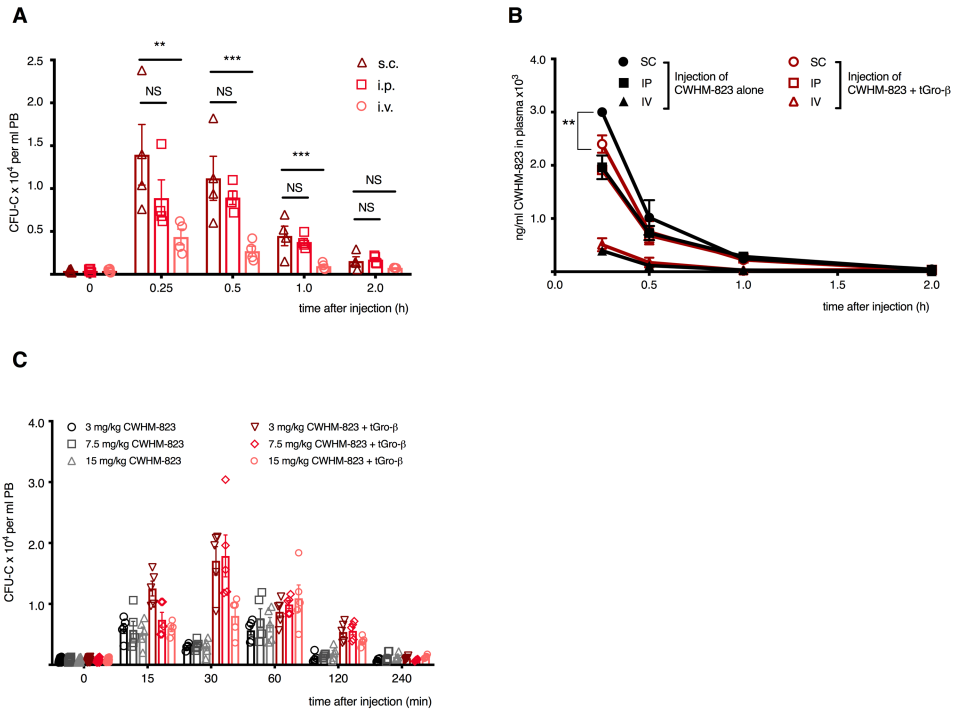
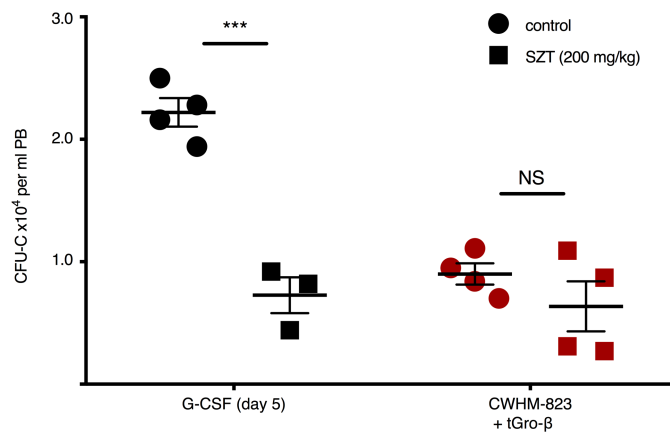


Supplemental Data

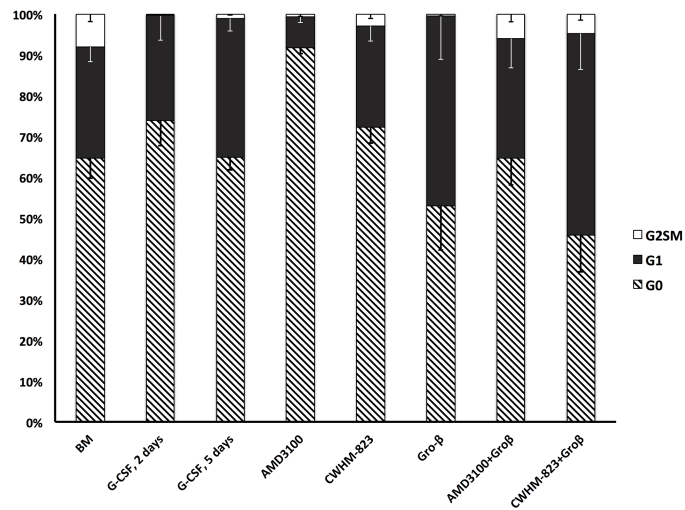
Supplemental Figures



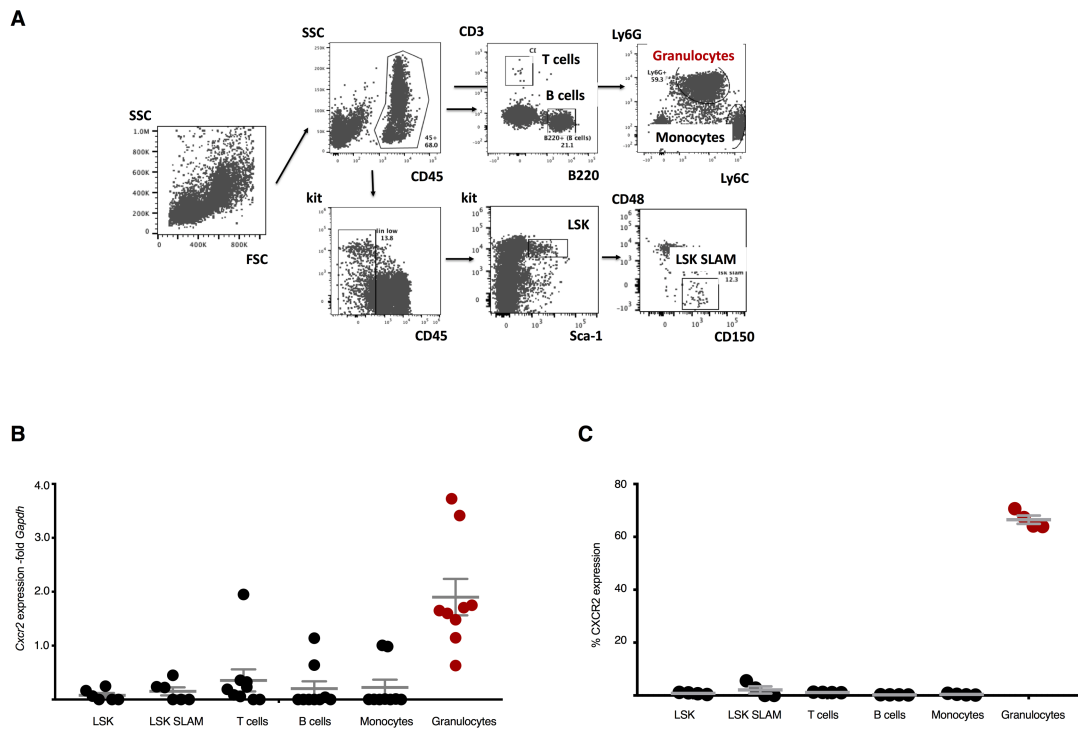
Supplemental Figure 1. Pharmacokinetic and pharmacodynamic analysis of the novel mobilization regimen. (A) DBA2/J mice received an injection of CWHM-823+tGro-β (3 mg/kg CWHM823 + 2.5 mg/kg tGro-β) either subcutaneously (s.c.), intraperitoneally (i.p.) or intravenously (i.v.). Numbers of circulating CFU-C at the indicated timepoints after the injection are shown. Data represent mean \pm SEM, n=4-6. (B) DBA2/J mice received an injection of CWHM-823 alone (3 mg/kg) or the combination CWHM-823+tGro-β (3 mg/kg CWHM823 + 2.5 mg/kg tGro-β) either subcutaneously (s.c.), intraperitoneally (i.p.) or intravenously (i.v.). Plasma concentrations of CWHM-823 were determined by LC/MS. Data represent mean \pm SEM, n=3. (C) Time and dose-response kinetics of mobilization were analyzed in DBA2/J mice. Circulating CFU-C were enumerated up to 8 hrs following an injection of CWHM-823 alone (3.0, 7.5 or 15 mg/kg s.c.) or in combination with tGro-β (2.5 mg/kg, s.c.). Data represent mean \pm SEM, n=5. ***p<0.001, **p<0.01. Statistical comparisons were made using linear mixed models, followed by step-down Bonferroni adjustment for multiple comparisons.



