



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 7, 2024 – 02:25 PM EST

PDB ID : 8TUB
Title : HLA B7:02 with HPNGYKSLSTL
Authors : Littler, D.R.; Rossjohn, J.; Chaurasia, P.; Petersen, J.
Deposited on : 2023-08-16
Resolution : 2.40 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

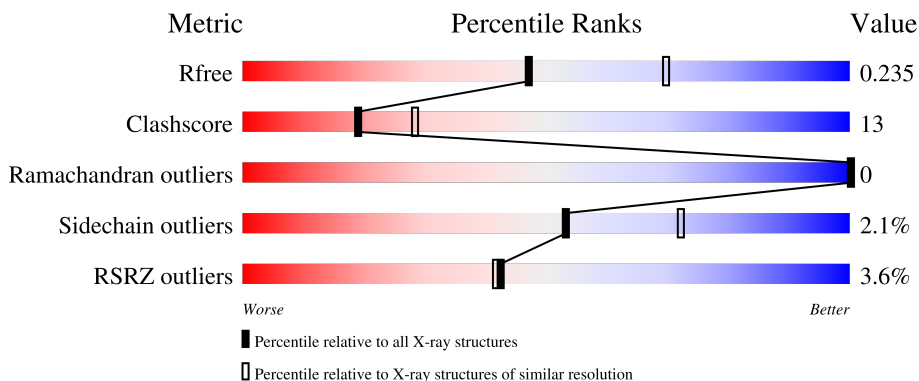
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION


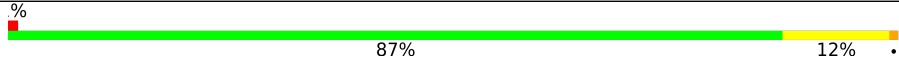
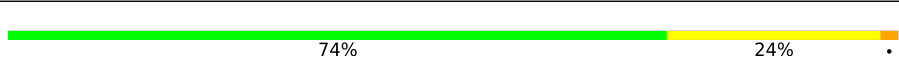
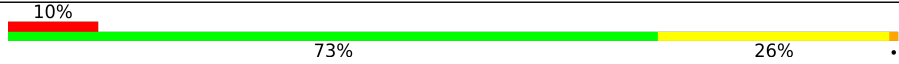
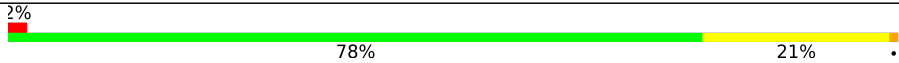
The reported resolution of this entry is 2.40 Å.

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	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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	A	99	
1	B	99	
1	E	99	
1	I	99	
2	C	275	

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Mol	Chain	Length	Quality of chain
2	F	275	<p>%</p> <p>77% 21%</p>
2	G	275	<p>%</p> <p>79% 20%</p>
2	J	275	<p>12%</p> <p>73% 25%</p>
3	D	11	<p>91% 9%</p>
3	H	11	<p>73% 18% 9%</p>
3	K	11	<p>82% 18%</p>
3	Q	11	<p>73% 27%</p>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	PEG	F	301	-	-	X	-

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 13263 atoms, of which 46 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 Beta-2-microglobulin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	99	Total 829	C 528	N 140	O 158	S 3	0	0	0
1	B	99	Total 813	C 518	N 138	O 154	S 3	0	0	0
1	E	99	Total 829	C 528	N 140	O 158	S 3	0	0	0
1	I	99	Total 823	C 525	N 137	O 158	S 3	0	0	0

- Molecule 2 is a protein called HLA class I histocompatibility antigen, B-7 alpha chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	F	275	Total 2248	C 1396	N 411	O 434	S 7	0	1	0
2	C	275	Total 2247	C 1395	N 412	O 434	S 6	0	0	0
2	G	275	Total 2249	C 1396	N 410	O 437	S 6	0	0	0
2	J	275	Total 2247	C 1395	N 413	O 433	S 6	0	0	0

- Molecule 3 is a protein called HIS-PRO-ASN-GLY-TYR-LYS-SER-LEU-SER-THR-LEU.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	Q	11	Total 85	C 54	N 15	O 16	0	0	0
3	D	11	Total 85	C 54	N 15	O 16	0	0	0
3	H	11	Total 86	C 54	N 15	O 17	0	0	0
3	K	11	Total 86	C 54	N 15	O 17	0	0	0

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
4	A	1	10	2	6	2	0	0
4	F	1	10	2	6	2	0	0
4	Q	1	10	2	6	2	0	0
4	E	1	10	2	6	2	0	0
4	E	1	10	2	6	2	0	0
4	H	1	10	2	6	2	0	0

- Molecule 5 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
5	F	1	17	4	10	3	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	48	Total	O	0	0
			48	48		
6	F	114	Total	O	0	0
			114	114		
6	Q	2	Total	O	0	0
			2	2		
6	B	30	Total	O	0	0
			30	30		
6	C	92	Total	O	0	0
			92	92		
6	D	4	Total	O	0	0
			4	4		
6	E	32	Total	O	0	0
			32	32		
6	G	138	Total	O	0	0
			138	138		
6	H	7	Total	O	0	0
			7	7		
6	I	22	Total	O	0	0
			22	22		
6	J	64	Total	O	0	0
			64	64		

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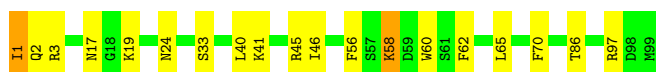
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	K	6	Total	O	0	0
			6	6		

3 Residue-property plots [i](#)


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

- Molecule 1: Beta-2-microglobulin

Chain A: 



- Molecule 1: Beta-2-microglobulin

Chain B: 



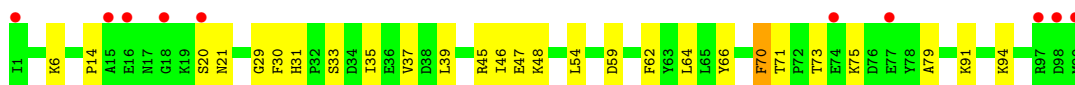
- Molecule 1: Beta-2-microglobulin

Chain E: 




