Full wwPDB X-ray Structure Validation Report ⓘ

Sep 24, 2023 – 07:20 AM EDT

PDB ID	:	5U01
Title	:	Cooperative DNA binding by two RelA dimers
Authors	:	Ghosh, G.; Huang, D.
Deposited on	:	2016-11-22
Resolution	:	2.50 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

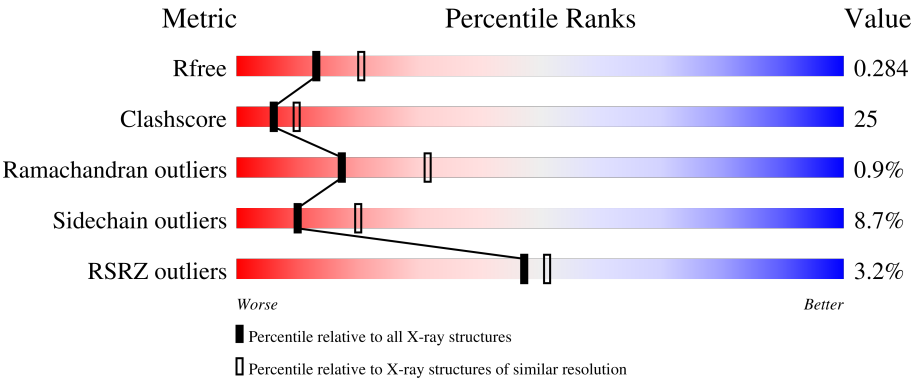
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	273	4% 54% 38% 8%
1	B	273	2% 63% 32% 5%
1	C	273	4% 59% 33% 8%
1	D	273	3% 63% 32% 5%
2	E	27	11% 74% 11% .

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Mol	Chain	Length	Quality of chain
2	F	27	

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 10183 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Transcription factor p65.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	273	Total	C	N	O	S	0	0	0
			2178	1358	401	408	11			
1	B	273	Total	C	N	O	S	0	0	0
			2178	1358	401	408	11			
1	C	273	Total	C	N	O	S	0	0	0
			2178	1358	401	408	11			
1	D	273	Total	C	N	O	S	0	0	0
			2178	1358	401	408	11			

- Molecule 2 is a DNA chain called DNA (27-MER).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	F	27	Total	C	N	O	P	0	0	0
			554	263	100	164	27			
2	E	27	Total	C	N	O	P	0	0	0
			554	263	100	164	27			

- Molecule 3 is water.

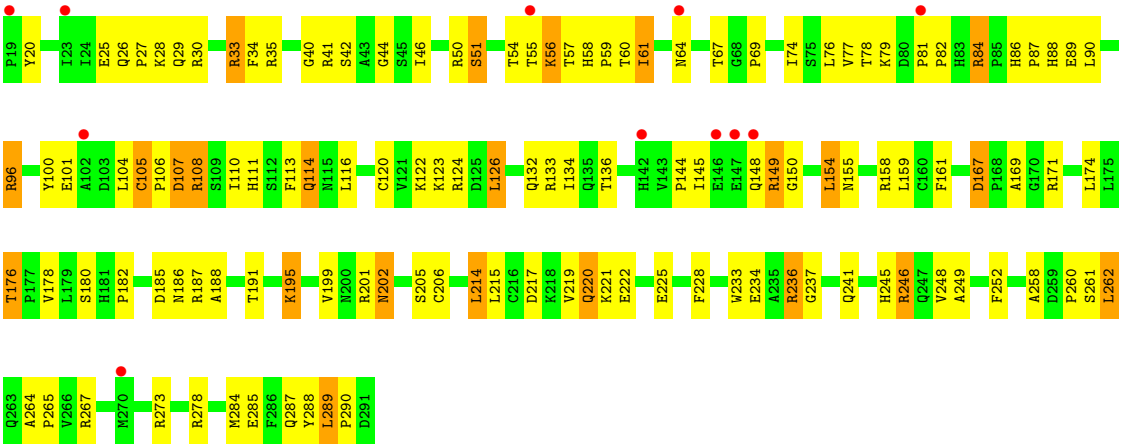
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	84	Total	O	0	0
			84	84		
3	B	82	Total	O	0	0
			82	82		
3	C	79	Total	O	0	0
			79	79		
3	D	69	Total	O	0	0
			69	69		
3	F	28	Total	O	0	0
			28	28		
3	E	21	Total	O	0	0
			21	21		

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

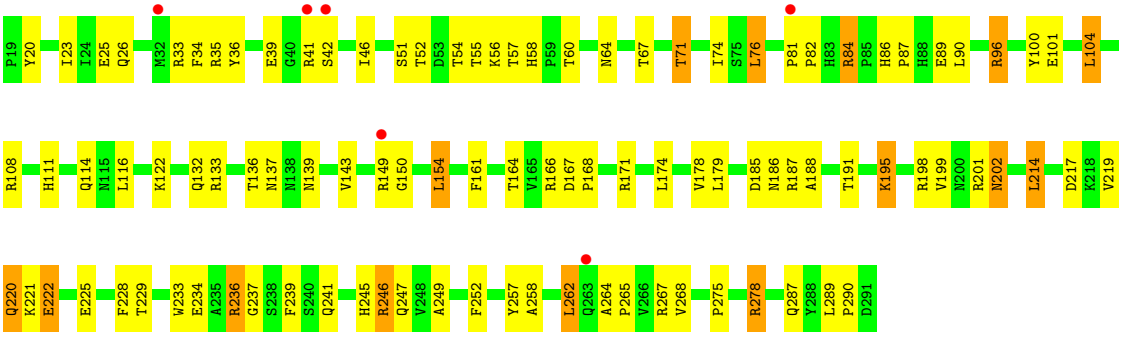
• Molecule 1: Transcription factor p65

Chain A:



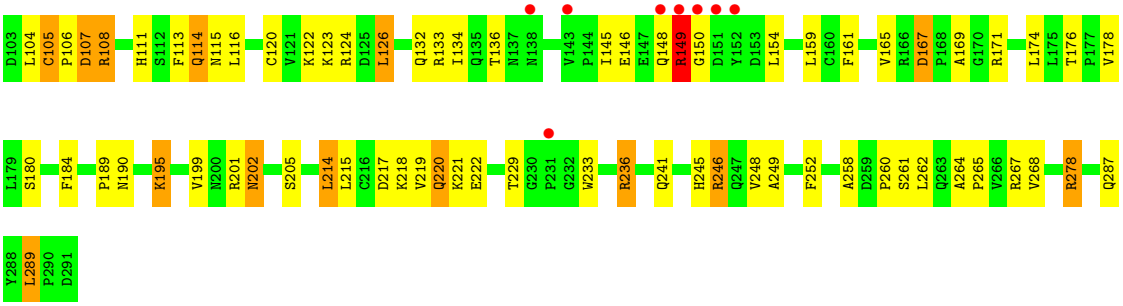
• Molecule 1: Transcription factor p65

Chain B:



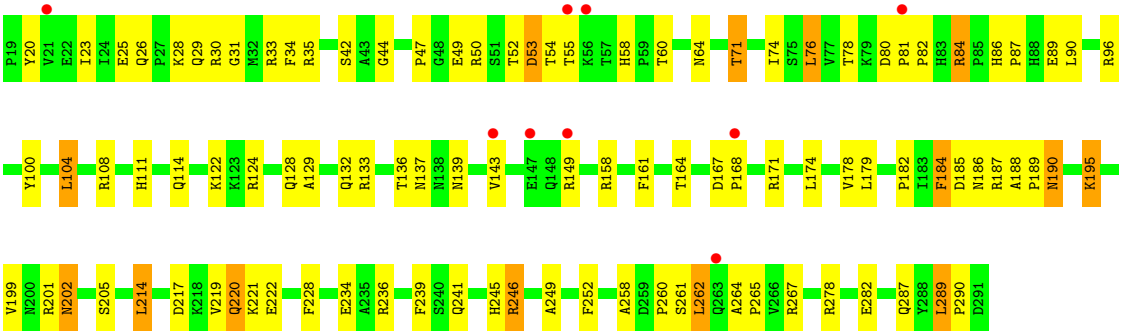
• Molecule 1: Transcription factor p65

Chain C:



