



Full wwPDB X-ray Structure Validation Report ⓘ

May 16, 2020 – 04:05 am BST

PDB ID : 1XTU
Title : Sulfolobus solfataricus uracil phosphoribosyltransferase in complex with
uridine 5'-monophosphate (UMP) and cytidine 5'-triphosphate (CTP)
Authors : Arent, S.; Harris, P.; Jensen, K.F.; Larsen, S.
Deposited on : 2004-10-24
Resolution : 2.80 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The 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 : 2.11
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) : 2.11

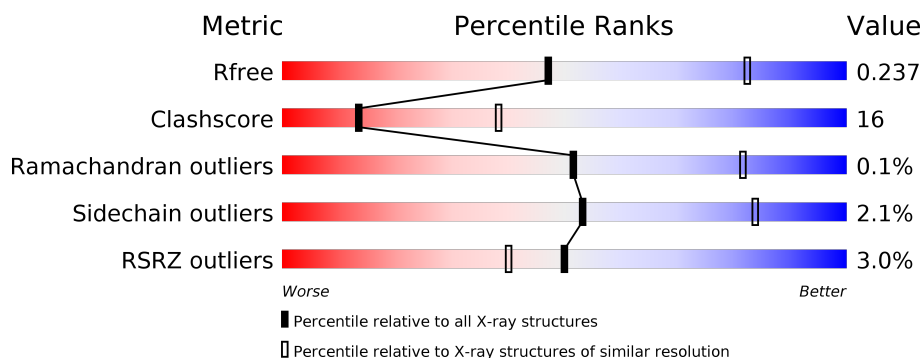
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	216	<div> <div>4%</div> <div>63%</div> <div>37%</div> </div>
1	B	216	<div> <div>2%</div> <div>67%</div> <div>33%</div> </div>
1	C	216	<div> <div>3%</div> <div>64%</div> <div>35%</div> </div>
1	D	216	<div> <div>%</div> <div>65%</div> <div>33%</div> </div>
1	E	216	<div> <div>4%</div> <div>63%</div> <div>37%</div> </div>
1	F	216	<div> <div>2%</div> <div>67%</div> <div>32%</div> </div>

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Mol	Chain	Length	Quality of chain
1	G	216	<div><div>%</div><div><div></div><div>67%</div><div>31%</div><div></div></div></div>
1	H	216	<div><div>6%</div><div><div></div><div>68%</div><div>31%</div><div></div></div></div>

2 Entry composition

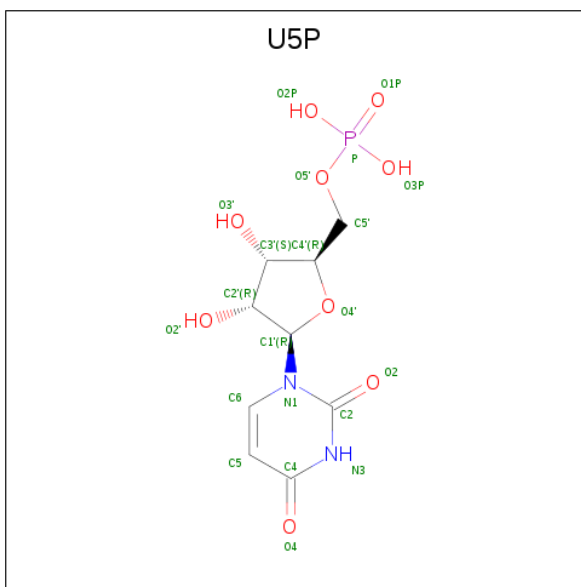
There are 3 unique types of molecules in this entry. The entry contains 13960 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Probable uracil phosphoribosyltransferase.

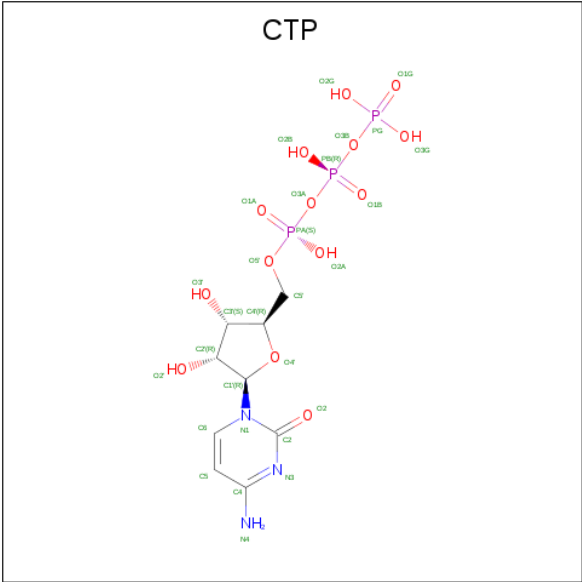
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	215	Total	C	N	O	S	0	0	0
			1695	1102	279	311	3			
1	B	215	Total	C	N	O	S	0	0	0
			1695	1102	279	311	3			
1	C	215	Total	C	N	O	S	0	0	0
			1695	1102	279	311	3			
1	D	215	Total	C	N	O	S	0	0	0
			1695	1102	279	311	3			
1	E	215	Total	C	N	O	S	0	0	0
			1695	1102	279	311	3			
1	F	215	Total	C	N	O	S	0	0	0
			1695	1102	279	311	3			
1	G	215	Total	C	N	O	S	0	0	0
			1695	1102	279	311	3			
1	H	215	Total	C	N	O	S	0	0	0
			1695	1102	279	311	3			

- Molecule 2 is URIDINE-5'-MONOPHOSPHATE (three-letter code: U5P) (formula: $\text{C}_9\text{H}_{13}\text{N}_2\text{O}_9\text{P}$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
2	B	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
2	C	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
2	D	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
2	E	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
2	F	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
2	G	1	Total	C	N	O	P	0	0
			21	9	2	9	1		
2	H	1	Total	C	N	O	P	0	0
			21	9	2	9	1		

- Molecule 3 is CYTIDINE-5'-TRIPHOSPHATE (three-letter code: CTP) (formula: $C_9H_{16}N_3O_{14}P_3$).

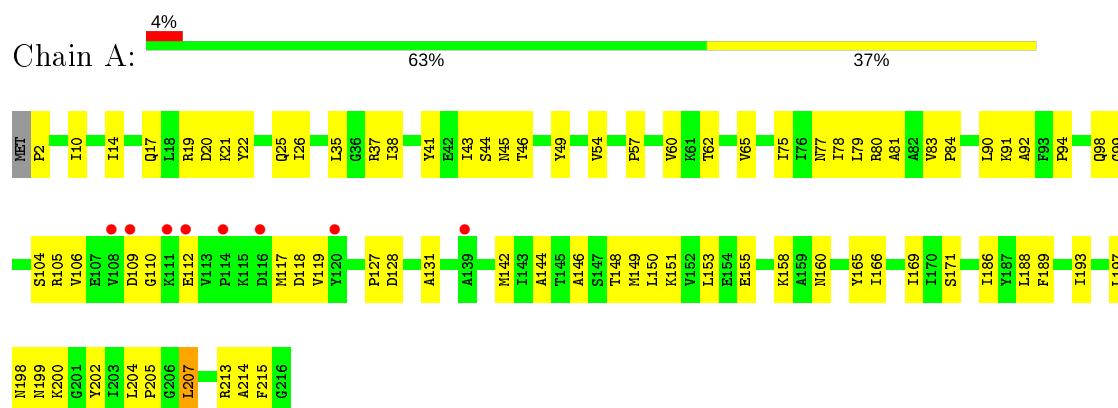


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			29	9	3	14	3		
3	C	1	Total	C	N	O	P	0	0
			29	9	3	14	3		
3	D	1	Total	C	N	O	P	0	0
			29	9	3	14	3		
3	E	1	Total	C	N	O	P	0	0
			29	9	3	14	3		
3	F	1	Total	C	N	O	P	0	0
			29	9	3	14	3		
3	G	1	Total	C	N	O	P	0	0
			29	9	3	14	3		
3	G	1	Total	C	N	O	P	0	0
			29	9	3	14	3		
3	H	1	Total	C	N	O	P	0	0
			29	9	3	14	3		

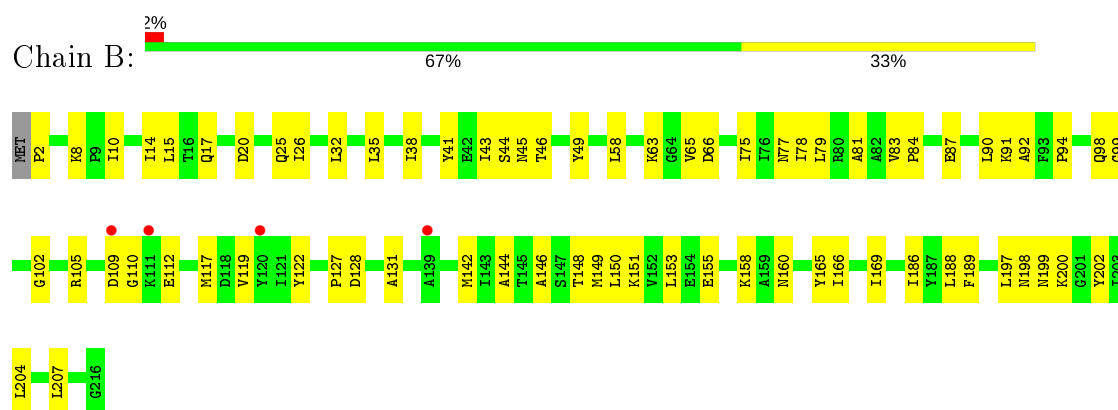
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

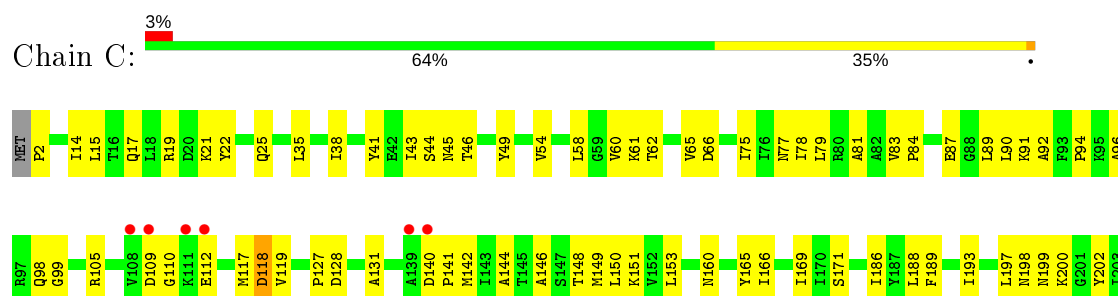
- Molecule 1: Probable uracil phosphoribosyltransferase

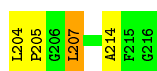


- Molecule 1: Probable uracil phosphoribosyltransferase

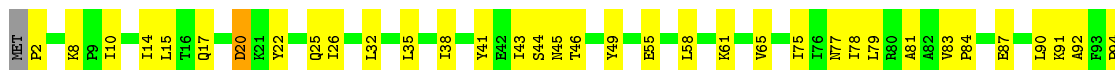


- Molecule 1: Probable uracil phosphoribosyltransferase

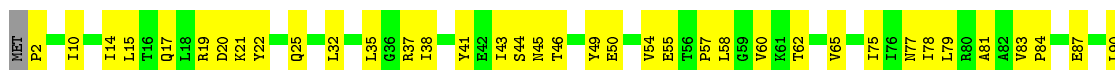




- Molecule 1: Probable uracil phosphoribosyltransferase



- Molecule 1: Probable uracil phosphoribosyltransferase

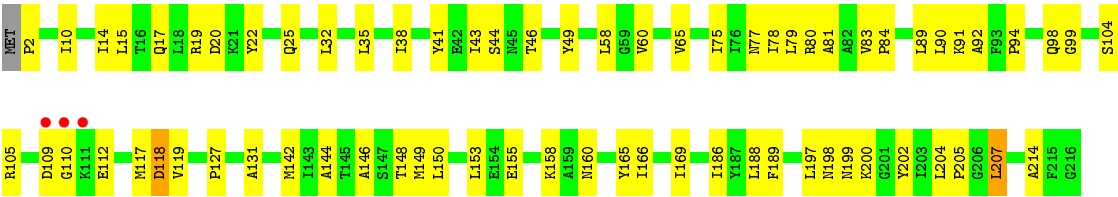


- Molecule 1: Probable uracil phosphoribosyltransferase

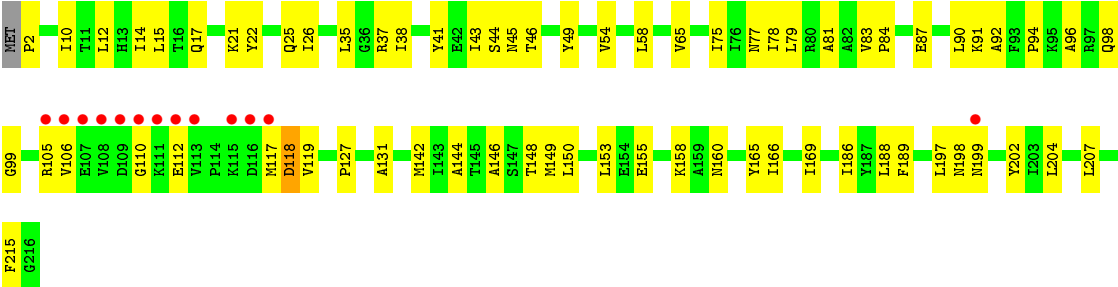


- Molecule 1: Probable uracil phosphoribosyltransferase





• Molecule 1: Probable uracil phosphoribosyltransferase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	71.67Å 76.51Å 91.45Å 109.00° 90.76° 115.40°	Depositor
Resolution (Å)	24.75 – 2.80 24.75 – 2.70	Depositor EDS
% Data completeness (in resolution range)	98.5 (24.75-2.80) 98.4 (24.75-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.12	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.78 (at 2.72Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.222 , 0.257 0.205 , 0.237	Depositor DCC
R_{free} test set	2204 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	40.5	Xtriage
Anisotropy	0.243	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 46.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.007 for h,-h-k,-l	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	13960	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.69% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: CTP, U5P

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	0.42	0/1724	0.64	0/2338
1	B	0.43	0/1724	0.64	0/2338
1	C	0.43	0/1724	0.64	0/2338
1	D	0.42	0/1724	0.65	0/2338
1	E	0.41	0/1724	0.63	0/2338
1	F	0.41	0/1724	0.64	0/2338
1	G	0.41	0/1724	0.63	0/2338
1	H	0.42	0/1724	0.64	0/2338
All	All	0.42	0/13792	0.64	0/18704

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	1695	0	1789	67	0
1	B	1695	0	1789	60	0
1	C	1695	0	1789	69	0
1	D	1695	0	1789	69	0
1	E	1695	0	1789	68	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	1695	0	1789	61	0
1	G	1695	0	1789	62	0
1	H	1695	0	1789	66	0
2	A	21	0	11	3	0
2	B	21	0	11	2	0
2	C	21	0	11	2	0
2	D	21	0	11	3	0
2	E	21	0	11	3	0
2	F	21	0	11	3	0
2	G	21	0	11	2	0
2	H	21	0	11	3	0
3	A	29	0	12	4	0
3	C	29	0	12	2	0
3	D	29	0	12	3	0
3	E	29	0	12	4	0
3	F	29	0	12	4	0
3	G	58	0	24	4	0
3	H	29	0	12	3	0
All	All	13960	0	14496	454	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 16.

