Office of the President
September 5, 2001

TO MEMBERS OF THE COMMITTEE ON EDUCATIONAL POLICY:

ITEM FOR DISCUSSION

For Meeting of September 13, 2001

REPORT OF THE COMMISSION ON THE GROWTH AND SUPPORT OF GRADUATE EDUCATION

In January 2001, the Chairman of the Board of Regents, Sue Johnson, and President Richard Atkinson appointed a Commission on the Growth and Support of Graduate Education to explore in depth the issues related to providing adequate graduate student support in a competitive market, and to identify strategies for achieving this essential increase in funding. That Commission has produced an action plan that will require the University to develop significantly expanded partnerships with federal agencies, the state government, industry, foundations, and individual donors over the next five years as well as make some important internal changes. A list of the members of the Commission and description of the process by which it reached its conclusions appears at the end of this report.

Graduate Student Support Recommendations

The Commission's analysis indicates that by 2010, the University of California will need an additional $215 million annually (in today's dollars) to provide the graduate student support needed to add 11,000 graduate students and be competitive for the best. This is a 50% increase in current student financial support.*

Much of the necessary additional support will come from three important and traditionally available sources:

-Research assistantships (RA's) provided by federal and industrial contracts and grants ($75,000,000)

-Teaching assistantships (TA's) funded by the State of California as part of the marginal cost funding in support of enrollment growth ($50,000,000)

-Fellowships or grants funded by the increased fee revenue that will come with enrollment growth ($25,000,000)

However, the remaining $65 million that will be needed requires the University to partner with the federal and state governments, with industry, foundations, and private donors to implement new strategies. The Commission therefore recommends six initiatives, which are described in

* These numbers do not include enrollments in health science professional programs (e.g., M.D., D.D.S., D.V.M. programs) or the financial support that health science professional students will require. The Commission did not include this group of students because planning for these students is being addressed separately.

greater detail in Attachments 1-6. Each initiative is designed to target a particular student population and match its need with the interests of a specific funding source. Together the six initiatives form an integrated strategy to achieve the level of growth and support UC is planning.

1. Actively advocate with the federal government for an increase in the annual level of fellowship stipends from the current $16,000-18,000 to $25,000, and an additional 1,500 stipends nationwide for graduate students (increase to UC: $22,000,000)

2. Urge the state to create a program of repayable fellowships for doctoral students in California universities who, upon graduation, agree to teach in California higher education institutions (increase to UC: $20,000,000)

3. Ask the state to fund 1,000 "incentive grants" for students awarded prestigious national fellowships to make the University of California more competitive in enrolling them ($10,000,000)

4. Develop a program of Collaborative Industry-University Internships for graduate students, particularly at the master's level, integrated with their academic programs ($8,000,000)

5. Create a University of California Graduate Fellowships Endowment to raise the funds necessary to provide $5,000,000 annually for first-year and dissertation-year fellowships especially in underfunded disciplines (increased immediate fund raising with a goal of a $125,000,000 endowment)

6. Develop a solid case for more funding for nonresident graduate students, and then embark on a campaign to inform state and federal decision makers and private donors about the importance of educating graduate domestic nonresident and graduate international students in our state, proposing to them the funding necessary to accomplish it.

The Commission considered many recommendations beyond the key strategies identified above. Additional ideas worthy of consideration include:

-expanding state-funded research assistantships in areas of interest to California
-expanding outreach programs for graduate students and including funds for fellowships
-creating a Cal Grant program of need-based aid for graduate students
-asking the federal government to make the living expense portion of graduate fellowships non-taxable
-exempting RA and TA salaries from income taxes
-removing the current federal cap on the amount of loan interest a graduate student can deduct
-expanding the HOPE tax credit to graduate education
-increasing industry support for science and engineering students
-supporting joint industry-university projects that explore the social and cultural effects of science and business
-increasing existing privately funded graduate fellowship programs
-creating bequests or living trusts focused on graduate student support, and
-developing annual giving programs directed to graduate student support.