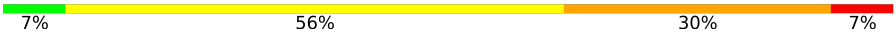
• Molecule 1: Transcription factor p65

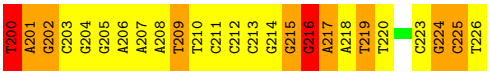
Chain D:



• Molecule 2: DNA (27-MER)

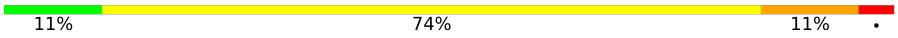
Chain F:

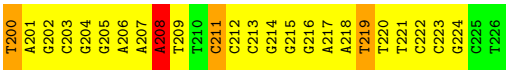




• Molecule 2: DNA (27-MER)

Chain E:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	88.91Å 117.80Å 70.81Å 90.00° 91.20° 90.00°	Depositor
Resolution (Å)	29.63 – 2.50 49.70 – 2.48	Depositor EDS
% Data completeness (in resolution range)	85.4 (29.63-2.50) 91.5 (49.70-2.48)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.65 (at 2.48Å)	Xtriage
Refinement program	CNS 1.3	Depositor
R, R_{free}	0.221 , 0.274 0.232 , 0.284	Depositor DCC
R_{free} test set	2340 reflections (4.62%)	wwPDB-VP
Wilson B-factor (Å^2)	59.3	Xtriage
Anisotropy	0.529	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 48.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.076 for -h,-k,l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	10183	wwPDB-VP
Average B, all atoms (Å^2)	81.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.78% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A	0.36	0/2231	0.92	14/3025 (0.5%)
1	B	0.37	0/2231	0.94	9/3025 (0.3%)
1	C	0.35	0/2231	0.90	14/3025 (0.5%)
1	D	0.38	0/2231	0.77	8/3025 (0.3%)
2	E	0.78	1/620 (0.2%)	1.13	3/953 (0.3%)
2	F	0.67	1/620 (0.2%)	1.08	8/953 (0.8%)
All	All	0.43	2/10164 (0.0%)	0.92	56/14006 (0.4%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	E	0	2
2	F	0	5
All	All	0	7

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	200	DT	OP3-P	-7.75	1.51	1.61
2	F	200	DT	OP3-P	-7.60	1.52	1.61

All (56) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	278	ARG	NE-CZ-NH1	-21.25	109.67	120.30
1	B	278	ARG	NE-CZ-NH2	20.02	130.31	120.30
1	D	108	ARG	NE-CZ-NH2	-14.34	113.13	120.30
1	B	108	ARG	NE-CZ-NH1	-13.91	113.34	120.30
1	A	236	ARG	NE-CZ-NH2	-13.89	113.35	120.30
1	A	236	ARG	NE-CZ-NH1	13.70	127.15	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	108	ARG	NE-CZ-NH2	13.67	127.13	120.30
1	C	33	ARG	NE-CZ-NH1	13.56	127.08	120.30
1	B	236	ARG	NE-CZ-NH1	13.53	127.06	120.30
1	C	149	ARG	NE-CZ-NH1	-13.51	113.55	120.30
1	B	236	ARG	NE-CZ-NH2	-13.47	113.56	120.30
1	D	108	ARG	NE-CZ-NH1	13.34	126.97	120.30
1	A	33	ARG	NE-CZ-NH1	-13.30	113.65	120.30
1	A	35	ARG	NE-CZ-NH1	-13.21	113.69	120.30
1	A	149	ARG	NE-CZ-NH2	-13.11	113.74	120.30
1	A	33	ARG	NE-CZ-NH2	13.10	126.85	120.30
1	C	33	ARG	NE-CZ-NH2	-13.08	113.76	120.30
1	C	236	ARG	NE-CZ-NH1	-13.04	113.78	120.30
1	C	149	ARG	NE-CZ-NH2	12.90	126.75	120.30
1	C	35	ARG	NE-CZ-NH2	-12.89	113.86	120.30
1	A	35	ARG	NE-CZ-NH2	12.88	126.74	120.30
1	C	35	ARG	NE-CZ-NH1	12.78	126.69	120.30
1	A	149	ARG	NE-CZ-NH1	12.78	126.69	120.30
1	D	236	ARG	NE-CZ-NH1	-12.53	114.03	120.30
1	D	236	ARG	NE-CZ-NH2	12.06	126.33	120.30
1	C	236	ARG	NE-CZ-NH2	11.38	125.99	120.30
1	B	278	ARG	CD-NE-CZ	10.22	137.91	123.60
1	A	278	ARG	NE-CZ-NH2	-7.97	116.31	120.30
1	D	278	ARG	NE-CZ-NH2	-7.75	116.42	120.30
1	D	278	ARG	NE-CZ-NH1	7.58	124.09	120.30
1	A	278	ARG	NE-CZ-NH1	7.47	124.04	120.30
1	C	278	ARG	NE-CZ-NH2	-7.31	116.64	120.30
2	F	224	DG	OP1-P-O3'	7.21	121.06	105.20
1	C	33	ARG	CD-NE-CZ	7.11	133.55	123.60
1	C	278	ARG	NE-CZ-NH1	7.09	123.85	120.30
1	B	108	ARG	CD-NE-CZ	6.96	133.35	123.60
1	A	33	ARG	CD-NE-CZ	6.85	133.18	123.60
1	B	236	ARG	CD-NE-CZ	6.82	133.15	123.60
1	A	236	ARG	CD-NE-CZ	6.75	133.06	123.60
1	C	35	ARG	CD-NE-CZ	6.75	133.04	123.60
1	A	149	ARG	CD-NE-CZ	6.73	133.02	123.60
1	A	35	ARG	CD-NE-CZ	6.71	132.99	123.60
1	D	108	ARG	CD-NE-CZ	6.54	132.76	123.60
1	C	149	ARG	CD-NE-CZ	6.53	132.75	123.60
1	D	236	ARG	CD-NE-CZ	6.47	132.66	123.60
1	C	236	ARG	CD-NE-CZ	6.44	132.61	123.60
2	F	200	DT	O5'-P-OP1	-6.18	100.14	105.70
2	E	219	DT	OP1-P-O3'	6.04	118.50	105.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	F	215	DG	OP1-P-O3'	5.78	117.91	105.20
2	F	200	DT	OP1-P-O3'	5.69	117.73	105.20
2	E	200	DT	OP1-P-OP2	-5.64	111.13	119.60
2	F	216	DG	OP1-P-O3'	5.42	117.12	105.20
2	F	219	DT	OP1-P-O3'	5.17	116.56	105.20
2	E	208	DA	OP1-P-O3'	5.09	116.41	105.20
2	F	209	DT	OP1-P-O3'	5.05	116.31	105.20
2	F	202	DG	OP1-P-O3'	5.04	116.30	105.20

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	E	208	DA	Sidechain
2	E	211	DC	Sidechain
2	F	200	DT	Sidechain
2	F	201	DA	Sidechain
2	F	216	DG	Sidechain
2	F	217	DA	Sidechain
2	F	225	DC	Sidechain

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2178	0	2140	120	0
1	B	2178	0	2140	84	0
1	C	2178	0	2140	101	0
1	D	2178	0	2140	94	0
2	E	554	0	305	41	0
2	F	554	0	305	54	0
3	A	84	0	0	10	0
3	B	82	0	0	7	0
3	C	79	0	0	10	0
3	D	69	0	0	5	0
3	E	21	0	0	1	0
3	F	28	0	0	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	10183	0	9170	467	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 25.

