



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 02:28 PM UTC

PDB ID : 7K67 / pdb_00007k67
Title : Structure of the PTP-like myo-inositol phosphatase from *Desulfovibrio magneticus*
Authors : Cleland, C.P.; Van Herk, P.H.; Mosimann, S.C.
Deposited on : 2020-09-18
Resolution : 1.60 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 ⓘ 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

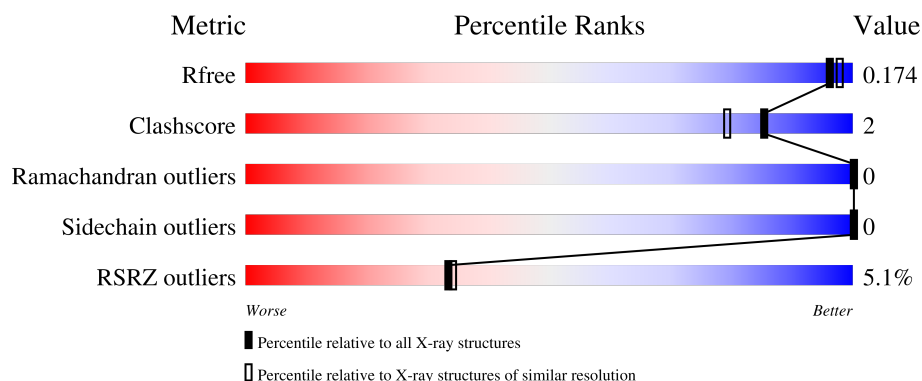
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.60 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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	4673 (1.60-1.60)
Clashscore	190562	4931 (1.60-1.60)
Ramachandran outliers	187476	4831 (1.60-1.60)
Sidechain outliers	187428	4830 (1.60-1.60)
RSRZ outliers	180081	4672 (1.60-1.60)

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 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	310	5% 83% 7% 10%
1	B	310	5% 84% • 12%
1	C	310	4% 84% • 13%
1	D	310	5% 85% • 11%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 18451 atoms, of which 8511 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 Myo-inositol phosphohydrolase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	278	Total	C	H	N	O	S	0	7	0
			4321	1354	2156	416	391	4			
1	B	272	Total	C	H	N	O	S	0	5	0
			4208	1322	2101	402	379	4			
1	C	271	Total	C	H	N	O	S	0	3	0
			4150	1306	2071	395	374	4			
1	D	277	Total	C	H	N	O	S	0	7	0
			4299	1348	2143	414	390	4			

There are 88 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	22	MET	-	initiating methionine	UNP C4XPJ9
A	23	GLY	-	expression tag	UNP C4XPJ9
A	24	SER	-	expression tag	UNP C4XPJ9
A	25	SER	-	expression tag	UNP C4XPJ9
A	26	HIS	-	expression tag	UNP C4XPJ9
A	27	HIS	-	expression tag	UNP C4XPJ9
A	28	HIS	-	expression tag	UNP C4XPJ9
A	29	HIS	-	expression tag	UNP C4XPJ9
A	30	HIS	-	expression tag	UNP C4XPJ9
A	31	HIS	-	expression tag	UNP C4XPJ9
A	32	SER	-	expression tag	UNP C4XPJ9
A	33	SER	-	expression tag	UNP C4XPJ9
A	34	GLY	-	expression tag	UNP C4XPJ9
A	35	LEU	-	expression tag	UNP C4XPJ9
A	36	VAL	-	expression tag	UNP C4XPJ9
A	37	PRO	-	expression tag	UNP C4XPJ9
A	38	ARG	-	expression tag	UNP C4XPJ9
A	39	GLY	-	expression tag	UNP C4XPJ9
A	40	SER	-	expression tag	UNP C4XPJ9
A	41	HIS	-	expression tag	UNP C4XPJ9
A	42	MET	-	expression tag	UNP C4XPJ9

