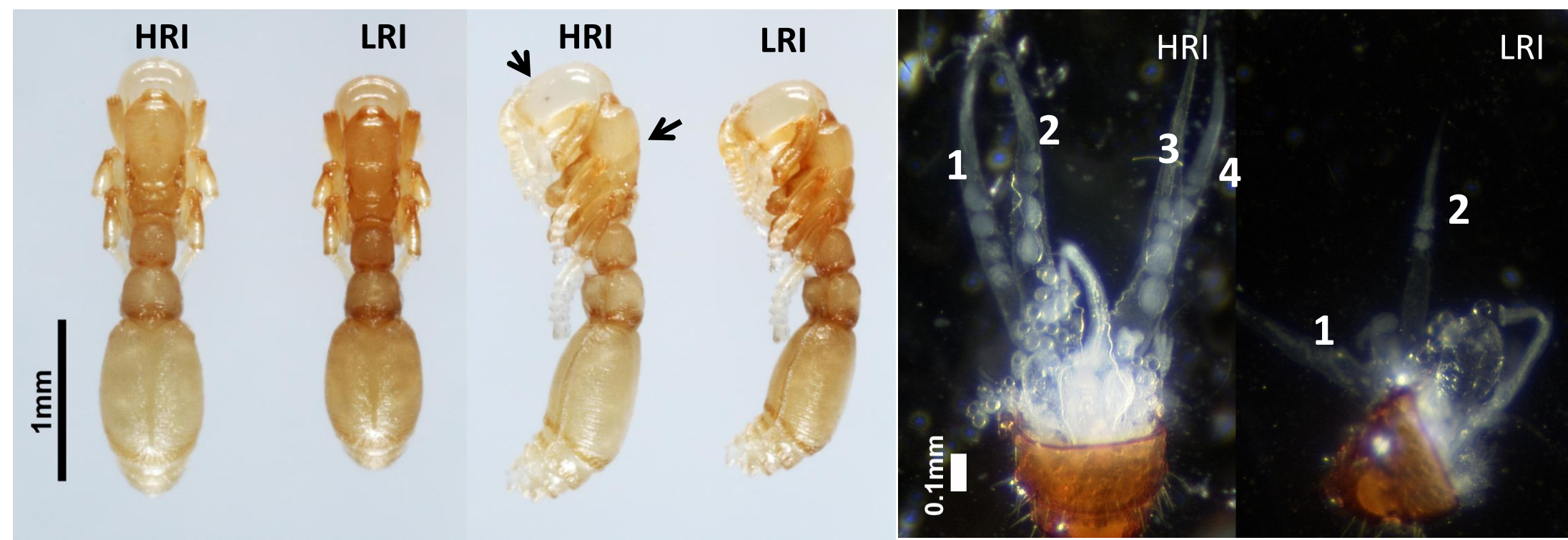


Intra-organismal competition in chimeric colonies of the clonal ant *Cerapachys biroi*