All (467) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:201:DA:H2"	2:F:202:DG:H5"	1.26	1.14
1:A:144:PRO:HA	3:A:326:HOH:O	1.56	1.03
1:C:56:LYS:HE3	1:C:56:LYS:H	1.28	0.96
1:A:154:LEU:HD22	1:A:154:LEU:H	1.32	0.95
1:A:56:LYS:HE3	1:A:56:LYS:H	1.33	0.93
1:A:284:MET:HG2	3:A:305:HOH:O	1.70	0.90
1:D:33:ARG:HA	1:D:185:ASP:HB2	1.53	0.89
1:A:122:LYS:HG2	2:F:209:DT:H5'	1.53	0.89
2:E:214:DG:H2'	2:E:215:DG:O4'	1.72	0.88
2:F:201:DA:C2'	2:F:202:DG:H5"	2.03	0.88
1:A:174:LEU:HD23	1:A:174:LEU:H	1.43	0.84
1:C:174:LEU:HD23	1:C:174:LEU:H	1.45	0.82
1:D:220:GLN:HE21	1:D:220:GLN:HA	1.45	0.80
1:D:202:ASN:H	1:D:202:ASN:HD22	1.28	0.80
1:C:220:GLN:HE21	1:C:220:GLN:HA	1.44	0.80
1:B:220:GLN:HE21	1:B:220:GLN:HA	1.46	0.80
2:F:203:DC:H2"	2:F:204:DG:OP2	1.82	0.79
1:A:202:ASN:HD22	1:A:202:ASN:H	1.32	0.78
1:A:220:GLN:HE21	1:A:220:GLN:HA	1.47	0.77
1:C:202:ASN:HD22	1:C:202:ASN:H	1.32	0.77
2:F:201:DA:H2"	2:F:202:DG:C5'	2.12	0.77
1:C:25:GLU:HB3	1:C:60:THR:H	1.50	0.77
2:F:211:DC:H2"	2:F:212:DC:OP2	1.83	0.77
2:F:225:DC:H2"	2:F:226:DT:OP2	1.83	0.76
1:A:25:GLU:HB3	1:A:60:THR:H	1.51	0.76
1:A:225:GLU:HB2	1:A:236:ARG:HD2	1.67	0.76
1:B:33:ARG:HD2	1:B:187:ARG:HB2	1.67	0.76
1:B:202:ASN:H	1:B:202:ASN:HD22	1.32	0.75
1:D:34:PHE:CD2	1:D:185:ASP:HB3	2.21	0.75
2:E:201:DA:OP2	2:E:201:DA:H8	1.70	0.75
1:D:52:THR:HG23	1:D:55:THR:H	1.52	0.74
2:F:206:DA:H2"	2:F:207:DA:OP2	1.87	0.74
1:B:225:GLU:HB2	1:B:236:ARG:HD2	1.68	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:186:ASN:HB2	3:D:326:HOH:O	1.89	0.72
1:B:33:ARG:HH21	1:B:35:ARG:NH1	1.86	0.72
2:F:204:DG:H2"	2:F:205:DG:OP2	1.88	0.72
1:B:167:ASP:HB2	1:B:168:PRO:HD2	1.72	0.72
2:E:218:DA:H2"	2:E:219:DT:H5'	1.73	0.71
2:F:217:DA:H2"	2:F:218:DA:C8	2.26	0.70
1:A:81:PRO:HB2	1:A:82:PRO:HD3	1.74	0.70
1:D:167:ASP:HB2	1:D:168:PRO:HD2	1.72	0.70
2:F:213:DC:H2"	2:F:214:DG:OP2	1.91	0.70
1:D:282:GLU:HB2	3:D:310:HOH:O	1.92	0.70
1:D:149:ARG:HB3	1:D:149:ARG:NH1	2.07	0.69
1:B:149:ARG:HB3	1:B:149:ARG:NH1	2.08	0.69
1:D:214:LEU:HD23	1:D:252:PHE:HE2	1.58	0.69
2:F:224:DG:H8	2:F:224:DG:OP2	1.76	0.68
2:F:208:DA:H2"	2:F:209:DT:OP2	1.94	0.68
1:B:247:GLN:NE2	2:E:217:DA:H5'	2.08	0.68
1:B:161:PHE:HB2	1:B:178:VAL:HG13	1.76	0.67
1:C:81:PRO:HB2	1:C:82:PRO:HD3	1.75	0.67
1:D:33:ARG:HA	1:D:185:ASP:CB	2.23	0.67
2:F:208:DA:N6	2:E:218:DA:N6	2.42	0.67
1:B:33:ARG:HH21	1:B:35:ARG:HH12	1.42	0.67
1:D:122:LYS:HG2	2:F:220:DT:H5'	1.78	0.66
1:B:239:PHE:O	1:C:54:THR:HG22	1.96	0.65
1:A:214:LEU:HD23	1:A:252:PHE:HE2	1.61	0.65
2:E:218:DA:H2"	2:E:219:DT:C5'	2.26	0.65
1:C:56:LYS:H	1:C:56:LYS:CE	2.06	0.65
2:E:200:DT:OP1	2:E:200:DT:H6	1.80	0.65
2:E:213:DC:H2'	2:E:214:DG:C8	2.31	0.64
1:A:33:ARG:HD3	3:A:344:HOH:O	1.97	0.64
1:C:214:LEU:HD23	1:C:252:PHE:HE2	1.63	0.64
2:E:208:DA:H2"	2:E:209:DT:O5'	1.96	0.64
1:B:71:THR:HG23	1:B:164:THR:OG1	1.98	0.63
1:D:71:THR:HG23	1:D:164:THR:OG1	1.97	0.63
1:D:161:PHE:HB2	1:D:178:VAL:HG13	1.79	0.63
1:A:25:GLU:O	1:A:59:PRO:HA	1.98	0.63
1:A:105:CYS:HB2	1:A:107:ASP:OD2	1.98	0.63
2:F:212:DC:H2"	2:F:213:DC:OP2	1.98	0.63
1:B:198:ARG:HD2	3:B:350:HOH:O	1.99	0.63
1:B:20:TYR:CZ	1:B:64:ASN:HB2	2.34	0.62
1:D:217:ASP:O	1:D:219:VAL:HG13	2.00	0.62
2:E:201:DA:H2'	2:E:202:DG:O4'	1.99	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:25:GLU:HB3	1:A:60:THR:N	2.14	0.62
1:A:217:ASP:O	1:A:219:VAL:HG13	1.99	0.62
1:C:105:CYS:HB2	1:C:107:ASP:OD2	1.99	0.62
1:C:36:TYR:HB3	3:C:317:HOH:O	1.99	0.61
1:C:199:VAL:HG12	1:C:201:ARG:H	1.65	0.61
1:C:217:ASP:O	1:C:219:VAL:HG13	2.00	0.61
1:D:104:LEU:CD2	1:D:104:LEU:H	2.12	0.61
1:D:267:ARG:HA	1:D:287:GLN:HA	1.82	0.61
1:D:190:ASN:HD22	1:D:190:ASN:N	1.97	0.61
1:A:29:GLN:HG3	3:A:319:HOH:O	1.99	0.61
1:B:149:ARG:HB3	1:B:149:ARG:HH11	1.65	0.61
1:D:149:ARG:HB3	1:D:149:ARG:HH11	1.66	0.61
1:B:199:VAL:HG12	1:B:201:ARG:H	1.66	0.61
2:F:223:DC:H2"	2:F:224:DG:OP2	2.01	0.61
1:B:39:GLU:HA	3:B:344:HOH:O	2.01	0.61
1:B:214:LEU:HD23	1:B:252:PHE:HE2	1.66	0.61
1:D:33:ARG:HD2	1:D:35:ARG:NH1	2.16	0.61
1:C:25:GLU:HB3	1:C:60:THR:N	2.16	0.61
1:D:246:ARG:HD2	1:D:246:ARG:N	2.14	0.61
1:B:164:THR:HG21	3:B:374:HOH:O	2.00	0.60
