



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 8, 2023 – 04:47 PM EDT

PDB ID : 6MBK
Title : SETD3, a Histidine Methyltransferase, in Complex with an Actin Peptide and SAH, First P212121 Crystal Form
Authors : Horton, J.R.; Dai, S.; Cheng, X.
Deposited on : 2018-08-30
Resolution : 1.69 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 : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : 2.35.1
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) : 2.35.1

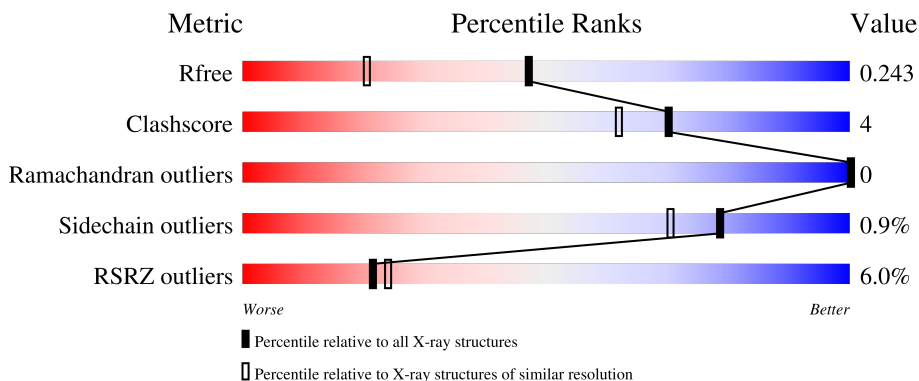
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.69 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	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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 $\leq 5\%$. 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	Y	15	 20% 80% 20%
1	Z	15	 13% 93% 7%
2	A	599	 5% 77% 19%
2	B	599	 4% 73% 7% 20%

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	B	1010	-	-	-	X
5	GOL	B	1011	-	-	X	X

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 9190 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 Actin peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
1	Y	15	126	83	20	23	0	0	0
1	Z	15	126	83	20	23	0	0	0

- Molecule 2 is a protein called Histone-lysine N-methyltransferase setd3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	A	483	3985	2549	669	748	19	0	12	0
2	B	481	3968	2537	667	745	19	0	13	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	GLY	-	expression tag	UNP Q86TU7
A	-4	PRO	-	expression tag	UNP Q86TU7
A	-3	LEU	-	expression tag	UNP Q86TU7
A	-2	GLY	-	expression tag	UNP Q86TU7
A	-1	SER	-	expression tag	UNP Q86TU7
B	-5	GLY	-	expression tag	UNP Q86TU7
B	-4	PRO	-	expression tag	UNP Q86TU7
B	-3	LEU	-	expression tag	UNP Q86TU7
B	-2	GLY	-	expression tag	UNP Q86TU7
B	-1	SER	-	expression tag	UNP Q86TU7

- Molecule 3 is S-ADENOSYL-L-HOMOCYSTEINE (three-letter code: SAH) (formula: C₁₄H₂₀N₆O₅S).



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

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



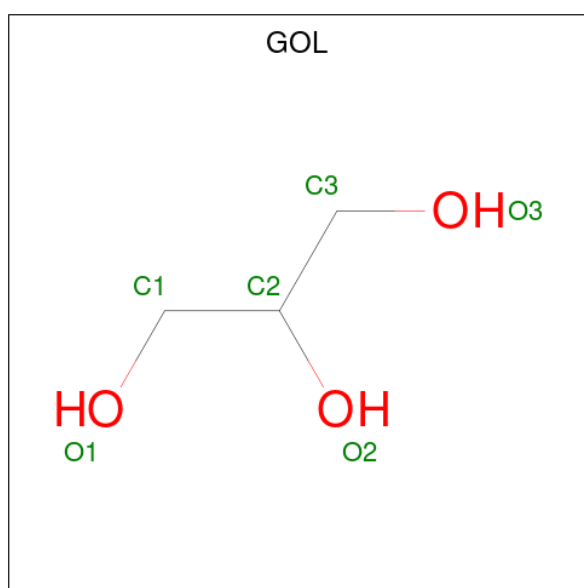
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			4	2	2		
4	A	1	Total	C	O	0	0
			4	2	2		

Continued on next page...

Continued from previous page...