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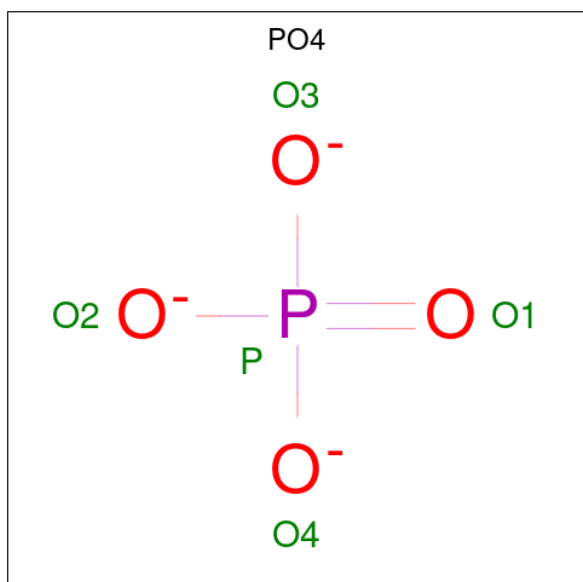
Chain	Residue	Modelled	Actual	Comment	Reference
A	241	SER	CYS	engineered mutation	UNP C4XPJ9
B	22	MET	-	initiating methionine	UNP C4XPJ9
B	23	GLY	-	expression tag	UNP C4XPJ9
B	24	SER	-	expression tag	UNP C4XPJ9
B	25	SER	-	expression tag	UNP C4XPJ9
B	26	HIS	-	expression tag	UNP C4XPJ9
B	27	HIS	-	expression tag	UNP C4XPJ9
B	28	HIS	-	expression tag	UNP C4XPJ9
B	29	HIS	-	expression tag	UNP C4XPJ9
B	30	HIS	-	expression tag	UNP C4XPJ9
B	31	HIS	-	expression tag	UNP C4XPJ9
B	32	SER	-	expression tag	UNP C4XPJ9
B	33	SER	-	expression tag	UNP C4XPJ9
B	34	GLY	-	expression tag	UNP C4XPJ9
B	35	LEU	-	expression tag	UNP C4XPJ9
B	36	VAL	-	expression tag	UNP C4XPJ9
B	37	PRO	-	expression tag	UNP C4XPJ9
B	38	ARG	-	expression tag	UNP C4XPJ9
B	39	GLY	-	expression tag	UNP C4XPJ9
B	40	SER	-	expression tag	UNP C4XPJ9
B	41	HIS	-	expression tag	UNP C4XPJ9
B	42	MET	-	expression tag	UNP C4XPJ9
B	241	SER	CYS	engineered mutation	UNP C4XPJ9
C	22	MET	-	initiating methionine	UNP C4XPJ9
C	23	GLY	-	expression tag	UNP C4XPJ9
C	24	SER	-	expression tag	UNP C4XPJ9
C	25	SER	-	expression tag	UNP C4XPJ9
C	26	HIS	-	expression tag	UNP C4XPJ9
C	27	HIS	-	expression tag	UNP C4XPJ9
C	28	HIS	-	expression tag	UNP C4XPJ9
C	29	HIS	-	expression tag	UNP C4XPJ9
C	30	HIS	-	expression tag	UNP C4XPJ9
C	31	HIS	-	expression tag	UNP C4XPJ9
C	32	SER	-	expression tag	UNP C4XPJ9
C	33	SER	-	expression tag	UNP C4XPJ9
C	34	GLY	-	expression tag	UNP C4XPJ9
C	35	LEU	-	expression tag	UNP C4XPJ9
C	36	VAL	-	expression tag	UNP C4XPJ9
C	37	PRO	-	expression tag	UNP C4XPJ9
C	38	ARG	-	expression tag	UNP C4XPJ9
C	39	GLY	-	expression tag	UNP C4XPJ9
C	40	SER	-	expression tag	UNP C4XPJ9

