



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 27, 2017 – 06:14 PM EST

PDB ID : 5U29  
Title : Crystal structure of *Cryptococcus neoformans* H99 Acetyl-CoA Synthetase in complex with Ac-AMS  
Authors : Seattle Structural Genomics Center for Infectious Disease (SSGCID); Fox III, D.; Edwards, T.E.; Potts, K.T.; Taylor, B.M.  
Deposited on : unknown  
Resolution : 2.50 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 : 1.7.2 (RC1), CSD as538be (2017)  
Xtrriage (Phenix) : 1.9-1692  
EDS : rb-20030345  
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)  
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) : rb-20030345

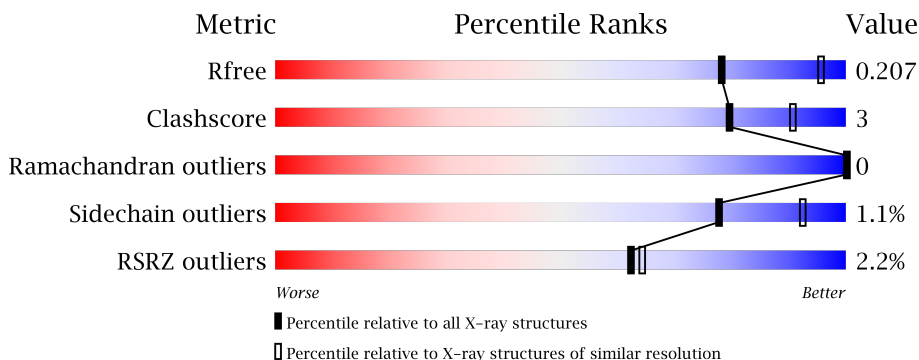
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.50 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))
$R_{free}$	100719	3846 (2.50-2.50)
Clashscore	112137	4554 (2.50-2.50)
Ramachandran outliers	110173	4463 (2.50-2.50)
Sidechain outliers	110143	4465 (2.50-2.50)
RSRZ outliers	101464	3876 (2.50-2.50)

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	694	 2% 89% 6% . .
1	B	694	 3% 88% 8% .
1	C	694	 % 89% 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
3	PO4	C	702	-	-	-	X
4	EDO	A	703	-	-	-	X
4	EDO	B	705	-	-	-	X
4	EDO	C	705	-	-	-	X

## 2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 15741 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 Acetyl-coenzyme A synthetase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	668	5099	3253	867	952	27	0	1	0
1	B	667	5037	3210	860	940	27	0	2	0
1	C	668	5082	3242	865	948	27	0	2	0

There are 45 discrepancies between the modelled and reference sequences:

