Sunitinib treatment enhances metastasis of innately drug resistant breast tumors

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Supplementary table 1. Murine RTqPCR primers used for the research detailed in this paper.

Target name	Primer sequences	Probe number
CD11b	Fwd: gcacctcggtatcagcatatt	9
	Rev: cccaggtaccgaaattctcc	
CD68	Fwd: ttctcttgcaaccgtgacc	34
	Rev: gaggaggaccaggccaat	
EPCAM	Fwd: ggttagcgcttccgaggta	53
	Rev: tgttggatagtcaaggccagt	
PDGFRA	Fwd: aacggggctagaagtcaacc	4
	Rev: tgacatgaagccaagaacttaaac	
PECAM	Fwd: gctggtgctctatgcaagc	30
	Rev: atggatgctgttgatggtga	
β-ACTIN	Fwd: ggagggggttgaggtgtt	71
	Rev: gtgtgcacttttattggtctcaa	
LEPR	Fwd: cctccatctaacgtaaaagcaga	47
	Rev: tggcttttcccaagatactttc	
PRLR	Fwd: gccttcctgctctgtctcac	55
	Rev: cctgagccccgtgtaaaat	
ESAM	Fwd: tgattcttcaggctggaacc	54
	Rev: tcagtcccaggaacaaaacc	
PTN	Fwd: tgtcactttgctctccttgg	55
	Rev: agtgggcttcctggcttc	
AQP1	Fwd: atcaactcagcaccccactc	25
	Rev: caggtgggtccctcacttt	
ANGPT2	Fwd: aagagcgtggacagcacag	8
	Rev: gtagctgcagggtccgttc	
DARC	Fwd: cttcaccttgggactcagtgt	32
	Rev: gactggcagccctaagagg	
ECSCR	Fwd: gctagacacttggcctgctc	18
	Rev: ttgactcctcgttcctgagttt	
TSPAN7	Fwd: ttggatgctttgctacatgc	89
	Rev: gggacaggaacatggcatac	
STC2	Fwd: catgccctgcgtcataaat	18
	Rev: catttccctaattgctggaca	
RET	Fwd: cacagcccagcaacttacg	2
	Rev: ggccctgagaattctgctct	
MMRN2	Fwd: agcccctcaccatgatcc	3
	Rev: agtccccagctcaggtacac	
VEGFR2	Fwd: accagagaccctcgttttca	22
	Rev: catttgcttgcaggaggttt	
EDN1	Fwd: cagcatccttgatccaaaca	30
	Rev: gacgcagacaggctaggg	

Supplementary table 2. Expression change of genes on which sunitinib has a known or predicted effect, in tumour bulk harvested at each time-point. Log2 fold change in gene expression shown.

Gene ID	Gene symbol	GeneBank accession no.	Predicted sunitinib effect	Responsive vs Untreated 9 days	Responsive vs Untreated 600 mm^3	Responsive vs Untreated 1300 mm^3
kit oncogene	KIT	NM_001122733	Downregulated	-2.33	-0.78	0.27
platelet derived growth factor receptor, beta	PDGFRB	NM_001146268	Downregulated	-2.11	-0.41	-0.60
CD69 antigen	CD69	NM_001033122	Downregulated	-2.00	0.47	0.47
Vascular endothelial growth factor receptor 2	VEGFR2	NM_010612	Downregulated	-1.63	-0.18	-0.95
FMS-like tyrosine kinase 3	Flt3	NM_010229	Downregulated	-1.53	-0.21	-0.82
colony stimulating factor 1 receptor	Csf1r	NM_001037859	Downregulated	-1.35	-0.91	-0.82
interleukin 2 receptor, alpha	IL2RA	NM_008367	Downregulated	-1.28	-0.24	0.99

Supplementary table 3. Expression change of genes on which sunitinib has a predicted effect, in EC isolates from tumours harvested at 1300 mm^3. Log2 fold change in gene expression shown.

Gene ID	Gene symbol	GeneBank accession no.	Predicted sunitinib effect	Non-responsive vs. Untreated EC	Responsive vs. Untreated EC	Non-responsive vs. Responsive EC
chemokine (C-X-C motif) ligand 3	CXCL3	NM_203320	Downregulated	-1.97	-0.35	-1.62
FMS-like tyrosine kinase 1	FLT1	AK005502	Downregulated	-0.95	0.89	-1.84
kinase insert domain protein receptor	KDR	NM_010612	Downregulated	-0.14	1.04	-1.18
FMS-like tyrosine kinase 3	FLT3	AK045865	Downregulated	-1.04	-0.01	-1.04
ret proto-oncogene	RET	NM_001080780	Downregulated	0.60	1.26	-0.41
baculoviral IAP repeat-containing 5	BIRC5	NM_001012273	Downregulated	1.15	0.20	0.97
BCL2-like 11 (apoptosis facilitator)	BCL2L11	NM_207680	Upregulated	1.30	-0.33	1.64

Supplementary table 4. Expression change of genes that enhance metastasis in tumour bulk harvested at each time-point. Log2 fold change in gene expression shown.

