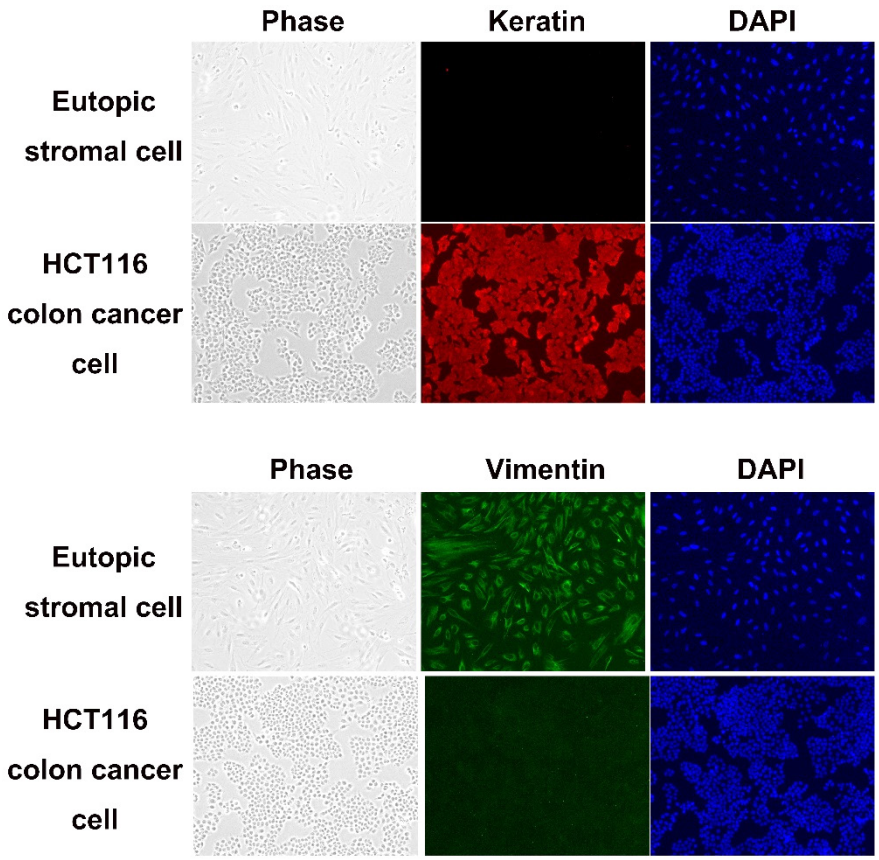
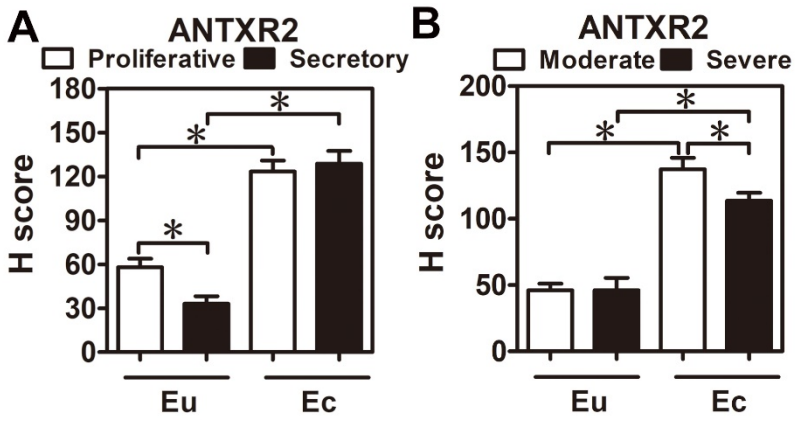
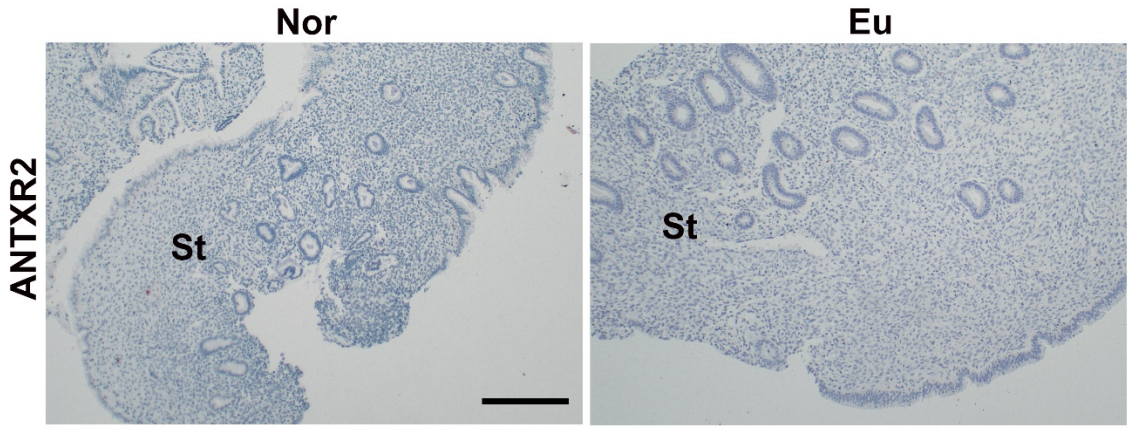


