

The Regents of the University of California

**SPECIAL COMMITTEE ON INNOVATION TRANSFER AND ENTREPRENEURSHIP**

June 2, 2023

The Special Committee on Innovation Transfer and Entrepreneurship met on the above date at the Clark Kerr Campus, Berkeley campus and by teleconference in accordance with California Government Code §§ 11133.

Members present: Regents Hernandez, Park, Reilly, and Timmons; Chancellors Christ, Hawgood, Khosla, and Muñoz; and Advisory members Green, Ku, Taylor, and Walker

In attendance: Regent Pouchot, Regent-designate Ellis, Faculty Representatives Cochran and Steintrager, Chancellor Larive, Staff Advisor Mackness, Secretary and Chief of Staff Lyall, General Counsel Robinson, Provost Newman, Chief Financial Officer and Executive Vice President Brostrom, and Regents Analyst Sheridan

The meeting convened at 9:05 a.m. with Special Committee Chair Park presiding.

1. **PUBLIC COMMENT**

Committee Chair Park said she was thrilled to be at her alma mater, thanked Chancellor Christ for hosting, and invited the public to provide comment on University-related matters. The following persons addressed the Special Committee concerning the items noted.

- A. Darren Cook, Executive Director of Life Sciences Entrepreneurship Center (LSEC) and founding director of the biology track at Berkeley SkyDeck, said that LSEC is donor-funded, time-limited, and expressly designed to support faculty on campus who are interested in commercializing their research. Last year, LSEC established a \$100,000 venture grant program and formed a partnership with SkyDeck which has invested \$200,000 to form companies based on these innovations. They received over a dozen applications and made three awards; there is far more interest than funding.
- B. Costas Spanos, a professor of Engineering and Computer Sciences at UC Berkeley and director of the Center for Information Technology Research in the Interest of Society (CITRIS), reported that CITRIS engages more than 400 faculty from the Berkeley, Davis, Merced, and Santa Cruz campuses from 15 disciplines focusing on health, climate, aviation, robotics, and technology policy. Facilities include the Marvell nanofabrication cleanroom and the CITRIS Foundry, an early-stage technology incubator credited with 70 business launches in recent years. He witnessed the start of multiple foundational inventions from these facilities, including the birth of a trillion dollar industry in design information for complex

integrated circuits. He and his students started two semiconductor companies that were acquired, and the technologies are now in worldwide use. He commented upon institutional progress at Berkeley in promoting technology transfer and innovation and entrepreneurship, such as the ability to use innovation and entrepreneurship activities as a positive element in evaluating faculty performance.

- C. Omar Qarshi, Director of the Equity Solutions Group at UC Berkeley, recalled that one of the recommendations of the Regents' Working Group on Innovation Transfer and Entrepreneurship was to transfer the management of campus equity portfolios from the Office of the President (UCOP) to the campuses. The Berkeley campus has developed a transition plan to do so, shared it with other UC campuses, and is ready to implement the transition.
- D. Tara deBoer, CEO of BioAmp Diagnostics, began the research upon which the company is based as a post-doctoral researcher on the Berkeley campus. She described the resources at Berkeley that helped her form the company. These included the FORM+FUND Founders Workshop at Berkeley Law, the National Science Foundation NSF I-Corps program at Haas School of Business, and the CITRIS Foundry. She also received a Bakar Fellows Spark Award for early proof-of-principle work, engaged with Berkeley's office of Intellectual Property and Industry Research Alliances to understand how to license the technology, and hired talent from Berkeley. These resources helped her launch a global health care company that will change the way infectious diseases are diagnosed around the world.
- E. Harvey Smith stated that UC students are in dire need of housing. But he argued that UC Berkeley provided a false choice between a park and housing, when both are possible. He asserted that the campus did not consider or identify multiple alternative sites, which was recognized by a court of appeal. He stated that opponents are not opposed to housing, but are opposed to building housing in an inappropriate location and to the destruction of People's Park, which is on the National Register of Historic Places. Building on People's Park would remove open space in the most densely populated part of Berkeley. He urged the Regents to reject both the People's Park project and UC Santa Barbara's Munger Hall as experiments in social engineering that do not bode well for the future. He suggested that the projects create a negative image of UC as a corporation that only values its own initiatives and does not value its host communities.
- F. Phillip Denny, a staff member the Blum Center for Social Innovation, runs the Big Ideas student innovation program, which supports students' game-changing solutions to pressing social problems. Since 2006, the Blum Center provided the funding, skills, networks, and resources to help students launch sustainable social ventures that matter to them. Over the past 17 years, it has served over 9,000 students and 4,000 ventures in 50 countries across a variety of sectors; over 80 majors were represented in the Big Ideas competition this year. It has contributed \$2.5 million to these projects that leveraged \$1.2 billion in additional financing.

