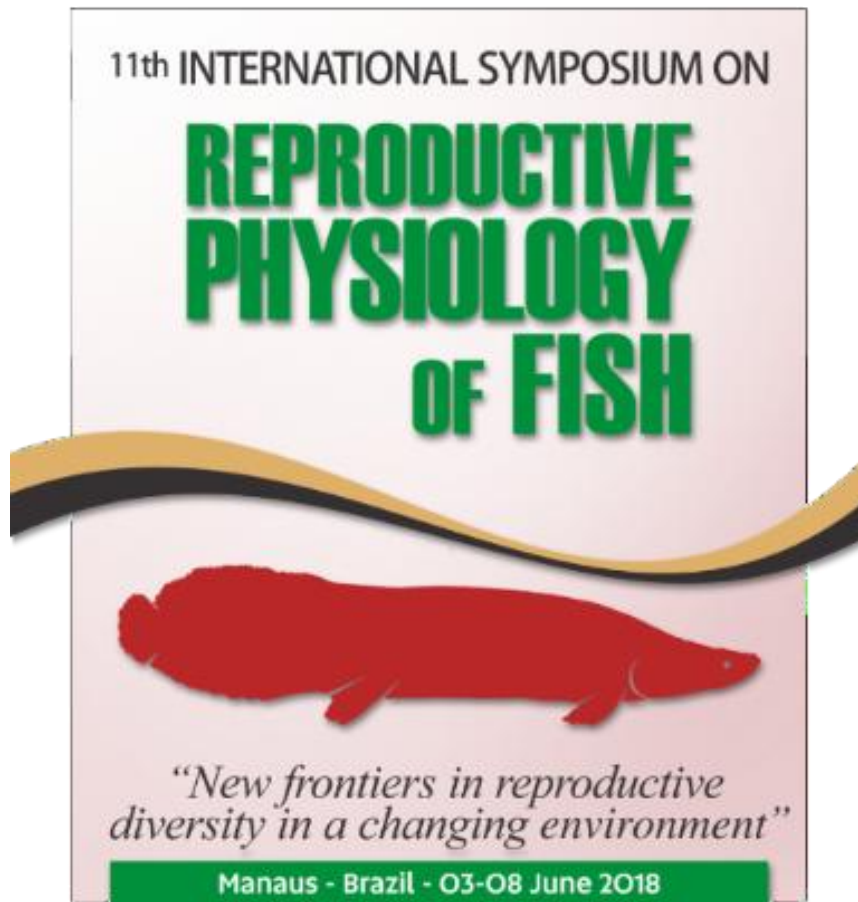


# PROGRAM AND ABSTRACTS



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## **STRUCTURAL ASPECTS OF THE FEMALE SEXUAL DIFFERENTIATION OF THE PIRARUCU (*Arapaima gigas*, SCHINZ, 1822)**

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### **Introduction**

The pirarucu (*Arapaima gigas*) are the biggest scale Amazonian fish and their farming potential is enormous. However, there are few studies involving the reproductive physiology of pirarucu. Raising fish in confined environments still encounters several adversities, being necessary basic studies for the development of the productive chain, mainly at the early stages of development. Thus, studies related to the gonadal development are essential for the understanding of the reproductive biology of the species.

### **Methods**

To study gonadal differentiation, gonadal tissues from 75 juveniles (from 15 to 52 cm) of *A. gigas* were fixed in glutaraldehyde, dehydrated and embedded in historesin. Sections (5µm) were stained with Toluidin Blue, Metanil Yellow+Periodic Acid Schiff's+Hematoxylin and Reticulin Method.

### **Results and Discussion**

In *A. gigas*, the gonadal primordium is an elongated paired structure with isolated primordial germ cells (PGCs) scattered among the somatic cells. With the development they become thicker, giving rise to an undifferentiated gonad. However, during the early gonadal stages, the right gonad degenerates and therefore the ovarian differentiation occurs only in the left gonad. In the differentiating ovary, the PGCs differentiate into oogonia. Each oogonium proliferates by mitosis and after enters into meiosis, becoming prophase oocytes. Oogonia and oocytes are surrounded by the pre-follicle cells, forming clusters of the germ cells (germline cysts). At this stage, the pre-follicle cells begin the synthesis of the basement membrane around each cyst, segregating the germinal and stromal compartment. Oocytes initiates primary growth, originating the previtellogenic oocytes, which are gradually and individually involved by the follicle cells. Consequently, each ovarian follicle is completely surrounded by a basement membrane. During this early folliculogenesis, the ovary of pirarucu maintains a compact structure. Then, the ventral side of the ovary suffers invaginations as the ovigerous lamellae develop. Epithelial cells from the gonad periphery present in the invaginations associate with oogonia to form the germinal epithelium. Hence, the newly established germinal epithelium becomes functional. The ovarian tissue develops progressively, increasing the number of previtellogenic oocytes. This pattern of ovarian differentiation seems to be maintained among more basal animals, as already observed in sturgeons and Ostariophysi.

**Conclusion:** In the pirarucu, the somatic cells, derived from the coelomic epithelium, appear to be involved in the process of germ cells reorganization during gonadal differentiation. Especially when the germ cells of undifferentiated gonads begin to form continuous cords and establish new relationships during the development of both the germinal epithelium and stroma.