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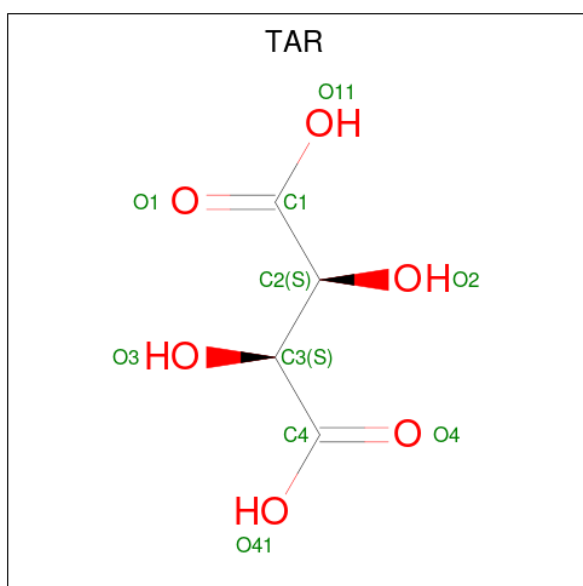
Chain	Residue	Modelled	Actual	Comment	Reference
C	41	HIS	-	expression tag	UNP C4XPJ9
C	42	MET	-	expression tag	UNP C4XPJ9
C	241	SER	CYS	engineered mutation	UNP C4XPJ9
D	22	MET	-	initiating methionine	UNP C4XPJ9
D	23	GLY	-	expression tag	UNP C4XPJ9
D	24	SER	-	expression tag	UNP C4XPJ9
D	25	SER	-	expression tag	UNP C4XPJ9
D	26	HIS	-	expression tag	UNP C4XPJ9
D	27	HIS	-	expression tag	UNP C4XPJ9
D	28	HIS	-	expression tag	UNP C4XPJ9
D	29	HIS	-	expression tag	UNP C4XPJ9
D	30	HIS	-	expression tag	UNP C4XPJ9
D	31	HIS	-	expression tag	UNP C4XPJ9
D	32	SER	-	expression tag	UNP C4XPJ9
D	33	SER	-	expression tag	UNP C4XPJ9
D	34	GLY	-	expression tag	UNP C4XPJ9
D	35	LEU	-	expression tag	UNP C4XPJ9
D	36	VAL	-	expression tag	UNP C4XPJ9
D	37	PRO	-	expression tag	UNP C4XPJ9
D	38	ARG	-	expression tag	UNP C4XPJ9
D	39	GLY	-	expression tag	UNP C4XPJ9
D	40	SER	-	expression tag	UNP C4XPJ9
D	41	HIS	-	expression tag	UNP C4XPJ9
D	42	MET	-	expression tag	UNP C4XPJ9
D	241	SER	CYS	engineered mutation	UNP C4XPJ9

- Molecule 2 is PHOSPHATE ION (CCD ID: PO4) (formula: O₄P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	P	0	0
			5	4	1		
2	B	1	Total	O	P	0	0
			5	4	1		
2	C	1	Total	O	P	0	0
			5	4	1		
2	D	1	Total	O	P	0	0
			5	4	1		

- Molecule 3 is D(-)-TARTARIC ACID (CCD ID: TAR) (formula: $C_4H_6O_6$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	0	1
			28	8	8	12		
3	B	1	Total	C	H	O	0	1
			28	8	8	12		
3	C	1	Total	C	H	O	0	0
			14	4	4	6		
3	D	1	Total	C	H	O	0	0
			14	4	4	6		

- Molecule 4 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	C	1	Total	C	H	O	0	0
			14	3	8	3		
4	D	1	Total	C	H	O	0	0
			14	3	8	3		

