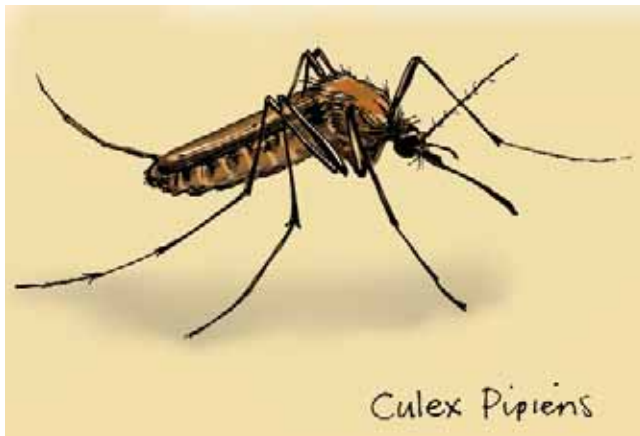


Preventing malaria spread

As summer progresses, sun block, travel sickness tablets and anti-diarrhoeals fly off the shelves. For those travelling to exotic destinations, malaria prophylaxis is a major concern. Around 2,000 Britons and 500 million people worldwide suffer from malaria each year (according to the World Health Organization). Understanding why mosquitoes bite may be the key to preventing the spread of this deadly disease. Most mosquitoes prefer to feed on rotting fruit or nectar. Of the minority that practise haemophagy all are female. The *Culex pipiens* mosquito is a tiny, dusky brown insect, weighing not much more than a grape seed. It is the most common transmitter for malaria. After insemination the female *Culex pipiens* produces her eggs. However she needs one more ingredient: protein. Without blood, her eggs will not survive. She will then go in search of a source, sometimes carrying the lethal plasmodium in her salivary glands.



As the days get shorter and cooler the breeding season comes to an end and therefore so does the need to consume blood. Studies show that there is a physical change inside the insect that impairs the ability to digest blood and increases the urge to search for sugar-based meals. This diapause or “hibernation”, as it were, also means that any virus the mosquito may be carrying becomes dormant too. As yet it is unclear exactly how this process occurs and which genes are involved. Understanding this may provide an innovative way to control the spread of malaria.

Taking empathy to a touch-sensitive level

As pharmacists we are often encouraged to be empathetic. However, what makes people empathetic is still unknown. In contrast, people with mirror touch-synaesthesia (MTS) can literally feel the pain of others.

MTS is a disorder associated with over-activity of mirror-neurons in the brain. If the person in front of an MTS sufferer is touched on his left cheek, the sufferer will feel it on his right cheek. In a new study,

MTS individuals were given a questionnaire to gauge their level of empathy with characters in a film. The results showed that MTS individuals scored significantly higher than the general population, suggesting that their empathy goes beyond physical sensations. Understanding the relationship between MTS and empathy could shed light on the treatment of conditions such as autism and schizophrenia.

Important role for the umbilical cord

In many ancient cultures of Africa, Asia and Latin America the umbilical cord is not cut away at the baby's abdomen at birth. Instead, it is allowed to detach naturally from the newborn at around one to two days after birth. The benefits of these traditions have never been investigated. However, now it seems that the umbilical cord is full of untapped resources, and may be integral to the health of the newborn.

As well as being a reservoir of potentially life-saving stem cells, umbilical blood may also contain a host of other beneficial factors. Type 1 diabetes is associated with an autoimmune reaction that results in the destruction of insulin-producing beta cells in the pancreas.

Infusion of umbilical cord blood into newborns suffering with this disorder causes a measurable reduction in their blood sugar and need for insulin. The reasons for this are unclear, but may be due to the fact that the blood contains a large number of T-cells that may protect the pancreatic cells from damage. It has also been tentatively suggested that the stem cells could be differentiating into beta cells. Scientists are greeting these results with cautious optimism, especially since the effects seems to be transient. It does suggest that the recent rise in popularity in the West of lotus births (keeping the placenta and umbilical cord in place) may have some real scientific rationale.

Surf, sand and *Escherichia coli*?

Despite the rainy weather, holidaymakers will be making their way to beaches, to indulge in a little sea-air sand and general relaxation. What people who are flying to the US in search of sun may not be aware of are the recent concerns about the number of *Escherichia coli* strains found on beaches there.

E coli, best known for its gastrotoxic effects, typically lives in the intestines of mammals and birds. Studies show that certain areas around Lake Superior, the largest of North America's great lakes, had high levels of *E coli* (over 235 colonies per 100ml). Originally this was attributed to faecal contamination, although only one strain was found to be dangerous to humans. However some of these *E coli* were naturalised — that is, existing in uncontaminated soils, suggesting it may be indigenous to the sands. Additionally, the contribution of birdlife has not been assessed and as yet it remains unclear whether the presence of *E coli* represents a true risk factor for the summer holidays.

Memes and genres — literal evolution

Patterns of literature in the UK could be linked to that of genetic evolution, according to Franco Moretti, an English professor at Stanford University. Studying the trends of literature in the UK, he shows that there have been three surges in the development of the novel to date. The first was in 1720, the second was in 1780 and the third, which saw the development of genres for the first time, happened around 1820. Moretti states that genres, like genes, survive only if they are read (used) and disappear if they are not.

Although it seems difficult to maintain that literature has genes, it may have memes. Meme was a term coined by the evolutionary scientist Richard Dawkins and describes a unit of cultural information. Like a gene, it will propagate when it confers benefit to the individual or community. Examples include slang, fashion and music. Therefore using biological patterns, it is theoretically possible to make predictions about the rise and fall of any meme. How accurate these predictions may be remains to be seen.

Stress?

Are you suffering from stress? Do you need help in coping with it? The Listening Friends Scheme, set up by the Royal Pharmaceutical Society, provides an opportunity for you to talk about your problems with a fellow pharmacist who is trained in listening skills. Telephone the scheme's help-line on 020 7572 2442.