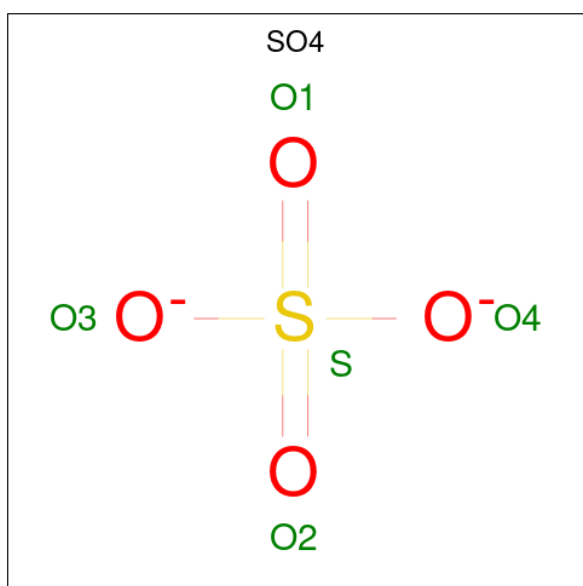
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0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

- 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 6 3 3	0	0
5	A	1	Total C O 6 3 3	0	0
5	B	1	Total C O 6 3 3	0	0
5	B	1	Total C O 6 3 3	0	0

- Molecule 6 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



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

- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	Y	18	Total O 18 18	0	0
7	A	418	Total O 418 418	0	0

Continued on next page...

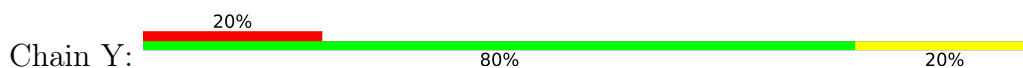
Continued from previous page...

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	Z	15	Total 15	O 15	0	0
7	B	382	Total 382	O 382	0	0

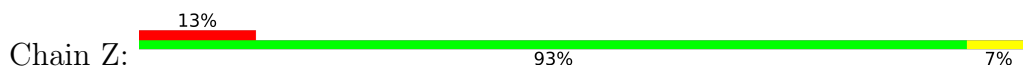
3 Residue-property plots [i](#)

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.

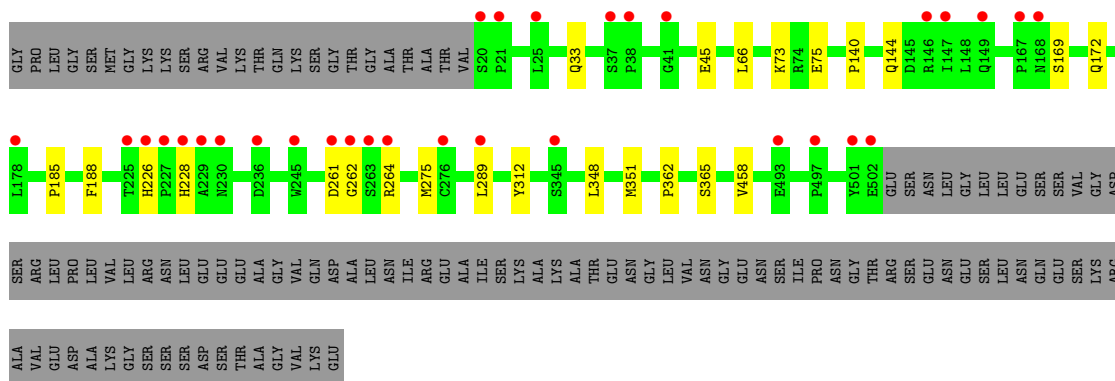
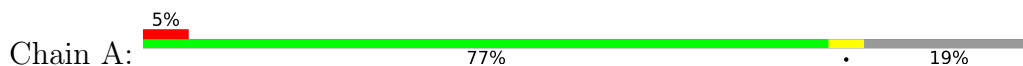
- Molecule 1: Actin peptide



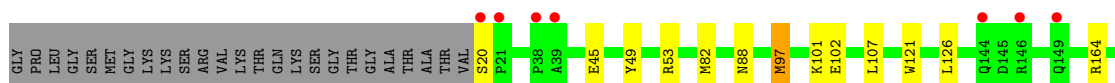
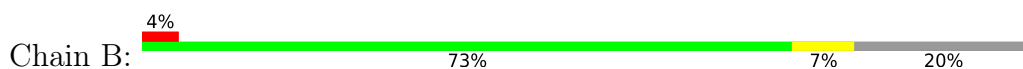
- Molecule 1: Actin peptide

