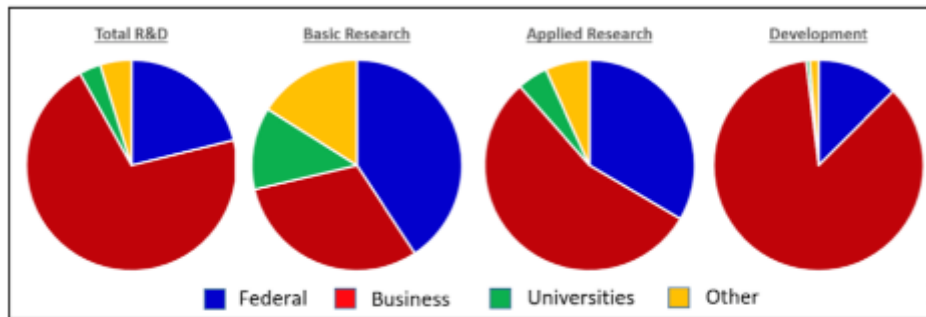


Philanthropy: A Crucial Sector for Basic Research



Source: CRS analysis of National Science Foundation, *National Patterns of R&D Resources: 2018–19 Data Update*, NSF 21-325, Tables 6-9, April 9, 2021.

France A. Córdova

President, Science Philanthropy Alliance

Director Emerita, NSF

President Emerita, Purdue University

What is the Science Philanthropy Alliance?

A networked community of 36 funders

who work together on a common mission:

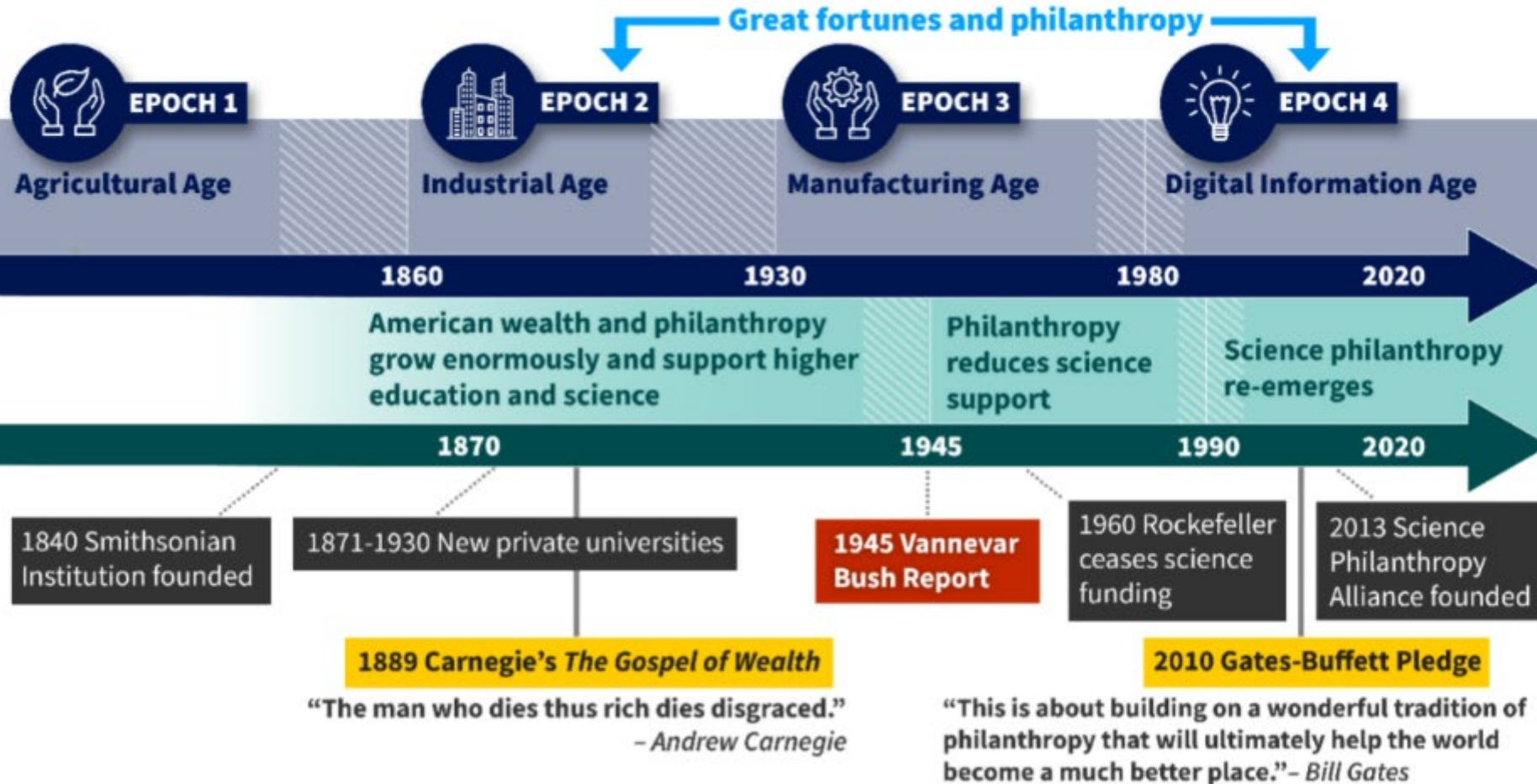
“To advance scientific discovery through visionary philanthropy”

