Full wwPDB X-ray Structure Validation Report (i)

Sep 3, 2023 – 04:30 AM EDT

PDB ID	:	3RGD
Title	:	Iron loaded frog M ferritin. Short soaking time
Authors	:	Bertini, I.; Lalli, D.; Mangani, S.; Pozzi, C.; Rosa, C.; Theil, E.C.; Turano, P.
Deposited on	:	2011-04-08
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 (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:

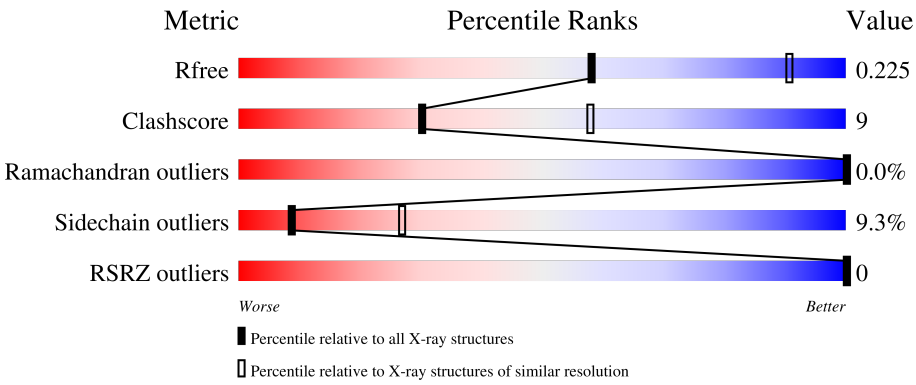
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

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 2.89 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)
RSRZ outliers	127900	1906 (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 <=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	176	75% 20% • •
1	B	176	74% 20% • • •
1	C	176	70% 25% • •
1	D	176	70% 24% • •
1	E	176	73% 21% • •

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Mol	Chain	Length	Quality of chain
1	F	176	77% 18%
1	G	176	77% 17%
1	H	176	76% 16% 5%
1	I	176	69% 23% 5%
1	J	176	71% 23%
1	K	176	68% 24% 6%
1	L	176	70% 25%
1	M	176	76% 20%
1	N	176	73% 21%
1	O	176	75% 19%
1	P	176	71% 24%
1	Q	176	66% 26% 6%
1	R	176	74% 21%
1	S	176	73% 21%
1	T	176	74% 20%
1	U	176	78% 17%
1	V	176	72% 24%
1	W	176	75% 20%
1	X	176	77% 18%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 34941 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 Ferritin, middle subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	B	173	1427	897	248	275	7	0	0	0
			Total	C	N	O	S			
1	C	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	D	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	E	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	F	171	1409	886	245	271	7	0	0	0
			Total	C	N	O	S			
1	G	171	1409	886	245	271	7	0	0	0
			Total	C	N	O	S			
1	H	171	1409	886	245	271	7	0	0	0
			Total	C	N	O	S			
1	I	171	1409	886	245	271	7	0	0	0
			Total	C	N	O	S			
1	J	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	K	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	L	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	M	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	N	171	1409	886	245	271	7	0	0	0
			Total	C	N	O	S			
1	O	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	P	172	1418	892	247	272	7	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	Q	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	R	171	1409	886	245	271	7	0	0	0
			Total	C	N	O	S			
1	S	171	1409	886	245	271	7	0	0	0
			Total	C	N	O	S			
1	T	171	1409	886	245	271	7	0	0	0
			Total	C	N	O	S			
1	U	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	V	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	W	172	1418	892	247	272	7	0	0	0
			Total	C	N	O	S			
1	X	171	1409	886	245	271	7	0	0	0

- Molecule 2 is FE (III) ION (three-letter code: FE) (formula: Fe).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Fe		
2	A	2	2	2	0	0
			Total	Fe		
2	B	3	3	3	0	0
			Total	Fe		
2	C	4	4	4	0	0
			Total	Fe		
2	D	4	4	4	0	0
			Total	Fe		
2	E	3	3	3	0	0
			Total	Fe		
2	F	3	3	3	0	0
			Total	Fe		
2	G	2	2	2	0	0
			Total	Fe		
2	H	3	3	3	0	0
			Total	Fe		
2	I	3	3	3	0	0
			Total	Fe		
2	J	3	3	3	0	0
			Total	Fe		
2	K	3	3	3	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Fe		
2	L	2	2	2	0	0
2	M	2	2	2	0	0
2	N	3	3	3	0	0
2	O	3	3	3	0	0
2	P	2	2	2	0	0
2	Q	2	2	2	0	0
2	R	2	2	2	0	0
2	S	2	2	2	0	0
2	T	3	3	3	0	0
2	U	2	2	2	0	0
2	V	2	2	2	0	0
2	W	2	2	2	0	0
2	X	2	2	2	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	A	36	36	36	0	0
3	B	50	50	50	0	0
3	C	32	32	32	0	0
3	D	54	54	54	0	0
3	E	46	46	46	0	0
3	F	32	32	32	0	0

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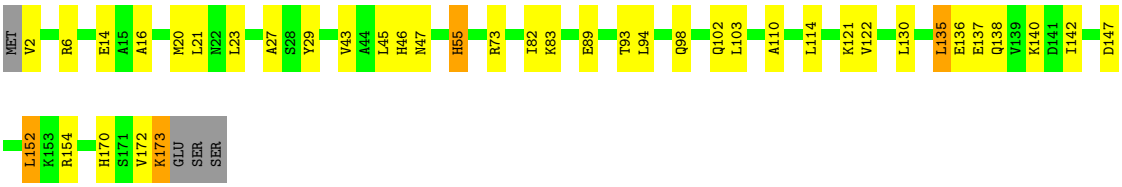
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	G	29	Total O 29 29	0	0
3	H	43	Total O 43 43	0	0
3	I	46	Total O 46 46	0	0
3	J	36	Total O 36 36	0	0
3	K	45	Total O 45 45	0	0
3	L	49	Total O 49 49	0	0
3	M	30	Total O 30 30	0	0
3	N	22	Total O 22 22	0	0
3	O	34	Total O 34 34	0	0
3	P	48	Total O 48 48	0	0
3	Q	24	Total O 24 24	0	0
3	R	36	Total O 36 36	0	0
3	S	30	Total O 30 30	0	0
3	T	35	Total O 35 35	0	0
3	U	32	Total O 32 32	0	0
3	V	43	Total O 43 43	0	0
3	W	48	Total O 48 48	0	0
3	X	39	Total O 39 39	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.

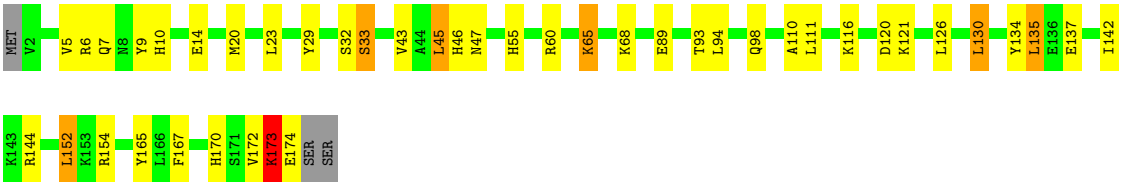
• Molecule 1: Ferritin, middle subunit

Chain A:



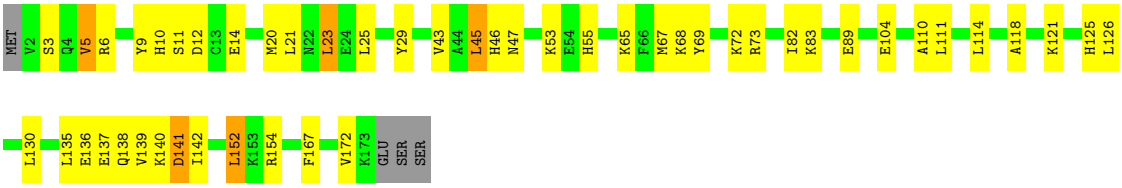
• Molecule 1: Ferritin, middle subunit

Chain B:



• Molecule 1: Ferritin, middle subunit

Chain C:

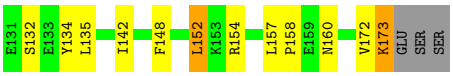


• Molecule 1: Ferritin, middle subunit

Chain D:

• Molecule 1: Ferritin, middle subunit

Chain E:

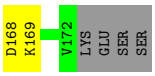


• Molecule 1: Ferritin, middle subunit

Chain F:

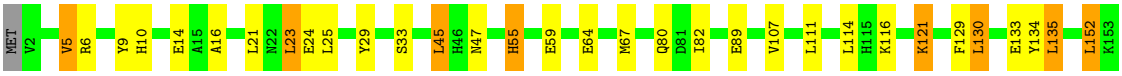
• Molecule 1: Ferritin, middle subunit

Chain G:



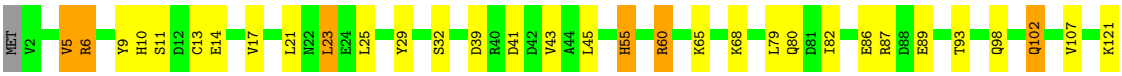
• Molecule 1: Ferritin, middle subunit

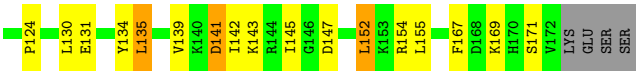
Chain H:



• Molecule 1: Ferritin, middle subunit

Chain I:



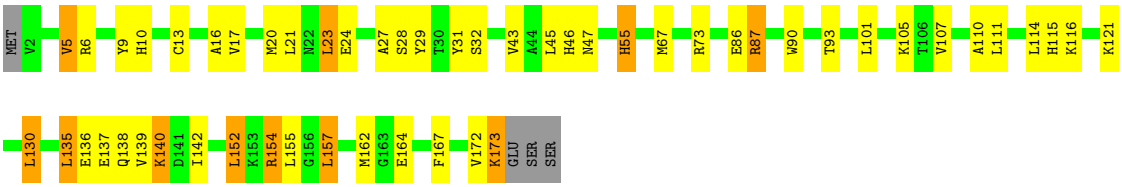


• Molecule 1: Ferritin, middle subunit

Chain J:

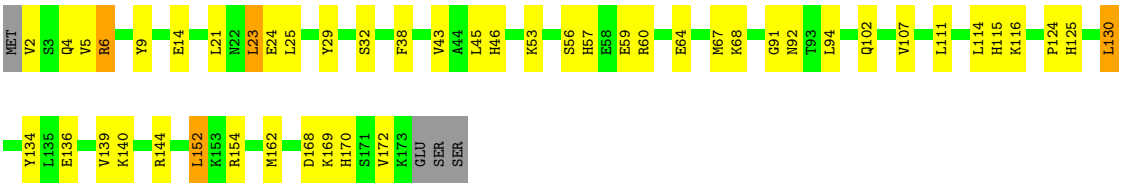
• Molecule 1: Ferritin, middle subunit

Chain K:



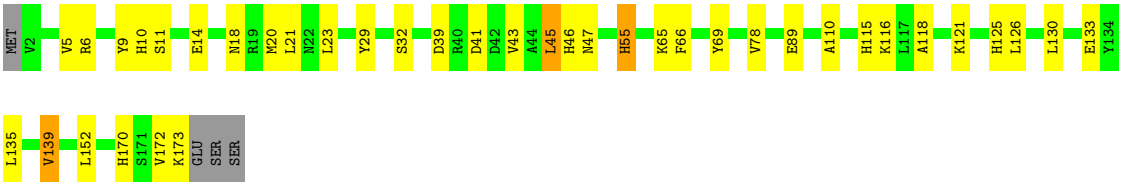
• Molecule 1: Ferritin, middle subunit

Chain L:



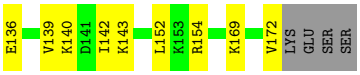
• Molecule 1: Ferritin, middle subunit

Chain M:



