

Germinal niche of the oyster *Crassostrea gigas* : cellular and molecular characterization

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The cupped oyster *Crassostrea gigas* represents the first resource of aquaculture in the world and France is the first European producer of this species. And then, the control of reproduction of this species constitutes a checkpoint to the success of mass production. Indeed, the production of spats obtained from genitors ripened under artificial conditions fails at certain periods of the year pointing out the necessity to understand and control mechanisms of gametogenesis re-initiation. To have an overview of the fine regulative mechanisms involved in gametogenesis, a precise knowledge of the tissues and the role of each cell type present in gonad are required. In many cases, intimate interactions between germinal lineage and somatic support cells are necessary for normal germ cell behaviour and differentiation. Finally, the characterization of these totipotent primordial cells may help to overlap the difficulty to obtain proliferating cells cultures required for molluscs.

Knowledge of organization and regulations inside the germinal niche at the beginning of gametogenesis is of great interest as gonial mitosis are one of the key of the success of reproduction. Cellular organization of germinal niche in oyster was studied and first assays of isolation of cell types in the niche performed. Expression of markers of early germ cells and somatic cells having a role in the niche were measured in order to specify the regulations inside the niche.

Ultrastructural organization of the niche was established and showed that the Intra-gonadal Somatic Cells (ISCs) associated to the germ line played a major role in the arrangement of germ lineage in gonadal tubules in the male oyster *C. gigas*. A procedure for isolation of early germ cells and ISCs based on enzymatic dissociation and density gradient was developed and allowed to obtain enriched cell fractions qualified by ultrastructural study and molecular expression of specific markers.