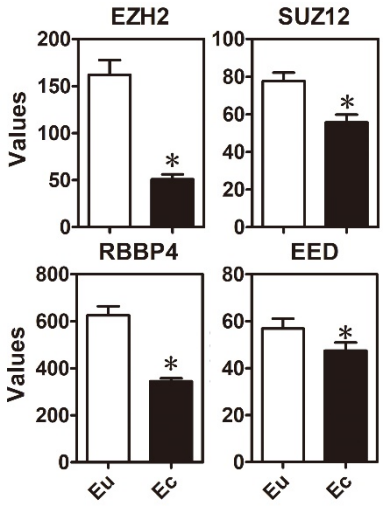
Supplementary figure 1: Expressions of keratin, an epithelial cell marker (upper panel) and vimentin, a stromal cell marker (lower panel) in eutopic endometrial stromal cells. HCT116 cell line was used as positive control of epithelial cells.



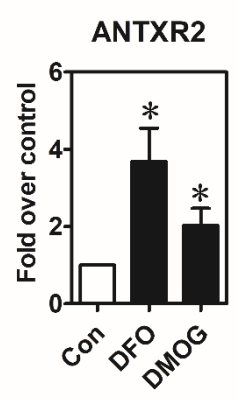
Supplementary figure 2: Analysis of ANTXR2 levels in eutopic and ectopic specimens according to the menstrual cycle and severity from clinical information of endometriosis patients. H score of ANTXR2 IHC staining results were further analyzed by menstrual cycle **(A)** and severity **(B)** from clinical information of endometriosis patients. Proliferative phase (Eu: n=22; Ec: n=22); Secretory phase (Eu: n=20; Ec: n=20). Asterisk indicates $p<0.05$.



