WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

May 25, 2020 – 07:55 am BST

PDB ID	:	3SOZ
Title	:	Cytoplasmic Protein STM1381 from Salmonella typhimurium LT2
Authors	:	Joachimiak, A.; Duke, N.E.C.; Jedrzejczak, R.; Li, H.; Adkins, J.; Brown, R.; Midwest Center for Structural Genomics (MCSG); Program for the Characterization of Secreted Effector Proteins (PCSEP)
Deposited on	:	2011-06-30
Resolution	:	2.60 Å(reported)

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

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

The following versions of software and data (see references (i)) 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	:	2.11
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)	:	2.11

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 2.60 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	Percentile Ranks	Value
Rfree		0.264
Clashscore		14
Ramachandran outliers		1.1%
Sidechain outliers		10.0%
RSRZ outliers		2.7%

Worse   *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
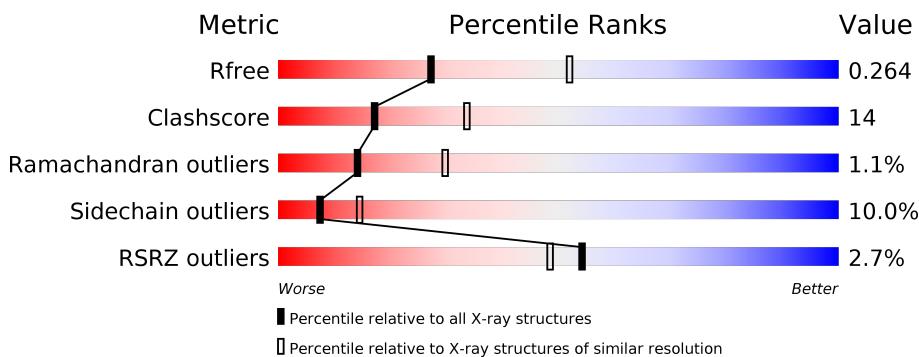
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

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 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	248	4% 71% 23% · ·
1	B	248	2% 66% 27% 6% ·
1	C	248	2% 73% 23% · ·
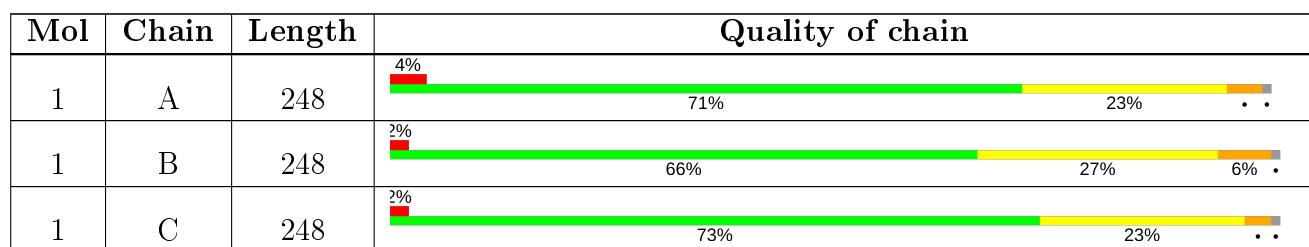
2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 5897 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 Cytoplasmic Protein STM1381.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	245	Total	C	N	O	S	Se	0	0	0
			1930	1243	313	360	7	7			
1	B	245	Total	C	N	O	S	Se	0	0	0
			1930	1243	313	360	7	7			
1	C	245	Total	C	N	O	S	Se	0	0	0
			1930	1243	313	360	7	7			

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	SER	-	EXPRESSION TAG	UNP Q9Z4S4
A	-1	ASN	-	EXPRESSION TAG	UNP Q9Z4S4
A	0	ALA	-	EXPRESSION TAG	UNP Q9Z4S4
B	-2	SER	-	EXPRESSION TAG	UNP Q9Z4S4
B	-1	ASN	-	EXPRESSION TAG	UNP Q9Z4S4
B	0	ALA	-	EXPRESSION TAG	UNP Q9Z4S4
C	-2	SER	-	EXPRESSION TAG	UNP Q9Z4S4
C	-1	ASN	-	EXPRESSION TAG	UNP Q9Z4S4
C	0	ALA	-	EXPRESSION TAG	UNP Q9Z4S4

