

## Supplementary figure legends

Figure S1. Road map of the patients from different datasets. A total of 187 AML patients were collected from the TCGA dataset. C1, C2, C3, C4, C5 and C6 are the codes of the six comparison groups that we defined manually. C1: 75 CN-AML patients who compared survival time (EFS and OS) between ACTL10 RNA-high expression group and ACTL10 RNA-low expression group. C2: 92 AML patients received chemotherapy who compared clinical prognosis between ACTL10 RNA-high expression group and ACTL10 RNA-low expression group. C3: 85 CN-AML patients who compared clinical prognosis between ACTL10 DNA methylation-high group and the ACTL10 DNA methylation-low group. C4: 77 AML patients received Allo-HSCT who compared clinical prognosis between ACTL10 DNA methylation-high group and the ACTL10 DNA methylation-low group. C5: 101 AML patients received chemotherapy who compared clinical prognosis between ACTL10 DNA methylation-high group and the ACTL10 DNA methylation-low group. C6: 74 CN-AML who integrated ACTL10 RNA expression data with ACTL10 DNA methylation data. The patients in these 6 groups (C1-C6) are partially overlapping. For details, see Figure S2.

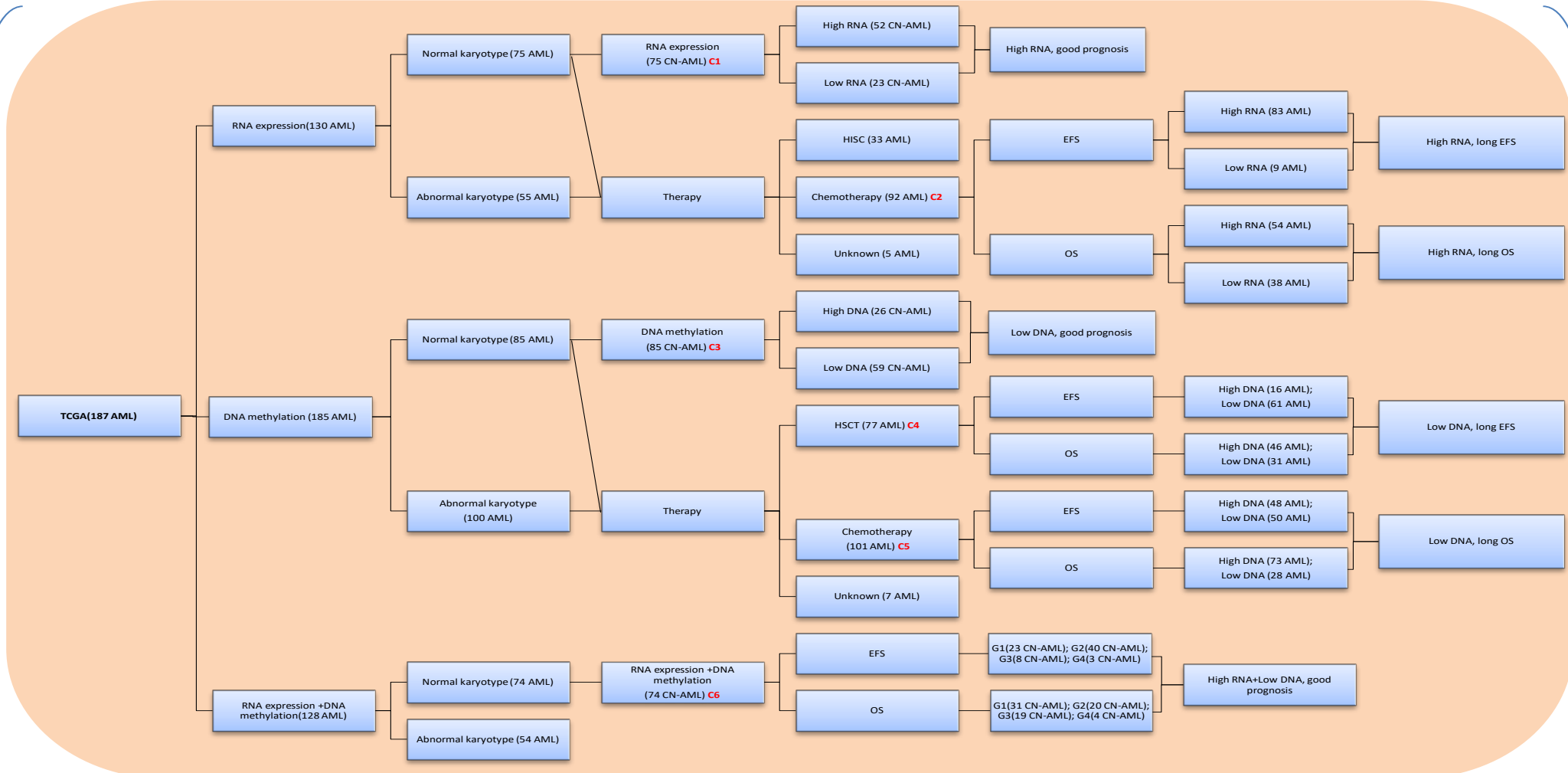
Figure S2. Venn diagram of patients in each group. A: Venn diagram of patients with ACTL10 RNA expression. In the C1 and C2 groups, 37 AML patients were overlapping. B: Wayne diagram of patients with ACTL10 DNA methylation. In the C3 and C4 groups, 36 AML patients were overlapping; In the C3 and C5 groups, 42 AML patients were overlapping; Patients in the C4 and C5 groups did not overlap. C: Venn diagram of CN-AML patients. In the C1 and C3 groups, 74 CN-AML patients were overlapping. Patients with overlapping C1 and C3 are patients with C6. D: The proportion of CN-AML patients in all patients.

