

The Regents of the University of California

SPECIAL COMMITTEE ON INNOVATION TRANSFER AND ENTREPRENEURSHIP

January 27, 2023

The Special Committee on Innovation Transfer and Entrepreneurship met on the above date at the Highlander Union Building, Riverside Campus and by teleconference in accordance with California Government Code §§ 11133.

Members present: Regents Hernandez, Matosantos, Park, Reilly, Sherman, and Timmons; Chancellors Christ, Hawgood, Khosla, and Muñoz; Ex officio member Leib; Advisory members Ku, Taylor, and Walker.

In attendance: Regent Blas Pedral, Regents-designate Ellis and Tesfai, Faculty Representatives Cochran and Steintrager, Secretary and Chief of Staff Lyall, General Counsel Robinson; Provost Newman, Vice President Maldonado, Chancellor Wilcox, and Regents Analyst Sheridan.

The meeting convened at 10:00 a.m. with Special Committee Chair Park presiding.

Special Committee Chair Park noted that UC Riverside has led a change to the national conversation about student success in higher education by advocating for the inclusion of measures of social mobility in university rankings. Under Chancellor Wilcox's leadership, in the last decade the campus raised graduation rates over 20 percent and narrowed equity gaps. It also raised \$300 million in fundraising and doubled contracts and grants since 2017. UCR completed \$1 billion of capital projects, adding 100,000 square feet. She lauded the Chancellor for these accomplishments.

1. PUBLIC COMMENT

Special Committee Chair Park explained that the public comment period permitted members of the public an opportunity to address University-related matters. The following persons addressed the Committee concerning the items noted.

- A. Wolde-Ab Isaac, Chancellor of the Riverside Community College District (RCCD), described the history of collaboration between UC Riverside and RCCD, highlighting the need for housing. Through State Senate Bill 169, UCR and RCCD were proposing a joint housing project that would provide access for community college students to all of the resources of UCR's campus and would hopefully lead those students to transfer.
- B. Selin Nielsen, co-founder of Globally Connected, shared that she has worked to provide refugee women with the opportunity to thrive. She promoted programs such as Scholars at Risk for refugees and asylum seekers who are not eligible for federal funding. In addition, she asked the University to support research that leads to good jobs in the region, such as the first floating offshore wind energy source.
- C. Rafael Guzman, Assistant City Manager and Chief Sustainability Officer for the City of Riverside, asked that the Regents continue to invest in Riverside, the fastest

growing metropolitan area in the nation. The City was proud to partner with UCR on an innovation district, the future home of the OASIS project, business and innovation centers and incubators, the Northside Agriculture Innovation Center, and efforts to build the clean and green economy, such as bringing the California Air Resources Board to Riverside. In addition, UCR and the school district were planning to bring a science, technology, engineering, and mathematics (STEM) high school to the Riverside campus.

- D. Javier Cano, business development manager of Eurosemillas, emphasized the investment and revenues that UC Riverside's agricultural research generates, and urged the Regents to continue to invest in such intellectual property because every dollar invested provides great returns to the economy.
- E. Tim Richardson, partner at four venture capital firms and advisor to several university boards, lauded UC Riverside for its exceptional quality of faculty and staff and drive to excel. He asked the Regents to invest in proof-of-concept funding to help bridge the gap between ideas and venture capital seed monies.
- F. Alex Avila, co-founder of Black Brown Economic Empowerment Partnership, stated that, as a native Spanish speaker, first-generation student, and high school drop-out from the Bronx, he was unlikely to attend college and be successful. Now an English professor and published author, he lauded UC Riverside, which has provided people like him access to college and ensured that they have a successful future. He asked the Regents to continue to support and expand such efforts.
- G. Sandro Flores, leader of Fight for \$15 and a Union and member of Service Employees International Union (SEIU) Local 515, asked the Regents not to let corporations attack the hard-fought gains of fast-food workers. He stated that this week the State approved a ballot measure backed by fast food companies to abolish the Fast-Food Council, which gave workers a seat at the table with government and corporations to set standards in that industry. He alleged that a report from UC Riverside on this topic, supported with funding from fast-food companies, was misleading, and asked the University not to allow its name to be used.
- H. Karthick Ramakrishnan, UCR professor, asked that the University make social impact and policy innovation an integral part of University-sponsored research. He said that applications for science funding have often treated community engagement and input as a checkbox, not a rigorous part of the application with metrics for success. The Center for Social Innovation at UCR, which he directed, was working with governmental partners to build systematic indicators of core California priorities such as inclusion, sustainability, and equity. In his view, innovation must be paired with inclusion. He asked that innovation funding from the Office of the President contain a community inclusion component, fund social impact and policy innovation, and create new innovations centers near UC campuses that would benefit from inclusion.
- I. Paul Granillo, President of the Inland Empire Economic Partnership, spoke about the importance of UCR to the Inland Empire. The region was the 12th largest

