

Nobel Prizes and COVID-19: Slow, basic science may pay off

October 3 2020, by Seth Borenstein



In this April 17, 2015, file photo, a national library employee shows a gold Nobel Prize medal in Bogota, Colombia. The Nobels, with new winners announced starting Monday, Oct. 5, 2020, often concentrate on unheralded, methodical, basic science. (AP Photo/Fernando Vergara, File)

While the world wants flashy quick fixes for everything, especially

massive threats like the coronavirus and global warming, next week's Nobel Prizes remind us that in science, slow and steady pays off.

It may soon do so again.

Science builds upon previous work, with thinkers "standing on the shoulders of giants," as Isaac Newton put it, and it starts with basic research aimed at understanding a problem before fixing it. It's that type of basic [science](#) that the Nobels usually reward, often years or decades after a discovery, because it can take that long to realize the implications.

Slow and steady success in science has made researchers hopeful in the fight against the pandemic. It even offers a glimmer of climate optimism.

Many years of advances in basic molecular science, some of them already Nobel Prize-winning, have given the world tools for fast virus identification and speeded up the development of testing. And now they tantalize us with the prospect of COVID-19 treatments and ultimately a vaccine, perhaps within a few months.

"This could be science's finest hour. This could be the time when we deliver, not just for the nation but the world, the miracle that will save us," said geophysicist vaccines that would normally take years may be developed in a year or less, and "it's all been built on the back of basic science advances that have been developed in the past three decades," McNutt said.



In this Nov. 1, 2005, file photo, Dr. Colman Kraff uses a laser during eye surgery at Kraff's offices in Chicago. The Nobels, with new winners announced starting Monday, Oct. 5, often concentrate on unheralded, methodical, basic science. Basic science even improves how we see with laser eye surgery and better lighting. (AP Photo/Charles Rex Arbogast, File)

She pointed to gene sequencing and polymerase chain reaction, which allows for multiple copying of precise DNA segments. That latter discovery won the 2014 Nobel in physics, said astrophysicist 2018 Nobel for physics, but was also the product of an accident in which a researcher got lasered in the eye, said microbiologist [Rita Colwell](#), former head of the U.S. National Science Foundation.

And those lasers used concepts that date back to Albert Einstein, said British Royal Astronomer [Martin Rees](#).

[John Mather](#), who won the 2006 physics Nobel for cosmology, which is the study of the origin of the universe and is thus the ultimate basic science, said nearly everything we use around us is there because of basic science.

"Engineers and entrepreneurs use this knowledge to build commercial empires," he said. "Doctors use what we find to develop new cures. Architects build houses with modern materials. Airplanes are designed at the very edge of what is possible. Even cars are completely dependent on basic science."



In this May 13, 2019, file photo, astrophysicist Neil Degrasse Tyson attends the 23rd annual Webby Awards at Cipriani Wall Street in New York. The Nobel Prizes starting Monday, Oct. 5, 2020, show how slow basic science pays off, even though everyone wants quick fixes to global problems. "Maybe with a new discovery in science in a way that affects your life outcomes, the TV commercials say, 'Did you know this? This thing that you're using was invented here in this lab by this person. And it was brought to market by this company. And now you're using it and enjoying it.' Stop in silence. 'You're welcome.'"(Photo by Christopher Smith/Invision/AP, File)

But some people don't make that connection. [Adam Riess](#), who won the

2011 Nobel in physics, and Tyson said this is especially noticeable when people who deny [climate science](#) or vaccine effectiveness do so while reaching fellow nonbelievers on smartphones and Google searches made possible because of basic science research.

"Maybe, maybe science needs a PR agent, OK?" Tyson said in an interview. "Maybe with a new discovery in science in a way that affects your life outcomes, the TV commercials say, 'Did you know this? This thing that you're using was invented here in this lab by this person. And it was brought to market by this company. And now you're using it and enjoying it.' Stop in silence. 'You're welcome.'"

