I. Status of Women in Academia

In the biological sphere, diversity is the raw material of novelty, innovation and evolution. Conversely, uniformity leads to inflexibility. The same principles operate in the social realm, where it has been shown that diversity within the workforce translates into economic gains for corporations (Bielby, 2000; Congressional Commission on Advancement of Women & Minorities in SET, 2000). Within academia, divergent thinking from multiple perspectives increases creativity and innovation (Etzkowitz et al., 1994; Rolison, 2001). Although scientific research follows objective standards in the conduct of experiments and in the analysis of data, creativity comes from seeing connections that have been missed by others, leading to new hypotheses and interpretations. A diverse scientific workforce brings divergent points of view and perspectives to scientific thought, breaking the stranglehold of dogma and uniformity that lead to stagnation in science as elsewhere.

In the realm of scientific education, role models play an essential role because they allow students to see themselves as future scientists. From this flows the motivation to push through difficult barriers to achieve the desired and attainable goal. It is imperative that students be exposed to role models that offer the varieties of style, manner and experience with which they can identify. Thus, underrepresented individuals must be brought into academic institutions so that we may offer a culturally diverse education, as well as a diversity of strategies and paradigms for research.

Gender inequities exist in most of academe, as measured by numbers, rank, tenure, salaries and type of schools in which individuals are likely to be employed (Congr. Comm., 2000). Of the 27,363 SMET doctoral graduates from U.S. universities in 1999, 9985 (36.5%) are women, and in the life sciences, women make up 45% of the graduating Ph.D.s (NSF WebCASPAR, 1999). While two-year colleges employ almost an equal number of women and men, this is not the case in four-year colleges and universities (Benjamin, 1999). In these institutions, the overall percentage of women faculty at all ranks is now approximately 38%, with women at the rank of assistant, associate and full professor at 48%, 38%, and 21% respectively. However, in science, mathematics, engineering & technology (SMET), 29% of women faculty are in tenure-track positions, with 38% assistants, 27% associates, and 14% full professors (NSF/ Division of Science Resources Studies, 1999).

Recent equity analyses have revealed that in addition to the low hiring rate of women in some SMET schools, salaries for women lag behind those of their male colleagues. According to the recent AAUP report (2001):

“Female faculty members still do not earn equal pay for equal work. Gender differences are small overall, but are significantly larger at research universities and for faculty at the rank of full professor. In public institutions, male professors earn on average 6.5 percent more than female professors do. Male professors in private institutions earn 5.9 percent more than female professors generally and 10 percent more than women in both private and public research universities.” (AAUP report, 2001)

Hence, the national picture regarding women in science is that they have not achieved equity on the faculties of research universities in terms of either numerical representation or salary.

A number of studies have been done that point to a “chilly climate” for women at many academic institutions (Moore & Sagaria, 1993; Sandler & Hall, 1986). More recently, Riger, Stokes, Raja & Sullivan (1997) measured the perceptions of the work environment for female faculty at 69 colleges and universities in the U.S. and Canada, using the Academic Work Environment for Women Scale. The data reveal a perceived “chillier” climate for women than men, as well as a less favorable work environment in a number of categories (ex. differential treatment, balancing work & personal obligations, sexist attitudes and comments). Furthermore, women’s perception of the environment was directly related to the ratio of women to men, that is, departments that had fewer women were deemed more hostile.
I. Status of Women at UC Irvine

While the national data clearly demonstrate the underrepresentation of women in the academic sciences as a whole, at UCI, numerical gender equity has fallen below the national average. Our hiring record for female faculty in the SMET disciplines has languished since 1996, coincident with California’s passage of Proposition 209, which bars consideration of race, gender, and ethnicity in hiring (see Table 1).

TABLE I

New appointments to ladder rank faculty positions at UCI 1991-2000 in science and engineering. Data provided by UCI Office of Academic Personnel. (Annual data collection summarized hires from November 1 - October 31, so most current data from the year ending October 31, 2000 is included.) The year 1996 was the year that Proposition 209 passed in California and UC Regent’s Orders SB1 and SB2 were initiated.