- Molecule 1: Beta-2-microglobulin

Chain I: 



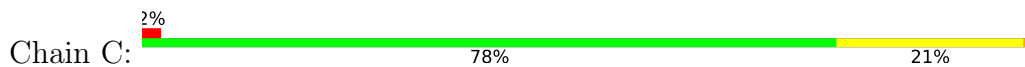
- Molecule 2: HLA class I histocompatibility antigen, B-7 alpha chain

Chain F: 

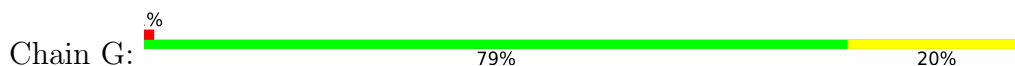




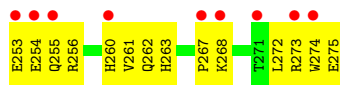
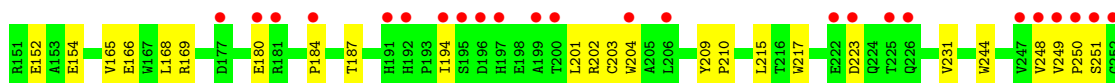
- Molecule 2: HLA class I histocompatibility antigen, B-7 alpha chain



- Molecule 2: HLA class I histocompatibility antigen, B-7 alpha chain



- Molecule 2: HLA class I histocompatibility antigen, B-7 alpha chain



- Molecule 3: HIS-PRO-ASN-GLY-TYR-LYS-SER-LEU-SER-THR-LEU



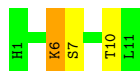
- Molecule 3: HIS-PRO-ASN-GLY-TYR-LYS-SER-LEU-SER-THR-LEU






- Molecule 3: HIS-PRO-ASN-GLY-TYR-LYS-SER-LEU-SER-THR-LEU

Chain H:  73% 18% 9%



- Molecule 3: HIS-PRO-ASN-GLY-TYR-LYS-SER-LEU-SER-THR-LEU

Chain K:  82% 18%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	49.21Å 90.67Å 104.56Å 97.54° 93.83° 90.23°	Depositor
Resolution (Å)	43.00 – 2.40 47.62 – 2.40	Depositor EDS
% Data completeness (in resolution range)	94.5 (43.00-2.40) 94.5 (47.62-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.58 (at 2.39Å)	Xtrriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.197 , 0.238 0.197 , 0.235	Depositor DCC
R_{free} test set	3318 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å ²)	27.3	Xtrriage
Anisotropy	0.434	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 35.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	13263	wwPDB-VP
Average B, all atoms (Å ²)	39.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.58% 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: PEG, EDO

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	0.54	0/852	0.66	0/1152
1	B	0.52	1/836 (0.1%)	0.71	0/1134
1	E	0.43	0/852	0.64	0/1152
1	I	0.51	1/846 (0.1%)	0.66	0/1145
2	C	0.65	1/2309 (0.0%)	0.77	1/3137 (0.0%)
2	F	0.59	2/2309 (0.1%)	0.76	1/3136 (0.0%)
2	G	0.58	1/2311 (0.0%)	0.74	0/3140
2	J	0.61	2/2309 (0.1%)	0.72	1/3137 (0.0%)
3	D	0.54	0/87	0.62	0/117
3	H	0.43	0/88	0.70	0/117
3	K	0.51	0/88	0.64	0/117
3	Q	0.35	0/87	0.57	0/117
All	All	0.58	8/12974 (0.1%)	0.73	3/17601 (0.0%)

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	184	PRO	N-CD	-15.85	1.25	1.47
2	C	267	PRO	N-CD	-12.65	1.30	1.47
2	F	57	PRO	N-CD	-10.34	1.33	1.47
1	I	14	PRO	N-CD	-9.74	1.34	1.47
1	B	90	PRO	N-CD	6.86	1.57	1.47
2	J	43	PRO	N-CD	6.52	1.56	1.47
2	G	173	GLU	CB-CG	-5.66	1.41	1.52
2	F	19	GLU	CD-OE2	-5.50	1.19	1.25

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	62	ARG	NE-CZ-NH1	5.91	123.25	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	J	14	ARG	NE-CZ-NH2	-5.37	117.62	120.30
2	F	17	ARG	N-CA-C	-5.28	96.75	111.00

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	829	0	794	16	0
1	B	813	0	764	11	0
1	E	829	0	793	27	0
1	I	823	0	783	25	0
2	C	2247	0	2085	61	4
2	F	2248	0	2086	55	0
2	G	2249	0	2087	68	0
2	J	2247	0	2089	61	4
3	D	85	0	86	1	0
3	H	86	0	86	6	0
3	K	86	0	86	3	0
3	Q	85	0	86	3	0
4	A	4	6	6	0	0
4	E	8	12	12	0	0
4	F	4	6	6	1	0
4	H	4	6	6	0	0
4	Q	4	6	6	1	0
5	F	7	10	10	4	0
6	A	48	0	0	7	0
6	B	30	0	0	6	0
6	C	92	0	0	15	0
6	D	4	0	0	0	0
6	E	32	0	0	10	0
6	F	114	0	0	11	0
6	G	138	0	0	32	0
6	H	7	0	0	1	0
6	I	22	0	0	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	J	64	0	0	14	0
6	K	6	0	0	0	0
6	Q	2	0	0	0	0
All	All	13217	46	11871	320	4

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 13.

