

Immune Genes in Echinodermata, Immune Cellular Differentiations in Invertebrates

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Abstract

We attempt to compare in the present report the found immune genes in the fifth classes of Echinodermata : the Echinids, the Asterids, the Ophuirids, the Crinoïds, and the Holothurids.

3 classes show the existence of an IGGKappa gene, a Fc receptor gene ; a Fab gene.

This phenomenon seems linked to the existence, in them, of the presence or not of an axial organ which is considered, in Asterids, as an ancestral lymphoïd organ. Sea star lymphocytes were shown.

Keywords: Invertebrates ; Echinodermata; axial organ ; IGGKappa gene. Primitive antibody

INTRODUCTION

Recent data news about the existence or no-existence of an Invertebrate primitive antibody suggest that Echinodermata are the only Invertebrates to possess this last one. In fact we have found in them : an Iggkappa gene (ref.1), a Fab gene, (ref. 2) a Fc receptor gene, a Cr receptor gene (ref.3). These discoveries were correlated to the presence of the famous axial organ which is an ancestral lymphoïd organ (ref . 4) : it is situated in the coelomic cavity of Echinodermata.

MATERIAL AND METHODS

Animals

Asterias rubens (Asterids), Ophiocomina nigra

(Ophuirids), Antedon bifida (Crinoïds)

were used; They were collected in different marine laboratories: Roscoff (France), Gothenburg (Sweden)

Methods

T.E.M was used so Immunocytochemical assays. At last genomic studies were made in different countries: FASTERIS (Switzerland) GenXpro (Germany) Genosplice (France).

RESULTS

Results are summarized in the following table:

	IgKappa gene	Fab gene	Fcreceptor gene	Cr receptor gene	Axial organ	Plasmocytic cells
Asterias rubens Asterids	+	+	+	+	+	+
Ophiocomina nigra Ophuirids	+	+	+	nd	+	+
Antedon nigra Crinoïds	+	nd	+	nd	+	nd
Echinids	-	-	-	-	+	-
Holothurids	-	-	-	-	-	nd

T.E.M results concerning sea star lymphocytes (T-like and B-like cells) appear under the above table where nd significates not determined:

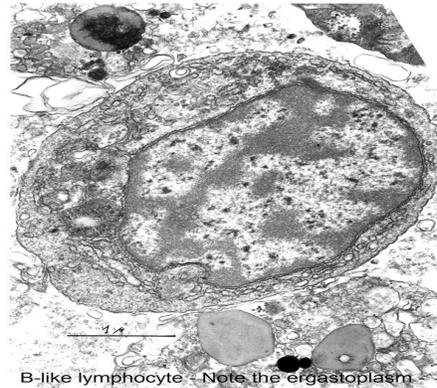
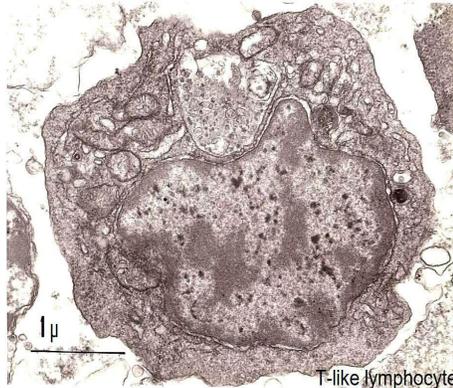
DISCUSSION AND CONCLUSION

It was the ancient world . They said :

« In Invertebrates, there were no lymphocytes, no antibody »

A new world comes.

It is said : there are lymphocytes, small ones (4µ in diameter) yes, but lymphocytes. We call them



B-like ones and T-like ones or sea star lymphocytes.

Furthermore Genomic studies assert the evidences of IGKappa genes in Echinodermata : In Asterids, in Ophuirids, in Crinoïds.

At our knowledge, Echinids would just present Innate Immunity.As for Holothurids there is not an axial organ and further studies 'll indicate the field of Innate Immunity and may be adaptative immunity in them as it was described for Asterids, Ophuirids and Crinoïds.

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