

Supplementary information for:

The Essential Role of Prolines and Their Conformation in Allosteric Regulation of Kaiso Zinc Finger DNA-Binding Activity by the Adjacent C-Terminal Loop

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Supplementary Table S1. Oligonucleotides used for cloning and EMSA. Protein binding sites are shown in bold.

1.1. Oligonucleotides used for cloning

Kaiso_P523Q_d	GTATCAGTGCCGTTACTGT
Kaiso_P523Q_r	ACAGTAACGGCACTGATAC
Kaiso_P577A_d	GATGCTTCTGGGGACTCA
Kaiso_P577A_r	TGAGTCCCCAGAAGCATC
Kaiso_P588A_d	CATGCATGCAGGTCTTTAC
Kaiso_P588A_r	GTAAAGACCTGCATGCATG
Kaiso_P588V_d	CATGTATGCAGGTCTTTAC
Kaiso_P588V_r	GTAAAGACCTGCATACATG
Kaiso_579_r	TTGTCGACTTACCCAGAAGGATCTTGACTA
Kaiso_593_r	TTGTCGACTTATTGTAAAGACCTGCATGGAT
Kaiso_604_r	TTGTCGACTTATGATCTATCGGAAAGATATGC
Kaiso_472_d	TTGAATTCGCAAACAAACGTATGAAAGTA

1.2. DNA probes for EMSA

Kaiso BSx3

AACAGCTATGACCATGATTACGCCAAGCTCGAAATTAACCCTCACTAAAGGGAACAAAAGCTGGAGCTCCACCG
CGGTGGCGGCCGCTCTAGAACTAGTGCT**TCCTGCCA**ATAACGGTGCT**TCCTGCCA**ATAACGGTGCT**TCCTGCCA**
ATAAGCTTATCGATACCGTCGACCTCGAGGGGGGGCCCGGTACCCAATTCGCCCTATAGTGAGTCGTATTACAA
TTCAGTGCCGTCGTTTTAC

Pita BSx5 as nonspecific DNA

GTAAAACGACGGCCAGTGAGCGCGCGTAATACGACTCACTATAGGGCGAATTGGGTACCGGGCCCCCCTCGA
GGTCGACGGTATCGATAAGCTTGATCTTT**AGCCAAGACGCGA****ACCCGAATCCG**AACTTT**AGCCAAGACGCGA**
ACCCGAATCCGAACTTT**AGCCAAGACGCGA****ACCCGAATCCG**AACTTT**AGCCAAGACGCGA****ACCCGAATCCG**
AACTTT**AGCCAAGACGCGA****ACCCGAATCCG**AAGATCTAATATCGAATTCCTGCAGCCCGGGGGATCCACTAG
TTCTAGAGCGGCCGCCACCGCGGTGGAGCTCCAGCTTTTGTCCCTTTAGTGAGGGTTAATTCGAGCTTGCGG
TAATCATGGTCATAGCTGTT

Supplementary Table S2. The presence of protein–DNA hydrogen bonds along last 90 ns of 100 ns molecular dynamics trajectories of Kaiso complexes with Kaiso binding sequence DNA. Only bonds with over 20% presence in wild-type protein are shown. Grey fill indicates H-bonds weakened 5x times or more compared to wild-type protein. Light grey fill indicates H-bonds weakened 2-5x times compared to wild-type protein.

donor	acceptor	wt	P523Q	P577A	P577 ^{cis}	P588A	P588V	P588 ^{cis}
TYR550-Side	DA30-PO4	85.41%	81.04%	81.72%	85.11%	85.91%	88.22%	68.06%
TYR562-Side	DG31-PO4	77.72%	74.75%	76.12%	67.03%	73.83%	74.15%	77.54%
THR538-Side	DG28-PO4	72.43%	72.46%	69.73%	61.04%	55.14%	53.09%	16.27%
TYR584-Side	DA30-PO4	71.73%	62.67%	68.73%	73.73%	68.73%	72.65%	66.77%
ARG549-Side	DC29-PO4	67.93%	85.83%	67.03%	60.24%	87.81%	68.06%	83.43%
TYR536-Side	DC8-PO4	66.63%	42.61%	17.98%	2.00%	0.90%	42.22%	2.40%
SER508-Side	DG10-PO4	63.84%	57.78%	62.14%	61.94%	66.33%	71.46%	41.82%
TYR503-Side	DT9-PO4	54.65%	69.16%	63.54%	66.33%	69.63%	65.17%	66.97%
ARG511-Side	DG10-Base	45.65%	60.98%	61.14%	60.84%	62.54%	49.50%	45.51%
ALA598-Main	DA14-Base	40.36%	41.22%	36.96%	38.16%	43.86%	43.01%	3.69%
ARG510-Side	DT25-PO4	39.56%	34.03%	8.49%	6.59%	16.08%	0.20%	0.90%
TYR522-Side	DG27-PO4	36.76%	44.41%	46.95%	36.06%	33.67%	10.18%	38.12%
TYR597-Side	DG28-Base	32.17%	40.72%	35.16%	32.87%	0.60%	45.11%	10.08%
ARG475-Side	DC18-PO4	31.77%	40.22%	25.57%	9.89%	6.59%	2.99%	6.69%
SER567-Side	DC4-Base	30.27%	60.68%	56.84%	0.00%	11.89%	20.46%	0.00%
ARG501-Side	DT9-PO4	25.37%	34.03%	20.58%	22.88%	25.37%	24.35%	24.45%
ARG595-Side	DG27-Base	24.98%	24.35%	21.98%	27.57%	11.09%	27.15%	2.30%
DC29-Base	GLU535-Side	22.08%	39.92%	39.66%	42.86%	42.66%	19.16%	44.71%
LYS477-Side	DC18-PO4	20.78%	16.57%	0.10%	0.40%	8.89%	0.10%	27.84%

Supplementary Table S3. The presence of protein–DNA hydrogen bonds along last 90 ns of 100 ns molecular dynamics trajectories of Kaiso complexes with CG-methylated DNA. Only bonds with over 15% presence in wild-type protein (and the bond E535-5MC8, which was previously found to be important for specific methyl-DNA recognition) are shown. Designations are the same as in Supplementary Table 2.

