

IG V-L K appa Expression from Sea Star Igekappa Gene

Michel Leclerc

Immunology of Invertebrates, Div: Biochem/Biology, Orléans University (France) 556 rue Isabelle Romée, 45640 Sandillon (France).

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***Corresponding author:** Michel Leclerc, Immunology of Invertebrates, Div: Biochem/Biology, Orléans University (France) 556 rue Isabelle Romée, 45640 Sandillon (France).

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Abstract

The sea star IGKappa gene was cloned in 2014 by the use of primers. It was compared in the present work to Vertebrate Immunoglobulin genes. A high identity was found with these last ones. A length of 105 amino acids fit with Immunoglobulin domain

Introduction:

The sequence of the sea star *Asterias rubens* IGKappa gene was described by our team, in 2014(Ref 1). Since we have tried to find homologies between this gene and upper genes from lower Vertebrates to human genes.

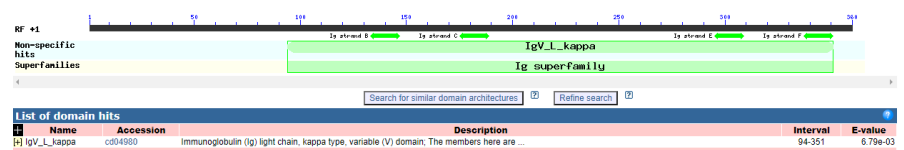
We report, in the precedent paper, results obtained with upper Vertebrate genes by the use of blasts directed against these last ones (Ref 2, 3)

Results:

The sequence of the sea star IGKappa gene is the following (Ref 1):

```
5'GGA TCC GGA GGA ATG
CGTGGCAACATGGCGTCTCTATGGATGTTCTTCTT
TGTCGTGGGGATAACTTTACAACGGAGTTTGGCGATTTACACGTTTCGCG
AGCAACCGTCGGACACTAGCGCGTTGCAGGGGAGCACAGTGGTGCTTCA
C
TGCTCCGTTGAGCAGTACATAAACACCACGGCCATCGTTTGGTGGAGCCG
TGACTCGGTCATCAGCCACAACAAAGACCTGAAACTGTCCAGTCTAAAC
A
CCGACCAGCTCCAAAGTACTCGATTTCAGGCGACGCATCTCGGGGGGA
A
TTCAACCTTAAAATAGTGAACCTTACC GCCACAGACGCCGCCAGTTACCG
CTGTCAGATG TAA GAA TTC3'
```

The bioinformatic work leads us to show similarities between sea star IGKappa gene and Immunoglobulin domain from Vertebrates

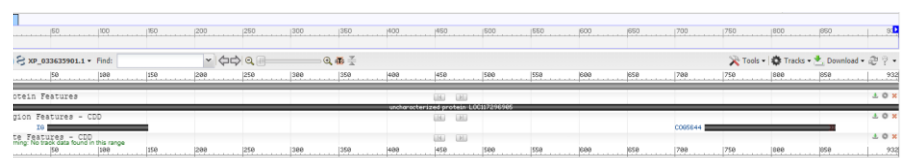


Non-specific hits: IgV_L_Kappa

[Non-specific hit, evaluate = 6.79e-03] cd04980, Immunoglobulin (Ig) light chain, kappa type, variable (V) domain; The members here are composed of the immunoglobulin (Ig) light chain, kappa type, variable (V) domain. This group contains the standard Ig superfamily V-set AGFCC'C"/DEB domain topology.

Super-families: Ig superfamily

[Superfamily, evaluate = 6.79e-03] cl11960, Immunoglobulin domain; The members here are composed of the immunoglobulin (Ig) domain found in the Ig superfamily. The Table 1, as shown below, resumes our results: We observe again the Immunoglobulin domain and a particular one without immune function.





Two region features:

a. Region Ig

Comment: Immunoglobulin

Location: 47...151

Length: 105 aa

CDD: 214652

b. COG5644

Comment: U3 small nucleolar RNA-associated protein 14 (function unknown)

Location: 731...866

Length: 136 aa

CDD: 227931

Table 1: PREDICTED: *Asterias rubens* uncharacterized LOC117296905 (LOC117296905)

Conclusion: We retain from this bioinformatic analysis, the

presence of Immunoglobulin domain in the sea star IGKappa gene with the CDD:214652. This gene, nevertheless, seems less evolved than the Ophurid IGKappa gene we discovered 1 month ago (Ref4) in terms of Immune functions.

These 2 genes from Echinodermata (Invertebrates) bring us a new light in Immunogenetic World and mainly in Comparative Immunology between Invertebrates and Vertebrates animals.

References:

1. Vincent N et al (2014) *Meta Gene* 2:320-22
2. Marchler-Bauer A et al (2017) *Nucleic Acid Res* 45 (D): 200-3
3. Marchler-Bauer A et al (2011) *Nucleic Acid Res* 39(D):225-9
4. Leclerc M (2021) *J. Clin. Class. Immunol* 1(1)