<table>
<thead>
<tr>
<th>Years</th>
<th>School</th>
<th>New Appointments</th>
<th>Male</th>
<th>Female</th>
<th>%Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>91-96</td>
<td>Biological Sciences</td>
<td>14</td>
<td>9</td>
<td>5</td>
<td>36%</td>
</tr>
<tr>
<td>96-00</td>
<td>Biological Sciences</td>
<td>14</td>
<td>13</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>91-96</td>
<td>COM-Basic Sciences</td>
<td>11</td>
<td>7</td>
<td>4</td>
<td>36%</td>
</tr>
<tr>
<td>96-00</td>
<td>COM-Basic Sciences</td>
<td>13</td>
<td>9</td>
<td>4</td>
<td>31%</td>
</tr>
<tr>
<td>91-96</td>
<td>Engineering</td>
<td>22</td>
<td>19</td>
<td>3</td>
<td>14%</td>
</tr>
<tr>
<td>96-00</td>
<td>Engineering</td>
<td>14</td>
<td>12</td>
<td>2</td>
<td>14%</td>
</tr>
<tr>
<td>91-96</td>
<td>Grad. Sch.Management</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>33%</td>
</tr>
<tr>
<td>96-00</td>
<td>Grad. Sch.Management</td>
<td>14</td>
<td>10</td>
<td>4</td>
<td>29%</td>
</tr>
<tr>
<td>91-96</td>
<td>Inf. &amp; Computer Science</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>20%</td>
</tr>
<tr>
<td>96-00</td>
<td>Inf. &amp; Computer Science</td>
<td>13</td>
<td>9</td>
<td>4</td>
<td>31%</td>
</tr>
<tr>
<td>91-96</td>
<td>Physical Sciences</td>
<td>28</td>
<td>18</td>
<td>10</td>
<td>36%</td>
</tr>
<tr>
<td>96-00</td>
<td>Physical Sciences</td>
<td>17</td>
<td>16</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>91-96</td>
<td>Social Ecology</td>
<td>14</td>
<td>7</td>
<td>7</td>
<td>50%</td>
</tr>
<tr>
<td>96-00</td>
<td>Social Ecology</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>44%</td>
</tr>
<tr>
<td>91-96</td>
<td>Social Science</td>
<td>33</td>
<td>21</td>
<td>12</td>
<td>36%</td>
</tr>
<tr>
<td>96-00</td>
<td>Social Science</td>
<td>33</td>
<td>27</td>
<td>6</td>
<td>18%</td>
</tr>
</tbody>
</table>

Affirmative action, which had facilitated entry of women into the faculty ranks of research universities, was dismantled by Prop 209. Although in two scientific disciplines there is an inadequate supply of qualified women in the pipeline to fill faculty positions, UCI has comparatively few women faculty in both these disciplines, Physical Sciences and Engineering, as well as in those where the supply is adequate. As seen in Figure 1, the percentage of women in tenure-track positions in a majority of the eight SMET schools at UCI has been below the national average of 29%, with little signs of improvement over the years.
In addition, the number of women full professors in each of these schools is small, (Figure 2) denoting both a lack of women available to influence important departmental decision-making, as well as a shortage of women able to advance to senior administrative positions that could lead to changes in policies and procedures. More importantly, the scarcity of senior women, and the lack of a critical mass, reduces the opportunities for women to make an impact on search committees and on the recruitment of women scientists (Etzkowitz, 1994; Rolison, 2000) that are presently underrepresented on our campus. While we clearly lack women full professors, four of the eight SMET schools are also markedly deficient in the number of women at the rank of assistant professor (Figure 2). These are the very women who should be expected to be present based on the increase in the number of women receiving their Ph.D. in recent years (NSF CASPAR, 1999). Since Proposition 209, hiring of women faculty in the eight SMET schools at UCI has dropped by half. Prior to 209, women represented 33 percent of all new appointments, but post-209, only 18 percent.

**Figure 2**

![Figure 1: PERCENTAGE OF WOMEN TENURE-TRACK FACULTY](image)

![Figure 2: PERCENTAGE OF WOMEN IN EACH RANK](image)
Pay equity for women in the sciences, recognized as an issue nationally, is also an issue at UCI, where studies have shown that women faculty in the sciences receive less pay than their white male peers, as defined by parameters such as age, hiring date, and year of degree. For example, in 2000, the mean salary residuals for women compared to white males was $-6,895 in Biological Sciences, $-3,517 in Graduate School of Management, $-7,560 in Physical Sciences, $-1,389 in Social Sciences, $-4,071 in ICS, however, in Engineering they were almost equal $216, and in Social Ecology women’s salary exceeded men’s ($6,985). Although this issue has been studied for several years, and some equity adjustments have been made, the adjustments have not kept pace with the salary progression of male faculty, leading to negative salary differentials in almost all the SMET schools, with the exception of the School of Social Ecology and Engineering, which have remained relatively stable for several years.

UCI is now at a critical juncture and has a rare opportunity to create equity for its women faculty. The University of California is projecting a major growth in the undergraduate population over the next decade, known as Tidal Wave II. The new campus at Merced will not be on-line early enough to handle the enrollment pressure, and many campuses such as UCB, UCLA, UCSB and UCD are very limited in their ability to expand to accommodate the increase. The brunt of the growth in enrollment will take place at UCI, UCR, and UCSD. At UCI alone, enrollment will increase by 11,000 students in the next decade (Table 2). This growth will be accompanied by an unprecedented wave of faculty hiring, with at least 50 new UCI faculty members being added each year. This growth with replacements for retirements and resignations creates a window of opportunity to significantly alter the diversity of the faculty.

