

The Sea Star Igkappa Gene and The Ophiurid Igkappa Gene Vaccinations to HRP (Horse-radish Peroxydase)

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Abstract

The main point of the sea star immunology, of the ophiurid immunology remain the discovery of the INVERTEBRATE PRIMITIVE ANTIBODY (IPA), the IGHKAPPA GENES, with Ig sites which imply the COMPLEMENT SYSTEM, to be initiated: 9 component genes from C1 to C9 have been updated these last years, in sea star genome, in ophiurid one. These primitive antibodies were obtained after immunizations to the enzyme HRP (Horse-radish peroxydase). It is the first time we observe vaccinations in invertebrates. We have discovered, for the first time also, in these same Invertebrate a FC receptor gene, a Fab gene which corroborate the presence of IPA. The transcriptomes are given. It is the first time, we can speak of Adaptative Immunity, in Echinoderms, in Invertebrates Since many years, even since a century long, the notion of Antibody was out of the speech of immunologists. To speak of that made you as an outlaw. It is time to look with genomic studies which confirm which assert now evidence that 3 classes of Echinoderms out of 5 possess an Ighkappa gene, a FC receptor gene. I recall these classent: the Asterids with *Asterias rubens*, the Ophiurids with *Ophiocomina nigra* and the Crinoïds.

Keywords: Invertebrates, Echinoderms, Antibody, Complément, Ighkappa Gene, Fab Gene, Fc Receptor Gene

ncbi-blast+ with parameter word_size 7 [3].

Introduction

It is a long time we research the presence of antibodies in Invertebrates. We think to give an answer with this work we present now [1].

Materials and Methods

- Animals:** The Asterids: *Asterias rubens*, the ophiurids: *Ophiocomina nigra* were purchased from the Marine Biology Laboratory of Roscoff (France)
- Obtention of Crinoïd mRNA:** Digestive coeca were excised from the *O. nigra* body. *O. nigra* mRNA was obtained from Uptizol (Interchim). Quality control were operated. Similar protocol was done with *Asterias rubens* for the obtention of mRNA.
- Sequencing:** Sequencing was made on Illumina Next Seq 500 with paired-end : 2. 75 bp Transcriptome was assembled from RNA-Seq fastq files using Trinity v2.1.1 with default parameters [2]. A BLAST database was created with the assembled transcripts using makeblastdb application from ncbi-blast+ (v2.2.31+). The sequences of transcripts of interest were then blasted against this database using blastn application from

Results

Many Sequencing data with a High significant e-value have been obtained Now, when we have a look on the ophiurid Ig kappa gene sequence, it may be observed Ig sites in translated amino-acids sequence:

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

5'GAGGAACTGCTCAGTTAGGACCCAGACGGAACCATG
GAAGCCCCAGCGCAGCTTCTCTTCCTCCTGCTAC

TCTGGCTCCCAGATAACCACTGGAGAAATAGTGATGA
CGCAGTCTCCAGCCACCCTGTCTGTGTCTCCAGG
GGAAAGAGCCACCCTCTCCTGCAGGGCCAGTCAGA
GTGTTACCAGCAACTTAGCCTGGTACCAGCAGACA
CCTGGGCAGTCTCCCAGGCTCGTCATCTATGGTGCA
TCCAGCAGGGCCAGTGGTGTCCCAGCCAGGTTCA
GTGGCAGTGGGTCTGGGACAGAGTTCACTCTCA
CCATCAGCAGCCTGCAGTCTGAAGATTTTGCAGTTTA
TTACTGTCAGCAGTATAATAAGTGGCCGCACACTTTT
GGCCAGGGGACCAAGCTGGACATCAAACGAACT

GTGGCTGCACCATCTGTCTTCATCTTCCCGCCATCTG
ATGAGCAGTTGAAATCTGGAACCTGCCTCTGTTG
TGTGCCTGCTGAATAACTTCTATCCCAGGGAGGCCA
AAGTACAGTGGAAGGTGGATAACGCCCTCCAATC
GGTAACTCCCAGGAGAGTGTACAGAGCAGGACA
GCAAGGACAGCACCTACAGCCTCAGCAGCACCTG

ACGCTGAGCAAAGCAGACTACGAGAAACACAAAGTC
TACGCCTGCGAAGTCACCCATCAGGGCCTGAGCT
CGCCCGTCACAAAGAGCTTCAACAGGGGAGAGTGTT
AGAGGGAGAAGTGCCCCACCTGCTCCTCAGTTC
CAGCCTGACCCCTCCCATCCTTTGGCCTCTGACCC
TTTTTCCACAGGGGACCTACCCCTATTGCGGTCC
TCCAGCTCATCTTTCACCTCACCCCTCCTCCTCC
TTGGCTTTAATTATGCTAATGTTGGAGGAGAATG
AATAAATAAAGTGAATCTTGCAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAA 3'

Conclusion

It is obvious that sea star Igkappa gene, that Ophiocomina nigra Igkappa gene exist. A scientific fact is a scientific fact! Many researchers of these last years are doubtful. In 1990 they asked me to give the genomic evidences of our results concerning the existence of invertebrate primitive Anti body: it's done. Since 2012-2019 we assert these data. And now what they are waiting for ?

References

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