



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2026 – 04:42 AM UTC

PDB ID : 5N2C / pdb_00005n2c
Title : Crystal structure of the peptidoglycan-associated lipoprotein from Burkholderia cenocepacia
Authors : Matterazzo, E.; Bolognesi, M.; Gourlay, L.J.
Deposited on : 2017-02-07
Resolution : 1.80 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4-5-2 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

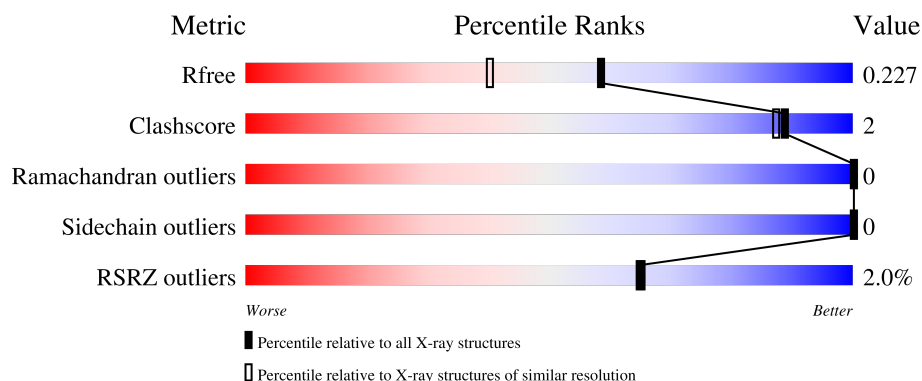
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

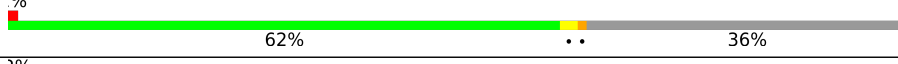
The reported resolution of this entry is 1.80 Å.

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	7662 (1.80-1.80)
Clashscore	190562	8479 (1.80-1.80)
Ramachandran outliers	187476	8391 (1.80-1.80)
Sidechain outliers	187428	8390 (1.80-1.80)
RSRZ outliers	180081	7663 (1.80-1.80)

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	185	
1	B	185	
1	C	185	

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
4	OXL	A	204	-	X	-	-
4	OXL	B	202	-	X	-	-
4	OXL	C	204	-	X	-	-
5	ACT	C	205	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 6002 atoms, of which 2852 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 OmpA family lipoprotein.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	119	Total	C	H	N	O	S	0	4	0
			1874	592	917	174	187	4			
1	B	119	Total	C	H	N	O	S	0	2	0
			1870	590	916	174	185	5			
1	C	117	Total	C	H	N	O	S	0	6	0
			1877	591	923	173	186	4			

There are 99 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-14	MET	-	initiating methionine	UNP B4EDC1
A	-13	HIS	-	expression tag	UNP B4EDC1
A	-12	HIS	-	expression tag	UNP B4EDC1
A	-11	HIS	-	expression tag	UNP B4EDC1
A	-10	HIS	-	expression tag	UNP B4EDC1
A	-9	HIS	-	expression tag	UNP B4EDC1
A	-8	HIS	-	expression tag	UNP B4EDC1
A	-7	GLY	-	expression tag	UNP B4EDC1
A	-6	LYS	-	expression tag	UNP B4EDC1
A	-5	PRO	-	expression tag	UNP B4EDC1
A	-4	ILE	-	expression tag	UNP B4EDC1
A	-3	PRO	-	expression tag	UNP B4EDC1
A	-2	ASN	-	expression tag	UNP B4EDC1
A	-1	PRO	-	expression tag	UNP B4EDC1
A	0	LEU	-	expression tag	UNP B4EDC1
A	1	LEU	-	expression tag	UNP B4EDC1
A	2	GLY	-	expression tag	UNP B4EDC1
A	3	LEU	-	expression tag	UNP B4EDC1
A	4	ASP	-	expression tag	UNP B4EDC1
A	5	SER	-	expression tag	UNP B4EDC1
A	6	THR	-	expression tag	UNP B4EDC1
A	7	GLU	-	expression tag	UNP B4EDC1
A	8	ASN	-	expression tag	UNP B4EDC1

