

Closing the gap

NSF grant aims to increase, retain women faculty in science, technology

— by Michele Coffill

In the 1950s — the era of the Cold War, “I Love Lucy” and bobby socks — the perception seemed that many women attended college for one of three reasons: they wanted to be a teacher, a secretary, or earn their fictitious “M-R-S degree.”

In the five decades since, women have made obvious career strides. But while it’s no longer shocking to see a women chemist or engineer, science- and math-based careers remain male dominated. To help close the gap, Grand Valley is in its third year of administering a \$500,000 grant from the National Science Foundation ADVANCE PAID (Partnerships for Adaptation, Implementation, and Dissemination) project, working in partnership with The University of Michigan.

The goal behind NSF’s ADVANCE program is to increase representation and advancement of women in academic science and engineering careers by addressing faculty recruitment, retention, professional development and campus climate.

Since receiving the grant, grant writers and principal investigators Shaily Menon, chair and associate professor of biology, and Kathleen Underwood, director of Women and Gender Studies and associate professor of history, have distributed professional development funds totaling \$100,000 to support research by Grand Valley women faculty

in the STEM fields (Science, Technology, Engineering and Mathematics). Faculty projects included studying the chemical makeup of antibiotic resistant cells, working with radioisotopes, and looking to improve solar cells used in renewable energy sources. To meet the varied aspects of the NSF grant, Menon and Underwood have established a campus committee and charged its members with helping improve recruiting procedures for faculty positions; they’ve partnered with U-M colleagues for advice and collaboration; and they have developed a Grand Valley network for women faculty in the STEM fields.

They both admit that it has not been an easy job. Campus climate issues surfaced at the start: some faculty questioned why grant monies are offered only to women, while women faculty wondered what impact applying for professional development grants might have on their tenure process. As they worked to spread word about the grant and its possibilities, the doubts have been calmed and participation has risen.

“We knew it would be difficult in the beginning,” Underwood said. “We’re asking for transformation in the way faculty think about their world.”

For example, Grand Valley faculty members often conduct intense research during sabbaticals or summers when their teaching load lightens. The NSF ADVANCE program

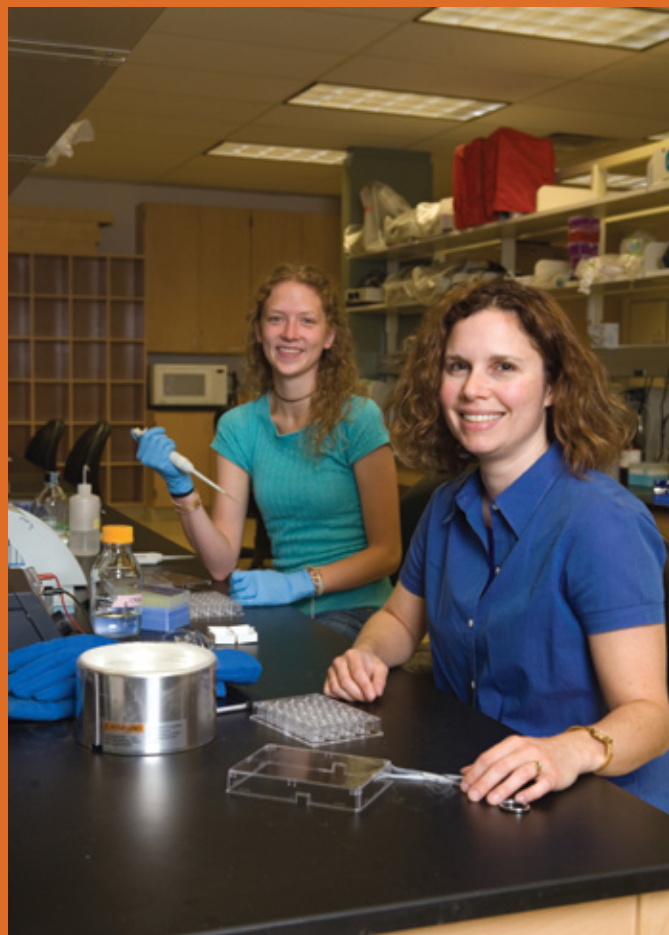


photo by Amanda Pitts

Rachel Powers, assistant professor of chemistry, and student researcher Rachel Kubiak (in back) study enzyme inhibitors in a lab in the Cook-DeVos Center for Health Sciences. Powers was among the recipients of a professional development grant from the National Science Foundation.

opens new doors by offering grants that allow faculty to focus on research, and being a recipient of such an NSF grant can bolster resumes and aid the tenure process.

“We have to keep reminding

women faculty in the sciences and engineering that this grant is about you and your professional development, and how down the road it will benefit your students,” Menon said.

