Supplementary Fig. S1 Sequencing information and differentially expressed genes in germ cell clusters.  

*a* Sequencing information including cell number, mean reads per cell and median genes per cell etc.  

*b* Violin plots show the expression patterns of marker genes across germ cell clusters.  

*c* Violin plots of the critical transcription factors across germ cell populations.  

*d* Heatmap representing the expression patterns of zinc finger protein family genes across germ cell clusters.
Supplementary Fig. S2 The expression patterns of highly variable genes in germ cell clusters. a Dynamic changes of highly variable genes along pseudo-time using monocle2. b The expression patterns of germ cell fate determination-associated genes.
Supplementary Fig. S3 PCA analysis and gene expression patterns. a PCA analysis of the transcriptome of granulosa cells. b The expression patterns of highly variable genes among granulosa cell subpopulations. c The expression patterns of PTCH1, ACTA2 and CYP17A1.
Supplementary Fig. S4 Differentially expressed genes and signaling pathways. 
a The expression patterns of highly variable genes among theca cell subpopulations. 
b The critical marker genes for different key signaling pathways.