# Year-End Report for

# ADVANCE Institutional Transformation Project

# University of Michigan

## Year 2: December 2003

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# SECTION I: PERSONNEL AND FINANCIAL REPORT

## Budget Explanations by Areas and Major Functions
**(for the reporting year and the next year)**

**SENIOR PERSONNEL**
Dr. Abigail J. Stewart, the principal investigator, is responsible for ADVANCE project oversight. In the second project year, 50% of Dr. Stewart's salary was cost shared. Her work has included the management and oversight of the project implementation and evaluation advisory and steering committees and the facilitation of departmental initiative implementations. Half of Dr. Stewart's salary will continue to be cost shared in the third project year.

Salary is cost shared in this second project year at 5% for each of the four co-PIs (the Deans of Engineering, Medicine, LS&A and a representative of the Provost's Office), and this cost sharing will continue in the third project year. The co-PIs facilitate project activities within their home schools and campus-wide. They serve on the project's Steering Committee, which makes decisions about program initiatives, and the three deans chair the Gender, Science and Engineering (GSE) subcommittees.

**OTHER PROFESSIONALS**
Dr. Janet Malley, Deputy Director of the Institute for Research on Women and Gender, has served as evaluation manager for the project and has provided oversight of the quantitative research evaluation effort (data collection, analysis and reporting) of the initiative (survey and inventory) at 30% effort. Dr. Malley will continue this work in the third project year at 30% effort.

Carol Hollenshead, Director of the Center for the Education of Women (CEW), allocated 10% effort to the ADVANCE project in the second year (includes 5% cost share). She will continue her work on the project at 10% effort (includes 5% cost share) in the third project year. Jean Waltman, a Research Associate at CEW, also assisted the project and will continue this work at 25% effort in the third project year.

Dr. Cinda Sue Davis, Director of the Women in Science and Engineering (WISE) program, was provided with release time ($10,300) to develop and offer discipline-specific data-based workshops in the second project year. We expect this work to continue in the third year, and the associated release time expense incorporates a 3% increase.

Dr. Jane Hassinger, Director of the Interdisciplinary Program in Feminist Practice, developed and facilitated the *Women Talking Science and Engineering* (WTSE) program and was provided with release time for this work ($10,300). Dr. Hassinger will continue in this role in the third project year, and a 3% increase is incorporated into the release time expense.

Senior faculty served on the *Science and Technology Recruiting to Improve Diversity and Excellence* (STRIDE) Committee and assisted the project this year by providing consultation with individual departments on recruitment and on hiring and retention practices. Each committee member received $20,600 in release time for this work, and funds in the amount of

$140,000 were allocated for this purpose in the second year (includes $86,440 cost share). In the third project year, committee members will continue to assist the project and a 3% increase is incorporated into the release time compensation.

**GRADUATE STUDENTS**
This year research assistants worked on the project by assisting with evaluation data collection and analysis and with programming activity. In addition, research assistants (after being trained by the Program Manager) interviewed faculty members as part of departmental self-studies. Research assistants will continue to perform similar duties in the third project year.

Funds were provided for one graduate student assistant (25% effort) to assist the WISE director in year two; this arrangement will continue in the third project year.

**OTHER PERSONNEL**
Dr. Danielle LaVaque-Manty served as Program Manager for the project (100% effort; 2/3 of Dr. LaVaque-Manty's salary was paid from other funding) until September 2003. Dr. LaVaque-Manty provided staff support for data collection efforts, all project initiatives, advisory, steering and selection committees, and production and dissemination of reports and presentations. She also served as the focus group facilitator and organized and trained interviewers.

Robin Stephenson assumed the responsibilities of Program Manager in September 2003 (100% effort). She will continue in this role in the third project year. Ms. Stephenson's salary is paid partially by cost shared funds.

Dr. Ching-Yune Sylvester joined the project as Program Evaluation Manger (100% effort) in June 2003. Dr. Sylvester provides staff support for data analyses and evaluation and will continue in this role in the third project year. Dr. Sylvester's salary is paid partially by cost shared funds.

Lisa Parker, research administrator at the Institute for Research on Women and Gender, allocates 10% of her time to manage the budget for the ADVANCE grant (including all sub-accounts) and process financial and administrative paperwork. She will continue this work in the third year.

Salary funds for transcription of interviews and focus group meetings were expected to total $3,100 in the second project year. Because of the confidential nature of many of the interviews to date, transcribing has not been completed. Evaluation interviews are being transcribed, however, and these funds will be used for that purpose. Transcription costs are expected to total $2,400 in year three.

**FRINGE BENEFITS**
Fringe benefit expenses are calculated at 30% for all faculty, professional and administrative staff and at 8% for all students, facilitators and transcribers.

**TRAVEL/DOMESTIC**
Travel expenses in year two have totaled $6,000 for advisory meetings and University of Michigan Women Scientist Network event speakers. These costs will remain the same for the third project year.

**OTHER DIRECT COSTS – MATERIALS AND SUPPLIES**
In year two, funds in the amount of $2,700 were used for program and event publicity as well as consumable supplies and duplication. In year three, $2,700 is again allocated for this purpose. In addition, funds in the amount of $1,200 are allocated each year for project activity at the Center for the Education of Women (CEW).

**OTHER DIRECT COSTS – CONSULTANT SERVICES**
Consultants provided information about and presentations at data-based workshops this year and consulted with project personnel and gender equity advisors about best practices. Total consultant costs in year two were $7,200 and this amount is also allocated for similar services in the third project year.

**OTHER DIRECT COSTS – OTHER**
Funds in the amount of $22,500 were allocated in year two to the Center for Research on Learning and Teaching's (CRLT) Climate Theater to fund fourteen performances of scripts developed by CRLT that are of specific relevance to the ADVANCE project. In the third project year, funds in the amount of $24,500 will be allocated to CRLT to continue this work.

In the second and third project years, funds in the amount of $17,800 per year will be used by the UM Network of Women Scientists to support events, including visiting speakers. Expenses in the second year included a speaker series, a leadership retreat, and social events.

The Elizabeth Crosby Research Fund (formerly the Gender Equity Resource Fund) is budgeted at $100,000 each year (includes $10,000 cost share) to provide awards of $20,000 each to five applicants. This fund is used to support women faculty in ways best suited to their particular needs (special laboratory equipment, graduate student or post-doctoral support, conference travel, support for a visiting scientist, release time, etc.). Funds are awarded as a result of a call for applications and a selection process. In the second project year, the University of Michigan cost shared additional funds in the amount of $60,000 to increase the number of awards. This year, twelve awards were made in the total amount of $191,400 ($90,000 direct cost, $10,000 cost share, $60,00 additional University of Michigan cost shared funds, and $31,400 from other funds). The additional University of Michigan funds will continue each year for the remainder of the project, and the total amount to be awarded in year three equals $160,000. A total of $3,000 is used each year to compensate selection committee members.

In the second project year, the University of Michigan provided additional funds in the amount of $40,000 to establish the Lydia Adams DeWitt Research Fund for those who hold research scientist titles at the University. This research fund was established as the result of research scientists' strong interest in the work of ADVANCE and the University's desire to provide support for this group similar to support provided to instructional track faculty by the ADVANCE project. Three awards were made to research scientists this year. The University of

Michigan will continue to contribute these additional funds ($40,000 per year) for the remainder of the project.

The allocation of funds to support the Departmental Transformation Grants continued in year two. Four awards to departments have been distributed (selected through a review process) to carry out specific activities aimed at producing significant transformation of the climate for women faculty and six more have been allocated. The University of Michigan has allocated additional funding, in the amount of $75,000 per year for four years, to increase the overall funding available for Departmental Transformation Grants. In total, $951,000 ($611,000 direct cost, $340,000 cost share and additional funds) will be allocated to departments over the entire project period. To date, $503,000 has been allocated to specific departments, and the remaining funds will continue to be assigned in the third project year.

**INDIRECT COSTS**
Indirect costs are calculated at 51%.

**COST SHARING**
In the original project budget, cost sharing was committed in the amount of $213,005 for the second project year and in the amount of $214,175 for the third project year. The percentage of Dr. Abigail Stewart's salary to be cost shared, however, increased from 15% to 50%. As a result, the cost sharing commitment has increased to $274,326 in the second project year and $285,839 in the third project year.

## Estimated Unobligated Funds
**(at the end of the second project year)**

We anticipate no unobligated funds at the end of the period (January 1, 2003 – December 31, 2003) for which NSF currently is providing support to Abigail J. Stewart's NSF grant SBE 0123571, "ADVANCE Institutional Transformation Award." The budget allocation for the second project year was $749,872 ($496,604 direct costs; $253,268 indirect costs). While a balance of direct cost funding will remain at the end of the second project period, all of these funds have been assigned to specific allocations or have been otherwise committed.

Direct costs in the amount of $535,707 have been expended as of November 30, 2003 (the most recent monthly account statement available to us). It is anticipated that an additional $163,496 in direct cost expenses (including on-going expenses such as salary costs as well as outstanding year two expenses that have been charged to this project), will be committed by December 31, 2003.

In total, $615,160 in direct costs has been allocated in the first two project years to various departments and colleges at the University of Michigan in the form of sub-accounts that house funds provided to Crosby (Gender Equity Resource Fund) award recipients, senior faculty gender-equity advisors (STRIDE committee members) and Departmental Transformation Grant projects. All sub-accounts are established and active, but the rate of expenditure of funds varies. It is anticipated that a portion of the funds in several of these sub-accounts will not be expended by December 31, 2003. However, all of these funds have been committed for use by the

recipients as proposed in the original budget and it is expected that the funds will be used as planned.

As a result of the expenditures and funding allocations described above, we expect the ADVANCE project to make use of $993,285 in direct costs, the total direct cost amount awarded, in the first and second project years. A total of $749,034 ($496,049 direct costs; $252,985 indirect costs) is requested to fund the third project year (January 1-December 31, 2004).

**COST SHARING STATUS AT THE END OF THE SECOND PROJECT YEAR**

The University of Michigan has committed $274,326 in cost sharing for this second 12 month project period. A cost sharing report will be provided, in hard copy form, to NSF from the University of Michigan's Office of Financial Operations. Financial Operations is unable to produce an accurate cost sharing report for the first two years of this project until the close of December business occurs in early January. The University will submit this report as soon as possible after December 31, 2003.

## Proposed Budget for the Third Project Year
**(in accordance with NSF form 1030)**

| **Year Three (NSF - ADVANCE)** | **NSF** | **UM Cost Share** |
|---|---|---|
| A. Senior Personnel | | |
| PI – Stewart | | 72,500 |
| co-PI LSA | | 14,506 |
| co-PI Engineering | | 14,903 |
| co-PI Medicine | | 17,569 |
| co-PI Senior Counselor to the Provost | | 10,357 |
| TOTAL SENIOR PERSONNEL | 0 | 129,835 |
| B. Other Personnel | | |
| B.2 Other Professionals | 107,947 | 66,964 |
| B.3 Graduate Students | 22,680 | |
| B.6 Other | 26,783 | |
| TOTAL OTHER PERSONNEL | 157,410 | 66,964 |
| TOTAL SALARIES AND WAGES | 157,410 | 196,799 |
| C. Fringe Benefits | 41,239 | 59,040 |
| TOTAL FRINGE BENEFITS | 41,239 | 59,040 |
| TOTAL SALARIES, WAGES AND FRINGE BENEFITS | 198,649 | 255,839 |
| E. Travel/domestic | 6,000 | |
| TOTAL TRAVEL/DOMESTIC | 6,000 | |
| G. Other Direct Costs | | |
| G.1 Other Dir. Costs - Materials & Supp | 3,900 | |
| G.3 Consultant Services | 7,200 | |
| G.6 Other | 280,300 | 30,000 |
| TOTAL OTHER DIRECT COSTS | 291,400 | 30,000 |
| H. TOTAL DIRECT COSTS year 3 | 496,049 | 285,839 |
| I. Total Indirect Costs Rate: 51% | 252,985 | |
| J. Total Direct and Indirect Costs | 749,034 | |
| L. Amount of This Request | **749,034** | |
| M. Cost Sharing | 285,839 | |

# Current Other Support Information for Key Personnel

***Stewart, Abigail***
**(Current)**

| | |
|---|---|
| Principal Investigator: | Timothy Johnson |
| Title: | *BIRCWH Career Development* |
| Sponsor: | NIH/BIRCWH (Building Interdisciplinary Research Careers in Women's Health) Career Development Program |
| Amount of Award: | $2,434,083 |
| Duration of Award: | 09/01/00 – 07/31/05 |
| Time Devoted to Project: | 3% as advisory board member |

| | |
|---|---|
| Principal Investigator: | Abigail Stewart |
| Title: | *Narratives and Numbers: Integrating Quantitative and Qualitative Methods in the Study of Gender* |
| Sponsor: | University of Michigan/Rackham Graduate School |
| Amount of Award: | $32,000 |
| Duration of Award: | 09/01/00 – 12/31/03 |
| Time Devoted to Project: | 1% |

| | |
|---|---|
| Principal Investigator: | Abigail Stewart |
| Co-PI: | Enid Sutherland |
| Title: | *Performance of Daphne and Apollo Remade* |
| Sponsor: | Ford Foundation/Arts and Culture Program |
| Amount of Award: | $84,300 |
| Duration of Award: | 07/01/01 – 06/30/04 |
| Time Devoted to Project: | 1% |

| | |
|---|---|
| Principal Investigator: | Pamela Trotman Reid |
| Co-PI: | Abigail Stewart |
| Title: | *Girls Exploring Mathematics Through Social Science (GEMS)* |
| Sponsor: | National Science Foundation |
| Amount of Award: | $842,877 |
| Duration of Award: | 09/01/01 – 08/31/04 |
| Time Devoted to Project: | 5% and one month of summer salary |

| | |
|---|---|
| Principal Investigator: | Abigail Stewart |
| Co-PI: | Stephen Director, Allen Lichter, Terrence McDonald, Pamela Raymond |
| Title: | *ADVANCE Institutional Transformation Award* |
| Sponsor: | National Science Foundation |
| Amount of Award: | $3,748,785 |
| Duration of Award: | 01/01/02 – 12/31/06 |
| Time Devoted to Project: | 50% of academic appointment (cost shared) |

| | |
|---|---|
| Principal Investigator: | Abigail Stewart |
| Title: | *Global Feminisms: Comparative Case Studies of Women's Activism and Scholarship* |
| Sponsor: | University of Michigan/Rackham Graduate School |
| Amount of Award: | $250,000 |
| Duration of Award: | 07/1/02 – 06/30/05 |

Time Devoted to Project: 5%

***Director, Stephen***
**(Current)**
Principal Investigator: Abigail Stewart
Co-PI: Stephen Director, Allen Lichter, Terrence McDonald, Pamela Raymond
Title: *ADVANCE Institutional Transformation Award*
Sponsor: National Science Foundation
Amount of Award: $3,748,785
Duration of Award: 01/01/02 - 12/31/06
Time Devoted to Project: 5% of academic appointment (cost shared)

***Lichter, Allen***
**(Current)**
Principal Investigator: Abigail Stewart
Co-PI: Stephen Director, Allen Lichter, Terrence McDonald, Pamela Raymond
Title: *ADVANCE Institutional Transformation Award*
Sponsor: National Science Foundation
Amount of Award: $3,748,785
Duration of Award: 01/01/02 - 12/31/06
Time Devoted to Project: 5% of academic appointment (cost shared)

***Malley, Janet***
**(Current)**
Principal Investigator: Pamela Trotman Reid
Co-PI: Abigail Stewart
Title: *Girls Exploring Mathematics Through Social Science (GEMS)*
Sponsor: National Science Foundation
Amount of Award: $842,877
Duration of Award: 09/01/01 – 08/31/04
Time Devoted to Project: 10% of 12-month appointment (cost shared)

Principal Investigator: Abigail Stewart
Co-PI: Stephen Director, Allen Lichter, Terrence McDonald, Pamela Raymond
Title: *ADVANCE Institutional Transformation Award*
Sponsor: National Science Foundation
Amount of Award: $3,748,785
Duration of Award: 01/01/02 - 12/31/06
Time Devoted to Project: 30% of 12-month appointment (Year 2-5-directs)

***McDonald, Terrence***
Principal Investigator: Abigail Stewart
Co-PI: Stephen Director, Allen Lichter, Terrence McDonald, Pamela Raymond
Title: *ADVANCE Institutional Transformation Award*
Sponsor: National Science Foundation
Amount of Award: $3,748,785
Duration of Award: 01/01/02 - 12/31/06
Time Devoted to Project: 5% of academic appointment (cost shared)

***Raymond, Pamela***

**(Current)**

| | |
|---|---|
| Principal Investigator: | Abigail Stewart |
| Co-PI: | Stephen Director, Allen Lichter, Terrence McDonald, Pamela Raymond |
| Title: | *ADVANCE Institutional Transformation Award* |
| Sponsor: | National Science Foundation |
| Amount of Award: | $3,748,785 |
| Duration of Award: | 01/01/02 - 12/31/06 |
| Time Devoted to Project: | 5% of academic year appointment (cost shared) |

| | |
|---|---|
| Principal Investigator: | E. Keller |
| Co-PI: | Pamela Raymond |
| Title: | *Development of Mature Zebrafish as an Animal Model* |
| Sponsor: | NIH |
| Amount of Award: | $1,853,350 |
| Duration of Award: | 05/01/02 – 04/30/07 |
| Time Devoted to Project: | 5% |

| | |
|---|---|
| Principal Investigator: | B. Hughes |
| Title: | *Core Center for Vision Research* |
| Sponsor: | NIH |
| Amount of Award: | $3,019,879 |
| Duration of Award: | 05/01/02 – 04/30/07 |

| | |
|---|---|
| Principal Investigator: | Pamela Raymond |
| Title: | *New Neurons in the Retina* |
| Sponsor: | NIH |
| Amount of Award: | $225,000 (direct costs current year) |
| Duration of Award: | 07/01/03 – 06/30/08 |
| Time Devoted to Project: | 37.5% |

| | |
|---|---|
| Principal Investigator: | D. Goldman |
| Co-PI: | Pamela Raymond |
| Title: | *A Genetic Screen for Mutations affecting CNS Development and Regeneration* |
| Sponsor: | State of Michigan |
| Amount of Award: | $750,000 |

**(Pending)**

| | |
|---|---|
| Principal Investigator: | Pamela Raymond |
| Title: | *Genes that Control the Identity and Patterning of Retina* |
| Sponsor: | NIH |
| Proposed Amount of Award: | $1,050,000 |
| Proposed Duration of Award: | 04/01/04 – 03/31/09 |
| Time Devoted to Project: | 40% |

# SECTION II: SUMMARY OF PROJECT ACTIVITIES

## SUMMARY OVERVIEW

The ADVANCE project at the University of Michigan has made efforts to engage discussion, stimulate new efforts and create real change throughout the campus. The importance to our campus of the NSF ADVANCE Institutional Transformation grant lies in several areas: (1) It ensures that there is consistent institutional support for a process that is inevitably slow and difficult. The consistency of the support guarantees that efforts will not flag or reverse. (2) It provides national-level validation and confirmation that it is important to address the issue of the climate for women faculty in science and engineering. This helps counter any sense that the problem is uniquely local (which can produce a counterproductive sense of local responsibility or guilt) or (worse) imaginary. (3) It provides crucial resources to compensate a group of individuals' ongoing efforts to improve the climate for women faculty in science and engineering at the University. (4) It provides crucial direct support to both women scientists and departments that make it more possible for women science and engineering faculty to thrive.

At the end of our second full year of activity (and halfway through our second full academic year, since we publicly launched our project in September 2002), we believe that campus awareness about the importance of the climate for recruitment and retention of women faculty in the sciences and engineering has increased dramatically. Building consciousness is a key component of the value added by the ADVANCE project. We also believe we have seen the beginnings of real change. A total of 19 new women science and engineering faculty were recruited into non-clinical science departments and schools by fall 2003; six in LS&A, seven in Engineering, three in the basic science departments of the Medical School, two in Public Health and one in Dentistry. This is an unprecedented rate of success in these schools and for the University as a whole.

The President and Provost of the University have taken active steps to promote institutional transformation, and the deans of the three largest schools (Engineering, Literature, Science & the Arts, and Medicine) are committed co-PIs on our Institutional Transformation efforts. The three deans make college-wide use of the initiatives offered by UM ADVANCE (such as Departmental Transformation Grants, educational presentations, and our recruitment handbook). They also work hard on recruitment and retention themselves, have appointed women scientists to important administrative responsibilities, and supported sending women scientists to leadership training programs. They have encouraged their chairs to make use of these same resources as well as those offered through ADVANCE-sponsored awards to individuals.

We have observed one difficult-to-document change in the environment on campus: women scientists and engineers seem to us to be more hopeful about the prospects of real change, and partly as a result, they have become more active in efforts to advocate for change. It is our strong impression that this group's commitment to ADVANCE is critical to success; they are crucial agents of change, because they understand best what needs to be different. Why are they more hopeful and more active now than they were two years ago? We cannot be sure, but our best guess is that the reason is the fact that ADVANCE has not turned out to be one more well-intentioned but short-term "band-aid." Many key leadership positions in the University have

changed in the short period of ADVANCE at UM (the President, Provost and the Dean of LS&A, to name three). In addition, the University has faced serious budget cuts. Despite these facts, ADVANCE has remained throughout a visible and important institutional priority, addressed actively and with real resources by all three of these past and current leaders. In addition, the visible, continuing leadership of ADVANCE (Stewart and Raymond, and two of the deans), have also made vocal and persistent public and behind-the-scenes efforts on behalf of women scientists and engineers throughout this period. The stability and persistence of the University's commitment and efforts, throughout a period of budgetary pressure and leadership change, has generated some willingness on the part of women scientists and engineers to suspend their previous skepticism about the possibility of significant institutional change.

The importance of transformation of the academic environment for women scientists and engineers is being addressed in many venues on campus, and concrete actions are being taken to undertake that transformation. Through educational presentations by the *Science and Technology Recruiting to Improve Diversity and Excellence* (STRIDE) Committee, lecture series and workshops, Network of Women Scientists and Engineers events, and individual meetings of ADVANCE staff with chairs and science and engineering faculty, the University as a whole is acknowledging the problem and identifying solutions in a public, active and straightforward manner. Women are being appointed to leadership positions in science departments for the first time. Until this year, none of the twenty-six departments in the Medical School and none of the eight science departments in the College of Literature, Science and the Arts had ever been chaired by a woman. This year one woman was appointed chair of a science department in each of these schools.

Another important milestone this year was achieved by the Network of Women Scientists and Engineers created and sponsored by UM ADVANCE. The Network planned their own *Women in Science and Engineering Leadership Retreat*. It was a well-attended, powerful display of the pool of talented women scientists and engineers to cultivate for leadership at UM. Many departments, schools and colleges collaborated to sponsor speakers and events focused on improving the UM climate for women scientists and engineers. ADVANCE is also planning two advanced leadership and negotiation workshops in the winter of 2004.

We have initiated an interdisciplinary volunteer mentoring program, linking senior and junior women in the sciences and engineering throughout the campus. To facilitate those linkages UM ADVANCE has partnered with a female sociologist who will begin by working with the fourteen women junior faculty in sciences in the College of Literature, Science and the Arts. The sociologist (Professor Pamela Smock) will interview the faculty about their mentoring needs and try to connect them with the right mentors. Once she has gained experience with this group, we will expand the program to include all of the junior faculty women in science and engineering campus wide. Meanwhile, the web-based initiative is available in a more self-directed form to the entire campus right now. In addition, a distinguished woman faculty member in the School of Medicine, who had retired early, has returned to Ann Arbor. Emerita Professor Sarah Newman has offered to work with groups of women faculty in the School of Medicine to identify strategies for improving their mentoring. She will begin meeting with groups of junior faculty women in Medicine in January 2004.

Stimulating and encouraging a productive conversation on improving the campus environment for women scientists and engineers is an ongoing process. The STRIDE committee continues to work with search committees and departments on recruitment, retention and climate, and has begun a collaboration with the Center for Research on Learning and Teaching (CRLT) in their use of interactive theater techniques to illustrate behaviors and attitudes that create a negative climate for women scientists and engineers. To assist STRIDE, this year a new group of senior faculty in science and engineering, called Friends and Allies of Science and Technology Equity in Recruiting (FASTER), was formed. Department chairs and deans also remind search committees to request presentations and to invite the CRLT Players to perform for the faculty in their respective schools.

Finally, the President and Provost have set in motion a comprehensive review of University policies that affect women scientists and engineers. For this initiative, the Gender in Science and Engineering Committee (GSE) created three subcommittees chaired by three deans, to examine policies in the areas of Faculty Evaluation and Development, Recruitment, Retention and Leadership, and Family Policies and Faculty Tracks. This initiative will allow us to begin the process of institutionalizing practices that will be useful for both male and female faculty, while focusing on the policies that research shows affect women more such as family-related policies, the tenure clock, and the criteria for evaluation and promotion.

Below, in detail, is a full accounting of activities of UM ADVANCE in 2003.

## Participants

**PROJECT STAFF**

Abigail Stewart, Principal Investigator, represents the project to the larger University of Michigan community, offering presentations about the program, and consultation on mentoring, recruitment and retention strategies to units and administrators across campus and in other settings. She directs all project interventions and consults on all ADVANCE-related activities involving the project's collaborators. She directed three climate studies within individual departments on the UM campus, supervised the writing of reports on the results of the completed studies, and advised administrators regarding the use and dissemination of these reports. She drafted the progress report delivered on behalf of the President and Provost of the University.

Janet Malley directs all project evaluations. She directed a climate survey commissioned by the UM-Dearborn and wrote the final report on the results of that survey. She directs the ongoing collection of data to be used to evaluate the project's progress in nine different UM colleges, and conducted a salary analysis for one. She administered web surveys to evaluate the effectiveness of the STRIDE recruitment committee and the Women Talking Science and Engineering seminar, collected interim progress reports from units that were awarded Departmental Transformation Grants at the end of 2002, and prepared hiring and recruitment data for presentations given herself, by Abigail Stewart or the STRIDE committee.

Danielle LaVaque-Manty left the project in September, 2003. Until that time, she managed and coordinated intervention activities. She coordinated two climate studies conducted within

individual departments, conducted interviews for one of the studies, trained other interviewers, and drafted reports on the results of the studies. She coordinated plans for a leadership retreat for women faculty that took place in October and completed initial planning for the series of talks and workshops for the 2003-2004 academic year. She provided administrative support to the STRIDE recruitment committee and other project committees and collaborators (e.g., CRLT and Women Talking Science and Engineering seminars). Though she has become a student in a creative writing program, she has agreed to work with Stewart and on her own on some writing projects associated with ADVANCE.

Robin Stephenson began working for the project in July 2003. Since September, she managed and coordinated the project's intervention activities, including committee meetings, presentations, and intervention activities. She wrote the third draft of the climate self study report. She assisted in focus groups, developed draft reports and publications, and implemented the ADVANCE speaker series and workshops. She re-developed the PowerPoint tool used to educate the campus community regarding the ADVANCE project with Stewart and the STRIDE Committee. She maintains the website, mailing lists and individual contacts with ADVANCE constituencies.

Lynne Schaberg collected and cleaned data, and conducted statistical analyses, for a climate survey conducted for the UM-Dearborn, contributed to the final report on the results of the Dearborn survey, and sent the report to participants who requested copies. She drafted IRB applications for two climate studies conducted in departments on the main UM campus, conducted interviews for both studies, and helped train other interviewers. She archived ADVANCE materials and reconfigured the storage arrangements for all ADVANCE archives.

Ching-Yune Sylvester began working for the project in June 2003. She manages and coordinates ongoing project evaluation and data collection activities. She collects, cleans and analyzes data used in evaluating the project's initiatives. She develops instruments for collecting college-level data, ensures the accuracy of the data, and interprets results into charts and graphs designed to illustrate change over time. She provides liaison with the nine target schools and colleges within the university to collect data and information.

Robbin Gonzalez maintained a journal of ADVANCE activities, took photographs of Crosby and DeWitt award winners for the ADVANCE web page, removed identifying details from interview transcripts, and provided part-time office support to other members of the staff.

Heather Branton conducted statistical analyses for the gender climate survey report and for the race and ethnicity report.

Allison Smith, Pamela Ramseyer, Sarah Arvey and Jennifer Churchwell conducted interviews for a study on gender and academic climate in two departments.

Laura Reese resumed her summer position with the project in June, 2003 and will continue through January 2004. She updates the web page and produces promotional materials to advertise the project's intervention programs. She also checks and formats data.

Lily Axelrod worked for the project over the summer of 2003. She updated the project's archives, bibliographies, and web page, and helped Janet Malley and Ching-Yune Sylvester put evaluation data into tables and graphs.

Lisa Parker keeps financial records, writes budget reports, and manages ongoing account activities for the ADVANCE grant.

Patricia Smith reviews ADVANCE account activities and, along with Lisa Parker, negotiates with administrators in units cooperating with the Institute for Research on Women and Gender in administering the grant.

**PARTNERS**

Jean Waltman and Carol Hollenshead from the Center for the Education of Women (CEW) are conducting qualitative evaluations of the Departmental Transformation Grants. They are also conducting exit interviews with female faculty who have left these science and engineering departments (and selected comparison departments) at the UM.

Jeffrey Steiger, Diana Kardia, and other staff at the Center for Research on Learning and Teaching (CRLT), directed by Connie Cook, presented an interactive theater sketch to three test audiences for fine-tuning and for advice about the best venues and audiences for this sketch as it gets launched in the coming academic year. Collaboration has arisen between the CRLT theater group and the STRIDE recruitment committee. CRLT has been invited to perform the ADVANCE Faculty Meeting Sketch throughout the academic year 2003-2004. CRLT has also previewed a mentoring sketch which they will begin performing in 2004.

Jane Hassinger, director of the Interdisciplinary Program in Feminist Practice, conducted *Women Talking Science and Engineering* (WTSE) seminars in May and August, 2003. She held a second reunion dinner for past participants in January and will host another for the 2003 participants in January 2004.

Cinda-Sue Davis, director of Women in Science and Engineering (WISE), has helped facilitate project outreach to female graduate students and postdoctoral fellows, using her pre-existing networks to help schedule presentations and seminars for them. She is redesigning her Data-based Workshops.

**OTHER COLLABORATORS OR CONTACTS**

The *Science, Technology and Society Program* at the UM continued the "Gender in Science, Technology & Medicine" lecture series it co-sponsored with ADVANCE during the winter semester. Ruth Oldenziel, whose research focuses on the history of gender in engineering and technology and who came from the Netherlands to give a talk in this series, attended a reception for the winners of last year's Crosby awards at the College of Engineering in January.

Richard Gonzalez (Psychology) has continued to work on developing analytic strategies for assessing space and salary equity. In addition, Bendek Hansen (Statistics) is assessing the value of various matching strategies in these analyses.

A new partnership is being forged with Lorna Hurl of the University's Faculty and Staff Assistance Program (FASAP), which will introduce a coaching program using the ADVANCE Network as a trial population.

