



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 10, 2023 – 02:42 AM EDT

PDB ID : 7KZD  
Title : Crystal structure of KabA from Bacillus cereus UW85 in complex with the reduced internal aldimine and with bound Glutarate  
Authors : Prasertanan, T.; Palmer, D.R.J.; Sanders, D.A.R.  
Deposited on : 2020-12-10  
Resolution : 1.90 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 : 2.35.1  
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

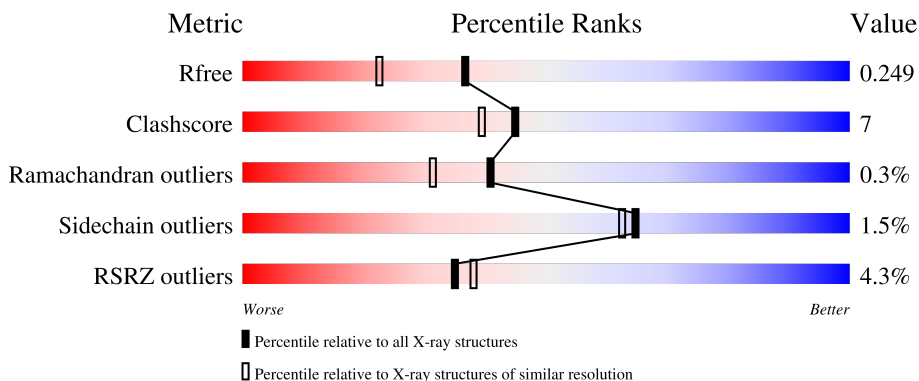
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.90 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.



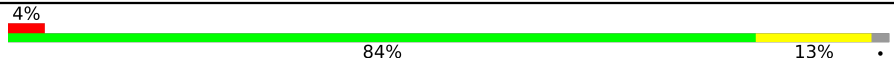

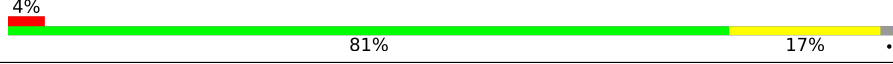
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	6207 (1.90-1.90)
Clashscore	141614	6847 (1.90-1.90)
Ramachandran outliers	138981	6760 (1.90-1.90)
Sidechain outliers	138945	6760 (1.90-1.90)
RSRZ outliers	127900	6082 (1.90-1.90)

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	445	 2% (red), 83% (green), 15% (yellow), .. (grey)
1	B	445	 3% (red), 84% (green), 14% (yellow), . (grey)
1	C	445	 10% (red), 82% (green), 16% (yellow), . (grey)
1	D	445	 5% (red), 82% (green), 16% (yellow), .. (grey)
1	E	445	 4% (red), 83% (green), 15% (yellow), . (grey)

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Mol	Chain	Length	Quality of chain
1	F	445	 4% 84% 13%
1	G	445	 3% 85% 13%
1	H	445	 4% 81% 17%

## 2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 30275 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 Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	438	Total 3539	C 2263	N 603	O 658	S 15	0	1	0
1	B	439	Total 3551	C 2269	N 605	O 662	S 15	0	2	0
1	C	438	Total 3539	C 2263	N 603	O 658	S 15	0	1	0
1	D	438	Total 3542	C 2264	N 604	O 659	S 15	0	2	0
1	E	437	Total 3540	C 2264	N 603	O 658	S 15	0	2	0
1	F	437	Total 3522	C 2252	N 601	O 654	S 15	0	0	0
1	G	439	Total 3537	C 2262	N 603	O 657	S 15	0	0	0
1	H	438	Total 3538	C 2262	N 603	O 658	S 15	0	1	0

There are 32 discrepancies between the modelled and reference sequences:

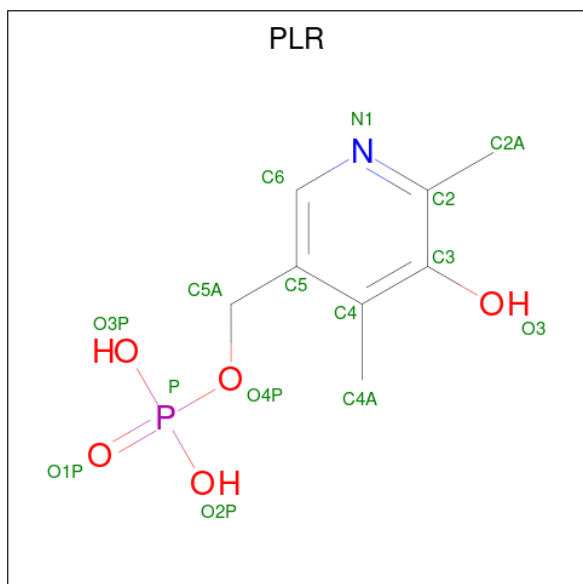
Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP C0JRF5
A	0	ALA	-	expression tag	UNP C0JRF5
A	1	MET	-	expression tag	UNP C0JRF5
A	2	ASP	-	expression tag	UNP C0JRF5
B	-1	GLY	-	expression tag	UNP C0JRF5
B	0	ALA	-	expression tag	UNP C0JRF5
B	1	MET	-	expression tag	UNP C0JRF5
B	2	ASP	-	expression tag	UNP C0JRF5
C	-1	GLY	-	expression tag	UNP C0JRF5
C	0	ALA	-	expression tag	UNP C0JRF5
C	1	MET	-	expression tag	UNP C0JRF5
C	2	ASP	-	expression tag	UNP C0JRF5

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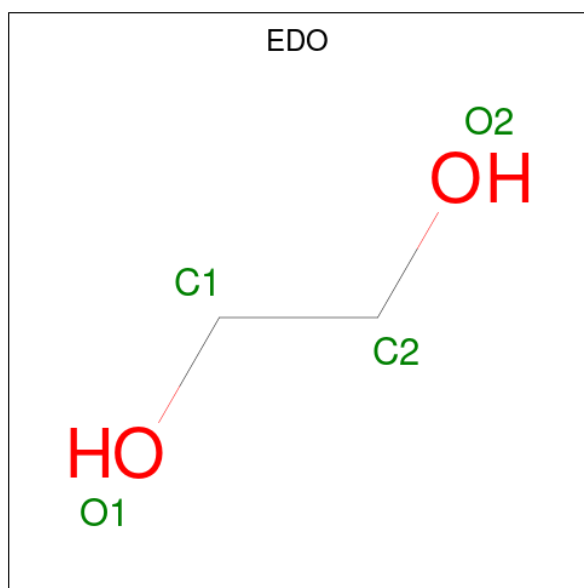
Chain	Residue	Modelled	Actual	Comment	Reference
D	-1	GLY	-	expression tag	UNP C0JRF5
D	0	ALA	-	expression tag	UNP C0JRF5
D	1	MET	-	expression tag	UNP C0JRF5
D	2	ASP	-	expression tag	UNP C0JRF5
E	-1	GLY	-	expression tag	UNP C0JRF5
E	0	ALA	-	expression tag	UNP C0JRF5
E	1	MET	-	expression tag	UNP C0JRF5
E	2	ASP	-	expression tag	UNP C0JRF5
F	-1	GLY	-	expression tag	UNP C0JRF5
F	0	ALA	-	expression tag	UNP C0JRF5
F	1	MET	-	expression tag	UNP C0JRF5
F	2	ASP	-	expression tag	UNP C0JRF5
G	-1	GLY	-	expression tag	UNP C0JRF5
G	0	ALA	-	expression tag	UNP C0JRF5
G	1	MET	-	expression tag	UNP C0JRF5
G	2	ASP	-	expression tag	UNP C0JRF5
H	-1	GLY	-	expression tag	UNP C0JRF5
H	0	ALA	-	expression tag	UNP C0JRF5
H	1	MET	-	expression tag	UNP C0JRF5
H	2	ASP	-	expression tag	UNP C0JRF5

- Molecule 2 is (5-HYDROXY-4,6-DIMETHYLPYRIDIN-3-YL)METHYL DIHYDROGEN PHOSPHATE (three-letter code: PLR) (formula: C<sub>8</sub>H<sub>12</sub>NO<sub>5</sub>P) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			15	8	1	5	1		
2	B	1	Total	C	N	O	P	0	0
			15	8	1	5	1		
2	C	1	Total	C	N	O	P	0	0
			15	8	1	5	1		
2	D	1	Total	C	N	O	P	0	0
			15	8	1	5	1		
2	E	1	Total	C	N	O	P	0	0
			15	8	1	5	1		
2	F	1	Total	C	N	O	P	0	0
			15	8	1	5	1		
2	G	1	Total	C	N	O	P	0	0
			15	8	1	5	1		
2	H	1	Total	C	N	O	P	0	0
			15	8	1	5	1		

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



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

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

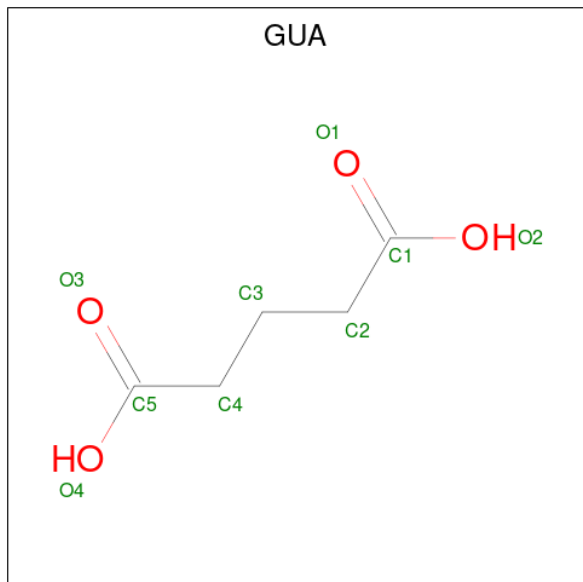
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total C O 4 2 2	0	0
3	D	1	Total C O 4 2 2	0	0
3	D	1	Total C O 4 2 2	0	0
3	E	1	Total C O 4 2 2	0	0
3	E	1	Total C O 4 2 2	0	0
3	E	1	Total C O 4 2 2	0	0
3	E	1	Total C O 4 2 2	0	0
3	E	1	Total C O 4 2 2	0	0
3	E	1	Total C O 4 2 2	0	0
3	F	1	Total C O 4 2 2	0	0
3	F	1	Total C O 4 2 2	0	0
3	F	1	Total C O 4 2 2	0	0
3	G	1	Total C O 4 2 2	0	0
3	G	1	Total C O 4 2 2	0	0
3	G	1	Total C O 4 2 2	0	0
3	G	1	Total C O 4 2 2	0	0
3	G	1	Total C O 4 2 2	0	0
3	G	1	Total C O 4 2 2	0	0
3	H	1	Total C O 4 2 2	0	0
3	H	1	Total C O 4 2 2	0	0
3	H	1	Total C O 4 2 2	0	0



- Molecule 4 is GLUTARIC ACID (three-letter code: GUA) (formula:  $C_5H_8O_4$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	1	Total C O 9 5 4	0	0
4	D	1	Total C O 9 5 4	0	0
4	E	1	Total C O 9 5 4	0	0
4	F	1	Total C O 9 5 4	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	200	Total O 200 200	0	0
5	B	226	Total O 226 226	0	0
5	C	158	Total O 158 158	0	0
5	D	207	Total O 207 207	0	0
5	E	218	Total O 218 218	0	0
5	F	220	Total O 220 220	0	0

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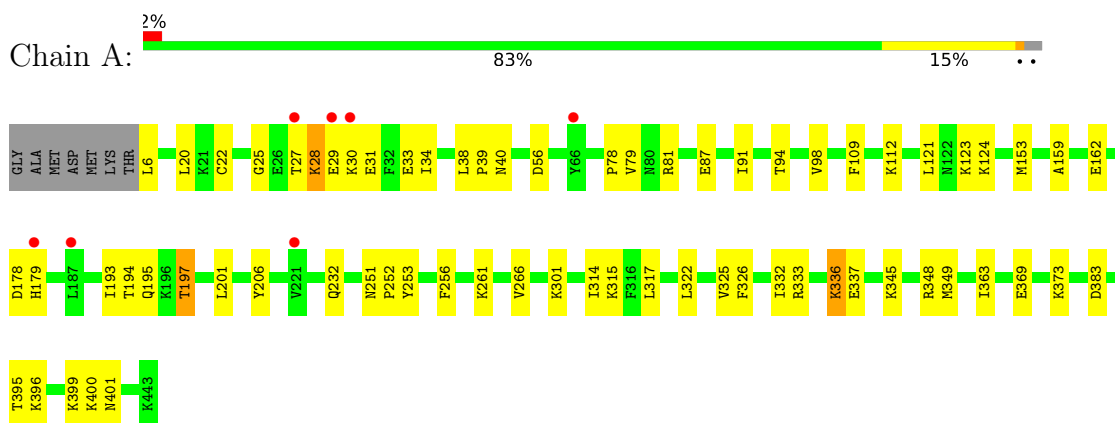
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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
5	G	219	Total 219	O 219	0	0
5	H	179	Total 179	O 179	0	0

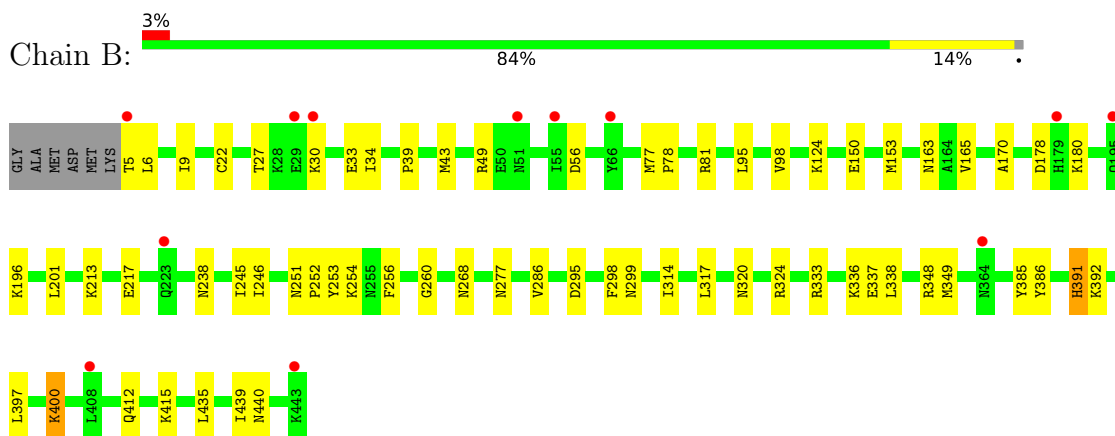
### 3 Residue-property plots [i](#)

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.

