



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 30, 2026 – 09:51 PM UTC

PDB ID : 6NW9 / pdb_00006nw9
Title : CRYSTAL STRUCTURE OF A TAILSPIKE PROTEIN 3 (TSP3, ORF212)
FROM ESCHERICHIA COLI O157:H7 BACTERIOPHAGE CBA120
Authors : Greenfield, J.Y.; Herzberg, O.
Deposited on : 2019-02-06
Resolution : 1.85 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

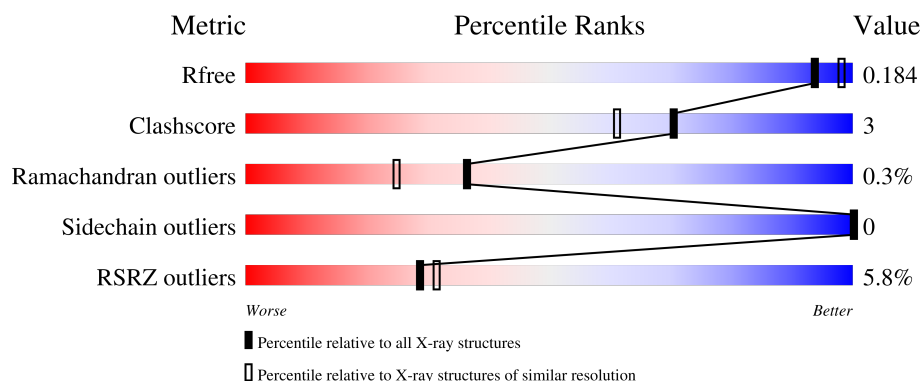
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

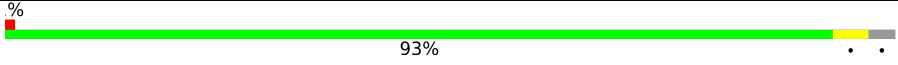
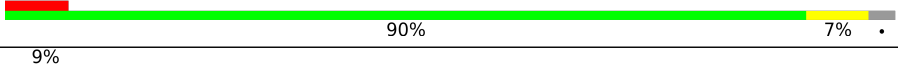
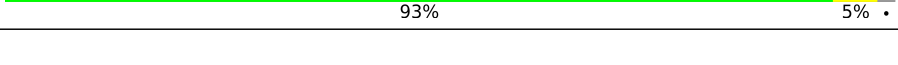
The reported resolution of this entry is 1.85 Å.

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}	180053	3428 (1.86-1.86)
Clashscore	190562	3579 (1.86-1.86)
Ramachandran outliers	187476	3553 (1.86-1.86)
Sidechain outliers	187428	3553 (1.86-1.86)
RSRZ outliers	180081	3429 (1.86-1.86)

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	633	 93% . .
1	B	633	 7% 90% 7% .
1	C	633	 9% 93% 5% .

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
10	PO4	A	732	-	-	X	-
7	EDO	B	721	-	-	X	-
7	EDO	C	729	-	-	X	-
8	PEG	A	728	-	-	X	-

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 16468 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 Tailspike protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	616	Total	C	N	O	S	0	15	0
			4776	3026	804	932	14			
1	B	616	Total	C	N	O	S	0	4	0
			4681	2964	797	907	13			
1	C	619	Total	C	N	O	S	0	6	0
			4738	2999	808	917	14			

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	628	HIS	-	expression tag	UNP G3M191
A	629	HIS	-	expression tag	UNP G3M191
A	630	HIS	-	expression tag	UNP G3M191
A	631	HIS	-	expression tag	UNP G3M191
A	632	HIS	-	expression tag	UNP G3M191
A	633	HIS	-	expression tag	UNP G3M191
B	628	HIS	-	expression tag	UNP G3M191
B	629	HIS	-	expression tag	UNP G3M191
B	630	HIS	-	expression tag	UNP G3M191
B	631	HIS	-	expression tag	UNP G3M191
B	632	HIS	-	expression tag	UNP G3M191
B	633	HIS	-	expression tag	UNP G3M191
C	628	HIS	-	expression tag	UNP G3M191
C	629	HIS	-	expression tag	UNP G3M191
C	630	HIS	-	expression tag	UNP G3M191
C	631	HIS	-	expression tag	UNP G3M191
C	632	HIS	-	expression tag	UNP G3M191
C	633	HIS	-	expression tag	UNP G3M191

- Molecule 2 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Cl	0	0
			1	1		
2	B	3	Total	Cl	0	0
			3	3		
2	C	2	Total	Cl	0	0
			2	2		

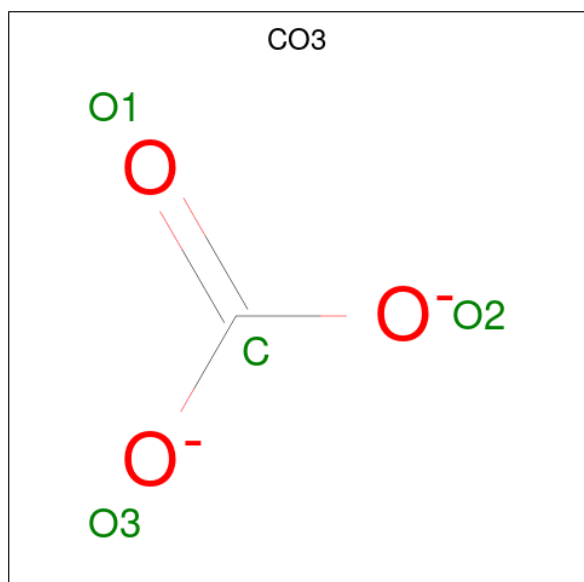
- Molecule 3 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total	Na	0	0
			2	2		
3	B	1	Total	Na	0	0
			1	1		

- Molecule 4 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Mg	0	0
			1	1		

- Molecule 5 is CARBONATE ION (CCD ID: CO3) (formula: CO₃).