Success stories include Bolt Threads, a biosynthetic fabric company in Emeryville now valued at \$1.2 billion and Back to the Roots, the largest home indoor gardening company in the U.S. with 15,000 points of sale. He remarked that while the focus on investor-ready startups and commercializable technologies is warranted, he urged the Regents to support the pipeline of new ideas.

Chair Park invited Regent Pouchot, a Berkeley alumna and entrepreneur, to reflect on her experience at Berkeley. Regent Pouchot stated that she received an alumni leadership scholarship which helped her build the leadership skills that enabled her to start her first company at the age of 24. The research opportunities and classes at Berkeley nurtured her curiosity and changed the way she sees the world. She was excited about Berkeley's programming that helps students nurture an entrepreneurial spirit. Her company has three products sold at Walmart, the nation's largest retailer. She attributed her success to her experience at UC Berkeley.

Chair Park recalled her experience at Berkeley. She mused that innovation and entrepreneurship are a form of activism by acting to create a better world and noted that this is a fitting expression of Berkeley's values.

## 2. **INNOVATION AND ENTREPRENEURSHIP AT UC BERKELEY**

[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 Christ recounted the Berkeley campus' legacy of innovation and leaders who created groundbreaking products, revolutionary companies, and entirely new industries. She cited that in 2020, Pitchbook ranked UCB as the number two university in the nation for entrepreneurship. As of 2020, alumni startup companies have raised more than \$36 billion in venture capital and helped create the world's most valuable companies such as Apple, Intel, Gap, eBay, and Tesla. In the last three decades, over 280 startup companies have been founded to commercialize intellectual property (IP) rights under licenses from Berkeley, resulting in more than 770 products. UCB also holds the largest CRISPR cas-9 gene editing portfolio in the U.S., with 49 U.S. patents.

Chancellor Christ described the Berkeley Research Infrastructure Commons program, which enables early-stage startup companies affiliated with UCB to temporarily conduct new product research and development in faculty laboratories under certain conditions. In one case, this resulted in a drug royalty monetized for \$93 million, which helps fund biological research facilities, student/faculty recruitment and retention, and new initiatives.

She opined that the Bakar Fellows Program has changed campus culture to encourage entrepreneurship in the science, technology, engineering, and math (STEM) fields. The program provides awards to Berkeley faculty with promising projects that are more advanced than basic research but are not quite to the point of commercialization. The highly competitive program has resulted in the founding of 15 companies in the past 11 years. She was pleased that over 110 programs now exist on campus to support the innovation and

entrepreneurship (I&E) ecosystem.

Chancellor Christ declared that entrepreneurship is becoming increasingly central to the mission of universities. First, it helps recruit the finest minds. Faculty and students choose institutions where they can have the greatest real-world impact. Second, it reinforces the discovery mission. Faculty find that connection to industry enhances their scholarship. Third, it magnifies Berkeley's impact. She noted that addressing grand challenges requires transformational solutions that only breakthrough research can provide. Finally, it allows the campus to reinvest in both research and education.