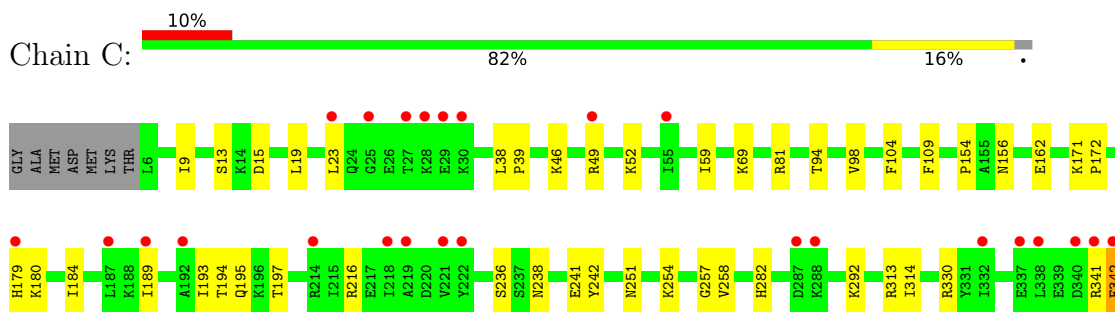
- Molecule 1: Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme

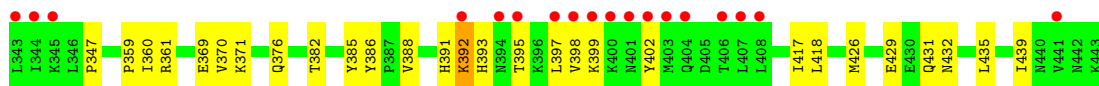


- Molecule 1: Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme

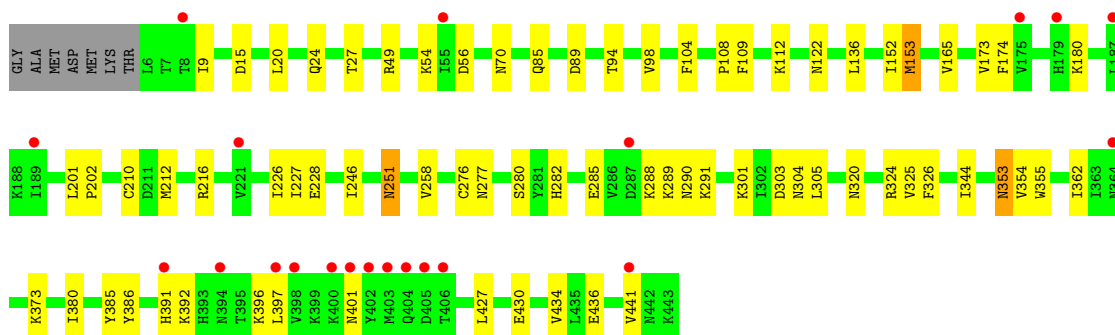
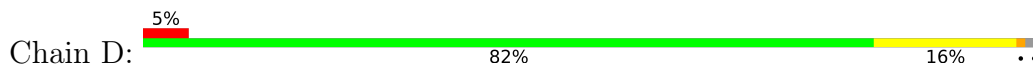


- Molecule 1: Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme

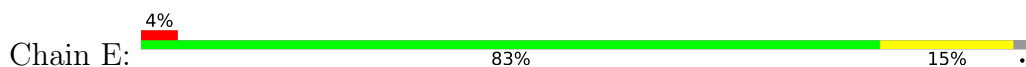




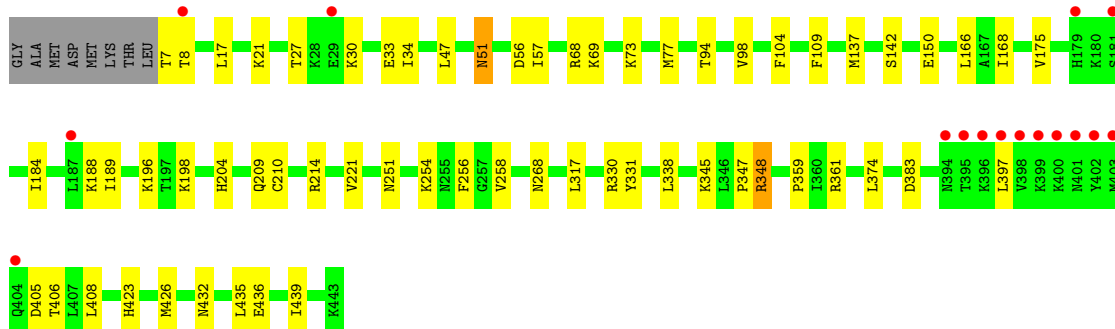
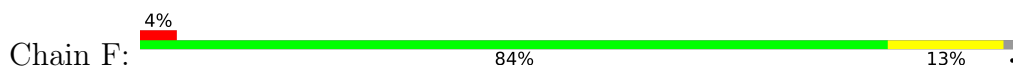
- Molecule 1: Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme



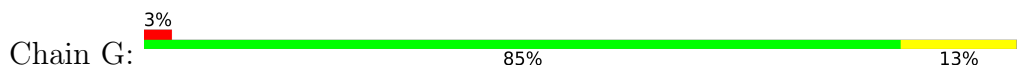
- Molecule 1: Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme

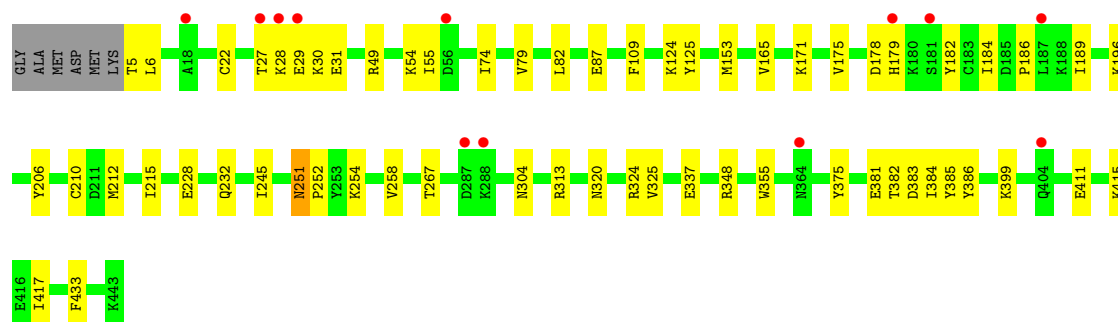


- Molecule 1: Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme

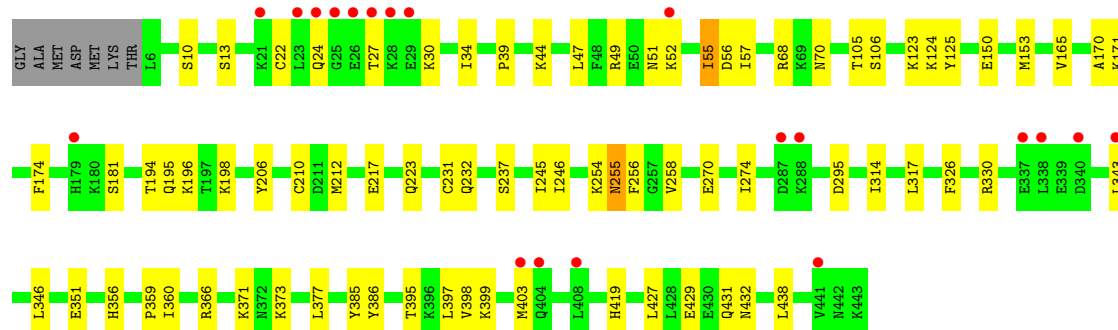
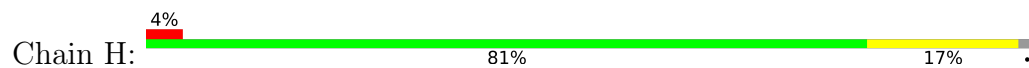


- Molecule 1: Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme





- Molecule 1: Aminotransferase class I/II-fold pyridoxal phosphate-dependent enzyme



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	92.94Å 93.58Å 106.89Å 108.84° 92.33° 90.08°	Depositor
Resolution (Å)	48.41 – 1.90 48.41 – 1.90	Depositor EDS
% Data completeness (in resolution range)	95.9 (48.41-1.90) 96.1 (48.41-1.90)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.14 (at 1.90Å)	Xtrriage
Refinement program	PHENIX dev_2398	Depositor
R, $R_{free}$	0.207 , 0.249 0.207 , 0.249	Depositor DCC
$R_{free}$ test set	12893 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	29.0	Xtrriage
Anisotropy	0.394	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.38 , 54.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	0.045 for h,-k,-l	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	30275	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	39.0	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 79.47 % 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 5.5374e-07. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: EDO, GUA, PLR

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	0.40	0/3600	0.56	0/4852
1	B	0.41	0/3612	0.55	0/4869
1	C	0.37	0/3600	0.55	0/4852
1	D	0.41	0/3603	0.56	0/4856
1	E	0.42	0/3602	0.57	0/4855
1	F	0.41	0/3583	0.57	0/4829
1	G	0.42	0/3598	0.57	0/4850
1	H	0.38	0/3599	0.55	0/4851
All	All	0.40	0/28797	0.56	0/38814

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3539	0	3624	42	0
1	B	3551	0	3633	47	0
1	C	3539	0	3623	49	0
1	D	3542	0	3627	55	0
1	E	3540	0	3619	43	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	3522	0	3608	38	0
1	G	3537	0	3626	45	0
1	H	3538	0	3621	65	0
2	A	15	0	9	0	0
2	B	15	0	9	0	0
2	C	15	0	9	1	0
2	D	15	0	9	0	0
2	E	15	0	9	0	0
2	F	15	0	9	1	0
2	G	15	0	8	1	0
2	H	15	0	9	0	0
3	A	28	0	42	3	0
3	B	44	0	66	8	0
3	C	20	0	30	0	0
3	D	20	0	30	2	0
3	E	24	0	36	0	0
3	F	12	0	18	1	0
3	G	24	0	36	3	0
3	H	12	0	18	0	0
4	C	9	0	0	0	0
4	D	9	0	0	0	0
4	E	9	0	0	1	0
4	F	9	0	0	0	0
5	A	200	0	0	3	0
5	B	226	0	0	6	0
5	C	158	0	0	4	0
5	D	207	0	0	6	0
5	E	218	0	0	8	0
5	F	220	0	0	4	0
5	G	219	0	0	6	0
5	H	179	0	0	5	0
All	All	30275	0	29328	378	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 7.

All (378) 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:E:345:LYS:HG3	1:E:363:ILE:HD11	1.37	1.04
1:H:270:GLU:O	1:H:274:ILE:HD13	1.64	0.97