The Committee on Gender in Science and Engineering (GSE) was formed in June 2003, charged and co-chaired by the President and Provost. Three faculty subcommittees will offer recommendations on Family Policies and Faculty Tracks; Faculty Evaluation and Development; and Recruitment, Retention and Leadership. The deans of the Medical School, College of Engineering and the College of Literature, Science and the Arts head these committees and Abby Stewart and Pamela Raymond, co-PI, serve and advise on them. The committees aim at initiating a campus-wide dialogue about the impact of UM policies on women faculty in science and engineering.

Pamela Smock, Associate Director of the Institute for Social Research and Associate Professor of Sociology is the liaison between junior women faculty and the senior women faculty volunteer mentors.

## Activities and Findings

### RESEARCH AND EVALUATION ACTIVITIES

**Climate Reports and Focus Groups.** ADVANCE staff conducted a study of the academic climate and gender for one LS&A science department during the fall of 2002, and completed a report on this study in January 2003. Twenty-nine male and female graduate students from the unit participated in focus groups and interviews to discuss reasons for a lower retention rate for women students. The results of this report were confidential and have been released only to the department.

ADVANCE staff conducted a study on academic climate and gender for a unit in the Medical School. Thirty-nine out of fifty faculty in the unit were interviewed for the study. A report on the results was written and will be released only to the unit and administrators in the School of Medicine.

ADVANCE staff completed a study on academic climate and gender for a unit in the College of Engineering. Forty-two faculty, staff, postdoctoral fellows, and graduate students were interviewed for this study. The report was written during July 2003. The results are confidential and were released only to the unit and to the dean.

Three focus groups were conducted in September with eleven junior faculty women from the Medical School, College of Engineering and College of Literature, Science and the Arts.

**Race and Ethnicity Report.** Data from the fall 2001 University of Michigan climate survey were analyzed to assess the academic work environment for instructional track faculty of color on this campus. The sample is small, so inferences can only be made with caution. However, given the paucity of data on the experience of faculty of color in science and engineering, we felt it was critical to report on the data we do have. The report was circulated to the Evaluation

Advisory Committee and a group of senior faculty of color for comment before broader release of the findings in January 2004.

**Salary Analyses.** One large college requested assistance from ADVANCE in examining the salaries of men and women scientists in an effort to assess gender equity in salaries. ADVANCE staff provided data using similar salary models employed in the University's 2001 study, but identifying any gaps between individual women's salaries and the salary paid to comparable white men.

**MAJOR FINDINGS RESULTING FROM THESE ACTIVITIES**

Specific findings from each of the three climate studies conducted within individual units during 2002-2003 are confidential. In each case, climate problems specific to the unit were discerned, and recommendations for change were offered to the unit in question.

The focus group findings substantiated the lack of formal mentoring and the need for it.

The results of the analyses of the climate survey in terms of race and ethnicity will be released to the campus in January 2004; they suggest that there are many parallel problems for faculty of color in general and all women and that difficulties are particularly serious for women of color.

The results of the salary study were confidentially reported only to the college involved.

**OPPORTUNITIES FOR TRAINING AND DEVELOPMENT**

*Women Talking Science and Engineering (WTSE)* is a seminar offered by Jane Hassinger, director of the Interdisciplinary Program in Feminist Practice. Participants meet for four sessions to discuss readings about work and gender and strategies for workplace difficulties confronted by women science and engineering faculty. Nine women participated in the seminar in May 2003, and were from the Medical School, the College of Engineering, the College of Literature, Science and the Arts, the Kresge Hearing Research Institute, and the Division of Kinesiology. Ten women participated in the seminar in August 2003, and came from the Medical School, the College of Literature, Science and the Arts, the College of Pharmacy, the Kresge Hearing Research Institute, the School of Public Health, and the School of Natural Resources and the Environment.

The Committee for *Science and Technology Recruiting to Improve Diversity and Excellence (STRIDE)* held two meetings with a group of fifteen interested faculty during the month of May. (These fifteen faculty now compose a group called *Friends and Allies of Science and Technology Equity in Recruiting,* or *FASTER.*) Each of these meetings lasted for three hours and provided STRIDE with the opportunity to get feedback regarding their recruitment strategies from FASTER, while at the same time educating the members of FASTER about gender schemas and evaluation bias in academic hiring. STRIDE made ten educational presentations during the calendar year to search committees, departmental groups, postdoctoral students, graduate students, and as a part of the university's MLK Day events in the College of Engineering. These included presentations to Statistics, Microbiology/Immunology, AMLP, Biomedical Scholars, Molecular, Cellular, and Developmental Biology (MCDB), Ecology and Evolutionary Biology (EEB), and Material Sciences and Engineering. STRIDE hosted a reception for incoming

women junior faculty and a dinner for Virginia Valian, whose work has been the foundation of their presentation.

A second Negotiation Workshop was conducted for the Network of Women Scientists and Engineers by Barbara Butterfield (Chief Human Resource Officer for Academic and Staff Human Resources and Affirmative Action at the University of Michigan) and Jane Tucker (Senior Manager, SAP – Administration Systems Management Group at Duke University) in March 2003. Twenty-two faculty members attended. Butterfield and Tucker developed an advanced version of this workshop for women who would like to further improve their negotiation skills and which will be held in the spring of 2004.

A *Women In Science and Engineering Leadership Retreat* was held in October 2003 for all women science and engineering faculty from the College of Engineering, the College of Literature, Science and the Arts, the basic science departments of the Medical School and five of the smaller schools. A group of women faculty leaders in the Colleges of Engineering and Literature, Science and the Arts formed the planning committee with ADVANCE staff support and implementation. Ten speakers presented panels and sessions to a group of sixty women participants discussing topics on Academic Leadership and Leadership outside the Academy as well as smaller sessions on Negotiations and Career Moves, On Being a Chair or Dean, Running Search Committees, and Entrepreneurship and Startups. Speakers included Linda Abriola (Dean of Engineering at Tufts University); Susan Ambrose (Associate Provost for Educational Development, Director of the Eberly Center for Teaching Excellence and Principal Lecturer in the Department of History at Carnegie Mellon University); Nancy Benovich Gilby (CEO of PocketThis); Patricia Gurin (Nancy Cantor Distinguished University Professor Emerita of Psychology and Women's Studies at the University of Michigan); Alice Hogan (Program Director for ADVANCE at the National Science Foundation); Linda Katehi (Dean of Engineering at Purdue University); Maria Klawe (Dean of Engineering and Applied Science at Princeton University); Debbie Niemeier (Department Chair of Civil and Environmental Engineering at the University of California, Davis); Pamela Raymond (former Associate Provost for Academic and Faculty Affairs, currently Senior Counselor to the Provost, and Professor of Cell & Developmental Biology at the University of Michigan); and Myriam Sarachik (president of the American Physical Society, and Distinguished Professor of Physics at the City College of the City University of New York).

**OUTREACH ACTIVITIES**

Women on the Primary Research Scientist track at the University of Michigan expressed a strong interest in developing a grant program like the ADVANCE Project's Elizabeth C. Crosby Award for women research scientists at the UM. In 2003, the Provost's Office committed funds for such a grant program for the duration of the ADVANCE Project, to be administered by ADVANCE staff at UM. This new grant program is called the Lydia Adams DeWitt Research Award. Three DeWitt grants were awarded to women research scientists in 2003; they were selected by the same committee that made the Crosby Award selections.

*The University of Michigan's Dearborn campus* asked for help in adapting our climate survey for their faculty. The survey was administered last fall, and Janet Malley and Lynne Schaberg

analyzed the data and wrote a report that was distributed to the Dearborn faculty during the winter term 2003.

Abby Stewart gave a presentation on the UM climate survey findings and on strategies and policies to help women science and engineers in academe to a *graduate student Society of Women Engineers* at the University of Michigan in February 2003.

Abby Stewart and Pamela Raymond gave a presentation on the UM climate survey findings and on recruitment and retention strategies for women in academe to the *Biomedical Scholars, a group of postdoctoral fellows* at the University of Michigan's School of Medicine, in February 2003.

Abby Stewart held a discussion about good mentoring practices with *postdocs in the Clinical Scholars Program* and their current mentors at the School of Medicine in April 2003.

Janet Malley presented on the findings from the climate survey as part of a panel in August 2003 at the *American Statistical Association* meeting in San Francisco.

Abby Stewart presented a talk about ADVANCE in April 2003 at the *Massachusetts Institute of Technology* and in September 2003 at the *Institute for Research on Women and Gender* at UM.

Abby Stewart held a discussion with the *UM chapter of the Association of Women in Science*, and made a presentation to *the Rackham School of Graduate Studies Executive Committee* in October 2003.

Twenty-*five graduate students* attended a writing workshop with Judith Swann of Princeton University in Fall 2003.

A series of seven public lectures was held throughout the fall called "Women Leading in Science ADVANCE Speaker Series". The lectures were open to the public. The list of speakers and their titles included:

- Joan Williams, Professor of Law, American University, Director of the Gender, Work and Family Project. "Work and Family Conflict and What To Do About It," sponsored with the Law School and Women's Studies;
- Kathy Barker, Microbiologist and Columnist, Science NextWave, "Lessons from P.I.s: Making Your Lab Work for You," sponsored with the Medical School;
- Virginia Valian, author "Why So Slow: The Advancement of Women" and professor of Psychology, Hunter College, Advance PI, sponsored with the College of Engineering, LSA, and Medical School;
- Kathleen DeBoer, Commissioner of General Services for the Lexington-Fayette County Government. "Beyond Political Correctness: An Irreverent Look at Gender Stereotypes," sponsored with the College of Engineering;
- Stacy Blake-Beard, Associate Professor of Management, Simmons School of Management, "The Importance of Mentoring in the Professional Development of Women Faculty";

- Margaret Kivelson, Professor of Space Physics, UCLA, “Careers, Leadership, and Speculations on Why Academia Loses Women”;
- Yu Xie, Frederick G. L. Huetwell Distinguished Professor of Sociology, Departments of Sociology & Statistics, University of Michigan, "Women in Science: Career Processes and Outcomes," sponsored with the Department of Sociology, and the Institute for Social Research.

In conjunction with her public lecture, Virginia Valian also spent a day in meetings and discussions with groups throughout the UM campus. Professor Valian had breakfast with Network of Women Scientists and Engineers; a meeting with Abby Stewart and Alice Hogan; a meeting with Medical School administrators and faculty; a meeting at the College of Engineering Dean’s Advisory Committee on Female Faculty and with selected chairs; a meeting with Provost Paul Courant and the Gender in Science and Engineering Committee; a discussion with graduate students following her public lecture; and dinner with women scientists from the School of Medicine, College of Engineering, and College of Literature Science and the Arts.

ADVANCE staff member Ching-Yune Sylvester attended the Annual Conference of the American Evaluation Association in November.

ADVANCE staff member Robin Stephenson attended the 11th Annual Women in Leadership Conference at the University of Michigan in October.

## Publications and Products

The *Report on the University of Michigan-Dearborn 2002 Survey of Academic Climate and Activities* was completed in February 2003. Copies of this report were distributed to the 265 UM-Dearborn faculty members who completed the survey, as well as to key campus administrators and was made available on the ADVANCE website.

Two brochures describing the major initiatives of ADVANCE were published and widely distributed. They are entitled: “Six Resources for Improving Department Climate” and “Support to Women Scientists and Engineers.” The brochures, which outline how to access the ADVANCE project at individual and departmental levels, are included as Appendix A and B respectively.

A poster and bookmark announcing the ADVANCE leadership speaker series were widely distributed.

“Advancing Science at the University of Michigan: A Progress Report From the President and Provost” was delivered as a lecture to the Network of Women Scientists and Engineers by the Provost on September 15. It was also sent via email from the President to all deans, for distribution to department chairs and faculty. It is also posted on the ADVANCE website, and is included as Appendix C of this report.

Additional resources have been added to our web page, including an annotated list of links to leadership programs for professional women, and a report on a salary study that was completed

last fall and included as an addendum in our year-end report for 2002. A website overhaul is scheduled for January to make navigation more hospitable. A mentoring link with volunteer mentor biographies of fourteen senior women faculty was added to the website. Additional mentors are added weekly and guidelines on how to access the mentors are on the site.

Abigail Stewart and Danielle LaVaque-Manty were invited to review Yu Xie and Kimberlee Shaumann's book *Women in Science: Career Prospects and Outcomes* for *Nature*. They submitted their review in December, 2003.

## Contributions

*The Elizabeth Caroline Crosby Fund* awarded grants to thirteen women faculty in science and engineering in 2003. These grants provide support to efforts that will enhance the scholarship and promote the retention of women faculty at Michigan. A total of 20 awards have been made in two years to nine faculty in LSA, seven in Engineering, two in Medicine, and one each in Public Health and Kinesiology. Some of these grants have supported individual junior faculty in their research; others have helped senior faculty launch new programs or reinvigorate high-risk research efforts. At least two of the projects include sponsorship of speaker series that bring exciting women scientists or engineers to campus.

*The Lydia Adams DeWitt Research Fund* awarded grants to three women faculty on the Primary Research Scientist track in 2003. Funding for these awards was provided by the UM Provost for the duration of the ADVANCE project, to be administered by the ADVANCE staff. We expect these awards to contribute not only to the careers of the women who receive them, but also to the morale of the women on the research science track in general.

*The Network of Women Scientists and Engineers* held three events during the winter term and three events in the fall term.

- In January we held a reception to honor the seven women who received Elizabeth C. Crosby awards last year. Each of the seven recipients gave a short presentation on the research she had conducted with her award. This event was attended by twenty women faculty in science and engineering.

- In March we held a second workshop on negotiating effectively, conducted by Barbara Butterfield, Chief Human Resource Officer for Academic and Staff Human Resources and Affirmative Action at the University of Michigan, and Jane Tucker, Senior Manager, SAP – Administration Systems Management Group at Duke University. Twenty-two faculty members attended.

- In April we held a reception and conversation about women and science with UM President Mary Sue Coleman, attended by forty women faculty.

- In September a welcome dinner was held in the Museum of Art. Provost Paul Courant presented the ADVANCE Progress Report. Sixty faculty women attended.

- In October a breakfast with Virgina Valian was held in the Michigan Union. Twelve faculty women attended.

- In November a reception followed the Stacy Blake-Beard mentoring talk to introduce our new mentoring website. Twenty women faculty attended.

Members of the Network have begun to play a more active role in planning their own events, such as the leadership retreat that occurred in October 2003.

*CRLT Players* performed the ADVANCE faculty sketch to an audience of the President, Provost and all the deans and associate provosts in Spring 2003. It has since been performed twice during the fall to the College of Engineering faculty and once to a public audience. Five future performances are scheduled for both the College of Engineering and College of Literature Science and the Arts in the Winter 2004 term. The new Mentoring sketch will also be premiered during Winter 2004.

*Departmental Transformation Grants* awarded at the end of 2002 are in the implementation stage.

- The Department of Electrical Engineering and Computer Science brought in sixteen female candidates for job interviews, using its Departmental Transformation Grant funds to pay recruiting expenses. The Department succeeding in hiring four new female faculty members this year, an unprecedented level of success for a department that had six women in a faculty of seventy-three.

- The Department of Chemistry has given travel and summer salary funds to some of its female faculty members; it has conducted a departmental climate survey and has funded a junior faculty forum to help new female (and male) faculty in the department develop stronger networks and gather information and advice. Chemistry also hired two outstanding female assistant professors this past year.

- The Departments of Chemical Engineering and Materials Science have used their joint award to give teaching release and international travel funds to two women faculty, in addition to funding a joint mentoring program on an ongoing basis.

During December 2003, the ADVANCE Steering Committee reviewed and provided partial funding for six new proposals. These included the following:

- The Basic Science Units at the Medical School proposed establishing a Junior Faculty Forum for mentoring of junior faculty who have primary or joint Instructional Track appointments in the 9 basic science units in the Medical School. It will be co-supported by the Endowment for the Basic Sciences (EBS), which last year helped recruit 10 new junior faculty. Their constituent departments will take turns in administering the program.

- The Department of Ecology and Evolutionary Biology proposed four projects to increase recruitment of women and improve the climate for women in that department: 1) a University of Michigan Young Scientists Symposium in Ecology and Evolution, 2) Seminars by Prominent Women in Ecology and Evolutionary Biology (inviting women for seminars and potential recruitment), 3) Increasing the number of women interviewed during searches, and 4) Travel funds for women.

- The Molecular, Cellular and Developmental Biology Department proposed a five-point program to invigorate or institute the following: recruitment of women faculty; creation of an MCDB Leadership Award; provision of an Initiative Fund for women faculty; WINS-MCDB functions; and creation of a Career and Gender Issues lending library.

- The Department of Atmospheric, Oceanic and Space Sciences proposed Teaching Release/Support, Travel/Leadership Training, and Seminar Speakers/Visitors. Funding for teaching release time will make it possible for the AOSS women faculty to write papers and proposals while continuing to serve on many national committees. AOSS also proposed funding a series of seminars and mentoring sessions with women members of the National Academy of Sciences in space and atmospheric sciences.

- The Department of Civil & Environmental Engineering proposed two activities that the committee supported: a Career Development Program for women faculty that includes teaching load reductions over the academic year 2004-05 and travel grants to attend international conferences; and a Faculty Recruitment Program, a pro-active plan to hire women faculty members into the Civil Engineering side of CEE that includes the involvement of existing women faculty in future searches and establishing contacts with women graduate students at other universities prior to their entry into the academic job market.

- Department of Naval Architecture & Marine Engineering proposed three strategies: 1) establishing a faculty recruitment program tailored to increase the hiring of female faculty members into the NAME Department; 2) facilitating the success of the current female faculty and ensuring their retention and promotion through the provision of travel funds to aid the female faculty in their national and international networking activities, pursuit of research collaborations across disciplines, and presentations of their research work at conferences and workshops; 3) initiating and maintaining a faculty mentoring program for junior female faculty in the Department since no formal mentoring currently takes place in NAME.

*Integration of ADVANCE issues in University Policy and Administration*

- Abigail Stewart, Project PI, has continued to serve as the Associate Dean for Academic Affairs in the College of Literature, Science and the Arts for a second year. This enables her to participate in recruitment, hiring, promotion, and policy

decisions in the college. She is also on the Gender in Science and Engineering (GSE) Committee, the GSE Subcommittee on Family Policies and Faculty Tracks, and provides support to the GSE Subcommittee on Faculty Evaluation and Development.

- Pamela Raymond, ADVANCE Co-PI, continues to serve as Senior Counselor to the Provost, maintaining crucial communication between ADVANCE and the central administration. She also serves on the GSE Subcommittee on Development, Recruitment, Retention and Leadership.

- To support the efforts of the ADVANCE project, the President and Provost appointed eight faculty to the Gender in Science and Engineering (GSE) Committee, While the President and Provost serve as co-chairs, the membership is comprised of four deans, three women scientists, and the director of the Life Sciences Institute. The charge of the GSE Committee is to examine and evaluate institutional practices and policies that might differentially impact the progress of UM women faculty in science and engineering, and to recommend specific goals for improvement and outcome measures to ensure accountability.

- The College of Literature, Science and the Arts awarded small grants to all seven of the LS&A departments that did not receive a full Departmental Transformation Grant in 2002. (One of the LS&A small grants was shared among three units, to foster interdisciplinary activities in the physical sciences.)

    - The Department of Ecology and Evolutionary Biology used its grant to fund several career development workshops for graduate students and to support travel and hosting for three female faculty recruitment targets.
    - The Department of Molecular, Cellular and Developmental Biology has funded monthly meetings of its female faculty, attendance at a leadership course for one woman faculty member, a team-building course for another woman faculty member's lab, an undergraduate researcher for a third woman faculty member, and books on gender and leadership for a fourth woman faculty member.
    - The three physical science departments (Physics, Geological Sciences, and Astronomy) have used their shared award to host interdisciplinary lunch and dinner discussions and to purchase books on gender and science for participants. This group is planning a series of workshops for the fall semester.
    - The Department of Statistics has also planned workshops designed to provide networking opportunities for a junior woman faculty member who has no close colleagues working in her area of expertise on the UM campus.
    - The Department of Mathematics will use most of its funds to give a junior faculty woman nurturing leave during the coming academic year and will use the rest for research travel for women faculty.

- The College of Engineering created its own program to fund a number of activities that were originally suggested in Departmental Transformation Grant proposals submitted by engineering departments. Any department in the College of Engineering may now apply directly to the College for funds that will help enlarge their candidate pools, change perceptions about the availability of excellent candidates from underrepresented groups, improve departmental climates, or contribute to faculty success. The College can also fund seminar speakers, international travel, visiting professorships, and course relief. It will also consider other proposals that would contribute to improvements in climate, recruitment, or retention.

- The Medical School provided support for a proposal to hire a staff support person for a group of women faculty in the Department of Radiology that was originally submitted to the Elizabeth C. Crosby Fund, but that ADVANCE was unable to fund directly.

- In order to meet our obligations for data reporting to NSF, we enhanced institutional capacity to monitor important indicators, at least within the three Schools/Colleges with the largest number of women scientists and engineers at the UM. In the next years of the program we hope to institutionalize data analysis of key indicators of hiring, retention and promotion campus-wide.

# SECTION III: REPORT ON BASELINE INDICATORS AND PROGRAM EVALUATION

## Indicators: First Year of ADVANCE (AY2002) and Changes from Baseline Year (AY2001)

### INTRODUCTION

The data reported here are for the academic year 2001-2002 (September 2001-August, 2002, referred to in this report as AY2002); the beginning of ADVANCE funding (in January 2002) occurred midway through the academic year of interest. The data from AY2002 will be compared with the baseline pre-project year: 2000-2001 (AY2001) data, which were reported last year. The ADVANCE project activities we are reporting on have taken place between January-December, 2003. For this report, then, outcome measures are more than a year behind the activities that are discussed[1]. We plan to make up for this time lag by the end of next calendar year by completing two years of data collection and analysis of indicators: data collection and analysis of AY2003 indicators will be completed and reported to NSF in June 2004 and data collection and analysis of AY2004 indicators will be completed and reported to NSF in December 2004. This will allow us to discuss the same year in our activities account and our analysis of indicators of change in that year end report. Because of the current time discrepancy between programmatic and indicator reporting, the relative lack of changes (and even losses) described in this report should be taken as an indication of the stability of the AY2001 baseline, and not a reflection of the efforts of the ADVANCE project.

We are reporting on all science and engineering faculty (instructional, research and clinical tracks) with budgeted (i.e., greater than 0% time equivalence) appointments in science and engineering departments in the College of Engineering (COE)[2], the Medical School's Basic Science departments[3], and the College of Literature, Sciences and Arts' (LS&A) Natural Sciences Division[4]. In addition, individual faculty members in six smaller Schools that have science faculty at the University are included. These smaller Schools are the School of Dentistry, the School of Information, the Division of Kinesiology, the School of Natural Resources, the College of Pharmacy, and the School of Public Health.[5] Faculty in these Schools were determined to be scientists by examining the field of study in which they received their highest degree. A list of degrees considered science degrees is included in Appendix D. For those

[1] Activities for the *calendar* year of 2003 (i.e., January 2003-December 2003) are reported; indicators are reported for the 2001-2002 *academic* year.

[2] COE: Aerospace Engineering; Atmospheric, Oceanic & Space Sciences; Biomedical Engineering; Chemical Engineering; Civil & Environmental Engineering; Electrical Engineering & Computer Science; Industrial & Operations Engineering; Materials Science & Engineering; Mechanical Engineering; Naval Architecture & Marine Engineering; Nuclear Engineering & Radiological Sciences.

[3] Medicine: Biological Chemistry; Cell & Developmental Biology; Human Genetics; Microbiology & Immunology; Pharmacology; Physiology.

[4] LS&A: Astronomy; Chemistry; Ecology & Evolutionary Biology; Geological Sciences; Mathematics; Molecular, Cellular & Developmental Biology; Physics; Statistics

[5] Last year, we also reported numbers for the School of Nursing. However, since the composition of the School of Nursing was determined to be dramatically different from that of other Schools with scientists (96% female), in consultation with Alice Hogan, we did not include Nursing this year, and will not include them in future years.

degrees that might afford research in both science and non-science areas, we evaluated the individual cases and included faculty based on their research areas.

For each College or School, we included faculty from the following three tracks where applicable: the instructional (tenure) track, the primary research track and the clinical instructional track. These generally refer to the titles of assistant/associate/professors, assistant/ (senior) associate/(senior) research scientists [6], and assistant/associate/clinical professors respectively; instructors, research investigators, and supplemental faculty were not included.

In the report, we discuss the state of female scientists and engineers at the University of Michigan for AY2002. We review the gender composition of faculty at each rank, as well as changes in the composition from the previous academic year (AY2001). However, given the small number of female faculty and corresponding small changes in numbers, we did not compute statistics on these comparisons.

Following the report are tables representing all of the outcome measures required by the National Science Foundation.[7] A list of the tables is included on page III-21. In extracting data from the University's databases, the effective date of March 1, 2002 was used. We have taken this to reflect conditions in effect during the 2002 academic year. These data were verified by the individual Colleges to ensure we did not miss any faculty who may have been present in the Fall of 2001 and not in Winter 2002; they also ensured that we included all additional positions (e.g., administrative positions) held in either semester. Additionally, tables for AY2001 have been updated/corrected based on revised inclusion criteria for faculty and are included as well.[7]

## Instructional Track Faculty

**OVERVIEW**

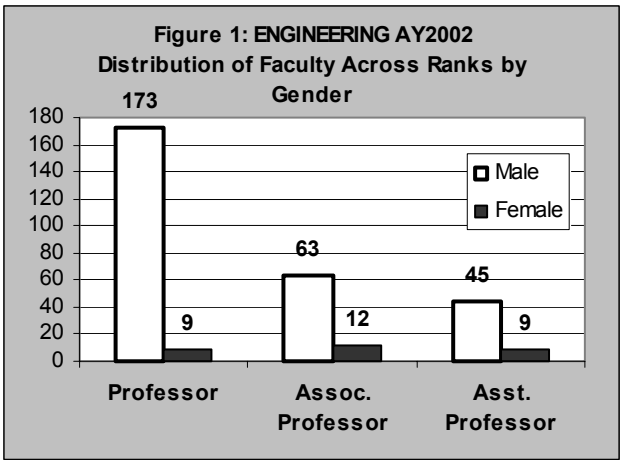
In this section we discuss the numbers of men and women science and engineering instructional (tenure) track faculty in each College. The percentages reported here are based on the number of men and women in each department (i.e., headcount), and not based on time equivalents (FTE). Head counts are easier to conceptualize, and in most cases do not differ much from the number of FTEs (percentages based on FTE can be found in Table 1). Where the percentages based on head counts and those based on FTEs differ by more than 2 points, the percentage based on FTE will also be reported in brackets [ ].

[6] On the research track, after assistant research scientist level, faculty can pursue two different track paths. One is designated by the titles associate research scientist and research scientist, the other by senior associate research scientist and senior research scientist. For our purposes, faculty on both tracks are considered together.

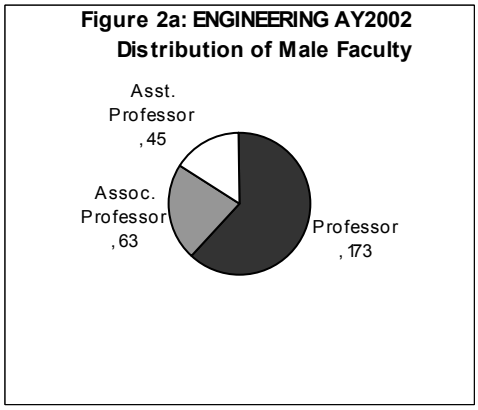
[7] Data reported to NSF included tables broken down by college and department. To minimize identification of individual faculty members, the tables included here are only broken down by college.

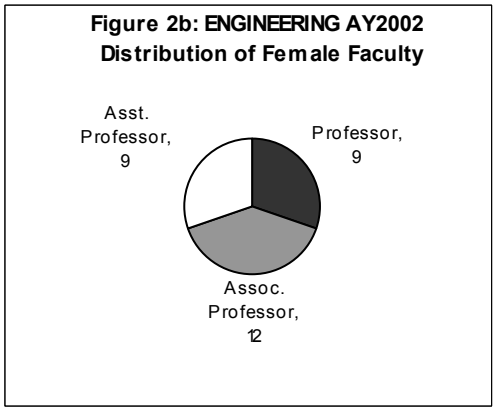
## COLLEGE OF ENGINEERING

In AY2002, the College was 90% male (N = 281) and 10% female (N = 30)[8] (see Table 1). The small proportion of female faculty is particularly apparent at the professor level, where only 9 out of 182 (5%) of the faculty at this highest rank were women. At the associate professor level, women comprised 16% of the faculty, and at the assistant professor level, they comprised 17%. Figure 1 depicts the number of faculty at each rank by gender in AY2002 across all 11 departments.




Looking specifically at the 281 male faculty, the majority (62%) were professors; only 22% were associate professors, and 16% were assistant professors. In contrast, female faculty were more evenly distributed across the ranks, with the greatest percentage holding associate professor rank (40%), and 30% at both the assistant professor and professor ranks. The distribution of faculty within gender and across ranks can be clearly seen in Figures 2a (males) and 2b (females).

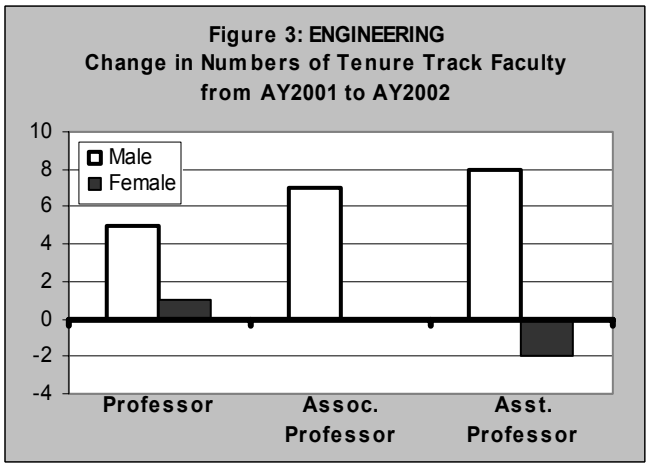



In comparison to AY2001, male faculty experienced increases in numbers across the ranks: a 3% increase in the number of professors, a 13% increase in the number of associate professors and a 22% increase in the number of assistant professors. In contrast, while female faculty experienced a 13% increase in the number of female professors, there was no change in the number of associate professors and an 18% *decrease* in the number of assistant professors. The numbers corresponding to the percentage change from AY2001 to AY2002 can be seen in Figure 3, where positive numbers indicate gains in faculty, and negative numbers indicate losses.

