



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 11, 2024 – 06:34 PM EST

PDB ID : 3EFE
Title : The crystal structure of the thiJ/ pfpI family protein from Bacillus anthracis
Authors : Zhang, R.; Xu, X.; Cui, H.; Savchenko, A.; Edwards, A.; Anderson, W.;
Joachimiak, A.; Center for Structural Genomics of Infectious Diseases (CS-
GID)
Deposited on : 2008-09-08
Resolution : 2.30 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

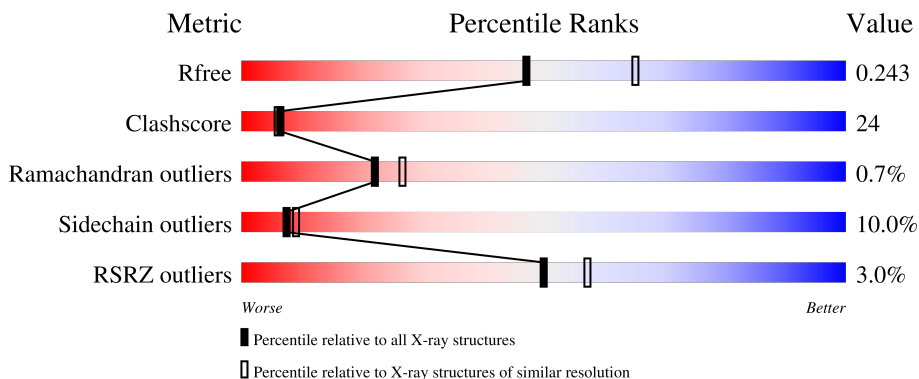
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 Å.

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



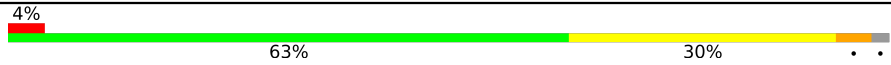
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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

Mol	Chain	Length	Quality of chain
1	A	212	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 62%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 28%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 8%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">2% 62% 28% 8% •</p>
1	B	212	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 60%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 33%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 7%; height: 10px; background-color: orange; margin-right: 5px;"></div> </div> <p style="margin-left: 20px;">2% 60% 33% 7%</p>
1	C	212	<div style="display: flex; align-items: center;"> <div style="width: 1%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 61%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 29%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 8%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 20px;">% 61% 29% 8% •</p>
1	D	212	<div style="display: flex; align-items: center;"> <div style="width: 70%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 24%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: orange; margin-right: 5px;"></div> </div> <p style="margin-left: 20px;">70% 24% 5%</p>
1	E	212	<div style="display: flex; align-items: center;"> <div style="width: 8%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 61%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 32%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 5%; height: 10px; background-color: orange; margin-right: 5px;"></div> </div> <p style="margin-left: 20px;">8% 61% 32% 5%</p>

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Mol	Chain	Length	Quality of chain
1	F	212	

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
2	SO4	C	211	-	-	-	X

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 10091 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 ThiJ/pfpI family protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	208	1638	1057	264	307	10	0	0	0
1	B	212	1668	1074	270	313	11	0	0	0
1	C	206	1622	1047	261	304	10	0	0	0
1	D	209	1647	1062	266	309	10	0	0	0
1	E	208	1638	1057	264	307	10	0	0	0
1	F	207	1629	1051	262	306	10	0	0	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLN	-	expression tag	UNP Q81PY3
A	0	GLY	-	expression tag	UNP Q81PY3
B	-1	GLN	-	expression tag	UNP Q81PY3
B	0	GLY	-	expression tag	UNP Q81PY3
C	-1	GLN	-	expression tag	UNP Q81PY3
C	0	GLY	-	expression tag	UNP Q81PY3
D	-1	GLN	-	expression tag	UNP Q81PY3
D	0	GLY	-	expression tag	UNP Q81PY3
E	-1	GLN	-	expression tag	UNP Q81PY3
E	0	GLY	-	expression tag	UNP Q81PY3
F	-1	GLN	-	expression tag	UNP Q81PY3
F	0	GLY	-	expression tag	UNP Q81PY3

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	C	1	Total	O S	0	0
			5	4 1		

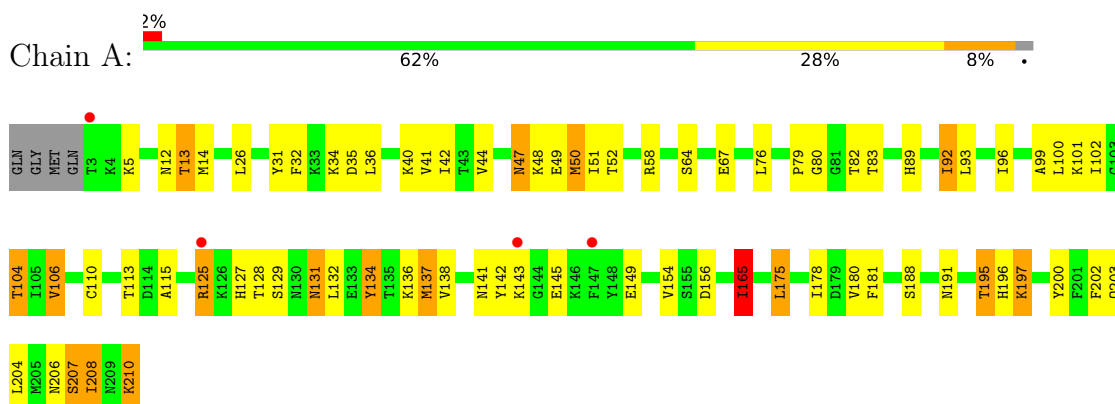
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	41	Total	O	0	0
			41	41		
3	B	66	Total	O	0	0
			66	66		
3	C	37	Total	O	0	0
			37	37		
3	D	53	Total	O	0	0
			53	53		
3	E	29	Total	O	0	0
			29	29		
3	F	18	Total	O	0	0
			18	18		

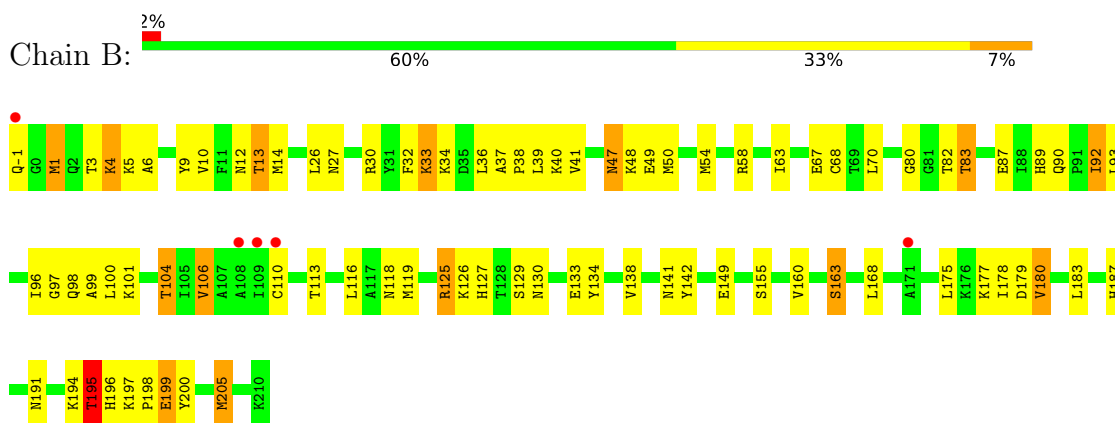
3 Residue-property plots [i](#)

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.