The members act as champions and advisers to other philanthropists and share promising practices. They fund SPA staff.

SPA staff recruit new philanthropists to fund basic science.

The Alliance staff roles: Advise, Connect, Inform, Convene

Evolution of American Wealth Creation and Philanthropy



From: Robert W. Conn. "Why Philanthropy is America's Unique Research Advantage". ISSUES in Science and Technology. July 2021.

ALLIANCE MEMBERS



BILL & MELINDA
GATES foundation



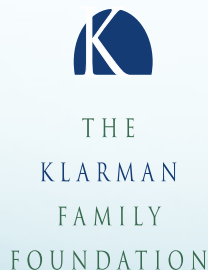
Shanahan Family
Charitable Foundation



Sergey Brin
Family Foundation



Wood Next
LLC



Ross M. Brown
Family Foundation



Presenting today

SIMONS
FOUNDATION



THE
KAVLI
FOUNDATION

GORDON AND BETTY
MOORE
FOUNDATION

the David
Lucile & Packard
FOUNDATION



ALFRED P. SLOAN
FOUNDATION

What does the Alliance invest in?

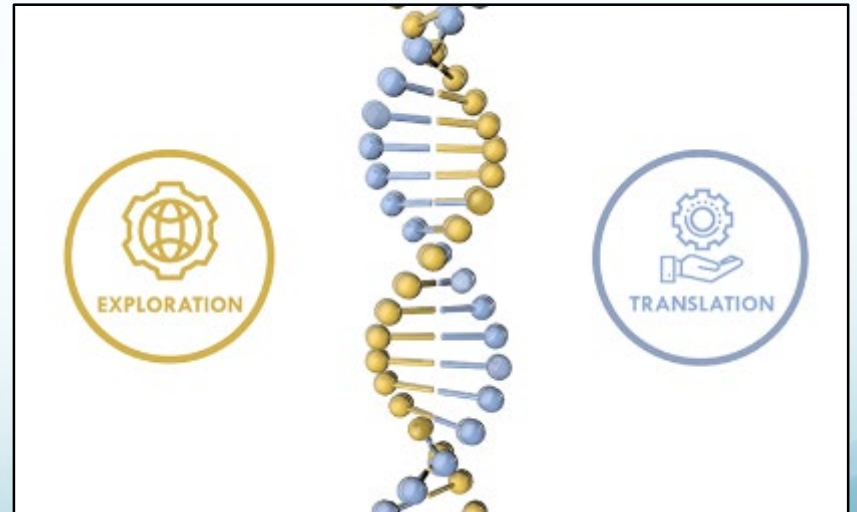
The method: Invest in fundamental, early-stage, discovery science

