



Evidence of Fab Fragment Gene in the Ophiurid : Ophiocomina Nigra (Echinodermata)

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Abstract

Recently, Fab fragment gene was discovered in the Asterid genome (Asterias rubens genome). More recently was found the Fab fragment gene in the Ophiocomina nigra genome with an e-value of $3,00E-12$ and 89,38 identity (Homo sapiens/o.nigra). This discovery corroborates the presence of a primitive antibody in Ophiurids.

Keywords: Invertebrate, Ophiurids, Ophiocomina Nigra, Fab Fragment Gene, Primitive Antibody

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Introduction

The purpose of this paper is to draw attention to the emergence of primitive antibody ([Ref. 1,2](#)) in two classes of Echinodermata :

The Asterids and the Ophiurids.

In the sea star primitive antibody, the presence of Fab fragment gene occurred ([Ref.3](#))

The aim of this communication is to look for Fab fragment gene in the genome of Ophiocomina nigra.

Materials and Methods

Ophiocomina nigra was obtained from the Biology Station of Roscoff.

a) Ophiocomina nigra and its preparation to obtain mRNA have already been described ([Ref. 2](#)). Furthermore quality controls were made.

b) It is useful to add that :

Transcriptome was assembled from RNA-Seq fastq files using Trinity v2.1.1 ([Ref.4](#)) with default parameters. 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 ncbi-blast+ (Ref .5) with parameter word_size 7.

Results :

The transcriptome presents the sequence of Fab fragment gene(e-value:3,00E-12)

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>NM_133273.3 FCAR (2204) Fab fragment / Homo sapiens Fc fragment of IgA receptor (FCAR), transcript variant 5, mRNA
5' TCCACCC AAGAGCAACCTGGAACTAAGTTATTCGGCAACGAACTGTTCCACTTTGTTGTGAGGCAATAGA
TGTGGAAATCCCTGACGAGGGGCTCTGTCTCATACTTCTGCGGAGCTTATTGTCGTAAGAATACTG
TCATCCTGCTAATGTGCATTGAAAGGAGAGCAACGGGGCTGAGGCGGTGTCAGCACGATGGACCCAAAC
AGACCACCCTCCTGTGTCTTGGGACITTCCTCATGCTTTCATATCTGCCAAATCGAGTCTGTGATTC
CTTGGATGGATCTGTGAAAATCCAGTGCCAGGCCATTCTGTAAGCTTACCTGACCCAGCTGATGATCATA
AAAACTCACGTACCGAGAGTAGGCAGAAAGACTGAAGTTTTGGATGAGACTGATCCTGAGTTCGTCA
TTGACCACATGGACGCAAAACAGGCGGGCTATCAGTGCCAAATAGGATAGGGCACTACAGGTTCGG
GTACAGTGACACCCTGGAGCTGGTAGTGACAGACTCCATCCACCAAGATACACGACGCAAGAACTTGATC
CGCATGGCCGTGGCAGGACTGGTCTCTGTGCTCTCTTGGCCATACTGGTTGAAAATGGCACAGCCATA
CGGCACCTGAACAAGGAAAGCTCGGCAGATGTGGCTGAACCGAGCTGGAGCCAACAGATGTGTCAGCCAGG
ATTGACCTTTGCACGAACCAAGTGTCTGCAAGTAAACACCTGGAGGTGAAGGCAGAGAGGAGCCAGGA
CTGTGGAGTCCGACAAAGCTACTTGAAGGACACAAGAGAGAAAAGCTCACTAAGAAAGCTTGAATCTACTT
TTTTTTTTTTTGTGAGACAGAGTCTGGCTCTGTCAACCAGGCTGGAGTGCAGTGGAGCAATCTCGGCTCAT
TGAACCTCTTGGGTCAAGTGAATCTTGTGCTCAGCCTCCCAAGTAGCTGGAATTACAGGCACATACCA
CTGCACCAGCTAATTTTTGATTTTTAGTAGAGATGGGTTTTCACTGTGTTGGCCAGGC TGGTCTCGAA
CTCCTGACCTCAGGTGATCCACCCACTTGGCCCTCCCAAGTGTGAGATATATAGGCATGAGCCACCAGC
CCTGGCCAGATGCATGTTCAAACCAATCAAAATGGTGT TTTCTTATGACGACTGATCGATTTGCACCCAC
CTTTCTGCACATAAAGTTATGGTTTTCCATCTTATCTGTCTTCTGATTTTTATATCTCTGTTAATTCTT
CCTTCATTGTTCTTCTCTTTTTTTATTTATTTATTTATTTTTATTTTTATTTTATTTTATTTGAGACAGAGTC
TCACTCTGTTGCCAGGCTGGAGTGCAGTGGCACGATCTCGGCTCAGTGCACCTCTGCTCTCTGGGTTT
AAGTGATTCTCCTGCTCGGCTCCCAAGTAGCTGGGATTGCAAGGCTCCACCAATCAGCCAGCTACTT
TTACAGTATTTTTAGTAGAGACGGGTTTTCATCATATGGCCAAAGCTGGTCTCAAACCTCTGACCTCGTG
ATCTGCCCGCTCGGCTCCCAAAGTGTGGGATTACAGATGTGAGCCACTGCGCCAGCCTTCTTTTA
TATTTTTAAATGTCTCTCCCAAATATAAATGGTTGTAAGCATGCCAAATATATTCAAATAACCCCTCT
CCITTTATTTTTTTTGTGAAGTGAAGGCTCTCCCTATGTTGCCAAGCTGGTCTGAACTCCTGGTCTCA
AGCAATCCCTCTACCTCAGCTCCTGCTGTTTCATCTACAAATGATAAGAGTGAAGTCAATAATCCTA
CAGGAGGATACCTTATTTATTTACAAACCTATTTCTACCGATTTTATACAGGAAATACAGGCATG
TGTTTCACTCATTAAITTTTACTTACTTGTGATGATATTACATATAATTCAAGTGTGCAAA
CAITAAATCTTTGTGACAAACTCAAATGGTCTTCCAAATAATCCCAATTCTTTTTCTTATAAATT
TCACAGCTTTACCCCTGACAGACTTACTCAAGGAAATCTAAGTTGGTCAATATGTTGGCTTTTCACTGAT
TGCTATTTACTTCAATGTCAGTAGCTTATGATGAAAATATAAATATAAATGTAAGGGTCTCTACCTCC
AGTGAACCTGAAGGGACTTAGGCCACTTTTATCCTTACTGAGAGCTTATCTCTACTTGATAAAAATTC
TACTGTATCTTGGCTTAACTCAGGTCTGTGATTAATAAAAAAATGCAAGTA3'
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Discussion-Conclusion

The identity of the sequence with Homo sapiens is of 89,38 %. The e-value is highly significant..

In *Asterias rubens* Fab fragment gene was clearly expressed such as Fc receptor gene(Ref.3)

We'll retain the fact that in *Ophiocomina nigra*, Fab fragment gene appears too in the sequencing. It corroborates indirectly, by its presence, the explanation of a primitive antibody, in ophiurids (Echinodermata)

We recall that Echinodermata shows immune specific humoral

reactions, at least for asterids and ophiurids(Ref.1 and 6) : it makes their originality.

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