WEB WATCH

William James

The influence of the American philosopher William James on our modern views of cognitive neuroscience cannot be underestimated. In the field of memory, for example, James' interpretation of the classic Ebbinghaus experiments anticipated the now well established division between short- and long-term memory by more than fifty years. James also coined the widely used expression "stream of thought" and wrote extensively on attention, emotion, perception and many other topics that still occupy the agenda of today's neuroscientists.

In some respects, James' influence rivals that of Ramón y Cajal; like this other formidable thinker, James is cited extensively today, although few people have actually read his work. But here's a great opportunity to remedy this state of affairs — the Williams James web site. This marvellous resource, maintained and developed by Frank Pajares from Emory University, is a repository of links that lead to a plethora of web sites with information about James, his life and times, his work and essentially anything you might ever want to know about this philosopher.

The William James web site is organized into useful categories and one of its highlights is a series of links to the complete text of some of James' writings, including the legendary *The Principles of Psychology*. The 28 chapters of this classic book are hosted by another fantastic resource developed by Christopher Green of York University — Classics in the History of Psychology — which also contains the original writings of many forerunners of modern neuroscience, including Broca, Pavlov, Spearman and Skinner. These two web sites are splendid resources that should be visited again and again in search not only of information, but also of inspiration.

Juan Carlos López

TASTE RECEPTORS

Sweet sensation

With many of us still recovering from the Easter chocolate frenzy, it is timely to consider the processes that underlie our partiality to sweet foods and the reasons why some people are more susceptible to their charms than others. Indeed, the 'sweet tooth' phenomenon is not confined to humans; it has long been known that different strains of mice vary in their preference for sweet-tasting substances. A candidate locus for sweet detection — *Sac* — has been identified in mice, but not in humans, and no specific sweet-taste receptors were known until recently. However, as reported in *Nature Genetics* and *Nature Neuroscience*, two research groups have now independently identified what appears to be the first mammalian sweet taste receptor.

Five different types of tastant can be distinguished by mammals: sweet, sour, bitter, salty and glutamate (umami). The receptors for salty and sour tastes have been identified as ion channels, whereas other tastes are believed to be transduced by G-protein-coupled receptors (GPCRs). To identify sweet taste receptors, Max *et al.* and Montmayeur *et al.* searched the human genome databases for new GPCR genes that map to, or near to, the human equivalent of the mouse *Sac* locus. Both teams cloned the mouse homologue of one gene that fulfils these criteria, and the protein that it encodes was named T1r3.

Mouse strains were classed as 'tasters' (those that preferred water containing sucrose or saccharin to plain water) and 'non-tasters' (those that showed little or no preference). Both groups showed that there are allelic differences at the *T1r3* locus between tasters and non-tasters. The specific expression of its mRNA in the papillae (taste buds) of the tongue is also consistent with T1r3 being a taste receptor. Interestingly, in many taste cells, T1r3 is co-expressed with the related GPCR T1r2, which has also been implicated in taste reception. There is increasing evidence that dimerization is important for GPCR function, and T1r3 could form heterodimers with T1r2 (and/or other as yet unidentified GPCRs), thereby increasing the repertoire of receptors to allow for detection of different sweet tastants. Max *et al.* propose that one of the mutations seen in the non-taster allele might introduce a glycosylation site that inhibits dimerization.

With the incidence of obesity on the rise in both the United Kingdom and the United States, understanding the mechanisms underlying our predilection for particular foods inevitably becomes linked to human health issues. Max *et al.* predict that one spin-off from their research might be the design of better artificial sweeteners, which will hopefully help us to satisfy our cravings for sugar without piling on the calories. Also, by studying those people who seem to have been born without a sweet tooth, it might be possible to develop strategies to make sweetness less appealing.

Heather Wood

References and links

ORIGINAL RESEARCH PAPERS Montmayeur, J.-P. *et al*. A candidate taste receptor gene near a sweet taste locus. *Nature Neurosci.* **4**, 492–498 (2001) | Max, M. *et al*. *Tas1r3*, encoding a new candidate taste receptor, is allelic to the sweet responsiveness locus *Sac*. *Nature Genet*. **28**, 58–63 (2001)
FURTHER READING Bouvier, M. Oligomerization of G-protein-coupled transmitter receptors. *Nature Rev. Neurosci*. **2**, 274–286 (2001) | Gilbertson, T. A. *et al*. The molecular physiology of taste transduction. *Curr. Opin. Neurobiol*. **10**, 519–527 (2000)