



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 16, 2024 – 03:19 PM EDT

PDB ID : 4WXF  
Title : Crystal structure of L-Serine Hydroxymethyltransferase in complex with glycine  
Authors : Hernandez, K.; Zelen, I.; Petrillo, G.; Uson, I.; Wadtke, C.; Bujons, J.; Joglar, J.; Parella, T.; Clapes, P.  
Deposited on : 2014-11-13  
Resolution : 2.40 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	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
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)	:	2.37.1

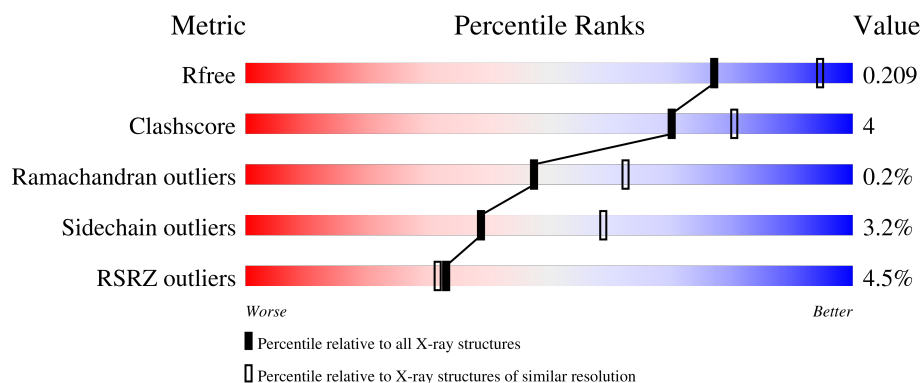
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.40 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	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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  $\leq 5\%$ . 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	428	<div> <div style="width: 88%;"></div> <div style="width: 6%;"></div> <div style="width: 6%;"></div> <div style="width: 2%;"></div> </div> 88% 6% . .
1	C	428	<div> <div style="width: 9%;"></div> <div style="width: 84%;"></div> <div style="width: 11%;"></div> <div style="width: 2%;"></div> </div> 9% 84% 11% . .

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 6687 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.

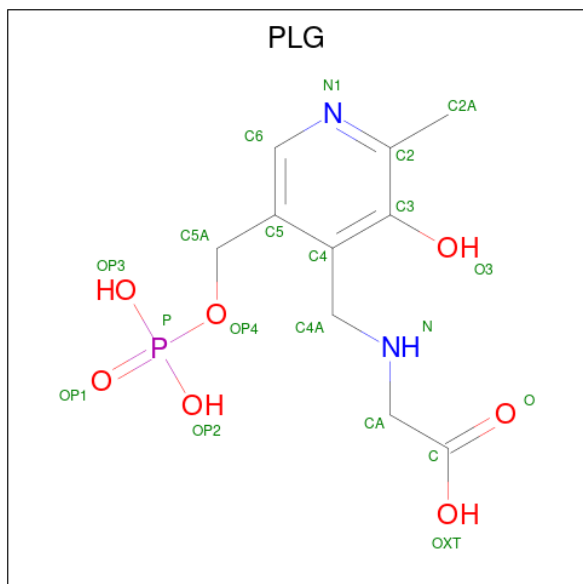
- Molecule 1 is a protein called Serine hydroxymethyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	410	Total	C	N	O	S	0	4	0
			3151	1996	539	607	9			
1	C	410	Total	C	N	O	S	0	3	0
			3135	1986	536	604	9			

There are 24 discrepancies between the modelled and reference sequences:

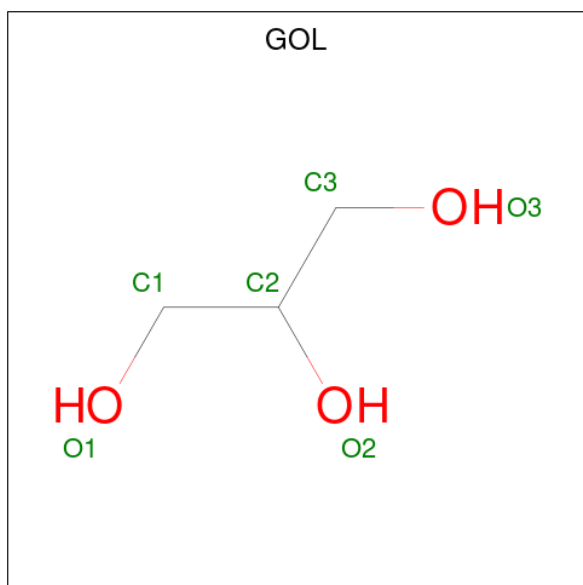
Chain	Residue	Modelled	Actual	Comment	Reference
A	-11	MET	-	initiating methionine	UNP Q5M0B4
A	-10	ARG	-	expression tag	UNP Q5M0B4
A	-9	GLY	-	expression tag	UNP Q5M0B4
A	-8	SER	-	expression tag	UNP Q5M0B4
A	-7	HIS	-	expression tag	UNP Q5M0B4
A	-6	HIS	-	expression tag	UNP Q5M0B4
A	-5	HIS	-	expression tag	UNP Q5M0B4
A	-4	HIS	-	expression tag	UNP Q5M0B4
A	-3	HIS	-	expression tag	UNP Q5M0B4
A	-2	HIS	-	expression tag	UNP Q5M0B4
A	-1	GLY	-	expression tag	UNP Q5M0B4
A	0	SER	-	expression tag	UNP Q5M0B4
C	-11	MET	-	initiating methionine	UNP Q5M0B4
C	-10	ARG	-	expression tag	UNP Q5M0B4
C	-9	GLY	-	expression tag	UNP Q5M0B4
C	-8	SER	-	expression tag	UNP Q5M0B4
C	-7	HIS	-	expression tag	UNP Q5M0B4
C	-6	HIS	-	expression tag	UNP Q5M0B4
C	-5	HIS	-	expression tag	UNP Q5M0B4
C	-4	HIS	-	expression tag	UNP Q5M0B4
C	-3	HIS	-	expression tag	UNP Q5M0B4
C	-2	HIS	-	expression tag	UNP Q5M0B4
C	-1	GLY	-	expression tag	UNP Q5M0B4
C	0	SER	-	expression tag	UNP Q5M0B4

- Molecule 2 is N-GLYCINE-[3-HYDROXY-2-METHYL-5-PHOSPHONOXYMETHYL-PYRIDIN-4-YL-METHANE] (three-letter code: PLG) (formula:  $C_{10}H_{15}N_2O_7P$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			20	10	2	7	1		
2	C	1	Total	C	N	O	P	0	0
			20	10	2	7	1		

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula:  $C_3H_8O_3$ ) (labeled as "Ligand of Interest" by depositor).