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

GOL
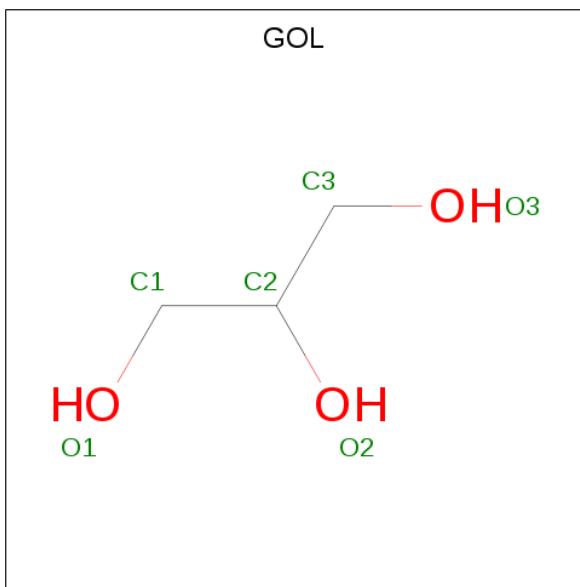
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 6	C 3	O 3	0	0
2	B	1	Total 6	C 3	O 3	0	0
2	C	1	Total 6	C 3	O 3	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	18	Total 18	O 18	0	0
3	B	26	Total 26	O 26	0	0
3	C	45	Total 45	O 45	0	0

