Supporting Information

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	Origin	Name	Status
1	Fibroblast	EH	Non-transformed
2	Fibroblast	EL	Non-transformed
3	Fibroblast	ELR	Transformed
4	Fibroblast	WI-38	Non-transformed
5	Prostate	BPH1	Non-transformed
6	Prostate	PC3	Transformed
7	Breast	MCF-10A	Non-transformed
8	Breast	MDA-MB-231	Transformed
9	Breast	MDA-MB-468	Transformed
10	Breast	T47D	Transformed
11	Ovaries	SAA1	Transformed
12	Ovaries	SAA2	Transformed
13	Ovaries	SAA3	Transformed

Fig. S1. Cell lines. Listed are cells that were tested in soft-agar and GILA methods (Fig. 1) with their origin tissue and transformation status.

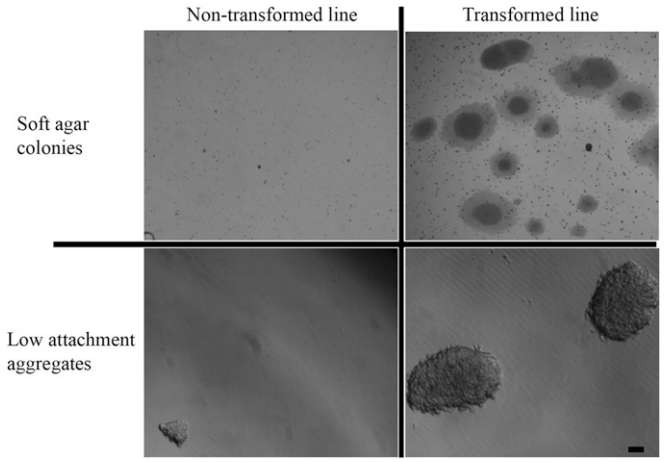

Fig. S2. Soft-agar and GILA methods. Phase-contrast images of nontransformed (*Left*) and transformed (*Right*) fibroblast cell lines are shown after 21 d of growth in soft agar (*Upper*) and 5 d in GILA (*Lower*). (Scale bar: 100 μm.)

	Cell line	GILA	High-attachment	Ratio
Non-transformed lines	EH	1112	99970	0.01
	BPH1	2673	205416	0.01
	MCF10A	4247	100307	0.04
	EL	15861	185496	0.09
	Average GILA/High-attachment ratio			**0.04**
	Cell line	**GILA**	**High-attachment**	**Ratio**
Transformed lines	ELR	67967	302034	0.23
	T47D	41496	46158	0.90
	PC3	28311	31278	0.91
	MDA-MB231	9106	6642	1.37
	MDA-MB468	26326	16076	1.64
	Average GILA/High-attachment ratio			**1.01**

Fig. S3. Transformation and proliferation values. Nontransformed and transformed cell lines and the values of growth (ATP units) and GILA to high-attachment ratio are listed.

Name	Synonym	Library	Role	p-value (GILA/HA)
SAM001246690	Honokiol	NIH Clinical Collection 1 – 2013	Anxiolytic, Antithrombotic, Antidepressant, Antiemetic, Antibacterial, Antitumorigenic, Neuroprotective	2E-06
SAM001247105	sibutramine	NIH Clinical Collection 1 – 2013	Treatment of obesity	9E-06
SAM001247066	CGS 12066B	NIH Clinical Collection 1 – 2013	Antidepressants; Anxiolytics; and in the treatment of migraine disorders	2E-05
KIN001-119	ZSTK474	Kinase Inhibitor Focused Library	Targeting EGFR and PI3K pathways	1E-04
KIN001-052	RepSox	Kinase Inhibitor Focused Library	Yes1 kinase inhibitor, transforming growth factor-beta type I receptor (ALK5) inhibitor	1E-04
SAM001246708	Nitazoxanide	NIH Clinical Collection 1 – 2013	Anti-protozoal, antiviral	2E-04
CVM-04-060	STK855495	Kinase Inhibitor Focused Library	A possible LATS1 inhibitor	7E-04
SAM001246670	Calcipotriol	NIH Clinical Collection 1 – 2013	Treatment of psoriasis	7E-04
SAM001246662	Nobiletin	NIH Clinical Collection 1 – 2013	Antioxidant, anti-inflammatory, anti-carcinogenic	4E-03
SAM001246645	Azelastine hydrochloride	NIH Clinical Collection 1 – 2013	Antihistamine, anti-allergy	6E-02

Fig. S4. Hits from drug screen. Top 10 compounds with a significant inhibitory effect on growth of transformed cells in low-attachment conditions are listed. The right column indicates the *P* values of viability measured by comparing GILA to growth in high-attachment.