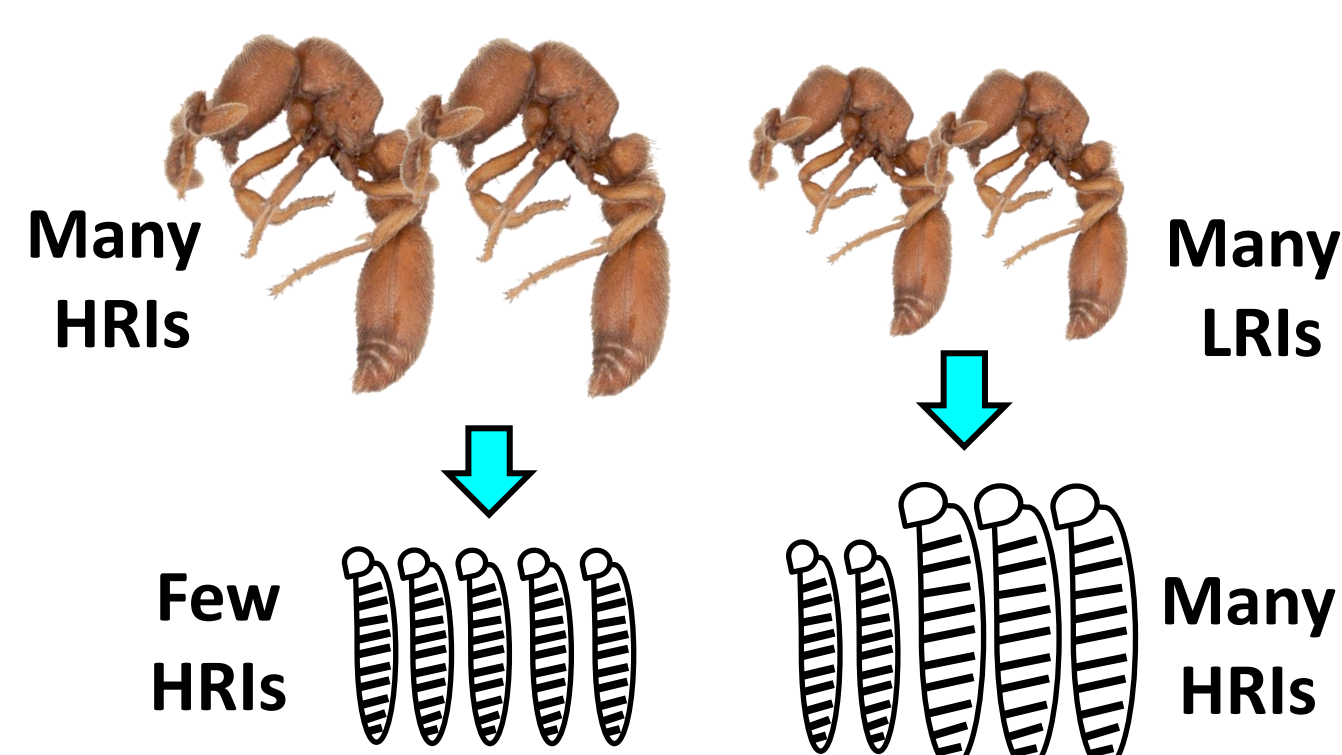
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*Laboratoire d'Éthologie Expérimentale et Comparée, EA4443, Université Paris 13, 99 avenue J.B. Clément, 93430 Villetaneuse, France

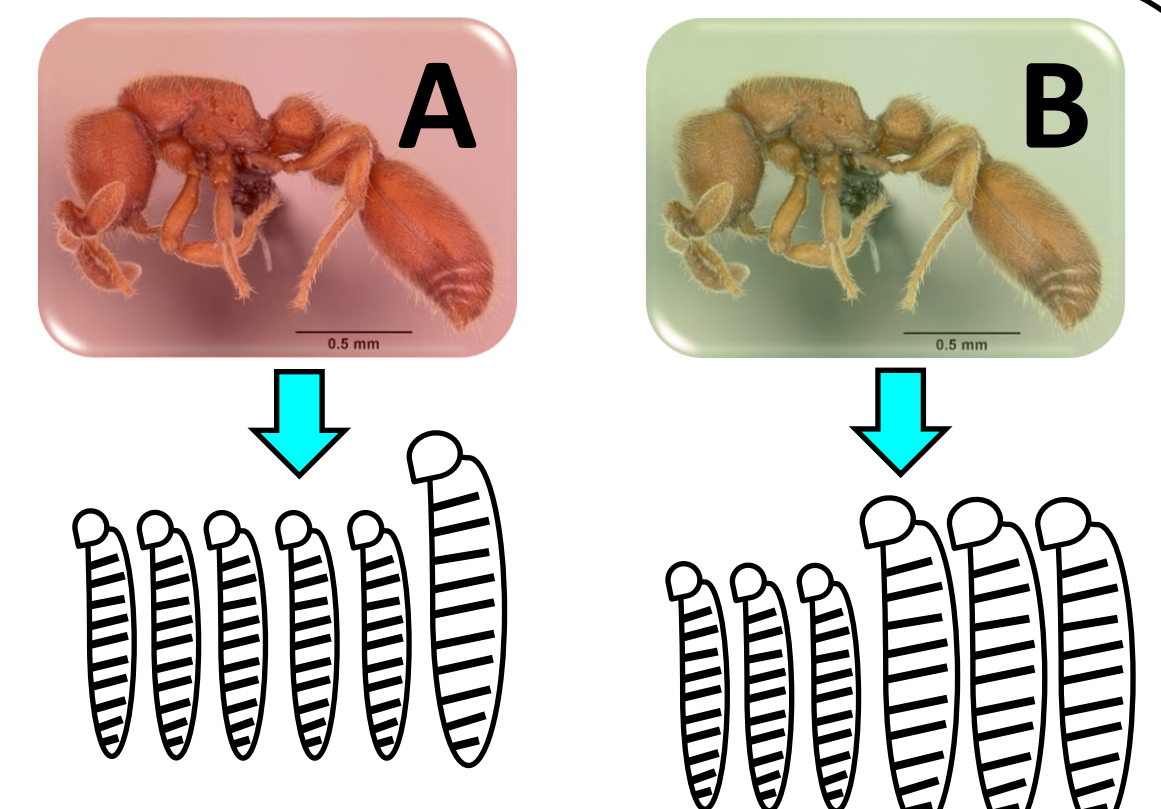
†Laboratory of Insect Social Evolution, The Rockefeller University, 1230 York Avenue, NY 10065, New York, USA



In *Cerapachys biroi* all the individuals lay eggs via thelytokous parthenogenesis. Two castes: Lowly Reproductive individuals (**LRIs**), and Highly Reproductive individuals (**HRIs**).

