

# T-cell immunomodulatory protein in the sea star *Asterias rubens*: Genomic studies

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## Abstract

The transcriptome of the sea star *Asterias rubens* shows a T-cell immunomodulatory gene when compared to mouse genome. This gene plays a role in the regulation of graft-versus host reaction in mammals and in sea star system.

## Introduction

In mammals, the T-cell immunomodulatory protein is a modulator of T-cell function. It has a protective effect in graft-versus-host disease model [1]. We have, in the past, demonstrated the existence of T and B sea star lymphocytes [2]. In the present paper we tried to determine proteins bound to sea star T lymphocytes, as the T-cell immunomodulatory protein(TIP).

## Material and methods

Sea stars were obtained from Gothenburgh University(Sweden).

Immunizations, genomic studies were already described [3].

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 [4].

## Results

T-cell immunomodulatory protein is present in immunized and non-immunized to HRP sea star genomes.

Result with immunized animals is given:

One contig (Contig11337|m.9741) could be annotated via BLASTX to *Mus musculus* "T-cell immunomodulatory protein OS = *Mus musculus*" from the Swissprot database (TIP\_MOUSE), with an e-value of 2.35e-19. On an aligned region of 113 amino acids, 74 positive and 54 identical amino acids were found.

5'TGCAACTTCCTTACATCATCCTGGGTCTTG-GTCCAAATCCAAACTACGTTGATTCTTTAACAGTGAGCATTGCAGGCGCAACAAAACGAGACACACCGAACAACAAGACAGCACACTTGGATGTCGATCATCCCAAACCTCAGAGCTGATAG-

CAATTCCATATCCCCCTGACGAACCGGAGGAGTGGACGAGTGTCTTAAATTACCCCTGTAGATCCGTTCTATTGACCGGTGGCGTTC TTATAGGAACCTGTGTATTTATGGCAATCGTAGTTGGCGTACTCCAACCTTCTAGAAAAGAGGGAAGATGATCGAGAAAAGAGACAGGAGTCTCACC-GATTC3'

## Discussion and conclusion

Similar results were obtained with non-immunized sea star to HRP.

It is noticeable to recall that T sea star lymphocytes induce a graft-versus-host in vertebrates [2].

when injected by the use of sea star T cell suspension: it induces splenomegaly in chicken and angiogenesis in irradiated mice. It would be interesting to perform these experiments in presence of T-cell immunomodulatory protein, at various concentrations, and to observe, the effect of such a protein on chicken and irradiated mice (inhibitor effect or not).

The emergence of T-cell immunomodulatory protein in sea star genome seems fundamental to the physiology of Asterids and constitutes "a biological marker" of these last ones.

## References

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**Key words:** T-cell immunomodulatory protein, sea star, genomic

**Received:** April 02, 2016; **Accepted:** April 22, 2016; **Published:** April 25, 2016

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