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Reporting Summary

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Statistical parameters

When statistical analyses are reported, confirm that the following items are present in the relevant location (e.g. figure legend, table legend, main text, or Methods section).

n/a	Confirmed	
☐	☒	The exact sample size (*n*) for each experimental group/condition, given as a discrete number and unit of measurement
☐	☒	An indication of whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
☐	☒	The statistical test(s) used AND whether they are one- or two-sided *Only common tests should be described solely by name; describe more complex techniques in the Methods section.*
☐	☒	A description of all covariates tested
☐	☒	A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
☐	☒	A full description of the statistics including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☐	☒	For null hypothesis testing, the test statistic (e.g. *F*, *t*, *r*) with confidence intervals, effect sizes, degrees of freedom and *P* value noted *Give P values as exact values whenever suitable.*
☒	☐	For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☐	☒	For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☒	☐	Estimates of effect sizes (e.g. Cohen's *d*, Pearson's *r*), indicating how they were calculated
☒	☐	Clearly defined error bars *State explicitly what error bars represent (e.g. SD, SE, CI)*

Our web collection on statistics for biologists may be useful.

Software and code

Policy information about availability of computer code

Data collection	No software and code were used for data collection.
Data analysis	Software and code used for data analysis are available, and this is described in detail in Supplementary Table 7. Custom software include Progeny Clustering (R package progenyclust), STRING, Graphical Lasso with StARS (R package huge), Cytoscape, block clustering (R package blockcluster), and decision trees (R package rpart). Links to the online tool for the MetaGalaxy Analysis, a tutorial, and example files are provided in the Supplementary Information, and are available online at https://www.leukemiaatlas.org/code.

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors/reviewers upon request. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Research guidelines for submitting code & software for further information.

Data

Policy information about availability of data

All manuscripts must include a data availability statement. This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A list of figures that have associated raw data
- A description of any restrictions on data availability

The datasets generated and analysed during the study are available on the Leukaemia Proteome Atlas: LeukemiaAtlas.org (direct dataset-download at https://www.leukemiaatlas.org/adultaml). Source data for the figures in this study are also provided in .xlsx and .csv formats in figshare at https://figshare.com/s/5ec75fb971747383c0be52 and are accessible directly from the Atlas (https://www.leukemiaatlas.org/adultaml).

Field-specific reporting

Please select the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☒ Life sciences ☐ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see nature.com/authors/policies/ReportingSummary-flat.pdf

Life sciences study design

All studies must disclose on these points even when the disclosure is negative.

Sample size	Sample size depended on the availability of patient samples collected over a nine-year period. We used all available acute myeloid leukaemia samples in the MD Anderson Cancer Center bank at the time of the analysis (co-senior author Steve Kornblau directs MD Anderson Cancer Center's Leukemia Sample Bank). Sample size per array depends on the constraints of the slides. 576 samples can fit on an array slide. The array used in this manuscript was a two-slide set, so we could accommodate up to 1152 total samples. Some slots were used for controls; this left space for 719 AML and acute promyelocytic leukaemia patient samples and for 360 acute lymphoblastic leukaemia (ALL) samples. We focused this manuscript and development of the MetaGalaxy analysis on the 511 AML patients, both because of the larger sample size compared to other leukaemias and because the complexity of the disease demanded a new analysis approach. ALL data is being separately analysed and reported, and is available through the links on the Leukemia Atlas site (www.LeukemiaAtlas.org). In addition to the available number of patients and the array itself limiting the sample size, sample collection from an individual patient is limited. Bone-marrow biopsies are invasive and painful procedures, and performed generally only at the time of diagnosis and relapse. Hence most patients provide only one or possibly two sets of samples.
Data exclusions	No data were excluded from the analyses.
Replication	Sample replicates were used to ensure the reproducibility of the proteomic measurement. The prognostic findings of this study were validated in a training and a testing subset of the data.
Randomization	Not relevant because this study does not involve experimental groups.
Blinding	Not relevant because this study does not involve experimental groups.