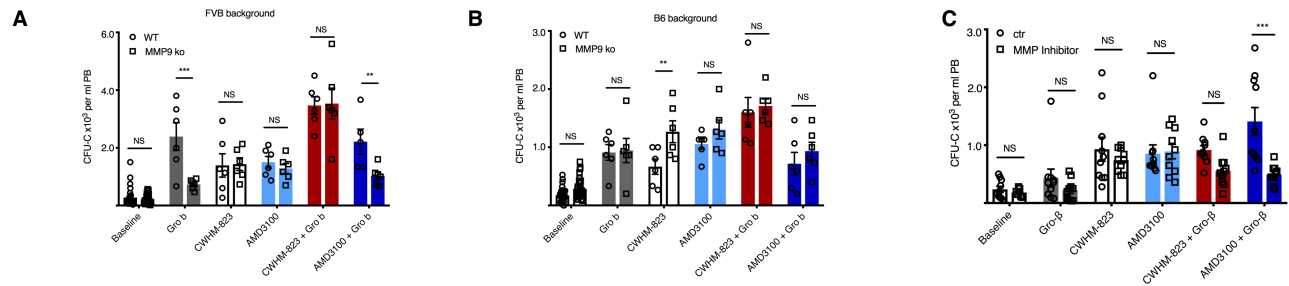
Supplemental Figure 2: Retention of CFU-C mobilization in model of poor mobilization. Two to three weeks after streptozotocin (200 mg/kg) or control buffer injection BALB/cJ mice were mobilized with either G-CSF (100 μg/kg, i.p, 9 doses, q12h) or the combination CWHM-823+tGro-β (3 mg/kg CWHM823 + 2.5 mg/kg tGro-β, timepoint 30 min after s.c injection). PB CFU-C were enumerated. Data represent mean±SEM, n=3-4. ***p<0.001. Statistical comparisons were made using ANOVA, followed by step-down Bonferroni adjustment for multiple comparisons.



Supplemental Figure 3. Cell cycle analysis of LSK cells. BALB/cJ mice were mobilized with G-CSF (100 μ g/kg, i.p., 4 or 9 doses (2 or 5 days), q12h), tGro- β (2.5 mg/kg, s.c., timepoint 15 min), CWHM-823 (3.0 mg/kg, s.c., timepoint 60 min), AMD3100 (5.0 mg/kg, s.c., timepoint 60 min) or the combinations CWHM-823+tGro- β or AMD3100+tGro- β (doses same as for separate treatments, timepoint 30 min). Distribution of mobilized LSK in in G₀/G₁/G₂SM phases of the cell cycle was quantified based on Ki67 and 7-AAD staining. BM LSK were analyzed for comparison. Data represent mean \pm SEM, n=5.



Supplemental Figure 4. CXCR2 expression analysis. Expression of CXCR2 was assessed in mature and immature hematopoietic populations in the BM of wildtype BALB/cJ mice. (A) Gating strategy and markers used to distinguish different cell populations. (B) CXCR2 gene expression in sorted populations was quantified using real-time PCR. Data represent mean \pm SEM, n=3-9. C, CXCR2 surface expression was assessed by flow cytometry. Data represent mean \pm SEM, n=4.



Supplemental Figure 5. Role of proteases on mobilization. (A-C) Mobilization in MMP9 knockout mice. MMP9 knockout and corresponding control mice (FVB background in **A** and B6 background in **B**) were mobilized with tGro-β (2.5 mg/kg, s.c., timepoint 15 min), CWHM-823 (3.0 mg/kg, s.c., timepoint 60 min), AMD3100 (5.0 mg/kg, s.c., timepoint 60 min) or the combinations CWHM-823+tGro-β and AMD3100+tGro-β (doses same as for separate treatments, timepoint 30 min). Numbers of circulating CFU-C were assessed and compared to baseline level. Each bar represents the mean±SEM, n=34-36 for baseline, n=5-6 for mobilized mice. (C) Wildtype BALB/cJ mice received two injections of the broad-spectrum inhibitor of matrix metalloproteases Batimastat (12 and 2 hrs prior to mobilization, 25 mg/kg i.p.). Control mice were pretreated with DMSO/oil solution. Mice were treated as in D/E and numbers of circulating progenitors (CFU-C) compared to baseline levels. Each bar represents the mean±SEM, n=10. ***p<0.001, **p<0.01. Statistical comparisons were made using ANOVA, followed by step-down Bonferroni adjustment for multiple comparisons.

Supplemental Tables

Supplemental Table 1: Properties of VLA4 integrin antagonists tested in the study.

VLA4 antagonist	Binding Affinity (IC ₅₀ ; nM)					Aqueous solubility (pH7)	
	$\alpha4\beta1$	$\alpha4\beta7$	$\alphaV\beta3$	$\alpha5\beta1$	$\alpha2\beta1$	$\mu\text{g/mL}$	clogP
BIO5192	6.5	>1000	>1000	>1000	>1000	0.08	5.4
Firategrast	3.2	5.8	>1000	>1000	>1000	2.67	3.1
CWHM-842	1.9	>1000	>1000	>1000	>1000	0.09	5.4
CWHM-822	4.3	22.1	N.D.	N.D.	N.D.	5.56	4.1
CWHM-823	2.0	1.5	>1000	>1000	82.7	4.45	3.1
CWHM-824	2.7	31.8	N.D.	N.D.	N.D.	0.57	5.7
CWHM-825	3.0	37.0	N.D.	N.D.	N.D.	0.15	3.2

Supplemental Table 2: Profiling of tGro-β for its agonistic activity against the gpcrMAX Panel.