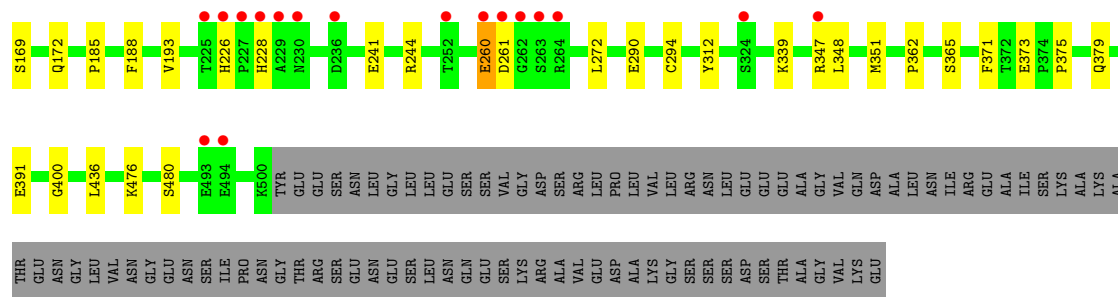


- Molecule 2: Histone-lysine N-methyltransferase setd3



- Molecule 2: Histone-lysine N-methyltransferase setd3





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	60.28Å 115.97Å 173.59Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	37.73 – 1.69 37.73 – 1.69	Depositor EDS
% Data completeness (in resolution range)	98.8 (37.73-1.69) 98.8 (37.73-1.69)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.21 (at 1.69Å)	Xtrriage
Refinement program	PHENIX (1.13_2998)	Depositor
R, R_{free}	0.228 , 0.243 0.228 , 0.243	Depositor DCC
R_{free} test set	1996 reflections (1.48%)	wwPDB-VP
Wilson B-factor (Å ²)	20.5	Xtrriage
Anisotropy	0.389	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 55.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	9190	wwPDB-VP
Average B, all atoms (Å ²)	30.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 88.68 % 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 4.4922e-08. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Intensities estimated from amplitudes.

²Theoretical 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: SO4, EDO, SAH, 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	Y	0.50	0/130	0.53	0/178
1	Z	0.46	0/130	0.55	0/178
2	A	0.54	0/4101	0.59	0/5546
2	B	0.54	0/4087	0.60	0/5527
All	All	0.54	0/8448	0.59	0/11429

