



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 01:39 AM GMT

PDB ID : 2DSO
Title : Crystal structure of D138N mutant of Drp35, a 35kDa drug responsive protein from *Staphylococcus aureus*
Authors : Tanaka, Y.; Ohki, Y.; Morikawa, K.; Yao, M.; Watanabe, N.; Ohta, T.; Tanaka, I.
Deposited on : 2006-07-04
Resolution : 2.10 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
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

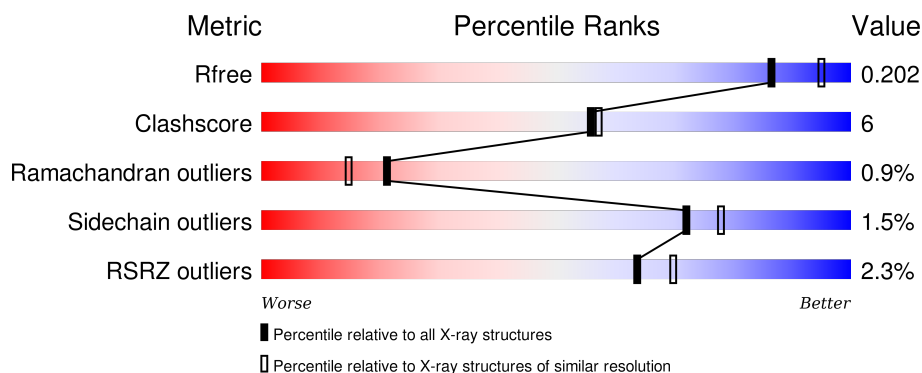
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 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}	91344	3939 (2.10-2.10)
Clashscore	102246	4460 (2.10-2.10)
Ramachandran outliers	100387	4413 (2.10-2.10)
Sidechain outliers	100360	4414 (2.10-2.10)
RSRZ outliers	91569	3948 (2.10-2.10)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	333	 3% 83% 12% ..
1	B	333	 2% 82% 14% ..
1	C	333	 2% 77% 20% .
1	D	333	 4% 80% 16% ..
1	E	333	 2% 83% 13% ..

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Mol	Chain	Length	Quality of chain
1	F	333	<div> <div>%</div> <div> </div> <div>81%14% . .</div> </div>

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
3	GOL	A	5002	-	-	-	X
3	GOL	D	5003	-	-	-	X

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 15988 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 Drp35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	322	Total	C	N	O	S	0	0	0
			2520	1609	418	483	10			
1	B	321	Total	C	N	O	S	0	0	0
			2511	1604	415	482	10			
1	C	323	Total	C	N	O	S	0	0	0
			2526	1612	419	485	10			
1	D	321	Total	C	N	O	S	0	0	0
			2512	1603	417	482	10			
1	E	321	Total	C	N	O	S	0	0	0
			2511	1604	416	481	10			
1	F	320	Total	C	N	O	S	0	0	0
			2502	1599	414	479	10			

There are 66 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	CLONING ARTIFACT	UNP Q99QV3
A	2	ALA	-	CLONING ARTIFACT	UNP Q99QV3
A	138	ASN	ASP	ENGINEERED	UNP Q99QV3
A	326	LEU	-	EXPRESSION TAG	UNP Q99QV3
A	327	GLU	-	EXPRESSION TAG	UNP Q99QV3
A	328	HIS	-	EXPRESSION TAG	UNP Q99QV3
A	329	HIS	-	EXPRESSION TAG	UNP Q99QV3
A	330	HIS	-	EXPRESSION TAG	UNP Q99QV3
A	331	HIS	-	EXPRESSION TAG	UNP Q99QV3
A	332	HIS	-	EXPRESSION TAG	UNP Q99QV3
A	333	HIS	-	EXPRESSION TAG	UNP Q99QV3
B	1	MET	-	CLONING ARTIFACT	UNP Q99QV3
B	2	ALA	-	CLONING ARTIFACT	UNP Q99QV3
B	138	ASN	ASP	ENGINEERED	UNP Q99QV3
B	326	LEU	-	EXPRESSION TAG	UNP Q99QV3
B	327	GLU	-	EXPRESSION TAG	UNP Q99QV3
B	328	HIS	-	EXPRESSION TAG	UNP Q99QV3

