Maximizing the potential of female scientists and engineers in academia

Overcoming obstacles

Bascom Palmer Eye Institute researcher M. Elizabeth Fini still remembers the bright, inquisitive young female scientists she mentored as a faculty member at Tufts University during the late 1990s. Back then, Fini knew that mentoring could be an effective method for helping female scientists advance to top-level positions in the sciences.

Brain trust: Clockwise from left, Helena Solo-Gabriele, Lora Fleming and Sharon Smith, M. Elizabeth Fini, and Mary Bartlett Bunge are some of the University's top women scientists.

Today, it is still important and if anything may have taken on greater significance after the recent release of a National Academies report that says women face barriers to hiring and promotion in research universities in many fields of science and engineering—a situation that deprives the United States of an important source of talent.

Written by a committee chaired by University of Miami President Donna E. Shalala, the report also offers nearly two dozen recommendations to eliminate gender bias in academia and maximize the potential of women scientists and engineers, calling on administrators, professional societies, government agencies, and Congress to implement reforms and take decisive action.

Among their own ranks, female scientists like Fini know that there is a lot they can do themselves to help advance their cause, mentoring being only one part of the solution.

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—Professor Sharon Smith

Veritas questioned some of the University of Miami's top women scientists on strategies to eliminate gender bias in academia, and here's what they said:

One way to combat such bias is to increase "outreach and education efforts in K-12 and college education by female scientists of all types so that there are role models

out there for young women—especially minority females—as they decide what career they want," says Lora E. Fleming, a professor of epidemiology and public health at the Miller School of Medicine. Educated at both Harvard and Yale, Fleming holds a joint appointment in marine biology and fisheries at the Rosenstiel School of Marine and Atmospheric Science and is codirector of the school's Center for Oceans and Human Health.

Educating themselves on issues of gender bias and learning skills to advance their careers are other strategies, says Kathryn Tosney, professor and chair of the Department of Biology in the College of Arts and Sciences. Tosney recommends books such as Virginia Valian's *Why So Slow? The Advancement of Women*, which examines why so few females occupy positions of power and prestige in every field, and *Women Don't Ask: Negotiation and the Gender Divide*, which examines the dramatic differences in how men and women negotiate and why women so often fail to ask for what they want at work.

"We can also invest our personal efforts in seeking outside funding, such as the National Science Foundation ADVANCE grants, which are dedicated to increasing the participation and advancement of women in science and engineering careers," Tosney says.

Rana Fine, a professor of marine and atmospheric chemistry at the Rosenstiel School and a recipient of the Provost's Award for Scholarly Activity, says the task of ending gender bias should fall on all scientists, not just women scientists. She says universities should strive to foster a collegial working environment, and initiating regular, planned gatherings of female faculty members is one way to achieve this. "This provides a mechanism for women at different career stages to meet and provide encouragement to each other. Junior faculty can speak with mid-career and senior colleagues, collecting ideas on career and life issues and on ways to deal with gender bias," Fine says.

"Women need to actively promote women," says Sharon Smith, professor of marine biology and fisheries and codirector of the Center for Oceans and Human Health. "Women need to be vigilant and proactive in all areas where they have influence—for example, in promotion and tenure procedures, peer-reviewed grants and manuscripts, nominations for awards and recognition—to ensure that women under consideration in these processes receive fair treatment."

But not all of the issues of gender bias affecting female scientists fall within the realm of academic issues. Some involve family matters. Helena Solo-Gabriele, professor and associate dean for research in the College of Engineering, says university leaders nationwide "should be sensitive to the issues that impact the upward mobility of females in the workplace, in particular family issues."

"It's important for women to discuss their professional goals with their bosses and to have the occasional open and frank discussion regarding attendance in the face of family or personal problems," says Norma Kenyon, the Martin Kleiman Chair in Diabetes Research and executive director of the Wallace H. Coulter Center for Translational Research. "It is also important for women to discuss the demands on their time openly with their family, and even if the demands are great, to do everything in their power to show their family that they are priority one while not sacrificing what needs to get done at work."

Mary Bartlett Bunge, a leading spinal cord injury researcher, would like to see more universities establish faculty development offices that would help guide

female scientists' growth, advise them about achieving tenure, and ensure that each new female postdoctoral person and faculty member is assigned a more senior mentor. "Mentoring is very important," says Bunge, the Christine E. Lynn Distinguished Professor in Neuroscience at The Miami Project to Cure Paralysis, reinforcing a point made by Fini.

"I share the responsibility for mentoring many young female scientific faculty members, as well as scientific trainees at all levels," says Fini, scientific director of the McKnight Vision Research Center and the Walter G. Ross Chair in Ophthalmic Research. "I encourage them to challenge themselves and reach for the highest goals, and I take every opportunity to bring them into my collegial network."

Says Smith, "I know that every day of my working life I am a role model for younger women. I take that responsibility seriously."