



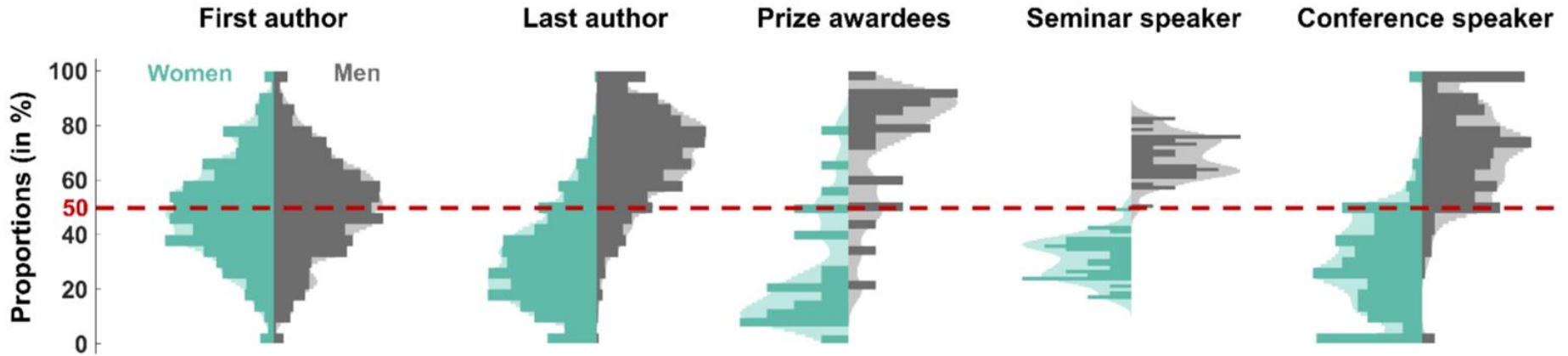
# Gender bias in (neuro)science: facts, consequences and solutions

**Sarah Genon**  
for the Women in Neuroscience Repository (WINRepo)

**Jessica Schrouff, Doris Pischedda, Gregory Fryns, Ana Luisa Pinho, Eliana Vassena,  
Antonieta Liuzzi, Fabio Ferreira**



# Is there a gender bias in neuroscience ?



Histogram in different aspects of **neuroscientific academic life**  
over the 3 to 10 past years

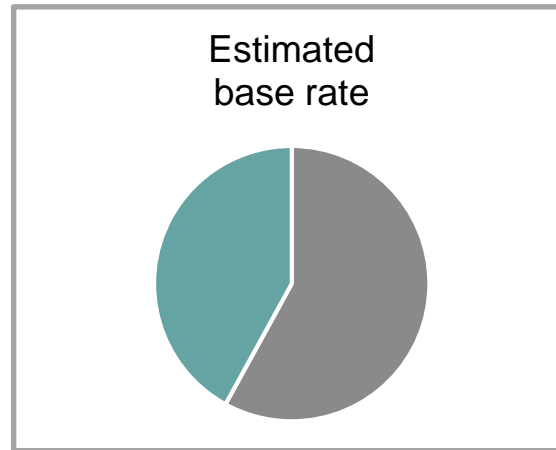
Schrouff et al. 2019

## Bias in most aspects of the research career:

- Funding acceptance rate (Pohlhaus et al., 2011; Kaatz et al., 2016; Sheltzer, 2018)
- Chances of being hired for tenure-track positions at the same competence level (Steinpreis et al., 1999)
- Reviewing and editorial boards, deciding bodies, etc... (Helmer et al., 2017)
- ...