metropolitan area in the nation but did not contain a major city. UCR was an important part of the economy in three areas: Growing Inland Achievement, a K–16 collaborative that encouraged participation in higher education; the UCR School of Medicine, which was vital to the health of the region and a major economic driver; and in working to create a sustainable center of excellence to ensure a clean logistics industry.

- J. Amina Sadat, UCR doctoral student, shared that she evacuated from Afghanistan when the Taliban took power because, as a scholar and women’s rights advocate, her life was in danger. She said Selin Nielsen, who encouraged her to apply for the Ph.D. program and connected her with the Scholar at Risk program. She thanked all those who supported her.
- K. Fred Schwartz, Director of the Solar Valley Consortium at UCR, spoke about efforts to move farming indoors as key to creating a sustainable model of agriculture for the region. The Northside Agriculture Innovation Center is training a new generation of farmers to grow food in a climate-controlled clean energy facility that uses 80 percent less water while increasing crop yields by three to eight times. This was a model that could be replicated. He congratulated the City of Riverside for supporting this public-private alliance that was commercially viable, provided jobs, and expanded UCR agricultural research and training programs.

2. APPROVAL OF MINUTES OF PREVIOUS MEETINGS

Upon motion duly made and seconded, the minutes of the meetings of September 20, 2022 and October 28, 2022 were approved, Regents Hernandez, Leib, Matosantos, Park, Reilly, Sherman, and Timmons voting “aye.”¹

3. UC RIVERSIDE’S ROLE AS AN ENGINE OF ECONOMIC ACTIVITY IN THE INLAND EMPIRE

[Background material was provided to the Special Committee in advance of the meeting, and a copy is on file in the Office of the Secretary and Chief of Staff.]

Chancellor Wilcox provided an overview of both the region’s economic strengths and the challenges these industries pose. UC Riverside grew out of the UC Citrus Experiment Station and now is focusing on agricultural innovation. He noted that 40 percent of all goods in America pass through Riverside and San Bernardino counties, with one billion square feet of distribution centers and Amazon as its largest employer, which has resulted in high levels of air pollution in the region. Because of this, UCR was a leader in air quality and engineering research. UCR partnered with local government agencies to recruit the California Air Resources Board (CARB) to open its Southern California headquarters and research testing facility on campus. It was the largest zero-carbon footprint building in the world. The region also was home to the Salton Sea, one of the biggest lithium repositories in the world. UCR faculty’s research on battery technology and the extraction of lithium

¹ Roll call vote required by the Bagley-Keene Open Meeting Act [Government Code §11123(b)(1)(D)] for all meetings held by teleconference.

using clean methods were helping to build a new regional economy.

Chancellor Wilcox noted that Riverside was the fastest growing county in the country and one of the most diverse. However, 20 percent of its workforce commuted to the coast for jobs, which worsened air pollution and quality of life. UCR has assumed a leadership role in regional economic development initiatives to shape that growth and attract innovation-based, clean technology companies to the Inland Empire and to lead in health equity, clean energy, agricultural technology, and sustainable logistics. This was effectuated through OASIS (Opportunities to Advance Sustainability, Innovation, and Social Inclusion), a portfolio of programs pursued in partnership with 17 regional organizations. For UCR, a sustainable community must be environmentally, economically, and educationally sustainable, working for a better future for all its residents.

Rodolfo Torres, UCR Vice Chancellor for Research and Economic Development, stated that the campus wanted to be an engine of inclusive economic development for inland southern California. The campus aimed to create a diverse pipeline of innovators and entrepreneurs. To that end, it sponsored a mentorship program that has reached over 7,000 students since 2019. UCR supported faculty by providing proof-of-concept grants and training opportunities. Since 2013, it has funded 59 faculty projects with \$2 million, generating a return of \$14 million, with 14 of those projects leading to commercialization success.

