



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 01:59 PM UTC

PDB ID : 2HZV / pdb_00002hzv
Title : NikR-operator DNA complex
Authors : Schreiter, E.R.; Drennan, C.L.
Deposited on : 2006-08-09
Resolution : 3.10 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 : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

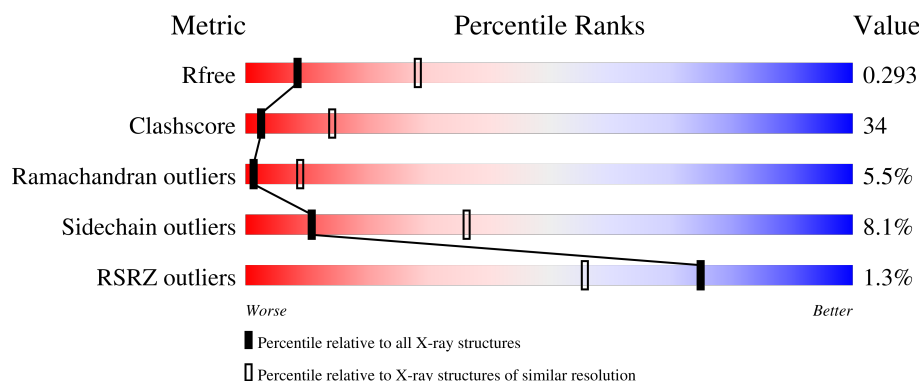
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.10 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.



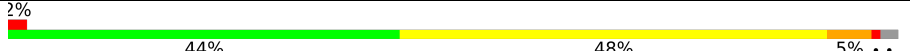
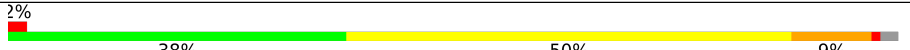
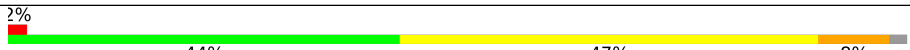
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1456 (3.10-3.10)
Clashscore	190562	1539 (3.10-3.10)
Ramachandran outliers	187476	1467 (3.10-3.10)
Sidechain outliers	187428	1467 (3.10-3.10)
RSRZ outliers	180081	1456 (3.10-3.10)

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 $\leq 5\%$. 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	I	30	7% 87% 7%
1	K	30	23% 70% 7%
2	J	30	17% 83%
2	L	30	20% 77% .
3	A	133	38% 51% 9% ..

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Mol	Chain	Length	Quality of chain
3	B	133	
3	C	133	
3	D	133	
3	E	133	
3	F	133	
3	G	133	
3	H	133	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 10501 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 5'-D(*AP*GP*TP*AP*TP*GP*AP*CP*GP*AP*AP*T
P*AP*CP*TP*TP*AP*AP*AP*AP*TP*CP*GP*TP*CP*AP*TP*AP*CP*T)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	I	30	Total	C	N	O	P	0	0	0
			612	295	113	175	29			
1	K	30	Total	C	N	O	P	0	0	0
			612	295	113	175	29			

- Molecule 2 is a DNA chain called 5'-D(*AP*GP*TP*AP*TP*GP*AP*CP*GP*AP*TP*T
P*TP*TP*AP*AP*GP*TP*AP*TP*TP*CP*GP*TP*CP*AP*TP*AP*CP*T)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	J	30	Total	C	N	O	P	0	0	0
			612	296	106	181	29			
2	L	30	Total	C	N	O	P	0	0	0
			612	296	106	181	29			

- Molecule 3 is a protein called Nickel-responsive regulator.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
3	A	131	Total	C	N	O	S	Se	0	0	0
			981	603	184	190	2	2			
3	B	131	Total	C	N	O	S	Se	0	0	0
			1031	631	198	198	2	2			
3	C	131	Total	C	N	O	S	Se	0	0	0
			971	598	183	186	2	2			
3	D	131	Total	C	N	O	S	Se	0	0	0
			1027	629	197	197	2	2			
3	E	131	Total	C	N	O	S	Se	0	0	0
			981	603	184	190	2	2			
3	F	131	Total	C	N	O	S	Se	0	0	0
			1031	631	198	198	2	2			
3	G	131	Total	C	N	O	S	Se	0	0	0
			985	605	185	191	2	2			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
3	H	131	Total	C	N	O	S	Se	0	0	0
			1027	629	197	197	2	2			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MSE	MET	modified residue	UNP P0A6Z6
A	105	MSE	MET	modified residue	UNP P0A6Z6
B	1	MSE	MET	modified residue	UNP P0A6Z6
B	105	MSE	MET	modified residue	UNP P0A6Z6
C	1	MSE	MET	modified residue	UNP P0A6Z6
C	105	MSE	MET	modified residue	UNP P0A6Z6
D	1	MSE	MET	modified residue	UNP P0A6Z6
D	105	MSE	MET	modified residue	UNP P0A6Z6
E	1	MSE	MET	modified residue	UNP P0A6Z6
E	105	MSE	MET	modified residue	UNP P0A6Z6
F	1	MSE	MET	modified residue	UNP P0A6Z6
F	105	MSE	MET	modified residue	UNP P0A6Z6
G	1	MSE	MET	modified residue	UNP P0A6Z6
G	105	MSE	MET	modified residue	UNP P0A6Z6
H	1	MSE	MET	modified residue	UNP P0A6Z6
H	105	MSE	MET	modified residue	UNP P0A6Z6

- Molecule 4 is NICKEL (II) ION (CCD ID: NI) (formula: Ni).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Ni	0	0
			1	1		
4	C	1	Total	Ni	0	0
			1	1		
4	D	2	Total	Ni	0	0
			2	2		
4	E	1	Total	Ni	0	0
			1	1		
4	F	1	Total	Ni	0	0
			1	1		
4	G	1	Total	Ni	0	0
			1	1		
4	H	1	Total	Ni	0	0
			1	1		

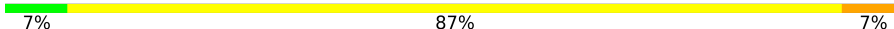
- Molecule 5 is POTASSIUM ION (CCD ID: K) (formula: K).

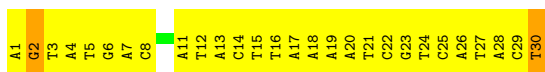
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	2	Total 2	K 2	0	0
5	B	1	Total 1	K 1	0	0
5	C	2	Total 2	K 2	0	0
5	E	2	Total 2	K 2	0	0
5	F	1	Total 1	K 1	0	0
5	G	2	Total 2	K 2	0	0
5	H	1	Total 1	K 1	0	0

3 Residue-property plots

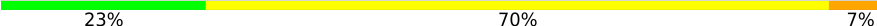
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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.

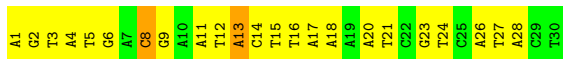
- Molecule 1: 5'-D(*AP*GP*TP*AP*TP*GP*AP*CP*GP*AP*AP*TP*AP*CP*TP*TP*AP*AP*AP*TP*CP*GP*TP*CP*AP*TP*AP*CP*T)-3'

Chain I: 



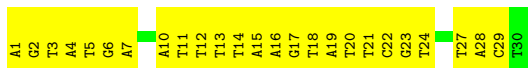
- Molecule 1: 5'-D(*AP*GP*TP*AP*TP*GP*AP*CP*GP*AP*AP*TP*AP*CP*TP*TP*AP*AP*AP*TP*CP*GP*TP*CP*AP*TP*AP*CP*T)-3'

Chain K: 

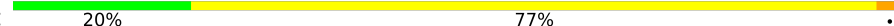


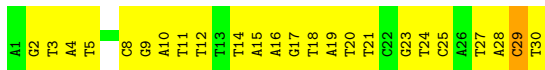
- Molecule 2: 5'-D(*AP*GP*TP*AP*TP*GP*AP*CP*GP*AP*TP*TP*TP*TP*AP*AP*GP*TP*AP*TP*TP*CP*GP*TP*CP*AP*TP*AP*CP*T)-3'

Chain J: 



- Molecule 2: 5'-D(*AP*GP*TP*AP*TP*GP*AP*CP*GP*AP*TP*TP*TP*TP*AP*AP*GP*TP*AP*TP*TP*CP*GP*TP*CP*AP*TP*AP*CP*T)-3'

Chain L: 



- Molecule 3: Nickel-responsive regulator

Chain A: 

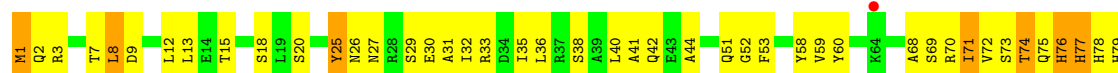
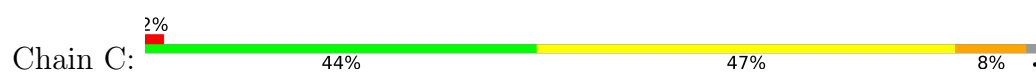




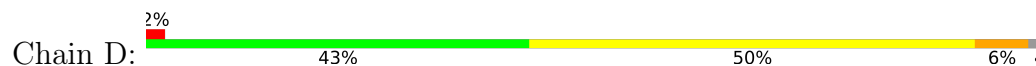
- Molecule 3: Nickel-responsive regulator



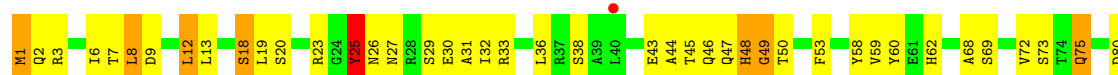
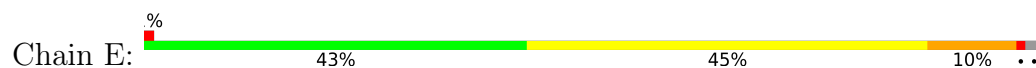
- Molecule 3: Nickel-responsive regulator



