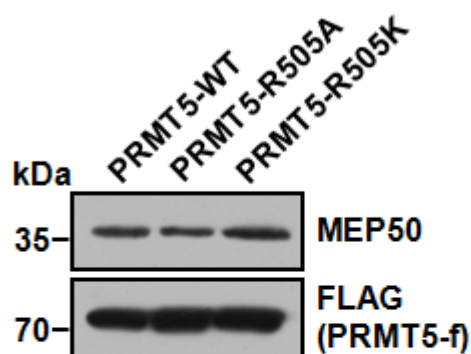


## Supporting information

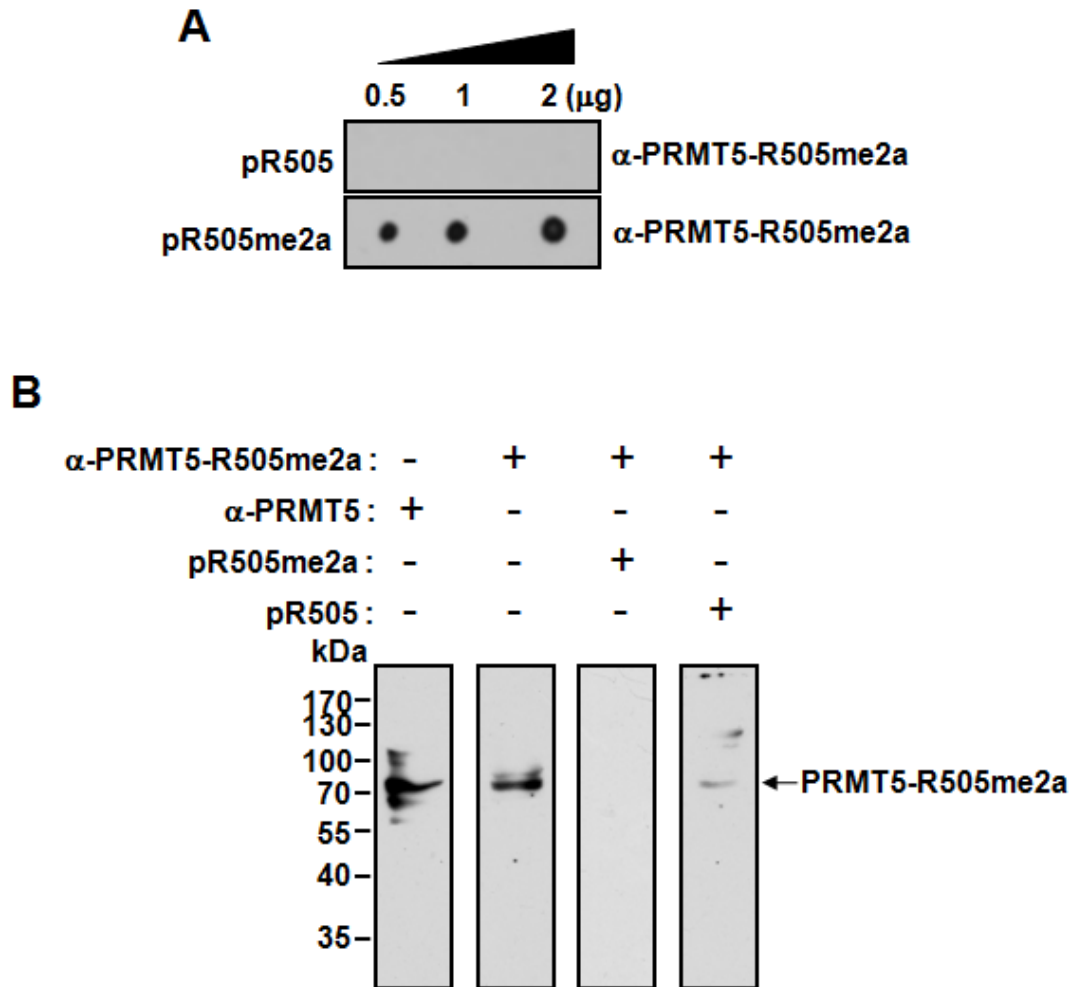
CARM1-mediated methylation of protein arginine methyltransferase 5 represses human  $\gamma$ -globin gene expression in erythroleukemia cells

Min Nie<sup>1</sup>, Yadong Wang<sup>1</sup>, Chan Guo<sup>1</sup>, Xinyu Li<sup>1</sup>, Ying Wang<sup>1</sup>, Yexuan Deng<sup>1</sup>, Bing Yao<sup>1</sup>, Tao Gui<sup>1</sup>, Chi Ma<sup>1</sup>, Ming Liu<sup>1</sup>, Panxue Wang<sup>1</sup>, Ruoyun Wang<sup>1</sup>, Renxiang Tan<sup>1,2</sup>, Ming Fang<sup>3</sup>, Bing Chen<sup>1</sup>, Yinghong He<sup>4</sup>, David C. S. Huang<sup>5</sup>, Junyi Ju<sup>1\*</sup>, and Quan Zhao<sup>1\*</sup>



