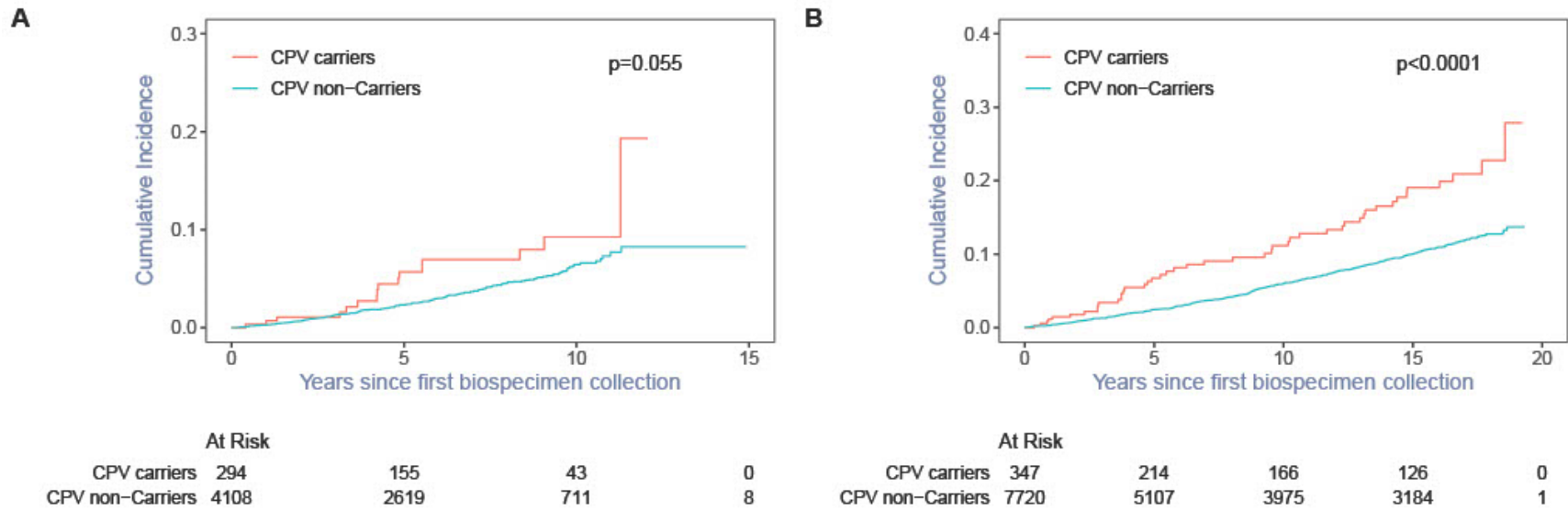
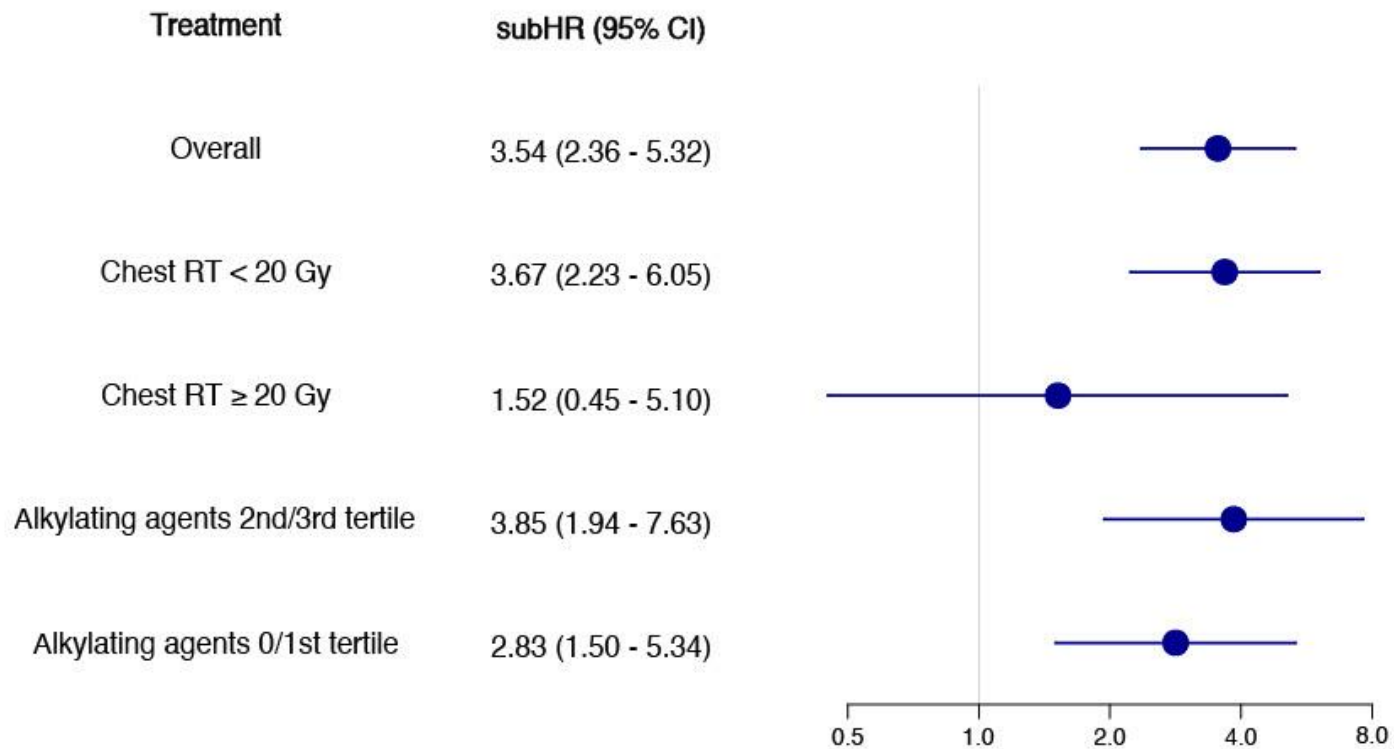


Supplement Appendix

Appendix 1. Supplementary Figures



Supplementary Figure 1. Cumulative incidence of all-cause late-mortality among CPV carriers vs. non-carriers in (A) SJLIFE; and (B) CCSS.



**Supplementary Figure 2. Adjusted associations of CPV status with SMN-related late-mortality by treatment exposures.** Chest-RT<20Gy: 9698 survivors with 124 SMN-related mortality and 218 other-cause mortality; chest-RT≥20Gy: 2123 survivors with 124 SMN-related mortality and 180 other-cause mortality; Alkylating agents 0 or 1<sup>st</sup> tertile: 7646 survivors with 119 SMN-related mortality and 221 other-cause mortality; Alkylating agents 2nd/3rd tertiles: 3935 survivors with 109 SMN-related mortality and 151 other-cause mortality. Abbreviation: subHR, subdistribution hazard ratio.

**Appendix 2. Supplementary Tables**

**Supplementary Table 1. Correlation between body-region specific radiation therapy variables (categorical based on radiation therapy dose).**

Continuous Variable	Ordinal Variable	N	Correlation	Standard Error	Wald Test		Likelihood Ratio Test	
					Chi-Square	P-value	Chi-Square	P-value
Cranial-RT	Chest-RT	11881	0.72	0.005	20380.3829	<0.0001	7172.6616	<0.0001
Abdomen-RT	Chest-RT	11896	0.90	0.002	164764.261	<0.0001	15015.4163	<0.0001
Pelvic-RT	Chest-RT	11895	0.88	0.002	131472.527	<0.0001	14189.7287	<0.0001
Neck-RT	Chest-RT	11898	0.91	0.002	200283.998	<0.0001	14896.3169	<0.0001
Abdomen- and Pelvic-RT	Chest-RT	11898	0.88	0.003	118746.729	<0.0001	13740.7191	<0.0001

**Supplementary Table 2. Population characteristics for survivors in the CCSS original and expansion cohorts.**

Variable	Category	Original cohort, N=5228 (%)			Expansion cohort, N=2839 (%)		
		Overall	CPV carriers	CPV non-carriers	Overall	CPV carriers	CPV non-carriers
<b>Race/Ethnicity</b>	Non-Hispanic White	4559 (87.2)	189 (86.7)	4370 (87.2)	2315 (81.5)	101 (78.3)	2214 (81.7)
	Non-Hispanic Black	108 (2.1)	4 (1.8)	104 (2.1)	116 (4.1)	8 (6.2)	108 (4.0)
	Other	561 (10.7)	25 (11.5)	536 (10.7)	408 (14.4)	20 (15.5)	388 (14.3)
<b>Sex</b>	Female	2717 (52.0)	118 (54.1)	2599 (51.9)	1490 (52.5)	66 (51.2)	1424 (52.5)
	Male	2511 (48.0)	100 (45.9)	2411 (48.1)	1349 (47.5)	63 (48.8)	1286 (47.5)
<b>Diagnosis</b>	ALL	1434 (27.4)	60 (27.5)	1374 (27.4)	515 (18.1)	9 (7.0)	506 (18.7)
	CNS	713 (13.6)	41 (18.8)	672 (13.4)	718 (25.3)	58 (45.0)	660 (24.4)
	Hodgkin lymphoma	695 (13.3)	14 (6.4)	681 (13.6)	342 (12.0)	8 (6.2)	334 (12.3)
	Other malignancies*	2386 (45.6)	103 (47.2)	2283 (45.6)	1264 (44.5)	54 (41.9)	1210 (44.6)
<b>Chest-RT</b>	None	1764 (33.7)	92 (42.2)	1672 (33.4)	1637 (57.7)	70 (54.3)	1567 (57.8)
	>0 to <20	2068 (39.6)	81 (37.2)	1987 (39.7)	628 (22.1)	37 (28.7)	591 (21.8)
	>=20	1036 (19.8)	27 (12.4)	1009 (20.1)	408 (14.4)	14 (10.9)	394 (14.5)
	Unknown	360 (6.9)	18 (8.3)	342 (6.8)	166 (5.8)	8 (6.2)	158 (5.8)
<b>Alkylating agents</b>	No	2548 (48.7)	112 (51.4)	2436 (48.6)	1232 (43.4)	71 (55.0)	1161 (42.8)
	Yes	2076 (39.7)	75 (34.4)	2001 (39.9)	1405 (49.5)	53 (41.1)	1352 (49.9)
	Unknown	604 (11.6)	31 (14.2)	573 (11.4)	202 (7.1)	5 (3.9)	197 (7.3)
<b>Anthracyclines</b>	No	3151 (60.3)	127 (58.3)	3024 (60.4)	1217 (42.9)	78 (60.5)	1139 (42.0)
	Yes	1645 (31.5)	70 (32.1)	1575 (31.4)	1457 (51.3)	45 (34.9)	1412 (52.1)
	Unknown	432 (8.3)	21 (9.6)	411 (8.2)	165 (5.8)	6 (4.7)	159 (5.9)
<b>Epipodophyllotoxins</b>	No	4753 (90.9)	189 (86.7)	4564 (91.1)	2057 (72.5)	97 (75.2)	1960 (72.3)
	Yes	174 (3.3)	9 (4.1)	165 (3.3)	644 (22.7)	29 (22.5)	615 (22.7)
	Unknown	301 (5.8)	20 (9.2)	281 (5.6)	138 (4.9)	3 (2.3)	135 (5.0)
<b>Age at diagnosis</b>	Overall	7.2 (3.2-13.6)	5.8 (2.8-14.0)	7.3 (3.2-13.6)	7.7 (3.4-13.5)	5.1 (2.1-10.2)	7.9 (3.5-13.5)
	0-4	2022 (38.7)	98 (45.0)	1924 (38.4)	990 (34.9)	64 (49.6)	926 (34.2)
	5-9	1169 (22.4)	43 (19.7)	1126 (22.5)	683 (24.1)	31 (24.0)	652 (24.1)
	10-14	1077 (20.6)	37 (17.0)	1040 (20.8)	692 (24.4)	24 (18.6)	668 (24.6)
	>=15	960 (18.4)	40 (18.3)	920 (18.4)	474 (16.7)	10 (7.8)	464 (17.1)
<b>Age at first biospecimen, median (IQR)</b>		30.8 (24.5-37.1)	29.9 (22.2-36.8)	30.8 (24.6-37.1)	30.2 (25.8-35.1)	27.7 (24.0-32.2)	30.4 (25.9-35.2)
<b>Time from diagnosis to the first biospecimen, median (IQR)</b>		22.3 (17.9-26.8)	21.5 (16.9-26.1)	22.3 (18.0-26.8)	22.1 (19.0-25.3)	22.2 (18.8-24.7)	22.1 (19.1-25.3)

Variable	Category	Original cohort, N=5228 (%)			Expansion cohort, N=2839 (%)		
		Overall	CPV carriers	CPV non-carriers	Overall	CPV carriers	CPV non-carriers
<b>Follow up time since the first biospecimen, median (IQR)</b>	Censoring	16.3 (14.3-17.6)	16.1 (14.2-17.7)	16.3 (14.3-17.6)	2.0 (1.2-2.4)	2.0 (1.2-2.4)	2.0 (1.2-2.4)
	Death	9.1 (4.9-13.1)	8.7 (3.8-13.1)	9.1 (5.1-13.1)	1.8 (1.0-3.2)	1.8 (0.9-3.7)	2.1 (1.0-3.1)
<b>Attained age, median (IQR)</b>	Censoring	45.4 (39.6-51.2)	43.7 (38.0-49.1)	45.5 (39.7-51.3)	32.6 (28.2-37.5)	30.2 (26.2-34.6)	32.7 (28.3-37.6)
	Death	44.4 (37.7-51.3)	41.7 (34.7-46.4)	44.9 (38.0-51.8)	30.6 (29.0-38.8)	30.5 (24.4-43.1)	30.9 (29.2-38.5)

Abbreviations: ALL, Acute lymphoblastic leukemia; CNS, Central nervous system; CPV, cancer predisposing variant; RT, radiotherapy; SJLIFE, St. Jude Lifetime Cohort Study; CCSS, Childhood Cancer Survivor Study; IQR, Inter-Quartile Range. \*Other malignancies included acute myeloid leukemia, germ cell tumor, neuroblastoma, non-Hodgkin lymphoma, retinoblastoma, sarcoma, Wilms tumor and other rare types.

**Supplementary Table 3. Populations characteristics for sequenced survivors and not-sequenced survivors in the SJLIFE study.**

Variable	Category	Sequenced, n=4402 (%)	Not-Sequenced, n=961 (%)	P-value (Chi-squared test)
Race	Non-Hispanic White	3463 (78.7)	669 (69.6)	<0.0001
	Non-Hispanic Black	700 (15.9)	169 (17.6)	
	Other	237 (5.4)	123 (12.8)	
Sex	Female	2090 (47.5)	458 (47.7)	0.92
	Male	2312 (52.5)	503 (52.3)	
Diagnosis	Acute lymphoblastic leukemia	1259 (28.6)	252 (26.2)	0.00017
	Central nervous system (CNS)	648 (14.7)	158 (16.4)	
	Hodgkin lymphoma	467 (10.6)	63 (6.6)	
	Other malignancies	2028 (46.1)	488 (50.8)	
Follow-up time from diagnosis, mean (SD)		27.13 (16.2)	19.84 (10.1)	<0.0001 <sup>#</sup>
SMN	Yes	298 (6.8)	89 (9.3)	0.0068
Late-Mortality	SMN-related	44 (1.0)	13 (1.4)	0.089
	Other-cause	103 (2.3)	12 (1.2)	
	Unknown-cause	27 (0.6)	4 (0.4)	

Abbreviations: SJLIFE, the St. Jude Lifetime Cohort Study; SD, standard deviation; SMN, Subsequent Malignant Neoplasm. <sup>#</sup> t-test

**Supplementary Table 4. Populations characteristics for sequenced survivors and not-sequenced survivors in the CCSS study.**

Variable	Category	Sequenced, n=8067 (%)	Not-Sequenced, n=15791 (%)	P-value Chi-squared test)
Race	Missing	0 (0.0)	6 (0.0)	
	Non-Hispanic White	6874 (85.2)	12149 (76.9)	<0.0001
	Non-Hispanic Black	224 (2.8)	1280 (8.1)	
	Other	969 (12.0)	2356 (14.9)	
Sex	Missing	0 (0.0)	1 (0.0)	
	Female	4207 (52.2)	7011 (44.4)	<0.0001
	Male	3860 (47.8)	8779 (55.6)	
Diagnosis	Acute lymphoblastic leukemia	1949 (24.2)	4231 (26.8)	<0.0001
	Central nervous system (CNS)	1431 (17.7)	2647 (16.8)	
	Hodgkin lymphoma	1037 (12.9)	1827 (11.6)	
	Other malignancies	3650 (45.2)	7086 (44.9)	
Follow-up time from diagnosis, mean (SD)		32.69 (7.62)	29.89 (7.95)	<0.0001 <sup>#</sup>
SMN	Yes	864 (10.7)	1106 (7.0)	<0.0001
Late-Mortality	SMN-related	219 (2.7)	481 (3.0)	<.00001
	Other-cause	323 (4.0)	1077 (6.8)	
	Unknown-cause	49 (0.6)	125 (0.8)	

Abbreviations: CCSS, the Childhood Cancer Survivor Study; SD, standard deviation; SMN, Subsequent Malignant Neoplasm. <sup>#</sup>t-test

**Supplementary Table 5. Pathogenic/likely pathogenic variants in 60 cancer predisposition genes (SJCPG60) in SJLIFE and CCSS cohorts.**