The campus opened a new Multidisciplinary Research Building and, in conjunction with the City of Riverside, established a Life Sciences Incubator occupied by 10 companies, in addition to the EPIC Small Business Development Center, which supported 248 small businesses, developed 300 jobs, and led to 11,000 hours of mentorships. A new building was planned to house OASIS and would serve as a hub for startup innovation and industry collaboration, focusing on the following six pillars: agricultural technology and food security; community health and health disparities; human development; natural resources management; renewable energy and fuels; and sustainable transportation and infrastructure. Over \$65 million has been raised for the building; another \$35 million was needed.

The campus was currently building the Northside Agriculture Innovation Center to train the next generation of farmers in sustainable agriculture and incubate food security technology. Finally, there were plans to build the UCR Palm Desert Campus to focus on research of critical minerals to aid the transition to clean energy and workforce development for this industry. Mr. Torres summarized that, with limited resources, the campus has collaborated with multiple stakeholders to transform the economy and lives in the region.

Advisor Walker complimented the campus on strategically leveraging its strengths and developing the building blocks to support entrepreneurship. He suggested that UCR look for opportunities for capital in early-stage application where there is a lack of private money. He further suggested that the campus search for creative ways to raise capital, such

as targeted philanthropic opportunities, partnerships between philanthropy and private money to create centers of excellence, and partnerships with industry.

Rosibel Ochoa, UCR Associate Vice Chancellor for Technology Partnerships, reported that the campus brought in \$27 million in grants, invested in startups, and created the Highlander Fund. However, she noted the difficulty of reaching fundraising targets due to the lack of angel investors in the region.

Regent Hernandez suggested that UC Merced and UCR work together with UC's National Laboratories to become a center of excellence in research and development for nuclear fusion technology.

Regent Blas Pedral asked what UC Riverside was doing to encourage its students to invest, live, and start businesses in the region. Ms. Ochoa responded that efforts to encourage entrepreneurs to remain in the area include the use of State Assembly Bill 2664 funds to support UCR's maker space and Irvine Foundation funds for community members to start technology-enabled businesses. She noted that companies must have access to capital, customers, and facilities. Chancellor Wilcox remarked that Riverside ranked number two in the country in retention of college graduates, trailing only New York City.

Advisor Taylor complimented the scope of UCR's ambition and remarked on the kudos that members of the community gave to the campus during public comment. He suggested that UCR approach philanthropic foundations, noting that the tax code allowed foundations to invest in mission-aligned programs run by private companies.

4. **FEDERAL UPDATE ON THE CHIPS AND SCIENCE ACT AND ITS IMPACT ON THE NATIONAL SCIENCE FOUNDATION, UNIVERSITY-BASED RESEARCH AND TECHNOLOGY TRANSFER**

[Background material was provided to the Special Committee in advance of the meeting, and a copy is on file in the Office of the Secretary and Chief of Staff.]

Vice President Maldonado reported that the National Science Foundation (NSF) established the Engineering Research Centers program to encourage interdisciplinary research and prepare faculty and students to partner with industry. NSF announced that it would invest \$100 million in climate action funds. It received nearly 500 Letters of Intent with a total request of close to \$1 billion.

Associate Vice President Chris Harrington reported that the University received \$14.9 billion in federal support in 2021–22; federal funds accounted for half of UC's research funding. It is estimated that UC received eight to ten percent of all federal research funding. He expressed appreciation that nearly all of UC's priorities experienced increases in federal Fiscal Year 2022–23 budget, including: a \$500 increase to individual Pell grant awards; \$47.5 billion to the National Institutes of Health, UC's largest funding partner; and \$9.8 billion for NSF, including funding for the implementation of the CHIPS and Science Act.

Mr. Harrington stated that the Act directed NSF and the Department of Energy (DOE) to establish and strengthen its diversity programs, including opportunities for Hispanic-Serving Institutions, and it directed NSF to strengthen its undergraduate and graduate science, technology, engineering, and mathematics (STEM) education and mentoring programs. The Act codified NSF’s newly established Technology, Innovation, and Partnership (“TIP”) directorate, which would focus on moving innovation to commercialization via technology transfer programs in fields such as quantum computing and artificial intelligence. Specifically, the bill authorized technology accelerators; test beds to advance the demonstration of new technologies; planning and capacity building awards to identify research with the potential to be commercialized; entrepreneurship fellowships for scientists and engineers to foster commercialization; and scholarships and fellowships for undergraduate, graduate, and post-doctoral students.

