Supplemental Table 1. Antibody list.

Primary antibody	**Brand**	**Dilution (IF)**	**Dilution (WB)**	**Size (kDa)**
chicken anti-VIM	Millipore	1:1,000	1:1,000	54
mouse anti-FBLN5	Abcam	1:100	1:1,000	50
mouse anti-ABCA1	Abcam		1:200	254
mouse anti-β-actin	Sigma		1:50,000	42
Secondary antibody				
donkey anti-chicken Alexafluor 488	Jackson ImmunoResearch	1:1,000		
goat anti-mouse Alexafluor 594	Jackson ImmunoResearch	1:1,000		
donkey anti-chicken HRP conjugate	Jackson ImmunoResearch		1:5,000	
goat anti-mouse HRP conjugate	Jackson ImmunoResearch		1:5,000	

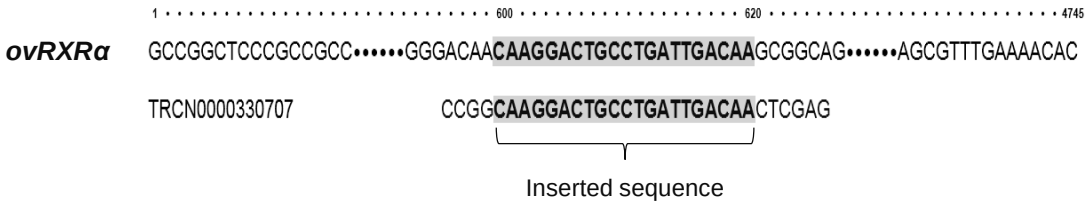
IF: immunofluorescence, WB: western blotting.

Supplemental Table 2. Primer list.

