



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 06:41 PM GMT

PDB ID : 4MFQ  
Title : The crystal structure of acyltransferase in complex with CoA and 10C-Teicoplanin  
Authors : Lyu, S.Y.; Liu, Y.C.; Chang, C.Y.; Huang, C.J.; Li, T.L.  
Deposited on : 2013-08-28  
Resolution : 2.00 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](mailto:validation@mail.wwpdb.org)  
A user guide is available at  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467  
Mogul : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk26865

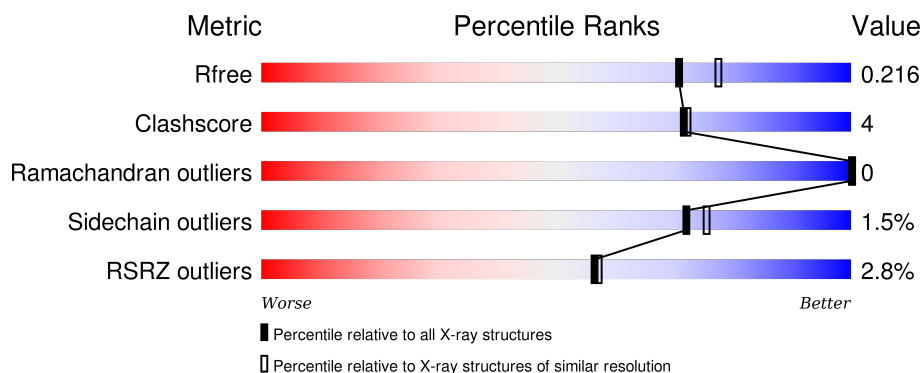
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

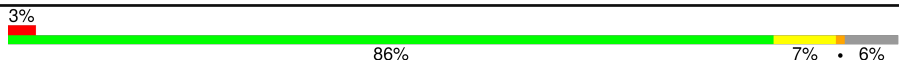

The reported resolution of this entry is 2.00 Å.

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))
$R_{free}$	91344	6249 (2.00-2.00)
Clashscore	102246	7340 (2.00-2.00)
Ramachandran outliers	100387	7248 (2.00-2.00)
Sidechain outliers	100360	7247 (2.00-2.00)
RSRZ outliers	91569	6262 (2.00-2.00)

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 on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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	345	
2	B	7	

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
8	DKA	B	504	-	-	-	X

## 2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 3165 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Putative uncharacterized protein tcp24.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	323	Total	C	N	O	S	0	7	0
			2658	1699	483	470	6			

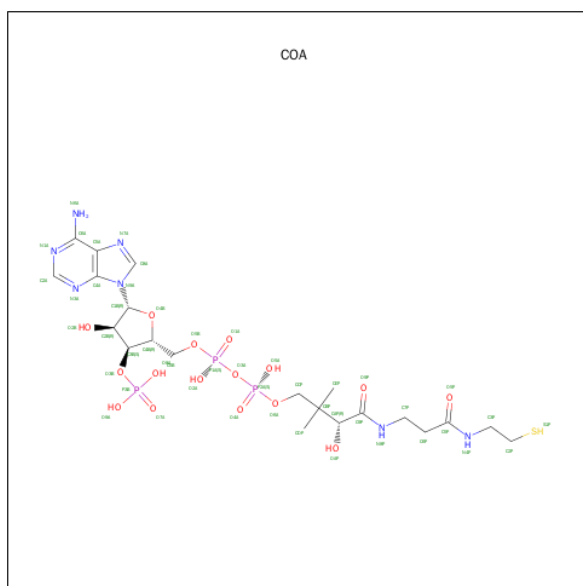
There are 23 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-21	MET	-	EXPRESSION TAG	UNP Q70AY4
A	-20	GLY	-	EXPRESSION TAG	UNP Q70AY4
A	-19	SER	-	EXPRESSION TAG	UNP Q70AY4
A	-18	SER	-	EXPRESSION TAG	UNP Q70AY4
A	-17	HIS	-	EXPRESSION TAG	UNP Q70AY4
A	-16	HIS	-	EXPRESSION TAG	UNP Q70AY4
A	-15	HIS	-	EXPRESSION TAG	UNP Q70AY4
A	-14	HIS	-	EXPRESSION TAG	UNP Q70AY4
A	-13	HIS	-	EXPRESSION TAG	UNP Q70AY4
A	-12	HIS	-	EXPRESSION TAG	UNP Q70AY4
A	-11	SER	-	EXPRESSION TAG	UNP Q70AY4
A	-10	SER	-	EXPRESSION TAG	UNP Q70AY4
A	-9	GLY	-	EXPRESSION TAG	UNP Q70AY4
A	-8	LEU	-	EXPRESSION TAG	UNP Q70AY4
A	-7	VAL	-	EXPRESSION TAG	UNP Q70AY4
A	-6	PRO	-	EXPRESSION TAG	UNP Q70AY4
A	-5	ARG	-	EXPRESSION TAG	UNP Q70AY4
A	-4	GLY	-	EXPRESSION TAG	UNP Q70AY4
A	-3	SER	-	EXPRESSION TAG	UNP Q70AY4
A	-2	HIS	-	EXPRESSION TAG	UNP Q70AY4
A	-1	MET	-	EXPRESSION TAG	UNP Q70AY4
A	0	MET	-	EXPRESSION TAG	UNP Q70AY4
A	196	ALA	HIS	ENGINEERED MUTATION	UNP Q70AY4

