

1 **Supplementary information**

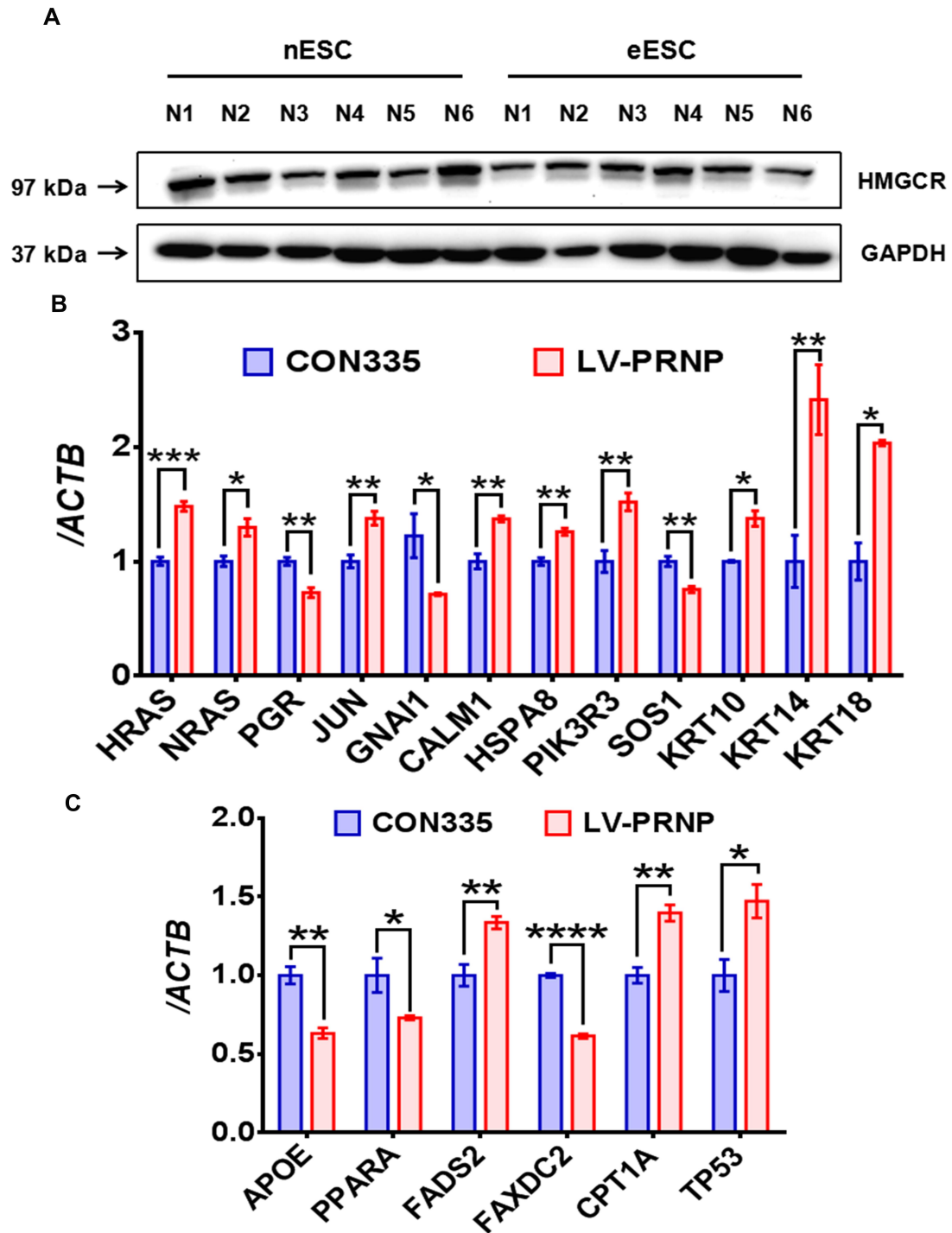
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3 **PrP^C Promotes Endometriosis Progression By Reprogramming**
4 **Cholesterol Metabolism And Estrogen Biosynthesis Of Endometrial**
5 **Stromal Cells Through PPAR α Pathway**

