



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 12, 2026 – 07:48 PM UTC

PDB ID : 8BIB / pdb\_00008bib  
Title : O-Methyltransferase Plu4890 in complex with SAH and AQ-256  
Authors : Huber, E.M.; Groll, M.  
Deposited on : 2022-11-02  
Resolution : 2.30 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

<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>.

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	NOT EXECUTED
Xtriage (Phenix)	:	2.0
EDS	:	NOT EXECUTED
Buster-report	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

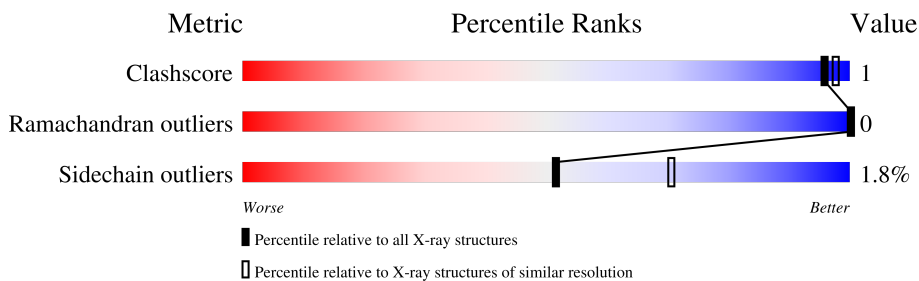
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 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))
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ .

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	319	97% ..
1	B	319	95% .
1	C	319	96% ..
1	D	319	95% 5%

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 10992 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.

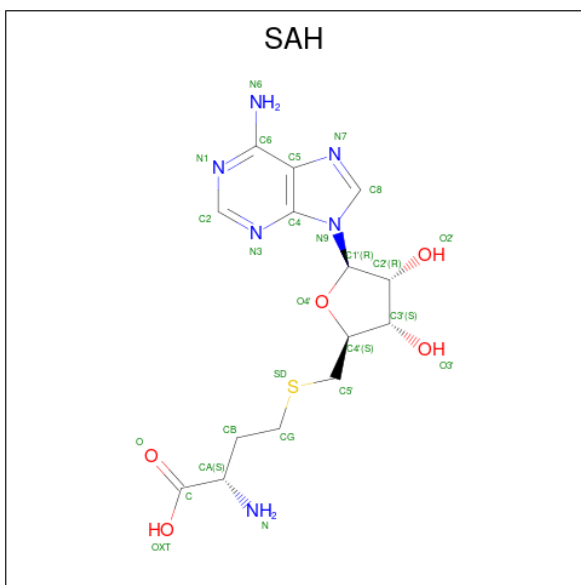
- Molecule 1 is a protein called Methyltransferase Plu4890.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	319	Total	C	N	O	S	0	0	0
			2574	1650	425	487	12			
1	B	319	Total	C	N	O	S	0	0	0
			2574	1650	425	487	12			
1	C	319	Total	C	N	O	S	0	0	0
			2574	1650	425	487	12			
1	D	319	Total	C	N	O	S	0	0	0
			2574	1650	425	487	12			

There are 4 discrepancies between the modelled and reference sequences:

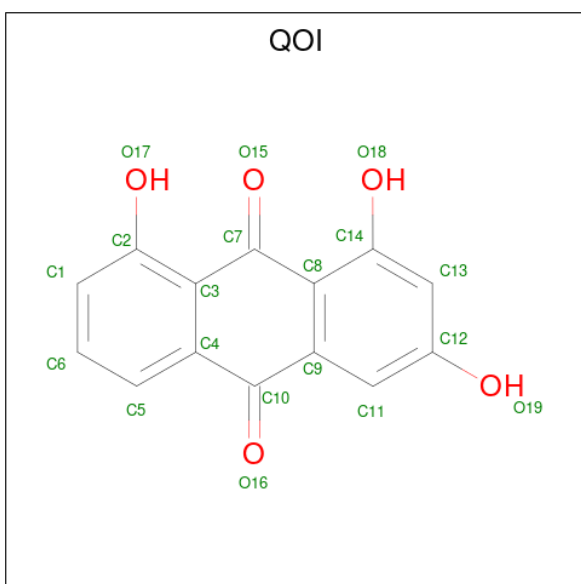
Chain	Residue	Modelled	Actual	Comment	Reference
A	0	SER	-	expression tag	UNP A0A6L9JR93
B	0	SER	-	expression tag	UNP A0A6L9JR93
C	0	SER	-	expression tag	UNP A0A6L9JR93
D	0	SER	-	expression tag	UNP A0A6L9JR93