ID	Chr	Pos	Chr_Allele	Alternative_Allele	Gene	Diagnosis	Cohort	SMN	SMN_Mortality
SJALL019712	chr2	47799610	AAAG	-	<i>MSH6</i>	ALL	SJLIFE	No	No
SJALL003120	chr17	7673780	T	A	<i>TP53</i>	ALL	SJLIFE	Yes	No
SJALL018429	chr16	23637886	ACAA	-	<i>PALB2</i>	ALL	SJLIFE	No	No
SJALL005325	chr17	7674221	G	A	<i>TP53</i>	ALL	SJLIFE	No	No
SJALL019066	chr13	32339288	AAAG	-	<i>BRCA2</i>	ALL	SJLIFE	No	No
SJALL019044	chr17	7674250	C	T	<i>TP53</i>	ALL	SJLIFE	No	No
SJALL018926	chr17	7674217	C	G	<i>TP53</i>	ALL	SJLIFE	No	No
SJALL018955	chr16	23621362	C	T	<i>PALB2</i>	ALL	SJLIFE	No	No
SJALL041235	chr5	224432	C	T	<i>SDHA</i>	ALL	SJLIFE	No	No
SJALL041181	chr7	5997364	G	T	<i>PMS2</i>	ALL	SJLIFE	No	No
SJALL041236	chr17	43124028	CT	-	<i>BRCA1</i>	ALL	SJLIFE	No	No
SJALL041385	chr17	43070932	TCTTCTGGGG TCAGGCCAG	-	<i>BRCA1</i>	ALL	SJLIFE	No	No
SJALL041423	chr9	37020779	-	A	<i>PAX5</i>	ALL	SJLIFE	No	No
SJALL041270	chr13	32339422	-	A	<i>BRCA2</i>	ALL	SJLIFE	No	No
SJALL042468	chr16	23621362	C	T	<i>PALB2</i>	ALL	SJLIFE	No	No
SJALL005157	chr17	7676153	-	G	<i>TP53</i>	ALL	SJLIFE	Yes	No
SJALL042490	chr10	87863635	C	T	<i>PTEN</i>	ALL	SJLIFE	No	No
SJALL041882	chr13	32339483	TATG	-	<i>BRCA2</i>	ALL	SJLIFE	No	No
SJALL041892	chr10	43119576	G	A	<i>RET</i>	ALL	SJLIFE	No	No
SJALL042683	chr9	21248101- 22074100			<i>CDKN2A</i>	ALL	SJLIFE	No	No
SJALL041429	chr13	32340301	T	-	<i>BRCA2</i>	ALL	SJLIFE	No	No
SJALL021915	chr17	43063346	TTTC	-	<i>BRCA1</i>	ALL	SJLIFE	No	No
SJAML018550	chr2	47800714	C	T	<i>MSH6</i>	AML	SJLIFE	No	No
SJAML019107	chr2	47799224	G	A	<i>MSH6</i>	AML	SJLIFE	No	No
SJAML030024	chr19	32305801- 33702900			<i>CEBPA</i>	AML	SJLIFE	No	No
SJCNS017897	chr2	47803473	C	T	<i>MSH6</i>	CNS	SJLIFE	No	No
SJCNS018579	chr17	43093074	G	-	<i>BRCA1</i>	CNS	SJLIFE	Yes	No
SJCNS018569	chr17	31223568	G	A	<i>NF1</i>	CNS	SJLIFE	No	No



SJCNS019165	chr17	31259067	A	-	<i>NF1</i>	CNS	SJLIFE	Yes	No
SJCNS041009	chr17	31265243	A	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJCNS041474	chr12	25245328	C	G	<i>KRAS</i>	CNS	SJLIFE	No	No
SJCNS041485	chr16	23635788	AG	-	<i>PALB2</i>	CNS	SJLIFE	No	No
SJCNS041476	chr17	43091827	TTTAC	-	<i>BRCA1</i>	CNS	SJLIFE	No	No
SJCNS041957	chr17	31206360	C	T	<i>NF1</i>	CNS	SJLIFE	No	No
SJCNS041907	chr17	31219041	A	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJCNS043967	chr14	95117714	A	-	<i>DICER1</i>	CNS	SJLIFE	No	No
SJCNS044168	chr17	31227282	-	A	<i>NF1</i>	CNS	SJLIFE	No	No
SJEWS041505	chr17	43094317	GATTCAGACT CCCCATCATG TGAGTCATCA GAACCTAACA	-	<i>BRCA1</i>	EWS	SJLIFE	No	No
SJGCT019228	chr16	23621427	A	-	<i>PALB2</i>	GCT	SJLIFE	No	No
SJHL019788	chr1	17028712	-	C	<i>SDHB</i>	HL	SJLIFE	Yes	Yes
SJHL018653	chr7	5995628	G	C	<i>PMS2</i>	HL	SJLIFE	No	No
SJHL018686	chr13	32356607	C	T	<i>BRCA2</i>	HL	SJLIFE	Yes	No
SJHL018684	chr13	32338322	A	T	<i>BRCA2</i>	HL	SJLIFE	Yes	No
SJHL042723	chr7	5987504	G	A	<i>PMS2</i>	HL	SJLIFE	No	No
SJNBL019418	chr17	7675088	C	T	<i>TP53</i>	NBL	SJLIFE	No	No
SJNHL019807	chr16	23635229	C	-	<i>PALB2</i>	NHL	SJLIFE	No	No
SJNHL019808	chr13	32337161	AAAC	-	<i>BRCA2</i>	NHL	SJLIFE	No	No
SJNHL019465	chr13	32337161	A	-	<i>BRCA2</i>	NHL	SJLIFE	No	No
SJNHL019456	chr13	32337458	G	T	<i>BRCA2</i>	NHL	SJLIFE	No	No
SJNHL019492	chr16	23621362	C	T	<i>PALB2</i>	NHL	SJLIFE	No	No
SJNHL041039	chr17	43091772	AGAC	-	<i>BRCA1</i>	NHL	SJLIFE	No	No
SJNHL041626	chr13	32380085	C	T	<i>BRCA2</i>	NHL	SJLIFE	No	No
SJNHL041625	chr17	7674230	C	T	<i>TP53</i>	NHL	SJLIFE	No	No
SJNHL042068	chr13	32339063	AG	-	<i>BRCA2</i>	NHL	SJLIFE	No	No
SJLM019368	chr5	112834985	G	A	<i>APC</i>	Other	SJLIFE	No	No
SJHIST018643	chr13	32339288	AAAG	-	<i>BRCA2</i>	Other	SJLIFE	No	No
SJCA041980	chr17	7673802	C	T	<i>TP53</i>	Other	SJLIFE	No	No
SJNPC042059	chr2	47806282	G	A	<i>MSH6</i>	Other	SJLIFE	No	No

SJRB018831	chr13	48368551	_	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019830	chr13	48473359	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019815	chr13	48379594	C	T	<i>RB1</i>	RB	SJLIFE	Yes	No
SJRB018828	chr13	48381402	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019569	chr13	48349000	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019575	chr2	47800130	CAGT	-	<i>MSH6</i>	RB	SJLIFE	No	No
SJRB019567	chr13	48367512	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019561	chr13	48360062	T	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB041652	chr17	43106480	A	T	<i>BRCA1</i>	RB	SJLIFE	No	No
SJRB043127	chr13	48368549	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB043940	chr17	43124028	CT	-	<i>BRCA1</i>	RB	SJLIFE	No	No
SJRB044969	chr13	48342714	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRHB019599	chr13	32357741	G	A	<i>BRCA2</i>	RMS	SJLIFE	No	No
SJRHB042119	chr17	7675070	C	T	<i>TP53</i>	RMS	SJLIFE	No	No
SJSTS019607	chr17	43094707	-	CCACATGGCT	<i>BRCA1</i>	STS	SJLIFE	Yes	No
SJSTS042132	chr17	43092597	A	C	<i>BRCA1</i>	STS	SJLIFE	No	No
SJWLM018891	chr17	7675058	C	T	<i>TP53</i>	WT	SJLIFE	No	No
SJWLM041719	chr13	32336284	G	-	<i>BRCA2</i>	WT	SJLIFE	No	No
SJWLM043921	chr11	31376101-40055600			<i>WT1</i>	WT	SJLIFE	No	No
SJWLM019670	chr2	47800714	C	T	<i>MSH6</i>	WT	SJLIFE	No	No
SJACT056015	chr17	7674221	G	A	<i>TP53</i>	Other	SJLIFE	Yes	No
SJALL003467	chr13	32340301	T	-	<i>BRCA2</i>	ALL	SJLIFE	No	No
SJALL004093	chr17	43092849	TT	-	<i>BRCA1</i>	ALL	SJLIFE	No	No
SJALL018309	chr16	23621362	C	T	<i>PALB2</i>	ALL	SJLIFE	No	No
SJALL058410	chr16	23635872	G	-	<i>PALB2</i>	ALL	SJLIFE	No	No
SJCA056926	chr17	7674893	C	T	<i>TP53</i>	Other	SJLIFE	No	No
SJCNS056414	chr2	47379007	C	T	<i>EPCAM</i>	CNS	SJLIFE	No	No
SJCNS056526	chr13	32357916	G	T	<i>BRCA2</i>	CNS	SJLIFE	No	No
SJCNS056849	chr7	5997349	G	-	<i>PMS2</i>	CNS	SJLIFE	No	No
SJCNS058358	chr12	112489084	G	A	<i>PTPN11</i>	CNS	SJLIFE	No	No
SJEPD056229	chr13	32379465	C	-	<i>BRCA2</i>	CNS	SJLIFE	No	No
SJMB008012	chr13	32355073	T	-	<i>BRCA2</i>	CNS	SJLIFE	No	No

SJMB008039	chr13	32379795	T	A	<i>BRCA2</i>	CNS	SJLIFE	No	No
SJMB056244	chr10	102594066	G	T	<i>SUFU</i>	CNS	SJLIFE	No	No
SJMB056454	chr2	47803501	C	-	<i>MSH6</i>	CNS	SJLIFE	No	No
SJMB058480	chr16	23637886	ACAA	-	<i>PALB2</i>	CNS	SJLIFE	Yes	No
SJMEL058366	chr16	23621362	C	T	<i>PALB2</i>	Other	SJLIFE	No	No
SJOS001118	chr16	23634896	T	-	<i>PALB2</i>	OS	SJLIFE	No	No
SJRB056055	chr13	48379651	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056218	chr13	48307359	A	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056236	chr13	48379594	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056237	chr13	48381283	TG	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056239	chr13	46866401- 50495100			<i>RB1</i>	RB	SJLIFE	No	No
SJRB056361	chr17	43093074	G	-	<i>BRCA1</i>	RB	SJLIFE	No	No
SJRB056382	chr13	48362818	C	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056418	chr13	48349001	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058289	chr13	48465250	A	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058315	chr13	48380191	AT	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058341	chr13	48362865	CAGAA	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058443	chr13	48469801- 48959200			<i>RB1</i>	RB	SJLIFE	No	No
SJRB058486	chr13	48373493	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRGB003903	chr17	7675088	C	T	<i>TP53</i>	RMS	SJLIFE	No	No
SJRGB003939	chr17	7674221	G	A	<i>TP53</i>	RMS	SJLIFE	Yes	No
SJRGB058455	chr13	32362627	CCTTT	-	<i>BRCA2</i>	RMS	SJLIFE	No	No
SJSTS057292	chr17	31235713	-	A	<i>NF1</i>	STS	SJLIFE	No	No
SJWLM056459	chr16	23629897	G	A	<i>PALB2</i>	WT	SJLIFE	No	No
SJCNS041962	chr1	161356832	C	T	<i>SDHC</i>	CNS	SJLIFE	No	No
SJRB018834	chr13	48342617	A	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058452	chr13	48393801- 52252700			<i>RB1</i>	RB	SJLIFE	No	No
SJRB019558	chr13	48364923	A	_	<i>RB1</i>	RB	SJLIFE	No	No
SJSTO19551	chr14	95124247	_	A	<i>DICER1</i>	Other	SJLIFE	No	No
SJCNS056915	chr17	31235963	C	T	<i>NF1</i>	CNS	SJLIFE	No	No

SJRB058313	chr13	46468001-48959200			<i>RB1</i>	RB	SJLIFE	No	No
SJRB019573	chr13	48349013	A	-	<i>RB1</i>	RB	SJLIFE	No	No
SJLGG011283	chr17	31229954	AA	_	<i>NF1</i>	CNS	SJLIFE	No	No
SJSTS018869	chr14	95104075	5bp	_	<i>DICER1</i>	STS	SJLIFE	No	No
SJCNS058356	chr17	31225132	A	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJCNS042486	chr9	95458146	C	-	<i>PTCH1</i>	CNS	SJLIFE	No	No
SJCNS018601	chr17	31235728	C	T	<i>NF1</i>	CNS	SJLIFE	Yes	No
SJSTS058309	chr17	30779001-32083100			<i>NF1</i>	STS	SJLIFE	No	No
SJCNS003254	chr11	112088939	C	T	<i>SDHD</i>	CNS	SJLIFE	No	No
SJWLM042770	chr11	32396282	-	T	<i>WT1</i>	WT	SJLIFE	No	No
SJEWS058225	chr3	128487922	C	G	<i>GATA2</i>	EWS	SJLIFE	No	No
SJRB041658	chr13	48360118	G	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056320	chr13	48336001-48379400			<i>RB1</i>	RB	SJLIFE	No	No
SJCNS056352	chr17	31357338	-	A	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB043915	chr13	48020101-48770000			<i>RB1</i>	RB	SJLIFE	No	No
SJRB058276	chr7	6005918	C	A	<i>PMS2</i>	RB	SJLIFE	No	No
SJRB058276	chr13	48358301-48383000			<i>RB1</i>	RB	SJLIFE	No	No
SJCML018604	chr11	119278181	T	C	<i>CBL</i>	Other	SJLIFE	No	No
SJOS056034	chr2	96254061	A	T	<i>TMEM127</i>	OS	SJLIFE	No	No
SJWLM017961	chr10	43114598	G	T	<i>RET</i>	WT	SJLIFE	No	No
SJRB043947	chr13	48303716	G	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056240	chr13	48307353	AG	-	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS043942	chr10	102630078	AA	-	<i>SUFU</i>	CNS	SJLIFE	No	No
SJCNS018566	chr10	102627190	G	-	<i>SUFU</i>	CNS	SJLIFE	No	No
SJRB019557	chr13	48459721	TT	-	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS056254	chr16	2079555	A	G	<i>TSC2</i>	CNS	SJLIFE	No	No
SJWLM058307	chr11	32434961	GCGGAGCCG GTGGCGGC	-	<i>WT1</i>	WT	SJLIFE	No	No

SJRB056471	chr13	46468001-50495200			<i>RB1</i>	RB	SJLIFE	No	No
SJRB056195	chr13	48465369	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS056508	chr17	31201156	TAAGG	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB056359	chr13	48379594	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJEPD056209	chr2	47359101-47373300			<i>EPCAM</i>	CNS	SJLIFE	No	No
SJCNS042493	chr17	31343059	C	A	<i>NF1</i>	CNS	SJLIFE	No	No
SJST055956	chr14	95108453	G	T	<i>DICER1</i>	Other	SJLIFE	No	No
SJRB019555	chr13	48349013	A	-	<i>RB1</i>	RB	SJLIFE	Yes	Yes
SJCNS056364	chr17	31233157	C	T	<i>NF1</i>	CNS	SJLIFE	No	No
SJNBLO06050	chr5	240459	C	T	<i>SDHA</i>	NBL	SJLIFE	No	No
SJRB005819	chr9	21970952	-	C	<i>CDKN2A</i>	RB	SJLIFE	No	No
SJALLO41209	chr10	87863635	C	T	<i>PTEN</i>	ALL	SJLIFE	No	No
SJRB056262	chr13	48342646	TA	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB005836	chr13	48381414	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS019153	chr17	31221865	C	G	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB056851	chr13	48381246	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJBCC040981	chr9	95482901-95503800			<i>PTCH1</i>	Other	SJLIFE	No	No
SJCNS019760	chr17	31249093	C	T	<i>NF1</i>	CNS	SJLIFE	No	No
SJLM019371	chr5	112834948	T	G	<i>APC</i>	Other	SJLIFE	No	No
SJRB056394	chr13	48381335	C	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058337	chr13	47962301-48816300			<i>RB1</i>	RB	SJLIFE	No	No
SJOS019814	chr16	2060687	C	-	<i>TSC2</i>	OS	SJLIFE	No	No
SJCNS019192	chr17	31258502	G	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB043898	chr13	48463836	G	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB005838	chr13	48465070	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB041674	chr13	48380238	-	AGCA	<i>RB1</i>	RB	SJLIFE	No	No
SJEWS042715	chr9	95516640	C	-	<i>PTCH1</i>	EWS	SJLIFE	No	No
SJRB056832	chr13	48307353	-	AG	<i>RB1</i>	RB	SJLIFE	No	No
SJOS019530	chr1	241512001	G	C	<i>FH</i>	OS	SJLIFE	Yes	Yes
SJRB055985	chr13	48364933	A	-	<i>RB1</i>	RB	SJLIFE	No	No

SJWLM018879	chr9	21974796	-	GGCTCCATGCTGCT CCCCGCCGCC	<i>CDKN2A</i>	WT	SJLIFE	No	No
SJCNS056392	chr12	112477719	A	G	<i>PTPN11</i>	CNS	SJLIFE	No	No
SJCNS041958	chr17	43068101- 43071900			<i>BRCA1</i>	CNS	SJLIFE	No	No
SJRB019570	chr13	48381445	T	G	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS056277	chr17	31201156	TAAGG	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB056527	chr13	48381445	T	G	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056425	chr13	48368549	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJNBL042062	chr1	17033077	C	T	<i>SDHB</i>	NBL	SJLIFE	No	No
SJRB056399	chr13	48379594	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJWLM041025	chr11	30883501- 42792200			<i>WT1</i>	WT	SJLIFE	No	No
SJRB018832	chr13	48342617	A	-	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS019127	chr10	102509250	G	A	<i>SUFU</i>	CNS	SJLIFE	Yes	No
SJRB058332	chr13	48349024	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJWLM056122	chr11	32392032	G	A	<i>WT1</i>	WT	SJLIFE	No	No
SJRB043960	chr13	48465238	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056202	chr13	48381436	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJWLM058490	chr11	32392717	G	A	<i>WT1</i>	WT	SJLIFE	No	No
SJNBL018745	chr19	10986326	C	T	<i>SMARCA4</i>	NBL	SJLIFE	No	No
SJALL041340	chr11	112093129	C	T	<i>SDHD</i>	ALL	SJLIFE	No	No
SJOS019813	chr13	48303931	C	T	<i>RB1</i>	OS	SJLIFE	No	No
SJWLM017957	chr16	68823524	TG	-	<i>CDH1</i>	WT	SJLIFE	No	No
SJCA042484	chr5	112839211	G	-	<i>APC</i>	Other	SJLIFE	No	No
SJCNS056907	chr17	31229308	T	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJCNS043971	chr17	31214586	G	C	<i>NF1</i>	Other	SJLIFE	No	No
SJSTS019618	chr1	17044824	C	T	<i>SDHB</i>	STS	SJLIFE	Yes	No
SJRB056049	chr13	48362865	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058448	chr13	47651001- 48959100			<i>RB1</i>	RB	SJLIFE	No	No
SJRB056257	chr13	48453032	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019566	chr13	48465336	G	-	<i>RB1</i>	RB	SJLIFE	Yes	No
SJRH019584	chr14	95103392	-	T	<i>DICER1</i>	RMS	SJLIFE	No	No

