2015 study from the University of Texas, Arlington, says that learning a second language using virtual reality (VR) technology allows for high memory retention and is more effective.

“When you learn anything new, there are memory pathways in which you retain that information and retrieve it,” said Taber. “One of the best ways to maximize retention and retrieval is to have as many different pathways as possible.”

Soon following their global experiences, in 2017, Immerse became a thing of reality … virtual reality to be exact. The Wayfinder startup company utilizes Oculus Go, a wireless VR gaming headset that features built-in sensors to track movement and room scale.

“It is effective to speak with a native speaker over a Zoom call or a Skype call … we really encourage that,” said Furnari. “But our thought was, ‘How can we take that to the next level?’ Virtual reality is the natural next step.”

The VR headset does not require a pricey computer and is reasonably affordable for the consumer. As the team’s preferred VR system, the Oculus headset connects language students with an Immerse-trained American instructor via Wi-Fi signal, inviting them to “immerse” themselves into the language and culture by practicing conversations in virtual locations, in addition to having virtual experiences.
“Because not everyone owns a VR headset yet, we can buy these cheaper versions that don’t require a laptop … send them off to the client, who can use them without having to buy,” said Furnari. “They can just jump on our app while the teacher can be thousands of miles away.”

According to the team, VR technology as a second-language learning tool increases user enjoyment by 300 percent and is 250 percent more effective than other methods.

Immerse is currently marketing their startup as both a product and a service to primarily large corporations in Asia due to interest in learning the English language. Big companies also have bigger budgets and more students.

“Once the students’ headsets are there, the students plug them in and then meet with one of our teachers,” said Taber. “Once they’re in, they can go to any of these awesome virtual places and practice language together in a place that feels American.”

According to the team, Asia, namely China, Korea and Japan, currently ranks as the largest market for language learning, with English as the primary language of interest. Russia, Brazil and Saudi Arabia follow as the next largest batch who also aim to learn English.

“To be in this tiny little room and get picked up and put in a new location where you’re in the middle of your workday as a Japanese learner and, for an hour, you can be in California learning English – that’s pretty powerful,” said Furnari.

Immerse has recently closed a three-month pilot project with PricewaterhouseCoopers-Taiwan where their language-learning technology is utilized to train the multinational accounting firm’s employees at five different branch locations. The team has also secured a partnership with Transparent Language, one of the leading contractors for language learning that services the U.S. government. The company will utilize Immerse’s VR learning experiences.

Immerse has been entrenched in Applied Innovation’s Wayfinder incubator program as well as utilized many Innovation Advisors.

“All of the Wayfinder courses were super helpful, like intellectual property, HR, payroll – stuff that no one knows unless you’ve started a company,” said Taber.

Although the path toward building their startup has led the team through entrepreneurship’s typical peaks and valleys, their progression moves at a respectable speed. They plan to continue disrupting the language-learning space by scaling up their presence and increasing sales through their current business-to-business model. In the next six to eight months, the team plans to venture into the business-to-consumer market, as well.

“Both Quinn and I are passionate about doing something that is not only a sustainable business, but is also something we can use to create influence and help the world,” said Furnari. “If we can make the world better through that sustainable influence that we build with this business, we’re stoked.”

Find out more information about Immerse at immerse.online
Martha Davis Adapts to the Ebb & Flow of Innovation

FROM BIOCHEMISTRY TO DATA SCIENCE, DAvis BRINGS HER COMPANY TO THE FOREFRONT OF INNOVATION AT UC IRVINE.

Martha Davis has an eye for adaptability. Although she has degrees in biochemistry and physiology and entered the workforce as a bench chemist, Davis, through various research and development roles, has established a career in data science at Beckman Coulter, Inc. for 29 years. She currently works as Beckman Coulter’s chief data scientist for the Workflow and IT Solutions Business Unit and is UCI Irvine’s (UCI) alliance manager for Danaher Diagnostics. These two roles allow her to engage in areas that require adaptability: university startup innovation and research translation.

Beckman Coulter, Inc., a Danaher Corporation company, develops, manufactures and markets products that simplify, automate and progress complex biomedical testing in the diagnostics and life sciences industries. Her current role at UCI Beall Applied Innovation, which she began in October 2018, builds the relationship between Danaher Diagnostics and UCI. With an office at the Cove, she also makes technical decisions and bolsters the commercialization of academic research.

“It’s important that we understand what’s happening in the university ecosystem and what kinds of things are coming up as problems that need to be solved and are identified even before they’re a problem,” said Davis. “And universities are usually on the forefront of that.”