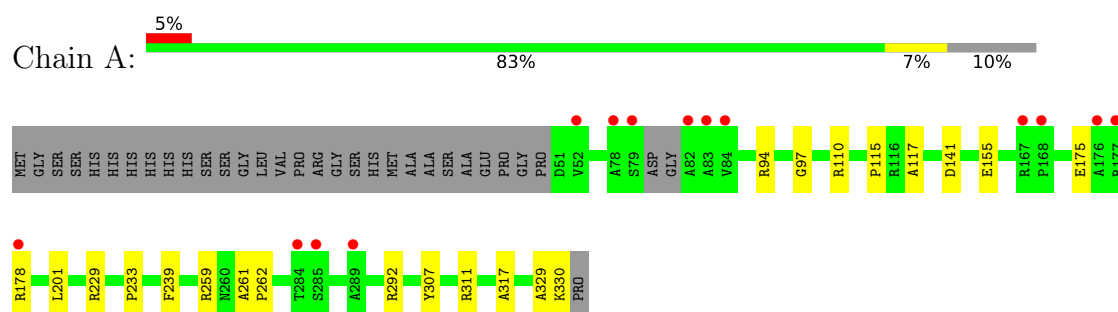
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	336	Total	O	0	0
			336	336		
5	B	339	Total	O	0	0
			339	339		
5	C	332	Total	O	0	0
			332	332		
5	D	334	Total	O	0	0
			334	334		

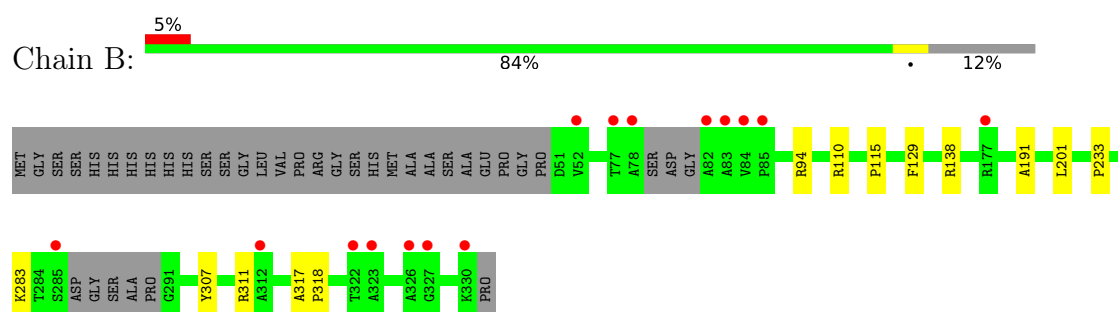
3 Residue-property plots [i](#)

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.

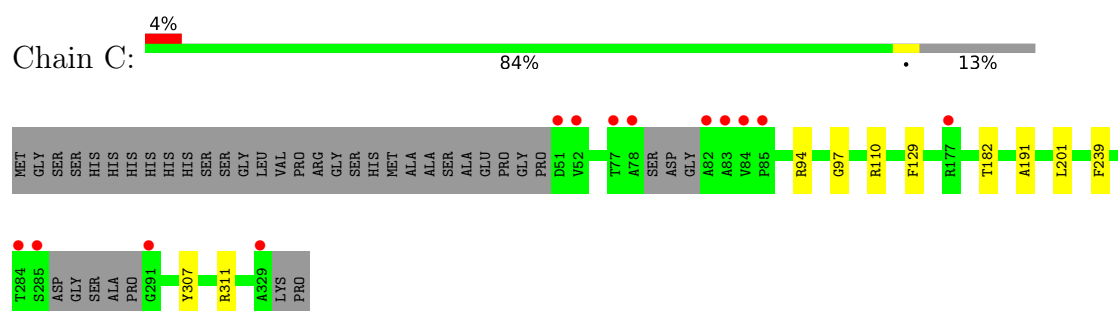
- Molecule 1: Myo-inositol phosphohydrolase