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 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: Cytoplasmic Protein STM1381
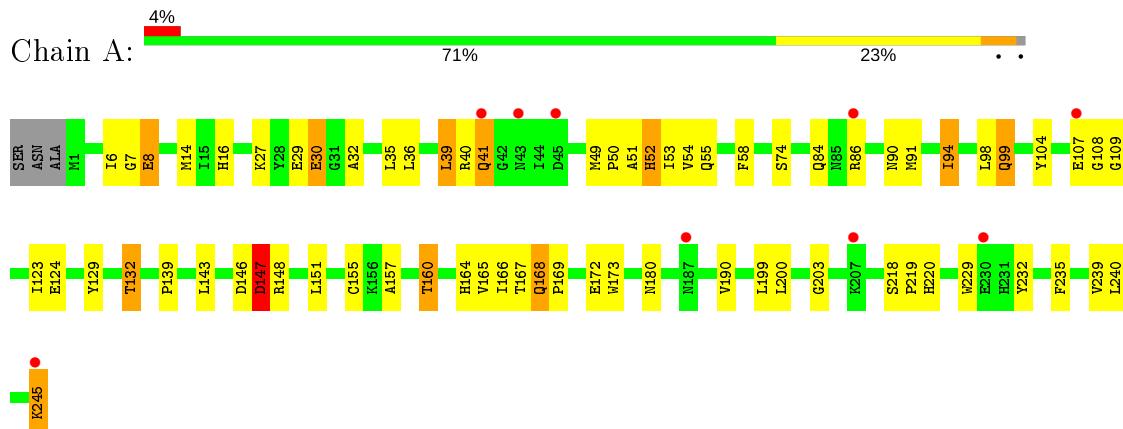
- Molecule 1: Cytoplasmic Protein STM1381
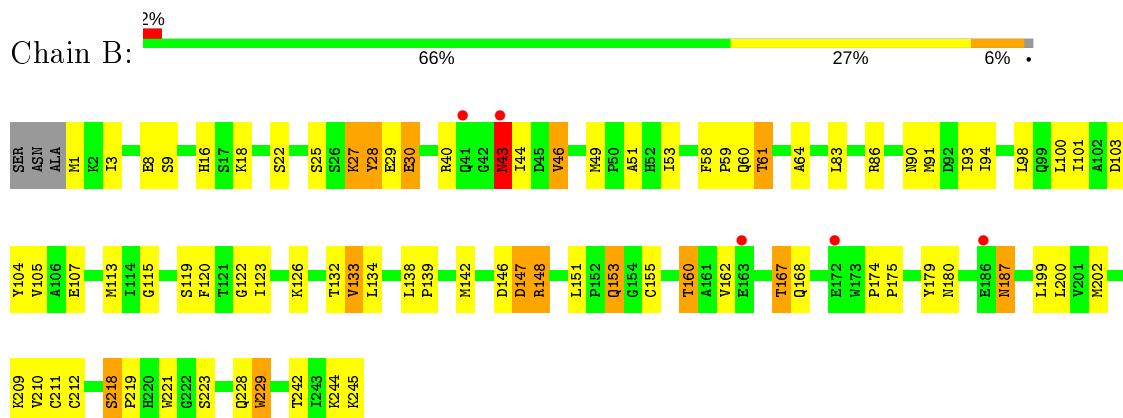
- Molecule 1: Cytoplasmic Protein STM1381
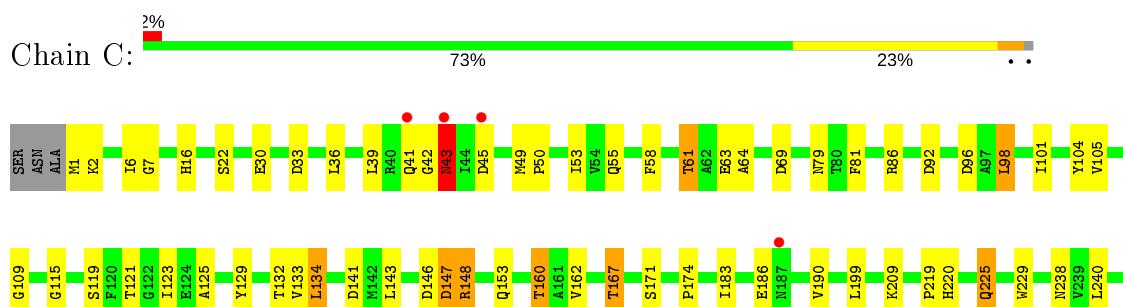
K244 K245

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α, β, γ	92.39Å 92.39Å 240.90Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	86.26 – 2.60 38.78 – 2.60	Depositor EDS
% Data completeness (in resolution range)	99.8 (86.26-2.60) 99.8 (38.78-2.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	4.53 (at 2.61Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.192 , 0.265 0.197 , 0.264	Depositor DCC
R_{free} test set	1676 reflections (5.08%)	wwPDB-VP
Wilson B-factor (Å^2)	53.6	Xtriage
Anisotropy	0.056	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 40.5	EDS
L-test for twinning[2]	$<|L|> = 0.48, <L^2> = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	5897	wwPDB-VP
Average B, all atoms (Å^2)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.58% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1] Intensities estimated from amplitudes.

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

5 Model quality (i)

5.1 Standard geometry (i)

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

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	0.83	0/1975	0.86	1/2676 (0.0%)
1	B	0.85	0/1975	0.87	2/2676 (0.1%)
1	C	0.99	0/1975	0.99	4/2676 (0.1%)
All	All	0.89	0/5925	0.91	7/8028 (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	B	0	1
1	C	0	1
All	All	0	2

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	148	ARG	NE-CZ-NH2	-10.04	115.28	120.30
1	C	148	ARG	NE-CZ-NH1	6.54	123.57	120.30
1	B	148	ARG	NE-CZ-NH2	-5.92	117.34	120.30
1	B	27	LYS	CD-CE-NZ	-5.91	98.10	111.70
1	C	45	ASP	CB-CG-OD1	5.75	123.48	118.30
1	C	147	ASP	CB-CG-OD1	-5.29	113.54	118.30
1	A	147	ASP	CB-CA-C	-5.07	100.27	110.40

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	43	ASN	Peptide
1	C	43	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	1930	0	1881	47	0
1	B	1930	0	1881	65	0
1	C	1930	0	1881	50	0
2	A	6	0	8	1	0
2	B	6	0	8	0	0
2	C	6	0	8	0	0
3	A	18	0	0	1	0
3	B	26	0	0	2	0
3	C	45	0	0	4	0
All	All	5897	0	5667	159	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 14.