All (454) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:21:LYS:HE3	1:C:22:TYR:CZ	2.13	0.82
1:H:198:ASN:HD21	1:H:202:TYR:HB2	1.47	0.80
1:C:127:PRO:HG3	1:F:25:GLN:HE22	1.46	0.78
1:D:127:PRO:HG3	1:E:25:GLN:HE22	1.49	0.78
1:C:198:ASN:HD21	1:C:202:TYR:HB2	1.49	0.77
1:G:91:LYS:HZ2	3:G:2260:CTP:H5'1	1.50	0.77
1:D:198:ASN:HD21	1:D:202:TYR:HB2	1.49	0.76
1:B:198:ASN:HD21	1:B:202:TYR:HB2	1.50	0.76
1:B:63:LYS:HE2	1:D:22:TYR:CE1	2.21	0.76
1:F:198:ASN:HD21	1:F:202:TYR:HB2	1.51	0.76
3:A:1260:CTP:H5'1	1:H:91:LYS:HZ2	1.52	0.75
1:A:25:GLN:HE22	1:H:127:PRO:HG3	1.50	0.75
1:A:91:LYS:HZ2	3:H:8260:CTP:H5'1	1.52	0.74
1:E:198:ASN:HD21	1:E:202:TYR:HB2	1.52	0.74
1:G:198:ASN:HD21	1:G:202:TYR:HB2	1.51	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:198:ASN:HD21	1:A:202:TYR:HB2	1.51	0.73
1:A:37:ARG:NH1	1:A:91:LYS:HB3	2.05	0.72
3:C:3260:CTP:H5'1	1:F:91:LYS:HZ2	1.56	0.71
1:D:91:LYS:HZ2	3:E:5260:CTP:H5'1	1.56	0.70
1:B:91:LYS:HZ2	3:G:7260:CTP:H5'1	1.55	0.70
1:E:75:ILE:HD12	1:E:90:LEU:HD23	1.75	0.69
1:D:75:ILE:HD12	1:D:90:LEU:HD23	1.75	0.69
1:C:75:ILE:HD12	1:C:90:LEU:HD23	1.74	0.69
3:D:4260:CTP:H5'1	1:E:91:LYS:HZ2	1.58	0.69
1:D:106:VAL:CG2	1:D:120:TYR:HE1	2.07	0.68
1:H:75:ILE:HD12	1:H:90:LEU:HD23	1.75	0.68
1:B:75:ILE:HD12	1:B:90:LEU:HD23	1.75	0.68
1:F:75:ILE:HD12	1:F:90:LEU:HD23	1.75	0.68
1:G:75:ILE:HD12	1:G:90:LEU:HD23	1.76	0.67
1:A:83:VAL:HB	1:A:84:PRO:HD3	1.77	0.67
1:H:198:ASN:ND2	1:H:202:TYR:HB2	2.09	0.66
1:A:127:PRO:HG3	1:H:25:GLN:HE22	1.60	0.66
1:G:83:VAL:HB	1:G:84:PRO:HD3	1.78	0.66
1:D:83:VAL:HB	1:D:84:PRO:HD3	1.78	0.66
1:B:83:VAL:HB	1:B:84:PRO:HD3	1.78	0.66
1:C:91:LYS:HZ2	3:F:6260:CTP:H5'1	1.61	0.65
1:C:198:ASN:ND2	1:C:202:TYR:HB2	2.12	0.65
1:A:75:ILE:HD12	1:A:90:LEU:HD23	1.77	0.65
1:D:106:VAL:HG23	1:D:120:TYR:HE1	1.61	0.65
1:H:83:VAL:HB	1:H:84:PRO:HD3	1.78	0.65
1:D:198:ASN:ND2	1:D:202:TYR:HB2	2.12	0.64
1:F:198:ASN:ND2	1:F:202:TYR:HB2	2.11	0.64
1:F:83:VAL:HB	1:F:84:PRO:HD3	1.79	0.64
1:E:83:VAL:HB	1:E:84:PRO:HD3	1.80	0.64
1:C:83:VAL:HB	1:C:84:PRO:HD3	1.79	0.64
1:B:198:ASN:ND2	1:B:202:TYR:HB2	2.12	0.64
1:F:35:LEU:HD13	1:F:169:ILE:HD12	1.79	0.64
1:B:35:LEU:HD13	1:B:169:ILE:HD12	1.80	0.63
1:B:127:PRO:HG3	1:G:25:GLN:HE22	1.63	0.63
1:G:35:LEU:HD13	1:G:169:ILE:HD12	1.81	0.63
1:G:198:ASN:ND2	1:G:202:TYR:HB2	2.12	0.63
1:E:198:ASN:ND2	1:E:202:TYR:HB2	2.13	0.63
1:A:198:ASN:ND2	1:A:202:TYR:HB2	2.12	0.62
1:C:54:VAL:HG21	1:G:20:ASP:HB2	1.79	0.62
1:E:35:LEU:HD13	1:E:169:ILE:HD12	1.81	0.62
1:A:41:TYR:CE1	1:E:38:ILE:HG23	2.35	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:35:LEU:HD13	1:H:169:ILE:HD12	1.80	0.62
1:C:25:GLN:HE22	1:F:127:PRO:HG3	1.64	0.62
1:D:35:LEU:HD13	1:D:169:ILE:HD12	1.82	0.62
1:A:35:LEU:HD13	1:A:169:ILE:HD12	1.81	0.62
1:C:35:LEU:HD13	1:C:169:ILE:HD12	1.81	0.61
1:D:81:ALA:O	1:D:84:PRO:HD2	2.01	0.60
1:C:81:ALA:O	1:C:84:PRO:HD2	2.01	0.60
1:B:25:GLN:HE22	1:G:127:PRO:HG3	1.67	0.60
1:C:2:PRO:HD2	1:C:186:ILE:O	2.01	0.60
1:B:2:PRO:HD2	1:B:186:ILE:O	2.01	0.59
1:E:2:PRO:HD2	1:E:186:ILE:O	2.03	0.59
1:G:2:PRO:HD2	1:G:186:ILE:O	2.03	0.59
1:E:78:ILE:O	1:E:79:LEU:HB2	2.02	0.59
1:F:81:ALA:O	1:F:84:PRO:HD2	2.03	0.59
1:H:2:PRO:HD2	1:H:186:ILE:O	2.02	0.59
1:D:2:PRO:HD2	1:D:186:ILE:O	2.03	0.58
1:D:25:GLN:HE22	1:E:127:PRO:HG3	1.68	0.58
1:C:78:ILE:O	1:C:79:LEU:HB2	2.04	0.58
1:H:78:ILE:O	1:H:79:LEU:HB2	2.03	0.58
1:A:78:ILE:O	1:A:79:LEU:HB2	2.04	0.58
1:C:204:LEU:CD2	1:G:58:LEU:HD13	2.34	0.58
1:G:78:ILE:O	1:G:79:LEU:HB2	2.03	0.58
1:H:81:ALA:O	1:H:84:PRO:HD2	2.03	0.58
1:E:81:ALA:O	1:E:84:PRO:HD2	2.03	0.58
1:F:78:ILE:O	1:F:79:LEU:HB2	2.05	0.57
1:C:41:TYR:CE1	1:G:38:ILE:HG23	2.39	0.57
1:A:2:PRO:HD2	1:A:186:ILE:O	2.04	0.57
1:B:78:ILE:O	1:B:79:LEU:HB2	2.04	0.57
1:G:91:LYS:NZ	3:G:2260:CTP:H5'1	2.18	0.57
1:A:81:ALA:O	1:A:84:PRO:HD2	2.05	0.57
1:B:81:ALA:O	1:B:84:PRO:HD2	2.05	0.57
1:A:38:ILE:HG23	1:E:41:TYR:CE1	2.39	0.57
1:F:144:ALA:HB3	2:F:6250:U5P:O3P	2.05	0.57
1:C:149:MET:HE1	1:C:166:ILE:HG12	1.87	0.57
1:D:204:LEU:CD2	1:H:58:LEU:HD13	2.35	0.57
1:B:20:ASP:HB2	1:F:54:VAL:HG21	1.85	0.56
1:G:144:ALA:HB3	2:G:7250:U5P:O3P	2.05	0.56
1:C:54:VAL:O	1:C:61:LYS:HA	2.05	0.56
1:G:81:ALA:O	1:G:84:PRO:HD2	2.05	0.55
1:F:2:PRO:HD2	1:F:186:ILE:O	2.06	0.55
1:D:78:ILE:O	1:D:79:LEU:HB2	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:91:LYS:NZ	3:H:8260:CTP:H5'1	2.20	0.55
1:D:77:ASN:HB2	1:D:98:GLN:HE21	1.72	0.55
1:H:142:MET:HB2	2:H:8250:U5P:H2'	1.89	0.55
1:C:144:ALA:HB3	2:C:3250:U5P:O3P	2.07	0.54
1:E:144:ALA:HB3	2:E:5250:U5P:O3P	2.06	0.54
1:A:144:ALA:HB3	2:A:1250:U5P:O3P	2.06	0.54
1:B:144:ALA:HB3	2:B:2250:U5P:O3P	2.08	0.54
1:E:21:LYS:HE3	1:E:22:TYR:CZ	2.42	0.54
1:B:77:ASN:HB2	1:B:98:GLN:HE21	1.72	0.54
1:H:77:ASN:HB2	1:H:98:GLN:HE21	1.72	0.54
1:G:149:MET:HE1	1:G:166:ILE:HG12	1.90	0.54
3:C:3260:CTP:H5'1	1:F:91:LYS:NZ	2.20	0.54
1:B:149:MET:HE1	1:B:166:ILE:HG12	1.90	0.54
1:E:149:MET:HE1	1:E:166:ILE:HG12	1.89	0.54
1:H:144:ALA:HB3	2:H:8250:U5P:O3P	2.08	0.54
1:B:142:MET:HB2	2:B:2250:U5P:H2'	1.90	0.53
1:F:149:MET:HE1	1:F:166:ILE:HG12	1.90	0.53
1:A:45:ASN:OD1	1:E:10:ILE:HG22	2.08	0.53
1:D:144:ALA:HB3	2:D:4250:U5P:O3P	2.07	0.53
1:D:105:ARG:HA	1:D:118:ASP:O	2.09	0.53
1:C:77:ASN:HB2	1:C:98:GLN:HE21	1.74	0.53
1:F:142:MET:HB2	2:F:6250:U5P:H2'	1.90	0.53
1:C:45:ASN:OD1	1:G:10:ILE:HG22	2.09	0.53
1:A:142:MET:HB2	2:A:1250:U5P:H2'	1.91	0.53
1:A:20:ASP:CB	1:E:54:VAL:HG21	2.39	0.53
1:E:77:ASN:HB2	1:E:98:GLN:HE21	1.74	0.53
1:G:49:TYR:CD1	1:G:65:VAL:HG13	2.44	0.53
1:A:25:GLN:NE2	1:H:127:PRO:HG3	2.22	0.53
1:C:96:ALA:O	3:F:6260:CTP:N4	2.42	0.52
1:A:77:ASN:HB2	1:A:98:GLN:HE21	1.73	0.52
1:H:149:MET:HE1	1:H:166:ILE:HG12	1.92	0.52
1:C:127:PRO:HG3	1:F:25:GLN:NE2	2.20	0.52
1:B:91:LYS:NZ	3:G:7260:CTP:H5'1	2.22	0.52
1:E:142:MET:HB2	2:E:5250:U5P:H2'	1.91	0.52
1:A:20:ASP:HB2	1:E:54:VAL:HG21	1.92	0.52
1:G:142:MET:HB2	2:G:7250:U5P:H2'	1.92	0.52
1:F:77:ASN:HB2	1:F:98:GLN:HE21	1.74	0.52
1:G:77:ASN:HB2	1:G:98:GLN:HE21	1.75	0.52
1:C:142:MET:HB2	2:C:3250:U5P:H2'	1.92	0.52
1:D:96:ALA:O	3:E:5260:CTP:N4	2.43	0.52
3:A:1260:CTP:H5'1	1:H:91:LYS:NZ	2.23	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:46:THR:HG21	1:H:189:PHE:HZ	1.76	0.51
1:G:46:THR:HG21	1:G:189:PHE:HZ	1.76	0.51
1:D:127:PRO:HG3	1:E:25:GLN:NE2	2.21	0.51
1:H:21:LYS:HE3	1:H:22:TYR:CZ	2.46	0.51
1:A:149:MET:HE1	1:A:166:ILE:HG12	1.92	0.51
1:C:38:ILE:HG23	1:G:41:TYR:CE1	2.46	0.51
1:A:49:TYR:CD1	1:A:65:VAL:HG13	2.46	0.51
1:C:128:ASP:CG	1:E:50:GLU:HB2	2.31	0.50
1:E:41:TYR:O	1:E:44:SER:HB2	2.11	0.50
1:B:58:LEU:HD13	1:F:204:LEU:CD2	2.41	0.50
1:D:142:MET:HB2	2:D:4250:U5P:H2'	1.93	0.50
1:C:58:LEU:HD13	1:G:204:LEU:CD2	2.41	0.50
1:E:46:THR:HG21	1:E:189:PHE:HZ	1.77	0.50
1:B:204:LEU:CD2	1:F:58:LEU:HD13	2.41	0.50
