Short Communication
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HRP-anti-HRP sea star primitive antibody complex: first modelization in 3d. invertebrate ig sites in 3d

Abstract

Recently, CDR1 and CDR2 determining regions were discovered in the anti-HRP (Horse-radish peroxydase) primitive invertebrate antibody (IPA). In the same time 3D modelizations of this primitive antibody, were presented, in collaboration with EMBL (Grenoble, Hamburg). It seems interesting to show now the complex HRP-sea star anti HRP in 3D with its 2 IG sites.

Keywords: IPA, HRP, anti-hrp, invertebrates

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Abbreviations

IPA, invertebrate primituve antibody; HRP, horse-radish peroxydase

Introduction

2023- 2024 were excellent years for us : Antigen-Antibody specificity was discovered by the use of recombinant protein (anti-HRP one) and revelation by Elisas.[1] Secondly we clarified the existence of CDR1, CDR2, CDR3 in the sea star primitive antibody.[2] At last it was possible to modelize this last one in 3D by the help of Alpha Fold and Swiss models.[3]

We know that the sequence of the primitive antibody shows 2 Ig sites : Our intention was to verify their presence in modelization 3D when HRP antigen, and corresponding sea star antibody, were put « in competition »

Method

Alphafold principe was used +

Results

As it can be seen on Figure 1 the complex HRP- sea star anti HRP appears in a first try. We mention that anti-HRP is colored in blue and consequently HRP antigen in green.

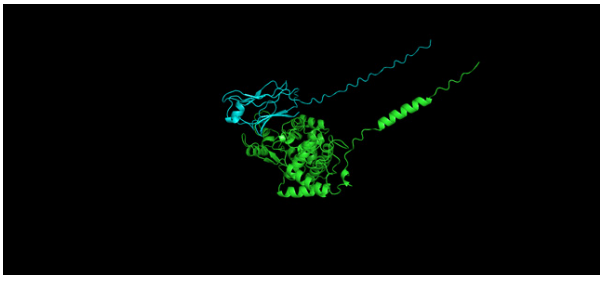

Figure 1 HRP-Sea star anti HRP antibody complex. Ab in blue. HRP Ag in green.

We observe also, and it seems the main point,that there are 2 « bridges » between the Antibody and the Antigen. Linkages between the antigen always in green and the « antibody » in other color can be seen in Figure 2, 3 at a higher magnification.

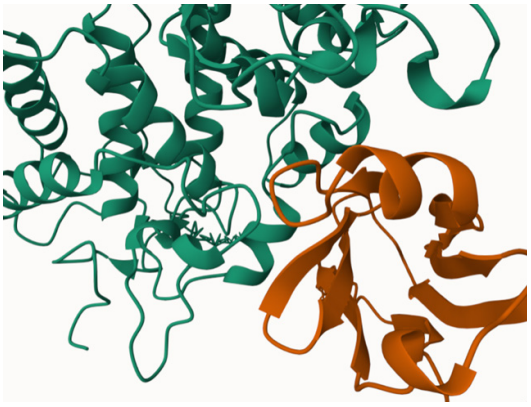

Figure 2 Antigen in green – Antbody and 3D IG site in another color.

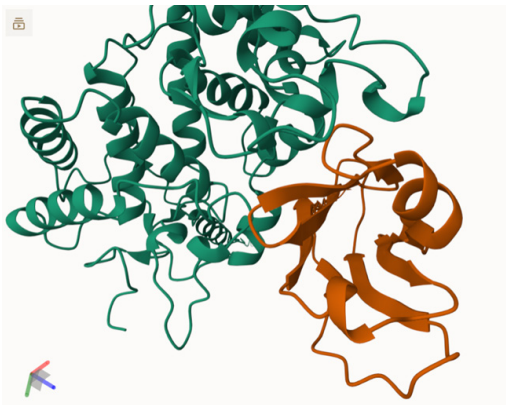

Figure 3 Other contact between antigen in green antibody (other color), IG site.

Conclusion

Modelization in 3D of the IPA (Invertebrate Primitive Antibody) or sea star anti-HRP antibody with CDR1, CDR2, CDR3 sites were already published.

This first other study shows, for the first time, an Invertebrate Ag Ab complex and we retain the existence of two bridges or two IG sites,as it was announced in the Ab amino-acid sequence . These 2

bridges can, may be seen, in 3D (Figure 2, 3) Nevertheless further studies are, of course, necessary to determine with more precision the nature of our primitive antibody (We think of crystallisation and X-rays analysis).

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Conflicts of interest

The authors declare that there is no conflict of interest.

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None.

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