IN BRIEF

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NEWS

Coronavirus origins explored

PUBLIC HEALTH | The World Health Organization (WHO) dispatched a two-member team to China on 10 July to lay the groundwork for an international mission to investigate the origins of the COVID-19 pandemic. The duo—an epidemiologist and an animal health expert whose names were not revealed—will discuss the scope of the mission with Chinese officials. The timeline for the larger investigation is unclear. Theories about the pandemic’s origins have proliferated—including the possibility that the virus escaped from a lab or was created intentionally—but so far, there is little evidence for any of them. Many infectious disease experts suspect the virus jumped from bats into other animals before moving into humans, so studies of potential intermediary species could prove useful.

Project probes ice sheet collapse

GLACIOLOGY | The National Science Foundation revealed this week that it is funding a 5-year ice drilling project in Antarctica to seek evidence of the last time the West Antarctic Ice Sheet (WAIS) collapsed. Scientists have long suspected that 125,000 years ago, during the Eemian, meltwater from WAIS drowned a world not much warmer than today in 3 meters of rising tides. But signs of such a collapse—and the speed of the melt—are scarce. To find them, the more than $3 million project will drill a 2.5-kilometer-long core from Hercules Dome, a stretch of stable ice in the center of the continent, and analyze the frozen snow and gas bubbles trapped in the ice. Because Hercules sits at the saddle between the continent’s main ice sheets, near the Transantarctic Mountains, a collapse of the WAIS would put it right “on the waterfront,” says Eric Steig, the project’s principal investigator and a glaciologist at the University of Washington, Seattle. The drilling, expected to begin in 2023, will inform projections of how quickly WAIS could melt under current global warming.

CONSERVATION

One-third of lemur species are critically endangered

Lehurs, whose populations have long been in decline, are now in even greater peril. Ninety-five percent of the 111 primate species—all native to Madagascar—are under threat of extinction from habitat loss and hunting, and 31% are critically endangered, according to a new review by the International Union for Conservation of Nature (IUCN). “They’re hanging on by the skin of their teeth,” says primatologist Russell Mittermeier of Global Wildlife Conservation, who led the analysis. During the last such review, conducted in 2008, 43% of all lemur species were under threat of extinction and 10% were critically endangered. (That review, however, lacked sufficient data for 55 species included in the new assessment.) The new assessment led IUCN to last week raise its Red List threat levels for 13 lemur species—bumping some from “endangered” to “critically endangered.” They include Madame Berthe’s mouse lemur (Microcebus berthae), the smallest of all primates with a body length of 9 to 11 centimeters (above). All told, 599 species had their threat levels revised, from West Africa’s king colobus monkey to the North Atlantic right whale. Another 4260 species were added to the Red List for the first time.
Coronavirus spikes in prisons

PUBLIC HEALTH | As COVID-19 cases soar in vulnerable communities across the United States, another group is seeing its numbers spike: inmates in state and federal prisons. A new study, using testing data from the U.S. Centers for Disease Control and Prevention, the Federal Bureau of Prisons, and state departments of corrections, found that—from 31 March to 6 June—prisoners were 5.5 times more likely to be diagnosed with the novel coronavirus than members of the general public, with cumulative infection rates of 3251 per 100,000 and 587 per 100,000, respectively (see chart, right). The study, published 8 July in JAMA, also found a higher rate of COVID-19 related deaths among U.S. prisoners—39 deaths per 100,000 compared with 29 deaths per 100,000 in the general public. Because prisoners tend to be younger, researchers say, the gap in deaths is lower than the gap in infections.

Big bucks for antibiotics

BIOMEDICINE | Some of the world’s largest pharmaceutical companies have jointly set up a $1 billion fund to help struggling biotech startups develop ways to combat the growing problem of antimicrobial resistance. The AMR Action Fund, which seeks to create two to four new antibiotics by the year 2030, was unveiled last week by giants such as Roche and Merck in partnership with the World Health Organization. Although the world is in dire need of new antibiotics, it has been hard to get investors to fund corporate efforts to find or synthesize them. That’s because new antibiotics are generally reserved for resistant infections—and are given for short courses—making them less profitable than other drugs.

First full-sequencing success

GENETICS | Even the most fully sequenced human genome is riddled with gaps, often because long stretches of repetitive DNA befuddle sequencing machines. By using diverse methods to sequence and arrange that DNA in the right order, researchers have closed all 29 gaps in the X chromosome sequence. That chromosome is now the first to have end-to-end, or telomere-to-telomere, coverage, an important and long-sought step toward pinning down the genetic basis of disease. “It was hard,” says project coordinator Karen Miga from the University of California, Santa Cruz. Other chromosomes will soon follow, though a few will have to await technological advances, she and her team report this week in Nature. Next up for full sequencing: chromosomes eight and six.