Reporting for specific materials, systems and methods

Materials & experimental systems

n/a	Involved in the study
☐	☒ Unique biological materials
☐	☒ Antibodies
☐	☒ Eukaryotic cell lines
☒	☐ Palaeontology
☒	☐ Animals and other organisms
☐	☒ Human research participants

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging

Unique biological materials

Policy information about availability of materials

Obtaining unique materials

All cell lines are commercially available and/or can be requested from MD Anderson Cancer Center and/or the authors via a material transfer agreement. No new patient-derived cell lines or tissues are described in this manuscript. In any cases where the consent of leukaemia patients is provided to enable sharing, primary biopsy samples (biospecimens) can be requested from SMK and MD Anderson Cancer Center via a material transfer agreement.

Antibodies

Antibodies used

The full list of antibodies used and their related information is available in Supplementary Table 1, and listed below for the 231 antibodies used in this work.
Common Name/Mfg Claimed Target | Manufacturer | Catalog# | Antibody Source | Antibody Dilution | 2nd Ab dilution
Actin(β) Sigma A5441 mouse 2000 20000
AIF Santa Cruz sc-13116 mouse 250
AKT1 Cell Signaling 9272 Rabbit 150 15000
AKT-P473(Ser) Cell Signaling 9271 Rabbit 50 15000
AKT-P308(Thr) Cell Signaling 9275 Rabbit 50 15000
Ash2L Cell Signaling 5019 Rabbit 5000 15000
ASNS Sigma HPA029318 Rabbit 500 15000
ATF3 Abcam ab87213 Rabbit 500 15000
ATG7 Cell Signaling 8558 Rabbit 500 15000
Bad Cell Signaling 9292 Rabbit 100 15000
Bad-p112(Ser) Cell Signaling 9291 Rabbit 100 15000
Bad-p136(Ser) Cell Signaling 9295 Rabbit 50 15000
Bad-p155(Ser) Cell Signaling 9297 Rabbit 100 15000
Bak Cell Signaling 3792 Rabbit 50 15000
Bax Cell Signaling 2772 Rabbit 100 15000
Bcl2 DAKO M0887 mouse 200 15000
Bcl-XL Cell Signaling 2762 Rabbit 500 20000
Bim Epitomics 1036-1 Rabbit 200 15000
Beclin-1 Cell Signaling 3738 Rabbit 500 15000
Bid Cell Signaling 2002 Rabbit 250 15000
CIAP-1 Upstate 07-759 Rabbit 200 15000
Survivin Cell Signaling 2802 Rabbit 50 15000
Bmi-1 Cell Signaling 2830 Rabbit 150 15000
Raf-B Santa Cruz sc5284 mouse 100 15000
BRD4 Epitomics 5716-1 Rabbit 250 15000
caspase 3 Cell Signaling 9662 Rabbit 250 15000
Caspase 3 cleaved Asp175 Cell Signaling 9661 Rabbit 100 15000
Caspase 7 cleaved Asp198 Cell Signaling 9491 Rabbit 250 15000
Caspase 8 Cell Signaling 9746 mouse 250 15000
Caspase 9 cleaved Asp315 Cell Signaling 9505 Rabbit 250 15000
Caspase 9 cleaved Asp330 Cell Signaling 9501 Rabbit 250 15000
Caveolin-1 Cell Signaling 3238 Rabbit 100 15000
Cbl-c BD sciences 610441 mouse 1000 15000
Cyclin B1 Santa Cruz SC245 mouse 100 15000
Cyclin D1(M-20) Santa Cruz sc718 Rabbit 500 15000
Cyclin D3 Cell Signaling 2936 mouse 100 15000
Cyclin E Santa Cruz sc-247 Rabbit 100 15000
Cyclin E2 Cell Signaling 1142 Rabbit 250 15000
CD44.Epi Epitomics 1998-1 Rabbit 2000 15000
CD74 Santa Cruz sc-6262 mouse 300 15000
CDC2 calbiochem cc01 mouse 200 15000
CDK2 Santa Cruz SC6248 200 15000
CDK4 Cell Signaling 2906 mouse 200 15000
P21/Waf Cell Signaling 2946 mouse 250 10000
P27 Santa Cruz sc-528 Rabbit 250 15000
P27ps10 Epitomics 2187-1 Rabbit 500 15000
P16 santa Cruz sc468 Rabbit 5000 15000
CLPP Abcam 124822 Rabbit 1000 15000
JAB1 Santa Cruz sc-13157 mouse 300 15000
CREB Epitomics 1496-1 Rabbit 2000 15000
CREB-p(ser133) Epitomics 1113-1 Rabbit 2000 15000
Catenin-alpha calbiochem CA1030 mouse 75 15000
Catenin-beta Cell Signaling 9562 Rabbit 50 15000
catenin-beta phospho- Cell Signaling 9561 Rabbit 500 15000
CTSG Abcam ab8816 sheep 500 30000
Smac/Diablo Cell Signaling 2954 mouse 500 15000
DLX1 Abnova H00001745-M01 mouse 1000 15000
DUSP6 abcam ab76310 Rabbit 3000 15000