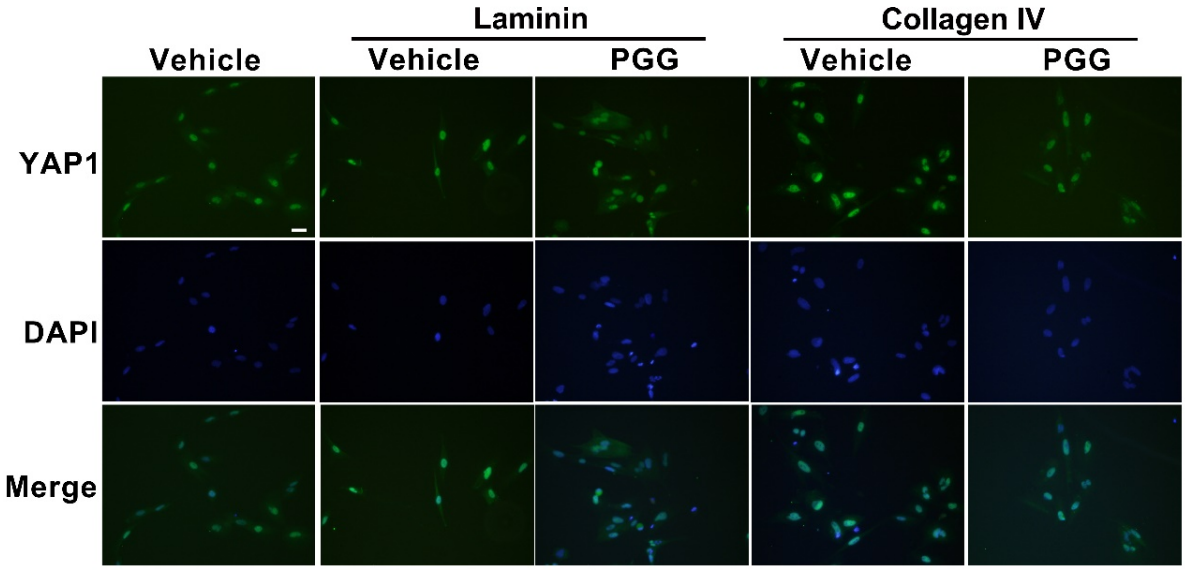
Supplementary figure 3: Representative images of ANTXR2 IHC staining in normal endometria (Nor, n=23) and eutopic endometria (Eu, n=42) derived from patients with endometriosis.



Supplementary figure 4: Expressions of PRC complexes in the public dataset of endometriosis. Expressions of PRC2 complexes such as EZH2, SUZ12, RBBP4, and EED were analyzed from a public dataset of endometriotic specimens (GSE7305). Results were represented as mean±SEM. Asterisk indicates $p<0.05$.



Supplementary figure 5: ANTXR2 expression was induced by chemical hypoxia in eutopic stromal cells. ANTXR2 expression was analyzed by quantitative RT-PCR in eutopic stromal cells treated with 1 mM DFO or DMOG for 24 hours (n=4).



Supplementary figure 6: Laminin- and Collagen IV-induced nuclear translocation of YAP1 in eutopic stromal cells was mediated by ANTXR2. Eutopic stromal cells were plated in the dish coating with laminin (0.5 mg/ml) or collagen IV (0.5 mg/ml) and treated with or without ANTXR2 inhibitor (PGG, 5 μM) for 24 hrs. Then, cells were fixed and stained by YAP1 and DAPI. Scale bar: 20 μm