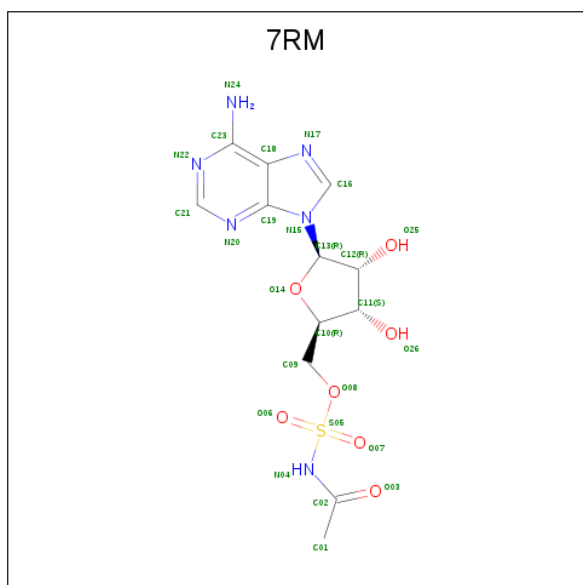
Chain	Residue	Modelled	Actual	Comment	Reference
A	-13	MET	-	initiating methionine	UNP J9VFT1
A	-12	HIS	-	expression tag	UNP J9VFT1
A	-11	HIS	-	expression tag	UNP J9VFT1
A	-10	HIS	-	expression tag	UNP J9VFT1
A	-9	HIS	-	expression tag	UNP J9VFT1
A	-8	HIS	-	expression tag	UNP J9VFT1
A	-7	HIS	-	expression tag	UNP J9VFT1
A	-6	HIS	-	expression tag	UNP J9VFT1
A	-5	HIS	-	expression tag	UNP J9VFT1
A	-4	GLU	-	expression tag	UNP J9VFT1
A	-3	ASN	-	expression tag	UNP J9VFT1
A	-2	LEU	-	expression tag	UNP J9VFT1
A	-1	TYR	-	expression tag	UNP J9VFT1
A	0	PHE	-	expression tag	UNP J9VFT1
A	1	GLN	-	expression tag	UNP J9VFT1
B	-13	MET	-	initiating methionine	UNP J9VFT1
B	-12	HIS	-	expression tag	UNP J9VFT1
B	-11	HIS	-	expression tag	UNP J9VFT1
B	-10	HIS	-	expression tag	UNP J9VFT1
B	-9	HIS	-	expression tag	UNP J9VFT1
B	-8	HIS	-	expression tag	UNP J9VFT1
B	-7	HIS	-	expression tag	UNP J9VFT1
B	-6	HIS	-	expression tag	UNP J9VFT1

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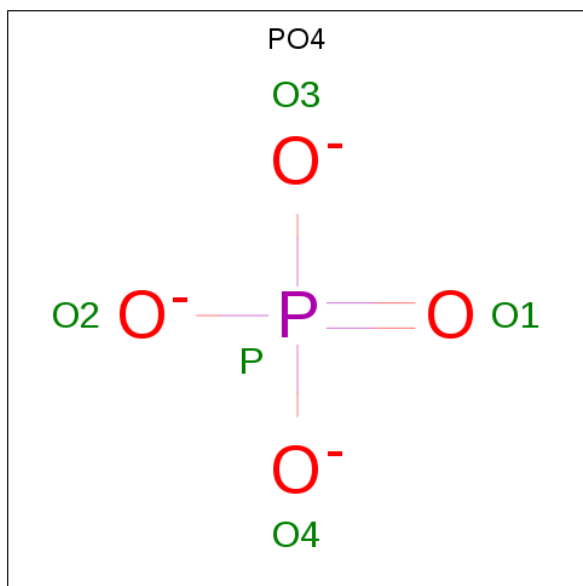
Chain	Residue	Modelled	Actual	Comment	Reference
B	-5	HIS	-	expression tag	UNP J9VFT1
B	-4	GLU	-	expression tag	UNP J9VFT1
B	-3	ASN	-	expression tag	UNP J9VFT1
B	-2	LEU	-	expression tag	UNP J9VFT1
B	-1	TYR	-	expression tag	UNP J9VFT1
B	0	PHE	-	expression tag	UNP J9VFT1
B	1	GLN	-	expression tag	UNP J9VFT1
C	-13	MET	-	initiating methionine	UNP J9VFT1
C	-12	HIS	-	expression tag	UNP J9VFT1
C	-11	HIS	-	expression tag	UNP J9VFT1
C	-10	HIS	-	expression tag	UNP J9VFT1
C	-9	HIS	-	expression tag	UNP J9VFT1
C	-8	HIS	-	expression tag	UNP J9VFT1
C	-7	HIS	-	expression tag	UNP J9VFT1
C	-6	HIS	-	expression tag	UNP J9VFT1
C	-5	HIS	-	expression tag	UNP J9VFT1
C	-4	GLU	-	expression tag	UNP J9VFT1
C	-3	ASN	-	expression tag	UNP J9VFT1
C	-2	LEU	-	expression tag	UNP J9VFT1
C	-1	TYR	-	expression tag	UNP J9VFT1
C	0	PHE	-	expression tag	UNP J9VFT1
C	1	GLN	-	expression tag	UNP J9VFT1

