

**Table EV2: Description of all Illumina sequencing data used in this study (GSE174775)**

| GEO series # | GEO accession # | Exp #  | Sample description       | Genotype                          | Cell preparation             | Species | Sequencing protocol |
|--------------|-----------------|--------|--------------------------|-----------------------------------|------------------------------|---------|---------------------|
| GSE174775    | GSM5327574      | 29936  | Bio-ChIP-Seq Pro-B       | Pax5(Bio/Bio) Rag1(Cre/Cre)       | Ex-vivo                      | Mouse   | 50bp paired-end     |
| GSE174775    | GSM5327575      | 29938  | Bio-ChIP-Seq Pro-B       | Pax5(Bio/Bio) Rag1(Cre/Cre)       | Ex-vivo                      | Mouse   | 50bp paired-end     |
| GSE174775    | GSM5327576      | 40030  | Bio-ChIP-Seq B-ALL       | Pax5(Jak2/+) Meox2(Cre/+)         | Ex-vivo                      | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327577      | 46051  | Bio-ChIP-Seq B-ALL       | Pax5(Jak2/+) Meox2(Cre/+)         | Ex-vivo                      | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327578      | 38870  | Bio-ChIP-Seq Pro-B       | Pax5(Jak2/+) Meox2(Cre/+)         | Pro-B culture                | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327579      | 40031  | Bio-ChIP-Seq Pro-B       | Pax5(Jak2/+) Meox2(Cre/+)         | Pro-B culture                | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327580      | 100885 | ChIP-Seq H3K27ac Pro-B   | Pax5(Jak2/-)                      | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327581      | 100886 | ChIP-Seq H3K27ac Pro-B   | Pax5(Jak2/-)                      | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327582      | 100884 | ChIP-Seq H3K27ac Pro-B   | Pax5(Prd/-)                       | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327583      | 100887 | ChIP-Seq H3K27ac Pro-B   | Pax5(Prd/-)                       | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327584      | 100893 | ChIP-Seq H3K27me3 Pro-B  | Pax5(Jak2/-)                      | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327585      | 100894 | ChIP-Seq H3K27me3 Pro-B  | Pax5(Jak2/-)                      | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327586      | 100892 | ChIP-Seq H3K27me3 Pro-B  | Pax5(Prd/-)                       | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327587      | 100895 | ChIP-Seq H3K27me3 Pro-B  | Pax5(Prd/-)                       | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327588      | 100881 | ChIP-Seq H3K4me3 Pro-B   | Pax5(Jak2/-)                      | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327589      | 100882 | ChIP-Seq H3K4me3 Pro-B   | Pax5(Jak2/-)                      | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327590      | 100880 | ChIP-Seq H3K4me3 Pro-B   | Pax5(Prd/-)                       | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327591      | 100883 | ChIP-Seq H3K4me3 Pro-B   | Pax5(Prd/-)                       | Progenitor culture           | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327592      | 138003 | ChIP-Seq Pax5 B-ALL      | Pax5(Jak2/+)                      | B-ALL cell line              | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327593      | 138002 | ChIP-Seq Pax5 B-ALL      | Pax5(Jak2Prdm/+)                  | B-ALL cell line              | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327594      | 35059  | ChIP-Seq Pax5 Pro-B      | wild-type C57BL/6J                | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327595      | 35061  | ChIP-Seq Pax5 Pro-B      | wild-type C57BL/6J                | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327596      | 138001 | ChIP-Seq input B-ALL     | Pax5(Jak2Prdm/+)                  | B-ALL cell line              | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327597      | 35327  | ChIP-Seq input Pro-B     | Rag1(Cre/Cre)                     | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp paired-end     |
| GSE93764     | GSM2461724      | 10195  | ChIP-Seq input Pro-B     | Rag2(-/-)                         | Pro-B culture                | Mouse   | 75bp paired-end     |
| GSE174775    | GSM5327598      | 8265   | ChIP-Seq Stat5 Pro-B     | wild-type                         | Pro-B culture (SB+)          | Mouse   | 36bp single-end     |
| GSE174775    | GSM5327599      | 36328  | RNA-Seq control B-ALL    | Pax5(+/-) Cdkn2ab(+/-)            | Ex-vivo                      | Mouse   | 125bp paired-end    |
| GSE174775    | GSM5327600      | 36329  | RNA-Seq control B-ALL    | Pax5(+/-) Cdkn2ab(+/-)            | Ex-vivo                      | Mouse   | 125bp paired-end    |
