



Figure S1. *LncPGCR* regulated the expression of the totipotent gene *Nanog* and PGC marker genes to promote PGCs development (A). qRT-PCR of *Nanog*, *Cvh*, and *C-kit* expression after overexpression or knockdown with *LncPGCR* in vitro. * $p < 0.05$, and ** $p < 0.01$ compared with untreated ESCs. Values are means \pm SEM. $n=3$. (B). qRT-PCR of *Nanog*, *Cvh*, and *C-kit* expression after overexpression or knockdown with *LncPGCR* in vivo. * $p < 0.05$, and ** $p < 0.01$ compared with the untreated genital ridge. Values are means \pm SEM. $n=3$. (C). The proportion of PGCs-like cells (*Cvh*⁺) in the genital ridge on E4.5d detected by flow cytometry analysis.

Table S1. *LncPGCR* promoter region different length PCR amplification primers.

Name	Primer Sequence	Size	Enzyme Sites	Usage
P1	CCCTACGTACCTTTGGGTTTCAGAGTCCTG	1614	XhoI	pLncPGCR-EGFP
P2	CGGGTACCCCTTGAGGGCTTTCCTTTGC	1356	KpnI	pGL3/1356
P3	CGGGTACCGGTAGTCCCGATGCCAGTCC	1160	KpnI	pGL3/1160
P4	CGGGTACCGGTTTCCACTGAACACCCTC	1033	KpnI	pGL3/1033
P5	CGGGTACCATCCAGCTTTGTCCTTGCT	661	KpnI	pGL3/661
P6	CGGGTACCCCAACCCGAGGAGCGAAGA	337	KpnI	pGL3/337
P0	CCGCTCGAGATCAAAGCGATTTCCCTGTA		SnaBI	pLncPGCR-EGFP

Table S2. Transcription factor TCF7L2 binding site mutation primer.

Name	Primer Sequence
F-Kpn I	TGATCTTAATCAACCATGTTGCAAAGCTTCATACCGTAAGCACA
TCF7L2 TCF7L2-R1	TGTGCTTACGGTATGAAGCTTTGCAACATGGTTGATTAAGATCA
TCF7L2-F1	TGATCTTAATCAACCATGTTGCAAAGCTTCATACCGTAAGCACA
R-Xho I	GCTTACTTAGATCGCAGATCTCGAGATCAAAGCGATTTCCTGTA

Table S3. The transcript expression levels of PGCs lncRNA related to germ cell differentiation in ESCs, PGCs, and SSCs.

lncRNA	ESCs_FPKM	PGCs_FPKM	SSCs_FPKM	P values
TCONS_00612668	0.304065	5.2481	2.91182	0.0268936
TCONS_00765266	35.8417	0.0421958	0	2.90E-06
TCONS_00874170	0	0.564523	0.0374735	0.00901045
TCONS_00072199	7.20163	0.0787197	0	0.000343457
TCONS_00362261	37.9311	1.1473	6.82561	0.0297688
TCONS_00362344	22.9197	0.187924	0	0.000404435
TCONS_00612668	0.304065	5.2481	2.91182	0.0268936
TCONS_00659989	22.9598	0.270672	1.37532	0.00405561
TCONS_00946310	1.28279	0.0733322	0	0.0338241

TCONS_00580256	28.7449	0.379114	0	0.00588496
TCONS_00612668	0.304065	5.2481	2.91182	0.0268936
TCONS_00947438	5.34547	0.610657	0.114237	3.90E-06
TCONS_00978804	0	0.105411	2.85304	0.0148691
TCONS_00948124	0	0.524497	1.89062	0.00672651
TCONS_00627195	32.6283	0.0533638	0	1.72E-08