- Molecule 2 is 5'-O-(acetylsulfamoyl)adenosine (three-letter code: 7RM) (formula: C<sub>12</sub>H<sub>16</sub>N<sub>6</sub>O<sub>7</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			26	12	6	7	1		
2	B	1	Total	C	N	O	S	0	0
			26	12	6	7	1		
2	C	1	Total	C	N	O	S	0	0
			26	12	6	7	1		

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O<sub>4</sub>P).



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

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	171	Total O 173 173	0	3
5	B	96	Total O 96 96	0	0
5	C	132	Total O 133 133	0	1







## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	71.28Å 83.78Å 101.60Å 110.33° 105.81° 87.75°	Depositor
Resolution (Å)	32.10 – 2.50 48.75 – 2.50	Depositor EDS
% Data completeness (in resolution range)	98.6 (32.10-2.50) 86.9 (48.75-2.50)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.80 (at 2.51Å)	Xtrriage
Refinement program	PHENIX (1.11.1_2575: 000)	Depositor
R, $R_{free}$	0.153 , 0.209 0.148 , 0.207	Depositor DCC
$R_{free}$ test set	2000 reflections (2.77%)	DCC
Wilson B-factor (Å <sup>2</sup> )	42.5	Xtrriage
Anisotropy	0.278	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 65.5	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	15741	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	51.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.69% 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, 0.333 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: PO4, 7RM, EDO

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	0.43	0/5243	0.59	1/7160 (0.0%)
1	B	0.38	0/5179	0.56	0/7082
1	C	0.39	0/5228	0.55	0/7140
All	All	0.40	0/15650	0.57	1/21382 (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	A	314	LEU	CA-CB-CG	-5.35	103.00	115.30

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	5099	0	4825	29	0
1	B	5037	0	4707	31	0
1	C	5082	0	4815	36	0
2	A	26	0	0	0	0
2	B	26	0	0	0	0
2	C	26	0	0	2	0
3	A	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	10	0	0	0	0
4	A	4	0	6	0	0
4	B	16	0	24	2	0
4	C	8	0	12	2	0
5	A	173	0	0	0	0
5	B	96	0	0	0	0
5	C	133	0	0	2	0
All	All	15741	0	14389	95	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 3.