- Molecule 3: Nickel-responsive regulator

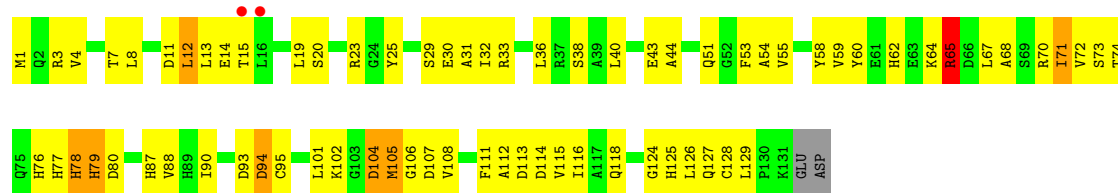


- Molecule 3: Nickel-responsive regulator

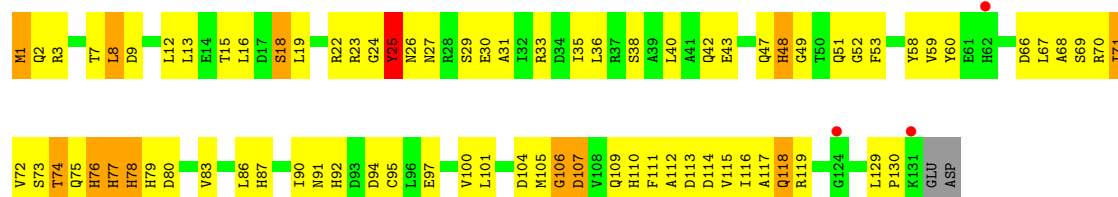


- Molecule 3: Nickel-responsive regulator

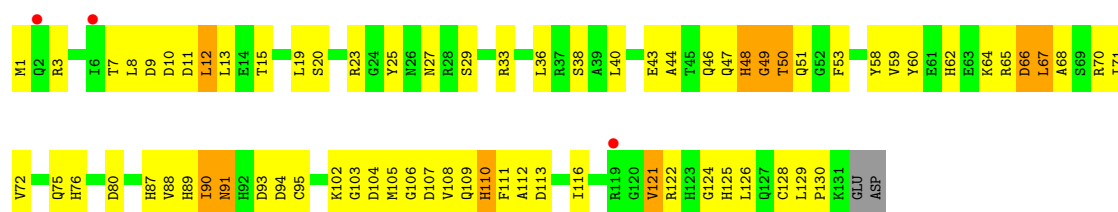
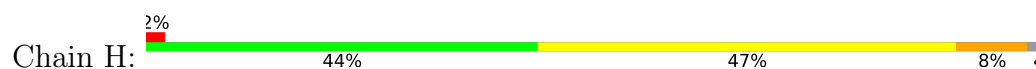




• Molecule 3: Nickel-responsive regulator



• Molecule 3: Nickel-responsive regulator



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	197.20Å 76.13Å 132.09Å 90.00° 110.27° 90.00°	Depositor
Resolution (Å)	49.28 – 3.10 49.28 – 3.10	Depositor EDS
% Data completeness (in resolution range)	94.1 (49.28-3.10) 89.8 (49.28-3.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.16 (at 3.12Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.261 , 0.303 0.247 , 0.293	Depositor DCC
R_{free} test set	2119 reflections (6.67%)	wwPDB-VP
Wilson B-factor (Å ²)	72.9	Xtriage
Anisotropy	0.965	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 65.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	10501	wwPDB-VP
Average B, all atoms (Å ²)	99.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.52% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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

Bond lengths and bond angles in the following residue types are not validated in this section: K, NI

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	I	0.39	0/687	0.89	3/1058 (0.3%)
1	K	0.39	0/687	0.87	2/1058 (0.2%)
2	J	0.36	0/685	0.82	0/1056
2	L	0.40	0/685	0.85	0/1056
3	A	0.49	0/995	1.00	5/1352 (0.4%)
3	B	0.57	0/1047	1.00	4/1416 (0.3%)
3	C	0.53	0/985	1.03	7/1339 (0.5%)
3	D	0.54	0/1043	0.96	1/1411 (0.1%)
3	E	0.53	0/995	1.00	5/1352 (0.4%)
3	F	0.56	0/1047	0.97	3/1416 (0.2%)
3	G	0.59	0/999	1.11	12/1357 (0.9%)
3	H	0.62	0/1043	0.96	1/1411 (0.1%)
All	All	0.52	0/10898	0.97	43/15282 (0.3%)

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	L	0	1

There are no bond length outliers.

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	45	THR	N-CA-C	-8.33	101.78	111.03
3	A	38	SER	N-CA-C	-8.33	102.14	111.14
3	A	26	ASN	N-CA-C	-7.78	102.14	112.72
3	C	129	LEU	CA-C-N	7.26	128.91	119.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	129	LEU	C-N-CA	7.26	128.91	119.84
3	C	26	ASN	N-CA-C	-7.25	102.86	112.72
3	G	66	ASP	CB-CA-C	7.20	125.06	110.38
3	G	67	LEU	N-CA-C	7.01	125.72	110.80
3	B	119	ARG	N-CA-C	-6.81	99.75	109.96
3	G	26	ASN	N-CA-C	-6.55	103.82	112.72
3	G	18	SER	N-CA-C	-6.45	104.17	111.07
3	E	26	ASN	N-CA-C	-6.24	104.23	112.72
3	G	129	LEU	CA-C-N	6.22	127.61	119.84
3	G	129	LEU	C-N-CA	6.22	127.61	119.84
3	B	93	ASP	N-CA-C	6.17	120.83	113.12
3	A	18	SER	N-CA-C	-6.14	104.50	111.07
3	C	83	VAL	N-CA-C	-6.14	104.87	110.82
3	E	18	SER	N-CA-C	-6.12	104.52	111.07
3	C	18	SER	N-CA-C	-6.08	104.57	111.07
3	A	44	ALA	N-CA-C	-5.94	106.64	114.31
3	D	80	ASP	N-CA-C	-5.93	105.96	112.72
3	C	38	SER	N-CA-C	-5.87	104.78	111.07
3	A	43	GLU	N-CA-C	-5.85	106.77	112.97
3	E	23	ARG	N-CA-C	5.83	116.76	108.54
3	H	80	ASP	N-CA-C	-5.80	106.11	112.72
3	G	109	GLN	N-CA-C	-5.79	104.88	111.07
3	G	48	HIS	N-CA-C	5.72	118.78	110.42
3	G	38	SER	N-CA-C	-5.65	105.04	111.14
3	B	78	HIS	N-CA-C	-5.63	104.83	112.26
3	F	94	ASP	N-CA-C	5.55	119.10	110.17
1	I	8	DC	N1-C1'-C2'	5.52	121.78	113.50
3	C	76	HIS	N-CA-C	-5.52	105.36	111.71
1	K	13	DA	N9-C1'-C2'	5.47	121.70	113.50
3	G	67	LEU	N-CA-CB	-5.45	101.28	110.49
3	F	78	HIS	N-CA-C	-5.44	105.08	112.26
1	I	30	DT	C2'-C3'-O3'	-5.43	103.35	111.50
3	E	38	SER	N-CA-C	-5.40	105.30	111.07
1	K	8	DC	N1-C1'-C2'	5.31	121.46	113.50
3	B	94	ASP	N-CA-C	5.27	118.66	110.17
3	G	83	VAL	N-CA-C	-5.20	105.64	110.53
3	G	76	HIS	N-CA-C	-5.10	105.84	111.71
3	F	93	ASP	N-CA-C	5.07	119.50	112.45
1	I	2	DG	N9-C1'-C2'	5.06	121.09	113.50

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	L	29	DC	Sidechain

5.2 Too-close contacts ⓘ

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	I	612	0	341	36	0
1	K	612	0	341	27	0
2	J	612	0	344	45	0
2	L	612	0	344	36	0
3	A	981	0	912	77	0
3	B	1031	0	989	78	0
3	C	971	0	897	70	0
3	D	1027	0	983	81	0
3	E	981	0	912	69	0
3	F	1031	0	989	73	0
3	G	985	0	918	70	0
3	H	1027	0	983	85	0
4	A	1	0	0	0	0
4	C	1	0	0	0	0
4	D	2	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
4	G	1	0	0	0	0
4	H	1	0	0	0	0
5	A	2	0	0	0	0
5	B	1	0	0	0	0
5	C	2	0	0	0	0
5	E	2	0	0	0	0
5	F	1	0	0	0	0
5	G	2	0	0	0	0
5	H	1	0	0	0	0
All	All	10501	0	8953	670	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 34.

