Full wwPDB X-ray Structure Validation Report (i)

Mar 3, 2025 – 03:18 pm GMT

PDB ID	:	8S6G
Title	:	Carbohydrate active oxidoreductase from Alternaria alternata
Authors	:	Banerjee, S.; Turella, S.; Morth, J.P.; Abou Hachem, M.
Deposited on	:	2024-02-27
Resolution	:	1.21 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 (i) 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 (i)) were used in the production of this report:

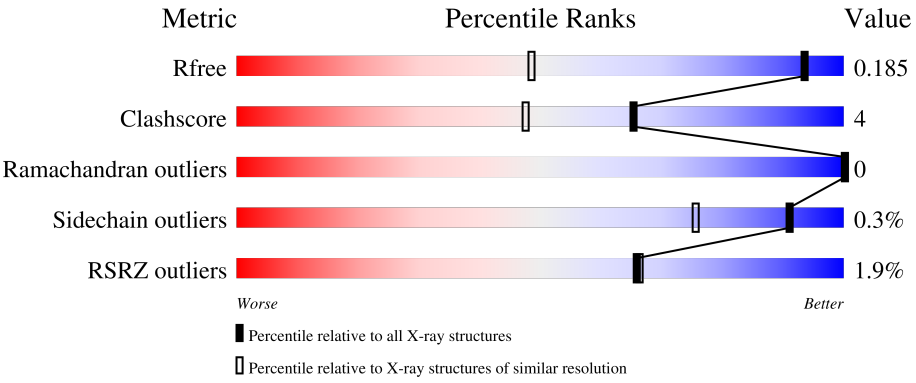
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41

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 1.21 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}	164625	1745 (1.24-1.20)
Clashscore	180529	1895 (1.24-1.20)
Ramachandran outliers	177936	1845 (1.24-1.20)
Sidechain outliers	177891	1844 (1.24-1.20)
RSRZ outliers	164620	1744 (1.24-1.20)

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	487	2% 91% 6%
2	B	2	50% 50%

2 Entry composition

There are 9 unique types of molecules in this entry. The entry contains 8485 atoms, of which 3801 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 FAD-binding domain-containing protein.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	475	7474	2426	3665	643	727	13	83	13	0

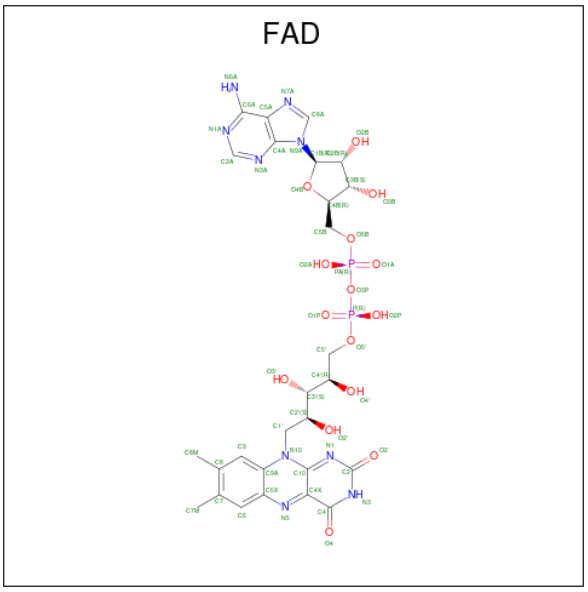
There are 11 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	58	THR	ILE	conflict	UNP A0A177D2A1
A	315	GLU	LYS	conflict	UNP A0A177D2A1
A	510	ALA	-	expression tag	UNP A0A177D2A1
A	511	ALA	-	expression tag	UNP A0A177D2A1
A	512	ALA	-	expression tag	UNP A0A177D2A1
A	513	HIS	-	expression tag	UNP A0A177D2A1
A	514	HIS	-	expression tag	UNP A0A177D2A1
A	515	HIS	-	expression tag	UNP A0A177D2A1
A	516	HIS	-	expression tag	UNP A0A177D2A1
A	517	HIS	-	expression tag	UNP A0A177D2A1
A	518	HIS	-	expression tag	UNP A0A177D2A1

- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

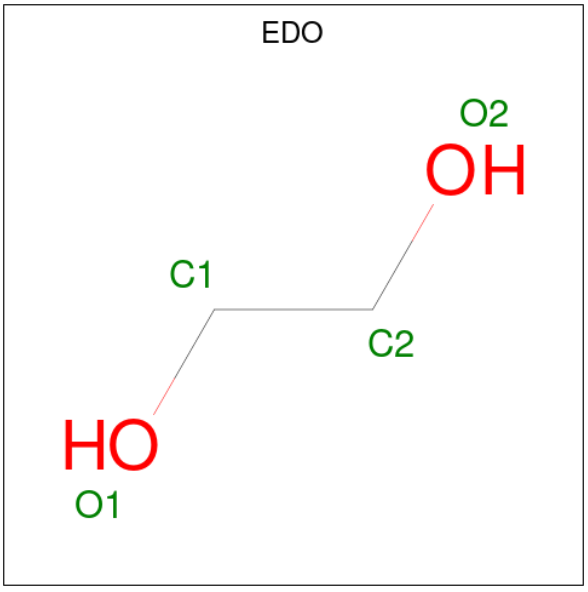
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	H	N	O			
2	B	2	53	16	25	2	10	0	0	0

- Molecule 3 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	H	N	O	P	0	0
			82	27	29	9	15	2		

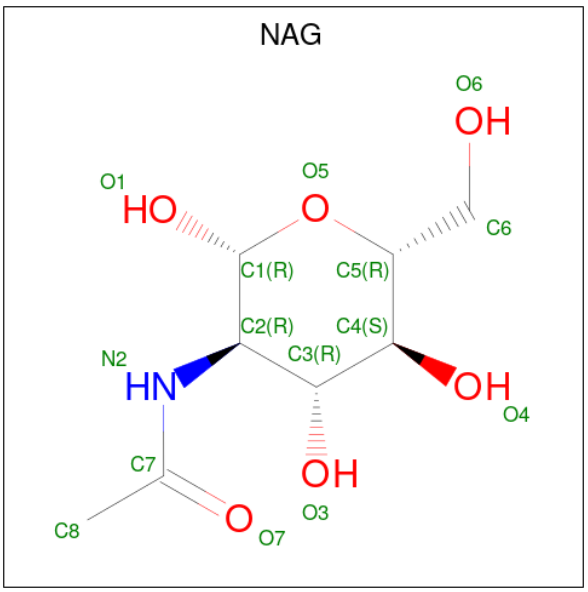
- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	H	O	0	0
			10	2	6	2		
4	A	1	Total	C	H	O	0	0
			10	2	6	2		

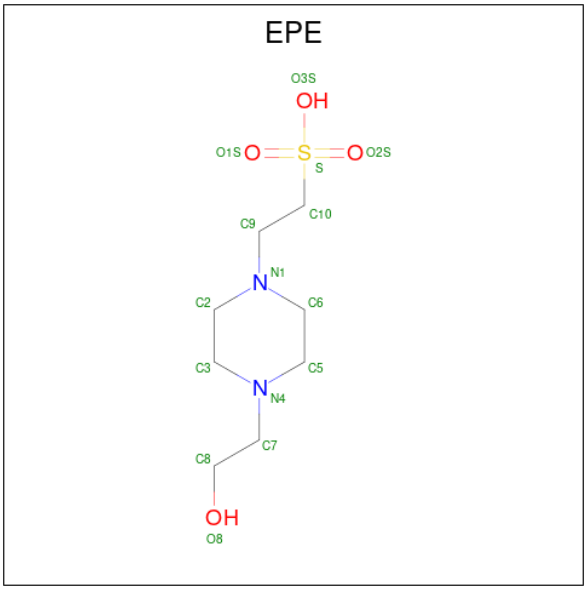
- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:

$C_8H_{15}NO_6$).



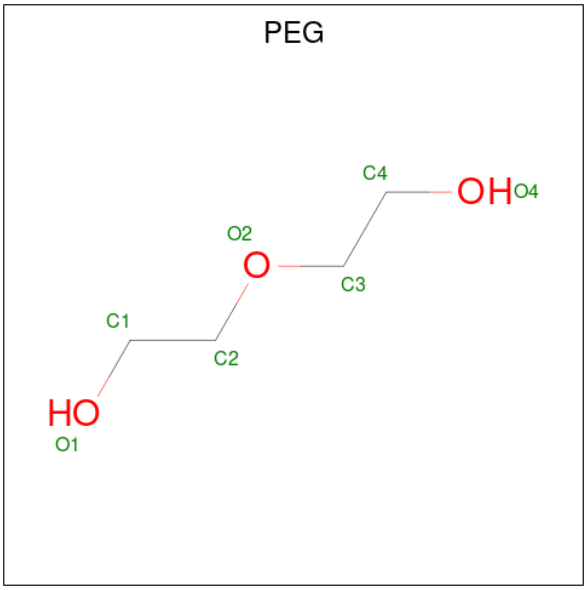
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C H N O 27 8 13 1 5	0	0
5	A	1	Total C H N O 27 8 13 1 5	0	0
5	A	1	Total C N O 14 8 1 5	0	0

- Molecule 6 is 4-(2-HYDROXYETHYL)-1-PIPERAZINE ETHANESULFONIC ACID (three-letter code: EPE) (formula: $C_8H_{18}N_2O_4S$).



