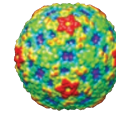


THIS WEEK

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Reasons to be cheerful

As two new fronts in the war on disease demonstrate, creativity remains a key weapon for scientists in the hunt for drugs.

How many of the lists of ‘things to watch for in 2015’ dared to predict progress in the war on antibiotic resistance? After all, 2014 was the year when awareness of the antibiotic problem spilled onto the front pages, led by a gloomy landmark report by the World Health Organization released in April. In a vote to determine the focus of a new research effort funded by the UK government, the British public named antibiotic resistance as one of the most pressing challenges of modern times. The outlook for public health and the future was grim.

Well, whisper it, but there may finally be some good news. In a paper published on *Nature*’s website this week, a team of researchers announces the discovery of a brand new antibiotic (L. L. Ling *et al.* *Nature* <http://dx.doi.org/10.1038/nature14098>; 2015). Called (by them) teixobactin, the compound is produced by a specific type of soil bacterium — the cultivation of which was previously impossible (see also G. Wright *Nature* <http://dx.doi.org/10.1038/nature14193>; 2015). There could be more undiscovered antibiotics out there. There could be lots more.

Just as important as its discovery is the finding that teixobactin triggered no detectable genetic resistance in the bacteria it targets. With creditable understatement, the authors of the paper conclude: “The properties of this compound suggest a path towards developing antibiotics that are likely to avoid development of resistance.”

The discovery, of course, does not get us off the hook. Years of testing lie ahead and, even under the most optimistic scenario for teixobactin, growing resistance to other antibiotics remains a serious problem. The good news — and at this early stage, it is good news — must not drain

momentum from emerging efforts by policy-makers and others to tackle the dreadful and short-sighted squandering of precious antibiotic resources.

The positivity does not end there. In a News story on page 130, we detail the promising results of another drug that could help to address a crucial clinical need. This time, the drug — ketamine — is far from new. An anaesthetic used on the battlefields of the Vietnam War, it is now drawing attention for its potential to treat depression.

This potential is colossal, and much of that comes from the demand. As *Nature* highlighted in a special issue last year (see nature.com/depression), depression causes a greater burden than any other condition, yet the outlook at present is bleak. New drugs are proving difficult to come by, which is one reason that existing compounds such as ketamine are under the spotlight. Encouraging — if early — trial results suggest that the drug is both effective and fast-acting, even in people who have tried other therapies with little success.

Just as with teixobactin, much could still derail the early promise of ketamine for treating depression (and other mental-health conditions such as suicidal behaviour and bipolar disorder). But given the number of people who rely on antibiotics and who are desperate for help with depression, early promise is a lot better than the pessimistic messages that have previously dominated. So, with a smile and an optimistic attitude, here is a prediction for the new year: both ketamine and teixobactin could yet feature in the ‘highlights of 2015’ lists when they appear in December. Not bad for the second week of January. ■

Listen up

Human echolocation kicks off the Nature podcast’s new series on sound science

What is it like to be a bat? To sleep upside down, eat insects and use sound to ‘see’? The question is not as frivolous at it seems. Philosophers debate it at length as a way to think about minds and experiences. Still, a classic philosophy paper from 1974 argues that such an experience is ultimately off-limits for humans (T. Nagel *Philos. Rev.* **83**, 435–450; 1974). “It will not help to try to imagine,” it says, “that one has very poor vision, and perceives the surrounding world by a system of reflected high-frequency sound signals.”

Fiona Gameson does not have to imagine. Blind since the age of three, when she had both eyes removed because of a rare childhood cancer called retinoblastoma, she has learned to echolocate. She can navigate and see with sounds, just as bats do.

Fiona echolocates with a series of clicks — she pulls her tongue away

from the roof of her mouth to make a sharp ‘tick-tick’ sound. Then she listens for the echoes that bounce off objects around her, revealing their physical properties. In this way, she can navigate an unfamiliar house, for example, to find the bathroom at night without waking her hosts.

Words do not reflect her subtlety and skill. Only hearing her echolocate can do her story justice. Perhaps a more useful question for the rest of us, then, is what is it like to be Fiona Gameson? Showing us is the aim of the first episode in a new series of audio documentaries on *Nature*’s podcast that explore sound science in the medium that suits it best.

The series, *Audiofile*, begins next week. The inaugural episode explores Fiona’s remarkable ability, what we can really know about being a bat, and the limits of human perception. Subsequent monthly episodes will offer listeners sound-rich stories on the effects of noise on human health, archaeoacoustics and the impact of music on science. They will be available at go.nature.com/6stdre from 12 January.

Acoustic science is wide in scope and often practical in focus: at the twice-yearly meetings of the Acoustical Society of America, sessions exploring marine-mammal communication frequently run alongside lectures on architectural design and noise pollution. Until now, however, experiments in acoustics have been rarely showcased in *Nature*. These stories deserve to be heard. Audiophiles, lend us your ears. ■