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

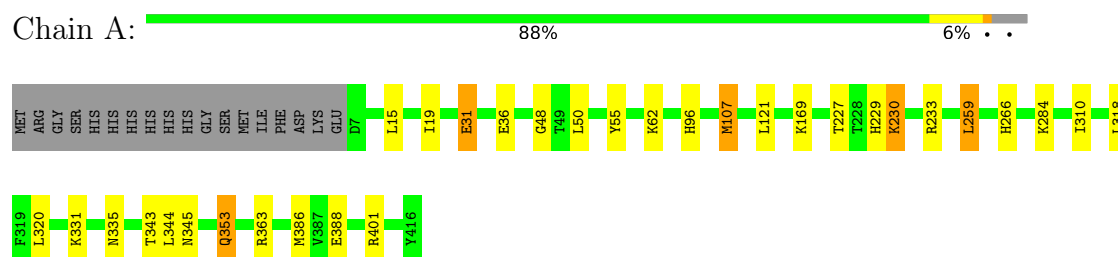
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	201	Total 201	O 201	0	0
4	C	148	Total 148	O 148	0	0

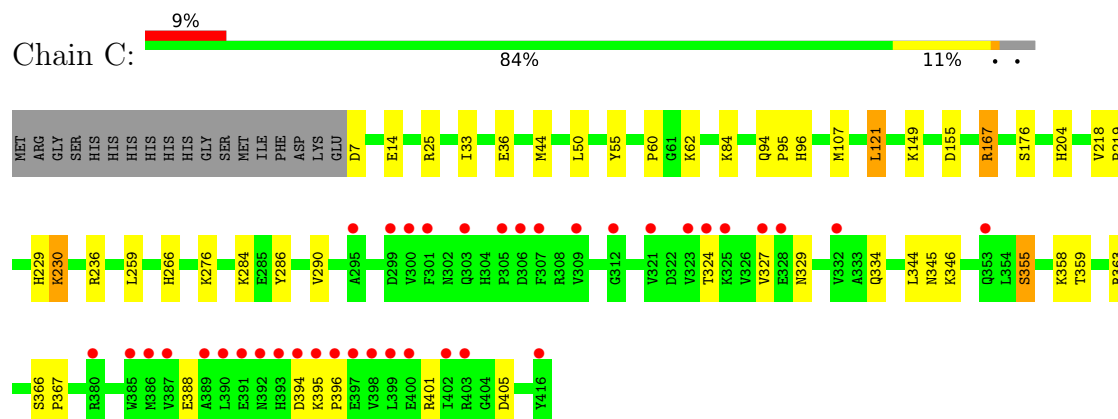
### 3 Residue-property plots [i](#)

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: Serine hydroxymethyltransferase



- Molecule 1: Serine hydroxymethyltransferase



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	115.47Å 115.47Å 191.72Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	57.74 – 2.40 57.73 – 2.40	Depositor EDS
% Data completeness (in resolution range)	100.0 (57.74-2.40) 100.0 (57.73-2.40)	Depositor EDS
$R_{merge}$	0.16	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.33 (at 2.40Å)	Xtriage
Refinement program	REFMAC 5.8.0069	Depositor
R, $R_{free}$	0.158 , 0.204 0.167 , 0.209	Depositor DCC
$R_{free}$ test set	2628 reflections (5.08%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	40.5	Xtriage
Anisotropy	0.025	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 35.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	6687	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	42.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.50% of the height of the origin peak. No significant pseudotranslation is detected.*

<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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, PLG

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	0.87	0/3222	0.95	5/4375 (0.1%)
1	C	0.82	1/3213 (0.0%)	0.95	6/4362 (0.1%)
All	All	0.84	1/6435 (0.0%)	0.95	11/8737 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	14	GLU	CD-OE1	5.80	1.32	1.25

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	236	ARG	NE-CZ-NH2	-8.23	116.19	120.30
1	A	233	ARG	NE-CZ-NH1	7.28	123.94	120.30
1	C	236	ARG	CG-CD-NE	-6.84	97.43	111.80
1	A	233	ARG	NE-CZ-NH2	-6.80	116.90	120.30
1	A	386	MET	CG-SD-CE	-6.09	90.46	100.20
1	C	121	LEU	CB-CG-CD1	-5.22	102.12	111.00
1	C	155	ASP	CB-CG-OD2	-5.07	113.74	118.30
1	A	31[A]	GLU	CB-CA-C	5.07	120.53	110.40
1	A	31[B]	GLU	CB-CA-C	5.07	120.53	110.40
1	C	167	ARG	NE-CZ-NH2	-5.05	117.78	120.30
1	C	155	ASP	CB-CG-OD1	5.03	122.83	118.30

