Full wwPDB X-ray Structure Validation Report (i)

Sep 6, 2023 – 01:02 AM EDT

PDB ID	:	4EGG
Title	:	Computationally Designed Self-assembling tetrahedron protein, T310
Authors	:	Sawaya, M.R.; King, N.P.; Sheffler, W.; Baker, D.; Yeates, T.O.
Deposited on	:	2012-03-30
Resolution	:	2.21 Å(reported)

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

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

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

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

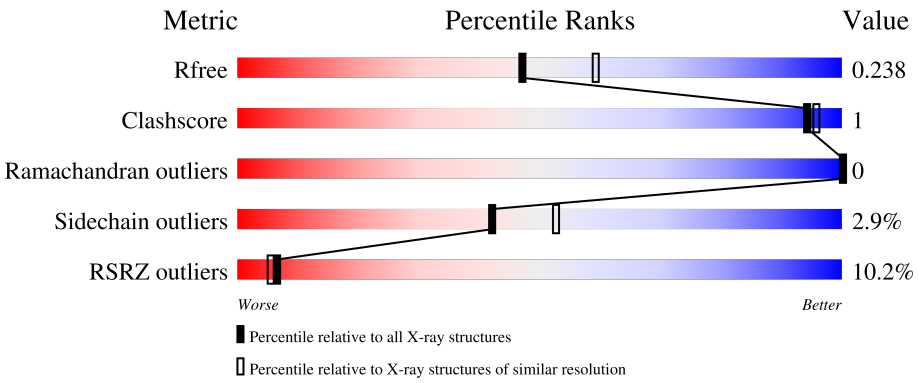
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.21 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	5912 (2.24-2.20)
Clashscore	141614	6646 (2.24-2.20)
Ramachandran outliers	138981	6543 (2.24-2.20)
Sidechain outliers	138945	6544 (2.24-2.20)
RSRZ outliers	127900	5797 (2.24-2.20)

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

Mol	Chain	Length	Quality of chain
1	A	207	8%, 85%, 6%, 9%
1	B	207	8%, 86%, ·, 9%
1	C	207	11%, 86%, 5%, 10%
1	D	207	7%, 84%, 7%, 9%
1	E	207	8%, 86%, 5%, 9%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	207	14% 85% 6% 9%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 9087 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 Putative acetyltransferase SACOL2570.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	188	1456	928	250	269	9	0	0	0
			Total	C	N	O	S			
1	B	188	1456	928	250	269	9	0	0	0
			Total	C	N	O	S			
1	C	187	1453	926	249	268	10	0	1	0
			Total	C	N	O	S			
1	D	188	1461	932	250	269	10	0	1	0
			Total	C	N	O	S			
1	E	188	1461	932	250	269	10	0	1	0
			Total	C	N	O	S			
1	F	188	1456	928	250	269	9	0	0	0

There are 108 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	20	THR	TYR	engineered mutation	UNP Q5HCZ5
A	26	LEU	ALA	engineered mutation	UNP Q5HCZ5
A	30	VAL	ASP	engineered mutation	UNP Q5HCZ5
A	34	ALA	GLU	engineered mutation	UNP Q5HCZ5
A	39	ASN	ARG	engineered mutation	UNP Q5HCZ5
A	41	VAL	SER	engineered mutation	UNP Q5HCZ5
A	44	MET	ASN	engineered mutation	UNP Q5HCZ5
A	45	MET	LYS	engineered mutation	UNP Q5HCZ5
A	48	VAL	GLU	engineered mutation	UNP Q5HCZ5
A	52	ALA	GLN	engineered mutation	UNP Q5HCZ5
A	200	LEU	-	expression tag	UNP Q5HCZ5
A	201	GLU	-	expression tag	UNP Q5HCZ5
A	202	HIS	-	expression tag	UNP Q5HCZ5
A	203	HIS	-	expression tag	UNP Q5HCZ5
A	204	HIS	-	expression tag	UNP Q5HCZ5
A	205	HIS	-	expression tag	UNP Q5HCZ5
A	206	HIS	-	expression tag	UNP Q5HCZ5