Table 2

<table>
<thead>
<tr>
<th>Campus</th>
<th>1998-99</th>
<th>2010-11</th>
<th>Average annual growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkeley</td>
<td>27,800</td>
<td>31,800</td>
<td>1.1%</td>
</tr>
<tr>
<td>Davis</td>
<td>20,300</td>
<td>26,400</td>
<td>2.2%</td>
</tr>
<tr>
<td>Irvine</td>
<td>15,700</td>
<td>27,600</td>
<td>4.8%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>28,500</td>
<td>32,900</td>
<td>1.2%</td>
</tr>
<tr>
<td>Merced</td>
<td>5,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Diego</td>
<td>16,850</td>
<td>27,600</td>
<td>4.2%</td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>17,880</td>
<td>21,900</td>
<td>1.7%</td>
</tr>
<tr>
<td>Santa Cruz</td>
<td>10,420</td>
<td>16,900</td>
<td>4.1%</td>
</tr>
<tr>
<td>Riverside</td>
<td>9,550</td>
<td>19,900</td>
<td>6.3%</td>
</tr>
<tr>
<td>TOTAL UC</td>
<td>147,000</td>
<td>210,000</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

While women faculty have achieved equity in some non-science disciplines, Tidal Wave II provides us with an extraordinary opportunity to achieve gender equity and advancement in the sciences. It is possible, given this projected growth, that by the end of the decade, UCI could lead the nation in parameters related to equity for women scientists in major research universities. However, reality dictates that this is an expensive, complex mission requiring multiple strategies, careful and continuous monitoring and most importantly, the commitment and sanction of the highest level of the administration. Fortunately, the new Executive Vice Chancellor, Michael Gottfredson is enthusiastically supportive of our proposed program and will make the achievement of our goals a campus priority (see letter of commitment). However, the job we have ahead of us, and the speed with which we hope to proceed, requires financial backing that the UC system alone cannot afford during this period of expansion, especially with the “energy crisis”, and its financial impact, looming ahead. Here at UCI, with the
strategic and timely assistance of NSF funding, we hope to transform our university into one in which women may participate equitably in visible leadership and decision-making positions.

III. Specific barriers to women’s advancement at UCI

1. Low number of junior women available for advancement. The major barrier to the advancement of women at UCI in SMET disciplines is their lack of availability for advancement. In recent years, women have not been recruited in sufficient numbers at the assistant professor rank. Hence the first barrier to the advancement of women in science that UCI must overcome lies at the level of recruitment. The strategies we have used for recruiting and hiring scientists, thus far, have favored men, and men have been hired at levels that are disproportionate to their availability in the applicant pools. There are several factors that could contribute to the recruitment problem, and these are discussed in detail in Specific Aim 3.

2. Women spend longer at rank than men. Although hard information at the national level in this area is currently sparse or lacking, preliminary data from a sampling of some SMET schools at UCI suggest that women spend longer at assistant professor ranks than men. For example, GSM females have 7.00 years vs. 4.42 years for males, in ICS women spend is 5.00 vs. 4.06 years, and COM 5.42 vs. 4.92 years, while BioSci females do not differ from males in amount of time for promotion to tenure (4.86 vs. 4.86). One of our goals is to conduct quantitative and qualitative analyses that will better inform us about this area, in order to address the reasons that women and men scientists might advance through the ranks at different rates, depending on the school.

3. Women are paid less than comparable men. Nationally, pay equity between men and women scientists has been identified as a problem. At UCI, as mentioned in the previous section, women in SMET schools have a negative salary differential that has remained stable for several years. It is our goal to accelerate the pace of pay equity adjustment at UCI.

4. Women feel undervalued and unappreciated. Many people are aware of a sense of alienation and unhappiness among women faculty in the sciences. As mentioned previously, female faculty nationwide feel that they receive differential treatment (Riger et al., 1997; Valian, 1999). Lacking the kind of qualitative information we plan to collect, we are probably not far from the mark if we assume that this has some relationship to # 2 and # 3 above. However, it is important to study this problem in detail, because there are likely to be other issues that relate to perception of the value placed on women’s opinions and ideas, and the respect with which they are viewed.

5. Women are not well represented in leadership roles. The lack of availability of women, and the other barriers described here, contribute to keeping the eligible women in the sciences from leadership positions, as in other institutions (Valian, 1999). Among the 8 SMET schools, there are 44 departments. Of these departments, 9 (20%) have women as chairs and 35 (80%) have men. This is a very important inequity because Chairs are on the front lines of academic leadership. They appoint search committees, recommend on the hiring of faculty, recommend merit increases and promotions, appoint or recommend their faculty for prestigious assignments, and for internal and external awards. Women have recently become better represented at the level of Dean, where of the 8 SMET schools, 2 (25%) are headed by women. There are no women at UCI in academic leadership positions at higher levels than Dean.