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	3151	0	3124	20	0
1	C	3135	0	3101	26	0
2	A	20	0	11	2	0
2	C	20	0	12	0	0
3	A	12	0	16	0	0
4	A	201	0	0	1	0
4	C	148	0	0	3	0
All	All	6687	0	6264	45	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 (45) 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:C:334:GLN:HE21	1:C:346:LYS:H	1.21	0.88
1:C:388:GLU:OE2	1:C:401:ARG:NH1	2.21	0.73
1:A:31[B]:GLU:OE1	1:A:36[B]:GLU:OE1	2.12	0.68
1:A:345:ASN:HD21	1:A:363:ARG:HH21	1.45	0.65
1:A:266:HIS:H	1:A:266:HIS:CD2	2.14	0.64
1:A:230:LYS:NZ	2:A:501:PLG:H4A2	2.17	0.60
1:C:401:ARG:NH2	1:C:405:ASP:OD2	2.32	0.60
1:C:266:HIS:H	1:C:266:HIS:CD2	2.20	0.60
1:C:96:HIS:HD2	4:C:679:HOH:O	1.86	0.58
1:C:7:ASP:HA	4:C:628:HOH:O	2.03	0.57
1:A:107:MET:HE1	1:A:259:LEU:HG	1.89	0.55
1:A:353:GLN:HA	1:A:353:GLN:HE21	1.73	0.54
1:A:230:LYS:HZ1	2:A:501:PLG:H4A2	1.72	0.53
1:C:33:ILE:HB	1:C:36[A]:GLU:HG2	1.92	0.52
1:C:229:HIS:O	1:C:230:LYS:HB2	2.10	0.51
1:C:324:THR:HA	1:C:327:VAL:O	2.12	0.50
1:A:388:GLU:OE2	1:A:401:ARG:NH1	2.46	0.48
1:A:345:ASN:ND2	1:A:363:ARG:HH21	2.12	0.48
1:A:96:HIS:HD2	4:A:660:HOH:O	1.96	0.47
1:C:345:ASN:HD21	1:C:363:ARG:HH21	1.61	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:15:LEU:HD13	1:A:19:ILE:HD12	1.97	0.47
1:C:345:ASN:ND2	1:C:363:ARG:HH21	2.13	0.47
1:C:94:GLN:N	1:C:95:PRO:CD	2.78	0.46
1:A:48:GLY:O	1:C:44:MET:HB3	2.15	0.46
1:A:266:HIS:H	1:A:266:HIS:HD2	1.61	0.45
1:A:169:LYS:N	1:A:169:LYS:HD3	2.31	0.45
1:C:107:MET:HE3	1:C:259:LEU:HD11	1.98	0.45
1:A:310:ILE:HG12	1:A:320:LEU:HB2	1.99	0.45
1:C:176:SER:HA	1:C:204:HIS:CD2	2.52	0.45
1:C:366:SER:N	1:C:367:PRO:HD3	2.33	0.43
1:C:107:MET:HE1	1:C:259:LEU:HD21	2.00	0.43
1:A:318:LEU:C	1:A:318:LEU:HD12	2.39	0.43
1:A:266:HIS:CD2	1:A:266:HIS:N	2.82	0.43
1:C:286:TYR:O	1:C:290:VAL:HG23	2.19	0.42
1:C:355:SER:HB3	1:C:358:LYS:HG2	2.01	0.42
1:C:276:LYS:HD2	4:C:737:HOH:O	2.20	0.42
1:C:33:ILE:HB	1:C:36[A]:GLU:CG	2.50	0.41
1:A:331:LYS:NZ	1:A:335:ASN:HD21	2.17	0.41
1:A:227:THR:HB	1:A:229:HIS:CE1	2.55	0.41
1:A:31[A]:GLU:HG2	1:A:343:THR:OG1	2.20	0.41
1:C:218:VAL:N	1:C:219:PRO:CD	2.84	0.41
1:C:394:ASP:O	1:C:396:PRO:HD3	2.21	0.41
1:C:329:ASN:HB2	1:C:359:THR:O	2.20	0.40
1:C:266:HIS:CD2	1:C:266:HIS:N	2.88	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	412/428 (96%)	402 (98%)	9 (2%)	1 (0%)	47 62

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	411/428 (96%)	396 (96%)	14 (3%)	1 (0%)	47	62
All	All	823/856 (96%)	798 (97%)	23 (3%)	2 (0%)	47	62

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	230	LYS
1	C	230	LYS

### 5.3.2 Protein sidechains ⓘ

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	331/343 (96%)	321 (97%)	10 (3%)	41	61
1	C	330/343 (96%)	318 (96%)	12 (4%)	35	54
All	All	661/686 (96%)	639 (97%)	22 (3%)	39	57

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	50	LEU
1	A	55	TYR
1	A	62	LYS
1	A	107	MET
1	A	121[A]	LEU
1	A	121[B]	LEU
1	A	259	LEU
1	A	284	LYS
1	A	344	LEU
1	A	353	GLN
1	C	50	LEU
1	C	55	TYR
1	C	60	PRO
1	C	62	LYS

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Mol	Chain	Res	Type
1	C	84	LYS
1	C	121	LEU
1	C	149	LYS
1	C	167	ARG
1	C	284	LYS
1	C	344	LEU
1	C	355	SER
1	C	395	LYS

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	17	ASN
1	A	96	HIS
1	A	266	HIS
1	A	303	GLN
1	A	335	ASN
1	A	345	ASN
1	A	347	ASN
1	A	353	GLN
1	C	17	ASN
1	C	96	HIS
1	C	266	HIS
1	C	334	GLN
1	C	345	ASN
1	C	347	ASN

### 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 ⓘ

There are no monosaccharides in this entry.

