



Full wwPDB X-ray Structure Validation Report ⓘ

Dec 16, 2023 – 11:31 PM EST

PDB ID : 2O3O
Title : Crystal Structure of the sensor histidine kinase regulator YycI from *Bacillus subtilis*
Authors : Santelli, E.; Liddington, R.C.
Deposited on : 2006-12-01
Resolution : 2.89 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
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

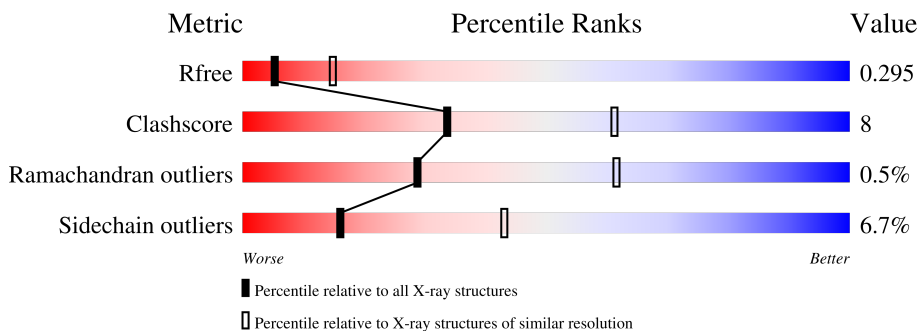
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.89 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)

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 $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	254	
1	B	254	
1	C	254	
1	D	254	
1	E	254	
1	F	254	
1	G	254	

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Mol	Chain	Length	Quality of chain
1	H	254	 77% 16% • 5%
1	I	254	 76% 17% • •
1	J	254	 75% 16% • 6%
1	K	254	 75% 16% • 7%
1	L	254	 74% 19% • 6%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 23401 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called YycI protein.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	241	Total 1965	C 1251	N 313	O 394	S 1	Se 6	0	0	0
1	B	239	Total 1947	C 1241	N 310	O 389	S 1	Se 6	0	0	0
1	C	239	Total 1947	C 1240	N 310	O 390	S 1	Se 6	0	0	0
1	D	241	Total 1965	C 1249	N 313	O 396	S 1	Se 6	0	0	0
1	E	237	Total 1932	C 1232	N 308	O 385	S 1	Se 6	0	0	0
1	F	240	Total 1958	C 1248	N 313	O 390	S 1	Se 6	0	0	0
1	G	237	Total 1929	C 1228	N 306	O 388	S 1	Se 6	0	0	0
1	H	241	Total 1965	C 1249	N 313	O 396	S 1	Se 6	0	0	0
1	I	244	Total 1986	C 1264	N 318	O 397	S 1	Se 6	0	0	0
1	J	238	Total 1941	C 1238	N 310	O 386	S 1	Se 6	0	0	0
1	K	235	Total 1913	C 1219	N 304	O 383	S 1	Se 6	0	0	0
1	L	239	Total 1947	C 1237	N 309	O 394	S 1	Se 6	0	0	0

There are 120 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	27	GLY	-	cloning artifact	UNP Q45612
A	28	SER	-	cloning artifact	UNP Q45612
A	29	HIS	-	cloning artifact	UNP Q45612
A	30	MSE	-	cloning artifact	UNP Q45612
A	47	MSE	MET	modified residue	UNP Q45612

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Chain	Residue	Modelled	Actual	Comment	Reference
A	89	MSE	MET	modified residue	UNP Q45612
A	91	MSE	MET	modified residue	UNP Q45612
A	103	MSE	MET	modified residue	UNP Q45612
A	167	MSE	MET	modified residue	UNP Q45612
A	204	MSE	MET	modified residue	UNP Q45612
B	27	GLY	-	cloning artifact	UNP Q45612
B	28	SER	-	cloning artifact	UNP Q45612
B	29	HIS	-	cloning artifact	UNP Q45612
B	30	MSE	-	cloning artifact	UNP Q45612
B	47	MSE	MET	modified residue	UNP Q45612
B	89	MSE	MET	modified residue	UNP Q45612
B	91	MSE	MET	modified residue	UNP Q45612
B	103	MSE	MET	modified residue	UNP Q45612
B	167	MSE	MET	modified residue	UNP Q45612
B	204	MSE	MET	modified residue	UNP Q45612
C	27	GLY	-	cloning artifact	UNP Q45612
C	28	SER	-	cloning artifact	UNP Q45612
C	29	HIS	-	cloning artifact	UNP Q45612
C	30	MSE	-	cloning artifact	UNP Q45612
C	47	MSE	MET	modified residue	UNP Q45612
C	89	MSE	MET	modified residue	UNP Q45612
C	91	MSE	MET	modified residue	UNP Q45612
C	103	MSE	MET	modified residue	UNP Q45612
C	167	MSE	MET	modified residue	UNP Q45612
C	204	MSE	MET	modified residue	UNP Q45612
D	27	GLY	-	cloning artifact	UNP Q45612
D	28	SER	-	cloning artifact	UNP Q45612
D	29	HIS	-	cloning artifact	UNP Q45612
D	30	MSE	-	cloning artifact	UNP Q45612
D	47	MSE	MET	modified residue	UNP Q45612
D	89	MSE	MET	modified residue	UNP Q45612
D	91	MSE	MET	modified residue	UNP Q45612
D	103	MSE	MET	modified residue	UNP Q45612
D	167	MSE	MET	modified residue	UNP Q45612
D	204	MSE	MET	modified residue	UNP Q45612
E	27	GLY	-	cloning artifact	UNP Q45612
E	28	SER	-	cloning artifact	UNP Q45612
E	29	HIS	-	cloning artifact	UNP Q45612
E	30	MSE	-	cloning artifact	UNP Q45612
E	47	MSE	MET	modified residue	UNP Q45612
E	89	MSE	MET	modified residue	UNP Q45612
E	91	MSE	MET	modified residue	UNP Q45612

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Chain	Residue	Modelled	Actual	Comment	Reference
E	103	MSE	MET	modified residue	UNP Q45612
E	167	MSE	MET	modified residue	UNP Q45612
E	204	MSE	MET	modified residue	UNP Q45612
F	27	GLY	-	cloning artifact	UNP Q45612
F	28	SER	-	cloning artifact	UNP Q45612
F	29	HIS	-	cloning artifact	UNP Q45612
F	30	MSE	-	cloning artifact	UNP Q45612
F	47	MSE	MET	modified residue	UNP Q45612
F	89	MSE	MET	modified residue	UNP Q45612
F	91	MSE	MET	modified residue	UNP Q45612
F	103	MSE	MET	modified residue	UNP Q45612
F	167	MSE	MET	modified residue	UNP Q45612
F	204	MSE	MET	modified residue	UNP Q45612
G	27	GLY	-	cloning artifact	UNP Q45612
G	28	SER	-	cloning artifact	UNP Q45612
G	29	HIS	-	cloning artifact	UNP Q45612
G	30	MSE	-	cloning artifact	UNP Q45612
G	47	MSE	MET	modified residue	UNP Q45612
G	89	MSE	MET	modified residue	UNP Q45612
G	91	MSE	MET	modified residue	UNP Q45612
G	103	MSE	MET	modified residue	UNP Q45612
G	167	MSE	MET	modified residue	UNP Q45612
G	204	MSE	MET	modified residue	UNP Q45612
H	27	GLY	-	cloning artifact	UNP Q45612
H	28	SER	-	cloning artifact	UNP Q45612
H	29	HIS	-	cloning artifact	UNP Q45612
H	30	MSE	-	cloning artifact	UNP Q45612
H	47	MSE	MET	modified residue	UNP Q45612
H	89	MSE	MET	modified residue	UNP Q45612
H	91	MSE	MET	modified residue	UNP Q45612
H	103	MSE	MET	modified residue	UNP Q45612
H	167	MSE	MET	modified residue	UNP Q45612
H	204	MSE	MET	modified residue	UNP Q45612
I	27	GLY	-	cloning artifact	UNP Q45612
I	28	SER	-	cloning artifact	UNP Q45612
I	29	HIS	-	cloning artifact	UNP Q45612
I	30	MSE	-	cloning artifact	UNP Q45612
I	47	MSE	MET	modified residue	UNP Q45612
I	89	MSE	MET	modified residue	UNP Q45612
I	91	MSE	MET	modified residue	UNP Q45612
I	103	MSE	MET	modified residue	UNP Q45612
I	167	MSE	MET	modified residue	UNP Q45612