Chancellor Christ recalled that in 2018, a faculty "Report on Entrepreneurship at UC Berkeley" was published. It made recommendations for creative ways to cultivate entrepreneurship and envisioned a multidisciplinary approach to foster diversity of thought. Since, then, UCB has created an entrepreneurial environment in which startup companies can develop emerging technologies on campus with resources such as the Bakar BioEngenuity Hub (BBH), an incubator that houses 80 startups across multiple fields. BBH also provides final-stage hypothesis testing that startups need before going to market. Berkeley is now planning a new hub, the Bakar Climate Ingenuity Hub, for technologies related to climate change, and the Innovative Genomics Institute – Professor Jennifer Doudna's institute based on CRISPR technology – is also designing an incubator and accelerator based on the BBH model.

Chancellor Christ reported that the Regents' 2021 report on innovation and entrepreneurship catalyzed more progress at the campus. Berkeley now has an equity solutions group that manages the campus' portfolio of 170 equity positions in startup companies acquired mainly through licensing. The report also encouraged the campus to think more expansively about how to provide proof-of-concept funding. Past investment by the State to spur innovation at UC via AB 2664 enabled the development of a website, "Berkeley Gateway to Innovation," cataloging tools and resources available on campus to assist student and faculty startups. In addition, the campus created a position of chief innovation officer to elevate the role of entrepreneurship. Chancellor Christ was very pleased that Professor Richard Lyons agreed to provide the visionary leadership needed to expand the innovation ecosystem. She introduced Mr. Lyons as a professor of finance and former dean at the Haas School of Business who serves as the campus' inaugural Associate Vice Chancellor and Chief Innovation and Entrepreneurship Officer. He helped launch the Berkeley SkyDeck accelerator in 2012 and also created Berkeley Changemaker, a program to teach entrepreneurship on campus.

Mr. Lyons highlighted three foci of the effort to expand entrepreneurship. First, he argued that innovation and entrepreneurship are central to UC's mission, which is to provide long-term societal benefit. Second, the effort focuses on broadening the student culture of innovation. He reflected that words like "founder" and "venture" are not inclusive. So, the campus aimed to build an inclusive entrepreneurship curriculum that encourages entrepreneurial thinking and does not define entrepreneurship narrowly. The curriculum, "Berkeley Changemaker," includes 25 classes that teach critical thinking, problem solving, communication, and collaboration. He noted that since it was launched three years ago, it

has reached 20 percent of undergraduates and is expected to increase since the campus now offers a minor in entrepreneurship. Finally, the effort focuses on encouraging a faculty culture of innovation and entrepreneurship through the Bakar Fellows Program's translational research fellowships. He credited the Chancellor and Provost for elevating the program and for providing legitimacy to I&E efforts.

Chancellor Christ stated that the largest philanthropic gifts that Berkeley has received have been in the I&E area. The campus used to regard patents and licensing as the only ways in which it would earn money from scientific innovation. Now, equity shares have become an important source of income, and campus venture funds yield some of their profits to UCB. She asked Mr. Lyons to expand on this theme.

Mr. Lyons said that UCB receives approximately \$1 billion in research funding per year and that 40 percent of this, or \$400 million, is attributable to I&E activities. This includes about \$200 million from federal funds, \$100 million from philanthropy, and \$100 million from tuition for entrepreneurship-focused masters programs. He explained that eight private venture capital funds are associated with the campus whose general partners have contractually pledged half of their profits to the University. He noted that Chancellor Christ is considering how to fund campus needs, such as deferred maintenance, graduate student funding, and research in the Humanities, with the revenue generated from I&E activities. The campus is engaged in a financial sustainability reform process in which it is examining how revenues can benefit all parts of the University.

Chancellor Christ mentioned that Berkeley encourages its alumni to sign a "founders pledge." Founders pledge that they will make a significant gift to the University when they experience the first major capital event in their careers. She urged the Regents to consider working toward budget models in which the State and tuition are not the only sources of revenue and noted that I&E has a large part to play.