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Chain	Residue	Modelled	Actual	Comment	Reference
B	329	HIS	-	EXPRESSION TAG	UNP Q99QV3
B	330	HIS	-	EXPRESSION TAG	UNP Q99QV3
B	331	HIS	-	EXPRESSION TAG	UNP Q99QV3
B	332	HIS	-	EXPRESSION TAG	UNP Q99QV3
B	333	HIS	-	EXPRESSION TAG	UNP Q99QV3
C	1	MET	-	CLONING ARTIFACT	UNP Q99QV3
C	2	ALA	-	CLONING ARTIFACT	UNP Q99QV3
C	138	ASN	ASP	ENGINEERED	UNP Q99QV3
C	326	LEU	-	EXPRESSION TAG	UNP Q99QV3
C	327	GLU	-	EXPRESSION TAG	UNP Q99QV3
C	328	HIS	-	EXPRESSION TAG	UNP Q99QV3
C	329	HIS	-	EXPRESSION TAG	UNP Q99QV3
C	330	HIS	-	EXPRESSION TAG	UNP Q99QV3
C	331	HIS	-	EXPRESSION TAG	UNP Q99QV3
C	332	HIS	-	EXPRESSION TAG	UNP Q99QV3
C	333	HIS	-	EXPRESSION TAG	UNP Q99QV3
D	1	MET	-	CLONING ARTIFACT	UNP Q99QV3
D	2	ALA	-	CLONING ARTIFACT	UNP Q99QV3
D	138	ASN	ASP	ENGINEERED	UNP Q99QV3
D	326	LEU	-	EXPRESSION TAG	UNP Q99QV3
D	327	GLU	-	EXPRESSION TAG	UNP Q99QV3
D	328	HIS	-	EXPRESSION TAG	UNP Q99QV3
D	329	HIS	-	EXPRESSION TAG	UNP Q99QV3
D	330	HIS	-	EXPRESSION TAG	UNP Q99QV3
D	331	HIS	-	EXPRESSION TAG	UNP Q99QV3
D	332	HIS	-	EXPRESSION TAG	UNP Q99QV3
D	333	HIS	-	EXPRESSION TAG	UNP Q99QV3
E	1	MET	-	CLONING ARTIFACT	UNP Q99QV3
E	2	ALA	-	CLONING ARTIFACT	UNP Q99QV3
E	138	ASN	ASP	ENGINEERED	UNP Q99QV3
E	326	LEU	-	EXPRESSION TAG	UNP Q99QV3
E	327	GLU	-	EXPRESSION TAG	UNP Q99QV3
E	328	HIS	-	EXPRESSION TAG	UNP Q99QV3
E	329	HIS	-	EXPRESSION TAG	UNP Q99QV3
E	330	HIS	-	EXPRESSION TAG	UNP Q99QV3
E	331	HIS	-	EXPRESSION TAG	UNP Q99QV3
E	332	HIS	-	EXPRESSION TAG	UNP Q99QV3
E	333	HIS	-	EXPRESSION TAG	UNP Q99QV3
F	1	MET	-	CLONING ARTIFACT	UNP Q99QV3
F	2	ALA	-	CLONING ARTIFACT	UNP Q99QV3
F	138	ASN	ASP	ENGINEERED	UNP Q99QV3
F	326	LEU	-	EXPRESSION TAG	UNP Q99QV3

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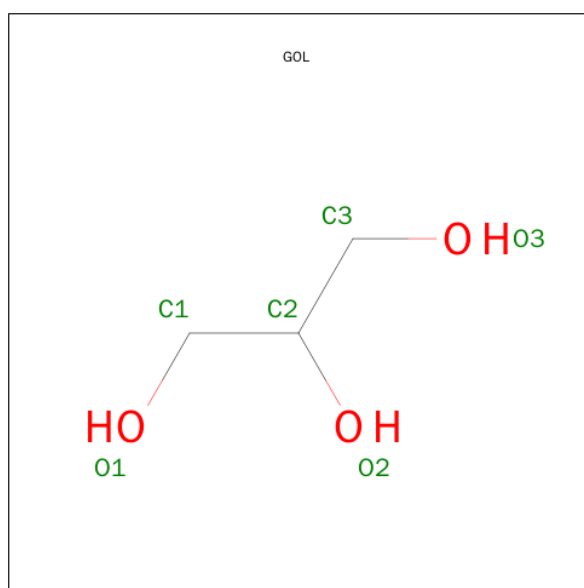
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Chain	Residue	Modelled	Actual	Comment	Reference
F	327	GLU	-	EXPRESSION TAG	UNP Q99QV3
F	328	HIS	-	EXPRESSION TAG	UNP Q99QV3
F	329	HIS	-	EXPRESSION TAG	UNP Q99QV3
F	330	HIS	-	EXPRESSION TAG	UNP Q99QV3
F	331	HIS	-	EXPRESSION TAG	UNP Q99QV3
F	332	HIS	-	EXPRESSION TAG	UNP Q99QV3
F	333	HIS	-	EXPRESSION TAG	UNP Q99QV3

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	D	2	Total Ca 2 2	0	0
2	E	2	Total Ca 2 2	0	0
2	B	2	Total Ca 2 2	0	0
2	C	2	Total Ca 2 2	0	0
2	A	2	Total Ca 2 2	0	0
2	F	2	Total Ca 2 2	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	D	1	Total	C	O	0	0
			6	3	3		
3	A	1	Total	C	O	0	0
			6	3	3		
3	D	1	Total	C	O	0	0
			6	3	3		

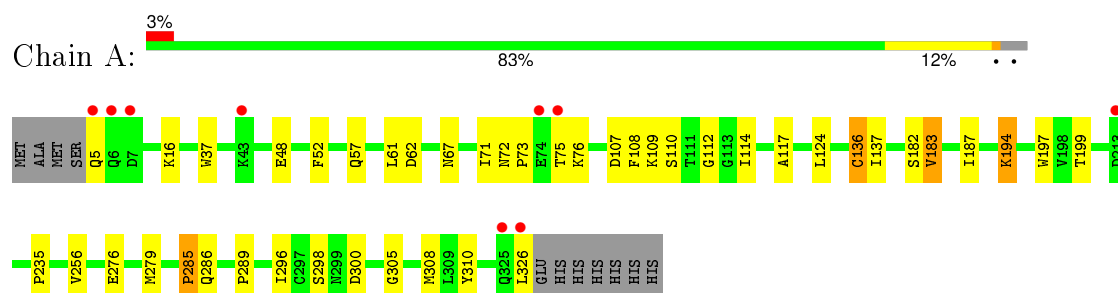
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	155	Total	O	0	0
			155	155		
4	B	143	Total	O	0	0
			143	143		
4	C	124	Total	O	0	0
			124	124		
4	D	145	Total	O	0	0
			145	145		
4	E	170	Total	O	0	0
			170	170		
4	F	139	Total	O	0	0
			139	139		

