



# Full wwPDB X-ray Structure Validation Report ⓘ

Apr 2, 2024 – 02:12 PM JST

PDB ID : 8XKF  
Title : Crystal structure of Helicobacter pylori IspDF with substrate CTP  
Authors : Chen, X.; Wu, D.  
Deposited on : 2023-12-23  
Resolution : 2.50 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 : 2.36  
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) : 2.36

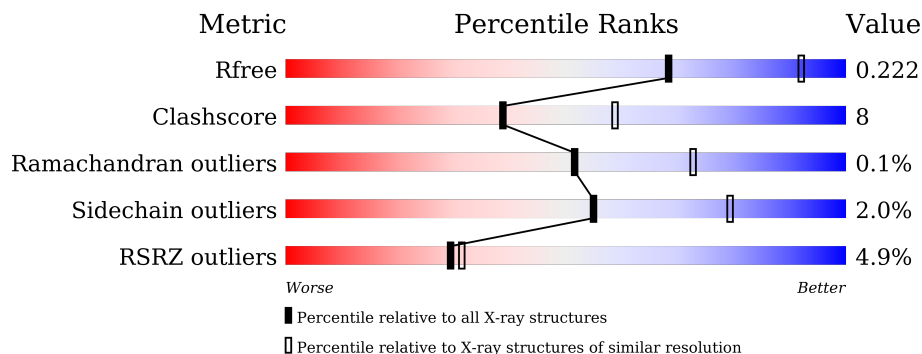
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.50 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	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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	381	 4% 81% 16% •
1	B	381	 5% 79% 15% • 5%
1	C	381	 4% 86% 13% ••
1	D	381	 5% 84% 14% •
1	E	381	 4% 81% 17% ••
1	F	381	 6% 77% 17% • 5%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

<b>Mol</b>	<b>Type</b>	<b>Chain</b>	<b>Res</b>	<b>Chirality</b>	<b>Geometry</b>	<b>Clashes</b>	<b>Electron density</b>
5	GOL	A	506	-	-	X	-

## 2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 18605 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 Bifunctional enzyme IspD/IspF.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	370	2922	1885	483	545	9	0	0	0
1	B	362	2864	1850	472	533	9	0	0	0
1	C	377	2985	1925	496	555	9	0	0	0
1	D	375	2966	1913	492	552	9	0	0	0
1	E	377	2985	1925	496	555	9	0	0	0
1	F	361	2856	1843	474	530	9	0	0	0

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	26	MET	-	initiating methionine	UNP O25664
A	27	HIS	-	expression tag	UNP O25664
A	28	HIS	-	expression tag	UNP O25664
A	29	HIS	-	expression tag	UNP O25664
A	30	HIS	-	expression tag	UNP O25664
A	31	HIS	-	expression tag	UNP O25664
A	32	HIS	-	expression tag	UNP O25664
B	26	MET	-	initiating methionine	UNP O25664
B	27	HIS	-	expression tag	UNP O25664
B	28	HIS	-	expression tag	UNP O25664
B	29	HIS	-	expression tag	UNP O25664
B	30	HIS	-	expression tag	UNP O25664
B	31	HIS	-	expression tag	UNP O25664
B	32	HIS	-	expression tag	UNP O25664
C	26	MET	-	initiating methionine	UNP O25664
C	27	HIS	-	expression tag	UNP O25664
C	28	HIS	-	expression tag	UNP O25664

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Chain	Residue	Modelled	Actual	Comment	Reference
C	29	HIS	-	expression tag	UNP O25664
C	30	HIS	-	expression tag	UNP O25664
C	31	HIS	-	expression tag	UNP O25664
C	32	HIS	-	expression tag	UNP O25664
D	26	MET	-	initiating methionine	UNP O25664
D	27	HIS	-	expression tag	UNP O25664
D	28	HIS	-	expression tag	UNP O25664
D	29	HIS	-	expression tag	UNP O25664
D	30	HIS	-	expression tag	UNP O25664
D	31	HIS	-	expression tag	UNP O25664
D	32	HIS	-	expression tag	UNP O25664
E	26	MET	-	initiating methionine	UNP O25664
E	27	HIS	-	expression tag	UNP O25664
E	28	HIS	-	expression tag	UNP O25664
E	29	HIS	-	expression tag	UNP O25664
E	30	HIS	-	expression tag	UNP O25664
E	31	HIS	-	expression tag	UNP O25664
E	32	HIS	-	expression tag	UNP O25664
F	26	MET	-	initiating methionine	UNP O25664
F	27	HIS	-	expression tag	UNP O25664
F	28	HIS	-	expression tag	UNP O25664
F	29	HIS	-	expression tag	UNP O25664
F	30	HIS	-	expression tag	UNP O25664
F	31	HIS	-	expression tag	UNP O25664
F	32	HIS	-	expression tag	UNP O25664

- Molecule 2 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

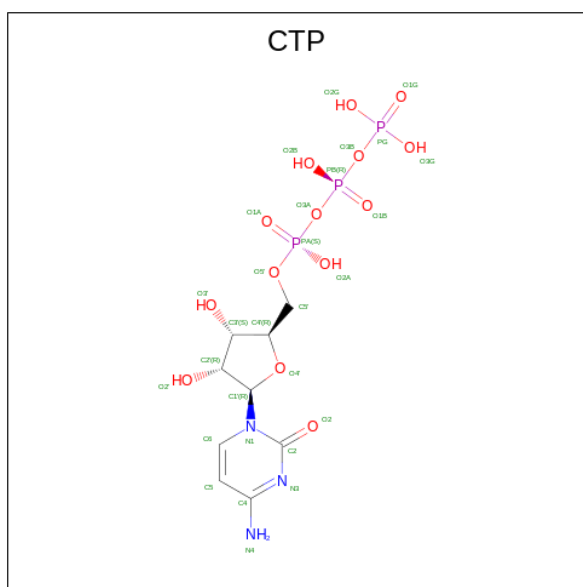
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Cl 1 1	0	0

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



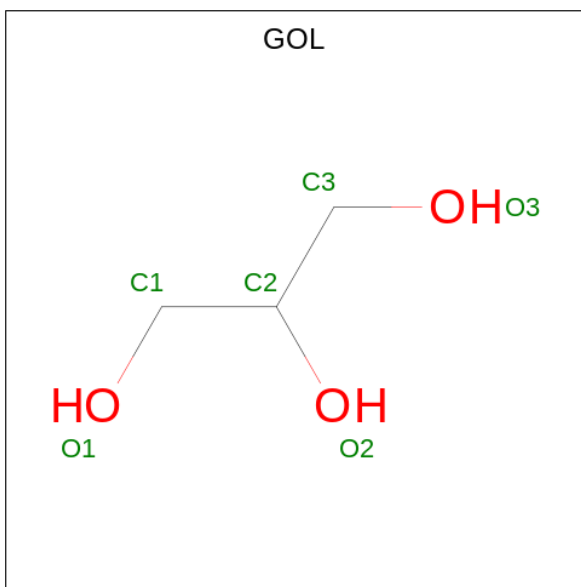
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0
3	B	1	Total C O 4 2 2	0	0
3	D	1	Total C O 4 2 2	0	0
3	E	1	Total C O 4 2 2	0	0

- Molecule 4 is CYTIDINE-5'-TRIPHOSPHATE (three-letter code: CTP) (formula:  $C_9H_{16}N_3O_{14}P_3$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
4	A	1	Total	9	3	14	3	0	0
4	B	1	Total	9	3	14	3	0	0
4	C	1	Total	9	3	14	3	0	0
4	D	1	Total	9	3	14	3	0	0
4	E	1	Total	9	3	14	3	0	0
4	F	1	Total	9	3	14	3	0	0

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



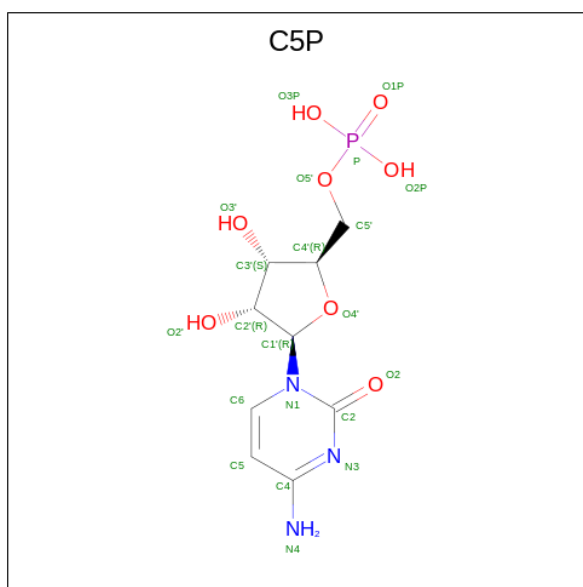
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			6	3	3		
5	C	1	Total	C	O	0	0
			6	3	3		
5	C	1	Total	C	O	0	0
			6	3	3		
5	D	1	Total	C	O	0	0
			6	3	3		
5	F	1	Total	C	O	0	0
			6	3	3		

- Molecule 6 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total	Zn	0	0
			1	1		
6	D	1	Total	Zn	0	0
			1	1		

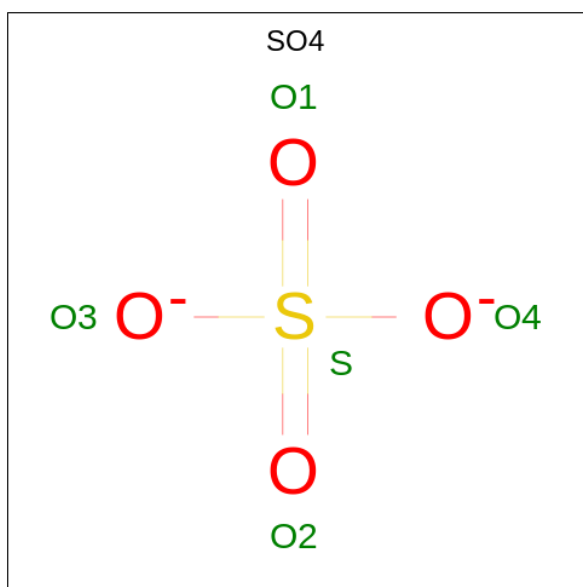
- Molecule 7 is CYTIDINE-5'-MONOPHOSPHATE (three-letter code: C5P) (formula: C<sub>9</sub>H<sub>14</sub>N<sub>3</sub>O<sub>8</sub>P) (labeled as "Ligand of Interest" by depositor).





Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
7	B	1	21	9	3	8	1	0	0
7	D	1	21	9	3	8	1	0	0
7	F	1	21	9	3	8	1	0	0

- Molecule 8 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



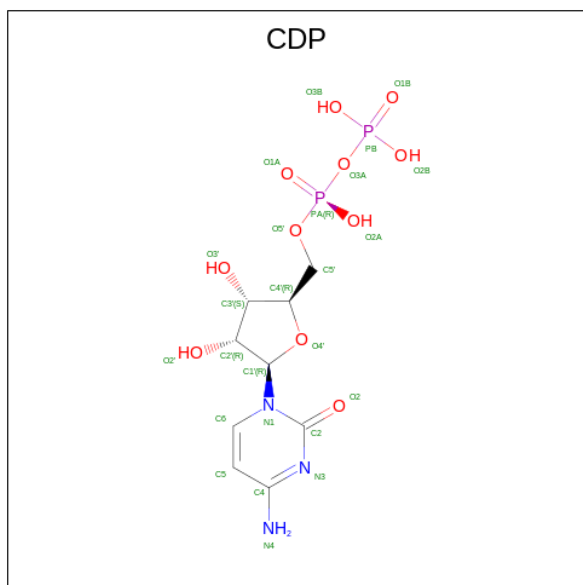
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
8	B	1	5	4	1	0	0

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

- Molecule 9 is CYTIDINE-5'-DIPHOSPHATE (three-letter code: CDP) (formula: C<sub>9</sub>H<sub>15</sub>N<sub>3</sub>O<sub>11</sub>P<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
9	C	1	Total	C	N	O	P	0	0
			25	9	3	11	2		
9	E	1	Total	C	N	O	P	0	0
			25	9	3	11	2		

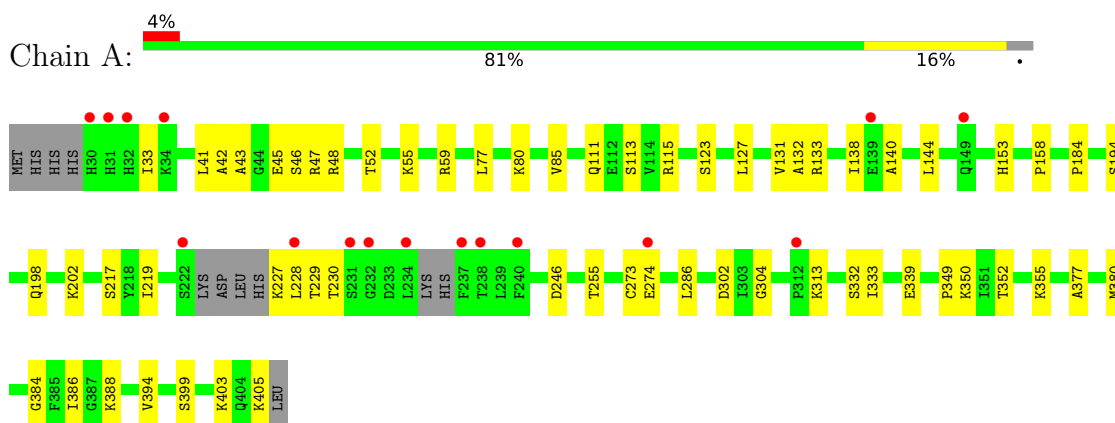
- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	126	Total	O	0	0
			126	126		
10	B	100	Total	O	0	0
			100	100		
10	C	113	Total	O	0	0
			113	113		
10	D	128	Total	O	0	0
			128	128		
10	E	118	Total	O	0	0
			118	118		
10	F	88	Total	O	0	0
			88	88		

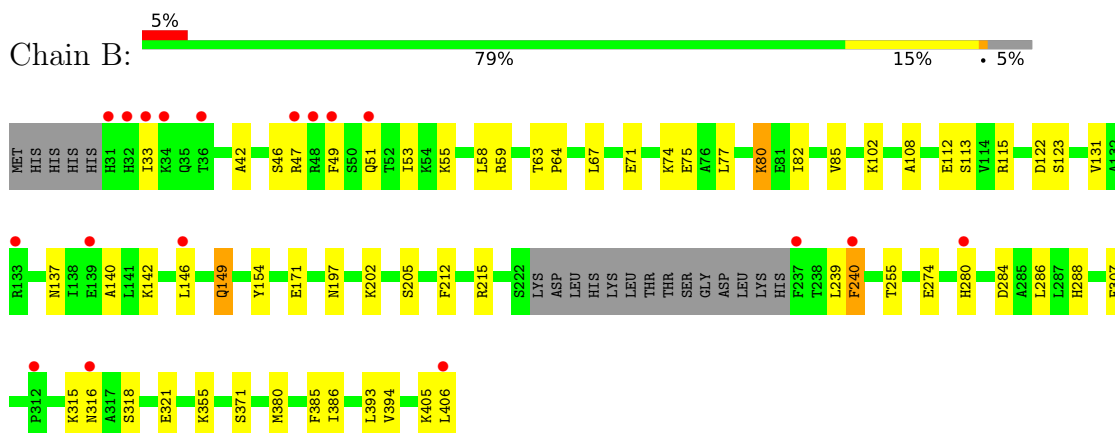
### 3 Residue-property plots [i](#)

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.