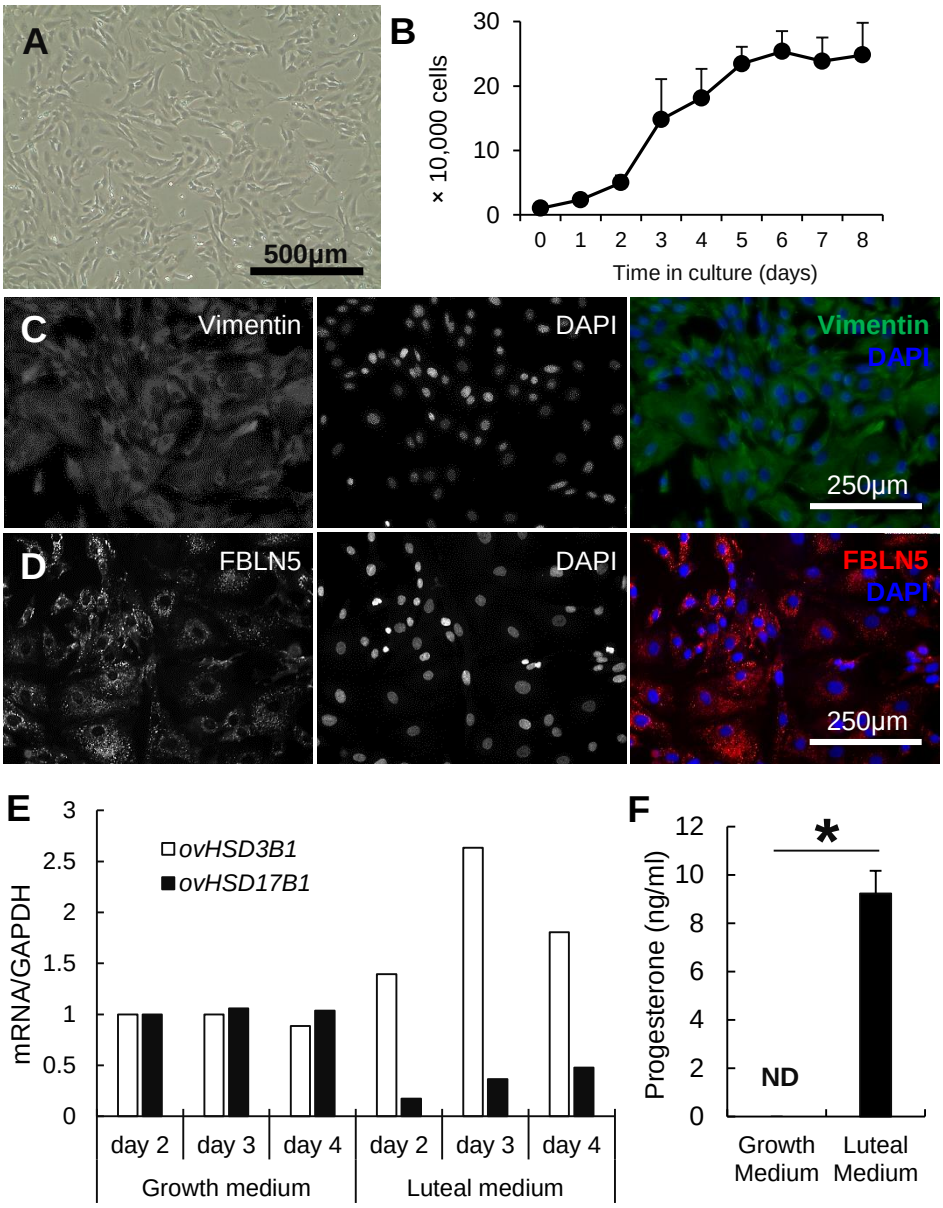
Gene	Primer	Length (bp)
hABCA1 - Forward	TTCGCCCGTTCACTG	96
hABCA1 - Reverse	TGCCATCCATCCCAC	
mABCA1 - Forward	CCACCCTACGAACAACA	183
mABCA1 - Reverse	TGAGAACAGGCGAGACA	
ov/bABCA1 - Forward	GCCTTCAATGAGACTAACCG	95
ov/bABCA1 - Reverse	AGAACCTCTGTCGCTACTGG	
pABCA1 - Forward	TCCCAGCGAGACGAAACA	141
pABCA1 - Reverse	CCTTGCCGTCCATACCG	
CREB1 - Forward	ACTCAGCCAGGCACTACCA	170
CREB1 - Reverse	GAAGACGCCATAACAACCC	
CYP11A1 - Forward	ACCCATCGGAGTCCTGTTTAA	84
CYP11A1 - Reverse	GCCTCTGGAGCCATCACCT	
HSD3B1 - Forward	CTTGCCGAGAAGGCTGTG	161
HSD3B1 - Reverse	TTGGTCAGGATGCCGTTG	
HSD17B1 - Forward	TCGGGACGCATATTGGTG	262
HSD17B1 - Reverse	GGCGACAGTAGCGGTAGAA	
HSL - Forward	CCTCCTCGTGGCTCAACTCCT	85
HSL - Reverse	CGCCGCATTGGCTCTGTCTT	
h/pGAPDH - Forward	GGGAAGCTCACTGGCATGGCCTTCC	119
h/pGAPDH - Reverse	GCCTGCTTCACCACCTTCTTG	
mGAPDH - Forward	CGGCAAATTCAACGGCACA	84
mGAPDH - Reverse	TCTCGCTCCTGGAAGATGG	
ov/bGAPDH - Forward	TTCCACGGCACAGTCAA	241
ov/bGAPDH - Reverse	TCACGCCCATCACAAAC	
LDLR - Forward	TCGCCTACCTCTTCTTCACCAA	107
LDLR - Reverse	GTCCAGGGCAACCACATTCTT	
LXRα - Forward	GAGGTACAACCCTGGAAGTGAGA	88
LXRα - Reverse	ATCAGTCGGTCCTGCTTTGG	
LXRβ - Forward	CAGATCGCCCTCCTGAAAGCC	183
LXRβ - Reverse	CATGGCCCGTGAGAACTCGA	
RPL27 - Forward	CGCAAGGCCCGACGAGAGGC	93
RPL27 - Reverse	GACCTAAAACCGCAGCTTCTGG	
RXRα - Forward	TCCTTAGCGATGCCTTAGCCG	90
RXRα - Reverse	ACCTTTCCCGACGCTTTAGACG	
RXRβ - Forward	AGCAGCCCAAATGACCC	83
RXRβ - Reverse	ATCCTCTTCGCCCACTCA	
hStAR - Forward	GCTCAGGAAGGACGAAG	91
hStAR - Reverse	CAAATGTGGCAGTGGTG	
mStAR - Forward	GGGCATACTCAACAACC	86
mStAR - Reverse	CATCTGGCACCATCTTAC	
ov/bStAR - Forward	CCCTGGGCATCCTCAAAGA	115
ov/bStAR - Reverse	ACCTCCAACCGGAACACCTT	

pStAR - Forward	AAGCTCAGCCCGCCACT	120
pStAR - Reverse	ACACCACTGCAACATCCCAC	
SREBF1 - Forward	TACATCCGCTTCCTTCAGCACAG	183
SREBF1 - Reverse	TCCACCACCTCGGGCTTCAT	
SR-B1 - Forward	GCCGCTAATGTGGTTCG	125
SR-B1 - Reverse	TGTGATGTGAGCAGGAAGC	
TSPO - Forward	GCCTTCGTGGATCTCCTGCTGA	88
TSPO - Reverse	TCCTGCCACATACGGTAGTTGAGC	