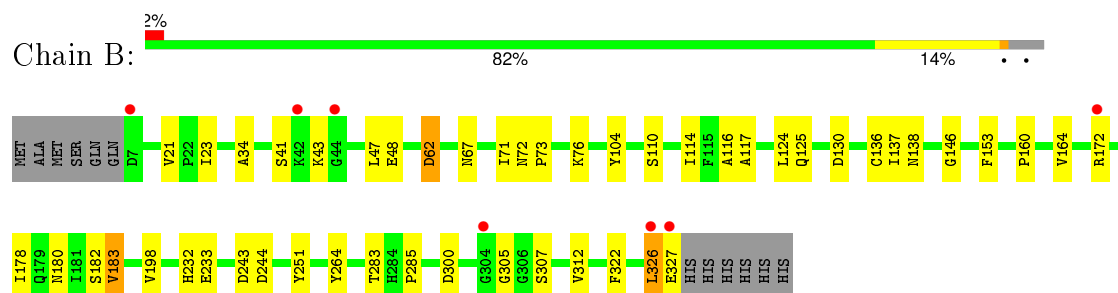
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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 ($\text{RSRZ} > 2$). 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.

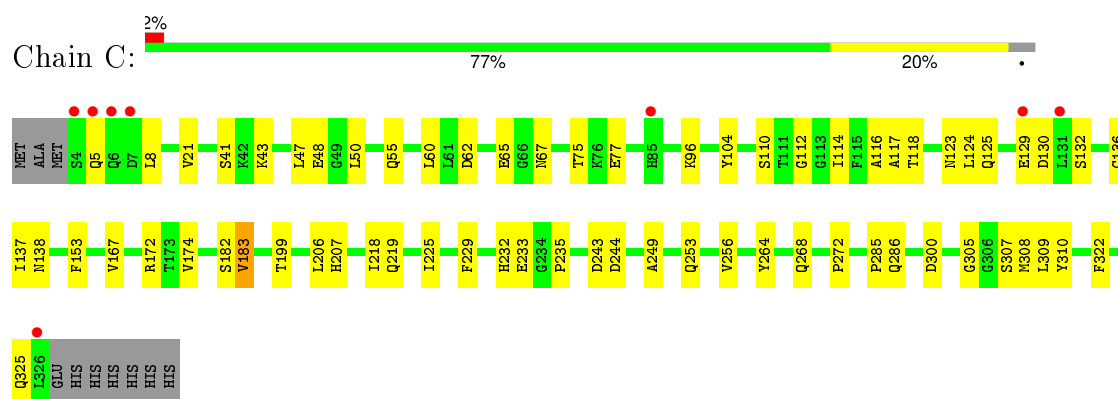
• Molecule 1: Drp35



• Molecule 1: Drp35

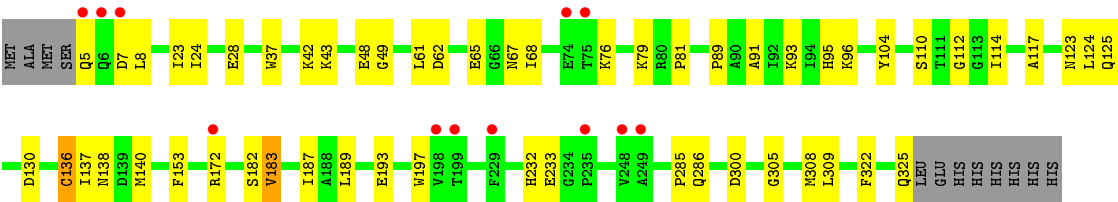


• Molecule 1: Drp35

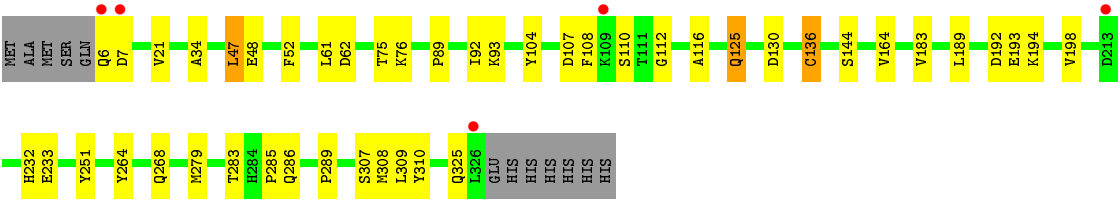
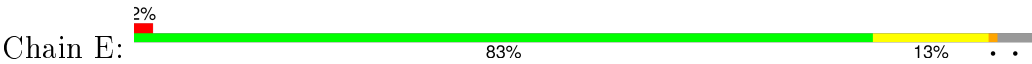