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10 **Figure S1: Verification of the next RNA-Sequencing results.** (A) Protein level of HMGCRC
 11 decreased in eESC, when compared to nESC. (B) Expression levels of estrogen signaling
 12 pathway related genes were verified by qRT-PCR assay. (C) Expression of *APOE*, *PPARA*,
 13 *FADS2*, *FAXDC2*, *CPT1A* and *TP53* were verified. Data was showed as mean \pm SEM,
 14 Student's t-test, one-way analysis of variance (ANOVA) and Mann-Whitney test were used to
 15 make statistical analysis. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$.

16 **Table S1: The clinical information of patients in the study.**

No.	Diagnosis	Specimens	Age	Cycle Phase	Dysmen orrhoea	rASRM Stage	Assays used
1	Ovarian EMs	EEM, EESC	31	Proliferative	Yes	III	qRT-PCR, ELISA
2	Ovarian EMs	EEM, EESC	25	Secretory	no	IV	qRT-PCR, ELISA
3	Ovarian EMs	EEM, EESC	37	Proliferative	no	II	qRT-PCR, ELISA
4	Ovarian EMs	EEM, EESC	40	Proliferative	no	II	qRT-PCR, ELISA
5	Ovarian EMs	EEM, EESC	46	Secretory	no	III	qRT-PCR, ELISA
6	Ovarian EMs	EEM, EESC	43	Proliferative	no	III	qRT-PCR, ELISA
7	Ovarian EMs	EEM, EESC	26	Proliferative	Yes	II	qRT-PCR, ELISA
8	Ovarian EMs	EEM, EESC	39	Secretory	no	II	qRT-PCR, ELISA
9	Ovarian EMs	EEM, EESC	24	Proliferative	Yes	III	qRT-PCR, ELISA
10	Ovarian EMs	EEM, EESC	33	Proliferative	Yes	III	qRT-PCR, WB, ELISA
11	Ovarian EMs	EEM, EESC	39	Proliferative	no	III	qRT-PCR, WB, ELISA
12	Ovarian EMs	EEM, EESC	46	Proliferative	no	III	qRT-PCR, WB, ELISA
13	Ovarian EMs	EEM, EESC	29	Proliferative	Yes	III	qRT-PCR, WB, ELISA
14	Ovarian EMs	EEM	40	Proliferative	Yes	III	WB, IHC
15	Ovarian EMs	EEM	31	Proliferative	Yes	IV	WB, IHC
16	Ovarian EMs	EEM	37	Proliferative	no	III	WB, IHC
17	Ovarian EMs	EEM	39	Proliferative	no	III	WB, IHC
18	Ovarian EMs	EEM	32	Proliferative	no	III	WB, IHC
19	Ovarian EMs	EEM	27	Proliferative	no	III	WB, IHC
20	Ovarian EMs	EEM	29	Secretory	no	III	WB, IHC
21	Ovarian EMs	EEM	43	Proliferative	Yes	IV	WB, IHC
22	Ovarian EMs	EEM	31	Proliferative	Yes	III	WB, IHC
23	Ovarian EMs	EEM	25	Proliferative	Yes	II	WB, IHC
24	Ovarian EMs	EEM	30	Proliferative	no	III	WB, IHC
25	Ovarian EMs	EEM	29	Proliferative	Yes	III	WB, IHC
26	Ovarian EMs	EEM	34	Proliferative	Yes	II	WB, IHC

