

Supplementary Table S1: Summary of TCGA data.

Tumor	Abbreviation	Sample size
Basal-like breast cancer	Basal	103
Bladder urothelial carcinoma	BLCA	88
Breast invasive carcinoma	BRCA	503
Colon adenocarcinoma	COAD	89
Head and neck squamous cell carcinoma	HNSC	203
Kidney renal clear cell carcinoma	KIRC	354
Lung adenocarcinoma	LUAD	131
Lung squamous cell carcinoma	LUSC	104
Ovarian carcinoma	OVCA	123
Rectum adenocarcinoma	READ	47
Uterine corpus endometrial carcinoma	UCEC	189

Supplementary Table S2: Correlation of Pan-Cancer signature genes by tumor type

	E vs M	Basal	BLCA	BRCA	COAD	HNSC	KIRC	LUAD	LUSC	OVCA	READ	UCEC
ADAM12	M	0.812	0.816	0.814	0.858	0.821	0.779	0.778	0.659	0.842	0.824	0.581
ADAMTS12	M	0.686	0.758	0.607	0.806	0.776	0.626	0.629	0.761	0.838	0.875	0.380
ADAMTS2	M	0.758	0.784	0.773	0.827	0.834	0.634	0.615	0.810	0.817	0.872	0.625
AEBP1	M	0.817	0.822	0.822	0.820	0.845	0.640	0.636	0.858	0.844	0.910	0.831
ANGPTL2	M	0.761	0.784	0.848	0.884	0.754	0.393	0.769	0.847	0.787	0.932	0.633
ANTXR1	M	0.702	0.816	0.785	0.782	0.710	0.621	0.639	0.771	0.733	0.879	0.595
AP1G1	E	-0.056	-0.330	-0.343	-0.002	-0.179	-0.523	-0.394	-0.135	-0.181	-0.625	-0.525
ATP8B1	E	-0.055	-0.547	-0.351	-0.136	-0.363	0.466	-0.409	-0.469	-0.090	-0.397	-0.490
AXL	M	0.698	0.782	0.813	0.835	0.674	0.528	0.624	0.656	0.542	0.954	0.604
BNC2	M	0.805	0.798	0.813	0.709	0.813	0.202	0.756	0.831	0.249	0.799	0.519
CALD1	M	0.536	0.799	0.780	0.663	0.813	0.499	0.748	0.826	0.625	0.779	0.597
CDH1	E	-0.196	-0.440	-0.407	-0.379	-0.462	-0.518	-0.367	-0.317	-0.317	-0.405	-0.539
CDH2	M	0.507	0.685	0.490	0.734	0.705	-0.224	0.560	0.492	0.030	0.793	0.501
CDS1	E	-0.151	-0.360	-0.422	-0.384	-0.413	-0.801	-0.443	-0.354	-0.268	-0.536	-0.383
CGN	E	-0.105	-0.417	-0.304	-0.099	-0.427	-0.563	-0.416	-0.228	-0.179	-0.235	-0.592
CLDN4	E	-0.061	-0.444	-0.187	-0.150	-0.524	-0.471	-0.246	-0.294	-0.174	0.249	-0.258