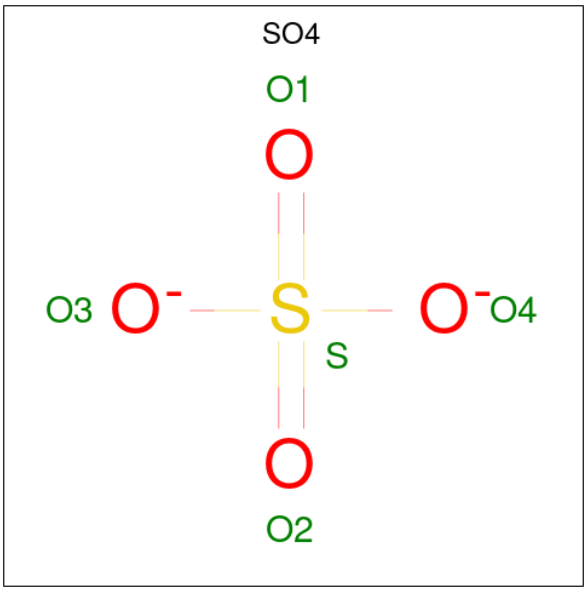
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
6	A	1	Total	C	H	N	O	S	0	0
			32	8	17	2	4	1		
6	A	1	Total	C	H	N	O	S	0	0
			32	8	17	2	4	1		

- Molecule 7 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	A	1	Total	C	H	O	0	0
			17	4	10	3		

- Molecule 8 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



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

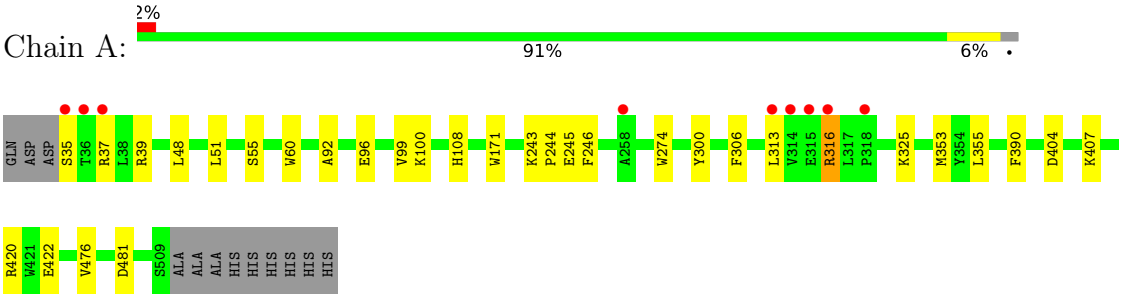
- Molecule 9 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	700	Total O 702 702	0	2

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: FAD-binding domain-containing protein



• Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	61.89Å 69.54Å 62.70Å 90.00° 93.97° 90.00°	Depositor
Resolution (Å)	30.30 – 1.21 30.30 – 1.21	Depositor EDS
% Data completeness (in resolution range)	98.2 (30.30-1.21) 98.4 (30.30-1.21)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.07 (at 1.21Å)	Xtriage
Refinement program	PHENIX 1.18.2_3874	Depositor
R, R_{free}	0.162 , 0.184 0.163 , 0.185	Depositor DCC
R_{free} test set	8066 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	12.9	Xtriage
Anisotropy	0.063	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.42 , 49.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.017 for l,-k,h	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	8485	wwPDB-VP
Average B, all atoms (Å^2)	17.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.75% 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: FAD, PEG, EPE, EDO, SO4, NAG

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	0.41	0/3912	0.73	5/5331 (0.1%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	316	ARG	NE-CZ-NH2	7.67	124.13	120.30
1	A	316	ARG	NE-CZ-NH1	-7.33	116.64	120.30
1	A	171	TRP	CB-CG-CD2	-6.86	117.69	126.60
1	A	171	TRP	CB-CG-CD1	6.69	135.69	127.00
1	A	316	ARG	CA-CB-CG	5.33	125.13	113.40

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	3809	3665	3655	25	0
2	B	28	25	25	0	0
3	A	53	29	30	1	0
4	A	8	12	12	4	0
5	A	42	26	39	1	0
6	A	30	34	34	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	A	7	10	10	1	0
8	A	5	0	0	0	0
9	A	702	0	0	17	1
All	All	4684	3801	3805	29	1

