

## Supporting Information

### Sexually Divergent Role of Germ Cells in Mammalian Gonadogenesis

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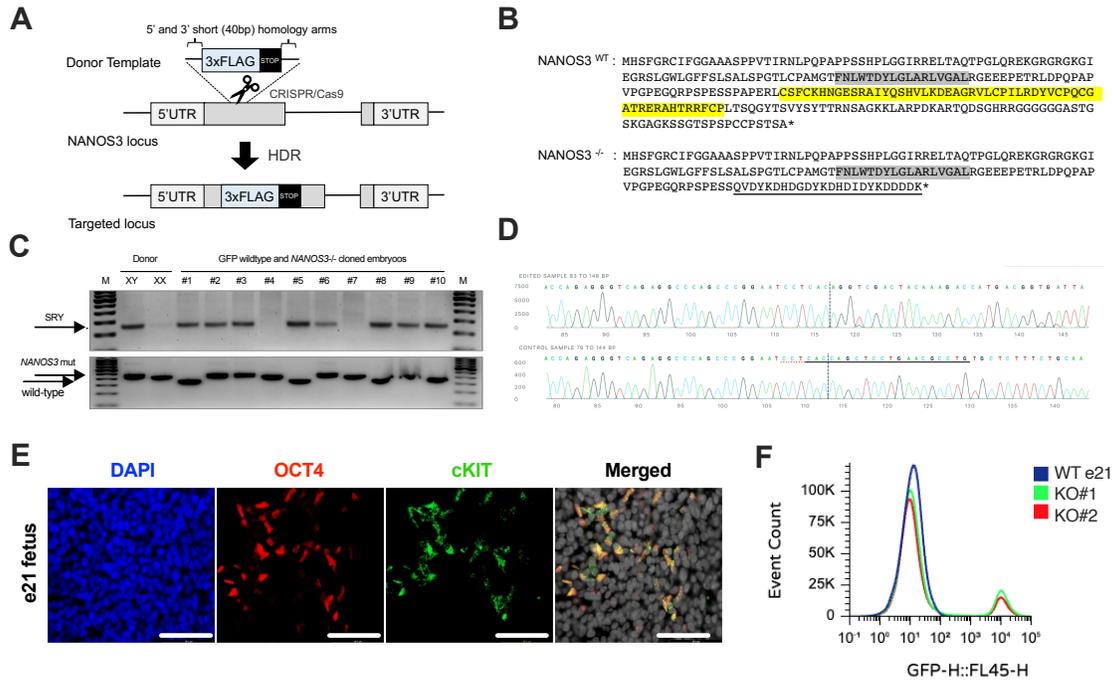
#### This PDF file includes:

Figures S1 to S6  
Tables S1 to S8

#### Table of contents:

Figure S1	Generation of targeted <i>NANOS3</i> mutants at e21.
Figure S2	Generation of targeted <i>NANOS3</i> mutants at e35
Figure S3	Experimental workflow and single-nucleus transcriptomic overview of fetal gonads
Figure S4	Comparative analysis of germ cell and somatic lineages in WT and KO fetal gonads
Figure S5	Altered intercellular communication networks in WT and KO ovaries and testes
Figure S6	Signaling network organization and pathway-specific communication patterns in testes
Table S1	Generation of WT and <i>NANOS3</i> KO cloned embryos
Table S2	increased apoptotic cell frequency in <i>NANOS3</i> KO gonads
Table S3	The proportions of ovarian and testicular cell clusters in developing gonads
Table S4	Pathway-level hits between WT and KO across sexes and cell types
Table S5	Major ligand–receptor (LR) families with top pathway changes
Table S6	Key LR changes in ovaries and testes
Table S7	Primers used in this study
Table S8	Antibodies used for immunostaining

## Figure S1



### Supplementary Figure 1. Generation of targeted *NANOS3* knockouts at e21:

Related to Figure 1.

(A) Strategy for disruption of *NANOS3* with insertion of a premature translational-stop codon (PTC). The cassette was designed containing a 3xFLAG epitope tag and a PTC (TAA) flanked by 40 bp homology arms corresponding to the region to be edited.

(B) Amino acid sequences of wild-type *NANOS3* which contains N-terminal NOT1-interacting motif in grey and C-terminal (CCHC)<sub>2</sub> zinc finger (zf) domain in yellow, and the targeted mutant with an in-frame three Flag epitopes in tandem (3x Flag), and a premature stop codon which results in a truncated protein (underline) missing the zf domain.

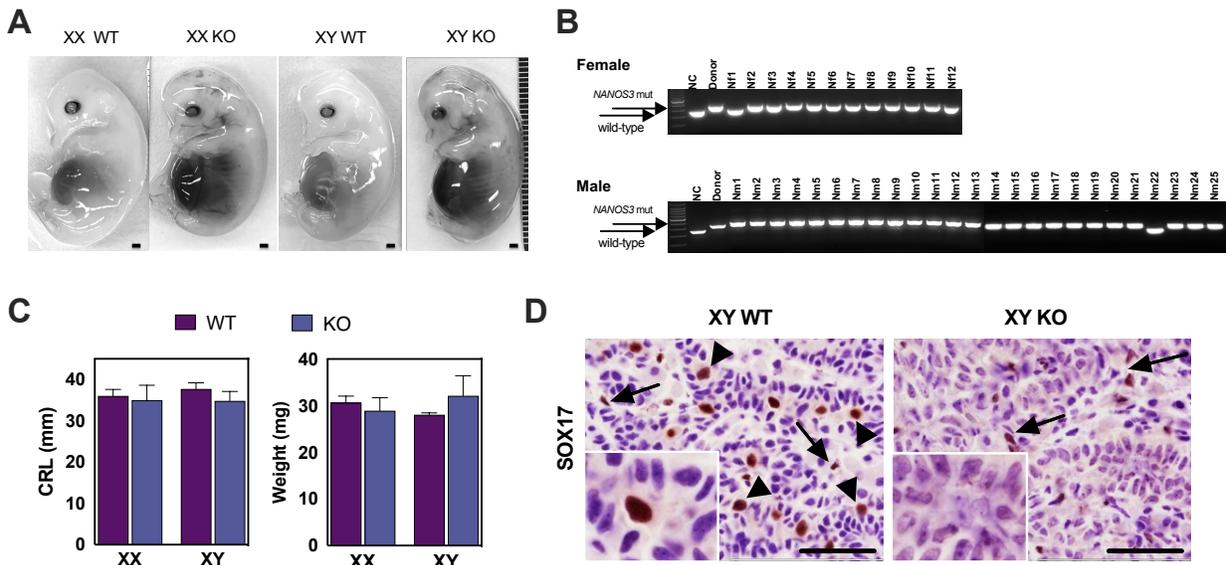
(C) Sex determination and genetic screening of e21 fetuses. The control samples labeled as "XY" and "XX" represent male and female donor cells, respectively. Lanes #1-10 correspond to cloned samples. The top panel displays a representative PCR result for determining sex, with a single PCR product of 250-bp indicating the presence of the *SRY* gene. PCR results demonstrate targeted mutants (426-bp) and wild-type alleles (352-bp). The "M" lane contains a 100-bp DNA ladder, serving as a size marker.

(D) The representative chromatogram showing the target site of *NANOS3* gene underlined.

(E) Immunofluorescence staining confirmed that the migrating primordial germ cells were OCT4 (red) and cKIT (green) positive. Scale bar = 50 $\mu$ m.

(F) Detecting cleaved caspase-3 in the PGCs isolated by magnetic-activated cell sorting using SSEA1+ MicroBeads

