

New Data : Mhc Genes In Echinodermata

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Abstract

MHC genes were recently discovered en 3 classes of Echinodermata out of 5 ones: the Ophuirids, the Crinoïds and more recently : the Asterids. These genes belong to MHC Class I and MHC Class II. Echinids and Holothurids don't present MHC genes

Introduction:

MHCgenes (Class I, Class II) were discovered, for the first time, in Invertebrates, and particularly en 2 classes of Echinodermata : the ophuirids and the crinoïds out of 5 classes [1]. They were found more recently in a third class : Asterids [2].

The aim of this work is to summarize the different obtained results

Materials and Methods:

Three Echinodermata : the Ophuirid (*Ophiocomina nigra*), the Crinoïd (*Antedon bifida*) and the Asterid (*Asterias rubens*) were used.

Their digestive coeca were removed and treated with Trizol (Invitrogen) to obtain RNA. Transcriptomes from *Ophiocomina nigra* (Ophuirids) *Antedon bifida* (Crinoïds) were assembled from RNA-Seq fastq files using Trinity v2.1.1 [3] 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+ [4] with parameter word_size 7.

As for *Asterias rubens* (Asterids), cDNA was normalized using double strand specific nuclease essentially as described by Zhulidov et al [5]. cDNA was fragmented using DNA Fragmentase (New England Biolabs), according to the manufacturer's instructions. After ligation of adapters for Illumina's GSII sequencing system, the cDNA was sequenced on the Illumina GSII platform sequencing 100 bp from one side of the approximately 200 bp fragments. Sequences were assembled using Velvet Zerbino et al. [6]

Assembled nodes were used for further assembly including *Beta vulgaris* EST-Data from NCBI in MIRA.

Results :

Results are summarized in a table (Table 1) which is following. It correspond to various transcriptomes (1, 2) discovered in the 3 classes of Echinodermata with a significant e-value

MHC CLASS I : HLA-E	OPHUIRIDS CRINOÏDS
HLA-B	OPHUIRIDS CRINOÏDS
HLA-A	ASTERIDS
MHC CLASS II : HLADRB1	OPHUIRIDS CRINOÏDS
HLADQB1	OPHUIRIDS CRINOÏDS
HLADQA1	ASTERIDS

**Table 1 : Presence Of Mhc Genes In Echinodermata Classes.****Conclusion:**

It appears as clearly as possible that 3 MHC Class I genes are present in Echinodermata : we recall next to HLA-A gene : the HLA-B, the HLA-E genes we described

On the other hand 3 MHC Class II genes exist in Echinodermata : HLADRB1, HLADQB1 and HLADQA1 ones.

Further studies are necessary to clarify or to confirm a) the non-existence of MHC Class II genes and Class I in Holothurids which have not axial lymphoid organ and Echinids which have

been highly studied in the past, from a genomic point of view.. The Echinids and Holothurids are in fact, the 2 missing classes of Echinodermata which don't present Adaptative Immunity.

References:

1. Leclerc M, Proteomics and Bioinformatics 2020 ; 2(1) :59-61
2. Leclerc M, et al Eur.J. Biol Biotechnol 2021 ; 2(2):60-62
3. Grabher M.G, et la Nature Biotechnology 2011 ; 29 644-52
4. Altschul S. F, et al J.Mol.Biol 1990 ; 215(3) 403-410
5. Zhulidov PA, et al. Nucleic Acid Res 2004 ; 3 : 32-37
6. Zerbino DR, et al. Gen Res 2007 ;18 : 821-829