All (670) 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:K:4:DA:H2''	1:K:5:DT:H5''	1.21	1.16
1:K:4:DA:H2''	1:K:5:DT:C5'	1.83	1.06
3:E:30:GLU:HG2	3:E:33:ARG:HH22	1.24	1.02
3:G:51:GLN:HG2	3:G:104:ASP:HA	1.45	0.98
1:K:4:DA:C2'	1:K:5:DT:H5''	1.95	0.96
3:C:90:ILE:HD11	3:C:94:ASP:HB3	1.47	0.96
3:A:30:GLU:HG2	3:A:33:ARG:HH22	1.35	0.92
3:C:30:GLU:HG2	3:C:33:ARG:HH22	1.35	0.91
3:G:90:ILE:HD11	3:G:94:ASP:HB3	1.50	0.90
3:D:36:LEU:O	3:D:40:LEU:HB2	1.70	0.90
2:L:20:DT:H2''	2:L:21:DT:C5'	2.02	0.90
2:J:1:DA:H2''	2:J:2:DG:H5'	1.56	0.87
1:K:14:DC:H1'	1:K:15:DT:H5'	1.56	0.87
2:J:1:DA:H2''	2:J:2:DG:C5'	2.05	0.86
2:L:20:DT:H2''	2:L:21:DT:H5''	1.58	0.86
1:I:4:DA:H2''	1:I:5:DT:H5'	1.57	0.85
3:G:30:GLU:HG2	3:G:33:ARG:HH22	1.39	0.85
3:G:16:LEU:HA	3:H:40:LEU:HD11	1.60	0.84
2:L:10:DA:H2''	2:L:11:DT:O5'	1.78	0.83
2:L:19:DA:H1'	2:L:20:DT:H5''	1.60	0.83
3:A:23:ARG:NH2	3:B:109:GLN:HE22	1.76	0.83
2:L:4:DA:H2''	2:L:5:DT:C5'	2.09	0.82
3:B:43:GLU:HG2	3:B:44:ALA:H	1.45	0.82
3:H:116:ILE:HG23	3:H:124:GLY:HA3	1.60	0.81
3:C:58:TYR:CE1	3:C:97:GLU:HB3	2.15	0.81
3:G:15:THR:HG22	3:H:40:LEU:HD21	1.63	0.81
3:A:112:ALA:O	3:A:116:ILE:HG13	1.81	0.80
3:F:36:LEU:O	3:F:40:LEU:HB2	1.80	0.80
3:F:128:CYS:O	3:F:129:LEU:HD23	1.81	0.80
3:D:70:ARG:HD3	3:D:118:GLN:HE22	1.47	0.79
2:L:20:DT:C2'	2:L:21:DT:H5''	2.14	0.78
3:B:68:ALA:O	3:B:72:VAL:HG23	1.83	0.77
3:E:112:ALA:O	3:E:116:ILE:HG13	1.84	0.77
3:D:116:ILE:HG23	3:D:124:GLY:HA3	1.66	0.77
3:A:7:THR:HG22	3:B:3:ARG:HD2	1.67	0.77
3:E:126:LEU:HD21	3:E:128:CYS:SG	2.24	0.76
1:I:4:DA:H2''	1:I:5:DT:C5'	2.14	0.76
1:K:3:DT:H1'	1:K:4:DA:H5''	1.66	0.76
3:D:75:GLN:HG2	3:D:111:PHE:CZ	2.21	0.76
3:E:30:GLU:HG2	3:E:33:ARG:NH2	1.98	0.75
2:J:11:DT:H1'	2:J:12:DT:H5''	1.66	0.75
3:B:104:ASP:HB3	3:B:107:ASP:OD2	1.87	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:1:MSE:HE3	3:H:8:LEU:C	2.13	0.74
3:H:40:LEU:HD23	3:H:40:LEU:O	1.86	0.74
1:K:15:DT:C6	1:K:16:DT:H72	2.22	0.74
3:B:128:CYS:O	3:B:129:LEU:HD23	1.87	0.74
3:F:65:ARG:HH21	3:F:65:ARG:HG3	1.51	0.74
3:A:62:HIS:CD2	3:A:93:ASP:HA	2.22	0.74
2:J:28:DA:H2''	2:J:29:DC:OP2	1.88	0.74
3:C:7:THR:HG22	3:D:3:ARG:HD2	1.69	0.73
1:K:20:DA:H1'	1:K:21:DT:H5''	1.68	0.73
2:L:4:DA:H2''	2:L:5:DT:H5''	1.70	0.73
3:C:1:MSE:HE3	3:D:8:LEU:C	2.13	0.73
3:F:55:VAL:HG12	3:F:55:VAL:O	1.88	0.72
3:G:9:ASP:HB3	3:H:1:MSE:HE2	1.69	0.72
1:I:15:DT:H1'	1:I:16:DT:H5'	1.71	0.72
3:G:53:PHE:CZ	3:H:90:ILE:HG22	2.24	0.72
3:A:126:LEU:HD21	3:A:128:CYS:SG	2.30	0.72
3:E:62:HIS:CD2	3:E:93:ASP:HA	2.25	0.72
3:G:58:TYR:CE1	3:G:97:GLU:HB3	2.23	0.72
1:I:21:DT:H1'	1:I:22:DC:H5'	1.71	0.71
2:L:17:DG:H2''	2:L:18:DT:OP2	1.89	0.71
3:E:127:GLN:HE21	3:F:125:HIS:CG	2.08	0.71
1:I:29:DC:H1'	1:I:30:DT:H5''	1.71	0.71
2:J:13:DT:H1'	2:J:14:DT:H5''	1.72	0.71
3:G:91:ASN:ND2	3:G:94:ASP:HB2	2.05	0.71
3:D:105:MSE:HE1	3:D:128:CYS:HB3	1.74	0.70
2:L:23:DG:H1'	2:L:24:DT:H5''	1.74	0.70
3:A:23:ARG:HH21	3:B:109:GLN:HE22	1.40	0.69
3:E:53:PHE:CZ	3:F:90:ILE:HG22	2.27	0.69
3:H:43:GLU:HG2	3:H:44:ALA:H	1.56	0.69
3:A:62:HIS:NE2	3:A:93:ASP:HA	2.06	0.69
3:D:45:THR:HG22	3:D:46:GLN:N	2.08	0.69
3:B:19:LEU:HD21	3:B:23:ARG:CZ	2.23	0.69
2:L:4:DA:H2''	2:L:5:DT:H5'	1.75	0.69
3:D:105:MSE:CE	3:D:128:CYS:HB3	2.23	0.69
3:E:8:LEU:CD1	3:E:13:LEU:HB2	2.22	0.69
3:C:1:MSE:HG3	3:C:2:GLN:H	1.58	0.69
2:J:20:DT:H2'	2:J:21:DT:H71	1.73	0.69
2:L:11:DT:H2''	2:L:12:DT:H5'	1.74	0.69
3:C:91:ASN:ND2	3:C:94:ASP:HB2	2.08	0.68
3:A:1:MSE:HE3	3:B:8:LEU:C	2.19	0.68
2:J:12:DT:H1'	2:J:13:DT:H5''	1.75	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:4:DA:H2''	1:K:5:DT:H5'	1.76	0.68
2:L:20:DT:H1'	2:L:21:DT:H5''	1.76	0.68
3:E:25:TYR:C	3:E:27:ASN:H	2.02	0.68
3:D:45:THR:HG22	3:D:46:GLN:H	1.58	0.68
1:K:1:DA:H8	1:K:1:DA:HO5'	1.42	0.67
2:L:3:DT:H1'	2:L:4:DA:H5''	1.75	0.67
2:L:20:DT:H2''	2:L:21:DT:H5'	1.75	0.67
3:H:105:MSE:CE	3:H:128:CYS:HB3	2.23	0.67
3:G:30:GLU:HG2	3:G:33:ARG:NH2	2.09	0.67
3:H:65:ARG:HB2	3:H:70:ARG:HH12	1.60	0.67
1:I:23:DG:H1'	1:I:24:DT:H5''	1.77	0.67
3:F:43:GLU:HG2	3:F:44:ALA:N	2.09	0.67
1:K:17:DA:H2''	1:K:18:DA:OP2	1.94	0.67
3:B:45:THR:HG22	3:B:46:GLN:N	2.10	0.66
3:A:50:THR:HG22	3:A:105:MSE:HG3	1.77	0.66
3:G:52:GLY:N	3:G:105:MSE:HE3	2.11	0.66
1:I:14:DC:H2''	1:I:15:DT:H5'	1.77	0.66
3:G:8:LEU:CD1	3:G:13:LEU:HB2	2.26	0.66
2:L:14:DT:H2''	2:L:15:DA:H5''	1.77	0.66
3:G:31:ALA:O	3:G:35:ILE:HG13	1.95	0.66
2:L:29:DC:H2''	2:L:30:DT:OP2	1.95	0.65
3:A:52:GLY:N	3:A:105:MSE:HE3	2.10	0.65
3:E:62:HIS:NE2	3:E:93:ASP:HA	2.12	0.65
3:E:29:SER:O	3:E:33:ARG:HG3	1.96	0.65
3:B:43:GLU:CG	3:B:44:ALA:H	2.10	0.65
3:B:70:ARG:HD2	3:B:118:GLN:HE22	1.60	0.65
3:E:7:THR:HG22	3:F:3:ARG:HD2	1.78	0.65
2:J:3:DT:C7	3:C:7:THR:HG23	2.28	0.64
2:J:13:DT:H2''	2:J:14:DT:H5'	1.80	0.64
2:J:17:DG:H2''	2:J:18:DT:OP2	1.97	0.64
3:A:30:GLU:HG2	3:A:33:ARG:NH2	2.09	0.64
3:D:43:GLU:HG2	3:D:44:ALA:H	1.62	0.64
3:F:113:ASP:C	3:F:115:VAL:H	2.05	0.64
3:G:90:ILE:HG22	3:H:53:PHE:CE2	2.33	0.64
1:I:17:DA:H2''	1:I:18:DA:OP2	1.97	0.64
2:L:14:DT:C2'	2:L:15:DA:H5''	2.28	0.64
3:F:104:ASP:HB3	3:F:107:ASP:OD2	1.97	0.64
3:E:13:LEU:C	3:E:13:LEU:HD23	2.23	0.63
3:F:68:ALA:O	3:F:72:VAL:HG23	1.97	0.63
3:G:7:THR:HG22	3:H:3:ARG:HD2	1.80	0.63
3:G:100:VAL:C	3:G:101:LEU:HD23	2.24	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:1:DA:HO5'	1:I:1:DA:H8	1.45	0.63
3:G:8:LEU:HD13	3:G:13:LEU:HB2	1.80	0.63
3:H:29:SER:O	3:H:33:ARG:HB2	1.98	0.63
2:J:5:DT:H2''	2:J:6:DG:C8	2.34	0.63
1:I:12:DT:H2''	1:I:13:DA:OP2	1.99	0.63
3:A:126:LEU:HD23	3:A:126:LEU:C	2.24	0.63
3:F:19:LEU:HD21	3:F:23:ARG:CZ	2.29	0.63
3:G:1:MSE:HG3	3:G:2:GLN:H	1.63	0.63
3:F:29:SER:O	3:F:33:ARG:HB2	1.98	0.62
2:J:15:DA:H1'	2:J:16:DA:H5'	1.81	0.62
3:D:43:GLU:HG2	3:D:44:ALA:N	2.14	0.62
3:A:13:LEU:HD23	3:A:13:LEU:C	2.25	0.62
2:J:1:DA:H2''	2:J:2:DG:H5''	1.80	0.62
3:C:25:TYR:C	3:C:27:ASN:H	2.08	0.62
3:G:13:LEU:C	3:G:13:LEU:HD23	2.24	0.62
3:G:113:ASP:C	3:G:115:VAL:H	2.07	0.62
1:I:14:DC:H2''	1:I:15:DT:C5'	2.30	0.62
3:A:126:LEU:HD23	3:A:126:LEU:O	2.00	0.62
3:G:25:TYR:C	3:G:27:ASN:H	2.07	0.62
3:C:8:LEU:CD1	3:C:13:LEU:HB2	2.30	0.62
3:A:30:GLU:O	3:A:31:ALA:C	2.42	0.62
3:C:52:GLY:N	3:C:105:MSE:HE3	2.15	0.62
3:F:43:GLU:HG2	3:F:44:ALA:H	1.64	0.62
3:A:31:ALA:O	3:A:35:ILE:HG13	2.00	0.61
3:H:46:GLN:H	3:H:109:GLN:HG3	1.65	0.61
3:H:68:ALA:O	3:H:72:VAL:HG23	2.00	0.61
3:B:65:ARG:HH21	3:B:65:ARG:HG3	1.64	0.61
3:H:105:MSE:HE1	3:H:128:CYS:HB3	1.81	0.61
3:H:125:HIS:C	3:H:125:HIS:CD2	2.78	0.61
3:B:40:LEU:C	3:B:40:LEU:HD23	2.25	0.61
3:C:13:LEU:HD23	3:C:13:LEU:C	2.26	0.61
3:C:113:ASP:C	3:C:115:VAL:H	2.08	0.61
3:A:20:SER:O	3:A:25:TYR:O	2.19	0.61
3:C:30:GLU:HG2	3:C:33:ARG:NH2	2.11	0.61
3:D:90:ILE:O	3:D:91:ASN:HB3	2.00	0.61
1:I:3:DT:H1'	1:I:4:DA:H5''	1.82	0.60
2:J:13:DT:H2''	2:J:14:DT:C5'	2.32	0.60
3:B:36:LEU:O	3:B:40:LEU:HB2	2.00	0.60
3:A:25:TYR:C	3:A:27:ASN:H	2.09	0.60
3:H:53:PHE:CE1	3:H:102:LYS:HB2	2.36	0.60
3:H:91:ASN:HD21	3:H:94:ASP:HB2	1.66	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:3:DT:C7	3:G:7:THR:HG23	2.31	0.60
3:E:126:LEU:C	3:E:126:LEU:HD23	2.26	0.60
3:F:116:ILE:HG23	3:F:124:GLY:HA3	1.84	0.60