**Figure S2**



**Supplementary Figure 2. Generation of targeted *NANOS3* knockouts at e35.** Related to Figure 2 and 3.

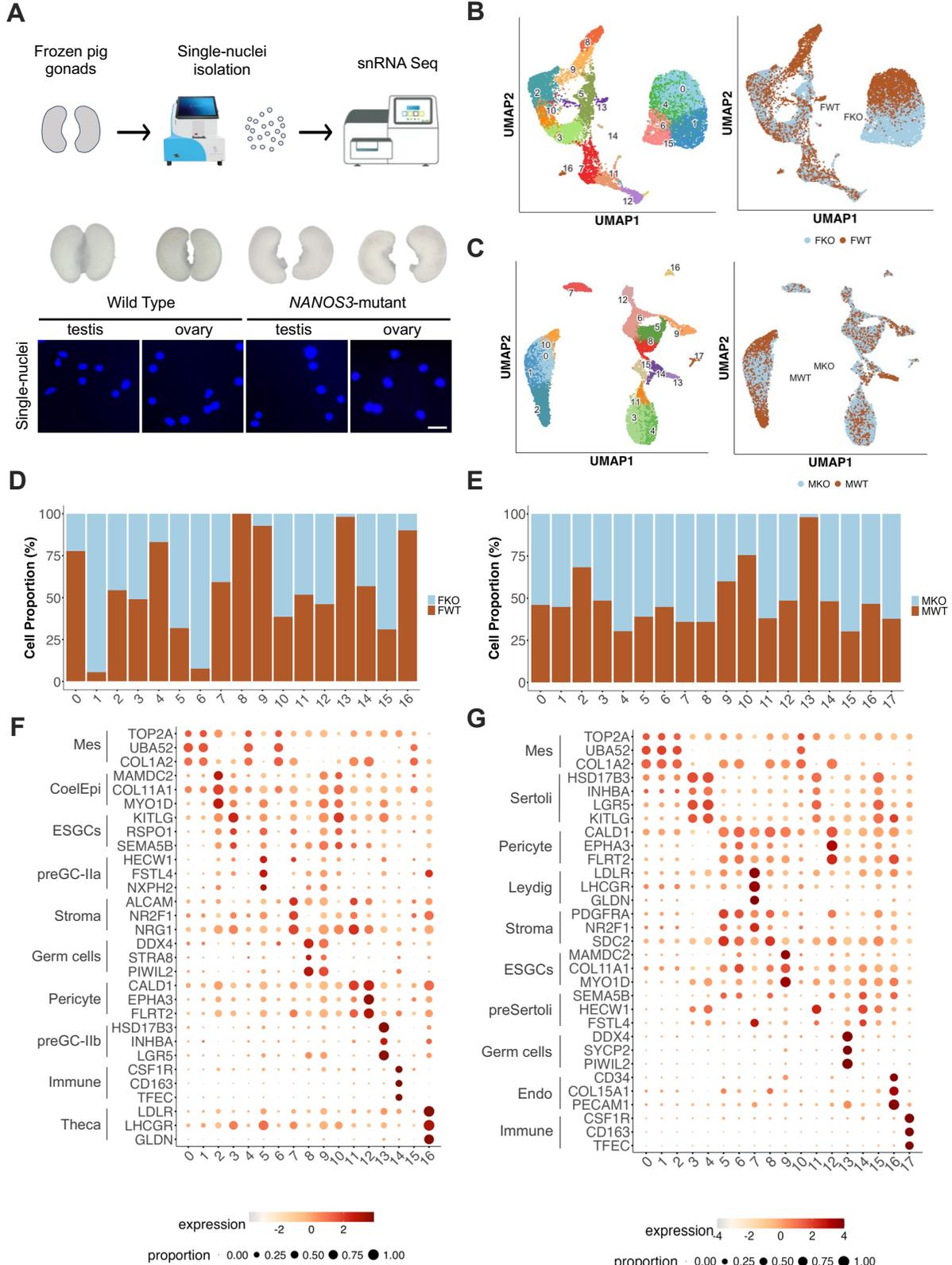
(A) Photographs of the wild-type (WT) and knockout (KO) male and female fetuses at e35. Scale bar = 1mm.

(B) Agarose gel image showing the representative banding patterns for determining genotypes for the mutant (426 bp) and wild-type (352bp) *NANOS3* alleles. M is a 100-bp ladder as a DNA size marker.

© Bar graphs illustrate CRL and body weight, as indicated.

(D) Immunostained images of the WT and KO testes, which marked SOX17+ germ cells (arrowheads, inlet) and endothelial cells (arrow).

**Figure S3**



**Supplementary Figure 3. Experimental workflow and single-nucleus RNA-seq analysis of fetal gonads** Related to Figure 4 and 5

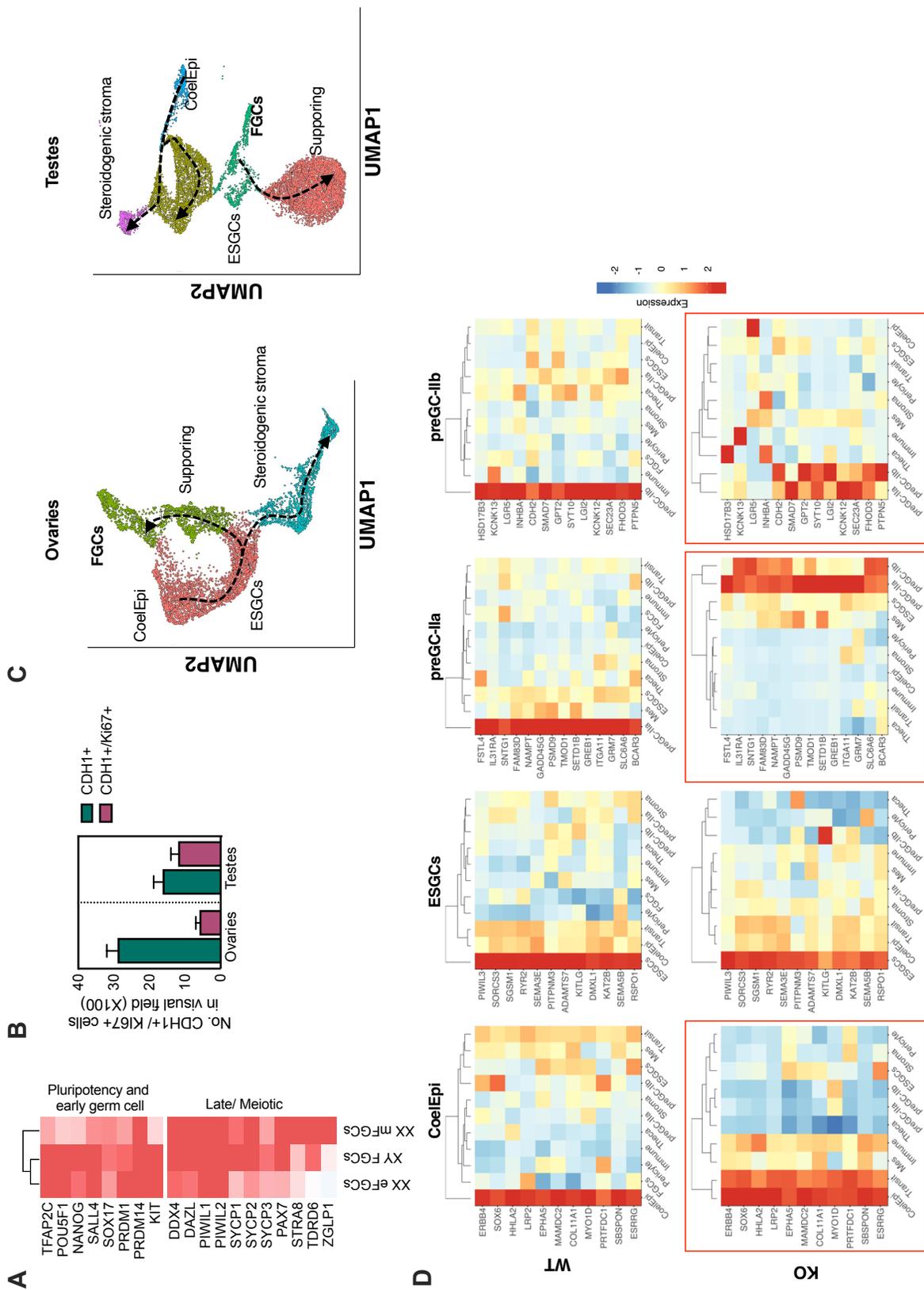
(F) Experimental workflow for single-nucleus RNA-sequencing (snRNA-seq). Freshly isolated nuclei from whole gonads were inspected and stained with DAPI (n = 3 per group).

(B, C) UMAP plots showing (B) ovarian nuclei colored by cluster (c1-c16; left) and by sample ID (right), and (C) testicular nuclei colored by cluster (c1-c17; left) and by sample ID (right).

(D, E) Bar plots showing the relative proportions of each cell type in (D) ovaries and (E) testes.

(F, G) Bubble heatmaps depicting expression levels of selected gonadal marker genes across identified cell clusters in (F) ovaries and (G) testes.

