Full wwPDB X-ray Structure Validation Report ⓘ

Jan 9, 2024 – 03:38 pm GMT

PDB ID	:	8C58
Title	:	CpG specific M.MpeI methyltransferase crystallized in the presence of 5-hydroxycytosine and 5-methylcytosine containing dsDNA
Authors	:	Wojciechowski, M.; Czapinska, H.; Krwawicz, J.; Rafalski, D.; Bochtler, M.
Deposited on	:	2023-01-06
Resolution	:	1.85 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:

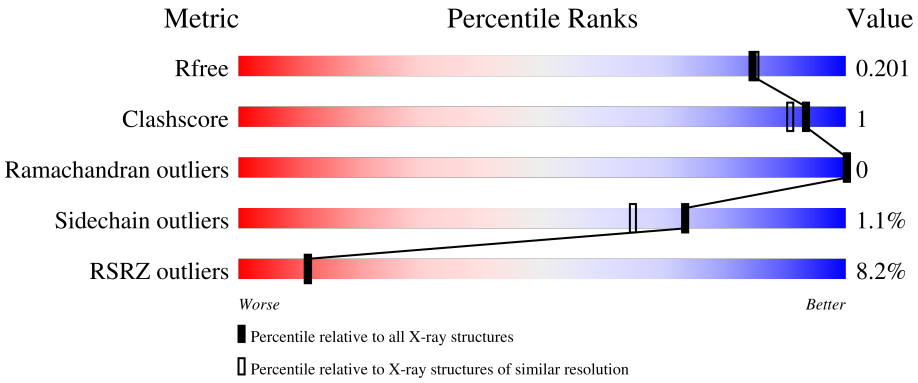
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.85 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}	130704	2469 (1.86-1.86)
Clashscore	141614	2625 (1.86-1.86)
Ramachandran outliers	138981	2592 (1.86-1.86)
Sidechain outliers	138945	2592 (1.86-1.86)
RSRZ outliers	127900	2436 (1.86-1.86)

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% 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	395	8%, 92%, 5%
2	B	14	64%, 29%, 7%
3	C	14	93%, 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
5	GOL	A	407[A]	-	-	-	X

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 4691 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 Cytosine-specific methyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	376	Total	C	N	O	S	0	44	0
			3490	2229	600	649	12			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	68	ARG	GLN	conflict	UNP Q8EVR5
A	71	ARG	LYS	conflict	UNP Q8EVR5
A	295	PRO	SER	conflict	UNP Q8EVR5

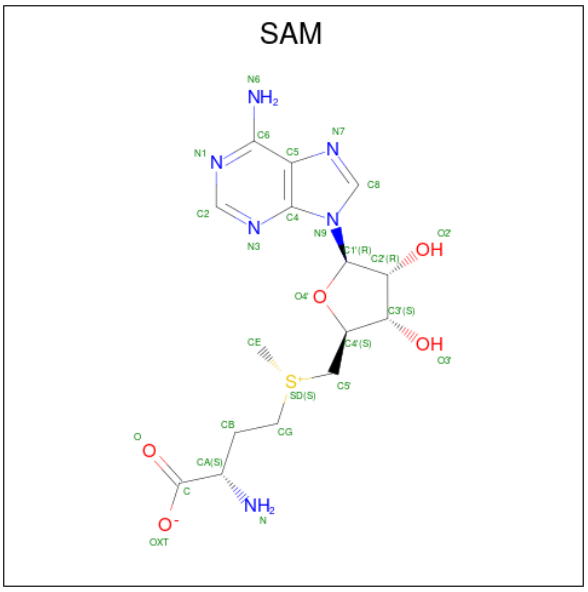
- Molecule 2 is a DNA chain called DNA (5'-D(*CP*CP*AP*CP*AP*TP*GP*(5OC)P*GP*CP*TP*GP*AP*A)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	14	Total	C	N	O	P	0	0	0
			283	135	54	81	13			

- Molecule 3 is a DNA chain called DNA (5'-D(*GP*TP*TP*CP*AP*GP*(5CM)P*GP*CP*AP*TP*GP*TP*G)-3').

