

Supplementary Materials:

Supplementary Table S1. Survival analysis of ZEB2 in various cancers using prognoscan database.

DATASET	CANCER TYPE	ENDPOINT	N	ln(HR-high / HR-low)	p-VALUE	ln(HR)	HR [95% CI-low CI-up]
GSE16131-GPL97	Blood cancer	Overall Survival	180	0.806407	0.0470009	0.446249	1.56 [1.01 - 2.43]
GSE4412-GPL96	Brain cancer	Overall Survival	74	-1.2724	0.0404328	-0.634978	0.53 [0.29 - 0.97]
GSE16581	Brain cancer	Overall Survival	67	1.80158	0.0376143	2.76856	15.94 [1.17 - 216.72]
GSE19615	Breast cancer	Distant Metastasis Free Survival	115	-1.77523	0.0293108	-1.0131	0.36 [0.15 - 0.90]
GSE12276	Breast cancer	Relapse Free Survival	204	-0.563349	0.0328363	-0.272153	0.76 [0.59 - 0.98]
GSE1456-GPL96	Breast cancer	Disease Specific Survival	159	-1.30938	0.0458268	-0.633631	0.53 [0.28 - 0.99]
GSE3494-GPL96	Breast cancer	Disease Specific Survival	236	-1.07136	0.0377182	-0.533531	0.59 [0.35 - 0.97]
GSE4922-GPL96	Breast cancer	Disease Free Survival	249	-1.00845	0.0201433	-0.464822	0.63 [0.42 - 0.93]
GSE4922-GPL97	Breast cancer	Disease Free Survival	249	-0.742581	0.0238131	-0.516104	0.60 [0.38 - 0.93]
GSE17536	Colorectal cancer	Disease Free Survival	145	1.24824	0.038437	0.898199	2.46 [1.05 - 5.75]
GSE17536	Colorectal cancer	Disease Free Survival	145	2.08083	0.0032525	0.60329	1.83 [1.22 - 2.73]
GSE17536	Colorectal cancer	Disease Specific Survival	177	0.840664	0.00405702	0.463378	1.59 [1.16 - 2.18]
GSE17536	Colorectal cancer	Disease Specific Survival	177	-1.26034	0.0373419	-2.16037	0.12 [0.02 - 0.88]
GSE17536	Colorectal cancer	Disease Specific Survival	177	0.953897	0.0241088	0.785333	2.19 [1.11 - 4.34]
GSE17536	Colorectal cancer	Overall Survival	177	-1.13161	0.0179672	-2.11959	0.12 [0.02 - 0.69]
GSE17536	Colorectal cancer	Overall Survival	177	0.764409	0.0177957	0.325741	1.39 [1.06 - 1.81]
GSE14333	Colorectal cancer	Disease Free Survival	226	1.02136	0.0261089	0.251215	1.29 [1.03 - 1.60]
GSE14333	Colorectal cancer	Disease Free Survival	226	0.969175	0.0195668	0.310015	1.36 [1.05 - 1.77]
GSE14333	Colorectal cancer	Disease Free Survival	226	1.1729	0.00513886	0.506459	1.66 [1.16 - 2.37]
GSE31210	Lung cancer	Relapse Free Survival	204	-0.845839	0.00169391	-0.956522	0.38 [0.21 - 0.70]
GSE9891	Ovarian cancer	Overall Survival	278	-0.809959	0.0447499	-1.12764	0.32 [0.11 - 0.97]

Bold values indicate $P < 0.05$

Supplementary Table S2. Correlation between ZEB2 and infiltrating immune cells in different types of cancer using
TIMER database.

