

The Regents of the University of California

**COMMITTEE ON EDUCATIONAL POLICY**

January 20-21, 2016

The Committee on Educational Policy met on the above dates at UCSF–Mission Bay Conference Center, San Francisco.

Members present: Regents Elliott, Gorman, Gould, Island, Kieffer, Lansing, Newsom, Ortiz Oakley, Oved, and Reiss; Ex officio members Lozano and Napolitano; Advisory members Brody, Chalfant, Ramirez, and Schroeder; Staff Advisors Acker and Richmond

In attendance: Regents Davis, De La Peña, Pattiz, Pérez, Ruiz, Sherman, Wachter, and Zettel, Faculty Representative Hare, Secretary and Chief of Staff Shaw, General Counsel Robinson, Chief Compliance and Audit Officer Vacca, Provost Dorr, Executive Vice President and Chief Financial Officer Brostrom, Executive Vice President and Chief Operating Officer Nava, Executive Vice President Stobo, Senior Vice Presidents Henderson and Peacock, Vice Presidents Brown, Budil, Duckett, Humiston, and Sakaki, Chancellors Block, Blumenthal, Gillman, Hawgood, Katehi, Khosla, Leland, Wilcox, and Yang, and Recording Secretary McCarthy

The meeting convened at 9:35 a.m. with Committee Chair Island presiding.

1. **APPROVAL OF MINUTES OF PREVIOUS MEETING**

Upon motion duly made and seconded, the minutes of the meeting of November 19, 2015 were approved.

2. **ESTABLISHMENT OF A SCHOOL OF MUSIC, LOS ANGELES CAMPUS**

The President of the University recommended that Section 15 (a) of the Academic Units and Functions, Affiliated Institutions, and Related Activities of the University, as provided for in Standing Order 110.1, be amended as follows:

**Additions shown by underscoring**

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15. Professional Schools

- (a) There are established the following schools, with curricula based on two or more years of undergraduate work as well as graduate curricula as listed:

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The UCLA Herb Alpert School of Music, at Los Angeles, with curricula leading to the degrees of Bachelor of Arts, Master of Arts, Master of Music, Doctor of Musical Arts, and Doctor of Philosophy.

[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 Island briefly introduced this item requesting approval of the UCLA Herb Alpert School of Music. Provost Dorr noted that Regents' approval is required to create a new school or college on a UC campus. She assured the Regents that the proposal for the Herb Alpert School of Music had gained all necessary approvals on the campus, with the Academic Senate, and at the Office of the President. Every review resulted in a recommendation to create the School, which is also strongly supported by President Napolitano.

Chancellor Block described why the School would be a great asset to UCLA, to UC, and to the study and performance of music around the world. UCLA would be proud to have the first school of music in the UC system. He emphasized UCLA's gratitude to Herb Alpert and the Herb Alpert Foundation for its generous gift that enabled UCLA to fulfill its ambitious vision.

The Herb Alpert School of Music would meet all the University's standards for creating a new school. First, the School reflects and enhances both campus and systemwide priorities. The proposal to establish the School has strong support from UCLA administration, students, faculty, and the local arts community. Second, the School would display academic rigor in its education and research programs. The School would be comprised of three top-ranked departments with internationally acclaimed faculty. Each department competes nationally with top music schools for students and faculty. The National Research Council assigned the School's doctoral programs its highest rankings. The undergraduate and graduate curricula are rigorous, with capstone projects enabling students to demonstrate mastery in scholarship and performance. Third, the School's financial foundation is solid. Upon establishment, it would include about 50 ladder-rank faculty and 450 students, and have annual revenues of \$18.67 million. Fourth, the School would provide significant benefits to its students, the UCLA campus, and the University. Chancellor Block expressed his belief that the School would offer a transformative model for music schools across the nation by virtue of its balanced emphasis on scholarship, music-making, and understanding music in all its contemporary and historical diversity. The School would increase the visibility of UCLA's music programs, and enable UCLA students to cross departmental boundaries to explore areas ranging from ethnomusicology to the music industry, encouraging interdisciplinary research and creative work. Finally, creation of the School would increase UCLA's fundraising capacity, especially important for UCLA's current Centennial Campaign.