EGFR Santa Cruz sc-03 Rabbit 500 20000
EGFR-p tyr992 Cell Signaling 2235 Rabbit 50 15000
Egln1 Millipore 05-1327 mouse 500 5000
PRKR(EIF2AK2) Abnova H00005610-M02 mouse 5000 15000
PRKRpTh451(EIF2AK2) invitrogen 44-668G Rabbit 1500 15000
eIF2 Cell Signaling 9722 Rabbit 3000 15000
phospho-eIF2-alpha Cell Signaling 9721 Rabbit 250 15000
eIF4E Cell Signaling 9742 Rabbit 200 15000
EBP1 Cell Signaling 9452 Rabbit 500 15000
EBP1.pser65 Cell Signaling 9456 Rabbit 400 15000
EBP1.pthr37.46 Cell Signaling 9459 Rabbit 1000 15000
EBP1.pthr70 Cell Signaling 9455 Rabbit 200 15000
ElK(phospho-ser383) Cell Signaling 9181 Rabbit 100 15000
HER2/Erb2 Cell Signaling 2242 Rabbit 250 15000
HER2(p-Tyr1248) Upstate 06-229 Rabbit 1500 15000
HER3 Upstate 05-390 mouse 500 15000
ERG1/2/3 Santa Cruz sc-353 Rabbit 1000 15000
Fli Dennis Watson Rabbit 2000 15000
Fibronectin Epitomics 1574 Rabbit 30000 15000
FoxO1a/3a Cell Signaling 9464 Rabbit 500 15000
FoxO3a Cell Signaling 9467 Rabbit 500 20000
FKHRL1/FoxO3a (P-Ser 318/321) Cell Signaling 9465 Rabbit 10000 15000
Gab2 Cell Signaling 3239 Rabbit 500 15000
Gab2-pTyr452 Cell Signaling 3882 Rabbit 100 15000
GAPDH Cell Signaling 4300 mouse 2000 15000
GATA-1 Cell Signaling 3535 Rabbit 1000 15000
Gata3 BD bioscience 558686 mouse 500 15000
GSK3 santa Cruz sc-7291 mouse 200 15000
GSK3a/B(p-ser21/9) Cell Signaling 9331 Rabbit 200 15000
H3histone active motif 39163 Rabbit 1500000 40000
H3K27Me3 active motif 61017 mouse 3000 40000
H3K4Me2 active motif 39141 Rabbit 8000 20000
H3K4Me3 active motif 39159 Rabbit 7000 20000
HDAC1 Imgenex IM-337 Rabbit 400 20000
HDAC2 Santa Cruz sc-7899 Rabbit 1000 15000
HDAC3 Cell Signaling 2632 Rabbit 100 15000
HIF-1α BD pharmingen 610959 mouse 50 15000
hnRNPK Santa Cruz sc-28380 mouse 5000 15000
HSP90 Cell Signaling 4875 Rabbit 500 15000
HSP70 Cell Signaling 4872 Rabbit 250 15000
HSP27 Cell Signaling 2402 mouse 100 15000
IGF-1 receptor beta Cell Signaling 3027 Rabbit 1000 15000
IGFBP-2 Cell Signaling 3922 Rabbit 250 15000
SHIP1 Santa Cruz SC-8425 mouse 250 15000
SHIP2 Cell Signaling 2730 Rabbit 300 15000
IRS-1-p(ser1101) Cell Signaling 2385 Rabbit 250 15000
CD49b BD Transduction Lab 611016 mouse 500 15000
CD11a BD Transduction Lab 610826 mouse 500 15000
Integrin-beta3 Cell Signaling 4702 Rabbit 250 15000
JMJD6 Abcam ab50720 Rabbit 1000 20000
Jun-C-phospho ser73 Cell Signaling 9164 Rabbit 100 10000
Jun-B Cell Signaling 3755 Rabbit 100 15000
LSD1 Cell Signaling 2184 Rabbit 3000 15000
VEGFR2 Cell Signaling 2479 Rabbit 700 15000
Kit-C Epitomics 1522 Rabbit 1000 15000
Lck Cell Signaling 2752 Rabbit 50 15000
LEF1 Cell Signaling 2230 Rabbit 1000 15000
Galectin-3 Santa Cruz sc-32790 mouse 250 15000
Lyn Cell Signaling 2732 Rabbit 250 15000
MEK Cell Signaling 9122 Rabbit 2000 10000
MEK(p-ser217/221) Cell Signaling 9121 Rabbit 1000 15000
Erk2 Santa Cruz Sc-154 Rabbit 2000 15000
Erk-p42/44(Thr202/Tyr204 Cell Signaling 9101 Rabbit 400 15000
P38 Cell Signaling 9212 Rabbit 200
P38p180p182 Cell Signaling 9211 Rabbit 10 15000
JNK2 Cell Signaling 4672 Rabbit 25 15000
Tau Upstate 05-348 mouse 150 15000
MCL1 BD pharmingen 559027 mouse 50 15000
MDM2 Santa Cruz sc813 Rabbit 5000 15000
MDM4 Bethly lab A300-287A Rabbit 5000 15000
C-Met-pTyr 1230/1234/1235 Biosource 44-888G Rabbit 250 20000
mTor Cell Signaling 2983 Rabbit 200 10000
mTor(p-Ser2448) Cell Signaling 2971 Rabbit 100 15000
Myc Cell Signaling 9402 Rabbit 100 15000
C23 (nucleolin) Santa Cruz sc8031 mouse 200 15000