Beckman Coulter strategically chose to work with UCI and Johns Hopkins University, the only two universities selected for, what she calls, joint structured collaboration programs. This allows Beckman Coulter access to their medical schools and ecosystems to cultivate startup and faculty relationships, as well as take advantage of the university’s geographic location.

“Universities are usually on the forefront of that.”

Beckman Coulter has contributed to Applied Innovator’s Proof of Product (POP) Grants program, which helps fund faculty innovator research that has commercial potential. Laws Stines vash in one area or commercialization — she not only looks at the product now, but she also identifies technology that may fit in the Danaher portfolio in the future.

“We assess startups and ask ourselves ‘are they really ready?’ Do they have a product? What are they looking for from us?’” said Davis. “Again, because we are in the medical device arena, how will that [device] be used for our patients and our customers?”

At Beckman Coulter, Davis and her team look at test results from medical devices as data points to determine device functionality. Her role with data has evolved over the years, as well. In the beginning, Davis manually entered hundreds of data points into a computer. Now, with rapidly increasing technology, Davis handles millions of data points to benefit researcher and, subsequently, patient experience.

Davis uses her knowledge about medical diagnostics to help entrepreneurs and patients alike. She recognizes the importance of data in innovations that improve patient care and enhance experiences through accurate results and quicker turnaround time.

“There’s a lot that I feel pretty passionate about just in how data is used,” said Davis. “When you really start to look at it, there’s some really cool things you actually get to talk about with your patients. We do contribute to their health. So, that’s a pretty cool area to work in.”

For more information on Beckman Coulter and its parent company, Danaher Diagnostics, visit beckmancoulter.com.

“IT’S IMPORTANT THAT WE UNDERSTAND WHAT’S HAPPENING IN THE UNIVERSITY ECOSYSTEM AND WHAT KINDS OF THINGS ARE COMING UP AS PROBLEMS THAT NEED TO BE SOLVED.”

— Martha Davis

**DEEP DIVE**

**MARtha Davis**

**ALLIANCE MANAGER**

As alliance manager, Davis helps build the relationship between Danaher Diagnostics and UCI Beall Applied Innovation to commercialize academic research.

**BENCHMARK SCIENTIST**

Although Davis no longer works in this capacity, she previously used her degrees in biochemistry and physiology to work directly with substances in a lab setting.

**DATA SCIENTIST**

Davis uses computer technology to analyze millions of data points from Danaher devices to determine functionality and improve customer and patient experience.

**PERIOD COSTUMER DESIGNER**

Davis enjoys designing historical costumes and specializes in the time periods 1775 through 1815 and 1875 through 1910 due to their transitional natures at the end of the centuries.
10 of Orange County’s Resources for Entrepreneurs

DIVING INTO THE ENTREPRENEURIAL WORLD
CAN BE AS INTIMIDATING AND EXHILARATING AS CATCHING THAT FIRST WAVE. THINK OF THIS LIST AS A SURFBOARD TO HELP NAVIGATE THE WAVES.

With any new venture it is important to do research and know where to turn to for help. This list features some of Orange County’s resources for entrepreneurs who are looking for basic or specific information. From getting a startup off the ground to applying for funding and credit checks, it’s all here.

*The organizations listed are ranked in no particular order.

1. THE NATIONAL ASSOCIATION OF WOMEN BUSINESS OWNERS
   The National Association of Women Business Owners (NAWBO) is a community of women business owners who expand the entrepreneurial and economic empowerment of other women business owners. This members-only organization has a chapter in Orange County and is the only dues-based organization for all women entrepreneurs across all industries. They emphasize community, advocacy and education to their members through annual social events and conferences.
   - [NAWBOOC biz](https://www.nawbooc.biz)
   - [Startup Grind OC/Irvine Chapter](https://www.startupgrind.com/irvine-1)

2. STARTUP GRIND OC/Irvine Chapter
   In partnership with Google for Startups, Startup Grind OC/Irvine offers the Orange County entrepreneurial community a way to connect through various events. Worldwide annual conferences offer opportunities to connect with entrepreneurs from around the world, as well as two different exhibition opportunities for startups to showcase their companies. This includes Grind, for those who have received under $3 million in funding, and Growth, for startups who have received $3 million or more in funding. The 2020 global conference will be held in Silicon Valley in February.
   - [startupgrind.com/irvine-1](https://startupgrind.com/irvine-1)

3. U.S. BUSINESS VETERAN ALLIANCE
   The U.S. Business Veteran Alliance helps U.S. veterans certify their business for Disabled Veteran Business Enterprise contracts, offers mentorship, avocation and education about the business world. The Orange County branch holds meetings on the third Thursday of the month at the Tierny Center in Tustin.
   - [gouvva.org/chapters](https://gouvva.org/chapters)

