

News in brief

ALIENS WOULD GLIMPSE EARTH FROM THESE 2,000 STARS

Astronomers have pinpointed 2,034 stars from which, in the not-too-distant past or future, Earth could be detected transiting the face of the Sun. If there are aliens on planets around those stars with at least a similar level of technological advancement to ours, then they would theoretically be able to spot us (L. Kaltenegger and J. K. Faherty *Nature* 594, 505–507; 2021).

The work offers a new way of thinking about the search for extraterrestrial life, says Lisa Kaltenegger, an astronomer at Cornell University in Ithaca, New York, who led the analysis. “For whom would we be the aliens?” she asks.

Those aliens would be the natural choice for Earthlings to look for, say the scientists – because they could have already had a chance to spot us, and thus might be primed to receive communications from Earth.

Although previous studies have considered this question, this is the first to incorporate the movement of stars as they slide in or out of the narrow slice of the sky that lines up with both Earth and the Sun. With this information, the scientists were able to predict from where Earth was visible over the past 5,000 years or so of human civilization – and from where it will be visible up to 5,000 years into the future.

In doing so, the study expands astronomers’ thinking about which stars have “a better-than-average shot of discovering and characterizing the Earth”, says Sofia Sheikh, an astrobiologist at the Berkeley SETI Research Center in California.

The discovery was made possible by the European Space Agency’s Gaia space observatory, which has compiled the best 3D map of stars so far. Of more than 330,000 stars in the Gaia catalogue that are within 100 parsecs of Earth, just 2,034 happen to have the required viewing geometry. Of those, 1,715 are in the right locations to have spotted Earth so far, and another 319 will have vantage points in the future (see ‘All eyes on Earth’). Seven of the 2,034 are already known to host planets – but many more are likely to have worlds orbiting them.

The method assumed for spying Earth from elsewhere in the Galaxy is the same as that used by astronomers to discover thousands of exoplanets: detecting the light of a star dimming slightly as a planet passes across its face.



DELETED CORONAVIRUS SEQUENCES TRIGGER SCIENTIFIC INTRIGUE

A biologist in the United States has ‘excavated’ partial SARS-CoV-2 genome sequences from the beginnings of the pandemic’s probable epicentre in Wuhan, China, that were deposited – but later removed – from a US government database.

The sequences address an evolutionary conundrum about the early genetic diversity of the coronavirus SARS-CoV-2.

Jesse Bloom, a viral evolutionary geneticist at the Fred Hutchinson Cancer Research Center in Seattle, Washington, discovered the sequences after searching for genomic data from the pandemic’s early stages. A research paper from May 2020 contained a table of publicly available sequence data, which included entries Bloom had not come across. He worked out that the data had been removed from the Sequence Read Archive (SRA), a US repository for raw sequencing data.

Bloom was able to find archived versions of the sequences on cloud servers, recovering data from 50 samples, 13 of which contained enough raw data to generate partial genome sequences (J. D. Bloom Preprint at bioRxiv, <https://doi.org/gksfmv1>; 2021).

The recovered data help to solve an evolutionary mystery about the early stages of the pandemic. The earliest viral sequences from Wuhan are from people linked to the city’s Huanan Seafood Market in December 2019, which was initially thought to be where the coronavirus first jumped from animals to people. But the seafood-market sequences are more distantly related to SARS-CoV-2’s closest relatives in bats – the most likely ultimate origin of the virus – than are later sequences.

That is surprising, says Bloom, because you would expect that viruses from the early stages of Wuhan’s epidemic would be most closely related to SARS-CoV-2’s relatives that infect bats. The recovered sequences, which were probably collected in January and February 2020, show this to be the case – they are more closely related to the bat viruses than are the sequences from people linked to the seafood market.

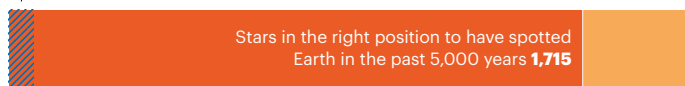
This adds to a growing body of evidence that the first human cases of COVID-19 were not associated with the Huanan Seafood Market.

It remains unclear why the sequences were removed from the SRA.

ALL EYES ON EARTH

There are about 2,000 stars, some known to host planets, that in the recent past or future are in a location that allows them to see Earth passing across the Sun. Some are close enough for our radio waves to have reached them.

Stars already swept by human-made radio waves **75**



Further stars that will have a view of Earth in the next 5,000 years **319**