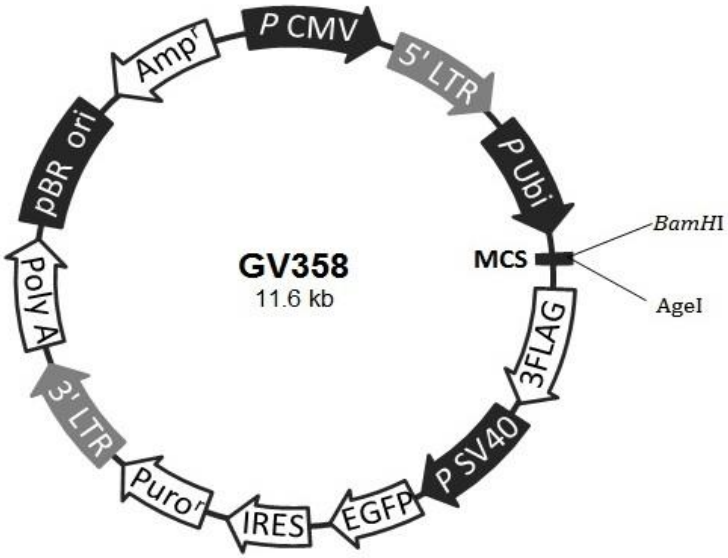
Table SI. Vector.

FBP1-OE and KMT5A-OE Vector information

- Gene name: FBP1(NM_000507); KMT5A(NM_020382)
- Species: human
- Vector name：GV358
- Component sequence：Ubi-MCS-3FLAG-SV40-EGFP-IRES-puromycin
- Cloning site：AgeI / AgeI
- Reference number：CON238
- Vector information

General: 11615bp
HIV-1_5_LTR, trunkHIV-1_3_LTR: 835-1015
Psi: 1067-1204
RRE: 1680-1913
ORF frame 1: 1558-2445
Ubiquitin Promoter: 2617-3833
3FALG: 3880-3957
SV40 promoter: 3964-4341
EGFP: 4350-5069
IRES: 5092-5676
Puromycin: 5683-6282
WPRE: 6309-6896
HIV-1_5_LTR, trunkHIV-1_3_LTR: 7420-7600
pBR322_origin: 10467-9848
Ampicillin: 11482-10622
AmpR_promoter: 11552-11524
CAG_enhancer: 318-605
CMV_immearly_promoter: 239-810



shKMT5A Vector information

- Gene name: KMT5A(NM_020382)
- Species: human
- Vector name: GV248
- Component sequence: hU6-MCS-Ubiquitin-EGFP-IRES-puromycin
- Cloning site: AgeI / AgeI
- Reference number: CON054
- Contrast insertion sequence: TTCTCCGAACGTGTCACGT
- Vector information

General: 11468bp
HIV-1_5_LTR, truncHIV-1_3_LTR：835-1015

Psi: 1067-1204
RRE: 1680-1913
ORF frame 1: 1558-2445
hU6Promoter: 2602-2869
me-shid-2: 2938-2961
Ubiquitin Promoter: 2957-4173
EGFP: 4216-4935
IRES: 4945-5529
Puromycin: 5536-6135
WPRE: 6149-6736
HIV-1_5_LTR, truncHIV-1_3_LTR: 7247-7427
pBR322-origin: 10294-9675
AmpR: 11309-10449
AmpR-promoter: 11379-11351
CAG_enhance: 318-605
CMV_immearly_promoter: 239-810
Primer locations and sequences
H1-F (2479-2502): GGAAAGAATAGTAGACATAATAGC
Ubi-R (3136-3115): ATGTCCTTCTGCTGATACTGGG