• Molecule 1: Drp35

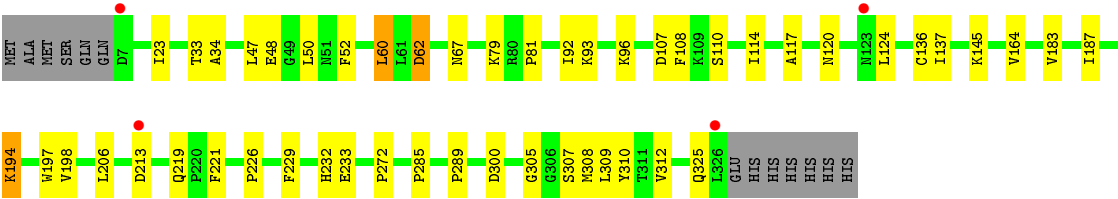
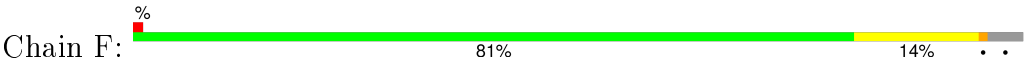




• Molecule 1: Drp35



• Molecule 1: Drp35



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	76.55Å 182.43Å 81.45Å 90.00° 115.58° 90.00°	Depositor
Resolution (Å)	19.99 – 2.10 38.20 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.5 (19.99-2.10) 99.7 (38.20-2.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.10	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.04 (at 2.10Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.168 , 0.202 0.167 , 0.202	Depositor DCC
R_{free} test set	11651 reflections (10.01%)	DCC
Wilson B-factor (Å ²)	23.5	Xtriage
Anisotropy	0.397	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 51.4	EDS
Estimated twinning fraction	0.021 for h,-k,-h-l	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	0 of 116502 reflections	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	15988	wwPDB-VP
Average B, all atoms (Å ²)	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.63% 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, 0.375 respectively for untwinned datasets, and 0.333, 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: GOL, CA

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	0.33	0/2580	0.63	1/3499 (0.0%)
1	B	0.33	0/2571	0.63	1/3487 (0.0%)
1	C	0.33	0/2586	0.63	0/3507
1	D	0.34	0/2572	0.64	1/3488 (0.0%)
1	E	0.33	0/2571	0.65	1/3487 (0.0%)
1	F	0.33	0/2562	0.64	1/3475 (0.0%)
All	All	0.33	0/15442	0.64	5/20943 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	136	CYS	N-CA-C	-5.70	95.62	111.00
1	E	136	CYS	N-CA-C	-5.34	96.59	111.00
1	D	136	CYS	N-CA-C	-5.17	97.03	111.00
1	A	136	CYS	N-CA-C	-5.08	97.29	111.00
1	B	136	CYS	N-CA-C	-5.06	97.34	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	2520	0	2446	30	0
1	B	2511	0	2435	30	0
1	C	2526	0	2451	37	0
1	D	2512	0	2434	39	0
1	E	2511	0	2438	25	0
1	F	2502	0	2429	31	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
2	E	2	0	0	0	0
2	F	2	0	0	0	0
3	A	6	0	8	0	0
3	D	12	0	16	1	0
4	A	155	0	0	1	0
4	B	143	0	0	0	0
4	C	124	0	0	0	0
4	D	145	0	0	1	0
4	E	170	0	0	0	0
4	F	139	0	0	1	0
All	All	15988	0	14657	184	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 6.

