

In The News

Massive cosmic collisions around a nearby star

Astronomers have directly observed the aftermath of two massive collisions between large rocky and icy bodies around the nearby star Fomalhaut, an unprecedented discovery beyond our solar system. Early planetary

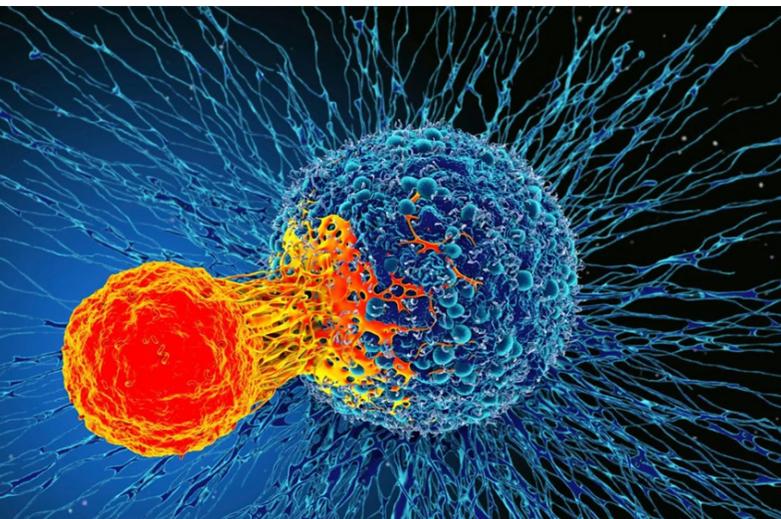


systems are chaotic, with frequent impacts among comets and asteroids, but the largest collisions were thought to be rare. Yet two such events were detected around Fomalhaut in just 20 years, first in 2004 and again in 2023, suggesting these violent smashups may be more common than expected. Fomalhaut, located 25 light-years from Earth, is about 440 million years old, making it a valuable analog for the early solar system. Using the Hubble Space Telescope, astronomers observed bright points of light that initially appeared to be planets. Further analysis revealed they were actually expanding dust clouds created by collisions between planetesimals at least 60 kilometers wide.

One supposed planet, Fomalhaut b, later disappeared, supporting the dust-cloud explanation. A newer cloud, even brighter, reinforces this conclusion. Scientists estimate hundreds of millions of similar objects orbit the star. Ongoing observations with Hubble and the James Webb Space Telescope will track these clouds and help astronomers distinguish real exoplanets from collision debris in future searches. ◆

Cancer drug made tumors vanish

After decades of disappointing results, a redesigned cancer immunotherapy targeting the CD40 receptor



is showing new promise. CD40 agonist antibodies once produced strong anti-tumor effects in animals but caused serious side effects and limited benefits in people. In 2018, Jeffrey Ravetch and colleagues at Rockefeller University engineered a more potent CD40 antibody, called 2141-V11, and changed how it was delivered—injecting it directly into tumors rather than intravenously. Results from a phase 1 clinical trial, recently published in *Cancer Cell*, included 12 patients with advanced cancers such as melanoma, breast cancer, and renal cell carcinoma. Tumors shrank in six patients, and in two cases the cancer disappeared completely. Notably, tumors that were not injected also regressed, showing a rare systemic immune

response. None of the patients experienced the severe toxic side effects seen with earlier CD40 drugs. Analysis revealed that treated tumors became filled with immune cells forming structures similar to lymph nodes, known as tertiary lymphoid structures, which are linked to better immunotherapy outcomes. Larger trials are now underway to identify which patients benefit most and how to expand responses. ◆

Wildfire smoke may be dangerous

Scientists have found that pollution from wildland fires may be far greater than previously estimated. A new study in *Environmental Science & Technology* shows that wildfires and prescribed burns worldwide emit about 21% more organic gases than earlier calculations suggested. These findings highlight an overlooked source of air pollution that can affect human health, air quality, and climate. When vegetation burns, it releases a mix of gases and particles, including volatile organic compounds (VOCs). The study emphasizes the importance of intermediate- and semi-volatile organic compounds (IVOCs and SVOCs), which are harder to measure and often ignored. These compounds can more easily form fine particles in the atmosphere, making them especially harmful to breathe in. Researchers analyzed global fire data from 1997 to 2023 and combined real-world measurements with laboratory experiments to estimate emissions from different vegetation types. They found that wildland fires release an average of 143 million tons of organic compounds into the air each year. Although human activities still produce more pollution overall, fires emit similar amounts of IVOCs and SVOCs. Regions such as Equatorial Asia, Northern Hemisphere Africa, and Southeast Asia face overlapping pollution from fires and human sources, creating complex air quality challenges. ♦



Myth that AI stifles human creativity

Researchers at Swansea University have found that artificial intelligence can enhance human creativity rather than simply automate work. In a large online study involving more than 800 participants, people used an AI-powered design system to create virtual car models. Instead of quietly optimizing designs behind the scenes, the system presented users with a wide and deliberately diverse range of options—from highly effective designs to unusual and even flawed ones. The study showed that this approach encouraged deeper engagement. Participants spent more time designing, felt more involved, and ultimately produced better results. Lead researcher Dr. Sean Walton explained that AI worked best as a creative partner, inspiring exploration and collaboration rather than just efficiency. Published in *ACM Transactions on Interactive Intelligent Systems*, the research also challenges how AI tools are evaluated. Simple metrics like clicks or copied suggestions miss important emotional and cognitive effects. The team argues for broader evaluation methods that consider how AI influences thinking, motivation, and creativity. As AI becomes more common in creative fields, the findings suggest its greatest value may lie in helping people explore ideas, take risks, and think differently. ♦