GPCR ID	Assay Mode	Conc (μM)	Mean RLU	% Activity	GPCR ID	Assay Mode	Conc (μM)	Mean RLU	% Activity
ADCYAP1R1	Agonist	0.1	419720	-1%	GLP2R	Agonist	0.1	127540	1%
ADORA3	Agonist	0.1	174160	2%	GPR1	Agonist	0.1	146020	1%
ADRA1B	Agonist	0.1	418180	2%	GPR103	Agonist	0.1	66080	4%
ADRA2A	Agonist	0.1	246540	3%	GPR109A	Agonist	0.1	1058400	18%
ADRA2B	Agonist	0.1	309400	1%	GPR109B	Agonist	0.1	267680	0%
ADRA2C	Agonist	0.1	146720	1%	GPR119	Agonist	0.1	347900	7%
ADRB1	Agonist	0.1	177800	2%	GPR120	Agonist	0.1	48020	1%
ADRB2	Agonist	0.1	22400	1%	GPR35	Agonist	0.1	397600	2%
AGTR1	Agonist	0.1	293720	2%	GPR92	Agonist	0.1	160300	0%
AGTRL1	Agonist	0.1	351120	2%	GRPR	Agonist	0.1	27300	1%
AVPR1A	Agonist	0.1	19040	0%	HCRTR1	Agonist	0.1	146580	0%
AVPR1B	Agonist	0.1	29540	0%	HCRTR2	Agonist	0.1	113120	0%
AVPR2	Agonist	0.1	710780	2%	HRH1	Agonist	0.1	919240	-1%
BDKRB1	Agonist	0.1	21560	1%	HRH2	Agonist	0.1	122640	1%
BDKRB2	Agonist	0.1	548940	0%	HRH3	Agonist	0.1	113680	7%
BRS3	Agonist	0.1	160160	3%	HRH4	Agonist	0.1	791980	-5%
C3AR1	Agonist	0.1	60760	1%	HTR1A	Agonist	0.1	996940	0%
C5AR1	Agonist	0.1	129500	1%	HTR1B	Agonist	0.1	1654660	2%
C5L2	Agonist	0.1	548100	4%	HTR1E	Agonist	0.1	31920	1%
CALCR	Agonist	0.1	103600	2%	HTR1F	Agonist	0.1	502460	-4%
CALCRL-RAMP1	Agonist	0.1	86100	1%	HTR2A	Agonist	0.1	721560	1%
CALCRL-RAMP2	Agonist	0.1	92540	0%	HTR2C	Agonist	0.1	1497720	-3%
CALCRL-RAMP3	Agonist	0.1	285180	1%	HTR5A	Agonist	0.1	1080660	2%
CALCR-RAMP2	Agonist	0.1	112700	1%	KISS1R	Agonist	0.1	36680	1%
CALCR-RAMP3	Agonist	0.1	7840	0%	LHGCR	Agonist	0.1	29680	-1%
CCKAR	Agonist	0.1	58380	1%	LTB4R	Agonist	0.1	226100	1%
CCKBR	Agonist	0.1	643580	3%	MC1R	Agonist	0.1	14000	-1%
CCR10	Agonist	0.1	129360	1%	MC3R	Agonist	0.1	9100	0%
CCR1	Agonist	0.1	1506260	9%	MC4R	Agonist	0.1	25060	2%
CCR2	Agonist	0.1	145180	2%	MC5R	Agonist	0.1	38080	1%
CCR3	Agonist	0.1	203980	6%	MCHR1	Agonist	0.1	44800	2%
CCR4	Agonist	0.1	207200	1%	MCHR2	Agonist	0.1	61740	1%
CCR5	Agonist	0.1	132720	0%	MLNR	Agonist	0.1	133420	1%
CCR6	Agonist	0.1	147280	1%	MRGPRX1	Agonist	0.1	552300	1%
CCR7	Agonist	0.1	866460	1%	MRGPRX2	Agonist	0.1	212940	1%
CCR8	Agonist	0.1	48580	1%	MTNR1A	Agonist	0.1	94920	3%
CCR9	Agonist	0.1	175700	1%	NMBR	Agonist	0.1	35420	0%
CHRM1	Agonist	0.1	860860	3%	NMU1R	Agonist	0.1	90440	0%
CHRM2	Agonist	0.1	39760	0%	NPBWR1	Agonist	0.1	44800	-5%
CHRM3	Agonist	0.1	73920	1%	NPBWR2	Agonist	0.1	166460	0%
CHRM4	Agonist	0.1	334040	-1%	NPPFR1	Agonist	0.1	58800	3%
CHRM5	Agonist	0.1	1893360	4%	NPSR1B	Agonist	0.1	26180	0%
CMKLR1	Agonist	0.1	77980	0%	NPY1R	Agonist	0.1	33320	0%
CNR1	Agonist	0.1	37520	1%	NPY2R	Agonist	0.1	132300	0%
CNR2	Agonist	0.1	199360	1%	NTSR1	Agonist	0.1	265160	2%
CRHR1	Agonist	0.1	349020	0%	OPRD1	Agonist	0.1	59640	-1%
CRHR2	Agonist	0.1	100100	0%	OPRK1	Agonist	0.1	41860	0%
CRTH2	Agonist	0.1	314160	1%	OPRL1	Agonist	0.1	123620	1%
CX3CR1	Agonist	0.1	10360	1%	OPRM1	Agonist	0.1	73360	0%
CXCR1	Agonist	0.1	434700	7%	OXER1	Agonist	0.1	65660	1%
CXCR2	Agonist	0.1	972720	137%	OXR	Agonist	0.1	30800	0%
CXCR3	Agonist	0.1	556500	4%	P2RY1	Agonist	0.1	346640	-3%
CXCR4	Agonist	0.1	101640	11%	P2RY11	Agonist	0.1	41020	1%
CXCR5	Agonist	0.1	261380	2%	P2RY12	Agonist	0.1	115920	0%
CXCR6	Agonist	0.1	21140	-1%	P2RY2	Agonist	0.1	345940	-12%
CXCR7	Agonist	0.1	144340	1%	P2RY4	Agonist	0.1	476280	3%
DRD1	Agonist	0.1	100800	1%	P2RY6	Agonist	0.1	243880	1%
DRD2L	Agonist	0.1	77140	2%	PPYR1	Agonist	0.1	19320	3%
DRD2S	Agonist	0.1	208880	0%	PRLHR	Agonist	0.1	41720	4%
DRD3	Agonist	0.1	481600	8%	PROKR1	Agonist	0.1	52780	0%
DRD4	Agonist	0.1	22820	1%	PROKR2	Agonist	0.1	13860	0%
DRD5	Agonist	0.1	11480	0%	PTAFR	Agonist	0.1	1035720	2%
EBI2	Agonist	0.1	60620	-1%	PTGER2	Agonist	0.1	9800	4%
EDG1	Agonist	0.1	105560	-1%	PTGER3	Agonist	0.1	649880	4%
EDG3	Agonist	0.1	972440	1%	PTGER4	Agonist	0.1	99540	1%
EDG4	Agonist	0.1	192360	5%	PTGFR	Agonist	0.1	7980	0%
EDG5	Agonist	0.1	201460	0%	PTGIR	Agonist	0.1	279580	2%
EDG6	Agonist	0.1	215600	-4%	PTHR1	Agonist	0.1	185640	0%
EDG7	Agonist	0.1	125440	2%	PTHR2	Agonist	0.1	143640	0%
EDNRA	Agonist	0.1	22540	0%	RXFP3	Agonist	0.1	84280	5%
EDNRB	Agonist	0.1	140980	1%	SCTR	Agonist	0.1	260120	1%
F2R	Agonist	0.1	102340	0%	SSTR1	Agonist	0.1	15400	2%
F2RL1	Agonist	0.1	596540	3%	SSTR2	Agonist	0.1	5180	0%
F2RL3	Agonist	0.1	1121260	3%	SSTR3	Agonist	0.1	200620	2%
FFAR1	Agonist	0.1	373940	1%	SSTR5	Agonist	0.1	268940	3%
FPR1	Agonist	0.1	1194760	4%	TACR1	Agonist	0.1	847280	1%
FPRL1	Agonist	0.1	133840	0%	TACR2	Agonist	0.1	399560	1%
FSHR	Agonist	0.1	169120	1%	TACR3	Agonist	0.1	119980	0%
GALR1	Agonist	0.1	656320	1%	TBXA2R	Agonist	0.1	122920	0%
GALR2	Agonist	0.1	250600	1%	TRHR	Agonist	0.1	15820	0%
GCGR	Agonist	0.1	195020	0%	TSHR(L)	Agonist	0.1	7000	-1%
GHSR	Agonist	0.1	339920	0%	UTR2	Agonist	0.1	27720	-1%
GIPR	Agonist	0.1	16380	0%	VIPR1	Agonist	0.1	318640	1%
GLP1R	Agonist	0.1	260680	0%	VIPR2	Agonist	0.1	219940	0%

Supplemental Table 3: List of genes differentially regulated in CWHM-823+tGro-β mobilized compared to BM LSK.

GeneName	p-value	Fold-Change
Lilrb4	1.85E-01	9.31E+02
Nr4a3	1.55E-04	9.15E+02
Socs3	5.04E+00	8.23E+02
Ahnak	3.06E+00	7.71E+02
Nfkbid	2.96E-01	7.42E+02
Fosb	2.79E-01	7.40E+02
Adgre5	1.67E+00	7.36E+02
Dusp18	5.66E+00	6.71E+02
S100a10	1.69E+00	6.12E+02
Hbb-bt	5.14E-01	6.01E+02
TC1775906	8.44E-01	5.93E+02
Dyrk3	3.48E-02	5.18E+02
Pde4b	9.44E-01	5.12E+02
Emp1	6.98E-01	5.11E+02
Egr2	3.85E+00	5.07E+02
Vpreb3	6.85E+00	4.34E+02
Slc2a3	5.85E+00	4.31E+02
Marcksl1	3.01E+00	4.07E+02
Stk17b	5.12E-01	4.04E+02
Rnf19b	4.31E-01	3.98E+02
A_55_P2159595	4.78E-01	3.43E+02
Tshb	2.03E+00	3.04E+02
Atf3	1.20E+00	3.01E+02
Hba-a2	8.42E-02	2.93E+02
Spry1	5.11E-03	2.83E+02
Nr4a1	7.19E-01	2.82E+02
Trib1	1.83E-02	2.54E+02
Pmaip1	5.08E+00	2.47E+02
Plk3	3.21E+00	2.25E+02
Csrnp1	3.25E-02	2.24E+02
Klf2	2.31E+00	2.22E+02
Hba-a1	5.03E-02	2.16E+02
Cd69	7.41E-01	2.03E+02
Sgk1	1.14E+00	1.82E+02
Rasgef1b	8.41E-02	1.58E+02
Lmna	4.77E-01	1.44E+02
Klf4	1.36E+00	1.10E+02
Nr4a2	5.89E-01	1.05E+02
Gzmb	3.02E+00	1.02E+02
Egr3	1.66E-02	8.56E+01
Tnfsf11	4.59E-02	7.99E+01
Klf6	6.21E-01	7.36E+01
Gpr171	2.08E+00	4.66E+01
LOC105247474	4.29E+00	-3.56E+02
Rxfp1	6.87E+00	-5.40E+02

Supplemental Table 4: List of genes differentially regulated in CWHM-823+tGro- β compared to G-CSF mobilized LSK.

GeneName	p-value	Fold-Change
Vpreb3	4.23E-01	8.54E+02
Tnfsf11	5.40E-02	7.66E+02
Pou2af1	5.85E+00	7.02E+02
ENSMUST00000103410 (Igkc)	2.12E+00	6.31E+02
Spry1	1.49E+00	4.93E+02
Thbs1	8.36E+00	4.22E+02
Ccr9	3.57E+00	3.69E+02
Cd79a	3.55E+00	2.33E+02
A_55_P2180521	5.12E-01	2.22E+02
Nr4a3	4.70E-04	1.88E+02
Bpifb5	4.13E-01	1.19E+02
Galnt6	3.94E+00	-2.99E+01
Cav2	2.02E-02	-8.51E+01
Pira11	1.36E-01	-1.08E+02
Dlk1	4.04E-02	-1.28E+02
Tgfbi	1.32E-01	-1.46E+02
Selp	1.20E-01	-1.46E+02
Col18a1	8.01E-03	-1.47E+02
Pirb	6.81E-01	-1.47E+02
Pira7	6.70E-01	-1.93E+02
TC1682680	4.99E+00	-2.18E+02
1110008P14Rik	1.24E+00	-3.22E+02
3830612M24	3.38E+00	-3.24E+02
Rps6ka3	8.50E+00	-3.25E+02
Plscr1	6.31E+00	-3.41E+02
Dpysl3	6.88E+00	-3.47E+02
Anxa1	4.71E+00	-3.48E+02
Il4ra	8.81E+00	-3.62E+02
Fads3	2.23E+00	-3.64E+02
Prtn3	2.20E+00	-3.84E+02
Hpse	7.51E-01	-3.99E+02
Gda	2.69E-01	-4.22E+02
Tgm1	3.88E+00	-4.35E+02
Gas2l1	2.67E+00	-4.48E+02
Vldlr	1.03E+00	-4.57E+02
Nhsl2	7.28E+00	-4.58E+02
Ms4a3	5.37E+00	-4.60E+02
Pira6	2.69E+00	-4.62E+02
Endod1	7.66E+00	-4.96E+02
Lilra6	7.41E+00	-5.87E+02
Lag3	1.15E-01	-5.99E+02
Ecm1	8.41E-01	-6.12E+02
Csf2rb	3.30E-01	-6.59E+02
Lilrb4	4.22E-01	-7.40E+02
Anxa2	2.86E+00	-7.42E+02
Pmaip1	9.79E-03	-7.85E+02
Id1	4.56E+00	-8.28E+02
S100a4	1.89E-01	-8.40E+02
Csf2rb2	8.24E-01	-8.57E+02
S100a6	2.89E+00	-8.84E+02
Bcl3	6.44E-01	-9.15E+02
Mrgpra2b	6.87E+00	-9.30E+02
Grhl1	3.30E+00	-9.75E+02

Supplemental Table 5: List of genes differentially regulated in CWHM-823+tGro-β compared to AMD3100 mobilized LSK.