CMTM3	M	0.624	0.548	0.828	0.728	0.807	0.599	0.605	0.621	0.584	0.881	0.488
CNOT1	E	-0.033	-0.104	-0.231	-0.429	-0.262	-0.275	-0.226	-0.159	-0.215	-0.574	-0.307
CNRIP1	M	0.785	0.772	0.809	0.701	0.823	0.520	0.726	0.733	0.810	0.869	0.658
COL10A1	M	0.728	0.660	0.724	0.793	0.758	0.660	0.549	0.836	0.770	0.819	0.469
COL1A1	M	0.855	0.779	0.861	0.834	0.878	0.855	0.666	0.803	0.856	0.888	0.782
COL1A2	M	0.843	0.812	0.866	0.916	0.880	0.837	0.724	0.844	0.780	0.913	0.657
COL3A1	M	0.832	0.803	0.851	0.814	0.881	0.825	0.756	0.831	0.872	0.920	0.668
COL5A1	M	0.817	0.777	0.846	0.837	0.859	0.876	0.678	0.825	0.875	0.866	0.819
COL5A2	M	0.814	0.836	0.849	0.800	0.859	0.798	0.748	0.856	0.875	0.863	0.739
COL6A1	M	0.697	0.769	0.820	0.828	0.874	0.790	0.710	0.752	0.730	0.910	0.564
COL6A2	M	0.669	0.784	0.840	0.802	0.884	0.807	0.730	0.819	0.847	0.914	0.709
COL6A3	M	0.833	0.815	0.822	0.888	0.856	0.830	0.652	0.793	0.844	0.863	0.770
COL8A1	M	0.465	0.737	0.730	0.825	0.773	0.409	0.387	0.755	0.753	0.929	0.574
CTNND1	E	-0.035	-0.370	-0.146	-0.229	-0.519	-0.306	-0.346	-0.192	-0.129	-0.296	-0.349
DACT1	M	0.818	0.753	0.850	0.564	0.839	0.595	0.760	0.863	0.686	0.341	0.671
DYNC11L2	E	0.030	-0.194	-0.078	-0.098	0.095	-0.005	-0.296	0.004	-0.163	-0.450	-0.088
EMP3	M	0.515	0.786	0.760	0.839	0.587	0.422	0.625	0.717	0.585	0.939	0.647
ERBB3	E	-0.379	-0.600	-0.289	-0.294	-0.612	-0.536	-0.602	-0.391	-0.348	-0.167	-0.452
ESRP1	E	-0.293	-0.503	-0.324	-0.356	-0.429	0.071	-0.421	-0.477	-0.016	-0.287	-0.307
ESRP2	E	-0.288	-0.599	-0.382	-0.334	-0.567	-0.304	-0.639	-0.444	-0.324	-0.272	-0.279
F11R	E	-0.252	-0.334	-0.166	-0.338	-0.459	-0.357	-0.481	-0.382	-0.212	-0.550	-0.299
FAP	M	0.839	0.798	0.830	0.825	0.843	0.847	0.731	0.847	0.855	0.777	0.618
FBN1	M	0.793	0.862	0.827	0.886	0.820	0.687	0.704	0.846	0.864	0.936	0.736
FN1	M	0.664	0.820	0.728	0.691	0.837	0.691	0.659	0.805	0.830	0.742	0.581
FSTL1	M	0.758	0.815	0.876	0.677	0.846	0.451	0.759	0.618	0.683	0.876	0.444