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Chain	Residue	Modelled	Actual	Comment	Reference
I	204	MSE	MET	modified residue	UNP Q45612
J	27	GLY	-	cloning artifact	UNP Q45612
J	28	SER	-	cloning artifact	UNP Q45612
J	29	HIS	-	cloning artifact	UNP Q45612
J	30	MSE	-	cloning artifact	UNP Q45612
J	47	MSE	MET	modified residue	UNP Q45612
J	89	MSE	MET	modified residue	UNP Q45612
J	91	MSE	MET	modified residue	UNP Q45612
J	103	MSE	MET	modified residue	UNP Q45612
J	167	MSE	MET	modified residue	UNP Q45612
J	204	MSE	MET	modified residue	UNP Q45612
K	27	GLY	-	cloning artifact	UNP Q45612
K	28	SER	-	cloning artifact	UNP Q45612
K	29	HIS	-	cloning artifact	UNP Q45612
K	30	MSE	-	cloning artifact	UNP Q45612
K	47	MSE	MET	modified residue	UNP Q45612
K	89	MSE	MET	modified residue	UNP Q45612
K	91	MSE	MET	modified residue	UNP Q45612
K	103	MSE	MET	modified residue	UNP Q45612
K	167	MSE	MET	modified residue	UNP Q45612
K	204	MSE	MET	modified residue	UNP Q45612
L	27	GLY	-	cloning artifact	UNP Q45612
L	28	SER	-	cloning artifact	UNP Q45612
L	29	HIS	-	cloning artifact	UNP Q45612
L	30	MSE	-	cloning artifact	UNP Q45612
L	47	MSE	MET	modified residue	UNP Q45612
L	89	MSE	MET	modified residue	UNP Q45612
L	91	MSE	MET	modified residue	UNP Q45612
L	103	MSE	MET	modified residue	UNP Q45612
L	167	MSE	MET	modified residue	UNP Q45612
L	204	MSE	MET	modified residue	UNP Q45612

- Molecule 2 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Cl 1 1	0	0
2	D	1	Total Cl 1 1	0	0
2	E	1	Total Cl 1 1	0	0
2	F	1	Total Cl 1 1	0	0

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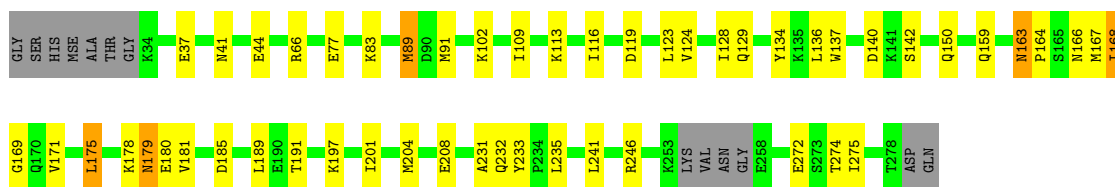
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	K	1	Total 1	Cl 1	0	0
2	L	1	Total 1	Cl 1	0	0

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. 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. 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.

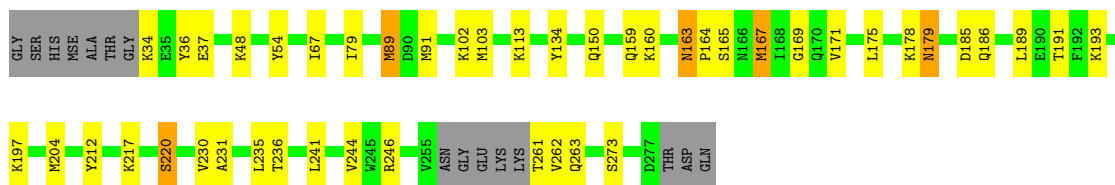
- Molecule 1: YycI protein

Chain A: 




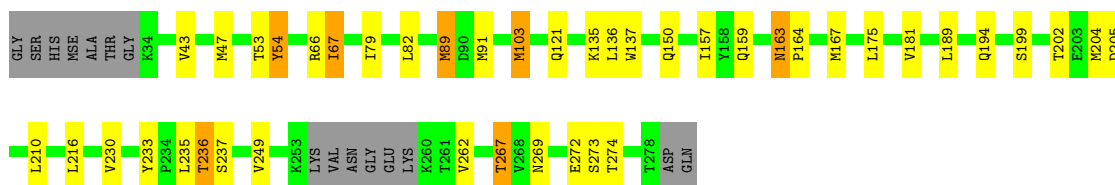
- Molecule 1: YycI protein

Chain B: 



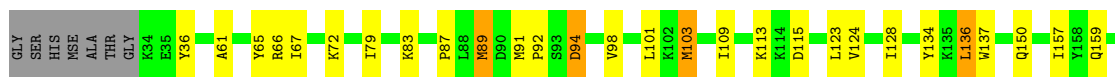
- Molecule 1: YycI protein

Chain C: 



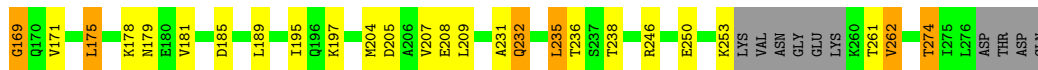
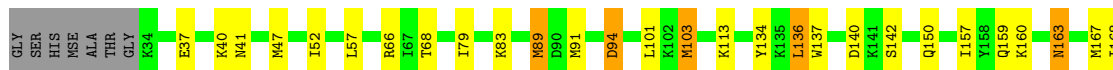
- Molecule 1: YycI protein

Chain D: 

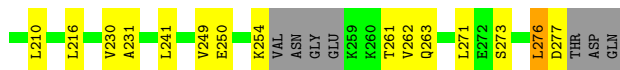
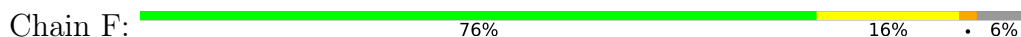




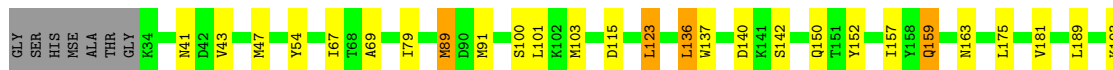
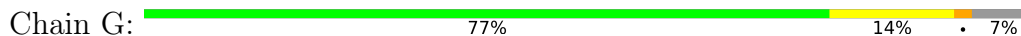
• Molecule 1: YycI protein



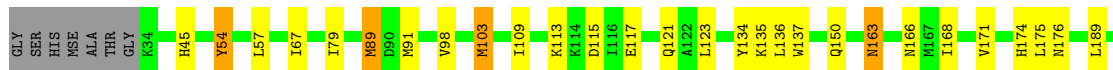
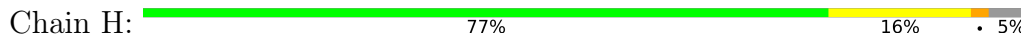
• Molecule 1: YycI protein