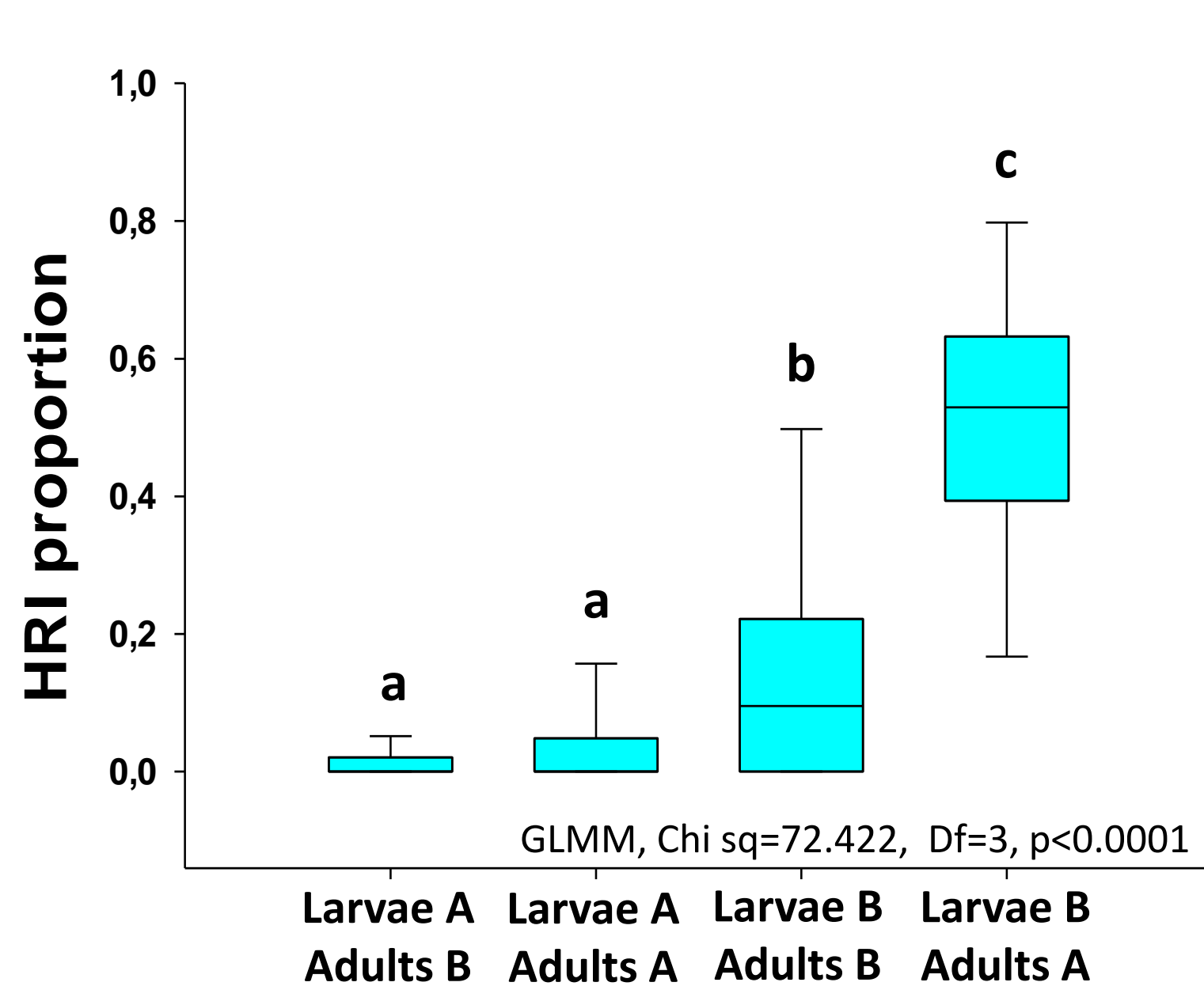


HRI production depends on the actual fertility level of the colony: larval fate is probably driven by adults-larvae interactions