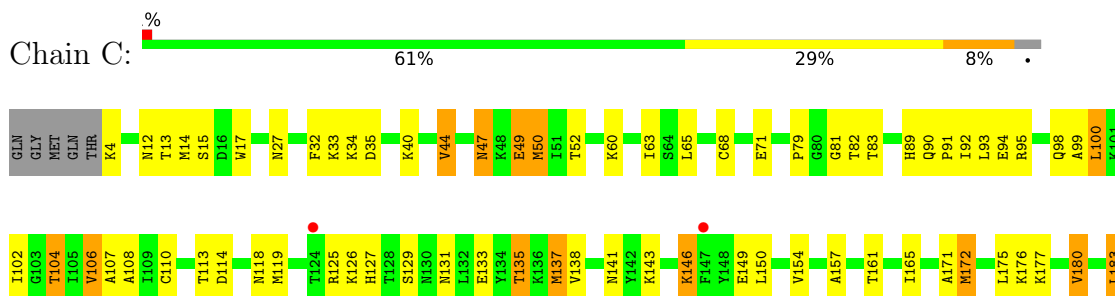
- Molecule 1: ThiJ/pfpI family protein



- Molecule 1: ThiJ/pfpI family protein



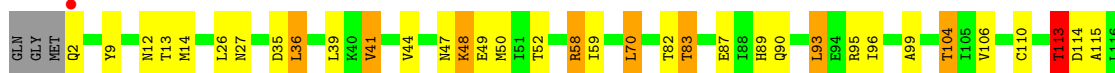
- Molecule 1: ThiJ/pfpI family protein





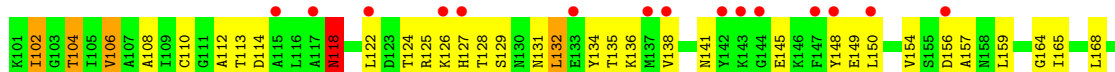
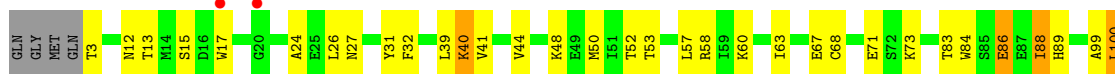
- Molecule 1: ThiJ/pfpI family protein

Chain D: 70% 24% 5%



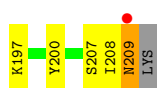
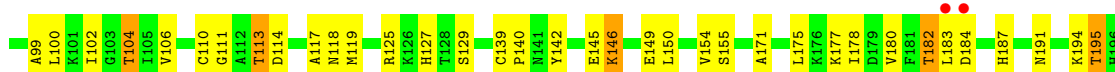
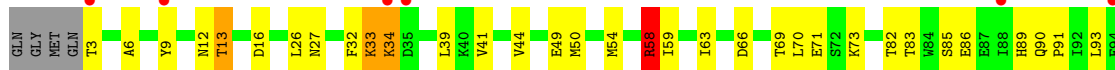
- Molecule 1: ThiJ/pfpI family protein

Chain E: 8% 61% 32% 5%



- Molecule 1: ThiJ/pfpI family protein

Chain F: 4% 63% 30% 5%



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	85.13Å 91.53Å 167.21Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	83.62 – 2.30 39.19 – 2.30	Depositor EDS
% Data completeness (in resolution range)	98.1 (83.62-2.30) 98.2 (39.19-2.30)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.23 (at 2.29Å)	Xtrriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.190 , 0.237 0.205 , 0.243	Depositor DCC
R_{free} test set	2925 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å ²)	38.6	Xtrriage
Anisotropy	0.590	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 44.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	10091	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.82% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: SO4

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	1.13	1/1673 (0.1%)	0.99	6/2265 (0.3%)
1	B	1.24	5/1703 (0.3%)	1.10	6/2304 (0.3%)
1	C	1.17	6/1657 (0.4%)	1.01	1/2244 (0.0%)
1	D	1.21	3/1682 (0.2%)	1.04	5/2277 (0.2%)
1	E	1.02	2/1673 (0.1%)	0.90	0/2265
1	F	1.04	1/1664 (0.1%)	0.89	1/2254 (0.0%)
All	All	1.14	18/10052 (0.2%)	0.99	19/13609 (0.1%)

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	E	0	1

All (18) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	194	LYS	CE-NZ	8.49	1.70	1.49
1	D	49	GLU	CG-CD	7.34	1.62	1.51
1	C	176	LYS	CE-NZ	6.49	1.65	1.49
1	C	68	CYS	CB-SG	6.38	1.93	1.82
1	B	5	LYS	CD-CE	6.36	1.67	1.51
1	C	49	GLU	CG-CD	5.81	1.60	1.51
1	E	197	LYS	CE-NZ	5.79	1.63	1.49
1	B	160	VAL	CA-CB	5.72	1.66	1.54
1	F	49	GLU	CG-CD	5.68	1.60	1.51
1	D	113	THR	CB-CG2	-5.67	1.33	1.52
1	B	87	GLU	CG-CD	5.55	1.60	1.51
1	B	199	GLU	CG-CD	5.49	1.60	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	133	GLU	CG-CD	5.48	1.60	1.51
1	C	107	ALA	CA-CB	5.40	1.63	1.52
1	E	60	LYS	CE-NZ	5.25	1.62	1.49
1	D	41	VAL	CB-CG1	5.16	1.63	1.52
1	A	134	TYR	CE2-CZ	5.08	1.45	1.38
1	B	133	GLU	CD-OE2	5.04	1.31	1.25

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	165	ILE	CG1-CB-CG2	-6.85	96.32	111.40
1	D	125	ARG	NE-CZ-NH1	-6.18	117.21	120.30
1	B	30	ARG	NE-CZ-NH2	6.16	123.38	120.30
1	B	205	MET	CG-SD-CE	6.14	110.02	100.20
1	B	125	ARG	NE-CZ-NH2	-6.08	117.26	120.30
1	A	175	LEU	CB-CG-CD1	6.07	121.32	111.00
1	D	35	ASP	CB-CG-OD2	-5.90	112.99	118.30
1	D	95	ARG	NE-CZ-NH1	5.84	123.22	120.30
1	A	175	LEU	CA-CB-CG	5.38	127.67	115.30
1	B	125	ARG	NE-CZ-NH1	5.38	122.99	120.30
1	B	1	MET	CG-SD-CE	-5.36	91.62	100.20
1	F	58	ARG	NE-CZ-NH2	5.36	122.98	120.30
1	C	137	MET	CG-SD-CE	5.22	108.56	100.20
1	D	95	ARG	NE-CZ-NH2	-5.17	117.71	120.30
1	A	180	VAL	CB-CA-C	5.17	121.22	111.40
1	B	195	THR	N-CA-CB	-5.17	100.48	110.30
1	D	205	MET	CG-SD-CE	5.13	108.41	100.20
1	A	204	LEU	CB-CG-CD2	-5.10	102.33	111.00
1	A	137	MET	CG-SD-CE	5.05	108.27	100.20

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	E	118	ASN	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	1638	0	1653	90	0
1	B	1668	0	1684	86	0
1	C	1622	0	1633	88	0
1	D	1647	0	1661	52	0
1	E	1638	0	1653	89	0
1	F	1629	0	1640	88	0
2	C	5	0	0	0	0
3	A	41	0	0	3	0
3	B	66	0	0	7	0
3	C	37	0	0	5	0
3	D	53	0	0	5	0
3	E	29	0	0	3	0
3	F	18	0	0	3	0
All	All	10091	0	9924	474	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 24.

