Negative Impact of somatic Aneuploidy in bivalve's growth rate: ten years of case studies

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The aneuploidy phenomenon (mainly hipodiploidy) has been observed in several species of marine bivalves. Furthermore, a negative relationship between growth rate and this phenomenon was already verified for the species of oyster *Crassostrea gigas*, *C. angulata* and interspecific hybrids. This negative relationship is of particular importance, since the variability of growth rate is one of the biggest problems faced by bivalve producers. The clam *Ruditapes decussatus* is one of the most important bivalve species in Southern Europe (Portugal, Spain and Italy). However, despite the high commercial and social importance of the production of this clam, very few studies of selection and genetic improvement were made so far. Moreover, local Portuguese producers have observed, in the last years, a decrease in the maximum size reach by individuals of this species. In this study, and in order to establish the potential link between aneuploidy and growth rate in R. decussatus we determined the aneuploidy rate of two types of individuals of the same cohort, the socalled "fast-growers" and "slow-growers." These two types are present despite the fact that all individuals are raised under the same conditions of culture. In order to try to clarify the nature of the aneuploidy phenomenon in bivalves (and its negative relationship with growth rate) we applied the molecular cytogenetic technique of banding with restriction enzymes for the identification of the missing chromosomes in aneuploid karyotypes of *R. decussatus* and other bivalve species.