Sample ID	Prior treatments
Patient A	Carboplatin/Paclitaxel, Paclitaxel+Bevacizumab, Pazopanib
Patient B	Carboplatin/Paclitaxel, Paclitaxel+Bevacizumab, Pazopanib
Patient C	Carboplatin/Paclitaxel, Paclitaxel, Pazopanib
Patient D	Carboplatin/Paclitaxel, Carboplatin/Gemcitabine/Iniparib, Topocetan, Sapacitabine + Seliciclib, Rucaparib
Patient E	Carboplatin/Paclitaxel

Fig. S5. Patient samples. Previous treatments of ovarian cancer patients are listed. Freshly discarded ascites from these five individuals were used to test drug sensitivity.

Dataset	Pathway Name	SIZE	ES	NES	p-value	FDR q-value
GeneOntology	Kinase Activity	304	0.52	2.3	0.00E+00	0.00E+00
GeneOntology	Protein Serine Threonine Kinase Activity	165	0.56	2.3	0.00E+00	0.00E+00
GeneOntology	Phosphotransferase Activity Alcohol Group as Acceptor	274	0.53	2.29	0.00E+00	0.00E+00
GeneOntology	Protein Kinase Activity	234	0.53	2.27	0.00E+00	0.00E+00
GeneOntology	G Protein Coupled Receptor Activity	176	0.55	2.26	0.00E+00	0.00E+00
GeneOntology	ATP Binding	109	0.57	2.24	0.00E+00	0.00E+00
GeneOntology	Adenyl Nucleotide Binding	115	0.57	2.24	0.00E+00	0.00E+00
GeneOntology	Adenyl Ribonucleotide Binding	112	0.57	2.23	0.00E+00	0.00E+00
Reactome	Signaling by ERBB2	71	0.67	2.44	0.00E+00	0.00E+00
Reactome	Signaling by EGFR In Cancer	70	0.66	2.38	0.00E+00	0.00E+00
GeneOntology	Rhodopsin Like Receptor Activity	127	0.54	2.19	0.00E+00	9.40E-05
GeneOntology	Phosphoinositide Mediated Signaling	41	0.67	2.2	0.00E+00	1.00E-04
GeneOntology	G Protein Signaling Coupled to IP3 Second Messengerphospholipase C Activating	40	0.68	2.22	0.00E+00	1.20E-04
GeneOntology	Transferase Activity Transferring Phosphorus Containing Groups	343	0.49	2.16	0.00E+00	2.40E-04
GeneOntology	Magnesium Ion Binding	59	0.63	2.16	0.00E+00	2.60E-04
Reactome	Gastrin CREB Signalling Pathway via PKC And MAPK	166	0.56	2.28	0.00E+00	4.00E-04
Reactome	Downstream Signaling Of Activated FGFR	67	0.62	2.25	0.00E+00	5.90E-04
KEGG	Neuroactive Ligand Receptor Interaction	237	0.52	2.24	0.00E+00	5.90E-04
Reactome	Signaling by FGFR In Disease	85	0.59	2.22	0.00E+00	5.90E-04
GeneOntology	Second Messenger Mediated Signaling	141	0.52	2.1	0.00E+00	6.00E-04
KEGG	ERBB Signaling Pathway	70	0.61	2.19	0.00E+00	6.30E-04
Reactome	Downstream Signal Transduction	63	0.63	2.25	0.00E+00	6.70E-04
Reactome	Signaling by ERBB4	65	0.62	2.22	0.00E+00	7.10E-04
KEGG	Insulin Signaling Pathway	104	0.55	2.18	0.00E+00	7.60E-04
Reactome	Signaling by FGFR	77	0.61	2.25	0.00E+00	7.80E-04
Reactome	Signaling by PDGF	70	0.6	2.17	0.00E+00	7.80E-04
Reactome	Class A1 Rhodopsin Like Receptors	268	0.51	2.23	0.00E+00	7.90E-04
GeneOntology	Protein Amino Acid Phosphorylation	217	0.49	2.07	0.00E+00	9.00E-04
Reactome	GPCR Ligand Binding	351	0.51	2.25	0.00E+00	9.40E-04

Fig. S6. Genetic screen analysis. Gene set enrichment is based on rank-ordered low:high attachment growth ratios.