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:23:LEU:HB3	1:C:59:ILE:HD11	1.58	0.85
1:G:49:ARG:HG3	1:G:54:LYS:HG2	1.56	0.84
1:D:49:ARG:HH12	1:D:54:LYS:HE2	1.46	0.79
1:A:112:LYS:NZ	5:A:601:HOH:O	2.22	0.73
1:G:22:CYS:HA	1:G:27:THR:HB	1.69	0.73
1:D:391:HIS:HD2	1:D:392:LYS:HG2	1.52	0.73
1:H:123:LYS:NZ	5:H:601:HOH:O	2.22	0.73
1:H:210:CYS:HB2	1:H:212:MET:HE2	1.71	0.72
1:C:193:ILE:HG23	1:C:197:THR:HG21	1.71	0.72
1:D:391:HIS:CD2	1:D:392:LYS:HG2	2.25	0.72
1:H:13:SER:HB3	1:H:351:GLU:O	1.91	0.71
1:G:210:CYS:HB2	1:G:212:MET:HE2	1.73	0.70
1:B:77:MET:SD	1:B:253:TYR:HD2	2.15	0.69
1:D:109:PHE:H	1:D:304:ASN:HD21	1.40	0.69
1:D:397:LEU:O	1:D:401:ASN:HB2	1.94	0.68
1:D:153:MET:HE1	1:D:165:VAL:HG21	1.74	0.68
1:B:286:VAL:HA	3:B:507:EDO:H11	1.76	0.67
1:A:261:LYS:NZ	5:A:607:HOH:O	2.27	0.67
1:B:5:THR:HG23	1:B:30:LYS:HA	1.78	0.66
1:B:49:ARG:NH2	5:B:602:HOH:O	2.21	0.66
1:H:256:PHE:HB2	1:H:317:LEU:HD13	1.78	0.66
1:H:270:GLU:O	1:H:274:ILE:CD1	2.42	0.65
1:A:123:LYS:NZ	5:A:603:HOH:O	2.24	0.65
1:C:330:ARG:HE	1:C:431:GLN:NE2	1.95	0.65
1:D:210:CYS:HB2	1:D:212:MET:HE2	1.79	0.65
1:D:49:ARG:NH1	1:D:54:LYS:HE2	2.13	0.64
1:E:175:VAL:HG11	1:E:189:ILE:HD13	1.78	0.64
1:G:254:LYS:NZ	2:G:501:PLR:O3	2.31	0.64
1:C:194:THR:O	1:C:197:THR:HG22	1.98	0.64
1:A:98:VAL:HG22	1:A:109:PHE:CE2	2.34	0.62
1:F:8:THR:HG23	1:F:33:GLU:HG3	1.80	0.62
1:F:348:ARG:HA	1:F:348:ARG:NE	2.13	0.62
1:G:210:CYS:HB2	1:G:212:MET:CE	2.28	0.62
1:H:124:LYS:HG2	1:H:125:TYR:CE2	2.34	0.62
1:G:381:GLU:HA	3:G:506:EDO:H21	1.79	0.62
1:B:256:PHE:HB2	1:B:317:LEU:HD13	1.82	0.62
1:D:70:ASN:ND2	5:D:604:HOH:O	2.33	0.62
1:D:210:CYS:HB2	1:D:212:MET:CE	2.29	0.62
1:A:400:LYS:NZ	1:A:401:ASN:HD21	1.98	0.61
1:D:325:VAL:HG12	1:D:355:TRP:HD1	1.65	0.61
1:G:153:MET:CE	1:G:165:VAL:HG21	2.31	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:333:ARG:NH2	5:E:607:HOH:O	2.33	0.61
1:F:175:VAL:HG13	1:F:188:LYS:HB3	1.83	0.61
1:C:341:ARG:O	1:C:342:GLU:HB2	2.01	0.61
1:G:5:THR:N	5:G:606:HOH:O	2.33	0.61
1:B:440:ASN:ND2	5:B:606:HOH:O	2.33	0.60
1:H:399:LYS:HA	1:H:403:MET:HE3	1.83	0.60
1:B:163:ASN:HD22	1:D:282:HIS:HD2	1.47	0.60
1:H:346:LEU:HD23	1:H:360:ILE:HD11	1.82	0.60
1:B:298:PHE:HB3	3:B:504:EDO:H21	1.83	0.60
1:G:325:VAL:HG12	1:G:355:TRP:HD1	1.67	0.60
1:H:330:ARG:NH2	1:H:432:ASN:OD1	2.34	0.60
1:A:348:ARG:NH1	3:A:508:EDO:O2	2.36	0.59
1:G:5:THR:HG23	1:G:30:LYS:HG3	1.84	0.59
1:H:55:ILE:HG23	1:H:56:ASP:H	1.66	0.59
1:D:277:ASN:OD1	1:D:301:LYS:NZ	2.35	0.59
1:F:77:MET:SD	5:F:707:HOH:O	2.57	0.59
1:G:245:ILE:HA	1:G:267:THR:HG22	1.85	0.59
1:A:6:LEU:HD11	1:A:33:GLU:HG2	1.84	0.59
1:A:256:PHE:HB2	1:A:317:LEU:HD13	1.85	0.59
1:A:301:LYS:HB2	3:A:507:EDO:H11	1.84	0.59
1:F:34:ILE:H	1:F:51:ASN:HD21	1.51	0.59
5:E:750:HOH:O	1:H:395:THR:HG21	2.02	0.58
1:H:343:LEU:HD21	1:H:366:ARG:NH2	2.19	0.58
1:G:6:LEU:HD12	1:G:31:GLU:HG2	1.84	0.58
1:H:124:LYS:HG2	1:H:125:TYR:CZ	2.38	0.58
1:B:124:LYS:NZ	1:B:268:ASN:O	2.37	0.58
1:D:285:GLU:HG2	1:D:288:LYS:HE2	1.86	0.58
1:H:343:LEU:HD21	1:H:366:ARG:HH21	1.68	0.58
1:E:81:ARG:O	1:E:425:ASN:ND2	2.30	0.58
1:A:333:ARG:O	1:A:336:LYS:HD2	2.03	0.57
1:A:206:TYR:H	1:A:232:GLN:NE2	2.02	0.57
1:F:175:VAL:HG11	1:F:189:ILE:HD13	1.87	0.57
1:E:178:ASP:OD1	1:E:179:HIS:N	2.35	0.57
1:A:194:THR:H	1:A:197:THR:HG22	1.70	0.57
1:F:34:ILE:N	1:F:51:ASN:HD21	2.01	0.57
1:G:212:MET:HE1	1:G:215:ILE:HD12	1.86	0.57
1:C:330:ARG:NH2	1:C:432:ASN:OD1	2.38	0.57
1:F:98:VAL:HG22	1:F:109:PHE:CE2	2.40	0.57
1:D:325:VAL:HG12	1:D:355:TRP:CD1	2.39	0.56
1:A:6:LEU:HB2	1:A:31:GLU:OE1	2.05	0.56
1:A:78:PRO:HG2	1:A:81:ARG:HG3	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:204:HIS:ND1	1:F:209:GLN:HA	2.20	0.56
1:C:162:GLU:HG3	1:C:172:PRO:HG2	1.86	0.56
1:H:210:CYS:HB2	1:H:212:MET:CE	2.35	0.56
3:A:503:EDO:H22	3:A:505:EDO:H11	1.88	0.55
1:H:395:THR:HG22	1:H:397:LEU:N	2.22	0.55
1:G:175:VAL:HB	1:G:184:ILE:HD11	1.87	0.55
1:H:330:ARG:HE	1:H:431:GLN:HE21	1.55	0.55
1:B:163:ASN:HD22	1:D:282:HIS:CD2	2.25	0.55
1:G:109:PHE:H	1:G:304:ASN:HD21	1.53	0.55
1:H:49:ARG:HH22	1:H:55:ILE:HG22	1.72	0.54
1:D:85:GLN:NE2	1:D:89:ASP:OD1	2.39	0.54
1:H:330:ARG:HE	1:H:431:GLN:NE2	2.04	0.54
1:G:325:VAL:HG12	1:G:355:TRP:CD1	2.42	0.54
1:E:363:ILE:HG22	1:E:364:ASN:N	2.23	0.54
1:B:9:ILE:HG21	1:B:43:MET:HE3	1.90	0.54
1:B:95:LEU:HA	1:B:98:VAL:HG12	1.90	0.54
1:H:105:THR:OG1	1:H:106:SER:N	2.41	0.54
1:H:255:ASN:HD21	1:H:356:HIS:HA	1.73	0.54
1:D:20:LEU:O	1:D:24:GLN:HG2	2.08	0.53
1:G:382:THR:H	3:G:506:EDO:H21	1.72	0.53
1:E:63:ILE:HG22	1:E:323:LYS:HE3	1.90	0.53
1:H:270:GLU:HG2	1:H:274:ILE:CD1	2.39	0.53
1:E:372:ASN:ND2	5:E:609:HOH:O	2.35	0.53
1:H:22:CYS:O	1:H:27:THR:OG1	2.27	0.53
1:F:330:ARG:HH22	1:F:432:ASN:HD21	1.57	0.53
1:C:392:LYS:O	1:C:392:LYS:HD3	2.09	0.53
1:E:49:ARG:HH22	1:E:55:ILE:H	1.57	0.53
1:D:9:ILE:HD13	1:D:15:ASP:HB3	1.91	0.53
1:F:27:THR:HG21	5:F:711:HOH:O	2.08	0.53
1:A:396:LYS:HD3	1:F:221:VAL:O	2.08	0.52
1:C:397:LEU:HD22	1:C:402:TYR:CE2	2.44	0.52
1:H:206:TYR:H	1:H:232:GLN:NE2	2.07	0.52
1:D:276:CYS:O	1:D:280:SER:OG	2.20	0.52
1:B:348:ARG:CZ	1:B:349:MET:H	2.23	0.52
1:E:184:ILE:HG12	1:E:189:ILE:HD11	1.91	0.51
1:E:14:LYS:NZ	5:E:610:HOH:O	2.37	0.51
1:E:20:LEU:HD11	1:E:326:PHE:HD1	1.74	0.51
1:E:256:PHE:HB2	1:E:317:LEU:HD13	1.92	0.51
1:H:346:LEU:HD23	1:H:360:ILE:CD1	2.40	0.51
1:A:159:ALA:O	1:A:162[A]:GLU:HG2	2.10	0.51
1:D:152:ILE:HD13	1:D:173:VAL:HB	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:94:THR:O	1:A:98:VAL:HG23	2.10	0.51
1:F:432:ASN:O	1:F:436:GLU:HG3	2.09	0.51
1:C:435:LEU:O	1:C:439:ILE:HD13	2.11	0.51
1:E:281:TYR:OH	1:E:289:LYS:HE2	2.11	0.50
1:H:217:GLU:HG3	5:H:639:HOH:O	2.11	0.50
1:A:348:ARG:CZ	1:A:349:MET:H	2.24	0.50
1:C:9:ILE:HD13	1:C:19:LEU:HD22	1.93	0.50
1:D:210:CYS:HB3	5:D:645:HOH:O	2.10	0.50
1:D:98:VAL:HG22	1:D:109:PHE:CE1	2.46	0.50
1:F:406:THR:HG22	1:F:408:LEU:HD12	1.92	0.50
1:E:363:ILE:HG22	1:E:364:ASN:H	1.77	0.50
1:A:79:VAL:HG12	1:A:253:TYR:HE1	1.76	0.50
1:C:393:HIS:H	1:C:398:VAL:HG21	1.77	0.50
5:B:729:HOH:O	1:D:282:HIS:HE1	1.95	0.50
1:F:184:ILE:HG12	1:F:189:ILE:HD11	1.93	0.49
1:B:153:MET:HE1	1:B:165:VAL:HG21	1.93	0.49
1:G:411:GLU:O	1:G:415:LYS:HG2	2.12	0.49
1:B:337:GLU:HG2	3:B:509:EDO:H11	1.94	0.49
1:B:439:ILE:HG23	3:B:509:EDO:H22	1.93	0.49
1:C:39:PRO:HA	1:C:314:ILE:O	2.12	0.49
1:C:388:VAL:HB	1:C:393:HIS:CE1	2.48	0.49
1:A:56:ASP:OD1	1:A:56:ASP:N	2.46	0.49
1:B:435:LEU:O	1:B:439:ILE:HG12	2.13	0.48
1:G:30:LYS:HG2	1:G:31:GLU:H	1.78	0.48
1:H:231:CYS:O	1:H:254:LYS:HD2	2.14	0.48
1:E:27:THR:OG1	1:E:30:LYS:HB2	2.13	0.48
1:C:369:GLU:HG3	1:C:370:VAL:N	2.28	0.48
1:E:66:TYR:CE2	1:E:68:ARG:HG2	2.47	0.48
1:A:39:PRO:HA	1:A:314:ILE:O	2.14	0.48
1:D:153:MET:O	1:D:174:PHE:HA	2.13	0.48
1:A:20:LEU:HD11	1:A:326:PHE:HD2	1.79	0.48
1:B:397:LEU:O	1:B:400:LYS:HG2	2.13	0.48
1:A:194:THR:H	1:A:197:THR:CG2	2.26	0.47
1:B:333:ARG:O	1:B:336:LYS:HG2	2.14	0.47
1:D:108:PRO:O	1:D:112:LYS:HG3	2.14	0.47
1:D:353:ASN:ND2	1:D:355:TRP:H	2.12	0.47
1:E:402:TYR:HD1	1:E:405:ASP:OD2	1.96	0.47
1:A:336:LYS:HD3	1:A:337:GLU:H	1.80	0.47
1:C:69:LYS:N	1:C:429:GLU:HG2	2.29	0.47
1:C:194:THR:HG22	1:C:195:GLN:N	2.29	0.47
1:D:320:ASN:O	1:D:324:ARG:HG3	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:150:GLU:HG3	1:F:196:LYS:HB2	1.97	0.47
1:G:206:TYR:H	1:G:232:GLN:NE2	2.12	0.47
1:H:150:GLU:HG3	1:H:196:LYS:HB3	1.95	0.47
1:B:22:CYS:HA	1:B:27:THR:HG22	1.96	0.47
1:B:299:ASN:H	3:B:504:EDO:H21	1.79	0.47
1:A:193:ILE:HA	1:A:197:THR:HG21	1.97	0.47
1:C:184:ILE:HG12	1:C:189:ILE:HD11	1.95	0.47
1:D:303:ASP:HB3	5:D:602:HOH:O	2.14	0.47
1:B:6:LEU:HD21	1:B:33:GLU:OE2	2.15	0.47
1:C:171:LYS:HD3	1:C:172:PRO:O	2.15	0.47
1:H:395:THR:HG22	1:H:397:LEU:H	1.79	0.47
1:F:7:THR:OG1	1:F:30:LYS:HE3	2.15	0.46
1:B:295:ASP:OD2	1:D:397:LEU:HB2	2.15	0.46
1:E:78:PRO:HG2	1:E:81:ARG:HG3	1.96	0.46
1:H:49:ARG:HE	1:H:49:ARG:HB3	1.52	0.46
1:A:28:LYS:H	1:A:28:LYS:HG2	1.43	0.46
1:C:376:GLN:NE2	5:C:611:HOH:O	2.48	0.46
1:E:204:HIS:HD2	1:E:210:CYS:H	1.62	0.46
1:F:34:ILE:HG22	1:F:51:ASN:ND2	2.30	0.46
1:G:182:TYR:CE1	1:G:417:ILE:HD13	2.50	0.46
1:B:77:MET:SD	1:B:253:TYR:CD2	3.03	0.46
1:G:348:ARG:HD3	5:G:781:HOH:O	2.16	0.46
1:B:252:PRO:HG3	1:D:104:PHE:HB2	1.98	0.46
1:E:345:LYS:HE3	1:E:361:ARG:HD2	1.97	0.46
1:G:245:ILE:HG12	1:G:267:THR:CG2	2.45	0.46
1:B:56:ASP:OD1	1:B:56:ASP:N	2.40	0.46
1:B:338:LEU:HD11	1:B:439:ILE:HD13	1.97	0.46
1:C:197:THR:HB	5:C:683:HOH:O	2.16	0.46
1:F:254:LYS:NZ	2:F:501:PLR:O3	2.49	0.46
1:C:154:PRO:HB2	1:C:156:ASN:OD1	2.16	0.46
1:D:202:PRO:HD2	1:D:227:ILE:O	2.16	0.46
1:D:289:LYS:HG2	1:D:290:ASN:N	2.31	0.46
1:F:47:LEU:HD22	1:F:57:ILE:HD13	1.98	0.46
1:G:74:ILE:HG12	1:G:433:PHE:CD2	2.51	0.46
1:H:223:GLN:NE2	5:H:618:HOH:O	2.49	0.46
1:C:347:PRO:HD3	1:C:359:PRO:O	2.16	0.45
1:F:256:PHE:HB2	1:F:317:LEU:HD13	1.99	0.45
1:G:49:ARG:HG3	1:G:54:LYS:CG	2.38	0.45
1:B:178:ASP:O	5:B:601:HOH:O	2.20	0.45
1:E:49:ARG:NH2	1:E:55:ILE:H	2.13	0.45
1:F:204:HIS:CE1	1:F:210:CYS:H	2.35	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:124:LYS:HB3	1:G:125:TYR:CD2	2.52	0.45
1:G:196:LYS:HD2	1:G:196:LYS:HA	1.74	0.45
1:H:153:MET:O	1:H:174:PHE:HA	2.15	0.45
1:E:98:VAL:HG22	1:E:109:PHE:CE2	2.52	0.45
1:D:427:LEU:HB2	1:D:430:GLU:HG3	1.99	0.45
1:G:399:LYS:HE3	1:G:399:LYS:HB3	1.82	0.45
1:H:49:ARG:NH2	1:H:55:ILE:HG22	2.31	0.45
1:E:358:PHE:HB2	1:E:422:LEU:HD13	1.99	0.45
1:F:137:MET:HE2	1:F:137:MET:HB3	1.87	0.45
1:G:320:ASN:O	1:G:324:ARG:HG3	2.16	0.45
1:H:70:ASN:ND2	5:H:617:HOH:O	2.48	0.45
1:A:395:THR:O	1:A:399:LYS:HD3	2.17	0.45
1:D:380:ILE:HD13	1:D:434:VAL:HA	1.98	0.45
1:E:44:LYS:HG2	5:E:790:HOH:O	2.17	0.45
1:C:13:SER:HB2	1:C:236:SER:HA	1.99	0.45
1:H:245:ILE:C	1:H:246:ILE:HD13	2.37	0.45
1:A:22:CYS:O	1:A:25:GLY:N	2.47	0.45
1:B:320:ASN:O	1:B:324:ARG:HG3	2.16	0.45
1:C:359:PRO:HB2	1:C:417:ILE:HD11	1.98	0.45
1:C:371:LYS:HG3	1:C:382:THR:OG1	2.17	0.45
1:C:393:HIS:HB3	1:C:395:THR:HG23	1.99	0.45
1:E:182:TYR:CE1	1:E:417:ILE:HD12	2.52	0.45
1:A:34:ILE:HD11	1:A:40:ASN:HB3	1.99	0.44
1:B:412:GLN:HA	1:B:415:LYS:HD2	2.00	0.44
1:D:228:GLU:OE2	5:D:601:HOH:O	2.21	0.44
1:H:371:LYS:NZ	5:H:612:HOH:O	2.42	0.44
1:H:270:GLU:HG2	1:H:274:ILE:HD11	1.98	0.44
1:B:238:ASN:ND2	5:B:619:HOH:O	2.50	0.44
1:H:427:LEU:HB3	1:H:429:GLU:OE1	2.18	0.44
1:A:369:GLU:HG3	1:A:373:LYS:HE3	1.99	0.44
1:C:360:ILE:O	1:C:417:ILE:HD12	2.17	0.44
1:D:373:LYS:HE2	1:D:441:VAL:HG23	1.99	0.44
1:F:94:THR:HG21	5:F:726:HOH:O	2.18	0.44
1:H:39:PRO:HA	1:H:314:ILE:O	2.18	0.44
1:B:78:PRO:HG2	1:B:81:ARG:HG3	2.00	0.44
1:C:282:HIS:O	1:C:292:LYS:HD2	2.18	0.44
1:C:391:HIS:HB2	1:C:402:TYR:HB3	1.99	0.44
1:E:396:LYS:HE2	1:H:295:ASP:OD2	2.17	0.44
1:F:17:LEU:O	1:F:21:LYS:HG2	2.17	0.44
1:G:153:MET:HE3	1:G:165:VAL:HG21	1.98	0.44
1:H:171:LYS:HD2	1:H:171:LYS:HA	1.81	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:181:SER:O	1:H:181:SER:OG	2.33	0.44
1:H:196:LYS:HD2	1:H:196:LYS:HA	1.59	0.44
1:A:345:LYS:HD2	1:A:363:ILE:HG21	1.98	0.44
1:B:251:ASN:ND2	1:B:254:LYS:HE2	2.32	0.44
1:E:83:ILE:O	5:E:601:HOH:O	2.21	0.44
1:E:385:TYR:HA	1:E:386:TYR:HA	1.84	0.44
1:G:186:PRO:HA	1:G:189:ILE:HD12	1.99	0.44
1:D:385:TYR:HA	1:D:386:TYR:HA	1.76	0.44
1:H:34:ILE:HG12	1:H:44:LYS:HB2	2.00	0.44
1:G:178:ASP:HB3	5:G:647:HOH:O	2.17	0.44
1:G:384:ILE:HG23	1:G:417:ILE:HG23	2.00	0.44
1:A:79:VAL:HG12	1:A:253:TYR:CE1	2.52	0.43
1:C:385:TYR:HA	1:C:386:TYR:HA	1.75	0.43
1:H:13:SER:HB2	1:H:237:SER:H	1.82	0.43
1:H:27:THR:HG23	1:H:30:LYS:HB2	2.00	0.43
1:C:179:HIS:O	1:C:361:ARG:NH2	2.50	0.43
1:C:180:LYS:NZ	5:C:605:HOH:O	2.40	0.43
1:D:436:GLU:HG3	3:D:504:EDO:H22	2.00	0.43
1:H:194:THR:HG22	1:H:195:GLN:N	2.33	0.43
1:A:121:LEU:HD23	1:A:266:VAL:HG11	2.00	0.43
1:B:34:ILE:CD1	1:B:43:MET:HG2	2.48	0.43
1:D:246:ILE:HD12	1:D:246:ILE:N	2.33	0.43
1:F:338:LEU:HD11	1:F:439:ILE:HD13	1.99	0.43
1:A:322:LEU:O	1:A:325:VAL:HG12	2.18	0.43
1:C:241:GLU:HG3	1:C:242:TYR:CD2	2.53	0.43
1:C:393:HIS:N	1:C:398:VAL:HG21	2.33	0.43
1:E:109:PHE:HB2	1:E:304:ASN:OD1	2.18	0.43
1:E:29:GLU:HG3	1:E:29:GLU:O	2.18	0.43
1:H:359:PRO:HB3	1:H:419:HIS:CE1	2.53	0.43
1:A:252:PRO:HG3	1:C:104:PHE:HB2	2.01	0.43
1:F:435:LEU:O	1:F:439:ILE:HG12	2.19	0.43
1:H:385:TYR:HA	1:H:386:TYR:HA	1.73	0.43
1:A:195:GLN:O	1:A:195:GLN:HG2	2.19	0.43
1:B:245:ILE:O	1:B:246:ILE:HD13	2.18	0.43
1:G:171:LYS:HA	1:G:171:LYS:HD2	1.62	0.43
1:H:373:LYS:O	1:H:377:LEU:HB2	2.19	0.43
1:A:124:LYS:HB2	1:A:124:LYS:HE3	1.81	0.43
1:C:38:LEU:HB3	1:C:39:PRO:HD3	2.01	0.43
1:C:254:LYS:NZ	2:C:502:PLR:O3	2.44	0.43
1:F:56:ASP:O	5:F:601:HOH:O	2.22	0.43
1:G:49:ARG:NH2	1:G:55:ILE:H	2.17	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:332:ILE:HG21	1:A:348:ARG:HH21	1.84	0.42
1:B:180:LYS:HE2	1:B:180:LYS:HA	2.01	0.42
1:B:252:PRO:HD3	1:B:260:GLY:O	2.19	0.42
1:G:385:TYR:HA	1:G:386:TYR:HA	1.83	0.42
1:H:51:ASN:O	1:H:52:LYS:HD3	2.19	0.42
1:B:391:HIS:CD2	1:B:392:LYS:HE2	2.55	0.42
1:C:238:ASN:O	1:C:241:GLU:HG2	2.19	0.42
1:D:122:ASN:OD1	3:D:507:EDO:H12	2.19	0.42
1:D:344:ILE:HG22	1:D:362:ILE:HD13	2.00	0.42
1:H:24:GLN:NE2	1:H:326:PHE:HE1	2.18	0.42
1:A:87:GLU:O	1:A:91:ILE:HG13	2.20	0.42
1:C:46:LYS:NZ	5:C:607:HOH:O	2.41	0.42
1:D:353:ASN:HD22	1:D:354:VAL:N	2.18	0.42
1:B:153:MET:HE2	1:B:201:LEU:HD23	2.00	0.42
1:C:156:ASN:OD1	1:C:156:ASN:N	2.51	0.42
1:B:213:LYS:O	1:B:217:GLU:HG3	2.20	0.42
1:B:277:ASN:OD1	3:B:507:EDO:H21	2.18	0.42
1:C:49:ARG:HB2	1:C:49:ARG:NH1	2.35	0.42
1:E:351:GLU:HG3	5:E:780:HOH:O	2.19	0.42
1:H:270:GLU:HG2	1:H:274:ILE:HD13	2.01	0.42
1:G:337:GLU:HB3	5:G:710:HOH:O	2.18	0.42
1:C:257:GLY:O	1:C:313:ARG:HD3	2.20	0.42
1:F:166:LEU:HD22	1:F:397:LEU:HD11	2.02	0.42
1:B:9:ILE:HG21	1:B:43:MET:CE	2.50	0.42
1:E:412:GLN:O	1:E:416:GLU:HG3	2.19	0.42
1:F:345:LYS:HD3	1:F:361:ARG:NH1	2.35	0.41
1:H:399:LYS:HA	1:H:403:MET:CE	2.50	0.41
1:A:38:LEU:O	1:A:315:LYS:HA	2.20	0.41
1:D:27:THR:HG21	5:D:667:HOH:O	2.20	0.41
1:F:374:LEU:HD23	1:F:374:LEU:HA	1.92	0.41
1:H:274:ILE:HD12	1:H:274:ILE:N	2.35	0.41
1:H:330:ARG:HH22	1:H:432:ASN:CG	2.22	0.41
1:E:345:LYS:CE	1:E:361:ARG:HD2	2.51	0.41
1:F:268:ASN:HB2	3:F:503:EDO:H22	2.02	0.41
1:F:423:HIS:CE1	1:F:426:MET:HB3	2.55	0.41
3:B:503:EDO:H22	5:B:809:HOH:O	2.20	0.41
1:C:98:VAL:HG22	1:C:109:PHE:CE1	2.55	0.41
1:A:348:ARG:NE	1:A:348:ARG:HA	2.35	0.41
1:B:39:PRO:HA	1:B:314:ILE:O	2.21	0.41
1:B:165:VAL:HG13	1:B:170:ALA:HB3	2.02	0.41
1:C:382:THR:OG1	1:C:418:LEU:HD11	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:153:MET:O	1:E:174:PHE:HA	2.20	0.41
1:H:255:ASN:N	1:H:255:ASN:HD22	2.17	0.41
1:E:195:GLN:OE1	1:E:195:GLN:HA	2.20	0.41
1:F:330:ARG:NH2	1:F:432:ASN:HD21	2.17	0.41
1:F:347:PRO:HD3	1:F:359:PRO:O	2.20	0.41
1:B:150:GLU:HG3	1:B:196:LYS:CB	2.51	0.41
1:D:396:LYS:HE3	1:D:396:LYS:HB3	1.85	0.41
1:E:150:GLU:HG3	1:E:196:LYS:HB2	2.02	0.41
1:E:380:ILE:HD13	1:E:434:VAL:HA	2.03	0.41
1:E:396:LYS:HG2	1:H:295:ASP:OD1	2.20	0.41
1:E:94:THR:O	1:E:98:VAL:HG23	2.20	0.41
1:G:228:GLU:OE2	5:G:601:HOH:O	2.21	0.41
1:D:94:THR:O	1:D:98:VAL:HG23	2.20	0.41
1:E:98:VAL:HG21	1:E:308:ALA:CB	2.51	0.41
1:E:137:MET:HE3	1:E:168:ILE:HG23	2.02	0.41
1:G:87:GLU:OE2	1:G:313:ARG:HD2	2.20	0.41
1:G:348:ARG:HG2	5:G:669:HOH:O	2.21	0.41
1:G:375:TYR:HB2	3:G:506:EDO:H22	2.03	0.41
1:H:198:LYS:O	1:H:198:LYS:HG3	2.21	0.41
1:A:153:MET:HE2	1:A:201:LEU:HD23	2.03	0.41
1:B:385:TYR:HA	1:B:386:TYR:HA	1.85	0.41
1:D:325:VAL:HG11	5:D:663:HOH:O	2.21	0.41
1:F:34:ILE:H	1:F:51:ASN:ND2	2.15	0.41
1:C:81:ARG:NH2	1:C:426:MET:HA	2.36	0.40
1:C:94:THR:O	1:C:98:VAL:HG23	2.20	0.40
1:D:216:ARG:HA	1:D:226:ILE:HD11	2.03	0.40
1:H:395:THR:HG22	1:H:398:VAL:H	1.86	0.40
1:H:438:LEU:HD23	1:H:438:LEU:HA	1.76	0.40
1:G:27:THR:C	1:G:29:GLU:H	2.25	0.40
1:G:79:VAL:HA	1:G:82:LEU:HG	2.03	0.40
1:H:47:LEU:HD22	1:H:57:ILE:HD13	2.03	0.40
1:F:104:PHE:HB2	1:G:252:PRO:HG3	2.03	0.40
1:F:137:MET:HE3	1:F:168:ILE:HG23	2.03	0.40
1:G:251:ASN:OD1	1:G:251:ASN:C	2.59	0.40
1:D:20:LEU:HD11	1:D:326:PHE:HD1	1.86	0.40
1:D:136:LEU:HD21	1:D:201:LEU:HD21	2.03	0.40
1:D:153:MET:HE3	1:D:153:MET:HB3	1.79	0.40
1:D:251:ASN:OD1	1:D:251:ASN:C	2.59	0.40
1:E:149:ASP:OD2	1:E:198:LYS:HD2	2.22	0.40
1:H:165:VAL:HG13	1:H:170:ALA:HB3	2.04	0.40
1:B:299:ASN:N	3:B:504:EDO:H21	2.37	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:69:LYS:HA	1:C:69:LYS:HD3	1.90	0.40
1:C:216:ARG:HB2	1:C:242:TYR:HB3	2.03	0.40
1:D:49:ARG:NH1	1:D:49:ARG:HB2	2.36	0.40
1:D:56:ASP:N	1:D:56:ASP:OD1	2.54	0.40
1:D:324:ARG:HH11	1:D:324:ARG:HD3	1.76	0.40
4:E:502:GUA:O2	5:E:602:HOH:O	2.22	0.40
1:H:55:ILE:HG23	1:H:56:ASP:N	2.35	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	437/445 (98%)	420 (96%)	17 (4%)	0	100	100
1	B	439/445 (99%)	424 (97%)	15 (3%)	0	100	100
1	C	437/445 (98%)	420 (96%)	15 (3%)	2 (0%)	29	18
1	D	438/445 (98%)	422 (96%)	14 (3%)	2 (0%)	29	18
1	E	437/445 (98%)	418 (96%)	17 (4%)	2 (0%)	29	18
1	F	435/445 (98%)	417 (96%)	17 (4%)	1 (0%)	47	38
1	G	437/445 (98%)	421 (96%)	15 (3%)	1 (0%)	47	38
1	H	437/445 (98%)	420 (96%)	15 (3%)	2 (0%)	29	18
All	All	3497/3560 (98%)	3362 (96%)	125 (4%)	10 (0%)	41	31