All (320) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:219:ARG:NH1	2:C:257:TYR:CE1	1.72	1.58
2:C:219:ARG:NH1	2:C:257:TYR:CZ	1.68	1.57
2:C:275:GLU:HB2	6:C:304:HOH:O	1.22	1.37
2:J:82:ARG:NH1	2:J:87:GLN:O	1.59	1.34
2:C:219:ARG:NH1	2:C:257:TYR:OH	1.58	1.32
2:G:146:LYS:HB3	6:G:302:HOH:O	1.41	1.18
2:G:146:LYS:CA	6:G:302:HOH:O	1.90	1.15
1:E:1:ILE:HA	6:E:202:HOH:O	1.50	1.11
2:C:146:LYS:NZ	6:C:301:HOH:O	1.84	1.10
2:G:146:LYS:CB	6:G:302:HOH:O	1.93	1.08
2:G:147:TRP:N	6:G:302:HOH:O	1.87	1.07
2:F:262:GLN:HB3	5:F:301:PEG:H31	1.37	1.06
2:C:219:ARG:NH2	2:C:253:GLU:OE1	1.93	1.01
2:J:17:ARG:NH2	6:J:304:HOH:O	1.92	1.00
2:G:146:LYS:N	6:G:302:HOH:O	1.90	0.98
2:G:275:GLU:OE1	6:G:301:HOH:O	1.82	0.98
1:A:1:ILE:N	6:A:202:HOH:O	1.95	0.98
1:I:31:HIS:ND1	6:I:101:HOH:O	1.96	0.97
2:J:80:ASN:O	6:J:301:HOH:O	1.81	0.97
1:E:1:ILE:CA	6:E:202:HOH:O	2.07	0.97
1:A:1:ILE:O	6:A:201:HOH:O	1.81	0.97
2:F:257:TYR:OH	6:F:401:HOH:O	1.82	0.96
1:E:1:ILE:N	6:E:201:HOH:O	1.96	0.96
1:B:51:HIS:NE2	6:B:101:HOH:O	1.83	0.96
2:G:143:THR:O	6:G:302:HOH:O	1.84	0.95
2:F:253:GLU:OE1	6:F:402:HOH:O	1.82	0.95
2:C:256:ARG:NE	6:C:306:HOH:O	1.99	0.94
1:I:29:GLY:HA3	6:I:103:HOH:O	1.68	0.93
2:J:251:SER:HA	2:J:254:GLU:OE2	1.67	0.92
2:C:128:GLU:O	6:C:302:HOH:O	1.87	0.92

