

**Philadelphia chromosome-negative B-cell acute lymphoblastic leukaemia with
kinase fusions in Taiwan**

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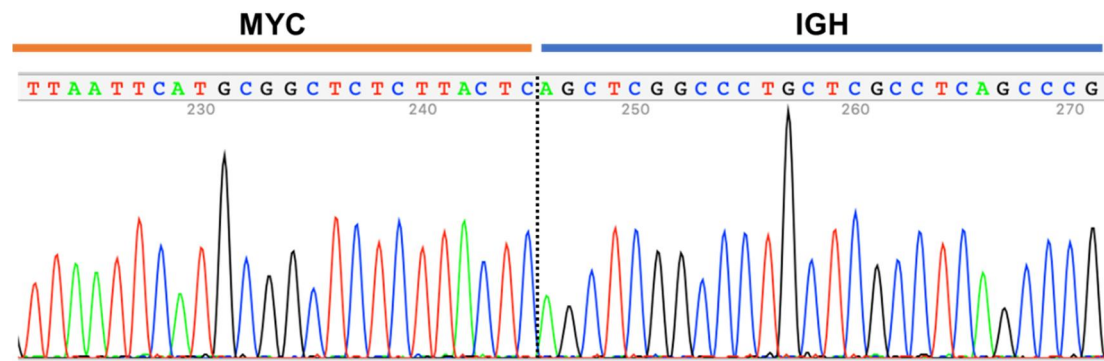
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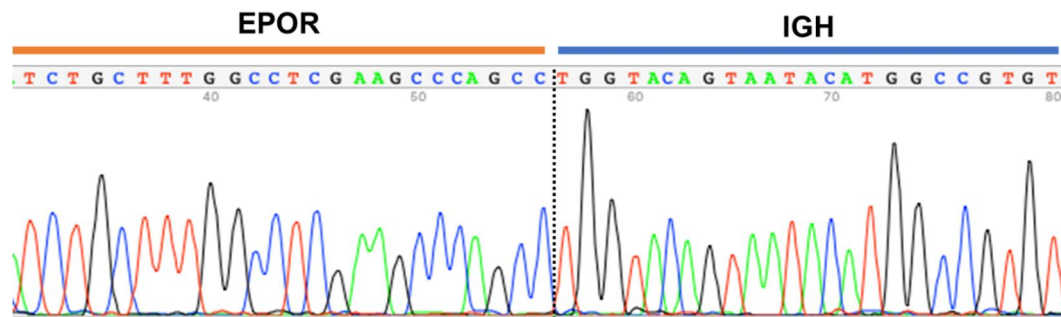
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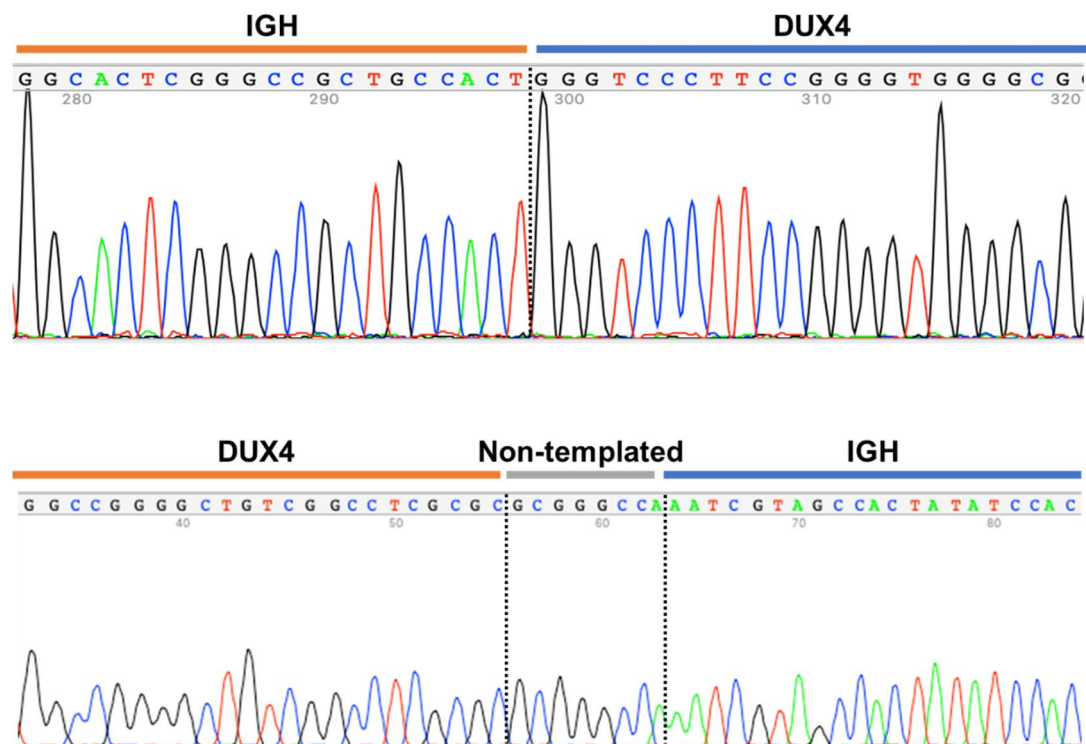
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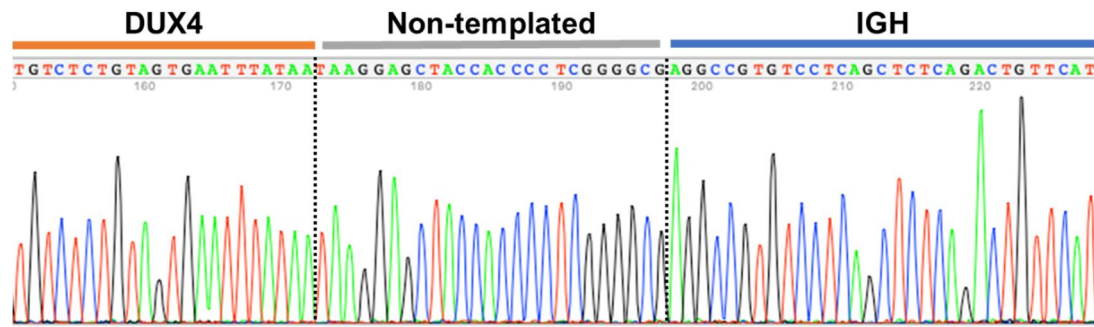