# Is there a gender bias in neuroscience ?

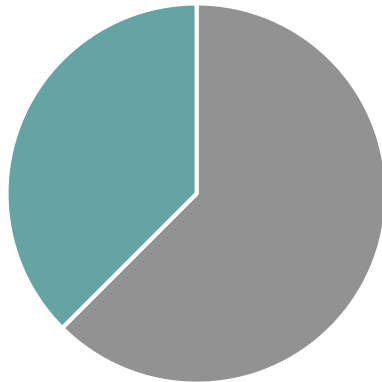
■ Men ■ Women



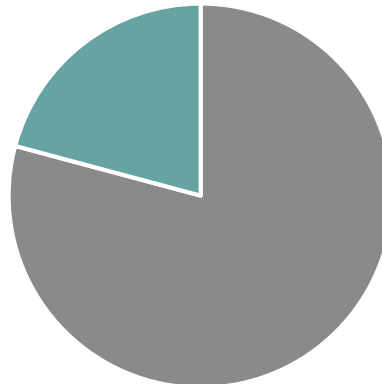
<https://biaswatchneuro.com/>

## 2019 Conference Data

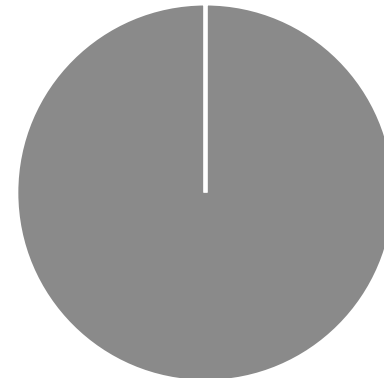
**OHBM 2019**



**Brain Connectivity Workshop**



**Systems Neuroscience Spring School**



# Does it matter ?

- **Evolving as a human community**
- **Increase team performance:**

Diverse teams outperform on innovation, problem-solving, flexibility, and decision-making (King, 2005)

- **Research community inclusivity improves research representativity:**
  - “We study people like us”  
→ **Health research: “white male model”** (e.g.: Dresser, 1992)
  - Future of science and **AI**: data are **biased**, so models are (e.g.: Bolukbasi et al., 2016)

# How to promote gender diversity ?

## As an institution

- Organize bias training sessions (Asplund & Welle, 2018)
- Implement double-blind reviewing when relevant  
e.g. grant applications, journal papers see e.g. Budden et al. 2008
- Consider gender balance when awarding prizes or grants  
(e.g. through tandem nomination)  
See e.g. Science Europe 2017
- Implement quotas such as cascading model for hires (Wallon et al., 2015)
- Implement “stop-the-clock” policies for parents  
(Flaherty Manchester et al. 2010)
- Actively collect and share data to define and evaluate new policies

# How to promote gender diversity ?

## As an organization

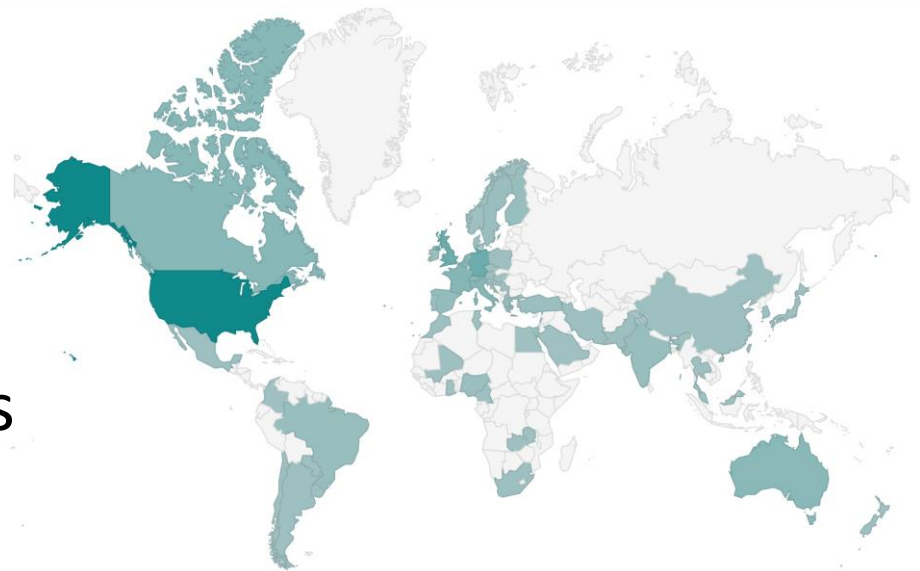
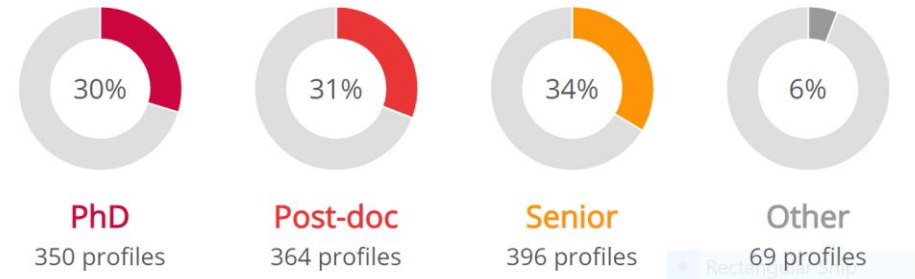
- Provide childcare or other family-friendly measures (Calisi, 2018)
  - Consider gender balance when awarding prizes or fellowships (e.g. through tandem nomination)
  - Implement double-blind reviewing for paper submissions and awards  
see e.g. Budden et al. 2008
  - Require gender-balanced **nominations** for all organizing committees and reviewer pools
    - Can be a burden for more visible women (Vernos, 2012)
- Search for candidates on lists and repositories

