

## 29. CHARACTERIZATION OF THE EXTRACELLULAR MATRIX OF THE HUMAN CORPUS LUTEUM

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The ovarian follicle is composed of an epithelium (membrana granulosa) surrounded by a specialized stromal layer (theca). Like other epithelia the granulosa cells are compartmentalized and derive polarity from a basal lamina. On ovulation the follicular basal lamina is degraded and the granulosa cells develop into mesenchymal luteal cells during luteinization (1). Unlike follicles the matrix composition of the corpus luteum has not been determined or characterized. We therefore undertook an immunohistochemical and electron microscopy study of the extracellular matrix of human corpora lutea. Collagen type IV alpha 1 and laminin chains (alpha 1 to 4, beta 1 and 2, gamma 1) and the proteoglycan versican were immunolocalized to frozen sections of human corpora lutea staged as early (0–4 days following ovulation,  $n = 3$ ), mid (5–9 days,  $n = 5$ ) or late (10–14 days,  $n = 6$ ) or regressing (excised during the follicular phase,  $n = 1$ ). Collagen type IV alpha 1 chains were present in all corpora lutea with minimal staining in early corpora lutea and maximal staining in the mid to regressing corpora lutea. Staining was localized to the subendothelial basal laminae and within the luteal parenchyma. Laminin chains alpha 4, gamma 1, and beta 2 were localized to the blood vessels, and both laminin beta 2 and alpha 2 were present within the luteal parenchyma. Versican was present in the connective tissue septae (considered to be largely derived from theca) at all stages of luteal development, and in connective tissue sheaths surrounding large blood vessels. Laminin alpha 1 and alpha 3 were not detected. One early, 3 mid and 3 regressing corpora lutea were processed for electron microscopic examination. At the electron microscope level subendothelial basal laminae were present. Whilst electron dense extracellular material was deposited intermittently adjacent to the luteal cells, no continuous classic basal lamina structure was observed. This material probably contains laminin beta 2 and alpha 2 and collagen type IV alpha 1. Thus luteal cells appear not to have a continuous basal lamina surrounding them and the matrix environment of the human corpus luteum contains laminin chains, collagen IV and versican.

(1) Rodgers RJ, Irving-Rodgers HF (2002) *Mol. Cell. Endocrinol.* **191**, 57–64.