MESSAGE FROM THE OFFICE OF TECHNOLOGY PARTNERSHIPS

Dr. Rosibel Ochoa
Associate Vice Chancellor
Technology Partnerships
Office of Research and Economic Development

Over the past three years, our office has been actively engaged in building the infrastructure needed to support UCR and community innovators accelerate the translation of their ideas into products and services for the benefit of society.

Through its strong partnership with local and regional organizations that has led to securing over $17 million in funding, OTP has taught 15 Innovat’R workshops to 127 teams, delivered almost $1 million in proof of concept funds to over 30 faculty projects and mentored over 200 projects and companies through its EPIC SBDC and SBIR/STTR resource centers. We are fortunate to have engaged 15 expert Entrepreneurs-in-Residence and instructors who provide specialized commercialization assistance to our region’s entrepreneurs.

We are also taking a proactive role in building bridges with our corporate partners both local, nationally and internationally. This past year we welcomed 18 industry partners on campus and signed a 5-year strategic agreement with our long time licensee Eurosemillas. This includes securing worldwide industry partners to help us commercialize the avocado and rootstock varieties from our renown breeding program. The expanded partnership will focus on increasing research and development collaboration, and accelerate transfer of UCR Intellectual Property.

We are very excited about our partnership with the Western Growers Association to explore areas to bring advanced technology to support our California farmers. Our partnership with Clean Tech San Diego and the University of San Diego will help clean energy entrepreneurs have access to specialized mentorship from these organizations through the recently expanded Southern California Regional Energy Innovation Network (SCEIN) program.

Lastly, we are also proud of our international partnerships. Our strategic collaboration with Know Hub Chile and the Organization of American States will not only help UCR expand its presence in Latin America but also build bridges between universities and research institutions, bringing technology into the marketplace through capacity building, mentoring, technology assistance and training programs.

As we reflect on how we have been able to build and strengthen the ecosystem over the past 3 years, we appreciate the support of all our partners and look forward to launching new programs, resources, and facilities that will continue to better serve the campus and our region.

Sincerely,

Dr. Rosibel Ochoa
Working with OTP

Reporting to the Vice Chancellor of Research and Economic Development, the Office of Technology Partnerships encompasses 3 areas:

- Technology Commercialization
- Corporate & Strategic Partnerships
- Innovation & Entrepreneurship

Our integrated approach helps us provide fast, transparent, efficient, and individualized support for the development, validation, and incubation of ideas.

Technology Commercialization (TC)
The Technology Commercialization team protects and helps to commercialize the cutting-edge research developed at UCR. From developing an IP strategy, and filing disclosures to licensing technologies, the TC team provides faculty, students, and staff full-service support in protecting and commercializing their UCR intellectual property.

Corporate & Strategic Partnerships (CSP)
The Corporate & Strategic Partnerships team facilitates collaborations between faculty and industry. The team provides specialized company access to the pioneering research, faculty, students, and infrastructure at UCR.

Corporate Research Contracts (CRC)
The Corporate Research Contracts office helps faculty members advance their research by negotiating industry agreements and providing grant proposal support.

Entrepreneurial Proof of Concept and Innovation Center (EPIC)
EPIC provides faculty, staff, students and local innovators valuable resources and tools to support their entrepreneurial journey. EPIC is a complete path-to-market platform for innovators to validate their ideas, build their team, and launch their company.

EPIC Small Business Development Center (SBDC)
EPIC SBDC Provides early stage tech entrepreneurs and companies support to grow their businesses at no cost. Services include specialized consulting, training programs, workshops, and access to capital.

SBIR/STTR Resource Center
The Resource Center helps faculty develop and submit winning proposals, provides one-on-one mentorship, and offers a robust training program.

LaunchPad @ UCR
LaunchPad @ UCR powered by the Techstars network helps students succeed in entrepreneurship and in their careers by complementing existing entrepreneurship on-campus resources, coordinating off-campus opportunities for students to expand their reach, and convening students and staff at world-class events leveraging Techstars’ industry-leading mentors, networks and brands.

ExCITE Startup Incubator
The ExCITE startup incubator is a partnership between UCR, Riverside County, and the City of Riverside providing startup residents with facilities, workshops, and community support to accelerate their companies’ success.

