Full wwPDB X-ray Structure Validation Report (i)

Jun 16, 2024 – 07:47 PM EDT

PDB ID	:	3HB7
Title	:	The Crystal Structure of an Isochorismatase-like Hydrolase from Alkaliphilus metalliredigens to 2.3A
Authors	:	Stein, A.J.; Xu, X.; Cui, H.; Ng, J.; Edwards, A.; Savchenko, A.; Joachimiak, A.; Midwest Center for Structural Genomics (MCSG)
Deposited on	:	2009-05-04
Resolution	:	2.30 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 (i) 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 (1)) were used in the production of this report:

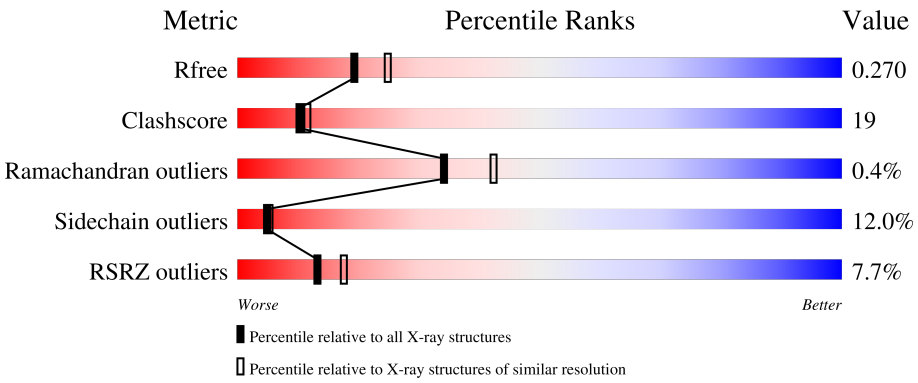
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.30 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	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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

Mol	Chain	Length	Quality of chain
1	A	204	4% 67% 22% • 8%
1	B	204	7% 66% 19% • 12%
1	C	204	5% 54% 29% • 13%
1	D	204	4% 59% 26% • 12%
1	E	204	7% 64% 24% 5% 7%

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Mol	Chain	Length	Quality of chain
1	F	204	5% 64% 24% • 10%
1	G	204	4% 60% 24% 5% 11%
1	H	204	18% 39% 34% 11% 16%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 11682 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 Isochorismatase hydrolase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	188	1478	945	254	274	2	3	0	2	0
1	C	178	1396	887	240	264	2	3	0	0	0
1	B	179	1419	908	239	267	2	3	0	1	0
1	D	179	1398	890	241	262	2	3	0	0	0
1	E	189	1474	935	253	281	2	3	0	0	0
1	F	183	1437	914	246	272	2	3	0	0	0
1	G	182	1423	907	242	269	2	3	0	0	0
1	H	171	1309	835	226	243	2	3	0	0	0

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	TYR	-	expression tag	UNP A6TWT6
A	-2	PHE	-	expression tag	UNP A6TWT6
A	-1	GLN	-	expression tag	UNP A6TWT6
A	0	GLY	-	expression tag	UNP A6TWT6
C	-3	TYR	-	expression tag	UNP A6TWT6
C	-2	PHE	-	expression tag	UNP A6TWT6
C	-1	GLN	-	expression tag	UNP A6TWT6
C	0	GLY	-	expression tag	UNP A6TWT6
B	-3	TYR	-	expression tag	UNP A6TWT6
B	-2	PHE	-	expression tag	UNP A6TWT6
B	-1	GLN	-	expression tag	UNP A6TWT6
B	0	GLY	-	expression tag	UNP A6TWT6
D	-3	TYR	-	expression tag	UNP A6TWT6

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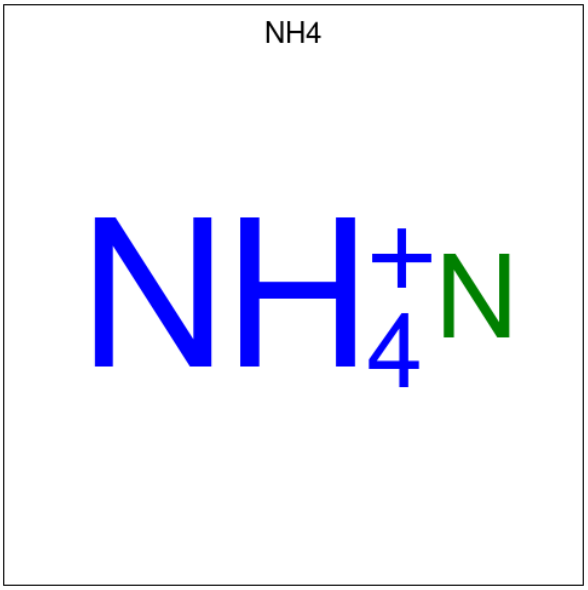
Chain	Residue	Modelled	Actual	Comment	Reference
D	-2	PHE	-	expression tag	UNP A6TWT6
D	-1	GLN	-	expression tag	UNP A6TWT6
D	0	GLY	-	expression tag	UNP A6TWT6
E	-3	TYR	-	expression tag	UNP A6TWT6
E	-2	PHE	-	expression tag	UNP A6TWT6
E	-1	GLN	-	expression tag	UNP A6TWT6
E	0	GLY	-	expression tag	UNP A6TWT6
F	-3	TYR	-	expression tag	UNP A6TWT6
F	-2	PHE	-	expression tag	UNP A6TWT6
F	-1	GLN	-	expression tag	UNP A6TWT6
F	0	GLY	-	expression tag	UNP A6TWT6
G	-3	TYR	-	expression tag	UNP A6TWT6
G	-2	PHE	-	expression tag	UNP A6TWT6
G	-1	GLN	-	expression tag	UNP A6TWT6
G	0	GLY	-	expression tag	UNP A6TWT6
H	-3	TYR	-	expression tag	UNP A6TWT6
H	-2	PHE	-	expression tag	UNP A6TWT6
H	-1	GLN	-	expression tag	UNP A6TWT6
H	0	GLY	-	expression tag	UNP A6TWT6

- Molecule 2 is AMMONIUM ION (three-letter code: NH4) (formula: H_4N).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total N 1 1	0	0
2	C	1	Total N 1 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total N 1 1	0	0
2	D	1	Total N 1 1	0	0
2	E	1	Total N 1 1	0	0
2	H	1	Total N 1 1	0	0

- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Na 1 1	0	0
3	B	1	Total Na 1 1	0	0
3	E	1	Total Na 1 1	0	0
3	F	1	Total Na 1 1	0	0
3	G	1	Total Na 1 1	0	0

- Molecule 4 is water.

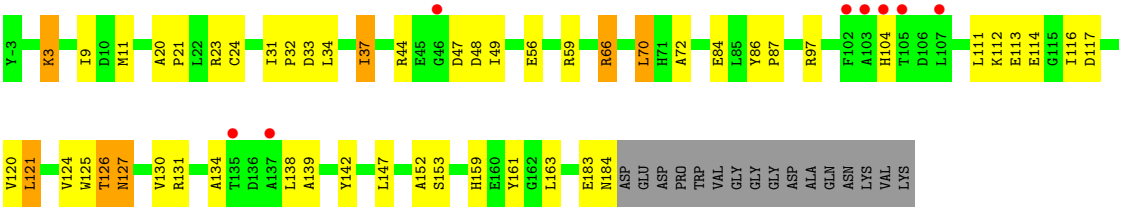
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	69	Total O 69 69	0	0
4	C	52	Total O 52 52	0	0
4	B	67	Total O 67 67	0	0
4	D	38	Total O 38 38	0	0
4	E	19	Total O 19 19	0	0
4	F	44	Total O 44 44	0	0
4	G	35	Total O 35 35	0	0
4	H	13	Total O 13 13	0	0

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 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.