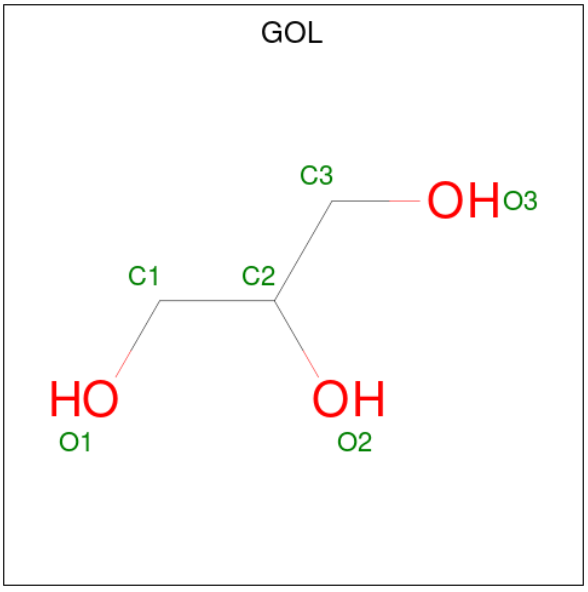
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	14	Total	C	N	O	P	0	0	0
			287	138	52	84	13			

- Molecule 4 is S-ADENOSYLMETHIONINE (three-letter code: SAM) (formula: $C_{15}H_{22}N_6O_5S$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	S	0	0
			27	15	6	5	1		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	O		0	0
			6	3	3			
5	A	1	Total	C	O		0	0
			6	3	3			
5	A	1	Total	C	O		0	0
			6	3	3			

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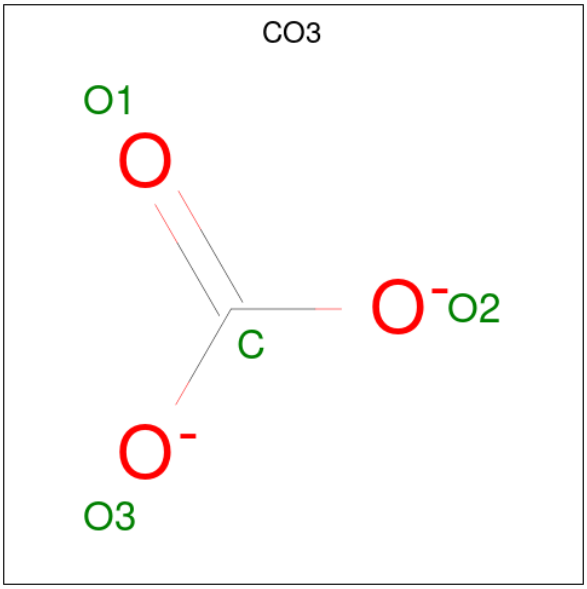
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 6 3 3	0	0
5	A	1	Total C O 6 3 3	0	0
5	A	1	Total C O 6 3 3	0	1
5	A	1	Total C O 6 3 3	0	0
5	B	1	Total C O 6 3 3	0	0

- Molecule 6 is CARBONATE ION (three-letter code: CO3) (formula: CO_3).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	C	1	Total C O 4 1 3	0	0

- Molecule 7 is water.

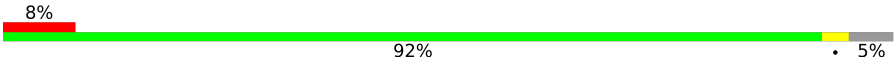
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	448	Total O 449 449	0	32
7	B	47	Total O 49 49	0	3
7	C	54	Total O 54 54	0	1

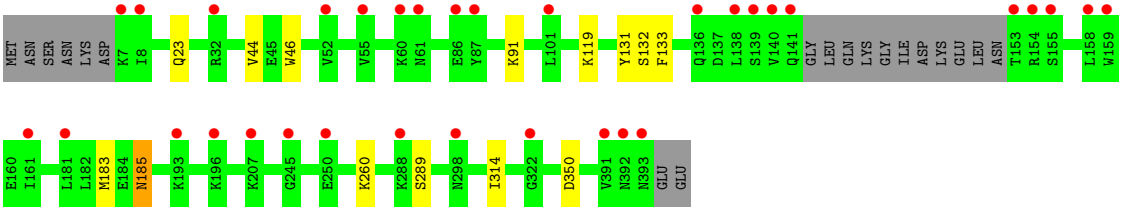
3 Residue-property plots (i)