International Partnerships
OTP’s International Partnerships facilitates technology transfer and entrepreneurship capacity building for organizations and entities across the globe.
Strengthening Our Ecosystem

Blackstone LaunchPad @ UCR
Providing more resources to support student entrepreneurship, UCR partnered with the Blackstone Charitable Foundation to bring Blackstone LaunchPad to UCR.

MOU with Western Growers
Solidifying UCR’s expertise in agriculture and engineering, this partnership aims to support research, development, and commercialization of advanced Ag-focused technologies.

MOU with Eurosemillas
UCR partnered with Eurosemillas to support UCR’s avocado and citrus breeding programs, accelerate the commercialization of regional intellectual property and promote faculty and student exchange.

Life Science Incubator
Located in the new Multidisciplinary Research Building, the incubator, funded in part by a $2.5 million grant from the EDA, will house up to 15 startups in the agbiotech, biomedical, bioengineering and medicinal chemistry fields.

CEO-in-Residence
Connecting entrepreneurs with innovators, OTP sought out and connected a successful entrepreneur with UCR faculty interested in starting a company.

Launch of Know Hub Chile Ignition
Collaborating internationally to build entrepreneurs abroad and in Riverside. OTP successfully completed the Know Hub Chile ignition program for universities in Chile. Utilizing UCR’s NSF I-Corps Lean Launchpad methodology, teams participated in an intensive, experiential entrepreneurial training program. The top Chilean teams will visit Riverside for mentoring, learning about the ecosystem, and building US market relationships.

2018 - 2019 Highlights
Intellectual Property Management and Licensing

Over the past year, the Technology Commercialization team focused on streamlining processes, increasing transparency for inventors and improving its patent management system. These efforts resulted in the issuance of a record of 42 US patents. The team has been working diligently on an online portal to allow UCR inventors to login and view their intellectual property portfolios and easily submit invention disclosures. This service will be officially launched in the fall of 2019. To better serve our stakeholders, the team has merged with our corporate engagement team in order to facilitate faculty and industry engagement and accessibility to UCR research expertise, student talent and intellectual property portfolio.

### Highlights and Key Outcomes:

- Received 64 invention disclosures
- Filed 91 provisional and non-provisional patent applications
- Had 42 US patents issued, a record number for UCR
- Executed Helicoid License Agreement
- Executed 11 license agreements, 7 active licenses to startups
- Signed Eurosemillas Strategic Partnership MOU
- Signed Letter of Intent with Eurosemillas to support the Avocado Improvement Program (AVIP)

### Patent Portfolio as of 2019

- **575** Active Intellectual Property
- **211** Active License Agreements
- **8** Active Licenses to Startups
- **19.7%** Active IP Licensed

### Connecting Innovators with Entrepreneurial Talent

**Inventor:**

**Dr. David Kisailus**

Winston Chung Endowed Chair of Energy Innovation
Professor in the Department of Chemical and Environmental Engineering & Materials Science and Engineering

Professor Kisailus and his team invented a new lightweight, impact-resistant material inspired by a tiny crustacean, the mantis shrimp, which could change the way we play sports, and improve wind-farm productivity and automotive fuel economy.

OTP brought this patented technology to a successful entrepreneur in its network, Chad Wasilenkoff, who saw the commercial potential and decided to start a company around the technology called Helicoid Industries Inc.

"Utilization of this bio-inspired technology will enable composites to be lighter weight, more impact-resistant, more durable, and be manufactured at a lower overall cost." - Chad Wasilenkoff, CEO of Helicoid
Proof of Concept Grants

OTP’s Proof-of-Concept (POC) program offers competitive grants to UCR researchers seeking to advance their research towards commercialization. Spring 2019 POC award winners included Adler Dillman, Professor of Nematology, Masaru Rao, Professor of Mechanical Engineering, and Paul Larsen, Professor of Biochemistry. To date, over $1.4 million in POC funding has been awarded to 49 projects with a new round of POC grants to be issued in the fall of 2019.

Paul Larsen
Biochemistry
“Modification of Phosphoenolpyruvate Carboxylase activity”

Professor Larsen’s research has potential to achieve major biomass increases for commercial crops while enabling growth on metal-contaminated soils.