Of note: Discovery and its uses co-evolve and are entangled

The result: The investment can replicate, yielding outsized returns



Quantum representation



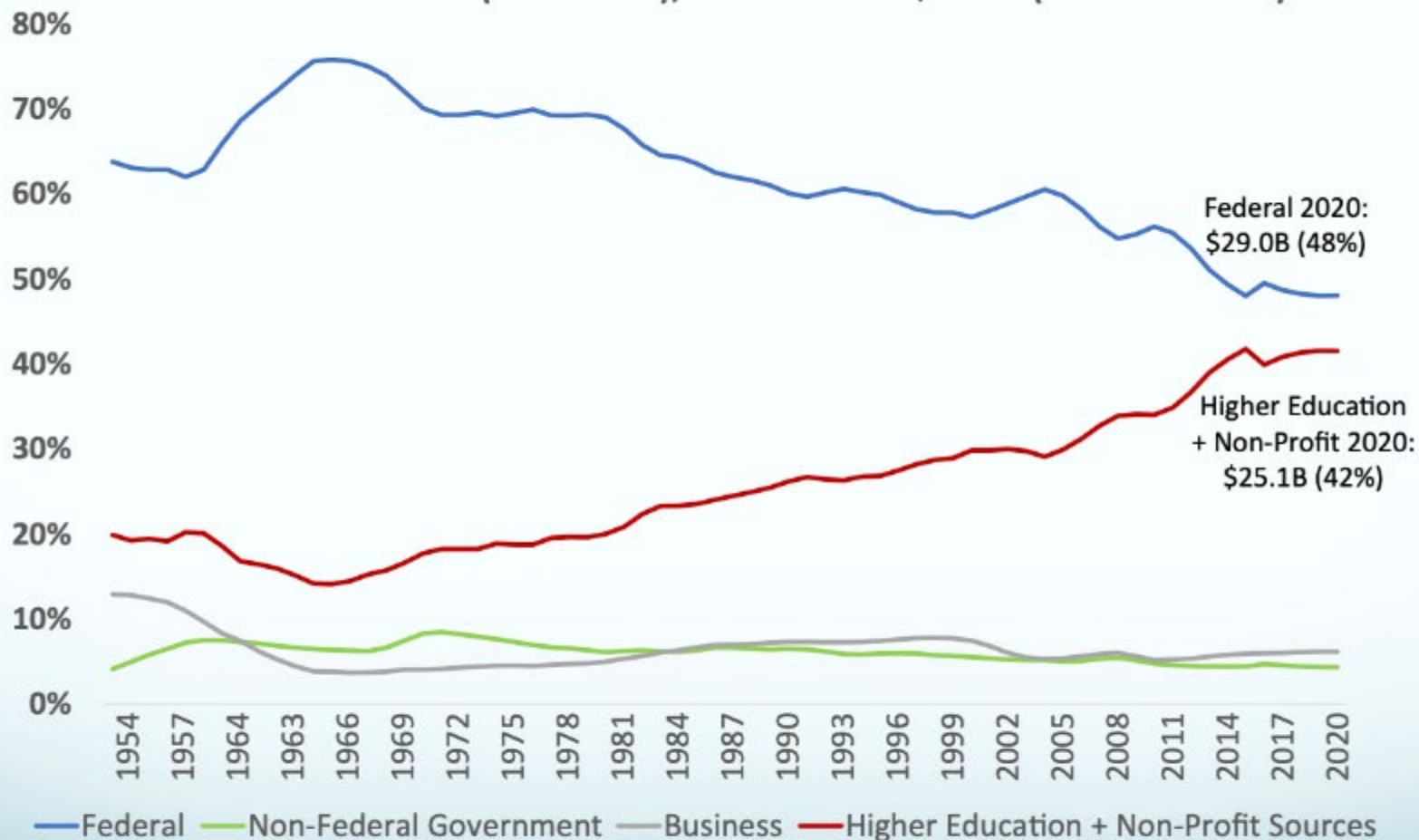
Molecular biology representation

HOW WE HELP PHILANTHROPISTS

- **Customized Services**
- **Connecting** with other funders,
- **Advising** with our science experts
- **Analyzing** funding landscape
- **Developing** mission and vision
- **Developing** strategy
- **Crafting** partnerships
- **Evaluating** funding model structures
- **Vetting** proposals
- **Identifying gaps** in research funding
- **Informing** about R&D trends
- **Convening** workshops and events



