

## Science Countdown 2021

The year 2022 is finally upon us. Despite my hiatus from Humanity's Candle, I have not stopped paying attention to scientific advancement. These are the 5 most important scientific developments of 2021 that have impressed me. Most are good, however, one is terrifying. Let's buckle up and wrap up 2021 with science.

### 1. Lithium-Metal Batteries

Caroline Delbert wrote an article in Popular Mechanics that explained the function of a lithium metal battery. She explains that a lithium metal battery can charge an electric car in 10 minutes. Furthermore, Delbert explains that lithium metal batteries will most likely not have dendrites. Dendrites are jagged pieces of lithium which could penetrate the battery that can damage it. If these batteries lead to electric cars to be more efficient that would be awesome.

### 2. Colonial Pipeline and DarkSide Hack

Imagine waking up to discover that there is no gas at your gas station. Even worse, every gas station in your state is running low on or is out of fuel. Earlier this year, the Colonial Access pipeline was hacked and brought to a halt. "The Colonial Pipeline Cyberattack: How a major oil pipeline got held for ransom" article authored by Sara Morrison chronicles how this travesty happened. In summary, the pipeline which supplied the east coast was down for a week. The criminal group responsible for this crime was DarkSide. The company paid several million dollars in ransom. However, the Department of Justice was able to recover most of the ransom payment. The Colonial Pipeline hack is extremely important because access to fuel is one facet of how computer programs connect with our daily lives.

### 3. Fusion Reactor Advancements

In a quest to make fusion reactors work, physicists built a magnet that produced a magnetic field of 20 Tesla: "MIT Scientists Report 'Major Advance' in fusion energy", authored by Mathew Galt which details their accomplishments. Galt summarizes that the MIT scientists are trying to replicate a fusion reaction that occurs on the sun. They successfully designed and built a magnet, which generates 20 Tesla of force that will allow containment of the nuclear fusion reaction in the test reactor.

### 4. Development of a pill that treats COVID-19

Pfizer has developed a pill that will treat COVID-19. The FDA has granted emergency authorization for doctors to prescribe the medication known as Pakslovid. Spencer Kimball's article for CNBC titled "[SKIP](#)" elaborately explains Pakslovid's effects on treating patients. Kimball explains that Pakslovid is approved for COVID patients 12 years and older who have mild to moderate symptoms. More importantly, Kimball reports that 10 million treatments of the medication were purchased. Additionally,

Kimball describes how Pakslovid is administered. Patients are proscribed the pill twice daily with an HIV drug called ritonavir. Last, but not least, Pfizer's Covid-19 treatment is 89% effective.

## 5. California's Snowpack rebounds

Over the month of December 2021, California has had a major increase in its snowpack. The consequence of this new snowpack is not limited to reservoirs being replenished. Tracy Bloom's article for KTLA explains that the snow pack in the southern Sierra Nevada Mountains is 167% above average. The snowpack in the northern and central Sierra Nevada Mountains are respectively, 162% and 145% according to Bloom. One can conclude that relief regarding California's water situation has arrived even if the new snow pack does not end the drought.

Over all 2021 has been a great year for science. I wish all readers a happy 2022.

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Links to Sources Science Countdown 2021

Lithium-Metal Battery

## [The Holy Grail Is Here: A Stable, Solid-State, Lithium-Metal ...](https://www.yahoo.com/lifestyle/holy-grail-stable-solid-state-lithium-metal-battery-110000000.html)

[https://www.yahoo.com/lifestyle/holy-grail-stable-so...](https://www.yahoo.com/lifestyle/holy-grail-stable-solid-state-lithium-metal-battery-110000000.html)

2 DarkSide Colonial Pipeline Hack

## [How a major oil pipeline got held for ransom - Vox](https://www.vox.com/recode/2021/12/22/23000000/darkside-colonial-pipeline-hack)

<https://www.vox.com/recode/2021/12/22/23000000/darkside-colonial-pipeline-hack>

## 3. Fusion Reactor Breakthrough

## [MIT Scientists Report 'Major Advance' In Fusion Energy - VICE](https://www.vice.com/en_us/article/2021/12/22/163975775353/MIT-scientists-report-major-advance-in-fusion-energy)

[https://www.vice.com/en\\_us/article/2021/12/22/163975775353/MIT-scientists-report-major-advance-in-fusion-energy](https://www.vice.com/en_us/article/2021/12/22/163975775353/MIT-scientists-report-major-advance-in-fusion-energy)

## 4. FDA Authorizes Pfizer's COVID Pill

## [FDA authorizes Pfizer's Covid treatment pill, the first oral antiviral](https://www.cnbc.com/2021/12/22/fda-authorized-pfizer-covid-oral-antiviral.html)

<https://www.cnbc.com/2021/12/22/fda-authorized-pfizer-covid-oral-antiviral.html>

5. California's Snowpack

[\*\*How California's snowpack looks after storms dump 17 feet of ...\*\*](#)

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