- Molecule 2 is a protein called Teicoplanin pseudoaglycone.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	7	Total	C	Cl	N	O	0	0	0
			85	58	2	7	18			

- Molecule 3 is COENZYME A (three-letter code: COA) (formula:  $C_{21}H_{36}N_7O_{16}P_3S$ ).



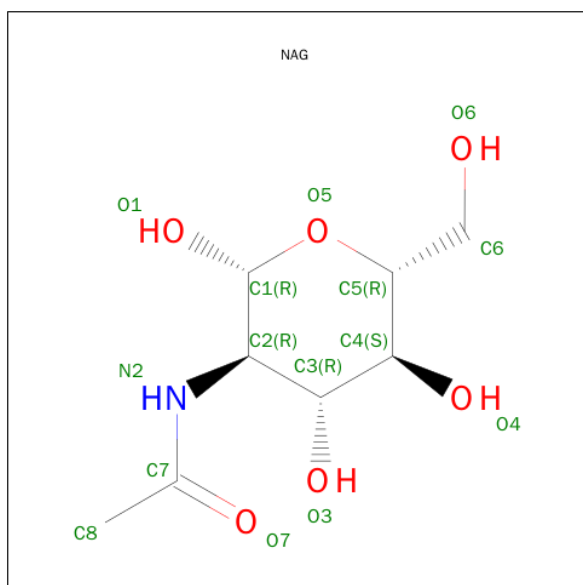
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	S	0	0
			48	21	7	16	3	1		

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula:  $O_4S$ ).



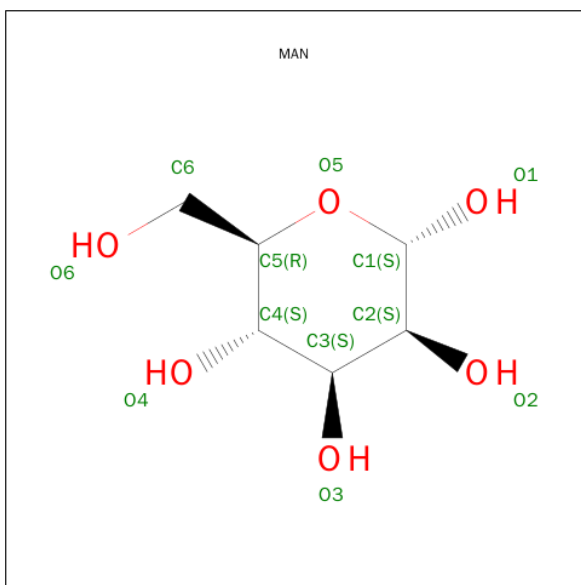
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	O	S	0	0
			5	4	1		
4	A	1	Total	O	S	0	0
			5	4	1		

- Molecule 5 is SUGAR (N-ACETYL-D-GLUCOSAMINE) (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