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	207	HIS	-	expression tag	UNP Q5HCZ5
B	20	THR	TYR	engineered mutation	UNP Q5HCZ5
B	26	LEU	ALA	engineered mutation	UNP Q5HCZ5
B	30	VAL	ASP	engineered mutation	UNP Q5HCZ5
B	34	ALA	GLU	engineered mutation	UNP Q5HCZ5
B	39	ASN	ARG	engineered mutation	UNP Q5HCZ5
B	41	VAL	SER	engineered mutation	UNP Q5HCZ5
B	44	MET	ASN	engineered mutation	UNP Q5HCZ5
B	45	MET	LYS	engineered mutation	UNP Q5HCZ5
B	48	VAL	GLU	engineered mutation	UNP Q5HCZ5
B	52	ALA	GLN	engineered mutation	UNP Q5HCZ5
B	200	LEU	-	expression tag	UNP Q5HCZ5
B	201	GLU	-	expression tag	UNP Q5HCZ5
B	202	HIS	-	expression tag	UNP Q5HCZ5
B	203	HIS	-	expression tag	UNP Q5HCZ5
B	204	HIS	-	expression tag	UNP Q5HCZ5
B	205	HIS	-	expression tag	UNP Q5HCZ5
B	206	HIS	-	expression tag	UNP Q5HCZ5
B	207	HIS	-	expression tag	UNP Q5HCZ5
C	20	THR	TYR	engineered mutation	UNP Q5HCZ5
C	26	LEU	ALA	engineered mutation	UNP Q5HCZ5
C	30	VAL	ASP	engineered mutation	UNP Q5HCZ5
C	34	ALA	GLU	engineered mutation	UNP Q5HCZ5
C	39	ASN	ARG	engineered mutation	UNP Q5HCZ5
C	41	VAL	SER	engineered mutation	UNP Q5HCZ5
C	44	MET	ASN	engineered mutation	UNP Q5HCZ5
C	45	MET	LYS	engineered mutation	UNP Q5HCZ5
C	48	VAL	GLU	engineered mutation	UNP Q5HCZ5
C	52	ALA	GLN	engineered mutation	UNP Q5HCZ5
C	200	LEU	-	expression tag	UNP Q5HCZ5
C	201	GLU	-	expression tag	UNP Q5HCZ5
C	202	HIS	-	expression tag	UNP Q5HCZ5
C	203	HIS	-	expression tag	UNP Q5HCZ5
C	204	HIS	-	expression tag	UNP Q5HCZ5
C	205	HIS	-	expression tag	UNP Q5HCZ5
C	206	HIS	-	expression tag	UNP Q5HCZ5
C	207	HIS	-	expression tag	UNP Q5HCZ5
D	20	THR	TYR	engineered mutation	UNP Q5HCZ5
D	26	LEU	ALA	engineered mutation	UNP Q5HCZ5
D	30	VAL	ASP	engineered mutation	UNP Q5HCZ5
D	34	ALA	GLU	engineered mutation	UNP Q5HCZ5
D	39	ASN	ARG	engineered mutation	UNP Q5HCZ5

Continued on next page...

Continued from previous page...