IV. Performance Plan: Specific Aims

Specific Aim 1: Appoint Equity Advisors and Advance Chairs
Specific Aim 2: Develop and maintain a database of gender equity indicators
Specific Aim 3: Increase recruitment of women in the sciences
Specific Aim 4: Implement faculty development, retention and advancement
Specific Aim 1: Appoint Equity Advisors to provide school-based assistance in recruitment and retention, and Term Chairs to promote the goals of ADVANCE

To accomplish the key specific aims of this proposal, UCI plans to appoint a senior faculty member as an Equity Advisor in each of the eight SMET schools. The Equity Advisor will oversee the Faculty Development Program for each school, will participate in recruiting strategies and mentoring and awareness training, and will meet as a group to develop best practices. The different science disciplines on our campus have their own specific issues that need to be addressed to create gender equity; e.g., a school with a fairly good track record in retention may show poor performance in recruitment, and vice versa. The Equity Advisors will be instrumental in tailoring equity practices to individual schools, focus different remediative measures where they are needed most. The strategy is to place responsibility for the project in the hands of individuals, rather than faceless regulatory or programmatic measures. Putting a human face on equity in each School gives the program agility, responsiveness, and intelligence. It is a strategy that is new only in scope, since UCI has a successful model in the College of Medicine. There, for the past nine years, Associate Dean for Faculty Development Dr. Sue Duckles has been mentoring women and men faculty on building their research, keeping on track for tenure and promotion, and developing as professionals. Her efforts appear to have been very successful: from 1993 to 2001, the number of women faculty in the College of Medicine jumped from 10 percent to 17 percent in the tenure track, and from 24 percent to 32 percent among all faculty positions. The specific roles of the Equity Advisors will be discussed as they relate to the individual specific aims below.

To further the aims of ADVANCE, which include awareness of the barriers that prevent gender equity, and movement towards gender equity in all relevant measures, UCI will appoint two ADVANCE Chairs. These will be Term Chairs that will provide the occupants with $50,000/year for 5 years in discretionary funds to enhance their career development. At the end of the 5-year term, the recipients will be known as Senior Advance Chairs. To ensure that ADVANCE Chairs will be available beyond the 5-year period of this grant, UCI is making a commitment to raise private funds to create additional ADVANCE Chairs. Chairs will be chosen from the pool of newly recruited faculty as well as existing tenured faculty. Advance Chair nominations will be made by the SMET Deans, and selection will be made by the Executive Vice Chancellor with input from the PI and Co-PI of this grant, Dean Bryant and Associate Executive Vice Chancellor Killackey. The criteria for selection will be scholarly distinction coupled with evidence of tangible commitment to issues of equity in their research, teaching or service. For example, eligible individuals will have been involved in mentoring, outreach or similar activities to increase the pipeline, or those who have demonstrated leadership and or accomplishment in areas of concern to the achievement of equity.

The establishment of the ADVANCE Chairs will enhance the career development of the recipients, will provide a visible display of institutional commitment to gender equity, and will highlight the types of gender equity related activities that are rewarded. The recipients of the Advance Chairs will have an ongoing commitment to and be an active member of the Advance gender equity program.

Specific Aim 2: Develop and maintain databases of gender equity indicators

Equity for women faculty in science refers to representation, resources, choices and benefits on a par with their male counterparts. In order to identify all the parameters that relate to gender equity, a quantitative and a qualitative database will be developed and analyzed by faculty in the School of Social Sciences, Kristin Monroe and Philip Cohen and their research assistants. The following methods will be used:

- Collect and measure the following indicators for both male and female faculty: Recruitment data, salary, rank, awards, start-up funds, space, facilities, spousal employment, retention rates (and deals), other special deals, committee workload, teaching workload, types of courses taught (prestige vs. service), on-campus awards (nominated and achieved), acceleration and off-step data, grant dollars,
access to housing, access to childcare, difference in family circumstance (married, children, and spousal job), and time to tenure

- Conduct surveys and interviews to collect subjective information, including perceptions of support, fairness, and discrimination. We will develop a new exit-interview program for faculty leaving the University, designed to uncover any quality of work or quality of life issues that differentially affect women
- Ascertain whether any “hidden biases” exist in the initial circumstances of employment by performing an audit of all offer letters and hiring conditions (including start-up packages, workload concessions, salary, and research assistance)
- Conduct a detailed audit of teaching and advising assignments and experiences, to include such matters as the level of instruction as well as number of students and courses
- Monitor these issues for progress over a 10-year period
- Publicize results using written and internet media, brochures and yearly conferences

Dr. Cohen will oversee the collection of data and analyses for the quantitative database to be taken at the beginning of the grant period and yearly thereafter, and Dr. Monroe will direct the qualitative assessment. The equity factors to be examined include offer details and circumstances, salary, lab space, set-up research support, teaching load, advising load, committee work, and collegiality. These analyses will help the ADVANCE program to establish base-line measures from which to assess improvement. Remediation strategies should tailor a response to specific inequities as revealed by assessments of the individual schools, with the goal that these data should form the basis for designing “best practices” for the recruitment and advancement of women.