GeneName	p-value	Fold-Change	GeneName	p-value	Fold-Change
Insm1	6.74E-04	9.00E+05	Ldhb	3.31E-04	3.84E+05
Tspan8	1.76E-04	8.84E+05	Ttc21b	4.10E-04	3.83E+05
ENSMUST00000058162	5.98E-04	8.04E+05	Mdm1	4.51E-04	3.83E+05
Usp45	1.17E-03	7.76E+05	Slc12a2	6.24E-04	3.80E+05
Rps6ka5	4.13E-04	7.76E+05	Sdha	3.93E-04	3.78E+05
ENSMUST00000103311	7.28E-04	7.46E+05	ENSMUST00000176764	2.41E-04	3.78E+05
2310026L22Rik	2.90E-04	7.15E+05	Ppan	3.52E-04	3.75E+05
ENSMUST00000103486	1.46E-03	7.05E+05	ENSMUST00000025904	1.72E-04	3.75E+05
Dcaf12l1	7.73E-04	6.89E+05	Inpp1	2.05E-04	3.69E+05
Gphn	1.13E-03	6.86E+05	1810011H11Rik	6.90E-04	3.66E+05
Tmem29	1.18E-03	6.59E+05	Jpx	7.12E-04	3.64E+05
Klf9	1.48E-03	6.57E+05	Ptpn21	6.69E-04	3.63E+05
Abcg2	1.04E-03	6.17E+05	Aldh7a1	2.06E-04	3.63E+05
Gnpda2	2.07E-04	6.10E+05	Dancr	9.45E-04	3.61E+05
Rap1gap	1.31E-03	5.98E+05	Klf8	4.70E-04	3.57E+05
Gm12592	4.42E-04	5.93E+05	Adprm	6.74E-04	3.55E+05
Dip2c	5.15E-04	5.90E+05	Ackr2	1.03E-03	3.55E+05
Kazn	3.34E-04	5.85E+05	Fhl1	1.14E-03	3.54E+05
Arl5c	1.38E-03	5.74E+05	Slamf1	1.01E-03	3.53E+05
Gimap5	1.37E-03	5.71E+05	ENSMUST00000135671	8.02E-04	3.53E+05
Xk	1.02E-03	5.48E+05	2410016O06Rik	2.60E-04	3.49E+05
Herpud2	7.05E-04	5.39E+05	Rasgef1b	2.82E-04	3.48E+05
Dars2	3.47E-04	5.31E+05	Mogs	2.79E-04	3.47E+05
0610009L18Rik	1.29E-03	5.31E+05	Slit2	5.12E-04	3.44E+05
Ndfip2	6.52E-04	5.30E+05	Ctsc	2.68E-04	3.43E+05
B630019K06Rik	1.48E-03	5.26E+05	Agpat6	5.91E-04	3.43E+05
Sgk1	6.65E-04	5.07E+05	Ctps	1.38E-03	3.42E+05
Sccpdh	8.77E-04	5.06E+05	Rnf103	1.46E-03	3.40E+05
Lincpint	8.92E-04	4.96E+05	Sacm1l	1.09E-03	3.38E+05
Alkbh8	3.96E-04	4.94E+05	Spint2	5.75E-04	3.36E+05
Lincpint	1.36E-03	4.94E+05	Dock5	4.51E-04	3.34E+05
Armc3	1.17E-03	4.73E+05	Tmem40	2.60E-04	3.33E+05
Armcx1	1.44E-03	4.61E+05	Hells	4.89E-04	3.33E+05
Dhx29	1.47E-03	4.48E+05	Ccna2	6.22E-04	3.28E+05
Nr4a2	1.61E-04	4.42E+05	Erlin1	1.62E-04	3.28E+05
Maged1	3.62E-04	4.40E+05	Cpq	1.50E-04	3.27E+05
Deaf1	3.73E-04	4.33E+05	Mthfd1l	9.03E-04	3.26E+05
Cstf3	1.08E-03	4.31E+05	Stx12	4.15E-04	3.24E+05
C530008M17Rik	1.14E-03	4.30E+05	Stat5b	6.88E-04	3.23E+05
A_55_P2086835	8.03E-04	4.30E+05	Emc7	7.09E-04	3.22E+05
Chchd6	5.70E-04	4.25E+05	Sde2	1.31E-04	3.21E+05
Wls	3.97E-04	4.22E+05	Pbx3	1.12E-04	3.19E+05
Nol7	3.38E-04	4.20E+05	Ccdc53	1.46E-03	3.19E+05
Nr1d2	2.64E-04	4.13E+05	Fam73a	2.02E-04	3.19E+05
Lancl1	1.17E-03	4.13E+05	Stard7	3.26E-04	3.18E+05
Usp19	1.36E-04	4.12E+05	Piga	4.96E-04	3.18E+05
Pex1	4.94E-04	4.07E+05	Golim4	1.24E-03	3.17E+05
Zfp800	1.26E-03	4.00E+05	Tfr2	1.23E-03	3.17E+05
2310022B05Rik	1.03E-03	3.86E+05	lqce	8.68E-04	3.16E+05
Afp	4.42E-04	3.86E+05	Urod	3.23E-04	3.16E+05
Adal	5.74E-04	3.86E+05	Rpn2	1.14E-03	3.16E+05
Rap1gap	2.09E-02	3.84E+05	Thbs1	3.97E-04	3.15E+05
Otud6b	4.92E-04	3.84E+05	Cyb5r1	9.33E-04	3.14E+05

GeneName	p-value	Fold-Change	GeneName	p-value	Fold-Change
Phldb1	1.33E-03	3.14E+05	Ranbp2	1.10E-03	2.89E+05
Rabac1	7.02E-04	3.13E+05	Inafm1	1.28E-03	2.89E+05
Scyl2	6.43E-04	3.12E+05	Nsmf	1.43E-04	2.89E+05
Lonp2	5.48E-04	3.12E+05	1700071A11Rik	1.28E-03	2.88E+05
Hacd4	3.99E-04	3.11E+05	Slc22a18	1.09E-03	2.88E+05
Gabarapl1	3.65E-04	3.10E+05	Igfbp7	1.39E-03	2.88E+05
Slc25a28	6.39E-04	3.09E+05	Comtd1	2.61E-04	2.87E+05
Pja1	4.30E-04	3.09E+05	Fam171a1	1.47E-03	2.87E+05
Laptm4b	7.48E-04	3.08E+05	Slc2a3	5.58E-04	2.86E+05
Cyp4v3	8.53E-04	3.06E+05	Tiparp	3.96E-04	2.86E+05
Pctp	1.33E-03	3.06E+05	Pi4ka	6.89E-04	2.86E+05
Dhx36	1.16E-03	3.06E+05	Cox4i1	1.21E-03	2.86E+05
Kras	9.18E-04	3.05E+05	Ell2	7.47E-04	2.85E+05
ENSMUST00000140653	8.12E-04	3.04E+05	Bgn	1.42E-03	2.85E+05
Emc6	9.68E-04	3.04E+05	Ptgs1	3.48E-04	2.85E+05
Sf3a3	3.54E-04	3.03E+05	Pds5b	6.02E-04	2.85E+05
Mansc1	3.63E-04	3.03E+05	Agtpbp1	9.82E-04	2.85E+05
Isca1	1.17E-04	3.03E+05	Eftud1	2.23E-04	2.85E+05
Hhex	1.43E-03	3.02E+05	Tmem164	6.55E-04	2.84E+05
Spidr	1.41E-04	3.01E+05	Nt5c3	1.17E-03	2.84E+05
Akr1e1	7.50E-04	3.01E+05	Pde8a	3.23E-04	2.83E+05
A830035O19Rik	9.74E-04	3.01E+05	Atr	1.04E-03	2.83E+05
Rnf187	3.20E-04	3.01E+05	Fech	5.25E-04	2.82E+05
Rab38	1.51E-04	3.00E+05	Pgm2	1.27E-03	2.82E+05
Arfgap2	1.24E-03	3.00E+05	Arhgap35	5.67E-04	2.82E+05
Il11ra1	2.68E-04	2.99E+05	Pja2	1.18E-03	2.81E+05
Stub1	3.01E-04	2.99E+05	Ipo11	1.11E-03	2.81E+05
Sil1	4.85E-04	2.98E+05	Snrpd1	4.08E-04	2.81E+05
Tmem9	1.20E-03	2.97E+05	Apool	5.53E-04	2.81E+05
Prdm16	4.38E-04	2.97E+05	Emid1	9.71E-04	2.80E+05
Slc35g1	9.69E-04	2.97E+05	Dpp3	9.58E-04	2.79E+05
Fkbp9	7.53E-04	2.97E+05	Krtcap3	5.20E-04	2.78E+05
Rnf113a2	1.49E-03	2.95E+05	Rbpms2	2.51E-04	2.77E+05
Cnbp	6.96E-04	2.95E+05	Trib1	8.39E-04	2.76E+05
NAP111930-1	5.82E-04	2.93E+05	Tbkbp1	5.75E-04	2.75E+05
Dtymk	9.12E-04	2.93E+05	Ufc1	5.78E-04	2.75E+05
Nus1	1.33E-03	2.93E+05	Homez	1.02E-04	2.75E+05
Ciapin1	4.00E-04	2.93E+05	Romo1	2.06E-04	2.74E+05
Kpnb1	7.38E-04	2.92E+05	Tlk2	1.08E-03	2.74E+05
Gbe1	5.96E-04	2.91E+05	Pqlc1	1.31E-03	2.74E+05
Cdk18	2.25E-04	2.91E+05	Mthfd1	4.67E-04	2.74E+05
Ralgapb	1.04E-03	2.91E+05	Pls3	3.16E-04	2.74E+05
Hmgcr	6.23E-04	2.91E+05	C1qbp	8.03E-04	2.74E+05
Tob2	2.54E-04	2.91E+05	Snrpb	5.56E-04	2.74E+05
Rnf11	8.97E-04	2.90E+05	Nudt9	2.66E-04	2.73E+05
Nubpl	1.08E-03	2.90E+05	Rab1b	1.37E-04	2.73E+05
Sgpp1	4.63E-04	2.90E+05	Psm3	6.88E-04	2.73E+05
Tex30	4.90E-04	2.90E+05	E130304I02Rik	5.65E-04	2.73E+05
Sec61a1	5.71E-04	2.90E+05	Phb	9.12E-04	2.71E+05
Mrps12	3.59E-04	2.90E+05	Der1	1.16E-03	2.71E+05
Alg8	1.30E-03	2.89E+05	Syde1	9.61E-04	2.70E+05
Selenbp1	4.15E-04	2.89E+05	Glrx5	1.09E-03	2.70E+05
Dgkd	5.31E-04	2.89E+05	Eif4g1	5.60E-04	2.70E+05
Phldb1	1.33E-03	3.14E+05	Ranbp2	1.10E-03	2.89E+05
Rabac1	7.02E-04	3.13E+05	Inafm1	1.28E-03	2.89E+05