All (474) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:194:LYS:NZ	1:C:194:LYS:CE	1.70	1.53
1:E:83:THR:HG22	1:E:89:HIS:CE1	1.56	1.40
1:A:83:THR:HG21	3:A:214:HOH:O	1.18	1.28
1:C:83:THR:HG22	1:C:89:HIS:CE1	1.75	1.20
1:B:93:LEU:HD13	1:B:119:MET:HE2	1.24	1.18
1:F:44:VAL:HG22	1:F:63:ILE:CG1	1.72	1.18
1:F:44:VAL:HG22	1:F:63:ILE:HG12	1.29	1.15
1:B:83:THR:HG21	3:B:380:HOH:O	1.46	1.12
1:E:110:CYS:O	1:E:113:THR:HG22	1.51	1.10
1:B:83:THR:HG23	1:B:89:HIS:HE1	1.15	1.09
1:A:13:THR:HG21	1:A:82:THR:H	1.12	1.07
1:C:83:THR:HG22	1:C:89:HIS:HE1	0.92	1.06
1:C:131:ASN:O	1:C:135:THR:HG22	1.57	1.04
1:E:136:LYS:HD3	1:E:145:GLU:OE1	1.58	1.04
1:A:13:THR:CG2	1:A:82:THR:H	1.70	1.03
1:C:90:GLN:OE1	1:C:119:MET:CE	2.07	1.02
1:D:83:THR:HG21	3:D:245:HOH:O	1.59	1.01
1:C:126:LYS:NZ	1:C:149:GLU:OE2	1.94	1.00
1:E:12:ASN:O	1:E:13:THR:HG22	1.59	0.99

