Full wwPDB X-ray Structure Validation Report ⓘ

Sep 23, 2024 – 10:11 AM EDT

PDB ID	:	8U9L
Title	:	Crystal Structure of RelA-cRel chimera complex with DNA
Authors	:	Chang, A.; Wu, Y.; Li, S.X.; Smale, S.; Chen, L.
Deposited on	:	2023-09-19
Resolution	:	3.09 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:

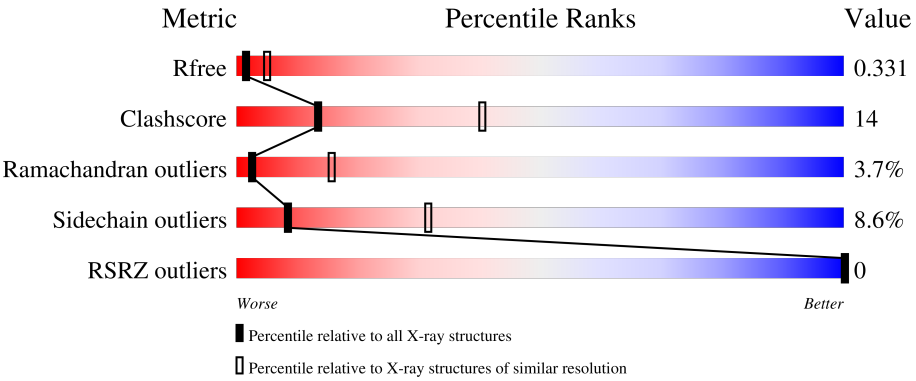
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.002 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.38.3

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 3.09 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}	164625	1351 (3.10-3.10)
Clashscore	180529	1454 (3.10-3.10)
Ramachandran outliers	177936	1391 (3.10-3.10)
Sidechain outliers	177891	1391 (3.10-3.10)
RSRZ outliers	164620	1351 (3.10-3.10)

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	C	20	30% 65% 5%
1	E	20	25% 65% 10%
1	I	20	5% 45% 50%
1	M	20	50% 50%
2	D	20	25% 60% 15%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	F	20	15% 60% 25%
2	J	20	30% 70%
2	N	20	10% 30% 60%
3	A	277	68% 28%
3	B	277	68% 26% 5%
3	G	277	70% 25%
3	H	277	71% 21% 6%
3	K	277	69% 29%
3	L	277	62% 30% 6%
3	O	277	69% 27%
3	P	277	65% 29% 5%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 20864 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 DNA chain called DNA (5'-D(P*TP*TP*TP*GP*AP*TP*GP*GP*GP*AP*AP *TP*TP*TP*CP*CP*GP*AP*TP*TP*C)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	E	20	Total	C	N	O	P	0	0	0
			412	197	70	125	20			
1	C	20	Total	C	N	O	P	0	0	0
			412	197	70	125	20			
1	I	20	Total	C	N	O	P	0	0	0
			412	197	70	125	20			
1	M	20	Total	C	N	O	P	0	0	0
			412	197	70	125	20			

- Molecule 2 is a DNA chain called DNA (5'-D(P*GP*AP*AP*TP*CP*GP*GP*AP*AP*AP *TP*TP*CP*CP*CP*AP*TP*CP*AP*A)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	F	20	Total	C	N	O	P	0	0	0
			410	195	78	117	20			
2	D	20	Total	C	N	O	P	0	0	0
			410	195	78	117	20			
2	J	20	Total	C	N	O	P	0	0	0
			410	195	78	117	20			
2	N	20	Total	C	N	O	P	0	0	0
			410	195	78	117	20			

- Molecule 3 is a protein called Transcription factor p65,Proto-oncogene c-Rel chimera.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	A	276	Total	C	N	O	S	0	0	0
			2203	1388	394	410	11			
3	B	274	Total	C	N	O	S	0	0	0
			2191	1382	391	407	11			
3	G	276	Total	C	N	O	S	0	0	0
			2203	1388	394	410	11			

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	H	274	Total	C	N	O	S	0	0	0
			2191	1382	391	407	11			
3	K	276	Total	C	N	O	S	0	0	0
			2203	1388	394	410	11			
3	L	274	Total	C	N	O	S	0	0	0
			2191	1382	391	407	11			
3	O	276	Total	C	N	O	S	0	0	0
			2203	1388	394	410	11			
3	P	274	Total	C	N	O	S	0	0	0
			2191	1382	391	407	11			

There are 112 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP Q04207
A	111	GLU	GLY	conflict	UNP P15307
A	127	PRO	GLY	conflict	UNP P15307
A	144	LEU	CYS	conflict	UNP P15307
A	145	CYS	VAL	conflict	UNP P15307
A	147	GLN	MET	conflict	UNP P15307
A	148	VAL	PHE	conflict	UNP P15307
A	154	HIS	ASP	conflict	UNP P15307
A	171	ASP	-	linker	UNP P15307
A	172	ASN	-	linker	UNP P15307
A	173	ARG	-	linker	UNP P15307
A	174	ALA	-	linker	UNP P15307
A	175	PRO	-	linker	UNP P15307
A	176	ASN	-	linker	UNP P15307
B	1	MET	-	initiating methionine	UNP Q04207
B	111	GLU	GLY	conflict	UNP P15307
B	127	PRO	GLY	conflict	UNP P15307
B	144	LEU	CYS	conflict	UNP P15307
B	145	CYS	VAL	conflict	UNP P15307
B	147	GLN	MET	conflict	UNP P15307
B	148	VAL	PHE	conflict	UNP P15307
B	154	HIS	ASP	conflict	UNP P15307
B	171	ASP	-	linker	UNP P15307
B	172	ASN	-	linker	UNP P15307
B	173	ARG	-	linker	UNP P15307
B	174	ALA	-	linker	UNP P15307
B	175	PRO	-	linker	UNP P15307
B	176	ASN	-	linker	UNP P15307
G	1	MET	-	initiating methionine	UNP Q04207

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
G	111	GLU	GLY	conflict	UNP P15307
G	127	PRO	GLY	conflict	UNP P15307
G	144	LEU	CYS	conflict	UNP P15307
G	145	CYS	VAL	conflict	UNP P15307
G	147	GLN	MET	conflict	UNP P15307
G	148	VAL	PHE	conflict	UNP P15307
G	154	HIS	ASP	conflict	UNP P15307
G	171	ASP	-	linker	UNP P15307
G	172	ASN	-	linker	UNP P15307
G	173	ARG	-	linker	UNP P15307
G	174	ALA	-	linker	UNP P15307
G	175	PRO	-	linker	UNP P15307
G	176	ASN	-	linker	UNP P15307
H	1	MET	-	initiating methionine	UNP Q04207
H	111	GLU	GLY	conflict	UNP P15307
H	127	PRO	GLY	conflict	UNP P15307
H	144	LEU	CYS	conflict	UNP P15307
H	145	CYS	VAL	conflict	UNP P15307
H	147	GLN	MET	conflict	UNP P15307
H	148	VAL	PHE	conflict	UNP P15307
H	154	HIS	ASP	conflict	UNP P15307
H	171	ASP	-	linker	UNP P15307
H	172	ASN	-	linker	UNP P15307
H	173	ARG	-	linker	UNP P15307
H	174	ALA	-	linker	UNP P15307
H	175	PRO	-	linker	UNP P15307
H	176	ASN	-	linker	UNP P15307
K	1	MET	-	initiating methionine	UNP Q04207
K	111	GLU	GLY	conflict	UNP P15307
K	127	PRO	GLY	conflict	UNP P15307
K	144	LEU	CYS	conflict	UNP P15307
K	145	CYS	VAL	conflict	UNP P15307
K	147	GLN	MET	conflict	UNP P15307
K	148	VAL	PHE	conflict	UNP P15307
K	154	HIS	ASP	conflict	UNP P15307
K	171	ASP	-	linker	UNP P15307
K	172	ASN	-	linker	UNP P15307
K	173	ARG	-	linker	UNP P15307
K	174	ALA	-	linker	UNP P15307
K	175	PRO	-	linker	UNP P15307
K	176	ASN	-	linker	UNP P15307
L	1	MET	-	initiating methionine	UNP Q04207

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
L	111	GLU	GLY	conflict	UNP P15307
L	127	PRO	GLY	conflict	UNP P15307
L	144	LEU	CYS	conflict	UNP P15307
L	145	CYS	VAL	conflict	UNP P15307
L	147	GLN	MET	conflict	UNP P15307
L	148	VAL	PHE	conflict	UNP P15307
L	154	HIS	ASP	conflict	UNP P15307
L	171	ASP	-	linker	UNP P15307
L	172	ASN	-	linker	UNP P15307
L	173	ARG	-	linker	UNP P15307
L	174	ALA	-	linker	UNP P15307
L	175	PRO	-	linker	UNP P15307
L	176	ASN	-	linker	UNP P15307
O	1	MET	-	initiating methionine	UNP Q04207
O	111	GLU	GLY	conflict	UNP P15307
O	127	PRO	GLY	conflict	UNP P15307
O	144	LEU	CYS	conflict	UNP P15307
O	145	CYS	VAL	conflict	UNP P15307
O	147	GLN	MET	conflict	UNP P15307
O	148	VAL	PHE	conflict	UNP P15307
O	154	HIS	ASP	conflict	UNP P15307
O	171	ASP	-	linker	UNP P15307
O	172	ASN	-	linker	UNP P15307
O	173	ARG	-	linker	UNP P15307
O	174	ALA	-	linker	UNP P15307
O	175	PRO	-	linker	UNP P15307
O	176	ASN	-	linker	UNP P15307
P	1	MET	-	initiating methionine	UNP Q04207
P	111	GLU	GLY	conflict	UNP P15307
P	127	PRO	GLY	conflict	UNP P15307
P	144	LEU	CYS	conflict	UNP P15307
P	145	CYS	VAL	conflict	UNP P15307
P	147	GLN	MET	conflict	UNP P15307
P	148	VAL	PHE	conflict	UNP P15307
P	154	HIS	ASP	conflict	UNP P15307
P	171	ASP	-	linker	UNP P15307
P	172	ASN	-	linker	UNP P15307
P	173	ARG	-	linker	UNP P15307
P	174	ALA	-	linker	UNP P15307
P	175	PRO	-	linker	UNP P15307
P	176	ASN	-	linker	UNP P15307

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: DNA (5'-D(P*TP*TP*TP*GP*AP*TP*GP*GP*GP*AP*AP*TP*TP*TP*CP*CP*GP*AP*TP*TP*C)-3')

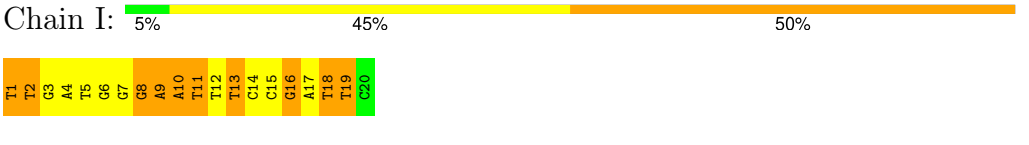
Chain E:

• Molecule 1: DNA (5'-D(P*TP*TP*TP*GP*AP*TP*GP*GP*GP*AP*AP*TP*TP*TP*CP*CP*GP*AP*TP*TP*C)-3')

Chain C:

• Molecule 1: DNA (5'-D(P*TP*TP*TP*GP*AP*TP*GP*GP*GP*AP*AP*TP*TP*TP*CP*CP*GP*AP*TP*TP*C)-3')

Chain I:

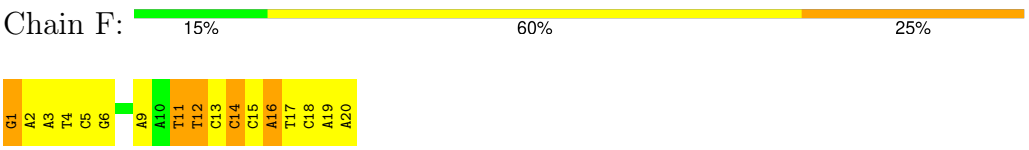


• Molecule 1: DNA (5'-D(P*TP*TP*TP*GP*AP*TP*GP*GP*GP*AP*AP*TP*TP*TP*CP*CP*GP*AP*TP*TP*C)-3')

Chain M:

• Molecule 2: DNA (5'-D(P*GP*AP*AP*TP*CP*GP*GP*AP*AP*AP*TP*TP*CP*CP*CP*AP*TP*CP*AP*A)-3')

Chain F:



• Molecule 2: DNA (5'-D(P*GP*AP*AP*TP*CP*GP*GP*AP*AP*AP*TP*TP*CP*CP*CP*AP*TP*CP*AP*A)-3')

Chain D:

• Molecule 2: DNA (5'-D(P*GP*AP*AP*TP*CP*GP*GP*AP*AP*AP*TP*TP*CP*CP*CP*AP*TP*CP*AP*A)-3')

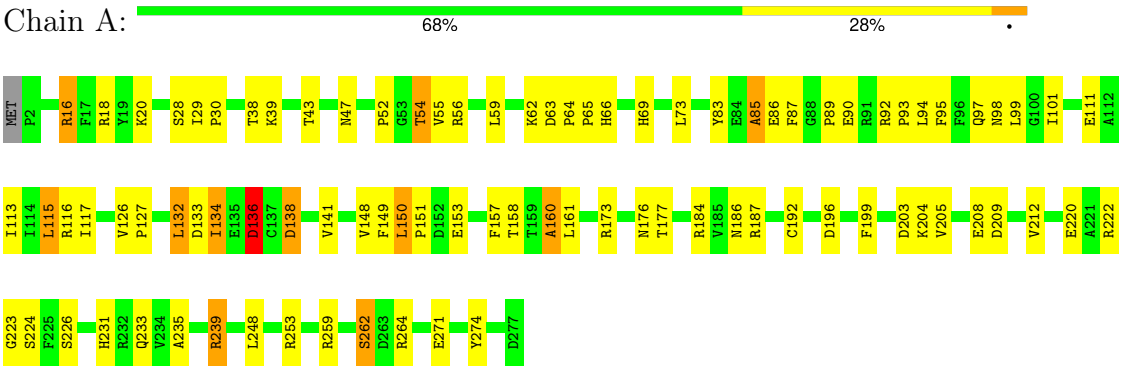
Chain J:

• Molecule 2: DNA (5'-D(P*GP*AP*AP*TP*CP*GP*GP*AP*AP*AP*TP*TP*CP*CP*CP*AP*TP*CP*AP*A)-3')

Chain N:

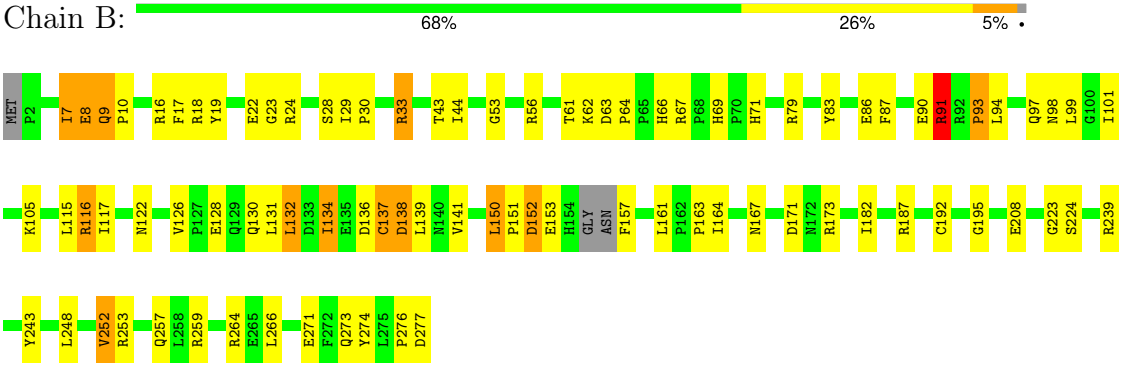
• Molecule 3: Transcription factor p65,Proto-oncogene c-Rel chimera

Chain A:



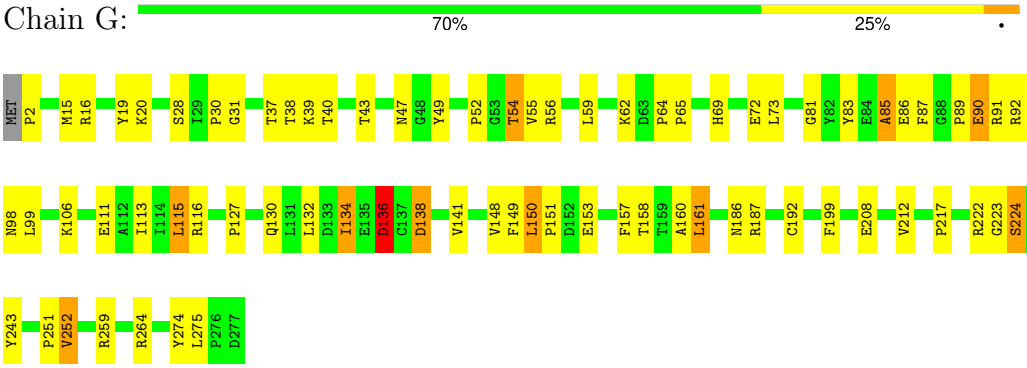
• Molecule 3: Transcription factor p65,Proto-oncogene c-Rel chimera

Chain B:



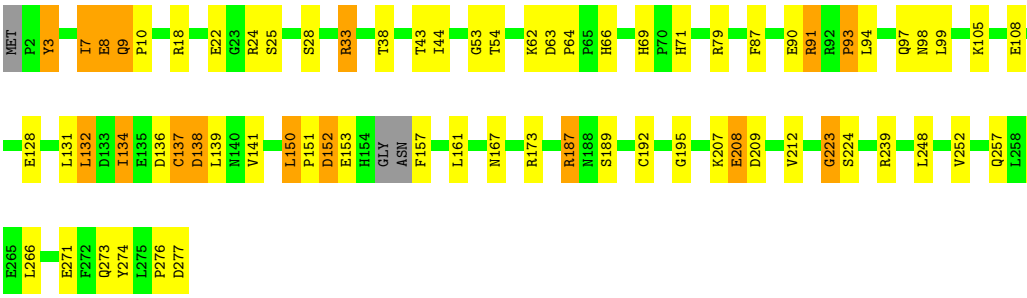
• Molecule 3: Transcription factor p65,Proto-oncogene c-Rel chimera

Chain G:



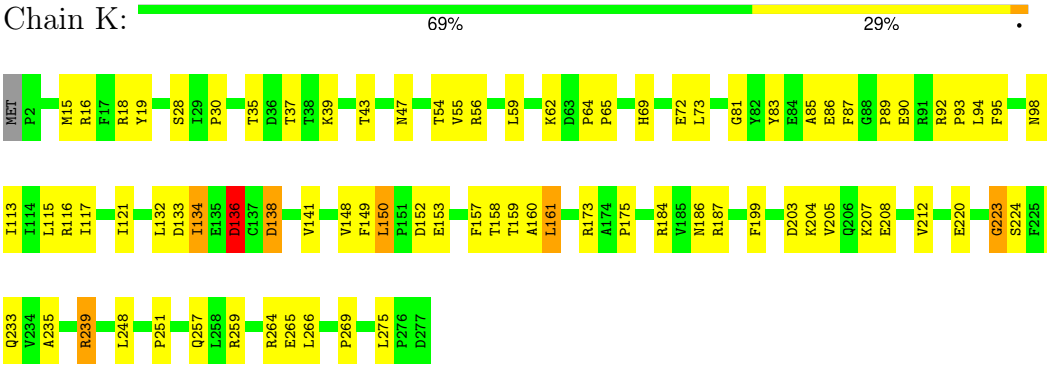
• Molecule 3: Transcription factor p65,Proto-oncogene c-Rel chimera

Chain H:



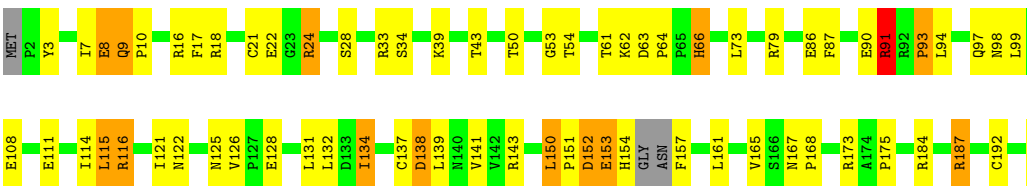
• Molecule 3: Transcription factor p65,Proto-oncogene c-Rel chimera

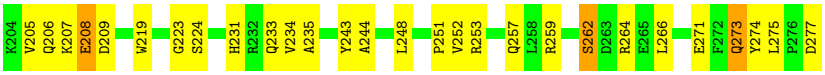
Chain K:



• Molecule 3: Transcription factor p65,Proto-oncogene c-Rel chimera

Chain L:



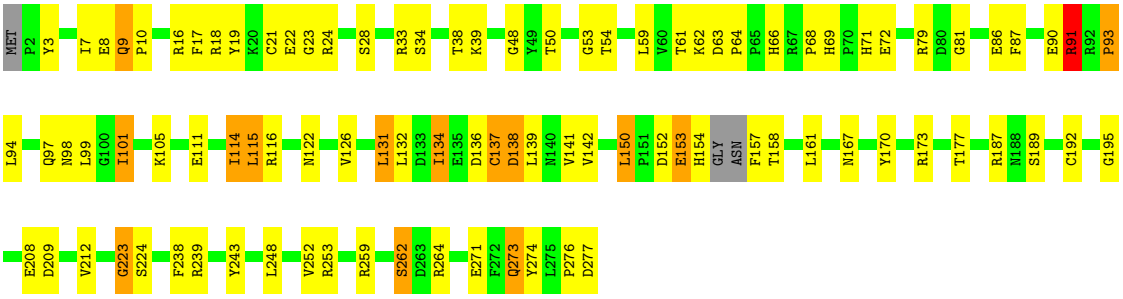


• Molecule 3: Transcription factor p65,Proto-oncogene c-Rel chimera

Chain O:

• Molecule 3: Transcription factor p65,Proto-oncogene c-Rel chimera

Chain P:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	65.91Å 110.46Å 162.84Å 82.20° 77.98° 72.81°	Depositor
Resolution (Å)	47.92 – 3.09 47.92 – 3.09	Depositor EDS
% Data completeness (in resolution range)	96.0 (47.92-3.09) 94.6 (47.92-3.09)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.59 (at 3.07Å)	Xtriage
Refinement program	PHENIX (1.16_3549: ???)	Depositor
R, R_{free}	0.277 , 0.329 0.278 , 0.331	Depositor DCC
R_{free} test set	73196 reflections (2.65%)	wwPDB-VP
Wilson B-factor (Å^2)	79.3	Xtriage
Anisotropy	0.399	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.29 , 72.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.45$, $< L^2 > = 0.28$	Xtriage
Estimated twinning fraction	0.038 for h,h-k,h-l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	20864	wwPDB-VP
Average B, all atoms (Å^2)	85.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 79.65 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 5.3229e-07. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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	C	1.36	1/460 (0.2%)	1.25	2/707 (0.3%)
1	E	1.27	2/460 (0.4%)	1.12	1/707 (0.1%)
1	I	1.68	9/460 (2.0%)	1.40	7/707 (1.0%)
1	M	1.72	6/460 (1.3%)	1.46	8/707 (1.1%)
2	D	1.33	2/460 (0.4%)	1.21	3/705 (0.4%)
2	F	1.33	4/460 (0.9%)	1.14	2/705 (0.3%)
2	J	1.79	10/460 (2.2%)	1.78	13/705 (1.8%)
2	N	1.94	15/460 (3.3%)	1.67	13/705 (1.8%)
3	A	0.44	0/2258	0.68	1/3061 (0.0%)
3	B	0.43	0/2245	0.64	0/3042
3	G	0.45	0/2258	0.69	0/3061
3	H	0.45	0/2245	0.67	0/3042
3	K	0.47	0/2258	0.70	0/3061
3	L	0.46	0/2245	0.69	0/3042
3	O	0.50	2/2258 (0.1%)	0.72	1/3061 (0.0%)
3	P	0.47	0/2245	0.67	0/3042
All	All	0.77	51/21692 (0.2%)	0.86	51/30060 (0.2%)

All (51) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	N	19	DA	N9-C4	-11.79	1.30	1.37
2	J	1	DG	OP3-P	-10.69	1.48	1.61
1	C	1	DT	OP3-P	-10.66	1.48	1.61
2	F	1	DG	OP3-P	-10.62	1.48	1.61
2	D	1	DG	OP3-P	-10.50	1.48	1.61
1	M	1	DT	OP3-P	-10.47	1.48	1.61
2	N	1	DG	OP3-P	-10.44	1.48	1.61
1	I	1	DT	OP3-P	-10.02	1.49	1.61
1	E	1	DT	OP3-P	-10.01	1.49	1.61
2	J	8	DA	N7-C5	7.54	1.43	1.39
2	J	15	DC	C1'-N1	7.34	1.58	1.49
2	N	12	DT	C1'-N1	7.14	1.58	1.49

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	3	DA	N9-C4	-7.08	1.33	1.37
2	N	5	DC	C3'-O3'	-6.96	1.34	1.44
2	N	5	DC	N3-C4	6.91	1.38	1.33
1	I	13	DT	C1'-N1	6.83	1.58	1.49
1	I	2	DT	C1'-N1	6.57	1.57	1.49
2	F	16	DA	N7-C5	-6.48	1.35	1.39
2	N	16	DA	C3'-O3'	-6.45	1.35	1.44
1	I	18	DT	N1-C2	6.40	1.43	1.38
2	N	19	DA	N3-C4	-6.40	1.31	1.34
2	N	14	DC	C3'-O3'	-6.08	1.36	1.44
1	M	4	DA	C3'-O3'	-6.07	1.36	1.44
1	I	9	DA	C3'-O3'	-5.91	1.36	1.44
2	J	19	DA	C3'-O3'	-5.85	1.36	1.44
1	I	13	DT	N1-C2	5.85	1.42	1.38
2	F	14	DC	C3'-O3'	-5.76	1.36	1.44
2	N	4	DT	C1'-N1	5.72	1.56	1.49
1	I	19	DT	C1'-N1	5.71	1.56	1.49
2	J	12	DT	C1'-N1	5.65	1.56	1.49
1	I	18	DT	C1'-N1	5.61	1.56	1.49
1	M	18	DT	P-O5'	-5.56	1.54	1.59
1	M	17	DA	N9-C4	-5.54	1.34	1.37
2	J	10	DA	C3'-O3'	-5.51	1.36	1.44
2	J	7	DG	C8-N7	-5.49	1.27	1.30
1	M	1	DT	N1-C2	-5.46	1.33	1.38
2	J	8	DA	N9-C4	-5.43	1.34	1.37
2	N	18	DC	N1-C2	-5.42	1.34	1.40
3	O	78	CYS	CB-SG	-5.40	1.73	1.81
1	E	6	DG	C3'-O3'	-5.39	1.36	1.44
3	O	183	CYS	CB-SG	-5.38	1.73	1.81
1	M	8	DG	C3'-O3'	-5.35	1.36	1.44
2	F	16	DA	C3'-O3'	-5.33	1.37	1.44
2	N	19	DA	C2-N3	-5.32	1.28	1.33
2	N	19	DA	N7-C5	-5.17	1.36	1.39
2	N	14	DC	C4-C5	-5.14	1.38	1.43
2	N	5	DC	C1'-N1	5.07	1.55	1.49
2	N	6	DG	C5'-C4'	5.07	1.56	1.51
1	I	10	DA	N9-C4	5.06	1.40	1.37
2	J	14	DC	P-O5'	-5.04	1.54	1.59
2	D	8	DA	N9-C4	-5.02	1.34	1.37

All (51) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	J	14	DC	O5'-P-OP2	-19.59	87.19	110.70
2	J	10	DA	O5'-P-OP2	-12.82	94.16	105.70
2	N	4	DT	O5'-P-OP2	-12.65	94.31	105.70
2	N	9	DA	O5'-P-OP1	-9.29	97.33	105.70
1	M	3	DG	O5'-P-OP1	-8.56	97.99	105.70
2	N	12	DT	OP2-P-O3'	8.26	123.38	105.20
1	I	14	DC	O5'-P-OP1	-8.11	98.40	105.70
2	J	18	DC	O4'-C1'-N1	7.86	113.50	108.00
1	M	5	DT	O4'-C1'-N1	-7.78	102.55	108.00
2	N	11	DT	O5'-P-OP2	-7.59	98.87	105.70
2	J	9	DA	OP2-P-O3'	7.09	120.80	105.20
1	C	9	DA	O5'-P-OP1	-7.08	99.33	105.70
2	J	8	DA	O5'-P-OP2	-6.63	99.74	105.70
2	J	14	DC	O4'-C1'-N1	6.54	112.58	108.00
2	D	9	DA	O5'-P-OP2	-6.44	99.91	105.70
2	D	10	DA	O5'-P-OP2	-6.34	100.00	105.70
1	M	14	DC	O5'-P-OP2	-6.31	100.03	105.70
1	I	2	DT	N3-C4-O4	6.26	123.66	119.90
1	I	17	DA	O4'-C1'-N9	-5.93	103.85	108.00
1	M	5	DT	N3-C4-O4	5.93	123.46	119.90
1	I	8	DG	O5'-P-OP1	-5.82	100.46	105.70
2	N	12	DT	N3-C4-O4	5.80	123.38	119.90
2	N	4	DT	N3-C4-O4	5.80	123.38	119.90
2	F	12	DT	N3-C4-O4	5.71	123.33	119.90
2	N	18	DC	O4'-C1'-N1	-5.66	104.03	108.00
2	N	11	DT	N3-C4-O4	5.64	123.28	119.90
1	M	12	DT	N3-C4-O4	5.45	123.17	119.90
2	J	13	DC	OP2-P-O3'	5.37	117.02	105.20
2	J	18	DC	C3'-C2'-C1'	-5.37	96.06	102.50
3	O	201	LEU	CA-CB-CG	5.36	127.63	115.30
2	J	10	DA	OP1-P-OP2	5.36	127.63	119.60
1	I	13	DT	N3-C4-O4	5.35	123.11	119.90
1	M	19	DT	N3-C4-O4	5.30	123.08	119.90
2	D	7	DG	O5'-P-OP2	-5.27	100.96	105.70
1	M	5	DT	C5-C4-O4	-5.24	121.23	124.90
1	I	16	DG	O4'-C1'-N9	-5.23	104.34	108.00
2	J	11	DT	OP1-P-OP2	5.21	127.41	119.60
2	J	8	DA	C3'-C2'-C1'	-5.21	96.25	102.50
1	M	12	DT	O5'-P-OP2	-5.20	101.02	105.70
2	N	13	DC	O5'-P-OP1	-5.18	101.03	105.70
2	N	4	DT	C5-C4-O4	-5.16	121.29	124.90
2	F	11	DT	OP1-P-OP2	5.15	127.32	119.60
2	N	13	DC	OP2-P-O3'	5.11	116.44	105.20

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	18	DT	N3-C4-O4	5.09	122.96	119.90
2	J	7	DG	OP2-P-O3'	5.09	116.41	105.20
2	N	16	DA	O4'-C1'-N9	-5.09	104.44	108.00
1	I	11	DT	N3-C4-O4	5.07	122.94	119.90
2	N	5	DC	O4'-C1'-N1	5.07	111.55	108.00
2	J	4	DT	N3-C4-O4	5.06	122.94	119.90
1	C	5	DT	N3-C4-O4	5.02	122.91	119.90
3	A	132	LEU	CA-CB-CG	5.01	126.83	115.30

There are no chirality outliers.

There are no planarity outliers.

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	C	412	0	229	16	0
1	E	412	0	229	20	0
1	I	412	0	229	29	0
1	M	412	0	229	44	0
2	D	410	0	225	22	0
2	F	410	0	225	26	0
2	J	410	0	225	56	0
2	N	410	0	225	65	0
3	A	2203	0	2175	43	0
3	B	2191	0	2165	57	0
3	G	2203	0	2175	38	0
3	H	2191	0	2165	46	0
3	K	2203	0	2175	43	0
3	L	2191	0	2165	62	0
3	O	2203	0	2175	49	0
3	P	2191	0	2165	55	0
All	All	20864	0	19176	559	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 14.