However, he noted that, while the Act authorized significant funding for NSF and DOE, Congress had yet to appropriate funding at the authorized level. Current appropriations remained below the authorized level by more than \$2 billion. Therefore, NSF would have to identify priorities to fund.

Advisor Ku asked if UC was creating a funding proposal. Mr. Harrington confirmed that six campuses were working on a funding request of \$1 million and another six campuses were requesting \$160 million. He said that Federal Governmental Relations was engaging with NSF on its aims and is reviewing all federal agencies’ programs to identify which could assist with the University’s efforts.

Special Committee Chair Park commented that UC should fortify its processes and infrastructure to be more competitive for federal funding opportunities.

5. **UC SAN DIEGO’S MIGRATION FROM THE PATENT TRACKING SYSTEM:
OPPORTUNITIES AND CHALLENGES**

[Background material was provided to the Special Committee in advance of the meeting, and a copy is on file in the Office of the Secretary and Chief of Staff.]

Chancellor Khosla stated that the San Diego region was now a biotechnology hub largely because of the role UCSD played. He suggested that at a future meeting the Special Committee discuss developing the technology corridor between UCSD and UCR. He shared that when he became Chancellor, entrepreneurs and licensees expressed frustration with conducting business with UC. He and Associate Vice Chancellor for Innovation and Commercialization Paul Roben have been working to transform this relationship, following the motto “Enable everybody; control nobody.” Under the new strategy, licensing agreements were no more than two pages and negotiations took no more than three hours. He expressed pride that, under Mr. Roben’s leadership, UCSD was ranked fourth nationally in terms of university start-up creation.

Mr. Roben explained that their approach to licensing is to eliminate obstacles in moving technologies from UCSD to start-up companies. He reported that equity licenses can be executed in a few days, which has led to an enormous increase in innovation and entrepreneurship activity. This response time required a nimble technology platform, so UCSD moved from the Patent Tracking System (PTS), which had not been able to meet new demands, to Sophia, produced by Wellspring. Prior to making this decision, UCSD determined that building its own system would be too expensive and performed a cost-benefit analysis which found that, over a five-year period, the cost of Sophia would be equivalent to what UCSD would pay for PTS. However, he noted two caveats: UCSD already had the staff (six full-time equivalents) to manage the financial aspects of the process, the only campus with this capacity, and additional costs were incurred due to the unanticipated transition by the campus of its financial system to another platform.

Mr. Roben outlined the biggest challenges of the transition, including migrating decades of data, the need for customization because UC business processes did not align with Sophia's software, and the need to run both systems in parallel for over a year until the data in the new system could be validated. This created considerable stress on staff. The campus was now operating completely in Sophia, although it maintained some access to PTS for reporting and other limited purposes.

Mr. Roben highlighted lessons for other campuses from UCSD's experience. He recommended that campuses develop a system that supports the desired outcomes rather than replicate PTS, that they align business processes with available solutions in order to minimize customization, that they pay attention to change management by involving staff in the transition and supporting them with appropriate training, and that ongoing, dedicated information technology (IT) support is necessary after implementation.

Regent Leib asked Mr. Roben to opine on the implementation of the Working Group's recommendations, particularly what has been successful and what required more attention. Mr. Roben responded that the autonomy in terms of legal structures and the opportunity for campuses to control their own destiny in terms of equity have been extremely helpful. However, he argued that securing additional proof-of-concept funding would be critical to moving UC research to the marketplace. Special Committee Chair Park noted that addressing proof-of-concept funding will be on the Committee's February agenda.

Advisor Ku underscored the need for business process redesign and asked Mr. Roben to describe the advantages of using Sophia. Mr. Roben replied that his office was able to respond to the needs of inventors and licensees quickly. Chancellor Khosla added that technology transfer was inherently a local activity; the decision making, licensing strategy, and relationship with the inventor and licensee were all at the campus level.

Special Committee Chair Park commented that UCSD decided to move to Sophia in 2018 and largely accomplished this goal, while the Working Group highlighted the need to replace PTS in 2019, yet that work was now just beginning. She expressed disappointment that the consultant retained by UCOP failed to identify the desired outcomes or the changes

required to achieve those outcomes.

