

**Title:**

Microfluidic Single-Cell Migration Chip Reveals Insights into the Impact of Extracellular Matrices on Cell Movement

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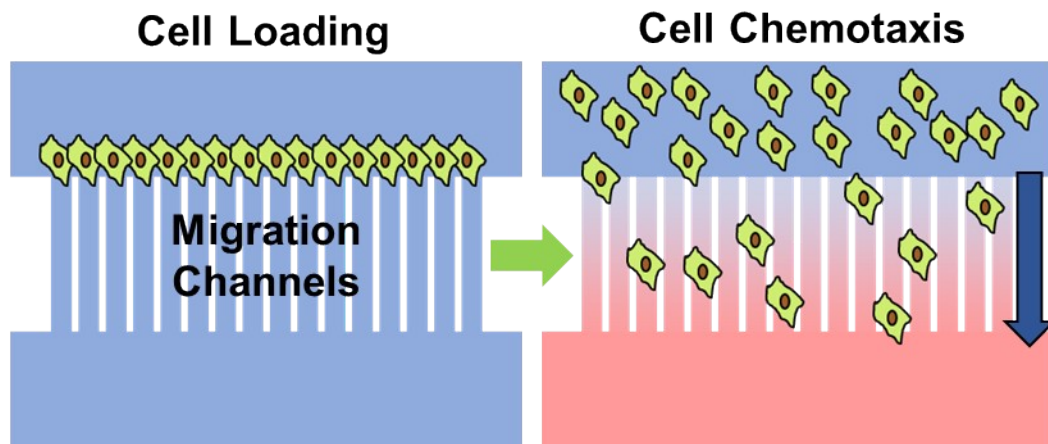
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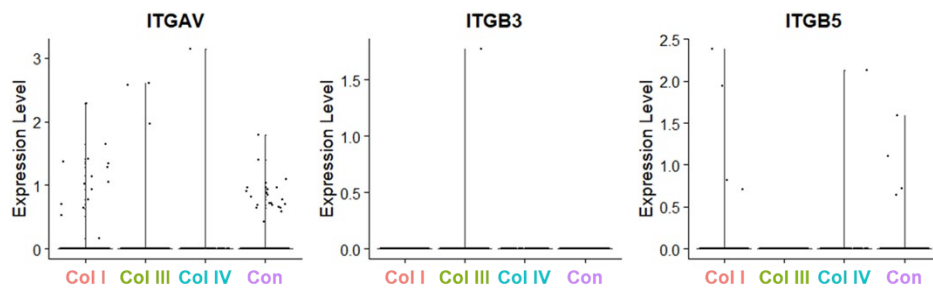
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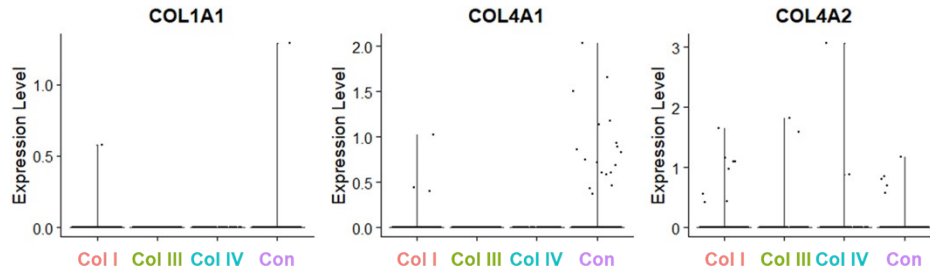
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**Figure S1.** Operation of the single-cell migration device. Initially, cells are loaded into the upper wells. After cell adhesion, chemoattractant is loaded in the lower wells to induce cell migration into channels.



**Figure S2.** Violin plots of gene expression levels of ITGAV, ITGB3, and ITGB5 with a logarithmic scale. The Y-axis represents gene expression. Each dot represents one cell.



**Figure S3.** Violin plots of gene expression levels of COL1A1, COL4A1, and COL4A2 with a logarithmic scale. The Y-axis represents gene expression. Each dot represents one cell.

