Full wwPDB X-ray Structure Validation Report ⓘ

Dec 20, 2022 – 12:27 pm GMT

PDB ID	:	7QLQ
Title	:	CRYSTAL STRUCTURE OF E.coli ALCOHOL DEHYDROGENASE - FucO MUTANT N151G, L259V COMPLEXED WITH FE, NAD, AND DIMETHOXYPHENYL ACETAMIDE
Authors	:	Sridhar, S.; Kiema, T.R.; Widersten, M.; Wierenga, R.K.
Deposited on	:	2021-12-20
Resolution	:	2.60 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:

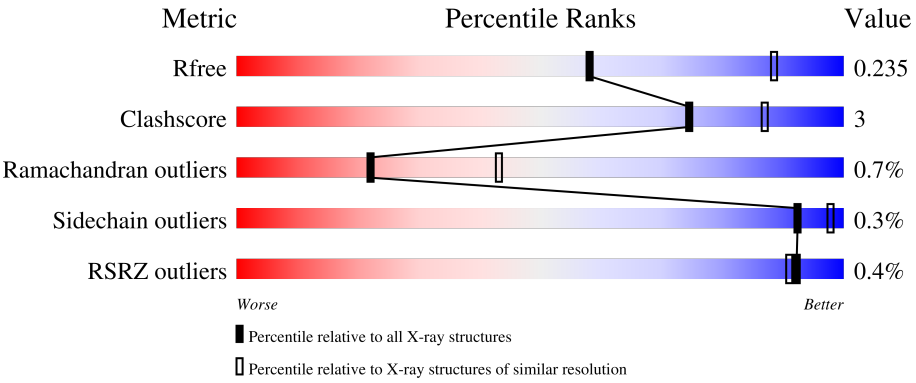
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.31.3
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 2.60 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	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

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	AAA	390	90% 8% .
1	BBB	390	% 91% 8% .

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 11636 atoms, of which 5778 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.

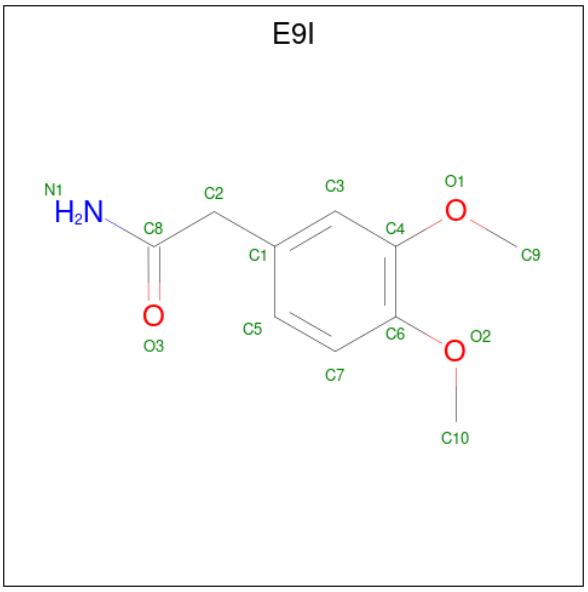
- Molecule 1 is a protein called Lactaldehyde reductase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	AAA	383	Total	C	H	N	O	S	66	0	0
			5692	1794	2848	493	542	15			
1	BBB	383	Total	C	H	N	O	S	66	0	0
			5692	1794	2848	493	542	15			

There are 20 discrepancies between the modelled and reference sequences:

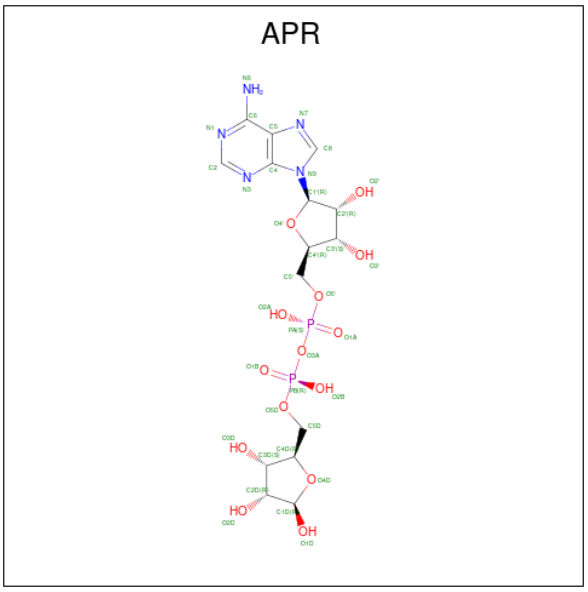
Chain	Residue	Modelled	Actual	Comment	Reference
AAA	1	MET	-	initiating methionine	UNP P0A9S2
AAA	151	GLY	ASN	engineered mutation	UNP P0A9S2
AAA	259	VAL	LEU	engineered mutation	UNP P0A9S2
AAA	384	THR	-	expression tag	UNP P0A9S2
AAA	385	SER	-	expression tag	UNP P0A9S2
AAA	386	HIS	-	expression tag	UNP P0A9S2
AAA	387	HIS	-	expression tag	UNP P0A9S2
AAA	388	HIS	-	expression tag	UNP P0A9S2
AAA	389	HIS	-	expression tag	UNP P0A9S2
AAA	390	HIS	-	expression tag	UNP P0A9S2
BBB	1	MET	-	initiating methionine	UNP P0A9S2
BBB	151	GLY	ASN	engineered mutation	UNP P0A9S2
BBB	259	VAL	LEU	engineered mutation	UNP P0A9S2
BBB	384	THR	-	expression tag	UNP P0A9S2
BBB	385	SER	-	expression tag	UNP P0A9S2
BBB	386	HIS	-	expression tag	UNP P0A9S2
BBB	387	HIS	-	expression tag	UNP P0A9S2
BBB	388	HIS	-	expression tag	UNP P0A9S2
BBB	389	HIS	-	expression tag	UNP P0A9S2
BBB	390	HIS	-	expression tag	UNP P0A9S2

- Molecule 2 is 2-(3,4-dimethoxyphenyl)ethanamide (three-letter code: E9I) (formula: $C_{10}H_{13}NO_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	AAA	1	Total	C	H	N	O	2	0
			27	10	13	1	3		
2	BBB	1	Total	C	H	N	O	2	0
			27	10	13	1	3		

- Molecule 3 is ADENOSINE-5-DIPHOSPHORIBOSE (three-letter code: APR) (formula: $C_{15}H_{23}N_5O_{14}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	AAA	1	Total	C	H	N	O	P	5	0
			57	15	21	5	14	2		

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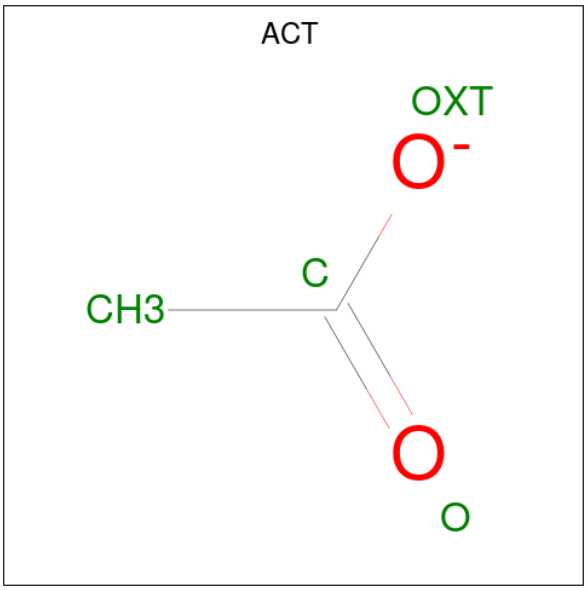
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	BBB	1	Total	C	H	N	O	P	5	0
			57	15	21	5	14	2		

- Molecule 4 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$) (labeled as "Ligand of Interest" by depositor).

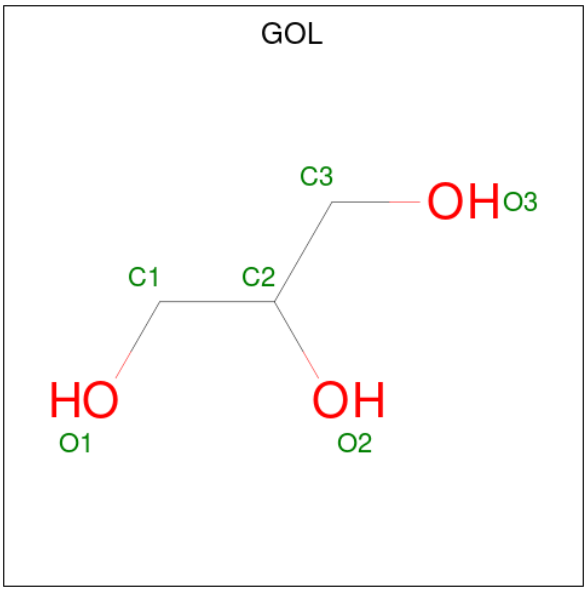


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	AAA	1	Total	C	H	O	0	0
			7	2	3	2		
4	AAA	1	Total	C	H	O	0	0
			7	2	3	2		

- Molecule 5 is FE (III) ION (three-letter code: FE) (formula: Fe) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	AAA	1	Total	Fe	0	0
			1	1		
5	BBB	1	Total	Fe	0	0
			1	1		

- Molecule 6 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	BBB	1	Total C H O 14 3 8 3	2	0

- Molecule 7 is water.