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:353[B]:MET:SD	4:A:608:EDO:O2	2.36	0.82
1:A:325:LYS:NZ	9:A:703:HOH:O	2.13	0.81
7:A:607:PEG:O1	9:A:701:HOH:O	1.86	0.80
6:A:605:EPE:O1S	9:A:702:HOH:O	2.06	0.73
5:A:609:NAG:H83	9:A:1168:HOH:O	1.97	0.63
1:A:390:PHE:O	9:A:704:HOH:O	2.16	0.63
1:A:243:LYS:HE3	9:A:1008:HOH:O	2.03	0.58
1:A:274:TRP:CE3	1:A:313:LEU:HD13	2.38	0.58
1:A:246:PHE:O	4:A:602:EDO:H12	2.08	0.53
1:A:108:HIS:CE1	3:A:601:FAD:HM71	2.44	0.52
1:A:35:SER:N	9:A:714:HOH:O	2.43	0.51
1:A:404:ASP:CB	9:A:722:HOH:O	2.59	0.50
1:A:245:GLU:OE2	9:A:705:HOH:O	2.19	0.50
1:A:37:ARG:HG2	9:A:953:HOH:O	2.12	0.48
1:A:422:GLU:N	9:A:704:HOH:O	2.47	0.48
1:A:300:TYR:O	4:A:602:EDO:C2	2.62	0.47
1:A:306:PHE:CD2	1:A:325:LYS:HD2	2.51	0.46
1:A:92:ALA:O	1:A:96:GLU:HG3	2.17	0.45
4:A:602:EDO:H21	9:A:708:HOH:O	2.16	0.45
1:A:243:LYS:HD2	1:A:244:PRO:HD2	1.98	0.44
1:A:476[B]:VAL:HG22	9:A:892:HOH:O	2.17	0.44
1:A:48[B]:LEU:HD12	1:A:51:LEU:CD1	2.47	0.44
1:A:99[A]:VAL:HG12	1:A:100:LYS:O	2.18	0.42
1:A:39:ARG:NH2	9:A:731:HOH:O	2.52	0.41
1:A:407:LYS:HE3	9:A:722:HOH:O	2.20	0.41
1:A:476[B]:VAL:HG23	9:A:753[B]:HOH:O	2.21	0.41
1:A:55:SER:HA	1:A:60:TRP:CG	2.56	0.40
1:A:355[B]:LEU:HD11	1:A:420:ARG:HG3	2.03	0.40
1:A:481:ASP:HA	9:A:1019:HOH:O	2.22	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:A:717:HOH:O	9:A:741:HOH:O[2_545]	2.04	0.16

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	486/487 (100%)	470 (97%)	16 (3%)	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	404/400 (101%)	403 (100%)	1 (0%)	92 76

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	316	ARG

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

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

2 monosaccharides 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	NAG	B	1	2,1	14,14,15	0.57	0	17,19,21	0.71	0
2	NAG	B	2	2	14,14,15	1.09	2 (14%)	17,19,21	0.73	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	NAG	B	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	B	2	2	-	2/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2	NAG	O5-C1	-3.29	1.38	1.43
2	B	2	NAG	C1-C2	2.24	1.55	1.52

There are no bond angle outliers.

There are no chirality outliers.