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:12:ASN:O	1:C:13:THR:HB	1.61	0.99
1:C:100:LEU:HD13	1:C:106:VAL:HG11	1.45	0.99
1:F:83:THR:HG22	1:F:89:HIS:CE1	2.00	0.97
1:A:12:ASN:O	1:A:13:THR:HB	1.62	0.96
1:D:13:THR:HG21	1:D:82:THR:H	1.32	0.95
1:E:83:THR:CG2	1:E:89:HIS:CE1	2.50	0.95
1:C:13:THR:CG2	1:C:82:THR:H	1.80	0.94
1:C:90:GLN:OE1	1:C:119:MET:HE1	1.65	0.94
1:B:9:TYR:OH	1:B:89:HIS:HD2	1.53	0.92
1:C:191:ASN:O	1:C:195:THR:HB	1.69	0.91
1:B:83:THR:CG2	1:B:89:HIS:HE1	1.84	0.91
1:B:83:THR:HG23	1:B:89:HIS:CE1	2.06	0.91
1:F:195:THR:HG23	1:F:197:LYS:H	1.34	0.90
1:A:34:LYS:HE2	1:A:208:ILE:HD11	1.52	0.90
1:C:47:ASN:HD22	1:C:49:GLU:H	1.15	0.90
1:C:100:LEU:HD13	1:C:106:VAL:CG1	2.02	0.89
1:A:48:LYS:NZ	1:A:67:GLU:OE2	2.05	0.89
1:A:83:THR:HG22	1:A:89:HIS:HE1	1.35	0.88
1:B:199:GLU:HG3	3:B:413:HOH:O	1.74	0.88
1:A:132:LEU:HD21	1:A:145:GLU:HG3	1.56	0.87
1:D:195:THR:HG23	1:D:197:LYS:HG3	1.55	0.86
1:B:12:ASN:O	1:B:13:THR:HB	1.75	0.86
1:B:93:LEU:HD13	1:B:119:MET:CE	2.07	0.85
1:F:83:THR:HG22	1:F:89:HIS:HE1	1.38	0.85
1:D:13:THR:CG2	1:D:82:THR:H	1.89	0.84
1:C:90:GLN:OE1	1:C:119:MET:HE3	1.77	0.83
1:E:195:THR:HG22	1:E:197:LYS:H	1.43	0.83
1:E:136:LYS:CD	1:E:145:GLU:OE1	2.26	0.82
1:D:195:THR:CG2	1:D:197:LYS:HG3	2.09	0.81
1:E:83:THR:HG22	1:E:89:HIS:HE1	1.05	0.81
1:E:100:LEU:CD1	1:E:106:VAL:CG1	2.58	0.81
1:C:83:THR:CG2	1:C:89:HIS:HE1	1.86	0.81
1:C:113:THR:HG21	1:C:129:SER:HA	1.60	0.81
1:A:13:THR:HG21	1:A:82:THR:N	1.95	0.81
1:E:83:THR:O	1:E:89:HIS:CE1	2.33	0.81
1:E:191:ASN:O	1:E:195:THR:HB	1.81	0.81
1:E:83:THR:HG22	1:E:83:THR:O	1.82	0.80
1:D:83:THR:HG22	1:D:89:HIS:HE1	1.47	0.80
1:F:110:CYS:O	1:F:113:THR:HG22	1.82	0.80
1:B:48:LYS:O	1:B:48:LYS:HG2	1.82	0.79
1:D:12:ASN:O	1:D:13:THR:HB	1.81	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:83:THR:CG2	1:E:83:THR:O	2.30	0.78
1:B:93:LEU:CD1	1:B:119:MET:HE2	2.10	0.78
1:C:13:THR:HG23	1:C:82:THR:H	1.47	0.78
1:E:100:LEU:HD13	1:E:106:VAL:HG11	1.66	0.78
1:D:83:THR:CG2	1:D:89:HIS:HE1	1.96	0.77
1:C:100:LEU:CD1	1:C:106:VAL:HG13	2.15	0.77
1:E:100:LEU:CD1	1:E:106:VAL:HG11	2.15	0.76
1:C:34:LYS:H	1:C:209:ASN:ND2	1.84	0.76
1:E:63:ILE:HD12	1:E:68:CYS:HB2	1.67	0.76
1:C:110:CYS:O	1:C:113:THR:HB	1.87	0.75
1:C:100:LEU:CD1	1:C:106:VAL:CG1	2.64	0.75
1:B:12:ASN:O	1:B:13:THR:CB	2.32	0.75
1:E:27:ASN:HD22	1:E:41:VAL:H	1.35	0.74
1:F:32:PHE:CZ	1:F:180:VAL:HG11	2.21	0.74
1:D:191:ASN:O	1:D:195:THR:HB	1.87	0.74
1:C:99:ALA:O	1:C:104:THR:HG23	1.87	0.74
1:B:50:MET:HE3	1:B:58:ARG:HB3	1.70	0.73
1:A:83:THR:HG22	1:A:89:HIS:CE1	2.22	0.73
1:E:100:LEU:CD1	1:E:106:VAL:HG13	2.19	0.73
1:E:125:ARG:O	1:E:127:HIS:HD2	1.71	0.72
1:C:13:THR:CG2	1:C:82:THR:N	2.52	0.72
1:F:9:TYR:OH	1:F:89:HIS:HD2	1.72	0.72
1:C:195:THR:HG22	1:C:197:LYS:H	1.54	0.72
1:A:12:ASN:HD22	1:A:52:THR:H	1.35	0.72
1:B:99:ALA:O	1:B:104:THR:HG23	1.89	0.72
1:C:12:ASN:HD22	1:C:52:THR:H	1.36	0.72
1:E:126:LYS:NZ	1:E:149:GLU:OE2	2.21	0.72
1:B:47:ASN:HD22	1:B:49:GLU:H	1.37	0.71
1:B:13:THR:HG21	1:B:82:THR:OG1	1.90	0.71
1:B:83:THR:CG2	1:B:89:HIS:CE1	2.70	0.71
1:E:125:ARG:HH12	1:E:157:ALA:HB3	1.53	0.71
1:C:126:LYS:CE	1:C:149:GLU:OE2	2.37	0.71
1:F:99:ALA:HB1	1:F:104:THR:HG23	1.72	0.71
1:B:13:THR:CG2	1:B:82:THR:H	2.05	0.69
1:F:102:ILE:HG23	1:F:104:THR:HG22	1.73	0.69
1:C:13:THR:HG21	1:C:82:THR:H	1.57	0.69
1:F:27:ASN:HD22	1:F:41:VAL:H	1.40	0.69
1:E:12:ASN:HD22	1:E:52:THR:H	1.41	0.69
1:E:129:SER:OG	1:E:135:THR:HG21	1.93	0.68
1:D:195:THR:HG22	1:D:197:LYS:H	1.57	0.68
1:C:47:ASN:HD21	1:C:49:GLU:HB3	1.59	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:100:LEU:HD12	1:E:106:VAL:HG13	1.75	0.68
1:F:83:THR:CG2	1:F:89:HIS:HE1	2.06	0.68
1:A:207:SER:HB3	1:A:210:LYS:NZ	2.09	0.67
1:C:195:THR:CG2	1:C:197:LYS:HB2	2.23	0.67
1:A:44:VAL:HG23	1:A:44:VAL:O	1.94	0.67
1:A:47:ASN:HD22	1:A:49:GLU:H	1.42	0.67
1:F:44:VAL:HG22	1:F:63:ILE:CD1	2.24	0.67
1:B:197:LYS:HE3	1:B:199:GLU:OE1	1.95	0.67
1:D:12:ASN:HD22	1:D:52:THR:H	1.43	0.67
1:D:83:THR:HG22	1:D:89:HIS:CE1	2.30	0.67
1:F:183:LEU:HD11	1:F:187:HIS:NE2	2.10	0.66
1:C:114:ASP:OD1	1:C:135:THR:HB	1.96	0.66
1:E:131:ASN:O	1:E:135:THR:HG23	1.96	0.66
1:D:110:CYS:O	1:D:113:THR:HB	1.95	0.65
1:F:178:ILE:HG13	1:F:180:VAL:HG23	1.76	0.65
1:B:26:LEU:HD21	1:B:178:ILE:HD11	1.77	0.65
1:A:47:ASN:HD21	1:A:49:GLU:HB2	1.61	0.65
1:B:110:CYS:O	1:B:113:THR:HB	1.94	0.65
1:B:113:THR:HG21	1:B:129:SER:HA	1.78	0.65
1:F:44:VAL:CG2	1:F:63:ILE:HD11	2.27	0.65
1:B:1:MET:HE3	1:B:3:THR:HB	1.77	0.65
1:C:13:THR:HG21	1:C:82:THR:N	2.12	0.65
1:A:12:ASN:O	1:A:13:THR:CB	2.42	0.64
1:F:12:ASN:O	1:F:13:THR:HB	1.97	0.64
1:F:34:LYS:HG3	1:F:209:ASN:OD1	1.98	0.64
1:A:99:ALA:O	1:A:104:THR:HG23	1.97	0.64
1:C:47:ASN:ND2	1:C:49:GLU:H	1.92	0.64
1:D:27:ASN:HD22	1:D:41:VAL:H	1.45	0.64
1:F:118:ASN:HD21	1:F:140:PRO:HD2	1.62	0.64
1:A:191:ASN:O	1:A:195:THR:HB	1.98	0.64
1:D:99:ALA:O	1:D:104:THR:HG23	1.98	0.64
1:C:83:THR:CG2	1:C:89:HIS:CE1	2.66	0.63
1:A:195:THR:CG2	1:A:197:LYS:H	2.11	0.63
1:E:3:THR:N	3:E:234:HOH:O	2.31	0.63
1:F:195:THR:CG2	1:F:197:LYS:H	2.10	0.63
1:C:83:THR:HG21	3:C:232:HOH:O	1.97	0.63
1:F:99:ALA:HA	1:F:102:ILE:HG22	1.81	0.62
1:C:113:THR:HG21	1:C:129:SER:CA	2.29	0.62
1:F:90:GLN:OE1	1:F:119:MET:CE	2.48	0.62
1:A:188:SER:OG	1:A:203:GLN:NE2	2.31	0.62
1:B:13:THR:HG21	1:B:82:THR:H	1.64	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:48:LYS:CE	1:A:67:GLU:OE2	2.48	0.62
1:B:98:GLN:HG2	3:B:366:HOH:O	2.00	0.62
1:A:5:LYS:HE3	1:A:42:ILE:HD11	1.82	0.61
1:D:125:ARG:O	1:D:127:HIS:HD2	1.83	0.61
1:F:32:PHE:CE2	1:F:180:VAL:HG11	2.35	0.61
1:A:102:ILE:HG23	1:A:104:THR:HG22	1.81	0.61
1:F:13:THR:HG23	1:F:82:THR:H	1.65	0.61
1:F:32:PHE:CE2	1:F:180:VAL:CG1	2.84	0.61
1:E:132:LEU:HD12	1:E:132:LEU:O	2.01	0.61
1:E:129:SER:HG	1:E:148:TYR:HE1	1.49	0.60
1:B:50:MET:CE	1:B:58:ARG:HB3	2.31	0.60
1:C:125:ARG:HD3	3:C:231:HOH:O	2.00	0.60
1:F:89:HIS:O	1:F:93:LEU:HG	2.01	0.60
1:C:83:THR:HG22	1:C:83:THR:O	2.01	0.60
1:C:143:LYS:O	1:C:146:LYS:NZ	2.35	0.60
1:A:132:LEU:HD21	1:A:145:GLU:CG	2.31	0.59
1:E:110:CYS:O	1:E:113:THR:CG2	2.40	0.59
1:E:83:THR:CG2	1:E:89:HIS:HE1	1.97	0.59
1:E:132:LEU:HD22	1:E:148:TYR:CG	2.37	0.59
1:B:9:TYR:OH	1:B:89:HIS:CD2	2.44	0.59
1:D:118:ASN:ND2	1:D:141:ASN:OD1	2.35	0.59
1:A:202:PHE:HB3	1:B:205:MET:HE2	1.84	0.59
1:F:99:ALA:HB1	1:F:104:THR:CG2	2.32	0.59
1:A:41:VAL:O	1:F:146:LYS:HE3	2.02	0.59
1:E:24:ALA:HB1	1:F:54:MET:HE2	1.85	0.59
1:F:191:ASN:O	1:F:195:THR:HB	2.02	0.59
1:F:182:THR:HG23	3:F:257:HOH:O	2.02	0.59
1:D:182:THR:HG23	3:D:249:HOH:O	2.02	0.59
1:A:13:THR:CG2	1:A:82:THR:N	2.55	0.58
1:E:196:HIS:HD2	3:E:392:HOH:O	1.87	0.58
1:F:32:PHE:CD2	1:F:180:VAL:HG12	2.38	0.58
1:F:83:THR:CG2	1:F:89:HIS:CE1	2.81	0.58
