

### 23. CELL-SPECIFIC EXPRESSION OF $\beta$ C-ACTIVIN IN THE RAT OVARY

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Previous northern blot analysis of adult mouse tissues revealed significant amounts of  $\beta$ C-activin mRNA only in liver (1). We have assessed  $\beta$ C-activin mRNA and peptide levels and activin C dimer formation in the rat ovary, using real-time reverse transcription and real-time polymerase chain reaction (RT-PCR), non-reducing Western blotting and immunohistochemistry with a specific monoclonal antibody (2). Although  $\beta$ C-activin mRNA was predominately expressed in liver, real-time RT-PCR revealed small, but detectable amounts of mRNA in 3 of 5 extracts of rat ovary. Western blots of ovarian extracts contained immunoreactive bands at sizes suggestive of an inhibin C dimer (32 kDa) and a  $\beta$ A $\beta$ C dimer (23 kDa), but there was no evidence for a  $\beta$ C $\beta$ C (21 kDa) dimer. Specific  $\beta$ C-activin immunoreactivity was demonstrated in the granulosa cells of primordial and primary follicles and possibly in the oocyte cytoplasm of some primary follicles, but not in the granulosa cells of antral follicles. The nucleus of the oocyte was stained in some antral follicles. The theca interna was positive in all healthy antral follicles. Within the corpora lutea (CL) there was some cytoplasmic and nuclear staining of large luteal cells. Not all nuclei were stained and fewer cells were stained in regressed or degenerating CL. There was little or no  $\beta$ C-activin subunit immunoreactivity in the ovarian surface epithelium, but the mesothelium at the hilum of the ovary was frequently immunoreactive. The epithelium lining the rete ovarii was also strongly stained for  $\beta$ C-activin. The observation of stage-specific expression in gonadal cells suggests this activin subunit has specific roles, different from those of other activin subunits. Small amounts of mRNA in the presence of significant  $\beta$ C-activin peptide may indicate a rapid turnover of a labile mRNA.

(1) Lau AL *et al.* (1996) Structural analysis of the mouse activin beta C gene. *BBA-Gene Struct. Express.* **1307**: 145–148. (2) Gold EJ *et al.* (2003) Changes in activin and activin receptor subunit expression in rat liver during the development of CCl<sub>4</sub>-induced cirrhosis. *Mol. Cell. Endocrinol.* **201**: 143–153.