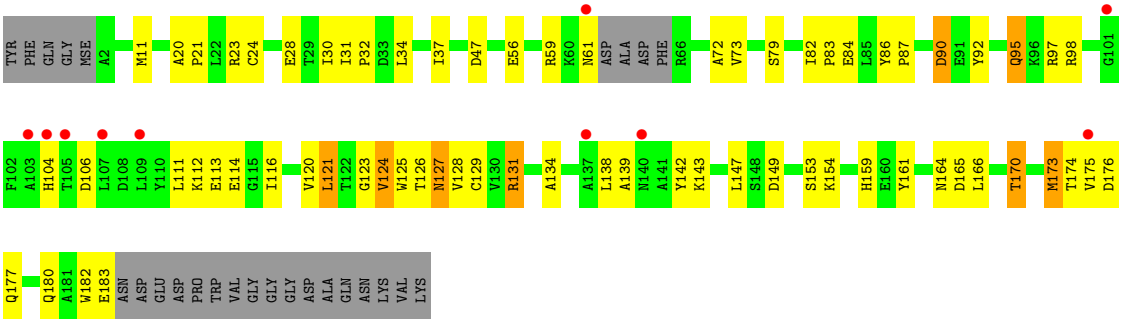
• Molecule 1: Isochorismatase hydrolase

Chain A:



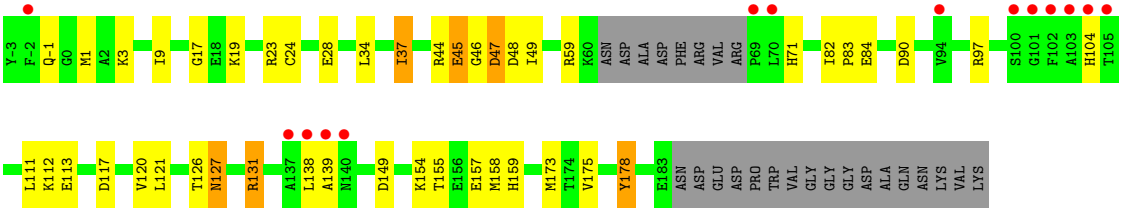
• Molecule 1: Isochorismatase hydrolase

Chain C:



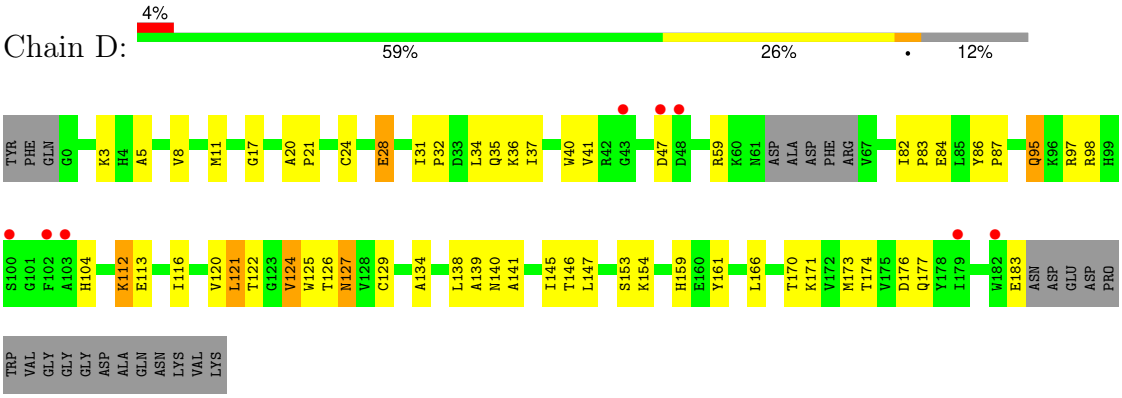
• Molecule 1: Isochorismatase hydrolase

Chain B:



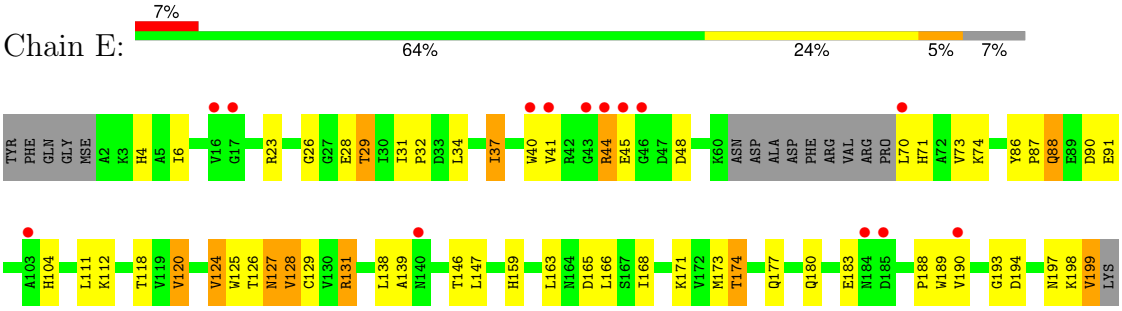
• Molecule 1: Isochorismatase hydrolase

Chain D:



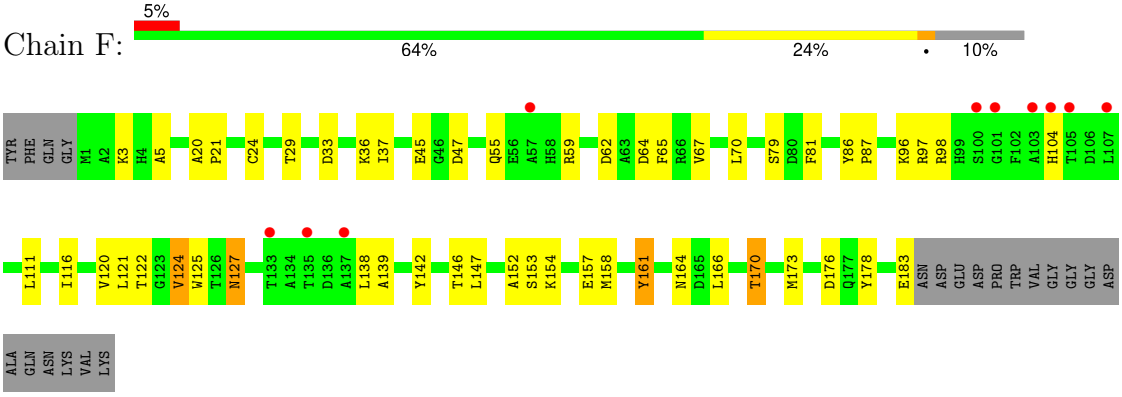
• Molecule 1: Isochorismatase hydrolase

Chain E:



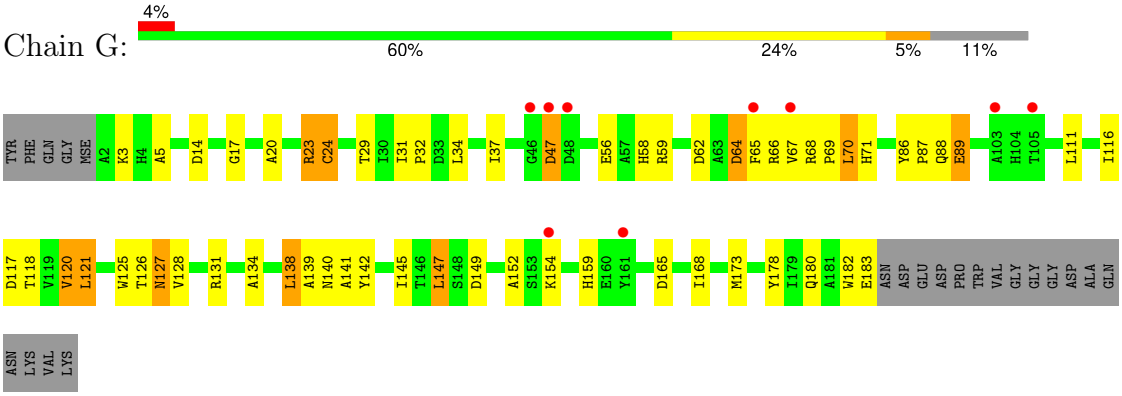
• Molecule 1: Isochorismatase hydrolase

Chain F:



• Molecule 1: Isochorismatase hydrolase

Chain G:

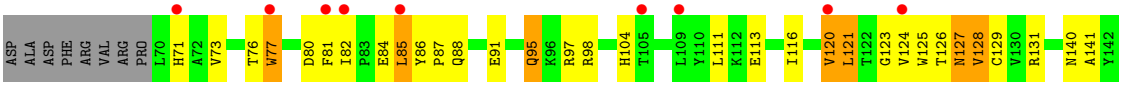


• Molecule 1: Isochorismatase hydrolase

Chain H:

18%
39%
34%
11%
16%

TYR PHE GLN GLY MSE A2 K3 H4 A5 I6 M11 L12 N13 D14 F15 V16 G17 E18 K19 A20 P21 L22 R23 C24 P25 G26 G27 E28 T29 I30 I31 P32 D33 L34 Q35 K36 I37 F38 E39 W40 V41 R42 G43 R44 GLU GLY D47 D48 I49 H50 L51 V52 H53 I54 Q55 R59 K60 ASN