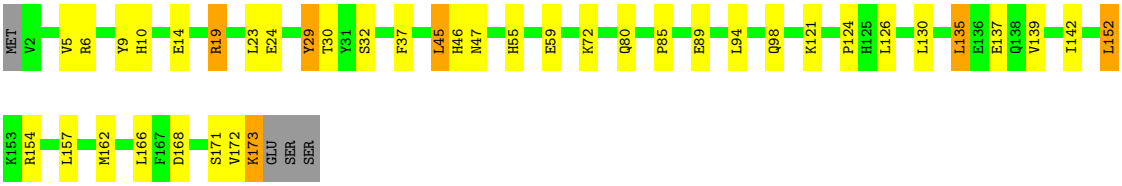
• Molecule 1: Ferritin, middle subunit

Chain N:



• Molecule 1: Ferritin, middle subunit

Chain O:

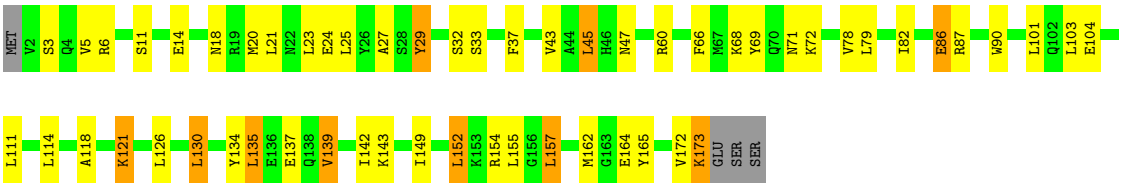


• Molecule 1: Ferritin, middle subunit

Chain P:

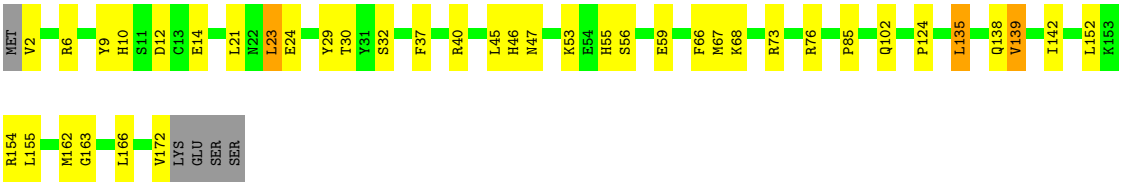
• Molecule 1: Ferritin, middle subunit

Chain Q:



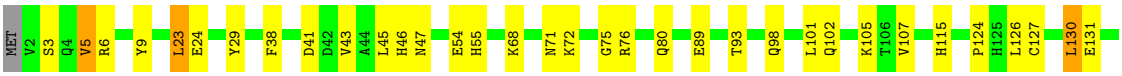
• Molecule 1: Ferritin, middle subunit

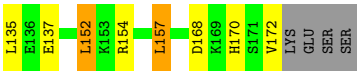
Chain R:



• Molecule 1: Ferritin, middle subunit

Chain S:





• Molecule 1: Ferritin, middle subunit

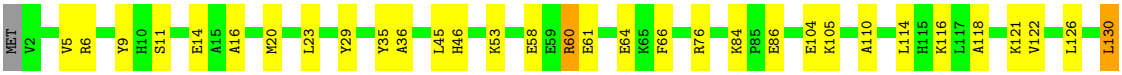
Chain T:

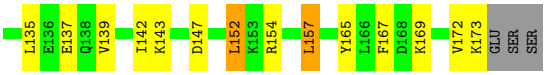
• Molecule 1: Ferritin, middle subunit

Chain U:

• Molecule 1: Ferritin, middle subunit

Chain V:



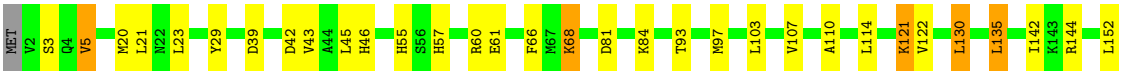


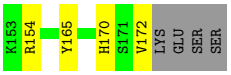
• Molecule 1: Ferritin, middle subunit

Chain W:

• Molecule 1: Ferritin, middle subunit

Chain X:




K153
R154
Y165
H170
S171
V172
LYS
GLU
SER
SER

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α, β, γ	210.74Å 210.74Å 322.04Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	48.54 – 2.89 48.54 – 2.89	Depositor EDS
% Data completeness (in resolution range)	99.7 (48.54-2.89) 99.7 (48.54-2.89)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.13	Depositor
$< I/\sigma(I) >$ [1]	4.45 (at 2.91Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.6.4_486)	Depositor
R, R_{free}	0.172 , 0.229 0.169 , 0.225	Depositor DCC
R_{free} test set	9240 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	33.2	Xtriage
Anisotropy	0.104	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 36.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.43$, $< L^2 > = 0.25$	Xtriage
Estimated twinning fraction	0.046 for -h,-k,l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	34941	wwPDB-VP
Average B, all atoms (Å^2)	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.30% 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: FE

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	0.44	0/1446	0.57	0/1944
1	B	0.46	0/1455	0.56	0/1956
1	C	0.42	0/1446	0.56	0/1944
1	D	0.46	0/1446	0.57	0/1944
1	E	0.51	0/1446	0.57	0/1944
1	F	0.44	0/1437	0.54	0/1933
1	G	0.45	0/1437	0.58	0/1933
1	H	0.47	0/1437	0.55	0/1933
1	I	0.45	0/1437	0.60	0/1933
1	J	0.42	0/1446	0.54	0/1944
1	K	0.44	0/1446	0.56	0/1944
1	L	0.54	0/1446	0.60	0/1944
1	M	0.41	0/1446	0.52	0/1944
1	N	0.44	0/1437	0.53	0/1933
1	O	0.46	0/1446	0.59	0/1944
1	P	0.46	0/1446	0.55	0/1944
1	Q	0.44	0/1446	0.53	0/1944
1	R	0.43	0/1437	0.54	0/1933
1	S	0.42	0/1437	0.55	0/1933
1	T	0.46	0/1437	0.55	0/1933
1	U	0.46	0/1446	0.55	0/1944
1	V	0.47	0/1446	0.59	0/1944
1	W	0.45	0/1446	0.57	0/1944
1	X	0.60	0/1437	0.58	0/1933
All	All	0.46	0/34632	0.56	0/46569

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	1418	0	1370	28	0
1	B	1427	0	1376	28	0
1	C	1418	0	1370	31	0
1	D	1418	0	1370	36	0
1	E	1418	0	1370	29	0
1	F	1409	0	1357	25	0
1	G	1409	0	1357	20	0
1	H	1409	0	1357	30	0
1	I	1409	0	1357	31	0
1	J	1418	0	1370	41	0
1	K	1418	0	1370	39	0
1	L	1418	0	1370	30	0
1	M	1418	0	1370	30	0
1	N	1409	0	1357	34	0
1	O	1418	0	1370	24	0
1	P	1418	0	1370	31	0
1	Q	1418	0	1370	45	0
1	R	1409	0	1357	24	0
1	S	1409	0	1357	27	0
1	T	1409	0	1357	29	0
1	U	1418	0	1370	24	0
1	V	1418	0	1370	35	0
1	W	1418	0	1370	30	0
1	X	1409	0	1357	37	0
2	A	2	0	0	0	0
2	B	3	0	0	0	0
2	C	4	0	0	0	0
2	D	4	0	0	0	0
2	E	3	0	0	0	0
2	F	3	0	0	0	0
2	G	2	0	0	0	0
2	H	3	0	0	0	0
2	I	3	0	0	0	0
2	J	3	0	0	0	0
2	K	3	0	0	0	0
2	L	2	0	0	0	0
2	M	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	N	3	0	0	0	0
2	O	3	0	0	0	0
2	P	2	0	0	0	0
2	Q	2	0	0	0	0
2	R	2	0	0	0	0
2	S	2	0	0	0	0
2	T	3	0	0	0	0
2	U	2	0	0	0	0
2	V	2	0	0	0	0
2	W	2	0	0	0	0
2	X	2	0	0	0	0
3	A	36	0	0	4	0
3	B	50	0	0	3	0
3	C	32	0	0	1	0
3	D	54	0	0	5	0
3	E	46	0	0	3	0
3	F	32	0	0	1	0
3	G	29	0	0	1	0
3	H	43	0	0	1	0
3	I	46	0	0	1	0
3	J	36	0	0	6	0
3	K	45	0	0	2	0
3	L	49	0	0	2	0
3	M	30	0	0	3	0
3	N	22	0	0	2	0
3	O	34	0	0	2	0
3	P	48	0	0	1	0
3	Q	24	0	0	1	0
3	R	36	0	0	2	0
3	S	30	0	0	4	0
3	T	35	0	0	3	0
3	U	32	0	0	1	0
3	V	43	0	0	1	0
3	W	48	0	0	4	0
3	X	39	0	0	5	0
All	All	34941	0	32769	624	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 9.

