Almost half of all recent MDs and PhDs in biology are women, and so are the majority of new psychologists, veterinarians, and dentists. But in other science and math professions, it is more difficult to find women.

For example, in the top 100 U.S. universities, only fewer than 15 percent of tenure-track academic positions in math-intensive fields are held by women, according to work by human development professors Stephen J. Ceci and Wendy M. Williams.

In their new book, *The Mathematics of Sex: How Biology and Society Conspire to Limit Talented Women and Girls*, Ceci and Williams examine evidence from around the world about why such fields as mathematics, computer science, physics, engineering, and chemistry are so topsidedly male.

Their general conclusion: Many women opt out of these careers at a fairly young age or drop out early in their careers because they want some flexibility to raise children.

“The timing of child rearing coincides with the most demanding periods of their career, such as trying to get tenure or working exorbitant hours to get promoted,” Ceci said.

Now Ceci and Williams have received $1.4 million from the National Institutes of Health to establish the Cornell Institute for Women in Science. The money will fund a series of studies that aim to assess and reduce gender bias in recruitment, mentorship, and evaluation in science, technology, engineering, and mathematics, commonly known as STEM fields.

The grant is part of 14 awarded in response to a 2007 National Academies report, “Beyond Bias and Barriers,” that called for a broad, national effort to maximize the potential of women scientists and engineers.

Ceci and Williams will use the new funding to conduct three large-scale experiments, a national canvass of STEM professors and graduate students at the top 80 research universities across the United States.

The project will explore how women and men are recruited to and informally trained in graduate school, and how they are evaluated when they apply for their first tenure-track position. The researchers seek to better understand, and ultimately improve, behavioral norms that may consciously or unconsciously lead to gender-biased recruitment, mentorship, and evaluation environments.

“Our results will help hone unbiased, effective recruitment, mentorship, and evaluation practices, leading to greater gender fairness in the scientific recruitment, training, and job-placement processes,” they said in their proposal.

Although females earn a large portion of bachelor’s degrees in all fields of science, including math-intensive fields (46 percent of mathematics majors are females), disproportionately fewer women enter graduate school in these fields, and fewer women who earn PhDs apply for academic jobs.

For the same reasons, women drop out of scientific fields after entering them—especially math and physical sciences—at significantly higher rates than men, particularly as they advance, Williams said. Even in such fields as medicine, where women now make up half of graduating classes, those entering academic medicine drop out at higher rates than do their male counterparts.

“The tenure structure in academe demands that women who have children make their greatest intellectual achievements contemporaneously with their greatest physical and emotional achievements—a feat fathers are never expected to accomplish,” Williams said. “When women opt out of careers—or segue to part-time work in them—to have children, this is a choice men are not required to make.”

This new work builds on a study that Ceci, Williams, and colleague Susan Barnett published earlier this year...
Sharon Sassler, associate professor of policy analysis and management, received a three-year, $539,000 grant to analyze the entrance and retention of women in STEM occupations, focusing on two cohorts coming of age at different times. She is collaborating with Yael Levitte, executive director of the CU-ADVANCE Center, and Jennifer Glass, formerly of the Department of Policy Analysis and Management and now a professor of sociology at the University of Iowa.

The award is also part of the effort by the National Academies to maximize the potential of women scientists and engineers.

Sassler, Levitte, and Glass will examine their hypotheses by using two national surveys of women and men to explore the roles of attitudes, family background, personal characteristics, and institutional environments in shaping career pathways over time.

The team will try to answer such questions as: Why are women who major in STEM disciplines less likely than men to enter into related occupations that utilize their training? How do institutional environments and programs influence the decision to enter and remain in a science occupation? In what ways do marital status and family composition shape careers for STEM employees? Do these factors have different effects on women and men?

The researchers will look at such issues as what factors contribute to women leaving jobs in the sciences and how marriage and family affect retention in those occupations.