Supplementary table 1: Information for clinical specimens of endometriosis

Eutopic	Ectopic	Location	diagnosis	age	phase	BMI
001Eu	001Ec	ovarian	Severe endometriosis (IV)	36	P	21.9
002Eu	002Ec	ovarian	Severe endometriosis (IV)	35	P	18.2
003Eu	003Ec	ovarian	Moderate endometriosis(Ⅲ)	35	P	20.5
004Eu	004Ec	ovarian	Moderate endometriosis(Ⅲ)	24	S	20.4
005Eu	005Ec	ovarian	Severe endometriosis (IV)	48	S	25.7
006Eu	006Ec	ovarian	Moderate endometriosis(Ⅲ)	37	P	22.6
007Eu	007Ec	ovarian	Severe endometriosis (IV)	33	S	29.3
008Eu	008Ec	ovarian	Severe endometriosis (IV)	31	P	15.6
009Eu	009Ec	ovarian	Severe endometriosis (IV)	35	S	24.7
010Eu	010Ec	ovarian	Moderate endometriosis(Ⅲ)	26	P	27
011Eu	011Ec	ovarian	Severe endometriosis (IV)	26	S	20.7
012Eu	012Ec	ovarian	Severe endometriosis (IV)	39	P	18.9
013Eu	013Ec	ovarian	Severe endometriosis (IV)	40	S	21
014Eu	014Ec	ovarian	Severe endometriosis (IV)	33	S	20.5
015Eu	015Ec	ovarian	Moderate endometriosis(Ⅲ)	29	P	21.7
016Eu	016Ec	ovarian	Moderate endometriosis(Ⅲ)	44	S	21.1
017Eu	017Ec	ovarian	Moderate endometriosis(Ⅲ)	33	S	22.4
018Eu	018Ec	ovarian	Severe endometriosis (IV)	34	P	21.8
019Eu	019Ec	ovarian	Severe endometriosis (IV)	34	S	19.1
020Eu	020Ec	ovarian	Severe endometriosis (IV)	43	S	20.8
021Eu	021Ec	ovarian	Severe endometriosis (IV)	33	P	22.2
022Eu	022Ec	ovarian	Severe endometriosis (IV)	41	S	22
023Eu	023Ec	ovarian	Severe endometriosis (IV)	33	P	22.8
024Eu	024Ec	ovarian	Severe endometriosis (IV)	41	P	21.1
025Eu	025Ec	ovarian	Moderate endometriosis(Ⅲ)	25	S	22.9
026Eu	026Ec	ovarian	Moderate endometriosis(Ⅲ)	49	P	22.9
	027Ec	ovarian	Moderate endometriosis(Ⅲ)	27	S	23
	028Ec	ovarian	Moderate endometriosis(Ⅲ)	25	P	16
	029Ec	ovarian	Moderate endometriosis(Ⅲ)	45	S	20.9
	030Ec	ovarian	Moderate endometriosis(Ⅲ)	39	S	20.6
	031Ec	Peritoneal wall	Moderate endometriosis(Ⅲ)	31	S	29.6
	032Ec	ovarian	Moderate endometriosis(Ⅲ)	37	P	14.8
	033Ec	ovarian	Severe endometriosis (IV)	27	P	18.9
	034Ec	ovarian	Severe endometriosis (IV)	39	S	19.7

	035Ec	ovarian	Moderate endometriosis(Ⅲ)	29	S	19.8
	036Ec	ovarian	Moderate endometriosis(Ⅲ)	31	P	23.5
	037Ec	Peritoneal wall	Moderate endometriosis(Ⅲ)	29	P	20.7
	038Ec	ovarian	Mild endometriosis (Ⅱ)	39	S	20.1
	039Ec	ovarian	Moderate endometriosis(Ⅲ)	32	P	19.4
	040Ec	ovarian	Moderate endometriosis(Ⅲ)	29	P	18.6
	041Ec	ovarian	Severe endometriosis (Ⅳ)	24	P	17.4
	042Ec	ovarian	Moderate endometriosis(Ⅲ)	28	P	28.5
043Eu		ovarian	Moderate endometriosis(Ⅲ)	33	S	27.2
044Eu		ovarian	Moderate endometriosis(Ⅲ)	38	P	24.1
045Eu		ovarian	Moderate endometriosis(Ⅲ)	39	S	19.3
046Eu		ovarian	Moderate endometriosis(Ⅲ)	27	S	21.6
047Eu		ovarian	Severe endometriosis (Ⅳ)	41	P	20.3
048Eu		ovarian	Moderate endometriosis (Ⅲ)	31	P	18.8
049Eu		ovarian	Moderate endometriosis (Ⅲ)	30	P	20.4
050Eu		Peritoneal wall	Moderate endometriosis (Ⅲ)	23	S	19.6
051Eu		ovarian	Mild endometriosis (Ⅱ)	35	P	20.1
052Eu		ovarian	Moderate endometriosis(Ⅲ)	38	S	19.9
053Eu		Peritoneal wall	Moderate endometriosis(Ⅲ)	42	P	20.7
054Eu		ovarian	Moderate endometriosis(Ⅲ)	28	S	17.4
055Eu		ovarian	Moderate endometriosis(Ⅲ)	22	P	18.8
056Eu		ovarian	Moderate endometriosis(Ⅲ)	37	P	21.1
057Eu		ovarian	Moderate endometriosis(Ⅲ)	26	P	19
058Eu		ovarian	Moderate endometriosis(Ⅲ)	39	S	26.4
059Eu		ovarian	Moderate endometriosis(Ⅲ)	43	P	18

