



Conserved SERPINE2 function maintains ovarian estrogen production to support fertility in goats and mice

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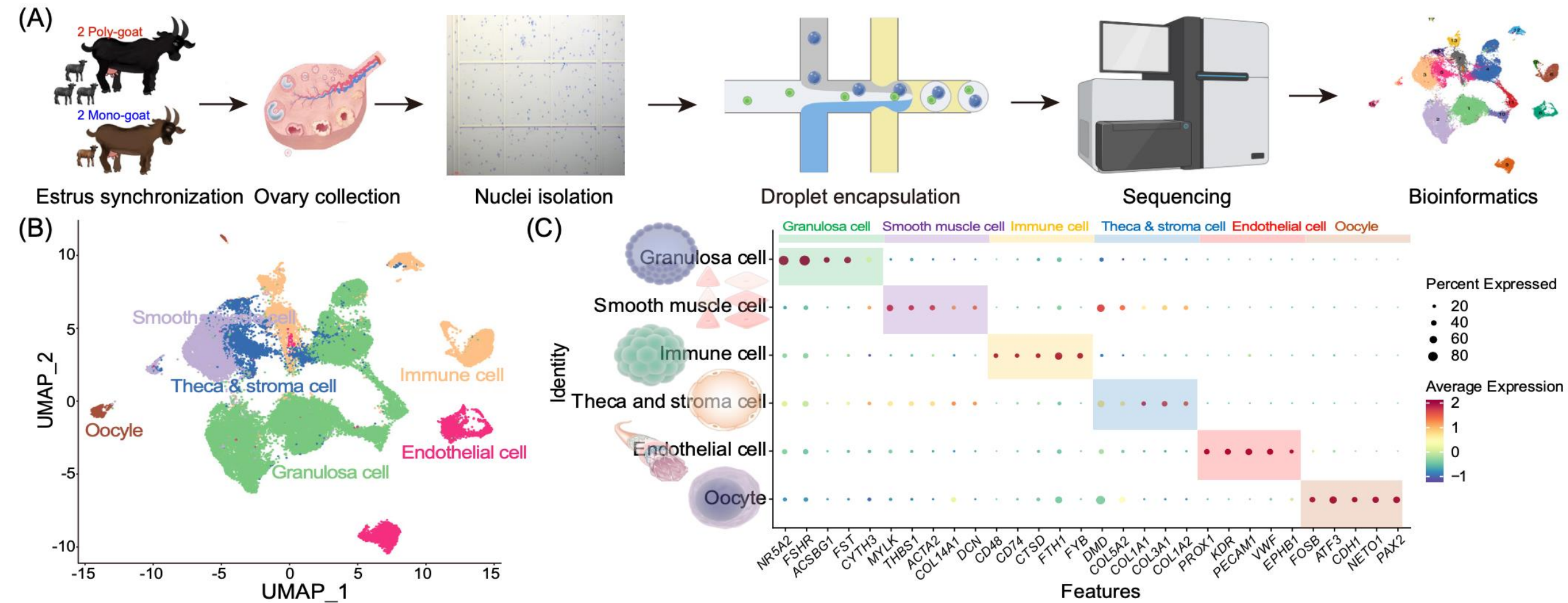
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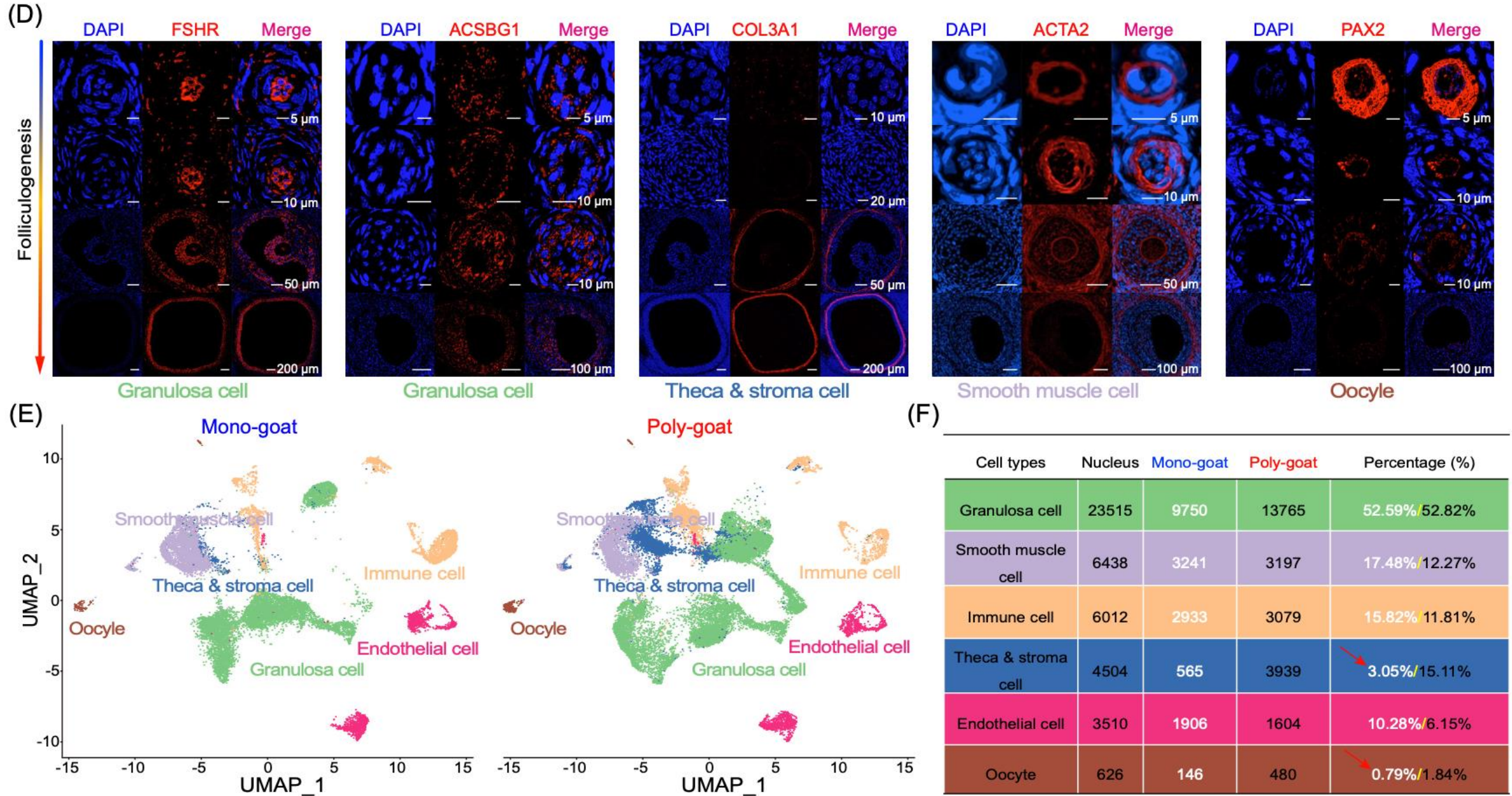
Background

- ❑ Ovulation rate and follicular development are major determinants of mammalian fertility. In goat production, litter size is an important measure of reproductive efficiency. However, differences in ovarian cell composition and functional states between goats with high and low litter sizes remain unclear.
- ❑ Granulosa cells surround the oocyte and provide nutritional, metabolic, and hormonal support for follicular development and oocyte maturation. Coordination among granulosa cell proliferation, survival, and steroidogenesis is essential for normal follicular development and successful ovulation.
- ❑ The enzymatic pathway of estrogen biosynthesis is well established, with CYP19A1 catalyzing the conversion of androgens into estrogens. However, how extracellular cues in the follicular microenvironment regulate intracellular CYP19A1 expression and activity, thereby affecting estrogen production, remains unclear.

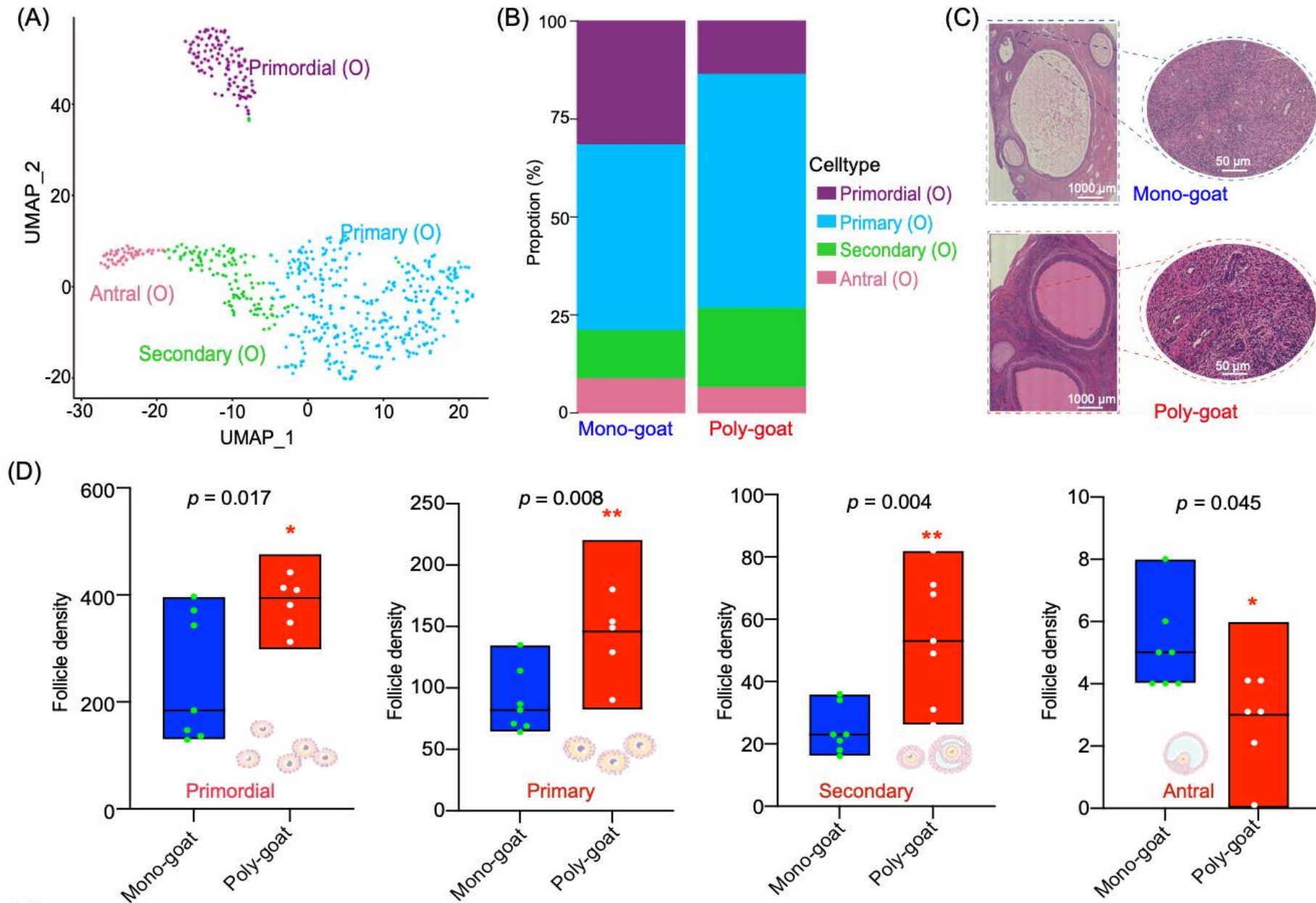
Result 1: Single-nucleus transcriptomic atlas of the goat ovary