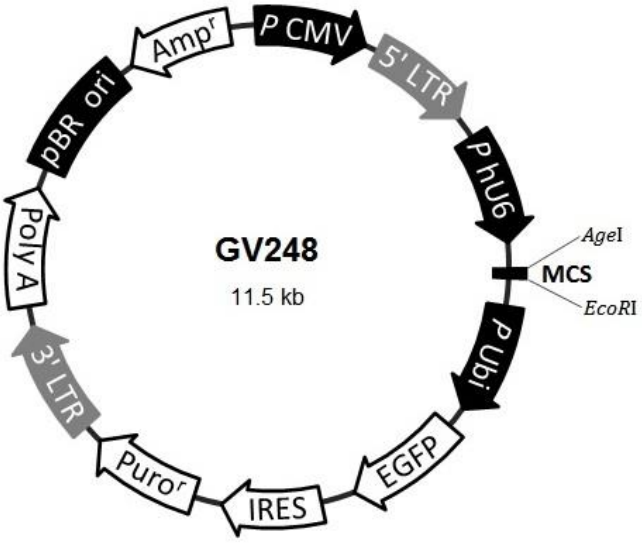


Table SII. Sequences of shRNA, shRNA-KMT5A knockdown.

ID	5’	stem	loop	stem	3’
KMT5A-RNAi (72762-11)-a	Ccgg	cgCAACAGAATCGCAAACTTA	CTCGAG	TAAGTTTGCGATTCTGTTGCG	TTTTTg
KMT5A-RNAi (72762-11)-b	aattcaaaaa	cgCAACAGAATCGCAAACTTA	CTCGAG	TAAGTTTGCGATTCTGTTGCG	
KMT5A-RNAi (72764-11)-a	Ccgg	caAAGGACAAAGTGCCCTCAA	CTCGAG	TTGAGGGCACTTTGTCCTTTG	TTTTTg
KMT5A-RNAi (72764-11)-b	aattcaaaaa	caAAGGACAAAGTGCCCTCAA	CTCGAG	TTGAGGGCACTTTGTCCTTTG	

sh, short hairpin; KMT5A, lysine methyltransferase 5A.

Table SIII. Immunohistochemistry scoring

No.	Molecular classification	Pathology grade_group	Lymph_group	Age	Ki-67	KMT5A_Intensity	KMT5A_Area	KMT5A	KMT5A group
1	Luminal A	2	1	60	10	0	0	0	1
2	Luminal A	2	2	46	15	3	4	12	2
3	Luminal A	2	1	50	10	2	4	8	2
4	Luminal A	1	2	48	5	3	2	6	1
5	Luminal A	2	1	56	10	2	3	6	1
6	Luminal A	1	2	42	2	0	0	0	1
7	Luminal A	2	1	48	5	2	4	8	2
8	Luminal A	2	2	60	8	2	4	8	2
9	Luminal A	2	1	76	10	1	3	3	1
10	Luminal A	1	2	49	11	0	0	0	1
11	Luminal A	2	2	43	1	3	4	12	2
12	Luminal A	3	2	36	5	0	0	0	1
13	Luminal A	2	2	41	10	1	1	1	1
14	Luminal A	2	2	46	10	0	0	0	1
15	Luminal A	2	1	43	5	3	4	12	2

16	Luminal A	2	1	82	10	2	2	4	1
17	Luminal A	1	1	59	5	0	0	0	1
18	Luminal A	2	2	47	10	1	4	4	1
19	Luminal A	2	1	63	9	0	0	0	1
20	Luminal A	2	1	52	8	2	1	2	1
21	Triple Negative	3	1	53	80	1	3	3	1
22	Triple Negative	2	2	63	15	2	2	4	1
23	Triple Negative	3	2	37	80	1	2	2	1
24	Triple Negative	3	1	49	55	3	2	6	1
25	Triple Negative	3	1	54	90	2	3	6	1
26	Triple Negative	3	1	51	70	2	1	2	1
27	Triple Negative	2	1	38	75	2	4	8	2
28	Triple Negative	3	1	40	40	2	1	2	1
29	Triple Negative	3	1	39	80	1	0	0	1
30	Triple Negative	3	1	47	80	2	4	8	2
31	Triple Negative	2	1	34	27	2	3	6	1
32	Triple Negative	3	2	57	60	2	3	6	1
33	Triple Negative	3	1	32	50	3	4	12	2