All (159) 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:168:GLN:HE21	1:A:168:GLN:HA	1.04	1.16
1:B:132:THR:O	1:B:133:VAL:HB	1.35	1.13
1:C:167:THR:HG21	3:C:283:HOH:O	1.45	1.13
1:B:187:ASN:HD22	1:B:187:ASN:H	1.08	1.00
1:B:132:THR:O	1:B:133:VAL:CB	2.16	0.93
1:A:168:GLN:NE2	1:A:168:GLN:HA	1.84	0.93
1:B:49:MSE:HE2	1:B:53:ILE:HG22	1.52	0.91
1:B:187:ASN:ND2	1:B:187:ASN:H	1.70	0.88
1:A:168:GLN:CA	1:A:168:GLN:HE21	1.87	0.86
1:A:160:THR:HG21	1:A:190:VAL:O	1.75	0.86
1:C:160:THR:HG21	1:C:190:VAL:O	1.75	0.85
1:B:146:ASP:OD1	1:B:148:ARG:HD3	1.75	0.84
1:A:235:PHE:O	1:A:239:VAL:HG23	1.78	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:61:THR:HG22	1:B:64:ALA:H	1.42	0.84
1:C:50:PRO:HD2	1:C:53:ILE:HD13	1.60	0.82
1:C:132:THR:HG22	1:C:134:LEU:H	1.44	0.81
1:C:61:THR:HG22	1:C:64:ALA:H	1.46	0.80
1:B:29:GLU:O	1:B:30:GLU:HB2	1.81	0.78
1:B:218:SER:HB2	1:B:219:PRO:HD2	1.68	0.75
1:B:218:SER:HB2	1:B:219:PRO:CD	2.18	0.74
1:C:146:ASP:OD1	1:C:148:ARG:HD3	1.89	0.72
1:B:86:ARG:CB	1:B:94:ILE:HD11	2.19	0.72
1:A:146:ASP:OD1	1:A:148:ARG:HD3	1.90	0.71
1:B:86:ARG:HB3	1:B:94:ILE:HD11	1.72	0.71
1:B:49:MSE:HE1	1:B:59:PRO:HD3	1.73	0.70
1:B:187:ASN:HD22	1:B:187:ASN:N	1.80	0.70
1:B:175:PRO:O	1:B:223:SER:OG	2.11	0.69
1:A:129:TYR:O	1:A:132:THR:HB	1.93	0.69
1:C:129:TYR:O	1:C:132:THR:HB	1.94	0.67
1:B:28:TYR:CD1	1:B:28:TYR:N	2.61	0.67
1:B:3:ILE:CG1	1:B:46:VAL:HG23	2.25	0.67
1:B:167:THR:HG21	3:B:270:HOH:O	1.93	0.67
1:A:51:ALA:O	1:A:52:HIS:HB3	1.95	0.66
1:A:108:GLY:O	1:A:245:LYS:HB2	1.95	0.66
1:B:3:ILE:HD11	1:B:46:VAL:HG23	1.76	0.66
1:A:218:SER:HB2	1:A:219:PRO:CD	2.25	0.66
1:B:187:ASN:ND2	1:B:187:ASN:N	2.42	0.66
1:B:160:THR:HG22	1:B:162:VAL:H	1.59	0.65
1:C:225:GLN:HE21	1:C:225:GLN:H	1.44	0.65
1:C:6:ILE:HG12	1:C:49:MSE:HE2	1.79	0.65
1:A:51:ALA:O	1:A:52:HIS:CB	2.44	0.65
1:C:132:THR:CG2	1:C:134:LEU:H	2.12	0.63
1:A:49:MSE:HE1	1:A:58:PHE:HE1	1.65	0.62
1:A:147:ASP:HB3	1:A:180:ASN:HD22	1.64	0.62
1:A:90:ASN:O	1:A:91:MSE:HB2	1.98	0.62
1:A:8:GLU:HG3	1:A:51:ALA:HB3	1.82	0.62
1:B:90:ASN:O	1:B:91:MSE:HB2	1.99	0.61
1:C:61:THR:CG2	1:C:63:GLU:H	2.13	0.61
1:B:49:MSE:CE	1:B:53:ILE:HG22	2.30	0.60
1:A:218:SER:HB2	1:A:219:PRO:HD2	1.82	0.60
1:B:139:PRO:HD3	1:B:210:VAL:CG1	2.32	0.60
1:A:104:TYR:CE1	1:A:109:GLY:HA3	2.37	0.60
1:B:8:GLU:OE2	1:B:51:ALA:HB3	2.02	0.60