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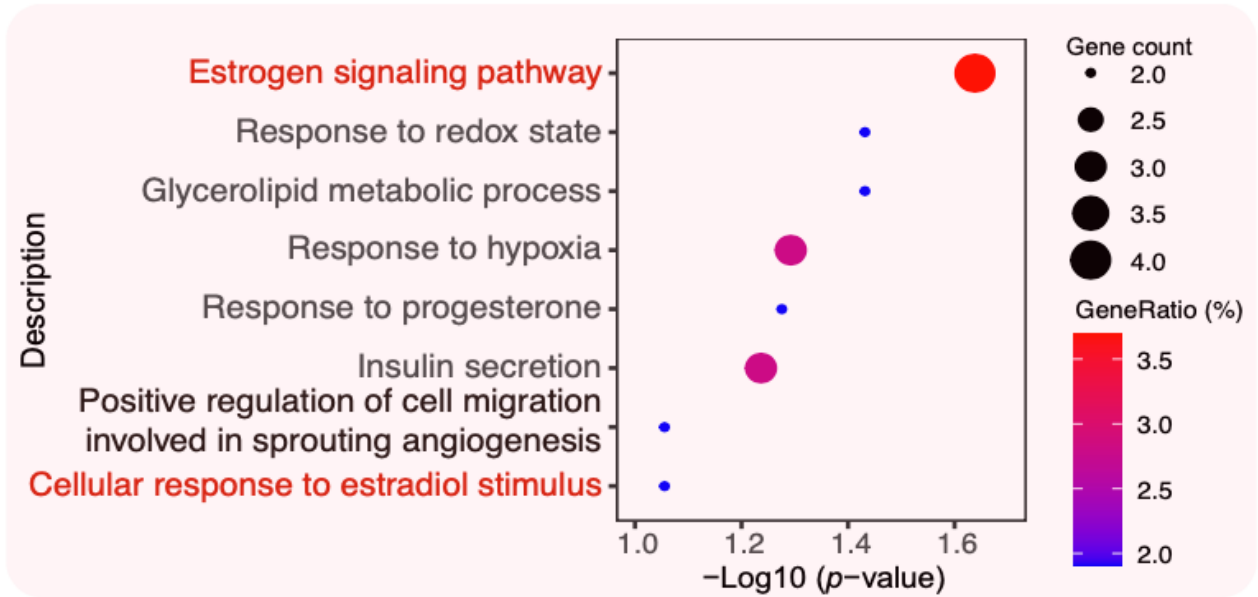
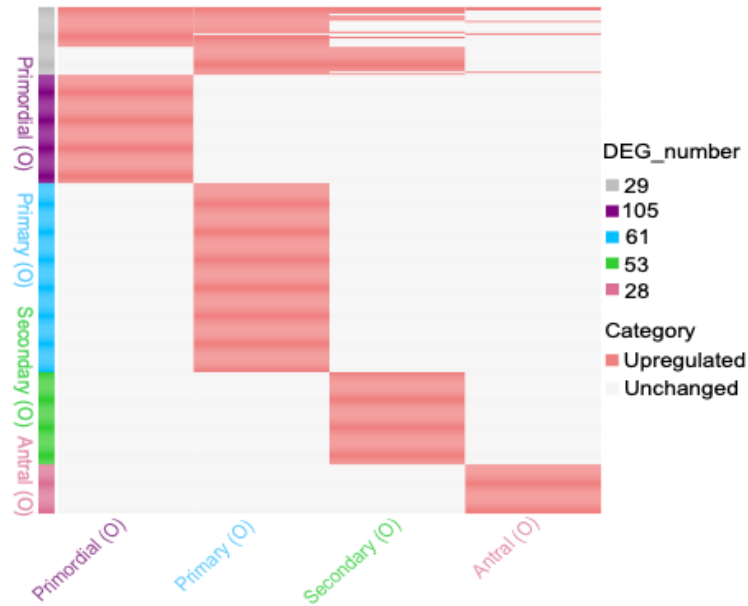


Result 2: Poly-goat ovaries exhibit altered oocyte-state composition and follicular-stage distribution

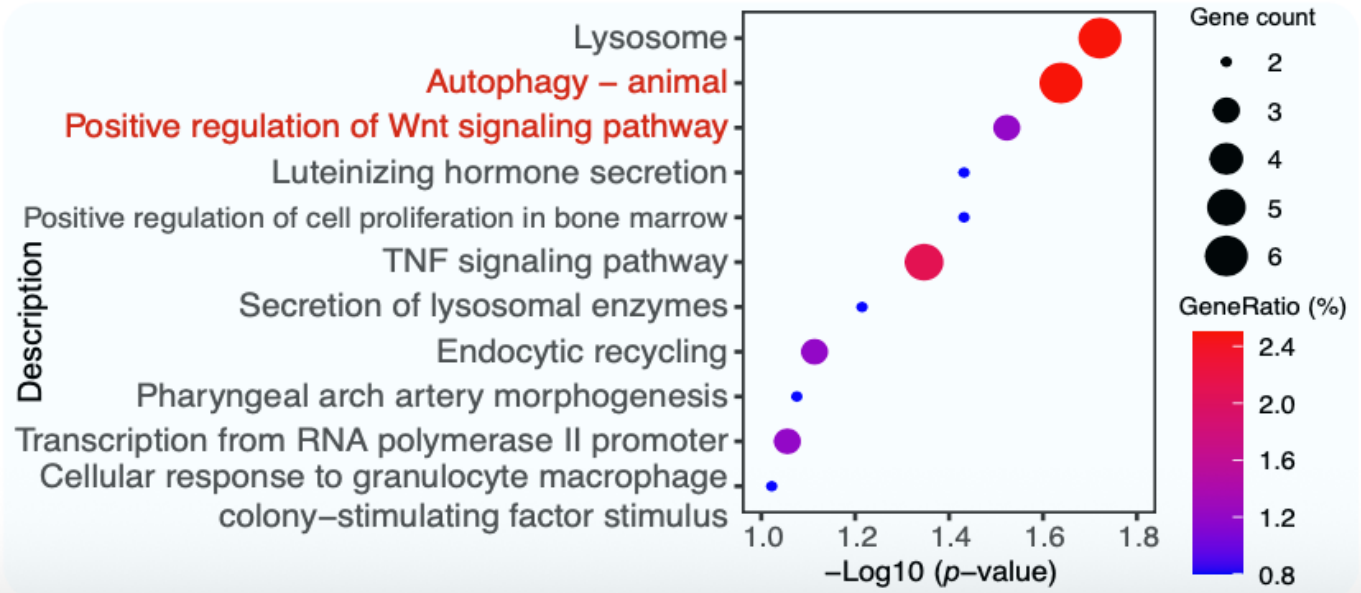
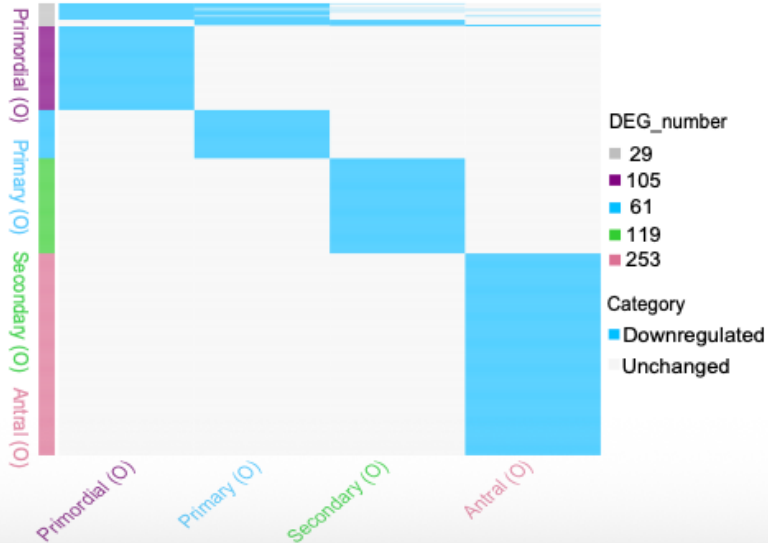


