



The Asterias Rubens Sea Star Igkappa Gene When Compared to Marthasterias Glacialis Sea Star Genome(Echinodermata)

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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 Marthasterias glacialis sea star genome. A high identity was found with this last one.

Keywords: Asterias Rubens; Echinodermata; Human Genes

Introduction

The sequence of the sea star Asterias rubens IGKappa gene was described by our team, in 2014 [1]. Since we have tried to find homologies between this gene and genes from another Asterid: Marthasterias glacialis We report, in the

precedent paper, results obtained with these last ones by the use of blasts against human genes [2,3].

The sequence of the sea star IGKappa gene is the following [1]:

```
5'GGA TCC GGA GGA ATG CGTGGCAACATGGCGTCTCTATGGATGTTCTTCTT
TGTCGTGGGGATAACTTTACAACGGAGTTTGGCGATTTACACGTTTCGCG
AGCAACCGTCGGACACTAGCGCGTTGCAGGGGAGCACAGTGGTGCTTCAC
TGCTCCGTTGAGCAGTACATAAACACCACGGCCATCGTTTGGTGAGCCG
TGACTCGGTCATCAGCCACAACAAAGACCTGAAACTGTCCAGTCTAAACA
CCGACCAGCTCCAAAGGTACTCGATTTTCAGGCGACGCATCTCGGGGGGAA
TTCAACCTTAAAATAGTGAACCTTACC GCCACAGACGCCGCCAGTTACCG
CTGTCAGATG TAA GAA TTC3'
```

Results

Description	Scientific name	Max score	Total score	Query cover	E. Value	Per. Ident	Acc Len	Accession
Predicted: Asterias Rubens Uncharacterized Loc117296905 (Loc117296905), mRNA	<i>Asterias rubens</i>	634	634	97%	2.00E-177	99.43%	4538	XM_033780010.1

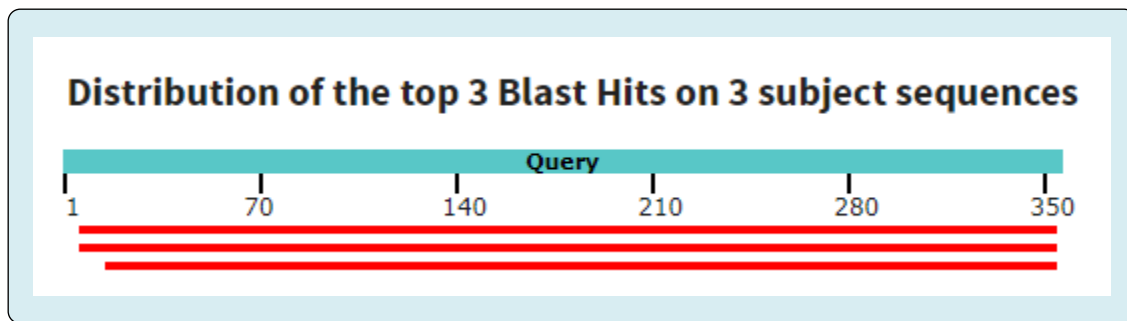
Asterias Rubens Genome Assembly, Chromosome: 11	<i>Asterias rubens</i>	634	634	97%	2.00E-177	99.43%	18069988	LR699102.1
Marthasterias Glacialis Genome Assembly, Chromosome: 6	<i>Marthasterias glacialis</i>	329	329	95%	9.00E-86	84.16%	28777708	OU452224.1

Molecule type: DNA

Query length: 357

Table 1: Blastn Original Sequence, Blastn results.

The graphic summary gives the opportunity to see the top3 Blast Hits:



As for Alignments we find a high identity nearly 100% as shown below:

99% Identities (347/349bp) with Predicted: Asterias Rubens Uncharacterized Loc117296905 (Loc117296905),

mRNA

Reference Sequence: XM_033780010.1

Length: 4539

Aligment: 1546-1894

```

Query 7   ATGCGTGGCAACATGGCGTCTCTATGGATGTTCTTCTTTGTCGTGGGATAACTTTACAA 66
          |||
Sbjct 1546 ATGCGTGGCAACATGTCGTCTCTATGGATGTTCTTCTTTGTCGTGGGATAACTTTACAA 1605

Query 67  CGGAGTTTGGCGATTTACACGTTTCGCGAGCAACCGTCGGACACTAGCGCGTTGCAGGGG 126
          |||
Sbjct 1606 CGGAGTTTGGCGATTTACACGTTTCGCGAGCAACCGTCGGACACTAGCGCGTTGCAGGGG 1665

Query 127 AGCACAGTGGTGCTTCACTGCTCCGTTGAGCAGTACATAAACACCACGGCCATCGTTTGG 186
          |||
Sbjct 1666 AGCACAGTGGTGCTTCACTGCTCCGTTGAGCAGTACATAAACACCACGGCCATCGTTTGG 1725

Query 187 TGGAGCCGTGACTCGGTCATCAGCCACAACAAGACCTGAAACTGTCCAGTCTAAACACC 246
          |||
Sbjct 1726 TGGAGCCGTGACTCGGTCATCAGCCACAACAAGACCTGAAACTGTCCAGTCTAAACACC 1785

Query 247 GACCAGCTCAAAGGTACTCGATTTTCAGGCGACGCATCTCGGGGGGAATTCAACCTTAAA 306
          |||
Sbjct 1786 GACCAGCTCAAAGGTACTCGATTTTCAGGCGACGCATCTCGGGGGGAATTCAACCTTAGA 1845

Query 307 ATAGTGAACTTTACCGCCACAGACGCCGCCAGTTACCGCTGTCAGATGT 355
          |||
Sbjct 1846 ATAGTGAACTTTACCGCCACAGACGCCGCCAGTTACCGCTGTCAGATGT 1894

```

Figure 2: Query 7 to query 307 are resumed now with correspondence of nucleotids.

Conclusion

We retain from this bioinformatic analysis, a high identity between the *Asterias rubens* sea star IGH κ gene with the sea star *Marthasterias glacialis* genome. Those genes, nevertheless, seem less evolved than the Ophirid IGH κ gene we discovered 1 month ago [4] in terms of immune functions. Sea stars belong to the Asterid class. They are Echinodermata like Ophirids.

References

1. Vincent N (2014) A new gene in *A. rubens*: A sea star IGH κ gene. *Meta Gene* 2: 320-322.
2. Marchler-Bauer A, Bo Y, Han L, He J, Lu S, et al. (2017) CDD/SPARCLE: functional classification of proteins via subfamily domain architectures. *Nucleic Acid Res* 45(D): 200-203.
3. Marchler-Bauer A (2011) CDD: a Conserved Domain Database for the functional annotation of proteins. *Nucleic Acid Res* 39(D): 225-229.
4. Leclerc M (2021) Biosynthesis «De Novo» of the Ophirid *Ophiocomina nigra* IGH κ gene. *J Clin Class Immunol* 1(1).