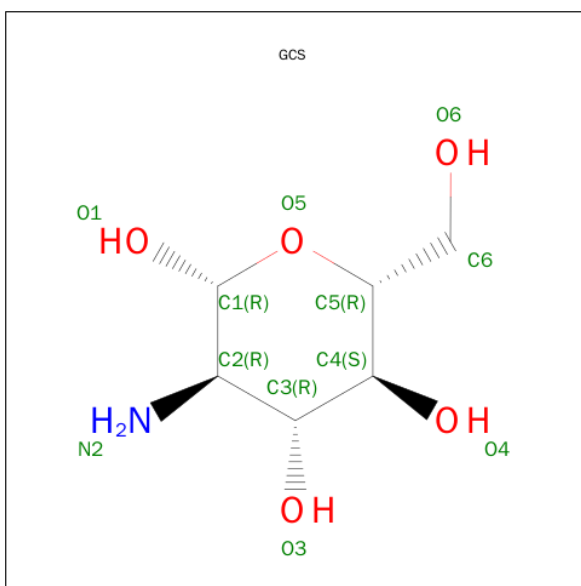
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	B	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 6 is SUGAR (ALPHA-D-MANNOSE) (three-letter code: MAN) (formula:  $C_6H_{12}O_6$ ).



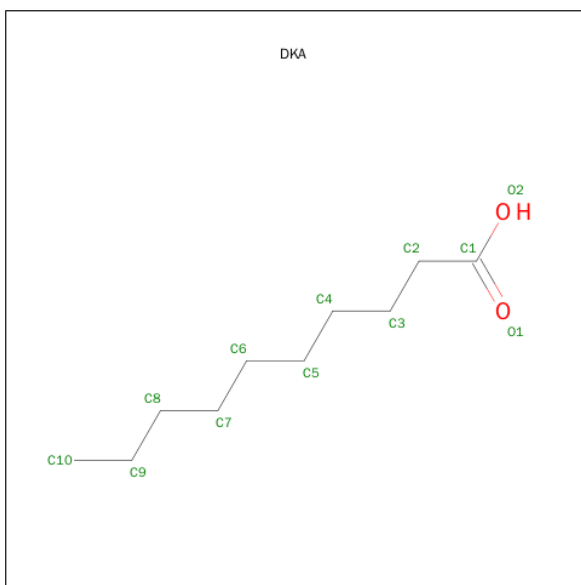
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	B	1	Total	C	O	0	0
			11	6	5		

- Molecule 7 is SUGAR (D-GLUCOSAMINE) (three-letter code: GCS) (formula:  $C_6H_{13}NO_5$ ).



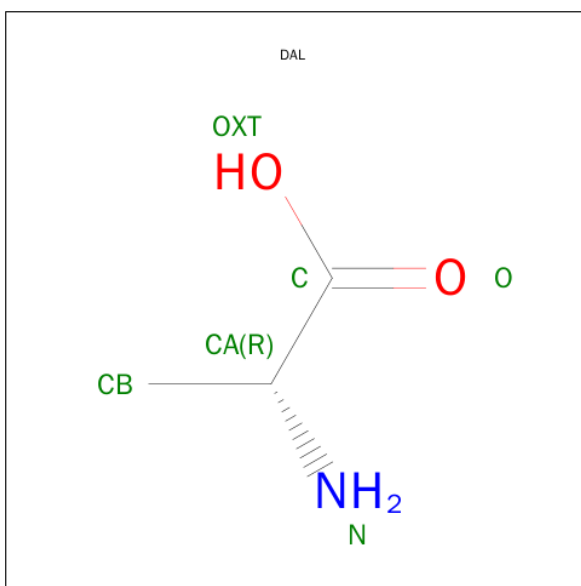
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	B	1	Total	C	N	O	0	0
			11	6	1	4		

- Molecule 8 is DECANOIC ACID (three-letter code: DKA) (formula:  $C_{10}H_{20}O_2$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	B	1	Total	C	O	0	0
			11	10	1		

- Molecule 9 is D-ALANINE (three-letter code: DAL) (formula:  $C_3H_7NO_2$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
9	B	1	Total	C	N	O	0	0
			6	3	1	2		

- Molecule 10 is water.

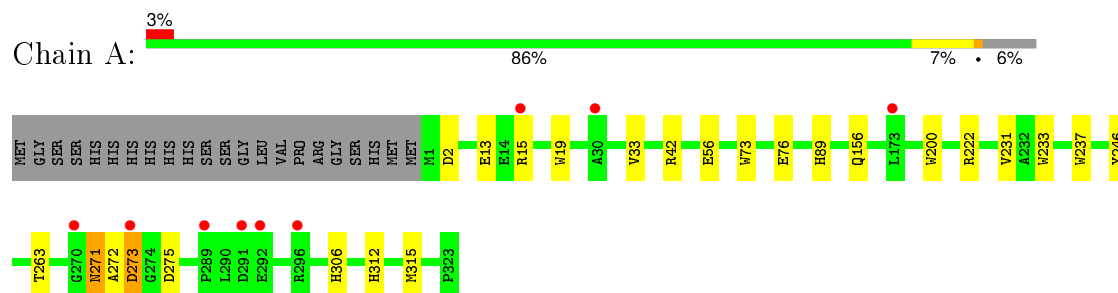


Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	295	Total 295	O 295	0	0
10	B	16	Total 16	O 16	0	0

