Full wwPDB X-ray Structure Validation Report ⓘ

Sep 7, 2023 – 03:29 AM EDT

PDB ID	:	4FM4
Title	:	Wild Type Fe-type Nitrile Hydratase from Comamonas testosteroni Ni1
Authors	:	Kuhn, M.L.; Martinez, S.; Gumataotao, N.; Bornscheuer, U.; Liu, D.; Holz, R.C.
Deposited on	:	2012-06-15
Resolution	:	2.38 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

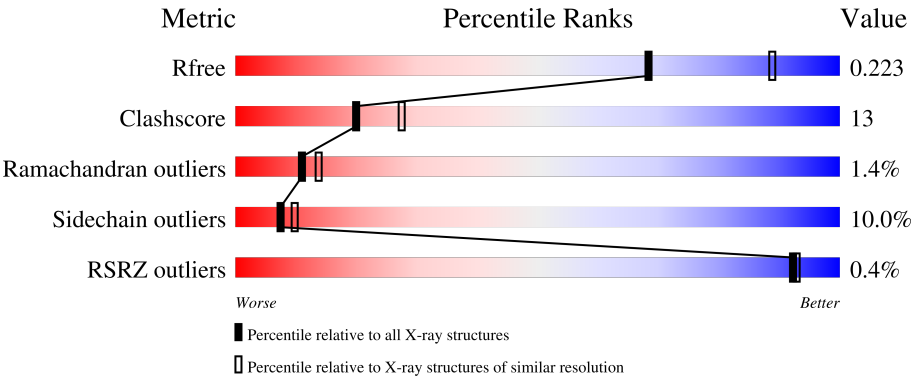
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, 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 2.38 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	5509 (2.40-2.36)
Clashscore	141614	6082 (2.40-2.36)
Ramachandran outliers	138981	5973 (2.40-2.36)
Sidechain outliers	138945	5975 (2.40-2.36)
RSRZ outliers	127900	5397 (2.40-2.36)

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	209	71% 21% 7% •
1	C	209	68% 24% 6% •
1	E	209	72% 21% 6% •
1	G	209	72% 22% 5% •
1	I	209	71% 22% 5% •

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Mol	Chain	Length	Quality of chain
1	K	209	72% 21% 5%
1	M	209	71% 22% 5%
1	O	209	73% 19% 7%
2	B	206	79% 18%
2	D	206	75% 20%
2	F	206	76% 19%
2	H	206	81% 14%
2	J	206	75% 20%
2	L	206	76% 20%
2	N	206	77% 19%
2	P	206	75% 21%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
1	CSD	E	104	-	-	X	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 27326 atoms, of which 8 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 Nitrile hydratase alpha subunit.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	206	Total	C	H	N	O	S	0	0	0
			1610	1026	1	268	306	9			
1	C	206	Total	C	H	N	O	S	0	0	0
			1610	1026	1	268	306	9			
1	E	206	Total	C	H	N	O	S	0	0	0
			1610	1026	1	268	306	9			
1	G	206	Total	C	H	N	O	S	0	0	0
			1610	1026	1	268	306	9			
1	I	206	Total	C	H	N	O	S	0	0	0
			1610	1026	1	268	306	9			
1	K	206	Total	C	H	N	O	S	0	0	0
			1610	1026	1	268	306	9			
1	M	206	Total	C	H	N	O	S	0	0	0
			1610	1026	1	268	306	9			
1	O	206	Total	C	H	N	O	S	0	0	0
			1610	1026	1	268	306	9			

- Molecule 2 is a protein called Nitrile hydratase beta subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	206	Total	C	N	O	S	0	0	0
			1589	1017	271	293	8			
2	D	206	Total	C	N	O	S	0	0	0
			1589	1017	271	293	8			
2	F	206	Total	C	N	O	S	0	0	0
			1589	1017	271	293	8			
2	H	206	Total	C	N	O	S	0	0	0
			1589	1017	271	293	8			
2	J	206	Total	C	N	O	S	0	0	0
			1589	1017	271	293	8			
2	L	206	Total	C	N	O	S	0	0	0
			1589	1017	271	293	8			

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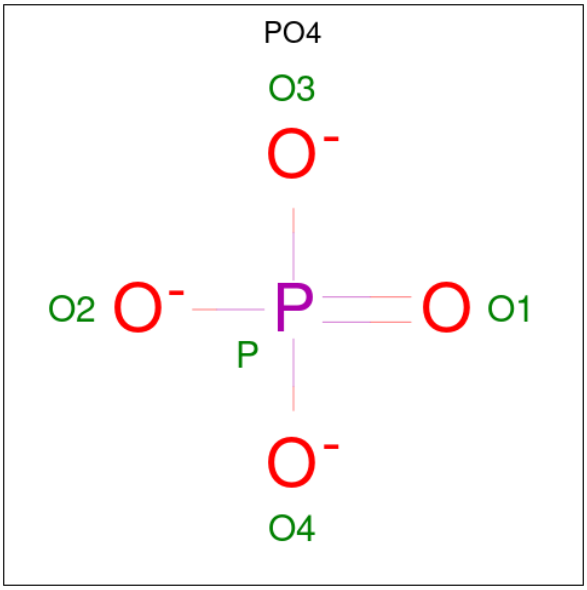
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	N	206	Total	C	N	O	S	0	0	0
			1589	1017	271	293	8			
2	P	206	Total	C	N	O	S	0	0	0
			1589	1017	271	293	8			

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	O	P		0	0
			5	4	1			
3	C	1	Total	O	P		0	0
			5	4	1			
3	E	1	Total	O	P		0	0
			5	4	1			
3	G	1	Total	O	P		0	0
			5	4	1			
3	I	1	Total	O	P		0	0
			5	4	1			
3	K	1	Total	O	P		0	0
			5	4	1			
3	M	1	Total	O	P		0	0
			5	4	1			
3	O	1	Total	O	P		0	0
			5	4	1			

- Molecule 4 is FE (III) ION (three-letter code: FE) (formula: Fe).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total Fe 1 1	0	0
4	C	1	Total Fe 1 1	0	0
4	E	1	Total Fe 1 1	0	0
4	G	1	Total Fe 1 1	0	0
4	I	1	Total Fe 1 1	0	0
4	K	1	Total Fe 1 1	0	0
4	M	1	Total Fe 1 1	0	0
4	O	1	Total Fe 1 1	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	98	Total O 98 98	0	0
5	B	113	Total O 113 113	0	0
5	C	91	Total O 91 91	0	0
5	D	106	Total O 106 106	0	0
5	E	107	Total O 107 107	0	0
5	F	112	Total O 112 112	0	0
5	G	93	Total O 93 93	0	0
5	H	110	Total O 110 110	0	0
5	I	108	Total O 108 108	0	0
5	J	92	Total O 92 92	0	0
5	K	113	Total O 113 113	0	0
5	L	122	Total O 122 122	0	0

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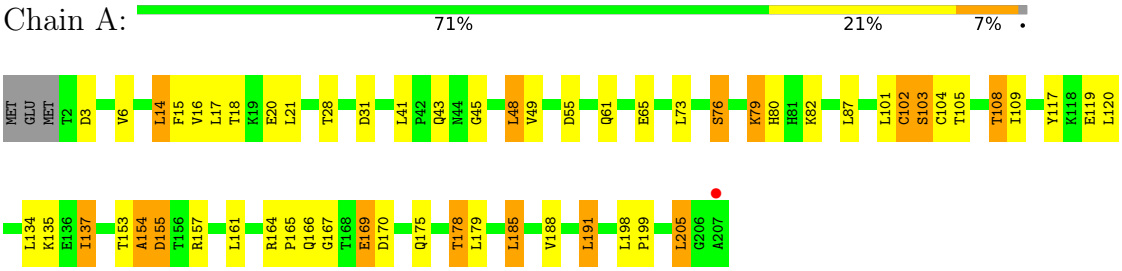
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	M	99	Total O 99 99	0	0
5	N	104	Total O 104 104	0	0
5	O	115	Total O 115 115	0	0
5	P	103	Total O 103 103	0	0

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.

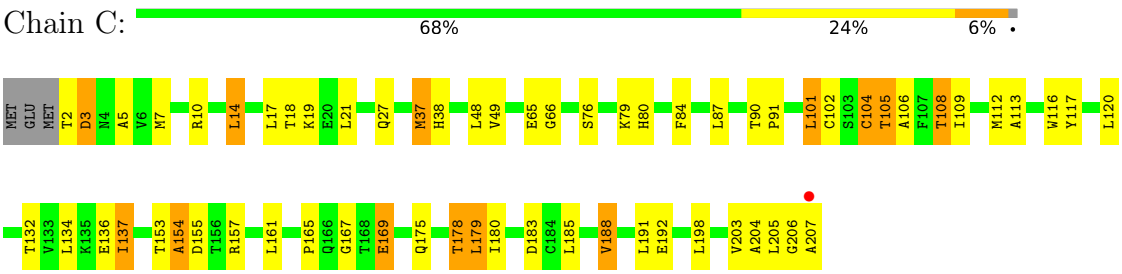
• Molecule 1: Nitrile hydratase alpha subunit

Chain A:



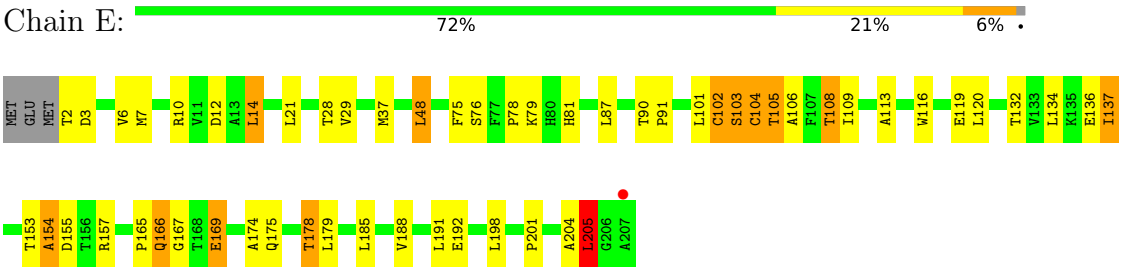
• Molecule 1: Nitrile hydratase alpha subunit

Chain C:



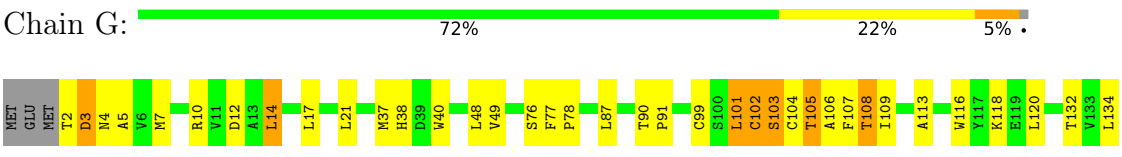
• Molecule 1: Nitrile hydratase alpha subunit

Chain E:



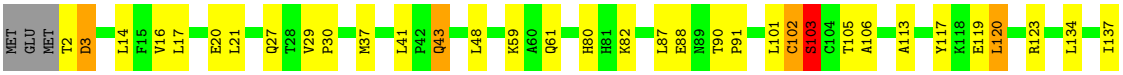
• Molecule 1: Nitrile hydratase alpha subunit

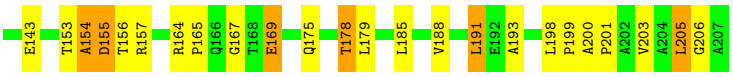
Chain G:



• Molecule 1: Nitrile hydratase alpha subunit

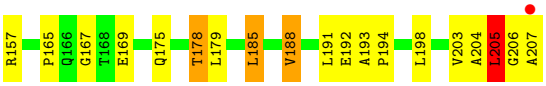
Chain I:





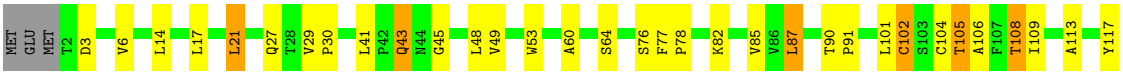
• Molecule 1: Nitrile hydratase alpha subunit

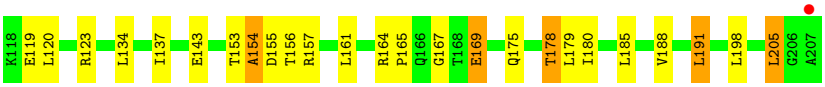
Chain K:



• Molecule 1: Nitrile hydratase alpha subunit

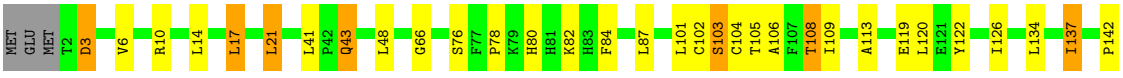
Chain M:





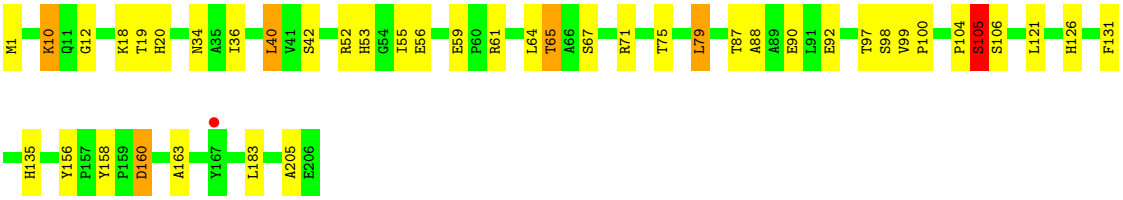
• Molecule 1: Nitrile hydratase alpha subunit

Chain O:



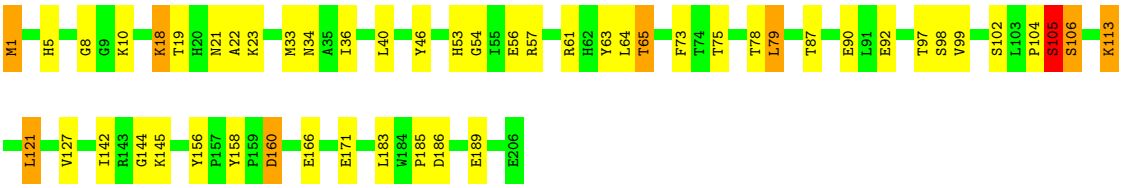
• Molecule 2: Nitrile hydratase beta subunit

Chain B:



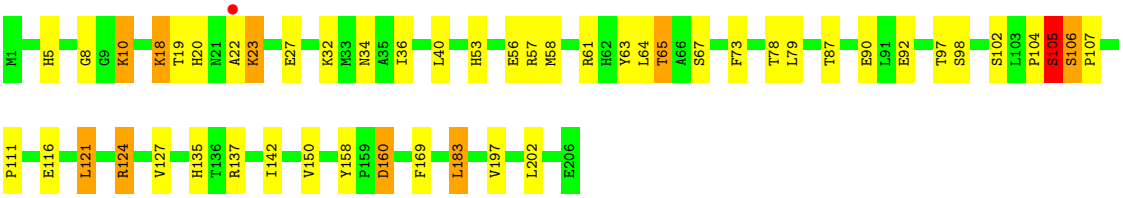
• Molecule 2: Nitrile hydratase beta subunit

Chain D:



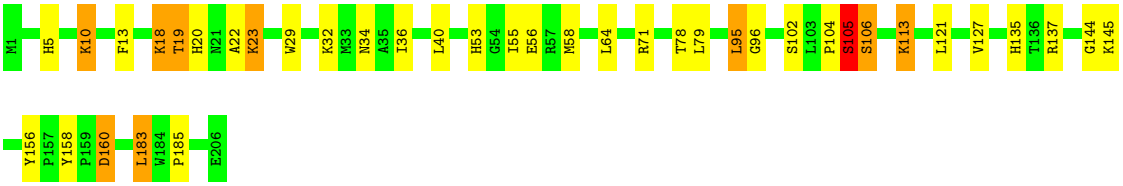
• Molecule 2: Nitrile hydratase beta subunit

Chain F:



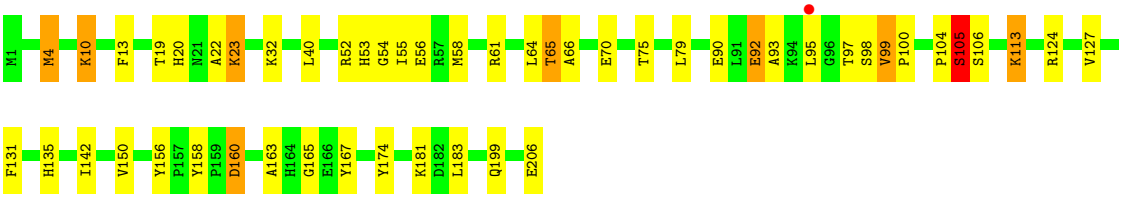
• Molecule 2: Nitrile hydratase beta subunit

Chain H:



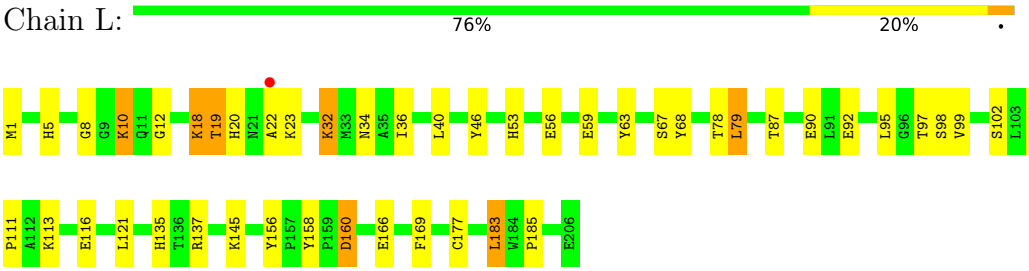
• Molecule 2: Nitrile hydratase beta subunit

Chain J:



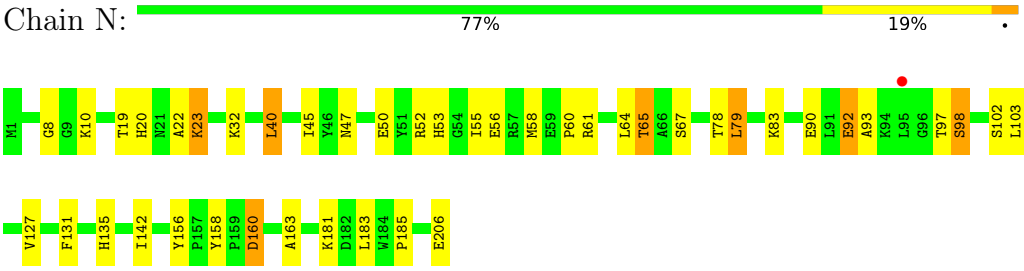
• Molecule 2: Nitrile hydratase beta subunit

Chain L:



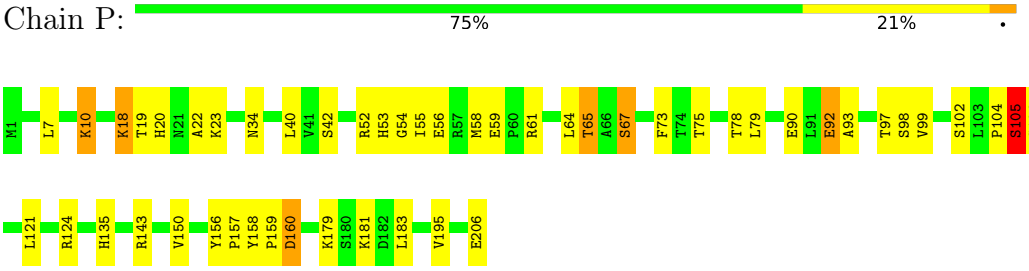
• Molecule 2: Nitrile hydratase beta subunit

Chain N:



• Molecule 2: Nitrile hydratase beta subunit

Chain P:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31	Depositor
Cell constants a, b, c, α, β, γ	111.40Å 111.40Å 475.31Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	36.16 – 2.38 36.16 – 2.38	Depositor EDS
% Data completeness (in resolution range)	99.3 (36.16-2.38) 87.0 (36.16-2.38)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.30 (at 2.39Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.3_928)	Depositor
R, R_{free}	0.188 , 0.227 0.184 , 0.223	Depositor DCC
R_{free} test set	13171 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	31.9	Xtriage
Anisotropy	0.674	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 36.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.487 for -h,-k,l 0.487 for h,-h-k,-l 0.487 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	27326	wwPDB-VP
Average B, all atoms (Å^2)	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.33% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CSD, PO4, 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	0.54	0/1630	0.66	0/2227
1	C	0.57	0/1630	0.71	0/2227
1	E	0.57	0/1630	0.69	0/2227
1	G	0.57	0/1630	0.70	0/2227
1	I	0.53	0/1630	0.67	0/2227
1	K	0.57	0/1630	0.71	0/2227
1	M	0.55	0/1630	0.68	0/2227
1	O	0.55	0/1630	0.67	0/2227
2	B	0.56	0/1636	0.65	0/2216
2	D	0.58	0/1636	0.65	1/2216 (0.0%)
2	F	0.59	0/1636	0.67	1/2216 (0.0%)
2	H	0.59	0/1636	0.66	1/2216 (0.0%)
2	J	0.56	0/1636	0.66	0/2216
2	L	0.60	0/1636	0.67	1/2216 (0.0%)
2	N	0.57	0/1636	0.65	0/2216
2	P	0.58	0/1636	0.66	0/2216
All	All	0.57	0/26128	0.67	4/35544 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	1
1	E	0	1
1	G	0	1
1	I	0	1
1	K	0	1
1	M	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	O	0	1
All	All	0	8

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	H	105	SER	N-CA-C	-6.11	94.51	111.00
2	F	105	SER	N-CA-C	-5.75	95.47	111.00
2	L	105	SER	N-CA-C	-5.52	96.10	111.00
2	D	105	SER	N-CA-C	-5.26	96.79	111.00

There are no chirality outliers.

All (8) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	153	THR	Peptide
1	C	153	THR	Peptide
1	E	153	THR	Peptide
1	G	153	THR	Peptide
1	I	153	THR	Peptide
1	K	153	THR	Peptide
1	M	153	THR	Peptide
1	O	153	THR	Peptide

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	1609	1	1592	43	0
1	C	1609	1	1590	49	0
1	E	1609	1	1591	42	0
1	G	1609	1	1591	42	0
1	I	1609	1	1591	48	0
1	K	1609	1	1590	48	0
1	M	1609	1	1590	52	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	O	1609	1	1590	44	0
2	B	1589	0	1538	37	0
2	D	1589	0	1538	43	0
2	F	1589	0	1538	41	0
2	H	1589	0	1538	38	0
2	J	1589	0	1538	48	0
2	L	1589	0	1538	46	0
2	N	1589	0	1538	33	0
2	P	1589	0	1538	47	0
3	A	5	0	0	0	0
3	C	5	0	0	1	0
3	E	5	0	0	1	0
3	G	5	0	0	0	0
3	I	5	0	0	0	0
3	K	5	0	0	0	0
3	M	5	0	0	0	0
3	O	5	0	0	0	0
4	A	1	0	0	0	0
4	C	1	0	0	0	0
4	E	1	0	0	0	0
4	G	1	0	0	0	0
4	I	1	0	0	0	0
4	K	1	0	0	0	0
4	M	1	0	0	0	0
4	O	1	0	0	0	0
5	A	98	0	0	7	0
5	B	113	0	0	4	0
5	C	91	0	0	5	1
5	D	106	0	0	2	0
5	E	107	0	0	6	0
5	F	112	0	0	4	1
5	G	93	0	0	4	0
5	H	110	0	0	8	0
5	I	108	0	0	5	0
5	J	92	0	0	8	0
5	K	113	0	0	8	0
5	L	122	0	0	5	0
5	M	99	0	0	7	0
5	N	104	0	0	1	0
5	O	115	0	0	4	1
5	P	103	0	0	3	1
All	All	27318	8	25029	640	2

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 13.