27	Ovarian EMs	EEM	30	Proliferative	Yes	II	WB, IHC
28	Ovarian EMs	EEM	29	Secretory	Yes	III	WB, IHC
29	Ovarian EMs	EEM	28	Proliferative	Yes	III	WB, IHC
30	Tubal Infertility	NEM, NESC	31	Proliferative	no	-	qRT-PCR, ELISA, IHC
31	Tubal Infertility	NEM, NESC	26	Proliferative	no	-	qRT-PCR, ELISA, IHC
32	Tubal Infertility	NEM, NESC	38	Proliferative	no	-	qRT-PCR, ELISA, IHC
33	Tubal Infertility	NEM, NESC	36	Secretory	no	-	qRT-PCR, ELISA, IHC
34	Tubal Infertility	NEM, NESC	35	Proliferative	no	-	qRT-PCR, WB, ELISA
35	Tubal Infertility	NEM, NESC	30	Proliferative	Yes	-	qRT-PCR, WB, ELISA
36	Tubal Infertility	NEM, NESC	29	Proliferative	no	-	qRT-PCR, WB, ELISA
37	Tubal Infertility	NEM, NESC	30	Proliferative	Yes	-	qRT-PCR, WB, ELISA
38	Tubal Infertility	NEM, NESC	40	Proliferative	no	-	qRT-PCR, WB, ELISA
39	Tubal Infertility	NEM, NESC	33	Proliferative	no	-	qRT-PCR, WB, ELISA
40	Tubal Infertility	NEM, NESC	41	Proliferative	no	-	qRT-PCR, WB, ELISA
41	Tubal Infertility	NEM, NESC	21	Proliferative	Yes	-	qRT-PCR, WB, ELISA
42	Tubal Infertility	NEM, NESC	37	Secretory	no	-	WB, ELISA, IHC
43	Tubal Infertility	NEM, NESC	29	Proliferative	Yes	-	WB, ELISA, IHC
44	Tubal Infertility	NEM, NESC	36	Proliferative	no	-	WB, ELISA, IHC
45	Tubal Infertility	NEM	41	Proliferative	no	-	qRT-PCR, WB, IHC
46	Tubal Infertility	NEM	25	Proliferative	no	-	qRT-PCR, WB, IHC
47	Tubal Infertility	NEM	28	Proliferative	no	-	qRT-PCR, WB, IHC
48	Tubal Infertility	NEM	27	Proliferative	no	-	qRT-PCR, WB, IHC
49	Tubal Infertility	NEM	35	Proliferative	no	-	WB, IHC

17 **Note:**

18 No.: Number; EEM: ectopic endometrium; NEM: normal endometrium; EESC: ectopic
19 endometrial stromal cells; NESC: normal endometrial stromal cells; qRT-PCR: quantitative
20 real-time PCR assay; WB: western blotting assay; IHC: immunohistochemistry; ELISA:
21 enzyme-linked immunosorbent assay.

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23 **Table S2: Primers for qRT-PCR assay.**