• Molecule 1: YycI protein

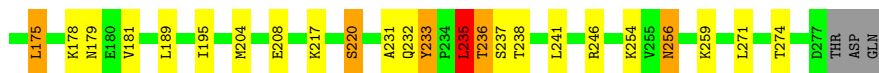


• Molecule 1: YycI protein

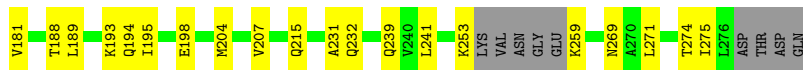


• Molecule 1: YycI protein

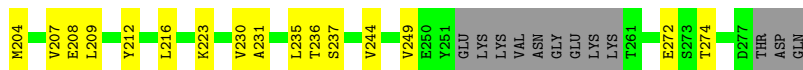
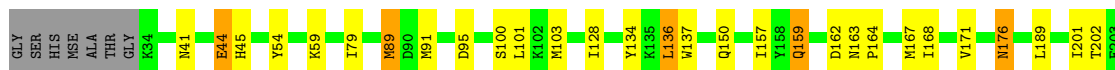
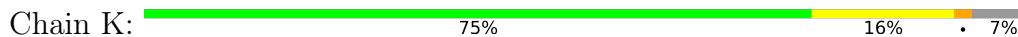




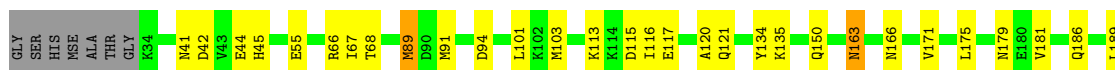
• Molecule 1: YycI protein



• Molecule 1: YycI protein



• Molecule 1: YycI protein



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	60.79Å 161.92Å 180.16Å 90.00° 90.90° 90.00°	Depositor
Resolution (Å)	90.00 – 2.89 48.43 – 2.89	Depositor EDS
% Data completeness (in resolution range)	92.2 (90.00-2.89) 92.2 (48.43-2.89)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.20 (at 2.91Å)	Xtrriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.212 , 0.262 0.254 , 0.295	Depositor DCC
R_{free} test set	3605 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å ²)	53.2	Xtrriage
Anisotropy	0.245	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , -10.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.037 for h,-k,-l	Xtrriage
F_o, F_c correlation	0.89	EDS
Total number of atoms	23401	wwPDB-VP
Average B, all atoms (Å ²)	30.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 19.67% 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 [i](#)

5.1 Standard geometry [i](#)

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.51	0/1994	0.59	0/2679
1	B	0.50	0/1976	0.61	0/2656
1	C	0.50	0/1976	0.59	0/2656
1	D	0.50	0/1994	0.62	0/2679
1	E	0.50	0/1961	0.60	0/2635
1	F	0.50	0/1987	0.62	0/2668
1	G	0.49	0/1958	0.58	0/2634
1	H	0.47	0/1994	0.57	0/2679
1	I	0.53	0/2016	0.62	0/2709
1	J	0.51	0/1970	0.61	0/2646
1	K	0.48	0/1942	0.58	0/2612
1	L	0.46	0/1976	0.57	0/2657
All	All	0.49	0/23744	0.60	0/31910

There are no bond length outliers.

There are no bond angle outliers.

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	A	1965	0	1943	30	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	1947	0	1926	30	0
1	C	1947	0	1924	34	0
1	D	1965	0	1936	47	0
1	E	1932	0	1913	44	0
1	F	1958	0	1943	31	0
1	G	1929	0	1898	32	0
1	H	1965	0	1936	33	0
1	I	1986	0	1968	37	0
1	J	1941	0	1926	36	0
1	K	1913	0	1885	36	0
1	L	1947	0	1910	29	0
2	A	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
2	K	1	0	0	0	0
2	L	1	0	0	0	0
All	All	23401	0	23108	393	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 8.