All (95) 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:C:283:PRO:HG3	4:C:705:EDO:H21	1.62	0.81
1:B:484:GLY:O	1:B:531:ARG:NH1	2.16	0.78
1:C:540:LYS:HG2	4:C:704:EDO:H21	1.66	0.77
1:B:592:MET:HE3	1:B:606:LEU:HD21	1.70	0.73
1:C:123:ILE:HD11	1:C:325:ARG:HD3	1.72	0.72
1:C:325:ARG:NH1	1:C:351:THR:HG21	2.05	0.70
1:A:99:GLU:HG2	4:B:702:EDO:H12	1.75	0.69
1:A:86:ALA:HA	4:B:703:EDO:H22	1.79	0.65
1:A:13:VAL:HG21	1:A:532:ASP:HA	1.80	0.62
1:C:472:ASP:OD2	1:C:494:ARG:NH1	2.32	0.62
1:B:472:ASP:OD2	1:B:494:ARG:NH1	2.31	0.60
1:C:194:SER:N	1:C:661:SER:OG	2.36	0.58
1:A:123:ILE:HD11	1:A:325:ARG:HH11	1.69	0.58
1:A:194:SER:N	1:A:661:SER:OG	2.37	0.56
1:B:194:SER:N	1:B:661:SER:OG	2.35	0.56
1:A:660:LEU:HB3	1:A:663:ILE:HD12	1.87	0.56
1:A:472:ASP:OD2	1:A:494:ARG:HD3	2.06	0.55
1:A:442:GLU:HG2	1:A:515:TYR:CZ	2.43	0.54
1:C:492:VAL:HB	1:C:522:TYR:HB3	1.90	0.54
1:B:58:THR:HG22	1:B:66:TRP:CD2	2.43	0.54
1:B:563:LEU:HB3	1:B:572:THR:HG21	1.90	0.54
1:A:394:GLU:HG2	1:A:426:PHE:CZ	2.42	0.53
1:A:13:VAL:CG2	1:A:532:ASP:HA	2.38	0.53
1:B:123:ILE:HD11	1:B:325:ARG:HD3	1.90	0.52
1:C:542:ARG:NH1	2:C:701:7RM:O26	2.42	0.52
1:C:13:VAL:CG2	1:C:532:ASP:HA	2.40	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:442:GLU:HG2	1:C:515:TYR:CZ	2.45	0.51
1:A:314:LEU:O	1:A:314:LEU:HG	2.08	0.51
1:B:13:VAL:HG22	1:B:486:ASP:OD1	2.11	0.51
1:A:58:THR:HG22	1:A:66:TRP:CD2	2.46	0.51
1:B:592:MET:CE	1:B:606:LEU:HD21	2.39	0.51
1:C:64:ASP:HB2	5:C:913:HOH:O	2.10	0.51
1:C:13:VAL:HG22	1:C:486:ASP:OD1	2.12	0.50
1:C:368:TRP:NE1	1:C:397:VAL:HG22	2.27	0.50
1:B:18:ASP:OD1	1:B:19:SER:N	2.45	0.49
1:B:217:ARG:NH1	1:B:222:THR:OG1	2.46	0.48
1:B:67:TRP:CZ3	1:B:498:PRO:HG2	2.47	0.48
1:B:548:ASN:O	1:B:584:GLN:HB2	2.14	0.48
1:C:442:GLU:OE2	1:C:515:TYR:OH	2.26	0.48
1:A:606:LEU:HD23	1:A:629:LEU:HD21	1.96	0.48
1:C:531:ARG:HA	1:C:536:TYR:O	2.15	0.47
1:B:531:ARG:HA	1:B:536:TYR:O	2.15	0.47
1:A:123:ILE:HD11	1:A:325:ARG:HD3	1.97	0.47
1:A:13:VAL:HG22	1:A:486:ASP:OD1	2.16	0.46
1:C:13:VAL:HG21	1:C:532:ASP:HA	1.96	0.46
1:B:335:ILE:HG12	1:B:441:THR:HA	1.98	0.46
1:B:642:MET:HG3	1:B:663:ILE:HG12	1.99	0.45
1:B:93:ASP:HB3	1:C:271:ALA:HB3	1.97	0.45
1:C:659:ASP:OD1	1:C:661:SER:HB2	2.17	0.45
1:C:17:PRO:HB3	1:C:617:VAL:HG11	1.99	0.45
1:B:113:TYR:CD1	1:B:117:PRO:HB3	2.52	0.45
1:B:18:ASP:OD2	1:B:421:HIS:NE2	2.49	0.45