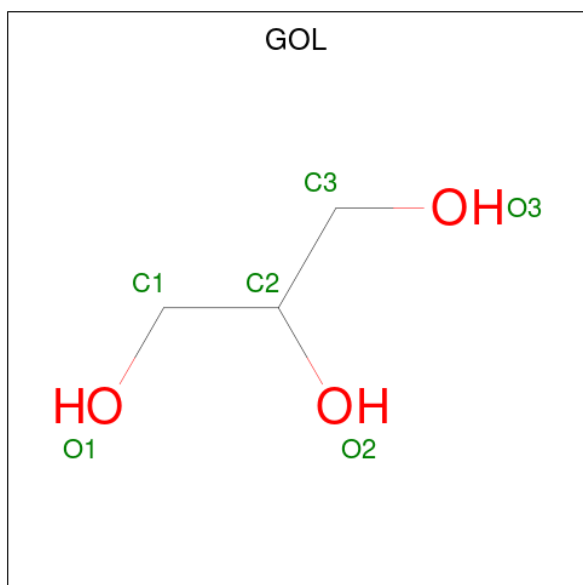
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			4	1	3		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			4	1	3		
5	B	1	Total	C	O	0	0
			4	1	3		

- Molecule 6 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



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

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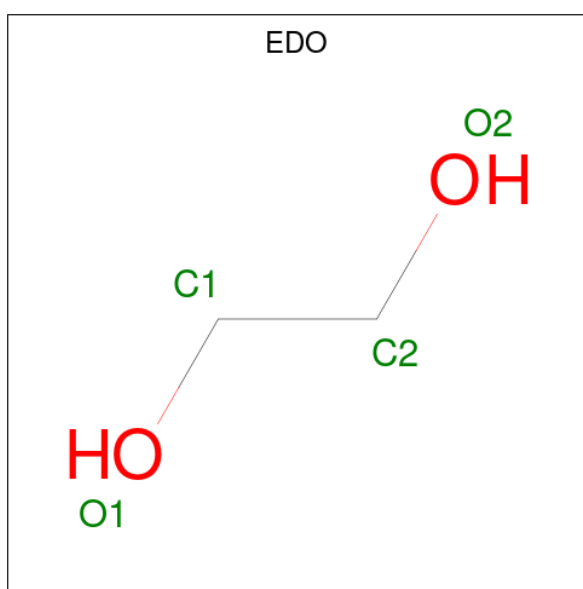
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	A	1	Total	C	O	0	0
			6	3	3		
6	B	1	Total	C	O	0	0
			6	3	3		
6	B	1	Total	C	O	0	0
			6	3	3		
6	B	1	Total	C	O	0	0
			6	3	3		
6	B	1	Total	C	O	0	0
			6	3	3		
6	B	1	Total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

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

- Molecule 7 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total	C	O	0	0
			4	2	2		
7	A	1	Total	C	O	0	0
			4	2	2		
7	A	1	Total	C	O	0	0
			4	2	2		
7	A	1	Total	C	O	0	0
			4	2	2		
7	A	1	Total	C	O	0	0
			4	2	2		
7	A	1	Total	C	O	0	0
			4	2	2		
7	A	1	Total	C	O	0	0
			4	2	2		

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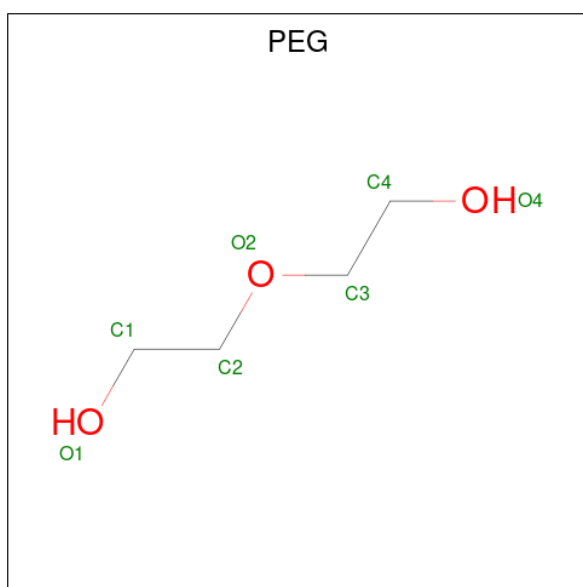
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total 4	C 2	O 2	0	0
7	A	1	Total 4	C 2	O 2	0	0
7	A	1	Total 4	C 2	O 2	0	0
7	A	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	B	1	Total 4	C 2	O 2	0	0
7	C	1	Total 4	C 2	O 2	0	0
7	C	1	Total 4	C 2	O 2	0	0
7	C	1	Total 4	C 2	O 2	0	0
7	C	1	Total 4	C 2	O 2	0	0
7	C	1	Total 4	C 2	O 2	0	0