3:B:43:GLU:HG2	3:B:44:ALA:N	2.15	0.60
3:B:76:HIS:CE1	3:D:95:CYS:SG	2.95	0.60
3:E:47:GLN:O	3:E:49:GLY:N	2.35	0.60
3:H:19:LEU:HD21	3:H:23:ARG:CZ	2.32	0.60
3:A:84:ALA:HB1	3:C:86:LEU:HD11	1.82	0.60
3:H:43:GLU:HG2	3:H:44:ALA:N	2.15	0.60
3:H:72:VAL:HG12	3:H:76:HIS:HD2	1.67	0.60
3:D:65:ARG:O	3:D:66:ASP:C	2.45	0.60
3:F:105:MSE:CE	3:F:128:CYS:HB3	2.31	0.60
3:C:53:PHE:CE2	3:D:90:ILE:HG22	2.37	0.60
2:L:4:DA:C2'	2:L:5:DT:H5''	2.31	0.59
3:A:62:HIS:HE2	3:A:93:ASP:HA	1.65	0.59
3:H:65:ARG:O	3:H:66:ASP:C	2.44	0.59
3:H:104:ASP:HB3	3:H:107:ASP:OD2	2.02	0.59
1:I:24:DT:H2''	1:I:25:DC:H5'	1.83	0.59
3:B:45:THR:HG22	3:B:46:GLN:H	1.66	0.59
3:C:53:PHE:CZ	3:D:90:ILE:HG22	2.36	0.59
3:D:91:ASN:HD21	3:D:94:ASP:HB2	1.68	0.59
3:E:111:PHE:CD1	3:E:111:PHE:C	2.81	0.59
3:G:87:HIS:CE1	3:G:95:CYS:SG	2.94	0.59
3:C:40:LEU:HD13	3:D:15:THR:CG2	2.32	0.59
3:E:1:MSE:HE3	3:F:8:LEU:C	2.28	0.59
3:F:54:ALA:HB1	3:F:126:LEU:HD11	1.84	0.59
3:A:91:ASN:OD1	3:A:94:ASP:HB2	2.03	0.59
3:F:3:ARG:O	3:F:4:VAL:HG23	2.03	0.59
3:B:29:SER:O	3:B:33:ARG:HB2	2.03	0.59
3:G:15:THR:HG22	3:H:40:LEU:CD2	2.32	0.59
3:C:30:GLU:O	3:C:31:ALA:C	2.46	0.59
3:F:70:ARG:HE	3:F:118:GLN:HE22	1.51	0.59
3:B:36:LEU:O	3:B:40:LEU:CB	2.50	0.59
3:F:65:ARG:HB3	3:F:70:ARG:HH12	1.67	0.59
3:A:1:MSE:HG3	3:A:2:GLN:H	1.67	0.58
1:I:18:DA:H2''	1:I:19:DA:OP2	2.02	0.58
2:L:20:DT:C1'	2:L:21:DT:H5''	2.34	0.58
3:E:8:LEU:HD13	3:E:13:LEU:HB2	1.84	0.58
1:K:13:DA:H1'	1:K:14:DC:H5''	1.86	0.58
3:C:100:VAL:C	3:C:101:LEU:HD23	2.27	0.58
3:C:69:SER:O	3:C:72:VAL:HG12	2.03	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:112:ALA:O	3:F:116:ILE:HG13	2.04	0.58
1:I:28:DA:H2''	1:I:29:DC:OP2	2.04	0.58
3:A:90:ILE:HD11	3:A:96:LEU:HB2	1.86	0.58
3:D:20:SER:O	3:D:25:TYR:HB2	2.03	0.58
3:G:47:GLN:HG2	3:G:48:HIS:N	2.19	0.58
3:C:117:ALA:O	3:C:118:GLN:C	2.47	0.58
2:L:10:DA:C2'	2:L:11:DT:O5'	2.49	0.57
3:B:20:SER:O	3:B:25:TYR:HB2	2.03	0.57
3:B:113:ASP:C	3:B:115:VAL:H	2.12	0.57
3:D:67:LEU:O	3:D:71:ILE:HG13	2.04	0.57
1:I:25:DC:H2''	1:I:26:DA:C8	2.38	0.57
2:J:4:DA:H1'	2:J:5:DT:H5''	1.85	0.57
3:B:51:GLN:HG2	3:B:52:GLY:N	2.18	0.57
1:K:2:DG:H1'	1:K:3:DT:H5'	1.85	0.57
3:G:30:GLU:O	3:G:31:ALA:C	2.47	0.57
3:H:43:GLU:CG	3:H:44:ALA:H	2.15	0.57
2:L:24:DT:H2''	2:L:25:DC:C6	2.39	0.57
3:B:51:GLN:HG2	3:B:52:GLY:H	1.70	0.57
3:F:76:HIS:CE1	3:H:89:HIS:HB3	2.40	0.57
1:I:14:DC:H1'	1:I:15:DT:H5''	1.87	0.57
3:E:62:HIS:HE2	3:E:93:ASP:HA	1.70	0.57
3:F:8:LEU:HD12	3:F:13:LEU:HD13	1.85	0.57
3:H:36:LEU:O	3:H:40:LEU:CB	2.53	0.57
3:B:55:VAL:HG12	3:B:55:VAL:O	2.04	0.57
3:F:128:CYS:C	3:F:129:LEU:HD23	2.30	0.56
3:A:8:LEU:CD1	3:A:13:LEU:HB2	2.34	0.56
3:A:127:GLN:HE21	3:B:125:HIS:CG	2.23	0.56
1:I:11:DA:H1'	1:I:12:DT:H5'	1.88	0.56
3:A:117:ALA:O	3:A:118:GLN:C	2.48	0.56
3:B:74:THR:O	3:B:77:HIS:HB3	2.06	0.56
3:D:64:LYS:O	3:D:67:LEU:HB2	2.04	0.56
3:A:69:SER:OG	3:C:68:ALA:HB3	2.05	0.56
3:E:30:GLU:O	3:E:31:ALA:C	2.48	0.56
3:E:84:ALA:HB1	3:G:86:LEU:HD11	1.87	0.56
3:F:74:THR:O	3:F:77:HIS:HB3	2.04	0.56
3:C:59:VAL:HG12	3:C:60:TYR:N	2.20	0.56
3:C:100:VAL:O	3:C:101:LEU:HD23	2.05	0.56
3:D:50:THR:HG21	3:D:130:PRO:HB2	1.87	0.56
2:L:11:DT:H2''	2:L:12:DT:C5'	2.35	0.56
3:G:100:VAL:O	3:G:101:LEU:HD23	2.06	0.56
3:H:72:VAL:HG12	3:H:76:HIS:CD2	2.41	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:16:DA:H2''	2:L:17:DG:OP2	2.05	0.56
3:B:51:GLN:HG3	3:B:103:GLY:C	2.31	0.56
3:D:29:SER:O	3:D:33:ARG:HB2	2.06	0.56
3:B:54:ALA:HB3	3:B:101:LEU:HB2	1.88	0.56
3:E:91:ASN:OD1	3:E:94:ASP:HB2	2.06	0.56
3:H:90:ILE:O	3:H:91:ASN:HB3	2.06	0.56
1:I:4:DA:H1'	1:I:5:DT:H5''	1.88	0.55
3:E:90:ILE:HG23	3:F:53:PHE:CE2	2.41	0.55
3:A:111:PHE:CD1	3:A:111:PHE:C	2.84	0.55
3:F:78:HIS:C	3:F:80:ASP:H	2.13	0.55
3:G:23:ARG:HD2	3:H:113:ASP:OD2	2.05	0.55
3:D:75:GLN:HG2	3:D:111:PHE:HZ	1.70	0.55
3:G:117:ALA:O	3:G:118:GLN:C	2.50	0.55
3:H:20:SER:O	3:H:25:TYR:HB2	2.05	0.55
3:E:126:LEU:HD23	3:E:126:LEU:O	2.06	0.55
3:H:46:GLN:HG2	3:H:109:GLN:HG2	1.88	0.55
1:I:25:DC:H2''	1:I:26:DA:H8	1.72	0.55
3:E:117:ALA:O	3:E:118:GLN:C	2.50	0.55
3:G:91:ASN:HD21	3:G:94:ASP:HB2	1.69	0.55
3:C:91:ASN:HD21	3:C:94:ASP:HB2	1.71	0.55
3:A:8:LEU:HD13	3:A:13:LEU:HB2	1.88	0.55
3:D:67:LEU:HD21	3:D:121:VAL:HG23	1.88	0.55
3:D:113:ASP:C	3:D:115:VAL:H	2.14	0.54
2:J:14:DT:H1'	2:J:15:DA:H5'	1.89	0.54
3:A:15:THR:HG22	3:B:40:LEU:HD21	1.88	0.54
3:B:105:MSE:HE2	3:B:128:CYS:HB3	1.89	0.54
3:H:104:ASP:C	3:H:106:GLY:N	2.65	0.54
3:F:105:MSE:HE2	3:F:128:CYS:HB3	1.89	0.54
1:K:23:DG:H5''	3:G:27:ASN:ND2	2.22	0.54
2:J:13:DT:OP1	3:D:65:ARG:N	2.40	0.54
3:C:8:LEU:HD13	3:C:13:LEU:HB2	1.88	0.54
3:D:112:ALA:O	3:D:116:ILE:HG13	2.07	0.54
3:H:105:MSE:HE3	3:H:128:CYS:HB3	1.89	0.54
1:K:20:DA:H1'	1:K:21:DT:C5'	2.36	0.54
3:G:104:ASP:HB3	3:G:107:ASP:OD2	2.08	0.54
3:G:16:LEU:CA	3:H:40:LEU:HD11	2.37	0.54
2:J:18:DT:H2''	2:J:19:DA:OP2	2.08	0.54
3:C:87:HIS:CE1	3:C:95:CYS:SG	3.01	0.54
3:F:20:SER:O	3:F:25:TYR:HB2	2.08	0.54
3:B:58:TYR:CE1	3:B:97:GLU:HB2	2.43	0.53
3:B:76:HIS:CE1	3:D:89:HIS:HB3	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:78:HIS:O	3:F:80:ASP:N	2.42	0.53
3:C:31:ALA:O	3:C:35:ILE:HG13	2.08	0.53
1:I:20:DA:H1'	1:I:21:DT:H5''	1.90	0.53
1:K:16:DT:H2''	1:K:17:DA:OP2	2.08	0.53
3:D:72:VAL:HG12	3:D:76:HIS:HD2	1.74	0.53
2:J:19:DA:H1'	2:J:20:DT:H5''	1.90	0.53
3:H:51:GLN:HA	3:H:103:GLY:O	2.09	0.53
1:K:13:DA:C2	2:L:19:DA:C2	2.95	0.53
3:G:1:MSE:O	3:G:2:GLN:HG2	2.08	0.53
3:H:87:HIS:HD2	3:H:88:VAL:N	2.07	0.53
3:D:45:THR:CG2	3:D:46:GLN:H	2.21	0.53
1:I:26:DA:H2''	1:I:27:DT:OP2	2.08	0.53
3:F:53:PHE:HE1	3:F:102:LYS:HD2	1.74	0.53
3:H:64:LYS:O	3:H:67:LEU:HB2	2.09	0.53
2:L:27:DT:H2''	2:L:28:DA:OP2	2.09	0.52
3:B:59:VAL:HA	3:B:95:CYS:O	2.08	0.52
3:D:125:HIS:CD2	3:D:125:HIS:C	2.87	0.52
3:F:58:TYR:N	3:F:58:TYR:CD2	2.78	0.52
3:H:46:GLN:CG	3:H:109:GLN:HG2	2.39	0.52
3:B:70:ARG:HD2	3:B:118:GLN:NE2	2.23	0.52
3:G:74:THR:C	3:G:77:HIS:HB3	2.35	0.52
3:H:47:GLN:O	3:H:49:GLY:N	2.42	0.52
3:C:74:THR:O	3:C:77:HIS:HB3	2.10	0.52
3:G:107:ASP:O	3:G:110:HIS:HB2	2.10	0.52
2:J:10:DA:H1'	2:J:11:DT:H5'	1.92	0.52
1:K:20:DA:H2''	1:K:21:DT:OP2	2.09	0.52
3:A:53:PHE:CE2	3:B:90:ILE:HG22	2.45	0.52
3:G:40:LEU:HD13	3:H:15:THR:CG2	2.40	0.52
3:H:75:GLN:HG2	3:H:111:PHE:CZ	2.45	0.52
2:J:23:DG:H1'	2:J:24:DT:H5''	1.92	0.52
3:D:19:LEU:HD21	3:D:23:ARG:CZ	2.40	0.52
3:D:104:ASP:C	3:D:106:GLY:N	2.68	0.52
3:E:1:MSE:HG3	3:E:2:GLN:H	1.73	0.52
3:F:65:ARG:HB3	3:F:70:ARG:NH1	2.25	0.52
3:G:29:SER:O	3:G:33:ARG:HG3	2.09	0.52
3:H:87:HIS:CD2	3:H:88:VAL:N	2.78	0.52
2:J:2:DG:H1'	2:J:3:DT:H5'	1.91	0.52
3:F:53:PHE:CE1	3:F:102:LYS:HB2	2.44	0.52
3:B:105:MSE:CE	3:B:128:CYS:HB3	2.40	0.51
3:F:65:ARG:HH21	3:F:65:ARG:CG	2.22	0.51
3:A:23:ARG:CZ	3:B:109:GLN:HE22	2.24	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:30:GLU:HA	3:B:33:ARG:NH2	2.25	0.51
3:D:68:ALA:O	3:D:72:VAL:HG23	2.10	0.51
3:H:104:ASP:C	3:H:106:GLY:H	2.19	0.51
1:K:5:DT:H2''	1:K:6:DG:C8	2.45	0.51
3:E:107:ASP:O	3:E:110:HIS:HB3	2.10	0.51
3:G:75:GLN:HG3	3:G:111:PHE:HZ	1.75	0.51
3:A:23:ARG:NE	3:B:109:GLN:NE2	2.59	0.51
3:A:27:ASN:OD1	3:A:27:ASN:C	2.54	0.51
3:F:78:HIS:CD2	3:F:111:PHE:HD2	2.29	0.51