All (640) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:207:ALA:CB	2:P:42:SER:HB3	1.71	1.20
2:F:124:ARG:HG3	2:F:124:ARG:HH11	0.99	1.13
1:G:154:ALA:O	5:G:447:HOH:O	1.83	0.96
2:F:97:THR:HG22	2:F:98:SER:H	1.30	0.96
1:K:207:ALA:HB1	2:P:42:SER:HB3	1.46	0.95
1:M:43:GLN:H	1:M:43:GLN:HE21	1.04	0.95
1:I:43:GLN:HE21	1:I:43:GLN:N	1.64	0.94
1:K:204:ALA:O	1:K:205:LEU:HB2	1.68	0.93
2:F:104:PRO:CA	2:F:105:SER:HB2	1.97	0.93
1:O:43:GLN:HE21	1:O:43:GLN:N	1.67	0.93
2:H:10:LYS:HE3	5:H:378:HOH:O	1.66	0.93
2:D:104:PRO:CA	2:D:105:SER:HB2	2.01	0.91
1:K:154:ALA:O	5:K:403:HOH:O	1.88	0.91
2:D:104:PRO:CB	2:D:105:SER:HB2	2.00	0.91
1:I:43:GLN:H	1:I:43:GLN:NE2	1.69	0.90
1:E:204:ALA:O	1:E:205:LEU:HB2	1.69	0.90
2:F:124:ARG:HG3	2:F:124:ARG:NH1	1.78	0.89
1:O:43:GLN:H	1:O:43:GLN:NE2	1.69	0.89
2:P:104:PRO:CA	2:P:105:SER:HB2	2.03	0.89
2:B:163:ALA:O	5:B:349:HOH:O	1.91	0.88
1:E:2:THR:N	5:E:460:HOH:O	2.06	0.88
1:O:43:GLN:HE21	1:O:43:GLN:H	0.87	0.86
1:E:154:ALA:O	5:E:473:HOH:O	1.93	0.85
2:P:104:PRO:CB	2:P:105:SER:HB2	2.06	0.85
2:D:1:MET:HE3	2:D:56:GLU:HB3	1.58	0.85
2:H:104:PRO:CA	2:H:105:SER:HB2	2.05	0.84
2:N:104:PRO:CA	2:N:105:SER:HB2	2.07	0.84
1:M:167:GLY:N	1:M:169:GLU:OE1	2.10	0.84
2:J:163:ALA:O	5:J:344:HOH:O	1.94	0.84
2:P:59:GLU:OE1	5:P:333:HOH:O	1.96	0.83
2:N:104:PRO:CB	2:N:105:SER:HB2	2.08	0.83
2:L:10:LYS:HE3	2:L:10:LYS:HA	1.59	0.83
1:M:43:GLN:HE21	1:M:43:GLN:N	1.77	0.83
1:A:167:GLY:N	1:A:169:GLU:OE1	2.12	0.82
1:K:154:ALA:HB3	5:K:507:HOH:O	1.78	0.82
1:O:76:SER:O	1:O:108:THR:HG21	1.78	0.82
2:B:104:PRO:CB	2:B:105:SER:HB2	2.10	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:10:LYS:HE3	2:J:10:LYS:HA	1.61	0.82
2:F:104:PRO:HA	2:F:105:SER:CB	2.09	0.82
2:J:97:THR:HG22	2:J:98:SER:N	1.94	0.82
1:C:175:GLN:O	1:C:178:THR:HB	1.80	0.81
1:O:167:GLY:N	1:O:169:GLU:OE1	2.12	0.81
1:C:154:ALA:O	5:C:402:HOH:O	1.98	0.80
1:G:108:THR:HG22	1:G:109:ILE:HG12	1.64	0.80
1:G:2:THR:HG21	1:G:7:MET:SD	2.21	0.80
2:F:104:PRO:HA	2:F:105:SER:HB2	1.63	0.79
2:F:104:PRO:CB	2:F:105:SER:HB2	2.12	0.79
2:N:92:GLU:OE1	2:N:98:SER:HA	1.83	0.79
1:C:2:THR:HG21	1:C:7:MET:SD	2.22	0.79
1:K:205:LEU:O	1:K:207:ALA:N	2.16	0.79
1:A:154:ALA:O	5:A:412:HOH:O	1.99	0.79
1:E:175:GLN:O	1:E:178:THR:HB	1.83	0.79
1:O:205:LEU:C	1:O:205:LEU:HD23	2.04	0.78
1:K:207:ALA:HA	2:P:42:SER:CB	2.14	0.78
2:H:104:PRO:CB	2:H:105:SER:HB2	2.15	0.77
2:H:78:THR:HG21	2:H:102:SER:HB2	1.66	0.77
1:G:175:GLN:O	1:G:178:THR:HB	1.85	0.77
1:E:76:SER:O	1:E:108:THR:HG21	1.84	0.77
2:L:92:GLU:HG2	2:L:98:SER:HA	1.66	0.77
1:K:175:GLN:O	1:K:178:THR:HB	1.84	0.76
1:I:43:GLN:HE21	1:I:43:GLN:H	0.83	0.76
1:I:154:ALA:O	5:I:461:HOH:O	2.03	0.76
2:P:61:ARG:O	2:P:65:THR:HB	1.86	0.76
2:H:113:LYS:HA	2:H:113:LYS:HE3	1.68	0.76
1:G:102:CSD:O	1:G:103:SER:HB3	1.86	0.76
1:K:207:ALA:HB2	2:P:42:SER:HB3	1.67	0.76
2:N:104:PRO:HA	2:N:105:SER:CB	2.15	0.76
2:J:61:ARG:O	2:J:65:THR:HB	1.86	0.76
1:K:207:ALA:CA	2:P:42:SER:HB3	2.17	0.76
2:B:104:PRO:CA	2:B:105:SER:HB2	2.15	0.75
1:G:105:THR:HG21	1:G:113:ALA:HB2	1.66	0.75
1:O:154:ALA:O	5:O:412:HOH:O	2.02	0.75
1:C:104:CSD:HA	3:C:301:PO4:O4	1.87	0.75
1:M:17:LEU:HD23	1:M:21:LEU:CD2	2.15	0.75
2:J:92:GLU:OE1	2:J:98:SER:HA	1.86	0.75
1:M:105:THR:HG21	1:M:113:ALA:HB2	1.68	0.75
2:F:97:THR:HG22	2:F:98:SER:N	2.02	0.74
2:F:58:MET:O	5:F:397:HOH:O	2.03	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:105:THR:HG21	1:E:113:ALA:HB2	1.68	0.73
2:F:10:LYS:NZ	5:F:345:HOH:O	2.20	0.73
1:C:167:GLY:N	1:C:169:GLU:OE1	2.20	0.73
1:M:43:GLN:H	1:M:43:GLN:NE2	1.84	0.73
1:E:2:THR:HG21	1:E:7:MET:SD	2.29	0.73
1:I:82:LYS:HE2	1:I:155:ASP:OD2	1.89	0.73
2:B:59:GLU:OE1	5:B:408:HOH:O	2.07	0.73
2:B:61:ARG:O	2:B:65:THR:HB	1.89	0.73
2:F:22:ALA:O	2:F:23:LYS:HB2	1.87	0.73
2:N:61:ARG:O	2:N:65:THR:HB	1.89	0.73
1:K:207:ALA:HA	2:P:42:SER:HB2	1.70	0.72
2:D:104:PRO:HA	2:D:105:SER:CB	2.18	0.72
1:I:37:MET:HE2	1:I:37:MET:HA	1.71	0.72
2:P:104:PRO:HA	2:P:105:SER:CB	2.18	0.72
1:I:167:GLY:N	1:I:169:GLU:OE1	2.22	0.72
1:O:82:LYS:HE2	1:O:155:ASP:OD2	1.88	0.72
1:M:154:ALA:O	5:M:447:HOH:O	2.08	0.71
1:K:154:ALA:N	5:K:403:HOH:O	2.22	0.71
2:H:104:PRO:HA	2:H:105:SER:HB2	1.72	0.71
1:A:205:LEU:HD23	1:A:205:LEU:C	2.10	0.71
1:G:191:LEU:O	5:G:420:HOH:O	2.09	0.70
2:D:97:THR:HG22	2:D:98:SER:N	2.07	0.70
2:H:104:PRO:HA	2:H:105:SER:CB	2.22	0.70
2:P:104:PRO:CA	2:P:105:SER:CB	2.71	0.69
2:J:97:THR:CG2	2:J:98:SER:N	2.56	0.69
1:G:3:ASP:OD1	1:G:5:ALA:N	2.26	0.69
2:D:61:ARG:O	2:D:65:THR:HB	1.93	0.68
1:C:154:ALA:N	5:C:402:HOH:O	2.25	0.68
2:F:87:THR:OG1	2:F:90:GLU:HG3	1.94	0.68
2:P:67:SER:HB3	5:P:373:HOH:O	1.93	0.68
1:M:154:ALA:N	5:M:447:HOH:O	2.27	0.68
1:K:207:ALA:CB	2:P:42:SER:CB	2.63	0.68
1:K:2:THR:HG21	1:K:7:MET:SD	2.33	0.68
1:I:137:ILE:CD1	1:I:188:VAL:CG2	2.72	0.67
2:J:104:PRO:CA	2:J:105:SER:HB2	2.25	0.67
1:E:154:ALA:N	5:E:473:HOH:O	2.28	0.67
2:F:61:ARG:O	2:F:65:THR:HB	1.95	0.67
2:N:104:PRO:CA	2:N:105:SER:CB	2.69	0.67
1:O:76:SER:O	1:O:108:THR:CG2	2.43	0.67
2:B:97:THR:HG22	2:B:98:SER:O	1.95	0.67
1:E:102:CSD:O	1:E:103:SER:HB3	1.93	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:124:ARG:HD2	2:N:206:GLU:OE1	1.95	0.67
1:G:204:ALA:O	1:G:205:LEU:CB	2.43	0.67
2:H:185:PRO:HD2	2:N:131:PHE:CE2	2.30	0.67
2:L:10:LYS:HE3	2:L:10:LYS:CA	2.24	0.67
1:A:154:ALA:HB3	5:B:410:HOH:O	1.94	0.67
1:I:41:LEU:HB3	1:I:43:GLN:NE2	2.09	0.67
2:L:177:CYS:O	5:L:337:HOH:O	2.11	0.67
1:E:167:GLY:N	1:E:169:GLU:OE1	2.27	0.66
2:F:53:HIS:O	2:F:57:ARG:HG3	1.95	0.66
2:H:58:MET:O	5:H:358:HOH:O	2.12	0.66
1:M:82:LYS:HE2	1:M:155:ASP:OD2	1.93	0.66
2:N:52:ARG:O	2:N:56:GLU:HG3	1.96	0.66
2:P:19:THR:HG22	2:P:20:HIS:N	2.11	0.66
1:K:207:ALA:HB1	2:P:42:SER:CB	2.24	0.66
1:A:137:ILE:CD1	1:A:188:VAL:CG2	2.74	0.66
2:P:97:THR:HG22	2:P:98:SER:O	1.96	0.66
1:A:28:THR:O	5:A:428:HOH:O	2.15	0.65
1:A:31:ASP:O	5:A:477:HOH:O	2.13	0.65
2:P:104:PRO:HA	2:P:105:SER:HB2	1.77	0.65
1:G:76:SER:O	1:G:108:THR:HG21	1.97	0.65
2:D:92:GLU:HG2	2:D:98:SER:HA	1.78	0.65
1:A:61:GLN:NE2	5:A:451:HOH:O	2.20	0.65
1:M:17:LEU:HD23	1:M:21:LEU:HD22	1.78	0.65
2:J:52:ARG:O	2:J:56:GLU:HG3	1.96	0.64
2:J:104:PRO:CB	2:J:105:SER:HB2	2.27	0.64
1:K:198:LEU:HD12	1:M:198:LEU:HD12	1.79	0.64
1:M:205:LEU:C	1:M:205:LEU:HD23	2.16	0.64
1:E:166:GLN:HG3	1:I:193:ALA:CB	2.27	0.64
2:F:124:ARG:HH11	2:F:124:ARG:CG	1.91	0.64
1:I:61:GLN:NE2	5:I:478:HOH:O	1.86	0.64
1:K:116:TRP:CD1	2:L:18:LYS:HG2	2.33	0.64
1:G:14:LEU:HD13	2:H:36:ILE:HG21	1.81	0.63
1:K:112:MET:HE3	5:K:464:HOH:O	1.98	0.63
1:K:207:ALA:CA	2:P:42:SER:CB	2.76	0.63
2:H:10:LYS:CE	5:H:378:HOH:O	2.36	0.63
2:J:22:ALA:O	2:J:23:LYS:HB2	1.97	0.63
1:I:105:THR:HG21	1:I:113:ALA:HB2	1.79	0.63
1:G:4:ASN:OD1	2:H:29:TRP:NE1	2.23	0.63
2:D:22:ALA:O	2:D:23:LYS:HB2	1.96	0.63
1:M:137:ILE:CD1	1:M:188:VAL:CG2	2.77	0.62
1:K:82:LYS:HE2	1:K:155:ASP:OD2	1.99	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:165:PRO:HG3	1:A:191:LEU:HB3	1.80	0.62
1:E:76:SER:O	1:E:108:THR:CG2	2.47	0.62
1:M:137:ILE:HD12	1:M:188:VAL:HG21	1.81	0.62
2:L:10:LYS:HA	2:L:10:LYS:CE	2.30	0.62
2:P:143:ARG:HD2	5:P:360:HOH:O	2.00	0.62
1:A:108:THR:HG22	1:A:109:ILE:HG12	1.80	0.62
2:P:92:GLU:OE1	2:P:98:SER:HA	1.99	0.62
2:B:19:THR:HG22	2:B:20:HIS:O	2.00	0.62
1:M:175:GLN:O	1:M:178:THR:HB	1.98	0.62
1:O:175:GLN:O	1:O:178:THR:HB	2.00	0.62
2:D:78:THR:HG21	2:D:102:SER:HB2	1.81	0.61
1:G:132:THR:O	1:G:136:GLU:HG3	2.00	0.61
2:J:10:LYS:NZ	5:J:386:HOH:O	2.14	0.61
2:B:87:THR:OG1	2:B:90:GLU:HG3	2.00	0.61
2:B:97:THR:HG22	2:B:98:SER:N	2.14	0.61
1:C:105:THR:HG21	1:C:113:ALA:HB2	1.82	0.61
2:L:22:ALA:O	2:L:23:LYS:HB2	1.99	0.61
2:N:22:ALA:O	2:N:23:LYS:HB2	1.99	0.61
1:A:76:SER:O	1:A:108:THR:HG21	2.00	0.61
2:B:1:MET:HE3	2:L:12:GLY:CA	2.30	0.61
2:D:1:MET:CE	2:D:56:GLU:HB3	2.28	0.61
2:L:97:THR:HG22	2:L:98:SER:N	2.16	0.61
2:F:158:TYR:CE2	2:F:160:ASP:HB2	2.36	0.61
1:I:137:ILE:HD12	1:I:188:VAL:CG2	2.30	0.61
2:J:97:THR:CG2	2:J:98:SER:H	2.12	0.61
2:L:104:PRO:CB	2:L:105:SER:HB2	2.30	0.61
2:B:104:PRO:HA	2:B:105:SER:CB	2.30	0.61
2:J:92:GLU:HG3	2:J:97:THR:O	2.01	0.60
2:P:104:PRO:HB2	2:P:105:SER:HB2	1.81	0.60
1:K:76:SER:O	1:K:108:THR:OG1	2.19	0.60
2:D:5:HIS:CG	2:D:56:GLU:HG2	2.36	0.60
2:P:90:GLU:O	2:P:93:ALA:HB3	2.01	0.60
2:P:10:LYS:HA	2:P:10:LYS:HE3	1.84	0.60
1:E:3:ASP:HB2	1:E:6:VAL:HG23	1.82	0.60
1:A:175:GLN:O	1:A:178:THR:HB	2.02	0.60
2:B:104:PRO:HB2	2:B:105:SER:HB2	1.82	0.60
1:C:204:ALA:O	1:C:205:LEU:CB	2.50	0.60
2:J:104:PRO:HA	2:J:105:SER:CB	2.32	0.60
1:K:205:LEU:HD22	1:O:78:PRO:HB3	1.83	0.60
2:B:104:PRO:CA	2:B:105:SER:CB	2.79	0.60
2:B:131:PHE:CE2	2:L:185:PRO:HD2	2.37	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:165:PRO:HG3	1:M:191:LEU:HB3	1.83	0.60
1:C:137:ILE:CD1	1:C:188:VAL:CG2	2.80	0.59
1:G:116:TRP:CD1	2:H:18:LYS:HG2	2.37	0.59
1:K:106:ALA:HB2	1:K:157:ARG:HB3	1.83	0.59
1:A:119:GLU:HB3	5:A:437:HOH:O	2.01	0.59
2:B:97:THR:CG2	2:B:98:SER:N	2.64	0.59
1:C:112:MET:HE3	5:C:486:HOH:O	2.02	0.59
1:O:108:THR:HG22	1:O:109:ILE:HG12	1.84	0.59
1:E:108:THR:HG22	1:E:109:ILE:HG12	1.85	0.59
1:M:76:SER:O	1:M:108:THR:HG21	2.03	0.59
1:E:28:THR:O	5:E:453:HOH:O	2.17	0.59
2:J:10:LYS:HD3	5:J:386:HOH:O	2.01	0.59
2:N:163:ALA:O	5:N:345:HOH:O	2.17	0.59