1:A:126:ALA:O	1:A:366:ARG:NH2	2.50	0.45
1:C:408:LEU:HB3	1:C:423:TYR:CZ	2.53	0.44
1:B:332:ILE:HA	1:B:337:GLY:HA3	1.99	0.44
1:B:408:LEU:HB3	1:B:423:TYR:CE2	2.53	0.44
1:C:325:ARG:HH11	1:C:351:THR:HG21	1.81	0.44
1:A:110:ASP:N	1:A:110:ASP:OD1	2.50	0.44
1:C:197:SER:OG	1:C:659:ASP:OD2	2.35	0.44
1:A:368:TRP:HB3	1:A:402:LEU:HD21	2.00	0.43
1:A:391:ARG:HG3	1:A:570:ALA:CB	2.48	0.43
1:A:554:LEU:HD11	1:A:622:ALA:HA	2.00	0.43
1:C:527:ASP:OD2	2:C:701:7RM:O26	2.36	0.43
1:A:187:SER:HA	1:A:286:ILE:O	2.18	0.43
1:A:270:PRO:HD3	5:C:879:HOH:O	2.16	0.43
1:B:288:TYR:HA	1:B:297:LYS:O	2.18	0.43
1:C:563:LEU:HB3	1:C:572:THR:HG21	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:67:TRP:CZ3	1:C:498:PRO:HG2	2.54	0.43
1:B:587:TYR:CD2	1:B:626:LYS:HB2	2.54	0.43
1:C:17:PRO:HD2	1:C:561:SER:HB2	1.99	0.43
1:B:55:TRP:CH2	1:B:59:VAL:HG21	2.54	0.42
1:C:389:LEU:HA	1:C:389:LEU:HD23	1.87	0.42
1:A:391:ARG:HG3	1:A:570:ALA:HB1	2.01	0.42
1:A:272:TYR:CG	1:A:273:CYS:N	2.88	0.42
1:C:123:ILE:HD11	1:C:325:ARG:HH11	1.85	0.42
1:C:332:ILE:H	1:C:332:ILE:HG13	1.74	0.41
1:B:368:TRP:CD1	1:B:397:VAL:HG13	2.56	0.41
1:A:129:PRO:HG3	1:A:366:ARG:CZ	2.51	0.41
1:A:500:ILE:O	1:A:502:ARG:NH1	2.53	0.41
1:B:361:TYR:CD1	1:B:362:PRO:HA	2.56	0.41
1:C:134:GLU:OE2	1:C:325:ARG:NH2	2.54	0.41
1:C:435:VAL:O	1:C:435:VAL:HG23	2.20	0.41
1:A:122:ILE:HA	1:A:352:THR:O	2.21	0.41
1:B:17:PRO:HD2	1:B:561:SER:HB2	2.01	0.41
1:C:187:SER:HA	1:C:286:ILE:O	2.21	0.41
1:C:466:PHE:CG	1:C:467:PHE:N	2.89	0.41
1:B:435:VAL:HG23	1:B:435:VAL:O	2.21	0.41
1:C:554:LEU:HD13	1:C:621:PHE:HE2	1.85	0.41
1:B:466:PHE:CG	1:B:467:PHE:N	2.89	0.41
1:A:408:LEU:HB3	1:A:423:TYR:CZ	2.57	0.40
1:B:368:TRP:NE1	1:B:397:VAL:HG22	2.36	0.40
1:C:58:THR:HG22	1:C:66:TRP:CD2	2.57	0.40
1:A:96:TRP:CD1	1:A:498:PRO:HA	2.57	0.40
1:B:517:LYS:N	1:B:518:PRO:CD	2.84	0.40
1:C:548:ASN:O	1:C:584:GLN:HB2	2.22	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	667/694 (96%)	654 (98%)	13 (2%)	0	100	100
1	B	667/694 (96%)	653 (98%)	14 (2%)	0	100	100
1	C	668/694 (96%)	653 (98%)	15 (2%)	0	100	100
All	All	2002/2082 (96%)	1960 (98%)	42 (2%)	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	513/576 (89%)	506 (99%)	7 (1%)	71	90
1	B	497/576 (86%)	492 (99%)	5 (1%)	80	93
1	C	512/576 (89%)	508 (99%)	4 (1%)	85	95
All	All	1522/1728 (88%)	1506 (99%)	16 (1%)	78	92