All (624) 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:A:142:ILE:HG22	1:X:5:VAL:HG22	1.44	1.00
1:B:5:VAL:HG22	1:V:142:ILE:HG22	1.39	0.99
1:C:142:ILE:HG22	1:S:5:VAL:HG22	1.40	0.99
1:F:144:ARG:HG2	1:F:144:ARG:HH21	1.25	0.97
1:E:142:ILE:HG22	1:V:5:VAL:HG22	1.47	0.95
1:Q:154:ARG:NH2	1:X:43:VAL:O	2.01	0.93
1:J:5:VAL:HG22	1:Q:142:ILE:HG22	1.53	0.90
1:H:5:VAL:HG22	1:X:142:ILE:HG22	1.56	0.88
1:N:142:ILE:HG22	1:Q:5:VAL:HG22	1.55	0.87
1:N:6:ARG:NH1	1:N:9:TYR:O	2.07	0.87
1:M:5:VAL:HG22	1:T:142:ILE:HG22	1.58	0.85
1:L:57:HIS:CD2	1:L:60:ARG:HH12	1.96	0.84
1:G:152:LEU:HD12	1:G:157:LEU:HD13	1.61	0.83
1:L:6:ARG:NH1	1:L:9:TYR:O	2.13	0.82
1:G:46:HIS:HB3	3:G:184:HOH:O	1.80	0.81
1:X:57:HIS:HD2	1:X:60:ARG:HH12	1.29	0.80
1:O:94:LEU:O	1:O:98:GLN:HG3	1.79	0.80
1:D:154:ARG:NH2	1:K:43:VAL:O	2.16	0.79
1:S:46:HIS:HB3	3:S:179:HOH:O	1.81	0.79
1:L:21:LEU:HD11	1:L:67:MET:CG	2.13	0.79
3:B:192:HOH:O	1:F:84:LYS:HE2	1.82	0.79
1:N:114:LEU:HG	1:N:130:LEU:HD21	1.65	0.79
1:C:5:VAL:HG22	1:R:142:ILE:HG22	1.65	0.79
1:D:157:LEU:HD21	1:D:164:GLU:HG3	1.64	0.79
1:B:142:ILE:HG22	1:E:5:VAL:HG22	1.63	0.78
1:H:10:HIS:CD2	1:H:121:LYS:HE2	2.18	0.78
1:E:172:VAL:O	1:E:173:LYS:HB3	1.81	0.78
1:C:118:ALA:HB2	1:C:126:LEU:HD23	1.66	0.77
1:A:43:VAL:O	1:O:154:ARG:NH2	2.15	0.77
1:F:142:ILE:HG22	1:O:5:VAL:HG22	1.66	0.77
1:J:60:ARG:HD2	1:X:60:ARG:CZ	2.15	0.77
1:I:6:ARG:NH1	1:I:9:TYR:O	2.19	0.76
1:T:6:ARG:NH1	1:T:9:TYR:O	2.19	0.75
1:K:5:VAL:HG22	1:P:142:ILE:HG22	1.68	0.75
1:L:67:MET:HE3	1:V:36:ALA:HB2	1.67	0.75
1:E:25:LEU:HD13	1:E:82:ILE:HD11	1.69	0.74
1:V:60:ARG:HG3	1:V:60:ARG:HH11	1.50	0.74
1:R:37:PHE:O	1:R:40:ARG:HG3	1.87	0.74
1:J:115:HIS:CE1	1:N:124:PRO:HB3	2.23	0.74
1:B:94:LEU:O	1:B:98:GLN:HG3	1.89	0.73
1:N:169:LYS:HD2	1:S:170:HIS:HB3	1.71	0.73
1:L:154:ARG:NH2	1:P:43:VAL:O	2.18	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:57:HIS:CD2	1:T:60:ARG:HH22	2.06	0.72
1:X:121:LYS:HE2	3:X:858:HOH:O	1.89	0.72
1:A:170:HIS:HB3	1:J:169:LYS:HD2	1.70	0.72
1:T:46:HIS:HB3	3:T:187:HOH:O	1.88	0.71
1:W:46:HIS:HB3	3:W:186:HOH:O	1.89	0.71
1:L:21:LEU:HD11	1:L:67:MET:HG2	1.72	0.71
1:D:5:VAL:HG22	1:I:142:ILE:HG22	1.73	0.71
1:M:170:HIS:HB3	1:V:169:LYS:HE2	1.73	0.71
1:N:6:ARG:NH2	1:N:14:GLU:OE1	2.24	0.71
1:W:57:HIS:CD2	1:W:60:ARG:HH12	2.09	0.71
1:F:6:ARG:NH2	1:F:14:GLU:OE1	2.25	0.70
1:H:6:ARG:NH1	1:H:9:TYR:O	2.24	0.70
1:S:38:PHE:HA	1:S:43:VAL:HG11	1.73	0.70
1:N:46:HIS:HB3	3:N:584:HOH:O	1.90	0.70
1:B:93:THR:HG22	1:B:152:LEU:HD21	1.73	0.70
1:D:20:MET:HE1	1:D:110:ALA:HB1	1.74	0.70
1:R:124:PRO:HB3	1:S:115:HIS:CE1	2.27	0.70
1:V:152:LEU:HD12	1:V:157:LEU:HD13	1.72	0.69
1:O:126:LEU:O	1:O:130:LEU:HD23	1.92	0.69
1:O:173:LYS:O	1:O:173:LYS:HG3	1.91	0.69
1:T:114:LEU:HG	1:T:130:LEU:HD21	1.74	0.69
1:R:6:ARG:NH2	1:R:14:GLU:OE1	2.22	0.68
1:B:6:ARG:NH1	1:B:9:TYR:O	2.27	0.68
1:O:152:LEU:HD12	1:O:157:LEU:HD13	1.74	0.68
1:F:144:ARG:HH21	1:F:144:ARG:CG	2.04	0.68
1:O:6:ARG:NH1	1:O:9:TYR:O	2.27	0.68
1:V:46:HIS:HB3	3:V:178:HOH:O	1.93	0.68
1:P:59:GLU:HA	1:P:59:GLU:OE1	1.94	0.68
1:H:23:LEU:HD13	1:H:107:VAL:HG22	1.76	0.68
1:D:43:VAL:O	1:X:154:ARG:NH2	2.27	0.67
1:O:19:ARG:HH11	1:O:19:ARG:HG2	1.59	0.67
1:L:6:ARG:NH2	1:L:14:GLU:OE1	2.27	0.67
1:E:152:LEU:HD12	1:E:157:LEU:HD13	1.76	0.67
1:J:166:LEU:HD13	1:R:166:LEU:HD21	1.76	0.67
1:A:154:ARG:NH2	1:J:43:VAL:O	2.28	0.67
1:X:114:LEU:HG	1:X:130:LEU:HD21	1.76	0.67
1:P:6:ARG:NH2	1:P:14:GLU:OE1	2.27	0.67
1:V:35:TYR:CZ	1:V:53:LYS:HE3	2.31	0.66
1:J:71:ASN:HD22	1:X:39:ASP:HB3	1.59	0.66
1:X:57:HIS:CD2	1:X:60:ARG:HH12	2.14	0.66
1:F:43:VAL:O	1:V:154:ARG:NH2	2.28	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:47:ASN:HB3	1:B:172:VAL:HG23	1.77	0.65
1:J:142:ILE:HG22	1:N:5:VAL:HG22	1.79	0.65
1:M:20:MET:HG3	1:M:66:PHE:CE2	2.30	0.65
1:L:21:LEU:HD11	1:L:67:MET:HG3	1.79	0.65
1:M:125:HIS:NE2	1:T:139:VAL:HG21	2.12	0.65
1:C:20:MET:HE1	1:C:110:ALA:C	2.16	0.65
1:D:128:ASP:HB2	1:I:131:GLU:HG2	1.77	0.65
1:U:6:ARG:NH1	1:U:9:TYR:O	2.27	0.65
1:C:6:ARG:NH1	1:C:9:TYR:O	2.30	0.65
1:V:60:ARG:HH11	1:V:60:ARG:CG	2.10	0.65
1:T:152:LEU:HD12	1:T:157:LEU:HD13	1.78	0.65
1:C:46:HIS:HB3	3:C:202:HOH:O	1.96	0.64
1:K:13:CYS:O	1:K:17:VAL:HG23	1.97	0.64
1:N:47:ASN:HB3	1:N:172:VAL:HG23	1.77	0.64
1:M:65:LYS:HE2	1:M:133:GLU:OE1	1.98	0.64
1:X:21:LEU:C	1:X:21:LEU:HD23	2.18	0.64
1:A:94:LEU:O	1:A:98:GLN:HG3	1.98	0.64
1:K:142:ILE:HG22	1:U:5:VAL:HG22	1.80	0.63
1:P:46:HIS:HB3	3:P:182:HOH:O	1.98	0.63
1:P:152:LEU:HD12	1:P:157:LEU:CD1	2.28	0.63
1:D:20:MET:CE	1:D:110:ALA:HB1	2.28	0.63
1:O:80:GLN:HG3	3:O:182:HOH:O	1.98	0.63
1:S:47:ASN:HB3	1:S:172:VAL:HG12	1.81	0.63
1:T:57:HIS:CD2	1:T:60:ARG:NH2	2.65	0.63
1:N:20:MET:HE3	1:N:110:ALA:C	2.18	0.62
1:E:6:ARG:NH1	1:E:9:TYR:O	2.30	0.62
1:Q:155:LEU:HD21	1:X:165:TYR:CG	2.34	0.62
1:T:25:LEU:HD13	1:T:82:ILE:HD11	1.80	0.62
1:D:20:MET:HG3	1:D:66:PHE:CE2	2.34	0.62
1:E:23:LEU:HD13	1:E:107:VAL:HG22	1.80	0.62
1:S:152:LEU:HD12	1:S:157:LEU:HD13	1.80	0.62
3:D:520:HOH:O	1:I:102:GLN:HG2	1.98	0.62
1:B:111:LEU:HD13	1:B:134:TYR:HB3	1.81	0.61
1:K:162:MET:HG2	1:Q:162:MET:HE3	1.82	0.61
1:P:47:ASN:HB3	1:P:172:VAL:HG23	1.81	0.61
1:X:57:HIS:HD2	1:X:60:ARG:NH1	1.97	0.61
1:C:125:HIS:CD2	1:R:139:VAL:HG11	2.36	0.61
1:I:55:HIS:CE1	1:I:141:ASP:OD2	2.54	0.61
1:J:172:VAL:O	1:J:173:LYS:C	2.39	0.61
1:D:127:CYS:O	1:D:131:GLU:HG3	2.00	0.61
1:Q:25:LEU:HD13	1:Q:82:ILE:HD11	1.81	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:10:HIS:CD2	1:M:121:LYS:HD2	2.35	0.60
1:W:57:HIS:HD2	1:W:60:ARG:HH12	1.49	0.60
1:E:114:LEU:HG	1:E:130:LEU:HD21	1.84	0.60
1:I:55:HIS:HE1	1:I:141:ASP:OD2	1.83	0.60
1:K:115:HIS:CE1	1:U:124:PRO:HB3	2.37	0.60
1:M:6:ARG:NH1	1:M:9:TYR:O	2.31	0.60
1:P:172:VAL:O	1:P:173:LYS:HB3	2.02	0.60
1:F:5:VAL:HG22	1:G:142:ILE:HG22	1.83	0.60
1:F:111:LEU:HD13	1:F:134:TYR:HB3	1.84	0.60
1:F:115:HIS:CE1	1:O:124:PRO:HB3	2.37	0.60
1:J:125:HIS:NE2	1:Q:139:VAL:HG11	2.17	0.60
1:P:152:LEU:HD12	1:P:157:LEU:HD13	1.82	0.60
1:B:46:HIS:HB3	3:B:870:HOH:O	2.01	0.60
1:C:6:ARG:NH2	1:C:14:GLU:OE1	2.34	0.60
1:G:43:VAL:O	1:H:154:ARG:NH2	2.35	0.60
1:G:118:ALA:HB2	1:G:126:LEU:HD23	1.84	0.60
1:R:47:ASN:HB3	1:R:172:VAL:HG23	1.83	0.60
1:H:114:LEU:HG	1:H:130:LEU:HD21	1.84	0.59
1:N:154:ARG:NH2	1:U:43:VAL:O	2.35	0.59
1:D:20:MET:HE1	1:D:110:ALA:CB	2.32	0.59
1:J:46:HIS:HB3	3:J:428:HOH:O	2.03	0.59
1:K:20:MET:HE1	1:K:110:ALA:HB1	1.84	0.59
1:X:57:HIS:HB3	3:X:475:HOH:O	2.03	0.59
1:D:143:LYS:HE2	1:D:147:ASP:OD1	2.03	0.58
1:U:40:ARG:HB2	1:U:43:VAL:HG23	1.83	0.58
1:I:60:ARG:HD2	3:I:186:HOH:O	2.03	0.58
1:B:142:ILE:HG22	1:E:5:VAL:CG2	2.32	0.58
1:B:20:MET:HE1	1:B:110:ALA:C	2.23	0.58
1:N:43:VAL:O	1:S:154:ARG:NH2	2.37	0.58
1:B:43:VAL:O	1:G:154:ARG:NH2	2.22	0.58
1:V:20:MET:HE1	1:V:110:ALA:HB1	1.85	0.58
1:L:114:LEU:HG	1:L:130:LEU:HD21	1.84	0.58
1:T:6:ARG:NH2	1:T:14:GLU:OE1	2.38	0.57
1:B:173:LYS:O	1:B:174:GLU:HB2	2.04	0.57
1:L:67:MET:CE	1:V:36:ALA:HB2	2.34	0.57
1:N:154:ARG:HG3	1:N:154:ARG:HH11	1.69	0.57
1:S:6:ARG:NH1	1:S:9:TYR:O	2.37	0.57
1:O:59:GLU:OE1	1:O:59:GLU:HA	2.03	0.57
1:U:172:VAL:HG12	1:U:173:LYS:N	2.20	0.57
1:J:71:ASN:ND2	1:X:39:ASP:HB3	2.19	0.57
1:M:172:VAL:O	1:M:173:LYS:HB2	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:45:LEU:HD21	1:Q:164:GLU:HG2	1.87	0.57
1:C:45:LEU:HD13	1:F:154:ARG:NH2	2.19	0.57
1:H:25:LEU:HD13	1:H:82:ILE:HD11	1.86	0.57
1:A:172:VAL:O	1:A:173:LYS:HB2	2.05	0.56
1:N:53:LYS:O	1:N:57:HIS:HD2	1.88	0.56
1:T:165:TYR:CG	1:U:155:LEU:HD21	2.40	0.56
1:W:6:ARG:NH2	1:W:14:GLU:OE1	2.23	0.56
1:L:24:GLU:OE1	1:L:59:GLU:OE1	2.22	0.56
1:V:6:ARG:NH2	1:V:14:GLU:OE1	2.37	0.56
1:B:68:LYS:HE3	3:F:395:HOH:O	2.05	0.56
1:Q:114:LEU:HG	1:Q:130:LEU:HD21	1.88	0.56
1:E:35:TYR:CZ	1:E:53:LYS:HE3	2.41	0.56
1:G:5:VAL:HG22	1:O:142:ILE:HG22	1.87	0.56
1:J:25:LEU:HD13	1:J:82:ILE:HD11	1.87	0.56
1:A:147:ASP:OD1	1:J:41:ASP:HA	2.06	0.56
1:P:116:LYS:HD2	1:P:116:LYS:O	2.06	0.55
1:M:6:ARG:NH2	1:M:14:GLU:OE1	2.32	0.55
1:T:136:GLU:OE2	1:T:140:LYS:HE2	2.06	0.55
1:A:21:LEU:HD23	1:A:21:LEU:O	2.06	0.55
1:A:16:ALA:HB1	1:A:114:LEU:HD13	1.88	0.55
1:B:116:LYS:HE2	1:B:120:ASP:OD1	2.06	0.55
1:K:46:HIS:HB3	3:K:179:HOH:O	2.06	0.55
1:C:25:LEU:HD13	1:C:82:ILE:HD11	1.88	0.55
1:D:93:THR:HG22	1:D:152:LEU:HD21	1.87	0.55
1:H:45:LEU:HD13	1:I:154:ARG:NH2	2.21	0.55
1:H:55:HIS:CD2	3:H:909:HOH:O	2.59	0.55
1:J:84:LYS:HE2	3:J:844:HOH:O	2.06	0.55
1:W:172:VAL:HG12	1:W:173:LYS:N	2.21	0.55
1:E:60:ARG:HD2	3:E:190:HOH:O	2.06	0.55
1:K:157:LEU:HD11	1:K:164:GLU:HG3	1.89	0.55
1:V:114:LEU:HG	1:V:130:LEU:HD21	1.88	0.55
1:C:47:ASN:HB3	1:C:172:VAL:HG23	1.88	0.55
1:K:55:HIS:HE1	3:K:713:HOH:O	1.89	0.55
1:S:38:PHE:HA	1:S:43:VAL:CG1	2.37	0.55
1:A:6:ARG:NH2	1:A:14:GLU:OE1	2.31	0.54
1:Q:172:VAL:O	1:Q:173:LYS:HB3	2.07	0.54
1:X:144:ARG:HD3	3:X:603:HOH:O	2.07	0.54
1:I:143:LYS:HE2	1:I:147:ASP:OD1	2.07	0.54
1:J:60:ARG:HH11	1:X:60:ARG:HD3	1.72	0.54
1:W:173:LYS:C	1:W:173:LYS:HD2	2.27	0.54
1:C:68:LYS:HE3	1:C:72:LYS:HE3	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:31:TYR:CE2	1:D:55:HIS:HD2	2.26	0.54
1:E:6:ARG:NH2	1:E:14:GLU:OE1	2.33	0.54
1:W:6:ARG:NH1	1:W:9:TYR:O	2.35	0.54
1:D:53:LYS:HE3	1:H:64:GLU:OE1	2.07	0.54
1:Q:68:LYS:HD3	3:U:247:HOH:O	2.08	0.54
1:F:30:THR:HA	1:F:85:PRO:HG3	1.90	0.54
1:O:46:HIS:HB3	3:O:207:HOH:O	2.07	0.54
1:U:16:ALA:HB1	1:U:114:LEU:HD13	1.90	0.54
1:X:20:MET:HE1	1:X:110:ALA:C	2.27	0.54
1:R:76:ARG:HB3	3:R:468:HOH:O	2.08	0.53
1:K:21:LEU:HD11	1:K:67:MET:HG2	1.91	0.53