1:B:3:ILE:CD1	1:B:46:VAL:HG23	2.31	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:40:ARG:O	1:A:41:GLN:HB3	2.00	0.59
1:A:7:GLY:O	1:A:50:PRO:HA	2.02	0.59
1:B:3:ILE:HG13	1:B:46:VAL:HG23	1.85	0.58
1:C:1:MSE:N	3:C:268:HOH:O	2.37	0.57
1:B:202:MSE:HE1	1:B:211:CYS:SG	2.43	0.57
1:A:14:MSE:HE2	1:A:16:HIS:CE1	2.40	0.57
1:B:86:ARG:HB2	1:B:94:ILE:HD11	1.86	0.57
1:B:122:GLY:H	1:B:147:ASP:HB2	1.70	0.57
1:A:49:MSE:HE1	1:A:58:PHE:CE1	2.40	0.56
1:C:6:ILE:CD1	1:C:49:MSE:CE	2.83	0.56
1:C:121:THR:HG22	1:C:125:ALA:HA	1.87	0.56
1:C:98:LEU:HD23	1:C:132:THR:HG23	1.88	0.55
1:A:6:ILE:HG12	1:A:49:MSE:HE2	1.89	0.55
1:C:123:ILE:HA	1:C:148:ARG:HD2	1.88	0.55
1:B:139:PRO:HD3	1:B:210:VAL:HG12	1.89	0.54
1:B:138:LEU:HD12	1:B:142:MSE:HE2	1.88	0.54
1:A:8:GLU:HG2	1:A:51:ALA:H	1.72	0.54
1:C:61:THR:HG23	1:C:63:GLU:H	1.72	0.53
1:B:160:THR:HG22	1:B:162:VAL:N	2.25	0.52
1:B:153:GLN:H	1:B:153:GLN:NE2	2.07	0.52
1:A:86:ARG:HG3	3:A:258:HOH:O	2.08	0.52
1:B:218:SER:CB	1:B:219:PRO:CD	2.84	0.52
1:B:179:TYR:HA	1:B:221:TRP:CZ3	2.46	0.51
1:A:151:LEU:HD13	1:A:155:CYS:HB3	1.93	0.50
1:C:61:THR:HG22	1:C:63:GLU:N	2.27	0.50
1:C:132:THR:HG22	1:C:134:LEU:N	2.22	0.50
1:C:61:THR:HG21	1:C:63:GLU:HB2	1.94	0.50
1:C:16:HIS:O	1:C:22:SER:HA	2.12	0.49
1:C:6:ILE:HG12	1:C:49:MSE:CE	2.42	0.49
1:B:16:HIS:HE1	1:B:25:SER:OG	1.97	0.48
1:A:220:HIS:HD1	2:A:1001:GOL:HO3	1.61	0.48
1:B:91:MSE:SE	1:C:220:HIS:HA	2.63	0.48
1:C:160:THR:HG22	1:C:162:VAL:H	1.78	0.48
1:B:90:ASN:O	1:B:91:MSE:CB	2.62	0.48
1:B:1:MSE:N	3:B:259:HOH:O	2.45	0.47
1:C:69:ASP:HB3	1:C:244:LYS:HG3	1.96	0.47
1:C:86:ARG:NH1	1:C:92:ASP:OD2	2.47	0.47
1:C:96:ASP:OD1	1:C:96:ASP:C	2.53	0.47
1:A:99:GLN:NE2	1:A:99:GLN:HA	2.29	0.47
1:C:115:GLY:HA2	1:C:119:SER:HB2	1.96	0.47
1:B:242:THR:O	1:B:242:THR:HG22	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:52:HIS:HA	1:A:55:GLN:HB2	1.97	0.47
1:B:139:PRO:HD2	1:B:212:CYS:SG	2.54	0.47
1:A:49:MSE:HE3	1:A:54:VAL:HG22	1.97	0.46
1:B:91:MSE:SE	1:C:219:PRO:HB3	2.64	0.46
1:A:123:ILE:HA	1:A:148:ARG:HD2	1.96	0.46
1:B:123:ILE:HA	1:B:148:ARG:HD2	1.98	0.46
1:B:46:VAL:CG1	1:B:46:VAL:O	2.63	0.46
1:C:49:MSE:HE1	1:C:58:PHE:HE1	1.80	0.46
1:A:29:GLU:O	1:A:30:GLU:HB2	2.16	0.46
1:B:101:ILE:O	1:B:105:VAL:HG23	2.16	0.46
1:B:1:MSE:N	1:B:43:ASN:HD21	2.14	0.46
1:C:153:GLN:OE1	1:C:153:GLN:N	2.37	0.46