1:K:204:ALA:O	1:K:205:LEU:CB	2.43	0.59
2:P:10:LYS:HA	2:P:10:LYS:CE	2.32	0.59
2:L:10:LYS:NZ	5:L:392:HOH:O	2.36	0.59
2:P:52:ARG:O	2:P:56:GLU:HG3	2.03	0.59
2:L:158:TYR:CE2	2:L:160:ASP:HB2	2.38	0.59
1:E:204:ALA:O	1:E:205:LEU:CB	2.47	0.58
2:F:106:SER:HB3	5:F:382:HOH:O	2.02	0.58
2:B:92:GLU:OE1	2:B:98:SER:HA	2.04	0.58
1:K:137:ILE:CD1	1:K:188:VAL:HG22	2.33	0.58
1:A:82:LYS:HE2	1:A:155:ASP:OD2	2.03	0.58
2:B:88:ALA:O	2:B:92:GLU:HG3	2.03	0.58
1:E:198:LEU:HD12	1:I:198:LEU:HD12	1.84	0.58
1:K:37:MET:HG2	1:K:38:HIS:CE1	2.37	0.58
1:O:41:LEU:HB3	1:O:43:GLN:NE2	2.19	0.58
2:L:78:THR:HG21	2:L:102:SER:HB2	1.84	0.58
1:G:137:ILE:CD1	1:G:188:VAL:HG22	2.34	0.58
2:J:97:THR:HG22	2:J:98:SER:H	1.66	0.58
2:N:97:THR:HG22	2:N:98:SER:N	2.18	0.58
1:O:3:ASP:HB3	1:O:6:VAL:H	1.68	0.57
2:J:158:TYR:CE2	2:J:160:ASP:HB2	2.39	0.57
2:L:97:THR:CG2	2:L:98:SER:N	2.67	0.57
1:M:29:VAL:HG21	2:N:32:LYS:HD3	1.86	0.57
1:E:14:LEU:HD13	2:F:36:ILE:HG21	1.86	0.57
1:G:76:SER:O	1:G:108:THR:CG2	2.52	0.57
2:L:104:PRO:HA	2:L:105:SER:CB	2.34	0.57
1:M:17:LEU:CD2	1:M:21:LEU:CD2	2.82	0.57
1:O:198:LEU:HB3	1:O:199:PRO:HD2	1.86	0.57
1:A:137:ILE:HD11	1:A:188:VAL:CG2	2.35	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:137:ILE:HD12	1:I:188:VAL:HG21	1.86	0.57
2:H:106:SER:HB3	5:H:368:HOH:O	2.03	0.57
2:B:75:THR:O	2:B:79:LEU:HB2	2.05	0.57
1:C:14:LEU:HD13	2:D:36:ILE:HG21	1.86	0.56
1:A:154:ALA:N	5:A:412:HOH:O	2.38	0.56
2:D:5:HIS:CD2	2:D:56:GLU:HG2	2.40	0.56
1:I:165:PRO:HG3	1:I:191:LEU:HB3	1.88	0.56
1:C:137:ILE:HD11	1:C:188:VAL:CG2	2.35	0.56
2:D:104:PRO:HB2	2:D:105:SER:HB2	1.88	0.56
1:I:119:GLU:HB3	5:I:408:HOH:O	2.04	0.56
1:C:76:SER:O	1:C:108:THR:OG1	2.22	0.56
2:L:104:PRO:CA	2:L:105:SER:HB2	2.36	0.56
2:D:171:GLU:OE1	5:D:379:HOH:O	2.18	0.56
1:M:137:ILE:HD12	1:M:188:VAL:CG2	2.34	0.56
1:C:106:ALA:HB2	1:C:157:ARG:HB3	1.88	0.56
1:E:167:GLY:CA	1:E:169:GLU:OE1	2.53	0.56
2:P:19:THR:CG2	2:P:20:HIS:N	2.69	0.56
1:A:49:VAL:HG13	1:A:161:LEU:HD12	1.88	0.55
2:B:1:MET:CE	2:L:12:GLY:CA	2.84	0.55
1:M:119:GLU:HB3	5:M:410:HOH:O	2.06	0.55
2:L:10:LYS:NZ	5:L:347:HOH:O	2.39	0.55
2:B:52:ARG:O	2:B:56:GLU:HG3	2.06	0.55
2:D:106:SER:HB3	5:D:391:HOH:O	2.05	0.55
2:L:5:HIS:CG	2:L:56:GLU:HG2	2.42	0.55
1:M:108:THR:HG22	1:M:109:ILE:HG12	1.87	0.55
2:F:92:GLU:HG2	2:F:98:SER:HA	1.88	0.55
2:J:10:LYS:CD	5:J:386:HOH:O	2.55	0.55
1:M:3:ASP:HB3	1:M:6:VAL:H	1.71	0.55
1:A:137:ILE:HD12	1:A:188:VAL:CG2	2.37	0.55
2:H:5:HIS:CG	2:H:56:GLU:HG2	2.42	0.55
1:I:175:GLN:O	1:I:178:THR:HB	2.07	0.55
1:A:45:GLY:O	1:A:49:VAL:HG23	2.07	0.55
2:L:92:GLU:CG	2:L:98:SER:HA	2.34	0.55
2:H:23:LYS:N	5:H:402:HOH:O	2.15	0.55
2:L:104:PRO:CA	2:L:105:SER:CB	2.85	0.55
2:N:92:GLU:HG3	2:N:97:THR:O	2.06	0.55
2:N:158:TYR:CE2	2:N:160:ASP:HB2	2.42	0.55
2:D:97:THR:HG22	2:D:98:SER:H	1.71	0.55
1:C:101:LEU:HB2	5:C:406:HOH:O	2.06	0.55
1:I:37:MET:HE2	1:I:37:MET:CA	2.37	0.54
1:K:207:ALA:N	5:K:428:HOH:O	2.39	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:46:TYR:CG	2:L:79:LEU:HD23	2.42	0.54
1:E:104:CSD:C	1:E:105:THR:CG2	2.85	0.54
1:I:3:ASP:OD2	1:I:3:ASP:N	2.25	0.54
2:L:145:LYS:HG3	2:L:183:LEU:HD12	1.88	0.54
1:M:41:LEU:HB3	1:M:43:GLN:NE2	2.23	0.54
2:N:79:LEU:O	2:N:83:LYS:HG3	2.08	0.54
1:O:142:PRO:HD2	1:O:145:ILE:HD12	1.89	0.54
1:A:16:VAL:O	1:A:20:GLU:HG3	2.08	0.54
1:G:137:ILE:HD11	1:G:188:VAL:HG22	1.89	0.54
1:M:102:CSD:O	1:M:123:ARG:HD2	2.08	0.54
1:M:105:THR:CG2	1:M:113:ALA:HB2	2.35	0.54
1:E:166:GLN:HG3	1:I:193:ALA:HB3	1.88	0.54
2:H:113:LYS:HE3	2:H:113:LYS:CA	2.32	0.54
1:A:49:VAL:HG13	1:A:161:LEU:CD1	2.38	0.54
2:H:158:TYR:CE2	2:H:160:ASP:HB2	2.43	0.54
1:M:60:ALA:O	5:M:484:HOH:O	2.18	0.54
1:O:153:THR:HG21	2:P:195:VAL:HG13	1.90	0.54
1:E:165:PRO:HB3	1:E:192:GLU:HA	1.90	0.54
2:J:19:THR:HG22	2:J:20:HIS:N	2.23	0.54
2:H:104:PRO:CA	2:H:105:SER:CB	2.77	0.53
2:N:19:THR:HG22	2:N:20:HIS:N	2.23	0.53
1:O:200:ALA:HB1	1:O:201:PRO:HD2	1.90	0.53
2:P:22:ALA:O	2:P:23:LYS:HB2	2.08	0.53
1:C:3:ASP:OD1	1:C:5:ALA:N	2.42	0.53
1:K:137:ILE:HD11	1:K:188:VAL:HG22	1.90	0.53
1:I:103:SER:O	1:I:103:SER:OG	2.24	0.52
1:C:37:MET:HB3	1:C:38:HIS:CD2	2.43	0.52
1:I:143:GLU:N	2:L:116:GLU:OE2	2.27	0.52
2:J:20:HIS:ND1	5:J:392:HOH:O	2.29	0.52
2:F:78:THR:HG21	2:F:102:SER:HB2	1.91	0.52
1:I:106:ALA:HB2	1:I:157:ARG:HB3	1.91	0.52
1:I:156:THR:HB	5:I:407:HOH:O	2.08	0.52
2:J:19:THR:CG2	2:J:20:HIS:N	2.72	0.52
2:P:53:HIS:CG	2:P:135:HIS:HB2	2.45	0.52
2:B:53:HIS:CG	2:B:135:HIS:HB2	2.45	0.52
2:J:53:HIS:CG	2:J:135:HIS:HB2	2.44	0.52
1:O:137:ILE:CD1	1:O:188:VAL:HG22	2.39	0.52
1:A:137:ILE:CD1	1:A:188:VAL:HG22	2.39	0.52
1:K:3:ASP:OD1	1:K:5:ALA:N	2.43	0.52
2:B:19:THR:HG22	2:B:20:HIS:N	2.24	0.52
2:H:53:HIS:CG	2:H:135:HIS:HB2	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:104:PRO:HB2	2:N:105:SER:HB2	1.89	0.52
1:C:108:THR:HG23	1:C:109:ILE:HG12	1.92	0.52
2:F:124:ARG:NH1	2:F:124:ARG:CG	2.59	0.52
2:F:97:THR:CG2	2:F:98:SER:H	2.10	0.51
1:C:37:MET:C	1:C:38:HIS:HD2	2.13	0.51
2:J:10:LYS:CE	5:J:386:HOH:O	2.58	0.51
2:H:22:ALA:N	5:H:402:HOH:O	2.44	0.51
1:E:104:CSD:O	1:E:105:THR:HG22	2.10	0.51
1:K:103:SER:HB3	2:L:68:TYR:HE1	1.75	0.51
2:B:10:LYS:HA	2:B:10:LYS:CE	2.40	0.51
2:F:19:THR:CG2	2:F:20:HIS:N	2.74	0.51
2:N:19:THR:HG22	2:N:20:HIS:O	2.10	0.51
2:F:197:VAL:HG11	2:F:202:LEU:HD21	1.92	0.51
1:G:101:LEU:HB2	5:G:403:HOH:O	2.09	0.51
1:I:137:ILE:HD11	1:I:188:VAL:CG2	2.39	0.51
1:K:155:ASP:HB2	2:L:156:TYR:CD2	2.46	0.51
2:D:64:LEU:HD21	2:J:4:MET:CE	2.41	0.51
1:E:104:CSD:C	1:E:105:THR:HG22	2.41	0.51
1:G:106:ALA:HB2	1:G:157:ARG:HB3	1.92	0.51
1:K:2:THR:N	5:K:455:HOH:O	2.43	0.51
2:F:19:THR:HG22	2:F:20:HIS:O	2.10	0.51
2:B:92:GLU:CD	2:B:98:SER:HA	2.31	0.51
1:C:90:THR:HB	1:C:91:PRO:CD	2.41	0.51
1:E:174:ALA:HB1	1:I:203:VAL:HG11	1.92	0.51
1:M:45:GLY:O	1:M:49:VAL:HG23	2.11	0.51
1:E:29:VAL:HG21	2:F:32:LYS:HG3	1.92	0.50
1:E:116:TRP:CD1	2:F:18:LYS:HG2	2.46	0.50
1:A:3:ASP:HB3	1:A:6:VAL:HG23	1.92	0.50
2:L:59:GLU:OE1	5:L:408:HOH:O	2.20	0.50
2:N:19:THR:CG2	2:N:20:HIS:N	2.74	0.50
2:F:5:HIS:CG	2:F:56:GLU:HG2	2.46	0.50
1:I:16:VAL:O	1:I:20:GLU:HG3	2.11	0.50
2:J:10:LYS:HE3	2:J:10:LYS:CA	2.37	0.50
2:J:90:GLU:O	2:J:93:ALA:HB3	2.11	0.50
1:G:155:ASP:H	1:G:157:ARG:HH12	1.59	0.50
2:P:97:THR:CG2	2:P:98:SER:N	2.74	0.50
1:C:37:MET:C	1:C:38:HIS:CD2	2.85	0.50
1:I:37:MET:CA	1:I:37:MET:CE	2.89	0.50
1:I:105:THR:HG22	1:I:117:TYR:CE2	2.47	0.50
1:G:3:ASP:OD1	1:G:3:ASP:C	2.50	0.50
1:M:49:VAL:HG13	1:M:161:LEU:CD1	2.42	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:127:VAL:O	2:H:144:GLY:HA2	2.11	0.50
1:A:137:ILE:HD12	1:A:188:VAL:HG21	1.94	0.50
2:D:97:THR:CG2	2:D:98:SER:N	2.74	0.50
2:H:113:LYS:HA	2:H:113:LYS:CE	2.38	0.50
2:L:63:TYR:C	2:L:63:TYR:CD2	2.84	0.50
2:D:64:LEU:HD21	2:J:4:MET:HE2	1.93	0.50
2:L:104:PRO:HB2	2:L:105:SER:HB2	1.92	0.50
1:K:167:GLY:N	1:K:169:GLU:OE1	2.42	0.49
1:K:167:GLY:CA	1:K:169:GLU:OE1	2.61	0.49
2:L:97:THR:HG22	2:L:98:SER:O	2.11	0.49
1:A:135:LYS:NZ	5:A:494:HOH:O	2.29	0.49
1:A:155:ASP:HB2	2:B:156:TYR:CD2	2.47	0.49
1:C:137:ILE:HD12	1:C:188:VAL:HG21	1.94	0.49
2:B:1:MET:CE	2:L:12:GLY:HA3	2.42	0.49
1:G:99:CYS:HB3	1:G:103:SER:HA	1.93	0.49
2:J:104:PRO:CA	2:J:105:SER:CB	2.86	0.49
2:N:97:THR:CG2	2:N:98:SER:N	2.76	0.49
2:D:63:TYR:C	2:D:63:TYR:CD2	2.85	0.49
1:E:201:PRO:HG3	1:I:178:THR:HG21	1.94	0.49
2:F:53:HIS:CG	2:F:135:HIS:HB2	2.47	0.49
2:D:185:PRO:HD2	2:J:131:PHE:CE2	2.48	0.49
1:I:80:HIS:O	1:I:155:ASP:HA	2.12	0.49
2:J:19:THR:HG22	2:J:20:HIS:O	2.13	0.49
1:O:155:ASP:H	1:O:157:ARG:HH12	1.60	0.49
2:P:97:THR:HG22	2:P:98:SER:N	2.27	0.49
1:E:104:CSD:HA	3:E:301:PO4:O3	2.13	0.49
2:B:19:THR:CG2	2:B:20:HIS:N	2.75	0.48
1:C:37:MET:CE	1:C:37:MET:HA	2.43	0.48
1:A:167:GLY:CA	1:A:169:GLU:OE1	2.61	0.48
2:H:55:ILE:HG23	2:H:71:ARG:HB3	1.95	0.48
1:O:106:ALA:HB2	1:O:157:ARG:HB3	1.93	0.48
1:A:76:SER:O	1:A:108:THR:CG2	2.61	0.48
1:O:137:ILE:CD1	1:O:188:VAL:CG2	2.91	0.48
1:C:104:CSD:C	1:C:105:THR:CG2	2.91	0.48
2:H:5:HIS:ND1	2:H:56:GLU:HG2	2.28	0.48
1:I:205:LEU:C	1:I:205:LEU:HD23	2.34	0.48
1:K:10:ARG:HA	2:L:95:LEU:HD11	1.94	0.48
2:L:160:ASP:OD2	2:L:160:ASP:N	2.47	0.48
1:G:167:GLY:CA	1:G:169:GLU:OE1	2.62	0.48
1:I:29:VAL:HB	1:I:30:PRO:HD3	1.96	0.48
1:I:59:LYS:NZ	1:I:88:GLU:OE2	2.39	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:3:ASP:HB3	1:M:6:VAL:HG23	1.95	0.48
2:B:10:LYS:HA	2:B:10:LYS:HE3	1.93	0.48
1:C:14:LEU:HD22	1:C:14:LEU:O	2.14	0.48
1:K:14:LEU:HD13	2:L:36:ILE:HG21	1.94	0.47
1:E:137:ILE:CD1	1:E:188:VAL:CG2	2.92	0.47
2:N:127:VAL:HG21	2:N:142:ILE:HD12	1.95	0.47
1:C:154:ALA:CA	5:C:402:HOH:O	2.63	0.47
1:C:206:GLY:HA2	1:C:207:ALA:HA	1.70	0.47
1:E:78:PRO:HG2	1:E:81:HIS:CG	2.49	0.47
2:H:10:LYS:NZ	5:H:385:HOH:O	2.20	0.47
1:M:106:ALA:HB2	1:M:157:ARG:HB3	1.95	0.47
1:G:204:ALA:O	1:G:205:LEU:HB2	2.15	0.47
2:J:10:LYS:HA	2:J:10:LYS:CE	2.41	0.47
2:L:53:HIS:CG	2:L:135:HIS:HB2	2.50	0.47
2:N:78:THR:HG21	2:N:102:SER:HB2	1.95	0.47
2:P:160:ASP:OD2	2:P:160:ASP:N	2.48	0.47
1:G:154:ALA:N	5:G:447:HOH:O	2.47	0.47
2:D:92:GLU:CG	2:D:98:SER:HA	2.42	0.47
1:M:137:ILE:HD11	1:M:188:VAL:CG2	2.44	0.47
2:P:10:LYS:HE3	2:P:10:LYS:CA	2.44	0.47
1:C:155:ASP:HB2	2:D:156:TYR:CD2	2.50	0.47
1:K:90:THR:HB	1:K:91:PRO:CD	2.45	0.47
