

P175*Molecular warfare in the leaf cutter ant *Atta colombica**

Ryan Dosselli, Susanne den Boer, Jacobus J. Boomsma, Boris Baer

Polyandry is phylogenetically widespread in the social bees, ants and wasps where queens mate with multiple males during a single reproductive episode such as a nuptial flight. This results in sperm from multiple males to compete for access to the female's sperm storage organ (spermatheca) prior to egg fertilisation. The resulting sperm competition might however not always be in the interest of the queen, because they never re-mate later in life and therefore depend on sufficient numbers of viable sperm being stored to complete a full colony cycle. This results in adaptations in queens such as for example cryptic female choice, biasing paternity contributions after matings and in the absence of males. Glandular secretions, which males and females provide to sperm in the form of seminal fluid or spermathecal fluid, are now known as major determinants of these sexual conflicts. We used the leaf cutter ant *Atta colombica*, where seminal fluid incapacitates sperm of rival males but spermathecal fluid of queens neutralizes this effect. The molecules in seminal fluid that are able to detect and incapacitate non-self rival sperm are unknown, as are the molecules in the spermathecal fluid that are responsible to neutralise the sperm incapacitation effect. Our data show that proteins seem to be the biologically active molecules and modern proteomics technologies allowed us to quantify and identify those proteins using mass spectrometry. We therefore conducted experiments to understand interactions between seminal fluid and spermathecal fluid in order to test whether spermathecal fluid targets and modifies specific proteins in the seminal fluid. We investigated the presence and abundance of seminal fluid proteins in the spermatheca over time to quantify abundance changes of proteins after insemination. Furthermore we used mass spectrometry to identify those seminal fluid proteins that changed in abundance in the spermatheca.