The two types of social organization, monogyny and polygyny, in the fire ant (*Solenopsis invicta*) are known to be fully associated with a single gene, Gp-9. In contrast to the genetic homogeneity of all individuals in monogyne colonies (all Gp-9BB genotype), queens of polygynous colonies have the Gp-9Bb genotype while their workers have either the Gp-9BB or the Gp-9Bb genotype. Recently, the Gp-9 gene has been found to be a part of a big supergene. Although the supergene holds the potential for explaining the many characteristics associated with social form in fire ant, the precise relationships between genes and phenotypes are still unclear. One of the interesting fire ant behaviors is the ability of Gp-9Bb workers to distinguish and accept only Gp-9Bb queens into polygynous colonies based on odor cues. We are using a transcriptomics approach to determine what gene products expressed in workers may be responsible for sensing the queen odors. We are currently profiling gene expression in the antennae and brains of different castes and genotypes of the two social forms by using Illumina RNA sequencing. We will present our preliminary results and analyses.