Gene Name	Forward or Reverse	Sequence
Human stAR	Forward	GGCATCCTTAGCAACCAAGA
Human stAR	Reverse	TCTCCTTGACATTGGGGTTC
Human CYP17A1	Forward	TCTCTGGGCGGCCTCAA
Human CYP17A1	Reverse	AGGCGATACCCTTACGGTTGT
Human CYP19A1	Forward	GACTTTGCCACTGAGTTGATTT
Human CYP19A1	Reverse	CGATCAGCATTTC CAATATGCA
Human CYP11A1	Forward	GAGATGGCACGCAACCTGAAG
Human CYP11A1	Reverse	CTTAGTGTCTCCTTGATGCTGGC
Human HSD3B2	Forward	CAGGCTCTTTTCAGGAATGG
Human HSD3B2	Reverse	CTTGGACAAGGCCTTCAGAC
Human PGR	Forward	CCCAGCATGTTCGCCTTAGAAA
Human PGR	Reverse	AGTGCTCTCACAACTCTGACTT
Human B-Actin	Forward	TGGCACCCAGCACAAATGAA
Human B-Actin	Reverse	CTAAGTCATAGTCCGCCTAGAAGCA
Human GAPDH	Forward	GCCTCAAGATCATCAGCAATGCCT
Human GAPDH	Reverse	GTGGTCATGAGTCCTTCCACGAT
Human HSD17B7	Forward	AAGGCAAGGAACCCTACAGCTCTT
Human HSD17B7	Reverse	AATATTGCCGGCATCAACAGCGTC
human PRNP	Forward	AATCAAGCAGCACACGGTCA
human PRNP	Reverse	TCGGTGAAGTTCTCCCCCTT
Human ACAT2	Forward	GAGACTTACCCTAGGACGCCCT
Human ACAT2	Reverse	AGTTCTTGGCCACATAATTCCAC
Human HMGCS1	Forward	AAAGTACCAAGACTCCCTGCCACA
Human HMGCS1	Reverse	ATCCCATTCCTCCA ACTGTTCCCA
Human HMGCR	Forward	GCCTGGCTCGAAACATCTGAA
Human HMGCR	Reverse	CTGACCTGGACTGGAAACGGATA
Human SQLE	Forward	CTATGGCAGAGCCCAATGCAAAGT

Human SQLE	Reverse	ACAACAGTCAGTGGAGCATGGAGT
Human DHCR24	Forward	GTGAAACACTTTGAAGCCAGG
Human DHCR24	Reverse	AGCCATCAAACATCTCCCAG
Human IDI1	Forward	GCATCGAGCTTTTAGTGTCTTCT
Human IDI1	Reverse	GGCTGGATTGCTTAATGGATGA
Human DHCR7	Forward	CAGCGCCAGAGACTGCAAA
Human DHCR7	Reverse	TGAAGAACAGCTTGAAGTCAAACC
Human LSS	Forward	CATCAACATGCTTGTGCGCTGGTA
Human LSS	Reverse	ATTTTCATGCCGTCAAGGCCCATC
Human SREBP-1	Forward	CCCATGGGAGAGCCTGTACA
Human SREBP-1	Reverse	CTAAGAGATGTTCCCGGAATAGCT
Human SREBP-2	Forward	ACAACCCATAATATCATTGAGAAACG
Human SREBP-2	Reverse	TTGTGCATCTTGGCGTCTGT
Human CYP51	Forward	GAGTGATGCTGCTGCACTGCTTTT
Human CYP51	Reverse	ACATCGTATGCAACTCCCTTCCA
Human ACAT1	Forward	GCAGCGAAGAGGCTCAATG
Human ACAT1	Reverse	GCAGCATATACAGGAGCAATTGG
Human ABCG2	Forward	TTTCCAAGCGTTCATTCAAAAA
Human ABCG2	Reverse	TACGACTGTGACAATGATCTGAGC
Human ABCA1	Forward	ATGTCCAGTCCAGTAATGGTTCTGT
Human ABCA1	Reverse	CGAGATATGGTCCGGATTGC
Human APOE	Forward	TGCCCCGGCCTCCTAGCTCCTTC
Human APOE	Reverse	GAGGTGAAGGAGCAGGTGGCGGAG
Human PPARA	Forward	GCGGAGGATAGTTCTGGAAGC
Human PPARA	Reverse	CACAGGATAAGTCACCGAGGAG
Human FADS2	Forward	TCATGACCATGATCGTCCATAAGAA
Human FADS2	Reverse	GCTCCCAGGATGCCGTAGAA
Human FAXDC2	Forward	GACATGGTGGATCCTGTGAAACT
Human FAXDC2	Reverse	GAAAGATATCATGCACTGGTTGAAA

