POSTER

FROM HATCHLINGS TO JUVENILES: HISTOLOGICAL ANALYSIS OF HEMOCYTE TISSUE COLONIZATION DURING GROWTH IN THE SNAIL *POMACEA CANALICULATA*

C. Losi[1], A. Ferri[2], D. Roncuzzi[2], G. Lucà[2], S. Sacchi[2], N. Franchi[2], D. Malagoli[2|3]

[1]Models and Methods for Material and Environmental Sciences PhD Course, Dept. of Chemical and Geological Sciences, University of Modena and Reggio Emilia, Italy; [2]Dept. of Life Sciences, University of Modena and Reggio Emilia, Italy; [3]NBFC-National Biodiversity Future Center, Palermo, Italy

The developmental origin of immune cells is an open field of research in animal biology. The snail Pomacea canaliculata (Pc) is a suitable model for studying developmental hematopoiesis and niche maintenance, as it has direct development, long lifespan and both circulating and tissue-resident hemocytes. However, it has never been investigated if Pc hemocytes are present in tissues at hatching or progressively colonize organs during post-hatching development. Here, we performed histological and histochemical analysis of whole snails at specific post-hatching timepoints (PHT) (3dph to 3mph) to characterize hemocyte distribution in the context of organ morphology. By 3dph, fully organized ganglia and sensory organs indicated their crucial early role in hatchlings, while hemocytes occurred in the mantle, gill leaflets, and pericardial cavity. Distinct hemocyte morphotypes were observed in the gills, including small blast-like cells (SCs) and larger alcian-PAS-negative granular cells (GCs). Interestingly, GCs were observed within and leaving the leaflets' epithelium, suggesting a transition from circulation to organs and between organs. The posterior kidney, which presents epithelial crypts and hemocyte aggregates (HAs) in adults, exhibited mesenchymal-like organization until 2mph. At 3mph a structured parenchyma with HAs became evident, comprising mostly SCs and few GCs. These observations suggest that different sites contribute to hemocyte storage, with relevant involvement of the gills during early PHT. Overall, this study provides the first anatomical characterization of hatchlings Pc, enabling histological identification of post-hatching stages and opening new temporal windows to investigate hemocyte tissue seeding and organ-specific immune roles during growth.

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