One issue that we are proposing to use these data to investigate is the differential hiring patterns in pairs of schools who often draw from similar candidate pools. The pairs of schools are Social Ecology vs. Social Sciences, and Biological Sciences vs. the Basic Science departments in the College of Medicine. We hope to learn what aspects of the search and recruitment procedures differ, and which are similar and to correlate these similarities and differences with numbers of women recruited and their satisfaction levels.

Specific Aim 3: Increase recruitment of women so as to substantially increase the presence of tenure-track women faculty in the sciences.

Despite the relative youth of the UCI campus, which opened in 1965, the science schools have similar equity problems to those of other research universities. We believe that recruitment is a primary contribution to these problems. For example, there are often either no women on search committees, or just one or two, rather than the critical mass necessary to evoke the change in mindset that is needed to view candidates and the recruitment process differently (Etzkowitz et al., 1994). Also, search committees and departmental faculty who review and interact with candidates may practice “unconscious discrimination,” as described by Georgii (2000). Men, and also women, often apply double standards: they value assertiveness and single-mindedness in men, but view women who have these qualities as difficult and those without them as weak. Thus, department chairs and search committees, who are most likely to be men, eliminate women from the list of finalists because of this “mismatch between the cultural stereotypes of women and scientists.”

These problems will now be compounded by the fact that every major research university in the country is beginning to focus on improving their ability to hire women in the sciences. In addition, many states, where affirmative action programs are still in place, measures to ensure the targeted recruitment of women faculty can and will be undertaken. In order to succeed in this environment, we will need to be proactive in identifying candidates. We plan a program to improve both recruitment and awareness of gender equity issues on campus. This is a time-intensive activity in which the Equity Advisors within each school can be particularly helpful, and can provide sources through scientific societies and search
funding agency databases for possible candidates. Active and vigorous recruitment is a key function of the Equity Advisors and Advance Program.

**Measures to improve gender equity in recruitment**

1. **Advertising:**
   - Publish broad scope advertisements that encourage wide recruiting and emphasize special resources and benefits at UCI, such as the career partner (spousal hiring) program, on-campus housing, excellent local schools and availability of superior quality on-campus child-care.
   - Create more effective advertising strategies, including focused efforts to actively seek out the best candidates and ensuring that the pool of viable candidates appropriately represents highly qualified women. Strategies will include: consulting databases of women Ph.D.s and postdoctoral fellows, including those on other campuses and at other universities, using resources such as CRISP to identify and contact active researchers in the field, using networking opportunities at national meetings to identify potential candidates before they go on the job market, and exploiting personal contacts.

2. **Search Committees:**
   - The composition of search committees is to be approved by the Executive Vice Chancellor at the time when the request to recruit and advertise are submitted.
   - All search committees must include women, and whenever possible, several women. If the hiring unit has none available, the women members can come from other departments.
   - The campus will develop guidelines for search committee procedures and best practices, and provide for orientation sessions involving the search committee, the Chair of the department and the Equity Advisor.

3. **Selection of candidates**
   - The campus will develop policies to certify searches for equity balance before and after development of the short list. The Equity Advisor will certify the searches for equity in consultation with the Chair of the search committee and of the department.
   - When candidates are considered by the search committee or the department, ensure a bias-free review and discussion of the dossier, and treatment of candidates. Search committees should focus on research expertise and goals, as well as pedagogical philosophy, not on where the candidate came from.

4. **Interaction with candidates:**
   - In assessing the performance of candidates, focus on substance rather than style. Do not use assertiveness and single-mindedness as criteria for inclusion/exclusion (Georgii, 2000), but use gender-neutral characteristics such as creativity, intellectual curiosity, thoughtfulness, dedication, perseverance, cooperation.
   - The Chair of the department and the search must ensure that the interviews of all candidates are collegial. Make sure that women candidates meet women from within and outside the department.
   - In negotiations, be sensitive to different interview and negotiation strategies and styles. When making an offer, ask the candidate what it would take to get them to UCI, then craft the offer.
   - The Chair of the department must ensure that candidates receive job offers that are equitable and, that they are responsive to the needs of the candidates. The chair must be prepared to actively pursue underrepresented candidates, even if they appear reluctant.
   - The campus must devise a mechanism to enable candidates to be offered priority for childcare spaces, when it would make a difference. This is analogous to the priority system for on-campus housing.
Measures to improve awareness of the issues

Faculty search committees and department chairs must be made aware of gender equity problems nationally and at UCI. This will be accomplished by directed reading and search committee orientation sessions with the Equity Advisor, the Chair of the department and the Dean. The readings will include the MIT report on gender equity, a summary of activities at other research universities, and readings related to unconscious discrimination in current hiring practices (e.g., Georgii, 2000).