donor	acceptor	wt	P577A	P577 ^{cis}	P588A	P588V	P588 ^{cis}
ARG549-Side	5MC30-PO4	100.00%	100.00 %	92.71%	100.00 %	100.00%	100.00 %
ARG511-Side	DG9-Base	100.00%	56.74%	43.66%	90.11%	70.83%	33.57%
TYR503-Side	5MC8- PO4	83.62%	79.82%	65.13%	80.02%	70.73%	82.52%
THR538-Side	DG29-PO4	73.83%	31.37%	56.44%	71.13%	68.13%	4.30%
TYR584-Side	DG31-PO4	73.13%	79.82%	63.74%	77.72%	76.72%	76.52%
TYR562-Side	DG32- PO4	71.23%	70.93%	58.14%	64.94%	69.53%	65.73%
TYR550-Side	DG31-Side	70.63%	68.93%	65.43%	69.03%	69.03%	60.04%
TYR522-Side	5MC28- PO4	63.44%	28.57%	39.76%	64.24%	43.96%	7.69%
SER508-Side	5MC8- PO4	37.36%	7.89%	0.0%	9.49%	0.10%	0.0%
VAL504-Main	DG9- PO4	28.57%	52.05%	45.65%	47.35%	51.15%	61.64%
ALA598-Main	DC13- PO4	24.48%	19.18%	25.97%	31.27%	14.69%	10.09%
5MC30-Side	GLU535-Side	24.48%	3.80%	10.89%	10.59%	17.88%	1.10%
ARG595-Side	DG29-PO4	20.88%	1.90%	1.00%	9.09%	0.20%	8.09%
ARG595-Side	5MC28-Base	19.68%	28.17%	29.57%	26.57%	28.77%	17.58%
SER578-Side	DG32- PO4	17.98%	1.70%	2.90%	1.40%	5.39%	0.60%
TYR597-Side	DG29-Base	16.48%	16.58%	15.88%	26.17%	18.18%	25.47%
CYS505-Main	DG9-PO4	15.98%	1.40%	2.60%	4.40%	1.00%	0.0%
GLN563-Side	DT33-Base	14.79%	3.50%	5.39%	4.60%	5.59%	2.00%
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5MC8-Side	GLU535-Side	1.70%	6.09%	6.19%	9.99%	1.50%	1.20%

Supplementary Figure S1. Multiple sequence alignment of C-terminal extensions of Kaiso proteins from 400 species of Vertebrates.

	P577	P588
Accipiter_nisus	HSQDP	SGDTKLYRLHPCRS
Acinonyx_jubatus	HSQDP	SGDAKLYRLHPCRS
Acrocephalus_arundinaceus	HSQDP	SGDTKLYRLHPCRS
Aegotheles_bennettii	HSQDP	SGDNKLYRLHPCRS
Ailuropoda_melanoleuca	HSQDP	SGDSKLYRLHPCRS
Alca_torda	HSQDP	SGDTKLYRLHPCRS
Aleadryas_rufinucha	HSQDP	SGDTKLYRLHPCRS
Alligator_mississippiensis	HSQDP	SGDAKLYRLHPCRS
Alligator_sinensis	HSQDP	SGDAKLYRLHPCRS
Alopecoenas_beccarii	HSQDP	SGDTKLYRLNPCRS
Anas_platyrhynchos	HSQDP	SGDTKLYRLHPCRS
Anas_platyrhynchos_platyrhynchos	HSQDP	SGDTKLYRLHPCRS
Anas_zonorhyncha	HSQDP	SGDTKLYRLHPCRS
Anhinga_anhinga	HSQDP	SGDTKLYRLHPRSLR
Anolis_carolinensis	HSQDP	SGESKHYRLHPCRS
Anser_brachyrhynchus	HSQDP	SGDTKLYRLHPCRS
Anser_cygnoid	HSQDP	SGDTKLYRLHPCRS
Anthoscopus_minutus	HSQDP	SGDTKLYRLHPCRS
Aorycteropus_afer_afer	HSQDP	SGDAKLYRLHPCRS
Apaloderma_vittatum	HSQDP	SGDTKLYRLHPCRS
Aphelocoma_coerulescens	HSQDP	SGDTKLYRLHPCRS
Aptenodytes_forsteri	HSQDP	SGDTKLYRLHPCRS
Aptenodytes_patagonicus	HSQDP	SGDTKLYRLHPCRS
Aquila_chrysaetos_chrysaetos	HSQDP	SGDTKLYRLHPCRS
Aramus_guarauna	HSQDP	SGDTKLYRLHPCRS
Ardeotis_kori	HSQDP	SGDTKLYRLHPCRS
Arenaria_interpres	HSQDP	SGDTKLYRLHPCRS
Asarcornis_scutulata	HSQDP	SGDTKLYRLHPCRS
Athene_cunicularia	HSQDP	SGDTKLYRLHPCRS
Atlantisia_rogersi	HSQDP	SGDTKLYRLHPCRS
Aythya_fuligula	HSQDP	SGDTKLYRLHPCRS
Balaeniceps_rex	HSQDP	SGDTKLYRLHPCRS
Balaenoptera_acutorosUrsus_maritimus	HSQDP	SGDSKLYRLHPCRS
Balaenoptera_musculus	HSQDP	SGDSKLYRLHPCRS
Balaenoptera_physalus	HSQDP	SGDSKLYRLHPCRS
Balearica_regulorum_gibbericeps	HSQDP	SGDTKLYRLHPCRS
Baryphthengus_martii	HSQDP	SGDTKLYRLHPCRS
Bison_bison_bison	HSQDP	SGDSKLYRLHPCRS
Bombycilla_garrulus	HSQDP	SGDTKLYRLHPCSLR
Bos_indicus_x_Bos_taurus	HSQDP	SGDSKLYRLHPCRS
Bos_mutus	HSQDP	SGDSKLYRLHPCRS
Bos_taurus	HSQDP	SGDSKLYRLHPCRS
Bubo_bubo	HSQDP	SGDTKLYRLHPCRS
Buphagus_erythrorhynchus	HSQDP	SGDTKLYRLHPCSLR
Burhinus_bisSinosuthora_webbiana	HSQDP	SGDTKLYLLHPCRS
Buteo_japonicus	HSQDP	SGDTKLYRLHPCRS
Cairina_moschata_domestica	HSQDP	SGDTKLYRLHPCRS
Calcarius_ornatus	HSQDP	SGDTKLYRLHPCRS
Calidris_pygmaea	HSQDP	SGDTKLYRLHPCRS
Callaeas_wilsoni	HSQDP	SGDTKLYRLHPCRS
Callorhinus_ursinus	HSQDP	SGDSKLYRLHPCRS
Caloenas_nicobarica	HSQDP	SGDTKLYRLNPCRS
CalonecFregetta_grallaria	HSQDP	SGDTKLYRLHPCRS
Camelus_dromedarius	HSQDP	SGDSKLYRLHPCRS
Camelus_ferus	HSQDP	SGDSKLYRLHPCRS
Campylorhamphus_procurvoides	HSQDP	SGDTKLYRLHPCRS
Canis_lupus_dingo	HSQDP	SGDSKLYRLHPCRS

