

**OR118***Impacts of nymph/worker genotypes on termite incipient colony fitness***Osamu Kitade**, Kaori Takatsuto

In *Reticulitermes* termites, caste fate of a young larva (whether to become functionally sterile, wingless 'worker' or to become 'nymph' with reproductive opportunities) is strongly affected by the genotypes of a X-linked locus (Hayashi et al., 2007). This Mendelian system predicts that offspring in a normal incipient colony of *Reticulitermes speratus* (Kolbe) founded by primary reproductive pairs has worker-oriented genotype, while that of parthenogenetically produced offspring in a colony founded by a female-female primary pair has nymph-oriented genotype. To understand the function of the gene in the incipient colony and evolutionary basis of the commitment mediated by it, we compared colony traits between the colonies expected to have different offspring genotype ratios: (1) colonies founded by normal alate pairs and female-female pairs, and (2) colonies introduced 100 worker-oriented eggs and 100 nymph-oriented eggs. While almost no nymphs were produced in the normal colonies, 5.8-17.9% of the offspring in female-female colonies became nymphs. Even in the presence of primary pairs, 15-20% of the nymphs were differentiated into neotenic reproductives. Replacements of the primary reproductives by the neotenic reproductives took place significantly higher rates in female-female colonies than in normal colonies. The fatal aggression between primary and neotenic reproductives significantly decreased the colony size and survival rate of female-female colonies. Sexual colonies introduced nymph-oriented eggs exhibited the same trends as female-female colonies. These results indicate that parthenogenesis and production of nymph-genotype individuals considerably decrease the fitness of the incipient colonies through the promotion of intra-colonial conflicts among reproductives. In the normal incipient colonies, the genetic system functions to coerce offspring into becoming workers and increases competitive advantage of the colonies. It possibly enables the large colony size of *Reticulitermes* and other relatively advanced termite taxa with worker caste.