

issues were further complicated by the campus' important commitment to meet a State expectation that it have a two-to-one ratio of California freshman to transfer student enrollment. After much dedicated work, the campus was on track for fall 2017 to meet this goal, which the freshman over-enrollment called into question given the limitations on the campus' pool of transfer students. This problem could not be solved by simply adding beds and instructors.

Chancellor Gillman said the campus had tried a variety of strategies to address these challenges. UCI worked with the Office of the President to see if other UC campuses could prioritize these students admitted to UCI. The campus worked to expand transfer pathways and developed a program through which students could defer admission for one year, while making progress toward their degree through continuing education at a reduced tuition rate. Even with these efforts, UC Irvine still faced large numbers of additional students and verification of the conditions of admission was offered as another potential solution. The campus decided to explore this option. Chancellor Gillman stated that, in hindsight, he did know enough to ask the difficult questions about options other than widespread withdrawal notifications.

By mid-July, after having advised admitted students of various deadlines for submitting records and then extending those deadlines a few weeks, UC Irvine still had 500 students who had not submitted materials or whose transcripts had revealed that they had not satisfied the academic conditions of admission. Normally, some percentage of those students might have been advised that their offer of admission had been withdrawn, while others would receive offers of assistance or additional warnings before a withdrawal notification. But, for reasons Chancellor Gillman said he could not explain at the current time, unacceptably terse and unhelpful withdrawal notifications were sent to those 500 students. Those notifications did not assist students with an appeal process and UC Irvine's antiquated telephone system was soon overwhelmed. It took a little more than a week before the withdrawal notifications and the resulting chaos came to the attention of Chancellor Gillman and his cabinet.

The campus' initial response was to increase its ability to handle appeals, while making it clear that no one would be denied admission merely because of a missed deadline. Within a few days, Chancellor Gillman concluded that the entire process had to be reset and he directed a reversal of the withdrawal notifications, which occurred two weeks and two days after the original notifications. While there were serious concerns about the implications of the over-enrollment, these could not allow UCI to deviate from the ordinary outstanding, empathetic, student-centered approach that UC admissions professionals demonstrate. While UC Irvine needs to verify conditions of admission, it must always do so in accordance with UC values, student-centered and focused on creating opportunities.

As UC Irvine nears the end of this process, it appears that it will withdraw a relatively small number of freshman admission offers, about 50, which is its usual number. Chancellor Gillman reported that some inventive thinking enabled the campus to provide housing and financial aid to all eligible students, and UCI looked forward to welcoming these new students.

Regent Ortiz Oakley noted past efforts by California State University to more easily capture high school transcript data, and asked Mr. Handel if UC was exploring, together with CSU and the California Community Colleges, ways to improve the process of verification of transcripts, at least for California high school transcripts. Mr. Handel commented that several vendors can produce electronic transcripts; all but one UC campus can receive these electronic transcripts, which are verified by high schools. However, not many California high schools use electronic transcripts yet. He agreed that would improve the process.

Regent Ortiz Oakley expressed appreciation for Chancellor Gillman's response to UC Irvine's situation, but noted the need to establish a better system to inform the Regents of significant occurrences during the admissions process, as Regents often hear about events related to UC admissions before they receive any information from the University, making it difficult to respond to questions.

Regent Monge thanked Chancellor Gillman for his leadership in this situation and his willingness to issue a timely apology. He asked if the task force would standardize deadlines for verification and communication procedures before the severe consequence of withdrawal of admission is triggered. He also asked that the data regarding each campus' admissions withdrawals be disaggregated by diversity characteristics.

Regent Lozano stated that it would be important to distinguish specific issues related to UC Irvine from systemwide issues, such as overall components of UC's admissions practices that could be improved. Mr. Handel agreed.

Committee Chair Pérez thanked Chancellor Gillman for his response over time to the situation. UC's values should guide its approach to its students and prospective students.

4. **ENHANCING SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) PREPARATION THROUGH COMMUNITY PARTNERSHIPS: LAUNCH ACADEMY SUMMER STEM PROGRAM**

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

Vice Provost Yvette Gullatt said this presentation, in response to Regents' requests to understand UC's efforts to foster academic readiness, would highlight the Leadership, Academic Excellence, Unleashing Potential, Nutritional Health, College Bound, High Self-Esteem (LAUNCH) Academy. The LAUNCH Academy is one important example of how UC connects with local communities to improve student learning, in this case in mathematics and science for K-8 students, advancing their preparation for eventual majors and careers in fields of science, technology, engineering, and mathematics (STEM).