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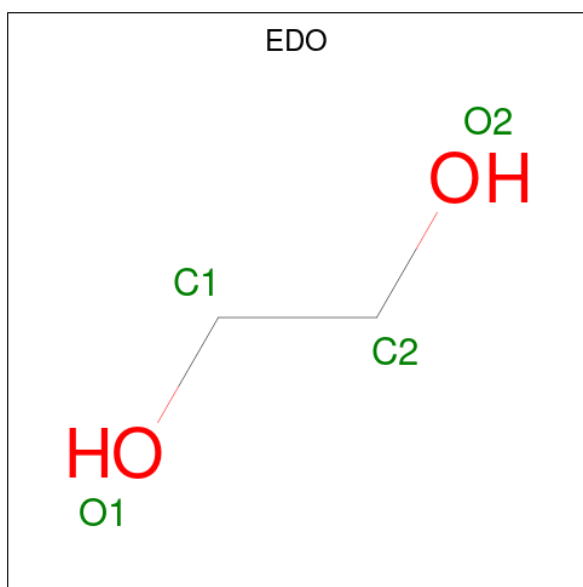
Chain	Residue	Modelled	Actual	Comment	Reference
A	9	LEU	-	expression tag	UNP B4EDC1
A	10	TYR	-	expression tag	UNP B4EDC1
A	11	PHE	-	expression tag	UNP B4EDC1
A	12	GLN	-	expression tag	UNP B4EDC1
A	13	GLY	-	expression tag	UNP B4EDC1
A	14	ILE	-	expression tag	UNP B4EDC1
A	15	ASP	-	expression tag	UNP B4EDC1
A	16	PRO	-	expression tag	UNP B4EDC1
A	17	PHE	-	expression tag	UNP B4EDC1
A	18	THR	-	expression tag	UNP B4EDC1
B	-14	MET	-	initiating methionine	UNP B4EDC1
B	-13	HIS	-	expression tag	UNP B4EDC1
B	-12	HIS	-	expression tag	UNP B4EDC1
B	-11	HIS	-	expression tag	UNP B4EDC1
B	-10	HIS	-	expression tag	UNP B4EDC1
B	-9	HIS	-	expression tag	UNP B4EDC1
B	-8	HIS	-	expression tag	UNP B4EDC1
B	-7	GLY	-	expression tag	UNP B4EDC1
B	-6	LYS	-	expression tag	UNP B4EDC1
B	-5	PRO	-	expression tag	UNP B4EDC1
B	-4	ILE	-	expression tag	UNP B4EDC1
B	-3	PRO	-	expression tag	UNP B4EDC1
B	-2	ASN	-	expression tag	UNP B4EDC1
B	-1	PRO	-	expression tag	UNP B4EDC1
B	0	LEU	-	expression tag	UNP B4EDC1
B	1	LEU	-	expression tag	UNP B4EDC1
B	2	GLY	-	expression tag	UNP B4EDC1
B	3	LEU	-	expression tag	UNP B4EDC1
B	4	ASP	-	expression tag	UNP B4EDC1
B	5	SER	-	expression tag	UNP B4EDC1
B	6	THR	-	expression tag	UNP B4EDC1
B	7	GLU	-	expression tag	UNP B4EDC1
B	8	ASN	-	expression tag	UNP B4EDC1
B	9	LEU	-	expression tag	UNP B4EDC1
B	10	TYR	-	expression tag	UNP B4EDC1
B	11	PHE	-	expression tag	UNP B4EDC1
B	12	GLN	-	expression tag	UNP B4EDC1
B	13	GLY	-	expression tag	UNP B4EDC1
B	14	ILE	-	expression tag	UNP B4EDC1
B	15	ASP	-	expression tag	UNP B4EDC1
B	16	PRO	-	expression tag	UNP B4EDC1
B	17	PHE	-	expression tag	UNP B4EDC1