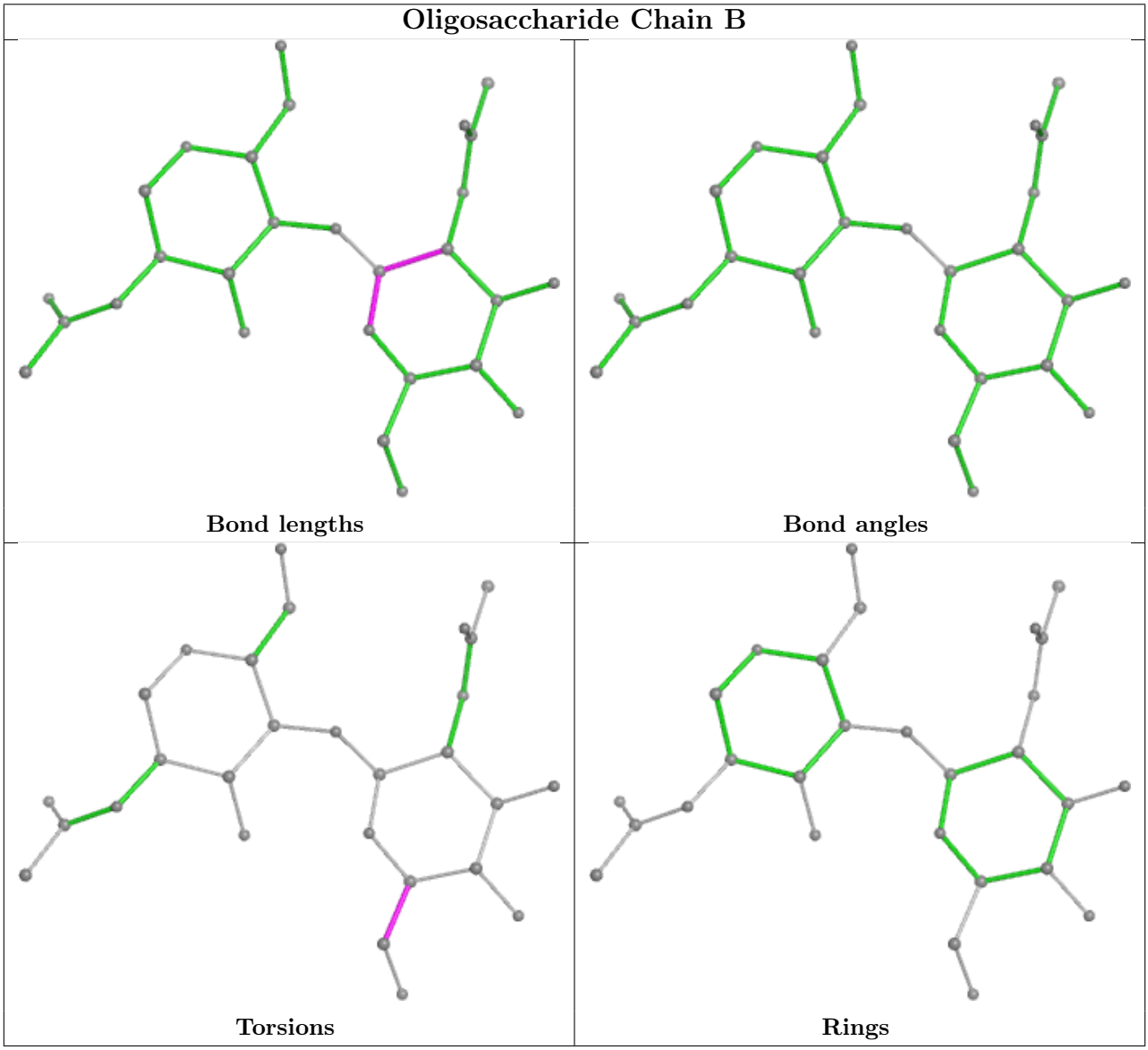
All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	2	NAG	O5-C5-C6-O6
2	B	2	NAG	C4-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.



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	$\#\|Z\| > 2$
7	PEG	A	607	-	6,6,6	0.49	0	5,5,5	0.41	0
8	SO4	A	610	-	4,4,4	0.30	0	6,6,6	0.34	0
6	EPE	A	605	-	15,15,15	0.66	1 (6%)	18,20,20	1.12	1 (5%)
4	EDO	A	602	-	3,3,3	0.41	0	2,2,2	0.08	0
5	NAG	A	603	1	14,14,15	0.58	0	17,19,21	0.33	0
6	EPE	A	606	-	15,15,15	0.96	1 (6%)	18,20,20	2.58	9 (50%)
5	NAG	A	604	1	14,14,15	0.28	0	17,19,21	0.51	0
3	FAD	A	601	1	53,58,58	0.69	2 (3%)	68,89,89	0.59	1 (1%)
5	NAG	A	609	1	14,14,15	0.46	0	17,19,21	0.46	0
4	EDO	A	608	-	3,3,3	0.46	0	2,2,2	0.23	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
7	PEG	A	607	-	-	1/4/4/4	-
6	EPE	A	605	-	-	6/9/19/19	0/1/1/1
4	EDO	A	602	-	-	1/1/1/1	-
5	NAG	A	603	1	-	0/6/23/26	0/1/1/1
6	EPE	A	606	-	-	5/9/19/19	0/1/1/1
5	NAG	A	604	1	-	2/6/23/26	0/1/1/1
3	FAD	A	601	1	-	1/30/50/50	0/6/6/6
5	NAG	A	609	1	-	2/6/23/26	0/1/1/1
4	EDO	A	608	-	-	0/1/1/1	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	606	EPE	C10-S	3.37	1.82	1.77
3	A	601	FAD	C8A-N7A	-2.14	1.30	1.34
6	A	605	EPE	C10-S	2.08	1.80	1.77

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	601	FAD	P-O2P	-2.04	1.45	1.55

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	606	EPE	C5-N4-C3	5.81	121.90	108.83
6	A	606	EPE	C7-N4-C3	4.35	122.36	111.23
6	A	606	EPE	C6-C5-N4	3.40	117.61	110.64
6	A	606	EPE	O3S-S-C10	2.95	110.54	105.77
6	A	606	EPE	C5-C6-N1	2.85	116.49	110.64
6	A	606	EPE	O2S-S-C10	2.81	110.30	106.92
6	A	605	EPE	C5-N4-C3	2.70	114.91	108.83
6	A	606	EPE	C9-N1-C6	-2.62	104.54	111.23
6	A	606	EPE	C2-C3-N4	2.57	115.91	110.64
6	A	606	EPE	C3-C2-N1	2.27	115.31	110.64
3	A	601	FAD	C5A-C6A-N6A	2.27	123.80	120.35

There are no chirality outliers.