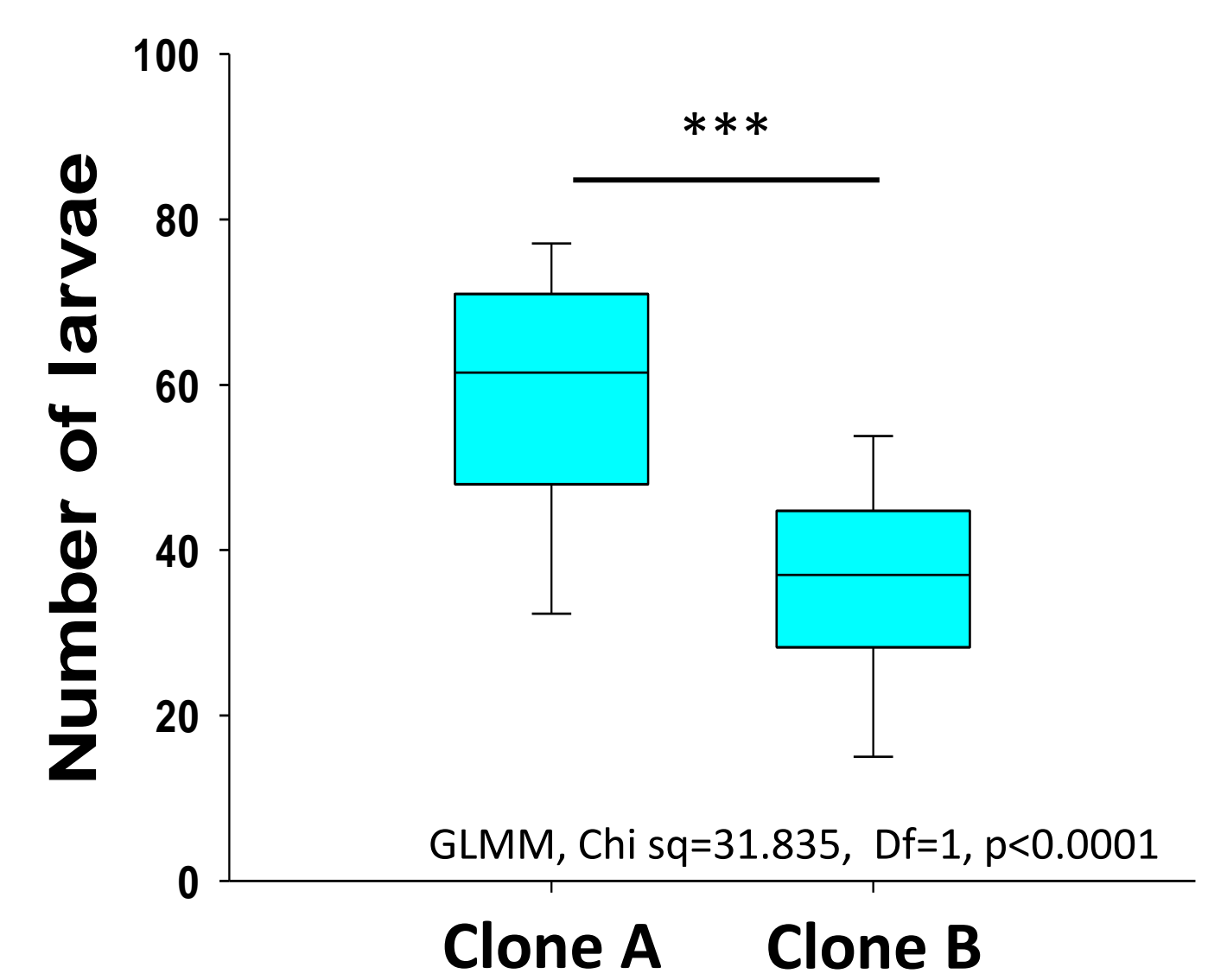