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:219:ARG:NH1	2:C:257:TYR:HE1	1.57	0.91
2:C:232:GLU:OE2	6:C:303:HOH:O	1.89	0.91
2:C:275:GLU:O	6:C:304:HOH:O	1.89	0.91
2:G:6:ARG:CZ	6:G:308:HOH:O	2.17	0.91
1:E:49:VAL:N	6:E:204:HOH:O	2.04	0.89
2:J:119:ASP:OD1	6:J:303:HOH:O	1.89	0.89
1:E:1:ILE:N	6:E:202:HOH:O	1.99	0.89
2:G:233:THR:O	6:G:303:HOH:O	1.88	0.89
2:F:181:ARG:NH2	2:F:183:ASP:OD2	2.07	0.88
2:G:275:GLU:O	6:G:304:HOH:O	1.92	0.88
2:F:82:ARG:NH1	2:F:89:GLU:HA	1.88	0.88
1:I:79:ALA:HB2	1:I:94:LYS:HG2	1.56	0.86
2:G:105:PRO:N	6:G:307:HOH:O	2.08	0.86
2:C:275:GLU:C	6:C:304:HOH:O	2.14	0.85
2:G:20:PRO:HD3	2:G:75:ARG:HG3	1.58	0.85
2:J:154:GLU:OE2	6:J:305:HOH:O	1.93	0.85
2:J:3:HIS:NE2	2:J:180:GLU:OE2	2.08	0.85
2:G:6:ARG:NE	6:G:308:HOH:O	2.11	0.82
1:E:48:LYS:C	6:E:204:HOH:O	2.17	0.82
2:G:105:PRO:CD	6:G:307:HOH:O	2.27	0.81
1:I:29:GLY:CA	6:I:103:HOH:O	2.23	0.81
2:C:46:GLU:OE1	6:C:305:HOH:O	1.99	0.81
2:G:154:GLU:OE2	6:G:305:HOH:O	1.99	0.80
2:J:106:ASP:OD2	2:J:108:ARG:NE	2.15	0.80
2:C:114:ASP:OD1	6:C:307:HOH:O	2.01	0.79
2:J:6:ARG:HG2	2:J:6:ARG:HH11	1.48	0.79
2:G:105:PRO:HD2	6:G:307:HOH:O	1.84	0.78
2:G:6:ARG:NH2	6:G:308:HOH:O	2.14	0.78
2:G:255:GLN:NE2	2:G:273:ARG:HD2	1.99	0.77
2:F:212:GLU:OE2	6:F:404:HOH:O	2.04	0.76
1:E:76:ASP:O	6:E:203:HOH:O	2.03	0.76
2:G:82:ARG:NH2	2:G:89:GLU:HG3	2.00	0.76
2:C:275:GLU:CA	6:C:304:HOH:O	2.24	0.75
1:I:73:THR:CG2	1:I:75:LYS:HG2	2.16	0.75
2:C:45:GLU:O	6:C:308:HOH:O	2.04	0.74
2:C:258:THR:HG23	2:C:273:ARG:HD3	1.69	0.74
2:F:219:ARG:HD3	2:F:257:TYR:CZ	2.24	0.73
1:E:94:LYS:HD2	1:E:94:LYS:N	2.02	0.73
2:C:54:GLN:O	6:C:309:HOH:O	2.07	0.73
2:C:258:THR:CG2	2:C:273:ARG:HD3	2.19	0.72
2:J:82:ARG:HD3	6:J:361:HOH:O	1.89	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:20:PRO:HD3	2:F:75:ARG:HG3	1.71	0.71
2:J:94:THR:OG1	6:J:302:HOH:O	1.82	0.71
2:J:154:GLU:CD	6:J:305:HOH:O	2.30	0.70
2:G:108:ARG:NH1	6:G:316:HOH:O	2.25	0.70
1:B:71:THR:O	6:B:102:HOH:O	2.10	0.69
2:F:262:GLN:HB3	5:F:301:PEG:C3	2.20	0.69
1:B:6:LYS:O	6:B:103:HOH:O	2.10	0.69
2:G:255:GLN:HE22	2:G:273:ARG:HD2	1.57	0.69
2:J:53:GLU:O	6:J:307:HOH:O	2.11	0.67
1:B:1:ILE:HG23	1:B:2:GLN:H	1.58	0.67
2:C:50:PRO:O	2:C:53:GLU:HG3	1.95	0.67
2:G:108:ARG:NH2	6:G:317:HOH:O	2.27	0.67
2:F:123:TYR:CE2	3:Q:11:LEU:HD23	2.29	0.67
2:J:274:TRP:CE2	2:J:275:GLU:HG2	2.29	0.67
2:J:130:LEU:O	6:J:308:HOH:O	2.12	0.67
1:E:94:LYS:N	1:E:94:LYS:CD	2.57	0.67
1:A:3:ARG:NH1	6:A:205:HOH:O	2.10	0.67
2:G:179:LEU:O	6:G:309:HOH:O	2.12	0.67
2:J:203:CYS:HB2	2:J:217:TRP:CZ2	2.30	0.66
2:C:258:THR:HG22	2:C:273:ARG:HG3	1.77	0.66
2:J:169:ARG:NE	6:J:306:HOH:O	2.00	0.66
2:J:201:LEU:HD12	2:J:249:VAL:HG11	1.76	0.66
2:J:187:THR:HB	2:J:272:LEU:HD11	1.78	0.66
2:J:85:TYR:OH	2:J:137:ASP:OD2	2.10	0.65
1:A:17:ASN:HD21	1:A:97:ARG:HH12	1.43	0.65
2:F:30:ASP:O	6:F:405:HOH:O	2.15	0.65
2:J:152:GLU:OE2	6:J:309:HOH:O	2.14	0.65
2:J:215:LEU:HD23	2:J:261:VAL:HG13	1.79	0.65
1:I:73:THR:HG22	1:I:75:LYS:HG2	1.78	0.65
2:F:6:ARG:HD2	2:F:98[A]:MET:SD	2.36	0.65
2:J:215:LEU:CD2	2:J:261:VAL:HG13	2.27	0.64
2:C:115:GLN:NE2	6:C:311:HOH:O	2.30	0.64
2:G:194:ILE:HD11	2:G:200:THR:HG23	1.78	0.63
1:I:73:THR:HG22	1:I:75:LYS:H	1.64	0.63
2:F:219:ARG:HB2	2:F:224:GLN:NE2	2.12	0.63
1:I:59:ASP:OD2	6:I:102:HOH:O	2.15	0.63
1:I:73:THR:HG21	1:I:75:LYS:HG2	1.78	0.63
1:E:19:LYS:C	1:E:71:THR:HG23	2.18	0.63
2:C:258:THR:HG22	2:C:273:ARG:CG	2.29	0.63
2:C:274:TRP:CE2	2:C:275:GLU:HG2	2.34	0.62
2:F:157:ARG:NH1	6:F:408:HOH:O	2.21	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:39:LEU:CB	1:I:46:ILE:HD12	2.29	0.62
2:F:20:PRO:CD	2:F:75:ARG:HG3	2.29	0.62
2:C:258:THR:CG2	2:C:273:ARG:HH11	2.12	0.62
2:C:238:ASP:OD1	2:C:240:THR:OG1	2.18	0.61
2:G:106:ASP:N	6:G:307:HOH:O	2.13	0.61
2:C:194:ILE:HD11	2:C:248:VAL:HG22	1.81	0.61
1:A:17:ASN:ND2	1:A:97:ARG:HH12	1.98	0.61
1:E:16:GLU:HB2	1:E:19:LYS:HE3	1.83	0.61
1:E:97:ARG:HG2	6:E:212:HOH:O	2.00	0.60
1:A:24:ASN:HB3	1:A:65:LEU:HD11	1.83	0.60
3:Q:4:GLY:H	4:Q:101:EDO:C2	2.15	0.60
2:F:194:ILE:HD12	2:F:198:GLU:HB3	1.84	0.59
2:C:6:ARG:HG2	2:C:6:ARG:HH11	1.67	0.59
2:J:3:HIS:HE2	2:J:180:GLU:CD	2.05	0.59
1:E:28:SER:OG	6:E:205:HOH:O	2.17	0.59
