IBBJ

Autumn 2018, Vol 4, No 4

Letter to editor

Platelet's Problem in Echinodermata: Transmission Electron Microscopy Observations

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Submitted 3 Feb 2019; Accepted 18 Mar 2019; Published 27 Apr 2019

In invertebrates and in Asterids particularly, immunity is characterized by physiological mechanisms mediated by various types of cells, especially lymphocytes (1).

Here we obtained *Asterias rubens* from the marine laboratory of Roscoff, France. Transmission electron microscopy (TEM) methods were applied as described previously (2), and a new structure similar to a blood platelet.was observed. This structure was about 5 µ in length. It included many mitochondria and "azurophile granulations" (osmiophile granulations) which are typical of human blood platelet.

It is obvious that this obsevation must be completed by genomic studies: we plan to look for genes implicated in the thromboxane initiation (i.e., thromboxane A synthethase, thromboxane A2 receptor genes).

Nevertheless, this structure is similar to a platelet, and so reveals the high degree of sophistication of Asterids from a point of view of evolution.

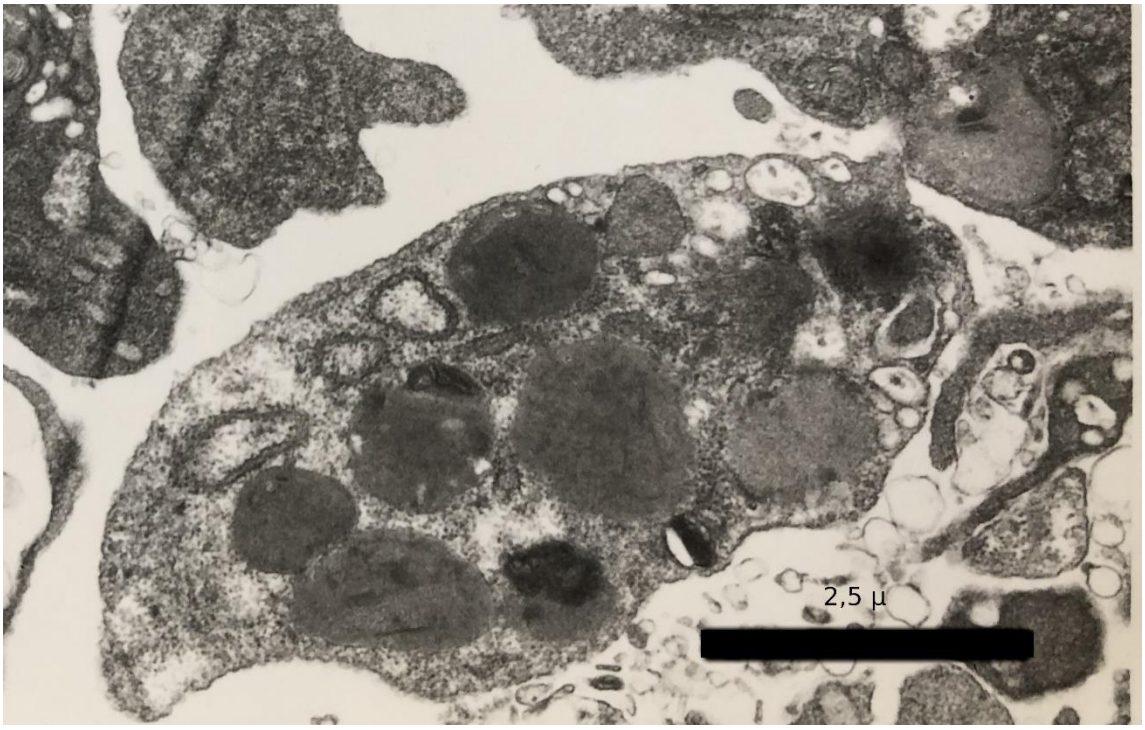


Figure 1. Transmission electron microscopy of *Asterias rubens*. A cellular structure similar to platelet is presented.

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This structure could be of mesodermic origin like the axial organ cells (3).

Blood platelets are issued in vertebrates,from bone marrow. Hence, they are mesodermic from an embryologic point of view. In Echinodermata there is no bone marrow, but rather a stone canal (3) which is somehow a "strange structure" that evokes bone marrow of vertebrates, and the sea star axial organ lies along the stone canal (3)

All these elements have a mesodermic origin. Therefore, blood platelets and sea star platelet may have the same embryonic origin..

In conclusion, blood platelets and sea star platelet are similar from morphological and embryological point of view. Further genomics studies should complete this work.

Conflict of interest

The authors declared no conflict of interest.

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