(B)

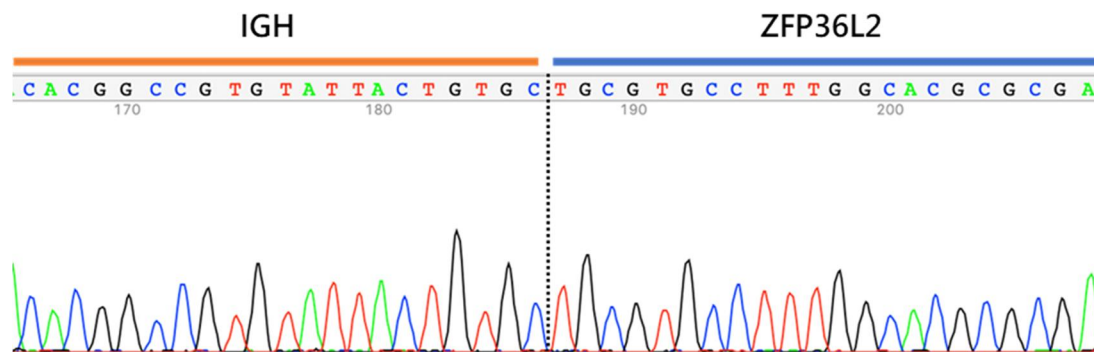


(C)





(D)



Supplementary Figure 1. Examples of (A) *MYC-IGH* (B) *EPOR-IGH* (C) of *DUX4-IGH* and (D) *IGH-ZFP36L2* fusions.