Staff Advisor Mackness asked how UC staff can support I&E. Mr. Lyons responded that UCB conducted well-attended staff seminars to expose staff to the ideas of the Berkeley Changemakers program.

Regent Timmons encouraged the campus to share the wealth across the University. Mr. Lyons provided an example of this. He reported that the campus launched a book subvention program to subsidize publication fees for research in the Humanities with funding from I&E. Another effort is the development of a central platform to make scientific instrumentation available to external startup companies when not in use by faculty. This provides efficiency and lowers costs and is implemented through templates and DocuSign contracts, reducing bureaucracy.

Committee Chair Park asked where I&E fits into UC's tripartite mission. Chancellor Christ responded that I&E is intrinsic to all parts of the mission; it is not in a separate silo.

Committee Chair Park asked if the campus understands the cost of its investment in I&E. Mr. Lyons replied that research and philanthropic funds targeted for I&E are not fungible.

To some extent, it is a false question: would the funding exist if I&E activities did not attract it? However, he noted it is important to try to ascertain such costs.

Regent Reilly asked about Berkeley's entrepreneurship council, how its membership was chosen, and whether it has been effective in fostering an ecosystem. Mr. Lyons responded that it is comprised of 80 leaders of the components of the ecosystem. It meets monthly and there is a strong norm of participation to ensure collaboration and effectiveness.

### 3. **ENTREPRENEURSHIP COUNCIL UPDATE**

[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.]

Provost Newman announced that all UC campuses will benefit from Associate Vice Chancellor Richard Lyons' insights since he will serve as the inaugural chair of the President's Entrepreneurship Network Council. She noted that prior efforts to develop such a body were directed from the center. This effort will be different; it will be directed from the campuses where the entrepreneurs are, and will be action-oriented, with concrete goals that support the campuses in their areas of expertise. The Council will assist campuses in developing mentorship opportunities and investments to expand the capacity for innovation and entrepreneurship. In its first year, the Council will focus on three areas: mentoring, funding early-stage research, and collaboration.

Mr. Lyons emphasized that the Council would focus on bringing value to the campuses. The Council will commit to achieving three goals in the first two years, and the goals will be determined via Council discussion. One idea is to build a platform that connects faculty with commercialization mentors, sector by sector. He emphasized that it is essential for campus leadership to communicate about these opportunities to encourage faculty participation and foster a culture of entrepreneurship in all fields.

Committee Chair Park thanked Advisors Ku and Green for highlighting the need for a redesigned entrepreneurship council and for emphasizing the importance of mentorship. She also thanked Executive Vice President and Chief Financial Officer Brostrom for his encouragement. She noted that the structure of an entrepreneurship council could make the "Power of Ten" a reality.

Advisor Green commented that the combination of people and technology is the key to successful technology transfer and that mentorship is crucial.

Chancellor Muñoz appreciated the focus on faculty in the Humanities and social sciences who may not recognize opportunities for the application of their research. He noted that higher education is becoming more interdisciplinary and there may be ways to commercialize research that one cannot imagine now. Ms. Newman agreed and said that she plans to feature research from all disciplines at future Regents' meetings.

Chancellor Christ remarked that last week UC Riverside was invited to join the Association

of American Universities. It is extraordinary that eight of the nine UC undergraduate campuses are members of this elite group of the nation's 65 leading research universities. She appreciated that holding Special Committee meetings at different campuses provided committee members with a sense of the distinctive strengths of each campus.

Regent Reilly asked how the Council would identify commercialization partners and how to expedite the process. Mr. Lyons responded that it would take time to build relationships sector by sector and noted that it took SkyDeck a decade to recruit its 400 advisors. He stated that it would be important to ensure that faculty use mentors and that volunteers are engaged. Ms. Newman added that UC alumni could be an enormous resource; over the past 15 years more than 2,500 California companies were founded by UC graduates.

Regent Hernandez asked how UC could ensure that it invests in the best technologies. Ms. Newman responded that investments are worth the risk; there are far more worthwhile ideas than funding. She noted that the Regents are trying to persuade the State to invest in proof-of-concept funding, and that Mr. Brostrom is also exploring funding opportunities. Advisor Green responded that venture capitalists are happy if one out of every ten investments exceeds their expectations.