NF2 Santa Cruz sc332 Rabbit 500 15000
pNF2(ser518) chemicon AB5607 Rabbit 500 15000
ARC Imgenex IMG-171 Rabbit 2000 15000
Notch1-cleaved (Val1744) Cell Signaling 4147 Rabbit 400 15000
Notch3 santa Cruz sc5593 Rabbit 200 15000
NPM invitrogen 32-5200 mouse 10000 15000
NPM1.3542 Cell Signaling 3542 Rabbit 1000 15000
Nur77 Imgenex IMG-528 Rabbit 200 15000
NRP1(neuropilin) Santa Cruz SC-5307 mouse 10 20000
ODC Shantz/Lisa Lab 500 15000
DJ-1 Private-Andreeff Rabbit 500 15000
PARP Cell Signaling 9542 Rabbit 200 15000
PARP(cleaved Asp214) Cell Signaling 9541 Rabbit 100 15000
PDK1 Cell Signaling 3062 Rabbit 200 15000
PDK1-p241(Ser) Cell Signaling 3061 Rabbit 500 15000
PI3 K p110-alpha Epitomics 1683-1 Rabbit 200 15000
PI3 K p85 Cell Signaling 4292 Rabbit 20 15000
PIM1 Santa Cruz sc-13153 mouse 100 15000
PIM2 Cell Signaling 4730 Rabbit 200 15000
PPARA boster Bio PA1412 Rabbit 0.5ug/ul 30000
PPARγ Santa Cruz sc7273 mouse 75 15000
PP2A-B55 Santa Cruz sc-18330 goat 500 15000
AMPKα cell signaling 2532 Rabbit 200 15000
AMPKα P(Thr172) cell signaling 2535 Rabbit 200 15000
PKCα Upstate 05-154 mouse 2000 15000
PKCα-p657(Ser) Upstate 06-822 Rabbit 1000 20000
PKCβ I Santa Cruz sc8049 mouse 300 20000
PKCβII Santa Cruz 13149 mouse 200 15000
PKCδ-645(Ser) Upstate 07-875 Rabbit 200 30000
PKCδ-p664(Ser) Upstate 07-874 Rabbit 250 30000
PKCδ-507(Thr) Santa Cruz sc11770 Goat 1000 30000
PTEN Upstate 07-016 Rabbit 400 15000
PTEN-p (380/382/383) Cell Signaling 9554 Rabbit 500 15000
cox-2 Epitomics 2169-1 Rabbit 250 15000
Fak Cell Signaling 3285 Rabbit 500 15000
SHP-2 Epitomics 1590-1 Rabbit 500 15000
Rac1/2/3 Cell Signaling 2465 Rabbit 500 15000
Rb BD PharMingen 554136 mouse 100 15000
Rb (P-Ser807/811) Cell Signaling 9308 Rabbit 250 15000
NF-kB p65 Cell Signaling 3034 Rabbit 500 15000
S6 Ribosomal protein Cell Signaling 2217 Rabbit 250 15000
S6 Ribosomal protein(phospho-ser235/236) Cell Signaling 2211 Rabbit 1500-2000 15000
S6 Ribosomal protein(phospho-ser240/244) Cell Signaling 2215 Rabbit 750-1000 15000
p70S6K Cell Signaling 9202 Rabbit 250 15000
p70S6K(p-thr389) Cell Signaling 9205 Rabbit 250 15000
X14.3.3Sigma Upstate 05-632 mouse 200 15000
SIRT1 Abcam ab32441 Rabbit 1000 15000
smad1 Epitomics 1649-1 Rabbit 200 15000
SMAD2 Cell Signaling 5339 Rabbit 5000 15000
Smad2-p S245/250/255 Cell Signaling 3104 Rabbit 500 15000
Smad2-p S465/467 Cell Signaling 3108 Rabbit 1000 15000
SMAD3 Cell Signaling 9523 Rabbit 500 15000
smad4 Santa Cruz sc7966 mouse 1000 15000
SMAD5 epitomics 1682-1 Rabbit 1000 15000
Smad5-p S463/465 epitomics 2224-1 Rabbit 500 15000
Smad6 Cell Signaling 9519 Rabbit 100 15000
SOCS2 Abcam ab92847 Rabbit 200 15000
PU.1 Cell Signaling 2258 Rabbit 5000 15000
Osteopotin Santa Cruz sc-21742 mouse 500 15000
P62 Santa Cruz sc-28359 mouse 250 15000
Src Upstate 05-184 mouse 600 15000
Src(phospho-tyr416) Cell Signaling 2101 Rabbit 400 15000
Src(phospho-tyr527) Cell Signaling 2105 Rabbit 100 15000
SSBP2-I(alpha) Private-Nagarajan Rabbit 1000 15000
stat1 Cell Signaling 9172 250 15000
Stat1(phospho-tyr701) Cell Signaling 9171 Rabbit 100 15000
Stat3 Upstate 06-596 Rabbit 50 15000
Stat3-p727(Ser) Cell Signaling 9134 Rabbit 100 15000
Stat3 p705(Tyr) Cell Signaling 9131 Rabbit 500 15000
Stat5 Cell Signaling 9352 Rabbit 250 15000
Stat5(phospho-Tyr694) Cell Signaling 9351 Rabbit 100 15000
Stat6(phospho-tyr641) Cell Signaling 9361 Rabbit 100 10000
LKB1/STK11 Cell Signaling 3050 Rabbit 500 15000
Stathmin epitomics 1972-1 Rabbit 30000 15000
TCF-4 Santa Cruz sc8632 goat 400 15000