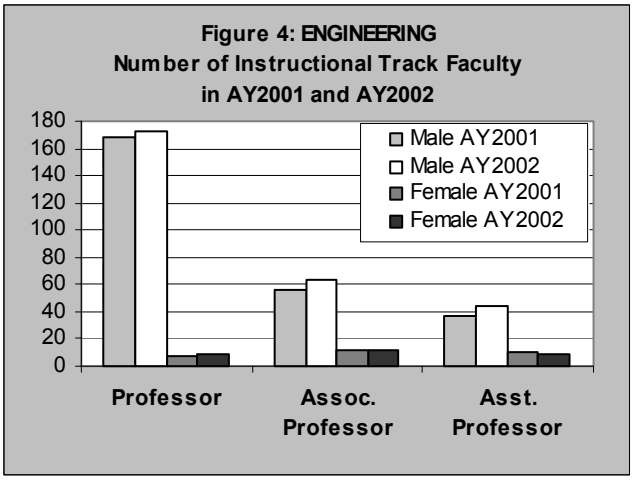
[8] All percentages are rounded to the nearest whole number. Also, while percentages are used throughout this report for ease of comparison across colleges and sub-populations that vary widely in number, the reader must keep in mind that due to the small number of female faculty, an addition/loss of one female will result in a larger corresponding percentage change than if that addition/loss had been one male. Please refer to the tables and figures for raw numbers.

The changes in the number of faculty were largely due to new hires and terminations (retirements and non-renewal of appointments) from the College. In AY2002, the College of Engineering made 23 hires, and all of these hires were male faculty (Table 5). At the same time, the College lost 11 male faculty members and 1 female faculty member due to retirement and other terminations (including non-renewal of appointments; see Table 6). The remainder of the changes from AY2001 to AY2002 reflect changes due to promotions (e.g., the "loss" of an assistant professor and a corresponding "gain" in an associate professor; see Table 2) and people going on, or coming off of, dry (non-budgeted) appointments for a given year.



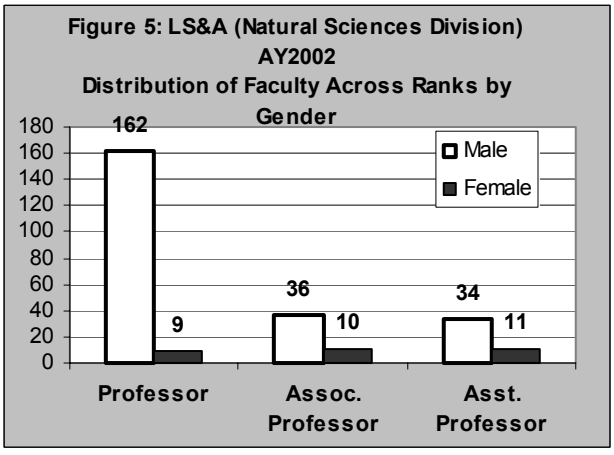

**Summary for Faculty Appointments in Engineering.**

Overall, the comparison from AY2001 to AY2002 for instructional faculty show increases in male faculty at all three ranks, and an overall decrease in the total number of female faculty, with specific decreases at the assistant professor level. Figure 4 presents a summary of the number of faculty at each rank by gender, for both AY2001 and AY2002.

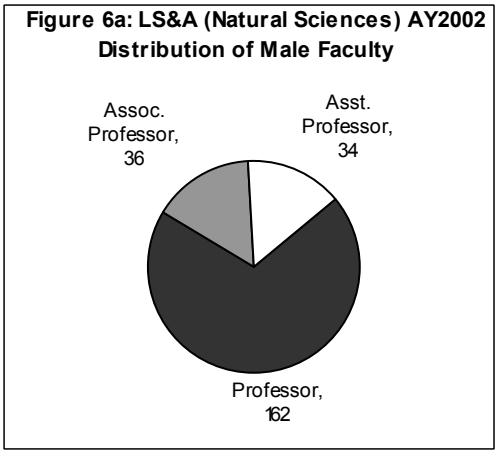


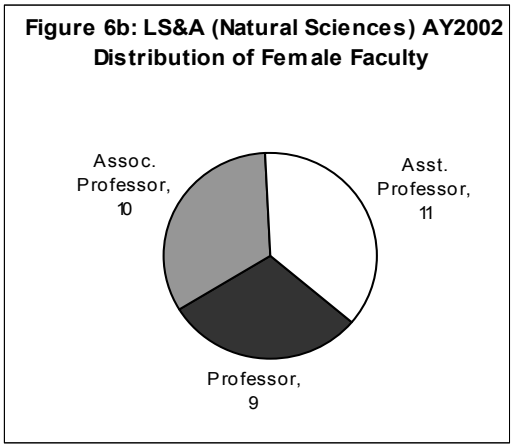

**COLLEGE OF LITERATURE, SCIENCE & THE ARTS**
**(Natural Sciences Division)**

The overall composition of faculty in the Natural Sciences Division for AY2002 was 89% male (N = 232) and 11 % female (N = 30). At the highest rank, this gender disparity was the greatest: only 5% of the professors were women. At the associate professor level, 20% of the faculty were women, and at the assistant professor level, 24% of the faculty were women (see Table 1). Figure 5 depicts the number of faculty at each rank in AY2002, by gender across the 7 departments in LS&A's Natural Sciences Division.

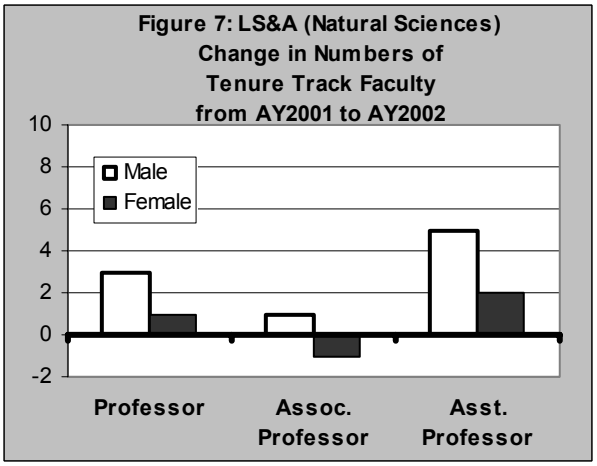


Looking specifically within gender, 70% of all male instructional track faculty in the natural sciences were professors, 16% were associate professors, and 15% were assistant professors. The female comparisons were almost evenly distributed across the ranks--30%, 33% and 36% at professor, associate and assistant professor ranks, respectively (see Figures 6a and 6b).



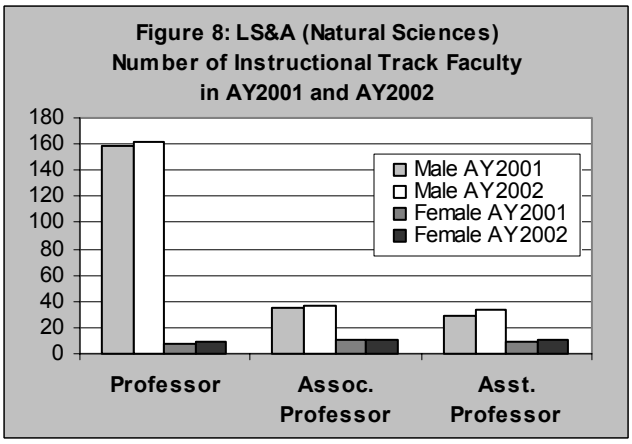

Compared to AY2001, there was an overall 4% increase in the number of tenure track faculty in AY2002. Examined by gender however, the picture varies. For male faculty, there were increases at all ranks: 4% for professors, 2% for associate professors, and 24% for assistant professors. While female faculty also increased at the professor and assistant professors levels (8% and 11% respectively), they *decreased* 8% at the associate professor level. Figure 7 depicts the actual changes in the number of faculty at each rank for both men and women across the 7 natural science departments.




As might be expected, changes in the number of faculty from AY2001 to AY2002 were largely due to new hires and terminations in the College. For AY2002, LS&A natural sciences departments hired a total of 12 male faculty members and lost 7 to terminations or retirements. While they also hired 4 female faculty members, they lost 4 in the same year (see Tables 5 and 6 for hires and terminations to/from the College). Additional changes to the numbers of faculty members were due to promotions (Table 2) and changes in appointment (e.g., going from budgeted to non-budgeted appointments). It is the combination of the abovementioned factors that accounts for the overall changes in distribution of faculty at each rank.

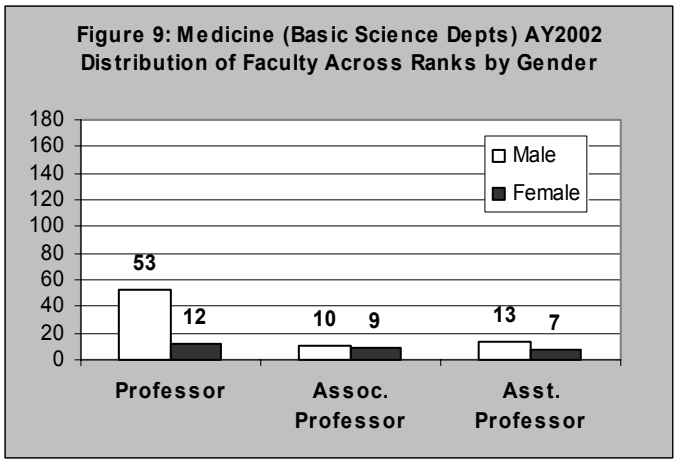
**Summary for Faculty Appointments in the College of LS&A (Natural Sciences Division).**

From AY2001 to AY2002, there were increases in male faculty at all three ranks. For female faculty, there were increases at the assistant and professor levels, but a loss at the associate professor level. Figure 8 shows a summary of the number of faculty at each rank by gender, for both AY2001 and AY2002.

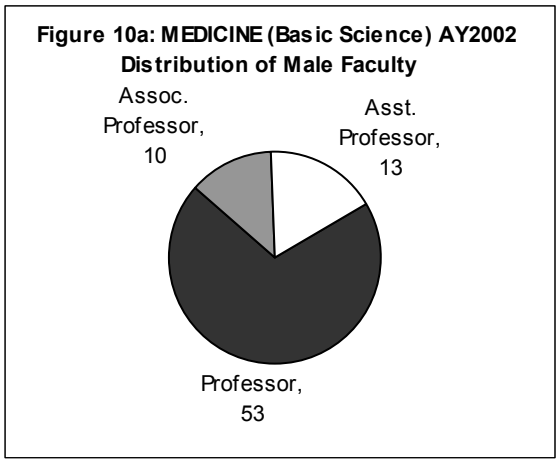


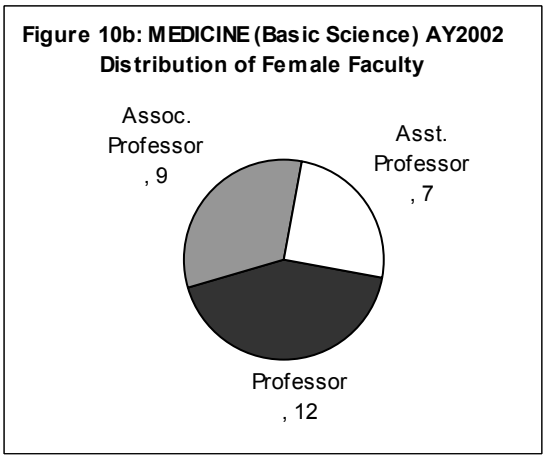

**MEDICAL SCHOOL (Basic Science Departments).**

The basic science departments in the Medical School were comprised of 73% men [69% of FTE] (N = 76) and 27% women [31% of FTE] (N = 34) in AY2002. At all ranks, women were in the minority: they comprised only 18% of professors, 47% of associate professors [59% of FTE] and 35% of assistant professors. Figure 9 shows the actual number of men and women at each rank in AY2002; see Table 1 for percentages based on FTE.

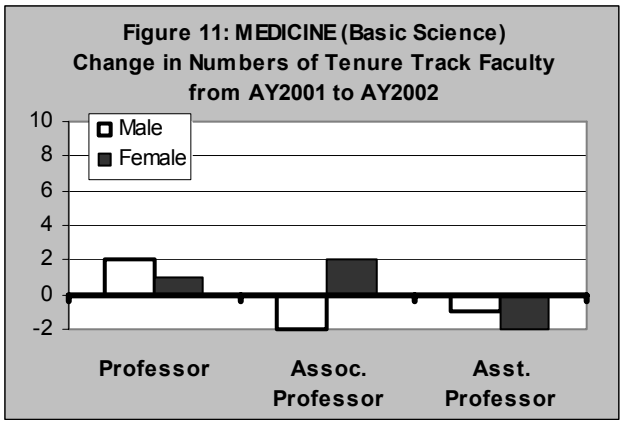



Within the six basic science departments in the Medical School, the distribution of male science instructional track faculty was more concentrated at the upper ranks than that of similar female faculty. For men, 70% were professors, 13% were associate professors and 17% were assistant professors (see Figure 10a). For women, 43% were professors, 32% were associate professors and 25% were assistant professors (see Figure 10b). Thus while women tended to have the greatest proportion of their faculty at the highest (professor) level, this pattern was much more pronounced for the men.



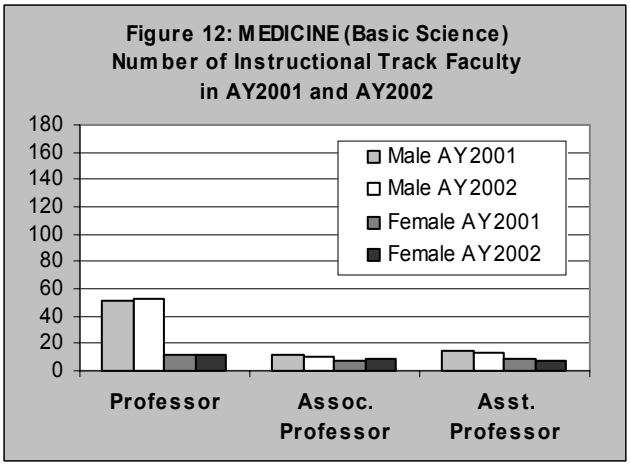



In comparison to AY2001, the faculty remained fairly stable with respect to gender ratio, with many of the gains at one rank balancing out the losses at other ranks (and *vice versa*). In Figure 11 (positive numbers indicate gains in faculty and negative numbers indicate losses in faculty), it can be seen that there was an overall gain of one female faculty member, and an overall loss of one male faculty member.



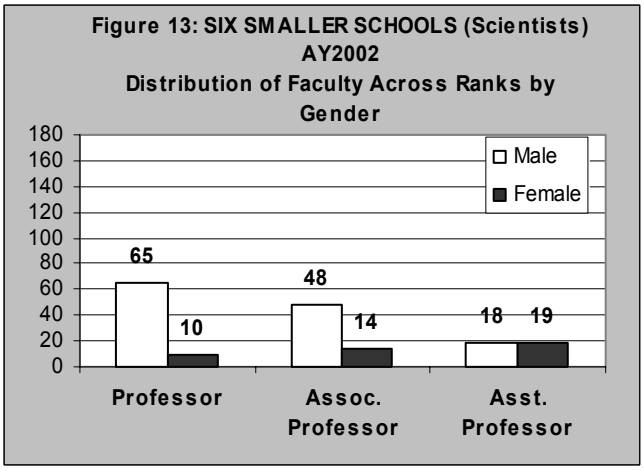

The changes in numbers from AY2001 to AY2002 were due in part to the hires during this time period. Four men and three women were hired on to the faculty in the Basic Science departments (see Table 5). These were offset by the loss of eight men and two women in the same year (see Table 6). In addition to hires and losses, promotions also affected the number of faculty at each rank. Table 2 shows the promotions for the Basic Science departments in the Medical School.

**Summary of Faculty Appointments in the Medical School (Basic Science Departments).** Overall, these Medical School departments did not experience a great deal of change in total numbers of instructional track faculty from AY2001 to AY2002. Figure 12 shows a summary of the number of faculty at each rank by gender for both years.



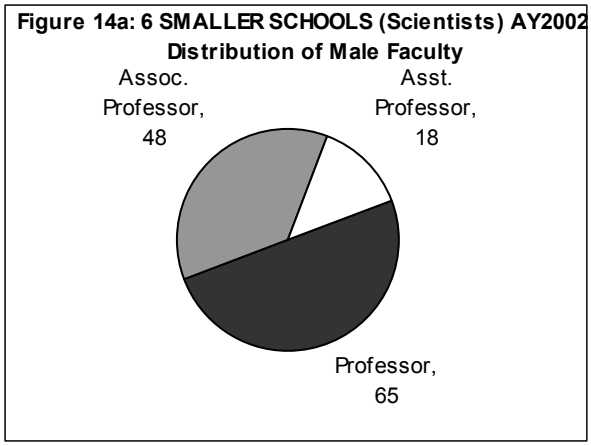

**SIX SMALLER SCHOOLS**
**(Dentistry, Information, Kinesiology, Natural Resources, Pharmacy, Public Health)**

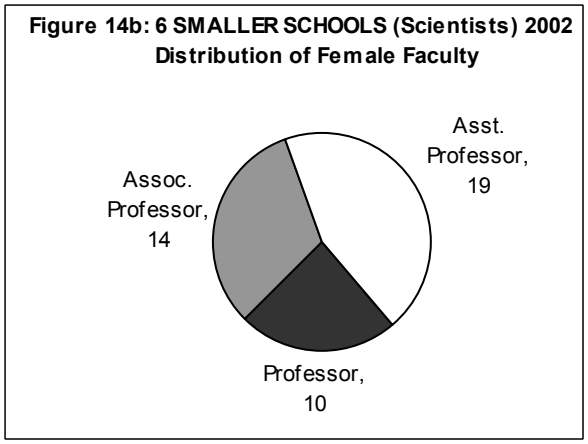
In AY2002, the overall proportion of female (scientist[9]) faculty across all six additional Schools was 24%. This proportion ranged from 0% female in the School of Information to 40% female in the Division of Kinesiology (see Table 1). Looking at all six Schools by rank, we see that while almost half of all assistant professors were female (46%) [43% of FTE], this proportion dropped as we moved higher up the ranks; only 22% of associate professors and 16% of professors were female (see Figure 13).



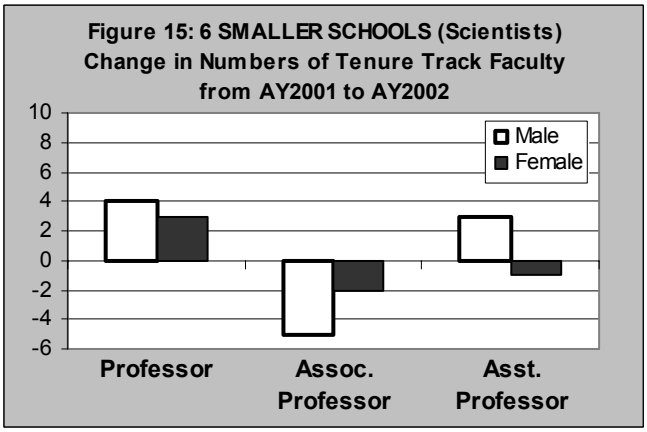

[9] Only scientists in each department were included; non-scientists (based on highest degree or research area) were not included.

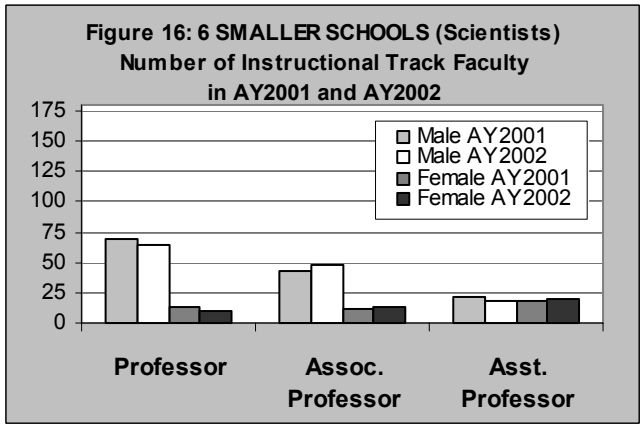
In examining the gender distribution of relevant faculty in these Schools across the ranks, we found that male instructional track faculty were most likely to be at the highest ranks—of all male faculty, 50% were professors, 37% were associate professors and 14% were assistant professors (see Figure 14a). This is in contrast to the distribution of female faculty who were more likely to be at the lowest ranks—44% were assistant professors, 33% were associate professors, and 23% were professors (see Figure 14b).




In comparison to AY2001, there was an overall loss of 3 male faculty members, and a gain of 1 female faculty member in AY2002 (Figure 15). We do not have hire, termination or promotion data from these Schools, and, therefore, are unable to identify the reasons for the changes in numbers. Figure 16 shows the number of faculty at each rank for AY2001 and AY2002.




## SUMMARY OF CHANGES FOR ALL SCHOOLS/COLLEGES

Looking across the Colleges and Schools, the most striking fact is the relatively low numbers of women faculty in all ranks in comparison to their male colleagues. In addition, the majority of instructional track science and engineering male faculty were found to hold the highest rank of professor, while instructional track science and engineering female faculty were relatively evenly distributed across all ranks. In all instances we found more men than women at each rank. These patterns were particularly evident in the Colleges of Engineering and LS&A (Natural Sciences).

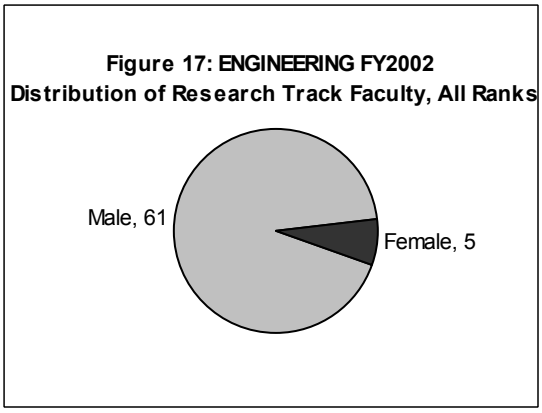
In terms of changes in gender composition from AY2001 to AY2002, The Colleges of Engineering and LS&A (Natural Sciences Division) show the greatest disparity between changes in male and female numbers. Both of these Colleges show marked increases in the number of male faculty, with no corresponding increases in the number of female faculty. The Medical School (Basic Science departments) and the six smaller Schools show a more balanced picture of gains and losses of faculty in AY2002.

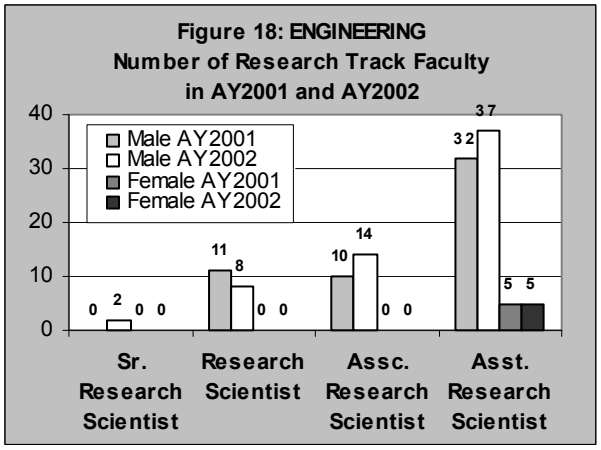
## Research Track Faculty

In this section we discuss faculty on the research track at the University. While there are actually two (not entirely separable) research tracks, and Colleges may elect to use one or both of these tracks, we do not distinguish between them for this report.

### COLLEGE OF ENGINEERING

In AY2002, of the 66 faculty on the research track, 5 (or 8%) were female (see Figure 17) and all of them were assistant research scientists; the 61 men were distributed across all ranks (see also Table 1).

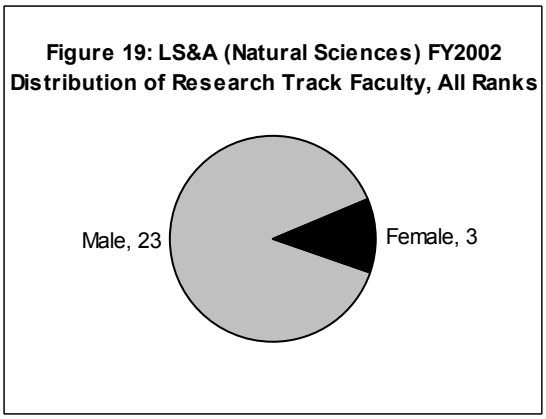


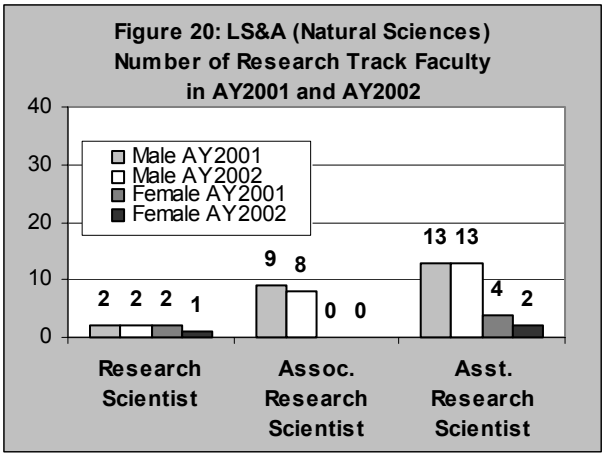

However, unlike the pattern observed for male faculty on the instructional track, most of the research track faculty were concentrated at the lower ranks, with 64% of the faculty (both male and female) holding assistant research scientist positions. In fact only 3% of the research faculty held the highest level of senior research scientist. This pattern remained consistent across both AY2001 and AY2002 (see Figure 18 for raw numbers) as did the proportion of women on the research track (9% in AY2001).

### COLLEGE OF LS&A (Natural Sciences Division)

In AY2002, 12% of the research track faculty in the LS&A Natural Sciences Division were women (N=3; see Figure 19 and Table 1). This was a smaller proportion of women than in AY2001, when there were 20% women (N=6; see Figure 20 for raw numbers).

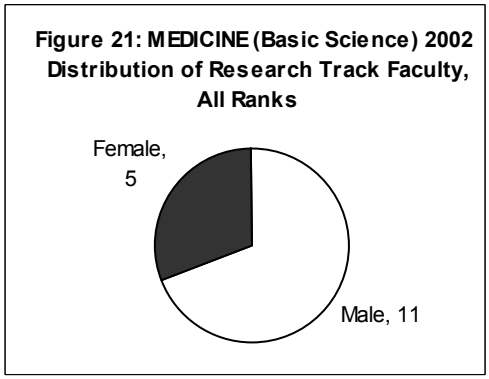


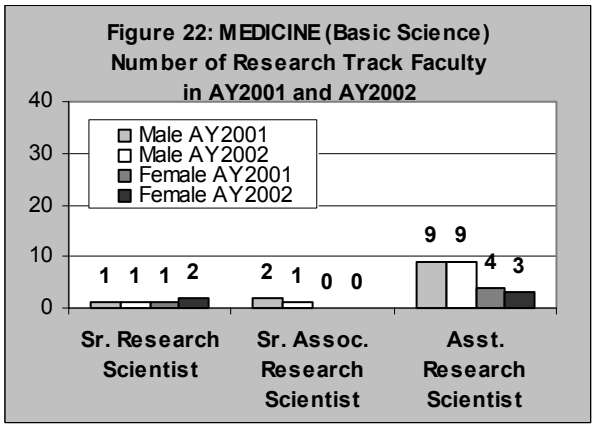
Similar to the research track faculty in Engineering, the natural science departments in LS&A also have more faculty on this track at the lower ranks (57% at assistant research scientist) than at the higher ranks (13% at research scientist); see Figure 20.




## MEDICAL SCHOOL
## (Basic Science Departments)

31% of the research track faculty in the Medical School's Basic Science departments were women in AY2002 (n=5; see Figure 21 and Table 1). In AY2001, 29% of the research track faculty were women (see Figure 22 for raw numbers).

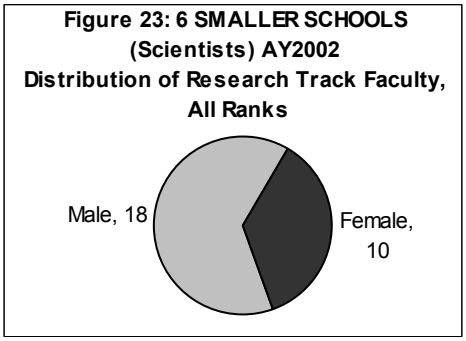


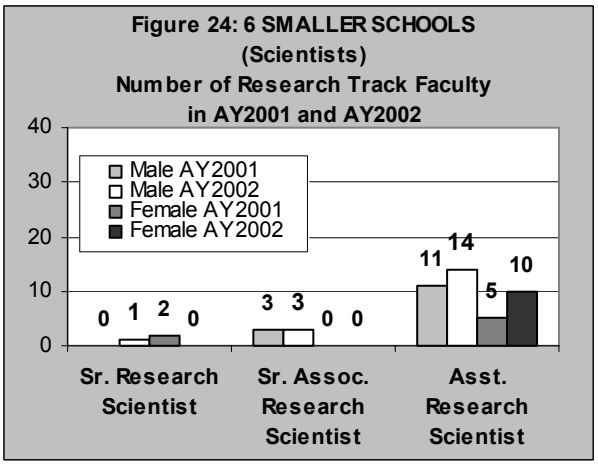

As observed in the other Colleges, the distribution of research scientists in the Medical School was bottom-heavy, with the greatest proportion of faculty at the lowest rank, assistant research scientist. Overall, 75% of all research track faculty fell into that rank, and only 19% of faculty were at the highest rank, senior research scientist.

## SIX SMALLER SCHOOLS (Scientists)

Women research scientists comprised 36% of the research track faculty in the six smaller Schools in AY2002 (n=10; see Figure 23 and Table 1); in AY2001, they comprised 33% (see Figure 24). Note, however, that all 10 women were assistant research scientists.



For research scientists in these six Schools, the pattern of distribution among the ranks again revealed the greatest proportion of faculty concentrated at the lowest rank of assistant research scientist (86%), and the smallest proportion of faculty at the highest rank of senior research scientist (4%).




**SUMMARY OF RESEARCH TRACK FACULTY**

Overall, the proportion of women scientists on the research track did not change much from AY2001 to AY2002. Neither did the distribution of faculty across the ranks (for both men and women). The distribution of research track faculty was opposite that of male tenure track faculty: the majority of faculty were at the lowest ranks, rather than at the highest rank.

## Clinical Track Faculty

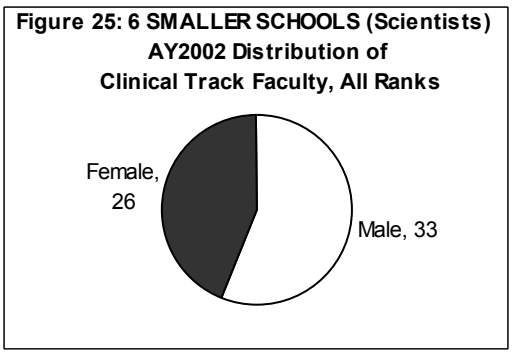
Here we report only on the Colleges/Schools that have faculty on the clinical instructional track. In AY2002, only the smaller Schools had faculty on this track.

