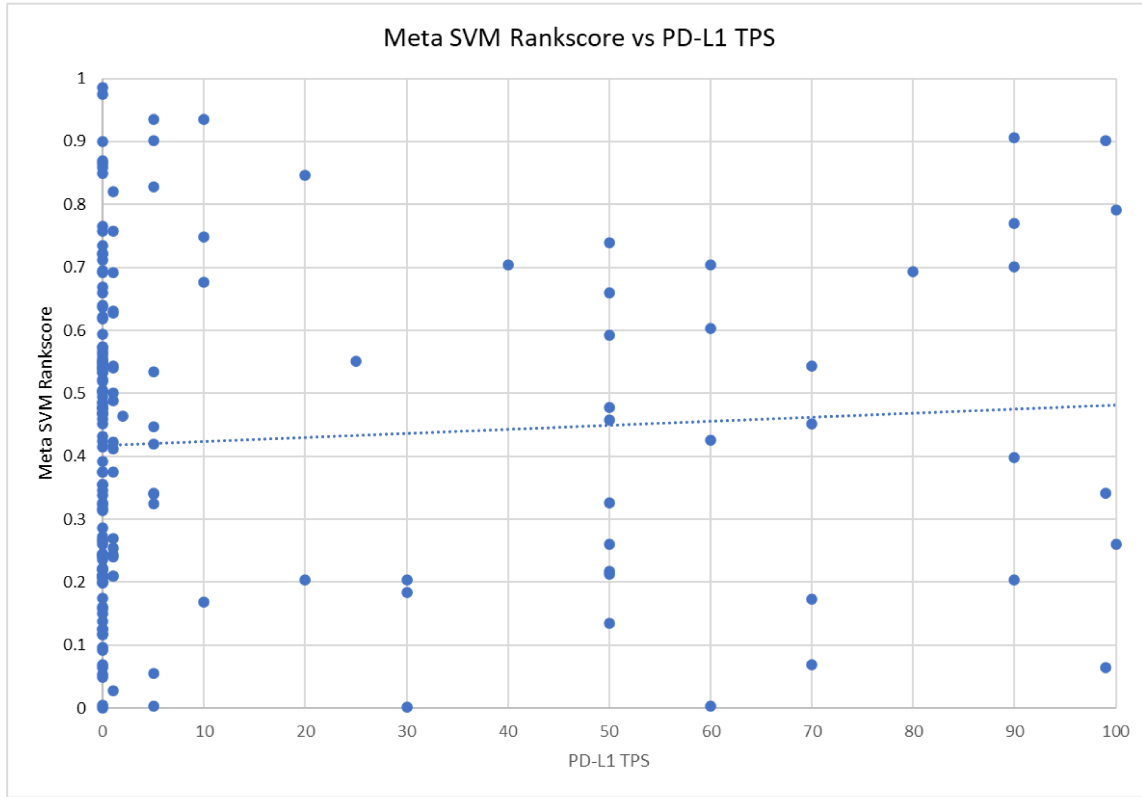


Supplement

Supplemental Figure 1. Meta SVM Rankscore vs PD-L1 TPS



Supplemental Table 1 Predicted Germline or Somatic Missense Mutation with somatic germline zygosity (SGZ) algorithm. G = predicted germline; S = predicted somatic; and A = unable to predict germline or somatic.

A109V; A	D215H; A	E218K; S	G245V; S	K129N; S	M266I; A	P43A; S	R212K; S	R86Q; G	V147A; A
A109V; A	D215H; A	E218K; S	G252C; A	K136E; A	M266I; G	P43L; S	R212T; A	R86Q; G	V147A; G
A109V; G	D215H; A	E218K; S	G252D; G	K162N; S	M266I; S	P43Q; S	R213K; A	R86Q; G	V165A; A
A121V; S	D215H; A	E218Q; S	G252S; G	K162Q; S	M266I; S	P43Q; S	R238K; A	R86Q; S	V165A; S
A132D; A	D215H; G	E223K; S	G264E; S	K162R; A	M266I; S	P43S; G	R238K; A	R86Q; S	V165L; S
A132V; A	D215H; S	E223K; S	G264E; S	K178E; G	M266I; S	P43S; S	R238T; S	R86Q; S	V174A; S
A132V; S	D215H; S	E223K; S	G264E; S	K178E; G	M266I; S	P43S; S	R260C; A	R86W; A	V174D; G
A132V; S	D215H; S	E223K; S	G264R; S	K185E; S	M267I; A	Q100H; S	R260C; A	R86W; A	V174F; A
A157S; S	D215H; S	E223K; S	G264V; S	K185N; A	M267T; A	Q100R; A	R260C; G	R86W; A	V174G; A
A157T; A	D215N; A	E223K; S	G264W; A	K185N; A	M36I; A	Q107K; G	R260C; G	R86W; G	V174G; S
A157T; S	D215Y; S	E223K; S	G273D; S	K185N; S	M36I; S	Q107K; S	R260C; G	R86W; G	V174I; A
A163V; A	D268G; A	E223Q; A	G33C; S	K189E; S	M36I; S	Q139E; G	R260C; G	R86W; G	V174I; G
A163V; S	D268G; S	E223Q; A	G70A; S	K189M; G	M36I; S	Q139E; S	R260C; G	R86W; G	V174L; G
A163V; S	D268H; G	E223V; G	G70A; S	K189Q; S	M36T; A	Q139R; A	R260C; G	R86W; G	V174L; G
A163V; S	D268H; G	E228G; G	G70E; S	K25M; A	M36V; G	Q139R; G	R260C; G	R86W; S	V193M; G
A163V; S	D268N; A	E228V; S	G70R; A	K25N; A	M59I; A	Q139R; G	R260C; G	R86W; S	V193M; S
A18S; G	D268N; S	E237K; A	G95E; S	K25N; S	M59I; S	Q139R; S	R260C; G	S149Y; S	V21A; A
A18T; A	D268N; S	E237K; S	G95E; S	K25N; S	M59T; A	Q156E; S	R260C; G	S169C; S	V21A; S
A18T; A	D26G; S	E237K; S	G95E; S	K25N; S	N131H; S	Q156H; A	R260C; S	S169C; S	V21L; S
A18T; S	D26G; S	E237Q; S	G95R; G	K25R; G	N131I; A	Q156H; G	R260C; S	S169C; S	V21L; S
A18T; S	D26N; S	E288D; G	G95R; G	K25R; G	N131I; G	Q156H; G	R260C; S	S169N; A	V23F; A
A18T; S	D26Y; S	E288G; A	G95R; S	K263E; S	N131K; S	Q156K; G	R260C; S	S169N; A	V23F; S
A18T; S	D276E; S	E288G; S	H14R; S	K271N; S	N131S; G	Q173E; A	R260C; S	S169N; G	V23I; A
A18T; S	D276H; S	E288G; S	H14Y; A	K280N; S	N135D; S	Q173E; G	R260C; S	S169N; G	V242A; A
A222G; S	D276N; S	E288K; S	H14Y; S	K280N; S	N135S; G	Q173E; S	R260H; A	S169N; S	V242A; S
A222V; S	D276N; S	E288Q; A	H151L; G	K280N; S	N135S; S	Q173E; S	R260H; A	S169N; S	V242I; G
A232G; A	D276Y; S	E288Q; S	H151R; G	K280N; S	N135S; S	Q173H; S	R260H; A	S169R; A	V242I; G
A232G; A	D276Y; S	E289D; A	H172P; A	K280Q; S	N138H; S	Q173H; S	R260H; A	S169R; S	V253G; S
A232G; G	D276Y; S	E289D; G	H172Q; A	K281N; A	N138K; S	Q275R; S	R260H; A	S176G; S	V253I; G
A232G; G	D284A; A	E289D; S	H172Y; S	K46R; S	N138T; S	Q282R; G	R260H; A	S184F; S	V253I; S
A232G; G	D284A; A	E31A; A	H220D; G	K62N; G	N17D; A	Q47E; G	R260H; A	S184F; S	V253I; S
A232P; A	D284A; A	E31G; G	H220Y; A	K62N; S	N183D; S	Q47E; G	R260H; A	S184F; S	V269M; S
A232S; G	D284A; G	E31K; S	H220Y; A	K75N; A	N183H; A	Q47R; S	R260H; A	S184F; S	V29G; A
A232S; S	D284A; G	E39K; S	H220Y; G	K75N; A	N183S; A	Q66E; S	R260H; G	S184P; A	V29M; G
A232S; S	D284N; S	E39K; S	H220Y; G	K75T; A	N183S; S	Q66E; S	R260H; G	S195I; G	V29M; S
A232T; A	D284N; S	E39Q; G	H233Y; A	K75T; G	N183S; S	Q83H; A	R260H; G	S195N; S	V30A; S
A232T; S	D284Y; A	E39Q; S	H233Y; G	K89N; A	N192I; G	Q83H; S	R260H; G	S195R; S	V30A; S
A232T; S	D49G; S	E45K; A	H233Y; G	L106F; S	N200D; S	Q83H; S	R260H; G	S279L; A	V44A; G

