DISEASE WATCH | IN THE NEWS

Extra ammo for MRSA

A recent study reports the spread of a highly mobile gene among methicillin-resistant *Staphylococcus aureus* (MRSA) strains in a number of Chinese hospitals. The gene, termed *sasX*, was found in the most prevalent MRSA sequence type (ST239), and between 2003 and 2011 its frequency increased from 19% to 31% in invasive *S. aureus* isolates and from 21% to 39% among MRSA isolates. The authors discovered that SasX is anchored to the surface of *S. aureus*, and nasal colonization was notaly reduced when the protein was removed. Furthermore, SasX was found to facilitate biofilm formation, and wild-type isolates produced larger abscesses and induced a stronger immune response in the lungs and on the skin than *sasX* mutant strains in a mouse infection model. The finding that this protein is crucial for virulence, together with its ease of transfer among *S. aureus* strains, including non-ST239 sequence types, highlights the need for treatment interventions targeting SasX. ***Nature Med.*/Nature News**

SUPERSTOCK

BSE makes a comeback

As part of an ongoing surveillance programme, the US Department of Agriculture (USDA) recently confirmed that a Californian dairy cow tested positive for bovine spongiform encephalitis (BSE). The diagnosis is the first of its kind in the United States since 2006 and has sparked international concern about the safety of beef consumption despite reassurances from the USDA that the animal did not enter the food chain. BSE (and the human version of the disease, variant Creutzfeldt–Jakob disease) is caused by an infectious prion agent that accumulates in the brain and induces misfolding of other proteins, leading to the formation of fibrous plaques and eventual degeneration of brain tissue. Tests carried out at the USDA's Veterinary Research Laboratories in Ames, Iowa, revealed that this particular case was caused by an atypical L-type prion that is extremely rare and poorly characterized. Whether this represents a sporadic case caused by an infrequent genetic mutation or whether the L-type variant has existed for a long time is currently unknown. The USDA is now collaborating with reference laboratories in the UK and Canada and has reassured the public that it will "continue to communicate findings in a timely and transparent manner." ***Guardian*/BBC News**

Measles resists eradication

The number of cases of measles continues to rise in Europe, dashing any hope of reaching the 2015 deadline for elimination set by the WHO. Re-emergence in Europe began in 2009, and 2011 saw a worrying 37,000 reported cases, corresponding to a fourfold increase on the 2009 figures. Although control of the disease has been more successful in the Americas, the number of reported infections is also growing there. All of this comes at a time when an effective and inexpensive vaccine is available; however, unsubstantiated concerns over potential side effects, combined with a mistaken perception that the disease is harmless, have discouraged parents from vaccinating their children. With two major sporting events due to take place in Europe later this year — the Euro 2012 soccer tournament and the summer Olympic Games — the European Centre for Disease Control has made measles one of its priorities for 2012 and is urging attendees of the events to get vaccinated. ***Guardian*/Science News**

Artemisinin retreats from the front line

Worldwide efforts to prevent the spread of malaria were dealt a blow recently following the announcement that artemisinin-resistant *Plasmodium falciparum* has been found in northwestern Thailand. The alarming news, published in *The Lancet* in early April 2012, is the result of a large study of 3,202 patients who were treated for uncomplicated malaria with various artemisinin medications between 2001 and 2010. The average clearance rate of parasites from the blood of these patients increased from 2.6 hours in 2001 to 3.7 hours in 2010, and the total proportion of slow-clearing infections (≥6.2 hours) increased from 0.6% to 20%. Slow clearance rates are a characteristic feature of artemisinin resistance, and genotyping data implicated genetic alterations in *P. falciparum* as the cause of the slow clearance rates in these patients. In a related study, published in *Science*, the genotypes of a number of parasites from these Thai patients were compared to those isolated in Cambodia (slow clearance rates) and Laos (rapid clearance rates) to identify the genetic determinants that are under strong selection pressure and may confer resistance. The analysis revealed that a region of chromosome 13, containing a number of candidate resistance genes, was associated with slow clearance rates. In response to the news, the WHO has appealed for donations to scale up containment activities in the affected countries. ***Lancet*/*Science*/WHO**

An end to the H5N1 saga?

In recent weeks the debate over the publication of two controversial H5N1 influenza virus articles has escalated, but a resolution finally seems to be on the cards. The research deals with the creation of mutant avian H5N1 variants that can spread among mammals by the aerosol route. Having initially ruled that the experimental details should be redacted from both papers, the US National Science Advisory Board for Biosecurity (NSABB) reversed this decision in March 2012 after reviewing revised versions of both papers, and the work of Kawaoka and colleagues was recently published in *Nature*. The authors describe the generation of a reassortant virus in which the haemagglutinin (HA) protein of the 2009 human pandemic H1N1 influenza virus was replaced by an H5N1 HA carrying four mutations that facilitate transmission of the reassortant virus among ferrets through respiratory droplets. However, the reassortant virus was not highly pathogenic in the ferret model and was susceptible to currently available antiviral agents and vaccines. At the time of going to press, the second article had not yet been published, but the lead author, Ron Fouchier, had been granted an export license by the Dutch government, which should clear the way for its publication in *Science*. ***Nature*/Nature News**

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).