LETTERS

Edited by **Jennifer Sills**

Impact of COVID-19 on academic mothers

As daily life grinds to a halt worldwide in response to the coronavirus disease 2019 (COVID-19) pandemic, professionals are adjusting to a new reality of remote working. For many researchers, the release from teaching and administrative activities means more time for independent work. In contrast, parents of young children for whom school has been cancelled are facing uniquely challenging responsibilities. Although academic fathers are not immune to the impacts of confinement, it is traditionally women who carry the heaviest load (*1*, *2*).

These women risk suffering yet another motherhood penalty. Instead of writing papers, they are likely to devote time to homeschooling children and doing household chores. For those who have not yet leaked from the pipeline (*3*) and are struggling to keep their careers on track, these months of heavier duties may increase the distance between them and their male and childless peers.

Gender inequality in science is an urgent issue, and motherhood plays a major role in it (*4*). Recent years have witnessed the emergence of many initiatives that ignited changes toward addressing this problem [e.g., (*5*–*8*)]. We cannot allow this pandemic to reverse advances and further deepen the gender gap in science.

Policies and actions to mitigate the motherhood penalty can benefit all scientists. Deadlines for grant proposals, reports, and renewal requests must be postponed. Funding agencies should consider creating granting programs designed around the reality of academics with families. By instituting more flexible policies, we can make science fairer for everyone affected by the pandemic.

Fernanda Staniscuaski[1,*], Fernanda Reichert[2], Fernanda P. Werneck[3], Letícia de Oliveira[4], Pâmela B. Mello-Carpes[5], Rossana C. Soletti[6], Camila Infanger Almeida[7], Eugenia Zandona[8], Felipe Klein Ricachenevsky[1], Adriana Neumann[9], Ida Vanessa D. Schwartz[1], Alessandra Sayuri Kikuchi Tamajusuku[5], Adriana Seixas[10], Livia Kmetzsch[1], Parent in Science Movement†

[1]Biosciences Institute, Federal University of Rio Grande do Sul, Porto Alegre, RS, 91501-970, Brazil. [2]Management School, Federal University of Rio Grande do Sul, Porto Alegre, RS, 90010-460, Brazil. [3]Biodiversity Coordination, National Institute of Amazonian Research (INPA), Manaus, AM, 69067-375, Brazil. [4]Biomedical Institute, Federal Fluminense University, Niterói, RJ, 24210-130, Brazil. [5]Federal University of Pampa/UNIPAMPA, Uruguaiana, RS, 97501-970, Brazil. [6]Interdisciplinary Department, Federal University of Rio Grande do Sul, Tramandaí, RS, 95590-000, Brazil. [7]Graduate Program in Management, Escola Superior de Propaganda e Marketing, São Paulo, SP, 04018-010, Brazil. [8]Department of Ecology, State University of Rio de Janeiro, Rio de Janeiro, RJ, 20550-013, Brazil. [9]Mathematics and Statistics Institute, Federal University of Rio Grande do Sul, Porto Alegre, RS, 91501-970, Brazil. [10]Pharmacoscience Department, Federal University of Health Sciences of Porto Alegre, Porto Alegre, RS, 90050-170, Brazil.
*Corresponding author.
Email: fernanda.staniscuaski@ufrgs.br
†The movement consists of all listed authors. There are no additional authors or collaborators.

REFERENCES AND NOTES

1. L. S. Machado *et al.*, "Parent in science: The impact of parenthood on the scientific career in Brazil," *Proceedings of the 2nd International Workshop on Gender Equality in Software Engineering* (2019), pp. 37–40.
2. M. A. Mason *et al.*, *Do Babies Matter?: Gender and Family in the Ivory Tower* (Rutgers University Press, New Brunswick, NJ, 2013).
3. J. Huang *et al.*, *Proc. Natl. Acad. Sci. U.S.A.* **117**, 4609 (2020).
4. E. A. Cech, M. Blair-Loy, *Proc. Natl. Acad Sci U.S.A.* **116**, 4182 (2019).
5. V. A. Jean *et al.*, in *Gender and the Work-Family Experience*, M. Mills, Ed. (Springer, 2015), pp. 291–311.
6. Parent in Science (www.parentinscience.com).
7. Mothers in Science (www.mothersinscience.com).
8. Mama Is an Academic (https://mamaisanacademic.wordpress.com/).

10.1126/science.abc2740

COVID-19 stay-at-home orders could exacerbate challenges faced by mothers in academia.

Support early-career field researchers

Pandemic-induced restrictions on research are now ubiquitous. We urge administrators and policy-makers to recognize that field researchers—especially those early in their careers—face unique challenges, even if restrictions last only a month or two. Bans on travel, hiring, and facility use are forcing many researchers to abandon the entire field season, losing a full year of irreplaceable data and research-training opportunities.

The loss of data is most damaging for multi-year projects, which are common in the case of field research. For example, a lost year in a demographic study renders multiple years of data uninterpretable because data on growth and survival between years are required for analysis. Similarly, in any system with lagging effects, the loss of a single season can have multi-year consequences on analyses. For long-term studies, the loss of a single year may seem less damaging, but increasing climate variance means that each season brings new insights.