- Molecule 2 is S-ADENOSYL-L-HOMOCYSTEINE (CCD ID: SAH) (formula: C<sub>14</sub>H<sub>20</sub>N<sub>6</sub>O<sub>5</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
2	B	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
2	C	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
2	D	1	Total	C	N	O	S	0	0
			26	14	6	5	1		

- Molecule 3 is 1,3,8-tris(oxidanyl)anthracene-9,10-dione (CCD ID: QOI) (formula: C<sub>14</sub>H<sub>8</sub>O<sub>5</sub>) (labeled as "Ligand of Interest" by depositor).

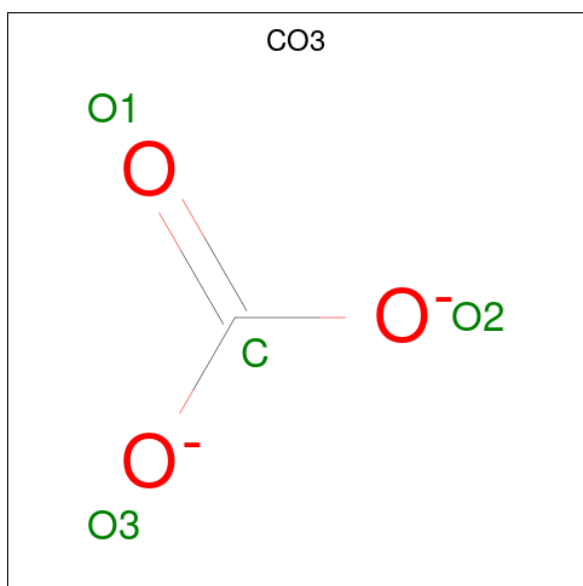


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			19	14	5		
3	B	1	Total	C	O	0	0
			19	14	5		
3	C	1	Total	C	O	0	0
			19	14	5		
3	D	1	Total	C	O	0	0
			19	14	5		

- Molecule 4 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Na	0	0
			1	1		

- Molecule 5 is CARBONATE ION (CCD ID: CO3) (formula: CO<sub>3</sub>).



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

- Molecule 6 is GLYCEROL (CCD ID: GOL) (formula:  $C_3H_8O_3$ ).



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

- Molecule 7 is CHLORIDE ION (CCD ID: CL) (formula:  $Cl$ ).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	C	1	Total	Cl	0	0
			1	1		
7	D	2	Total	Cl	0	0
			2	2		

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	97	Total	O	0	0
			97	97		
8	B	102	Total	O	0	0
			102	102		
8	C	144	Total	O	0	0
			144	144		
8	D	147	Total	O	0	0
			147	147		

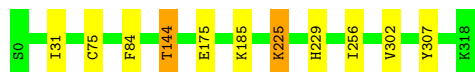
### 3 Residue-property plots [i](#)

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. 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 was not executed.

- Molecule 1: Methyltransferase Plu4890

Chain A:  97%



- Molecule 1: Methyltransferase Plu4890

Chain B:  95%



- Molecule 1: Methyltransferase Plu4890

Chain C:  96%



- Molecule 1: Methyltransferase Plu4890

Chain D:  95%



## 4 Data and refinement statistics

EDS was not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	63.06Å 77.05Å 167.22Å 90.00° 95.50° 90.00°	Depositor
Resolution (Å)	30.00 – 2.30	Depositor
% Data completeness (in resolution range)	96.6 (30.00-2.30)	Depositor
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.92 (at 2.29Å)	Xtriage
Refinement program	REFMAC 5.8.0258	Depositor
R, $R_{free}$	0.214 , 0.252	Depositor
Wilson B-factor (Å <sup>2</sup> )	39.7	Xtriage
Anisotropy	0.249	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	10992	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 46.24 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.1786e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<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: SAH, GOL, QOI, CL, CO3, NA