1:B:20:SER:HA	1:B:71:THR:HG22	1.85	0.59
2:G:76:GLU:O	2:G:76:GLU:HG3	2.04	0.58
2:C:275:GLU:CB	6:C:304:HOH:O	1.95	0.58
2:G:275:GLU:CD	6:G:301:HOH:O	2.31	0.57
2:G:14:ARG:HB3	2:G:17:ARG:HB2	1.87	0.57
2:J:201:LEU:HD12	2:J:249:VAL:CG1	2.33	0.57
2:F:202:ARG:HG2	2:F:204:TRP:NE1	2.19	0.57
2:C:4:SER:HB2	2:C:6:ARG:HH12	1.70	0.57
2:F:11:SER:OG	2:F:74:ASP:OD2	2.21	0.56
1:I:6:LYS:NZ	6:I:104:HOH:O	2.36	0.56
2:C:33:PHE:CD2	2:C:34:VAL:HG13	2.41	0.56
2:C:71:ALA:O	2:C:75:ARG:HG3	2.05	0.56
2:F:257:TYR:CZ	6:F:401:HOH:O	2.45	0.56
2:C:180:GLU:HA	2:C:180:GLU:OE1	2.04	0.56
2:F:258:THR:HG23	2:F:260:HIS:NE2	2.20	0.56
2:G:20:PRO:CD	2:G:75:ARG:HG3	2.34	0.56
2:F:139:ALA:HA	2:F:142:ILE:HD12	1.88	0.55
2:G:275:GLU:C	6:G:304:HOH:O	2.40	0.55
2:J:5:MET:HB2	2:J:168:LEU:HD13	1.89	0.55
2:C:76:GLU:HA	2:C:76:GLU:OE1	2.06	0.55
1:I:39:LEU:HB3	1:I:46:ILE:HD12	1.88	0.55
1:A:60:TRP:CE2	2:F:117:ALA:HB2	2.42	0.55
2:F:151:ARG:NH2	2:J:166:GLU:HG2	2.21	0.55
2:F:216:THR:HG23	2:F:260:HIS:HB2	1.89	0.55
2:F:269:PRO:HG3	5:F:301:PEG:H42	1.89	0.55
1:E:7:ILE:CD1	1:E:82:VAL:HG21	2.37	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:50:GLU:HB2	1:E:67:TYR:CZ	2.42	0.55
2:J:187:THR:CB	2:J:272:LEU:HD11	2.36	0.55
2:J:137:ASP:HB3	2:J:140:ALA:H	1.72	0.54
2:C:14:ARG:HD3	2:C:19:GLU:O	2.08	0.54
2:G:104:GLY:O	6:G:311:HOH:O	2.19	0.54
2:G:258:THR:HG22	6:G:351:HOH:O	2.08	0.54
2:J:210:PRO:O	2:J:263:HIS:HE1	1.90	0.54
2:C:146:LYS:HE2	3:D:10:THR:HG23	1.90	0.54
2:G:6:ARG:NH2	2:G:102:ASP:OD1	2.41	0.54
2:G:232:GLU:HG2	6:G:303:HOH:O	2.07	0.54
1:B:6:LYS:C	6:B:103:HOH:O	2.46	0.54
2:J:194:ILE:HD11	2:J:248:VAL:HG22	1.89	0.54
2:C:6:ARG:HD2	2:C:98:MET:SD	2.48	0.53
2:C:44:ARG:NH2	2:C:61:ASP:OD1	2.40	0.53
2:F:253:GLU:CD	6:F:402:HOH:O	2.35	0.53
2:G:169:ARG:HD2	6:G:330:HOH:O	2.08	0.53
2:G:76:GLU:HG2	3:H:10:THR:CG2	2.38	0.52
1:A:58:LYS:HB2	6:A:246:HOH:O	2.10	0.52
2:F:17:ARG:N	2:F:17:ARG:CD	2.72	0.52
2:F:255:GLN:OE1	2:F:274:TRP:O	2.28	0.52
1:A:19:LYS:HE3	6:A:219:HOH:O	2.08	0.52
2:F:108:ARG:HG3	2:F:108:ARG:HH11	1.75	0.52
2:J:98:MET:SD	2:J:98:MET:C	2.88	0.52
1:E:16:GLU:OE2	1:E:19:LYS:HE2	2.10	0.52
1:E:60:TRP:CE2	2:G:117:ALA:HB2	2.45	0.52
1:B:4:THR:CG2	1:B:5:PRO:HD2	2.39	0.51
2:J:250:PRO:HG2	2:J:253:GLU:OE2	2.10	0.51
2:J:267:PRO:O	2:J:268:LYS:HG3	2.10	0.51
2:F:82:ARG:CZ	2:F:89:GLU:HA	2.41	0.51
6:A:223:HOH:O	2:F:237:GLY:HA3	2.10	0.50
2:J:202:ARG:HG2	2:J:204:TRP:CD1	2.46	0.50
1:I:20:SER:HA	1:I:71:THR:HG22	1.93	0.50
3:H:6:LYS:HG2	3:H:6:LYS:O	2.12	0.50
1:E:7:ILE:HD13	1:E:82:VAL:HG21	1.92	0.50
2:G:106:ASP:OD2	2:G:108:ARG:HG2	2.11	0.50
2:G:146:LYS:HD3	6:H:204:HOH:O	2.11	0.50
2:J:141:GLN:HB3	2:J:145:ARG:NH2	2.27	0.50
1:A:1:ILE:HD12	1:A:2:GLN:H	1.77	0.49
1:E:20:SER:OG	1:E:69:GLU:OE2	2.31	0.49
2:C:215:LEU:HD23	2:C:261:VAL:HG13	1.94	0.49
2:G:232:GLU:CG	6:G:303:HOH:O	2.60	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:105:PRO:CA	6:G:307:HOH:O	2.56	0.49
2:G:255:GLN:OE1	2:G:274:TRP:O	2.30	0.49
2:F:262:GLN:HG2	2:F:269:PRO:HG3	1.93	0.49
2:F:129:ASP:O	2:F:131:ARG:HD2	2.12	0.49
1:E:73:THR:OG1	1:E:76:ASP:HB2	2.13	0.49
2:J:6:ARG:HG2	2:J:6:ARG:NH1	2.18	0.49
2:F:156:ARG:CZ	3:Q:6:LYS:HD3	2.42	0.49
2:C:250:PRO:HB2	2:C:253:GLU:HG3	1.94	0.49
1:E:51:HIS:HD2	1:E:52:SER:O	1.96	0.49
2:C:131:ARG:NH2	6:C:313:HOH:O	2.37	0.48
2:G:268:LYS:HB3	2:G:268:LYS:HE3	1.59	0.48
2:C:163:GLU:OE1	2:C:163:GLU:HA	2.14	0.48
1:E:94:LYS:CD	1:E:94:LYS:H	2.25	0.48
1:I:79:ALA:CB	1:I:94:LYS:HA	2.43	0.48
2:F:111:ARG:NH1	2:F:128:GLU:HA	2.27	0.48
1:A:40:LEU:HD23	1:A:45:ARG:HA	1.94	0.47
2:C:9:TYR:CE2	2:C:70:GLN:HG2	2.48	0.47
2:F:189:VAL:HG23	2:F:272:LEU:HD13	1.96	0.47
2:J:201:LEU:CD1	2:J:249:VAL:HG11	2.43	0.47
2:F:33:PHE:CD2	2:F:34:VAL:HG13	2.48	0.47
6:B:128:HOH:O	2:C:98:MET:HG3	2.15	0.47
2:G:76:GLU:HG2	3:H:10:THR:HG21	1.95	0.47
2:C:141:GLN:HB3	2:C:145:ARG:NH2	2.29	0.47
2:C:187:THR:HB	2:C:272:LEU:HD11	1.96	0.47
1:B:4:THR:HG22	1:B:5:PRO:HD2	1.97	0.47
2:C:6:ARG:HG2	2:C:6:ARG:NH1	2.29	0.47
1:E:21:ASN:HB3	1:E:70:PHE:CE1	2.49	0.47
2:G:243:LYS:HE2	6:G:345:HOH:O	2.14	0.47
2:J:109:LEU:HB2	2:J:165:VAL:HG21	1.97	0.47
2:J:231:VAL:HG11	2:J:244:TRP:CZ2	2.49	0.47