Supplementary Table 1. PCR primers for fusion genes.

Fusion gene	PCR primers (5' to 3')
<i>ETV6-RUNX1</i>	F: CGTGGATTTCAAACAGTCCA R: CATTGCCAGCCATCACAGTGAC
<i>KMT2A-AFF1</i>	F: AAAGCAGCCTCCACCACC R: GGTTACAGAACTGACATGCTG
<i>KMT2A-MLLT3</i>	F: AAAGCAGCCTCCACCACC R: GACCTTGTTGCCTGGTCTGGG
<i>KMT2A-MLLT10</i>	F: AGCCTCCTCCACGAAAGCCC R: CCCTTTGACCTGAGCTGTGAGC
<i>KMT2A-EPS15</i>	F: AGTCAGAAACCTACCCCATCAGCAA R: TGGGCCTCCTCAGCACATTTCT
<i>BCR-ABL1</i> (p190)	F: CGGTTGTCGTGTCCGAGG R: AGATACTCAGCGGCATTG
<i>BCR-ABL1</i> (p210)	F: CGATGAGGAGCTGGACGCTTT R: CTGCTCTCACTCTCACGCACC
<i>TCF3-PBX1</i>	F: CAGCCTCATGCACAACCAC R: TAACTCCTCTTTGGCTTCCTC
<i>P2RY8-CRLF2</i>	F: GCGGCCGCCTTTGCAAGGTTGC R: GTCTAGGAGGCACCCCGAAGTGTGA
<i>TCF3-HLF</i> (Pt439, Pt784)	F: GCCTGGCAGGAACGTCACAG R: TCAAGTCAGCCACCTCCTGGC
<i>CUX1-NUTM1</i> (Pt734)	F: CTGACCCCCGAGCAGTACGA R: CCCCAGTGGCCAAGTGAGTC
<i>EPOR-IGH</i> (Pt362)	F: CCTGGTGGCAGTGTGGACAT R: TGAAGGGCCGATTCACAATCT
<i>CNTRL-ABL1</i> (Pt628)	F: GTGAGCAGACCCGACTCCAGA R: GTCCGTGCGTTCCATCTCCC
<i>DUX4-IGH</i> (Pt50)	F: CAGAGCTGGTCAAAGGTGGA R: TTGTAAAGGCCACAGGCAG
<i>DUX4-IGH</i> (Pt777)	F: TATGCCATTTTCTCCCTCTATTCTT R: GGTATTAATTGGAATGGTGGTAGCA
<i>DUX4-IGH</i> (Pt886)	F: GGAGGGCAAAGCCACGC R: AACTGTGCATGTCTGGTACCTAAG
<i>IGH-ZFP36L2</i> (Pt787)	F: GAAGCCCGAGAAGCTGAGG R: GGGTTCACCGTCAGTAGCAA
<i>MYC-IGH</i> (Pt601)	F: CCCTGGGACTCTTGATCAAAG R: TTGTATCAGGCTAAGCCAAGCT
<i>MYC-IGH</i> (Pt786)	F: CACCGAAGTCCACTTGCCTTT R: GTTTGGGCTGAGCTGGGTTT
<i>MYC-IGH</i> (Pt797)	F: CGCTATTGACACTTTTCTCAGAGT R: CCGAGCCAGGCTGGTTT

F, forward; R, reverse.

Supplementary Table 2. IGH capture library design.

