Early evolution and structure of a young supergene governing social behavior

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The long-term genomic consequences of suppressed recombination are best known from sex chromosomes, where a dramatic reduction in chromosome size is observed. The effects over shorter timescales, or in other “supergene” regions are less understood. Our optical mapping and sequencing of the young social chromosome supergene in three fire-ant species shows that the accumulation of structural mutations is shaping the early evolution in this system. Our analysis not only represents the first direct evidence of degenerative expansion in animals, but also sheds light on the evolutioary processes in supergenes in general and the origin and and evolution of this social chromosome system in particular.