1:D:169:LYS:HG2	3:D:849:HOH:O	2.08	0.53
1:E:157:LEU:CB	1:E:158:PRO:HA	2.39	0.53
1:R:21:LEU:HD11	1:R:67:MET:HG3	1.90	0.53
1:Q:3:SER:C	1:Q:5:VAL:H	2.12	0.53
1:T:24:GLU:HA	1:T:24:GLU:OE1	2.09	0.53
1:E:21:LEU:O	1:E:21:LEU:HD23	2.07	0.53
1:I:23:LEU:HD13	1:I:107:VAL:HG22	1.91	0.53
1:K:152:LEU:HD13	1:K:167:PHE:CD1	2.43	0.53
1:Q:79:LEU:HD13	1:U:29:TYR:CE1	2.44	0.53
1:A:20:MET:HE1	1:A:110:ALA:HB1	1.91	0.53
1:D:169:LYS:HE2	3:D:849:HOH:O	2.08	0.53
1:I:80:GLN:HA	1:I:80:GLN:NE2	2.24	0.53
1:L:125:HIS:CD2	1:M:139:VAL:HG11	2.44	0.53
3:E:191:HOH:O	1:I:79:LEU:HD12	2.09	0.53
1:N:60:ARG:HD2	3:R:298:HOH:O	2.08	0.53
1:M:125:HIS:HE2	1:T:139:VAL:HG21	1.74	0.52
1:S:124:PRO:HD2	3:S:739:HOH:O	2.09	0.52
1:J:21:LEU:C	1:J:21:LEU:HD23	2.29	0.52
1:K:16:ALA:HB1	1:K:114:LEU:HD13	1.91	0.52
1:A:27:ALA:HA	1:A:103:LEU:HD21	1.91	0.52
1:J:131:GLU:HA	1:J:135:LEU:HD23	1.92	0.52
1:K:101:LEU:CD1	1:K:142:ILE:HG23	2.39	0.52
1:B:165:TYR:CD2	1:G:155:LEU:HD21	2.44	0.52
1:L:23:LEU:HD13	1:L:107:VAL:HG22	1.91	0.52
1:P:55:HIS:HE1	1:P:141:ASP:OD1	1.92	0.52
1:Q:71:ASN:HD22	1:U:39:ASP:HB3	1.73	0.52
1:X:20:MET:HG3	1:X:66:PHE:CE2	2.44	0.52
1:P:20:MET:HE3	1:P:110:ALA:C	2.30	0.52
1:B:170:HIS:HB3	1:I:169:LYS:HD2	1.92	0.52
1:F:144:ARG:CG	1:F:144:ARG:NH2	2.68	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:86:GLU:HG3	1:I:87:ARG:HG3	1.92	0.52
1:N:98:GLN:O	1:N:102:GLN:HG2	2.10	0.52
1:W:45:LEU:HD21	1:W:164:GLU:HG2	1.91	0.52
1:J:173:LYS:O	1:J:173:LYS:HG3	2.10	0.52
1:O:29:TYR:O	1:O:32:SER:HB3	2.10	0.52
1:V:122:VAL:HG12	1:V:122:VAL:O	2.09	0.52
1:A:55:HIS:CE1	3:A:179:HOH:O	2.62	0.52
1:Q:24:GLU:HA	1:Q:24:GLU:OE1	2.10	0.52
1:K:87:ARG:HG3	1:K:90:TRP:CZ3	2.45	0.52
1:S:93:THR:HG22	1:S:152:LEU:HD21	1.92	0.52
1:M:39:ASP:HB3	1:S:71:ASN:HD22	1.75	0.52
1:R:138:GLN:O	1:R:142:ILE:HG13	2.09	0.52
1:P:70:GLN:OE1	1:P:70:GLN:HA	2.10	0.51
1:C:21:LEU:HD11	1:C:67:MET:HG3	1.91	0.51
1:I:141:ASP:O	1:I:145:ILE:HG13	2.10	0.51
1:M:170:HIS:HB3	1:V:169:LYS:CE	2.40	0.51
1:H:6:ARG:NH2	1:H:14:GLU:OE1	2.42	0.51
1:B:152:LEU:HD13	1:B:167:PHE:CD1	2.46	0.51
1:J:130:LEU:O	1:J:135:LEU:HD22	2.11	0.51
1:A:46:HIS:HB3	3:A:183:HOH:O	2.10	0.51
1:J:126:LEU:HD12	1:J:130:LEU:HD22	1.92	0.51
1:C:10:HIS:ND1	1:C:12:ASP:HB2	2.26	0.51
1:I:6:ARG:NH2	1:I:14:GLU:OE1	2.43	0.51
1:J:6:ARG:NH2	1:J:14:GLU:OE1	2.43	0.51
1:K:101:LEU:HD11	1:K:142:ILE:HG23	1.92	0.51
1:P:111:LEU:HD13	1:P:134:TYR:HB3	1.93	0.51
1:V:172:VAL:HG12	1:V:173:LYS:N	2.26	0.51
3:A:666:HOH:O	1:G:68:LYS:HE3	2.11	0.51
1:M:46:HIS:HB3	3:M:179:HOH:O	2.10	0.51
1:P:53:LYS:O	1:P:57:HIS:HD2	1.94	0.51
1:R:10:HIS:ND1	1:R:12:ASP:HB2	2.26	0.51
1:S:80:GLN:HA	1:S:80:GLN:NE2	2.26	0.51
1:V:152:LEU:HD13	1:V:167:PHE:CD1	2.46	0.51
1:E:71:ASN:ND2	1:I:39:ASP:HB3	2.26	0.50
1:K:154:ARG:O	1:K:154:ARG:HG3	2.09	0.50
1:Q:37:PHE:CD2	1:Q:90:TRP:HB2	2.46	0.50
1:V:172:VAL:O	1:V:173:LYS:HB3	2.11	0.50
1:B:154:ARG:NH2	1:I:43:VAL:O	2.37	0.50
1:J:46:HIS:CD2	3:J:306:HOH:O	2.64	0.50
1:Q:6:ARG:NH2	1:Q:14:GLU:OE1	2.37	0.50
1:D:6:ARG:NH1	1:D:9:TYR:O	2.42	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:79:LEU:HD12	1:H:33:SER:HB2	1.92	0.50
1:M:55:HIS:CD2	3:M:753:HOH:O	2.64	0.50
1:N:142:ILE:CG2	1:Q:5:VAL:HG22	2.33	0.50
1:P:21:LEU:HD11	1:P:67:MET:HG2	1.93	0.50
1:K:154:ARG:NH2	1:Q:43:VAL:O	2.42	0.50
1:J:6:ARG:NH1	1:J:9:TYR:O	2.44	0.50
3:J:763:HOH:O	1:R:46:HIS:HE1	1.94	0.50
1:O:45:LEU:HD13	1:R:154:ARG:NH2	2.26	0.50
1:V:20:MET:CE	1:V:110:ALA:HB1	2.41	0.50
1:V:152:LEU:HD12	1:V:157:LEU:CD1	2.40	0.50
1:C:69:TYR:CE2	1:C:126:LEU:HD13	2.47	0.50
1:K:6:ARG:NH1	1:K:9:TYR:O	2.39	0.50
1:N:53:LYS:O	1:N:57:HIS:CD2	2.64	0.50
1:S:23:LEU:HD13	1:S:107:VAL:HG22	1.92	0.50
1:W:159:GLU:HB2	3:W:190:HOH:O	2.12	0.50
1:M:20:MET:CE	1:M:110:ALA:HB1	2.41	0.50
1:Q:20:MET:HG3	1:Q:66:PHE:CE2	2.47	0.50
1:V:118:ALA:HB2	1:V:126:LEU:HD23	1.94	0.50
1:F:144:ARG:HG2	1:F:144:ARG:NH2	2.04	0.50
1:H:129:PHE:CE1	1:H:133:GLU:HG3	2.46	0.49
1:F:114:LEU:HG	1:F:130:LEU:HD21	1.94	0.49
1:U:6:ARG:NH2	1:U:14:GLU:OE1	2.31	0.49
1:B:6:ARG:NH2	1:B:14:GLU:OE1	2.42	0.49
1:C:20:MET:HE1	1:C:111:LEU:N	2.27	0.49
1:T:165:TYR:CD2	1:U:155:LEU:HD21	2.47	0.49
1:M:20:MET:HE3	1:M:110:ALA:HB1	1.93	0.49
1:K:136:GLU:O	1:K:140:LYS:HB2	2.12	0.49
1:C:55:HIS:CE1	1:C:141:ASP:OD2	2.66	0.49
1:W:152:LEU:HD12	1:W:157:LEU:HD13	1.94	0.49
1:D:20:MET:HE1	1:D:110:ALA:C	2.33	0.49
1:S:41:ASP:HA	1:T:147:ASP:OD1	2.13	0.49
1:S:127:CYS:O	1:S:131:GLU:HG3	2.13	0.49
1:F:21:LEU:HD23	1:F:21:LEU:O	2.12	0.49
1:K:114:LEU:HG	1:K:130:LEU:HD21	1.95	0.49
1:U:152:LEU:HD13	1:U:167:PHE:CD1	2.48	0.49
1:B:60:ARG:HD2	3:B:187:HOH:O	2.11	0.48
1:I:152:LEU:HD13	1:I:167:PHE:CD1	2.49	0.48
1:Q:21:LEU:O	1:Q:21:LEU:HD23	2.13	0.48
1:D:152:LEU:HD13	1:D:167:PHE:CD1	2.48	0.48
1:K:10:HIS:CD2	1:K:121:LYS:HE3	2.48	0.48
1:R:6:ARG:NH1	1:R:9:TYR:O	2.43	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:47:ASN:HB2	1:J:168:ASP:OD1	2.14	0.48
1:T:136:GLU:HA	1:T:139:VAL:HG22	1.95	0.48
1:C:43:VAL:O	1:F:154:ARG:NH2	2.29	0.48
1:E:157:LEU:HB3	1:E:158:PRO:HA	1.96	0.48
1:J:169:LYS:HE3	3:J:179:HOH:O	2.13	0.48
1:L:68:LYS:HD3	1:V:35:TYR:OH	2.14	0.48
1:L:91:GLY:O	1:L:92:ASN:HB3	2.12	0.48
1:J:23:LEU:HD13	1:J:107:VAL:HG22	1.96	0.48
1:Q:86:GLU:HB3	1:Q:87:ARG:HG3	1.95	0.48
1:C:21:LEU:C	1:C:21:LEU:HD23	2.33	0.48
1:H:165:TYR:CD2	1:I:155:LEU:HD21	2.49	0.48
1:M:21:LEU:HD23	1:M:21:LEU:C	2.34	0.48
1:E:111:LEU:HD13	1:E:134:TYR:HB3	1.96	0.48
1:H:111:LEU:HD13	1:H:134:TYR:HB3	1.96	0.48
1:P:20:MET:HE3	1:P:111:LEU:N	2.29	0.48
1:I:93:THR:HG22	1:I:152:LEU:HD21	1.96	0.48
1:W:10:HIS:CD2	1:W:121:LYS:HE3	2.49	0.48
1:B:10:HIS:CD2	1:B:121:LYS:HE3	2.49	0.47
1:G:169:LYS:HD2	1:H:170:HIS:HB3	1.96	0.47
1:I:124:PRO:HB3	1:W:115:HIS:CE1	2.49	0.47
1:Q:47:ASN:HB3	1:Q:172:VAL:HG23	1.95	0.47
1:J:125:HIS:CD2	1:Q:139:VAL:HG11	2.49	0.47
1:D:6:ARG:NH2	1:D:14:GLU:OE1	2.36	0.47
1:D:82:ILE:HB	1:H:82:ILE:HB	1.97	0.47
1:H:10:HIS:NE2	1:H:121:LYS:HE2	2.28	0.47
1:W:157:LEU:HD23	1:W:158:PRO:HA	1.97	0.47
1:B:5:VAL:HG22	1:V:142:ILE:CG2	2.29	0.47
1:J:155:LEU:HD13	1:J:163:GLY:O	2.14	0.47
1:U:25:LEU:HD13	1:U:82:ILE:HD11	1.96	0.47
1:L:115:HIS:CE1	1:T:124:PRO:HB3	2.49	0.47
1:P:162:MET:SD	1:W:162:MET:HE1	2.54	0.47
1:Q:111:LEU:HD13	1:Q:134:TYR:HB3	1.96	0.47
1:R:53:LYS:O	1:R:56:SER:HB3	2.15	0.47
1:W:59:GLU:HA	1:W:59:GLU:OE1	2.15	0.47
1:C:154:ARG:NH2	1:M:43:VAL:O	2.30	0.47
1:E:46:HIS:HB3	3:E:182:HOH:O	2.14	0.47
1:L:53:LYS:O	1:L:56:SER:HB3	2.15	0.47
1:P:154:ARG:NH2	1:W:45:LEU:HD13	2.28	0.47
1:H:16:ALA:CB	1:H:114:LEU:HD13	2.45	0.47
1:K:16:ALA:CB	1:K:114:LEU:HD13	2.45	0.47
1:U:114:LEU:HG	1:U:130:LEU:HD21	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:71:ASN:ND2	1:U:39:ASP:HB3	2.30	0.47
1:X:20:MET:HE1	1:X:110:ALA:CB	2.45	0.47
1:P:10:HIS:CE1	1:P:121:LYS:HE2	2.49	0.46
1:S:101:LEU:O	1:S:105:LYS:HG3	2.13	0.46
1:A:136:GLU:HG3	1:A:140:LYS:HE3	1.98	0.46
1:J:24:GLU:HA	1:J:24:GLU:OE1	2.15	0.46
1:W:173:LYS:CD	1:W:173:LYS:O	2.63	0.46
1:A:21:LEU:HD23	1:A:21:LEU:C	2.35	0.46
1:H:25:LEU:HD13	1:H:82:ILE:CD1	2.45	0.46
1:Q:33:SER:HB2	1:U:79:LEU:HD12	1.97	0.46
1:D:135:LEU:HD12	1:D:135:LEU:HA	1.58	0.46
1:E:21:LEU:HD23	1:E:21:LEU:C	2.35	0.46
1:H:10:HIS:CG	1:H:121:LYS:HE2	2.50	0.46
1:O:166:LEU:HD21	1:R:166:LEU:HD13	1.97	0.46
1:A:122:VAL:HG11	1:H:116:LYS:HD3	1.97	0.46
1:J:173:LYS:O	1:J:173:LYS:CG	2.63	0.46
1:M:18:ASN:HD21	1:M:78:VAL:HG23	1.81	0.46
1:T:70:GLN:OE1	1:T:75:GLY:HA3	2.15	0.46
1:V:172:VAL:HG12	1:V:173:LYS:H	1.81	0.46
1:D:45:LEU:HD13	1:X:154:ARG:NH2	2.31	0.46
1:E:9:TYR:HB2	1:E:73:ARG:NH2	2.31	0.46
1:Q:27:ALA:HB1	1:Q:103:LEU:HD21	1.98	0.46
1:U:59:GLU:HA	1:U:59:GLU:OE1	2.16	0.46
1:W:20:MET:HE1	1:W:110:ALA:C	2.36	0.46
1:N:24:GLU:OE1	1:N:59:GLU:OE1	2.34	0.46
1:F:6:ARG:NH1	1:F:9:TYR:O	2.46	0.46
1:G:69:TYR:HE1	1:G:125:HIS:CE1	2.33	0.46
1:H:152:LEU:HD13	1:H:167:PHE:CD1	2.50	0.46
1:I:13:CYS:O	1:I:17:VAL:HG23	2.15	0.46
1:K:21:LEU:HD23	1:K:21:LEU:C	2.36	0.46
1:P:13:CYS:O	1:P:17:VAL:HG23	2.16	0.46
1:H:135:LEU:HD12	1:H:135:LEU:HA	1.77	0.45
1:Q:114:LEU:HD12	1:Q:114:LEU:O	2.16	0.45
1:Q:121:LYS:HD2	1:Q:121:LYS:N	2.31	0.45
1:D:169:LYS:HE3	1:X:170:HIS:HB3	1.98	0.45
1:K:135:LEU:O	1:K:139:VAL:HG13	2.16	0.45
1:D:155:LEU:HD13	1:D:163:GLY:O	2.17	0.45
1:E:25:LEU:O	1:E:28:SER:HB3	2.15	0.45
1:I:65:LYS:HB3	1:I:134:TYR:OH	2.16	0.45
1:K:31:TYR:CE2	1:K:55:HIS:HD2	2.35	0.45
1:L:94:LEU:HA	1:L:152:LEU:HD23	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:162:MET:SD	1:R:162:MET:CE	3.04	0.45
1:Q:60:ARG:HD2	3:Q:223:HOH:O	2.17	0.45
1:Q:135:LEU:HD12	1:Q:135:LEU:HA	1.73	0.45
1:T:121:LYS:C	1:T:122:VAL:HG23	2.37	0.45
1:T:129:PHE:CE2	1:T:134:TYR:HE1	2.35	0.45
1:X:46:HIS:HB3	3:X:258:HOH:O	2.17	0.45
1:C:23:LEU:O	1:C:23:LEU:HD22	2.17	0.45
1:E:160:ASN:HD21	1:L:162:MET:HE3	1.82	0.45
1:G:69:TYR:CE1	1:G:125:HIS:CE1	3.05	0.45
1:N:21:LEU:HD23	1:N:21:LEU:O	2.17	0.45
1:S:75:GLY:O	1:S:76:ARG:NH1	2.48	0.45
1:W:173:LYS:C	1:W:173:LYS:CD	2.85	0.45
1:N:135:LEU:HD12	1:N:135:LEU:HA	1.74	0.45
1:K:172:VAL:O	1:K:173:LYS:HB2	2.16	0.45
1:L:111:LEU:HD13	1:L:134:TYR:HB3	1.97	0.45
1:M:172:VAL:O	1:M:173:LYS:CB	2.65	0.45
1:O:135:LEU:HD12	1:O:135:LEU:HA	1.84	0.45
1:X:21:LEU:HD23	1:X:21:LEU:O	2.17	0.45
1:I:10:HIS:CD2	1:I:121:LYS:HE3	2.52	0.45
1:J:115:HIS:CE1	1:N:124:PRO:CB	2.99	0.45
1:K:47:ASN:HB3	1:K:172:VAL:HG12	1.98	0.45
1:C:21:LEU:HD23	1:C:21:LEU:O	2.17	0.45
1:C:114:LEU:O	1:C:114:LEU:HD12	2.17	0.45
1:H:16:ALA:HB1	1:H:114:LEU:HD13	1.98	0.45
1:P:21:LEU:C	1:P:21:LEU:HD23	2.37	0.45