All (393) 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:C:89:MSE:HE2	1:C:91:MSE:HE1	1.22	1.12
1:C:79:ILE:HG23	1:C:103:MSE:HE1	1.33	1.06
1:A:89:MSE:HE2	1:A:91:MSE:HE1	1.34	1.05
1:A:89:MSE:HE2	1:A:91:MSE:CE	1.93	0.97
1:E:235:LEU:HD13	1:G:235:LEU:HD13	1.49	0.91
1:C:89:MSE:HE2	1:C:91:MSE:CE	2.01	0.90
1:C:150:GLN:HE22	1:C:189:LEU:H	1.20	0.89
1:F:210:LEU:HD23	1:H:275:ILE:HD11	1.55	0.88
1:K:150:GLN:HE22	1:K:189:LEU:H	1.21	0.88
1:A:109:ILE:HD13	1:A:123:LEU:HD11	1.56	0.88
1:L:163:ASN:HD21	1:L:166:ASN:HD22	1.21	0.87
1:I:109:ILE:HG21	1:I:123:LEU:HD13	1.57	0.85
1:K:89:MSE:HE2	1:K:91:MSE:HE1	1.59	0.83
1:H:79:ILE:HG23	1:H:103:MSE:HE1	1.60	0.82
1:H:109:ILE:HD13	1:H:123:LEU:HD11	1.61	0.82
1:K:79:ILE:HG23	1:K:103:MSE:HE1	1.59	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:150:GLN:HE22	1:I:189:LEU:H	1.26	0.81
1:B:150:GLN:HE22	1:B:189:LEU:H	1.28	0.81
1:E:150:GLN:HE22	1:E:189:LEU:H	1.29	0.80
1:F:89:MSE:HE2	1:F:91:MSE:CE	2.12	0.80
1:C:79:ILE:CG2	1:C:103:MSE:HE1	2.12	0.79
1:G:150:GLN:HE22	1:G:189:LEU:H	1.28	0.79
1:J:89:MSE:HE2	1:J:91:MSE:HE1	1.63	0.79
1:F:150:GLN:HE22	1:F:189:LEU:H	1.32	0.78
1:C:89:MSE:CE	1:C:91:MSE:HE1	2.12	0.77
1:F:109:ILE:HD12	1:F:123:LEU:HD11	1.64	0.77
1:E:79:ILE:HG23	1:E:103:MSE:HE1	1.68	0.75
1:J:231:ALA:HA	1:J:241:LEU:HD23	1.66	0.75
1:A:89:MSE:CE	1:A:91:MSE:HE1	2.14	0.74
1:D:91:MSE:HE2	1:D:91:MSE:HA	1.69	0.74
1:K:136:LEU:HD12	1:K:137:TRP:N	2.02	0.74
1:D:89:MSE:HE3	1:D:101:LEU:HD23	1.69	0.74
1:E:160:LYS:HZ1	1:K:176:ASN:HD21	1.33	0.74
1:E:238:THR:HG21	1:G:235:LEU:HD21	1.70	0.73
1:L:150:GLN:HE22	1:L:189:LEU:H	1.36	0.73
1:K:89:MSE:HE2	1:K:91:MSE:CE	2.18	0.73
1:D:79:ILE:HG23	1:D:103:MSE:HE1	1.70	0.72
1:D:124:VAL:HA	1:D:128:ILE:HD12	1.69	0.72
1:D:150:GLN:HE22	1:D:189:LEU:H	1.36	0.72
1:B:89:MSE:HE2	1:B:91:MSE:HE1	1.72	0.71
1:H:163:ASN:HD21	1:H:166:ASN:HD22	1.37	0.71
1:I:79:ILE:HG21	1:I:91:MSE:HE1	1.73	0.71
1:F:89:MSE:HE2	1:F:91:MSE:HE1	1.73	0.70
1:H:150:GLN:HE22	1:H:189:LEU:H	1.39	0.70
1:D:79:ILE:HD13	1:D:91:MSE:HE1	1.74	0.69
1:B:34:LYS:HA	1:D:214:ASN:HD21	1.58	0.69
1:L:163:ASN:HD21	1:L:166:ASN:ND2	1.91	0.69
1:D:164:PRO:HA	1:D:167:MSE:HE2	1.73	0.69
1:E:160:LYS:NZ	1:K:176:ASN:HD21	1.91	0.68
1:K:91:MSE:HE2	1:K:91:MSE:HA	1.75	0.68
1:G:79:ILE:HG23	1:G:103:MSE:HE1	1.74	0.68
1:J:150:GLN:HE22	1:J:189:LEU:H	1.39	0.68
1:H:89:MSE:HE3	1:H:98:VAL:HG11	1.75	0.68
1:J:163:ASN:H	1:J:163:ASN:HD22	1.39	0.67
1:K:204:MSE:HE2	1:K:208:GLU:HG3	1.76	0.67
1:H:109:ILE:HD13	1:H:123:LEU:CD1	2.24	0.67
1:H:91:MSE:HA	1:H:91:MSE:HE2	1.77	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:204:MSE:HE2	1:G:208:GLU:HG3	1.76	0.67
1:B:89:MSE:HE2	1:B:91:MSE:CE	2.25	0.66
1:B:235:LEU:HD13	1:D:235:LEU:HD12	1.77	0.66
1:I:109:ILE:HD13	1:I:123:LEU:CD1	2.24	0.66
1:K:216:LEU:CD2	1:K:249:VAL:HG21	2.26	0.66
1:I:136:LEU:HD12	1:I:137:TRP:N	2.11	0.66
1:H:163:ASN:HD21	1:H:166:ASN:ND2	1.94	0.66
1:E:91:MSE:HE2	1:E:91:MSE:HA	1.78	0.66
1:D:231:ALA:HA	1:D:241:LEU:HD23	1.79	0.65
1:F:89:MSE:HE2	1:F:91:MSE:HE2	1.78	0.65
1:F:163:ASN:H	1:F:163:ASN:HD22	1.43	0.65
1:E:136:LEU:HD12	1:E:137:TRP:N	2.12	0.65
1:C:150:GLN:NE2	1:C:189:LEU:H	1.94	0.65
1:K:216:LEU:HD21	1:K:249:VAL:HG21	1.79	0.64
1:I:217:LYS:O	1:I:220:SER:OG	2.16	0.64
1:F:89:MSE:CE	1:F:91:MSE:HE1	2.27	0.64
1:F:109:ILE:HD12	1:F:123:LEU:CD1	2.28	0.64
1:J:47:MSE:HE1	1:J:207:VAL:HG12	1.80	0.64
1:J:89:MSE:HE2	1:J:91:MSE:CE	2.28	0.63
1:G:79:ILE:HD13	1:G:89:MSE:HE1	1.80	0.63
1:G:136:LEU:HD12	1:G:137:TRP:N	2.13	0.63
1:E:68:THR:HG23	1:E:195:ILE:HG21	1.82	0.61
1:L:91:MSE:HE2	1:L:91:MSE:HA	1.81	0.61
1:C:230:VAL:HG11	1:C:267:THR:HG21	1.82	0.61
1:F:159:GLN:HE22	1:F:169:GLY:H	1.49	0.61
1:L:280:GLN:C	1:L:280:GLN:HE21	2.04	0.61
1:H:273:SER:O	1:H:274:THR:HG23	2.00	0.61
1:A:191:THR:HG22	1:A:191:THR:O	2.01	0.61
1:D:79:ILE:CG2	1:D:103:MSE:HE1	2.30	0.61
1:I:232:GLN:O	1:I:233:TYR:HB3	2.01	0.61
1:J:124:VAL:HG21	1:J:148:PHE:CZ	2.36	0.60
1:B:159:GLN:HE22	1:B:169:GLY:H	1.50	0.60
1:A:163:ASN:HD21	1:A:166:ASN:CG	2.04	0.60
1:J:175:LEU:CD2	1:J:181:VAL:HG22	2.32	0.60
1:D:230:VAL:HG13	1:D:244:VAL:HG11	1.83	0.60
1:E:238:THR:HG21	1:G:235:LEU:CD2	2.32	0.59
1:A:150:GLN:HE22	1:A:189:LEU:H	1.50	0.59
1:L:89:MSE:HE3	1:L:101:LEU:HD23	1.84	0.59
1:B:191:THR:HG22	1:B:193:LYS:HE3	1.85	0.59
1:C:91:MSE:HA	1:C:91:MSE:HE2	1.84	0.59
1:C:164:PRO:HA	1:C:167:MSE:HE2	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:275:ILE:HG22	1:H:275:ILE:O	2.02	0.59
1:I:109:ILE:CD1	1:I:123:LEU:HD11	2.33	0.59
1:D:175:LEU:CD2	1:D:181:VAL:HG22	2.33	0.58
1:I:123:LEU:HD12	1:I:127:LYS:HD2	1.84	0.58
1:B:160:LYS:NZ	1:H:176:ASN:OD1	2.35	0.58
1:J:79:ILE:HG23	1:J:103:MSE:HE1	1.84	0.58
1:E:238:THR:CG2	1:G:235:LEU:HD21	2.33	0.58
1:E:89:MSE:HE2	1:E:91:MSE:HE1	1.84	0.58
1:E:175:LEU:CD2	1:E:181:VAL:HG22	2.34	0.58
1:H:67:ILE:HD12	1:H:194:GLN:HG2	1.84	0.58
1:E:89:MSE:HE2	1:E:91:MSE:CE	2.34	0.57
1:B:164:PRO:HA	1:B:167:MSE:HE2	1.86	0.57
1:E:134:TYR:CD2	1:E:171:VAL:HG23	2.40	0.57
1:I:150:GLN:NE2	1:I:189:LEU:H	2.01	0.57
1:F:196:GLN:NE2	1:F:198:GLU:OE2	2.37	0.57
1:E:160:LYS:NZ	1:K:176:ASN:ND2	2.52	0.57
1:H:168:ILE:HD13	1:H:231:ALA:HB2	1.86	0.57
1:I:175:LEU:HD23	1:I:181:VAL:HG22	1.87	0.57
1:G:69:ALA:O	1:G:238:THR:HG23	2.05	0.57
1:D:236:THR:HG22	1:D:237:SER:N	2.20	0.56
1:A:89:MSE:HE2	1:A:91:MSE:HE2	1.86	0.56
1:D:89:MSE:HE3	1:D:101:LEU:CD2	2.34	0.56
1:B:163:ASN:N	1:B:163:ASN:HD22	2.04	0.56
1:E:168:ILE:HD13	1:E:231:ALA:HB2	1.88	0.56
1:G:204:MSE:HE3	1:G:207:VAL:HB	1.87	0.56
1:I:109:ILE:HD13	1:I:123:LEU:HD11	1.87	0.56
1:E:66:ARG:HE	1:E:232:GLN:HE22	1.53	0.56
1:E:168:ILE:CD1	1:E:231:ALA:HB2	2.36	0.56
1:K:89:MSE:CE	1:K:91:MSE:HE1	2.34	0.56
1:C:67:ILE:HD12	1:C:194:GLN:HG2	1.88	0.56
1:A:204:MSE:HE3	1:A:208:GLU:HG3	1.88	0.55
1:C:79:ILE:HG23	1:C:103:MSE:CE	2.22	0.55
1:F:34:LYS:HA	1:H:214:ASN:HD21	1.69	0.55
1:J:44:GLU:OE2	1:J:204:MSE:HE2	2.06	0.55
1:C:202:THR:HG23	1:C:205:ASP:OD2	2.06	0.55
1:H:163:ASN:N	1:H:163:ASN:HD22	2.05	0.55
1:K:236:THR:HG22	1:K:237:SER:N	2.22	0.55
