

Figure S1A

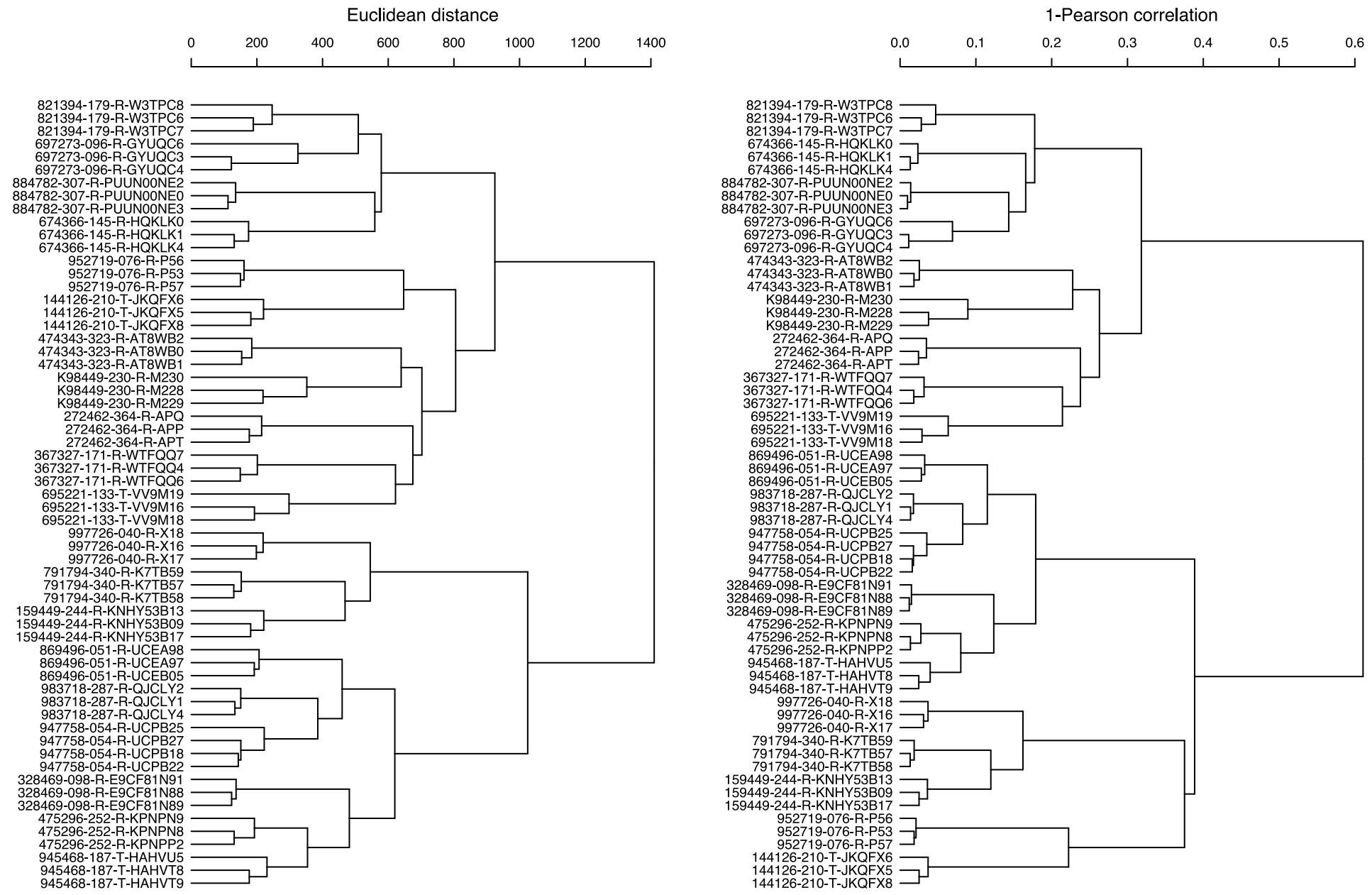


Figure S1B

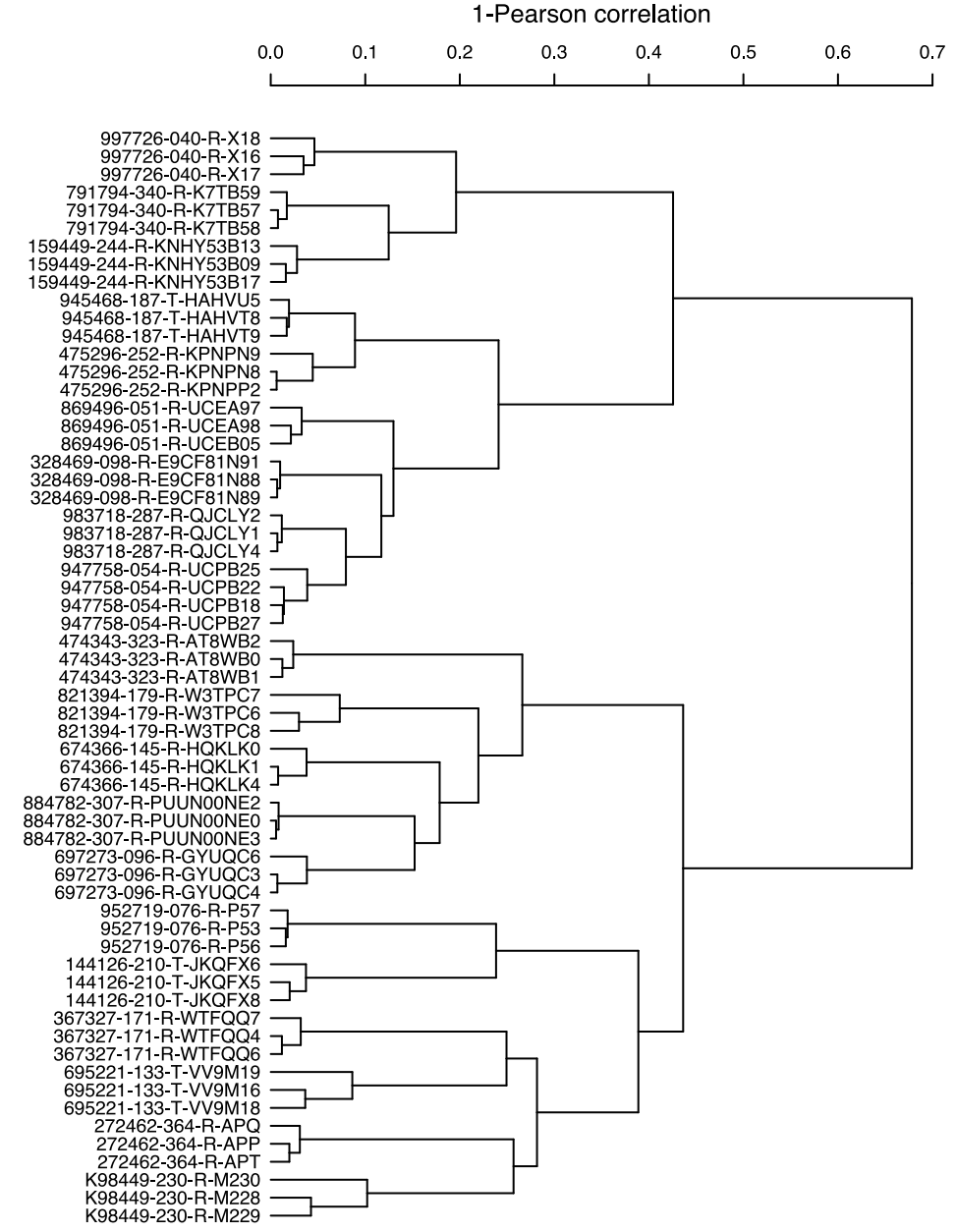
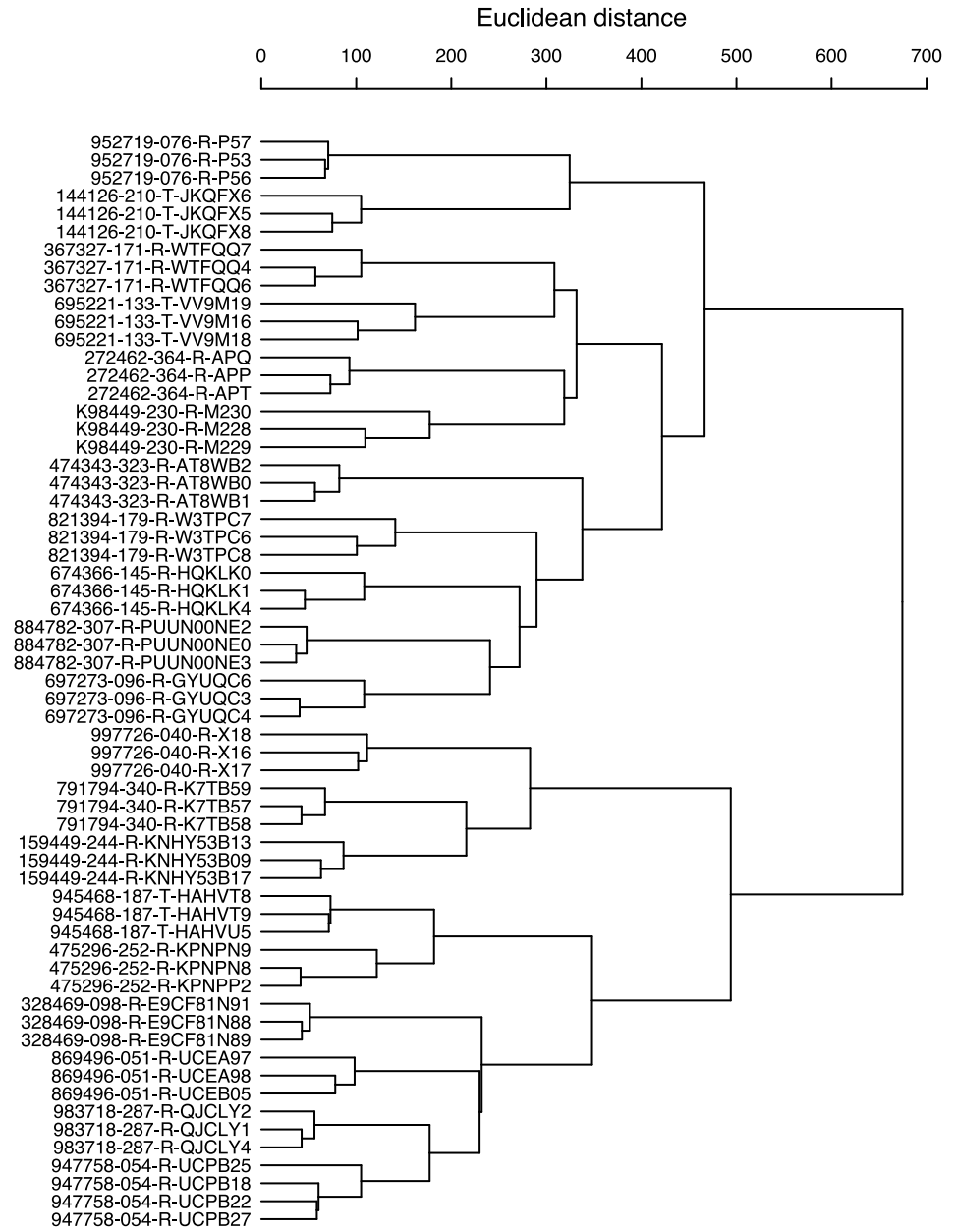