It is possible to raise awareness of the possible intrusion of unconscious bias against women in hiring differences due to differences in mental set and cognitive strategies through workshops specifically designed for those purposes. We are fortunate that an expert in this area is a member of our faculty. Dr. Judy Rosener of the Graduate School of Management has developed a model for assessing gender equity. She has studied gender equity in industry, and has developed strategies to expose commonly held unconscious prejudices, reveal real differences in the ways men and women think, and break down communication barriers between men and women. Her approach uses novel exercises and humor to show both sexes how gender shapes the way people judge others. The workshops have succeeded in changing the equity climate in industry, and we believe that academia can benefit similarly (Rigor et al., 1997). Dr. Rosener will conduct these workshops at UCI as an important part of the Advance Program. Senior campus administrators (Deans and above) will be the first to take part in an Equity workshop. Next, the workshop will be offered for Chairs of science departments, and then, for all currently active search committees in SMET disciplines.

Depending on the time, size of group, group make-up, and other such factors, Dr. Rosener uses one or all the following:

- **Stereotyping exercise** in which participants are asked to free-associate about words having to do with gender, race, ethnicity, age, sexual orientation, and physical ability. After participants fill out a form on which they disclose their reactions to words or questions, the facilitator discusses the meaning of the responses in the context of University issues such as recruitment, retention, promotion, evaluation, space allocation, and task assignments.

- **Focus groups** in which sex and ethnicity divide participants. Each group is asked the same set of questions, which are worded to elicit perceptions and feelings about “others,” as those in the other groups. After a discussion and analysis of the responses in each group (which are put on a flip chart), the groups are brought together. The facilitator then points out how “where you sit is where you stand” on issues associated with cultural diversity (the assumption being that men and women have a different culture). This is followed by a discussion of how stereotyping and cultural differences gets in the way of judging others in terms of research, productivity, teaching, service, etc.

- **Talk** (followed by a group discussion) will provide an overview of why the diversity issue is similar in all types of organizations: i.e., the same principles and explanations for discrimination apply. Speaker can provide examples of what is being done in corporations that provide a learning experience for educational institutions.

The goal of this specific aim is to design and implement “best practices” for hiring highly qualified women scientists. The changes we plan to make in our current practices will be evaluated for effectiveness at the end of the first year of recruitment. Feedback from participants will be used alongside the evaluation of the results to determine changes for the next year. Once defined and assessed, we hope to incorporate successful recruitment practices throughout the institution.

**Specific Aim 4: Implement faculty development, retention and advancement**

We will set up a program for assistant and associate professors to assure promotion to tenure and full professor, and to develop their careers beyond these barriers, including into administrative
positions. We will strive to retain women faculty and increase their job satisfaction by assuring equal treatment in all relevant measures at all ranks.

Here we aim to provide the counseling and support needed to guide assistant professors through the tenure barrier, associate professors through the promotion to full professor, and full professors to both the full development of their professional careers, and into leadership positions. A critical need for women in science, given their low numbers, is to develop strong networks of support. This section of the Advance Program will provide mentoring, conferences and social opportunities to build strong support networks. To encourage such networking among women scientists, we will organize a series of scientific conferences, focused on different scientific disciplines, at which women scientists are invited to speak about their research. Workshops will follow the scientific agenda allowing for an exploration of the issues standing in the way of full participation of women in academia, and all science faculty, students and postdoctoral fellows will be invited to participate. Because among the eight SMET schools there are many separate disciplines, we will host these Women in Science conferences, one for each SMET School every other year. In those disciplines where the supply of future women scientists are not abundant, these conferences and associated workshops could provide a mechanism to encourage interested undergraduate and graduate students to stay involved.

1. Promotion to tenure

Because women often comment that the climate in academe is chilly (Riger, 1997), the Equity Advisors and department chair will arrange for welcoming opportunities, where new faculty can meet and talk to their colleagues in a pleasant social setting. Opportunities for similar gatherings, either departmental retreats, or end of the year parties, should be used as much as possible, as a means to help new faculty feel included and valued. These are important measures that allow new recruits to understand the workings of the system into which they must adapt in order to progress.

A mentoring program will be set-up for assistant professors in the SMET disciplines. The structure will be patterned after the successful mentoring program in the College of Medicine, run by Dr. Sue Duckles. The Equity Advisors will meet with all faculty who wish to be involved in the mentoring program, either as mentors or mentees. By talking to each assistant professor individually, the Equity Advisor will attempt to design the most effective partnering of mentor and mentee.

1. The role of the mentor is to meet with junior faculty individually to help them understand the nature of their responsibilities, the professional consequences of their choices, and to develop the portfolio of accomplishments and experiences needed for the tenure review. An important aspect of the communication will be the provision of a detailed interpretation of the ladder-rank series, and the steps involved in the evaluation of faculty. A specifically chosen mentor will be able to offer a detailed understanding of the review process as it applies to particular disciplines and sub-disciplines. Also, as an invaluable aid to success, the mentor can assist in interpreting the relative weights of different parameters such as:

   the amount of grant support, where papers are published, how many papers are published, whether and how many graduate and postdoctoral students are trained, the number of invited conference presentations, the number of invited seminars, the value of prestigious awards, the amount and quality of teaching, and the types of courses taught, the amount and quality of service and outreach to the community.