1:S:46:HIS:CD2	3:S:873:HOH:O	2.69	0.45
1:U:16:ALA:CB	1:U:114:LEU:HD13	2.47	0.45
1:X:39:ASP:OD1	1:X:46:HIS:HE1	1.99	0.45
1:Q:152:LEU:HD12	1:Q:157:LEU:HG	1.99	0.45
1:X:93:THR:O	1:X:97:MET:HG2	2.16	0.45
1:K:93:THR:HG22	1:K:152:LEU:HD21	1.98	0.44
1:D:104:GLU:HA	1:D:104:GLU:OE1	2.16	0.44
1:U:172:VAL:HG12	1:U:173:LYS:H	1.81	0.44
1:X:39:ASP:OD1	1:X:46:HIS:CE1	2.71	0.44
1:N:154:ARG:HG3	1:N:154:ARG:NH1	2.33	0.44
1:F:30:THR:HA	1:F:85:PRO:CG	2.47	0.44
1:F:111:LEU:CD1	1:F:134:TYR:HB3	2.48	0.44
1:G:94:LEU:O	1:G:94:LEU:HD12	2.16	0.44
1:J:114:LEU:HG	1:J:130:LEU:HD21	2.00	0.44
1:P:155:LEU:HD21	1:W:165:TYR:CG	2.52	0.44
1:Q:104:GLU:HA	1:Q:104:GLU:OE1	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:V:6:ARG:NH1	1:V:9:TYR:O	2.45	0.44
1:C:136:GLU:OE2	1:C:140:LYS:HE2	2.17	0.44
1:D:157:LEU:CB	1:D:158:PRO:HA	2.48	0.44
1:E:68:LYS:HE2	1:E:68:LYS:HB3	1.75	0.44
1:K:138:GLN:O	1:K:142:ILE:HG13	2.17	0.44
1:Q:21:LEU:HD23	1:Q:21:LEU:C	2.37	0.44
1:E:33:SER:HB2	1:I:79:LEU:CD1	2.48	0.44
1:G:101:LEU:O	1:G:105:LYS:HG3	2.18	0.44
1:H:21:LEU:HD11	1:H:67:MET:HG2	2.00	0.44
1:K:27:ALA:O	1:K:28:SER:C	2.56	0.44
1:Q:18:ASN:ND2	1:Q:78:VAL:HB	2.33	0.44
1:E:43:VAL:O	1:W:154:ARG:NH2	2.28	0.44
1:M:118:ALA:HB2	1:M:126:LEU:HD23	2.00	0.44
1:T:85:PRO:HG2	3:T:558:HOH:O	2.17	0.44
1:D:124:PRO:HD2	3:D:191:HOH:O	2.18	0.44
1:E:128:ASP:O	1:E:132:SER:HB2	2.18	0.44
1:S:43:VAL:O	1:T:154:ARG:NH2	2.35	0.44
1:F:65:LYS:HE3	1:F:65:LYS:HB2	1.72	0.43
1:H:24:GLU:OE1	1:H:59:GLU:OE1	2.36	0.43
1:M:20:MET:HB2	1:M:20:MET:HE2	1.72	0.43
1:L:114:LEU:HD12	1:L:114:LEU:O	2.18	0.43
1:M:47:ASN:HB3	1:M:172:VAL:HG23	2.00	0.43
1:V:16:ALA:HB1	1:V:114:LEU:HD13	2.00	0.43
1:X:42:ASP:OD1	1:X:42:ASP:N	2.44	0.43
1:X:57:HIS:CD2	1:X:60:ARG:NH1	2.81	0.43
1:D:31:TYR:CE2	1:D:55:HIS:CD2	3.06	0.43
1:O:24:GLU:HA	1:O:24:GLU:OE1	2.17	0.43
1:A:20:MET:CE	1:A:110:ALA:HB1	2.48	0.43
1:H:80:GLN:HA	1:H:80:GLN:NE2	2.33	0.43
1:W:35:TYR:CD1	1:W:53:LYS:HB2	2.53	0.43
1:B:126:LEU:O	1:B:130:LEU:HD22	2.18	0.43
1:D:57:HIS:HB3	3:D:194:HOH:O	2.18	0.43
1:F:144:ARG:HD2	1:F:148:PHE:CZ	2.53	0.43
1:M:45:LEU:HD12	1:M:45:LEU:HA	1.84	0.43
1:D:118:ALA:HB2	1:D:126:LEU:HD23	2.00	0.43
1:G:6:ARG:NH2	1:G:14:GLU:OE1	2.39	0.43
1:K:111:LEU:HD12	1:K:138:GLN:HG3	2.00	0.43
1:L:57:HIS:HB3	3:L:641:HOH:O	2.17	0.43
1:N:118:ALA:HB2	1:N:126:LEU:HD23	2.01	0.43
1:T:65:LYS:HB3	1:T:134:TYR:OH	2.19	0.43
1:V:165:TYR:O	1:V:169:LYS:HG2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:82:ILE:HB	1:G:82:ILE:HB	1.99	0.43
1:D:23:LEU:HD23	1:D:23:LEU:HA	1.84	0.43
1:R:30:THR:HA	1:R:85:PRO:HG3	2.01	0.43
1:A:135:LEU:HD12	1:A:135:LEU:HA	1.81	0.43
1:B:7:GLN:NE2	1:V:105:LYS:HB3	2.33	0.43
1:C:104:GLU:OE1	1:C:138:GLN:OE1	2.37	0.43
1:I:25:LEU:HD13	1:I:82:ILE:HD11	2.01	0.43
1:J:62:HIS:HB3	1:J:134:TYR:HE2	1.84	0.43
1:O:37:PHE:CE1	1:O:89:GLU:HB2	2.54	0.43
1:R:73:ARG:HA	1:R:73:ARG:HD2	1.80	0.43
1:C:154:ARG:NH2	1:M:45:LEU:HD13	2.33	0.43
1:D:114:LEU:HG	1:D:130:LEU:HD21	2.01	0.43
1:P:92:ASN:ND2	1:P:158:PRO:HB3	2.33	0.43
1:K:24:GLU:OE1	1:K:24:GLU:HA	2.19	0.43
1:L:38:PHE:HA	1:L:43:VAL:HG11	2.01	0.43
1:N:20:MET:HE3	1:N:110:ALA:O	2.19	0.43
1:P:116:LYS:HA	1:P:116:LYS:HD3	1.77	0.43
1:K:152:LEU:HD12	1:K:152:LEU:HA	1.78	0.42
1:L:25:LEU:HA	1:L:25:LEU:HD23	1.70	0.42
1:O:47:ASN:HB2	1:O:168:ASP:OD1	2.19	0.42
1:V:20:MET:HE3	1:V:20:MET:HB2	1.70	0.42
1:H:47:ASN:HB2	1:H:168:ASP:OD1	2.19	0.42
1:X:20:MET:HE1	1:X:110:ALA:HB1	1.99	0.42
1:F:41:ASP:HA	1:V:147:ASP:OD1	2.18	0.42
1:J:33:SER:HB2	1:J:85:PRO:HG3	2.02	0.42
1:W:102:GLN:NE2	3:W:300:HOH:O	2.52	0.42
1:C:152:LEU:HD13	1:C:167:PHE:CD1	2.54	0.42
1:L:170:HIS:HB3	1:P:169:LYS:HD2	2.01	0.42
1:T:79:LEU:HA	3:T:325:HOH:O	2.19	0.42
1:U:13:CYS:O	1:U:17:VAL:HG23	2.19	0.42
1:A:55:HIS:HE1	3:A:179:HOH:O	1.98	0.42
1:H:21:LEU:HD23	1:H:21:LEU:C	2.39	0.42
1:O:10:HIS:CD2	1:O:121:LYS:HE3	2.55	0.42
1:R:135:LEU:HD12	1:R:135:LEU:HA	1.78	0.42
1:A:138:GLN:OE1	1:A:138:GLN:HA	2.19	0.42
1:E:148:PHE:O	1:E:152:LEU:HD22	2.19	0.42
1:G:73:ARG:HD2	1:G:73:ARG:HA	1.79	0.42
1:F:21:LEU:HD23	1:F:21:LEU:C	2.40	0.42
1:N:136:GLU:OE2	1:N:140:LYS:HE2	2.19	0.42
1:O:6:ARG:NH2	1:O:14:GLU:OE1	2.44	0.42
1:Q:45:LEU:HD12	1:Q:45:LEU:HA	1.90	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:124:PRO:HA	1:G:127:CYS:HB2	2.01	0.42
1:N:102:GLN:HB3	3:N:244:HOH:O	2.18	0.42
1:V:76:ARG:HA	1:V:76:ARG:HD3	1.73	0.42
1:A:47:ASN:HB3	1:A:172:VAL:HG23	2.02	0.42
1:L:116:LYS:HD3	1:T:122:VAL:HG11	2.00	0.42
1:B:45:LEU:HD13	1:G:154:ARG:NH2	2.35	0.42
1:I:5:VAL:HG22	1:W:142:ILE:HG22	2.02	0.42
1:J:5:VAL:HG21	1:Q:143:LYS:HA	2.02	0.42
1:N:73:ARG:HD2	1:N:73:ARG:HA	1.88	0.42
1:S:24:GLU:OE1	1:S:24:GLU:HA	2.20	0.42
1:S:102:GLN:HG2	3:S:879:HOH:O	2.20	0.42
1:B:33:SER:HB2	1:F:79:LEU:CD1	2.50	0.41
1:C:125:HIS:CD2	1:R:139:VAL:CG1	3.02	0.41
1:I:135:LEU:HA	1:I:135:LEU:HD12	1.78	0.41
1:S:76:ARG:HD3	1:S:76:ARG:HA	1.89	0.41
1:J:152:LEU:HD12	1:J:152:LEU:HA	1.91	0.41
1:P:27:ALA:HA	1:P:103:LEU:HD21	2.01	0.41
1:B:65:LYS:HE3	1:B:65:LYS:HB2	1.89	0.41
1:C:3:SER:C	1:C:5:VAL:H	2.22	0.41
1:C:73:ARG:HD2	1:C:73:ARG:HA	1.84	0.41
1:K:23:LEU:HD13	1:K:107:VAL:HG22	2.02	0.41
1:L:169:LYS:HA	1:L:169:LYS:HD3	1.70	0.41
1:M:55:HIS:HD2	3:M:753:HOH:O	2.02	0.41
1:P:69:TYR:CE2	1:P:126:LEU:HD13	2.54	0.41
1:V:104:GLU:HA	1:V:104:GLU:OE1	2.20	0.41
1:A:16:ALA:CB	1:A:114:LEU:HD13	2.51	0.41
1:K:105:LYS:HG2	1:U:7:GLN:OE1	2.21	0.41
1:P:136:GLU:OE2	1:P:140:LYS:HE2	2.20	0.41
1:R:23:LEU:HD23	1:R:23:LEU:HA	1.82	0.41
1:V:20:MET:HG3	1:V:66:PHE:CE2	2.55	0.41
1:B:135:LEU:HD12	1:B:135:LEU:HA	1.90	0.41
1:K:154:ARG:NH2	1:Q:45:LEU:HD13	2.36	0.41
1:M:116:LYS:HA	1:M:116:LYS:HD2	1.85	0.41
1:Q:118:ALA:HB2	1:Q:126:LEU:HD23	2.03	0.41
1:R:155:LEU:O	1:R:163:GLY:HA3	2.21	0.41
1:V:143:LYS:HE2	1:V:147:ASP:OD1	2.20	0.41
1:W:28:SER:HB2	1:W:59:GLU:HB2	2.01	0.41
1:D:23:LEU:HD13	1:D:107:VAL:HG22	2.02	0.41
1:I:21:LEU:HD23	1:I:21:LEU:O	2.20	0.41
1:O:30:THR:HA	1:O:85:PRO:HG3	2.02	0.41
1:P:20:MET:HE1	1:P:110:ALA:HB1	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:135:LEU:HD12	1:P:135:LEU:HA	1.75	0.41
1:A:152:LEU:HD13	1:A:152:LEU:HA	1.91	0.41
1:F:155:LEU:HD23	1:F:155:LEU:HA	1.95	0.41
1:I:25:LEU:HD23	1:I:25:LEU:HA	1.85	0.41
1:N:19:ARG:HH11	1:N:19:ARG:HD2	1.74	0.41
1:N:23:LEU:HD23	1:N:23:LEU:HA	1.87	0.41
1:X:122:VAL:HG12	1:X:122:VAL:O	2.21	0.41
1:D:92:ASN:ND2	1:D:158:PRO:HB3	2.35	0.41
1:E:154:ARG:HG3	3:L:272:HOH:O	2.21	0.41
1:J:143:LYS:HA	1:N:5:VAL:HG21	2.03	0.41
1:L:4:GLN:HG3	1:L:5:VAL:HG23	2.02	0.41
1:M:69:TYR:OH	1:M:126:LEU:HA	2.20	0.41
1:U:51:PHE:HB2	1:U:172:VAL:HG11	2.03	0.41
1:W:57:HIS:CD2	1:W:60:ARG:NH1	2.82	0.41
1:N:112:LEU:HD23	1:N:112:LEU:HA	1.95	0.41
1:Q:69:TYR:CE2	1:Q:126:LEU:HD13	2.56	0.41
1:S:3:SER:C	1:S:5:VAL:H	2.23	0.41
1:T:130:LEU:HD12	1:T:130:LEU:HA	1.96	0.41
1:T:145:ILE:O	1:T:148:PHE:HB2	2.20	0.41
1:W:122:VAL:HG12	1:W:122:VAL:O	2.21	0.41
1:E:172:VAL:O	1:E:173:LYS:CB	2.59	0.41
1:J:126:LEU:CD1	1:J:130:LEU:HD22	2.51	0.41
1:K:73:ARG:HD2	1:K:73:ARG:HA	1.87	0.41
1:G:111:LEU:HD13	1:G:134:TYR:HB3	2.03	0.40
1:S:47:ASN:HB2	1:S:168:ASP:OD1	2.20	0.40
1:T:101:LEU:O	1:T:105:LYS:HG3	2.22	0.40
1:X:81:ASP:HB2	3:X:845:HOH:O	2.21	0.40
1:X:103:LEU:O	1:X:107:VAL:HG23	2.21	0.40
1:A:73:ARG:HD2	1:A:73:ARG:HA	1.87	0.40
1:A:93:THR:HG22	1:A:152:LEU:HD21	2.02	0.40
1:L:124:PRO:HB3	1:M:115:HIS:CE1	2.57	0.40
1:Q:29:TYR:O	1:Q:32:SER:HB3	2.21	0.40
1:S:126:LEU:O	1:S:130:LEU:HD22	2.21	0.40
1:U:21:LEU:HD23	1:U:21:LEU:O	2.20	0.40
1:X:68:LYS:HB3	1:X:68:LYS:HE2	1.86	0.40
1:C:55:HIS:HE1	1:C:141:ASP:OD2	2.05	0.40
1:J:60:ARG:HD3	3:J:182:HOH:O	2.20	0.40
1:W:10:HIS:NE2	1:W:121:LYS:HE3	2.36	0.40
1:A:142:ILE:HG22	1:X:5:VAL:CG2	2.32	0.40
1:K:155:LEU:HD21	1:Q:165:TYR:CG	2.56	0.40
1:L:136:GLU:O	1:L:140:LYS:HB2	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:W:135:LEU:HD12	1:W:135:LEU:HA	1.95	0.40
1:W:170:HIS:HE1	3:W:185:HOH:O	2.04	0.40
1:X:135:LEU:HD12	1:X:135:LEU:HA	1.83	0.40
1:J:60:ARG:HD2	1:X:60:ARG:NE	2.36	0.40
1:N:94:LEU:O	1:N:94:LEU:HD12	2.21	0.40
1:N:143:LYS:HD3	1:Q:72:LYS:HA	2.03	0.40
1:Q:101:LEU:HD22	1:Q:149:ILE:HD12	2.03	0.40
1:R:24:GLU:OE1	1:R:59:GLU:OE1	2.40	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	170/176 (97%)	167 (98%)	3 (2%)	0	100	100
1	B	171/176 (97%)	166 (97%)	4 (2%)	1 (1%)	25	58
1	C	170/176 (97%)	165 (97%)	5 (3%)	0	100	100
1	D	170/176 (97%)	165 (97%)	5 (3%)	0	100	100
1	E	170/176 (97%)	166 (98%)	4 (2%)	0	100	100
1	F	169/176 (96%)	163 (96%)	6 (4%)	0	100	100
1	G	169/176 (96%)	162 (96%)	7 (4%)	0	100	100
1	H	169/176 (96%)	166 (98%)	3 (2%)	0	100	100
1	I	169/176 (96%)	162 (96%)	7 (4%)	0	100	100
1	J	170/176 (97%)	166 (98%)	4 (2%)	0	100	100
1	K	170/176 (97%)	164 (96%)	6 (4%)	0	100	100
1	L	170/176 (97%)	164 (96%)	6 (4%)	0	100	100
1	M	170/176 (97%)	162 (95%)	8 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	N	169/176 (96%)	163 (96%)	6 (4%)	0	100	100
1	O	170/176 (97%)	161 (95%)	9 (5%)	0	100	100
1	P	170/176 (97%)	161 (95%)	9 (5%)	0	100	100
1	Q	170/176 (97%)	160 (94%)	10 (6%)	0	100	100
1	R	169/176 (96%)	163 (96%)	6 (4%)	0	100	100
1	S	169/176 (96%)	162 (96%)	7 (4%)	0	100	100
1	T	169/176 (96%)	165 (98%)	4 (2%)	0	100	100
1	U	170/176 (97%)	164 (96%)	6 (4%)	0	100	100
1	V	170/176 (97%)	166 (98%)	4 (2%)	0	100	100
1	W	170/176 (97%)	165 (97%)	5 (3%)	0	100	100
1	X	169/176 (96%)	164 (97%)	5 (3%)	0	100	100
All	All	4072/4224 (96%)	3932 (97%)	139 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	173	LYS