All (184) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:194:LYS:HA	1:A:194:LYS:HE3	1.53	0.90
1:B:326:LEU:HD12	1:B:326:LEU:H	1.38	0.88
1:C:96:LYS:HE2	1:C:325:GLN:HB3	1.57	0.86
1:C:232:HIS:CE1	1:C:233:GLU:HG2	2.18	0.78
1:C:75:THR:OG1	1:C:77:GLU:HG2	1.87	0.75
1:F:194:LYS:HD2	1:F:194:LYS:O	1.87	0.74
1:C:199:THR:HB	1:C:235:PRO:HB2	1.70	0.72
1:B:41:SER:OG	1:B:43:LYS:HG2	1.90	0.72
1:C:232:HIS:NE2	1:C:233:GLU:HG2	2.06	0.71
1:E:232:HIS:CE1	1:E:233:GLU:HG3	2.26	0.69
1:C:104:TYR:OH	1:C:130:ASP:HB3	1.93	0.69
1:E:116:ALA:HB3	1:E:125:GLN:HG3	1.75	0.68
1:D:5:GLN:HG3	1:D:7:ASP:H	1.57	0.68
1:D:114:ILE:HG13	1:D:137:ILE:HD12	1.76	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:144:SER:HA	1:E:325:GLN:HE22	1.61	0.65
1:D:232:HIS:CE1	1:D:233:GLU:HG2	2.31	0.65
1:F:194:LYS:HD3	1:F:219:GLN:HE22	1.62	0.65
1:C:41:SER:OG	1:C:43:LYS:HG2	1.98	0.64
1:D:300:ASP:HB3	1:D:305:GLY:HA3	1.80	0.63
1:E:6:GLN:HG2	1:E:7:ASP:H	1.63	0.63
1:C:112:GLY:HA3	1:C:136:CYS:HA	1.81	0.63
1:D:232:HIS:NE2	1:D:233:GLU:HG2	2.14	0.62
1:C:129:GLU:HB3	1:C:132:SER:OG	1.99	0.62
1:A:5:GLN:HE22	1:A:37:TRP:HE1	1.48	0.61
1:F:194:LYS:HD3	1:F:219:GLN:NE2	2.16	0.61
1:B:264:TYR:OH	1:C:253:GLN:HG2	2.00	0.60
1:D:24:ILE:CG1	1:D:28:GLU:HG3	2.31	0.60
1:A:114:ILE:HG13	1:A:137:ILE:HD12	1.83	0.59
1:B:232:HIS:CE1	1:B:233:GLU:HG2	2.38	0.59
1:A:279:MET:HE2	1:A:308:MET:HB3	1.83	0.59
1:D:79:LYS:HE2	4:D:5062:HOH:O	2.03	0.59
1:C:62:ASP:OD2	1:C:65:GLU:HB2	2.03	0.58
1:B:326:LEU:N	1:B:326:LEU:HD12	2.15	0.57
1:B:114:ILE:HG13	1:B:137:ILE:HD12	1.86	0.57
1:F:79:LYS:HE2	4:F:1105:HOH:O	2.03	0.57
1:C:62:ASP:OD1	1:C:67:ASN:HB2	2.05	0.57
1:E:232:HIS:NE2	1:E:233:GLU:HG3	2.20	0.57
1:D:43:LYS:HA	1:F:120:ASN:ND2	2.20	0.56
1:E:189:LEU:HD13	1:E:193:GLU:HG2	1.87	0.55
1:D:24:ILE:HG13	1:D:28:GLU:HG3	1.88	0.55
1:B:300:ASP:HB3	1:B:305:GLY:HA3	1.90	0.54
1:D:5:GLN:HB3	1:D:8:LEU:HG	1.89	0.54
1:A:279:MET:HE3	1:A:298:SER:HB3	1.89	0.54
1:B:104:TYR:OH	1:B:130:ASP:HB3	2.08	0.54
1:F:96:LYS:HD2	1:F:325:GLN:OE1	2.08	0.54
1:D:189:LEU:HD13	1:D:193:GLU:HG2	1.91	0.53
1:B:326:LEU:CD1	1:B:326:LEU:H	2.16	0.53
1:A:117:ALA:HB2	1:A:124:LEU:HD13	1.90	0.53
1:E:75:THR:O	1:E:76:LYS:HB2	2.08	0.53
1:D:43:LYS:HA	1:F:120:ASN:HD22	1.73	0.53
1:D:68:ILE:O	1:D:81:PRO:HD2	2.09	0.53
1:A:194:LYS:HA	1:A:194:LYS:CE	2.32	0.52
1:F:232:HIS:CE1	1:F:233:GLU:HG2	2.43	0.52
1:B:116:ALA:HB3	1:B:125:GLN:HG3	1.92	0.52
1:D:23:ILE:HB	3:D:5003:GOL:H31	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:308:MET:HG3	1:C:309:LEU:N	2.24	0.52
1:A:112:GLY:HA3	1:A:136:CYS:HA	1.91	0.52
1:B:232:HIS:NE2	1:B:233:GLU:HG2	2.25	0.51
1:C:118:THR:CG2	1:C:123:ASN:HD22	2.23	0.51
1:F:308:MET:HG3	1:F:309:LEU:N	2.24	0.51
1:C:55:GLN:NE2	1:C:55:GLN:HA	2.26	0.51
1:A:109:LYS:HE2	1:A:109:LYS:HA	1.92	0.51
1:D:117:ALA:HB2	1:D:124:LEU:HD23	1.93	0.51