SJCNS041928	chr17	31259060	-	G	<i>NF1</i>	CNS	SJLIFE	No	No
SJHL019346	chr1	241504123	G	A	<i>FH</i>	HL	SJLIFE	No	No
SJRHB056228	chr17	31337881	G	T	<i>NF1</i>	RMS	SJLIFE	No	No
SJRB019823	chr17	31227289	G	T	<i>NF1</i>	RB	SJLIFE	No	No
SJRB017940	chr13	48381281	T	-	<i>RB1</i>	RB	SJLIFE	No	No
SJNHL042082	chr5	223509	C	T	<i>SDHA</i>	NHL	SJLIFE	No	No
SJRB056465	chr13	48349024	G	T	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS043917	chr17	31223510	TC	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJCNS003247	chr12	112477719	A	G	<i>PTPN11</i>	CNS	SJLIFE	No	No
SJRB056131	chr13	48362958	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058240	chr13	48380086	T	A	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS056088	chr17	31230886	C	G	<i>NF1</i>	CNS	SJLIFE	No	No
SJALL042537	chr5	223509	C	T	<i>SDHA</i>	ALL	SJLIFE	No	No
SJRB056868	chr13	48367529	T	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056410	chr13	48368527	T	-	<i>RB1</i>	RB	SJLIFE	No	No
SJSTS056343	chr17	31227607	G	C	<i>NF1</i>	STS	SJLIFE	No	No
SJCNS018580	chr17	31226496	-	A	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB058445	chr13	48349024	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019828	chr13	48368581	A	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056050	chr13	48362865	CAGAA	-	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS018587	chr17	31169999	T	G	<i>NF1</i>	CNS	SJLIFE	No	No
SJNBL019380	chr1	241512001	G	C	<i>FH</i>	NBL	SJLIFE	No	No
SJCNS041945	chr17	31201471	C	T	<i>NF1</i>	CNS	SJLIFE	No	No
SJCNS042482	chr17	31352280	G	A	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB017936	chr13	48381402	C	T	<i>RB1</i>	RB	SJLIFE	Yes	No
SJST056304	chr14	95116600	A	-	<i>DICER1</i>	Other	SJLIFE	No	No
SJRB058297	chr13	48345095	TAAC	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB040971	chr13	48345090	T	-	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS043959	chr10	102550088	C	T	<i>SUFU</i>	CNS	SJLIFE	No	No
SJWLM018894	chr11	32428554	G	A	<i>WT1</i>	WT	SJLIFE	No	Yes
SJRB056227	chr13	48381414	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056335	chr13	48343001- 48487900			<i>RB1</i>	RB	SJLIFE	No	No

SJALL018964	chr2	96254061	A	T	<i>TMEM127</i>	ALL	SJLIFE	Yes	Yes
SJRB058229	chr13	48379624	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJALL021978	chr9	21971200	C	G	<i>CDKN2A</i>	ALL	SJLIFE	No	No
SJWLM019664	chr11	32396401	G	A	<i>WT1</i>	WT	SJLIFE	No	No
SJRB054	chr13	48238101- 48958800			<i>RB1</i>	RB	SJLIFE	No	No
SJRB019560	chr13	48368549	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056828	chr13	48381245	A	T	<i>RB1</i>	RB	SJLIFE	No	No
SJWLM058260	chr11	32392032	G	A	<i>WT1</i>	WT	SJLIFE	No	No
SJRB017939	chr13	48368549	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJGCT056017	chr10	87957951	C	T	<i>PTEN</i>	GCT	SJLIFE	No	No
SJRB056440	chr13	48367512	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS058433	chr22	23801082	G	A	<i>SMARCB1</i>	CNS	SJLIFE	No	No
SJRB017937	chr13	48276601- 48342700			<i>RB1</i>	RB	SJLIFE	Yes	No
SJRB056380	chr13	48465023	A	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056344	chr13	48368549	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB043968	chr13	48459770	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJALL005426	chr3	10149885	C	G	<i>VHL</i>	ALL	SJLIFE	No	No
SJRB056103	chr13	48360100	C	-	<i>RB1</i>	RB	SJLIFE	No	No
SJRB041669	chr13	48377035	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJALL021892	chr9	37002705	C	T	<i>PAX5</i>	ALL	SJLIFE	No	No
SJCNS019135	chr17	31229155	T	C	<i>NF1</i>	CNS	SJLIFE	No	No
SJST056405	chr14	95105785	T	C	<i>DICER1</i>	Other	SJLIFE	No	No
SJALL041234	chr15	66435145	G	A	<i>MAP2K1</i>	ALL	SJLIFE	No	No
SJCNS019166	chr17	31334864	G	T	<i>NF1</i>	CNS	SJLIFE	No	No
SJCNS058363	chr17	31235649	T	-	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB017945	chr11	112088939	C	T	<i>SDHD</i>	RMS	SJLIFE	No	No
SJRB056128	chr13	48349024	G	T	<i>RB1</i>	RB	SJLIFE	No	No
SJCNS019185	chr9	95485697	-	TA	<i>PTCH1</i>	CNS	SJLIFE	No	No
SJLGG056893	chr17	31249116	C	A	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB056449	chr13	48380065	-	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB041663	chr13	48393801- 50495200			<i>RB1</i>	RB	SJLIFE	Yes	No



SJRB042853	chr13	48303991	-	C	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019819	chr13	48368549	C	T	<i>RB1</i>	RB	SJLIFE	Yes	Yes
SJRB056913	chr13	48373493	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJHL018683	chr9	95485875	C	T	<i>PTCH1</i>	HL	SJLIFE	Yes	No
SJRB058231	chr13	48360019	G	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRGB041684	chr17	31235961	T	A	<i>NF1</i>	RMS	SJLIFE	No	No
SJPGLO42495	chr11	112088939	C	T	<i>SDHD</i>	Other	SJLIFE	No	No
SJGCT041520	chr10	87958013	-	A	<i>PTEN</i>	GCT	SJLIFE	No	No
SJCNS052441	chr17	31229098	T	A	<i>NF1</i>	CNS	SJLIFE	No	No
SJRB058288	chr13	46468601- 49563700			<i>RB1</i>	RB	SJLIFE	No	No
SJRB056474	chr13	48381402	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB058467	chr13	48362859	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJALLO41391	chr7	6005918	C	A	<i>PMS2</i>	ALL	SJLIFE	No	No
SJRB041651	chr13	48456349	G	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB041653	chr13	48377035	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB005805	chr13	48381246	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJRB041662	chr13	48367512	C	T	<i>RB1</i>	RB	SJLIFE	Yes	No
SJCNS058306	chr3	10142167	G	C	<i>VHL</i>	CNS	SJLIFE	No	No
SJHL042047	chr5	112842303	C	T	<i>APC</i>	HL	SJLIFE	No	No
SJRB019574	chr13	48459708	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB056389	chr13	48349024	G	A	<i>RB1</i>	RB	SJLIFE	No	No
SJALLO41326	chr2	96265262	4bp	-	<i>TMEM127</i>	ALL	SJLIFE	No	No
SJRB018826	chr13	48465249	C	G	<i>RB1</i>	RB	SJLIFE	Yes	No
SJRB019565	chr13	48367512	C	T	<i>RB1</i>	RB	SJLIFE	No	No
SJRB019816	chr13	48342714	G	C	<i>RB1</i>	RB	SJLIFE	No	No
SRR14545496	chr12	112477719	A	G	<i>PTPN11</i>	CNS	CCSS	No	No
SRR14542625	chr13	32379800	G	A	<i>BRCA2</i>	WT	CCSS	No	No
SRR14544138	chr17	43057122	A	G	<i>BRCA1</i>	ALL	CCSS	No	No
SRR14544109	chr17	43063930	C	T	<i>BRCA1</i>	CNS	CCSS	No	No
SRR14545297	chr5	112780865	C	T	<i>APC</i>	ALL	CCSS	No	No
SRR14542403	chr13	32394688	G	C	<i>BRCA2</i>	WT	CCSS	No	No
SRR14540645	chr11	64804620	C	CG	<i>MEN1</i>	NBL	CCSS	No	No

SRR14541207	chr11	64804620	C	CG	<i>MEN1</i>	HL	CCSS	No	No
SRR14542827	chr11	64804620	C	CG	<i>MEN1</i>	EWS	CCSS	No	No
SRR14543684	chr11	64804620	C	CG	<i>MEN1</i>	AML	CCSS	No	No
SRR14543842	chr11	64804620	C	CG	<i>MEN1</i>	ALL	CCSS	No	No
SRR14544071	chr11	64804620	C	CG	<i>MEN1</i>	STS	CCSS	No	No
SRR14541242	chr10	102504216	G	GC	<i>SUFU</i>	AML	CCSS	No	No
SRR14542395	chr10	102504216	G	GC	<i>SUFU</i>	HL	CCSS	No	No
SRR14542630	chr10	102504216	G	GC	<i>SUFU</i>	ALL	CCSS	No	No
SRR14543741	chr10	102504216	G	GC	<i>SUFU</i>	ALL	CCSS	No	No
SRR14543842	chr10	102504216	G	GC	<i>SUFU</i>	ALL	CCSS	No	No
SRR14544438	chr10	102504216	G	GC	<i>SUFU</i>	CNS	CCSS	No	No
SRR14543067	chr17	7673717	T	TG	<i>TP53</i>	ALL	CCSS	No	No
SRR14544185	chr17	7673739	TC	T	<i>TP53</i>	OS	CCSS	Yes	No
SRR14542066	chr17	31159090	TG	T	<i>NF1</i>	CNS	CCSS	No	No
SRR14540703	chr17	31163362	T	TA	<i>NF1</i>	CNS	CCSS	Yes	No
SRR14542000	chr17	31223501	CA	C	<i>NF1</i>	CNS	CCSS	No	No
SRR14545393	chr17	31226437	T	TAGTGCAGC	<i>NF1</i>	NBL	CCSS	No	No
SRR14541465	chr17	31226459	A	AC	<i>NF1</i>	CNS	CCSS	No	No
SRR14543776	chr17	31226459	A	AC	<i>NF1</i>	ALL	CCSS	No	No
SRR14542853	chr17	31227581	CA	C	<i>NF1</i>	CNS	CCSS	No	No
SRR14540394	chr17	31229953	CAAT	C	<i>NF1</i>	ALL	CCSS	No	No
SRR14543357	chr17	31232840	TACTC	T	<i>NF1</i>	CNS	CCSS	No	No
SRR14541465	chr17	31249025	T	TCC	<i>NF1</i>	CNS	CCSS	No	No
SRR14542337	chr17	31252977	GA	G	<i>NF1</i>	ALL	CCSS	No	No
SRR14543741	chr17	31326056	AG	A	<i>NF1</i>	ALL	CCSS	No	No
SRR14543845	chr17	31326174	CT	C	<i>NF1</i>	STS	CCSS	No	No
SRR14544845	chr17	31327530	CAG	C	<i>NF1</i>	CNS	CCSS	No	No
SRR14543825	chr17	31334930	CAA	C	<i>NF1</i>	CNS	CCSS	Yes	Yes
SRR14545390	chr17	31336698	CA	C	<i>NF1</i>	CNS	CCSS	No	No
SRR14540582	chr17	31337864	A	ACAGAACTAGCT	<i>NF1</i>	STS	CCSS	No	No
SRR14543811	chr17	31340616	TTAGA	T	<i>NF1</i>	CNS	CCSS	Yes	Yes
SRR14545353	chr17	31356539	A	AC	<i>NF1</i>	STS	CCSS	Yes	Yes
SRR14542116	chr17	43057062	T	TG	<i>BRCA1</i>	ALL	CCSS	No	No

SRR14542822	chr17	43063374	CT	C		<i>BRCA1</i>	NBL	CCSS	No	No
SRR14543606	chr17	43093520	CT	C		<i>BRCA1</i>	ALL	CCSS	No	No
SRR14545307	chr17	43094514	C	CT		<i>BRCA1</i>	EWS	CCSS	No	No
SRR14544189	chr17	43104233	C	CT		<i>BRCA1</i>	WT	CCSS	No	No
SRR14545442	chr17	43104233	C	CT		<i>BRCA1</i>	AML	CCSS	No	No
SRR14541362	chr17	43124027	ACT	A		<i>BRCA1</i>	ALL	CCSS	No	No
SRR14543162	chr17	43124027	ACT	A		<i>BRCA1</i>	EWS	CCSS	No	No
SRR14543361	chr17	43124027	ACT	A		<i>BRCA1</i>	ALL	CCSS	No	No
SRR14543569	chr17	43124027	ACT	A		<i>BRCA1</i>	HL	CCSS	No	No
SRR14544647	chr17	43124027	ACT	A		<i>BRCA1</i>	WT	CCSS	No	No
SRR14541044	chr1	17044848	C	CGG		<i>SDHB</i>	CNS	CCSS	No	No
SRR14541229	chr1	17053978	C	CGGCAACCGGCGC CTCAAGGAGAG		<i>SDHB</i>	NBL	CCSS	No	No
SRR14540476	chr10	102597290	A	AGGATGACGAGG		<i>SUFU</i>	ALL	CCSS	No	No
SRR14544310	chr10	102627189	AG	A		<i>SUFU</i>	CNS	CCSS	No	No
SRR14543606	chr10	86923468	T	TAAGTAAAATAAGC CAGGCACAGAAAG ACAAACTTCACATG TTCTCACTTAC		<i>BMPRI1A</i>	ALL	CCSS	No	No
SRR14544165	chr10	87965303	C	CA		<i>PTEN</i>	CNS	CCSS	No	No
SRR14540557	chr11	32396268	CTGCTG	C		<i>WT1</i>	WT	CCSS	No	No
SRR14540543	chr11	32417575	AC	A		<i>WT1</i>	WT	CCSS	No	No
SRR14542651	chr11	32417632	ATGTCATTTG GTATAAAT	A		<i>WT1</i>	WT	CCSS	No	No
SRR14545110	chr12	112473001	G	GA		<i>PTPN11</i>	NHL	CCSS	No	No
SRR14540552	chr13	32332974	AG	A		<i>BRCA2</i>	STS	CCSS	Yes	No
SRR14540685	chr13	32333283	G	GA		<i>BRCA2</i>	HL	CCSS	Yes	No
SRR14541883	chr13	32333283	G	GA		<i>BRCA2</i>	CNS	CCSS	No	No
SRR14544818	chr13	32333283	G	GA		<i>BRCA2</i>	ALL	CCSS	Yes	No
SRR14545086	chr13	32333283	G	GA		<i>BRCA2</i>	ALL	CCSS	No	No
SRR14545423	chr13	32336660	CTTATT	C		<i>BRCA2</i>	ALL	CCSS	No	No
SRR14544594	chr13	32337160	TAAAC	T		<i>BRCA2</i>	NBL	CCSS	No	No
SRR14540503	chr13	32339287	AAAAG	A		<i>BRCA2</i>	STS	CCSS	No	No
SRR14544591	chr13	32339421	C	CA		<i>BRCA2</i>	OS	CCSS	No	No

SRR14541340	chr13	32340113	G	GT	<i>BRCA2</i>	HL	CCSS	Yes	Yes
SRR14543077	chr13	32340300	GT	G	<i>BRCA2</i>	OS	CCSS	Yes	No
SRR14543820	chr13	32340300	GT	G	<i>BRCA2</i>	NHL	CCSS	Yes	No
SRR14545042	chr13	32340756	ATAACT	A	<i>BRCA2</i>	HL	CCSS	Yes	Yes
SRR14542103	chr13	32340951	CTT	C	<i>BRCA2</i>	ALL	CCSS	No	No
SRR14543063	chr13	32355232	A	AG	<i>BRCA2</i>	ALL	CCSS	No	No
SRR14541160	chr13	32398184	T	TA	<i>BRCA2</i>	NBL	CCSS	No	No
SRR14544884	chr13	48456282	A	ATGATTTTAGAAGG ACCAGTGTCTGGTC TAGTATCCACTTTG GATTTTCATTCAGT TCACTGACAGTATC GTAAACTGGCCTAA CTTGG	<i>RB1</i>	CNS	CCSS	No	No
SRR14545399	chr14	95103828	C	CCTTTG	<i>DICER1</i>	ALL	CCSS	No	No
SRR14542518	chr14	95115690	GTTGA	G	<i>DICER1</i>	STS	CCSS	No	No
SRR14541141	chr16	2081780	C	CT	<i>TSC2</i>	CNS	CCSS	No	No
SRR14542271	chr16	2088292	CCGGCTCCGC CACATCAAG	C	<i>TSC2</i>	CNS	CCSS	Yes	No
SRR14541200	chr16	23614088	AT	A	<i>PALB2</i>	CNS	CCSS	No	No
SRR14542505	chr16	23614088	AT	A	<i>PALB2</i>	WT	CCSS	No	No
SRR14540974	chr16	23630229	AT	A	<i>PALB2</i>	WT	CCSS	No	No
SRR14541623	chr16	23634999	CT	C	<i>PALB2</i>	ALL	CCSS	No	No
SRR14544174	chr16	23635504	GTTCTT	G	<i>PALB2</i>	ALL	CCSS	No	No
SRR14545243	chr19	10986415	GC	G	<i>SMARCA4</i>	CNS	CCSS	No	No
SRR14540838	chr19	10986960	GC	G	<i>SMARCA4</i>	CNS	CCSS	No	No
SRR14542749	chr19	10996222	GA	G	<i>SMARCA4</i>	ALL	CCSS	No	No
SRR14543115	chr19	11013022	TG	T	<i>SMARCA4</i>	ALL	CCSS	Yes	Yes
SRR14542102	chr19	33302346	C	CA	<i>CEBPA</i>	AML	CCSS	No	No
SRR14540877	chr2	39067705	G	GA	<i>SOS1</i>	HL	CCSS	Yes	No
SRR14545318	chr2	47800056	C	CA	<i>MSH6</i>	ALL	CCSS	No	No
SRR14544194	chr2	47806605	AAAGC	A	<i>MSH6</i>	STS	CCSS	Yes	No
SRR14540636	chr3	10141988	A	AGATGGTACACAAT T	<i>VHL</i>	ALL	CCSS	No	No