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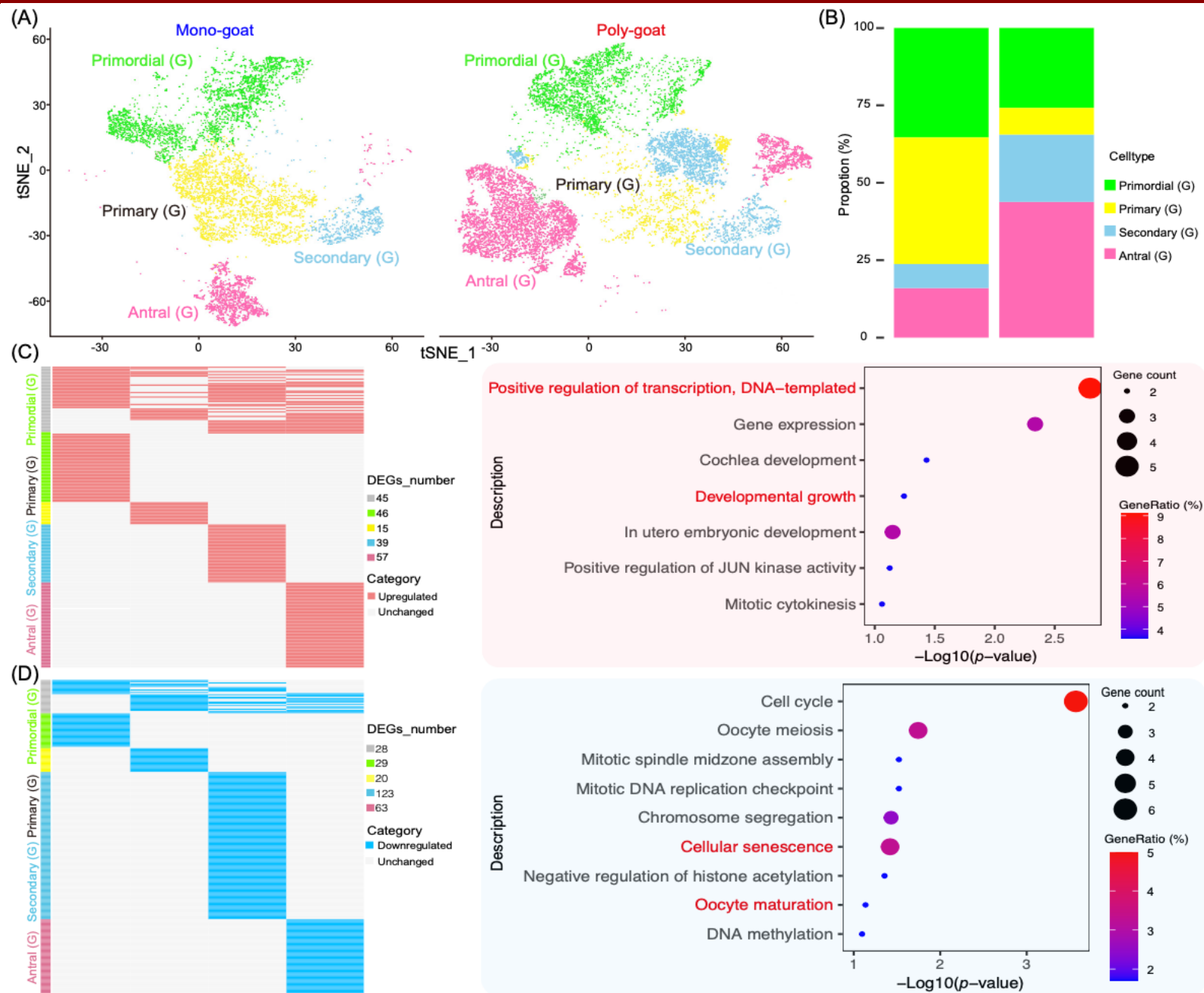
(E)



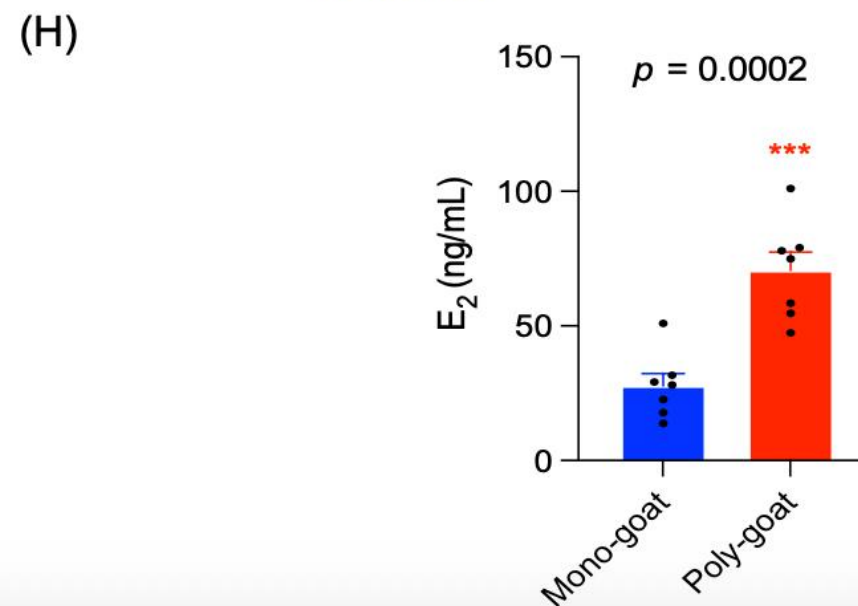
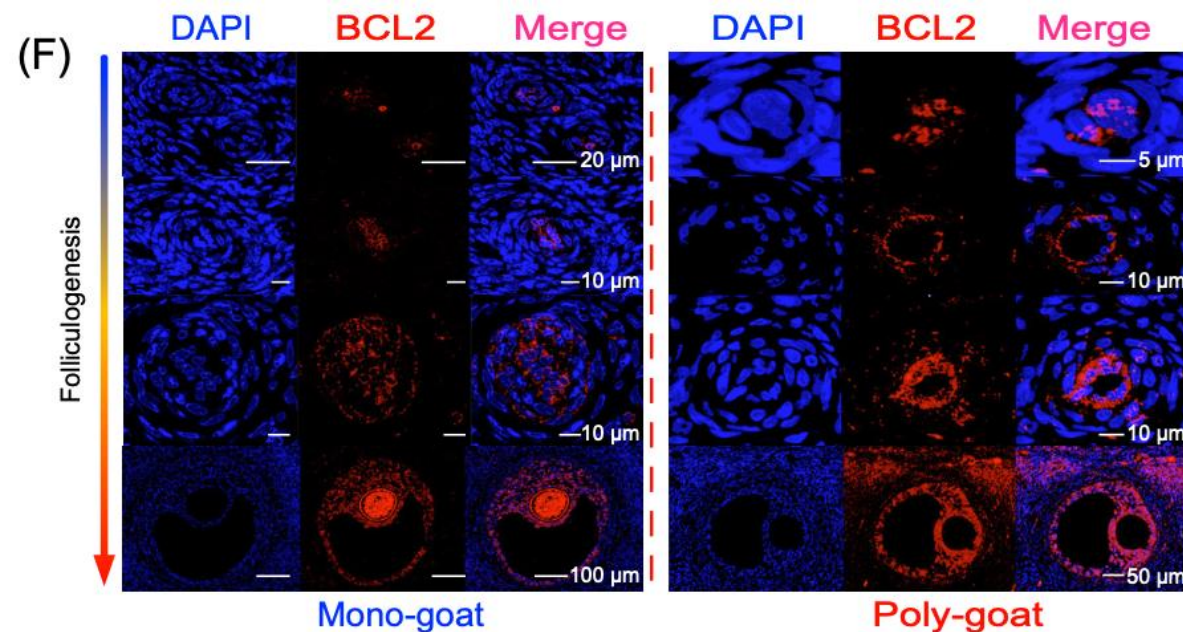
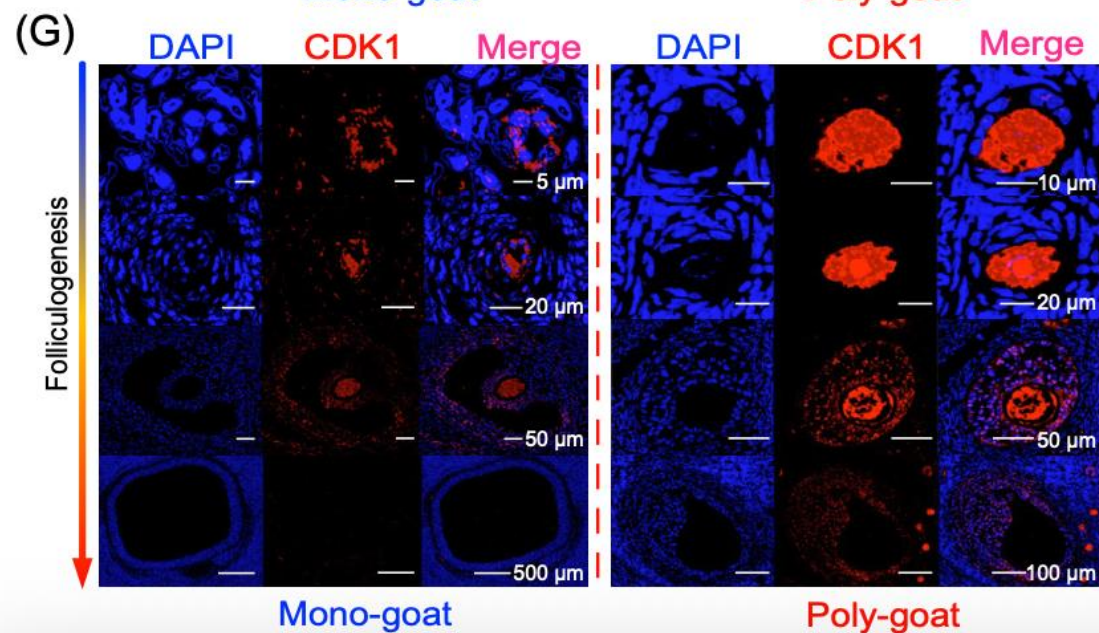
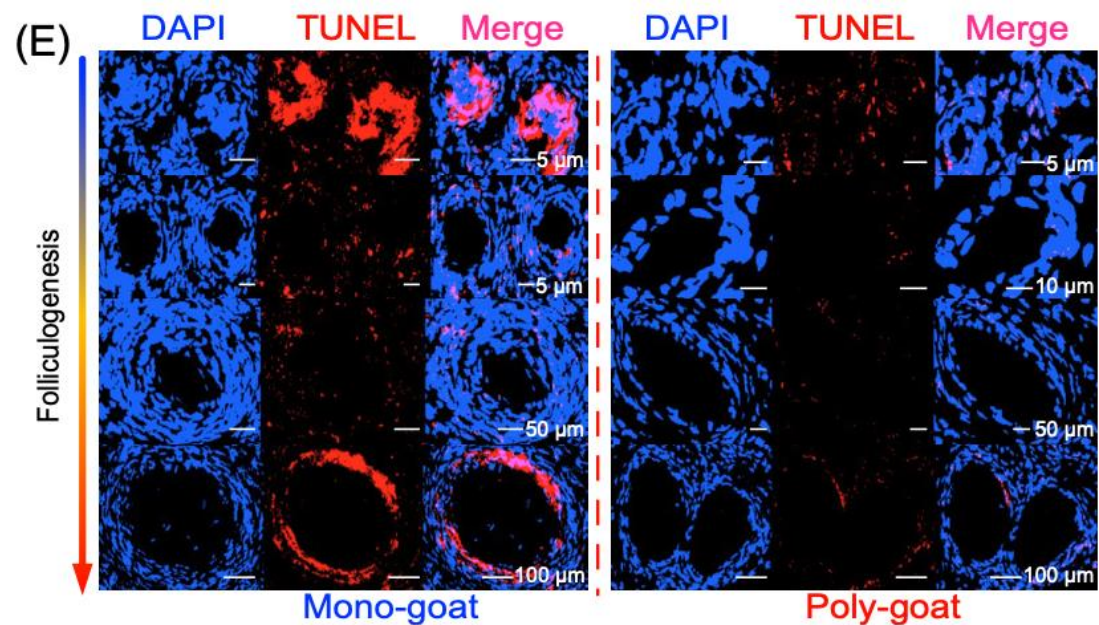
(F)



