New Scientist

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Health

Treating your gum disease may prevent irregular heartbeat

Sonali Roy

GUM disease seems to increase the chance of an irregular and abnormally fast heart rate recurring after a procedure to correct the cardiac condition.

The heart condition, known as atrial fibrillation, can increase the risk of stroke or heart failure. In advanced cases, it can be treated via catheter ablation, a procedure that carefully destroys a damaged area of the heart that is interrupting its electrical circuits.

Now, Shunsuke Miyauchi at Hiroshima University in Japan and his colleagues have shown that gum disease may be a risk factor for atrial fibrillation.

The team enrolled 288 people who all had gum disease and who underwent ablation to treat atrial fibrillation. Of these, 97 received treatment for their gum disease up to three months later. This dental condition can be prevented by brushing with a fluoride toothpaste.

In the following two years, 24 per cent of participants experienced atrial fibrillation again, but this was 61 per cent less likely among those whose gum disease was treated after ablation. The risk of developing atrial fibrillation once more was higher if the gum disease was more severe (*Journal of the American Heart Association*, doi.org/mq96).

If gum tissue is inflamed or ulcerated then bacteria and inflammatory immune proteins can enter the bloodstream, which may affect the heart, says Miyauchi.

The researchers found elevated levels of inflammatory proteins in the blood of participants with severe gum disease before they underwent ablation.

The study was relatively small, so doesn't show a definitive link, says Nieca Goldberg at NYU Grossman School of Medicine in New York, but "it does set the groundwork for future studies in this area". ▮

Extraterrestrial life

Planets that look alike might be a sign of spacefaring aliens

Alex Wilkins

NEARBY planets that look unusually alike could be a sign of alien life that has travelled between stars, researchers have suggested.

Astronomers searching for extraterrestrial life tend to look for specific signals, either in the form of "biosignatures" – molecules that are only produced by biological processes – or "technosignatures", abnormal patterns of light that may have been produced by technologies.

Both of these rely on assumptions about how life might function on another world, which is largely based on our knowledge of life on Earth. However, this approach risks missing signals from alien life forms that might be very different to us.

Lana Sinapayen at the Sony Computer Science Laboratories and Harrison Smith at the Tokyo Institute of Technology, both in Japan, have proposed a new biosignature that doesn't rely on any specific molecule. Instead, it looks for similarities between planets in neighbouring star systems that life may have colonised. "We're trying to make very few assumptions about what this life looks like because we know nothing about what life, in general, could look like," says Smith.

We may be able to spot planets that have been terraformed

1000
Number of planets contained in the studied universe simulation

Sinapayen and Smith started by assuming that life can spread between planets, either intentionally or by accident – an idea known as panspermia. They also assumed that it will somehow change the environment of the planets that it lands on, called terraformation.

The pair simulated a universe containing 1000 planets, each around a different star, with one planet that was sending out life in all directions. When life reached another planet, it would terraform it.

They then ran the simulation forwards in time to see which statistical patterns would appear between nearby groups of planets, irrespective of the kind of signal they were giving off, like a specific molecule or planetary temperature.

Based on this, they came up with a test to determine whether signals from a group of planets might contain life and a method to identify which planet in the group the life may have originated from (arXiv, doi.org/mrdk).

The study looks at an interesting combination of two possible ways that alien life may function, in panspermia and terraformation, says David Armstrong at the University of Warwick, UK. However, these mechanisms might not be possible, he says.

Better telescopes

Even if terraformation were an option, it would be difficult to rule out the possibility that nearby planets had similar compositions for other, non-biological reasons, says Armstrong. "There's a couple of things there that I think would stop this being a 'one and done, we've definitely found life if we see this' kind of output," he says.

We will also need better telescopes to reliably start detecting molecules in exoplanet atmospheres, which would be required for this kind of similarity analysis, says Armstrong. "When we get to that stage, you'll be able to just look at lots of planets to try and find certain chemicals, so there'll be a lot of angles to explore there in terms of habitability." ▮

PETER JURIK/ALAMY