## 5.6 Ligand geometry

4 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$
2	PLG	A	501	-	20,20,20	1.47	4 (20%)	25,28,28	2.26	6 (24%)
3	GOL	A	502	-	5,5,5	0.86	0	5,5,5	1.06	0
3	GOL	A	503	-	5,5,5	0.32	0	5,5,5	1.13	0
2	PLG	C	501	-	20,20,20	1.45	3 (15%)	25,28,28	2.36	4 (16%)

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	PLG	A	501	-	-	2/12/12/12	0/1/1/1
3	GOL	A	502	-	-	4/4/4/4	-
3	GOL	A	503	-	-	0/4/4/4	-
2	PLG	C	501	-	-	4/12/12/12	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	PLG	C4A-N	-3.66	1.28	1.46
2	C	501	PLG	C4A-N	-3.66	1.28	1.46
2	A	501	PLG	C3-C2	-2.91	1.38	1.40
2	C	501	PLG	OXT-C	-2.82	1.21	1.30
2	A	501	PLG	OXT-C	-2.78	1.21	1.30
2	C	501	PLG	C3-C2	-2.55	1.38	1.40
2	A	501	PLG	C4A-C4	-2.28	1.49	1.51

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	501	PLG	C4A-N-CA	8.73	121.69	112.58
2	A	501	PLG	C4A-N-CA	8.17	121.11	112.58
2	C	501	PLG	OP4-C5A-C5	5.41	119.67	109.35
2	C	501	PLG	C4-C4A-N	3.93	118.93	111.58
2	A	501	PLG	OP4-C5A-C5	3.75	116.49	109.35
2	A	501	PLG	OP2-P-OP4	-3.61	97.13	106.73
2	A	501	PLG	OP3-P-OP2	3.07	119.36	107.64
2	A	501	PLG	C4A-C4-C5	2.48	122.47	119.71
2	C	501	PLG	C4A-C4-C5	2.14	122.09	119.71
2	A	501	PLG	C4-C4A-N	2.11	115.53	111.58

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	501	PLG	C3-C4-C4A-N
2	C	501	PLG	C5-C4-C4A-N
3	A	502	GOL	C1-C2-C3-O3
2	A	501	PLG	C5-C4-C4A-N
3	A	502	GOL	O1-C1-C2-C3
3	A	502	GOL	O1-C1-C2-O2
3	A	502	GOL	O2-C2-C3-O3
2	A	501	PLG	C3-C4-C4A-N
2	C	501	PLG	C4-C5-C5A-OP4
2	C	501	PLG	C6-C5-C5A-OP4

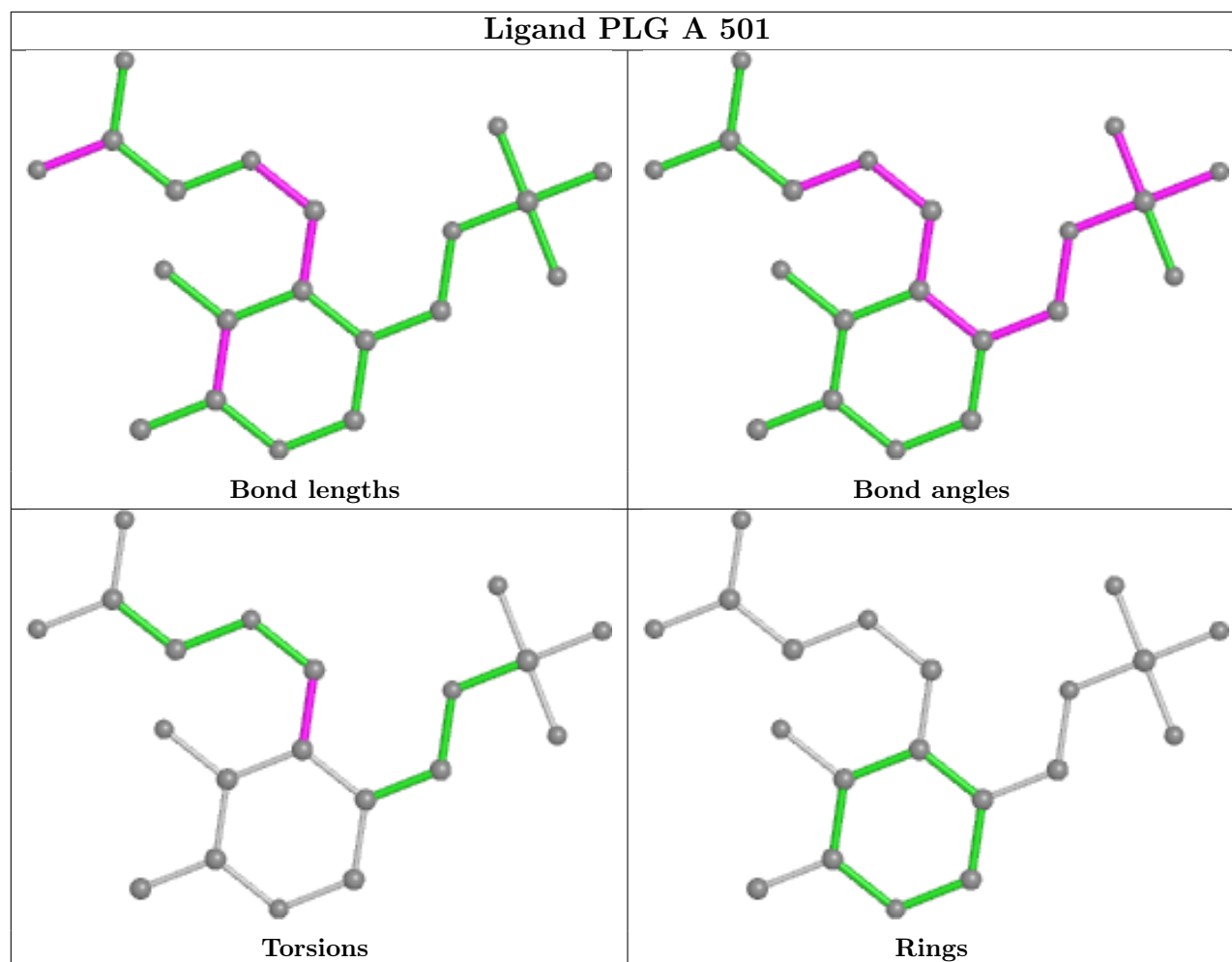
There are no ring outliers.