ORF	GILA	HA	GILA/HA	P-value
EGFR	27.51	3.00	9.18	2E-12
KRAS	8.70	1.65	5.28	1E-07
HRAS	6.79	1.74	3.89	1E-05
MRPL20	3.36	0.87	3.88	1E-05
EPHB1	0.28	0.10	2.65	2E-03
AKT2	1.85	0.70	2.65	2E-03
C3orf62	1.75	0.86	2.03	2E-02
MAP3K3	2.37	1.19	1.99	2E-02
EIF4E	0.84	0.44	1.91	3E-02
PPP1R8	1.78	0.96	1.86	4E-02
HOXC11	1.46	1.02	1.43	2E-01
HOXA9	2.35	1.77	1.33	3E-01
UBL5	0.98	0.77	1.27	4E-01
ARHGEF18	1.25	1.01	1.24	4E-01
SOX2	2.55	2.07	1.23	5E-01
RARA	0.72	0.58	1.22	5E-01
S1PR3	0.74	0.61	1.21	5E-01
RPL6	0.98	0.84	1.17	5E-01
RASA3	0.74	0.63	1.17	6E-01
CCL8	0.72	0.62	1.17	6E-01
CD40	0.85	0.73	1.17	6E-01
RPL39L	1.25	1.08	1.17	6E-01
BHLHA15	1.74	1.52	1.15	6E-01
SOX15	0.64	0.60	1.06	8E-01
CSNK1E	1.05	1.00	1.05	8E-01
BAD	1.01	0.98	1.03	8E-01
EMR1	0.89	0.88	1.01	9E-01
CCDC103	0.87	0.88	0.99	9E-01
GSK3A	0.95	1.00	0.95	1E+00
NUMBL	0.97	1.02	0.95	1E+00
PRL	0.76	0.83	0.92	9E-01
TBP	0.64	0.70	0.91	9E-01
SOCS3	1.05	1.19	0.88	8E-01
ZNF581	0.74	0.86	0.86	7E-01
MRPL28	0.84	1.02	0.83	6E-01
MRPL33	0.83	1.02	0.82	6E-01
CBX6	0.99	1.21	0.81	6E-01
PRIM1	0.99	1.23	0.81	6E-01
MTM1	1.00	1.25	0.80	6E-01
RAB8B	1.15	1.46	0.79	5E-01
EGFR*	0.86	1.13	0.76	5E-01
AKAP7	0.79	1.09	0.73	4E-01
TCF25	0.62	0.87	0.72	3E-01
BCL7A	0.75	1.06	0.71	3E-01
AGTR1	0.63	0.90	0.70	3E-01
SNRK	0.42	0.61	0.70	3E-01
BAG4	0.62	0.89	0.69	3E-01
IFT57	0.99	1.45	0.68	3E-01
EGR2	0.96	1.43	0.67	3E-01
IRAK1	0.90	1.37	0.66	2E-01
HPRT1	1.53	2.35	0.65	2E-01
APP	0.50	0.77	0.65	2E-01
MZF1	0.47	0.76	0.62	2E-01
HIST1H4L	0.82	1.33	0.62	2E-01
HEYL	0.42	0.70	0.60	1E-01
NTSR1	0.68	1.13	0.60	1E-01
SPHK1	0.51	0.86	0.59	1E-01
APH1A	0.44	0.80	0.55	8E-02
CXCL1	0.61	1.26	0.48	3E-02
SRC	0.38	1.01	0.38	3E-03
NUAK2	0.54	1.64	0.33	7E-04

Fig. S7. Validation screen. Shown are values of GILA and high-attachment growth over 5 d (fold-change) of MCF-10A cell lines stably expressing the indicated ORFs along with *P* values indicating statistical significance for preferential growth under GILA conditions.