All (559) 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)
1:M:3:DG:N1	2:N:18:DC:O2	1.86	1.06
1:M:2:DT:N3	2:N:19:DA:N1	2.06	1.04
1:M:12:DT:OP2	3:P:19:TYR:OH	1.78	1.01
1:M:17:DA:N1	2:N:4:DT:N3	2.09	1.00
1:I:8:DG:N1	2:J:13:DC:N3	2.09	0.99
2:J:5:DC:H41	3:L:24:ARG:HH22	1.12	0.98
1:M:18:DT:N3	2:N:3:DA:N1	2.13	0.97
1:M:16:DG:O6	2:N:5:DC:N4	1.98	0.96
1:M:16:DG:N1	2:N:5:DC:N3	2.14	0.95
2:N:17:DT:H2"	2:N:18:DC:C5	2.02	0.94
2:D:1:DG:H2'	2:D:2:DA:C8	2.02	0.94
1:I:8:DG:N2	2:J:13:DC:O2	1.99	0.94
1:I:8:DG:O6	2:J:13:DC:N4	2.00	0.93
3:L:9:GLN:HG3	3:L:10:PRO:HD2	1.50	0.93
1:C:6:DG:N2	2:D:15:DC:O2	2.00	0.93
3:P:9:GLN:HG3	3:P:10:PRO:HD2	1.50	0.93
1:I:9:DA:N1	2:J:12:DT:N3	2.15	0.93
1:I:7:DG:N1	2:J:14:DC:N3	2.16	0.92
1:I:7:DG:N2	2:J:14:DC:O2	2.03	0.91
2:J:15:DC:H2"	2:J:16:DA:C8	2.06	0.91
3:P:18:ARG:NH1	3:P:22:GLU:OE2	2.06	0.89
2:N:15:DC:H2"	2:N:16:DA:C8	2.09	0.88
2:N:15:DC:H2"	2:N:16:DA:N7	1.89	0.86
1:M:7:DG:O6	3:O:18:ARG:NH2	2.09	0.86
2:J:5:DC:H41	3:L:24:ARG:NH2	1.74	0.85
2:D:5:DC:H41	3:H:24:ARG:HH22	1.22	0.85
3:H:9:GLN:HG3	3:H:10:PRO:HD2	1.59	0.84
2:J:17:DT:H4'	2:J:18:DC:H5'	1.58	0.84
2:N:1:DG:H2'	2:N:2:DA:C8	2.14	0.83
2:J:1:DG:H2'	2:J:2:DA:C8	2.14	0.83
3:B:117:ILE:HG21	3:B:131:LEU:HD11	1.60	0.83
1:I:6:DG:N1	2:J:15:DC:N3	2.26	0.82
1:E:3:DG:N2	2:F:18:DC:O2	2.12	0.82
1:E:17:DA:N6	2:F:4:DT:O4	2.10	0.81
3:G:73:LEU:HD22	3:G:99:LEU:HD22	1.61	0.81
1:M:15:DC:N4	2:N:6:DG:O6	2.11	0.81
2:J:10:DA:H2"	2:J:11:DT:H5"	1.63	0.80
1:I:6:DG:N2	2:J:15:DC:O2	2.14	0.80
2:F:1:DG:H2'	2:F:2:DA:C8	2.18	0.79
1:C:7:DG:N1	2:D:14:DC:N3	2.25	0.79
3:O:28:SER:HA	3:O:99:LEU:O	1.83	0.79

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:248:LEU:HD21	3:L:252:VAL:HG22	1.65	0.78
1:C:7:DG:N2	2:D:14:DC:O2	2.11	0.78
3:B:9:GLN:HG3	3:B:10:PRO:HD2	1.66	0.77
3:P:248:LEU:HD21	3:P:252:VAL:HG22	1.67	0.77
1:M:8:DG:O6	3:O:16:ARG:NH2	2.18	0.77
2:J:6:DG:N7	3:L:18:ARG:NH2	2.34	0.76
3:G:150:LEU:HD22	3:G:161:LEU:HD11	1.66	0.76
1:M:17:DA:N6	2:N:4:DT:O4	2.15	0.76
3:H:128:GLU:HG2	3:O:117:ILE:HG13	1.69	0.76
3:B:128:GLU:HG2	3:K:117:ILE:HG13	1.69	0.75
3:P:150:LEU:HD22	3:P:161:LEU:HD21	1.69	0.75
3:O:55:VAL:HG12	3:O:148:VAL:HG22	1.67	0.75
3:H:8:GLU:HB2	3:H:43:THR:HG22	1.69	0.74
3:A:253:ARG:NH2	3:A:271:GLU:OE1	2.21	0.74
3:P:62:LYS:HD2	3:P:141:VAL:HG11	1.68	0.73
1:M:1:DT:N3	2:N:20:DA:C2	2.57	0.73
3:L:209:ASP:OD2	3:L:262:SER:OG	2.08	0.72
3:P:59:LEU:HD11	3:P:101:ILE:HG12	1.70	0.72
3:G:28:SER:HA	3:G:99:LEU:O	1.89	0.72
3:A:73:LEU:HD22	3:A:99:LEU:HD22	1.70	0.72
3:A:28:SER:HA	3:A:99:LEU:O	1.90	0.72
1:I:5:DT:H3	2:J:16:DA:H61	1.35	0.72
1:C:6:DG:N2	2:D:15:DC:C2	2.54	0.71
3:L:62:LYS:HD2	3:L:141:VAL:HG11	1.73	0.71
1:M:2:DT:N3	2:N:19:DA:C2	2.59	0.71
3:A:55:VAL:HG12	3:A:148:VAL:HG22	1.72	0.70
1:M:2:DT:C2	2:N:19:DA:C2	2.79	0.70
3:O:186:ASN:HB2	3:O:199:PHE:H	1.56	0.70
2:J:18:DC:H2"	2:J:19:DA:OP2	1.91	0.70
3:K:28:SER:HA	3:K:99:LEU:O	1.90	0.69
1:I:11:DT:H1'	1:I:12:DT:H5"	1.74	0.69
3:G:55:VAL:HG12	3:G:148:VAL:HG22	1.73	0.69
3:K:69:HIS:NE2	3:K:138:ASP:O	2.16	0.69
3:A:69:HIS:NE2	3:A:138:ASP:O	2.16	0.69
2:J:15:DC:H2"	2:J:16:DA:H8	1.55	0.69
2:N:19:DA:H8	2:N:19:DA:OP2	1.74	0.69
3:A:150:LEU:HD22	3:A:161:LEU:HD11	1.75	0.69
3:A:117:ILE:HG13	3:L:128:GLU:HG2	1.75	0.69
1:M:16:DG:N2	2:N:5:DC:O2	2.20	0.69
3:H:248:LEU:HD21	3:H:252:VAL:HG22	1.74	0.68
3:H:18:ARG:NH1	3:H:22:GLU:OE2	2.26	0.68

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:7:DG:O6	2:D:14:DC:N4	2.21	0.67
3:K:73:LEU:HD22	3:K:99:LEU:HD22	1.75	0.67
1:E:2:DT:N3	2:F:19:DA:C2	2.63	0.66
3:B:248:LEU:HD21	3:B:252:VAL:HG22	1.77	0.66
3:L:9:GLN:HG2	3:L:167:ASN:ND2	2.10	0.66
1:M:2:DT:O2	2:N:19:DA:C2	2.48	0.66
3:G:54:THR:HG22	3:G:85:ALA:HA	1.78	0.66
2:F:17:DT:H2"	2:F:18:DC:C5	2.31	0.65
3:H:9:GLN:OE1	3:H:167:ASN:N	2.30	0.65
2:J:19:DA:OP2	2:J:19:DA:C4	2.50	0.65
1:E:8:DG:O6	3:A:16:ARG:NH2	2.30	0.64
3:K:69:HIS:O	3:K:116:ARG:NH1	2.30	0.64
3:B:8:GLU:HB2	3:B:43:THR:HG22	1.78	0.64
3:L:91:ARG:HG3	3:L:93:PRO:HA	1.79	0.64
1:I:5:DT:H3	2:J:16:DA:N6	1.96	0.64
1:E:1:DT:N3	2:F:20:DA:H2	1.96	0.63
2:J:19:DA:H1'	2:J:20:DA:O4'	1.99	0.63
3:O:209:ASP:OD2	3:O:262:SER:OG	2.16	0.63
2:N:19:DA:H2"	2:N:20:DA:C8	2.34	0.62
3:B:163:PRO:O	3:P:48:GLY:HA2	1.99	0.62
3:L:18:ARG:NH1	3:L:22:GLU:OE2	2.32	0.62
1:I:7:DG:O6	2:J:14:DC:N4	2.22	0.62
3:H:195:GLY:O	3:H:239:ARG:NH1	2.29	0.62
3:H:28:SER:HA	3:H:99:LEU:O	2.00	0.62
3:K:64:PRO:HB2	3:K:65:PRO:HD3	1.82	0.62
2:N:14:DC:H2"	2:N:15:DC:C5	2.35	0.62
1:E:12:DT:OP2	3:B:19:TYR:OH	2.12	0.61
3:H:259:ARG:NH1	3:H:264:ARG:HG2	2.16	0.61
3:A:186:ASN:HB2	3:A:199:PHE:H	1.66	0.61
3:B:62:LYS:HD2	3:B:141:VAL:HG11	1.82	0.61
3:L:66:HIS:CD2	3:L:165:VAL:HG11	2.36	0.61
3:B:91:ARG:HG3	3:B:93:PRO:HA	1.81	0.60
2:N:11:DT:H2'	2:N:12:DT:H71	1.81	0.60
2:J:5:DC:H2"	2:J:6:DG:C8	2.36	0.60
3:H:192:CYS:HB3	3:H:248:LEU:HD22	1.84	0.60
2:N:13:DC:H2"	2:N:14:DC:H6	1.65	0.60
3:O:54:THR:HG22	3:O:85:ALA:HA	1.83	0.60
3:O:150:LEU:HD22	3:O:161:LEU:HD11	1.84	0.60
1:I:9:DA:OP1	3:L:207:LYS:NZ	2.24	0.60
3:O:64:PRO:HB2	3:O:65:PRO:HD3	1.83	0.60
3:K:55:VAL:HG12	3:K:148:VAL:HG22	1.84	0.59