2:L:3:DT:H1'	2:L:4:DA:C5'	2.40	0.51
3:B:14:GLU:O	3:B:15:THR:C	2.53	0.51
3:C:40:LEU:HD13	3:D:15:THR:HG22	1.91	0.51
3:C:52:GLY:CA	3:C:105:MSE:HE3	2.41	0.51
3:C:74:THR:C	3:C:77:HIS:HB3	2.35	0.51
2:J:6:DG:H1'	2:J:7:DA:H5'	1.92	0.51
3:G:1:MSE:HE3	3:H:8:LEU:O	2.10	0.51
3:D:125:HIS:HD2	3:D:126:LEU:N	2.09	0.51
2:J:21:DT:H1'	2:J:22:DC:H5''	1.93	0.51
3:A:128:CYS:O	3:A:129:LEU:HD23	2.11	0.50
3:B:87:HIS:CD2	3:B:89:HIS:CE1	2.99	0.50
3:H:8:LEU:HD12	3:H:13:LEU:HD13	1.92	0.50
2:J:15:DA:H1'	2:J:16:DA:C5'	2.41	0.50
2:J:22:DC:H2''	2:J:23:DG:C8	2.46	0.50
3:D:14:GLU:O	3:D:15:THR:C	2.52	0.50
3:B:76:HIS:HA	3:B:79:HIS:HB3	1.93	0.50
3:D:87:HIS:CD2	3:D:88:VAL:N	2.79	0.50
1:K:23:DG:H1'	1:K:24:DT:H5''	1.93	0.50
3:D:45:THR:CG2	3:D:46:GLN:N	2.74	0.50
3:C:41:ALA:O	3:C:42:GLN:C	2.54	0.50
2:L:11:DT:C2'	2:L:12:DT:H5'	2.41	0.50
1:I:3:DT:H2''	1:I:4:DA:H5'	1.93	0.50
1:I:24:DT:H2''	1:I:25:DC:C5'	2.41	0.50
1:K:14:DC:C1'	1:K:15:DT:H5'	2.36	0.50
3:D:7:THR:O	3:D:8:LEU:HD23	2.12	0.50
3:D:72:VAL:HG12	3:D:76:HIS:CD2	2.47	0.50
3:F:105:MSE:HE1	3:F:128:CYS:SG	2.52	0.50
3:D:104:ASP:C	3:D:106:GLY:H	2.20	0.50
3:E:81:LEU:HD11	3:E:107:ASP:HB3	1.93	0.50
3:D:104:ASP:O	3:D:106:GLY:N	2.45	0.49
3:H:112:ALA:O	3:H:116:ILE:HG13	2.12	0.49
2:L:2:DG:H3'	3:H:27:ASN:HD22	1.76	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:60:TYR:CE2	3:B:71:ILE:HD12	2.47	0.49
3:E:90:ILE:HD11	3:E:96:LEU:HB2	1.94	0.49
3:A:110:HIS:O	3:A:111:PHE:C	2.55	0.49
3:D:87:HIS:HD2	3:D:88:VAL:N	2.10	0.49
3:E:25:TYR:C	3:E:27:ASN:N	2.70	0.49
3:E:32:ILE:HG12	3:F:36:LEU:HD21	1.95	0.49
1:I:16:DT:H2''	1:I:17:DA:OP2	2.12	0.49
3:D:75:GLN:HG2	3:D:111:PHE:CE2	2.47	0.49
3:D:104:ASP:HB3	3:D:107:ASP:OD2	2.13	0.49
3:D:113:ASP:C	3:D:115:VAL:N	2.69	0.49
3:H:43:GLU:CG	3:H:44:ALA:N	2.75	0.49
2:L:19:DA:C1'	2:L:20:DT:H5''	2.38	0.49
3:A:107:ASP:O	3:A:110:HIS:HB3	2.12	0.49
3:C:111:PHE:CD1	3:C:111:PHE:C	2.91	0.49
3:H:48:HIS:HA	3:H:106:GLY:HA3	1.95	0.49
3:B:89:HIS:HB3	3:D:76:HIS:CE1	2.48	0.49
3:F:70:ARG:O	3:F:71:ILE:C	2.55	0.49
3:G:113:ASP:C	3:G:115:VAL:N	2.71	0.49
3:H:64:LYS:C	3:H:65:ARG:HG2	2.37	0.49
3:H:50:THR:O	3:H:105:MSE:HG2	2.13	0.48
3:C:87:HIS:NE2	3:C:95:CYS:SG	2.86	0.48
3:F:59:VAL:HA	3:F:95:CYS:O	2.13	0.48
3:H:48:HIS:NE2	3:H:110:HIS:NE2	2.61	0.48
2:L:14:DT:H1'	2:L:15:DA:H5''	1.94	0.48
3:E:1:MSE:O	3:E:2:GLN:HG2	2.13	0.48
3:B:45:THR:CG2	3:B:46:GLN:N	2.76	0.48
3:F:51:GLN:HA	3:F:105:MSE:HG2	1.94	0.48
3:G:113:ASP:O	3:G:115:VAL:N	2.46	0.48
3:B:116:ILE:HG23	3:B:124:GLY:HA3	1.96	0.48
3:E:100:VAL:O	3:E:101:LEU:HD23	2.14	0.48
3:F:111:PHE:CD1	3:F:111:PHE:C	2.92	0.48
3:H:64:LYS:O	3:H:65:ARG:C	2.56	0.48
3:H:65:ARG:HB2	3:H:70:ARG:NH1	2.25	0.48
3:H:108:VAL:O	3:H:109:GLN:C	2.56	0.48
3:B:78:HIS:C	3:B:80:ASP:H	2.22	0.48
3:E:90:ILE:CG1	3:F:53:PHE:HE2	2.26	0.48
3:E:128:CYS:O	3:E:129:LEU:HD23	2.14	0.48
3:H:67:LEU:HD21	3:H:121:VAL:HG23	1.95	0.48
1:I:17:DA:C2	2:J:15:DA:C2	3.02	0.48
2:J:20:DT:H2''	2:J:21:DT:H6	1.79	0.48
3:C:29:SER:O	3:C:33:ARG:HG3	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:9:ASP:OD2	3:D:10:ASP:N	2.46	0.48
3:D:62:HIS:HB2	3:D:68:ALA:HB2	1.96	0.48
3:D:105:MSE:HE2	3:D:130:PRO:HB3	1.94	0.48
3:H:125:HIS:HD2	3:H:126:LEU:N	2.12	0.48
3:E:9:ASP:HB3	3:F:1:MSE:HE2	1.95	0.48
3:E:127:GLN:NE2	3:F:125:HIS:ND1	2.61	0.48
3:A:117:ALA:O	3:A:119:ARG:N	2.47	0.47
3:B:90:ILE:HD11	3:B:94:ASP:CB	2.44	0.47
3:C:104:ASP:HB3	3:C:107:ASP:OD2	2.14	0.47
3:E:108:VAL:O	3:E:109:GLN:C	2.57	0.47
1:K:8:DC:H1'	1:K:9:DG:N7	2.29	0.47
3:E:69:SER:OG	3:G:68:ALA:HB3	2.14	0.47
3:E:90:ILE:HD12	3:E:90:ILE:H	1.79	0.47
3:H:105:MSE:HE2	3:H:130:PRO:HB3	1.95	0.47
3:B:70:ARG:O	3:B:71:ILE:C	2.57	0.47
3:E:91:ASN:CG	3:E:94:ASP:HB2	2.39	0.47
3:A:29:SER:O	3:A:33:ARG:HG3	2.15	0.47
3:A:108:VAL:O	3:A:109:GLN:C	2.56	0.47
3:G:25:TYR:C	3:G:27:ASN:N	2.72	0.47
3:A:42:GLN:C	3:A:44:ALA:H	2.23	0.47
3:B:50:THR:O	3:B:105:MSE:HG2	2.13	0.47
3:B:78:HIS:CD2	3:B:111:PHE:HD2	2.32	0.47
3:E:125:HIS:CD2	3:F:127:GLN:OE1	2.67	0.47
3:G:18:SER:CB	3:G:22:ARG:HH12	2.27	0.47
3:F:19:LEU:C	3:F:19:LEU:HD23	2.40	0.47
3:G:43:GLU:OE2	3:H:19:LEU:HD11	2.15	0.47
1:I:13:DA:C2	1:I:14:DC:C2	3.03	0.47
3:D:7:THR:C	3:D:8:LEU:HD23	2.39	0.47
3:D:19:LEU:HD23	3:D:19:LEU:C	2.39	0.47
3:D:91:ASN:ND2	3:D:94:ASP:HB2	2.29	0.47
3:D:111:PHE:O	3:D:115:VAL:HG23	2.14	0.47
3:A:23:ARG:CZ	3:B:109:GLN:NE2	2.78	0.47
3:C:112:ALA:O	3:C:116:ILE:HG13	2.15	0.47
3:G:74:THR:O	3:G:77:HIS:HB3	2.15	0.47
3:B:19:LEU:C	3:B:19:LEU:HD23	2.40	0.47
3:D:105:MSE:HE3	3:D:128:CYS:HB3	1.96	0.47
3:H:104:ASP:O	3:H:106:GLY:N	2.48	0.47
3:H:9:ASP:OD2	3:H:10:ASP:N	2.47	0.47
3:A:91:ASN:HA	3:C:79:HIS:CD2	2.49	0.46
3:B:111:PHE:CD1	3:B:111:PHE:C	2.92	0.46
3:F:19:LEU:HD23	3:F:19:LEU:O	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:13:DA:C2	2:J:19:DA:C2	3.03	0.46
2:L:29:DC:H1'	2:L:30:DT:H5'	1.96	0.46
3:C:100:VAL:HG22	3:D:98:ILE:CD1	2.46	0.46
3:H:19:LEU:C	3:H:19:LEU:HD23	2.40	0.46
2:L:24:DT:H2''	2:L:25:DC:H6	1.80	0.46
3:B:43:GLU:CG	3:B:44:ALA:N	2.76	0.46
3:H:91:ASN:ND2	3:H:94:ASP:HB2	2.29	0.46
3:F:78:HIS:C	3:F:80:ASP:N	2.74	0.46
3:B:8:LEU:HD12	3:B:13:LEU:HD13	1.98	0.46
3:B:45:THR:CG2	3:B:46:GLN:H	2.27	0.46
3:F:62:HIS:HB2	3:F:68:ALA:HB2	1.98	0.46
2:J:27:DT:H2''	2:J:28:DA:OP2	2.15	0.46
2:L:14:DT:H2''	2:L:15:DA:C5'	2.46	0.46
3:F:104:ASP:O	3:F:106:GLY:N	2.49	0.46
3:C:25:TYR:C	3:C:27:ASN:N	2.74	0.46
3:C:113:ASP:C	3:C:115:VAL:N	2.74	0.46
3:H:40:LEU:HD23	3:H:40:LEU:C	2.41	0.46
1:K:3:DT:H2''	1:K:4:DA:OP2	2.16	0.46
3:B:9:ASP:OD2	3:B:10:ASP:N	2.48	0.46
3:D:3:ARG:O	3:D:4:VAL:HG23	2.15	0.46
3:D:59:VAL:HG12	3:D:60:TYR:N	2.31	0.46
3:F:105:MSE:HE1	3:F:128:CYS:HB3	1.97	0.46
3:G:70:ARG:O	3:G:71:ILE:C	2.58	0.46
3:H:59:VAL:HA	3:H:95:CYS:O	2.15	0.46
2:J:12:DT:H2''	2:J:13:DT:H5'	1.98	0.45
3:A:100:VAL:O	3:A:101:LEU:HD23	2.16	0.45
3:D:64:LYS:C	3:D:65:ARG:HG2	2.41	0.45
3:H:62:HIS:HB2	3:H:68:ALA:HB2	1.98	0.45
3:B:40:LEU:C	3:B:40:LEU:CD2	2.89	0.45
3:G:106:GLY:O	3:G:107:ASP:C	2.59	0.45
3:A:60:TYR:CZ	3:A:71:ILE:HD12	2.52	0.45
3:A:91:ASN:CG	3:A:94:ASP:HB2	2.41	0.45
3:B:56:LEU:HD13	3:B:112:ALA:HB1	1.98	0.45
3:C:72:VAL:HG13	3:C:73:SER:N	2.32	0.45
3:F:11:ASP:O	3:F:12:LEU:C	2.59	0.45
3:A:41:ALA:HA	3:A:44:ALA:HB3	1.98	0.45
3:B:7:THR:O	3:B:8:LEU:HD23	2.17	0.45
3:A:48:HIS:C	3:A:50:THR:H	2.23	0.45
3:F:36:LEU:O	3:F:40:LEU:CB	2.59	0.45
2:J:20:DT:H2''	2:J:21:DT:C6	2.52	0.45
3:E:117:ALA:O	3:E:119:ARG:N	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:65:ARG:O	3:H:70:ARG:NH1	2.49	0.45
3:A:1:MSE:O	3:A:2:GLN:HG2	2.17	0.45
3:A:76:HIS:NE2	3:C:95:CYS:SG	2.78	0.45
3:F:53:PHE:HE1	3:F:102:LYS:CG	2.30	0.45
3:F:113:ASP:C	3:F:115:VAL:N	2.69	0.45
2:J:12:DT:H2'	2:J:13:DT:H71	1.99	0.45
2:J:19:DA:H2''	2:J:20:DT:H5''	1.99	0.45
3:E:87:HIS:ND1	3:E:97:GLU:HG3	2.32	0.45
3:G:69:SER:O	3:G:72:VAL:HG12	2.16	0.45
3:B:54:ALA:HB1	3:B:126:LEU:HD11	1.98	0.44
3:C:32:ILE:HD12	3:D:6:ILE:HG21	1.98	0.44
3:D:54:ALA:HB1	3:D:126:LEU:HD11	1.99	0.44
3:D:59:VAL:HA	3:D:95:CYS:O	2.17	0.44
3:D:65:ARG:O	3:D:70:ARG:NH1	2.50	0.44
2:L:3:DT:H2''	2:L:4:DA:OP2	2.17	0.44
3:A:87:HIS:ND1	3:A:97:GLU:HG3	2.33	0.44
3:F:53:PHE:CD1	3:F:102:LYS:HB2	2.52	0.44
