

OR304*Anarchy in the honeybee colony: genetic basis of worker sterility***Isobel Ronai**, Vanina Vergoz, Julianne Lim, Benjamin P. Oldroyd

In honeybee (*Apis mellifera*) colonies the queen monopolises female reproduction, while the workers are 'altruistically' sterile. However, even within the highly cooperative system of the social insects reproductive cheating occurs. A mutant 'anarchistic' strain of honeybee has been selected in which workers activate their ovaries and lay eggs, despite the presence of a queen. This compelling example of intra-specific social parasitism enables the investigation of mechanisms that must have evolved to enforce worker sterility. Mapping and gene expression studies of the anarchistic strain have yielded a short list of candidate genes for worker sterility. Anarchy (GB13621), a peroxisomal membrane protein, is the strongest candidate gene based on map location and differential expression between anarchistic and wildtype workers; and workers with activated and non-activated ovaries. To determine whether there is a causal relationship between expression of the candidate genes and ovary activation we are experimentally manipulating gene expression using RNA interference and observing the effect on reproductive phenotype. This will help establish the molecular pathway that regulates functional sterility in honeybee workers.