wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 28, 2023 – 01:20 AM EDT

PDB ID	:	1XXX
Title	:	Crystal structure of Dihydrodipicolinate Synthase (DapA, Rv2753c) from Mycobacterium tuberculosis
Authors	:	Kefala, G.; Panjikar, S.; Janowski, R.; Weiss, M.S.; TB Structural Genomics Consortium (TBSGC)
Deposited on	:	2004-11-09
Resolution	:	2.28 Å(reported)

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

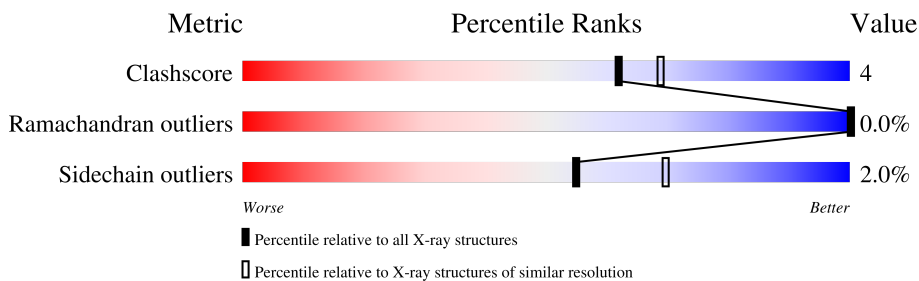|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	FAILED
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 2.28 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		4
Ramachandran outliers		0.0%
Sidechain outliers		2.0%

Worse   *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	7711 (2.30-2.26)
Ramachandran outliers	138981	7597 (2.30-2.26)
Sidechain outliers	138945	7598 (2.30-2.26)

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%

Note EDS failed to run properly.

Mol	Chain	Length	Quality of chain
1	A	303	88% 9% •
1	B	303	88% 9% • •
1	C	303	89% 9% •
1	D	303	87% 10% •
1	E	303	89% 8% • •
1	F	303	88% 9% •
1	G	303	86% 10% • •
1	H	303	88% 9% •

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 18739 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 Dihydrodipicolinate synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	296	Total	C	N	O	S	0	0	0
			2136	1335	379	413	9			
1	B	295	Total	C	N	O	S	0	0	0
			2132	1333	378	412	9			
1	C	296	Total	C	N	O	S	0	0	0
			2136	1335	379	413	9			
1	D	295	Total	C	N	O	S	0	0	0
			2132	1333	378	412	9			
1	E	295	Total	C	N	O	S	0	0	0
			2132	1333	378	412	9			
1	F	296	Total	C	N	O	S	0	0	0
			2136	1335	379	413	9			
1	G	295	Total	C	N	O	S	0	0	0
			2132	1333	378	412	9			
1	H	296	Total	C	N	O	S	0	0	0
			2136	1335	379	413	9			

There are 32 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	cloning artifact	UNP P63945
A	-1	ALA	-	cloning artifact	UNP P63945
A	0	MET	-	cloning artifact	UNP P63945
A	1	VAL	MET	see remark 999	UNP P63945
B	-2	GLY	-	cloning artifact	UNP P63945
B	-1	ALA	-	cloning artifact	UNP P63945
B	0	MET	-	cloning artifact	UNP P63945
B	1	VAL	MET	see remark 999	UNP P63945
C	-2	GLY	-	cloning artifact	UNP P63945
C	-1	ALA	-	cloning artifact	UNP P63945
C	0	MET	-	cloning artifact	UNP P63945
C	1	VAL	MET	see remark 999	UNP P63945
D	-2	GLY	-	cloning artifact	UNP P63945

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-1	ALA	-	cloning artifact	UNP P63945
D	0	MET	-	cloning artifact	UNP P63945
D	1	VAL	MET	see remark 999	UNP P63945
E	-2	GLY	-	cloning artifact	UNP P63945
E	-1	ALA	-	cloning artifact	UNP P63945
E	0	MET	-	cloning artifact	UNP P63945
E	1	VAL	MET	see remark 999	UNP P63945
F	-2	GLY	-	cloning artifact	UNP P63945
F	-1	ALA	-	cloning artifact	UNP P63945
F	0	MET	-	cloning artifact	UNP P63945
F	1	VAL	MET	see remark 999	UNP P63945
G	-2	GLY	-	cloning artifact	UNP P63945
G	-1	ALA	-	cloning artifact	UNP P63945
G	0	MET	-	cloning artifact	UNP P63945
G	1	VAL	MET	see remark 999	UNP P63945
H	-2	GLY	-	cloning artifact	UNP P63945
H	-1	ALA	-	cloning artifact	UNP P63945
H	0	MET	-	cloning artifact	UNP P63945
H	1	VAL	MET	see remark 999	UNP P63945