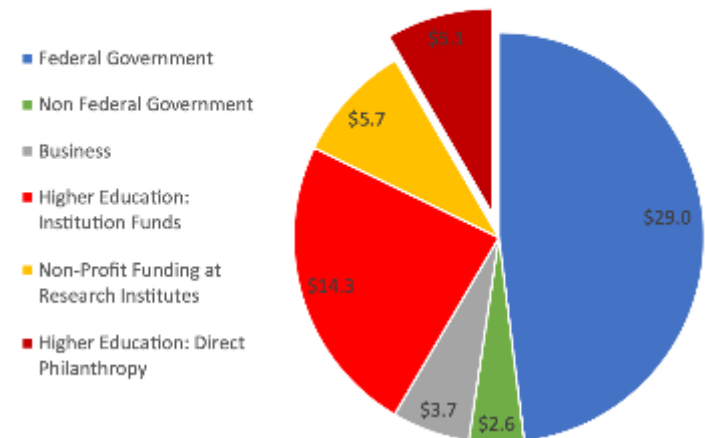
Funding Sources for Basic Research Expenditures of Universities & Research Institutes (1953-2020); Total in 2020: \$60.5B (current dollars)



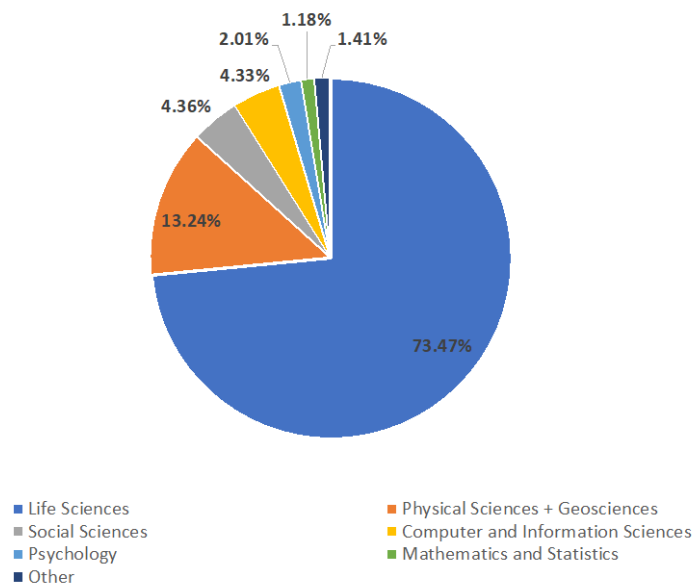
Data: NSF National Patterns of R&D Resources: 2019-2020 Data Update (February 2022)

Sources of funds for basic R&D at Universities and Research Institutes, and relative support of disciplines -- data from NSF/NCSES