Figure S1C

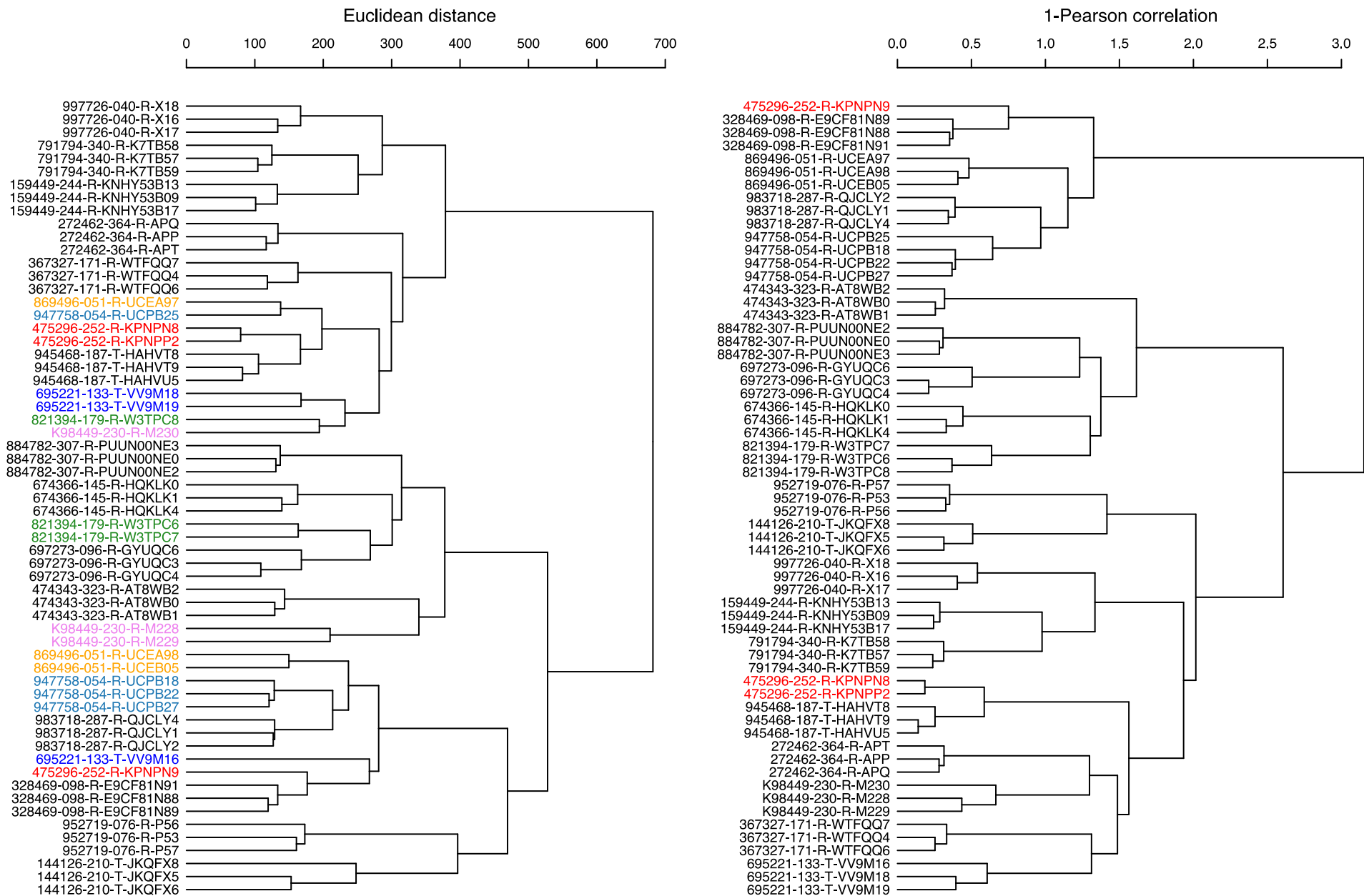


Figure S2

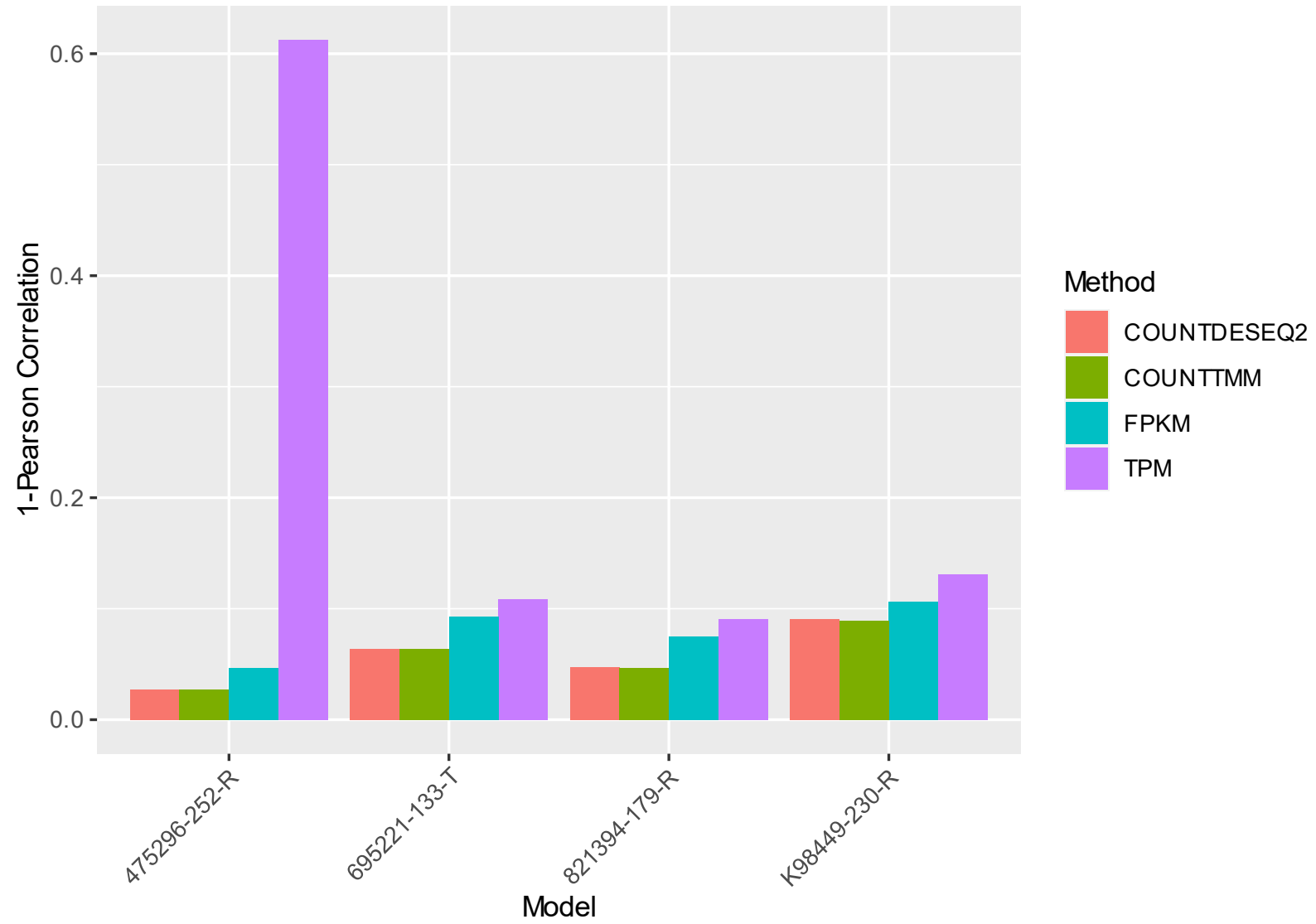


Figure S3A

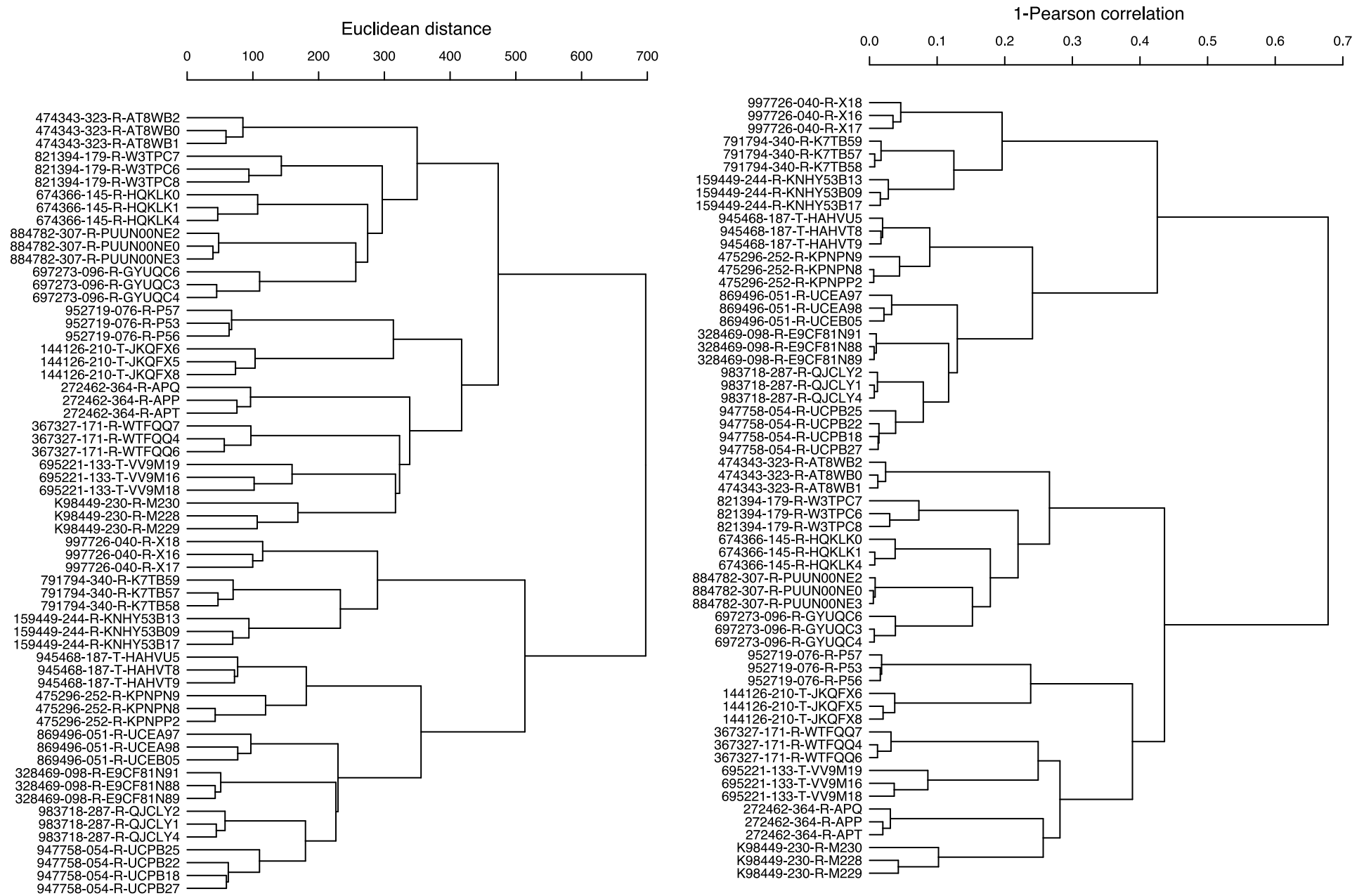


Figure S3B

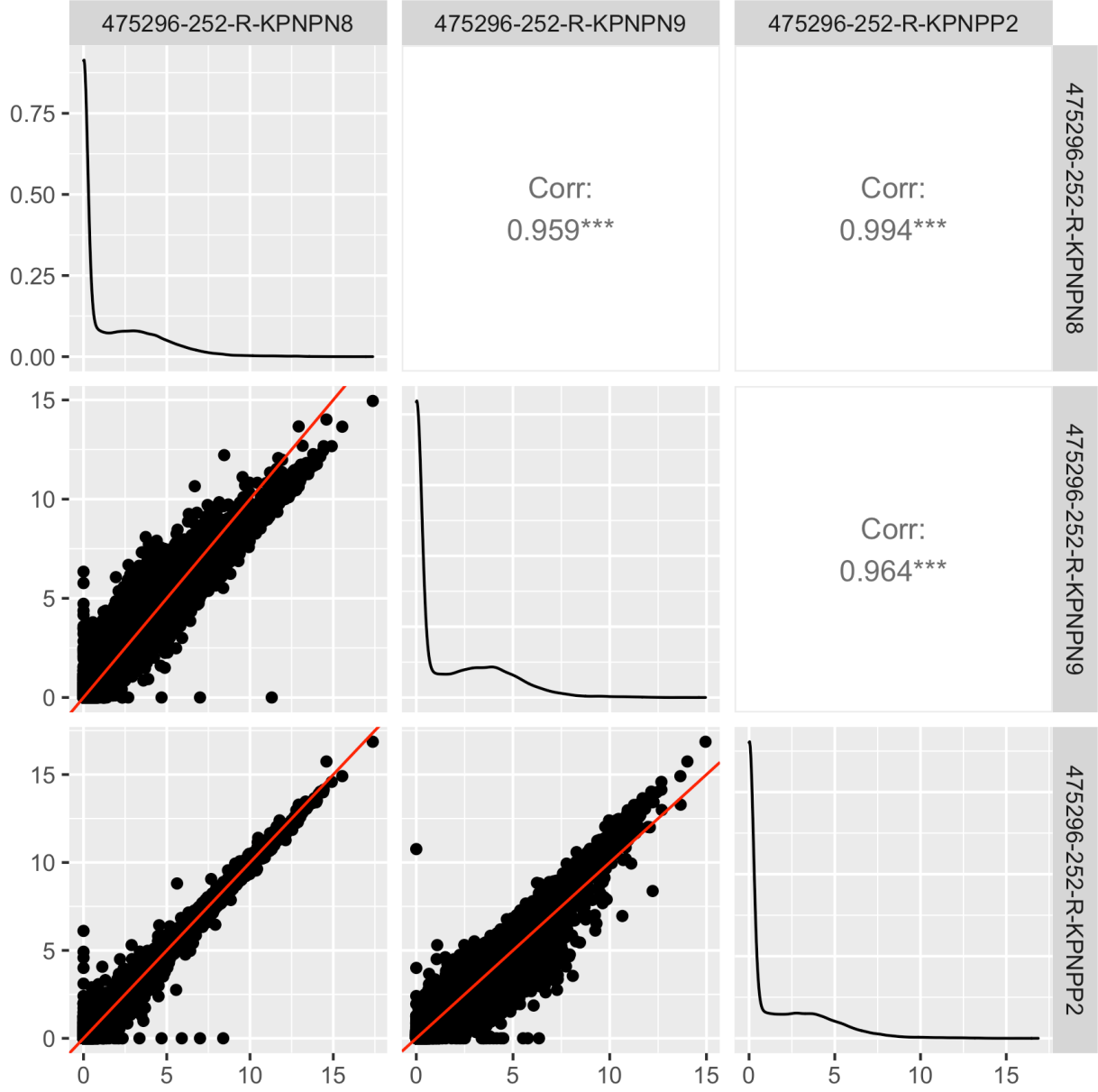


Figure S4

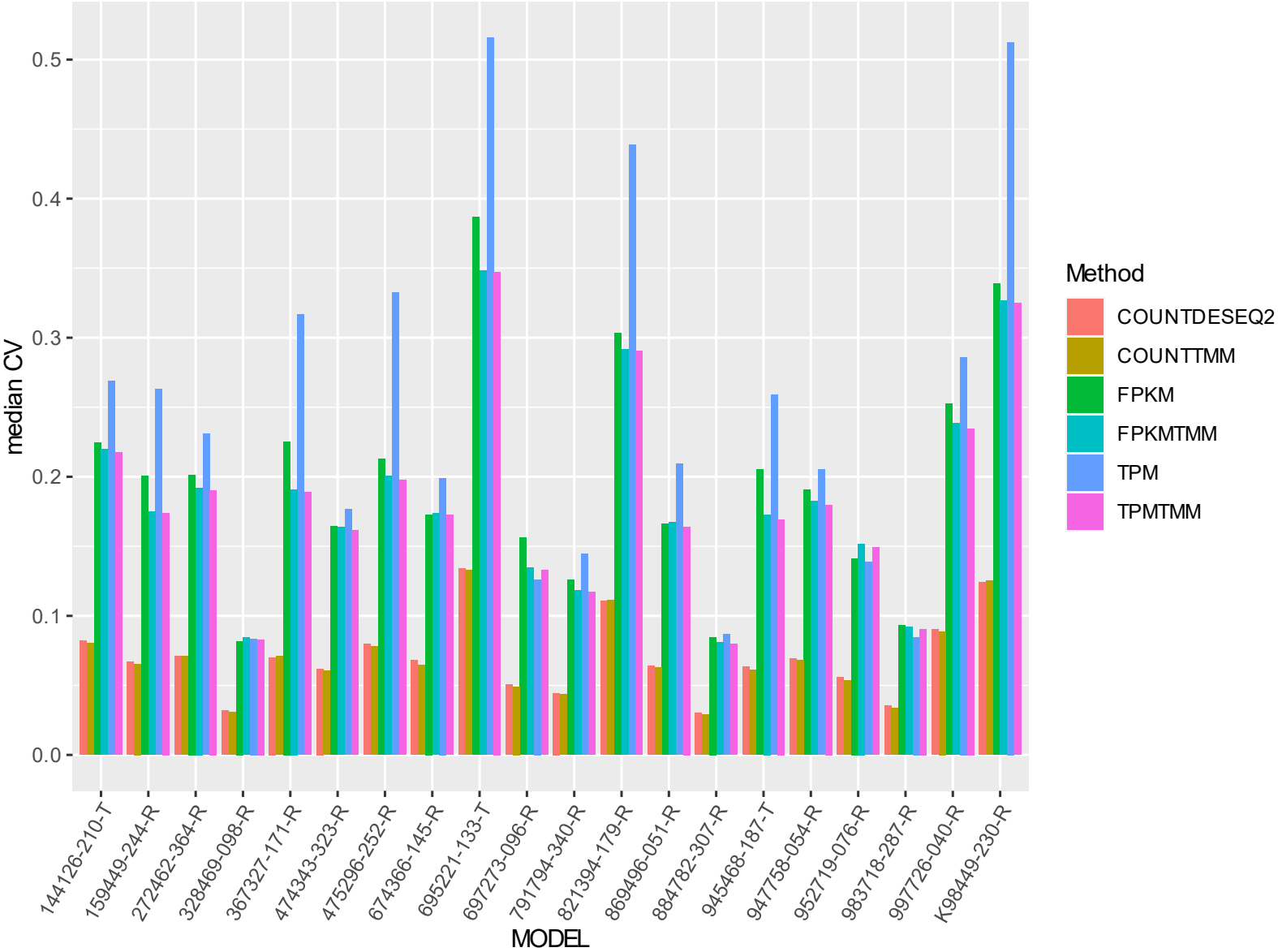


Figure S5A

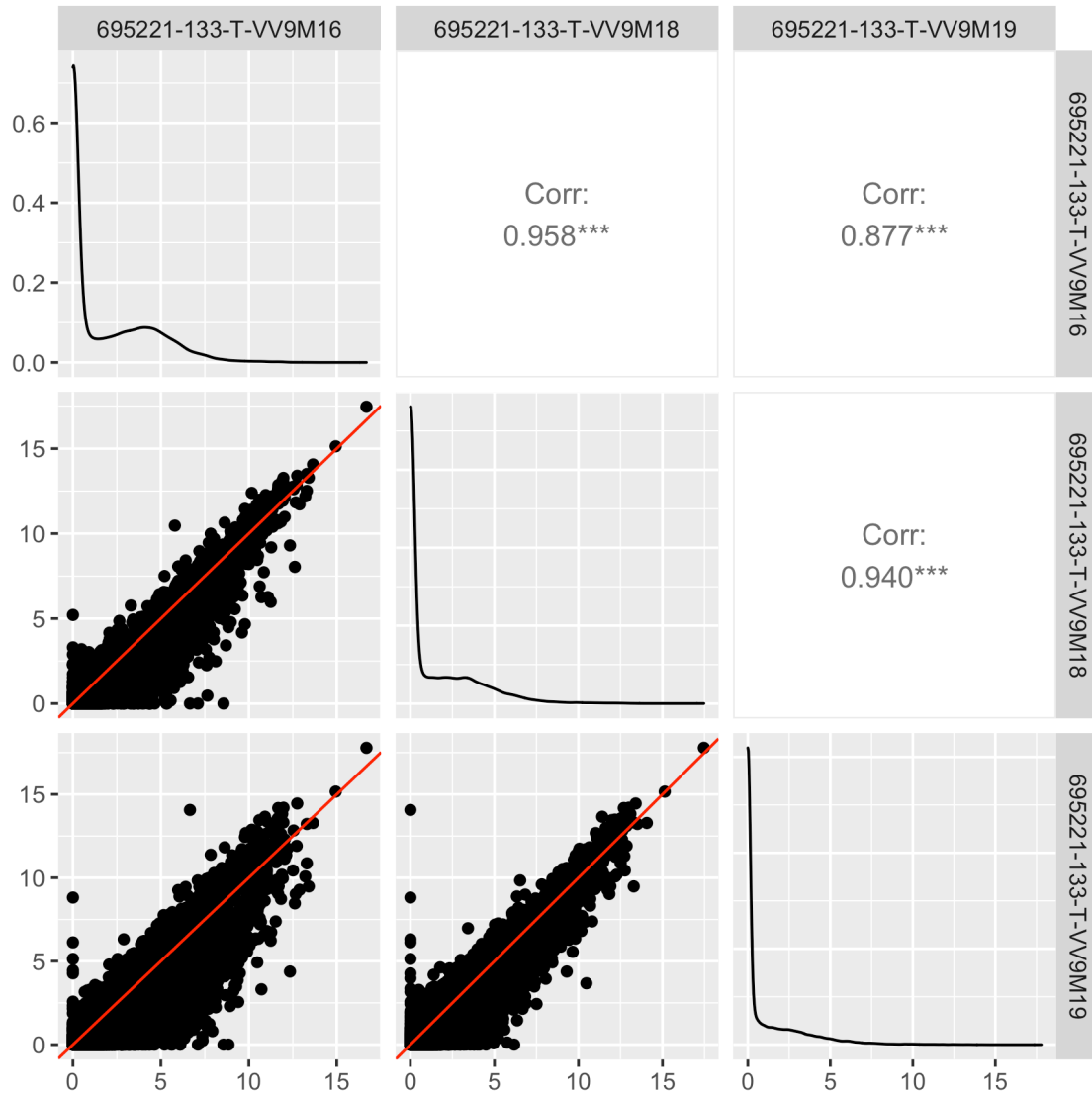


Figure S5B

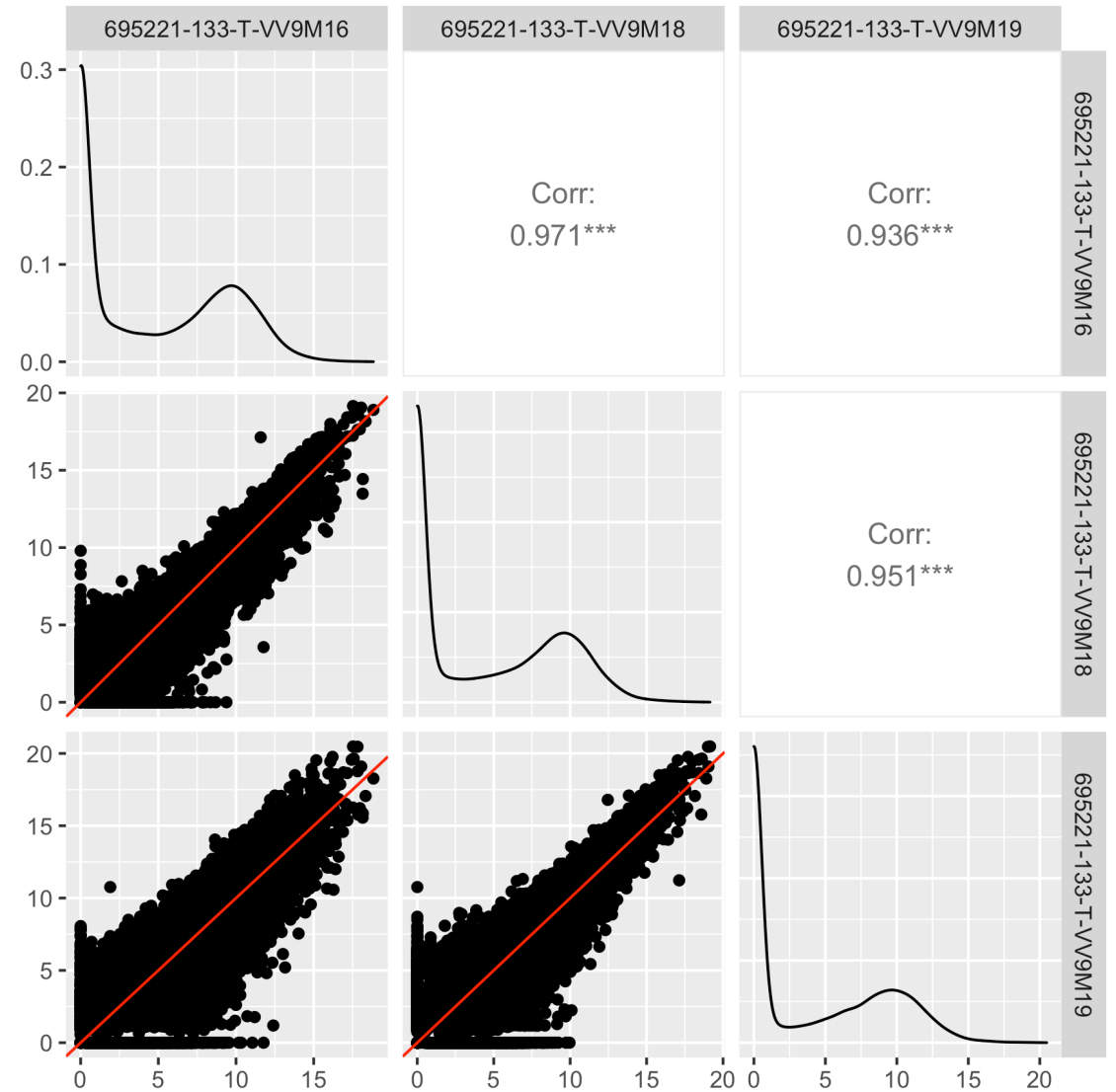


Figure S6A

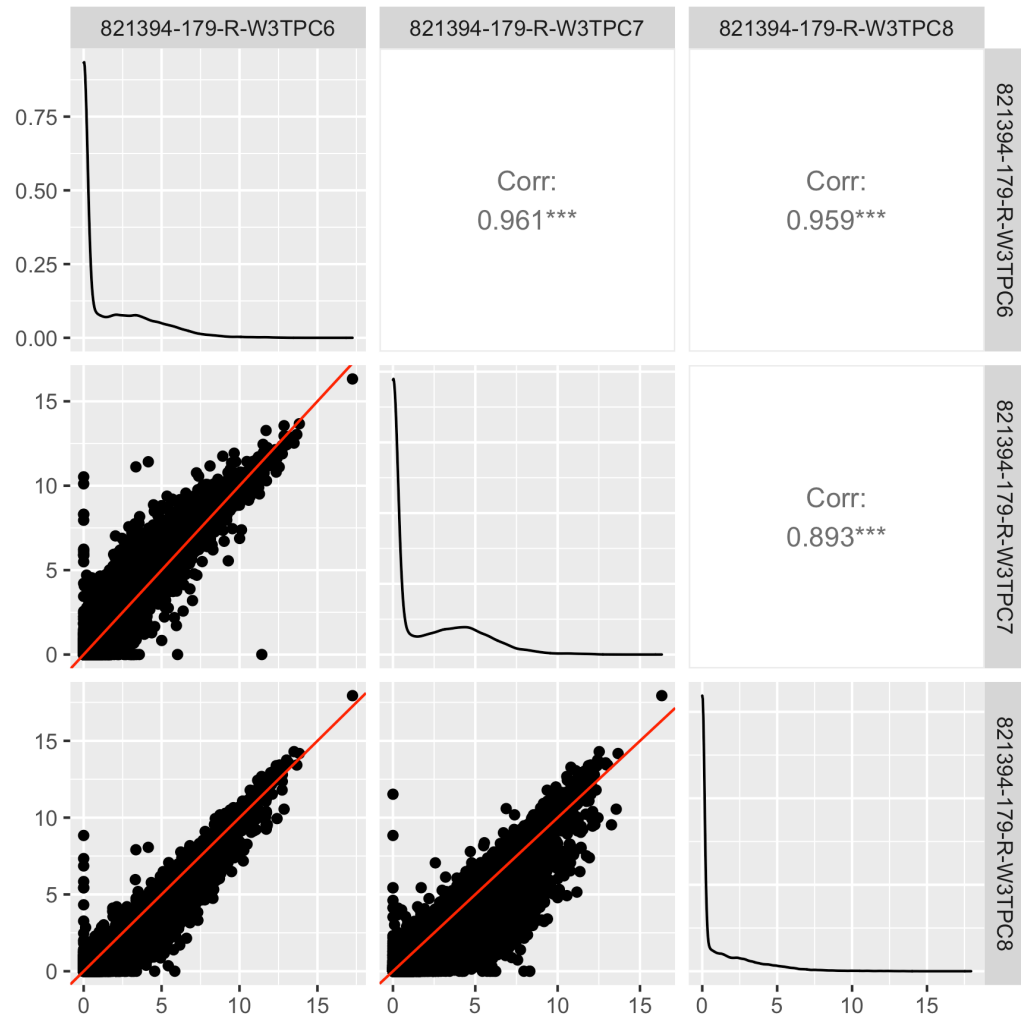


Figure S6B

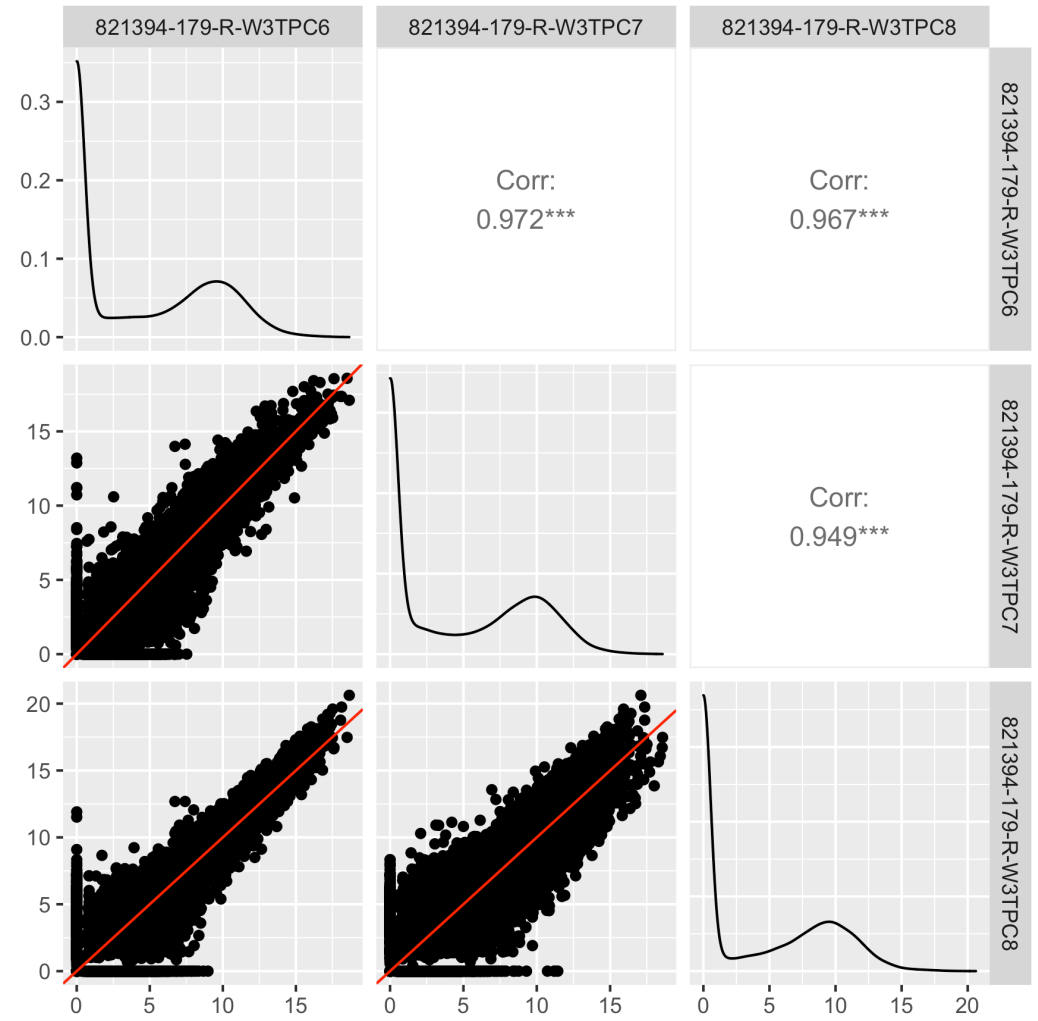


Figure S7A

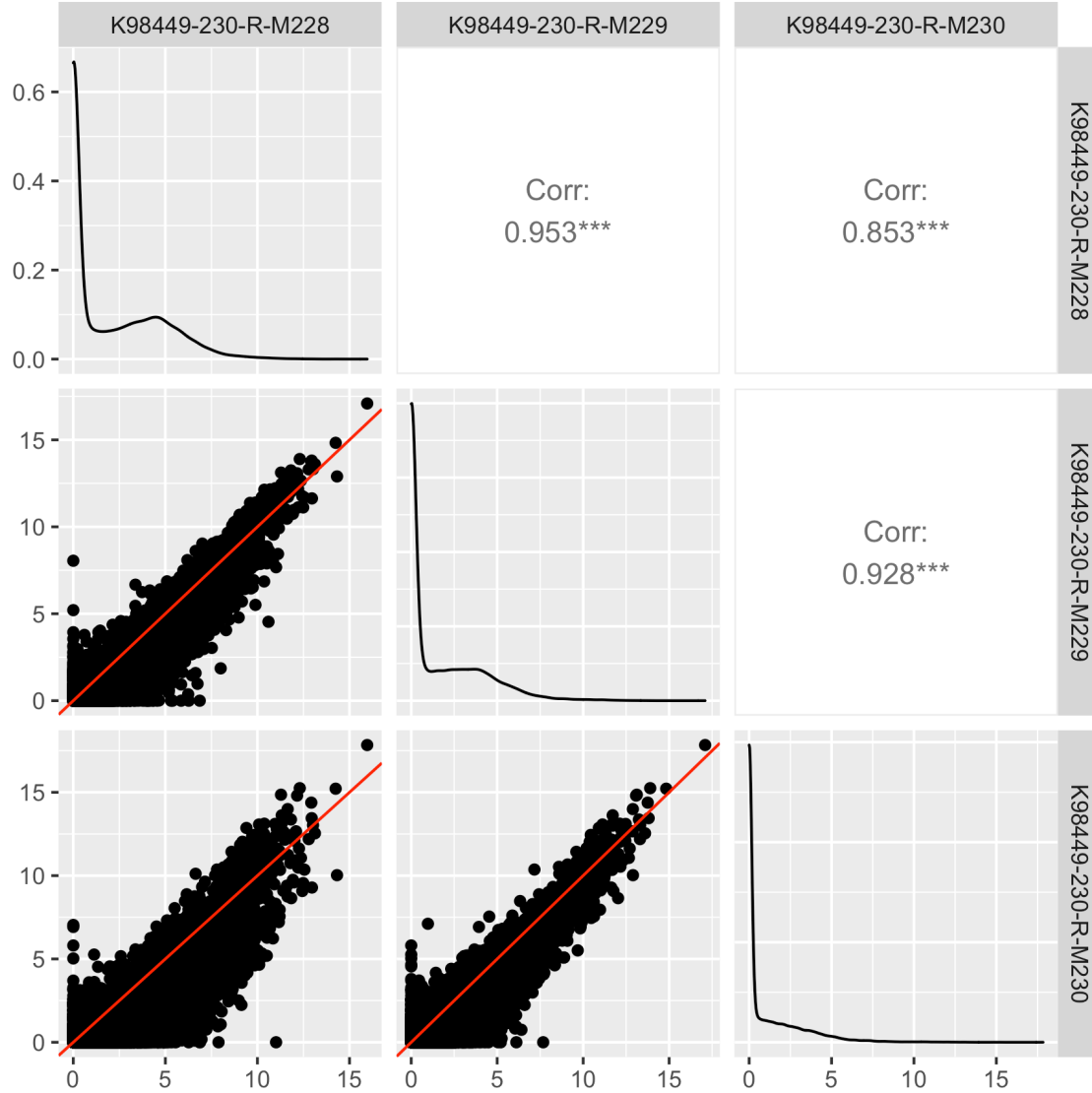


Figure S7B

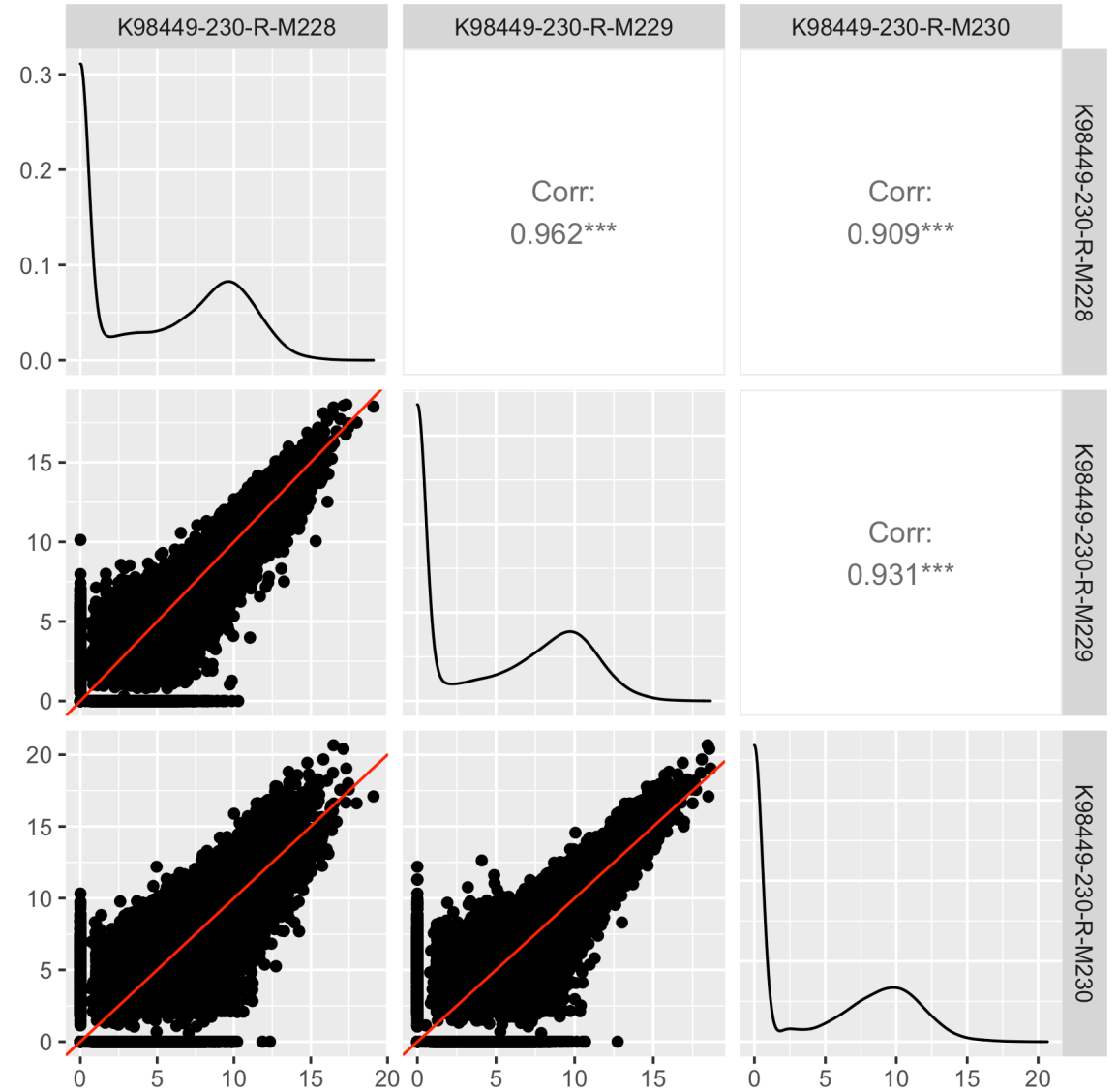


Figure S8A

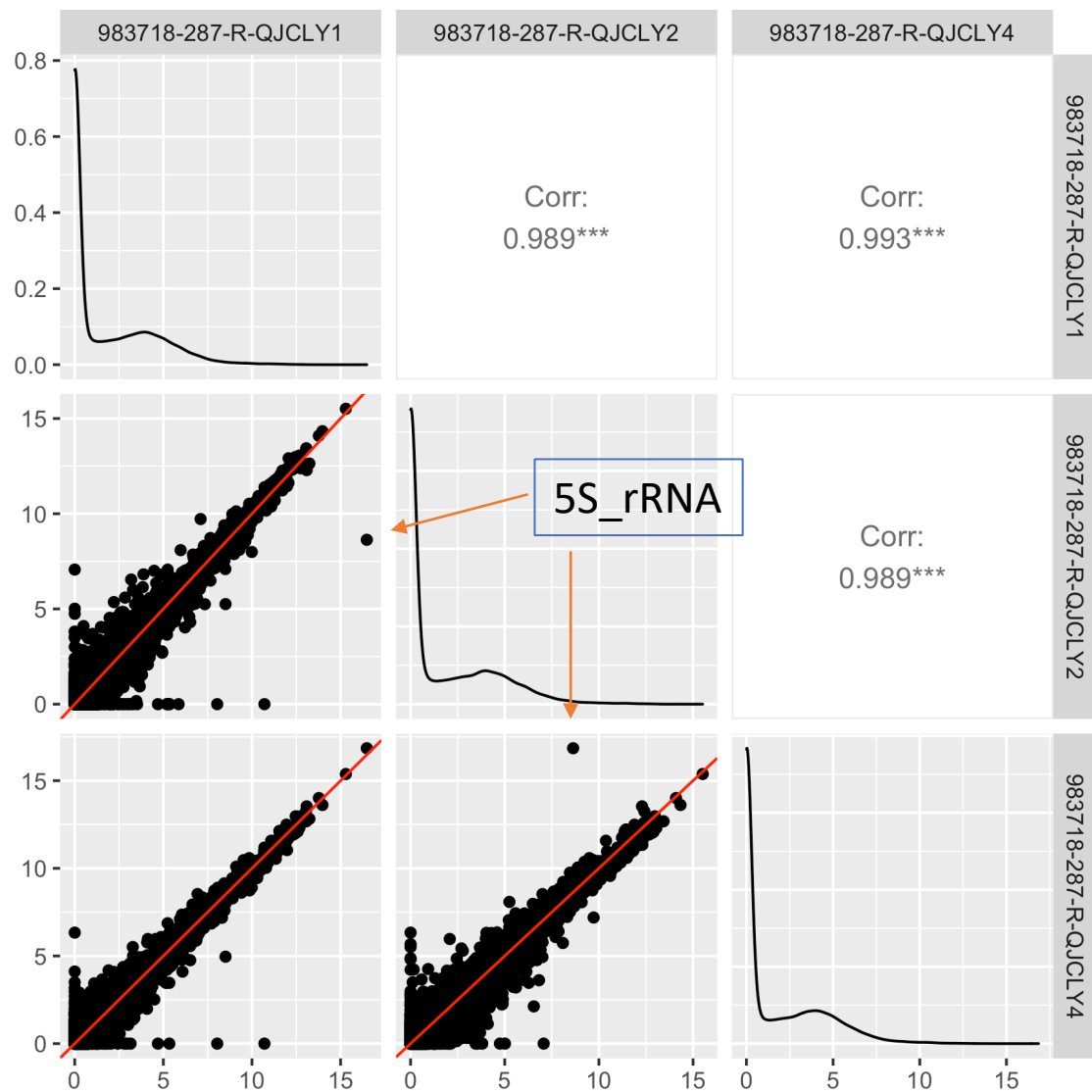


Figure S8B

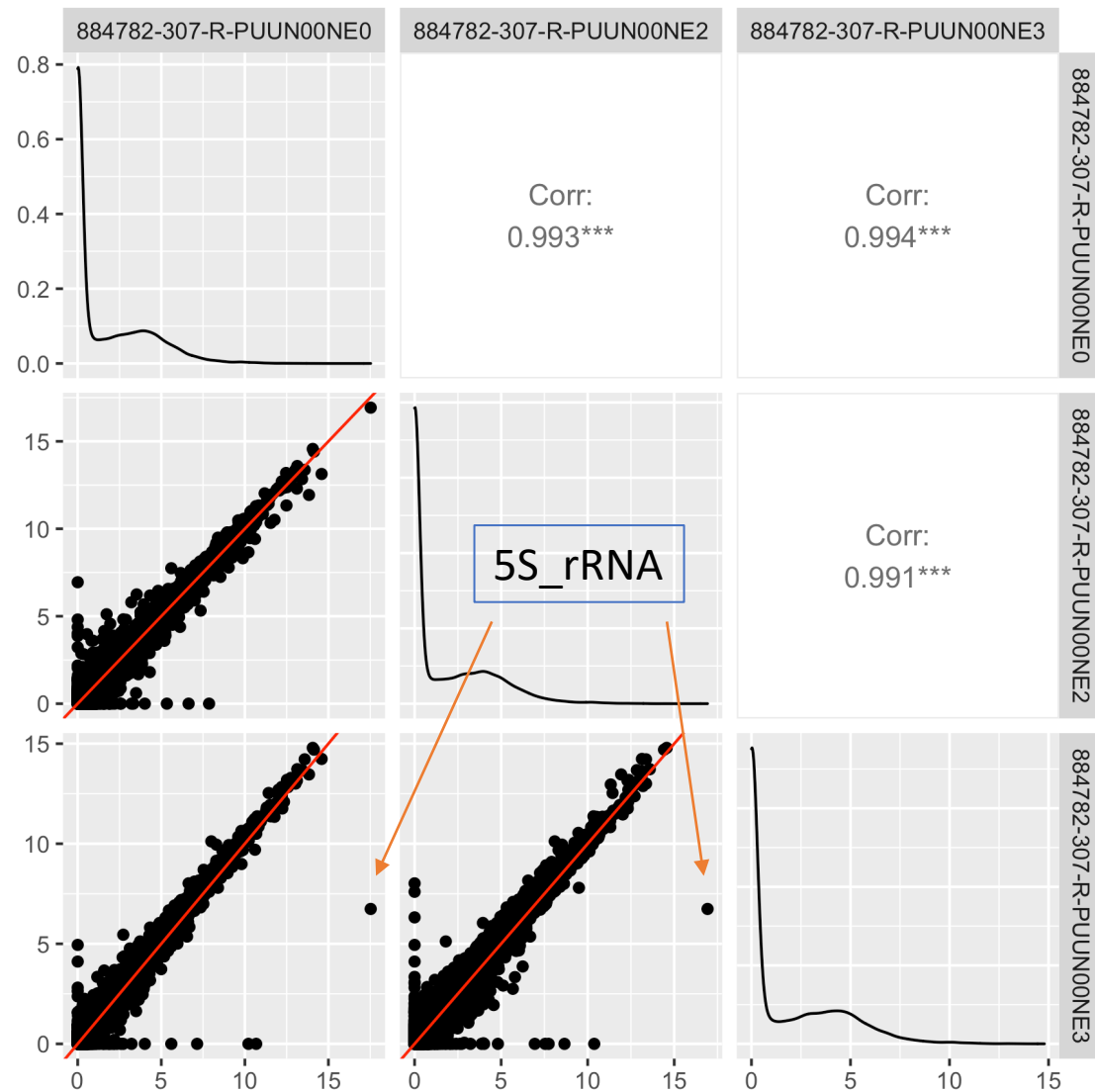


Table S1. Details of the patient-derived xenograft samples used in this study (downloaded on Sept. 16, 2020 from the NCI PDMR database).