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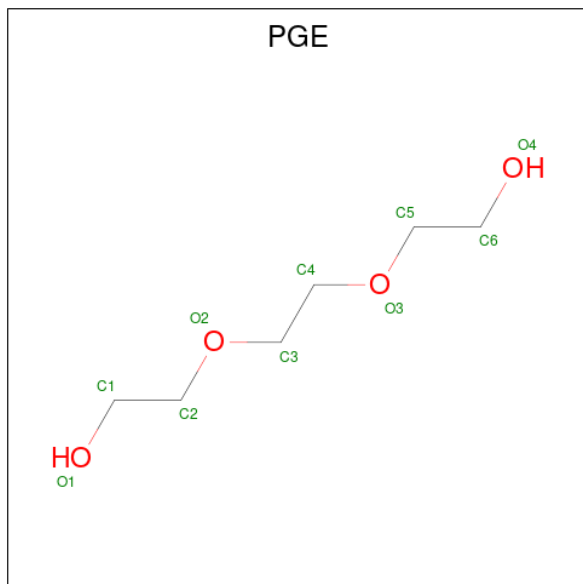
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	C	1	Total	C	O	0	0
			4	2	2		
7	C	1	Total	C	O	0	0
			4	2	2		
7	C	1	Total	C	O	0	0
			4	2	2		
7	C	1	Total	C	O	0	0
			4	2	2		
7	C	1	Total	C	O	0	0
			4	2	2		
7	C	1	Total	C	O	0	0
			4	2	2		
7	C	1	Total	C	O	0	0
			4	2	2		
7	C	1	Total	C	O	0	0
			4	2	2		
7	C	1	Total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

- Molecule 8 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: C₄H₁₀O₃).



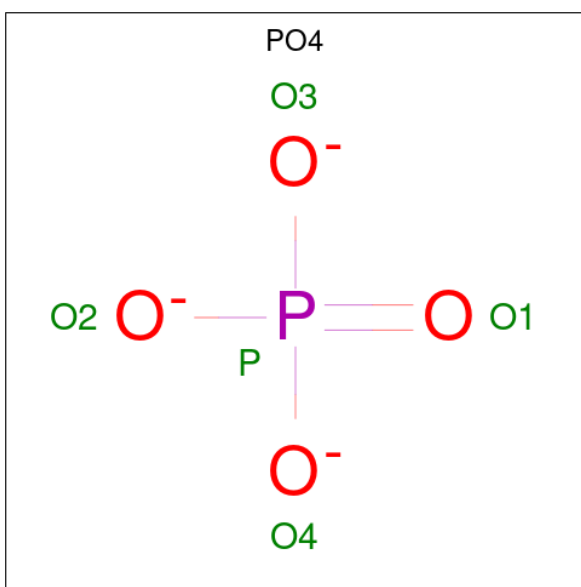
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	A	1	Total	C	O	0	0
			7	4	3		
8	A	1	Total	C	O	0	0
			7	4	3		
8	B	1	Total	C	O	0	0
			7	4	3		
8	B	1	Total	C	O	0	0
			7	4	3		
8	B	1	Total	C	O	0	0
			7	4	3		
8	C	1	Total	C	O	0	0
			7	4	3		

- Molecule 9 is TRIETHYLENE GLYCOL (CCD ID: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	A	1	Total	C	O	0	0
			10	6	4		

- Molecule 10 is PHOSPHATE ION (CCD ID: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	A	1	Total	O	P	0	0
			5	4	1		
10	A	1	Total	O	P	0	0
			5	4	1		

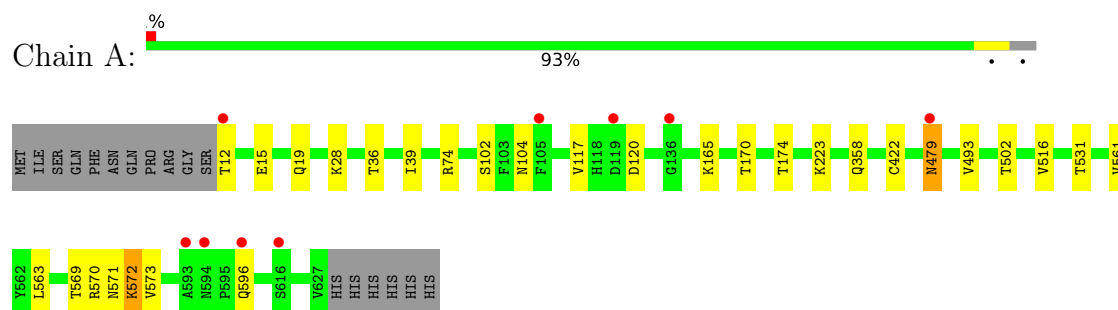
- Molecule 11 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
11	A	659	Total	O	0	0
			659	659		
11	B	605	Total	O	0	0
			605	605		
11	C	564	Total	O	0	1
			565	565		

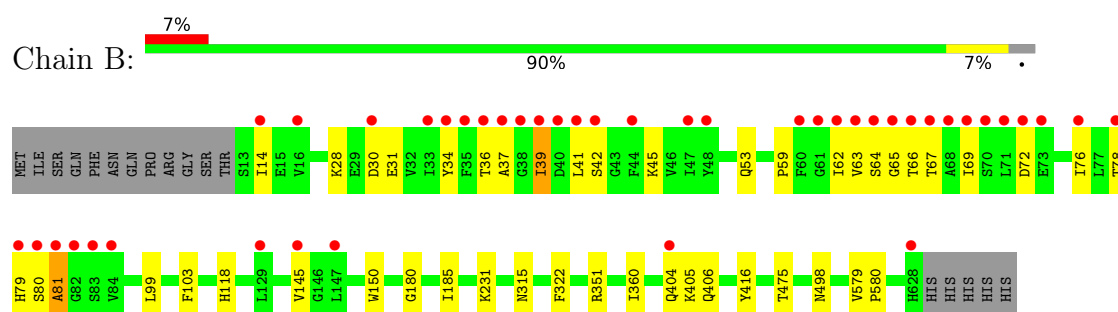
3 Residue-property plots [i](#)

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.