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:4:DA:H61	2:N:17:DT:H3	1.49	0.59
3:L:61:THR:HG22	3:L:63:ASP:H	1.68	0.59
3:L:150:LEU:HD22	3:L:161:LEU:HD21	1.83	0.59
2:F:9:DA:OP2	3:A:233:GLN:NE2	2.32	0.59
2:D:10:DA:H2"	2:D:11:DT:H5"	1.84	0.59
3:B:9:GLN:OE1	3:B:167:ASN:N	2.36	0.59
1:M:1:DT:C2	2:N:20:DA:C2	2.91	0.59
2:N:9:DA:OP2	3:O:233:GLN:NE2	2.30	0.59
3:O:192:CYS:HA	3:O:274:TYR:CD2	2.37	0.59
1:M:1:DT:C2	2:N:20:DA:H2	2.20	0.59
2:N:17:DT:H2"	2:N:18:DC:C4	2.38	0.58
3:O:113:ILE:HD13	3:O:134:ILE:HD12	1.84	0.58
3:P:53:GLY:O	3:P:87:PHE:HB3	2.03	0.58
2:N:13:DC:H2"	2:N:14:DC:C6	2.38	0.58
3:O:30:PRO:HB3	3:O:39:LYS:HE2	1.86	0.58
2:F:11:DT:H72	3:A:173:ARG:HD3	1.86	0.58
3:H:150:LEU:HD22	3:H:161:LEU:HD21	1.86	0.58
3:A:113:ILE:HD13	3:A:134:ILE:HD12	1.86	0.58
2:N:12:DT:H2"	2:N:13:DC:H6	1.69	0.58
3:K:43:THR:HG23	3:K:95:PHE:HB3	1.86	0.57
2:N:7:DG:P	3:O:232:ARG:HH12	2.27	0.57
1:I:6:DG:H1	2:J:15:DC:N4	2.02	0.57
3:H:248:LEU:HB3	3:H:276:PRO:HA	1.87	0.57
3:L:192:CYS:HA	3:L:274:TYR:HD2	1.69	0.57
2:F:19:DA:OP2	2:F:19:DA:H8	1.87	0.57
2:F:15:DC:H2"	2:F:16:DA:C8	2.39	0.57
1:I:6:DG:N2	2:J:15:DC:C2	2.58	0.57
3:B:195:GLY:O	3:B:239:ARG:NH1	2.37	0.56
2:J:10:DA:C2'	2:J:11:DT:H5"	2.34	0.56
3:K:150:LEU:HD22	3:K:161:LEU:HD11	1.86	0.56
1:M:4:DA:N6	2:N:17:DT:H3	2.04	0.56
3:H:63:ASP:O	3:H:66:HIS:ND1	2.39	0.56
3:A:231:HIS:HB3	3:A:235:ALA:HB3	1.86	0.56
3:H:209:ASP:OD2	3:H:262:SER:OG	2.21	0.56
3:K:259:ARG:NH1	3:K:264:ARG:HG2	2.21	0.56
1:M:3:DG:C2	2:N:18:DC:O2	2.58	0.56
3:O:69:HIS:O	3:O:116:ARG:NH1	2.38	0.56
3:P:61:THR:HG22	3:P:63:ASP:H	1.71	0.56
1:I:13:DT:H2'	3:L:21:CYS:SG	2.45	0.55
1:C:13:DT:H2"	1:C:14:DC:H5'	1.87	0.55
3:B:29:ILE:HD11	3:B:101:ILE:HG13	1.88	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:64:PRO:HB2	3:G:65:PRO:HD3	1.88	0.55
3:G:43:THR:HG23	3:G:95:PHE:HB3	1.88	0.55
3:B:16:ARG:HH21	3:B:173:ARG:NH2	2.04	0.55
1:I:6:DG:C2	2:J:15:DC:N3	2.75	0.55
3:K:113:ILE:HD13	3:K:134:ILE:HD12	1.88	0.55
2:J:5:DC:N4	3:L:24:ARG:HH22	1.94	0.55
3:K:175:PRO:HG3	3:K:204:LYS:HE3	1.88	0.55
3:P:195:GLY:O	3:P:239:ARG:NH1	2.39	0.54
1:I:6:DG:O6	2:J:15:DC:N4	2.38	0.54
2:N:14:DC:H2"	2:N:15:DC:C6	2.43	0.54
1:M:17:DA:C2	1:M:18:DT:C2	2.96	0.54
3:G:52:PRO:HG2	3:G:151:PRO:HG3	1.90	0.54
2:J:15:DC:C2'	2:J:16:DA:C8	2.84	0.54
3:L:122:ASN:HD21	3:L:126:VAL:HG22	1.73	0.54
1:C:6:DG:N1	2:D:15:DC:N3	2.53	0.53
3:H:136:ASP:O	3:H:137:CYS:HB2	2.08	0.53
2:J:11:DT:OP2	3:K:19:TYR:OH	2.13	0.53
3:H:53:GLY:O	3:H:87:PHE:HB3	2.08	0.53
3:B:122:ASN:HD21	3:B:126:VAL:HG22	1.72	0.53
1:C:11:DT:H1'	1:C:12:DT:H5"	1.90	0.53
3:G:69:HIS:NE2	3:G:138:ASP:O	2.26	0.53
2:J:11:DT:H72	3:K:173:ARG:HD3	1.90	0.53
2:J:14:DC:H2"	2:J:15:DC:C5	2.44	0.53
3:L:192:CYS:HA	3:L:274:TYR:CD2	2.43	0.53
3:L:253:ARG:HG2	3:L:271:GLU:HG3	1.89	0.53
2:D:11:DT:OP1	3:G:106:LYS:HB2	2.08	0.53
3:O:4:VAL:HB	3:O:164:ILE:HD11	1.91	0.53
3:H:138:ASP:O	3:H:139:LEU:HB2	2.09	0.52
3:K:186:ASN:HB2	3:K:199:PHE:H	1.74	0.52
3:L:259:ARG:NH1	3:L:264:ARG:HG2	2.24	0.52
2:F:3:DA:C8	2:F:4:DT:H72	2.44	0.52
3:A:64:PRO:HB2	3:A:65:PRO:HD3	1.90	0.52
2:N:15:DC:C2'	2:N:16:DA:N7	2.69	0.52
3:P:253:ARG:HG2	3:P:271:GLU:HG3	1.91	0.52
3:A:149:PHE:HD1	3:A:160:ALA:HA	1.74	0.52
3:O:150:LEU:HD22	3:O:161:LEU:HD21	1.91	0.52
3:H:91:ARG:HG3	3:H:93:PRO:HA	1.91	0.52
2:J:9:DA:C2	2:J:10:DA:C4	2.97	0.52
1:M:8:DG:C2	1:M:9:DA:C4	2.98	0.52
1:E:1:DT:N3	2:F:20:DA:C2	2.68	0.52
1:E:7:DG:O6	3:A:18:ARG:NH2	2.43	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:11:DT:OP1	3:O:106:LYS:HB2	2.09	0.52
3:O:170:TYR:HB3	3:O:177:THR:HB	1.91	0.52
3:O:192:CYS:HA	3:O:274:TYR:HD2	1.75	0.52
3:G:2:PRO:HG3	3:G:49:TYR:HB2	1.92	0.52
3:L:28:SER:HB2	3:L:97:GLN:O	2.10	0.52
3:P:192:CYS:SG	3:P:248:LEU:HB2	2.50	0.52
3:H:53:GLY:C	3:H:87:PHE:HB3	2.30	0.52
3:K:62:LYS:HD2	3:K:141:VAL:HG11	1.91	0.52
3:L:53:GLY:C	3:L:87:PHE:HB3	2.30	0.52
1:M:13:DT:H2"	1:M:14:DC:H5'	1.92	0.52
2:D:15:DC:H2"	2:D:16:DA:C8	2.45	0.52
1:E:13:DT:H2"	1:E:14:DC:H5'	1.92	0.51
3:O:67:ARG:HB3	3:O:134:ILE:HD11	1.92	0.51
3:G:149:PHE:HD1	3:G:160:ALA:HA	1.75	0.51
2:J:18:DC:C2'	2:J:19:DA:OP2	2.58	0.51
2:D:5:DC:N4	3:H:24:ARG:HH22	1.99	0.51
1:E:3:DG:C2	2:F:19:DA:C2	2.99	0.51
3:H:105:LYS:HB2	3:H:108:GLU:HG3	1.93	0.51
1:M:3:DG:C4	2:N:19:DA:C2	2.99	0.51
3:A:62:LYS:HD2	3:A:141:VAL:HG11	1.93	0.51
3:O:251:PRO:HB3	3:O:275:LEU:HD23	1.93	0.51
3:B:18:ARG:NH1	3:B:22:GLU:OE2	2.43	0.51
3:G:136:ASP:OD1	3:G:138:ASP:HB2	2.12	0.51
1:I:1:DT:C2'	1:I:2:DT:H71	2.41	0.51
3:L:138:ASP:O	3:L:139:LEU:HB2	2.10	0.51
3:L:187:ARG:NH1	3:L:196:ASP:HB3	2.26	0.51
1:M:1:DT:O2	2:N:20:DA:C2	2.64	0.51
3:O:56:ARG:HD3	3:O:121:ILE:HD12	1.93	0.50
2:N:5:DC:H41	3:P:24:ARG:HH22	1.59	0.50
1:E:1:DT:H3	2:F:20:DA:H2	1.45	0.50
2:F:17:DT:H2"	2:F:18:DC:C6	2.47	0.50
1:I:18:DT:H2'	1:I:19:DT:H72	1.92	0.50
2:J:6:DG:C2	2:J:7:DG:C5	2.99	0.50
3:K:59:LEU:HD13	3:K:73:LEU:HG	1.93	0.50
3:A:136:ASP:OD1	3:A:138:ASP:HB2	2.12	0.50
1:I:15:DC:H2"	1:I:16:DG:C8	2.46	0.50
3:K:56:ARG:HD3	3:K:121:ILE:HD12	1.94	0.50
1:M:4:DA:H1'	1:M:5:DT:H5'	1.92	0.50
2:N:14:DC:C2	2:N:15:DC:C4	3.00	0.50
3:B:8:GLU:HB2	3:B:43:THR:CG2	2.41	0.50
3:B:56:ARG:HG2	3:B:83:TYR:O	2.11	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:73:LEU:HD22	3:L:99:LEU:HD22	1.93	0.50
1:M:1:DT:O2	2:N:20:DA:H2	1.94	0.50
2:N:19:DA:OP2	2:N:19:DA:C8	2.60	0.50
3:G:56:ARG:HA	3:G:83:TYR:O	2.12	0.50
3:P:68:PRO:HG2	3:P:131:LEU:HD21	1.93	0.50
3:O:204:LYS:HE3	3:O:233:GLN:OE1	2.12	0.50
3:P:53:GLY:C	3:P:87:PHE:HB3	2.32	0.50
3:G:92:ARG:N	3:G:93:PRO:HD2	2.26	0.50
3:K:30:PRO:HB3	3:K:39:LYS:HE2	1.94	0.50
3:A:30:PRO:HB3	3:A:39:LYS:HE2	1.94	0.49
3:G:113:ILE:HD13	3:G:134:ILE:HD12	1.94	0.49
2:N:16:DA:C4	2:N:17:DT:C5	2.99	0.49
3:B:28:SER:HA	3:B:99:LEU:O	2.11	0.49
3:O:73:LEU:HD22	3:O:99:LEU:HD22	1.94	0.49
3:P:91:ARG:HG3	3:P:93:PRO:HA	1.94	0.49
3:P:138:ASP:O	3:P:139:LEU:HB2	2.12	0.49
3:K:56:ARG:HA	3:K:83:TYR:O	2.12	0.49
3:O:8:GLU:O	3:O:42:PRO:HA	2.12	0.49
3:P:248:LEU:HB3	3:P:276:PRO:HA	1.94	0.49
3:O:62:LYS:HD2	3:O:141:VAL:HG11	1.93	0.49
1:I:8:DG:C6	2:J:13:DC:N3	2.79	0.49
3:A:259:ARG:NH1	3:A:264:ARG:HG2	2.27	0.49
3:K:35:THR:OG1	3:K:37:THR:HG22	2.12	0.49
3:L:53:GLY:O	3:L:87:PHE:HB3	2.13	0.49
3:A:192:CYS:HA	3:A:274:TYR:CD2	2.48	0.49
3:B:28:SER:HB2	3:B:97:GLN:O	2.13	0.49
3:B:61:THR:HG22	3:B:63:ASP:H	1.77	0.49
1:M:5:DT:P	3:O:27:GLY:HA2	2.53	0.49
3:P:28:SER:HA	3:P:99:LEU:O	2.13	0.48
3:P:243:TYR:CE1	3:P:252:VAL:HG21	2.48	0.48
3:H:151:PRO:O	3:H:152:ASP:HB2	2.13	0.48
3:P:97:GLN:HG2	3:P:98:ASN:H	1.78	0.48
3:L:97:GLN:HG2	3:L:98:ASN:H	1.77	0.48
3:L:243:TYR:CE1	3:L:252:VAL:HG21	2.48	0.48
1:M:5:DT:H2"	1:M:6:DG:C8	2.47	0.48
2:N:3:DA:C8	2:N:4:DT:H72	2.49	0.48
2:N:15:DC:C2	2:N:16:DA:C6	3.01	0.48
3:A:56:ARG:HA	3:A:83:TYR:O	2.14	0.48
1:M:18:DT:O2	2:N:3:DA:C2	2.66	0.48
3:A:209:ASP:OD2	3:A:262:SER:OG	2.26	0.48
3:K:92:ARG:N	3:K:93:PRO:HD2	2.28	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:28:SER:HA	3:L:99:LEU:O	2.14	0.48
3:L:63:ASP:O	3:L:66:HIS:ND1	2.40	0.48
3:H:3:TYR:N	3:H:3:TYR:HD2	2.12	0.48
2:J:8:DA:C2	2:J:9:DA:C4	3.02	0.48
3:L:16:ARG:HH21	3:L:173:ARG:NH2	2.11	0.48
3:H:97:GLN:HG2	3:H:98:ASN:H	1.78	0.48
3:B:136:ASP:O	3:B:137:CYS:HB2	2.14	0.48
3:O:63:ASP:HB3	3:O:64:PRO:HD2	1.96	0.48
1:E:11:DT:H1'	1:E:12:DT:H5"	1.95	0.48
1:M:2:DT:C2	2:N:19:DA:H2	2.29	0.48
3:P:111:GLU:O	3:P:115:LEU:HB2	2.14	0.48
3:H:192:CYS:HA	3:H:274:TYR:CD2	2.49	0.48
3:L:205:VAL:O	3:L:233:GLN:NE2	2.43	0.48
3:K:205:VAL:O	3:K:233:GLN:NE2	2.45	0.47
3:P:259:ARG:NH1	3:P:264:ARG:HG2	2.29	0.47
3:G:212:VAL:O	3:G:223:GLY:N	2.47	0.47
3:H:24:ARG:HG3	3:H:25:SER:O	2.15	0.47
2:J:12:DT:H1'	2:J:13:DC:H5'	1.96	0.47
3:K:203:ASP:O	3:K:205:VAL:HG13	2.14	0.47
1:M:10:DA:H1'	1:M:11:DT:H5'	1.96	0.47
2:N:11:DT:H2"	2:N:12:DT:C5'	2.44	0.47
3:G:192:CYS:HA	3:G:274:TYR:CD2	2.50	0.47
3:H:209:ASP:CG	3:H:262:SER:OG	2.53	0.47
3:L:53:GLY:HA2	3:L:157:PHE:CD2	2.50	0.47
3:L:116:ARG:HD2	3:L:121:ILE:HB	1.95	0.47
3:O:156:ASN:O	3:O:158:THR:N	2.47	0.47
1:C:12:DT:H72	3:H:173:ARG:HD3	1.97	0.47
1:I:3:DG:H2"	1:I:4:DA:C8	2.50	0.47
3:K:265:GLU:O	3:K:266:LEU:HD12	2.14	0.47
3:A:111:GLU:HG3	3:L:114:ILE:HD13	1.96	0.47
3:B:97:GLN:HG2	3:B:98:ASN:H	1.79	0.47
1:C:9:DA:H2"	1:C:10:DA:H8	1.78	0.47
3:G:59:LEU:HD13	3:G:73:LEU:HG	1.96	0.47
3:O:62:LYS:HA	3:O:143:ARG:HE	1.79	0.47
3:O:204:LYS:HA	3:O:233:GLN:O	2.14	0.47
3:P:23:GLY:C	3:P:24:ARG:HG2	2.35	0.47
3:A:69:HIS:O	3:A:116:ARG:NH1	2.48	0.47
3:A:133:ASP:O	3:A:134:ILE:HB	2.15	0.47
2:J:14:DC:H2"	2:J:15:DC:H5	1.80	0.47
3:K:136:ASP:OD1	3:K:138:ASP:HB2	2.14	0.47
3:H:8:GLU:CB	3:H:43:THR:HG22	2.43	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:1:DT:H2”	1:I:2:DT:H71	1.97	0.47
2:N:11:DT:C2’	2:N:12:DT:H71	2.45	0.47
3:H:53:GLY:HA2	3:H:157:PHE:CD2	2.50	0.47
3:B:94:LEU:HA	3:B:94:LEU:HD23	1.54	0.46
3:H:257:GLN:CD	3:H:266:LEU:HD23	2.35	0.46
3:L:94:LEU:HA	3:L:94:LEU:HD23	1.66	0.46
3:L:111:GLU:O	3:L:115:LEU:HB2	2.15	0.46
2:D:10:DA:C2’	2:D:11:DT:H5”	2.45	0.46
3:G:30:PRO:HB3	3:G:39:LYS:HE2	1.98	0.46
3:A:126:VAL:HG12	3:A:127:PRO:HD2	1.97	0.46
3:B:243:TYR:CE1	3:B:252:VAL:HG21	2.51	0.46
3:B:253:ARG:HG2	3:B:271:GLU:HG3	1.97	0.46
1:I:6:DG:H1	2:J:15:DC:H42	1.62	0.46
3:L:8:GLU:HB2	3:L:43:THR:CG2	2.46	0.46
3:L:207:LYS:HG3	3:L:208:GLU:HG3	1.98	0.46
3:O:212:VAL:O	3:O:223:GLY:N	2.45	0.46
3:P:50:THR:HA	3:P:91:ARG:NH2	2.30	0.46
3:A:29:ILE:HD11	3:A:101:ILE:HG13	1.96	0.46
3:A:63:ASP:O	3:A:66:HIS:ND1	2.48	0.46