SRR14544251	chr3	37048505	TCCTGCAAGC AGG	T	<i>MLH1</i>	AML	CCSS	No	No
SRR14541498	chr3	52406895	T	TC	<i>BAP1</i>	STS	CCSS	No	No
SRR14542292	chr3	52406895	T	TC	<i>BAP1</i>	ALL	CCSS	No	No
SRR14545100	chr3	52406895	T	TC	<i>BAP1</i>	AML	CCSS	No	No
SRR14545320	chr3	52406895	T	TC	<i>BAP1</i>	ALL	CCSS	No	No
SRR14542859	chr5	251415	GGA	G	<i>SDHA</i>	WT	CCSS	No	No
SRR14540266	chr7	5977632	A	AAGGC	<i>PMS2</i>	ALL	CCSS	No	No
SRR14545100	chr7	5982837	G	GC	<i>PMS2</i>	AML	CCSS	No	No
SRR14541672	chr7	5982880	CT	C	<i>PMS2</i>	OS	CCSS	No	No
SRR14543528	chr7	5982880	CT	C	<i>PMS2</i>	NHL	CCSS	No	No
SRR14541190	chr7	5986933	A	AT	<i>PMS2</i>	NHL	CCSS	Yes	Yes
SRR14541419	chr7	5986933	A	AT	<i>PMS2</i>	STS	CCSS	No	No
SRR14541354	chr9	132903776	AC	A	<i>TSC1</i>	CNS	CCSS	No	No
SRR14540849	chr9	132903784	CG	C	<i>TSC1</i>	CNS	CCSS	Yes	No
SRR14542376	chr9	132905590	TCC	T	<i>TSC1</i>	ALL	CCSS	No	No
SRR14540299	chr9	21974795	A	AGGCTCCATGCTGC TCCCCGCCGCC	<i>CDKN2A</i>	STS	CCSS	No	No
SRR14540653	chr9	21974795	A	AGGCTCCATGCTGC TCCCCGCCGCC	<i>CDKN2A</i>	NHL	CCSS	Yes	Yes
SRR14544232	chr9	21974795	A	AGGCTCCATGCTGC TCCCCGCCGCC	<i>CDKN2A</i>	CNS	CCSS	No	No
SRR14545117	chr9	21974795	A	AGGCTCCATGCTGC TCCCCGCCGCC	<i>CDKN2A</i>	ALL	CCSS	No	No
SRR14545207	chr9	21974795	A	AGGCTCCATGCTGC TCCCCGCCGCC	<i>CDKN2A</i>	HL	CCSS	Yes	No
SRR14541439	chr9	95449266	T	TG	<i>PTCH1</i>	CNS	CCSS	No	No
SRR14541795	chr9	95449266	T	TG	<i>PTCH1</i>	CNS	CCSS	No	No
SRR14544774	chr9	95449266	T	TG	<i>PTCH1</i>	WT	CCSS	No	No
SRR14544225	chr9	95479082	C	CAACCAGCGAGTCT GCACGCCGATTCTGA AGGTGGGTTTACCT CCA	<i>PTCH1</i>	STS	CCSS	No	No
SRR14542621	chr9	95516816	TC	T	<i>PTCH1</i>	OS	CCSS	No	No
SRR14540387	chr1	17028599	C	T	<i>SDHB</i>	STS	CCSS	No	No

SRR14544106	chr1	17028736	C	T	<i>SDHB</i>	STS	CCSS	Yes	No
SRR14540480	chr1	114716126	C	T	<i>NRAS</i>	WT	CCSS	Yes	Yes
SRR14542973	chr1	114716127	C	T	<i>NRAS</i>	Other	CCSS	No	No
SRR14542733	chr1	17028605	C	A	<i>SDHB</i>	STS	CCSS	No	No
SRR14542537	chr1	241508643	C	T	<i>FH</i>	OS	CCSS	No	No
SRR14541154	chr10	43119548	G	A	<i>RET</i>	AML	CCSS	No	No
SRR14543633	chr10	43119548	G	A	<i>RET</i>	STS	CCSS	No	No
SRR14543846	chr10	87933198	A	T	<i>PTEN</i>	NHL	CCSS	No	No
SRR14543986	chr10	87957951	C	T	<i>PTEN</i>	STS	CCSS	No	No
SRR14542824	chr11	32392032	G	A	<i>WT1</i>	WT	CCSS	No	No
SRR14544030	chr11	32392032	G	A	<i>WT1</i>	WT	CCSS	No	No
SRR14544755	chr11	32392032	G	A	<i>WT1</i>	WT	CCSS	No	No
SRR14544838	chr11	32392717	G	A	<i>WT1</i>	WT	CCSS	No	No
SRR14544275	chr11	32428509	G	A	<i>WT1</i>	WT	CCSS	No	No
SRR14545124	chr11	32428568	G	T	<i>WT1</i>	WT	CCSS	Yes	No
SRR14543887	chr11	64805141	G	A	<i>MEN1</i>	ALL	CCSS	No	No
SRR14541145	chr11	64807009	A	G	<i>MEN1</i>	ALL	CCSS	No	No
SRR14545265	chr11	119273867	G	A	<i>CBL</i>	CNS	CCSS	Yes	No
SRR14541591	chr11	119278294	G	A	<i>CBL</i>	ALL	CCSS	No	No
SRR14545243	chr12	112477720	A	G	<i>PTPN11</i>	CNS	CCSS	No	No
SRR14543115	chr12	112450408	G	C	<i>PTPN11</i>	ALL	CCSS	Yes	Yes
SRR14545435	chr12	112453279	G	C	<i>PTPN11</i>	ALL	CCSS	No	No
SRR14541688	chr12	112472968	C	T	<i>PTPN11</i>	ALL	CCSS	No	No
SRR14540747	chr13	32338140	C	G	<i>BRCA2</i>	WT	CCSS	No	No
SRR14540522	chr13	32338577	C	T	<i>BRCA2</i>	ALL	CCSS	Yes	No
SRR14544699	chr13	32338680	C	A	<i>BRCA2</i>	WT	CCSS	No	No
SRR14540882	chr13	32340000	C	A	<i>BRCA2</i>	STS	CCSS	No	No
SRR14543798	chr13	32363178	G	C	<i>BRCA2</i>	ALL	CCSS	No	No
SRR14544906	chr13	32380085	C	T	<i>BRCA2</i>	OS	CCSS	No	No
SRR14545045	chr13	32396896	A	C	<i>BRCA2</i>	ALL	CCSS	No	No
SRR14545172	chr13	48349024	G	T	<i>RB1</i>	OS	CCSS	Yes	No
SRR14541860	chr13	32362595	G	C	<i>BRCA2</i>	ALL	CCSS	No	No
SRR14542031	chr13	32362595	G	C	<i>BRCA2</i>	OS	CCSS	No	No

SRR14544996	chr13	32362595	G	C	<i>BRCA2</i>	HL	CCSS	Yes	Yes
SRR14544911	chr14	65006285	C	T	<i>MAX</i>	ALL	CCSS	No	No
SRR14542574	chr14	95108323	C	A	<i>DICER1</i>	WT	CCSS	Yes	No
SRR14540204	chr14	95113166	G	A	<i>DICER1</i>	STS	CCSS	Yes	No
SRR14541733	chr14	95116680	G	A	<i>DICER1</i>	STS	CCSS	No	No
SRR14543449	chr14	95133314	C	T	<i>DICER1</i>	ALL	CCSS	No	No
SRR14544708	chr16	23603471	G	C	<i>PALB2</i>	STS	CCSS	No	No
SRR14544241	chr16	23621362	C	T	<i>PALB2</i>	ALL	CCSS	No	No
SRR14544827	chr16	23635306	G	A	<i>PALB2</i>	ALL	CCSS	No	No
SRR14542211	chr16	23635903	C	A	<i>PALB2</i>	ALL	CCSS	No	No
SRR14541394	chr16	23637865	G	A	<i>PALB2</i>	ALL	CCSS	No	No
SRR14542638	chr16	68808504	G	A	<i>CDH1</i>	ALL	CCSS	No	No
SRR14542589	chr17	7670700	G	A	<i>TP53</i>	STS	CCSS	Yes	No
SRR14540916	chr17	7673704	G	A	<i>TP53</i>	ALL	CCSS	No	No
SRR14542318	chr17	7673802	C	T	<i>TP53</i>	OS	CCSS	Yes	Yes
SRR14541320	chr17	7673803	G	T	<i>TP53</i>	OS	CCSS	Yes	Yes
SRR14543594	chr17	7674220	C	T	<i>TP53</i>	STS	CCSS	Yes	Yes
SRR14545222	chr17	7674220	C	T	<i>TP53</i>	STS	CCSS	Yes	Yes
SRR14545301	chr17	7674220	C	T	<i>TP53</i>	NHL	CCSS	Yes	Yes
SRR14545264	chr17	7674230	C	T	<i>TP53</i>	CNS	CCSS	No	No
SRR14540979	chr17	7675139	C	T	<i>TP53</i>	CNS	CCSS	Yes	No
SRR14543532	chr17	7675139	C	T	<i>TP53</i>	STS	CCSS	No	No
SRR14545140	chr17	7675234	G	T	<i>TP53</i>	STS	CCSS	Yes	Yes
SRR14544268	chr17	31200443	C	T	<i>NF1</i>	CNS	CCSS	No	No
SRR14544886	chr17	31229457	C	T	<i>NF1</i>	CNS	CCSS	No	No
SRR14543000	chr17	31230309	A	T	<i>NF1</i>	STS	CCSS	No	No
SRR14545505	chr17	31235623	C	T	<i>NF1</i>	CNS	CCSS	No	No
SRR14545395	chr17	31258353	C	T	<i>NF1</i>	NHL	CCSS	Yes	Yes
SRR14544353	chr17	31326154	C	T	<i>NF1</i>	CNS	CCSS	No	No
SRR14543553	chr17	31335016	G	A	<i>NF1</i>	CNS	CCSS	Yes	Yes
SRR14544864	chr17	31352323	T	G	<i>NF1</i>	STS	CCSS	Yes	No
SRR14542435	chr17	31352348	C	T	<i>NF1</i>	CNS	CCSS	Yes	Yes
SRR14542992	chr17	43049195	C	T	<i>BRCA1</i>	STS	CCSS	No	No

SRR14541792	chr17	43057051	C	T	<i>BRCA1</i>	NHL	CCSS	No	No
SRR14543942	chr17	43063917	A	C	<i>BRCA1</i>	OS	CCSS	No	No
SRR14545123	chr17	43092326	G	A	<i>BRCA1</i>	ALL	CCSS	No	No
SRR14542325	chr17	43095924	T	G	<i>BRCA1</i>	ALL	CCSS	No	No
SRR14543139	chr17	43095924	T	G	<i>BRCA1</i>	ALL	CCSS	No	No
SRR14545399	chr17	7673568	C	A	<i>TP53</i>	ALL	CCSS	No	No
SRR14544746	chr17	31225134	G	A	<i>NF1</i>	NBL	CCSS	Yes	Yes
SRR14542790	chr17	7675070	C	T	<i>TP53</i>	STS	CCSS	No	No
SRR14543385	chr17	31223470	A	G	<i>NF1</i>	CNS	CCSS	No	No
SRR14542267	chr17	43106487	A	C	<i>BRCA1</i>	STS	CCSS	Yes	No
SRR14543845	chr17	43106487	A	C	<i>BRCA1</i>	STS	CCSS	No	No
SRR14541487	chr17	31221930	G	A	<i>NF1</i>	CNS	CCSS	No	No
SRR14540636	chr18	51059880	G	T	<i>SMAD4</i>	ALL	CCSS	No	No
SRR14544599	chr19	33302247	G	T	<i>CEBPA</i>	STS	CCSS	No	No
SRR14543142	chr2	47375301	T	C	<i>EPCAM</i>	EWS	CCSS	No	No
SRR14542246	chr2	47378952	G	A	<i>EPCAM</i>	HL	CCSS	Yes	No
SRR14542981	chr2	47783243	C	T	<i>MSH6</i>	NBL	CCSS	No	No
SRR14541589	chr2	47783493	G	C	<i>MSH6</i>	NHL	CCSS	No	No
SRR14542363	chr2	47798839	G	T	<i>MSH6</i>	HL	CCSS	Yes	No
SRR14541816	chr2	47804908	A	G	<i>MSH6</i>	ALL	CCSS	No	No
SRR14545100	chr2	47806488	C	T	<i>MSH6</i>	AML	CCSS	No	No
SRR14542103	chr2	47803473	C	T	<i>MSH6</i>	ALL	CCSS	No	No
SRR14545442	chr22	23825261	C	T	<i>SMARCB1</i>	AML	CCSS	No	No
SRR14544952	chr22	29639088	A	C	<i>NF2</i>	OS	CCSS	No	No
SRR14542839	chr22	29661334	A	T	<i>NF2</i>	CNS	CCSS	Yes	No
SRR14544085	chr22	29683080	G	A	<i>NF2</i>	STS	CCSS	No	No
SRR14541394	chr3	10149921	C	T	<i>VHL</i>	ALL	CCSS	No	No
SRR14542881	chr3	10149921	C	T	<i>VHL</i>	AML	CCSS	No	No
SRR14543963	chr3	10149921	C	T	<i>VHL</i>	WT	CCSS	No	No
SRR14543702	chr4	41746323	C	T	<i>PHOX2B</i>	NBL	CCSS	No	No
SRR14545624	chr4	41748499	G	A	<i>PHOX2B</i>	HL	CCSS	Yes	Yes
SRR14541195	chr5	223509	C	T	<i>SDHA</i>	ALL	CCSS	No	No
SRR14541555	chr5	223509	C	T	<i>SDHA</i>	WT	CCSS	No	No



SRR14542396	chr5	223509	C	T	<i>SDHA</i>	HL	CCSS	No	No
SRR14542503	chr5	223509	C	T	<i>SDHA</i>	ALL	CCSS	No	No
SRR14544655	chr5	223509	C	T	<i>SDHA</i>	HL	CCSS	No	No
SRR14544727	chr5	223509	C	T	<i>SDHA</i>	STS	CCSS	No	No
SRR14545161	chr5	223509	C	T	<i>SDHA</i>	ALL	CCSS	No	No
SRR14544512	chr5	112841156	C	G	<i>APC</i>	ALL	CCSS	No	No
SRR14543553	chr7	140794370	G	A	<i>BRAF</i>	CNS	CCSS	Yes	Yes
SRR14542771	chr7	6009019	T	C	<i>PMS2</i>	WT	CCSS	No	No
SRR14545004	chr9	36846869	C	T	<i>PAX5</i>	ALL	CCSS	No	No
SRR14543869	chr9	36846931	T	A	<i>PAX5</i>	ALL	CCSS	No	No
SRR14543570	chr9	95476758	C	T	<i>PTCH1</i>	ALL	CCSS	No	No
SRR14543586	chr9	95516622	C	T	<i>PTCH1</i>	ALL	CCSS	No	No
SRR14540418	chr9	132902727	C	A	<i>TSC1</i>	CNS	CCSS	No	No
SRR14541195	chr9	21971200	C	G	<i>CDKN2A</i>	ALL	CCSS	No	No
SJCNS051108	chr11	533512	G	A	<i>HRAS</i>	CNS	CCSS	No	No
SJCNS051163	chr17	31200443	C	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051170	chr17	31258442	A	-	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051178	chr17	31327840	G	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051191	chr14	95096462	-	T	<i>DICER1</i>	CNS	CCSS	No	No
SJCNS051215	chr5	112838978	T	-	<i>APC</i>	CNS	CCSS	Yes	No
SJCNS051258	chr17	30668101-32085400	CNV		<i>NF1</i>	CNS	CCSS	No	No
SJCNS051327	chr17	31226476	ACAA	-	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051338	chr17	31260370	-	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051342	chr17	31249120	G	A	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051356	chr17	43092801	TTGA	-	<i>BRCA1</i>	CNS	CCSS	No	No
SJCNS051402	chr17	31200531	-	A	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051412	chr10	102593680	G	A	<i>SUFU</i>	CNS	CCSS	No	No
SJCNS051475	chr17	31230383	G	A	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051538	chr17	43092040	CTAGTATCTT C	-	<i>BRCA1</i>	CNS	CCSS	No	No
SJCNS051648	chr10	102504243	C	-	<i>SUFU</i>	CNS	CCSS	No	No
SJCNS051676	chr17	31229457	C	T	<i>NF1</i>	CNS	CCSS	Yes	No