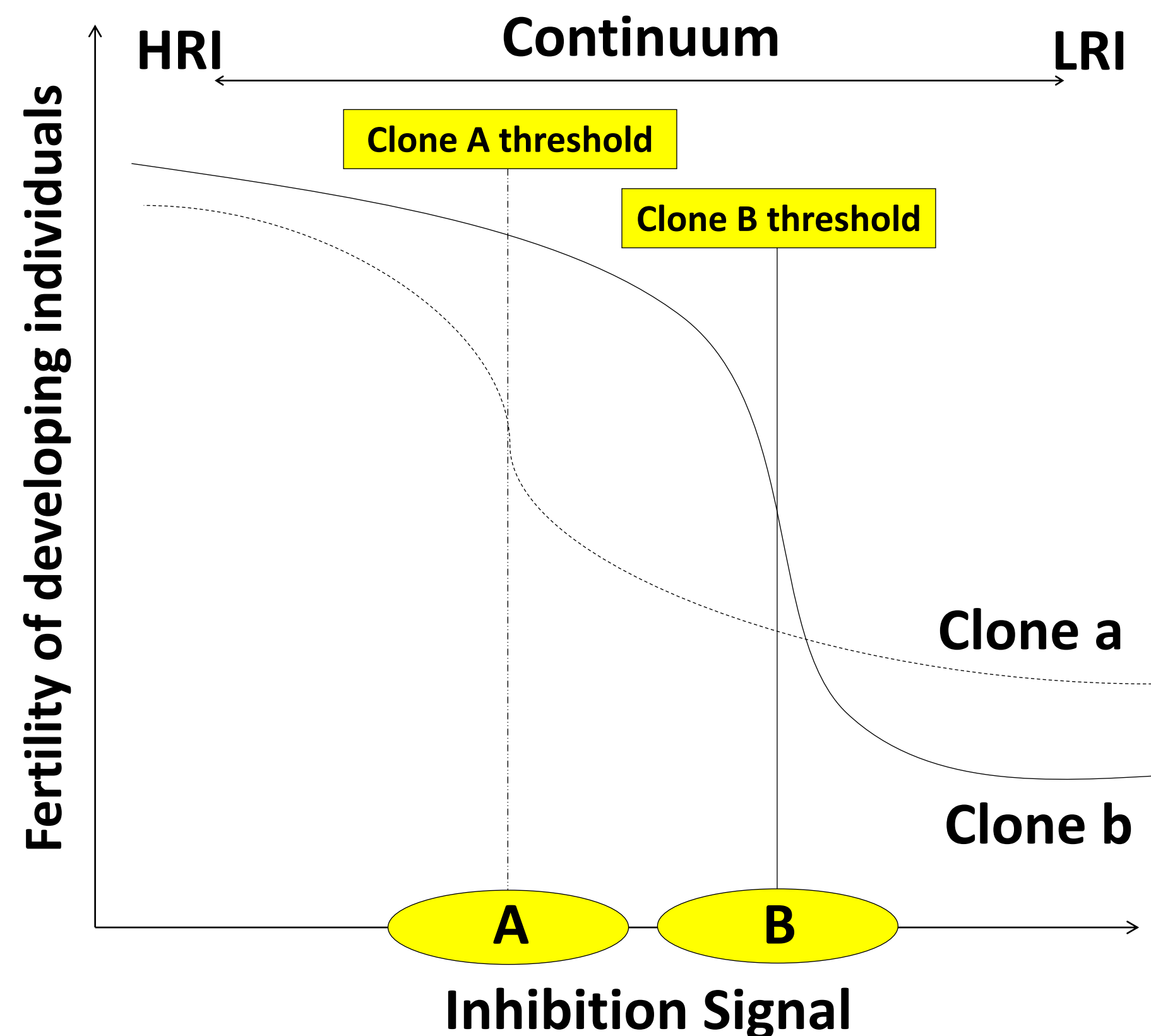