3:H:3:TYR:N	3:H:3:TYR:CD2	2.83	0.46
3:L:151:PRO:O	3:L:152:ASP:HB2	2.16	0.46
2:N:11:DT:H2”	2:N:12:DT:H5’	1.97	0.46
3:G:186:ASN:HB2	3:G:199:PHE:H	1.80	0.46
1:M:18:DT:O2	2:N:3:DA:H2	1.99	0.46
3:B:53:GLY:HA2	3:B:157:PHE:CD2	2.51	0.46
3:L:97:GLN:HG2	3:L:98:ASN:N	2.31	0.46
1:I:8:DG:N1	2:J:13:DC:C2	2.75	0.46
3:K:239:ARG:HH22	3:L:184:ARG:HH12	1.62	0.46
3:B:132:LEU:HD13	3:B:132:LEU:O	2.15	0.46
3:H:209:ASP:OD1	3:H:262:SER:OG	2.32	0.46
2:J:11:DT:H5’	3:K:19:TYR:CE2	2.51	0.46
2:F:5:DC:H2”	2:F:6:DG:C8	2.51	0.45
1:C:19:DT:H2”	1:C:20:DC:C5	2.51	0.45
3:P:17:PHE:CG	3:P:101:ILE:HD12	2.50	0.45
3:A:92:ARG:N	3:A:93:PRO:HD2	2.32	0.45
3:G:259:ARG:NH1	3:G:264:ARG:HG2	2.30	0.45
3:B:17:PHE:CE1	3:B:171:ASP:HB2	2.52	0.45
3:G:28:SER:HB2	3:G:97:GLN:O	2.16	0.45
2:N:15:DC:C2’	2:N:16:DA:C8	2.92	0.45
3:O:69:HIS:NE2	3:O:138:ASP:O	2.42	0.45
3:O:159:THR:O	3:O:160:ALA:HB3	2.17	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:P:16:ARG:HH21	3:P:173:ARG:NH2	2.15	0.45
3:B:150:LEU:HA	3:B:150:LEU:HD12	1.81	0.45
3:B:151:PRO:O	3:B:152:ASP:HB2	2.16	0.45
3:H:111:GLU:O	3:H:115:LEU:HB2	2.16	0.45
3:G:111:GLU:HG3	3:P:114:ILE:HD13	1.99	0.45
3:A:59:LEU:HD13	3:A:73:LEU:HG	1.99	0.45
2:J:17:DT:C6	2:J:19:DA:N1	2.85	0.45
2:N:13:DC:C2	2:N:14:DC:C5	3.05	0.45
3:B:131:LEU:O	3:B:131:LEU:HD22	2.17	0.45
3:K:251:PRO:HB3	3:K:275:LEU:HD23	1.98	0.45
3:L:219:TRP:CD1	3:L:244:ALA:HB2	2.52	0.45
3:P:9:GLN:HG2	3:P:167:ASN:ND2	2.32	0.45
3:B:44:ILE:O	3:B:94:LEU:HB2	2.17	0.45
3:A:28:SER:HB2	3:A:97:GLN:O	2.17	0.44
3:G:31:GLY:HA3	3:G:40:THR:OG1	2.17	0.44
3:P:72:GLU:HB2	3:P:81:GLY:HA2	1.99	0.44
3:P:170:TYR:HB3	3:P:177:THR:HB	1.97	0.44
1:E:10:DA:H1'	1:E:11:DT:H5'	1.99	0.44
3:B:63:ASP:O	3:B:66:HIS:ND1	2.51	0.44
3:G:90:GLU:OE1	3:G:91:ARG:HG3	2.18	0.44
3:H:187:ARG:HD3	3:H:189:SER:O	2.17	0.44
2:J:7:DG:H1'	2:J:8:DA:H5'	1.97	0.44
1:M:20:DC:O2	2:N:2:DA:C2	2.70	0.44
3:H:3:TYR:HD2	3:H:3:TYR:H	1.64	0.44
3:O:133:ASP:O	3:O:134:ILE:HB	2.17	0.44
3:A:248:LEU:HA	3:A:248:LEU:HD23	1.70	0.44
3:H:44:ILE:O	3:H:94:LEU:HB2	2.16	0.44
3:P:63:ASP:HB3	3:P:64:PRO:HD2	1.99	0.44
3:A:176:ASN:OD1	3:A:177:THR:HG23	2.17	0.44
3:B:8:GLU:OE2	3:B:33:ARG:HG3	2.18	0.44
3:L:203:ASP:O	3:L:205:VAL:HG13	2.18	0.44
3:P:122:ASN:HD21	3:P:126:VAL:HG22	1.82	0.44
3:K:212:VAL:O	3:K:223:GLY:N	2.51	0.44
1:E:8:DG:C2	1:E:9:DA:C4	3.05	0.44
3:B:150:LEU:HD22	3:B:161:LEU:HD21	1.99	0.44
3:B:164:ILE:HA	3:P:48:GLY:HA2	1.98	0.44
3:G:243:TYR:CZ	3:G:252:VAL:HG11	2.53	0.44
3:P:69:HIS:CD2	3:P:142:VAL:HG12	2.53	0.44
2:D:9:DA:C6	2:D:10:DA:C6	3.06	0.43
1:M:18:DT:C2	2:N:3:DA:N1	2.82	0.43
3:O:59:LEU:HD13	3:O:73:LEU:HG	1.99	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:P:53:GLY:HA2	3:P:157:PHE:CD2	2.53	0.43
3:H:207:LYS:HG3	3:H:208:GLU:HG3	2.00	0.43
3:K:149:PHE:HD1	3:K:160:ALA:HA	1.83	0.43
2:F:13:DC:H2"	2:F:14:DC:C6	2.53	0.43
3:B:69:HIS:CD2	3:B:71:HIS:H	2.36	0.43
3:O:16:ARG:HH21	3:O:173:ARG:HH21	1.66	0.43
3:A:43:THR:HG23	3:A:95:PHE:HB3	1.99	0.43
1:C:3:DG:C2	2:D:19:DA:C2	3.07	0.43
2:D:5:DC:C2	2:D:6:DG:C5	3.06	0.43
3:G:72:GLU:HB2	3:G:81:GLY:HA2	2.00	0.43
2:J:16:DA:H1'	2:J:17:DT:OP2	2.19	0.43
3:K:231:HIS:HB3	3:K:235:ALA:HB3	2.00	0.43
3:P:34:SER:OG	3:P:39:LYS:HA	2.17	0.43
1:E:7:DG:H2"	1:E:8:DG:OP2	2.19	0.43
2:F:19:DA:H2"	2:F:20:DA:C8	2.53	0.43
2:D:10:DA:C8	2:D:11:DT:H72	2.54	0.43
3:L:93:PRO:HB2	3:L:94:LEU:H	1.73	0.43
1:M:12:DT:H72	3:P:173:ARG:HD3	2.00	0.43
1:E:18:DT:H2'	1:E:19:DT:H72	2.00	0.43
3:A:52:PRO:O	3:A:151:PRO:HD3	2.19	0.43
3:B:16:ARG:HG2	3:B:173:ARG:HB2	2.01	0.43
2:N:12:DT:H5'	3:O:21:CYS:SG	2.58	0.43
2:N:12:DT:C2	2:N:13:DC:C5	3.07	0.43
3:B:192:CYS:HA	3:B:274:TYR:CD2	2.54	0.43
3:L:257:GLN:CD	3:L:266:LEU:HD23	2.39	0.43
3:P:189:SER:HA	3:P:273:GLN:O	2.19	0.43
3:B:116:ARG:HB2	3:B:116:ARG:NH1	2.34	0.43
2:N:14:DC:C2	2:N:15:DC:C5	3.06	0.43
2:N:16:DA:C8	2:N:17:DT:C7	3.02	0.43
3:K:248:LEU:HD23	3:K:248:LEU:HA	1.75	0.43
3:A:203:ASP:O	3:A:205:VAL:HG13	2.18	0.42
3:H:8:GLU:OE2	3:H:33:ARG:HG3	2.19	0.42
3:L:209:ASP:CG	3:L:262:SER:OG	2.57	0.42
1:M:13:DT:OP2	3:P:21:CYS:SG	2.69	0.42
2:F:11:DT:C6	2:F:12:DT:H72	2.54	0.42
3:B:29:ILE:HA	3:B:30:PRO:HD3	1.86	0.42
3:G:251:PRO:HB3	3:G:275:LEU:HD23	2.01	0.42
3:L:175:PRO:HB2	3:L:206:GLN:OE1	2.19	0.42
3:O:4:VAL:HB	3:O:164:ILE:CD1	2.49	0.42
3:O:73:LEU:HA	3:O:100:GLY:O	2.19	0.42
1:C:6:DG:H1	2:D:15:DC:H42	1.67	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:67:ARG:HD2	3:O:134:ILE:HG12	2.01	0.42
3:P:71:HIS:NE2	3:P:139:LEU:O	2.47	0.42
1:E:2:DT:C2	2:F:19:DA:H2	2.37	0.42
3:H:7:ILE:HG13	3:H:43:THR:HG23	2.02	0.42
3:K:18:ARG:HA	3:K:18:ARG:HD2	1.80	0.42
3:K:152:ASP:OD1	3:P:264:ARG:NH1	2.53	0.42
3:K:232:ARG:HG2	3:L:234:VAL:HG11	2.00	0.42
3:L:50:THR:HA	3:L:91:ARG:NH2	2.33	0.42
3:L:153:GLU:HB3	3:L:154:HIS:H	1.63	0.42
2:F:11:DT:H1'	2:F:12:DT:H5"	2.00	0.42
3:G:69:HIS:O	3:G:116:ARG:NH1	2.52	0.42
3:H:212:VAL:O	3:H:223:GLY:N	2.52	0.42
3:K:133:ASP:O	3:K:134:ILE:HB	2.20	0.42
3:L:143:ARG:NH1	3:L:168:PRO:HD3	2.35	0.42
3:B:7:ILE:HG13	3:B:43:THR:O	2.20	0.42
1:C:12:DT:C6	1:C:13:DT:H72	2.55	0.42
3:G:223:GLY:O	3:G:224:SER:HB3	2.20	0.42
3:H:62:LYS:HD2	3:H:141:VAL:HG11	2.01	0.42
3:L:66:HIS:HD2	3:L:165:VAL:HG11	1.82	0.42
1:E:2:DT:N3	2:F:19:DA:H2	2.17	0.42
2:F:19:DA:OP2	2:F:19:DA:C8	2.68	0.42
3:B:23:GLY:O	3:B:24:ARG:HG2	2.20	0.42
3:P:69:HIS:HD2	3:P:71:HIS:HB2	1.84	0.42
3:P:192:CYS:HA	3:P:274:TYR:CD2	2.55	0.42
3:B:122:ASN:HD21	3:B:126:VAL:CG2	2.32	0.42
3:B:259:ARG:NH1	3:B:264:ARG:HG2	2.35	0.42
3:H:94:LEU:HD23	3:H:94:LEU:HA	1.59	0.42
1:I:9:DA:H2"	1:I:10:DA:H8	1.85	0.42
2:J:1:DG:H2"	2:J:2:DA:H5'	2.01	0.42
2:J:18:DC:H6	2:J:19:DA:H5'	1.85	0.42
1:M:2:DT:H2"	1:M:3:DG:OP2	2.19	0.42
2:N:19:DA:H2"	2:N:20:DA:OP2	2.20	0.42
3:P:141:VAL:HG22	3:P:170:TYR:CD1	2.55	0.42
1:E:18:DT:H3	2:F:3:DA:H61	1.67	0.42
2:F:11:DT:H2"	2:F:12:DT:H5'	2.02	0.42
3:G:127:PRO:HG2	3:G:130:GLN:OE1	2.20	0.42
3:P:209:ASP:OD2	3:P:262:SER:OG	2.34	0.42
2:F:5:DC:H41	3:B:24:ARG:HH22	1.67	0.41
3:B:138:ASP:O	3:B:139:LEU:HB2	2.19	0.41
3:A:54:THR:HG22	3:A:85:ALA:HA	2.01	0.41
2:J:3:DA:H2"	2:J:4:DT:OP2	2.19	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:265:GLU:C	3:K:266:LEU:HD12	2.41	0.41
3:L:63:ASP:HB3	3:L:64:PRO:HD2	2.01	0.41
1:M:19:DT:O2	2:N:2:DA:C2	2.73	0.41
3:O:72:GLU:HB2	3:O:81:GLY:CA	2.49	0.41
3:A:115:LEU:HD12	3:A:115:LEU:HA	1.81	0.41
1:M:11:DT:H1'	1:M:12:DT:H5"	2.02	0.41
3:A:212:VAL:O	3:A:223:GLY:N	2.53	0.41
2:D:9:DA:C2	2:D:10:DA:C4	3.09	0.41
3:G:148:VAL:HB	3:G:161:LEU:HD22	2.02	0.41
3:H:132:LEU:HD22	3:H:132:LEU:HA	1.93	0.41
3:L:231:HIS:HB3	3:L:235:ALA:HB3	2.03	0.41
3:O:69:HIS:HE1	3:O:71:HIS:CD2	2.39	0.41
2:D:3:DA:C2'	2:D:4:DT:H71	2.51	0.41
3:H:69:HIS:CD2	3:H:71:HIS:H	2.39	0.41
3:K:72:GLU:HB2	3:K:81:GLY:CA	2.51	0.41
1:M:19:DT:O2	2:N:3:DA:C2	2.74	0.41
3:B:16:ARG:HH21	3:B:173:ARG:HH22	1.68	0.41
1:C:3:DG:C2	1:C:4:DA:C4	3.09	0.41
1:I:10:DA:N1	2:J:11:DT:C2	2.87	0.41
2:J:6:DG:H2"	2:J:7:DG:OP2	2.21	0.41
3:K:257:GLN:HB3	3:K:269:PRO:HA	2.02	0.41
3:O:243:TYR:CG	3:O:244:ALA:N	2.89	0.41
1:E:17:DA:H2'	1:E:18:DT:H72	2.03	0.41
2:D:3:DA:H2'	2:D:4:DT:H71	2.02	0.41
3:K:56:ARG:NH1	3:K:121:ILE:HD13	2.35	0.41
1:M:2:DT:O2	2:N:19:DA:H2	1.98	0.41
3:P:94:LEU:HD23	3:P:94:LEU:HA	1.66	0.41
2:D:11:DT:H5'	3:G:19:TYR:CZ	2.55	0.41
3:G:72:GLU:HB2	3:G:81:GLY:CA	2.50	0.41
1:I:1:DT:H2'	1:I:2:DT:H71	2.02	0.41
2:J:11:DT:H5'	3:K:19:TYR:CZ	2.56	0.41
3:L:251:PRO:HB3	3:L:275:LEU:HD23	2.02	0.41
3:L:273:GLN:HE21	3:L:273:GLN:HB2	1.66	0.41
3:O:88:GLY:H	3:O:89:PRO:HD2	1.86	0.41
3:B:257:GLN:OE1	3:B:266:LEU:HD23	2.21	0.41
3:L:105:LYS:HB2	3:L:108:GLU:HG3	2.03	0.41
3:P:136:ASP:O	3:P:137:CYS:HB2	2.20	0.41
3:A:196:ASP:O	3:A:239:ARG:HA	2.20	0.40
3:A:204:LYS:HE3	3:A:233:GLN:OE1	2.20	0.40
3:G:115:LEU:HD12	3:G:115:LEU:HA	1.90	0.40
2:J:7:DG:C2	2:J:8:DA:C4	3.09	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:11:DT:H5'	3:O:19:TYR:CE2	2.56	0.40
3:P:212:VAL:HG11	3:P:238:PHE:CZ	2.56	0.40
3:B:182:ILE:HD11	3:B:257:GLN:HA	2.02	0.40
3:B:248:LEU:O	3:B:276:PRO:HB3	2.21	0.40
2:J:11:DT:C2	2:J:12:DT:C5	3.10	0.40
2:J:12:DT:C2	2:J:13:DC:C6	3.10	0.40
3:L:34:SER:OG	3:L:39:LYS:HG3	2.21	0.40
2:N:15:DC:H42	3:O:24:ARG:HH22	1.68	0.40
3:P:72:GLU:HB2	3:P:81:GLY:CA	2.51	0.40
3:B:53:GLY:O	3:B:87:PHE:HB3	2.20	0.40
3:B:67:ARG:NH1	3:B:130:GLN:O	2.54	0.40
1:C:19:DT:H2"	1:C:20:DC:C6	2.57	0.40
3:G:62:LYS:HD2	3:G:141:VAL:HG11	2.02	0.40
3:B:53:GLY:C	3:B:87:PHE:HB3	2.41	0.40
3:B:64:PRO:HB3	3:P:3:TYR:HB3	2.04	0.40
3:B:93:PRO:HB2	3:B:94:LEU:H	1.70	0.40
2:J:4:DT:H2"	2:J:5:DC:OP2	2.20	0.40
3:P:153:GLU:HB3	3:P:154:HIS:H	1.62	0.40
3:P:209:ASP:CG	3:P:262:SER:OG	2.59	0.40
3:P:212:VAL:O	3:P:223:GLY:N	2.54	0.40
3:A:192:CYS:HA	3:A:274:TYR:HD2	1.86	0.40
3:B:248:LEU:HB3	3:B:276:PRO:HA	2.03	0.40
3:G:99:LEU:HA	3:G:99:LEU:HD23	1.86	0.40
3:K:159:THR:O	3:K:160:ALA:HB3	2.21	0.40
3:L:17:PHE:CE2	3:L:101:ILE:HD13	2.57	0.40
1:M:3:DG:C2	2:N:19:DA:C2	3.09	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	
3	A	274/277 (99%)	244 (89%)	20 (7%)	10 (4%)	3	16
3	B	270/277 (98%)	240 (89%)	20 (7%)	10 (4%)	2	16
3	G	274/277 (99%)	242 (88%)	22 (8%)	10 (4%)	3	16
3	H	270/277 (98%)	240 (89%)	20 (7%)	10 (4%)	2	16
3	K	274/277 (99%)	244 (89%)	20 (7%)	10 (4%)	3	16
3	L	270/277 (98%)	241 (89%)	17 (6%)	12 (4%)	2	12
3	O	274/277 (99%)	242 (88%)	25 (9%)	7 (3%)	4	21
3	P	270/277 (98%)	239 (88%)	20 (7%)	11 (4%)	2	13
All	All	2176/2216 (98%)	1932 (89%)	164 (8%)	80 (4%)	2	16