1:B:33:LYS:HE2	1:B:179:ASP:O	2.04	0.58
1:F:44:VAL:HG22	1:F:63:ILE:HG13	1.76	0.58
1:B:118:ASN:HD21	1:B:141:ASN:H	1.50	0.58
1:C:131:ASN:O	1:C:135:THR:CG2	2.42	0.58
1:E:118:ASN:H	1:E:118:ASN:HD22	1.51	0.58
1:A:76:LEU:HD21	1:A:92:ILE:HD11	1.86	0.58
1:A:132:LEU:CD2	1:A:145:GLU:HG3	2.33	0.57
1:D:13:THR:CG2	1:D:13:THR:O	2.52	0.57
1:E:63:ILE:CD1	1:E:68:CYS:HB2	2.33	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:178:ILE:HG13	1:F:180:VAL:CG2	2.34	0.57
1:B:93:LEU:CD1	1:B:119:MET:CE	2.77	0.57
1:D:9:TYR:OH	1:D:89:HIS:HD2	1.88	0.57
1:A:134:TYR:CE2	1:A:138:VAL:HG21	2.39	0.57
1:B:13:THR:CG2	1:B:82:THR:OG1	2.53	0.57
1:C:83:THR:CG2	1:C:83:THR:O	2.53	0.57
1:A:136:LYS:NZ	1:A:145:GLU:OE1	2.38	0.57
1:C:89:HIS:O	1:C:92:ILE:HG22	2.04	0.57
1:C:129:SER:OG	1:C:135:THR:HG21	2.04	0.57
1:D:93:LEU:HD11	1:D:115:ALA:HB1	1.86	0.57
1:B:47:ASN:ND2	1:B:49:GLU:H	2.03	0.56
1:A:48:LYS:HG3	1:A:64:SER:HB3	1.87	0.56
1:C:90:GLN:O	1:C:94:GLU:HG2	2.05	0.56
1:E:100:LEU:HD12	1:E:106:VAL:CG1	2.32	0.56
1:A:113:THR:HG21	1:A:128:THR:O	2.06	0.56
1:E:12:ASN:O	1:E:13:THR:CG2	2.43	0.56
1:F:195:THR:HG21	1:F:200:TYR:CE2	2.40	0.56
1:B:197:LYS:CE	1:B:199:GLU:OE1	2.54	0.56
1:A:35:ASP:OD1	1:A:36:LEU:HG	2.06	0.56
1:E:195:THR:HG23	1:E:197:LYS:HG3	1.87	0.56
1:C:172:MET:HE3	1:C:172:MET:O	2.06	0.55
1:C:4:LYS:N	3:C:236:HOH:O	2.39	0.55
1:F:191:ASN:O	1:F:195:THR:HG22	2.07	0.55
1:A:44:VAL:O	1:A:44:VAL:CG2	2.55	0.55
1:A:5:LYS:NZ	1:F:146:LYS:O	2.32	0.55
1:D:90:GLN:OE1	1:D:119:MET:HE1	2.06	0.55
1:B:27:ASN:HD21	1:B:40:LYS:HD3	1.72	0.55
1:B:191:ASN:O	1:B:195:THR:HB	2.07	0.55
1:E:122:LEU:CD2	1:E:159:LEU:HD21	2.36	0.55
1:C:12:ASN:O	1:C:13:THR:CB	2.45	0.55
1:C:32:PHE:CE2	1:C:180:VAL:HG13	2.42	0.55
1:C:47:ASN:ND2	1:C:49:GLU:HB3	2.22	0.55
1:D:70:LEU:HB3	1:D:104:THR:HG21	1.89	0.55
1:E:99:ALA:HB1	1:E:104:THR:CG2	2.38	0.55
1:A:195:THR:HG23	1:A:197:LYS:H	1.72	0.54
1:A:47:ASN:ND2	1:A:49:GLU:HB2	2.22	0.54
1:B:27:ASN:ND2	1:B:41:VAL:H	2.05	0.54
1:F:44:VAL:HG21	1:F:63:ILE:HD11	1.88	0.54
1:A:40:LYS:NZ	1:F:145:GLU:O	2.39	0.54
1:B:90:GLN:NE2	1:B:93:LEU:HD12	2.23	0.54
1:F:34:LYS:CG	1:F:209:ASN:OD1	2.55	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:26:LEU:HD21	1:A:178:ILE:HD11	1.88	0.54
1:A:12:ASN:ND2	1:A:52:THR:H	2.04	0.54
1:B:89:HIS:O	1:B:92:ILE:HG22	2.06	0.54
1:A:207:SER:HB3	1:A:210:LYS:HZ1	1.73	0.54
1:F:6:ALA:HB2	1:F:39:LEU:HD21	1.90	0.54
1:E:129:SER:OG	1:E:135:THR:CG2	2.55	0.54
1:C:126:LYS:HD3	1:C:149:GLU:HG2	1.90	0.53
1:E:128:THR:HG22	1:E:154:VAL:HG23	1.90	0.53
1:F:9:TYR:OH	1:F:89:HIS:CD2	2.57	0.53
1:C:195:THR:HG22	1:C:197:LYS:HB2	1.89	0.53
1:E:132:LEU:HD13	1:E:148:TYR:CD1	2.44	0.53
1:A:125:ARG:O	1:A:127:HIS:HD2	1.90	0.53
1:E:50:MET:CE	1:E:58:ARG:HB3	2.39	0.53
1:A:13:THR:HG22	1:A:13:THR:O	2.07	0.53
1:E:31:TYR:CD1	1:E:208:ILE:HD13	2.44	0.53
1:C:102:ILE:HG23	1:C:104:THR:HG22	1.91	0.53
1:A:100:LEU:CD2	1:A:106:VAL:HG13	2.38	0.53
1:D:90:GLN:OE1	1:D:119:MET:CE	2.56	0.52
1:E:83:THR:O	1:E:89:HIS:ND1	2.43	0.52
1:F:3:THR:HG23	1:F:73:LYS:O	2.09	0.52
1:F:90:GLN:OE1	1:F:119:MET:HE3	2.09	0.52
1:F:113:THR:HG21	1:F:129:SER:HA	1.92	0.52
1:E:102:ILE:O	1:E:102:ILE:HD12	2.09	0.52
1:F:114:ASP:O	1:F:117:ALA:HB3	2.10	0.52
1:E:195:THR:CG2	1:E:197:LYS:H	2.18	0.52
1:D:13:THR:O	1:D:13:THR:HG22	2.09	0.52
1:A:196:HIS:ND1	1:D:165:ILE:HG13	2.23	0.52
1:B:130:ASN:HA	1:B:163:SER:HB2	1.91	0.52
1:F:12:ASN:O	1:F:13:THR:CB	2.58	0.52
1:E:195:THR:HG23	1:E:197:LYS:CG	2.40	0.52
1:F:26:LEU:HD21	1:F:178:ILE:HD11	1.91	0.52
1:B:27:ASN:ND2	1:B:40:LYS:HD3	2.25	0.51
1:E:128:THR:CG2	1:E:154:VAL:HG23	2.40	0.51
1:A:13:THR:CG2	1:A:13:THR:O	2.57	0.51
1:D:93:LEU:HA	1:D:96:ILE:HD12	1.92	0.51
1:E:132:LEU:HD22	1:E:148:TYR:CD2	2.45	0.51
1:F:32:PHE:CZ	1:F:180:VAL:CG1	2.91	0.51
1:F:44:VAL:CG2	1:F:63:ILE:CD1	2.86	0.51
1:A:34:LYS:HE2	1:A:208:ILE:CD1	2.33	0.51
1:B:83:THR:HG23	1:B:83:THR:O	2.09	0.51
1:B:27:ASN:HD22	1:B:41:VAL:H	1.58	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:113:THR:HG21	1:C:129:SER:CB	2.41	0.51
1:A:206:ASN:ND2	3:A:219:HOH:O	2.43	0.51
1:B:127:HIS:HE1	1:B:142:TYR:OH	1.93	0.50
1:A:51:ILE:C	1:A:51:ILE:HD12	2.32	0.50
1:E:31:TYR:CD1	1:E:208:ILE:CD1	2.94	0.50
1:E:57:LEU:HD13	1:F:59:ILE:HD11	1.93	0.50
1:F:44:VAL:CG2	1:F:63:ILE:CG1	2.66	0.50
1:F:100:LEU:CD2	1:F:106:VAL:HG13	2.41	0.50
1:C:172:MET:C	1:C:172:MET:CE	2.80	0.50
1:F:171:ALA:O	1:F:175:LEU:HG	2.10	0.50
1:A:195:THR:HG21	1:A:200:TYR:CE2	2.47	0.50
1:B:195:THR:HG21	1:B:200:TYR:CE2	2.47	0.50
1:F:118:ASN:ND2	1:F:139:CYS:HA	2.25	0.50
1:F:191:ASN:O	1:F:195:THR:CG2	2.59	0.50
1:D:83:THR:CG2	1:D:89:HIS:CE1	2.86	0.50
1:F:127:HIS:HE1	1:F:142:TYR:OH	1.94	0.50
1:B:13:THR:HG22	1:B:82:THR:H	1.74	0.50
1:E:114:ASP:OD1	1:E:135:THR:HG22	2.12	0.50
1:B:187:HIS:HB3	3:B:277:HOH:O	2.12	0.49
1:F:70:LEU:HB3	1:F:104:THR:HG21	1.95	0.49
1:C:34:LYS:H	1:C:209:ASN:HD22	1.58	0.49
1:E:27:ASN:HD22	1:E:40:LYS:HA	1.77	0.49
1:B:89:HIS:O	1:B:93:LEU:HG	2.12	0.49
1:C:14:MET:CE	1:C:79:PRO:HG2	2.42	0.49
1:A:99:ALA:HA	1:A:102:ILE:HG22	1.95	0.49
1:C:195:THR:HG23	1:C:197:LYS:HG3	1.94	0.49
1:C:149:GLU:HB2	1:C:154:VAL:HG21	1.94	0.49
1:F:6:ALA:HB2	1:F:39:LEU:CD2	2.43	0.49
1:F:33:LYS:HB3	1:F:182:THR:HG22	1.95	0.49
1:A:26:LEU:CD2	1:A:178:ILE:HD11	2.43	0.48
1:F:83:THR:HG22	1:F:83:THR:O	2.12	0.48
1:B:125:ARG:O	1:B:127:HIS:HD2	1.96	0.48
1:E:71:GLU:O	1:E:104:THR:HB	2.13	0.48
1:F:149:GLU:CG	1:F:154:VAL:HG21	2.43	0.48
1:A:5:LYS:HE3	1:A:42:ILE:CD1	2.43	0.48
1:A:195:THR:HG22	1:A:197:LYS:H	1.77	0.48
1:D:195:THR:CG2	1:D:197:LYS:CG	2.88	0.48
1:E:125:ARG:O	1:E:127:HIS:CD2	2.60	0.48
1:B:196:HIS:HA	1:C:165:ILE:HD12	1.94	0.48
1:B:4:LYS:NZ	1:E:197:LYS:NZ	2.61	0.48
1:A:113:THR:HG21	1:A:129:SER:HA	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:132:LEU:O	1:A:136:LYS:HG2	2.13	0.48
1:E:12:ASN:ND2	1:E:52:THR:H	2.09	0.48
1:F:195:THR:HG21	1:F:200:TYR:CD2	2.48	0.48
1:B:134:TYR:CZ	1:B:138:VAL:HG21	2.49	0.48
1:B:97:GLY:O	1:B:101:LYS:HG3	2.13	0.48
1:C:14:MET:HE2	1:C:79:PRO:HG2	1.96	0.47
1:C:125:ARG:O	1:C:127:HIS:HD2	1.97	0.47
1:E:195:THR:HG21	1:E:200:TYR:CE2	2.49	0.47
1:B:27:ASN:O	1:B:40:LYS:HE2	2.14	0.47
1:C:171:ALA:O	1:C:175:LEU:HG	2.13	0.47
1:E:63:ILE:HB	1:E:67:GLU:HG3	1.95	0.47
1:A:32:PHE:O	1:A:208:ILE:CD1	2.62	0.47
1:C:172:MET:HE3	1:C:172:MET:C	2.34	0.47
1:A:93:LEU:HA	1:A:96:ILE:HD12	1.96	0.47
1:A:196:HIS:HE1	1:D:166:ALA:HA	1.78	0.47
1:F:13:THR:CG2	1:F:82:THR:H	2.28	0.47
1:D:113:THR:HG21	1:D:129:SER:HA	1.95	0.47
1:E:27:ASN:ND2	1:E:41:VAL:H	2.08	0.47
1:E:86:GLU:HA	3:E:369:HOH:O	2.13	0.47
1:F:83:THR:CG2	1:F:83:THR:O	2.63	0.47
1:A:40:LYS:HD3	1:F:146:LYS:HA	1.97	0.47
1:A:196:HIS:HE1	1:D:165:ILE:O	1.98	0.47
1:C:118:ASN:O	1:C:141:ASN:HB2	2.15	0.47