34	Triple Negative	2	1	50	60	3	4	12	2
35	Triple Negative	2	1	47	50	0	0	0	1
36	Triple Negative	2	2	60	40	3	4	12	2
37	Triple Negative	3	2	48	75	2	2	4	1
38	Triple Negative	3	1	47	70	1	3	3	1
39	Triple Negative	2	2	72	30	0	0	0	1
40	Luminal B	3	1	34	80	2	3	6	1
41	Luminal B	3	1	69	20	3	2	6	1
42	Luminal B	2	2	61	45	2	1	2	1
43	Luminal B	2	2	50	60	3	4	12	2
44	Luminal B	3	2	42	30	2	3	6	1
45	Luminal B	3	2	65	18	1	1	1	1
46	Luminal B	2	1	49	60	3	4	12	2
47	Luminal B	1	1	48	30	1	2	2	1
48	Luminal B	2	1	49	60	3	4	12	2
49	Luminal B	2	1	64	30	1	1	1	1
50	Luminal B	2	1	53	15	0	0	0	1
51	Luminal B	2	1	62	15	2	2	4	1

52	Luminal B	3	1	50	60	3	4	12	2
53	Luminal B	2	1	31	8	3	4	12	2
54	Luminal B	2	2	48	65	2	1	2	1
55	Luminal B	3	1	43	40	3	2	6	1
56	Luminal B	2	2	47	60	2	3	6	1
57	Luminal B	3	1	42	27	2	4	8	2
58	Luminal B	3	2	55	60	2	4	8	2
59	Luminal B	3	1	61	50	2	4	8	2
60	Luminal B	2	2	48	30	3	1	3	1

(1) Under the microscope, each immunohistochemical section was randomly selected in 3 different fields (×200) for observation, and the positive expression intensity and positive rate were interpreted. (2) The staining results were analyzed by semi-quantitative method: the score was multiplied by the staining intensity combined with the percentage of positive cells. (3) Staining intensity is calculated by the staining intensity of most cells and subtracting the background coloring: 0 points for no obvious staining, 1 point for light yellow or light yellow, 2 points for dark yellow or brownish yellow, and 3 points for tan or dark brown. (4) The percentage of positive cells was observed in 3 different fields (x200) for each immunohistochemical section. The number of positive cells in 100 cells in each field was counted, and the average number of positive cells was calculated: 0 to 5% was rated as 0, 6% to 25% was rated as 1, 26% to 50% was rated as 2, 51% to 75% was rated as 3, and >75% was rated as 4. (5) The product of the staining intensity score and percentage of positive cells evaluated each visual field. The score was calculated by the product of the percentage of positive cells and staining intensity: 0 was classified as negative (-), 1~6 as weak positive, and 7 ~ 12 as strong positive. (6) KMT5Agroup, 1-negative, 2-positive. KMT5A, lysine methyltransferase 5A.

Table SIV. Luciferase plasmid.

Recombinant plasmids name	Vector	Manufacturer
Vector	pRL-TK-Renilla_Luciferase	Shanghai GeneChem Co., Ltd
NC-Luc	pGL3-Basic-Firefly_Luciferase	Shanghai GeneChem Co., Ltd.
FBP1-promotor-Luc	pGL3-Basic-Firefly_Luciferase	Shanghai GeneChem Co., Ltd.
KMT5A-WT	pcDNA3.1	Shanghai GeneChem Co., Ltd.
KMT5A-R295G	pcDNA3.1	Shanghai GeneChem Co., Ltd.
TWIST1	pcDNA3.1	Shanghai GeneChem Co., Ltd.

NC, negative controls; Luc, luciferase; FBP1, fructose-1,6-bisphosphatase; KMT5A, lysine methyltransferase 5A; WT, wild-type; TWIST1, twist family BHLH transcription factor 1.