EXPID	PatientID	SpecimenID	SampleID	Description	DiseaseBodyLocation
1	144126	210-T	JKQFX5	Neuroendocrine cancer, NOS	Endocrine and Neuroendocrine
2	144126	210-T	JKQFX6	Neuroendocrine cancer, NOS	Endocrine and Neuroendocrine
3	144126	210-T	JKQFX8	Neuroendocrine cancer, NOS	Endocrine and Neuroendocrine
4	159449	244-R	KNHY53B09	Transitional cell car. - uroth.	Genitourinary
5	159449	244-R	KNHY53B13	Transitional cell car. - uroth.	Genitourinary
6	159449	244-R	KNHY53B17	Transitional cell car. - uroth.	Genitourinary
7	272462	364-R	APP	RCC, clear cell adenocarcinoma	Genitourinary
8	272462	364-R	APQ	RCC, clear cell adenocarcinoma	Genitourinary
9	272462	364-R	APT	RCC, clear cell adenocarcinoma	Genitourinary
10	328469	098-R	E9CF81N88	Adenocarcinoma - colon	Digestive/Gastrointestinal
11	328469	098-R	E9CF81N89	Adenocarcinoma - colon	Digestive/Gastrointestinal
12	328469	098-R	E9CF81N91	Adenocarcinoma - colon	Digestive/Gastrointestinal
13	367327	171-R	WTFQQ4	Salivary gland cancer	Head and Neck
14	367327	171-R	WTFQQ6	Salivary gland cancer	Head and Neck
15	367327	171-R	WTFQQ7	Salivary gland cancer	Head and Neck
16	474343	323-R	AT8WB0	Osteosarcoma	Musculoskeletal
17	474343	323-R	AT8WB1	Osteosarcoma	Musculoskeletal
18	474343	323-R	AT8WB2	Osteosarcoma	Musculoskeletal
19	475296	252-R	KPNPN8	Adenocarcinoma - rectum	Digestive/Gastrointestinal
20	475296	252-R	KPNPN9	Adenocarcinoma - rectum	Digestive/Gastrointestinal
21	475296	252-R	KPNPP2	Adenocarcinoma - rectum	Digestive/Gastrointestinal
22	674366	145-R	HQKLN0	Non-Rhabdo. soft tissue sarcoma	Musculoskeletal
23	674366	145-R	HQKLN1	Non-Rhabdo. soft tissue sarcoma	Musculoskeletal
24	674366	145-R	HQKLN4	Non-Rhabdo. soft tissue sarcoma	Musculoskeletal