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total 1	Mg 1	0	0
2	B	1	Total 1	Mg 1	0	0
2	C	1	Total 1	Mg 1	0	0
2	D	1	Total 1	Mg 1	0	0
2	E	1	Total 1	Mg 1	0	0
2	F	1	Total 1	Mg 1	0	0
2	G	1	Total 1	Mg 1	0	0
2	H	1	Total 1	Mg 1	0	0

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total 1	Cl 1	0	0
3	B	1	Total 1	Cl 1	0	0
3	C	1	Total 1	Cl 1	0	0
3	D	1	Total 1	Cl 1	0	0
3	E	1	Total 1	Cl 1	0	0
3	F	1	Total 1	Cl 1	0	0
3	G	1	Total 1	Cl 1	0	0
3	H	1	Total 1	Cl 1	0	0

- Molecule 4 is 2,3-DIHYDROXY-1,4-DITHIOBUTANE (three-letter code: DTT) (formula: $C_4H_{10}O_2S_2$).

DTT
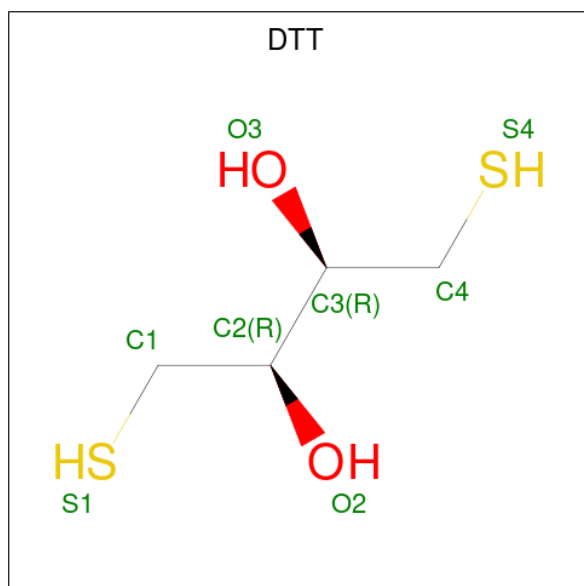
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total 8	C 4	O 2	S 2	0	0
4	B	1	Total 8	C 4	O 2	S 2	0	0
4	C	1	Total 8	C 4	O 2	S 2	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	D	1	Total 8	C 4	O 2	S 2	0	0
4	E	1	Total 8	C 4	O 2	S 2	0	0
4	F	1	Total 8	C 4	O 2	S 2	0	0
4	G	1	Total 8	C 4	O 2	S 2	0	0
4	H	1	Total 8	C 4	O 2	S 2	0	0

- Molecule 5 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	236	Total 236	O 236	0	0
5	B	236	Total 236	O 236	0	0
5	C	213	Total 213	O 213	0	0
5	D	241	Total 241	O 241	0	0
5	E	139	Total 139	O 139	0	0
5	F	106	Total 106	O 106	0	0
5	G	222	Total 222	O 222	0	0
5	H	194	Total 194	O 194	0	0

3 Residue-property plots ⓘ

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. 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. 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.

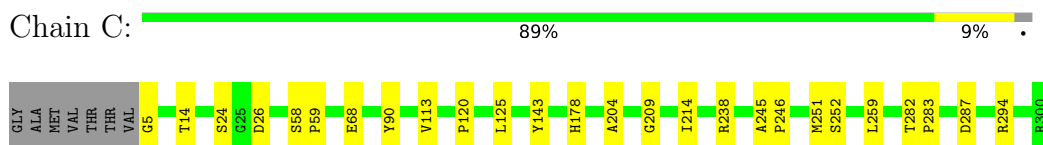Note EDS failed to run properly.