SJCNS051697	chr17	31227607	G	A	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051708	chr17	31265227	A	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051798	chr5	112819026	C	T	<i>APC</i>	CNS	CCSS	No	No
SJCNS051818	chr17	31230383	G	C	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051822	chr17	31235963	C	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051834	chr17	31235963	C	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051850	chr10	102599545	G	A	<i>SUFU</i>	CNS	CCSS	No	No
SJCNS051856	chr17	31349156	CAGT	-	<i>NF1</i>	CNS	CCSS	No	No
SJCNS051995	chr13	32339566	TACT	-	<i>BRCA2</i>	CNS	CCSS	No	No
SJCNS052006	chr10	102592722	C	T	<i>SUFU</i>	CNS	CCSS	No	No
SJCNS052131	chr17	7675143	C	A	<i>TP53</i>	CNS	CCSS	No	No
SJCNS052218	chr17	31261733	C	T	<i>NF1</i>	CNS	CCSS	Yes	No
SJCNS052227	chr17	31326248	-	T	<i>NF1</i>	CNS	CCSS	Yes	Yes
SJCNS052227	chr22	29389601- 29874700			<i>NF2</i>	CNS	CCSS	Yes	Yes
SJCNS052349	chr5	112707723	C	A	<i>APC</i>	CNS	CCSS	No	No
SJCNS052389	chr17	31330471	G	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS052470	chr17	31258502	G	-	<i>NF1</i>	CNS	CCSS	Yes	No
SJCNS052520	chr17	31233030	AA	-	<i>NF1</i>	CNS	CCSS	No	No
SJCNS052539	chr5	223509	C	T	<i>SDHA</i>	CNS	CCSS	No	No
SJCNS052583	chr17	30777501- 31984600	CNV		<i>NF1</i>	CNS	CCSS	No	No
SJCNS052881	chr5	223509	C	T	<i>SDHA</i>	CNS	CCSS	No	No
SJCNS052886	chr14	95104037	-	TTATTAGTTCTGG	<i>DICER1</i>	CNS	CCSS	No	No
SJCNS052952	chr17	31230911	A	-	<i>NF1</i>	CNS	CCSS	No	No
SJCNS053010	chr9	132905844	-	G	<i>TSC1</i>	CNS	CCSS	No	No
SJCNS053019	chr16	2085233	C	T	<i>TSC2</i>	CNS	CCSS	No	No
SJCNS053085	chr17	31229136	AC	-	<i>NF1</i>	CNS	CCSS	No	No
SJCNS053132	chr22	23793672	-	C	<i>SMARCB1</i>	CNS	CCSS	Yes	No
SJCNS053143	chr17	31091601- 31098700			<i>NF1</i>	CNS	CCSS	No	No
SJCNS053170	chr17	31206239	G	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS053205	chr17	31233025	C	T	<i>NF1</i>	CNS	CCSS	No	No

SJCNS053263	chr2	47397501-47420000			<i>MSH2</i>	CNS	CCSS	No	No
SJCNS053326	chr17	43124028	CT	-	<i>BRCA1</i>	CNS	CCSS	No	No
SJCNS053348	chr17	31249093	C	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS053360	chr13	32380124	G	-	<i>BRCA2</i>	CNS	CCSS	No	No
SJCNS053423	chr17	31352381	C	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS053537	chr17	31223476	TAAC	-	<i>NF1</i>	CNS	CCSS	No	No
SJCNS053576	chr14	95124660	-	T	<i>DICER1</i>	CNS	CCSS	No	No
SJCNS053614	chr2	47799618	AG	-	<i>MSH6</i>	CNS	CCSS	Yes	No
SJCNS053680	chr14	95108323	-	C	<i>DICER1</i>	CNS	CCSS	No	No
SJCNS053752	chr17	31225126	-	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS053956	chr17	31325833	C	T	<i>NF1</i>	CNS	CCSS	No	No
SJCNS054357	chr17	31219018	AG	-	<i>NF1</i>	CNS	CCSS	No	No
SJGENBN051304	chr11	112093129	C	T	<i>SDHD</i>	Other	CCSS	No	No
SJGENBN051662	chr3	36993563	G	-	<i>MLH1</i>	OS	CCSS	No	No
SJGENBN051953	chr1	193212395	C	T	<i>CDC73</i>	EWS	CCSS	No	No
SJGENBN053395	chr16	23635000	T	-	<i>PALB2</i>	EWS	CCSS	No	No
SJGENBN053829	chr2	47806497	-	ATTA	<i>MSH6</i>	OS	CCSS	No	No
SJGENKY051239	chr11	32392020	G	A	<i>WT1</i>	WT	CCSS	No	No
SJGENKY051394	chr11	32434847	G	A	<i>WT1</i>	WT	CCSS	No	No
SJGENKY051427	chr11	32428550	-	A	<i>WT1</i>	WT	CCSS	No	No
SJGENKY051753	chr11	32399947	C	-	<i>WT1</i>	WT	CCSS	No	No
SJGENKY051866	chr12	112489047	C	T	<i>PTPN11</i>	WT	CCSS	No	No
SJGENKY051985	chr11	32434815	-	A	<i>WT1</i>	WT	CCSS	No	No
SJGENKY052394	chr2	47465801-47474300	CNV		<i>MSH2</i>	WT	CCSS	No	No
SJGENKY052648	chr11	32392032	G	A	<i>WT1</i>	WT	CCSS	No	No
SJGENKY052729	chr3	10142001	G	T	<i>VHL</i>	WT	CCSS	No	No
SJGENKY053253	chr9	95516747	G	-	<i>PTCH1</i>	WT	CCSS	No	No
SJGENKY053478	chr11	32392032	G	A	<i>WT1</i>	WT	CCSS	No	No
SJGENKY053702	chr16	23635306	G	A	<i>PALB2</i>	WT	CCSS	No	No
SJGENKY053853	chr11	32396401	G	A	<i>WT1</i>	WT	CCSS	No	No
SJGENKY054132	chr5	217301-224700	CNV		<i>SDHA</i>	WT	CCSS	No	No

SJGENKY054260	chr10	87957955	C	T	<i>PTEN</i>	WT	CCSS	No	No
SJGENLK051278	chr12	112489086	A	G	<i>PTPN11</i>	ALL	CCSS	No	No
SJGENLK051351	chr5	248901-262200	CNV		<i>SDHA</i>	ALL	CCSS	No	No
SJGENLK051562	chr9	20571601-22496500	CNV		<i>CDKN2A</i>	ALL	CCSS	No	No
SJGENLK052255	chr16	23623044	TT	-	<i>PALB2</i>	AML	CCSS	No	No
SJGENLK052479	chr7	6009018	A	T	<i>PMS2</i>	AML	CCSS	No	No
SJGENLK052905	chr2	47375300	G	A	<i>EPCAM</i>	ALL	CCSS	No	No
SJGENLK053196	chr12	112477719	A	G	<i>PTPN11</i>	ALL	CCSS	No	No
SJGENLK053199	chr19	10956701-10962700	CNV		<i>SMARCA4</i>	ALL	CCSS	No	No
SJGENLK053424	chr19	33302347	-	G	<i>CEBPA</i>	AML	CCSS	No	No
SJGENLK053562	chr12	112450368	A	G	<i>PTPN11</i>	ALL	CCSS	No	No
SJGENLK054165	chr10	43119548	G	A	<i>RET</i>	ALL	CCSS	No	No
SJGENLK054381	chr13	32370955	G	A	<i>BRCA2</i>	ALL	CCSS	No	No
SJHL051598	chr13	32332668	-	TTAG	<i>BRCA2</i>	HL	CCSS	No	No
SJHL052518	chr11	64804588	G	A	<i>MEN1</i>	HL	CCSS	No	No
SJHL052760	chr2	47377078	G	C	<i>EPCAM</i>	HL	CCSS	No	No
SJHL052786	chr13	32339320	C	G	<i>BRCA2</i>	HL	CCSS	No	No
SJHL053080	chr13	32333310	C	A	<i>BRCA2</i>	HL	CCSS	No	No
SJHL053084	chr16	23636336	T	C	<i>PALB2</i>	HL	CCSS	No	No
SJHL053343	chr9	95446392	C	T	<i>PTCH1</i>	HL	CCSS	No	No
SJHL053539	chr16	23637886	ACAA	-	<i>PALB2</i>	HL	CCSS	No	No
SJNBL051179	chr17	31335032	G	T	<i>NF1</i>	NBL	CCSS	No	No
SJNBL051231	chr10	102599545	G	A	<i>SUFU</i>	NBL	CCSS	No	No
SJNBL051322	chr2	47801123	G	A	<i>MSH6</i>	NBL	CCSS	No	No
SJNBL051590	chr17	31200484	AG	-	<i>NF1</i>	NBL	CCSS	No	No
SJNBL051835	chr17	43094685	TGAG	-	<i>BRCA1</i>	NBL	CCSS	No	No
SJNBL052180	chr13	32337651	C	G	<i>BRCA2</i>	NBL	CCSS	Yes	No
SJNBL052199	chr19	4101244	G	A	<i>MAP2K2</i>	NBL	CCSS	No	No
SJNBL052602	chr5	240459	C	T	<i>SDHA</i>	NBL	CCSS	No	No
SJNBL054237	chr19	11041413	C	-	<i>SMARCA4</i>	NBL	CCSS	Yes	No
SJNHL051409	chr17	7670700	G	A	<i>TP53</i>	NHL	CCSS	No	No

SJNHL051684	chr2	47803473	C	T	<i>MSH6</i>	NHL	CCSS	No	No
SJNHL052138	chr3	10142001	G	T	<i>VHL</i>	NHL	CCSS	No	No
SJNHL052192	chr19	11034177	G	T	<i>SMARCA4</i>	NHL	CCSS	No	No
SJNHL052326	chr11	119297033	C	T	<i>CBL</i>	NHL	CCSS	No	No
SJNHL053027	chr13	32332740	A	-	<i>BRCA2</i>	NHL	CCSS	No	No
SJNHL053274	chr13	32340301	T	-	<i>BRCA2</i>	NHL	CCSS	No	No
SJNHL053418	chr17	43124028	CT	-	<i>BRCA1</i>	NHL	CCSS	No	No
SJSTS051335	chr17	43092849	TTTC	-	<i>BRCA1</i>	STS	CCSS	No	No
SJSTS051345	chr2	47373471	TG	-	<i>EPCAM</i>	STS	CCSS	No	No
SJSTS051449	chr16	23636036	TC	-	<i>PALB2</i>	STS	CCSS	No	No
SJSTS051860	chr2	47803501	C	-	<i>MSH6</i>	STS	CCSS	No	No
SJSTS051865	chr12	112450389	A	G	<i>PTPN11</i>	STS	CCSS	No	No
SJSTS052573	chr16	23629897	G	A	<i>PALB2</i>	STS	CCSS	No	No
SJSTS052665	chr13	32340301	T	-	<i>BRCA2</i>	STS	CCSS	No	No
SJSTS053098	chr12	57748590	G	A	<i>CDK4</i>	STS	CCSS	No	No
SJSTS053659	chr17	7674220	C	T	<i>TP53</i>	STS	CCSS	Yes	No
SJSTS053817	chr2	47373571	G	T	<i>EPCAM</i>	STS	CCSS	No	No
SJSTS053942	chr17	31206323	-	T	<i>NF1</i>	STS	CCSS	No	No
SJSTS054223	chr17	7675993	C	T	<i>TP53</i>	STS	CCSS	No	No
SJSTS054343	chr17	7674230	C	T	<i>TP53</i>	STS	CCSS	No	No
SJSTS054384	chr11	64808086	-	A	<i>MEN1</i>	STS	CCSS	No	No
SJSTS054384	chr12	112450497	A	C	<i>PTPN11</i>	STS	CCSS	No	No

Abbreviations: CPG, Cancer Predisposition Genes; SJLIFE, the St. Jude Lifetime Cohort Study; CCSS, the Childhood Cancer Survivor Study; SMN, Subsequent malignant neoplasm; ALL, Acute Lymphoblastic Leukemia; AML, Acute Myeloid Leukemia; HL, Hodgkin Lymphoma; NHL, Non-Hodgkin Lymphoma; CNS, Central Nervous System; WT, Wilms Tumor; NBL, Neuroblastoma; RB, Retinoblastoma; GCT, Germ Cell Tumor; OS, Osteosarcoma; RMS, Rhabdomyosarcoma; EWS, Ewing sarcoma family of tumors; STS, Soft Tissue Sarcoma; Other, other malignancies. SMN, subsequent malignant neoplasm

**Supplementary Table 6. Subsequent malignant neoplasms (SMNs) diagnosed among all survivors.**

<b>SMN diagnosis group</b>	<b>SJLIFE</b>	<b>CCSS</b>	<b>Combined, N</b>	<b>Combined, %</b>
<b>Other Solid Tumors</b>	93	269	362	31.15
<b>Breast Cancer</b>	51	199	250	21.51
<b>Thyroid Cancer</b>	79	145	224	19.28
<b>Unspecified Sites</b>	0	99	99	8.52
<b>Sarcoma</b>	39	43	82	7.06
<b>Hematological Cancers</b>	21	56	77	6.63
<b>CNS Tumors</b>	15	53	68	5.85
<b>Total</b>	298	864	1162	100.00

Abbreviations: SJLIFE, the St. Jude Lifetime Cohort Study; CCSS, the Childhood Cancer Survivor Study; CNS, Central Nervous System.

Note: nearly all basal cell carcinomas are non-malignant and hence were not included in this table.

**Supplementary Table 7. Subsequent malignant neoplasms (SMNs) among CPV carriers and non-carriers in the SJLIFE study.**

<b>SMN</b>	<b>Non-CPV carriers, n (%)</b>	<b>CPV carriers, n (%)</b>
Breast Cancer	46 (16.9)	5 (19.2)
Hematological Cancer	21 (7.7)	0 (0)
Meningioma	2 (0.7)	1 (3.8)
Sarcoma	27 (9.9)	12 (46.2)
Thyroid Cancer	76 (27.9)	3 (11.5)
Other	100 (36.8)	5 (19.2)
Total	272(100)	26(100)

Abbreviations: SJLIFE, the St. Jude Lifetime Cohort Study; SMN, Subsequent Malignant Neoplasm; CPV, Cancer Predisposition Variants.  
Note: The types of SMN differ significantly between CPV carriers and non-carriers based on Fisher's Exact Test ( $P<0.001$ ).

**Supplementary Table 8. Subsequent malignant neoplasms (SMNs) among CPV carriers and non-carriers in the CCSS study.**

<b>SMN</b>	<b>Non-CPV carriers, n (%)</b>	<b>CPV carriers, n (%)</b>
Breast Cancer	191 (23.7)	8 (13.8)
Hematological Cancer	54 (6.7)	2 (3.5)
CNS Tumors	57 (7.1)	13 (22.4)
Sarcoma	36 (4.5)	7 (12.1)
Thyroid Cancer	140 (17.4)	5(8.6)
Other	328 (40.7)	23 (39.7)
Total	806 (100)	58 (100)

Abbreviations: CCSS, the Childhood Cancer Survivor Study; SMN, Subsequent Malignant Neoplasm; CPV, Cancer Predisposition Variants; CNS, Central nervous system. Note: The types of SMN differ significantly between CPV carriers and non-carriers based on Fisher’s Exact Test (P<0.001).



**Supplementary Table 9. Subsequent malignant neoplasms (SMNs) diagnosed among survivors who died from SMNs.**

<b>SMN diagnosis group</b>	<b>SJLIFE</b>	<b>CCSS</b>	<b>Combined, N</b>	<b>Combined, %</b>
<b>Other Solid Tumors</b>	20	94	114	43.35
<b>CNS Tumors</b>	10	37	47	17.87
<b>Unspecified Sites</b>	6	37	43	16.35
<b>Hematological Cancers</b>	7	23	30	11.41
<b>Breast Cancer</b>	1	28	29	11.03
<b>Total</b>	<b>44</b>	<b>219</b>	<b>263</b>	<b>100</b>

Abbreviations: SJLIFE, the St. Jude Lifetime Cohort Study; CCSS, the Childhood Cancer Survivor Study; CNS, Central Nervous System.

**Supplementary Table 10. Standardized mortality ratio and absolute excess risk by comparing survivors of childhood cancer with CDC database.**

Cohort	CPV carriers	Death due to SMNs				Death due to other causes				All-cause death			
		Observed	Expected	SMR	AER per 1,000 person years	Observed	Expected	SMR	AER per 1,000 person years	Observed	Expected	SMR	AER per 1,000 person years
SJLIFE	Overall	44	9.3	4.7 (3.4, 6.4)	1.2 (0.8, 1.7)	103	44	2.3 (1.9, 2.8)	2.1 (1.4, 2.8)	174	54.2	3.2 (2.8, 3.7)	4.2 (3.3, 5.1)
	Non-carriers	38	8.9	4.3 (3.0, 5.8)	1.1 (0.7, 1.6)	96	41.9	2.3 (1.9, 2.8)	2.0 (1.3, 2.8)	158	51.7	3.1 (2.6, 3.6)	3.9 (3.0, 4.9)
	Carriers	6	0.4	16.5 (6.0, 36.0)	3.3 (1.1, 7.5)	7	2.1	3.4 (1.4, 6.9)	2.9 (0.4, 7.3)	16	2.5	6.5 (3.7, 10.5)	7.9 (3.9, 13.8)
CCSS	Overall	219	34.9	6.3 (5.5, 7.2)	2.2 (1.9, 2.6)	325.	140.	2.3 (2.1, 2.6)	2.2 (1.8, 2.7)	593.	175.	3.4 (3.1, 3.7)	5.0 (4.4, 5.6)
	Non-carriers	197	33.7	5.9 (5.1, 6.7)	2.0 (1.7, 2.4)	305.	135.	2.3 (2.0, 2.5)	2.1 (1.7, 2.6)	548.	169.	3.2 (3.0, 3.5)	4.7 (4.2, 5.3)
	Carriers	22	1.2	18.2 (11.4, 27.6)	6.3 (3.8, 9.7)	20	5.1	3.9 (2.4, 6.0)	4.5 (2.1, 7.8)	45	6.4	7.1 (5.2, 9.5)	11.6 (8.0, 16.2)
Combined	Overall	263	44.3	5.9 (5.2, 6.7)	1.9 (1.7, 2.2)	428.	184.	2.3 (2.1, 2.6)	2.2 (1.8, 2.5)	767.	230	3.3 (3.1, 3.6)	4.8 (4.3, 5.3)
	Non-carriers	235	42.8	5.5 (4.8, 6.2)	1.8 (1.5, 2.1)	401.	177.	2.3 (2.1, 2.5)	2.1 (1.7, 2.5)	706.	221.	3.2 (3.0, 3.4)	4.5 (4.0, 5.0)
	Carriers	28	1.6	17.8 (11.9, 25.8)	5.3 (3.4, 7.7)	27	7.2	3.7 (2.5, 5.4)	3.9 (2.1, 6.4)	61	8.8	6.9 (5.3, 8.9)	10.4 (7.5, 13.8)

Abbreviations: SMR, Standardized Mortality Ratio; AER, Absolute Excess risk; SMN, Subsequent Malignant Neoplasms; SJLIFE, the St. Jude Lifetime Cohort Study; CCSS, the Childhood Cancer Survivor Study; CPV, Cancer Predisposing Variant; CDC, Centers for Disease Control and Prevention.