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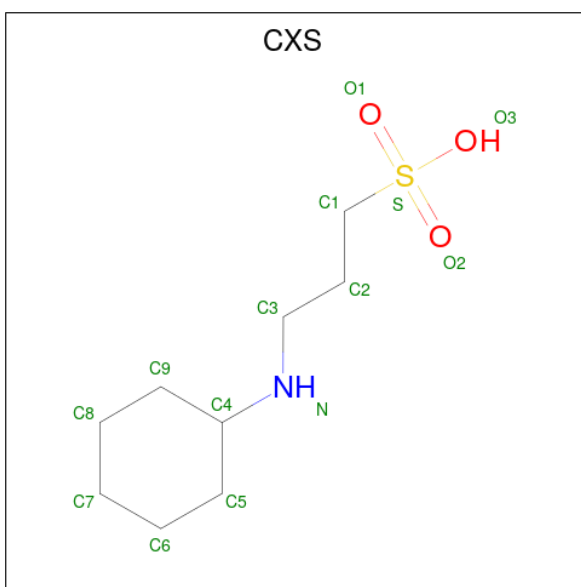
Chain	Residue	Modelled	Actual	Comment	Reference
B	18	THR	-	expression tag	UNP B4EDC1
C	-14	MET	-	initiating methionine	UNP B4EDC1
C	-13	HIS	-	expression tag	UNP B4EDC1
C	-12	HIS	-	expression tag	UNP B4EDC1
C	-11	HIS	-	expression tag	UNP B4EDC1
C	-10	HIS	-	expression tag	UNP B4EDC1
C	-9	HIS	-	expression tag	UNP B4EDC1
C	-8	HIS	-	expression tag	UNP B4EDC1
C	-7	GLY	-	expression tag	UNP B4EDC1
C	-6	LYS	-	expression tag	UNP B4EDC1
C	-5	PRO	-	expression tag	UNP B4EDC1
C	-4	ILE	-	expression tag	UNP B4EDC1
C	-3	PRO	-	expression tag	UNP B4EDC1
C	-2	ASN	-	expression tag	UNP B4EDC1
C	-1	PRO	-	expression tag	UNP B4EDC1
C	0	LEU	-	expression tag	UNP B4EDC1
C	1	LEU	-	expression tag	UNP B4EDC1
C	2	GLY	-	expression tag	UNP B4EDC1
C	3	LEU	-	expression tag	UNP B4EDC1
C	4	ASP	-	expression tag	UNP B4EDC1
C	5	SER	-	expression tag	UNP B4EDC1
C	6	THR	-	expression tag	UNP B4EDC1
C	7	GLU	-	expression tag	UNP B4EDC1
C	8	ASN	-	expression tag	UNP B4EDC1
C	9	LEU	-	expression tag	UNP B4EDC1
C	10	TYR	-	expression tag	UNP B4EDC1
C	11	PHE	-	expression tag	UNP B4EDC1
C	12	GLN	-	expression tag	UNP B4EDC1
C	13	GLY	-	expression tag	UNP B4EDC1
C	14	ILE	-	expression tag	UNP B4EDC1
C	15	ASP	-	expression tag	UNP B4EDC1
C	16	PRO	-	expression tag	UNP B4EDC1
C	17	PHE	-	expression tag	UNP B4EDC1
C	18	THR	-	expression tag	UNP B4EDC1

- Molecule 2 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C₂H₆O₂).



