Strength in Diversity

How Inclusive Science Policy Promotes Innovation

The development of COVID-19 vaccines is an unprecedented and remarkable example of how diversity in Science serves humanity. Organizations all over the world have been advocating for improving inclusion of the underrepresented social groups in Academia for decades. Still, we have barely scratched the surface of the problem.

Until not so long ago, becoming a scientist was a highly privileged career path, out of reach for the overwhelming majority of citizens including women, people living under strained socio-economic conditions, let alone ethnic or religious minorities. Even though this troubling state of affairs has recently started to change data shows that, assuming current pace, it would take decades for the research enterprise to be transformed sufficiently to accurately reflect the makeup of the human population[1].

Since Academia still consists predominantly of people of a decidedly uniform background – as of today white men of high or middle socioeconomic status – the way Science works is based on a skewed outlook. And thus by definition it cannot serve us all in an equally efficient manner. The authors of the article recently published in Science point out that by making it hard for people from minorities and underrepresented backgrounds to enter Academia we do Science a great disservice, by weakening its societal impact[2].

Including underrepresented groups in research is the fastest and most promising way to start exploring yet untapped areas of knowledge by expending the poll of talent we can draw from to find the best, the brightest, and most importantly, the distinctively-suited to tackle novel problems[2,3]. This is exactly what happened in biomedical research when women started joining its ranks around fifty years ago[4]. Many specialists argue, that more diverse scientific staff might have prevented the world from having genetic databases so heavily biased towards white population, the obstacle which has been hindering the efforts to determine biological underpinnings of many pervasive diseases[5,2].

Over the last decade science skepticism has been on the rise, due in no small part to the lack of inclusion and historical injustices in the research enterprise. Societal mistrust in scientific community significantly impedes medical progress, as reflected by the reluctance to participate in clinical trials or hesitancy towards vaccines[6–11]. Moreover, under most critical circumstances, exemplified by the COVID-19 pandemic, authorities face an uphill battle to contain the devastating consequences of a catastrophe, while struggling to convince society to comply with the course of action recommended by the experts. Similarly, the lack of sufficient representation of people with disabilities and elderly in policy making and crisis response teams impeded the preparedness to prevent disproportionately lethal effects of the pandemic on this already disadvantaged societal group[12]. To remedy these issues Academia must become more representative of the community it serves to effectively communicate with all citizens[2].

Since increasing diversity is a key factor for science advancement, raising awareness of implicit biases and conscious monitoring are the initial steps often proposed to overcome the problem[13]. From

equality-focused programs launched by the national and international organizations to grassroots movements, awareness of the issue and implementation of effective solutions slowly gain pace.

One of the very first initiatives aiming at increasing the retention and academic performance of underrepresented minority students was the Meyerhoff Scholars Program (MSP), launched at the University of Maryland, Baltimore County (United States) in late 80-ties[14,2]. MSP managed to create a platform which became a model of an inclusive academic policy for other institutions, which at the time have just started to recognize the importance of diversity in research. After almost three decades MSP's beneficiaries were 5.3 times as likely to have graduated from or been currently enrolled in a doctoral program than those who declined and attended another university[14].

More recently, ALBA Network, an international initiative advocating equality in brain sciences embedded at the Federation of European Neuroscience Societies (FENS), was established to foster fair and diverse academic communities as a fundamental component of progress. ALBA serves as a global networking platform supported not only by FENS, but also by the International Brain Research Organization (IBRO) and American Society for Neuroscience (SfN). The main goals of ALBA are promoting best practices to counteract biases, recognizing outstanding achievements in working towards more equitable Academia and providing mentoring to underrepresented groups[15]. "*It is important that we join the forces and work together to increase diversity and ensure equity in the way we deal with science. The ALBA Network tackles these goals at a global level by launching and regrouping initiatives for diversity in brain sciences under one umbrella. Our ambition is to create a network to help all brain scientists to have equal opportunities to thrive*" - says Prof. Carmen Sandi, the Chair and founder[16]. A milestone achievement of ALBA was a launch of the Declaration on Equity and Inclusion (2021), the document presenting concrete, evidence-based actions that individuals and organizations can take to promote equity and inclusivity[15]. The Declaration has already been signed by over 200 leading scientific organizations from all over the world.