3:F:54:ALA:HB3	3:F:101:LEU:HB2	2.00	0.44
3:H:59:VAL:HG12	3:H:60:TYR:N	2.33	0.44
3:F:70:ARG:O	3:F:73:SER:N	2.50	0.44
3:G:60:TYR:HE2	3:G:68:ALA:HA	1.82	0.44
3:E:50:THR:O	3:E:105:MSE:HG2	2.16	0.44
3:E:110:HIS:O	3:E:111:PHE:C	2.61	0.44
3:F:87:HIS:CD2	3:F:88:VAL:N	2.85	0.44
3:G:59:VAL:HG12	3:G:60:TYR:N	2.32	0.44
2:J:13:DT:H5'	2:J:13:DT:H6	1.83	0.44
3:F:76:HIS:HA	3:F:79:HIS:HB3	1.99	0.44
3:H:90:ILE:H	3:H:90:ILE:HG12	1.62	0.44
3:H:125:HIS:CD2	3:H:126:LEU:N	2.86	0.44
1:I:3:DT:H2''	1:I:4:DA:C5'	2.48	0.44
1:K:27:DT:H1'	1:K:28:DA:H5'	1.99	0.44
3:C:1:MSE:HE3	3:D:8:LEU:O	2.18	0.44
3:D:8:LEU:HD12	3:D:13:LEU:HD13	1.99	0.44
3:E:72:VAL:HG13	3:E:73:SER:N	2.32	0.44
3:F:90:ILE:HD11	3:F:94:ASP:CB	2.48	0.44
3:H:36:LEU:O	3:H:40:LEU:HB2	2.16	0.44
3:D:19:LEU:HD23	3:D:19:LEU:O	2.18	0.44
2:J:19:DA:H2''	2:J:20:DT:C5'	2.47	0.44
3:A:45:THR:HG21	3:A:128:CYS:SG	2.58	0.44
3:C:70:ARG:O	3:C:71:ILE:C	2.60	0.44
3:E:100:VAL:C	3:E:101:LEU:HD23	2.43	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:58:TYR:CD2	3:H:58:TYR:N	2.86	0.44
1:I:6:DG:H1'	1:I:7:DA:H5'	2.00	0.43
3:D:125:HIS:CD2	3:D:126:LEU:N	2.86	0.43
3:F:30:GLU:O	3:F:31:ALA:C	2.60	0.43
1:K:26:DA:H2''	1:K:27:DT:OP2	2.19	0.43
3:E:59:VAL:HG12	3:E:60:TYR:N	2.32	0.43
2:J:19:DA:C2'	2:J:20:DT:H5''	2.47	0.43
3:E:58:TYR:OH	3:E:97:GLU:OE1	2.34	0.43
3:C:90:ILE:HG13	3:C:91:ASN:N	2.34	0.43
3:E:75:GLN:HG3	3:E:111:PHE:CZ	2.53	0.43
3:E:113:ASP:HA	3:E:116:ILE:HD12	2.00	0.43
3:H:110:HIS:O	3:H:113:ASP:N	2.51	0.43
3:B:90:ILE:HD11	3:B:94:ASP:HB2	2.00	0.43
3:C:91:ASN:CG	3:C:94:ASP:HB2	2.43	0.43
3:G:60:TYR:CE2	3:G:71:ILE:HD12	2.54	0.43
3:A:75:GLN:HG3	3:A:111:PHE:CZ	2.54	0.43
3:C:109:GLN:O	3:C:110:HIS:C	2.62	0.43
3:H:47:GLN:O	3:H:48:HIS:C	2.60	0.43
2:J:22:DC:H2''	2:J:23:DG:O5'	2.18	0.43
3:E:18:SER:OG	3:E:19:LEU:N	2.51	0.43
3:E:20:SER:O	3:E:25:TYR:O	2.36	0.43
1:K:3:DT:C1'	1:K:4:DA:H5''	2.43	0.43
3:B:128:CYS:C	3:B:129:LEU:HD23	2.44	0.43
3:D:43:GLU:O	3:D:44:ALA:HB2	2.19	0.43
3:D:75:GLN:HA	3:D:111:PHE:HE2	1.84	0.43
3:A:25:TYR:C	3:A:27:ASN:N	2.75	0.43
3:B:105:MSE:CE	3:B:128:CYS:SG	3.06	0.43
3:C:104:ASP:O	3:C:108:VAL:HG23	2.19	0.43
3:C:118:GLN:O	3:C:121:VAL:HG23	2.18	0.43
3:D:65:ARG:HB2	3:D:70:ARG:HH12	1.83	0.43
3:E:30:GLU:HA	3:E:33:ARG:NH2	2.33	0.43
3:F:105:MSE:CE	3:F:128:CYS:SG	3.06	0.43
3:H:11:ASP:O	3:H:12:LEU:C	2.62	0.43
3:A:87:HIS:CD2	3:A:89:HIS:CE1	3.06	0.43
3:D:108:VAL:O	3:D:109:GLN:C	2.62	0.43
1:I:15:DT:O2	2:J:17:DG:N2	2.52	0.42
3:C:59:VAL:CG1	3:C:60:TYR:N	2.82	0.42
3:A:81:LEU:HD11	3:A:107:ASP:HB3	2.01	0.42
3:C:20:SER:O	3:C:25:TYR:O	2.36	0.42
3:E:88:VAL:HG12	3:E:89:HIS:N	2.34	0.42
3:F:32:ILE:HG22	3:F:36:LEU:CD1	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:3:ARG:O	3:B:4:VAL:HG23	2.19	0.42
3:B:78:HIS:O	3:B:80:ASP:N	2.52	0.42
3:C:15:THR:HG22	3:D:40:LEU:HD22	2.00	0.42
3:D:87:HIS:CD2	3:D:89:HIS:CE1	3.07	0.42
3:E:94:ASP:O	3:G:76:HIS:HE1	2.02	0.42
2:J:5:DT:H2''	2:J:6:DG:H8	1.83	0.42
3:G:111:PHE:CD1	3:G:111:PHE:C	2.97	0.42
3:A:7:THR:CG2	3:B:3:ARG:HD2	2.45	0.42
3:A:118:GLN:O	3:A:119:ARG:C	2.62	0.42
3:H:91:ASN:OD1	3:H:93:ASP:N	2.51	0.42
3:A:40:LEU:HD13	3:B:15:THR:CG2	2.50	0.42
3:A:122:ARG:C	3:A:124:GLY:H	2.28	0.42
3:G:70:ARG:O	3:G:73:SER:N	2.52	0.42
3:C:90:ILE:HG13	3:C:91:ASN:H	1.84	0.42
3:E:111:PHE:C	3:E:111:PHE:HD1	2.26	0.42
1:K:3:DT:C7	3:E:7:THR:HG23	2.50	0.42
3:A:10:ASP:OD1	3:B:2:GLN:HG3	2.18	0.42
3:A:112:ALA:C	3:A:116:ILE:HG13	2.44	0.42
3:H:36:LEU:O	3:H:40:LEU:HB3	2.19	0.42
2:J:1:DA:C2'	2:J:2:DG:H5''	2.48	0.42
3:A:52:GLY:CA	3:A:105:MSE:HE3	2.50	0.42
3:D:67:LEU:HD21	3:D:121:VAL:CG2	2.50	0.42
3:H:107:ASP:O	3:H:110:HIS:HB2	2.20	0.42
3:A:125:HIS:CD2	3:B:127:GLN:OE1	2.73	0.42
3:C:87:HIS:CD2	3:C:87:HIS:C	2.98	0.42
3:E:90:ILE:HD11	3:E:96:LEU:CB	2.50	0.42
3:G:47:GLN:HG2	3:G:48:HIS:H	1.84	0.42
1:I:1:DA:H2''	1:I:2:DG:O5'	2.20	0.41
1:K:11:DA:H1'	1:K:12:DT:H5''	2.00	0.41
3:C:113:ASP:O	3:C:115:VAL:N	2.53	0.41
3:E:48:HIS:O	3:E:49:GLY:C	2.63	0.41
3:F:60:TYR:CE2	3:F:71:ILE:HD12	2.55	0.41
3:G:91:ASN:CG	3:G:94:ASP:HB2	2.45	0.41
1:I:14:DC:C2'	1:I:15:DT:C5'	2.98	0.41
3:A:18:SER:OG	3:A:19:LEU:N	2.53	0.41
3:B:104:ASP:O	3:B:106:GLY:N	2.52	0.41
2:J:1:DA:O5'	2:J:1:DA:H8	2.03	0.41
3:A:94:ASP:O	3:C:76:HIS:HE1	2.04	0.41
3:B:107:ASP:O	3:B:108:VAL:C	2.63	0.41
3:B:113:ASP:C	3:B:115:VAL:N	2.74	0.41
3:C:9:ASP:HB3	3:D:1:MSE:HE2	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:104:ASP:OD1	3:C:106:GLY:N	2.43	0.41
3:E:91:ASN:HA	3:G:79:HIS:CD2	2.55	0.41
3:F:14:GLU:O	3:F:15:THR:C	2.62	0.41
3:F:65:ARG:CG	3:F:65:ARG:NH2	2.82	0.41
3:G:87:HIS:CD2	3:G:87:HIS:C	2.98	0.41
3:G:112:ALA:O	3:G:116:ILE:HG13	2.20	0.41
2:L:8:DC:H2''	2:L:9:DG:OP2	2.21	0.41
3:A:90:ILE:HD11	3:A:96:LEU:CB	2.48	0.41
3:C:129:LEU:O	3:C:130:PRO:O	2.39	0.41
3:G:24:GLY:O	3:G:25:TYR:C	2.63	0.41
3:H:67:LEU:O	3:H:71:ILE:HG13	2.21	0.41
3:A:24:GLY:O	3:A:25:TYR:C	2.63	0.41
3:A:88:VAL:HG12	3:A:89:HIS:N	2.35	0.41
3:E:46:GLN:O	3:E:47:GLN:HG2	2.20	0.41
3:G:118:GLN:O	3:G:119:ARG:C	2.64	0.41
3:H:125:HIS:C	3:H:125:HIS:HD2	2.24	0.41
1:I:4:DA:C2	2:J:28:DA:C2	3.08	0.41
3:C:7:THR:CG2	3:D:3:ARG:HD2	2.46	0.41
3:C:75:GLN:HG3	3:C:111:PHE:HZ	1.86	0.41
3:E:6:ILE:HG21	3:F:32:ILE:CD1	2.51	0.41
3:H:53:PHE:CD1	3:H:102:LYS:HB2	2.54	0.41
3:A:53:PHE:CE2	3:B:90:ILE:CG2	3.03	0.41
3:C:1:MSE:O	3:C:2:GLN:HG2	2.21	0.41
3:C:27:ASN:OD1	3:C:27:ASN:C	2.64	0.41
3:C:70:ARG:O	3:C:73:SER:N	2.54	0.41
3:F:67:LEU:O	3:F:68:ALA:C	2.64	0.41
3:G:52:GLY:CA	3:G:105:MSE:HE3	2.51	0.41
3:G:78:HIS:C	3:G:80:ASP:H	2.29	0.41
3:H:110:HIS:O	3:H:111:PHE:C	2.64	0.41
3:A:113:ASP:HA	3:A:116:ILE:HD12	2.02	0.41
3:C:106:GLY:O	3:C:107:ASP:C	2.64	0.41
3:D:17:ASP:O	3:D:18:SER:C	2.63	0.41
3:E:109:GLN:O	3:E:110:HIS:C	2.63	0.41
3:A:75:GLN:HG3	3:A:111:PHE:HZ	1.86	0.40
3:A:87:HIS:CE1	3:A:95:CYS:SG	3.14	0.40
3:H:128:CYS:O	3:H:129:LEU:HD23	2.21	0.40
3:D:11:ASP:O	3:D:12:LEU:C	2.62	0.40
3:F:107:ASP:O	3:F:108:VAL:C	2.64	0.40
1:I:30:DT:H6	1:I:30:DT:H5'	1.87	0.40
3:A:61:GLU:HA	3:A:93:ASP:O	2.21	0.40
3:B:90:ILE:HG12	3:B:94:ASP:O	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:105:MSE:HE1	3:B:128:CYS:SG	2.62	0.40
3:E:12:LEU:CD2	3:E:12:LEU:C	2.95	0.40
3:E:90:ILE:HG23	3:F:53:PHE:HE2	1.82	0.40
3:G:73:SER:C	3:G:75:GLN:H	2.29	0.40
2:J:23:DG:H1'	2:J:24:DT:C5'	2.51	0.40
3:G:18:SER:OG	3:G:19:LEU:N	2.54	0.40
3:G:117:ALA:O	3:G:119:ARG:N	2.54	0.40
1:I:15:DT:C2	2:J:17:DG:N2	2.90	0.40
3:A:59:VAL:HA	3:A:95:CYS:O	2.20	0.40
3:A:114:ASP:O	3:A:117:ALA:HB3	2.22	0.40
3:C:42:GLN:C	3:C:44:ALA:H	2.29	0.40
3:E:2:GLN:OE1	3:E:2:GLN:HA	2.21	0.40
3:E:19:LEU:O	3:E:20:SER:C	2.64	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	129/133 (97%)	97 (75%)	23 (18%)	9 (7%)	1	5
3	B	129/133 (97%)	102 (79%)	21 (16%)	6 (5%)	2	11
3	C	129/133 (97%)	99 (77%)	26 (20%)	4 (3%)	3	18
3	D	129/133 (97%)	99 (77%)	24 (19%)	6 (5%)	2	11
3	E	129/133 (97%)	100 (78%)	18 (14%)	11 (8%)	0	4
3	F	129/133 (97%)	102 (79%)	20 (16%)	7 (5%)	1	9
3	G	129/133 (97%)	99 (77%)	23 (18%)	7 (5%)	1	9
3	H	129/133 (97%)	101 (78%)	21 (16%)	7 (5%)	1	9
All	All	1032/1064 (97%)	799 (77%)	176 (17%)	57 (6%)	1	9