Rachel Powers, assistant

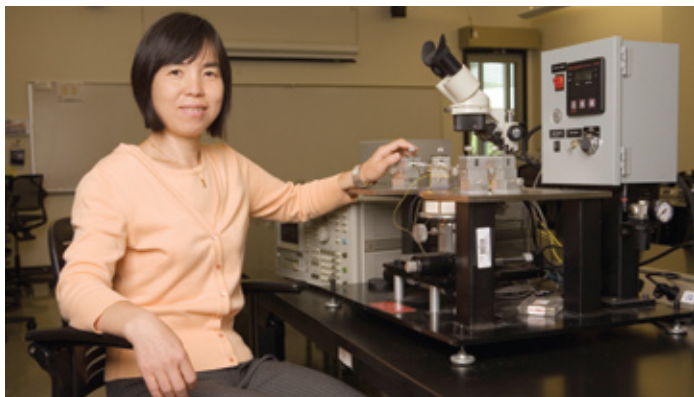


photo by Amanda Pitts

Grant money allowed Lihong (Heidi) Jiao, assistant professor of engineering, to continue researching solar cells used in renewable energy sources.

professor of chemistry, was among the grant recipients, securing three professional development grants to continue her research on enzyme inhibitors and their role in antibiotic resistance. “I see the NSF grant as sort of an all-in-one stop for professional development,” she said. “It funded travel to a national conference and supplies. Otherwise, I would have had to apply to several places. I see this also as a stepping stone to writing a big, external grant and means to publishing an article.”

Laurie Witucki, associate professor of chemistry, used her grant to continue research she started while at the Van Andel Research Institute in Grand Rapids. The NSF grant funded reagents and equipment to create a radioisotope lab in Padnos Hall on the Allendale Campus. “With the grant, I was able to do high-level research no one else at Grand Valley had been able to do before,” she said. “Now a professor in biomedical health sciences is using the lab, so it’s interdisciplinary.”

“This grant is dedicated to women’s lives. This type of funding helps give you the extra push needed to get the work done.”

Paul Leidig, director of the School of Computing and Information Systems, looks at

the ADVANCE program from a broader perspective that gets at the root of the problem: to help advance the careers of women scientists and engineers on campus, you need to first attract them to STEM fields. The statistics from his department tell the story. In the winter 2008 semester, 180 students majored in information systems or computer science, eight are women; of 24 tenured or tenure-track faculty members in the department, one is a woman.

Leidig said, “In tech roles, it systemically has been a problem. Why don’t women want to do computing?” The job outlook for anyone with a computing degree is outstanding, he noted and added that telecommuting and flexible work schedules (programming, for example, can be done from anywhere) should make it an appealing career for women.

The number of women faculty in STEM fields at Grand Valley mirrors national statistics. According to NSF and based on a 2003 national survey, women comprise 29 percent of science and engineering faculty at four-year colleges and universities and 18 percent of full professors. At Grand Valley, representation of women faculty varies from department to department. Of 23 engineering faculty, four are women; all 27 faculty in

the Kirkhof College of Nursing are women; 13 of 37 faculty in biology are women; 13 of 31 faculty in mathematics are women. (See sidebar on page 17.)

Leidig is a member of Grand Valley’s NSF ADVANCE STRIDE (Strategies and Tactics for Recruiting to Improve Diversity and Excellence) committee. The committee, based on a model from U-M, is comprised of senior faculty members who have studied how evaluation bias and other processes can limit a woman’s professional advancement; they have led workshops for others on campus who are involved in hiring. Their goal is far from forcing departments to hire a women faculty member; it’s to help departments understand the reasons it can be difficult for women in a STEM field to find a position. She may have gaps in her employment or research because of time taken to raise a child, for instance.

To address the problem, the Padnos College of Engineering and Computing has hired women for community outreach and student services positions, continued to recruit women faculty and students, and hosted summer camps for junior high girls interested in the sciences (see sidebar on page 17). “For me, all these things are related,” Leidig said. “I’m on the STRIDE

committee first because of the shortage of female students. We need to get past the stereotype that seems to steer women away from STEM fields. And then there’s the faculty role.”

John Golden, associate professor of mathematics and STRIDE committee member, said the group’s presentations on recruitment and candidate evaluations have been well-received. “People realize that the changes they make as a search committee to make evaluations fair will help everyone,” he said. After a year of focusing on faculty recruitment, the STRIDE committee plans to look at retention efforts and study various family-friendly policies like a flexible tenure clock, which is in place at other universities.

At U-M, the ADVANCE program has been in place for seven years. When gauging its progress, program director Abigail Stewart can cite successes and problems in the same sentence. “I can be in a roomful of women scientists and think, ‘Wow, that would not have happened five years ago,’ and then I’ll hear of some personnel problem and think it’s not so wonderful,” she said.