1:F:145:LYS:NZ	1:F:145:LYS:HB2	2.25	0.51
1:E:164:VAL:HG21	1:E:198:VAL:HG21	1.92	0.51
1:D:104:TYR:OH	1:D:130:ASP:HB3	2.11	0.51
1:C:55:GLN:HA	1:C:55:GLN:HE21	1.76	0.51
1:A:199:THR:HB	1:A:235:PRO:HB2	1.92	0.51
1:F:232:HIS:NE2	1:F:233:GLU:HG2	2.25	0.50
1:D:96:LYS:HE2	1:D:322:PHE:CE1	2.47	0.50
1:E:61:LEU:HD22	1:E:89:PRO:HB2	1.94	0.50
1:D:232:HIS:CD2	1:D:233:GLU:HG2	2.47	0.49
1:E:6:GLN:N	1:E:6:GLN:CD	2.65	0.49
1:A:57:GLN:OE1	1:A:72:ASN:HA	2.12	0.49
1:A:279:MET:CE	1:A:310:TYR:HE1	2.25	0.49
1:F:114:ILE:HG13	1:F:137:ILE:HD12	1.95	0.49
1:A:75:THR:O	1:A:76:LYS:HB2	2.12	0.48
1:B:164:VAL:HG21	1:B:198:VAL:HG21	1.95	0.48
1:F:62:ASP:OD2	1:F:67:ASN:HB2	2.13	0.48
1:C:206:LEU:HB2	1:C:229:PHE:CE2	2.49	0.48
1:B:251:TYR:HD1	1:B:283:THR:HG22	1.79	0.48
1:A:276:GLU:OE1	1:A:276:GLU:N	2.47	0.48
1:F:47:LEU:HD11	1:F:307:SER:HB3	1.97	0.47
1:C:172:ARG:HH21	1:D:172:ARG:NH1	2.12	0.47
1:E:6:GLN:HG2	1:E:7:ASP:N	2.28	0.47
1:A:279:MET:CE	1:A:308:MET:HB3	2.44	0.47
1:C:207:HIS:CE1	1:C:225:ILE:HD11	2.50	0.47
1:F:206:LEU:HB2	1:F:229:PHE:CE2	2.49	0.47
1:B:251:TYR:CD1	1:B:283:THR:HG22	2.49	0.47
1:F:206:LEU:O	1:F:226:PRO:HD2	2.15	0.47
1:F:232:HIS:CD2	1:F:233:GLU:HG2	2.49	0.47
1:B:23:ILE:HD13	1:C:268:GLN:OE1	2.15	0.47
1:E:104:TYR:OH	1:E:130:ASP:HB3	2.15	0.47
1:B:21:VAL:HG12	1:B:264:TYR:CE2	2.50	0.47
1:A:326:LEU:HD22	1:A:326:LEU:N	2.31	0.47
1:F:164:VAL:HG21	1:F:198:VAL:HG21	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:300:ASP:HB3	1:A:305:GLY:HA3	1.97	0.47
1:C:232:HIS:CD2	1:C:233:GLU:HG2	2.50	0.46
1:C:117:ALA:HB2	1:C:124:LEU:HD23	1.98	0.46
1:B:172:ARG:HB3	1:B:172:ARG:HH21	1.81	0.46
1:B:182:SER:O	1:B:183:VAL:HB	2.16	0.46
1:C:272:PRO:HD2	1:C:310:TYR:CE2	2.51	0.45
1:F:300:ASP:HB3	1:F:305:GLY:HA3	1.99	0.45
1:A:124:LEU:HD22	1:A:124:LEU:H	1.81	0.45
1:D:123:ASN:O	1:D:125:GLN:HG3	2.16	0.45
1:C:249:ALA:HA	1:C:256:VAL:HG22	1.98	0.45
1:D:95:HIS:ND1	1:D:96:LYS:N	2.64	0.45
1:F:117:ALA:HB2	1:F:124:LEU:HD23	1.97	0.45
1:C:300:ASP:HB3	1:C:305:GLY:HA3	1.99	0.45
1:C:50:LEU:HD23	1:C:60:LEU:HB3	1.99	0.45
1:A:124:LEU:N	1:A:124:LEU:HD22	2.32	0.44
1:E:112:GLY:HA3	1:E:136:CYS:HA	1.98	0.44
1:E:279:MET:HG3	1:E:310:TYR:OH	2.18	0.44
1:B:326:LEU:HB2	1:B:327:GLU:OE2	2.17	0.44
1:D:300:ASP:HB3	1:D:305:GLY:CA	2.48	0.44
1:D:96:LYS:NZ	1:D:325:GLN:HB2	2.33	0.44
1:C:47:LEU:HD11	1:C:307:SER:HB3	1.99	0.44
1:D:62:ASP:OD2	1:D:67:ASN:HB2	2.18	0.44
1:A:182:SER:O	1:A:183:VAL:HB	2.18	0.44
1:D:93:LYS:HE2	1:D:140:MET:O	2.18	0.44
1:C:167:VAL:HG22	1:C:174:VAL:HG22	2.00	0.44
1:A:61:LEU:C	1:A:61:LEU:HD12	2.39	0.44
1:D:182:SER:O	1:D:183:VAL:HB	2.18	0.44
1:D:308:MET:HG3	1:D:309:LEU:N	2.33	0.44
1:A:62:ASP:OD2	1:A:67:ASN:HB2	2.17	0.43
1:D:42:LYS:HD2	1:F:81:PRO:HA	2.00	0.43
1:A:256:VAL:HG21	1:A:296:ILE:HD13	2.00	0.43
1:D:138:ASN:HB2	1:D:153:PHE:HB2	2.00	0.43