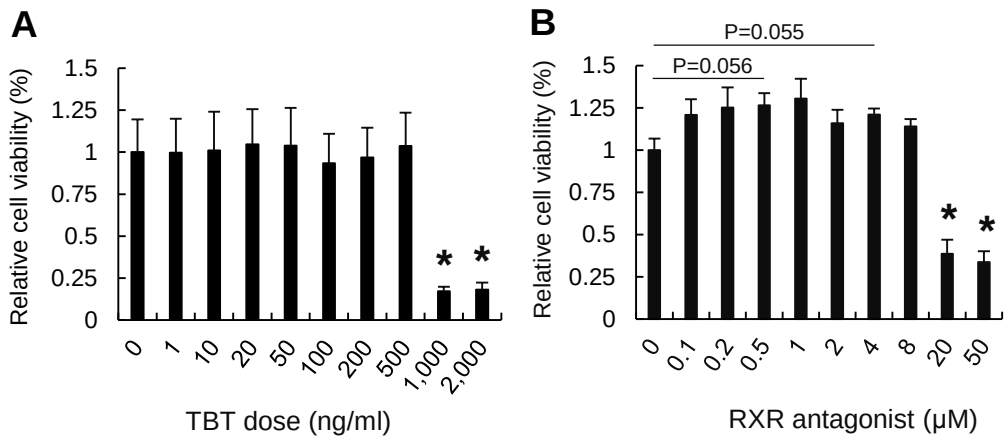
Unless specified, all primer sequences are designed against the sheep genome sequence. b: bovine, h: human, m: mouse, p: porcine, ov: ovine.



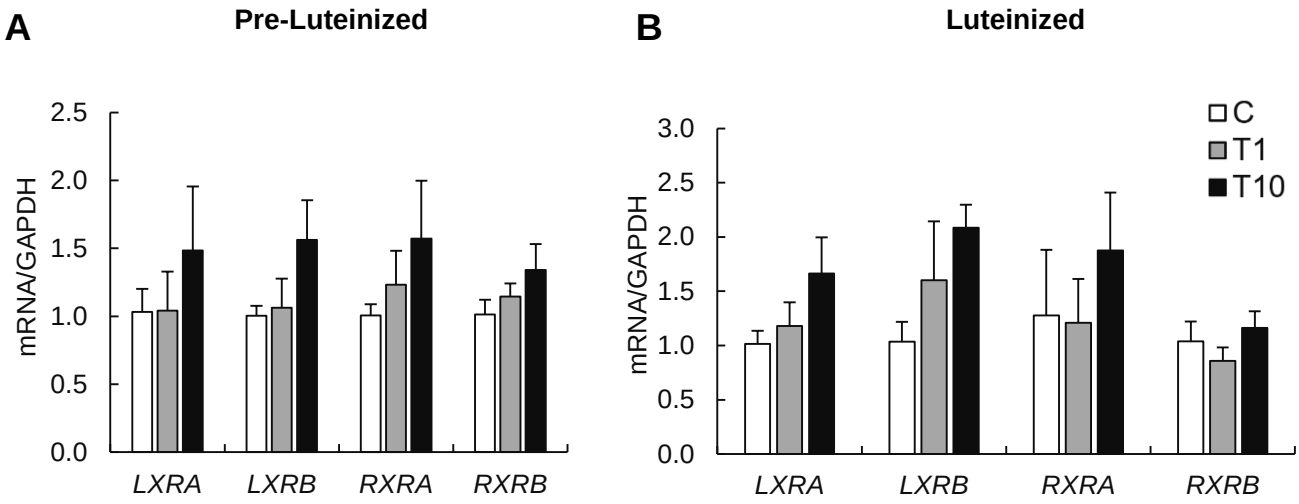
Supplemental Figure 1. Sequence map for *RXRα* knockdown. *Top*: ovine *RXRα* sequence. *Bottom*: *RXRα* shRNA insert



Supplemental Figure 2. Identification of primary cultured ovine ovarian theca cells. Morphology (**A**), growth curve (**B**) of primary cultured ovine theca cells over 8 days. Immunofluorescence stain of theca cell positive marker vimentin (VIM) (**C**) and fibulin 5 (FBLN5) (**D**). Dynamic expression pattern of steroidogenic enzymes (*ovHSD3B1* and *ovHSD17B1*) (**E**) and progesterone production (**F**) in ovine ovarian theca cells before (growth medium) and after luteinization (luteal medium). * denote differences among treatments ($P<0.05$). N = 3 cultured cell lines per group. ND means not detectable.