2:C:4:SER:HB2	2:C:6:ARG:NH1	2.28	0.47
2:G:85:TYR:OH	2:G:137:ASP:OD2	2.22	0.47
2:G:76:GLU:CD	3:H:10:THR:HG21	2.36	0.46
2:J:121:LYS:HB3	2:J:121:LYS:HE3	1.34	0.46
2:J:256:ARG:NE	6:J:321:HOH:O	2.47	0.46
2:F:220:ASP:N	6:F:417:HOH:O	2.48	0.46
1:A:56:PHE:CE2	2:F:8:PHE:HB3	2.50	0.46
1:B:51:HIS:CE1	6:B:101:HOH:O	2.51	0.46
2:C:260:HIS:ND1	2:C:260:HIS:N	2.63	0.46
2:G:34:VAL:HG23	6:G:362:HOH:O	2.16	0.46
2:J:202:ARG:HG2	2:J:204:TRP:NE1	2.31	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:44:ARG:NH1	2:J:44:ARG:HG2	2.31	0.45
2:F:219:ARG:HD3	2:F:257:TYR:OH	2.17	0.45
1:E:1:ILE:HG22	2:G:119:ASP:O	2.17	0.45
2:G:44:ARG:HH11	2:G:44:ARG:HG2	1.81	0.45
2:J:83:GLY:HA3	6:J:301:HOH:O	2.15	0.45
2:G:62:ARG:O	2:G:66:ILE:HG13	2.17	0.45
2:C:137:ASP:HB3	2:C:140:ALA:H	1.82	0.45
1:B:60:TRP:CE2	2:C:117:ALA:HB2	2.53	0.44
2:G:9:TYR:CE2	2:G:70:GLN:HG2	2.52	0.44
1:B:33:SER:HB3	1:B:62:PHE:CE2	2.51	0.44
2:G:274:TRP:CE2	2:G:275:GLU:HG2	2.51	0.44
1:I:54:LEU:HD11	1:I:62:PHE:CD1	2.52	0.44
1:A:41:LYS:HB2	1:A:46:ILE:HD11	1.99	0.44
2:F:19:GLU:OE2	2:F:75:ARG:NH1	2.50	0.44
2:F:35:ARG:NE	2:F:46:GLU:OE1	2.47	0.44
2:C:255:GLN:OE1	2:C:274:TRP:O	2.35	0.44
2:G:197:HIS:C	2:G:251:SER:OG	2.56	0.44
2:F:17:ARG:N	2:F:17:ARG:HD2	2.32	0.44
2:J:209:TYR:CD1	2:J:210:PRO:HA	2.52	0.44
2:J:3:HIS:CE1	2:J:180:GLU:OE2	2.69	0.44
1:I:31:HIS:CE1	6:I:101:HOH:O	2.56	0.44
2:C:258:THR:HG21	2:C:273:ARG:HH11	1.81	0.44
2:G:258:THR:OG1	2:G:271:THR:HG23	2.18	0.43
2:F:258:THR:CG2	2:F:260:HIS:NE2	2.81	0.43
1:E:13:HIS:HB3	1:E:14:PRO:HD2	2.01	0.43
2:C:218:GLN:HB2	2:C:260:HIS:CE1	2.53	0.43
2:F:44:ARG:NH1	6:F:420:HOH:O	2.52	0.43
2:F:85:TYR:OH	2:F:137:ASP:OD2	2.28	0.43
1:I:33:SER:HB3	1:I:62:PHE:CE2	2.54	0.43
2:G:72:GLN:HG3	6:G:424:HOH:O	2.19	0.43
2:G:102:ASP:OD2	2:G:113:HIS:HE1	2.02	0.43
1:E:7:ILE:HD12	1:E:91:LYS:HD2	2.01	0.43
2:F:91:GLY:HA3	6:F:432:HOH:O	2.19	0.42
1:I:29:GLY:O	6:I:103:HOH:O	2.20	0.42
2:G:91:GLY:HA3	6:G:348:HOH:O	2.19	0.42
2:G:262:GLN:HG2	2:G:269:PRO:HG3	2.01	0.42
2:C:202:ARG:HG2	2:C:204:TRP:NE1	2.34	0.42
2:F:249:VAL:HG21	2:F:254:GLU:HG3	2.01	0.42
2:J:81:LEU:HD13	2:J:118:TYR:CD1	2.54	0.42
2:F:274:TRP:HA	2:F:275:GLU:HA	1.85	0.42
2:G:70:GLN:OE1	3:H:7:SER:HA	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1:ILE:N	6:A:203:HOH:O	2.00	0.42
2:C:219:ARG:CZ	2:C:257:TYR:OH	2.51	0.42
1:I:39:LEU:C	1:I:46:ILE:HD12	2.40	0.42
1:I:30:PHE:CD2	1:I:35:ILE:HD12	2.55	0.42
2:C:258:THR:HG22	2:C:273:ARG:HD3	2.00	0.42
2:G:44:ARG:HG2	2:G:44:ARG:NH1	2.35	0.42
1:I:21:ASN:HB3	1:I:70:PHE:CE1	2.55	0.42
2:J:3:HIS:NE2	2:J:180:GLU:CD	2.69	0.42
2:J:79:ARG:HG2	6:J:362:HOH:O	2.19	0.42
1:A:33:SER:HB3	1:A:62:PHE:CE2	2.55	0.42
2:G:274:TRP:HA	2:G:275:GLU:HA	1.79	0.41
1:A:2:GLN:HE21	1:A:86:THR:HG22	1.86	0.41
2:F:62:ARG:O	2:F:66:ILE:HG13	2.20	0.41
2:C:123:TYR:CZ	2:C:140:ALA:HA	2.55	0.41
1:I:30:PHE:CE2	1:I:35:ILE:HD12	2.54	0.41
2:J:82:ARG:NH1	2:J:82:ARG:HG2	2.34	0.41
1:I:54:LEU:HA	1:I:64:LEU:HD21	2.02	0.41
2:C:215:LEU:CD2	2:C:261:VAL:HG13	2.51	0.41
6:E:209:HOH:O	2:G:237:GLY:HA3	2.19	0.41
2:F:202:ARG:HG2	2:F:204:TRP:CD1	2.55	0.41
2:F:262:GLN:HG2	5:F:301:PEG:H42	2.03	0.41
2:G:5:MET:HB2	2:G:168:LEU:HD13	2.02	0.41
2:J:4:SER:HB2	2:J:6:ARG:HH12	1.86	0.41
2:J:20:PRO:HG2	2:J:75:ARG:HG2	2.01	0.41
2:J:147:TRP:HZ2	3:K:11:LEU:HD12	1.84	0.41
4:F:302:EDO:O2	2:G:262:GLN:HB3	2.21	0.41
2:J:9:TYR:CE2	2:J:70:GLN:HG2	2.55	0.41
2:F:6:ARG:HG2	2:F:6:ARG:HH11	1.86	0.41
2:C:106:ASP:OD2	2:C:108:ARG:HG3	2.21	0.41
2:C:258:THR:HG22	2:C:273:ARG:CD	2.50	0.41
1:E:7:ILE:HD13	1:E:82:VAL:CG2	2.51	0.41
1:I:45:ARG:NH1	1:I:47:GLU:OE1	2.54	0.41
2:J:202:ARG:CZ	2:J:202:ARG:HB2	2.49	0.41
2:F:239:ARG:NE	6:F:406:HOH:O	2.17	0.41
2:G:76:GLU:CG	3:H:10:THR:HG21	2.51	0.41
2:G:202:ARG:HD2	2:G:244:TRP:CD2	2.56	0.41
2:J:147:TRP:CZ2	3:K:11:LEU:HD12	2.56	0.40
2:J:201:LEU:CD1	2:J:249:VAL:HG21	2.52	0.40
2:J:260:HIS:CD2	2:J:262:GLN:HE21	2.39	0.40
2:J:6:ARG:NH1	2:J:6:ARG:CG	2.83	0.40
2:F:138:THR:CG2	2:F:139:ALA:N	2.85	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:146:LYS:HE2	3:K:10:THR:HG23	2.04	0.40
2:G:192:HIS:HB2	2:G:200:THR:OG1	2.21	0.40
1:I:37:VAL:HG21	1:I:66:TYR:CE1	2.56	0.40

