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Single-cell analysis of the developing human ovary defines distinct insights into ovarian somatic and germline progenitors

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Summary

Formation of either an ovary or a testis during human embryonic life is one of the most important sex-specific events leading to the emergence of secondary sexual characteristics and sex assignment of babies at birth. Our study focused on the sex-specific and sex-indifferent characteristics of the prenatal ovarian stromal cells, cortical cords, and germline, with the discovery that the ovarian mesenchymal cells of the stroma are transcriptionally indistinguishable from the mesenchymal cells of the testicular interstitium. We found that first-wave pre-granulosa cells emerge at week 7 from early supporting gonadal cells with stromal identity and are spatially defined by KRT19 levels. We also identified rare transient state f0 spermatogonia cells within the ovarian cords between weeks 10 and 16. Taken together, our work illustrates a unique plasticity of the embryonic ovary during human development.

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