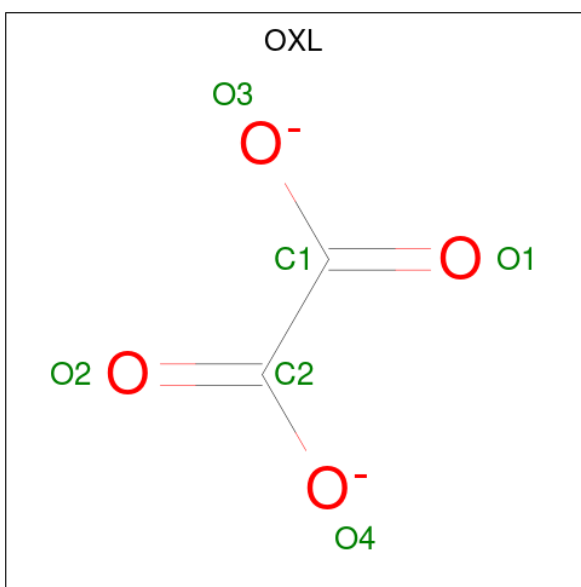
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	A	1	Total	C	H	O	0	0
			10	2	6	2		
2	B	1	Total	C	H	O	0	0
			10	2	6	2		
2	C	1	Total	C	H	O	0	0
			10	2	6	2		
2	C	1	Total	C	H	O	0	0
			10	2	6	2		

- Molecule 3 is 3-CYCLOHEXYL-1-PROPYLSULFONIC ACID (CCD ID: CXS) (formula: $C_9H_{19}NO_3S$).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	H	N	O	S	0	0
			32	9	18	1	3	1		
3	A	1	Total	C	H	N	O	S	0	0
			32	9	18	1	3	1		
3	C	1	Total	C	H	N	O	S	0	0
			32	9	18	1	3	1		

- Molecule 4 is OXALATE ION (CCD ID: OXL) (formula: C_2O_4).



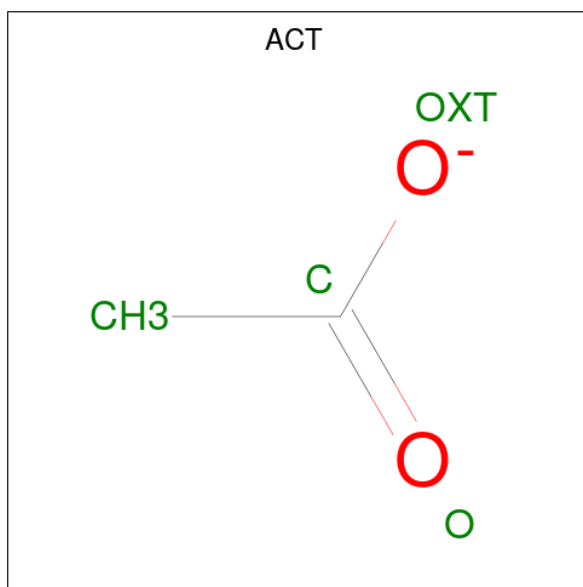
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			6	2	4		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			6	2	4		
4	C	1	Total	C	O	0	0
			6	2	4		

- Molecule 5 is ACETATE ION (CCD ID: ACT) (formula: $C_2H_3O_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	H	O	0	0
			7	2	3	2		
5	B	1	Total	C	H	O	0	0
			7	2	3	2		
5	C	1	Total	C	H	O	0	0
			7	2	3	2		
5	C	1	Total	C	H	O	0	0
			7	2	3	2		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	68	Total	O	0	0
			68	68		
6	B	53	Total	O	0	0
			53	53		
6	C	68	Total	O	0	0
			68	68		

i

- Molecule 1: Putative OmpA family lipoprotein



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	70.43Å 104.53Å 110.44Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	37.96 – 1.80 37.96 – 1.80	Depositor EDS
% Data completeness (in resolution range)	100.0 (37.96-1.80) 98.2 (37.96-1.80)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.18 (at 1.81Å)	Xtriage
Refinement program	PHENIX (1.10.1_2155: ???)	Depositor
R, R_{free}	0.178 , 0.219 0.187 , 0.227	Depositor DCC
R_{free} test set	1905 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	11.9	Xtriage
Anisotropy	0.408	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.41 , 38.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	6002	wwPDB-VP
Average B, all atoms (Å ²)	19.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.70% 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: OXL, CXS, EDO, ACT