2. In addition, following the College of Medicine model, junior faculty will meet with a panel of mentors to present and get feedback about short- and long-term goals.

3. Each Equity Advisor will set up a grant assistance program within their schools, to assist in grant preparation and provide for constructive review for inexperienced grant writers.
The Equity Advisor will also make sure that the mentee takes advantage of the services of the Instructional Resources Center. The Director, Dr. De Gallow, provides individual teaching consultations to help faculty identify successful and unsuccessful teaching methods, and conducts workshops on specific issues.

For all assistant professors who want it, mentors will discuss the timing of child bearing in an academic career. If an assistant professor gives birth to a child (or children), she needs to be aware of policies on childbearing leave and stopping the tenure clock. The department chair will ensure that women who elect such leaves are not expected to use the time for research or penalized, however subtly, for not doing so.

The main goal of the mentoring program will be to allow assistant professors to be fully informed and supported as they move through their mid-career review, mid-way through the assistant professor years, and though the tenure review. A secondary goal is that the relationship that develops between mentors and mentees will be carried beyond tenure, and will guide associate professors through the next few years to promotion to full professor.

### 2. Beyond tenure

In order to ensure optimal development of faculty after tenure, an ongoing relationship with a senior faculty mentor will be encouraged. A mentor can make sure that opportunities for grants or awards are made available to the tenured professor. They can help extend and consolidate a network of colleagues in the scientific field, and can recommend their colleague for national positions on editorial boards or grant reviewing panels. They can assist the chair of the department in identifying appropriate reviewers for the review at promotion to full professor, to senior professor and even promotion to above scale, and so on. Beyond the level of full professor, the mentor can make sure that their mentee is nominated for as many high ranking awards on and off campus as possible. Awards and honors are an important part of any society and necessary for individuals to feel appreciated by their peers. Females are not often nominated for memberships into honor societies or for awards for high achievement (Valian, 1999). We plan to raise the awareness of faculty in general that women are colleagues to be appreciated and honored for their participation and success in research, teaching and community service. It is also possible to work with professional societies that have Women in Science sections to assist us in advancing the goals of our women scientists. In fact, scientific societies can use their power and influence to advance women’s careers in science. As part of focusing on this part of the academic career, Equity Advisors as a group will develop a best practices statement about faculty development from tenure to full professor.

Associate and full professors who meet the criteria for ADVANCE Chairs will be able to compete for these prestigious awards, which will allow them the freedom to pursue their research and other career enhancing options. The presence of ADVANCE Professors at UCI will send a very clear signal that equity has value, that equity is important to the institution, and that equity as an issue is not going away until equity is achieved.

A final aspect of the development of the full potential of our women faculty is seeing opportunities for them to move into leadership roles either at UCI or in the national or international arena. The enormous value of women in leadership roles cannot be overestimated at this time, as we are attempting to correct gender inequities. In positions of power, women, and men who care about equity issues, can make a difference by promoting the values of diversity and ensuring that decisions are made that are consistent with these values. Just as men in leadership positions have provided affirmative role models for generations of men, so women in leadership positions allow women in the system to see that the system is open for women, and the styles and values of women are acceptable and appropriate.
3. Equal treatment

A significant strength of our proposal is the full cooperation and oversight by the present administration for the proposed plan of action. This is important because the factors we hope to change require administrative support. Organizational factors often determine career success for women scientists because the work of a scientist is performed in a setting that needs human and instrumental resources (Holton, 1999). Science departments in academia, as at UCI are uniformly still male-dominated and women often report feeling like an outsider (Fox, 1995; Riger et al., 1997). Women here, as elsewhere, report that they have fewer interactions with other faculty, are given fewer resources, space, and awards, less salary and have more teaching responsibilities. Some studies have shown that the work of women is undervalued in comparison to the work of their male peers (Holton, 1999), and many women have the subjective impression that this is the case. Working conditions obviously contribute to the amount of vocational satisfaction an individual feels, especially when it has been assessed that women work on average 80 to 90 hours per week, including child care (Hensel, 1991; Scarr et al., 1989). For women to make inroads against these feelings of isolation and discrimination, and of being undervalued, at the same time as attempting to balance career and family, we are determined to address these issues in a proactive manner. Methods to address these include:

- The aforementioned awareness seminars to bring to the fore the attitudes, beliefs and values that lead to the problems.
- Ensure that the blatant inequities in salaries that presently exist are eliminated as expeditiously as possible. This will require Chairs and Deans to make very effort to address inequities at every opportunity.
- Investigate and eliminate any other inequities (space, teaching load, service load, release time, retention perks etc)
- Provide for continuous oversight of the distribution of resources to faculty as described in Specific Aim # 2. Persisting inequities will be targets for administrative intervention
- Provide a continuous in-house networking structure that provides informative and collegial relationships