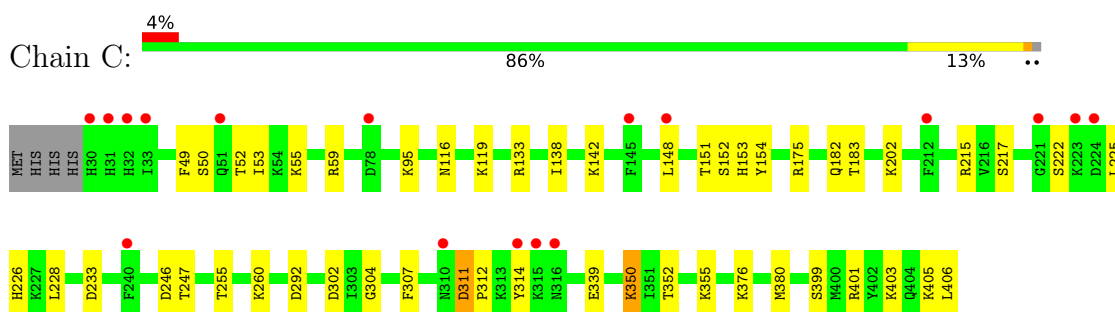
- Molecule 1: Bifunctional enzyme IspD/IspF



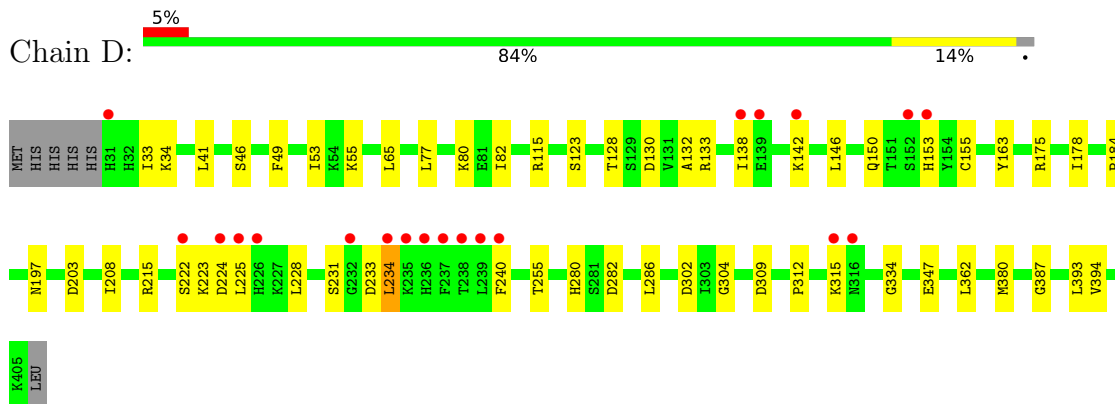
- Molecule 1: Bifunctional enzyme IspD/IspF



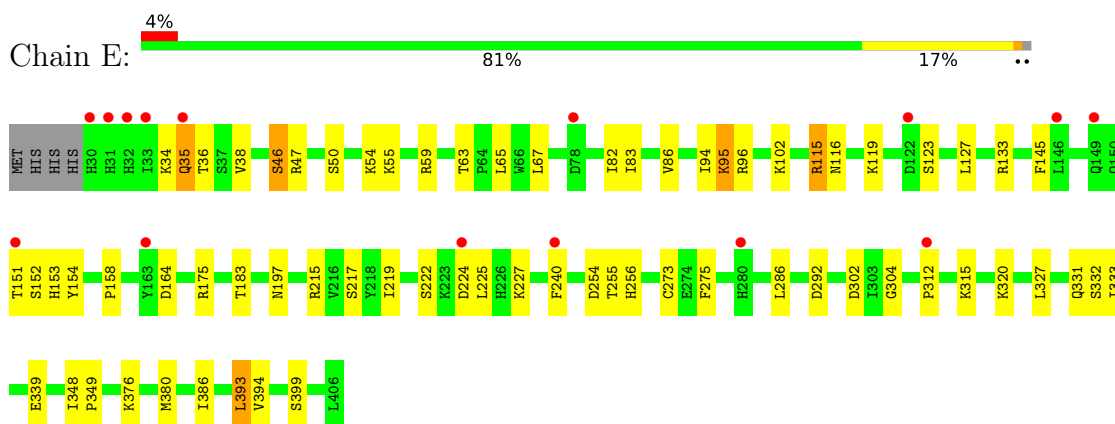
- Molecule 1: Bifunctional enzyme IspD/IspF



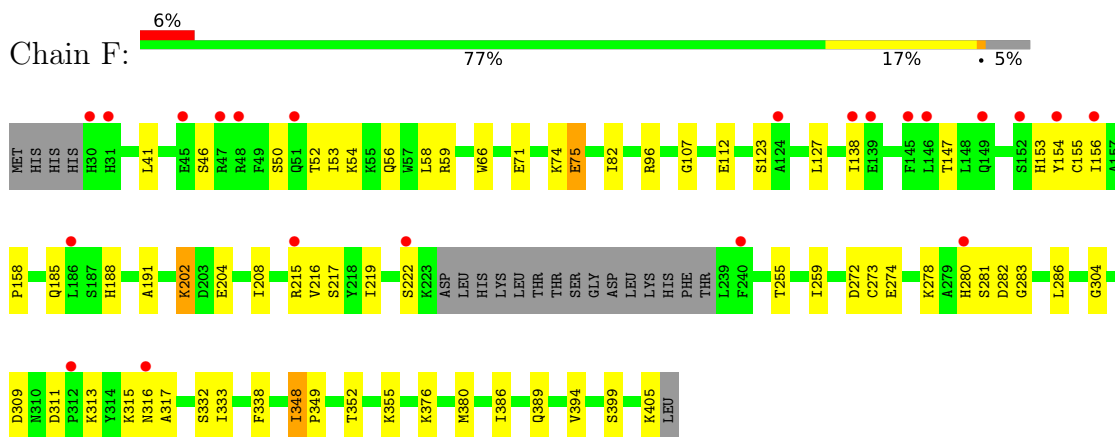
- Molecule 1: Bifunctional enzyme IspD/IspF



- Molecule 1: Bifunctional enzyme IspD/IspF



- Molecule 1: Bifunctional enzyme IspD/IspF



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	146.62Å 146.62Å 256.50Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	47.56 – 2.50 47.56 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.3 (47.56-2.50) 99.3 (47.56-2.50)	Depositor EDS
$R_{merge}$	0.18	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.63 (at 2.51Å)	Xtrriage
Refinement program	PHENIX (1.19.2_4158: ???)	Depositor
R, $R_{free}$	0.192 , 0.227 0.196 , 0.222	Depositor DCC
$R_{free}$ test set	5654 reflections (5.14%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	36.6	Xtrriage
Anisotropy	0.021	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 41.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.016 for -h,-k,l	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	18605	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	39.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.61% 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 [i](#)

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

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, CTP, SO4, C5P, CDP, GOL, EDO, CL

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	0.49	0/2982	0.62	0/4025
1	B	0.48	0/2924	0.62	0/3947
1	C	0.44	0/3049	0.65	0/4116
1	D	0.48	0/3029	0.60	0/4090
1	E	0.41	0/3049	0.62	0/4116
1	F	0.45	0/2916	0.61	0/3936
All	All	0.46	0/17949	0.62	0/24230

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	2922	0	2956	42	0
1	B	2864	0	2900	48	0
1	C	2985	0	3024	39	0
1	D	2966	0	3006	53	0
1	E	2985	0	3024	45	0
1	F	2856	0	2893	45	0
2	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	12	0	17	1	0
3	B	4	0	6	1	0
3	D	4	0	6	2	0
3	E	4	0	6	0	0
4	A	29	0	12	3	0
4	B	29	0	12	2	0
4	C	29	0	12	2	0
4	D	29	0	12	1	0
4	E	29	0	12	2	0
4	F	29	0	12	2	0
5	A	6	0	8	4	0
5	C	12	0	16	4	0
5	D	6	0	8	2	0
5	F	6	0	8	0	0
6	A	1	0	0	0	0
6	D	1	0	0	0	0
7	B	21	0	11	2	0
7	D	21	0	11	2	0
7	F	21	0	11	2	0
8	B	5	0	0	0	0
8	E	5	0	0	0	0
9	C	25	0	10	1	0
9	E	25	0	10	4	0
10	A	126	0	0	1	0
10	B	100	0	0	1	0
10	C	113	0	0	0	0
10	D	128	0	0	0	0
10	E	118	0	0	2	0
10	F	88	0	0	2	0
All	All	18605	0	18003	270	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 8.

All (270) 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)
7:F:502:C5P:C4'	7:F:502:C5P:O4'	1.68	1.17
1:D:312:PRO:CA	1:D:315:LYS:HE3	1.78	1.14
1:D:312:PRO:HA	1:D:315:LYS:HE3	1.14	1.12
1:F:71:GLU:O	1:F:75:GLU:HG3	1.50	1.11

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:B:503:C5P:C4'	7:B:503:C5P:O4'	1.68	1.10
7:D:503:C5P:O4'	7:D:503:C5P:C4'	1.68	1.09
1:D:312:PRO:HA	1:D:315:LYS:CE	1.89	1.02
1:A:384:GLY:O	1:A:388:LYS:HG3	1.65	0.94
1:E:312:PRO:HA	1:E:315:LYS:HG2	1.52	0.91
1:B:307:PHE:O	3:B:501:EDO:H12	1.76	0.86
1:D:115:ARG:HH12	1:D:197:ASN:ND2	1.75	0.83
7:D:503:C5P:H4'	1:F:304:GLY:HA3	1.59	0.83
1:B:280:HIS:NE2	1:B:315:LYS:HE2	1.95	0.82
1:B:280:HIS:CE1	1:B:315:LYS:HE3	2.15	0.81
1:D:312:PRO:CB	1:D:315:LYS:HE3	2.11	0.80
1:C:183:THR:O	1:C:225:LEU:HD11	1.82	0.80
1:D:65:LEU:HD13	1:D:240:PHE:CD2	2.17	0.80
1:E:304:GLY:HA3	7:F:502:C5P:H4'	1.63	0.78
1:F:138:ILE:HD12	1:F:138:ILE:H	1.48	0.78
1:C:133:ARG:HD3	1:C:225:LEU:HD21	1.66	0.75
1:B:46:SER:HB2	1:B:55:LYS:HD3	1.66	0.75
7:B:503:C5P:H4'	1:C:304:GLY:HA3	1.68	0.74
1:A:59:ARG:NH1	1:A:333:ILE:O	2.20	0.74
1:A:246:ASP:HA	5:A:506:GOL:H2	1.67	0.74
1:C:151:THR:HB	1:C:153:HIS:CD2	2.26	0.71
1:A:352:THR:HA	1:A:355:LYS:HD2	1.72	0.71
1:D:65:LEU:HD13	1:D:240:PHE:HD2	1.54	0.70
1:F:280:HIS:NE2	1:F:315:LYS:HB2	2.06	0.70
1:E:54:LYS:HD3	1:E:332:SER:HB2	1.72	0.69
1:D:115:ARG:NH1	1:D:197:ASN:ND2	2.40	0.69
1:B:280:HIS:CE1	1:B:315:LYS:CE	2.75	0.69
1:B:85:VAL:HG11	1:B:113:SER:HB3	1.76	0.68
1:F:59:ARG:NH1	1:F:333:ILE:O	2.22	0.68
1:D:312:PRO:HB3	1:D:315:LYS:HE3	1.75	0.68
1:E:151:THR:O	1:E:153:HIS:N	2.24	0.67
1:D:380:MET:HA	1:F:255:THR:HG21	1.75	0.67
1:B:142:LYS:O	1:B:146:LEU:HG	1.94	0.67
1:B:71:GLU:O	1:B:75:GLU:HG2	1.96	0.65
1:D:138:ILE:HD12	1:D:138:ILE:H	1.61	0.64
1:E:133:ARG:HG3	1:E:227:LYS:HG3	1.78	0.64
1:A:133:ARG:NH1	1:A:227:LYS:HB2	2.12	0.64
1:A:80:LYS:HD3	1:A:123:SER:OG	1.97	0.64
1:F:153:HIS:CD2	1:F:215:ARG:HA	2.32	0.64
1:A:59:ARG:NH2	10:A:602:HOH:O	2.31	0.63
1:B:149:GLN:O	1:B:149:GLN:NE2	2.23	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:307:PHE:HD1	1:C:314:TYR:CZ	2.17	0.62
1:E:255:THR:OG1	1:E:393:LEU:HD12	1.99	0.62
1:B:280:HIS:HD2	1:B:315:LYS:O	1.82	0.62
1:F:153:HIS:ND1	1:F:217:SER:HB3	2.15	0.61
1:D:203:ASP:HB3	5:D:504:GOL:H2	1.80	0.61
1:A:153:HIS:ND1	1:A:217:SER:OG	2.30	0.61
1:B:280:HIS:NE2	1:B:315:LYS:CE	2.63	0.61
1:D:46:SER:HB2	1:D:55:LYS:HD3	1.83	0.61
1:C:154:TYR:CD2	1:C:215:ARG:HD3	2.37	0.60
1:B:280:HIS:HD2	1:B:315:LYS:C	2.05	0.59
1:C:133:ARG:HD2	1:C:183:THR:OG1	2.01	0.59
1:B:212:PHE:HB3	1:B:215:ARG:CG	2.32	0.59
1:C:153:HIS:ND1	1:C:217:SER:OG	2.32	0.59
1:D:231:SER:O	1:D:234:LEU:HB2	2.02	0.59
1:F:188:HIS:HB3	1:F:191:ALA:HB3	1.83	0.59
1:D:80:LYS:HD2	1:D:123:SER:OG	2.03	0.59
1:F:259:ILE:HB	1:F:278:LYS:HB2	1.84	0.59
1:B:405:LYS:NZ	10:B:604:HOH:O	2.36	0.58
1:C:307:PHE:HA	1:C:314:TYR:CD2	2.38	0.58
1:D:312:PRO:HA	1:D:315:LYS:HG3	1.84	0.58
1:B:47:ARG:N	4:B:502:CTP:O1G	2.36	0.58
1:D:175:ARG:HA	1:D:178:ILE:HD12	1.86	0.58
1:A:138:ILE:HD12	1:A:138:ILE:H	1.67	0.58
1:D:55:LYS:HE3	1:D:132:ALA:HB2	1.86	0.58
3:D:501:EDO:H21	9:E:503:CDP:O2B	2.03	0.57
1:E:95:LYS:HE2	10:E:642:HOH:O	2.04	0.57
1:C:352:THR:HA	1:C:355:LYS:HD2	1.86	0.57
1:A:339:GLU:HB3	1:A:399:SER:HB2	1.86	0.57
1:F:352:THR:HA	1:F:355:LYS:HD2	1.86	0.57
1:E:96:ARG:NH2	10:E:607:HOH:O	2.37	0.57
1:B:63:THR:HG23	1:B:67:LEU:HD23	1.87	0.57
1:F:53:ILE:HD13	1:F:58:LEU:HD23	1.87	0.57
1:A:144:LEU:HD23	1:A:219:ILE:HD11	1.87	0.56
1:D:146:LEU:O	1:D:150:GLN:HG3	2.05	0.56
1:D:255:THR:OG1	1:D:393:LEU:HD12	2.05	0.56
1:D:312:PRO:HA	1:D:315:LYS:CD	2.36	0.56
1:E:151:THR:O	1:E:151:THR:OG1	2.24	0.56
1:C:154:TYR:CE2	1:C:215:ARG:HD3	2.40	0.56
1:B:53:ILE:HD13	1:B:58:LEU:HD23	1.88	0.56
1:F:71:GLU:O	1:F:75:GLU:CG	2.40	0.56
1:A:45:GLU:HB3	1:A:47:ARG:HG3	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:302:ASP:HB3	1:C:376:LYS:HB3	1.89	0.55
1:E:339:GLU:HB3	1:E:399:SER:HB2	1.89	0.55
1:B:212:PHE:HB3	1:B:215:ARG:HG2	1.88	0.54
1:C:307:PHE:HD1	1:C:314:TYR:CE1	2.26	0.54
1:F:274:GLU:O	1:F:274:GLU:HG2	2.05	0.54
1:F:280:HIS:CE1	1:F:315:LYS:HB2	2.43	0.54
1:A:46:SER:HB2	1:A:55:LYS:HD3	1.89	0.54
1:B:33:ILE:HD12	1:B:77:LEU:HD13	1.90	0.54
1:D:312:PRO:HA	1:D:315:LYS:CG	2.37	0.54
1:B:59:ARG:HG2	1:B:63:THR:C	2.28	0.54
1:E:65:LEU:HD13	1:E:240:PHE:CD2	2.43	0.54
1:E:380:MET:HG3	1:E:386:ILE:HB	1.90	0.54
1:B:46:SER:N	4:B:502:CTP:O1B	2.38	0.54
1:C:154:TYR:CE2	1:C:215:ARG:CD	2.91	0.54
1:A:85:VAL:HG11	1:A:113:SER:HB3	1.89	0.53
1:F:46:SER:HA	4:F:501:CTP:O3B	2.08	0.53
1:A:33:ILE:HD13	1:A:77:LEU:HD13	1.90	0.53
1:D:115:ARG:HH12	1:D:197:ASN:HD21	1.51	0.53
1:A:313:LYS:O	1:A:313:LYS:HG2	2.09	0.52
1:D:65:LEU:CD1	1:D:240:PHE:CD2	2.90	0.52
1:E:38:VAL:HB	1:E:82:ILE:HD13	1.91	0.52
1:A:377:ALA:HB1	3:A:502:EDO:H21	1.92	0.52
1:F:281:SER:HB2	1:F:317:ALA:O	2.10	0.52
1:D:53:ILE:HD12	1:D:334:GLY:HA2	1.92	0.52
1:B:280:HIS:HE2	1:B:315:LYS:HE2	1.73	0.52
1:F:380:MET:HG3	1:F:386:ILE:HB	1.91	0.52
1:F:281:SER:HA	1:F:316:ASN:HA	1.91	0.52
1:B:371:SER:O	5:C:504:GOL:H2	2.10	0.51
1:E:158:PRO:HA	1:E:219:ILE:O	2.10	0.51
1:E:286:LEU:HA	1:E:394:VAL:HG11	1.92	0.51
1:F:56:GLN:HB2	1:F:66:TRP:HB3	1.91	0.51
1:A:230:THR:OG1	1:D:223:LYS:HE3	2.10	0.51
5:A:506:GOL:H32	5:C:503:GOL:H12	1.92	0.51
1:C:182:GLN:HB3	1:C:225:LEU:HD22	1.92	0.51
1:D:138:ILE:O	1:D:142:LYS:HD2	2.11	0.51
1:B:80:LYS:HD2	1:B:123:SER:OG	2.11	0.50
1:E:227:LYS:HD2	4:E:502:CTP:O1A	2.11	0.50
1:A:158:PRO:HA	1:A:219:ILE:O	2.10	0.50
1:E:164:ASP:O	1:E:175:ARG:HD2	2.12	0.50
1:E:34:LYS:HD2	1:E:34:LYS:O	2.12	0.49
1:C:339:GLU:HB3	1:C:399:SER:HB2	1.92	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:501:CTP:H5'2	4:C:501:CTP:H6	1.77	0.49
1:E:47:ARG:HG2	1:E:47:ARG:HH11	1.77	0.49
1:B:59:ARG:HG2	1:B:64:PRO:N	2.27	0.49
5:A:506:GOL:H32	5:C:503:GOL:C1	2.43	0.49
1:E:65:LEU:HD13	1:E:240:PHE:CE2	2.48	0.49
1:B:355:LYS:NZ	1:C:302:ASP:OD2	2.43	0.49
1:E:312:PRO:HA	1:E:315:LYS:CG	2.33	0.49
1:F:280:HIS:CE1	1:F:315:LYS:HA	2.48	0.49
1:E:275:PHE:CZ	1:E:348:ILE:HD12	2.47	0.49
1:F:348:ILE:HG12	1:F:389:GLN:OE1	2.13	0.49
1:E:133:ARG:HD2	1:E:183:THR:OG1	2.13	0.48
1:F:155:CYS:HB2	1:F:208:ILE:HD12	1.94	0.48
1:D:49:PHE:HE1	1:D:228:LEU:HD11	1.78	0.48
1:F:74:LYS:HA	1:F:82:ILE:HD11	1.94	0.48
1:C:49:PHE:CZ	1:C:406:LEU:HD21	2.49	0.48
1:C:116:ASN:HA	1:C:119:LYS:HE3	1.95	0.48
1:A:350:LYS:HA	1:A:350:LYS:HD3	1.66	0.48
1:B:284:ASP:O	1:B:288:HIS:ND1	2.46	0.48
1:C:148:LEU:O	1:C:152:SER:HA	2.13	0.48
1:F:138:ILE:H	1:F:138:ILE:CD1	2.21	0.48
1:D:153:HIS:HB3	1:D:215:ARG:O	2.14	0.48
1:F:107:GLY:HA3	1:F:112:GLU:HB2	1.96	0.47
1:B:46:SER:HB2	1:B:55:LYS:CD	2.39	0.47
1:E:302:ASP:HB3	1:F:376:LYS:HB3	1.95	0.47
1:C:350:LYS:HA	1:C:350:LYS:HD3	1.56	0.47
1:A:229:THR:HG21	1:D:163:TYR:CD2	2.49	0.47
1:B:115:ARG:NH1	1:B:197:ASN:OD1	2.48	0.47
1:D:55:LYS:HB2	1:D:228:LEU:HD23	1.97	0.47
1:E:153:HIS:ND1	1:E:217:SER:OG	2.28	0.47
1:F:54:LYS:HD3	1:F:332:SER:HB2	1.96	0.47
1:A:52:THR:O	1:A:332:SER:HA	2.15	0.46
5:A:506:GOL:O2	1:C:401:ARG:NH1	2.37	0.46
1:A:255:THR:HG21	1:C:380:MET:HA	1.96	0.46
1:C:55:LYS:HB2	1:C:228:LEU:HD23	1.97	0.46
1:F:96:ARG:HD2	10:F:627:HOH:O	2.14	0.46
1:A:286:LEU:HA	1:A:394:VAL:HG11	1.97	0.46
1:C:175:ARG:NH1	1:F:202:LYS:HB3	2.30	0.46
1:D:222:SER:OG	1:D:224:ASP:OD2	2.31	0.46
1:E:35:GLN:O	1:E:123:SER:HB3	2.15	0.46
1:E:116:ASN:HA	1:E:119:LYS:HE2	1.96	0.46
1:F:185:GLN:OE1	1:F:204:GLU:HB2	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:247:THR:HG1	5:C:503:GOL:HO1	1.64	0.46
1:C:307:PHE:CD1	1:C:314:TYR:CE1	3.04	0.46
3:D:501:EDO:C2	9:E:503:CDP:O2B	2.63	0.46
1:C:202:LYS:HE3	10:F:681:HOH:O	2.15	0.46
1:E:83:ILE:HD13	1:E:102:LYS:HG2	1.96	0.46
1:A:140:ALA:O	1:A:144:LEU:HG	2.16	0.45
1:B:380:MET:HE3	1:C:255:THR:HG21	1.96	0.45
1:A:111:GLN:O	1:A:115:ARG:HG3	2.16	0.45
1:D:80:LYS:CD	1:D:123:SER:OG	2.64	0.45
1:C:260:LYS:HB2	1:C:260:LYS:HE3	1.56	0.45
1:A:42:ALA:HB2	1:A:131:VAL:HG21	1.98	0.45
1:B:280:HIS:CD2	1:B:315:LYS:O	2.68	0.45
1:B:286:LEU:HA	1:B:394:VAL:HG11	1.98	0.45
1:B:212:PHE:HB3	1:B:215:ARG:HG3	1.97	0.45
1:D:155:CYS:HB2	1:D:208:ILE:HD12	1.99	0.45
1:D:286:LEU:HD21	1:D:362:LEU:HD11	1.99	0.45
1:A:273:CYS:SG	1:A:349:PRO:HG3	2.57	0.44
1:D:286:LEU:HA	1:D:394:VAL:HG11	1.99	0.44
1:E:115:ARG:CZ	1:E:197:ASN:OD1	2.66	0.44
1:F:311:ASP:OD1	1:F:313:LYS:HB3	2.18	0.44
1:F:273:CYS:SG	1:F:349:PRO:HD3	2.57	0.44
1:F:147:THR:HG22	1:F:156:ILE:HD12	1.99	0.44
1:B:42:ALA:HB2	1:B:131:VAL:HG21	1.99	0.44
1:C:154:TYR:CD2	1:C:215:ARG:CD	3.00	0.44
1:A:55:LYS:HG2	1:A:228:LEU:HG	2.00	0.44
1:B:46:SER:O	1:B:46:SER:OG	2.33	0.44
1:D:33:ILE:HG21	1:D:77:LEU:HB3	2.00	0.44
1:D:280:HIS:CE1	1:D:309:ASP:O	2.71	0.44
1:E:38:VAL:HG22	1:E:127:LEU:HD23	1.98	0.44
1:E:327:LEU:O	1:E:331:GLN:HG3	2.18	0.44
1:F:74:LYS:HA	1:F:82:ILE:CD1	2.48	0.43
1:C:148:LEU:O	1:C:152:SER:N	2.51	0.43
1:E:63:THR:HG23	1:E:67:LEU:HD23	2.00	0.43
1:A:138:ILE:HD12	1:A:138:ILE:N	2.34	0.43
1:B:108:ALA:H	1:B:112:GLU:CD	2.22	0.43
1:F:158:PRO:HA	1:F:219:ILE:O	2.18	0.43
1:E:227:LYS:HB3	1:E:227:LYS:HE2	1.56	0.43
1:B:240:PHE:HD1	1:B:240:PHE:HA	1.71	0.43
1:F:127:LEU:HA	1:F:185:GLN:O	2.19	0.43
4:C:501:CTP:H5'2	4:C:501:CTP:C6	2.54	0.43
1:E:254:ASP:OD2	1:E:256:HIS:NE2	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:273:CYS:SG	1:E:349:PRO:HG3	2.59	0.42
1:F:154:TYR:H	1:F:215:ARG:HB3	1.84	0.42
1:D:228:LEU:HD12	1:D:233:ASP:HB2	2.01	0.42
1:E:59:ARG:NH1	1:E:333:ILE:O	2.35	0.42
1:A:41:LEU:HB3	4:A:505:CTP:H1'	2.02	0.42
1:A:48:ARG:NH1	4:A:505:CTP:O1G	2.48	0.42
1:B:202:LYS:HA	1:B:202:LYS:HD2	1.94	0.42
1:A:274:GLU:O	1:A:274:GLU:HG2	2.20	0.42
1:A:304:GLY:HA3	9:C:502:CDP:H4'	2.01	0.42
1:B:318:SER:OG	1:B:321:GLU:HG3	2.20	0.42
1:C:50:SER:HB2	1:C:406:LEU:HD23	2.01	0.42
1:C:52:THR:OG1	1:C:53:ILE:N	2.52	0.42
1:C:95:LYS:HB2	1:C:95:LYS:HE2	1.73	0.42
1:C:311:ASP:HA	1:C:312:PRO:HD3	1.95	0.42
1:D:304:GLY:N	9:E:503:CDP:O3'	2.50	0.42
1:C:138:ILE:HG22	1:C:142:LYS:HD2	2.02	0.42
1:D:41:LEU:HB3	4:D:502:CTP:H1'	2.02	0.42
1:F:280:HIS:CE1	1:F:315:LYS:CA	3.03	0.42
1:D:302:ASP:HB3	1:E:376:LYS:HB3	2.02	0.42
1:F:286:LEU:HA	1:F:394:VAL:HG11	2.01	0.42
1:B:46:SER:HB2	1:B:55:LYS:CE	2.50	0.42
1:D:203:ASP:CB	5:D:504:GOL:H2	2.50	0.42
1:D:138:ILE:HD12	1:D:138:ILE:N	2.32	0.41
1:C:226:HIS:HE1	1:C:233:ASP:OD1	2.03	0.41
1:D:130:ASP:OD2	1:D:133:ARG:NH1	2.53	0.41
1:D:304:GLY:HA3	9:E:503:CDP:O3'	2.19	0.41
1:B:49:PHE:CE2	1:B:406:LEU:HD11	2.56	0.41
1:B:255:THR:OG1	1:B:393:LEU:HD12	2.20	0.41
1:A:380:MET:HG3	1:A:386:ILE:HB	2.02	0.41
1:B:74:LYS:HA	1:B:82:ILE:CD1	2.50	0.41
1:E:46:SER:HA	4:E:502:CTP:O3B	2.21	0.41
1:E:86:VAL:HG11	1:E:94:ILE:HD12	2.03	0.41
1:A:127:LEU:HD11	1:A:184:PRO:HB2	2.02	0.41
1:A:202:LYS:HD3	1:D:175:ARG:CZ	2.51	0.41
1:D:128:THR:O	1:D:184:PRO:HA	2.20	0.41
1:D:312:PRO:HB3	1:D:315:LYS:CE	2.49	0.41
1:A:43:ALA:HB3	4:A:505:CTP:N3	2.36	0.41
1:D:280:HIS:HE1	1:D:309:ASP:O	2.02	0.41
1:F:348:ILE:HD11	1:F:389:GLN:HB3	2.03	0.41
1:A:55:LYS:HE3	1:A:132:ALA:HB2	2.02	0.41
1:B:74:LYS:HA	1:B:82:ILE:HD13	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:347:GLU:CG	1:D:387:GLY:HA2	2.51	0.41
1:F:281:SER:O	1:F:283:GLY:N	2.53	0.41
1:A:403:LYS:HG2	1:A:405:LYS:HG3	2.03	0.41
1:E:154:TYR:H	1:E:215:ARG:HB3	1.86	0.41
1:F:56:GLN:OE1	1:F:56:GLN:N	2.26	0.41
1:A:194:SER:O	1:A:198:GLN:HG3	2.21	0.41
1:B:154:TYR:HE2	1:B:212:PHE:CE2	2.39	0.41
1:B:385:PHE:CE1	1:B:386:ILE:HG13	2.56	0.41
1:C:403:LYS:HG2	1:C:405:LYS:O	2.20	0.41
1:E:46:SER:OG	1:E:55:LYS:HG2	2.20	0.41
1:E:83:ILE:HD13	1:E:102:LYS:CG	2.51	0.41
1:D:138:ILE:H	1:D:138:ILE:CD1	2.29	0.41
1:E:36:THR:HG1	1:E:145:PHE:HZ	1.65	0.41
1:E:222:SER:C	1:E:224:ASP:H	2.23	0.41
1:B:137:ASN:HB3	1:B:140:ALA:HB3	2.02	0.40
1:D:133:ARG:HD3	1:D:225:LEU:O	2.21	0.40
1:F:338:PHE:CZ	1:F:399:SER:HB3	2.55	0.40
1:E:133:ARG:HD3	1:E:225:LEU:O	2.21	0.40
1:F:41:LEU:HB3	4:F:501:CTP:H1'	2.02	0.40
1:B:280:HIS:CD2	1:B:315:LYS:HG2	2.57	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	364/381 (96%)	359 (99%)	5 (1%)	0	100	100
1	B	358/381 (94%)	351 (98%)	7 (2%)	0	100	100
1	C	375/381 (98%)	360 (96%)	15 (4%)	0	100	100
1	D	373/381 (98%)	365 (98%)	7 (2%)	1 (0%)	41	61