Figure S4

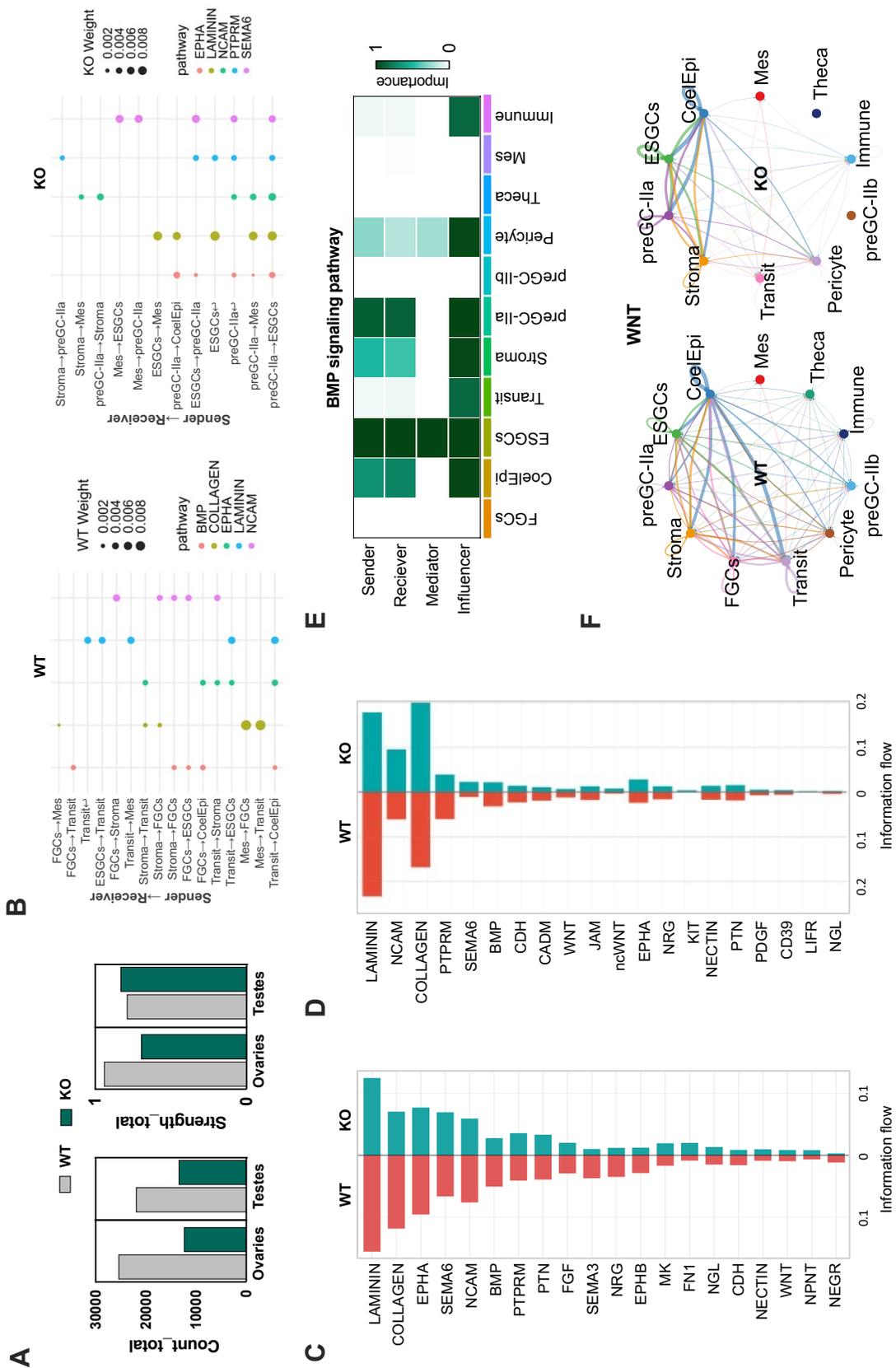




**Supplementary Figure 4. Comparative analysis of germ cell and somatic lineages in WT and KO fetal gonads** Related to Figure 4

- (F) Heatmaps showing expression of selected germ cell-associated genes in fetal germ cells from ovaries (XX) and testes (XY). Color intensity represents scaled log-transformed expression levels.
- (B) Quantification of CDH1-only and CDH1/KI67 co-expressing cells.
- (C) Developmental trajectories of gonadal somatic progression inferred using Monocle v3. UMAP plots show ovaries (right) and testes (left) colored by gonadal cell populations. Cells in stage 0 were designated as the root node, representing Coelomic Epithelium (CoelEpi).
- (D,E) Heatmaps displaying expression of selected genes in (D) CoelEpi, ESGCs, and PreGCs; © Stroma, Theca, Pericyte, Mes and Immune clusters between WT and KO ovaries.
- (F, G) KEGG pathway enrichment analyses highlighting sex-specific signaling dependencies based on DEGs per cluster in WT and KO (F) ovaries and (G) testes.

Figure S5



**Supplementary Figure 5. Altered intercellular communication networks in WT and KO ovaries and testes** Related to Figure 5

(A) Histogram displaying the number and overall strength of inferred intercellular communications between WT and KO ovarian and testicular cells. Both metrics were markedly reduced in ovaries but largely preserved in testes.

(B) Bubble plot showing the top five signaling pathways and their corresponding ligand–receptor pairings.

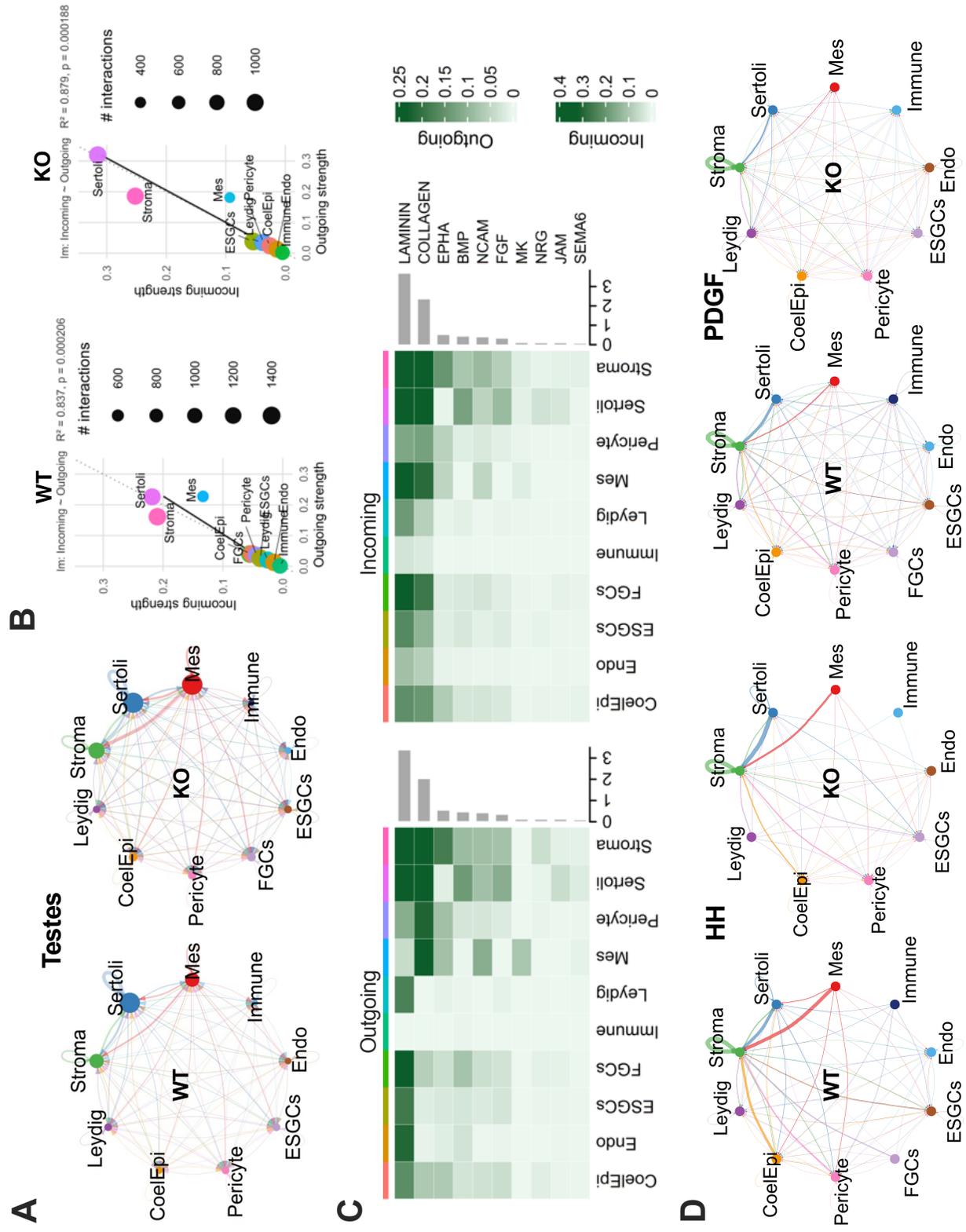
(C) Information flow of the top 20 signaling pathways in WT and KO ovaries.

(D) Information flow of the top 20 signaling pathways in WT and KO testes.

© Heatmap depicting the relative centrality of each cell type within the BMP signaling network, summarized by sender, receiver, mediator, and influencer scores in KO ovaries.

(F) Circle plots depicting WNT signaling (right) among gonadal cell populations in WT and KO ovaries.

Figure S6



**Supplementary Figure 6. Signaling network organization and pathway-specific communication patterns in testes** Related to Figure 5

(A) Circle plots showing interaction density between all cell type pairs in WT (left) and KO (right) testes.

(B) Scatter plots displaying incoming and outgoing communication strengths (log-scaled) for each major testicular cell type in WT (left) and KO (right).

(C) Outgoing (left) and incoming (right) signaling patterns of WT testicular cells. The vertical axis indicates the top ten signaling pathways and their relative strengths; the horizontal axis shows corresponding cell types.

(D) Circle plots depicting Hedgehog (HH) signaling (left) and PDGF signaling (right) among gonadal cell populations in WT and KO testes.

### Supplemental tables

**Table S1. Generation of wild type control and *NANOS3* KO cloned embryos.** Related to Figure 1 and 2

Donor	No. transferred	Pregnancy	No. retrieved (%) at
WT control <sup>AI-GFP</sup>	-	1/1	18; XX: 10 (53.3); XY: 8 (46.7)
XY WT	15		4 (26.7)
XX KO	15	1/1	2 (13.3)
XY KO	50		4 (8.0)
wt control <sup>AI</sup>	-	1/1	15; XX: 8 (53.3); XY: 7 (46.7)
XX KO	126	1/1	12 (9.5)
XY KO	135	1/2	25 (18.5)

AI-GFP, artificial inseminated with GFP semen. The percentage was obtained by calculating total no. fetuses/total no. embryos transferred.

