March for science

In Frank Capra’s seasonal classic *It’s a Wonderful Life*, the main character, George Bailey, wishes he had never been born and is then transported to a version of his world where all traces of his existence have been removed. This world is much different—darker and less enlightened. Distressingly, the United States is now filled with echoes of George Bailey’s nightmare. It seems that some people are dismissive of the beneficial effects of evidence-based approaches on our lives. Available evidence, even when quite substantial, is ignored or minimized. Non–evidence-based approaches are treated as equally likely as evidence-based ones to lead to factually correct, robust results. The federal budget proposal recently released by President Trump’s administration includes draconian cuts for almost all research agencies. If implemented, these cuts will severely damage the U.S. scientific enterprise for years to come. Based on history, this path is likely to lead to decreased long-term technological innovation as well as poorly conceived public policy.

The upcoming March for Science on 22 April has many goals, linked by articulation of the impacts of science on society and individuals. Human beings have always been innately interested in understanding the world around us. Philosophical approaches to build this understanding, such as those associated with Aristotle, relied solely on reason and logic rather than experimental methods. Although this was highly influential, it was ultimately subsumed by increasingly rigorous empirical methods—those in which careful observations are made and hypotheses are generated and refined against these data.

Some influential modern ideas were critically dependent on this empirical approach. For example, quantum mechanics emerged from counterintuitive experimental observations that could not be readily explained by existing theories. The eventual result was a remarkable predictive theory that became the foundation of the chemistry, physics, and electronics that underlie modern technologies of today.

Scientific approaches and empirical methods are also central to modern biology and medicine. The formulation of germ theory completely transformed the understanding of infectious diseases and, ultimately, their treatment and prevention. This theory led to the identification of microbial species responsible for a range of diseases, and then to the implementation of public health measures and sterile techniques to prevent the spread of disease-causing organisms. These events raised a wide appreciation for the discovery of antibiotics as tools for treating infections and vaccines for preventing diseases, advances that have transformed medicine.

The March for Science is a tremendous opportunity to highlight the importance of science and its benefits to society. Participants, and others who are interested, would do well to communicate the relevance and impacts of scientific advances, the central role that science can play in addressing the challenges that we face today, the importance of fundamental research both for long-term progress and for cultural enrichment, the need for collaboration to tackle important problems, and the benefits of knowledge and appreciation of science across broad segments of society.

I hope that the March for Science is successful in bringing together diverse groups of scientists and non-scientists. It should not, however, be an endpoint. George Bailey advocated for the people of his town, supported policies that benefited these individuals, and shared observations about the resulting improvements over many years. After the March, individuals and groups must sustain advocacy for science. A future where society benefits from all that science has to offer is at stake.

—Jeremy Berg

“A future where society benefits from all that science has to offer is at stake.”
March for science
Jeremy Berg (April 6, 2017)
Science 356 (6333), 7. [doi: 10.1126/science.aan3466]

Editor's Summary

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