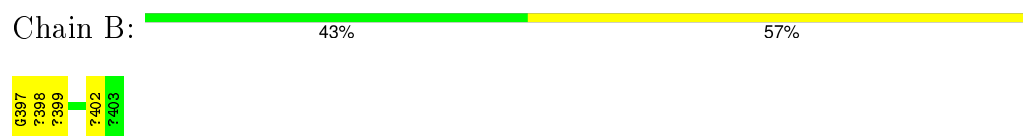
### 3 Residue-property plots

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

- Molecule 1: Putative uncharacterized protein tcp24



- Molecule 2: Teicoplanin pseudoaglycone



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 65	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	133.47Å 133.47Å 49.20Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	30.00 – 2.00 28.90 – 2.00	Depositor EDS
% Data completeness (in resolution range)	99.9 (30.00-2.00) 100.0 (28.90-2.00)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.09 (at 2.00Å)	Xtriage
Refinement program	REFMAC 5.6.0117	Depositor
R, $R_{free}$	0.173 , 0.217 0.172 , 0.216	Depositor DCC
$R_{free}$ test set	1725 reflections (5.33%)	DCC
Wilson B-factor (Å <sup>2</sup> )	31.2	Xtriage
Anisotropy	0.006	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 42.3	EDS
Estimated twinning fraction	0.029 for h,-h-k,-l	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	0 of 34304 reflections	Xtriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	3165	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	36.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.81% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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: GHP, NAG, 3MY, DAL, COA, GCS, SO4, DKA, 3FG, OMY, MAN

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	0.71	4/2752 (0.1%)	0.67	0/3749

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	73	TRP	CD2-CE2	5.73	1.48	1.41
1	A	200	TRP	CD2-CE2	5.35	1.47	1.41
1	A	19	TRP	CD2-CE2	5.22	1.47	1.41
1	A	237	TRP	CD2-CE2	5.11	1.47	1.41

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	2658	0	2586	18	0
2	B	85	0	32	4	0
3	A	48	0	32	2	0
4	A	10	0	0	0	0
5	B	14	0	13	0	0
6	B	11	0	10	0	0
7	B	11	0	10	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	B	11	0	19	2	0
9	B	6	0	6	1	0
10	A	295	0	0	3	0
10	B	16	0	0	0	0
All	All	3165	0	2708	24	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.

All (24) 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:33:VAL:HG21	1:A:76:GLU:HA	1.74	0.69
1:A:222:ARG:HG2	10:A:600:HOH:O	1.96	0.66
3:A:401:COA:S1P	8:B:504:DKA:C1	2.83	0.66
1:A:246:TYR:OH	1:A:306:HIS:HD2	1.79	0.64
1:A:42:ARG:HH12	1:A:56:GLU:HG3	1.65	0.61
1:A:13:GLU:HG3	1:A:15:ARG:HH22	1.67	0.57
1:A:271:ASN:HD22	1:A:271:ASN:C	2.08	0.57
1:A:246:TYR:OH	1:A:306:HIS:CD2	2.60	0.54
1:A:89:HIS:HD2	10:A:516:HOH:O	1.90	0.53
1:A:275:ASP:OD2	1:A:312:HIS:HD2	1.90	0.53
1:A:13:GLU:HG3	1:A:15:ARG:NH2	2.26	0.51
2:B:402:OMY:CD2	2:B:402:OMY:N	2.75	0.50
3:A:401:COA:H31	8:B:504:DKA:O1	2.12	0.50
2:B:397:GHP:C2	2:B:399:3FG:CG2	2.88	0.49
1:A:42:ARG:NH1	1:A:56:GLU:HG3	2.28	0.48
1:A:306:HIS:HE1	1:A:312:HIS:O	1.98	0.46
1:A:231[A]:VAL:HG12	1:A:233[A]:TRP:CD1	2.51	0.45
2:B:398:3MY:HD1	9:B:505:DAL:O	2.16	0.45
1:A:315:MET:HE2	1:A:315:MET:HB2	1.65	0.45
1:A:13:GLU:HG2	10:A:556:HOH:O	2.19	0.43
1:A:271:ASN:HD21	1:A:273:ASP:HB2	1.84	0.42
1:A:233[A]:TRP:CH2	1:A:263:THR:HG21	2.55	0.41
2:B:397:GHP:C2	2:B:399:3FG:HG2	2.50	0.41
1:A:271:ASN:HD22	1:A:272:ALA:N	2.19	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	328/345 (95%)	324 (99%)	4 (1%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	271/283 (96%)	267 (98%)	4 (2%)	72	75

