Supplementary information S2 (figure) | **Recurrent and significantly mutated genes identified from analysis of whole-exome and whole-genome sequencing studies of haematologic malignancies.** Recurrently mutated genes (Recurrent Mut.) and significantly mutated genes (SMGs) demonstrated to possess a higher mutation rate than the calculated background mutation rate (BMR) are shown for whole-exome/whole-genome sequencing (WES/WGS) studies for a number of haematologic malignancies where available. Approaches to identify SMGs (Sig. approaches) and False Discovery Rate (FDR), a statistical method used to correct for multiple hypothesis testing indicating the expected proportion of "false discoveries", are shown where available.

Acute Myeloid Leukemia (AML)

TCGA, 2013 (REF. 33)

SMG
DNMT3A
NPM1
FLT3
TET2
RUNX1
IDH2
IDH1
CEBPA
TP53
NRAS
WT1
KIT
PTPN11
KRAS
U2AF1
SMC1A
SMC3
PHF6
FAM5C
STAG2
RAD21
EZH2
HNRNPK

Sig. Approach:
MuSiC (FDR < 0.05)

Myelodysplastic Syndromes (MDS)

Yoshida *et al.*, 2011 (REF. 89)

MDS/CMML/AML-MRC

Recurrent Mut.
TET2
U2AF1
ZRSR2
NRAS
SRSF2
ASXL1
BCOR
DNMT3A
EZH2
KRAS
RUNX1
TP53
ATRX
CBL
FLT3
IDH1
IDH2
SF3B1
STAG2

Sig. Approach:
Knowledge based

Chronic Lymphocytic Leukemia (CLL)

Wang *et al.*, 2011 (REF. 92)

SMG	Incidence
TP53	15%
SF3B1	15%
MYD88	10%
ATM	9%
FBXW7	4%
NOTCH1	4%
ZMYM3	4%
DDX3X	3%
MAPK1	3%

Sig. Approach:
MutSig (FDR≤0.1)

Puente *et al.*, 2011 (ICGC) (REF. 29)

	IGHV: unmutated	mutated
Recurrent Mut.	Incidence	Incidence
NOTCH1	20.4%	7%
MYD88	0.8%	5.6%
XPO1	4.6%	0%
KLHL6	0%	4.5%

Sig. Approach:
Frequency

Quesada *et al.*, 2012 (ICGC) (REF. 30)

	IGHV: unmutated	mutated
Recurrent Mut.	Incidence	Incidence
NOTCH1	2.8%	10.1%
SF3B1	7.9%	20.5%
POT1	0%	11.1%
CHD2	8.3%	0%
LRP1B	5.0%	4.4%

Sig. Approach:
Frequency

Fabbri *et al.*, 2011 (REF. 94)

Recurrent Mut.	Incidence
NOTCH1	15%
TP53	8%
PLEKHG5	4%
TGM7	4%
BIRC3	4%

Sig. Approach:
Frequency

Diffuse Large B Cell Lymphoma (DLBCL)

Lohr *et al.*, 2012 (REF. 99)

SMG	Incidence
PCLO	35%
PIM1	31%
MLL2	29%
TP53	24%
TNFRSF14	22%
GNA13	20%
CARD11	20%
MEF2B	18%
CD79B	16%
BTG1	16%
HIST1H1C	14%
EZH2	14%
TMSL3	12%
CD58	10%

Sig. Approach:
MutSig (FDR≤0.1)

Pasqualucci *et al.*, 2011 (REF. 101)

Recurrent Mut.	Recurrent Mut.
MLL2	TMEM30A
CREBBP	EP300
TP53	DPYD
MYOM2	DSC3
TNFAIP3	KLF2
PIM1	MED12L
CD36	MTMR8
B2M	PMS1
CD79B	TSC22D1
PRDM1	OFD1
CARD11	TRAF3
BCL2	BCL2L10
MEF2B	BRSK1
MYD88	CAMTA1
ANKLE2	CYTSB
KDM2B	DUSP9
HNF1B	FBXO31
MYC	GRB2
CD58	HMGB1
EZH2	MYO1G
ADAMTSL3	PPP2R5A
AKAP8	RASGEF1A
C12orf35	RGAG1
CCND3	SERPINA1
DCHS1	SMARCA1
DUSP27	ZNF521
MAGEC3	ZWILCH
TLL2	NOTCH1

Sig. Approach:
Frequency

Paediatric Acute Lymphoblastic Leukemia (ALL)

Zhang *et al.*, 2012 (REF. 97)

ETP ALL		Non-ETP ALL	
Recurrent Mut.	Incidence	Recurrent Mut.	Incidence
ETV6	33%	CDKN2A	81%
WT1	28%	NOTCH1	43%
CDKN2A	25%	PTEN	26%
PHF6	25%	PHF6	21%
DNM2	13%	FBXW7	14%
NRAS	17%	WT1	12%
SUZ12	11%	EZH2	12%
EZH2	16%	ETV6	10%
NOTCH1	16%	DNM2	10%
RUNX1	16%	NRAS	10%
FLT3	14%	CTCF	10%
EED	13%	EED	7%
IKZF1	13%	BCL11B	7%
JAK3	11%	ECT2L	7%
NF1	11%	RUNX1	5%
GATA3	9%	NF1	5%
PTEN	9%	IL7R	5%
CTCF	8%	RELN	5%
ECT2L	8%	SUZ12	2%
IL7R	8%	IKZF1	2%
JAK1	8%	JAK1	2%
SETD2	8%		
RELN	6%		
SH2B3	6%		
BCL11B	5%		
EP300	5%		
FBXW7	5%		
PTPN11	5%		
KRAS	3%		
BRAF	2%		
DCLRE1C	2%		
HIST1H1B	2%		
HNRNPA1	2%		
HNRNPR	2%		

Sig. Approach:
Frequency

Multiple Myeloma (MM)

Chapman *et al.*, 2011 (REF. 103)

SMG	Incidence
KRAS	26%
NRAS	24%
FAM46C	13%
DIS3	11%
TP53	8%
CCND1	5%
PNRC1	5%
ALOX12B	8%
HLA-A	5%
MAGED1	5%

Sig. Approach:
MutSig (FDR≤0.1)