



STEMBoost Newsletter

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STEMBoost Summer Workshops and the Upcoming Science Olympiad Season

Joseph Lee

In the past few weeks, the STEMBoost 2021 workshops have been running smoothly. We have held both single/duo workshops and series workshops. The workshops will be held until August 15, so make sure to sign up before then! We thank the instructors and TAs who have helped teach these workshops along with the officers who have helped coordinate and organize them.

Meanwhile, the Kennedy Middle School Science Olympiad team has begun to recruit new members for the 2021-2022 school year. Signups are now available on the Kennedy Science Olympiad Homepage. As newer members join and senior members leave Kennedy Science Olympiad, we wish all of the teams a smooth transition for the upcoming season.

Finally, for the upcoming 2021-2022 Science Olympiad season, many places have decided to return to in-person competitions. We hope that these in-person gatherings will run safely without any major issues. The Gold Team has plans to attend the upcoming ATX Science Olympiad Invitational at Austin, Texas, which will be held in-person this year. However, current plans for the 2022 National Tournament, which will be hosted by CalTech, are still being worked out. As of now, there seems to be plans to hold this final competition virtually rather than in-person.

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Fun Fact

What is the name of the temperature and pressure at which a substance can be a solid, liquid, and gas at the same time? (See answer in the back)

Editorial – New Alzheimer’s Drug: Miracle or Mishap?

Angela Zhang

It’s well known that old age is often plagued with disease. Whether it’s arthritis, heart disease, or other (often chronic) conditions, the elderly seldom enjoy their later years in good health. Alzheimer’s Disease is among this myriad of conditions, yet it is also fundamentally unique. Rather than being a disease of the body, Alzheimer’s afflicts the mind—progressively destroying an individual’s memory and eventually their other cognitive functions. A typical progression of Alzheimer’s begins with mild memory loss, and evolves over numerous years to render the individual unable to communicate or even respond to their environment. By the end of such a patient’s life, they will have lost control over the most basic bodily functions, including walking, swallowing, and finally, breathing. It’s not uncommon, either; Alzheimer’s is the 6th leading cause of death in the US, and is present in 1 out of every 9 individuals over 65. And yet, there’s still no cure for this devastating disease. Or is there?

On June 7, the FDA approved a new Alzheimer’s drug, Aduhelm, through its accelerated approval pathway. This pathway is reserved for medications that are deemed significantly more effective than others in the market at treating serious diseases. Following this controversial decision, the agency was hit with backlash from critics, with three members of an FDA advisory committee resigning in protest. One of these members, a Harvard professor of medicine, called it “the worst approval decision that the FDA has made that I can remember” (Kesselheim 2021).

Kesselheim and other critics' concerns are not unfounded. The drug's approval rested on clinical trials showing it to be effective at destroying amyloid proteins in patients with mild Alzheimer's. However, although amyloid proteins have been linked to Alzheimer's, scientists still don't understand the exact cause of the disease, leading to arguments that the drug's effectiveness against amyloid proteins doesn't translate to slowing cognitive decline—the main goal of current Alzheimer's drugs. Furthermore, Aduhelm has been linked to potentially life-threatening side effects such as brain swelling and bleeding.

In spite of these concerns, many still support the FDA's decision, and it's not difficult to see why. Aduhelm is the first drug to be approved for Alzheimer's in 18 years, with only five other drugs approved for the debilitating disease. For many, its novelty is a source of hope and optimism. And although its effect on cognitive decline is uncertain, its effect on a telltale sign of Alzheimer's—the amyloid plaques—is not. Even without a consensus on the cause of the disease, it is still reasonable to assume that the targeting of the plaques could have a positive effect on cognition.

Regardless of the propriety of the FDA's decision, it is nevertheless a major milestone for those impacted by Alzheimer's. And now that it is on the market, only time will tell whether that was the wisest decision.

Works Cited:

1. "Aducanumab Approved for Treatment of Alzheimer's Disease." Alzheimer's Disease and Dementia, www.alz.org/alzheimers-dementia/treatments/aducanumab.
2. Belluck, Pam, and Rebecca Robbins. "Three F.D.A. Advisers Resign Over Agency's Approval of Alzheimer's Drug." The New York Times, The New York Times, 10 June 2021, www.nytimes.com/2021/06/10/health/aduhelm-fda-resign-alzheimers.html.
3. "FDA Grants Accelerated Approval for Alzheimer's Drug." U.S. Food and Drug Administration, FDA, 7 June 2021, <http://www.fda.gov/news-events/press-announcements/fda-grants-accelerated-approval-alzheimers-drug>.

Answer: Triple point is the name of the temperature and pressure at which a substance exists as a solid, liquid, and gas at the same time.