1:E:118:ASN:HB2	1:E:141:ASN:HB2	1.97	0.47
1:D:203:GLN:NE2	3:D:253:HOH:O	2.47	0.47
1:A:165:ILE:HG21	1:A:165:ILE:HD13	1.13	0.46
1:A:197:LYS:HZ2	1:C:137:MET:HG3	1.79	0.46
1:B:90:GLN:OE1	1:B:119:MET:HE1	2.15	0.46
1:C:83:THR:O	1:C:89:HIS:CE1	2.68	0.46
1:E:27:ASN:ND2	1:E:40:LYS:HA	2.30	0.46
1:D:47:ASN:OD1	1:D:47:ASN:C	2.54	0.46
1:E:126:LYS:HB2	1:E:156:ASP:HB2	1.97	0.46
1:A:58:ARG:HD3	3:A:252:HOH:O	2.15	0.46
1:E:32:PHE:CE1	1:E:180:VAL:HG22	2.50	0.46
1:F:113:THR:CG2	1:F:129:SER:HB2	2.45	0.46
1:A:50:MET:HE3	1:A:58:ARG:HB3	1.98	0.46
1:B:27:ASN:HD22	1:B:40:LYS:HA	1.79	0.46
1:F:191:ASN:O	1:F:195:THR:CB	2.63	0.46
1:C:13:THR:HG22	1:C:81:GLY:HA3	1.97	0.46
1:A:131:ASN:C	1:A:131:ASN:ND2	2.69	0.46
1:D:2:GLN:NE2	1:D:36:LEU:HD21	2.30	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:149:GLU:CG	1:A:154:VAL:HG21	2.46	0.46
1:A:110:CYS:O	1:A:113:THR:HB	2.16	0.45
1:C:32:PHE:CE2	1:C:180:VAL:CG1	2.99	0.45
1:D:127:HIS:HE1	1:D:142:TYR:OH	1.99	0.45
1:E:88:ILE:HG23	1:E:89:HIS:CD2	2.51	0.45
1:E:99:ALA:HB1	1:E:104:THR:HG21	1.97	0.45
1:E:183:LEU:O	1:E:187:HIS:HD2	1.98	0.45
1:B:63:ILE:HB	1:B:67:GLU:HB2	1.99	0.45
1:A:41:VAL:O	1:F:146:LYS:CE	2.64	0.45
1:B:99:ALA:HB1	1:B:104:THR:CG2	2.47	0.45
1:C:126:LYS:HD3	1:C:149:GLU:CG	2.46	0.45
1:C:47:ASN:ND2	1:C:49:GLU:CB	2.80	0.45
1:C:98:GLN:O	1:C:102:ILE:HG22	2.16	0.45
1:D:113:THR:HG22	1:D:114:ASP:N	2.31	0.45
1:D:113:THR:HG21	1:D:129:SER:CB	2.47	0.45
1:B:10:VAL:HA	1:B:14:MET:CE	2.46	0.45
1:C:32:PHE:CD2	1:C:180:VAL:HG13	2.51	0.45
1:D:26:LEU:HD22	1:D:39:LEU:HD23	1.98	0.45
1:E:3:THR:HA	1:E:73:LYS:O	2.17	0.45
1:E:32:PHE:CE1	1:E:180:VAL:CG2	3.00	0.45
1:F:146:LYS:CG	3:F:212:HOH:O	2.64	0.45
1:B:195:THR:HG22	1:B:197:LYS:H	1.81	0.45
1:E:195:THR:HG21	1:E:200:TYR:HE2	1.81	0.45
1:B:126:LYS:HG2	1:B:149:GLU:OE2	2.17	0.44
1:E:26:LEU:HD21	1:E:178:ILE:HD11	1.99	0.44
1:E:99:ALA:HB1	1:E:104:THR:HG23	1.99	0.44
1:B:93:LEU:HA	1:B:96:ILE:HD12	1.98	0.44
1:C:15:SER:HB3	1:C:17:TRP:CH2	2.52	0.44
1:F:145:GLU:OE1	1:F:145:GLU:N	2.44	0.44
1:A:92:ILE:HD12	1:A:96:ILE:HD11	1.98	0.44
1:B:27:ASN:ND2	1:B:40:LYS:HA	2.32	0.44
1:D:26:LEU:HD21	1:D:178:ILE:HD11	1.99	0.44
1:F:127:HIS:CE1	1:F:142:TYR:OH	2.71	0.44
1:D:58:ARG:HB3	1:D:58:ARG:CZ	2.47	0.44
1:E:134:TYR:O	1:E:138:VAL:HG23	2.18	0.44
1:C:183:LEU:HD13	3:C:245:HOH:O	2.17	0.44
1:E:84:TRP:HA	1:E:89:HIS:ND1	2.32	0.44
1:C:99:ALA:O	1:C:102:ILE:HG22	2.17	0.44
1:C:99:ALA:C	1:C:104:THR:HG23	2.38	0.44
1:D:13:THR:HG21	1:D:82:THR:N	2.15	0.44
1:B:54:MET:O	1:C:27:ASN:ND2	2.47	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:127:HIS:CE1	1:B:142:TYR:OH	2.71	0.44
1:C:125:ARG:O	1:C:127:HIS:CD2	2.70	0.44
1:F:125:ARG:O	1:F:127:HIS:HD2	2.01	0.44
1:A:14:MET:CE	1:A:79:PRO:HG2	2.48	0.43
1:B:90:GLN:NE2	3:B:338:HOH:O	2.50	0.43
1:F:83:THR:HG23	1:F:86:GLU:CD	2.39	0.43
1:A:102:ILE:CG2	1:A:104:THR:HG22	2.48	0.43
1:D:119:MET:HE1	3:D:232:HOH:O	2.17	0.43
1:E:108:ALA:HB1	1:E:112:ALA:HB3	2.00	0.43
1:F:90:GLN:N	1:F:91:PRO:CD	2.81	0.43
1:B:100:LEU:CD2	1:B:106:VAL:HG13	2.48	0.43
1:F:3:THR:O	1:F:3:THR:HG22	2.17	0.43
1:E:110:CYS:HB2	1:E:164:GLY:CA	2.48	0.43
1:A:93:LEU:HD21	1:A:115:ALA:HB1	2.00	0.43
1:B:113:THR:HG21	1:B:129:SER:CB	2.49	0.43
1:B:196:HIS:HD2	3:B:340:HOH:O	2.02	0.43
1:B:197:LYS:HA	1:B:198:PRO:HD3	1.84	0.43
1:A:99:ALA:C	1:A:104:THR:HG23	2.39	0.43
1:A:131:ASN:HD22	1:A:132:LEU:N	2.17	0.43
1:C:177:LYS:HD3	3:C:235:HOH:O	2.18	0.43
1:A:136:LYS:NZ	1:A:145:GLU:CD	2.72	0.43
1:A:165:ILE:HD11	1:D:192:LEU:CD1	2.48	0.43
1:C:195:THR:HG21	1:C:200:TYR:HE2	1.84	0.43
1:E:52:THR:HA	1:E:57:LEU:O	2.19	0.42
1:F:32:PHE:CE2	1:F:180:VAL:HG12	2.53	0.42
1:C:108:ALA:O	1:C:161:THR:HA	2.19	0.42
1:A:127:HIS:HE1	1:A:142:TYR:OH	2.01	0.42
1:A:196:HIS:CE1	1:D:165:ILE:O	2.72	0.42
1:B:99:ALA:C	1:B:104:THR:HG23	2.39	0.42
1:F:90:GLN:OE1	1:F:119:MET:HE1	2.18	0.42
1:A:100:LEU:HD23	1:A:106:VAL:HG13	2.00	0.42
1:D:48:LYS:NZ	1:D:48:LYS:HB3	2.34	0.42
1:D:132:LEU:HD11	1:D:145:GLU:HG3	2.01	0.42
1:E:204:LEU:HD11	1:E:208:ILE:HD11	2.01	0.42
1:F:58:ARG:HH21	1:F:58:ARG:CG	2.32	0.42
1:C:44:VAL:HB	1:C:63:ILE:HG13	2.02	0.42
1:C:50:MET:HE3	1:C:50:MET:HB3	1.88	0.42
1:E:108:ALA:HB1	1:E:112:ALA:CB	2.50	0.42
1:D:117:ALA:HB2	1:D:122:LEU:HD12	2.00	0.42
1:B:14:MET:HA	1:B:80:GLY:O	2.20	0.42
1:B:134:TYR:CE1	1:B:138:VAL:HG21	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:89:HIS:O	1:C:92:ILE:CG2	2.68	0.42
1:B:90:GLN:OE1	1:B:119:MET:CE	2.68	0.41
1:C:65:LEU:HD11	1:C:95:ARG:HG3	2.01	0.41
1:B:92:ILE:CD1	1:B:96:ILE:HD11	2.50	0.41
1:D:36:LEU:HD12	3:D:254:HOH:O	2.19	0.41
1:E:26:LEU:HD22	1:E:39:LEU:HD23	2.01	0.41
1:E:150:LEU:HD13	1:E:150:LEU:HA	1.93	0.41
1:F:99:ALA:O	1:F:102:ILE:HG22	2.19	0.41
1:A:31:TYR:HB2	1:A:181:PHE:CZ	2.56	0.41
1:A:48:LYS:HE2	1:A:67:GLU:CD	2.41	0.41
1:B:48:LYS:O	1:B:48:LYS:CG	2.63	0.41
1:C:113:THR:CG2	1:C:129:SER:CB	2.98	0.41
1:F:6:ALA:CB	1:F:39:LEU:HG	2.50	0.41
1:A:14:MET:HE3	1:A:79:PRO:HG2	2.01	0.41
1:D:14:MET:HB2	1:D:14:MET:HE2	1.80	0.41
1:F:146:LYS:HG3	3:F:212:HOH:O	2.19	0.41
1:B:68:CYS:SG	1:B:70:LEU:HD21	2.61	0.41
1:C:197:LYS:HE2	1:C:197:LYS:HB3	1.90	0.41
1:F:100:LEU:HD23	1:F:106:VAL:HG13	2.02	0.41
1:F:99:ALA:HA	1:F:102:ILE:CG2	2.50	0.41
1:F:113:THR:HG21	1:F:129:SER:CB	2.51	0.41
1:A:127:HIS:CE1	1:A:142:TYR:OH	2.73	0.41
1:B:6:ALA:HB2	1:B:39:LEU:HG	2.02	0.41
1:B:32:PHE:CE1	1:B:180:VAL:HG22	2.56	0.41
1:B:195:THR:HG23	1:B:197:LYS:HG3	2.02	0.41
1:D:50:MET:HE2	1:D:59:ILE:C	2.41	0.41
1:E:15:SER:HB3	1:E:17:TRP:CZ3	2.55	0.41
1:E:195:THR:HG23	1:E:197:LYS:HD2	2.02	0.41
1:F:195:THR:HG23	1:F:197:LYS:N	2.17	0.41
1:B:36:LEU:HD12	1:B:36:LEU:HA	1.83	0.41
1:C:90:GLN:N	1:C:91:PRO:HD2	2.36	0.41
1:A:47:ASN:ND2	1:A:49:GLU:H	2.14	0.40
1:B:-1:GLN:N	3:B:415:HOH:O	2.53	0.40
1:B:168:LEU:HD23	1:B:194:LYS:HD3	2.03	0.40
1:C:157:ALA:O	1:C:177:LYS:HE2	2.21	0.40
1:E:150:LEU:N	1:E:150:LEU:HD22	2.34	0.40
1:A:80:GLY:HA3	1:A:110:CYS:HB3	2.03	0.40
1:B:4:LYS:NZ	1:E:197:LYS:HZ2	2.19	0.40
1:E:86:GLU:H	1:E:86:GLU:HG2	1.57	0.40
1:F:71:GLU:O	1:F:104:THR:HB	2.21	0.40
1:A:50:MET:HE3	1:A:50:MET:HB3	1.93	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:202:PHE:CD1	1:B:205:MET:HG3	2.56	0.40
1:D:195:THR:HG22	1:D:197:LYS:N	2.32	0.40
1:A:195:THR:O	1:A:196:HIS:HB2	2.21	0.40
1:B:37:ALA:HB1	1:B:38:PRO:HD2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	206/212 (97%)	199 (97%)	6 (3%)	1 (0%)	29	35
1	B	210/212 (99%)	198 (94%)	9 (4%)	3 (1%)	11	11
1	C	204/212 (96%)	196 (96%)	7 (3%)	1 (0%)	29	35
1	D	207/212 (98%)	202 (98%)	5 (2%)	0	100	100
1	E	206/212 (97%)	195 (95%)	9 (4%)	2 (1%)	15	17
1	F	205/212 (97%)	190 (93%)	13 (6%)	2 (1%)	15	17
All	All	1238/1272 (97%)	1180 (95%)	49 (4%)	9 (1%)	22	26