Cancer type	T-cell CD4+		T-cell CD8+		B Cell		Neutrophil		Macrophage		Dendritic cell	
	R	P	R	P	R	P	R	P	R	P	R	P
Adrenocortical carcinoma	-0.06	0.616	0.18	0.132	0.21	0.068	0.15	0.208	0.27	0.020	0.07	0.580
Bladder Urothelial Carcinoma	0.17	0.001	0.25	0.000	-0.18	0.000	0.37	0.000	0.39	0.000	0.30	0.000
Breast invasive carcinoma	0.04	0.268	0.34	0.000	-0.17	0.000	0.58	0.000	0.50	0.000	0.42	0.000
Cervical squamous cell carcinoma and endocervical adenocarcinoma	0.21	0.000	0.29	0.000	0.09	0.134	0.36	0.000	0.20	0.001	0.44	0.000
Cholangiocarcinoma	0.15	0.396	0.48	0.003	0.47	0.005	0.21	0.232	0.41	0.014	0.60	0.000
Colon adenocarcinoma	0.43	0.000	0.32	0.000	-0.19	0.002	0.70	0.000	0.61	0.000	0.80	0.000
Lymphoid Neoplasm Diffuse Large B-cell Lymphoma	-0.12	0.472	0.51	0.001	-0.03	0.867	0.82	0.000	-0.16	0.329	0.32	0.038
Esophageal carcinoma	0.23	0.002	0.36	0.000	0.15	0.048	0.38	0.000	0.65	0.000	0.53	0.000
Glioblastoma multiforme	0.06	0.484	-0.16	0.069	0.30	0.000	0.03	0.689	0.10	0.260	0.23	0.006
Head and Neck squamous cell carcinoma	0.38	0.000	-0.25	0.000	-0.34	0.000	0.49	0.000	0.57	0.000	0.25	0.000
Kidney Chromophobe	0.06	0.657	0.41	0.001	0.48	0.000	0.36	0.003	0.58	0.000	0.64	0.000
Kidney renal clear cell carcinoma	0.42	0.000	0.09	0.044	-0.26	0.000	0.62	0.000	0.50	0.000	0.25	0.000
Kidney renal papillary cell carcinoma	0.15	0.019	0.30	0.000	0.30	0.000	0.44	0.000	0.41	0.000	0.44	0.000
Brain Lower Grade Glioma	-0.10	0.031	0.11	0.014	0.22	0.000	0.10	0.036	-0.04	0.422	-0.09	0.038
Liver hepatocellular carcinoma	0.30	0.000	0.43	0.000	0.30	0.000	0.38	0.000	0.55	0.000	0.61	0.000
Lung adenocarcinoma	0.18	0.000	0.39	0.000	-0.04	0.403	0.62	0.000	0.53	0.000	0.45	0.000
Lung squamous cell carcinoma	0.20	0.000	0.37	0.000	0.05	0.326	0.40	0.000	0.26	0.000	0.58	0.000
Mesothelioma	0.04	0.714	0.31	0.003	0.10	0.355	0.30	0.006	0.57	0.000	0.50	0.000
Ovarian serous cystadenocarcinoma	0.11	0.095	0.24	0.000	-0.19	0.002	0.58	0.000	0.48	0.000	0.23	0.000
Pancreatic adenocarcinoma	0.08	0.286	0.72	0.000	0.06	0.447	0.72	0.000	0.68	0.000	0.78	0.000
Pheochromocytoma and Paraganglioma	0.26	0.001	0.25	0.001	0.01	0.929	0.34	0.000	0.29	0.000	0.48	0.000
Prostate adenocarcinoma	0.52	0.000	0.18	0.000	-0.02	0.629	0.61	0.000	0.33	0.000	0.67	0.000
Rectum adenocarcinoma	0.46	0.000	0.36	0.000	0.12	0.265	0.56	0.000	0.57	0.000	0.80	0.000
Sarcoma	0.24	0.000	0.03	0.690	-0.05	0.432	0.41	0.000	0.28	0.000	0.13	0.042
Skin Cutaneous Melanoma	0.15	0.001	0.09	0.056	-0.04	0.452	0.49	0.000	0.09	0.051	0.04	0.449
Stomach adenocarcinoma	0.40	0.000	0.62	0.000	0.13	0.012	0.60	0.000	0.73	0.000	0.62	0.000
Testicular Germ Cell Tumors	0.45	0.000	-0.08	0.341	-0.38	0.000	0.47	0.000	0.17	0.037	0.38	0.000
Thyroid carcinoma	0.48	0.000	-0.26	0.000	-0.18	0.000	0.39	0.000	0.27	0.000	0.24	0.000
Thymoma	-0.23	0.012	-0.46	0.000	-0.13	0.161	0.25	0.007	0.27	0.004	-0.25	0.008
Uterine Corpus Endometrial Carcinoma	0.37	0.000	0.20	0.063	0.34	0.001	0.48	0.000	0.51	0.000	0.27	0.012
Uterine Carcinosarcoma	-0.25	0.066	0.39	0.004	-0.01	0.961	-0.34	0.012	0.14	0.327	0.15	0.288
Uveal Melanoma	-0.10	0.379	0.11	0.335	-0.29	0.010	0.28	0.015	0.08	0.470	-0.02	0.891

Bold values indicate $P < 0.05$

Supplementary Table S3. Correlations with ZEB2-related proteins in various types of cancer using STRING

network database.

