

News in brief

TOPOLOGY VIRTUOSO WINS ABEL PRIZE

US mathematician Dennis Sullivan (pictured) has won one of the most prestigious awards in mathematics, for his contributions to topology – the study of qualitative properties of shapes – and related fields.

“Sullivan has repeatedly changed the landscape of topology by introducing new concepts, proving landmark theorems, answering old conjectures and formulating new problems that have driven the field forwards,” says the citation for the 2022 Abel Prize, which was announced by the Norwegian Academy of Science and Letters, based in Oslo, on 23 March. Throughout his career, Sullivan has moved from one area of mathematics to another and solved problems using a wide variety of tools, “like a true virtuoso”, the citation added. The prize is worth 7.5 million Norwegian kroner (US\$854,000).

Sullivan, who has positions at both Stony Brook University in New York and the City University of New York, says that the result he is proudest of is one he obtained in 1977, which distills the crucial properties of a space using a tool called rational homotopy (D. Sullivan *Publ. Math IHES* 47, 269–331; 1977). This became one of his most cited works and most widely applied techniques.



VACCINES WARD OFF OMICRON SUBVARIANT

The Omicron subvariant BA.2 is replacing its sister version, BA.1, as the dominant form of SARS-CoV-2 in many nations. But a study published on 13 March shows that mRNA vaccines offer similar protection against the two strains – although protection against SARS-CoV-2 infection and symptomatic COVID-19 wanes within months of a third dose (H. Chemaitelly, *et al.* Preprint at medRxiv <https://doi.org/hnkw>; 2022). The study has not yet been peer reviewed.

Study co-author Laith Abu-Raddad, an infectious-diseases epidemiologist at Weill Cornell Medicine–Qatar in Doha, and his colleagues studied vaccine effectiveness using records and test results from Qatar’s health-care system. They found that Qatari residents with two doses of either the Pfizer–BioNTech or Moderna mRNA-based vaccine enjoyed several months of substantial protection against symptomatic disease caused by either BA.1 or BA.2. But protection waned to around 10% after only 4–6 months, meaning that the vaccines prevented only 10% of the cases that would have occurred if all of the individuals had been unvaccinated. A booster shot brought the protection against symptomatic infection by either subvariant back to 30–60%.

Data story

Beauty of science boosts researchers’ well-being

Scientists’ ability to experience wonder, awe and beauty in their work is associated with higher levels of job satisfaction and better mental health, finds an international survey (see go.nature.com/36xuyos).

Brandon Vaidyanathan, a sociologist at the Catholic University of America in Washington DC, and his colleagues collected responses from more than 3,000 scientists – mainly biologists and physicists – in India, Italy, the United Kingdom and the United States. They asked participants about their job satisfaction and workplace culture, their experience of the COVID-19 pandemic and the role of aesthetics in science.

The survey found that 75% of respondents encounter beauty in the phenomena that they study (see ‘Beautiful science’), and, for 62%, this had motivated them to pursue a scientific career. Half of those surveyed said that beauty helps them to persevere when they experience difficulty or failure, and for 57%, beauty improves their scientific understanding. “When we experience scientific insight, it triggers the same operation in the brain as musical harmony, and we can take pleasure in this insight just like other art,” says Vaidyanathan.

BEAUTIFUL SCIENCE

Three-quarters of researchers surveyed encounter beauty in the phenomena that they study. Biologists and physicists associate beauty with different aspects of their scientific work.