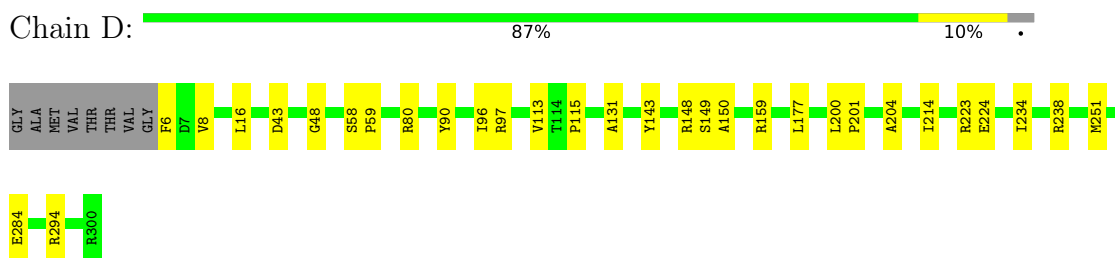• Molecule 1: Dihydrodipicolinate synthase
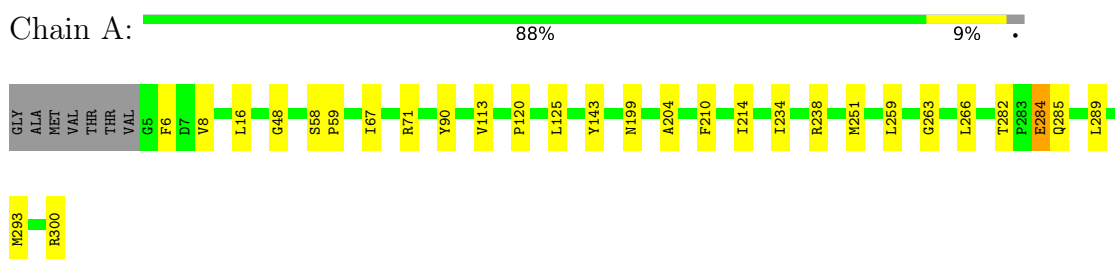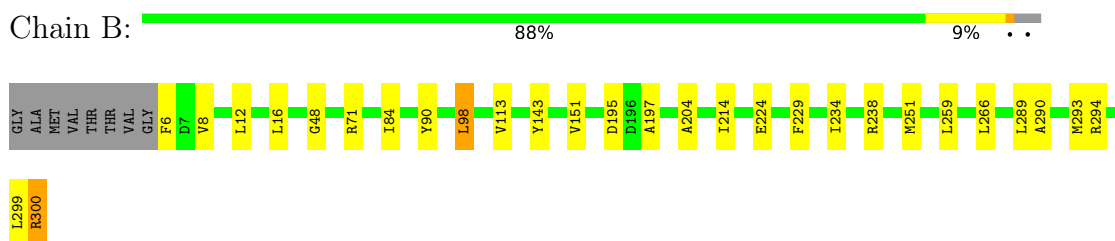
• Molecule 1: Dihydrodipicolinate synthase

• Molecule 1: Dihydrodipicolinate synthase

• Molecule 1: Dihydrodipicolinate synthase

• Molecule 1: Dihydrodipicolinate synthase

Chain E:

89%　　　　　8%　• •

GLY ALA MET VAL THR THR VAL GLY F6 D7 L16 T31 R36 G48 E68 I84 Y90 I96 V113 T114 P115 A131 Y143 M184 L189 D195 P201 W202 L203 A204 I214 E224 L225 L226 M251 R300

• Molecule 1: Dihydrodipicolinate synthase

Chain F:

88%　　　　　9%　•

GLY ALA MET VAL THR THR VAL G5 L16 T21 N39 G48 L69 L70 E75 R80 I84 Y90 D91 A107 V113 Y116 Q126 Y143 A204 I214 R238 M251 S252 L259 L266 E284 L289 M293 R294 R300

• Molecule 1: Dihydrodipicolinate synthase

Chain G:

86%　　　　　10%　• •

GLY ALA MET VAL THR THR VAL GLY F6 L16 D30 G48 R71 E75 R82 V83 I84 Y90 L98 E105 V113 T114 P115 Y116 Y117 P120 L125 Y143 S149 A150 P155 N166 L177 I214 E224 T236 A237 R238 K239 I240

N241 I242 M251 L259 L266 E284 L289 M293 R294 R300

• Molecule 1: Dihydrodipicolinate synthase

Chain H:

88%　　　　　9%　•

GLY ALA MET VAL THR THR VAL G5 V8 L12 L15 L16 G48 T54 D79 R82 V83 I84 Y90 V113 P120 L125 Y143 R159 L177 P201 W202 V213 I214 L222 L226 I234 R238 M251 L259 E284