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	ASP
1	A	156	GLN
1	A	271	ASN
1	A	273	ASP

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

Mol	Chain	Res	Type
1	A	89	HIS
1	A	242	GLN
1	A	271	ASN
1	A	286	ASN

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Mol	Chain	Res	Type
1	A	306	HIS
1	A	312	HIS

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

7 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z  > 2$	Counts	RMSZ	# $ Z  > 2$
2	GHP	B	397	2	10,11,12	1.44	1 (10%)	12,14,16	0.78	0
2	3MY	B	398	2	12,13,14	2.30	1 (8%)	14,17,19	1.11	1 (7%)
2	3FG	B	399	2	11,12,13	1.12	1 (9%)	14,16,18	1.26	1 (7%)
2	GHP	B	400	2,7	10,11,12	0.64	0	12,14,16	1.52	2 (16%)
2	GHP	B	401	2	10,11,12	1.57	1 (10%)	12,14,16	0.98	1 (8%)
2	OMY	B	402	2,5	13,14,15	2.45	2 (15%)	17,19,21	2.09	3 (17%)
2	3FG	B	403	2,6	9,13,13	1.28	1 (11%)	14,18,18	1.46	2 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GHP	B	397	2	-	0/4/6/8	0/1/1/1
2	3MY	B	398	2	-	0/4/6/8	0/1/1/1
2	3FG	B	399	2	-	0/4/6/8	0/1/1/1
2	GHP	B	400	2,7	-	0/4/6/8	0/1/1/1
2	GHP	B	401	2	-	0/4/6/8	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	OMY	B	402	2,5	-	0/8/10/12	0/1/1/1
2	3FG	B	403	2,6	-	0/4/8/8	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	401	GHP	C1-CA	-4.58	1.48	1.52
2	B	397	GHP	C1-CA	-3.95	1.48	1.52
2	B	399	3FG	CB-CA	-2.98	1.49	1.52
2	B	402	OMY	CG-CB	-2.85	1.47	1.51
2	B	403	3FG	CB-CA	-2.62	1.49	1.52
2	B	402	OMY	CZ-CE1	7.63	1.46	1.39
2	B	398	3MY	CZ-CE2	7.64	1.46	1.39

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	402	OMY	CG-CB-CA	-6.44	102.95	111.96
2	B	402	OMY	CD1-CE1-CZ	-2.71	119.71	121.22
2	B	403	3FG	CD1-CG1-CB	-2.43	117.94	120.14
2	B	398	3MY	O-C-CA	-2.30	119.50	125.49
2	B	400	GHP	C5-C6-C1	2.10	123.36	121.20
2	B	401	GHP	C1-CA-N	2.14	117.59	112.54
2	B	402	OMY	ODE-CB-CA	3.00	114.11	107.44
2	B	400	GHP	C-CA-N	3.14	115.93	109.12
2	B	403	3FG	C-CA-CB	3.15	115.61	111.31
2	B	399	3FG	C-CA-N	4.04	117.89	109.12

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	397	GHP	2	0
2	B	398	3MY	1	0
2	B	399	3FG	2	0
2	B	402	OMY	1	0



## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

8 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
3	COA	A	401	-	40,50,50	1.04	3 (7%)	50,75,75	1.54	7 (14%)
4	SO4	A	402	-	4,4,4	0.38	0	6,6,6	0.23	0
4	SO4	A	403	-	4,4,4	0.37	0	6,6,6	0.13	0
5	NAG	B	501	2	14,14,15	0.72	0	15,19,21	1.81	2 (13%)
6	MAN	B	502	2	11,11,12	0.78	0	14,15,17	1.19	1 (7%)
7	GCS	B	503	8,2	11,11,12	0.54	0	13,15,17	2.11	3 (23%)
8	DKA	B	504	7	10,10,11	0.50	0	8,9,11	1.12	1 (12%)
9	DAL	B	505	-	2,5,5	1.14	0	0,6,6	0.00	-