Ms. Gullatt explained that, in addition to UC's longstanding work in K-12 schools and California Community Colleges, the UC Office of the President (UCOP) had been pursuing a new outreach strategy as part of President Napolitano's Diversity Pipeline Initiative to

raise awareness of UC's affordability and accessibility, and support eventual application and enrollment of underrepresented students at UC. With the support and input of community leaders and the Black Legislative Caucus, this program links community and faith-based organizations with the University. LAUNCH Academy is a six-week summer STEM program operated as a collaboration between UCLA's educator preparation programs and the Bethany Baptist Church of West Los Angeles. The Academy provides a foundation for students to pursue academic excellence and delivers valuable educational resources to families for whom summer learning options are scarce. At the same time, UC is forming valuable relationships with underserved communities to build upon in the future.

Bethany Baptist Church wanted to support its local community through rigorous and engaging learning activities that spark students' interest in STEM and inspire them to pursue higher education, particularly for students ages four to 14. As a summer lunch nutritional site, Bethany was serving breakfast and lunch to students in the community and sought ways to keep those students academically engaged. UC had the tools to support this interest in the California Mathematics Project and the California Science Project's regional sites at UCLA, part of the California Subject Matter Project (CSMP), a statewide intersegmental network that has provided rigorous professional development for California educators for more than 40 years. CSMP is administered by UC in collaboration with the state's other education segments. This partnership began the LAUNCH Academy. While many participating students and their families are members of Bethany Baptist Church, the program is open to all local youth and serves a number of surrounding communities. In the summer of 2017, 102 K-8 students representing 43 schools in the region enrolled in Launch Academy. Nearly all the students were African American.

LAUNCH Academy students received intensive, age-appropriate, high-quality instruction by teachers from the UCLA Mathematics Project and UCLA Science Project, in a safe and nurturing learning environment provided by dedicated staff, community leaders, and volunteers from Bethany, free of charge. UC sees the opportunity to foster similar University/community summer learning projects in other regions of California through the state's extensive network of 18 regional California Mathematics Project sites and 13 California Science Project sites.

Executive Director of Baldwin Bethany Community Development Corporation Rodman Miles expressed appreciation for the fruitful partnership with UCOP and the UCLA Mathematics and Science Projects. He reported that LAUNCH Academy had been a success for two consecutive summers, having empowered 100 students each summer. The community served by Launch Academy has the highest percentage of African American population in Los Angeles; more than 90 percent of program applicants are from low-income families. Observations by both instructors and parents confirmed that LAUNCH students gained competence, learned teamwork, sharpened their problem-solving skills, and cultivated a desire to learn more about mathematics and science. Parents of participating students rated the program very highly.

Mr. Miles discussed the future of LAUNCH Academy, which has more than 200 students on its waiting list for the summer of 2018, and his goals to increase the number of

participants, extend the program until 4:00 p.m., and develop a high-quality parent education program. Mr. Miles enumerated what he saw as necessary conditions for similar effective partnerships with universities. First, that the community-based organization (CBO) must hold educating its youth as one of its major goals. The CBO must have the confidence and trust of the community it serves to deliver the educational programs needed to engage the youth, including the trust of the parents, the volunteers, and community and political leaders. Third, the CBO must establish and maintain an ongoing partnership and collaboration with the university that will provide the curriculum, instruction, and enrichment activities relevant to the community it serves. Finally, the university must be involved and vested in the community on an ongoing basis by participating in other CBO activities.

UCLA Center X Executive Director Annamarie Francois explained that Center X is a K-12 educator preparation development and support unit in UCLA's Graduate School of Education and Information Studies. Center X works to advance teaching and learning in public schools in low-income communities of color by bringing together University faculty, K-12 educators, community organizations, and families. The Center is home to two academic preparation programs, five California subject matter projects, and nine grant- and contract-funded educator, student, and community support programs. The structure and resources of Center X make it uniquely poised to collaborate with schools, districts, and community organizations in efforts like the LAUNCH Academy to address pervasive educational achievement gaps that exist in high-poverty communities.