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	153/157 (98%)	139 (91%)	14 (9%)	9	27
1	B	154/157 (98%)	140 (91%)	14 (9%)	9	28
1	C	153/157 (98%)	137 (90%)	16 (10%)	7	21
1	D	153/157 (98%)	139 (91%)	14 (9%)	9	27
1	E	153/157 (98%)	138 (90%)	15 (10%)	8	24
1	F	152/157 (97%)	135 (89%)	17 (11%)	6	18
1	G	152/157 (97%)	137 (90%)	15 (10%)	8	24

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	H	152/157 (97%)	142 (93%)	10 (7%)	16	44
1	I	152/157 (97%)	132 (87%)	20 (13%)	4	12
1	J	153/157 (98%)	138 (90%)	15 (10%)	8	24
1	K	153/157 (98%)	136 (89%)	17 (11%)	6	19
1	L	153/157 (98%)	138 (90%)	15 (10%)	8	24
1	M	153/157 (98%)	141 (92%)	12 (8%)	12	34
1	N	152/157 (97%)	140 (92%)	12 (8%)	12	34
1	O	153/157 (98%)	140 (92%)	13 (8%)	10	31
1	P	153/157 (98%)	142 (93%)	11 (7%)	14	39
1	Q	153/157 (98%)	140 (92%)	13 (8%)	10	31
1	R	152/157 (97%)	140 (92%)	12 (8%)	12	34
1	S	152/157 (97%)	137 (90%)	15 (10%)	8	24
1	T	152/157 (97%)	140 (92%)	12 (8%)	12	34
1	U	153/157 (98%)	141 (92%)	12 (8%)	12	34
1	V	153/157 (98%)	135 (88%)	18 (12%)	5	16
1	W	153/157 (98%)	139 (91%)	14 (9%)	9	27
1	X	152/157 (97%)	138 (91%)	14 (9%)	9	27
All	All	3664/3768 (97%)	3324 (91%)	340 (9%)	9	27