Figure S3. OS between the ACTL10 RNA-high expression group and the ACTL10 RNA-low expression group were compared in patients with CN-AML. The x-axis represents the OS time (days) and the y-axis represents the survival probability. Data were analyzed in 78 patients with CN-AML from the GSE12417 dataset (validation cohort) using a log-rank test. OS, overall survival time.

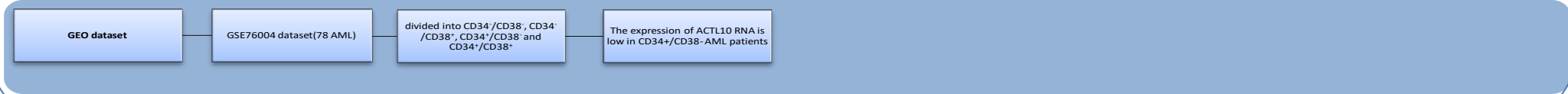
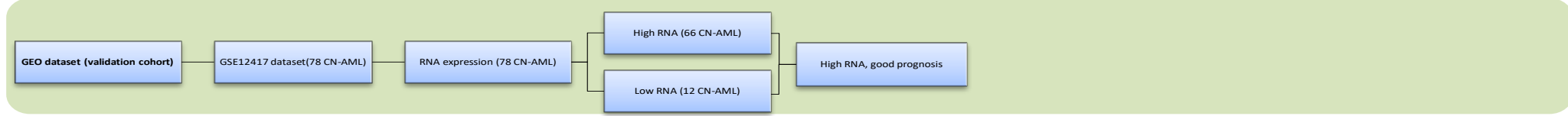
Figure S4. RNA expression levels of ACTL10 in CD34<sup>-</sup>/CD38<sup>-</sup>, CD34<sup>+</sup>/CD38<sup>-</sup>, CD34<sup>-</sup>/CD38<sup>+</sup> and CD34<sup>+</sup>/CD38<sup>+</sup> cells from patients with CN-AML. The RNA expression levels of ACTL10 are converted to log<sub>2</sub>; each dot represents each CD34/CD38 cell of a total of 227 CD34/CD38 cells, 138 leukemia stem cell positive (LSC+) cells and 89 leukemia stem cell negative (LSC-) cells. The average values of two samples were compared using an unpaired t-test, whereas the average values of >2 samples were compared using an ANOVA. NS, P>0.05, \*P<0.05, \*\*P<0.01.

