

Figure S1: (A) The consolidation process between clinical data and the RNA sequence data of lung squamous cell carcinoma (LUSC) patients. (B) The consolidation process between clinical data and the RNA sequence data of lung adenocarcinoma (LUAD) patients.

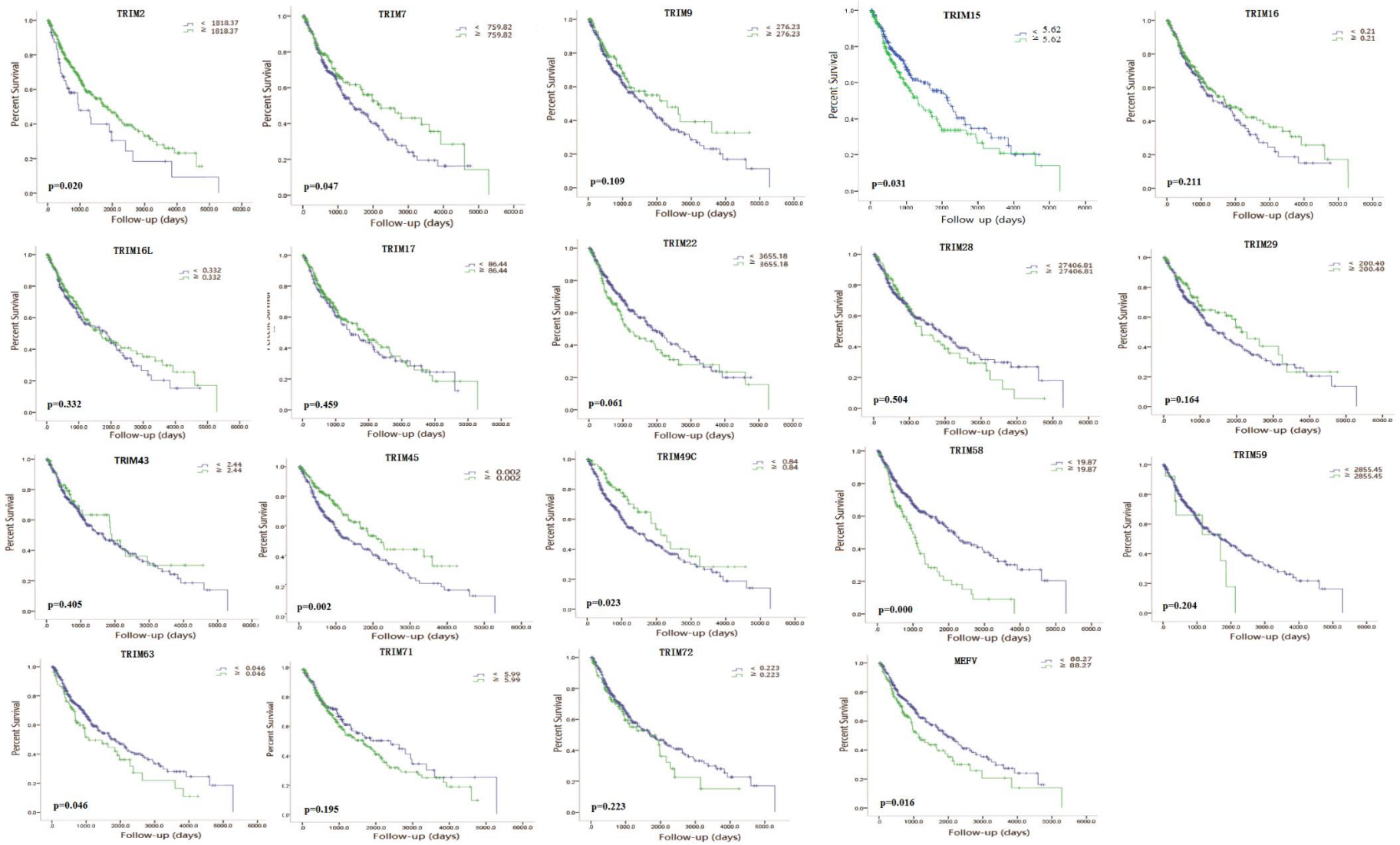


Figure S2: The prognostic value of TRIM family members whose expression were significant in lung squamous cell carcinoma (LUSC).