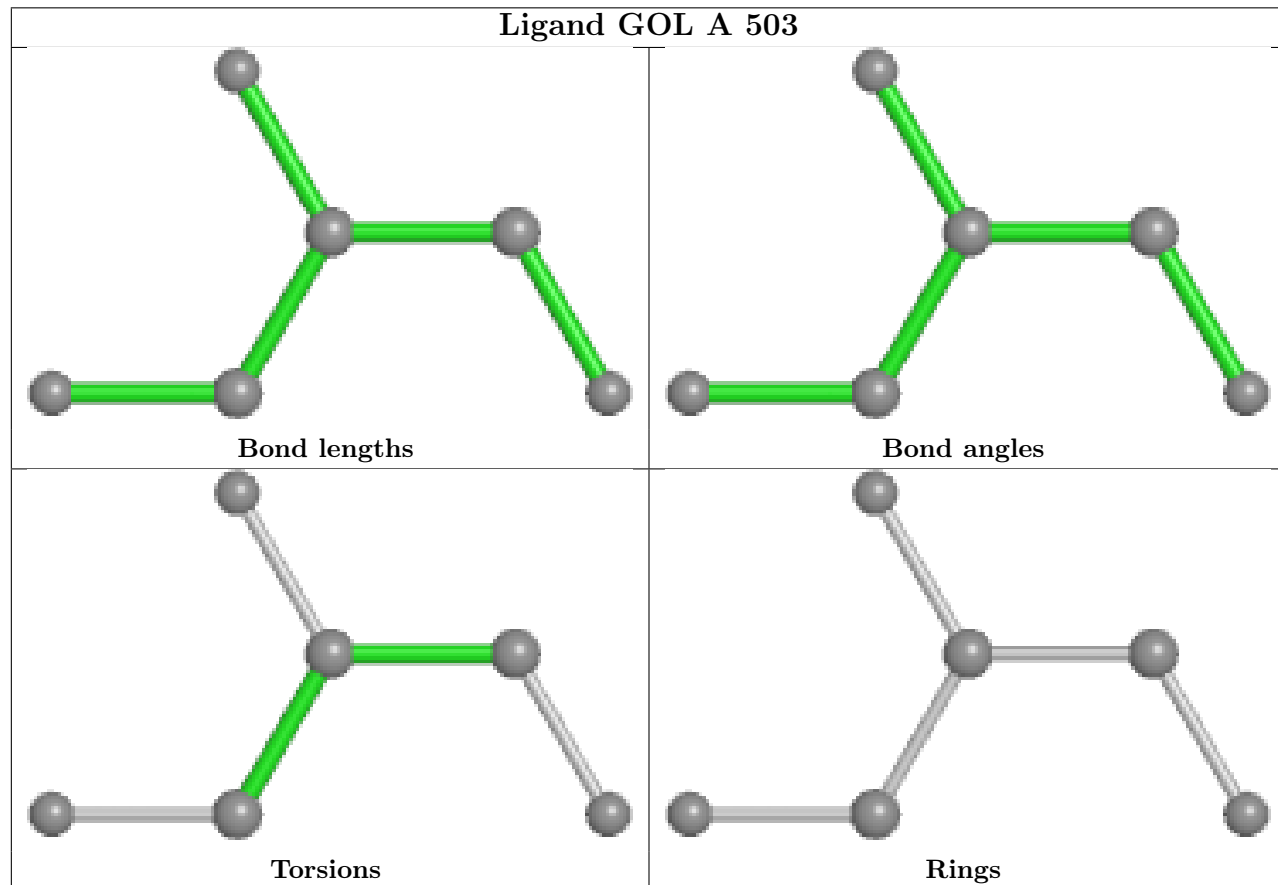
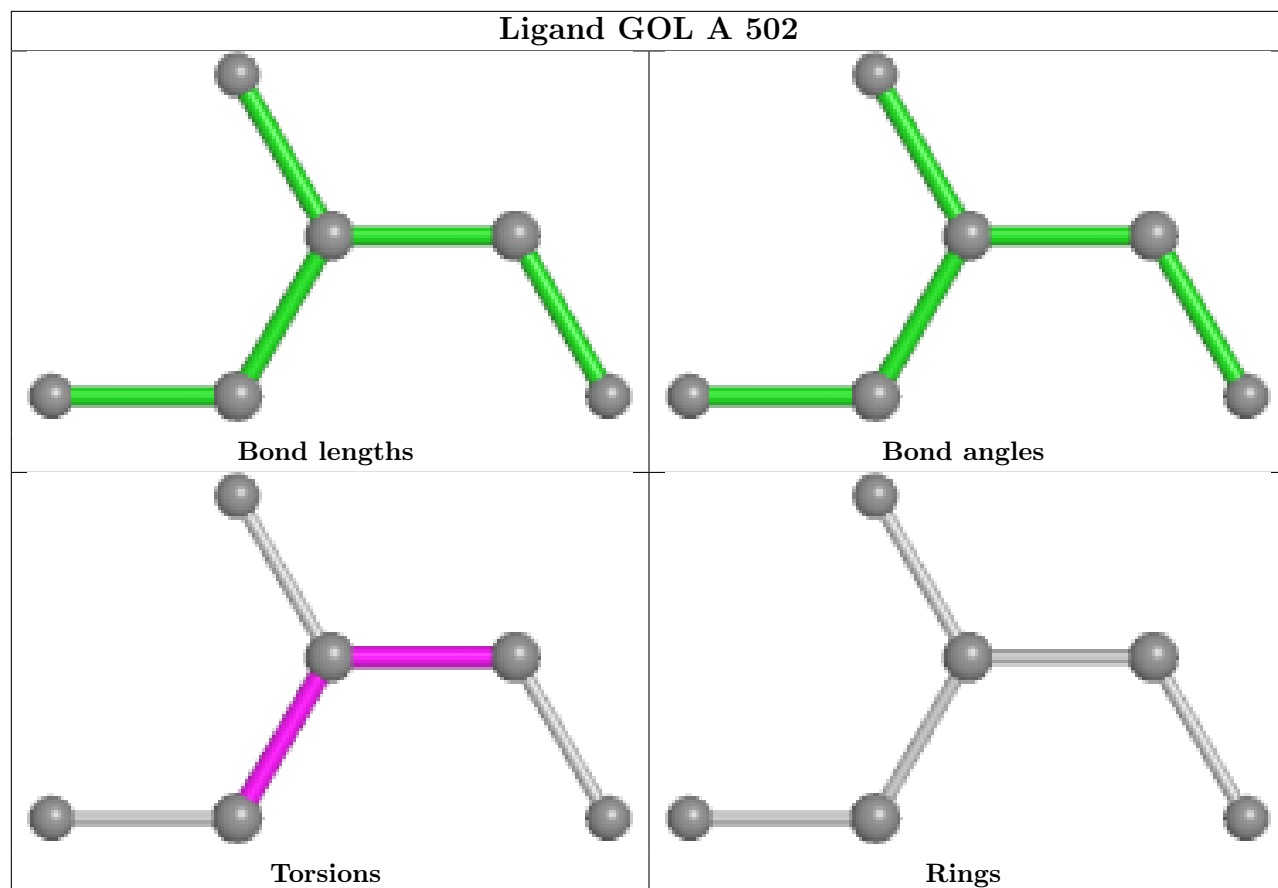
1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	501	PLG	2	0