ASP ALA ASP PHE ARG VAL ARG PRO L70 H71 A72 V73 T76 W77 D80 F81 I82 P83 E84 L85 Y86 P87 Q88 E91 Q95 K96 R97 R98 H104 T105 L109 Y110 L111 K112 E113 I116 V120 L121 T122 G123 V124 W125 T126 N127 V128 C129 V130 R131 N140 A141 Y142

K143 V144 I145 T146 L147 S148 D149 G150 T151 A152 S153 K154 T155 E156 E157 M158 H159 E160 Y161 G162 L163 N164 D165 L166 S167 I168 F169 T170 K171 T174 V175 D176 Q177 Y178 I179 W182 E183 ASN ASP GLU ASP PRO TRP VAL GLY GLY GLY ASP ALA GLN ASN LYS VAL LYS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	85.65Å 105.42Å 106.27Å 90.00° 103.90° 90.00°	Depositor
Resolution (Å)	46.32 – 2.30 46.33 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.5 (46.32-2.30) 99.5 (46.33-2.30)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.01 (at 2.29Å)	Xtriage
Refinement program	REFMAC refmac_5.5.0054	Depositor
R, R_{free}	0.196 , 0.238 0.230 , 0.270	Depositor DCC
R_{free} test set	4054 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	43.1	Xtriage
Anisotropy	0.033	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 43.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	11682	wwPDB-VP
Average B, all atoms (Å^2)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.41% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: NA, NH4

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	1.56	4/1515 (0.3%)	0.78	0/2057
1	B	1.58	3/1451 (0.2%)	0.81	2/1965 (0.1%)
1	C	1.45	3/1424 (0.2%)	0.73	0/1934
1	D	1.45	2/1425 (0.1%)	0.70	0/1932
1	E	1.33	0/1504	0.70	0/2042
1	F	1.49	2/1467 (0.1%)	0.72	0/1992
1	G	1.44	2/1453 (0.1%)	0.72	0/1974
1	H	1.23	1/1334 (0.1%)	0.75	0/1813
All	All	1.45	17/11573 (0.1%)	0.74	2/15709 (0.0%)

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	9[A]	ILE	N-CA	-12.13	1.22	1.46
1	B	9[B]	ILE	N-CA	-12.13	1.22	1.46
1	A	9[A]	ILE	N-CA	-10.13	1.26	1.46
1	A	9[B]	ILE	N-CA	-10.13	1.26	1.46
1	C	24	CYS	CB-SG	-7.41	1.69	1.82
1	A	24	CYS	CB-SG	-6.80	1.70	1.82
1	G	24	CYS	CB-SG	-6.17	1.71	1.82
1	F	24	CYS	CB-SG	-5.91	1.72	1.81
1	C	129	CYS	CB-SG	-5.80	1.72	1.81
1	C	142	TYR	CD1-CE1	-5.61	1.30	1.39
1	D	24	CYS	CB-SG	-5.59	1.72	1.81
1	A	142	TYR	CD1-CE1	-5.54	1.31	1.39
1	F	142	TYR	CD1-CE1	-5.53	1.31	1.39
1	H	24	CYS	CB-SG	-5.26	1.73	1.81
1	G	142	TYR	CD1-CE1	-5.24	1.31	1.39
1	D	129	CYS	CB-SG	-5.23	1.73	1.81
1	B	178	TYR	CD1-CE1	-5.17	1.31	1.39

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	9[A]	ILE	CA-C-O	5.75	132.18	120.10
1	B	9[B]	ILE	CA-C-O	5.75	132.18	120.10

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	1478	0	1424	41	0
1	B	1419	0	1377	38	0
1	C	1396	0	1341	58	0
1	D	1398	0	1352	57	0
1	E	1474	0	1409	61	0
1	F	1437	0	1385	32	1
1	G	1423	0	1367	46	0
1	H	1309	0	1242	115	1
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	H	1	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
4	A	69	0	0	0	0
4	B	67	0	0	1	0
4	C	52	0	0	3	0
4	D	38	0	0	2	0
4	E	19	0	0	0	0
4	F	44	0	0	2	0
4	G	35	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	H	13	0	0	2	0
All	All	11682	0	10897	417	1

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 19.

All (417) 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:H:13:ASN:ND2	1:H:77:TRP:CE3	1.68	1.55
1:E:174:THR:CG2	1:E:177:GLN:HG3	1.34	1.53
1:H:82:ILE:HD11	1:H:85:LEU:CD1	1.53	1.35
1:H:146:THR:OG1	1:H:170:THR:HG21	1.26	1.32
1:H:13:ASN:ND2	1:H:77:TRP:CZ3	1.95	1.31
1:H:49:ILE:HD11	1:H:182:TRP:CZ2	1.67	1.27
1:A:126:THR:HG21	1:A:159:HIS:HD2	1.05	1.14
1:E:174:THR:CG2	1:E:177:GLN:CG	2.25	1.14
1:A:126:THR:HG21	1:A:159:HIS:CD2	1.83	1.13
1:C:11:MSE:HE1	1:C:30:ILE:HD11	1.26	1.12
1:H:11:MSE:HE2	1:H:123:GLY:HA2	1.17	1.12
1:B:154:LYS:HB3	1:B:158:MSE:CE	1.78	1.12
1:B:154:LYS:HB3	1:B:158:MSE:HE1	1.19	1.11
1:E:171:LYS:NZ	1:E:190:VAL:O	1.83	1.10
1:E:193:GLY:HA3	1:F:67:VAL:CG2	1.82	1.10
1:A:112:LYS:HE2	1:D:112:LYS:HE3	1.33	1.09
1:H:146:THR:OG1	1:H:170:THR:CG2	2.01	1.09
1:B:131:ARG:NH2	1:D:127:ASN:O	1.85	1.09
1:C:23:ARG:NH1	1:C:28:GLU:OE1	1.86	1.09
1:H:13:ASN:CG	1:H:77:TRP:CZ3	2.26	1.07
1:E:174:THR:HG23	1:E:177:GLN:HG3	1.10	1.05
1:C:11:MSE:CE	1:C:123:GLY:HA2	1.87	1.04
1:C:11:MSE:HE2	1:C:123:GLY:CA	1.89	1.02
1:H:149:ASP:OD1	1:H:175:VAL:HG23	1.61	1.01
1:E:171:LYS:CG	1:E:173:MSE:CE	2.40	1.00
1:H:82:ILE:HD11	1:H:85:LEU:HD12	1.41	1.00
1:H:82:ILE:CD1	1:H:85:LEU:CD1	2.40	1.00
1:E:171:LYS:HG2	1:E:173:MSE:CE	1.91	0.99
1:G:70:LEU:CD1	1:G:70:LEU:C	2.30	0.99
1:B:127:ASN:H	1:B:127:ASN:HD22	1.05	0.99
1:E:174:THR:HG22	1:E:177:GLN:HG3	1.45	0.99
1:E:193:GLY:HA3	1:F:67:VAL:HG23	1.41	0.98

