

# THE SENEGALESE SOLE *Mx* GENE PROMOTER CONTAINS A VARIABLE MICROSATELLITE REGION INVOLVED IN THE TRANSCRIPTIONAL CONTROL

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Interferons (IFNs) play a key role in the fish innate immune system against viral infections by stimulating the expression of IFN stimulated genes (ISGs), such as *Mx*. The mechanisms involved in the transcriptional regulation of fish ISGs are poorly understood. The sequencing of the Senegalese sole (*Solea senegalensis*) *Mx* gene (*SsMx*) promoter revealed the presence of a guanosine-cytosine (G-C) rich region that contains a microsatellite, sited close to the translation start codon. The aim of the current study has been to determine the functional role of this region and to study its variability.

In order to fulfill the first objective, RTG-2 cells were transiently transfected with a vector containing the luciferase reporter gene under the control of the wild type *SsMx* promoter or the mutated promoter in which the G-C region was removed. Afterwards, transfected cells were treated with poly I:C and the luciferase activity was measured at different times post-stimulation. The results indicated that this region is involved in the *SsMx* transcriptional control, being an essential motif for the *SsMx* promoter activity.

In addition, the microsatellite variability was studied in different sole populations, in which four different alleles have been found. The differences in the genetic structure of this locus among these populations have been analyzed. Microsatellites in gene promoters are commonly involved in the transcriptional regulation, and allelic differences are frequently related to the promoter activation level. For this reason, it is tempting to suggest that the polymorphisms found in the G-C microsatellite of the *SsMx* promoter, which has not been previously described in any teleost *Mx* gene promoter, might have a functional meaning. However, further studies are required in order to establish a functional relationship between the different alleles and the level of *SsMx* transcription. In this approach, it would be mostly interesting to evaluate if this variability is related to the Senegalese sole resistance to viral infections. If such relationship exists, this locus could be used as a marker for genetic selection of this fish species.

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