Gene ID	Gene symbol	GeneBank accession no.	Effect on metastasis	Responsive vs. Untreated 9 days	Responsive vs. Untreated 600 mm^3	Responsive vs. Untreated 1300 mm^3
bone morphogenetic protein 2	BMP2	NM_007553	Increased	-3.30	-0.45	-1.05
snail homolog 2 (Drosophila)	SNAI2	NM_011415	Increased	-2.91	0.08	0.46
ubiquitin D	UBD	NM_023137	Increased	-2.06	0.72	0.04
thymus cell antigen 1, theta	THY1	NM_009382	Increased	-1.98	-0.67	0.19
collagen triple helix repeat containing 1	CTHRC1	NM_026778	Increased	-1.37	-0.71	-0.70
nitric oxide synthase 3, endothelial cell	NOS3	NM_008713	Increased	-1.34	-0.32	-0.24
angiopoietin-like 4	ANGPTL4	NM_020581	Increased	-1.32	-1.04	0.22
heparanase	HPSE	NM_152803	Increased	-1.30	-0.18	-0.21
O-6-methylguanine-DNA methyltransferase	MGMT	NM_008598	Increased	-1.28	-0.52	-0.08
tumor necrosis factor superfamily, 11	TNFSF11	NM_011613	Increased	-1.27	0.29	0.36
zeta-chain (TCR) associated protein kinase	ZAP70	NM_009539	Increased	-1.27	0.19	0.89
CD274 antigen	CD274	NM_021893	Increased	-1.25	-0.21	0.00
Fyn proto-oncogene	FYN	NM_001122893	Increased	-1.13	-0.35	-0.08
tumor necrosis factor	TNF	NM_013693	Increased	-1.11	-0.30	0.96
chemokine (C-X-C motif) receptor 4	CXCR4	NM_009911	Increased	-1.07	-0.73	0.00
matrix metallopeptidase 2	MMP2	NM_008610	Increased	-0.29	-1.14	-0.40
chemokine (C-X-C motif) ligand 1	CXCL1	NM_008176	Increased	0.25	1.08	0.77
TOX high mobility group box 4	TOX4	NM_023434	Increased	0.31	-0.02	1.95
chemokine (C-X-C motif) ligand 3	CXCL3	NM_203320	Increased	0.40	1.41	0.07
lysyl oxidase	LOX	NM_010728	Increased	0.41	-1.05	-0.29
c-fos induced growth factor	FIGF	NM_010216	Increased	0.42	-1.21	-0.36
syndecan binding protein	SDCBP	AK014678	Increased	0.60	-0.06	1.11
leukotriene B4 receptor 2	LTB4R2	NM_020490	Increased	0.74	-0.69	1.29
CD151 antigen	CD151	NM_009842	Increased	1.03	0.13	0.21
inositol hexaphosphate kinase 2	IP6K2	NM_029634	Increased	1.05	-0.15	0.04
chemokine (C-X-C motif) ligand 5	CXCL5	NM_009141	Increased	1.07	0.32	0.04
S100 calcium binding protein A4	S100A4	NM_011311	Increased	1.13	0.38	0.33
bone morphogenetic protein 7	BMP7	NM_007557	Increased	2.34	-0.14	0.54

Supplementary table 5. Expression change of genes that enhance metastasis in tumour bulk harvested at 1300 mm^3. Log2 fold change in gene expression shown.

Gene ID	Gene symbol	GeneBank accession no.	Effect of metastasis	Non-responsive vs. Untreated W	Responsive vs. Untreated W	Non-responsive vs. Responsive W
TOX high mobility group box family member 4	TOX4	NM_023434	Increased	-1.96	1.95	-3.94
insulin-like growth factor 1	IGF1	NM_010512	Increased	-1.52	0.10	-1.62
cadherin 2	CDH2	NM_007664	Increased	-1.12	-0.11	-1.01
neurotrophic tyrosine kinase, receptor, type 2	NTRK2	NM_001025074	Increased	-1.12	0.64	-1.74
leukotriene B4 receptor 2	LTB4R2	NM_020490	Increased	-1.01	1.29	-2.04
bone morphogenetic protein 2	BMP2	NM_007553	Increased	-0.02	-1.05	0.91
syndecan binding protein	SDCBP	AK014678	Increased	0.77	1.11	-0.51
netrin 1	NTN1	NM_008744	Increased	1.01	0.30	0.72
CD44 antigen	CD44	NM_009851	Increased	1.02	0.17	0.85
Notch gene homolog 1 (Drosophila)	NOTCH1	NM_008714	Increased	1.16	0.75	0.40
ubiquitin D	UBD	NM_023137	Increased	1.23	0.04	1.17
melanoma cell adhesion molecule	MCAM	NM_023061	Increased	1.27	-0.05	1.35
chemokine (C-X-C motif) ligand 5	CXCL5	NM_009141	Increased	1.55	0.04	1.52

Supplementary table 6. Expression change of genes that enhance endothelial migration in tumour bulk harvested at each time-point. Log2 fold change in gene expression shown.