All (18) torsion outliers are listed below:

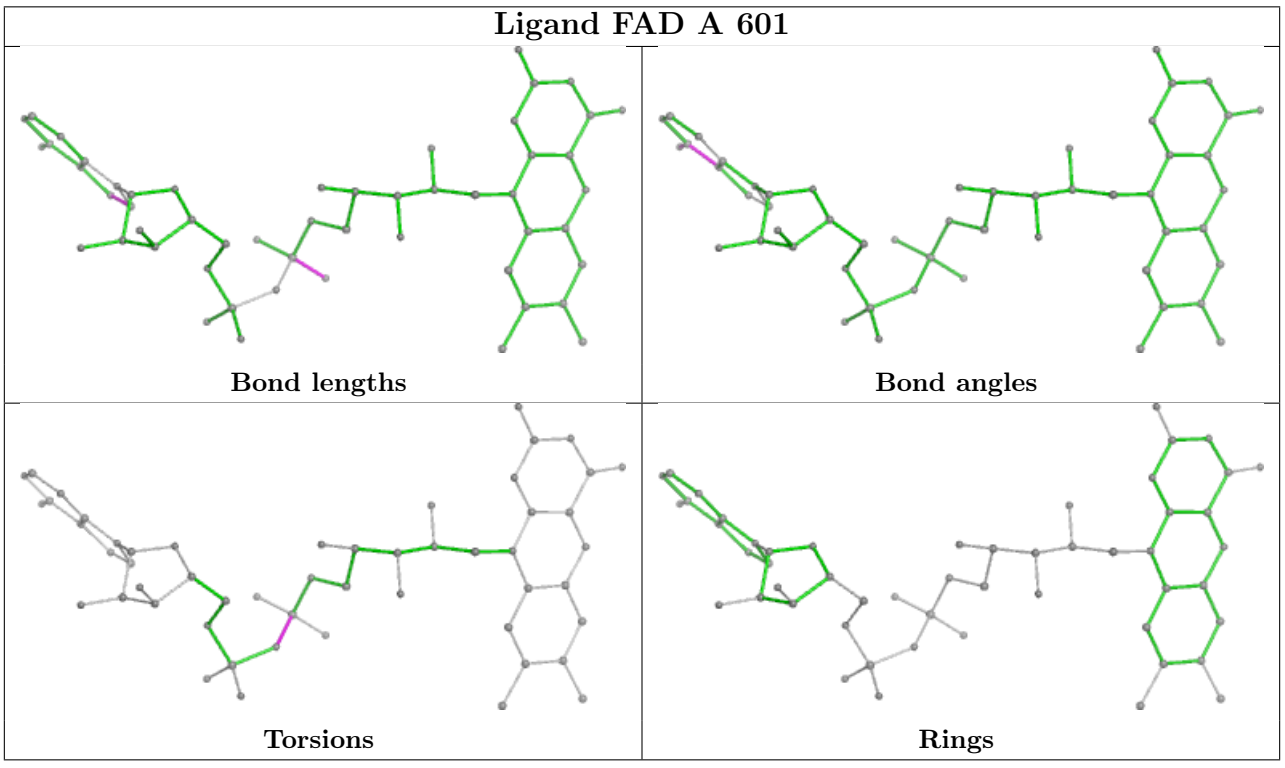
Mol	Chain	Res	Type	Atoms
6	A	605	EPE	C8-C7-N4-C5
6	A	605	EPE	C9-C10-S-O1S
6	A	605	EPE	C9-C10-S-O2S
6	A	605	EPE	C9-C10-S-O3S
6	A	606	EPE	C10-C9-N1-C2
6	A	606	EPE	C8-C7-N4-C3
5	A	604	NAG	C8-C7-N2-C2
5	A	604	NAG	O7-C7-N2-C2
5	A	609	NAG	C8-C7-N2-C2
5	A	609	NAG	O7-C7-N2-C2
4	A	602	EDO	O1-C1-C2-O2
3	A	601	FAD	PA-O3P-P-O1P
6	A	606	EPE	C9-C10-S-O3S
6	A	606	EPE	C9-C10-S-O1S
6	A	606	EPE	C9-C10-S-O2S
6	A	605	EPE	C10-C9-N1-C6
7	A	607	PEG	O2-C3-C4-O4
6	A	605	EPE	C10-C9-N1-C2

There are no ring outliers.