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	342	GLU
1	D	180	LYS
1	E	180	LYS

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Mol	Chain	Res	Type
1	H	55	ILE
1	C	258	VAL
1	E	258	VAL
1	F	258	VAL
1	D	258	VAL
1	G	258	VAL
1	H	258	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	A	397/401 (99%)	387 (98%)	10 (2%)	47	41
1	B	399/401 (100%)	397 (100%)	2 (0%)	88	89
1	C	397/401 (99%)	392 (99%)	5 (1%)	69	68
1	D	398/401 (99%)	393 (99%)	5 (1%)	69	68
1	E	397/401 (99%)	392 (99%)	5 (1%)	69	68
1	F	395/401 (98%)	383 (97%)	12 (3%)	41	33
1	G	397/401 (99%)	393 (99%)	4 (1%)	76	76
1	H	397/401 (99%)	394 (99%)	3 (1%)	81	82
All	All	3177/3208 (99%)	3131 (99%)	46 (1%)	65	65

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	27	THR
1	A	28	LYS
1	A	29	GLU
1	A	30	LYS
1	A	178	ASP
1	A	179	HIS
1	A	197	THR
1	A	251	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	336	LYS
1	A	383	ASP
1	B	391	HIS
1	B	400	LYS
1	C	15	ASP
1	C	52	LYS
1	C	251	ASN
1	C	392	LYS
1	C	399	LYS
1	D	153	MET
1	D	251	ASN
1	D	291	LYS
1	D	305	LEU
1	D	353	ASN
1	E	34	ILE
1	E	180	LYS
1	E	214	ARG
1	E	251	ASN
1	E	348	ARG
1	F	51	ASN
1	F	68	ARG
1	F	69	LYS
1	F	73	LYS
1	F	142	SER
1	F	198	LYS
1	F	214	ARG
1	F	251	ASN
1	F	331	TYR
1	F	348	ARG
1	F	383	ASP
1	F	405	ASP
1	G	28	LYS
1	G	179	HIS
1	G	251	ASN
1	G	383	ASP
1	H	10	SER
1	H	68	ARG
1	H	255	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	232	GLN
1	A	401	ASN
1	B	12	HIS
1	B	299	ASN
1	C	122	ASN
1	C	431	GLN
1	D	282	HIS
1	D	299	ASN
1	D	304	ASN
1	D	353	ASN
1	D	391	HIS
1	E	163	ASN
1	E	204	HIS
1	F	24	GLN
1	F	51	ASN
1	F	432	ASN
1	G	232	GLN
1	G	304	ASN
1	H	24	GLN
1	H	232	GLN
1	H	255	ASN
1	H	419	HIS
1	H	431	GLN

### 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](#)

58 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
3	EDO	A	502	-	3,3,3	0.36	0	2,2,2	0.36	0
3	EDO	G	506	-	3,3,3	0.43	0	2,2,2	0.23	0
3	EDO	F	504	-	3,3,3	0.31	0	2,2,2	0.43	0
3	EDO	C	507	-	3,3,3	0.29	0	2,2,2	0.50	0
3	EDO	D	507	-	3,3,3	0.31	0	2,2,2	0.52	0
3	EDO	E	505	-	3,3,3	0.33	0	2,2,2	0.41	0
3	EDO	B	504	-	3,3,3	0.34	0	2,2,2	0.30	0
3	EDO	G	507	-	3,3,3	0.32	0	2,2,2	0.71	0
3	EDO	E	506	-	3,3,3	0.32	0	2,2,2	0.46	0
4	GUA	F	502	-	8,8,8	1.05	0	9,9,9	1.39	0
3	EDO	B	510	-	3,3,3	0.34	0	2,2,2	0.28	0
3	EDO	G	503	-	3,3,3	0.32	0	2,2,2	0.39	0
3	EDO	B	507	-	3,3,3	0.40	0	2,2,2	0.24	0
2	PLR	E	501	1	15,15,15	1.10	0	20,22,22	1.49	3 (15%)
2	PLR	F	501	1	15,15,15	1.21	3 (20%)	20,22,22	1.78	5 (25%)
2	PLR	B	501	1	15,15,15	1.14	0	20,22,22	1.47	4 (20%)
3	EDO	A	506	-	3,3,3	0.29	0	2,2,2	0.53	0
3	EDO	C	505	-	3,3,3	0.35	0	2,2,2	0.35	0
2	PLR	H	501	1	15,15,15	1.30	1 (6%)	20,22,22	1.67	4 (20%)
3	EDO	A	503	-	3,3,3	0.31	0	2,2,2	0.55	0
3	EDO	B	509	-	3,3,3	0.32	0	2,2,2	0.30	0
3	EDO	A	505	-	3,3,3	0.32	0	2,2,2	0.40	0
3	EDO	C	506	-	3,3,3	0.32	0	2,2,2	0.54	0
3	EDO	D	503	-	3,3,3	0.31	0	2,2,2	0.30	0
3	EDO	D	506	-	3,3,3	0.32	0	2,2,2	0.56	0
3	EDO	F	505	-	3,3,3	0.33	0	2,2,2	0.43	0
3	EDO	H	502	-	3,3,3	0.33	0	2,2,2	0.51	0
3	EDO	B	506	-	3,3,3	0.33	0	2,2,2	0.39	0
3	EDO	B	511	-	3,3,3	0.36	0	2,2,2	0.27	0
3	EDO	H	504	-	3,3,3	0.34	0	2,2,2	0.45	0
3	EDO	B	505	-	3,3,3	0.31	0	2,2,2	0.49	0
3	EDO	B	503	-	3,3,3	0.33	0	2,2,2	0.32	0
3	EDO	C	503	-	3,3,3	0.30	0	2,2,2	0.46	0
3	EDO	H	503	-	3,3,3	0.32	0	2,2,2	0.45	0
3	EDO	F	503	-	3,3,3	0.30	0	2,2,2	0.44	0
3	EDO	G	505	-	3,3,3	0.32	0	2,2,2	0.39	0
4	GUA	C	501	-	8,8,8	1.10	0	9,9,9	1.16	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	EDO	A	508	-	3,3,3	0.30	0	2,2,2	0.64	0
3	EDO	A	507	-	3,3,3	0.31	0	2,2,2	0.77	0
2	PLR	A	501	1	15,15,15	1.25	2 (13%)	20,22,22	1.44	3 (15%)
2	PLR	D	502	1	15,15,15	1.36	1 (6%)	20,22,22	1.73	4 (20%)
3	EDO	G	504	-	3,3,3	0.30	0	2,2,2	0.43	0
3	EDO	D	505	-	3,3,3	0.31	0	2,2,2	0.36	0
3	EDO	E	508	-	3,3,3	0.32	0	2,2,2	0.33	0
3	EDO	E	504	-	3,3,3	0.30	0	2,2,2	0.50	0
3	EDO	B	508	-	3,3,3	0.32	0	2,2,2	0.41	0
4	GUA	D	501	-	8,8,8	1.06	0	9,9,9	1.34	1 (11%)
4	GUA	E	502	-	8,8,8	1.07	0	9,9,9	1.24	0
3	EDO	B	502	-	3,3,3	0.34	0	2,2,2	0.27	0
3	EDO	G	502	-	3,3,3	0.32	0	2,2,2	0.25	0
2	PLR	G	501	1	15,15,15	1.35	1 (6%)	20,22,22	1.78	5 (25%)
3	EDO	E	507	-	3,3,3	0.33	0	2,2,2	0.35	0
3	EDO	D	504	-	3,3,3	0.32	0	2,2,2	0.39	0
3	EDO	C	504	-	3,3,3	0.30	0	2,2,2	0.58	0
3	EDO	A	504	-	3,3,3	0.34	0	2,2,2	0.37	0
3	EDO	E	503	-	3,3,3	0.31	0	2,2,2	0.36	0
3	EDO	B	512	-	3,3,3	0.31	0	2,2,2	0.61	0
2	PLR	C	502	1	15,15,15	1.18	1 (6%)	20,22,22	1.31	3 (15%)

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	EDO	A	502	-	-	0/1/1/1	-
3	EDO	G	506	-	-	1/1/1/1	-
3	EDO	F	504	-	-	1/1/1/1	-
3	EDO	C	507	-	-	0/1/1/1	-
3	EDO	D	507	-	-	1/1/1/1	-
3	EDO	E	505	-	-	0/1/1/1	-
3	EDO	B	504	-	-	1/1/1/1	-
3	EDO	G	507	-	-	1/1/1/1	-
3	EDO	E	506	-	-	1/1/1/1	-
4	GUA	F	502	-	-	4/6/6/6	-
3	EDO	B	510	-	-	1/1/1/1	-
3	EDO	G	503	-	-	1/1/1/1	-
3	EDO	B	507	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PLR	E	501	1	-	0/6/6/6	0/1/1/1
2	PLR	F	501	1	-	0/6/6/6	0/1/1/1
2	PLR	B	501	1	-	0/6/6/6	0/1/1/1
3	EDO	A	506	-	-	0/1/1/1	-
3	EDO	C	505	-	-	0/1/1/1	-
2	PLR	H	501	1	-	0/6/6/6	0/1/1/1
3	EDO	A	503	-	-	1/1/1/1	-
3	EDO	B	509	-	-	0/1/1/1	-
3	EDO	A	505	-	-	1/1/1/1	-
3	EDO	C	506	-	-	0/1/1/1	-
3	EDO	D	503	-	-	1/1/1/1	-
3	EDO	D	506	-	-	0/1/1/1	-
3	EDO	F	505	-	-	1/1/1/1	-
3	EDO	H	502	-	-	1/1/1/1	-
3	EDO	B	506	-	-	0/1/1/1	-
3	EDO	B	511	-	-	0/1/1/1	-
3	EDO	H	504	-	-	1/1/1/1	-
3	EDO	B	505	-	-	0/1/1/1	-
3	EDO	B	503	-	-	1/1/1/1	-
3	EDO	C	503	-	-	0/1/1/1	-
3	EDO	H	503	-	-	0/1/1/1	-
3	EDO	F	503	-	-	1/1/1/1	-
3	EDO	G	505	-	-	0/1/1/1	-
4	GUA	C	501	-	-	5/6/6/6	-
3	EDO	A	508	-	-	0/1/1/1	-
3	EDO	A	507	-	-	1/1/1/1	-
2	PLR	A	501	1	-	0/6/6/6	0/1/1/1
2	PLR	D	502	1	-	0/6/6/6	0/1/1/1
3	EDO	G	504	-	-	1/1/1/1	-
3	EDO	D	505	-	-	0/1/1/1	-
3	EDO	E	508	-	-	0/1/1/1	-
3	EDO	E	504	-	-	0/1/1/1	-
3	EDO	B	508	-	-	0/1/1/1	-
4	GUA	D	501	-	-	5/6/6/6	-
4	GUA	E	502	-	-	6/6/6/6	-
3	EDO	B	502	-	-	0/1/1/1	-
3	EDO	G	502	-	-	1/1/1/1	-
2	PLR	G	501	1	-	0/6/6/6	0/1/1/1
3	EDO	E	507	-	-	1/1/1/1	-
3	EDO	D	504	-	-	0/1/1/1	-
3	EDO	C	504	-	-	0/1/1/1	-
3	EDO	A	504	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	EDO	E	503	-	-	1/1/1/1	-
3	EDO	B	512	-	-	1/1/1/1	-
2	PLR	C	502	1	-	0/6/6/6	0/1/1/1