**Table S1. The list of compounds.**

Source	Item #	Compounds Name	Target
Cayman	11421	Actinomycin D	Chemo
Cayman	10008822	Bortezomib (PS-341)	Proteasome
Cayman	22266	Digoxin	HIF
Cayman	11637	Docetaxel	Chemo
Cayman	15007	Doxorubicin	Chemo
Cayman	11596	Enzalutamide	AR Inhibitor
Cayman	10011269	Fulvestrant	HR Inhibitor
Cayman	15312	Galunisertib	TGFB
Cayman	9003096	Gemcitabine	Chemo
Cayman	14180	Irinotecan	Chemo
Cayman	13986	Pirfenidone	TGFB
Cayman	27190	Tamoxifen	HR Inhibitor
Cayman	22964	Valrubicin	Chemo
Cayman	10009929	Vorinostat (SAHA)	HDAC
Cayman	10483	Erlotinib	EGFR
Cayman	15008	Exemestane	ER
Cayman	23732	Ixabepilone	Chemo
Cayman	10461	Paclitaxel	Chemo
Cayman	17130	Romidepsin	HDAC
Cayman	21262	Vinorelbine (tartrate)	Chemo
Cayman	22262	Cabazitaxel	Chemo
Cayman	12097	Pazopanib	EGFR
Cayman	15632	SN-38	Topoisomerase I
Cayman	11492	Afatinib	EGFR
Cayman	13119	Cisplatin	Chemo
Cayman	14416	5-Fluorouracil	Chemo
Selleckchem	S1133	Alisertib (MLN8237)	Aurora
Selleckchem	S1048	Tozasertib (VX-680, MK-0457)	Aurora
Selleckchem	S3479	R243	CCR
Selleckchem	S8512	Cenicriviroc(TAK-652)	CCR
Selleckchem	S9634	Phenoxodiol (Haginin E)	cFlip
Selleckchem	S1003	Linifanib(ABT-869)	CSF1R
Selleckchem	S7818	Pexidartinib(PLX3397)	CSF1R
Selleckchem	S8640	Reparixin (Repertaxin)	CXCR1
Selleckchem	S2912	WZ811	CXCR4
Selleckchem	S8030	Plerixafor(AMD3100)	CXCR4
Selleckchem	S2672	PF-00562271Besylate	Focal Adhesion Kinase (FAK)
Selleckchem	S7654	Defactinib(VS-6063)	Focal Adhesion Kinase (FAK)
Selleckchem	S7653	PND-1186(VS-4718)	Focal Adhesion Kinase (FAK)

Selleckchem	S6620	Danirixin(GSK1325756)	IL8
Selleckchem	S1189	Aprepitant(MK-0869)	IL8
Selleckchem	S7077	Cilengitide	Integrin
Selleckchem	S7540	SB273005	Integrin
Selleckchem	S8454	ATN-161(Ac-PHSCN-NH2)	Integrin
Selleckchem	S2885	A-205804	Integrin
Selleckchem	S1452	Ispinesib (SB-715992)	Kinesin
Selleckchem	S2182	SB743921 HCl	Kinesin
Selleckchem	S7783	CombretastatinA4	microtubule
Selleckchem	S1364	Patupilone(EpothiloneB)	microtubule
Selleckchem	S1176	Plinabulin(NPI-2358)	microtubule
Selleckchem	S2195	Lexibulin(CYT997)	microtubule
Selleckchem	S7162	Mdivi-1	Mitochondria
Selleckchem	S3375	Mitochondrial Fusion Promoter M1	Mitochondria
Selleckchem	S1247	Leflunomide	Mitochondria
Selleckchem	S6494	CCCP	Mitochondria
Selleckchem	S7922	Tiplaxtinin	Mitochondria
Selleckchem	S8047	Dynasore	Mitochondria
Selleckchem	S8388	ML-7 HCl	myosin
Selleckchem	S1573	Fasudil(HA-1077) HCl	myosin
Selleckchem	S8078	Bardoxolone Methyl	NFKB
Selleckchem	S2824	TPCA-1	NFKB
Selleckchem	S4902	QNZ	NFKB
Selleckchem	S3603	Betulinic acid	NFKB
Selleckchem	S7271	FRAX597	PAK
Selleckchem	S7094	PF-3758309	PAK
Selleckchem	S7482	EHT1864-2HCl	Rac CDC42
Selleckchem	S8749	MBQ-167	Rac CDC42
Selleckchem	S8988	Rhosin hydrochloride	Rho
Selleckchem	S6636	Azaindole 1 (TC-S 7001)	ROCK
Selleckchem	S1474	GSK429286A	ROCK
Selleckchem	S1006	Saracatinib(AZD0530)	Src
Selleckchem	S2700	KX2-391(Tirbanibulin)	Src
Selleckchem	S1021	Dasatinib(BMS-354825)	Src
Selleckchem	S2788	Capmatinib (INCB28060)	WNT
Selleckchem	S7143	LGK-974	WNT
Selleckchem	S7885	SBI-0206965	Autophagy
Selleckchem	S2289	Daidzin	ALDH
Selleckchem	S2853	Carfilzomib (PR-171)	Proteasome
Selleckchem	S8148	PD0166285	Wee1
Selleckchem	S1525	Adavosertib (MK-1775)	Wee1
Cayman	19200	Thiostrepton	FOXM1
Medchemexpress	HY-112721	FDI-6	FOXM1