1:A:159:GLN:HE22	1:A:169:GLY:H	1.54	0.55
1:I:89:MSE:HE2	1:I:91:MSE:CE	2.37	0.55
1:G:67:ILE:HD12	1:G:194:GLN:HG2	1.87	0.54
1:K:59:LYS:O	1:K:202:THR:HG21	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:68:THR:HG23	1:I:195:ILE:HG21	1.89	0.54
1:K:168:ILE:HD13	1:K:231:ALA:HB2	1.89	0.54
1:E:150:GLN:NE2	1:E:189:LEU:H	2.03	0.54
1:J:68:THR:HG23	1:J:195:ILE:HD13	1.90	0.54
1:L:232:GLN:NE2	1:L:242:ALA:HB2	2.23	0.54
1:B:79:ILE:HG23	1:B:103:MSE:HE1	1.90	0.54
1:K:150:GLN:NE2	1:K:189:LEU:H	1.98	0.53
1:L:116:ILE:HD12	1:L:179:ASN:ND2	2.24	0.53
1:H:89:MSE:HE2	1:H:91:MSE:HE1	1.91	0.53
1:K:134:TYR:CE2	1:K:171:VAL:HG23	2.44	0.53
1:A:178:LYS:O	1:A:180:GLU:N	2.42	0.53
1:C:235:LEU:O	1:C:236:THR:C	2.47	0.53
1:D:89:MSE:HE2	1:D:91:MSE:CE	2.39	0.53
1:J:67:ILE:HG22	1:J:194:GLN:HA	1.90	0.53
1:B:217:LYS:O	1:B:220:SER:OG	2.26	0.53
1:I:238:THR:HG21	1:K:235:LEU:HD22	1.91	0.53
1:I:236:THR:HG22	1:I:237:SER:H	1.74	0.52
1:F:261:THR:O	1:F:261:THR:HG22	2.10	0.52
1:L:66:ARG:C	1:L:67:ILE:HD13	2.28	0.52
1:I:159:GLN:HE22	1:I:169:GLY:H	1.56	0.52
1:C:82:LEU:HD12	1:C:103:MSE:HE2	1.91	0.52
1:H:236:THR:HG22	1:H:237:SER:N	2.24	0.52
1:K:204:MSE:HE3	1:K:207:VAL:HB	1.91	0.52
1:L:171:VAL:HG22	1:L:186:GLN:HG3	1.91	0.52
1:A:91:MSE:HE2	1:A:91:MSE:HA	1.92	0.52
1:E:167:MSE:HE1	1:E:185:ASP:CB	2.40	0.52
1:F:136:LEU:HD12	1:F:137:TRP:N	2.25	0.52
1:L:280:GLN:HE21	1:L:280:GLN:CA	2.23	0.52
1:E:140:ASP:OD1	1:E:142:SER:OG	2.27	0.52
1:H:168:ILE:CD1	1:H:231:ALA:HB2	2.40	0.52
1:D:136:LEU:HD12	1:D:137:TRP:N	2.25	0.51
1:F:175:LEU:HA	1:F:180:GLU:O	2.10	0.51
1:J:215:GLN:HE21	1:L:275:ILE:HD13	1.74	0.51
1:G:150:GLN:NE2	1:G:189:LEU:H	2.04	0.51
1:F:164:PRO:HA	1:F:167:MSE:HE2	1.92	0.51
1:E:274:THR:OG1	1:G:213:GLN:NE2	2.43	0.51
1:I:178:LYS:O	1:I:179:ASN:C	2.49	0.51
1:D:124:VAL:HG22	1:D:128:ILE:CD1	2.40	0.51
1:J:231:ALA:HB1	1:J:239:GLN:NE2	2.26	0.51
1:I:41:ASN:HA	1:I:44:GLU:HB2	1.93	0.51
1:J:159:GLN:HE22	1:J:169:GLY:H	1.57	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:101:LEU:HD22	1:G:103:MSE:SE	2.60	0.51
1:H:89:MSE:HE2	1:H:91:MSE:CE	2.40	0.51
1:I:231:ALA:HA	1:I:241:LEU:HD23	1.93	0.51
1:G:79:ILE:HD13	1:G:89:MSE:CE	2.39	0.51
1:D:150:GLN:NE2	1:D:189:LEU:H	2.07	0.51
1:E:68:THR:CG2	1:E:195:ILE:HG21	2.40	0.50
1:D:92:PRO:HB3	1:D:98:VAL:HG23	1.92	0.50
1:G:152:TYR:OH	1:G:194:GLN:NE2	2.44	0.50
1:D:89:MSE:CE	1:D:101:LEU:CD2	2.89	0.50
1:D:163:ASN:HB2	1:D:164:PRO:HD2	1.93	0.50
1:E:274:THR:CG2	1:G:209:LEU:HD21	2.42	0.50
1:G:91:MSE:HE2	1:G:91:MSE:HA	1.93	0.50
1:L:68:THR:HG22	1:L:240:VAL:HG22	1.94	0.50
1:J:120:ALA:O	1:J:124:VAL:HG23	2.12	0.50
1:E:167:MSE:HE1	1:E:185:ASP:HB3	1.94	0.50
1:C:235:LEU:O	1:C:237:SER:N	2.45	0.49
1:L:41:ASN:HA	1:L:44:GLU:HB2	1.93	0.49
1:B:91:MSE:HE2	1:B:91:MSE:HA	1.95	0.49
1:E:68:THR:HG23	1:E:195:ILE:CG2	2.42	0.49
1:E:261:THR:HG22	1:E:261:THR:O	2.11	0.49
1:J:112:SER:OG	1:J:113:LYS:N	2.45	0.49
1:J:163:ASN:H	1:J:163:ASN:ND2	2.10	0.49
1:C:136:LEU:HD12	1:C:137:TRP:N	2.27	0.49
1:L:175:LEU:CD2	1:L:181:VAL:HG22	2.42	0.49
1:K:136:LEU:HD12	1:K:136:LEU:C	2.32	0.49
1:B:231:ALA:HA	1:B:241:LEU:HD23	1.95	0.49
1:J:163:ASN:HD21	1:J:166:ASN:ND2	2.11	0.49
1:L:230:VAL:HG13	1:L:244:VAL:HG21	1.95	0.49
1:H:231:ALA:HA	1:H:241:LEU:HD23	1.95	0.49
1:L:134:TYR:CD2	1:L:171:VAL:HG23	2.48	0.49
1:L:262:VAL:HG12	1:L:263:GLN:N	2.27	0.49
1:B:36:TYR:HB2	1:D:212:TYR:CE1	2.48	0.48
1:C:43:VAL:O	1:C:47:MSE:HG3	2.12	0.48
1:C:66:ARG:C	1:C:67:ILE:HD13	2.32	0.48
1:D:67:ILE:HD12	1:D:194:GLN:HG2	1.93	0.48
1:A:136:LEU:HD12	1:A:137:TRP:H	1.78	0.48
1:E:94:ASP:OD1	1:E:94:ASP:N	2.47	0.48
1:H:134:TYR:CE2	1:H:171:VAL:HG23	2.48	0.48
1:H:150:GLN:NE2	1:H:189:LEU:H	2.09	0.48
1:B:261:THR:HG22	1:B:261:THR:O	2.14	0.48
1:I:136:LEU:HD12	1:I:137:TRP:H	1.76	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:175:LEU:HD22	1:D:181:VAL:HG22	1.94	0.48
1:E:159:GLN:HE22	1:E:169:GLY:H	1.61	0.48
1:H:136:LEU:HD12	1:H:137:TRP:N	2.29	0.48
1:C:54:TYR:CE2	1:C:204:MSE:HE1	2.49	0.48
1:E:89:MSE:CE	1:E:91:MSE:HE1	2.43	0.48
1:A:163:ASN:HD21	1:A:166:ASN:ND2	2.12	0.48
1:E:40:LYS:HE2	1:E:205:ASP:OD1	2.13	0.48
1:H:121:GLN:HE22	1:H:135:LYS:HA	1.79	0.48
1:K:157:ILE:O	1:K:159:GLN:HG2	2.14	0.48
1:A:163:ASN:C	1:A:163:ASN:HD22	2.17	0.48
1:A:231:ALA:HA	1:A:241:LEU:HD23	1.96	0.48
1:H:230:VAL:HG13	1:H:244:VAL:HG11	1.94	0.48
1:B:171:VAL:HG22	1:B:186:GLN:HG3	1.96	0.48
1:C:175:LEU:HD23	1:C:181:VAL:HA	1.96	0.48
1:C:216:LEU:CD2	1:C:249:VAL:HG21	2.44	0.48
1:D:124:VAL:HG22	1:D:128:ILE:HD12	1.95	0.48
1:K:164:PRO:HB3	1:K:167:MSE:HE2	1.96	0.48
1:F:163:ASN:H	1:F:163:ASN:ND2	2.11	0.47
1:D:66:ARG:C	1:D:67:ILE:HD13	2.35	0.47
1:D:163:ASN:HD22	1:D:163:ASN:C	2.18	0.47
1:D:87:PRO:N	1:D:103:MSE:HE3	2.29	0.47
1:D:157:ILE:O	1:D:159:GLN:HG3	2.14	0.47
1:D:109:ILE:HD12	1:D:123:LEU:HD11	1.96	0.47
1:C:216:LEU:HD21	1:C:249:VAL:HG21	1.95	0.47
1:E:157:ILE:O	1:E:159:GLN:HG3	2.14	0.47
1:G:89:MSE:HE2	1:G:91:MSE:CE	2.45	0.47
1:E:57:LEU:HD11	1:E:207:VAL:HG21	1.96	0.47
1:H:79:ILE:HG23	1:H:103:MSE:CE	2.38	0.47
1:E:134:TYR:CE2	1:E:171:VAL:HG23	2.50	0.47
1:J:47:MSE:HE1	1:J:207:VAL:CG1	2.44	0.47
1:J:150:GLN:NE2	1:J:189:LEU:H	2.09	0.47
1:A:201:ILE:HG22	1:A:272:GLU:HB2	1.97	0.47
1:I:89:MSE:HE2	1:I:91:MSE:HE1	1.97	0.47
1:A:178:LYS:O	1:A:179:ASN:C	2.53	0.47
1:B:89:MSE:CE	1:B:91:MSE:HE1	2.41	0.47
1:B:134:TYR:CE2	1:B:171:VAL:HG23	2.51	0.46
1:C:272:GLU:O	1:C:274:THR:HG23	2.15	0.46
1:G:79:ILE:HG12	1:G:101:LEU:HD21	1.98	0.46
1:B:163:ASN:HD22	1:B:163:ASN:H	1.61	0.46
1:F:109:ILE:HG21	1:F:123:LEU:HD13	1.96	0.46
1:G:204:MSE:HE2	1:G:208:GLU:CG	2.44	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:191:THR:HG22	1:B:191:THR:O	2.16	0.46
1:D:89:MSE:HE2	1:D:91:MSE:HE1	1.97	0.46
1:H:117:GLU:HB3	1:H:136:LEU:HD23	1.97	0.46
1:E:178:LYS:O	1:E:179:ASN:C	2.55	0.46
1:K:204:MSE:HE3	1:K:204:MSE:O	2.16	0.46
1:F:231:ALA:HA	1:F:241:LEU:HD23	1.98	0.45
1:F:249:VAL:HG12	1:F:250:GLU:N	2.31	0.45
1:J:79:ILE:CG2	1:J:103:MSE:HE1	2.46	0.45
1:A:164:PRO:HB3	1:A:167:MSE:HE2	1.98	0.45
1:C:157:ILE:O	1:C:159:GLN:HG3	2.16	0.45