Regent Pouchot commented on the importance of learning from failure and noted that sometimes failure leads to a secondary or tertiary finding. The message to researchers and entrepreneurs should be that failing is fine as long as one learns from that failure.

#### 4. **RECOGNITION PLAN**

[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.]

Chair Park remarked on the need to change UC culture by building a coordinated program to recognize innovation and entrepreneurship at all levels of the University and signaling that innovation and entrepreneurship (I&E) is a high priority. She noted that a draft proposal for a Regents Innovation Awards program was in the meeting materials, and that the proposal does not yet have a funding source. She invited comments on the proposal.

Regent Hernandez asked if there should be a separate award for the National Laboratories and noted that campus faculty have additional responsibilities such as teaching, whereas principal investigators at the Laboratories work exclusively on their research projects. In addition, funding at the National Laboratories is more readily available from the federal government. Faculty Representative Cochran added that it may be difficult for researchers at the National Laboratories to describe their work due to national security restrictions.

Regent Reilly suggested a non-cash award to recognize external mentors.

Chancellor Khosla remarked that given the number of UC faculty and research prowess of the UC system, one award per category was not enough.

Chancellor Larive shared that UC Santa Cruz celebrated its first innovation awards with categories similar to those in the Regents' proposal. She suggested approaching the awards like the Grad Slam competition, wherein each campus holds its own competition and campus awardees are then considered for a systemwide award. Chancellors Hawgood and Muñoz supported Chancellor Larive's idea. Chancellor Muñoz added that because the campuses have different capacities, one awardee from each campus would accelerate a systemwide culture of innovation. Chancellor Hawgood preferred that no limits would be placed on how the awards could be used.

Regent-designate Ellis said that UC should celebrate its successes and accomplishments. These awards should be broadly communicated to the State of California and be used to tell UC's story.

Chair Park asked what an appropriate dollar amount for the awards would be. Chancellors disagreed about whether the awards should be substantial or if recognition from the Regents would suffice. They asked if the purpose of the award would be to fund research or to recognize individuals. It was noted that a large award may have a greater impact if the monies instead were invested in a proof-of-concept fund. Any such awards should not be debited from campus funds. One Chancellor suggested creating a Hall of Fame in lieu of individual awards. Chair Park thanked the Chancellors for their ideas and input.

5. **SPEAKER SERIES: UC BERKELEY PROFESSOR ANA CLAUDIA ARIAS**

[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 Christ introduced Professor Ana Arias, a professor of electrical engineering and computer science and director of the Berkeley Wireless Research Center.

Ms. Arias said that she has always been motivated to work on research that has impact. She works on flexible electronics for medical devices. Not only are such materials more comfortable and lightweight, but also devices that form to the body produce better biological signals.

She began working on Magnetic Resonance Imaging (MRI) after a colleague approached her to ask if she could print flexible substrates on MRI coils, or antennas. She remarked that undergoing an MRI is an unpleasant experience; patients must wear heavy, uncomfortable equipment, and remain still in a machine that can induce claustrophobia. She aimed to solve this problem by changing the design of the coils. She stated that MRI equipment is designed for a six-foot tall male and is made to be durable so that hospitals do not have to replace it. Professor Arias wanted to move away from one-size-fits-all approach. She began by printing coils into blankets and clothing for babies, who otherwise have to be sedated to undergo an MRI. She noted that the technology is similar to printing graphics on T-shirts. Flexible coils can be put against the skin, which produces better images. Proximity to the body results in higher image quality and the items can be customized to fit difficult shapes, such as shoulders and ankles. Her laboratory spent a year



and a half developing and testing an MRI swaddle blanket, which has now been used on 200 pediatric patients. The doctors who used it requested more blankets of a greater variety.