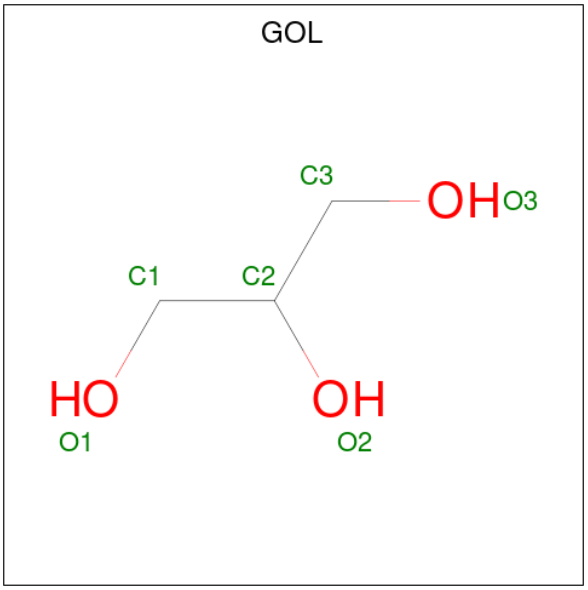
Chain	Residue	Modelled	Actual	Comment	Reference
D	41	VAL	SER	engineered mutation	UNP Q5HCZ5
D	44	MET	ASN	engineered mutation	UNP Q5HCZ5
D	45	MET	LYS	engineered mutation	UNP Q5HCZ5
D	48	VAL	GLU	engineered mutation	UNP Q5HCZ5
D	52	ALA	GLN	engineered mutation	UNP Q5HCZ5
D	200	LEU	-	expression tag	UNP Q5HCZ5
D	201	GLU	-	expression tag	UNP Q5HCZ5
D	202	HIS	-	expression tag	UNP Q5HCZ5
D	203	HIS	-	expression tag	UNP Q5HCZ5
D	204	HIS	-	expression tag	UNP Q5HCZ5
D	205	HIS	-	expression tag	UNP Q5HCZ5
D	206	HIS	-	expression tag	UNP Q5HCZ5
D	207	HIS	-	expression tag	UNP Q5HCZ5
E	20	THR	TYR	engineered mutation	UNP Q5HCZ5
E	26	LEU	ALA	engineered mutation	UNP Q5HCZ5
E	30	VAL	ASP	engineered mutation	UNP Q5HCZ5
E	34	ALA	GLU	engineered mutation	UNP Q5HCZ5
E	39	ASN	ARG	engineered mutation	UNP Q5HCZ5
E	41	VAL	SER	engineered mutation	UNP Q5HCZ5
E	44	MET	ASN	engineered mutation	UNP Q5HCZ5
E	45	MET	LYS	engineered mutation	UNP Q5HCZ5
E	48	VAL	GLU	engineered mutation	UNP Q5HCZ5
E	52	ALA	GLN	engineered mutation	UNP Q5HCZ5
E	200	LEU	-	expression tag	UNP Q5HCZ5
E	201	GLU	-	expression tag	UNP Q5HCZ5
E	202	HIS	-	expression tag	UNP Q5HCZ5
E	203	HIS	-	expression tag	UNP Q5HCZ5
E	204	HIS	-	expression tag	UNP Q5HCZ5
E	205	HIS	-	expression tag	UNP Q5HCZ5
E	206	HIS	-	expression tag	UNP Q5HCZ5
E	207	HIS	-	expression tag	UNP Q5HCZ5
F	20	THR	TYR	engineered mutation	UNP Q5HCZ5
F	26	LEU	ALA	engineered mutation	UNP Q5HCZ5
F	30	VAL	ASP	engineered mutation	UNP Q5HCZ5
F	34	ALA	GLU	engineered mutation	UNP Q5HCZ5
F	39	ASN	ARG	engineered mutation	UNP Q5HCZ5
F	41	VAL	SER	engineered mutation	UNP Q5HCZ5
F	44	MET	ASN	engineered mutation	UNP Q5HCZ5
F	45	MET	LYS	engineered mutation	UNP Q5HCZ5
F	48	VAL	GLU	engineered mutation	UNP Q5HCZ5
F	52	ALA	GLN	engineered mutation	UNP Q5HCZ5
F	200	LEU	-	expression tag	UNP Q5HCZ5

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
F	201	GLU	-	expression tag	UNP Q5HCZ5
F	202	HIS	-	expression tag	UNP Q5HCZ5
F	203	HIS	-	expression tag	UNP Q5HCZ5
F	204	HIS	-	expression tag	UNP Q5HCZ5
F	205	HIS	-	expression tag	UNP Q5HCZ5
F	206	HIS	-	expression tag	UNP Q5HCZ5
F	207	HIS	-	expression tag	UNP Q5HCZ5

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



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

- Molecule 3 is water.