1:K:201:ILE:HG22	1:K:272:GLU:HG3	1.97	0.45
1:F:136:LEU:HD12	1:F:137:TRP:H	1.81	0.45
1:H:57:LEU:HD11	1:H:207:VAL:HG21	1.98	0.45
1:A:175:LEU:HD22	1:A:181:VAL:HG22	1.99	0.45
1:A:275:ILE:HD11	1:C:210:LEU:HD23	1.98	0.45
1:F:163:ASN:HD22	1:F:163:ASN:N	2.09	0.45
1:D:234:PRO:O	1:D:235:LEU:HD23	2.17	0.45
1:E:150:GLN:HE22	1:E:189:LEU:N	2.07	0.45
1:G:201:ILE:HG23	1:G:270:ALA:O	2.16	0.45
1:C:79:ILE:HD13	1:C:89:MSE:CE	2.46	0.45
1:C:136:LEU:HD12	1:C:137:TRP:H	1.82	0.45
1:I:116:ILE:HG23	1:I:117:GLU:N	2.31	0.45
1:I:233:TYR:HE1	1:I:235:LEU:HD12	1.81	0.45
1:B:150:GLN:NE2	1:B:189:LEU:H	2.07	0.45
1:D:134:TYR:CE2	1:D:171:VAL:HG23	2.52	0.45
1:K:41:ASN:HA	1:K:44:GLU:HB2	1.99	0.45
1:G:140:ASP:OD1	1:G:142:SER:OG	2.30	0.44
1:H:163:ASN:N	1:H:163:ASN:ND2	2.65	0.44
1:G:123:LEU:O	1:G:123:LEU:HD12	2.18	0.44
1:C:67:ILE:HD13	1:C:67:ILE:N	2.32	0.44
1:L:89:MSE:CE	1:L:101:LEU:CD2	2.96	0.44
1:L:117:GLU:O	1:L:120:ALA:HB3	2.18	0.44
1:B:212:TYR:CE1	1:D:36:TYR:HA	2.52	0.44
1:I:68:THR:HG23	1:I:195:ILE:CG2	2.46	0.44
1:I:274:THR:HB	1:K:209:LEU:HD21	1.99	0.44
1:K:216:LEU:HD22	1:K:249:VAL:HG21	2.00	0.44
1:A:233:TYR:HH	1:C:233:TYR:HH	1.57	0.44
1:A:140:ASP:OD1	1:A:142:SER:OG	2.32	0.44
1:B:54:TYR:CZ	1:B:204:MSE:HE1	2.52	0.44
1:H:54:TYR:HB2	1:H:57:LEU:HD12	1.98	0.44
1:E:204:MSE:HE2	1:E:208:GLU:HG3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:116:ILE:HD12	1:A:179:ASN:ND2	2.33	0.43
1:J:87:PRO:CB	1:J:91:MSE:HE1	2.48	0.43
1:J:198:GLU:OE1	1:J:271:LEU:HD22	2.18	0.43
1:K:89:MSE:HE3	1:K:101:LEU:HD23	2.00	0.43
1:E:160:LYS:HZ3	1:K:176:ASN:ND2	2.17	0.43
1:F:91:MSE:HE2	1:F:91:MSE:HA	2.00	0.43
1:J:163:ASN:HD22	1:J:163:ASN:N	2.06	0.43
1:B:102:LYS:HG3	1:B:185:ASP:OD1	2.19	0.43
1:G:43:VAL:O	1:G:47:MSE:HG3	2.18	0.43
1:I:89:MSE:HE3	1:I:101:LEU:CD2	2.48	0.43
1:B:230:VAL:HG13	1:B:244:VAL:HG11	1.99	0.43
1:C:163:ASN:N	1:C:163:ASN:HD22	2.14	0.43
1:G:157:ILE:O	1:G:159:GLN:HG2	2.19	0.43
1:J:274:THR:HB	1:L:209:LEU:HD21	2.01	0.43
1:C:272:GLU:O	1:C:274:THR:N	2.52	0.43
1:D:61:ALA:HA	1:D:202:THR:HG22	2.01	0.43
1:D:163:ASN:HB2	1:D:164:PRO:CD	2.48	0.43
1:A:102:LYS:HG3	1:A:185:ASP:OD1	2.18	0.43
1:E:89:MSE:HE3	1:E:101:LEU:HD23	2.00	0.43
1:E:175:LEU:HD22	1:E:181:VAL:HG22	2.01	0.43
1:J:150:GLN:HE22	1:J:188:THR:HA	1.83	0.43
1:F:102:LYS:HG3	1:F:185:ASP:OD1	2.19	0.43
1:I:109:ILE:HD12	1:I:123:LEU:HD11	2.00	0.43
1:L:235:LEU:O	1:L:238:THR:N	2.48	0.42
1:J:79:ILE:HG23	1:J:103:MSE:CE	2.48	0.42
1:J:275:ILE:HD11	1:L:210:LEU:HD23	2.01	0.42
1:C:89:MSE:O	1:C:91:MSE:HE3	2.19	0.42
1:D:67:ILE:HD13	1:D:67:ILE:N	2.34	0.42
1:G:67:ILE:HD13	1:G:67:ILE:N	2.34	0.42
1:G:175:LEU:HD23	1:G:181:VAL:HG22	2.01	0.42
1:J:253:LYS:C	1:J:259:LYS:HA	2.40	0.42
1:B:178:LYS:O	1:B:179:ASN:C	2.57	0.42
1:D:159:GLN:HE22	1:D:169:GLY:H	1.67	0.42
1:D:136:LEU:HD12	1:D:136:LEU:C	2.40	0.42
1:E:47:MSE:HE3	1:E:52:ILE:HG21	2.02	0.42
1:I:113:LYS:NZ	1:I:178:LYS:HE3	2.35	0.42
1:J:109:ILE:HD13	1:J:123:LEU:HD13	2.01	0.42
1:A:124:VAL:O	1:A:128:ILE:HB	2.20	0.42
1:B:67:ILE:HG13	1:B:241:LEU:HD12	2.01	0.41
1:D:94:ASP:OD1	1:D:94:ASP:N	2.52	0.41
1:E:142:SER:CB	1:K:164:PRO:HG2	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:87:PRO:HB2	1:J:91:MSE:HE1	2.01	0.41
1:H:174:HIS:C	1:H:175:LEU:HD23	2.41	0.41
1:I:89:MSE:HE2	1:I:91:MSE:HE2	2.01	0.41
1:I:117:GLU:HG2	1:I:136:LEU:HD21	2.01	0.41
1:L:89:MSE:HE2	1:L:91:MSE:CE	2.50	0.41
1:L:275:ILE:C	1:L:276:LEU:HD23	2.41	0.41
1:C:54:TYR:CD2	1:C:204:MSE:HE1	2.55	0.41
1:D:65:TYR:HB2	1:D:67:ILE:HD11	2.02	0.41
1:F:262:VAL:HG12	1:F:263:GLN:N	2.36	0.41
1:G:123:LEU:HD12	1:G:123:LEU:C	2.41	0.41
1:A:136:LEU:HD12	1:A:137:TRP:N	2.35	0.41
1:L:121:GLN:HE22	1:L:135:LYS:HA	1.84	0.41
1:B:89:MSE:HE2	1:B:91:MSE:HE2	2.01	0.41
1:F:66:ARG:HG3	1:F:271:LEU:HD11	2.01	0.41
1:D:230:VAL:HG13	1:D:244:VAL:CG1	2.50	0.41
1:D:230:VAL:CG1	1:D:244:VAL:HG11	2.48	0.41
1:I:254:LYS:HA	1:I:259:LYS:HA	2.03	0.41
1:K:230:VAL:HG13	1:K:244:VAL:HG11	2.01	0.41
1:A:159:GLN:NE2	1:A:169:GLY:H	2.18	0.41
1:A:168:ILE:CD1	1:A:231:ALA:HB2	2.51	0.41
1:I:204:MSE:HE2	1:I:208:GLU:HG3	2.03	0.41
1:G:175:LEU:CD2	1:G:181:VAL:HG22	2.50	0.41
1:I:36:TYR:HB3	1:K:212:TYR:O	2.20	0.41
1:I:271:LEU:HD23	1:I:271:LEU:HA	1.96	0.41
1:J:175:LEU:HD21	1:J:181:VAL:HG22	1.99	0.41
1:K:134:TYR:CD2	1:K:171:VAL:HG23	2.56	0.41
1:B:262:VAL:HG12	1:B:263:GLN:N	2.36	0.41
1:D:72:LYS:HD3	1:D:190:GLU:OE2	2.21	0.41
1:G:89:MSE:HE2	1:G:91:MSE:HE2	2.02	0.41
1:K:128:ILE:HD13	1:K:171:VAL:HG11	2.03	0.41
1:E:250:GLU:HB2	1:E:262:VAL:O	2.21	0.41
1:H:249:VAL:HG12	1:H:250:GLU:N	2.36	0.41
1:I:150:GLN:HE22	1:I:189:LEU:N	2.04	0.41
1:K:159:GLN:HE22	1:K:168:ILE:H	1.69	0.41
1:A:134:TYR:CE2	1:A:171:VAL:HG23	2.57	0.40
1:F:162:ASP:N	1:F:162:ASP:OD1	2.55	0.40
1:F:168:ILE:CD1	1:F:231:ALA:HB2	2.51	0.40
1:L:134:TYR:CE2	1:L:171:VAL:HG23	2.56	0.40
1:F:210:LEU:HD13	1:F:216:LEU:HD21	2.04	0.40
1:F:276:LEU:N	1:F:276:LEU:HD23	2.36	0.40
1:J:41:ASN:HA	1:J:44:GLU:HB2	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:65:TYR:CZ	1:F:194:GLN:NE2	2.90	0.40
1:J:150:GLN:HE22	1:J:189:LEU:N	2.13	0.40
1:D:235:LEU:O	1:D:236:THR:C	2.57	0.40
1:D:262:VAL:HG12	1:D:263:GLN:N	2.36	0.40
1:I:157:ILE:O	1:I:159:GLN:HG3	2.22	0.40
1:L:66:ARG:O	1:L:67:ILE:HD13	2.21	0.40
1:J:231:ALA:CA	1:J:241:LEU:HD23	2.46	0.40
1:L:175:LEU:HD22	1:L:181:VAL:HG22	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	237/254 (93%)	224 (94%)	12 (5%)	1 (0%)	34	66
1	B	235/254 (92%)	219 (93%)	15 (6%)	1 (0%)	34	66
1	C	235/254 (92%)	220 (94%)	13 (6%)	2 (1%)	17	48
1	D	237/254 (93%)	221 (93%)	15 (6%)	1 (0%)	34	66
1	E	233/254 (92%)	215 (92%)	16 (7%)	2 (1%)	17	48
1	F	236/254 (93%)	219 (93%)	16 (7%)	1 (0%)	34	66
1	G	233/254 (92%)	217 (93%)	16 (7%)	0	100	100
1	H	237/254 (93%)	223 (94%)	12 (5%)	2 (1%)	19	51
1	I	242/254 (95%)	223 (92%)	15 (6%)	4 (2%)	9	31
1	J	234/254 (92%)	221 (94%)	13 (6%)	0	100	100
1	K	231/254 (91%)	218 (94%)	13 (6%)	0	100	100
1	L	235/254 (92%)	222 (94%)	12 (5%)	1 (0%)	34	66
All	All	2825/3048 (93%)	2642 (94%)	168 (6%)	15 (0%)	29	61

