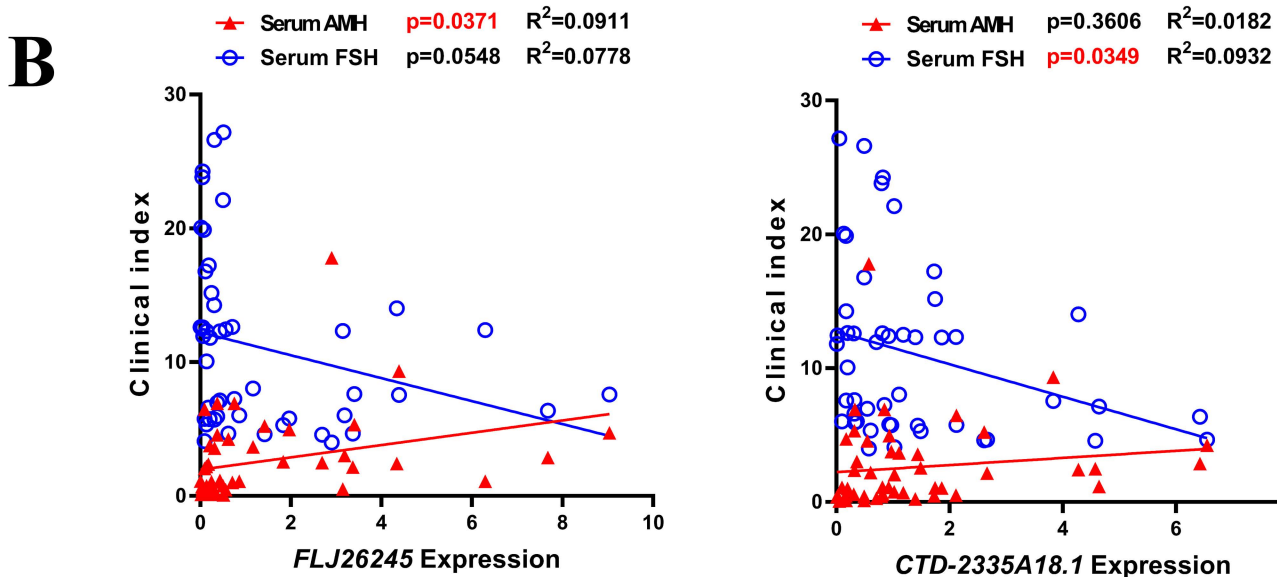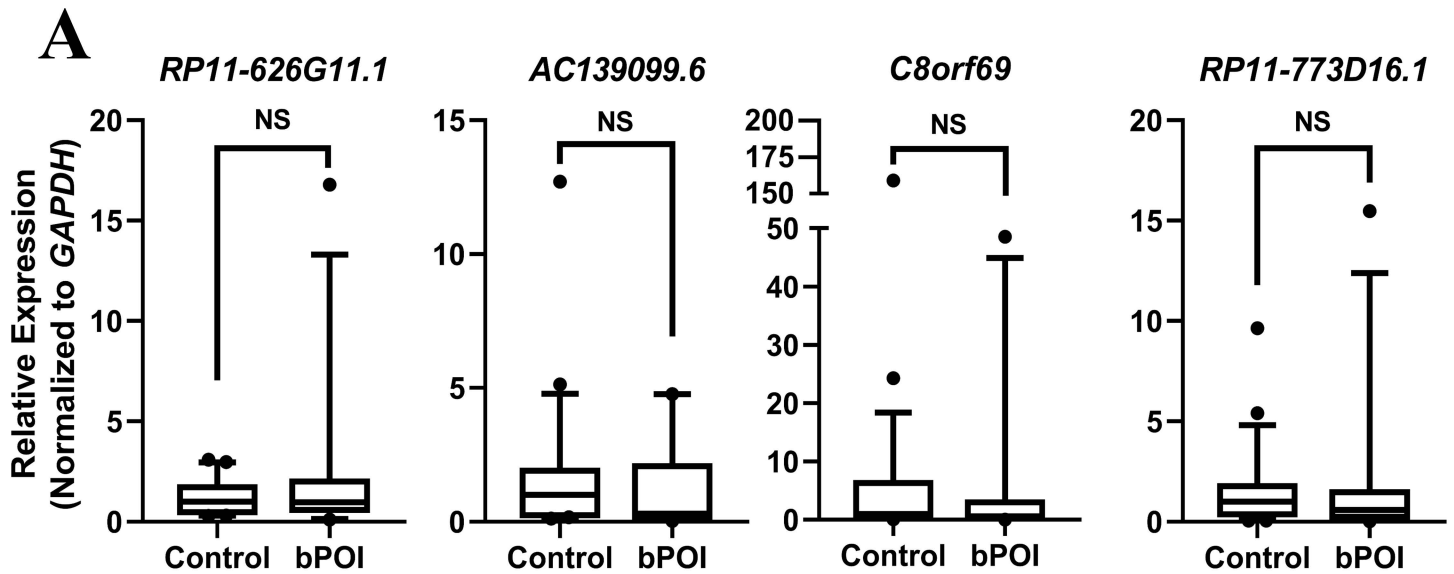# Supplemental Information

lncRNA *GCAT1* is involved in premature ovarian

insufficiency by regulating p27 translation in

GCs via competitive binding to PTBP1

Duan Li, Xiaoyan Wang, Yujie Dang, Xinyue Zhang, Shidou Zhao, Gang Lu, Wai-Yee Chan, Peter C.K. Leung, and Yingying Qin

