

PDF - ARE SQUID STATOLITHS HOLLOW DURING EMBRYOGENESIS? - researchcub.info Squid statoliths are paired calcareous concretions essentially composed of calcium carbonate crystallised as aragonite and found inside cranial fluid-filled cavities, the statocysts – the main organ of detection of gravity and movement. Statolith use as an ageing tool was validated in the 1980s, when the daily periodicity of the growth increments was confirmed by chemically marking these structures in animals maintained in aquaria. Although statolith analysis has brought major advances in the knowledge of squid population-dynamics, little is known about the processes involved in statolith's calcification and increment deposition (e.g. during embryogenesis). According to Villanueva (2000), embryonic statolith development involves the formation of structures such as the focus, nucleus, postnuclear zone and natal ring. The aim of this study was to investigate the microstructure of the embryonic statolith, considering all main structures, in recently-hatched squids using optical (fluorescence) microscopy, scanning electron microscopy (SEM) and confocal microscopy. Recently-spawned egg masses of the European squid, *Loligo vulgaris*, were collected in the west coast of Portugal. After hatching at 13-15°C, statoliths were removed from the paralarvae and preserved at -20°C. Prior to confocal analysis, statoliths were submitted to Alizarin red S (ARS) staining (5% of ARS in 0.1% KOH) to verify the presence of calcium content. In addition, images from optical microscopy and scanning electron microscopy (SEM) were acquired. The findings obtained by auto-fluorescence observation (Figure 1 A, B) and SEM (Figure 1 C), show that the embryonic statolith is hollow in some of the area between the nucleus and the natal ring. ARS stained samples analysed in confocal microscopy (Figure 2A-G), confirmed the previous observation. This surprising structural feature in the origin of CaCO<sub>3</sub> sensorial structures has never been described before and suggests a production, with minimum of material and energy expenditure. This is fundamentally interesting not only in biological terms but also considering biotemplating or biomimetics approaches (i.e. synthetic approaches), where hollow calcium carbonate structures have attracted considerable attention owing to their unique structural, optical, and surface properties that lead them to a wide range of applications, including as templates for functional architecture composite materials.

## **ARE SQUID STATOLITHS HOLLOW DURING EMBRYOGENESIS?**

**The complete project material is available and ready for download. All what you need to do is to order for the complete material. The price for the material is NGN 3,000.00.**

**Make payment via bank transfer to Bank: Guaranteed Trust Bank, Account name: Emi-Aware technology, Account Number: 0424875728**

**Bank: Zenith Bank, Account name: Emi-Aware technology, Account Number: 1222004869**

**or visit the website and pay online. For more info: Visit <https://researchcub.info/payment-instruct.html>**

**After payment send your depositor's name, amount paid, project topic, email address or your phone number (in which instructions will sent to you to download the material) to +234 70 6329 8784 via text message/ whatsapp or Email address: [info@allprojectmaterials.com](mailto:info@allprojectmaterials.com).**

**Once payment is confirmed, the material will be sent to you immediately.**

**It takes 5min to 30min to confirm and send the material to you.**

**For more project topics and materials visit: <https://researchcub.info/> or For enquiries: [info@allprojectmaterials.com](mailto:info@allprojectmaterials.com) or call/whatsapp: +234 70 6329 8784**

**Regards!!!**