1:B:40:ARG:CZ	1:B:46:VAL:HG12	2.46	0.45
1:A:14:MSE:HE2	1:A:16:HIS:NE2	2.32	0.45
1:C:42:GLY:O	1:C:43:ASN:C	2.54	0.45
1:C:81:PHE:HB3	1:C:98:LEU:HD13	1.98	0.45
1:B:151:LEU:HD13	1:B:155:CYS:HB3	1.98	0.45
1:B:160:THR:CG2	1:B:162:VAL:H	2.28	0.45
1:C:7:GLY:O	1:C:50:PRO:HA	2.17	0.45
1:C:61:THR:CG2	1:C:63:GLU:HB2	2.46	0.45
1:B:44:ILE:HG13	1:B:44:ILE:H	1.59	0.45
1:C:123:ILE:CA	1:C:148:ARG:HD2	2.47	0.45
1:B:103:ASP:O	1:B:107:GLU:HG2	2.17	0.45
1:B:83:LEU:HD23	1:B:83:LEU:HA	1.83	0.45
1:A:50:PRO:HD2	1:A:53:ILE:HD12	1.98	0.44
1:C:167:THR:HG22	3:C:247:HOH:O	2.17	0.44
1:C:174:PRO:HD3	1:C:229:TRP:CE2	2.53	0.44
1:A:164:HIS:CE1	1:A:166:ILE:HD12	2.53	0.44
1:C:61:THR:CG2	1:C:63:GLU:N	2.80	0.44
1:B:1:MSE:HG3	1:B:44:ILE:HG23	1.99	0.44
1:C:101:ILE:O	1:C:105:VAL:HG23	2.18	0.44
1:B:202:MSE:CE	1:B:211:CYS:SG	3.05	0.43
1:A:147:ASP:CB	1:A:180:ASN:HD22	2.30	0.43
1:C:104:TYR:CE1	1:C:109:GLY:HA3	2.53	0.43
1:C:123:ILE:CB	1:C:148:ARG:HD2	2.48	0.43
1:A:157:ALA:HB3	1:A:173:TRP:CG	2.54	0.43
1:B:3:ILE:HD11	1:B:46:VAL:CG2	2.47	0.43
1:A:139:PRO:HB3	1:A:203:GLY:HA3	1.99	0.43
1:C:115:GLY:HA2	1:C:119:SER:CB	2.49	0.43
1:C:98:LEU:HG	1:C:134:LEU:HG	2.00	0.43
1:A:32:ALA:HB1	1:A:35:LEU:HB3	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:49:MSE:HE1	1:B:58:PHE:HA	2.01	0.43
1:A:148:ARG:NH2	1:C:79:ASN:OD1	2.40	0.43
1:A:168:GLN:N	1:A:169:PRO:CD	2.82	0.42
1:B:244:LYS:HG3	1:B:245:LYS:N	2.33	0.42
1:C:141:ASP:N	1:C:183:ILE:O	2.41	0.42
1:B:113:MSE:HG2	1:B:120:PHE:CZ	2.54	0.42
1:C:121:THR:HB	1:C:147:ASP:OD1	2.19	0.42
1:A:104:TYR:CZ	1:A:109:GLY:HA3	2.55	0.41
1:B:16:HIS:O	1:B:22:SER:HA	2.20	0.41
1:B:174:PRO:HG3	1:B:229:TRP:CG	2.55	0.41
1:B:8:GLU:HG2	1:B:9:SER:N	2.35	0.41
1:B:115:GLY:HA2	1:B:119:SER:CB	2.50	0.41
1:B:123:ILE:O	1:B:126:LYS:HG3	2.19	0.41
1:C:238:ASN:HA	1:C:238:ASN:HD22	1.63	0.41
1:A:39:LEU:HA	1:A:39:LEU:HD12	1.60	0.41
1:A:99:GLN:CA	1:A:99:GLN:NE2	2.82	0.41
1:A:8:GLU:HG2	1:A:51:ALA:N	2.36	0.41
1:C:49:MSE:HE1	1:C:58:PHE:CE1	2.56	0.41
1:A:245:LYS:HG3	1:A:245:LYS:O	2.21	0.41
1:C:55:GLN:HG2	3:C:271:HOH:O	2.19	0.41
1:A:84:GLN:OE1	1:A:94:ILE:HD11	2.21	0.40
1:B:147:ASP:HB3	1:B:180:ASN:HD22	1.86	0.40
1:A:229:TRP:HB3	1:A:232:TYR:HB2	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	243/248 (98%)	216 (89%)	24 (10%)	3 (1%)	13	27
1	B	243/248 (98%)	222 (91%)	18 (7%)	3 (1%)	13	27