Result 3: Poly-goat granulosa cells exhibit proliferation-associated, steroidogenic, and survival-associated features

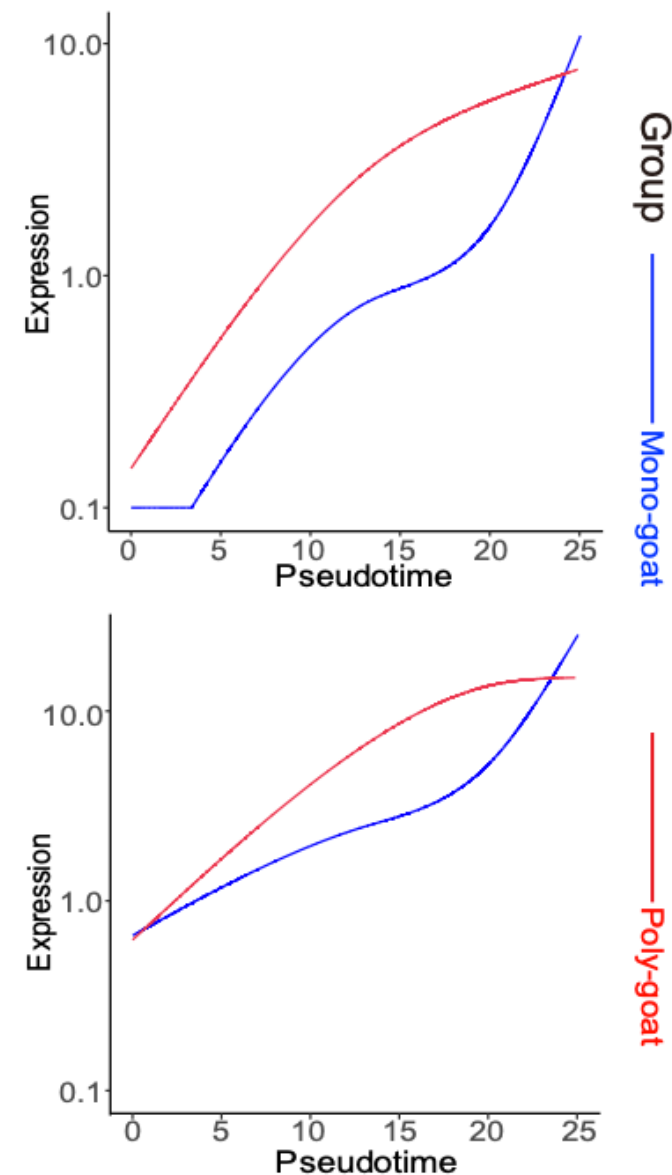
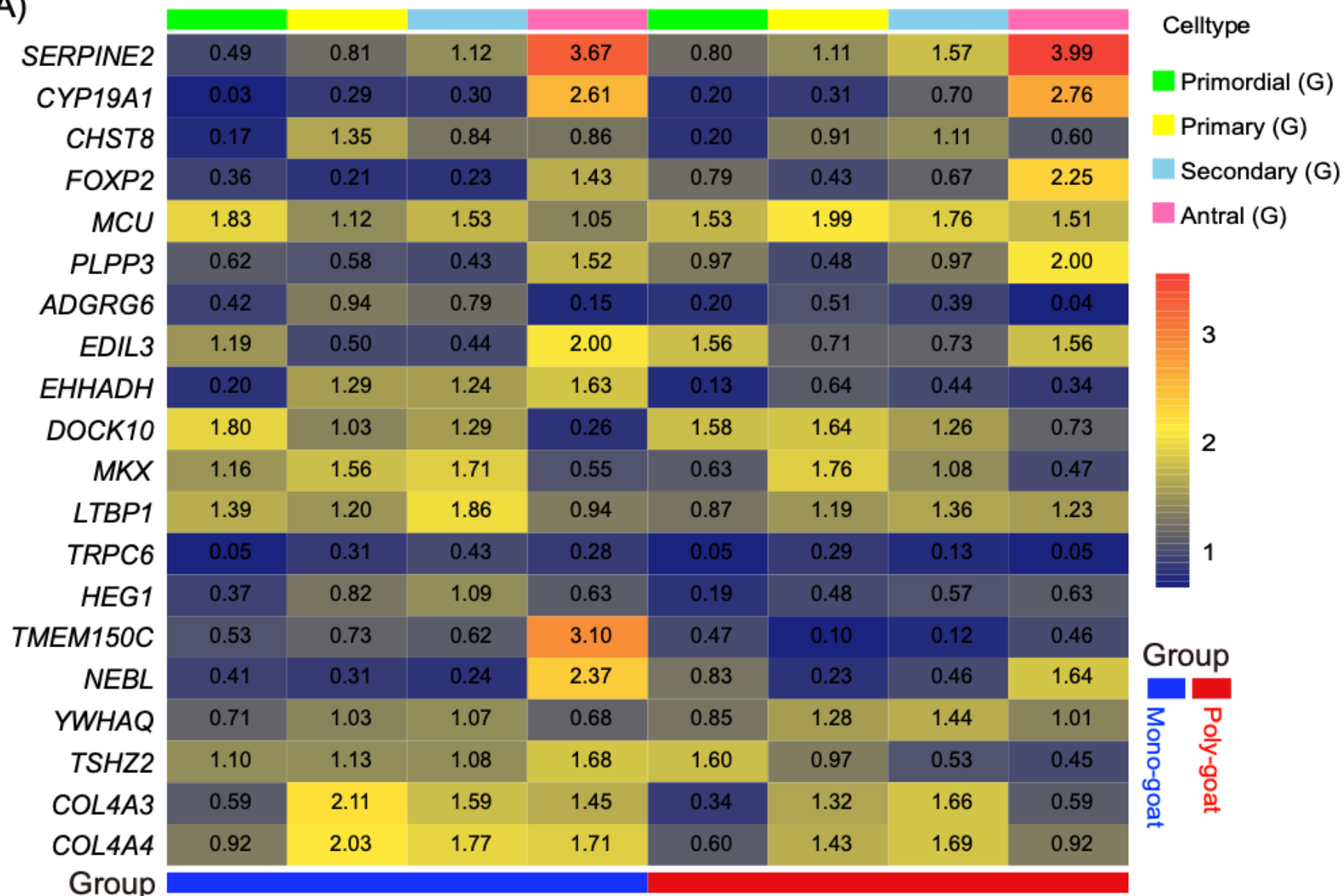