**Supplementary Table 11. Cumulative incidence of mortality for survivors in SJLIFE.**

Variable	Time since date of the first biospecimen collection	CPV non-carriers		CPV carriers		P-value
		CIF	95%CI	CIF	95%CI	
All-cause mortality	5	2.3	1.8- 2.9	5.7	3.0- 9.7	0.055
	10	6.4	5.4- 7.6	9.3	5.2- 14.8	
	15	8.3	6.5- 10.3			
SMN-related mortality	5	0.6	0.4- 0.9	1.3	0.3- 3.7	0.029
	10	1.5	1.0- 2.1	3.7	1.2- 8.5	
	15	2.0	1.1- 3.5			
Other-cause mortality	5	1.6	1.2- 2.1	2.7	1.0- 6.0	0.70
	10	3.8	3.1- 4.7	4.0	1.8- 7.8	
	15	4.0	3.2- 4.9			

Abbreviations: SJLIFE, the St. Jude Lifetime Cohort Study; CPV, Cancer Predisposition Variant; CIF, Cumulative Incidence Function; 95%CI, 95% Confidence Interval.

**Supplementary Table 12. Cumulative incidence of mortality for survivors in CCSS.**

Variable	Time since date of the first biospecimen collection	No CPV carriers		CPV carriers		P-value
		CIF	95%CI	CIF	95%CI	
All-cause mortality	5	2.5	2.1- 2.8	6.8	4.1- 10.3	<0.0001
	10	6.0	5.4- 6.7	11.2	7.5- 15.6	
	15	10.0	9.2- 10.9	19.1	14.0- 24.8	
SMN-related mortality	5	0.8	0.6- 1.1	3.9	2.0- 6.9	<0.0001
	10	2.1	1.7- 2.5	6.9	4.1- 10.7	
	15	3.6	3.0- 4.1	9.3	5.8- 13.7	
Other-cause mortality	5	1.4	1.1- 1.7	2.9	1.4- 5.5	0.062
	10	3.4	2.9- 3.9	4.4	2.3- 7.6	
	15	5.6	5.0- 6.3	8.3	5.1- 12.6	

Abbreviations: CCSS, the Childhood Cancer Survivor Study; CPV, Cancer Predisposition Variant; CIF, Cumulative Incidence Function; 95%CI, 95% Confidence Interval.

**Supplementary Table 13. Non-genetic multivariable regression model of mortality risk combining the two cohorts.**

Status	Variable	Category	Excluding CPV in the model	
			HR (95% CI)	P-value
<b>All-cause mortality</b>	Age at diagnosis	5-9 vs 0-4	1.06 (0.85-1.32)	0.63
		10-14 vs 0-4	1.50 (1.22-1.84)	<b>0.0001</b>
		>=15 vs 0-4	2.11 (1.72-2.60)	<b>&lt;.0001</b>
	YRI		1.01 (0.66-1.55)	0.97
	ASA		0.40 (0.13-1.27)	0.12
	Sex	Male vs Female	1.12 (0.97-1.29)	0.12
	Cohort	CCSS vs SJLIFE	0.72 (0.59-0.87)	<b>0.0011</b>
	Chest RT	>0 to <20 Gy vs 0	2.06 (1.66-2.55)	<b>&lt;.0001</b>
		>=20 Gy vs 0	3.91 (3.15-4.87)	<b>&lt;.0001</b>
		Unknown vs 0	1.96 (1.27-3.05)	<b>0.0026</b>
	Alkylating agents	1st tertile vs 0	1.10 (0.83-1.44)	0.52
		2nd tertile vs 0	1.33 (1.07-1.67)	<b>0.012</b>
		3rd tertile vs 0	1.41 (1.16-1.73)	<b>0.0006</b>
		Unknown vs 0	1.30 (0.95-1.77)	0.10
	Anthracyclines	1st tertile vs 0	0.50 (0.36-0.71)	<b>&lt;.0001</b>
		2nd tertile vs 0	0.62 (0.48-0.81)	<b>0.0004</b>
		3rd tertile vs 0	0.84 (0.67-1.06)	0.13
		Unknown vs 0	0.83 (0.51-1.35)	0.45
	Epidodophyllotoxins	1st tertile vs 0	0.88 (0.56-1.38)	0.58
		2nd tertile vs 0	0.41 (0.22-0.76)	<b>0.0043</b>
		3rd tertile vs 0	0.58 (0.34-0.98)	<b>0.040</b>
Unknown vs 0		1.49 (0.86-2.60)	0.16	
<b>SMN-related mortality</b>	Age at diagnosis	5-9 vs 0-4	1.17 (0.76-1.79)	0.48
		10-14 vs 0-4	2.05 (1.40-3.00)	<b>0.0002</b>
		>=15 vs 0-4	3.58 (2.46-5.20)	<b>&lt;.0001</b>
	YRI		0.95 (0.41-2.18)	0.90
	ASA		0.68 (0.24-1.91)	0.46
	Sex	Male vs Female	0.99 (0.77-1.26)	0.91
	Cohort	CCSS vs SJLIFE	1.08 (0.73-1.59)	0.70
	Chest RT	>0 to <20 Gy vs 0	2.28 (1.55-3.36)	<b>&lt;.0001</b>
		>=20 Gy vs 0	3.84 (2.59-5.70)	<b>&lt;.0001</b>
		Unknown vs 0	3.16 (1.60-6.23)	<b>0.0009</b>
	Alkylating agents	1st tertile vs 0	1.04 (0.63-1.70)	0.89

Status	Variable	Category	Excluding CPV in the model	
			HR (95% CI)	P-value
		2nd tertile vs 0	1.76 (1.23-2.51)	<b>0.0019</b>
		3rd tertile vs 0	1.64 (1.16-2.31)	<b>0.0051</b>
		Unknown vs 0	1.68 (1.08-2.60)	<b>0.021</b>
	Anthracyclines	1st tertile vs 0	0.40 (0.21-0.77)	<b>0.0055</b>
		2nd tertile vs 0	0.57 (0.37-0.88)	<b>0.011</b>
		3rd tertile vs 0	0.74 (0.50-1.08)	0.12
		Unknown vs 0	0.96 (0.46-1.98)	0.90
	Epipodophyllotoxins	1st tertile vs 0	1.07 (0.49-2.32)	0.87
		2nd tertile vs 0	0.28 (0.07-1.19)	0.08
		3rd tertile vs 0	0.54 (0.19-1.57)	0.26
		Unknown vs 0	0.43 (0.15-1.22)	0.11
		10-14 vs 0-4	1.26 (0.96-1.65)	0.10
		>=15 vs 0-4	1.44 (1.09-1.90)	<b>0.011</b>
	YRI		1.15 (0.66-1.98)	0.63
	ASA		0.33 (0.06-1.73)	0.19
	Sex	Male vs Female	1.29 (1.06-1.56)	<b>0.0093</b>
	Cohort	CCSS vs SJLIFE	0.70 (0.54-0.92)	<b>0.011</b>
	Chest RT	>0 to <20 Gy vs 0	1.87 (1.41-2.48)	<b>&lt;.0001</b>
		>=20 Gy vs 0	4.05 (3.04-5.39)	<b>&lt;.0001</b>
		Unknown vs 0	1.54 (0.76-3.10)	0.23
	Alkylating agents	1st tertile vs 0	1.17 (0.82-1.68)	0.39
		2nd tertile vs 0	1.09 (0.80-1.49)	0.60
		3rd tertile vs 0	1.21 (0.92-1.58)	0.18
		Unknown vs 0	1.11 (0.69-1.77)	0.67
	Anthracyclines	1st tertile vs 0	0.58 (0.38-0.90)	<b>0.014</b>
		2nd tertile vs 0	0.68 (0.47-0.97)	<b>0.034</b>
		3rd tertile vs 0	0.94 (0.69-1.29)	0.71
		Unknown vs 0	0.60 (0.27-1.34)	0.21
	Epipodophyllotoxins	1st tertile vs 0	0.69 (0.36-1.32)	0.26
		2nd tertile vs 0	0.57 (0.29-1.14)	0.11
		3rd tertile vs 0	0.58 (0.29-1.18)	0.13
		Unknown vs 0	3.48 (1.52-7.96)	<b>0.0032</b>

Abbreviations: HR, Hazard Ratio; CI, Confidence Interval; YRI, Yoruba population (African ancestry) in 1000 Genome Project; ASA, Eastern Asian population (Japanese and Chinese) in 1000 Genomes Project; SJLIFE, the St. Jude Lifetime Cohort Study; CCSS, the Childhood Cancer Survivor Study.

**Supplementary Table 14. Multivariable model of mortality risk in SJLIFE (adjusting for time from diagnosis to the first biospecimen collection).**

Status	Variable	Category	HR (95% CI)	P-value	Including CPV in the model	
					HR (95% CI)	P-value
<b>All-cause mortality</b>	Age at diagnosis	5-9 vs 0-4	1.25(0.78-2.00)	0.36	1.37(0.85-2.21)	0.20
		10-14 vs 0-4	2.09(1.33-3.26)	0.0013	2.30(1.46-3.64)	0.00040
		>=15 vs 0-4	3.13(1.99-4.93)	<.0001	3.45(2.17-5.47)	<.0001
	YRI		1.00(0.58-1.75)	0.99	1.00(0.57-1.74)	0.99
	ASA		0.32(0.01-18.50)	0.58	0.31(0.01-18.65)	0.57
	Sex	Male vs Female	1.67(1.21-2.30)	0.0017	1.65(1.20-2.27)	0.0021
	Chest RT	>0 to <20 Gy vs 0	2.22(1.39-3.55)	0.00080	2.18(1.36-3.49)	0.0011
		>=20 Gy vs 0	3.66(2.26-5.94)	<.0001	3.81(2.35-6.16)	<.0001
	Alkylating agents	1st tertile vs 0	1.10(0.61-1.99)	0.76	1.08(0.59-1.95)	0.81
		2nd tertile vs 0	1.65(1.02-2.67)	0.042	1.61(1.00-2.61)	0.052
		3rd tertile vs 0	1.52(1.02-2.27)	0.041	1.46(0.98-2.19)	0.065
	Anthracyclines (COG)	1st tertile vs 0	0.45(0.25-0.82)	0.0084	0.47(0.26-0.86)	0.013
		2nd tertile vs 0	0.51(0.30-0.86)	0.011	0.52(0.31-0.89)	0.016
		3rd tertile vs 0	0.56(0.34-0.92)	0.022	0.58(0.35-0.96)	0.033
	Epipodophyllotoxins	1st tertile vs 0	1.04(0.53-2.04)	0.91	1.03(0.52-2.03)	0.93
		2nd tertile vs 0	0.66(0.31-1.41)	0.29	0.67(0.31-1.41)	0.29
		3rd tertile vs 0	0.65(0.32-1.32)	0.23	0.68(0.34-1.38)	0.29
	Time from diagnosis to the first biospecimen		1.08(0.99-1.17)	0.10	1.08(0.99-1.17)	0.11
	Time from diagnosis to the first biospecimen (square)		1.00(1.00-1.00)	0.71	1.00(1.00-1.00)	0.76
	CPV carriers	Yes vs No		.	2.24(1.28-3.93)	0.004
	<b>SMN-related mortality</b>	Age at diagnosis	5-9 vs 0-4	1.72(0.63-4.65)	0.29	2.19(0.82-5.87)
10-14 vs 0-4			3.14(1.31-7.57)	0.011	4.11(1.72-9.80)	0.0015
>=15 vs 0-4			5.48(2.28-13.12)	0.0001	7.06(2.91-17.17)	<.0001
YRI			1.01(0.36-2.87)	0.98	1.02(0.36-2.90)	0.97
ASA			1.13(0.10-13.26)	0.92	1.09(0.08-15.30)	0.95
Sex		Male vs Female	1.70(0.92-3.13)	0.088	1.67(0.91-3.07)	0.10
Chest RT		>0 to <20 Gy vs 0	2.37(0.93-6.06)	0.070	2.40(0.96-5.97)	0.06
		>=20 Gy vs 0	2.22(0.85-5.81)	0.10	2.48(0.97-6.32)	0.06
Alkylating agents		1st tertile vs 0	0.96(0.25-3.75)	0.95	0.94(0.24-3.73)	0.93
		2nd tertile vs 0	2.89(1.10-7.60)	0.032	2.80(1.07-7.29)	0.035
		3rd tertile vs 0	2.22(1.05-4.71)	0.038	2.07(0.97-4.45)	0.061
Anthracyclines (COG)		1st tertile vs 0	0.45(0.12-1.64)	0.23	0.49(0.13-1.88)	0.30

Status	Variable	Category	HR (95% CI)	P-value	Including CPV in the model	
					HR (95% CI)	P-value
		2nd tertile vs 0	0.30(0.10-0.91)	0.033	0.32(0.10-0.95)	0.040
		3rd tertile vs 0	0.28(0.11-0.74)	0.0098	0.30(0.11-0.81)	0.018
	Epipodophyllotoxins	1st tertile vs 0	0.83(0.18-3.85)	0.82	0.83(0.18-3.88)	0.82
		2nd tertile vs 0	0.28(0.03-2.40)	0.25	0.27(0.03-2.38)	0.24
		3rd tertile vs 0	0.19(0.03-1.10)	0.065	0.21(0.04-1.18)	0.077
	Time from diagnosis to the first biospecimen		1.21(1.01-1.43)	0.035	1.21(1.02-1.44)	0.033
	Time from diagnosis to the first biospecimen (square)		1.00(0.99-1.00)	0.084	1.00(0.99-1.00)	0.087
	CPV carriers	Yes vs No		.	3.80(1.47-9.82)	0.0058
<b>Other-cause mortality</b>	Age at diagnosis	5-9 vs 0-4	1.02(0.55-1.89)	0.95	1.05(0.57-1.95)	0.87
		10-14 vs 0-4	1.81(1.01-3.23)	0.047	1.87(1.03-3.38)	0.039
		>=15 vs 0-4	2.22(1.16-4.23)	0.02	2.29(1.20-4.38)	0.012
	YRI		1.11(0.53-2.29)	0.79	1.10(0.53-2.28)	0.79
	ASA		0.30(0.00-44.20)	0.64	0.29(0.00-46.01)	0.63
	Sex	Male vs Female	1.92(1.23-2.99)	0.0039	1.91(1.23-2.98)	0.0042
	Chest RT	>0 to <20 Gy vs 0	1.96(1.07-3.59)	0.030	1.93(1.04-3.58)	0.036
		>=20 Gy vs 0	4.51(2.40-8.45)	<.0001	4.55(2.44-8.51)	<.0001
	Alkylating agents	1st tertile vs 0	1.26(0.60-2.66)	0.54	1.25(0.60-2.64)	0.55
		2nd tertile vs 0	1.30(0.67-2.51)	0.43	1.29(0.67-2.47)	0.45
		3rd tertile vs 0	1.32(0.76-2.30)	0.32	1.31(0.75-2.28)	0.35
	Anthracyclines (COG)	1st tertile vs 0	0.55(0.27-1.12)	0.099	0.56(0.28-1.14)	0.11
		2nd tertile vs 0	0.53(0.26-1.08)	0.079	0.54(0.27-1.09)	0.085
		3rd tertile vs 0	0.74(0.38-1.45)	0.37	0.75(0.38-1.47)	0.40
	Epipodophyllotoxins	1st tertile vs 0	0.91(0.35-2.34)	0.84	0.91(0.35-2.32)	0.84
		2nd tertile vs 0	1.08(0.48-2.44)	0.85	1.09(0.48-2.45)	0.84
		3rd tertile vs 0	1.00(0.39-2.53)	1.00	1.02(0.40-2.60)	0.97
	Time from diagnosis to the first biospecimen		1.05(0.94-1.19)	0.39	1.05(0.94-1.19)	0.39
	Time from diagnosis to the first biospecimen (square)		1.00(1.00-1.00)	0.80	1.00(1.00-1.00)	0.78
	CPV carriers	Yes vs No		.	1.45(0.61-3.49)	0.40

Abbreviations: SJLIFE, the St. Jude Lifetime Cohort Study; CPV, Cancer Predisposition Variants; HR, Hazard Ratio; CI, Confidence Interval; YRI, Yoruba population (African ancestry) in 1000 Genome Project; ASA, Eastern Asian population (Japanese and Chinese) in 1000 Genomes Project; RT, radiotherapy; SMN, Subsequent Malignant Neoplasm.