Supplementary table 2: Primer sequences

Gene Symbol	Forward	Reverse
Realtime primer_human ANTXR2	acacaccagcctcctcagac	atactgccgcctcaacaaag
Realtime primer_human ANTXR1	gaaagggccagtgagcag	agttctccatcagtcaaagca
Realtime primer_human EZH2	aaagaactcaccgaacagca	agcgtatgaaaggagtgtaagc
Realtime primer_human PDK1	ttctcaggacaccatccgttc	gagacctgcaaccatgttctt
Realtime primer_human COL5A2	ctggaatgaagggagaagca	ggaagacctggagagccaac
Realtime_primer_human CTGF	ggagtgggtgtgtgacgag	ccaggcagttggctctaatc
Realtime_primer_IL-1β	tcgccagtgaaatgatgg	cccttgctgtagtggtggtc
Realtime_primer_VEGFC	gagcagttacggtctgtgtcc	tatgttgccagcctcctttc
Realtime_primer_CTNNB1	aggctcttgtgcgtactgtc	atctctgcttcttggtgtcg
Realtime_primer_CD44	gcaaacacaacctctggtcct	ttcttctgcccacaccttct
Realtime_primer_18s rRNA	gtgtgcctaccctacg	tgacccgcacttactg
EZH2-ChIP_primer_ANTXR2	ggagggagagagggaggtc	cactgggattcgtcaagagttc
YAP1-ChIP_primer_CD44	tcttaacaagtcgcagagagg	gattcccttccattcattca
YAP1-ChIP_primer_COL5A2	aatacttccatcttcccacaaa	caacggacaaacacattcct
ANTXR2_siRNA (Ambion, 4392420-s42200)	ccaguaaguguacagcuuatt	uaagcuguacacuuacuggtt
EZH2_siRNA_smartpool (M-004218-03-0020)-1	caaagaaucuagcaucaua	
EZH2_siRNA_smartpool (M-004218-03-0020)-2	gaggacggcuucccaauaa	
EZH2_siRNA_smartpool (M-004218-03-0020)-3	gcugaagccucaauguuua	
EZH2_siRNA_smartpool (M-004218-03-0020)-4	gaauggaaacagcgaagga	

Supplementary table 3: Antibody list

Antibody name	Catalog	company	dilution factor (Western blot)	dilution factor (IHC)
ANTXR2	ab129004	Abcam		200
ANTXR2	16723-1-AP	Proteintech	2000	
EZH2	5246	Cell Signaling	2000	200
YAP1	14074	Cell Signaling	2000	100 (ICC)
P-YAP1(s127)	4911	Cell Signaling	2000	
HIF-1α	36169	Cell Signaling	2000	
CD31	ab28364	Abcam		100
Ki67	GTX16667	Genetex		200
β-actin	A5441	Sigma	10000	

Supplementary table 4: Public dataset list

GEO number	Dataset information	Reference
GSE7305	gene expression profile from normal and diseased endometrial human tissues	Proc Natl Acad Sci U S A 2007 Jul 24;104(30):12451-6
GSE5108	gene expression profile from human ectopic and eutopic endometrial tissues	Fertil Steril 2007 Dec;88(6):1505-33
GSE51981	gene expression profile from a large cohort of normal endometrial and endometritoic tissues	Endocrinology 2014 Dec;155(12):4986-99
GSE55186	YAP1-ChIP-seq in mouse embryonal rhabdomyosarcoma (RMS) cells	Cancer Cell 2014 Aug 11;26(2):273-87.