25	695221	133-T	VV9M16	Melanoma	Skin
26	695221	133-T	VV9M18	Melanoma	Skin
27	695221	133-T	VV9M19	Melanoma	Skin
28	697273	096-R	GYUQC3	Fibrosarcoma - not infantile	Musculoskeletal
29	697273	096-R	GYUQC4	Fibrosarcoma - not infantile	Musculoskeletal
30	697273	096-R	GYUQC6	Fibrosarcoma - not infantile	Musculoskeletal
31	791794	340-R	K7TB57	Squamous cervical cancer	Gynecologic

32	791794	340-R	K7TB58	Squamous cervical cancer	Gynecologic
33	791794	340-R	K7TB59	Squamous cervical cancer	Gynecologic
34	821394	179-R	W3TPC6	Malignant fibrous histiocytoma	Musculoskeletal
35	821394	179-R	W3TPC7	Malignant fibrous histiocytoma	Musculoskeletal
36	821394	179-R	W3TPC8	Malignant fibrous histiocytoma	Musculoskeletal
37	869496	051-R	UCEA97	Adenocarcinoma - rectum	Digestive/Gastrointestinal
38	869496	051-R	UCEA98	Adenocarcinoma - rectum	Digestive/Gastrointestinal
39	869496	051-R	UCEB05	Adenocarcinoma - rectum	Digestive/Gastrointestinal
40	884782	307-R	PUUN00NE0	Non-Rhabdo. soft tissue sarcoma	Musculoskeletal
41	884782	307-R	PUUN00NE2	Non-Rhabdo. soft tissue sarcoma	Musculoskeletal
42	884782	307-R	PUUN00NE3	Non-Rhabdo. soft tissue sarcoma	Musculoskeletal
43	945468	187-T	HAHVT8	Adenocarcinoma - rectum	Digestive/Gastrointestinal
44	945468	187-T	HAHVT9	Adenocarcinoma - rectum	Digestive/Gastrointestinal
45	945468	187-T	HAHVU5	Adenocarcinoma - rectum	Digestive/Gastrointestinal
46	947758	054-R	UCPB18	Adenocarcinoma - colon	Digestive/Gastrointestinal
47	947758	054-R	UCPB22	Adenocarcinoma - colon	Digestive/Gastrointestinal
48	947758	054-R	UCPB25	Adenocarcinoma - colon	Digestive/Gastrointestinal
49	947758	054-R	UCPB27	Adenocarcinoma - colon	Digestive/Gastrointestinal
50	952719	076-R	P53	Lung adenocarcinoma	Respiratory/Thoracic
51	952719	076-R	P56	Lung adenocarcinoma	Respiratory/Thoracic
52	952719	076-R	P57	Lung adenocarcinoma	Respiratory/Thoracic
53	983718	287-R	QJCLY1	Adenocarcinoma - colon	Digestive/Gastrointestinal
54	983718	287-R	QJCLY2	Adenocarcinoma - colon	Digestive/Gastrointestinal
55	983718	287-R	QJCLY4	Adenocarcinoma - colon	Digestive/Gastrointestinal
56	997726	040-R	X16	Squamous cell lung carcinoma	Respiratory/Thoracic
57	997726	040-R	X17	Squamous cell lung carcinoma	Respiratory/Thoracic
58	997726	040-R	X18	Squamous cell lung carcinoma	Respiratory/Thoracic
59	K98449	230-R	M228	Glioblastoma multiforme	Neurologic
60	K98449	230-R	M229	Glioblastoma multiforme	Neurologic
61	K98449	230-R	M230	Glioblastoma multiforme	Neurologic

Table S2. Summary statistics for CV values including interquartile range for different quantitative measures.