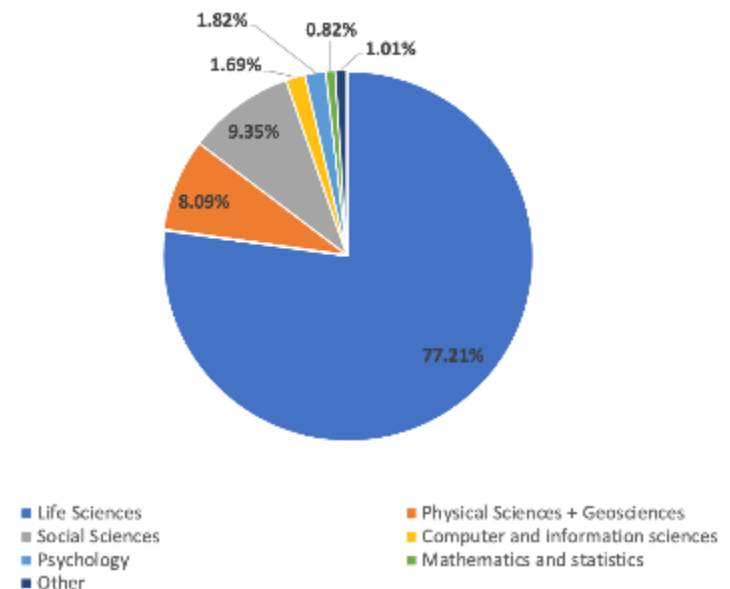
Source of Funds for Basic R&D Expenditures at Universities and Research Institutes (2020 estimate; current billions of dollars)



Higher Education Science R&D Research Expenditures in 2020
All Funding Sources (Data: NSF - December 2021)

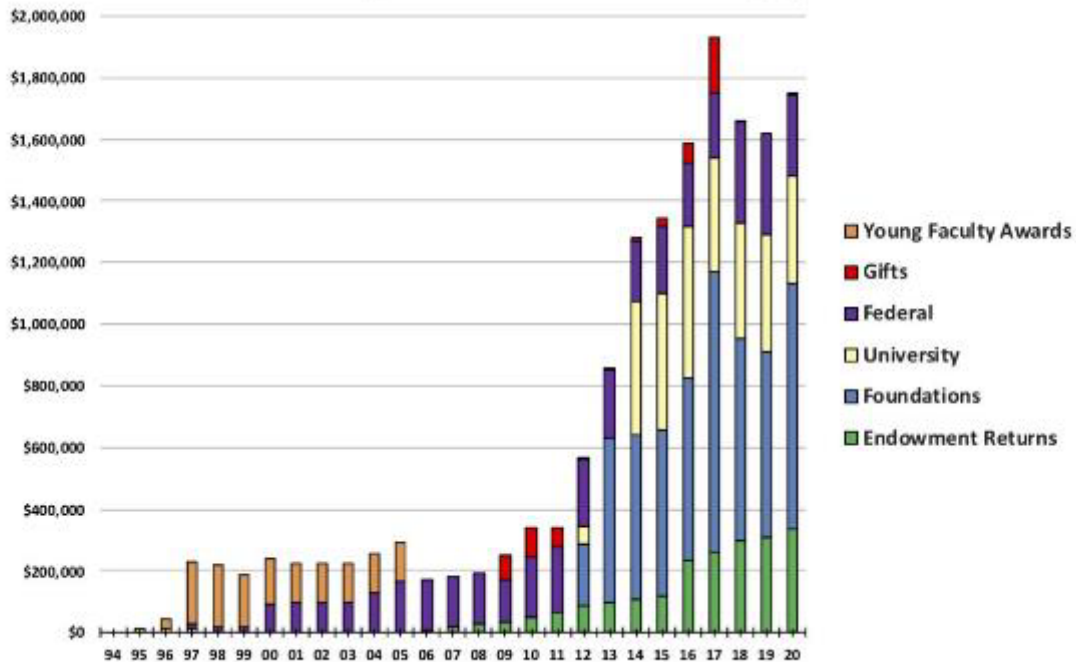


Higher Education Science R&D Research Expenditures in 2020
Funded by Direct Philanthropy (Data Source: NSF - December 2021)



Impact

Historical Funding Support



Nobel prizes

Arnold



Ghez



Doudna



New goals for science philanthropy

Science philanthropy is experiencing a growth spurt, propelled by the newly acquired wealth of individuals and foundations, as well as a desire to address challenges such as infectious disease, fire, drought, and food and water security. Especially in the United States, this is altering the dynamics of the research ecosystem, which has been dominated by government funding since the end of World War II. This change comes with new perspectives and approaches to solving the world's problems. And it comes with a commitment to increase equity in funding.