Ms. Francois said the LAUNCH Academy provides a sustainable and scalable model of collaboration. The vision for the LAUNCH Academy was larger than a STEM-focused summer camp, and included providing the critical resources underrepresented minority students need to progress through the educational pipeline to be academically eligible and competitive for admission to UC. Center X entered the partnership with Bethany Baptist Church with the goals of establishing a summer program as part of a larger strategic effort to advance UC's Diversity Pipeline Initiative, to provide a resource for community development and a space for innovative research-based teaching and collaboration, and to ignite a passion for learning in students in STEM from the time they are four or five years old. After collaborating with community members and teachers in the local public schools, Center X's instructional team developed a student-centered STEM-focused cohesive curriculum. CSMP carefully selected lead teachers, who were trained to implement the curriculum. Young adults from the community and UCLA students were hired as teaching assistants. Trained volunteers from the Bethany community were critical to the Academy's success.

Ms. Francois asserted that key partners and resources are readily available across the state, along with the intellectual resources of UC campuses to increase the scale of the LAUNCH Academy. UC campuses' departments of education already have close connections with local school districts serving underrepresented minorities. The CSMP network supports thousands of teachers and teacher leaders each year, and countless churches across the state are eager for a relationship with education partners. Increasing the scale of the program would increase minority representation and preparation, increase the number of

underrepresented students entering the teaching profession, contribute to community redevelopment, and advance UC research on educational practices and student outcomes.

Regent Lozano congratulated the presenters on the promise of the LAUNCH Academy collaboration. She asked about program funding, how students are selected, and the role of the local school district. Ms. Gullatt said UC's costs were about \$800 per student for the cost of instruction, teaching assistants, and training of teaching assistants and volunteers. She expressed her view that local industry would support this model and that schools could be partners through their Local Control Funding Formula allocations and other means. Grants from the National Science Foundation could also be sought. This model could be employed in other disciplines such as reading and writing. She anticipated that more information would be available after the Academy's third summer in 2018. Committee Chair Pérez invited another report at that time of ways the Academy model could be expanded.

Regent Newsom commented on the importance of this work, given the lack of African Americans among UC Berkeley's recent graduating class in computer science and noted that those graduates already had job offers with excellent salaries. He spoke of the extensive job openings in California in STEM fields, and expressed support for exploring the scalability of the LAUNCH Academy model and pursuing funding partnerships with industry.

5. **BASIC NEEDS SECURITY: YEAR THREE UPDATE**

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

Vice President Holmes-Sullivan recalled that in July 2014 President Napolitano launched the Global Food Initiative (GFI), which included the challenge of food insecurity facing UC students. In 2015 the Office of the President (UCOP) allocated \$75,000 per undergraduate campus to support student food access and enhance existing campus food security projects, and since then had committed more than \$3 million over three years to UC campuses to more comprehensively address food insecurity. In collaboration with students, faculty, staff, administration, and community experts, the GFI Basic Needs Access and Security Subcommittee (since renamed the Basic Needs Committee) developed an action plan that sought to expand food pantry access and storage, increase collaboration with State and county offices to register students for CalFresh, the State's nutrition assistance program, provide access to mobile kitchen services, expand Swipe Out Hunger programs that allow UC students to donate excess meal plan dollars to students in need, and enhance financial aid communications about housing and food costs. As this work progressed, it became clear that food insecurity was only one element of broader basic needs that take into account the overall cost of attendance for students, including food, housing, and other expenses.

UC Food Access and Security Subcommittee Co-Chair Tim Galarneau reported that over the past year the Basic Needs Committee in collaboration with campus and UCOP

leadership, worked to expand research on student food insecurity and basic needs, on-campus food services and programming, and collaborations on the state and national level. UCOP expanded the results of the 2015 UC Student Food Access and Security Survey by incorporating food insecurity and homelessness questions into the UC Undergraduate Experience Survey and the Graduate Student Well Being Survey, both administered systemwide in 2016. A few UC campuses had initiated qualitative surveys to explore students' basic needs experiences. The results of these studies would be featured in a comprehensive UC report to be published in November.