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	Y	126	0	120	3	0
1	Z	126	0	120	1	0
2	A	3985	0	3952	17	0
2	B	3968	0	3934	41	0
3	A	26	0	19	0	0
3	B	26	0	19	0	0
4	A	24	0	36	2	0
4	B	32	0	48	7	0
5	A	12	0	14	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	12	0	16	12	0
6	A	10	0	0	0	0
6	B	10	0	0	1	0
7	A	418	0	0	3	0
7	B	382	0	0	5	0
7	Y	18	0	0	0	0
7	Z	15	0	0	0	0
All	All	9190	0	8278	60	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 (60) 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)
6:B:1012:SO4:O4	7:B:1101:HOH:O	1.92	0.85
2:B:373:GLU:OE2	5:B:1011:GOL:H31	1.80	0.81
2:B:373:GLU:CD	5:B:1011:GOL:H31	2.04	0.77
2:B:53:ARG:NH1	7:B:1102:HOH:O	2.22	0.72
2:A:261:ASP:OD1	2:A:264:ARG:NH2	2.30	0.63
2:B:260:GLU:H	2:B:260:GLU:CD	2.02	0.61
2:B:169:SER:HB3	2:B:172:GLN:HG2	1.87	0.56
2:B:379:GLN:NE2	7:B:1107:HOH:O	2.34	0.56
2:B:260:GLU:OE1	2:B:260:GLU:N	2.39	0.55
2:B:480[B]:SER:OG	5:B:1011:GOL:O3	2.25	0.54
5:B:1011:GOL:O3	5:B:1011:GOL:O1	2.20	0.54
2:B:82:MET:HE1	2:B:272:LEU:HD13	1.90	0.54
1:Y:72:GLU:HG3	2:A:312:TYR:O	2.09	0.53
2:B:164:ARG:HH12	4:B:1004:EDO:H11	1.73	0.53
2:A:458:VAL:HG23	2:B:101:LYS:HG2	1.91	0.53
2:B:348:LEU:HD22	2:B:351:MET:CE	2.39	0.52
2:A:458:VAL:CG2	2:B:101:LYS:HG2	2.41	0.51
2:A:348:LEU:HD22	2:A:351:MET:CE	2.41	0.49
2:B:373:GLU:OE2	5:B:1011:GOL:C3	2.55	0.49
1:Z:72:GLU:HG3	2:B:312:TYR:O	2.13	0.49
2:B:164:ARG:HH12	4:B:1004:EDO:C1	2.25	0.49
2:B:373:GLU:CG	5:B:1011:GOL:H31	2.44	0.48
2:A:73:LYS:HZ1	2:B:241:GLU:CD	2.17	0.48
1:Y:79:TRP:O	1:Y:80:ASP:CB	2.61	0.47
2:B:45:GLU:OE1	4:B:1002:EDO:O1	2.32	0.47
2:A:362:PRO:HG2	2:A:365:SER:HB2	1.96	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:371:PHE:O	5:B:1011:GOL:O2	2.26	0.47
2:B:476:LYS:HD3	5:B:1011:GOL:H12	1.96	0.46
2:A:169:SER:HB3	2:A:172[A]:GLN:HG2	1.97	0.46
2:B:348:LEU:HD22	2:B:351:MET:HE1	1.98	0.46
2:B:121:TRP:HA	2:B:294[A]:CYS:O	2.16	0.46
2:B:375:PRO:HB3	5:B:1011:GOL:C1	2.46	0.45
2:B:362:PRO:HG2	2:B:365:SER:HB2	1.97	0.45
2:A:66:LEU:HG	4:A:604:EDO:H22	1.99	0.45
2:B:375:PRO:HB3	5:B:1011:GOL:H11	1.99	0.44
2:A:262:GLY:HA3	2:A:289:LEU:HD11	2.00	0.44
2:B:102[B]:GLU:HG2	7:B:1288:HOH:O	2.17	0.44
2:B:88:ASN:HB2	2:B:126:LEU:HD21	2.00	0.44
2:B:82:MET:CE	2:B:272:LEU:HD13	2.48	0.44
1:Y:79:TRP:O	1:Y:80:ASP:HB2	2.18	0.43
2:A:45:GLU:OE1	4:A:602:EDO:O2	2.36	0.43
2:B:347:ARG:HG3	2:B:348:LEU:HG	1.99	0.43
2:B:339:LYS:H	4:B:1009:EDO:C2	2.31	0.43
2:B:97[B]:MET:SD	2:B:107:LEU:CD2	3.06	0.43
2:A:275:MET:HE3	2:A:275:MET:HB3	1.87	0.43
2:B:241:GLU:CD	2:B:244:ARG:HH21	2.21	0.42
2:B:185:PRO:HA	2:B:188:PHE:CD1	2.55	0.42
2:B:400:GLY:HA3	4:B:1008:EDO:C2	2.49	0.42
2:A:140:PRO:O	2:A:144:GLN:HG2	2.20	0.42
2:A:185:PRO:HA	2:A:188:PHE:CD1	2.54	0.42
2:A:226:HIS:HB3	2:A:228:HIS:CE1	2.54	0.42
2:A:172[A]:GLN:NE2	7:A:710:HOH:O	2.49	0.41
2:B:436:LEU:HD21	4:B:1009:EDO:H11	2.02	0.41
7:A:705:HOH:O	2:B:101:LYS:HG3	2.21	0.41
2:B:351:MET:HE1	2:B:391:GLU:HG3	2.03	0.41
2:B:476:LYS:HB3	5:B:1011:GOL:H12	2.02	0.41
5:B:1011:GOL:H11	7:B:1136:HOH:O	2.19	0.41
2:B:339:LYS:H	4:B:1009:EDO:H21	1.86	0.41
2:B:49:TYR:OH	2:B:193:VAL:HG21	2.21	0.40
2:A:75:GLU:OE2	7:A:701:HOH:O	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	Y	13/15 (87%)	13 (100%)	0	0	100	100
1	Z	13/15 (87%)	13 (100%)	0	0	100	100
2	A	493/599 (82%)	486 (99%)	7 (1%)	0	100	100
2	B	492/599 (82%)	488 (99%)	4 (1%)	0	100	100
All	All	1011/1228 (82%)	1000 (99%)	11 (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	Y	14/14 (100%)	14 (100%)	0	100	100
1	Z	14/14 (100%)	14 (100%)	0	100	100
2	A	438/521 (84%)	437 (100%)	1 (0%)	93	90
2	B	437/521 (84%)	429 (98%)	8 (2%)	59	43
All	All	903/1070 (84%)	894 (99%)	9 (1%)	78	67

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	A	33	GLN
2	B	20	SER

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	B	97[A]	MET
2	B	97[B]	MET
2	B	226	HIS
2	B	228	HIS
2	B	260	GLU
2	B	261	ASP
2	B	290	GLU

Sometimes 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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