R300

4 Data and refinement statistics ⓘ

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	94.79Å 87.37Å 139.85Å 90.00° 107.78° 90.00°	Depositor
Resolution (Å)	30.00 – 2.28	Depositor
% Data completeness (in resolution range)	100.0 (30.00-2.28)	Depositor
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	9.22 (at 2.29Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.148 , 0.215	Depositor
Wilson B-factor (Å^2)	24.6	Xtriage
Anisotropy	0.473	Xtriage
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.018 for h,-k,-h-l	Xtriage
Total number of atoms	18739	wwPDB-VP
Average B, all atoms (Å^2)	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.59% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.

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

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: CL, DTT, MG

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	0.88	1/2170 (0.0%)	0.81	0/2956
1	B	0.91	1/2166 (0.0%)	0.87	1/2951 (0.0%)
1	C	0.89	1/2170 (0.0%)	0.81	1/2956 (0.0%)
1	D	0.91	1/2166 (0.0%)	0.86	6/2951 (0.2%)
1	E	0.78	1/2166 (0.0%)	0.77	1/2951 (0.0%)
1	F	0.76	1/2170 (0.0%)	0.72	3/2956 (0.1%)
1	G	0.88	2/2166 (0.1%)	0.88	5/2951 (0.2%)
1	H	0.84	2/2170 (0.1%)	0.82	1/2956 (0.0%)
All	All	0.86	10/17344 (0.1%)	0.82	18/23628 (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	C	0	1

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	75	GLU	CD-OE1	12.05	1.39	1.25
1	D	224	GLU	CG-CD	7.84	1.63	1.51
1	E	224	GLU	CG-CD	6.78	1.62	1.51
1	G	224	GLU	CG-CD	5.99	1.60	1.51
1	H	284	GLU	CG-CD	5.93	1.60	1.51

The worst 5 of 18 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	G	294	ARG	NE-CZ-NH2	-8.35	116.13	120.30
1	G	238	ARG	NE-CZ-NH2	-6.62	116.99	120.30
1	D	294	ARG	CG-CD-NE	-6.29	98.59	111.80
1	G	238	ARG	NE-CZ-NH1	5.80	123.20	120.30
1	G	98	LEU	CA-CB-CG	5.76	128.55	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	5	GLY	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2136	0	2158	29	0
1	B	2132	0	2155	25	0
1	C	2136	0	2158	15	0
1	D	2132	0	2155	15	0
1	E	2132	0	2155	18	0
1	F	2136	0	2158	24	0
1	G	2132	0	2155	23	0
1	H	2136	0	2158	18	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	1	0	0	0	0
2	G	1	0	0	0	0
2	H	1	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0

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W O R L D W I D E
PDB
PROTEIN DATA BANK

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	G	1	0	0	0	0
3	H	1	0	0	0	0
4	A	8	0	9	0	0
4	B	8	0	9	1	0
4	C	8	0	9	2	0
4	D	8	0	9	0	0
4	E	8	0	9	1	0
4	F	8	0	9	1	0
4	G	8	0	9	0	0
4	H	8	0	9	0	0
5	A	236	0	0	0	0
5	B	236	0	0	1	0
5	C	213	0	0	0	0
5	D	241	0	0	1	0
5	E	139	0	0	1	0
5	F	106	0	0	1	0
5	G	222	0	0	2	0
5	H	194	0	0	1	0
All	All	18739	0	17324	153	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 4.

The worst 5 of 153 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:289:LEU:HG	1:A:293:MET:HE2	1.25	1.18
1:A:289:LEU:HG	1:A:293:MET:CE	1.78	1.12
1:A:289:LEU:CG	1:A:293:MET:HE2	1.89	1.02
1:G:266:LEU:HD13	1:G:293:MET:CE	1.90	1.02
1:D:284:GLU:HG3	5:D:3097:HOH:O	1.62	0.99

There are no symmetry-related clashes.