1:E:106:ALA:HB2	1:E:157:ARG:HB3	1.96	0.46
2:H:145:LYS:HG3	2:H:183:LEU:HD12	1.97	0.46
2:P:64:LEU:HD12	2:P:64:LEU:HA	1.58	0.46
1:C:37:MET:HA	1:C:37:MET:HE2	1.97	0.46
1:I:137:ILE:HD11	1:I:188:VAL:HG23	1.96	0.46
1:O:155:ASP:N	1:O:157:ARG:HH12	2.13	0.46
2:F:116:GLU:OE2	1:M:143:GLU:N	2.39	0.46
1:K:156:THR:OG1	5:K:422:HOH:O	2.19	0.46
2:D:46:TYR:CG	2:D:79:LEU:HD23	2.50	0.46
2:J:113:LYS:HA	2:J:113:LYS:HD3	1.80	0.46
2:D:158:TYR:CE2	2:D:160:ASP:HB2	2.51	0.46
1:M:53:TRP:CE2	1:M:164:ARG:HB2	2.51	0.46
1:C:132:THR:O	1:C:136:GLU:HG3	2.16	0.46
2:D:104:PRO:HA	2:D:105:SER:HB2	1.77	0.46
1:G:14:LEU:CD1	2:H:36:ILE:HG21	2.46	0.46
1:K:3:ASP:OD1	1:K:3:ASP:C	2.54	0.46
1:K:3:ASP:OD1	1:K:4:ASN:N	2.49	0.46
1:O:154:ALA:O	1:O:155:ASP:HB2	2.16	0.46
1:C:204:ALA:O	1:C:205:LEU:HB3	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:166:GLN:CG	1:I:193:ALA:HB3	2.46	0.46
2:P:54:GLY:HA3	2:P:75:THR:OG1	2.16	0.46
1:A:15:PHE:HB2	2:B:36:ILE:HD11	1.98	0.46
1:I:198:LEU:HB3	1:I:199:PRO:HD2	1.97	0.46
2:J:99:VAL:HA	2:J:100:PRO:HD3	1.83	0.46
1:O:156:THR:OG1	5:O:467:HOH:O	2.21	0.45
2:H:121:LEU:HD12	2:H:121:LEU:HA	1.79	0.45
1:A:164:ARG:HA	1:A:165:PRO:HD3	1.88	0.45
1:E:102:CSD:O	1:E:103:SER:CB	2.64	0.45
2:D:33:MET:SD	2:D:73:PHE:HA	2.56	0.45
2:J:55:ILE:HG13	2:J:75:THR:HB	1.97	0.45
2:D:54:GLY:HA3	2:D:75:THR:OG1	2.17	0.45
1:G:37:MET:HG2	1:G:38:HIS:NE2	2.32	0.45
1:G:40:TRP:HB3	1:G:107:PHE:O	2.17	0.45
2:N:90:GLU:O	2:N:93:ALA:HB3	2.16	0.45
1:O:167:GLY:CA	1:O:169:GLU:OE1	2.64	0.45
1:A:14:LEU:HD22	1:A:18:THR:HG23	1.99	0.45
1:A:48:LEU:CD1	1:A:73:LEU:HD12	2.46	0.45
1:G:204:ALA:O	1:G:205:LEU:HB3	2.17	0.45
2:H:64:LEU:HA	2:H:64:LEU:HD12	1.58	0.45
2:L:87:THR:OG1	2:L:90:GLU:HG3	2.16	0.45
1:O:105:THR:HG21	1:O:113:ALA:HB2	1.98	0.45
1:C:132:THR:OG1	2:D:189:GLU:OE1	2.25	0.45
2:D:127:VAL:HG21	2:D:142:ILE:HD12	1.98	0.45
2:J:55:ILE:O	2:J:58:MET:HG3	2.17	0.45
2:J:97:THR:HG22	2:J:98:SER:O	2.16	0.45
2:P:158:TYR:CE2	2:P:160:ASP:HB2	2.52	0.45
1:E:90:THR:HB	1:E:91:PRO:CD	2.46	0.45
1:C:14:LEU:HD22	1:C:18:THR:HG23	1.99	0.44
1:C:66:GLY:HA3	1:C:84:PHE:O	2.17	0.44
1:I:37:MET:HE3	1:I:37:MET:HB2	1.73	0.44
1:O:137:ILE:HD11	1:O:188:VAL:CG2	2.47	0.44
1:G:77:PHE:HB3	1:G:78:PRO:HD2	1.99	0.44
1:C:49:VAL:HB	1:C:180:ILE:HD13	1.99	0.44
2:F:64:LEU:HD12	2:F:64:LEU:HA	1.64	0.44
2:L:19:THR:HB	5:L:314:HOH:O	2.17	0.44
1:O:80:HIS:O	1:O:155:ASP:HA	2.17	0.44
2:B:12:GLY:HA3	2:L:1:MET:CE	2.48	0.44
2:B:126:HIS:HB2	2:B:205:ALA:HB2	1.99	0.44
1:M:27:GLN:HB2	5:M:462:HOH:O	2.18	0.44
2:D:53:HIS:O	2:D:57:ARG:HG2	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:82:LYS:HD2	2:N:156:TYR:CD1	2.52	0.44
2:N:53:HIS:CG	2:N:135:HIS:HB2	2.52	0.44
2:N:55:ILE:O	2:N:58:MET:HG3	2.16	0.44
1:O:3:ASP:HB2	1:O:6:VAL:HG23	2.00	0.44
2:P:157:PRO:O	2:P:159:PRO:HD3	2.18	0.44
2:B:64:LEU:HD12	2:B:64:LEU:HA	1.55	0.44
2:F:111:PRO:HG2	2:F:169:PHE:CD1	2.53	0.44
1:I:155:ASP:HB2	2:J:156:TYR:CD2	2.53	0.44
1:M:17:LEU:CD2	1:M:21:LEU:HD21	2.47	0.44
2:B:40:LEU:HD12	2:B:40:LEU:HA	1.86	0.44
2:F:127:VAL:HG21	2:F:142:ILE:HD12	1.99	0.44
2:D:87:THR:OG1	2:D:90:GLU:HG3	2.17	0.43
1:I:200:ALA:HB1	1:I:201:PRO:HD2	2.00	0.43
2:J:20:HIS:HB3	5:J:392:HOH:O	2.17	0.43
1:E:132:THR:O	1:E:136:GLU:HG3	2.18	0.43
1:O:205:LEU:HD23	1:O:205:LEU:O	2.17	0.43
2:J:104:PRO:HB2	2:J:105:SER:HB2	1.99	0.43
2:L:111:PRO:HG2	2:L:169:PHE:CD1	2.53	0.43
1:M:29:VAL:HB	1:M:30:PRO:HD3	2.00	0.43
1:G:104:CSD:C	1:G:105:THR:CG2	2.96	0.43
1:I:37:MET:HA	1:I:37:MET:CE	2.45	0.43
1:I:154:ALA:N	5:I:461:HOH:O	2.51	0.43
2:L:110:GLN:HB3	2:L:111:PRO:HD2	2.01	0.43
1:M:49:VAL:HG13	1:M:161:LEU:HD12	2.00	0.43
2:N:47:ASN:OD1	2:N:50:GLU:HG3	2.18	0.43
1:K:11:VAL:HG12	2:L:32:LYS:HG2	2.01	0.43
1:M:105:THR:HG22	1:M:117:TYR:CE2	2.54	0.43
1:C:178:THR:HG22	1:C:179:LEU:HD13	2.01	0.43
2:F:137:ARG:HD2	2:F:137:ARG:HA	1.82	0.43
1:M:77:PHE:HB3	1:M:78:PRO:HD2	2.00	0.43
1:A:41:LEU:HB3	1:A:43:GLN:OE1	2.18	0.43
1:E:154:ALA:CA	5:E:473:HOH:O	2.67	0.43
1:C:198:LEU:HD23	1:C:198:LEU:HA	1.75	0.43
1:A:105:THR:CG2	1:A:117:TYR:CE2	3.01	0.43
1:C:116:TRP:CD1	2:D:18:LYS:HG2	2.54	0.43
2:D:64:LEU:HD12	2:D:64:LEU:HA	1.80	0.43
2:F:92:GLU:CG	2:F:98:SER:HA	2.48	0.43
2:H:104:PRO:HB2	2:H:105:SER:HB2	1.99	0.43
1:A:48:LEU:HD12	1:A:73:LEU:HD12	2.00	0.43
1:I:120:LEU:HB3	2:J:13:PHE:CE1	2.54	0.43
1:C:49:VAL:HG22	1:C:161:LEU:CD1	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:137:ILE:HD12	1:E:188:VAL:HG21	2.01	0.42
1:G:103:SER:HB2	1:G:118:LYS:HG3	2.00	0.42
2:J:127:VAL:HG21	2:J:142:ILE:HD12	1.99	0.42
2:J:160:ASP:OD2	2:J:160:ASP:N	2.52	0.42
1:K:101:LEU:HB2	5:K:404:HOH:O	2.18	0.42
1:O:137:ILE:HG22	2:P:18:LYS:HB2	2.01	0.42
1:M:17:LEU:O	1:M:21:LEU:HD22	2.18	0.42
2:P:19:THR:HG22	2:P:20:HIS:O	2.19	0.42
2:D:10:LYS:HE3	5:J:381:HOH:O	2.19	0.42
1:G:105:THR:CG2	1:G:113:ALA:HB2	2.44	0.42
2:L:19:THR:CG2	2:L:20:HIS:N	2.83	0.42
1:C:137:ILE:CD1	1:C:188:VAL:HG22	2.48	0.42
1:O:154:ALA:N	5:O:412:HOH:O	2.51	0.42
1:O:165:PRO:HB3	1:O:192:GLU:HA	2.01	0.42
2:P:78:THR:HG21	2:P:102:SER:HB2	2.01	0.42
2:N:40:LEU:HD12	2:N:40:LEU:HA	1.93	0.42
1:O:185:LEU:HD12	1:O:185:LEU:HA	1.88	0.42
1:G:10:ARG:HA	2:H:95:LEU:CD1	2.50	0.42
2:J:165:GLY:HA2	2:J:167:TYR:CZ	2.55	0.42
1:K:48:LEU:HD11	1:K:70:SER:HA	2.01	0.42
1:O:122:TYR:O	1:O:126:ILE:HG22	2.18	0.42
1:A:170:ASP:OD1	1:A:170:ASP:N	2.49	0.42
1:G:17:LEU:HD23	1:G:17:LEU:HA	1.83	0.42
1:K:193:ALA:HB1	1:K:194:PRO:HA	2.01	0.42
2:L:110:GLN:HB3	2:L:111:PRO:CD	2.50	0.42
1:O:137:ILE:HD11	1:O:188:VAL:HG22	2.02	0.42
1:C:183:ASP:OD1	2:D:18:LYS:HE2	2.19	0.42
1:G:49:VAL:HG22	1:G:161:LEU:HD13	2.01	0.42
2:H:13:PHE:CD1	2:N:60:PRO:HG2	2.55	0.42
2:J:64:LEU:HA	2:J:64:LEU:HD12	1.67	0.42
1:M:156:THR:HB	5:M:404:HOH:O	2.20	0.42
2:N:103:LEU:N	2:N:103:LEU:HD12	2.35	0.42
1:O:155:ASP:HB2	2:P:156:TYR:CD2	2.55	0.42
1:C:17:LEU:HD23	1:C:17:LEU:HA	1.88	0.42
1:C:137:ILE:CD1	1:C:188:VAL:HG21	2.50	0.42
1:C:169:GLU:H	1:C:169:GLU:HG2	1.47	0.42
2:D:113:LYS:HD3	2:D:113:LYS:HA	1.81	0.42
2:D:127:VAL:O	2:D:144:GLY:HA2	2.19	0.42
1:E:48:LEU:HD13	1:E:75:PHE:HE2	1.85	0.42
1:E:155:ASP:N	1:E:157:ARG:HH12	2.18	0.42
2:J:54:GLY:HA3	2:J:75:THR:OG1	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:64:LEU:HD12	2:N:64:LEU:HA	1.80	0.42
1:A:155:ASP:N	1:A:157:ARG:HH12	2.17	0.41
1:E:10:ARG:HB3	2:F:73:PHE:CZ	2.55	0.41
1:G:137:ILE:HD12	1:G:188:VAL:HG22	2.01	0.41
1:I:102:CSD:O	1:I:123:ARG:HD2	2.19	0.41
1:A:102:CSD:O	1:A:103:SER:HB3	2.19	0.41
2:D:145:LYS:HA	2:D:145:LYS:HD3	1.77	0.41
2:H:19:THR:CG2	2:H:20:HIS:N	2.82	0.41
1:O:156:THR:HB	5:O:410:HOH:O	2.20	0.41
1:O:205:LEU:C	1:O:205:LEU:CD2	2.78	0.41
2:B:99:VAL:HA	2:B:100:PRO:HD3	1.86	0.41
2:B:158:TYR:CE2	2:B:160:ASP:HB2	2.56	0.41
1:C:80:HIS:O	1:C:155:ASP:HA	2.20	0.41
2:H:137:ARG:HA	2:H:137:ARG:HD2	1.93	0.41
1:M:76:SER:O	1:M:108:THR:CG2	2.67	0.41
1:O:17:LEU:O	1:O:21:LEU:HD22	2.20	0.41
2:B:160:ASP:OD2	2:B:160:ASP:N	2.53	0.41
1:G:104:CSD:C	1:G:105:THR:HG22	2.51	0.41
1:K:77:PHE:HB3	1:K:78:PRO:HD2	2.02	0.41
1:K:137:ILE:CD1	1:K:188:VAL:CG2	2.98	0.41
1:K:185:LEU:HD12	1:K:185:LEU:HA	1.86	0.41
1:M:85:VAL:HG12	1:M:87:LEU:HD13	2.02	0.41
1:A:80:HIS:O	1:A:155:ASP:HA	2.20	0.41
1:K:165:PRO:HB3	1:K:192:GLU:HA	2.03	0.41
2:D:121:LEU:HD12	2:D:121:LEU:HA	1.82	0.41
1:C:137:ILE:HD12	1:C:188:VAL:CG2	2.51	0.41
1:G:37:MET:C	1:G:38:HIS:CD2	2.94	0.41
2:L:5:HIS:ND1	2:L:56:GLU:HG2	2.36	0.41
1:M:64:SER:HB3	5:M:484:HOH:O	2.21	0.41
1:O:10:ARG:HB3	2:P:73:PHE:CZ	2.56	0.41
2:P:55:ILE:O	2:P:58:MET:HG3	2.20	0.41
2:P:179:LYS:HD3	2:P:181:LYS:HE3	2.03	0.41
1:A:198:LEU:HB3	1:A:199:PRO:HD2	2.02	0.41
1:C:165:PRO:HB3	1:C:192:GLU:HA	2.03	0.41
2:F:121:LEU:HD12	2:F:121:LEU:HA	1.91	0.41
1:M:3:ASP:CB	1:M:6:VAL:HG23	2.51	0.41
2:F:106:SER:OG	2:F:107:PRO:HD2	2.21	0.41
2:J:92:GLU:O	2:J:95:LEU:O	2.39	0.41
2:L:137:ARG:HD2	2:L:137:ARG:HA	1.90	0.41
1:M:90:THR:HB	1:M:91:PRO:CD	2.51	0.41
1:M:180:ILE:N	1:M:180:ILE:HD12	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:N:45:ILE:O	2:N:83:LYS:HD2	2.21	0.41
1:O:66:GLY:HA3	1:O:84:PHE:O	2.21	0.41
2:H:19:THR:HB	5:H:326:HOH:O	2.21	0.41
2:J:66:ALA:HB1	2:J:70:GLU:HB3	2.02	0.41
1:M:198:LEU:HD23	1:M:198:LEU:HA	1.81	0.41
2:P:7:LEU:O	2:P:10:LYS:HB2	2.20	0.41
2:D:97:THR:CG2	2:D:98:SER:H	2.33	0.40
1:C:105:THR:HG22	1:C:117:TYR:CE2	2.56	0.40
2:F:27:GLU:HA	5:F:400:HOH:O	2.21	0.40
1:G:90:THR:HB	1:G:91:PRO:CD	2.51	0.40
1:I:205:LEU:HD23	1:I:206:GLY:N	2.37	0.40
1:M:108:THR:CG2	1:M:109:ILE:HG12	2.50	0.40
1:A:55:ASP:OD1	1:A:55:ASP:C	2.60	0.40
1:A:79:LYS:HE2	5:B:407:HOH:O	2.22	0.40
1:A:185:LEU:HD12	1:A:185:LEU:HA	1.88	0.40
2:B:55:ILE:HG23	2:B:71:ARG:HB3	2.04	0.40
1:E:119:GLU:HB3	5:E:407:HOH:O	2.21	0.40
2:H:22:ALA:O	2:H:23:LYS:HB2	2.22	0.40
1:M:155:ASP:H	1:M:157:ARG:HH12	1.68	0.40
1:C:10:ARG:HB3	2:D:73:PHE:CZ	2.56	0.40
2:P:113:LYS:HA	2:P:113:LYS:HD3	1.84	0.40
2:F:63:TYR:CD2	2:F:63:TYR:C	2.94	0.40
2:F:183:LEU:HD12	2:F:183:LEU:HA	1.83	0.40
1:G:155:ASP:HB2	2:H:156:TYR:CD2	2.56	0.40
1:G:155:ASP:N	1:G:157:ARG:HH12	2.18	0.40
1:I:90:THR:HB	1:I:91:PRO:CD	2.52	0.40
1:I:164:ARG:HA	1:I:165:PRO:HD3	1.88	0.40
2:J:174:TYR:HE2	2:J:199:GLN:HG3	1.86	0.40
1:O:43:GLN:N	1:O:43:GLN:NE2	2.46	0.40