All (4) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:177:ASP:CA	2:J:255:GLN:NE2[1_656]	1.54	0.66
2:C:183:ASP:OD1	2:J:273:ARG:NH1[1_656]	2.01	0.19
2:C:177:ASP:OD1	2:J:255:GLN:NE2[1_656]	2.13	0.07
2:C:183:ASP:OD1	2:J:273:ARG:NH2[1_656]	2.17	0.03

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	97/99 (98%)	96 (99%)	1 (1%)	0	100	100
1	B	97/99 (98%)	96 (99%)	1 (1%)	0	100	100
1	E	97/99 (98%)	95 (98%)	2 (2%)	0	100	100
1	I	97/99 (98%)	96 (99%)	1 (1%)	0	100	100
2	C	273/275 (99%)	264 (97%)	9 (3%)	0	100	100
2	F	274/275 (100%)	267 (97%)	7 (3%)	0	100	100
2	G	273/275 (99%)	265 (97%)	8 (3%)	0	100	100
2	J	273/275 (99%)	266 (97%)	7 (3%)	0	100	100
3	D	9/11 (82%)	9 (100%)	0	0	100	100
3	H	9/11 (82%)	9 (100%)	0	0	100	100
3	K	9/11 (82%)	9 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	Q	9/11 (82%)	9 (100%)	0	0	100	100
All	All	1517/1540 (98%)	1481 (98%)	36 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	94/94 (100%)	91 (97%)	3 (3%)	39	59
1	B	90/94 (96%)	88 (98%)	2 (2%)	52	71
1	E	94/94 (100%)	91 (97%)	3 (3%)	39	59
1	I	93/94 (99%)	90 (97%)	3 (3%)	39	59
2	C	231/233 (99%)	228 (99%)	3 (1%)	69	84
2	F	230/233 (99%)	225 (98%)	5 (2%)	52	71
2	G	232/233 (100%)	229 (99%)	3 (1%)	69	84
2	J	231/233 (99%)	226 (98%)	5 (2%)	52	71
3	D	10/10 (100%)	10 (100%)	0	100	100
3	H	10/10 (100%)	9 (90%)	1 (10%)	7	11
3	K	10/10 (100%)	10 (100%)	0	100	100
3	Q	10/10 (100%)	10 (100%)	0	100	100
All	All	1335/1348 (99%)	1307 (98%)	28 (2%)	53	72