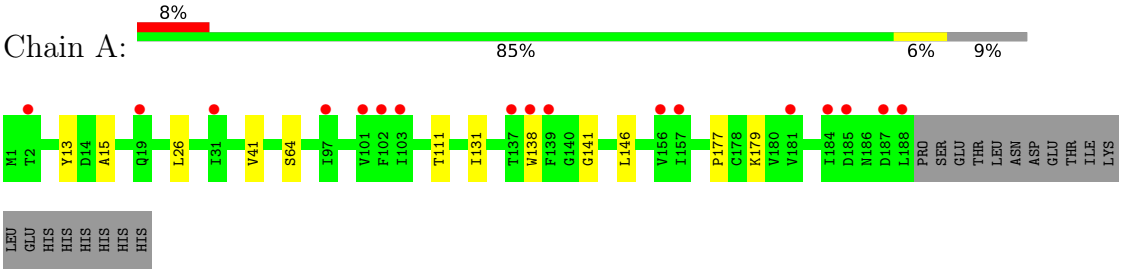
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	A	56	56	56	0	0
			Total	O		
3	B	68	68	68	0	0
			Total	O		
3	C	45	45	45	0	0
			Total	O		
3	D	52	52	52	0	0
			Total	O		
3	E	43	43	43	0	0
			Total	O		
3	F	32	32	32	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

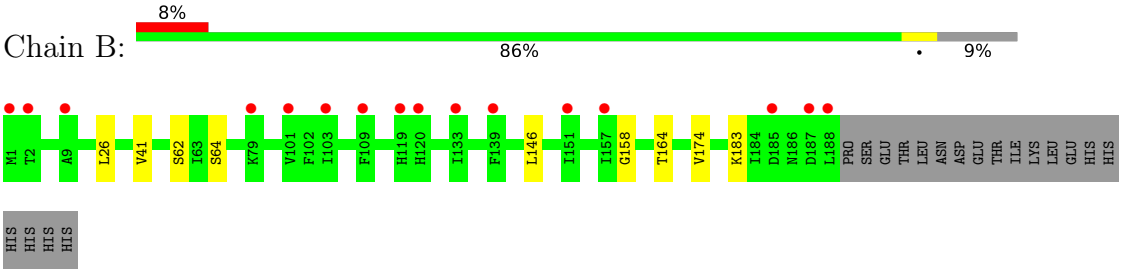
• Molecule 1: Putative acetyltransferase SACOL2570

Chain A:



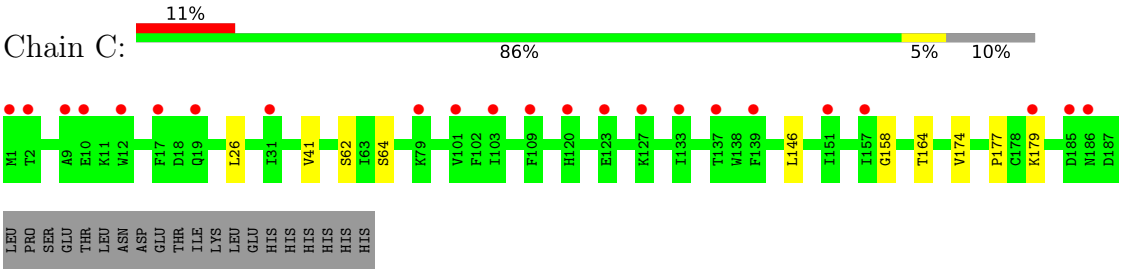
• Molecule 1: Putative acetyltransferase SACOL2570

Chain B:



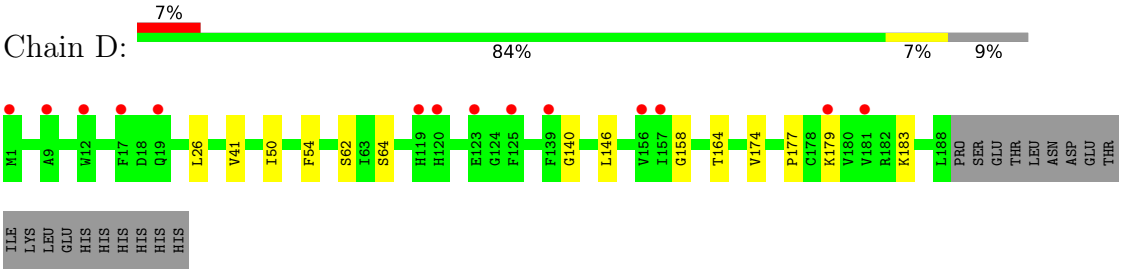
• Molecule 1: Putative acetyltransferase SACOL2570

Chain C:



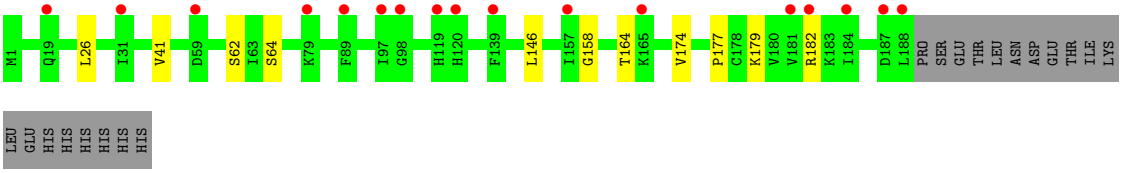
• Molecule 1: Putative acetyltransferase SACOL2570

Chain D:



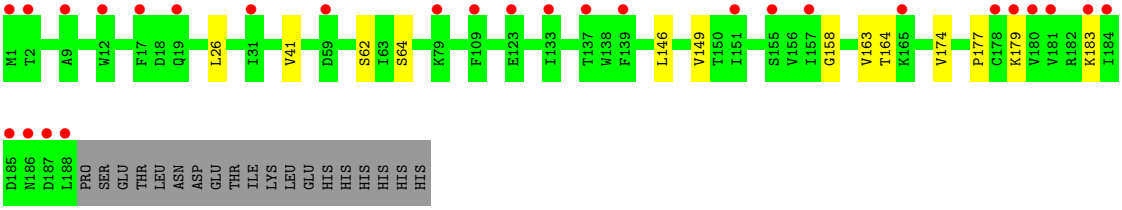
• Molecule 1: Putative acetyltransferase SACOL2570

Chain E:



• Molecule 1: Putative acetyltransferase SACOL2570

Chain F:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	183.76Å 90.84Å 107.70Å 90.00° 125.30° 90.00°	Depositor
Resolution (Å)	22.28 – 2.21 22.18 – 2.24	Depositor EDS
% Data completeness (in resolution range)	92.6 (22.28-2.21) 96.7 (22.18-2.24)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.98 (at 2.24Å)	Xtriage
Refinement program	BUSTER-TNT, BUSTER 2.10.0	Depositor
R, R_{free}	0.208 , 0.238 0.208 , 0.238	Depositor DCC
R_{free} test set	3386 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	44.8	Xtriage
Anisotropy	0.151	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 55.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.012 for -h-2*l,-k,l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	9087	wwPDB-VP
Average B, all atoms (Å^2)	65.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.24% of the height of the origin peak. No significant pseudotranslation is detected.*

[1]Intensities estimated from amplitudes.