3:D:4260:CTP:H5'1	1:E:91:LYS:NZ	2.25	0.50
1:F:46:THR:HG21	1:F:189:PHE:HZ	1.77	0.49
1:D:58:LEU:HD13	1:H:204:LEU:CD2	2.42	0.49
1:B:46:THR:HG21	1:B:189:PHE:HZ	1.77	0.49
1:C:49:TYR:CD1	1:C:65:VAL:HG13	2.47	0.49
1:D:41:TYR:CE1	1:H:38:ILE:HG23	2.47	0.49
1:G:43:ILE:HG23	1:G:165:TYR:CE2	2.48	0.49
1:A:46:THR:HG21	1:A:189:PHE:HZ	1.77	0.49
1:C:43:ILE:HG23	1:C:165:TYR:CE2	2.47	0.49
1:G:20:ASP:OD1	1:G:22:TYR:N	2.35	0.49
1:A:41:TYR:O	1:A:44:SER:HB2	2.13	0.49
1:E:146:ALA:O	1:E:150:LEU:HG	2.13	0.49
1:A:60:VAL:HG21	1:E:205:PRO:HA	1.95	0.49
1:E:49:TYR:CD1	1:E:65:VAL:HG13	2.47	0.49
1:D:45:ASN:OD1	1:H:10:ILE:HG22	2.12	0.49
1:D:20:ASP:HB2	1:H:54:VAL:HG21	1.94	0.48
1:E:119:VAL:HG21	1:E:148:THR:HA	1.95	0.48
1:A:43:ILE:HG23	1:A:165:TYR:CE2	2.48	0.48
1:G:153:LEU:HD11	1:G:166:ILE:HD11	1.95	0.48
1:H:105:ARG:HB3	1:H:119:VAL:HG22	1.95	0.48
1:H:49:TYR:CD1	1:H:65:VAL:HG13	2.48	0.48
1:F:49:TYR:CD1	1:F:65:VAL:HG13	2.47	0.48
1:B:49:TYR:CD1	1:B:65:VAL:HG13	2.48	0.48
1:A:153:LEU:HD11	1:A:166:ILE:HD11	1.96	0.48
1:A:146:ALA:O	1:A:150:LEU:HG	2.14	0.48
1:C:41:TYR:O	1:C:44:SER:HB2	2.13	0.48
1:D:131:ALA:HA	1:D:160:ASN:O	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:43:ILE:HG23	1:E:165:TYR:CE2	2.48	0.48
1:D:46:THR:HG21	1:D:189:PHE:HZ	1.78	0.48
1:F:41:TYR:O	1:F:44:SER:HB2	2.14	0.48
1:G:119:VAL:HG21	1:G:148:THR:HA	1.96	0.48
1:G:146:ALA:O	1:G:150:LEU:HG	2.13	0.48
1:A:205:PRO:HA	1:E:60:VAL:HG21	1.96	0.48
1:F:153:LEU:HD11	1:F:166:ILE:HD11	1.96	0.48
1:A:215:PHE:HB3	1:H:99:GLY:HA2	1.96	0.48
1:D:43:ILE:HG23	1:D:165:TYR:CE2	2.49	0.48
1:E:153:LEU:HD11	1:E:166:ILE:HD11	1.95	0.48
1:A:105:ARG:HB3	1:A:119:VAL:HG22	1.96	0.47
1:C:146:ALA:O	1:C:150:LEU:HG	2.14	0.47
1:E:37:ARG:CZ	1:E:91:LYS:HB3	2.44	0.47
1:A:119:VAL:HG21	1:A:148:THR:HA	1.95	0.47
1:B:8:LYS:HD2	1:F:41:TYR:OH	2.15	0.47
1:D:105:ARG:HA	1:D:119:VAL:HA	1.96	0.47
1:F:198:ASN:HB3	1:F:204:LEU:HD11	1.97	0.47
1:H:146:ALA:O	1:H:150:LEU:HG	2.15	0.47
1:C:153:LEU:HD11	1:C:166:ILE:HD11	1.96	0.47
1:B:119:VAL:HG21	1:B:148:THR:HA	1.96	0.47
1:F:146:ALA:O	1:F:150:LEU:HG	2.15	0.47
1:A:198:ASN:HB3	1:A:204:LEU:HD11	1.96	0.47
1:C:198:ASN:HB3	1:C:204:LEU:HD11	1.97	0.47
1:F:197:LEU:HA	1:F:202:TYR:O	2.15	0.47
1:D:149:MET:HE1	1:D:166:ILE:HG12	1.96	0.47
1:G:41:TYR:O	1:G:44:SER:HB2	2.15	0.47
1:B:146:ALA:O	1:B:150:LEU:HG	2.14	0.47
1:B:92:ALA:O	1:B:94:PRO:HD3	2.15	0.47
1:C:46:THR:HG21	1:C:189:PHE:HZ	1.79	0.47
1:D:49:TYR:CD1	1:D:65:VAL:HG13	2.49	0.47
1:A:57:PRO:HG2	1:E:213:ARG:HD3	1.96	0.47
1:H:119:VAL:HG21	1:H:148:THR:HA	1.96	0.47
1:A:105:ARG:HD2	1:A:117:MET:HG3	1.97	0.46
1:D:99:GLY:HA3	1:D:127:PRO:HD3	1.97	0.46
1:D:198:ASN:HB3	1:D:204:LEU:HD11	1.97	0.46
1:G:92:ALA:O	1:G:94:PRO:HD3	2.16	0.46
1:H:153:LEU:HD11	1:H:166:ILE:HD11	1.97	0.46
1:D:105:ARG:HB3	1:D:119:VAL:HG22	1.96	0.46
1:A:54:VAL:HG21	1:E:20:ASP:HB2	1.98	0.46
1:F:119:VAL:HG21	1:F:148:THR:HA	1.96	0.46
1:H:43:ILE:HG23	1:H:165:TYR:CE2	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:92:ALA:O	1:E:94:PRO:HD3	2.15	0.46
1:F:92:ALA:O	1:F:94:PRO:HD3	2.14	0.46
1:H:105:ARG:HD2	1:H:117:MET:HG3	1.97	0.46
1:C:119:VAL:HG21	1:C:148:THR:HA	1.96	0.46
1:D:197:LEU:HA	1:D:202:TYR:O	2.15	0.46
1:E:105:ARG:HB3	1:E:119:VAL:HG22	1.96	0.46
1:F:99:GLY:HA3	1:F:127:PRO:HD3	1.97	0.46
1:H:99:GLY:HA3	1:H:127:PRO:HD3	1.98	0.46
1:B:105:ARG:HB3	1:B:119:VAL:HG22	1.97	0.46
1:D:119:VAL:HG21	1:D:148:THR:HA	1.98	0.46
1:D:38:ILE:HG23	1:H:41:TYR:CE1	2.51	0.46
1:B:153:LEU:HD11	1:B:166:ILE:HD11	1.98	0.46
1:E:99:GLY:HA3	1:E:127:PRO:HD3	1.98	0.46
1:B:41:TYR:CE1	1:F:38:ILE:HG23	2.51	0.46
1:D:92:ALA:O	1:D:94:PRO:HD3	2.16	0.46
1:H:198:ASN:HB3	1:H:204:LEU:HD11	1.97	0.46
1:C:60:VAL:HG21	1:G:205:PRO:HA	1.98	0.46
1:A:62:THR:HG21	1:E:19:ARG:HD3	1.98	0.46
1:C:105:ARG:HA	1:C:118:ASP:O	2.16	0.46
1:E:197:LEU:HA	1:E:202:TYR:O	2.16	0.46
1:A:10:ILE:HG22	1:E:45:ASN:OD1	2.16	0.46
1:A:197:LEU:HA	1:A:202:TYR:O	2.17	0.45
1:B:43:ILE:HG23	1:B:165:TYR:CE2	2.51	0.45
1:E:105:ARG:HD2	1:E:117:MET:HG3	1.98	0.45
1:E:32:LEU:HD12	1:E:32:LEU:HA	1.78	0.45
1:B:105:ARG:HD2	1:B:117:MET:HG3	1.98	0.45
1:E:198:ASN:HB3	1:E:204:LEU:HD11	1.98	0.45
1:B:14:ILE:HG21	1:B:35:LEU:HG	1.99	0.45
1:C:197:LEU:HA	1:C:202:TYR:O	2.16	0.45
1:D:105:ARG:HD2	1:D:117:MET:HG3	1.98	0.45
1:D:106:VAL:CG2	1:D:120:TYR:CE1	2.93	0.45
1:D:146:ALA:O	1:D:150:LEU:HG	2.16	0.45
1:B:105:ARG:HA	1:B:119:VAL:HA	1.98	0.45
1:C:204:LEU:HD23	1:G:58:LEU:HD13	1.99	0.45
1:D:41:TYR:O	1:D:44:SER:HB2	2.17	0.45
1:F:43:ILE:HG23	1:F:165:TYR:CE2	2.51	0.45
1:E:14:ILE:HG21	1:E:35:LEU:HG	1.97	0.45
1:B:188:LEU:HD12	1:B:189:PHE:N	2.31	0.45
1:B:198:ASN:HB3	1:B:204:LEU:HD11	1.98	0.45
1:C:105:ARG:HB3	1:C:119:VAL:HG22	1.97	0.45
1:D:91:LYS:NZ	3:E:5260:CTP:H5'1	2.26	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:197:LEU:HA	1:G:202:TYR:O	2.17	0.45
1:H:105:ARG:CB	1:H:119:VAL:HG22	2.47	0.45
1:C:105:ARG:HD2	1:C:117:MET:HG3	1.99	0.45
1:H:92:ALA:O	1:H:94:PRO:HD3	2.17	0.45
1:A:20:ASP:HA	1:E:54:VAL:CG2	2.46	0.45
1:B:131:ALA:HA	1:B:160:ASN:O	2.17	0.45
1:B:41:TYR:O	1:B:44:SER:HB2	2.17	0.45
1:H:41:TYR:O	1:H:44:SER:HB2	2.17	0.45
3:A:1260:CTP:N4	1:H:96:ALA:O	2.49	0.45
1:F:15:LEU:HD13	1:F:169:ILE:HG22	1.99	0.45
1:G:198:ASN:HB3	1:G:204:LEU:HD11	1.98	0.45
1:B:99:GLY:HA3	1:B:127:PRO:HD3	1.99	0.44
1:D:153:LEU:HD11	1:D:166:ILE:HD11	1.97	0.44
1:E:105:ARG:HA	1:E:119:VAL:HA	2.00	0.44
1:F:105:ARG:HB3	1:F:119:VAL:HG22	1.98	0.44
1:F:188:LEU:HD12	1:F:189:PHE:N	2.31	0.44
1:H:197:LEU:HA	1:H:202:TYR:O	2.17	0.44
1:A:14:ILE:HG21	1:A:35:LEU:HG	1.99	0.44
1:F:87:GLU:O	1:F:91:LYS:HG2	2.18	0.44
1:G:105:ARG:HD2	1:G:117:MET:HG3	1.98	0.44
1:C:21:LYS:HE3	1:C:22:TYR:OH	2.16	0.44
1:G:105:ARG:HA	1:G:119:VAL:HA	1.99	0.44
1:G:105:ARG:HB3	1:G:119:VAL:HG22	1.98	0.44
1:C:99:GLY:HA3	1:C:127:PRO:HD3	1.99	0.44
1:F:131:ALA:HA	1:F:160:ASN:O	2.18	0.44
1:G:188:LEU:HD12	1:G:189:PHE:N	2.32	0.44
1:A:105:ARG:CB	1:A:119:VAL:HG22	2.47	0.44
1:B:127:PRO:HG3	1:G:25:GLN:NE2	2.31	0.44
1:C:14:ILE:HG21	1:C:35:LEU:HG	1.99	0.44
1:C:35:LEU:CD1	1:C:169:ILE:HD12	2.48	0.44
1:D:105:ARG:CB	1:D:119:VAL:HG22	2.48	0.44
1:F:120:TYR:N	1:F:120:TYR:CD1	2.86	0.44
1:G:14:ILE:HG21	1:G:35:LEU:HG	1.99	0.44
1:E:15:LEU:HD13	1:E:169:ILE:HG22	1.99	0.44
1:B:151:LYS:HD2	1:B:151:LYS:HA	1.80	0.44
1:E:105:ARG:CB	1:E:119:VAL:HG22	2.48	0.44
1:E:188:LEU:HD12	1:E:189:PHE:N	2.33	0.44
1:F:105:ARG:HD2	1:F:117:MET:HG3	1.99	0.44
1:C:205:PRO:HA	1:G:60:VAL:HG21	2.00	0.44
1:C:105:ARG:HA	1:C:119:VAL:HA	1.98	0.44
1:D:14:ILE:HG21	1:D:35:LEU:HG	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:105:ARG:HA	1:F:119:VAL:HA	1.99	0.44
1:C:91:LYS:NZ	3:F:6260:CTP:O1G	2.50	0.44
1:A:99:GLY:HA3	1:A:127:PRO:HD3	1.99	0.44
1:E:37:ARG:NH2	1:E:91:LYS:HE2	2.33	0.43
1:A:99:GLY:HA2	1:H:215:PHE:HB3	2.00	0.43