A232V; S	D49N; S	E45K; A	H233Y; G	L106F; S	N200S; A	Q83H; S	R260H; G	S279L; A	V55F; S
A232V; S	D61E; S	E45Q; S	H233Y; G	L142F; G	N204I; A	Q83R; S	R260H; G	S279L; S	V68A; G
A232V; S	D61H; A	E45Q; S	H233Y; G	L142F; S	N204K; G	Q91E; G	R260H; G	S283T; S	V68A; G
A246D; S	D61N; G	E58G; S	H233Y; G	L142W; G	N219I; A	Q91H; G	R260H; G	S79G; S	V68E; G
A246V; S	D61N; S	E58K; S	H240L; S	L16M; S	N219T; S	Q91H; G	R260H; G	S79N; G	V68E; G
A254G; S	D61N; S	E58K; S	H240P; A	L16P; G	N236D; A	R113C; A	R260H; G	S79N; G	V68M; S
A51D; A	D61N; S	E58K; S	H240Y; S	L16P; G	N236H; S	R113C; A	R260H; G	S79N; G	V6I; A
A51S; S	D61V; S	E60Q; S	H69L; S	L16P; G	N236I; S	R113C; A	R260H; G	S80R; A	V6I; G
A51V; A	D61Y; S	E71K; G	H69N; S	L16R; A	N35D; S	R113H; A	R260H; G	S80R; G	V76F; G
A51V; S	D61Y; S	E71K; S	H69N; S	L190F; A	N35H; S	R113H; A	R260H; G	T102I; A	V76F; G
A52V; A	D73H; S	E71Q; A	H69R; G	L190F; S	N35K; S	R113H; A	R260H; G	T127A; S	V76I; S
A52V; A	D73N; A	E71Q; S	H69R; S	L190I; A	N63Y; S	R113H; G	R260H; G	T148A; A	W13C; G
A52V; S	D73N; S	F207L; A	H69Y; G	L190R; S	N96H; A	R113H; S	R260H; G	T148A; A	W13C; S
A52V; S	D90A; S	F207L; S	H78R; A	L190V; S	N96S; S	R113H; S	R260H; G	T148A; G	W13C; S
A5D; S	D90E; S	F207L; S	H78R; S	L197P; A	N96Y; A	R113H; S	R260H; G	T154I; G	W167C; S
A5V; G	D90Y; G	F207L; S	H78Y; G	L197R; S	P133L; G	R113H; S	R260H; G	T154S; A	W57G; A
A5V; S	D90Y; G	F211C; S	I101T; S	L229P; G	P133L; S	R113H; S	R260H; G	T179I; G	W57G; G
A5V; S	E150G; S	F211I; G	I126F; S	L229P; S	P133S; G	R113H; S	R260H; G	T179I; S	W57S; S
A85S; A	E150K; S	F211L; G	I126F; S	L229P; S	P133S; S	R113L; S	R260H; G	T180I; S	Y112C; S
A85T; G	E150K; S	F257C; G	I126L; G	L231M; S	P146L; S	R113S; A	R260H; G	T181A; S	Y112C; S
A85T; S	E150K; S	F257C; G	I126S; S	L231V; S	P146L; S	R125L; A	R260H; G	T181A; S	Y112C; S
A85T; S	E152K; A	F257L; A	I141M; A	L231V; S	P146L; S	R125Q; A	R260H; G	T181I; S	Y112C; S
A85V; A	E152Q; S	F257L; A	I141V; A	L231V; S	P146S; A	R125Q; A	R260H; G	T182P; G	Y112C; S
A85V; A	E158G; A	F259L; G	I166L; S	L241F; A	P146S; S	R125Q; A	R260H; G	T194A; A	Y112C; S
A85V; S	E158K; A	F4S; S	I166V; S	L241F; G	P146S; S	R125Q; G	R260H; S	T196A; G	Y118F; A
A85V; S	E158K; A	F67C; A	I199V; S	L244M; A	P161L; S	R125Q; S	R260H; S	T196A; G	Y123H; S
A97T; A	E158K; S	F67C; S	I206M; S	L244M; S	P161L; S	R125Q; S	R260H; S	T201I; A	Y12F; G
A97V; S	E158K; S	F67I; S	I206T; A	L244P; G	P161S; S	R125Q; S	R260H; S	T201I; S	Y134C; S
A97V; S	E158Q; G	F7L; A	I226L; A	L244V; S	P216H; S	R125Q; S	R260H; S	T202I; A	Y160H; A
A98T; G	E158V; G	F9L; A	I226M; S	L248S; G	P216H; S	R125Q; S	R260H; S	T202R; S	Y160H; G
A98T; S	E164A; S	F9L; S	I243T; A	L249S; A	P216L; S	R125Q; S	R260H; S	T203A; G	Y208C; G
A98V; S	E164Q; S	F9L; S	I243V; G	L249V; G	P216L; S	R125Q; S	R260H; S	T203I; G	Y208C; S
C114Y; S	E164Q; S	G110E; A	I258F; S	L249V; S	P216S; G	R125Q; S	R260H; S	T203S; G	Y28S; S
C209F; S	E187D; A	G110R; S	I258M; A	L251F; A	P216S; S	R140I; A	R260H; S	T20A; A	Y32C; S
C209S; A	E187D; S	G110R; S	I258M; A	L255M; G	P216S; S	R140I; G	R260H; S	T210S; G	Y56C; G
C209Y; S	E187D; S	G110R; S	I258M; S	L255Q; S	P227A; A	R140I; S	R260H; S	T210S; S	Y81H; S
C209Y; S	E187K; A	G119D; G	I258V; G	L255R; S	P227S; A	R140I; S	R260H; S	T221A; A	
C250G; G	E187Q; A	G119D; G	I274M; A	L261F; S	P227S; A	R140I; S	R260H; S	T221A; S	
C250Y; A	E187Q; A	G119D; S	I274M; G	L261F; S	P227S; S	R140I; S	R262G; G	T221I; G	
C272R; S	E187Q; G	G119S; S	I274M; G	L27I; G	P227T; S	R140I; S	R262I; A	T221I; S	
C272Y; A	E187Q; S	G119S; S	I38M; A	L27I; S	P230L; S	R140I; S	R262I; A	T22S; S	

C272Y; S	E187V; S	G119V; G	I38T; G	L287V; S	P230S; A	R140K; A	R262I; S	T239S; G	
D103H; S	E188D; S	G159C; S	I38T; S	L48S; G	P230S; A	R140K; S	R262I; S	T256S; A	
D103N; S	E188K; G	G159C; S	I3M; S	L50M; S	P230S; G	R140K; S	R262K; A	T256S; G	
D103Y; A	E188K; S	G159R; A	I3T; A	L50V; S	P230T; G	R140T; A	R262K; S	T285A; S	
D103Y; S	E188Q; A	G177C; A	I54L; S	L53I; S	P234F; S	R140T; A	R262K; S	T285I; G	
D108N; S	E188V; S	G177C; S	I64M; A	L53P; A	P234R; G	R140T; A	R265G; G	T285I; S	
D108N; S	E188V; S	G177D; S	I64T; G	L53P; S	P234S; S	R140T; G	R265I; S	T285P; A	
D122E; A	E205K; S	G177D; S	I64V; G	L53P; S	P234T; S	R140T; S	R265K; S	T285S; A	
D122N; S	E205Q; A	G177D; S	I65M; G	L53R; A	P235L; A	R140T; S	R265K; S	T290A; A	
D122N; S	E205Q; S	G177D; S	I8K; G	L88F; S	P235L; S	R140T; S	R265K; S	T290A; G	
D122Y; A	E205Q; S	G177S; A	I8K; G	L88F; S	P235S; A	R140T; S	R265T; G	T290A; G	
D122Y; S	E205Q; S	G177S; G	I8V; G	L92H; G	P235S; A	R186G; G	R265T; S	T290A; S	
D145E; S	E217K; A	G177S; S	I8V; G	L92H; S	P235S; S	R186K; S	R265T; S	T37A; S	
D145H; A	E217K; A	G177S; S	K105Q; A	L94Q; S	P235S; S	R186T; S	R2G; A	T37K; G	
D145N; A	E217K; G	G177V; S	K105Q; G	M10I; S	P24A; A	R198G; A	R2K; G	V111L; S	
D145Y; A	E217K; S	G245A; G	K105Q; G	M10I; S	P24S; A	R198K; S	R2M; A	V128L; S	
D145Y; G	E217Q; A	G245E; A	K105Q; G	M10I; S	P24S; A	R198K; S	R2M; S	V130L; G	
D145Y; G	E217Q; G	G245E; A	K124N; A	M10T; S	P24S; G	R198T; S	R2W; S	V143A; A	
D171G; A	E217Q; G	G245E; S	K129N; G	M10V; A	P24S; G	R212I; A	R82I; S	V143A; G	
D171G; A	E217Q; S	G245E; S	K129N; G	M115L; S	P24S; S	R212K; S	R82K; S	V143F; S	
D171N; G	E217Q; S	G245E; S	K129N; G	M115T; G	P24S; S	R212K; S	R86Q; G	V143I; A	

Supplemental Table 2 Prevalence of *CD274* Mutations for each Diagnosis (only total n >100 is shown)