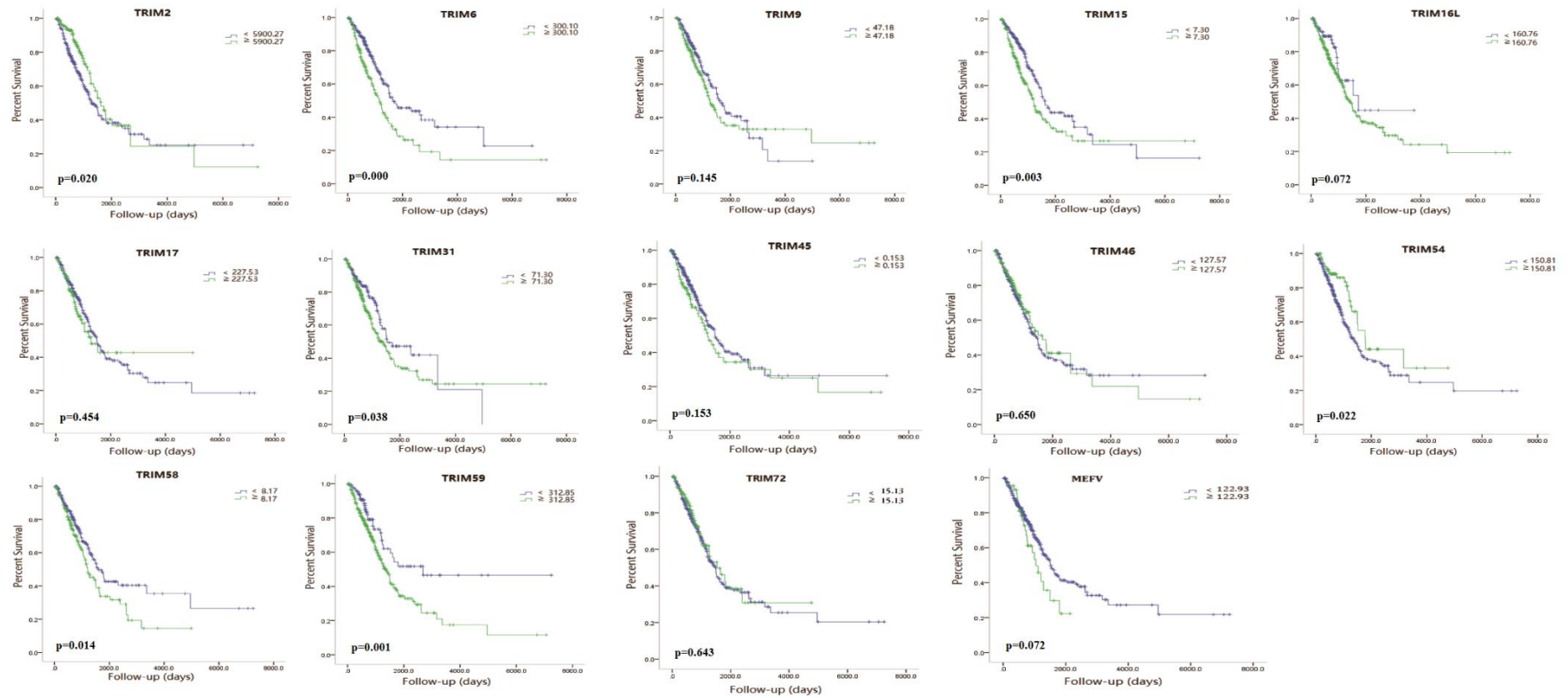


Figure S3: The prognostic value of TRIM family members whose expression were significant in lung adenocarcinoma (LUAD).