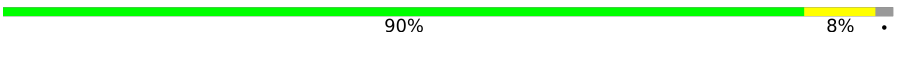
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	AAA	36	Total O 36 36	0	0
7	BBB	18	Total O 18 18	0	0

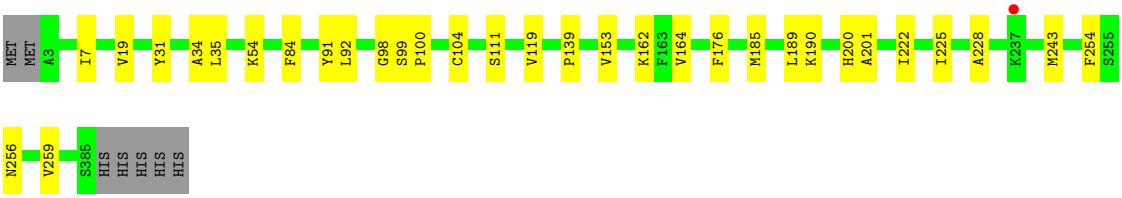
3 Residue-property plots (i)

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: Lactaldehyde reductase

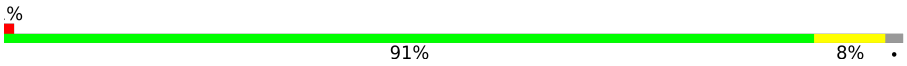
Chain AAA:

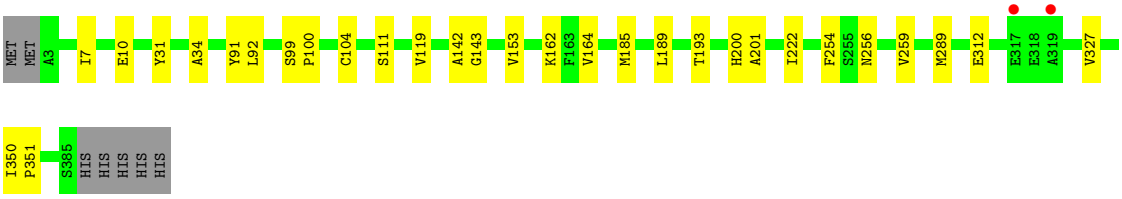




• Molecule 1: Lactaldehyde reductase

Chain BBB:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	61.29Å 85.45Å 137.23Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	56.02 – 2.60 55.96 – 2.60	Depositor EDS
% Data completeness (in resolution range)	99.9 (56.02-2.60) 100.0 (55.96-2.60)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.32 (at 2.61Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.187 , 0.233 0.194 , 0.235	Depositor DCC
R_{free} test set	1104 reflections (4.83%)	wwPDB-VP
Wilson B-factor (Å^2)	52.5	Xtriage
Anisotropy	0.086	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.42 , 32.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	11636	wwPDB-VP
Average B, all atoms (Å^2)	57.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.60% 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: GOL, APR, E9I, ACT, FE

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	AAA	0.65	0/2898	0.74	0/3945
1	BBB	0.66	0/2898	0.73	0/3945
All	All	0.65	0/5796	0.74	0/7890

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	BBB	0	2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	BBB	142	ALA	Peptide,Mainchain

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	AAA	2844	2848	2838	22	0
1	BBB	2844	2848	2838	16	0
2	AAA	14	13	0	0	0
2	BBB	14	13	0	0	0
3	AAA	36	21	21	2	0
3	BBB	36	21	21	1	0
4	AAA	8	6	6	0	0
5	AAA	1	0	0	0	0
5	BBB	1	0	0	0	0
6	BBB	6	8	8	0	0
7	AAA	36	0	0	0	0
7	BBB	18	0	0	0	0
All	All	5858	5778	5732	37	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (37) 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:AAA:228:ALA:HB3	1:AAA:243:MET:HE3	1.73	0.70
1:AAA:225:ILE:HA	1:AAA:243:MET:CE	2.24	0.68
1:AAA:185:MET:HE2	1:AAA:189:LEU:HG	1.81	0.61
1:BBB:99:SER:HB2	1:BBB:100:PRO:HD3	1.84	0.60
1:AAA:225:ILE:HA	1:AAA:243:MET:HE2	1.84	0.60
1:AAA:99:SER:HB2	1:AAA:100:PRO:HD3	1.85	0.58
1:BBB:7:ILE:H	1:BBB:256:ASN:ND2	2.02	0.57
1:AAA:228:ALA:HB3	1:AAA:243:MET:CE	2.34	0.57
1:AAA:7:ILE:H	1:AAA:256:ASN:ND2	2.02	0.57
1:BBB:185:MET:HE2	1:BBB:189:LEU:HG	1.85	0.57
1:AAA:200:HIS:HB3	1:AAA:254:PHE:CD2	2.41	0.56
1:BBB:200:HIS:HB3	1:BBB:254:PHE:CD2	2.42	0.55
1:AAA:225:ILE:HA	1:AAA:243:MET:HE1	1.90	0.52
1:AAA:34:ALA:HB2	1:AAA:91:TYR:CZ	2.45	0.52
1:BBB:34:ALA:HB2	1:BBB:91:TYR:CZ	2.45	0.51
1:BBB:7:ILE:H	1:BBB:256:ASN:HD21	1.58	0.50
1:BBB:201:ALA:HB1	1:BBB:222:ILE:HG13	1.94	0.48
1:AAA:201:ALA:HB1	1:AAA:222:ILE:HG13	1.94	0.48
1:AAA:7:ILE:H	1:AAA:256:ASN:HD21	1.60	0.48
1:BBB:31:TYR:HB3	1:BBB:91:TYR:CD1	2.49	0.48
1:AAA:31:TYR:HB3	1:AAA:91:TYR:CD1	2.50	0.47
1:BBB:143:GLY:HA2	1:BBB:193:THR:HB	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AAA:98:GLY:HA3	3:AAA:402:APR:O4D	2.14	0.47
1:AAA:153:VAL:HG22	1:AAA:164:VAL:HG22	1.96	0.46
1:AAA:92:LEU:HB3	1:AAA:104:CYS:SG	2.56	0.46
1:BBB:153:VAL:HG22	1:BBB:164:VAL:HG22	1.98	0.45
1:BBB:92:LEU:HB3	1:BBB:104:CYS:SG	2.57	0.44
1:AAA:7:ILE:HA	1:BBB:10:GLU:O	2.18	0.43
1:AAA:162:LYS:NZ	3:AAA:402:APR:O2D	2.50	0.43
1:BBB:162:LYS:NZ	3:BBB:403:APR:O2D	2.51	0.43
1:BBB:350:ILE:N	1:BBB:351:PRO:HD2	2.36	0.41
1:AAA:185:MET:HE1	1:AAA:190:LYS:HA	2.02	0.41
1:BBB:185:MET:HE1	1:BBB:193:THR:OG1	2.21	0.41
1:AAA:19:VAL:HG23	1:AAA:54:LYS:HE3	2.03	0.40
1:AAA:35:LEU:HD22	1:AAA:84:PHE:HA	2.03	0.40
1:AAA:139:PRO:HD2	1:AAA:176:PHE:O	2.21	0.40
1:BBB:289:MET:CE	1:BBB:327:VAL:HG21	2.52	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	AAA	381/390 (98%)	371 (97%)	8 (2%)	2 (0%)	29	52
1	BBB	381/390 (98%)	370 (97%)	8 (2%)	3 (1%)	19	39
All	All	762/780 (98%)	741 (97%)	16 (2%)	5 (1%)	22	43

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	BBB	312	GLU
1	AAA	259	VAL
1	BBB	259	VAL

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Mol	Chain	Res	Type
1	BBB	119	VAL
1	AAA	119	VAL

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	AAA	291/298 (98%)	290 (100%)	1 (0%)	92	98
1	BBB	291/298 (98%)	290 (100%)	1 (0%)	92	98
All	All	582/596 (98%)	580 (100%)	2 (0%)	92	98

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	AAA	111	SER
1	BBB	111	SER

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)

Of 9 ligands modelled in this entry, 2 are monoatomic - leaving 7 for Mogul analysis.