| GSE84987     | GSM2255562      | 17226  | RNA-Seq Large pre-B      | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE84987     | GSM2255569      | 20759  | RNA-Seq Large pre-B      | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327601      | 36345  | RNA-Seq Pax5-Jak2 B-ALL  | Pax5(Jak2/+)                      | Ex-vivo                      | Mouse   | 125bp paired-end    |
| GSE174775    | GSM5327602      | 36346  | RNA-Seq Pax5-Jak2 B-ALL  | Pax5(Jak2/+)                      | Ex-vivo                      | Mouse   | 125bp paired-end    |
| GSE174775    | GSM5327603      | 36347  | RNA-Seq Pax5-Jak2 B-ALL  | Pax5(Jak2/+)                      | Ex-vivo                      | Mouse   | 125bp paired-end    |
| GSE174775    | GSM5327604      | 36348  | RNA-Seq Pax5-Jak2 B-ALL  | Pax5(Jak2/+)                      | Ex-vivo                      | Mouse   | 125bp paired-end    |
| GSE174775    | GSM5327605      | 24394  | RNA-Seq Pro-B            | Stat5(fl/+) Vav-Bcl2 Rag1(Cre/+)  | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327606      | 24395  | RNA-Seq Pro-B            | Stat5(fl/+) Vav-Bcl2 Rag1(Cre/+)  | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327607      | 24396  | RNA-Seq Pro-B            | Stat5(fl/fl) Vav-Bcl2 Rag1(Cre/+) | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327608      | 24397  | RNA-Seq Pro-B            | Stat5(fl/fl) Vav-Bcl2 Rag1(Cre/+) | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327609      | 38492  | RNA-Seq Pro-B            | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327610      | 38493  | RNA-Seq Pro-B            | Pax5(-/-)                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327611      | 38494  | RNA-Seq Pro-B            | Pax5(-/-)                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327612      | 38496  | RNA-Seq Pro-B            | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327613      | 38497  | RNA-Seq Pro-B            | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE84987     | GSM2255560      | 17224  | RNA-Seq Pro-B            | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327614      | 99560  | RNA-Seq Pro-B            | Pax5(+/+) Meox2(Cre/+)            | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327615      | 99561  | RNA-Seq Pro-B            | Pax5(+/+) Meox2(Cre/+)            | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327616      | 99562  | RNA-Seq Pro-B            | Pax5(+/+) Meox2(Cre/+)            | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327617      | 99563  | RNA-Seq Pro-B            | Pax5(Jak2/+) Meox2(Cre/+)         | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327618      | 99564  | RNA-Seq Pro-B            | Pax5(Jak2/+) Meox2(Cre/+)         | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp single-end     |
| GSE174775    | GSM5327619      | 99565  | RNA-Seq Pro-B            | Pax5(Jak2/+) Meox2(Cre/+)         | Ex-vivo, FACS sorted, pooled | Mouse   | 50bp single-end     |
| GSE84987     | GSM2255568      | 20758  | RNA-Seq Pro-B            | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE84987     | GSM2255561      | 17225  | RNA-Seq Small pre-B      | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
| GSE84987     | GSM2255570      | 20760  | RNA-Seq Small pre-B      | wild-type                         | Ex-vivo, FACS sorted         | Mouse   | 50bp single-end     |
|              |                 | 43239  | RNA-seq PAX5-JAK2+ B-ALL | PAX5-JAK2 rearrangement           | Ex-vivo                      | Human   | 125bp paired-end    |
|              |                 | 43241  | RNA-seq PAX5-JAK2+ B-ALL | PAX5-JAK2 rearrangement           | Ex-vivo                      | Human   | 125bp paired-end    |
|              | SJBALL020069    |        | RNA-seq PAX5-JAK2+ B-ALL | PAX5-JAK2 rearrangement           | Ex-vivo                      | Human   | 100 bp paired-end   |
|              | SJBALL020138    |        | RNA-seq PAX5-JAK2+ B-ALL | PAX5-JAK2 rearrangement           | Ex-vivo                      | Human   | 100 bp paired-end   |
|              | SJBALL020936    |        | RNA-seq PAX5-JAK2+ B-ALL | PAX5-JAK2 rearrangement           | Ex-vivo                      | Human   | 100 bp paired-end   |
|              | SJBALL020966    |        | RNA-seq PAX5-JAK2+ B-ALL | PAX5-JAK2 rearrangement           | Ex-vivo                      | Human   | 100 bp paired-end   |
|              | SJBALL021329    |        | RNA-seq PAX5-JAK2+ B-ALL | PAX5-JAK2 rearrangement           | Ex-vivo                      | Human   | 100 bp paired-end   |
|              | SJBALL265       |        | RNA-seq PAX5-JAK2+ B-ALL | PAX5-JAK2 rearrangement           | Ex-vivo                      | Human   | 100 bp paired-end   |