All (340) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	VAL
1	A	23	LEU
1	A	29	TYR
1	A	45	LEU
1	A	55	HIS
1	A	83	LYS
1	A	89	GLU
1	A	102	GLN
1	A	121	LYS
1	A	130	LEU
1	A	135	LEU
1	A	137	GLU
1	A	152	LEU
1	A	173	LYS

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Mol	Chain	Res	Type
1	B	23	LEU
1	B	29	TYR
1	B	32	SER
1	B	33	SER
1	B	45	LEU
1	B	55	HIS
1	B	65	LYS
1	B	89	GLU
1	B	130	LEU
1	B	135	LEU
1	B	137	GLU
1	B	144	ARG
1	B	152	LEU
1	B	173	LYS
1	C	5	VAL
1	C	11	SER
1	C	23	LEU
1	C	29	TYR
1	C	45	LEU
1	C	53	LYS
1	C	65	LYS
1	C	83	LYS
1	C	89	GLU
1	C	121	LYS
1	C	130	LEU
1	C	135	LEU
1	C	137	GLU
1	C	139	VAL
1	C	141	ASP
1	C	152	LEU
1	D	5	VAL
1	D	23	LEU
1	D	29	TYR
1	D	41	ASP
1	D	45	LEU
1	D	65	LYS
1	D	68	LYS
1	D	102	GLN
1	D	122	VAL
1	D	130	LEU
1	D	135	LEU
1	D	137	GLU

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Mol	Chain	Res	Type
1	D	152	LEU
1	D	173	LYS
1	E	5	VAL
1	E	11	SER
1	E	23	LEU
1	E	29	TYR
1	E	32	SER
1	E	41	ASP
1	E	45	LEU
1	E	55	HIS
1	E	68	LYS
1	E	84	LYS
1	E	116	LYS
1	E	130	LEU
1	E	135	LEU
1	E	152	LEU
1	E	173	LYS
1	F	2	VAL
1	F	5	VAL
1	F	23	LEU
1	F	29	TYR
1	F	32	SER
1	F	45	LEU
1	F	61	GLU
1	F	64	GLU
1	F	68	LYS
1	F	84	LYS
1	F	130	LEU
1	F	135	LEU
1	F	137	GLU
1	F	139	VAL
1	F	144	ARG
1	F	152	LEU
1	F	172	VAL
1	G	2	VAL
1	G	5	VAL
1	G	6	ARG
1	G	23	LEU
1	G	29	TYR
1	G	32	SER
1	G	45	LEU
1	G	55	HIS

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Mol	Chain	Res	Type
1	G	68	LYS
1	G	89	GLU
1	G	130	LEU
1	G	136	GLU
1	G	152	LEU
1	G	157	LEU
1	G	168	ASP
1	H	5	VAL
1	H	23	LEU
1	H	29	TYR
1	H	45	LEU
1	H	55	HIS
1	H	89	GLU
1	H	121	LYS
1	H	130	LEU
1	H	135	LEU
1	H	152	LEU
1	I	5	VAL
1	I	6	ARG
1	I	11	SER
1	I	23	LEU
1	I	29	TYR
1	I	32	SER
1	I	41	ASP
1	I	45	LEU
1	I	55	HIS
1	I	60	ARG
1	I	68	LYS
1	I	89	GLU
1	I	98	GLN
1	I	102	GLN
1	I	130	LEU
1	I	135	LEU
1	I	139	VAL
1	I	141	ASP
1	I	152	LEU
1	I	171	SER
1	J	2	VAL
1	J	5	VAL
1	J	23	LEU
1	J	29	TYR
1	J	32	SER

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Mol	Chain	Res	Type
1	J	45	LEU
1	J	55	HIS
1	J	80	GLN
1	J	84	LYS
1	J	98	GLN
1	J	102	GLN
1	J	130	LEU
1	J	135	LEU
1	J	144	ARG
1	J	152	LEU
1	K	5	VAL
1	K	23	LEU
1	K	29	TYR
1	K	32	SER
1	K	45	LEU
1	K	55	HIS
1	K	86	GLU
1	K	87	ARG
1	K	116	LYS
1	K	130	LEU
1	K	135	LEU
1	K	137	GLU
1	K	140	LYS
1	K	152	LEU
1	K	154	ARG
1	K	157	LEU
1	K	173	LYS
1	L	2	VAL
1	L	6	ARG
1	L	23	LEU
1	L	29	TYR
1	L	32	SER
1	L	45	LEU
1	L	46	HIS
1	L	64	GLU
1	L	102	GLN
1	L	130	LEU
1	L	139	VAL
1	L	144	ARG
1	L	152	LEU
1	L	168	ASP
1	L	172	VAL

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Mol	Chain	Res	Type
1	M	11	SER
1	M	23	LEU
1	M	29	TYR
1	M	32	SER
1	M	41	ASP
1	M	45	LEU
1	M	55	HIS
1	M	89	GLU
1	M	130	LEU
1	M	135	LEU
1	M	139	VAL
1	M	152	LEU
1	N	5	VAL
1	N	23	LEU
1	N	29	TYR
1	N	45	LEU
1	N	55	HIS
1	N	64	GLU
1	N	65	LYS
1	N	98	GLN
1	N	130	LEU
1	N	135	LEU
1	N	139	VAL
1	N	152	LEU
1	O	19	ARG
1	O	23	LEU
1	O	29	TYR
1	O	45	LEU
1	O	55	HIS
1	O	72	LYS
1	O	135	LEU
1	O	137	GLU
1	O	139	VAL
1	O	152	LEU
1	O	171	SER
1	O	172	VAL
1	O	173	LYS
1	P	2	VAL
1	P	5	VAL
1	P	19	ARG
1	P	23	LEU
1	P	45	LEU