GeneName	p-value	Fold-Change	GeneName	p-value	Fold-Change
Tmem41a	4.54E-04	2.70E+05	Nufip2	9.04E-04	2.58E+05
Dnajb1	8.94E-04	2.70E+05	Psm1	1.27E-03	2.58E+05
Asns	1.01E-03	2.69E+05	Pus7	3.57E-04	2.58E+05
Hnrnpm	8.31E-04	2.69E+05	Edc4	1.32E-03	2.58E+05
Rfc1	1.45E-04	2.69E+05	Nfia	6.47E-04	2.58E+05
Mcoln2	9.08E-04	2.69E+05	Nup85	1.06E-03	2.58E+05
Smarca2	1.32E-03	2.68E+05	Uqcr11	7.55E-04	2.58E+05
Nap1l1	6.72E-04	2.68E+05	Sf3a1	1.45E-04	2.57E+05
BX514619	7.87E-03	2.68E+05	Nme2	2.60E-04	2.57E+05
Nhp2	5.74E-04	2.68E+05	ENSMUST0000000804	5.38E-04	2.57E+05
Rpl22	3.00E-04	2.68E+05	Psph	6.37E-04	2.57E+05
Hprt	2.47E-04	2.68E+05	Uqcrf5	6.87E-04	2.57E+05
Bud31	5.29E-04	2.67E+05	Gtf2i	7.86E-04	2.57E+05
Adarb1	7.31E-04	2.67E+05	Minos1	1.29E-03	2.57E+05
Nop58	1.67E-04	2.66E+05	Prps1	2.74E-04	2.57E+05
Cyld	6.79E-04	2.66E+05	Ccdc50	1.33E-03	2.56E+05
Hspa14	9.10E-04	2.66E+05	Ncapd3	1.16E-03	2.56E+05
Socs2	1.98E-04	2.66E+05	Dhrs7b	8.13E-04	2.56E+05
Hgf	6.90E-04	2.66E+05	Usp2	1.64E-04	2.56E+05
Oxct1	6.61E-04	2.65E+05	Pold1	5.09E-04	2.55E+05
Uggt1	1.43E-03	2.65E+05	Gemin4	1.22E-03	2.55E+05
Tnfrsf1	8.57E-04	2.65E+05	Mrpl52	9.37E-04	2.55E+05
G630025P09Rik	2.26E-04	2.64E+05	Atp5a1	6.03E-04	2.54E+05
Uqcrq	1.04E-03	2.64E+05	Fam110a	1.87E-04	2.54E+05
Tnfrsf10b	4.57E-04	2.64E+05	Exoc5	6.33E-04	2.54E+05
P2ry14	3.91E-04	2.64E+05	Ndufc2	1.30E-04	2.53E+05
Klhl15	3.70E-04	2.64E+05	Cdc37	1.02E-03	2.53E+05
Armcx2	1.32E-03	2.63E+05	Ppic	9.95E-04	2.53E+05
Minpp1	1.19E-03	2.63E+05	Cenpo	1.10E-03	2.53E+05
Tnks2	1.46E-03	2.63E+05	Ccdc132	5.29E-04	2.53E+05
Marcks1	4.05E-04	2.63E+05	Dnajc9	7.73E-04	2.53E+05
ENSMUST00000182143	9.69E-04	2.63E+05	Nsmf	1.37E-03	2.52E+05
Impdh2	6.13E-04	2.63E+05	Sar1a	4.01E-04	2.52E+05
Ankrd39	1.51E-04	2.63E+05	Ttc33	4.66E-04	2.52E+05
Hnrnpdl	1.48E-03	2.63E+05	Aar2	1.27E-03	2.52E+05
Fancd2	1.46E-03	2.62E+05	Pcbd1	1.40E-04	2.51E+05
Gfpt1	1.29E-03	2.62E+05	Pdap1	4.80E-04	2.51E+05
Car2	1.11E-03	2.62E+05	Gng12	2.20E-04	2.51E+05
Rgs7bp	3.54E-04	2.62E+05	0610011F06Rik	1.22E-03	2.50E+05
Sgpl1	3.46E-04	2.61E+05	Ube2q1	4.47E-04	2.50E+05
A_55_P2073134	8.31E-04	2.61E+05	Ap1s3	3.40E-04	2.50E+05
Toporsos	9.04E-04	2.61E+05	Cpne1	1.29E-03	2.49E+05
Klhl22	5.43E-04	2.61E+05	Por	1.00E-03	2.49E+05
Ubl4	8.31E-04	2.61E+05	Psm5	1.49E-03	2.49E+05
Pde4b	4.17E-04	2.60E+05	Scfd2	1.39E-03	2.49E+05
ENSMUST00000107485	8.06E-04	2.60E+05	Snx3	9.67E-04	2.49E+05
Irf3	1.48E-03	2.60E+05	Bnip3	8.22E-04	2.49E+05
Ash2l	1.49E-03	2.59E+05	A_55_P2156625	1.01E-03	2.49E+05
Fam174a	1.50E-03	2.59E+05	Mfn2	1.54E-04	2.49E+05
Trim13	5.31E-04	2.59E+05	Atp13a3	1.46E-03	2.48E+05
Hnrnpul2	2.92E-04	2.59E+05	Wdr77	5.08E-04	2.48E+05
Uba2	2.79E-04	2.59E+05	Mepce	1.03E-03	2.48E+05
Puf60	2.92E-04	2.58E+05	Ric8	8.44E-04	2.48E+05