All (80) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	86	GLU
3	A	87	PHE
3	A	89	PRO
3	A	134	ILE
3	B	93	PRO
3	B	137	CYS
3	B	138	ASP
3	B	152	ASP
3	B	153	GLU
3	B	224	SER
3	G	86	GLU
3	G	89	PRO
3	G	134	ILE
3	G	157	PHE
3	H	93	PRO
3	H	137	CYS
3	H	138	ASP
3	H	152	ASP
3	H	153	GLU
3	H	224	SER
3	K	86	GLU
3	K	87	PHE
3	K	89	PRO
3	K	134	ILE
3	K	153	GLU
3	K	224	SER
3	L	93	PRO

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	L	137	CYS
3	L	138	ASP
3	L	152	ASP
3	L	153	GLU
3	L	224	SER
3	O	86	GLU
3	O	89	PRO
3	O	134	ILE
3	O	153	GLU
3	O	157	PHE
3	P	93	PRO
3	P	137	CYS
3	P	138	ASP
3	P	152	ASP
3	P	153	GLU
3	P	224	SER
3	A	153	GLU
3	A	224	SER
3	B	90	GLU
3	B	91	ARG
3	G	87	PHE
3	G	153	GLU
3	G	224	SER
3	H	90	GLU
3	H	91	ARG
3	K	85	ALA
3	L	24	ARG
3	L	90	GLU
3	L	91	ARG
3	L	134	ILE
3	O	87	PHE
3	P	90	GLU
3	P	91	ARG
3	P	134	ILE
3	A	136	ASP
3	A	157	PHE
3	B	223	GLY
3	G	136	ASP
3	H	134	ILE
3	H	223	GLY
3	K	136	ASP
3	K	157	PHE