Recommended Improvements in the University's Own Practices

The Commission also considered at length what the University can do itself, within existing resources, to accomplish the graduate growth and concomitant student support UC is planning and recommends that the University reexamine a number of internal practices to improve support for and foster the progress of our graduate students. These are described in more detail in Attachments 7-10.

7. Make graduate education a higher internal financial priority in allocation decisions and redeploy existing financial support dollars in ways that facilitate competitiveness

8. Ensure that graduate student housing is a priority on every campus, especially for first-year students

9. Make the University of California's campuses the ten best campus environments in the nation for graduate students by

    -ensuring that admissions practices foster recruitment
    -improving mentoring,
    -fostering students' development as scholars and teachers by consciously designing new opportunities for professional practice,
    -creating community spaces where graduate students can meet and study, and
    -expanding career planning and placement and other student services.

10. Develop benchmarks to monitor success in graduate education

Why Are These Actions Needed?

The attached booklet, *Innovation and Prosperity at Risk*, makes a compelling case that California's future strength depends on investing now in graduate education. Our state's economy is increasingly dependent on discovery, but California has been underinvesting in graduate education, the key training ground for the people who create those discoveries. California is already seriously falling behind—failing to meet the state's workforce needs for managerial and professional workers, and not adequately preparing to meet the scientific, educational, or cultural needs of the decade ahead.

California also needs more graduate degree holders because the state's undergraduates need the new faculty that graduate education will produce in the coming decade. The enrollment increases and retirements anticipated in all segments of higher education in this state will require hiring 40,000 new faculty by 2010. Many must come from our graduate programs.

But, perhaps most importantly for the long-term success of our state, we must recognize that advanced degrees are a key route to upward mobility, not only for the individuals who achieve graduate degrees, but for people at all educational levels, because the leaders produced by UC graduate programs in turn create jobs and opportunities for many other people. As California becomes increasingly diverse, its educational institutions have a responsibility to keep open the doors to advancement for our state's rapidly growing and changing population.

What will it take to accomplish what California needs from graduate education in the next decade? The State's current underinvestment in graduate programs is compounded by increasing competition from other states and by the high cost of living in California. Preliminary data from a Spring 2001 survey of doctoral students admitted to UC for 2001-02, indicate that UC needs to increase the number of fellowships it provides for new graduate students, offer multi-year funding packages that will give applicants the assurance that they will be able to afford their years of graduate education, and provide affordable housing at least to first-year graduate students. As well, those doors must be open, with no disincentives, to international students. If we eliminate any graduate students from consideration for admission on financial grounds, we compromise quality. Under current policy, UC campuses are less likely to accept international students than our peer universities because neither the students nor UC can afford to pay their tuition and fees, and that must change.

The University of California is prepared to increase its graduate enrollment by at least 11,000 students in fields in which there is demonstrable need for graduates. There is clear value in this expansion both for the state and for the individuals involved, but expansion requires not only support for our faculty's efforts in instruction and research, but also substantial funds for financial support for the students. And expanding well requires that UC be able to compete for and graduate the very best students in the nation and the world, in order to ensure that California has access to the strongest possible pool of talent to foster and strengthen its economic, social, and cultural health and its innovation base.

The plan suggested here will accomplish that goal.

How Great Is the Financial Need?

University of California graduate students currently receive $417,000,000 in financial support. As Table 1 shows, that support varies greatly among disciplines, and is, in large measure earned through work as research and teaching assistants.

Table 1
Financial Support for Graduate Students: Current Annual Support
(expenditures are in 1998-99 dollars)

	1998-99		Proportion of Support Provided from Traditional Sources		
	Support Expenditures (millions)	Per Student Support	Research Assistantships	Teaching Assistantships	Fellowships/ Grants
Engineering/Computer/ Physical Sciences	$ 149	$19,221	52%	23%	25%
Life/Health Sciences	$ 88	$18,418	41%	15%	45%
Humanities/Arts/ Social Sciences	$ 118	$16,480	11%	51%	38%
Professions (Education, Business, etc.)*	$ 62	$ 6,015	20%	21%	59%
Total	$ 417	$14,813			

*Does not include health sciences professions.