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	179	ASN
1	C	236	THR
1	C	273	SER
1	I	233	TYR
1	B	179	ASN
1	D	236	THR
1	F	179	ASN
1	I	235	LEU
1	H	236	THR
1	L	273	SER
1	I	256	ASN
1	E	163	ASN
1	H	274	THR
1	I	162	ASP
1	E	169	GLY

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	221/224 (99%)	203 (92%)	18 (8%)	11	33
1	B	219/224 (98%)	206 (94%)	13 (6%)	19	49
1	C	219/224 (98%)	207 (94%)	12 (6%)	21	53
1	D	221/224 (99%)	207 (94%)	14 (6%)	18	46
1	E	217/224 (97%)	198 (91%)	19 (9%)	10	30
1	F	220/224 (98%)	204 (93%)	16 (7%)	14	38
1	G	217/224 (97%)	202 (93%)	15 (7%)	15	41
1	H	221/224 (99%)	209 (95%)	12 (5%)	22	54
1	I	223/224 (100%)	207 (93%)	16 (7%)	14	39
1	J	218/224 (97%)	205 (94%)	13 (6%)	19	49
1	K	215/224 (96%)	202 (94%)	13 (6%)	19	49
1	L	219/224 (98%)	204 (93%)	15 (7%)	16	42