1:D:202:ASN:H	1:D:202:ASN:ND2	1.98	0.60
2:F:200:DT:OP1	2:F:200:DT:H6	1.84	0.60
2:F:219:DT:H2"	2:F:220:DT:OP2	1.99	0.60
1:A:145:ILE:HA	1:A:148:GLN:HG2	1.83	0.60
1:B:96:ARG:HD3	3:B:343:HOH:O	2.01	0.60
1:B:154:LEU:HD23	1:B:154:LEU:H	1.65	0.60
2:F:200:DT:H3'	2:F:201:DA:C8	2.35	0.60
2:F:214:DG:H5'	3:F:302:HOH:O	2.01	0.60
1:A:199:VAL:HG12	1:A:201:ARG:H	1.66	0.60
1:B:267:ARG:HA	1:B:287:GLN:HA	1.83	0.60
1:C:61:ILE:HD13	1:C:61:ILE:H	1.67	0.60
1:D:199:VAL:HG12	1:D:201:ARG:H	1.67	0.60
1:C:246:ARG:N	1:C:246:ARG:HD2	2.16	0.59
2:F:213:DC:H2"	2:F:214:DG:C8	2.38	0.59
1:A:202:ASN:H	1:A:202:ASN:ND2	2.00	0.59
2:F:216:DG:H2"	2:F:217:DA:H5"	1.85	0.59
1:A:267:ARG:HA	1:A:287:GLN:HA	1.85	0.59
1:B:246:ARG:HD2	1:B:246:ARG:N	2.18	0.59
1:C:267:ARG:HA	1:C:287:GLN:HA	1.85	0.59
1:A:86:HIS:CG	1:A:87:PRO:HD2	2.38	0.59
1:D:89:GLU:HG2	1:D:133:ARG:NH2	2.18	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:217:ASP:O	1:B:219:VAL:HG13	2.03	0.58
1:C:145:ILE:HA	1:C:148:GLN:HG2	1.83	0.58
1:A:51:SER:CB	1:A:57:THR:H	2.17	0.58
1:A:246:ARG:HD2	1:A:246:ARG:N	2.19	0.58
1:B:202:ASN:H	1:B:202:ASN:ND2	2.01	0.58
2:F:200:DT:H3'	2:F:201:DA:H8	1.69	0.58
2:F:208:DA:N6	2:E:218:DA:H61	2.01	0.58
1:A:195:LYS:HB2	1:A:195:LYS:NZ	2.19	0.58
1:B:104:LEU:HB2	1:B:111:HIS:CD2	2.38	0.58
2:E:212:DC:H2'	2:E:213:DC:C6	2.39	0.58
1:C:25:GLU:O	1:C:59:PRO:HA	2.02	0.58
1:A:56:LYS:H	1:A:56:LYS:CE	2.11	0.57
1:C:195:LYS:HB2	1:C:195:LYS:NZ	2.19	0.57
1:C:233:TRP:HB2	3:C:320:HOH:O	2.04	0.57
2:F:207:DA:H2"	2:F:208:DA:OP2	2.04	0.57
1:B:132:GLN:O	1:B:136:THR:HG22	2.05	0.57
2:F:216:DG:H2"	2:F:217:DA:C5'	2.35	0.57
1:B:89:GLU:HG2	1:B:133:ARG:NH2	2.19	0.57
1:C:51:SER:CB	1:C:57:THR:H	2.18	0.57
1:A:214:LEU:C	1:A:214:LEU:HD12	2.25	0.57
1:C:51:SER:HB3	1:C:57:THR:H	1.69	0.57
1:C:233:TRP:CD1	1:C:258:ALA:HB2	2.40	0.57
1:D:20:TYR:CZ	1:D:64:ASN:HB2	2.39	0.57
1:A:51:SER:HB3	1:A:57:THR:H	1.70	0.57
1:D:195:LYS:HB2	1:D:195:LYS:NZ	2.20	0.56
1:C:221:LYS:HD2	1:C:241:GLN:HB3	1.86	0.56
1:D:190:ASN:HD22	1:D:190:ASN:H	1.52	0.56
1:A:89:GLU:HG2	1:A:133:ARG:NH2	2.19	0.56
1:B:275:PRO:HG2	1:C:55:THR:OG1	2.04	0.56
1:C:56:LYS:HE3	1:C:56:LYS:N	2.11	0.56
2:E:223:DC:H2'	2:E:224:DG:C8	2.41	0.56
1:A:122:LYS:HB3	3:F:314:HOH:O	2.05	0.56
1:A:154:LEU:HD22	1:A:154:LEU:N	2.13	0.56
1:B:101:GLU:HB3	3:B:343:HOH:O	2.06	0.56
2:F:217:DA:H2"	2:F:218:DA:H8	1.67	0.55
1:A:154:LEU:H	1:A:154:LEU:CD2	2.12	0.55
1:B:23:ILE:HG21	1:B:26:GLN:NE2	2.21	0.55
1:B:104:LEU:CD2	1:B:104:LEU:H	2.19	0.55
1:A:264:ALA:HB1	1:A:265:PRO:HD2	1.88	0.55
1:C:154:LEU:N	1:C:154:LEU:HD22	2.22	0.55
2:F:208:DA:H61	2:E:218:DA:N6	2.03	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:52:THR:O	1:B:56:LYS:HD2	2.07	0.55
1:B:264:ALA:HB1	1:B:265:PRO:HD2	1.88	0.54
1:C:61:ILE:HD11	1:C:111:HIS:HB2	1.89	0.54
2:F:205:DG:H5"	3:F:305:HOH:O	2.08	0.54
1:A:76:LEU:HD11	1:A:90:LEU:HD13	1.90	0.54
1:A:187:ARG:HG3	1:A:187:ARG:HH11	1.72	0.54
1:C:61:ILE:CD1	1:C:111:HIS:HB2	2.37	0.54
1:C:89:GLU:HG2	1:C:133:ARG:NH2	2.22	0.54
1:A:155:ASN:HD21	1:A:188:ALA:HB3	1.72	0.54
1:A:202:ASN:HD22	1:A:202:ASN:N	1.96	0.54
1:C:202:ASN:H	1:C:202:ASN:ND2	2.01	0.54
1:D:89:GLU:HG2	1:D:133:ARG:HH22	1.72	0.54
1:D:132:GLN:O	1:D:136:THR:HG22	2.07	0.54
1:A:221:LYS:HD2	1:A:241:GLN:HB3	1.88	0.54
1:A:61:ILE:CD1	1:A:111:HIS:HB2	2.38	0.54
1:B:195:LYS:HB2	1:B:195:LYS:NZ	2.22	0.54
1:A:149:ARG:NH1	1:A:150:GLY:H	2.05	0.54
1:C:149:ARG:NH1	1:C:150:GLY:H	2.06	0.54
1:D:28:LYS:HB3	1:D:47:PRO:HG2	1.88	0.54
1:D:104:LEU:H	1:D:104:LEU:HD22	1.72	0.54
1:A:25:GLU:HG2	1:A:58:HIS:O	2.08	0.54
1:A:61:ILE:HD13	1:A:61:ILE:H	1.73	0.54
1:B:33:ARG:HB3	1:B:186:ASN:HB3	1.90	0.54
1:D:104:LEU:HB2	1:D:111:HIS:CD2	2.42	0.54
1:D:149:ARG:NH2	3:D:303:HOH:O	2.41	0.54
1:D:202:ASN:HD22	1:D:202:ASN:N	1.94	0.53
1:C:264:ALA:HB1	1:C:265:PRO:HD2	1.90	0.53
1:D:246:ARG:HD2	1:D:246:ARG:H	1.74	0.53
1:B:214:LEU:HD12	1:B:214:LEU:C	2.28	0.53
1:D:76:LEU:HD13	1:D:90:LEU:HD22	1.90	0.53
1:A:61:ILE:HD12	1:A:113:PHE:HE1	1.73	0.53
1:D:171:ARG:NH1	1:D:171:ARG:HB3	2.24	0.53
1:D:44:GLY:HA3	2:E:202:DG:H5"	1.91	0.53