Cayman	20305	Terfenadine	Anti-Histoamine
Cayman	10008005	OSU-03012 (AR-12)	PDK-1
Cayman	22142	NVP-BGT226	PI3K/mTOR
Cayman	19420	CC-115	mTor/DNA-PK
Cayman	18464	XL184	AXL
Cayman	21523	R428	AXL

**Table S2. The effects of compounds on cell viability.**

<b>Compounds Name</b>	<b># of MDA-MB231 Cells</b>	<b>Normalized to Control</b>
Control	5970	1.000
Actinomycin D	424	0.071
Bortezomib (PS-341)	198	0.033
Digoxin	620	0.104
Docetaxel	428	0.072
Doxorubicin	614	0.103
Fulvestrant	2966	0.497
Galunisertib	3059	0.512
Gemcitabine	766	0.128
Pirfenidone	3270	0.548
Tamoxifen	3702	0.620
Valrubicin	1266	0.212
Vorinostat (SAHA)	730	0.122
Erlotinib	5971	1.000
Exemestane	5724	0.959
Ixabepilone	547	0.092
Paclitaxel	980	0.164
Romidepsin	141	0.024
Vinorelbine (tartrate)	206	0.035
Cabazitaxel	565	0.095
Pazopanib	4396	0.736
SN-38	726	0.122
Afatinib	2039	0.342
Cisplatin	2796	0.468
5-Fluorouracil	6094	1.021
Alisertib (MLN8237)	602	0.101
Tozasertib (VX-680, MK-0457)	603	0.101
R243	2186	0.366
Cenicriviroc(TAK-652)	1523	0.255
Phenoxodiol (Haginin E)	3681	0.617
Linifanib(ABT-869)	1680	0.281
Pexidartinib(PLX3397)	1675	0.281
Reparixin (Repertaxin)	1898	0.318
WZ811	1304	0.218
Plerixafor(AMD3100)	1543	0.258
PF-00562271Besylate	1992	0.334
Defactinib(VS-6063)	3208	0.537
PND-1186(VS-4718)	4230	0.709
Danirixin(GSK1325756)	2726	0.457
Aprepitant(MK-0869)	2761	0.462



Cilengitide	3339	0.559
SB273005	1483	0.248
ATN-161(Ac-PHSCN-NH2)	1117	0.187
A-205804	3059	0.512
Ispinesib (SB-715992)	412	0.069
SB743921 HCl	502	0.084
CombretastatinA4	402	0.067
Patupilone(EpothiloneB)	890	0.149
Plinabulin(NPI-2358)	2141	0.359
Lexibulin(CYT997)	457	0.077
Mdivi-1	471	0.079
Mitochondrial Fusion Promoter M1	1047	0.175
Leflunomide	248	0.042
CCCP	2736	0.458
Tiplaxtinin	1688	0.283
Dynasore	2819	0.472
ML-7 HCl	3536	0.592
Fasudil(HA-1077) HCl	2499	0.419
Bardoxolone Methyl	874	0.146
TPCA-1	3803	0.637
QNZ	3678	0.616
Betulinic acid	3973	0.665
FRAX597	2959	0.496
PF-3758309	479	0.080
EHT1864-2HCl	387	0.065
MBQ-167	1662	0.278
Rhosin hydrochloride	2495	0.418
Azaindole 1 (TC-S 7001)	2275	0.381
GSK429286A	2028	0.340
Saracatinib(AZD0530)	3510	0.588
KX2-391(Tirbanibulin)	449	0.075
Dasatinib(BMS-354825)	1707	0.286
Capmatinib (INCB28060)	3642	0.610
LGK-974	3392	0.568
SBI-0206965	5474	0.917
Daidzin	4566	0.765
Carfilzomib (PR-171)	114	0.019
PD0166285	304	0.051
Adavosertib (MK-1775)	340	0.057
Thiostrepton	512	0.086
FDI-6	190	0.032