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	375/381 (98%)	367 (98%)	7 (2%)	1 (0%)	41	61
1	F	357/381 (94%)	351 (98%)	5 (1%)	1 (0%)	41	61
All	All	2202/2286 (96%)	2153 (98%)	46 (2%)	3 (0%)	51	73

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	152	SER
1	F	282	ASP
1	D	282	ASP

### 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	318/329 (97%)	318 (100%)	0	100	100
1	B	311/329 (94%)	300 (96%)	11 (4%)	36	62
1	C	325/329 (99%)	319 (98%)	6 (2%)	59	81
1	D	323/329 (98%)	320 (99%)	3 (1%)	78	92
1	E	325/329 (99%)	317 (98%)	8 (2%)	47	73
1	F	310/329 (94%)	299 (96%)	11 (4%)	36	62
All	All	1912/1974 (97%)	1873 (98%)	39 (2%)	55	79

All (39) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	51	GLN
1	B	80	LYS
1	B	102	LYS
1	B	122	ASP
1	B	149	GLN
1	B	171	GLU
1	B	205	SER

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Mol	Chain	Res	Type
1	B	239	LEU
1	B	240	PHE
1	B	274	GLU
1	B	316	ASN
1	C	59	ARG
1	C	222	SER
1	C	246	ASP
1	C	292	ASP
1	C	311	ASP
1	C	350	LYS
1	D	34	LYS
1	D	82	ILE
1	D	234	LEU
1	E	35	GLN
1	E	46	SER
1	E	50	SER
1	E	95	LYS
1	E	115	ARG
1	E	292	ASP
1	E	320	LYS
1	E	393	LEU
1	F	50	SER
1	F	52	THR
1	F	75	GLU
1	F	123	SER
1	F	202	LYS
1	F	216	VAL
1	F	222	SER
1	F	272	ASP
1	F	309	ASP
1	F	348	ILE
1	F	405	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	170	ASN
1	A	182	GLN
1	A	256	HIS
1	B	193	GLN
1	B	280	HIS
1	C	226	HIS

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Mol	Chain	Res	Type
1	C	316	ASN
1	D	193	GLN
1	D	197	ASN
1	D	226	HIS
1	D	280	HIS
1	E	35	GLN
1	E	150	GLN
1	E	331	GLN
1	F	31	HIS

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 27 ligands modelled in this entry, 3 are monoatomic - leaving 24 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
3	EDO	A	502	-	3,3,3	0.73	0	2,2,2	0.30	0
8	SO4	E	504	-	4,4,4	0.14	0	6,6,6	0.25	0
5	GOL	C	504	-	5,5,5	0.43	0	5,5,5	0.47	0
8	SO4	B	504	-	4,4,4	0.15	0	6,6,6	0.23	0
5	GOL	A	506	-	5,5,5	0.68	0	5,5,5	0.58	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	CTP	F	501	-	26,30,30	3.82	15 (57%)	39,47,47	1.05	2 (5%)
3	EDO	A	503	-	3,3,3	0.47	0	2,2,2	0.49	0
5	GOL	F	503	-	5,5,5	0.46	0	5,5,5	0.41	0
4	CTP	B	502	-	26,30,30	3.78	15 (57%)	39,47,47	0.93	2 (5%)
3	EDO	A	504	-	3,3,3	0.77	0	2,2,2	0.51	0
5	GOL	D	504	-	5,5,5	0.48	0	5,5,5	0.29	0
7	C5P	D	503	-	22,22,22	4.32	14 (63%)	33,33,33	0.95	1 (3%)
5	GOL	C	503	-	5,5,5	0.43	0	5,5,5	0.31	0
4	CTP	C	501	-	26,30,30	3.82	15 (57%)	39,47,47	1.23	4 (10%)
9	CDP	E	503	-	24,26,26	3.97	13 (54%)	37,40,40	1.79	11 (29%)
3	EDO	E	501	-	3,3,3	0.60	0	2,2,2	0.72	0
7	C5P	B	503	-	22,22,22	4.31	14 (63%)	33,33,33	0.80	0
3	EDO	B	501	-	3,3,3	0.61	0	2,2,2	0.17	0
4	CTP	A	505	-	26,30,30	3.79	15 (57%)	39,47,47	0.96	2 (5%)
3	EDO	D	501	-	3,3,3	0.68	0	2,2,2	0.34	0
4	CTP	E	502	-	26,30,30	3.75	15 (57%)	39,47,47	1.05	3 (7%)
7	C5P	F	502	-	22,22,22	4.36	14 (63%)	33,33,33	0.96	0
4	CTP	D	502	-	26,30,30	3.79	15 (57%)	39,47,47	1.04	2 (5%)
9	CDP	C	502	6	24,26,26	4.14	13 (54%)	37,40,40	1.62	8 (21%)

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	-	-	1/1/1/1	-
5	GOL	C	504	-	-	2/4/4/4	-
5	GOL	A	506	-	-	2/4/4/4	-
4	CTP	F	501	-	-	4/22/38/38	0/2/2/2
3	EDO	A	503	-	-	1/1/1/1	-
5	GOL	F	503	-	-	0/4/4/4	-
4	CTP	B	502	-	-	1/22/38/38	0/2/2/2
3	EDO	A	504	-	-	1/1/1/1	-
5	GOL	D	504	-	-	4/4/4/4	-
7	C5P	D	503	-	-	3/10/26/26	0/2/2/2
5	GOL	C	503	-	-	3/4/4/4	-
4	CTP	C	501	-	-	2/22/38/38	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	CDP	E	503	-	-	3/16/32/32	0/2/2/2
3	EDO	E	501	-	-	1/1/1/1	-
7	C5P	B	503	-	-	1/10/26/26	0/2/2/2
3	EDO	B	501	-	-	1/1/1/1	-
4	CTP	A	505	-	-	6/22/38/38	0/2/2/2
3	EDO	D	501	-	-	1/1/1/1	-
4	CTP	E	502	-	-	6/22/38/38	0/2/2/2
7	C5P	F	502	-	-	1/10/26/26	0/2/2/2
4	CTP	D	502	-	-	4/22/38/38	0/2/2/2
9	CDP	C	502	6	-	2/16/32/32	0/2/2/2