All (2) 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)
5:C:490:HOH:O	5:O:511:HOH:O[2_555]	1.77	0.43
5:F:376:HOH:O	5:P:374:HOH:O[1_565]	2.12	0.08

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	202/209 (97%)	192 (95%)	8 (4%)	2 (1%)	15	21
1	C	202/209 (97%)	195 (96%)	6 (3%)	1 (0%)	29	39
1	E	202/209 (97%)	195 (96%)	4 (2%)	3 (2%)	10	12
1	G	202/209 (97%)	193 (96%)	6 (3%)	3 (2%)	10	12
1	I	202/209 (97%)	196 (97%)	4 (2%)	2 (1%)	15	21
1	K	202/209 (97%)	194 (96%)	5 (2%)	3 (2%)	10	12
1	M	202/209 (97%)	194 (96%)	7 (4%)	1 (0%)	29	39
1	O	202/209 (97%)	194 (96%)	6 (3%)	2 (1%)	15	21
2	B	204/206 (99%)	196 (96%)	6 (3%)	2 (1%)	15	21
2	D	204/206 (99%)	196 (96%)	4 (2%)	4 (2%)	7	8
2	F	204/206 (99%)	194 (95%)	6 (3%)	4 (2%)	7	8
2	H	204/206 (99%)	194 (95%)	6 (3%)	4 (2%)	7	8
2	J	204/206 (99%)	190 (93%)	11 (5%)	3 (2%)	10	12
2	L	204/206 (99%)	195 (96%)	6 (3%)	3 (2%)	10	12
2	N	204/206 (99%)	192 (94%)	7 (3%)	5 (2%)	5	5
2	P	204/206 (99%)	191 (94%)	11 (5%)	2 (1%)	15	21
All	All	3248/3320 (98%)	3101 (96%)	103 (3%)	44 (1%)	11	14

