A commitment to scientific equity from a philanthropic funder

Racial equity and global inclusion are essential if biomedical science is to fulfil its mission to improve human health.

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Biomedical science is a powerful tool to catalyze discoveries and innovations that extend lives. Yet globally, science is also rife with systemic disparities, inequities and injustices. Scientific training and funding opportunities are unevenly distributed, resulting in a scientific workforce that does not represent all communities. There is a systemic lack of research investment in the health and diseases of underserved populations in the United States and across the world. These same communities bear a disproportionate burden of many diseases, yet have limited access to the benefits of biomedical research.

Social and economic factors and systemic racism are major contributors to health care disparities, but biomedical science shares responsibility. Scientific leaders—and funders—must ask difficult questions of ourselves and assess the evidence. In what ways are scientific institutions making science less diverse, less equitable and less inclusive than it should be? How do we hold ourselves accountable?

We write from the perspective of the Chan Zuckerberg Initiative (CZI), a five-year-old philanthropy founded by Mark Zuckerberg and Priscilla Chan with a sweeping scientific mission statement: to help support science and technology that will make it possible to cure, prevent or manage all diseases for all people by the end of the twenty-first century. Bringing new funding and people into the scientific enterprise allows CZI and other philanthropies to try new approaches, different from those of government funders, and evaluate the impact and potential of those approaches.

With our initial priorities, CZI aims to accelerate science by supporting new tools and technologies, as well as supporting collaborations between experimental and computational scientists, engineers, physicians and patients. Increasingly, CZI views all its work—in biomedical science, in education and in our local community—through a racial equity lens, and we have committed[1] US$500 million to support organizations that advance racial equity.

CZI co-founder and co-CEO Dr Priscilla Chan with students from University of California, San Diego, who are part of a program for helping to inspire, recruit and retain underrepresented students pursuing degrees in science, technology, mathematics and engineering fields. Credit: CZI

As a first step toward prioritizing equity in biomedical science, CZI now asks four key questions about the research that we fund and the technology that we build, below.

Who does the science?

CZI is a grantmaking philanthropy. How do we include and support scientists from underrepresented groups in the United States, including Black, Latinx, Asian American/Pacific Islander and Indigenous people, as well as scientists in low- and middle-income countries?

Historically, the lack of racial diversity in US science has been viewed as a pipeline problem. To bring undergraduates of color into science, technology, engineering and medicine, CZI has partnered with the University of Maryland, Baltimore County (UMBC), to expand its extraordinarily effective Meyerhoff Scholars Program[2] to students at the University of California, Berkeley, and University of California, San Diego. The philosophy of building a program with UMBC recognizes that past success is the best predictor of future success. CZI does not need to invent everything anew.

The uneven support for biomedical science across the globe also calls for more investment—not only in traditional philanthropic areas such as public health, but also in science in low- and middle-income countries. This is science equity, and to that end, CZI's Infectious Disease program, the Chan Zuckerberg Biohub and the Bill & Melinda Gates Foundation have collaborated to build metagenomic-sequencing-based pathogen-detection capacity[3] across ten countries (and counting) in the Global South. Originally aimed at the particular infectious disease questions in each country, the unbiased metagenomic tools were rapidly adapted to COVID-19 during

the pandemic, allowing on-site scientists from Cambodia to Madagascar to test for SARS-CoV-2 and viral variants.

What science is being done?

Every country and funder makes decisions about its priorities, which can be unintentionally biased toward a majority population, such as people who are white in the United States.

A more diverse workforce can counter this issue through its selection of research topics[4], but funders must also ensure that scientific research is representative. For instance, individuals of European ancestry have contributed nearly 80 percent of human genomic data[5], which means that genetic research is biased toward the variation present in European populations.

Although the core biology of humans is shared, there is immense diversity at a detailed level, demanding a representative approach. CZI's Single-Cell Biology program, which supports the Human Cell Atlas[6], is seeking to avoid the biases of previous projects. The Human Cell Atlas is an ambitious project to create comprehensive reference maps of all human cells as a basis for understanding health and disease. CZI has dedicated[7] funding to expand ancestral representation in the Human Cell Atlas to a broad set of non-European ancestries. Representative science is better science, and this approach will allow a nuanced understanding of different disease trajectories and outcomes.

Who is at the table?

In projects based on human biology, true progress requires that science's legacy of exploitation and exclusion be acknowledged. Research participants must be included as full partners.

Including more diverse ancestries in the Human Cell Atlas, as described above, explicitly includes CZI support for community-facing researchers and a community engagement plan. Similarly, CZI's Science in Society Program places patients and their advocates as the drivers of the research agenda in rare disease.

Biomedical technology, which may appear neutral, can propagate the biases[8] of its developers. As an organization that actively supports open-source software tools for biomedicine, CZI is in a position to counteract these biases. A new supplemental grant program[9] specifically funds efforts to increase the diversity of contributors to open-source software projects, many of which are used across biomedical science and, increasingly, in medicine. The participation, retention and leadership progression of contributors who are systemically under-represented has the potential to reshape the open-source community.

Who has access?

Biomedical science belongs to everyone. Broad access to scientific discoveries is essential for equity, and CZI has therefore promoted the wide dissemination of science during the COVID-19 pandemic.

The use of preprints[10] to share early-stage research exploded during the COVID-19 pandemic, allowing universal, free sharing of critical research results within days. To support this form of science equity, CZI's Open Science program funds the flagship bioRxiv and medRxiv preprint servers. Through preprints, the speed of research on SARS-CoV-2 accelerates because it is shared in real time, without diminishing the value of the final peer-reviewed journal article.

Although vaccines against SARS-CoV-2 were developed with unprecedented speed, their distribution has seen significant disparities for communities of color. CZI has committed[11] $15 million to media projects, public health experts, researchers and organizations working to deliver COVID-19 relief and vaccines to communities of color in the United States. Critically, these organizations include local nonprofits that have forged deep relationships with the people they serve.

Looking ahead

All scientific and technology programs can and should be approached from a perspective of racial and global inclusion, with needs identified through the involvement of people from under-represented groups. There is much work to be done, and CZI does not have all the answers. But we believe that an open discussion about diversity, equity and inclusion in biomedical science will expand participation in, trust in and access to the benefits of science—and support life-changing advances that truly build a future for everyone. ❐

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