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	1.01	0/2628	1.44	0/3538
1	B	1.01	0/2628	1.45	0/3538
1	C	1.00	0/2628	1.43	0/3538
1	D	1.00	0/2628	1.44	0/3538
All	All	1.00	0/10512	1.44	0/14152

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2574	0	2531	5	0
1	B	2574	0	2531	8	0
1	C	2574	0	2531	4	0
1	D	2574	0	2531	8	0
2	A	26	0	19	0	0
2	B	26	0	19	0	0
2	C	26	0	19	0	0
2	D	26	0	19	0	0
3	A	19	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	19	0	0	0	0
3	C	19	0	0	0	0
3	D	19	0	0	0	0
4	A	1	0	0	0	0
5	A	4	0	0	0	0
5	B	4	0	0	0	0
5	C	4	0	0	0	0
5	D	4	0	0	0	0
6	B	6	0	8	0	0
7	C	1	0	0	0	0
7	D	2	0	0	0	0
8	A	97	0	0	0	0
8	B	102	0	0	0	0
8	C	144	0	0	0	0
8	D	147	0	0	0	0
All	All	10992	0	10208	22	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 (22) 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:D:164:ASN:HA	1:D:187:LYS:HD2	1.77	0.65
1:C:153:LYS:HG2	1:C:303:ILE:HG23	1.83	0.60
1:C:225:LYS:HA	1:C:256:ILE:O	2.01	0.60
1:A:307:TYR:HA	1:B:0:SER:HB2	1.88	0.56
1:D:298:GLN:NE2	1:D:316:GLN:OE1	2.39	0.55
1:A:307:TYR:HA	1:B:0:SER:CB	2.38	0.54
1:B:225:LYS:HA	1:B:256:ILE:O	2.08	0.53
1:C:184:VAL:O	1:C:189:TYR:OH	2.26	0.51
1:D:283:PHE:CZ	1:D:300:THR:HG21	2.46	0.50
1:D:225:LYS:HA	1:D:256:ILE:O	2.11	0.50
1:A:144:THR:HG23	1:A:175:GLU:HG3	1.93	0.50
1:B:103:MET:HE3	1:B:119:MET:HE2	1.95	0.47
1:A:225:LYS:HA	1:A:256:ILE:O	2.15	0.46
1:D:174:GLY:O	1:D:178:VAL:HG23	2.15	0.46
1:A:75:CYS:SG	1:B:2:LEU:HD13	2.56	0.46
1:D:147:SER:O	1:D:151:VAL:HG23	2.16	0.45
1:B:224:LEU:HD21	1:B:228:LEU:HD13	2.00	0.44
1:C:229:HIS:CD2	1:C:257:ASN:HD21	2.35	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:254:LEU:HB3	1:D:256:ILE:HD11	2.00	0.43
1:B:56:LEU:HA	1:B:59:MET:HE3	2.01	0.41
1:B:142:LEU:HD22	1:B:143:MET:CE	2.51	0.40
1:D:283:PHE:CE1	1:D:300:THR:HG21	2.57	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	317/319 (99%)	315 (99%)	2 (1%)	0	100	100
1	B	317/319 (99%)	310 (98%)	7 (2%)	0	100	100
1	C	317/319 (99%)	311 (98%)	6 (2%)	0	100	100
1	D	317/319 (99%)	314 (99%)	3 (1%)	0	100	100
All	All	1268/1276 (99%)	1250 (99%)	18 (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	287/287 (100%)	280 (98%)	7 (2%)	43	62
1	B	287/287 (100%)	283 (99%)	4 (1%)	59	76

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	287/287 (100%)	281 (98%)	6 (2%)	47	66
1	D	287/287 (100%)	283 (99%)	4 (1%)	59	76
All	All	1148/1148 (100%)	1127 (98%)	21 (2%)	51	70