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:166:LEU:O	1:D:170:THR:HB	1.64	0.98
1:G:70:LEU:C	1:G:70:LEU:HD13	1.83	0.97
1:H:11:MSE:HE1	1:H:30:ILE:CD1	1.95	0.96
1:F:127:ASN:H	1:F:127:ASN:HD22	1.01	0.95
1:H:82:ILE:CD1	1:H:85:LEU:HD12	1.97	0.95
1:H:146:THR:HG1	1:H:170:THR:HG21	1.31	0.95
1:H:13:ASN:ND2	1:H:77:TRP:HE3	1.59	0.94
1:D:127:ASN:H	1:D:127:ASN:HD22	1.10	0.94
1:H:124:VAL:HG13	1:H:125:TRP:CD1	2.04	0.93
1:C:11:MSE:HE2	1:C:123:GLY:HA2	0.95	0.93
1:E:127:ASN:HD22	1:E:127:ASN:H	1.18	0.92
1:H:163:LEU:O	1:H:167:SER:OG	1.87	0.92
1:G:70:LEU:HD12	1:G:70:LEU:O	1.69	0.91
1:H:127:ASN:HD22	1:H:127:ASN:H	1.14	0.91
1:H:88:GLN:N	1:H:91:GLU:OE1	2.04	0.90
1:E:171:LYS:HG2	1:E:173:MSE:HE1	1.52	0.90
1:C:127:ASN:HD22	1:C:127:ASN:H	0.92	0.90
1:C:11:MSE:CE	1:C:30:ILE:HD11	2.01	0.89
1:H:88:GLN:O	1:H:91:GLU:HG3	1.72	0.89
1:H:11:MSE:HE1	1:H:30:ILE:HD11	1.53	0.88
1:E:174:THR:HG21	1:E:177:GLN:HG3	1.55	0.88
1:H:82:ILE:HD11	1:H:85:LEU:HD13	1.55	0.88
1:E:174:THR:HG23	1:E:177:GLN:CG	1.96	0.88
1:C:127:ASN:H	1:C:127:ASN:ND2	1.65	0.88
1:H:124:VAL:HG13	1:H:125:TRP:HD1	1.40	0.86
1:F:124:VAL:HG13	1:F:125:TRP:HD1	1.38	0.86
1:C:127:ASN:HD22	1:C:127:ASN:N	1.73	0.86
1:H:53:HIS:CD2	1:H:87:PRO:HB3	2.11	0.86
1:H:166:LEU:O	1:H:170:THR:HB	1.76	0.86
1:C:83:PRO:HD2	1:C:84:GLU:OE1	1.76	0.85
1:A:121:LEU:HD21	1:A:134:ALA:HB2	1.58	0.85
1:E:171:LYS:HG3	1:E:173:MSE:CE	2.06	0.85
1:H:82:ILE:CG1	1:H:85:LEU:HD12	2.07	0.85
1:G:56:GLU:OE1	1:G:58:HIS:NE2	2.10	0.84
1:H:11:MSE:CE	1:H:123:GLY:HA2	2.05	0.83
1:A:112:LYS:CE	1:D:112:LYS:HE3	2.09	0.83
1:H:124:VAL:CG1	1:H:125:TRP:HD1	1.92	0.83
1:H:82:ILE:HD11	1:H:85:LEU:HD11	1.59	0.82
1:H:13:ASN:HB3	1:H:77:TRP:CH2	2.16	0.81
1:E:23:ARG:HH12	1:E:28:GLU:CD	1.84	0.81
1:H:11:MSE:HE3	1:H:34:LEU:HD11	1.62	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:49:ILE:HD11	1:H:182:TRP:CE2	2.16	0.80
1:F:166:LEU:O	1:F:170:THR:HB	1.81	0.80
1:B:154:LYS:CB	1:B:158:MSE:HE1	2.09	0.80
1:D:127:ASN:H	1:D:127:ASN:ND2	1.80	0.80
1:A:126:THR:CG2	1:A:159:HIS:HD2	1.92	0.79
1:B:126:THR:OG1	1:B:159:HIS:HD2	1.66	0.79
1:C:112:LYS:HE3	1:B:112:LYS:HE3	1.65	0.78
1:G:70:LEU:CD1	1:G:70:LEU:O	2.30	0.78
1:F:127:ASN:H	1:F:127:ASN:ND2	1.79	0.78
1:H:40:TRP:HH2	1:H:182:TRP:CD1	2.01	0.78
1:G:127:ASN:H	1:G:127:ASN:HD22	1.31	0.77
1:A:104:HIS:HE1	1:C:139:ALA:O	1.67	0.76
1:F:33:ASP:OD2	4:F:219:HOH:O	2.03	0.76
1:H:49:ILE:CD1	1:H:182:TRP:CZ2	2.60	0.76
1:G:17:GLY:O	1:G:23:ARG:HD2	1.87	0.75
1:E:23:ARG:NH1	1:E:28:GLU:OE2	2.19	0.75
1:E:174:THR:HG22	1:E:177:GLN:CG	2.05	0.74
1:H:26:GLY:HA3	1:H:152:ALA:HB1	1.70	0.73
1:F:124:VAL:HG13	1:F:125:TRP:CD1	2.23	0.73
1:A:127:ASN:HD22	1:A:127:ASN:H	1.36	0.73
1:H:127:ASN:H	1:H:127:ASN:ND2	1.85	0.73
1:B:104:HIS:HE1	1:D:139:ALA:O	1.74	0.71
1:F:36:LYS:NZ	1:F:176:ASP:OD1	2.23	0.71
1:E:173:MSE:HE1	1:E:188:PRO:O	1.91	0.71
1:H:124:VAL:CG1	1:H:125:TRP:CD1	2.72	0.71
1:D:3:LYS:NZ	1:D:47:ASP:O	2.24	0.71
1:H:6:ILE:HG13	1:H:120:VAL:HG13	1.72	0.71
1:H:17:GLY:O	1:H:23:ARG:HD3	1.91	0.70
1:A:183:GLU:O	1:A:184:ASN:C	2.30	0.70
1:C:182:TRP:C	1:C:183:GLU:OE2	2.30	0.70
1:H:43:GLY:O	1:H:44:ARG:CB	2.38	0.70
1:H:13:ASN:HB3	1:H:77:TRP:CZ2	2.27	0.70
1:G:182:TRP:C	1:G:183:GLU:OE1	2.31	0.69
1:E:127:ASN:H	1:E:127:ASN:ND2	1.91	0.69
1:A:112:LYS:HE2	1:D:112:LYS:CE	2.16	0.69
1:G:70:LEU:HD13	1:G:71:HIS:N	2.08	0.69
1:D:126:THR:OG1	1:D:159:HIS:HD2	1.73	0.69
1:H:11:MSE:HE1	1:H:30:ILE:HD12	1.72	0.69
1:E:171:LYS:CG	1:E:173:MSE:HE2	2.24	0.68
1:H:40:TRP:CE2	1:H:179:ILE:HG23	2.29	0.68
1:F:127:ASN:HD22	1:F:127:ASN:N	1.83	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:80:ASP:OD1	1:H:81:PHE:N	2.27	0.67
1:C:166:LEU:O	1:C:170:THR:HB	1.93	0.67
1:E:174:THR:HG22	1:E:177:GLN:CD	2.13	0.67
1:D:124:VAL:HG13	1:D:125:TRP:HD1	1.60	0.67
1:H:49:ILE:HD11	1:H:182:TRP:HZ2	1.52	0.67
1:B:127:ASN:H	1:B:127:ASN:ND2	1.82	0.67
1:H:40:TRP:CH2	1:H:182:TRP:CD1	2.82	0.67
1:H:175:VAL:O	1:H:179:ILE:HG13	1.95	0.67
1:C:113:GLU:OE2	1:D:97:ARG:NH2	2.26	0.67
1:E:44:ARG:NH1	1:E:48:ASP:HB2	2.10	0.67
1:E:171:LYS:HG3	1:E:173:MSE:HE2	1.76	0.67
1:E:171:LYS:CG	1:E:173:MSE:HE3	2.24	0.66
1:H:82:ILE:HG13	1:H:85:LEU:HD12	1.75	0.66
1:A:121:LEU:CD2	1:A:134:ALA:HB2	2.23	0.66
1:H:43:GLY:O	1:H:44:ARG:HB3	1.95	0.66
1:H:127:ASN:HD22	1:H:127:ASN:N	1.91	0.66
1:D:84:GLU:H	1:D:84:GLU:CD	1.92	0.66
1:G:126:THR:OG1	1:G:159:HIS:HD2	1.78	0.66
1:D:183:GLU:N	1:D:183:GLU:OE2	2.30	0.65
1:B:154:LYS:HB3	1:B:158:MSE:HE3	1.74	0.65
1:C:97:ARG:NH2	1:D:113:GLU:OE2	2.26	0.64
1:E:171:LYS:HG3	1:E:173:MSE:HE3	1.79	0.64
1:H:11:MSE:CE	1:H:30:ILE:HD12	2.27	0.64
1:G:183:GLU:OE1	1:G:183:GLU:N	2.30	0.64
1:D:127:ASN:HD22	1:D:127:ASN:N	1.90	0.64
1:H:40:TRP:CD2	1:H:179:ILE:HG23	2.32	0.64
1:E:174:THR:HG23	1:E:177:GLN:H	1.62	0.63
1:C:86:TYR:CD1	1:C:87:PRO:HD2	2.34	0.63
1:E:124:VAL:HG13	1:E:125:TRP:HD1	1.64	0.63
1:C:84:GLU:OE1	1:C:84:GLU:N	2.29	0.63
1:D:174:THR:OG1	1:D:177:GLN:HG3	1.98	0.63
1:G:3:LYS:HE3	1:G:47:ASP:O	1.99	0.63
1:E:139:ALA:O	1:F:104:HIS:HE1	1.81	0.63
1:A:124:VAL:HG13	1:A:125:TRP:HD1	1.63	0.62
1:C:83:PRO:CD	1:C:84:GLU:OE1	2.46	0.62
1:B:17:GLY:O	1:B:23:ARG:CD	2.47	0.62
1:F:146:THR:OG1	1:F:170:THR:HG21	1.98	0.62
1:H:53:HIS:HD2	1:H:87:PRO:HB3	1.61	0.62
1:C:11:MSE:HE3	1:C:34:LEU:HD11	1.81	0.62
1:E:126:THR:OG1	1:E:159:HIS:HD2	1.83	0.62
1:H:33:ASP:OD2	1:H:33:ASP:N	2.29	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:193:GLY:HA3	1:F:67:VAL:HG22	1.81	0.62
1:B:37:ILE:HD12	1:B:175:VAL:HG13	1.82	0.61
1:G:5:ALA:HB2	1:G:116:ILE:HD13	1.82	0.61