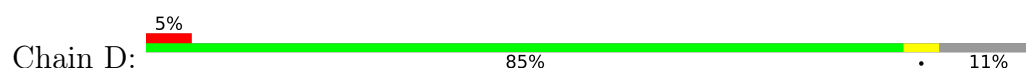
- Molecule 1: Myo-inositol phosphohydrolase

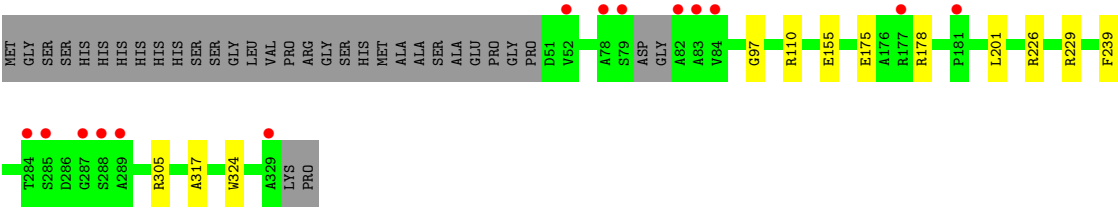


- Molecule 1: Myo-inositol phosphohydrolase



- Molecule 1: Myo-inositol phosphohydrolase





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	70.01Å 97.32Å 104.10Å 90.00° 92.29° 90.00°	Depositor
Resolution (Å)	71.07 – 1.60 71.07 – 1.60	Depositor EDS
% Data completeness (in resolution range)	96.0 (71.07-1.60) 91.6 (71.07-1.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.79 (at 1.60Å)	Xtriage
Refinement program	PHENIX 1.13_2998	Depositor
R, R_{free}	0.156 , 0.170 0.157 , 0.174	Depositor DCC
R_{free} test set	1765 reflections (0.96%)	wwPDB-VP
Wilson B-factor (Å ²)	18.3	Xtriage
Anisotropy	0.368	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.40 , 40.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.074 for h,-k,-l	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	18451	wwPDB-VP
Average B, all atoms (Å ²)	28.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.90% 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: GOL, TAR, 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	0.45	0/2213	0.52	0/3002
1	B	0.44	0/2153	0.52	0/2920
1	C	0.43	0/2125	0.52	0/2884
1	D	0.44	0/2204	0.51	0/2991
All	All	0.44	0/8695	0.52	0/11797

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	2165	2156	2146	13	0
1	B	2107	2101	2092	8	0
1	C	2079	2071	2064	6	0
1	D	2156	2143	2133	8	0
2	A	5	0	0	1	0
2	B	5	0	0	1	0
2	C	5	0	0	0	0
2	D	5	0	0	1	0
3	A	20	8	8	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	20	8	8	0	0
3	C	10	4	4	0	0
3	D	10	4	4	0	0
4	C	6	8	8	0	0
4	D	6	8	8	1	0
5	A	336	0	0	5	2
5	B	339	0	0	4	1
5	C	332	0	0	2	2
5	D	334	0	0	4	1
All	All	9940	8511	8475	38	3