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	O	136	ASP
3	P	66	HIS
3	G	85	ALA
3	K	223	GLY
3	A	160	ALA
3	P	223	GLY
3	A	85	ALA
3	L	125	ASN
3	B	134	ILE
3	L	223	GLY
3	G	217	PRO

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
3	A	245/246 (100%)	223 (91%)	22 (9%)	8 29
3	B	244/246 (99%)	226 (93%)	18 (7%)	11 36
3	G	245/246 (100%)	222 (91%)	23 (9%)	7 27
3	H	244/246 (99%)	224 (92%)	20 (8%)	9 33
3	K	245/246 (100%)	223 (91%)	22 (9%)	8 29
3	L	244/246 (99%)	221 (91%)	23 (9%)	7 27
3	O	245/246 (100%)	228 (93%)	17 (7%)	13 39
3	P	244/246 (99%)	220 (90%)	24 (10%)	6 25
All	All	1956/1968 (99%)	1787 (91%)	169 (9%)	8 31

All (169) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	A	16	ARG
3	A	20	LYS
3	A	38	THR
3	A	47	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	A	54	THR
3	A	90	GLU
3	A	94	LEU
3	A	98	ASN
3	A	115	LEU
3	A	132	LEU
3	A	136	ASP
3	A	138	ASP
3	A	150	LEU
3	A	158	THR
3	A	184	ARG
3	A	187	ARG
3	A	208	GLU
3	A	220	GLU
3	A	222	ARG
3	A	226	SER
3	A	239	ARG
3	A	262	SER
3	B	7	ILE
3	B	8	GLU
3	B	9	GLN
3	B	33	ARG
3	B	79	ARG
3	B	86	GLU
3	B	91	ARG
3	B	105	LYS
3	B	115	LEU
3	B	116	ARG
3	B	132	LEU
3	B	134	ILE
3	B	150	LEU
3	B	187	ARG
3	B	208	GLU
3	B	252	VAL
3	B	273	GLN
3	B	277	ASP
3	G	15	MET
3	G	16	ARG
3	G	20	LYS
3	G	37	THR
3	G	38	THR
3	G	47	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	G	54	THR
3	G	90	GLU
3	G	94	LEU
3	G	98	ASN
3	G	115	LEU
3	G	132	LEU
3	G	136	ASP
3	G	138	ASP
3	G	150	LEU
3	G	158	THR
3	G	161	LEU
3	G	187	ARG
3	G	208	GLU
3	G	222	ARG
3	G	226	SER
3	G	239	ARG
3	G	252	VAL
3	H	3	TYR
3	H	7	ILE
3	H	8	GLU
3	H	9	GLN
3	H	33	ARG
3	H	38	THR
3	H	54	THR
3	H	64	PRO
3	H	79	ARG
3	H	115	LEU
3	H	116	ARG
3	H	131	LEU
3	H	132	LEU
3	H	134	ILE
3	H	150	LEU
3	H	187	ARG
3	H	208	GLU
3	H	271	GLU
3	H	273	GLN
3	H	277	ASP
3	K	15	MET
3	K	16	ARG
3	K	47	ASN
3	K	54	THR
3	K	90	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	K	94	LEU
3	K	98	ASN
3	K	106	LYS
3	K	115	LEU
3	K	132	LEU
3	K	136	ASP
3	K	138	ASP
3	K	150	LEU
3	K	158	THR
3	K	161	LEU
3	K	184	ARG
3	K	187	ARG
3	K	207	LYS
3	K	208	GLU
3	K	220	GLU
3	K	226	SER
3	K	239	ARG
3	L	3	TYR
3	L	7	ILE
3	L	8	GLU
3	L	9	GLN
3	L	33	ARG
3	L	54	THR
3	L	66	HIS
3	L	79	ARG
3	L	86	GLU
3	L	91	ARG
3	L	105	LYS
3	L	115	LEU
3	L	116	ARG
3	L	131	LEU
3	L	132	LEU
3	L	134	ILE
3	L	150	LEU
3	L	187	ARG
3	L	198	ILE
3	L	208	GLU
3	L	262	SER
3	L	273	GLN
3	L	277	ASP
3	O	16	ARG
3	O	38	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	O	47	ASN
3	O	54	THR
3	O	90	GLU
3	O	94	LEU
3	O	98	ASN
3	O	132	LEU
3	O	136	ASP
3	O	138	ASP
3	O	150	LEU
3	O	161	LEU
3	O	164	ILE
3	O	187	ARG
3	O	208	GLU
3	O	239	ARG
3	O	262	SER
3	P	7	ILE
3	P	8	GLU
3	P	9	GLN
3	P	33	ARG
3	P	38	THR
3	P	54	THR
3	P	79	ARG
3	P	86	GLU
3	P	91	ARG
3	P	101	ILE
3	P	105	LYS
3	P	114	ILE
3	P	115	LEU
3	P	116	ARG
3	P	131	LEU
3	P	132	LEU
3	P	134	ILE
3	P	150	LEU
3	P	158	THR
3	P	187	ARG
3	P	208	GLU
3	P	262	SER
3	P	273	GLN
3	P	277	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
3	K	273	GLN
3	L	273	GLN
3	P	69	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	C	20/20 (100%)	-1.69	0	100	100	58, 73, 101, 109	0
1	E	20/20 (100%)	-1.37	0	100	100	47, 100, 151, 152	0
1	I	20/20 (100%)	-1.87	0	100	100	49, 68, 93, 96	0
1	M	20/20 (100%)	-1.83	0	100	100	46, 76, 118, 123	0
2	D	20/20 (100%)	-1.71	0	100	100	43, 97, 119, 119	0
2	F	20/20 (100%)	-1.75	0	100	100	55, 82, 118, 121	0
2	J	20/20 (100%)	-1.60	0	100	100	39, 63, 130, 143	0
2	N	20/20 (100%)	-1.76	0	100	100	51, 71, 89, 99	0
3	A	276/277 (99%)	-1.39	0	100	100	60, 82, 133, 168	0
3	B	274/277 (98%)	-1.30	0	100	100	56, 83, 141, 166	0
3	G	276/277 (99%)	-1.36	0	100	100	49, 79, 135, 157	0
3	H	274/277 (98%)	-1.33	0	100	100	48, 79, 141, 164	0
3	K	276/277 (99%)	-1.36	0	100	100	56, 84, 128, 166	0
3	L	274/277 (98%)	-1.45	0	100	100	45, 77, 118, 170	0
3	O	276/277 (99%)	-1.45	0	100	100	48, 83, 125, 155	0
3	P	274/277 (98%)	-1.42	0	100	100	51, 77, 117, 173	0
All	All	2360/2376 (99%)	-1.41	0	100	100	39, 80, 131, 173	0

There are no RSRZ outliers to report.

6.2 Non-standard residues in protein, DNA, RNA chains

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.