1:A:124:VAL:HG13	1:A:125:TRP:CD1	2.35	0.61
1:E:171:LYS:HE2	1:E:173:MSE:HE2	1.83	0.61
1:C:28:GLU:HG3	4:C:272:HOH:O	2.00	0.61
1:C:90:ASP:OD2	1:C:90:ASP:N	2.29	0.61
1:E:159:HIS:CE1	1:E:163:LEU:HD11	2.35	0.61
1:D:36:LYS:NZ	1:D:176:ASP:OD1	2.33	0.60
1:A:84:GLU:OE1	1:A:84:GLU:N	2.30	0.60
1:D:59:ARG:HD2	4:D:229:HOH:O	2.01	0.60
1:D:82:ILE:HD12	1:D:84:GLU:HG2	1.82	0.60
1:H:121:LEU:CD2	1:H:144:VAL:CG1	2.79	0.60
1:H:38:PHE:CE1	1:H:85:LEU:HB3	2.37	0.60
1:A:124:VAL:CG1	1:A:125:TRP:HD1	2.15	0.60
1:E:86:TYR:CD1	1:E:87:PRO:HD2	2.37	0.59
1:G:126:THR:OG1	1:G:159:HIS:CD2	2.55	0.59
1:B:127:ASN:HD22	1:B:127:ASN:N	1.86	0.59
1:A:114:GLU:HB2	1:A:116:ILE:HD12	1.85	0.59
1:G:56:GLU:OE1	1:G:58:HIS:CD2	2.56	0.59
1:G:64:ASP:O	1:G:67:VAL:N	2.34	0.59
1:G:139:ALA:HA	1:H:98:ARG:HG3	1.84	0.59
1:H:37:ILE:HG22	1:H:38:PHE:N	2.17	0.58
1:H:40:TRP:CE2	1:H:179:ILE:CG2	2.86	0.58
1:C:23:ARG:HH12	1:C:28:GLU:CD	2.07	0.58
1:F:173:MSE:HE2	1:F:178:TYR:HA	1.86	0.58
1:H:182:TRP:HB2	1:H:183:GLU:OE2	2.04	0.58
1:A:139:ALA:HA	1:C:98:ARG:HG3	1.86	0.58
1:H:123:GLY:O	1:H:151:THR:HG22	2.04	0.58
1:D:40:TRP:CE3	1:D:41:VAL:HG23	2.38	0.58
1:H:170:THR:HG22	1:H:171:LYS:N	2.17	0.58
1:H:13:ASN:CB	1:H:77:TRP:CZ3	2.86	0.58
1:B:154:LYS:HD3	1:B:158:MSE:HE1	1.85	0.57
1:E:104:HIS:HE1	1:F:139:ALA:O	1.86	0.57
1:G:127:ASN:H	1:G:127:ASN:ND2	2.01	0.57
1:D:84:GLU:OE1	1:D:84:GLU:N	2.30	0.57
1:D:146:THR:OG1	1:D:170:THR:HG21	2.03	0.57
1:C:23:ARG:NH1	1:C:28:GLU:CD	2.58	0.57
1:C:92:TYR:CE1	1:D:59:ARG:HD3	2.39	0.57
1:B:84:GLU:OE1	1:B:84:GLU:N	2.30	0.57
1:B:155:THR:H	1:B:158:MSE:HE3	1.69	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:139:ALA:O	1:H:104:HIS:HE1	1.87	0.57
1:E:199:VAL:HB	1:F:158:MSE:HE1	1.85	0.57
1:A:139:ALA:O	1:C:104:HIS:HE1	1.88	0.57
1:E:159:HIS:NE2	1:E:163:LEU:HD11	2.20	0.56
1:H:6:ILE:HG13	1:H:120:VAL:CG1	2.35	0.56
1:H:11:MSE:CE	1:H:30:ILE:CD1	2.78	0.56
1:F:96:LYS:HD2	1:F:98:ARG:O	2.05	0.56
1:C:124:VAL:HG13	1:C:125:TRP:CD1	2.41	0.56
1:E:44:ARG:HH12	1:E:48:ASP:HB2	1.70	0.56
1:H:95:GLN:HG2	4:H:323:HOH:O	2.06	0.56
1:E:168:ILE:HG12	1:E:199:VAL:HG11	1.88	0.56
1:F:55:GLN:HB3	1:F:81:PHE:CZ	2.41	0.56
1:H:126:THR:OG1	1:H:159:HIS:HD2	1.89	0.56
1:C:124:VAL:HG13	1:C:125:TRP:HD1	1.70	0.55
1:A:97:ARG:NH2	1:B:113:GLU:OE2	2.38	0.55
1:D:84:GLU:CD	1:D:84:GLU:N	2.60	0.55
1:H:153:SER:OG	1:H:154:LYS:N	2.35	0.55
1:A:121:LEU:HD21	1:A:134:ALA:CB	2.33	0.55
1:D:5:ALA:HB2	1:D:116:ILE:HD13	1.89	0.55
1:E:174:THR:HG22	1:E:177:GLN:OE1	2.06	0.55
1:A:126:THR:HG22	1:A:152:ALA:C	2.26	0.55
1:D:170:THR:CG2	1:D:171:LYS:N	2.67	0.55
1:C:59:ARG:HD2	4:C:228:HOH:O	2.05	0.55
1:B:139:ALA:O	1:D:104:HIS:HE1	1.90	0.55
1:D:86:TYR:CD1	1:D:87:PRO:HD2	2.42	0.55
1:A:20:ALA:HB3	1:A:23:ARG:HB2	1.90	0.54
1:C:121:LEU:HD21	1:C:134:ALA:HB2	1.90	0.54
1:B:45:GLU:HG2	1:B:46:GLY:N	2.21	0.53
1:A:113:GLU:OE1	1:B:97:ARG:NH2	2.41	0.53
1:B:155:THR:HG23	1:B:158:MSE:HE2	1.89	0.53
1:C:149:ASP:OD1	1:C:175:VAL:HG23	2.08	0.53
1:E:31:ILE:N	1:E:32:PRO:CD	2.72	0.53
1:H:128:VAL:HG12	1:H:129:CYS:N	2.23	0.53
1:B:23:ARG:NH1	1:B:28:GLU:OE1	2.41	0.53
1:H:40:TRP:O	1:H:43:GLY:O	2.26	0.52
1:F:5:ALA:HB2	1:F:116:ILE:HD13	1.91	0.52
1:G:140:ASN:O	1:G:141:ALA:HB3	2.09	0.52
1:H:53:HIS:CD2	1:H:87:PRO:CB	2.90	0.52
1:C:126:THR:OG1	1:C:159:HIS:HD2	1.93	0.52
1:H:84:GLU:C	1:H:85:LEU:HG	2.29	0.52
1:A:113:GLU:CD	1:B:97:ARG:HH22	2.12	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:121:LEU:CD2	1:C:134:ALA:HB2	2.41	0.51
1:H:164:ASN:HA	1:H:167:SER:OG	2.10	0.51
1:C:56:GLU:HG2	1:C:72:ALA:HB3	1.91	0.51
1:D:171:LYS:HD3	1:D:173:MSE:CE	2.40	0.51
1:G:120:VAL:HA	1:G:145:ILE:O	2.10	0.51
1:A:127:ASN:H	1:A:127:ASN:ND2	2.07	0.51
1:C:131:ARG:NH2	1:C:165:ASP:OD2	2.44	0.51
1:F:158:MSE:HA	1:F:161:TYR:CE2	2.46	0.51
1:G:121:LEU:CD2	1:G:134:ALA:HB2	2.41	0.51
1:H:174:THR:HG23	1:H:177:GLN:H	1.75	0.51
1:A:126:THR:HA	1:A:130:VAL:HB	1.92	0.51
1:D:140:ASN:O	1:D:141:ALA:HB3	2.10	0.50
1:G:59:ARG:O	1:G:62:ASP:HB2	2.10	0.50
1:A:31:ILE:N	1:A:32:PRO:CD	2.73	0.50
1:E:127:ASN:HD22	1:E:127:ASN:N	1.96	0.50
1:G:65:PHE:CD1	1:G:70:LEU:HA	2.47	0.50
1:H:146:THR:HG21	1:H:166:LEU:HD13	1.93	0.50
1:H:175:VAL:O	1:H:179:ILE:CG1	2.60	0.50
1:A:183:GLU:O	1:A:184:ASN:O	2.30	0.50
1:E:131:ARG:NH2	1:F:127:ASN:O	2.43	0.50
1:E:194:ASP:OD2	1:E:199:VAL:HG22	2.12	0.50
1:H:31:ILE:N	1:H:32:PRO:CD	2.75	0.50
1:C:61:ASN:OD1	1:C:61:ASN:O	2.30	0.50
1:B:157:GLU:H	1:B:157:GLU:CD	2.15	0.50
1:E:34:LEU:O	1:E:37:ILE:HG22	2.12	0.50
1:B:17:GLY:O	1:B:23:ARG:HD2	2.11	0.49
1:E:171:LYS:HE2	1:E:173:MSE:CE	2.42	0.49
1:G:120:VAL:HB	1:G:145:ILE:HB	1.93	0.49
1:H:26:GLY:O	1:H:29:THR:HG23	2.12	0.49
1:H:147:LEU:HB3	1:H:150:GLY:HA3	1.93	0.49
1:C:97:ARG:HH22	1:D:113:GLU:CD	2.13	0.49
1:E:40:TRP:CE3	1:E:41:VAL:HG23	2.48	0.48
1:H:13:ASN:CB	1:H:77:TRP:CH2	2.90	0.48
1:E:131:ARG:NH2	1:E:165:ASP:OD2	2.45	0.48
1:H:40:TRP:HH2	1:H:182:TRP:NE1	2.10	0.48
1:C:31:ILE:N	1:C:32:PRO:CD	2.76	0.48
1:D:82:ILE:HD12	1:D:84:GLU:CG	2.43	0.48
1:C:113:GLU:OE1	1:D:97:ARG:NH2	2.47	0.48
1:G:152:ALA:HA	1:G:159:HIS:CD2	2.49	0.48
1:D:17:GLY:HA2	1:D:28:GLU:OE2	2.14	0.48
1:G:88:GLN:O	1:G:89:GLU:C	2.50	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:113:GLU:CD	1:D:97:ARG:NH2	2.67	0.48
1:D:28:GLU:H	1:D:28:GLU:HG2	1.50	0.48
1:F:96:LYS:HB2	4:F:328:HOH:O	2.12	0.47
1:H:121:LEU:HD22	1:H:144:VAL:CG1	2.44	0.47
1:H:73:VAL:O	1:H:76:THR:HG23	2.14	0.47
1:C:106:ASP:OD1	1:D:97:ARG:NH1	2.40	0.47
1:D:31:ILE:O	1:D:35:GLN:HG3	2.14	0.47
1:C:20:ALA:HA	1:C:21:PRO:HD3	1.77	0.47
1:H:140:ASN:O	1:H:141:ALA:HB3	2.15	0.47