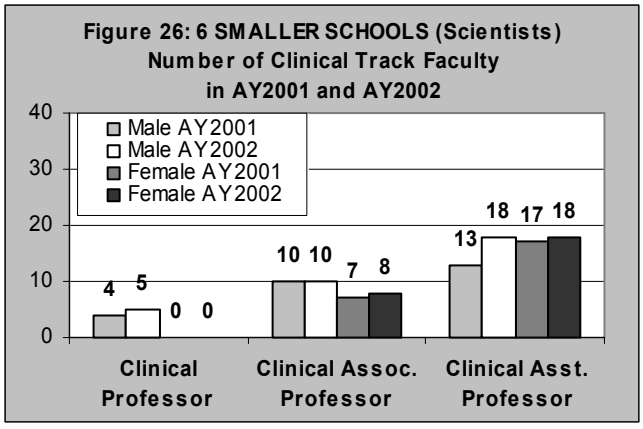
**MEDICAL SCHOOL (Basic Science Departments)**

In AY2002, the Medical School had no clinical faculty in the Basic Science departments. The single female clinical associate professor in human genetics in AY2001 left the University in January 2002.

**SIX SMALLER SCHOOLS (Scientists)**

In AY2002, there were 26 female faculty, representing 44% of the clinical track faculty (see Figure 25 and Table 1) in the six smaller Schools. In AY2001 the proportion of female faculty was 47% (see Figure 26 for raw numbers).




Similar to the research track faculty, but not male instructional track faculty, the clinical track science faculty were concentrated at the lowest rank of clinical assistant professor (61%), and had the smallest proportion of faculty at the highest rank of clinical professor (8%).

## Additional Appointments and Honors
### (Instructional Track Faculty)

In this section we discuss additional appointments of interest held by instructional track faculty members. These appointments fall under two broad categories: named professorships and administrative service in leadership positions.

Under named professorships, we considered the following four categories of honor: Distinguished University Professor (to recognize exceptional scholarly achievement, national and international reputation, and superior teaching skills; a lifetime award), Collegiate Professor (for outstanding scholarship, teaching and service), Thurnau Professor (for excellence in teaching), and endowed chairs. As these appointments are generally limited to professors, we limited our analyses here to faculty at that rank.

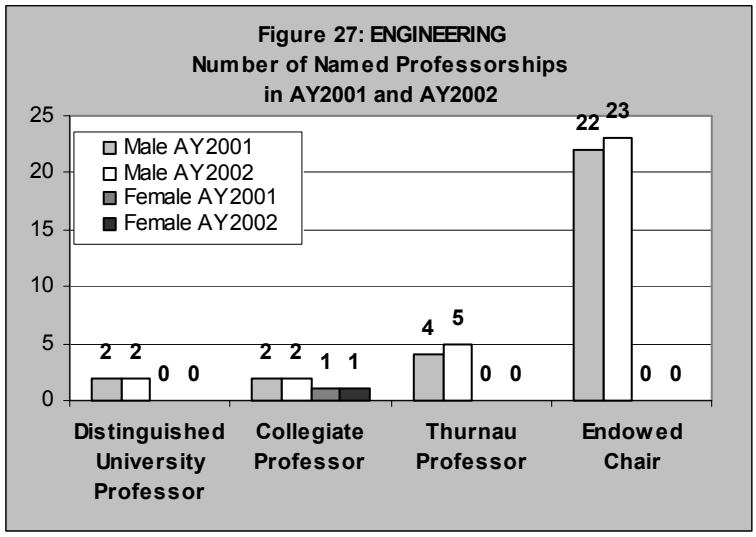
For administrative service, we considered membership on tenure and promotion committees, as well as administrative appointments. These appointments were largely held by professors, but also include associate professors; for this report we considered both associate professors and professors who held these positions. We included faculty who served on either college or department level tenure and promotion committees. For administrative positions, we included those who hold these positions at the university, college or department level.

For each type of appointment we addressed the following questions: 1) What was the change in the number of women holding these positions from AY2001 to AY2002? 2) Was the proportion of positions held by women the same as the proportion of women in the faculty at that rank? 3) Did men and women faculty hold these positions at the same rate?[10]

**NAMED PROFESSORSHIPS**

**College of Engineering**.

In AY2002, two new named professors were appointed: one male faculty received an endowed chair and one male faculty received a Thurnau Professorship. As in AY2001, men held all the positions in three of the four considered categories: Distinguished University professors (2), Thurnau Professors (5) and endowed chairs (23). Only one woman held a Collegiate Professorship (the other 2 were held by men). Figure 27 shows the number of named professorships held by professors in both AY2001 and AY2002.

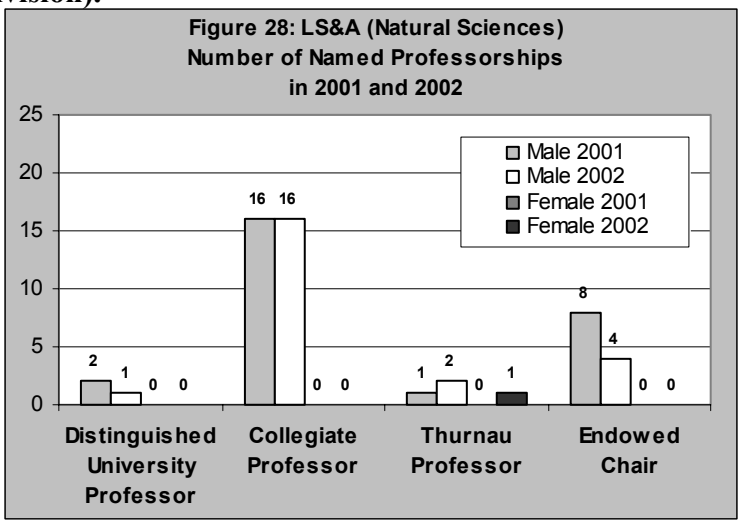



[10] Expected rates can be calculated for each level/category by taking the rates at which male faculty are awarded these positions. We only consider categories in which the expected rate for women was equal to or greater than 1 woman.

Overall, given the distribution of male and female professors, we would expect about 5% of these positions be held by females; in fact, only 3% of the positions were. However, since there were different rates of appointment within the different categories of named professorships (see Table 7a), it seems more appropriate to discuss the distribution of appointments within each category. As there were 9 female professors, the rate of appointment for men must be at least 12% in order to expect 1 woman in a given category (12% of 9). In the category of endowed chairs, 13% of male professors held such a professorship. Given this rate for men, it would be expected that there be at least 1 female with an endowed chair; however, there were none. As the other three categories all had fewer than 12% of male professors holding positions, they were not examined for gender differences.

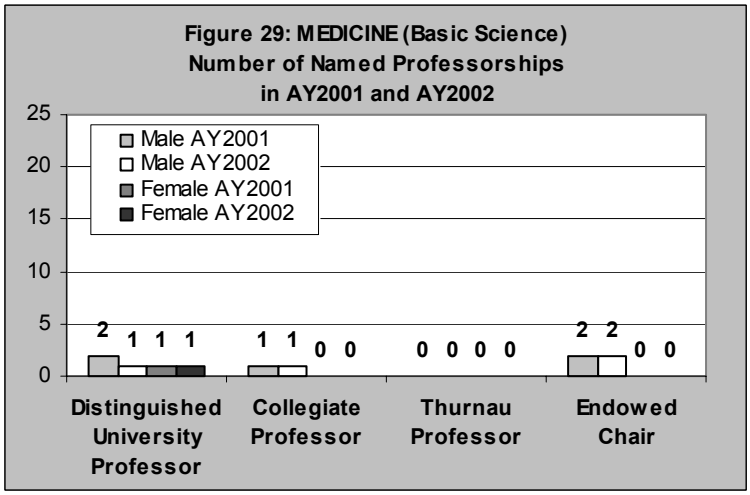
**College of LS&A (Natural Sciences Division).**

In AY2002 there were 24 professors who held Distinguished University Professorships, Collegiate Professorships, Thurnau Professorships or endowed chairs. Of these 24 positions, 23 (or 96%) went to male professors; only 1 (Thurnau Professor) went to a female professor. This is, however, an improvement over AY2001 when none of the 27 named professors was a woman. See Figure 28 for a comparison of AY2001 and AY2002 numbers.




By one means of comparison, the proportion of faculty in AY2002 who were women was 5% and the proportion of named professorships held by women was 4%. However, it is not possible to compare rates of male and female appointments for individual categories because, based on the low rate of male appointments (all less than 12%; see Table 7b) and the very small number of female professors, no female appointments would be expected.

**Medical School (Basic Sciences Departments).** While there was only one female professor who held a named professorship in AY2002 (and AY2001; Distinguished University Professor), the rate of appointment to these positions was comparable for men and women (see Table 7c). These rates were similar for both AY2001 and AY2002—overall 8% percent of both male and female professors held a named professorship (see Figure 29).



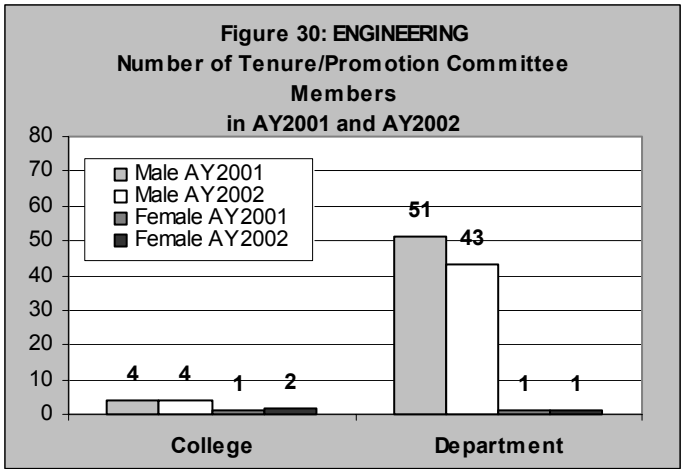
In comparing the proportion of named professorships held by women, and the proportion of the eligible faculty pool that was comprised of women, we found that female professors comprised 18% of professors (12 out of 65), and held 20% of the named professorships (1 out of 5). In order to look at expected numbers of women in the individual categories, men would have had to held positions at a rate of 9% or greater; in no instance was that true.

**Summary for Named Professorships.** Neither the College of Engineering nor the Medical School (Basic Science departments) saw any change in the number of female faculty holding named professorships from AY2001 to AY2002. In these two Colleges, there was an increase in two male named professors and a decrease in one male named professor, respectively. The College of LS&A (Natural Sciences Division) added one female Thurnau Professor, and lost four male named professorships.

For the College of Engineering, there was a particular under-representation of women in the categories of named professors in which there were the largest number of positions: endowed chairs (in Engineering; 23 men, 0 women). This trend was also evident in the College of LS&A (Natural Sciences Division) for Collegiate Professors (16 men, 0 women). In the Medical School (Basic Science departments), there were relatively few named professorships (a total of 5 positions across all categories) and no one category predominated. In this School, the number of women with named professorships was about what would be expected based on the proportion of women faculty at the associate and professor level, as well as based on the proportion of men faculty who held these positions.

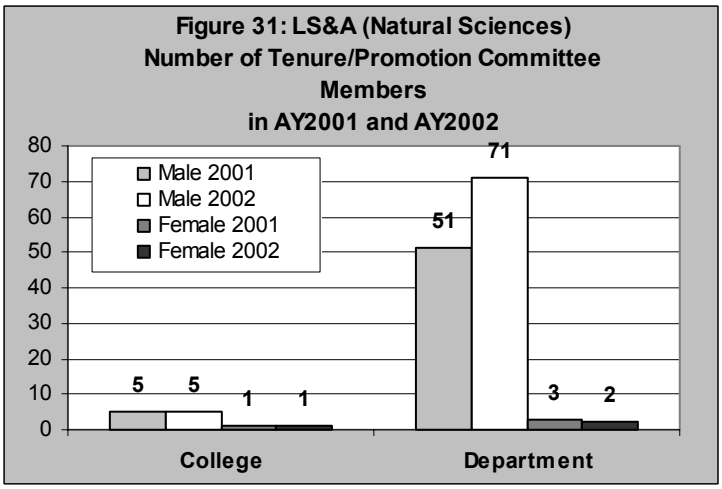
## ADMINISTRATIVE SERVICE: TENURE & PROMOTION COMMITTEES

**College of Engineering.** In AY2001, women comprised 4% of the members of tenure and promotion committees at the College and department level; in AY2002, this number had risen to 6%. This still fell short of the expected proportion (based on the overall distribution of male and female associate professors and professors) of 8% (see Table 8a and Figure 30 for raw numbers).




Given the different number of appointments to College and departmental tenure and promotion committees, it may be more useful to look at appointments at these two levels separately. We look only at the category in which the expected rate (i.e., rate of male participation) is greater than 5% (the minimum percentage needed to expect 1 out of the 21 female associate and professors to be appointed to a tenure and promotion committees). College level committees did not meet this criterion (only 2% of male faculty served on these committees). At the department level, a full 18% of male associate professors and professors served on department-level tenure and promotion committees. It is striking that, in contrast, only 5% of female associate and professors served on these committees at this level.

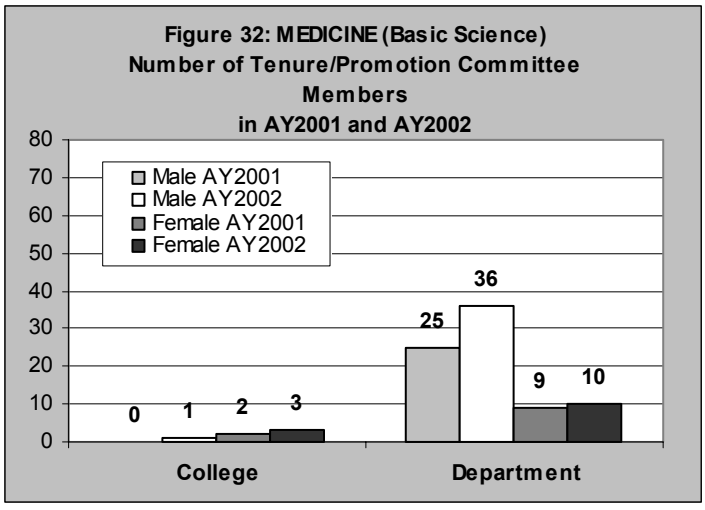
**College of LS&A (Natural Sciences Division).** Despite the overall increase in AY2002 of 19 faculty in the number of department level tenure and promotion committee members from AY2001, this increase was the result of the addition of 20 male faculty members, and the loss of 1 female faculty member. Thus in comparison to AY2001 when 7% of the committee members were women, female representation decreased in AY2002 to 4% (see Figure 31 and Table 8b). This latter rate can be contrasted with the 9% of associate professors and professors who were women in AY2002.




At the level of departmental tenure and promotion committees, it should be noted that while nearly 36% of all male associate professors and professors were on these committees, only 11% of female associate professors and professors were. If 36% of the female faculty served on these committees, we would expect 6 or 7 women, rather than the 2 that served in AY2002. For college level committees, the rate of male faculty participation (3%) was too low to have an expected rate of at least one woman, and thus we did not consider gender differences at this level.

**Medical School (Basic Science Departments).** Overall, in AY2002 women held 26% of all the positions on tenure and promotion committees (see Table 8c). This is comparable to the proportion of women on the faculty at the associate professor and professor level (25%). However this represents a loss from AY2001 where women represented 31% of the committee membership. This change in representation was due to the fact that although 14 positions were added in 2002, only 2 went to female faculty (see Figure 32).

We examined the category in which there was at least 1 woman expected to hold a position based on the proportion of men who held positions in that category: department level tenure and promotion committee membership. Since 57% of male associate professors and professors held positions as department level tenure and promotion committee members, we would expect women to have held these positions at a similar rate. This equates to an expected 26 women on these committees; in AY2002 there were only 10. The college level committees included only 2% of male faculty, resulting in an expected rate for women that was less than one; thus gender differences in this category were not examined.

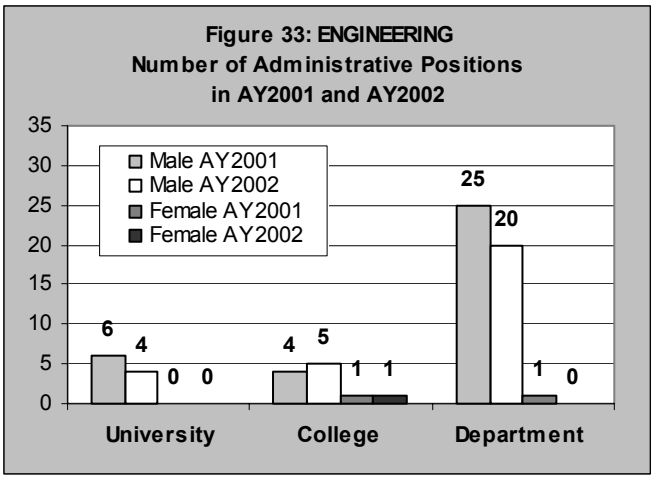


**Summary for Tenure and Promotion Committees.** Given the small number of faculty on college level tenure and promotion committees, women were relatively well represented in all three Schools/Colleges. In both the College of Engineering and Medical School (Basic Science departments), there was an increase of one woman to membership in these committees in AY2002; the number of women (1) remained unchanged in the College of LS&A (Natural Sciences Division).

For all three Schools/Colleges, the largest number of positions on tenure and promotion committees was at the department level. While there were relatively large fluctuations in the number of men holding these positions from AY2001 to AY2002 (-8 for Engineering, +20 for LS&A, +11 for Medicine), this was not true for women. In fact across the three Schools/Colleges there was no change in the number of women who served on department level tenure and promotion committees. As a result, women remained under-represented on these department level committees.

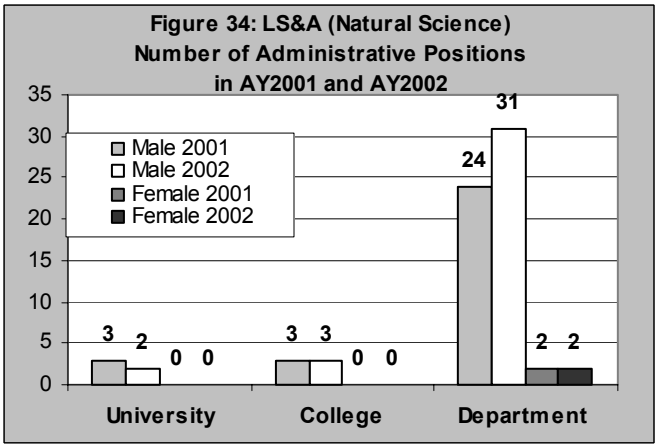
## ADMINISTRATIVE SERVICE: ADMINISTRATIVE POSITIONS

**College of Engineering.** The total number of faculty with administrative appointments dropped in AY2002 from AY2001 for both men and women. However, while female faculty comprised 5% of all faculty with administrative appointments in AY2001, they comprised only 3% in AY2002 (see Figure 33 and Table 9a for raw numbers). By means of reference, females comprised 8% of associate professors and professors in AY2002, the pool from which those with administrative appointments are drawn.




When examining differences at each administration level**,** we looked only at levels where the expected rate (i.e., observed rate for men) was greater than 5%; in this case it was at the department level (both the university and college levels had male participation rates less than 5%). In AY2002, 9% of male associate professors and professors held administrative positions in the department; contrast this with 0% of female associate professors and professors who held such positions.

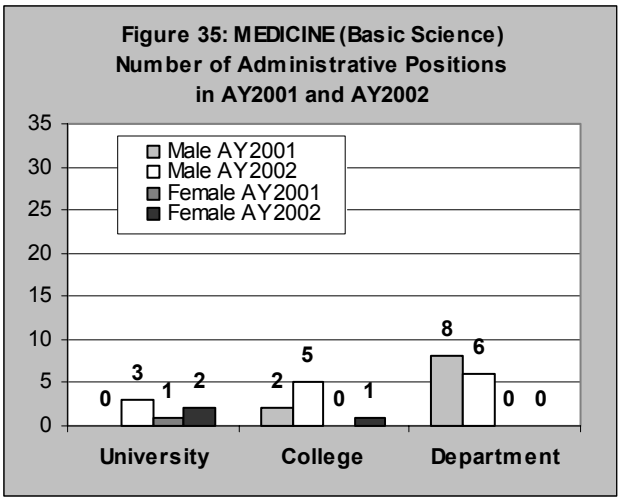
**College of LS&A (Natural Sciences Division).** In AY2002, as in AY2001, only 2 women held department level administrative positions and no women held administrative positions at the college or university levels. This is in comparison to 36 men who held such positions in AY2002: department level (31), college level (3) and university level (2). Overall, compared to AY2001, the proportion of positions held by women decreased from 6% to 5% (see Figure 34 for



raw numbers). In AY2002, 9% of associate professors and professors were women, and 5% of faculty who held administrative positions were women (see Table 9b).

For administrative positions at the departmental level in particular, given that 16% of male faculty held positions at this level, we would expect a similar rate for women—which equates to 3 women. There were in fact 2 women (11% of female faculty) who held these positions. However, this number should be considered in the context that 7 additional faculty were appointed to administrative positions at the department level in AY2002, and none of these new appointees were women. At the university and college levels, the rate of male faculty holding these positions was less than 6% (critical rate to expect one woman faculty holding these positions), and were not examined for gender differences.

**Medical School (Basic Science Departments).** In AY2002, only 18% of the faculty holding administrative positions were women, although they comprised 25% of the faculty at the associate professor and professor ranks (see Figure 35 and Table 9c for raw numbers). It should be noted, however, that this was an improvement over the previous year. In AY2001, only 9% of the faculty holding administrative positions were women (representing one female professor who held a university level administrative position that year).




Based on the proportion of male associate professors and professors who held administrative positions at the college and department level in AY2002 (7.9% and 9.5%, respectively), if we expected a similar proportion of female associate professors and professors to hold these positions, there would be at least 1 woman administrator at each level. We did find this at the college level, but not at the department level. Men at the university level did not meet the critical threshold (5%) to be examined for gender differences.

**Summary for Administrative Positions.** The findings here are similar to those observed for membership on tenure and promotion committees: given the small number of faculty appointed to *university* and *college* level administrative positions, women and men were appointed to these positions at about the same rates. In the Colleges of Engineering and LS&A (Natural Sciences Division), there were no changes in the number of women in administrative positions at these levels from AY2001 to AY2002. The Medical School (Basic Science departments) added one woman at both the university and college levels over this same time period.

However, in the case of *department* level administrative positions, women were not represented at the same rates as men. In all three Schools/Colleges, women faculty were less likely to hold department-level administrative positions than were men faculty. This is particularly important as the largest numbers of positions are at this level.

**SUMMARY FOR NAMED PROFESSORSHIPS & ADMINISTRATIVE SERVICE: ALL SCHOOLS/COLLEGES**

The discussion of equitable representation of women in these additional appointments is complicated by the low rates of appointment (for both men and women) to these positions, and further, by the low numbers of female faculty eligible (i.e., associate professors and/or professors) to hold such positions. Though the findings must be considered within this context, it is nonetheless important to discuss any discernable gender disparities.

Across all Schools/Colleges, women held additional appointments at rates that were about equivalent to the rates at which they are represented in the population (of associate professors/professors). Given the low numbers of women faculty, these rates were often equivalent to only 1 or 2 women holding named professorships, serving on tenure and promotion committees, or holding administrative positions in each School/College. However, there were some instances when even this low number was not achieved for women faculty.

Instances where women were appointed to administrative positions do not reflect the same pattern of distribution as we find for the men. Categories in which the largest numbers of men held positions—and therefore in which there are the largest number of appointments available (e.g., endowed chairs in Engineering, department level tenure and promotion committees in LS&A, and department level administrative positions in Medicine) are not the categories in which the largest numbers of women held positions. As a result, women are particularly under-represented in categories that have the largest number of appointments.

## Other Indicators

Here we discuss additional indicators that were collected for AY2002. In the case of three variables: years at the University, years at rank and salary, we collected data for all three tracks: instructional, research and clinical. For the fourth variable—startup packages—we only collected data for instructional track faculty from the three large Schools/Colleges (Engineering, LS&A, and Medicine).

**YEARS IN RANK & YEARS AT INSTITUTION**

The raw numbers are reported in Table 3 and Table 4 respectively, and have been broken down by School/College, rank and gender. This data will be used in future salary analyses (see below); currently they have not been factored into any descriptive analyses presented in this report.

**SALARY**

We are working on developing a model to assess salary equity across gender, and this is reported in the Evaluation Activities section (the report on AY2003 salary in one College; see Appendix E for the full report on this effort to date). We will continue working on these analyses and extending them to analyses of data across the three large School/Colleges; we hope to be able to present additional findings in June 2004. In this report we present the average salaries by college (see Table 10). While broken down by school, track, rank and gender, these data have not incorporated any statistical controls. Thus no conclusions can be drawn from them at this time.

**STARTUP PACKAGES**

Startup packages for new incoming instructional track faculty for the three large School/Colleges have been compiled. Given the relatively small number of new faculty (a total of 48 across all ranks and departments), we do not yet have a large enough sample to incorporate any statistical controls on the data. Without these controls, the data cannot be interpreted in a meaningful manner. For this reason, as well as to minimize identification of individual faculty members, we do not present these data here.

**SPACE**

In Fall 2001, prior to the start of UM's NSF ADVANCE project, the staff at the Institute for Research on Women and Gender, with funding from UM administration, conducted a exhaustive assessment of space allocation for faculty, by department, across the three large Schools with science and engineering faculty. Last year we reported on preliminary analyses of these data. Since then, two faculty members, Richard Gonzalez, professor of psychology and chair of the department, and Bendek Hansen, assistant professor in statistics, have been pursuing separate and specialized analyses of these data. The two different analytic strategies and the regression analysis strategy used by Dr. Malley provide little evidence of gender disparities in the aggregate, but each suggests the value of narrower, more targeted comparisons for identifying particular disparities. Professor Hansen's report is included in Appendix F. When Professor Gonzalez completes his analyses, we will provide an overall summary with recommendations for institutional monitoring of space allocations.

## Program Evaluation
### (To Date and Planned for 2004)

**EVALUATION OF PROGRAMMING**

As we approach the completion of the second year of our project, most of the programming initiatives are fully developed and in place, and we have been turning our attention to evaluation of these initiatives. Several initial evaluations have been completed, and more are scheduled to be completed in the near future. We have also developed a schedule to ensure regular evaluation of all project related initiatives and events.

**Continuing Programs.** Currently, there are three programs that are ongoing. The first two were evaluated in 2003 and reports of these are appended. The third is a new program that began in the late Fall of 2003, and will be evaluated next year.

1) STRIDE presentations to search committees (see Appendix G for the full report).
2) Women Talking Science and Engineering (WTSE) seminars for female faculty (see Appendix H for the full report).
3) CRLT players "Faculty Meeting" sketch presented to faculty groups will be evaluated in 2004.

**Events.** Several events have been hosted by the ADVANCE project in 2003 which have not yet been formally evaluated. We plan to conduct evaluations of these programs in 2004.

1) Negotiation Workshop (for women faculty; March 2003)
2) Speaker Series: *Women Leading in Science* (public lectures; Fall 2003)

3) Leadership retreat (co-hosted by the College of Engineering and College of Literature, Science and Arts for instructional track women faculty; October 2003)

**Grants.** We will also compile formal reports of progress on the following grants that were awarded or continued in 2003:

1) Departmental Transformation Grants (3 departments that received awards and three comparison departments)
    - CEW staff have been conducting a qualitative evaluation of the Departmental Transformation Grants awarded AY2002. Grants were awarded in Chemical Engineering, Materials Science & Engineering, Electrical Engineering and Computer Science, and Chemistry. The evaluation includes interviews with all women faculty and an equal number of men faculty in the departments awarded funds as well as in comparison departments that did not receive funds. During the Winter and Spring 2003 terms, a total of 21 interviews with men and women in the above-mentioned departments were completed. Faculty were asked their perceptions about departmental climate in general and about gender/ADVANCE-related issues more specifically. By the end of this semester it is expected that the interviewing phase will be completed (approximately 25 interviews). Preliminary thematic analysis of completed interview has begun, and a draft report should be completed by January 2004. Focus groups with graduate students in these departments will be scheduled for Winter term 2004.
2) Crosby Award winners (20 tenured/tenure-track faculty awardees)
3) DeWitt Award winners (3 research-track faculty awardees)

**ADDITIONAL EVALUATION EFFORTS**

**Attrition Data.** We are in the process of tracking hires and terminations of instructional track faculty in the three large Schools/Colleges, by department, on an annual basis from 1990 to the present. We plan to code reasons for attrition (specifically retirements, voluntary leaving and involuntary leaving). University personnel data provides good information on faculty changes by department, but does not consistently identify reasons for faculty leaving the University. We have consulted with faculty from the STRIDE and FASTER committees to help us verify reasons for instructional faculty attrition. This will assist us in developing a coding system that will aid departments in tracking the reasons for faculty departures in a more meaningful way.

**Data collection for 2004 annual report.** We will continue data collection on the indicators in the upcoming calendar year of 2004, making efforts to standardize the format and type of data received from individual Colleges and Schools. In 2004, we will collect two years of indicator data—AY2003 and AY 2004. This will allow us, in December 2004, to report on activities of the 2004 calendar year (CY2004) in tandem with indicator measures for the 2004 academic year. Note however that activities of the CY2004 will not be reflected in indicators for the AY2004; the impact of such activities should not be evident until AY2005 at the earliest.