All (158) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	C	502	CDP	C2'-C3'	-11.52	1.21	1.53
9	E	503	CDP	C2'-C3'	-10.45	1.24	1.53
7	F	502	C5P	O4'-C4'	10.39	1.68	1.45
7	D	503	C5P	O4'-C4'	10.38	1.68	1.45
7	B	503	C5P	O4'-C4'	10.34	1.68	1.45
4	C	501	CTP	C3'-C2'	-9.67	1.26	1.53
4	E	502	CTP	C3'-C2'	-9.51	1.27	1.53
4	B	502	CTP	C3'-C2'	-9.51	1.27	1.53
4	D	502	CTP	C3'-C2'	-9.49	1.27	1.53
4	A	505	CTP	C3'-C2'	-9.38	1.27	1.53
4	F	501	CTP	C3'-C2'	-9.34	1.27	1.53
7	F	502	C5P	C3'-C4'	-9.22	1.29	1.53
7	D	503	C5P	C3'-C4'	-9.13	1.29	1.53
7	B	503	C5P	C3'-C4'	-9.11	1.29	1.53
9	C	502	CDP	O4'-C4'	-9.04	1.24	1.45
9	E	503	CDP	O4'-C4'	-8.28	1.26	1.45
4	E	502	CTP	C6-C5	6.36	1.49	1.35
4	B	502	CTP	C6-C5	6.31	1.49	1.35
4	D	502	CTP	C6-C5	6.31	1.49	1.35
4	C	501	CTP	C6-C5	6.31	1.49	1.35
4	A	505	CTP	C2-N3	6.26	1.49	1.36
4	F	501	CTP	C6-C5	6.23	1.49	1.35
4	D	502	CTP	C2-N3	6.18	1.48	1.36
4	F	501	CTP	C2-N3	6.16	1.48	1.36
7	F	502	C5P	C2-N3	6.15	1.48	1.36
9	E	503	CDP	C1'-N1	-6.12	1.29	1.47
7	D	503	C5P	C6-C5	6.10	1.49	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	F	502	C5P	C6-C5	6.10	1.49	1.35
4	A	505	CTP	C6-C5	6.06	1.49	1.35
7	B	503	C5P	C6-C5	6.04	1.49	1.35
7	B	503	C5P	C2-N3	6.02	1.48	1.36
4	C	501	CTP	C2-N3	6.00	1.48	1.36
4	E	502	CTP	C2-N3	5.89	1.48	1.36
4	B	502	CTP	C2-N3	5.89	1.48	1.36
7	D	503	C5P	C2-N3	5.83	1.48	1.36
9	C	502	CDP	C1'-N1	-5.82	1.30	1.47
9	C	502	CDP	O2-C2	-5.58	1.13	1.23
4	F	501	CTP	O4'-C1'	-5.33	1.29	1.42
4	D	502	CTP	O4'-C1'	-5.23	1.29	1.42
4	F	501	CTP	C4-N3	5.22	1.45	1.34
4	C	501	CTP	C4-N4	5.22	1.46	1.33
7	F	502	C5P	C4-N3	5.18	1.44	1.34
4	B	502	CTP	O4'-C1'	-5.17	1.29	1.42
4	A	505	CTP	O4'-C1'	-5.16	1.29	1.42
4	A	505	CTP	C4-N3	5.16	1.44	1.34
4	E	502	CTP	O4'-C1'	-5.16	1.29	1.42
4	C	501	CTP	C4-N3	5.14	1.44	1.34
7	D	503	C5P	C4-N4	5.08	1.45	1.33
7	F	502	C5P	C4-N4	5.05	1.45	1.33
4	F	501	CTP	C4-N4	5.01	1.45	1.33
7	B	503	C5P	C4-N4	4.99	1.45	1.33
9	E	503	CDP	O2-C2	-4.99	1.14	1.23
4	B	502	CTP	C4-N4	4.96	1.45	1.33
4	D	502	CTP	C4-N3	4.96	1.44	1.34
4	B	502	CTP	C4-N3	4.96	1.44	1.34
9	E	503	CDP	C3'-C4'	4.93	1.65	1.53
7	B	503	C5P	C4-N3	4.92	1.44	1.34
7	D	503	C5P	C4-N3	4.89	1.44	1.34
4	C	501	CTP	O4'-C1'	-4.87	1.30	1.42
4	A	505	CTP	C4-N4	4.85	1.45	1.33
4	C	501	CTP	C2'-C1'	4.79	1.68	1.53
4	D	502	CTP	C4-N4	4.77	1.45	1.33
4	E	502	CTP	C4-N4	4.75	1.45	1.33
7	D	503	C5P	O4'-C1'	-4.72	1.30	1.42
4	E	502	CTP	C4-N3	4.69	1.44	1.34
4	A	505	CTP	C2'-C1'	4.67	1.68	1.53
4	D	502	CTP	O4'-C4'	4.66	1.55	1.45
4	F	501	CTP	C2'-C1'	4.66	1.68	1.53
4	D	502	CTP	C2'-C1'	4.66	1.68	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	501	CTP	O4'-C4'	4.58	1.55	1.45
4	C	501	CTP	C5'-C4'	-4.53	1.37	1.51
7	B	503	C5P	O4'-C1'	-4.52	1.31	1.42
4	B	502	CTP	C2'-C1'	4.52	1.68	1.53
4	F	501	CTP	O4'-C4'	4.49	1.55	1.45
7	D	503	C5P	C2-N1	4.48	1.49	1.40
4	D	502	CTP	C2-N1	4.45	1.49	1.40
7	F	502	C5P	O4'-C1'	-4.44	1.31	1.42
4	A	505	CTP	C5'-C4'	-4.42	1.37	1.51
4	E	502	CTP	C5'-C4'	-4.42	1.37	1.51
9	E	503	CDP	C2-N3	4.42	1.45	1.36
4	F	501	CTP	C2-N1	4.42	1.49	1.40
4	B	502	CTP	O4'-C4'	4.42	1.54	1.45
4	E	502	CTP	C2'-C1'	4.42	1.67	1.53
4	E	502	CTP	C2-N1	4.40	1.49	1.40
4	A	505	CTP	O4'-C4'	4.39	1.54	1.45
4	A	505	CTP	C2-N1	4.39	1.49	1.40
4	F	501	CTP	C5'-C4'	-4.33	1.38	1.51
9	C	502	CDP	C6-C5	4.31	1.45	1.35
9	C	502	CDP	C3'-C4'	4.28	1.63	1.53
7	B	503	C5P	C2-N1	4.28	1.49	1.40
4	E	502	CTP	O4'-C4'	4.26	1.54	1.45
4	B	502	CTP	C5'-C4'	-4.23	1.38	1.51
7	F	502	C5P	C2-N1	4.23	1.49	1.40
4	D	502	CTP	C5'-C4'	-4.19	1.38	1.51
9	C	502	CDP	C2-N3	4.15	1.44	1.36
9	E	503	CDP	C2-N1	4.08	1.48	1.40
9	C	502	CDP	C4-N4	4.08	1.43	1.33
7	F	502	C5P	O2'-C2'	-4.06	1.33	1.43
4	B	502	CTP	C2-N1	4.06	1.48	1.40
7	B	503	C5P	O2'-C2'	-4.02	1.33	1.43
4	C	501	CTP	C2-N1	3.95	1.48	1.40
9	C	502	CDP	C4-N3	3.91	1.42	1.34
7	D	503	C5P	O2'-C2'	-3.85	1.33	1.43
9	E	503	CDP	O4'-C1'	3.78	1.51	1.42
9	C	502	CDP	O4'-C1'	3.56	1.50	1.42
4	E	502	CTP	C6-N1	3.48	1.46	1.38
4	C	501	CTP	C6-N1	3.44	1.46	1.38
9	E	503	CDP	C6-C5	3.41	1.43	1.35
4	F	501	CTP	O3'-C3'	3.33	1.50	1.43
4	B	502	CTP	C6-N1	3.32	1.46	1.38
4	B	502	CTP	O3'-C3'	3.31	1.50	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	505	CTP	C6-N1	3.31	1.46	1.38
9	E	503	CDP	C4-N4	3.28	1.41	1.33
7	F	502	C5P	C6-N1	3.26	1.45	1.38
4	A	505	CTP	O3'-C3'	3.24	1.50	1.43
4	F	501	CTP	C6-N1	3.23	1.45	1.38
9	E	503	CDP	C4-N3	3.19	1.41	1.34
4	D	502	CTP	C6-N1	3.16	1.45	1.38
4	D	502	CTP	O3'-C3'	3.16	1.50	1.43
9	C	502	CDP	C2-N1	3.13	1.46	1.40
7	B	503	C5P	O3'-C3'	3.12	1.50	1.43
4	C	501	CTP	O3'-C3'	3.10	1.50	1.43
7	F	502	C5P	O3'-C3'	3.07	1.50	1.43
7	D	503	C5P	C6-N1	3.07	1.45	1.38
4	E	502	CTP	O3'-C3'	3.03	1.50	1.43
7	B	503	C5P	C6-N1	2.97	1.45	1.38
7	D	503	C5P	O3'-C3'	2.91	1.49	1.43
4	C	501	CTP	C5-C4	2.75	1.49	1.42
4	E	502	CTP	C5-C4	2.74	1.49	1.42
4	B	502	CTP	C5-C4	2.72	1.49	1.42
4	F	501	CTP	C5-C4	2.72	1.49	1.42
4	B	502	CTP	C3'-C4'	2.72	1.59	1.53
4	F	501	CTP	O2-C2	-2.67	1.18	1.23
4	D	502	CTP	C5-C4	2.66	1.49	1.42
9	E	503	CDP	PA-O2A	-2.65	1.42	1.55
4	F	501	CTP	C3'-C4'	2.64	1.59	1.53
7	F	502	C5P	O2-C2	-2.63	1.18	1.23
7	B	503	C5P	C5-C4	2.60	1.48	1.42
4	A	505	CTP	C3'-C4'	2.59	1.59	1.53
4	E	502	CTP	O2-C2	-2.56	1.19	1.23
7	D	503	C5P	C5-C4	2.55	1.48	1.42
4	A	505	CTP	C5-C4	2.53	1.48	1.42
4	C	501	CTP	C3'-C4'	2.52	1.59	1.53
4	D	502	CTP	O2-C2	-2.52	1.19	1.23
4	B	502	CTP	O2-C2	-2.51	1.19	1.23
4	D	502	CTP	C3'-C4'	2.48	1.59	1.53
4	E	502	CTP	C3'-C4'	2.43	1.59	1.53
7	F	502	C5P	C5-C4	2.41	1.48	1.42
7	D	503	C5P	O2-C2	-2.41	1.19	1.23
7	B	503	C5P	O2-C2	-2.34	1.19	1.23
4	C	501	CTP	O2-C2	-2.30	1.19	1.23
7	F	502	C5P	C2'-C3'	2.25	1.59	1.53
9	C	502	CDP	PA-O2A	-2.23	1.44	1.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	D	503	C5P	C2'-C3'	2.12	1.59	1.53
4	A	505	CTP	O2-C2	-2.08	1.19	1.23
9	C	502	CDP	PB-O3B	-2.03	1.47	1.54
9	E	503	CDP	O3'-C3'	2.03	1.47	1.43
7	B	503	C5P	C2'-C3'	2.03	1.58	1.53

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	E	503	CDP	O2-C2-N3	-3.91	115.97	122.33
4	C	501	CTP	PB-O3B-PG	-3.57	120.58	132.83
4	C	501	CTP	O4'-C1'-N1	3.51	116.38	108.36
9	C	502	CDP	C5-C6-N1	-3.24	116.39	121.81
4	F	501	CTP	C3'-C2'-C1'	3.22	107.54	101.43
9	C	502	CDP	C6-C5-C4	3.18	122.64	117.50
9	E	503	CDP	C2'-C1'-N1	-3.00	104.71	113.22
9	C	502	CDP	C2'-C3'-C4'	2.97	108.42	102.64
9	C	502	CDP	N4-C4-N3	2.83	122.93	117.97
9	E	503	CDP	O3'-C3'-C2'	2.77	120.78	111.82
9	C	502	CDP	C5-C4-N4	-2.76	116.22	120.57
9	E	503	CDP	C5-C4-N4	-2.74	116.25	120.57
9	E	503	CDP	C6-C5-C4	2.70	121.87	117.50
4	B	502	CTP	PB-O3B-PG	-2.57	124.02	132.83
4	A	505	CTP	C4'-O4'-C1'	-2.54	103.86	109.47
9	E	503	CDP	N4-C4-N3	2.50	122.35	117.97
9	C	502	CDP	C4-N3-C2	-2.48	116.25	120.25
4	D	502	CTP	C3'-C2'-C1'	2.43	106.05	101.43
4	C	501	CTP	C3'-C2'-C1'	2.38	105.95	101.43
4	D	502	CTP	PB-O3B-PG	-2.32	124.85	132.83
9	E	503	CDP	C2'-C3'-C4'	2.27	107.05	102.64
4	A	505	CTP	PB-O3B-PG	-2.26	125.06	132.83
4	E	502	CTP	C3'-C2'-C1'	2.25	105.70	101.43
9	E	503	CDP	C3'-C2'-C1'	2.22	105.64	101.43
4	E	502	CTP	O2-C2-N3	-2.21	118.74	122.33
9	C	502	CDP	O2-C2-N3	-2.20	118.75	122.33
4	C	501	CTP	C2'-C1'-N1	-2.17	107.06	113.22
9	E	503	CDP	O4'-C4'-C5'	2.14	116.42	109.37
4	B	502	CTP	C3'-C2'-C1'	2.13	105.47	101.43
7	D	503	C5P	O2-C2-N3	-2.12	118.88	122.33
9	C	502	CDP	N1-C2-N3	2.12	122.67	118.81
9	E	503	CDP	PA-O3A-PB	-2.11	125.58	132.83
9	E	503	CDP	C5-C6-N1	-2.11	118.28	121.81

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	E	502	CTP	PB-O3B-PG	-2.09	125.65	132.83
4	F	501	CTP	PB-O3B-PG	-2.06	125.77	132.83

There are no chirality outliers.

All (50) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	E	502	CTP	C5'-O5'-PA-O1A
4	F	501	CTP	C5'-O5'-PA-O1A
4	F	501	CTP	C5'-O5'-PA-O2A
4	F	501	CTP	PB-O3A-PA-O5'
5	A	506	GOL	C1-C2-C3-O3
5	A	506	GOL	O2-C2-C3-O3
7	D	503	C5P	C5'-O5'-P-O1P
7	D	503	C5P	C5'-O5'-P-O2P
9	C	502	CDP	C5'-O5'-PA-O3A
9	C	502	CDP	C5'-O5'-PA-O1A
9	E	503	CDP	C5'-O5'-PA-O3A
4	B	502	CTP	O4'-C4'-C5'-O5'
3	A	502	EDO	O1-C1-C2-O2
5	C	503	GOL	O1-C1-C2-C3
5	C	503	GOL	C1-C2-C3-O3
5	C	504	GOL	C1-C2-C3-O3
5	D	504	GOL	O1-C1-C2-C3
5	D	504	GOL	C1-C2-C3-O3
5	D	504	GOL	O2-C2-C3-O3
4	D	502	CTP	O4'-C4'-C5'-O5'
3	B	501	EDO	O1-C1-C2-O2
3	D	501	EDO	O1-C1-C2-O2
3	E	501	EDO	O1-C1-C2-O2
4	A	505	CTP	O4'-C4'-C5'-O5'
3	A	503	EDO	O1-C1-C2-O2
3	A	504	EDO	O1-C1-C2-O2
7	B	503	C5P	C5'-O5'-P-O2P
7	D	503	C5P	C5'-O5'-P-O3P
4	E	502	CTP	C5'-O5'-PA-O3A
5	C	503	GOL	O2-C2-C3-O3
5	D	504	GOL	O1-C1-C2-O2
4	E	502	CTP	PG-O3B-PB-O2B
4	A	505	CTP	C5'-O5'-PA-O2A
4	D	502	CTP	C5'-O5'-PA-O1A
4	E	502	CTP	C5'-O5'-PA-O2A

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Mol	Chain	Res	Type	Atoms
9	E	503	CDP	C5'-O5'-PA-O2A
4	D	502	CTP	C3'-C4'-C5'-O5'
4	A	505	CTP	PB-O3A-PA-O2A
5	C	504	GOL	O2-C2-C3-O3
4	E	502	CTP	PA-O3A-PB-O1B
9	E	503	CDP	C4'-C5'-O5'-PA
4	A	505	CTP	C3'-C4'-C5'-O5'
7	F	502	C5P	O4'-C4'-C5'-O5'
4	C	501	CTP	O4'-C4'-C5'-O5'
4	A	505	CTP	C5'-O5'-PA-O3A
4	F	501	CTP	C5'-O5'-PA-O3A
4	A	505	CTP	PB-O3A-PA-O1A
4	D	502	CTP	PB-O3A-PA-O2A
4	E	502	CTP	PA-O3A-PB-O2B
4	C	501	CTP	C5'-O5'-PA-O1A

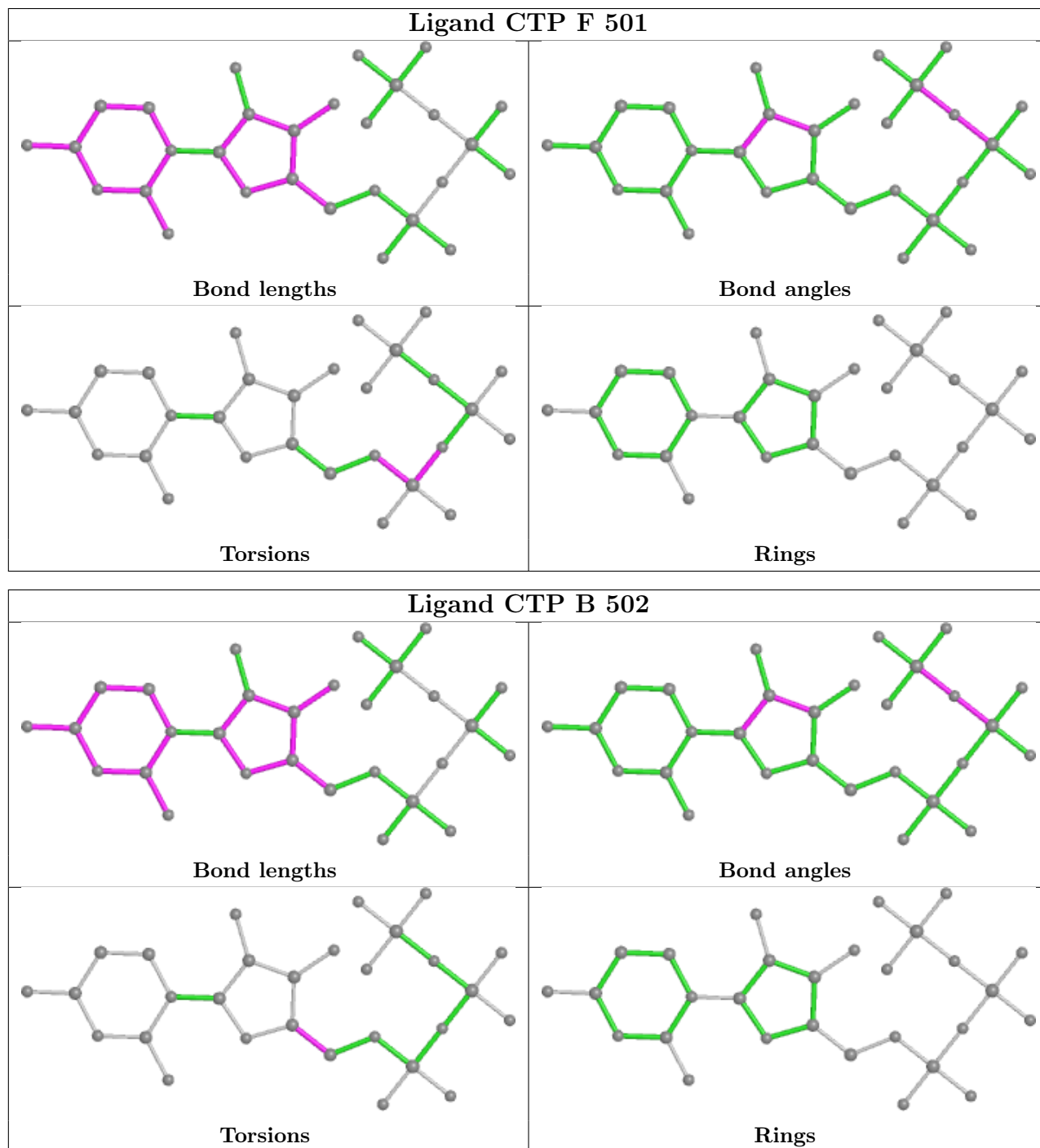
There are no ring outliers.