GeneName	p-value	Fold-Change	GeneName	p-value	Fold-Change
Lrpprc	1.93E-04	2.48E+05	Mfng	5.94E-04	2.39E+05
Slc35b1	1.11E-03	2.48E+05	Ankrd27	7.97E-04	2.39E+05
Tmed8	1.26E-03	2.48E+05	Pcmt1	1.38E-03	2.39E+05
Mrps30	1.49E-03	2.48E+05	Whsc1	3.28E-04	2.39E+05
Rin3	1.32E-03	2.48E+05	Eif2ak4	1.42E-03	2.39E+05
Psm4	3.26E-04	2.48E+05	Rab1	2.51E-04	2.39E+05
Nfkbid	8.28E-04	2.47E+05	Epb4.1l4b	8.73E-04	2.39E+05
Zdhhc23	1.09E-03	2.47E+05	Ndufs1	1.02E-03	2.39E+05
Ube2e2	3.98E-04	2.47E+05	Phf10	3.06E-04	2.39E+05
Nenf	3.51E-04	2.47E+05	Akt1	9.67E-04	2.39E+05
Ubac1	1.49E-03	2.46E+05	Mtmr3	1.40E-03	2.39E+05
Magoh	9.87E-04	2.46E+05	Dnaja1	6.61E-04	2.38E+05
Fam96a	1.27E-04	2.46E+05	Cd28	1.42E-03	2.38E+05
Cnot2	5.32E-04	2.46E+05	Rab37	1.34E-03	2.38E+05
Anxa4	1.05E-03	2.46E+05	Fbxo11	1.85E-04	2.38E+05
Pigq	1.02E-03	2.46E+05	Tomm70a	1.27E-04	2.37E+05
ENSMUST00000185925	9.22E-04	2.46E+05	Pgpep1	9.28E-04	2.37E+05
Rrm1	1.08E-03	2.46E+05	Tmem230	1.22E-03	2.37E+05
D15Ert621e	3.21E-04	2.46E+05	Pigyl	1.03E-03	2.37E+05
ENSMUST0000036467	1.18E-03	2.45E+05	Sf3b4	5.62E-04	2.37E+05
2610002J02Rik	1.71E-04	2.45E+05	Pbdc1	1.45E-03	2.37E+05
Mrpl20	5.84E-04	2.45E+05	Fam60a	5.58E-04	2.37E+05
Polr2m	1.40E-03	2.45E+05	Skp1a	1.98E-04	2.36E+05
B4galt4	3.36E-04	2.45E+05	Rabep2	7.98E-04	2.36E+05
Polr2d	8.40E-04	2.45E+05	Nxn	6.29E-04	2.36E+05
Tmem176b	2.49E-04	2.44E+05	Psm3	3.80E-04	2.36E+05
Spns1	8.33E-04	2.44E+05	Naf1	5.44E-04	2.36E+05
Znrd1	8.69E-04	2.44E+05	Got1	1.15E-03	2.36E+05
Ica1	5.45E-04	2.44E+05	Rfwd3	1.90E-04	2.36E+05
Sqle	1.43E-04	2.44E+05	Cnih1	2.61E-04	2.36E+05
Gnl1	6.77E-04	2.43E+05	Ppp3cb	5.29E-04	2.36E+05
ENSMUST00000000153	1.41E-03	2.43E+05	Leo1	1.38E-03	2.36E+05
Wdr43	5.50E-04	2.43E+05	Sfr1	3.07E-04	2.35E+05
Mat2b	4.30E-04	2.42E+05	Wdr12	9.79E-04	2.35E+05
Slc23a2	6.07E-04	2.42E+05	Ppfibp1	9.29E-04	2.35E+05
Dpm3	9.58E-04	2.42E+05	Gpr171	1.16E-03	2.35E+05
Pcgf5	4.70E-04	2.42E+05	Tamm41	5.58E-04	2.35E+05
Arl6ip1	1.36E-03	2.42E+05	MacroD1	1.06E-03	2.35E+05
Btg3	1.03E-03	2.41E+05	Pgrmc1	1.62E-04	2.35E+05
Mapk1	6.92E-04	2.41E+05	Smndc1	7.08E-04	2.34E+05
Spn	3.70E-04	2.41E+05	Acaa2	8.91E-04	2.34E+05
Fbxo7	8.95E-04	2.41E+05	Cd63	3.09E-04	2.34E+05
Atp6ap2	6.18E-04	2.41E+05	Nme4	3.28E-04	2.34E+05
Vdac3	3.22E-04	2.41E+05	A_55_P2043451	1.44E-03	2.34E+05
Rpn1	1.31E-04	2.41E+05	Leprot	1.24E-03	2.33E+05
Matr3	6.24E-04	2.41E+05	Cycs	2.33E-04	2.33E+05
1700123O20Rik	7.90E-04	2.40E+05	Alcam	1.13E-03	2.33E+05
Jade1	3.07E-04	2.40E+05	Wwp2	7.26E-04	2.33E+05
Creg1	9.51E-04	2.40E+05	Gabpb1	1.44E-03	2.32E+05
Nol6	5.22E-04	2.40E+05	Krtcap2	1.46E-03	2.32E+05
Lamp1	4.64E-04	2.40E+05	Khdrbs1	1.50E-04	2.32E+05
Atp2c1	3.51E-04	2.40E+05	Arhgef6	1.01E-03	2.32E+05
Hlf	1.17E-03	2.40E+05	Myl12a	9.29E-04	2.32E+05

GeneName	p-value	Fold-Change	GeneName	p-value	Fold-Change
Alg2	2.89E-04	2.32E+05	Foxp4	5.16E-04	2.23E+05
Plekha3	1.89E-04	2.31E+05	Tnfrsf18	1.34E-03	2.23E+05
Zkscan17	9.33E-04	2.31E+05	Sucla2	2.00E-04	2.22E+05
Timm8a1	3.59E-04	2.31E+05	ENSMUST00000049628	1.20E-03	2.22E+05
Ppp6r1	1.17E-03	2.31E+05	Ncoa6	4.71E-04	2.22E+05
Hbb-b2	6.45E-04	2.30E+05	A_55_P1999805	1.23E-03	2.22E+05
Pdcd6	1.59E-04	2.30E+05	Huwe1	7.89E-04	2.22E+05
M6pr	8.87E-04	2.30E+05	Gm5408	5.62E-04	2.21E+05
Pxylp1	5.20E-04	2.30E+05	Prkar1a	1.05E-03	2.21E+05
Sptssa	2.96E-04	2.30E+05	Pfkm	1.30E-03	2.21E+05
Ywhag	3.45E-04	2.30E+05	Cyfp2	4.54E-04	2.21E+05
A_55_P2049071	8.98E-04	2.30E+05	1810037117Rik	4.85E-04	2.21E+05
Plrg1	1.17E-03	2.30E+05	Epn1	5.28E-04	2.21E+05
Stk17b	2.13E-04	2.30E+05	Zdhhc17	3.53E-04	2.21E+05
Myct1	9.89E-04	2.30E+05	Larp4	3.70E-04	2.21E+05
Naa60	4.71E-04	2.29E+05	Rnf19b	2.45E-04	2.20E+05
Tnfrsf10	1.42E-03	2.29E+05	Txnrc12	9.14E-04	2.20E+05
H2afz	2.20E-04	2.29E+05	Chchd2	5.93E-04	2.20E+05
Fosb	1.35E-03	2.29E+05	Git1	1.02E-03	2.20E+05
5430405H02Rik	1.49E-03	2.29E+05	Eif3l	4.84E-04	2.20E+05
ENSMUST00000136319	2.86E-04	2.29E+05	Zfp64	4.25E-04	2.20E+05
Zfp191	1.15E-03	2.28E+05	Cox14	7.03E-04	2.19E+05
Cdc42ep3	5.29E-04	2.28E+05	Smad3	1.46E-03	2.19E+05
Fbxo4	1.22E-03	2.28E+05	Lrrc47	1.03E-03	2.19E+05
Psmg2	7.10E-04	2.28E+05	ENSMUST00000080598	1.17E-03	2.19E+05
NAP112768-1	1.20E-03	2.28E+05	ENSMUST00000116234	3.14E-04	2.19E+05
Ctbp1	3.86E-04	2.28E+05	Ddx3x	1.14E-03	2.19E+05
Mex3a	4.51E-04	2.28E+05	Ruvbl2	1.15E-03	2.19E+05
Cops6	5.60E-04	2.27E+05	Ints2	3.15E-04	2.18E+05
Cetn2	7.30E-04	2.27E+05	Cstf2t	3.58E-04	2.18E+05
Hypk	8.71E-04	2.27E+05	Pigb	1.11E-03	2.18E+05
Emilin2	7.76E-04	2.27E+05	Rbm42	1.10E-03	2.18E+05
Cdc20	1.03E-03	2.27E+05	E2f5	7.27E-04	2.18E+05
Ranbp9	1.02E-03	2.27E+05	ENSMUST00000121927	1.42E-03	2.17E+05
Mir17hg	6.38E-04	2.27E+05	Cers2	1.13E-03	2.17E+05
Rab5a	5.11E-04	2.27E+05	Ppif	5.89E-04	2.17E+05
Ddx50	1.45E-03	2.26E+05	Txnrd1	9.00E-04	2.17E+05
NAP058885-1	4.38E-04	2.26E+05	Chp1	1.18E-03	2.17E+05
Actr3	5.88E-04	2.26E+05	Eif3m	6.36E-04	2.17E+05
Zmat2	1.28E-03	2.26E+05	Dnaja2	3.99E-04	2.16E+05
Mthfs	2.50E-04	2.26E+05	G6pc3	7.73E-04	2.16E+05
Psmc2	2.50E-04	2.25E+05	Glrx	1.19E-03	2.16E+05
Nap1l1	1.17E-03	2.25E+05	Syncp1	4.27E-04	2.16E+05
Mttr12	6.99E-04	2.25E+05	Lman1	8.33E-04	2.16E+05
Xbp1	1.03E-03	2.25E+05	Ndufc1	3.86E-04	2.16E+05
Ostc	1.07E-03	2.25E+05	Isy1	9.92E-04	2.16E+05
Nono	5.61E-04	2.24E+05	Mapre1	9.45E-04	2.16E+05
Hnrnpd	1.24E-04	2.24E+05	Ppp2cb	8.22E-04	2.15E+05
Casc3	1.36E-03	2.23E+05	Pnkd	1.37E-03	2.15E+05
Dnajc16	4.44E-04	2.23E+05	Cttnb1	1.04E-03	2.15E+05
Tbca	7.22E-04	2.23E+05	Srbd1	6.66E-04	2.15E+05
Timm17b	1.12E-03	2.23E+05	Eif3c	6.53E-04	2.15E+05
Tusc1	3.85E-04	2.23E+05	Gtf3a	1.45E-03	2.15E+05