**Table S2. increased apoptotic cell frequency in *NANOS3* KO gonads** Related to Figure 2

Groups	Ovary		Testis	
	WT	KO	WT	KO
Total counts	322.0 ± 16.8	364.7 ± 14.2	422.0 ± 26.5	420.7 ± 20.1
No. CS3+	3.7 ± 1.5	20.3 ± 10.4	5.0 ± 2.0	22.7 ± 8.6
Apoptotic rates %	1.2 ± 0.6	5.6 ± 3.0	1.1 ± 0.4	5.4 ± 2.1

**Table S3. The proportions of ovarian and testicular cell clusters in developing gonads**

Ovarian cells	WT		KO	
	nCells	%	nCells	%
CoelEpi	702	9.4	588	9.3
ESGCs	810	10.9	943	14.9
Transit	508	6.8	40	0.6
preGC-IIa	336	4.5	719	11.3
preGC-IIb	159	2.1	3	0.0
Mesenchyme	3292	44.2	3150	49.7
Stroma	771	10.3	621	9.8
Pericyte	190	2.5	222	3.5
Theca	63	0.8	7	0.1
Immune	59	0.8	45	0.7
FGCs	565	7.6	0	0
Total	7455	100.0	6338	100.0

Testicular cells	WT		KO	
	nCells	%	nCells	%
CoelEpi	383	3.5	256	2.1
ESGCs	251	2.3	380	3.2
Sertoli	2154	19.5	3132	26.2
Mesenchyme	5811	52.5	5096	42.6
Stroma	1435	13.0	2106	17.6
Pericyte	270	2.4	287	2.4
Leydig	279	2.5	499	4.2
Endothelial	89	0.8	102	0.9
Immune	56	0.5	92	0.8
FGCs	334	3.0	7	0.1
Total	11062	100.0	11957	100.0

**Table S4. Key ligand–receptor (LR) changes in ovaries and testes** Related to Figures 4& 5

Sender	Target	Ligand	Receptor	Pathway	KO vs WT
<b>Ovarian cell</b>					
FGC	ESGC	BMP6	BMPR1A	BMP	WT>KO
FGC	ESGC	BMP6	BMPR2	BMP	WT>KO
FGC	CoelEpi	BMP6	BMPR1A	BMP	WT>KO
FGC	CoelEpi	BMP6	BMPR2	BMP	WT>KO
FGC	Mes	BMP7	BMPR2	BMP	WT>KO
preGC-IIa	ESGC	BMP4	BMPR1A/BMPR2	BMP	<b>KO&gt;WT</b>
CoelEpi	ESGC	WNT5A	FZD7	WNT	WT>KO
CoelEpi	ESGC	WNT5A	FZD2	WNT	WT>KO
preGC-IIa	ESGC	WNT5A	FZD7	WNT	<b>KO&gt;WT</b>
CoelEpi	ESGC	COL1A1	ITGA1	ECM	WT>KO
ESGC	preGC-IIa	LAMA2	ITGA6	ECM	WT>KO
CoelEpi	Pericyte	SEMA3A	NRP1	Axon-guidance	WT>KO
ESGC	Mes	SEMA6A	PLXNA2	Axon-guidance	<b>KO&gt;WT</b>
ESGC	Mes	FN1	ITGB1	ECM	<b>KO&gt;WT</b>
<b>Testicular cells</b>					
Sertoli	Stroma	DHH	PTCH1	Hedgehog	<b>KO&gt;WT</b>
Sertoli	Mes	DHH	PTCH1	Hedgehog	<b>KO&gt;WT</b>
Sertoli	Sertoli	AMH	AMHR2	AMH/TGFβ	KO≈WT
Stroma	Sertoli	PDGFA	PDGFRA	PDGF	<b>KO&gt;WT</b>
Stroma	Pericyte	PDGFB	PDGFRB	PDGF	<b>KO&gt;WT</b>
Sertoli	Stroma	FGF9	FGFR2	FGF	<b>KO&gt;WT</b>
Sertoli	Stroma	FGF8	FGFR1	FGF	<b>KO&gt;WT</b>
Mesenchyme	Stroma	COL1A1	ITGB1	ECM	<b>KO&gt;WT</b>
Stroma	Sertoli	LAMA2	ITGA6	ECM	KO≈WT
Stroma	Leydig	FN1	ITGB1	ECM	KO≈WT

**Table S5. Pathway Hits\_WT vs KO Related to Figure 4&5**

**Ovarian Pathway Hits**

<b>Cluster</b>	<b>Pathway</b>	<b>Gene</b>	<b>avg_log2FC</b>	<b>dir</b>	<b>sig</b>
Mes	BMP_TGFb	AMH	-2.1498934	WT	TRUE
Mes	AMH	AMH	-2.1498934	WT	TRUE
Mes	Steroidogenesis	INSL3	-1.0140523	WT	TRUE
Mes	Steroidogenesis	CYP17A1	-1.1569522	WT	TRUE
Mes	Estrogen	ESR1	-0.9445014	WT	TRUE
Mes	KIT_KITLG	KIT	-0.8991188	WT	TRUE
Mes	Steroidogenesis	STAR	-0.8843889	WT	TRUE
Mes	Semaphorin	SEMA3E	-0.4205395	WT	TRUE
Mes	ECM_Integrin	FN1	0.92644602	KO	TRUE
Mes	BMP_TGFb	BMPR1B	-0.2955537	WT	TRUE
Mes	EPH_Ephrin	EFNB1	0.88503925	KO	TRUE
Mes	Cytokine_JAK_STAT	JAK2	-0.2910833	WT	TRUE
Mes	Cytokine_JAK_STAT	CCL2	0.85815883	KO	TRUE
CoelEpi	Semaphorin	SEMA6A	-1.0356914	WT	TRUE
CoelEpi	Steroidogenesis	LHCGR	-0.5029699	WT	TRUE
CoelEpi	ECM_Integrin	COL1A2	-0.8691093	WT	TRUE
CoelEpi	EPH_Ephrin	EPHA5	0.53857768	KO	TRUE
CoelEpi	KIT_KITLG	KIT	0.62511074	KO	TRUE
CoelEpi	ECM_Integrin	FN1	-0.5090623	WT	TRUE
CoelEpi	PDGF	PDGFA	-0.2956228	WT	TRUE
CoelEpi	AMH	AMHR2	-0.2670264	WT	TRUE
CoelEpi	Steroidogenesis	FSHR	-0.2986719	WT	TRUE
CoelEpi	Estrogen	ESR1	-0.490328	WT	TRUE
CoelEpi	BMP_TGFb	SMAD5	0.42595886	KO	TRUE
CoelEpi	Semaphorin	SEMA3E	-0.4638054	WT	TRUE
CoelEpi	Cytokine_JAK_STAT	JAK1	-0.3566707	WT	TRUE
CoelEpi	ECM_Integrin	COL4A2	-0.3123046	WT	TRUE
CoelEpi	ECM_Integrin	COL4A1	-0.3411379	WT	TRUE
CoelEpi	WNT	FZD3	0.27790938	KO	TRUE
ESGCs	KIT_KITLG	KIT	0.9868576	KO	TRUE
ESGCs	ECM_Integrin	FN1	-0.6546259	WT	TRUE
ESGCs	Estrogen	ESR1	-0.800309	WT	TRUE
ESGCs	ECM_Integrin	COL1A2	-0.6979141	WT	TRUE
ESGCs	WNT	WNT6	-0.5036345	WT	TRUE
ESGCs	ECM_Integrin	COL4A1	-0.709625	WT	TRUE
ESGCs	PDGF	PDGFRB	-0.3473659	WT	TRUE