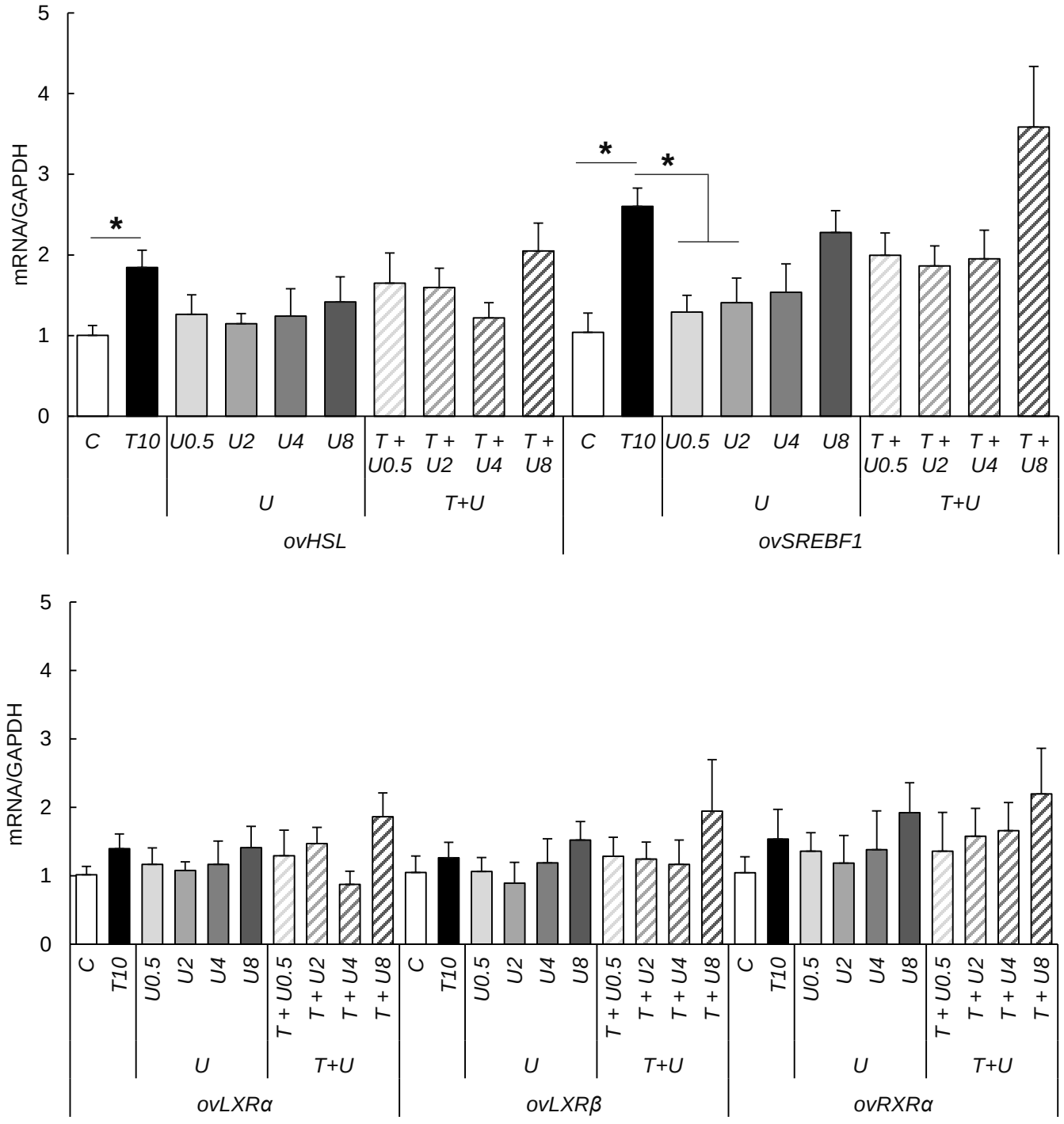


Supplemental Figure 3. Cytotoxicity effects of TBT (A) and RXR antagonist, UVI3003 (B) on primary ovine ovarian theca cells upon three days exposure using an MTT assay. Asterisks denote differences among treatments ($P<0.05$). N = 3 cultured cell lines per group.



Supplemental Figure 4. Effect of TBT exposure on mRNA expression in pre-luteinized and luteinized ovine primary theca cells. mRNA expression (mean ± SEM) of nuclear receptors (*LXRα, LXRβ, RXRα, RXRβ*) in primary ovine pre-luteinized (**A**) and luteinized (**B**) ovine primary theca cells exposed to 1 ng/ml TBT (T1; *gray bars*), 10 ng/ml TBT (T10; *closed bars*) or vehicle (C; control group; *open bars*). * denote differences among treatments ($P < 0.05$). N=3 primary cultured cell lines per group.

Supplemental Figure 5



Supplemental Figure 5. Effect of TBT (0 and 10 ng/ml) and/or RXR antagonist (UVI3003; 0.5, 2, 4 and 8 μM) exposure on mRNA (*ovHSL, ovSREBF1, ovLXRα,* ov*LXRβ* and ov*RXRα*) expression (mean ± SEM) in pre-luteinized ovine primary theca cells. Asterisks denote differences among treatments (P<0.05). N=3 cultured cell lines per group. U: UVI3003 (μM). T: TBT.