It is also important to note that students in each of these discipline groupings receive their funding in very different combinations. Students in engineering and the physical sciences receive more than half their support from research assistantships; those in the life and health sciences receive nearly half their support from fellowships and grants with an additional large contribution from research assistantships; and students in the humanities, arts, and social sciences receive over half their support from teaching assistantships. Students in professional school programs are supported largely through fellowships but receive far fewer dollars of support than other disciplines and are much more dependent on loans and their own resources. These variations occur in part because of the interests of those who supply the funding, but in part because work as a research or teaching assistant is an important ingredient in the academic program and provides experience directly related to the employment opportunities graduates pursue.

The Commission has estimated the funds needed for graduate student support in the next decade by looking, by discipline, at the amounts now provided on average to students, the enrollment increases planned, and the funds needed to be competitive with other comparable universities. The results are displayed in Table 2. It indicates that an additional $215,000,000 will be needed annually to support growth and compete successfully for excellent students.

Table 2
Financial Support for Graduate Students: Estimate of Additional Funds Needed
(estimated support is in 1998-99 dollars)

	Current Enrollment	Planned Enrollment Increase	1998-99 Per Student Support	Additional Annual Support Needed (in millions)		
				For Additional Enrollment	For Competitiveness	Total Additional Need
Engineering/Computer/ Physical Sciences	8,454	3,997	$ 19,221	$ 70	$ 27	$ 97
Life/Health Sciences	6,175	1,681	18,418	30	11	41
Humanities/Arts/ Social Sciences	7,468	2,370	16,480	36	18	54
Professions (Education, Business, etc.)*	8,181	3,538	6,015	20	2	22
Total	30,278	11,586	$ 14,813	$ 156	$ 59	$ 215

*Does not include health sciences professions.

Results differ from column multiplications because calculation was done in greater disciplinary detail than the aggregation Indicated here.

Current Average Support is based on 1998-99 expenditures plus 8.3% increase in TA fee remission.

Support Needed for Competitiveness assumes that:

Life and physical sciences stipends equal NSF stipend levels, adjusted by CPI-U to reflect California cost of living.

The percentage increase in life and physical sciences applies to all other academic disciplines.

Support for master's students and those in professional schools is presumed to be adequate.

Humanities students on average should not be expected to earn more than $7,000 annually from TA positions (although individual students will earn more than this during the years in which they TA).

Engineering and Computer Science students on average should not be expected to earn more than $9,000 annually from RA positions (although individual students will earn more than this during the years in which they RA).

The estimate of additional funds that will be needed to support the next decade's growth was created in three steps. First it was assumed that additional students in each broad discipline would receive on average the same amount of funding from the same types of support as current students. Then an increase of 5-10 percent was added to each discipline's average support to make the University competitive for the best students. Finally, dollar limits were built into the support packaging for students in the humanities and in engineering and computer science to recognize the fact that they are currently required to earn their support through work as teaching and research assistants, considerably more than students in other disciplines.

Differences in the amount of enrollment growth planned in the various disciplines combine with these funding assumptions to make the additional funds needed in Engineering and Computer Science the most significant and funds needed in the professions the least.

Table 3 shows the amount of the needed additional support that is likely to come through traditional sources. As enrollment grows and UC hires greater numbers of faculty, their efforts in research should result in increased contract and grant activity including additional research

assistantships. Also as enrollment grows, funding for additional teaching assistants will be provided by the State of California as part of the marginal cost per student built into the University's budget requests. And as student fee income increases with enrollment growth, the fee revenue dedicated to student aid will grow proportionally as well. While this funding is dependent on the continued investment of the state in enrollment growth and on the ability of future faculty to garner research grants with the same success that current faculty achieve, the likelihood of achieving a substantial portion of student support through traditional means is high.

However, after these traditional sources are counted, a sizeable gap still exists, as the final column in Table 3 indicates. By 2010, the University must have $65 million more dollars annually, in today's dollars, to reach its goals for graduate student support.