Canis_lupus_familiaris	HSQDP	SGDS	SKLYRLHP	PCRS	LQ	
Canis_lupus_familiaris_0	HSQDP	SGDS	SKLYRLHP	PCRS	LQ	
Canis_lupus_familiaris_1	HSQDP	SGDS	SKLYRLHP	PCRS	LQ	
Capra_hircus	HSQDP	SGDS	SKLYRLHP	PCRS	LQ	
Cardinalis_cardinalis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cariama_cristata	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Catagonus_wagneri	HSQDP	SGDS	SKLYRLHP	PCRS	LQ	
Catharus_fuscescens	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Catharus_ustulatus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cavia_porcellus	HSQDP	SGDS	SKLYRLHP	CKSL	LQ	
Cephalopterus_ornatus	HSQDP	SGE	TKLYRLHP	PCRS	LQ	
Cepphus_grylle	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Certhia_brachydactyla	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Certhia_familiaris	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cettia_cetti	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chaetorhynchus_papuensis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Charadrius_vociferus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chauna_torquata	HSQDP	SGDA	KLYRLHP	PCRS	LQ	
Chelonia_mydas	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chelonoidis_abingdonii	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chelydra_serpentina	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chinchilla_lanigera	HSQDP	SGDS	SKLYRLHP	CKSL	LQ	
Chlamydotis_macqueenii	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chloebia_gouldiae	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chloropsis_cyanopogon	HSQDP	SGNT	TKLYRLHP	PCRS	LQ	
Chloropsis_hardwickii	HSQDP	SGNT	TKLYRLHP	PCRS	LQ	
Chordeiles_acutipennis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chroicocephalus_maculipennis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chrysemys_picta_bellii	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Chunga_burmeisteri	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Ciccaba_nigrolineata	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Ciconia_maguari	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cinclus_mexicanus	HSQDP	SGNT	TKLYRLHP	PCRS	LQ	
Circaetus_pectoralis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cisticola_juncidis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Climacteris_rufus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cnemophilus_loriae	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cochlearius_cochlearius	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Columbina_picui	HSQDP	SGDT	TKLYRLN	PCRS	LH	
Copsychus_sechellarum	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Corvus_brachyrhynchos	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Corvus_moneduloides	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Corythaeola_cristata	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Corythaixoides_concolor	HSQDP	SGE	TKLYRLHP	PCRS	LQ	
Crocodylus_porosus	HSQDP	SGDA	KLYRLHP	PCRS	LQ	
Crocota_crocota	HSQDP	SGDA	KLYRLHP	PCRS	LQ	
Cyanistes_caeruleus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cyanoderma_ruficeps	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Cyanoderma_ruficeps_0	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Daphoenositta_chrysoptera	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Dasyornis_broadbenti	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Dicaeum_eximium	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Dicrurus_megarhynchus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Donacobius_aVidua_chalybeata	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Dromas_ardeola	HSQDP	SGDT	TKLYRLHP	CKSL	LQ	
Drymodes_brunneopygia	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Dryoscopus_gambensis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Edolisoma_coerulescens	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Egretta_garzetta	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Elachura_formosa	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Emberiza_fucata	HSQDP	SGDT	TKLYRLHP	PCRS	LQ	
Enhydra_luDelphinapterus_leucas	HSQDP	SGDS	SKLYRLHP	PCRS	LQ	
Equus_asinus_asinus	HSQDP	SGDS	SKLYRLHP	PCRS	LQ	
Erithacus_rubecula	HSQ	E	PSGDT	TKLYRLHP	PCRS	LQ