Gene ID	Gene symbol	GeneBank accession no.	Effect on endothelial migration	Responsive vs. Untreated 9 days	Responsive vs. Untreated 600 mm^3	Responsive vs. Untreated 1300 mm^3
tenascin N	TNN	NM_177839	Increased	-3.45	-0.42	-0.14
bone morphogenetic protein 2	BMP2	NM_007553	Increased	-3.30	-0.45	-1.05
matrix metallopeptidase 13	MMP13	NM_008607	Increased	-2.90	1.24	-0.75
wingless-related MMTV integration site 5A	WNT5A	NM_009524	Increased	-2.86	-0.36	0.17
endothelial cell-specific adhesion molecule	ESAM	NM_027102	Increased	-2.62	-0.29	-1.08
integrin alpha 9	ITGA9	NM_133721	Increased	-2.33	0.20	-0.47
EGF-like domain 7	EGFL7	NM_178444	Increased	-2.00	-0.38	-0.42
elastin	ELN	NM_007925	Increased	-1.65	-1.04	-0.15
growth arrest specific 6	GAS6	NM_019521	Increased	-1.64	-0.75	0.12
phosphoinositide-3-kinase, catalytic, gamma	PIK3CG	NM_020272	Increased	-1.63	-0.46	-0.34
tumor necrosis factor (ligand) superfamily, 10	TNFSF10	NM_009425	Increased	-1.62	1.01	-0.03
tachykinin 1	TAC1	NM_009311	Increased	-1.60	0.35	0.01
insulin-like growth factor binding protein 3	IGFBP3	NM_008343	Increased	-1.59	-0.79	-0.43
Rac/Cdc42 guanine nucleotide exchange factor 6	ARHGEF6	NM_152801	Increased	-1.52	-0.08	0.18
sphingosine-1-phosphate receptor 3	S1PR3	NM_010101	Increased	-1.50	-1.03	0.16
sphingosine-1-phosphate receptor 1	S1PR1	NM_007901	Increased	-1.44	-0.70	-0.96
endothelial-specific receptor tyrosine kinase	TEK	NM_013690	Increased	-1.42	-0.45	-0.38
nitric oxide synthase 3, endothelial cell	NOS3	NM_008713	Increased	-1.34	-0.32	-0.24
heparanase	HPSE	NM_152803	Increased	-1.30	-0.18	-0.21
chemokine (C-C motif) ligand 5	CCL5	NM_013653	Increased	-1.25	-0.15	0.43
phosphodiesterase 2A, cGMP-stimulated	PDE2A	NM_001143848	Increased	-1.21	-0.77	-0.62
protein kinase D1	PRKD1	NM_008858	Increased	-1.13	-0.07	-0.51
GATA binding protein 1	GATA1	NM_008089	Increased	-0.82	-1.45	-0.60
pleiotrophin	PTN	NM_008973	Increased	-0.34	-0.15	3.23
matrix metallopeptidase 2	MMP2	NM_008610	Increased	-0.29	-1.14	-0.40
chemokine (C-X-C motif) ligand 1	CXCL1	NM_008176	Increased	0.25	1.08	0.77
teratocarcinoma-derived growth factor 1	TDGF1	NM_011562	Increased	0.30	0.56	1.03
lysyl oxidase	LOX	NM_010728	Increased	0.41	-1.05	-0.29
c-fos induced growth factor	FIGF	NM_010216	Increased	0.42	-1.21	-0.36
gastrin releasing peptide	GRP	NM_175012	Increased	0.49	0.47	-2.22
syndecan 4	SDC4	NM_011521	Increased	0.73	-0.55	1.01
adrenomedullin	ADM	NM_009627	Increased	0.78	-1.31	0.10
CD151 antigen	CD151	NM_009842	Increased	1.03	0.13	0.21
angiopoietin 1	ANGPT1	NM_009640	Increased	1.77	0.15	-0.19
colony stimulating factor 2	CSF2	NM_009969	Increased	1.80	0.28	0.06
kininogen 1	KNG1	NM_001102411	Increased	2.58	-0.08	-0.09
calcitonin/calcitonin-related polypeptide, alpha	CALCA	NM_001033954	Increased	2.73	-0.08	0.67