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: Cytosine-specific methyltransferase

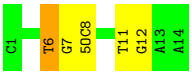
Chain A:





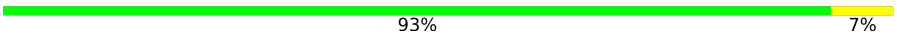
• Molecule 2: DNA (5'-D(*CP*CP*AP*CP*AP*TP*GP*(5OC)P*GP*CP*TP*GP*AP*A)-3')

Chain B:



• Molecule 3: DNA (5'-D(*GP*TP*TP*CP*AP*GP*(5CM)P*GP*CP*AP*TP*GP*TP*G)-3')

Chain C:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α, β, γ	84.52Å 84.52Å 172.99Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.95 – 1.85 19.95 – 1.85	Depositor EDS
% Data completeness (in resolution range)	99.5 (19.95-1.85) 99.6 (19.95-1.85)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.04	Depositor
$< I/\sigma(I) >$ [1]	1.47 (at 1.85Å)	Xtriage
Refinement program	REFMAC 5.8.0258	Depositor
R, R_{free}	0.165 , 0.195 0.172 , 0.201	Depositor DCC
R_{free} test set	2689 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å^2)	36.2	Xtriage
Anisotropy	0.312	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 54.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	4691	wwPDB-VP
Average B, all atoms (Å^2)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.60% of the height of the origin peak. No significant pseudotranslation is detected.*

[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: 5CM, 5OC, CO3, SAM, GOL

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	0.37	0/3554	0.55	0/4759
2	B	0.36	0/294	0.83	1/449 (0.2%)
3	C	0.42	0/298	0.85	0/457
All	All	0.37	0/4146	0.61	1/5665 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	6	DT	C1'-O4'-C4'	-6.51	103.59	110.10

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	3490	0	3536	9	0
2	B	283	0	158	2	0
3	C	287	0	162	0	0
4	A	27	0	22	1	0
5	A	42	0	56	2	0
5	B	6	0	8	0	0
6	C	4	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	A	449	0	0	2	0
7	B	49	0	0	0	0
7	C	54	0	0	0	0
All	All	4691	0	3942	11	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 1.

All (11) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:6:DT:H2"	2:B:7:DG:C8	2.35	0.62
2:B:11:DT:H2"	2:B:12:DG:N7	2.33	0.43
1:A:133:PHE:O	1:A:185[B]:ASN:ND2	2.52	0.43
1:A:132[A]:SER:HB2	5:A:404:GOL:HO3	1.83	0.43
1:A:132[C]:SER:OG	5:A:404:GOL:O3	2.34	0.43
1:A:350[B]:ASP:HB3	7:A:807[B]:HOH:O	2.19	0.42
1:A:260[A]:LYS:NZ	7:A:510:HOH:O	2.52	0.42
1:A:44:VAL:HG12	4:A:401:SAM:H2	2.03	0.41
1:A:131:TYR:CZ	1:A:183:MET:HB2	2.55	0.41
1:A:289:SER:O	1:A:314:ILE:HD11	2.21	0.41
1:A:91[B]:LYS:HD2	1:A:91[B]:LYS:HA	1.90	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	418/395 (106%)	411 (98%)	7 (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	398/369 (108%)	392 (98%)	6 (2%)	65 53

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	23[A]	GLN
1	A	23[B]	GLN
1	A	46	TRP
1	A	119	LYS
1	A	185[A]	ASN
1	A	185[B]	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	94	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

2 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	$\#\|Z\|>2$
3	5CM	C	7	3,2	17,21,22	0.98	1 (5%)	24,30,33	1.23	5 (20%)
2	5OC	B	8	2	18,21,22	1.50	3 (16%)	25,30,33	1.33	3 (12%)

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	5CM	C	7	3,2	-	0/7/21/22	0/2/2/2
2	5OC	B	8	2	-	4/7/21/22	0/2/2/2