## Index of Tables for AY2002

## Index of Tables for AY2001

**Table 1: Tenure, Research and Clinical Track Faculty (AY2002)**

| | FULL PROFESSOR | | | | | | ASSOCIATE PROFESSOR | | | | | | ASSISTANT PROFESSOR | | | | | | TOTAL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | males | | | females | | | males | | | females | | | males | | | females | | | males | | | females | | |
| | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % |
| ALL ENGINEERING | 173 | 149.3 | 95% | 9 | 8.5 | 5% | 63 | 58.4 | 85% | 12 | 10.3 | 15% | 45 | 45.0 | 85% | 9 | 8.1 | 15% | 281 | 252.6 | 90% | 30 | 26.9 | 10% |
| LS&A (Natural Science) | 160 | 140.4 | 94% | 9 | 9.0 | 6% | 36 | 32.1 | 78% | 10 | 9.0 | 22% | 34 | 32.0 | 76% | 11 | 10.0 | 24% | 232 | 204.5 | 88% | 30 | 28.0 | 12% |
| MEDICINE (Basic Science) | 52 | 41.9 | 82% | 12 | 9.4 | 18% | 10 | 6.1 | 41% | 9 | 8.9 | 59% | 13 | 11.4 | 65% | 7 | 6.1 | 35% | 76 | 59.4 | 71% | 28 | 24.4 | 29% |
| 6 SCHOOLS (Scientists) | 69 | 60.6 | 83% | 13 | 12.3 | 17% | 43 | 38.9 | 76% | 12 | 12.0 | 24% | 21 | 21.0 | 57% | 18 | 15.8 | 43% | 133 | 120.5 | 75% | 43 | 40.1 | 25% |
| TOTAL | 454 | 392.2 | 91% | 43 | 39.2 | 9% | 152 | 135.5 | 77% | 43 | 40.2 | 23% | 113 | 109.4 | 73% | 45 | 40.0 | 27% | 722 | 637.0 | 84% | 131 | 119.4 | 16% |

| | SR RESEARCH SCIENTISTS | | | | | | SR ASSOC RES. SCIENTISTS | | | | | | RESEARCH SCIENTISTS | | | | | | ASSOC RESEARCH SCIENTISTS | | | | | | ASST RESEARCH SCIENTISTS | | | | | | TOTAL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | males | | | females | | | males | | | females | | | males | | | females | | | males | | | females | | | males | | | females | | | males | | | females | | |
| | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % |
| ALL ENGINEERING | 2 | 1.8 | 100% | 0 | 0.0 | 0% | -- | -- | -- | -- | -- | -- | 8 | 5.7 | 100% | 0 | 0.0 | 0% | 14 | 12.7 | 100% | 0 | 0.0 | 0% | 37 | 34.0 | 89% | 5 | 4.0 | 11% | 61 | 52.4 | 93% | 5 | 4.0 | 7% |
| LS&A (Natural Science) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2 | 2.0 | 80% | 1 | 0.5 | 20% | 8 | 6.1 | 100% | 0 | 0.0 | 0% | 13 | 11.8 | 90% | 2 | 1.3 | 10% | 23 | 19.9 | 92% | 3 | 1.8 | 8% |
| MEDICINE (Basic Science) | 1 | 0.5 | 29% | 2 | 1.2 | 71% | 1 | 1.0 | 100% | 0 | 0.0 | 0% | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 9 | 9.0 | 78% | 3 | 2.5 | 22% | 11 | 10.5 | 74% | 5 | 3.7 | 26% |
| 6 SCHOOLS (Scientists) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1 | 0.4 | 1 | 0 | 0.0 | 0% | 3 | 2.7 | 100% | 0 | 0.0 | 0% | 14 | 12.3 | 63% | 10 | 7.2 | 37% | 18 | 15.4 | 68% | 10 | 7.2 | 32% |
| TOTAL | 3 | 2.3 | 66% | 2 | 1.2 | 34% | 1 | 1.0 | 100% | 0 | 0.0 | 0% | 11 | 8.1 | 94% | 1 | 0.5 | 6% | 25 | 21.5 | 100% | 0 | 0.0 | 0% | 73 | 67.1 | 82% | 20 | 15.0 | 18% | 113 | 98.2 | 85% | 23 | 16.7 | 15% |

Note: Ns do not include faculty with only dry appointments in the department. Percentages based on FTE

**Table 2: Tenure Track Promotions, effective AY2002 (reviews conducted AY2001)**

| | Asst--> Associate with Tenure | | Assoc with tenure--> Full with tenure | |
|---|---|---|---|---|
| | M | F | M | F |
| ALL ENGINEERING | 3 | 2 | 8 | 1 |
| LS&A (Natural Science) | 5 | 1 | 6 | 2 |
| MEDICINE (Basic Science) | 1 | 3 | 2 | 1 |
| Total Positive Decisions | 9 | 6 | 16 | 4 |

## Table 3: Average time (in years) in Rank for Tenure, Research and Clinical Track Faculty (AY2002)

### Tenure Track Faculty

| | PROFESSORS | | ASSOC PROFS | | ASST PROFS | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | 11.67 | 5.12 | 5.86 | 2.98 | 2.31 | 4.12 |
| LS&A (Natural Science) | 13.96 | 3.22 | 5.00 | 4.80 | 1.97 | 1.18 |
| MEDICINE (Basic Science) | 14.55 | 9.32 | 3.61 | 4.50 | 3.42 | 3.74 |
| 6 SCHOOLS (Scientists) | 14.67 | 8.46 | 10.25 | 7.63 | 3.70 | 7.78 |

### Research Track Faculty

| | SR RESEARCH SCI | | SR ASSOC RES SCI | | RESEARCH SCI | | ASSOC RES SCI | | ASST RES SCI | |
|---|---|---|---|---|---|---|---|---|---|---|
| | males | females | males | females | males | females | males | females | males | females |
| ALL ENGINEERING | 2.50 | -- | -- | -- | 8.91 | -- | 3.60 | -- | 3.04 | 2.72 |
| LS&A (Natural Science) | -- | -- | -- | -- | 6.50 | 16.00 | 2.50 | -- | 3.23 | 1.00 |
| MEDICINE (Basic Science) | 4.50 | 5.25 | 4.50 | -- | -- | -- | -- | -- | 4.92 | 5.97 |
| 6 SCHOOLS (Scientists) | -- | -- | -- | -- | 7.80 | -- | 4.63 | -- | 3.82 | 4.58 |

### Clinical Track Faculty

| | CLINC PROF | | CLINC ASSOC P | | CLINC ASST P | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | -- | -- | -- | -- | -- | -- |
| LS&A (Natural Science) | -- | -- | -- | -- | -- | -- |
| MEDICINE (Basic Science) | -- | -- | -- | -- | -- | -- |
| 6 SCHOOLS (Scientists) | 3.70 | -- | 5.13 | 3.83 | 4.26 | 4.02 |

Note: Ns do not include faculty with only dry appointments in the department

## Table 4: Average time (in years) at UM for Tenure, Research and Clinical Track Faculty (AY2002)

### Tenure Track Faculty

| | PROFESSORS | | ASSOC PROFS | | ASST PROFS | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | 19.54 | 10.70 | 10.51 | 7.63 | 2.65 | 4.64 |
| LS&A (Natural Science) | 22.78 | 12.04 | 10.37 | 9.88 | 2.70 | 2.16 |
| MEDICINE (Basic Science) | 23.93 | 19.55 | 10.96 | 13.12 | 3.93 | 4.81 |
| 6 SCHOOLS (Scientists) | 21.98 | 20.53 | 14.74 | 12.68 | 2.87 | 7.50 |

### Research Track Faculty

| | SR RESEARCH SCI | | SR ASSOC RES SCI | | RESEARCH SCI | | ASSOC RES SCI | | ASST RES SCI | |
|---|---|---|---|---|---|---|---|---|---|---|
| | males | females | males | females | males | females | males | females | males | females |
| ALL ENGINEERING | 16.58 | -- | -- | -- | 19.39 | -- | 8.81 | -- | 6.04 | 6.96 |
| LS&A (Natural Science) | -- | -- | -- | -- | 23.02 | 26.00 | 9.26 | -- | 9.11 | 3.45 |
| MEDICINE (Basic Science) | 11.83 | 18.29 | 5.49 | -- | -- | -- | -- | -- | 10.73 | 9.58 |
| 6 SCHOOLS (Scientists) | -- | -- | -- | -- | 27.83 | -- | 6.49 | -- | 6.21 | 4.83 |

### Clinical Track Faculty

| | CLINC PROF | | CLINC ASSOC P | | CLINC ASST P | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | -- | -- | -- | -- | -- | -- |
| LS&A (Natural Science) | -- | -- | -- | -- | -- | -- |
| MEDICINE (Basic Science) | -- | -- | -- | -- | -- | -- |
| 6 SCHOOLS (Scientists) | 17.23 | -- | 11.48 | 14.71 | 4.19 | 7.28 |

Note: Ns do not include faculty with only dry appointments in the department

**Table 5: Hires to the Tenure Track (Appointment beginning AY2002)**

| | FULL PROFESSOR | | ASSOCIATE PROFESSOR | | ASST. PROFESSOR | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | male | female | male | female | male | female | male | female |
| ALL ENGINEERING | 0 | 0 | 10 | 0 | 13 | 0 | 23 | 0 |
| LS&A (Natural Science) | 1 | 0 | 1 | 0 | 10 | 4 | 12 | 4 |
| MEDICINE (Basic Science) | 2 | 1 | 0 | 0 | 2 | 2 | 4 | 3 |
| TOTAL | 3 | 1 | 11 | 0 | 25 | 6 | 39 | 7 |

**Table 6: Losses (retirements and terminations) from the Tenure Track AY2002**

| | FULL PROFESSOR | | ASSOCIATE PROFESSOR | | ASST. PROFESSOR | | TOTAL | |
|---|---|---|---|---|---|---|---|---|
| | male | female | male | female | male | female | male | female |
| ALL ENGINEERING | -7 | 0 | -1 | 0 | -3 | -1 | -11 | -1 |
| LS&A (Natural Science) | -6 | -1 | -1 | -1 | 0 | -2 | -7 | -4 |
| MEDICINE (Basic Science) | -4 | -1 | -1 | 0 | -3 | -1 | -8 | -2 |
| TOTAL | -17 | -2 | -3 | -1 | -6 | -4 | -26 | -7 |

**Table 7a: ENGINEERING: Named Professorships held by Full Professors (AY2002)**

| | Males | % of Male Full Profs | % of all Positions | Females | % of Female Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| Distinguished University Professor | 2 | 1.2% | 6.1% | 0 | 0.0% | 0.0% |
| Collegiate Professor | 2 | 1.2% | 6.1% | 1 | 11.1% | 3.0% |
| Thurnau Professor | 5 | 2.9% | 15.2% | 0 | 0.0% | 0.0% |
| Endowed Chair* | 23 | 13.3% | 69.7% | 0 | 0.0% | 0.0% |
| TOTAL | 32 | 18.5% | 97.0% | 1 | 11.1% | 3.0% |

*Does not include 1 male (Asst Prof) [endowed Asst Professorship]

*Male Full Prof (Ns)* *173* *Female Full Prof (Ns)* *9*

**Table 7b: LS&A (Natural Science): Named Professorships held by Full Professors (AY2002)**

| | Males | % of Male Full Profs | % of all Positions | Females | % of Female Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| Distinguished University Professor | 1 | 0.6% | 4.2% | 0 | 0.0% | 0.0% |
| Collegiate Professor | 16 | 9.9% | 66.7% | 0 | 0.0% | 0.0% |
| Thurnau Professor | 2 | 1.2% | 8.3% | 1 | 11.1% | 4.2% |
| Endowed Chair* | 4 | 2.5% | 16.7% | 0 | 0.0% | 0.0% |
| TOTAL | 23 | 14.2% | 95.8% | 1 | 11.1% | 4.2% |

*Does not include 2 males (Visiting Professor, Assoc Res Sci)

*Male Full Prof (Ns)* *162* *Female Full Prof (Ns)* *9*

**Table 7c: MEDICINE (Basic Science): Named Professorships held by Full Professors (AY2002)**

| | Males | % of Male Full Profs | % of all Positions | Females | % of Female Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| Distinguished University Professor | 1 | 1.9% | 20.0% | 1 | 8.3% | 20.0% |
| Collegiate Professor | 1 | 1.9% | 20.0% | 0 | 0.0% | 0.0% |
| Thurnau Professor | 0 | 0.0% | 0.0% | 0 | 0.0% | 0.0% |
| Endowed Chair | 2 | 3.8% | 40.0% | 0 | 0.0% | 0.0% |
| TOTAL | 4 | 7.5% | 80.0% | 1 | 8.3% | 20.0% |

*Male Full Prof (Ns)* *53* *Female Full Prof (Ns)* *12*

**Table 8a: ENGINEERING: Tenure/Promotion Committee members held by Associate & Full Professors (AY2002)**

| | Males | % of Male Assoc/Full Profs | % of all Positions | Females | % of Female Assoc/Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| College | 4 | 1.7% | 8.0% | 2 | 9.5% | 4.0% |
| Department* | 43 | 18.2% | 86.0% | 1 | 4.8% | 2.0% |
| TOTAL | 47 | 19.9% | 94.0% | 3 | 14.3% | 6.0% |

*Does not include 1 male (Sr Research Scientist) and 1 female (Sr Research Scientist)

| | | | |
|---|---|---|---|
| *Male Assoc Prof (Ns)* | *63* | *Female Assoc Prof (Ns)* | *12* |
| *Male Full Prof (Ns)* | *173* | *Female Full Prof (Ns)* | *9.0* |
| *Male (Ns)* | *236* | *Female (Ns)* | *21* |

**Table 8b: LS&A (Natural Science): Tenure/Promotion Committee members held by Associate & Full Professors (AY2002)**

| | Males | % of Male Assoc/Full Profs | % of all Positions | Females | % of Female Assoc/Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| College | 5 | 2.5% | 6.3% | 1 | 5.3% | 1.3% |
| Department* | 71 | 35.9% | 89.9% | 2 | 10.5% | 2.5% |
| TOTAL | 76 | 38.4% | 96.2% | 3 | 15.8% | 3.8% |

*Does not include 1 female (Sr Research Scientst)

| | | | |
|---|---|---|---|
| *Male Assoc Prof (Ns)* | *36* | *Female Assoc Prof (Ns)* | *10* |
| *Male Full Prof (Ns)* | *162* | *Female Full Prof (Ns)* | *9* |
| *Male (Ns)* | *198* | *Female (Ns)* | *19* |

**Table 8c: MEDICINE (Basic Science): Tenure/Promotion Committee held by Associate & Full Professors (AY2002)**

| | Males | % of Male Assoc/Full Profs | % of all Positions | Females | % of Female Assoc/Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| College | 1 | 1.6% | 2.0% | 3 | 14.4% | 6.0% |
| Department * | 36 | 57.1% | 72.0% | 10 | 47.9% | 20.0% |
| TOTAL | 37 | 58.7% | 74.0% | 13 | 62.3% | 26.0% |

*Does not include 1 male (Asst Prof) and 3 females (1 Sr Research Scientist, 2 Asst Prof)

| | | | |
|---|---|---|---|
| *Male Assoc Prof (Ns)* | *10* | *Female Assoc Prof (Ns)* | *9* |
| *Male Full Prof (Ns)* | *53* | *Female Full Prof (Ns)* | *12* |
| *Male (Ns)* | *63* | *Female (Ns)* | *21* |

**Table 9a: ENGINEERING: Administrative Positions held by Associate & Full Professors (AY2002)**

| | Males | % of Male Assoc/Full Profs | % of all Positions | Females | % of Female Assoc/Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| University | 4 | 1.7% | 13.3% | 0 | 0% | 0.0% |
| College | 5 | 2.1% | 16.7% | 1 | 4.8% | 3.3% |
| Department * | 20 | 8.5% | 66.7% | 0 | 0% | 0.0% |
| TOTAL | 29 | 12.3% | 96.7% | 1 | 4.8% | 3.3% |

*Does not include 3 males (Research Scientist, Lecturer, Asst Research Scientist)

| | | | |
|---|---|---|---|
| *Male Assoc Prof (Ns)* | *63* | *Female Assoc Prof (Ns)* | *12* |
| *Male Full Prof (Ns)* | *173* | *Female Full Prof (Ns)* | *9.0* |
| *Male (Ns)* | *236* | *Female (Ns)* | *21* |

**Table 9b: LS&A (Natural Science): Administrative Positions held by Associate & Full Professors (AY2002)**

| | Males | % of Male Assoc/Full Profs | % of all Positions | Females | % of Female Assoc/Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| University | 2 | 1.0% | 5.3% | 0 | 0.0% | 0.0% |
| College | 3 | 1.5% | 7.9% | 0 | 0.0% | 0.0% |
| Department * | 31 | 15.7% | 81.6% | 2 | 10.5% | 5.3% |
| TOTAL | 36 | 18.2% | 94.7% | 2 | 10.5% | 5.3% |

*does not include 1 male (Asst Prof) and 2 females (1 Senior Lecturer, 1 has 0 FTE)

| | | | |
|---|---|---|---|
| *Male Assoc Prof (Ns)* | *36* | *Female Assoc Prof (Ns)* | *10* |
| *Male Full Prof (Ns)* | *162* | *Female Full Prof (Ns)* | *9* |
| *Male (Ns)* | *198* | *Female (Ns)* | *19* |

**Table 9c: MEDICINE (Basic Science): Administrative Positions held by Associate & Full Professors (AY2002)**

| | Males | % of Male Assoc/Full Profs | % of all Positions | Females | % of Female Assoc/Full Profs | % of all Positions |
|---|---|---|---|---|---|---|
| University* | 3 | 4.8% | 17.6% | 2 | 10% | 11.8% |
| College | 5 | 7.9% | 29.4% | 1 | 4.8% | 5.9% |
| Department | 6 | 9.5% | 35.3% | 0 | 0% | 0.0% |
| TOTAL | 14 | 22.2% | 82.4% | 3 | 14.4% | 17.6% |

*does not include 1 male (Asst Prof)

| | | | |
|---|---|---|---|
| *Male Assoc Prof (Ns)* | *10* | *Female Assoc Prof (Ns)* | *9* |
| *Male Full Prof (Ns)* | *53* | *Female Full Prof (Ns)* | *12* |
| *Male (Ns)* | *63* | *Female (Ns)* | *21* |

## Table 10: Mean Salary for Tenure, Research and Clinical Track Faculty (AY2002)

### Tenure Track Faculty

| | PROFESSOR | | ASSOC PROF | | ASST PROF | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| **ENGINEERING** | $ 122,618 | $ 115,920 | $ 89,317 | $ 85,479 | $ 74,705 | $ 74,306 |
| **LS&A Natural Science** | $ 97,418 | $ 87,450 | $ 70,778 | $ 70,221 | $ 59,946 | $ 58,666 |
| **MEDICINE Basic Science** | $ 99,320 | $ 95,270 | $ 74,300 | $ 69,130 | $ 63,981 | $ 62,819 |
| **6 SCHOOLS Scientists** | $ 112,135 | $ 106,940 | $ 84,503 | $ 74,215 | $ 63,001 | $ 60,731 |

### Research Track Faculty

| | SR RESEARCH SCI | | SR. ASSOC RES SCI | | RESEARCH SCI | | ASSOC RES SCI | | ASST RES SCI | |
|---|---|---|---|---|---|---|---|---|---|---|
| | males | females | males | females | males | females | males | females | males | females |
| **ENGINEERING** | $ 95,690 | -- | -- | -- | $ 92,167 | -- | $ 68,576 | -- | $ 51,970 | $ 46,656 |
| **LS&A Natural Science** | -- | -- | -- | -- | $ 62,590 | $ 59,388 | $ 45,623 | -- | $ 42,016 | $ 36,916 |
| **MEDICINE Basic Science** | $ 101,910 | $ 60,729 | $ 73,940 | -- | -- | -- | -- | -- | $ 42,726 | $ 48,989 |
| **6 SCHOOLS Scientists** | -- | -- | -- | -- | $ 45,000 | -- | $ 71,926 | -- | $ 49,607 | $ 52,137 |

### Clinical Track Faculty

| | CLIN PROF | | ASSOC CLIN PROF | | ASST CLIN PROF | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| **ENGINEERING** | -- | -- | -- | -- | -- | -- |
| **LS&A Natural Science** | -- | -- | -- | -- | -- | -- |
| **MEDICINE Basic Science** | -- | -- | -- | -- | -- | -- |
| **6 SCHOOLS Scientists** | $ 100,743 | -- | $ 88,790 | $ 74,801 | $ 65,266 | $ 62,951 |

*9 month academic year salaries are reported; Faculty paid on 12 month years had their salaries multiplied by 9/11th

**Table 11: Tenure, Research and Clinical Track Faculty (AY2001)**
**All Departments**

**Tenure Track Faculty**

| | FULL PROFESSOR | | | | | | ASSOCIATE PROFESSOR | | | | | | ASSISTANT PROFESSOR | | | | | | TOTAL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | males | | | females | | | males | | | females | | | males | | | females | | | males | | | females | | |
| | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % |
| ALL ENGINEERING | 168 | 145.43 | 96% | 8 | 6.70 | 4% | 56 | 51.38 | 83% | 12 | 10.45 | 17% | 37 | 36.95 | 79% | 11 | 10.10 | 21% | 261 | 233.76 | 90% | 31 | 27.25 | 10% |
| LSA (Natural Science) | 159 | 138.11 | 95% | 8 | 8.00 | 5% | 35 | 32.53 | 78% | 11 | 9.22 | 22% | 29 | 27.50 | 77% | 9 | 8.00 | 23% | 223 | 198.14 | 89% | 28 | 25.22 | 11% |
| MEDICINE (Basic Science) | 51 | 39.14 | 81% | 11 | 8.92 | 19% | 12 | 8.08 | 54% | 7 | 6.91 | 46% | 14 | 12.40 | 60% | 9 | 8.10 | 40% | 77 | 59.62 | 71% | 27 | 23.93 | 29% |
| 6 SCHOOLS | 65 | 58.00 | 87% | 10 | 8.90 | 13% | 48 | 41.90 | 77% | 14 | 12.52 | 23% | 18 | 18.00 | 53% | 19 | 15.75 | 47% | 131 | 117.90 | 76% | 43 | 37.17 | 24% |
| TOTAL | 443 | 380.68 | 92% | 37 | 32.52 | 8% | 151 | 133.89 | 77% | 44 | 39.10 | 23% | 98 | 94.85 | 69% | 48 | 41.95 | 31% | 692 | 609.42 | 84% | 129 | 113.57 | 16% |

**Research Track**

| | RESEARCH SCIENTISTS** | | | | | | ASSOC RESEARCH SCIENTISTS** | | | | | | ASST RESEARCH SCIENTISTS | | | | | | TOTAL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | males | | | females | | | males | | | females | | | males | | | females | | | males | | | females | | |
| | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % |
| ALL ENGINEERING | 11 | 7.54 | 100% | 0 | 0.00 | 0% | 10 | 8.85 | 100% | | | | 32 | 30.20 | 88% | 5 | 4.10 | 12% | 53 | 46.59 | 93% | 4 | 3.60 | 7% |
| LSA (Natural Science) | 2 | 2.00 | 67% | 2 | 1.00 | 33% | 9 | 5.64 | 100% | -- | -- | -- | 13 | 11.39 | 79% | 4 | 3.00 | 21% | 24 | 19.03 | 83% | 6 | 4.00 | 17% |
| MEDICINE (Basic Science) | 1 | 0.50 | 33% | 1 | 1.00 | 67% | 2 | 1.60 | 100% | -- | -- | -- | 9 | 8.90 | 78% | 4 | 2.50 | 22% | 12 | 11.00 | 76% | 5 | 3.50 | 24% |
| 6 SCHOOLS | -- | -- | -- | 2 | 1.25 | 100% | 3 | 2.90 | 100% | -- | -- | -- | 11 | 7.92 | 65% | 5 | 4.25 | 35% | 14 | 10.82 | 66% | 7 | 5.50 | 34% |
| TOTAL | 14 | 10.04 | 76% | 5 | 3.25 | 24% | 24 | 18.99 | 100% | 0 | 0.00 | 0% | 65 | 58.41 | 81% | 18 | 13.85 | 19% | 103 | 87.44 | 84% | 22 | 16.60 | 16% |

**Clinical Track**

| | CLINICAL PROFESSOR | | | | | | CLINICAL ASSOC PROFESSOR | | | | | | CLINICAL ASST PROFESSOR | | | | | | TOTALS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | males | | | females | | | males | | | females | | | males | | | females | | | males | | | females | | |
| | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % | N | FTE | % |
| ALL ENGINEERING | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| LSA (Natural Science) | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MEDICINE (Basic Science) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1 | 1.00 | 100% | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1 | 1.00 | 100% |
| 6 SCHOOLS | 4 | 3.50 | 100% | -- | -- | -- | 10 | 9.50 | 64% | 7 | 5.30 | 36% | 13 | 11.70 | 42% | 17 | 16.33 | 58% | 27 | 24.70 | 53% | 24 | 21.63 | 47% |
| TOTAL | 4 | 3.50 | 100% | 0 | 0.00 | 0% | 10 | 9.50 | 60% | 8 | 6.30 | 40% | 13 | 11.70 | 42% | 17 | 16.33 | 58% | 27 | 24.70 | 52% | 25 | 22.63 | 48% |

Note: Ns do not include faculty with 0 FTE appointments in the department; Percentages based on FTE.

**Senior Research Scientists and Research Scientists are reported as a single category, "Research Scientists";
Senior Associate Research Scientists and Associate Research Scientists are reported as a single category, "Assoc Research Scientists"

**Table 12: Length of Sevice for Tenure, Research and Clinical Track Faculty (AY2001)**

**Average Time (in Years ) in Rank**

**Tenure Track Faculty**

| | PROFESSORS | | ASSOC PROFS | | ASST PROFS | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | 12.30 | 4.53 | 5.84 | 4.61 | 2.43 | 3.02 |
| LSA (Natural Science) | 14.82 | 5.40 | 6.88 | 3.70 | 3.26 | 1.76 |
| MEDICINE (Basic Science) | 16.20 | 9.33 | 3.22 | 5.07 | 3.52 | 5.02 |
| 6 SCHOOLS | 17.59 | 10.82 | 11.04 | 7.04 | 5.80 | 5.86 |

**Research Track Faculty**

| | RESEARCH SCI** | | ASSOC RES SCI** | | ASST RES SCI | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | 6.69 | -- | 4.76 | -- | 3.13 | 2.74 |
| LSA (Natural Science) | 6.00 | 15.50 | 4.65 | -- | 4.79 | 6.95 |
| MEDICINE (Basic Science) | 3.50 | 3.50 | 3.00 | -- | 4.13 | 5.83 |
| 6 SCHOOLS | -- | 0.41 | 2.30 | -- | 4.04 | 4.22 |

**Clinical Track Faculty**

| | CLINC PROF | | CLINC ASSOC PROF | | CLINC ASST PROF | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | -- | -- | -- | -- | -- | -- |
| LSA (Natural Science) | -- | -- | -- | -- | -- | -- |
| MEDICINE (Basic Science) | -- | -- | -- | 0.90 | -- | -- |
| 6 SCHOOLS | 5.87 | -- | 6.79 | 5.75 | 8.04 | 6.26 |

**Average Time (in Years) at UM**

| | PROFESSORS | | ASSOC PROFS | | ASST PROFS | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | 20.09 | 8.45 | 11.22 | 8.10 | 2.97 | 2.64 |
| LSA (Natural Science) | 23.33 | 14.97 | 11.68 | 7.52 | 3.57 | 1.83 |
| MEDICINE (Basic Science) | 25.18 | 20.84 | 9.54 | 15.44 | 4.01 | 6.09 |
| 6 SCHOOLS | 26.45 | 26.25 | 15.35 | 13.23 | 6.29 | 6.59 |

| | RESEARCH SCI | | ASSOC RES SCI | | ASST RES SCI | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | 14.85 | -- | 9.36 | -- | 6.01 | 7.76 |
| LSA (Natural Science) | 22.02 | 27.63 | 10.56 | -- | 9.75 | 9.70 |
| MEDICINE (Basic Science) | 10.83 | 25.50 | 9.99 | -- | 20.80 | 10.07 |
| 6 SCHOOLS | -- | 0.41 | 5.50 | -- | 7.66 | 5.64 |

| | CLINC PROF | | CLINC ASSOC PROF | | CLINC ASST PROF | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ALL ENGINEERING | -- | -- | -- | -- | -- | -- |
| LSA (Natural Science) | -- | -- | -- | -- | -- | -- |
| MEDICINE (Basic Science) | -- | -- | -- | 10.33 | -- | -- |
| 6 SCHOOLS | 22.16 | -- | 14.68 | 16.24 | 9.79 | 10.29 |

**Senior Research Scientists and Research Scientists are reported as a single category, "Research Sci";
Senior Associate Research Scientists and Associate Research Scientists are reported as a single category, "Assoc Res Sci"

**Table 13: ENGINEERING Tenure Track Faculty (AY2001)**
**Named Chairs, Tenure/Promotion Committees and Administrative Positions by Gender**

| Named Chairs* | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| Distinguished University Professor | 2 | 1 | 0 | 0 |
| Collegiate | 2 | 1 | 1 | 12.5 |
| Endowed | 22 | 13 | 0 | 0 |
| Thurnau (for teaching) | 4 | 2 | 0 | 0 |
| Total | 30 | 8 | 1 | 12.5 |

| Tenure/Promotion Committees** | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| College Level | 4 | 0.2 | 1 | 5 |
| Department Level | 51 | 23 | 1 | 5 |
| Total | 55 | 25 | 2 | 10.5 |

| Administrative Positions** | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| Department | 25 | 11 | 1 | 5 |
| College | 4 | 2 | 1 | 5 |
| University | 6 | 3 | 0 | 0 |
| Total | 35 | 16 | 2 | 10.5 |

*Calculated as a proportion of full professors within gender.
**Calculated as a proportion of full and associate professors within gender.

**Table 14: LS&A Tenure Track Faculty (AY2001)**
**Named Chairs, Tenure/Promotion Committees and Administrative Positions by Gender**

| Named Chairs* | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| Distinguished University Professor | 2 | 1 | 0 | 0 |
| Collegiate | 16 | 10 | 0 | 0 |
| Endowed | 8 | 5 | 0 | 0 |
| Thurnau (for teaching) | 1 | 1 | 0 | 0 |
| Total | 27 | 17 | 0 | 0 |

| Tenure/Promotion Committees** | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| College Level | 5 | 2.6 | 1 | 5 |
| Department Level | 51 | 26 | 3 | 15 |
| Total | 56 | 29 | 4 | 20 |

| Administrative Positions** | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| Department | 24 | 12 | 2 | 10 |
| College | 3 | 1.5 | 0 | 0 |
| University | 3 | 1.6 | 0 | 0 |
| Total | 30 | 15.5 | 2 | 10 |

*Calculated as a proportion of full professors within gender.
**Calculated as a proportion of full and associate professors within gender.

**Table 15: MEDICINE Basic Science Tenure Track Faculty (AY2001)**
**Named Chairs, Tenure/Promotion Committees, and Administrative Positions by Gender**

| Named Chairs* | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| Distinguished University Professor | 2 | 4 | 1 | 10 |
| Collegiate+ | 1 | 2 | 0 | 0 |
| Endowed+ | 2 | 4 | 0 | 0 |
| Thurnau (for teaching) | 0 | 0 | 0 | 0 |
| Total | 5 | 11 | 1 | 10 |

+does not include microbiology/immunology

| Tenure/Promotion Committees** | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| College Level (only basic science depts.)+ | 0 | 0 | 2 | 12 |
| Department Level+ | 25 | 43 | 9 | 21 |
| Total+ | 25 | 43 | 11 | 26 |

+does not include microbiology/immunology

| Administrative Positions** | males | %of male FTEs | females | % of female FTEs |
|---|---|---|---|---|
| Department | 7 | 12 | 0 | 0 |
| College | 2 | 3 | 0 | 0 |
| University | 0 | 0 | 1 | 6 |
| Total | 9 | 15.5 | 1 | 6 |

*Calculated as a proportion of full professors within gender.
**Calculated as a proportionl of full and associate professors within gender.