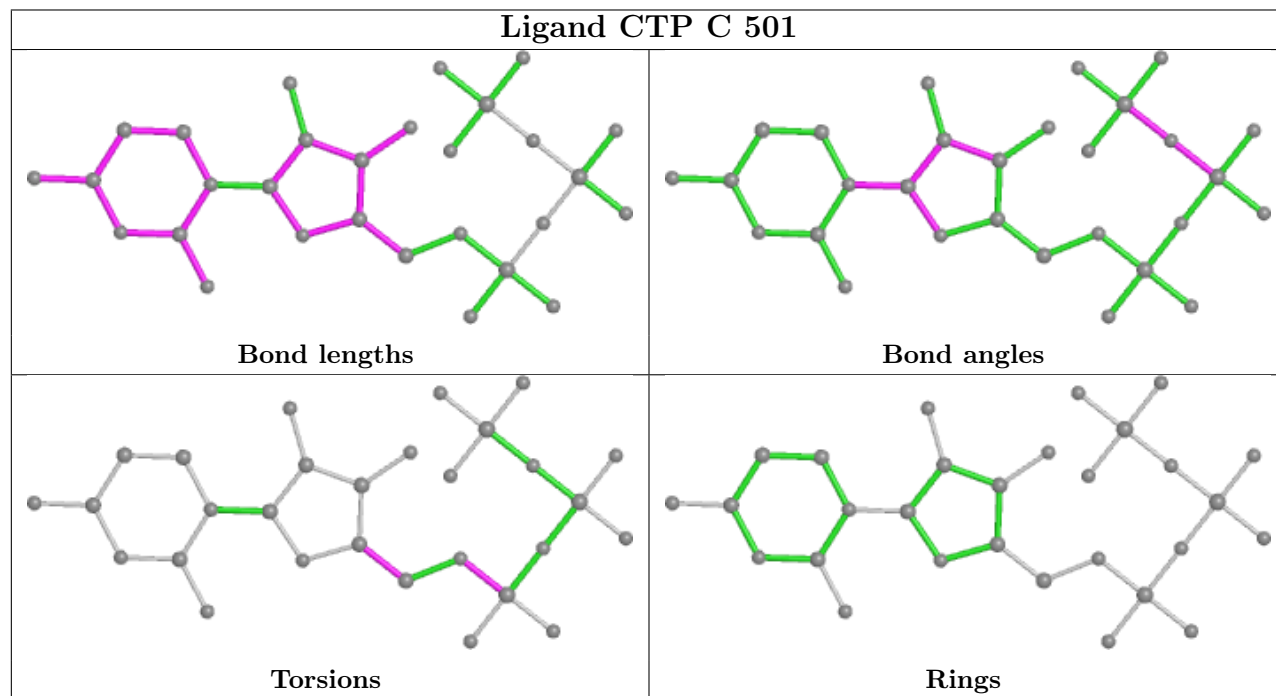
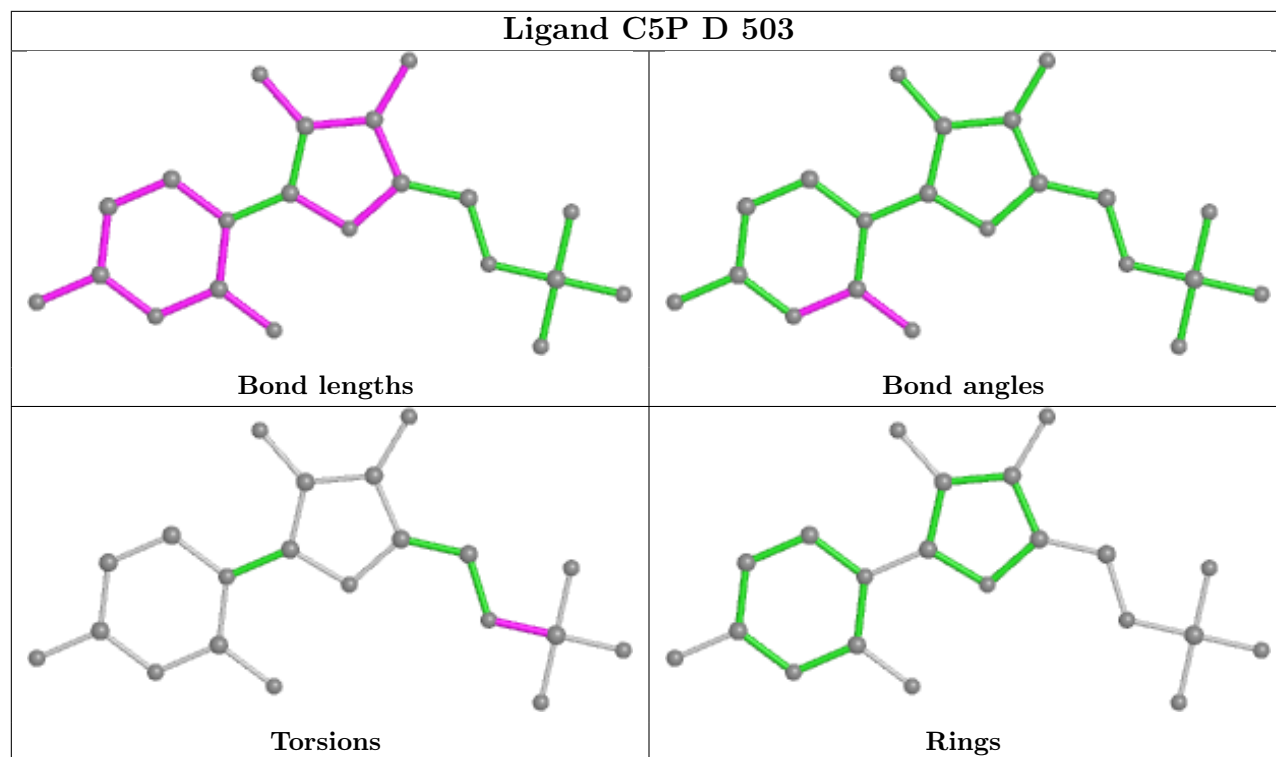
18 monomers are involved in 33 short contacts:

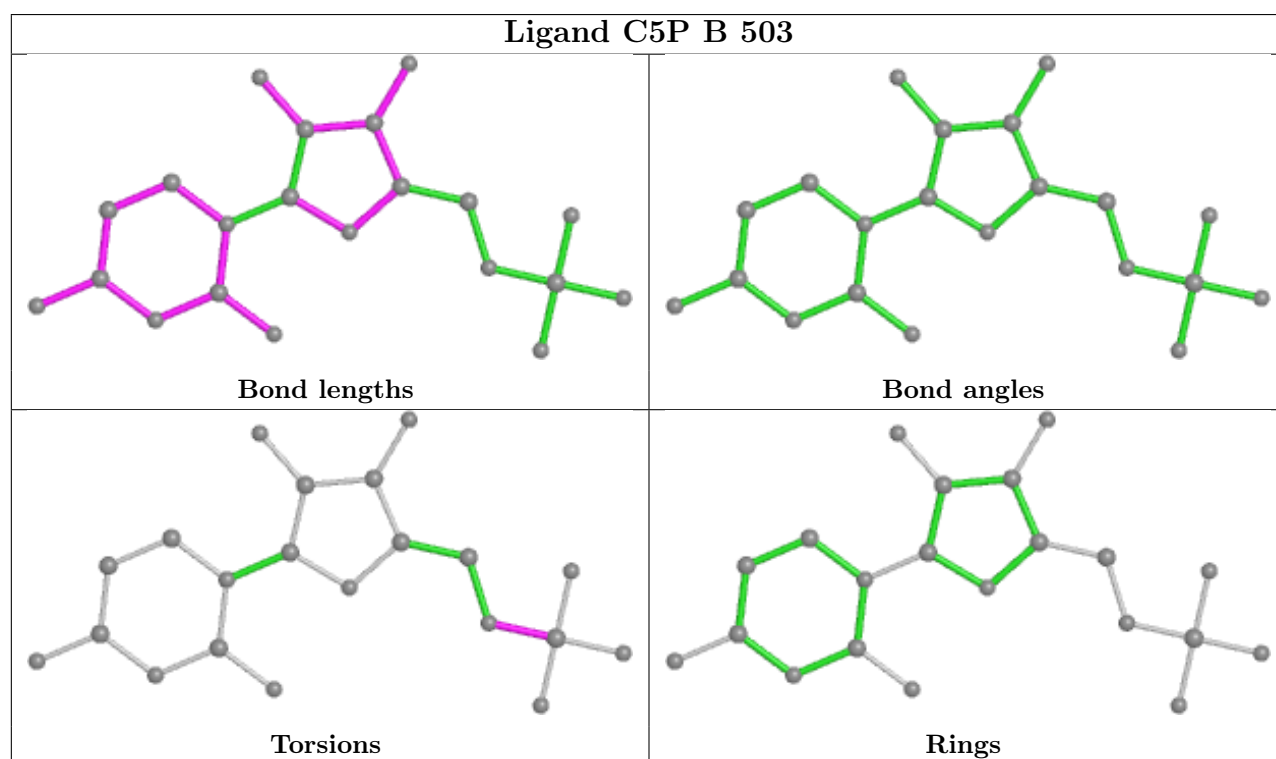
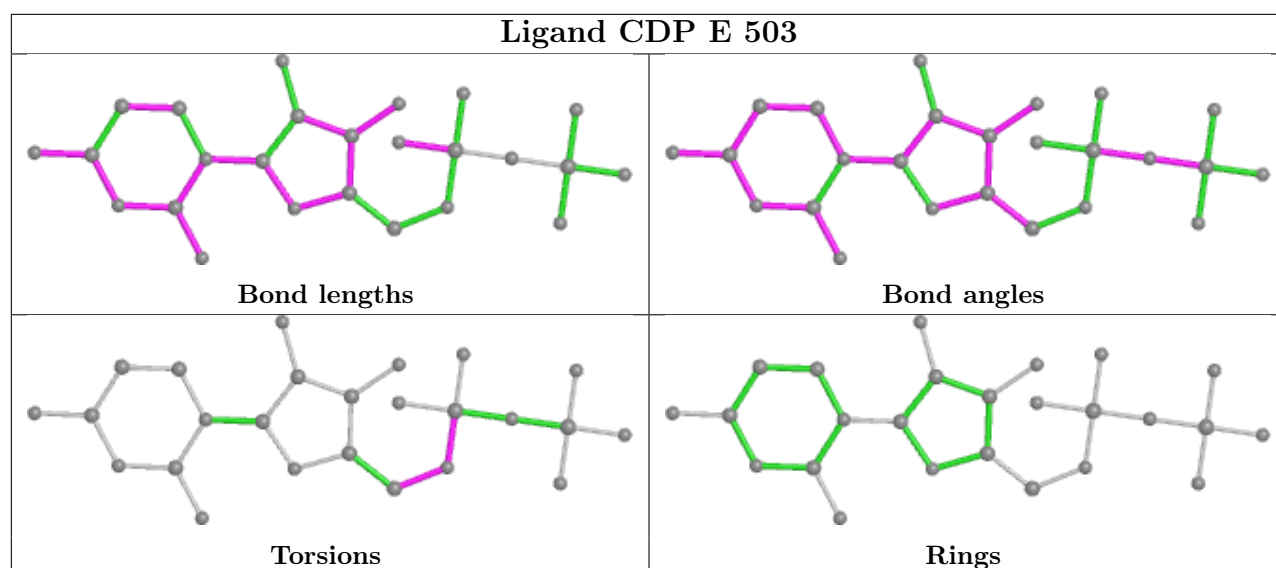
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	502	EDO	1	0
5	C	504	GOL	1	0
5	A	506	GOL	4	0
4	F	501	CTP	2	0
4	B	502	CTP	2	0
5	D	504	GOL	2	0
7	D	503	C5P	2	0
5	C	503	GOL	3	0
4	C	501	CTP	2	0
9	E	503	CDP	4	0
7	B	503	C5P	2	0
3	B	501	EDO	1	0
4	A	505	CTP	3	0
3	D	501	EDO	2	0
4	E	502	CTP	2	0
7	F	502	C5P	2	0
4	D	502	CTP	1	0
9	C	502	CDP	1	0

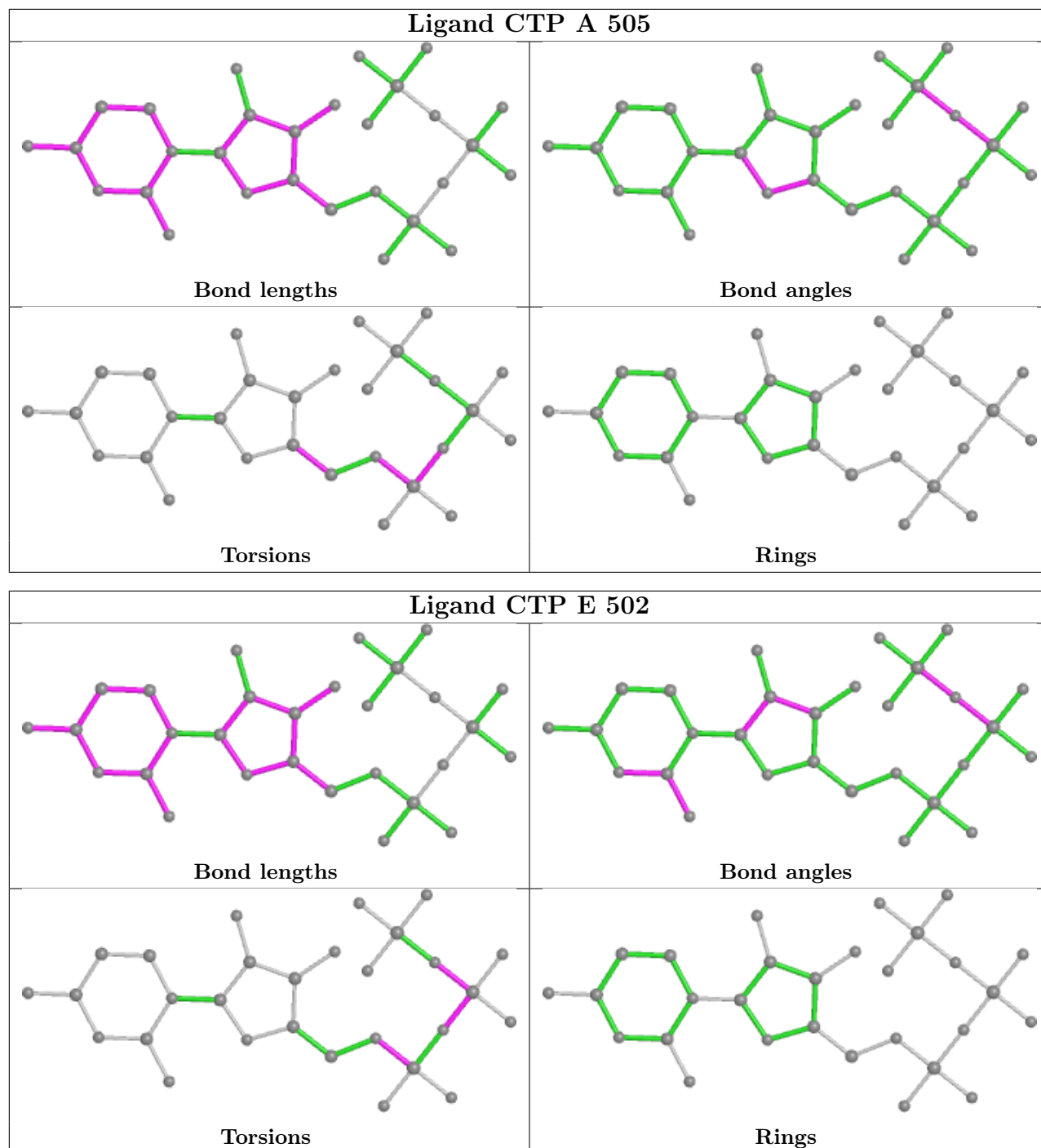
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