Diagnosis	Prevalence	N	Total
lung adenocarcinoma	0.31%	110	35968
colon adenocarcinoma (crc)	0.51%	150	29129
breast carcinoma (nos)	0.27%	46	16854
pancreas ductal adenocarcinoma	0.19%	24	12959
breast invasive ductal carcinoma (idc)	0.36%	39	10720
prostate acinar adenocarcinoma	0.26%	26	10079
lung squamous cell carcinoma (scc)	0.27%	27	9825
ovary serous carcinoma	0.16%	15	9313
lung non-small cell lung carcinoma (nsclc) (nos)	0.39%	32	8103
unknown primary adenocarcinoma	0.21%	16	7742
brain glioblastoma (gbm)	0.38%	24	6238
rectum adenocarcinoma (crc)	0.34%	20	5819
liver cholangiocarcinoma	0.13%	7	5421
bladder urothelial (transitional cell) carcinoma	0.52%	26	5038
esophagus adenocarcinoma	0.17%	8	4605
stomach adenocarcinoma (nos)	0.32%	14	4310
head and neck squamous cell carcinoma (hnscc)	0.39%	16	4071
unknown primary carcinoma (cup) (nos)	0.15%	6	4128
skin melanoma	0.83%	32	3874
unknown primary melanoma	0.90%	33	3679
uterus endometrial adenocarcinoma (nos)	0.99%	36	3640
myelodysplastic syndrome (mds) (nos)	0.03%	1	3364
ovary epithelial carcinoma	0.34%	10	2970
lung small cell undifferentiated carcinoma	0.44%	13	2935
multiple myeloma	0.35%	9	2606
acute myeloid leukemia (aml) (nos)	0.08%	2	2600
pancreatobiliary carcinoma	0.28%	7	2484
uterus endometrial adenocarcinoma endometrioid	0.72%	17	2348
soft tissue sarcoma (nos)	0.27%	6	2226
uterus endometrial adenocarcinoma papillary serous	0.46%	10	2155
ovary high grade serous carcinoma	0.05%	1	2103
kidney renal cell carcinoma	0.16%	3	1897
pancreas carcinoma (nos)	0.23%	4	1776

unknown primary squamous cell carcinoma (scc)	0.81%	14	1733
gallbladder adenocarcinoma	0.30%	5	1685
gastroesophageal junction adenocarcinoma	0.18%	3	1652
breast invasive lobular carcinoma (ilc)	0.57%	9	1591
kidney clear cell carcinoma	0.13%	2	1595
unknown primary undifferentiated neuroendocrine carcinoma	0.20%	3	1512
liver hepatocellular carcinoma (hcc)	0.52%	8	1537
fallopian tube serous carcinoma	0.13%	2	1512
myeloproliferative neoplasm (mpn) (nos)	0.13%	2	1533
cervix squamous cell carcinoma (scc)	0.49%	7	1443
soft tissue leiomyosarcoma	0.00%	0	1355
uterus carcinosarcoma	0.43%	6	1397
appendix adenocarcinoma	0.26%	3	1165
unknown primary (nos)	0.44%	5	1129
esophagus squamous cell carcinoma (scc)	0.25%	3	1194
soft tissue liposarcoma	0.00%	0	1148
thyroid papillary carcinoma	0.38%	4	1061
pleura mesothelioma	0.11%	1	913
diffuse large b-cell lymphoma (dlbcl) (nos)	1.91%	19	997
uterus leiomyosarcoma	0.20%	2	978
lung large cell neuroendocrine carcinoma	0.33%	3	920
brain glioma (nos)	0.11%	1	897
ovary clear cell carcinoma	0.11%	1	929
brain anaplastic astrocytoma	0.00%	0	849
skin squamous cell carcinoma (scc)	1.61%	14	868
anus squamous cell carcinoma (scc)	0.23%	2	870
peritoneum serous carcinoma	0.12%	1	860
brain meningioma	0.12%	1	859
pancreas islet cell tumor	0.12%	1	820
brain astrocytoma	0.40%	3	747
cervix adenocarcinoma	0.39%	3	773
bile duct adenocarcinoma	0.13%	1	763
kidney urothelial carcinoma	0.41%	3	733
small intestine adenocarcinoma	0.94%	7	747
unknown primary urothelial carcinoma	0.26%	2	758
bone osteosarcoma	0.00%	0	703
duodenum adenocarcinoma	0.74%	5	679

acute b-lymphoblastic leukemia-lymphoma (b-all)	0.00%	0	714
chronic lymphocytic leukemia/small lymphocytic lymphoma (cll/sll)	0.00%	0	658
unknown primary gist	0.00%	0	628
ovary endometrioid adenocarcinoma	0.00%	0	594
acute lymphoblastic leukemia-lymphoma (all) (nos)	0.51%	3	592
ovary carcinosarcoma	0.36%	2	561
unknown primary serous carcinoma	0.17%	1	579
adrenal gland cortical carcinoma	0.00%	0	511
brain oligodendroglioma	0.82%	4	489
ampullary adenocarcinoma	0.36%	2	562
thyroid carcinoma (nos)	0.19%	1	527
thyroid anaplastic carcinoma	0.41%	2	492
head and neck adenoid cystic carcinoma	0.23%	1	432
stomach gist	0.00%	0	473
neuroblastoma	0.00%	0	427
ovary granulosa cell tumor	0.23%	1	441
vulva squamous cell carcinoma (scc)	0.22%	1	458
skin merkel cell carcinoma	1.44%	6	417
soft tissue synovial sarcoma	0.47%	2	427
salivary gland carcinoma (nos)	0.48%	2	416
lung adenosquamous carcinoma	0.70%	3	431
salivary gland adenoid cystic carcinoma	0.25%	1	403
soft tissue ewing sarcoma	0.00%	0	414
soft tissue angiosarcoma	0.73%	3	413
lung sarcomatoid carcinoma	0.25%	1	408
ureter urothelial carcinoma	0.00%	0	412
soft tissue sarcoma undifferentiated	0.77%	3	392
unknown primary neuroendocrine tumor	0.48%	2	421
colon neuroendocrine carcinoma	0.55%	2	366
unknown primary undifferentiated small cell carcinoma	0.26%	1	385
stomach adenocarcinoma diffuse type	0.90%	3	333
prostate neuroendocrine carcinoma	0.26%	1	379
breast metaplastic carcinoma	0.56%	2	356
thymus carcinoma	0.00%	0	335
kidney renal papillary carcinoma	0.00%	0	352
brain astrocytoma pilocytic	0.00%	0	383

uterus endometrial adenocarcinoma clear cell	0.54%	2	373
acute leukemia (nos)	0.00%	0	377
soft tissue malignant peripheral nerve sheath tumor (mpnst)	0.86%	3	349
eye intraocular melanoma	0.00%	0	326
salivary gland adenocarcinoma	0.33%	1	305
brain medulloblastoma	0.00%	0	323
peritoneum mesothelioma	0.00%	0	302
follicular lymphoma	2.42%	8	330
thyroid medullary carcinoma	0.00%	0	326
bladder carcinoma (nos)	0.00%	0	316
esophagus carcinoma (nos)	0.00%	0	316
small intestine gist	0.00%	0	287
myelodysplastic-myeloproliferative neoplasm (mds-mpn) (nos)	0.00%	0	308
rhabdomyosarcoma (nos)	0.00%	0	278
soft tissue fibromatosis	0.37%	1	272
uterus endometrial stromal sarcoma	0.00%	0	283
soft tissue chondrosarcoma	0.36%	1	281
brain ependymoma	0.00%	0	266
thymus thymoma (nos)	0.40%	1	252
mantle cell lymphoma	0.00%	0	272
t-cell neoplasm (nos)	0.78%	2	257
skin basal cell carcinoma	2.55%	6	235
b-cell neoplasm (nos)	1.26%	3	238
bone chondrosarcoma	0.00%	0	225
penis squamous cell carcinoma (scc)	0.00%	0	232
soft tissue myxofibrosarcoma	0.41%	1	241
prostate undifferentiated carcinoma	0.44%	1	228
bladder adenocarcinoma	0.47%	1	211
nasopharynx and paranasal sinuses undifferentiated carcinoma	0.50%	1	202
unknown primary leiomyosarcoma	0.44%	1	229
acute t-lymphoblastic leukemia-lymphoma (t-all)	0.00%	0	229
bone chordoma	0.00%	0	200
lung large cell carcinoma	0.48%	1	210
thyroid follicular carcinoma	0.00%	0	205
lung atypical carcinoid	0.00%	0	192
uterus sarcoma (nos)	1.40%	3	215
skin adnexal carcinoma	3.03%	6	198
soft tissue solitary fibrous tumor	0.00%	0	197

