

Supplementary Table 1. Enzyme kinetic parameters (V_{\max} , K_M , k_{cat} , k_{cat}/K_M) of CK1 δ wild type and mutants for three different substrates. Kinetic parameters were determined for CK1 δ wild type and mutants using either α -casein, GST- β -catenin¹⁻¹⁸¹, or GST-p53¹⁻⁶⁴ as substrate. Data is presented as mean values \pm standard deviation (SD) for experiments performed in triplicate. Abbreviations: A, alanine; E, glutamic acid; G, glycine; GST, glutathione S-transferase; H, histidine; I, isoleucine; K, lysine; k_{cat} , turn-over number; L, leucine; M, methionine; min, minute; μM , micromol; P, proline; pmol, picomol; Q, glutamine; R, arginine; S, serine; sec, second; V, valine; V_{\max} , maximum enzyme reaction velocity; W, tryptophan; WT, wild type; Y, tyrosine; *, stop codon.

CK1 δ mutant	α -casein				GST- β -catenin ¹⁻¹⁸¹				GST- β -p53 ¹⁻⁶⁴			
	V_{\max} [pmol/min/mg]	K_M [μM]	k_{cat} [sec ⁻¹]	k_{cat}/K_M [sec ⁻¹ μM^{-1}]	V_{\max} [pmol/min/mg]	K_M [μM]	k_{cat} [sec ⁻¹]	k_{cat}/K_M [sec ⁻¹ μM^{-1}]	V_{\max} [pmol/min/mg]	K_M [μM]	k_{cat} [sec ⁻¹]	k_{cat}/K_M [sec ⁻¹ μM^{-1}]
WT	336382 \pm 24923	11.7 \pm 1.8	6051 \pm 1569	482 \pm 121	5860 \pm 819	0.50 \pm 0.17	100 \pm 8	197 \pm 56	4173 \pm 1238	2.25 \pm 1.05	49 \pm 12	37.8 \pm 6.7
L25P	5113 \pm 300	2.2 \pm 0.5	86 \pm 7	40 \pm 13	580 \pm 74	0.01 \pm 0.03	10 \pm 3	620 \pm 620	464 \pm 32	0.09 \pm 0.04	8 \pm 2	204 \pm 59
A36V	814548 \pm 163379	12.9 \pm 5.2	14772 \pm 4565	1040 \pm 346	14993 \pm 2258	0.36 \pm 0.15	251 \pm 14	715 \pm 192	2267 \pm 327	0.54 \pm 0.22	38 \pm 9	72 \pm 6
R115H	62918 \pm 7754	5.5 \pm 1.9	1049 \pm 156	193 \pm 6	2145 \pm 352	0.46 \pm 0.19	30 \pm 9	145 \pm 115	13379 \pm 2539	0.65 \pm 0.31	236 \pm 43	333 \pm 120
R127L	942637 \pm 614292	73 \pm 59	10706 \pm 3621	220 \pm 35	48345 \pm 13700	0.46 \pm 0.33	762 \pm 22	2744 \pm 1333	12439 \pm 5139	1.37 \pm 1.06	236 \pm 145	281 \pm 284
R127Q	1184000 \pm 329292	65 \pm 23	24638 \pm 11890	306 \pm 42	42840 \pm 7692	0.61 \pm 0.25	1029 \pm 784	1527 \pm 1063	130054 \pm 15720	0.17 \pm 0.09	2212 \pm 112	8916 \pm 1403
I148M	85476 \pm 11630	16 \pm 4	1430 \pm 193	92 \pm 11	267 \pm 41	0.24 \pm 0.13	6 \pm 4	25 \pm 17	387 \pm 87	0.48 \pm 0.31	14 \pm 17	17 \pm 13
R160H	132275 \pm 24227	10 \pm 4	1593 \pm 391	254 \pm 120	5227 \pm 978	0.81 \pm 0.30	91 \pm 20	111 \pm 30	414 \pm 114	0.70 \pm 0.47	8 \pm 3	10 \pm 4
R160P	156772 \pm 16423	6.1 \pm 1.7	2722 \pm 650	436 \pm 119	511 \pm 71	0.43 \pm 0.16	9 \pm 2	20 \pm 7	1754 \pm 263	0.48 \pm 0.20	30 \pm 10	74 \pm 35
R160S	174988 \pm 27722	15 \pm 5	2361 \pm 579	201 \pm 83	591 \pm 90	0.47 \pm 0.18	11 \pm 2	22 \pm 10	601 \pm 182	1.05 \pm 0.66	11 \pm 4	10 \pm 4
R168H	488699 \pm 130163	36 \pm 14	5043 \pm 255	279 \pm 3	4769 \pm 334	0.10 \pm 0.03	81 \pm 14	1543 \pm 255	5510 \pm 2	0.87 \pm 0.01	101 \pm 36	116 \pm 47
R178W	19880 \pm 1651	9.7 \pm 1.8	336 \pm 27	34 \pm 4	2397 \pm 212	0.19 \pm 0.06	42 \pm 10	226 \pm 98	1336 \pm 193	1.30 \pm 0.36	23 \pm 6	17 \pm 4
E247K	243 \pm 30	1.8 \pm 1.0	6 \pm 2	0.6 \pm 0.3	74 \pm 12	0.01 \pm 0.03	1.3 \pm 0.4	110 \pm 69	98 \pm 4	0.01 \pm 0.01	1.5 \pm 0.1	278 \pm 22
L252P	195 \pm 37	1.1 \pm 1.0	3.3 \pm 0.2	3 \pm 1	46 \pm 3	0.01 \pm 0.01	0.8 \pm 0.1	143 \pm 15	34 \pm 2	0.01 \pm 0.01	0.6 \pm 0.1	29 \pm 9
R299Q	705191 \pm 127744	33 \pm 9	13270 \pm 5087	364 \pm 98	9545 \pm 4369	1.84 \pm 1.27	123 \pm 43	127 \pm 44	4471 \pm 1157	2.45 \pm 0.97	79 \pm 22	31 \pm 5
R316G	191294 \pm 20894	21 \pm 4	3208 \pm 263	155 \pm 22	2527 \pm 740	1.57 \pm 0.73	44 \pm 15	28 \pm 6	880 \pm 192	0.74 \pm 0.39	15 \pm 3	20 \pm 1
Q399*	413321 \pm 104175	35 \pm 13	7190 \pm 2191	197 \pm 20	3701 \pm 1412	1.20 \pm 0.79	46 \pm 18	61 \pm 19	2250 \pm 1442	3.17 \pm 2.86	25 \pm 1	17 \pm 1
H414Y	110421 \pm 33216	26 \pm 12	1999 \pm 459	73 \pm 25	1525 \pm 411	1.74 \pm 0.72	26 \pm 5	15 \pm 2	410 \pm 83	0.68 \pm 0.34	7 \pm 1	10 \pm 2