Adler Dillman
Nematology
“Nematode-Derived Insecticidal Toxins”

Professor Dillman is developing novel insecticides based on natural toxins.

Masaru Rao
Mechanical Engineering
“Perforo Nanomechanical Gene Insertion Device for CAR T-Cell Cancer Immunotherapy”

Professor Rao has demonstrated the potential of a nanomechanical device for introducing DNA into nuclei for cellular therapy.

To Date:

$1.4M+
Proof of Concept Funding Awarded

49
Projects Funded

11
Companies Formed

2
Licenses Executed

Inventor:
Dr. Masaru Rao
Professor
Department of Mechanical Engineering

OTP implemented a new “CEO-in-Residence” program with the goal to connect inventors who have promising technologies with senior business executives interested in starting a new company.

Mr. Brynley Lee, an experienced business executive became our inaugural CEO-in-Residence. Mr. Lee has partnered with Professor Masaru Rao to launch Basilard Biotechnology, selecting Professor’s Rao technology for 2 reasons: 1) the potential of its innovative SoloPore™ cellular engineering technology to transform the growing field of cell therapy, 2) the strong engagement of the entrepreneurial scientific founder. Following research with potential users of the technology and discussions with venture capital providers, including UCR’s Highlander Venture Fund, Mr. Lee became Basilard BioTech ‘s founding CEO. The team has incorporated the company and is in the process of negotiating the license from UCR.

Brynley Lee (Right)
CEO of Basilard Biotech
at Better Than Life Sciences Launch Bio event in San Diego

Basilard Biotech
Nanomechanical Gene Delivery

THANK YOU
Corporate Research Contracts

Corporate Research Contracts focuses on facilitating university-industry collaboration by negotiating a variety of agreements from material transfer, to non-disclosure and sponsored research. This past year, the team executed 300 contracts including 70 sponsored research agreements funded valued at $5.7 million dollars. Corporate funding on campus totalled $16.2 million which represents a 10% increase over the previous year. Working closely with the Technology Commercialization group and EPIC SBDC, the team secured 11 SBIR/STTR awards for UCR faculty and community startups for a total of $1.8 million. To increase campus awareness and engagement with industry, the team hosted 5 workshops and seminars, including the first UCR led SBIR-STTR conference.

Highlights and Key Outcomes:
- Executed 300 Contracts
- Executed 2 Master Research Agreements
- Executed 8 Collaboration Agreements
- Secured $440K from BASF CARA program
- Increased funding from Corporate partners by 10% over the previous year
- Secured 7 UCR SBIR/STTR Awards:
  - Tristan Technologies, PI: Shane Cybart
  - Hypres Inc, PI: Shane Cybart
  - Intelligent Automation Inc, PI: Bir Bhanu
  - Physical Optics Corporation, PI: Roger Lake
  - Questek Inc, PI: Suveen Mathaudhu
  - Radoptics LLC, PI: Bahman Anvari
  - Centeye, PI: David Kisailus

Supporting California Agriculture

OTP's Corporate and Strategic Partnerships (CSP) team has been working to meet diverse industry needs by increasing industry collaboration across UCR’s schools and departments, particularly between the College of Natural and Agricultural Sciences and Bourns College of Engineering. Over the past year, OTP has been able to expand and deepen relationships with the Western Growers Association, LARTA, and Eurosemillas, positioning UCR as a leader in the Ag tech arena.

An MOU with the Western Growers Association (WGA) will leverage UCR and WGA expertise in research, development, and commercialization of advanced technologies in areas of excellence such as plant sciences, entomology, sustainability of natural resources, and engineering. The WGA partnership will help advance UCR technologies that address the real challenges to growers and our ability to feed a soaring global population. These include technologies to grow plant yields under increasing abiotic and biotic stress due to climate change, more efficient use of water to grow crops, and in-field mechanical automation to address labor shortages and enhance crop harvest.