1:D:187:ILE:HA	1:D:197:TRP:O	2.17	0.43
1:D:37:TRP:CE2	1:D:76:LYS:HE2	2.52	0.43
1:A:16:LYS:NZ	4:A:5097:HOH:O	2.51	0.43
1:B:160:PRO:HB2	1:B:180:ASN:C	2.38	0.43
1:B:34:ALA:HA	1:B:312:VAL:CG1	2.49	0.43
1:B:47:LEU:HD11	1:B:307:SER:HB3	1.99	0.43
1:E:192:ASP:OD1	1:E:194:LYS:HD2	2.19	0.43
1:E:21:VAL:HG12	1:E:264:TYR:CE2	2.54	0.43
1:F:308:MET:HG2	1:F:310:TYR:CZ	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:279:MET:HE2	1:A:310:TYR:HE1	1.83	0.43
1:E:92:ILE:O	1:E:93:LYS:HD2	2.18	0.42
1:A:107:ASP:O	1:A:108:PHE:HB2	2.19	0.42
1:B:71:ILE:O	1:B:73:PRO:HD3	2.18	0.42
1:D:61:LEU:C	1:D:61:LEU:HD12	2.40	0.42
1:E:47:LEU:HD22	1:E:307:SER:HB3	2.00	0.42
1:B:164:VAL:HB	1:B:178:ILE:HG22	2.02	0.42
1:B:72:ASN:O	1:B:76:LYS:N	2.49	0.42
1:B:243:ASP:O	1:B:244:ASP:HB2	2.20	0.42
1:C:243:ASP:O	1:C:244:ASP:HB2	2.20	0.42
1:D:112:GLY:HA3	1:D:136:CYS:HA	2.00	0.42
1:B:138:ASN:HB2	1:B:153:PHE:HB2	2.02	0.42
1:F:52:PHE:CG	1:F:289:PRO:HD3	2.54	0.42
1:C:114:ILE:HG13	1:C:137:ILE:HD12	2.02	0.42
1:C:116:ALA:HB3	1:C:125:GLN:HG3	2.01	0.42
1:C:96:LYS:HE3	1:C:322:PHE:CE1	2.54	0.42
1:A:52:PHE:CG	1:A:289:PRO:HD3	2.55	0.42
1:A:187:ILE:HA	1:A:197:TRP:O	2.20	0.42
1:E:251:TYR:CD1	1:E:283:THR:HG22	2.54	0.42
1:F:187:ILE:HA	1:F:197:TRP:O	2.19	0.42
1:E:268:GLN:OE1	1:F:23:ILE:HD13	2.20	0.41
1:E:308:MET:HG3	1:E:309:LEU:N	2.35	0.41
1:F:33:THR:CG2	1:F:272:PRO:HG3	2.50	0.41
1:A:71:ILE:O	1:A:73:PRO:HD3	2.20	0.41
1:D:49:GLY:HA3	1:D:91:ALA:HA	2.02	0.41
1:C:138:ASN:HB2	1:C:153:PHE:HB2	2.03	0.41
1:F:107:ASP:O	1:F:108:PHE:HB2	2.20	0.41
1:D:61:LEU:HD22	1:D:89:PRO:HB2	2.03	0.41
1:C:218:ILE:HG22	1:C:219:GLN:O	2.21	0.41
1:E:6:GLN:N	1:E:6:GLN:NE2	2.68	0.41
1:D:62:ASP:OD1	1:D:65:GLU:HB2	2.20	0.41
1:C:182:SER:O	1:C:183:VAL:HB	2.20	0.41
1:F:34:ALA:HA	1:F:312:VAL:CG1	2.50	0.41
1:E:107:ASP:O	1:E:108:PHE:HB2	2.21	0.41
1:F:50:LEU:HD23	1:F:60:LEU:HB3	2.01	0.41
1:B:117:ALA:HB2	1:B:124:LEU:HD23	2.02	0.41
1:D:96:LYS:HZ3	1:D:325:GLN:HB2	1.86	0.41
1:C:21:VAL:HG12	1:C:264:TYR:CE2	2.56	0.41
1:B:62:ASP:OD2	1:B:67:ASN:HB2	2.21	0.41
1:E:52:PHE:CG	1:E:289:PRO:HD3	2.56	0.41
1:C:96:LYS:HZ3	1:C:325:GLN:HG2	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:34:ALA:HB1	1:E:310:TYR:HB3	2.01	0.41
1:F:92:ILE:O	1:F:93:LYS:HD2	2.20	0.41
1:B:146:GLY:HA2	1:B:322:PHE:CZ	2.55	0.40
1:D:114:ILE:HD11	1:D:137:ILE:HG21	2.04	0.40
1:A:279:MET:HE2	1:A:310:TYR:CE1	2.56	0.40
1:D:42:LYS:CD	1:F:81:PRO:HA	2.52	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	320/333 (96%)	308 (96%)	9 (3%)	3 (1%)	21	15
1	B	319/333 (96%)	307 (96%)	9 (3%)	3 (1%)	21	15
1	C	321/333 (96%)	308 (96%)	10 (3%)	3 (1%)	21	15
1	D	319/333 (96%)	310 (97%)	6 (2%)	3 (1%)	21	15
1	E	319/333 (96%)	310 (97%)	6 (2%)	3 (1%)	21	15
1	F	318/333 (96%)	306 (96%)	9 (3%)	3 (1%)	21	15
All	All	1916/1998 (96%)	1849 (96%)	49 (3%)	18 (1%)	21	15