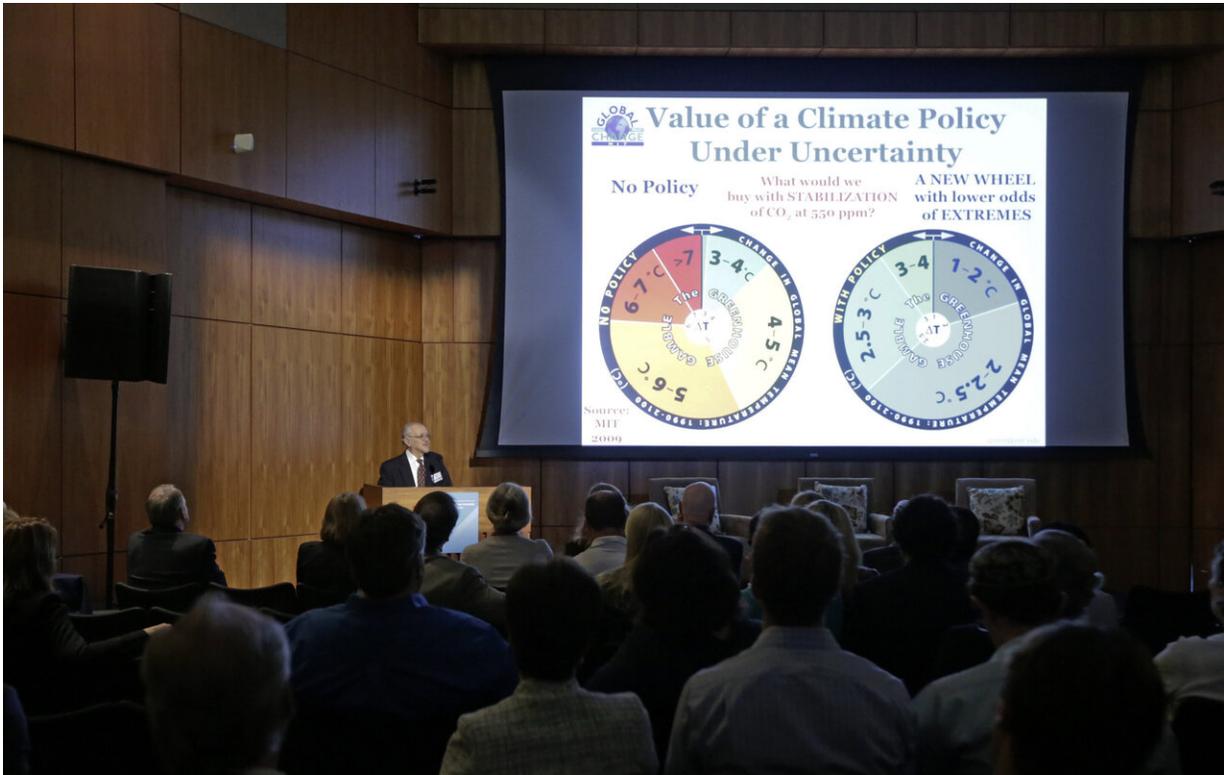
As for fixing [climate change](#), Mexican chemist [Mario Molina](#) has hope that the world will be able to solve the problem because of the work that led to his 1995 Nobel Prize.



In this Oct. 22, 2014, file photo, Nagoya University Professor Hiroshi Amano, right, displays an LED light during the science and technology innovation conference in Tokyo. Three Japanese researchers won the 2014 Nobel Prize for Physics for inventing the LED lamp. (Toshifumi Kitamura/Pool Photo via AP, File)



In this Oct. 4, 2011, file photo, Dr. Adam Riess smiles at a news conference that was held to acknowledge his being awarded the Nobel Prize in Physics at Johns Hopkins University in Baltimore. Riess shares the prize with Saul Perlmutter, an astrophysicist at the University of California, Berkeley, and Brian Schmidt of the Australian National University, for their contributions to the discovery that the universe's expansion is accelerating. (AP Photo/Patrick Semansky, File)



In this Oct. 27, 2015, file photo, Nobel laureate Mario Molina speaks at Carbon Neutrality Initiative on the campus of the University of California-San Diego. The Nobel Prizes starting Monday, Oct. 5, 2020, show how slow basic science pays off, even though everyone wants quick fixes to global problems. As for fixing climate change, Molina has hope that the world will be able to solve the problem because of the work that led to his 1995 Nobel Prize. He and others discovered that industrial chemicals known as chlorofluorocarbons were reaching high into the atmosphere and eating away at Earth's protective ozone layer. (AP Photo/Lenny Ignelzi, File)



In this Dec. 10, 2018, file photo, Chemistry laureate Frances H. Arnold, left, receives the prize from King Carl Gustaf of Sweden, during the Nobel Prize award ceremony, at the Stockholm Concert Hall, in Stockholm. The Nobels, with new winners announced starting Monday, Oct. 5, 2020, often concentrate on unheralded, methodical, basic science. "Without basic science, you won't have cutting-edge applied science," said Frances Arnold, a Caltech chemical engineer who won the 2018 Nobel in chemistry. (Pontus Lundahl/Pool Photo via AP, File)

He and others discovered that industrial chemicals known as chlorofluorocarbons were reaching high into the atmosphere and eating away at Earth's protective ozone layer. He discovered this many years before an ozone hole developed over Antarctica.

His work and the opening of the hole led to a 1987 international agreement to ban those ozone-depleting chemicals, and the hole has started shrinking. Now Molina hopes that kind of action can be applied to what he calls "the climate emergency."

"That's why I'm optimistic. Because we do have one example of a global problem where practically all the countries of the planet agreed to work together. The ozone layer is healing. It takes quite awhile," Molina said. "But it's working, slowly. So it can be done."

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