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Research Protocol

Evidence of Sea Star Monocytes Evolving in Phagocytes: Observations in T.E.M in Asterias Rubens

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Abstract

Sea star Axial organ (A.O) cells were observed in T.EM: Evidence of primitive monocytes was done: They contained azurophile particles and a reniform nucleus, sometimes a phagosome appeared and amoeboïd images were seen. These cells, in a second time, evolves mainly in phagocytes which may be assimilated to Vertebrate Macrophages, with functional phagosomes and azurophile particles. The sea star monocytes are smaller in diameter (4 to 5µ) than Vertebrate ones.

Introduction

Observation of sea star Asterias rubens T and B lymphocytes have already been performed in TEM [1,2]: it was asserted by biochemistry and biophysical assays. Second sea star platelets [3] were so observed.

In a third time, we confirm the existence of sea star Monocytes which, mainly, evolves in Phagocytes corresponding to vertebrate macrophages.

Materials and Methods

Sea star Asterias rubens were obtained from the Marine Institute of Arcachon (France)

Axial organs (A.O) were excised and:

a) Either the whole cellular population was conserved and so observed in TEM

b) or the whole A.O was separated into B and T cell subpopulations according the well-known method of Julius and al [4].

Cells were fixed with glutaraldehyde in cacodylate buffer as precedently described [1]

No post-coloration was operated.

Observations were done with a Hitachi Microscope.

Results

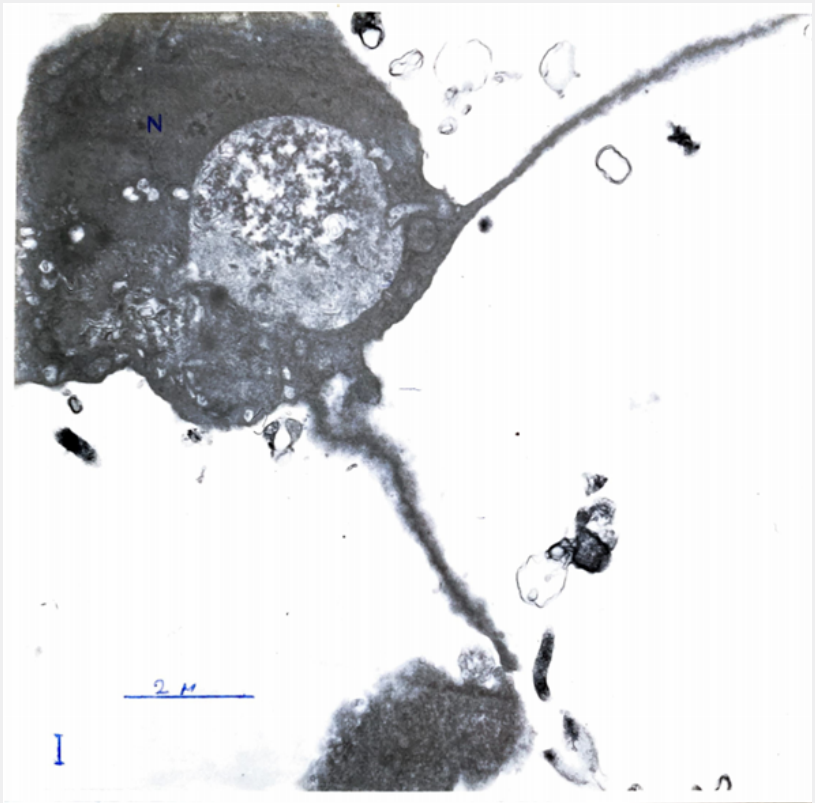

Figure 1: *Monocyte with digitations. (N): Nucleus*

We observe a reniform Nucleus (N). Besides of it: azurophiles particles smaller than 0,2 µ,

These particles may correspond to lysosomes villous digitations which evoke ciliatures (2) and a small phagosome are present.