1:H:86:TYR:CD1	1:H:87:PRO:HD2	2.49	0.47
1:B:173:MSE:CE	1:B:178:TYR:HA	2.45	0.47
1:D:82:ILE:CD1	1:D:84:GLU:HG2	2.44	0.47
1:D:170:THR:HG22	1:D:171:LYS:N	2.30	0.47
1:E:6:ILE:HG12	1:E:120:VAL:HG22	1.96	0.47
1:E:180:GLN:O	1:E:180:GLN:HG3	2.13	0.47
1:G:149:ASP:OD1	1:G:149:ASP:N	2.40	0.47
1:B:126:THR:OG1	1:B:159:HIS:CD2	2.58	0.46
1:H:26:GLY:CA	1:H:152:ALA:HB1	2.42	0.46
1:B:173:MSE:HE1	1:B:178:TYR:HA	1.96	0.46
1:E:194:ASP:OD2	1:E:197:ASN:HA	2.15	0.46
1:A:31:ILE:N	1:A:32:PRO:HD3	2.29	0.46
1:A:56:GLU:HG2	1:A:72:ALA:HB3	1.97	0.46
1:C:97:ARG:NH2	1:D:113:GLU:CD	2.69	0.46
1:B:3:LYS:NZ	1:B:47:ASP:O	2.48	0.46
1:E:88:GLN:O	1:E:91:GLU:HG3	2.14	0.46
1:G:173:MSE:HE2	1:G:178:TYR:HA	1.97	0.46
1:E:31:ILE:HB	1:E:32:PRO:HD3	1.96	0.46
1:G:121:LEU:HD21	1:G:134:ALA:HB2	1.98	0.46
1:A:11:MSE:HE2	1:A:34:LEU:HD12	1.96	0.46
1:C:182:TRP:O	1:C:183:GLU:OE2	2.34	0.46
1:E:146:THR:HG21	1:E:166:LEU:HD13	1.97	0.46
1:A:47:ASP:OD1	1:A:47:ASP:O	2.35	0.45
1:E:128:VAL:HG12	1:E:129:CYS:N	2.31	0.45
1:H:31:ILE:HB	1:H:32:PRO:HD3	1.98	0.45
1:D:20:ALA:HA	1:D:21:PRO:HD3	1.76	0.45
1:G:14:ASP:O	1:G:20:ALA:HB1	2.17	0.45
1:H:170:THR:CG2	1:H:171:LYS:N	2.78	0.45
4:C:202:HOH:O	1:D:104:HIS:CD2	2.69	0.45
1:D:153:SER:OG	1:D:154:LYS:N	2.50	0.45
1:B:17:GLY:O	1:B:23:ARG:HD3	2.16	0.45
1:B:155:THR:N	1:B:158:MSE:HE3	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:34:LEU:O	1:H:37:ILE:HB	2.17	0.45
1:H:20:ALA:HA	1:H:21:PRO:HD3	1.90	0.45
1:H:97:ARG:HG3	4:H:212:HOH:O	2.16	0.45
1:B:155:THR:HG23	1:B:158:MSE:CE	2.46	0.45
1:H:41:VAL:HG22	1:H:49:ILE:HG21	1.98	0.45
1:H:155:THR:OG1	1:H:157:GLU:HG2	2.16	0.44
1:A:127:ASN:ND2	1:A:153:SER:OG	2.50	0.44
1:E:163:LEU:HD23	1:E:163:LEU:HA	1.84	0.44
1:G:65:PHE:CE1	1:G:70:LEU:HA	2.52	0.44
1:A:20:ALA:HA	1:A:21:PRO:HD3	1.82	0.44
1:D:86:TYR:HA	1:D:87:PRO:HD3	1.89	0.44
1:F:153:SER:OG	1:F:154:LYS:N	2.51	0.44
1:C:95:GLN:H	1:C:95:GLN:HG2	1.56	0.44
1:C:113:GLU:CD	1:D:97:ARG:HH22	2.17	0.44
1:E:4:HIS:CD2	1:E:118:THR:HB	2.53	0.44
1:C:31:ILE:HB	1:C:32:PRO:HD3	2.00	0.44
1:C:153:SER:OG	1:C:154:LYS:N	2.50	0.44
1:C:176:ASP:O	1:C:180:GLN:HB3	2.18	0.44
1:D:40:TRP:CZ3	1:D:41:VAL:HG23	2.53	0.44
1:G:125:TRP:CH2	1:G:154:LYS:HD2	2.53	0.44
1:G:117:ASP:OD2	1:G:118:THR:OG1	2.32	0.44
1:D:8:VAL:HA	1:D:122:THR:OG1	2.18	0.43
1:D:82:ILE:HA	1:D:83:PRO:HD3	1.81	0.43
1:H:146:THR:OG1	1:H:170:THR:HG22	2.06	0.43
1:H:25:PRO:C	1:H:27:GLY:N	2.72	0.43
1:C:86:TYR:HA	1:C:87:PRO:HD3	1.81	0.43
1:G:64:ASP:C	1:G:66:ARG:N	2.72	0.43
1:D:86:TYR:CG	1:D:87:PRO:HD2	2.52	0.43
1:D:95:GLN:H	1:D:95:GLN:HG2	1.67	0.43
1:D:121:LEU:HD21	1:D:134:ALA:HB2	2.00	0.43
1:A:66:ARG:H	1:A:66:ARG:HG2	1.09	0.43
1:A:48:ASP:C	1:A:49:ILE:HG13	2.37	0.43
1:F:98:ARG:HD3	1:F:98:ARG:HA	1.85	0.43
1:E:174:THR:HG23	1:E:177:GLN:CB	2.46	0.43
1:H:163:LEU:HD23	1:H:163:LEU:HA	1.68	0.43
1:D:95:GLN:HG2	4:D:209:HOH:O	2.19	0.43
1:H:30:ILE:HG22	1:H:149:ASP:O	2.19	0.43
1:H:165:ASP:O	1:H:168:ILE:HG13	2.20	0.42
1:H:174:THR:H	1:H:177:GLN:CD	2.22	0.42
1:E:26:GLY:O	1:E:29:THR:HG23	2.18	0.42
1:G:31:ILE:HB	1:G:32:PRO:HD3	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:70:LEU:HA	1:A:70:LEU:HD12	1.71	0.42
1:A:34:LEU:O	1:A:37:ILE:HG22	2.19	0.42
1:A:86:TYR:HA	1:A:87:PRO:HD3	1.91	0.42
1:F:70:LEU:C	1:F:70:LEU:HD23	2.40	0.42
1:G:86:TYR:HA	1:G:87:PRO:HD3	1.78	0.42
1:G:127:ASN:HD22	1:G:127:ASN:N	2.08	0.42
1:C:82:ILE:HA	1:C:83:PRO:HD3	1.87	0.42
1:G:31:ILE:N	1:G:32:PRO:CD	2.82	0.42
1:G:34:LEU:O	1:G:37:ILE:HG22	2.20	0.42
1:G:138:LEU:HD23	1:G:138:LEU:HA	1.84	0.42
1:C:73:VAL:O	1:C:79:SER:HB2	2.19	0.42
1:B:59:ARG:HD2	4:B:252:HOH:O	2.19	0.42
1:E:73:VAL:HG12	1:E:74:LYS:N	2.35	0.42
1:G:165:ASP:O	1:G:168:ILE:HB	2.20	0.42
1:F:124:VAL:CG1	1:F:125:TRP:HD1	2.20	0.42
1:H:86:TYR:HA	1:H:87:PRO:HD3	1.78	0.42
1:H:125:TRP:CD1	1:H:125:TRP:N	2.88	0.42
1:H:95:GLN:HG2	1:H:95:GLN:H	1.39	0.41
1:F:20:ALA:HA	1:F:21:PRO:HD3	1.81	0.41
1:F:124:VAL:HG22	1:F:152:ALA:O	2.21	0.41
1:C:114:GLU:HB2	1:C:116:ILE:HD12	2.02	0.41
1:C:173:MSE:HE3	1:C:173:MSE:HB3	1.96	0.41
1:C:174:THR:HG23	1:C:177:GLN:OE1	2.20	0.41
1:B:-1:GLN:O	1:B:1:MSE:N	2.50	0.41
1:F:86:TYR:HA	1:F:87:PRO:HD3	1.90	0.41
1:G:59:ARG:HH11	1:G:59:ARG:HD2	1.73	0.41
1:H:147:LEU:O	1:H:150:GLY:CA	2.68	0.41
1:H:147:LEU:O	1:H:150:GLY:HA3	2.20	0.41
1:C:183:GLU:OE2	1:C:183:GLU:N	2.52	0.41
1:F:59:ARG:O	1:F:62:ASP:HB2	2.21	0.41
1:F:122:THR:HG22	1:F:147:LEU:HD12	2.03	0.41
1:G:65:PHE:O	1:G:68:ARG:O	2.38	0.41
1:G:147:LEU:HA	1:G:173:MSE:O	2.20	0.41
1:H:73:VAL:HB	1:H:76:THR:HG21	2.02	0.41
1:A:163:LEU:HD23	1:A:163:LEU:HA	1.87	0.41
1:H:41:VAL:CG2	1:H:49:ILE:HG21	2.51	0.41
1:B:82:ILE:HA	1:B:83:PRO:HD3	1.90	0.41
1:D:120:VAL:HA	1:D:145:ILE:O	2.21	0.41
1:E:126:THR:OG1	1:E:159:HIS:CD2	2.69	0.41
1:G:68:ARG:CB	1:G:69:PRO:CD	2.99	0.41
1:H:13:ASN:HB3	1:H:77:TRP:CZ3	2.49	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:28:GLU:O	1:H:31:ILE:HG13	2.21	0.41
1:H:124:VAL:HG12	1:H:125:TRP:HD1	1.79	0.41
1:H:182:TRP:CB	1:H:183:GLU:OE2	2.69	0.41
1:H:149:ASP:CG	1:H:175:VAL:HG23	2.37	0.41
1:D:11:MSE:HE2	1:D:34:LEU:HD12	2.02	0.40
1:D:31:ILE:N	1:D:32:PRO:CD	2.84	0.40
1:A:3:LYS:HE3	1:A:114:GLU:O	2.21	0.40
1:B:48:ASP:C	1:B:49:ILE:HG13	2.41	0.40
1:F:65:PHE:CE1	1:F:70:LEU:HA	2.56	0.40
1:B:149:ASP:OD1	1:B:149:ASP:N	2.50	0.40
1:H:5:ALA:HB2	1:H:116:ILE:HD12	2.02	0.40
1:H:97:ARG:O	1:H:98:ARG:HD3	2.21	0.40
1:C:11:MSE:HE3	1:C:34:LEU:CD1	2.49	0.40
1:B:34:LEU:O	1:B:37:ILE:HG22	2.22	0.40
1:E:189:TRP:O	1:E:189:TRP:CG	2.75	0.40
1:H:3:LYS:HB3	1:H:116:ILE:HA	2.04	0.40