In May 2019, UCR and the LARTA Institute, an internationally recognized innovation accelerator, co-hosted an Ag Technology event on the UCR campus. With the help of WGA and the regional water districts, the event successfully brought together over 130 individuals representing industry, growers, policy makers, and academics. This meeting helped bring into focus a common understanding of the current and future challenges to agriculture, and enabled this diverse group of Ag Technology stakeholders to embrace the position that innovative technological solutions are essential to secure our future ability to feed the world.
The Corporate and Strategic Partnerships (CSP) team has been focused on providing a customer-driven approach to industry collaboration, working on transitioning relationships from single points of engagement to broader University-wide collaborations. This year, the team hosted 18 on campus visits with faculty and visited 10 company partners. Now part of the Technology Commercialization group, the team led the expansion of UCR’s partnership with Eurosemillas, LARTA and the Western Growers Association.

**Corporate Engagement**

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**Highlights and Key Outcomes:**
- Signed MOU with Western Growers
- Developed Strategic partnership with Eurosemillas
- Co-organized LARTA-UCR Ag Tech Conference
- Co-hosted Western Growers Robotics Workshop
- Engaged 28 diverse technology companies to support UCR research programs
- Supported the Inaugural Molecular Medicine Symposium held by UCR’s School of Medicine

**Noteworthy Visits:**
- Exiterra
- DeBerry Villita Avocado Inc.
- Kingenta
- Eurosemillas
- Western Growers Association
- Westfalia
- Uth AG
- Corteva
- Bioptev (Australia)
- Temecula Valley Wine Growers Association
- Sumitomo Chemical (Japan)
- Gallo Wines
- Greenlight BioSciences
- J.R. Smucker’s
- Jetmine Technology
- Almond Board of California
- JSR Corporation (Japan)
- BASF CARA

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**Strengthening Partnerships Around the World**

In May 2019, Eurosemillas S.A., a global leader in the commercialization of agriculture innovations, signed a $5 million agreement with UC Riverside to expand a research and licensing partnership that has taken the campus’ citrus varieties to nearly 20 countries. Based in Cordoba, Spain, Eurosemillas is UCR’s largest international licensee of the Tango mandarin variety.

Eurosemillas has been a strong partner of UCR for over 16 years, supporting campus research as well as commercialization of UCR citrus, avocado, and asparagus varieties. As part of the new five-year agreement, the company will fund Proof-of-Concept grants to commercialize technology, spur the creation of local technology companies, expand collaborations and research, and increase Eurosemillas’ presence in Southern California. The expanded partnership includes working together to build a global consortia of industry partners and sponsors to screen, validate and accelerate the commercialization of more than 10 avocado scion and rootstock varieties as part of UCR’s signature avocado breeding program.
Innovation and Entrepreneurship

OTP made great progress this year expanding its entrepreneurial support programs to UCR and Inland Empire innovators. Through its Innovat’R Workshops I-Corps program, EPIC SBDC and the SBIR/STTR resource center, teams and technology-based startups from across the Inland Empire, from the Temecula Valley to Ontario and Coachella valley, have received over 2000 hours of individualized mentorship assistance. This support also includes in depth coaching for investor pitch preparation, sales and marketing, and company financials.

To date, we have trained 127 teams of innovators using the customer discovery process, funded a total of $1.4 million in Proof-of-Concept grants, and supported more than 270 projects. Sixty-four companies have raised a total of $12 million in investment capital and grant funding. We also partnered with 9 student organizations, engaging with over 1,000 students through workshops, events, outreach activities, and idea development opportunities.

Highlights and Key Outcomes:
- Engaged 15 Entrepreneurs-in-Residence who specialize in life sciences, Ag tech, energy, cleantech, SaaS, and student entrepreneurship
- Launched the i6-SCEIN collaboration with Cleantech San Diego for clean energy companies
- Engaged with over 1,000 students
- Grew the ExCITE startup incubator membership from 8 companies to 20 companies which contributed to:
  - 105 full time and part time jobs created or retained
  - $519,000 in revenue for 2019
  - $933,000 in total investment capital raised
  - $2.46 Million in total grants received

To Date:

- $12M in Capital Raised by Companies
- 15 Entrepreneurs-in-Residence
- 270+ Projects and Companies Supported
- 2000+ Mentoring Hours Provided

Supporting Student Entrepreneurship

Last year, OTP increased its student engagement, reaching over 1,000 students by partnering with 9 diverse student organizations including the Experimental Acoustic Research Studio (EARS), the Society of Women Engineers, the Future Business Leaders of America, and the Association of Latino Professionals for America. We provided mentorship, hosted workshops, and supported events including the Cross Campus Entrepreneurs Pitch-a-Thon, Citrus Hack, and BioHack that encourage student-driven innovation and entrepreneurship activities on campus.