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 (38) 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)
2:A:401:PO4:O3	5:A:501:HOH:O	2.07	0.72
2:D:401:PO4:O3	5:D:501:HOH:O	2.07	0.70
1:B:115:PRO:O	5:B:501:HOH:O	2.12	0.67
1:A:115:PRO:O	5:A:502:HOH:O	2.13	0.65
2:B:401:PO4:O2	5:B:502:HOH:O	2.14	0.65
1:D:226[B]:ARG:NH2	5:D:504:HOH:O	2.33	0.61
1:C:182:THR:OG1	5:C:501:HOH:O	2.16	0.60
1:B:283:LYS:O	5:B:503:HOH:O	2.16	0.58
1:A:141[B]:ASP:OD1	1:A:292[B]:ARG:NH2	2.38	0.55
1:C:94[B]:ARG:NE	5:C:509:HOH:O	2.43	0.52
1:A:259[A]:ARG:NH2	5:A:510:HOH:O	2.43	0.51
1:D:175:GLU:OE1	1:D:178:ARG:NH1	2.44	0.51
1:B:138[B]:ARG:NH2	5:B:504:HOH:O	2.17	0.50
1:A:155[A]:GLU:OE2	5:A:503:HOH:O	2.20	0.49
1:A:94[B]:ARG:CZ	1:A:233:PRO:O	2.60	0.48
1:A:229[A]:ARG:CZ	1:A:317:ALA:HB2	2.43	0.48
1:D:110:ARG:HD3	1:D:201:LEU:HB3	1.95	0.48
1:A:329:ALA:O	1:A:330:LYS:HB2	2.15	0.47
1:C:110:ARG:HD3	1:C:201:LEU:HB3	1.97	0.47
1:D:155[B]:GLU:OE2	5:D:502:HOH:O	2.20	0.46
1:B:94[A]:ARG:CZ	1:B:233:PRO:O	2.64	0.45
1:A:97:GLY:HA2	1:A:239:PHE:O	2.17	0.45
1:D:305:ARG:NH1	5:D:511:HOH:O	2.49	0.45
1:B:110:ARG:HD3	1:B:201:LEU:HB3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:97:GLY:HA2	1:D:239:PHE:O	2.18	0.43
1:D:229:ARG:CZ	1:D:317:ALA:HB2	2.48	0.43
1:B:129:PHE:O	1:B:191:ALA:HA	2.19	0.43
1:C:97:GLY:HA2	1:C:239:PHE:O	2.19	0.43
1:A:175:GLU:OE1	1:A:178:ARG:NH1	2.52	0.43
1:A:117:ALA:O	5:A:504:HOH:O	2.21	0.42
1:B:307:TYR:CE2	1:B:311:ARG:HD2	2.55	0.42
1:B:317:ALA:HB1	1:B:318:PRO:HA	2.02	0.42
1:C:307:TYR:CE2	1:C:311:ARG:HD2	2.56	0.41
1:A:261:ALA:N	1:A:262:PRO:CD	2.84	0.41
1:A:307:TYR:CE2	1:A:311:ARG:HD2	2.56	0.41
1:A:110:ARG:HD3	1:A:201:LEU:HB3	2.02	0.40
1:D:324:TRP:CZ2	4:D:403:GOL:H2	2.56	0.40
1:C:129:PHE:O	1:C:191:ALA:HA	2.22	0.40

All (3) 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)
5:A:533:HOH:O	5:C:594:HOH:O[2_646]	1.89	0.31
5:A:733:HOH:O	5:C:684:HOH:O[2_646]	2.13	0.07
5:B:626:HOH:O	5:D:701:HOH:O[2_656]	2.17	0.03

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	281/310 (91%)	277 (99%)	4 (1%)	0	100	100
1	B	271/310 (87%)	266 (98%)	5 (2%)	0	100	100
1	C	268/310 (86%)	264 (98%)	4 (2%)	0	100	100
1	D	280/310 (90%)	276 (99%)	4 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	1100/1240 (89%)	1083 (98%)	17 (2%)	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	215/232 (93%)	215 (100%)	0	100	100
1	B	209/232 (90%)	209 (100%)	0	100	100
1	C	206/232 (89%)	206 (100%)	0	100	100
1	D	214/232 (92%)	214 (100%)	0	100	100
All	All	844/928 (91%)	844 (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 (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	67	HIS
1	A	298	GLN
1	C	67	HIS
1	C	273	GLN
1	C	298	GLN
1	D	298	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 [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