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	APR	BBB	403	-	34,39,39	0.58	0	40,60,60	0.68	1 (2%)
2	E9I	AAA	401	5	14,14,14	0.27	0	18,18,18	0.22	0
4	ACT	AAA	403	-	3,3,3	0.99	0	3,3,3	0.67	0
3	APR	AAA	402	-	34,39,39	0.57	0	40,60,60	0.68	1 (2%)
6	GOL	BBB	402	-	5,5,5	0.12	0	5,5,5	0.31	0
2	E9I	BBB	401	5	14,14,14	0.21	0	18,18,18	0.22	0
4	ACT	AAA	405	-	3,3,3	0.99	0	3,3,3	0.77	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
3	APR	BBB	403	-	-	5/18/54/54	0/4/4/4
2	E9I	AAA	401	5	-	4/8/8/8	0/1/1/1
6	GOL	BBB	402	-	-	3/4/4/4	-
3	APR	AAA	402	-	-	5/18/54/54	0/4/4/4
2	E9I	BBB	401	5	-	4/8/8/8	0/1/1/1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	BBB	403	APR	C5-C6-N6	2.25	123.77	120.35
3	AAA	402	APR	C5-C6-N6	2.15	123.62	120.35

There are no chirality outliers.

All (21) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	AAA	402	APR	C5D-O5D-PB-O2B
3	BBB	403	APR	PA-O3A-PB-O5D
3	BBB	403	APR	C5D-O5D-PB-O1B
3	BBB	403	APR	C5D-O5D-PB-O2B
6	BBB	402	GOL	C1-C2-C3-O3
2	BBB	401	E9I	C4-C6-O2-C10
2	AAA	401	E9I	C4-C6-O2-C10
2	BBB	401	E9I	C7-C6-O2-C10
2	AAA	401	E9I	C7-C6-O2-C10
2	AAA	401	E9I	C3-C4-O1-C9
2	BBB	401	E9I	C3-C4-O1-C9
2	AAA	401	E9I	C6-C4-O1-C9
6	BBB	402	GOL	O2-C2-C3-O3
2	BBB	401	E9I	C6-C4-O1-C9
3	AAA	402	APR	PA-O3A-PB-O5D
3	AAA	402	APR	C5D-O5D-PB-O3A
3	BBB	403	APR	C5D-O5D-PB-O3A
3	AAA	402	APR	PA-O3A-PB-O2B
3	BBB	403	APR	PA-O3A-PB-O1B
3	AAA	402	APR	C5D-O5D-PB-O1B
6	BBB	402	GOL	O1-C1-C2-O2

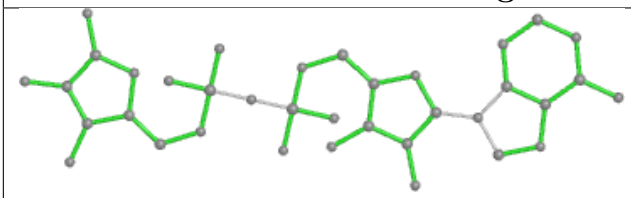
There are no ring outliers.

2 monomers are involved in 3 short contacts:

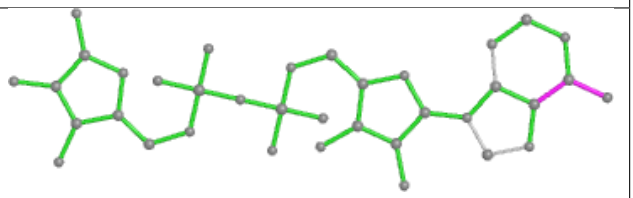
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	BBB	403	APR	1	0
3	AAA	402	APR	2	0

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.

