Adaptative Immunity, A True New Gene in Ophiocomina Nigra: An Ophuirid Igkappa Gene

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Abstract
It was shown 32 years ago that the sea star axial organ cells (AO cells) produced a spontaneous cytotoxicity against mouse cancerous cells. Recently, we discovered a sea star Ig kappa gene with immune properties. This gene was inserted in a CMV (cytomegalovirus) and finally in a plasmid called « young » plasmid. The induced « young » protein exerted a spontaneous cytotoxicity against Hela cells (cervix carcinoma cells) and at a weaker degree against dendritic cell, MSC cells.

Keywords: Ophiocomina nigra; Ophuirid Igkappa Gene

Introduction
Recently, investigations performed in our laboratory, have provided evidence, that the Ophuirid : Ophiocomina nigra (Echinodermata), presented antibody-like reactions with cellular and humoral reactions to peroxydase antigen. These reactions are similar to those observed in the sea star Asterias rubens, another Echinodermata and we know that the Asterias rubens genome contains the sea star Igkappa gene with Ig sites, a Fab gene, a Fc receptor gene [1-4]. The aim of this work consists to explore immune genes in the genome of virgin Ophiocomina nigra.

Materials and Methods
Ophiocomina nigra was collected to the Biologic station of Roscoff (France). Digestive coeca were excised and treated with Uptizol (Interchim) to obtain m RNA Ophiocomina nigra.

Preparation of library (RNA), by the Use of the Kappa mRNA Hyper Prep Kit
Sequencing: The sequencing was done with a NextSeq 500Illumina (2.75 bases).
Transcriptome was assembled from RNA-Seq fastq files using Trinity v2.1.1 with default parameters. A BLAST database was created with the assembled transcripts using make blast db application from ncbi-blast+ (v2.2.31+) [5]. The sequences of transcripts of interest were then blasted against this database using blastn application from ncbi-blast+ with parameter word size 7 [6].

Results
An obtained blast against homo sapiens was very highly significant (E-value of 2,00E-12).
Undoubtedly it brings the evidence of the existence of an Ophuirid-IGKappa gene.
The Sequence Follows

>BC030813.1 Homo sapiens immunoglobulin kappa locus, mRNA (cDNA clone MGC:22645 IMAGE:4700961), complete cds

5'GAGGAACTGCTCAGTTAGGACCCAGGAAACCATGGAAGCCAGGACGATTGCTCTTCTCTTTGCTACCTCAGCAGCTCAGGTGTTATCCGTACGAGGAGCATTGCAGAGTGTACGGGTTCGAGCACTCTGCTAC

Conclusion and Discussion

A gene of about 960 nucleotides appears. It is longer than the one found in Asterias rubens (Asterid) in immunized sea stars to HRP [3]. For the second time, «The classic immunology» is broken with the emergence, in Invertebrates, of a gene which has the property of Invertebrate primitive antibody. But it would be necessary to correlate this gene to the obtained immune reaction in Ophuirids. We suggest that the Echinodermata primitive antibody is composed of 4 subunits Kappa light Chains of 30,000 daltons each, as it was said for the Asterid: Asterias rubens A bright avenir is opened in the field of comparative immunology [1].

References