

## DISEASE WATCH | IN THE NEWS

**Lasker victory for artemisinin researcher**

Chinese scientist Tu Youyou, of the China Academy of Chinese Medical Sciences, Beijing, has been recognized by the Albert and Mary Lasker Foundation with the prestigious Lasker–DeBakey Clinical Medical Research Award for her discovery of the antimalarial drug artemisinin. In the 1960s, Tu was working on a Chinese military project looking for a new antimalarial treatment targeting chloroquine-resistant parasites. One of the ancient Chinese herbal remedies Tu and her colleagues investigated was sweet wormwood (*Artemisia annua*), extracts of which have been used in Chinese medicine to treat fever for more than 2,000 years. The team identified an extract with strong antimalarial properties, which was subsequently modified to remove the toxic portion and used to develop artemisinin. Today, artemisinin is administered as a combination therapy to prevent the development of resistance. It is recommended by the WHO as the first-line treatment for malaria in regions where the disease is endemic, and has saved million of lives, in particular in the developing world.

*New York Times/Financial Times*

**TB vaccine hope**

A new type of vaccine for tuberculosis (TB) that elicits a strong immune response is reported in *Nature Medicine*. Currently, *Mycobacterium bovis* bacillus Calmette–Guérin (BCG), an attenuated form of *M. bovis*, is the only TB vaccine, but this has produced variable results and in fact shows very low efficacy in areas with a high number of TB cases. Jacobs and colleagues generated mutant *Mycobacterium smegmatis* lacking the secretion system Esx-3, which is conserved in mycobacteria and thought to have a key role in virulence. Injection of these bacteria at a high dose into mice activated a strong immune response and led to bacterial clearance from the tissues. Importantly, Jacobs and colleagues introduced Esx-3 from *Mycobacterium tuberculosis* into the mutant *M. smegmatis* and found that vaccination of mice with this strain (termed IKEPLUS) could induce robust immunity against *M. tuberculosis*, leading to clearance of bacteria in many tissues. Although further work is needed to

determine the efficacy and safety of the vaccine, it is encouraging that IKEPLUS offered stronger protection against TB than *M. bovis* BCG, as well as a higher level of survival. *Nature Medicine/BBC*

**Linking malaria and bacteraemia**

Strategies to control malaria could also lower the rates of bacteraemia, which kills thousands of children every year in many parts of the world, in particular in Africa. A group at the Kenya Medical Research Institute (funded by the Wellcome Trust) in Kilifi examined the link between the two diseases by assessing rates of bacteraemia in children carrying one copy of the sickle cell gene, which naturally protects against malaria. They found that children carrying this 'sickle cell trait' were less likely to develop bacteraemia than those that lacked it. This was not because the two diseases are targeted by the same immune mechanism or because the sickle cell trait also protects against bacteraemia. Instead, in areas where malaria has nearly been eradicated (where the incidence of bacteraemia has also decreased), the protection against bacteraemia offered by the sickle cell trait disappeared. On the basis of these findings, the researchers suggest that malaria infection makes children more susceptible to bacteraemia and may account for more than half of bacteraemia cases in malaria-endemic areas. *Lancet/Science Daily*

**New tick-borne disease identified**

Russian scientists have confirmed that the spirochaete *Borrelia miyamotoi* can cause tick-borne disease. *B. miyamotoi* is distantly related to *Borrelia burgdorferi* (which includes *B. burgdorferi* str. s.s., the causative agent of Lyme disease) and had previously been identified in ixodid tick vectors, which also carry *B. burgdorferi*. However, whether the species caused disease had been unclear. In collaboration with a group based at Yale University, New Haven, Connecticut, USA, the Russian group developed a diagnostic test that could distinguish disease caused by *B. miyamotoi* and *B. burgdorferi*. Using this test, they were able to conclude that *B. miyamotoi* causes disease in humans. Clinically, the disease resembles that caused by the other spirochaetes, albeit with a higher fever and incidence of relapse, and can be treated by the same drugs. *Emerg. Infect. Dis.*

**Outbreak news**

**Poliovirus.** Wild poliovirus 1 (WPV1) has appeared in China for the first time since 1999. The virus was isolated from four young children from the Hotan Prefecture, Xinjiang Uygur Autonomous Region, China, who have been left paralyzed. A team of specialists, including epidemiologists and laboratory experts, has been dispatched in the area to investigate this outbreak, and China plans to vaccinate a large number of children in the region to avoid further spread. The virus is genetically related to the WPV1 currently present throughout Pakistan, where the only cases of WPV3 infection in Asia have also been reported.

*WHO/Nature News*



**Listeriosis.** Up to 13 listeriosis-associated deaths and 72 cases of illness have been reported throughout the United States, all caused by eating contaminated cantaloupe melons. The melons, which were confirmed to contain *Listeria monocytogenes* by the US Food and Drug Administration, were traced back to a farm in Holly, Colorado, USA, that distributes the fruit throughout the country. As the bacterium has a long incubation period, the CDC expects the number of cases to increase. *New York Times/The Guardian*

*In the News* was compiled with the assistance of David Ojcius, University of California, Merced, USA. David's links to infectious disease news stories can be accessed on his Twitter page (@Ojcius).