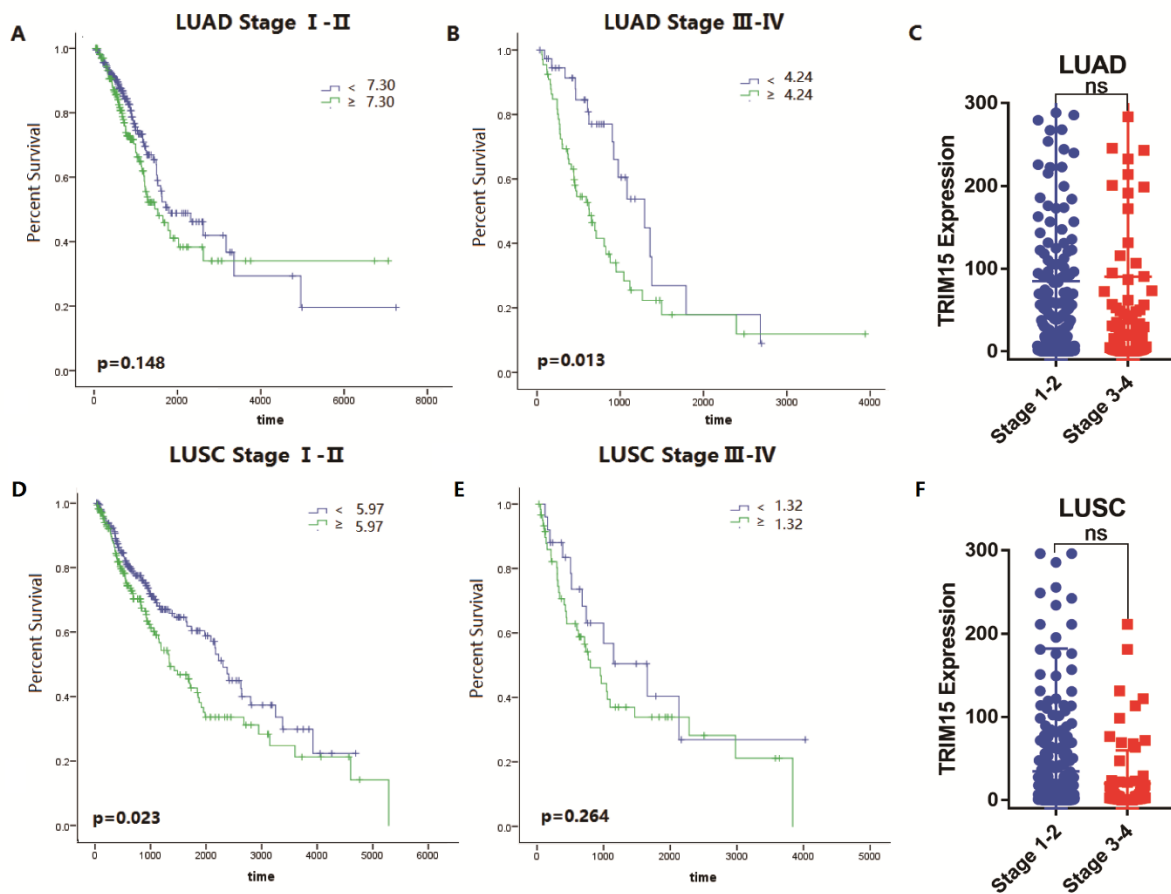


Figure S4: The scatter diagram showed that there was no significant difference in expression of TRIM15 between stage I - II and stage III-IV in both LUAD (C) and LUSC (F). The K-M survival curves of TRIM15 in LUAD stage I - II (A, $p=0.148$) and III-IV (B, $p=0.013$), LUSC stage I - II (D, $p=0.023$) and III-IV (E, $p=0.264$) was performed.