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	34	LYS
1	B	13	THR
1	B	33	LYS
1	E	53	THR
1	B	34	LYS
1	C	33	LYS
1	A	13	THR
1	E	88	ILE
1	F	111	GLY

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	178/181 (98%)	159 (89%)	19 (11%)	6	7
1	B	181/181 (100%)	167 (92%)	14 (8%)	13	16
1	C	176/181 (97%)	156 (89%)	20 (11%)	5	6
1	D	179/181 (99%)	162 (90%)	17 (10%)	8	10
1	E	178/181 (98%)	162 (91%)	16 (9%)	9	11
1	F	177/181 (98%)	156 (88%)	21 (12%)	5	5
All	All	1069/1086 (98%)	962 (90%)	107 (10%)	7	9

All (107) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	47	ASN
1	A	50	MET
1	A	92	ILE
1	A	101	LYS
1	A	104	THR
1	A	106	VAL
1	A	125	ARG
1	A	131	ASN
1	A	137	MET
1	A	141	ASN
1	A	143	LYS
1	A	156	ASP
1	A	165	ILE
1	A	175	LEU
1	A	195	THR
1	A	197	LYS
1	A	207	SER
1	A	208	ILE
1	A	210	LYS
1	B	4	LYS
1	B	47	ASN
1	B	83	THR