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	243/248 (98%)	227 (93%)	14 (6%)	2 (1%)	19	39
All	All	729/744 (98%)	665 (91%)	56 (8%)	8 (1%)	14	30

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	52	HIS
1	B	133	VAL
1	B	229	TRP
1	C	133	VAL
1	A	30	GLU
1	A	124	GLU
1	C	30	GLU
1	B	30	GLU

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	210/205 (102%)	188 (90%)	22 (10%)	7	13
1	B	210/205 (102%)	187 (89%)	23 (11%)	6	11
1	C	210/205 (102%)	192 (91%)	18 (9%)	10	20
All	All	630/615 (102%)	567 (90%)	63 (10%)	7	14

All (63) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	GLU
1	A	27	LYS
1	A	36	LEU
1	A	39	LEU
1	A	41	GLN
1	A	74	SER
1	A	94	ILE

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Mol	Chain	Res	Type
1	A	98	LEU
1	A	99	GLN
1	A	107	GLU
1	A	132	THR
1	A	143	LEU
1	A	147	ASP
1	A	160	THR
1	A	165	VAL
1	A	167	THR
1	A	168	GLN
1	A	172	GLU
1	A	199	LEU
1	A	200	LEU
1	A	240	LEU
1	A	245	LYS
1	B	18	LYS
1	B	27	LYS
1	B	28	TYR
1	B	43	ASN
1	B	46	VAL
1	B	60	GLN
1	B	61	THR
1	B	93	ILE
1	B	98	LEU
1	B	100	LEU
1	B	104	TYR
1	B	134	LEU
1	B	147	ASP
1	B	153	GLN
1	B	160	THR
1	B	167	THR
1	B	168	GLN
1	B	187	ASN
1	B	199	LEU
1	B	200	LEU
1	B	209	LYS
1	B	218	SER
1	B	228	GLN
1	C	2	LYS
1	C	33	ASP
1	C	36	LEU
1	C	39	LEU