**Supplementary Table 15. Multivariable model of mortality risk in CCSS (adjusting for time from diagnosis to the first biospecimen collection).**

Status	Variable	Category	HR (95% CI)	P-value	Including CPV in the model	
					HR (95% CI)	P-value
<b>All-cause mortality</b>	Age at diagnosis	5-9 vs 0-4	1.04(0.81-1.35)	0.75	1.07(0.83-1.38)	0.62
		10-14 vs 0-4	1.50(1.18-1.90)	0.0009	1.53(1.20-1.94)	0.0005
		>=15 vs 0-4	2.09(1.66-2.64)	<.0001	2.15(1.70-2.71)	<.0001
	YRI		1.49(0.76-2.93)	0.25	1.56(0.79-3.06)	0.20
	ASA		0.49(0.15-1.60)	0.23	0.49(0.15-1.62)	0.24
	Sex	Male vs Female	1.04(0.88-1.22)	0.66	1.04(0.88-1.22)	0.65
	Chest RT	>0 to <20 Gy vs 0	1.71(1.34-2.19)	<.0001	1.75(1.37-2.23)	<.0001
		>=20 Gy vs 0	3.65(2.85-4.66)	<.0001	3.77(2.95-4.82)	<.0001
	Alkylating agents	Unknown vs 0	1.56(0.97-2.49)	0.065	1.63(1.02-2.60)	0.042
		1st tertile vs 0	1.06(0.78-1.46)	0.70	1.08(0.79-1.48)	0.64
		2nd tertile vs 0	1.26(0.98-1.63)	0.076	1.28(0.99-1.65)	0.064
		3rd tertile vs 0	1.22(0.96-1.55)	0.11	1.23(0.97-1.56)	0.093
	Anthracyclines	Unknown vs 0	1.14(0.83-1.57)	0.42	1.14(0.83-1.58)	0.41
		1st tertile vs 0	0.64(0.42-0.97)	0.037	0.63(0.41-0.96)	0.033
		2nd tertile vs 0	0.92(0.68-1.26)	0.62	0.93(0.68-1.27)	0.64
		3rd tertile vs 0	1.13(0.87-1.48)	0.36	1.12(0.86-1.47)	0.39
	Epipodophyllotoxins	Unknown vs 0	1.09(0.68-1.75)	0.73	1.09(0.68-1.76)	0.72
		1st tertile vs 0	1.48(0.78-2.82)	0.23	1.39(0.73-2.65)	0.31
		2nd tertile vs 0	0.74(0.23-2.31)	0.60	0.77(0.24-2.41)	0.65
		3rd tertile vs 0	0.75(0.28-2.04)	0.57	0.77(0.29-2.09)	0.61
	Time from diagnosis to the first biospecimen	Unknown vs 0	1.44(0.82-2.55)	0.21	1.37(0.78-2.42)	0.28
			0.98(0.89-1.09)	0.73	0.99(0.89-1.09)	0.79
	Time from diagnosis to the first biospecimen (square)		1.00(1.00-1.00)	0.073	1.00(1.00-1.00)	0.084
CPV carriers	Yes vs NO		.	2.53(1.86-3.45)	<.0001	
<b>SMN-related mortality</b>	Age at diagnosis	5-9 vs 0-4	1.10(0.68-1.77)	0.71	1.13(0.70-1.83)	0.61
		10-14 vs 0-4	1.95(1.28-2.99)	0.0019	1.99(1.30-3.05)	0.0015
		>=15 vs 0-4	3.34(2.22-5.03)	<.0001	3.47(2.31-5.21)	<.0001
	YRI		0.92(0.23-3.70)	0.90	0.98(0.24-3.96)	0.97
	ASA		0.72(0.23-2.19)	0.56	0.67(0.20-2.25)	0.51
	Sex	Male vs Female	0.90(0.69-1.18)	0.45	0.89(0.68-1.17)	0.42
	Chest RT	>0 to <20 Gy vs 0	2.10(1.36-3.24)	0.0008	2.16(1.40-3.34)	0.0005
		>=20 Gy vs 0	4.09(2.67-6.26)	<.0001	4.34(2.84-6.64)	<.0001

Status	Variable	Category	HR (95% CI)	P-value	Including CPV in the model	
					HR (95% CI)	P-value
		Unknown vs 0	3.52(1.76-7.04)	0.0004	3.64(1.85-7.18)	0.0002
	Alkylating agents	1st tertile vs 0	1.07(0.64-1.81)	0.79	1.10(0.65-1.86)	0.72
		2nd tertile vs 0	1.68(1.14-2.48)	0.0093	1.68(1.13-2.49)	0.011
		3rd tertile vs 0	1.45(0.97-2.15)	0.068	1.47(0.99-2.18)	0.058
		Unknown vs 0	1.59(1.03-2.46)	0.037	1.59(1.03-2.48)	0.039
	Anthracyclines	1st tertile vs 0	0.50(0.24-1.04)	0.063	0.50(0.24-1.05)	0.067
		2nd tertile vs 0	0.87(0.54-1.39)	0.55	0.88(0.55-1.42)	0.61
		3rd tertile vs 0	1.01(0.66-1.53)	0.97	1.01(0.67-1.54)	0.95
		Unknown vs 0	1.15(0.55-2.42)	0.71	1.14(0.54-2.42)	0.73
	Epipodophyllotoxins	1st tertile vs 0	2.01(0.79-5.12)	0.14	1.72(0.68-4.31)	0.25
		2nd tertile vs 0	0.67(0.09-4.89)	0.69	0.71(0.10-5.22)	0.74
		3rd tertile vs 0	1.13(0.27-4.65)	0.87	1.18(0.29-4.84)	0.82
		Unknown vs 0	0.38(0.13-1.10)	0.075	0.36(0.13-1.00)	0.050
	Time from diagnosis to the first biospecimen		0.96(0.81-1.13)	0.62	0.96(0.82-1.14)	0.65
	Time from diagnosis to the first biospecimen (square)		1.00(1.00-1.00)	0.17	1.00(1.00-1.00)	0.18
	CPV carriers	Yes vs NO		.	3.73(2.37-5.88)	<.0001
<b>Other-cause mortality</b>	Age at diagnosis	5-9 vs 0-4	1.02(0.73-1.42)	0.91	1.03(0.74-1.44)	0.85
		10-14 vs 0-4	1.26(0.92-1.74)	0.15	1.28(0.93-1.76)	0.13
		>=15 vs 0-4	1.43(1.04-1.95)	0.027	1.44(1.06-1.97)	0.022
	YRI		1.88(0.85-4.16)	0.12	1.93(0.87-4.26)	0.11
	ASA		0.41(0.07-2.21)	0.30	0.40(0.07-2.24)	0.30
	Sex	Male vs Female	1.21(0.98-1.51)	0.081	1.22(0.98-1.51)	0.077
	Chest RT	>0 to <20 Gy vs 0	1.50(1.09-2.08)	0.013	1.52(1.10-2.10)	0.012
		>=20 Gy vs 0	3.43(2.51-4.69)	<.0001	3.49(2.56-4.77)	<.0001
	Alkylating agents	Unknown vs 0	1.03(0.52-2.05)	0.93	1.05(0.53-2.07)	0.90
		1st tertile vs 0	1.09(0.72-1.65)	0.70	1.09(0.72-1.66)	0.67
		2nd tertile vs 0	1.02(0.71-1.46)	0.94	1.02(0.71-1.47)	0.91
		3rd tertile vs 0	0.99(0.71-1.38)	0.96	1.00(0.71-1.39)	0.98
	Anthracyclines	Unknown vs 0	0.91(0.56-1.48)	0.71	0.91(0.56-1.49)	0.71
		1st tertile vs 0	0.73(0.42-1.27)	0.26	0.72(0.42-1.26)	0.25
		2nd tertile vs 0	1.01(0.66-1.56)	0.95	1.01(0.66-1.56)	0.95
		3rd tertile vs 0	1.21(0.84-1.75)	0.31	1.21(0.84-1.75)	0.32
		Unknown vs 0	0.85(0.40-1.79)	0.66	0.85(0.40-1.81)	0.67

Status	Variable	Category	HR (95% CI)	P-value	Including CPV in the model	
					HR (95% CI)	P-value
	Epipodophyllotoxins	1st tertile vs 0	1.26(0.52-3.08)	0.61	1.23(0.51-3.01)	0.64
		2nd tertile vs 0	0.84(0.20-3.49)	0.81	0.86(0.21-3.58)	0.84
		3rd tertile vs 0	0.33(0.05-2.39)	0.27	0.34(0.05-2.42)	0.28
		Unknown vs 0	3.42(1.48-7.87)	0.0039	3.35(1.45-7.76)	0.0047
	Time from diagnosis to the first biospecimen		1.03(0.89-1.18)	0.74	1.03(0.89-1.18)	0.70
	Time from diagnosis to the first biospecimen (square)		1.00(1.00-1.00)	0.59	1.00(1.00-1.00)	0.62
	CPV carriers	Yes vs No		.	1.80(1.14-2.84)	0.012

Abbreviations: CCSS, the Childhood Cancer Survivor Study; CPV, Cancer Predisposition Variants; HR, Hazard Ratio; CI, Confidence Interval; YRI, Yoruba population (African ancestry) in 1000 Genome Project; ASA, Eastern Asian population (Japanese and Chinese) in 1000 Genomes Project; RT, radiotherapy; SMN, Subsequent Malignant Neoplasm.

**Supplementary Table 16. Multivariable cause-specific Cox model in SJLIFE**

Status	Variable	Category	csHR (95% CI)	P-value	Including CPV in the model		
					csHR (95% CI)	P-value	
<b>All-cause mortality</b>	Age at diagnosis	5-9	1.12 (0.70-1.80)	0.63	1.21 (0.75-1.96)	0.43	
	Age at diagnosis	10-14	1.63 (1.05-2.54)	0.030	1.76 (1.12-2.76)	0.014	
	Age at diagnosis	>=15	2.38 (1.52-3.73)	0.0002	2.58 (1.63-4.08)	<.0001	
	YRI		0.87 (0.50-1.52)	0.63	0.88 (0.50-1.53)	0.64	
	ASA		0.12 (0.00-8.72)	0.33	0.11 (0.00-8.55)	0.32	
	Sex	Male	1.62 (1.18-2.23)	0.0029	1.62 (1.18-2.23)	0.0030	
	Chest RT	>0 to <20	2.87 (1.81-4.54)	<.0001	2.83 (1.79-4.48)	<.0001	
	Chest RT	>=20	3.97 (2.43-6.48)	<.0001	4.07 (2.49-6.65)	<.0001	
	Alkylating agents	1st tertile	1.49 (0.82-2.71)	0.19	1.49 (0.82-2.71)	0.19	
	Alkylating agents	2nd tertile	2.14 (1.32-3.48)	0.0022	2.14 (1.31-3.48)	0.0023	
	Alkylating agents	3rd tertile	2.01 (1.36-2.99)	0.0005	2.00 (1.35-2.97)	0.0006	
	Anthracyclines (COG)	1st tertile	0.45 (0.24-0.83)	0.010	0.47 (0.25-0.86)	0.015	
	Anthracyclines (COG)	2nd tertile	0.37 (0.22-0.62)	0.0002	0.38 (0.22-0.63)	0.0002	
	Anthracyclines (COG)	3rd tertile	0.48 (0.29-0.78)	0.0030	0.49 (0.30-0.80)	0.0042	
	Epipodophyllotoxins	1st tertile	0.72 (0.37-1.40)	0.33	0.71 (0.37-1.38)	0.32	
	Epipodophyllotoxins	2nd tertile	0.43 (0.21-0.90)	0.024	0.43 (0.21-0.89)	0.024	
	Epipodophyllotoxins	3rd tertile	0.42 (0.21-0.83)	0.013	0.43 (0.22-0.86)	0.016	
	CPV carriers	Yes			1.89 (1.08-3.30)	0.025	
	<b>SMN-related mortality</b>	Age at diagnosis	5-9	1.53 (0.58-4.09)	0.39	1.89 (0.72-4.94)	0.19
		Age at diagnosis	10-14	2.66 (1.11-6.40)	0.029	3.30 (1.38-7.89)	0.0072
Age at diagnosis		>=15	4.67 (1.98-11.03)	0.0004	5.79 (2.45-13.69)	<.0001	
YRI			0.89 (0.32-2.51)	0.83	0.92 (0.33-2.58)	0.88	
ASA			0.50 (0.03-8.01)	0.62	0.48 (0.03-8.71)	0.62	
Sex		Male	1.66 (0.90-3.06)	0.10	1.66 (0.91-3.05)	0.099	
Chest RT		>0 to <20	2.62 (1.06-6.45)	0.037	2.61 (1.08-6.33)	0.034	
Chest RT		>=20	2.45 (0.91-6.62)	0.078	2.67 (1.01-7.07)	0.049	
Alkylating agents		1st tertile	1.30 (0.31-5.47)	0.728	1.33 (0.31-5.69)	0.70	
Alkylating agents		2nd tertile	3.52(1.34-9.28)	0.011	3.59 (1.36-9.50)	0.010	
Alkylating agents		3rd tertile	2.74(1.23-6.12)	0.014	2.74 (1.24-6.03)	0.013	
Anthracyclines (COG)		1st tertile	0.43(0.11-1.74)	0.24	0.47 (0.11-2.02)	0.31	
Anthracyclines (COG)		2nd tertile	0.24 (0.08-0.75)	0.0144	0.24 (0.08-0.78)	0.017	
Anthracyclines (COG)		3rd tertile	0.28 (0.10-0.74)	0.011	0.29 (0.11-0.80)	0.016	
Epipodophyllotoxins		1st tertile	0.62 (0.14-2.73)	0.52	0.61 (0.14-2.77)	0.52	
Epipodophyllotoxins		2nd tertile	0.20(0.02-1.69)	0.14	0.20 (0.02-1.66)	0.14	

	Epipodophyllotoxins	3rd tertile	0.17 (0.03-0.97)	0.046	0.18 (0.03-1.02)	0.053
	CPV carriers	Yes			3.36 (1.36-8.32)	0.0087
<b>Other-cause mortality</b>	Age at diagnosis	5-9	0.91 (0.49-1.68)	0.76	0.92 (0.50-1.71)	0.80
	Age at diagnosis	10-14	1.39 (0.78-2.48)	0.26	1.41 (0.79-2.54)	0.25
	Age at diagnosis	>=15	1.66 (0.87-3.16)	0.12	1.69 (0.88-3.22)	0.11
	YRI		0.96 (0.47-1.96)	0.90	0.96 (0.47-1.96)	0.90
	ASA		0.08 (0.00-31.13)	0.41	0.08 (0.00-31.34)	0.41
	Sex	Male	1.90 (1.22-2.96)	0.0043	1.90 (1.22-2.96)	0.0043
	Chest RT	>0 to <20	2.73 (1.46-5.10)	0.0016	2.72 (1.45-5.10)	0.0019
	Chest RT	>=20	5.17 (2.62-10.21)	<.0001	5.19 (2.64-10.21)	<.0001
	Alkylating agents	1st tertile	1.74 (0.82-3.69)	0.15	1.74 (0.82-3.69)	0.15
	Alkylating agents	2nd tertile	1.78 (0.88-3.59)	0.11	1.77 (0.88-3.59)	0.11
	Alkylating agents	3rd tertile	1.83 (1.06-3.18)	0.031	1.83 (1.06-3.17)	0.031
	Anthracyclines (COG)	1st tertile	0.54 (0.26-1.14)	0.11	0.55 (0.26-1.15)	0.11
	Anthracyclines (COG)	2nd tertile	0.36 (0.17-0.74)	0.0052	0.36 (0.17-0.74)	0.0054
	Anthracyclines (COG)	3rd tertile	0.59 (0.31-1.14)	0.11	0.59 (0.31-1.15)	0.12
	Epipodophyllotoxins	1st tertile	0.57 (0.23-1.42)	0.23	0.57 (0.23-1.42)	0.23
	Epipodophyllotoxins	2nd tertile	0.63 (0.29-1.40)	0.26	0.63 (0.29-1.40)	0.26
	Epipodophyllotoxins	3rd tertile	0.55 (0.22-1.39)	0.21	0.56 (0.22-1.41)	0.22
		CPV carriers	Yes			1.19 (0.50-2.85)

Abbreviations: SJLIFE, the St. Jude Lifetime Cohort Study; CPV, Cancer Predisposition Variants; csHR, cause-specific Hazard Ratio; CI, Confidence Interval; YRI, Yoruba population (African ancestry) in 1000 Genome Project; ASA, Eastern Asian population (Japanese and Chinese) in 1000 Genomes Project; RT, radiotherapy; SMN, Subsequent Malignant Neoplasm.