1:A:151:LYS:HD2	1:A:151:LYS:HA	1.81	0.43
1:A:25:GLN:HB2	1:A:214:ALA:O	2.18	0.43
1:F:78:ILE:O	1:F:78:ILE:HG22	2.18	0.43
1:B:188:LEU:C	1:B:188:LEU:HD12	2.38	0.43
1:B:38:ILE:HG23	1:F:41:TYR:CE1	2.53	0.43
1:D:8:LYS:HD2	1:H:41:TYR:OH	2.18	0.43
1:A:92:ALA:O	1:A:94:PRO:HD3	2.18	0.43
1:C:92:ALA:O	1:C:94:PRO:HD3	2.19	0.43
3:D:4260:CTP:O3G	3:H:8260:CTP:O3G	2.35	0.43
1:E:58:LEU:HA	1:E:58:LEU:HD23	1.80	0.43
1:G:155:GLU:HA	1:G:158:LYS:HG3	2.01	0.43
1:H:35:LEU:CD1	1:H:169:ILE:HD12	2.48	0.43
1:B:197:LEU:HA	1:B:202:TYR:O	2.19	0.43
1:B:41:TYR:CE1	1:F:10:ILE:HG21	2.53	0.43
1:D:204:LEU:HD23	1:H:58:LEU:HD13	1.99	0.43
1:B:10:ILE:HG21	1:F:41:TYR:CE1	2.53	0.43
1:F:14:ILE:HG21	1:F:35:LEU:HG	1.99	0.43
1:H:87:GLU:O	1:H:91:LYS:HG2	2.19	0.43
1:C:25:GLN:HB2	1:C:214:ALA:O	2.19	0.43
1:D:204:LEU:HD23	1:H:58:LEU:CD1	2.48	0.43
1:G:99:GLY:HA3	1:G:127:PRO:HD3	1.99	0.43
1:D:41:TYR:CE1	1:H:10:ILE:HG21	2.54	0.43
1:D:171:SER:O	1:D:193:ILE:HA	2.19	0.43
1:C:58:LEU:HD23	1:C:58:LEU:HA	1.79	0.43
1:A:105:ARG:HA	1:A:119:VAL:HA	2.00	0.42
1:A:131:ALA:HA	1:A:160:ASN:O	2.19	0.42
1:B:58:LEU:HD23	1:B:58:LEU:HA	1.82	0.42
1:C:109:ASP:OD2	1:C:200:LYS:HE2	2.19	0.42
1:C:105:ARG:CB	1:C:119:VAL:HG22	2.48	0.42
1:D:25:GLN:HG3	1:D:26:ILE:N	2.34	0.42
1:B:10:ILE:HG22	1:F:45:ASN:OD1	2.19	0.42
1:C:110:GLY:O	1:C:199:ASN:HB3	2.19	0.42
1:C:91:LYS:NZ	3:F:6260:CTP:H5'1	2.33	0.42
1:H:12:LEU:HA	1:H:12:LEU:HD23	1.89	0.42
1:G:35:LEU:CD1	1:G:169:ILE:HD12	2.49	0.42
1:C:204:LEU:HD23	1:G:58:LEU:CD1	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:105:ARG:CB	1:B:119:VAL:HG22	2.49	0.42
1:B:32:LEU:HA	1:B:32:LEU:HD12	1.79	0.42
1:E:155:GLU:HA	1:E:158:LYS:HG3	2.02	0.42
1:F:188:LEU:C	1:F:188:LEU:HD12	2.40	0.42
1:F:110:GLY:O	1:F:199:ASN:HB3	2.19	0.42
1:C:62:THR:HG21	1:G:19:ARG:HD3	2.01	0.42
1:H:105:ARG:HA	1:H:119:VAL:HA	2.00	0.42
1:A:155:GLU:HA	1:A:158:LYS:HG3	2.00	0.42
1:A:21:LYS:HE3	1:A:22:TYR:CZ	2.55	0.42
1:A:78:ILE:O	1:A:78:ILE:HG22	2.19	0.42
1:B:87:GLU:O	1:B:91:LYS:HG2	2.20	0.42
1:C:131:ALA:HA	1:C:160:ASN:O	2.19	0.42
1:A:54:VAL:HG22	1:E:20:ASP:HA	2.02	0.42
1:B:45:ASN:OD1	1:F:10:ILE:HG22	2.20	0.42
1:F:171:SER:O	1:F:193:ILE:HA	2.20	0.42
1:H:14:ILE:HG21	1:H:35:LEU:HG	2.01	0.42
1:E:131:ALA:HA	1:E:160:ASN:O	2.19	0.42
1:E:109:ASP:OD2	1:E:200:LYS:HE2	2.20	0.42
1:G:20:ASP:C	1:G:20:ASP:OD1	2.58	0.42
1:G:32:LEU:HD12	1:G:32:LEU:HA	1.78	0.42
1:H:188:LEU:HD12	1:H:189:PHE:N	2.34	0.42
1:H:37:ARG:CZ	1:H:91:LYS:HB3	2.48	0.42
1:C:160:ASN:O	1:C:160:ASN:ND2	2.52	0.42
1:D:109:ASP:OD2	1:D:200:LYS:HE2	2.20	0.42
1:D:78:ILE:HG22	1:D:78:ILE:O	2.20	0.42
1:G:105:ARG:HA	1:G:118:ASP:O	2.19	0.42
1:D:32:LEU:HD12	1:D:32:LEU:HA	1.78	0.42
1:B:102:GLY:HA3	1:B:122:TYR:CE1	2.55	0.42
1:F:25:GLN:HG3	1:F:26:ILE:N	2.34	0.42
1:G:58:LEU:HD23	1:G:58:LEU:HA	1.81	0.42
1:A:188:LEU:HD12	1:A:189:PHE:N	2.34	0.42
1:B:15:LEU:HD13	1:B:169:ILE:HG22	2.02	0.42
1:B:41:TYR:OH	1:F:8:LYS:HD2	2.20	0.42
1:E:171:SER:O	1:E:193:ILE:HA	2.20	0.42
1:G:109:ASP:OD2	1:G:200:LYS:HE2	2.20	0.42
1:B:25:GLN:HG3	1:B:26:ILE:N	2.35	0.41
1:C:87:GLU:O	1:C:91:LYS:HG2	2.19	0.41
1:F:151:LYS:HD2	1:F:151:LYS:HA	1.80	0.41
1:G:15:LEU:HD13	1:G:169:ILE:HG22	2.01	0.41
1:H:160:ASN:O	1:H:160:ASN:ND2	2.53	0.41
1:H:58:LEU:HA	1:H:58:LEU:HD23	1.82	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:188:LEU:HD12	1:D:189:PHE:N	2.35	0.41
1:E:25:GLN:HB2	1:E:214:ALA:O	2.20	0.41
1:F:144:ALA:HB2	2:F:6250:U5P:H5	2.02	0.41
1:G:160:ASN:ND2	1:G:160:ASN:O	2.52	0.41
1:H:15:LEU:HD13	1:H:169:ILE:HG22	2.02	0.41
1:H:144:ALA:HB2	2:H:8250:U5P:H5	2.01	0.41
1:A:109:ASP:OD2	1:A:200:LYS:HE2	2.20	0.41
1:C:188:LEU:HD12	1:C:189:PHE:N	2.36	0.41
1:C:89:LEU:HA	1:C:89:LEU:HD23	1.88	0.41
1:D:204:LEU:HD21	1:H:58:LEU:HD13	2.01	0.41
1:D:87:GLU:O	1:D:91:LYS:HG2	2.19	0.41
1:F:109:ASP:OD2	1:F:200:LYS:HE2	2.20	0.41
1:B:155:GLU:HA	1:B:158:LYS:HG3	2.03	0.41
1:C:65:VAL:HG12	1:C:66:ASP:N	2.36	0.41
1:D:15:LEU:HD13	1:D:169:ILE:HG22	2.02	0.41
1:D:144:ALA:HB2	2:D:4250:U5P:H5	2.02	0.41
1:D:58:LEU:HD23	1:D:58:LEU:HA	1.82	0.41
1:G:110:GLY:O	1:G:199:ASN:HB3	2.21	0.41
1:D:10:ILE:HG21	1:H:41:TYR:CE1	2.55	0.41
1:E:144:ALA:HB2	2:E:5250:U5P:H5	2.02	0.41
1:D:91:LYS:NZ	3:E:5260:CTP:O1G	2.49	0.41
1:G:25:GLN:HB2	1:G:214:ALA:O	2.21	0.41
1:D:10:ILE:HG22	1:H:45:ASN:OD1	2.20	0.41
1:A:19:ARG:HD3	1:E:62:THR:HG21	2.03	0.41
1:C:140:ASP:HA	1:C:141:PRO:HD3	1.93	0.41
1:A:110:GLY:O	1:A:199:ASN:HB3	2.21	0.41
1:A:19:ARG:HA	1:A:207:LEU:HB3	2.02	0.41
1:B:65:VAL:HG12	1:B:66:ASP:N	2.36	0.41
1:C:151:LYS:HA	1:C:151:LYS:HD2	1.81	0.41
1:D:110:GLY:O	1:D:199:ASN:HB3	2.20	0.41
1:A:213:ARG:HD3	1:E:57:PRO:HG2	2.03	0.41
1:F:102:GLY:HA3	1:F:122:TYR:CE1	2.56	0.41
1:H:106:VAL:HG23	1:H:118:ASP:O	2.20	0.41
1:H:110:GLY:O	1:H:199:ASN:HB3	2.21	0.41
1:A:25:GLN:HG3	1:A:26:ILE:N	2.36	0.41
1:B:109:ASP:OD2	1:B:200:LYS:HE2	2.20	0.41
1:C:78:ILE:HG22	1:C:78:ILE:O	2.20	0.41
1:E:87:GLU:O	1:E:91:LYS:HG2	2.20	0.41
1:F:25:GLN:HB2	1:F:214:ALA:O	2.21	0.41
1:B:25:GLN:NE2	1:G:127:PRO:HG3	2.34	0.41
1:H:25:GLN:HG3	1:H:26:ILE:N	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:160:ASN:O	1:A:160:ASN:ND2	2.54	0.41
1:D:55:GLU:HG3	1:D:61:LYS:HG2	2.02	0.41
1:E:19:ARG:HA	1:E:207:LEU:HB3	2.03	0.41
1:C:99:GLY:HA2	1:F:215:PHE:HB3	2.03	0.41
1:G:105:ARG:CB	1:G:119:VAL:HG22	2.50	0.41
1:A:80:ARG:NH1	1:A:104:SER:OG	2.54	0.41
1:F:105:ARG:CB	1:F:119:VAL:HG22	2.50	0.41
1:G:131:ALA:HA	1:G:160:ASN:O	2.21	0.41
1:H:155:GLU:HA	1:H:158:LYS:HG3	2.02	0.41
1:B:110:GLY:O	1:B:199:ASN:HB3	2.20	0.40
1:E:110:GLY:O	1:E:199:ASN:HB3	2.20	0.40
1:A:144:ALA:HB2	2:A:1250:U5P:H5	2.03	0.40
1:A:171:SER:O	1:A:193:ILE:HA	2.21	0.40
1:D:99:GLY:HA2	1:E:215:PHE:HB3	2.04	0.40
1:E:54:VAL:HG22	1:E:55:GLU:N	2.36	0.40
1:G:19:ARG:HA	1:G:207:LEU:HB3	2.03	0.40
1:G:89:LEU:HD23	1:G:89:LEU:HA	1.89	0.40
1:A:106:VAL:HG23	1:A:118:ASP:O	2.21	0.40
1:C:15:LEU:HD13	1:C:169:ILE:HG22	2.03	0.40
1:D:153:LEU:C	1:D:155:GLU:N	2.75	0.40
1:H:78:ILE:HG22	1:H:78:ILE:O	2.20	0.40
1:C:171:SER:O	1:C:193:ILE:HA	2.21	0.40
1:G:80:ARG:NH1	1:G:104:SER:OG	2.54	0.40
1:H:131:ALA:HA	1:H:160:ASN:O	2.20	0.40
3:A:1260:CTP:O1G	1:H:91:LYS:NZ	2.53	0.40
1:C:19:ARG:HA	1:C:207:LEU:HB3	2.04	0.40
1:D:103:ALA:HA	1:D:120:TYR:O	2.22	0.40
1:E:37:ARG:HH21	1:E:91:LYS:HE2	1.85	0.40
1:F:58:LEU:HA	1:F:58:LEU:HD23	1.79	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	213/216 (99%)	197 (92%)	16 (8%)	0	100	100
1	B	213/216 (99%)	196 (92%)	17 (8%)	0	100	100
1	C	213/216 (99%)	195 (92%)	18 (8%)	0	100	100
1	D	213/216 (99%)	195 (92%)	17 (8%)	1 (0%)	29	61
1	E	213/216 (99%)	195 (92%)	18 (8%)	0	100	100
1	F	213/216 (99%)	193 (91%)	20 (9%)	0	100	100
1	G	213/216 (99%)	195 (92%)	18 (8%)	0	100	100
1	H	213/216 (99%)	193 (91%)	20 (9%)	0	100	100
All	All	1704/1728 (99%)	1559 (92%)	144 (8%)	1 (0%)	51	81