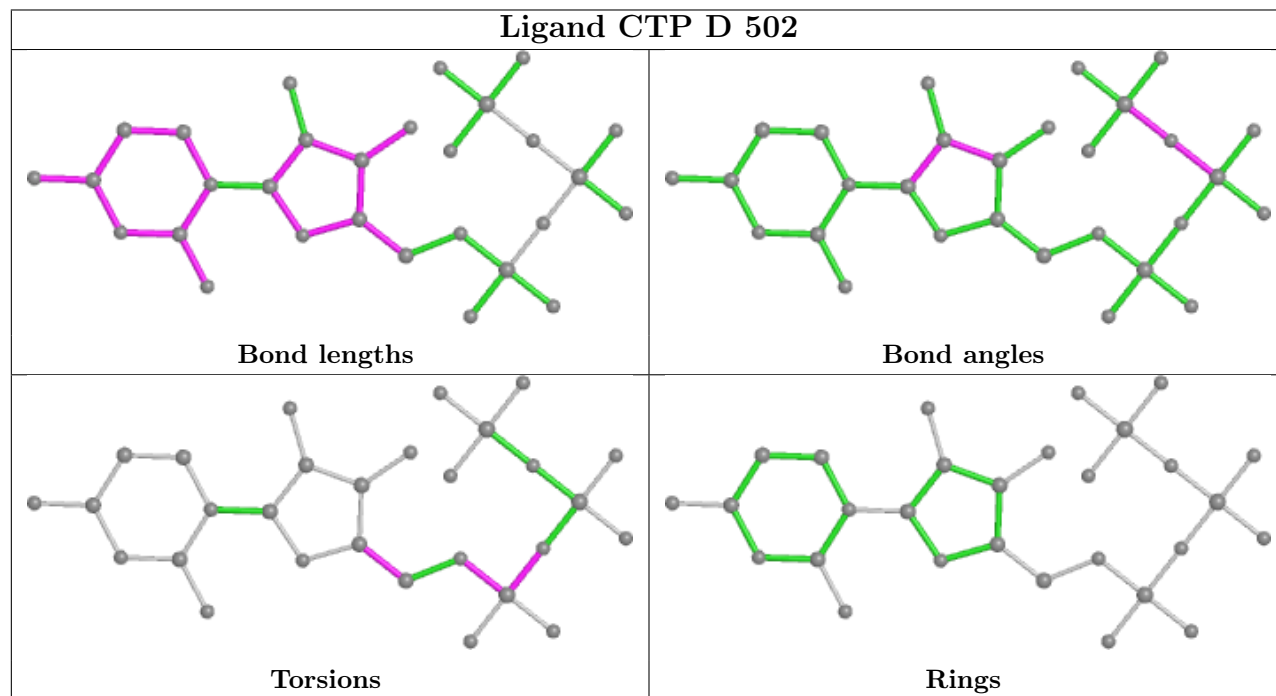
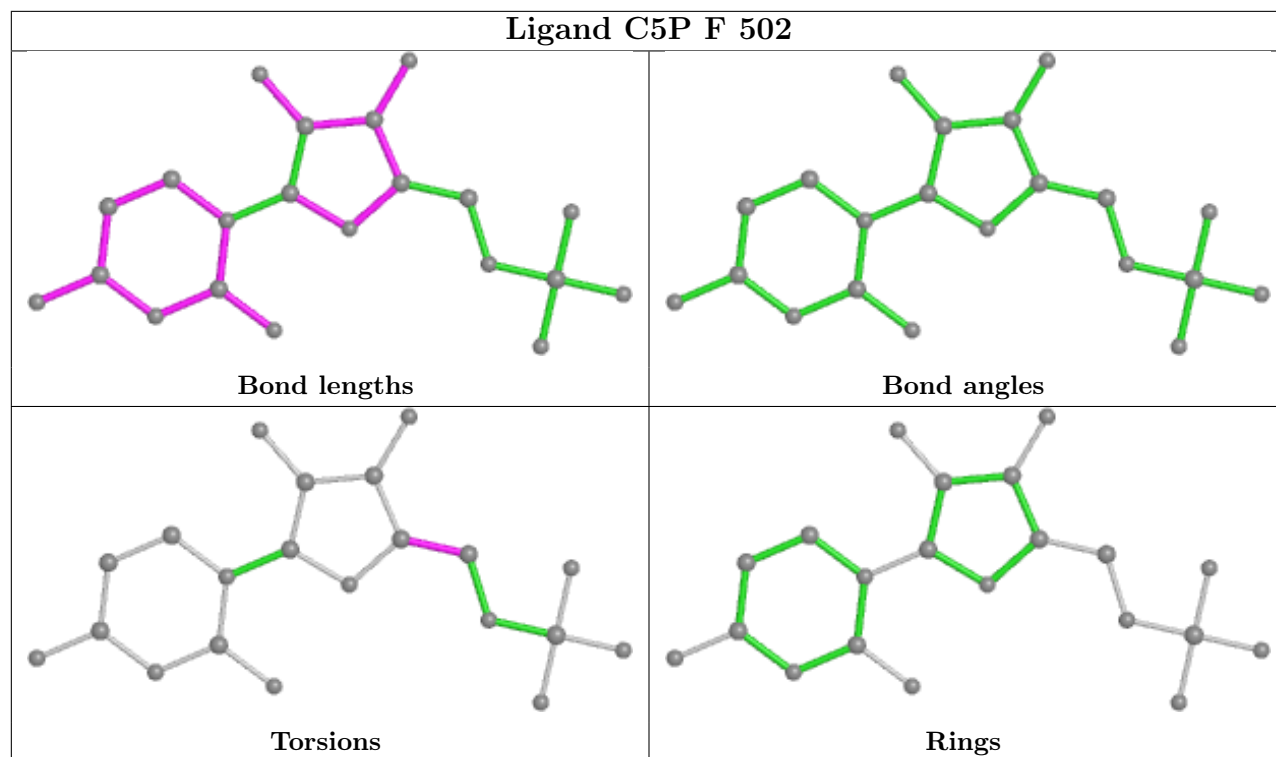
also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted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

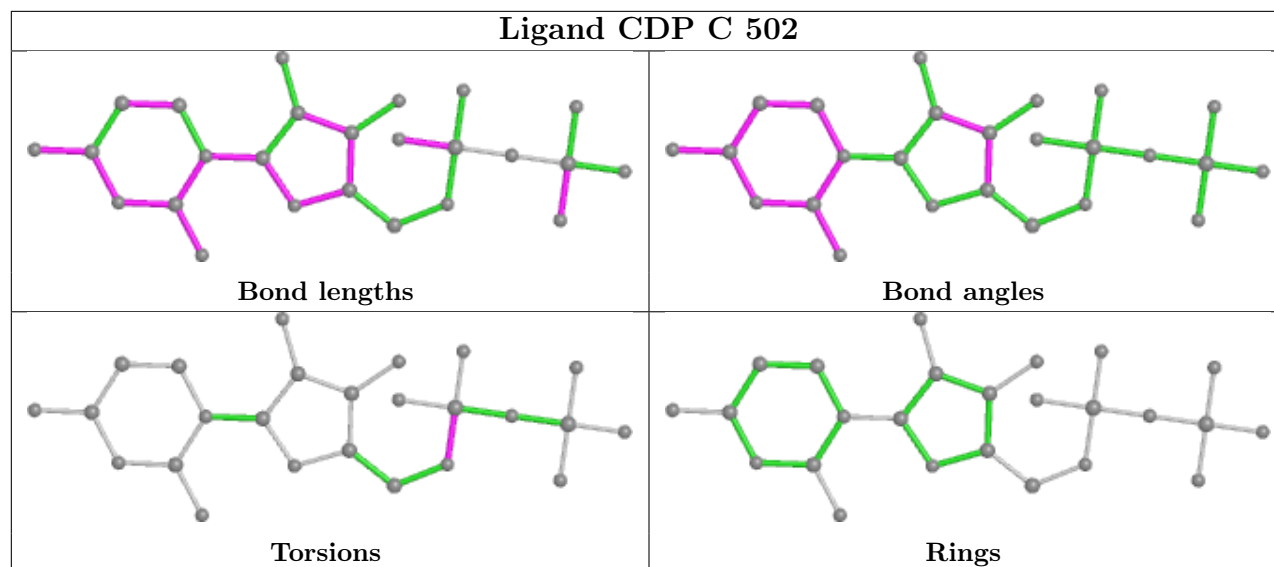












## 5.7 Other polymers [\(i\)](#)

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	370/381 (97%)	0.05	16 (4%) 35 38	20, 33, 61, 76	0
1	B	362/381 (95%)	0.13	18 (4%) 28 30	21, 39, 68, 87	0
1	C	377/381 (98%)	0.09	17 (4%) 33 36	21, 36, 68, 79	0
1	D	375/381 (98%)	0.12	20 (5%) 26 28	21, 35, 64, 79	0
1	E	377/381 (98%)	0.04	15 (3%) 38 41	22, 38, 64, 76	0
1	F	361/381 (94%)	0.28	22 (6%) 21 22	24, 43, 68, 87	0
All	All	2222/2286 (97%)	0.12	108 (4%) 29 31	20, 37, 66, 87	0

All (108) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	280	HIS	4.8
1	D	236	HIS	4.8
1	E	30	HIS	4.6
1	F	31	HIS	4.6
1	F	312	PRO	4.5
1	B	146	LEU	4.5
1	F	45	GLU	4.5
1	D	224	ASP	4.4
1	B	406	LEU	4.4
1	D	225	LEU	4.4
1	D	240	PHE	4.4
1	D	316	ASN	4.3
1	F	240	PHE	4.2
1	A	237	PHE	4.0
1	B	240	PHE	3.9
1	A	240	PHE	3.8
1	C	316	ASN	3.8
1	B	280	HIS	3.6
1	C	240	PHE	3.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	F	138	ILE	3.6
1	F	124	ALA	3.6
1	A	232	GLY	3.6
1	E	224	ASP	3.5
1	D	232	GLY	3.5
1	C	30	HIS	3.5
1	D	226	HIS	3.5
1	E	312	PRO	3.5
1	F	215	ARG	3.4
1	E	31	HIS	3.3
1	E	151	THR	3.3
1	D	234	LEU	3.3
1	D	235	LYS	3.3
1	F	280	HIS	3.3
1	C	310	ASN	3.2
1	D	138	ILE	3.2
1	B	51	GLN	3.2
1	F	51	GLN	3.2
1	C	224	ASP	3.2
1	A	274	GLU	3.2
1	F	30	HIS	3.1
1	F	48	ARG	3.1
1	B	49	PHE	3.1
1	D	237	PHE	3.1
1	C	31	HIS	3.1
1	D	222	SER	3.1
1	F	47	ARG	3.0
1	B	139	GLU	3.0
1	C	148	LEU	3.0
1	D	152	SER	3.0
1	C	32	HIS	3.0
1	D	239	LEU	3.0
1	D	142	LYS	2.9
1	E	35	GLN	2.9
1	B	48	ARG	2.9
1	A	234	LEU	2.8
1	D	315	LYS	2.8
1	A	149	GLN	2.8
1	B	34	LYS	2.8
1	F	316	ASN	2.8
1	B	31	HIS	2.8
1	C	51	GLN	2.7

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	F	146	LEU	2.7
1	F	139	GLU	2.7
1	B	312	PRO	2.7
1	C	315	LYS	2.7
1	B	32	HIS	2.7
1	C	78	ASP	2.7
1	B	316	ASN	2.7
1	A	231	SER	2.6
1	A	228	LEU	2.6
1	B	47	ARG	2.6
1	C	314	TYR	2.6
1	A	30	HIS	2.5
1	C	221	GLY	2.5
1	E	33	ILE	2.5
1	E	78	ASP	2.5
1	E	149	GLN	2.5
1	D	31	HIS	2.5
1	B	36	THR	2.5
1	C	223	LYS	2.5
1	F	149	GLN	2.5
1	E	240	PHE	2.4
1	F	186	LEU	2.4
1	F	145	PHE	2.4
1	F	222	SER	2.4
1	B	237	PHE	2.3
1	F	154	TYR	2.3
1	A	34	LYS	2.3
1	E	163	TYR	2.3
1	D	139	GLU	2.3
1	C	33	ILE	2.2
1	F	156	ILE	2.2
1	B	133	ARG	2.2
1	A	31	HIS	2.2
1	D	238	THR	2.2
1	E	146	LEU	2.2
1	A	238	THR	2.1
1	A	222	SER	2.1
1	A	139	GLU	2.1
1	E	32	HIS	2.1
1	C	212	PHE	2.1
1	F	152	SER	2.1
1	A	312	PRO	2.0

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Mol	Chain	Res	Type	RSRZ
1	D	153	HIS	2.0
1	A	32	HIS	2.0
1	B	33	ILE	2.0
1	C	145	PHE	2.0
1	E	122	ASP	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	B	501	4/4	0.60	0.24	50,53,55,55	0
6	ZN	A	507	1/1	0.75	0.29	84,84,84,84	0
3	EDO	A	503	4/4	0.81	0.18	37,40,50,54	0
3	EDO	E	501	4/4	0.85	0.16	45,46,48,51	0
7	C5P	D	503	21/21	0.86	0.27	34,40,60,75	0
5	GOL	F	503	6/6	0.87	0.13	33,34,35,35	0
9	CDP	E	503	25/25	0.87	0.22	31,41,63,79	0
3	EDO	D	501	4/4	0.88	0.15	43,44,47,49	0
7	C5P	F	502	21/21	0.88	0.18	40,46,58,70	0
5	GOL	A	506	6/6	0.88	0.21	28,34,35,40	0
3	EDO	A	502	4/4	0.89	0.15	33,34,39,39	0
2	CL	A	501	1/1	0.89	0.14	46,46,46,46	0
9	CDP	C	502	25/25	0.89	0.20	30,39,64,79	0
6	ZN	D	505	1/1	0.89	0.24	86,86,86,86	0
7	C5P	B	503	21/21	0.90	0.16	32,38,50,54	0
5	GOL	C	503	6/6	0.91	0.10	31,34,38,38	0
4	CTP	F	501	29/29	0.91	0.18	40,51,78,82	0
4	CTP	B	502	29/29	0.91	0.20	40,52,80,88	0

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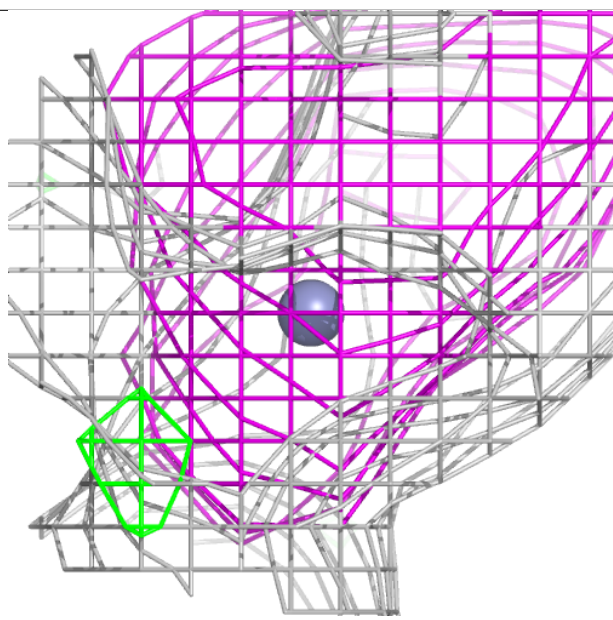
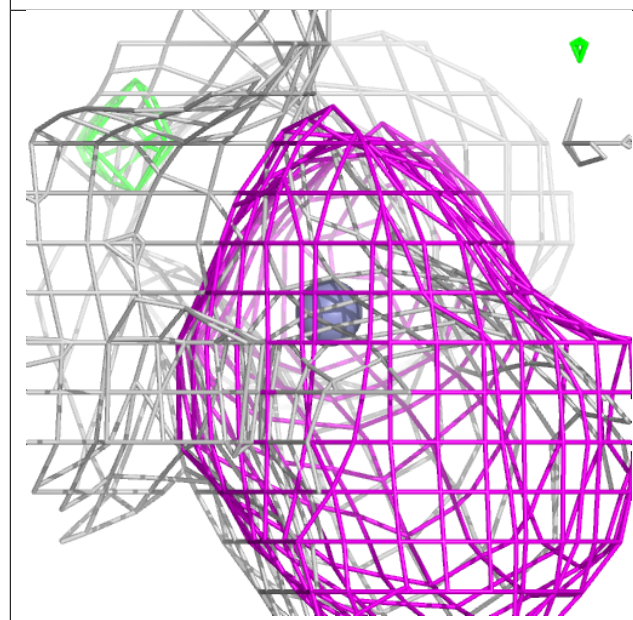
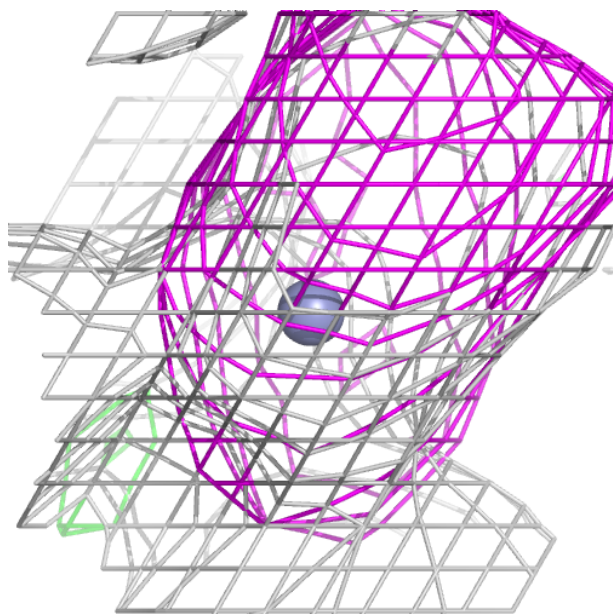
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	CTP	A	505	29/29	0.94	0.14	32,42,64,67	0
3	EDO	A	504	4/4	0.95	0.13	33,35,37,44	0
5	GOL	C	504	6/6	0.95	0.10	30,32,32,35	0
4	CTP	C	501	29/29	0.96	0.14	31,40,56,63	0
4	CTP	D	502	29/29	0.96	0.12	33,41,59,66	0
4	CTP	E	502	29/29	0.96	0.12	29,38,52,53	0
5	GOL	D	504	6/6	0.98	0.10	39,41,42,45	0
8	SO4	B	504	5/5	0.99	0.12	28,29,31,37	0
8	SO4	E	504	5/5	0.99	0.11	32,35,38,39	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.