1:C:214:LEU:C	1:C:214:LEU:HD12	2.29	0.53
1:A:51:SER:HB2	1:A:56:LYS:HA	1.91	0.53
1:D:33:ARG:CA	1:D:185:ASP:HB2	2.33	0.53
1:D:158:ARG:CZ	1:D:182:PRO:HG3	2.39	0.53
1:A:174:LEU:H	1:A:174:LEU:CD2	2.20	0.52
1:A:46:ILE:HG13	1:A:116:LEU:O	2.09	0.52
1:A:61:ILE:HD11	1:A:111:HIS:HB2	1.90	0.52
1:A:214:LEU:HD23	1:A:252:PHE:CE2	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:25:GLU:HG2	1:C:58:HIS:O	2.09	0.52
1:B:171:ARG:NH1	1:B:171:ARG:HB3	2.24	0.52
1:C:93:LYS:HG2	1:C:94:ASP:OD1	2.09	0.52
1:C:189:PRO:HG3	1:C:218:LYS:HB3	1.91	0.52
1:A:34:PHE:CD1	1:A:185:ASP:HB2	2.45	0.52
1:C:202:ASN:HD22	1:C:202:ASN:N	1.98	0.52
1:B:89:GLU:HG2	1:B:133:ARG:HH22	1.75	0.52
1:A:133:ARG:O	1:A:136:THR:HG22	2.10	0.52
1:B:154:LEU:HD23	1:B:154:LEU:N	2.25	0.52
1:B:221:LYS:HD2	1:B:241:GLN:HB3	1.92	0.52
1:B:76:LEU:HD13	1:B:90:LEU:HD22	1.92	0.52
1:C:51:SER:HB2	1:C:56:LYS:HA	1.92	0.52
1:D:264:ALA:HB1	1:D:265:PRO:HD2	1.92	0.52
1:B:76:LEU:HD21	1:B:90:LEU:HD13	1.93	0.51
1:B:202:ASN:HD22	1:B:202:ASN:N	1.98	0.51
1:C:86:HIS:CG	1:C:87:PRO:HD2	2.46	0.51
1:D:31:GLY:C	1:D:186:ASN:HD21	2.14	0.51
1:B:51:SER:HB2	1:B:57:THR:OG1	2.09	0.51
1:D:86:HIS:CG	1:D:87:PRO:HD2	2.46	0.51
1:D:221:LYS:HD2	1:D:241:GLN:HB3	1.93	0.51
1:B:164:THR:HG22	1:B:174:LEU:HA	1.91	0.51
2:F:203:DC:C2'	2:F:204:DG:OP2	2.56	0.51
1:C:220:GLN:HE21	1:C:220:GLN:CA	2.18	0.51
1:D:158:ARG:NH1	1:D:182:PRO:HD3	2.26	0.51
1:B:58:HIS:CG	1:B:114:GLN:HB3	2.46	0.50
1:B:220:GLN:HE21	1:B:220:GLN:CA	2.19	0.50
1:C:61:ILE:HD12	1:C:113:PHE:HE1	1.76	0.50
1:C:159:LEU:HB2	1:C:180:SER:OG	2.11	0.50
1:D:58:HIS:CG	1:D:114:GLN:HB3	2.46	0.50
1:B:82:PRO:O	1:B:84:ARG:HG3	2.11	0.50
1:C:133:ARG:O	1:C:136:THR:HG22	2.11	0.50
1:A:61:ILE:HD13	1:A:111:HIS:O	2.11	0.50
1:C:214:LEU:HD23	1:C:252:PHE:CE2	2.45	0.50
1:D:214:LEU:HD23	1:D:252:PHE:CE2	2.43	0.50
2:E:222:DC:H2"	2:E:223:DC:H5'	1.94	0.50
1:B:34:PHE:CD1	1:B:185:ASP:HB2	2.47	0.50
2:E:204:DG:H2'	2:E:205:DG:C8	2.47	0.50
1:A:54:THR:HG22	1:D:239:PHE:O	2.12	0.50
1:C:61:ILE:HD13	1:C:111:HIS:O	2.11	0.50
1:A:124:ARG:HG3	3:F:314:HOH:O	2.11	0.49
2:F:225:DC:C6	2:F:226:DT:H72	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:114:GLN:H	1:C:114:GLN:NE2	2.10	0.49
1:B:81:PRO:HB2	1:B:82:PRO:HD3	1.93	0.49
1:C:88:HIS:ND1	1:C:120:CYS:HA	2.27	0.49
1:D:50:ARG:HB2	1:D:50:ARG:HH11	1.77	0.49
1:D:81:PRO:HB2	1:D:82:PRO:HD3	1.94	0.49
1:D:214:LEU:C	1:D:214:LEU:HD12	2.32	0.49
1:D:164:THR:HG22	1:D:174:LEU:HA	1.93	0.49
1:C:84:ARG:HG2	1:C:148:GLN:HA	1.95	0.49
2:F:214:DG:H2"	2:F:215:DG:O5'	2.13	0.49
1:C:46:ILE:HG13	1:C:116:LEU:O	2.12	0.49
1:A:54:THR:HG22	1:D:239:PHE:H	1.78	0.49
1:C:50:ARG:O	1:C:51:SER:C	2.51	0.49
1:D:23:ILE:HG21	1:D:26:GLN:NE2	2.27	0.49
2:E:202:DG:H2'	2:E:203:DC:C6	2.48	0.49
1:C:54:THR:HG21	3:C:337:HOH:O	2.12	0.49
1:C:161:PHE:HB2	1:C:178:VAL:CG2	2.43	0.49
1:D:202:ASN:ND2	1:D:202:ASN:N	2.60	0.48
1:A:233:TRP:CD1	1:A:258:ALA:HB2	2.49	0.48
1:C:122:LYS:HG2	2:E:209:DT:H5'	1.95	0.48
1:A:84:ARG:HG2	1:A:148:GLN:HA	1.95	0.48
1:D:220:GLN:HE21	1:D:220:GLN:CA	2.18	0.48
1:A:50:ARG:O	1:A:51:SER:C	2.52	0.48
1:C:33:ARG:O	1:C:33:ARG:HG3	2.12	0.48
1:D:50:ARG:HB2	1:D:50:ARG:NH1	2.28	0.48
1:D:139:ASN:HD21	1:D:143:VAL:CG1	2.27	0.48
1:A:246:ARG:HD2	1:A:246:ARG:H	1.79	0.48
1:B:225:GLU:HB2	1:B:236:ARG:CD	2.41	0.48
1:C:246:ARG:HD2	1:C:246:ARG:H	1.78	0.48
2:F:208:DA:C2'	2:F:209:DT:OP2	2.60	0.48
1:D:82:PRO:O	1:D:84:ARG:HG3	2.13	0.48
1:A:60:THR:HG23	1:A:111:HIS:O	2.13	0.48
1:A:76:LEU:HD13	1:A:90:LEU:HD22	1.96	0.48
1:A:158:ARG:CZ	1:A:182:PRO:HG3	2.44	0.48
1:D:184:PHE:CD1	1:D:184:PHE:N	2.81	0.48
1:A:220:GLN:HE21	1:A:220:GLN:CA	2.21	0.47
1:C:202:ASN:ND2	1:C:202:ASN:N	2.62	0.47
1:C:245:HIS:HB3	1:C:249:ALA:HB3	1.95	0.47
1:A:161:PHE:HB2	1:A:178:VAL:CG2	2.45	0.47
1:A:187:ARG:HG3	1:A:187:ARG:NH1	2.30	0.47
1:C:124:ARG:NH2	3:C:303:HOH:O	2.47	0.47
1:D:185:ASP:OD2	1:D:187:ARG:HB3	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:220:DT:H2"	2:E:221:DT:H5'	1.97	0.47
1:B:104:LEU:H	1:B:104:LEU:HD22	1.78	0.47
1:C:114:GLN:H	1:C:114:GLN:HE21	1.61	0.47
1:C:174:LEU:H	1:C:174:LEU:CD2	2.22	0.47
2:F:207:DA:H2"	2:F:208:DA:C8	2.49	0.47