The impact of lost research is most severe for scientists at early career stages. Institutions and agencies should focus on protecting graduate students and postdocs, as the loss of a year's data can affect their ability to complete dissertations or acquire jobs. We call on policy-makers and institutions to provide funding opportunities for early-career researchers to recover from such disruptions; support for salary, stipends, and tuition will be most critical. Although scientists conducting field research may be most vulnerable, these funding opportunities would certainly benefit laboratory-based scientists as well.

No one institution or agency has the resources to prevent impacts of lost research on field science or science in general. However, modest targeted funding for the most vulnerable research projects and researchers would help to preserve the quality of research and the pipeline of

PHOTO: ISTOCK.COM/KATE_SEPT2004

research training that we depend on for our next generation of scientists.

David W. Inouye[1,2]*, Nora Underwood[1,3], Brian D. Inouye[1,3], Rebecca E. Irwin[1,4]
[1]Rocky Mountain Biological Laboratory, Crested Butte, CO 81224, USA. [2]Department of Biology, University of Maryland, College Park, MD 20742, USA. [3]Department of Biological Science, Florida State University, Tallahassee, FL 32306, USA. [4]Department of Applied Ecology, North Carolina State University, Raleigh, NC 27695, USA.
*Corresponding author. Email: inouye@umd.edu

10.1126/science.abc1261

Preserve Global South's research capacity

The coronavirus disease 2019 (COVID-19) pandemic is pushing the world into a humanitarian crisis that will have devastating, long-term consequences for development. One of the casualties will be research capacity, and the recovery will be most challenging in the Global South.

Over the past two decades, great strides have been made in creating research capacity to address health and development in those countries most in need (*1*). This has been made possible through a range of funding sources, including national research councils and philanthropic donors as well as overseas development assistance of multilateral funders such as the UN agencies and bilateral foreign aid agreements. Research institutions in low- and middle-income countries have used this support to improve infrastructure, governance, and human capital.

Now, the pandemic is substantially disrupting funding streams (*2*, *3*). Some institutions are already preparing to lay off or furlough staff (*4*). If they cannot maintain or quickly rehire staff, researchers will drift away, and institutional memory, relationships, and skills will fade. Although these challenges are universal, the Global South is particularly vulnerable given that its gains have been made only recently. The countries in this region cannot afford to hemorrhage the limited human resources that are the foundation of research and scholarship.

Funders of scientific research, particularly in low- and middle-income countries, can contribute to preserve research capacity. Supplementary funding will be required to cover the costs of the delays likely to result from movement restrictions and deadline extensions. Deliverables on existing grants should be reconfigured to support virus-safe research. Investment should be made in the creation of collaborative platforms to enable virtual collaboration. Finally, new funds should be committed in anticipation of the post–COVID-19 implementation of planned or revised research projects. These changes will help all research institutions, but they will be most vital to retain capacity in the Global South, where the recovery from the loss to funding could take much longer than in regions with long-established research institutions and infrastructure.

Daniel Reidpath[1]*, Pascale Allotey[2], and 166 signatories
[1]International Centre for Diarrhoeal Disease Research, Bangladesh, Health System and Population Studies Division, Mohakhali, Dhaka 1212, Bangladesh. [2]United Nations University, International Institute for Global Health, UKM Medical Centre, Cheras, 56000, Kuala Lumpur, Malaysia.
*Corresponding author.
Email: daniel.reidpath@icddrb.org

REFERENCES AND NOTES

1. D. Beran *et al.*, *Lancet Glob. Health* **5**, e567 (2017).
2. M. Pai, "'Covidisation' of academic research: Opportunities and risks," *Nature Research Communities: Microbiology* (2020).
3. T. Riley, E. Sully, Z. Ahmed, A. Biddlecom, *Int. Perspect. Sex. Reprod. Health*. **46**, 73 (2020).
4. W. Worley, "NGOs lay off, furlough staff as financial crisis bites," *Devex* (2020).

SUPPLEMENTARY MATERIALS

science.sciencemag.org/content/368/6492/725/suppl/DC1
List of signatories

10.1126/science.abc2677

TECHNICAL COMMENT ABSTRACTS

Comment on "Dry reforming of methane by stable Ni–Mo nanocatalysts on single-crystalline MgO"
Yun Hang Hu and Eli Ruckenstein
Song *et al.* (Reports, 14 February 2020, p. 777) ignore the reported efficient Ni/MgO solid-solution catalysts and overstate the novelty and importance of the Mo-doped Ni/MgO catalysts for the dry reforming of methane. We show that the Ni/MgO solid-solution catalyst that we reported in 1995, which is efficient and stable for the dry reforming, is superior to the Mo-doped Ni/MgO catalyst.
Full text: dx.doi.org/10.1126/science.abb5459

Response to Comment on "Dry reforming of methane by stable Ni–Mo nanocatalysts on single-crystalline MgO"
Youngdong Song, Ercan Ozdemir, Sreerangappa Ramesh, Aldiar Adishev, Saravanan Subramanian, Aadesh Harale, Mohammed Albuali, Bandar Abdullah Fadhel, Aqil Jamal, Dohyun Moon, Sun Hee Choi, Cafer T. Yavuz
Hu and Ruckenstein state that our findings were overclaimed and not new, despite our presentation of evidence for the Nanocatalysts on Single Crystal Edges (NOSCE) mechanism. Their arguments do not take into account fundamental differences between our Ni-Mo/MgO catalyst and their NiO/MgO preparations.
Full text: dx.doi.org/10.1126/science.abb5680