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	31	ILE
1	A	84	PHE
1	A	144	THR
1	A	185	LYS
1	A	225	LYS
1	A	229	HIS
1	A	302	VAL
1	B	84	PHE
1	B	211	PHE
1	B	225	LYS
1	B	229	HIS
1	C	84	PHE
1	C	136	LYS
1	C	211	PHE
1	C	229	HIS
1	C	257	ASN
1	C	300	THR
1	D	9	ASN
1	D	84	PHE
1	D	211	PHE
1	D	257	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	148	ASN
1	A	226	ASN
1	A	292	GLN
1	B	226	ASN
1	B	305	GLN
1	C	148	ASN
1	C	161	ASN
1	C	226	ASN

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Mol	Chain	Res	Type
1	C	257	ASN
1	C	291	ASN
1	D	9	ASN
1	D	26	HIS
1	D	188	HIS
1	D	291	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](#)

Mogul was not executed - this section is therefore empty.

## 5.5 Carbohydrates [i](#)

Mogul was not executed - this section is therefore empty.

## 5.6 Ligand geometry [i](#)

Mogul was not executed - this section is therefore empty.

## 5.7 Other polymers [i](#)

Mogul was not executed - this section is therefore empty.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

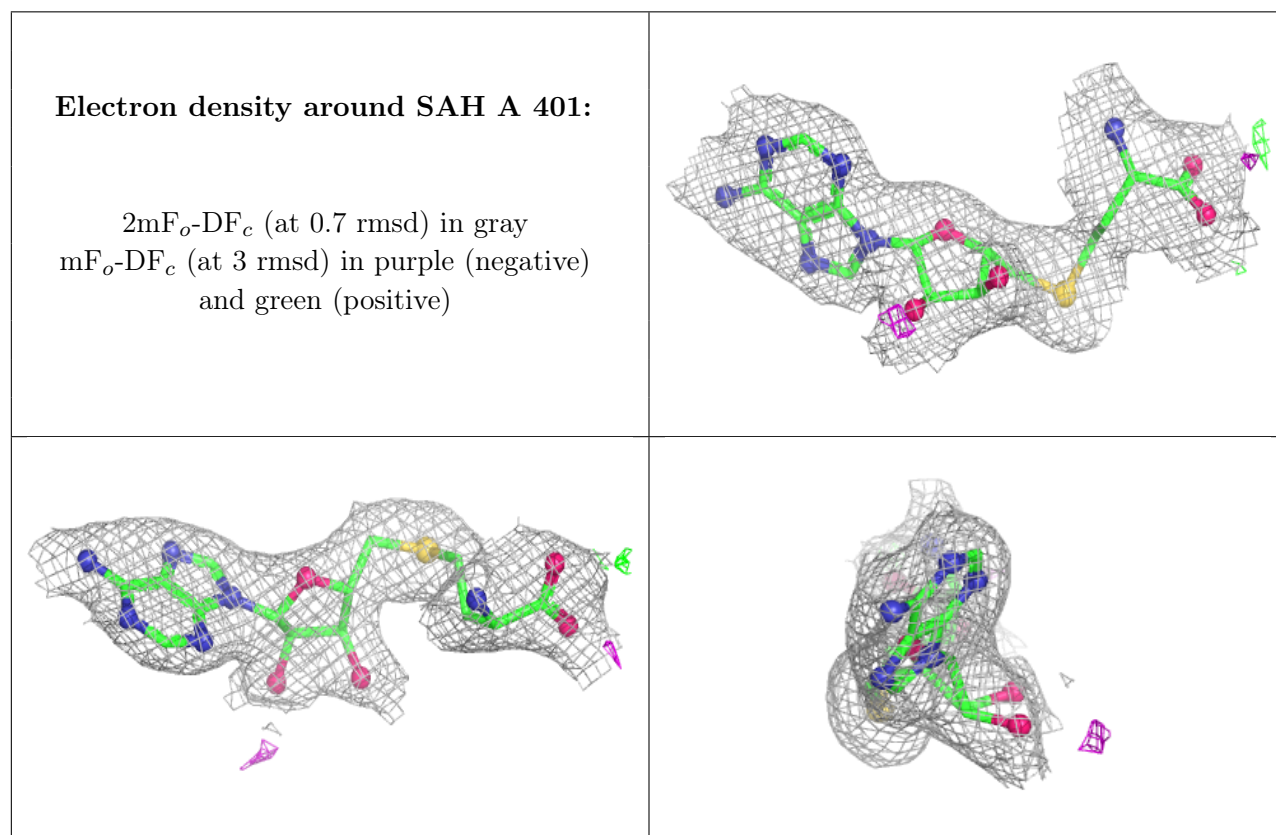
### 6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

