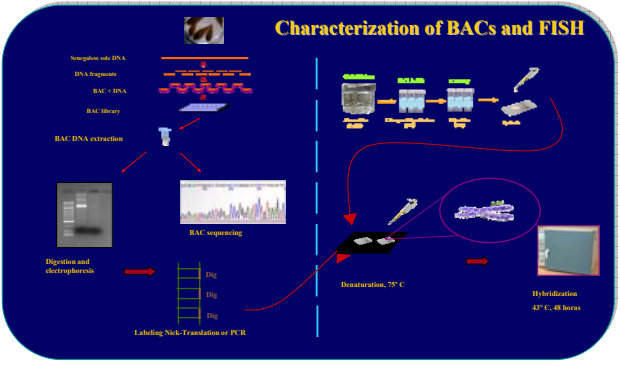
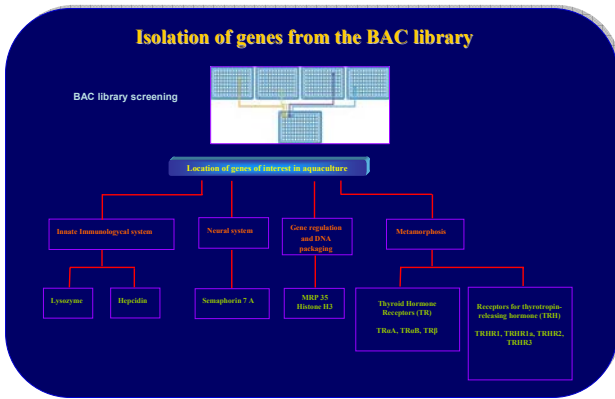


Gene mapping in the karyotype of *Solea senegalensis* using BAC clones

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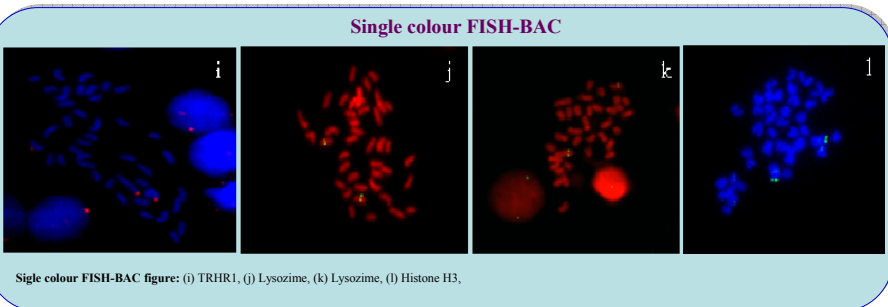
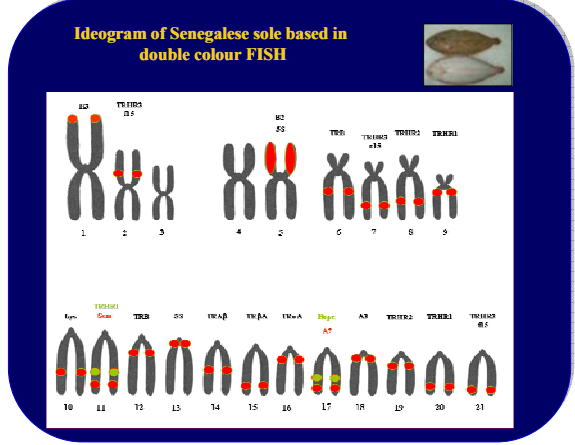
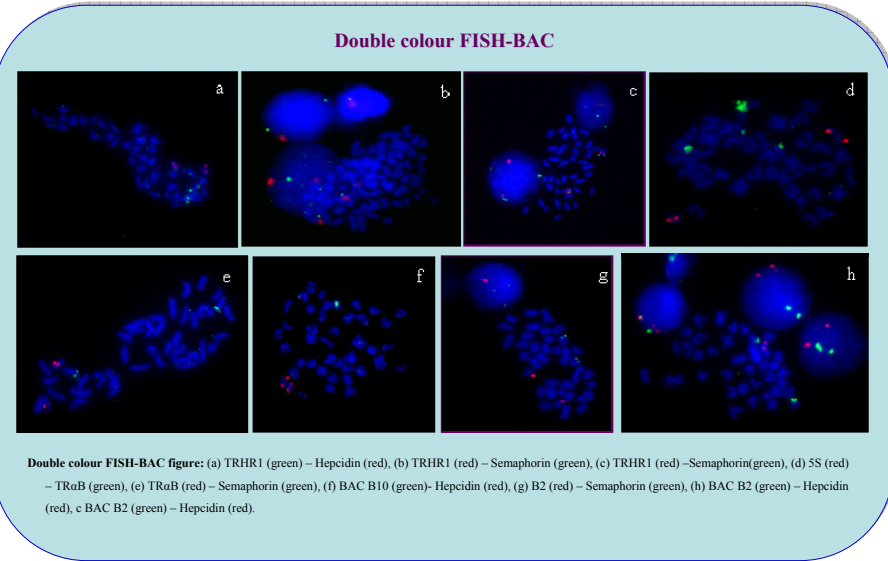
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Abstract
The Senegalese sole is one of the most highly valued commercial species in Southern Europe; it has attracted increasing interest particularly since the 1990's. Nevertheless, there are still unresolved problems that adversely affect its cultivation and prevent the maximum benefit being obtained from its production. The principal problems are associated with reproduction, low rates of growth in juveniles and high susceptibility to diseases, as well as high rates of mortality related to metamorphosis. Knowing the position of genes of interest in the chromosomes facilitates the construction of linkage maps and allows the chromosomes to be assigned to physical maps obtained by sequencing. This study is an initial approach to the production of a chromosome map of *Solea senegalensis*. The starting point for this objective is a gene library of cloned inserts in vectors capable of hosting fragments of large size: in our case, artificial chromosomes of bacteria (BAC). We have developed a protocol of single and double FISH techniques for localizing individual BAC, and have also performed double FISH for localizing two markers at the same time. Our results show the localization of BAC clones that contain genes related to the innate immune system that are important for the cultivation of this species, and genes and receptors of thyroid hormones involved in the metamorphosis of the sole. All the combinations of these genes have been analyzed by double FISH techniques to determine whether they co-localize, and also with those of gene families. Thus the first chromosome map of *S. senegalensis* has been obtained.



Double colour FISH-BAC combinations table

	5S	Lys	Sem	Hep	TRhA	TRhB	TRhC	TRHR1	TRHR1a	TRHR2	TRHR3
5S		X	X	X	X	X	X	X	X	X	X
Lys			X	X	X	X	X	X	X	X	X
Sem				X	X	X	X	X	X	X	X
Hep					X	X	X	X	X	X	X
TRhA						X	X	X	X	X	X
TRhB							X	X	X	X	X
TRhC							X	X	X	X	X
TRHR1								X	X	X	X
TRHR1a									X	X	X
TRHR2										X	X
TRHR3											X



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