24 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	EDO	A	602	-	3,3,3	0.48	0	2,2,2	0.25	0
4	EDO	B	1006	-	3,3,3	0.45	0	2,2,2	0.37	0
5	GOL	A	609	-	5,5,5	1.56	2 (40%)	5,5,5	1.26	1 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	EDO	B	1009	-	3,3,3	0.64	0	2,2,2	0.19	0
4	EDO	B	1002	-	3,3,3	0.48	0	2,2,2	0.33	0
4	EDO	A	607	-	3,3,3	0.40	0	2,2,2	0.44	0
4	EDO	A	606	-	3,3,3	0.50	0	2,2,2	0.45	0
4	EDO	B	1008	-	3,3,3	0.54	0	2,2,2	0.10	0
5	GOL	B	1010	-	5,5,5	0.80	0	5,5,5	0.99	0
6	SO4	A	611	-	4,4,4	0.27	0	6,6,6	0.23	0
4	EDO	B	1005	-	3,3,3	0.47	0	2,2,2	0.31	0
4	EDO	B	1007	-	3,3,3	0.63	0	2,2,2	0.34	0
4	EDO	A	603	-	3,3,3	0.61	0	2,2,2	0.16	0
6	SO4	B	1012	-	4,4,4	0.30	0	6,6,6	0.17	0
5	GOL	A	608	-	5,5,5	0.80	0	5,5,5	0.97	0
4	EDO	A	605	-	3,3,3	0.48	0	2,2,2	0.31	0
6	SO4	A	610	-	4,4,4	0.11	0	6,6,6	0.09	0
4	EDO	B	1004	-	3,3,3	0.60	0	2,2,2	0.18	0
5	GOL	B	1011	-	5,5,5	1.03	0	5,5,5	0.91	0
4	EDO	A	604	-	3,3,3	0.49	0	2,2,2	0.21	0
4	EDO	B	1003	-	3,3,3	0.43	0	2,2,2	0.27	0
3	SAH	A	601	-	24,28,28	1.31	3 (12%)	25,40,40	1.53	4 (16%)
6	SO4	B	1013	-	4,4,4	0.11	0	6,6,6	0.07	0
3	SAH	B	1001	-	24,28,28	1.37	3 (12%)	25,40,40	1.61	5 (20%)

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	EDO	A	602	-	-	0/1/1/1	-
4	EDO	B	1006	-	-	0/1/1/1	-
5	GOL	A	609	-	-	2/4/4/4	-
4	EDO	B	1009	-	-	1/1/1/1	-
4	EDO	B	1002	-	-	0/1/1/1	-
4	EDO	A	607	-	-	0/1/1/1	-
4	EDO	A	606	-	-	1/1/1/1	-
4	EDO	B	1008	-	-	0/1/1/1	-
5	GOL	B	1010	-	-	2/4/4/4	-
4	EDO	B	1005	-	-	1/1/1/1	-
4	EDO	B	1007	-	-	0/1/1/1	-
4	EDO	A	603	-	-	0/1/1/1	-
5	GOL	A	608	-	-	4/4/4/4	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	A	605	-	-	0/1/1/1	-
4	EDO	B	1004	-	-	0/1/1/1	-
5	GOL	B	1011	-	-	2/4/4/4	-
4	EDO	A	604	-	-	1/1/1/1	-
4	EDO	B	1003	-	-	1/1/1/1	-
3	SAH	A	601	-	-	2/11/31/31	0/3/3/3
3	SAH	B	1001	-	-	2/11/31/31	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	1001	SAH	C2-N3	3.95	1.38	1.32
3	A	601	SAH	C2-N3	3.58	1.37	1.32
3	B	1001	SAH	C2-N1	3.49	1.40	1.33
3	A	601	SAH	C2-N1	2.92	1.39	1.33
5	A	609	GOL	O2-C2	-2.76	1.35	1.43
3	A	601	SAH	C4-N3	2.40	1.39	1.35
3	B	1001	SAH	O4'-C1'	2.10	1.44	1.41
5	A	609	GOL	O3-C3	-2.00	1.34	1.42

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	601	SAH	N3-C2-N1	-4.48	121.67	128.68
3	B	1001	SAH	N3-C2-N1	-4.27	122.01	128.68
3	B	1001	SAH	C4-C5-N7	-3.34	105.92	109.40
3	A	601	SAH	C4-C5-N7	-3.19	106.07	109.40
3	B	1001	SAH	CB-CG-SD	-2.81	107.00	113.31
3	A	601	SAH	OXT-C-O	-2.62	118.14	124.09
3	B	1001	SAH	C3'-C2'-C1'	2.61	104.90	100.98
3	B	1001	SAH	C5'-C4'-C3'	-2.26	109.40	115.06
3	A	601	SAH	OXT-C-CA	2.24	121.00	113.38
5	A	609	GOL	C3-C2-C1	-2.05	103.72	111.70