All (44) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	103	SER
1	A	154	ALA
2	B	106	SER
1	C	154	ALA
2	D	105	SER
1	E	103	SER

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Mol	Chain	Res	Type
1	E	154	ALA
1	E	205	LEU
2	F	105	SER
2	F	106	SER
1	G	103	SER
1	G	154	ALA
2	H	105	SER
2	H	106	SER
1	I	154	ALA
1	K	154	ALA
1	K	205	LEU
2	L	105	SER
2	L	106	SER
1	M	154	ALA
2	N	105	SER
1	O	154	ALA
2	P	105	SER
2	B	105	SER
2	J	105	SER
1	K	206	GLY
1	O	103	SER
2	D	8	GLY
2	D	106	SER
1	G	205	LEU
2	H	96	GLY
2	D	21	ASN
2	J	106	SER
2	N	8	GLY
2	F	23	LYS
2	H	23	LYS
1	I	103	SER
2	J	23	LYS
2	N	23	LYS
2	P	106	SER
2	L	8	GLY
2	F	8	GLY
2	N	106	SER
2	N	185	PRO

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	172/175 (98%)	151 (88%)	21 (12%)	5 5
1	C	172/175 (98%)	149 (87%)	23 (13%)	4 4
1	E	172/175 (98%)	152 (88%)	20 (12%)	5 6
1	G	172/175 (98%)	155 (90%)	17 (10%)	8 10
1	I	172/175 (98%)	152 (88%)	20 (12%)	5 6
1	K	172/175 (98%)	153 (89%)	19 (11%)	6 7
1	M	172/175 (98%)	156 (91%)	16 (9%)	9 11
1	O	172/175 (98%)	149 (87%)	23 (13%)	4 4
2	B	164/164 (100%)	152 (93%)	12 (7%)	14 20
2	D	164/164 (100%)	149 (91%)	15 (9%)	9 12
2	F	164/164 (100%)	151 (92%)	13 (8%)	12 17
2	H	164/164 (100%)	152 (93%)	12 (7%)	14 20
2	J	164/164 (100%)	148 (90%)	16 (10%)	8 10
2	L	164/164 (100%)	149 (91%)	15 (9%)	9 12
2	N	164/164 (100%)	153 (93%)	11 (7%)	16 23
2	P	164/164 (100%)	147 (90%)	17 (10%)	7 9
All	All	2688/2712 (99%)	2418 (90%)	270 (10%)	7 10

All (270) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	LEU
1	A	17	LEU
1	A	21	LEU
1	A	48	LEU
1	A	65	GLU
1	A	76	SER
1	A	79	LYS
1	A	87	LEU

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Mol	Chain	Res	Type
1	A	101	LEU
1	A	108	THR
1	A	120	LEU
1	A	134	LEU
1	A	137	ILE
1	A	155	ASP
1	A	166	GLN
1	A	169	GLU
1	A	178	THR
1	A	179	LEU
1	A	185	LEU
1	A	191	LEU
1	A	205	LEU
2	B	10	LYS
2	B	18	LYS
2	B	34	ASN
2	B	40	LEU
2	B	42	SER
2	B	65	THR
2	B	67	SER
2	B	79	LEU
2	B	105	SER
2	B	121	LEU
2	B	160	ASP
2	B	183	LEU
1	C	3	ASP
1	C	14	LEU
1	C	19	LYS
1	C	21	LEU
1	C	27	GLN
1	C	37	MET
1	C	48	LEU
1	C	65	GLU
1	C	79	LYS
1	C	87	LEU
1	C	101	LEU
1	C	105	THR
1	C	108	THR
1	C	120	LEU
1	C	134	LEU
1	C	137	ILE
1	C	169	GLU

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Mol	Chain	Res	Type
1	C	178	THR
1	C	179	LEU
1	C	185	LEU
1	C	188	VAL
1	C	191	LEU
1	C	203	VAL
2	D	1	MET
2	D	18	LYS
2	D	19	THR
2	D	34	ASN
2	D	40	LEU
2	D	65	THR
2	D	79	LEU
2	D	99	VAL
2	D	105	SER
2	D	113	LYS
2	D	121	LEU
2	D	160	ASP
2	D	166	GLU
2	D	183	LEU
2	D	186	ASP
1	E	12	ASP
1	E	14	LEU
1	E	21	LEU
1	E	37	MET
1	E	48	LEU
1	E	79	LYS
1	E	87	LEU
1	E	101	LEU
1	E	105	THR
1	E	108	THR
1	E	120	LEU
1	E	134	LEU
1	E	137	ILE
1	E	166	GLN
1	E	169	GLU
1	E	178	THR
1	E	179	LEU
1	E	185	LEU
1	E	191	LEU
1	E	205	LEU
2	F	10	LYS

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Mol	Chain	Res	Type
2	F	18	LYS
2	F	34	ASN
2	F	40	LEU
2	F	65	THR
2	F	67	SER
2	F	79	LEU
2	F	105	SER
2	F	121	LEU
2	F	124	ARG
2	F	150	VAL
2	F	160	ASP
2	F	183	LEU
1	G	3	ASP
1	G	12	ASP
1	G	14	LEU
1	G	21	LEU
1	G	48	LEU
1	G	87	LEU
1	G	101	LEU
1	G	105	THR
1	G	108	THR
1	G	120	LEU
1	G	134	LEU
1	G	166	GLN
1	G	179	LEU
1	G	185	LEU
1	G	188	VAL
1	G	191	LEU
1	G	203	VAL
2	H	10	LYS
2	H	18	LYS
2	H	19	THR
2	H	32	LYS
2	H	34	ASN
2	H	40	LEU
2	H	79	LEU
2	H	95	LEU
2	H	105	SER
2	H	113	LYS
2	H	160	ASP
2	H	183	LEU
1	I	2	THR

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Mol	Chain	Res	Type
1	I	3	ASP
1	I	14	LEU
1	I	17	LEU
1	I	21	LEU
1	I	27	GLN
1	I	43	GLN
1	I	48	LEU
1	I	87	LEU
1	I	101	LEU
1	I	103	SER
1	I	120	LEU
1	I	134	LEU
1	I	155	ASP
1	I	169	GLU
1	I	178	THR
1	I	179	LEU
1	I	185	LEU
1	I	191	LEU
1	I	205	LEU
2	J	4	MET
2	J	10	LYS
2	J	32	LYS
2	J	40	LEU
2	J	65	THR
2	J	79	LEU
2	J	92	GLU
2	J	99	VAL
2	J	105	SER
2	J	113	LYS
2	J	124	ARG
2	J	150	VAL
2	J	160	ASP
2	J	181	LYS
2	J	183	LEU
2	J	206	GLU
1	K	3	ASP
1	K	14	LEU
1	K	21	LEU
1	K	37	MET
1	K	48	LEU
1	K	61	GLN
1	K	87	LEU

