Breakthrough cancer therapy destroys drug-resistant superbugs

Oliver Moody Science Correspondent

An experimental cancer drug has been found to kill superbugs and a range of deadly viruses from HIV to ebola. An experimental cancer drug has been found to kill superbugs and a range of deadly viruses from HIV to ebola. An experimental cancer drug has been found to kill superbugs and a range of deadly viruses from HIV to ebola. An experimental cancer drug has been found to kill superbugs and a range of deadly viruses from HIV to ebola. An experimental cancer drug has been found to kill superbugs and a range of deadly viruses from HIV to ebola.

Celebrex at Ohio State University. It quickly became apparent that the drug had powerful anti-cancer properties, and a clinical trial showed that it could be safely used in tablet form to treat solid tumours. It has also been approved in the UK for dealing with rare yeast and bacterial infections.

Researchers led by a team at Virginia Commonwealth University (VCU) have discovered that it targets a fundamental aspect of diseases, from mumps and measles to deadly bacteria.

It hits ‘chaperone’ proteins, which act as mufflers to stop infected or cancerous cells from breaking down and ejecting the materials they need to reproduce. When these proteins are broken up, the cells “eat” themselves to death through an innate stress response.

Writing in the Journal of Cellular Physiology, scientists showed that this mechanism worked against viruses of almost every type, including rabies, rubella, dengue and yellow fever. It also increased the survival rate of rabbits infected with an ebola-like haemorrhagic fever from 30 per cent to more than 60 per cent.

A separate study showed that it not only killed off drug-resistant ‘super-gonorrhoea’, which has spread around the UK over the last five years raising fears among doctors that it may be untreatable, but also weakened its defences against other antibiotics.

Drug-resistant ‘superbugs’ have been identified as one of the most severe threats to society over the coming decades. The chief medical officer warned that they could ‘end modern medicine’ by turning routine operations into a dice with death.

These infections kill at least 10,000 people a year in the UK but that figure is projected to rise more than tenfold by the middle of the century if science does not find new ways to break down the bacteria’s formidable shields.

The challenge will now be to turn AR-12 from a set of remarkable results in test tubes and animals into a drug that is safe and effective for humans to use. Arno Therapeutics, the American company that owns the rights to the chemical, is planning its first clinical trial as an antiviral drug in Nottingham.

Professor Paul Dent, who has worked on the compound for more than ten years, said it hit viruses and bacteria at such a fundamental part of their make-up that it was highly unlikely they would be able to evolve any resistance. This property means it could also be a breakthrough against highly mutable viruses such as flu.

He said: “Lots of bits of the chaperones change throughout evolution, but the key bits of the chaperones have often stayed almost the same. The result is that AR-12 can nobble malaria just like it can do to bacteria.”

The cancer clinical trial data suggest that AR-12 is safe to use, but there is still a chance that it could harm beneficial gut bacteria in the long run. Daniel Hawcutt, of the University of Liverpool, who was not involved in the research, said the side effects in the anti-cancer trial had all been relatively gentle.

Place the numbers 1 to 9 in the spaces so that the number in each circle is equal to the sum of the four surrounding spaces, and each colour turns the appropriate shade.

Vaping addiction risk

Teenagers who vape are getting hooked on nicotine, a study has suggested. University of California researchers asked 5,490 past pupils about their smoking and vaping habits and found that 19 per cent of 17 to 18-year-olds had smoked in the previous 30 days in 1995. By 2014 it had fallen to 8 per cent but when cigarettes and e-cigarettes were combined, it was 14 per cent, far more than expected if teenagers were just substituting cigarettes with e-cigarettes.

Gag on holidays lifted

A couple who have beaten a council’s attempt to gag them after they challenged a fine for taking their children on holiday in term time. Michael and Charlotte Lewison, from the Isle of Wight, had their conviction set aside but reporting restrictions stayed. A court has agreed that lifting the ban on anything that might identify the children was in the public interest as part of a national debate.

Bigamist thief is jailed

A man who stole from his wife’s family while he was married to another woman has been jailed for five years after admitting bigamy. Mitchell Sharpe, 44, from Derby, married Lisa Buckingham in July 2014. Two days later she heard from another woman, Derby crown court was told. In October 2014 Sharpe received a suspended sentence for stealing from Ms Buckingham’s family.

Stolen bus: man held

A man has appeared in court after a double-decker bus was stolen in Hertfordshire, leaving a trail of destruction. The bus was stolen from Watford Junction railway station at 11.30 on Thursday and driven along busy streets, hitting parked cars. No one was hurt. Deepak Bajwa, 35, from west London, has been charged with aggravated vehicle taking.

Prison gets three stars

An inmate gave the new Perry Barr prison in Birmingham three stars in a TripAdvisor-style review. The offender, aged 24, who spent 16 hours in custody, said the food was “excellent” and that he was surprised by the cleanliness and decor. Chief inspector Paul Minor, of West Midlands police, disagreed with the review, saying: “We feel it’s a five-star facility.”

Genetic test could help women avoid chemotherapy

Chris Smyth Health Editor

Thousands of women with breast cancer could be spared chemotherapy by a genetic test that can predict whether the disease will return.

The test is more accurate, cheaper and quicker than methods used by the NHS. Experts said that it ought to be a routine part of care for women with the most common type of breast cancer.

More than 80,000 women a year with early-stage breast cancer could be offered the test to help them choose whether to have intensive treatment after surgery to remove a tumour, which can cause side effects such as nausea, insomnia and hair loss.

Three years ago the NHS approved Oncotype DX, which looks for genetic markers in cancers that suggest how likely they are to grow and spread. The test is not widely used, partly because it costs £2,500 and because samples need to be sent away for processing.

The new study compares the test with a method called EndoPredict, which costs £1,000 and for which samples can be analysed within hospitals. Researchers used tissue samples from 928 women with oestrogen receptor positive, HER2 negative breast cancer. They found that 3.8 per cent of women classed as low risk by EndoPredict had a return of their cancer within a decade, compared with 10.1 per cent of those assessed by Oncotype DX. Of those classed as high risk, 28.8 per cent of those tested with Oncotype DX had a recurrence of their cancer compared with 23.5 per cent of those assessed with EndoPredict, according to the researchers’ report in the Journal of the National Cancer Institute.

Richard Bux, of the Institute of Cancer Research in London, lead author of the paper, said: “This study showed that a new test is more accurate than the current NHS standard test at detecting women at lowest risk of their breast cancer spreading to other parts of the body in the long term.”

Baroness Morgan of Drefelin, chief medical officerorry patients in the UK, said: “This test could give patients and their doctors invaluable reassurance. We would encourage NICE to consider this technology for routine use on the NHS.”