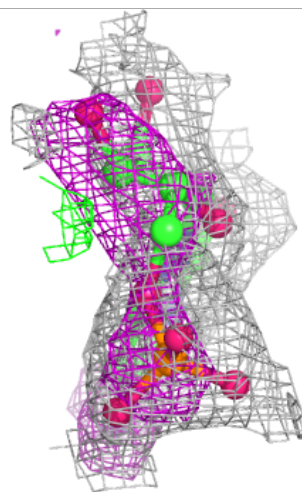
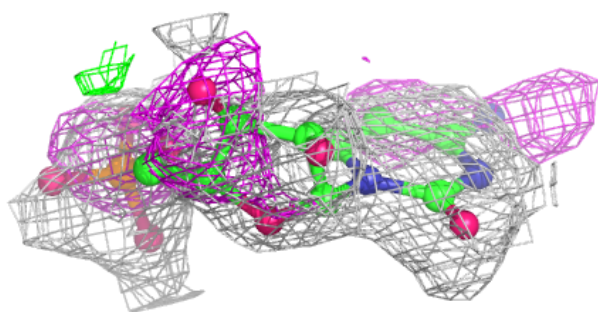
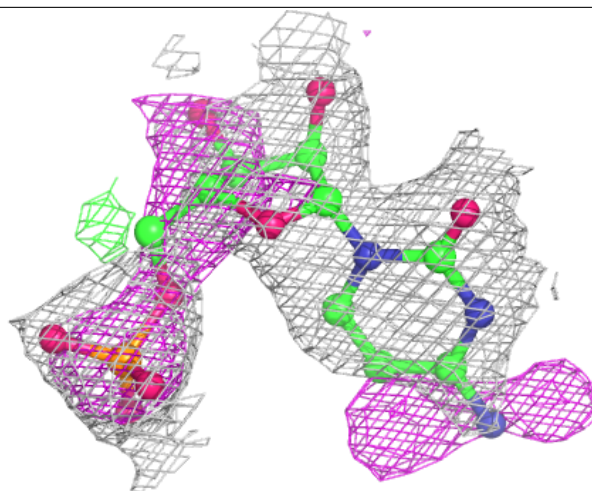
**Electron density around ZN A 507:**

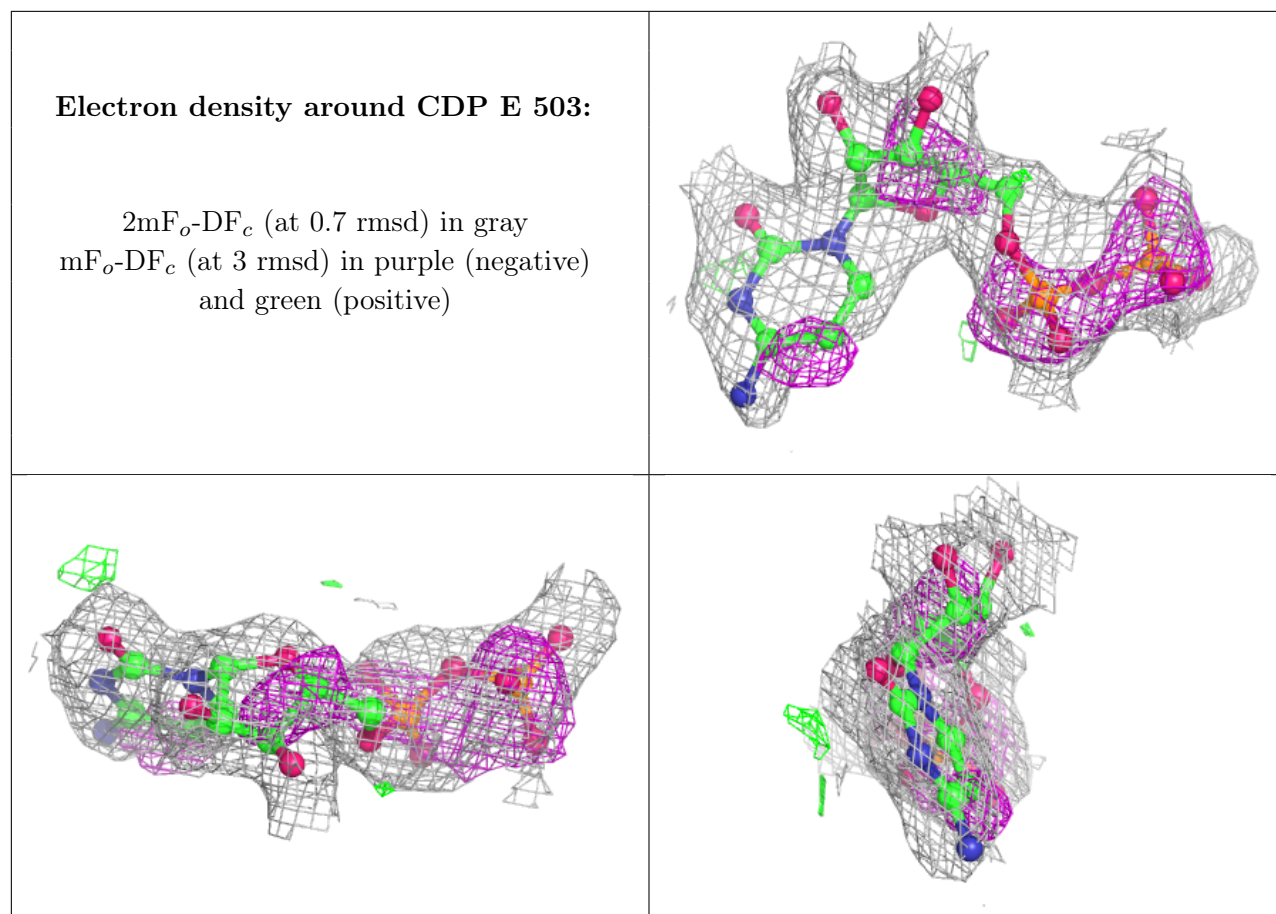
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around C5P D 503:**

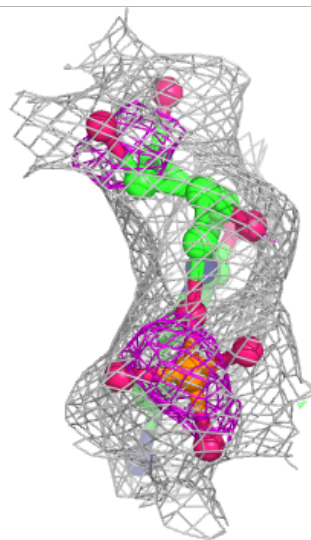
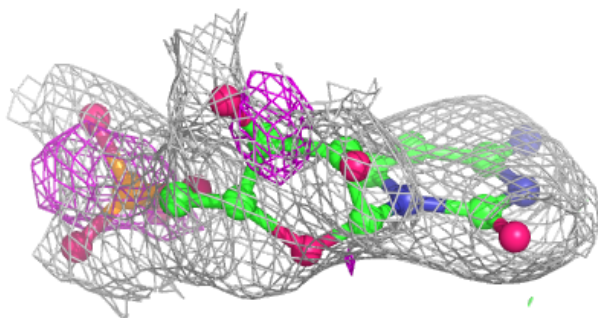
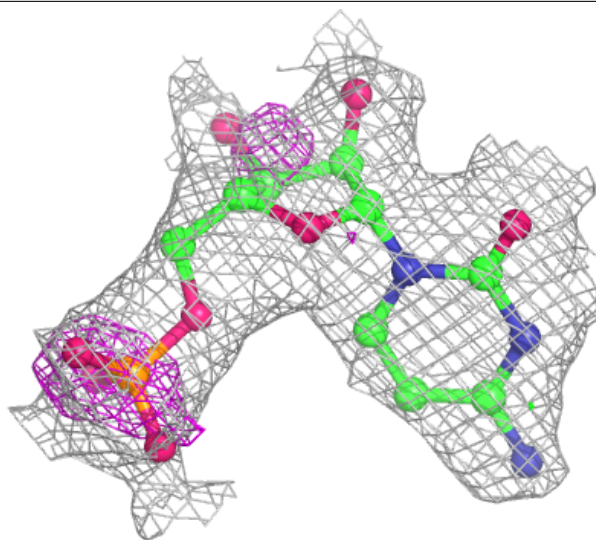
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



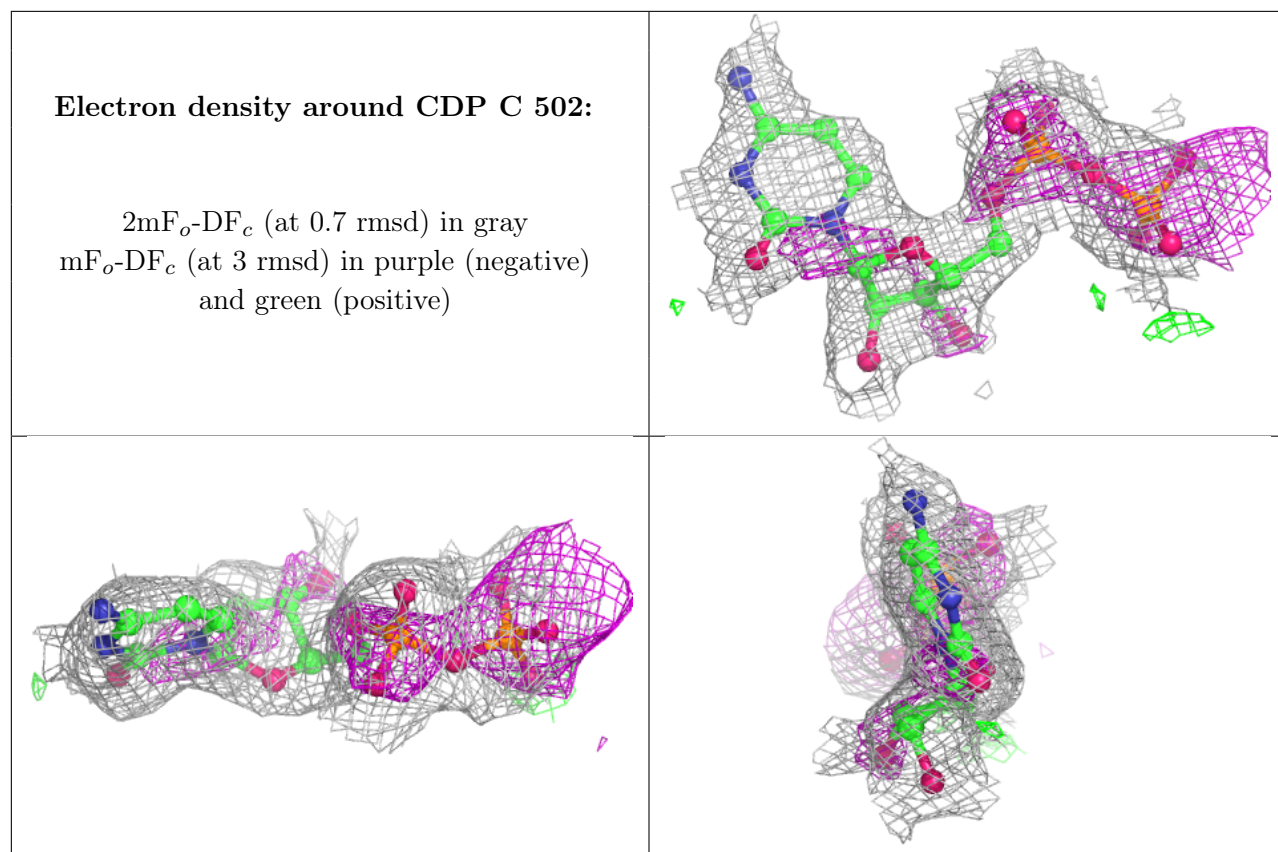


**Electron density around C5P F 502:**

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

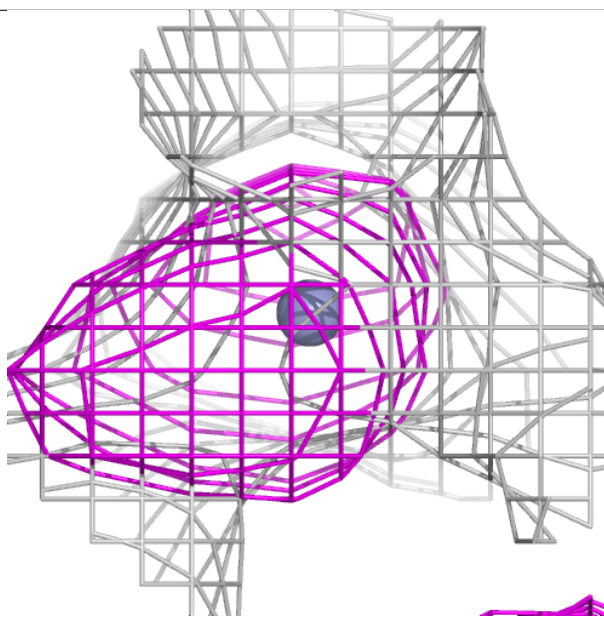
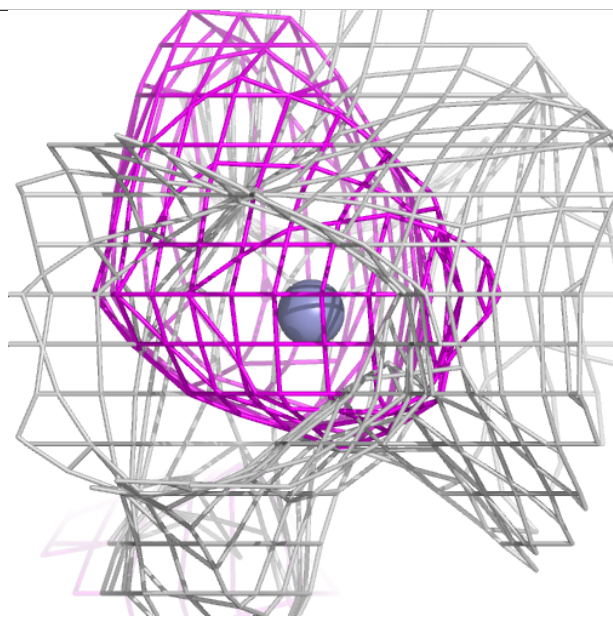
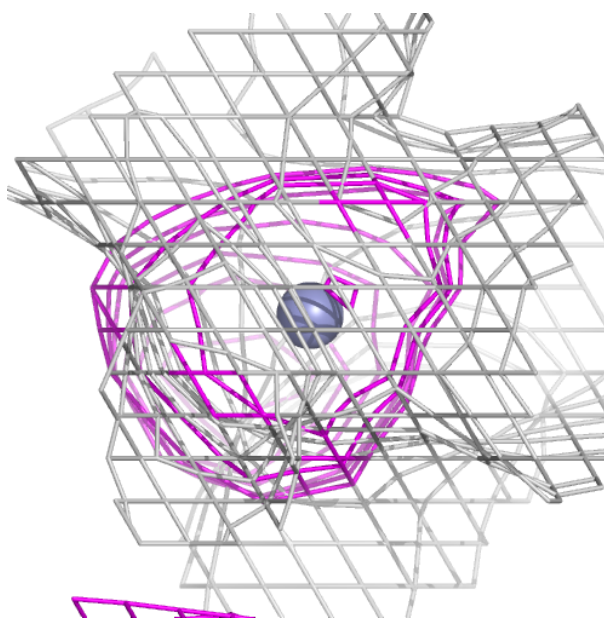






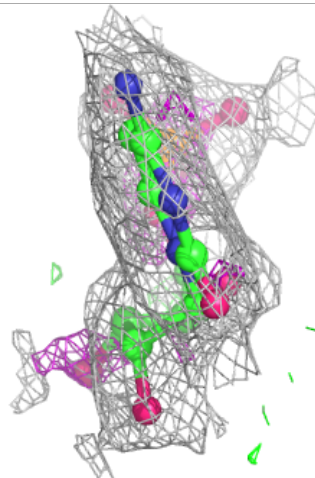
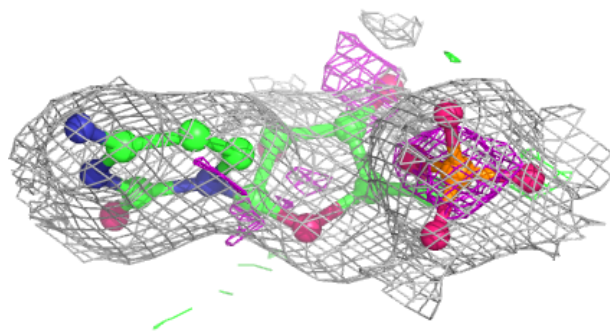
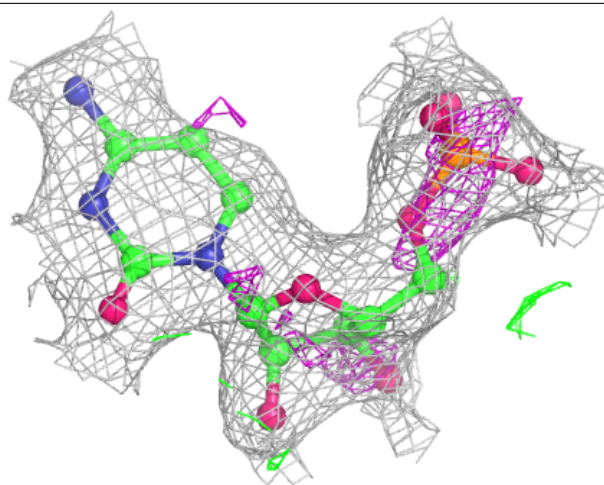
**Electron density around ZN D 505:**