All (16) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	36	LYS
1	A	51	TYR
1	A	110	ASP
1	A	116	ASN
1	A	423	TYR
1	A	472	ASP
1	A	580	ASP
1	B	110	ASP
1	B	116	ASN
1	B	423	TYR
1	B	472	ASP
1	B	580	ASP
1	C	110	ASP
1	C	116	ASN
1	C	423	TYR

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Mol	Chain	Res	Type
1	C	472	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

## 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

13 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
2	7RM	A	701	-	25,28,28	1.43	5 (20%)	28,42,42	2.82	4 (14%)
3	PO4	A	702	-	4,4,4	0.69	0	6,6,6	0.46	0
4	EDO	A	703	-	3,3,3	0.36	0	2,2,2	0.73	0
2	7RM	B	701	-	25,28,28	1.39	3 (12%)	28,42,42	2.80	6 (21%)
4	EDO	B	702	-	3,3,3	0.37	0	2,2,2	0.40	0
4	EDO	B	703	-	3,3,3	0.47	0	2,2,2	0.43	0
4	EDO	B	704	-	3,3,3	0.46	0	2,2,2	0.70	0
4	EDO	B	705	-	3,3,3	0.56	0	2,2,2	0.12	0
2	7RM	C	701	-	25,28,28	1.78	4 (16%)	28,42,42	2.98	6 (21%)



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	PO4	C	702	-	4,4,4	0.75	0	6,6,6	0.48	0
3	PO4	C	703	-	4,4,4	0.76	0	6,6,6	0.35	0
4	EDO	C	704	-	3,3,3	0.48	0	2,2,2	0.47	0
4	EDO	C	705	-	3,3,3	0.63	0	2,2,2	0.11	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
2	7RM	A	701	-	-	0/10/31/31	0/3/3/3
3	PO4	A	702	-	-	0/0/0/0	0/0/0/0
4	EDO	A	703	-	-	0/1/1/1	0/0/0/0
2	7RM	B	701	-	-	0/10/31/31	0/3/3/3
4	EDO	B	702	-	-	0/1/1/1	0/0/0/0
4	EDO	B	703	-	-	0/1/1/1	0/0/0/0
4	EDO	B	704	-	-	0/1/1/1	0/0/0/0
4	EDO	B	705	-	-	0/1/1/1	0/0/0/0
2	7RM	C	701	-	-	0/10/31/31	0/3/3/3
3	PO4	C	702	-	-	0/0/0/0	0/0/0/0
3	PO4	C	703	-	-	0/0/0/0	0/0/0/0
4	EDO	C	704	-	-	0/1/1/1	0/0/0/0
4	EDO	C	705	-	-	0/1/1/1	0/0/0/0

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	701	7RM	C02-N04	-4.65	1.33	1.38
2	A	701	7RM	O08-S05	-3.99	1.53	1.59
2	B	701	7RM	C02-N04	-3.91	1.33	1.38
2	B	701	7RM	O08-S05	-3.88	1.53	1.59
2	C	701	7RM	O08-S05	-3.36	1.54	1.59
2	A	701	7RM	C02-N04	-2.88	1.34	1.38
2	A	701	7RM	O07-S05	2.17	1.44	1.42
2	A	701	7RM	O06-S05	2.22	1.44	1.42
2	A	701	7RM	O14-C13	2.39	1.44	1.41
2	B	701	7RM	O07-S05	2.48	1.44	1.42
2	C	701	7RM	O07-S05	3.71	1.45	1.42
2	C	701	7RM	O06-S05	3.92	1.45	1.42

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	701	7RM	O06-S05-O07	-9.68	111.41	121.30
2	C	701	7RM	N20-C21-N22	-9.03	120.99	128.86
2	A	701	7RM	C02-N04-S05	-9.00	117.40	124.22
2	B	701	7RM	N20-C21-N22	-8.43	121.52	128.86
2	C	701	7RM	O06-S05-O07	-8.25	112.86	121.30
2	C	701	7RM	C02-N04-S05	-8.24	117.97	124.22
2	A	701	7RM	N20-C21-N22	-7.82	122.05	128.86
2	A	701	7RM	O06-S05-O07	-7.67	113.46	121.30
2	B	701	7RM	C02-N04-S05	-5.40	120.13	124.22
2	C	701	7RM	O25-C12-C13	-2.48	103.84	111.61
2	C	701	7RM	C19-C18-N17	-2.27	107.21	109.41
2	B	701	7RM	C19-C18-N17	-2.20	107.29	109.41
2	C	701	7RM	C13-N15-C19	-2.18	122.88	126.64
2	B	701	7RM	O03-C02-N04	2.18	122.59	121.09
2	B	701	7RM	O07-S05-N04	2.24	111.60	108.47
2	A	701	7RM	O03-C02-N04	2.27	122.65	121.09