Further, grassroots initiatives play a pivotal role in increasing the social awareness of the issue. The recently launched #BlackInNeuro Campaign initiated by Angeline Duke, a fourth year PhD student at the University of California is a brilliant example of an action sparked by a single tweet in times of escalating pushback against racial violence in the United States[17]. #BlackInNeuroWeek united the scientific community by celebrating and supporting Black voices in neuroscience. As of today initiative gathered over 20K followers on Twitter.

An outstanding contemporary example of the benefits stemming from improved participation of under-represented groups in Science is the development of the COVID-19 vaccines. For the first time in human history, not one but seven different vaccines were developed against a newly emerging disease in a less than a year, compared to a decade or more usually needed for the process to bring results[18]. This unprecedented achievement is an effect of the titanic effort of the scientists all around the globe, with women and people from typically underrepresented ethnicities leading the research[19]. Diversity among scientists led to better, more creative approaches. The variety of genders, ethnicities, sexual orientations, and cultures provided diverse perspectives that moved the research rapidly forward.

Moreover, diversity among participants of the clinical trials testing the efficacy of the COVID-19 vaccines designed by Pfizer/BioNTech and Moderna was significantly improved in comparison to the unfortunate norm for testing other drugs. Although meaningful progress was made, still given that COVID-19 has disproportionately affected Black, Asian, and other minority ethnic groups in the United States, more participants from those communities should have been included in the trials, which clearly shows we still have a mile to go[20,21]. An inclusivity criterion that has not been met by the entities conducting the trials was addressing the response to the vaccine in pregnant and lactating people, who are at 3 times higher risk of needing intensive care and experience more medical complications on average[22]. Nevertheless, the scientific community quickly stepped up to mark as the recent report from two academic medical centers in the United States showed that COVID-19 mRNA vaccines generate a robust immunity in pregnant and lactating individuals and that immunity is passed on to babies[23].

The immense accomplishment of designing and producing the vaccines that will soon allow the world to get back on tracks in such a short time is a striking example of how including diverse experiences and backgrounds allow for obtaining highly innovative solutions[24]. The straight forward take away is that we all win when Science is an inclusive endeavor, as equitable policy and progress clearly go hand in hand.

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ABOUT WOMEN IN SCIENCE AT NENCKI

Women in Science at Nencki (WISaN) is a non-profit organization advocating for gender equality and promoting the interests of female scientists. It was established by a group of young female researchers from the Nencki Institute of Experimental Biology (Polish Academy of Sciences) to highlight the voices raising women's and minoritie's issues to the forefront of societal discourse. Even though the involvement of women in Academia has continually grown over the last decades, they are still heavily underrepresented in many fields and face significant challenges at all levels of their careers. Still, only 30% of researchers are female (UNESCO Institute for Statistics (UIS), Women in Science, Fact Sheet No. 55, June 2019. FS/2019/SCI/55).

In a partnership with **ALBA Network** we are organising **an international meeting with Carmen Sandi, Professor of Neuroscience** at the Swiss Federal Institute of Technology Lausanne **(EPFL)**, **Chair of ALBA Network** and major advocate for diversity in brain research, **Past-President of The Federation of European Neuroscience Societies (FENS)**. The meeting would take place **April 20th** 1 PM CEST.

Patronage:
President of the Foundation for Polish Science Prof. Maciej Żylicz
Fundacja Kobiety Nauki (kobietynauki.org)
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CONTACT:
Urszula Markowska (she/her)
mob. +48 508 163 962
wis@nencki.edu.pl

ALBA NETWORK
Towards diversity and equality in brain sciences

kobietynauki.org

FNP Patronat Prezesa Fundacji na rzecz Nauki Polskiej prof. Macieja Żylicza

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