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	2630/2688 (98%)	2454 (93%)	176 (7%)	16 43

All (176) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	37	GLU
1	A	41	ASN
1	A	44	GLU
1	A	66	ARG
1	A	77	GLU
1	A	83	LYS
1	A	89	MSE
1	A	113	LYS
1	A	119	ASP
1	A	129	GLN
1	A	163	ASN
1	A	168	ILE
1	A	175	LEU
1	A	197	LYS
1	A	232	GLN
1	A	235	LEU
1	A	246	ARG
1	A	274	THR
1	B	37	GLU
1	B	48	LYS
1	B	89	MSE
1	B	113	LYS
1	B	163	ASN
1	B	165	SER
1	B	167	MSE
1	B	175	LEU
1	B	197	LYS
1	B	220	SER
1	B	236	THR
1	B	246	ARG
1	B	273	SER
1	C	53	THR
1	C	54	TYR
1	C	67	ILE
1	C	89	MSE
1	C	103	MSE
1	C	121	GLN

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Mol	Chain	Res	Type
1	C	135	LYS
1	C	163	ASN
1	C	199	SER
1	C	262	VAL
1	C	267	THR
1	C	269	ASN
1	D	83	LYS
1	D	89	MSE
1	D	94	ASP
1	D	103	MSE
1	D	113	LYS
1	D	115	ASP
1	D	136	LEU
1	D	163	ASN
1	D	193	LYS
1	D	223	LYS
1	D	232	GLN
1	D	246	ARG
1	D	274	THR
1	D	276	LEU
1	E	37	GLU
1	E	41	ASN
1	E	83	LYS
1	E	89	MSE
1	E	94	ASP
1	E	103	MSE
1	E	113	LYS
1	E	136	LEU
1	E	163	ASN
1	E	175	LEU
1	E	197	LYS
1	E	209	LEU
1	E	232	GLN
1	E	235	LEU
1	E	236	THR
1	E	246	ARG
1	E	253	LYS
1	E	262	VAL
1	E	274	THR
1	F	52	ILE
1	F	65	TYR
1	F	89	MSE

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Mol	Chain	Res	Type
1	F	94	ASP
1	F	103	MSE
1	F	113	LYS
1	F	162	ASP
1	F	163	ASN
1	F	165	SER
1	F	175	LEU
1	F	193	LYS
1	F	230	VAL
1	F	254	LYS
1	F	273	SER
1	F	276	LEU
1	F	277	ASP
1	G	41	ASN
1	G	54	TYR
1	G	89	MSE
1	G	100	SER
1	G	115	ASP
1	G	123	LEU
1	G	136	LEU
1	G	159	GLN
1	G	163	ASN
1	G	193	LYS
1	G	232	GLN
1	G	235	LEU
1	G	246	ARG
1	G	252	GLU
1	G	269	ASN
1	H	45	HIS
1	H	54	TYR
1	H	89	MSE
1	H	103	MSE
1	H	113	LYS
1	H	115	ASP
1	H	163	ASN
1	H	193	LYS
1	H	204	MSE
1	H	246	ARG
1	H	260	LYS
1	H	274	THR
1	I	44	GLU
1	I	65	TYR

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Mol	Chain	Res	Type
1	I	83	LYS
1	I	89	MSE
1	I	97	LYS
1	I	113	LYS
1	I	119	ASP
1	I	129	GLN
1	I	163	ASN
1	I	168	ILE
1	I	175	LEU
1	I	220	SER
1	I	235	LEU
1	I	236	THR
1	I	246	ARG
1	I	256	ASN
1	J	41	ASN
1	J	44	GLU
1	J	76	LYS
1	J	83	LYS
1	J	89	MSE
1	J	100	SER
1	J	103	MSE
1	J	113	LYS
1	J	116	ILE
1	J	163	ASN
1	J	193	LYS
1	J	232	GLN
1	J	269	ASN
1	K	44	GLU
1	K	45	HIS
1	K	54	TYR
1	K	89	MSE
1	K	95	ASP
1	K	100	SER
1	K	136	LEU
1	K	159	GLN
1	K	162	ASP
1	K	163	ASN
1	K	176	ASN
1	K	223	LYS
1	K	274	THR
1	L	42	ASP
1	L	45	HIS

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Mol	Chain	Res	Type
1	L	55	GLU
1	L	89	MSE
1	L	94	ASP
1	L	103	MSE
1	L	113	LYS
1	L	115	ASP
1	L	163	ASN
1	L	193	LYS
1	L	199	SER
1	L	217	LYS
1	L	246	ARG
1	L	278	THR
1	L	280	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (82) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	71	GLN
1	A	121	GLN
1	A	150	GLN
1	A	159	GLN
1	A	163	ASN
1	A	166	ASN
1	A	214	ASN
1	A	232	GLN
1	B	107	ASN
1	B	150	GLN
1	B	159	GLN
1	B	163	ASN
1	B	170	GLN
1	B	232	GLN
1	B	269	ASN
1	C	71	GLN
1	C	150	GLN
1	C	159	GLN
1	C	194	GLN
1	C	232	GLN
1	C	269	ASN
1	D	71	GLN
1	D	129	GLN
1	D	150	GLN
1	D	159	GLN

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Mol	Chain	Res	Type
1	D	163	ASN
1	D	166	ASN
1	D	194	GLN
1	D	232	GLN
1	D	269	ASN
1	E	150	GLN
1	E	159	GLN
1	E	232	GLN
1	F	71	GLN
1	F	150	GLN
1	F	159	GLN
1	F	163	ASN
1	F	196	GLN
1	F	213	GLN
1	F	232	GLN
1	G	71	GLN
1	G	129	GLN
1	G	150	GLN
1	G	159	GLN
1	G	163	ASN
1	G	194	GLN
1	G	213	GLN
1	G	232	GLN
1	G	239	GLN
1	G	269	ASN
1	H	71	GLN
1	H	121	GLN
1	H	150	GLN
1	H	159	GLN
1	H	163	ASN
1	H	214	ASN
1	H	269	ASN
1	I	71	GLN
1	I	129	GLN
1	I	150	GLN
1	I	159	GLN
1	I	163	ASN
1	I	194	GLN
1	I	232	GLN
1	J	150	GLN
1	J	159	GLN
1	J	163	ASN

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Mol	Chain	Res	Type
1	J	215	GLN
1	J	232	GLN
1	J	239	GLN
1	J	269	ASN
1	K	71	GLN
1	K	150	GLN
1	K	159	GLN
1	K	176	ASN
1	K	232	GLN
1	K	269	ASN
1	L	150	GLN
1	L	159	GLN
1	L	163	ASN
1	L	232	GLN
1	L	280	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 6 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

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.