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	294/303 (97%)	289 (98%)	5 (2%)	0	100	100
1	B	293/303 (97%)	289 (99%)	4 (1%)	0	100	100
1	C	294/303 (97%)	288 (98%)	6 (2%)	0	100	100
1	D	293/303 (97%)	286 (98%)	7 (2%)	0	100	100
1	E	293/303 (97%)	285 (97%)	7 (2%)	1 (0%)	41	49
1	F	294/303 (97%)	287 (98%)	7 (2%)	0	100	100
1	G	293/303 (97%)	287 (98%)	6 (2%)	0	100	100
1	H	294/303 (97%)	287 (98%)	7 (2%)	0	100	100
All	All	2348/2424 (97%)	2298 (98%)	49 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	7	ASP

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	216/221 (98%)	212 (98%)	4 (2%)	57	71
1	B	216/221 (98%)	210 (97%)	6 (3%)	43	57
1	C	216/221 (98%)	213 (99%)	3 (1%)	67	79
1	D	216/221 (98%)	213 (99%)	3 (1%)	67	79
1	E	216/221 (98%)	214 (99%)	2 (1%)	78	88
1	F	216/221 (98%)	212 (98%)	4 (2%)	57	71
1	G	216/221 (98%)	208 (96%)	8 (4%)	34	45
1	H	216/221 (98%)	211 (98%)	5 (2%)	50	65
All	All	1728/1768 (98%)	1693 (98%)	35 (2%)	55	70

5 of 35 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	G	177	LEU
1	G	259	LEU
1	H	177	LEU
1	C	287	ASP
1	C	259	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	44	GLN
1	F	278	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 monosaccharides in this entry.

5.6   Ligand geometry ⓘ

Of 24 ligands modelled in this entry, 16 are monoatomic - leaving 8 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	$\#|Z| > 2$
4	DTT	E	3005	1	7,7,7	1.02	0	4,8,8	1.24	1 (25%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	DTT	H	3008	1	7,7,7	0.90	1 (14%)	4,8,8	2.23	1 (25%)
4	DTT	C	3003	1	7,7,7	0.93	0	4,8,8	3.13	3 (75%)
4	DTT	F	3006	1	7,7,7	0.72	0	4,8,8	2.28	2 (50%)
4	DTT	A	3001	1	7,7,7	1.64	1 (14%)	4,8,8	1.48	1 (25%)
4	DTT	B	3002	1	7,7,7	1.35	1 (14%)	4,8,8	2.08	1 (25%)
4	DTT	D	3004	1	7,7,7	1.32	2 (28%)	4,8,8	1.72	1 (25%)
4	DTT	G	3007	1	7,7,7	1.25	1 (14%)	4,8,8	1.99	1 (25%)

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
4	DTT	E	3005	1	-	1/8/8/8	-
4	DTT	H	3008	1	-	6/8/8/8	-
4	DTT	C	3003	1	-	3/8/8/8	-
4	DTT	F	3006	1	-	7/8/8/8	-
4	DTT	A	3001	1	-	3/8/8/8	-
4	DTT	B	3002	1	-	1/8/8/8	-
4	DTT	D	3004	1	-	0/8/8/8	-
4	DTT	G	3007	1	-	5/8/8/8	-

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	G	3007	DTT	O3-C3	-2.95	1.37	1.43
4	B	3002	DTT	O3-C3	-2.91	1.37	1.43
4	A	3001	DTT	O3-C3	-2.47	1.38	1.43
4	D	3004	DTT	O2-C2	-2.41	1.38	1.43
4	H	3008	DTT	O3-C3	-2.12	1.38	1.43

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	3003	DTT	O2-C2-C3	5.07	120.15	109.72
4	H	3008	DTT	O3-C3-C2	-3.85	101.81	109.72
4	F	3006	DTT	C2-C1-S1	-3.56	104.11	114.47
4	B	3002	DTT	O2-C2-C3	-3.50	102.53	109.72

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	G	3007	DTT	O3-C3-C2	-3.16	103.23	109.72

There are no chirality outliers.

5 of 26 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	3001	DTT	S1-C1-C2-O2
4	A	3001	DTT	S1-C1-C2-C3
4	A	3001	DTT	O3-C3-C4-S4
4	B	3002	DTT	O3-C3-C4-S4
4	C	3003	DTT	S1-C1-C2-O2

There are no ring outliers.

4 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	E	3005	DTT	1	0
4	C	3003	DTT	2	0
4	F	3006	DTT	1	0
4	B	3002	DTT	1	0

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

6.3 Carbohydrates ⓘ

EDS failed to run properly - this section is therefore empty.

6.4 Ligands ⓘ

EDS failed to run properly - this section is therefore empty.

6.5 Other polymers ⓘ

EDS failed to run properly - this section is therefore empty.