ESGCs	ECM_Integrin	COL3A1	-0.3570693	WT	TRUE
ESGCs	EPH_Ephrin	EPHA3	0.77137853	KO	TRUE
ESGCs	Semaphorin	SEMA6A	-0.2743449	WT	TRUE
ESGCs	ECM_Integrin	COL4A2	-0.5222459	WT	TRUE
ESGCs	FGF	FGFR1	-0.4842316	WT	TRUE
ESGCs	Semaphorin	NRP1	0.33813289	KO	TRUE
ESGCs	RetinoicAcid	ALDH1A2	-0.3833534	WT	TRUE
ESGCs	EPH_Ephrin	EPHA4	-0.3502737	WT	TRUE
ESGCs	Cytokine_JAK_STAT	JAK2	0.25871459	KO	TRUE
ESGCs	WNT	LRP6	0.25548772	KO	TRUE
ESGCs	BMP_TGFb	SMAD5	0.31680979	KO	TRUE
ESGCs	PDGF	PDGFRA	0.31520113	KO	TRUE
ESGCs	EPH_Ephrin	EPHA7	-0.2971189	WT	TRUE
preGC-IIa	EPH_Ephrin	EPHA5	-1.2401709	WT	TRUE
preGC-IIa	Estrogen	ESR1	-1.8525882	WT	TRUE
preGC-IIa	PDGF	PDGFRB	-0.4192577	WT	TRUE
preGC-IIa	EPH_Ephrin	EPHA7	-0.8682801	WT	TRUE
preGC-IIa	Hedgehog	GLI3	-0.9567976	WT	TRUE
preGC-IIa	ECM_Integrin	COL4A1	-0.4934409	WT	TRUE
preGC-IIa	ECM_Integrin	COL4A2	-0.6249222	WT	TRUE
preGC-IIa	PDGF	PDGFRA	-0.3712756	WT	TRUE
preGC-IIa	Hedgehog	GLI2	-0.5615329	WT	TRUE
preGC-IIa	RetinoicAcid	ALDH1A2	-0.846381	WT	TRUE
preGC-IIa	Semaphorin	SEMA3E	-0.7153212	WT	TRUE
preGC-IIa	RetinoicAcid	RARB	-0.5293334	WT	TRUE
preGC-IIa	RetinoicAcid	CYP26B1	0.63609087	KO	TRUE
preGC-IIa	BMP_TGFb	BMP6	-0.4179149	WT	TRUE
preGC-IIa	Semaphorin	SEMA6A	0.62265349	KO	TRUE
preGC-IIa	FGF	FGFR1	-0.5732961	WT	TRUE
preGC-IIa	EPH_Ephrin	EFNB2	0.82224714	KO	TRUE
preGC-IIa	Cytokine_JAK_STAT	JAK1	0.69314665	KO	TRUE
preGC-IIa	Semaphorin	SEMA3A	-0.7122436	WT	TRUE
preGC-IIa	Semaphorin	SEMA6D	-0.2778829	WT	TRUE
preGC-IIa	WNT	RSPO1	-0.4233076	WT	TRUE
preGC-IIa	BMP_TGFb	SMAD7	0.76750099	KO	TRUE
preGC-IIa	EPH_Ephrin	EPHA3	0.97610047	KO	TRUE
preGC-IIa	Cytokine_JAK_STAT	IL6R	0.47216103	KO	TRUE
preGC-IIa	Cytokine_JAK_STAT	CCL2	0.33772127	KO	TRUE
preGC-IIa	NOTCH	NOTCH2	0.35453651	KO	TRUE

Stroma	ECM_Integrin	COL1A2	-0.7407709	WT	TRUE
Stroma	ECM_Integrin	COL1A1	-0.4834205	WT	TRUE
Stroma	ECM_Integrin	FN1	-0.628412	WT	TRUE
Stroma	Hedgehog	GLI3	0.54997987	KO	TRUE
Stroma	Hedgehog	GLI2	0.62560598	KO	TRUE
Stroma	EPH_Ephrin	EFNB1	-0.2551001	WT	TRUE
Stroma	ECM_Integrin	LAMA1	-0.4210928	WT	TRUE
Stroma	KIT_KITLG	KIT	0.68357412	KO	TRUE
Stroma	BMP_TGFb	BMP6	-0.4377727	WT	TRUE
Stroma	Estrogen	ESR1	-0.4128687	WT	TRUE
Stroma	NOTCH	NOTCH2	-0.2932464	WT	TRUE
Stroma	WNT	RSPO1	-0.2570529	WT	TRUE
Stroma	Steroidogenesis	LHCGR	-0.2845963	WT	TRUE
Stroma	PDGF	PDGFRA	0.38721213	KO	TRUE
Transit	RetinoicAcid	RARB	-1.4691309	WT	TRUE
Transit	EPH_Ephrin	EPHA5	1.86140912	KO	TRUE
Transit	RetinoicAcid	ALDH1A2	1.10578451	KO	TRUE
Transit	BMP_TGFb	BMP6	-0.9627788	WT	TRUE
Transit	GDNF_RET	GFRA1	-0.7520837	WT	TRUE
Transit	BMP_TGFb	BMPR1B	-0.877246	WT	TRUE
Transit	WNT	RSPO3	-0.8377602	WT	TRUE
Transit	EPH_Ephrin	EPHA7	1.26028957	KO	TRUE
Transit	BMP_TGFb	SMAD5	0.83032265	KO	TRUE
Transit	Steroidogenesis	LHCGR	-0.7935148	WT	TRUE
Transit	Semaphorin	SEMA6D	0.84678437	KO	TRUE
Transit	Cytokine_JAK_STAT	JAK1	-0.5570798	WT	TRUE
Transit	Semaphorin	NRP1	-0.5702691	WT	TRUE
Transit	Steroidogenesis	FSHR	-0.7517264	WT	TRUE
Transit	BMP_TGFb	BMP7	-0.3644075	WT	TRUE
Pericyte	ECM_Integrin	FN1	-0.4846757	WT	TRUE
Pericyte	Steroidogenesis	LHCGR	-0.3708398	WT	TRUE

**Testes Pathway Hits:**

Cluster	Pathway	Gene	avg_log2FC	dir	sig
Mes	Steroidogenesis	INSL3	0.378834	KO	TRUE
Mes	KIT_KITLG	KIT	-1.385499	WT	TRUE
Mes	Cytokine_JAK_STAT	CCL2	0.916726	KO	TRUE
Mes	BMP_TGFb	AMH	-0.344451	WT	TRUE
Mes	AMH	AMH	-0.344451	WT	TRUE
Mes	ECM_Integrin	COL3A1	0.409128	KO	TRUE
Mes	WNT	WNT6	0.819573	KO	TRUE
Mes	ECM_Integrin	COL4A1	0.451827	KO	TRUE
Mes	ECM_Integrin	COL4A2	0.440408	KO	TRUE
Mes	ECM_Integrin	ITGB1	0.368988	KO	TRUE
Mes	EPH_Ephrin	EPHA5	-0.420689	WT	TRUE
Mes	EPH_Ephrin	EFNB1	0.458561	KO	TRUE
Mes	Hedgehog	DHH	0.413688	KO	TRUE
Mes	BMP_TGFb	ACVR1	-0.436334	WT	TRUE
Mes	WNT	WNT5A	-0.417099	WT	TRUE
Mes	Semaphorin	SEMA6A	-0.399941	WT	TRUE
Mes	Hedgehog	GLI3	-0.358274	WT	TRUE
Mes	Steroidogenesis	CYP11A1	0.354995	KO	TRUE
Mes	BMP_TGFb	BMPR2	-0.359698	WT	TRUE
Mes	EPH_Ephrin	EPHA7	-0.294644	WT	TRUE
Mes	NOTCH	NOTCH2	-0.265078	WT	TRUE
Sertoli	BMP_TGFb	BMPR1B	0.766052	KO	TRUE
Sertoli	BMP_TGFb	AMH	-1.139276	WT	TRUE
Sertoli	AMH	AMH	-1.139276	WT	TRUE
Sertoli	BMP_TGFb	SMAD7	-0.589849	WT	TRUE
Sertoli	Semaphorin	SEMA6A	-0.471517	WT	TRUE
Sertoli	EPH_Ephrin	EPHA5	-0.386992	WT	TRUE
Sertoli	RetinoicAcid	ALDH1A2	0.379164	KO	TRUE
Sertoli	BMP_TGFb	SMAD1	0.298601	KO	TRUE
Sertoli	Semaphorin	SEMA6D	0.336283	KO	TRUE
Sertoli	WNT	FZD3	0.282358	KO	TRUE
Stroma	Steroidogenesis	FSHR	-1.382958	WT	TRUE
Stroma	KIT_KITLG	KITLG	-0.417792	WT	TRUE
Stroma	ECM_Integrin	LAMA1	-0.548556	WT	TRUE
Stroma	NOTCH	JAG1	-0.343053	WT	TRUE
Stroma	ECM_Integrin	ITGA6	-0.251289	WT	TRUE
Stroma	Hedgehog	PTCH1	0.625412	KO	TRUE

Stroma	ECM_Integrin	COL1A1	-0.448424	WT	TRUE
Stroma	EPH_Ephrin	EPHA3	0.681003	KO	TRUE
Stroma	WNT	WNT5A	-0.264558	WT	TRUE
Stroma	ECM_Integrin	COL3A1	0.405631	KO	TRUE
Stroma	BMP_TGFb	SMAD7	-0.277744	WT	TRUE
Stroma	Hedgehog	GLI2	0.32794	KO	TRUE
Stroma	Semaphorin	SEMA3A	0.340433	KO	TRUE
Leydig	Estrogen	ESR1	-0.870664	WT	TRUE
Leydig	NOTCH	NOTCH2	-0.608202	WT	TRUE
Leydig	Steroidogenesis	FSHR	-0.852729	WT	TRUE
Leydig	BMP_TGFb	SMAD7	-0.328715	WT	TRUE
Leydig	BMP_TGFb	SMAD4	-0.281781	WT	TRUE
Leydig	ECM_Integrin	COL4A2	-0.365623	WT	TRUE
Leydig	Steroidogenesis	CYP17A1	0.422588	KO	TRUE
Leydig	Cytokine_JAK_STAT	JAK1	-0.296419	WT	TRUE
Leydig	Steroidogenesis	CYP11A1	0.430095	KO	TRUE
Leydig	BMP_TGFb	SMAD1	0.376977	KO	TRUE
CoelEpi	ECM_Integrin	LAMA1	-0.892994	WT	TRUE
CoelEpi	Steroidogenesis	FSHR	-1.103016	WT	TRUE
CoelEpi	Semaphorin	SEMA6A	-0.518815	WT	TRUE
Pericyte	KIT_KITLG	KITLG	-0.63067	WT	TRUE
Pericyte	ECM_Integrin	LAMA1	-0.724811	WT	TRUE
Pericyte	ECM_Integrin	COL1A1	-0.493826	WT	TRUE
Pericyte	Steroidogenesis	STAR	-0.398585	WT	TRUE
FGCs	FGF	FGF9	0.345414	KO	TRUE
FGCs	Hedgehog	SMO	1.245777	KO	TRUE
FGCs	Semaphorin	SEMA3A	1.160735	KO	TRUE
ESGCs	Semaphorin	SEMA6A	-0.597916	WT	TRUE
ESGCs	ECM_Integrin	COL1A2	-0.735864	WT	TRUE
ESGCs	BMP_TGFb	SMAD7	-0.475627	WT	TRUE
ESGCs	EPH_Ephrin	EPHA5	-0.660737	WT	TRUE
Endo	WNT	WNT5A	-0.443396	WT	TRUE
Immune	ECM_Integrin	COL1A2	-0.918266	WT	TRUE

