

Field evidence for an association between growth and protein polymorphism in the acorn barnacle *Semibalanus balanoides*

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Organisms living in highly heterogeneous environments are useful for examining the effects of associations between phenotypes and ecologically relevant genes in the field. Here, we tested the null hypothesis of no association between the variation in 2 fitness-related traits (growth and fecundity) and polymorphism at 2 enzymatic loci, MPI* and GPI*, known to be subject to strong spatial selection. We also tested if such an association was related to the intensity of genotype selection observed for both allozymes at sampling locations in 2 barnacle cohorts. For both cohorts, individuals with the GPI*286/286 genotype were larger in size than individuals with the GPI*100/100 genotype, particularly in sites and microhabitats south of the Miramichi Estuary, Gulf of St. Lawrence, Canada. This coincided with a reduced GPI*100/100 frequency in this region. In contrast, the growth-MPI* genotype association showed no clear pattern. Overall, our results indicate that the phenotype-genotype associ