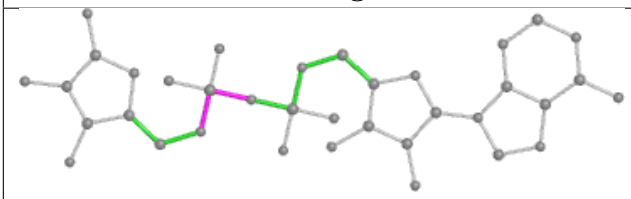
Ligand APR BBB 403



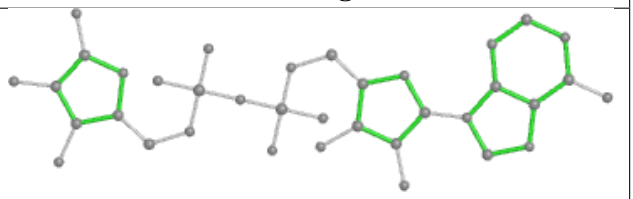
Bond lengths



Bond angles

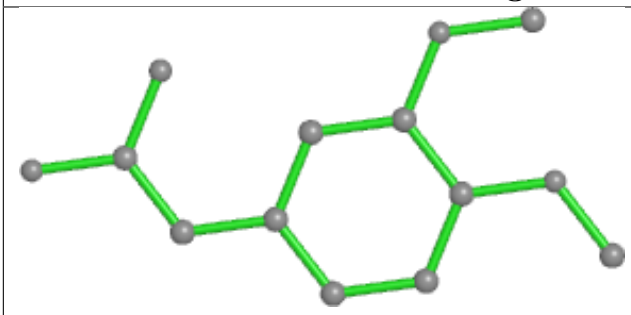


Torsions

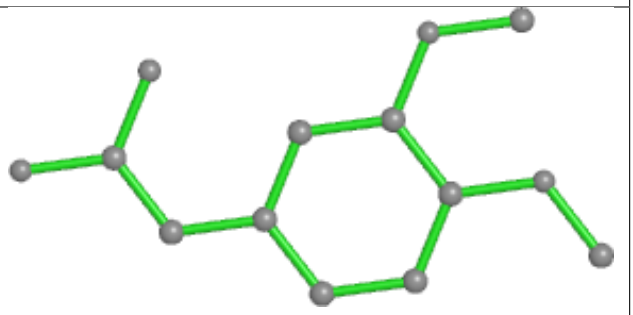


Rings

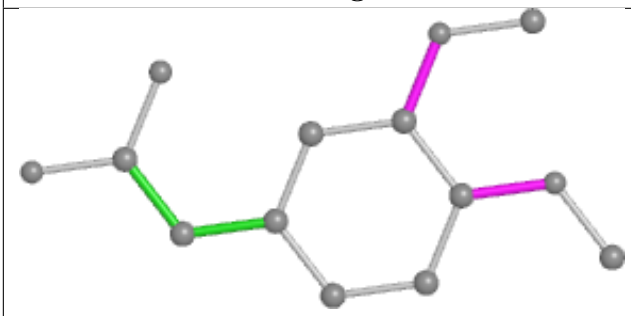
Ligand E9I AAA 401



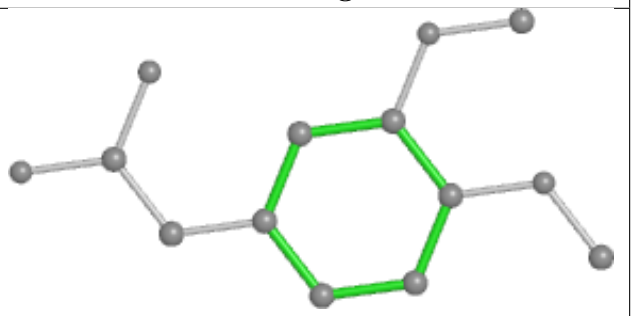
Bond lengths



Bond angles

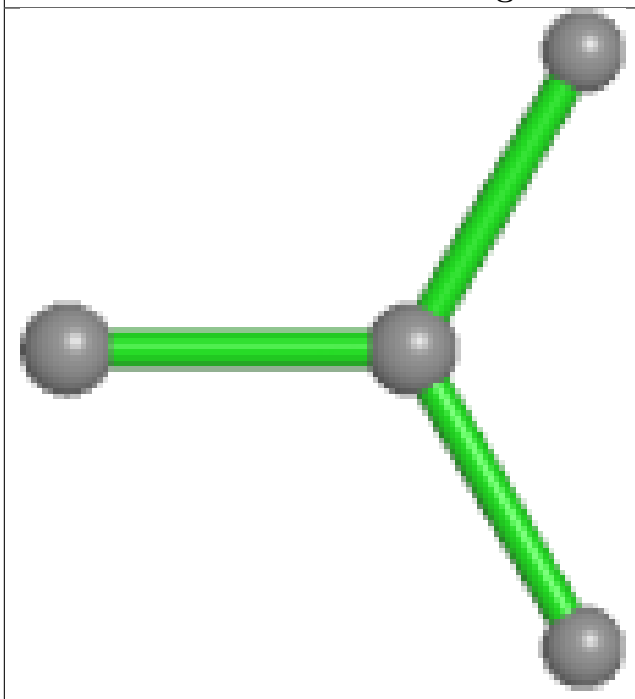


Torsions

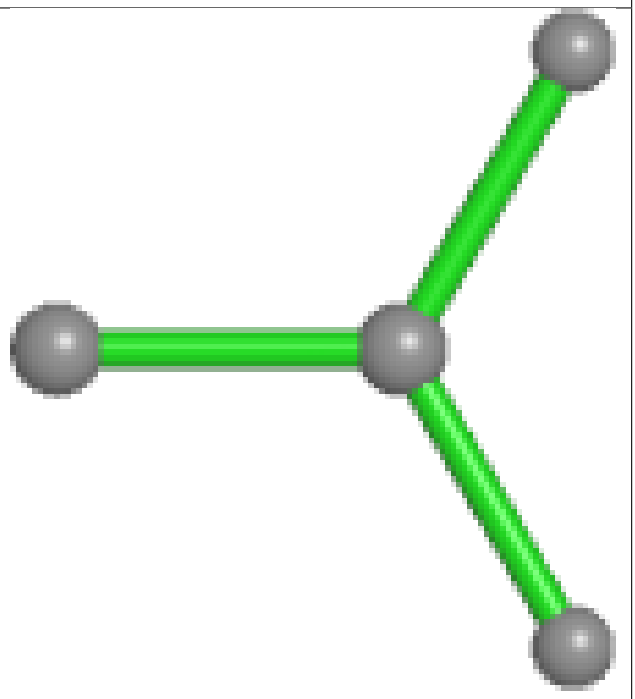


Rings

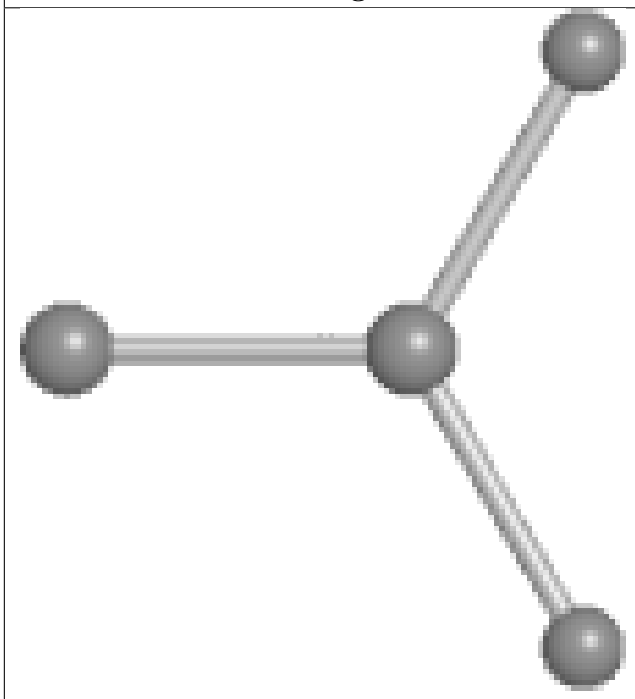
Ligand ACT AAA 403



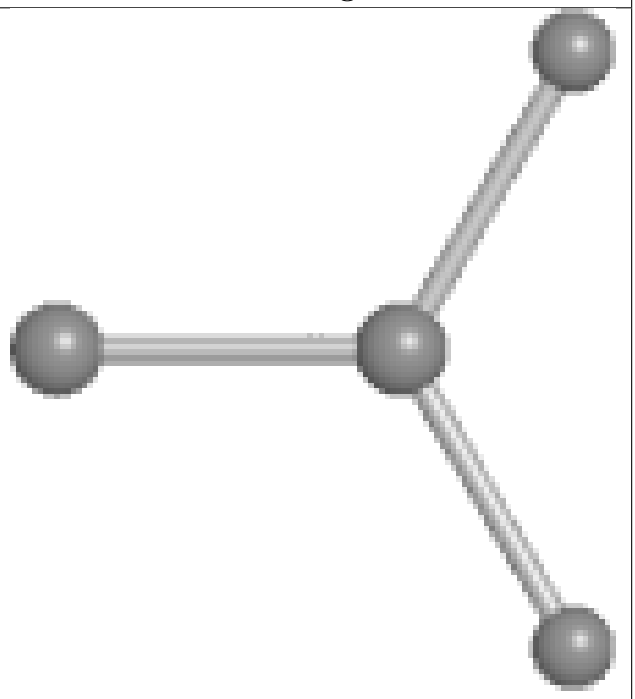
Bond lengths



Bond angles

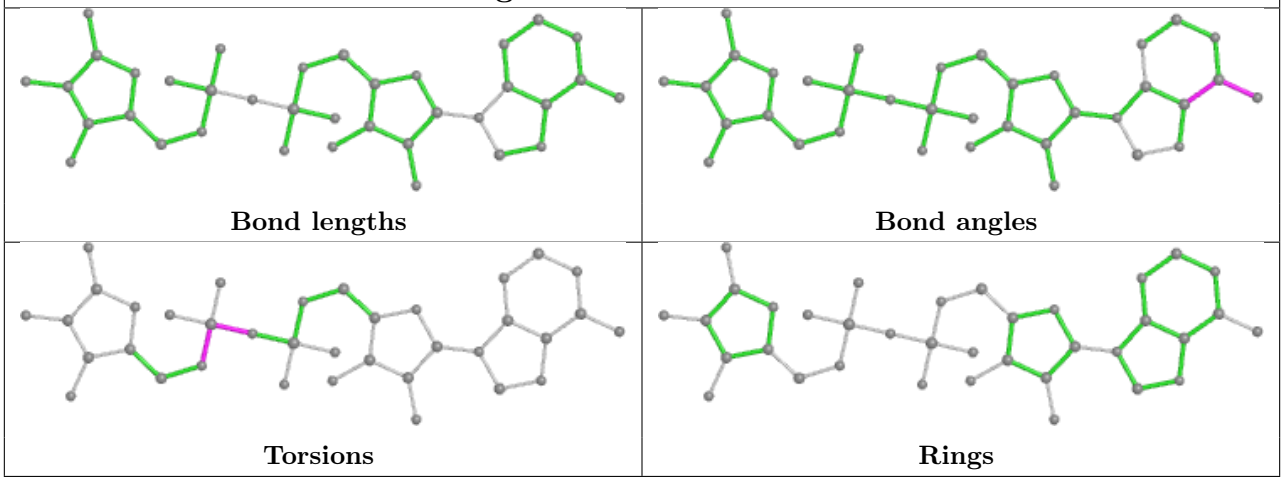


Torsions

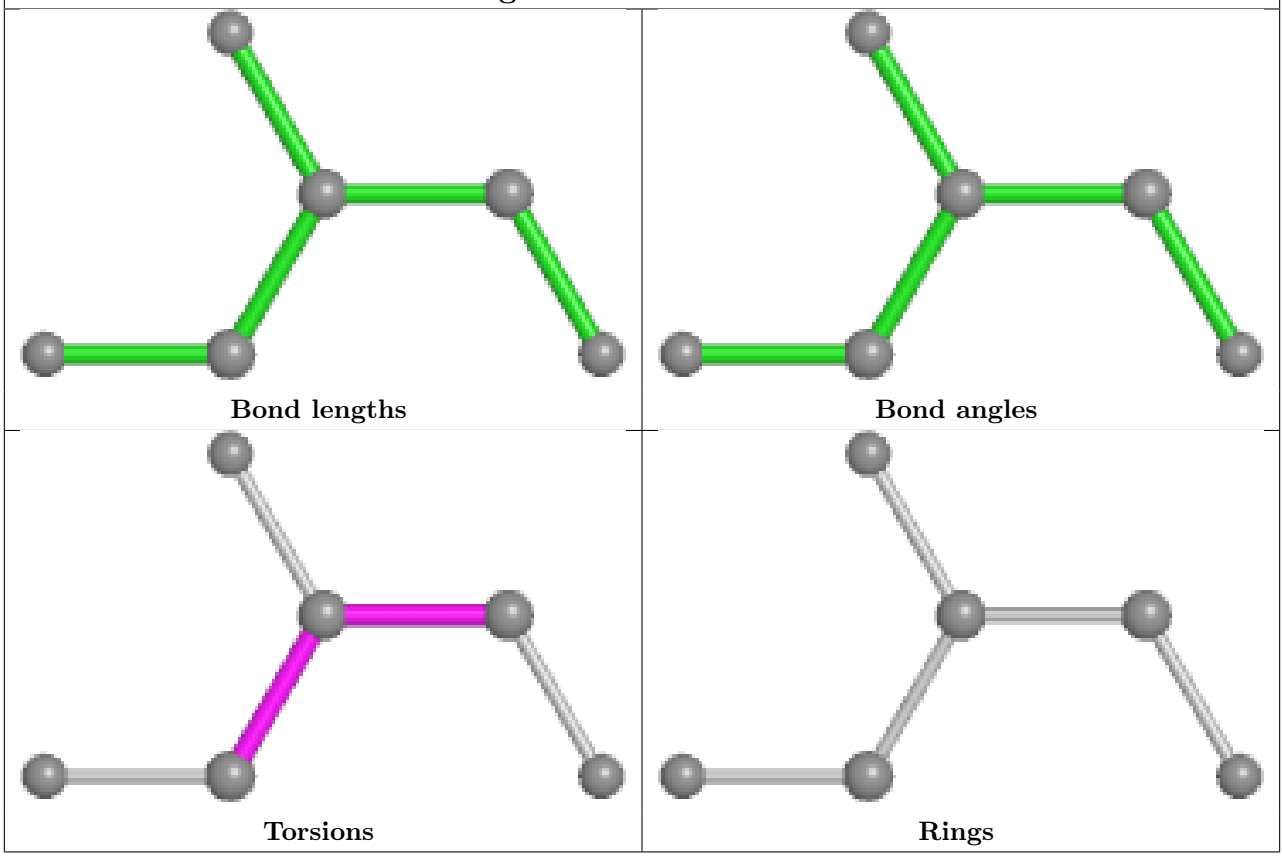


Rings

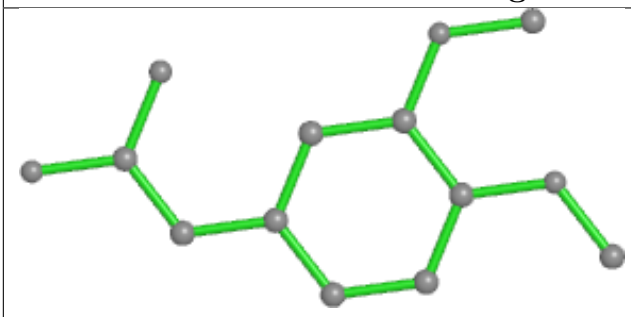
Ligand APR AAA 402



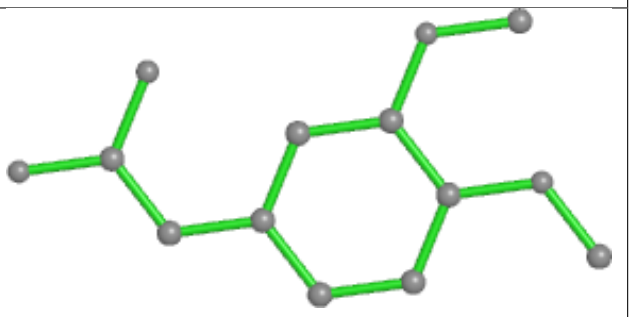
Ligand GOL BBB 402