appendix mucinous neoplasm	0.50%	1	200
ovary mucinous carcinoma	0.00%	0	190
adrenal gland neuroblastoma	0.00%	0	169
chronic myelogenous leukemia (cml)	0.00%	0	205
appendix goblet cell carcinoid (gcc)	0.53%	1	190
unknown primary adenoid cystic carcinoma	0.54%	1	185
unknown primary sarcomatoid carcinoma	1.08%	2	186
salivary gland duct carcinoma	0.55%	1	183
ovary carcinoma mixed histology	0.00%	0	189
salivary gland acinic cell tumor	0.00%	0	159
uterus endometrial adenocarcinoma mixed histology	1.07%	2	187
testis germ cell tumor (non-seminoma)	0.60%	1	168
bladder squamous cell carcinoma (scc)	1.16%	2	173
kidney carcinoma (nos)	0.66%	1	151
pancreas acinar cell carcinoma	0.00%	0	171
unknown primary carcinoid	0.00%	0	155
head and neck melanoma	0.63%	1	160
vagina squamous cell carcinoma (scc)	0.63%	1	158
nasopharynx and paranasal sinuses squamous cell carcinoma (scc)	0.00%	0	154
small intestine neuroendocrine carcinoma	0.00%	0	157
kidney sarcomatoid carcinoma	0.70%	1	142
head and neck carcinoma (nos)	0.00%	0	141
stomach adenocarcinoma intestinal type	0.78%	1	129
soft tissue desmoplastic small round cell tumor	1.43%	2	140
anus melanoma	0.00%	0	145
prostate ductal adenocarcinoma	0.00%	0	144
kidney wilms tumor	0.71%	1	141
rectum squamous cell carcinoma (scc)	0.00%	0	136
fallopian tube adenocarcinoma	0.00%	0	133
bone marrow failure (nos)	0.00%	0	143
ovary low grade serous carcinoma	0.00%	0	143
soft tissue fibrosarcoma	0.00%	0	123
small intestine carcinoid	0.00%	0	126
lung adenoid cystic carcinoma	0.00%	0	119

soft tissue rhabdomyosarcoma alveolar	0.00%	0	130
paraganglioma	0.00%	0	119
soft tissue rhabdomyosarcoma embryonal	0.00%	0	118
cervix neuroendocrine carcinoma	0.00%	0	113
salivary gland mucoepidermoid carcinoma	0.00%	0	115
peritoneum adenocarcinoma	0.00%	0	113
brain gliosarcoma	0.83%	1	120
breast angiosarcoma	0.85%	1	117
langerhans cell histiocytosis (lch)	0.00%	0	118
brain anaplastic oligodendroglioma	0.85%	1	117
non-hodgkin lymphoma (nos)	0.92%	1	109
brain ganglioglioma	0.00%	0	106
bladder small cell carcinoma	0.00%	0	106
esophagus neuroendocrine carcinoma	0.00%	0	104
lymphoplasmacytic lymphoma-waldenstroms macroglobulinemia	0.00%	0	105

Supplemental Table 3 Age, Sex, Diagnosis and PD-L1 tumor cell expression of *CD274* Mutations

Case ID	Genomic Alteration	PD-L1 TPS	Diagnosis	Age	Sex
Missense Mutations					
1	A109V	5	pancreas ductal adenocarcinoma	63	male
2	A157S	0	unknown primary adenocarcinoma	67	female
3	A163V	5	soft tissue angiosarcoma	75	male
4	A18S	0	colon adenocarcinoma	63	male
5	A18T	0	lung adenocarcinoma	72	female
6	A18T	1	unknown primary carcinoma	34	female
7	A222V	60	bile duct adenocarcinoma	76	male
8	A232S	0	prostate acinar adenocarcinoma	74	male
9	A254G	1	ovary serous carcinoma	74	female
10	A85S	0	liver hepatocellular carcinoma	56	male
11	A85V	0	uterus endometrial adenocarcinoma endometrioid	63	female
12	A97V	0	skin squamous cell carcinoma	58	male
13	C209S	100	lung adenocarcinoma	67	male
14	C272Y	0	colon adenocarcinoma	58	female
15	D122N	30	uterus endometrial adenocarcinoma mixed histology	54	female
16	D145Y	0	thyroid anaplastic carcinoma	70	male
17	D171G	0	rectum adenocarcinoma	34	male
18	D171N	0	head and neck squamous cell carcinoma	54	female
19	D215H	0	colon adenocarcinoma	68	female
20	D215H	0	pancreas adenosquamous carcinoma	71	male
21	D276E	0	ovary serous carcinoma	80	female
22	D284N	5	skin melanoma	71	female
23	D61Y	1	liver hepatocellular carcinoma	59	female

24	E187D	25	unknown primary squamous cell carcinoma	82	male
25	E187D	0	uterus endometrial adenocarcinoma endometrioid	57	female
26	E187Q	1	lung adenocarcinoma	55	female
27	E187V	0	lung adenocarcinoma	55	male
28	E188Q	5	lung adenocarcinoma	62	female
29	E205Q	50	unknown primary adenocarcinoma	81	male
30	E217K	0	pancreas ductal adenocarcinoma	85	male
31	E217Q	0	lung squamous cell carcinoma	66	female
32	E218K	60	lung adenocarcinoma	57	female
33	E223K	90	lung adenocarcinoma	72	female
34	E223K	20	lung adenocarcinoma	71	female
35	E223K	30	unknown primary squamous cell carcinoma	70	female
36	E228G	0	colon adenocarcinoma	40	female
37	E228V	0	colon adenocarcinoma	60	male
38	E237K	50	lung adenocarcinoma	60	male
39	E237K	0	breast invasive ductal carcinoma	34	female
40	E58K	50	skin melanoma	69	male
41	E71Q	0	lung adenocarcinoma	61	male
42	F211C	0	colon adenocarcinoma	74	female
43	F257L	0	uterus endometrial adenocarcinoma mixed histology	53	female
44	F9L	1	uterus endometrial adenocarcinoma	57	female
45	G110E	0	colon adenocarcinoma	66	male
46	G177D	0	colon adenocarcinoma	76	female
47	G177S	0	skin melanoma	72	male
48	G177V	0	duodenum adenocarcinoma	53	male
49	G245V	0	uterus endometrial adenocarcinoma papillary serous	54	female
50	G252S	0	lung non-small cell lung carcinoma	66	male
51	G264W	0	colon adenocarcinoma	44	male
52	H14Y	0	lung adenocarcinoma	70	female

53	H151L	0	colon adenocarcinoma	63	male
54	H172Y	0	lung adenocarcinoma	75	male
55	H220Y	0	skin melanoma	54	female
56	H220Y	0	fallopian tube carcinosarcoma	62	female
57	H233Y	0	unknown primary neuroendocrine tumor	62	female
58	H78R	1	lung adenocarcinoma	75	male
59	I126S	0	colon adenocarcinoma	41	female
60	I166L	1	lung squamous cell carcinoma	83	male
61	I199V	5	lung adenocarcinoma	62	male
62	I206M	50	uterus endometrial adenocarcinoma	41	female
63	I243T	0	colon adenocarcinoma	49	female
64	I258V	70	unknown primary carcinoma	61	female
65	I38M	70	breast carcinoma	66	female
66	I64T	90	lung adenocarcinoma	54	female
67	I8K	0	lung adenocarcinoma	76	male
68	K105Q	100	lung adenocarcinoma	85	male
69	K105Q	50	breast carcinoma	66	female
70	K105Q	0	unknown primary undifferentiated small cell carcinoma	71	male
71	K162Q	1	head and neck squamous cell carcinoma	80	male
72	K178E	0	salivary gland adenoid cystic carcinoma	58	female
73	K25N	0	uterus endometrial adenocarcinoma	62	female
74	K280N	0	uterus papillary serous carcinosarcoma	57	female
75	K280N	0	lung adenocarcinoma	63	male
76	K75T	90	lung adenocarcinoma	67	male
77	L142F	0	lung adenocarcinoma	85	male
78	L190V	0	lung small cell undifferentiated carcinoma	56	female
79	L197P	10	colon adenocarcinoma	55	female
80	L50V	1	colon adenocarcinoma	84	male
81	L92H	20	lung squamous cell carcinoma	65	male

82	M1I	5	lung squamous cell carcinoma	60	female
83	M1I	0	lung squamous cell carcinoma	76	female
84	M266I	10	lung squamous cell carcinoma	54	male
85	M267I	50	unknown primary melanoma	77	male
86	M59I	0	colon adenocarcinoma	74	female
87	M59I	0	uterus endometrial adenocarcinoma	68	female
88	N135S	0	breast carcinoma	31	female
89	N135S	0	lung adenosquamous carcinoma	72	female
90	N183S	0	skin basal cell carcinoma	65	female
91	N183S	0	skin melanoma	69	male
92	N200D	0	prostate acinar adenocarcinoma	75	male
93	N96S	0	uterus endometrial adenocarcinoma endometrioid	58	female
94	N96Y	0	anus squamous cell carcinoma	70	male
95	P133S	0	prostate acinar adenocarcinoma	64	male
96	P146S	0	skin melanoma	80	female
97	P216H	2	skin merkel cell carcinoma	72	male
98	P216S	50	skin melanoma	77	male
99	P230S	5	lung adenocarcinoma	63	male
100	P234R	50	lung adenocarcinoma	71	male
101	P235L	30	soft tissue angiosarcoma	76	male
102	P24A	60	thyroid carcinoma	81	male
103	P24S	0	soft tissue sarcoma	64	male
104	P43A	1	breast invasive ductal carcinoma	39	female
105	P43L	10	skin melanoma	64	male
106	P43Q	1	bladder adenocarcinoma	60	male
107	Q100R	0	uterus endometrial adenocarcinoma	60	female
108	Q107K	0	prostate acinar adenocarcinoma	81	male
109	Q107K	50	pancreas ductal adenocarcinoma	75	male

