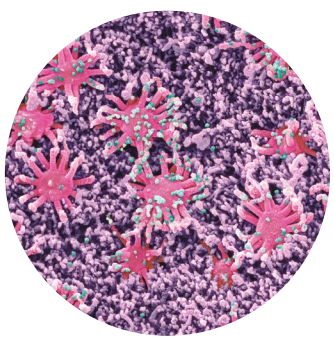
News in brief

COULD A NOSE SPRAY A DAY KEEP COVID AWAY?

Vaccines protect against severe COVID-19, but they're less adept at preventing infection. That has many scientists pursuing a needle-free alternative: nasal sprays to ward off SARS-CoV-2 infection.

The sprays would be fast-acting and would be applied frequently, perhaps once or twice a day, to the site where the virus first takes hold — the throat and nasal lining (pictured, viral particles infecting olfactory receptors). Unlike vaccines, which train the recipient's immune system to build durable protection, the sprays are short-lived compounds that would directly block the virus's ability to enter cells. Multiple research teams have shown that such sprays effectively prevent SARS-CoV-2 infection in animals.

But these sprays have a long way to go. Funding and interest from pharmaceutical firms for human trials has been limited, in part because trials to determine efficacy for prophylactics are large and expensive, says Anne Moscona, a molecular virologist at Columbia University in New York City, who is working on one such spray. And the sprays must achieve the difficult task of coating any surface to which a virus might attach, because once viral particles enter even a few cells, a full-scale infection can progress rapidly.



L TO R: STEVE GSCHMEISSNER/SPL; DHIRAJ SINGH/BLOOMBERG/GETTY; SOURCE: JANOT & BLONDEL (2022)

'DEMORALIZING': 300 SCIENCE AWARDS SCRAPPED IN INDIA

Indian scientists were surprised to learn that the government plans to axe nearly 300 science awards.

Many researchers acknowledge problems in how award winners are selected, such as a lack of inclusivity and transparency. But they say the decision to discontinue the prizes will not fix the issues.

The government has yet to announce the decision, but minutes from a meeting chaired by the home secretary, Ajay Bhalla, and attended by senior officials in the science and health ministries in September reveal details. For instance, the Department of Science and Technology, the country's main funding agency in these fields, will retain just 4 of its 207 awards.

Researchers say that the awards to be culled, many of which come with small cash prizes or grant funding, are important for the motivation and recognition that they offer. Scientists worry about the message that the decision will send to young scientists. "Scrapping these will demoralize the scientific community and weaken the pursuit of science in India," says Soumitro Banerjee, a physicist at the Indian Institute of Science Education and Research, Kolkata, and general secretary of the Breakthrough Science Society.

What's the carbon footprint of a Higgs boson?

Physicists worldwide are vying to build the planet's next super collider — and the carbon footprints of the various designs could be vastly different, says an analysis led by a physicist at CERN, Europe's particle-physics laboratory near Geneva, Switzerland.

CERN already hosts the world's most powerful particle accelerator, the Large Hadron Collider (LHC). In 2012, LHC physicists discovered the Higgs boson, and researchers now want a multibillion-dollar 'Higgs factory' dedicated to churning out the particles.

Patrick Janot at CERN and Alain Blondel, a particle physicist at the University of Geneva, used published details of five leading super-collider designs to calculate each one's energy consumption per Higgs boson produced. They looked at the machine proposed by CERN, the Future Circular Collider (FCC), and China's proposed Circular Electron Positron Collider (CEPC), as well as three proposals for linear colliders: an International Linear Collider (ILC) in Japan, CERN's own Compact Linear Collider (CLIC) and the Cool Copper Collider (C^3), a compact US-based accelerator.

The FCC would use just one-sixth of the energy of its most power-intensive rivals, the study found (P. Janot and A. Blondel *Eur. Phys. J. Plus* **137**, 1122; 2022).

POWER-HUNGRY PROPOSALS

An analysis of five 'Higgs factory' designs suggests that the colliders would have vastly different carbon footprints.