

Evidence of CR Receptor Gene in an Invertebrate

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Abstract

In 2013, Complement components were found in the *Asterias rubens* genome, when compared to mouse genome (Classical and alternative components). Recently, we discovered a Fab gene and Fc gene in the *A. rubens* transcriptome. A link was missing: the CR receptor gene which is described in the present paper.

Keywords: CR receptor gene; Sea star primitive antibody; Invertebrate

Introduction

All the elements which constitute a primitive antibody were discovered in the sea star genome [1] but the CR receptor gene was missing. Nevertheless, Complement components were shown in 2013 [2] especially the C1q component which can link, in mammals to the Fc site of Immunoglobulins. We attempt, in the present paper, to analyse the sea star CR receptor gene.

Materials and Methods

Sea stars were obtained from the Biology Institute (Gothenburg University). Immunizations to HRP, 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 approximately 200 bp fragments sequences were assembled using Velvet [3].

Results

One counting (c20648_g1_i1) could be annotated via BLASTX to *Mus musculus* "Complement component C1q receptor" from the Uniprot database (sp|O89103|C1QR1_MOUSE), with an e-value of 1e-09. On

an aligned region of 83 amino acids, 44 positive and 34 identical amino acids were found.

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5'GGATACACTCTGGACCCTGATCGACATGCTTGCAATAATA
TTGATGAATGCTCAATGACT
CGCACCCACAACACTGTCACCAGAATTGCACTGATACCCCGG
TAGCTACAGCTGTAGTTGT
TACTCTGGTTACTCGCTAGTGGATCCCAAAGGAGTCGAGTG
TGTTGACTATGACGAATGT
GAAAAGAAGGCGGATAACGAGTGTGAACAGCTTTGCATGA
ACTTGGAGGGATTTTACAGC
TGTGATTGCTACCCCGGGTATGAG3'
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Discussion and Conclusion

Result was obtained with control sea stars (non-immunized sea star to HRP: horse -radish peroxydase) It is the first time that such result was given in an invertebrate.

Our study seems now complete: the sea star primitive antibody shows 2 Immunoglobulin sites [4], a Fab site, a Fc receptor and at last a CR receptor site.

We appreciate greatly this new discovery from the point of view of the phylogeny of the « Antibody structure » through the animal kingdom.

References

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