

Pathway	Oncogene/Tumor Suppressor	Type of Alteration	WT (n=12)	KrasLA1 (n=8)	p53+/- (n=4)	NIR p53 -/- (n=7)
<b>Notch Signaling</b>						
Notch1	Oncogene	Mutation	75.0%	62.5%	25.0%	28.6%
Ikzf1	Tumor Suppressor	CNVs	75.0%	62.5%	50.0%	28.6%
Ikzf1	Tumor Suppressor	Mutation	50.0%	37.5%	25.0%	0.0%
<b>PI3K/AKT/mTOR pathway</b>						
Akt1	Oncogene	Mutation	8.3%	12.5%	0.0%	0.0%
Pten	Tumor Suppressor	CNVs	25.0%	0.0%	25.0%	42.9%
Pten	Tumor Suppressor	Mutation	16.7%	0.0%	50.0%	14.3%
Mtor	Oncogene	CNVs	8.3%	0.0%	75.0%	28.6%
Mtor	Oncogene	Mutation	0.0%	0.0%	0.0%	14.3%
<b>MEK/ERK Pathway</b>						
Kras	Oncogene	Mutation	8.3%	100.0%	0.0%	0.0%
Flt3	Oncogene	CNVs	0.0%	0.0%	25.0%	0.0%
Ptpn11	Oncogene	Mutation	8.3%	0.0%	0.0%	0.0%
Cxcr4	Oncogene	Mutation	8.3%	0.0%	0.0%	0.0%
Ackr3	Oncogene	Mutation	0.0%	12.5%	0.0%	0.0%
<b>Epigenetic Modifiers</b>						
Chd4	Oncogene	Mutation	8.3%	0.0%	0.0%	0.0%
Dnmt3a	Tumor Suppressor	CNVs	0.0%	0.0%	25.0%	42.9%
Esr1	Oncogene	Mutation	0.0%	12.5%	0.0%	0.0%
Bcl11b	Tumor Suppressor	CNVs	50.0%	50.0%	75.0%	28.6%
Bcl11b	Tumor Suppressor	Mutation	8.3%	0.0%	0.0%	0.0%
Dicer1	Tumor Suppressor	CNVs	66.7%	75.0%	50.0%	71.4%
Ezh2	Oncogene	Mutation	8.3%	0.0%	0.0%	0.0%
Kmt2c	Tumor Suppressor	Mutation	0.0%	12.5%	0.0%	0.0%
<b>Hippo Pathway</b>						
Nf2	Tumor Suppressor	CNVs	50.0%	62.5%	50.0%	28.6%
Fat1	Tumor Suppressor	Mutation	0.0%	0.0%	0.0%	14.3%
<b>Wnt Signaling</b>						
Lrig3	Tumor Suppressor	CNVs	25.0%	0.0%	25.0%	57.1%
Lrig3	Tumor Suppressor	Mutation	8.3%	0.0%	0.0%	0.0%
Cdh11	Tumor Suppressor	CNVs	50.0%	0.0%	0.0%	100.0%
Rspo3	Oncogene	CNVs	25.0%	12.5%	50.0%	14.3%
Lrp1b	Tumor Suppressor	Mutation	0.0%	12.5%	0.0%	0.0%
<b>DNA Damage Response</b>						
p53	Tumor Suppressor	CNVs	8.3%	12.5%	100.0%	100.0%
p53	Tumor Suppressor	Mutation	16.7%	0.0%	0.0%	0.0%
Fancg	Tumor Suppressor	CNVs	58.3%	37.5%	100.0%	57.1%
Rpl5	Tumor Suppressor	Mutation	8.3%	0.0%	0.0%	0.0%
Xpa	Tumor Suppressor	Mutation	0.0%	0.0%	25.0%	0.0%
<b>Others</b>						
Ncoa4	Tumor Suppressor	Mutation	0.0%	0.0%	0.0%	14.3%
Stil	Oncogene	Mutation	8.3%	0.0%	0.0%	0.0%
Pold1	Tumor Suppressor	CNVs	33.3%	62.5%	75.0%	14.3%
Ptprb	Tumor Suppressor	Mutation	8.3%	0.0%	0.0%	0.0%
Ptprc	Tumor Suppressor	Mutation	8.3%	0.0%	0.0%	0.0%
Tdpoz5	Tumor Suppressor	CNVs	16.7%	0.0%	0.0%	71.4%
Tdpoz3	Tumor Suppressor	Mutation	0.0%	0.0%	0.0%	14.3%

**Table S5.** Summary of mutations and copy number variations in COSMIC genes among different cohorts of thymic lymphomas. Note: the frequency of Kras mutation and p53 mutation in Kras<sup>LA1</sup> and p53 deficient mice, respectively, is defined as 100%.