GeneName	p-value	Fold-Change	GeneName	p-value	Fold-Change
Jak1	5.36E-04	2.15E+05	Dpy30	5.49E-04	2.08E+05
2700094K13Rik	1.01E-03	2.15E+05	S1pr4	7.65E-04	2.07E+05
Rcn1	2.36E-04	2.15E+05	Tbc1d23	1.25E-03	2.07E+05
Snw1	5.27E-04	2.14E+05	A_55_P2105017	1.01E-03	2.07E+05
Mtch1	1.09E-03	2.14E+05	Ndufa4	1.17E-03	2.07E+05
Nudt3	9.59E-04	2.14E+05	Vapb	7.86E-04	2.07E+05
Hp1bp3	1.18E-03	2.14E+05	Sdhc	1.47E-03	2.07E+05
Zfp207	9.15E-04	2.14E+05	A_55_P1952743	6.56E-04	2.07E+05
A_55_P2168781	1.52E-04	2.14E+05	Wdr12	1.18E-03	2.07E+05
Psme1	3.43E-04	2.14E+05	Prdx6	1.48E-03	2.07E+05
Gm13202	7.15E-04	2.14E+05	2410127L17Rik	1.06E-03	2.06E+05
Aldh16a1	8.40E-04	2.13E+05	NAP101548-1	1.26E-03	2.06E+05
Mapk8ip3	1.35E-03	2.13E+05	Sdr39u1	1.35E-03	2.06E+05
Rbm3	2.64E-04	2.13E+05	lpmk	6.97E-04	2.06E+05
Ifitm1	8.23E-04	2.12E+05	Ppm1h	7.98E-04	2.05E+05
A_55_P2124381	7.60E-04	2.12E+05	Aagab	1.15E-03	2.05E+05
Mavs	9.46E-04	2.12E+05	NAP114346-1	1.03E-04	2.05E+05
Sall2	9.25E-04	2.12E+05	Ndufa12	5.31E-04	2.05E+05
ENSMUST00000190438	1.25E-03	2.12E+05	Aco2	7.88E-04	2.04E+05
Sms	1.30E-03	2.12E+05	1110008F13Rik	2.21E-04	2.04E+05
Vars2	8.09E-04	2.12E+05	Ybx3	1.17E-04	2.04E+05
Glrx3	6.13E-04	2.12E+05	Psmb6	1.48E-03	2.04E+05
Gar1	2.48E-04	2.11E+05	Rnaset2a	1.35E-03	2.03E+05
Wdr36	1.35E-03	2.11E+05	Pycr2	1.14E-03	2.03E+05
A_66_P135804	1.14E-03	2.11E+05	Gm9238	3.19E-04	2.03E+05
Xylt2	9.96E-04	2.11E+05	lman2	7.25E-04	2.03E+05
Atp5g3	5.41E-04	2.11E+05	Wbp1l	1.05E-03	2.03E+05
Eif5	1.22E-03	2.11E+05	Arl2bp	1.35E-03	2.03E+05
P3h3	1.11E-03	2.11E+05	Casp7	9.05E-04	2.03E+05
Slc25a17	7.17E-04	2.11E+05	Hacd3	9.67E-04	2.03E+05
Appbp2	5.88E-04	2.11E+05	Ppip5k2	5.52E-04	2.03E+05
Ier3ip1	6.33E-04	2.10E+05	Rpl22l1	1.42E-03	2.02E+05
Ifitm3	2.57E-04	2.10E+05	Cd34	5.93E-04	2.02E+05
Shc1	1.33E-03	2.10E+05	Wdr75	1.28E-04	2.02E+05
Cited2	9.87E-04	2.10E+05	A_55_P2045512	5.05E-04	2.02E+05
Sin3b	1.12E-03	2.10E+05	Fzr1	4.56E-04	2.02E+05
Supt3	1.19E-03	2.10E+05	Atad3a	1.08E-03	2.01E+05
Rbm8a	4.10E-04	2.10E+05	Gimap1os	1.44E-04	2.01E+05
Vdac2	1.00E-03	2.09E+05	Zfp148	2.45E-04	2.01E+05
Nif3l1	7.38E-04	2.09E+05	Sod1	1.23E-03	2.01E+05
Ehd4	3.41E-04	2.09E+05	ENSMUST00000178807	1.27E-03	2.01E+05
Prkrir	1.09E-03	2.09E+05	Tceb1	9.08E-04	2.00E+05
Ubiad1	1.30E-03	2.09E+05	Rap1b	5.16E-04	2.00E+05
Pa2g4	3.36E-04	2.09E+05	Hmgb3	5.74E-04	2.00E+05
Smtn	5.91E-04	2.09E+05	Usp7	9.83E-04	2.00E+05
Dnajc8	4.32E-04	2.09E+05	Atmin	1.07E-03	2.00E+05
Hspa4	3.61E-04	2.09E+05	Nup210	1.40E-03	2.00E+05
Vkorc1	7.56E-04	2.09E+05	Gm15421	1.24E-03	2.00E+05
Adrm1	9.01E-04	2.09E+05	Hid1	8.81E-04	1.25E+05
Cherp	1.15E-03	2.08E+05	ENSMUST00000148936	2.26E-04	1.18E+05
Metap2	5.09E-04	2.08E+05	Slc39a13	4.48E-04	1.05E+05
Gm5526	1.25E-03	2.08E+05	Mtus1	3.28E-04	8.87E+04
Clic4	1.45E-03	2.08E+05	Dlg3	2.20E-04	8.34E+04

GeneName	p-value	Fold-Change	GeneName	p-value	Fold-Change
Atp5s	1.03E-03	4.81E+04	Resp18	1.37E-04	-3.33E+05
Cep170	1.19E-04	4.80E+04	Tusc5	1.48E-03	-3.47E+05
Ndr3	3.25E-04	4.51E+04	Gjb2	1.12E-03	-3.62E+05
Cxadr	1.36E-03	4.47E+04	A_55_P1964677	1.22E-03	-4.48E+05
Mmrn1	1.02E-03	3.73E+04	A_55_P1998821	1.35E-03	-5.11E+05
Tmbim1	2.81E-04	3.72E+04			
Tle1	1.66E-04	3.69E+04			
Rpia	1.07E-03	3.63E+04			
Cebpb	6.45E-04	3.19E+04			
Gda	1.25E-04	3.19E+04			
ENSMUST00000122443	6.41E-04	3.12E+04			
Kcnk5	2.42E-04	3.05E+04			
Hlx	8.77E-04	3.00E+04			
A_55_P2075358	2.25E-04	2.82E+04			
Rufy1	1.41E-04	2.79E+04			
Ahsa1	1.05E-03	2.77E+04			
ENSMUST00000103410	1.10E-04	2.69E+04			
Pgp	1.40E-03	2.67E+04			
Ppp2r5c	4.90E-04	2.67E+04			
Tspan3	4.79E-04	2.65E+04			
Farsa	9.42E-04	2.64E+04			
Tsn	1.49E-03	2.59E+04			
Bag3	1.20E-03	2.58E+04			
Ccnd3	6.41E-04	2.57E+04			
Eif5a	4.14E-04	2.56E+04			
Dis3	1.06E-03	2.54E+04			
Mapk14	1.29E-03	2.53E+04			
Msl3	4.24E-04	2.47E+04			
Prep	2.02E-04	2.46E+04			
NAP111315-1	2.84E-04	2.44E+04			
Ebi3	8.15E-04	2.42E+04			
NAP097543-001	4.75E-04	2.30E+04			
NAP094260-001	8.99E-04	2.28E+04			
Ik	1.36E-03	2.24E+04			
Tcp1	7.68E-04	2.23E+04			
Calm3	2.27E-04	2.23E+04			
Tmem98	1.16E-03	2.22E+04			
Tmem14c	5.97E-04	2.19E+04			
Uqcrc2	7.37E-04	2.17E+04			
Zfand5	9.31E-04	2.13E+04			
Morf4l2	5.90E-04	2.09E+04			
Atp5k	1.16E-03	2.09E+04			
Supt6	7.14E-04	2.09E+04			
Ddx24	9.63E-04	2.08E+04			
Tmem147	2.28E-04	2.08E+04			
Carkd	7.26E-04	2.07E+04			
Mrpl55	1.46E-03	2.04E+04			
Zfand3	7.83E-04	7.28E+03			
P2ry10	5.07E-04	3.70E+03			
Rnf215	5.99E-04	2.70E+03			
Abcd3	5.97E-04	2.35E+03			
Olf93	6.89E-04	-2.53E+05			
Ddr2	5.95E-04	-3.07E+05			

Supplemental Table 6: Antibodies used for flow cytometry.

