

The 2023 Nobels: What They Mean for Higher Education

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Abstract

The 2023 Nobel cohort in the sciences shows little change from recent years, skewed towards Western university-affiliated researchers, dominated by the United States. This year's prizewinners have partially internationalized career trajectories, and all have had affiliations external to the traditional university. The case of Katalin Karikó emphasizes how ongoing challenges in the university environment, particularly gender bias, threaten such groundbreaking academic research, and may push imaginative scientists to find more welcoming homes outside the university.

What are the big takeaways from the 2023 Nobels in the sciences? There are several clear lessons with relevance to higher education. While the world has been awaiting the rise especially of Asia to the heights of global science, there is no sign of this diversification in the 2023 Nobels. Eight of the nine prizewinners are affiliated with Western universities—six in the United States. The ninth, Alexei Ekimov, joint winner of the chemistry prize, is chief scientist at a private company in New York. The prizewinners, as in years past, were educated in a variety of Western countries—though it seems to be a bumper year for Eastern Europe with two educated in Hungary, and one educated in the former Soviet Union. A majority have worked at institutions in a variety of countries over the course of their careers (including Austria, Canada, France, Germany, Hungary, the Netherlands, Russia, South Korea, Sweden, and the United States)—thus showing again that science remains international and internationalized, though skewed towards a typical subset of wealthy, Western countries.

And unusually (though perhaps unsurprisingly), one of this year's winners, Katalin Karikó's career shows the explicit impact of sexism and the challenges of working on non-mainstream ideas in the pursuit of Nobel-worthy research.

Science Remains Partially International

While the 2023 Nobelists are mostly located in the United States, their scientific and academic careers, similar to trends in recent years, have been remarkably international. They were born in five different countries—three in the United States, two in France, two in Hungary, one in Tunisia, and one in the former Soviet Union. The group received their bachelor degrees in four different countries, and doctorates in five.

As might be expected, this distinguished cohort has held academic and scientific positions in at least 10 countries and has been quite mobile over their careers. France has hosted four of the nine at academic institutions over the course of their educational and professional journeys, and Germany has hosted five of the nine either within academic or corporate positions, at universities, research institutes, and a biotechnology company. However, the United States remains the country with the most present affiliations, and features in the career trajectories of eight of the nine winners as we discuss further below.

The Continuing Domination of the West, and Especially of the United States

All but two of the 2023 Nobelists work in the United States, with one having joint US and Hungarian affiliation (since 2021), while only three were born in the United States, and four received their doctorates in the United States. The non-Western world appears to be absent from the careers of most of this year's Nobelists—with no mentions of affiliations, postdocs, visiting professorships or other relationships with institutions elsewhere—with one exception of a guest professorship in South Korea.

The 2023 class has a variety of affiliations and experience in continental Europe, with Germany, Sweden, and Hungary featuring in the present affiliations of three, and with many having had experience elsewhere in Europe, France and Germany being popular destinations, but, perhaps unexpectedly, the United Kingdom entirely absent.

The American domination of the Nobel world is not new although it is particularly pronounced this year. This is not surprising. The United States accounts for 28 percent of the world's research and development expenditures (China is second at 22 percent, though unrepresented in this year's Nobels). Academic salaries for top research professors at

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highly ranked institutions in the United States may be among the highest in the world, particularly in STEM fields, and the country's top universities can provide both the resources and the autonomy necessary for the best research of this kind. Whether science and universities from the United States will retain dominance is questionable. The internal pressures on academic life in the United States combined with the impressive development of research capacity elsewhere may lead to a more equal global scientific community in the future. But for the moment, the United States and the West remain at the top of global science as represented by the capture of Nobels and Nobel winners.

The Strange Case of Katalin Karikó

Dr. Karikó, joint winner of the physiology/medicine award, has received much comment in the media. Born and educated in Hungary, she has spent most of her career in the United States, but has also held appointments in three countries at a variety of institutions, and has most recently been senior vice president at BioNTech, a biotech company in Germany.

The debate stems from her time at the University of Pennsylvania, where she worked from 1989 to 2001, at positions ranging from scientific assistant professor, to senior head of research, to adjunct associate professor. During that period, she was demoted from a tenure-track position in 1995, refused the possibility of reinstatement to the tenure track, and eventually ushered into retirement in 2013. Meanwhile, her close collaborator and fellow prizewinner, Dr. Drew Weissman, whom she met in 1997, remains at the University of Pennsylvania as professor of medicine, as well as codirector of the immunology core of the Penn Center for AIDS Research, and director of vaccine research in the Infectious Diseases Division.

Some have pointed out that Karikó was working on risky or unconventional scientific themes, and that the usual funding agencies and senior academics were unable to see the promise in her work until recently, when she and her colleague Weissman have been the recipients of multiple prizes. The fact that she received her doctorate from Szeged University in Hungary and not a prestigious institution in a major country may not have helped. Others have pointed to this as a clear-cut case of gender discrimination, as her research was unacknowledged by the University of Pennsylvania, though the institution unabashedly claimed her Nobel win on social media. The fact that her career was significantly more difficult than most Nobel winners suggests that the scientific community should at the very least examine how it evaluates innovative but exploratory scientific ideas and reserve funding and support for such groundbreaking basic research. And, of course, gender bias, still prevalent in academe and elsewhere, must be eliminated.

Basic Science is Not Just in Traditional Academe

All of this year's winners have spent some time in nonacademic settings. Of the three chemistry prizewinners, two have spent time at Bell Labs, though currently holding academic affiliations, while the third, Alexei Ekimov, is at Nanocrystals Technology—all within the United States context. Karikó moved to BioNTech in Germany to continue her research unsupported by academia. A number have spent time at research institutes, some nationally funded and others independently supported as nonprofits: the Max Born and Max Planck Institutes and the Institute of Labor Economics in Germany; the Center for Molecular Fingerprinting Research and the Biological Research Center at the Hungarian Academy of Sciences; the Foundation for Fundamental Research on Matter (FOM) in the Netherlands; Vavilov State Optical Institute in the former Soviet Union; and the Brookhaven and Lawrence Livermore National Laboratories and the National Institutes of Health in the United States.

Conclusion

Nobel prizes are of course given for scientific accomplishments often achieved decades ago, although the various award committees stress the contemporary relevance of the work done. Nobel prizes seek to link basic research to applied and practical results—ideas and innovations that may take decades to percolate to fruition. But they remind us that basic research is fundamental to science and to both understanding and practical results. Furthermore, the Nobels show that the institutional environment is

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of fundamental importance. Funding, awarded on a meritocratic (and hopefully imaginative) basis is central. Although, the case of Karikó points to the realities of discrimination within the institutionalized research system (as the Nobel-winning research of Claudia Goldin underscores), and the alternative pathways that unsupported scientists seek to pursue research of this caliber. Universities or other scientific institutions that respect academic freedom, encourage independent work and collegueship, have adequate funding, and that have autonomy in their academic governance are necessary homes for the best science and scholarship. If academia fails to be the home for this kind of research, researchers may be drawn to those who will provide a home outside of the university. ▲