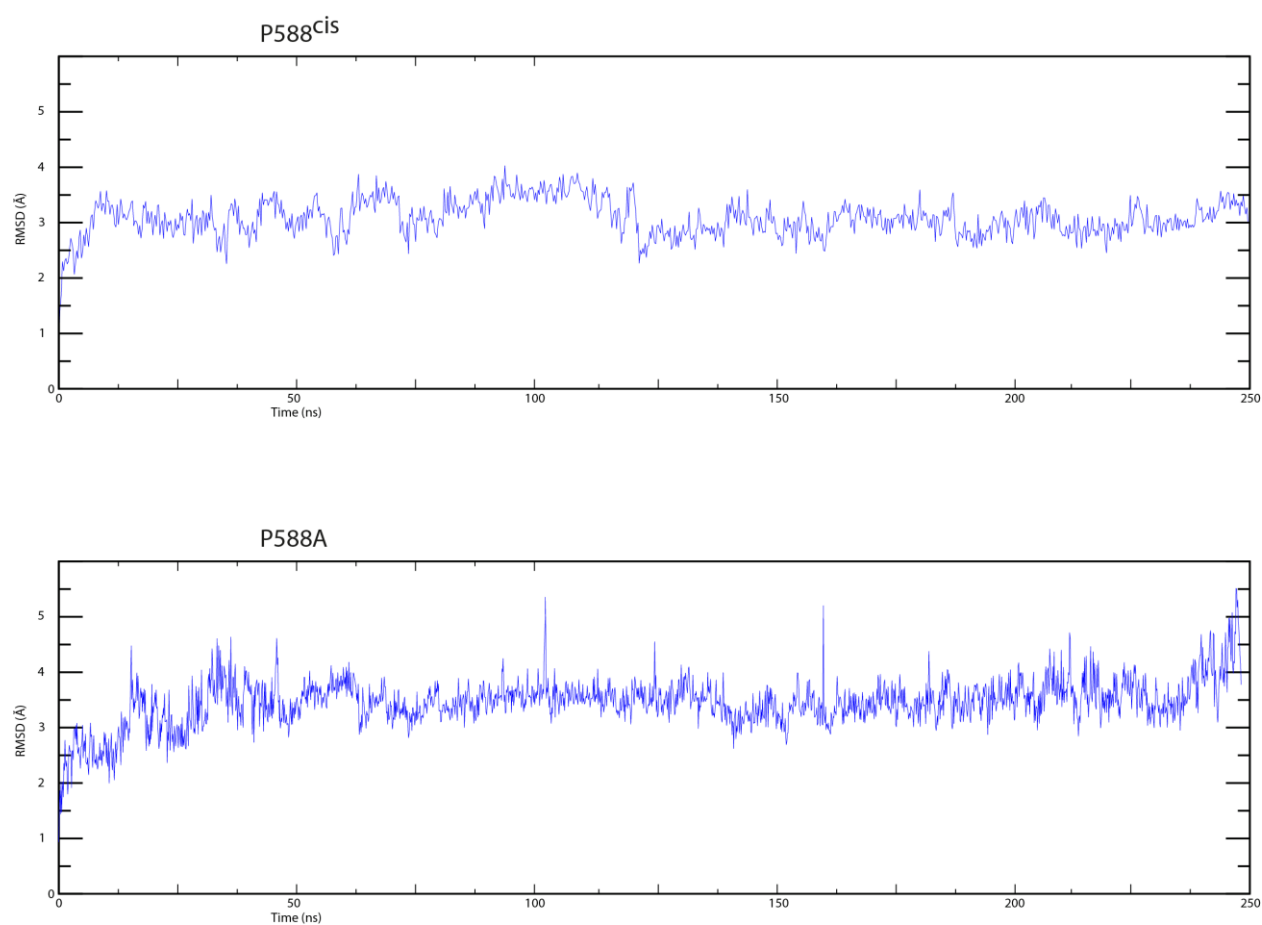
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Eudytes_chrysocome	HSQDP	SGD	TKLYRLHPC	RS	LQ
Eudytes_filholi	HSQDP	SGD	TKLYRLHPC	RS	LQ
Eudytes_robustus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Eudytes_sclateri	HSQDP	SGD	TKLYRLHPC	RS	LQ
Eudyptula_minor	HSQDP	SGD	TKLYRLHPC	RS	LQ
Eulacestoma_nigropectus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Eurypyga_helias	HSQDP	SGD	TKLYRLHPC	RS	LQ
Eurystomus_gularis	HSQDP	SGD	TKLYRLHPC	RS	LQ
Falco_tinnunculus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Falcunculus_frontatus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Felis_catus	HSQDP	SGD	SKLYRLHPC	RS	LQ
Ficedula_albicollis	HSQDP	SGD	TKLYRLHPC	RS	LQ
Formicarius_rufipectus	HSQDP	SGD	TKLYRLHPC	RS	LR
Fregata_magnificens	HSQDP	SGD	TKLYRLHPC	RS	LQ
Fukomys_damarensis	HSQDP	SGD	SKLYRLHPC	KS	LQ
Fulmarus_glacialis	HSQDP	SGD	TKLYRLHPC	RS	LQ
Furnarius_figulus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Gavia_stellata	HSQDP	SGD	TKLYRLHPC	RS	LQ
GeoGeoMyotis_myotis	HSQDP	SGD	SKLYRLHPC	RS	LQ
Geospiza_fortis	HSQDP	SGD	TKLYRLHPC	RS	LQ
Geospiza_parvula	HSQDP	SGD	TKLYRLHPC	RS	LQ
Glareola_pratincola	HSQDP	SGD	TKLYRLHPC	KS	LQ
Glaucidium_brasilianum	HSQDP	SGD	TKLYRLHPC	RS	LQ
Gopherus_agassizii	HSQDP	SGD	TKLYRLHPC	RS	LQ
Gopherus_evgoodei	HSQDP	SGD	TKLYRLHPC	RS	LQ
Gorilla_gorilla_gorilla	HSQDP	SGD	SKLYRLHPC	KS	LQ
Grallaria_varia	HSQDP	SGD	TKLYRLHPC	RS	LQ
Grantiella_picta	HSQDP	SGD	TKLYRLHPC	RS	LR
Grus_americana	HSQDP	SGD	TKLYRLHPC	RS	LQ
Gulo_gulo	HSQDP	SGD	SKLYRLHPC	RS	LQ
Gymnorhina_tibicen	HSQDP	SGD	TKLYRLHPC	RS	LQ
Halcyon_senegalensis	HSQDP	SGD	TKLYRLHPC	RS	LQ
Haliaeetus_albicilla	HSQDP	SGD	TKLYRLHPC	RS	LQ
Heliornis_fulica	HSQDP	SGD	TKLYRLHPC	RS	LQ
Hemiprocne_comata	HSQDP	SGD	TKLYRLHPC	RS	LQ
Herpetotheres_cachinnans	HSQDP	SGD	TKLYRLHPC	RS	LQ
Himantopus_himantopus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Hippolais_icterina	HSQDP	SGD	TKLYRLHPC	RS	LQ
Hipposideros_armiger	HSQDP	SGE	SKLYRLHPC	RS	LQ
Hirundo_rustica_rustica	HSQDP	SGD	TKLYRLHPC	RS	LQ
Homo_sapiens	HSQDP	SGD	SKLYRLHPC	KS	LQ
Horornis_vulcanius	HSQDP	SGD	TKLYRLHPC	RS	LQ
Hypotaenidia_okinawae	HSQDP	SGD	TKLYRLHPC	RS	LQ
Ibidorhyncha_sThryothorus_ludovicianus	HSQDP	SGE	TKMYRLHPC	RS	LQ
Ifrita_kowaldi	HSQDP	SGD	TKLYRLHPC	RS	LQ
Irena_cyanogasAnseranas_semipalmata	HSQDP	SGD	TKLYRLHPC	RS	LQ
Jacana_jacana	HSQDP	SGD	TKLYRLHPC	RS	LQ
Junco_hyemalis	HSQDT	SGD	TKLYRLHPC	RS	LQ
Lamprotornis_superbus	HSQDP	SGD	TKLYRLHPC	RS	LR
Lanius_ludovicianus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Larus_smithsonianus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Leiothrix_lutea	HSQDP	SGD	TKLYRLHPC	RS	LQ
Lepidothrix_coronata	HSQDP	SGD	TKLYRLHPC	RS	LQ
Leptocoma_aspasia	HSQDP	SGD	TKLYRLHPC	RS	LQ
Leptonychotes_weddellii	HSQDP	SGD	SKLYRLHPC	RS	LQ
Leptosomus_discolor	HSQDP	SGD	TKLYRLHPC	RS	LQ
Leucopsar_rothschildi	HSQDP	SGD	TKLYRLHPC	RS	LR
Limosa_lapponica_baueri	HSQDP	SGD	TKLYRLHPC	RS	LQ
Lipotes_vexillifer	HSQDP	SGD	SKLYRLHPC	RS	LQ
Locustella_ochotensis	HSQDP	SGD	TKLYRLHPC	RS	LQ
Lonchura_striata_domestica	HSQDP	SGD	TKLYRLHPC	RS	LQ