Antibody	Clone	Conjugate	Source
CD3	17A2	BV785	Biolegend
CD3e	145-2C11	PE-Cy7	Biolegend
CD11a	2D7	PE, PerCPy5.5	BD Biosciences
CD11b (Mac1)	M1/70	AF700	Biolegend
CD45.1	A20	APC-Cy7, BV421, BV510	Biolegend
CD45.2	104	AF700, FITC	Biolegend
CD45	30-F11	AF700, BV510, BV650, FITC	Biolegend
CD45R (B220)	RA3-6B2	APC, BV421, BV711	Biolegend
CD48	HM48-1	APC-Cy7	Biolegend
CD117 (c-kit)	ACK2	BV510	Biolegend
CD117 (c-kit)	ACK2	PE-Cy7, AF700	eBioscience
CD150	TC-12F12.2	BV421	Biolegend
CD182 (CXCR2)	SA044G4	FITC, PE	Biolegend
Gr1	RB6-8C5	BV510, BV786, APC-Cy7	Biolegend
Ki67	SolA15	FITC, PE-Cy7	eBioscience
Lineage Cocktail	-	APC	BD Biosciences
Ly6C	HK1.4	BV510, FITC, PerCpCy5.5	Biolegend
Ly6G	1A8	APC-Cy7, BV510	BD Biosciences
Sca-1 (Ly-6A/E)	D7	PE, PE-CF594	BD Biosciences

Supplemental Table 7: Gene expression assays used in the study.

Gene Name	Assay-ID	Source
CXCR2	Mm99999117_s1	Applied Biosystems
GAPDH	Mm99999915_g1	Applied Biosystems

Appendix

Pending or approved patents held by various authors (alphabetical).

Halvard Bonig

1. Co-inventor on patent PCT/EP2015/066083, receives royalties and licensing fees,

John DiPersio

1. "Methods and compositions for up-regulating MHC Class II" (U.S. Provisional Application No. 62/798,630)
2. "Use of IL-7 and CAR-T" (U.S. Provisional Application No. 62/712,803)
3. "Method for genome-editing and transduction of T cells" (U.S. Provisional Application No. 62/678,886)
4. "Genome-edited iNKT cells" (U.S. Provisional Application No. 62/678,883)
5. "Suppression of cytokine release syndrome" (U.S. Provisional Application No. 62/679,597)
6. "Dual and tandem CAR-T" (U.S. Provisional Application No. 62/678,878)
7. "Compositions and methods for prolonging organ transplant survival" (U.S. Provisional Application No. 62/661,295)
8. "Gene editing of CAR-T" (Application No. PCT/US2017/045304" and U.S. and foreign counterparts)

David Griggs

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3. US2004167067A. ESM-1 gene differentially expressed in angiogenesis, antagonists thereof, and methods of using the same.
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6. US9085606. Beta amino acid derivatives as integrin antagonists (granted)
7. WO2017117538. Meta-azacyclic amino benzoic acid derivatives as pan integrin antagonists with improved pharmacokinetic properties (pending)
8. 62/471,882. $\alpha V\beta 1$ integrin antagonists (pending)

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Marvin Meyers

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1. "Methods and compositions for up-regulating MHC Class II" (U.S. Provisional Application No. 62/798,630)

Peter Ruminski

1. **VLA4 Integrin Antagonists.** *Provisional US Patent Application USTL.P0080US.P1 (2017)*
2. **$\alpha_v\beta_1$ INTEGRIN ANTAGONISTS.** *Provisional US Patent Application USTL.P0082US.P1 (2016)*
3. **Preparation of 3,5-phenyl substituted beta amino acid derivatives as integrin receptor antagonists.** *U.S. Pat. Appl. Publ. (2014), US 20140051715 A1 20140220*
4. **Beta Amino Acid Derivatives as Integrin Antagonists.** *US patent 9085606*
5. **3,5-phenyl substituted beta amino acid derivatives as integrin antagonists.** *US patent 8716226*
6. **Preparation of N-glycyl-beta amino acid derivatives as integrin antagonists.** *WO 2014015054 A1*
7. **Preparation of pyrimidine and pyridine derivatives as antiinflammatory agents.** *WO Patent 2009016498*
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9. **Preparation of beta -amino acid R-isomer compounds as integrin receptor antagonists.** *WO Patent 2004060376*

10. **Preparation of peptidyl integrin antagonists for use in combination with a chemotherapeutic agent for treatment of neoplasia.** *US Patent 6372719*
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12. **Preparation of [(((pyrimidinylamino)benzoyl)amino]acetyl]amino]benzenepropanoic acid derivatives as avb3 integrin antagonists.** *US Patent 6013651*
13. **Preparation of heterocyclic glycol beta -alanine derivatives as vitronectin antagonists.** *WO Patent 9952896*
14. **Preparation of 3-hydroxy-5-[(1,4,5,6-tetrahydro-5-hydroxy-2-pyrimidinyl)amino]benzoic acid.** *WO Patent 9944996*
15. **Preparation of meta-pyrimidinylamino benzamides and derivatives as avb3 integrin antagonists.** *WO Patent 9944994*
16. **Preparation of cinnamic acid derivatives for selective inhibiting or antagonizing the avb3 integrin.** *US Patent 5852210*
17. **Preparation of 3-guanidinophenylamides and related compounds as integrin avb3 inhibitors or antagonists.** *US Patent 5773646*
18. **Platelet aggregation inhibitors** *US Patent 5798370*
19. **New vitronectin receptor antagonizing amino-benzoic acid derivatives used to treat e.g. tumor metastasis, solid tumor growth, angiogenesis, osteoporosis, smooth muscle migration and rheumatoid arthritis.** *WO Patent 9708145*
20. **Guanidinoalkyl glycine beta-amino acids useful for inhibiting tumor metastasis.** *US Patent 5681820*
21. **Guanidinoalkyl glycine beta-amino acids useful for inhibiting bone loss.** *US Patent 563976*
22. **Benzamido phenyl or phenoxy acetic and propionic acids for use in arthritis, tumor growth and metastasis, osteoporosis, etc.** *WO Patent 973686*
23. **New guanidino phenyl styryl alkenoic acids for use in arthritis, tumor growth and metastasis, osteoporosis, restenosis, etc.** *WO Patent 9736860*
24. **Benzamido phenyl propionic and phenoxyacetic acids for use in arthritis, tumor growth and metastasis, osteoporosis, restenosis, etc.** *WO Patent 9736859*
25. **Platelet aggregation inhibitors.** *US Patent 5602155*
26. **Guanidino alkylamino carbonyl alkyl carbamido alkanolic acid derivatives are platelet aggregation inhibitors used in thrombosis, stroke, infarction, arteriosclerosis, inflammation, metastasis, etc.** *WO Patent 9623771*
27. **Fluoroalkenyl compounds and their use as pest control agents.** *US Patent 5811578*
28. **Fluoroalkenyl compounds and their use as pest control agents.** *US Patent 5723470:*
29. **Fluoroalkenyl compounds and their use as pest repellents.** *US Patent 571451:*

30. **Fluoroalkenyl compounds and their use as pest control agents.** *US Patent 5708032*
31. **New 4,4-difluoro-but-3-enyl esters of carboxylic acid, useful as pesticides in plant protection.** *WO Patent 9708130*
32. **New N,N-disubstituted 4-bromo-3-chloro-3,4,4-trifluoro-butanamide- used to control nematodes, insects and acarids in agricultural crops, and glycine derivative, intermediate for trifluorobutene compounds.** *US Patent 5700840*
33. **Fluoroalkenyl compounds and their use as pest control agents.** *US Patent 562717:*
34. **Fluoroalkenyl compounds and their use as pest repellents.** *US Patent 569386*
35. **Fluoroalkenyl compounds and their use as pest repellents.** *US Patent 562308*
36. **New 3,4,4-trifluorobutenoic acid derivatives useful for controlling nematode, insect and acarid infestation of plants.** *US Patent 551471*
37. **New fluoro substituted alkenyl ether and thioether compounds useful as pesticides in plant protection.** *WO Patent 9619449*
38. **New fluoro substituted butenyl ester compounds useful as pesticides in plant and material protection and veterinary medicine.** *WO Patent 9614289*
39. **New fluoro butenyl carbonate and carbamate compounds useful as pesticides in plant protection.** *DE Patent 443933*
40. **Preparation of difluorobutenyloxy acetate and difluorobutenyl thioacetate derivatives as pesticides.** *DE Patent 4445792*
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42. **Fluoroalkenyl compounds and their use as pest repellents.** *US Patent 5457134*
43. **Fluoroalkenyl compounds and their use as pest repellents.** *US Patent 5389680*
44. **Fluoroalkenyl compounds for nematode, insect and acarid control.** *WO Patent 921555*
45. **Preparation of fluoroalkenyl group containing compounds as pesticides.** *CN Patent 1064479*
46. **2,6-bis(trifluoromethyl)-3-hydroxy carbonyl pyridines as gametocides.** *US Patent 4747871*
47. **2,6-bis (trifluoromethyl)-3-methoxycarbonyl-4-hydroxy pyridines as gametocides.** *EP Patent 276204*