6 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	A	607	PEG	1	0
6	A	605	EPE	1	0
4	A	602	EDO	3	0
3	A	601	FAD	1	0
5	A	609	NAG	1	0
4	A	608	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 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.



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^{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	475/487 (97%)	0.12	9 (1%)	66	66	6, 14, 27, 69	13 (2%)

All (9) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	316	ARG	3.9
1	A	37	ARG	2.9
1	A	314	VAL	2.8
1	A	258	ALA	2.8
1	A	35	SER	2.4
1	A	318	PRO	2.4
1	A	315	GLU	2.4
1	A	313	LEU	2.4
1	A	36	THR	2.2

6.2 Non-standard residues in protein, DNA, RNA chains

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

6.3 Carbohydrates

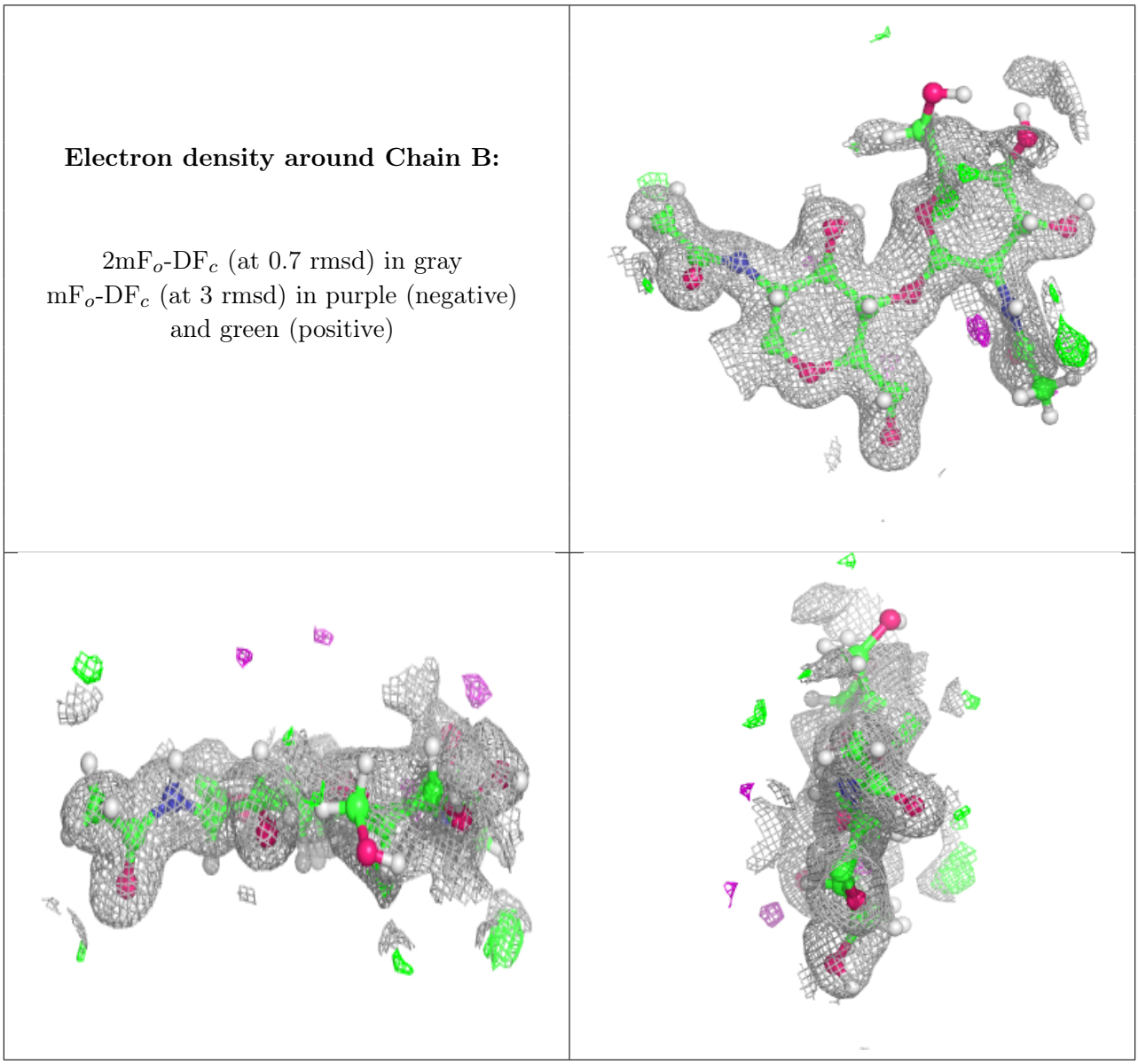
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
2	NAG	B	2	14/15	0.72	0.21	27,66,96,147	0
2	NAG	B	1	14/15	0.93	0.10	16,23,35,36	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain B:

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



6.4 Ligands

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	NAG	A	609	14/15	0.68	0.20	29,54,86,89	0
4	EDO	A	608	4/4	0.80	0.28	22,30,72,72	0
6	EPE	A	606	15/15	0.84	0.17	19,35,61,85	0

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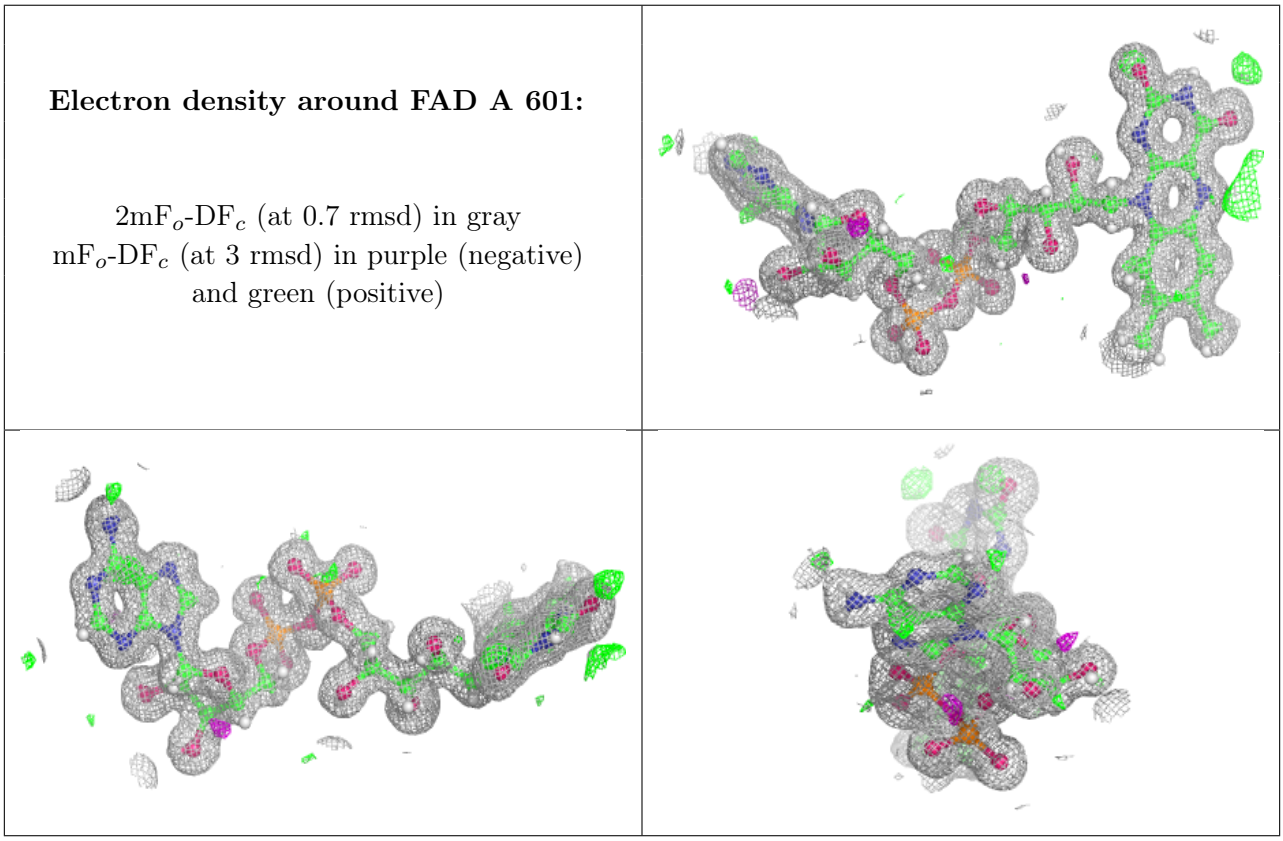
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
7	PEG	A	607	7/7	0.89	0.17	16,32,87,105	0
6	EPE	A	605	15/15	0.90	0.14	14,19,51,77	0
8	SO4	A	610	5/5	0.90	0.19	17,25,62,152	0
4	EDO	A	602	4/4	0.91	0.14	19,24,46,55	0
5	NAG	A	604	14/15	0.92	0.10	14,20,36,36	0
5	NAG	A	603	14/15	0.95	0.08	14,21,40,40	0
3	FAD	A	601	53/53	0.98	0.06	9,11,15,16	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 FAD A 601:

$2mF_o$-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 (i)

There are no such residues in this entry.