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	502	PLR	C2A-C2	2.86	1.55	1.50
2	G	501	PLR	C2A-C2	2.36	1.54	1.50
2	H	501	PLR	P-O4P	2.25	1.67	1.60
2	A	501	PLR	P-O4P	2.07	1.66	1.60
2	A	501	PLR	C2A-C2	2.06	1.53	1.50
2	F	501	PLR	C2A-C2	2.06	1.53	1.50
2	F	501	PLR	C3-C2	-2.03	1.38	1.40
2	F	501	PLR	C4A-C4	2.03	1.55	1.51
2	C	502	PLR	P-O4P	2.02	1.66	1.60

All (32) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	501	PLR	C4A-C4-C5	5.24	126.34	120.94
2	D	502	PLR	C4A-C4-C5	4.83	125.91	120.94
2	F	501	PLR	C4A-C4-C5	4.76	125.84	120.94
2	G	501	PLR	C4A-C4-C5	4.56	125.63	120.94
2	G	501	PLR	C6-C5-C4	3.70	121.07	118.16
2	E	501	PLR	C6-C5-C4	3.66	121.04	118.16
2	B	501	PLR	C4A-C4-C5	3.58	124.62	120.94
2	C	502	PLR	C4A-C4-C5	3.29	124.33	120.94
2	F	501	PLR	C6-C5-C4	3.25	120.72	118.16
2	B	501	PLR	C6-C5-C4	3.25	120.72	118.16
2	A	501	PLR	C4A-C4-C5	3.09	124.12	120.94
2	D	502	PLR	C6-C5-C4	3.04	120.55	118.16
2	E	501	PLR	C4A-C4-C5	2.99	124.01	120.94
2	A	501	PLR	C6-C5-C4	2.91	120.45	118.16
2	H	501	PLR	C4A-C4-C3	-2.61	116.08	120.50
2	E	501	PLR	C5-C6-N1	-2.59	119.51	123.82
2	D	502	PLR	O3-C3-C2	2.55	123.06	117.49
2	G	501	PLR	C5-C6-N1	-2.51	119.63	123.82
2	H	501	PLR	O3-C3-C2	2.41	122.75	117.49
2	C	502	PLR	C6-C5-C4	2.33	119.99	118.16
2	F	501	PLR	C3-C4-C5	-2.28	116.28	118.74
2	G	501	PLR	O3-C3-C2	2.27	122.43	117.49

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	501	PLR	C6-C5-C4	2.23	119.92	118.16
2	D	502	PLR	C3-C4-C5	-2.22	116.34	118.74
2	B	501	PLR	C3-C4-C5	-2.11	116.46	118.74
2	A	501	PLR	C5-C6-N1	-2.11	120.31	123.82
2	F	501	PLR	C5-C6-N1	-2.10	120.32	123.82
2	G	501	PLR	C3-C4-C5	-2.10	116.47	118.74
2	B	501	PLR	C5-C6-N1	-2.06	120.38	123.82
4	D	501	GUA	O2-C1-C2	2.04	120.57	114.03
2	F	501	PLR	C5A-C5-C6	-2.02	116.05	119.37
2	C	502	PLR	C5-C6-N1	-2.02	120.46	123.82

There are no chirality outliers.

All (44) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	501	GUA	C2-C3-C4-C5
4	E	502	GUA	C1-C2-C3-C4
4	E	502	GUA	C2-C3-C4-C5
4	D	501	GUA	C1-C2-C3-C4
4	D	501	GUA	C2-C3-C4-C5
3	B	507	EDO	O1-C1-C2-O2
3	D	507	EDO	O1-C1-C2-O2
3	E	503	EDO	O1-C1-C2-O2
3	E	506	EDO	O1-C1-C2-O2
3	E	507	EDO	O1-C1-C2-O2
3	F	504	EDO	O1-C1-C2-O2
3	A	503	EDO	O1-C1-C2-O2
3	B	504	EDO	O1-C1-C2-O2
3	B	510	EDO	O1-C1-C2-O2
3	G	503	EDO	O1-C1-C2-O2
3	A	504	EDO	O1-C1-C2-O2
3	A	507	EDO	O1-C1-C2-O2
3	F	505	EDO	O1-C1-C2-O2
3	G	507	EDO	O1-C1-C2-O2
4	C	501	GUA	O1-C1-C2-C3
4	F	502	GUA	O1-C1-C2-C3
3	G	504	EDO	O1-C1-C2-O2
4	C	501	GUA	O2-C1-C2-C3
4	E	502	GUA	O1-C1-C2-C3
4	D	501	GUA	O2-C1-C2-C3
4	F	502	GUA	O2-C1-C2-C3
4	D	501	GUA	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
4	E	502	GUA	O2-C1-C2-C3
3	H	502	EDO	O1-C1-C2-O2
3	H	504	EDO	O1-C1-C2-O2
4	E	502	GUA	C3-C4-C5-O4
4	F	502	GUA	C3-C4-C5-O4
4	F	502	GUA	C3-C4-C5-O3
4	E	502	GUA	C3-C4-C5-O3
3	A	505	EDO	O1-C1-C2-O2
3	B	512	EDO	O1-C1-C2-O2
3	D	503	EDO	O1-C1-C2-O2
3	G	502	EDO	O1-C1-C2-O2
4	C	501	GUA	C3-C4-C5-O4
3	B	503	EDO	O1-C1-C2-O2
3	F	503	EDO	O1-C1-C2-O2
3	G	506	EDO	O1-C1-C2-O2
4	D	501	GUA	C3-C4-C5-O4
4	C	501	GUA	C3-C4-C5-O3

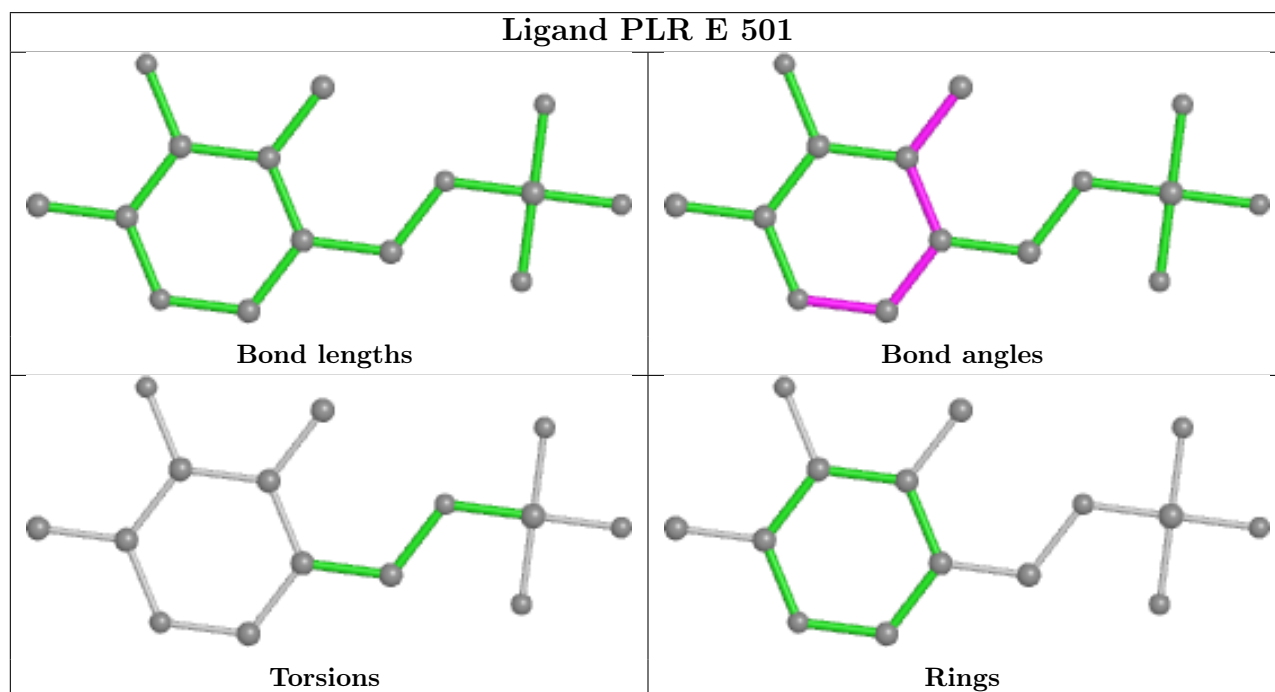
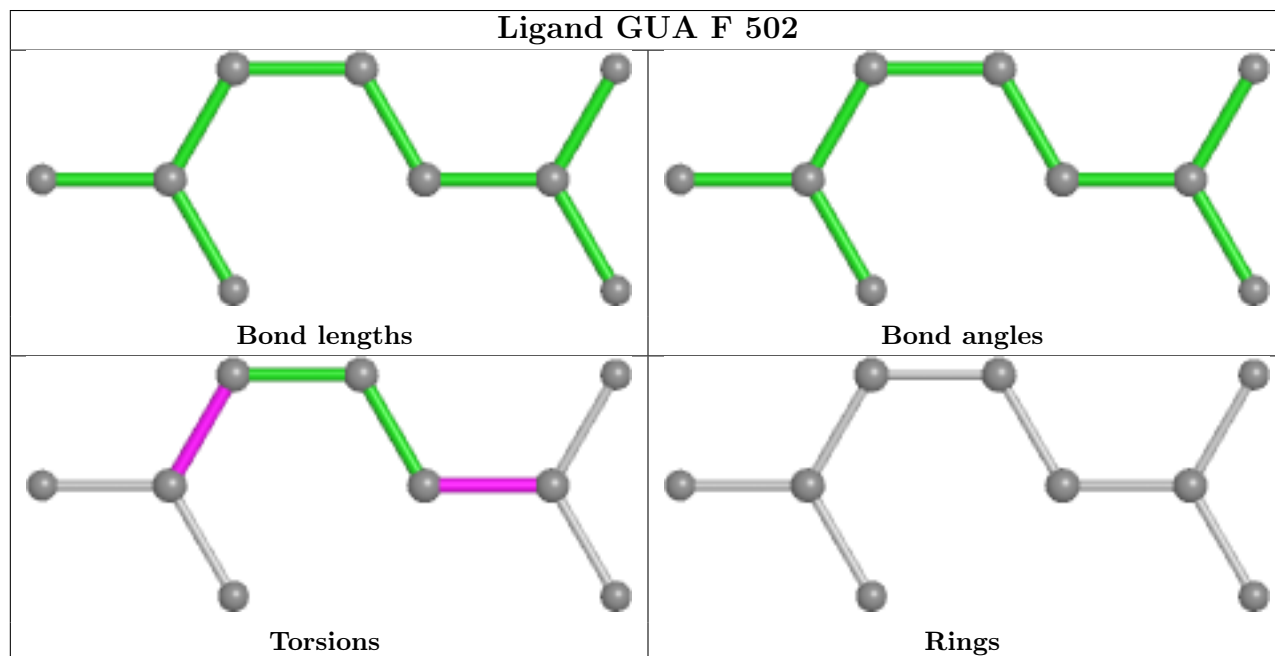
There are no ring outliers.

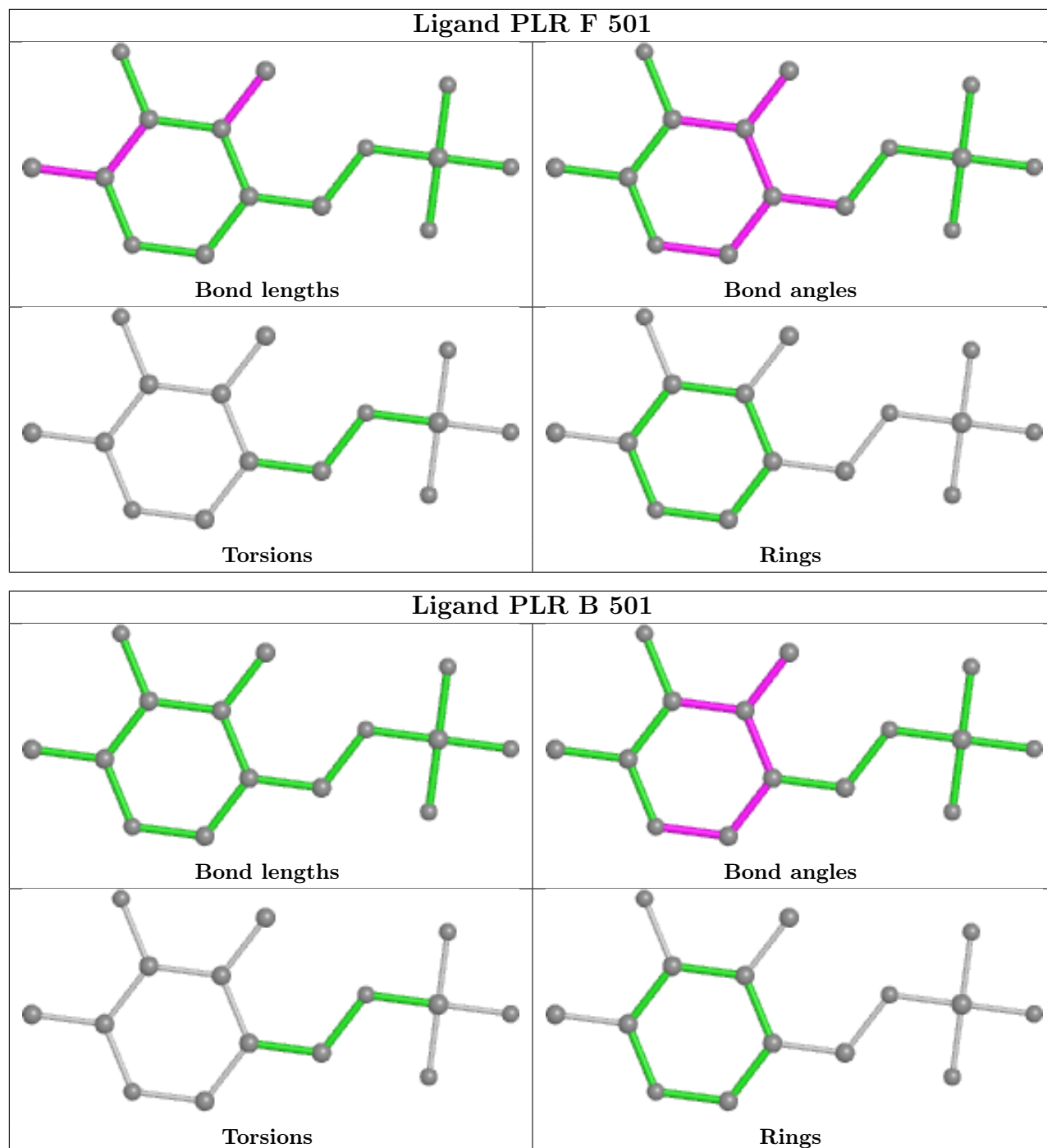
16 monomers are involved in 21 short contacts:

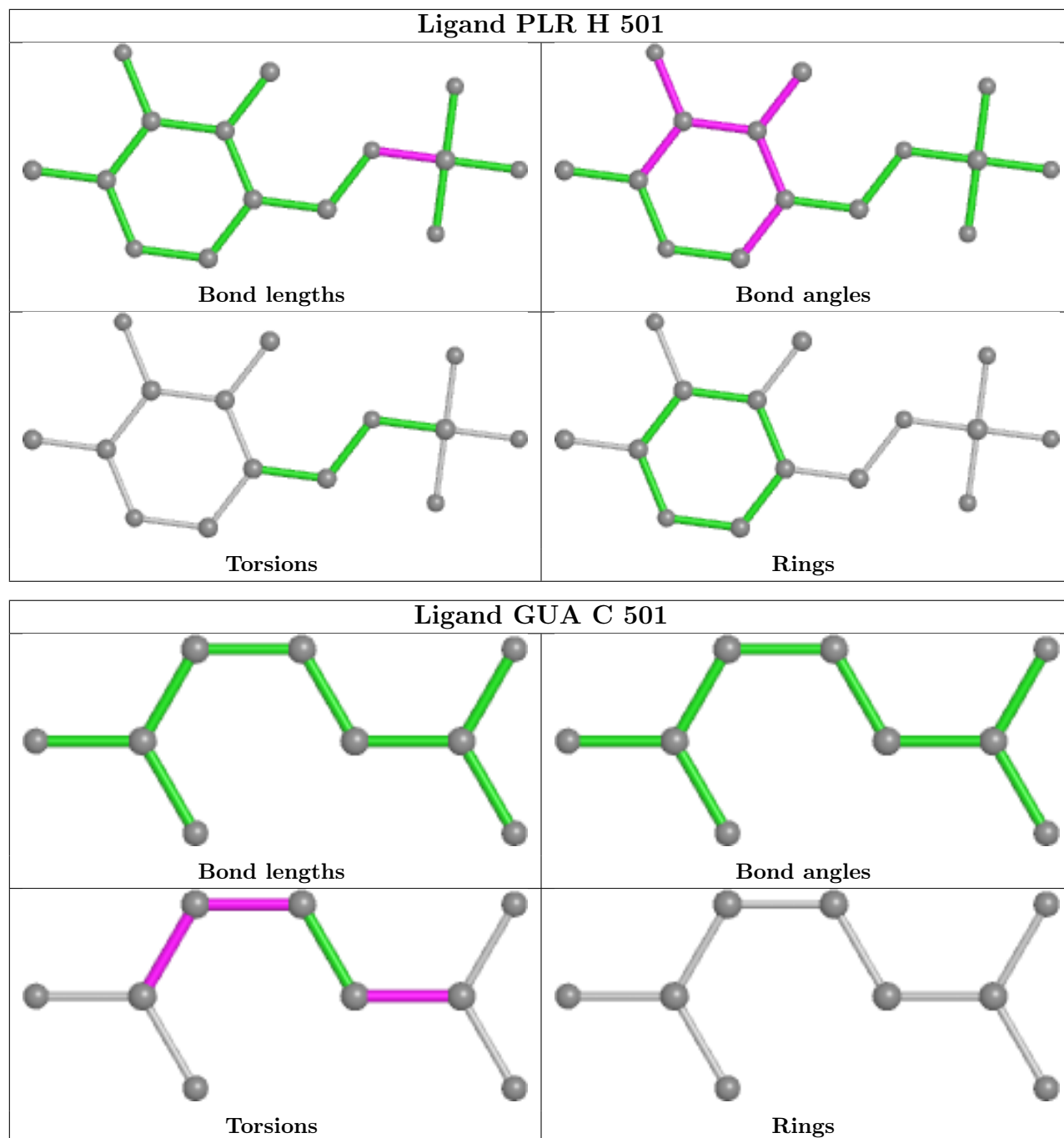
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	506	EDO	3	0
3	D	507	EDO	1	0
3	B	504	EDO	3	0
3	B	507	EDO	2	0
2	F	501	PLR	1	0
3	A	503	EDO	1	0
3	B	509	EDO	2	0
3	A	505	EDO	1	0
3	B	503	EDO	1	0
3	F	503	EDO	1	0
3	A	508	EDO	1	0
3	A	507	EDO	1	0
4	E	502	GUA	1	0
2	G	501	PLR	1	0
3	D	504	EDO	1	0
2	C	502	PLR	1	0

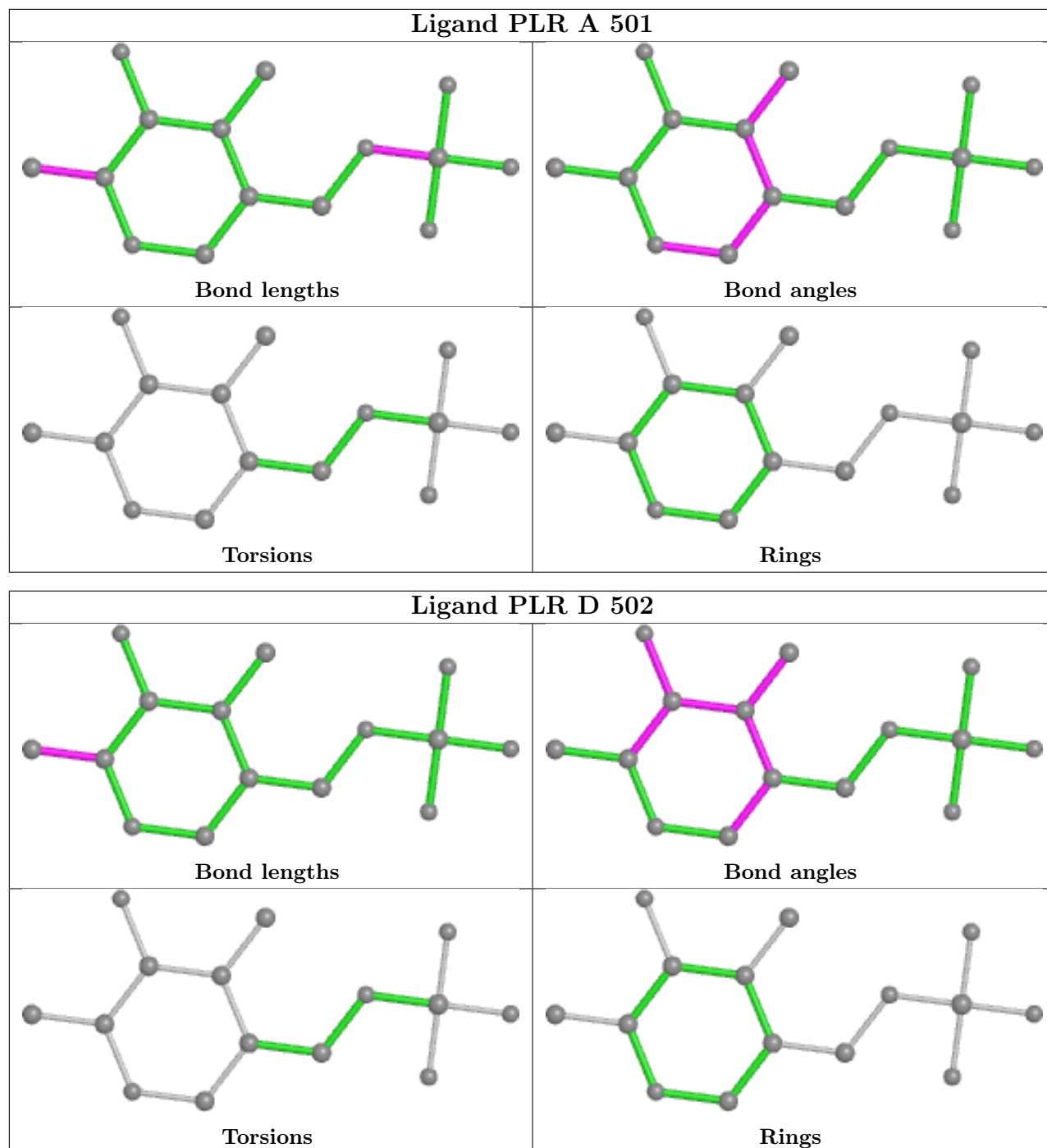
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

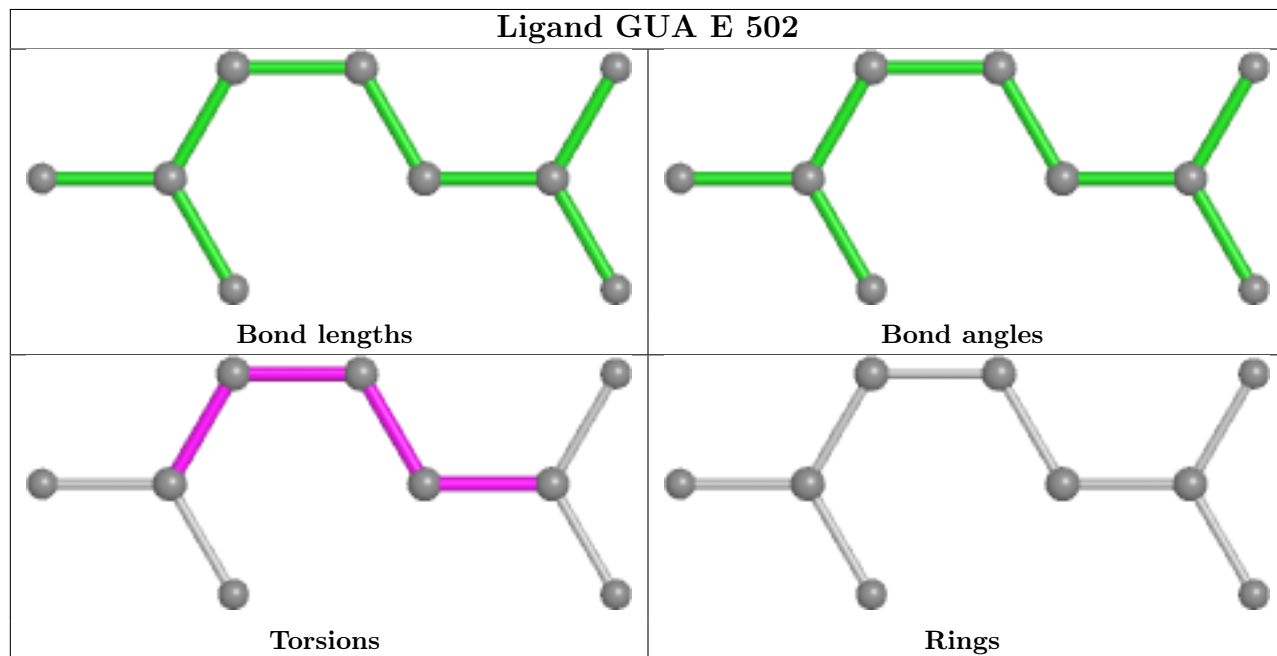
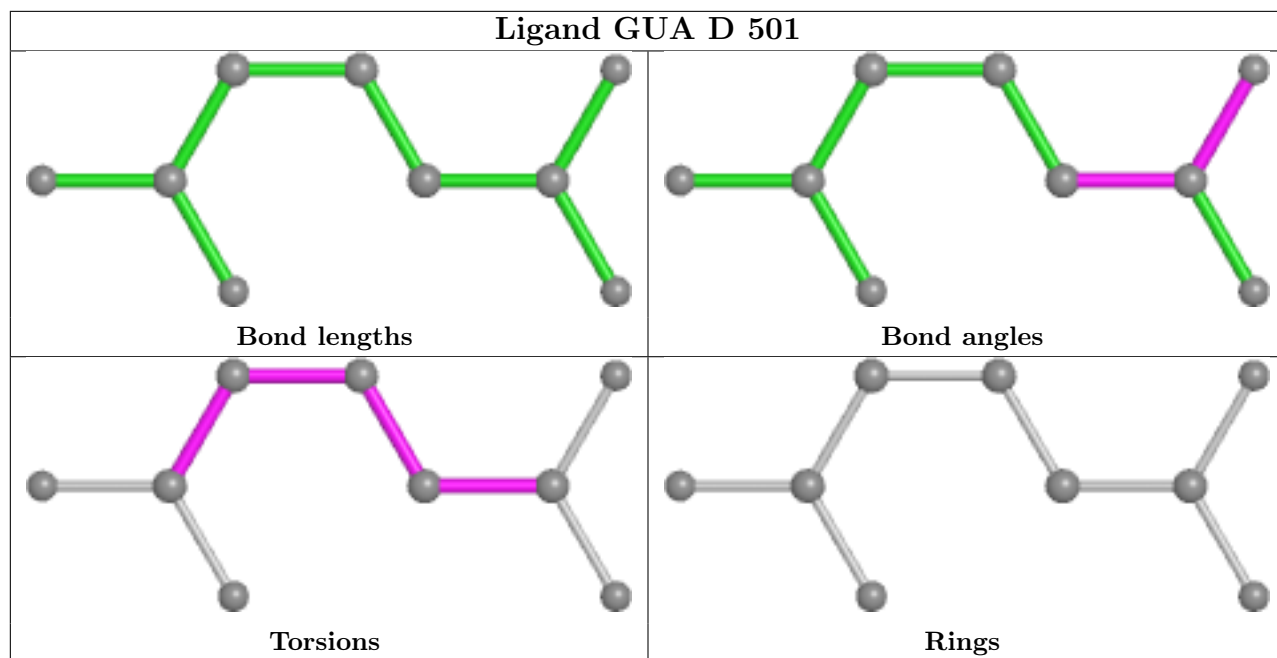
also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted 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.



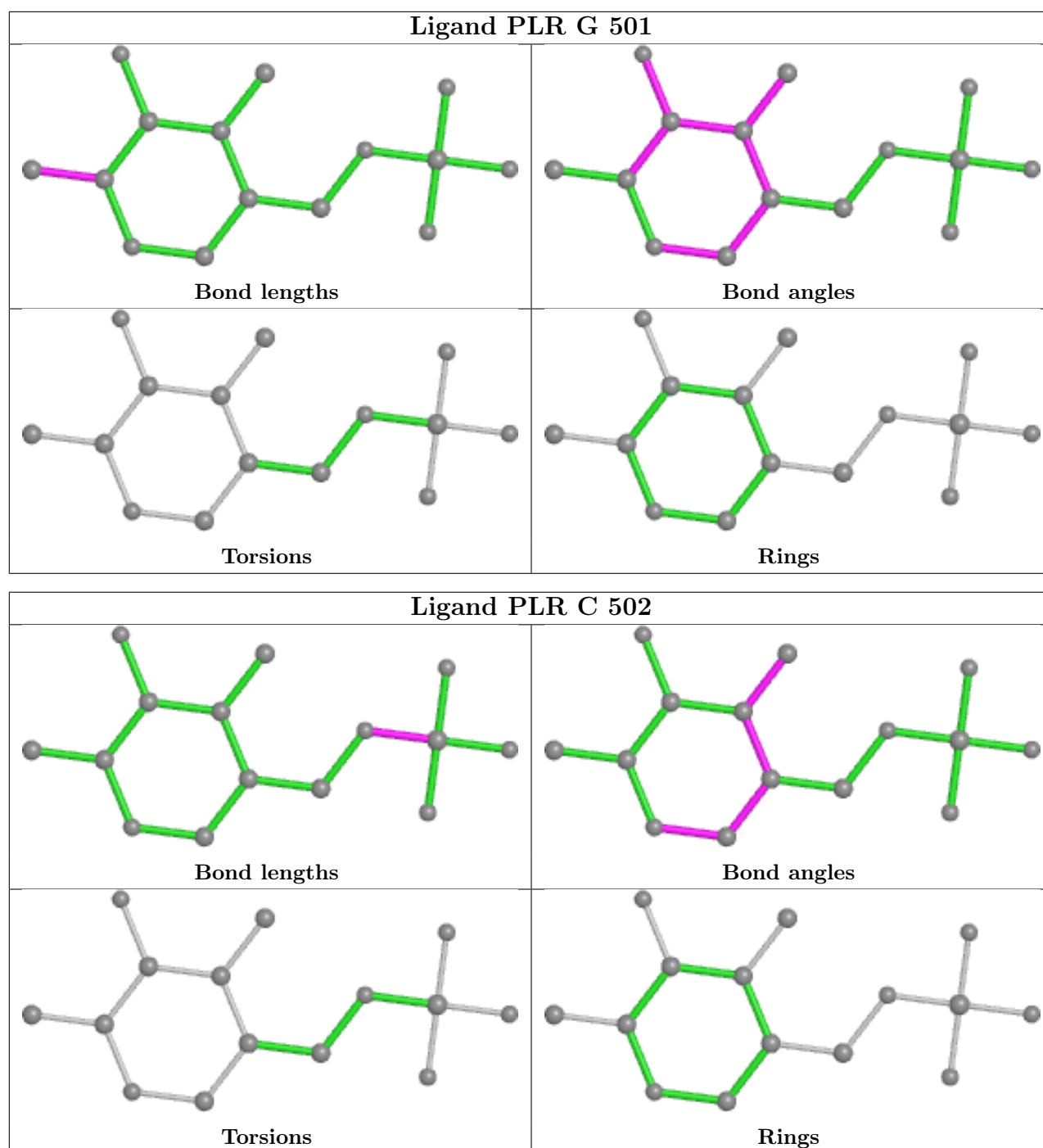












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [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	438/445 (98%)	0.12	7 (1%) 72 74	18, 34, 59, 119	0
1	B	439/445 (98%)	0.12	12 (2%) 54 57	17, 32, 60, 101	0
1	C	438/445 (98%)	0.68	43 (9%) 7 8	21, 43, 79, 164	0
1	D	438/445 (98%)	0.36	21 (4%) 30 33	18, 35, 66, 132	0
1	E	437/445 (98%)	0.19	18 (4%) 37 40	19, 33, 64, 121	0
1	F	437/445 (98%)	0.20	16 (3%) 41 44	18, 34, 66, 106	0
1	G	439/445 (98%)	0.14	12 (2%) 54 57	20, 32, 61, 106	0
1	H	438/445 (98%)	0.35	20 (4%) 32 35	21, 40, 69, 122	0
All	All	3504/3560 (98%)	0.27	149 (4%) 35 38	17, 35, 67, 164	0