Figure S1. (A) The expression level of differentially expressed lncRNAs was validated by qRT-PCR in GCs from an independent cohort of patients with bPOI (n = 24) and controls (n = 24). Ct values were normalized to GAPDH. Data are presented as the median ± interquartile range. NS = No significance. Two-tailed Mann–Whitney U-test. **(B)** The correlation between the expression levels of lncRNAs in GCs and the serum concentration of AMH and FSH was analyzed by Pearson Correlation Analysis.

A

CPC 2.0   🏠Home   📕Batch   ⬇Download   ❓Help   ⓘAbout

You can get the results by visit http://cpc2.cbi.pku.edu.cn/run_cpc2_result.php?userid=200322290431326 later.

Also you can remember your task id **200322290431326** and retrive the results at http://cpc2.cbi.pku.edu.cn/batch.php.

Download the result   Sort by ID ▼

ID	Label	Coding probability	Peptide length(aa)	Fickett score	Isoelectric point	ORF integrity	Details
GCAT1	noncoding	0.0524034	61	0.33138	4.87017822266	complete	View

‹‹ 1 ››   Go

B

CPAT
Coding Potential Assessment Tool

Calculator   User Guide   Feedback   Source Code

Result for species name : hg19 with job ID :1584807841

Data ID	Sequence Name	RNA Size	ORF Size	Ficket Score	Hexamer Score	Coding Probability	Coding Label
0	GCAT1	459	183	0.8904	0.114213447958	0.06949037463803	no

This job has been stored with the job ID
Download Table in tab delimetered file (.txt)

For suggestions, comments or queries about this website,
please leave your feedback through Feedback.
Copyright © 2012. All rights reserved.

BCM
Baylor College of Medicine

MAYO CLINIC

C
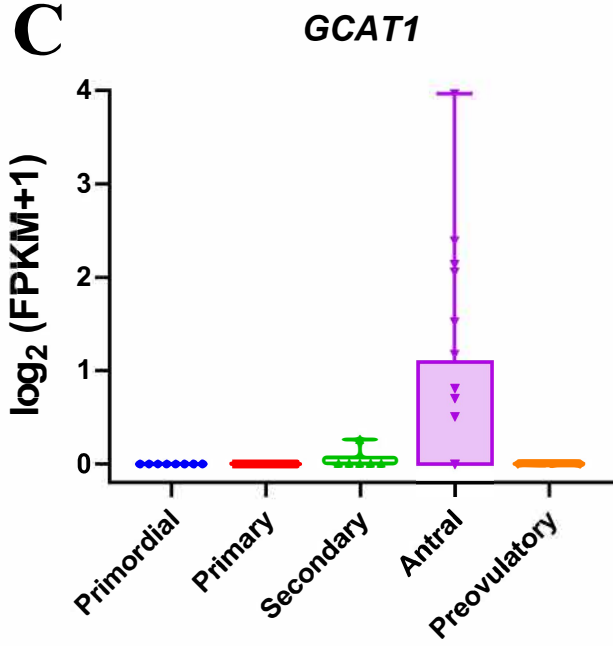
Figure S2. (A/B) Coding probability of *GCAT1* was assessed by Coding Potential Calculator (CPC2)**(A)** and Coding-Potential Assessment Tool (CPAT)**(B). (C)** The expression of *GCAT1* in human granulosa cells during folliculogenesis.