Lophotis_ruficrista	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Loxia_curvirostris	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Loxia_leucoptera	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Lynx_canadensis	HSQDP	SGDA	KLYR	RLHP	PCRS	LQ
Lynx_pardinus	HSQDP	SGDA	KLYR	RLHP	PCRS	LQ
Machaerirhynchus_nigripes	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Malurus_cyaneus_samuelsi	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Malurus_elegans	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Marmota_monax	HSQDP	SGDS	SKLY	RLHP	CKSL	LQ
Marmota_monax_0	HSQDP	SGDS	SKLY	RLHP	CKSL	LQ
Melospiza_melodia	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Mesembrinibia_cayennensis	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Mesitornis_unicolor	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Microcaecilia_unicolor	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Mionectes_macconnelli	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Molossus_molossus	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Molothrus_ater	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Monodon_monoceros	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Moschus_moschiferus	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Motacilla_alba	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Muntiacus_muntjak	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Muntiacus_reevesi	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Mus_caroli	HSQDP	SGDS	SKLY	RLHP	CKSL	LQ
Mus_musculus	HSQDP	SGDS	SKLY	RLHP	CKSL	LQ
Mus_musculus_0	HSQDP	SGDS	SKLY	RLHP	CKSL	LQ
Mus_spicilegus	HSQDP	SGDS	SKLY	RLHP	CKSL	LQ
Myiagra_hebetior	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Myotis_brandtii	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Myotis_davidii	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Myotis_lucifugus	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Mystacornis_crossleyi	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Nannospalax_galili	HSQDP	SGDS	SKLY	RLHP	CKSL	LQ
Neomonachus_schauinslandi	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Neophocaena_asiaeorientalis_asiaeorientalis	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Neopipo_cinnamomea	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Neovison_vison	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Neovison_vison_0	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Nicator_chloris	HSQDP	SGDT	TKLY	QLHP	PCRS	LQ
Nipponia_nippon	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Notiomystis_cincta	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Nyctereutes_procyonoides	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Nyctibius_bracteatus	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Nyctibius_grandis	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Nycticyphes_semicollaris	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Nyctiprogne_leucopygia	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Oceanites_oceanicus	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Oceanodroma_tethys	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Octodon_degus	HSQDP	SGDS	SKLY	RLHP	CKSL	LQ
Odobenus_rosmarinus_divergens	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Oenanthe_oenanthe	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Onychorhynchus_coronatus	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Opisthocomus_hoazin	HSQDP	SGDT	TKLY	RLNP	PCRS	LQ
Oreocharis_arfaki	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Origma_solitaria	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Oriolus_oriolus	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Ornithorhynchus_anatinus	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Otus_sunia	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Ovis_aries	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Ovis_aries_0	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ
Oxylabes_madagascariensis	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Oxyruncus_cristatus	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Pachycephala_philippinensis	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Pachyramphus_minor	HSQDP	SGDT	TKLY	RLHP	PCRS	LQ
Pan_paniscus	HSQDP	SGDS	SKLY	RLHP	PCRS	LQ