2:F:214:DG:H2"	2:F:215:DG:O4'	2.15	0.47
1:C:108:ARG:HD3	1:C:108:ARG:N	2.30	0.47
1:C:154:LEU:HD22	1:C:154:LEU:H	1.79	0.47
1:D:44:GLY:CA	2:E:202:DG:H5"	2.45	0.47
2:E:218:DA:H2"	2:E:219:DT:O4'	2.14	0.47
1:A:159:LEU:HB2	1:A:180:SER:OG	2.15	0.47
1:B:139:ASN:HD21	1:B:143:VAL:CG1	2.27	0.47
1:A:69:PRO:HA	1:A:106:PRO:HG3	1.96	0.47
1:B:34:PHE:N	1:B:34:PHE:CD2	2.82	0.47
1:A:114:GLN:H	1:A:114:GLN:NE2	2.13	0.46
2:E:218:DA:H2'	2:E:219:DT:C6	2.50	0.46
1:A:60:THR:HG23	1:A:111:HIS:C	2.35	0.46
1:A:108:ARG:HD3	1:A:108:ARG:N	2.30	0.46
1:A:33:ARG:HB3	1:A:186:ASN:HB3	1.96	0.46
1:A:202:ASN:ND2	1:A:202:ASN:N	2.60	0.46
1:B:36:TYR:CE2	2:E:220:DT:H5"	2.50	0.46
1:C:146:GLU:HB2	3:C:323:HOH:O	2.15	0.46
1:C:76:LEU:HD11	1:C:90:LEU:HD13	1.97	0.46
1:A:273:ARG:NH1	3:A:304:HOH:O	2.48	0.46
1:B:67:THR:HA	3:B:325:HOH:O	2.15	0.46
1:B:236:ARG:HG3	1:B:237:GLY:N	2.31	0.46
1:A:26:GLN:OE1	1:A:27:PRO:HD2	2.16	0.46
1:A:89:GLU:HG2	1:A:133:ARG:HH22	1.80	0.46
1:D:122:LYS:HA	2:F:220:DT:OP1	2.16	0.46
1:A:54:THR:HA	1:D:239:PHE:O	2.16	0.46
1:A:40:GLY:O	1:A:41:ARG:HD3	2.16	0.45
1:A:56:LYS:HE3	1:A:56:LYS:N	2.16	0.45
1:A:78:THR:HG22	1:A:79:LYS:N	2.31	0.45
1:B:25:GLU:HB3	1:B:60:THR:H	1.81	0.45
1:C:69:PRO:HA	1:C:106:PRO:HG3	1.99	0.45
1:D:28:LYS:CB	1:D:47:PRO:HG2	2.45	0.45
1:D:104:LEU:CD2	1:D:104:LEU:N	2.78	0.45
2:E:203:DC:H2'	2:E:204:DG:O4'	2.16	0.45
1:A:34:PHE:CE1	1:A:185:ASP:HB2	2.52	0.45
1:A:58:HIS:HB3	1:A:113:PHE:O	2.17	0.45
1:A:215:LEU:HB3	1:B:245:HIS:CD2	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:225:GLU:HB2	1:A:236:ARG:CD	2.41	0.45
1:A:245:HIS:HB3	1:A:249:ALA:HB3	1.97	0.45
1:C:258:ALA:O	1:C:260:PRO:HD3	2.16	0.45
1:D:139:ASN:HD21	1:D:143:VAL:HG13	1.82	0.45
1:C:76:LEU:HD13	1:C:90:LEU:HD22	1.98	0.45
1:C:233:TRP:HD1	3:C:358:HOH:O	1.98	0.45
2:F:201:DA:H2"	2:F:202:DG:O4'	2.17	0.45
1:A:96:ARG:NH1	1:A:101:GLU:HB3	2.31	0.45
1:B:74:ILE:HB	1:B:100:TYR:HB3	1.97	0.45
1:B:166:ARG:HB2	3:B:330:HOH:O	2.17	0.45
1:C:74:ILE:HB	1:C:100:TYR:HB3	1.99	0.45
1:C:123:LYS:O	1:C:126:LEU:HB2	2.17	0.45
1:A:50:ARG:NH1	3:A:303:HOH:O	2.47	0.45
1:B:46:ILE:HD12	1:B:116:LEU:CB	2.47	0.45
1:B:188:ALA:HB3	1:B:191:THR:OG1	2.17	0.45
1:C:215:LEU:HB3	1:D:245:HIS:CD2	2.52	0.45
2:F:213:DC:C2'	2:F:214:DG:OP2	2.60	0.45
2:E:223:DC:C5'	3:E:310:HOH:O	2.64	0.45
1:B:262:LEU:HD12	1:B:290:PRO:HB3	1.99	0.44
1:D:158:ARG:HH12	1:D:182:PRO:HD3	1.82	0.44
2:E:207:DA:H2'	2:E:208:DA:O4'	2.17	0.44
2:F:216:DG:C2'	2:F:217:DA:H5"	2.47	0.44
1:C:78:THR:HA	3:C:322:HOH:O	2.16	0.44
1:C:96:ARG:NH1	1:C:101:GLU:HB3	2.32	0.44
1:D:245:HIS:HB3	1:D:249:ALA:HB3	1.99	0.44
1:B:233:TRP:CD1	1:B:258:ALA:HB2	2.52	0.44
1:D:258:ALA:O	1:D:260:PRO:HD3	2.17	0.44
1:A:132:GLN:O	1:A:136:THR:HG22	2.17	0.44
1:D:262:LEU:HD12	1:D:290:PRO:HB3	1.99	0.44
1:C:60:THR:HG23	1:C:111:HIS:C	2.37	0.44
2:F:207:DA:H2"	2:F:208:DA:H8	1.83	0.44
2:E:215:DG:H2'	2:E:216:DG:O4'	2.17	0.44
1:A:245:HIS:CE1	1:A:246:ARG:HD3	2.53	0.44
1:B:139:ASN:HD21	1:B:143:VAL:HG13	1.83	0.44
1:B:245:HIS:HB3	1:B:249:ALA:HB3	2.00	0.44
1:D:76:LEU:HD21	1:D:90:LEU:HD13	1.99	0.44
1:D:80:ASP:HB3	1:D:81:PRO:HD2	2.00	0.44
1:C:26:GLN:OE1	1:C:27:PRO:HD2	2.18	0.44
1:C:88:HIS:CG	1:C:120:CYS:HA	2.53	0.44
1:D:124:ARG:HH11	2:E:211:DC:P	2.41	0.44
1:A:236:ARG:HG3	1:A:237:GLY:N	2.31	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:35:ARG:NH2	1:C:41:ARG:NH1	2.65	0.43
2:F:219:DT:C2'	2:F:220:DT:OP2	2.61	0.43
1:B:81:PRO:HB2	1:B:82:PRO:CD	2.47	0.43
1:D:26:GLN:O	1:D:49:GLU:HB2	2.19	0.43
2:F:201:DA:C3'	2:F:202:DG:H5"	2.47	0.43
2:F:202:DG:H2"	2:F:203:DC:C6	2.52	0.43
1:A:114:GLN:H	1:A:114:GLN:HE21	1.66	0.43
1:A:262:LEU:HD12	1:A:290:PRO:HB3	2.00	0.43
1:B:247:GLN:NE2	2:E:217:DA:C5'	2.78	0.43
2:F:207:DA:C2'	2:F:208:DA:OP2	2.66	0.43
1:A:76:LEU:CD1	1:A:90:LEU:HD22	2.48	0.43
1:C:248:VAL:HG11	1:D:246:ARG:HG2	2.01	0.43
1:D:81:PRO:HB2	1:D:82:PRO:CD	2.48	0.43
2:E:205:DG:H2'	2:E:206:DA:C8	2.53	0.43
1:A:155:ASN:HD22	1:A:191:THR:HG21	1.83	0.43
1:B:86:HIS:CG	1:B:87:PRO:HD2	2.53	0.43
1:D:190:ASN:H	1:D:190:ASN:ND2	2.15	0.43
1:C:60:THR:HG23	1:C:111:HIS:O	2.19	0.43
