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Sex/cast specific chemoreceptor analyses from RNAseq data in Camponotus japonicus

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Ants construct and maintain sophisticated society consisting of workers and reproductive cast. They communicate with each other, using complex chemical signs, which can affect not only physiological states but also stereotypic behaviors. In accordance with previous reports in *Camponotus floridanus* and *Harpegnathos saltator*, we performed comparative RNAseq analyses in the Japanese carpenter ant, *Camponotus japonicus* among workers, virgin queens and males, and constructed sex/cast specific catalogs of chemoreceptor genes. In the antennae, we identified 330, 340 and 297 Or genes and 35, 35 and 30 Gr genes in workers, virgin queens and males, respectively. Because of smaller number of glomeruli in the antennal lobes in males than in females, this quantitative difference in Or genes between males and females seems reasonable. There was dominant expression of an Or gene in male antennae and a Gr gene somewhere in the body without antennae of virgin queens. We also discovered 12 kinds of CSP (chemosensory protein) genes expressed in the worker antennae, and investigated their tissue distribution. They were found not only in the external chemosensory organs but also in their gut. Considering genomic sequence data as well, we will discuss diversity of chemosensory receptor molecules and CSPs with their functional characteristics adequate for sex/cast specific behavior of this social insect.