



The Institute Colloquium

Life-time commitment and the evolution of altruism and mutualism

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Major transitions in evolution shift selection to a higher level. Some require high relatedness (multicellularity, eusociality) and some do not (obligate mutualisms, sexual partnership). I will argue that strict, life-time commitment between partners (gametes, parents, somatic cells, and families) appears to be a very general requirement for realizing major transitions. It captures high offspring relatedness following sexual partner choice and it produces analogous alignments of reproductive interests when mutualistic partner choice is “supra-sexual”. Life-time commitment is very difficult to achieve in nature, but all eukaryote life is somehow based on it. As it seems, life-time commitment does not remove all reproductive conflict, but enough of it to allow lineages to diversify and become ecologically successful. Fungus-farming ants and termites have proven to be good models for studying questions of partner commitment and will continue to offer rich opportunities now that sequenced genomes are becoming available.

Aanen, D.K., H.H. de Fine Licht, A.J.M. Debets, N. Kerstes, R.F. Hoekstra and J.J. Boomsma (2009) High symbiont relatedness stabilizes mutualistic cooperation in fungus-growing termites. *Science* 326, 1103-1106.

Boomsma, J.J. (2007) Kin selection versus sexual selection: Why the ends do not meet. *Current Biology* 17, R673-683.

Boomsma, J.J. (2009) Life-time monogamy and the evolution of eusociality. *Philosophical Transactions of the Royal Society London* 364, 3191-3207.

Monday, January 23, 2012, 4.30 pm
Raiffeisen Lecture Hall, Central building, 1st floor



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