## Table 16: Mean Salary* for Tenure, Research and Clinical Track Faculty (AY2001)

### Tenure Track Faculty

| | PROFESSOR | | ASSOC PROF | | ASST PROF | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ENGINEERING | $ 119,993 | $ 111,856 | $ 85,698 | $ 87,410 | $ 70,341 | $ 68,638 |
| LS&A Natural Science | $ 94,018 | $ 77,627 | $ 67,832 | $ 71,152 | $ 57,133 | $ 53,056 |
| MEDICINE Basic Science | $ 97,225 | $ 89,806 | $ 70,588 | $ 66,616 | $ 60,980 | $ 59,037 |
| 6 SCHOOLS Scientists | $ 105,285 | $ 96,948 | $ 77,928 | $ 76,001 | $ 61,118 | $ 53,495 |

### Research Track Faculty

| | RESEARCH SCI** | | ASSOC RES SCI** | | ASST RES SCI | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ENGINEERING | $ 94,421 | -- | $ 65,444 | -- | $ 53,162 | $ 45,123 |
| LS&A Natural Science | $ 61,424 | $ 59,070 | $ 42,401 | -- | $ 42,928 | $ 37,529 |
| MEDICINE Basic Science | $ 98,182 | $ 68,232 | $ 61,409 | -- | $ 38,552 | $ 46,032 |
| 6 SCHOOLS Scientists | -- | $ 61,364 | $ 70,047 | -- | $ 51,551 | $ 53,502 |

### Clinical Track Faculty

| | CLIN PROF | | ASSOC CLIN PROF | | ASST CLIN PROF | |
|---|---|---|---|---|---|---|
| | males | females | males | females | males | females |
| ENGINEERING | -- | -- | -- | -- | -- | -- |
| LS&A Natural Science | -- | -- | -- | -- | -- | -- |
| MEDICINE Basic Science | -- | -- | -- | $ 72,327 | -- | -- |
| 6 SCHOOLS Scientists | $ 98,730 | -- | $ 83,526 | $ 72,972 | $ 66,290 | $ 61,801 |

*Salary based on 9-month academic year; salaries paid on 12 month year were multiplied by 9/11th.

**Senior Research Scientists and Research Scientists are reported as a single category, "Research Sci";
Senior Associate Research Scientists and Associate Research Scientists are reported as a single category, "Assoc Res Sci"

## #5

## Principles for Best Practices

A downloadable document, created by Carol Hollenshead and Jean Waltman of the Center for Education on Women based on findings from focus groups and interviews they conducted with junior women, outlines the kinds of departmental leadership practices that can make a difference in retention of women science and engineering faculty. It can be found on the ADVANCE website:

**www.umich.edu/~advproj/principles.pdf**

## #6 Departmental Transformation Grant

Natural science departments in the College of Literature, Science and Arts, basic science departments in the School of Medicine, and all departments in the College of Engineering are eligible to apply for funds to support a significant transformation in the environment for women faculty. Grants of up to $100,000 will be awarded on a rolling basis. Interdepartmental proposals are encouraged.

**www.umich.edu/~advproj/departmenttransgrant.html**

Information on additional UM ADVANCE programs and resources to aid women faculty in the sciences and engineering can be found on the ADVANCE website: www.umich.edu/~advproj or by contacting Robin Stephenson: rbs@umich.edu

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# NSF *ADVANCE*
## at the University of Michigan

## Promoting Institutional Transformation for Women Scientists and Engineers

# Six Resources for Improving the Climate

*For further information, visit our website or contact:*
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**www.umich.edu/~advproj**

## #1

# STRIDE: Committee for Science and Technology Recruiting to Improve Diversity and Excellence

Men and women senior faculty educate and advise departments on gender-equitable hiring practices:

- ✧ advises chairs on search committee composition and search practices;
- ✧ works with search committees throughout the search process;
- ✧ offers recruitment presentations to departments, search committees, and other groups.
- ✧ provides consultations as well as documents useful during recruitment process (Recruitment Handbook and Resource List) available through links on website.

**www.umich.edu/~advproj/stride.html**

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*CRLT Players*

## #2

# Interactive Theater Performances

Center for Research on Learning and Teaching (CRLT) players present scenarios portraying the challenges female faculty may encounter in interactions with students or faculty based on data from interviews and focus groups conducted at UM. They provide a foundation for dialogue about climate and collegiality.

**www.umich.edu/~advproj/crlt.html**

## #3

# Focus Groups and Targeted Consultation with Departments

Confidential consultations on deparmental climate are available to chairs and administrators. The consultation process may involve departmental climate surveys or confidential interviews tailored to address specific departmental questions.

**www.umich.edu/~advproj/selfstudy.html**

## #4

*Cinda Sue Davis, Director*
*Women in Science and Engineering (WISE)*

# Data-Based Workshops for Disciplines

These workshops, planned in consultation with faculty in particular departments present:

- ✧ data on the status of women in science and engineering generally, comparing University of Michigan data with national and international data;
- ✧ data on the status of women within a particular discipline, including national and international comparisons;
- ✧ possible strategies and departmental action plans;
- ✧ bibliographies of suggested readings.

**www.umich.edu/~advproj/datawksp.html**

*Jane Hassinger, MSW, DCSW, is the instructor for Women Talking Science and Engineering.*

## Women Talking Science and Engineering Program

A program of the Interdisciplinary Program in Feminist Practice in Women's Studies and part of the ongoing Women Talking Work Program, in which women meet in small groups to discuss:

- ✧ the impact of gender and race on workplace dynamics;
- ✧ communication, negotiation, and power;
- ✧ professional practice and training, and improving the climate for and retention of women scholars;
- ✧ research and theoretical literature about gender equity, particularly in science and engineering.

**www.umich.edu/~advproj/wtse.html**

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Information on additional UM ADVANCE programs and resources to aid departments in addressing recruitment, retention, and climate can be found on the ADVANCE website: www.umich.edu/~advproj or by contacting Robin Stephenson: rbs@umich.edu

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# NSF ADVANCE
## at the University of Michigan

# Support to Women Scientists and Engineers

**Goals:**

- Promote institutional climate transformation for women scientists and engineers.
- Address issues of special concern to women faculty.
- Provide funds to support success of women science and engineering faculty.
- Create support network for instructional track women faculty.
- Present and co-sponsor leadership lectures and discussions.
- Provide mentoring programs.

*For more information on the UM ADVANCE Program please visit our website:*
**www.umich.edu/~advproj**
*To raise program questions or to discuss concerns, please contact:*
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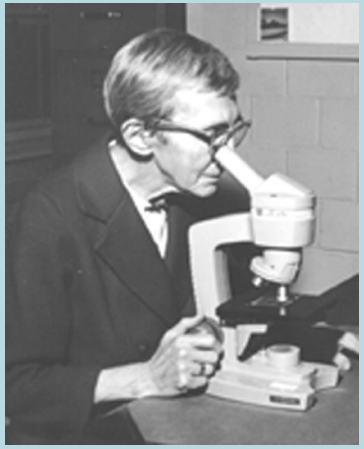

*Elizabeth Caroline Crosby*

## Elizabeth C. Crosby Research Fund

Elizabeth Caroline Crosby Awards are available to help meet career-relevant needs of individual instructional faculty if meeting those needs will help increase the retention or promotion of women scientists and engineers. The fund, initially seeded by an NSF ADVANCE grant, supports a range of activities necessary for scholarly work in science and engineering fields. Competition for funds ($100,000 annually) takes place once each year. Applications may be for up to $20,000.

**www.umich.edu/~advproj/crosbybio.html**

## Lydia Adams DeWitt Research Fund

The Lydia Adams DeWitt Research Fund was created in 2002 to help meet career-relevant needs of individual primary research track faculty in science and engineering if meeting those needs will improve the retention or promotion of women scientists and engineers. Created with University funds and administered by ADVANCE, DeWitt Awards support a range of activities necessary for scholarly work in science and engineering fields. Competition for funds will take place once per year. Applications may be for up to $20,000.

**www.umich.edu/~advproj/dewitt.html**

## Mentoring

A mentoring program has been created to help connect potential mentors and mentees through social events and the provision of online resources, available at:

**www.umich.edu/~advproj/mentorbio.html**

## Network of Women Scientists and Engineers

A Network has been created for instructional track women faculty in science and engineering. The Network hosts discussions, speakers, and other social events. Some Network events are available to all women scientists and engineers on campus, and efforts are underway to create parallel networks for research track and clinical track faculty.

**www.umich.edu/~advproj/network.html**

*President Mary Sue Coleman at ADVANCE launch, September 2002.*

## Promoting Leadership

In addition to bringing speakers and workshops on topics related to women's leadership to the UM campus, ADVANCE provides information (and additional support, where possible) on leadership programs elsewhere. Interested faculty are encouraged to visit the web page and consult with ADVANCE about opportunities they might wish to pursue:

**www.umich.edu/~advproj/leadership.html**

# Advancing Science at the University of Michigan: A Progress Report From the President and Provost,[1]

**September 15, 2003**

## Introduction

Almost exactly a year ago, we joined with Abby Stewart, Pamela Raymond, and the NSF director of the ADVANCE program Alice Hogan in "launching" Michigan's initiative "to improve the campus environment for women faculty in science and engineering at the University of Michigan, and as a result to increase the successful recruitment, retention and promotion of tenure-track women faculty in basic science fields." Although we announced that the program was formally beginning at that moment, it had been planned and developed over a much longer period and was based on the efforts of many women and men in faculty and administrative roles inside and outside of the science and engineering departments.

We are pleased in this report to share the progress we have made in our first formal year of coordinated effort on this important initiative. We are able to describe in detail that progress partly because we have adopted an open-eyed and data-based stance toward this program, and we believe that stance is the most constructive one. To put it another way, we believe it is crucial to precisely define our problems; and when we cannot see them clearly, to gather systematic data and examine it closely, so we can consider how best to address them. With the help of NSF, which encouraged a data-based approach and requires regular reporting , as well as the expertise of the Institute for Research on Women and Gender and the many generous faculty at the University who contributed their advice, experience and knowledge, we assembled an increasingly clear picture of the challenges that face women faculty in science and engineering at the University of Michigan. As a result, we also have a comprehensive understanding of the institutional challenges we must address to improve our environment for women.

## What is the nature of the institutional challenge?

We have identified four major areas in which we need to make institutional progress if we are to improve the science and engineering environment for women faculty at the University of Michigan.

First, we simply have too few women on the science and engineering faculty. Consider where we were when this project began, in January 2002. Only 28 out of 249 scientists in LSA were women; that's too few. Only 8 of the 173 tenured full professors in Engineering were women; that's too few. And none of the 26 department chairs in the Medical School was a woman; that's too few. So the baseline data we collected for academic year 2001/2 made clear to us that we had too few women faculty in the sciences and engineering, and especially, too few women in positions of academic leadership.

[1] This report was delivered as a speech by Provost Paul Courant to the Network of Women Scientists and Engineers on September 15, 2003.

Second, we need to retain the women we hire. We have learned that it is never enough merely to recruit a faculty member to the University of Michigan. That faculty member must find an environment that is stimulating and rewarding—an environment in which she feels she can be successful-- if she is to stay. We need to work actively and aggressively to retain the gifted women scientists and engineers we recruit.

The very best way to retain women scientists and engineers is to improve the climate in which they work. We have clear evidence that the women scientists and engineers at Michigan have found much to value and appreciate in the environment here; but in many cases they have also found too little support and too many obstacles. We must, as an institution, find ways to improve the local environment for women scientists and engineers.

Finally, historically women scientists and engineers have only rarely held leadership positions at the University of Michigan. The appointment of President Mary Sue Coleman is a major step. That step needs to be joined by many other activities that encourage and support women scientists and engineers with an interest in leadership to take on new roles, and to succeed in them.

The ADVANCE project at the University of Michigan is led, as you know, by Abby Stewart, Pamela Raymond and the deans of the three largest colleges. An Implementation Committee composed of 18 faculty and administrators advises the steering committee, and an Evaluation Advisory Committee composed of 9 social science faculty with research experience in survey research and evaluation. Several units on campus—notably CEW, the CRLT Players and the WISE program—have provided programmatic support to ADVANCE.

We are both whole-heartedly committed to institutional transformation. To support the efforts of the ADVANCE project and help us attain that goal, we have recently appointed a Gender in Science and Engineering Committee, which we co-chair, including four deans, three women scientists, and the director of the Life Sciences Institute. The charge of the GSE Committee is to examine and evaluate institutional practices and policies that might differentially impact the progress of UM women faculty in science and engineering, and to recommend specific goals for improvement and outcome measures to ensure accountability.

It is crucial and gratifying that this work has attracted the hard work of so many members of our community. With this kind of support, as Susan B. Anthony said in a different context, “Failure is impossible.”

## So what progress have we made in the past year?

## Recruitment

We began the year with the creation of a new University committee: STRIDE, or the Committee for Science and Technology Recruiting to Increase Diversity and Excellence. This committee is composed of eight full professors who are scientists and engineers of great accomplishment. These eight faculty members reviewed the literature on unintentional gender bias in evaluation and its effects on recruitment, and took on a mission -- to talk with their colleagues in their own and other departments and share what they had learned. Their purpose is to encourage better, more equitable strategies and practices around the recruitment of faculty in science and engineering departments. STRIDE created valuable materials that make faculty recruitment easier and more effective. The committee wrote an excellent recruitment handbook, posts materials on the ADVANCE website, developed a powerpoint presentation examining the issues and has encouraged the colleges to create new materials to distribute to job candidates addressing issues of family policies at UM. In addition, small groups of STRIDE members made over 20 presentations to departments and faculty groups on campus. At the end of the year, STRIDE invited 15 of their colleagues to engage in a process of self-education much like the process they had experienced themselves. The new group of senior faculty in science and engineering fields that formed as a result is called Friends and Allies of Science and Technology Equity and Recruiting or FASTER. STRIDE's hope was to thereby create a network of science and engineering faculty, men and women, who are well-informed about effective, equitable recruitment strategies, and will help promote the use of those strategies more widely.

So is there any evidence that we are succeeding in recruiting women scientists and engineers to campus? Yes, there is. During this past academic year, we successfully recruited at least 114 new instructional track science and engineering faculty to the University of Michigan (some negotiations are of course still ongoing—we may soon have yeses from a few more!). Of these, 43 of the confirmed yeses were from women: six in LSA, seven in Engineering, three in the basic science departments and twenty-four in clinical departments in Medicine, two in the School of Public Health, and one in the School of Dentistry. Thirty are tenure-track assistant professors, ten are associate professors and three are full professors. One of these is a senior woman recruited by Mathematics to be the first occupant of an endowed chair in Actuarial and Financial Mathematics in that department. This success in recruitment was certainly supported and encouraged by STRIDE's hard work; but it happened because their work was multiplied by the committed efforts of many individual faculty, search committees, department chairs, associate deans and deans. It's a great start—and it lets us know that we can make a big difference in recruiting women scientists and engineers when we make it a collective priority.

## Retention

Retention is a complex subject. Sometimes faculty members leave the University of Michigan for opportunities at other institutions that we cannot duplicate. When that happens, we must be happy for our colleagues, even if we are sorry for ourselves. Sometimes, though, faculty members leave because they have not been productive here, despite the promise and hope they and we shared at the outset; and sometimes they leave

because they have not found what they wanted here. In these latter cases, the institution has failed. One of the important effects of ADVANCE is that it has kept us vigilant to instances where we might be able to do better by women scientists and engineers than we have done in the past. We are proud of the cases this year—and there are several—where the institution worked diligently at several levels to identify steps to take to retain gifted woman scientists. We believe that department chairs, associate deans and deans are all more alert to the issues than they were in the past, and that they are quicker to seek remedies for problems or concerns before they become formal "retention cases."

We can do better--there are important unmet needs that still have not become clear enough to the right people. But we have, increasingly, a whole community of scientists and engineers, joined by a community of administrators, who agree on the importance of taking action early to address issues that might cause the women scientists and engineers among us to think other pastures might be greener.

One institution-wide effort at retention was the creation of the Elizabeth Crosby Awards. There have now been two rounds of competition for these Awards through the ADVANCE program. These grants provide support to efforts that will enhance the scholarship and promote the retention of women faculty at Michigan. A total of 20 awards have been made, to 9 faculty in LSA, 7 in Engineering, 2 in Medicine, and one each in Public Health and Kinesiology. Some of these grants have supported individual junior faculty in their research; others have helped senior faculty launch new programs or reinvigorate high-risk research efforts. At least two of the projects include sponsorship of speaker series that bring exciting women scientists or engineers to campus. We are pleased and impressed by the generous spirit behind these projects as well as by the outstanding research ADVANCE has been able to support.

One of the most enduring, if elusive, successes of the ADVANCE project to date is the creation of a community of women scientists and engineers on campus. The Network aims to operate as a vehicle to link women scientists and engineers together in common causes. This Network community has identified mentoring as an important goal and function that is currently not meeting the needs of younger women science and engineering faculty. Women scientists and engineers who are part of the Network have worked with ADVANCE staff to organize a website and several activities that will be launched this fall to provide some new mentoring opportunities. In addition, we, along with many of the deans,. have also recognized the need to foster mentoring more actively, and to create and monitor structures for providing it. The existence of this Network ensures not only that women scientists and engineers are connected with one another, but that they are in a position collectively to work on problems they are best positioned to identify and articulate.

## Climate

The best tool we have in the efforts to recruit and retain women scientists and engineers—like all faculty—is to provide them with a climate, particularly at the departmental and program level, that is hospitable to their professional development. The

ADVANCE program encouraged not only campus-wide initiatives, but also departmental initiatives based on self-study. During the past year, several departments on campus have asked the ADVANCE staff to conduct analyses of their climate; others have planned future analyses or conducted their own. Based on these, some departments made proposals for "departmental transformation grants" to transform their climates over the next several years.

> The Department of Electrical Engineering and Computer Science brought in sixteen female candidates for job interviews, using its Departmental Transformation Grant funds to pay its recruiting expenses. The Department succeeding in hiring four new female faculty members this year, an unprecedented level of success for a department that had six women in a faculty of seventy-three..
>
> The Department of Chemistry has given travel and summer salary funds to some of its female faculty members; it has conducted a departmental climate survey and has funded a junior faculty forum to help new female (and male) faculty in the department in developing stronger networks and gathering information and advice. Chemistry also hired two outstanding female assistant professors this past year.
>
> The Departments of Chemical Engineering and Materials Science have used their joint award to give teaching release and international travel funds to two women faculty, in addition to funding a joint mentoring program on an ongoing basis.

In addition, the deans in LSA and Engineering were eager to support smaller-scale efforts, and as a result in many other departments programs have been developed to improve the climate for women faculty.

## Leadership

One important area in which women scientists and engineers have expressed exasperation is leadership. Many have felt that in the past little investment was made in women faculty in these fields to develop their potential for future leadership. ADVANCE has worked very directly to provide opportunities for women faculty to expand their knowledge and skills in leadership. For example, ADVANCE sponsored two workshops on negotiation last year that were so popular that the participants requested an advanced version for the coming year. The ADVANCE website provides an extensive list of additional leadership programs, and LSA has encouraged its women faculty to attend these programs and has supported their applications. Women scientists from LSA were accepted to leadership programs at The Simmons School of Management, at Bryn Mawr, and at the Committee on Institutional Cooperation. The Medical School sponsored two women faculty as fellows in an intensive, year-long program in Executive Leadership in Academic Medicine (ELAM). Valerie Castle was accepted as an ELAM Fellow for 2003/04 but chose to defer, given her recent appointment as Chair of Pediatrics. The UM was also the first university to sponsor the Forum, a two day meeting of the ELAM fellows and their

deans, in 2001 and 2002. President Coleman met with women science and engineering faculty for a Q&A session regarding academic careers and leadership for women scientists. This year women scientists and engineers from LSA and the College of Engineering have planned a joint retreat on leadership to build on these early activities.

The deans of Medicine and LSA have both made important steps forward in appointing women scientists to major leadership roles. Valerie Castle, as the incoming chair of Pediatrics and Communicative Diseases, will be the first woman to chair a department in the School of Medicine, and Deborah Goldberg, in Ecology and Evolutionary Biology, will be the first woman to chair a natural science department in LSA. These two women join Laurie McCauley, who recently succeeded Martha Somerman as chair of Periodontics/Prevention/Geriatrics in Dentistry, as well as many other women scientists who serve in other kinds of leadership roles.

Again—we've made an excellent, and historic, beginning in the area of leadership. But we have also lost some talented senior women scientists this year who have gone on to positions of leadership elsewhere: Martha Somerman left last fall to become dean of the Dental School at the University of Washington; Linda Katehi also left to become dean of Engineering at Purdue; and this fall Linda Abriola assumed a new position as dean of the School of Engineering at Tufts. Although we regret the loss of these outstanding women faculty, we are proud of the role that the UM played in developing their academic careers in preparation for moving into these leadership roles

So, we have made progress, but we have a long way to go, and we expect to see women scientists and engineers taking on new responsibilities in departments, and at the college and the University level over the next few years.

## A Look Ahead

We have made good progress this year in all four of the areas we've outlined: recruitment, retention, climate and leadership. Moreover, ADVANCE is rolling out a number of new activities to support women scientists and engineers' interest in leadership, and it is also initiating several new activities around mentoring. In addition, the CRLT Players have created a new sketch, based on focus groups and interviews with women scientists and engineers, that depicts some of the challenges women faculty face in departments, programs or research contexts where the gender dynamics may work to create an inhospitable climate. The sketch will be used this year in a variety of settings to spark dialogue and discussion about how to transform departmental and other climates that suffer from skewed gender ratios and oppressive dynamics.

Finally, we have asked Deans Director, Lichter and McDonald to head three separate subcommittees of the Committee on Gender in Science and Engineering. These subcommittees will begin a campus-wide dialogue about University policies that may need revision in light of the needs of women scientist and engineering faculty. The policies under consideration include family-related policies like modified duties and dual career support, the length of the tenure clock, the three tracks, and criteria for evaluation

for promotion. We have asked these three subcommittees to make formal recommendations this year about which of these policies need to be revised and updated as part of our review of institutional practices that may impede the success and satisfaction of women scientists and engineers on our faculty. The full GSE committee will be meeting with Professor Virginia Valian, whose work has been central to the STRIDE committee's approach, when she comes to campus in October, as part of its effort to examine alternative policy models. We encourage you to participate in her visit if you can. She will be delivering a public lecture at 3 PM on October 17 in 1200 Chemistry Building-- so save that date and time on your calendars.

We want to end by thanking you all for the effort, patience, and optimism so many faculty and administrators have invested in the University of Michigan and in this crucial effort. We believe that we are all engaged in a project that can only make this an even better institution, and that we will succeed.

Appendix D

List of Degrees of Faculty Included/Excluded as Scientists for the 6 Smaller Schools.

The following tables list all fields of degrees of instructional (tenure), research and clinical track faculty with budgeted appointments in these schools. Faculty holding degrees listed in the "Include" column were deemed scientists; those holding degrees in the "exclude" column were deemed non-scientists for our purposes (and not included in any tables or figures). Those holding degrees in the "individualized" column were looked at on an individual level: their current field of research, as reflected by recent publications and website descriptions, determined their status as scientists or non-scientists.

School of Dentistry:

| **Include** | **Exclude** | **Individualized** |
|---|---|---|
| Anatomy<br>Biochemistry<br>Bioengrg & Biomedical Engrg<br>Biology<br>Biometrics And Biostatistics<br>Chemical Engineering<br>Dental Hygiene<br>Dental Specialties<br>Dentistry Dds Or Dmd Degree<br>Genetics<br>Materials Engineering<br>Medicine Md Degree<br>Microbiology<br>Neurosciences<br>Pathology<br>Physical Sciences<br>Physiology | Anthropology<br>Education<br>Medical Record Librarianship<br>Psychology | Public Health |

School of Information:

| **Include** | **Exclude** | **Individualized** |
|---|---|---|
| Computer & Information Science<br>Computer And Data Processing Elect & Communication Engrg | Economics<br>History<br>Library Science<br>Philosophy<br>Political Science & Government<br>Psychology<br>Social Sciences | Information Sciences & Systems |

Division of Kinesiology:

| **Include** | **Exclude** | **Individualized** |
|---|---|---|
| Bioengrg & Biomedical Engrg<br>Engineering<br>Neurosciences<br>Physiology<br>Stats, Math & Theory | Business Administration<br>Education<br>Experimental Psychology<br>Marketing And Purchasing | Physical Education |

School of Natural Resources:

| **Include** | **Exclude** | **Individualized** |
|---|---|---|
| Agriculture & Natural Resource<br>Biology<br>Biometrics And Biostatistics<br>Chemical Engineering<br>Ecology<br>Environmental Science<br>Forestry<br>Marine Biology<br>Natural Resources<br>Plant Physiology<br>Zoology | Agricultural Economics<br>City, Community & Reg Planning<br>Educational Psychology<br>Fine Arts<br>Fish, Game & Wildlife Mgmnt<br>Geography<br>Landscape Architecture<br>Law<br>Political Science & Government<br>Sociology | |

College of Pharmacy:

| **Include** | **Exclude** | **Individualized** |
|---|---|---|
| Biochemistry<br>Biophysics<br>Cell Biology<br>Chemistry<br>Pharmaceutical Chemistry<br>Pharmacy<br>Physical Chemistry<br>Physical Therapy | Education | Health Serv & Paramedical Tech |

Appendix D

School of Public Health:

| **Include** | **Exclude** | **Individualized** |
|---|---|---|
| Analytical Chemistry | Anthropology | Environmental Health |
| Atmospheric Sci & Meteorology | Business Administration | Health Professions |
| Biochemistry | Clinical Psychology | Public Health |
| Biological Sciences | Developmental Psychology | |
| Biometrics And Biostatistics | Economics | |
| Cell Biology | Educational Psychology | |
| Chemistry | Geography | |
| Civil & Construction Engrg | Health Education | |
| Dentistry Dds Or Dmd Degree | Hospital & Health Care Admin | |
| Ecology | Law | |
| Foods, Nutrition And Dietetics | Political Science & Government | |
| Genetics | Psychology | |
| Geochemistry | Social Psychology | |
| Medical Specialties | Sociology | |
| Medicine Md Degree | Urban Studies | |
| Microbiology | | |
| Molecular Biology | | |
| Nutrition | | |
| Physics | | |
| Physiology | | |
| Stats, Math & Theory | | |
| Toxicology | | |

Appendix E

**Report of**
**2002-03 Gender Equity Salary Study**
**in One University of Michigan College**

This report is a summary of the findings of a statistical analysis of 2002-03 salaries of instructional faculty from one UM college. The analyses largely followed the methodology of a University-wide salary study, released in 2001, and subsequent analysis of these same data for science and engineering faculty only, completed for the ADVANCE project and reported in 2002.

These analyses reported here were conducted by ADVANCE staff under the direction of Abigail Stewart, ADVANCE Project PI, in the summer of 2003. The study was requested by the particular college's dean because of findings from the earlier campus-wide salary analysis of gender equity. The original study reported 1-3% discrepancy for women faculty campus-wide, excluding the Medical School; using the same data, an analyses limited to science and engineering faculty revealed a 3-5% salary discrepancy for women tenure track faculty. Given these findings, the dean was particularly interested in identifying whether there were continuing and/or new instances of serious salary inequities among women faculty in the sciences and engineering.

Our goal is to refine a method of analysis to learn if there are substantive gender inequities in salaries for science and engineering faculty on this campus and, more generally, to provide a useful tool to University and College administrators so they may easily monitor the situation for their own faculty on an on-going basis. This is not an easy task as there are many factors (some more and some less tangible and easily measured) that affect an individual's salary level. Nevertheless, we believe the goal is achievable, and having such a tool would be invaluable to the ADVANCE project as well as the University more broadly.

We took as a starting point the model developed for UM's 2001 report, which used the following factors to predict salary: gender, race and ethnicity, highest degree, year received highest degree, years at UM, school/college, departmental unit affiliation, market ratio, administrative appointments, current rank, years in rank, and the interaction of rank by years in rank (the specific variables are listed in Table 1). However, because of concerns raised in that report that controlling for rank and years in rank might mask gender differences in rates of promotion as well as potential problems associated with redundancy in time measures (e.g., years at UM and years in rank)[1], we felt it would be helpful to explore ways to refine and, hopefully, improve the model for use within a College or School.

**Revised Model**

Drawing heavily on recommendations from *Paychecks* we ultimately developed a regression model that diverges somewhat from that used in the 2001 UM salary study to predict salary (see Table 2 for a listing of the variables). Following is an explanation of those differences.

> **Salary:** Actual salary (in dollar amounts) rather than the natural log of salary was used. Log of salary can be particularly helpful when the range of salaries is large, as it produces a more normal distribution (Haignere, 2002). However, the range of salaries in this study did not warrant the use of the natural log and using actual dollar amount makes results easier to interpret. Most faculty salaries are paid over a 9 month period reflecting the academic calendar; salaries for those faculty paid over 12 months were converted to the 9 month base.
>
> **Highest Degree:** Generally, all faculty had achieved the highest degree in their field; therefore this variable was not included. In some instances, the HR data appeared out of date (e.g., indicating that

[1] See for example, Haignere, L. (2002). *Paychecks: A guide to conducting salary-equity studies for higher education faculty*, second edition. Washington, DC: American Association of University Professors.

the highest degree was a B.A.). In those instances individual cases were checked to ensure the highest degree had been obtained; in one instance the information could not be confirmed and the individual was dropped from the analyses.

**Time Variables:** The UM model includes two variables assessing time at UM (number of years at UM and number of years in rank). Haignere (2002) points out that including both introduces an element of redundancy that should be avoided. To correct this, we used time in current appointment. Overall level of experience was assessed with a variable that calculated number of years from year of highest degree to current year; experience at time of hire at UM was assessed with a variable that calculated number of years from highest degree at time of hire. Because these time variables often have a curvilinear relationship to salary, a quadratic term for each of the time variables was also included in the regression. To address the potential problem of redundancy introduced by including the quadratic terms (the square of each variable), the original variables were centered by subtracting the mean from the value of the variable (and the quadratic terms were calculated on these centered variables).

**Market Ratio:** Market ratio was not included as a variable as that information was not readily available. Moreover, Haiegnere (2002) recommends against this strategy because using average market salaries ignores the relative prestige of a given department. Because these analyses were limited to faculty in one College, individual departments were included as individual dummy variables (excluding one) to address salary differences by discipline.

**Other Differences:** Other variables that were part of the initial salary study but were not included here are: Number of appointments; Medical appointment; School/College; and Rank by years in rank interactions. They were excluded because they were not applicable, or to minimize the number of variables in the equation since we were dealing with a smaller sample size, or to reduce the potential for redundancy. To keep the developing model simple, we also excluded the variable, having an Administrative Appointment, in our analyses, but plan to test its value for inclusion in the future.

**Application of the New Model**

The variables identified above and listed in Table 2 were used in a regression analysis with data on all tenure track science and engineering faculty in the college of interest to assess gender equity. The adjusted $R^2$ for this regression was .85 suggesting that these variables account for 85% of the variance in salary for these faculty. Haignere reports that most regression analyses of faculty salary have adjusted $R^2$ values greater than .50 and above .70 is not unusual (p. 6) suggesting that these models in general tend to do a good job predicting salary, and that our new model appears to work well for our data.

While not statistically significant, the coefficient for gender in the analysis with this new model was -1632. Because actual salary is the dependent variable in this analysis, that figure is interpreted as the average salary difference between the default category (men) and women, with all other variables held constant. These results, then, indicate that all tenured and tenure track women in this college, in general, continue to be at a disadvantage relative to their male colleagues in annual compensation and receive, on average, $1,632 less in annual salary compensation than male peers. Given these findings, the dean of the college in question was interested in trying to identify potential individual cases of gender inequity, particularly among the science and engineering faculty (where, in the earlier study of 1999 data from all science and engineering faculty, a larger discrepancy was found than in the analysis of all faculty campus-wide).