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	0.51	0/986	0.64	0/1333
1	B	0.58	0/979	0.69	1/1322 (0.1%)
1	C	0.48	0/994	0.57	0/1341
All	All	0.52	0/2959	0.63	1/3996 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	58	ASN	CB-CA-C	6.63	121.77	110.56

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	957	917	917	1	2
1	B	954	916	917	2	2
1	C	954	923	916	8	0
2	A	8	12	12	0	0
2	B	4	6	6	0	0
2	C	8	12	12	2	0
3	A	28	36	37	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	14	18	19	0	0
4	A	6	0	0	0	0
4	B	6	0	0	0	0
4	C	6	0	0	0	0
5	A	4	3	3	1	0
5	B	4	3	3	0	0
5	C	8	6	6	4	0
6	A	68	0	0	0	0
6	B	53	0	0	1	0
6	C	68	0	0	0	0
All	All	3150	2852	2848	11	2

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 2.

All (11) 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:125:ARG:NH1	6:B:301:HOH:O	2.26	0.67
1:B:52:ASP:OD2	1:B:96:ARG:NH2	2.35	0.58
1:C:95:GLN:H	5:C:205:ACT:H2	1.69	0.58
1:C:110:SER:H	2:C:201:EDO:H12	1.78	0.49
1:C:93:HIS:HA	5:C:205:ACT:H1	1.99	0.45
1:A:125:ARG:HE	5:A:205:ACT:H3	1.81	0.45
1:C:110:SER:H	2:C:201:EDO:C1	2.29	0.45
1:C:63:LYS:O	1:C:82[A]:LEU:HD11	2.20	0.42
1:C:80:GLN:O	1:C:84:GLN:HG3	2.20	0.42
1:C:93:HIS:CA	5:C:205:ACT:H1	2.50	0.41
1:C:95:GLN:H	5:C:205:ACT:CH3	2.33	0.41

All (2) 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)
1:A:58:ASN:CB	1:B:58:ASN:HD21[3_454]	1.19	0.41
1:A:58:ASN:CB	1:B:58:ASN:ND2[3_454]	2.04	0.16

5.3 Torsion angles

5.3.1 Protein backbone

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	120/185 (65%)	120 (100%)	0	0	100	100
1	B	119/185 (64%)	118 (99%)	1 (1%)	0	100	100
1	C	119/185 (64%)	118 (99%)	1 (1%)	0	100	100
All	All	358/555 (64%)	356 (99%)	2 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	102/155 (66%)	102 (100%)	0	100	100
1	B	101/155 (65%)	101 (100%)	0	100	100
1	C	104/155 (67%)	104 (100%)	0	100	100
All	All	307/465 (66%)	307 (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. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	169	GLN
1	B	55	ASN
1	B	169	GLN

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Mol	Chain	Res	Type
1	B	170	GLN
1	C	55	ASN
1	C	85	GLN
1	C	113	ASN
1	C	118	GLN
1	C	169	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