One piece of the ADVANCE pie still pending is securing a post-doctoral fellow from U-M to teach courses at Grand Valley. Menon said this “collaborative

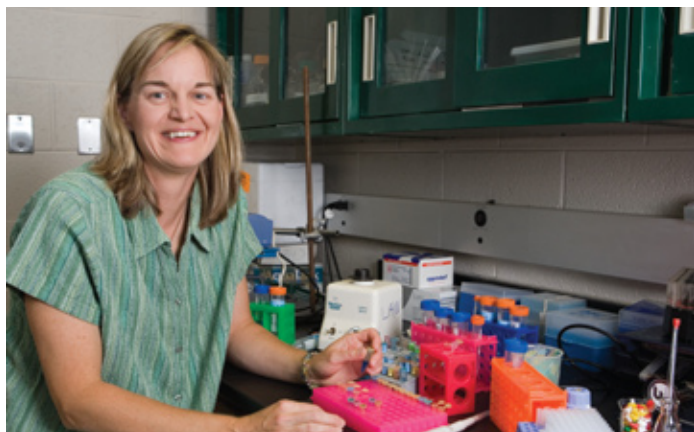


photo by Amanda Pitts

Laurie Witucki, associate professor of chemistry, prepares enzymes that will be analyzed in the radioisotope lab.

pipeline” benefits both universities, as a new doctoral candidate gains teaching experience and students learn from a woman scientist or engineer. “Some new Ph.D.s are at risk of giving up their careers because all their experience is with a research university and they have seen only one model of success in those professions. This offers an alternative model of teaching and research at a primarily undergraduate institution, which might be more attractive to them,” she said.

It was exactly what Lihong (Heidi) Jiao, Grand Valley assistant professor of engineering, was looking for when she applied for tenure-track positions four years ago. Jiao, also an NSF ADVANCE professional development grant recipient, earned a doctorate from Pennsylvania State University and had worked in a fiber optics lab at Lucent Technologies in New Jersey.

“That was a time when there were a lot of industry layoffs,” she said. “It was not an environment where I wanted to be. I wanted to be in a place where I can focus and do something useful.” She considered Penn State positions but watched her advisors and professors struggle to keep up with their research and class loads. “At research universities,

everything seems to be centered on research. Here, there is a combination of teaching and research,” she said. The NSF grant helped continue Jiao’s work with silicon solar cells.

Powers has been at Grand Valley for two years and said she too was attracted by its blend of teaching and research, important factors when considering work-life balance — points not missed by some of Powers’ students. “I have female students who — as we’ve worked together — have asked how I do the balance between work and raising a family,” said Powers, mother of two.

“It’s been fun for me to see the students grow, from being very timid and afraid to touch anything in the lab, and see their progression,” she said. One of her student researchers, Rachel Kubiak, was accepted at every graduate school she interviewed. She started the fall semester at the University of Wisconsin-Madison.

That type of successful mentorship is an example that those involved in the ADVANCE program love to tout; and they should, because it’s at the heart of NSF’s goals in developing the program: cultivating a world-class, broadly inclusive science and engineering workforce.

Helping students ‘Get with the Program’

Natalie Westaby, an eighth grader from Northview Middle School, spent a week at summer camp writing computer programs and designing and building robots. While it may have cost her a week at the beach, it brought her a step closer to a possible career as a computer scientist.

“Or a marine biologist. I haven’t decided yet between those two,” Natalie said.

Westaby was among the 20 campers at Grand Valley’s “Get with the Program” camp, a day camp in August for junior high girls interested in robotics and computer programming.

Teresa Peterman and Ana Posada, faculty members in the School of Computing and Information Systems, devised the idea for the camp three years ago. “It’s really to help girls interested in computers get ready for high school and take the right courses that will prepare them for college,” Peterman said.

The two secured funding from the Michigan Space Grant Consortium, Society of Manufacturing Engineers and Grand Valley’s Padnos College of Engineering and School of Computing and Information Systems. During the week, campers build LEGO Mindstorm robots, write computer programs and visit robotics companies in Holland.

Posada said the field trip to Holland allows campers to see programming concepts in action on the assembly line. “And they get to talk to senior women engineers and ask them questions about their work,” she said.

Get with the Program is for seventh- and eighth-grade girls. It follows Grand Valley’s STEPS camp, which introduces sixth-grade girls to engineering concepts. For more information on these programs, visit www.gvsu.edu/steps or www.gvsu.edu/cis.

Grand Valley faculty female/male breakdown

Department	Women	Men	Total
Total faculty (all departments)	324	426	750
(Select departments)			
Biology	13	24	37
Biomedical/Health Sciences	5	16	21
Chemistry	10	20	30
Computer Science/Information Systems	1	23	24
Kirhof College of Nursing	27	0	27
Mathematics	13	18	31
Physical Therapy	6	4	10
Psychology	17	19	36
School of Engineering	4	19	23
Statistics	3	11	14

Source: GVSU Institutional Analysis, 2007 (figure includes all tenure and tenure-track faculty, not visitors, affiliates or adjuncts)



photo by Amanda Pitts

Participants in the ‘Get with the Program’ summer camp build a robot. The camp is for junior high girls who are interested in robotics and computer programming.