Chancellor Block thanked Vice Provost and Dean Emerita Judith Smith, who led efforts to establish the UCLA Herb Alpert School of Music for the past two years. Ms. Smith commented that bringing three established academic departments: music, ethnomusicology, and musicology into a single academic unit was the result of a campus-wide effort that included extensive consultation with students, staff, and faculty. The School's faculty and programs are housed in two adjacent buildings, the Schoenberg Music Building and the Ostin Music Center, including a world-class music library, a new recording studio, two performance theaters, and dozens of practice, ensemble, and lecture rooms. The School's small size by national standards would allow it to provide individual instruction and seminars for all of its students. Even entering freshmen would be able to be included in the School's most prominent ensembles and would be offered classes integrating subject matter across the School's three areas. The School would balance its resources between music-making, including performance and composition, and scholarly research, as well as between western classical music and traditional world music; its studies would include America's popular music, such as jazz, punk, and rock and roll. The School would not be a conservatory, but rather an academic unit focused on providing a liberal arts education to its undergraduate and graduate students, many of whom are top-rated musicians.

Ms. Smith noted that UCLA offers UC's only program in music education, in which undergraduates complete a four-year program earning both a Bachelor of Arts degree and a teaching credential. Also, the School's Thelonious Monk Institute of Jazz Performance provides a master's degree program for top-rated young jazz musicians. Up to eight students selected from hundreds of applicants each year receive personal lessons and ensemble coaching from legendary jazz musicians such as Herbie Hancock and Wayne Shorter.

Regent Pattiz expressed strong support for the School. Regent Lansing also expressed her support for the School and appreciation of Herb Alpert's extraordinary generosity.

Regent Kieffer expressed support for establishment of the School, but asked if it would be merely an administrative combining of existing programs. Chancellor Block commented that the School would become a free-standing independent school that would enable these departments to work closely together. A board comprised of supporters from the community would be established for the School, offering opportunities to build the reserves necessary to develop the School into one of the outstanding programs in the nation.

Upon motion duly made and seconded, the Committee approved the President's recommendation and voted to present it to the Board.

### 3. **FALL 2016 UNDERGRADUATE APPLICATIONS**

[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 Dorr reported on the undergraduate applications UC received for fall 2016. She highlighted that UC's entirely online application system had been successful in receiving and processing all undergraduate applications systemwide. The online system has been greatly improved since the Office of the President assumed responsibility for the system and, under the leadership of Vice President Sakaki, increased its efficiency and effectiveness, at a lower cost than with a prior vendor.

Ms. Dorr recalled that in November 2015 the Regents had approved President Napolitano's plan to increase enrollment of California undergraduates by 5,000 in the 2016-17 academic year, both freshmen and transfer students. The total number of freshman and transfer applications UC receives is the first step toward fulfilling this goal. Without sufficient demand, it would be impossible to meet the enrollment goal. This update on applications received would contain good news.

Vice President Sakaki provided an overview of the application data for fall 2016. Undergraduate applications to UC rose for the 12th consecutive year, increasing by more than 12,000 applications, a 6.4 percent increase over the prior year. More than 206,000 students applied for admission as either freshmen or transfer students, the first time the number of applications exceeded 200,000, demonstrating extraordinary interest in UC. On average, each applicant applied to four UC campuses, meaning that UC received more than 700,000 separate applications.