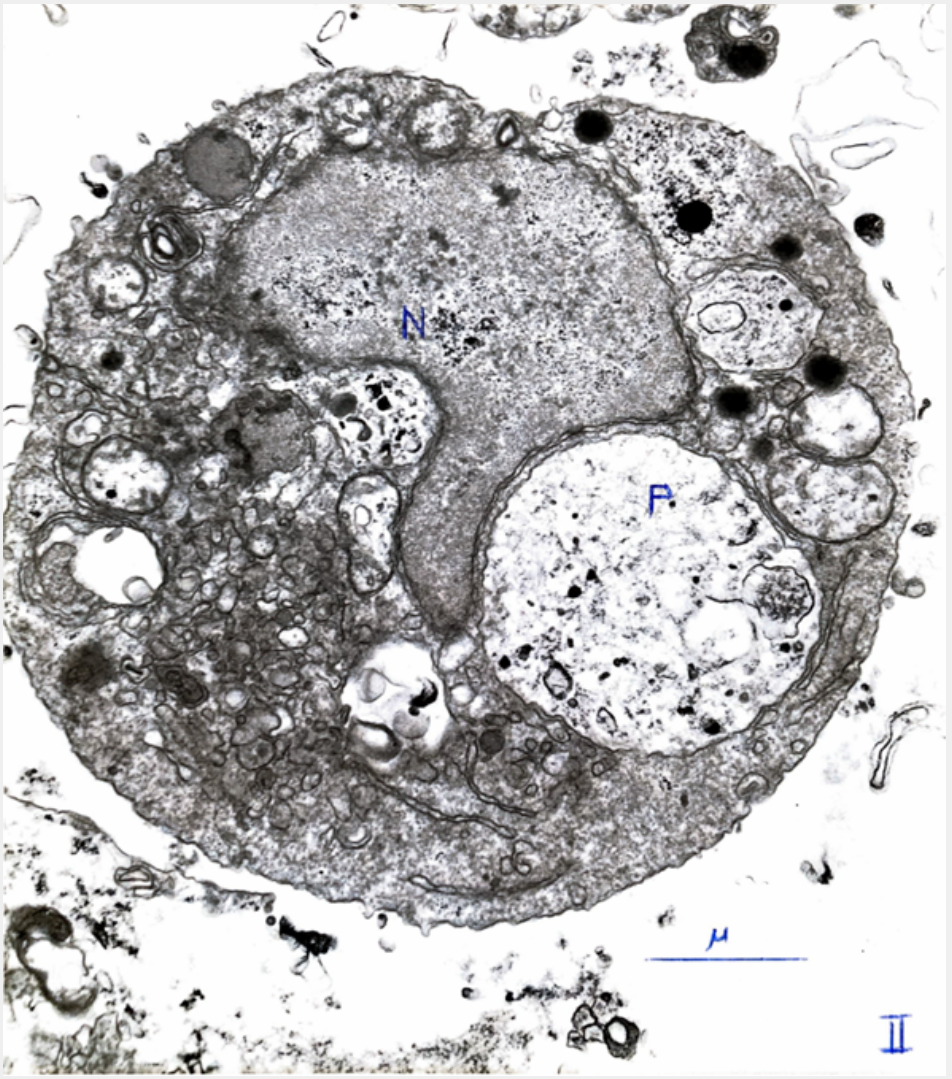

Figure 2: *Spheroïdal Monocyte. N(Nucleus), P(Phagosome)*

We see a circular cell with a nucleus containing fine chromatine. The cell diameter is about 4-5 μ. Azurophile particle are always present.

In the last figure III, the cell is longer than the two precedent ones and culminates at 8μ. There are no azurophile particles in the cytoplasme. The phagosome is greatly opened on the outside: it is a true phagocyte.

Figure 3: *True Phagocyte. Observe the Phagosome greatly opened.*

Conclusion

The sea star Asterias rubens presents T and B lymphocytes, Monocytes, Macrophages and Platelets, in T.E.M observations. The evolution of Monocytes in Phagocytes, resembling to evolution of macrophages, in Vertebrates was shown in this work through 3 Figures.

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