

OR369*Sperm competition in Cataglyphis desert ants.***Serge Aron**, Claire Baudoux, Denis Fournier

In species whose females mate promiscuously, competition of ejaculates from different males for the fertilization of a given set of ova can drive the evolution of sperm traits, such as ejaculate size or sperm length, that determine fertilization success and, ultimately, likelihood of paternity. Males that produce more sperm may often secure more fertilizations, with increased risk of sperm competition selecting for larger numbers of sperm in ejaculates. Sperm competition is also thought to promote the evolution of longer sperm, since sperm length is assumed to be positively associated with sperm swimming velocity. We examined relationships between sperm competition levels, sperm quantity and sperm lengths, in a comparative study of 14 species of *Cataglyphis* desert ants using phylogenetically controlled analyses. The genus displays large contrasts in sperm competition levels with queen mating frequency greatly varying across species, from strict monandry to obligate polyandry. Our results show that males of polyandrous species are significantly larger than males of monandrous species, consistent with positive selection on male size under sexual competition. Also, they produce a higher number of spermatozoa and longer sperm cells than males of monandrous species. Furthermore, across species comparison shows that sperm quantity and, in a lesser extent, sperm length are positively correlated with the average number of matings achieved by queens, independently of male size. Overall, these results show that sperm competition affects the characteristics of males ejaculates in *Cataglyphis* desert ants: they are consistent with the 'fair raffle principle', with increased risk of sperm competition selecting for production of larger numbers of spermatozoa. They also indicate that sperm competition affects sperm size, possibly to enhance sperm swimming abilities.