model	method	25	50	75	IQR
144126-210-T	COUNTDESEQ2	0.0388	0.0822	0.7792	0.7403
144126-210-T	COUNTTMM	0.0389	0.0805	0.7485	0.7096
144126-210-T	FPKM	0.0882	0.2246	0.9002	0.8119
144126-210-T	TPM	0.1049	0.2687	0.9043	0.7993
159449-244-R	COUNTDESEQ2	0.0317	0.0668	0.3207	0.289
159449-244-R	COUNTTMM	0.0311	0.0654	0.3146	0.2835
159449-244-R	FPKM	0.086	0.2006	0.7264	0.6404
159449-244-R	TPM	0.1231	0.263	0.7605	0.6374
272462-364-R	COUNTDESEQ2	0.0371	0.071	0.26	0.2229
272462-364-R	COUNTTMM	0.0361	0.0708	0.2553	0.2193
272462-364-R	FPKM	0.0894	0.2015	0.6533	0.5639
272462-364-R	TPM	0.0956	0.231	0.6801	0.5845
328469-098-R	COUNTDESEQ2	0.0149	0.032	0.1669	0.152
328469-098-R	COUNTTMM	0.0144	0.0308	0.1602	0.1458
328469-098-R	FPKM	0.0346	0.0818	0.4108	0.3761
328469-098-R	TPM	0.0364	0.0835	0.4074	0.371
367327-171-R	COUNTDESEQ2	0.0357	0.0701	0.2526	0.2168
367327-171-R	COUNTTMM	0.0352	0.0709	0.2495	0.2143
367327-171-R	FPKM	0.0887	0.2254	0.6241	0.5354
367327-171-R	TPM	0.1383	0.3166	0.6806	0.5423
474343-323-R	COUNTDESEQ2	0.0321	0.0619	0.2804	0.2483
474343-323-R	COUNTTMM	0.0315	0.0606	0.2721	0.2406
474343-323-R	FPKM	0.0765	0.1645	0.6113	0.5348
474343-323-R	TPM	0.0699	0.1765	0.6362	0.5663
475296-252-R	COUNTDESEQ2	0.0393	0.0796	0.2981	0.2588
475296-252-R	COUNTTMM	0.0383	0.0781	0.2888	0.2505
475296-252-R	FPKM	0.0873	0.2129	0.6867	0.5993
475296-252-R	TPM	0.1283	0.3324	0.8541	0.7259
674366-145-R	COUNTDESEQ2	0.0324	0.068	0.3453	0.313
674366-145-R	COUNTTMM	0.0309	0.0648	0.3332	0.3023
674366-145-R	FPKM	0.0767	0.1728	0.6533	0.5766
674366-145-R	TPM	0.0894	0.199	0.6672	0.5778
695221-133-T	COUNTDESEQ2	0.0618	0.134	0.8681	0.8063
695221-133-T	COUNTTMM	0.061	0.1331	0.8677	0.8067
695221-133-T	FPKM	0.1527	0.3867	0.9352	0.7824
695221-133-T	TPM	0.2195	0.5157	0.9984	0.7789
697273-096-R	COUNTDESEQ2	0.0203	0.0506	0.8666	0.8463
697273-096-R	COUNTTMM	0.02	0.0491	0.8663	0.8463
697273-096-R	FPKM	0.0549	0.1561	1.0467	0.9918
697273-096-R	TPM	0.0463	0.1261	0.9968	0.9504
791794-340-R	COUNTDESEQ2	0.0214	0.0445	0.2017	0.1803
791794-340-R	COUNTTMM	0.021	0.0437	0.1956	0.1746
791794-340-R	FPKM	0.0558	0.126	0.4886	0.4328
791794-340-R	TPM	0.0607	0.1443	0.4859	0.4252
821394-179-R	COUNTDESEQ2	0.0544	0.1105	0.4192	0.3648
821394-179-R	COUNTTMM	0.0545	0.1114	0.4174	0.3629
821394-179-R	FPKM	0.1346	0.3034	0.861	0.7264
821394-179-R	TPM	0.1906	0.4387	0.8898	0.6992
869496-051-R	COUNTDESEQ2	0.033	0.064	0.2138	0.1808

869496-051-R	COUNTTMM	0.0323	0.0628	0.211	0.1787
869496-051-R	FPKM	0.0758	0.1662	0.5519	0.4761
869496-051-R	TPM	0.101	0.2091	0.5897	0.4887
884782-307-R	COUNTDESEQ2	0.0143	0.0301	0.1917	0.1774
884782-307-R	COUNTTMM	0.0139	0.0291	0.1856	0.1716
884782-307-R	FPKM	0.039	0.0848	0.4377	0.3986
884782-307-R	TPM	0.0415	0.0866	0.4268	0.3852
945468-187-T	COUNTDESEQ2	0.0267	0.0636	0.5057	0.479
945468-187-T	COUNTTMM	0.0261	0.061	0.4902	0.4642
945468-187-T	FPKM	0.0759	0.2053	0.8735	0.7976
945468-187-T	TPM	0.1096	0.2587	0.8676	0.7579
947758-054-R	COUNTDESEQ2	0.0328	0.0691	0.415	0.3822
947758-054-R	COUNTTMM	0.0324	0.0681	0.4063	0.3739
947758-054-R	FPKM	0.0864	0.1907	0.731	0.6447
947758-054-R	TPM	0.0855	0.2052	0.7268	0.6413
952719-076-R	COUNTDESEQ2	0.0267	0.0557	0.2697	0.243
952719-076-R	COUNTTMM	0.0259	0.0535	0.2625	0.2367
952719-076-R	FPKM	0.0614	0.1413	0.5791	0.5177
952719-076-R	TPM	0.0662	0.1387	0.568	0.5018
983718-287-R	COUNTDESEQ2	0.0156	0.0353	0.1996	0.1839
983718-287-R	COUNTTMM	0.0151	0.0335	0.1919	0.1768
983718-287-R	FPKM	0.0367	0.0931	0.4723	0.4356
983718-287-R	TPM	0.0344	0.0846	0.4564	0.422
997726-040-R	COUNTDESEQ2	0.0473	0.0902	0.3186	0.2714
997726-040-R	COUNTTMM	0.047	0.0887	0.3092	0.2622
997726-040-R	FPKM	0.1134	0.2526	0.7312	0.6178
997726-040-R	TPM	0.1219	0.286	0.7639	0.642
K98449-230-R	COUNTDESEQ2	0.0597	0.124	0.8663	0.8066
K98449-230-R	COUNTTMM	0.0603	0.1251	0.8663	0.806
K98449-230-R	FPKM	0.1499	0.3389	0.9008	0.7509
K98449-230-R	TPM	0.2457	0.5125	0.9615	0.7158

Table S3A. The transcript percentages in each sample for the top five most abundant genes in four PDX models whose TPM data had the highest median CV values.

		<i>Top 5 most highly expressed transcripts in model</i>					
Model	SampleID	RMRP	TMSB4X	SCARNA10	SCARNA2	SCARNA5	Total % TPM for top 5 genes
K98449-230-R	M228	6.38	1.94	0.50	0.78	0.46	10.06
	M229	13.98	2.91	1.53	1.38	0.87	20.67
	M230	23.41	3.81	3.89	2.13	2.86	36.10
Model	SampleID	RMRP	5S_rRNA	RPS17L	RPL9	TMSB4X	Total % TPM for top 5 genes
475296-252-R	KPNPN8	11.45	1.66	3.21	2.07	1.48	19.89
	KPNPN9	4.57	2.39	1.86	0.94	0.94	10.69
	KPNPP2	8.98	4.13	2.31	1.85	1.35	18.62
Model	SampleID	RMRP	RPS17L	RPL9	RPL19	UBB	Total % TPM for top 5 genes
695221-133-T	VV9M16	10.55	3.15	0.69	1.28	1.01	16.68
	VV9M18	18.06	3.59	1.08	1.72	1.17	25.62
	VV9M19	22.62	3.67	2.24	1.00	0.96	30.48
Model	SampleID	RMRP	Metazoa_SRP	RPL9	TMSB4X	RPS17L	Total % TPM for top 5 genes
821394-179-R	W3TPC6	15.59	1.47	1.16	1.31	0.91	20.43
	W3TPC7	8.20	1.30	0.59	0.84	0.77	11.70
	W3TPC8	25.19	1.85	2.01	1.10	1.21	31.37

Table S3B. The transcript percentages in each sample for the top five most abundant genes in five PDX models whose TPM data had the lowest median CV values.

		<i>Top 5 most highly expressed transcripts in model</i>					
Model	SampleID	RMRP	5S_rRNA	RPS17L	RPL9	ACTB	Total % TPM for top 5 genes
328469-098-R	E9CF81N88	7.08	2.36	1.81	1.23	1.15	13.63
	E9CF81N89	7.27	3.28	2.17	1.49	0.97	15.18
	E9CF81N91	7.02	1.51	1.91	1.28	1.15	12.88
Model	SampleID	5S_rRNA	RMRP	RPS17L	ACTB	RPL9	Total % TPM for top 5 genes
983718-287-R	QJCLY1	9.14	4.02	1.61	1.40	0.86	17.03
	QJCLY2	0.04	4.67	2.06	1.75	1.11	9.63
	QJCLY4	11.81	4.26	1.25	1.65	0.66	19.64
Model	SampleID	5S_rRNA	RMRP	ACTB	NBPF10	COL1A1	Total % TPM for top 5 genes
884782-307-R	PUUN00NE0	18.92	1.71	1.80	2.47	1.22	26.12
	PUUN00NE2	12.45	2.42	2.18	0.90	1.06	19.01
	PUUN00NE3	0.01	2.84	2.67	1.93	1.91	9.35
Model	SampleID	RMRP	HIST2H2AA4	UBB	HIST1H2BK	RPS17L	Total % TPM for top 5 genes
952719-076-R	P53	11.04	1.70	1.24	1.17	1.04	16.20
	P56	7.24	1.86	1.29	1.14	0.93	12.46
	P57	12.68	1.11	0.64	0.77	1.08	16.28
Model	SampleID	5S_rRNA	KRT6A	KRT5	RMRP	RPS17L	Total % TPM for top 5 genes
791794-340-R	K7TB57	9.76	4.65	4.30	2.50	2.44	23.66
	K7TB58	11.72	4.92	4.71	2.57	2.34	26.26
	K7TB59	12.52	2.45	1.74	4.13	3.69	24.53