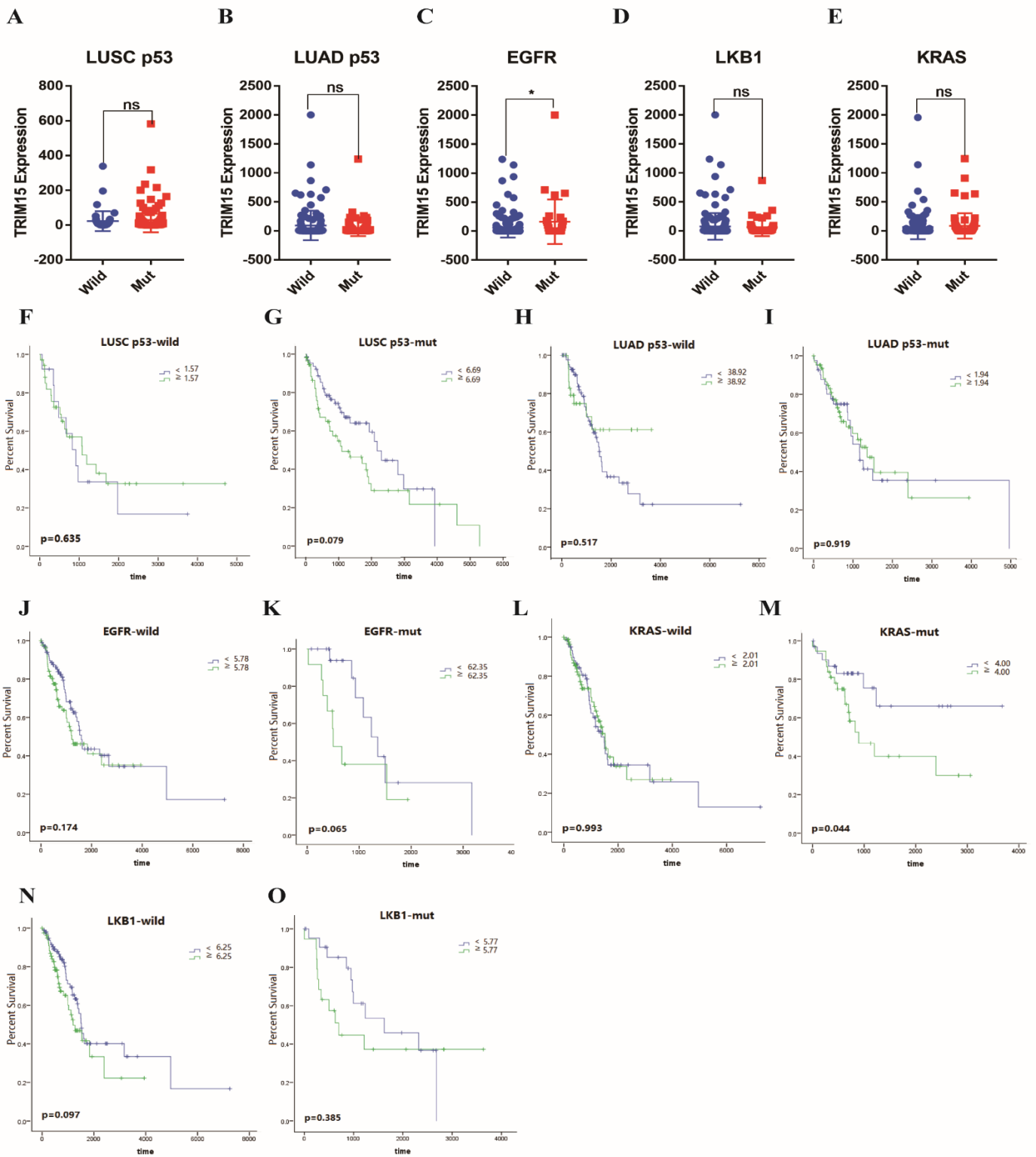


Figure S5: In both LUSC (A) and LUAD (B), there was no significant difference in the expression of TRIM15 between p53 mutate and wild patient. In LUAD, the expression of TRIM15 was significant higher in EGFR mutate patients compared with EGFR wild patients (C). There was no significant difference in the expression of TRIM15 between LKB1 mutate and wild patient (D), the same with KRAS (E). The K-M survival curves of TRIM15 in LUSC p53 wild patients (F), LUSC p53 mutate patients (G), LUAD p53 wild patients (H), LUAD p53 mutate patients (I), LUAD EGFR wild patients (J), LUAD EGFR mutate patients (K), LUAD KRAS wild patients (L), LUAD KRAS mutate patients (M), LUAD LKB1 mutate patients (N) and LUAD LKB1 wild patients (O) was performed.

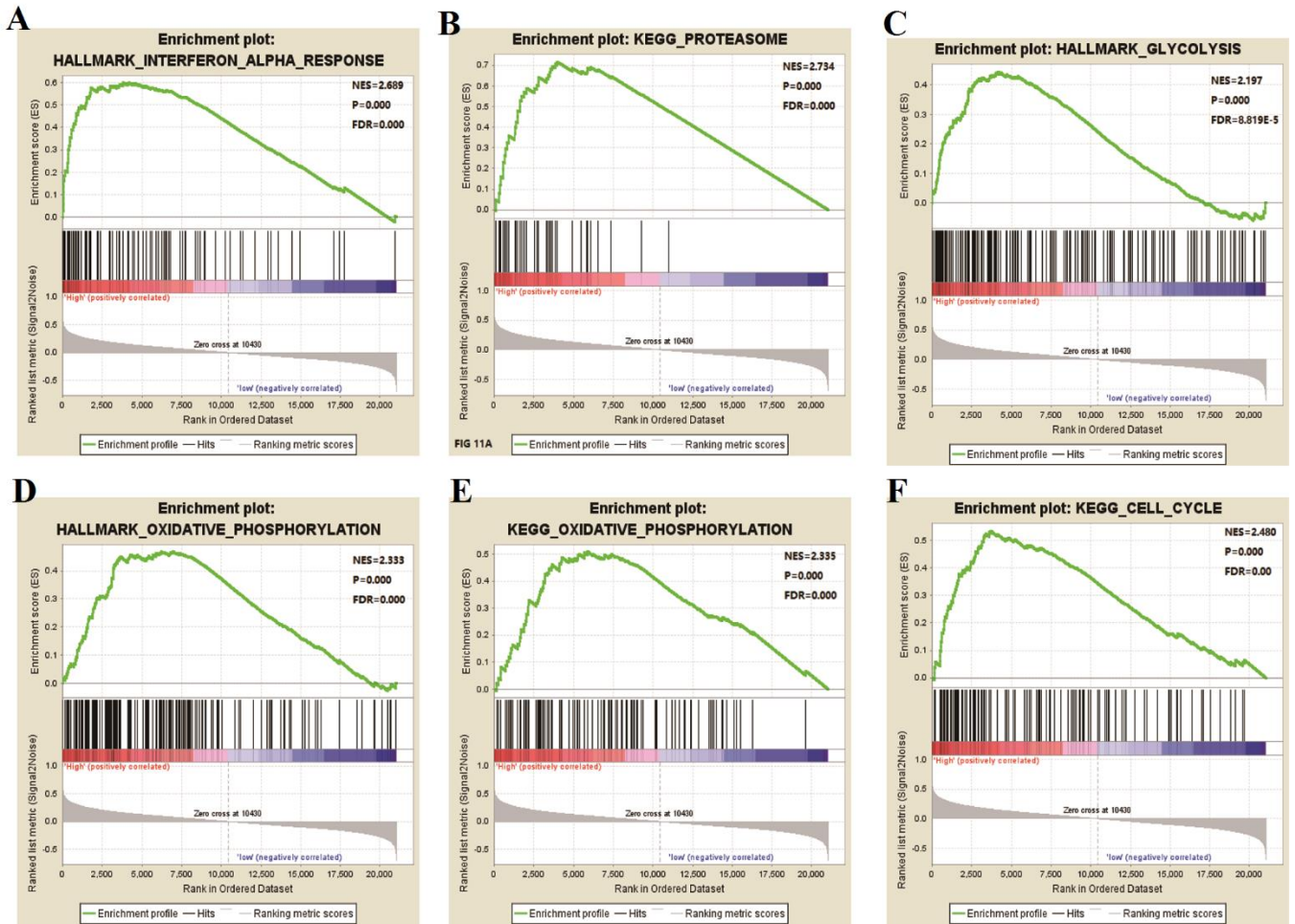


Figure S6: Gene set enrichment analysis (GSEA) analysis showed that high expression of TRIM15 was closely associated with various biological processes or signaling pathways, processes associated with interferon(A) and proteasome(B), glycolysis(C), oxidative phosphorylation (D and E) and cell cycle(F).