All UC campuses had established committees to advance implementation of projects and mechanisms to address basic needs. Each campus worked with its financial aid office and county Health and Human Services office to simplify students' enrollment in CalFresh benefits. Each campus also established a healthy and fresh food distribution model, including mobile market elements, meal voucher swipes enabling students to access meals from on-campus dining service vendors, transportation to and from retail grocers to use CalFresh benefits, and grocery store gift cards. Regular student workshops across all campuses include food preparation and provisioning, financial aid planning, off-campus housing planning, and rental assistance training. Campus innovations are shared through monthly conference calls, professional development training sessions every other month, and twice-a-year in-person meetings.

UC Food Access and Security Co-Chair Ruben Canedo reported that students at California State University and California Community Colleges experience similar challenges. Intersegmental leaders hosted two strategy sessions in the past year. They found that: research needs to be coordinated and collaborative; direct service providers need to learn from one another and collaborate regionally; and advocacy can be more effective by uniting to address State and federal policies that affect all three segments of public higher education. A number of State Assembly bills have focused on food assistance for students in higher education and California has become the most inclusive and accessible state for Supplemental Nutrition Assistance Program (called CalFresh in California) eligibility for college and university students, providing students with up to \$193 per month in federal benefits that do not negatively affect students' financial aid packages. Students with dependents are eligible for more support. In addition, the California Legislature recently provided \$2.5 million in one-time funding for UC campuses that are implementing specific activities to help them become "hunger free campuses." Mr. Canedo expressed gratitude for the Legislature's commitment.

Mr. Canedo added that throughout the 2016-17 academic year, he and Mr. Galarneau were presenters at more than 20 state and national conferences and research agenda meetings, including the 2016 Presidents United to Solve Hunger forum and the 2016 #RealCollege: National Convening on Food and Housing Insecurity. UC's basic needs efforts were featured in a Public Broadcasting System News Hour story. In addition, the GFI Basic Needs Co-Chairs have been confirmed as plenary session panelists and lead trainers for a day-long institute for national higher education leaders at the 2017 #RealCollege: National Convening on Food and Housing Insecurity.

Mr. Canedo stated that in the coming year UC would build on efforts currently underway including ensuring that all campuses prioritize the outreach, enrollment, and advocacy required to increase CalFresh enrollment. In partnership with UC Office of the President, the student Regent, and the UC Student Association, the GFI Basic Needs Co-Chairs would facilitate hosting of week-long events on all UC campuses in honor of National Hunger and Homelessness Awareness week in November. The upcoming report would provide a deeper understanding of student populations that have the highest needs, helping campuses with their limited resources better target these populations with limited resources.

Regent Monge expressed appreciation for the leadership of Mr. Galarneau and Mr. Caneda on this issue. He urged the development of actionable plans for the Regents and the Legislature, in addition to identifying and quantifying needs. Mr. Monge expressed his commitment to working with other student leaders on responding to the immediate needs of homeless students.

Regent Lozano commented on the relationship between basic needs insecurity and the total cost of attendance and urged collaboration on these issues. She encouraged identification of categories of students that might need additional support. Mr. Caneda responded that such analysis was being done. He pointed out that it is not only low-income students who use campus food pantries, and that needs of graduate and professional students must also be considered.

Regent Ortiz Oakley noted that data exist identifying needy K-12 students. If systems were coordinated so that this data could be captured as these students move on to higher education, they could be reached early in their higher education careers before problems develop.

Committee Chair Pérez commented that a follow-up conversation with Regent Torlackson would be beneficial in coordinating efforts. The California Student Aid Commission should be engaged and authorizing legislation could be advocated if necessary so that students could be co-qualified for Cal Grants and CalFresh.

Regent Newsom added that county engagement should also be extended to students in higher education.

6. **UPDATE ON REGENTS POLICY 3501: STUDENT ATHLETES AND GUIDING PRINCIPLES TO ENHANCE STUDENT-ATHLETE WELFARE**

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

Vice President Holmes-Sullivan recalled that the Regents adopted the Policy on Student-Athletes and the Guiding Principles to Enhance Student-Athlete Welfare in May 2016, the product of a working group of athletic directors and senior athletic department personnel convened by President Napolitano. The UC system includes a range of athletic programs. Division I and II programs compete at the highest levels of collegiate athletics and provide

scholarships for student-athletes, while Division III athletic programs have fewer resources and are unable to provide athletic scholarships. Aside from UC campuses in the Pac-12, funding for UC athletic programs is limited to what campuses are able to provide through fees, institutional support, and finite revenue streams. For this reason, lower-resourced conferences are often financially unable to provide the same level of student-athlete benefits available in conferences with higher levels of resources.

