New Scientist

SPECIAL ISSUE

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Astronomy

Supernovae might be a good cue to hunt for alien signals

Jonathan O'Callaghan

NASA GODDARD

IF WE want to spot messages from aliens, letting supernovae guide our search could help. Intelligent aliens might choose to transmit evidence of their presence amid such attention-grabbing cosmic events because it would mean their signals would be more likely to be seen, according to researchers at the Berkeley SETI Research Center in California.

Roughly once every 100 years, a star explodes as a supernova in the Milky Way. These flare-ups shine brightly and are visible across the galaxy as the light from the event spreads out. They would even be visible to observers in other galaxies.

The most recent supernova in the Milky Way visible on Earth was SN 1987A, seen for the first time on 23 February 1987, which lasted for several months.

Bárbara Cabrales at Berkeley SETI and her team propose that, for example, looking at exoplanets that had also seen the light of this supernova might be a good idea if we want to find signs of advanced alien life.

"We can get smart about where we're looking," says Cabrales. "We know which [star systems] have seen this big, bright event. So which one of those has had enough time to see this event and [also time to] send a signal to us?"

In work presented at a meeting of the American Astronomical Society in Seattle last month, Cabrales identified 32 stars using NASA's Transiting Exoplanet Survey Satellite whose planets meet those criteria and could be good targets for further study. All were close enough that anything living on worlds there may have been able

100
Years between supernova explosions in the Milky Way

32
Number of star systems that witnessed a supernova in 1987

Supernova SN 1987A sits below the centre of this image, in its luminous ring

to see supernova SN 1987A and had time for a signal to reach us.

There will be other star systems in years to come that will eventually also see the light from this supernova as it travels further, making them good future targets, say the researchers.

Jason Wright at Pennsylvania State University says the idea could be a good way to rank stars that we should target to hunt for intelligent life. "There's an enormous amount of stuff to look through," he says. "This adds to the list of ways in which we can prioritise stars."

It might also make sense for us to transmit our presence more broadly the next time we see a supernova, if we want anything that is employing the same search method on another planet to spot us. "If a supernova were to go off right now, I say we send a signal," says Cabrales. "Maybe someone will see it." ∎

Animal behaviour

'Love hormone' not crucial for social bonding after all

Sam Jones

PRAIRIE voles lacking receptors for oxytocin still bond with mates and their young – contradicting ideas about the role of this "love hormone" in such behaviours.

Oxytocin is released in the brain during social bonding, romantic intimacy and parenting, as well as during labour and lactation. Scientists have long studied its role in mammals, including prairie voles (*Microtus ochrogaster*), which show attachment to one long-term partner, known as pair bonding.

For decades, drug studies suggested oxytocin receptors were essential to produce bonding. But when Devanand Manoli at the University of California, San Francisco, and his team removed these receptors in prairie voles using CRISPR gene editing, they found that the animals still pair bond.

Prairie voles lacking the receptors gave birth and nursed their young, spending long periods of time grooming and huddling with them. However, vole pups born to mothers lacking oxytocin receptors weighed significantly less when they reached weaning age, suggesting that the mother had issues with milk production or nursing. They were also less likely to survive to weaning age (*Neuron*, doi.org/grpwnv). "It's not surprising that there isn't a single point of failure for behaviours as important to a species as attachment," says Manoli. ∎

Prairie voles bond with one partner, even without oxytocin receptors

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