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Revealed «Oncologic Markers» in the Sea Star Antibody Response to Horse-Radish Peroxydase

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ABSTRACT

At least two genes found in the genome of Asterias rubens after immunizations to the antigen Horse-Radish Peroxydase (HRP), could play the role of oncologic markers: The first one (Igkappa chain V-V region T 1 S 107 B precursor) reveals myeloma; The second (B cell CLL/Lymphoma 9-like) as the first one has a kinship to the IgKappa gene subfamily.

Keywords: Asterias Rubens, Antibody Response, Igkappa Precursor Genes, Myeloma, Lymphoma

1. INTRODUCTION

Leclerc and Vincent (2013) the sea star genome with Swissprot data, revealed, for the first time, a sea star Igkappa gene, in response to HRP immunizations.

On the other hand, oncologic markers, of the IgKappa subfamily, were also found. At our knowledge, it is also the first time, that such phenomenon was described.

2. MATERIAL AND METHODS

Sea stars Asterias rubens were obtained from the Biology Institute (Gothenburg Univeristy). Immunizations and sequencing have already been described in precedent papers (Leclerc *et al*., 2011; 2013). In 2013 transformation of RNA intoc DNA and sequencing were performed at Fasteris(Switzerland).

3. RESULTS AND DISCUSSION

It appears that the gene: Igkappa chain V-V region T 1 is present, in a significant manner in the genome of immunized sea star to the antigen HRP.

The following **Table 1** gives its characteristics.

In the **Table 2**, we make reference to another oncologic marker: The B cell CLL lymphoma 9-like protein. **Table 2** is following.

Table 1. Identities of Igkappa chain V-V region T1 between sea star and mouse

```
sp|P01637.1|KV5A5_MOUSE RecName: Full=Ig kappa chain V-V region T1; Flags: Precursor Length=128
 Score = 26.6 bits (57),  Expect = 8.0
 Identities = 10/22 (45%), Positives = 16/22 (73%), Gaps = 0/22 (0%) Frame = +2
Query  314  RVILRIRPSQ*LNKYLTWWRRK  379
            RV +  + SQ +N YLTW+++K
Sbjct  38   RVTISCKASQDINSYLTWFQQK  59
```

Table 2. Identities of B cell CLL between sea star and mouse genomes.

```
>sp|Q67FY2.1|BCL9L_MOUSE RecName: Full=B-cell CLL/lymphoma 9-like protein; Short=B-cell
lymphoma 9-like protein; Short=BCL9-like protein; AltName:
Full=BCL9-related beta-catenin-binding protein; AltName: Full=Protein BCL9-2
Length=1494
 Score = 26.9 bits (58),  Expect = 3.3
 Identities = 19/57 (33%), Positives = 23/57 (40%), Gaps = 7/57 (12%)  Frame = +1
Query  1     LQDRHGIRAR------GLCQFVAARVAIWPPIDTPDTPRGPYPSFSHQCSSARVSRI  153
             LQ  HG  A       GL Q   + +A+ PP D P  P GP P   H R+
Sbjct  1229  LQQPHGAMAPTGAGGPGLQQHYPSGMAL-PPEDLPTQPPGPIPPQQHLMGKGMTGRM  1284
```

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4. CONCLUSION

It is particularly interesting to find in the sea star genome such oncologic markers which are linked for the first one to mouse myeloma (Altenburger *et al*., 1980), for the second one to lymphoma (Toya *et al*., 2007). They are expressed in a significant manner in the sea star. It is advisable to ask if the sea star, itself possesses these markers, consequently to an immunization, like mammals and so reveal a disease.In the present time it is difficult to conclude. We just can say that it is the research of kappa genes in the sea star which have led us to this discovery. We expect that this last one will open a new field in the investigation of cancerology.

5. REFERENCES

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