### 6.4 Ligands [i](#)

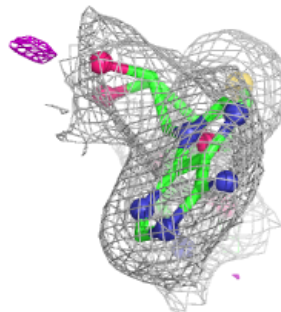
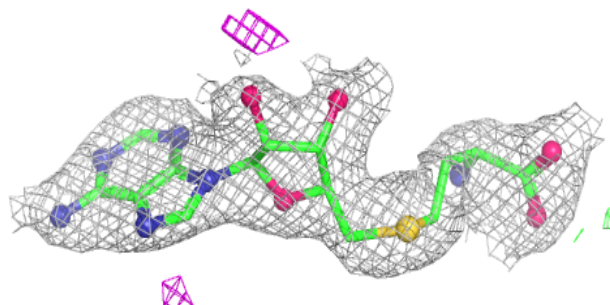
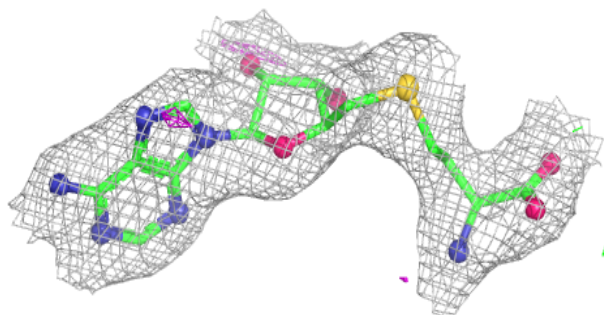
EDS was not executed - this section is therefore empty.

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.

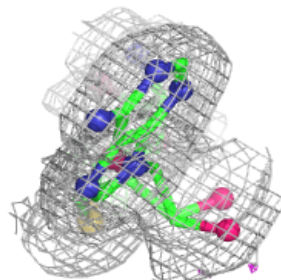
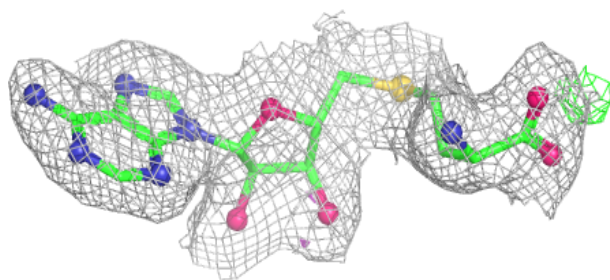
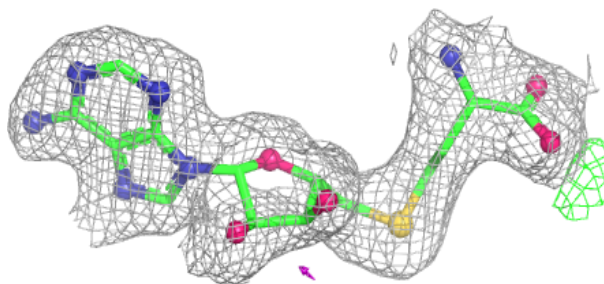