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	20	ASP

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	188/189 (100%)	184 (98%)	4 (2%)	53	84
1	B	188/189 (100%)	184 (98%)	4 (2%)	53	84
1	C	188/189 (100%)	184 (98%)	4 (2%)	53	84
1	D	188/189 (100%)	184 (98%)	4 (2%)	53	84
1	E	188/189 (100%)	184 (98%)	4 (2%)	53	84
1	F	188/189 (100%)	185 (98%)	3 (2%)	62	88
1	G	188/189 (100%)	184 (98%)	4 (2%)	53	84
1	H	188/189 (100%)	184 (98%)	4 (2%)	53	84
All	All	1504/1512 (100%)	1473 (98%)	31 (2%)	53	84

All (31) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17	GLN
1	A	112	GLU
1	A	128	ASP
1	A	207	LEU
1	B	17	GLN
1	B	112	GLU
1	B	128	ASP
1	B	207	LEU
1	C	17	GLN
1	C	112	GLU
1	C	118	ASP
1	C	207	LEU
1	D	17	GLN
1	D	112	GLU
1	D	118	ASP
1	D	207	LEU
1	E	17	GLN
1	E	112	GLU
1	E	118	ASP
1	E	207	LEU
1	F	17	GLN
1	F	112	GLU
1	F	207	LEU
1	G	17	GLN
1	G	112	GLU
1	G	118	ASP
1	G	207	LEU
1	H	17	GLN
1	H	112	GLU
1	H	118	ASP
1	H	207	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	98	GLN
1	B	98	GLN
1	C	98	GLN
1	D	98	GLN
1	E	98	GLN
1	F	98	GLN
1	G	98	GLN
1	H	98	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

16 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	U5P	H	8250	-	18,22,22	1.82	6 (33%)	21,33,33	1.49	3 (14%)
3	CTP	D	4260	-	23,30,30	3.06	13 (56%)	30,47,47	2.06	6 (20%)
3	CTP	G	7260	-	23,30,30	3.11	12 (52%)	30,47,47	2.05	6 (20%)
2	U5P	G	7250	-	18,22,22	1.75	3 (16%)	21,33,33	1.48	3 (14%)
2	U5P	B	2250	-	18,22,22	1.80	5 (27%)	21,33,33	1.50	3 (14%)
2	U5P	A	1250	-	18,22,22	1.81	6 (33%)	21,33,33	1.48	4 (19%)
3	CTP	E	5260	-	23,30,30	3.06	12 (52%)	30,47,47	2.07	6 (20%)
2	U5P	E	5250	-	18,22,22	1.75	6 (33%)	21,33,33	1.47	3 (14%)
2	U5P	C	3250	-	18,22,22	1.83	4 (22%)	21,33,33	1.49	3 (14%)
3	CTP	F	6260	-	23,30,30	3.06	11 (47%)	30,47,47	2.04	6 (20%)
3	CTP	A	1260	-	23,30,30	3.08	13 (56%)	30,47,47	2.07	6 (20%)
2	U5P	D	4250	-	18,22,22	1.72	4 (22%)	21,33,33	1.50	4 (19%)
2	U5P	F	6250	-	18,22,22	1.78	5 (27%)	21,33,33	1.48	3 (14%)
3	CTP	H	8260	-	23,30,30	3.01	13 (56%)	30,47,47	2.04	6 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	CTP	G	2260	-	23,30,30	3.13	12 (52%)	30,47,47	2.07	6 (20%)
3	CTP	C	3260	-	23,30,30	3.06	12 (52%)	30,47,47	2.04	6 (20%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	U5P	H	8250	-	-	2/8/26/26	0/2/2/2
3	CTP	D	4260	-	-	7/20/38/38	0/2/2/2
3	CTP	G	7260	-	-	7/20/38/38	0/2/2/2
2	U5P	G	7250	-	-	2/8/26/26	0/2/2/2
2	U5P	B	2250	-	-	2/8/26/26	0/2/2/2
2	U5P	A	1250	-	-	2/8/26/26	0/2/2/2
3	CTP	E	5260	-	-	7/20/38/38	0/2/2/2
2	U5P	E	5250	-	-	2/8/26/26	0/2/2/2
2	U5P	C	3250	-	-	2/8/26/26	0/2/2/2
3	CTP	F	6260	-	-	7/20/38/38	0/2/2/2
3	CTP	A	1260	-	-	7/20/38/38	0/2/2/2
2	U5P	D	4250	-	-	2/8/26/26	0/2/2/2
2	U5P	F	6250	-	-	2/8/26/26	0/2/2/2
3	CTP	H	8260	-	-	7/20/38/38	0/2/2/2
3	CTP	G	2260	-	-	7/20/38/38	0/2/2/2
3	CTP	C	3260	-	-	7/20/38/38	0/2/2/2

All (137) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	5260	CTP	PA-O5'	6.08	1.83	1.59
3	F	6260	CTP	PA-O5'	6.05	1.83	1.59
3	A	1260	CTP	PA-O5'	6.02	1.83	1.59
3	C	3260	CTP	PA-O5'	5.97	1.83	1.59
3	G	2260	CTP	PA-O5'	5.95	1.83	1.59
3	G	7260	CTP	PA-O5'	5.91	1.83	1.59
3	H	8260	CTP	PA-O5'	5.87	1.83	1.59
3	D	4260	CTP	PA-O5'	5.87	1.83	1.59
3	A	1260	CTP	PB-O1B	5.70	1.71	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	G	2260	CTP	PB-O1B	5.68	1.71	1.50
3	C	3260	CTP	PB-O1B	5.66	1.71	1.50
3	E	5260	CTP	PB-O1B	5.61	1.70	1.50
3	D	4260	CTP	PB-O1B	5.59	1.70	1.50
3	G	7260	CTP	PB-O1B	5.59	1.70	1.50
3	F	6260	CTP	PB-O1B	5.52	1.70	1.50
3	H	8260	CTP	PB-O1B	5.51	1.70	1.50
3	G	2260	CTP	O4'-C1'	4.71	1.47	1.41
3	G	2260	CTP	C4-N3	4.70	1.43	1.35
3	G	7260	CTP	C4-N3	4.67	1.43	1.35
3	C	3260	CTP	C4-N3	4.66	1.43	1.35
3	G	7260	CTP	O4'-C1'	4.63	1.47	1.41
3	G	7260	CTP	C6-N1	4.56	1.41	1.35
3	F	6260	CTP	C4-N3	4.56	1.42	1.35
3	E	5260	CTP	C4-N3	4.55	1.42	1.35
3	D	4260	CTP	C4-N3	4.54	1.42	1.35
3	G	2260	CTP	C6-N1	4.49	1.41	1.35
3	H	8260	CTP	C4-N3	4.45	1.42	1.35
3	F	6260	CTP	O4'-C1'	4.44	1.47	1.41
3	H	8260	CTP	O4'-C1'	4.41	1.47	1.41
3	C	3260	CTP	O4'-C1'	4.39	1.47	1.41
3	A	1260	CTP	O4'-C1'	4.38	1.47	1.41
3	A	1260	CTP	C4-N3	4.36	1.42	1.35
3	F	6260	CTP	C6-N1	4.31	1.41	1.35
3	D	4260	CTP	O4'-C1'	4.23	1.47	1.41
3	E	5260	CTP	C6-N1	4.17	1.41	1.35
3	A	1260	CTP	C6-N1	4.16	1.41	1.35
2	C	3250	U5P	C6-N1	-4.13	1.30	1.35
3	A	1260	CTP	PG-O3G	4.11	1.70	1.54
3	D	4260	CTP	C6-N1	4.11	1.40	1.35
3	D	4260	CTP	PG-O3G	4.07	1.70	1.54
3	E	5260	CTP	O4'-C1'	4.06	1.46	1.41
2	B	2250	U5P	C4-N3	4.05	1.40	1.33
3	E	5260	CTP	PG-O3G	4.03	1.70	1.54
3	G	2260	CTP	PG-O3G	4.02	1.70	1.54
3	C	3260	CTP	PG-O3G	4.02	1.70	1.54
3	G	7260	CTP	PG-O3G	4.02	1.70	1.54
3	F	6260	CTP	PG-O3G	4.01	1.70	1.54
2	D	4250	U5P	C6-N1	-3.98	1.30	1.35
2	A	1250	U5P	C4-N3	3.95	1.39	1.33
2	H	8250	U5P	C4-N3	3.93	1.39	1.33
3	C	3260	CTP	C6-N1	3.92	1.40	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	H	8260	CTP	PG-O3G	3.92	1.70	1.54
3	C	3260	CTP	C6-C5	3.87	1.46	1.38
3	D	4260	CTP	C6-C5	3.86	1.46	1.38
3	F	6260	CTP	O4'-C4'	3.84	1.53	1.45
3	E	5260	CTP	C6-C5	3.84	1.46	1.38
2	G	7250	U5P	C4-N3	3.81	1.39	1.33
2	F	6250	U5P	C4-N3	3.79	1.39	1.33
2	E	5250	U5P	C6-N1	-3.78	1.31	1.35
2	G	7250	U5P	C6-N1	-3.76	1.31	1.35
3	H	8260	CTP	C6-N1	3.75	1.40	1.35
2	B	2250	U5P	C6-N1	-3.75	1.31	1.35
3	E	5260	CTP	O4'-C4'	3.74	1.53	1.45
3	G	2260	CTP	O4'-C4'	3.73	1.53	1.45
3	H	8260	CTP	C6-C5	3.72	1.46	1.38
3	G	7260	CTP	O4'-C4'	3.68	1.53	1.45
3	F	6260	CTP	C6-C5	3.64	1.46	1.38
2	C	3250	U5P	C4-N3	3.64	1.39	1.33
3	A	1260	CTP	C6-C5	3.64	1.46	1.38
3	A	1260	CTP	O4'-C4'	3.62	1.53	1.45
3	G	7260	CTP	C6-C5	3.59	1.46	1.38
3	G	2260	CTP	C6-C5	3.59	1.46	1.38
2	A	1250	U5P	C6-N1	-3.57	1.31	1.35
2	H	8250	U5P	C6-N1	-3.53	1.31	1.35
2	F	6250	U5P	C6-N1	-3.50	1.31	1.35
3	D	4260	CTP	O4'-C4'	3.48	1.52	1.45
3	C	3260	CTP	O4'-C4'	3.41	1.52	1.45
3	H	8260	CTP	O4'-C4'	3.35	1.52	1.45
2	E	5250	U5P	C4-N3	3.27	1.38	1.33
2	D	4250	U5P	C4-N3	3.14	1.38	1.33
3	A	1260	CTP	C5'-C4'	3.12	1.61	1.51
3	F	6260	CTP	C5'-C4'	3.07	1.61	1.51
3	G	2260	CTP	C5'-C4'	3.06	1.61	1.51
3	H	8260	CTP	C5'-C4'	3.03	1.61	1.51
3	D	4260	CTP	C5'-C4'	3.01	1.61	1.51
3	G	2260	CTP	C3'-C4'	3.00	1.60	1.53
3	G	7260	CTP	C5'-C4'	2.99	1.60	1.51
3	G	7260	CTP	C3'-C4'	2.97	1.60	1.53
3	E	5260	CTP	C5'-C4'	2.94	1.60	1.51
3	E	5260	CTP	C3'-C4'	2.93	1.60	1.53
3	F	6260	CTP	C3'-C4'	2.88	1.60	1.53
3	C	3260	CTP	C5'-C4'	2.86	1.60	1.51
3	A	1260	CTP	C3'-C4'	2.86	1.60	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	H	8260	CTP	C3'-C4'	2.85	1.60	1.53
3	G	7260	CTP	PA-O1A	2.84	1.61	1.50
3	A	1260	CTP	PA-O1A	2.81	1.60	1.50
3	H	8260	CTP	PA-O1A	2.81	1.60	1.50
3	D	4260	CTP	PA-O1A	2.80	1.60	1.50
3	D	4260	CTP	C3'-C4'	2.80	1.60	1.53
3	G	2260	CTP	PA-O1A	2.80	1.60	1.50
3	C	3260	CTP	C3'-C4'	2.78	1.60	1.53
3	C	3260	CTP	PA-O1A	2.77	1.60	1.50
3	E	5260	CTP	PA-O1A	2.68	1.60	1.50
3	F	6260	CTP	PA-O1A	2.68	1.60	1.50
2	H	8250	U5P	O4'-C1'	2.49	1.44	1.41
2	D	4250	U5P	O2'-C2'	-2.43	1.37	1.43
2	A	1250	U5P	O4'-C1'	2.37	1.44	1.41
2	C	3250	U5P	O3'-C3'	2.36	1.48	1.43
2	H	8250	U5P	O3'-C3'	2.28	1.48	1.43
2	A	1250	U5P	O3'-C3'	2.28	1.48	1.43
3	H	8260	CTP	C4-N4	2.23	1.41	1.35
2	E	5250	U5P	O2'-C2'	-2.21	1.37	1.43
2	B	2250	U5P	O3'-C3'	2.20	1.48	1.43
2	F	6250	U5P	O4'-C1'	2.19	1.44	1.41
2	B	2250	U5P	O2'-C2'	-2.19	1.37	1.43
2	A	1250	U5P	O2'-C2'	-2.17	1.37	1.43
2	H	8250	U5P	C3'-C2'	2.17	1.59	1.53
2	G	7250	U5P	O2'-C2'	-2.16	1.37	1.43
3	H	8260	CTP	C2'-C1'	-2.16	1.50	1.53
3	D	4260	CTP	C4-N4	2.15	1.41	1.35
2	E	5250	U5P	O4'-C1'	2.15	1.44	1.41
3	G	7260	CTP	C4-N4	2.15	1.41	1.35
3	A	1260	CTP	C2'-C1'	-2.15	1.50	1.53
3	D	4260	CTP	C2'-C1'	-2.14	1.50	1.53
2	F	6250	U5P	C3'-C2'	2.14	1.59	1.53
2	D	4250	U5P	O3'-C3'	2.14	1.48	1.43
3	G	2260	CTP	C4-N4	2.14	1.41	1.35
2	F	6250	U5P	O2'-C2'	-2.14	1.37	1.43
2	E	5250	U5P	O3'-C3'	2.11	1.48	1.43
3	C	3260	CTP	C4-N4	2.10	1.41	1.35
3	A	1260	CTP	C4-N4	2.10	1.41	1.35
2	E	5250	U5P	C3'-C2'	2.10	1.59	1.53
2	A	1250	U5P	C3'-C2'	2.09	1.59	1.53
2	C	3250	U5P	O2'-C2'	-2.07	1.38	1.43
2	B	2250	U5P	O4'-C1'	2.04	1.43	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	5260	CTP	C4-N4	2.02	1.41	1.35
2	H	8250	U5P	O2'-C2'	-2.02	1.38	1.43

