

Appendix A. Primers and linker sequences used for Splinkerette PCR

| | | | <i>Sleeping Beauty</i> * | <i>piggyBac</i> |
|---------------------------|---------------------|-------|--|------------------------------------|
| Linker Sequences | FWD | | CGAAGAGTAACCGTTGCTAGGAGAGACCGTGGCTGAATGAGACTGGTGTCTGACA CTAGTGG | |
| | REV | | GATCCCACTAGTGTCTGACACCCAGTCTCTAATTTTTTTTTTCAAAAAA | |
| Primers on the linker | 1 st PCR | | CGAAGAGTAACCGTTGCTAGGAGAGACC | |
| | 2 nd PCR | | GTGGCTGAATGAGACTGGTGTCTGAC | |
| | Sequencing** | | ATGAGACTGGTGTCTGACACTAGTG | |
| Primers on the transposon | 1 st PCR | 5' TR | GTGTCATGCACAAAGTAGATG | TAAATAAACCTCGATATACAGACCGAT AAA |
| | | 3' TR | | CAAAATCAGTGACACTTACCGCATTGA CAA |
| | 2 nd PCR | 5' TR | GATGTCCTAACTGACTTGCC | ATATACAGACCGATAAAACACATGCGT CAA |
| | | 3' TR | | CTTACCGCATTGACAAGCACGCCTCAC GGG |
| | Sequencing | 5' TR | GATGTCCTAACTGACTTGCC | TTTTACGCATGATTATCTTTAACGTACG TC |
| | | 3' TR | | TTAGAAAGAGAGAGCAATATTTCAAGA ATG |

* For *Sleeping Beauty* uses the same primers for 5' and 3' PCR since the sequences for 5' and 3' terminal repeats are identical for *Sleeping Beauty*.

** Sequencing primers are primers used for sequencing the splinkerette PCR products. They could be either identical or downstream of the 2nd PCR primers.

Appendix B. ABBREVIATIONS

4-OHT – 4-Hydroxytamoxifen

AML1 – Acute Myeloid Leukemia 1

BAC – bacterial artificial clone

BLAT – BLAST-Like Alignment Tool

BSD – Blasticidin

cALL – childhood Acute Lymphoblastic Leukemia

CGH – comparative genomic hybridisation

cHS4 – chicken hypersensitive site 4 (an insulator sequence of the chicken β -like globin gene cluster)

CIS – Common Insertion Sites

EMS – ethyl methane sulphate

ENU – N-ethyl-N-nitrosourea

ERT2 – estrogen receptor ligand-binding domain

EtOH – ethanol

EUCOMM – European Conditional Mouse Mutagenesis Program

FACS – fluorescence-activated cell sorting

GFP – green fluorescent protein

HGP – Human Genome Project

HIV – human immunodeficiency virus

HTLV – human T-cell lymphotropic virus

iMapper – Insertional Mutagenesis Mapping and Analysis Tool

IRES – internal ribosomal entry site

KOMP – Knockout Mouse Project

LM-PCR – linker mediated PCR

LSA – local sequence alignment

LTR – long terminal repeat

MITEs – Miniature Inverted-repeat Transposable Elements

MMTV – mouse mammary tumour viruses

MSCV – murine stem cell virus

MuLV – murine leukaemia virus

ORF – open reading frame

PAX5 – Paired-Box-Containing Gene 5

PB – *piggyBac*

PBS – phosphate buffered saline

PCR – polymerase chain reaction

PI – propidium iodide

polyA – polyadenylation signal

RB – retinoblastoma

RISC – RNA Induced Silencing Complex

RIP1 – receptor-interacting protein kinase 1

RNAi – RNA interference

RT-PCR – Reverse Transcriptase Polymerase Chain Reaction

SA – splicing acceptor

SB – *Sleeping Beauty*

SD – splicing donor

shRNA – small hairpin RNA

siRNA – small interfering RNA

SNP – single nucleotide polymorphism

SOAP – Short OligoNucleotide Alignment Program

SSAHA – Sequence Search and Alignment by Hashing Algorithm

TR – terminal repeat

UCSC – University of California Santa Cruz genome browser

Appendix C. Publication 1 - Chromosomal mobilization and reintegration of *Sleeping Beauty* and *piggyBac* transposons

Appendix D. Publication 2 - *iMapper*: a web application for the automated analysis and mapping of insertional mutagenesis sequence data against Ensembl genomes

Appendix E. Publication 3 - Slingshot: a *piggyBac* based transposon system for tamoxifen-inducible 'self-inactivating' insertional mutagenesis