Different clonal lines produce different proportions of HRIs. How does this regulation work?

We cross-fostered larvae between two clonal lines and checked the proportion of HRIs produced in the various combinations



Clone B produces significantly more HRIs when bred by clone A adults

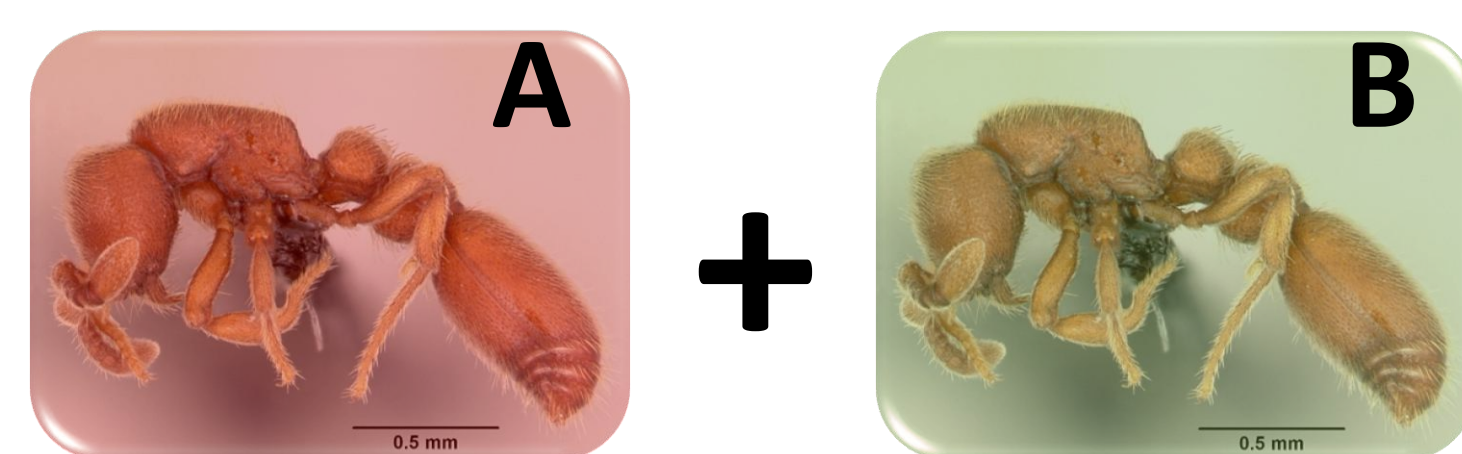


Clone A produces a significantly higher number of larvae than clone B

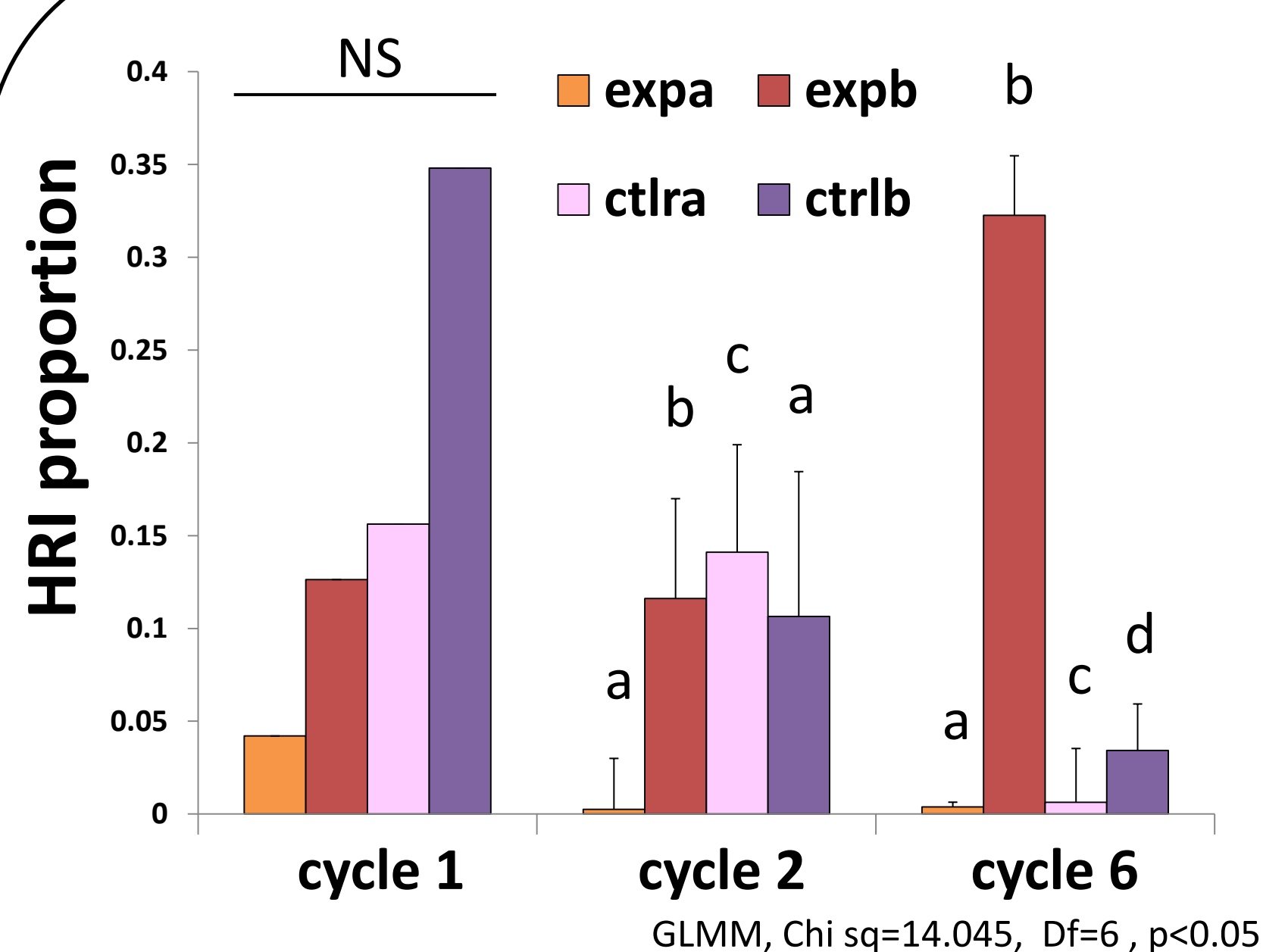
When larvae of clonal line B were bred by clonal line A, they differentiated in HRIs significantly more than when bred by clonal line B: **differential regulation of a polyphenism**

Clone A is very fertile, Clone B is less fertile but produces a higher proportion of HRIs. Are these strategies used to compete in experimental biclinal colonies?