1:C:229:THR:O	1:C:268:VAL:HB	2.19	0.43
1:B:246:ARG:HD2	1:B:246:ARG:H	1.83	0.43
1:D:195:LYS:HB2	1:D:195:LYS:HZ2	1.84	0.43
2:E:207:DA:C6	2:E:208:DA:C6	3.06	0.43
1:A:41:ARG:NH2	2:E:214:DG:O6	2.52	0.43
1:A:54:THR:OG1	1:A:55:THR:N	2.52	0.43
1:B:34:PHE:O	1:B:187:ARG:NH2	2.52	0.43
1:D:74:ILE:HB	1:D:100:TYR:HB3	2.00	0.43
1:C:58:HIS:HB3	1:C:113:PHE:O	2.18	0.42
1:C:61:ILE:HD13	1:C:61:ILE:N	2.32	0.42
1:D:149:ARG:NH1	3:D:304:HOH:O	2.51	0.42
1:A:123:LYS:O	1:A:126:LEU:HB2	2.19	0.42
1:A:149:ARG:HG3	3:A:350:HOH:O	2.18	0.42
1:B:214:LEU:HD23	1:B:252:PHE:CE2	2.49	0.42
1:B:229:THR:O	1:B:268:VAL:HB	2.20	0.42
1:B:257:TYR:CG	1:B:258:ALA:N	2.87	0.42
1:D:122:LYS:CG	2:F:220:DT:H5'	2.47	0.42
1:C:88:HIS:CE1	1:C:120:CYS:HB2	2.54	0.42
1:D:187:ARG:HG2	3:D:318:HOH:O	2.19	0.42
1:A:248:VAL:HG11	1:B:246:ARG:HG2	2.02	0.42
1:A:67:THR:HG22	1:A:67:THR:O	2.19	0.42
1:A:285:GLU:N	3:A:305:HOH:O	2.53	0.42
1:C:114:GLN:C	1:C:115:ASN:HD22	2.23	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:218:DA:H2"	2:F:219:DT:OP2	2.19	0.42
2:E:214:DG:C2'	2:E:215:DG:O4'	2.56	0.42
1:A:44:GLY:HA2	3:A:333:HOH:O	2.20	0.42
1:A:88:HIS:ND1	1:A:120:CYS:HA	2.33	0.42
1:B:34:PHE:CE1	1:B:185:ASP:HB2	2.55	0.42
1:C:278:ARG:HD3	3:C:346:HOH:O	2.19	0.42
1:D:188:ALA:HA	1:D:189:PRO:HD3	1.88	0.42
1:A:20:TYR:CE1	1:A:64:ASN:HB2	2.54	0.42
1:A:77:VAL:HG23	1:A:158:ARG:HB2	2.02	0.42
1:A:88:HIS:CE1	1:A:120:CYS:HB2	2.55	0.42
1:C:134:ILE:HB	3:C:340:HOH:O	2.18	0.42
1:C:205:SER:HA	1:C:289:LEU:O	2.20	0.42
1:D:128:GLN:HG3	1:D:129:ALA:N	2.35	0.42
1:A:28:LYS:HG2	1:A:30:ARG:O	2.20	0.42
1:A:148:GLN:HG3	1:A:149:ARG:N	2.35	0.42
2:E:201:DA:OP2	2:E:201:DA:C8	2.60	0.42
1:A:74:ILE:HB	1:A:100:TYR:HB3	2.01	0.41
1:D:25:GLU:HB3	1:D:60:THR:H	1.85	0.41
2:E:212:DC:H2'	2:E:213:DC:C5	2.54	0.41
1:C:40:GLY:O	1:C:41:ARG:HD3	2.20	0.41
1:C:167:ASP:CG	1:C:169:ALA:H	2.24	0.41
2:F:204:DG:C2'	2:F:205:DG:OP2	2.62	0.41
1:B:122:LYS:HD3	2:E:221:DT:P	2.61	0.41
2:E:207:DA:H2"	2:E:208:DA:H5'	2.02	0.41
1:A:86:HIS:ND1	1:A:87:PRO:HD2	2.35	0.41
2:E:202:DG:N2	2:E:203:DC:C2	2.89	0.41
2:E:200:DT:O2	2:E:200:DT:H2'	2.21	0.41
1:A:104:LEU:O	1:A:106:PRO:HD3	2.20	0.41
1:A:206:CYS:HA	1:A:288:TYR:CD2	2.55	0.41
2:F:212:DC:C2'	2:F:213:DC:OP2	2.64	0.41
1:A:228:PHE:O	1:A:234:GLU:HA	2.21	0.41
1:C:58:HIS:CD2	1:C:114:GLN:HB3	2.56	0.41
1:C:89:GLU:HG2	1:C:133:ARG:HH22	1.83	0.41
1:D:228:PHE:O	1:D:234:GLU:HA	2.21	0.41
1:D:245:HIS:CE1	1:D:246:ARG:HD3	2.55	0.41
1:B:171:ARG:HB3	1:B:171:ARG:HH11	1.86	0.41
1:C:134:ILE:H	1:C:134:ILE:HG12	1.71	0.41
1:C:148:GLN:HG3	1:C:149:ARG:N	2.34	0.41
1:B:228:PHE:O	1:B:234:GLU:HA	2.21	0.41
1:C:236:ARG:HD2	3:C:361:HOH:O	2.20	0.41
1:D:190:ASN:N	1:D:190:ASN:ND2	2.66	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:108:ARG:HG2	1:A:110:ILE:H	1.87	0.40
1:A:176:THR:HG21	3:A:377:HOH:O	2.21	0.40
1:B:167:ASP:OD1	1:B:171:ARG:HG2	2.21	0.40
1:A:90:LEU:HD12	1:A:90:LEU:HA	1.94	0.40
1:A:167:ASP:CG	1:A:169:ALA:H	2.24	0.40
1:C:20:TYR:CE1	1:C:64:ASN:HB2	2.56	0.40
1:D:149:ARG:HH11	1:D:149:ARG:CB	2.34	0.40
2:F:207:DA:OP2	2:F:207:DA:H8	2.04	0.40
2:F:210:DT:H1'	2:F:211:DC:H5'	2.04	0.40
2:E:208:DA:C2'	2:E:209:DT:OP2	2.65	0.40
1:A:258:ALA:O	1:A:260:PRO:HD3	2.22	0.40
1:B:222:GLU:O	1:C:56:LYS:HE2	2.22	0.40
1:C:78:THR:HG22	1:C:79:LYS:N	2.36	0.40
1:D:52:THR:OG1	1:D:53:ASP:N	2.54	0.40
1:D:205:SER:HA	1:D:289:LEU:O	2.21	0.40
1:A:205:SER:HA	1:A:289:LEU:O	2.22	0.40
1:B:42:SER:HB3	2:F:203:DC:H5	1.86	0.40
1:C:132:GLN:O	1:C:136:THR:HG22	2.22	0.40
1:D:78:THR:HG21	1:D:84:ARG:HD3	2.02	0.40
1:A:88:HIS:CG	1:A:120:CYS:HA	2.56	0.40
1:A:134:ILE:H	1:A:134:ILE:HG12	1.70	0.40
1:C:104:LEU:O	1:C:106:PRO:HD3	2.21	0.40
2:F:209:DT:H2"	2:F:210:DT:O5'	2.22	0.40
2:F:214:DG:OP2	2:F:214:DG:H8	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	271/273 (99%)	237 (88%)	31 (11%)	3 (1%)	14 26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	B	271/273 (99%)	232 (86%)	38 (14%)	1 (0%)	34 54
1	C	271/273 (99%)	239 (88%)	28 (10%)	4 (2%)	10 18
1	D	271/273 (99%)	234 (86%)	35 (13%)	2 (1%)	22 39
All	All	1084/1092 (99%)	942 (87%)	132 (12%)	10 (1%)	17 31