TG2 Abcam ab2386 mouse 2000 30000
TNK1 Agent AP7722a Rabbit 400 15000
TP53 Cell Signaling 9282 Rabbit 1000 15000
TP53(phospho Ser 15) Cell Signaling 9284 Rabbit 250 15000
TRIM24 Novus NB100-2597 Rabbit 1000 15000
TRIM62 from Dr.Quintas-cardama DEAR1 mouse 150 15000
TSC2 epitomic 1613-1 Rabbit 500 15000
VASP Cell Signaling 3112 Rabbit 250 15000
VHL Novus NB100-485 Rabbit 2000 15000
WTAP sanjay bansal from UTSA Rabbit 10000 15000
TAZ Abcam ab3961 Rabbit 1000 15000
TAZ p-Ser89 Santa Cruz sc17610R Rabbit 150 15000
XIAP Cell Signaling 2042 Rabbit 100 15000
CRM1 Santa Cruz sc-5595 Rabbit 2000 15000
YAP Cell Signaling 4912 Rabbit 100 15000
YAP-p(ser127) Cell Signaling 4911 Rabbit 500 15000
X14.3.3Epsilon Santa Cruz sc-23957 mouse 200 15000
14-3-3-zeta chemicon AB9746 Rabbit 750 20000
ZNF342 abcam ab51265 Rabbit 1000 15000
JAZ111 May-UFL Rabbit 1000 15000