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	8	5OC	C6-N1	3.54	1.44	1.38
3	C	7	5CM	C6-C5	3.20	1.39	1.34
2	B	8	5OC	C4-N3	3.19	1.39	1.34
2	B	8	5OC	C5-C4	-2.63	1.39	1.42

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	8	5OC	O4'-C1'-N1	-3.02	102.46	107.86
2	B	8	5OC	O2-C2-N3	-2.97	117.50	122.33
2	B	8	5OC	O5-C5-C4	2.89	118.79	114.43
3	C	7	5CM	C5-C6-N1	-2.82	120.44	123.34
3	C	7	5CM	C5A-C5-C6	-2.62	119.34	122.85
3	C	7	5CM	O4'-C1'-N1	2.39	112.14	107.86
3	C	7	5CM	C5-C4-N3	-2.16	119.34	121.67
3	C	7	5CM	O2-C2-N3	-2.12	118.88	122.33

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	8	5OC	C2'-C1'-N1-C6
2	B	8	5OC	C2'-C1'-N1-C2
2	B	8	5OC	O4'-C1'-N1-C6
2	B	8	5OC	O4'-C1'-N1-C2

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

10 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	$\#\|Z\| > 2$
4	SAM	A	401	-	24,29,29	1.00	1 (4%)	23,42,42	1.70	7 (30%)
5	GOL	B	101	-	5,5,5	0.30	0	5,5,5	0.21	0
5	GOL	A	402	-	5,5,5	0.38	0	5,5,5	0.54	0
5	GOL	A	404	-	5,5,5	0.27	0	5,5,5	0.57	0
5	GOL	A	406	-	5,5,5	0.37	0	5,5,5	0.35	0
5	GOL	A	403	-	5,5,5	0.37	0	5,5,5	0.39	0
5	GOL	A	408	-	5,5,5	0.40	0	5,5,5	0.29	0
5	GOL	A	407[A]	-	5,5,5	0.33	0	5,5,5	0.27	0
5	GOL	A	405	-	5,5,5	0.31	0	5,5,5	0.20	0
6	CO3	C	101	-	2,3,3	1.27	0	2,3,3	0.38	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
4	SAM	A	401	-	-	4/12/33/33	0/3/3/3
5	GOL	B	101	-	-	0/4/4/4	-
5	GOL	A	402	-	-	1/4/4/4	-
5	GOL	A	404	-	-	2/4/4/4	-
5	GOL	A	406	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	A	403	-	-	2/4/4/4	-
5	GOL	A	408	-	-	2/4/4/4	-
5	GOL	A	407[A]	-	-	4/4/4/4	-
5	GOL	A	405	-	-	0/4/4/4	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	401	SAM	C5-C4	2.17	1.46	1.40

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	401	SAM	N3-C2-N1	-3.15	123.75	128.68
4	A	401	SAM	C4-C5-N7	-2.95	106.33	109.40
4	A	401	SAM	CG-SD-C5'	2.83	110.62	103.40
4	A	401	SAM	C1'-N9-C4	-2.65	121.98	126.64
4	A	401	SAM	OXT-C-CA	2.53	121.99	113.38
4	A	401	SAM	O4'-C1'-C2'	-2.48	103.30	106.93
4	A	401	SAM	OXT-C-O	-2.21	119.07	124.09

There are no chirality outliers.

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	403	GOL	O1-C1-C2-C3
5	A	404	GOL	O1-C1-C2-C3
5	A	406	GOL	C1-C2-C3-O3
5	A	407[A]	GOL	C1-C2-C3-O3
5	A	407[A]	GOL	O1-C1-C2-O2
5	A	407[A]	GOL	O1-C1-C2-C3
5	A	408	GOL	C1-C2-C3-O3
5	A	403	GOL	O1-C1-C2-O2
5	A	404	GOL	O1-C1-C2-O2
5	A	406	GOL	O2-C2-C3-O3
5	A	407[A]	GOL	O2-C2-C3-O3
5	A	408	GOL	O2-C2-C3-O3
4	A	401	SAM	O-C-CA-CB
4	A	401	SAM	OXT-C-CA-CB
4	A	401	SAM	CB-CG-SD-CE

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Mol	Chain	Res	Type	Atoms
4	A	401	SAM	CB-CG-SD-C5'
5	A	402	GOL	C1-C2-C3-O3

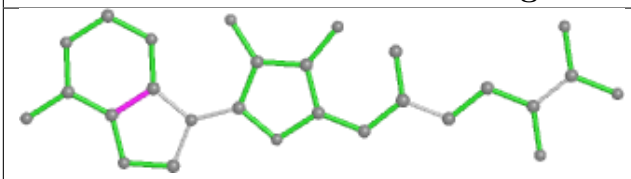
There are no ring outliers.