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Mol	Chain	Res	Type
1	P	64	GLU
1	P	130	LEU
1	P	135	LEU
1	P	141	ASP
1	P	152	LEU
1	P	157	LEU
1	Q	11	SER
1	Q	23	LEU
1	Q	29	TYR
1	Q	45	LEU
1	Q	86	GLU
1	Q	121	LYS
1	Q	130	LEU
1	Q	135	LEU
1	Q	137	GLU
1	Q	139	VAL
1	Q	152	LEU
1	Q	157	LEU
1	Q	173	LYS
1	R	2	VAL
1	R	23	LEU
1	R	29	TYR
1	R	32	SER
1	R	45	LEU
1	R	55	HIS
1	R	66	PHE
1	R	68	LYS
1	R	102	GLN
1	R	135	LEU
1	R	139	VAL
1	R	152	LEU
1	S	5	VAL
1	S	23	LEU
1	S	29	TYR
1	S	45	LEU
1	S	54	GLU
1	S	55	HIS
1	S	68	LYS
1	S	72	LYS
1	S	89	GLU
1	S	98	GLN
1	S	130	LEU

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Mol	Chain	Res	Type
1	S	135	LEU
1	S	137	GLU
1	S	152	LEU
1	S	157	LEU
1	T	23	LEU
1	T	29	TYR
1	T	45	LEU
1	T	55	HIS
1	T	65	LYS
1	T	122	VAL
1	T	130	LEU
1	T	135	LEU
1	T	144	ARG
1	T	152	LEU
1	T	157	LEU
1	T	171	SER
1	U	2	VAL
1	U	5	VAL
1	U	23	LEU
1	U	29	TYR
1	U	45	LEU
1	U	55	HIS
1	U	84	LYS
1	U	130	LEU
1	U	135	LEU
1	U	139	VAL
1	U	152	LEU
1	U	171	SER
1	V	11	SER
1	V	23	LEU
1	V	29	TYR
1	V	45	LEU
1	V	58	GLU
1	V	60	ARG
1	V	61	GLU
1	V	64	GLU
1	V	84	LYS
1	V	86	GLU
1	V	116	LYS
1	V	121	LYS
1	V	130	LEU
1	V	135	LEU

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Mol	Chain	Res	Type
1	V	137	GLU
1	V	139	VAL
1	V	152	LEU
1	V	157	LEU
1	W	11	SER
1	W	23	LEU
1	W	29	TYR
1	W	32	SER
1	W	45	LEU
1	W	55	HIS
1	W	68	LYS
1	W	130	LEU
1	W	135	LEU
1	W	139	VAL
1	W	144	ARG
1	W	152	LEU
1	W	157	LEU
1	W	173	LYS
1	X	3	SER
1	X	5	VAL
1	X	23	LEU
1	X	29	TYR
1	X	45	LEU
1	X	55	HIS
1	X	61	GLU
1	X	68	LYS
1	X	84	LYS
1	X	121	LYS
1	X	130	LEU
1	X	135	LEU
1	X	152	LEU
1	X	172	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (86) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	46	HIS
1	A	55	HIS
1	A	102	GLN
1	A	170	HIS
1	B	55	HIS
1	B	138	GLN

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Mol	Chain	Res	Type
1	C	55	HIS
1	C	98	GLN
1	C	138	GLN
1	D	55	HIS
1	D	98	GLN
1	D	170	HIS
1	E	46	HIS
1	F	80	GLN
1	F	98	GLN
1	F	102	GLN
1	F	115	HIS
1	F	138	GLN
1	G	57	HIS
1	G	98	GLN
1	G	102	GLN
1	G	138	GLN
1	H	55	HIS
1	H	80	GLN
1	H	98	GLN
1	H	138	GLN
1	I	55	HIS
1	I	62	HIS
1	I	80	GLN
1	I	98	GLN
1	J	57	HIS
1	J	98	GLN
1	J	115	HIS
1	J	138	GLN
1	J	170	HIS
1	K	46	HIS
1	K	55	HIS
1	K	62	HIS
1	K	80	GLN
1	K	98	GLN
1	K	115	HIS
1	L	55	HIS
1	L	57	HIS
1	L	98	GLN
1	L	138	GLN
1	M	22	ASN
1	M	98	GLN
1	M	170	HIS

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Mol	Chain	Res	Type
1	N	57	HIS
1	N	98	GLN
1	O	102	GLN
1	O	170	HIS
1	P	55	HIS
1	P	57	HIS
1	P	80	GLN
1	P	170	HIS
1	Q	57	HIS
1	Q	98	GLN
1	Q	138	GLN
1	R	46	HIS
1	R	80	GLN
1	R	98	GLN
1	R	170	HIS
1	S	57	HIS
1	S	80	GLN
1	S	98	GLN
1	S	138	GLN
1	T	57	HIS
1	T	98	GLN
1	U	80	GLN
1	U	98	GLN
1	U	138	GLN
1	V	55	HIS
1	V	80	GLN
1	V	138	GLN
1	V	170	HIS
1	W	22	ASN
1	W	55	HIS
1	W	57	HIS
1	W	80	GLN
1	W	98	GLN
1	W	138	GLN
1	W	170	HIS
1	X	57	HIS
1	X	80	GLN
1	X	170	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 62 ligands modelled in this entry, 62 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	172/176 (97%)	-0.70	0	100	100	19, 27, 40, 52	0
1	B	173/176 (98%)	-0.63	0	100	100	20, 26, 40, 62	0
1	C	172/176 (97%)	-0.65	0	100	100	24, 31, 42, 54	0
1	D	172/176 (97%)	-0.75	0	100	100	17, 25, 39, 46	0
1	E	172/176 (97%)	-0.69	0	100	100	19, 25, 37, 44	0
1	F	171/176 (97%)	-0.68	0	100	100	20, 27, 39, 47	0
1	G	171/176 (97%)	-0.77	0	100	100	19, 25, 37, 47	0
1	H	171/176 (97%)	-0.72	0	100	100	19, 25, 35, 46	0
1	I	171/176 (97%)	-0.70	0	100	100	18, 24, 35, 46	0
1	J	172/176 (97%)	-0.58	0	100	100	24, 32, 47, 54	0
1	K	172/176 (97%)	-0.70	0	100	100	18, 26, 40, 50	0
1	L	172/176 (97%)	-0.69	0	100	100	16, 25, 39, 47	0
1	M	172/176 (97%)	-0.61	0	100	100	24, 30, 43, 53	0
1	N	171/176 (97%)	-0.63	0	100	100	24, 31, 43, 53	0
1	O	172/176 (97%)	-0.56	0	100	100	22, 29, 43, 55	0
1	P	172/176 (97%)	-0.78	0	100	100	19, 24, 38, 50	0
1	Q	172/176 (97%)	-0.68	0	100	100	22, 30, 42, 49	0
1	R	171/176 (97%)	-0.65	0	100	100	26, 32, 44, 53	0
1	S	171/176 (97%)	-0.61	0	100	100	23, 32, 44, 54	0
1	T	171/176 (97%)	-0.72	0	100	100	17, 26, 40, 43	0
1	U	172/176 (97%)	-0.54	0	100	100	20, 28, 40, 51	0
1	V	172/176 (97%)	-0.74	0	100	100	17, 25, 40, 47	0
1	W	172/176 (97%)	-0.69	0	100	100	19, 26, 39, 48	0
1	X	171/176 (97%)	-0.60	0	100	100	23, 29, 42, 51	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
All	All	4120/4224 (97%)	-0.67	0	100	100	16, 28, 41, 62	0

There are no RSRZ outliers to report.

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	FE	D	183	1/1	0.58	0.15	54,54,54,54	0
2	FE	K	183	1/1	0.70	0.12	55,55,55,55	0
2	FE	Q	181	1/1	0.79	0.19	69,69,69,69	0
2	FE	B	183	1/1	0.80	0.14	59,59,59,59	0
2	FE	F	181	1/1	0.82	0.20	59,59,59,59	0
2	FE	U	181	1/1	0.83	0.19	61,61,61,61	0
2	FE	J	183	1/1	0.85	0.13	60,60,60,60	0
2	FE	F	183	1/1	0.86	0.17	52,52,52,52	0
2	FE	R	181	1/1	0.86	0.13	71,71,71,71	0
2	FE	P	181	1/1	0.86	0.17	68,68,68,68	0
2	FE	C	183	1/1	0.88	0.20	61,61,61,61	0
2	FE	G	181	1/1	0.88	0.16	64,64,64,64	0
2	FE	D	181	1/1	0.89	0.30	63,63,63,63	0
2	FE	O	181	1/1	0.89	0.20	72,72,72,72	0
2	FE	J	181	1/1	0.91	0.18	67,67,67,67	0
2	FE	I	181	1/1	0.91	0.16	49,49,49,49	0
2	FE	H	183	1/1	0.92	0.14	56,56,56,56	0
2	FE	T	183	1/1	0.92	0.19	56,56,56,56	0
2	FE	E	181	1/1	0.92	0.15	60,60,60,60	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	FE	H	181	1/1	0.93	0.20	56,56,56,56	0
2	FE	K	181	1/1	0.94	0.17	53,53,53,53	0
2	FE	T	180	1/1	0.94	0.10	39,39,39,39	0
2	FE	M	181	1/1	0.94	0.19	66,66,66,66	0
2	FE	V	181	1/1	0.94	0.13	62,62,62,62	0
2	FE	W	181	1/1	0.94	0.11	55,55,55,55	0
2	FE	B	181	1/1	0.95	0.12	62,62,62,62	0
2	FE	N	181	1/1	0.95	0.21	73,73,73,73	0
2	FE	A	181	1/1	0.95	0.14	56,56,56,56	0
2	FE	S	180	1/1	0.95	0.09	53,53,53,53	0
2	FE	S	181	1/1	0.95	0.09	64,64,64,64	0
2	FE	X	181	1/1	0.95	0.17	63,63,63,63	0
2	FE	C	184	1/1	0.96	0.18	50,50,50,50	0
2	FE	O	180	1/1	0.96	0.11	47,47,47,47	0
2	FE	B	180	1/1	0.96	0.18	56,56,56,56	0
2	FE	P	180	1/1	0.96	0.20	50,50,50,50	0
2	FE	L	181	1/1	0.96	0.20	59,59,59,59	0
2	FE	M	180	1/1	0.96	0.13	48,48,48,48	0
2	FE	R	180	1/1	0.96	0.17	49,49,49,49	0
2	FE	X	180	1/1	0.96	0.17	51,51,51,51	0
2	FE	G	180	1/1	0.96	0.22	52,52,52,52	0
2	FE	E	180	1/1	0.97	0.12	38,38,38,38	0
2	FE	I	180	1/1	0.97	0.15	42,42,42,42	0
2	FE	A	180	1/1	0.97	0.16	43,43,43,43	0
2	FE	T	181	1/1	0.97	0.17	59,59,59,59	0
2	FE	U	180	1/1	0.97	0.15	52,52,52,52	0
2	FE	Q	180	1/1	0.97	0.12	47,47,47,47	0
2	FE	E	184	1/1	0.97	0.11	41,41,41,41	0
2	FE	W	180	1/1	0.97	0.15	40,40,40,40	0
2	FE	N	180	1/1	0.97	0.18	60,60,60,60	0
2	FE	C	180	1/1	0.97	0.17	54,54,54,54	0
2	FE	H	180	1/1	0.97	0.11	40,40,40,40	0
2	FE	K	180	1/1	0.98	0.15	48,48,48,48	0
2	FE	F	180	1/1	0.98	0.16	48,48,48,48	0
2	FE	D	184	1/1	0.98	0.11	44,44,44,44	0
2	FE	C	181	1/1	0.98	0.28	56,56,56,56	0
2	FE	N	184	1/1	0.98	0.11	42,42,42,42	0
2	FE	V	180	1/1	0.99	0.13	49,49,49,49	0
2	FE	I	184	1/1	0.99	0.14	39,39,39,39	0
2	FE	L	180	1/1	0.99	0.11	35,35,35,35	0
2	FE	J	180	1/1	0.99	0.15	54,54,54,54	0
2	FE	D	180	1/1	0.99	0.12	37,37,37,37	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	FE	O	184	1/1	0.99	0.17	46,46,46,46	0

6.5 Other polymers (i)

There are no such residues in this entry.