Human CPT1A	Forward	ATCAATCGGACTCTGGAAACGG
Human CPT1A	Reverse	TCAGGGAGTAGCGCATGGT
Human TP53	Forward	CCTGGATTGGCCAGACTGC
Human TP53	Reverse	TTTTCAGGAAGTAGTTTCCATAGGT
Human HRAS	Forward	AGAGGATTCCTACCGGAAGCAGGT
Human HRAS	Reverse	TGCTCCCTGTACTGGTGGATGT
Human NRAS	Forward	CCTCTACAGGGAGCAGATTAAGCGA
Human NRAS	Reverse	CCCTGTCTGGTCTTGGCTGAGGT
Human JUN	Forward	AGGAAGCTGGAGAGAATCGC
Human JUN	Reverse	GTTAGCATGAGTTGGCACCC
Human GNAI1	Forward	ACGGACACATCCATCATCCT
Human GNAI1	Reverse	TCCGTTACAGCATCGAACAC
Human CALM1	Forward	ACAAGGATGGGAATGGTTACAT
Human CALM1	Reverse	TGCAGTCATCATCTGTACGAAT
Human HSPA8	Forward	CACCAACACAGTTTTTTGATGCCA
Human HSPA8	Reverse	GATGAGCACGTTTCTTTCTGCTC
Human PIK3R3	Forward	TACAATACGGTGTGGAGTATGGA
Human PIK3R3	Reverse	TCATTGGCTTAGGTGGCTTTG
Human SOS1	Forward	GGAGATCAACCCTTGAGTGCAG
Human SOS1	Reverse	TGCTCTACCCAGTGCCGACATA
Human KRT10	Forward	CTTGGCAGAAACAGAAGGTCGCT
Human KRT10	Reverse	GCAGGCTGCGGTAGGTTTGAA
Human KRT14	Forward	GGCCTGCTGAGATCAAAGACTAC
Human KRT14	Reverse	CACTGTGGCTGTGAGAATCTTGTT
Human KRT18	Forward	GCTGACCGACGAGATCAACT
Human KRT18	Reverse	CATGGACAGCACCACAGATG

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27 **Table S3: Reagents used in this study.**

Reagent	Application	Manufacturer	Catalogue
Anti-prion	WB/IHC	Abcam	ab52604
Anti-HMGCR	WB	abcam	Ab174830
Anti-ABCA1	WB	abcam	Ab18180
Anti-CYP19A1 (Aromatase)	WB	CST	14528
Anti-CYP17A1	WB	abcam	Ab125022
Anti-CYP11A1	WB	abcam	Ab175408
Anti-PCNA	WB	CST	13110
Anti-PPAR α	WB	abcam	Ab215270
Anti-GAPDH	WB	CST	5174S
Anti-Actin	WB	CST	4970
PE anti-human CD230 (Prion)	FCM	Biologend	800318
DAB HRP Color Development Kit	IHC	Biotech Well	WB0167
RIPA	WB	Biotech Well	WB0101
4% Paraformaldehyde	Reagent	Biotech Well	WH1011
PVDF membrane	WB	Millipore	IPVH00010
CELLSAVING	Cell Culture	NCM	C40050
Pravastatin	Reagent	MedChemExpress	HY-B0165A
Gemfibrozil	Reagent	MedChemExpress	HY-B0258
17- β estradiol	Reagent	Sigma	E2758
PrimeScript RT Master Mix	qRT-PCR	Takara	RR036A
TB Green Premix Ex TaqTMII	qRT-PCR	Takara	RR820A
RNAiso Plus	qRT-PCR	Takara	9109
17- β estradiol ELISA Kit	ELISA	IBL	RE52041
Amplex Red Cholesterol Assay Kit	Reagent	Invitrogen	A12216
Cholesterol Assay Kit (Cell-Based)	Reagent	abcam	Ab133116
U18666A	Reagent	abcam	Ab133116
Immobilon Western Chemilum HRP	WB	Millipore	WBKLS0100

Cell Counting Kit-8	Reagent	DOJINDO	CK04
Matrigel	Reagent	Corning	356234
DMSO	Reagent	Sigma	D8418