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	702	EDO	1	0
4	B	703	EDO	1	0
2	C	701	7RM	2	0
4	C	704	EDO	1	0
4	C	705	EDO	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, 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	668/694 (96%)	-0.31	16 (2%) 59 61	25, 43, 83, 105	0
1	B	667/694 (96%)	-0.00	22 (3%) 47 50	28, 56, 91, 122	0
1	C	668/694 (96%)	-0.25	7 (1%) 82 83	26, 50, 85, 109	0
All	All	2003/2082 (96%)	-0.19	45 (2%) 62 64	25, 48, 86, 122	0

All (45) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	291	GLY	6.1
1	B	676	VAL	4.1
1	A	292	SER	3.3
1	A	606	LEU	3.3
1	A	533	TYR	3.2
1	B	672	VAL	3.1
1	A	657	LEU	3.1
1	A	577	CYS	2.9
1	A	10	VAL	2.9
1	B	669	VAL	2.8
1	A	578	ALA	2.8
1	B	649	ILE	2.8
1	B	481	VAL	2.7
1	B	590	VAL	2.7
1	A	655	ASP	2.7
1	C	658	GLY	2.7
1	C	657	LEU	2.6
1	A	11	HIS	2.6
1	A	622	ALA	2.5
1	B	42	PRO	2.5
1	B	51	TYR	2.5
1	C	597	ASP	2.5
1	A	549	VAL	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	628	TYR	2.4
1	A	579	ASP	2.4
1	B	603	GLU	2.4
1	B	38	GLY	2.4
1	B	657	LEU	2.4
1	B	602	LYS	2.4
1	B	645	VAL	2.4
1	B	185	ILE	2.4
1	B	576	GLY	2.3
1	C	672	VAL	2.3
1	C	655	ASP	2.3
1	A	587	TYR	2.3
1	A	652	GLY	2.3
1	B	579	ASP	2.2
1	A	554	LEU	2.2
1	C	36	LYS	2.2
1	B	587	TYR	2.1
1	B	597	ASP	2.1
1	C	594	PRO	2.1
1	B	31	PRO	2.0
1	B	667	GLN	2.0
1	B	654	GLY	2.0

## 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 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
4	EDO	C	705	4/4	0.86	0.26	10.21	58,63,63,63	0
4	EDO	B	705	4/4	0.82	0.18	4.26	64,73,75,77	0
3	PO4	C	702	5/5	0.91	0.37	3.81	111,115,118,120	0
4	EDO	A	703	4/4	0.97	0.18	2.82	42,42,52,52	0
4	EDO	B	703	4/4	0.95	0.13	1.32	49,50,52,54	0
4	EDO	B	702	4/4	0.98	0.11	-0.11	45,46,51,56	0
2	7RM	B	701	26/26	0.99	0.13	-0.46	36,54,62,64	0
2	7RM	C	701	26/26	0.98	0.15	-0.53	28,40,46,49	0
2	7RM	A	701	26/26	0.98	0.13	-0.55	27,34,42,42	0
4	EDO	C	704	4/4	0.97	0.10	-1.01	59,59,63,65	0
3	PO4	C	703	5/5	0.95	0.09	-	76,78,81,87	0
4	EDO	B	704	4/4	0.93	0.17	-	67,69,70,73	0
3	PO4	A	702	5/5	0.93	0.30	-	118,119,121,123	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.