Ms. Sakaki reported that the UC online application system worked successfully. The University's implementation of its comprehensive review policy relies on the ability of the online application system to capture pertinent, detailed applicant information that can be communicated to UC campuses in timely and efficient ways. Students applying as freshmen or transfer students to any of UC's nine undergraduate campuses complete a single online application. The application was built and is maintained at the Office of the President in consultation with all campuses and faculty. Applicants provide their courses completed, grades, test scores, information about their school and community activities, and the educational context in which they prepared for university studies. Applicants also write personal statements in response to specific prompts that provide additional opportunities to share their qualifications and educational objectives. All information requested on the application is aligned with specific factors approved for comprehensive review. The application opening had been moved earlier, to August 1, for students applying for fall admission, allowing students more time to prepare their applications. Students may submit their application any time in November, with each campus application costing \$70. Low-income students can apply and receive immediate approval for a fee waiver covering the application fees for up to four UC campuses.

Since the online application was launched five years prior, it has successfully handled the increasingly large volume, including the current year's record-setting number of applications. Even with 50 percent of the applications received during the last two days, the system performed at maximum capacity, with no noticeable lags or delays. The system's call center staff worked tirelessly to ensure that students were served during the peak admission period. Overall, the systemwide online application initiative was

successful in producing a system proven to be efficient and cost-effective, delivering timely application data to campuses while being convenient and easy for applicants. UC admissions, communications, and information technology services staff continue to look for ways to improve the system, convening a number of focus groups with students and counselors during the past year to learn how the application could be made even more responsive to students' needs. Plans exist to refresh the online application's interface and make the entire application more accessible for students with disabilities.

Associate Vice President Stephen Handel provided more detail about the fall 2016 application data for undergraduate programs. The University received more applications for freshman and transfer student admission than at any other time in its history, and UC campuses have the responsibility to thoroughly review every application. Every UC undergraduate campus experienced an increase in both freshman and transfer applications. The strongest growth was at UC Merced, which received 13.5 percent more applications than the prior year. Other campuses experienced significant growth, including Santa Barbara, Irvine, Riverside, San Diego, and Santa Cruz. Students are encouraged to apply broadly, for instance, by an online prompt encouraging students who receive an application fee waiver to use it fully to apply to four campuses.

Mr. Handel discussed the increase in applications from California residents. Systemwide, freshman applications from California residents grew to more than 105,000, a 2.3 percent increase over the prior year. California transfer applications totaled nearly 33,000, a 12 percent increase. The number of California resident applications increased at all UC undergraduate campuses. UC Merced had the largest growth, up 11.3 percent for freshmen and 28 percent for transfer students. Strong growth in applications from California residents was also shown at Davis, Riverside, Santa Barbara, Santa Cruz, and Irvine.

There was also growth in the number of applications from California's diverse racial, ethnic, and socio-economic communities. For example, there was considerable increase in freshman and transfer applications from Chicano-Latino students. For the last three years, Chicano-Latino students have represented the largest ethnic group in the California freshman applicant pool; this trend continued for fall 2016, with a 7.5 percent increase in freshman Chicano-Latino applications and a noteworthy 18.5 percent increase for transfer students. Applications from African American students also increased significantly, 5.1 percent for freshmen and 26.3 percent for transfer applicants.

Mr. Handel discussed three measures indicative of the extent to which the University fuels an engine of economic opportunity. First, almost half of fall 2016 California freshman applicants come from families where one or both parents do not have a college degree. Second, applicants from low-income families rose slightly to almost 40 percent. Third, applicants from California's lower-resourced schools increased to 22.5 percent.

In light of UC's commitment to increase enrollment of California undergraduates, concerns had existed about the lack of increase in transfer applicants over the last four years. From 2010 to 2012, transfer applications actually declined slightly. Importantly,

transfer applications from California residents for fall 2016 increased 12 percent, representing about 3,500 more applications than the prior year. Following the Regents' approval of the 2016-17 budget, which is based on the assumption that the University would admit 5,000 more California resident students for the 2016-17 academic year, President Napolitano extended the transfer application deadline from November 30 to January 4, to encourage potential California transfer students, especially those who may have been undecided about whether to apply to UC. About 2,200 additional transfer applications were received from California residents during the extended period.