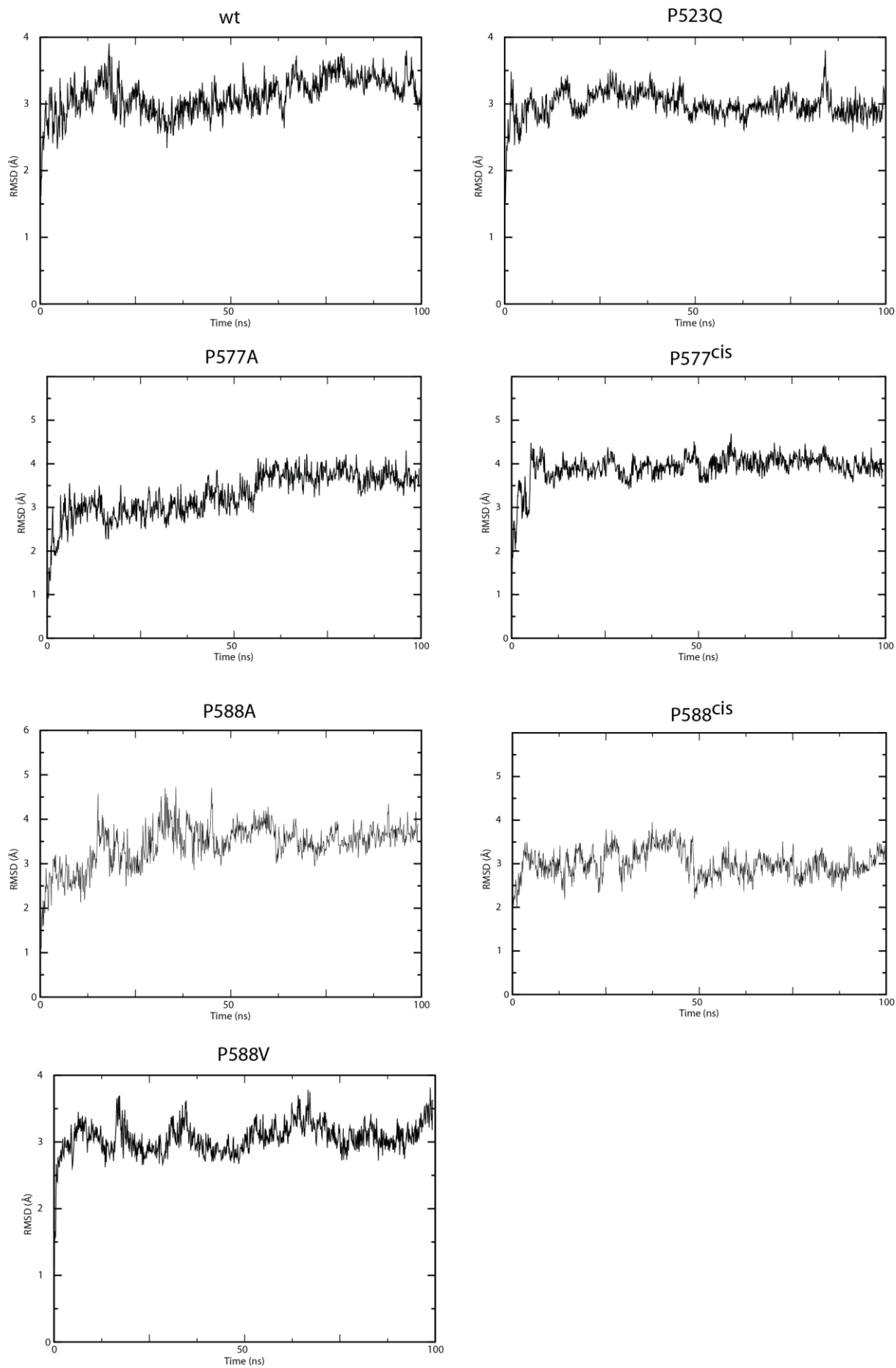
Pan_Panthera_pardus	HSQDP	SGDA	AKLYRLHP	PCRS	LQ
Pandion_haliaetus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Panthera_leo	HSQDP	SGDA	AKLYRLHP	PCRS	LQ
Panthera_tigris_altaica	HSQDP	SGDA	AKLYRLHP	PCRS	LQ
Panurus_biarmicus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Panurus_biarmicus_0	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pardalotus_punctatus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Patagioenas_fasciata_monilis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Patagioenas_fasciata_monilis_0	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pedionomus_torquatus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pelecanoides_urinaPluvianellus_socialis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pelecanus_crispus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pelodiscus_sinensis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pelusios_castaneus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Peucedramus_taeniatus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Phaetusa_simplex	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Phainopepla_nitens	HSRDP	SGDT	TKLYRLHP	PCRS	LR
Phalacrocorax_carbo	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Phocoena_sinus	HSQDP	SGD	SKLYRLHP	PCRS	LQ
Phyllostomus_discolor	HSQDP	SGD	SKLYRLHP	PCRS	LQ
Pipra_filicauda	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Piprites_chloris	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Platysteira_castanea	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Platysternon_megacephalum	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Ploceus_nigricollis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Podargus_sScopus_umbretta	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Podilymbus_podiceps	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Poecile_aNesospiza_acunhae	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pogona_vitticeps	HSQDP	SGE	SKLYRLHP	PCRS	LQ
Polioptila_caerulea	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pomatorhinus_ruficollis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pomatostomus_ruficeps	HSQDP	SGE	TKLYRLHP	PCRS	LQ
Promerops_cafer	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Propithecus_coquereli	HSQDP	SGD	SKLYRLHP	PCRS	LQ
Prunella_fulvescens	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Prunella_himalayana	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Psophia_crepitans	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pterocles_burchelli	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pterocles_gutturalis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Pteropus_alecto	HSQDP	SGD	SKLYRLHP	PCRS	LQ
Pteropus_vampyrus	HSQDP	SGD	SKLYRLHP	PCRS	LQ
Pteruthius_melanotis	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Ptilonorhynchus_violaceus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Ptilorrhoa_leucosticta	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Puma_concolor	HSQDP	SGDA	AKLYRLHP	PCRS	LQ
Pygoscelis_adeliae	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Quiscalus_mexicanus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Rattus_norvegicus	HSQDP	SGD	SKLYRLHP	CK	SLQ
Rhabdornis_inornatus	HSQDP	SGDT	TKLYRLHP	PCRS	LR
Rhadina_sibilaHypocryptadius_cinnamomeus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Rhagologus_leucostigma	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Rhegmatorhina_hoffmannsi	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Rhinolophus_ferrumequinum	HSQDP	SGE	SKLYRLHP	PCRS	LQ
Rhipidura_dahli	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Rhodinocichla_rosea	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Rhynchotos_jubatus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Rissa_Uria_aalge	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
RosTrogon_melanurus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Rousettus_aegyptiacus	HSQDP	SGD	SKLYRLHP	PCRS	LQ
Rynchops_niger	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Sagittarius_serpentarius	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Sakesphorus_luctuosus	HSQDP	SGDT	TKLYRLHP	PCRS	LQ
Salvator_merianae	HSQDP	SGE	SKMYRLHP	PCRS	LQ
Sciurus_vulgaris	HSQDP	SGD	SKLYRLHP	CK	SLQ

