COVID Vaccines Put Anti-Science Activists to Shame

By Alex Berezow, PhD — January 5, 2021

Though politicians and the public love to hate Big Ag and Big Pharma, everybody comes begging for help when the going gets tough. The arguments against biotechnology have been made exponentially weaker by the success of the coronavirus vaccine.

It turns out that, despite the destruction and heartbreak caused by the COVID pandemic, there is a silver lining: Scientists from academia, government, and industry worked together and, using the tools of biotechnology, created multiple vaccines that surely will put an end to the worst of the pandemic sometime in 2021. In short, they proved that science works, particularly that which comes from industry. Though politicians and the public love to hate Big Ag and Big Pharma, everybody comes begging for help when the going gets tough.

The change in public attitude is tangible. A headline in the Financial Times declared, "Covid vaccines offer Big Pharma a chance of rehabilitation." In its analysis, the FT says that the pharmaceutical industry is widely reviled because of the high prices it charges for its drugs, among other things, but the speed with which the industry developed COVID vaccines may allow for its reputation to be refurbished.

The Media’s Role in Promoting Anti-Biotech Activism
Of course, the media is partly to blame for the pharmaceutical industry's dismal reputation in the first place because of journalists' penchant for oversimplifying complicated stories and pinning blame on an easy scapegoat. While the pharmaceutical industry is far from angelic and places a hefty price tag on its products in the U.S., often gone unmentioned is the fact that high drug prices are the result of multiple factors, including lack of competition (even among generic drugs), foreign price controls that allow citizens of other countries to "free load" off of American consumers, and a deliberately opaque drug supply chain (that involves not only profit-maximizing pharmaceutical manufacturers but "middlemen" like distributors). But why delve into such nuance when it's easier to point to villains like Martin Shkreli?

Big Ag has been subjected to identical mistreatment by the media, with outlets such as the New York Times among the biggest offenders. One article it published compared pesticides to "Nazi-made sarin gas," and another spread misinformation about a high-profile biotech scientist. The website Undark, whose stated mission is "true journalistic coverage of the sciences," once published an opinion piece written by a person who works for an anti-GMO organization and another criticizing Monsanto for its reasonable efforts to defend itself from disinformation. These aren't cherry-picked examples. Overall, the media clearly has taken sides: Science is great, unless it's science from industry.

Now, the very same media – which has portrayed the pharmaceutical and biotech industries in the worst possible light, often for political or ideological reasons – is wondering why so many Americans are reluctant to get a COVID vaccine. Perhaps their reportage has something to do with it.

Tech Strikes Back

For years, the agricultural, pharmaceutical, and biotech industries fought back, but to no avail. GMOs are feared, pharma is hated, and biotech is misunderstood. Regulatory red tape abounds. But that may be all about to change, not because of a clever PR campaign, but thanks to the successful coronavirus vaccines produced by the pharma/biotech industry.

All of the major vaccines were created using biotechnology, broadly defined as the use of living systems and organisms to develop products intended to improve human life or the planet. The Pfizer/BioNTech and Moderna vaccines rely on mRNA (messenger RNA), which is essentially a molecular "photocopy" of the more familiar genetic material DNA. The mRNA molecules were tweaked using biotech and then shown to be 95% effective at preventing COVID in human volunteers. The AstraZeneca/Oxford vaccine is based on an older technology that genetically modifies a harmless virus to resemble an immunological target, in this case, SARS-CoV-2. Their vaccine is 62% to 90% effective.
Even better, the pharma/biotech industry showed that it can work hand-in-hand with the government, for instance the FDA, to produce vaccines in record-breaking time. Operation Warp Speed provided some financing to facilitate this process. History will look back at this endeavor and likely conclude that the unprecedented level of cooperation to develop a vaccine in less than 12 months was one of the greatest triumphs in public health history. (The bungled slow rollout is another story.)

The pharma/biotech industry has thus gained tremendous momentum. For the first time it seems, those who are opposed to scientific progress and biotechnology are on the defensive. If the scientific community can use the powerful techniques of biotechnology to cure a previously unknown infectious disease in less than a year, then why shouldn't it be able to cure genetic diseases in humans? Or create genetically modified crops that are resistant to insects and drought? Or use genetically modified mosquitoes to help fight against killer diseases like malaria? The arguments against biotechnology have been made exponentially weaker by the success of the coronavirus vaccine.

Perhaps the most important lesson that society will learn is that the scientific method works. We observed (by collecting samples of an unknown virus and sequencing its genome), hypothesized (by predicting which parts of the virus would trigger an immune response), experimented (by recruiting tens of thousands of volunteers into clinical trials), and concluded (that the vaccines worked). It was a thing of pure beauty.

Thanks to all the players involved – from Big Government to Big Pharma – we are beginning the process of being rescued from a modern-day plague. Let us hope that this scientific success also deals a fatal blow to the forces of ignorance that have held back technological progress for decades.

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