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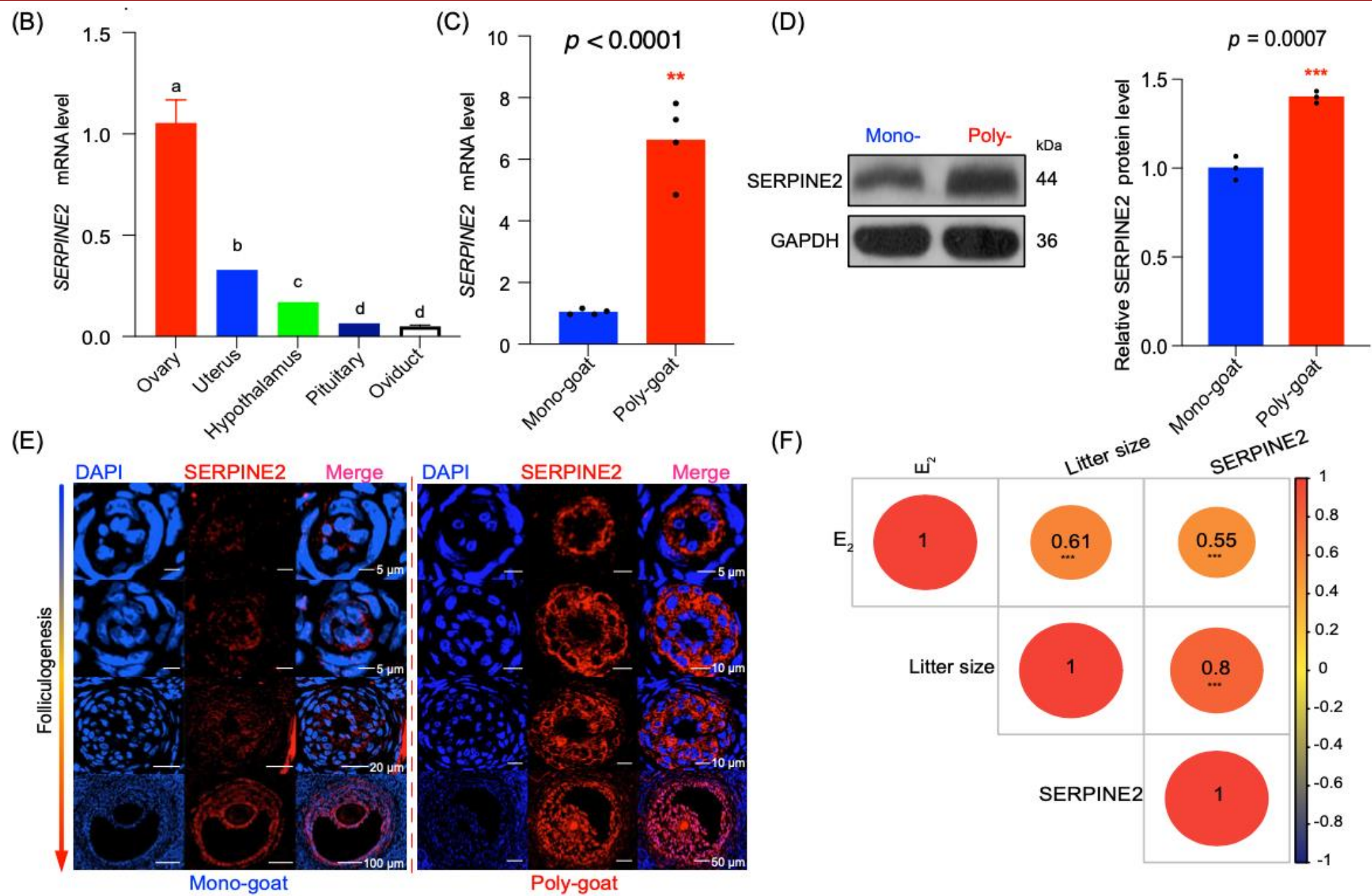


Result 4: SERPINE2 emerges as a prolificacy-associated candidate regulator in the ovary

(A)

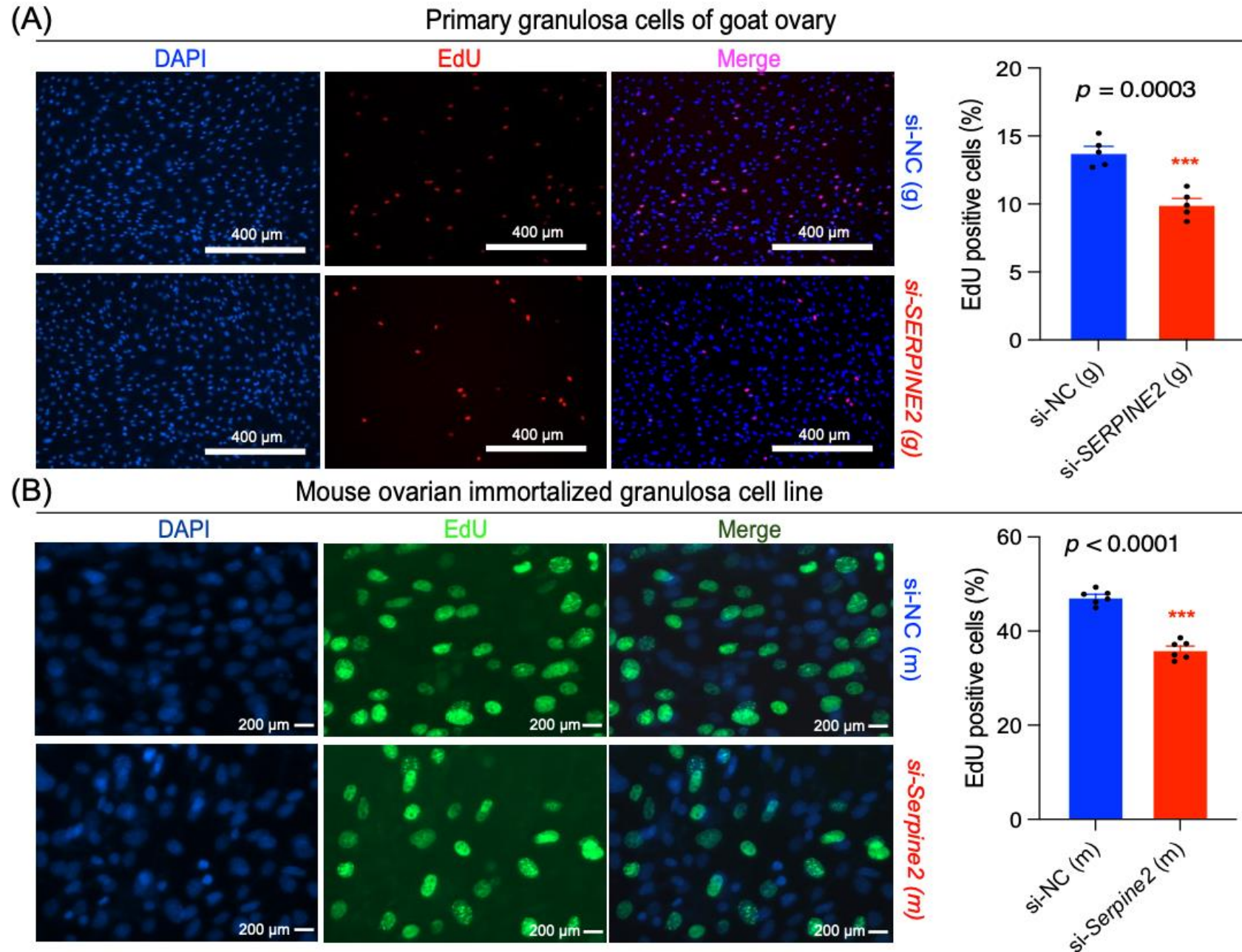


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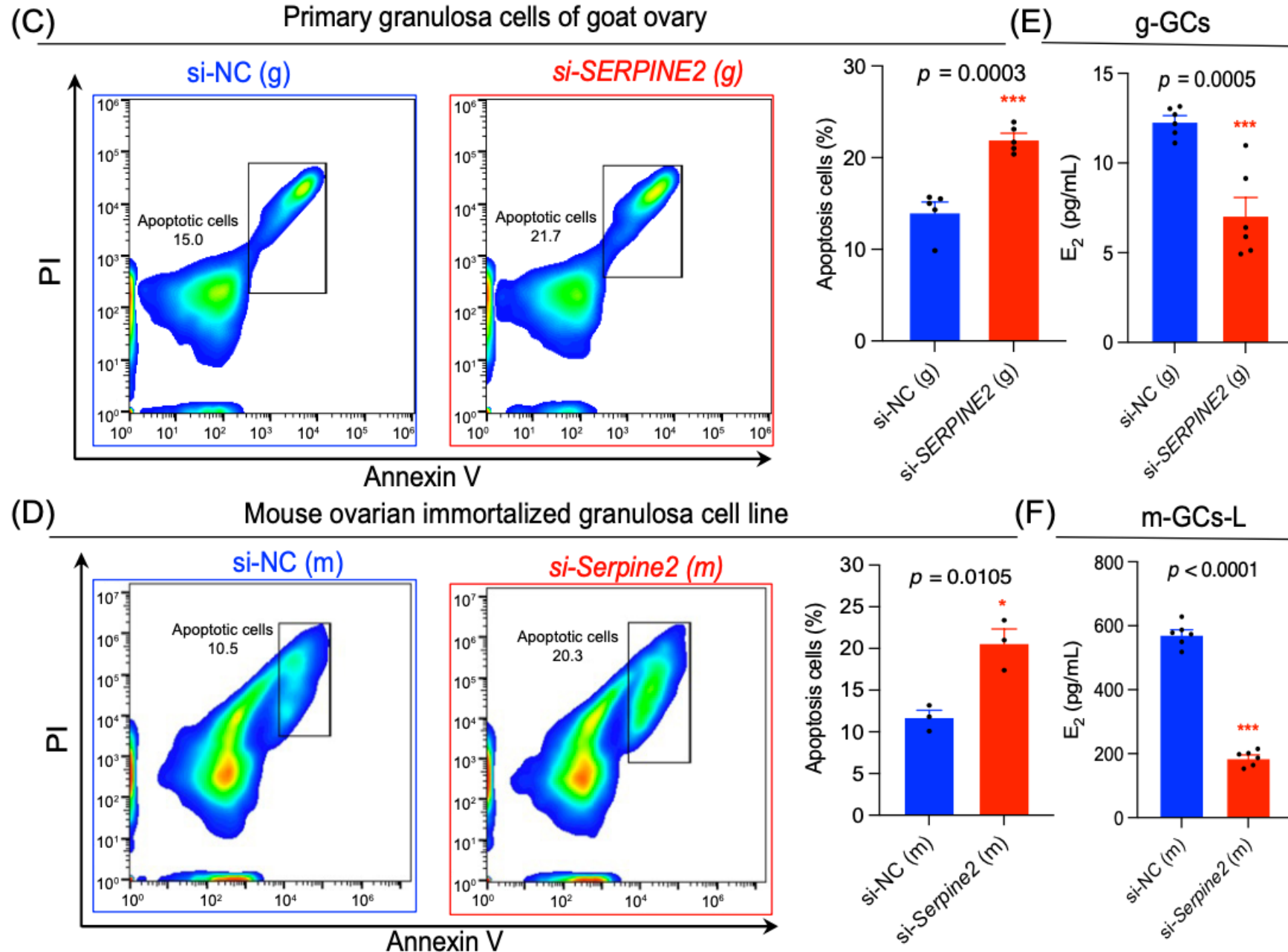