# Supplementary Figure 1

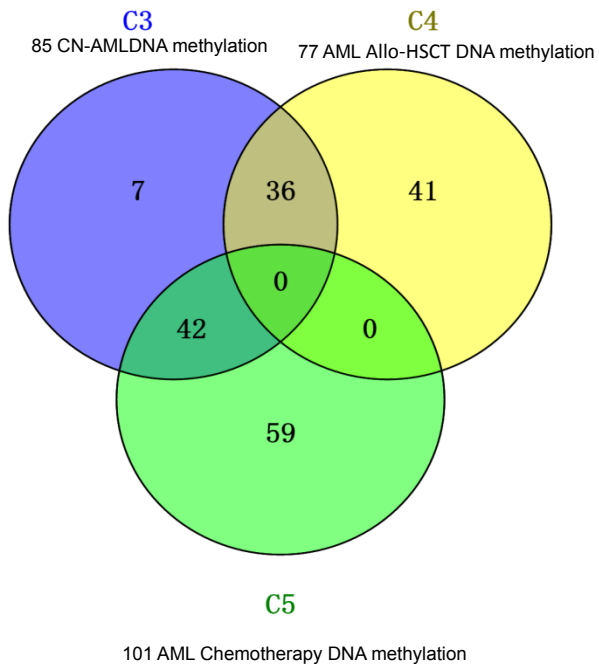
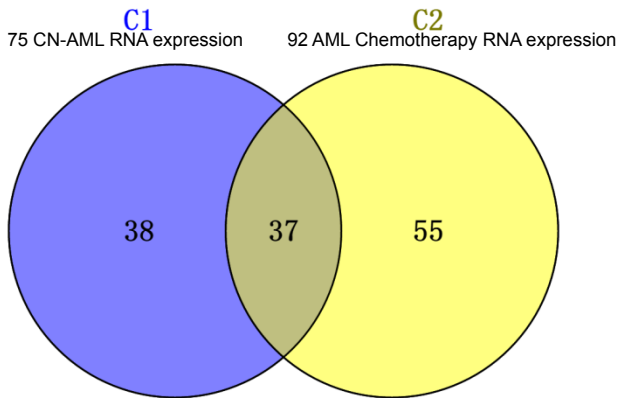
**ACTL10  
(3 dataset)**



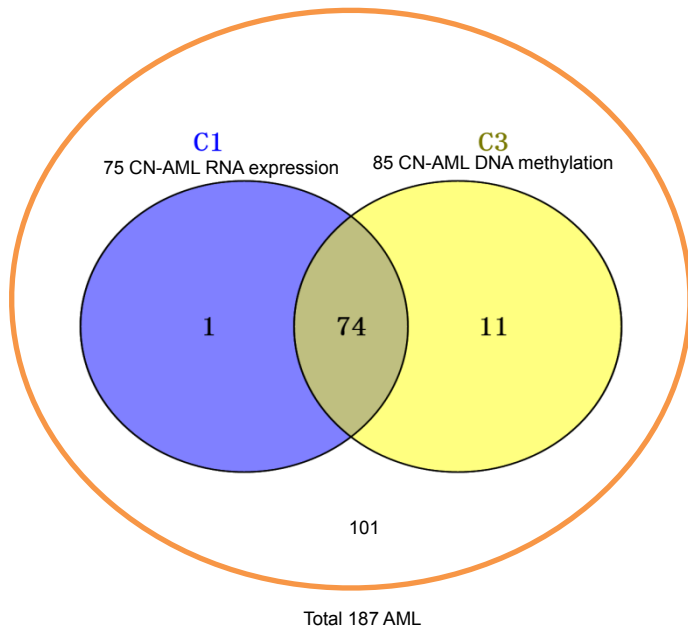
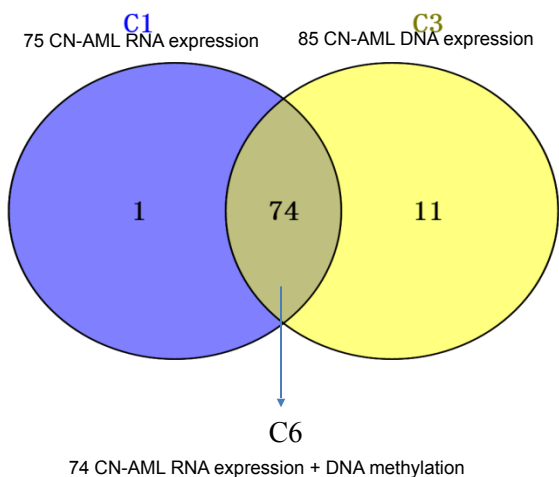
**High RNA expression of ACTL10 and low DNA methylation of ACTL10 predict good prognosis in CN-AML patients**