All (57) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	118	GLN
3	B	38	SER
3	C	130	PRO
3	E	44	ALA
3	E	48	HIS
3	E	118	GLN
3	F	38	SER
3	G	118	GLN
3	G	130	PRO
3	H	38	SER
3	A	92	HIS
3	A	117	ALA
3	B	44	ALA
3	B	79	HIS
3	B	105	MSE
3	C	114	ASP
3	C	118	GLN
3	D	38	SER
3	E	117	ALA
3	F	79	HIS
3	F	105	MSE
3	G	114	ASP
3	H	48	HIS
3	A	110	HIS
3	A	119	ARG
3	D	66	ASP
3	D	91	ASN
3	D	105	MSE
3	D	110	HIS
3	E	25	TYR
3	E	49	GLY
3	E	92	HIS
3	E	119	ARG
3	G	25	TYR
3	H	66	ASP
3	H	91	ASN
3	A	25	TYR
3	A	68	ALA
3	C	71	ILE
3	E	68	ALA
3	E	110	HIS
3	F	114	ASP

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Mol	Chain	Res	Type
3	G	49	GLY
3	H	49	GLY
3	H	110	HIS
3	H	121	VAL
3	B	48	HIS
3	B	49	GLY
3	D	44	ALA
3	E	123	HIS
3	F	65	ARG
3	F	104	ASP
3	G	71	ILE
3	A	49	GLY
3	A	123	HIS
3	G	106	GLY
3	F	71	ILE