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	609	GOL	C1-C2-C3-O3
5	A	609	GOL	O2-C2-C3-O3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
5	B	1010	GOL	O1-C1-C2-C3
4	B	1005	EDO	O1-C1-C2-O2
5	A	608	GOL	O1-C1-C2-C3
5	B	1011	GOL	C1-C2-C3-O3
5	A	608	GOL	O1-C1-C2-O2
5	B	1010	GOL	O1-C1-C2-O2
4	B	1009	EDO	O1-C1-C2-O2
5	B	1011	GOL	O2-C2-C3-O3
4	A	606	EDO	O1-C1-C2-O2
5	A	608	GOL	O2-C2-C3-O3
4	A	604	EDO	O1-C1-C2-O2
3	A	601	SAH	CB-CG-SD-C5'
3	B	1001	SAH	CB-CG-SD-C5'
4	B	1003	EDO	O1-C1-C2-O2
5	A	608	GOL	C1-C2-C3-O3
3	A	601	SAH	C3'-C4'-C5'-SD
3	B	1001	SAH	OXT-C-CA-CB

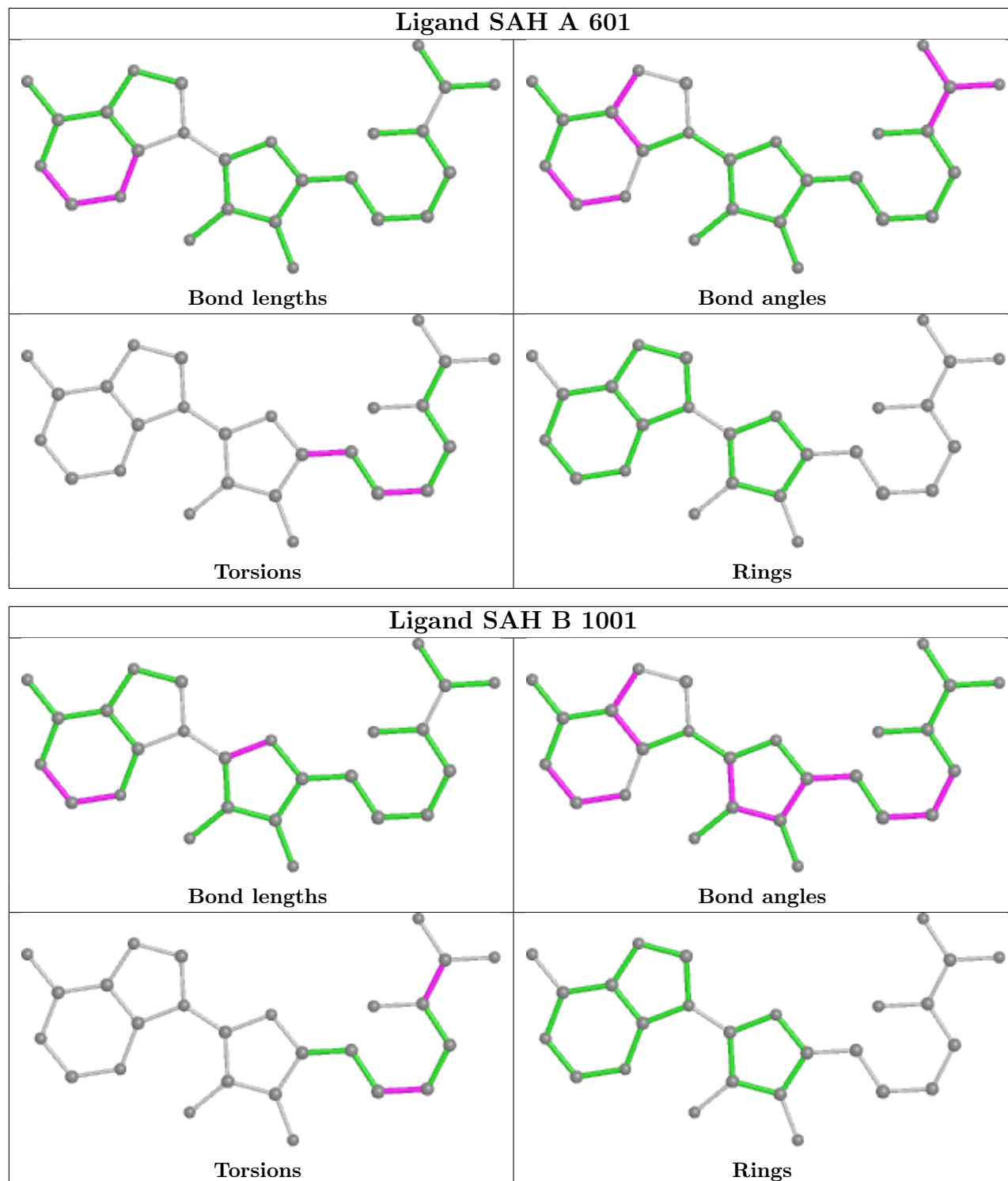
There are no ring outliers.