**Table S6. Key Ligand-Receptor changes in ovaries and testes**

**Ovary (Major families):**

pathway	Ligand Receptor pair	sender	receiver	KO	WT	delta	direction	abs_delta	family
BMP	BMP6_BMPRI1A_BMPRI2	FGCs	Stroma	0	0.00034395	-0.00034395	loss_in_KO	0.00034395	BMP
BMP	BMP6_BMPRI1A_BMPRI2	FGCs	CoelEpi	0	0.00032388	-0.00032388	loss_in_KO	0.00032388	BMP
BMP	BMP6_BMPRI1A_BMPRI2	FGCs	ESGCs	0	0.00029531	-0.00029531	loss_in_KO	0.00029531	BMP
BMP	BMP6_BMPRI1A_BMPRI2	Transit	Stroma	0	0.00028782	-0.00028782	loss_in_KO	0.00028782	BMP
BMP	BMP6_BMPRI1A_BMPRI2	Transit	CoelEpi	0	0.00027106	-0.00027106	loss_in_KO	0.00027106	BMP
BMP	BMP6_BMPRI1A_BMPRI2	FGCs	FGCs	0	0.00025536	-0.00025536	loss_in_KO	0.00025536	BMP
BMP	BMP6_BMPRI1A_BMPRI2	Transit	ESGCs	0	0.00024695	-0.00024695	loss_in_KO	0.00024695	BMP
BMP	BMP6_BMPRI1A_BMPRI2	FGCs	Transit	0	0.00024108	-0.00024108	loss_in_KO	0.00024108	BMP
BMP	BMP4_BMPRI1A_BMPRI2	ESGCs	ESGCs	0.00036644	0.00013329	0.00023315	gain_in_KO	0.00023315	BMP
BMP	BMP4_BMPRI1A_BMPRI2	ESGCs	preGC-Ila	0.00028334	6.89E-05	0.00021445	gain_in_KO	0.00021445	BMP
WNT	WNT3A_FZD3_LRP6	ESGCs	preGC-Ila	0.00017363	3.61E-05	0.00013752	gain_in_KO	0.00013752	WNT
WNT	WNT3A_FZD8_LRP6	ESGCs	ESGCs	0.00018228	5.81E-05	0.00012419	gain_in_KO	0.00012419	WNT
WNT	WNT3A_FZD3_LRP6	preGC-Ila	preGC-Ila	0.00012955	1.88E-05	0.00011079	gain_in_KO	0.00011079	WNT
WNT	WNT3A_FZD8_LRP6	preGC-Ila	ESGCs	0.000136	3.02E-05	0.00010579	gain_in_KO	0.00010579	WNT
WNT	WNT3A_FZD3_LRP5	ESGCs	preGC-Ila	0.00012458	2.38E-05	0.00010077	gain_in_KO	0.00010077	WNT
WNT	WNT3A_FZD8_LRP6	ESGCs	preGC-Ila	0.00012264	2.83E-05	9.43E-05	gain_in_KO	9.43E-05	WNT
WNT	WNT3A_FZD3_LRP6	ESGCs	ESGCs	0.00014964	5.54E-05	9.43E-05	gain_in_KO	9.43E-05	WNT
WNT	WNT3A_FZD3_LRP6	ESGCs	CoelEpi	0.00017661	8.68E-05	8.98E-05	gain_in_KO	8.98E-05	WNT
WNT	WNT3A_FZD8_LRP5	ESGCs	ESGCs	0.00013088	4.38E-05	8.71E-05	gain_in_KO	8.71E-05	WNT
WNT	WNT3A_FZD3_LRP6	preGC-Ila	CoelEpi	0.00013177	4.51E-05	8.67E-05	gain_in_KO	8.67E-05	WNT
FGF	FGF8_FGFR2	ESGCs	preGC-Ila	0.0002736	0	0.0002736	gain_in_KO	0.0002736	FGF
FGF	FGF10_FGFR2	preGC-Ila	preGC-Ila	0.00032503	6.02E-05	0.00026485	gain_in_KO	0.00026485	FGF
FGF	FGF8_FGFR2	ESGCs	ESGCs	0.00026214	0	0.00026214	gain_in_KO	0.00026214	FGF
FGF	FGF2_FGFR2	preGC-Ila	preGC-Ila	0.00029277	4.57E-05	0.00024705	gain_in_KO	0.00024705	FGF
FGF	FGF8_FGFR2	preGC-Ila	preGC-Ila	0.00022057	0	0.00022057	gain_in_KO	0.00022057	FGF
FGF	FGF8_FGFR2	preGC-Ila	ESGCs	0.00021139	0	0.00021139	gain_in_KO	0.00021139	FGF
FGF	FGF10_FGFR2	ESGCs	preGC-Ila	0.0003124	0.00010748	0.00020492	gain_in_KO	0.00020492	FGF
FGF	FGF10_FGFR2	preGC-Ila	ESGCs	0.00031219	0.00010941	0.00020279	gain_in_KO	0.00020279	FGF
FGF	FGF2_FGFR2	preGC-Ila	ESGCs	0.00028101	8.29E-05	0.00019806	gain_in_KO	0.00019806	FGF
FGF	FGF2_FGFR2	ESGCs	preGC-Ila	0.00024936	6.00E-05	0.00018932	gain_in_KO	0.00018932	FGF
PDGF	PDGFC_PDGFR1A	FGCs	Stroma	0	0.0001437	-0.0001437	loss_in_KO	0.0001437	PDGF
PDGF	PDGFC_PDGFR1A	Transit	Stroma	2.86E-05	0.00016709	-0.00013849	loss_in_KO	0.00013849	PDGF
PDGF	PDGFC_PDGFR1A	Pericyte	Stroma	0.00027087	0.00013732	0.00013355	gain_in_KO	0.00013355	PDGF
PDGF	PDGFA_PDGFR1A	Stroma	Stroma	0	0.00012084	-0.00012084	loss_in_KO	0.00012084	PDGF
PDGF	PDGFC_PDGFR1A	CoelEpi	Stroma	0.00036697	0.00026235	0.00010462	gain_in_KO	0.00010462	PDGF
PDGF	PDGFC_PDGFR1A	preGC-Ila	Stroma	0	6.88E-05	-6.88E-05	loss_in_KO	6.88E-05	PDGF
PDGF	PDGFC_PDGFR1A	CoelEpi	Mes	6.32E-05	0	6.32E-05	gain_in_KO	6.32E-05	PDGF
PDGF	PDGFC_PDGFR1A	Stroma	Stroma	0.00033002	0.00026743	6.26E-05	gain_in_KO	6.26E-05	PDGF
PDGF	PDGFC_PDGFR1A	CoelEpi	Pericyte	0.00010836	4.68E-05	6.15E-05	gain_in_KO	6.15E-05	PDGF
PDGF	PDGFB_PDGFR1A	Stroma	Stroma	0.00013158	7.46E-05	5.70E-05	gain_in_KO	5.70E-05	PDGF
HH	IHH_PTCH1_SMO	CoelEpi	CoelEpi	0	0.00012373	-0.00012373	loss_in_KO	0.00012373	HH
HH	IHH_PTCH1_SMO	CoelEpi	Transit	0	9.54E-05	-9.54E-05	loss_in_KO	9.54E-05	HH
HH	DHH_PTCH1_SMO	Mes	CoelEpi	0	7.45E-05	-7.45E-05	loss_in_KO	7.45E-05	HH
HH	IHH_PTCH1_SMO	CoelEpi	Stroma	0	7.09E-05	-7.09E-05	loss_in_KO	7.09E-05	HH
HH	IHH_PTCH1_SMO	Stroma	CoelEpi	0	6.50E-05	-6.50E-05	loss_in_KO	6.50E-05	HH
HH	DHH_PTCH1_SMO	CoelEpi	Transit	7.19E-06	6.95E-05	-6.24E-05	loss_in_KO	6.24E-05	HH
HH	DHH_PTCH1_SMO	Mes	Transit	0	5.75E-05	-5.75E-05	loss_in_KO	5.75E-05	HH
HH	IHH_PTCH1_SMO	CoelEpi	FGCs	0	5.45E-05	-5.45E-05	loss_in_KO	5.45E-05	HH
HH	IHH_PTCH1_SMO	Transit	CoelEpi	0	5.18E-05	-5.18E-05	loss_in_KO	5.18E-05	HH
HH	IHH_PTCH1_SMO	Stroma	Transit	0	5.01E-05	-5.01E-05	loss_in_KO	5.01E-05	HH
LAMININ	LAMA1_SV2C	preGC-Ila	ESGCs	0.00303538	0.00067932	0.00235606	gain_in_KO	0.00235606	LAMININ
LAMININ	LAMA1_SV2C	ESGCs	ESGCs	0.00288155	0.00141835	0.00146319	gain_in_KO	0.00146319	LAMININ
LAMININ	LAMA1_ITGA1_ITGB1	preGC-Ila	Mes	0.0016146	0.00034232	0.00127228	gain_in_KO	0.00127228	LAMININ
LAMININ	LAMA1_ITGA2_ITGB1	preGC-Ila	Mes	0.00160968	0.00034198	0.0012677	gain_in_KO	0.0012677	LAMININ
LAMININ	LAMA1_SV2C	preGC-Ila	CoelEpi	0.00171025	0.00050959	0.00120066	gain_in_KO	0.00120066	LAMININ
LAMININ	LAMC1_SV2C	ESGCs	ESGCs	0.00148546	0.00053762	0.00094784	gain_in_KO	0.00094784	LAMININ
LAMININ	LAMA1_ITGA6_ITGB1	preGC-Ila	Mes	0.00119863	0.00025428	0.00094435	gain_in_KO	0.00094435	LAMININ
LAMININ	LAMA1_SV2C	preGC-Ila	Stroma	0.00132492	0.00039616	0.00092877	gain_in_KO	0.00092877	LAMININ
LAMININ	LAMA1_ITGA7_ITGB1	preGC-Ila	Mes	0.00111413	0.00023671	0.00087742	gain_in_KO	0.00087742	LAMININ
LAMININ	LAMC1_SV2C	FGCs	ESGCs	0	0.00085572	-0.00085572	loss_in_KO	0.00085572	LAMININ
COLLAGEN	COL1A2_ITGA9_ITGB1	Mes	FGCs	0	0.00229896	-0.00229896	loss_in_KO	0.00229896	COLLAGEN
COLLAGEN	COL1A2_ITGA2_ITGB1	Mes	Mes	0.00330783	0.0053812	-0.00207337	loss_in_KO	0.00207337	COLLAGEN
COLLAGEN	COL1A2_ITGA1_ITGB1	Mes	Mes	0.00331809	0.00538648	-0.00206838	loss_in_KO	0.00206838	COLLAGEN
COLLAGEN	COL1A2_ITGA9_ITGB1	Mes	Transit	4.07E-05	0.00190976	-0.00186907	loss_in_KO	0.00186907	COLLAGEN
COLLAGEN	COL1A2_ITGAV_ITGB8	Mes	Transit	8.49E-05	0.00181912	-0.00173425	loss_in_KO	0.00173425	COLLAGEN
COLLAGEN	COL1A2_ITGA2_ITGB1	Mes	FGCs	0	0.00161268	-0.00161268	loss_in_KO	0.00161268	COLLAGEN
COLLAGEN	COL1A1_ITGA1_ITGB1	Mes	Mes	0.00345502	0.00191747	0.00153755	gain_in_KO	0.00153755	COLLAGEN
COLLAGEN	COL1A1_ITGA2_ITGB1	Mes	Mes	0.00344434	0.00191556	0.00152878	gain_in_KO	0.00152878	COLLAGEN
COLLAGEN	COL1A2_ITGAV_ITGB8	Mes	CoelEpi	0.00145501	0.0029191	-0.00146409	loss_in_KO	0.00146409	COLLAGEN
COLLAGEN	COL1A2_ITGAV_ITGB8	Mes	FGCs	0	0.00139172	-0.00139172	loss_in_KO	0.00139172	COLLAGEN