All (28) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	ILE
1	A	58	LYS
1	A	70	PHE
2	F	82	ARG
2	F	111	ARG

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Mol	Chain	Res	Type
2	F	137	ASP
2	F	183	ASP
2	F	186	LYS
1	B	20	SER
1	B	70	PHE
2	C	14	ARG
2	C	137	ASP
2	C	260	HIS
1	E	20	SER
1	E	70	PHE
1	E	89	GLN
2	G	111	ARG
2	G	137	ASP
2	G	186	LYS
3	H	6	LYS
1	I	48	LYS
1	I	70	PHE
1	I	91	LYS
2	J	14	ARG
2	J	98	MET
2	J	108	ARG
2	J	137	ASP
2	J	223	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	2	GLN
1	A	17	ASN
2	F	115	GLN
2	F	224	GLN
2	F	255	GLN
2	C	65	GLN
2	C	87	GLN
2	C	115	GLN
2	C	255	GLN
1	E	51	HIS
2	G	115	GLN
2	G	255	GLN
1	I	51	HIS
2	J	192	HIS
2	J	262	GLN

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Mol	Chain	Res	Type
2	J	263	HIS

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](#)

7 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
4	EDO	Q	101	-	3,3,3	0.35	0	2,2,2	0.21	0
4	EDO	E	102	-	3,3,3	0.46	0	2,2,2	0.88	0
5	PEG	F	301	-	6,6,6	0.49	0	5,5,5	0.66	0
4	EDO	F	302	-	3,3,3	0.49	0	2,2,2	0.37	0
4	EDO	E	101	-	3,3,3	0.25	0	2,2,2	0.41	0
4	EDO	H	101	-	3,3,3	0.43	0	2,2,2	0.30	0
4	EDO	A	101	-	3,3,3	0.49	0	2,2,2	0.97	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	Q	101	-	-	0/1/1/1	-
4	EDO	E	102	-	-	0/1/1/1	-
5	PEG	F	301	-	-	2/4/4/4	-
4	EDO	F	302	-	-	0/1/1/1	-
4	EDO	E	101	-	-	1/1/1/1	-
4	EDO	H	101	-	-	1/1/1/1	-
4	EDO	A	101	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	E	101	EDO	O1-C1-C2-O2
5	F	301	PEG	C1-C2-O2-C3
5	F	301	PEG	C4-C3-O2-C2
4	A	101	EDO	O1-C1-C2-O2
4	H	101	EDO	O1-C1-C2-O2

There are no ring outliers.

3 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	Q	101	EDO	1	0
5	F	301	PEG	4	0
4	F	302	EDO	1	0

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 i

6.1 Protein, DNA and RNA chains i

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	A	99/99 (100%)	-0.03	0 100 100	21, 39, 61, 69	0
1	B	99/99 (100%)	-0.15	1 (1%) 82 80	24, 43, 69, 90	0
1	E	99/99 (100%)	-0.05	0 100 100	20, 36, 64, 71	0
1	I	99/99 (100%)	0.46	10 (10%) 7 6	33, 54, 88, 116	0
2	C	275/275 (100%)	0.05	6 (2%) 62 60	20, 36, 69, 94	0
2	F	275/275 (100%)	-0.08	2 (0%) 87 86	19, 28, 67, 101	0
2	G	275/275 (100%)	-0.11	3 (1%) 80 79	17, 26, 49, 92	0
2	J	275/275 (100%)	0.52	34 (12%) 4 3	22, 44, 102, 126	0
3	D	11/11 (100%)	-0.18	0 100 100	22, 24, 27, 28	0
3	H	11/11 (100%)	-0.10	0 100 100	20, 22, 24, 25	0
3	K	11/11 (100%)	-0.17	0 100 100	28, 30, 35, 36	0
3	Q	11/11 (100%)	-0.15	0 100 100	21, 25, 26, 27	0
All	All	1540/1540 (100%)	0.08	56 (3%) 42 42	17, 35, 75, 126	0

All (56) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	J	251	SER	5.3
2	J	250	PRO	5.2
2	J	197	HIS	5.0
2	J	255	GLN	5.0
2	J	248	VAL	4.6
2	J	268	LYS	4.3
2	J	181	ARG	4.2
2	J	199	ALA	4.1
2	J	204	TRP	4.1
2	F	181	ARG	3.9
2	C	273	ARG	3.8

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Mol	Chain	Res	Type	RSRZ
2	J	247	VAL	3.7
2	G	17	ARG	3.7
2	J	253	GLU	3.7
2	C	225	THR	3.5
2	J	273	ARG	3.4
2	G	225	THR	3.2
1	I	99	MET	3.2
2	J	196	ASP	3.2
2	J	223	ASP	3.2
2	J	191	HIS	3.1
1	I	1	ILE	3.1
2	J	254	GLU	3.1
2	C	223	ASP	3.1
2	J	200	THR	3.0
2	C	177	ASP	2.9
2	J	274	TRP	2.9
2	J	249	VAL	2.8
1	I	77	GLU	2.8
2	J	184	PRO	2.8
2	J	180	GLU	2.7
2	C	194	ILE	2.7
2	J	225	THR	2.6
2	J	192	HIS	2.6
1	I	15	ALA	2.5
1	I	18	GLY	2.5
2	J	260	HIS	2.4
2	J	177	ASP	2.4
2	J	206	LEU	2.3
2	J	271	THR	2.3
1	I	16	GLU	2.3
2	J	195	SER	2.2
2	G	197	HIS	2.2
1	I	20	SER	2.2
2	J	267	PRO	2.2
2	J	226	GLN	2.1
1	I	74	GLU	2.1
2	J	222	GLU	2.1
1	B	16	GLU	2.1
2	J	252	GLY	2.1
2	J	150	ALA	2.1
1	I	98	ASP	2.0
2	F	15	PRO	2.0

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Mol	Chain	Res	Type	RSRZ
1	I	97	ARG	2.0
2	J	194	ILE	2.0
2	C	255	GLN	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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(Å ²)	Q<0.9
4	EDO	E	102	4/4	0.77	0.26	33,39,43,45	0
5	PEG	F	301	7/7	0.80	0.27	26,32,38,38	0
4	EDO	F	302	4/4	0.90	0.13	31,37,41,41	0
4	EDO	Q	101	4/4	0.93	0.21	23,33,40,44	0
4	EDO	E	101	4/4	0.93	0.17	31,38,43,49	0
4	EDO	H	101	4/4	0.95	0.14	24,29,33,38	0
4	EDO	A	101	4/4	0.97	0.16	32,39,42,50	0

6.5 Other polymers [i](#)

There are no such residues in this entry.