All (74) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	G	2260	CTP	PB-O3B-PG	-6.46	110.66	132.83
3	C	3260	CTP	PB-O3B-PG	-6.46	110.66	132.83
3	D	4260	CTP	PB-O3B-PG	-6.45	110.70	132.83
3	A	1260	CTP	PB-O3B-PG	-6.42	110.78	132.83
3	E	5260	CTP	PB-O3B-PG	-6.41	110.83	132.83
3	H	8260	CTP	PB-O3B-PG	-6.40	110.88	132.83
3	G	7260	CTP	PB-O3B-PG	-6.38	110.94	132.83
3	F	6260	CTP	PB-O3B-PG	-6.35	111.05	132.83
3	G	2260	CTP	C2-N3-C4	5.28	121.69	116.34
3	E	5260	CTP	C2-N3-C4	5.26	121.67	116.34
3	A	1260	CTP	C2-N3-C4	5.24	121.65	116.34
3	D	4260	CTP	C2-N3-C4	5.19	121.60	116.34
3	G	7260	CTP	C2-N3-C4	5.07	121.47	116.34
3	C	3260	CTP	C2-N3-C4	4.99	121.40	116.34
3	H	8260	CTP	C2-N3-C4	4.92	121.33	116.34
3	F	6260	CTP	C2-N3-C4	4.89	121.30	116.34
3	G	2260	CTP	PB-O3A-PA	-3.66	120.27	132.83
3	A	1260	CTP	PB-O3A-PA	-3.65	120.29	132.83
3	F	6260	CTP	PB-O3A-PA	-3.64	120.33	132.83
3	G	7260	CTP	PB-O3A-PA	-3.61	120.43	132.83
3	H	8260	CTP	PB-O3A-PA	-3.61	120.43	132.83
3	D	4260	CTP	PB-O3A-PA	-3.60	120.49	132.83
3	E	5260	CTP	PB-O3A-PA	-3.58	120.53	132.83
3	C	3260	CTP	PB-O3A-PA	-3.53	120.70	132.83
3	D	4260	CTP	O4'-C4'-C5'	3.22	119.95	109.37
3	E	5260	CTP	O4'-C4'-C5'	3.22	119.95	109.37
3	A	1260	CTP	O4'-C4'-C5'	3.20	119.91	109.37
3	G	7260	CTP	O4'-C4'-C5'	3.19	119.88	109.37
3	F	6260	CTP	O4'-C4'-C5'	3.18	119.82	109.37
3	G	2260	CTP	O4'-C4'-C5'	3.16	119.78	109.37
3	H	8260	CTP	O4'-C4'-C5'	3.14	119.71	109.37
3	C	3260	CTP	O4'-C4'-C5'	3.14	119.69	109.37
2	D	4250	U5P	C3'-C2'-C1'	3.03	105.55	100.98
2	B	2250	U5P	C3'-C2'-C1'	3.00	105.50	100.98
2	C	3250	U5P	C3'-C2'-C1'	2.91	105.36	100.98
2	E	5250	U5P	C3'-C2'-C1'	2.88	105.32	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	3250	U5P	O4'-C4'-C3'	2.85	110.76	105.11
2	G	7250	U5P	C3'-C2'-C1'	2.84	105.26	100.98
2	F	6250	U5P	C3'-C2'-C1'	2.81	105.21	100.98
2	A	1250	U5P	C3'-C2'-C1'	2.78	105.16	100.98
2	B	2250	U5P	O4'-C4'-C3'	2.77	110.60	105.11
2	D	4250	U5P	O4'-C4'-C3'	2.76	110.57	105.11
2	G	7250	U5P	O4'-C4'-C3'	2.73	110.52	105.11
2	E	5250	U5P	O4'-C4'-C3'	2.72	110.50	105.11
2	H	8250	U5P	C3'-C2'-C1'	2.71	105.06	100.98
2	F	6250	U5P	O4'-C4'-C3'	2.71	110.48	105.11
2	H	8250	U5P	O4'-C4'-C3'	2.71	110.47	105.11
2	G	7250	U5P	O5'-C5'-C4'	2.62	118.00	108.99
2	A	1250	U5P	O4'-C4'-C3'	2.60	110.27	105.11
2	C	3250	U5P	O5'-C5'-C4'	2.58	117.88	108.99
2	A	1250	U5P	O5'-C5'-C4'	2.57	117.83	108.99
2	B	2250	U5P	O5'-C5'-C4'	2.56	117.81	108.99
2	H	8250	U5P	O5'-C5'-C4'	2.53	117.71	108.99
2	E	5250	U5P	O5'-C5'-C4'	2.52	117.68	108.99
2	D	4250	U5P	O5'-C5'-C4'	2.51	117.63	108.99
2	F	6250	U5P	O5'-C5'-C4'	2.47	117.50	108.99
3	D	4260	CTP	O3'-C3'-C4'	-2.22	104.62	111.05
3	H	8260	CTP	O3'-C3'-C4'	-2.21	104.66	111.05
3	F	6260	CTP	O3'-C3'-C4'	-2.20	104.68	111.05
3	G	7260	CTP	O3'-C3'-C4'	-2.19	104.71	111.05
3	A	1260	CTP	O3'-C3'-C4'	-2.19	104.72	111.05
3	G	2260	CTP	O3'-C3'-C4'	-2.17	104.78	111.05
3	C	3260	CTP	O3'-C3'-C4'	-2.15	104.82	111.05
3	G	7260	CTP	O2A-PA-O1A	2.15	122.89	112.24
3	E	5260	CTP	O2A-PA-O1A	2.14	122.83	112.24
3	F	6260	CTP	O2A-PA-O1A	2.14	122.80	112.24
3	C	3260	CTP	O2A-PA-O1A	2.13	122.79	112.24
3	G	2260	CTP	O2A-PA-O1A	2.13	122.77	112.24
3	D	4260	CTP	O2A-PA-O1A	2.13	122.75	112.24
3	H	8260	CTP	O2A-PA-O1A	2.12	122.75	112.24
2	D	4250	U5P	O3'-C3'-C2'	-2.12	104.96	111.82
3	A	1260	CTP	O2A-PA-O1A	2.12	122.72	112.24
3	E	5260	CTP	O3'-C3'-C4'	-2.11	104.95	111.05
2	A	1250	U5P	O3'-C3'-C2'	-2.02	105.27	111.82

There are no chirality outliers.

All (72) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	G	7260	CTP	C3'-C4'-C5'-O5'
3	G	7260	CTP	O4'-C4'-C5'-O5'
3	G	7260	CTP	C5'-O5'-PA-O2A
3	G	7260	CTP	C5'-O5'-PA-O3A
3	F	6260	CTP	C3'-C4'-C5'-O5'
3	F	6260	CTP	O4'-C4'-C5'-O5'
3	F	6260	CTP	C5'-O5'-PA-O2A
3	F	6260	CTP	C5'-O5'-PA-O3A
3	D	4260	CTP	C3'-C4'-C5'-O5'
3	D	4260	CTP	O4'-C4'-C5'-O5'
3	D	4260	CTP	C5'-O5'-PA-O2A
3	D	4260	CTP	C5'-O5'-PA-O3A
3	H	8260	CTP	C3'-C4'-C5'-O5'
3	H	8260	CTP	O4'-C4'-C5'-O5'
3	H	8260	CTP	C5'-O5'-PA-O2A
3	H	8260	CTP	C5'-O5'-PA-O3A
3	A	1260	CTP	C3'-C4'-C5'-O5'
3	A	1260	CTP	O4'-C4'-C5'-O5'
3	A	1260	CTP	C5'-O5'-PA-O2A
3	A	1260	CTP	C5'-O5'-PA-O3A
3	E	5260	CTP	C3'-C4'-C5'-O5'
3	E	5260	CTP	O4'-C4'-C5'-O5'
3	E	5260	CTP	C5'-O5'-PA-O2A
3	E	5260	CTP	C5'-O5'-PA-O3A
3	G	2260	CTP	C3'-C4'-C5'-O5'
3	G	2260	CTP	O4'-C4'-C5'-O5'
3	G	2260	CTP	C5'-O5'-PA-O2A
3	G	2260	CTP	C5'-O5'-PA-O3A
3	C	3260	CTP	C3'-C4'-C5'-O5'
3	C	3260	CTP	O4'-C4'-C5'-O5'
3	C	3260	CTP	C5'-O5'-PA-O2A
3	C	3260	CTP	C5'-O5'-PA-O3A
2	H	8250	U5P	C3'-C4'-C5'-O5'
2	H	8250	U5P	O4'-C4'-C5'-O5'
2	G	7250	U5P	C3'-C4'-C5'-O5'
2	G	7250	U5P	O4'-C4'-C5'-O5'
2	F	6250	U5P	C3'-C4'-C5'-O5'
2	F	6250	U5P	O4'-C4'-C5'-O5'
2	A	1250	U5P	C3'-C4'-C5'-O5'
2	A	1250	U5P	O4'-C4'-C5'-O5'
2	B	2250	U5P	C3'-C4'-C5'-O5'
2	B	2250	U5P	O4'-C4'-C5'-O5'
2	C	3250	U5P	C3'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
2	C	3250	U5P	O4'-C4'-C5'-O5'
2	D	4250	U5P	C3'-C4'-C5'-O5'
2	D	4250	U5P	O4'-C4'-C5'-O5'
2	E	5250	U5P	C3'-C4'-C5'-O5'
2	E	5250	U5P	O4'-C4'-C5'-O5'
3	G	7260	CTP	PB-O3A-PA-O2A
3	F	6260	CTP	PB-O3A-PA-O2A
3	D	4260	CTP	PB-O3A-PA-O2A
3	H	8260	CTP	PB-O3A-PA-O2A
3	A	1260	CTP	PB-O3A-PA-O2A
3	E	5260	CTP	PB-O3A-PA-O2A
3	G	2260	CTP	PB-O3A-PA-O2A
3	C	3260	CTP	PB-O3A-PA-O2A
3	G	7260	CTP	C5'-O5'-PA-O1A
3	F	6260	CTP	C5'-O5'-PA-O1A
3	D	4260	CTP	C5'-O5'-PA-O1A
3	H	8260	CTP	C5'-O5'-PA-O1A
3	A	1260	CTP	C5'-O5'-PA-O1A
3	E	5260	CTP	C5'-O5'-PA-O1A
3	G	2260	CTP	C5'-O5'-PA-O1A
3	C	3260	CTP	C5'-O5'-PA-O1A
3	G	7260	CTP	PB-O3A-PA-O1A
3	F	6260	CTP	PB-O3A-PA-O1A
3	D	4260	CTP	PB-O3A-PA-O1A
3	A	1260	CTP	PB-O3A-PA-O1A
3	E	5260	CTP	PB-O3A-PA-O1A
3	G	2260	CTP	PB-O3A-PA-O1A
3	C	3260	CTP	PB-O3A-PA-O1A
3	H	8260	CTP	PB-O3A-PA-O1A

There are no ring outliers.