Result 5: SERPINE2 supports granulosa cell functional competence across species



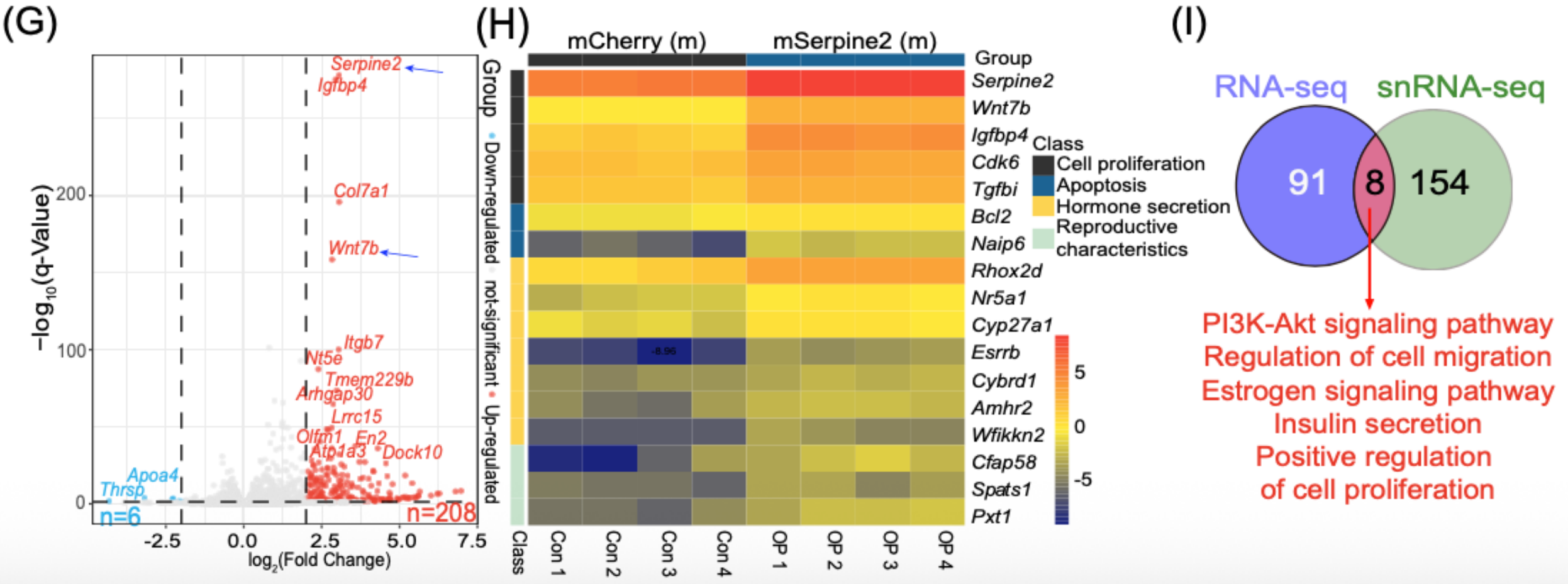


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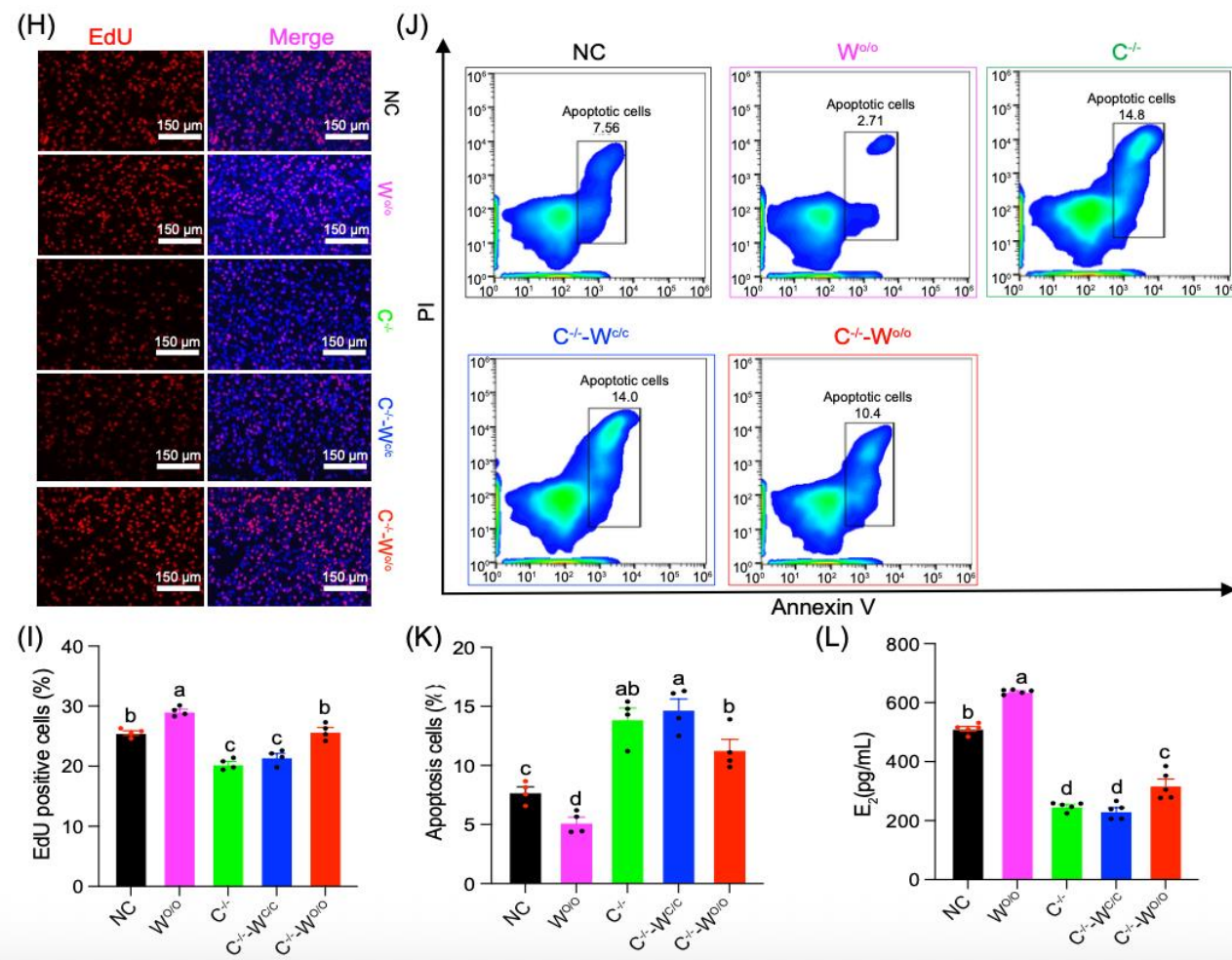
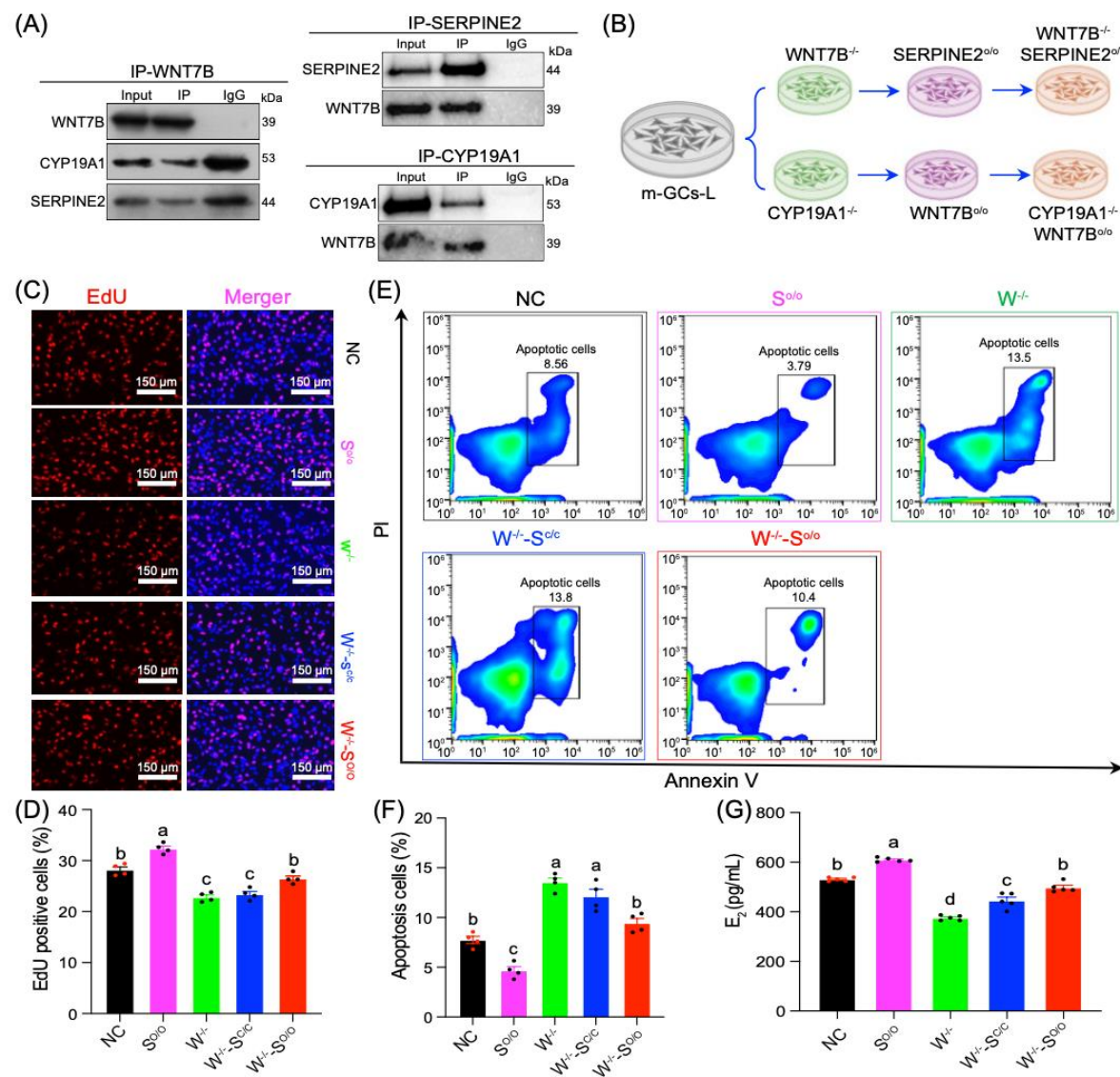




