Verhandlungen der Gesellschaft für Ichthyologie Band 5, 2006, 7-11

The envelope of fully grown, unfertilised oocytes in *Heterandria formosa* (Poeciliidae) and *Xenotoca eiseni* (Goodeidae)

Die Hülle reifer, unbefruchteter Oocyten von *Heterandria formosa* (Poeciliidae) und *Xenotoca eiseni* (Goodeidae)

Britta Gravemeier and Hartmut Greven
Institut für Zoomorphologie und Zellbiologie der Heinrich-Heine-Universität Düsseldorf, Universitätsstr. 1, D-40225 Düsseldorf, Germany; grevenh@uni-duesseldorf.de

Summary: When mechanically separated from the ovary, unfertilised mature oocytes of virgins of the poeciliid fish *Heterandria formosa* were always covered with cellular debris, mainly of the follicle epithelium, whereas those of the goodeid fish *Xenotoca eiseni* could be isolated without any contamination. Therefore, the oocytes of *X. eiseni* appear more suitable for *in vitro*-fertilisation attempts. Electron microscopical studies showed that in *H. formosa* the envelope of these oocytes did not contain radial canals; in *X. eiseni* results were less clear as some egg envelopes showed obliterated radial canals, whereas others did not.

Key words: envelope of oocytes, isolation of oocytes, radial canals, follicle epithelium, viviparity

Zusammenfassung: Bei dem Versuch, reife, unbefruchtete Oocyten aus dem Ovar zu isolieren, zeigte sich, dass bei jungfräulichen *Heterandria formosa* (Poeciliidae) diese stets mit Zellen des Follikelepithels und eventuell der Theca bedeckt waren, während bei jungfräulichen *Xenotoca eiseni* (Goodeidae) die Oocyten ohne jede Kontamination aus dem Follikel fallen. Für Versuche zur *in vitro*-Befruchtung scheinen daher die Oocyten von *X. eiseni* besser geeignet zu sein. Nach elektronenmikroskopischen Befunden besitzt die Hülle dieser Oocyten von *H. formosa* keine Radiärkanäle. Für X. *eiseni* waren die Ergebnisse weniger klar; einige Eihüllen zeigten offenbar Radiärkanäle, die verschlossen waren, andere waren jedoch weitgehend homogen.

Schlüsselwörter: Oozytenhülle, Isolierung reifer Oozyten, Radiärkanäle, Follikelepithel, Viviparie

1. Introduction

The mature oocyte of all teleosts is surrounded by an acellular, lamellate and/or fibrous envelope called also chorion, *zona radiata* or *zona pellucida* (see the discussion in Lo Nostro et al. 2003). Deposition takes place between the microvilli of the oocyte creating the typical radiation. In addition, villi of the surrounding follicle cells may penetrate the envelope. The intimate contact between oocyte and follicle epithelium may enhance exchange of substances (for review see Kunz 2004), but may also stabilize the oocyte within the follicle. Depending on the habitat and mode of reproduction the thickness and structure of the envelope varies among teleosts. In viviparous species it is the thinnest and largely lacks lamellae (e.g., Poeciliidae: Jollie and Jollie 1964, Erhardt and Götting 1970,Azevedo 1974, Grove and Wourms 1994; Hemirhamphidae: Flegler 1977; Goodeidae: Riehl and Greven 1993).