All (149) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	401	ASN	18.1
1	C	404	GLN	9.1
1	D	401	ASN	8.9
1	D	400	LYS	8.5
1	D	403	MET	8.3
1	D	55	ILE	8.3
1	C	403	MET	8.1
1	H	27	THR	6.0
1	D	221	VAL	5.8
1	C	398	VAL	5.7
1	C	441	VAL	5.7
1	D	402	TYR	5.6
1	C	29	GLU	5.6
1	E	396	LYS	5.6
1	D	404	GLN	5.6
1	F	403	MET	5.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	C	221	VAL	5.2
1	E	403	MET	5.1
1	D	187	LEU	5.0
1	H	404	GLN	5.0
1	E	404	GLN	4.9
1	H	441	VAL	4.8
1	F	396	LYS	4.8
1	C	179	HIS	4.7
1	F	402	TYR	4.6
1	C	219	ALA	4.6
1	F	398	VAL	4.6
1	C	394	ASN	4.6
1	C	402	TYR	4.6
1	D	364	ASN	4.6
1	F	399	LYS	4.5
1	G	364	ASN	4.5
1	B	29	GLU	4.4
1	C	397	LEU	4.4
1	F	400	LYS	4.3
1	C	338	LEU	4.3
1	H	287	ASP	4.2
1	C	408	LEU	4.2
1	C	55	ILE	4.0
1	G	181	SER	4.0
1	A	179	HIS	4.0
1	H	25	GLY	3.9
1	C	395	THR	3.9
1	G	404	GLN	3.9
1	F	29	GLU	3.9
1	F	394	ASN	3.8
1	G	27	THR	3.8
1	F	179	HIS	3.8
1	G	287	ASP	3.8
1	C	187	LEU	3.7
1	E	402	TYR	3.6
1	B	179	HIS	3.5
1	C	343	LEU	3.5
1	B	5	THR	3.5
1	G	28	LYS	3.5
1	C	192	ALA	3.4
1	H	337	GLU	3.4
1	B	195	GLN	3.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	E	397	LEU	3.4
1	A	29	GLU	3.4
1	H	29	GLU	3.4
1	E	179	HIS	3.4
1	H	28	LYS	3.3
1	C	49	ARG	3.3
1	A	187	LEU	3.2
1	C	288	LYS	3.2
1	F	8	THR	3.2
1	C	340	ASP	3.2
1	C	399	LYS	3.2
1	H	408	LEU	3.1
1	E	25	GLY	3.1
1	B	66	TYR	3.1
1	C	406	THR	3.0
1	H	23	LEU	3.0
1	C	392	LYS	3.0
1	C	23	LEU	2.9
1	D	397	LEU	2.9
1	C	25	GLY	2.9
1	A	66	TYR	2.8
1	C	222	TYR	2.8
1	E	398	VAL	2.8
1	E	399	LYS	2.8
1	F	397	LEU	2.7
1	H	338	LEU	2.7
1	G	288	LYS	2.7
1	E	187	LEU	2.7
1	C	218	ILE	2.7
1	F	401	ASN	2.7
1	D	287	ASP	2.7
1	C	30	LYS	2.7
1	F	181	SER	2.7
1	D	179	HIS	2.6
1	H	179	HIS	2.6
1	C	400	LYS	2.6
1	H	288	LYS	2.6
1	G	56	ASP	2.6
1	H	403	MET	2.6
1	G	187	LEU	2.6
1	E	400	LYS	2.5
1	B	408	LEU	2.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	C	342	GLU	2.5
1	C	214	ARG	2.5
1	C	345	LYS	2.5
1	C	341	ARG	2.5
1	C	407	LEU	2.4
1	E	53	LEU	2.4
1	C	287	ASP	2.4
1	B	443	LYS	2.4
1	B	55	ILE	2.4
1	D	398	VAL	2.4
1	D	441	VAL	2.4
1	D	405	ASP	2.3
1	E	29	GLU	2.3
1	C	344	ILE	2.3
1	F	395	THR	2.3
1	B	30	LYS	2.3
1	H	52	LYS	2.3
1	B	364	ASN	2.3
1	D	394	ASN	2.3
1	D	189	ILE	2.3
1	C	27	THR	2.3
1	E	28	LYS	2.3
1	G	179	HIS	2.3
1	B	51	ASN	2.2
1	E	68	ARG	2.2
1	F	187	LEU	2.2
1	H	24	GLN	2.2
1	C	189	ILE	2.2
1	G	29	GLU	2.2
1	D	8	THR	2.2
1	G	18	ALA	2.2
1	A	221	VAL	2.2
1	C	28	LYS	2.2
1	E	401	ASN	2.1
1	H	343	LEU	2.1
1	H	26	GLU	2.1
1	D	391	HIS	2.1
1	A	30	LYS	2.1
1	B	223	GLN	2.1
1	F	404	GLN	2.1
1	D	175	VAL	2.1
1	D	406	THR	2.1

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Mol	Chain	Res	Type	RSRZ
1	E	395	THR	2.1
1	C	337	GLU	2.1
1	A	27	THR	2.1
1	E	31	GLU	2.1
1	H	21	LYS	2.1
1	H	340	ASP	2.0
1	C	332	ILE	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.

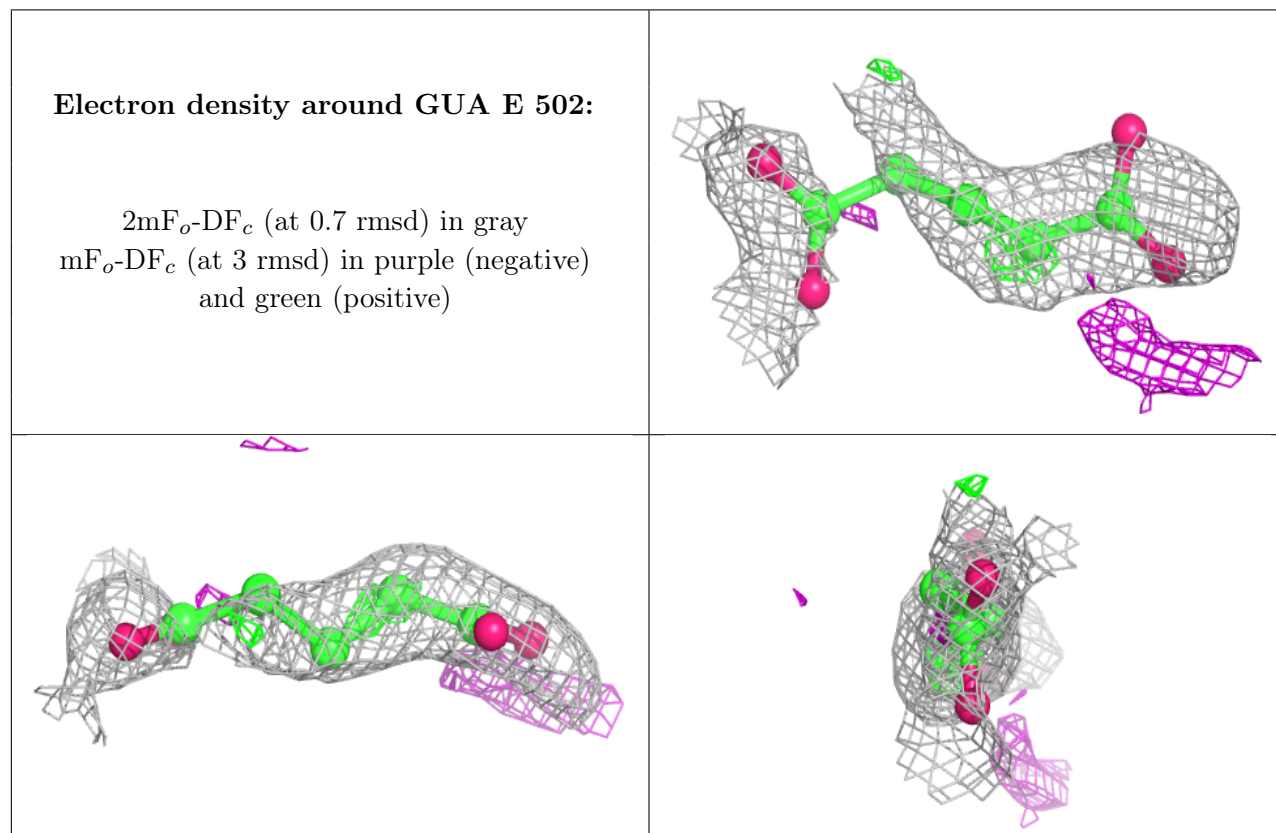
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
3	EDO	A	502	4/4	0.39	0.39	64,66,66,66	0
3	EDO	A	505	4/4	0.39	0.33	74,75,76,77	0
3	EDO	B	505	4/4	0.45	0.29	83,83,84,84	0
3	EDO	B	511	4/4	0.57	0.19	42,45,47,48	0
3	EDO	B	508	4/4	0.58	0.29	67,68,70,71	0
3	EDO	H	503	4/4	0.59	0.23	69,69,70,70	0
3	EDO	E	506	4/4	0.63	0.17	68,68,68,68	0
3	EDO	H	502	4/4	0.65	0.22	66,67,67,67	0
3	EDO	B	503	4/4	0.65	0.11	62,63,63,64	0
3	EDO	B	506	4/4	0.68	0.17	66,66,66,67	0
3	EDO	F	505	4/4	0.68	0.23	58,60,61,62	0
4	GUA	E	502	9/9	0.68	0.31	83,84,87,87	0
4	GUA	C	501	9/9	0.71	0.27	79,82,85,87	0
3	EDO	H	504	4/4	0.71	0.15	49,49,52,54	0
3	EDO	D	506	4/4	0.72	0.12	48,49,52,53	0
3	EDO	E	505	4/4	0.73	0.19	61,63,65,67	0

*Continued on next page...*

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	EDO	B	509	4/4	0.73	0.28	65,66,68,68	0
3	EDO	B	512	4/4	0.74	0.27	44,46,48,49	0
3	EDO	A	506	4/4	0.74	0.17	63,65,66,66	0
3	EDO	G	505	4/4	0.76	0.24	71,71,72,72	0
3	EDO	F	503	4/4	0.76	0.22	37,39,39,43	0
3	EDO	B	510	4/4	0.76	0.20	47,48,51,53	0
3	EDO	G	506	4/4	0.78	0.25	29,39,43,46	0
3	EDO	A	504	4/4	0.79	0.13	53,53,54,54	0
3	EDO	B	502	4/4	0.79	0.13	61,62,62,63	0
3	EDO	E	507	4/4	0.81	0.20	40,42,44,45	0
3	EDO	G	504	4/4	0.81	0.20	46,47,48,48	0
3	EDO	C	505	4/4	0.81	0.16	58,60,60,60	0
4	GUA	F	502	9/9	0.82	0.26	76,80,85,90	0
3	EDO	A	508	4/4	0.83	0.15	39,42,45,47	0
3	EDO	D	504	4/4	0.83	0.13	63,64,64,64	0
3	EDO	G	502	4/4	0.83	0.12	55,58,60,60	0
3	EDO	B	507	4/4	0.84	0.19	35,38,41,45	0
3	EDO	D	503	4/4	0.84	0.17	39,39,43,43	0
3	EDO	B	504	4/4	0.84	0.17	54,54,54,55	0
3	EDO	D	505	4/4	0.84	0.12	52,53,53,54	0
3	EDO	E	503	4/4	0.85	0.16	52,52,55,55	0
3	EDO	E	504	4/4	0.87	0.13	55,55,56,57	0
3	EDO	C	504	4/4	0.88	0.16	59,60,60,60	0
4	GUA	D	501	9/9	0.88	0.19	62,63,66,68	0
3	EDO	C	507	4/4	0.88	0.15	56,58,60,61	0
3	EDO	G	503	4/4	0.88	0.14	50,51,51,51	0
3	EDO	A	507	4/4	0.89	0.17	37,42,45,51	0
3	EDO	D	507	4/4	0.89	0.11	48,48,49,50	0
3	EDO	C	503	4/4	0.89	0.09	54,54,54,54	0
3	EDO	E	508	4/4	0.90	0.15	54,55,56,57	0
3	EDO	F	504	4/4	0.92	0.13	46,47,48,49	0
3	EDO	C	506	4/4	0.93	0.18	45,46,47,47	0
3	EDO	A	503	4/4	0.93	0.18	42,45,48,51	0
3	EDO	G	507	4/4	0.97	0.10	37,38,38,39	0
2	PLR	E	501	15/15	0.98	0.12	19,25,28,32	0
2	PLR	F	501	15/15	0.98	0.12	18,23,27,30	0
2	PLR	G	501	15/15	0.98	0.12	18,21,24,25	0
2	PLR	H	501	15/15	0.98	0.13	23,28,31,33	0
2	PLR	A	501	15/15	0.98	0.10	16,22,25,28	0
2	PLR	C	502	15/15	0.98	0.12	24,29,34,35	0
2	PLR	B	501	15/15	0.99	0.11	17,20,24,26	0
2	PLR	D	502	15/15	0.99	0.10	19,22,25,26	0

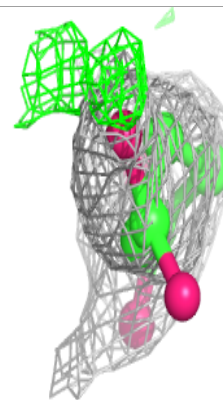
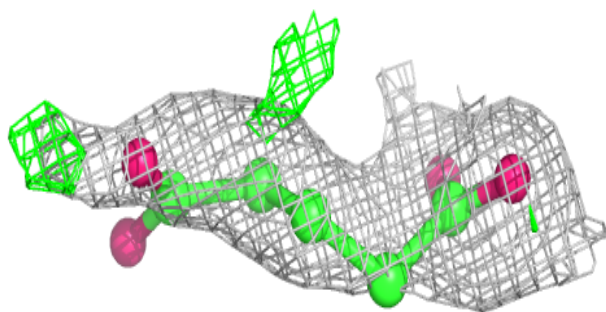
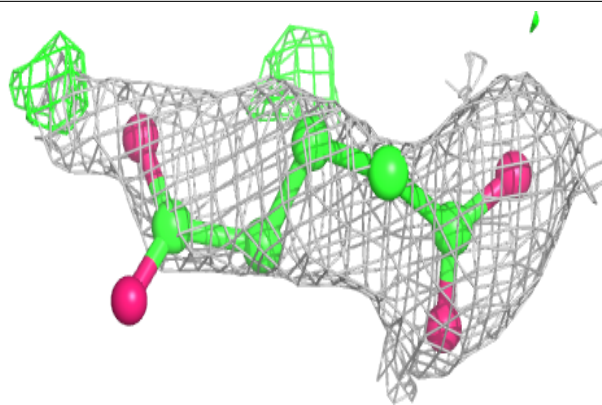
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



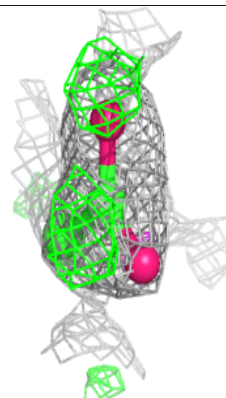
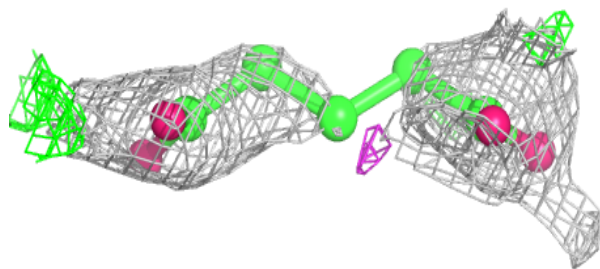
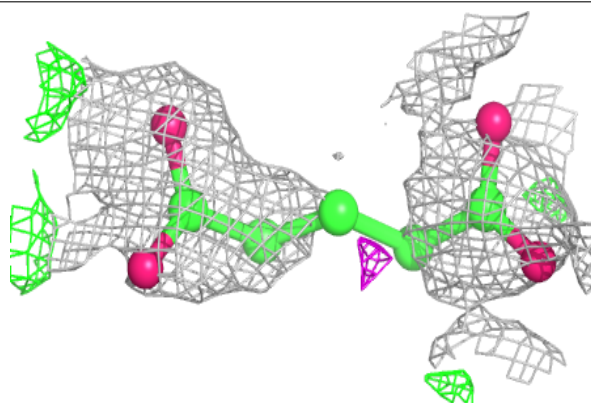


**Electron density around GUA C 501:**

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

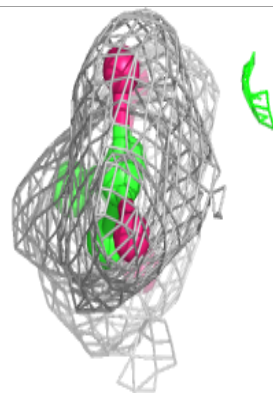
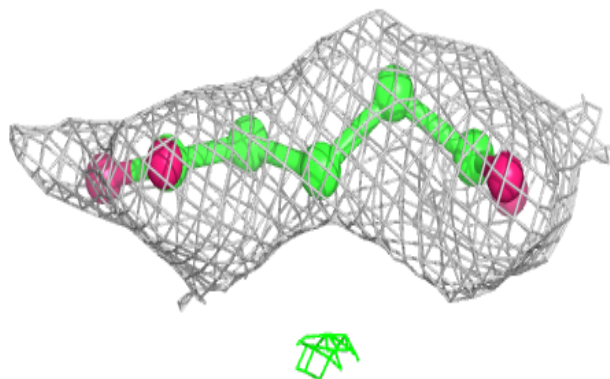
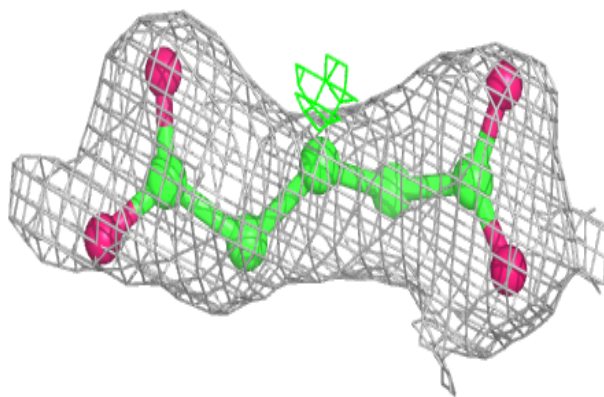
**Electron density around GUA F 502:**