## Testes (Major families):

pathway	Ligand Receptor pair	sender	receiver	KO	WT	delta	direction	abs_delta	family
BMP	BMP4_BMPR1A_BMPR2	Sertoli	Sertoli	0.001489	0.000779	0.00071	gain_in_KO	0.00071	BMP
BMP	BMP2_BMPR1A_BMPR2	Sertoli	Sertoli	0.001151	0.000515	0.000636	gain_in_KO	0.000636	BMP
BMP	BMP4_BMPR1B_BMPR2	Sertoli	Sertoli	0.000703	0.00014	0.000563	gain_in_KO	0.000563	BMP
BMP	GDF5_BMPR1A_BMPR2	Sertoli	Sertoli	0.00065	0.000103	0.000546	gain_in_KO	0.000546	BMP
BMP	BMP4_BMPR1A_BMPR2	Sertoli	Stroma	0.00097	0.0005	0.000469	gain_in_KO	0.000469	BMP
BMP	BMP4_BMPR1A_BMPR2	Stroma	Sertoli	0.000979	0.000514	0.000465	gain_in_KO	0.000465	BMP
BMP	BMP4_BMPR1A_ACVR2	Sertoli	Sertoli	0.001065	0.000605	0.00046	gain_in_KO	0.00046	BMP
BMP	BMP2_BMPR1B_BMPR2	Sertoli	Sertoli	0.000542	9.21E-05	0.00045	gain_in_KO	0.00045	BMP
BMP	BMP2_BMPR1A_ACVR2	Sertoli	Sertoli	0.000822	0.000399	0.000422	gain_in_KO	0.000422	BMP
BMP	BMP2_BMPR1A_BMPR2	Sertoli	Stroma	0.000749	0.000331	0.000418	gain_in_KO	0.000418	BMP
WNT	WNT3A_FZD3_LRP6	Sertoli	Sertoli	0.000991	0.000446	0.000544	gain_in_KO	0.000544	WNT
WNT	WNT3A_FZD3_LRP5	Sertoli	Sertoli	0.000739	0.000389	0.00035	gain_in_KO	0.00035	WNT
WNT	WNT3A_FZD3_LRP6	Stroma	Sertoli	0.000644	0.000303	0.000341	gain_in_KO	0.000341	WNT
WNT	WNT3A_FZD8_LRP6	Sertoli	Sertoli	0.000624	0.000314	0.000311	gain_in_KO	0.000311	WNT
WNT	WNT3A_FZD8_LRP6	Sertoli	Stroma	0.00051	0.000248	0.000262	gain_in_KO	0.000262	WNT
WNT	WNT3A_FZD3_LRP5	Stroma	Sertoli	0.000481	0.000264	0.000216	gain_in_KO	0.000216	WNT
WNT	WNT3A_FZD3_LRP6	Sertoli	Stroma	0.000402	0.000185	0.000216	gain_in_KO	0.000216	WNT
WNT	WNT3A_FZD8_LRP6	Stroma	Sertoli	0.000406	0.000213	0.000193	gain_in_KO	0.000193	WNT
WNT	WNT3A_FZD8_LRP5	Sertoli	Sertoli	0.000465	0.000273	0.000192	gain_in_KO	0.000192	WNT
WNT	WNT3A_FZD8_LRP6	Stroma	Stroma	0.000332	0.000168	0.000163	gain_in_KO	0.000163	WNT
FGF	FGF8_FGFR1	Sertoli	Sertoli	0.000663	0	0.000663	gain_in_KO	0.000663	FGF
FGF	FGF8_FGFR1	Stroma	Sertoli	0.000467	0	0.000467	gain_in_KO	0.000467	FGF
FGF	FGF8_FGFR1	Sertoli	Stroma	0.000409	0	0.000409	gain_in_KO	0.000409	FGF
FGF	FGF6_FGFR1	Sertoli	Sertoli	0	0.000311	-0.000311	loss_in_KO	0.000311	FGF
FGF	FGF8_FGFR1	Stroma	Stroma	0.000288	0	0.000288	gain_in_KO	0.000288	FGF
FGF	FGF2_FGFR1	Sertoli	Sertoli	0.000717	0.000455	0.000262	gain_in_KO	0.000262	FGF
FGF	FGF6_FGFR1	Stroma	Sertoli	0	0.000211	-0.000211	loss_in_KO	0.000211	FGF
FGF	FGF8_FGFR2	Sertoli	Sertoli	0.000199	0	0.000199	gain_in_KO	0.000199	FGF
FGF	FGF6_FGFR1	Sertoli	Stroma	0	0.000194	-0.000194	loss_in_KO	0.000194	FGF
FGF	FGF2_FGFR1	Stroma	Sertoli	0.000532	0.000356	0.000176	gain_in_KO	0.000176	FGF
PDGF	PDGFC_PDGFR	Stroma	Stroma	0.001577	0.000605	0.000973	gain_in_KO	0.000973	PDGF
PDGF	PDGFA_PDGFR	Stroma	Stroma	0.000393	0.000188	0.000205	gain_in_KO	0.000205	PDGF
PDGF	PDGFC_PDGFR	Stroma	Leydig	0.000225	7.48E-05	0.00015	gain_in_KO	0.00015	PDGF
PDGF	PDGFB_PDGFR	Stroma	Stroma	0.000297	0.000156	0.000142	gain_in_KO	0.000142	PDGF
PDGF	PDGFC_PDGFR	Leydig	Stroma	0.000213	8.33E-05	0.00013	gain_in_KO	0.00013	PDGF
PDGF	PDGFC_PDGFR	Sertoli	Stroma	0.000235	0.000116	0.000118	gain_in_KO	0.000118	PDGF
PDGF	PDGFC_PDGFR	ESGCs	Stroma	0.000175	6.82E-05	0.000107	gain_in_KO	0.000107	PDGF
PDGF	PDGFD_PDGFR	Sertoli	Stroma	0.000778	0.000677	0.000102	gain_in_KO	0.000102	PDGF
PDGF	PDGFC_PDGFR	FGCs	Stroma	0	9.89E-05	-9.89E-05	loss_in_KO	9.89E-05	PDGF
PDGF	PDGFD_PDGFR	FGCs	Stroma	0	9.60E-05	-9.60E-05	loss_in_KO	9.60E-05	PDGF
HH	IHH_PTCH1_SMO	Sertoli	Stroma	0.000316	0.0001	0.000216	gain_in_KO	0.000216	HH
HH	DHH_PTCH1_SMO	Sertoli	Stroma	0.000312	0.000117	0.000195	gain_in_KO	0.000195	HH
HH	IHH_PTCH1_SMO	Stroma	Stroma	0.000333	0.000152	0.00018	gain_in_KO	0.00018	HH
HH	DHH_PTCH1_SMO	Stroma	Stroma	0.000286	0.00014	0.000146	gain_in_KO	0.000146	HH
HH	IHH_PTCH2_SMO	Sertoli	Stroma	0.000157	5.04E-05	0.000107	gain_in_KO	0.000107	HH