16 monomers are involved in 44 short contacts:

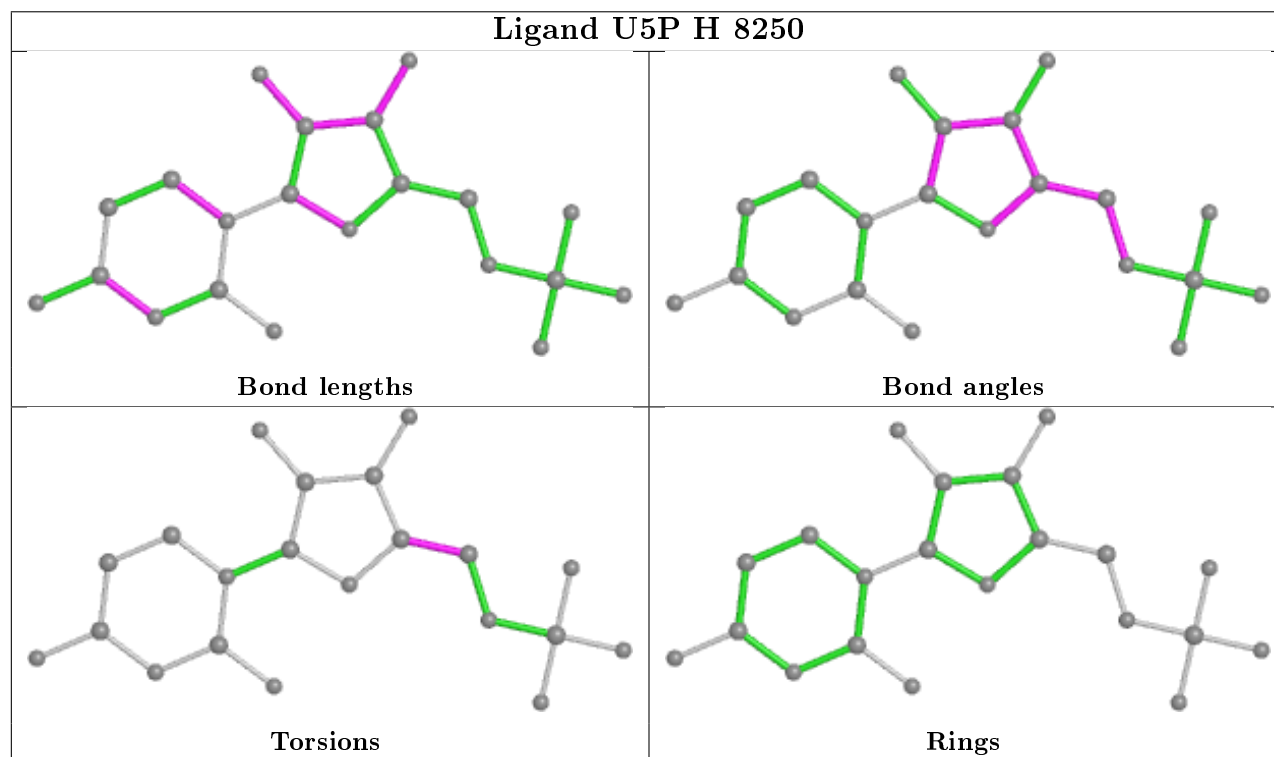
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	H	8250	U5P	3	0
3	D	4260	CTP	3	0
3	G	7260	CTP	2	0
2	G	7250	U5P	2	0
2	B	2250	U5P	2	0
2	A	1250	U5P	3	0
3	E	5260	CTP	4	0
2	E	5250	U5P	3	0

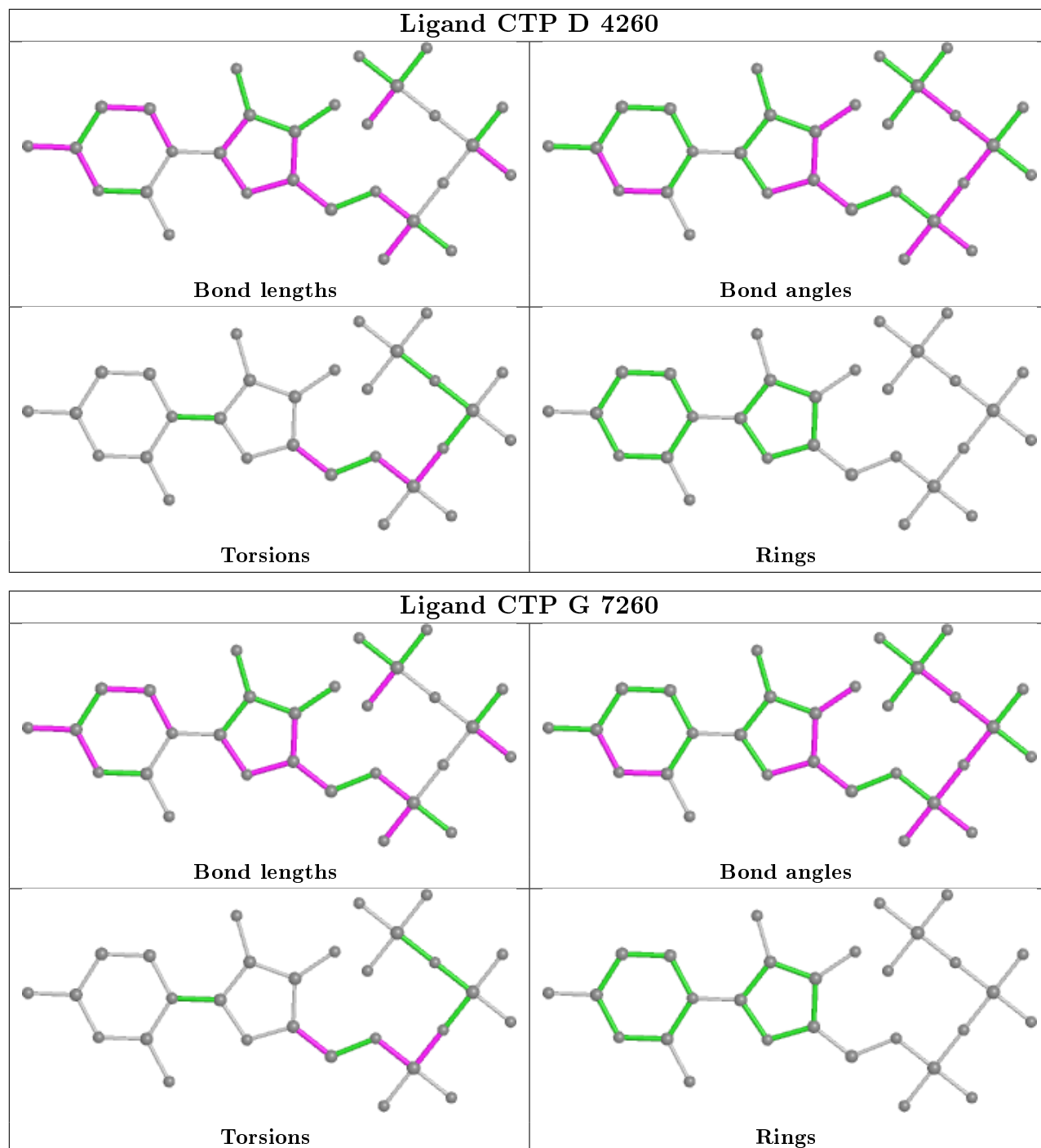
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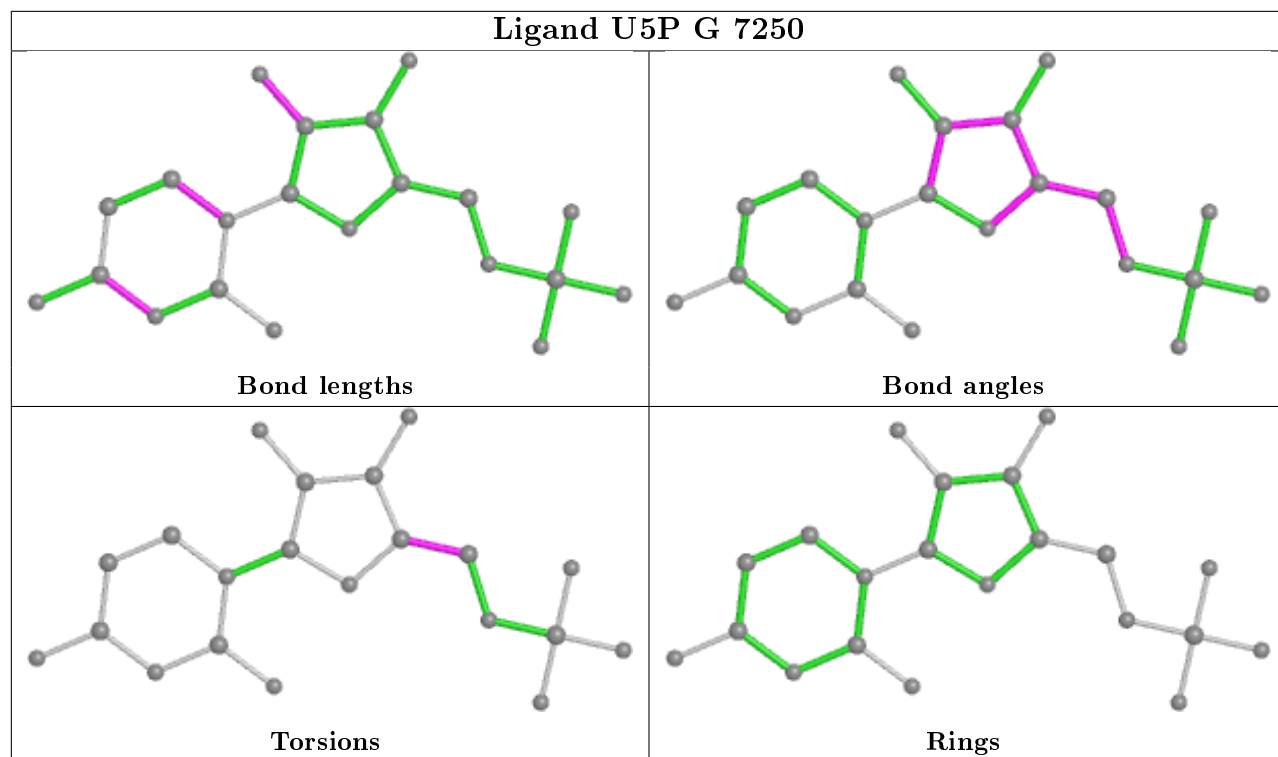
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	3250	U5P	2	0
3	F	6260	CTP	4	0
3	A	1260	CTP	4	0
2	D	4250	U5P	3	0
2	F	6250	U5P	3	0
3	H	8260	CTP	3	0
3	G	2260	CTP	2	0
3	C	3260	CTP	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