12 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
3	TAR	A	402[A]	-	9,9,9	1.29	0	12,12,12	1.18	1 (8%)
3	TAR	A	402[B]	-	9,9,9	1.36	1 (11%)	12,12,12	1.06	0
2	PO4	A	401	-	4,4,4	0.97	0	6,6,6	0.76	0
4	GOL	D	403	-	5,5,5	0.80	0	5,5,5	0.98	0
2	PO4	B	401	-	4,4,4	1.03	0	6,6,6	0.84	0
2	PO4	C	401	-	4,4,4	0.99	0	6,6,6	0.33	0
2	PO4	D	401	-	4,4,4	1.11	0	6,6,6	0.92	0
3	TAR	D	402	-	9,9,9	0.90	0	12,12,12	2.16	6 (50%)
3	TAR	C	402	-	9,9,9	1.34	1 (11%)	12,12,12	1.15	0
3	TAR	B	402[A]	-	9,9,9	1.14	0	12,12,12	1.28	2 (16%)
3	TAR	B	402[B]	-	9,9,9	1.23	0	12,12,12	0.99	0
4	GOL	C	403	-	5,5,5	0.86	0	5,5,5	1.08	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	TAR	A	402[A]	-	-	6/12/12/12	-
3	TAR	A	402[B]	-	-	4/12/12/12	-
4	GOL	D	403	-	-	0/4/4/4	-
3	TAR	D	402	-	-	4/12/12/12	-
3	TAR	C	402	-	-	4/12/12/12	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	TAR	B	402[A]	-	-	4/12/12/12	-
3	TAR	B	402[B]	-	-	4/12/12/12	-
4	GOL	C	403	-	-	2/4/4/4	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	402	TAR	O41-C4	-2.22	1.23	1.30
3	A	402[B]	TAR	C2-C1	-2.20	1.49	1.52

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	402	TAR	C2-C3-C4	-3.12	102.90	109.82
3	D	402	TAR	O3-C3-C4	3.03	117.18	110.69
3	D	402	TAR	O11-C1-C2	2.96	121.53	113.31
3	D	402	TAR	O41-C4-C3	2.86	121.25	113.31
3	D	402	TAR	O1-C1-C2	-2.84	114.06	121.62
3	A	402[A]	TAR	C3-C2-C1	-2.43	104.44	109.82
3	B	402[A]	TAR	O11-C1-C2	2.22	119.47	113.31
3	B	402[A]	TAR	O41-C4-C3	2.04	118.99	113.31
3	D	402	TAR	O4-C4-C3	-2.02	116.24	121.62

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	402[B]	TAR	O3-C3-C4-O4
3	A	402[B]	TAR	O3-C3-C4-O41
3	A	402[A]	TAR	O3-C3-C4-O4
3	A	402[A]	TAR	O3-C3-C4-O41
3	A	402[B]	TAR	O1-C1-C2-O2
3	A	402[B]	TAR	O11-C1-C2-O2
3	B	402[A]	TAR	O3-C3-C4-O4
3	B	402[A]	TAR	O3-C3-C4-O41
3	C	402	TAR	O3-C3-C4-O4
3	C	402	TAR	O3-C3-C4-O41
3	D	402	TAR	O3-C3-C4-O4
3	D	402	TAR	O3-C3-C4-O41
3	B	402[B]	TAR	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
3	C	402	TAR	O1-C1-C2-O2
3	C	402	TAR	O11-C1-C2-O2
3	B	402[A]	TAR	O1-C1-C2-O2
3	B	402[A]	TAR	O11-C1-C2-O2
3	B	402[B]	TAR	O11-C1-C2-O2
3	B	402[B]	TAR	O3-C3-C4-O4
3	B	402[B]	TAR	O3-C3-C4-O41
3	D	402	TAR	O1-C1-C2-O2
3	D	402	TAR	O11-C1-C2-O2
4	C	403	GOL	O1-C1-C2-C3
3	A	402[A]	TAR	O1-C1-C2-O2
3	A	402[A]	TAR	O11-C1-C2-O2
4	C	403	GOL	O1-C1-C2-O2
3	A	402[A]	TAR	O1-C1-C2-C3
3	A	402[A]	TAR	O11-C1-C2-C3

There are no ring outliers.