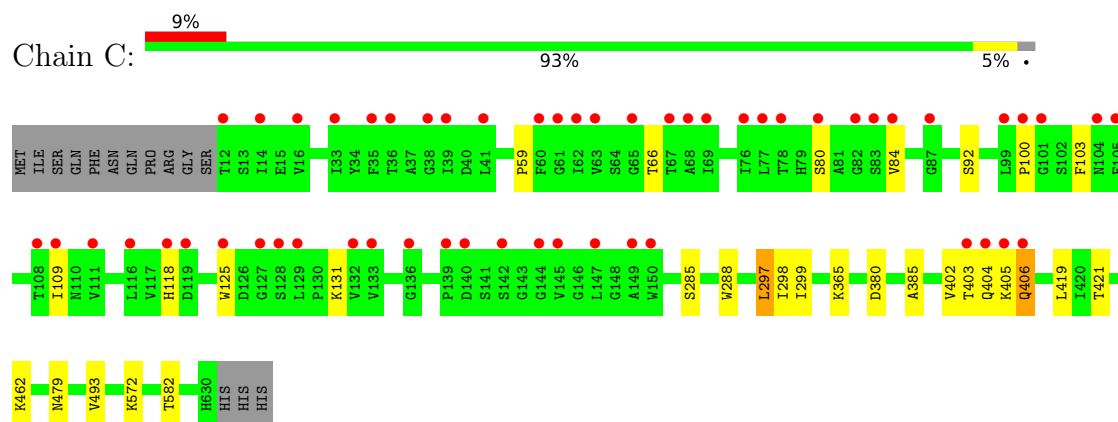
• Molecule 1: Tailspike protein



• Molecule 1: Tailspike protein



• Molecule 1: Tailspike protein



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	99.44Å 66.77Å 161.60Å 90.00° 103.58° 90.00°	Depositor
Resolution (Å)	54.16 – 1.85 54.16 – 1.85	Depositor EDS
% Data completeness (in resolution range)	99.7 (54.16-1.85) 99.7 (54.16-1.85)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.66 (at 1.86Å)	Xtriage
Refinement program	PHENIX (1.14_3228:)	Depositor
R, R_{free}	0.151 , 0.184 0.151 , 0.184	Depositor DCC
R_{free} test set	8688 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å ²)	13.8	Xtriage
Anisotropy	0.125	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 55.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	16468	wwPDB-VP
Average B, all atoms (Å ²)	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.19% 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: CL, PEG, PGE, GOL, NA, MG, CO3, EDO, PO4

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	0.68	4/4906 (0.1%)	0.82	6/6665 (0.1%)
1	B	0.72	4/4794 (0.1%)	0.85	7/6517 (0.1%)
1	C	0.69	3/4859 (0.1%)	0.82	3/6602 (0.0%)
All	All	0.70	11/14559 (0.1%)	0.83	16/19784 (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	A	0	2

The worst 5 of 11 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	572[A]	LYS	CA-C	7.97	1.61	1.52
1	A	572[B]	LYS	CA-C	7.97	1.61	1.52
1	B	99	LEU	C-O	-6.86	1.15	1.23
1	B	59	PRO	C-O	-6.74	1.16	1.23
1	C	402	VAL	C-O	-6.35	1.17	1.24

The worst 5 of 16 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	404	GLN	CB-CA-C	8.13	124.32	111.39
1	C	406	GLN	O-C-N	-8.01	112.93	122.46
1	C	405	LYS	CA-C-N	7.56	133.50	122.16
1	C	405	LYS	C-N-CA	7.56	133.50	122.16
1	A	572[A]	LYS	N-CA-C	5.76	117.77	108.32

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	572[A]	LYS	Mainchain
1	A	572[B]	LYS	Mainchain

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	4776	0	4664	28	0
1	B	4681	0	4525	34	0
1	C	4738	0	4594	27	0
2	A	1	0	0	0	0
2	B	3	0	0	1	0
2	C	2	0	0	0	0
3	A	2	0	0	0	0
3	B	1	0	0	0	0
4	A	1	0	0	0	0
5	A	8	0	0	0	0
5	B	4	0	0	0	0
6	A	78	0	104	3	0
6	B	60	0	80	0	0
6	C	66	0	88	1	0
7	A	44	0	66	0	0
7	B	48	0	72	7	0
7	C	64	0	96	8	0
8	A	14	0	20	8	0
8	B	21	0	29	2	0
8	C	7	0	10	0	0
9	A	10	0	14	4	0
10	A	10	0	0	2	0
11	A	659	0	0	8	1
11	B	605	0	0	1	0
11	C	565	0	0	4	1
All	All	16468	0	14362	98	1

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 3.