Validation

All antibodies used in this study have been strictly validated as described in previous publications:
Kornblau SM, Tibes R, Qiu YH, Chen W, Kantarjian HM, Andreeff M, Coombes KR, Mills GB (2009) Functional proteomic profiling of AML predicts response and survival. Blood 113: 154-164.
Tibes R, Qiu YH, Lu Y, Hennessy B, Andreeff M, Mills GB, Kornblau SM (2006) Reverse Phase Protein Array (RPPA): Validation of a Novel Proteomic Technology and Utility for Analysis of Primary Leukemia Specimens and Hematopoetic Stem Cells (HSC). Mol Cancer Ther 5: 2512-2521.

Eukaryotic cell lines

Policy information about cell lines

Cell line source(s)

The cell-line sources are described in Supplementary Table 5 and listed below:
cell-line | mycoplasma | disease
Blin-1 neg BCP-ALL
BV173 pos B cell precursor leukemia
BV173 neg B cell precursor leukemia
BV173 treated neg B cell precursor leukemia
CCRF-CEM neg leukemia, T lymphoblast
Daudi pos b lymphoblast,Burkitt's lymphoma
Daudi neg b lymphoblast,Burkitt's lymphoma
RPMI8226
GM00131 2nd-neg lymphoblastoid cell line
GM00131 treated neg lymphoblastoid cell line
HL-60 pos leukemia, AML M2
HL-60 neg leukemia, AML M2
HL60 neg leukemia, AML M2
Hl-60 treated neg leukemia, AML M2
HL-60 TRE TGM2 neg leukemia, AML M2
HL-60 TRE TGM2 control neg leukemia, AML M2
Jeko-1 neg lymphoma
Jurkat 2nd-neg leukemia T-ALL
Jurkat treated neg leukemia T-ALL
Jurkat I9.2 Caspase8 mut neg leukemia T-ALL
K562 pos leukemia, CML
K562 neg leukemia, CML
K562 treated neg leukemia, CML
kasumi-1 pos leukemia, AML M2
kasumi-1 neg leukemia, AML M2
kasumi-1 treated leukemia, AML M2
KBM3 neg leukemia, AML M5
KBM5 pos leukemia, CML
KBM5 neg leukemia, CML
KBM5 treated neg leukemia, CML
KBM5 STI, w/o STI pos CML T315I
KBM5 STI, w/STI neg CML T315I
KBM5 STI, w/o STI neg CML T315I
KBM5 STI treated, w/o STI neg CML T315I
KG-1 pos leukemia, AML M3
KG1 neg leukemia, AML M3
KG-1 treated neg leukemia, AML M3
KG-1α neg leukemia, AML M3
KOPTI-K1 (lable:KOPTI) neg T-ALL
MDSL neg MDS