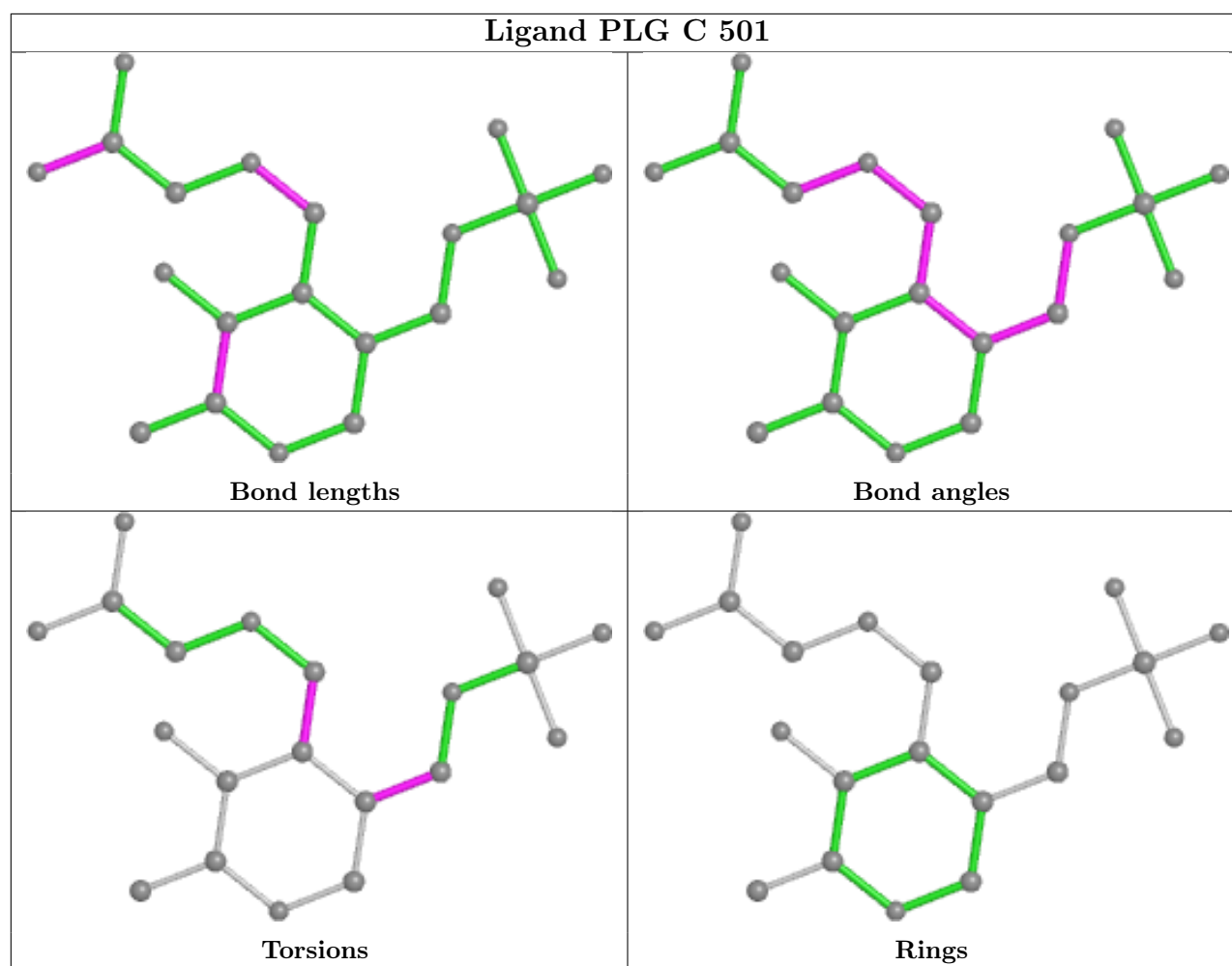
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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 [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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	410/428 (95%)	-0.49	0 <span>100</span> <span>100</span>	26, 35, 57, 82	0
1	C	410/428 (95%)	0.12	37 (9%) <span>9</span> <span>8</span>	26, 42, 74, 99	0
All	All	820/856 (95%)	-0.19	37 (4%) <span>33</span> <span>31</span>	26, 38, 69, 99	0