**Assessing Individual Inequity**

Following Haignere, we applied an approach she calls the "white-male-population salary analysis." This method is recommended to identify what the salary of a woman (or minority) would be if she (or he) were a white man with the same attributes and experiences (see Haignere, p. 42 for a fuller explanation of this analysis). To apply this method we calculated the same regression equation on the white male faculty subsample, with one important exception—departments were grouped by broader discipline categories into three larger collections instead of using individual departments. This was necessary to ensure that a sufficient number of men (at least five) fell into each category (discipline and rank); otherwise an uncharacteristic male in an individual category could invalidate the results. The race and gender variables were also dropped because they were irrelevant. A backward stepwise regression was calculated, resulting in the quadratic term for number of years since degree being dropped from the equation.

Results from this regression were used to predict salaries for individual women faculty in science and engineering by multiplying the regression coefficient for each variable by the actual value of that variable for the individual woman. These values plus the intercept term were added to produce a predicted salary. The following table provides an example of the results for three women faculty in the natural sciences, by rank.

| | unstandardized coefficients for white male faculty | female assistant professor | | female associate professor | | female professor | |
|---|---|---|---|---|---|---|---|
| Intercept | 59587 | 1 | 59587 | 1 | 59587 | 1 | 59587 |
| Yrs from degree at hire (centered) | 1077 | -5.11 | -5503.5 | 1.89 | 2035.5 | -0.11 | -118.47 |
| Yrs from degree (centered) | -1848 | -15.51 | 28662.5 | -6.51 | 12030 | -1.51 | 2790.5 |
| Yrs in appointment (centered) | 2008 | -5.24 | -10522 | -3.24 | -6506 | -2.24 | -4497.9 |
| Yrs from degree at hire (quadratic) | 47 | 26.11 | 1227.17 | 3.57 | 167.79 | 0.01 | 0.47 |
| Yrs in appointment (quadratic) | -30 | 27.46 | -823.8 | 10.5 | -315 | 5.02 | -150.6 |
| Associate prof (yes/no) | 22603 | | 0 | 1 | 22603 | | 0 |
| Professor (yes/no) | 60847 | | 0 | | 0 | 1 | 60847 |
| Departmental Category 1 (yes/no) | -18971 | | 0 | | 0 | | 0 |
| Departmental Category 2 (yes/no) | -10236 | 1 | -10236 | 1 | -10236 | 1 | -10236 |
| predicted u-yr salary (in dollars) | | | 62391 | | 79367 | | 108222 |
| actual u-yr salary (in dollars) | | | 60750 | | 81846 | | 87631 |

Of the 33 tenured and tenure track science and engineering women in this college, nearly half (15) had salaries below what was predicted from these analyses. The monetary differences ranged from $650 to over $20,000. Half (8) of these women showed salary discrepancies over $5,000; the average difference was $6,681. The 15 whose salaries were lower than predicted were represented in all ranks. However half (8) were at the full professor level; 5 were associate professors and two were assistant professors. These findings suggest that smaller discrepancies can accumulate over time to produce large inequities for women who have been on the faculty for many years.

These results were reported to the dean of the college and were considered when setting new faculty salaries for academic year 2003-04. Salaries of a few science and engineering women in this college were adjusted as a direct result of the information provided by these analyses. We will continue to work with and refine this model with salary data from other schools and colleges at UM and will continue to report on progress on this effort.

Appendix E

Table 1
Variables used in Regression
2001 UM Gender Salary Study

| | |
|---|---|
| Ln Salary | Natural logarithm of salary (adjusted to 9 months)averaged across appointments |
| Gender | Female=1 |
| Race | Asian, Pacific Islander=1<br>Under-represented Minority=1 |
| Degree Date | Date of highest degree |
| Years at UM | 1999-instructional entry date |
| Highest Degree | Holds doctorate or other appropriate terminal degree=1 |
| Departmental Units | Dummy variables were constructed for 29 departmental unit affiliation categories |
| Market Ratio | Natural logarithm of average market ratio across appointments.<br>Market ratio was calculated as average salary at peer institutions for given field and rank divided by average peer salary of all fields for given rank. |
| Number of Appointments | Two appointments=1<br>Three or more appointments=1 |
| Medical Appointment | =1 |
| Administrative Appointment | =1 |
| Rank | Professor=1<br>Associate Professor 1-6 years=1<br>Associate Professor 7+ years=1 |
| Years in Rank | based on highest rank |
| Rank by Years in Rank Interaction | Professor by Years in Rank<br>Associate Professor 1-6 years by Years in Rank<br>Associate Professor 7+ years by Years in Rank |
| School/College | Medical school not included |

Appendix E

Table 2
Variables in Regression
2002-03 Study of Faculty Salaries in One College

| | |
|---|---|
| Salary | salary (adjusted to 9 months) |
| Gender | Female=1 |
| Race | Asian, Pacific Islander=1<br>Under-represented Minority=1 |
| Years since Degree | 2003-year of final degree; this variable was centered and the quadratic term was also included |
| Years from Degree at Hire | Number of years since degree at time of hire; this variable was centered and the quadratic term was also included |
| Years in Rank | Number of years in current appointment; this variable was centered and the quadratic term was also included |
| Rank | Professor=1<br>Associate Professor 1-6 years=1<br>Associate Professor 7+ years=1 |
| Department | Dummy variables were constructed for 24 of the 25 departments; program was also included for those faculty who did not have a departmental appointment. One department was the excluded category. |

Appendix F

**Report of Analysis of Space Data**

TO: Abby Stewart
Janet Malley
NSF-ADVANCE project

December 18, 2003

FR: Ben Hansen
Statistics Department and Institute for Social Research

RE: Matched comparison of men's and women's space assignments for faculty in science and engineering departments

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Following your request, I have conducted a matching-based analysis of data you have collected as part of our university's NSF-ADVANCE study on space assignments and gender among the science and engineering faculty in the College of Engineering, the College of Literature, Science and the Arts, and the Medical School faculty. These data reflect the situation in each department as of March, 2001. The analysis asks of each relevant department within these schools (a total of 33) whether it has allocated space in a manner blind to gender — if perhaps not to faculty characteristics that may play a legitimate role in determining lab and office size, and yet be confounded with gender — or if, on the other hand, its distribution of space favors one gender over another to a degree not explicable by chance or by gender differences on other factors measured in the study.

In departments with research track faculty as well as instructional track faculty, my analysis considers the two tracks separately. With 33 departments, this meant 66 cases had to be considered. The findings are:

1. In 33 department/track combinations, there were no men at the same rank as any woman. In another ten, only one woman or one man shared her or his track and rank with some member of the opposite gender. The mode of analysis used in this report deems statistical equity comparisons to be impossible in such cases.

2. In most of the remaining departments, there was little to suggest gender bias favoring either gender in allocation of space — at least once instructional track, rank, and grant funding were taken into account.

3. In one more case, that of research scientists in one Medical School department, confidence intervals for the "effect" of being a woman upon lab and office size did not exclude zero, but allowed many more negative possibilities than positive ones — suggesting the possibility of a pattern of discrimination that failed to emerge clearly only for lack of data. A closer look at this group raises the possibility of disparate treatment by gender among those research scientists without funding.

4. In one LS&A department, and that department only, my analysis finds a distinct pattern of women professors inhabiting smaller offices and research spaces than do their male colleagues at the same rank and similar grant funding levels. Gender discrimination, either deliberate or inadvertent, could readily explain this pattern, while a number of other

possible explanations can be ruled out.

5. When data from all research scientists within a college are pooled, aggregated results are suggestive of disparate treatment of men and women research scientists in LS&A and in the College of Engineering, to the detriment of the women. However, even with pooling the numbers are small; the evidence is only suggestive.

Before presenting these conclusions in greater detail, I describe my analysis in general, and then specific, terms. The main distinguishing feature of my approach is its basis in matching, as opposed to regression modelling. Matching addresses confounding in a uniquely direct and robust way; my analysis takes pains to bring about as unbiased a comparison as the data permit.

**An analytic strategy based on matching and permutation inference.**
My analysis has three steps:

1. Match faculty members in the sample to counterparts of the opposite gender but the same department and rank (within track), as well as a similar profile on one important determinant of departmental privilege (namely the amount of funding from research grants).

2. Verify the absence of gender imbalances on research funding or other legitimate determinants of departmental privileges in the thus-matched sample.

3. Test, separately by department and by track within department, for tendencies of the larger spaces within each matched set to go to one or the other gender.

The central substantive hypothesis of the analysis is that, *within* sets of faculty who are matched on department, rank, and research funding (within track), a discrimination-free system is as likely to allot a large space, or a small space, to a woman as to a man. Step (1) creates such a matching, insisting that assistant professors be matched to assistant professors, that associate professors be matched to associate professors, that professors be matched to professors, and similarly for assistant, associate, and full research scientists; that chemists be matched to chemists, mathematicians to mathematicians, and so on; and that no female or male faculty member be matched to a male or female faculty member whose aggregate grant funding as a principal investigator differs from hers or his by more than a factor of 10, or whose overall grant funding differs from hers or his by more than a factor of 100.

Step (2) allows us to examine the plausibility of the central hypothesis, as it applies to the matching of step (1). As groups, male and female science and engineering faculty differ substantially in terms of age, grant funding, tenure within department, and other traits. If a matching is such that the within-matched-set gender balance on these traits, that is age, grant funding, and so forth, varies haphazardly from one matched set to another, on the whole favoring neither men nor women, then one expects that the balance of lab and office sizes within matched sets should favor neither men nor women — in the absence of discrimination. Step (2) establishes the "if" condition of this if-then statement.

Step (3) tests the consequent expectation of gender balance; more broadly, it assesses the data's relative support for hypotheses of gender effects that favor or disfavor men over women. Table 2 gives nonparametric 95% confidence intervals for the gender effect. The meaning of these intervals is as follows: if reported confidence interval is such as to contain a number μ, this means that adjusting woman's space assignment figure by adding μ feet to it (while leaving each man's number unchanged) yields sets of male and female numbers with differences no greater than can be attributed to chance. In particular, the hypothesis of gender neutrality is rejected only where zero is excluded from the interval. As with any statistical analysis, this one aims to assess the presence or absence of a pattern of discrimination, not its presence or absence in any particular case.

The matching I use compares *only* faculty whose department, rank, and research funding are well aligned, but it also has the property that it places in a matched set *every* sampled person for whom some other gendered, but similarly ranked and funded, departmental colleague is available in the sample. In contrast to matching's rejection of observations to prevent extrapolation, this is a property of conserving, not reducing, the effective sample. Such conservation is atypical of matchings in general, but it is characteristic of the approach taken here, so-called *full matching*. It is also characteristic of full matching that the groups it seeks to compare are not placed in matched sets in a single, fixed configuration, such as man-woman pairs or one man, two woman triples, but in flexible relative proportions. Table 1, which shows how the matching subclassifies associate and full professors in one of the departments I examined, illustrates this variability in the configuration of matched sets. Excluded from the table are six associate and full professors whose grant funding numbers were not close enough to those of any professor in the same rank and department, but of the other gender, to be matched to him or her.

| matched set | gender | Grant funding as PI | Grant funding overall | Space assmt. ($ft^2$) |
|---|---|---|---|---|
| associate professor.1 | male | 1000000 | 1000000 | 900 |
| | female | 2000000 | 7000000 | 1400 |
| | female | 1000000 | 5000000 | 1800 |
| associate professor.3 | male | 1000000 | 1000000 | 600 |
| | female | 4000000 | 6000000 | 1300 |
| professor.1 | male | 700000 | 1000000 | 800 |
| | male | 5100000 | 5100000 | 1600 |
| | female | 1500000 | 2900000 | 1600 |
| | male | 6000000 | 8800000 | 1900 |

**Table 1:** Matching of one of the departments studied.

The set labeled "associate professor.3" is a 1:1 matched pair, while associate professor.1 is a 2:1 matched triple, and professor.1 is a 1:3 matched quadruple. With full matching, only faculty lacking comparable counterparts are excluded from every matched set. In general, this property is unique to full matching; the example shows that this data set is no exception, in that it is necessary to use a full matching in order to match the maximum number of subjects. It is evident that neither 1:1 matched pairs, nor 1 :2 matched triples, nor any other fixed-ratio matching structure could place as many associate and full professors of cell biology into matched sets while maintaining the same standard of comparability.

**Subdividing the space study sample into matched sets**

The UM NSF-ADVANCE lab and office space data contain observations on, by my count, 886 faculty. Of these, 646 have a departmental colleague at the same rank who is of the opposite gender. Of

these, 441 have such a colleague with a level of grant funding that is comparable, in the sense that each and his or her comparable counterpart have PI grants in total amounts within a factor of 10 of one another, and participate in grants totaling to figures within a factor of 100 of one another. To distinguish them from the wider sample of size 886, I refer to these 441 as "the narrow sample." I create two matchings. Both match only within department and rank, and both take measures to insure that matched faculty have similar levels of grant funding. The preferred matching never matches male and female colleagues unless their grant funding levels are strictly comparable, in the sense just given. Because of this restriction, only members of the narrow sample may be so matched, and the preferred matching matches all such persons; its effective sample size is 441. Because of the same restriction, some departments have no or few matched sets under the preferred matching. For this reason, I consider also an alternate matching, one that joins faculty with strictly comparable levels of grant funding when feasible, and when this is not feasible settles for grant funding levels that are as similar as possible. This change permits the matching of all 646 faculty falling in department-rank combinations in which both genders are represented. Call these 646 "the broader sample."

Both matches subdivide cells of an already subdivided sample: the narrow sample and the broader sample are first partitioned by department and rank, and no faculty are matched across boundaries of this partition. The subdivision produces both one-many and many-one matched sets, that is, sets of one man and several women and of one woman and several men, as well as some one-to-one matchings. The preferred matching takes the additional step of insisting that the ratio of women to men in its matched sets be as similar as possible to that of the department-rank cell it is a subset of, so long as this restriction does not prevent the inclusion of persons belonging to the narrow sample. For instance, for a combination of department and rank into which two women and five men in the narrow sample fall, the matching would insist on creating a 1:2 and a 1:3 matched set, rather than a 1:1 and a 1:4 matched set — unless all but one of the men were similar in grant funding to only one, but not the other, of the women, in which case a 1:1 and a 1:4 matched set would be permitted. (Logically, it can't arise that all five of the men would be dissimilar from one of the two women; under present definitions, she would then have been excluded from the narrow sample.) These restrictions on the sizes of the matched sets serve the purpose of maximizing precision in estimating of gender effects.

**Match diagnostics**

Prior to matching, how different are men and women faculty in terms of variables that might confound comparisons of their space assignments? And how does matching affect these differences? That is, how much of this potential confounding do the preferred and the alternate matching remove? To address these question, I performed nonparametric tests for association between gender and the variables TGRNTPI (total grant funding as a PI), TGRNTCO (total grant funding as a Co-PI), TOTGRANT (TGRNTPI+TGRNTCO), CALCAGE (age in years), YRSATUM (number of years at the University) and YRSJBNOW (number of years in current position). Three tables, shown in an appendix, give detailed results of these tests. In brief, these tables show that matching removes most but not all of the bias due to confounding; that matching reduces imbalances between men and women as groups, both on variables used in the construction of the matching and on variables the matching procedure did not explicitly take into account; and that in those few cases where the primary matching increased or failed to sufficiently reduce bias along a variable, the alternate matching did address bias along that variable and other available variables. This validates equity comparisons based on the primary matching, particularly if in the

few cases where male-female imbalance remained after matching, the results of the comparison based on the primary matching are checked for consistency with results of equity comparisons based on the alternate matching. For a few department-appointment track combinations, namely research scientist in one Engineering department, professor in one Engineering department, and research scientist in one Medical School department, the primary matching includes too few matched sets in that department and appointment track to support a comparison there, while the alternate matching does have enough for such a comparison. The match diagnostics do not find systematic imbalances in these parts of the alternate matching. In those department-appointment track combinations for which the primary match matched too few faculty to support any equity comparison but the alternate match matched just enough, it validates use of the alternate match for equity comparisons. Besides giving results of the calculations, the appendix sketches the logic of the validation here obtained.

**Results**

Table 2 gives matching-based confidence intervals for the effect of gender on lab and office size. All suppose that there is an "effect", $\mu$, of being a woman, and ask which effects are consistent with the data (as matched by the primary matching or, in the indicated cells, by the alternate matching). Negative effects suggest discrimination against women whereas positive effects suggest the reverse. In most cases, no systematic distinction between men's and women's space assignments was found by the matched analysis; every confidence interval containing zero was such a case. Data are reported for each department/unit in the three schools (COE, LSA, MED). The individual schools are identified but not the specific departments within the school.

| dept/track | Preferred Match | | | Alternate Match | | |
|---|---|---|---|---|---|---|
| | lower | upper | n | lower | upper | n |
| COEdept1.ressci | -1800 | 280 | 12 | | | 17 |
| COEdept1.prof | -870 | 2200 | 17 | | | 22 |
| COEdept2.ressci | | | 03 | | | 06 |
| COEdept2.prof | -890 | 920 | 18 | -1300 | 890 | 28 |
| COEdept3.prof | | | 02 | | | 03 |
| COEdept4.ressci | | | 02 | | | 04 |
| COEdept4.prof | -2900 | 1700 | 16 | | | 25 |
| COEdept5.ressci | | | 7 | -100 | 140 | 16 |
| COEdept5.prof | -800 | 560 | 47 | | | 61 |
| COEdept6.prof | | | 03 | | | 05 |
| COEdept7.prof | | | 8 | -2400 | 3400 | 13 |
| COEdept8.prof | -300 | 1000 | 23 | | | 24* |
| COEdept9.prof | | | 00 | | | 03 |
| LSAdept1.prof | -430 | 370 | 10 | | | 23 |
| LSAdept2.prof | -2500 | 570 | 12 | | | 19 |
| LSAdept3.ressci | | | 02 | | | 04 |
| LSAdept4.prof | -1500 | -120 | 31* | | | 42 |
| LSAdept5.ressci | | | 00 | | | 02 |
| LSAdept5.prof | -1500 | 1400 | 18 | | | 24 |
| LSAdept6.prof | -20 | 230 | 47 | | | 57. |
| LSAdept7.ressci | | | 03 | | | 03 |
| LSAdept8.ressci | -320 | 320 | 15 | | | 22 |
| LSAdept8.prof | -600 | 1500 | 14 | | | 49 |
| LSAdept9.prof | | | 03 | | | 10 |
| MEDdept1.ressci | | | 07 | -1100 | 1400 | 08 |
| MEDdept1.prof | -870 | 210 | 29 | | | 37 |
| MEDdept2.prof | -270 | 1400 | 09 | | | 20. |
| MEDdept3.prof | -570 | 950 | 17 | -330 | 720 | 17 |
| MEDdept4.prof | -1100 | 310 | 11 | -550 | 550 | 15 |
| MEDdept5.ressci | -720 | 20 | 10 | | | 15 |
| MEDdept5.prof | -540 | 680 | 21 | | | 21 |
| MEDdept6.ressci | | | 02 | | | 04 |
| MEDdept6.prof | -40 | 1100 | 22. | -460 | 830 | 27 |

**Table 2:** Confidence intervals for the effect of being a woman on space assignment, by department and appointment track.
Significance codes (for tests of absence of gender effect): '***', 0.001; '**', 0.01; '*', 0.05; '.', 0.1; ' ', 1.

The remainder of this section explains findings 1–4 of the introduction.

**Finding 1.** Several (11) departments/units either contained no men assistant, associate, or full professors, no women assistant, associate, or full professors, or simply no man-woman pairs at similar ranks and grant funding levels. In four departments/units only one matched set of professors could be formed, and this was insufficient to support an equity comparison. In 22 departments/units no research scientists could be matched. Six departments/units supported only one matched set of research scientists.

Some departments had very few female faculty, or few female faculty whose external funding profiles resembled those of any male faculty, or simply few faculty of either gender; for these departments, no more than one matched set could be produced, and this report can offer no assessment of potential gender disparities. This is evidence neither for nor against the presence of

discrimination: it says only that a larger sample, or perhaps other methods, would be needed to discern either a pattern of fairness or a pattern of discrimination. The following table (Table 3) describes one department in which no matching was possible, as an example.

| matched set | gender | Grant funding As PI | Grant funding overall | space assmt. ($ft^2$) |
|---|---|---|---|---|
| asst.professor.0 | male | 0 | 150000 | 180 |
| | male | 570000 | 2400000 | 320 |
| assoc.professor.0 | male | 7900000 | 10000000 | 710 |
| | female | 60000 | 1100000 | 1200 |
| | male | 1500000 | 15000000 | 1400 |
| professor.0 | male | 0 | 650000 | 160 |
| | male | 520000 | 690000 | 180 |
| | male | 550000 | 550000 | 180 |
| | male | 1000000 | 1200000 | 280 |
| | male | 760000 | 1300000 | 280 |
| | male | 2200000 | 3100000 | 1600 |
| | male | 720000 | 2600000 | 1800 |
| | male | 1400000 | 1400000 | 5100 |
| asst.res.scientist.0 | male | 620000 | 620000 | 4400 |
| assoc.res.scientist.0 | male | 460000 | 3200000 | 670 |

**Table 3:** Faculty in one COE department. No male faculty in this department were sufficiently like the female member, in terms of rank and grant funding, to be matched with her in the primary matching.

**Finding 2.** In departments with men and women faculty sharing the same ranks, most distribute space in a manner that is at least roughly balanced by gender. In Table 2, this manifests itself with confidence intervals centered roughly at zero.

**Finding 3.** However, a few of the confidence intervals in Table 2 that do not omit zero are centered far to the right or left of it, suggesting a possible gender disparity that we are prevented from detecting only by the small size of the sample. Research scientists in one Medical School department are perhaps the best example of this: in this group, our procedure places the gender effect only somewhere between 20 feet to the advantage of female faculty and 720 feet to their disadvantage. Table 4 presents the department, its members' profiles in terms of demographics, grants, and office space, and how our matching groups its faculty. It is noteworthy, and perhaps worth investigating, that of the four research scientists without grant funding, three were women and were given little or no space while the one man had the largest space assignment of anyone in his job title.

| matched set | gender | Grant funding As PI | Grant funding overall | space assmt. ($ft^2$) |
|---|---|---|---|---|
| asst.res scientist.0 | male | 530000 | 530000 | 0 |
| | male | 0 | 0 | 0 |
| | female | 0 | 990000 | 62 |
| | male | 1800000 | 1800000 | 150 |
| res scientist.1 | female | 0 | 0 | 0 |
| | female | 0 | 0 | 0 |
| | female | 0 | 0 | 51 |
| | male | 0 | 0 | 1400 |
| res scientist.2 | female | 26000 | 26000 | 0 |
| | male | 110000 | 110000 | 0 |
| | male | 27000 | 27000 | 0 |
| res scientist.3 | male | 840000 | 410000 | 29 |
| | female | 1200000 | 12000000 | 99 |
| | male | 1100000 | 4900000 | 140 |

**Table 4:** Preferred matching of research scientists in one Medical School department. None of the four assistant research scientists at top could be matched to one another, as their grant numbers differed widely, but the three matched sets of research scientists below were sufficient to make an equity comparison. For research scientists in this department, 95% confidence intervals for the male advantage in office space went from -20 to 720.

**Finding 4.** Our analysis finds a pattern clearly suggestive of discrimination in just one instance: instructional-track faculty in one LSA department.

While no statistical analysis alone can with certainty attribute gender disparities to discrimination, the analysis given here precludes a number of important competing explanations. First, the pattern cannot be explained by different patterns of rank or grant funding among men and among women faculty; nor could it be an artifact imposed by an inappropriate statistical model. These exclusions issue from the structure of the comparison. As a matter of empirical fact, the pattern cannot be explained by differences in seniority as a University of Michigan employee; it is difficult to attribute to chance ($p$=.015); and it emerges quite distinctly in a tabular presentation of the department's faculty characteristics and office sizes. For this department, office and lab sizes range from 200 to 6300 square feet, with a median of 2200 and interquartile range 2300 feet; and the 95% confidence interval for the effect of being a woman allows possibilities of -120 down to -1500 square feet.

For a detailed view of the department under the preferred matching, see Table 5. The table shows only instructional track faculty. The preferred matching matches each assistant and associate professor in the department; among the full professors there are faculty without counterparts of the opposite sex with similar levels of grant funding. These faculty are not included in the table.

| matched set | gender | Grant funding As PI | Grant funding overall | space assmt. ($ft^2$) |
|---|---|---|---|---|
| asst professor.2 | male | 2500 | 25000 | 840 |
| | female | 1250000 | 250000 | 840 |
| | male | 490000 | 700000 | 1800 |
| | male | 1100000 | 1100000 | 2100 |
| | male | 45000 | 45000 | 3400 |
| asst professor.1 | female | 0 | 0 | 970 |
| | male | 0 | 0 | 1500 |
| | male | 0 | 0 | 2200 |
| | male | 0 | 0 | 2200 |
| assoc professor.1 | female | 960000 | 15000000 | 1000 |
| | male | 1300000 | 3100000 | 1000 |
| | male | 1400000 | 1500000 | 1200 |
| | male | 600000 | 600000 | 2100 |
| | male | 1000000 | 1200000 | 2200 |
| professor.1 | male | 750000 | 750000 | 1600 |
| | male | 3400000 | 3400000 | 2300 |
| | female | 4000000 | 4000000 | 2800 |
| | male | 790000 | 4500000 | 2800 |
| | male | 1600000 | 1600000 | 2800 |
| | male | 400000 | 860000 | 3100 |
| | male | 2100000 | 2800000 | 3100 |
| | male | 1100000 | 1100000 | 3500 |
| | male | 1600000 | 1600000 | 3500 |
| | male | 2100000 | 3500000 | 3600 |
| | male | 920000 | 920000 | 3800 |
| | male | 1600000 | 4400000 | 3900 |
| | male | 6000000 | 6000000 | 3900 |
| | male | 1900000 | 5200000 | 4100 |
| | male | 1700000 | 3300000 | 4100 |
| | male | 1600000 | 1600000 | 4600 |
| | male | 4700000 | 4700000 | 6300 |

Table 5: Matching of one LSA department faculty; includes only matched sets.

On the whole, women professors in this department have slightly more in grant funding than their matched male counterparts, and are slightly younger and newer to the university. These differences are mild and do not approach statistical significance. However, they may be of substantive significance. The women's advantage in grant funding underscores their disadvantage in terms of space assignments, strengthening rather than explaining away the suggestion of inequity. Their relative youth and newness suggests that the women's smaller space assignments could be due in part to a system of allotment that places great weight on seniority within the department, explicitly or by implication; however, since the male-female differences on age and years of service were not statistically significant while the men's space assignment advantage was, such an hypothesis cannot explain away the women's disadvantage in space assignments.

**Finding 5.** As may be seen from Table 6, when the comparisons within separate departments are aggregated at the college level, one finds suggestions that women research scientists, at least those in the College of Engineering and in the School of Literature, Sciences, and the Arts, inhabit smaller spaces than their male counterparts. What the confidence intervals show is that hypotheses of a substantial advantage for men are compatible with the data, whereas hypothesis of appreciable

advantages for women are not. However, since the hypothesis of equal treatment ($\mu=0$) could be rejected at neither the .05 nor the .10 level, this is at most a suggestion.

| college/track | 95% interval | | 90% interval | | | |
|---|---|---|---|---|---|---|
| | lower | upper | lower | upper | n | n/N |
| COE.ressci | -210 | 10 | -210 | 10 | 24 | .28 |
| COE.prof | -290 | 530 | -50 | 420 | 130 | .44 |
| LSA.ressci | -320 | 320 | -320 | 10 | 20 | .47 |
| LSA.prof | -210 | 200 | -130 | 200 | 140 | .52 |
| MED.ressci | -720 | 80 | -700 | 60 | 19 | .63 |
| MED.prof | -350 | 340 | -310 | 290 | 110 | .70 |

**Table 6:** Confidence intervals for the effect of being a woman on lab and office size, by college and appointment track. The final two columns indicate (i) how many faculty (*n*) contributed to the comparison and (ii) what fraction of all faculty in that college and instructional track *n* represents.

Recall that for department-track combinations, some matchings could be made but no more than one matched set was possible; these correspond to the rows of Table 2 with neither primary matching nor alternate matching confidence intervals for the effect of gender. While these matched sets by themselves could not support equity comparisons, they did contribute to the calculations leading to Table 6. There were 21 instructional-track and 23 research-track faculty who fell into such unique matched sets.

**Discussion**

The method of comparison used here makes use of information about a faculty member only if he or she can be compared to a counterpart of the opposite gender who is similar to him or her in several ways. This is both a weakness and a strength of the analysis.

The analysis takes it as given that only faculty members at the same time can reasonably be compared to one another in terms of their space assignments. In departments where this is not so, where for example associate and full professors have similar needs and privileges as groups, the analysis may reject some observations unnecessarily. Also, in departments where a looser standard of similarity in terms of grant funding would be appropriate, the effective sample could have been larger than it is here. Potentially, an analysis applying a tailored standard of comparability to each department could uncover patterns in unequal treatment that this analysis could not. On the other hand, it is less plausible that the patterns of inequity found here could be explained away by such a new set of premises — this, at least, is my reading of Tables 5 and 4.

The selectiveness of the analysis used here is also a strength. Unlike regression analysis, a matching-based analysis rejects those subjects for whom no comparable counterpart is available. While this reduces the sample size, it also protects the researcher against unwittingly extrapolating patterns into regions of data-space in which evidence for them is weak. In the literature on observational studies, such protection has shown itself to be valuable and important; in virtue of it, matching has led to accurate and stable estimates of effects of a treatment or intervention where regression analyses give results that are both inaccurate and unstable. (See, for instance, the recent work [1999, 2002] of R.H. Dehejia and S. Wahba.) Indeed, multiple linear regression has the perverse trait that observations dissimilar from the others, the ones separated from the rest in data space, frequently exert undue influence during model-fitting. By contrast, matching dismisses such observations as irrelevant to the comparison it seeks to facilitate. The restrictions imposed on

the matchings for this analysis insure against extrapolation; in addition, they protects against confounding by unmeasured factors that vary as a function of the department.

Some departmental locations have larger or smaller spaces than others, by design or by historical accident; when combined with departmental variations in size and gender composition, the meaning (for gender equity) of cross-department comparisons of space assignment is made obscure. Excluding such comparisons is a robustness measure that is difficult to replicate in analyses based on regression. Similarly, by placing only departmental colleagues of one given rank (assistant professor, assistant research scientist; associate professor, or research scientist; or professor or research scientist) within a single matched set, my analysis resists attributing to gender bias disparities in space assignment that favor one rank over another — unless men's and women's space assignments are also dissimilar within rank, in which case it is these dissimilarities that the present analysis trains attention on.