15 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	$\# Z > 2$
5	ACT	C	205	-	3,3,3	0.96	0	3,3,3	1.32	0
3	CXS	C	203	-	14,14,14	1.16	3 (21%)	18,18,18	1.60	4 (22%)
2	EDO	B	201	-	3,3,3	0.39	0	2,2,2	0.44	0
5	ACT	A	205	-	3,3,3	0.76	0	3,3,3	1.27	0
5	ACT	C	206	-	3,3,3	0.82	0	3,3,3	1.29	0
5	ACT	B	203	-	3,3,3	0.75	0	3,3,3	1.29	0
3	CXS	A	203	-	14,14,14	1.29	1 (7%)	18,18,18	2.88	8 (44%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	OXL	B	202	-	5,5,5	1.79	1 (20%)	6,6,6	2.87	3 (50%)
2	EDO	A	201	-	3,3,3	0.42	0	2,2,2	0.40	0
3	CXS	A	202	-	14,14,14	1.43	3 (21%)	18,18,18	2.39	6 (33%)
2	EDO	C	201	-	3,3,3	0.40	0	2,2,2	0.34	0
2	EDO	A	206	-	3,3,3	0.42	0	2,2,2	0.78	0
4	OXL	A	204	-	5,5,5	1.63	2 (40%)	6,6,6	2.71	2 (33%)
2	EDO	C	202	-	3,3,3	0.41	0	2,2,2	0.34	0
4	OXL	C	204	-	5,5,5	1.43	1 (20%)	6,6,6	1.90	2 (33%)

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	CXS	C	203	-	-	4/8/16/16	0/1/1/1
2	EDO	B	201	-	-	0/1/1/1	-
3	CXS	A	203	-	-	7/8/16/16	0/1/1/1
4	OXL	B	202	-	-	4/4/4/4	-
2	EDO	A	201	-	-	1/1/1/1	-
3	CXS	A	202	-	-	2/8/16/16	0/1/1/1
2	EDO	C	201	-	-	1/1/1/1	-
2	EDO	A	206	-	-	0/1/1/1	-
4	OXL	A	204	-	-	4/4/4/4	-
2	EDO	C	202	-	-	0/1/1/1	-
4	OXL	C	204	-	-	4/4/4/4	-

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	203	CXS	C1-S	4.23	1.83	1.77
3	A	202	CXS	C1-S	3.53	1.82	1.77
4	B	202	OXL	O2-C2	3.07	1.30	1.22
4	A	204	OXL	O1-C1	2.71	1.29	1.22
3	C	203	CXS	O2-S	2.45	1.52	1.45
3	C	203	CXS	C1-S	2.37	1.80	1.77
3	A	202	CXS	O2-S	2.37	1.51	1.45
3	A	202	CXS	O1-S	2.30	1.51	1.45
3	C	203	CXS	O1-S	2.11	1.51	1.45
4	C	204	OXL	O2-C2	2.08	1.27	1.22

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	204	OXL	O2-C2	2.08	1.27	1.22

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	203	CXS	O1-S-C1	7.02	117.34	106.73
4	B	202	OXL	O3-C1-C2	5.91	124.31	112.83
3	A	202	CXS	C8-C9-C4	5.36	120.71	111.09
3	A	203	CXS	O3-S-C1	5.36	116.49	106.00
4	A	204	OXL	O4-C2-C1	5.03	122.59	112.83
3	A	203	CXS	O2-S-O1	-4.59	98.88	113.82
3	A	202	CXS	O3-S-O1	-4.24	100.78	111.40
3	A	202	CXS	O1-S-C1	3.69	112.31	106.73
4	C	204	OXL	O3-C1-C2	3.45	119.52	112.83
3	A	202	CXS	C9-C4-C5	3.39	116.66	110.80
4	A	204	OXL	O3-C1-C2	3.39	119.40	112.83
3	A	202	CXS	O2-S-C1	3.28	111.69	106.73
3	A	203	CXS	C2-C1-S	3.25	118.22	113.25
3	C	203	CXS	O2-S-C1	3.24	111.62	106.73
3	C	203	CXS	O2-S-O1	-3.22	103.34	113.82
3	C	203	CXS	O1-S-C1	3.13	111.45	106.73
3	A	203	CXS	O2-S-C1	-2.87	102.39	106.73
3	A	203	CXS	C6-C5-C4	2.73	115.98	111.09
3	A	203	CXS	C8-C9-C4	2.60	115.76	111.09
3	A	202	CXS	C6-C5-C4	2.59	115.74	111.09
3	A	203	CXS	O3-S-O1	-2.57	104.97	111.40
4	C	204	OXL	O4-C2-C1	2.54	117.76	112.83
4	B	202	OXL	O4-C2-C1	2.42	117.52	112.83
4	B	202	OXL	O3-C1-O1	-2.19	118.69	123.90
3	C	203	CXS	C3-C2-C1	-2.16	105.81	112.72

There are no chirality outliers.

