

## Discussing the solutions

### To the Editor:

I write in response to the editorial “Considering the Consequences”<sup>1</sup>, which discussed the potential unfairness of policies designed to increase the representation of women among senior science faculty. I applaud the *Nature Immunology* editorial staff for addressing the issue of women in science and for supporting some institutional changes, especially as this subject can be uncomfortable and full of political ‘land mines’. Unfortunately, the persistence from 1975 to 1998 of a 20% gap between the percentage of male and female faculty who were tenured in the US indicates that present measures and the passage of time are not likely to increase the representation of women among elite science faculty<sup>2</sup>.

Why does this gap in representation persist? One possible reason is that child-rearing disproportionately affects the careers of female scientists. According to data from the National Science Foundation Survey of Doctorate Recipients from 1973 to 1999, 76% of men but only 50% of women who became parents up to 5 years after receiving a science Ph.D. went on to achieve tenure, while the average tenure rate was 72% (ref. 2). Furthermore, single women without children achieved tenure at a higher rate than that of women with children, comparable to that of their male counterparts with children<sup>2</sup>. Finally, a study of 4,400 tenure-track faculty members at the University of California showed that women were more than twice as likely as their male colleagues to report having fewer children than they wanted, and from age 22 to 36 and after 40, female UC tenure-track faculty at the University of California were less likely than their male colleagues to have a biological child enter the home<sup>3,4</sup>. The editorial “Considering the Consequences” appropriately discusses the need for equitable treatment of scientists who do and do not

have children. As indicated by the aforementioned data, acute inequities persist specifically between male and female scientists with children, and between female scientists with and without children, but not between male scientists with and without children.

I can offer several guesses as to why the career advancement of women, but not men, is affected deleteriously by having children. Contributing factors might include the physical toll of pregnancy, cultural norms that compel women to take more responsibility for housework and child-rearing, the biological need for women to have children at relatively young ages (when career uncertainty is greatest), and the higher probability for women with graduate degrees than for their male counterparts that they will have a spouse with an equally prestigious career. The fact that I still need to guess which factors are most critical suggests that additional studies of women facing career challenges are necessary. Throwing policies and money at a problem while its specific causes and best solutions remain unknown is not likely to produce the desired results.

Our society can, in the name of equity, promote equal representation of men and women among science faculty, at the risk of introducing quotas, bureaucracy and unfairness to scientists without children and of undermining qualified women candidates. Alternatively, our society can promote the most efficient and creative science that government dollars can buy. I argue that gender equity and efficient and creative science are not mutually exclusive but that they are probably not compatible in the present ‘up-or-out’, ‘one-size-fits-all’ academic career framework. A system that provides low pay and career stability yet demands high productivity and uninterrupted employment during female child-bearing years puts women at a disadvantage. I am not arguing that tenure and

post-doctoral research should be eliminated as options for women, but I am suggesting that alternative academic career structures should be considered that incorporate the advantages of the present system but ameliorate some of the inherent biases against women.

I propose a small cultural shift that accepts 2–3 years of resume interruption for child-bearing without labeling people who take that opportunity as ‘not serious’ or ‘out of the game’. I also propose thinking about more radical structural changes, such as longer tenure tracks and funding opportunities that are more in sync with the reproductive realities of women (but that would also be open to scientists without children), such as competitive merit-based post-doctoral funding awards that provide technical help and some independence.

The traditional tenure and funding policies in the USA produce a disproportionate quantity of the world’s best science. However, many great scientists and insights may have already been lost because female scientists choose to ‘drop out of’ this system, which was created at a time when men dominated the work force and is inherently biased against female reproductive reality. It is time to ‘think outside the box’, fund studies and do experiments—something at which the scientific community and its leaders should excel.

*Catherine Koebel*

*Department of Pathology and Immunology,  
Washington University, Saint Louis, Missouri  
63110, USA.  
e-mail: cmkoebel@artsci.wustl.edu*

1. Anonymous. *Nat. Immunol.* **7**, 429 (2006).
2. Mason, M.A. & Goulden, M. *Academe* **88**, 21–27 (2002).
3. Mason, M.A. & Goulden, M. *Academe* **90**, 10–15 (2004).
4. Mason, M.A. & Goulden, M. *Ann. Am. Acad. Pol. Soc. Sci.* **596**, 86–103 (2004).