DISEASE WATCH | IN THE NEWS

New arenavirus found

The improving nature of rapid pathogen diagnostics was ably demonstrated during the recent identification and characterization of the first Old World haemorrhagic fever-associated arenavirus to be identified in more than 30 years. In late 2008, five cases of haemorrhagic fever were identified in Johannesburg, South Africa, following the airlift of a critically ill patient from Lusaka in Zambia. Through contact with infected body fluids, the infection was transmitted to a paramedic, also from Lusaka, and to three health care workers in South Africa. Four of the five individuals died following infection. Efforts to identify the cause of the outbreak were led by researchers at Columbia University and the CDC in the United States, who were able to confirm the presence of a novel virus within 72 hours of receiving the samples. By using pyrosequencing of RNA extracts from serum and tissue samples, a new member of the *Arenaviridae* family was identified that has been provisionally named Lujo virus based on its geographical origins in Lusaka and Johannesburg. Sequencing approaches can significantly decrease the time taken to identify the causative agent of an outbreak, allowing health care providers to make informed decisions earlier. ***PLoS Pathog.***

Colon cancer risk factor?

Nearly 1 million new cases of colorectal cancer are diagnosed worldwide each year, with almost 500,000 people dying per year as a result. Mucosa-associated *Escherichia coli* strains, such as enteropathogenic *E. coli* (EPEC), can often be found attached to mucosal cells in the colon of individuals suffering from colorectal cancer, but are rare in healthy individuals. Strains such as EPEC have therefore been linked previously with tumorigenesis in the colon. EPEC attaches to the surface of mucosal cells through the adhesion protein intimin, and uses a type III secretion system to inject effector proteins into host cells, which modulate a range of host cell functions. Now, the authors of a study published in *PLoS ONE* have found that EPEC downregulates the expression of two host proteins that have a key role during mismatch repair of DNA damage. Downregulation of MSH2 and MLH1 could increase the likelihood that the mucosal cells would become cancerous, perhaps indicating how strains such as EPEC might influence the development of colorectal cancer. **BBC/*PLoS ONE***

Leprosy in ancient India

Leprosy, the chronic disease caused by the bacterium *Mycobacterium leprae*, which affects approximately 250,000 individuals worldwide, has long been thought by historians and biologists to have spread from the Indian subcontinent though Europe and the rest of the world. However, comparative genomic approaches have shown that *M. leprae* spread from a single clone that evolved in either South Asia or East Africa during the late Pleistocene era. The earliest accepted account of leprosy was documented in Asian texts dating to 600 BCE (before the common era). However, references to leprosy may also have been made in earlier Sanskrit hymns dating to 1550 BCE. Now, a 4,000-year-old skeleton has been unearthed in Balathal in northwestern India that shows the presence and patterning of legions indicative of leprosy. This represents the oldest documented evidence for leprosy and the first evidence for leprosy in pre-historic India. ***NY Times/PLoS ONE***

Skin crawling

Human skin is home to a diverse microbiome of harmless and even beneficial bacteria that are thought to play important parts in the balance between health and disease. A typical adult's skin is roughly 19 square feet and contains upwards of approximately 100 billion individual bacteria. In an attempt to map the topographical and temporal variations of the human skin microbiome, Julia Segre and colleagues from the National Institutes of Health, Bethesda, United States, analysed 16S ribosomal RNA sequences from 20 distinct skin sites in 10 healthy individuals. They found a much greater diversity than had previously been appreciated, with bacteria from 19 different phyla and over 205 genera. The diversity of bacteria present at particular sites depends on the physiological characteristics of the site. For example, the forearm had the greatest diversity, with an average of 44 different species, and the area of skin behind the ear was the least diverse, with an average of only 16 species. This study helps to lay the groundwork for researchers to begin to ask questions about the role of the microbiota in skin conditions such as eczema and psoriasis. ***Science***

Novel approach to HIV vaccine

Little progress has been made in identifying potential immunogens for use in generating a vaccine that stimulates the production of persistent antibodies with broad neutralizing activity against HIV. A new approach that circumvents the adaptive immune response, instead relying on the delivery of virally expressed antibodies directly into muscle tissue, shows considerable promise for treating simian immunodeficiency virus (SIV) infection in monkeys, a model system for HIV infection. Injection of the adeno-associated virus construct led to endogenous synthesis of SIV-specific antibodies in myofibres, which then distributed throughout the circulatory system. Treated monkeys were completely protected from infection during challenge with a virulent SIV strain. Adapting this system for use against HIV infection in humans may prove to be effective in developing an HIV vaccine. ***Associated Press/ Nature Med.***

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 Connotea (http://www.connotea.org), under the username NatRevMicrobiol