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Mol	Chain	Res	Type
1	K	101	LEU
1	K	108	THR
1	K	120	LEU
1	K	134	LEU
1	K	137	ILE
1	K	178	THR
1	K	179	LEU
1	K	185	LEU
1	K	188	VAL
1	K	191	LEU
1	K	203	VAL
1	K	205	LEU
2	L	10	LYS
2	L	18	LYS
2	L	19	THR
2	L	32	LYS
2	L	34	ASN
2	L	40	LEU
2	L	67	SER
2	L	79	LEU
2	L	99	VAL
2	L	105	SER
2	L	113	LYS
2	L	121	LEU
2	L	160	ASP
2	L	166	GLU
2	L	183	LEU
1	M	14	LEU
1	M	21	LEU
1	M	43	GLN
1	M	48	LEU
1	M	87	LEU
1	M	101	LEU
1	M	105	THR
1	M	108	THR
1	M	120	LEU
1	M	134	LEU
1	M	169	GLU
1	M	178	THR
1	M	179	LEU
1	M	185	LEU
1	M	191	LEU

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Mol	Chain	Res	Type
1	M	205	LEU
2	N	10	LYS
2	N	40	LEU
2	N	65	THR
2	N	67	SER
2	N	79	LEU
2	N	92	GLU
2	N	98	SER
2	N	105	SER
2	N	160	ASP
2	N	181	LYS
2	N	183	LEU
1	O	3	ASP
1	O	14	LEU
1	O	17	LEU
1	O	21	LEU
1	O	43	GLN
1	O	48	LEU
1	O	87	LEU
1	O	101	LEU
1	O	103	SER
1	O	108	THR
1	O	119	GLU
1	O	120	LEU
1	O	134	LEU
1	O	137	ILE
1	O	143	GLU
1	O	155	ASP
1	O	169	GLU
1	O	178	THR
1	O	179	LEU
1	O	185	LEU
1	O	188	VAL
1	O	191	LEU
1	O	205	LEU
2	P	10	LYS
2	P	18	LYS
2	P	34	ASN
2	P	40	LEU
2	P	65	THR
2	P	67	SER
2	P	79	LEU

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Mol	Chain	Res	Type
2	P	92	GLU
2	P	99	VAL
2	P	105	SER
2	P	113	LYS
2	P	121	LEU
2	P	124	ARG
2	P	150	VAL
2	P	160	ASP
2	P	183	LEU
2	P	206	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	38	HIS
2	D	5	HIS
1	G	38	HIS
1	I	43	GLN
1	M	38	HIS
1	M	43	GLN
1	O	38	HIS
1	O	43	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

16 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
1	CSD	A	102	1,4	3,7,8	1.43	0	1,8,10	3.61	1 (100%)
1	CSD	I	102	1,4	3,7,8	1.45	0	1,8,10	4.05	1 (100%)
1	CSD	M	104	1,4	3,7,8	1.61	1 (33%)	1,8,10	1.29	0
1	CSD	E	104	1,4	3,7,8	1.51	1 (33%)	1,8,10	1.21	0
1	CSD	G	104	1,4	3,7,8	1.55	0	1,8,10	0.93	0
1	CSD	M	102	1,4	3,7,8	1.38	0	1,8,10	4.65	1 (100%)
1	CSD	O	104	1,4	3,7,8	1.61	1 (33%)	1,8,10	1.57	0
1	CSD	A	104	1,4	3,7,8	1.52	1 (33%)	1,8,10	1.94	0
1	CSD	K	102	1,4	3,7,8	1.42	1 (33%)	1,8,10	4.64	1 (100%)
1	CSD	C	104	1,4	3,7,8	1.68	1 (33%)	1,8,10	1.08	0
1	CSD	G	102	1,4	3,7,8	1.46	1 (33%)	1,8,10	4.26	1 (100%)
1	CSD	C	102	1,4	3,7,8	1.52	0	1,8,10	5.00	1 (100%)
1	CSD	K	104	1,4	3,7,8	1.69	1 (33%)	1,8,10	1.48	0
1	CSD	O	102	1,4	3,7,8	1.38	0	1,8,10	4.61	1 (100%)
1	CSD	I	104	1,4	3,7,8	1.52	0	1,8,10	1.56	0
1	CSD	E	102	1,4	3,7,8	1.45	1 (33%)	1,8,10	4.93	1 (100%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	CSD	A	102	1,4	-	0/2/6/8	-
1	CSD	I	102	1,4	-	0/2/6/8	-
1	CSD	M	104	1,4	-	0/2/6/8	-
1	CSD	E	104	1,4	-	0/2/6/8	-
1	CSD	G	104	1,4	-	0/2/6/8	-
1	CSD	M	102	1,4	-	0/2/6/8	-
1	CSD	O	104	1,4	-	0/2/6/8	-
1	CSD	A	104	1,4	-	0/2/6/8	-
1	CSD	K	102	1,4	-	0/2/6/8	-
1	CSD	C	104	1,4	-	0/2/6/8	-
1	CSD	G	102	1,4	-	0/2/6/8	-
1	CSD	C	102	1,4	-	0/2/6/8	-
1	CSD	K	104	1,4	-	0/2/6/8	-
1	CSD	O	102	1,4	-	0/2/6/8	-
1	CSD	I	104	1,4	-	0/2/6/8	-
1	CSD	E	102	1,4	-	0/2/6/8	-

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	K	104	CSD	CB-SG	-2.24	1.66	1.79
1	C	104	CSD	CB-SG	-2.21	1.66	1.79
1	E	104	CSD	CB-SG	-2.08	1.67	1.79
1	G	102	CSD	CB-SG	-2.08	1.67	1.79
1	M	104	CSD	CB-SG	-2.05	1.67	1.79
1	K	102	CSD	CB-SG	-2.05	1.67	1.79
1	O	104	CSD	CB-SG	-2.04	1.67	1.79
1	A	104	CSD	CB-SG	-2.03	1.67	1.79
1	E	102	CSD	CB-SG	-2.03	1.67	1.79

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	102	CSD	OD1-SG-CB	5.00	115.05	105.54
1	E	102	CSD	OD1-SG-CB	4.93	114.93	105.54
1	M	102	CSD	OD1-SG-CB	4.65	114.39	105.54
1	K	102	CSD	OD1-SG-CB	4.64	114.36	105.54
1	O	102	CSD	OD1-SG-CB	4.61	114.32	105.54
1	G	102	CSD	OD1-SG-CB	4.26	113.65	105.54
1	I	102	CSD	OD1-SG-CB	4.05	113.24	105.54
1	A	102	CSD	OD1-SG-CB	3.61	112.41	105.54

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

8 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	102	CSD	1	0
1	I	102	CSD	1	0
1	E	104	CSD	4	0
1	G	104	CSD	2	0
1	M	102	CSD	1	0
1	C	104	CSD	2	0
1	G	102	CSD	1	0
1	E	102	CSD	2	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 16 ligands modelled in this entry, 8 are monoatomic - leaving 8 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	PO4	K	301	-	4,4,4	0.83	0	6,6,6	0.46	0
3	PO4	I	301	-	4,4,4	0.87	0	6,6,6	0.53	0
3	PO4	G	301	-	4,4,4	0.78	0	6,6,6	1.06	0
3	PO4	M	301	-	4,4,4	0.92	0	6,6,6	0.45	0
3	PO4	C	301	-	4,4,4	0.81	0	6,6,6	0.48	0
3	PO4	A	301	-	4,4,4	0.90	0	6,6,6	0.46	0
3	PO4	E	301	-	4,4,4	0.71	0	6,6,6	0.93	0
3	PO4	O	301	-	4,4,4	0.80	0	6,6,6	0.54	0

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.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	301	PO4	1	0
3	E	301	PO4	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	204/209 (97%)	0.07	1 (0%) 91 91	32, 45, 70, 131	0
1	C	204/209 (97%)	0.06	1 (0%) 91 91	31, 45, 66, 87	1 (0%)
1	E	204/209 (97%)	0.10	1 (0%) 91 91	32, 45, 69, 90	1 (0%)
1	G	204/209 (97%)	0.06	0 100 100	33, 45, 69, 91	1 (0%)
1	I	204/209 (97%)	0.06	0 100 100	33, 44, 68, 102	0
1	K	204/209 (97%)	0.07	1 (0%) 91 91	33, 45, 68, 110	1 (0%)
1	M	204/209 (97%)	0.07	1 (0%) 91 91	33, 45, 69, 124	1 (0%)
1	O	204/209 (97%)	0.09	1 (0%) 91 91	32, 45, 70, 120	0
2	B	206/206 (100%)	0.10	1 (0%) 91 91	31, 44, 77, 100	0
2	D	206/206 (100%)	0.12	0 100 100	30, 43, 75, 98	0
2	F	206/206 (100%)	0.11	1 (0%) 91 91	30, 43, 74, 96	0
2	H	206/206 (100%)	0.07	0 100 100	33, 43, 77, 96	0
2	J	206/206 (100%)	0.08	1 (0%) 91 91	31, 44, 76, 100	0
2	L	206/206 (100%)	0.04	1 (0%) 91 91	31, 44, 75, 96	0
2	N	206/206 (100%)	0.09	1 (0%) 91 91	30, 45, 79, 102	0
2	P	206/206 (100%)	0.10	1 (0%) 91 91	31, 44, 76, 102	0
All	All	3280/3320 (98%)	0.08	12 (0%) 92 93	30, 44, 75, 131	5 (0%)

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	207	ALA	5.9
1	M	207	ALA	5.9
1	O	207	ALA	4.4
1	E	207	ALA	3.0
1	K	207	ALA	3.0

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Mol	Chain	Res	Type	RSRZ
2	P	116	GLU	2.7
2	B	167	TYR	2.4
2	F	22	ALA	2.4
2	N	95	LEU	2.3
2	J	95	LEU	2.2
2	L	22	ALA	2.2
1	C	207	ALA	2.1

6.2 Non-standard residues in protein, DNA, RNA chains (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, 95^{th} 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
1	CSD	C	102	8/9	0.92	0.19	40,55,64,66	8
1	CSD	E	102	8/9	0.93	0.19	34,49,57,60	8
1	CSD	A	102	8/9	0.94	0.13	39,54,61,64	8
1	CSD	O	102	8/9	0.94	0.14	47,51,61,70	8
1	CSD	M	102	8/9	0.95	0.14	41,49,63,63	8
1	CSD	G	102	8/9	0.95	0.20	37,52,61,66	8
1	CSD	I	104	8/9	0.96	0.13	57,60,75,77	8
1	CSD	K	102	8/9	0.96	0.19	34,47,59,60	8
1	CSD	A	104	8/9	0.96	0.13	42,50,72,76	8
1	CSD	I	102	8/9	0.96	0.14	50,62,69,69	0
1	CSD	M	104	8/9	0.97	0.12	46,49,73,77	8
1	CSD	O	104	8/9	0.97	0.14	52,55,76,78	8
1	CSD	C	104	8/9	0.98	0.13	51,53,66,69	8
1	CSD	K	104	8/9	0.98	0.13	52,59,71,71	8
1	CSD	G	104	8/9	0.98	0.13	56,58,64,64	8
1	CSD	E	104	8/9	0.99	0.13	42,56,66,67	8

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, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	FE	M	302	1/1	0.90	0.10	66,66,66,66	1
4	FE	I	302	1/1	0.94	0.11	74,74,74,74	1
4	FE	E	302	1/1	0.95	0.09	70,70,70,70	1
4	FE	G	302	1/1	0.96	0.10	60,60,60,60	1
4	FE	O	302	1/1	0.96	0.12	68,68,68,68	1
4	FE	C	302	1/1	0.97	0.09	65,65,65,65	1
3	PO4	K	301	5/5	0.98	0.12	70,78,85,86	0
4	FE	A	302	1/1	0.98	0.12	65,65,65,65	1
4	FE	K	302	1/1	0.98	0.11	59,59,59,59	1
3	PO4	A	301	5/5	0.98	0.14	54,67,74,76	0
3	PO4	C	301	5/5	0.98	0.13	68,69,81,82	0
3	PO4	M	301	5/5	0.99	0.15	55,68,72,76	0
3	PO4	O	301	5/5	0.99	0.17	54,63,67,71	0
3	PO4	G	301	5/5	0.99	0.14	64,70,76,81	0
3	PO4	I	301	5/5	0.99	0.15	55,64,67,71	0
3	PO4	E	301	5/5	0.99	0.12	69,76,79,85	0

6.5 Other polymers (i)

There are no such residues in this entry.