The worst 5 of 98 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:B:79:HIS:CE1	1:B:81:ALA:HB3	1.85	1.10
1:B:42:SER:HA	1:B:62:ILE:HG13	1.49	0.94
1:C:462:LYS:O	6:C:704:GOL:H12	1.76	0.83
1:A:563:LEU:H	9:A:729:PGE:H42	1.50	0.77
1:B:79:HIS:HE1	1:B:81:ALA:HB3	1.50	0.76

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:A:1382:HOH:O	11:C:1250:HOH:O[1_565]	2.04	0.16

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	629/633 (99%)	611 (97%)	17 (3%)	1 (0%)	43	31
1	B	618/633 (98%)	588 (95%)	27 (4%)	3 (0%)	24	13
1	C	623/633 (98%)	603 (97%)	19 (3%)	1 (0%)	43	31
All	All	1870/1899 (98%)	1802 (96%)	63 (3%)	5 (0%)	36	25

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	37	ALA
1	B	81	ALA
1	A	479	ASN
1	B	406	GLN
1	C	479	ASN

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	515/518 (99%)	515 (100%)	0	100	100
1	B	493/518 (95%)	493 (100%)	0	100	100
1	C	503/518 (97%)	503 (100%)	0	100	100
All	All	1511/1554 (97%)	1511 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 10 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	290	GLN
1	C	315	ASN
1	C	590	ASN
1	A	315	ASN
1	A	590	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 95 ligands modelled in this entry, 10 are monoatomic - leaving 85 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
6	GOL	A	713	-	5,5,5	0.38	0	5,5,5	0.43	0
7	EDO	B	723	-	3,3,3	0.54	0	2,2,2	0.26	0
8	PEG	A	727	-	6,6,6	0.20	0	5,5,5	0.13	0
7	EDO	A	726	-	3,3,3	0.39	0	2,2,2	0.52	0
7	EDO	C	721	-	3,3,3	0.44	0	2,2,2	0.33	0
6	GOL	A	714	-	5,5,5	0.29	0	5,5,5	0.43	0
6	GOL	A	731	-	5,5,5	0.49	0	5,5,5	0.52	0
7	EDO	B	724	-	3,3,3	0.35	0	2,2,2	0.44	0
7	EDO	B	718	-	3,3,3	0.40	0	2,2,2	0.34	0
6	GOL	C	710	-	5,5,5	0.22	0	5,5,5	0.79	0
6	GOL	B	708	-	5,5,5	0.29	0	5,5,5	0.84	0
6	GOL	C	707	-	5,5,5	0.39	0	5,5,5	0.46	0
7	EDO	A	718	-	3,3,3	0.36	0	2,2,2	0.43	0
6	GOL	A	716	-	5,5,5	0.44	0	5,5,5	0.55	0
6	GOL	A	707	-	5,5,5	0.35	0	5,5,5	0.55	0
7	EDO	C	720	-	3,3,3	0.43	0	2,2,2	0.51	0
6	GOL	B	709	-	5,5,5	0.28	0	5,5,5	0.46	0
7	EDO	B	719	-	3,3,3	0.45	0	2,2,2	0.15	0
6	GOL	B	707	-	5,5,5	0.58	0	5,5,5	0.49	0
9	PGE	A	729	-	9,9,9	0.30	0	8,8,8	0.50	0
7	EDO	A	722	-	3,3,3	0.47	0	2,2,2	0.31	0
7	EDO	B	725	-	3,3,3	0.06	0	2,2,2	0.12	0
6	GOL	C	705	-	5,5,5	0.38	0	5,5,5	0.60	0
7	EDO	A	735	-	3,3,3	0.46	0	2,2,2	0.39	0
6	GOL	C	713	-	5,5,5	0.43	0	5,5,5	0.40	0
7	EDO	A	719	-	3,3,3	0.44	0	2,2,2	0.35	0
6	GOL	A	715	-	5,5,5	0.39	0	5,5,5	0.83	0
6	GOL	C	703	-	5,5,5	0.18	0	5,5,5	0.57	0
6	GOL	C	704	-	5,5,5	0.25	0	5,5,5	0.55	0
6	GOL	C	712	-	5,5,5	0.36	0	5,5,5	0.89	0
6	GOL	A	711	-	5,5,5	0.37	0	5,5,5	0.83	0
6	GOL	A	734	-	5,5,5	0.36	0	5,5,5	0.36	0
7	EDO	C	728	-	3,3,3	0.42	0	2,2,2	0.50	0
7	EDO	C	716	-	3,3,3	0.32	0	2,2,2	0.47	0
7	EDO	C	724	-	3,3,3	0.43	0	2,2,2	0.64	0
7	EDO	C	719	-	3,3,3	0.46	0	2,2,2	0.32	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	GOL	B	713	-	5,5,5	0.23	0	5,5,5	0.93	0
7	EDO	B	721	-	3,3,3	0.32	0	2,2,2	0.55	0
7	EDO	C	726	-	3,3,3	0.46	0	2,2,2	0.35	0
8	PEG	B	726	-	6,6,6	0.58	0	5,5,5	0.37	0
7	EDO	B	715	-	3,3,3	0.50	0	2,2,2	0.46	0
6	GOL	A	709	-	5,5,5	0.51	0	5,5,5	0.38	0
6	GOL	A	710	-	5,5,5	0.30	0	5,5,5	0.85	0
6	GOL	B	710	-	5,5,5	0.24	0	5,5,5	0.42	0
7	EDO	C	729	-	3,3,3	0.47	0	2,2,2	0.32	0
6	GOL	B	712	-	5,5,5	0.43	0	5,5,5	0.63	0
6	GOL	C	709	-	5,5,5	0.27	0	5,5,5	0.55	0
6	GOL	B	711	-	5,5,5	0.32	0	5,5,5	0.51	0
7	EDO	C	727	-	3,3,3	0.50	0	2,2,2	0.17	0
5	CO3	B	701	-	3,3,3	1.16	0	2,3,3	0.20	0
7	EDO	C	725	-	3,3,3	0.41	0	2,2,2	0.42	0
6	GOL	A	708	-	5,5,5	0.36	0	5,5,5	0.77	0
6	GOL	C	711	-	5,5,5	0.47	0	5,5,5	0.88	0
8	PEG	A	728	-	6,6,6	0.12	0	5,5,5	0.07	0
7	EDO	B	720	-	3,3,3	0.44	0	2,2,2	0.37	0
6	GOL	B	714	-	5,5,5	0.26	0	5,5,5	0.59	0
7	EDO	B	730	-	3,3,3	0.45	0	2,2,2	0.54	0