Current philanthropy supports basic research in the United States with about \$5 billion annually. When legacy philanthropic endowments spent by research institutions are taken into account, that number is about \$25 billion per year. These estimates, based on US National Science Foundation (NSF) data, indicate that philanthropy accounts for 42% of support for basic science at US research institutions.

Entrepreneurs are deploying new-found wealth to form foundations and philanthropic organizations, joining the ranks of more established foundations, some with a century-old history. Their origin story is not so different from that of the agricultural, oil, gas, and railroad barons of yore—they have become wealthy through private enterprise. What is new is their willingness to confront confounding issues of the day, such as how to identify unexplored areas of research and apply new technologies for discovery, how to leverage funding through creative partnerships, how to redress societal inequities, and how to involve the public in research design.

Philanthropies are now partnering with public entities such as government agencies to extend their impact. "We're being partners when we identify areas where the federal government cannot easily invest and we can make those investments," said David Spergel, president of the Simons Foundation. "Sometimes philanthropic funding can be about 'de-risking' projects." An example is the Vera C. Rubin Observatory in Chile, where philanthropists assumed the risk of funding the development of a new mirror technology before the NSF stepped in with support. Philanthropy can provide flexibility that government agencies may lack. With the NSF-Simons Research Centers for Mathematics of Complex Biological Systems, Spergel says, "We were able to provide funding for the centers in ways that were more difficult for NSF to fund,

through fewer rules on things like supporting visitors, conferences, [and] postdocs." NSF in turn brought the benefits of the new center to a broader community. "The whole was greater than the sum of the parts," says Spergel.

The new collaborations are working to overcome past limitations in which some philanthropies followed too narrowly the predilections of their founders or tended to direct money to high-profile universities and already established scientists. The new philanthropy is placing more emphasis on positioning equity among its goals. Some members of the Science Philanthropy Alliance, composed of 35 of the largest science funders, expressly seek out underrepresented scientists. For example, the Sloan Foundation

widens education pathways for students at minority-serving institutions. Lyda Hill Philanthropies envisions a culture shift among young girls, opening their eyes to careers in science by involving media, sports, fashion, and female science innovators as role models. At the same time, philanthropies are focusing more on efficiency and effectiveness in their grant making. The Research Corporation for Science Advancement, with partner foundations and federal agencies, sponsors interdisciplinary dialogs among early-career

researchers to develop innovative, collaborative proposals born "on the spot" during meetings that are reviewed rapidly for seed funding.

Many foundations are building communities that extend beyond researchers, collapsing silos and encouraging interactions across groups and disciplines. The Chan Zuckerberg Initiative funds patient communities to build research networks and partner in research project design. The goals of civic science are also a priority. Foundations, including the Rita Allen, Kavli, Gordon and Betty Moore, Heising-Simons, and Packard, along with the Burroughs Wellcome Fund, support the Civic Science Fellows program to catalyze interactions between science and society. And the Kavli Foundation recently funded university centers to engage the public in ethical issues in fields such as artificial intelligence, neuroscience, and genomics.

Societally responsible philanthropy recognizes the need to improve the world through funding science. Foundation leaders are taking bolder actions. The result will be a more responsive science that pushes the frontiers of knowledge in service of humanity.

—France A. Córdova



France A. Córdova is president of the Science Philanthropy Alliance, Palo Alto, CA, USA, president@scphil.org

"This change comes with... a commitment to increase equity in funding."

Philanthropy has a role in envisioning science for the future

Science philanthropists can be “architects” of a new future, one in which humanity continues to benefit from science discoveries¹

How?

1. Build up science infrastructure, including new funding models, new institutes
2. Invest for the long term in high-risk-high-promise research
3. Support new generations of potential discoverers
4. Promote public engagement and trust in science
5. Scale efforts through partnerships, open science
6. Engage with an international community

¹*From France Cordova in Issues in S&T, Aug. 12, 2021*