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# The Fc Receptor Gene in an Invertebrate

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## Abstract

Ig Kappa genes and complement genes were found in the sea star in the past. Recently, we discovered a "sea star IgKappa gene". More recently, we found an Ig epsilon Fc receptor gene, a Fab gene, when compared to mouse genome, in non-immunized sea stars to HRP. The aim of this paper is to come back on the existence of Fc receptor gene in immunized sea stars.

***Keywords:*** *Invertebrate; Immunized sea star; Fc receptor; Immunoglobulin;Primitive antibody*

## Introduction

Recently it was discovered a Fc receptor gene in the sea star transcriptome when compared to mouse genome [1]. The aim of this paper was to research this gene in immunized sea stars to HRP (Horse-radish peroxydase) we describe now.

## Material and Methods

Sea stars were obtained from the Biology Institute (Gothenburgh University).

Immunizations, genomic studies were already described [2].

After ligation of adapters for Illumina's GSII sequencing system, the cDNA was sequenced on the Illumina GSII platform sequencing.

1.100 bp from one side of the approximatey 200 bp fragments sequences were assembled using Velvet [3].

## Results

Low affinity Immunoglobulin epsilon Fc receptor appear in immunized and non-mmunized sea star genomes.

### Result with non-mmunized animals is given again

One contig (Contig10847) could be annotated via BLASTX to *Mus musculus* "Isoform 3 of Low affinity immunoglobulin epsilon Fc receptor" from the Swissprot database (FCER2_MOUSE), with an e-value of 1.49e-11.

On an aligned region of 118 amino acids, 63 positive and 40 identical amino acids were found.

**5'**TCCATTAGGGCAATGAGTGGGACTGCGCGGCTTGGCACAGATCATCCCTTTTCTATCACG
ACACCTCGAGTCTTTCCACTTGCCGTTGCTAATCTGTAATGCCACACAGTTATTCTCCAA
TGATTCGACTCCAGACAGCTCAGTTTGCTCTTCTTCGATGAAGTTCGTGTAGTTGACGGG
GGAATCGTTTGACCATTTCCAATCGCTTTCGTTGTGTGTATCATGGAGCCCGATCCACAC
GTCCCTGTCAATTAGGTCGGTAAGAAAATCATTAATTTCTTGGTCAGTGATGGCGACCAG
CCTAGCGCCGTCGTATTTAGTGCACTTCTGTTCAGCATCGACCCAGCGTGCTACATCGTC
TGGAATCCAGAAGCATTCATCACGGAAGAGATGGCCGTTGTTTAGGCAGTACTGTGGTTG
ACCACGTACTGTTTGAAGAAGATGAGCTGACCCAATAACCATCATCATCACGAATGGAAT
CATTGTGAATTTGTTTGAGATACGTCCGATACGTCCGTCCGTAGATGAAAAAACTGCCGA
AGTCTCTCACATAATTCCACCAGGCATTGTTGATGCCTTGCTGCTCTATGGTTGATGCTT
GGTGGCAGTCCACGAAAGAATGTGCAGTTAGGGAAAGTCCAGCTTGTATATCTC**3''**

### We give now result with immunized sea star genome, when compared to mouse genome

One contig (Contig1930|m.5483) could be annotated via BLASTX to *Mus musculus* "Isoform 3 of Low affinity immunoglobulin epsilon Fc receptor" from the Swissprot database (FCER2_MOUSE), with an e-value of 7.98e-12. On an aligned region of 118 amino acids, 64 positive and 40 identical amino acids were found.

**5'**TATACAAGCTGGACTTTCCCTAACTGCACATTCTTTCGTGGACTGCCACCAAGCATCAAC
CATAGAGCAGCAAGGCATCAACAATGCCTGGTGGAATTATGTGAGAGACTTCGGCAGTTT
TTTCATCTACGGACGGACGTATCGGACGTATCTCGAACAAATTCACAATGATTCCATTCG
TGATGATGATGGTTATTGGGTCAGCTCATCTTCTTCAAACAGTACGTGGTCAACCACAGT
ACTGCCTAAACAACGGCCATCTCTTCCGTGATGAATGCTTCTGGATTCCAGACGATGTAG
CACGCTGGGTCGATGCTGAACAGAAGTGCACTAAATACGAAGGCGCTAGGCTGGTCGCCA
TCACTGACCAAGAAATTAATGATTTTCTTACCGACCTAATTGACAGGGACGTGTGGATCG
GGCTCCATGATACACACAACGAAAGCGATTGGAAATGGTCAAACGATTCCCCCGTCAACT
ACACGAACTTCATCGAAGAAGAGCAAACTGAGCTGTCTGGAGTCGAATCATTGGAGAATA
ACTGTGTGGCATTACAGATTAGCAACGGCAAGTGGAAAGACTCGAGGTGTCGTGATAGAA
AAGGGATGATCTGTGCCAAGCCGCG**3'**

## Discussion and conclusion

So, similar results were obtained with immunized and non-immunized sea stars.

In mouse, it is well-known that Fc receptor binds the antibody to the antigen. In this interaction, antibody can regulate the immune response [4] through Fc receptor.

In mouse the corresponding antibody is an IgE.

We have not found IgE gene in sea star genome but exclusively Ig Kappa chains.

To date all the elements which composed an antibody are present in the sea star Asterias rubens : what is noticeable!

## Bibliography

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