# Repository for Women in Neuroscience

- [www.winrepo.org](http://www.winrepo.org)
- over 1,200 profiles
- easy search
- recommendations

## Support the project:

- sign up
- spread the word
- submit recommendations



WINRePo1

[www.facebook.com/WiNRepository/](http://www.facebook.com/WiNRepository/)



# How to promote gender diversity ?

## As an individual

- Be aware of your own and others' bias (e.g. Becker et al., 2011, Uhlmann & Cohen, 2007)
- Attend bias training sessions (Atewologun et al., 2018)
- Speak out when observing gender biased events/behaviours and inappropriate conduct (MeTooSTEM) (Bell & Koenig, 2017)
- Share the wealth! If declining an opportunity (e.g. reviewing a manuscript, a collaboration, a talk), suggest men and women equally.
- Sign up on repositories and encourage women colleagues to do so
- Submit recommendations for women scientists (directly to organizations or on repositories)



# Examples of recommendation system

[www.winrepo.org/list/recommend](http://www.winrepo.org/list/recommend)

**Aurore Perrault** (Post-doctoral researcher - Concordia University)

Jun 20, 2018

I have been in the same department as Valeria and saw many of her talks. More recently, I saw her talks at OHBM 2018 and as always she is very professional, efficient and understandable. Her presentation are always clear and well illustrated. Besides the fact that we have been friends for years, I professionally definitely recommend Valeria!

**Russell Poldrack** (Professor - Stanford University)

Mar 06, 2019

Emily has done some really outstanding work on the use of connectivity patterns to identify features of individuals and relate them to behavior. And she gives a great talk!

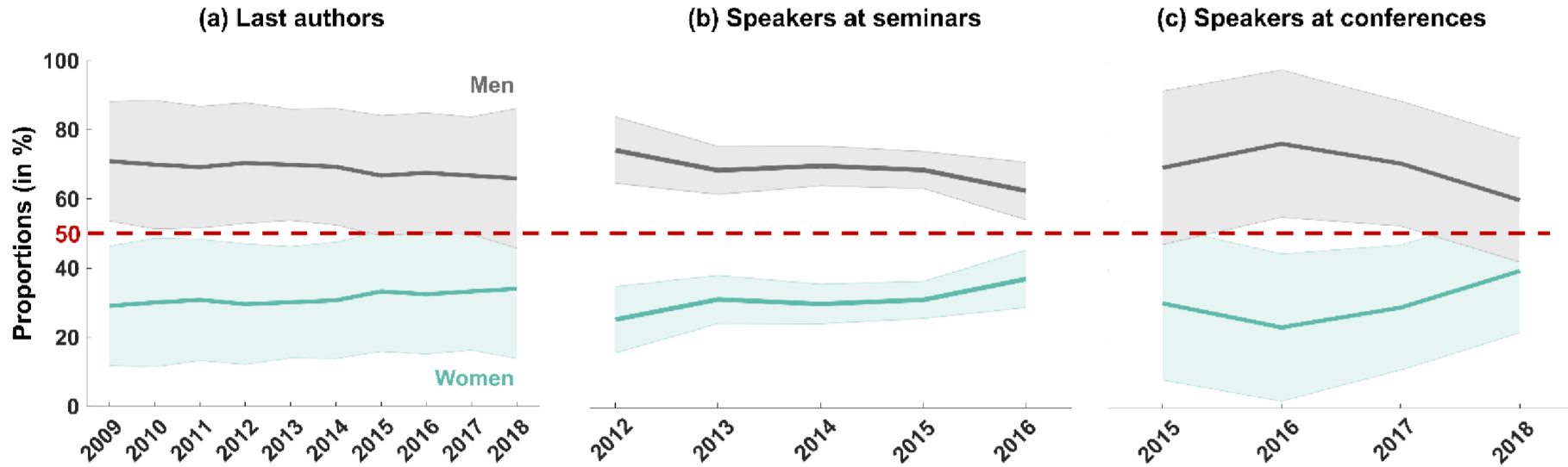
**Simon Eickhoff** (Group leader/ Director/ Head of Department - INM-7, Forschungszentrum Jülich)