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	51	SER
1	C	51	SER
1	C	261	SER
1	A	42	SER
1	C	42	SER
1	D	29	GLN
1	D	261	SER
1	A	261	SER
1	B	150	GLY
1	C	165	VAL

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	243/243 (100%)	222 (91%)	21 (9%)	10 20
1	B	243/243 (100%)	223 (92%)	20 (8%)	11 22
1	C	243/243 (100%)	220 (90%)	23 (10%)	8 17
1	D	243/243 (100%)	222 (91%)	21 (9%)	10 20
All	All	972/972 (100%)	887 (91%)	85 (9%)	10 20

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	56	LYS

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Mol	Chain	Res	Type
1	A	61	ILE
1	A	84	ARG
1	A	96	ARG
1	A	105	CYS
1	A	107	ASP
1	A	108	ARG
1	A	114	GLN
1	A	126	LEU
1	A	154	LEU
1	A	167	ASP
1	A	171	ARG
1	A	176	THR
1	A	195	LYS
1	A	202	ASN
1	A	214	LEU
1	A	220	GLN
1	A	222	GLU
1	A	246	ARG
1	A	262	LEU
1	A	289	LEU
1	B	41	ARG
1	B	54	THR
1	B	55	THR
1	B	71	THR
1	B	76	LEU
1	B	84	ARG
1	B	96	ARG
1	B	104	LEU
1	B	137	ASN
1	B	154	LEU
1	B	179	LEU
1	B	195	LYS
1	B	202	ASN
1	B	214	LEU
1	B	220	GLN
1	B	222	GLU
1	B	246	ARG
1	B	262	LEU
1	B	278	ARG
1	B	289	LEU
1	C	56	LYS
1	C	61	ILE

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Mol	Chain	Res	Type
1	C	84	ARG
1	C	96	ARG
1	C	105	CYS
1	C	107	ASP
1	C	108	ARG
1	C	114	GLN
1	C	126	LEU
1	C	149	ARG
1	C	167	ASP
1	C	171	ARG
1	C	176	THR
1	C	184	PHE
1	C	190	ASN
1	C	195	LYS
1	C	202	ASN
1	C	214	LEU
1	C	220	GLN
1	C	222	GLU
1	C	246	ARG
1	C	262	LEU
1	C	289	LEU
1	D	30	ARG
1	D	42	SER
1	D	53	ASP
1	D	54	THR
1	D	71	THR
1	D	76	LEU
1	D	84	ARG
1	D	96	ARG
1	D	104	LEU
1	D	137	ASN
1	D	179	LEU
1	D	184	PHE
1	D	190	ASN
1	D	195	LYS
1	D	202	ASN
1	D	214	LEU
1	D	220	GLN
1	D	222	GLU
1	D	246	ARG
1	D	262	LEU
1	D	289	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	114	GLN
1	A	115	ASN
1	A	128	GLN
1	A	155	ASN
1	A	162	GLN
1	A	181	HIS
1	A	202	ASN
1	A	220	GLN
1	A	241	GLN
1	A	287	GLN
1	B	29	GLN
1	B	135	GLN
1	B	137	ASN
1	B	202	ASN
1	B	220	GLN
1	B	241	GLN
1	B	287	GLN
1	C	114	GLN
1	C	115	ASN
1	C	128	GLN
1	C	155	ASN
1	C	162	GLN
1	C	190	ASN
1	C	202	ASN
1	C	220	GLN
1	C	241	GLN
1	C	287	GLN
1	D	135	GLN
1	D	137	ASN
1	D	190	ASN
1	D	202	ASN
1	D	220	GLN
1	D	241	GLN
1	D	287	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	273/273 (100%)	0.24	11 (4%) 38 41	52, 81, 123, 162	0
1	B	273/273 (100%)	0.14	6 (2%) 62 65	48, 74, 120, 149	0
1	C	273/273 (100%)	0.16	11 (4%) 38 41	49, 80, 126, 162	0
1	D	273/273 (100%)	0.09	9 (3%) 46 50	47, 74, 117, 149	0
2	E	27/27 (100%)	-0.37	0 100 100	61, 80, 139, 164	0
2	F	27/27 (100%)	-0.46	0 100 100	59, 81, 131, 160	0
All	All	1146/1146 (100%)	0.13	37 (3%) 47 51	47, 78, 123, 164	0

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	263	GLN	5.4
1	A	147	GLU	4.4
1	A	55	THR	4.2
1	C	150	GLY	3.6
1	D	81	PRO	3.4
1	A	148	GLN	3.3
1	A	102	ALA	3.3
1	C	55	THR	3.2
1	C	54	THR	3.1
1	D	263	GLN	3.0
1	A	146	GLU	3.0
1	A	270	MET	2.9
1	C	151	ASP	2.9
1	B	32	MET	2.9
1	D	21	VAL	2.8
1	B	149	ARG	2.7
1	D	143	VAL	2.7
1	D	56	LYS	2.5
1	C	148	GLN	2.5

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Mol	Chain	Res	Type	RSRZ
1	D	149	ARG	2.4
1	B	41	ARG	2.3
1	D	147	GLU	2.3
1	C	138	ASN	2.3
1	C	149	ARG	2.3
1	D	168	PRO	2.2
1	D	55	THR	2.2
1	C	102	ALA	2.2
1	B	81	PRO	2.2
1	C	231	PRO	2.2
1	B	42	SER	2.2
1	A	142	HIS	2.2
1	A	23	ILE	2.1
1	A	19	PRO	2.0
1	A	81	PRO	2.0
1	C	143	VAL	2.0
1	A	64	ASN	2.0
1	C	152	TYR	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (i)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.