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

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.52	0/1492	0.68	0/2029
1	B	0.50	0/1492	0.66	0/2029
1	C	0.48	0/1492	0.66	0/2028
1	D	0.50	0/1500	0.66	0/2039
1	E	0.50	0/1500	0.66	0/2039
1	F	0.46	0/1492	0.65	0/2029
All	All	0.50	0/8968	0.66	0/12193

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1456	0	1430	5	0
1	B	1456	0	1430	2	0
1	C	1453	0	1428	3	0
1	D	1461	0	1439	6	0
1	E	1461	0	1439	3	0
1	F	1456	0	1430	4	0
2	A	18	0	24	2	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	6	0	8	0	0
2	D	6	0	8	1	0
2	E	12	0	16	0	0
2	F	6	0	8	0	0
3	A	56	0	0	0	0
3	B	68	0	0	0	0
3	C	45	0	0	0	0
3	D	52	0	0	0	0
3	E	43	0	0	0	0
3	F	32	0	0	0	0
All	All	9087	0	8660	23	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 1.

All (23) 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:F:158:GLY:HA3	1:F:174:VAL:HG23	1.83	0.60
1:D:50:ILE:HG23	1:D:54:PHE:CE2	2.39	0.57
1:E:158:GLY:HA3	1:E:174:VAL:HG23	1.86	0.56
1:D:140:GLY:HA2	2:D:301:GOL:H12	1.88	0.54
1:D:50:ILE:HG23	1:D:54:PHE:HE2	1.73	0.53
1:C:158:GLY:HA3	1:C:174:VAL:HG23	1.90	0.53
1:A:111:THR:HG22	1:A:131:ILE:HG13	1.97	0.47
1:D:158:GLY:HA3	1:D:174:VAL:HG13	1.97	0.47
1:E:146:LEU:HD22	1:E:164:THR:HG22	2.00	0.43
1:A:141:GLY:H	2:A:302:GOL:H12	1.84	0.43
1:D:146:LEU:HD22	1:D:164:THR:HG22	2.01	0.43
1:F:146:LEU:HD22	1:F:164:THR:HG22	2.01	0.43
1:A:13:TYR:CE1	1:A:15:ALA:HB2	2.54	0.43
1:A:138:TRP:HE1	2:A:302:GOL:H32	1.82	0.43
1:C:146:LEU:HD22	1:C:164:THR:HG22	2.02	0.42
1:A:177:PRO:HG2	1:A:179:LYS:HE3	2.01	0.41
1:B:146:LEU:HD22	1:B:164:THR:HG22	2.02	0.41
1:D:177:PRO:HG2	1:D:179:LYS:HE3	2.01	0.41
1:E:177:PRO:HG2	1:E:179:LYS:HE3	2.02	0.41
1:B:158:GLY:HA3	1:B:174:VAL:HG12	2.03	0.41
1:C:177:PRO:HG2	1:C:179:LYS:HE3	2.03	0.41
1:F:149:VAL:HG11	1:F:163:VAL:HG12	2.03	0.40
1:F:177:PRO:HG2	1:F:179:LYS:HE3	2.04	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	186/207 (90%)	183 (98%)	3 (2%)	0	100	100
1	B	186/207 (90%)	183 (98%)	3 (2%)	0	100	100
1	C	186/207 (90%)	182 (98%)	4 (2%)	0	100	100
1	D	187/207 (90%)	184 (98%)	3 (2%)	0	100	100
1	E	187/207 (90%)	184 (98%)	3 (2%)	0	100	100
1	F	186/207 (90%)	182 (98%)	4 (2%)	0	100	100
All	All	1118/1242 (90%)	1098 (98%)	20 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	159/178 (89%)	155 (98%)	4 (2%)	47	58
1	B	159/178 (89%)	154 (97%)	5 (3%)	40	50
1	C	159/178 (89%)	155 (98%)	4 (2%)	47	58
1	D	160/178 (90%)	155 (97%)	5 (3%)	40	50
1	E	160/178 (90%)	155 (97%)	5 (3%)	40	50
1	F	159/178 (89%)	154 (97%)	5 (3%)	40	50

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	956/1068 (90%)	928 (97%)	28 (3%)	42 53