In the Winter of 2019, OTP partnered with UCR Professor and Director, Dr. Patricia Cardoso, to introduce entrepreneurship and innovation to students in her writing and film classes. During the Spring Quarter, Dr. Cardoso’s film students were able to experience the full web series creation process from concept development to final production. Using 10 UCR technologies as their source of inspiration, the students wrote and pitched a web series to the class. Of the 22 concepts submitted, one was selected to be produced during the rest of the quarter called “The Resistance”.

“The Resistance” story follows a group in a dystopian world who mastermind a plan to steal mantis shrimp to create super tough material that can be used for armor and weapons. The production of this web series saw cross-campus collaboration which included the UCR Botanical Gardens, the Bourns College of Engineering, the Music department, the Film department, and OTP.

This year, we launched the Blackstone LaunchPad (LaunchPad @ UCR) powered by Techstars network through a joint collaboration of the Office of Technology Partnerships with the Orbach Science Library. The LaunchPad @ UCR program is funded by a multi-year grant from the Blackstone Charitable Foundation and is part of a UC system-wide initiative that will extend entrepreneurial education, programming and mentoring support to over 2,300 UCR students.
Innovat’R Workshops

OTP focused on student and faculty engagement to recruit for the Innovat’R Workshops by hosting information sessions, working with student organizations, hosting a post doc round table, and partnering with student events. This year, 26 teams participated in the Innovat’R Workshops, UCR’s NSF I-Corps Site program awarding a total of $65,000 to the teams. Twenty students from UCR's Business school's MBA program were paired with teams to provide business consulting and additional market research.

Life Science Incubator

In April, the Economic Development Administration awarded $2.5 million to UCR to acquire specialized equipment for use in a life science incubator located in the Multidisciplinary building. The incubator, operated by OTP, will provide entrepreneurs with the facilities, resources and opportunities to grow and scale life science based startups in the region. Funding has been matched with $2.5 million of State of California grants AB2664 and internal UC Riverside funds.

The 3,000 sq. ft. Wet Lab Incubator will be specially outfitted to house up to 15 companies in the life science, agriculture, biotechnology and medical technologies. In addition to bench space, the Incubator features three tissue culture rooms with biosafety cabinets, four chemistry hoods, growth chambers, two industrial dishwashers and state-of-the-art equipment.

Residents will have the opportunity to collaborate with UCR researchers, faculty, and students, attend seminars, use library and patent research services, access the UCR SBIR/STTR Resource Center, participate in entrepreneurial development programs and mentoring offered by EPIC SBDC and I-Corps, and will have access to core equipment facilities in the building and across campus.
OTP was active in building and strengthening the region’s tech ecosystem by leading key events during Riverside County’s Innovation Month and Techstars Inland Empire Startup Week. Three of our companies presented at the First Look SoCal Showcase hosted by the Alliance for SoCal Innovation in June. The team participated at numerous events including Corona’s Tech-o Tuesday, Ontario’s I2TEC2, the Murrieta Innovation Center, and the Regions Rise Together Summit in Redlands. OTP assisted the Counties of Riverside and San Bernardino to win a state GO-BIZ grant which attracted 60 technology and defense industry applicants and awarded funding to six companies from across the Inland Empire.

OTP also played an active role in shaping the future of Riverside’s Innovation District. As a key player in the innovation space, OTP provides an avenue for spinning out technology from the University as well as supporting the development of tech startups and small businesses from the region. As a result of resources available to the community like EPIC SBDC and the ExCITE startup incubator, Riverside was ranked #23 of the best 50 cities to start a business in 2018 by Inc. Magazine. Additionally, due to the growth and needs of the companies located at ExCITE, the incubator will need to expand into a larger space. A potential space has been identified by the County of Riverside that would increase the size to over 12,000 sq ft.