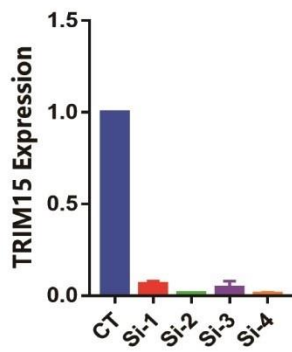
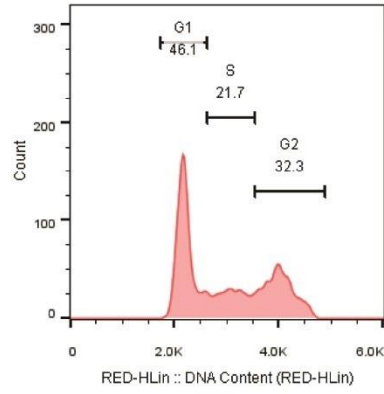
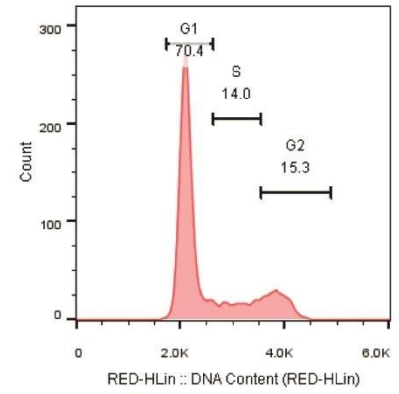
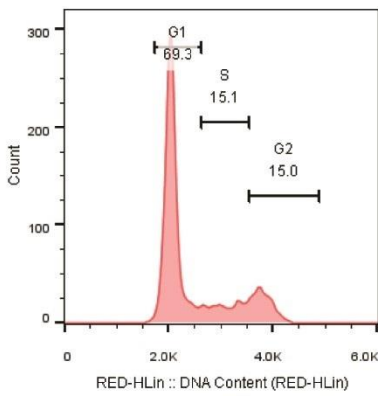
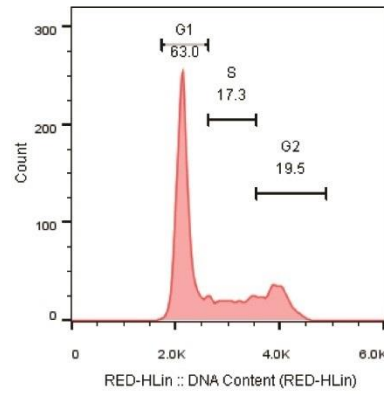
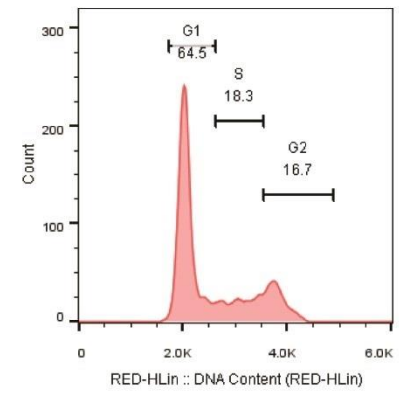
A**B****H520 CT****C****H520 SiTRIM15-1****D****H520 SiTRIM15-2****E****H520 SiTRIM15-3****F****H520 SiTRIM15-4**

Figure S7: Verification of TRIM15 knockout efficiency of H520 (A); Cell cycle detection of H520 CT (B); Cell cycle detection of H520 SiTRIM15-1 (C); Cell cycle detection of H520 SiTRIM15-2 (D); Cell cycle detection of H520 SiTRIM15-3 (E); Cell cycle detection of H520 SiTRIM15-4 (F).