7	EDO	C	718	-	3,3,3	0.39	0	2,2,2	0.42	0
5	CO3	A	705	-	3,3,3	0.99	0	2,3,3	0.23	0
10	PO4	A	732	-	4,4,4	0.59	0	6,6,6	0.94	0
6	GOL	B	705	-	5,5,5	0.15	0	5,5,5	0.36	0
7	EDO	B	716	-	3,3,3	0.43	0	2,2,2	0.39	0
7	EDO	C	723	-	3,3,3	0.39	0	2,2,2	0.50	0
10	PO4	A	730	-	4,4,4	0.88	0	6,6,6	0.38	0
7	EDO	A	723	-	3,3,3	0.44	0	2,2,2	0.31	0
7	EDO	A	724	-	3,3,3	0.39	0	2,2,2	0.43	0
7	EDO	C	715	-	3,3,3	0.55	0	2,2,2	0.33	0
7	EDO	A	720	-	3,3,3	0.37	0	2,2,2	0.52	0
6	GOL	A	733	-	5,5,5	0.54	0	5,5,5	0.86	0
7	EDO	B	717	-	3,3,3	0.33	0	2,2,2	0.37	0
7	EDO	A	721	-	3,3,3	0.42	0	2,2,2	0.37	0
5	CO3	A	706	-	3,3,3	0.64	0	2,3,3	0.13	0
7	EDO	C	714	-	3,3,3	0.43	0	2,2,2	0.46	0
7	EDO	C	717	-	3,3,3	0.47	0	2,2,2	0.34	0
7	EDO	C	722	-	3,3,3	0.36	0	2,2,2	0.46	0
6	GOL	C	706	-	5,5,5	0.41	0	5,5,5	0.38	0
7	EDO	A	725	-	3,3,3	0.43	0	2,2,2	0.47	0
7	EDO	A	717	-	3,3,3	0.51	0	2,2,2	0.37	0
8	PEG	B	727	-	6,6,6	0.58	0	5,5,5	0.25	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
8	PEG	B	728	-	6,6,6	0.60	0	5,5,5	0.28	0
7	EDO	B	722	-	3,3,3	0.50	0	2,2,2	0.02	0
8	PEG	C	730	-	6,6,6	0.41	0	5,5,5	0.49	0
6	GOL	B	706	-	5,5,5	0.31	0	5,5,5	0.66	0
6	GOL	A	712	-	5,5,5	0.75	0	5,5,5	0.99	0
6	GOL	C	708	-	5,5,5	0.29	0	5,5,5	0.69	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
6	GOL	A	713	-	-	2/4/4/4	-
7	EDO	B	723	-	-	0/1/1/1	-
8	PEG	A	727	-	-	2/4/4/4	-
7	EDO	A	726	-	-	0/1/1/1	-
7	EDO	C	721	-	-	1/1/1/1	-
6	GOL	A	714	-	-	4/4/4/4	-
6	GOL	A	731	-	-	0/4/4/4	-
7	EDO	B	724	-	-	1/1/1/1	-
7	EDO	B	718	-	-	0/1/1/1	-
6	GOL	C	710	-	-	2/4/4/4	-
6	GOL	B	708	-	-	2/4/4/4	-
6	GOL	C	707	-	-	4/4/4/4	-
7	EDO	A	718	-	-	0/1/1/1	-
6	GOL	A	716	-	-	3/4/4/4	-
6	GOL	A	707	-	-	0/4/4/4	-
7	EDO	C	720	-	-	1/1/1/1	-
6	GOL	B	709	-	-	0/4/4/4	-
7	EDO	B	719	-	-	1/1/1/1	-
6	GOL	B	707	-	-	0/4/4/4	-
9	PGE	A	729	-	-	4/7/7/7	-
7	EDO	A	722	-	-	0/1/1/1	-
7	EDO	B	725	-	-	1/1/1/1	-
6	GOL	C	705	-	-	2/4/4/4	-
7	EDO	A	735	-	-	0/1/1/1	-
6	GOL	C	713	-	-	4/4/4/4	-
7	EDO	A	719	-	-	1/1/1/1	-
6	GOL	A	715	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	GOL	C	703	-	-	1/4/4/4	-
6	GOL	C	704	-	-	4/4/4/4	-
6	GOL	C	712	-	-	2/4/4/4	-
6	GOL	A	711	-	-	2/4/4/4	-
6	GOL	A	734	-	-	0/4/4/4	-
7	EDO	C	728	-	-	0/1/1/1	-
7	EDO	C	716	-	-	1/1/1/1	-
7	EDO	C	724	-	-	0/1/1/1	-
7	EDO	C	719	-	-	0/1/1/1	-
6	GOL	B	713	-	-	2/4/4/4	-
7	EDO	B	721	-	-	1/1/1/1	-
7	EDO	C	726	-	-	0/1/1/1	-
8	PEG	B	726	-	-	2/4/4/4	-
7	EDO	B	715	-	-	1/1/1/1	-
6	GOL	A	709	-	-	1/4/4/4	-
6	GOL	A	710	-	-	2/4/4/4	-
6	GOL	B	710	-	-	0/4/4/4	-
7	EDO	C	729	-	-	1/1/1/1	-
6	GOL	B	712	-	-	3/4/4/4	-
6	GOL	C	709	-	-	0/4/4/4	-
6	GOL	B	711	-	-	0/4/4/4	-
7	EDO	C	727	-	-	0/1/1/1	-
7	EDO	C	725	-	-	1/1/1/1	-
6	GOL	A	708	-	-	0/4/4/4	-
6	GOL	C	711	-	-	1/4/4/4	-
8	PEG	A	728	-	-	3/4/4/4	-
7	EDO	B	720	-	-	0/1/1/1	-
6	GOL	B	714	-	-	0/4/4/4	-
7	EDO	B	730	-	-	0/1/1/1	-
7	EDO	C	718	-	-	0/1/1/1	-
6	GOL	B	705	-	-	4/4/4/4	-
7	EDO	B	716	-	-	0/1/1/1	-
7	EDO	C	723	-	-	1/1/1/1	-
7	EDO	A	723	-	-	0/1/1/1	-
7	EDO	A	724	-	-	0/1/1/1	-
7	EDO	C	715	-	-	0/1/1/1	-
7	EDO	A	720	-	-	0/1/1/1	-
6	GOL	A	733	-	-	2/4/4/4	-
7	EDO	B	717	-	-	0/1/1/1	-
7	EDO	A	721	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	EDO	C	714	-	-	0/1/1/1	-
7	EDO	C	717	-	-	0/1/1/1	-
7	EDO	C	722	-	-	0/1/1/1	-
6	GOL	C	706	-	-	2/4/4/4	-
7	EDO	A	725	-	-	0/1/1/1	-
7	EDO	A	717	-	-	0/1/1/1	-
8	PEG	B	727	-	-	0/4/4/4	-
8	PEG	B	728	-	-	1/4/4/4	-
7	EDO	B	722	-	-	1/1/1/1	-
8	PEG	C	730	-	-	2/4/4/4	-
6	GOL	B	706	-	-	2/4/4/4	-
6	GOL	A	712	-	-	2/4/4/4	-
6	GOL	C	708	-	-	0/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 83 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	710	GOL	O1-C1-C2-C3
6	A	711	GOL	O1-C1-C2-C3
6	A	712	GOL	C1-C2-C3-O3
6	A	714	GOL	C1-C2-C3-O3
6	A	714	GOL	O2-C2-C3-O3