110	Q156H	0	uterus endometrial adenocarcinoma	55	female
111	Q156K	90	lung non-small cell lung carcinoma	60	male
112	Q173E	0	uterus endometrial adenocarcinoma papillary serous	61	female
113	Q173H	0	colon adenocarcinoma	56	female
114	Q275R	0	lung non-small cell lung carcinoma	61	female
115	Q83H	0	lung adenocarcinoma	82	male
116	Q83H	0	fallopian tube serous carcinoma	71	female
117	Q83H	1	lung small cell undifferentiated carcinoma	80	male
118	R113H	0	colon adenocarcinoma	74	male
119	R113H	0	colon adenocarcinoma (crc)	68	female
120	R125Q	0	colon adenocarcinoma (crc)	55	male
121	R125Q	0	skin squamous cell carcinoma (scc)	71	female
122	R125Q	0	rectum adenocarcinoma (crc)	49	male
123	R125Q	1	skin melanoma	89	male
124	R140I	0	colon adenocarcinoma (crc)	45	male
125	R140I	0	colon adenocarcinoma (crc)	26	female
126	R140T	99	lung non-small cell lung carcinoma (nsclc) (nos)	58	female
127	R140T	5	lung adenocarcinoma	65	female
128	R186T	60	lung adenocarcinoma	69	male
129	R198K	80	lung adenocarcinoma	75	female
130	R198T	0	lung adenocarcinoma	71	female
131	R212K	0	prostate acinar adenocarcinoma	79	male
132	R260C	0	prostate acinar adenocarcinoma	82	male
133	R260H	0	colon adenocarcinoma	76	female
134	R260H	0	prostate acinar adenocarcinoma	56	male
135	R260H	0	lung adenocarcinoma	68	male
136	R260H	0	colon adenocarcinoma	55	male

137	R260H	1	ampullary adenocarcinoma	49	male
138	R260H	1	brain glioblastoma	49	male
139	R260H	0	prostate acinar adenocarcinoma	59	male
140	R260H	0	ovary epithelial carcinoma	44	female
141	R260H	0	breast carcinoma	56	female
142	R260H	0	uterus endometrial adenocarcinoma papillary serous	63	female
143	R260H	0	rectum adenocarcinoma	89	male
144	R2M	0	lung non-small cell lung carcinoma	44	male
145	R82I	0	unknown primary carcinoma	62	male
146	R86W	0	ovary carcinosarcoma	59	female
147	R86W	0	colon adenocarcinoma	74	male
148	S195R	5	unknown primary squamous cell carcinoma	80	male
149	T148A	70	pancreas ductal adenocarcinoma	72	male
150	T180I	0	colon adenocarcinoma	75	male
151	T181I	5	lung adenocarcinoma	62	male
152	T182P	90	lung adenocarcinoma	78	female
153	T196A	0	lung squamous cell carcinoma	69	male
154	T201I	0	lung squamous cell carcinoma	78	male
155	T290A	1	gallbladder adenocarcinoma	67	female
156	T37A	0	colon adenocarcinoma	57	male
157	T37K	5	fallopian tube serous carcinoma	68	female
158	V130L	0	ovary epithelial carcinoma	76	female
159	V143A	0	lung adenocarcinoma	88	male
160	V147A	70	pancreas ductal adenocarcinoma	52	female
161	V21A	0	uterus endometrial adenocarcinoma	52	female
162	V21L	1	lung adenocarcinoma	63	male
163	V253I	0	pancreas ductal adenocarcinoma	77	male

164	V30A	0	breast metaplastic carcinoma	46	female
165	V6I	1	unknown primary sarcoma	53	male
166	V6I	0	vagina squamous cell carcinoma	65	female
167	V76F	0	lung adenocarcinoma	52	female
168	W13C	50	lung large cell carcinoma	73	female
169	W57G	0	pancreas ductal adenocarcinoma	65	male
170	Y112C	0	duodenum adenocarcinoma	54	male
171	Y134C	0	lung adenocarcinoma	52	male
172	Y160H	99	kidney sarcomatoid carcinoma	48	female
173	Y160H	0	pancreas ductal adenocarcinoma	48	female
174	Y28S	0	skin melanoma	75	male
175	Y32C	10	lung squamous cell carcinoma	75	male
176	Y81H	0	prostate acinar adenocarcinoma	76	male
Truncations					
177	*291Yext*42	0	colon adenocarcinoma	29	male
178	C272fs*13	0	uterus endometrial adenocarcinoma	68	female
179	C272fs*13	0	ovary serous carcinoma	50	female
180	D90fs*10	0	prostate acinar adenocarcinoma	73	male
181	E150*	80	lung adenocarcinoma	72	female
182	E152*	0	uterus endometrial adenocarcinoma endometrioid	62	female
183	E152*	1	diffuse large b-cell lymphoma	87	female
184	E188fs*12	0	ovary epithelial carcinoma	69	female
185	E217*	20	lung non-small cell lung carcinoma	58	female
186	F7fs*27	0	colon adenocarcinoma	71	female
187	K271fs*44	1	uterus endometrial adenocarcinoma	50	female
188	K271fs*44	0	skin adnexal carcinoma	46	male
189	K41*	0	colon adenocarcinoma	45	female
190	P133fs*21	0	lung adenocarcinoma	71	male
191	Q107*	0	ovary serous carcinoma	72	female

192	Q66fs*13	70	lung adenosquamous carcinoma	84	male
193	Q77*	0	lung adenocarcinoma	60	female
194	R125*	5	uterus endometrial adenocarcinoma endometrioid	80	female
195	R125*	0	brain glioblastoma	18	female
196	R125*	0	prostate undifferentiated carcinoma	82	male
197	R265fs*2	0	prostate acinar adenocarcinoma	64	male
198	S279*	5	lung squamous cell carcinoma	72	female
199	Y134*	0	pancreas ductal adenocarcinoma	61	female
Splice Site Mutations					
200	splice site 53-49_82del79	70	lung adenocarcinoma	79	female
201	splice site 683-1G>A	0	colon adenocarcinoma	77	male
202	splice site 790+1_790+4delGTAG	30	rectum adenocarcinoma	76	female
203	splice site 790+1G>T	0	lung adenocarcinoma	81	male
204	splice site 791-1G>A	0	skin melanoma	65	male
205	splice site 791-1G>T	0	colon adenocarcinoma	51	female
206	splice site 791-1G>T	0	lung squamous cell carcinoma	73	male
Insertion/Deletions					
207	E31_Y32insFTVTVPKDLVVVE	0	thyroid papillary carcinoma	27	male
208	T203del	40	breast invasive ductal carcinoma	50	female
Missense Mutations with CD274 amplification					
209	E150G	99	lung adenocarcinoma	69	male
210	V242I	1	breast carcinoma	44	female
211	K25R	40	unknown primary squamous cell carcinoma	82	male
Multiple Missense Mutations					
212	I141M, F9L	0	uterus endometrial adenocarcinoma endometrioid	49	female
213	K189M, E188K	0	colon neuroendocrine carcinoma	51	male

Supplemental Table 4. SIFT converted rankscore, MutationTaster converted rankscore, fathmm-MKL coding rankscore, and MetaSVM rankscore for *CD274* missense mutations.

Missense Mutation	SIFT converted rankscore	MutationTaster converted rankscore	fathmm-MKL coding rankscore	MetaSVM rankscore
Y112C	0.91255	0.81001	0.76812	0.98514
W57G	0.72154	0.81001	0.73721	0.97448
W57S	0.72154	0.81001	0.8128	0.97206
D108N	0.91255	0.81001	0.76804	0.95276
L197R	0.91255	0.3084	0.37232	0.93982
S195R	0.91255	0.52396	0.56437	0.93462
L197P	0.91255	0.52935	0.35894	0.93462
S195I	0.91255	0.53665	0.57529	0.93317
S195N	0.91255	0.49394	0.55559	0.93317
G33C	0.91255	0.81001	0.77901	0.92711
G159R	0.91255	0.58761	0.57613	0.92475
G159C	0.91255	0.58761	0.56798	0.92475
L190R	0.91255	0.49283	0.51634	0.91321
Q156E	0.68238	0.36075	0.39841	0.91069
Q156K	0.68238	0.37557	0.40233	0.90642
A163V	0.91255	0.4977	0.49944	0.90143
V165A	0.72154	0.49283	0.49098	0.90102
E150G	0.7849	0.47904	0.53381	0.90102
T194A	0.65419	0.43243	0.55584	0.90026
V193M	0.7849	0.46249	0.46499	0.89995
T202I	0.24183	0.3397	0.28723	0.88977
E150K	0.46129	0.46733	0.3828	0.87947
E158V	0.65419	0.43214	0.45412	0.87733
N192I	0.68238	0.4367	0.422	0.87567
V165L	0.65419	0.4977	0.57613	0.87208
N200D	0.31088	0.41047	0.45378	0.86989
E158Q	0.51853	0.41402	0.49575	0.86669
L190V	0.65419	0.3075	0.3095	0.86503
Q156H	0.7849	0.38482	0.40744	0.85799
E164Q	0.61437	0.36795	0.50767	0.85181
H172P	0.54683	0.44019	0.32732	0.85053
V21A	0.72154	0.81001	0.61888	0.8488
L92H	0.91255	0.81001	0.58419	0.84686
E158G	0.63226	0.41837	0.46238	0.84675
L190I	0.61437	0.29766	0.30845	0.84648
N200S	0.36509	0.4129	0.47062	0.84386
E158K	0.26852	0.44492	0.44365	0.84263