All (27) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	C	203	CXS	C2-C1-S-O1
3	C	203	CXS	C2-C1-S-O3
4	A	204	OXL	O3-C1-C2-O4
4	A	204	OXL	O3-C1-C2-O2
3	A	203	CXS	C2-C1-S-O3
3	A	203	CXS	C9-C4-N-C3
3	A	203	CXS	S-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
4	A	204	OXL	O1-C1-C2-O2
4	B	202	OXL	O3-C1-C2-O4
3	C	203	CXS	C1-C2-C3-N
4	B	202	OXL	O1-C1-C2-O4
3	A	203	CXS	C2-C1-S-O1
3	C	203	CXS	C2-C1-S-O2
4	C	204	OXL	O3-C1-C2-O4
4	B	202	OXL	O1-C1-C2-O2
4	C	204	OXL	O1-C1-C2-O2
2	C	201	EDO	O1-C1-C2-O2
4	A	204	OXL	O1-C1-C2-O4
4	C	204	OXL	O1-C1-C2-O4
3	A	203	CXS	C2-C1-S-O2
3	A	202	CXS	C2-C1-S-O3
4	C	204	OXL	O3-C1-C2-O2
3	A	203	CXS	C2-C3-N-C4
3	A	203	CXS	C5-C4-N-C3
2	A	201	EDO	O1-C1-C2-O2
4	B	202	OXL	O3-C1-C2-O2
3	A	202	CXS	C5-C4-N-C3

There are no ring outliers.

3 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	205	ACT	4	0
5	A	205	ACT	1	0
2	C	201	EDO	2	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	119/185 (64%)	-0.41	2 (1%) 69 69	6, 13, 28, 36	3 (2%)
1	B	119/185 (64%)	-0.08	2 (1%) 69 69	8, 20, 36, 43	2 (1%)
1	C	117/185 (63%)	-0.16	3 (2%) 57 57	7, 17, 37, 56	5 (4%)
All	All	355/555 (63%)	-0.21	7 (1%) 65 65	6, 16, 35, 56	10 (2%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	52	ASP	6.0
1	B	58	ASN	5.4
1	B	57	PRO	2.4
1	C	53	PRO	2.4
1	A	57	PRO	2.3
1	A	58	ASN	2.3
1	C	57	PRO	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 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(Å ²)	Q<0.9
3	CXS	A	203	14/14	0.78	0.29	41,67,92,98	0
5	ACT	B	203	4/4	0.78	0.15	29,35,37,51	0
2	EDO	A	206	4/4	0.79	0.16	31,37,40,46	0
2	EDO	C	201	4/4	0.80	0.16	27,40,52,52	0
3	CXS	A	202	14/14	0.86	0.41	19,37,63,74	32
5	ACT	C	206	4/4	0.86	0.13	29,35,36,40	0
5	ACT	A	205	4/4	0.87	0.12	28,33,44,48	0
3	CXS	C	203	14/14	0.88	0.11	16,25,40,47	0
2	EDO	A	201	4/4	0.90	0.11	25,31,37,39	0
5	ACT	C	205	4/4	0.92	0.14	8,10,26,33	0
2	EDO	C	202	4/4	0.93	0.10	22,31,36,43	0
2	EDO	B	201	4/4	0.96	0.07	13,16,23,23	0
4	OXL	A	204	6/6	0.96	0.07	6,10,15,18	0
4	OXL	B	202	6/6	0.96	0.06	10,11,19,25	0
4	OXL	C	204	6/6	0.96	0.08	10,12,15,30	0

6.5 Other polymers [i](#)

There are no such residues in this entry.