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	COA	A	401	-	-	0/44/64/64	0/3/3/3
4	SO4	A	402	-	-	0/0/0/0	0/0/0/0
4	SO4	A	403	-	-	0/0/0/0	0/0/0/0
5	NAG	B	501	2	-	0/6/23/26	0/1/1/1
6	MAN	B	502	2	-	0/2/19/22	0/1/1/1
7	GCS	B	503	8,2	-	0/2/19/22	0/1/1/1
8	DKA	B	504	7	-	0/7/8/9	0/0/0/0
9	DAL	B	505	-	-	0/0/4/4	0/0/0/0

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	401	COA	C2A-N3A	2.33	1.36	1.32
3	A	401	COA	O4B-C1B	2.99	1.45	1.41
3	A	401	COA	C5A-C4A	3.38	1.48	1.40

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	401	COA	N3A-C2A-N1A	-6.69	123.77	128.89
7	B	503	GCS	C1-C2-N2	-4.37	100.99	111.37
3	A	401	COA	C4A-C5A-N7A	-3.21	106.52	109.48
3	A	401	COA	OAP-CAP-C9P	-2.82	103.90	110.38
3	A	401	COA	CDP-CBP-CCP	-2.80	104.87	108.50
6	B	502	MAN	O5-C1-C2	-2.76	106.39	110.86
3	A	401	COA	P2A-O3A-P1A	-2.57	125.50	132.73
3	A	401	COA	C6P-C5P-N4P	-2.15	112.72	116.46
8	B	504	DKA	C5-C4-C3	-2.12	103.60	114.53
7	B	503	GCS	O3-C3-C2	2.28	114.11	109.87
5	B	501	NAG	O3-C3-C4	2.34	115.61	110.34
3	A	401	COA	O9A-P3B-O8A	2.61	117.33	107.38
7	B	503	GCS	C1-O5-C5	4.29	117.69	112.25
5	B	501	NAG	C1-O5-C5	5.66	119.43	112.25

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	401	COA	2	0
8	B	504	DKA	2	0
9	B	505	DAL	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 [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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	323/345 (93%)	-0.02	9 (2%) 56 57	18, 32, 58, 85	0
2	B	0/7	-	-	-	-
All	All	323/352 (91%)	-0.02	9 (2%) 56 57	18, 32, 58, 85	0

All (9) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	291	ASP	3.6
1	A	292	GLU	3.5
1	A	296	ARG	3.1
1	A	273	ASP	3.0
1	A	15	ARG	2.5
1	A	270	GLY	2.5
1	A	289	PRO	2.4
1	A	173[A]	LEU	2.3
1	A	30	ALA	2.2

### 6.2 Non-standard residues in protein, DNA, RNA chains [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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
2	GHP	B	401	11/12	0.94	0.10	-	31,36,42,45	0
2	GHP	B	400	11/12	0.96	0.08	-	33,35,38,38	0
2	3FG	B	399	12/13	0.88	0.16	-	42,51,57,57	0
2	GHP	B	397	11/12	0.92	0.21	-	54,58,61,66	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
2	3MY	B	398	13/14	0.90	0.11	-	40,44,51,53	0
2	OMY	B	402	14/15	0.94	0.09	-	33,34,38,53	0
2	3FG	B	403	13/13	0.93	0.23	-	41,52,60,66	0

### 6.3 Carbohydrates [i](#)

There are no carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> 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	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
8	DKA	B	504	11/12	0.92	0.27	3.00	35,38,48,51	0
7	GCS	B	503	11/12	0.90	0.20	1.42	37,41,47,49	0
5	NAG	B	501	14/15	0.89	0.16	0.66	36,42,45,46	0
3	COA	A	401	48/48	0.97	0.08	-0.68	26,39,56,63	0
6	MAN	B	502	11/12	0.86	0.26	-	71,76,81,84	0
4	SO4	A	402	5/5	0.96	0.19	-	81,81,84,85	0
4	SO4	A	403	5/5	0.72	0.57	-	118,131,133,133	0
9	DAL	B	505	6/6	0.90	0.20	-	45,50,50,50	0

### 6.5 Other polymers [i](#)

There are no such residues in this entry.