2 monomers are involved in 3 short contacts:

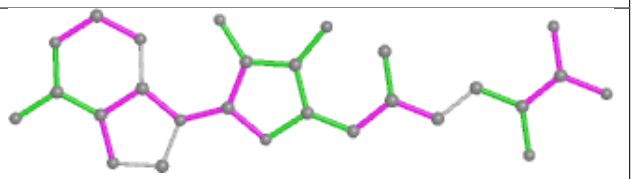
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	401	SAM	1	0
5	A	404	GOL	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

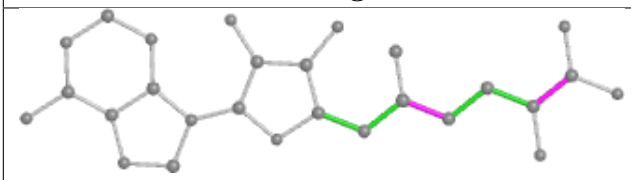
Ligand SAM A 401



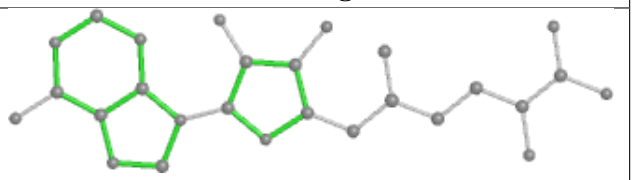
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

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^{th} 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	376/395 (95%)	0.37	33 (8%) 10 9	25, 40, 65, 98	0
2	B	13/14 (92%)	0.04	0 100 100	32, 47, 66, 71	0
3	C	13/14 (92%)	-0.18	0 100 100	39, 50, 60, 61	0
All	All	402/423 (95%)	0.34	33 (8%) 11 11	25, 40, 65, 98	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	140	VAL	9.0
1	A	393	ASN	7.5
1	A	153	THR	6.7
1	A	392	ASN	5.2
1	A	61	ASN	4.5
1	A	8	ILE	4.5
1	A	141	GLN	4.2
1	A	7	LYS	3.7
1	A	138	LEU	3.4
1	A	32	ARG	3.3
1	A	159	TRP	3.1
1	A	196	LYS	3.0
1	A	161	ILE	2.9
1	A	154	ARG	2.6
1	A	158	LEU	2.5
1	A	87	TYR	2.5
1	A	155	SER	2.5
1	A	193[A]	LYS	2.5
1	A	139	SER	2.4
1	A	298	ASN	2.3
1	A	60[A]	LYS	2.3
1	A	55	VAL	2.3
1	A	245	GLY	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	322	GLY	2.2
1	A	86[A]	GLU	2.2
1	A	136	GLN	2.2
1	A	391	VAL	2.2
1	A	181	LEU	2.1
1	A	101	LEU	2.1
1	A	250	GLU	2.1
1	A	207	LYS	2.1
1	A	52	VAL	2.0
1	A	288[A]	LYS	2.0

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. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	5CM	C	7	20/21	0.94	0.10	31,39,47,49	0
2	5OC	B	8	20/21	0.97	0.08	27,30,38,42	0

6.3 Carbohydrates (i)

There are no monosaccharides 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, 95^{th} 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
5	GOL	A	408	6/6	0.65	0.26	70,74,74,75	0
5	GOL	A	403	6/6	0.68	0.26	74,76,79,79	0
5	GOL	A	404	6/6	0.70	0.26	60,63,65,66	0
5	GOL	A	407[A]	6/6	0.78	0.50	54,56,56,57	6
5	GOL	A	405	6/6	0.79	0.21	64,66,66,67	0
5	GOL	B	101	6/6	0.83	0.21	70,71,72,72	6