Professor Arias and her colleagues filed for and were awarded patents. They then began to investigate how to start a business. They enrolled in the National Science Foundation I-Corps program and in a “Lean Launch” class at Haas School of Business, an eight-week intensive course. The class helped them understand incentives from a business perspective and included conducting 250 customer interviews with MRI professionals. From this experience, they learned that hospitals lose money if a patient moves during an MRI. This means that comfort equals revenue. They founded InkSpace Imaging in 2017 to improve the comfort, reliability, and performance of MRI exams. They received U.S. Food and Drug Administration (FDA) approval for pediatric use in December 2021 and for adult use in December 2022. The company now employs ten people and continues to research ways to improve MRIs.

Regent Hernandez asked how expensive the product is. Ms. Arias responded that the product sells for \$100,000, but a hospital will spend \$10 million to \$20 million for an MRI suite, which are typically cost centers, not revenue centers. If an exam fails, they cannot charge the patient’s insurance plan. In addition, pediatric MRIs usually take two hours to complete, compared to 30 minutes for adults. By adding just one additional patient per day, a hospital could earn \$1 million more per month. So, the use of the blankets can lower costs and increase revenue for hospitals.

Regent Timmons asked how the entrepreneurship process could be improved. Ms. Arias responded that it was very difficult to file the patent through the Berkeley campus, so much so that she offered to buy the rights to the intellectual property and use her own money to prosecute the patent. She noted that the process has greatly improved; now it is much easier to file a patent through the University.

Committee Chair Park asked Ms. Arias if she had any advice for entrepreneurs. Ms. Arias replied that entrepreneurs should listen, rather than talk, and learn to ask the right questions. Committee Chair Park also asked if she would be interested in being a mentor. Ms. Arias responded affirmatively.

Provost Newman asked if the University played a role in helping her find investors. Ms. Arias responded that Berkeley helped a great deal. She received a Bakar Fellowship, which provided opportunities to meet venture capitalists and investors. She also became part of SkyDeck, which exposed her students to entrepreneurship, connected them with angel investors, and provided \$100,000 for a \$2 million valuation. That private money, in turn, enabled them to apply for a Small Business Innovation Research (SBIR) grant, without requiring them to give up equity in the company. To apply for SBIR grants, a company must demonstrate the ability to meet payroll. They were able to leverage the SkyDeck funding and received SBIR funding of \$1 million.

Ms. Newman asked how her industry experience integrated with her academic career. Ms. Arias replied that her industry background helps her recruit graduate students with an

entrepreneurial mindset.

Regent Timmons asked how the process for filing patents could be improved. Professor Arias stated that when she worked at Xerox, they provided coaching on how to write patents and basic education about filing patents that is not available at UC Berkeley.

6. **MEASURING THE ECONOMIC AND SOCIETAL IMPACTS OF UC INNOVATION TRANSFER AND ENTREPRENEURSHIP – PART II**

[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.]

Committee Chair Park emphasized that the University must redefine the performance metrics it uses to measure the value of its innovation and entrepreneurship (I&E) enterprise. This is foundational to attracting other investments of time and money. A plan for revised performance metrics would be presented at the Special Committee's August meeting.

Professor Elizabeth Lyons, Associate Professor of Management at UC San Diego's School of Global Management and Strategy, stated that the costs of technology commercialization are not inconsequential. Filing a patent can cost \$15,000 and may not generate meaningful income. But she argued that the value of I&E should not be viewed only through a revenue lens, especially at a public university. Instead, one must consider broader goals of technology commercialization. While it is important to collect information on the number of licenses issued and other transactional data, these numbers do not measure the overall impact of University innovation. She delineated two categories of measurements that should be captured – impact to the University and impact on the greater good. She noted that she also estimated the cost of such an effort, including up-front costs to set up systems, and variable costs depending on the frequency of data collection efforts.

To better understand benefits to external stakeholders, the number of job opportunities produced through University research efforts should be determined. This information could be gleaned through subscriptions to data aggregators like LinkedIn and Glassdoor and be supplemented by surveys every three to five years. The approximate cost of a systemwide survey is \$225,000. Public benefits are more difficult to measure, but in-depth case studies about impactful inventions are compelling narratives that are easy for the public to understand.