MINO neg Mantle Cell Lymphoma
ML-1 pos leukemia, AML M3
ML-1 neg leukemia, AML M3
ML-1 treated neg leukemia, AML M3
ML-2 (AML-ML2) neg leukemia, AML M4
Mo7e 2nd-neg leukemia, AML M7
Molm13 neg leukemia, AML M5a
Molm13 P53 K/D neg leukemia, AML M5a
Molm13 P53 vector neg leukemia, AML M5a
Molm14 2nd-neg leukemia, AML M5a
molm14 neg leukemia, AML M5a
molm14 treated neg leukemia, AML M5a
molm16
molt3 neg T lymphoblast, T-ALL
Molt4 neg T lymphoblast, T-ALL
MR2 pos APL
MR2 treated neg APL
MV4-11 pos leukemia, AML M5
MV4-11 neg leukemia, AML M5
MV4-11 treated leukemia, AML M5
MV4-11 IDH1 R132H neg leukemia, AML M5
MV4-11 IDH1 wt(vector) neg leukemia, AML M5
Nalm6 pos B-ALL
Nalm6 treated neg B-ALL
NB4 neg leukemia, AML M3
OCIAML2 neg leukemia, AML M4
OCIAML3 neg leukemia, AML M4
OCIAML3 550 TGM2-overexp neg leukemia, AML M4
OCIAML3 708 ppp2R2A shRNA neg leukemia, AML M5
OCIAML3 709 ppp2R2A shRNA neg leukemia, AML M4
OCIAML3 Bcl2 overexpression neg leukemia, AML M4
OCIAML3 Bcl2 vector neg leukemia, AML M4
OCIAML3 IDH1 R132H neg leukemia, AML M4
OCIAML3 IDH1 wt(vector) neg leukemia, AML M4
OCIAML3 induxible HIF1a ODD mut neg leukemia, AML M4
OCIAML3 ITD pos leukemia, AML M4
OCIAML3 ITD treated neg leukemia, AML M4
OCIAML3 ITD vec neg leukemia, AML M4
OCIAML3 NS for ppp2R2A shRNA neg leukemia, AML M4
OCIAML3 p100SSAA neg leukemia, AML M4
OCIAML3 P53 shRNA neg leukemia, AML M4
OCIAML3 P53 vector neg leukemia, AML M4
OCIAML3 PI3K active pool #1 neg leukemia, AML M4
OCIAML3 PI3K wt pool#2 1A neg leukemia, AML M4
OCIAML3 Stat5A neg leukemia, AML M4
OCIAML3 stat5A N642H neg leukemia, AML M4
OCIAML3 stat5A N642H H4F neg leukemia, AML M4
OCIAML3 stat5A wt neg leukemia, AML M4
OCIAML3 TRE TGM2 neg leukemia, AML M4
OCIAML3 TRE TGM2 control neg leukemia, AML M4
OCIAML5 neg leukemia, AML M4
P12 ichikawa neg T-ALL
Raji pos B lymphocyte, Burkitt's lymphoma
Raji neg B lymphocyte, Burkitt's lymphoma
Raji treated neg B lymphocyte, Burkitt's lymphoma
Ramos neg lymphoma
REH pos ALL
REH neg ALL
REH treated neg ALL
REH PLKO CTGF neg ALL
REH PLKO-NS-shRNA(control) neg ALL
RS4:11 2nd-neg leukemia, BCP-ALL
RS4:11 treated neg leukemia, BCP-ALL
SKM1 neg leukemia, AML M5
SR neg leukemia,lymphoblast, lymphoma
TALL-1 neg T cell leukemia
TF-1 neg leukemia, AML M6
THP-1 neg leukemia, AML M4
U937 pos leukemia, AML M5
U937 neg leukemia, AML M5
U937 treated neg leukemia, AML M5

Authentication

DNA validation by short tandem repeat "barcoding"

Mycoplasma contamination

The testing results of mycoplasma contamination for all cell lines used were described in Supplementary Table 5 and listed