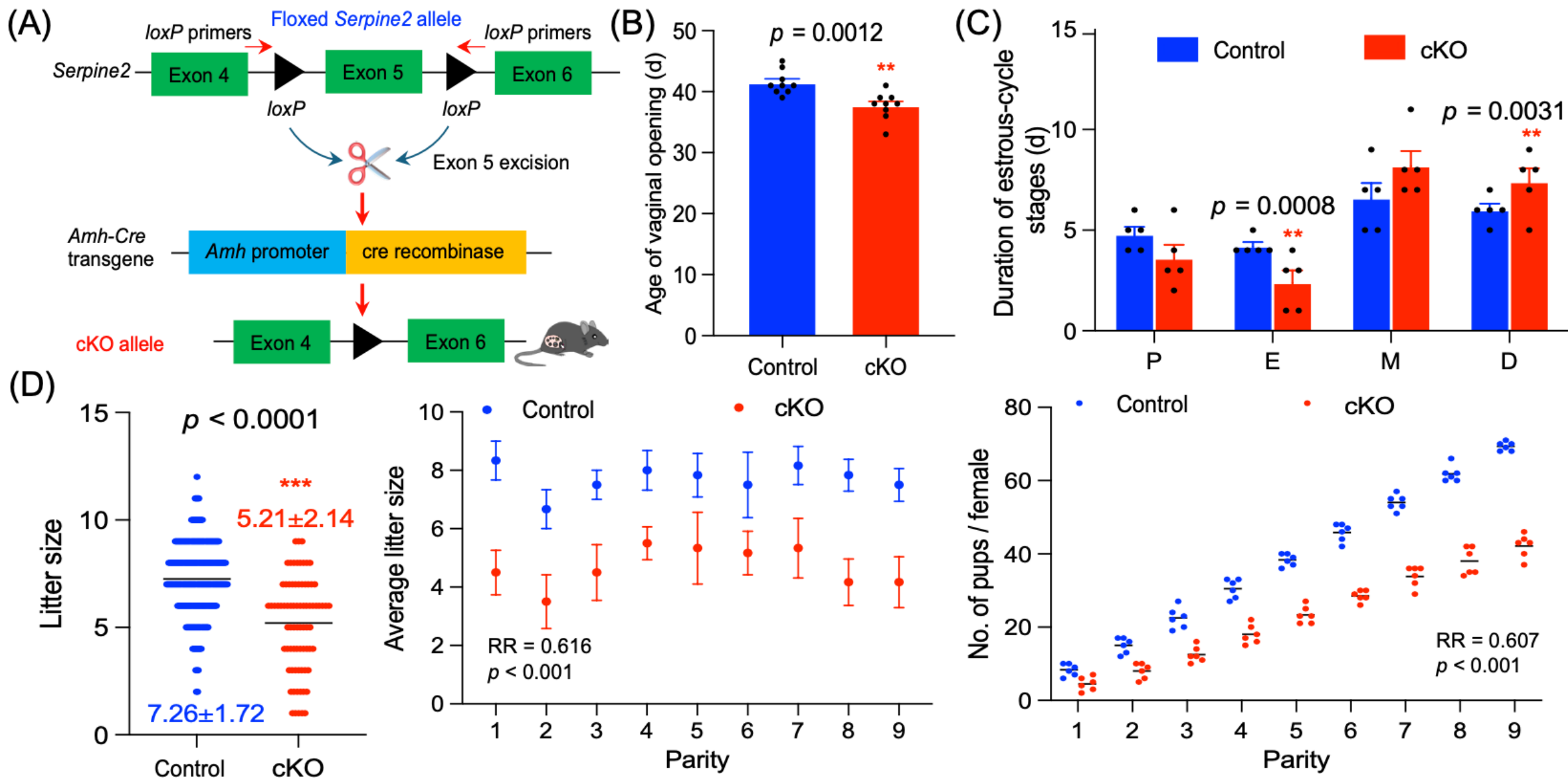
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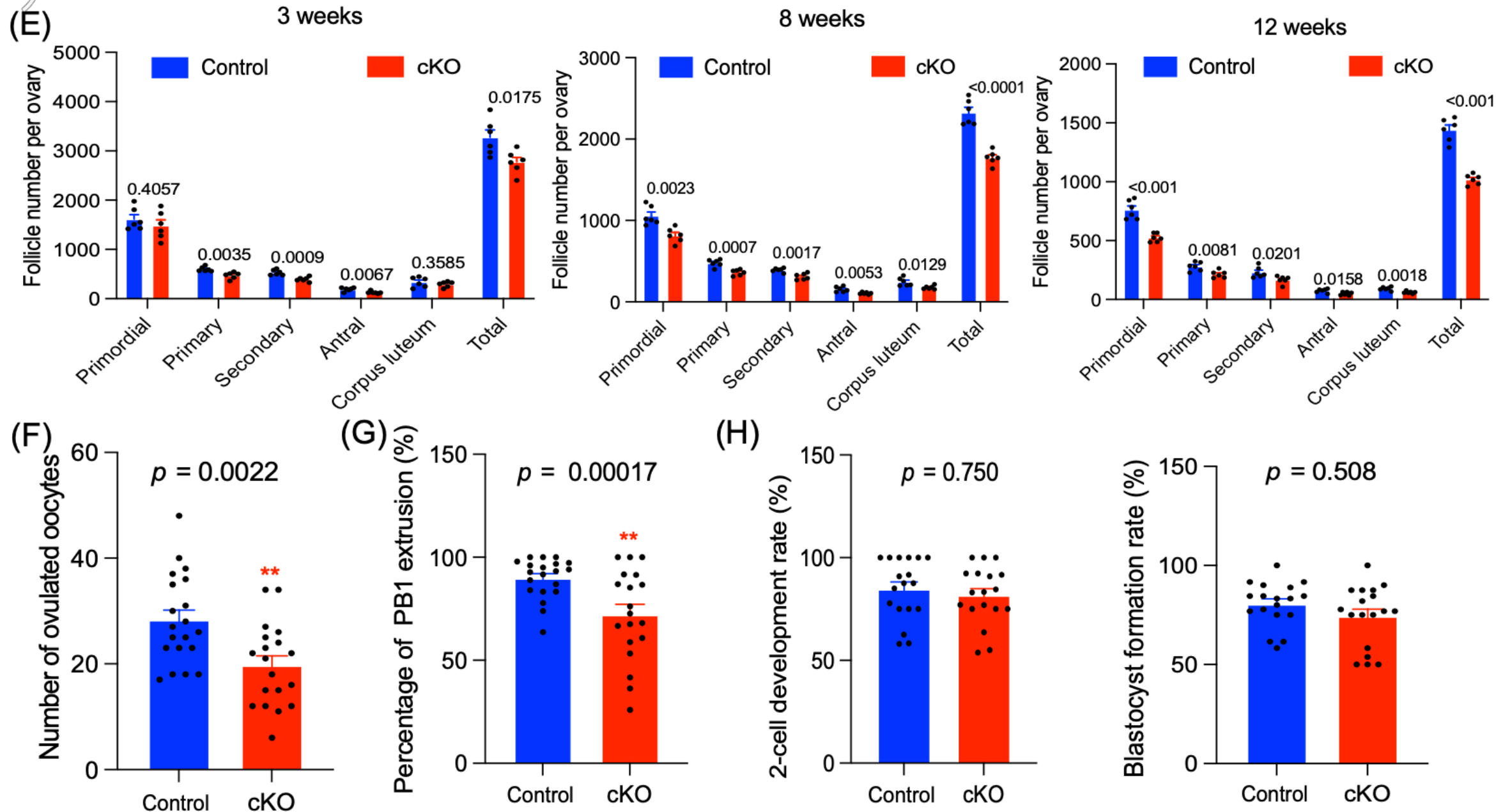
Result 6: WNT7B and CYP19A1 contribute to SERPINE2-dependent GC function and steroidogenesis