I166V	0.31383	0.34922	0.469	0.84231
K25M	0.7849	0.81001	0.70389	0.84074
F67C	0.72154	0.81001	0.5832	0.83603
E164A	0.63226	0.38848	0.40015	0.83084
N35H	0.72154	0.81001	0.76619	0.82903
A109V	0.61437	0.81001	0.56674	0.82739
E152Q	0.53172	0.36172	0.41133	0.82641
I166L	0.20002	0.3662	0.47041	0.82087
L190F	0.33254	0.34078	0.26703	0.8005
A132V	0.91255	0.53665	0.43883	0.7992
A132D	0.91255	0.58761	0.48778	0.7992
T202R	0.02847	0.36155	0.27255	0.79553
C209S	0.91255	0.58761	0.51349	0.79147
C209Y	0.91255	0.81001	0.50542	0.78749
C209F	0.91255	0.81001	0.53306	0.78749
V23F	0.72154	0.81001	0.52807	0.78644
T154S	0.539	0.22369	0.46945	0.78626
D90Y	0.72154	0.81001	0.574	0.77905
Y118F	0.91255	0.81001	0.61025	0.77885
T102I	0.49613	0.81001	0.22685	0.77714
T179I	0.46129	0.21134	0.35026	0.77294
I64T	0.10482	0.81001	0.61815	0.77045
Y134C	0.91255	0.45228	0.58976	0.76448
G119V	0.72154	0.81001	0.51883	0.76156
Y56C	0.37536	0.81001	0.34772	0.75975
A18T	0.91255	0.58761	0.64259	0.75706
Y32C	0.63226	0.81001	0.28603	0.7479
N204I	0.68238	0.08975	0.21934	0.74595
A97T	0.68238	0.21331	0.333	0.74492
S184P	0.61437	0.08975	0.21092	0.74052
E39Q	0.91255	0.81001	0.78815	0.74012
I206M	0.33923	0.29246	0.35983	0.73988
N35K	0.56456	0.81001	0.50828	0.73777
Y208C	0.3631	0.36012	0.347	0.73765
A97V	0.72154	0.44295	0.41085	0.73478
F67I	0.45756	0.37165	0.25589	0.73389
S184F	0.7849	0.08975	0.16884	0.73305
I64M	0.56456	0.40254	0.36355	0.73132
G119S	0.58626	0.81001	0.65144	0.7304
E187V	0.41637	0.08975	0.18105	0.72231
E39K	0.91255	0.81001	0.75311	0.7215
D26Y	0.72154	0.81001	0.33467	0.72093
K25N	0.68238	0.81001	0.4724	0.72068

C114Y	0.91255	0.81001	0.76804	0.71932
S176G	0.72154	0.08975	0.35923	0.71885
T201I	0.38185	0.20249	0.22446	0.7119
K25R	0.50676	0.81001	0.6962	0.70424
E218K	0.51248	0.08975	0.31936	0.70377
L16P	0.7849	0.58761	0.69832	0.70184
T182P	0.58626	0.08975	0.22183	0.70044
N138H	0.68238	0.34504	0.44203	0.69519
Y81H	0.13131	0.81001	0.45676	0.69476
R198K	0.42487	0.18878	0.21852	0.69403
Q173H	0.59928	0.08975	0.18168	0.69165
V21L	0.56456	0.4211	0.21458	0.69165
N204K	0.34444	0.08975	0.16465	0.68772
G119D	0.53172	0.81001	0.42135	0.68686
D26G	0.61437	0.81001	0.41215	0.68553
Q91H	0.68238	0.81001	0.39276	0.68225
R198G	0.42783	0.20581	0.23393	0.67903
P43L	0.61437	0.81001	0.5397	0.67598
T154I	0.24468	0.19486	0.15485	0.67349
E187K	0.26965	0.08975	0.14993	0.67001
R198T	0.25154	0.20372	0.22225	0.66874
T210S	0.46129	0.26469	0.33782	0.66503
E205Q	0.45039	0.20412	0.33325	0.65967
A18S	0.91255	0.81001	0.55559	0.65943
H78Y	0.68238	0.81001	0.33507	0.65791
D73H	0.539	0.81001	0.55123	0.65312
D90A	0.5748	0.81001	0.52663	0.65004
R212T	0.2708	0.08975	0.2651	0.64718
P133L	0.72154	0.58761	0.53491	0.64714
E288Q	0.91255	0.32163	0.44924	0.64449
A157S	0.16793	0.39959	0.32222	0.64005
V68M	0.42783	0.27403	0.29081	0.63798
P146S	0.5748	0.35854	0.32338	0.63723
L27I	0.49117	0.20152	0.16223	0.63418
P43A	0.46129	0.81001	0.6514	0.63018
E187Q	0.21385	0.08975	0.16164	0.62797
Q139E	0.28148	0.38806	0.41654	0.62749
H172Y	0.20306	0.39164	0.23517	0.62072
T196A	0.289	0.21485	0.30015	0.61792
V29G	0.7849	0.20412	0.1676	0.61652
A121V	0.42199	0.81001	0.5515	0.61446
D49G	0.39334	0.81001	0.65108	0.61127
V174G	0.31682	0.19853	0.29306	0.61099

Q139R	0.21968	0.39776	0.40319	0.60875
L50M	0.5553	0.20516	0.11707	0.60467
T181A	0.45756	0.08975	0.14038	0.60333
P24A	0.52492	0.38957	0.19405	0.60251
T221A	0.5748	0.48141	0.3933	0.59732
E288G	0.91255	0.33681	0.30135	0.59468
D145H	0.65419	0.40063	0.42964	0.59434
D145Y	0.72154	0.41509	0.41729	0.59399
E218Q	0.38185	0.08975	0.34476	0.59319
E58K	0.539	0.81001	0.52151	0.59279
E288K	0.91255	0.35257	0.42853	0.59224
N131H	0.24857	0.81001	0.18617	0.59164
L106F	0.59928	0.23188	0.10071	0.59064
T20A	0.63226	0.58761	0.40822	0.58974
V174F	0.42199	0.08975	0.19268	0.58442
N219I	0.37536	0.43096	0.54591	0.5836
I65M	0.539	0.27357	0.25504	0.58319
H172Q	0.33753	0.30657	0.16442	0.57998
E31G	0.65419	0.19072	0.35209	0.57731
I206T	0.21884	0.2802	0.23357	0.5753
E217Q	0.14303	0.08975	0.15236	0.5746
I141M	0.56456	0.33601	0.35108	0.57248
E289D	0.91255	0.31514	0.38662	0.57237
D215Y	0.46129	0.08975	0.22437	0.57055
E31K	0.56456	0.20864	0.32541	0.57044
S279L	0.72154	0.32987	0.22504	0.56847
L16R	0.91255	0.33651	0.71196	0.56714
V174A	0.14159	0.08975	0.28506	0.56698
G110E	0.91255	0.81001	0.75973	0.56675
G110R	0.91255	0.81001	0.75959	0.56675
D26N	0.59928	0.81001	0.35268	0.56537
E217K	0.09182	0.08975	0.1483	0.56161
D171G	0.36709	0.33535	0.3359	0.55583
V174D	0.23905	0.19486	0.25602	0.5545
K162N	0.21884	0.18198	0.18372	0.55409
N131S	0.39097	0.81001	0.2579	0.55292
G177V	0.15665	0.21894	0.28952	0.55139
E187D	0.1361	0.08975	0.16852	0.55127
V23I	0.32296	0.81001	0.47677	0.54968
Q66E	0.13744	0.44734	0.24965	0.54748
M59I	0.37536	0.81001	0.25374	0.54695
P146L	0.72154	0.49076	0.32645	0.54532
I38M	0.00964	0.81001	0.19299	0.54368

H78R	0.63226	0.81001	0.53096	0.54325
R125Q	0.11623	0.81001	0.37061	0.54003
D145E	0.61437	0.31128	0.34983	0.53726
N35D	0.59928	0.81001	0.75557	0.53695
M1I	0.91255	0.27177	0.65428	0.53448
N138K	0.43085	0.38345	0.40951	0.53448
H151R	0.12714	0.22212	0.19243	0.53371
V76F	0.33418	0.08975	0.14888	0.53211
S79N	0.39575	0.08975	0.19229	0.52726
I226L	0.21801	0.47961	0.45451	0.52372
G177D	0.1292	0.08975	0.27107	0.52263
Q173E	0.23905	0.21372	0.18337	0.51885
K189Q	0.13392	0.08975	0.25465	0.51505
R125L	0.18184	0.81001	0.39104	0.50783
N131I	0.4691	0.81001	0.25526	0.50732
A85V	0.21718	0.08975	0.26454	0.50567
D73N	0.29688	0.81001	0.53015	0.50234
G177S	0.06482	0.08975	0.28068	0.50166
E205K	0.22312	0.21765	0.3202	0.5015
R82I	0.24857	0.08975	0.17431	0.50143
P43Q	0.37966	0.81001	0.56022	0.5009
V68A	0.21144	0.25703	0.27508	0.50052
K46R	0.08865	0.08975	0.10069	0.49919
T203S	0.27544	0.20482	0.23582	0.49722
S80R	0.29029	0.41361	0.33018	0.49561
R212K	0.02625	0.08975	0.22602	0.49497
N183H	0.00964	0.08975	0.15061	0.49147
N131K	0.00964	0.81001	0.17099	0.49113
T290A	0.91255	0.29346	0.45769	0.48775
V29M	0.21224	0.08975	0.16666	0.48677
I126L	0.11844	0.81001	0.70654	0.48632
N183D	0.3775	0.08975	0.14575	0.48549
E45Q	0.08969	0.08975	0.15228	0.48512
E45K	0.04482	0.08975	0.11567	0.48465
R140I	0.5748	0.46125	0.37289	0.48455
F211I	0.91255	0.43893	0.49602	0.48455
A98V	0.07259	0.08975	0.06806	0.48418
E188D	0.16198	0.08975	0.26504	0.48155
I226M	0.59928	0.40113	0.34182	0.48074
R2G	0.91255	0.29103	0.33913	0.47942
K178E	0.17239	0.08975	0.27821	0.4776
Q107K	0.05106	0.08975	0.08973	0.47717
H240P	0.63226	0.43196	0.30041	0.47572

