

RESEARCH HIGHLIGHTS

Selections from the scientific literature

INFECTIOUS DISEASE

Sequencing tracks outbreak

Whole-genome sequencing has enabled researchers to confirm which patients in a hospital were affected by a particular outbreak of an antibiotic-resistant pathogen — at a cost and on a timescale that are clinically relevant.

Sharon Peacock at the University of Cambridge, UK, and her team sequenced isolates of methicillin-resistant *Staphylococcus aureus* (MRSA) from 14 hospitalized patients, half of whom had become carriers of a specific strain of MRSA during an outbreak in the neonatal intensive care unit. In about 1.5 days and at a cost of some US\$150 per isolate, the authors generated sequences that showed a clear genetic distinction between outbreak and non-outbreak isolates.

The researchers predict that, as whole-genome sequencing costs and turnaround times fall, this will become a standard tool for controlling the spread of dangerous pathogens.

N. Engl. J. Med. 366, 2267–2275 (2012)

ANIMAL BEHAVIOUR

Castration boosts spider stamina

The male orb-web nephilid spider often castrates himself during sex, reducing his body weight by up to 9%. This could increase his endurance when defending his mate from competitors.

L. O'Q



G. ZIESLER/GETTY

ECOLOGY

Bat culls do not stop spread of rabies

Culling adult vampire bats might not be an effective means of reducing outbreaks of rabies in humans and livestock.

Daniel Streicker at the University of Georgia in Athens and his colleagues tested common vampire bats (*Desmodus rotundus*; pictured) sampled from 20 colonies across Peru between 2007 and 2010 for exposure to the rabies virus. Exposure prevalence ranged from 3% to 28% and was highest in immature bats. Culling

during the test period did not reduce the probability of exposure to rabies.

Adult bats might be developing immunity to rabies after repeated exposure to the virus, the authors suggest, so culling could increase virus transmission in part because it targets immune adults and leaves behind young bats that are more likely to carry and to transmit the disease.

Proc. R. Soc. B <http://dx.doi.org/10.1098/rspb.2012.0538> (2012)

IMMUNOLOGY

Good microbes fight bad

Microbes living in the guts and airways of mammals help their hosts to fend off pathogens.

John Wherry and David Artis at the University of Pennsylvania in Philadelphia and their team treated mice with antibiotics to kill off their gut microbes and then infected them with an influenza virus. The mice lost more weight and were more likely to die than those that did not receive antibiotics. The antibiotic-fed mice also mounted a reduced immune response to the virus. The authors suggest that the

bacteria living in mammals prime the immune system to respond to pathogens, and say that harnessing this ability could aid in the treatment of viral infections in humans.

Immunity <http://dx.doi.org/10.1016/j.immuni.2012.04.011> (2012)

MATERIALS

Graphene can desalinate water

Salt could be separated from water using an ultrathin porous membrane made up of a single sheet of carbon atoms, a computational study suggests.

David Cohen-Tanugi