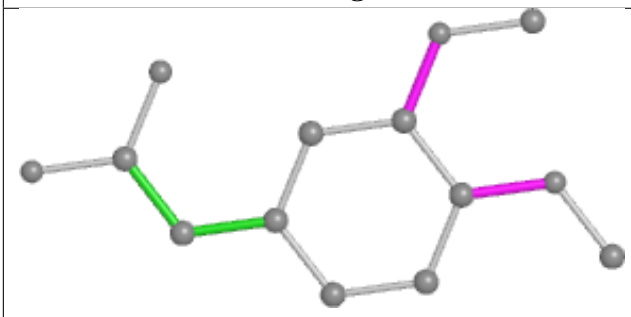
Ligand E9I BBB 401



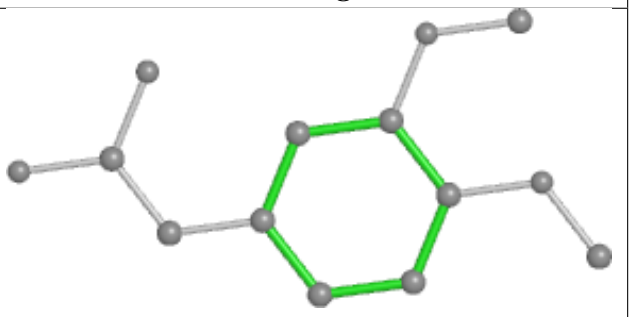
Bond lengths



Bond angles

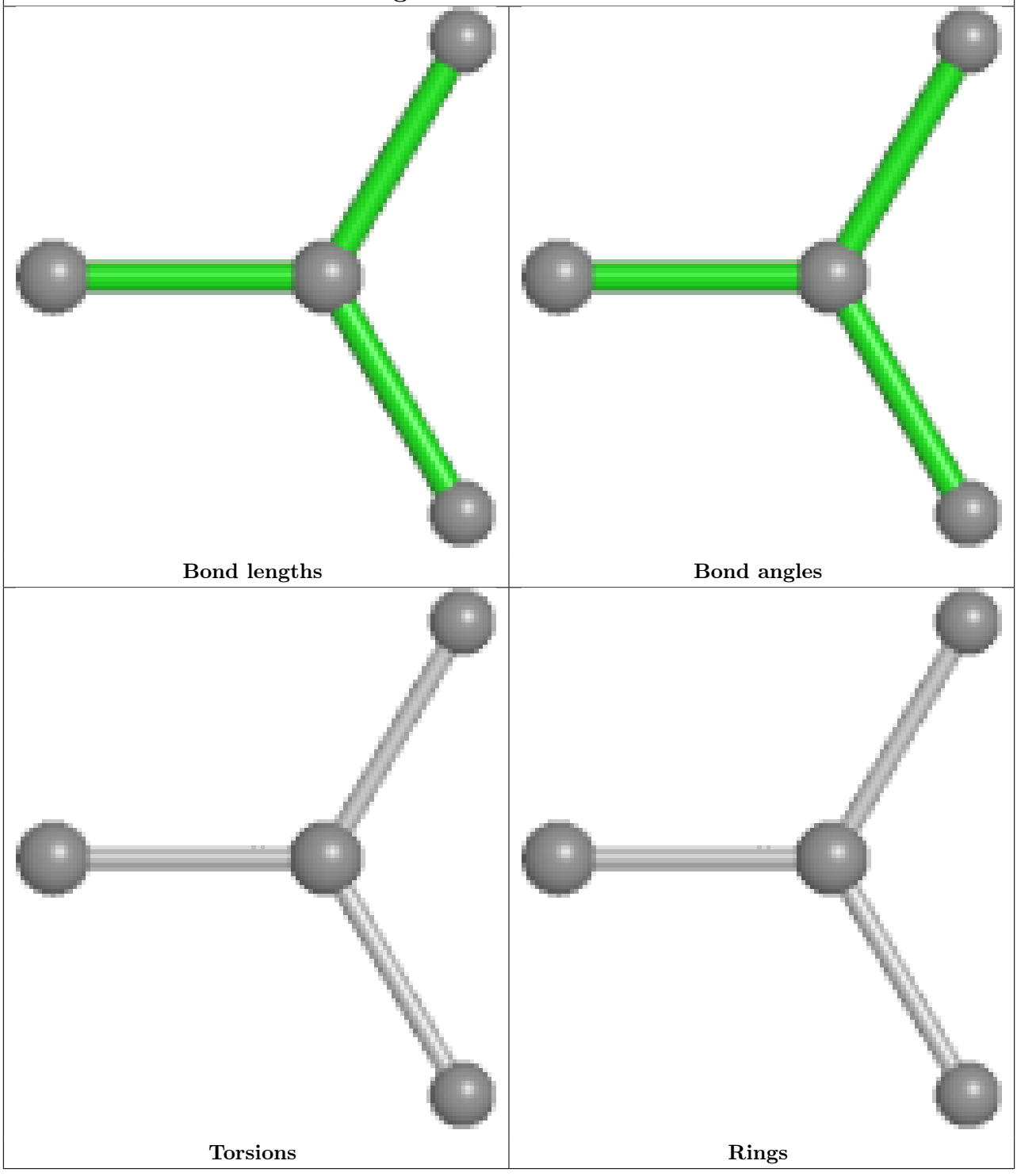


Torsions



Rings

Ligand ACT AAA 405



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	AAA	383/390 (98%)	-0.12	1 (0%)	94	93	36, 53, 76, 92	0
1	BBB	383/390 (98%)	0.10	2 (0%)	91	89	36, 56, 84, 114	0
All	All	766/780 (98%)	-0.01	3 (0%)	92	91	36, 54, 79, 114	0

All (3) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	BBB	317	GLU	2.6
1	AAA	237	LYS	2.1
1	BBB	319	ALA	2.0

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

There are no monosaccharides in this entry.

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
6	GOL	BBB	402	6/6	0.72	0.24	63,67,71,71	2
4	ACT	AAA	403	4/4	0.79	0.23	63,64,66,74	0

Continued on next page...