4 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	PO4	1	0
4	D	403	GOL	1	0
2	B	401	PO4	1	0
2	D	401	PO4	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	278/310 (89%)	-0.11	14 (5%) 34 35	10, 23, 60, 95	7 (2%)
1	B	272/310 (87%)	-0.15	15 (5%) 30 31	11, 24, 49, 96	5 (1%)
1	C	271/310 (87%)	-0.16	13 (4%) 35 37	10, 24, 55, 89	3 (1%)
1	D	277/310 (89%)	-0.19	14 (5%) 33 34	10, 23, 59, 105	7 (2%)
All	All	1098/1240 (88%)	-0.15	56 (5%) 33 34	10, 24, 57, 105	22 (2%)

All (56) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	78	ALA	5.6
1	C	82	ALA	5.6
1	C	285	SER	5.4
1	B	82	ALA	5.3
1	D	82	ALA	4.9
1	B	78	ALA	4.8
1	A	83	ALA	4.7
1	B	285	SER	4.7
1	C	83	ALA	4.5
1	A	79	SER	4.4
1	A	84	VAL	4.3
1	A	82	ALA	4.1
1	B	83	ALA	4.1
1	D	83	ALA	4.0
1	A	284	THR	3.9
1	B	84	VAL	3.9
1	D	79	SER	3.8
1	C	84	VAL	3.6
1	D	329	ALA	3.5
1	D	78	ALA	3.4
1	D	284	THR	3.4

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Mol	Chain	Res	Type	RSRZ
1	D	285	SER	3.3
1	C	329	ALA	3.2
1	B	177	ARG	3.0
1	A	167	ARG	2.9
1	A	78	ALA	2.9
1	B	330	LYS	2.7
1	A	285	SER	2.7
1	A	52	VAL	2.7
1	D	288	SER	2.6
1	C	291	GLY	2.6
1	A	177	ARG	2.6
1	D	84	VAL	2.6
1	D	177	ARG	2.5
1	A	168	PRO	2.4
1	B	85	PRO	2.4
1	B	323	ALA	2.4
1	C	51	ASP	2.4
1	B	312	ALA	2.4
1	B	326	ALA	2.4
1	D	289	ALA	2.4
1	B	52	VAL	2.4
1	B	77	THR	2.3
1	C	77	THR	2.3
1	A	289	ALA	2.3
1	D	287	GLY	2.3
1	C	85	PRO	2.2
1	D	181	PRO	2.2
1	A	178	ARG	2.2
1	C	177	ARG	2.2
1	D	52	VAL	2.2
1	B	322	THR	2.2
1	C	284	THR	2.1
1	C	52	VAL	2.1
1	B	327	GLY	2.1
1	A	176	ALA	2.0

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

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
4	GOL	C	403	6/6	0.83	0.16	45,61,66,79	0
4	GOL	D	403	6/6	0.87	0.14	44,60,74,74	0
3	TAR	C	402	10/10	0.89	0.12	28,39,53,56	0
3	TAR	B	402[A]	10/10	0.89	0.11	17,27,38,40	14
3	TAR	B	402[B]	10/10	0.89	0.11	22,29,39,43	14
3	TAR	D	402	10/10	0.91	0.11	24,30,50,52	0
3	TAR	A	402[A]	10/10	0.92	0.11	14,24,36,37	14
3	TAR	A	402[B]	10/10	0.92	0.11	18,22,39,41	14
2	PO4	C	401	5/5	0.98	0.05	19,22,27,30	0
2	PO4	D	401	5/5	0.99	0.04	17,18,24,25	0
2	PO4	B	401	5/5	0.99	0.05	18,20,27,29	0
2	PO4	A	401	5/5	0.99	0.05	17,19,25,28	0

6.5 Other polymers [i](#)

There are no such residues in this entry.