Sclerurus_mexicanus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Scytalopus_superciliaris	HSQDP	SGD	TKLYRLHPC	RS	LQ
Serinus_canaria	HSQDP	SGD	TKLYRLHPC	RS	LQ
Setophaga_kirtlandii	HSQDP	SGD	TKLYRLHPC	RS	LQ
Sitta_europaea	HSQDP	SGD	TKLYRLHPC	RS	LQ
Smutsornis_africanus	HSQDP	SGD	AKLYRLHPC	KS	LQ
SOrthonyx_spaldingii	HSQDP	SGD	TKLYRLHPC	RS	LQ
Spheniscus_mendiculus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Spizaetus_tyrannus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Spizella_passerina	HSQDP	SGD	TKLYRLHPC	RS	LQ
SSus_scrofa	HSQDP	SGD	SKLYRLHPC	RS	LQ
Steatornis_caripensis	HSQDP	SGD	TKLYRLHPC	RS	LQ
Stercorarius_parasiticus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Sula_dactyla	Picathartes_gymnocephalus	HSQDP	SGD	TKLYRLHPC	RS
Suricata_suricatta	HSQDP	SGD	AKLYRLHPC	RS	LQ
Sus_scrofa	HSQDP	SGD	SKLYRLHPC	RS	LQ
Sus_scrofa_0	HSQDP	SGD	SKLYRLHPC	RS	LQ
Sylvia_aChionis_minor	HSQDP	SGD	TKLYRLHPC	RS	LQ
Syrrhaptes_paradoxus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Tachuris_rubrigas	Regulus_saBucorvus_abyssinicus	HSQDP	SGD	TKLYRLHPC	RS
Taeniopygia_guttata	HSQDP	SGD	TKLYRLHPC	RS	LQ
Taeniopygia_guttata_0	HSQDP	SGD	SKLYRLHPC	RS	LQ
Tauraco_erythrolophus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Terrapene_carolina	Bos_mutus	HSQDP	SGD	SKLYRLHPC	RS
Thalassarche_chlororhynchus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Thinocorus_orbignyianus	HSQDP	SGD	TKLYRLHPC	KS	LQ
Tichodroma_muraria	HSQDP	SGD	TKLYRLHPC	RS	LQ
Todus_mexicanus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Toxostoma_redivivum	HSQDP	SGD	TKLYRLHPC	RS	L
Tupaia_chinensis	HSQDP	SGD	AKLYRLHPC	RS	LQ
Tursiops_Physeter_macrocephalus	HSQDP	SGD	SKLYRLHPC	RS	LQ
Tychaemon_coryphoeus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Tyrannus_savana	HSQDP	SGD	TKLYRLHPC	RS	LQ
Urocitellus_parryii	HSQDP	SGD	SKLYRLHPC	KS	LQ
Urocolius_indicus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Urocynchramus_pylzowi	HSQDP	SGD	TKLYRLHPC	RS	LQ
Ursus_americanus	HSQDP	SGD	SKLYRLHPC	RS	LQ
Ursus_arctos_horribilis	HSQDP	SGD	SKLYRLHPC	RS	LQ
Ursus_maritimus	HSQDP	SGD	SKLYRLHPC	RS	LQ
Varanus_komodoensis	HSQDP	SGE	SKLYRLHPC	RS	LQ
Vicugna_pacos	HSQDP	SGD	SKLYRLHPC	RS	LQ
Vidua_macroura	HSQDP	SGD	TKLYRLHPC	RS	LQ
Vireo_altiloquus	HSQDP	SGD	TKLYRLHPC	RS	LQ
Vulpes_vulpes	HSQDP	SGD	SKLYRLHPC	RS	LQ
Xiphorhynchus_elegans	HSQDP	SGD	TKLYRLHPC	RS	LQ
Zalophus_californianus	HSQDP	SGD	SKLYRLHPC	RS	LQ
Zapornia_aAnhinga_rufa	HSQDP	SGD	TKLYRLHPC	RS	LQ
ZonoZosterops_lateralis_melanops	HSQDP	SGD	TKLYRLHPC	RS	LQ
Zosterops_hypoxanthus	HSQDP	SGD	TKLYRLHPC	RS	LQ

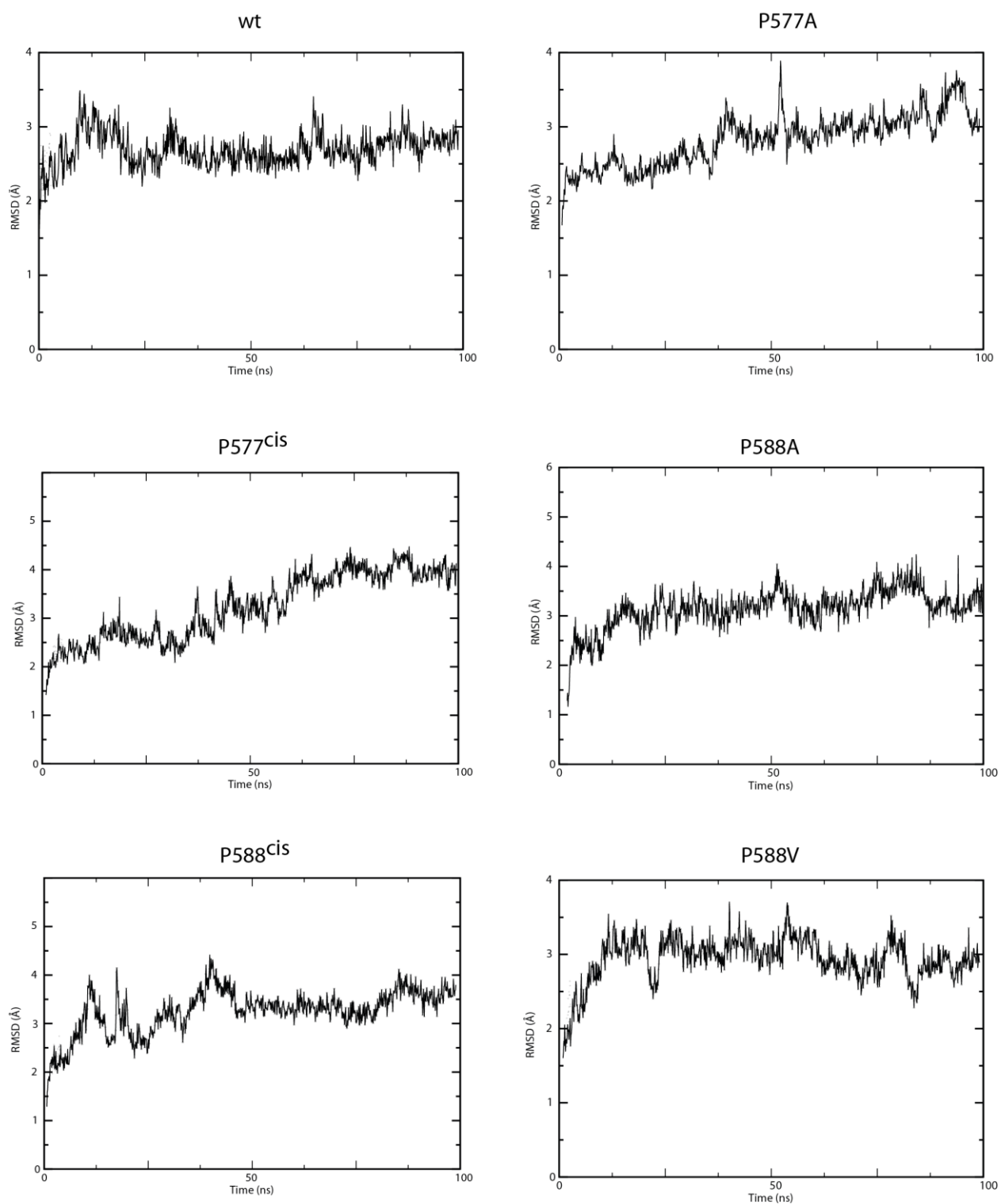
Supplementary Figure S2. RMSD of 250 ns molecular dynamics simulation trajectories of Kaiso P588A and P588^{cis} complexes with KBS DNA.