5.3.2 Protein sidechains ⓘ

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	100/114 (88%)	89 (89%)	11 (11%)	6	24
3	B	111/114 (97%)	106 (96%)	5 (4%)	24	56
3	C	97/114 (85%)	85 (88%)	12 (12%)	4	19
3	D	110/114 (96%)	103 (94%)	7 (6%)	16	44
3	E	100/114 (88%)	89 (89%)	11 (11%)	6	24
3	F	111/114 (97%)	107 (96%)	4 (4%)	31	62
3	G	101/114 (89%)	89 (88%)	12 (12%)	5	21
3	H	110/114 (96%)	104 (94%)	6 (6%)	19	50
All	All	840/912 (92%)	772 (92%)	68 (8%)	11	36

All (68) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	A	1	MSE
3	A	8	LEU
3	A	12	LEU
3	A	25	TYR
3	A	36	LEU
3	A	42	GLN
3	A	43	GLU
3	A	46	GLN
3	A	75	GLN
3	A	80	ASP
3	A	126	LEU
3	B	3	ARG
3	B	7	THR
3	B	12	LEU
3	B	64	LYS
3	B	65	ARG
3	C	1	MSE
3	C	3	ARG
3	C	8	LEU
3	C	12	LEU
3	C	25	TYR
3	C	36	LEU
3	C	51	GLN
3	C	74	THR
3	C	77	HIS
3	C	78	HIS
3	C	92	HIS
3	C	107	ASP
3	D	7	THR
3	D	12	LEU
3	D	27	ASN
3	D	28	ARG
3	D	40	LEU
3	D	67	LEU
3	D	122	ARG
3	E	1	MSE
3	E	3	ARG
3	E	8	LEU
3	E	12	LEU
3	E	25	TYR
3	E	36	LEU
3	E	43	GLU
3	E	75	GLN

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Mol	Chain	Res	Type
3	E	80	ASP
3	E	92	HIS
3	E	126	LEU
3	F	7	THR
3	F	12	LEU
3	F	64	LYS
3	F	65	ARG
3	G	1	MSE
3	G	3	ARG
3	G	8	LEU
3	G	12	LEU
3	G	25	TYR
3	G	36	LEU
3	G	42	GLN
3	G	74	THR
3	G	77	HIS
3	G	78	HIS
3	G	92	HIS
3	G	107	ASP
3	H	7	THR
3	H	12	LEU
3	H	50	THR
3	H	67	LEU
3	H	90	ILE
3	H	122	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
3	A	42	GLN
3	A	46	GLN
3	A	47	GLN
3	A	79	HIS
3	A	125	HIS
3	A	127	GLN
3	B	21	GLN
3	B	78	HIS
3	B	92	HIS
3	B	109	GLN
3	B	123	HIS
3	C	51	GLN
3	C	77	HIS

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Mol	Chain	Res	Type
3	C	78	HIS
3	C	79	HIS
3	C	125	HIS
3	D	21	GLN
3	D	27	ASN
3	D	46	GLN
3	D	78	HIS
3	D	92	HIS
3	D	109	GLN
3	D	123	HIS
3	D	125	HIS
3	E	46	GLN
3	E	79	HIS
3	E	125	HIS
3	E	127	GLN
3	F	21	GLN
3	F	78	HIS
3	G	77	HIS
3	G	79	HIS
3	G	127	GLN
3	H	21	GLN
3	H	78	HIS
3	H	92	HIS
3	H	125	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 ⓘ

Of 19 ligands modelled in this entry, 19 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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, 95th 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	I	30/30 (100%)	-0.61	0 100 100	69, 95, 115, 131	0
1	K	30/30 (100%)	-0.58	0 100 100	65, 89, 110, 120	0
2	J	30/30 (100%)	-0.55	0 100 100	70, 91, 118, 127	0
2	L	30/30 (100%)	-0.58	0 100 100	63, 86, 133, 150	0
3	A	129/133 (96%)	0.01	0 100 100	58, 105, 169, 192	0
3	B	129/133 (96%)	-0.13	1 (0%) 82 65	59, 95, 156, 180	0
3	C	129/133 (96%)	0.04	3 (2%) 61 39	60, 99, 163, 186	0
3	D	129/133 (96%)	0.02	2 (1%) 70 49	63, 96, 167, 199	0
3	E	129/133 (96%)	-0.02	1 (0%) 82 65	59, 99, 164, 188	0
3	F	129/133 (96%)	0.02	2 (1%) 70 49	49, 92, 159, 182	0
3	G	129/133 (96%)	0.05	3 (2%) 61 39	53, 92, 159, 186	0
3	H	129/133 (96%)	0.08	3 (2%) 61 39	49, 85, 136, 148	0
All	All	1152/1184 (97%)	-0.05	15 (1%) 75 56	49, 95, 161, 199	0

All (15) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	G	131	LYS	3.6
3	C	118	GLN	3.4
3	E	40	LEU	2.9
3	G	124	GLY	2.7
3	H	2	GLN	2.7
3	G	62	HIS	2.5
3	F	16	LEU	2.4
3	B	131	LYS	2.3
3	H	119	ARG	2.2
3	C	64	LYS	2.1
3	F	15	THR	2.1

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Mol	Chain	Res	Type	RSRZ
3	C	131	LYS	2.0
3	D	111	PHE	2.0
3	D	131	LYS	2.0
3	H	6	ILE	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
5	K	A	409	1/1	0.69	0.09	129,129,129,129	0
5	K	B	410	1/1	0.74	0.12	122,122,122,122	0
5	K	C	411	1/1	0.77	0.10	123,123,123,123	0
5	K	E	406	1/1	0.83	0.14	121,121,121,121	0
5	K	G	407	1/1	0.83	0.12	135,135,135,135	0
5	K	F	408	1/1	0.91	0.12	140,140,140,140	0
5	K	H	405	1/1	0.92	0.10	90,90,90,90	0
5	K	E	403	1/1	0.94	0.06	111,111,111,111	0
5	K	C	402	1/1	0.95	0.06	102,102,102,102	0
5	K	G	404	1/1	0.95	0.06	94,94,94,94	0
4	NI	E	306	1/1	0.97	0.04	106,106,106,106	0
4	NI	A	302	1/1	0.98	0.05	104,104,104,104	0
5	K	A	401	1/1	0.98	0.11	97,97,97,97	0
4	NI	C	303	1/1	0.98	0.06	109,109,109,109	0
4	NI	H	308	1/1	0.99	0.04	73,73,73,73	0
4	NI	D	304	1/1	0.99	0.03	86,86,86,86	0
4	NI	F	305	1/1	0.99	0.04	72,72,72,72	0
4	NI	G	307	1/1	0.99	0.02	78,78,78,78	0
4	NI	D	301	1/1	1.00	0.02	84,84,84,84	0

6.5 Other polymers [i](#)

There are no such residues in this entry.