Table S1. Differential expression analysis of TRIM family members in LUSC and LUAD

GENE	LUSC				LUAD			
	FC	log2FC	p-value	Adjusted P-value	FC	log2FC	p-value	Adjusted P-value
CMYA5 (TRIM76)	1.20	0.26	0.67892	0.79360	1.40	0.48	0.39567	0.58848
MEFV (TRIM20)	0.27	-1.91	0.00053	0.00197	0.32	-1.66	0.00362	0.01567
MID1 (TRIM18)	1.37	0.45	0.02216	0.05286	0.84	-0.26	0.17215	0.33569
MID2 (TRIM1)	1.25	0.32	0.40303	0.55317	0.88	-0.19	0.58607	0.75268
PML (TRIM19)	1.09	0.13	0.54180	0.68330	1.04	0.06	0.88610	0.94938
TRIM10	2.54	1.35	0.40252	0.55275	5.65	2.50	0.05010	0.13247
TRIM13	0.80	-0.32	0.16893	0.28412	0.88	-0.18	0.29461	0.48571
TRIM14	0.85	-0.24	0.13691	0.24120	0.98	-0.03	0.78279	0.88750
TRIM15	35.68	5.16	0.00177	0.00575	82.45	6.37	5.05E-08	6.78E-07
TRIM16	3.07	1.62	6.99E-11	7.15E-10	1.36	0.45	0.06760	0.16699
TRIM16L	10.77	3.43	1.06E-17	1.94E-16	3.68	1.88	8.98E-06	8.04E-05
TRIM17	4.54	2.18	0.00086	0.00302	4.52	2.17	0.00013	0.00091
TRIM2	2.25	1.17	7.82E-11	7.97E-10	2.69	1.43	1.29E-11	2.97E-10
TRIM21	0.58	-0.79	0.00049	0.00182	0.76	-0.40	0.05567	0.14371
TRIM22	0.39	-1.35	3.15E-19	6.44E-18	0.63	-0.67	6.65E-05	0.00049
TRIM23	0.62	-0.68	0.06626	0.13251	0.90	-0.15	0.49340	0.67687
TRIM24	1.39	0.47	0.00948	0.02527	1.40	0.48	0.00846	0.03136
TRIM26	0.99	-0.02	0.85416	0.91842	1.01	0.01	0.90801	0.96282
TRIM27	1.26	0.33	0.06391	0.12872	1.72	0.78	5.84E-05	0.00043
TRIM28	2.13	1.09	3.72E-08	2.79E-07	1.42	0.50	0.02146	0.06758
TRIM29	27.00	4.75	1.88E-70	3.87E-68	2.05	1.03	0.12176	0.26108
TRIM3	0.60	-0.73	0.02884	0.06618	0.78	-0.36	0.16738	0.32856
TRIM31	4.05	2.02	0.14268	0.24924	16.95	4.08	0.00011	0.00074
TRIM31-AS1	1.35	0.44	0.86936	0.92932	5.21	2.38	0.05419	0.14067
TRIM32	1.38	0.47	0.07550	0.14803	1.13	0.18	0.57868	0.74725
TRIM33	0.95	-0.08	0.76763	0.85813	1.05	0.07	0.66198	0.80803
TRIM34	0.53	-0.93	0.22219	0.35389	1.15	0.20	0.85969	0.93408
TRIM35	0.95	-0.07	0.66638	0.78374	0.63	-0.67	0.00568	0.02271
TRIM36	0.42	-1.24	0.03730	0.08243	1.05	0.07	0.87132	0.94100

TRIM37	1.55	0.63	0.00185	0.00596	1.51	0.60	0.00667	0.02588
TRIM38	0.74	-0.44	0.01782	0.04376	1.09	0.13	0.49653	0.67952
TRIM39	0.75	-0.41	0.17883	0.29790	0.91	-0.13	0.57895	0.74739
TRIM39-RPP21	0.92	-0.13	0.77393	0.86284				
TRIM4	0.83	-0.28	0.16343	0.27688	0.88	-0.18	0.29369	0.48485
TRIM40	0.90	-0.16	0.51916	0.66247	5.34	2.42	0.20792	0.38392
TRIM41	0.95	-0.08	0.56238	0.70071	1.01	0.01	0.94414	0.98639
TRIM43	89.89	6.49	0.00267	0.00828	10.94	3.45	0.11938	0.25691
TRIM44	0.74	-0.44	0.00389	0.01155	0.82	-0.29	0.11456	0.24901
TRIM45	3.94	1.98	3.21E-05	0.00015	2.48	1.31	0.00743	0.02829
TRIM46	1.71	0.78	0.30945	0.45622	3.44	1.78	0.00026	0.00162
TRIM47	1.22	0.29	0.23384	0.36829	1.98	0.99	2.36E-06	2.39E-05
TRIM48	398.89	8.64	0.13755	0.24211	440.48	8.78	0.24472	0.42950
TRIM49	195.98	7.61	0.04104	0.08932	45.89	5.52	0.29740	0.48879
TRIM49B	127.80	7.00	0.22515	0.35738				
TRIM49C	38.77	5.28	0.01353	0.03444				
TRIM5	0.61	-0.71	0.00257	0.00800	0.98	-0.03	0.91047	0.96450
TRIM50	0.56	-0.83	0.31935	0.46749	1.62	0.69	0.59242	0.75723
TRIM52	0.81	-0.31	0.35293	0.50239	1.12	0.17	0.60825	0.76819
TRIM52-AS1	0.61	-0.72	0.08984	0.17118	0.69	-0.54	0.13497	0.28166
TRIM53AP	7.08	2.82	0.82995	0.90187	17.69	4.14	0.54210	0.71806
TRIM54	5.50	2.46	0.15150	0.26126	13.18	3.72	3.04E-05	0.00024
TRIM55	0.77	-0.38	0.48006	0.62542	1.84	0.88	0.42318	0.61445
TRIM56	0.65	-0.63	2.25E-05	0.00011	0.72	-0.47	0.00607	0.02395
TRIM58	0.24	-2.05	0.00473	0.01373	0.23	-2.12	0.00234	0.01086
TRIM59	5.72	2.51	1.58E-13	2.09E-12	2.81	1.49	7.99E-05	0.00057
TRIM6	1.15	0.21	0.77895	0.86624	2.24	1.17	0.01015	0.03651
TRIM61	0.42	-1.26	0.11707	0.21297	0.76	-0.40	0.60826	0.76819
TRIM62	1.42	0.50	0.22876	0.36215	1.39	0.47	0.22510	0.40547
TRIM63	0.23	-2.11	0.00770	0.02108	0.58	-0.79	0.26827	0.45664
TRIM65	1.46	0.54	0.01609	0.04012	1.29	0.37	0.09159	0.21024
TRIM66	0.85	-0.23	0.44754	0.59638	1.10	0.14	0.66318	0.80889
TRIM67	3.58	1.84	0.14791	0.25634	5.54	2.47	0.05996	0.15187