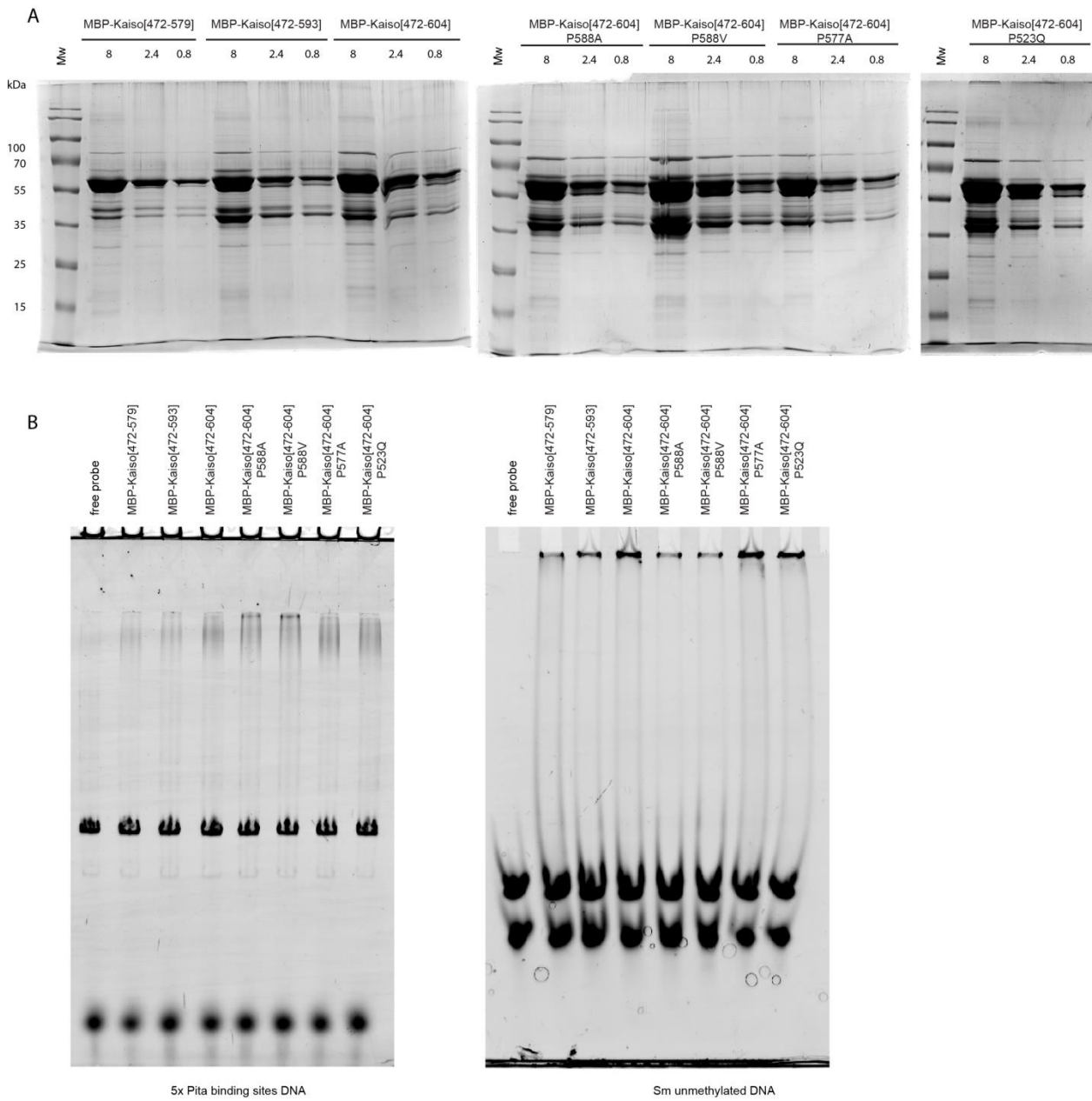
Supplementary Figure S3. RMSD of molecular dynamics simulation trajectories of Kaiso complex with KBS DNA.



Supplementary Figure S4. RMSD of molecular dynamics simulation trajectories of Kaiso complex with methylated DNA.



Supplementary Figure S5. (a) Protein preparations used for EMSA. (b) Non-specific binding controls at 10 μ M.



Supplementary Figure S6. Uncropped gels of EMSA.