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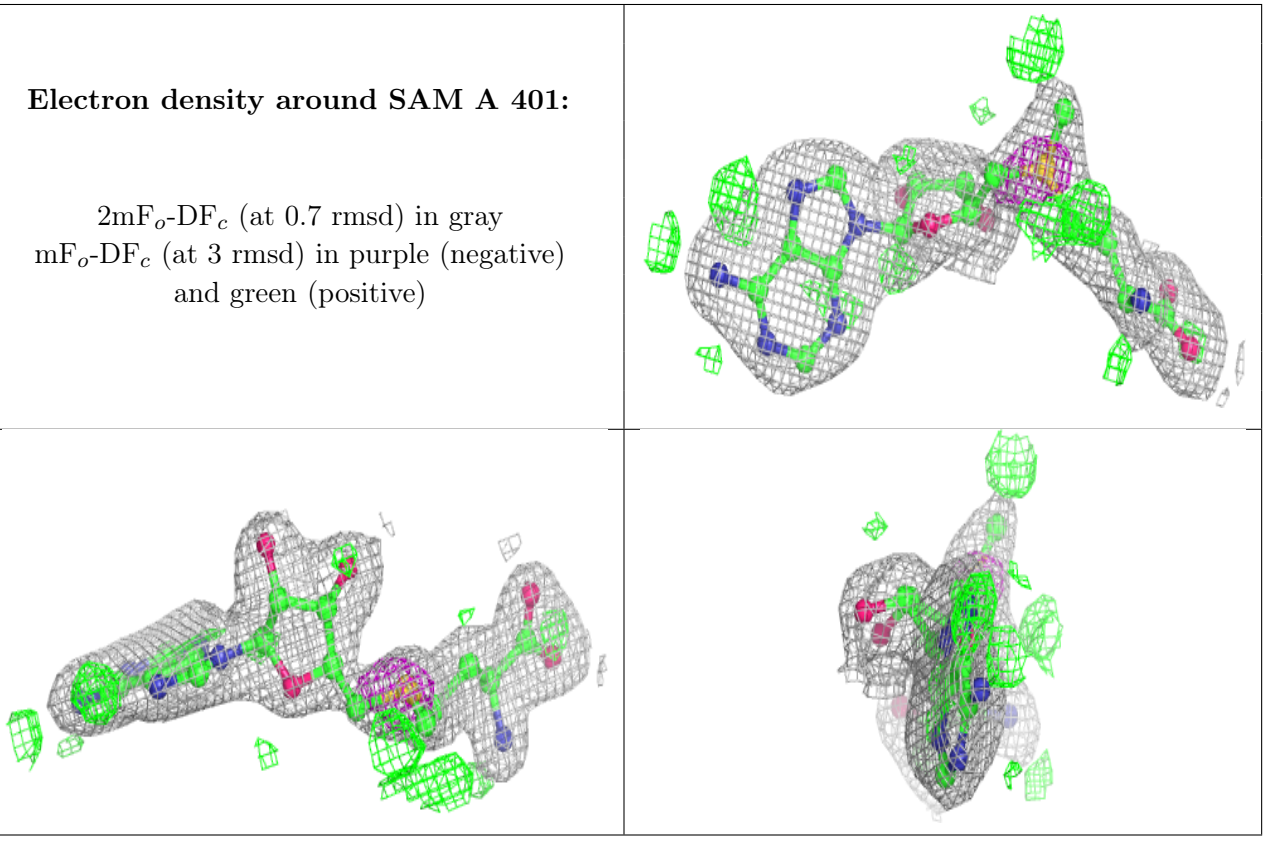
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	CO3	C	101	4/4	0.84	0.18	53,55,55,55	0
4	SAM	A	401	27/27	0.86	0.14	35,38,43,45	27
5	GOL	A	406	6/6	0.91	0.32	77,77,79,80	0
5	GOL	A	402	6/6	0.92	0.10	37,39,42,44	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around SAM A 401:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



6.5 Other polymers

There are no such residues in this entry.