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Mol	Chain	Res	Type
1	B	92	ILE
1	B	104	THR
1	B	106	VAL
1	B	116	LEU
1	B	155	SER
1	B	163	SER
1	B	175	LEU
1	B	177	LYS
1	B	180	VAL
1	B	183	LEU
1	B	195	THR
1	C	35	ASP
1	C	40	LYS
1	C	44	VAL
1	C	47	ASN
1	C	50	MET
1	C	60	LYS
1	C	71	GLU
1	C	93	LEU
1	C	100	LEU
1	C	104	THR
1	C	106	VAL
1	C	135	THR
1	C	138	VAL
1	C	146	LYS
1	C	150	LEU
1	C	172	MET
1	C	180	VAL
1	C	183	LEU
1	C	195	THR
1	C	197	LYS
1	D	36	LEU
1	D	44	VAL
1	D	48	LYS
1	D	58	ARG
1	D	70	LEU
1	D	83	THR
1	D	87	GLU
1	D	93	LEU
1	D	104	THR
1	D	106	VAL
1	D	113	THR

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Mol	Chain	Res	Type
1	D	141	ASN
1	D	150	LEU
1	D	172	MET
1	D	175	LEU
1	D	180	VAL
1	D	183	LEU
1	E	40	LYS
1	E	44	VAL
1	E	48	LYS
1	E	86	GLU
1	E	100	LEU
1	E	102	ILE
1	E	104	THR
1	E	106	VAL
1	E	118	ASN
1	E	124	THR
1	E	132	LEU
1	E	165	ILE
1	E	168	LEU
1	E	195	THR
1	E	208	ILE
1	E	210	LYS
1	F	13	THR
1	F	16	ASP
1	F	33	LYS
1	F	50	MET
1	F	58	ARG
1	F	66	ASP
1	F	69	THR
1	F	85	SER
1	F	104	THR
1	F	113	THR
1	F	146	LYS
1	F	150	LEU
1	F	155	SER
1	F	177	LYS
1	F	182	THR
1	F	184	ASP
1	F	194	LYS
1	F	195	THR
1	F	207	SER
1	F	208	ILE

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Mol	Chain	Res	Type
1	F	209	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (43) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	12	ASN
1	A	47	ASN
1	A	89	HIS
1	A	127	HIS
1	A	131	ASN
1	A	187	HIS
1	A	203	GLN
1	B	27	ASN
1	B	47	ASN
1	B	89	HIS
1	B	118	ASN
1	B	127	HIS
1	B	196	HIS
1	B	203	GLN
1	C	12	ASN
1	C	47	ASN
1	C	89	HIS
1	C	127	HIS
1	C	196	HIS
1	C	203	GLN
1	C	209	ASN
1	D	2	GLN
1	D	12	ASN
1	D	27	ASN
1	D	89	HIS
1	D	118	ASN
1	D	127	HIS
1	D	203	GLN
1	D	209	ASN
1	E	12	ASN
1	E	27	ASN
1	E	89	HIS
1	E	118	ASN
1	E	127	HIS
1	E	187	HIS
1	E	196	HIS
1	E	203	GLN

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Mol	Chain	Res	Type
1	E	206	ASN
1	F	12	ASN
1	F	27	ASN
1	F	89	HIS
1	F	118	ASN
1	F	127	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](#)

1 ligand is 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	$\# Z > 2$
2	SO4	C	211	-	4,4,4	0.38	0	6,6,6	0.61	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.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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, 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	208/212 (98%)	0.06	4 (1%) 66 73	31, 44, 59, 64	0
1	B	212/212 (100%)	0.13	5 (2%) 59 66	30, 43, 54, 64	0
1	C	206/212 (97%)	0.04	2 (0%) 82 86	31, 47, 63, 68	0
1	D	209/212 (98%)	0.03	1 (0%) 91 94	29, 40, 55, 65	0
1	E	208/212 (98%)	0.52	17 (8%) 11 15	33, 49, 70, 76	0
1	F	207/212 (97%)	0.31	9 (4%) 35 42	35, 51, 66, 81	0
All	All	1250/1272 (98%)	0.18	38 (3%) 50 57	29, 46, 63, 81	0

All (38) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	34	LYS	5.1
1	E	138	VAL	4.4
1	E	150	LEU	4.0
1	F	3	THR	4.0
1	E	137	MET	3.6
1	B	-1	GLN	3.2
1	E	147	PHE	3.0
1	B	108	ALA	2.8
1	B	109	ILE	2.7
1	F	184	ASP	2.7
1	E	142	TYR	2.7
1	E	126	LYS	2.7
1	E	20	GLY	2.6
1	F	183	LEU	2.6
1	F	209	ASN	2.6
1	E	148	TYR	2.5
1	F	9	TYR	2.5
1	A	3	THR	2.4
1	A	143	LYS	2.4

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Mol	Chain	Res	Type	RSRZ
1	E	143	LYS	2.4
1	A	147	PHE	2.4
1	E	144	GLY	2.3
1	E	115	ALA	2.3
1	E	127	HIS	2.3
1	E	156	ASP	2.3
1	E	133	GLU	2.3
1	E	122	LEU	2.2
1	C	147	PHE	2.2
1	E	117	ALA	2.2
1	A	125	ARG	2.1
1	F	94	GLU	2.1
1	B	110	CYS	2.1
1	E	17	TRP	2.1
1	F	88	ILE	2.1
1	F	35	ASP	2.1
1	C	124	THR	2.1
1	D	2	GLN	2.0
1	B	171	ALA	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	SO4	C	211	5/5	0.61	0.51	38,40,43,43	0

6.5 Other polymers [i](#)

There are no such residues in this entry.