# Supplementary Figure 2



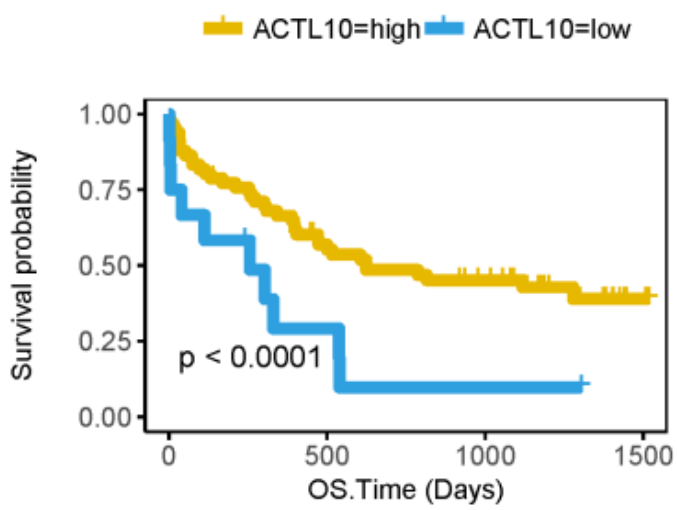
A: Overlap of patients with RNA expression    B: Overlap of DNA methylation patients



C: Overlap of CN-AML patients

D: The proportion of CN-AML patients in all patients

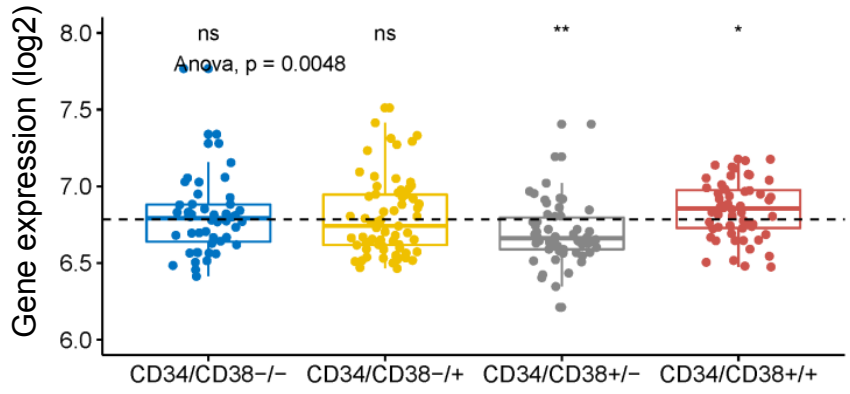
# Supplementary Figure 3



Number at risk

OS.Time (Days)	0	500	1000	1500
ACTL10=high	66	34	24	2
ACTL10=low	12	3	1	0

# Supplementary Figure 4



Supplement Table 1: Information of all patients participating in each groups in the TCGA dataset.

Number	Sample_ID	Karyotype	RNA-seq	DNA-methy	Therapy	Participating group				
1	TCGA-AB-2805-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
2	TCGA-AB-2811-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
3	TCGA-AB-2816-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
4	TCGA-AB-2818-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
5	TCGA-AB-2824-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
6	TCGA-AB-2826-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
7	TCGA-AB-2833-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
8	TCGA-AB-2835-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
9	TCGA-AB-2836-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
10	TCGA-AB-2837-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
11	TCGA-AB-2851-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
12	TCGA-AB-2853-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
13	TCGA-AB-2866-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
14	TCGA-AB-2867-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
15	TCGA-AB-2869-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
16	TCGA-AB-2873-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
17	TCGA-AB-2879-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
18	TCGA-AB-2900-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
19	TCGA-AB-2903-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
20	TCGA-AB-2919-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
21	TCGA-AB-2925-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
22	TCGA-AB-2927-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
23	TCGA-AB-2932-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6

24	TCGA-AB-2938-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
25	TCGA-AB-2948-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
26	TCGA-AB-2964-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
27	TCGA-AB-2971-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
28	TCGA-AB-2972-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
29	TCGA-AB-2973-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
30	TCGA-AB-2977-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
31	TCGA-AB-2984-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
32	TCGA-AB-2987-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
33	TCGA-AB-2988-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
34	TCGA-AB-2996-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
35	TCGA-AB-3002-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
36	TCGA-AB-3006-03	Normal	Yes	Yes	Chemotherapy	C1	C2	C3	C5	C6
37	TCGA-AB-2812-03	Normal	Yes	Yes	HTSC	C1	C3	C4	C6	
38	TCGA-AB-2839-03	Normal	Yes	Yes	HTSC	C1	C3	C4	C6	
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44	TCGA-AB-2896-03	Normal	Yes	Yes	HTSC	C1	C3	C4	C6	
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73	TCGA-AB-2967-03	Normal	Yes	Yes	unknown	C1	C3	C6	
74	TCGA-AB-2979-03	Normal	Yes	Yes	unknown	C1	C3	C6	
75	TCGA-AB-2859-03	Normal	Yes		Chemotherapy	C1	C2		