Mycoplasma contamination

below:
cell-line | mycoplasma
Blin-1 neg
BV173 pos
BV173 neg
BV173 treated neg
CCRF-CEM neg
Daudi pos
Daudi neg
RPMI8226
GM00131 2nd-neg
GM00131 treated neg
HL-60 pos
HL-60 neg
HL60 neg
Hl-60 treated neg
HL-60 TRE TGM2 neg
HL-60 TRE TGM2 control neg
Jeko-1 neg
Jurkat 2nd-neg
Jurkat treated neg
Jurkat I9.2 Caspase8 mut neg
K562 pos
K562 neg
K562 treated neg
kasumi-1 pos
kasumi-1 neg
kasumi-1 treated
KBM3 neg
KBM5 pos
KBM5 neg
KBM5 treated neg
KBM5 STI, w/o STI pos
KBM5 STI, w/STI neg
KBM5 STI, w/o STI neg
KBM5 STI treated, w/o STI neg
KG-1 pos
KG1 neg
KG-1 treated neg
KG-1α neg
KOPTI-K1 (lable:KOPTI) neg
MDSL neg
MINO neg
ML-1 pos
ML-1 neg
ML-1 treated neg
ML-2 (AML-ML2) neg
Mo7e 2nd-neg
Molm13 neg
Molm13 P53 K/D neg
Molm13 P53 vector neg
Molm14 2nd-neg
molm14 neg
molm14 treated neg
molm16
molt3 neg
Molt4 neg
MR2 pos
MR2 treated neg
MV4-11 pos
MV4-11 neg
MV4-11 treated
MV4-11 IDH1 R132H neg
MV4-11 IDH1 wt(vector) neg
Nalm6 pos
Nalm6 treated neg
NB4 neg
OCIAML2 neg
OCIAML3 neg
OCIAML3 550 TGM2-overexp neg
OCIAML3 708 ppp2R2A shRNA neg
OCIAML3 709 ppp2R2A shRNA neg
OCIAML3 Bcl2 overexpression neg
OCIAML3 Bcl2 vector neg
OCIAML3 IDH1 R132H neg

OCIAML3 IDH1 wt(vector) neg
OCIAML3 induxible HIF1a ODD mut neg
OCIAML3 ITD pos
OCIAML3 ITD treated neg
OCIAML3 ITD vec neg
OCIAML3 NS for ppp2R2A shRNA neg
OCIAML3 p100SSAA neg
OCIAML3 P53 shRNA neg
OCIAML3 P53 vector neg
OCIAML3 PI3K active pool #1 neg
OCIAML3 PI3K wt pool#2 1A neg
OCIAML3 Stat5A neg
OCIAML3 stat5A N642H neg
OCIAML3 stat5A N642H H4F neg
OCIAML3 stat5A wt neg
OCIAML3 TRE TGM2 neg
OCIAML3 TRE TGM2 control neg
OCIAML5 neg
P12 ichikawa neg
Raji pos
Raji neg
Raji treated neg
Ramos neg
REH pos
REH neg
REH treated neg
REH PLKO CTGF neg
REH PLKO-NS-shRNA(control) neg
RS4:11 2nd-neg
RS4:11 treated neg
SKM1 neg
SR neg
TALL-1 neg
TF-1 neg
THP-1 neg
U937 pos
U937 neg
U937 treated neg

Commonly misidentified lines
(See ICLAC register)

No commonly misidentified cell lines were used.

Human research participants

Policy information about studies involving human research participants

Population characteristics

The population characteristics of all human research participants were described in Supplementary Table 6. In brief, there were 511 newly diagnosed AML samples on the array and 47 had a paired relapse sample. There were no biases for age (other than these are adults) or gender. Patients received many different treatments.

Recruitment

Samples from AML patients (diagnosed at the University of Texas M.D. Anderson Cancer Center (MDACC) between September 1999 and March 2007) were acquired during routine diagnostic assessments in accordance with the regulations and protocols (Lab 01-473) approved by the Investigational Review Board (IRB) of MDACC. Informed consent was obtained in accordance with Declaration of Helinski. Samples were analyzed under and IRB-approved laboratory protocol (Lab 05-0654). The only selection biases is that (1) a patient had to be willing to sign the consent allowing us to collect material, and (2) they had to have adequate cell biopsy material for the bone marrow biopsies, so some “dry tap” cases would be omitted. These selection biases would not be anticipated to affect the results.