Gene name	Chr.	Target-captured regions (hg38)		Size (bp)
		Start	End	
<i>IGH@</i>	14	105,566,277	106,879,844	1,313,567
<i>BCL2</i>	18	63,123,346	63,320,128	196,782
<i>CEBPA</i>	19	33,299,934	33,302,564	2,630
<i>CEBPB</i>	20	50,190,583	50,192,690	2,107
<i>CEBPD</i>	8	47,736,909	47,739,086	2,177
<i>CEBPE</i>	14	23,117,304	23,119,985	2,681
<i>CEBPG</i>	19	33,373,330	33,382,686	9,356
<i>CRLF2</i>	X	1,187,549	1,212,815	25,266
<i>EPOR</i>	19	11,377,205	11,384,342	7,137
<i>ID4</i>	6	19,837,370	19,842,200	4,830
<i>IGF2BP1</i>	17	48,997,412	49,056,145	58,733
<i>IGK@</i>	2	89,851,758	90,235,368	383,610
<i>TAL1</i>	1	47,216,290	47,232,373	16,083
<i>TRA@</i>	14	21,621,904	22,552,132	930,228
<i>DUX4</i>	4	190,173,669	190,185,942	12,273
<i>hsa-mir125b-1</i>	11	122,099,757	122,099,844	87
<i>hsa-mir125b-2</i>	21	16,590,237	16,590,325	88

@, locus; Chr, chromosome.

Supplementary Table 3. Comparison of the clinical characteristics of studied and non-studied cohorts

	Studied	Non-studied	
	n = 212	n = 142	P-value [#]
Gender			0.38
Male	121	74	
Female	91	68	
Age (years)			0.36
<1	11	5	
1-9	144	113	
>10	57	24	
Median	5.3	5	
Range	0.01-18.0	0.1-17.3	
WBC ($\times 10^9/L$)			0.0002***
<50	151	115	
50-100	27	8	
>100	34	19	
Median	18.6	9.7	
Range	0.63-1173.2	0.23-1163.4	
Outcome			0.14
Living	137	105	
Relapse	12	4	
Deceased	63	33	

[#]: P-value was calculated using Fisher's exact test or the Mann-Whitney test for age and WBC. WBC, white blood cells.

Supplementary Table 4. Immunophenotypic information and karyotypes of patients with non-Ph-like fusions.

ID	CD2	CD3	CD5	CD7	CD10	CD13	CD15	CD19	CD20	CD33	CD34	CD56	CD79a	HLADR	cIg	Kappa	Lambda	Karyotypes
171	2.2	1.1	NA	0.7	96.6	0.4	0.6	95.4	19.1	13.7	68.7	NA	NA	95.4	90.4	0.2	0.7	46,XY[3]
184	4.3	1.4	NA	1.9	97.5	52.3	1.2	96.8	96.7	2.2	46.3	NA	NA	95.4	2.1	5.1	2	46,XY[2]/46,XY,+9q,11q, acentric(9;20)[17]/46,XY, acentric(9;20)[1]
299	NA	0.5	0.6	0.2	99.6	13.9	2.1	97.9	47.2	26.5	32.7	0.4	NA	93.1	NA	0.2	2	46,XY,t(1,7)
362	1.2	1.1	NA	1	98.3	2.6	NA	98.4	37.5	30.5	95.1	6.5	NA	89.7	0.1	NA	NA	46,XY[5]/45,XY,-4p,-7,+9p, -10p,-10q,-14q,+15p[3]/46, XY,+9p,-10p,-10q,-14q[12]
628	1.9	0.9	NA	1.1	98.8	10.5	10.7	99.2	29.3	5.8	98.7	1	98.5	99.7	13.7	3.5	2.2	47,XY,+9[19]/47,idem,+18, -21[1]
705	0.2	0.4	NA	0.1	89.2	2.4	30.6	89.3	88.1	0.8	65.4	1.2	94.3	83.5	0.2	0.3	0	46,XY,t(8;9)(q11;p13)[22]
829	0.5	0.5	0.3	1.1	72.5	4.6	12.2	72.7	13.3	7	76.4	0.8	78.8	59.8	1.9	0.3	0.3	46XY[20]

NA, data not available.