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	394	ASP	3.7
1	C	385	TRP	3.4
1	C	324	THR	3.4
1	C	397	GLU	3.4
1	C	390	LEU	3.2
1	C	332	VAL	3.2
1	C	399	LEU	3.1
1	C	396	PRO	2.8
1	C	391	GLU	2.8
1	C	389	ALA	2.7
1	C	328	GLU	2.7
1	C	393	HIS	2.6
1	C	300	VAL	2.6
1	C	327	VAL	2.6
1	C	299	ASP	2.5
1	C	301	PHE	2.5
1	C	309	VAL	2.4
1	C	398	VAL	2.4
1	C	307	PHE	2.4
1	C	323	VAL	2.4
1	C	395	LYS	2.3
1	C	416	TYR	2.3
1	C	392	ASN	2.3
1	C	321	VAL	2.3

*Continued on next page...*

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Mol	Chain	Res	Type	RSRZ
1	C	306	ASP	2.2
1	C	303	GLN	2.2
1	C	403	ARG	2.2
1	C	325	LYS	2.2
1	C	380	ARG	2.1
1	C	400	GLU	2.1
1	C	387	VAL	2.1
1	C	295	ALA	2.1
1	C	353	GLN	2.1
1	C	386	MET	2.1
1	C	305	PRO	2.1
1	C	402	ILE	2.1
1	C	312	GLY	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](#)

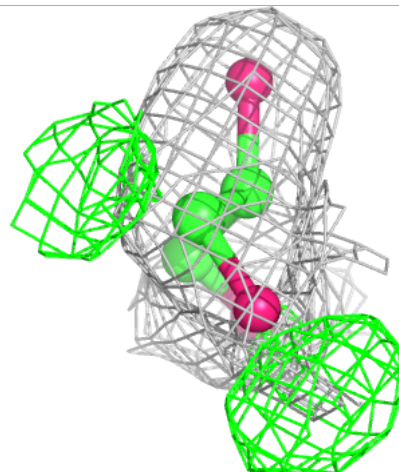
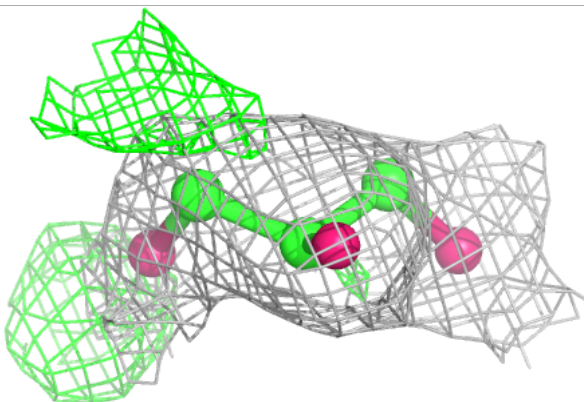
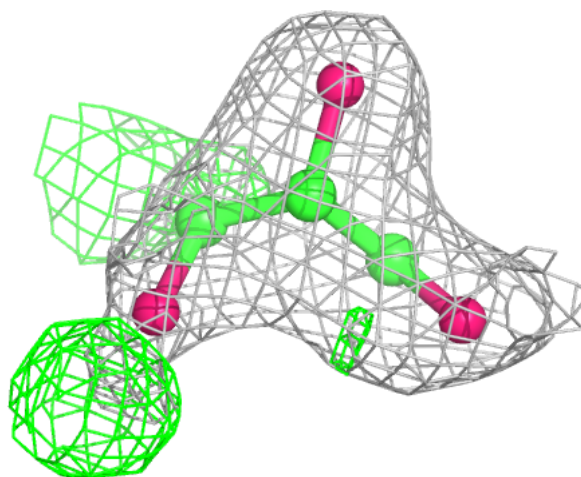
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	GOL	A	502	6/6	0.93	0.18	39,49,52,65	0
3	GOL	A	503	6/6	0.93	0.17	61,66,70,74	0
2	PLG	A	501	20/20	0.99	0.15	28,32,44,44	0
2	PLG	C	501	20/20	0.99	0.12	28,36,50,51	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.

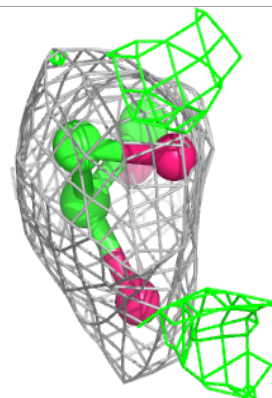
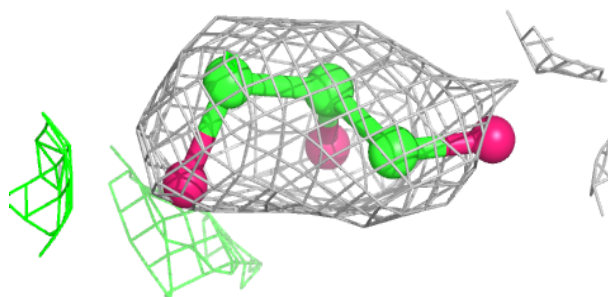
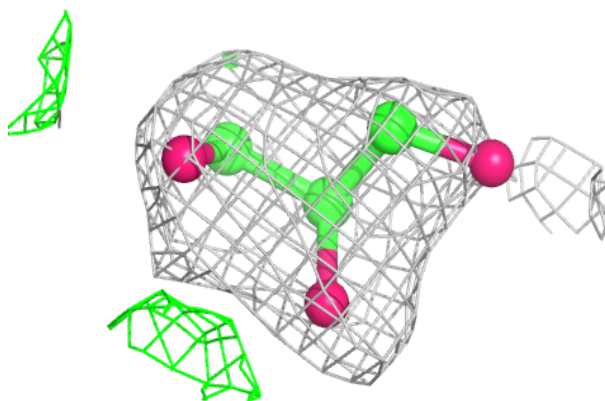
**Electron density around GOL A 502:**