76	TCGA-AB-2803-03	t(15;17)/PML-RARA	Yes	Yes	Chemotherapy	C2	C5
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78	TCGA-AB-2813-03	Complex	Yes	Yes	Chemotherapy	C2	C5
79	TCGA-AB-2819-03	t(8;21)/RUNX1-RUNX1T1	Yes	Yes	Chemotherapy	C2	C5
80	TCGA-AB-2820-03	Complex	Yes	Yes	Chemotherapy	C2	C5
81	TCGA-AB-2823-03	t(15;17)/PML-RARA	Yes	Yes	Chemotherapy	C2	C5
82	TCGA-AB-2828-03	inv(16)/CBFB-MYH11	Yes	Yes	Chemotherapy	C2	C5
83	TCGA-AB-2830-03	Others	Yes	Yes	Chemotherapy	C2	C5
84	TCGA-AB-2832-03	11q23/MLL trans	Yes	Yes	Chemotherapy	C2	C5
85	TCGA-AB-2834-03	11q23/MLL trans	Yes	Yes	Chemotherapy	C2	C5
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87	TCGA-AB-2840-03	t(15;17)/PML-RARA	Yes	Yes	Chemotherapy	C2	C5
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90	TCGA-AB-2844-03	11q23/MLL trans	Yes	Yes	Chemotherapy	C2	C5
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92	TCGA-AB-2858-03	t(8;21)/RUNX1-RUNX1T1	Yes	Yes	Chemotherapy	C2	C5
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94	TCGA-AB-2862-03	t(15;17)/PML-RARA	Yes	Yes	Chemotherapy	C2	C5
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97	TCGA-AB-2875-03	t(8;21)/RUNX1-RUNX1T1	Yes	Yes	Chemotherapy	C2	C5
98	TCGA-AB-2882-03	-7	Yes	Yes	Chemotherapy	C2	C5
99	TCGA-AB-2885-03	Complex	Yes	Yes	Chemotherapy	C2	C5
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101	TCGA-AB-2888-03	inv(16)/CBFB-MYH11	Yes	Yes	Chemotherapy	C2	C5

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105	TCGA-AB-2899-03	Others	Yes	Yes	Chemotherapy	C2	C5
106	TCGA-AB-2908-03	Complex	Yes	Yes	Chemotherapy	C2	C5
107	TCGA-AB-2914-03	inv(16)/CBFB-MYH11	Yes	Yes	Chemotherapy	C2	C5
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130	TCGA-AB-2827-03	Normal		Yes	HTSC	C3	C4
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132	TCGA-AB-2989-03	Normal		Yes	HTSC	C3	C4
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135	TCGA-AB-2923-03	Normal		Yes	Chemotherapy	C3	C5
136	TCGA-AB-2947-03	Normal		Yes	Chemotherapy	C3	C5
137	TCGA-AB-2968-03	Normal		Yes	Chemotherapy	C3	C5
138	TCGA-AB-2974-03	Normal		Yes	Chemotherapy	C3	C5
139	TCGA-AB-2865-03	21	Yes		Chemotherapy	C2	
140	TCGA-AB-2831-03	Normal		Yes	unknown	C3	
141	TCGA-AB-2922-03	Normal		Yes	unknown	C3	
142	TCGA-AB-2804-03	t(15;17)/PML-RARA		Yes	HTSC	C4	
143	TCGA-AB-2806-03	t(8;21)/RUNX1-RUNX1T1		Yes	HTSC	C4	
144	TCGA-AB-2808-03	Others		Yes	HTSC	C4	
145	TCGA-AB-2814-03	Others		Yes	HTSC	C4	
146	TCGA-AB-2815-03	inv(16)/CBFB-MYH11		Yes	HTSC	C4	
147	TCGA-AB-2817-03	t(9;22)/BCR-ABL1		Yes	HTSC	C4	
148	TCGA-AB-2821-03	8		Yes	HTSC	C4	
149	TCGA-AB-2822-03	8		Yes	HTSC	C4	
150	TCGA-AB-2846-03	inv(16)/CBFB-MYH11		Yes	HTSC	C4	
151	TCGA-AB-2847-03	Others		Yes	HTSC	C4	
152	TCGA-AB-2849-03	Complex		Yes	HTSC	C4	
153	TCGA-AB-2855-03	Complex		Yes	HTSC	C4	