The working group was formed to make recommendations based on best practices to enhance the welfare of student athletes and resulted in adoption of a three-pronged policy on student-athletes and ten guiding principles that cover areas of administrative accountability, admissions, financial support, injury support, academic and career support, and student life. The policy requires athletic directors at UC Division I and II campuses to report directly to their chancellors; student athletes to receive priority registration for classes; and expects campuses not to revoke financial aid or scholarships for student athletes who sustain an incapacitating injury while participating in intercollegiate athletics and are medically unable to continue their athletic commitments. Similarly, the guiding principles call for sensible strategies aimed at improving student athlete welfare.

Committee Chair Pérez expressed some skepticism because he said that when this policy was presented to the Regents all UC programs, with the exception of one, were already above the required academic standards. He questioned whether this policy led to any real improvement in the lives of UC's student athletes. He noted the public comments of UCLA's quarterback two weeks prior that it was not possible to be a full-time athlete and student at UCLA because of the required time commitments. Committee Chair Pérez hoped that this discussion would be a frank one. Regent Newsom agreed that the UCLA quarterback's comments were an indictment.

UC Berkeley Athletic Director Michael Williams reported that UC Berkeley had continued to make progress. Its focus on the student athlete includes academic support, time management, implementation of support for full cost of attendance, and enhancement to student athletes' professional development including networking and mentoring. The hiring of a recruiting coordinator in UC Berkeley's Athletics Compliance Department has significantly improved the academic profile of the high school athletes recruited in football and men's and women's basketball, by enabling identification of potential student athletes much earlier in their high school years. The academic incentives in contracts for coaches in men's and women's basketball and football have helped UC Berkeley further align with these goals. Hiring coaches with prior experience at UC Berkeley, another UC campus, or a peer institution has enabled the campus to build a culture focused on the student athletic experience. All ten of UC Berkeley's head coaching hires since the 2014 task force met that criterion. In May the National Collegiate Athletic Association (NCAA) released the most recent Academic Progress Rate (APR) data, and UC Berkeley's APR scores were the highest ever, including for football and men's basketball. Its four-year APR for football had increased 33 points over the previous four-year period. Out of a possible 1,000, UC Berkeley football scored 991, after a 997 in football the prior year. Men's basketball was a perfect 1,000 each of the past two years.

UC Berkeley strives to make the student athlete experience rewarding for all its student athletes. The prior day, the non-profit Athlete Ally produced an Athletic Equality Index, ranking the top intercollegiate athletic programs on Lesbian, Gay, Bisexual, Transgender, and Queer inclusion, policies, and practices. UC Berkeley scored 90 out of 100, and was highlighted by Athlete Ally for its transgender student athlete participation policy.

Regent-designate Graves asked whether student athletes had been consulted or surveyed about improvements to their welfare. Mr. Williams commented that student athletes are part of all decision-making at UC Berkeley, through a student athlete governing council. The NCAA and the Pac-12 have included students at all levels of governance. Regent-designate Graves noted that simply processing student-athletes through the University is different from empowering student athletes. He expressed his view that student athletes should be surveyed to gain their views.

Regent Newsom congratulated Mr. Williams on his efforts and his willingness to include academic incentives in coaches' contracts including his own. Regent Newsom noted the great improvement in UC Berkeley's APR scores. Regent Newsom expressed his view that the University owes its athletes more, particularly African American athletes in revenue-generating sports and even beyond graduation. He would like more tracking of these student athletes after their athletic careers.

Regent Pattiz pointed out the value of intercollegiate athletics, both to the University and to scholarship athletes.

Chair Kieffer expressed support for these continuing efforts that affect the brand of UC.

Regent Blum expressed appreciation to Regent Newsom for pursuing this subject. He noted that past budget cuts had affected UC Berkeley's student athlete graduation rates because the number of tutors was reduced. He asked how many tutors were available currently for UC Berkeley's football team. Mr. Williams responded that there were one or two learning specialists dedicated to football and another would be added. UC Berkeley has a policy that all student athletes have access to learning specialists. There are about 100 tutors available in specific subjects. He would like to increase learning specialists dedicated to football. Regent Blum commented that one-on-one relationships were crucial.

