'Wipe-on Sex Appeal!'' This is the claim made by dispensing machines in clubs and roadstops, the $2 products said to harness the animal magnetism of pheromones.

But let the buyer beware . . . it is far from clear how exactly pheromones influence behaviour or exactly which mates you'll end up attracting!

Pheromones are communication signals released in an animal's sweat or urine and just like other odours they are chemicals detected by a variety of receptors in your nose.

Normally we become consciously aware of odours when this stimulation is sent to the olfactory cortex, which matches the information up with memory records. Things are always like something or remind us of baking biscuits in grandma's kitchen, for example.

But some smells don't need any recognition to affect our behaviour; you would instinctively recoil in disgust to the smell of rotting meat even if it was your first experience. This response must have been hardwired by evolution to make us avoid the poisonous toxins in bad food. This profound reaction is due to the fact that pheromone receptors bypass the cortex and stimulate instead two ancient brain regions called the amygdala and the hypothalamus. The amygdala controls raw emotions such as fear, while the hypothalamus regulates basic physiological functions like hormone release, blood pressure, hunger and yes . . . sexual arousal.

In recent years scientists have been studying what components of body odour might influence attractiveness to mates. In particular, it has been shown both in mice and in humans that attraction to potential partners is influenced by the specific immune proteins they express. These so-called MHC proteins normally sit on the surface of immune cells in the blood where they ''feel out'' invading viruses and bacteria. It is thought that having a diversity of MHCs allows your body to recognise more types of microbes and to respond appropriately to fight off infections.

Because of the genetic mixing that occurs during conception, choosing a mate with a different set of MHC proteins to your own would produce children with a better range of defences against microbial infection. Scientists tested this hypothesis by having a group of men and women wear the same T-shirt for two days for it to get a proper dose of sweaty pheromones. The subjects were then asked to take a whiff of the other subjects' T-shirts, and to rate how pleasant they found the smell.

For both men and women, the more appealing T-shirts had been worn by subjects who had a very different set of MHC genes, supporting this immune diversity theory. Before the manufacturers of pheromonal aphrodisiacs should get too excited, however, we still have no idea what part of these proteins ends up acting as pheromones, and further, ''odour attractiveness'' appeared to

depend in large part on factors other than the MHC profile.

Interestingly, women taking anti-contraceptive pills were found to make the opposite preference choices to what would be expected; suggesting that such artificially-induced dosages of hormones could lead to inappropriate mates . . . at least as far as boosting your child's immune system is concerned.

An even more extreme example of the pheromone effect has been observed in lab mice; a pregnant female that is moved into a cage with a male other than the one she'd . . . been intimate with, will often terminate her pregnancy. This is probably nature's way of ensuring that she ends up reproducing with the most dominant partner and producing the toughest offspring.

Just as we possess this subconscious sense of smell, we also have a sort of third eye that affects our physiology over the cycle of day and night. When mice (and people) are kept in continuous daylight or continuous darkness for days on end, not only are their sleeping patterns disrupted but there are also changes to general alertness, hunger patterns, hormone secretion and to body temperature regulation. These functions are regulated by the hypothalamus, which lies downstream of a newly discovered system for light detection.

The sensory cells involved in regular vision are found in the retina and this two-dimensional arrangement is reproduced in the visual cortex, which reconstructs an image from the precise activity patterns.

Mice that have the genes for these receptors mutated are functionally blind, but curiously they are still able to adapt to the day-night cycle normally.

This is dependent on particular sensory cells in the eye that have

only recently been identified, despite the fact that the retina has been carefully studied for over a century.

These irradiance detectors in the eye build up a response to light over long periods and feed this information to an area called the suprachiasmatic nucleus.

While cells in this brain region have an internal genetic bodyclock, on its own accord this tends towards a 23-hour cycle. Yes, even the cells in your body like to skip work.

The subconscious input from irradiance detectors makes sure that this clock is set to the right time as far as day and night patterns are concerned.

While this allows physiological functions to be appropriately tuned, your moods and behaviour are also under the influence of sights and smells you are not even aware of.

In recent years scientists have been studying what components of body odour might influence attractiveness to mates.

Canberra Times
25-Oct-2010
Page: 6
Times
Market: Canberra
Circulation: 33511
Type: Capital City Daily
Size: 1356.17 sq.cms
MTWTFS-

A woman, possibly attracted by pheromones, checks out her male colleague, above; sensing the smell of bad food may have been hardwired in us as a protective measure, left.