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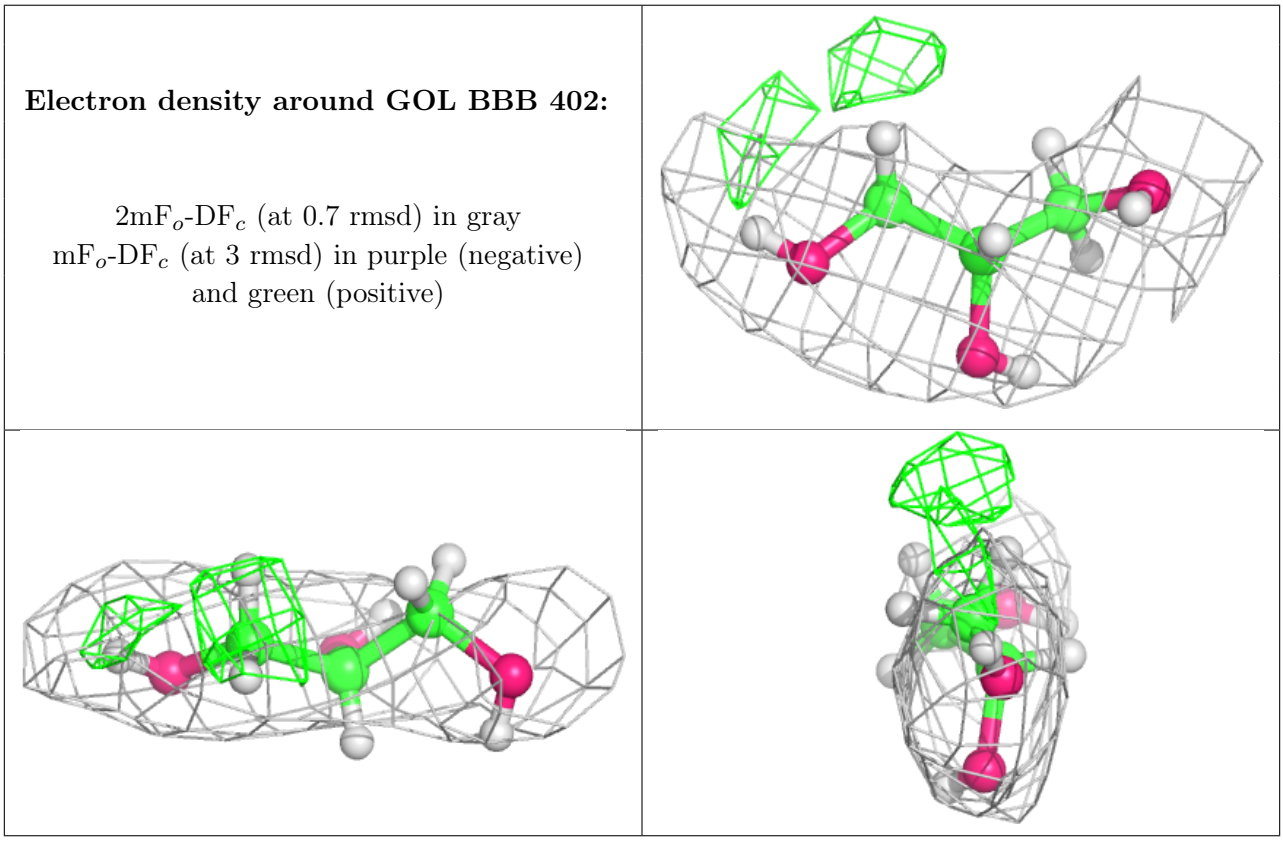
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	E9I	BBB	401	14/14	0.82	0.36	80,87,93,93	2
4	ACT	AAA	405	4/4	0.87	0.23	69,69,73,74	0
2	E9I	AAA	401	14/14	0.91	0.28	68,77,82,83	2
3	APR	BBB	403	36/36	0.97	0.15	47,55,68,69	5
3	APR	AAA	402	36/36	0.97	0.14	41,46,49,49	5
5	FE	BBB	404	1/1	0.98	0.17	46,46,46,46	0
5	FE	AAA	404	1/1	0.99	0.17	41,41,41,41	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.

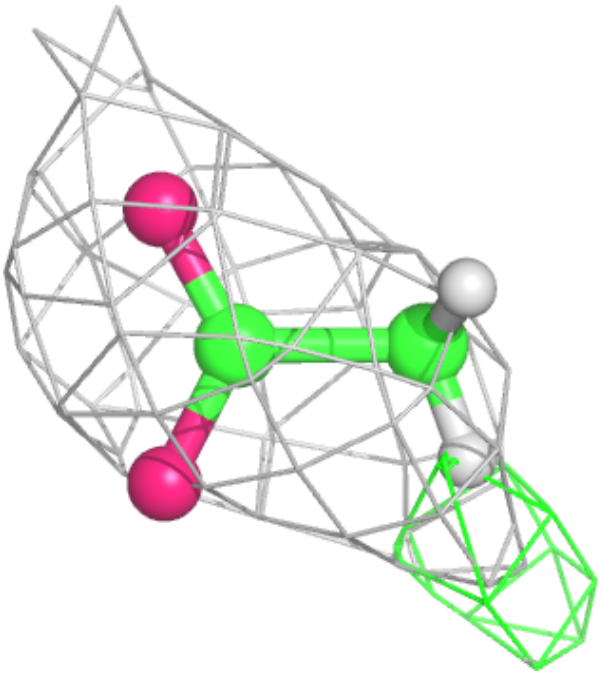
Electron density around GOL BBB 402:

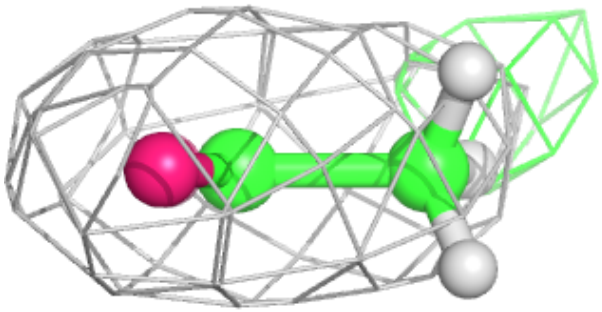
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

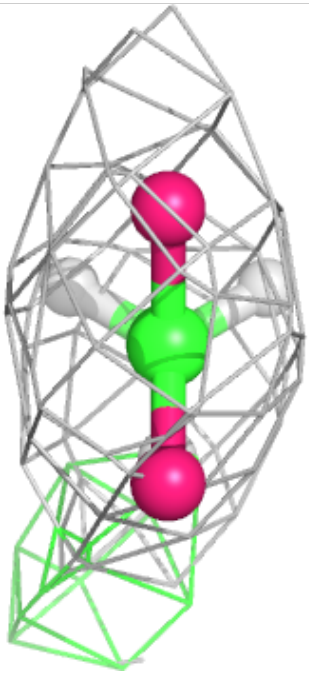


Electron density around ACT AAA 403:

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

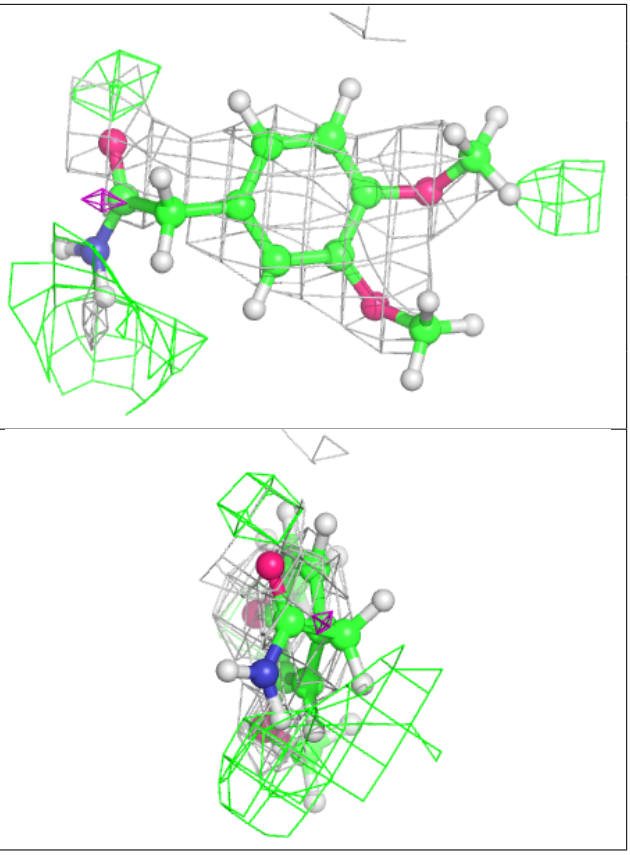


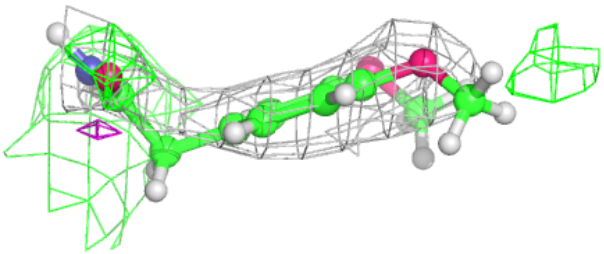




Electron density around E9I BBB 401:

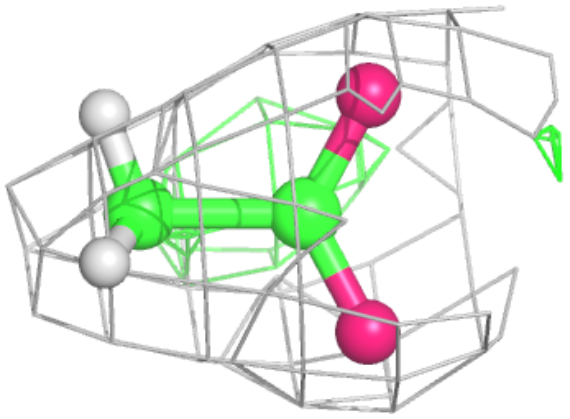
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

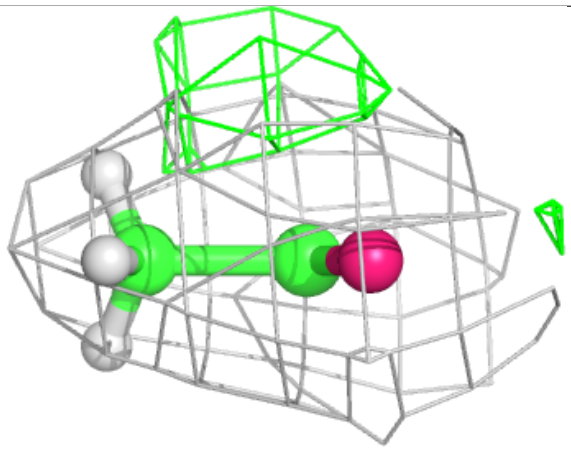


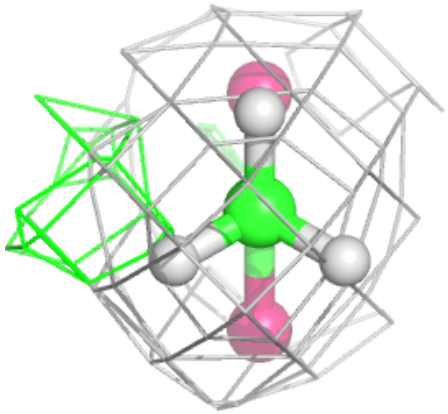


Electron density around ACT AAA 405:

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

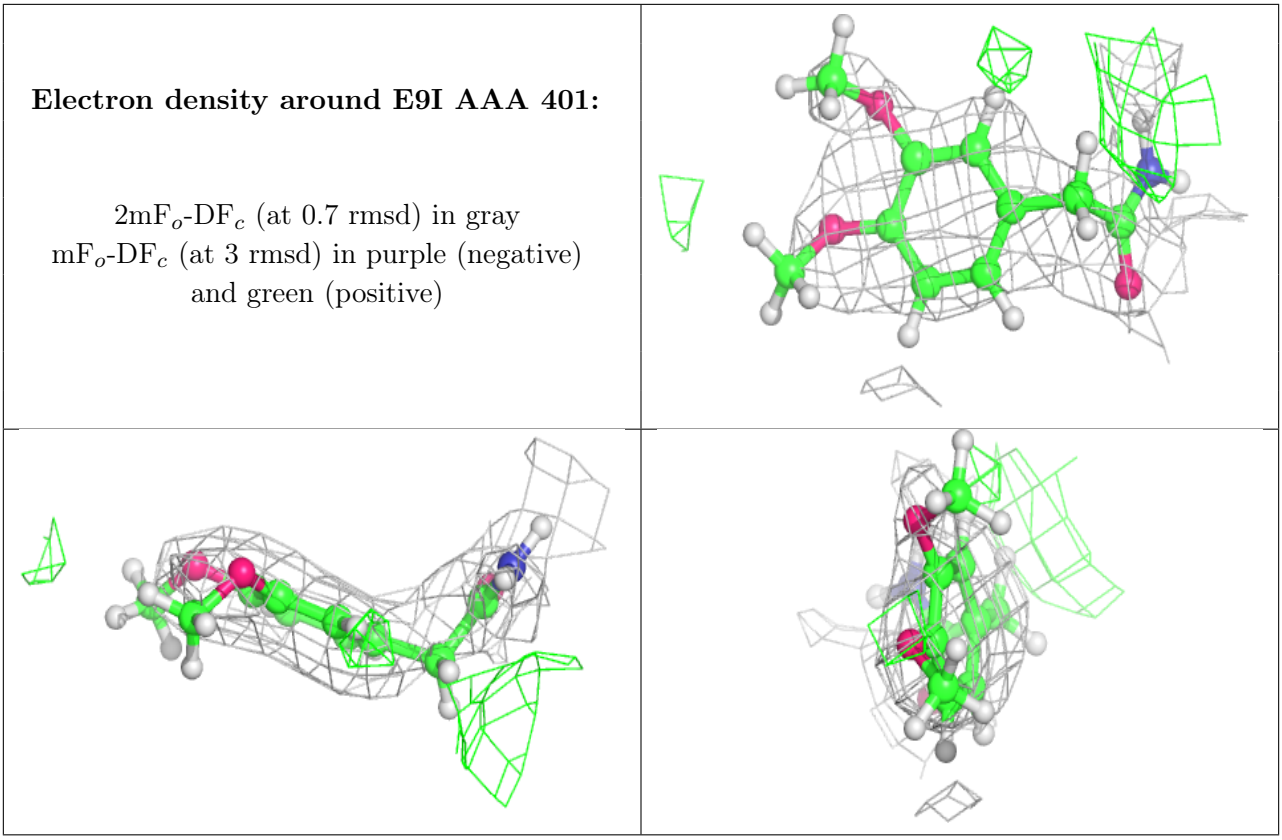






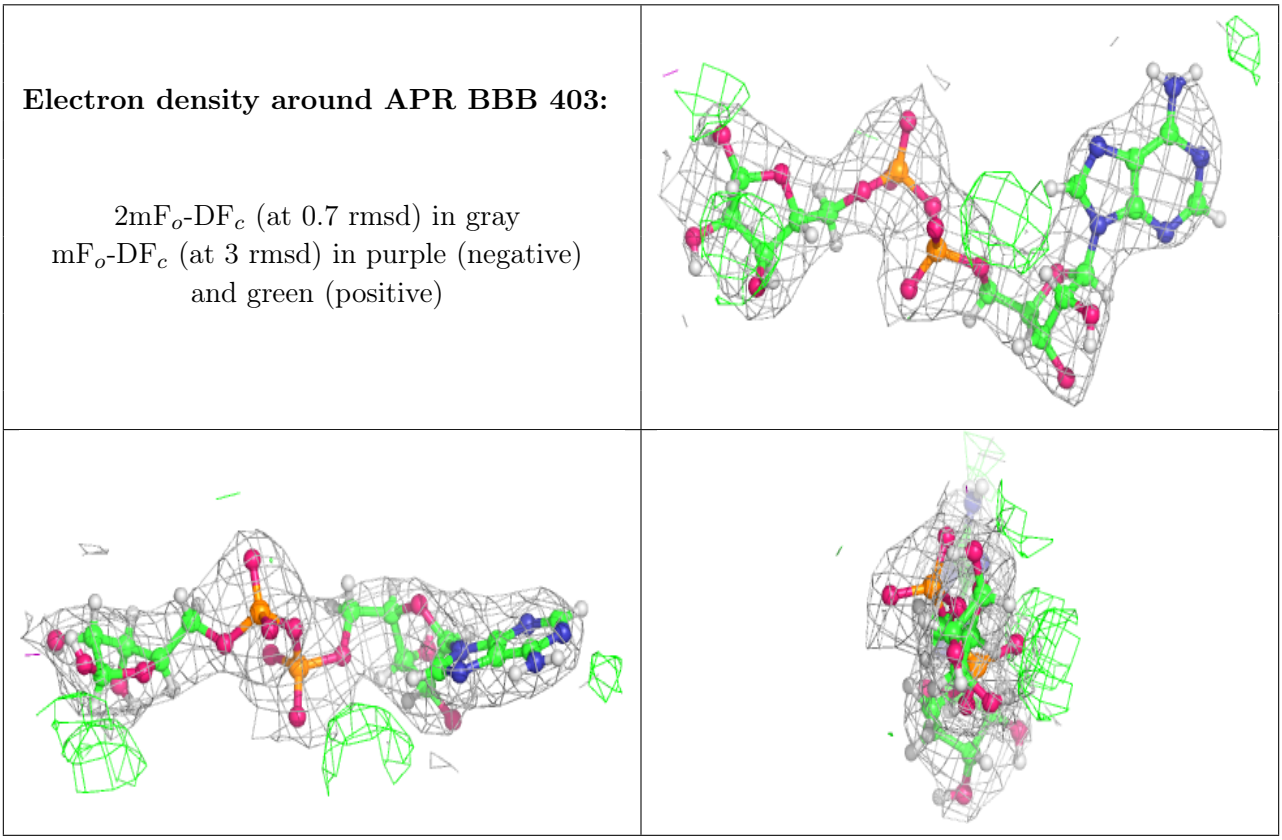
Electron density around E9I AAA 401:

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



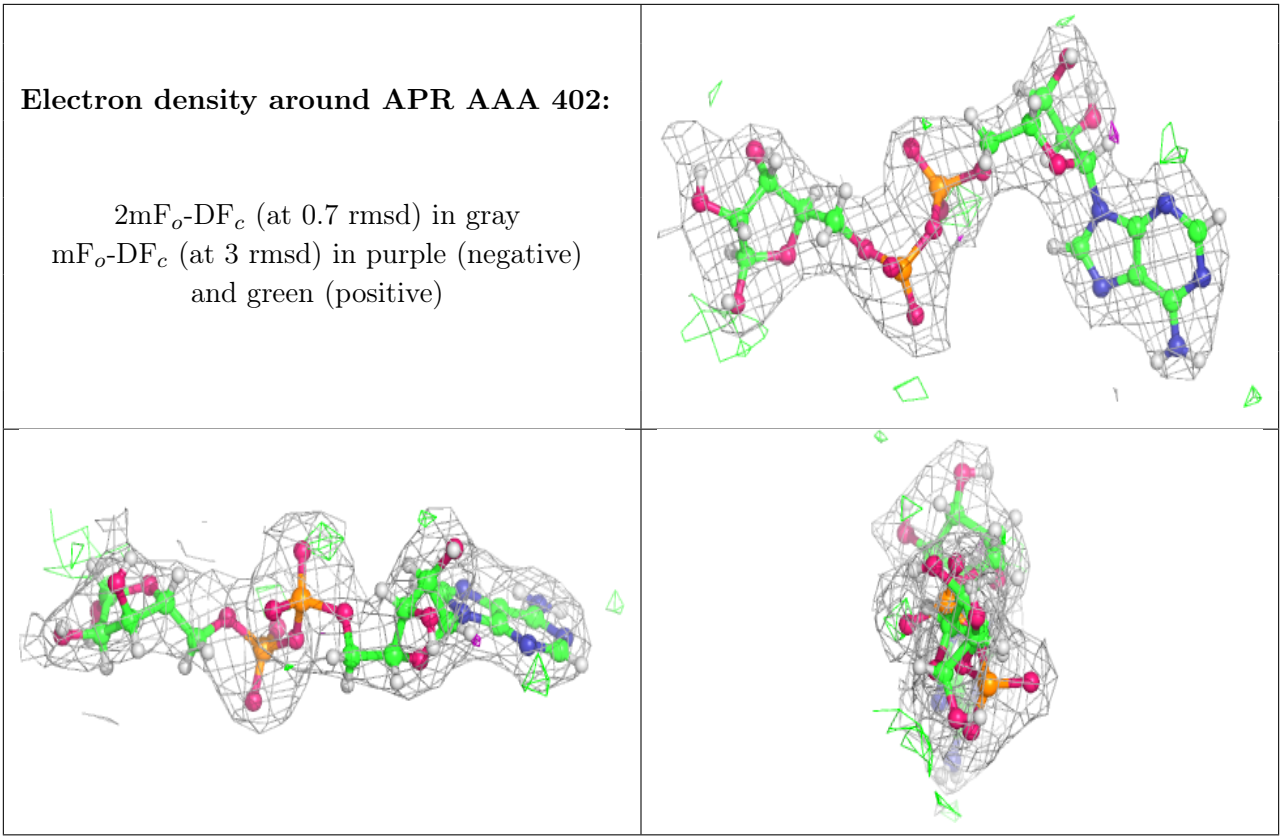
Electron density around APR BBB 403:

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



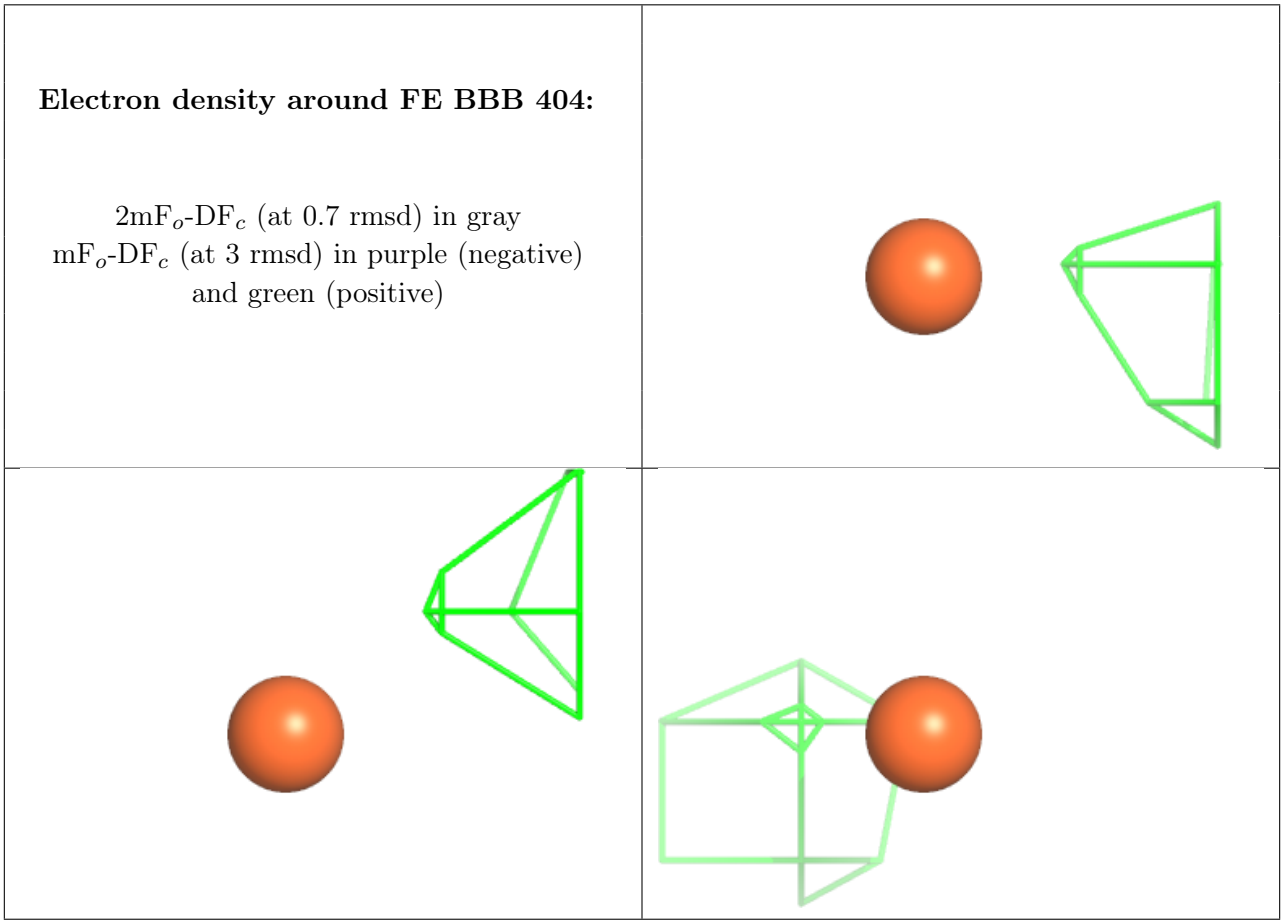
Electron density around APR AAA 402:

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



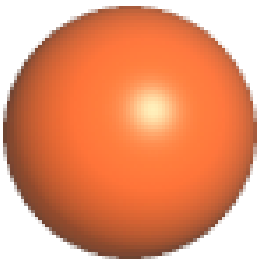
Electron density around FE BBB 404:

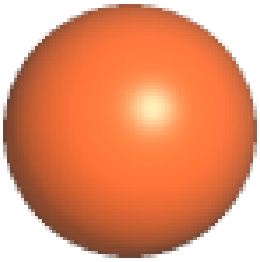
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

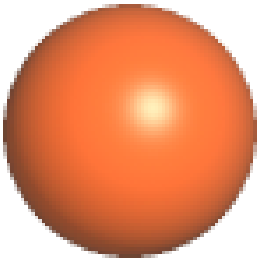


Electron density around FE AAA 404:

$2mF_o$-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.