Mr. Handel reported that the fall 2016 applications were currently being reviewed. Admitting qualified applicants to UC and then encouraging them to attend were the remaining steps to secure the enrollment of 5,000 additional California residents in fall 2016.

Regent Pérez asked if the presentation indicated that it would be impossible to increase enrollment of California residents by 5,000 without an increase in the number of applications. Mr. Handel said that was not his view, although he had been concerned about the prior lack of increase in California transfer applicants. Ms. Dorr commented that having more applicants would increase the likelihood of reaching admission goals, but the eligibility of applicants would be important. Regent Pérez expressed skepticism that there had been a lack of eligible California resident applicants in recent years. It would be instructive to analyze how many California applicants to each campus were UC-eligible to determine growth potential. From that eligible pool of California students it would be helpful to know how many were accepted, and how many enrolled at each campus to evaluate the effectiveness of UC's outreach efforts. He cited the two goals of meeting the target for increased California resident enrollment and ensuring that UC is aggressive as possible within its legal constraints in building a student body at each UC campus that is most reflective of the California population. He asked what structural issues led to a 1,300-student decrease in enrollment of California students the prior year in spite of an increase in applications. Ms. Dorr commented that her office was analyzing these data from the prior year, including student enrollment preferences when they have admission to more than one campus and ways to increase yield from underrepresented communities. Regent Pérez commented that factors other than admissions at UC's various campuses may affect whether students choose to enroll at UC.

Regent Pérez asked for Ms. Dorr's opinion of why admission of California students declined the prior year, even though it was the 11th consecutive year with an increase in the number of applicants and there was no decrease in overall UC enrollment. She responded that the prior year was unusual in that the University was careful not to enroll students for whom it received no State funding. That admissions practice would not be used in 2016 fall admissions.

Regent Reiss expressed concern about minimal progress in increasing the diversity of admitted students. She, Committee Chair Island, and Regent Elliott had met with UC Berkeley admissions staff to discuss the diversity of admitted students and would like to continue such meetings. She requested a follow-up presentation after admission letters

have been sent, with a breakdown by campus indicating whether the increase in diversity in applications resulted in an increase in diversity in admissions. The California Master Plan for Higher Education (Master Plan) prescribed that UC should accept the top California high school graduates, but did not specify how that top group would be defined. Establishing predictive measures of student success beyond test scores could help increase diversity in admissions. Ms. Dorr agreed that the current time of expanding enrollment presents an opportunity to increase diversity. Mr. Handel credited the work of the Academic Senate over a number of years to develop a comprehensive review policy, which states that no single measure can be used either to admit or to deny admission to a student. The University uses holistic review with 14 different criteria, including grade point average (GPA) in “a through g” courses and the context within which a student achieves in high school. In 2012 UC’s eligibility in the local context program was expanded so that students in the top nine percent, measured by GPA in “a through g” courses, of every California high school would gain admission to a UC campus, regardless of test scores. Regent Reiss commented that those admissions could be to a referral campus.

Regent Gould commented that this information about applications concerned only the initial phase of the enrollment process. The Regents would be interested in the subsequent admissions decisions and final enrollment results. While the increase in transfer applications and their diversity were encouraging, Regent Gould noted that in prior years UC transfer applications had come mainly from certain California Community Colleges (CCCs). He asked whether the range of CCCs of the 2016 UC transfer applicants had broadened. Mr. Handel replied that the range of transfer applicants’ CCCs had broadened, but not to the extent desired. While UC accepts students from every CCC, half its transfer applicants come from just 23 CCCs. The University would continue to support those schools that have sent many transfer students to UC and develop stronger relationships with the other community colleges.