IV. Administrative structure:

Much of the gender inequity present on our campus can be attributed to a society-wide lack of awareness of gender issues and stereotyping of gender by both sexes. However, continuation of these discriminatory practices has been exacerbated by a previous lack of attention by the administration. The present UCI administration is concerned about the status of women on campus, and is proactively seeking to assist in the transformation of our institution. The Chancellor and Executive Vice Chancellor (EVC) have made a strong commitment to improving the climate for women faculty. The Advance Program is fully endorsed by EVC Gottfredson, who has a public record of promoting the status of women faculty. The EVC’s office has collected substantial data on salary inequity between men and women faculty, and recently created the Chancellor’s Advisory Committee on the Status of Women (CACSW) which will study general issues of campus climate. Dean of Biological Sciences Sue Bryant will be the PI and Director of the NSF Advance Program, with Associate EVC Killacky as the Co-PI is the highest-ranking administrator for equity and academic personnel compliance. Together they will provide oversight for the Equity Advisory Committee, made up of the eight Equity Advisors, and will be responsible for inviting the external evaluators, disseminating the results of their evaluations, and enforcing diversity guidelines. The Advisors also will play a critical role in the mentor program. They will report to Dean Bryant, and in turn, will coordinate the ADVANCE program within individual schools. The PI will oversee the work of the Advisory Committee through the coordination of a half-time Associate Director, Priscilla Kehoe, Ph.D. who will be assisted by a full-time staff person.
The Equity Advisors will be chosen from the senior professorial faculty of each of the UCI’s eight SMET schools -- Biological Sciences, COM-Basic Sciences, Engineering, Graduate School of Management, Information and Computer Science, Physical Sciences, Social Ecology, and Social Sciences. The Equity Advisor will serve in that capacity for a period of at least two years. Equity advisors will meet with Dean Bryant, Associate Director Kehoe and Associate Vice-Chancellor Killackey on a monthly basis to assess ongoing progress, discuss problems and recommend strategies for improvement. The Equity Advisors will be selected by the PIs based on their strong scholarly performance coupled with an interest and commitment to gender equity. We have an excellent pool of senior faculty available for the Equity Advisor positions, most but not all of who are women.

Professors Philip Cohen and Kristin Monroe, of the School of Social Sciences, will direct the collection of the data for statistical evaluation and create and administer the self-assessment surveys within individual schools. They will be assisted by two-graduate research assistants. The mentor panels will be recruited by the Equity Advisor within each school and will serve on an ad hoc basis for two years. Professor Judy Rosener will administer the focus groups and other special programs as part of the plan to raise awareness of the way in which gender shapes judgements. Additionally, UCI’s ADVANCE program will interact closely with the CACSW.

Assessment of Program:

We plan to initiate, early in the program, an assessment of practices that have been in existence and those that are newly developed. The assessments will be done both internally on an ongoing basis as well as two structured external reviews.

Outcome Assessment

As an integral part of our program, we will conduct outcome assessments, using external reviewers. Nominations for external reviewers will be submitted by the PIs to the Executive Vice Chancellor, and will be drawn from a pool of SMET faculty with a track record in the area of gender equity. We will also consult with Dr. Hogan, the NSF Program Director for ADVANCE, concerning the identification of possible reviewers. The external review committee will be asked to assess the outcomes that resulted from the NSF funding at mid-term (2.5 years) and conclusion (5 years). Materials for the review will be assembled by the PIs and the Equity Advisors, and will include reports of activities, as well as comparative data by school for a variety of parameters that relate to gender equity. The assessment committee also will meet with women faculty, both recently hired and long-term, ADVANCE Chairs, Equity Advisors, PIs, Associate Director, and the Executive Vice Chancellor. Progress will be measured by the extent of change in a variety of equity measures, including number of women, their pay relative to comparable men, their rank, and their perceptions of the climate.

Dissemination of Findings

An important aspect of the proposed program is to share strategies, successes and data related to gender equity issues. We will establish a web site, to be accessed from the home page of UCI, and from the home pages of every SMET school involved in the project. When we reach the point of being able to see that particular aspects of the program have had an impact on gender equity, as judged by the outcomes assessments, we will disseminate our findings and best practices more broadly, especially to other UC campuses and to comparable research universities. In addition, each of the Women in Science conferences will provide a forum for the discussion of progress and effective measures.

Summary

We are proposing a menu of measures to address gender parity issues at UCI. The key features of the proposed program are its flexibility and potential endurance, whereby: 1) Equity Advisors in each school...
can direct efforts to the areas needing the most attention; 2) Its mentoring program will prepare faculty for tenure, for promotion to full professor and to support them to develop their careers to the fullest extent, including ensuring nominations for appropriate awards; 3) Its discipline-based "Women in Science" conferences will assist in promoting excellence in science as well as networking for the advancement of women; 4) Its ADVANCE term chairs will make visible the value the institution places on gender equity, and advance the careers of excellent scientists who have a track record in areas related to gender equity; 5) Its built-in self-assessments, which not only provide valuable information about the current situation, but provide outcome measures that allow us to assess both internally and externally; 6) Possibly most critical, support for the Advance Program from the highest levels of the university.