All (28) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	LEU
1	A	41	VAL
1	A	64	SER
1	A	146	LEU
1	B	26	LEU
1	B	41	VAL
1	B	62	SER
1	B	64	SER
1	B	183	LYS
1	C	26	LEU
1	C	41	VAL
1	C	62	SER
1	C	64	SER
1	D	26	LEU
1	D	41	VAL
1	D	62	SER
1	D	64	SER
1	D	183	LYS
1	E	26	LEU
1	E	41	VAL
1	E	62	SER
1	E	64	SER
1	E	182	ARG
1	F	26	LEU
1	F	41	VAL
1	F	62	SER
1	F	64	SER
1	F	183	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	55	GLN
1	B	55	GLN
1	C	55	GLN
1	D	55	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	E	55	GLN
1	F	55	GLN

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)

8 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	E	302	-	5,5,5	0.11	0	5,5,5	0.40	0
2	GOL	F	301	-	5,5,5	0.07	0	5,5,5	0.30	0
2	GOL	A	303	-	5,5,5	0.12	0	5,5,5	0.17	0
2	GOL	A	301	-	5,5,5	0.10	0	5,5,5	0.27	0
2	GOL	E	301	-	5,5,5	0.10	0	5,5,5	0.34	0
2	GOL	C	301	-	5,5,5	0.05	0	5,5,5	0.21	0
2	GOL	A	302	-	5,5,5	0.13	0	5,5,5	0.20	0
2	GOL	D	301	-	5,5,5	0.15	0	5,5,5	0.44	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	E	302	-	-	1/4/4/4	-
2	GOL	F	301	-	-	4/4/4/4	-
2	GOL	A	303	-	-	0/4/4/4	-
2	GOL	A	301	-	-	3/4/4/4	-
2	GOL	E	301	-	-	2/4/4/4	-
2	GOL	C	301	-	-	2/4/4/4	-
2	GOL	A	302	-	-	0/4/4/4	-
2	GOL	D	301	-	-	2/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	GOL	C1-C2-C3-O3
2	C	301	GOL	O1-C1-C2-C3
2	F	301	GOL	C1-C2-C3-O3
2	F	301	GOL	O2-C2-C3-O3
2	A	301	GOL	O1-C1-C2-C3
2	F	301	GOL	O1-C1-C2-C3
2	A	301	GOL	O2-C2-C3-O3
2	C	301	GOL	O1-C1-C2-O2
2	D	301	GOL	O1-C1-C2-O2
2	E	302	GOL	O1-C1-C2-C3
2	F	301	GOL	O1-C1-C2-O2
2	E	301	GOL	C1-C2-C3-O3
2	E	301	GOL	O2-C2-C3-O3
2	D	301	GOL	O1-C1-C2-C3

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	302	GOL	2	0
2	D	301	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	188/207 (90%)	0.39	17 (9%) 9 8	40, 60, 82, 118	0
1	B	188/207 (90%)	0.29	16 (8%) 10 9	38, 55, 83, 102	0
1	C	187/207 (90%)	0.55	23 (12%) 4 3	39, 66, 97, 122	0
1	D	188/207 (90%)	0.38	14 (7%) 14 13	37, 55, 89, 110	0
1	E	188/207 (90%)	0.39	17 (9%) 9 8	38, 63, 98, 135	0
1	F	188/207 (90%)	0.82	28 (14%) 2 2	40, 80, 112, 144	0
All	All	1127/1242 (90%)	0.47	115 (10%) 6 5	37, 62, 100, 144	0