Regent Ruiz commented that, while increasing enrollment would create challenges for UC faculty, staff, students, and facilities, it was the beginning of providing higher education to an increasing number of eligible California students. In the future, California higher education institutions may not be able to meet the demand from students now preparing for a college education. The Governor has anticipated that demand for a UC education would decrease, but in fact enrollment has continued to grow. Regent Ruiz expressed his view that the time was ripe to work on a strategic plan based on accurate predictions of future demand and to communicate this need to the public and the Legislature. Regent Ruiz expressed confidence in the direction in which UC is headed and thanked President Napolitano and Chairman Lozano for their efforts to increase enrollment. UC should be capable of providing its high-quality education to those California students who have earned that opportunity.

Regent Kieffer observed that the growing number of California students who are qualified for a college education has increased pressure on UC and the California State University. He asked if the percentage of students UC is required to accept under the Master Plan should be increased from the top 12.5 percent to a higher percentage, and

presented to the Legislature as a larger policy change that needed to be met with appropriate State funding. If enrollment is increased with no State funding policy change, UC would continue to be underfunded and the quality of a UC education would deteriorate. In fact, students already recognize effects of UC's funding problems and some choose to attend other institutions for that reason. A policy change that would demand a commensurate funding change would be preferable to a gradual enrollment increase that is not adequately funded. Simply pushing for increased enrollment without appropriate funding could reduce the University's ability to provide the kind of education it provided students when the State was fully funding UC.

Ms. Dorr observed that Regent Kieffer's concerns about adequate funding for enrollment were shared by administration and faculty, particularly because the funding for the 5,000 additional students would be at a lower level than prior funding levels. She noted the administration's hope that funding would stabilize at an appropriate level as the University works toward the goal of increasing enrollment by 10,000 students. The Master Plan mandates that UC accept the top 12.5 percent of California high school students, but also obligates the State to fund these students. It is appropriate for the administration and the Board to consider what is an appropriate funding level and how that can be achieved. Regent Kieffer expressed his view that it should be approached as a matter of policy so that UC's educational quality is not gradually eroded. Mr. Handel expressed his agreement, noting that current students have many more choices for higher education, since students apply to an average of seven institutions. He added that the State is interested in re-examining the Eligibility Study, which had not been conducted since 2007, to examine the extent to which the University is taking students eligible under the Master Plan framework. In the past, the University has had to raise admission standards in order to fulfill the Master Plan's 12.5 percent mandate. He agreed that it would be an appropriate time for the Regents to engage in discussions about how that top 12.5 percent is defined.

Regent Pattiz expressed appreciation for Faculty Representative Hare's comments earlier in the day and asked if data were available about students from underrepresented communities who are accepted to UC but choose not to enroll. The University must consider whether it is an attractive option for these students. Mr. Handel advised that each UC campus annually studies its accepted students who enrolled and those who did not, to try to determine their reasons. UC admissions staff does not know if an applicant is from an underrepresented ethnic group during the application process, but has interviewed applicants afterwards. Students who do not enroll often cite affordability as the reason. Even though UC has a robust financial aid policy, that message does not always reach these students who find other educational options that they think would be less costly. By the customary November 30 application deadline, some potential transfer students are unsure of their fall grades and so do not apply to UC. President Napolitano extended the application deadline for transfer students this year to allow such students to apply for transfer after they know their fall grades, which are important in the transfer application. Increasing publicity that UC is welcoming to students from underrepresented communities would help attract students. Regent Pattiz commented that UC's message should be tailored to the ethnic groups it is trying to attract.

Regent Ortiz Oakley suggested that the University re-examine the best predictors of successful UC enrollment, using multiple measures that could capture some students not currently successful in the admissions process, but who could be successful at UC. The University, with advice from its General Counsel, should be as aggressive as possible in recruiting students from underrepresented communities.

Regent Ortiz Oakley also asserted that the University, with input from the chancellors, should develop a clearly articulated policy about nonresident enrollment, a key issue with the public and the Legislature, particularly at a time when the University would seek more State funding. The current time of expanding enrollment offers an opportunity to increase the University's diversity in students and faculty to reflect California's population.