Regent Newsom commented that it was not necessary to sacrifice academic performance to have a successful athletic program, as exemplified by Stanford and Duke. UC should be held to a very high standard.

Mr. Williams stressed the importance of establishing a culture that supports student athletes. UC Berkeley's newly hired coaches were seeking recruits who accepted the academic challenges of UC Berkeley.

7. **IMPLEMENTATION UPDATE ON REGENTS POLICY 3103: POLICY ON PROFESSIONAL DEGREE SUPPLEMENTAL TUITION**

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

Committee Chair Pérez said this discussion was intended to provide a brief update. Associate Vice President David Alcocer recalled that the Regents had amended this policy in March. He invited the Committee's comments on a proposed template that would be used when proposals regarding Professional Degree Supplemental Tuition (PDST) were brought to the Regents in January. Under the new policy the Regents would be asked to approve multi-year plans for PDST levels instead of annual approvals of single-year levels.

Based on the expirations of current PDST approvals, Mr. Alcocer anticipated that about 20 plans would be presented to the Regents in January 2018 and another 40 plans the following year. All plans would have been thoroughly vetted by UC Office of the President staff to ensure full compliance with all aspects of the PDST policy. He anticipated that in evaluating the proposals, the Regents would want to have information about a program's goals, its investments and achievements, its proposed use of the revenue, its costs relative to other programs, its affordability for UC students, and the outcome of any student and faculty consultation that would have occurred in developing the plan. The proposed template, developed by the work group that devised the amended policy, was designed to capture these key elements.

Regent Ortiz Oakley expressed his preference that the template also include information about ways in which a requested increase would be used intentionally to support efforts to increase diversity in UC's graduate programs.

8. **UNIVERSITY OF CALIFORNIA'S LAND-BASED OBSERVATORIES**

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

Provost Brown expressed support for the Committee's clear commitment to increasing diversity at UC. This presentation was intended to deepen the understanding of the work of UC faculty in the production of new knowledge and the development of future researchers. He emphasized the difficult and complex work of building world-class excellence on UC's ten campuses. The UC Office of the President partners with campuses to support the full spectrum of UC's research and scholarship. Because of its size and stature, UC is in the rare position of being able to make systemwide investments as it has through UC Observatories (UCO), enabling multi- and single-campus research that could not have occurred otherwise. UCO astronomers have received the Nobel Prize, the National Medal of Science, and MacArthur Fellows awards. More such awards are anticipated.

Vice President Ellis explained that a distinctive feature of UC's research enterprise is its portfolio of outstanding multi-campus research units (MRUs), academic organizational

structures that provide a vehicle for encouraging collaborations transcending UC campus boundaries. MRUs foster collective excellence that makes the whole of UC more than the sum of its parts. UCO provides access to state-of-the-art telescopes that enable groundbreaking scientific discoveries. UCO supports technical staff and specialized facilities that enable faculty, students, and research staff to design and deploy cutting-edge instrumentation that can lead to breakthroughs in astronomical research. The Lick and Keck Observatories have supported decades of world-class research by UC astronomers. UC's telescopes have also proven to be a magnet for attracting and retaining leading faculty, postdoctoral scholars, research scientists, and students to UC from around the world. UCO also provides systemwide processes for ensuring that the telescopes are used to support world-class science and that they are managed and operated in a responsible manner. For example, committees with systemwide representation provide guidance on investments necessary to keep the telescopes operating at the edge of scientific frontiers and to make recommendations on the most meritorious research proposals so that precious observing time is awarded through a rigorous vetting process. External validation of the impact of UCO's scholarly outputs is evident in national and international awards received by UCO astronomers over the past decade. UCO has been an enormous success by any measure of its scholarly impact, an example of the well-considered big investments that the visionary University of California has been making for well over a century.

