

## Influential Women in Science and Scientific Publications

*Moderator:*

**Annette Flanagin**

JAMA

Chicago, Illinois

*Speakers:*

**Catherine DeAngelis**

JAMA

Chicago, Illinois

**Judith Curry**

Georgia Institute of Technology

Atlanta, Georgia

**Ani Aprahamian**

University of Notre Dame

Notre Dame, Indiana

*Reporter:*

**Dana Carey**

*American Journal of Nursing*

New York, New York

Three engaging women spoke of their lives and how all have worked to encourage other women in the sciences, from medicine to geosciences to astrophysics.

At age 4, Catherine DeAngelis wanted to be a doctor. During high school in the 1950s in northeastern Pennsylvania, she was told to go to nursing school before medical school. DeAngelis became a nurse (she still credits it as some of her most valuable training) and then went to medical school at the University of Pittsburgh, where she specialized in pediatrics. She taught at the Johns Hopkins University School of Medicine and in 1985 became the 12th woman professor in more than 90 years. In 1990, she became dean of the faculty and started a mentoring program for women professors. She established innovative guidelines for faculty—for example,

men were not allowed to discuss committee business in the bathroom, and every major committee had to include at least three women. She remained there until 2000, when she went to JAMA.

Data from the Association of American Medical Colleges show that the number of women professors has increased by 61% in 10 years while the number of men has increased by 17%. In the clinical sciences during the same period, the number of women has increased by 96%, and the number of men by 37%. About half of medical students are female; when DeAngelis was in school, it was about 5%. She said that although greater equity in the representation of women in medicine has been achieved, there is still work to be done.

In the early 1970s, Judith Curry was the only woman in her class at Northern Illinois University who majored in geosciences. She got married at 21 and commuted 60 miles a day to attend graduate school at the University of Chicago. Two and one-half years later, she divorced and moved to Chicago on a \$466/month graduate-student stipend. Her daughter often accompanied her to the library and computer laboratory.

Often isolated from other students, first as a commuter and then as a single mother, she developed ideas on interdisciplinary research that led to an unusual thesis idea: a precursor to the issue of global climate change. She graduated in 1982, 8 years after she began. She was tenured at Purdue University in 1988 and then moved to the Georgia Institute of Technology (GIT), where she has been the chair of the School of Earth and Atmospheric Sciences since 2002. At GIT, 55% of the graduate students are women (the national average

is 40%). Among the faculty, 26% of the associate professors and 8% of the professors are women. Those numbers are not changing as they are in medicine.

The prevailing challenge for female students in the sciences, she said, remains family issues; medical, financial, and family pressures can be overwhelming. Allowing children on site in the department has been one solution.

At age 7, Ani Aprahamian received a book on astronomy and began planning her own laboratory. She is a professor of experimental nuclear physics at the University of Notre Dame and director of the Institute for Structure and Nuclear Astrophysics, which is the only National Science Foundation nuclear-physics frontier center.

At her first faculty meeting as department chair, Aprahamian announced that she was going to double the number of physics majors. She created a common room, set up regular student meetings, and sent brochures about the program to incoming freshmen. Reordering the second- and third-semester curriculum helped to decrease attrition.

Before Aprahamian's interventions, there were 10 undergraduate physics majors and only one woman; about 13% of doctoral students were female, matching the national average. After the intervention, her goal was achieved: of the 28 undergraduate physics majors, five were female, and 26% at the doctoral level were female.

The three speakers concurred that greater opportunities are opening to women in science. As Curry said, "We can make a difference, one female scientist at a time."