Regent Davis expressed hope that UC campuses would aggressively increase admission of transfer students. The pool of transfer applicants is more likely to be representative of the diverse population of California, would be more likely to enroll than freshman applicants, and would be primarily California residents. Since the diversity of the transfer applications received had increased, this would be an opportune time to increase acceptance of transfer students. Mr. Handel commented that the President's extension of time for transfer students to apply was an indication of the University's interest in transfer applicants and the campuses were also particularly interested in enrollment of transfer students during this time of expanded enrollment.

Regent Oved commented that the UCLA Community Programs Office's programs of retention, access, and service are based on minority identities. UCLA students go to classrooms in under-resourced high schools to discuss higher education options and offer peer support. This program's one-to-one engagement of UC students with high school students from similar communities is most effective and is an example of an existing program that could be further developed to support expanding diversity of UC's students. UC's students are its best advertisement.

Chairman Lozano thanked UC admissions staff for their efforts. While specific admission strategies have had some success, she observed that many Regents have expressed an interest in considering larger policy questions around admissions, eligibility, enrollment, and diversity, and how the University can plan in advance to be responsive to demand for higher education from California's increasingly diverse population. These questions should not be considered only when annual reports are presented.

The Committee recessed at 10:50 a.m.

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The Committee reconvened on January 21, 2016 at 9:55 a.m.

Members present: Regents Elliott, Gorman, Gould, Island, Kieffer, Lansing, Ortiz Oakley, Oved, and Reiss; Ex officio members Lozano and Napolitano; Advisory

members Brody, Chalfant, Ramirez, and Schroeder; Staff Advisors Acker and Richmond

In attendance: Regents Blum, Davis, De La Peña, Pattiz, Ruiz, Sherman, and Zettel, Faculty Representative Hare, Secretary and Chief of Staff Shaw, General Counsel Robinson, Provost Dorr, Executive Vice President and Chief Financial Officer Brostrom, Executive Vice President and Chief Operating Officer Nava, Senior Vice Presidents Henderson and Peacock, Vice Presidents Budil and Duckett, Interim Vice President Tucker, Chancellors Block, Blumenthal, Gillman, Hawgood, Wilcox, and Yang, and Recording Secretary McCarthy

#### 4. **EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN) AND UNIVERSITY OF CALIFORNIA COLLABORATION**

[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 Island briefly introduced this presentation on UC's involvement at the European Organization for Nuclear Research (CERN). Provost Dorr commented that Regent Blum and former President Yudof had visited CERN in Geneva, Switzerland, and Regent Blum had recommended this presentation to the Regents. Interim Vice President Tucker introduced Senior Scientist at Lawrence Berkeley National Laboratory (LBNL) and UC Berkeley Professor Beate Heinemann and UC Santa Barbara Professor Joseph Incandela.

Professor Incandela stated that UC plays a large role in the research conducted at CERN that aims to investigate fundamental questions such as the nature of the universe, how it began, and its basic building blocks and forces. Scientists at CERN use accelerators and detectors, the original versions of which were invented at UC Berkeley, to accelerate and collide particles in the Large Hadron Collider (LHC) to create and discover new particles, including the 2012 discovery of the Higgs boson. UC is involved in both of the two main CERN experiments currently run, the A Toroidal LHC Apparatus (ATLAS) experiment with 3,000 scientists from 40 countries, and the Compact Muon Solenoid (CMS) experiment, with 2,500 scientists from 43 countries. Of all countries, the United States has the biggest presence at CERN, and UC has the most scientists in the U.S. contingent. Professor Incandela briefly discussed possible future research at CERN, which could include supersymmetry and research into dark matter and dark energy. The LHC is anticipated to run for another 20 years, with new detectors, electronics, data handling, and analysis methods under development.

