DISEASE WATCH | IN THE NEWS

Gut feeling

Signalling through Toll-like receptors (TLRs) is a key component of the innate immune response, but the precise role of TLR-based innate recognition at mucosal surfaces such as the gastrointestinal tract is difficult to assess. In a recent paper in *Journal of Experimental Medicine*, Mathias Hornef and colleagues have begun to address this by investigating the role of lipopolysaccharide (LPS) signalling through the TLR4–MD2 complex, using an assay involving primary intestinal epithelial cells (IECs) from fetal, newborn and adult mice. They found that although all cells examined expressed the TLR4 complex, the ability to respond to agonists varied with the developmental stage. Only fetal IECs were able to activate the signalling pathways downstream of TLR4 when challenged with LPS, interleukin-1β or tumour necrosis factor; newborn IECs spontaneously released inflammatory cytokines, but this was not enhanced by the presence of an agonist, and adult IECs were non-responsive. Further investigations comparing vaginally born mice with mice born by caesarean section revealed that the spontaneous activation of newborn IECs and concomitant acquisition of LPS resistance requires vaginal delivery and oral exposure to LPS. The authors conclude that: “This adaptive processing might be crucial to facilitate postnatal microbial colonization and subsequent development of the astonishingly stable, lifelong symbiosis.” [JEM](#)

World health report card

As part of the 2006 World Health Day, the WHO have published their annual World Health Report. The theme of this year’s report was ‘working together for health’ and it highlighted the fact that although the global population is growing, the number of healthcare workers is not increasing sufficiently to allow national healthcare systems to either provide essential medical interventions such as immunization and access to treatment for HIV/AIDS, malaria and tuberculosis, or to respond effectively to a healthcare crisis (such as SARS or avian influenza). In fact, there is a chronic shortage of healthcare workers — including doctors, nurses and midwives — in 57 countries worldwide, including 36 countries in sub-Saharan Africa. More than 4 million additional workers are needed to plug the gap, according to the report, which includes a 10-year plan to address the crisis. WHO Assistant Director-General Timothy Evans also commented specifically on the impact of the ‘brain drain’ of qualified healthcare professionals from developing countries, warning that industrialized nations “are likely to attract even more foreign staff because of their aging populations, who will need more long-term care”. The report recommends that 50% of all new donor funds for health should be spent on strengthening healthcare systems. [WHO](#)

Contact lens warning

The US FDA and CDC have issued an alert to healthcare professionals and their patients about the risk of corneal fungal infections in wearers of soft contact lenses. As of the beginning of May, almost 200 cases of suspected *Fusarium* corneal infection were being investigated. US company Bausch & Lomb voluntarily suspended sales of its lens cleaner ReNu With MoistureLoc in April after it was linked with the outbreak, but no direct link has yet been proven. However, news that a *Fusarium* outbreak in Hong Kong at the end of 2005 had also been linked with the Bausch & Lomb solution prompted some criticism that the company had not acted quickly enough. As we went to press, news had begun to emerge that *Fusarium* infections had also been reported in Europe. [CDC](#)

Post exposure Marburg vaccine?

The results of further work by Heinz Feldmann and colleagues on their live attenuated vaccine against the filovirus Marburg virus were reported recently in the *Lancet*. The work suggests that the vaccine, which is based on recombinant vesicular stomatitis virus (rVSV), could be used prophylactically after exposure to the virus, in addition to providing protection before exposure. In an efficacy assessment study carried out in a rhesus-macaque model of Marburg haemorrhagic fever, eight animals received an intramuscular dose of 1,000 plaque-forming units (pfu) of Marburg virus. Twenty to thirty minutes later, five animals received 1 x 10⁷ pfu of the rVSV-based vaccine, given as four intramuscular injections in different anatomical sites, and the three control animals were treated with the vector alone. All of the five animals that received the vaccine survived for at least 80 days; by contrast, the three animals in the control group all died by day 12. The authors suggest that the 20–30-minute time interval between exposure to the virus and administration of the vaccine would be sufficient to respond to accidental needlestick exposure in a laboratory or healthcare situation. [Lancet](#)