To support the development of clean energy startups in the region, OTP partnered with Cleantech San Diego and California State University San Marcos to expand the Southern California Regional Energy Innovation Network (SCEIN) program to include the Inland Empire. This partnership will encourage the development of smart grid, clean transportation, battery and energy efficiency technologies from UCR and the community.

Workforce Development

Through collaborations with UCR Extension and local colleges and universities, OTP has been working to identify industry needs and establish programs that will support the development and retention of talent in the region. As an Executive Board Member, Dr. Rosibel Ochoa joined a delegation from the County Workforce Development Board in Washington DC to advocate for congressional support for the Workforce Innovation & Opportunity Act (WIOA) legislation and expansion of apprenticeships.

SBIR/ STTR Conference @ UCR

In March 2019, EPIC SBDC held its first annual SBIR/STTR Conference 2019 at UCR. The conference was the first of its kind in the Inland region hosting over 200 small business entrepreneurs, researchers and graduate students from across California and the US. With over 23 presenters and 18 presentations and workshops, attendees were able to learn how the SBIR/STTR programs provide approximately $2.5 billion in funding to small business entrepreneurs to bring transformative innovations to the market. With a focus on insights on how to secure early stage SBIR funding, attendees were given the opportunity to schedule one-on-one meetings with program officers from five of the federal agencies including the National Science Foundation, National Institutes of Health, Department of Defense, Department of Energy, and US Department of Agriculture.

Study on Latina Business Owners in the Inland Empire

OTP partnered with the National Latina Business Women Association Inland Empire (NLBWA-IE) chapter to conduct a study on Latina Business Owners in the Inland Empire. The study helped define the business owners contribution to the economy and the society as well as identified the success factors and challenges faced. With this study, OTP plans to support the development of an action plan to foster the growth of Latina-owned businesses and build an effective and inclusive entrepreneurial ecosystem that will benefit the broader community.
International Partnerships

Over the past year, OTP further demonstrated its leadership internationally in the areas of technology transfer and entrepreneurship. International Partnership efforts included: signing of MOUs to collaborate in the growth of the innovation of entrepreneurship ecosystem in Latin America; launching flagship entrepreneurship programs in Chile; inspiring technology transfer leaders in Panama; and contributing to Riverside’s economic development by welcoming international startups and entrepreneurship students to the region.

Highlights and Key Outcomes:

- Signed MOU with the Organization of American States
- Successfully developed and delivered Know Hub Chile Ignition program
- Led an intensive workshop in Panama at the Commercialization and Technology Transfer Hub hosted by the Organization of American States
- Developed Entrepreneurship Certificate with UCR Extension that will be taught by OTP Certified I-Corps trainers to broaden the reach of OTP

Helping Advance Tech Transfer in Chile

Over the past year, the OTP team successfully implemented a multi-faceted partnership with Know Hub Chile, an association of 10 Chilean universities funded by CORFO, the Chilean government agency that leads entrepreneurship, innovation and competitiveness. The project included an assessment of a portfolio of close to 40 technologies, a Best Practices Seminar in Santiago, Chile for all Tech Transfer Officers from 10 Chilean Know Hub-Member universities, and a 10-week intensive entrepreneurial NSF I-CORPS Training program for the top 11 technologies from an applicant pool of 52 entrepreneurial groups from across the country. The NSF I-CORPS training was delivered as part of “Know Hub Ignition”, an acceleration program developed by Know Hub Chile in partnership with UCR. The best teams from the Know Hub Ignition program will travel to Riverside for a 1-week immersion in the local entrepreneurial ecosystem. A team of 15 members of the UCR team, including 9 expert mentors in the I-CORPS program collaborated with Know Hub Chile and a group of 10 Chilean mentors to make the first iteration of the Know Hub Ignition program a success.
The Year in Review: Photo Highlights

Eurosemillas MOU Signing with Chancellor Wilcox

Union Bank check presentation to OTP

OTP @ Know Hub Chile

Winning Team @ Know Hub Ignition in Chile

TPAC 2018

Latina Business Women Association 2019 Gala

IMPACT Summit

Representative Takano visit to ExCITE Riverside