Chancellor Blumenthal, Chair of the Board of the California Association for Research in Astronomy (CARA) that oversees the Keck Observatory, explained his deep interest in UCO as an astrophysicist whose research has been motivated from the results arising from UC's telescopes, as Chancellor of UC Santa Cruz, which houses the UCO headquarters, and as chair of the CARA board. He recounted the history of Lick Observatory, whose faculty and staff moved from Mount Hamilton to UC Santa Cruz just as that campus was opening in the mid-1960s, providing a great boon to the new campus that could begin with a world-renowned group of astronomers on the faculty. The innovative instrumentation developed on campus kept the Lick telescopes at the scientific cutting edge, even after other much larger observatories had begun operating. By the early 1990s, as UC became involved in designing and building the two ten-meter telescopes at the Keck Observatory, the need for a larger umbrella for UC's instrumentation efforts led to the creation of UCO, which now houses instrumentation facilities at both UC Santa Cruz and UCLA.

Chancellor Blumenthal said it would be an understatement to call UCO a great success. A UCO scientist, deceased UC Santa Cruz Professor Jerry Nelson, conceived the segmented mirror approach that led to the Keck telescopes; that approach is now the basis of the Thirty Meter Telescope (TMT) project as well. UCO was now developing one of the first major instruments for the TMT. UCO, in collaboration with other institutions including Lawrence Livermore National Laboratory (LLNL), developed Adaptive Optics techniques that produced sharper images not blurred by earth's atmosphere.

Chancellor Blumenthal highlighted the great success of the Keck Observatory, with by far the most scientific impact per telescope of the major ground-based telescopes around the world, the result of UCO's world-class instrumentation and the quality of Keck users from both UC and the California Institute of Technology (Cal Tech). Aside from a one-sixth

contribution from the National Aeronautics and Space Administration, the construction funding for the Keck Observatory came entirely from Cal Tech. By agreement with Cal Tech, UC has supplied all of the operating costs for the Keck Observatory, currently around \$14 million per year, with an agreement that, starting in April 2018, when UC's contribution will have equaled Cal Tech's, both institutions will equally share the operating expenses. The CARA board, with three members each from UC and Cal Tech, was finalizing a new cooperative agreement starting in April, which would be brought to the Regents for approval.

UCO Director Claire Max offered examples of the kinds of scientific discoveries made through UCO's large telescopes as a result of collaboration of UC scientists from multiple campuses. UC scientists choose to collaborate with one another to produce high-impact research with no explicit incentives. More than 3,500 planets have been discovered since 1995 in orbits around other stars. In a fruitful interplay between ground-based telescopes at Lick and Keck, and telescopes in space, UC scientists have discovered these new planets and estimated their mass. Images can be made using Adaptive Optics to sharpen the astronomical images by removing the blurring caused by atmospheric turbulence. This research resulted from a collaboration among scientists at UC Berkeley, UC Santa Cruz, UCLA, and LLNL over a decade or more. Adaptive Optics has also been used to map the motion of stars and infer the mass of a huge black hole that lies at the center of the Milky Way Galaxy. This technology is also being used in ophthalmology in retinal imaging. In addition, collaborations of faculty and students from eight UC campuses using UCO instruments were studying infant galaxies in the very early universe less than a billion years after the Big Bang. Ms. Max explained that the TMT being designed would be a major part of this research.

Regent Kieffer asked about the status of the TMT. Chancellor Yang reported that 20 months prior the Supreme Court of Hawaii had invalidated the TMT's Conservation District Use Permit (CDUP) because Hawaii's Board of Land and Natural Resources had issued the permit before a hearing was held. A hearing had subsequently been held and Chancellor Yang anticipated that the project would regain its CDUP. An alternate site in Spain is being considered.

Ms. Max added that progress on development of the telescope and the instruments for the TMT was continuing at full speed, regardless of which site would be ultimately selected. Groups at both UCLA and UC Santa Cruz were proceeding with the design. Chancellor Blumenthal commented on the superiority of the Hawaii site because it was higher and would likely be more convenient and hospitable for UC's partners that include Canada, Japan, India, and China. Chancellor Yang added that it was significant to the National Science Foundation that the Hawaii site was on U.S. soil. Regent Newsom asked about the TMT's funding. Chancellor Blumenthal said the most recent cost estimate was \$1.3 billion; the Gordon and Betty Moore Foundation gave a large donation to both UC and Cal Tech. Chancellor Yang added that the Moore Foundation gift was \$250 million, to be split equally between UC and Cal Tech. The four participating nations would also contribute funding.

The meeting adjourned at 3:55 p.m.

Attest:

Secretary and Chief of Staff

Pending
Approval