8 monomers are involved in 22 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	602	EDO	1	0
4	B	1009	EDO	3	0
4	B	1002	EDO	1	0
4	B	1008	EDO	1	0
6	B	1012	SO4	1	0
4	B	1004	EDO	2	0
5	B	1011	GOL	12	0
4	A	604	EDO	1	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 than 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.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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, 95th 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	Y	15/15 (100%)	0.79	3 (20%) 1 0	18, 28, 57, 74	0
1	Z	15/15 (100%)	1.05	2 (13%) 3 3	17, 26, 50, 62	0
2	A	483/599 (80%)	0.31	31 (6%) 19 21	13, 26, 51, 71	0
2	B	481/599 (80%)	0.31	24 (4%) 28 32	13, 27, 53, 72	0
All	All	994/1228 (80%)	0.33	60 (6%) 21 24	13, 27, 54, 74	0

All (60) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	Z	66	THR	8.0
2	A	228	HIS	5.5
2	B	227	PRO	5.2
1	Y	66	THR	4.2
2	B	262	GLY	4.1
2	A	227	PRO	3.8
2	A	21	PRO	3.8
2	B	146	ARG	3.7
2	A	264	ARG	3.6
2	A	502	GLU	3.5
2	B	144	GLN	3.5
2	A	230	ASN	3.5
2	B	21	PRO	3.5
2	A	226	HIS	3.4
2	A	501	TYR	3.3
2	A	146	ARG	3.3
2	B	38	PRO	3.3
2	B	493	GLU	3.2
1	Y	80	ASP	3.1
2	A	20	SER	3.1
2	B	229	ALA	3.0

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	B	226	HIS	2.9
2	A	263	SER	2.9
1	Z	67	LEU	2.9
2	B	230	ASN	2.9
2	B	39	ALA	2.8
2	B	260	GLU	2.8
2	A	276	CYS	2.8
2	B	347	ARG	2.7
2	A	262	GLY	2.7
2	B	20	SER	2.7
2	B	264	ARG	2.6
2	A	245	TRP	2.6
2	B	261	ASP	2.6
2	A	167	PRO	2.6
2	A	41	GLY	2.6
2	A	149	GLN	2.6
2	B	228	HIS	2.6
2	A	289	LEU	2.5
2	A	38	PRO	2.5
2	A	261	ASP	2.5
2	A	25	LEU	2.5
2	A	229	ALA	2.4
1	Y	67	LEU	2.4
2	A	236	ASP	2.4
2	B	236	ASP	2.3
2	A	493	GLU	2.3
2	A	37	SER	2.3
2	B	263	SER	2.3
2	B	149	GLN	2.2
2	A	497	PRO	2.2
2	B	225	THR	2.2
2	A	168	ASN	2.2
2	A	178	LEU	2.2
2	A	345	SER	2.1
2	A	147	ILE	2.1
2	B	494	GLU	2.1
2	A	225	THR	2.1
2	B	324	SER	2.1
2	B	252	THR	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 monosaccharides in this entry.