**Electron density around SAH B 401:**

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

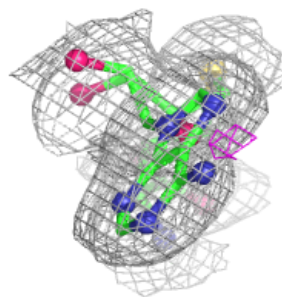
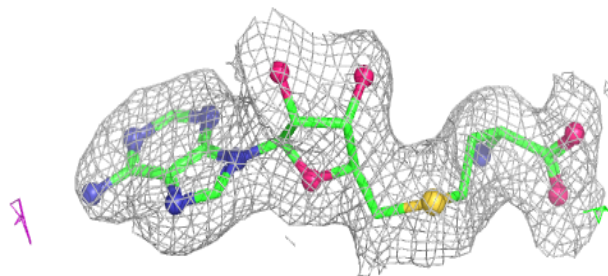
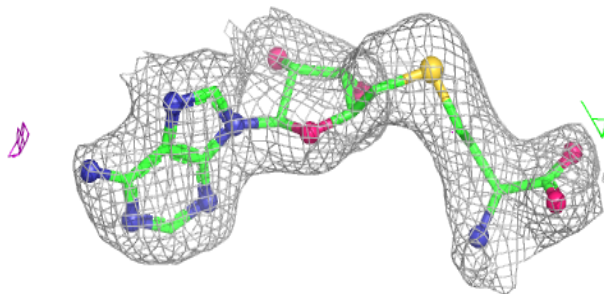
**Electron density around SAH C 401:**

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



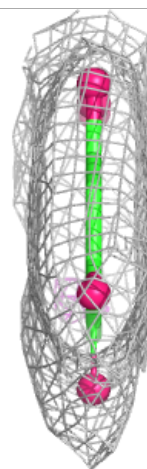
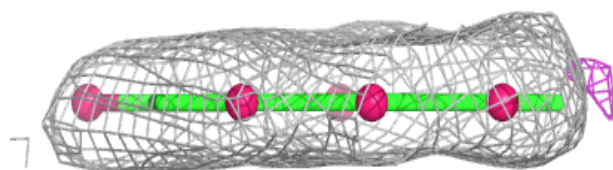
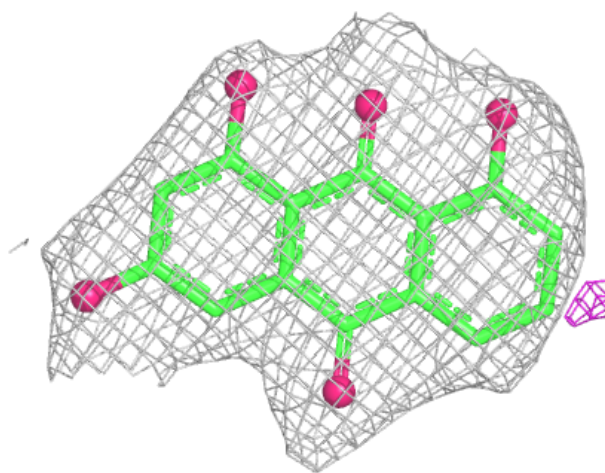
**Electron density around SAH D 401:**

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



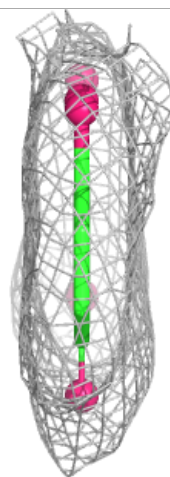
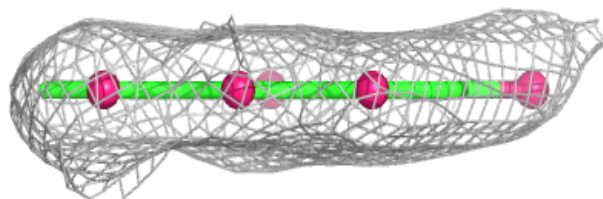
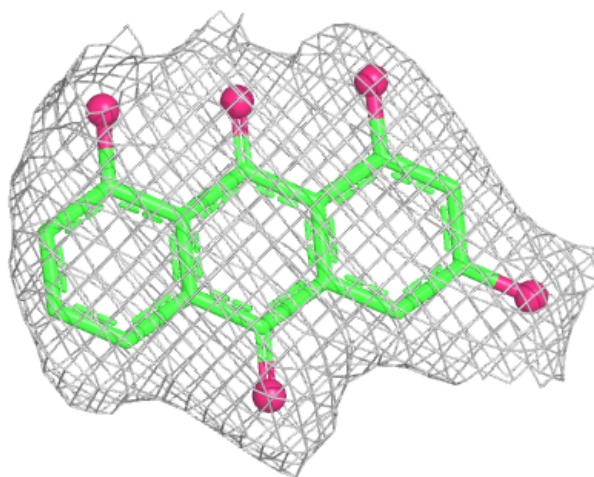
**Electron density around QOI A 402:**