In terms of benefits to UC, donations of time and money to the University are easy to measure. Successful inventors who found profitable companies with the help of universities frequently donate money to the university. Conversely, if a university charges high royalties or a large equity stake, this may discourage an inventor from giving back to the institution. She emphasized that it is important to think of the advantages to the University when structuring contracts for intellectual property. In addition, it is important to track faculty recruitment and retention due to the support they receive for I&E activity. UC has this data, but may need to link datasets across divisions, or develop a study. She suggested that future data collection efforts should include inventor gender and ethnicity.

Sean Randolph, Senior Director of the Bay Area Council Economic Institute, highlighted that this undertaking is doable. A variety of available databases can provide data on jobs, business revenue, and tax revenue generated. The Office of the President (UCOP) could work with each campus to understand the data that campuses have and acquire access to proprietary databases to perform in-depth research on companies. The staffing required would vary. He estimated it would cost between \$200,000 and \$300,000, depending on the scope of the project.

Mr. Randolph argued that developing a narrative that communicates the value of what UC does is crucial. It would provide a context for the numbers and tell a story. This would require case studies of UC-affiliated companies that have the greatest impact on the public. He recommended that this be done every four to five years, and in the interim, that smaller studies that focus on a particular area be done to keep UC innovation in the public spotlight. He recommended interviewing people involved in all layers of each campus' I&E ecosystem – from vice chancellors of research to staff managing accelerators and investment programs to technology transfer officers – to map out, campus-by-campus and systemwide, the innovation systems that generate founders and companies. It would help the public understand the impact of each campus's I&E enterprise on the local, regional, and state economies.

Committee Chair Park asked what metrics would be compelling to state lawmakers. Mr. Randolph responded that the State is interested in how technology development, commercialization, and company formation generated by UC supports California communities and advances state goals such as climate resiliency. These values should help inform the scope of any study.

Provost Newman observed that job opportunities help the state retain talent and new college graduates. She remarked that for 20 years, the State of Georgia invested in funding startup companies and early-stage commercialization as a conscious strategy to attract high-income, talented people to the state. She hoped that UC could convince the State of California to invest in a similar manner.

Regent Hernandez asked if UC should hire a third party to gather this data using artificial intelligence. Ms. Lyons responded that existing data aggregators like Dun and Bradstreet already collect data on employment, business revenues, etc. An element of her proposal is to hire a programmer to program systems to collect this data on an ongoing basis. Mr. Randolph added that hiring researchers would be required to interpret the data and describe the impact of a company.

Regent-designate Ellis believed that UC already has much of the data needed to perform an economic analysis. Ms. Lyons agreed but noted that the data is fragmented across the campuses and the system; it is an issue of coordination. Mr. Randolph suggested that UC systemize data collection rather than creating studies on an ad hoc basis.

Committee Chair Park commented that the existing annual UC commercialization report does not tell the rich story of UC innovation and entrepreneurship. She asked the chancellors what data they thought was important.

Chancellor Hawgood shared that UCSF maintains a real-time dashboard that contains information on the number of disclosures, patents filed, and patents approved; license revenue; number of startups and commercial industry partnerships; Catalyst Awards; and number of publications. He said he frequently consults it to ascertain trends.

Chancellor Khosla remarked that while he monitors the total revenue from patents and licenses, his focus is on enabling students and faculty to pursue ideas. He is not concerned about whether they achieve commercial success. Rather, he values the educational experience that students are afforded when they participate in entrepreneurial activities.

Regent Reilly asked how the University relays that data to people who can help further and enhance UC's mission and suggested that the new UC Center in Sacramento could be used to do so. Its purpose is to convey the contributions UC makes to the State of California and beyond.