Professor Heinemann reviewed CERN's organization and UC's involvement. CERN was founded in 1954 by 12 European states and currently has 21 member states, basically all the major European countries. CERN's \$1 billion budget comes from contributions of the member states proportionate to their gross domestic products (GDPs). CERN's 12,500 scientific users are from all over the world; the U.S. is the largest single user, with

nearly 2,000 users, representing 15.6 percent of all CERN users. An amendment of an agreement between the United States and CERN was signed recently, calling for collaboration for the next 20 years on collider physics and neutrino physics.

Approximately ten percent of CERN's U.S. users come from UC; eight of the ten UC campuses and all three UC-affiliated National Laboratories are strongly involved in CERN research. There are currently 176 CERN researchers from UC, including 34 faculty and senior scientists. Since 2009, 135 UC Ph.D. students, 300 undergraduates, and 50 technicians and engineers have been involved in CERN research. Funding of U.S. research at CERN is 80 percent from the Department of Energy (DOE) and 20 percent from the National Science Foundation. In total, U.S. funding of CERN research was nearly \$100 million in 2012, falling to \$80 million in 2015. The portion of U.S. funding received by UC, roughly 20 percent, has not declined as much as the overall U.S. funding, indicating the strength of UC research. Funding is determined by comparative reviews among various U.S. institutions.

Leadership positions held by UC scientists at CERN also show the strength of UC's presence. To date there have been only one spokesperson and four deputy spokespersons at CERN from the United States and all have been from UC. Professor Incandela is the spokesperson for CMS and Professor Heinemann is a deputy spokesperson for ATLAS.

CERN detectors are often partially constructed at UC campuses or UC-affiliated National Laboratories. Computer centers at LBNL's National Energy Research Scientific Computing Center and at UC San Diego are part of CERN's vast computing grid. UC research at CERN garners a great deal of media attention, which helps attract extraordinary talent among UC students and postdoctoral scholars. Many UC postdoctoral scholars are European students who come to California to work on CERN data analysis or detector construction. UC Ph.D. students who work on a Ph.D. in particle physics through CERN research learn innovative problem-solving, skills in hardware, engineering, software, data analysis, teamwork, leadership, and communication in a large collaborative, international enterprise. Results from fundamental research in particle physics is useful in many other fields as diverse as the worldwide web, cancer treatment, and the restoration of audio recordings.

Professor Heinemann concluded by observing that UC is a strong partner of CERN, with major leadership roles, and intellectual and technical contributions. UC's involvement at CERN attracts young talent to UC and educates students for positions in the current highly technological and competitive international scientific community. She expressed appreciation for the Regents' continuing support.

Regent Pattiz asked whether CERN was working toward a single mission or was a user facility, and who had authority for determining CERN's research focus. Professor Heinemann responded that CERN is focused on large experiments such as CMS and ATLAS, with the goal of obtaining data as precise as possible. How those data are used is determined by individual faculty members, whose research can have a variety of

interests. Professor Incandela added that researchers work together to operate the facility and then share the data.

Regent Blum commented that CERN provided young scientists the opportunity to pursue their interests. He suggested development of a small center at UC Berkeley or LBNL where people could learn about UC research at CERN. He asked Professor Heinemann to elaborate on CERN's research into dark matter. She responded that dark matter, suspected to comprise 28 percent of the universe, can be detected only by its gravitational pull. CERN scientists are working to find a particle related to dark matter.

Regent Ruiz noted the importance of CERN research and expressed his view that UC's involvement should be publicized and promoted.

Chairman Lozano observed that, although the United States is CERN's largest user, it is not a member state of CERN. She asked if this inhibits UC's ability to work at CERN. Professor Incandela commented that, in principle, the U.S. could become a member state. However, payments to CERN are proportionate to a member's GDP, so would be very expensive for the United States and the DOE is reluctant to make that commitment. The U.S. is a major force in particle physics research and offers many opportunities for international scientists to conduct research at its National Laboratories, which is considered a reciprocal arrangement. The U.S. has open access to CERN without having to pay large fees. Professor Heinemann invited the Regents to visit CERN.

The meeting adjourned at 10:30 a.m.

Attest:

Secretary and Chief of Staff