All (115) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	9	ALA	7.8
1	F	188	LEU	6.0
1	F	1	MET	5.7
1	F	181	VAL	5.1
1	C	1	MET	4.9
1	F	186	ASN	4.7
1	E	184	ILE	4.6
1	F	187	ASP	4.5
1	C	151	ILE	4.4
1	C	137	THR	4.3
1	C	120	HIS	4.2
1	C	9	ALA	4.2
1	C	139	PHE	4.2
1	F	139	PHE	4.2
1	F	185	ASP	4.2
1	B	1	MET	4.1
1	C	2	THR	4.1
1	D	1	MET	4.1
1	A	187	ASP	4.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	E	187	ASP	4.0
1	F	133	ILE	4.0
1	F	180	VAL	3.9
1	C	133	ILE	3.9
1	E	98	GLY	3.8
1	F	19	GLN	3.8
1	D	181	VAL	3.8
1	A	139	PHE	3.8
1	F	165	LYS	3.8
1	A	157	ILE	3.7
1	E	188	LEU	3.5
1	F	12	TRP	3.5
1	D	139	PHE	3.5
1	F	183	LYS	3.4
1	F	59	ASP	3.4
1	B	139	PHE	3.4
1	D	17	PHE	3.4
1	E	59	ASP	3.4
1	D	157	ILE	3.4
1	B	188	LEU	3.3
1	D	19	GLN	3.3
1	D	120	HIS	3.3
1	C	19	GLN	3.3
1	C	17	PHE	3.3
1	A	103	ILE	3.3
1	D	9	ALA	3.3
1	F	2	THR	3.2
1	C	123	GLU	3.2
1	D	156	VAL	3.2
1	A	184	ILE	3.2
1	B	187	ASP	3.2
1	D	119	HIS	3.1
1	B	103	ILE	3.1
1	F	151	ILE	3.0
1	D	125	PHE	3.0
1	A	2	THR	3.0
1	F	137	THR	3.0
1	F	179	LYS	2.9
1	E	19	GLN	2.8
1	B	119	HIS	2.8
1	F	79	LYS	2.8
1	D	12	TRP	2.8

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	188	LEU	2.8
1	E	165	LYS	2.7
1	B	157	ILE	2.7
1	F	184	ILE	2.7
1	F	123	GLU	2.7
1	C	12	TRP	2.6
1	A	137	THR	2.6
1	E	31	ILE	2.6
1	C	10	GLU	2.6
1	F	17	PHE	2.6
1	A	97	ILE	2.6
1	C	157	ILE	2.5
1	A	19	GLN	2.5
1	C	179	LYS	2.5
1	E	157	ILE	2.5
1	A	156	VAL	2.5
1	B	9	ALA	2.5
1	F	155	SER	2.4
1	C	101	VAL	2.4
1	F	157	ILE	2.4
1	B	109	PHE	2.4
1	C	186	ASN	2.3
1	D	123	GLU	2.3
1	A	101	VAL	2.3
1	A	31	ILE	2.3
1	C	79	LYS	2.3
1	A	181	VAL	2.3
1	B	133	ILE	2.3
1	E	182	ARG	2.3
1	F	178	CYS	2.2
1	B	101	VAL	2.2
1	F	109	PHE	2.2
1	E	139	PHE	2.2
1	B	120	HIS	2.2
1	E	120	HIS	2.2
1	B	79	LYS	2.2
1	C	103	ILE	2.2
1	C	185	ASP	2.2
1	A	102	PHE	2.1
1	E	89	PHE	2.1
1	E	97	ILE	2.1
1	F	31	ILE	2.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	2	THR	2.1
1	E	181	VAL	2.1
1	B	185	ASP	2.1
1	C	109	PHE	2.1
1	A	138	TRP	2.1
1	C	31	ILE	2.0
1	E	119	HIS	2.0
1	D	179	LYS	2.0
1	E	79	LYS	2.0
1	B	151	ILE	2.0
1	A	185	ASP	2.0
1	C	127	LYS	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	GOL	F	301	6/6	0.89	0.30	79,81,82,82	0
2	GOL	C	301	6/6	0.91	0.18	59,59,60,60	0
2	GOL	E	302	6/6	0.91	0.18	67,70,72,74	0
2	GOL	A	303	6/6	0.91	0.29	58,58,59,60	0
2	GOL	A	301	6/6	0.92	0.26	68,69,69,69	0
2	GOL	E	301	6/6	0.93	0.22	63,63,65,67	0
2	GOL	A	302	6/6	0.95	0.22	64,65,66,66	0
2	GOL	D	301	6/6	0.97	0.18	56,58,58,59	0

6.5 Other polymers (i)

There are no such residues in this entry.