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



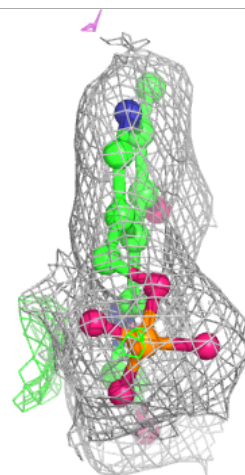
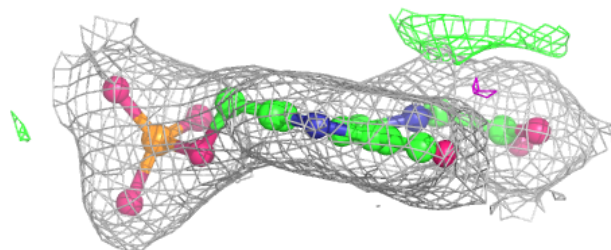
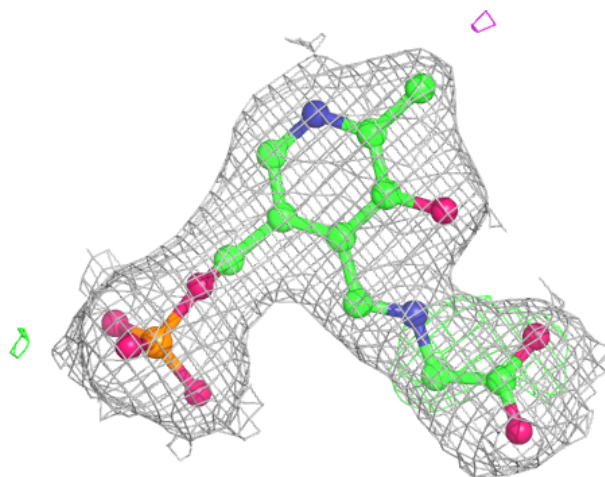
**Electron density around GOL A 503:**

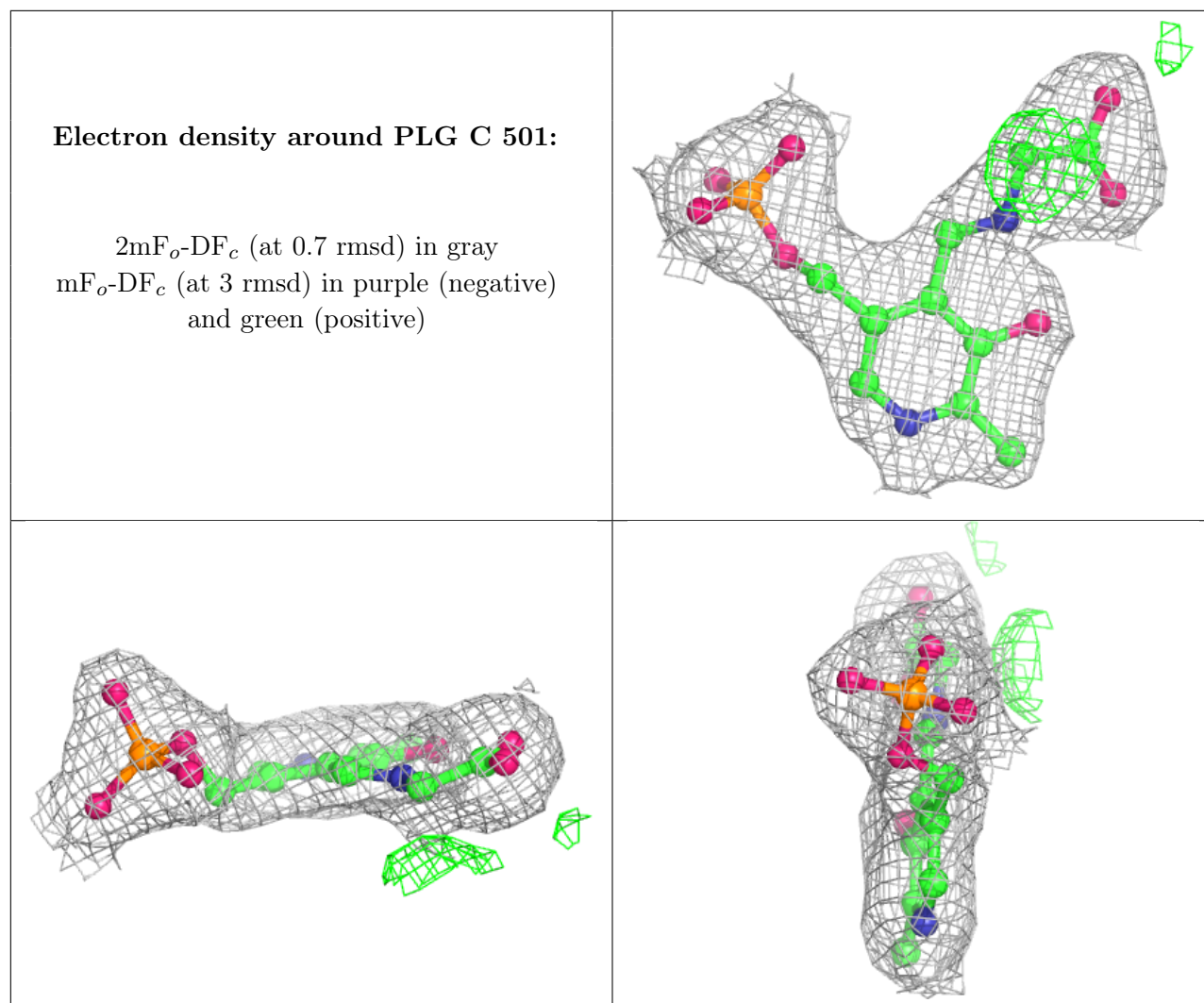
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around PLG A 501:**

$2mF_o-DF_c$  (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.