There are no ring outliers.

12 monomers are involved in 28 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	A	727	PEG	1	0
6	A	731	GOL	1	0
6	A	716	GOL	1	0
9	A	729	PGE	4	0
6	C	704	GOL	1	0
7	B	721	EDO	7	0
8	B	726	PEG	1	0
6	A	710	GOL	1	0
7	C	729	EDO	8	0
8	A	728	PEG	7	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	A	732	PO4	2	0
8	B	728	PEG	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	616/633 (97%)	-0.36	9 (1%)	72 76	3, 15, 34, 52	16 (2%)
1	B	616/633 (97%)	-0.08	43 (6%)	22 24	6, 16, 51, 77	4 (0%)
1	C	619/633 (97%)	-0.10	55 (8%)	15 15	4, 14, 47, 59	6 (0%)
All	All	1851/1899 (97%)	-0.18	107 (5%)	29 31	3, 15, 45, 77	26 (1%)

The worst 5 of 107 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	61	GLY	6.7
1	B	62	ILE	6.4
1	B	44	PHE	5.5
1	B	69	ILE	5.5
1	B	37	ALA	5.3

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 oligosaccharides 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($\text{\AA}^2$)	Q<0.9
7	EDO	C	727	4/4	0.71	0.19	45,50,52,56	0
7	EDO	C	729	4/4	0.71	0.21	33,37,41,43	0
7	EDO	A	719	4/4	0.74	0.19	46,47,49,53	0
7	EDO	B	715	4/4	0.74	0.17	41,43,44,47	0
8	PEG	B	727	7/7	0.74	0.15	41,47,49,55	0
7	EDO	B	725	4/4	0.75	0.19	24,31,33,38	0
6	GOL	B	705	6/6	0.75	0.18	39,40,46,56	0
10	PO4	A	730	5/5	0.77	0.14	33,40,55,60	0
6	GOL	C	713	6/6	0.78	0.17	34,40,41,46	0
8	PEG	A	727	7/7	0.79	0.16	27,34,40,41	7
7	EDO	C	725	4/4	0.79	0.17	36,39,46,50	0
7	EDO	C	726	4/4	0.79	0.14	33,35,43,48	0
5	CO3	A	705	4/4	0.80	0.14	44,47,51,53	0
8	PEG	A	728	7/7	0.80	0.15	32,33,43,57	0
6	GOL	C	710	6/6	0.80	0.14	25,36,38,41	0
7	EDO	A	725	4/4	0.80	0.15	39,41,45,51	0
7	EDO	B	719	4/4	0.81	0.19	34,39,41,51	0
7	EDO	B	722	4/4	0.81	0.14	35,37,42,49	0
7	EDO	A	724	4/4	0.81	0.13	41,41,42,55	0
9	PGE	A	729	10/10	0.81	0.14	27,35,41,47	0
7	EDO	C	723	4/4	0.81	0.14	35,41,48,55	0
8	PEG	B	728	7/7	0.82	0.14	27,31,36,41	0
6	GOL	A	731	6/6	0.82	0.16	25,34,43,43	0
7	EDO	C	714	4/4	0.82	0.15	38,40,44,46	0
6	GOL	C	704	6/6	0.83	0.20	23,30,33,46	0
6	GOL	A	716	6/6	0.83	0.16	24,31,35,39	0
7	EDO	A	726	4/4	0.84	0.14	30,31,32,34	0
7	EDO	C	720	4/4	0.85	0.15	39,39,42,44	0
5	CO3	B	701	4/4	0.85	0.13	34,44,49,50	0
7	EDO	A	717	4/4	0.85	0.12	26,26,28,37	0
7	EDO	B	720	4/4	0.85	0.15	48,51,51,51	0
7	EDO	C	721	4/4	0.86	0.15	37,39,42,43	0
7	EDO	A	723	4/4	0.86	0.14	39,44,44,45	0
7	EDO	B	716	4/4	0.86	0.11	22,28,32,36	0
6	GOL	C	707	6/6	0.87	0.13	22,38,40,44	0
7	EDO	A	721	4/4	0.87	0.11	30,31,45,47	0
8	PEG	B	726	7/7	0.87	0.14	26,40,48,53	0
5	CO3	A	706	4/4	0.87	0.15	21,25,38,41	0