Special Committee Chair Park asked why the University's inventor share distribution formula was different from that used by other universities; this complicated UCSD's transition to Sophia. Mr. Roben responded that UC's unique approach to calculating inventors' shares arose from a lawsuit many years ago. General Counsel Robinson stated he would research this and provide the information to the Committee. Advisor Ku shared that, at Stanford University, inventors' shares were paid within days.

6. INCLUSIVE INNOVATION AND EQUITABLE ENTREPRENEURSHIP (I2E2)

[Background material was provided to the Special Committee in advance of the meeting, and a copy is on file in the Office of the Secretary and Chief of Staff.]

Damon Tull, Director for Industry Alliances at UC Davis, shared that the goal of the Inclusive Innovation and Equitable Entrepreneurship project (I2E2) was to create a more inclusive and equitable innovation and entrepreneurship (I&E) ecosystem. It aimed to reduce barriers faced by people who have been excluded and underrepresented in I&E.

Mr. Tull explained that I2E2's objectives were to formalize approaches to gathering demographic data and to uncover evidence-based solutions to the long-standing structural impediments faced by innovators who belong to historically marginalized groups. It sought to understand rates of participation, flows of capital, and the climate faced by UC innovators.

Mr. Tull observed that the exclusion of diverse entrepreneurs has impeded the country's global competitiveness and would impair national security. He estimated that racial bias in access to entrepreneurial capital has cost the U.S. economy over \$16 trillion and asserted that the nation would have been almost twice as productive if it had addressed racial bias in entrepreneurship just 20 years ago. For example, in 2021, U.S. venture capital investments totaled \$330 billion, but only 1.1 percent of that was invested with black founders and 2.4 percent in women-led companies.

He noted that UC did not know how many inventions were disclosed by African American students and faculty because these data either were not collected or were fragmented across multiple data sets. Therefore, I2E2 was developing measurements that could provide insight and guide policy, including Research and Innovation (R&I) density (e.g., invention disclosures, patents, and research grants) per student, faculty, and staff; R&I efficiency (i.e., artifacts per research dollar), and R&I rate (i.e., artifacts per gross regional product).

Regent Matosantos asked several questions about structural barriers and what UC can do to address them. She asked if there is an opportunity to partner with government to increase participation in climate mitigation efforts. Mr. Tull responded that one option would be for UC to develop diversity training for participants in UC incubators and accelerators. In addition, I2E2 was discussing its efforts with the National Science Foundation and planned to share its work with other university systems and partners.

Special Committee Chair Park thanked Mr. Tull and requested that he present his final report to the Committee in the summer.

7. **SPEAKER SERIES: UC RIVERSIDE PROFESSOR MASARU RAO**

[Background material was provided to the Special Committee in advance of the meeting, and a copy is on file in the Office of the Secretary and Chief of Staff.]

Dr. Masaru Rao, Associate Professor of Mechanical Engineering and Founder of Basilard BioTech, a biotech instrumentation company that focuses on technology for inserting genes into cells, described his journey from conducting basic research to founding companies.

In 2019, Mr. Rao founded Basilard with an investment of \$500,000 from UCR's Highlander Venture Fund. This investment provided early validation of the technology and was critical to the success of future fundraising efforts. Basilard has raised over \$4.6 million in seed funding from venture capital to date. Mr. Rao thanked UCR's technology transfer office, an invaluable partner in Basilard's success. It provided key personnel, resources, and opportunities such as \$35,000 in proof-of-concept funding; mentorship by an entrepreneur-in-residence on how to pitch his idea; a relationship with a chief executive officer (CEO)-in-residence who advised him on how to commercialize the technology; help with filing a patent and licensing the technology; and networking that helped him find and hire Basilard's first Chief Scientific Officer. As a result, in 2021, Basilard began a residency at J&J Innovation (JLABS) in San Diego, one of the world's most selective life science wet laboratory incubators.

Regent Reilly remarked on how a \$35,000 investment turned into a much more significant investment and promising company. She inquired about the challenges he faced. Mr. Rao replied that he had to take several sabbaticals and partial leaves, working for the University only half-time, which harmed his academic career. In addition, he said more proof-of-concept funding would have enabled him to test the technology for broader applications and would have led to faster results.

Chancellor Muñoz highlighted the need to protect the careers of faculty entrepreneurs and asked how that could be accomplished. Mr. Rao suggested that the University could provide funding to hire postdoctoral fellows so that faculty could maintain their laboratory research while pursuing commercialization opportunities.

The meeting adjourned at 1:45 p.m.

Attest:

Secretary and Chief of Staff