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	110	SER
1	C	110	SER
1	D	110	SER
1	E	110	SER
1	F	110	SER
1	A	285	PRO

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Mol	Chain	Res	Type
1	B	110	SER
1	B	183	VAL
1	B	285	PRO
1	C	285	PRO
1	E	183	VAL
1	E	285	PRO
1	A	183	VAL
1	C	183	VAL
1	D	183	VAL
1	D	285	PRO
1	F	183	VAL
1	F	285	PRO

5.3.2 Protein sidechains ⓘ

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	275/285 (96%)	271 (98%)	4 (2%)	72	78
1	B	274/285 (96%)	271 (99%)	3 (1%)	80	85
1	C	276/285 (97%)	272 (99%)	4 (1%)	74	80
1	D	274/285 (96%)	272 (99%)	2 (1%)	88	92
1	E	274/285 (96%)	269 (98%)	5 (2%)	66	72
1	F	273/285 (96%)	267 (98%)	6 (2%)	60	64
All	All	1646/1710 (96%)	1622 (98%)	24 (2%)	72	78

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	48	GLU
1	A	194	LYS
1	A	285	PRO
1	A	286	GLN
1	B	48	GLU
1	B	62	ASP

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Mol	Chain	Res	Type
1	B	326	LEU
1	C	5	GLN
1	C	8	LEU
1	C	48	GLU
1	C	286	GLN
1	D	48	GLU
1	D	286	GLN
1	E	47	LEU
1	E	48	GLU
1	E	62	ASP
1	E	125	GLN
1	E	286	GLN
1	F	48	GLU
1	F	60	LEU
1	F	62	ASP
1	F	194	LYS
1	F	213	ASP
1	F	221	PHE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	GLN
1	A	286	GLN
1	B	286	GLN
1	B	293	GLN
1	C	55	GLN
1	C	123	ASN
1	C	286	GLN
1	C	325	GLN
1	D	159	ASN
1	E	6	GLN
1	E	55	GLN
1	E	325	GLN
1	F	123	ASN
1	F	159	ASN
1	F	219	GLN

5.3.3 RNA ⓘ

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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 15 ligands modelled in this entry, 12 are monoatomic - leaving 3 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	GOL	A	5002	-	5,5,5	0.25	0	5,5,5	0.24	0
3	GOL	D	5001	-	5,5,5	0.28	0	5,5,5	0.22	0
3	GOL	D	5003	-	5,5,5	0.31	0	5,5,5	0.24	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	5002	-	-	0/4/4/4	0/0/0/0
3	GOL	D	5001	-	-	0/4/4/4	0/0/0/0
3	GOL	D	5003	-	-	0/4/4/4	0/0/0/0

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.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	5003	GOL	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, 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	322/333 (96%)	-0.13	9 (2%)	56	64	14, 24, 37, 69	0
1	B	321/333 (96%)	-0.14	7 (2%)	65	71	16, 24, 36, 69	0
1	C	323/333 (96%)	-0.11	8 (2%)	61	67	15, 26, 45, 81	0
1	D	321/333 (96%)	-0.01	12 (3%)	45	54	14, 23, 36, 60	0
1	E	321/333 (96%)	-0.17	5 (1%)	74	79	15, 23, 36, 59	0
1	F	320/333 (96%)	-0.29	4 (1%)	79	84	16, 24, 37, 48	0
All	All	1928/1998 (96%)	-0.14	45 (2%)	64	70	14, 24, 39, 81	0

All (45) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	4	SER	10.3
1	C	326	LEU	6.4
1	F	326	LEU	6.2
1	D	6	GLN	6.2
1	C	5	GLN	5.1
1	C	6	GLN	5.0
1	E	326	LEU	4.8
1	A	326	LEU	4.7
1	B	326	LEU	4.6
1	A	5	GLN	4.5
1	A	6	GLN	4.2
1	B	7	ASP	4.1
1	E	7	ASP	3.9
1	C	131	LEU	3.7
1	E	6	GLN	3.4
1	A	74	GLU	3.4
1	B	327	GLU	3.3
1	D	7	ASP	3.0
1	A	7	ASP	3.0

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Mol	Chain	Res	Type	RSRZ
1	F	7	ASP	3.0
1	B	172	ARG	2.8
1	D	74	GLU	2.8
1	D	248	VAL	2.7
1	A	213	ASP	2.7
1	C	7	ASP	2.6
1	D	75	THR	2.5
1	D	229	PHE	2.5
1	D	5	GLN	2.5
1	B	304	GLY	2.5
1	E	213	ASP	2.4
1	C	85	HIS	2.4
1	D	172	ARG	2.4
1	F	123	ASN	2.4
1	A	43	LYS	2.3
1	D	198	VAL	2.3
1	D	249	ALA	2.2
1	D	235	PRO	2.2
1	B	42	LYS	2.2
1	B	44	GLY	2.1
1	D	199	THR	2.1
1	A	325	GLN	2.1
1	C	129	GLU	2.1
1	A	75	THR	2.0
1	E	109	LYS	2.0
1	F	213	ASP	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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(\AA^2)	Q<0.9
3	GOL	D	5003	6/6	0.89	0.20	7.00	51,55,57,61	0
3	GOL	A	5002	6/6	0.86	0.17	5.59	53,54,56,59	0
3	GOL	D	5001	6/6	0.90	0.13	1.05	30,33,34,37	0
2	CA	C	1009	1/1	0.98	0.19	0.44	30,30,30,30	1
2	CA	F	1012	1/1	0.98	0.10	-0.08	22,22,22,22	1
2	CA	A	1007	1/1	0.96	0.10	-0.55	25,25,25,25	1
2	CA	B	1008	1/1	0.99	0.08	-0.60	26,26,26,26	1
2	CA	E	1005	1/1	1.00	0.10	-1.05	22,22,22,22	0
2	CA	A	1001	1/1	0.99	0.09	-1.29	22,22,22,22	0
2	CA	E	1011	1/1	0.97	0.09	-1.31	25,25,25,25	1
2	CA	D	1010	1/1	1.00	0.05	-2.76	24,24,24,24	1
2	CA	B	1002	1/1	0.99	0.06	-2.87	24,24,24,24	0
2	CA	F	1006	1/1	0.99	0.06	-3.41	23,23,23,23	0
2	CA	C	1003	1/1	1.00	0.04	-3.68	22,22,22,22	0
2	CA	D	1004	1/1	0.99	0.06	-4.71	22,22,22,22	0

6.5 Other polymers [i](#)

There are no such residues in this entry.