154	TCGA-AB-2857-03	Complex	Yes	HTSC	C4
155	TCGA-AB-2860-03	Complex	Yes	HTSC	C4
156	TCGA-AB-2874-03	-7	Yes	HTSC	C4
157	TCGA-AB-2876-03	Others	Yes	HTSC	C4
158	TCGA-AB-2878-03	Complex	Yes	HTSC	C4
159	TCGA-AB-2881-03	nv(16)/CBFB-MYH11	Yes	HTSC	C4
160	TCGA-AB-2883-03	11q23/MLL trans	Yes	HTSC	C4
161	TCGA-AB-2887-03	Others	Yes	HTSC	C4
162	TCGA-AB-2889-03	inv(16)/CBFB-MYH11	Yes	HTSC	C4
163	TCGA-AB-2891-03	Complex	Yes	HTSC	C4
164	TCGA-AB-2892-03	nv(16)/CBFB-MYH11	Yes	HTSC	C4
165	TCGA-AB-2893-03	11q23/MLL trans	Yes	HTSC	C4
166	TCGA-AB-2898-03	8	Yes	HTSC	C4
167	TCGA-AB-2901-03	t(9;22)/BCR-ABL1	Yes	HTSC	C4
168	TCGA-AB-2904-03	Complex	Yes	HTSC	C4
169	TCGA-AB-2911-03	11q23/MLL trans	Yes	HTSC	C4
170	TCGA-AB-2912-03	8	Yes	HTSC	C4
171	TCGA-AB-2913-03	8	Yes	HTSC	C4
172	TCGA-AB-2916-03	Others	Yes	HTSC	C4
173	TCGA-AB-2917-03	Complex	Yes	HTSC	C4
174	TCGA-AB-2918-03	11p15/NUP98 trans	Yes	HTSC	C4
175	TCGA-AB-2920-03	Complex	Yes	HTSC	C4
176	TCGA-AB-2930-03	11p15/NUP98 trans	Yes	HTSC	C4
177	TCGA-AB-2939-03	Complex	Yes	HTSC	C4
178	TCGA-AB-2940-03	21	Yes	HTSC	C4
179	TCGA-AB-2945-03	Complex	Yes	HTSC	C4

<b>180</b>	TCGA-AB-2946-03	Others	Yes	HTSC	C4
<b>181</b>	TCGA-AB-2949-03	Complex	Yes	HTSC	C4
<b>182</b>	TCGA-AB-2997-03	t(15;17)/PML-RARA	Yes	HTSC	C4
<b>183</b>	TCGA-AB-2829-03	Others	Yes	Chemotherapy	C5
<b>184</b>	TCGA-AB-2870-03	inv(16)/CBFB-MYH11	Yes	Chemotherapy	C5
<b>185</b>	TCGA-AB-2906-03	t(15;17)/PML-RARA	Yes	Chemotherapy	C5
<b>186</b>	TCGA-AB-2957-03	inv(16)/CBFB-MYH11	Yes	Chemotherapy	C5
<b>187</b>	TCGA-AB-2982-03	t(15;17)/PML-RARA	Yes	Chemotherapy	C5

Note: RNA-seq: Patients with RNA sequencing data. DNA-methy: Patients with DNA methylation data. HSCT: Patients receiving Allo-HSCT. C1: 75 CN-AML patients who compared survival time (EFS and OS) between ACTL10 RNA-high expression group and ACTL10 RNA-low expression group. C2: 92 AML patients received chemotherapy who compared clinical prognosis between ACTL10 RNA-high expression group and ACTL10 RNA-low expression group. C3: 85 CN-AML patients who compared clinical prognosis between ACTL10 DNA methylation-high group and the ACTL10 DNA methylation-low group. C4: 77 AML patients received Allo-HSCT who compared clinical prognosis between ACTL10 DNA methylation-high group and the ACTL10 DNA methylation-low group. C5: 101 AML patients received chemotherapy who compared clinical prognosis between ACTL10 DNA methylation-high group and the ACTL10 DNA methylation-low group. C6: 74 CN-AML who integrated ACTL10 RNA expression data with ACTL10 DNA methylation data.