H220Y	0.03227	0.24179	0.27594	0.47561
V68E	0.42783	0.26172	0.25397	0.47085
H220D	0.20078	0.25492	0.2888	0.46977
D215H	0.24468	0.08975	0.22254	0.46854
T180I	0.32296	0.08975	0.10672	0.46719
L244P	0.36709	0.50806	0.44436	0.46556
A51S	0.03402	0.08975	0.0412	0.46338
D61E	0.07545	0.08975	0.06754	0.46325
P216H	0.06648	0.08975	0.136	0.46311
H69N	0.00964	0.08975	0.04132	0.46285
D103N	0.08762	0.81001	0.18554	0.46233
R186G	0.15406	0.08975	0.10846	0.46142
N138T	0.40319	0.34356	0.3585	0.46011
K189M	0.36709	0.08975	0.27909	0.45891
D215N	0.08609	0.08975	0.21129	0.45837
P216S	0.09543	0.08975	0.12949	0.45783
K189E	0.17701	0.08975	0.2617	0.45635
A98T	0.35349	0.08975	0.11408	0.45513
S169N	0.00964	0.22571	0.17674	0.4521
H151L	0.05046	0.2384	0.21265	0.45112
R186K	0.00964	0.08975	0.17818	0.45112
V147A	0.03471	0.24617	0.20075	0.45084
R213K	0.24955	0.08975	0.26111	0.44829
K129N	0.68238	0.81001	0.44422	0.44702
E188Q	0.47745	0.08975	0.33403	0.44702
P216L	0.03903	0.08975	0.09415	0.44673
N219T	0.22138	0.40826	0.55324	0.44415
Q91E	0.23271	0.81001	0.4067	0.44212
R113S	0.13566	0.81001	0.25909	0.44168
K185E	0.1909	0.08975	0.1239	0.44051
L16M	0.72154	0.27094	0.48981	0.44051
F211L	0.91255	0.44098	0.48091	0.43859
N96S	0.52492	0.08975	0.19685	0.43103
R186T	0.08188	0.08975	0.17635	0.42584
E188V	0.72154	0.08975	0.31269	0.42505
E188K	0.44694	0.08975	0.31261	0.42473
H69Y	0.47745	0.08975	0.10146	0.42314
L50V	0.50132	0.20516	0.14703	0.42234
M36V	0.00964	0.81001	0.13118	0.41944
T181I	0.14996	0.08975	0.07843	0.41927
A5D	0.91255	0.08975	0.05064	0.41927
L88F	0.53172	0.08975	0.2661	0.41863
E31A	0.56456	0.19072	0.3626	0.41764

R2M	0.91255	0.28273	0.40012	0.41549
V174L	0.2708	0.08975	0.20116	0.41498
A5V	0.91255	0.08975	0.052	0.4138
K162Q	0.0866	0.08975	0.14569	0.41211
E288D	0.91255	0.26787	0.32735	0.4066
K162R	0.03555	0.08975	0.21244	0.4052
M115T	0.68238	0.81001	0.46236	0.39879
K75T	0.35165	0.08975	0.14438	0.39879
K185N	0.19023	0.08975	0.15969	0.39843
G264V	0.20002	0.37168	0.09026	0.39735
R2W	0.91255	0.31263	0.40168	0.39644
Q275R	0.00964	0.08975	0.03784	0.39255
A85T	0.43085	0.08975	0.28314	0.39218
L142W	0.7849	0.20745	0.27611	0.39106
L94Q	0.40832	0.08975	0.11956	0.38664
T203I	0.08408	0.22782	0.2067	0.38527
R82K	0.24758	0.08975	0.12946	0.38488
K89N	0.36912	0.35134	0.28117	0.3833
S79G	0.42783	0.08975	0.19278	0.38092
Q83H	0.23813	0.08975	0.18148	0.37448
P227S	0.43708	0.4991	0.3454	0.3722
V128L	0.00964	0.81001	0.2444	0.3722
N63Y	0.45756	0.08975	0.09264	0.3703
H69L	0.38863	0.08975	0.23102	0.36946
E58G	0.38863	0.81001	0.56435	0.36819
D103H	0.40068	0.81001	0.25056	0.36235
I64V	0.05436	0.31138	0.20017	0.36082
P43S	0.37118	0.81001	0.55527	0.35705
H14Y	0.41637	0.22916	0.32832	0.35571
T127A	0.40319	0.81001	0.40861	0.35548
L142F	0.44694	0.19072	0.26892	0.35458
D268H	0.53172	0.41945	0.44247	0.35322
F4S	0.91255	0.08975	0.11753	0.35299
I3T	0.91255	0.26804	0.28311	0.35139
H14R	0.30097	0.25813	0.41771	0.35071
S283T	0.17353	0.08975	0.29893	0.35071
V242A	0.36709	0.08975	0.0693	0.3484
G252D	0.20002	0.08975	0.12642	0.34724
V30A	0.22053	0.18198	0.24125	0.34678
R140T	0.34982	0.30029	0.37836	0.34069
I199V	0.18184	0.22015	0.14676	0.33975
H240L	0.37536	0.43243	0.29856	0.33975
R238T	0.5748	0.41754	0.46267	0.33856

I243T	0.28026	0.08975	0.14085	0.33832
M36T	0.59928	0.81001	0.6727	0.33687
T285A	0.5553	0.08975	0.10902	0.33518
A52V	0.02906	0.08975	0.11565	0.33494
R140K	0.25873	0.26795	0.35251	0.33371
G264E	0.16738	0.08975	0.22123	0.33126
Q47R	0.10874	0.08975	0.09244	0.32978
L249V	0.26965	0.08975	0.1777	0.32928
Q47E	0.23997	0.08975	0.13134	0.32903
Q282R	0.08433	0.08975	0.20807	0.32878
M10I	0.25055	0.08975	0.06181	0.32727
E237K	0.05992	0.08975	0.04186	0.32576
I8V	0.91255	0.08975	0.10592	0.32525
P230S	0.2556	0.08975	0.07296	0.32475
G264W	0.53172	0.08975	0.12217	0.3227
T22S	0.25355	0.51308	0.34083	0.32218
E71K	0.02613	0.19925	0.0591	0.32141
V44A	0.49117	0.81001	0.6152	0.3188
M115L	0.00964	0.81001	0.23369	0.31749
V130L	0.539	0.81001	0.72164	0.31749
P227A	0.14064	0.50225	0.35188	0.31617
R262I	0.72154	0.20667	0.18867	0.31459
L248S	0.59928	0.08975	0.15422	0.31326
L251F	0.1909	0.08975	0.10923	0.31245
L255Q	0.539	0.08975	0.21105	0.31028
S149Y	0.43708	0.31492	0.18575	0.30646
T203A	0.02043	0.21509	0.1003	0.30255
T256S	0.40832	0.08975	0.11142	0.30199
A246V	0.11659	0.08975	0.17586	0.30143
L229P	0.17126	0.27379	0.02246	0.30143
D284Y	0.50132	0.81001	0.45125	0.29284
D145N	0.34982	0.36694	0.35477	0.29168
C250Y	0.33254	0.08975	0.13237	0.2908
M59T	0.28395	0.81001	0.24244	0.28577
I8K	0.91255	0.19072	0.15771	0.28577
N236H	0.2852	0.08975	0.15385	0.28126
E237Q	0.14996	0.08975	0.10679	0.28095
L255R	0.5553	0.08975	0.21287	0.28004
F259L	0.04629	0.08975	0.15967	0.27973
I243V	0.29158	0.08975	0.15161	0.27789
P227T	0.54683	0.4977	0.36344	0.27603
G252C	0.22138	0.08975	0.16616	0.27416
Q100R	0.10945	0.81001	0.38882	0.27292