4. EVONEXUS
   EvoNexus is a leading incubator for startup companies located in Southern California. With incubators located in Irvine and San Diego, they empower entrepreneurs to turn their ideas into funding-ready, commercially viable companies.
   - [evonexus.org](https://evonexus.org)

5. SMALL BUSINESS DEVELOPMENT CENTERS
   Small Business Development Centers offer no-cost consulting, low-cost training and access to a team of experienced consultants serving over 16 industries. They have a location at the Cove @ UCI Beall Applied Innovation that serves entrepreneurs and startup companies within the Orange County and UCI ecosystem. This specific team specializes in the life sciences, medtech and medical device business sectors.
   - [innovation.uci.edu/sbdc](https://innovation.uci.edu/sbdc)

6. TECH COAST ANGELS
   Tech Coast Angels, which has an office at the Cove, is the largest angel investor group in the United States. The company offers hands-on mentoring, assistance in building management teams and helps with raising venture capital funding. Tech Coast Angels consists of experienced CEOs, senior executives, current and former entrepreneurs, venture capitalists and other professionals.
   - [techcoastangels.com](https://techcoastangels.com)

7. ORANGE COUNTY STARTUP COUNCIL
   Orange County Startup Council is a local community service association that connects new technology and software startup companies with partners, customers and investors. They share knowledge and experiences with local entrepreneurs by offering a welcoming and inclusive environment.
   - [ocstartupcouncil.org](https://ocstartupcouncil.org)

8. 1 MILLION CUPS
   Based on the idea that entrepreneurs discover solutions and community engagement over one million cups of coffee, 1 Million Cups is a free program designed to educate, engage and inspire entrepreneurs around the country. Offered in 180 communities across the nation, the organization holds free weekly events for local entrepreneurs to meet and present their startups to a network of peers and founders. The Irvine chapter meets at 8:00 a.m. every Wednesday at the Cove.
   - [1millioncups.com/irvine](https://1millioncups.com/irvine)

9. OCTANE
   OCTANE is an organization of the Southern California technology and medtech business ecosystems that connects people, resource and money. Their goal is to bring $5,000 high-paying tech jobs to Southern California by 2030 through their accelerator, LaunchPad SBDC as well as their platform Growth Series. OCTANE hosts programs and events throughout the year, many of which are hosted at the Cove, such as “Coffee at the Cove.”
   - [octaneoc.org](https://octaneoc.org)

10. COVE FUND
    The Cove Fund is a collection of seed-stage venture capital funds that provides startup funding for promising new Southern California ventures. The Cove is located at the Cove. There are two separate funds, one for early-stage technology and one for life science companies that demonstrate potential to address large markets with unique products and services, and that can achieve significant value-creating investment points with their seed funding.
    - [covefund.com](https://covefund.com)

Find more resources for startups and entrepreneurs within UCI’s ecosystem and the Orange County community available at [innovation.uci.edu/sbdc](https://innovation.uci.edu/sbdc) //
What’s one book you think everyone should read?

What do you want to watch next?

Where’s one place you’ve always wanted to travel?

What’s one song that always puts you in a better mood?

Do you have any surprising hobbies?

During any day of the workweek, Jaune Odombrown, ANTreneur Center manager, can be found providing resources to UC Irvine (UCI) students interested in innovation and entrepreneurship. Events, programs and services are just some of the many benefits the ANTreneur Center has to offer. Here, Odombrown discusses his off-the-clock ventures and interests.

Q: What’s one book you think everyone should read?


Q: What do you want to watch next?

A: “Songland” is about the actual songwriters. This show is all about the collaboration that goes into making music. For me, I take that kind of concept into entrepreneurship. It’s all about collaboration in order to make something happen.

Q: Where’s one place you’ve always wanted to travel?

A: I want to go to Dubai or, anywhere in the United Arab Emirates, for particular reasons – for business and to experience their culture and see how they do things. Obviously, there’s a lot of wealth there so they can do so much in their community, but I would like to see it and experience it for myself.

Q: Where do you want to watch next?

A: You know how “The Voice” and “American Idol” are about the singers, right? “Songland” is about the actual songwriters. This show is all about the collaboration that goes into making music. For me, I take that kind of concept into entrepreneurship. It’s all about collaboration in order to make something happen.

Q: Do you have any surprising hobbies?

A: I’ve played piano for over 20 years now and I compose music and transpose music. Transpose means I take multiple styles of music and then make music out of it. I listen to classical and jazz, and I take pieces of those songs to make new ones because, in reality, I believe there aren’t many new ways to make music.

Q: What’s one song that always puts you in a better mood?