Supplementary table 5: Potential EZH2 downstream target list

gene symbol	strand	expression (Ec/Eu)_GSE7305
C10orf10	(-)	9.86414
NBL1	(+)	4.93985
GALNTL2	(+)	3.960533
PARD3B	(+)	3.753463
CARD16	(-)	3.507215
FXYD1	(+)	3.468647
BCL6	(-)	3.38538
LPP	(+)	2.854344
TPM1	(+)	2.806289
SRGAP1	(+)	2.772242
TSPAN5	(-)	2.77215
UCHL1	(+)	2.721031
BICC1	(+)	2.719775
TM4SF1	(-)	2.615921
ANTXR2	(-)	2.60855
CLIP1	(-)	2.606927
IGFBP3	(-)	2.587584
MCAM	(-)	2.51794
ENG	(-)	2.508343
C1QTNF7	(+)	2.465887
COL12A1	(-)	2.462066
TENC1	(+)	2.414106
ANKRD57	(+)	2.414032
UACA	(-)	2.389334
PER1	(-)	2.377421
SNX18	(+)	2.363895
FGFR1	(-)	2.35537
EPHX1	(+)	2.325712
POU6F1	(-)	2.287591
MVP	(+)	2.245461
LAMB2	(-)	2.235176
NET1	(+)	2.112328
LIMS2	(-)	2.102517
NDRG2	(-)	2.077656
HCLS1	(-)	2.046525

PLXNA4	(-)	2.023304
LRRC15	(-)	2.009724
GLG1	(-)	2.004108

Supplementary table 6: Potential function of ANTXR2

Enrichment by Process Networks				p0.005 pos corr-uniq
Networks	Total	pValue	p-value	FDR
Cytoskeleton_Regulation of cytoskeleton rearrangement	183	4.653E-06	4.653E-06	6.165E-05
Development_Regulation of angiogenesis	222	3.649E-05	3.649E-05	3.054E-04
Cell adhesion_Integrin-mediated cell-matrix adhesion	214	4.530E-05	4.530E-05	3.601E-04
Proliferation_Positive regulation cell proliferation	221	1.337E-03	1.337E-03	5.747E-03
Cell adhesion_Cell junctions	162	1.432E-03	1.432E-03	5.838E-03
Cell adhesion_Attractive and repulsive receptors	175	1.588E-03	1.588E-03	6.312E-03
Cell adhesion_Integrin priming	110	1.405E-02	1.405E-02	3.661E-02
Inflammation_IL-6 signaling	119	2.137E-02	2.137E-02	4.996E-02
Cell adhesion_Cadherins	180	8.159E-02	8.159E-02	1.593E-01

Supplementary table 7: Potential intracellular signaling pathways of ANTXR2

Maps	Total	pValue	Min FDR	p-value	FDR	In Data
Apoptosis and survival_NGF/ TrkA PI3K-mediated signaling	77	7.926E-11	1.417E-08	7.926E-11	1.417E-08	38
G-protein signaling_G-Protein alpha-12 signaling pathway	38	3.179E-10	4.737E-08	3.179E-10	4.737E-08	24
Signal transduction_mTORC1 downstream signaling	61	1.750E-09	1.738E-07	1.750E-09	1.738E-07	31
Development_Positive regulation of STK3/4 (Hippo) pathway and negative regulation of YAP/TAZ function	70	6.141E-09	4.575E-07	6.141E-09	4.575E-07	33
Development_TGF-beta receptor signaling	50	1.937E-08	1.049E-06	1.937E-08	1.049E-06	26
Cytoskeleton remodeling_FAK signaling	57	2.809E-08	1.395E-06	2.809E-08	1.395E-06	28
Chemotaxis_CXCR4 signaling pathway	34	5.548E-08	2.157E-06	5.548E-08	2.157E-06	20
Immune response_IL-4 signaling pathway	94	8.104E-08	3.019E-06	8.104E-08	3.019E-06	38
Signal transduction_NF-kB activation pathways	51	7.541E-07	1.532E-05	7.541E-07	1.532E-05	24
Signal transduction_Activation of PKC via G-Protein coupled receptor	52	1.174E-06	2.057E-05	1.174E-06	2.057E-05	24
Signal transduction_Soluble CXCL16 signaling	49	1.355E-06	2.244E-05	1.355E-06	2.244E-05	23

Signal transduction_JNK pathway	**47**	**1.026E-05**	**1.030E-04**	**1.026E-05**	**1.030E-04**	**21**
G-protein signaling_RhoA regulation pathway	**34**	**1.136E-05**	**1.092E-04**	**1.136E-05**	**1.092E-04**	**17**
Signal transduction_PKA signaling	**51**	**1.269E-05**	**1.147E-04**	**1.269E-05**	**1.147E-04**	**22**