**Supplementary Table 17. Multivariable cause-specific Cox model in CCSS.**

Status	Variable	Category	csHR (95% CI)	P-value	Including CPV in the model	
					csHR (95% CI)	P-value
<b>All-cause mortality</b>	Age at diagnosis	5-9	1.07 (0.83-1.38)	0.63	1.08 (0.84-1.40)	0.54
	Age at diagnosis	10-14	1.51 (1.19-1.92)	0.0007	1.54 (1.21-1.96)	0.0004
	Age at diagnosis	>=15	2.13 (1.68-2.69)	<.0001	2.18 (1.72-2.75)	<.0001
	YRI		1.36 (0.69-2.67)	0.38	1.41 (0.72-2.78)	0.32
	ASA		0.45 (0.14-1.48)	0.19	0.46 (0.14-1.52)	0.20
	Sex	Male	1.02 (0.87-1.20)	0.78	1.03 (0.87-1.21)	0.77
	Chest RT	>0 to <20	1.83 (1.44-2.34)	<.0001	1.86 (1.46-2.37)	<.0001
	Chest RT	>=20	3.89 (3.04-4.98)	<.0001	4.02 (3.14-5.14)	<.0001
	Chest RT	Unknown	1.57 (0.97-2.52)	0.064	1.61 (1.00-2.59)	0.049
	Alkylating agents	1st tertile	1.04 (0.76-1.42)	0.82	1.04 (0.76-1.43)	0.79
	Alkylating agents	2nd tertile	1.21 (0.94-1.57)	0.15	1.22 (0.95-1.58)	0.13
	Alkylating agents	3rd tertile	1.20 (0.94-1.53)	0.14	1.21 (0.95-1.54)	0.12
	Alkylating agents	Unknown	1.16 (0.84-1.60)	0.36	1.16 (0.84-1.60)	0.37
	Anthracyclines	1st tertile	0.51 (0.34-0.78)	0.0020	0.51 (0.33-0.78)	0.0017
	Anthracyclines	2nd tertile	0.79 (0.58-1.07)	0.13	0.79 (0.58-1.08)	0.14
	Anthracyclines	3rd tertile	1.00 (0.76-1.30)	0.97	0.99 (0.76-1.29)	0.94
	Anthracyclines	Unknown	0.99 (0.61-1.59)	0.96	1.00 (0.62-1.61)	0.98
	Epipodophyllotoxins	1st tertile	1.22 (0.64-2.30)	0.55	1.14 (0.60-2.15)	0.70
	Epipodophyllotoxins	2nd tertile	0.60 (0.19-1.88)	0.38	0.62 (0.20-1.95)	0.42
	Epipodophyllotoxins	3rd tertile	0.66 (0.25-1.79)	0.41	0.68 (0.25-1.82)	0.44
	Epipodophyllotoxins	Unknown	1.52 (0.86-2.67)	0.15	1.45 (0.83-2.55)	0.20
	CPV carriers	Yes			2.45 (1.80-3.33)	<.0001
	<b>SMN-related mortality</b>	Age at diagnosis	5-9	1.10 (0.68-1.78)	0.69	1.12 (0.70-1.81)
Age at diagnosis		10-14	1.98 (1.29-3.02)	0.0016	2.03 (1.33-3.10)	0.0011
Age at diagnosis		>=15	3.47 (2.30-5.22)	<.0001	3.58 (2.39-5.37)	<.0001
YRI			0.88 (0.21-3.65)	0.86	0.94 (0.22-3.90)	0.93
ASA			0.68 (0.23-2.05)	0.50	0.71 (0.23-2.18)	0.55
Sex		Male	0.89 (0.68-1.17)	0.41	0.89 (0.68-1.17)	0.39
Chest RT		>0 to <20	2.21 (1.48-3.41)	0.0004	2.26 (1.46-3.49)	0.0002
Chest RT		>=20	4.56 (2.96-7.01)	<.0001	4.85 (3.16-7.44)	<.0001
Chest RT		Unknown	3.51 (1.71-7.17)	0.0006	3.57 (1.77-7.19)	0.0004
Alkylating agents		1st tertile	1.05 (0.62-1.77)	0.87	1.06 (0.63-1.80)	0.83
Alkylating agents		2nd tertile	1.59 (1.08-2.35)	0.020	1.61 (1.09-2.39)	0.018
Alkylating agents		3rd tertile	1.42 (0.95-2.11)	0.085	1.44 (0.97-2.15)	0.072

Status	Variable	Category	csHR (95% CI)	P-value	Including CPV in the model	
					csHR (95% CI)	P-value
	Alkylating agents	Unknown	1.56 (1.00-2.44)	0.051	1.54 (0.98-2.43)	0.062
	Anthracyclines	1st tertile	0.40 (0.19-0.83)	0.014	0.40 (0.19-0.83)	0.014
	Anthracyclines	2nd tertile	0.74 (0.46-1.17)	0.19	0.75 (0.47-1.20)	0.23
	Anthracyclines	3rd tertile	0.88 (0.58-1.34)	0.55	0.88 (0.58-1.35)	0.57
	Anthracyclines	Unknown	1.00 (0.48-2.10)	1.00	1.00 (0.47-2.12)	0.99
	Epipodophyllotoxins	1st tertile	1.66 (0.66-4.14)	0.28	1.38 (0.56-3.42)	0.48
	Epipodophyllotoxins	2nd tertile	0.56 (0.08-4.08)	0.57	0.60 (0.08-4.33)	0.61
	Epipodophyllotoxins	3rd tertile	0.99 (0.24-4.07)	0.99	1.02 (0.25-4.21)	0.97
	Epipodophyllotoxins	Unknown	0.45 (0.15-1.33)	0.15	0.44 (0.16-1.23)	0.12
	CPV carriers	Yes			3.71 (2.34-5.86)	<.0001
<b>Other-cause mortality</b>	Age at diagnosis	5-9	1.04 (0.74-1.44)	0.83	1.05 (0.75-1.46)	0.78
	Age at diagnosis	10-14	1.29 (0.94-1.77)	0.12	1.31 (0.95-1.80)	1.00
	Age at diagnosis	>=15	1.53 (1.12-2.09)	0.0080	1.55 (1.14-2.12)	0.0059
	YRI		1.69 (0.76-3.79)	0.20	1.73 (0.77-3.89)	0.18
	ASA		0.39 (0.07-2.03)	0.26	0.39 (0.07-2.06)	0.27
	Sex	Male	1.18 (0.95-1.47)	0.14	1.18 (0.95-1.47)	0.14
	Chest RT	>0 to <20	1.64 (1.19-2.26)	0.0026	1.66 (1.20-2.29)	0.0022
	Chest RT	>=20	3.88 (2.84-5.32)	<.0001	3.95 (2.89-5.40)	<.0001
	Chest RT	Unknown	1.05 (0.52-2.12)	0.90	1.06 (0.52-2.15)	0.87
	Alkylating agents	1st tertile	1.07 (0.70-1.63)	0.75	1.07 (0.71-1.64)	0.74
	Alkylating agents	2nd tertile	1.00 (0.69-1.44)	0.99	1.00 (0.70-1.45)	0.98
	Alkylating agents	3rd tertile	0.99 (0.71-1.39)	0.97	1.00 (0.72-1.40)	0.99
	Alkylating agents	Unknown	0.94 (0.59-1.52)	0.81	0.94 (0.58-1.52)	0.80
	Anthracyclines	1st tertile	0.59 (0.34-1.01)	0.056	0.58 (0.34-1.01)	0.05
	Anthracyclines	2nd tertile	0.86 (0.57-1.32)	0.50	0.87 (0.57-1.32)	0.50
	Anthracyclines	3rd tertile	1.07 (0.74-1.54)	0.72	1.07 (0.74-1.54)	0.74
	Anthracyclines	Unknown	0.81 (0.39-1.66)	0.56	0.81 (0.39-1.68)	0.57
	Epipodophyllotoxins	1st tertile	1.10 (0.45-2.70)	0.83	1.07 (0.43-2.62)	0.89
	Epipodophyllotoxins	2nd tertile	0.72 (0.17-2.96)	0.65	0.73 (0.18-3.04)	0.67
	Epipodophyllotoxins	3rd tertile	0.30 (0.04-2.16)	0.23	0.30 (0.04-2.18)	0.23
	Epipodophyllotoxins	Unknown	3.49 (1.59-7.70)	0.0019	3.42 (1.55-7.54)	0.0024
	CPV carriers	Yes			1.85 (1.16-2.92)	0.0091

Abbreviations: CCSS, the Childhood Cancer Survivor Study; CPV, Cancer Predisposition Variants; csHR, cause-specific Hazard Ratio; CI, Confidence Interval; YRI, Yoruba population (African ancestry) in 1000 Genome Project; ASA, Eastern Asian population (Japanese and Chinese) in 1000 Genomes Project; RT, radiotherapy; SMN, Subsequent Malignant Neoplasm.

**Supplementary Table 18. Multivariable analyses in SJLIFE adjusting for the overall RT and chemotherapy (y/n).**

Status	Variable	Category	HR (95% CI)	P-value	Including CPV in the model	
					subHR (95% CI)	P-value
<b>All-cause mortality</b>	Age at diagnosis	5-9	1.24 (0.78-1.96)	0.36	1.32 (0.83-2.10)	0.24
	Age at diagnosis	10-14	1.83 (1.20-2.79)	0.0050	1.96 (1.28-3.00)	0.0020
	Age at diagnosis	>=15	2.56 (1.68-3.88)	<.0001	2.75 (1.80-4.19)	<.0001
	YRI		0.93 (0.53-1.62)	0.79	0.92 (0.53-1.60)	0.76
	ASA		0.08 (0.00-6.58)	0.26	0.08 (0.00-6.55)	0.26
	Sex	Male	1.57 (1.15-2.15)	0.0049	1.57 (1.15-2.16)	0.0048
	Cranial /Abdomen /Pelvis /Chest /Neck RT	Yes	3.91 (2.58-5.92)	<.0001	3.90 (2.58-5.90)	<.0001
	Alkylating agents /Anthracyclines /Epipodophyllotoxins	Yes	1.12 (0.76-1.65)	0.57	1.15 (0.78-1.70)	0.48
	CPV carriers	Yes			2.05 (1.19-3.52)	0.0096
<b>SMN-related mortality</b>	Age at diagnosis	5-9	1.61 (0.60-4.30)	0.34	1.87 (0.73-4.83)	0.19
	Age at diagnosis	10-14	2.71 (1.13-6.50)	0.025	3.18 (1.38-7.31)	0.0065
	Age at diagnosis	>=15	4.32 (1.80-10.34)	0.0010	5.11 (2.19-11.94)	0.0002
	YRI		1.01 (0.36-2.83)	0.99	0.98 (0.34-2.80)	0.97
	ASA		0.36 (0.02-6.02)	0.48	0.38 (0.02-6.45)	0.50
	Sex	Male	1.59 (0.86-2.95)	0.14	1.60 (0.87-2.97)	0.13
	Cranial /Abdomen /Pelvis /Chest /Neck RT	Yes	3.39 (1.53-7.54)	0.0027	3.45 (1.58-7.53)	0.0019
	Alkylating agents /Anthracyclines /Epipodophyllotoxins	Yes	1.05 (0.52-2.15)	0.89	1.12 (0.54-2.33)	0.76
	CPV carriers	Yes			3.69 (1.57-8.69)	0.0028
<b>Other-cause mortality</b>	Age at diagnosis	5-9	1.05 (0.58-1.88)	0.88	1.06 (0.59-1.92)	0.84
	Age at diagnosis	10-14	1.61 (0.95-2.73)	0.076	1.64 (0.96-2.80)	0.071
	Age at diagnosis	>=15	1.87 (1.07-3.27)	0.028	1.90 (1.09-3.33)	0.024
	YRI		1.00 (0.48-2.07)	0.99	0.99 (0.48-2.06)	0.99
	ASA		0.07 (0.00-27.27)	0.38	0.07 (0.00-27.58)	0.38
	Sex	Male	1.85 (1.21-2.82)	0.0046	1.85 (1.21-2.82)	0.0046
	Cranial /Abdomen /Pelvis /Chest /Neck RT	Yes	3.97 (2.30-6.85)	<.0001	3.96 (2.29-6.85)	<.0001
	Alkylating agents /Anthracyclines /Epipodophyllotoxins	Yes	1.21 (0.72-2.03)	0.48	1.22 (0.72-2.04)	0.46
	CPV carriers	Yes			1.24 (0.54-2.86)	0.62

Abbreviations: SJLIFE, the St. Jude Lifetime Cohort Study; CPV, Cancer Predisposition Variants; subHR, subdistribution Hazard Ratio; CI, Confidence Interval; YRI, Yoruba population (African ancestry) in 1000 Genome Project; ASA, Eastern Asian population (Japanese and Chinese) in 1000 Genomes Project; RT, radiotherapy; SMN, Subsequent Malignant Neoplasm.



**Supplementary Table 19. Multivariable analyses in CCSS adjusting for the overall RT and chemotherapy (y/n).**

Status	Variable	Category	HR (95% CI)	P-value	Including CPV in the model	
					subHR (95% CI)	P-value
<b>All-cause mortality</b>	Age at diagnosis	5-9	1.18 (0.90-1.56)	0.24	1.19 (0.91-1.57)	0.21
	Age at diagnosis	10-14	1.90 (1.47-2.44)	<.0001	1.94 (1.51-2.50)	<.0001
	Age at diagnosis	>=15	2.98 (2.34-3.78)	<.0001	3.03 (2.38-3.85)	<.0001
	YRI		1.11 (0.50-2.46)	0.80	1.12 (0.51-2.50)	0.78
	ASA		0.41 (0.11-1.50)	0.18	0.41 (0.11-1.50)	0.18
	Sex	Male	0.98 (0.82-1.17)	0.85	0.99 (0.83-1.18)	0.89
	Cranial /Abdomen /Pelvis /Chest /Neck RT	Yes	2.51 (2.01-3.15)	<.0001	2.56 (2.04-3.21)	<.0001
	Alkylating agents /Anthracyclines /Epipodophyllotoxins	Yes	0.94 (0.78-1.12)	0.46	0.94 (0.79-1.13)	0.51
	CPV carriers	Yes			2.15 (1.52-3.05)	<.0001
<b>SMN-related mortality</b>	Age at diagnosis	5-9	1.26 (0.75-2.13)	0.38	1.28 (0.76-2.15)	0.36
	Age at diagnosis	10-14	2.74 (1.76-4.28)	<.0001	2.85 (1.82-4.45)	<.0001
	Age at diagnosis	>=15	5.03 (3.31-7.67)	<.0001	5.18 (3.40-7.88)	<.0001
	YRI		1.02 (0.27-3.96)	0.97	1.04 (0.27-4.07)	0.95
	ASA		0.54 (0.18-1.68)	0.29	0.53 (0.17-1.69)	0.29
	Sex	Male	0.88 (0.66-1.18)	0.40	0.89 (0.66-1.19)	0.43
	Cranial /Abdomen /Pelvis /Chest /Neck RT	Yes	2.90 (1.95-4.31)	<.0001	3.02 (2.03-4.49)	<.0001
	Alkylating agents /Anthracyclines /Epipodophyllotoxins	Yes	0.93 (0.69-1.25)	0.63	0.94 (0.70-1.27)	0.70
	CPV carriers	Yes			2.93 (1.73-4.99)	<.0001
<b>Other-cause mortality</b>	Age at diagnosis	5-9	1.14 (0.80-1.63)	0.47	1.15 (0.81-1.63)	0.45
	Age at diagnosis	10-14	1.55 (1.11-2.17)	0.010	1.57 (1.12-2.20)	0.0085
	Age at diagnosis	>=15	2.05 (1.48-2.85)	<.0001	2.07 (1.49-2.87)	<.0001
	YRI		1.15 (0.38-3.50)	0.80	1.16 (0.38-3.54)	0.79
	ASA		0.47 (0.09-2.36)	0.36	0.47 (0.09-2.38)	0.36
	Sex	Male	1.13 (0.88-1.44)	0.34	1.13 (0.89-1.44)	0.33
	Cranial /Abdomen /Pelvis /Chest /Neck RT	Yes	2.32 (1.72-3.13)	<.0001	2.34 (1.74-3.17)	<.0001
	Alkylating agents /Anthracyclines /Epipodophyllotoxins	Yes	0.92 (0.72-1.18)	0.53	0.93 (0.73-1.19)	0.55
	CPV carriers	Yes			1.60 (0.95-2.71)	0.077

Abbreviations: CCSS, the Childhood Cancer Survivor Study; CPV, Cancer Predisposition Variants; subHR, subdistribution Hazard Ratio; CI, Confidence Interval; YRI, Yoruba population (African ancestry) in 1000 Genome Project; ASA, Eastern Asian population (Japanese and Chinese) in 1000 Genomes Project; RT, radiotherapy; SMN, Subsequent Malignant Neoplasm.

**Supplementary Table 20. Subsequent malignant neoplasms (SMNs) diagnosed among survivors who were CPV carriers and died from SMNs.**

<b>Childhood Cancer diagnosis</b>	<b>Cause of death (SMN types)</b>	<b>CPG</b>	<b>Cohort</b>
HL	Other connective and soft tissue	SDHB	SJLIFE
WT	Kidney, except renal pelvis	WT1	SJLIFE
RB	Other connective and soft tissue	RB1	SJLIFE
RB	Bone and articular cartilage of limbs	RB1	SJLIFE
OS	Kidney, except renal pelvis	FH	SJLIFE
ALL	Central Nervous System	TMEM127	SJLIFE
STS	All Other Malignant Neoplasms	NF1	CCSS
OS	Breast	TP53	CCSS
CNS	Central Nervous System	NF1	CCSS
CNS	Central Nervous System	NF1	CCSS
NHL	Prostate (male only)	CDKN2A	CCSS
NHL	All Other Malignant Neoplasms	TP53	CCSS
OS	Large Intestine	TP53	CCSS
NHL	All Other Malignant Neoplasms	PMS2	CCSS
STS	Central Nervous System	TP53	CCSS
HL	Biliary Passages and Liver Primary	PHOX2B	CCSS
STS	Breast	TP53	CCSS
CNS	Central Nervous System	NF1,NF2	CCSS
HL	Stomach	BRCA2	CCSS
CNS	Biliary Passages and Liver Primary	NF1	CCSS
CNS	Central Nervous System	NF1,BRAF	CCSS
NBL	Central Nervous System	NF1	CCSS
STS	Bronchus, Trachea, Lung	TP53	CCSS
HL	All Other Malignant Neoplasms	BRCA2	CCSS
WT	Central Nervous System	NRAS	CCSS
NHL	Non-Hodgkin's Lymphoma	NF1	CCSS
ALL	Central Nervous System	PTPN11,SMARCA4	CCSS
HL	Biliary Passages and Liver Primary	BRCA2	CCSS

Abbreviations: CPG, Cancer Predisposition Genes; SJLIFE, the St. Jude Lifetime Cohort Study; CCSS, the Childhood Cancer Survivor Study; ALL, Acute Lymphoblastic Leukemia; HL, Hodgkin Lymphoma; NHL, Non-Hodgkin Lymphoma; CNS, Central Nervous System; WT, Wilms Tumor; NBL, Neuroblastoma; RB, Retinoblastoma; OS, Osteosarcoma; STS, Soft Tissue Sarcoma.

**Supplementary Table 21. Fixed effects meta-analysis of treatment stratified models.**

<b>Category</b>	<b>OR</b>	<b>95% CI</b>	<b>P-value</b>	<b>P<sub>het</sub></b>	<b>I<sup>2</sup></b>
Chest-RT < 20 Gy*	3.67	(2.23-6.05)	<.0001		
Chest-RT ≥ 20 Gy	1.52	(0.45-5.10)	0.50		
Combined	3.20	(2.01-5.11)	<.0001	0.17	47.1
Alkylating agents 2nd/3rd tertile	3.85	(1.94-7.63)	0.00011		
Alkylating agents 0/1st tertile	2.83	(1.50-5.34)	0.0014		
Combined	3.26	(2.04-5.22)	<.0001	0.49	0

Abbreviations: OR, Odds Ratio; CI, Confidence Interval; P<sub>het</sub>, heterogeneity p value based on Cochran's Q statistic; RT, radiotherapy; \*Including no chest-RT.