M10V	0.18562	0.08975	0.13622	0.27043
A254G	0.35537	0.08975	0.15776	0.26917
D171N	0.20759	0.30711	0.33727	0.26854
D49N	0.03869	0.41327	0.23534	0.26823
I258M	0.54683	0.08975	0.18609	0.26604
V174I	0.24372	0.08975	0.17181	0.26541
R260C	0.20607	0.08975	0.00785	0.2651
G245A	0.10311	0.25222	0.2843	0.26101
I38T	0.65419	0.81001	0.66156	0.26038
R238K	0.29959	0.37769	0.44176	0.26007
K105Q	0.10447	0.81001	0.50322	0.26007
N135D	0.65419	0.19486	0.22053	0.26007
E60Q	0.16198	0.81001	0.25845	0.25943
K263E	0.45393	0.21792	0.31151	0.25912
R2K	0.91255	0.24169	0.27802	0.25688
T285S	0.49613	0.08975	0.1041	0.25688
Q83R	0.05808	0.08975	0.06683	0.25625
I54L	0.12592	0.08975	0.14111	0.25497
V242I	0.28271	0.08975	0.10331	0.25464
D284A	0.20835	0.08975	0.22773	0.25143
G245E	0.40573	0.26615	0.33294	0.25045
T285P	0.61437	0.08975	0.09477	0.24948
M10T	0.18434	0.08975	0.07133	0.24722
N236D	0.12187	0.08975	0.17464	0.24592
H69R	0.30943	0.08975	0.2277	0.24528
N135S	0.23905	0.08975	0.06293	0.24463
F9L	0.38185	0.08975	0.11763	0.24301
E228V	0.49613	0.52935	0.4191	0.24269
Y12F	0.05992	0.08975	0.25467	0.24139
I141V	0.20607	0.31207	0.31755	0.24041
G177C	0.3261	0.08975	0.3039	0.24041
V6I	0.20078	0.08975	0.04368	0.24008
Q100H	0.05152	0.81001	0.40406	0.23975
V143A	0.11478	0.18612	0.0967	0.23616
C250G	0.24564	0.08975	0.15762	0.23486
T285I	0.68238	0.08975	0.11911	0.23421
K136E	0.36912	0.25521	0.2941	0.22802
P230T	0.195	0.08975	0.12535	0.22736
D61V	0.72154	0.2191	0.248	0.22704
N183S	0.14159	0.08975	0.12917	0.22246
L241F	0.15984	0.08975	0.16174	0.22116
V253I	0.0831	0.08975	0.26357	0.2205
P24S	0.27426	0.38957	0.15688	0.21853

M267I	0.15406	0.21167	0.16709	0.21788
W13C	0.91255	0.21117	0.24426	0.21299
R260H	0.07425	0.08975	0.33842	0.21005
F211C	0.91255	0.45899	0.49535	0.21005
R265K	0.14595	0.08975	0.15012	0.20908
P235S	0.09022	0.08975	0.0905	0.20876
I3M	0.91255	0.22111	0.1523	0.20551
M267T	0.51248	0.08975	0.18426	0.20454
P133S	0.05167	0.47237	0.42281	0.2039
E223K	0.16144	0.08975	0.1467	0.20325
I274M	0.50132	0.08975	0.20931	0.20227
R113L	0.07846	0.81001	0.28813	0.20131
K280N	0.539	0.26424	0.26297	0.19937
D61N	0.41637	0.08975	0.17046	0.19777
L287V	0.30097	0.08975	0.24316	0.19618
V76I	0.10659	0.08975	0.10975	0.19554
N17D	0.36912	0.18612	0.21604	0.193
S169R	0.65419	0.2802	0.485	0.19236
L261F	0.44694	0.08975	0.13138	0.19173
V143I	0.30097	0.20048	0.2357	0.19141
A232V	0.14352	0.08975	0.03905	0.18951
T221I	0.68238	0.51968	0.4631	0.18951
H240Y	0.68238	0.40051	0.31208	0.18794
V253G	0.7849	0.21986	0.21906	0.187
D276N	0.25457	0.08975	0.19918	0.18606
A51D	0.05214	0.08975	0.05075	0.18513
P235L	0.2731	0.08975	0.10541	0.18357
P230L	0.40573	0.08975	0.09649	0.18202
P234S	0.1155	0.08975	0.13212	0.17832
A51V	0.11732	0.08975	0.04838	0.17771
A232S	0.03996	0.08975	0.12096	0.17526
R262G	0.65419	0.18612	0.18285	0.17434
I258V	0.14793	0.08975	0.11341	0.17253
F257C	0.58626	0.08975	0.18796	0.17041
M266I	0.43708	0.08975	0.19636	0.16921
N96H	0.51853	0.26267	0.20285	0.16592
K280Q	0.32929	0.23416	0.20048	0.16562
K75N	0.26965	0.08975	0.12792	0.16473
L249S	0.65419	0.08975	0.26741	0.16265
I258F	0.38185	0.08975	0.1305	0.16148
F257L	0.1155	0.08975	0.09555	0.16118
R265G	0.61437	0.08975	0.24199	0.16118
E223Q	0.25055	0.08975	0.18369	0.16089

G273D	0.20988	0.08975	0.09864	0.15913
E71Q	0.19361	0.19925	0.10475	0.15709
I101T	0.91255	0.81001	0.6852	0.15418
N236I	0.29823	0.08975	0.19231	0.15418
H233Y	0.00964	0.08975	0.04712	0.15073
K62N	0.09401	0.24576	0.17426	0.1496
P234T	0.14996	0.08975	0.15023	0.1496
A232T	0.05973	0.08975	0.10057	0.14481
A232G	0.10909	0.08975	0.10639	0.13954
D276E	0.44694	0.08975	0.19794	0.13736
P234R	0.15717	0.08975	0.13922	0.13493
L231M	0.20912	0.08975	0.05185	0.13493
L244V	0.37536	0.20909	0.19166	0.13145
L255M	0.31235	0.08975	0.13097	0.13093
R265I	0.68238	0.24609	0.18908	0.12803
V111L	0.13088	0.4977	0.17954	0.12672
R113H	0.1002	0.81001	0.28053	0.12517
S169C	0.7849	0.27684	0.47448	0.12439
R86Q	0.05755	0.08975	0.03823	0.12388
D90E	0.02465	0.81001	0.27145	0.12362
V269M	0.20532	0.31036	0.31572	0.12337
V143F	0.42783	0.23459	0.2357	0.11981
A85S	0.5748	0.08975	0.32068	0.11855
D61H	0.65419	0.08975	0.23128	0.11681
L244M	0.35537	0.20694	0.19024	0.11656
C272Y	0.31088	0.35168	0.38027	0.11607
D276H	0.50676	0.08975	0.2089	0.11118
D276Y	0.56456	0.08975	0.22053	0.11118
R265T	0.59928	0.08975	0.20367	0.11118
A246D	0.26965	0.08975	0.22397	0.10997
T239S	0.23271	0.28388	0.29521	0.10902
F7L	0.08359	0.08975	0.1031	0.10246
G245V	0.33418	0.46353	0.32846	0.09723
A232P	0.15561	0.08975	0.13052	0.09458
L231V	0.07521	0.08975	0.04523	0.09413
G252S	0.10412	0.08975	0.0917	0.09282
E223V	0.23631	0.08975	0.14776	0.09065
R262K	0.12305	0.08975	0.08508	0.08083
G264R	0.2708	0.08975	0.05302	0.07701
F207L	0.63226	0.43474	0.49787	0.07349
R113C	0.25768	0.81001	0.20826	0.0731
K271N	0.34269	0.36339	0.31517	0.07233
M36I	0.54683	0.81001	0.39734	0.07137

T148A	0.48642	0.34888	0.22288	0.06965
Y28S	0.61437	0.20581	0.32755	0.06852
D268N	0.27544	0.3866	0.40674	0.06498
D103Y	0.5553	0.81001	0.243	0.0648
Y160H	0.91255	0.40624	0.41461	0.06407
C272R	0.50132	0.53665	0.32021	0.05735
D284N	0.20154	0.81001	0.47931	0.05549
E228G	0.33418	0.51308	0.39979	0.05449
N96Y	0.58626	0.26267	0.2356	0.04869
L53I	0.2345	0.23778	0.13427	0.0364
D268G	0.40573	0.43662	0.49607	0.03517
K281N	0.26192	0.08975	0.09815	0.02832
D61Y	0.72154	0.08975	0.22502	0.02733
L48S	0.7849	0.81001	0.56721	0.01744
A157T	0.68238	0.4168	0.38343	0.01689
L53R	0.7849	0.81001	0.35684	0.01458
W167C	0.91255	0.81001	0.57613	0.0099
A222G	0.45039	0.4486	0.48385	0.00961
D122E	0.91255	0.81001	0.51077	0.00778
V55F	0.72154	0.81001	0.68928	0.00496
T37A	0.65419	0.81001	0.75557	0.00496
K124N	0.91255	0.81001	0.5607	0.00464
T37K	0.7849	0.81001	0.62191	0.00359
Y123H	0.91255	0.81001	0.45765	0.00331
A222V	0.56456	0.45092	0.45407	0.00294
G95E	0.68238	0.81001	0.74713	0.0029
P161L	0.91255	0.81001	0.49773	0.00275
P161S	0.91255	0.53665	0.49944	0.00275
L53P	0.7849	0.81001	0.34164	0.0027
G70R	0.68238	0.81001	0.78218	0.00228
D122N	0.91255	0.81001	0.76697	0.00211
I126F	0.65419	0.81001	0.69353	0.00206
D122Y	0.91255	0.81001	0.79327	0.00095
I126S	0.7849	0.81001	0.64709	0.00093
G95R	0.42783	0.81001	0.6625	0.00033
G70E	0.63226	0.81001	0.78218	0.00022
G70A	0.63226	0.81001	0.81754	0.00022