GALNT3	E	-0.017	-0.173	-0.088	-0.191	-0.274	-0.083	-0.081	-0.362	-0.225	-0.290	-0.536
GPC6	M	0.564	0.797	0.652	0.715	0.781	0.084	0.720	0.804	0.501	0.816	0.394
GPR56	E	-0.163	-0.325	-0.237	-0.145	-0.012	-0.107	-0.255	-0.252	-0.081	0.029	0.015
GRHL2	E	-0.082	-0.494	-0.379	-0.275	-0.381	0.093	-0.527	-0.470	-0.142	-0.222	-0.314
GYPC	M	0.407	0.785	0.663	0.724	0.668	0.220	0.625	0.585	0.514	0.914	0.629
HOOK1	E	-0.365	-0.253	-0.378	-0.205	-0.441	-0.570	-0.354	-0.245	-0.402	-0.475	-0.373
HTRA1	M	0.782	0.697	0.853	0.805	0.587	0.697	0.702	0.710	0.604	0.773	0.642
INHBA	M	0.572	0.589	0.657	0.815	0.476	0.683	0.683	0.798	0.817	0.820	0.686
IRF6	E	-0.194	-0.218	-0.126	-0.264	-0.345	-0.542	-0.298	0.027	-0.362	-0.303	-0.295
ITGA11	M	0.759	0.648	0.717	0.733	0.781	0.694	0.629	0.794	0.842	0.905	0.778
LOXL2	M	0.543	0.754	0.767	0.822	0.731	0.710	0.652	0.787	0.756	0.872	0.629
LRRC15	M	0.720	0.719	0.774	0.688	0.768	0.599	0.690	0.802	0.781	0.865	0.509
MAP7	E	-0.112	-0.601	-0.398	-0.246	-0.454	-0.613	-0.445	-0.407	-0.254	-0.436	-0.488
MARVELD2	E	-0.228	-0.476	-0.397	-0.297	-0.490	-0.524	-0.554	-0.186	-0.374	-0.480	-0.429
MARVELD3	E	-0.093	-0.425	-0.352	-0.184	-0.256	-0.594	-0.501	-0.305	-0.276	-0.471	-0.292
MMP2	M	0.820	0.687	0.876	0.867	0.812	0.700	0.688	0.853	0.868	0.945	0.694
MSRB3	M	0.642	0.807	0.772	0.743	0.822	0.602	0.681	0.713	0.759	0.841	0.696
MYO5B	E	-0.206	-0.405	-0.207	-0.098	-0.481	-0.615	-0.273	-0.259	-0.082	-0.284	-0.232
NAP1L3	M	0.661	0.623	0.756	0.626	0.734	0.358	0.580	0.623	0.339	0.863	0.445
NID2	M	0.814	0.768	0.795	0.702	0.865	0.532	0.741	0.844	0.693	0.719	0.652
OCLN	E	-0.089	-0.442	-0.270	-0.075	-0.429	-0.537	-0.448	-0.179	-0.206	-0.279	-0.548
OLFML2B	M	0.772	0.802	0.843	0.869	0.886	0.844	0.829	0.811	0.818	0.915	0.677
PCOLCE	M	0.817	0.793	0.865	0.824	0.891	0.820	0.738	0.840	0.829	0.956	0.630
PDGFRB	M	0.818	0.807	0.789	0.848	0.857	0.607	0.594	0.834	0.796	0.918	0.769
PMP22	M	0.543	0.594	0.519	0.812	0.843	0.450	0.705	0.816	0.805	0.847	0.676
POSTN	M	0.734	0.750	0.741	0.647	0.865	0.727	0.778	0.843	0.812	0.806	0.407
PRSS8	E	-0.255	-0.188	-0.194	-0.305	-0.464	-0.488	-0.455	-0.144	-0.071	-0.023	-0.177
SPARC	M	0.811	0.807	0.876	0.880	0.871	0.622	0.816	0.878	0.876	0.959	0.733
SPINT1	E	-0.299	-0.420	-0.273	-0.099	-0.488	-0.472	-0.360	-0.329	-0.011	-0.157	-0.189
SPOCK1	M	0.604	0.477	0.696	0.864	0.627	0.355	0.635	0.320	0.551	0.841	0.624
SULF1	M	0.740	0.748	0.596	0.807	0.784	0.701	0.719	0.781	0.598	0.869	0.633
SYT11	M	0.508	0.720	0.658	0.778	0.713	0.293	0.630	0.461	0.130	0.869	0.326
THBS2	M	0.748	0.600	0.836	0.902	0.703	0.702	0.756	0.857	0.869	0.930	0.737
VCAN	M	0.696	0.688	0.809	0.810	0.848	0.414	0.715	0.798	0.887	0.891	0.476
VIM	M	0.426	0.836	0.857	0.909	0.834	0.503	0.645	0.802	0.557	0.947	0.310
ZEB2	M	0.619	0.866	0.664	0.705	0.786	0.481	0.553	0.704	0.670	0.752	0.514

Supplementary Table S3: Cell line acronyms

Tumor type	Acronym
Acute myeloid leukemia	AML
Bladder Urothelial Carcinoma	BLCA
Glioblastoma multiforme	GB
Breast invasive carcinoma	BRCA
Colon adenocarcinoma	COAD
Diffuse large B cell lymphoma	DLBC
Esophageal carcinoma	ESCA
Head and Neck squamous cell carcinoma	HNSC
Kidney renal cell carcinoma	KRCC
Liver hepatocellular carcinoma	LIHC
Ovarian carcinoma	OVCA
Pancreatic adenocarcinoma	PAAD
Bone Sarcoma	BSARC
Soft tissue sarcoma	STS
Skin Cutaneous Melanoma	SCM
Stomach adenocarcinoma	STAD
Uterine Corpus Endometrial Carcinoma	UCEC
Neuroblastoma	NB