A

D

B PTBP1 amino acids sequence
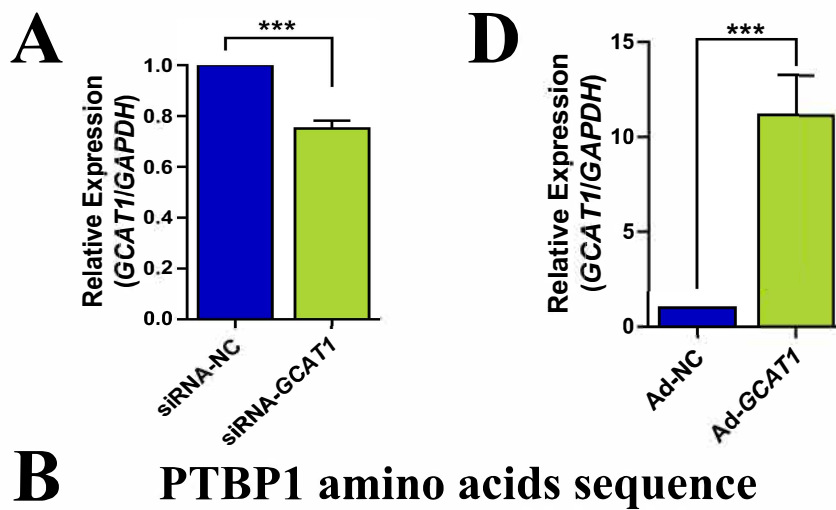
MDGIVPDIAVGTKRGSDELFSTCVTNGPFIMSSNSASAANGNDSKKFKGDSRSAGVPSRVIHIRKLPIDVTE
GEVISLGLPFGKVTNLLMLKGKNQAFIEMNTEEAANTMVNYYTSV1TPVLRGQPIYIQFSNHKELKTDSSP
NQARAQAALQAVNSVQSGNLALAASAAAVDAGMAMAGQSPVLRIIVENLFYPVTLDVLHQIFSKFGTVL
KIITFTKNNQFQALLQYADPVSAQHAKLSLDGQNIYNACCTLRIDFSKLTSLNVKYNNDKSRDYTRPDLPS
GDSQPSLDQTMAAAFGAPGIISASPYAGAGFPPTFAIPQAAGLSVPNVHGALAPLAIPSAAAAAAAAGRIAI
PGLAGAGNSVLLVSNLNPERVTPQSLFILFGVYGDVQRVKILFNKKENALVQMADGNQAQLAMSHLNGH
KLHGKPIRITLSKHQNVQLPREGQEDQGLTKDYGNSPLHRFKKPGSKNFQNIFPPSATLHLSNIPPSVSEED
LKVLFSSNGGVVKGFKFFQKDRKMALIQMGSVEEAVQALIDLHNHDLGENHHLRVSFSKSTI

C hnRNPK amino acids sequence

METEQPEETFPNTETNGEFGKRPAEDMEEEQAFKRSRNTDEMVELRILLQSKNAGAVIGKGGKNIKALRT
DYNASVSVPDSSGPERILSISADIETIGEILKKIIPTLEEGLQLPSPTATSQLPLESDAVECLNYQHYKGSDFD
CELRLLIHQSLAGGIIGVKGAKIKELRENTQTTIKLFQECCPHSTDRVVLIGGKPDRVVECIKIILDLISESPIK
GRAQPYDPNFYDETYDYGGFTMMFDDRRGRPVGFPMRGRGGFDRMPPGRGGRPMPPSRRDYDDMSPR
RGPPPPPPGRGGRGGSRARNLPLPPPPPPRGGDLMAYDRRGRPGDRYDGMVGFSADETWDSAIDTWSPSE
WQMAYEPQGGGSGYDYSYAGGRGSYGDLGGPIITTQVTIPKDLAGSIIGKGGQRIKQIRHESGASIKIDEPLE
GSEDRIITITGTQDQIQNAQYLLQNSVKQYADVEGF

Figure S3. **(A)** The efficiency of *GCAT1* knockdown via siRNA in KGN cells was detected by qRT-PCR. Values of qRT-PCR were obtained from triplicates and expressed as the mean ±SD (n = 3). Two-tailed Student's t-test. ***P < 0.001. **(B)** The amino acid sequence of PTBP1 protein. Five unique peptides identified by MS from *GCAT1*-binding protein were highlighted in red font and the RNA-binding domains were highlighted by gray background. **(C)** The amino acid sequence of hnRNPK protein. Seven unique peptides identified by MS from *GCAT1*-binding protein were highlighted in in red font and the RNA-binding domains were highlighted by gray background. **(D)** The efficiency of *GCAT1* over-expression via adenovirus in KGN cells was detected by qRT-PCR. Values of qRT-PCR were obtained from triplicates and expressed as the mean ±SD (n = 3). Two-tailed Student's t-test. ***P < 0.001.

Table S1 List of primers used in this study

Gene (homo sapiens)	Forward (5'-3')	Reverse (5'-3')
GCAT1	AGGTCTCCTGCCTCCTCCAA	TCCTCTTCCTCCACCTCTGC
GAPDH	GGGAAACTGTGGCGTGAT	GAGTGGGTGTCGCTGTTGA
LMNB1	GAAAAAGACAACTCTCGTCGCA	GTAAGCACTGATTTCCATGTCCA
CDKN1B	GTCAAACGTGCGAGTGTCTA	CATGTCTCTGCAGTGCTTCT
PTBP1	ATTGTCCCAGATATAGCCGTTG	GCTGTCATTTCCGTTTGCTG

Table S2 List of siRNA used in this study

siRNAs	Sense(5'-3')
siRNA-GCAT1	GAUGGCAGAGCAGAUGCAATT
siRNA-CDKN1B	GAGCAATGCGCAGGAATAAGG
siRNA-PTBP1	CCAGCCCATCTACATCCAGTT

Table S3 List of antibodies used in this study

Antibody	Supplier	Catalog#	Application
Anti-PTBP1	Abcam	ab133734	WB
Anti-PTBP1	Cell Signaling Technology	57246S	RIP
Anti-hnRNPK	Abcam	ab39975	RIP
Anti-p27 Kip1	Cell Signaling Technology	3686S	WB
Tubulin	Proteintech	66031-1-Ig	WB
Actin	Proteintech	66009-1-Ig	WB