May 21, 2019

I saw Emily speak several times, last at the SANS meeting in Miami. What I particularly like about her presentations is that she combines cutting edge science on connectomics-based predictions and naturalistic stimulations with a very good style of presentation that is extremely pleasant and easy to follow.

# Discussion

Progress is visible when we take action!



Schrouff et al., 2019

# Discussion

- Does each proposed solution work?
  - Work in progress
  - Not one solution: typically a combination of measures, fitted to the specific audience (e.g. Chang et al., 2019).
  - Important to collect data and evaluate actions' effects (e.g. Atewologun et al., 2018; Deschamps et al., 2018; Chang et al., 2019)
- Individuals count!
  - Be aware of your own bias
  - Promote diversity in your institution and field of research

# Some additional resources:

## “Information” resources:

Data about diversity in neuroscience: <https://biaswatchneuro.com/>

Information about the challenges facing women and minorities in science: Women in Stem Resources

[http://www.sarahrugheimer.com/Women\\_in\\_STEM\\_Resources.html](http://www.sarahrugheimer.com/Women_in_STEM_Resources.html)

A free online test to track implicit biases:

<https://implicit.harvard.edu/implicit/>

## “Action” resources:

#MeTooSTEM: <https://metoostem.com/>

Databases for diversity in sciences:

<https://www.winrepo.org/>

<https://diversesources.org/>

<https://www.embo.org/science-policy/women-in-science/wils-database-of-women-in-life-sciences>

<https://www.nexxt.rub.de/>

<https://anneslist.net/>

<http://www.academia-net.org/>

For gender diversity in policy debates:

<https://brusselsbinder.org/>

# Thank you



Jessica Schrouff



Fabio Ferreira



Aina Frau-Pascual



Gregory Fryns



Gabriella Liuzzi



Doris Pischedda



Ana Luísa Pinho



Eliana Vassena



# How to promote gender diversity ?

Repository for women in neuroscience [www.winrepo.org](http://www.winrepo.org)

**It's up to you now !**

<b>You are</b>	<b>You can/should</b>
Conference organizer Committee chair Recruiter	Search for the right women neuroscientist in Winrepo
A woman in neuroscience	Register on Winrepo
A scientist	<u>Write recommendations !!!</u> Spread the word !! Be aware of bias !

# How to promote gender diversity ?

Recommendations on WiNRepo [www.winrepo.org](http://www.winrepo.org)



[Home](#) [Repository](#) [Create profile](#) [Recommend](#) [FAQ](#) [About](#)

Recommended Person\*

Search Profile... ▾

Name of the person you would like to recommend

Your full name\*

Your Position

 ▾

Your Institution/Company\*

Please choose the 'closest' title from the proposed options.

I saw one of her talks

Describe here why you recommend this person for conference invitations or collaborations. If you attended one of her talks, add details on the event (year, event name). Please also mention potential conflicts of interest, like personal or professional relationships (friends, colleagues, former PI, ...)

Submit

# Does it matter ?

- The study of sex differences beyond “neurosexism” (Eliot, 2019)

Neurological and psychiatric conditions demonstrate robust differences between the sexes in:

- Incidence
- Symptoms
- Progression
- Response to treatment

(Ferretti & Hampel, 2019)



**The Women's Brain Project (WBP) aims to stimulate a global discussion on gender and sex determinants of female vulnerability to brain and mental disease.**

<http://www.womensbrainproject.com>