Table 3
Financial Support for Graduate Students:
Additional Need and Likely Funds Available
(in millions of 1998-99 dollars)

	Additional Funds Needed	Funds Available from Traditional Sources			Remaining Funds Needed
		Research Assistantships	Teaching Assistantships	Student Fees	
Engineering/Computer/ Physical Sciences	$ 97	$ 56	$ 18	$ 6	$ 17
Life/Health Sciences	$ 41	$ 12	$ 4	$ 3	$ 22
Humanities/Arts/ Social Sciences	$ 54	$ 2	$ 23	$ 10	$ 18
Professions (Education, Business, etc.)*	$ 22	$ 4	$ 5	$ 5	$ 8
Total	$ 215	$ 75	$ 50	$ 25	$ 65

*Does not include health sciences professions.

How Will the Recommended Solutions Meet the Financial Need?

Because the need for support and the amount of funds available differ significantly by discipline, solutions to meeting the remaining need must also be crafted in ways that will work by discipline. Public officials, foundations, and private donors have preferences and want to invest in disciplines and activities that match their interests and needs. Consequently, the Commission's recommended strategies for acquiring the additional $65 million take into account the interests of the State of California, the federal government, foundations, and individual donors and are designed to identify mutual interests UC can pursue with them.

In the course of its work, the Commission has also concluded that the remaining need must be met very largely by providing fellowships. The amount of work graduate students must now do in teaching, research, and non-University employment is more than comparable institutions

expect and in some disciplines is substantial enough to slow students' time to degree significantly. After looking at the offers made by comparable institutions and listening to the first-hand experience of our own graduate students and faculty, the Commission has concluded that the solutions must provide fellowships, particularly for first-year and dissertation-year students, and internships that are carefully integrated with academic program goals.

The pattern proposed is presented in Table 4. The Commission suggests that

- the federal government should be asked to increase its support for engineering and the sciences, but also for the social sciences, humanities, and arts
- the state should be asked to emphasize preparing future faculty for postsecondary institutions in California and to use incentive funding to attract the best students in the nation to the state,
- industry should be asked to assist in fields where their employment interests match academic opportunities, particularly for students in professional master's programs, and
- private foundations and donors should be sought to support first-year and dissertation-year fellowships especially in underfunded disciplines.

Together with its recommended internal actions, the Commission believes that these strategies will position the University well to grow according to its plans, to compete for the best graduate students in the nation, to provide them with the best learning environment in the nation and an expeditious route to their degree, and to support the workforce needs of the State of California.

Table 4
Financial Support for Graduate Students: Recommended Initiatives
(in millions of 1998-99 dollars)

	Federal Fellowship Increases	State Repayable Fellowships	State Incentive Grants	Industry Internships	UC Graduate Fellowships Endowment	Total Initiatives
Engineering/Computer/ Physical Sciences	$ 7	$ 3	$ 3	$ 2	$ 2	$ 17
Life/Health Sciences	11	3	5	2	1	22
Humanities/Arts/ Social Sciences	4	9	2	1	2	18
Professions (Education, Business, etc.)*	-	5	-	3	-	8
Total	$ 22	$ 20	$ 10	$ 8	$ 5	$ 65

*Does not include health sciences professions.

Graduate Student Support Initiatives

Recommended by
The Commission on the Growth and Support of Graduate Education
University of California
September 2001

1. Increase Federal Funding for Graduate Student Support
2. Create a State Postsecondary Teaching Fellowship Program
3. Create a Program of State Incentive Grants for Students Awarded Prestigious National Fellowships
4. Develop a Program of Collaborative Industry-University Internships for Graduate Students
5. Create a University of California Graduate Fellowships Endowment
6. Develop a Case for Increased Funding for Nonresident Graduate Students
7. Make Graduate Education a Higher Internal Financial Priority
8. Ensure That Graduate Student Housing Is a Priority On Every Campus, Especially for First-Year Students
9. Make the University of California's Campuses the Ten Best Campus Environments in the Nation for Graduate Students
10. Create and Use Benchmarks to Monitor Success in Graduate Education

(Attachments)