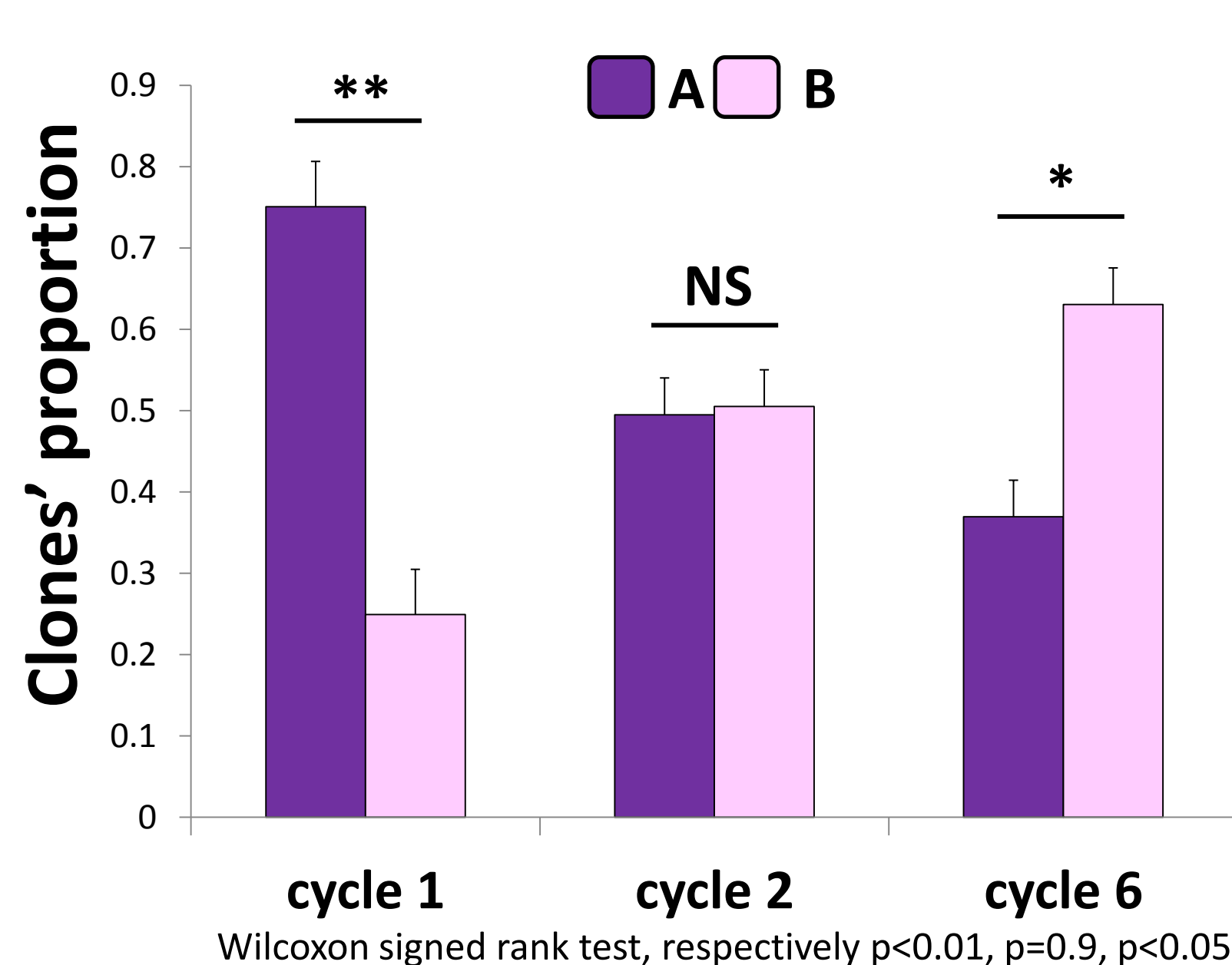
Genetic heterogeneity is associated with intra-organismal conflicts. Competition in chimeric aggregations of different clonal lines (e.g. *Dyctiostelium discoideum*)