Ice-measuring satellites align

GLACIOLOGY | The European Space Agency was set this week to raise the orbit of its aging ice measuring satellite, CryoSat-2, by nearly 1 kilometer to align it with NASA’s ICESat-2 mission. Combining the satellites’ data will offer unprecedented insight into the thickness—and vulnerability—of sea ice at the poles. CryoSat-2 uses reflected radar, which penetrates through snow to the ice beneath, whereas the newer ICESat-2, launched in 2018, uses reflected lasers that bounce off the top of the snow. CryoSat-2’s raised orbit will allow the spacecraft to measure the same polar ice as ICESat-2 every 1.5 days. That will be especially useful in the Antarctic, where sea ice may be blanketed in a confounding layer of snow up to 2 meters high. The maneuver was set to begin on 16 July, and will be completed prior to the annual Arctic sea ice minimum in September.

Red alga imperils Hawaii’s reefs

BIODIVERSITY | A mysterious red alga is rapidly spreading on coral reefs near the northwestern islands of Hawaii, blocking sunlight and smothering marine life below. Scientists first observed the alga—which they propose is a new species—in 2016 in the Pearl and Hermes Atoll, an uninhabited area more than 2000 kilometers northwest of Honolulu. Three years later, they discovered that thick, matlike layers of the seaweed had covered large expanses of the atoll, killing corals and other algae. The new alga, which they have named Chondria tumulosa, does not appear to

IN FOCUS There is something new under the Sun. When the European Space Agency’s Sun-bound Solar Orbiter released its first photos this week, close-ups of the Sun’s lower atmosphere, or corona, revealed tiny eruptions that mission scientists are calling “campfires.” The flares, barely visible as bright specks in this image, are just 400 kilometers across—the smallest solar features ever seen in the extreme ultraviolet. Formed when magnetic field lines reconnect in bursts of energy, the flares could explain why the corona is so much hotter than the Sun’s surface.
Who’s to blame in ‘Sharpiegate’

Meteorology | The U.S. Department of Commerce succumbed to political interference from the White House and unnecessarily pressured the National Oceanic and Atmospheric Administration (NOAA) to rebuke its forecasters during 2019’s Hurricane Dorian “Sharpiegate” scandal, Commerce’s inspector general concluded in a report last week. The report details how Commerce’s chief of staff, Michael Walsh, pushed NOAA’s acting administrator, Neil Jacobs, to publish a critique of NOAA forecasters in Alabama who had correctly tweeted that Dorian posed no risk to the state, after President Donald Trump said otherwise. The letter damaged NOAA’s apolitical reputation and could undermine public trust in its forecasts, the report found. Jacobs has since been nominated to serve as NOAA’s administrator, and Walsh as Commerce’s general counsel. The report is likely to increase Democratic scrutiny of Jacobs, making it possible that NOAA could go without a confirmed administrator for the entirety of the current presidential term.

U.S. drops foreign student rule

Higher Education | The Trump administration agreed this week to drop its controversial proposal to prevent international students from staying in the United States if they are taking all their courses online. The government had argued the students didn’t need to be in the country if all their coursework was offered remotely. But university officials protested the 6 July directive from the Department of Homeland Security, saying it would disrupt the education of hundreds of thousands of students and send a message that they weren’t welcome on U.S. campuses. Last week, universities filed suit on the grounds that the administration had failed to follow federal laws in drawing up the rule, and on 14 July a federal judge in Boston announced that the government had agreed to rescind its directive. The settlement leaves intact a policy issued at the start of the coronavirus pandemic that allows foreign students to maintain their visas even if their courses are entirely online.

White men dominate textbooks

Diversity | Few nonwhite or female scientists appear in textbooks widely used in U.S. introductory undergraduate biology classes, a study has found. In seven of the most commonly used ones, only about 7% of more than 1100 scientists mentioned were nonwhite. Nonwhite students received 35% of U.S. bachelor’s degrees in biology in 2015–16, and the lack of visible role models from underrepresented groups in textbooks might have discouraged more from entering the field, the research team suggests. What’s more, the textbooks mentioned seven male biologists for every one female scientist; women received 60% of the bachelor’s degrees in biology in 2015–16. The share of the textbooks’ references to women and people of color has grown only slowly, the researchers, from multiple institutions including Auburn University, reported in the 24 June issue of the Proceedings of the Royal Society B.

To inspire undergrads, the authors suggest that universities highlight diversity in other ways—for example, by posting photographs in classrooms and other campus spaces of women and people of color doing research.

How a blue protein turns frogs green

Biochemistry | What makes tree frogs so vividly green? The blue beneath their skin, of course. That’s the conclusion of a new study, which finds that a unique protein complex that reflects blue light is responsible for the verdant hue of the skin, muscles, and even lymph of these frogs. Carlos Taboada, a postdoctoral researcher at Duke University, came across this complex while trying to understand how hundreds of tree frog species and their relatives accumulate large amounts of a toxic pigment known as biliverdin (which in humans makes some bruises green). Taboada and his colleagues found that biliverdin loses its toxicity and looks blue when it binds to another protein called a serpine, they report this week in the Proceedings of the National Academy of Sciences. Because frog skin is mostly yellow, it looks bright green wherever the blue protein is present, helping the amphibians blend into their surroundings and evade predators. Only in body parts without yellow pigment does the blue show its true color.