BUSINESS

Mothers of invention?

Women academics are less likely than men to take out patents. **Emma Marris** investigates the reasons why.

While running an analysis of academics' links with industry, two economists noticed something odd in their database of commercially well-connected scientists. Women were seriously underrepresented — even taking their minority status in academia into account.

"We were on the 208th line, and there was the first female name," says Toby Stuart, an economist at Harvard University. To put numbers on this apparent imbalance, Stuart and his colleague Waverly Ding of the business school of the University of California, Berkeley, started a new study, together with Fiona Murray of MIT, using patenting as a proxy for involvement with the commercial sector.

CORBIS

To patent or not? Many women scientists find themselves too busy.

Their results appeared earlier this month in *Science*[1]. Taking a 30-year period, the team looked at the patenting activity of more than 4,000 academics in patent-heavy life sciences such as molecular biology and microbiology. After removing confounding factors — such as publication productivity and differences between institutions — they found that, overall, women patented at around 40% the rate of the men. The discrepancy between men and women was, however, getting less over the years.

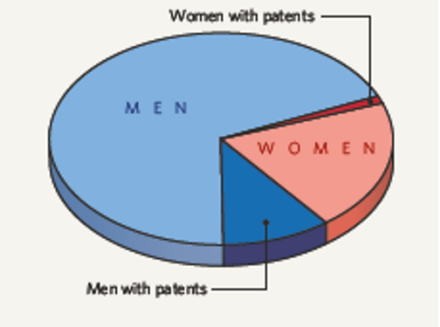
A similar gender gap was highlighted in two studies in the *Journal of Technology Transfer* in 2005, although technology-transfer professionals interviewed for this article appear not to have noticed. John Fraser, president of the Association of University Technology Managers, admits: "I guess I've been gender blind."

Tech-transfer specialists may have missed the gap because it gets lost in the gender imbalance in academia, particularly among senior faculty. But they are also more focused on the invention. "If the ideas are good, no matter who they come from, business is going to say, 'hey we want it,' and do a deal," says Fraser.

Stuart sums up the reasons for the discrepancy in two words: attitudes and networks. "We go all the way back to the 1970s, in the recombinant DNA period, when patenting was really frowned upon," he says. In interviews, Stuart found that older women expressed a lot of reservations about patenting. They knew their careers weren't as secure, so were hesitant about doing something that ran counter to the norms of the group. "And the men just seemed to be much better networked into industry," he says.

Laurel Smith-Doerr, a sociologist at Boston University and co-author of one of the *Journal of Technology Transfer* studies, has another theory[2]. She looked at patent quality, as well as quantity, in the life sciences: "We also find that women patent less, but for women who patent, their patents are cited more often and more widely — in more areas of the life sciences. So perhaps they are patenting for quality."

The other *Journal of Technology Transfer* article sheds light on where women fall out of the patenting pipeline[3]. Jerry Thursby, an economist at Emory University in Atlanta, and his wife Marie Thursby, an economist at nearby Georgia Tech, studied the gender difference in disclosures — the paperwork that is filed with the university on a possibly patentable invention. "We were trying to figure out who is interested in licensing," says Jerry Thursby. Their result? A man is 43% more likely to have disclosed an invention to his tech-transfer office. This means that many women aren't even beginning the process.



But perhaps the most compelling observation comes from Kjersten Bunker Whittington, Smith-Doerr's co-author, who is researching the question for her dissertation. She finds that women without children patent at the same rate as men. So the gender gap is really a gap between women with children, and everyone else.

Jennifer West, a bioengineer at Rice University in Houston, Texas, has more than a dozen patents, and was surprised at the difference detected in these studies. "This is an area of my career that I hadn't thought gender came into. It was instilled in me even as an undergraduate that it was my responsibility to patent."

West admits, though, that it takes time, and is not currently as highly valued in tenure and promotion decisions as a publication record. For women balancing children and a career, it may therefore look like an optional extra. "If junior faculty are trying to balance their family lives, patenting isn't necessarily the best use of their time," she says.

The implications of a patenting gap may be bad for women if patents become part of how academics are evaluated. But not everyone is convinced that will happen. At the moment, only a small fraction of academics ever patent. "There seems to be this growing myth that everyone is constantly running to the technology office," says Thursby. In practice, he says, a very small number of people are responsible for most of the patents.

The real price being paid may be the comparative exclusion of women scientists from business opportunities. "Patents really are a precursor to involvement at multiple levels in a company," says Stuart, "and we need more women in high levels in high-tech companies."

If childcare really is the limiting factor, it adds to the list of arguments for better, cheaper daycare for academic parents. Smith-Doerr thinks the benefits to society are worth the price. "I believe the more diverse the group of people who are developing knowledge, the better that knowledge will be," she says. ■

1. Ding, W. *et al. Science* **313**, 665–667 (2006).
2. Bunker Whittington, K. & Smith-Doerr, L. *J. Technol. Transfer* **30**, 355–370 (2005).
3. Thursby, J. & Thursby, M. *J. Technol. Transfer* **30**, 343–353 (2005).