More trachoma progress

At their 10th meeting held recently in Geneva, The Alliance for the Global Elimination of Blinding Trachoma by the year 2020 (GET2020) reviewed the encouraging progress that has been made towards their goal of eliminating trachoma by the year 2020. Trachoma is associated with *Chlamydia trachomatis* infection of the eye and, if left untreated, can lead to irreversible blindness. The WHO recommends that trachoma-affected countries implement a national strategy based on the SAFE principles to eliminate the disease; SAFE involves eyelid surgery; antibiotics; facial cleanliness and environmental changes. Last month’s In the News reported on the successful results of a clinical trial on the use of a single oral dose of azithromycin as a treatment for the disease, and the free availability of azithromycin forms a core part of the SAFE strategy. [WHO](#)

Two new kids on the block

Chronic granulomatous disease (CGD) is an inherited primary immune deficiency that is caused by a defect in the NADPH-oxidase complex in phagocytic cells, and CGD patients are therefore more susceptible to infection with various catalase-producing microorganisms, including *Staphylococcus aureus* and *Aspergillus* spp. In addition, patients often present with symptoms, such as inflammation of the lymph nodes, for which the causative infectious
Genetic test for HCV prognosis

Up to 20% of individuals infected with the hepatitis C virus (HCV) go on to develop cirrhosis, a chronic condition that can result in liver failure or hepatocellular carcinoma. It has long been known that the risk of developing cirrhosis is associated with clinical risk factors, such as being male, being over 40 years of age at the time of infection, and alcohol abuse, but genetic risk factors have been difficult to find. Now, Celera have presented data which indicate that a genetic test to predict which individuals infected with HCV will go on to develop cirrhosis could be available in the not-too-distant future. Speaking at an international conference for liver researchers in April, the company announced the results of a study that featured heavily on the newswires. Carbohydrate epitopes are becoming increasingly attractive for vaccine formulations, but require a suitable carrier and adjuvant. Immunostimulating reconstituted influenza virosomes (IRIVs) combine both these properties and have already been used successfully in vaccine construction. Now, IRIV technology has been used to create a leishmaniasis vaccine formulation with the cap tetrasaccharide from the Leishmania donovani lipophosphoglycan, and preliminary results in mice show that a strong protective response was elicited.

Leishmaniasis vaccine update

There are four main forms of leishmaniasis, ranging from the relatively mild cutaneous leishmaniasis to visceral leishmaniasis, which can be fatal if left untreated and which affects an estimated 500,000 individuals annually, with 60,000 deaths. All leishmaniasis are caused by parasitic protozoa belonging to the genus Leishmania, which are transmitted by phlebotomine sandflies and, so far, there is no effective vaccine for any of the leishmaniasis. Progress does, however, seem to have been made recently, according to a paper in ACS Chemical Biology that featured heavily on the newswires. Carbohydrate epitopes are becoming increasingly attractive for vaccine formulations, but require a suitable carrier and adjuvant. Immunostimulating reconstituted influenza virosomes (IRIVs) combine both these properties and have already been used successfully in vaccine construction. Now, IRIV technology has been used to create a leishmaniasis vaccine formulation with the cap tetrasaccharide from the Leishmania donovani lipophosphoglycan, and preliminary results in mice show that a strong protective response was elicited.

Microbicides in the news

Microbicides moved higher up the news agenda towards the end of April, as reports came in from Microbicides 2006 in Cape Town — the first time that this biennial conference has been held in Africa. Stories highlighted included the results of Phase I and Phase II clinical trials of new microbicide products, and there was also a focus on the need for research into the acceptability of microbicide use.

Avian influenza

Human cases of infection with the H5N1 virus continued to be reported throughout April, in countries including Egypt, China and Indonesia, and the total number of confirmed cases in 2006 by 5 May was 62, with 38 deaths. In terms of the general media however, these cases received comparatively little attention and instead news items focused mainly on efforts to develop a vaccine to be used in the event of a pandemic, with the US Federal Government announcing it was awarding $1 billion in contracts to five pharmaceutical companies for vaccine development.

Outbreak news

Mumps. A mumps outbreak in the Midwest of America has been hitting the headlines recently as it is the worst outbreak of mumps in the country for 20 years. The state of Iowa has been badly hit, with the number of recorded cases reaching more than 1,500. Mass immunization clinics for 18–22-year olds have been organized.

Cholera. A cholera outbreak in Angola that began in February has been exacerbated by recent heavy rains, and more than 1,000 deaths had been reported by the beginning of May, with more than 20,000 infections, according to Médicins san Frontières (MSF). The head of the MSF mission in Angola commented that the outbreak had yet to reach its peak and that the number of deaths could double.

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 ojcius.