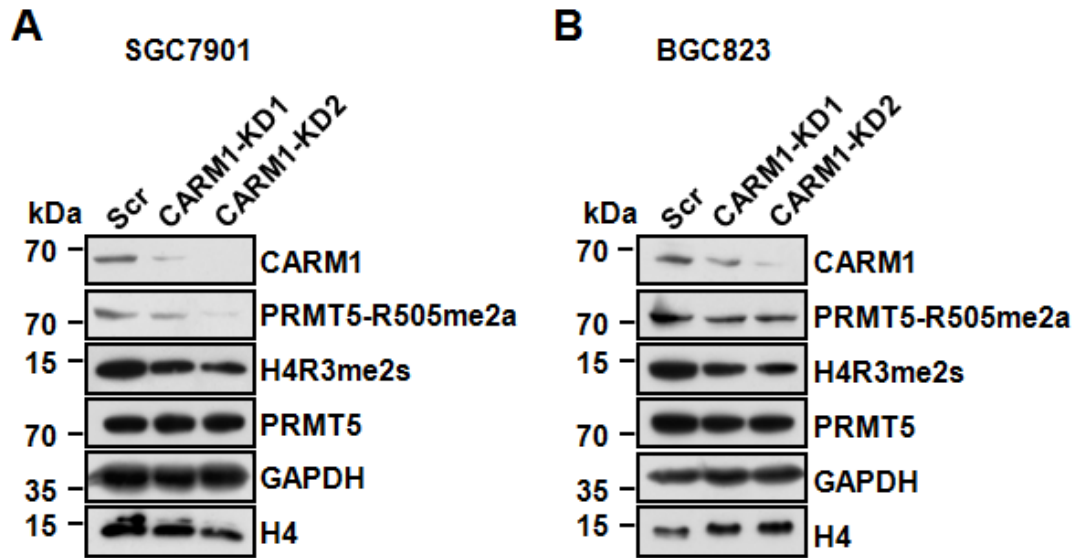
## Supplementary Fig. S1

Supplementary Figure S1. Coimmunoprecipitation of PRMT5 and MEP50 using FLAG antibody from K562 cell lysates overexpressing FLAG-tagged PRMT5-WT, PRMT5-R505A or PRMT5-R505K.



### Supplementary Fig. S2

Supplementary Figure S2. Anti-PRMT5-R505me2a antibody validation. (A) Anti-PRMT5-R505me2a antibody dot blot analysis with increasing amounts of the peptides MPYVVRLHNFH (pR505) or MPYVVVR (me2a) LHNFH (pR505me2a). (B) Western blot analysis with indicated antibodies in the presence of indicated peptides in K562 cell lysates.



Supplementary Fig. S3

Supplementary Figure S3. CARM1 methylates PRMT5 in SGC7901 and BGC823 cells. Western blot analysis of indicated protein levels in cell lysates from the scramble control (Scr), CARM1-KD1 and CARM1-KD2 SGC7901 cells (A) and BGC823 cells (B). GAPDH and histone H4 were used as loading controls. Blots are representative of three independent experiments.

**Supplementary Table S1. Potential PRMT5-interacting proteins identified by mass spectrometry in K562 cells overexpressing PRMT5.**

<b>Protein(s) identified</b>	<b>Number of peptides identified</b>	<b>Accession Number</b>
TPM3_Splice isoform2 of P06753	2 9% coverage	P06753-2
KCTD2_Potassium channel tetramerisation domain containing protein 2	1 5%	Q14681
PP2CB_Protein phosphatase 2C beta isoform	3 7%	O75688
MEP50_Methylosome protein 50 (WD-repeat protein 77)	1 4%	Q9BQA1
ILF2_Interleukin enhancer-binding factor 2	1 5%	Q12905
EF1A1_Elongation factor 1-alpha	4 9%	P68104
LYAR_Cell growth regulating nucleolar protein	1 3%	Q9NX58
DBPA_DNA-binding protein A	1 4%	P16989
PAIRB_Plasminogen activator inhibitor 1 RNA-binding protein	1 4%	Q8NC51
DDX6_ATP-dependent RNA helicase DDX6	1 3%	P26196
PRP19_PRP19/PSO4 homolog (Nuclear matrix protein 200)	1 2%	Q9UMS4
PRMT5_Protein arginine N-methyltransferase 5	17 35%	O14744
PABP1_Polyadenylate-binding protein 1	8 17%	P11940
HNRPM_Heterogenous nuclear ribonucleoprotein M	1 2%	P52272
NUCL_Nucleolin	2 4%	P19338
DHX9_ATP-dependent RNA helicase A	2 2%	Q08211
Q6AHX6_Hypothetical protein DKFZp686O0631	2 2%	Q6AHX6

**Supplementary Table S2. Q-RT-PCR primers**

Gene	Forward primer	Reverse Primer
$\gamma$ -globin	AATGTGGAAGATGCTGGA	CTTCTTGCCATGTGCCTTGACTT
GAPDH	GAAGGTGAAGGTCGGAG	GAAGATGGTGATGGGATTTTC
CARM1	TCGCCACACCCAACGATTT	GTACTGCACGGCAGAAGACT
PRMT5	CTGTCTTCCATCCGCGTTTCA	GCAGTAGGTCTGATCGTGTCTG

**Supplementary Table S3. ChIP primers**

Promoter	Forward primer	Reverse Primer
$\gamma$ -globin promoter	ATCCAGTGAGGCCAGGGGC	GAGATTGACAAGAACAGTTTGA