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



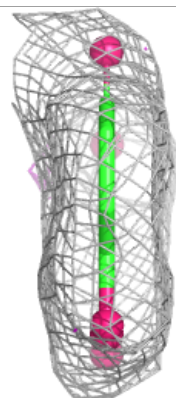
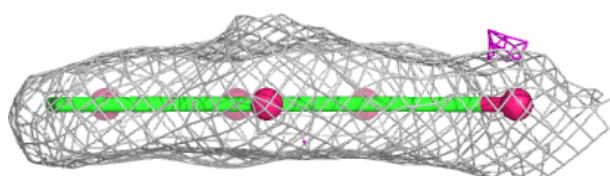
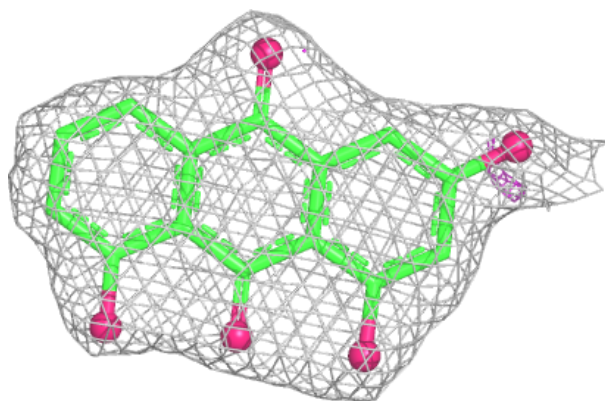
**Electron density around QOI B 402:**

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

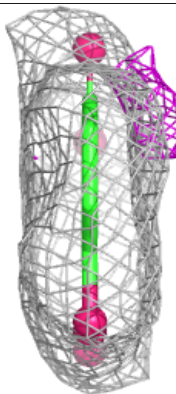
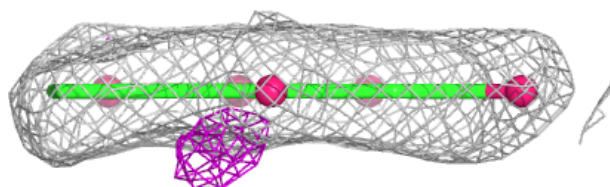
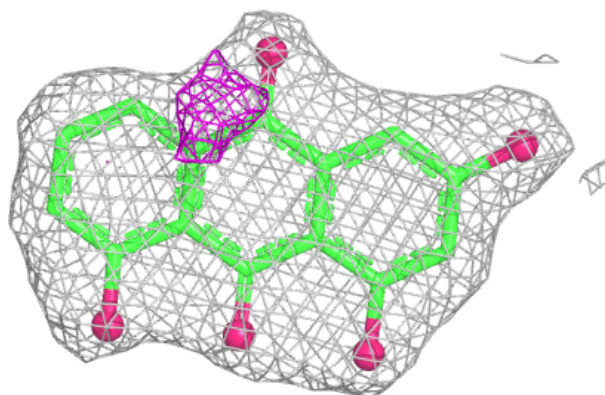


**Electron density around QOI C 402:**

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

**Electron density around QOI D 402:**

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



## 6.5 Other polymers

EDS was not executed - this section is therefore empty.