6	GOL	B	712	6/6	0.87	0.14	24,29,38,52	0
8	PEG	C	730	7/7	0.87	0.13	28,31,40,41	0
7	EDO	C	728	4/4	0.87	0.11	20,29,30,44	0
3	NA	A	703	1/1	0.87	0.09	26,26,26,26	1
6	GOL	C	705	6/6	0.88	0.15	20,30,37,46	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
6	GOL	C	706	6/6	0.88	0.14	26,29,32,37	0
7	EDO	A	735	4/4	0.88	0.13	25,29,32,40	0
6	GOL	A	715	6/6	0.88	0.13	23,29,39,46	0
6	GOL	B	713	6/6	0.88	0.14	22,38,43,43	0
6	GOL	B	706	6/6	0.88	0.13	23,39,46,51	0
7	EDO	C	722	4/4	0.88	0.12	38,41,43,52	0
7	EDO	A	718	4/4	0.89	0.12	28,35,38,51	0
7	EDO	C	717	4/4	0.89	0.12	35,41,43,46	0
7	EDO	C	718	4/4	0.89	0.11	26,28,29,31	0
2	CL	B	703	1/1	0.89	0.23	43,43,43,43	0
7	EDO	B	730	4/4	0.90	0.12	23,31,36,40	0
6	GOL	B	708	6/6	0.90	0.12	21,27,37,39	0
7	EDO	B	717	4/4	0.90	0.11	24,26,30,33	0
7	EDO	A	720	4/4	0.90	0.13	23,30,39,44	0
6	GOL	B	711	6/6	0.90	0.11	24,29,36,42	0
7	EDO	A	722	4/4	0.90	0.10	31,37,40,47	0
6	GOL	B	707	6/6	0.90	0.11	20,28,35,37	0
7	EDO	C	715	4/4	0.91	0.11	24,26,26,27	0
6	GOL	C	708	6/6	0.91	0.10	23,27,31,37	0
6	GOL	A	714	6/6	0.91	0.14	20,34,37,39	0
7	EDO	B	724	4/4	0.91	0.10	21,25,25,32	0
7	EDO	B	718	4/4	0.92	0.11	18,27,28,29	0
6	GOL	B	709	6/6	0.92	0.10	18,28,32,38	0
6	GOL	A	710	6/6	0.92	0.10	21,25,32,43	0
6	GOL	C	712	6/6	0.92	0.14	21,33,38,40	0
10	PO4	A	732	5/5	0.92	0.14	25,25,33,35	0
6	GOL	B	710	6/6	0.93	0.12	17,23,26,35	0
7	EDO	C	719	4/4	0.93	0.10	24,30,32,40	0
7	EDO	B	721	4/4	0.93	0.10	21,31,37,39	0
6	GOL	C	703	6/6	0.93	0.12	17,28,33,43	0
6	GOL	A	713	6/6	0.94	0.10	19,29,33,45	0
6	GOL	A	709	6/6	0.94	0.08	16,28,28,34	0
6	GOL	A	707	6/6	0.94	0.11	17,26,30,35	0
6	GOL	A	711	6/6	0.94	0.10	19,23,30,31	0
6	GOL	C	711	6/6	0.94	0.12	19,27,37,41	0
7	EDO	B	723	4/4	0.94	0.12	15,19,32,51	0
6	GOL	A	712	6/6	0.94	0.10	14,22,26,28	0
6	GOL	A	733	6/6	0.94	0.08	16,22,26,29	0
7	EDO	C	724	4/4	0.95	0.09	22,25,30,31	0
7	EDO	C	716	4/4	0.95	0.14	21,29,30,38	0
6	GOL	C	709	6/6	0.95	0.09	16,24,31,41	0
6	GOL	A	734	6/6	0.95	0.12	16,29,37,42	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
6	GOL	B	714	6/6	0.95	0.08	18,24,36,37	0
6	GOL	A	708	6/6	0.96	0.07	12,16,20,32	0
2	CL	A	701	1/1	0.98	0.07	29,29,29,29	0
3	NA	A	702	1/1	0.98	0.06	26,26,26,26	0
2	CL	B	702	1/1	0.98	0.08	26,26,26,26	0
3	NA	B	704	1/1	0.98	0.11	24,24,24,24	0
4	MG	A	704	1/1	0.98	0.05	25,25,25,25	1
2	CL	C	702	1/1	0.99	0.04	23,23,23,23	0
2	CL	B	729	1/1	0.99	0.03	18,18,18,18	1
2	CL	C	701	1/1	1.00	0.02	18,18,18,18	0

6.5 Other polymers [i](#)

There are no such residues in this entry.