Chancellors Christ and Larive noted that the best stories do not come from data and that the University should engage in storytelling, as anecdotes are more persuasive and memorable. Advisors Ku and Green countered that both data and stories are necessary; while stories inspire, the data supports and justifies investment. Mr. Randolph observed that a report should help its audience understand why the public should care about the University of California, as well as how the University has a positive impact on California communities, the economy, and people's lives.

7. **UPDATES: (1) AMGEN v. SANOFI AND (2) FEDERAL GRANT GUIDELINES – DEPARTMENT OF ENERGY-FUNDED TECHNOLOGIES**

[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.]

(1) Amgen v. Sanofi

Principal Counsel Randi Jenkins explained the context of *Amgen v. Sanofi*. Amgen and Sanofi produced competing versions of a drug that helps reduce cholesterol. The drug uses antibodies to stop a particular protein from binding to and destroying cell receptors that capture cholesterol from the bloodstream. Both companies have patents on the antibodies, but Amgen additionally claimed a genus of all antibodies that perform this function, including undiscovered antibodies. Sanofi challenged the validity of what it considered to be an overly broad claim.

The U.S. Supreme Court ruled in favor of Sanofi, opining that patents must describe the invention in such clear, concise, and full terms as to allow someone to replicate the invention. The Court held that Amgen did not provide the level of detail that would allow

someone to replicate the invention. The Court noted that a patent application need not describe every detail of every element within a genus, but it must disclose some general quality common to all elements within the genus.

The impact of this case will be largely in the biological and pharmaceutical area, in which genus claims are often filed. Ms. Jenkins noted that it will take time to understand the new legal standard for determining the level of specificity needed to seek broad genus claims. It will change UC's strategy for drafting and filing patent applications in these areas.

Regent Hernandez asked if UC would take a proactive approach to identifying the patents that could be affected by this decision. Ms. Jenkins replied that each campus would evaluate its intellectual property assets to determine risks and devise a strategy for how they will craft their claims. She said she could address this further in closed session.

## (2) Federal Grant Guidelines – Department of Energy-funded Technologies

Ms. Jenkins explained that the Bayh-Doyle Act permits recipients of federal funding to own and license discoveries made with federal funding. The Act provides a process for federal agencies, in exceptional circumstances, to eliminate or modify a grantee's right to retain title to an invention when it would better promote the goals and policy objectives of the Act. In 2021, the Department of Energy (DOE) exercised this "Determination of Exceptional Circumstances" (or DEC).

Previously, companies provided with exclusive licenses would have to commit to substantially manufacturing products emanating from the license in the U.S. Now, under the new DEC, the DOE requires the licensor and the licensee to share the responsibility of ensuring the products are manufactured in the U.S. Moreover, this obligation would be extended beyond exclusive licensees to cover non-exclusive licensees and to foreign markets. However, Ms. Jenkins stated that the DOE agreed to consider waivers in instances when a licensee or licensor believes it is not commercially feasible for a product to be manufactured substantially in the U.S.

If the DOE determines these new requirements have been breached, it will provide an opportunity for the non-compliant party to respond before making a final determination. The DOE could revoke title to the invention, which would automatically trigger the cancellation of existing licensing agreements and the grantee's reservation of rights to continue using the invention for research and education purposes. This rule is now incorporated into DOE awards to UC campuses.

Chancellor Hawgood asked what the chances are that the DOE interpretation will be adopted by other federal grantmaking agencies. Ms. Jenkins responded that other agencies are examining the position. She offered that UC's Federal Governmental Relations office is working with the federal administration to avoid the implementation of similar requirements at other agencies. In 2022, a coalition of universities and associations successfully halted consideration of such a rule. However, she noted that this issue has bipartisan support in Congress, so efforts to expand the requirement may reemerge in future

legislation.

Chair Park asked if all DOE grants are now subject to this DEC, and whether it is retroactive. Ms. Jenkins responded that it is not generally retroactive, but DOE is submitting amendments to some existing grants.

The meeting adjourned at 2:05 p.m.

Attest:

Secretary and Chief of Staff