Cancer type	SMAD1		SMAD2		SMAD3		SMAD5		CTBP1		CTBP2	
	R	P	R	P	R	P	R	P	R	P	R	P
Adrenocortical carcinoma	0.51	0.000	0.46	0.000	0.41	0.000	0.44	0.000	0.18	0.120	0.38	0.001
Bladder Urothelial Carcinoma	0.31	0.000	0.04	0.378	-0.23	0.000	-0.03	0.558	-0.10	0.053	0.13	0.006
Breast invasive carcinoma	0.41	0.000	0.31	0.000	0.28	0.000	0.35	0.000	-0.09	0.003	0.15	0.000
Cervical squamous cell carcinoma and endocervical adenocarcinoma	0.17	0.003	0.18	0.002	0.02	0.777	0.20	0.000	0.07	0.233	-0.12	0.030
Cholangiocarcinoma	0.56	0.000	0.20	0.247	-0.08	0.642	0.05	0.786	-0.03	0.844	-0.04	0.836
Colon adenocarcinoma	0.51	0.000	0.41	0.000	0.32	0.000	0.37	0.000	-0.04	0.434	0.16	0.001
Lymphoid Neoplasm Diffuse Large B-cell Lymphoma	0.51	0.000	0.75	0.000	0.63	0.000	0.70	0.000	0.20	0.175	0.69	0.000
Esophageal carcinoma	0.19	0.010	0.11	0.142	0.02	0.781	0.26	0.000	0.02	0.822	-0.12	0.100
Glioblastoma multiforme	0.11	0.168	0.34	0.000	0.17	0.035	0.39	0.000	0.43	0.000	0.51	0.000
Head and Neck squamous cell carcinoma	0.38	0.000	0.37	0.000	0.10	0.026	0.42	0.000	0.28	0.000	0.13	0.002
Kidney Chromophobe	0.14	0.245	0.29	0.017	-0.02	0.872	0.39	0.001	0.05	0.705	0.39	0.001
Kidney renal clear cell carcinoma	0.57	0.000	0.59	0.000	0.35	0.000	0.61	0.000	0.06	0.164	0.49	0.000
Kidney renal papillary cell carcinoma	0.51	0.000	0.41	0.000	0.25	0.000	0.52	0.000	0.26	0.000	0.46	0.000
Brain Lower Grade Glioma	0.28	0.000	0.48	0.000	0.05	0.246	0.53	0.000	-0.07	0.116	0.44	0.000
Liver hepatocellular carcinoma	0.46	0.000	0.44	0.000	0.26	0.000	0.46	0.000	0.18	0.001	0.70	0.000
Lung adenocarcinoma	0.31	0.000	0.19	0.000	0.24	0.000	0.29	0.000	-0.14	0.002	0.00	0.949
Lung squamous cell carcinoma	0.19	0.000	0.11	0.015	-0.06	0.189	0.12	0.008	0.07	0.113	0.01	0.809
Mesothelioma	0.47	0.000	0.40	0.000	0.22	0.039	0.35	0.001	-0.10	0.374	0.41	0.000
Ovarian serous cystadenocarcinoma	0.27	0.000	0.28	0.000	0.10	0.098	0.09	0.125	-0.02	0.794	0.01	0.871
Pancreatic adenocarcinoma	0.64	0.000	0.65	0.000	0.03	0.738	0.53	0.000	-0.11	0.136	0.04	0.553
Pheochromocytoma and Paraganglioma	0.40	0.000	0.10	0.186	-0.03	0.701	0.12	0.096	-0.27	0.000	0.35	0.000
Prostate adenocarcinoma	0.58	0.000	0.44	0.000	0.72	0.000	0.47	0.000	-0.11	0.011	0.20	0.000
Rectum adenocarcinoma	0.48	0.000	0.44	0.000	0.42	0.000	0.47	0.000	-0.16	0.037	0.11	0.157
Sarcoma	0.08	0.193	0.15	0.017	0.31	0.000	0.21	0.001	-0.14	0.021	0.11	0.077
Skin Cutaneous Melanoma	0.21	0.000	0.48	0.000	0.29	0.000	0.56	0.000	0.19	0.000	0.47	0.000
Stomach adenocarcinoma	0.36	0.000	0.28	0.000	0.11	0.026	0.40	0.000	-0.04	0.410	-0.12	0.013
Testicular Germ Cell Tumors	0.59	0.000	0.35	0.000	0.53	0.000	0.35	0.000	0.53	0.000	-0.16	0.050
Thyroid carcinoma	0.38	0.000	0.10	0.025	0.15	0.001	0.31	0.000	0.03	0.546	0.08	0.075
Thymoma	0.55	0.000	0.48	0.000	0.61	0.000	0.45	0.000	-0.43	0.000	0.32	0.000
Uterine Corpus Endometrial Carcinoma	0.38	0.000	0.17	0.000	0.21	0.000	0.29	0.000	-0.05	0.244	0.09	0.040
Uterine Carcinosarcoma	0.19	0.159	0.04	0.788	0.24	0.078	0.28	0.038	-0.08	0.531	0.05	0.717
Uveal Melanoma	0.73	0.000	0.73	0.000	0.50	0.000	0.72	0.000	0.51	0.000	0.77	0.000

Bold values indicate $P < 0.05$