A: It’s a Japanese song called “Ito.” It’s by Miyuki Nakajima. It’s a really cool song and I can actually sing a good majority of it in Japanese. You don’t want to hear me sing, but it’s a song that, if I hear it, brings me back to a lot of good memories.
Across Campus

SOME OF THE LATEST STORIES FROM THE UCI CAMPUS

UCI SCHOOL OF MEDICINE
The National Institute of Mental Health (NIMH) awarded Tallie Z. Baram a $15 million Silvio O. Conte Center grant for her research in infant vulnerability to cognitive and emotional problems. The competition provided winners with funding.

UCI HEALTH
UCI Health pain experts have worked the past several years to reduce the amount of opioids they prescribe to post-operative patients, without compromising comfort. Some alternatives to opioids include anti-inflammatory drugs, nerve medications, muscle relaxants, nerve blocks and catheters.

SCHOOL OF SOCIAL ECOLOGY
The Elisabeth Severance Prentiss Foundation gave the UCI Institute for Interdisciplinary Salivary Bioscience Research a five-year, $1 million gift to study saliva in monitoring lithium levels in patients with depression. Saliva would replace blood testing, which is often inefficient.

HENRY SAMUEL SCHOOL OF ENGINEERING
Six teams from the Samueli School of Engineering placed in various tracks, including UCI Beall Applied Innovation’s Tech Surge track, of the 2019 New Venture Competition, held at the Paul Merage School of Business.

DONALD BREN SCHOOL OF INFORMATION & COMPUTER SCIENCES
UCI Esports donated original arena PCs to the Department of Informatics, research labs and student clubs. These computers will help progress research in fields like memory and aging, and use virtual reality to bring theatre to underserved youth.

TIPS

Follow the Money Through the Venture Capital Process

IN THIS SECOND INSTALLMENT, WE DISCUSS THE DIFFERENT TYPES OF VENTURE CAPITAL FUND INVESTORS.

In this series, we provide insight into how the venture capital (VC) process works from a financial perspective—essentially, where venture capital money comes from and how it moves through the venture capital system.

As we discussed in the first installment, certain investors choose to invest in venture capital because of the potential for very high returns. So who are these investors that invest in VC funds? They are Venture Capitalists (VCs).

There are several types:

1. ENDOWMENTS
   Endowments may also invest a portion of their endowed gift funds into VC funds. The investment returns are then given to the institution each year. Large endowments usually have some VC fund investments.

2. HIGH NET WORTH INDIVIDUALS
   High net worth individuals, who, generally speaking, have a net worth over $1 million excluding the value of their home, may allocate a small percentage of their investable capital to VC funds, as long as they meet the minimum investment amount, which is set by each VC firm for each of their VC funds. High net worth individuals who invest into VC funds are seeking higher investment returns that are not available from other investment assets.

3. INSURANCE COMPANIES
   Life and property insurance companies invest their customer premiums to fund future claim payments. Once again, some of the investments may include VC funds.

4. FAMILY OFFICES
   Family offices, or wealthy families who have a dedicated process to manage a broad range of their investments, often invest in VC funds to provide long-term capital appreciation that can provide returns across several generations. For example, in the 1930s, the Rockefeller family was one of the first wealthy families to have a formal process for investing in startups.

5. CHARITABLE FUNDS
   Charitable foundations invest the money they raise and use the investment returns to provide funding toward their charitable causes. If the charity is large enough, a portion may be invested into VC funds.

6. RETIREMENT AND PENSION PLANS
   Finally, and perhaps most importantly, retirement and pension plans are significant VC fund investors. Prior to a legislative change in 1979, pension plans were prohibited from investing in high-risk assets, including venture capital. After the legislative change, large amounts of pension fund assets flowed into venture capital, arguably creating the VC industry as we know it today.

These investors have several things in common. They would like to allocate a portion of their investment capital to high-risk and hopefully high-return investments. They are also long-term investors that are able to accommodate the long timeframes and lack of liquidity of VC funds. And finally, these investors provide the money as it begins its path through the venture capital process.

Luis Vasquez has 15 years’ experience in the startup and venture capital space. He has worked with a startup, a VC firm, a venture development organization and a venture studio/accelerator firm. He is now UCI Beall Applied Innovation’s Associate Director of Venture Capital Collaborations.

EN·DOW·MENT
noun
money or income producing property to a public organization for a specific purpose

LI·D·I·T·Y
noun
the availability of liquid assets to a market or company

SEPTEMBER 2019 / UCI BEALL APPLIED INNOVATION / RISING TIDE
UCI Beall Applied Innovation is a dynamic, innovative central platform for the UCI campus, entrepreneurs, inventors, the business community and investors to collaborate and move UCI research from lab to market.