HH	DHH_PTCH2_SMO	Sertoli	Stroma	0.000155	5.88E-05	9.66E-05	gain_in_KO	9.66E-05	HH
HH	IHH_PTCH2_SMO	Stroma	Stroma	0.000166	7.69E-05	8.89E-05	gain_in_KO	8.89E-05	HH
HH	DHH_PTCH1_SMO	Mes	Stroma	0.000284	0.000205	7.97E-05	gain_in_KO	7.97E-05	HH
HH	DHH_PTCH2_SMO	Stroma	Stroma	0.000142	7.07E-05	7.17E-05	gain_in_KO	7.17E-05	HH
HH	DHH_PTCH1_SMO	Mes	Sertoli	0	6.62E-05	-6.62E-05	loss_in_KO	6.62E-05	HH
LAMININ	LAMA1_ITGA9_ITGB1	Sertoli	Stroma	0.007659	0.003917	0.003742	gain_in_KO	0.003742	LAMININ
LAMININ	LAMA1_ITGAV_ITGB8	Sertoli	Sertoli	0.004146	0.001193	0.002954	gain_in_KO	0.002954	LAMININ
LAMININ	LAMA1_ITGA6_ITGB1	Sertoli	Sertoli	0.006006	0.003372	0.002634	gain_in_KO	0.002634	LAMININ
LAMININ	LAMA1_ITGA6_ITGB1	Sertoli	Mes	0.005811	0.003322	0.002488	gain_in_KO	0.002488	LAMININ
LAMININ	LAMA1_ITGA6_ITGB1	Mes	Sertoli	0.002355	0	0.002355	gain_in_KO	0.002355	LAMININ
LAMININ	LAMA1_ITGA6_ITGB4	Sertoli	Mes	0.002312	0	0.002312	gain_in_KO	0.002312	LAMININ
LAMININ	LAMA1_SV2C	Sertoli	Stroma	0.003412	0.001242	0.00217	gain_in_KO	0.00217	LAMININ
LAMININ	LAMA1_DAG1	Sertoli	Sertoli	0.005007	0.002885	0.002122	gain_in_KO	0.002122	LAMININ
LAMININ	LAMA1_ITGA2_ITGB1	Sertoli	Sertoli	0.00385	0.002041	0.001809	gain_in_KO	0.001809	LAMININ
LAMININ	LAMA1_ITGA1_ITGB1	Sertoli	Sertoli	0.003719	0.00203	0.001689	gain_in_KO	0.001689	LAMININ
COLLAGEN	COL1A2_ITGA1_ITGB1	Mes	Mes	0.008473	0	0.008473	gain_in_KO	0.008473	COLLAGEN
COLLAGEN	COL9A2_ITGA1_ITGB1	Mes	Mes	0.00185	0.006655	-0.004805	loss_in_KO	0.004805	COLLAGEN
COLLAGEN	COL9A2_ITGA2_ITGB1	Mes	Mes	0.001845	0.006632	-0.004787	loss_in_KO	0.004787	COLLAGEN
COLLAGEN	COL1A2_ITGAV_ITGB8	Mes	Sertoli	0.007243	0.002561	0.004681	gain_in_KO	0.004681	COLLAGEN
COLLAGEN	COL1A2_ITGA9_ITGB1	Mes	Stroma	0.01327	0.008639	0.004631	gain_in_KO	0.004631	COLLAGEN
COLLAGEN	COL9A2_ITGA9_ITGB1	Mes	Stroma	0.003244	0.006569	-0.003325	loss_in_KO	0.003325	COLLAGEN
COLLAGEN	COL1A1_ITGA1_ITGB1	Mes	Mes	0.001172	0.004029	-0.002857	loss_in_KO	0.002857	COLLAGEN
COLLAGEN	COL1A1_ITGA2_ITGB1	Mes	Mes	0.001169	0.004015	-0.002846	loss_in_KO	0.002846	COLLAGEN
COLLAGEN	COL1A2_ITGA2_ITGB1	Mes	Sertoli	0.006728	0.004405	0.002322	gain_in_KO	0.002322	COLLAGEN
COLLAGEN	COL4A2_ITGA9_ITGB1	Mes	Stroma	0.002173	0	0.002173	gain_in_KO	0.002173	COLLAGEN

**Table S7. primers used in the article.** Related to the Methods

Target	Forward/Reverse primer (5'-3')
- Gene editing	
sgRNA	CAGGCGTTCAGGAGCTGGTG
ssODN	CCAGGACCAGAGGGTCAGAGGCCAGCCCGGAATCCTCACaggtcGACTACA AAGACCATGACGGTGATTATAAAGATCATGACATCGATTACAAGGATGACGAT GACAAGtaaCAGCTCCTGAACGCCTGTGCTCTTTCTGCAAACATAATGG
- Genotyping	
NANOS3	TTCAACCTGTGGACAGATTACC / AGCTGTAGACAGAGGTGTAGCC
- Sexing	
SRY	CTGGGATGCAAGTGGAAAAT/ GGCTTTCTGTTCTGAGCAC
- qPCR	
OCT4	GCTGGAGCCGAACCCCGAGG / CACCTTCCCAAAGAGAACCCCAAA
NANOG	CCCCCTTCTTCAACTCAACA / CTTCAGGCCCATAAACCTCA
SOX17	TGGTTGAATCTTGAGGTCTGC / CAGGGTGTAGGTGTGTGATGA
TFAP2C	GCTGCTCATGTAACCCTCCT / GTTGCCATCTCATTCCGTCC
ACTB	GTGGACATCAGGAAGGACCTCTA / ATGATCTTGATCTTCATGGTGCT

**Table S8. Antibodies used for immunostaining.** Related to the Methods

Primary	Host	Manufacturer
AMH	Rabbit IgG	Novus Bio, NBP1-70639
CDH2	Mouse IgG	Invitrogen, PIMA1159
TFAP2C	Goat IgG	RDsystem, AF5059
NANOG	Goat IgG	RDsystem, AF1997
SOX17	Goat IgG	RDsystem, AF1924
Cleaved Caspase-3	Rabbit IgG	Cell Signaling, ab32042
SSEA1	Mouse IgG	Santa Cruz, sc-21702
CKIT	Rat IgG	Thermo, 14-1171-82
DAZL	Rabbit IgG	Abcam, ab34139
DDX4	Goat IgG	R&D, AF2030-SP
DDX4	Rabbit IgG	Abcam, ab13840
OCT4	Rabbit IgG	Stemgent, 09-2023
OCT4	Mouse IgG	Santa Cruz, sc-5279
SOX9	Rabbit IgG	R&D Systems, NL3075R
BMP-6	Goat IgG	Fisher, AF507-SP
BMPR2	Mouse IgG	Fisher, MAB24061-SP
DBA		Vector Laboratories, FL-1031-2
Ki67	Rabbit IgG	Abcam, ab16667
Anti-Mouse	IgG	Invitrogen, 35503, 35513
Anti-Rabbit	IgG	Invitrogen, 84541, SA5-10087
Anti-Goat	IgG	Invitrogen, SA5-10086
Anti-Rat	IgM	Abcam, ab96963