TRIM68	0.88	-0.19	0.58413	0.71885	1.38	0.46	0.05851	0.14904
TRIM69	0.94	-0.10	0.62019	0.74805	0.70	-0.51	0.00681	0.02632
TRIM7	7.68	2.94	2.97E-11	3.16E-10	1.72	0.78	0.27999	0.47034
TRIM71	0.14	-2.85	1.62E-05	8.14E-05	0.34	-1.56	0.05491	0.14212
TRIM72	17.67	4.14	0.00451	0.01317	19.92	4.32	0.00070	0.00385
TRIM73	1.45	0.54	0.77289	0.86218	1.28	0.36	0.89454	0.95471
TRIM74	1.48	0.56	0.77147	0.86088	1.04	0.06	1.00000	1.00000
TRIM8	0.61	-0.71	5.57E-07	3.52E-06	1.12	0.16	0.45299	0.64247
TRIM9	7.05	2.82	4.20E-05	0.00019	6.74	2.75	0.00073	0.00399
TRIML1	3.39	1.76	0.28457	0.42744	3.82	1.93	0.47889	0.66484
TRIML2	16.26	4.02	0.06150	0.12478				

Table S2. The univariable Cox proportion hazards analysis of TRIM gene family members in LUSC and LUAD

	LUAD				LUSC			
	HR	95.0% CI		p	HR	95.0% CI		p
		Low limit	up limit			low limit	up limit	
MEFV	1.494	0.962	2.321	0.074	1.443	1.078	1.931	0.014
MID1	1.426	1.040	1.954	0.028	0.788	0.563	1.103	0.164
MID2	0.823	0.596	1.138	0.239	0.735	0.554	0.975	0.033
PML	1.388	1.026	1.877	0.033	1.322	0.992	1.760	0.057
TRIM10	1.363	1.014	1.833	0.040	1.388	1.044	1.847	0.024
TRIM13	0.643	0.457	0.906	0.012	1.202	0.905	1.596	0.204
TRIM14	1.383	0.923	2.073	0.116	1.385	1.031	1.861	0.031
TRIM15	1.560	1.159	2.101	0.003	1.353	1.023	1.789	0.034
TRIM16	1.781	1.320	2.402	<0.001	0.837	0.633	1.107	0.212
TRIM16L	1.531	0.959	2.444	0.074	0.871	0.658	1.152	0.332
TRIM17	1.141	0.808	1.613	0.454	0.897	0.673	1.196	0.460
TRIM2	0.672	0.479	0.941	0.021	0.637	0.433	0.935	0.021
TRIM21	1.383	0.954	2.005	0.087	1.277	0.965	1.690	0.087
TRIM22	0.632	0.444	0.900	0.011	1.319	0.986	1.765	0.062
TRIM23	0.704	0.523	0.947	0.020	0.626	0.380	1.030	0.065
TRIM24	0.628	0.466	0.846	0.002	2.050	1.208	3.480	0.008
TRIM26	0.816	0.606	1.099	0.181	0.831	0.614	1.124	0.230
TRIM27	0.685	0.507	0.927	0.014	1.270	0.943	1.710	0.116
TRIM28	1.678	1.246	2.259	0.001	0.706	0.429	1.163	0.172
TRIM29	1.673	1.146	2.444	0.008	0.760	0.545	1.060	0.106
TRIM3	1.993	0.817	4.863	0.130	1.864	1.169	2.972	0.009
TRIM31	1.416	1.018	1.971	0.039				
TRIM31AS1	0.685	0.421	1.116	0.129	2.080	1.063	4.073	0.033
TRIM32	1.162	0.863	1.565	0.322	1.301	0.982	1.723	0.067
TRIM33	1.323	0.961	1.822	0.087	0.759	0.562	1.024	0.071
TRIM34	1.298	0.963	1.751	0.087	1.773	1.213	2.591	0.003
TRIM35	0.631	0.387	1.028	0.065	0.809	0.583	1.123	0.205
TRIM36	1.203	0.861	1.681	0.278	1.223	0.921	1.624	0.165
TRIM37	1.231	0.915	1.656	0.169	1.265	0.953	1.679	0.104