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Mol	Chain	Res	Type
1	C	41	GLN
1	C	43	ASN
1	C	61	THR
1	C	98	LEU
1	C	134	LEU
1	C	143	LEU
1	C	160	THR
1	C	167	THR
1	C	171	SER
1	C	186	GLU
1	C	199	LEU
1	C	209	LYS
1	C	225	GLN
1	C	240	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	85	ASN
1	A	99	GLN
1	A	168	GLN
1	A	228	GLN
1	A	231	HIS
1	A	238	ASN
1	B	16	HIS
1	B	43	ASN
1	B	85	ASN
1	B	128	ASN
1	B	131	ASN
1	B	153	GLN
1	B	187	ASN
1	B	238	ASN
1	C	85	ASN
1	C	128	ASN
1	C	131	ASN
1	C	225	GLN
1	C	238	ASN

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 carbohydrates in this entry.

5.6 Ligand geometry (i)

3 ligands 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	#$|Z| > 2$
2	GOL	C	1001	-	5,5,5	0.46	0	5,5,5	1.49	1 (20%)
2	GOL	A	1001	-	5,5,5	0.69	0	5,5,5	1.50	1 (20%)
2	GOL	B	1001	-	5,5,5	0.32	0	5,5,5	0.89	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
2	GOL	C	1001	-	-	4/4/4/4	-
2	GOL	A	1001	-	-	2/4/4/4	-
2	GOL	B	1001	-	-	3/4/4/4	-

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1001	GOL	O2-C2-C3	2.38	119.60	109.12
2	A	1001	GOL	O2-C2-C1	2.19	118.78	109.12

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	1001	GOL	O1-C1-C2-O2
2	C	1001	GOL	C1-C2-C3-O3
2	B	1001	GOL	C1-C2-C3-O3
2	C	1001	GOL	O1-C1-C2-C3
2	C	1001	GOL	O2-C2-C3-O3
2	B	1001	GOL	O2-C2-C3-O3
2	A	1001	GOL	O1-C1-C2-C3
2	A	1001	GOL	O1-C1-C2-O2
2	B	1001	GOL	O1-C1-C2-O2

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1001	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 (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	238/248 (95%)	-0.05	9 (3%)	40	33	34, 60, 82, 94	1 (0%)
1	B	238/248 (95%)	-0.16	5 (2%)	63	58	36, 58, 75, 84	1 (0%)
1	C	238/248 (95%)	-0.32	5 (2%)	63	58	32, 45, 62, 74	1 (0%)
All	All	714/744 (95%)	-0.18	19 (2%)	54	48	32, 54, 78, 94	3 (0%)

All (19) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	187	ASN	4.4
1	A	245	LYS	4.3
1	C	41	GLN	4.3
1	C	43	ASN	4.1
1	B	43	ASN	3.8
1	B	41	GLN	3.6
1	A	43	ASN	3.6
1	A	41	GLN	3.5
1	B	163	GLU	3.2
1	A	230	GLU	3.0
1	B	172	GLU	2.6
1	A	86	ARG	2.4
1	B	186	GLU	2.4
1	A	45	ASP	2.3
1	A	107	GLU	2.3
1	C	187	ASN	2.2
1	A	207	LYS	2.2
1	C	45	ASP	2.2
1	C	245	LYS	2.2

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. 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	GOL	B	1001	6/6	0.90	0.18	57,60,61,61	0
2	GOL	C	1001	6/6	0.95	0.32	48,53,54,54	0
2	GOL	A	1001	6/6	0.96	0.14	40,45,48,53	0

6.5 Other polymers (i)

There are no such residues in this entry.