

# The Invertebrate Anti-Tnp Primitive Antibody:A Nanobody

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## Abstract

After immunizations to TNP (Trinitrophenyl) and purification of the anti-TNP protein a schema of sea star *Asterias rubens* IPA is given, in this communication, since it was discovered.

In 2014, it was asserted as in an Invertebrate Primitive Antibody by the discovery of IPA gene which matches to human Igkappa gene. It was also considered as an Invertebrate Nanobody

**Key words:** trinitrophenyl; invertebrate; ipa schema

## Introduction

In 1986, we discovered [1] the sea star anti- TNP antibody-like; it was isolated and analysed by the mean of biochemistry.

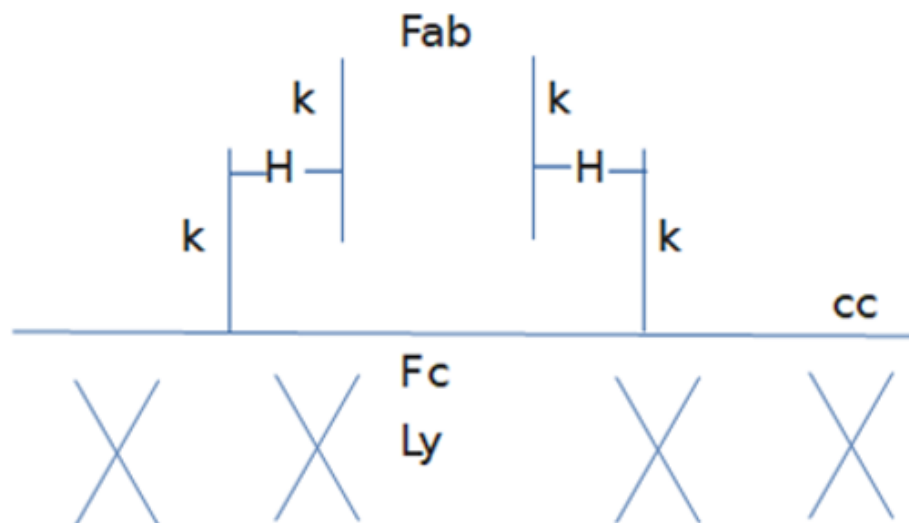
Its molecular weight was of 120.000 daltons and composed of 4 sub-units of 30.000 daltons each, without disulfide bonds. 30 years later [2] we found an IGKAPPA gene in the sea star (*Asterias rubens*), the antibody-like was called the IPA (Invertebrate Primitive Antibody). It was made of 4 KAPPA Light chains. Always later we discovered in the sea star genome a Fab gene, a Fc receptor gene, a Cr receptor gene , at last MHC genes [3] which match to Human genes.

## Results

We build the IPA in the following schema (Figure.1): it shows on the cell coat(cc), 4 kappa chains(k) in equal length, the Fab fragment, the Fc receptor which is situated on the sea star lymphocyte side(Ly)

1 – IPA Schema

K: kappa chain; Ly: sea star Lymphocyte; cc: cell coat; H:Hydogen bond; Fab (fragment); Fc receptor



**Figure 1:** The Anti-Tnp Sea Star Primitive Antibody.

## Conclusion:

The antiTNP sea star Primitive antibody and the anti-HRP ( Horse-radish Peroxydase) can be considered as Primitive Nanobodies [4]. The last one raises to 13.000 daltons and possesses CDR1 and CDR2 sites [5]. In the present time we have no schema to purpose about it but we hope greatly to have, in a next future, a modelization in 3D when consider it.

All these data confort us when we evoke the evidences of Invertebrate Primitive Antibodies with at least 2 sea star primitive nanobodies.

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