TRIM38	0.598	0.436	0.820	0.001	0.593	0.344	1.023	0.060
TRIM39	0.666	0.491	0.903	0.009	1.450	0.930	2.261	0.101
TRIM39RPP2					0.856	0.646	1.134	0.279
TRIM4	0.711	0.465	1.086	0.114	0.411	0.217	0.777	0.006
TRIM40	1.369	1.013	1.851	0.041	1.199	0.835	1.721	0.326
TRIM41	1.434	0.813	2.529	0.213	0.741	0.500	1.100	0.137
TRIM43	1.302	0.863	1.964	0.208	0.839	0.555	1.269	0.406
TRIM44	4.744	1.175	19.163	0.029	0.622	0.458	0.844	0.002
TRIM45	1.273	0.914	1.774	0.154	1.616	0.993	2.630	0.053
TRIM46	2.602	1.151	5.881	0.022	1.423	1.012	2.002	0.043
TRIM47	1.452	1.062	1.987	0.020	1.136	0.756	1.707	0.540
TRIM48	0.601	0.354	1.020	0.059	0.808	0.527	1.240	0.330
TRIM49	0.667	0.457	0.974	0.036	0.636	0.429	0.944	0.025
TRIM5	1.270	0.942	1.712	0.116	1.607	1.122	2.302	0.010
TRIM50	0.636	0.458	0.883	0.007	1.280	0.967	1.695	0.085
TRIM52	0.734	0.545	0.990	0.043				
TRIM52AS1	0.703	0.517	0.956	0.025	1.167	0.846	1.608	0.347
TRIM53AP	5.402	1.707	17.094	0.004	0.706	0.429	1.162	0.170
TRIM54	0.612	0.400	0.935	0.023	1.213	0.900	1.635	0.205
TRIM55	0.601	0.427	0.846	0.003	1.484	1.110	1.984	0.008
TRIM56	1.161	0.829	1.626	0.385	0.881	0.631	1.231	0.457
TRIM58	1.445	1.075	1.944	0.015	2.039	1.495	2.782	0.000
TRIM59	1.825	1.253	2.657	0.002				
TRIM6	1.780	1.323	2.394	<0.001	1.336	0.990	1.802	0.058
TRIM61	0.555	0.137	2.245	0.409	1.673	1.246	2.246	0.001
TRIM62	0.649	0.481	0.873	0.004	1.610	1.077	2.405	0.020
TRIM63	0.809	0.596	1.100	0.176	1.402	1.005	1.956	0.047
TRIM65	0.790	0.588	1.062	0.118	1.861	0.822	4.212	0.136
TRIM66	0.869	0.636	1.188	0.380	1.541	0.987	2.407	0.057
TRIM67	1.310	0.969	1.772	0.079	0.830	0.605	1.138	0.246
TRIM68	0.665	0.476	0.929	0.017	1.348	1.019	1.785	0.037
TRIM69	1.352	0.994	1.840	0.055	1.236	0.932	1.638	0.141
TRIM7	1.812	1.337	2.456	<0.001	0.738	0.547	0.998	0.048

TRIM71	0.880	0.650	1.191	0.408	1.215	0.904	1.632	0.196
TRIM72	0.919	0.643	1.313	0.643	1.233	0.880	1.726	0.224
TRIM73	0.769	0.543	1.089	0.139				
TRIM74	0.765	0.568	1.028	0.076				
CMYA5					1.215	0.827	1.786	0.320
TRIM8	0.750	0.533	1.053	0.097	1.221	0.879	1.696	0.233
TRIM9	1.246	0.926	1.677	0.146	0.757	0.538	1.065	0.110
TRIML1					1.336	0.991	1.801	0.057
TRIML2	1.563	1.114	2.192	0.010	1.259	0.920	1.723	0.150

Variables	Number (%)
Gender	
Male	12 (70.6%)
Female	5(29.4%)
Age	
<65	13 (76.5%)
≥65	4 (23.5 %)
Differentiation	
Well/moderate differentiation	3 (17.6%)
Poor differentiation	14 (82.4%)
Histology	
Adenocarcinoma	8(47.1%)
Squamous cell carcinoma	9(52.9%)
Pathological Tumor Stage	
T ₁₋₂	10 (58.8%)
T ₃₋₄	7 (41.2%)
Pathological Nodal Stage	
N ₀	4 (23.6%)
N ₁	3 (17.6%)
N ₂	10(58.8%)
TNM	
I-II	6 (35.3%)
III	11(64.7%)

Table S4. The clinicopathologic features of 17 patients