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

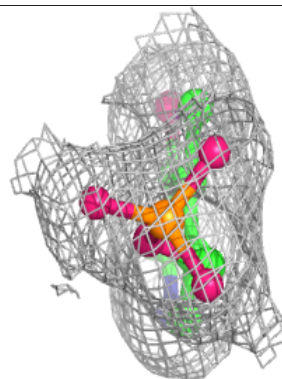
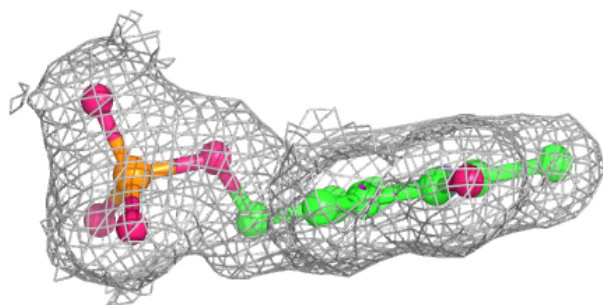
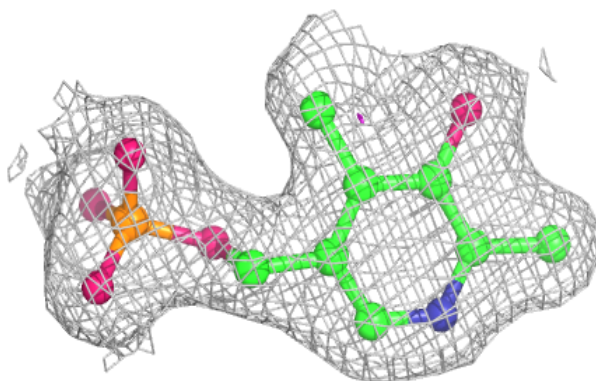


**Electron density around GUA D 501:**

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

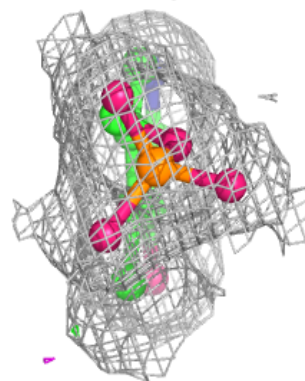
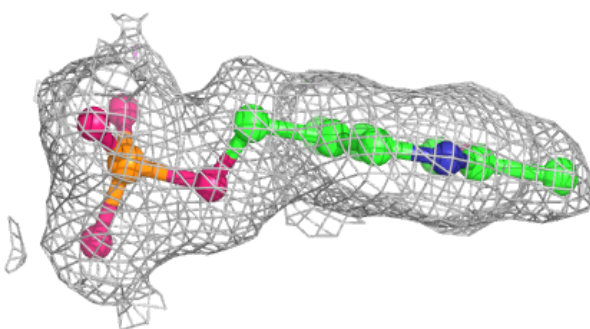
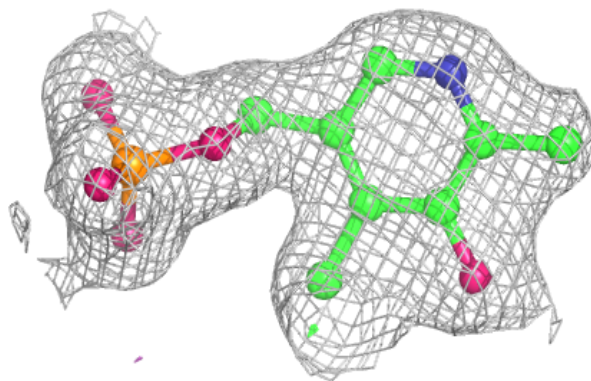
**Electron density around PLR E 501:**

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

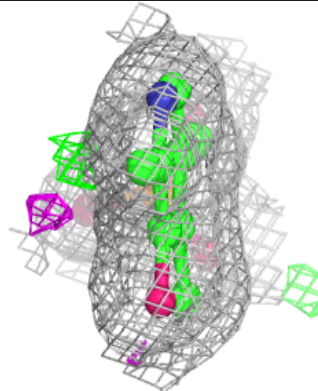
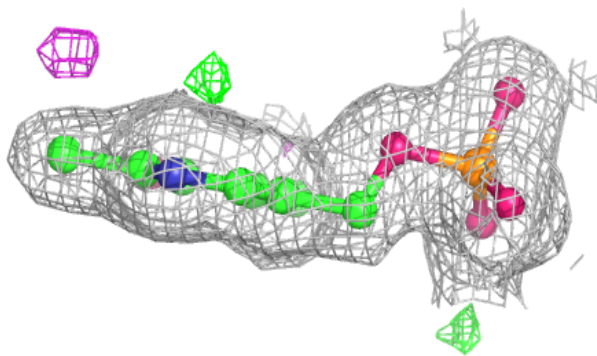
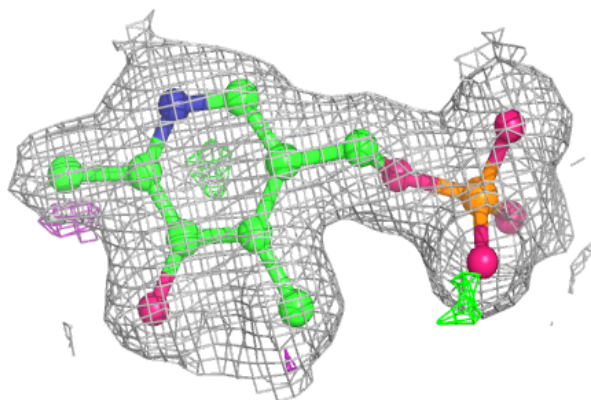


**Electron density around PLR F 501:**

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

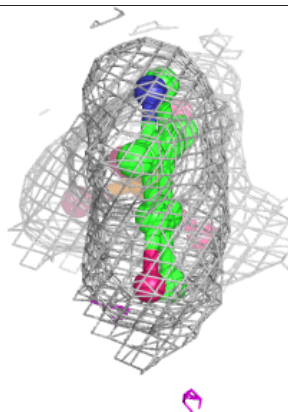
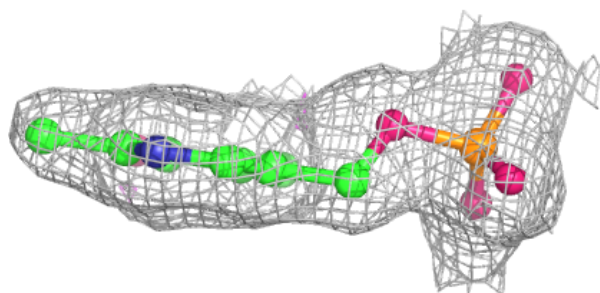
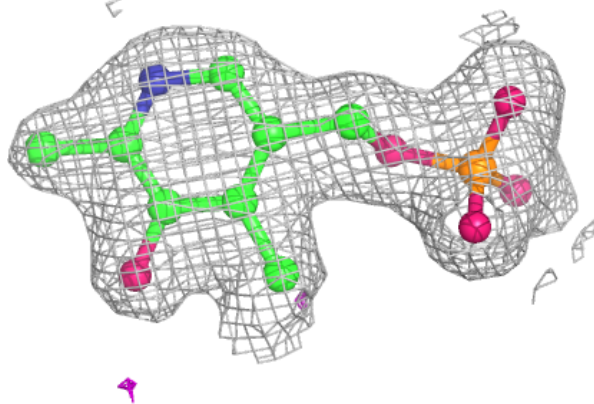
**Electron density around PLR G 501:**

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

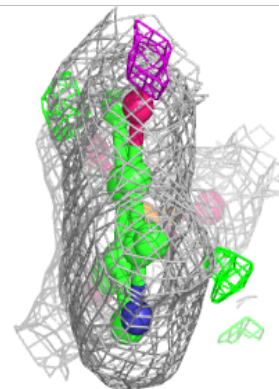
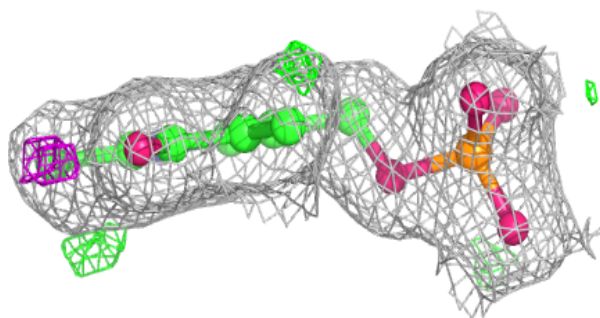
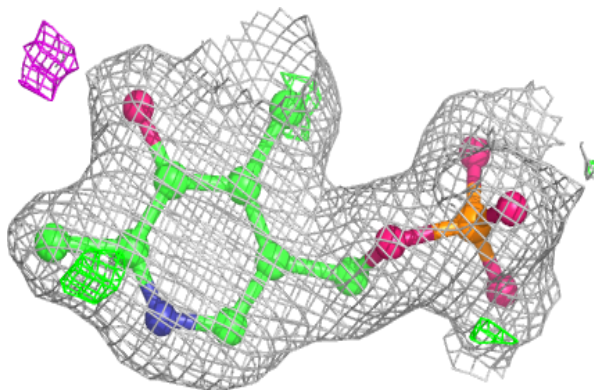


**Electron density around PLR H 501:**

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

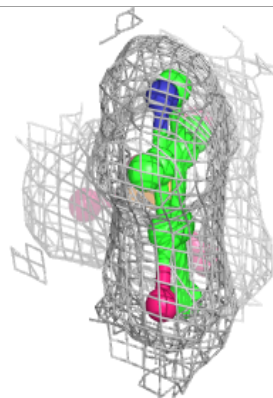
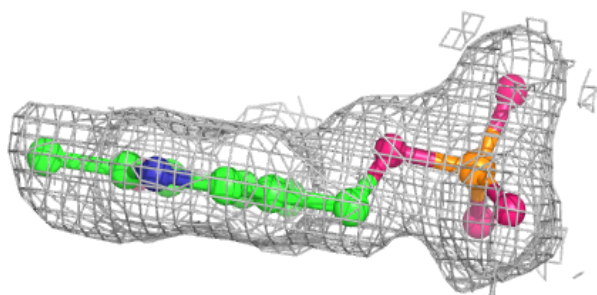
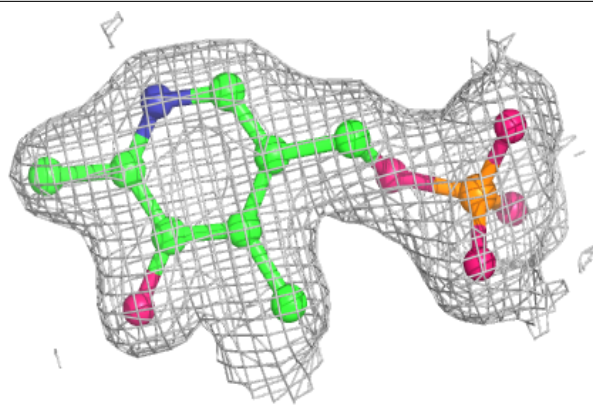
**Electron density around PLR A 501:**

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

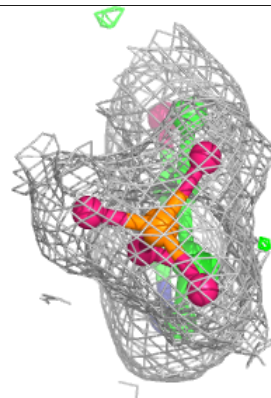
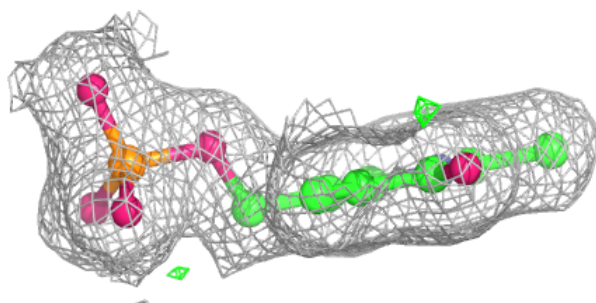
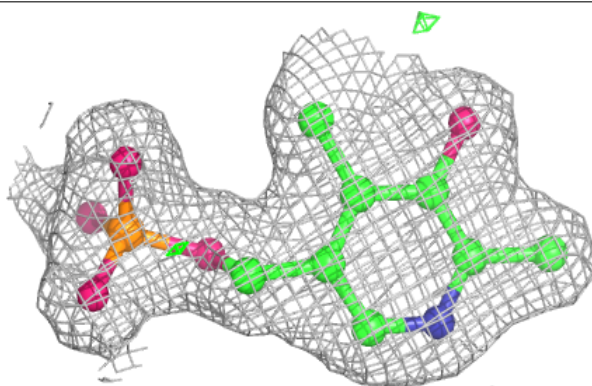


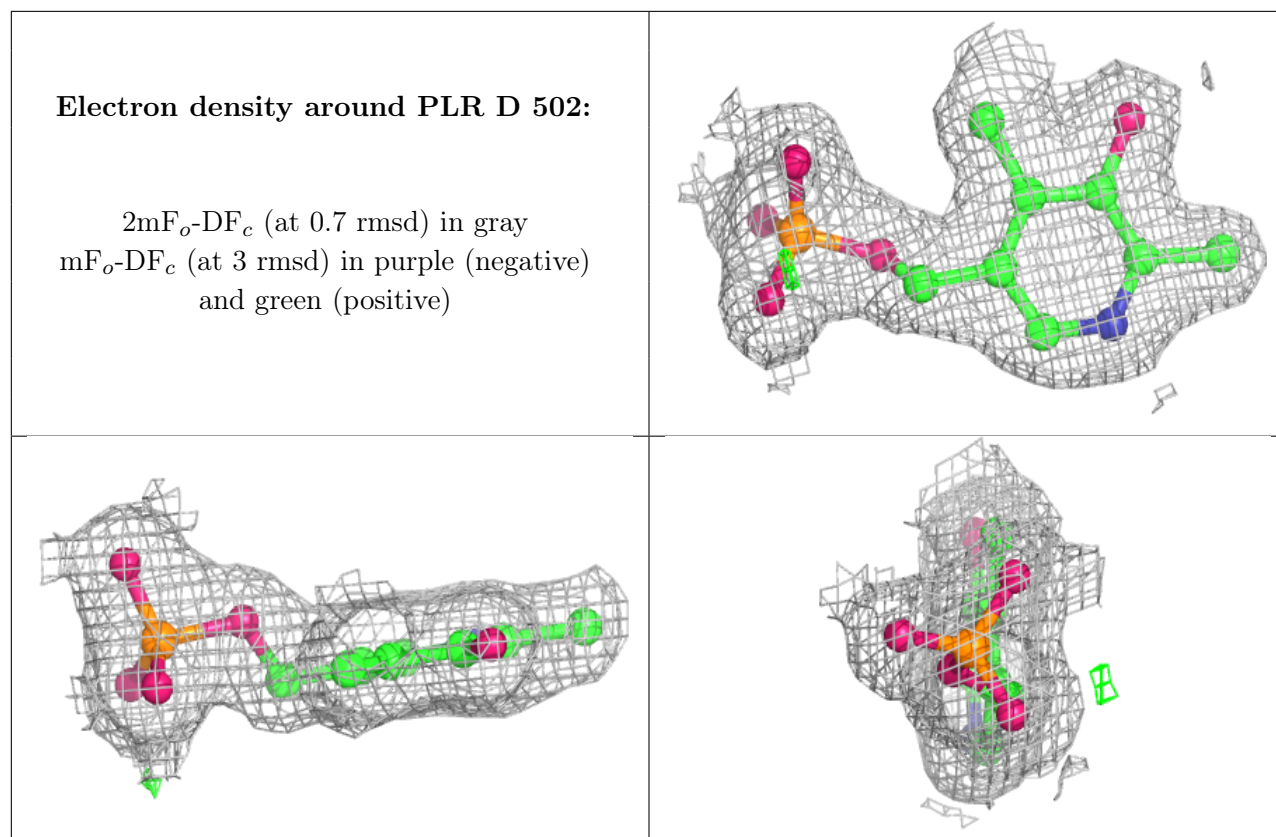
**Electron density around PLR C 502:**

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

**Electron density around PLR B 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.