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



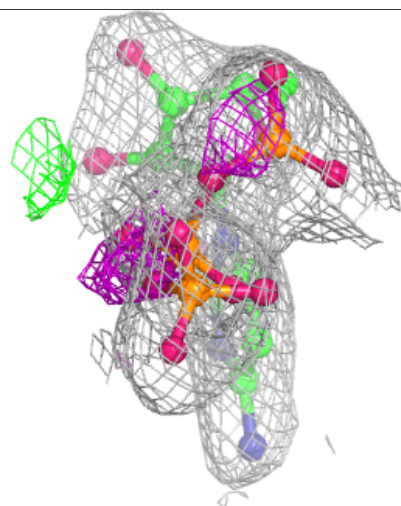
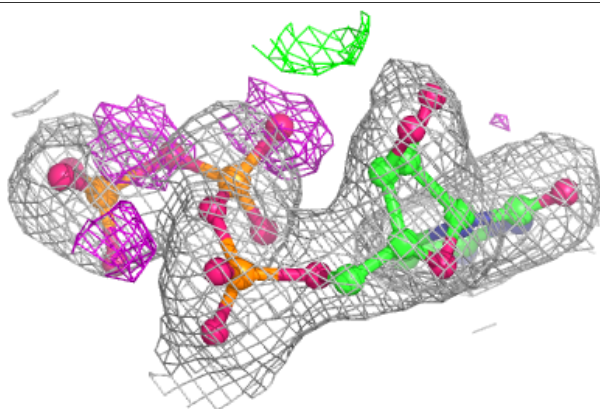
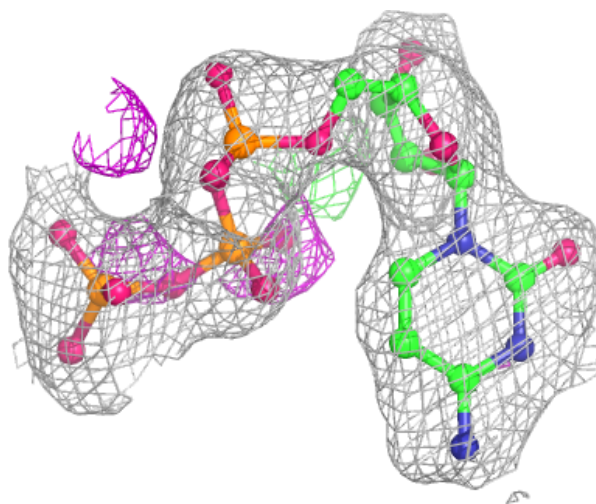
**Electron density around C5P B 503:**

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



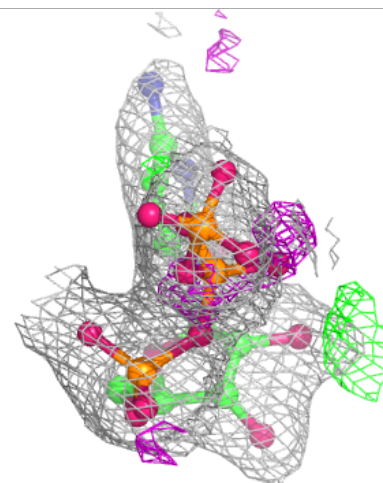
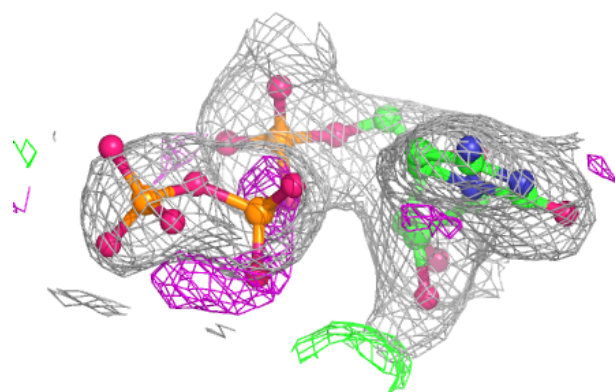
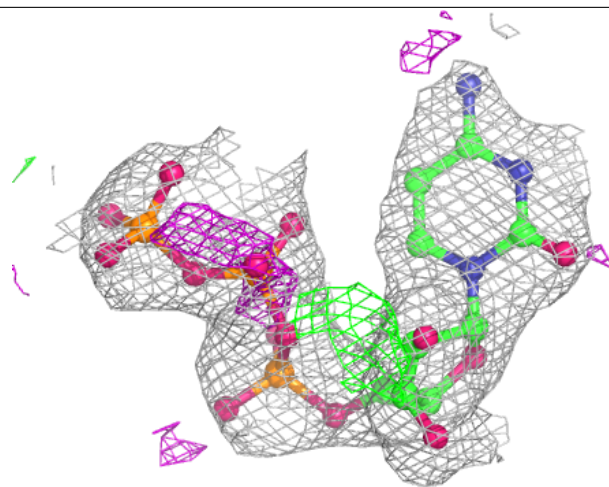
**Electron density around CTP F 501:**

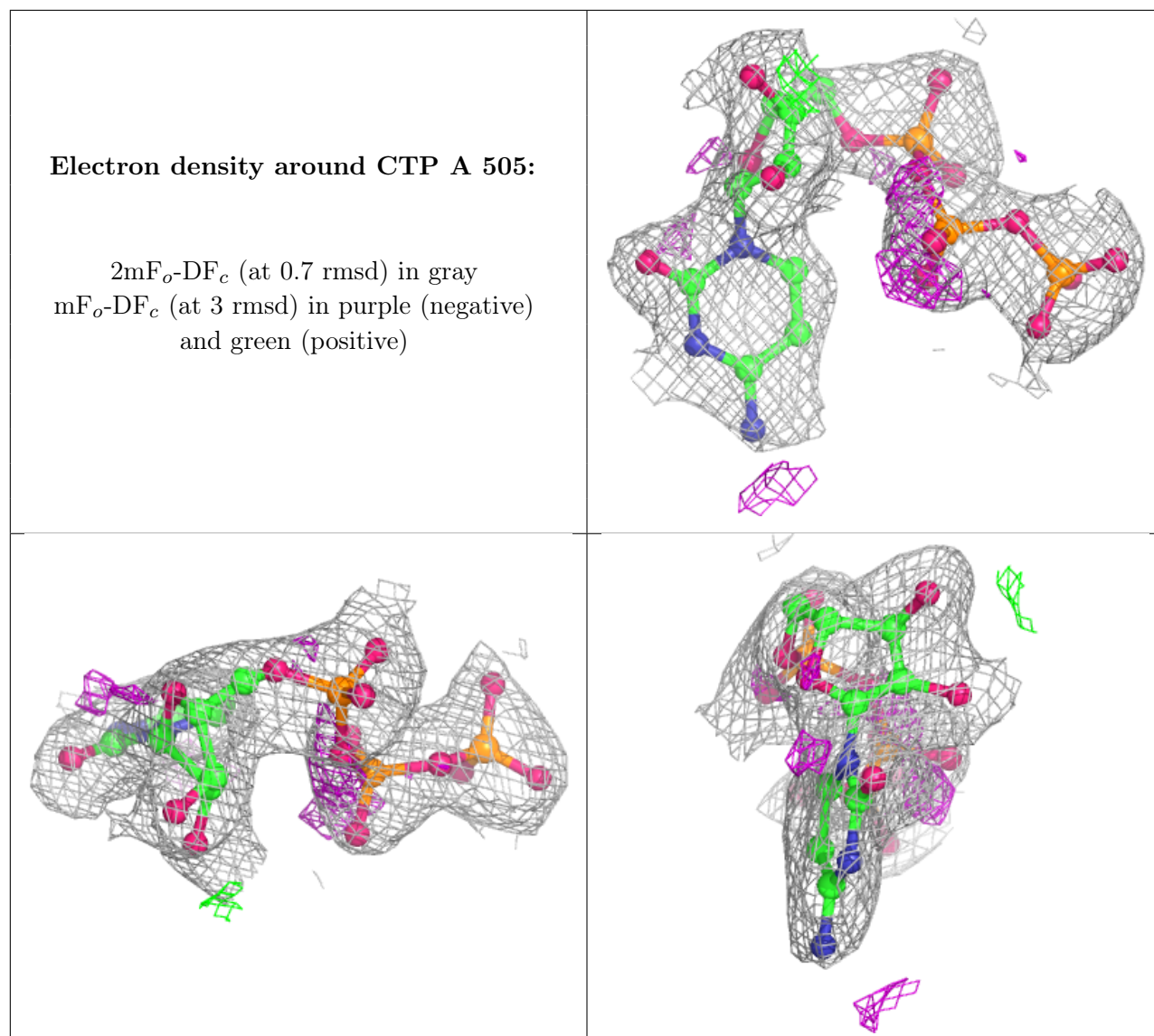
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around CTP B 502:**

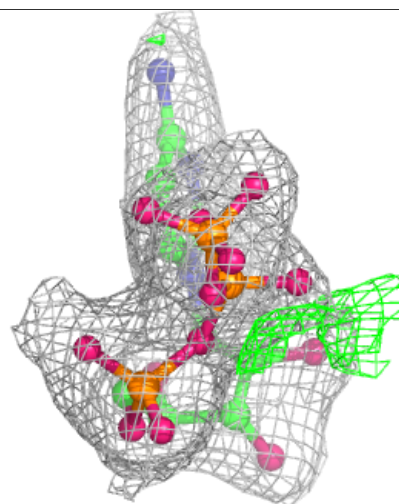
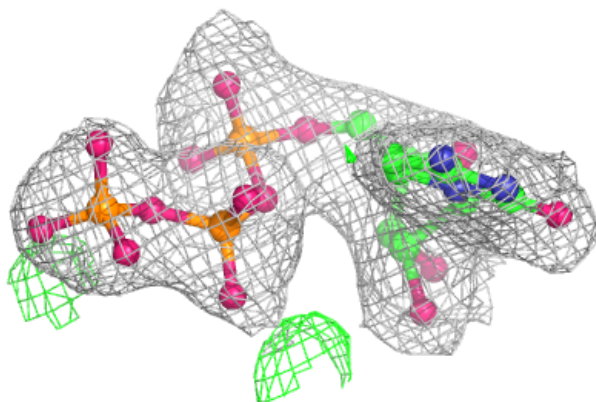
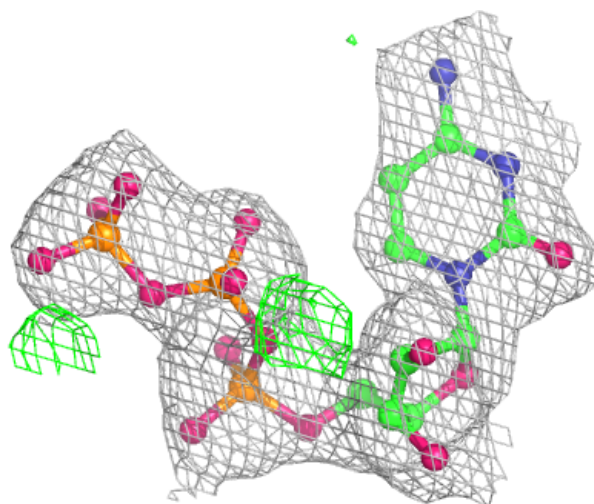
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

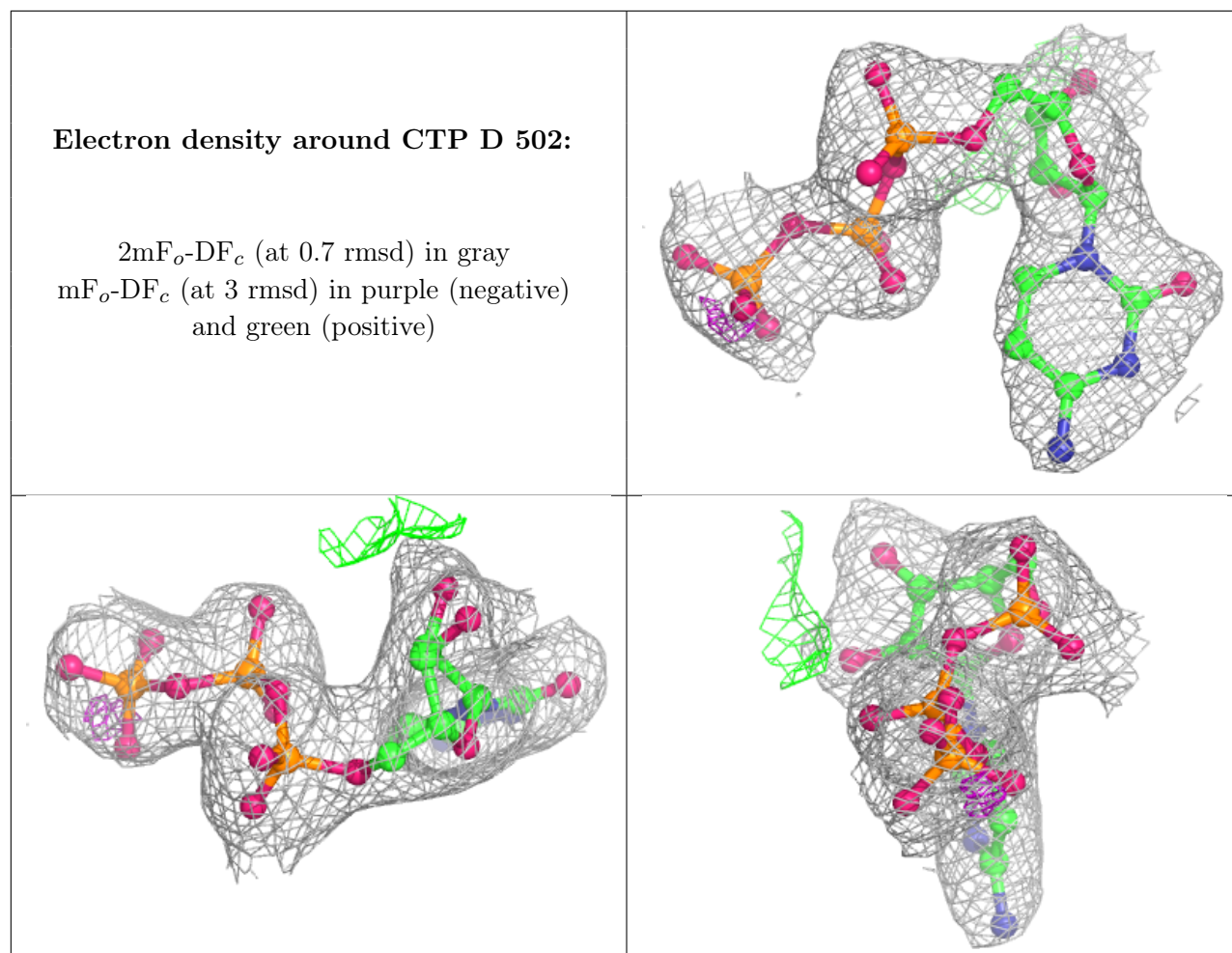




**Electron density around CTP C 501:**

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

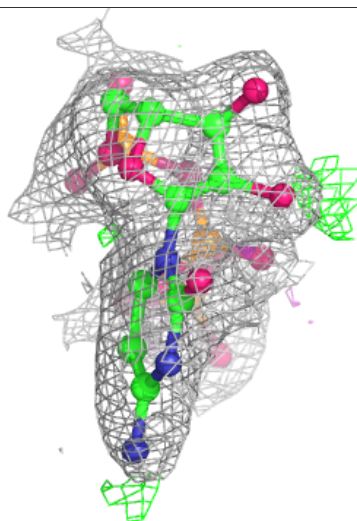
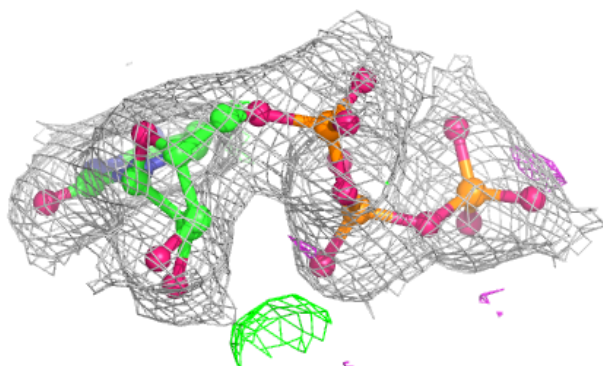
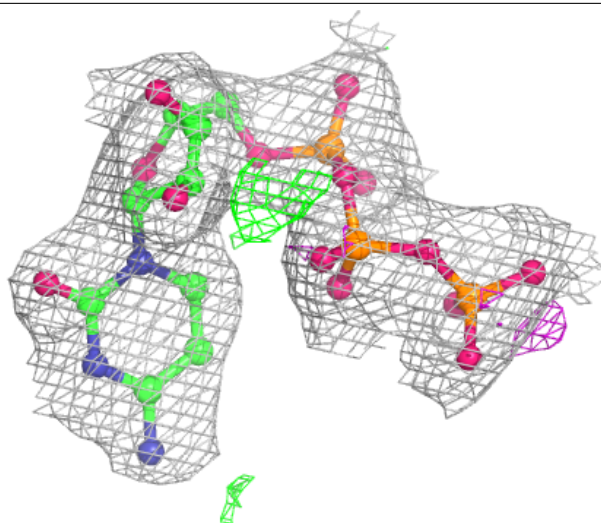






**Electron density around CTP E 502:**

$2mF_o-DF_c$  (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.