All (1) 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)
1:F:97:ARG:NH2	1:H:113:GLU:OE1[1_655]	2.15	0.05

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	188/204 (92%)	185 (98%)	3 (2%)	0	100 100
1	B	176/204 (86%)	172 (98%)	4 (2%)	0	100 100
1	C	174/204 (85%)	170 (98%)	3 (2%)	1 (1%)	25 31
1	D	175/204 (86%)	171 (98%)	4 (2%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	185/204 (91%)	179 (97%)	5 (3%)	1 (0%)	29	35
1	F	181/204 (89%)	178 (98%)	3 (2%)	0	100	100
1	G	180/204 (88%)	176 (98%)	2 (1%)	2 (1%)	14	15
1	H	165/204 (81%)	160 (97%)	4 (2%)	1 (1%)	25	31
All	All	1424/1632 (87%)	1391 (98%)	28 (2%)	5 (0%)	34	42

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	G	89	GLU
1	E	128	VAL
1	H	128	VAL
1	C	128	VAL
1	G	128	VAL

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	153/170 (90%)	136 (89%)	17 (11%)	6	7
1	B	150/170 (88%)	135 (90%)	15 (10%)	7	9
1	C	147/170 (86%)	130 (88%)	17 (12%)	5	6
1	D	146/170 (86%)	135 (92%)	11 (8%)	13	17
1	E	154/170 (91%)	134 (87%)	20 (13%)	4	4
1	F	151/170 (89%)	133 (88%)	18 (12%)	5	5
1	G	149/170 (88%)	135 (91%)	14 (9%)	8	10
1	H	133/170 (78%)	103 (77%)	30 (23%)	1	0
All	All	1183/1360 (87%)	1041 (88%)	142 (12%)	5	5

All (142) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	LYS
1	A	33	ASP
1	A	37	ILE
1	A	44	ARG
1	A	59	ARG
1	A	66	ARG
1	A	70	LEU
1	A	111	LEU
1	A	117	ASP
1	A	120	VAL
1	A	121	LEU
1	A	126	THR
1	A	127	ASN
1	A	131	ARG
1	A	138	LEU
1	A	147	LEU
1	A	161	TYR
1	C	37	ILE
1	C	47	ASP
1	C	90	ASP
1	C	95	GLN
1	C	111	LEU
1	C	120	VAL
1	C	121	LEU
1	C	124	VAL
1	C	127	ASN
1	C	131	ARG
1	C	138	LEU
1	C	143	LYS
1	C	147	LEU
1	C	161	TYR
1	C	164	ASN
1	C	170	THR
1	C	173	MSE
1	B	19	LYS
1	B	24	CYS
1	B	37	ILE
1	B	44	ARG
1	B	45	GLU
1	B	47	ASP
1	B	71	HIS
1	B	90	ASP
1	B	111	LEU

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Mol	Chain	Res	Type
1	B	117	ASP
1	B	120	VAL
1	B	121	LEU
1	B	127	ASN
1	B	131	ARG
1	B	138	LEU
1	D	28	GLU
1	D	37	ILE
1	D	95	GLN
1	D	98	ARG
1	D	112	LYS
1	D	121	LEU
1	D	124	VAL
1	D	127	ASN
1	D	138	LEU
1	D	147	LEU
1	D	161	TYR
1	E	29	THR
1	E	37	ILE
1	E	44	ARG
1	E	45	GLU
1	E	70	LEU
1	E	71	HIS
1	E	88	GLN
1	E	90	ASP
1	E	111	LEU
1	E	112	LYS
1	E	120	VAL
1	E	124	VAL
1	E	127	ASN
1	E	131	ARG
1	E	138	LEU
1	E	147	LEU
1	E	174	THR
1	E	183	GLU
1	E	198	LYS
1	E	199	VAL
1	F	3	LYS
1	F	29	THR
1	F	37	ILE
1	F	45	GLU
1	F	47	ASP

