

OR388

Seek and ye shall find: Seeking selection for sociality

Clement Kent, Amro Zayed, Karl Glastad, Karen Kapheim

Sequence analysis across species is an attractive way to look for genes in a hypothetical 'toolkit for sociality'. Social insects are ideal for this due to the large number of species with varying levels of sociality. However, sociality exerts powerful effects on the genome, some of which are not due to directed natural selection. 'Seek and ye shall find' in this context poses a problem: among genes in which we find sequence changes correlated with level of sociality, which ones change due to selection for mutations advantageous for social function, and which ones change for other reasons? We applied methods that distinguish between selective and neutral changes and sought for examples of functional categories of genes in both groups, drawing upon studies in Hymenoptera. The results were surprising. For example, among genes with dN/dS positively correlated with sociality, certain normally highly conserved transcription factors were overrepresented - is this evidence of a toolkit? Conversely among genes with dN/dS negatively correlated with sociality, 'brain development' was overrepresented - is this evidence that the more social you are the dumber you get? I present reasons for doubting both of these ideas, plus preliminary evidence for which functional gene groups may be positively associated with selection for sociality.