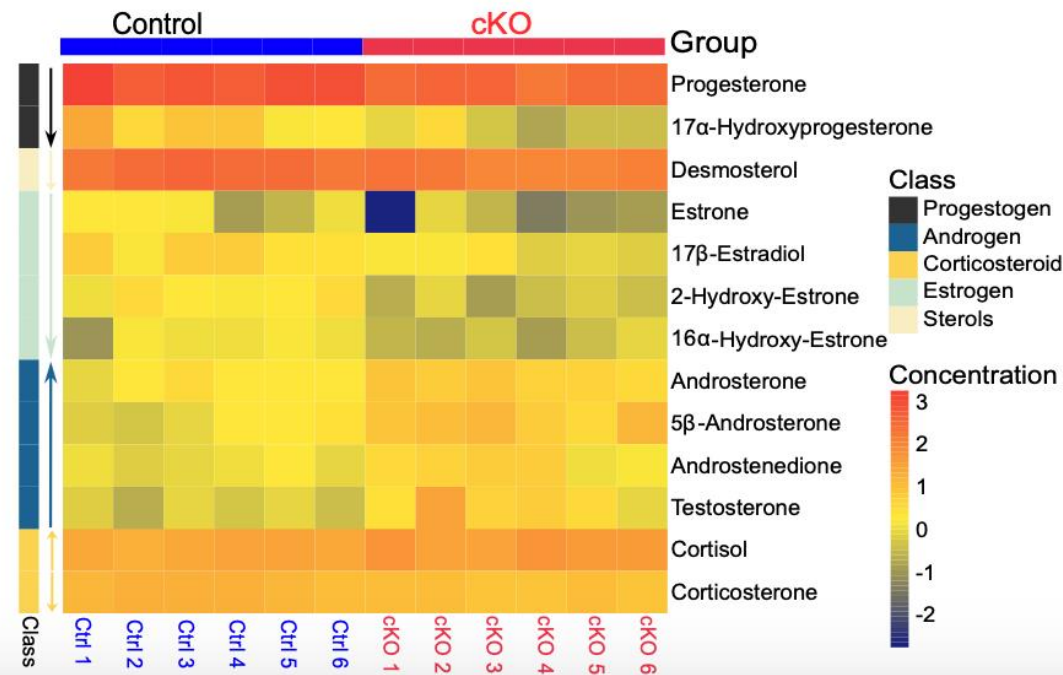
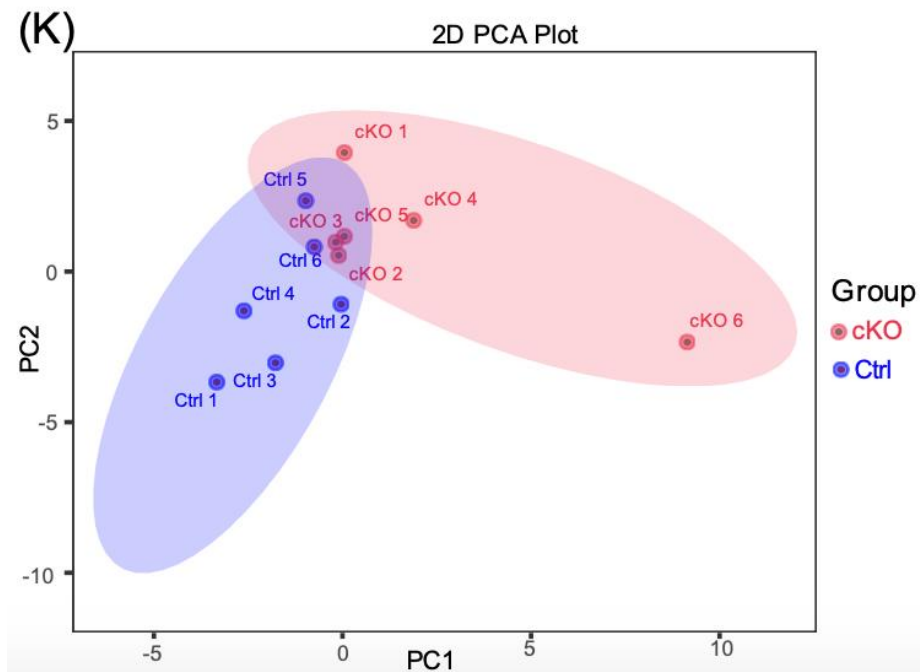
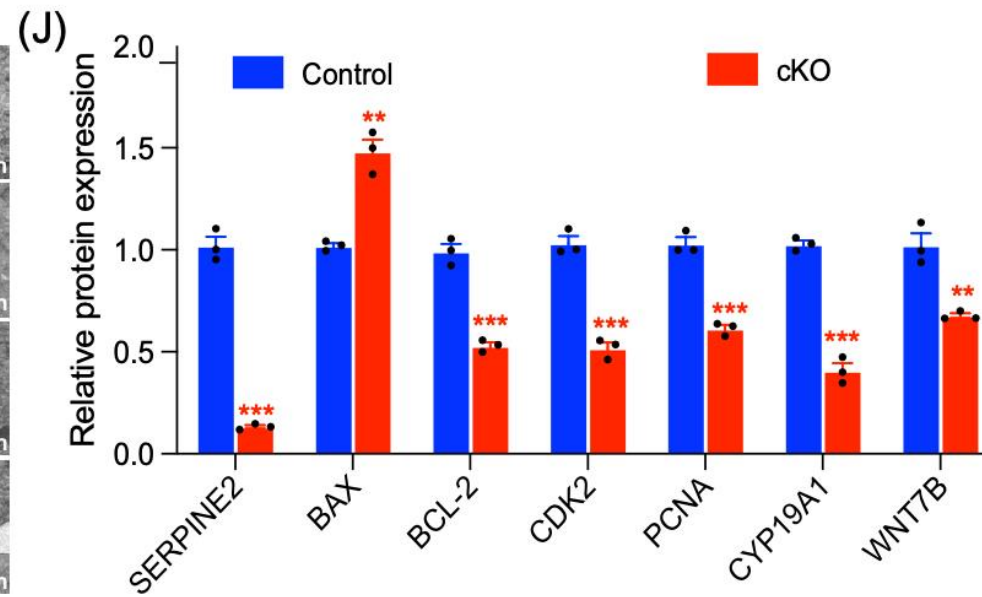
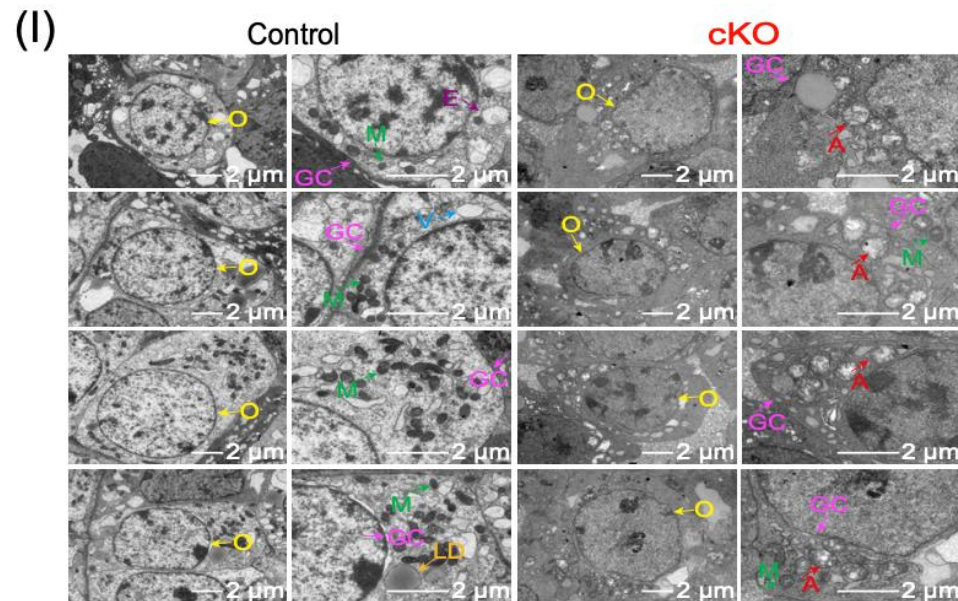
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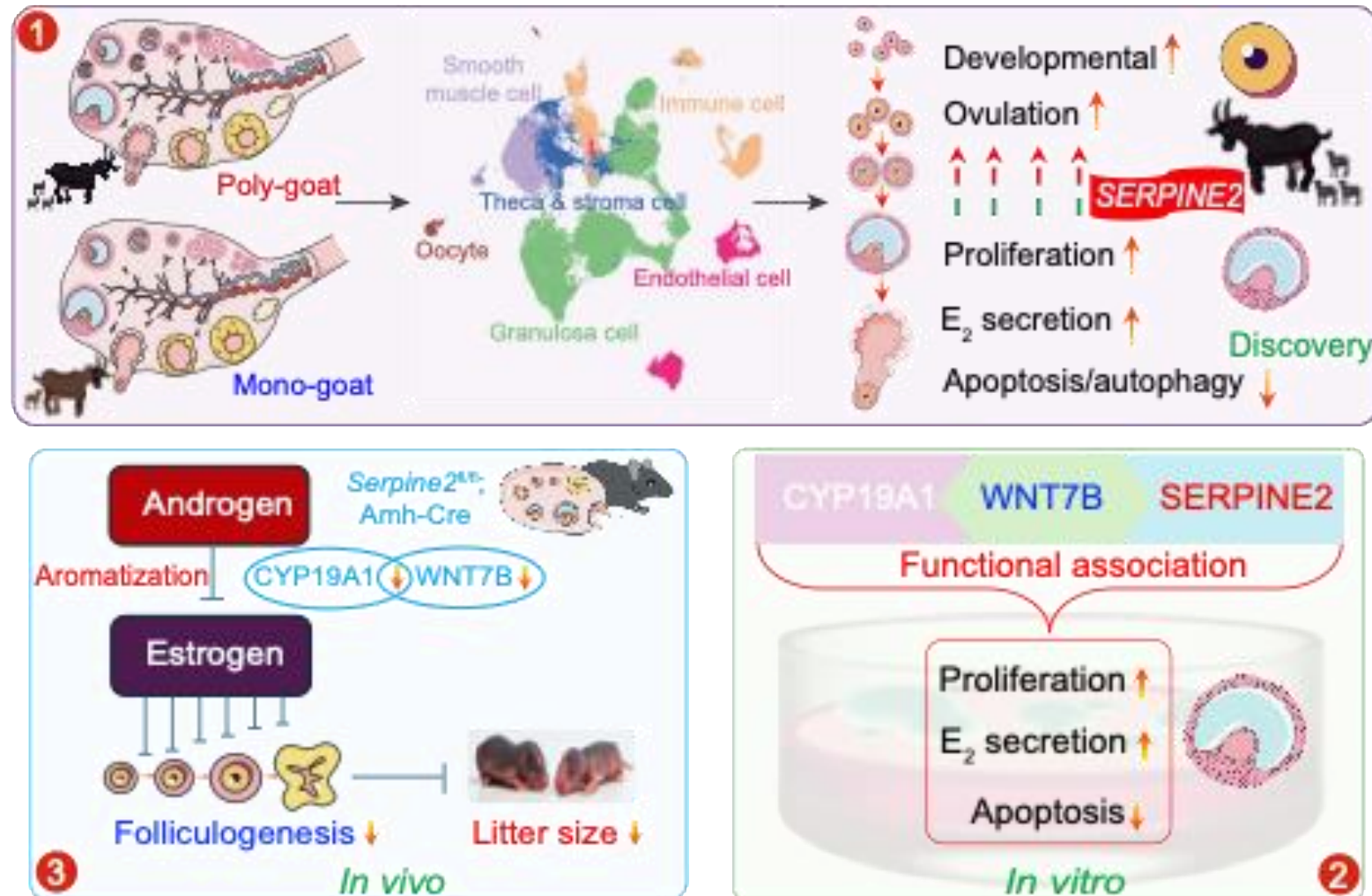


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Summary



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