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Mol	Chain	Res	Type
1	F	64	ASP
1	F	79	SER
1	F	111	LEU
1	F	120	VAL
1	F	121	LEU
1	F	124	VAL
1	F	127	ASN
1	F	138	LEU
1	F	157	GLU
1	F	161	TYR
1	F	164	ASN
1	F	170	THR
1	F	183	GLU
1	G	23	ARG
1	G	24	CYS
1	G	29	THR
1	G	47	ASP
1	G	64	ASP
1	G	70	LEU
1	G	111	LEU
1	G	120	VAL
1	G	121	LEU
1	G	127	ASN
1	G	131	ARG
1	G	138	LEU
1	G	147	LEU
1	G	180	GLN
1	H	3	LYS
1	H	6	ILE
1	H	12	LEU
1	H	28	GLU
1	H	29	THR
1	H	33	ASP
1	H	36	LYS
1	H	37	ILE
1	H	44	ARG
1	H	49	ILE
1	H	51	LEU
1	H	55	GLN
1	H	59	ARG
1	H	71	HIS
1	H	77	TRP

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Mol	Chain	Res	Type
1	H	85	LEU
1	H	95	GLN
1	H	111	LEU
1	H	120	VAL
1	H	121	LEU
1	H	127	ASN
1	H	131	ARG
1	H	143	LYS
1	H	146	THR
1	H	151	THR
1	H	157	GLU
1	H	167	SER
1	H	174	THR
1	H	177	GLN
1	H	179	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	61	ASN
1	A	104	HIS
1	A	127	ASN
1	A	159	HIS
1	C	61	ASN
1	C	104	HIS
1	C	127	ASN
1	C	159	HIS
1	B	55	GLN
1	B	104	HIS
1	B	127	ASN
1	B	159	HIS
1	D	55	GLN
1	D	104	HIS
1	D	127	ASN
1	D	159	HIS
1	E	104	HIS
1	E	127	ASN
1	E	159	HIS
1	E	196	GLN
1	E	197	ASN
1	F	58	HIS
1	F	71	HIS

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Mol	Chain	Res	Type
1	F	104	HIS
1	F	127	ASN
1	G	55	GLN
1	G	127	ASN
1	G	159	HIS
1	H	53	HIS
1	H	55	GLN
1	H	104	HIS
1	H	127	ASN
1	H	159	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)

Of 11 ligands modelled in this entry, 6 are modelled with single atom and 5 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 (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	184/204 (90%)	0.22	8 (4%)	35	42	13, 21, 30, 56	0
1	B	175/204 (85%)	0.45	14 (8%)	12	16	8, 23, 32, 64	0
1	C	175/204 (85%)	0.29	10 (5%)	23	30	14, 24, 30, 36	0
1	D	175/204 (85%)	0.45	8 (4%)	32	39	15, 24, 31, 55	0
1	E	186/204 (91%)	0.56	14 (7%)	14	19	19, 28, 49, 66	0
1	F	179/204 (87%)	0.29	10 (5%)	24	30	14, 23, 29, 38	0
1	G	179/204 (87%)	0.24	9 (5%)	28	35	11, 24, 39, 62	0
1	H	168/204 (82%)	1.09	37 (22%)	0	1	17, 30, 38, 40	0
All	All	1421/1632 (87%)	0.44	110 (7%)	13	17	8, 24, 36, 66	0

All (110) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	182	TRP	5.2
1	H	77	TRP	4.4
1	H	22	LEU	4.3
1	H	16	VAL	4.3
1	H	17	GLY	4.3
1	H	19	LYS	4.2
1	H	161	TYR	4.2
1	E	45	GLU	3.9
1	H	85	LEU	3.9
1	D	182	TRP	3.8
1	E	70	LEU	3.6
1	H	15	PHE	3.5
1	H	150	GLY	3.5
1	H	124	VAL	3.4
1	E	46	GLY	3.4
1	F	104	HIS	3.4

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Mol	Chain	Res	Type	RSRZ
1	H	40	TRP	3.3
1	H	41	VAL	3.3
1	H	27	GLY	3.2
1	F	103	ALA	3.1
1	F	100	SER	3.1
1	H	49	ILE	3.0
1	B	100	SER	3.0
1	G	154	LYS	3.0
1	H	2	ALA	3.0
1	H	71	HIS	2.9
1	B	70	LEU	2.9
1	G	65	PHE	2.8
1	C	103	ALA	2.8
1	B	103	ALA	2.8
1	C	105	THR	2.8
1	E	40	TRP	2.8
1	E	103	ALA	2.8
1	A	46	GLY	2.8
1	H	48	ASP	2.8
1	H	81	PHE	2.8
1	B	102	PHE	2.7
1	B	139	ALA	2.7
1	H	149	ASP	2.7
1	H	18	GLU	2.7
1	H	24	CYS	2.7
1	B	101	GLY	2.7
1	G	46	GLY	2.6
1	G	67	VAL	2.6
1	E	41	VAL	2.6
1	B	69	PRO	2.6
1	F	105	THR	2.5
1	B	137	ALA	2.5
1	H	20	ALA	2.5
1	C	104	HIS	2.5
1	H	23	ARG	2.5
1	C	107	LEU	2.5
1	E	190	VAL	2.4
1	G	103	ALA	2.4
1	H	38	PHE	2.4
1	H	152	ALA	2.4
1	D	43	GLY	2.4
1	B	104	HIS	2.4

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Mol	Chain	Res	Type	RSRZ
1	D	100	SER	2.4
1	A	137	ALA	2.4
1	E	185	ASP	2.4
1	H	120	VAL	2.4
1	F	107	LEU	2.4
1	D	48	ASP	2.3
1	G	161	TYR	2.3
1	A	103	ALA	2.3
1	B	138	LEU	2.3
1	A	105	THR	2.3
1	C	61	ASN	2.3
1	A	104	HIS	2.3
1	A	107	LEU	2.3
1	H	105	THR	2.3
1	D	102	PHE	2.3
1	H	179	ILE	2.3
1	H	25	PRO	2.3
1	F	133	THR	2.3
1	H	151	THR	2.3
1	C	175	VAL	2.3
1	G	105	THR	2.3
1	C	101	GLY	2.3
1	E	43	GLY	2.3
1	A	102	PHE	2.3
1	D	103	ALA	2.3
1	A	135[A]	THR	2.2
1	B	105	THR	2.2
1	B	94	VAL	2.2
1	E	16	VAL	2.2
1	E	44	ARG	2.2
1	F	101	GLY	2.2
1	G	47	ASP	2.2
1	G	48	ASP	2.2
1	H	176	ASP	2.2
1	F	57	ALA	2.1
1	H	12	LEU	2.1
1	F	135	THR	2.1
1	B	140	ASN	2.1
1	H	82	ILE	2.1
1	F	137	ALA	2.1
1	E	184	ASN	2.1
1	H	109	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	47	ASP	2.0
1	H	47	ASP	2.0
1	B	-2	PHE	2.0
1	D	179	ILE	2.0
1	C	140	ASN	2.0
1	E	140	ASN	2.0
1	H	183	GLU	2.0
1	C	137	ALA	2.0
1	C	109	LEU	2.0
1	E	17	GLY	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
2	NH4	B	201	1/1	0.82	0.72	26,26,26,26	0
2	NH4	H	201	1/1	0.83	0.45	27,27,27,27	0
2	NH4	E	201	1/1	0.86	0.53	30,30,30,30	0
2	NH4	C	201	1/1	0.86	0.74	28,28,28,28	0
3	NA	G	201	1/1	0.88	0.44	49,49,49,49	0
2	NH4	D	201	1/1	0.96	0.88	25,25,25,25	0
3	NA	E	202	1/1	0.96	0.60	41,41,41,41	0
3	NA	F	201	1/1	0.96	0.35	29,29,29,29	0
2	NH4	A	201	1/1	0.96	0.50	20,20,20,20	0
3	NA	B	202	1/1	0.98	0.52	31,31,31,31	0
3	NA	A	202	1/1	0.98	0.41	27,27,27,27	0

6.5 Other polymers (i)

There are no such residues in this entry.