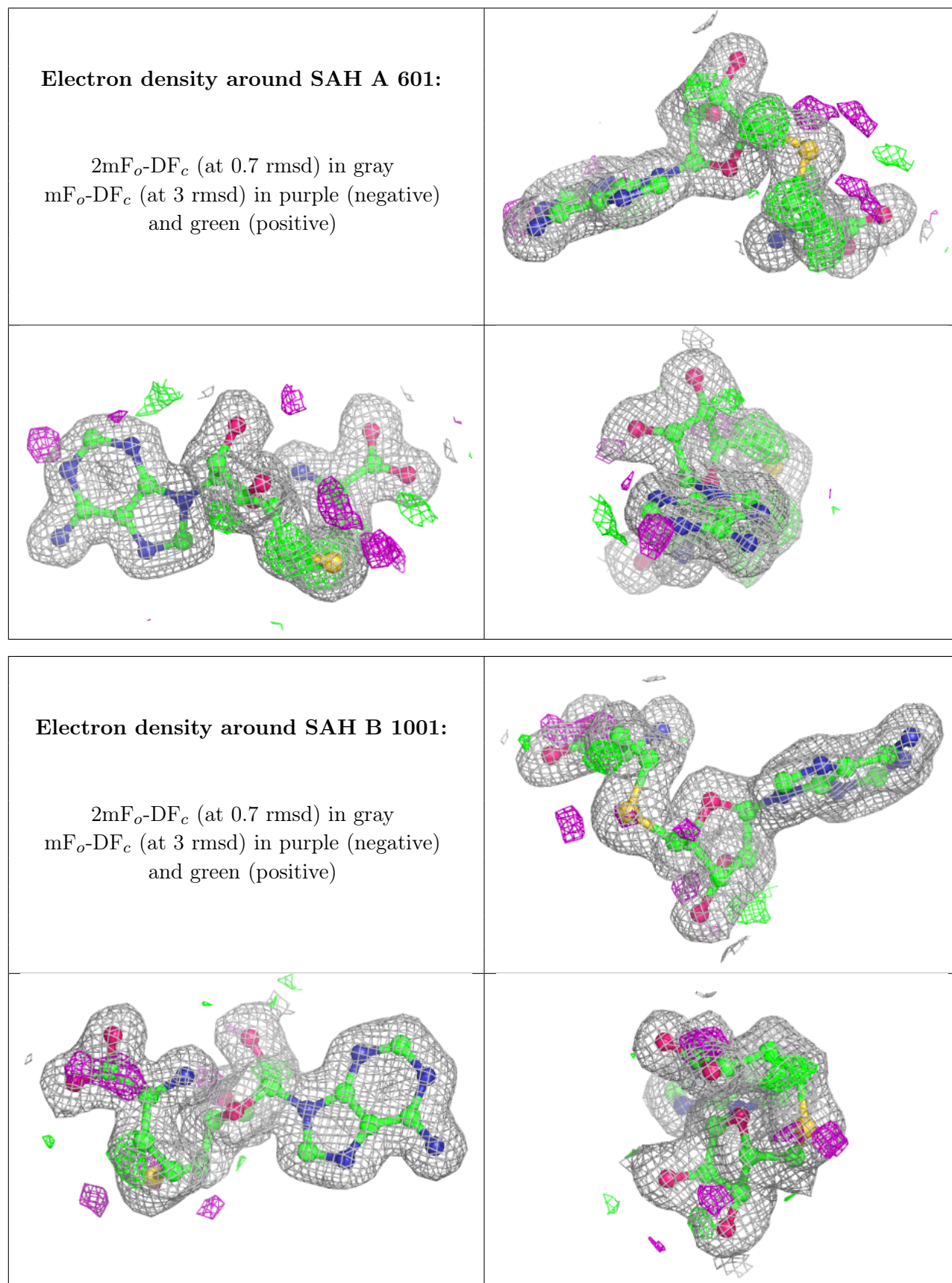
6.4 Ligands [i](#)

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, 95th 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(\AA^2)	Q<0.9
5	GOL	B	1010	6/6	0.51	0.40	61,68,72,76	0
4	EDO	B	1004	4/4	0.63	0.34	33,37,38,40	0
5	GOL	A	609	6/6	0.65	0.38	39,47,62,62	0
4	EDO	B	1009	4/4	0.70	0.17	44,45,47,47	0
4	EDO	B	1005	4/4	0.75	0.14	54,57,61,62	0
4	EDO	B	1002	4/4	0.76	0.31	47,50,53,54	0
4	EDO	A	604	4/4	0.76	0.22	46,47,48,52	0
4	EDO	A	602	4/4	0.78	0.25	44,49,50,52	0
5	GOL	A	608	6/6	0.78	0.31	47,51,56,66	0
4	EDO	A	605	4/4	0.79	0.20	39,41,44,45	0
5	GOL	B	1011	6/6	0.79	0.77	41,53,54,57	0
6	SO4	A	610	5/5	0.79	0.19	85,86,90,92	0
4	EDO	B	1006	4/4	0.83	0.15	48,50,50,56	0
4	EDO	B	1007	4/4	0.83	0.19	37,38,48,58	0
4	EDO	A	606	4/4	0.84	0.18	37,38,39,44	0
4	EDO	A	607	4/4	0.85	0.17	42,45,45,52	0
6	SO4	B	1013	5/5	0.86	0.27	86,86,87,91	0
4	EDO	B	1003	4/4	0.90	0.18	43,44,49,52	0
4	EDO	A	603	4/4	0.92	0.16	20,28,33,33	0
4	EDO	B	1008	4/4	0.92	0.17	24,34,37,38	0
3	SAH	A	601	26/26	0.92	0.14	8,15,22,50	0
6	SO4	A	611	5/5	0.94	0.12	49,50,52,55	0
6	SO4	B	1012	5/5	0.96	0.17	39,45,46,49	0
3	SAH	B	1001	26/26	0.97	0.11	11,14,19,21	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.



6.5 Other polymers [i](#)

There are no such residues in this entry.