**Appendix: Association of gender with potentially confounding variables, before and after matching**

Table 7 displays raw associations among the 646 faculty with a departmental colleague of the same rank but the opposite gender and Table 9 gives associations within the same group, but taking the alternate matching into account, while Table 8 gives the associations among the 441 members of the narrow sample, taking the preferred matching into account. The tests are performed separately for the research scientist and the professor tracks in each department contributing to the narrow sample. Such comparisons shed light on the plausibility of the specific theory of measurement supporting this analysis,

> *within* sets of faculty who are matched on department, rank, and research funding, a discrimination-free system is as likely to allot a large space (or a small space) to a woman as to a man. **(Hypothesis M)**

By the construction of our matching, matched male and female faculty members are never too far dissimilar in terms of grant level; but this leaves two ways in which the matching might yet fall short. First, while matched faculty are guaranteed to be relatively close in terms of their grant funding, the matching is necessarily imperfect on this count. In principle, a systematic imbalance in the matching might arise, with matched sets tending to group women with men whose grant levels were somewhat lower. If enough of the matched sets follow this trend, then the small imbalances in each matched set might combine to a meaningful skewing of the matching as a whole, undermining hypothesis M. The matched sets in Table 1, for example, might be said to err slightly on the side of creating matched sets in which male colleagues' grantsmanship is weaker than that of their matched female counterparts; we must check that other matched sets err in the other direction, and that balance on the whole is comparable to what we might expect were gender independent of grantsmanship among the faculty. Second, there may be gender imbalances along factors not explicitly matched upon, imbalances which, were we aware of them, would lead us to abandon M.

| | (in thousands of dollars) | | | | | |
|---|---|---|---|---|---|---|
| | TGRNTPI | TGRNTCO | TOTGRANT | CALCAGE | YRSATUM | YRSJBNOW |
| COEdept1.ressci | -720 | -37 | -620 | | | |
| COEdept1.prof | -120 | -15000 | -2200 | -0.004 | -0.014 | -0.007 |
| COEdept2.ressci | -950 | -2100 | -3100 | -0.004 | -0.001 | 0.001 |
| COEdept2.prof | -1400 | -6000. | -8900 | -0.004 | -0.005 | -0.004 |
| COEdept3.prof | -3700 | -5000 | -8700 | 0.001 | -0.000 | -0.000 |
| COEdept4.ressci | -150 | -490 | -360 | -0.009 | -0.017 | -0.008 |
| COEdept4.prof | -42 | 7 | 27 | -0.007 | -0.009 | -0.009* |
| COEdept5.ressci | -580 | -6800 | -6800 | -0.012 | -0.004 | -0.011 |
| COEdept5.prof | 77 | 4800 | 5700 | -0.007 | -0.008 | -0.006. |
| COEdept6.prof | -250 | 0 | -250 | -0.005 | -0.001 | -0.001 |
| COEdept7.prof | -730 | -1600 | -250 | -0.019* | -0.018. | -0.015 |
| COEdept8.prof | -33 | 2400 | 2200 | -0.001 | -0.001 | 0.002 |
| COEdept9.prof | -4600 | -6800 | -11000 | -0.003 | 0.005 | 0.004 |
| LSAdept1.prof | -92 | 210 | 110 | -0.005 | -0.005 | -0.006 |
| LSAdept2.prof | 370 | 62 | 120 | -0.008 | -0.011 | -0.007 |
| LSAdept3.ressci | -190 | 0 | -190 | | | |
| LSAdept4.prof | 600 | 4900 | 5000 | -0.015* | -0.016* | -0.010** |
| LSAdept5.ressci | -310 | -210 | -520 | 0.002 | 0.012 | 0.007 |
| LSAdept5.prof | -9 | 20 | -29 | -0.014* | -0.013* | -0.009. |
| LSAdept6.prof | -29 | -100 | -100 | -0.014** | -0.012* | -0.007 |
| LSAdept7.ressci | 0 | 0 | 0 | | | |
| LSAdept8.ressci | 0 | -360 | -360 | -0.009 | -0.009. | -0.005 |
| LSAdept8.prof | -410 | 5900 | 3700 | -0.004 | -0.009 | -0.012* |
| LSAdept9.prof | -300 | -14000 | -14000 | -0.009 | -0.017 | -0.011 |
| MEDdept1.ressci | -400 | 0 | -400 | -0.002 | -0.008 | -0.003 |
| MEDdept1.prof | -15 | -390 | -440 | -0.002 | -0.002 | -0.000 |
| MEDdept2.prof | 70 | 890 | 430 | -0.002 | -0.003 | -0.007 |
| MEDdept3.prof | -2500 | 13000 | 710 | -0.004 | -0.001 | -0.005 |
| MEDdept4.prof | -570 | -400 | -1300 | -0.001 | -0.001 | 0.002. |
| MEDdept5.ressci | -500 | -650 | -1100 | 0.003 | 0.008 | 0.002 |
| MEDdept5.prof | -410 | -480 | -1400 | -0.006. | -0.007 | -0.006 |
| MEDdept6.ressci | 20 | 6800 | 6800 | -0.004 | -0.003 | 0.001 |
| MEDdept6.prof | 700 | 3400 | 4200 | -0.004 | 0.000 | -0.003 |

**Table 7:** Fitted female-minus-male differences on selected variables, prior to matching. Grant differences are given in thousands of dollars.
Significance codes: '***', 0.001; '**', 0.01; '*', 0.05; '.', 0.1; ' ', 1.

| | (in thousands of dollars) | | | | | |
|---|---|---|---|---|---|---|
| | TGRNTPI | TGRNTCO | TOTGRANT | CALCAGE | YRSATUM | YRSJBNOW |
| COEdept1.ressci | -980 | -99 | -940 | | | |
| COEdept1.prof | -94 | -11000 | -9300 | 0.001 | -0.006 | -0.002 |
| COEdept2.ressci | 0 | 0 | 0 | -0.003 | 0.004 | 0.002 |
| COEdept2.prof | -850 | -4300. | -5000. | -0.001 | -0.006 | -0.004 |
| COEdept3.prof | -3400 | -5000 | -8400 | 0.000 | -0.006 | -0.002 |
| COEdept4.ressci | -420 | -200 | -620 | -0.009 | -0.017 | -0.008 |
| COEdept4.prof | -400 | -250 | -520 | -0.004 | -0.005 | -0.005 |
| COEdept5.ressci | 0 | 0 | 0 | -0.003 | 0.006 | -0.001 |
| COEdept5.prof | 550 | 2800 | 3100 | -0.004 | -0.007 | -0.005. |
| COEdept6.prof | 0 | 0 | 0 | -0.005 | -0.001 | -0.001 |
| COEdept7.prof | -1500 | -3100 | -4600 | -0.016 | -0.023 | -0.018 |
| COEdept8.prof | 63 | 2300 | 2400 | -0.004 | -0.003 | -0.003 |
| LSAdept1.prof | -250 | -110 | -300 | 0.000 | 0.007 | 0.001 |
| LSAdept2.prof | -360 | -360 | -270 | -0.001 | 0.000 | -0.004 |
| LSAdept3.ressci | -200 | 0 | -200 | | | |
| LSAdept4.prof | 750 | 4800 | 4700 | -0.003 | -0.007 | -0.004 |
| LSAdept5.ressci | 98 | -160 | 43 | -0.003 | -0.006 | -0.004 |
| LSAdept6.prof | -25 | 150 | 59 | -0.001 | -0.001 | 0.001 |
| LSAdept7.ressci | 0 | 0 | 0 | | | |
| LSAdept8.ressci | 0 | 0 | 0 | -0.001 | -0.004 | -0.003 |
| LSAdept8.prof | 110 | -240 | -110 | 0.000 | -0.002 | -0.006 |
| LSAdept9.prof | -79 | 1400 | 1300 | -0.002 | -0.007 | -0.001 |
| MEDdept1.ressci | 0 | 0 | 0 | -0.004 | -0.010. | -0.004 |
| MEDdept1.prof | -800 | 1600 | 150 | 0.001 | 0.001 | -0.001 |
| MEDdept2.prof | -240 | 1200 | 1000 | 0.001 | -0.002 | -0.002 |
| MEDdept3.prof | -3400 | 10000* | 3000 | -0.003 | -0.001 | -0.003 |
| MEDdept4.prof | -1200. | -1900 | -3100* | -0.000 | -0.002 | 0.002. |
| MEDdept5.ressci | 73 | 2600 | 2600 | -0.002 | 0.005 | 0.000 |
| MEDdept5.prof | -1000 | -1400 | -2300 | -0.005. | -0.007 | -0.004 |
| MEDdept6.ressci | -110 | 6800 | 6700 | 0.003 | -0.001 | 0.002 |
| MEDdept6.prof | 600 | 9600 | 10000* | -0.002 | 0.002 | -0.002 |

**Table 8:** Fitted female-minus-male differences on selected variables, after the preferred matching. Grant differences are given in thousands of dollars.
Significance codes: '***', 0.001; '**', 0.01; '*', 0.05; '.', 0.1; ' ', 1.

The first three columns of Tables 7 and 8, describing associations between grant totals as PI, co-PI, or overall with gender, address the first of these concerns. After matching with the more stringent criteria, these associations are mostly absent or weak; the two exceptions occur in the three rows for professors from the three Medical School departments (3, 4, and 6). Grants in these departments are large relative to the others, so it is unsurprising that relatively small imbalances in its matched sets should ramify more quickly. Nonetheless, the presence of statistically significant associations with grant totals in these departments amounts to legitimate, if not compelling, ground for doubt of Hypothesis M as it applies to these departments; happily, for these departments as well as many others, such associations do not arise under the alternate matching, as may be seen from Table 9. For these departments we shall test for gender imbalance using either matching.

| | (in thousands of dollars) | | | | | |
|---|---|---|---|---|---|---|
| | TGRNTPI | TGRNTCO | TOTGRANT | CALCAGE | YRSATUM | YRSJBNOW |
| COEdept1.ressci | -890 | -24 | -830 | | | |
| COEdept1.prof | 170 | -10000 | -3000 | -0.003 | -0.011 | -0.007 |
| COEdept2.ressci | -950 | -2100 | -3100 | -0.004 | -0.001 | 0.001 |
| COEdept2.prof | -220 | -2500 | -4900 | -0.000 | -0.003 | -0.002 |
| COEdept3.prof | -3700 | -5000 | -8700 | 0.001 | -0.000 | -0.000 |
| COEdept4.ressci | -150 | -490 | -360 | -0.009 | -0.017 | -0.008 |
| COEdept4.prof | -330 | 11 | -480 | -0.003 | -0.005 | -0.004 |
| COEdept5.ressci | -440 | -5700 | -5600 | -0.008 | -0.004 | -0.008 |
| COEdept5.prof | 1100 | 4000 | 3900 | -0.005 | -0.008 | -0.004 |
| COEdept6.prof | -250 | 0 | -250 | -0.005 | -0.001 | -0.001 |
| COEdept7.prof | -150 | -1200 | 400 | -0.007 | -0.007 | -0.008 |
| COEdept8.prof | 370 | 2400 | 2300 | -0.005 | -0.004 | -0.004 |
| COEdept9.prof | -4600 | -6800 | -11000 | -0.003 | 0.005 | 0.004 |
| LSAdept1.prof | -110 | -720 | -800 | -0.003 | -0.001 | -0.003 |
| LSAdept2.prof | -5 | 160 | 120 | -0.001 | -0.001 | -0.001 |
| LSAdept3.ressci | -190 | 0 | -190 | | | |
| LSAdept4.prof | 920 | 4400 | 4600. | -0.003 | -0.005 | -0.005 |
| LSAdept5.ressci | -310 | -210 | -520 | 0.002 | 0.012 | 0.007 |
| LSAdept5.prof | -37 | -64 | -47 | -0.003 | -0.005 | -0.004 |
| LSAdept6.prof | 68 | 100* | 140 | -0.003 | -0.002 | -0.000 |
| LSAdept7.ressci | 0 | 0 | 0 | | | |
| LSAdept8.ressci | 0 | -1100 | -1100 | -0.004 | -0.008* | -0.003 |
| LSAdept8.prof | 1 | 190 | 2300 | -0.000 | -0.006 | -0.009 |
| LSAdept9.prof | -300 | -14000 | -14000 | -0.009 | -0.017 | -0.011 |
| MEDdept1.ressci | -200 | 0 | -200 | -0.002 | -0.006 | -0.003 |
| MEDdept1.prof | -65 | 1500 | 670 | 0.000 | 0.003 | 0.002 |
| MEDdept2.prof | 150 | 880 | 760 | 0.002 | 0.000 | -0.003 |
| MEDdept3.prof | -5200 | 10000 | 4800 | -0.003 | -0.001 | -0.003 |
| MEDdept4.prof | -450 | -1000 | -930 | 0.000 | -0.000 | 0.001 |
| MEDdept5.ressci | -47 | 1700 | 1500 | 0.002 | 0.006 | 0.002 |
| MEDdept5.prof | 37 | -1100 | -780 | -0.005 | -0.006 | -0.003 |
| MEDdept6.ressci | 20 | 6800 | 6800 | -0.004 | -0.003 | 0.001 |
| MEDdept6.prof | 340 | 4100* | 5400 | -0.001 | 0.003 | -0.001 |

**Table 9 :** Fitted female-minus-male differences on selected variables, after the alternate matching. Grant differences are given in thousands of dollars.
Significance codes: '***', 0.001; '**', 0.01; '*', 0.05; '.', 0.1; ' ', 1.

The latter three columns of the tables give associations between gender and three measures not specifically addressed during the matching, namely age, years at the university, and years on the job now; these may be viewed either as potential determinants of lab and office size that are of interest unto themselves, or as a (nonrandom) selection from among those variables that were ignored or unavailable for matching, yet are potentially relevant to lab and office size and potentially correlated with gender in the narrow sample. Once people without workable counterparts have been excluded from the narrow sample, none of these three variables achieves statistical significance in its association with gender, regardless of department and track. It is worth noting that the under the primary matching, there is no department-appointment track combination in which any of these three variables is significantly imbalanced toward men or women. By the structure of the matching, even a statistically significant male-female imbalance along one of the grant variables could not have been large in real terms, since men and women with sharply different grant numbers are never matched. But neither CALCAGE, YRSATUM, nor YRSJBNOW are taken into account in forming matches, and in principle there is no limit on how

much matched men and women faculty members might differ on these measures. So it is particularly reassuring that the primary matching leaves no detectable differences on these variables between men and women as groups.

# Evaluation Report
# STRIDE Committee Presentations
# May, 2003

## STRIDE

The **Science and Technology Recruiting to Improve Diversity and Excellence (STRIDE**) committee provides information and advice about practices that will maximize the likelihood that well-qualified female and minority candidates for faculty positions will be identified, and, if selected for offers, recruited, retained, and promoted at the University of Michigan. The committee works with departments by meeting with chairs, faculty search committees, and other departmental leaders involved with recruitment and retention.

## Evaluation Survey

In March 2003, a survey was sent to all tenure track faculty members of departments where STRIDE had made formal presentations to department faculty and/or the department's search committee. Between August 2002 and March 2002 STRIDE presented to 9 departments and five search committees. Since ADVANCE staff did not attend these meetings, records were not kept of who attended each of the presentations. Therefore, all instructional track faculty of the relevant departments where presentations had been made were surveyed and given an opportunity to respond (both those who attended the presentation and those who did not). This allowed us to get information both from those who actually attended a STRIDE presentation and those who did not attend, but may have heard about it from their colleagues. In all, faculty from 9 departments were surveyed; seven of these departments were in LS&A, one was in Medicine and one was in Engineering.

A total of approximately 300 faculty were surveyed. Faculty were asked to participate via e-mail using department faculty e-mail lists. Surveys were completed via the web and were anonymous so we cannot link individual responses to specific presentations. Approximately 20% (61) of the faculty who were contacted completed the survey. Of these 28 had attended a STRIDE presentation; the remaining 33 had not.

Respondents who attended the presentation were asked to rate the presentation's effectiveness and identify what was most and least effective about the presentation they attended; they were also solicited about suggestions for how future presentations could be improved and what potential next steps the committee could take. Finally they were asked what, if any, effect the presentation had on their respective departments and their processes for carrying out future faculty searches. Faculty who did not attend scheduled presentations in their departments were asked what they had heard from others about the presentation and if they would be interested in attending a presentation in the future. A copy of the survey follows this report.

**Survey Findings: Those who attended a presentation**

Respondents generally found the STRIDE presentations to be effective. The average rating of the presentation by those who had attended one was 3.7 [on a scale from *not at all effective* (1) to *very effective* (5)]. Over 60% (17) of the responding participants rated the presentation 4 or 5. Four respondents rated the presentation a neutral 3; seven participants (25%) rated it 2 (*not very effective*) and no one rated it 1 (*not at all effective*).

Respondents' open-ended comments about the most and least effective aspects of the presentations they attended provided some context for these ratings. Interestingly, several commented that the most effective part of the presentation was the fact that it was done at all by these faculty members. One respondent explained, "The point of the presentation was emphasized merely by its existence, and by the facts that we were encouraged to spend our valuable time attending it, and that obviously a number of people had invested valuable time in preparing it, as well as the report on which it is based." Similarly, another respondent commented that STRIDE's work is important in bringing these issues out into the open and allowing for discussion.

More specifically, respondents appreciated the quality of the presentations – they described them as "excellent," "well-argued," "consistent" and "professional." Respondents were particularly impressed by STRIDE's very clear review of the research on gender bias and schemas, particularly the discussion and examples illustrating how well-intentioned behaviors can unwittingly result in bias. STRIDE often uses video clips from a talk by Virginia Valian that several mentioned as particularly effective in making this point.

For many the information on gender bias presented by STRIDE was new; several respondents indicated that they had become aware (or more aware) of the difficult situation for women as a result of the presentation. One respondent commented that the presentation was a reminder to be "sensitive to treating women colleagues and students properly" but others indicated that they were hearing this information for the first time. One reported that the presentation "highlighted some issues that I was unaware of in terms of biases that are present but not obvious." Another was more sensitized to "various issues regarding possible conflicts for women candidates." Others were particularly struck with the information on the impact of bias and a negative climate on women faculty. One respondent noted, "I learned quite a bit about latent and unwitting barriers to female faculty recruitment and retention."

Several respondents also noted the effectiveness of the demographic data STRIDE presented. They were struck both by the content (that the data showed the "need for changing the demographics") as well as the effectiveness of presenting clear, unassailable data. One respondent commented on the value of "hard numbers for where women are and where they have been." Another noted that "hearing the statistics" and "sticking to the facts" made the STRIDE presentation particularly effective. A different respondent emphasized that "the data presented are extremely important and meaningful."

Many respondents, however, expressed concern that the presentation was not very effective in reaching those with power to address the problems being discussed, noting that the presenters, themselves, had no power. One respondent noted, "the male faculty weren't very interested."

Another commented, "the chairs frequently 'talk a good game' on how 'hard' they are trying to hire women faculty, women chairs, etc., promote women and advance their careers, but do not do so—either before or after the STRIDE presentation." A few respondents themselves noted that they were not convinced by the information STRIDE presented. One respondent reported, "I remain unconvinced by the main hypothesis, which I took to be that essentially all groups doing any evaluation are either consciously or unconsciously prejudiced against women. I have been involved in many such evaluating groups and believe that almost all of these actually leaned in favor of women candidates."

A few felt that the discussions during the presentation were limited and not as open as they could have been. One identified the "lack of real 'answers' about how faculty and others can deal with some of the biases that are 'hidden' or that we are often unaware of" as particularly problematic. A minority of respondents felt they were being criticized for their behavior. One respondent commented, "The least effective part was somewhat of a lack of recognition that we are trying to recruit the best possible candidates to fill our positions. It just may turn out that the best possible candidate is not a woman." Another responded, "Our faculty felt accused of being sexist. The presenters urged us to adopt a goal of having the same proportion of women among professors as there are among Ph.D.s granted in our field nationwide. No additional argument for the feasibility of this goal was presented. None of us thought the issue was that simple." In contrast, one respondent felt the message was watered down significantly so that it would not be offensive and, as a result, was less effective.

Suggestions for improving the presentation were directed at addressing these concerns. One respondent urged STRIDE to work toward larger faculty participation in the discussions; similarly one suggested more prompts for audience responses. A third respondent indicated that it would be helpful to have STRIDE work with a department faculty to generate department-specific goals about hiring during the discussion. Along these lines, another suggested reviewing the department's hiring history prior to the presentation. This may also address the concern raised by a few that it is important to provide some strategies for addressing the problems being raised. Similarly, one respondent suggested that more direct conversations with those in power (e.g., chairs) could help generate those solutions.

Many of the respondents felt that the STRIDE presentations had a direct effect on their departments. Several noted that the presentation made faculty more aware of the issues. One indicated that it "broadened the perception for gender biases and their origin;" another reported that "it contributed to our increasing awareness of the importance of recruiting women and minority faculty, and of working extra hard to recruit such faculty." Others noted seemingly direct effects of the presentation on department hiring. One commented, "It made the personnel committee, on which I sit, very conscious of the need to increase female representation in the department." Another reported, "Several faculty told me, prior to the presentation, that the reason that we do not hire more women is that women are not interested in faculty positions. Their search committee subsequently identified and hired a woman."

Some respondents indicated that these positive effects may have been limited. One respondent reported that the presentation "probably had no effect on the people at the extremes—really concerned about the status of women in science to absolutely convinced that there is no problem.

I think there may have been an effect on those in the middle. I know it got me to thinking differently about my own career." Another agreed, "We have four women in [department] and to us the presenters were 'preaching to the choir.' The men (most of them) seemed not to care. I'm afraid that it made little to no impact on them."

Several felt that the presentations had no (or a negative) effect on the faculty. One respondent even rated the presentation a 3, even though it was considered to be "excellent," because it appeared the presentation did not change how things were done in the respondent's department. However, a different respondent hypothesized that the effect may not be immediate. "There was certainly some reaction against the presentation, which would intend to negatively impact us; but I believe there was also some very useful information that my colleagues will have reflected on, as I have."

As previously mentioned, there was some belief on the part of respondents that the presentations had direct effects on their departments' search processes. One respondent reported, "I chaired a recent departmental search and we refined some of our process methodology in reaction to advice from STRIDE members." Another concurred, "I am on the search committee, and we have several times referred to points made in the presentation discussion in formulating our own tactics." Three respondents believed that the STRIDE presentation was directly related to their departments hiring women.

Many respondents had recommendations for STRIDE about what activities to pursue. Several suggested that they continue what they are doing—making annual presentations to search committee and/or departments. As one respondent noted, "Like a vaccination that requires an occasional booster shot, an occasional re-indoctrination might be appropriate." Several thought STRIDE's assistance should be provided for all searches and that chairs were important targets of this information. Others suggested that STRIDE be better informed about the specific search history of a given department and be better prepared with specific examples "of how to counter-act or neutralize biases that are present."

Some respondents provided suggestions of other areas that it would be useful for STRIDE to address. These include the issues associated with two career families when recruiting new faculty and how to be flexible and creative in constructing offers that are attractive to women who are being recruited. Also of interest is more information about demographics of women scientists in European countries—specifically countries where the proportion of women scientists is significantly higher than it is in the U.S.

Seven of the respondents said they would be interested in future STRIDE presentations.

**Survey Findings: Those who did not attend a presentation:**
Of the 33 respondents who had not attended the STRIDE presentation in their department, only two had heard anything about the presentation from others; one heard that the presentation to the department's search committee did not provide any new information, the other heard that the presentation was "effective and that the facts presented were quite striking." Most (22) said they were definitely interested in attending a future STRIDE presentation.

**Evaluation Report**
**Women Talking Science and Engineering Program**
**December, 2003**

## Program Description

**"Women Talking Science and Engineering" (WTSE)** is a seminar/discussion group that brings together women scholars from the sciences and engineering. The purpose of the seminar is to forge connections across disciplines, explore the dynamics of gender at work, and develop an analytic framework for identifying and resolving complex interpersonal and structural challenges related to women's minority status at work. The seminar is intended to contribute to the development of a strong community of scholars and a supportive, encouraging climate for all faculty at the University of Michigan. **WTSE** is an activity of the Interdisciplinary Program in Feminist Practice in Women Studies and is a part of the "Women Talking Work" Faculty Seminar and Workshop Series that has involved nearly 200 faculty at the University of Michigan. The Program has included workshops, seminars, study groups, and conferences that highlight issues related to the impact of gender and race on workplace dynamics; communication, negotiation, and power; professional practice and training; and improving the climate for and retention of women scholars. The Interdisciplinary Program in Feminist Practice is directed by Jane Hassinger, MSW, DCSW, a lecturer in the Women's Studies Program, the School of Social Work, and the School of Business Administration.

The WTSE seminar program was developed specifically for the ADVANCE project. It was designed particularly for women faculty across a wide spectrum of scientific and engineering disciplines. The seminars make use of critical readings on the gendering of organizational dynamics and the professional workplace as well as on the development of strategies for increasing effectiveness and success in the workplace. Each seminar meets four times for two hours (for a total of eight hours) over the course of two weeks. Participants are requested to attend every session, although that is not always possible for every seminar member. The program is open to all women science and engineering faculty on all tracks (instructional, research, clinical) across the campus.

The WTSE seminar has been offered four times since the ADVANCE project began: twice in the summer of 2002 and twice in the summer of 2003. A total of 35 women science and engineering faculty signed up to participate in one of these seminars, although not all actually attended (because ADVANCE staff did not participate in the seminars, we don't know how many women attended each session). These women are from a range of schools and colleges on campus, including the three large schools (Medicine, Engineering, LS&A) but also some smaller schools (Dentistry, Public Health, Pharmacy, Nursing, Natural Resources, Kinesiology). Each seminar eventually involved 6-8 participants--an ideal size for encouraging participation and open discussion.

**Evaluation Survey**

All women faculty who signed up for the seminar were contacted via email and requested to complete an evaluation survey in the fall 2003.[1] Sixteen participants and seven non-participants responded, all completing the online survey for an overall response rate of 66%. The survey asked respondents who attended the seminar to rate its effectiveness and to elaborate on what aspects of the seminar were most and least effective; they were also asked specifically about the usefulness of the reading assignments. In addition, participants were asked about the effect of the seminar on them and their work and how the seminar might be improved. Non-participants were asked about the reasons for their non-participation and if they would be interested in attending a future seminar. Both participants and non-participants were asked if they'd be interested in other kinds of opportunities to connect and network with other women scientists and engineers. Copies of the surveys follow this report.

**Survey Findings - Participants**

Overall, participants found the seminar to be very useful, rating it between "very effective" (5) and "somewhat effective" (4) on a 5 point scale; the average rating was 4.3. With respect to the positive aspects of the seminar, two major themes emerge: 1) the interaction with other women scientists in the presence of a facilitator, and 2) the formal education on the literature and issues. On the first theme, women reported enjoying both getting to know other scientists and establishing a network, as well as learning how to deal with problems faced through shared experiences. As one woman stated, "some of the issues or problems which face other woman faculty and how they have dealt effectively with these issues are valuable lessons for me to learn." The women also reported learning from the readings distributed in advance of the seminar, and appreciated discovering that the issues they face are general and not person specific. One respondent reported, "The readings were eye opening and the discussion with others was great. I began to see that some of my experiences are not unique to me." Another woman found that the readings "put a context around our experiences and made us understand them better." Most found the readings helpful and viewed them as an important resource for future reference.

Participants noted very little that was ineffective about the seminars. They did, however, suggest more time be devoted to specific problem solving in their discussions. While participants did appreciate the didactic aspect of the seminar, some of them thought at times it was too theoretical and preferred a more goal oriented organization of the course. As one participant wrote, there is a "need to focus more on problem solving vs. just assessment." This sentiment was echoed by another participant who stated "we had no concrete way of implementing our ideas."

[1] Two separate surveys were designed: one for those who actually participated in the seminar, and one for those who had signed up but did not attend the seminar. In the email request, two URLs were provided, one for each group, where respondents could fill in an anonymous online survey. The surveys were also attached as PDF files to the email, which allowed people the option of printing out, completing and mailing it back if they preferred.

Participants seemed to be fairly evenly split on how the seminar affected their professional lives more broadly. About half felt the seminar had a real positive impact on their work life, and the other half discerned no direct impact. Specifically, what they felt they gained from the seminar was the ability to put their experiences into context, to take difficulties less personally, and to feel less isolated in their endeavors.

When asked about effects on their personal lives, reactions were mixed. Some found the sessions depressing, though most found solace in their discussions with others. As one woman stated, the seminar "made me cognizant that it's a widespread problem and I found that a sense of commonality and talking with others was uplifting, even if having to focus on it was not." Many participants indicated that their thinking about their situations as women scientists and engineers was confirmed or reinforced by the seminar.

For improvement of future seminars, participants suggested incorporating more time to discuss solutions or strategies to deal with the issues faced. In particular, the discussion of a range of case studies or scenarios was raised. Several participants also requested that there be more structure to the sessions, with agendas and goals clearly stated, perhaps as a strategy to direct discussion toward more problem solving.

All but a few of the women expressed interest in continued connections with the other women who had participated in the seminar and all but one reported that they'd like further opportunities to meet with other women scientists on campus.

**Survey Findings – Non-Participants**

The reasons that most of the non-participants gave for not attending was a last-minute scheduling conflict. All of these respondents indicated that they would be interested in attending a future seminar as well as opportunities to connect with other women scientists on campus. Other reasons for not attending seemed to revolve around the time involved—either in attending the seminar itself or the (reading) preparation for the seminar; but even these people indicated interest in future seminars.


# Women Talking Science and Engineering

**[Survey for Participants]**

1. When did you attend the WTSE seminar? (Please circle one)

   May 2002
   August 2002
   May 2003
   August 2003

2. How effective do you think the seminar was overall? (Please circle one)

   Very Effective
   Somewhat Effective
   Neutral
   Not Very Effective
   Not at All Effective

3. What was most effective about the seminar?

4. What was least effective about the seminar?

5. How useful did you find the reading materials?

6. How could the seminar be improved?

7. How did your participation in the seminar affect you personally, and your thinking about work and gender?

8. What have been the implications of your participation in the seminar for you at work?

9. What have been other outcomes (both positive and negative) of your participating in the seminar?

10. Would you be interested in opportunities to reconnect with others who participated in the seminar with you? (Please circle one)

Yes
Maybe
No

11. Would you be interested in opportunities to connect with women scientists in other departments? (Please circle one)

Yes
Maybe
No

**Thank you very much for completing our survey; your feedback will help us with future programming.**
**Please return survey to: Ching-Yune C. Sylvester,**
**Institute for Research on Women and Gender, 1136 Lane Hall 1290**


# Women Talking Science and Engineering

**[Survey for Non-Participants]**

1. Are you interested in attending a future WTSE seminar? (Please circle one)

Yes Maybe No

2. If you were unable to attend the seminar, let us know why (Please choose all that apply)

__ Too large of a time commitment
__ Last minute scheduling conflict
__ Too much reading required
__ Readings did not look interesting
__ Other (please specify):_____

3. If scheduling was an issue, what modifications to the schedule would make it easier for you to attend a future seminar?

Seminar held in the month of _____

Seminar held during (Please circle one):

Mornings Lunch hours Afternoons Evenings

4. Did you receive the reading materials? (Please circle one)

Yes Yes, but late No

5. If you read some (or all) of the materials, how useful did you find them?

6. Would you be interested in opportunities to connect with women scientists in other departments? (Please circle one)

Yes Maybe No

**Thank you very much for completing our survey; your feedback will help us with future programming.**

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