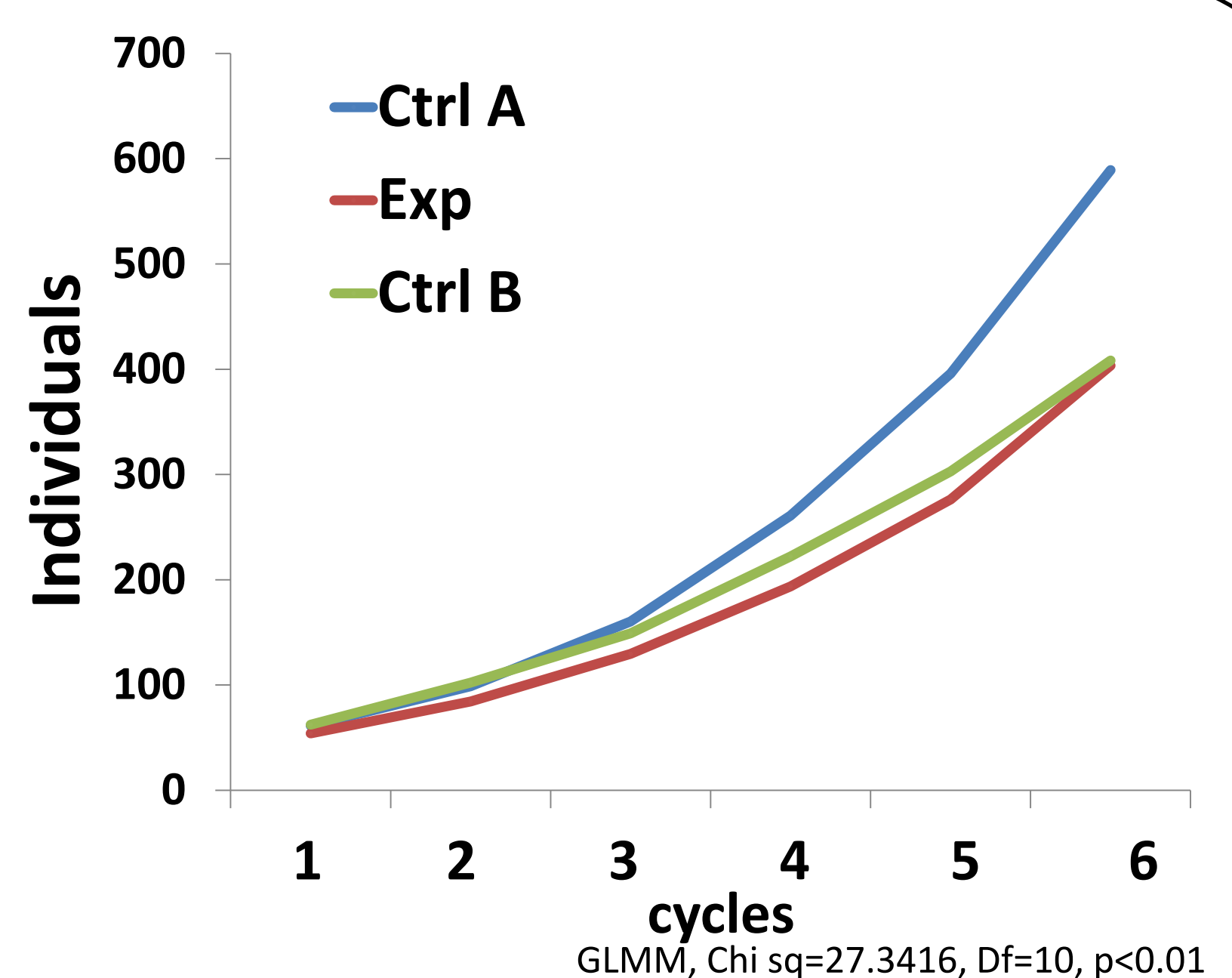
Biclinal colonies were followed during 6 colony cycles, individuals were genotyped at the end of the experiment to explore interclonal competition



Clone B produces significantly more HRIs in biclinal than in monoclonal colonies



Clone B outcompetes clone A by increasing its ratio at each colony cycle



Clone A pure colonies were significantly bigger than biclinal or clone B pure colonies

Conclusions

Clonal lines shows different plasticity levels and regulate caste differentiation with quantitatively different levels of inhibition
The clonal lineage with the highest threshold for the inhibition of the HRI developmental pathway (clone B) is selected in a competitive situation
The clonal lineage with the lowest threshold (clone A) is less fit in competitive situations but reproduces more than the other clonal lineage
Our work brings new general insights on intra-organismal conflicts of interests and on the regulation of polyphenisms