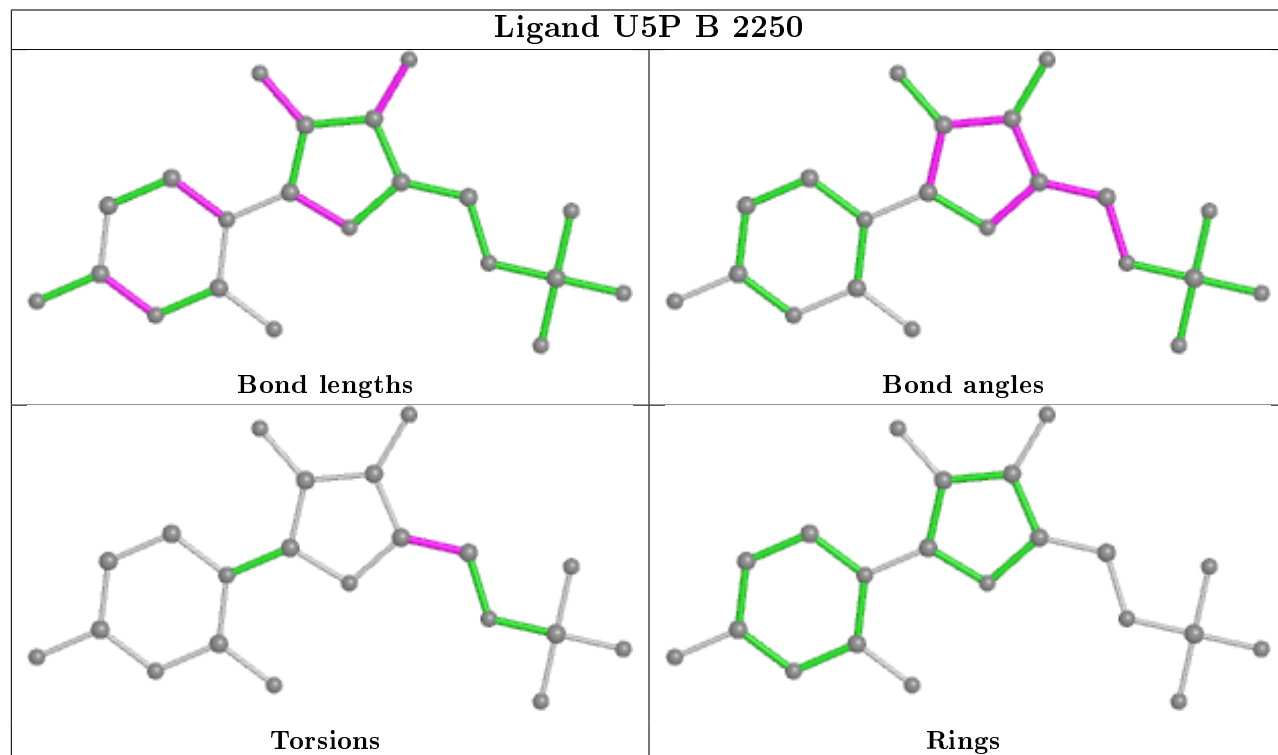




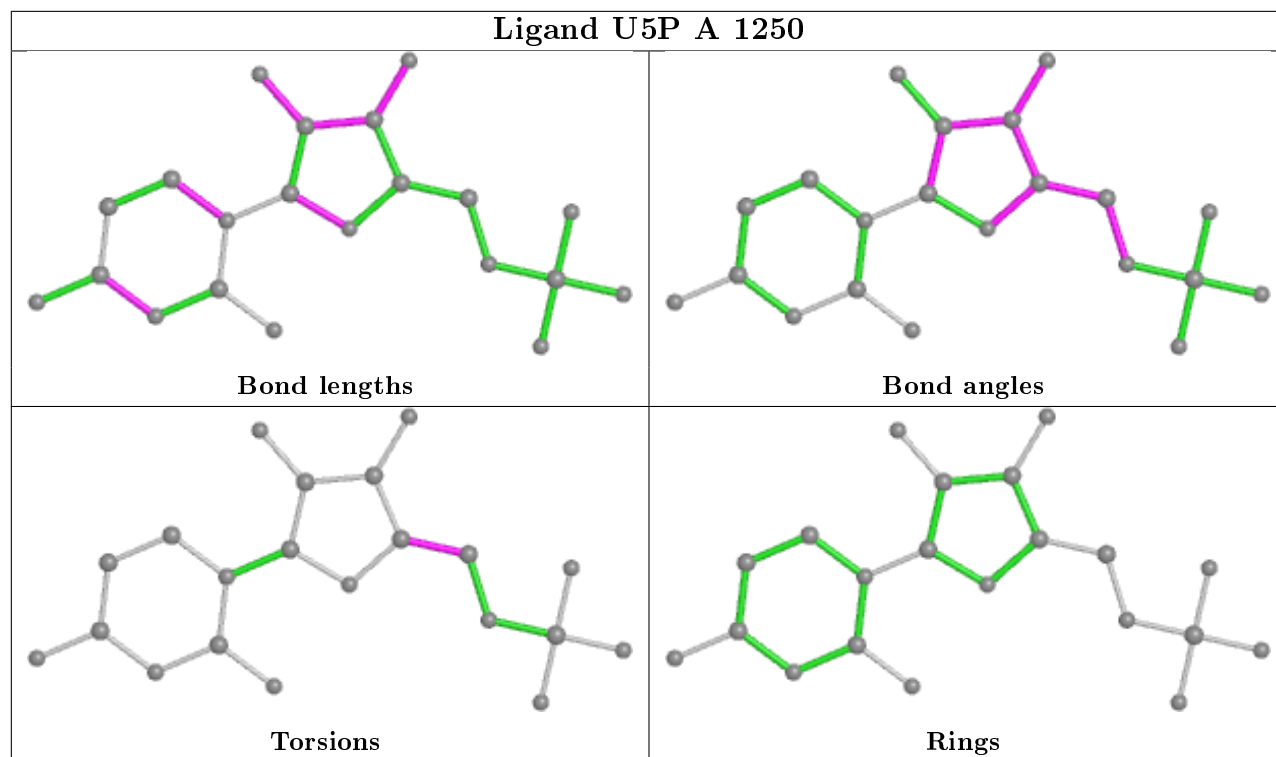
Ligand U5P G 7250



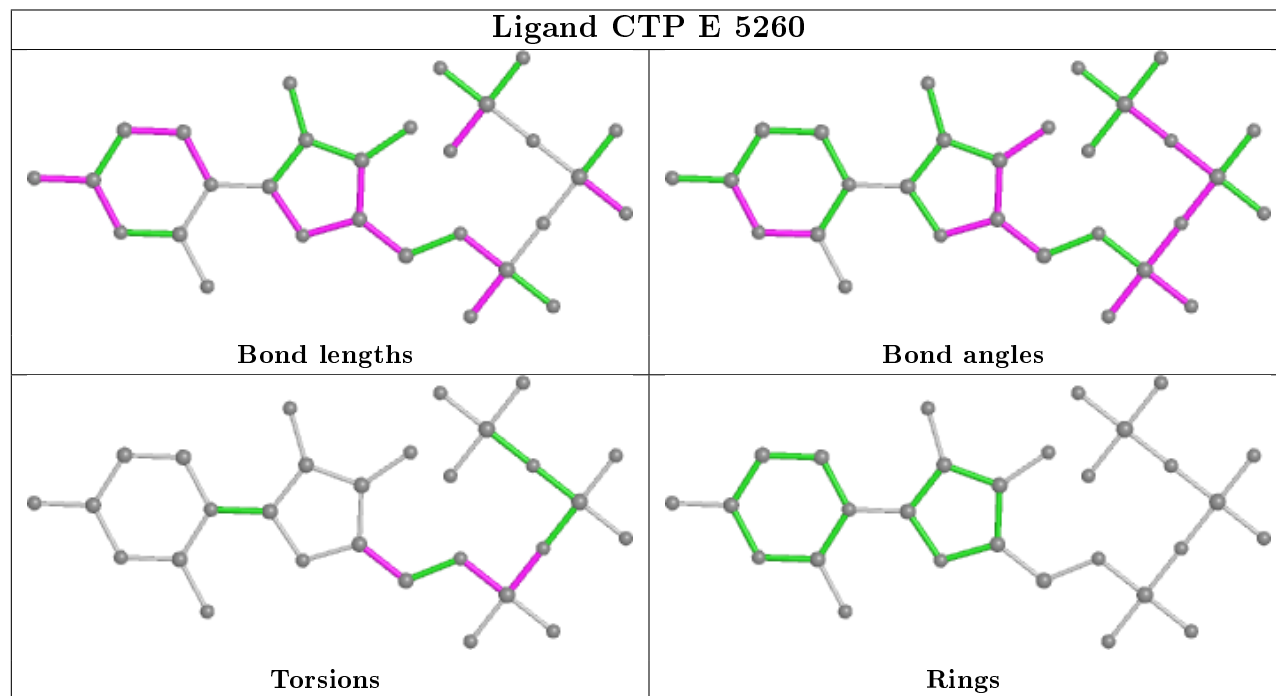
Ligand U5P B 2250



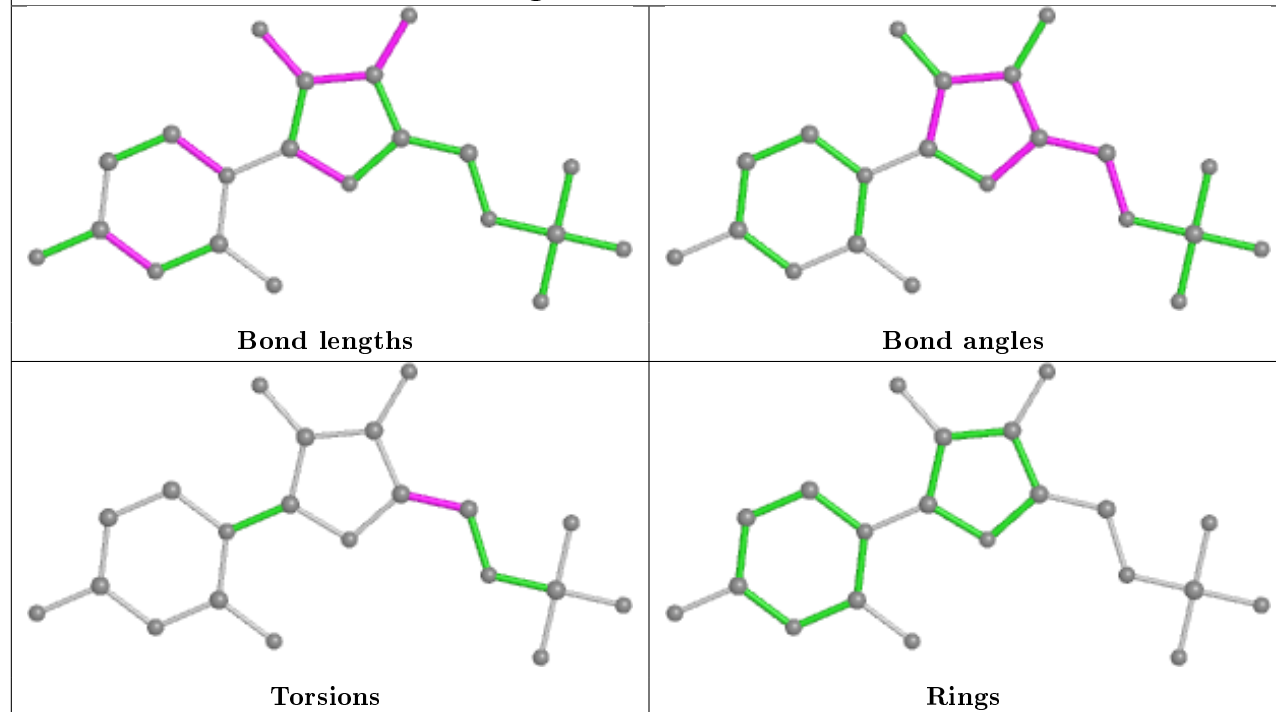
Ligand U5P A 1250



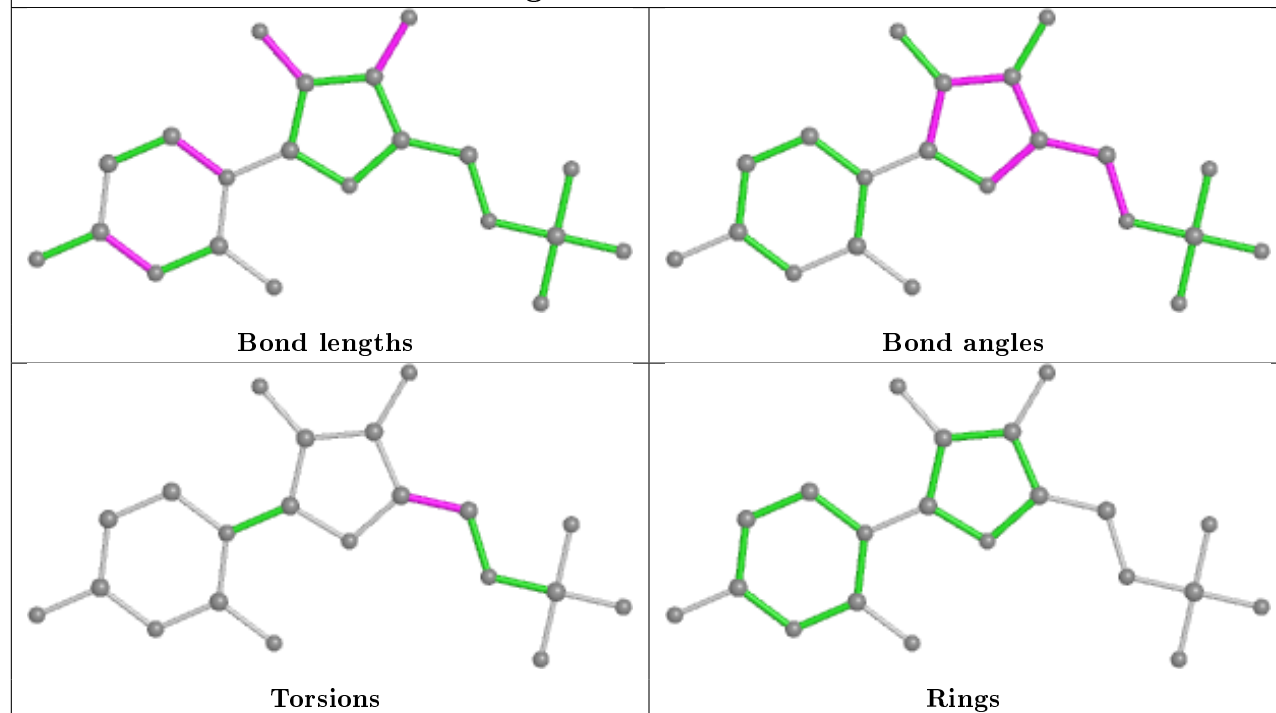
Ligand CTP E 5260

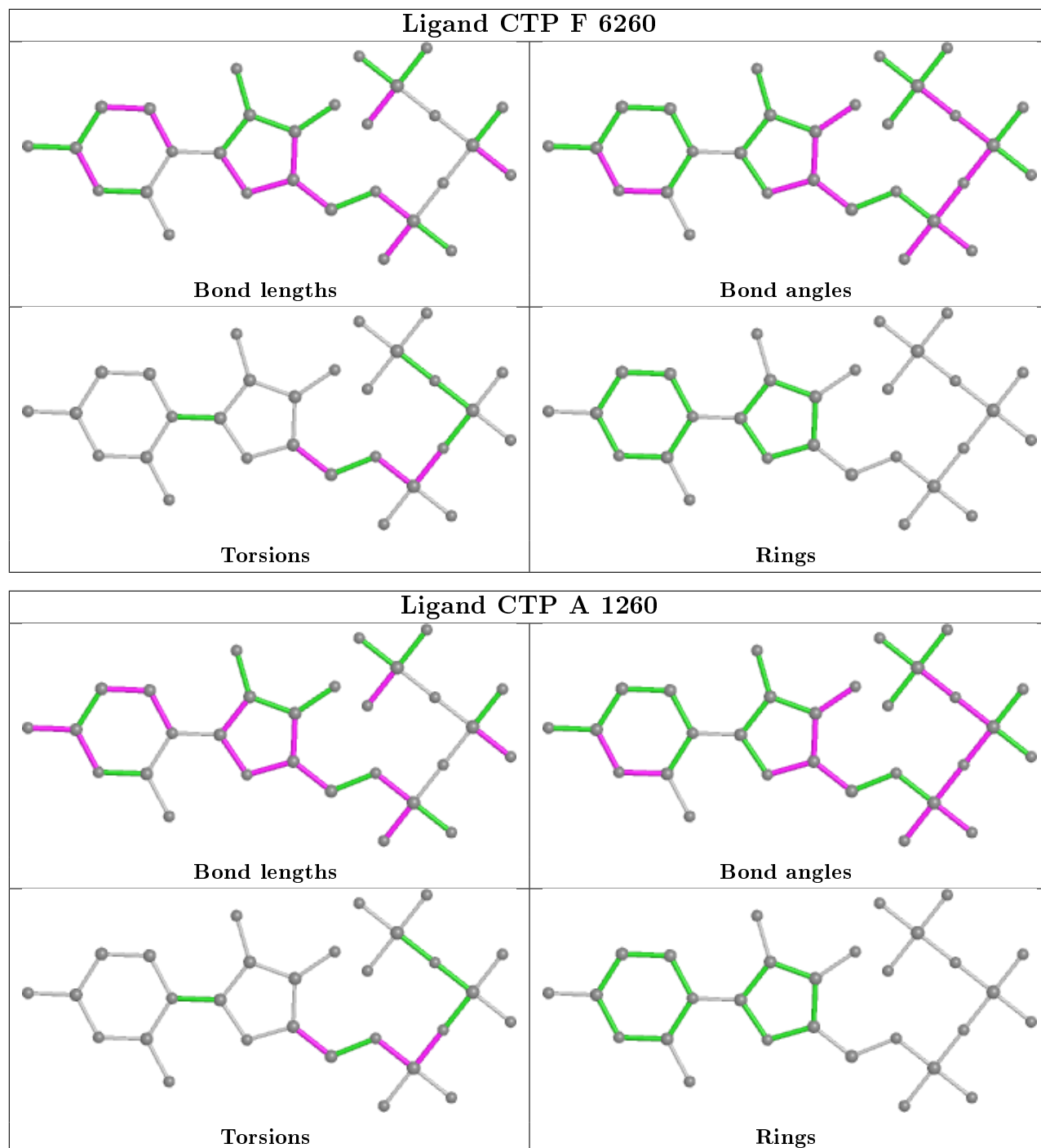


Ligand U5P E 5250

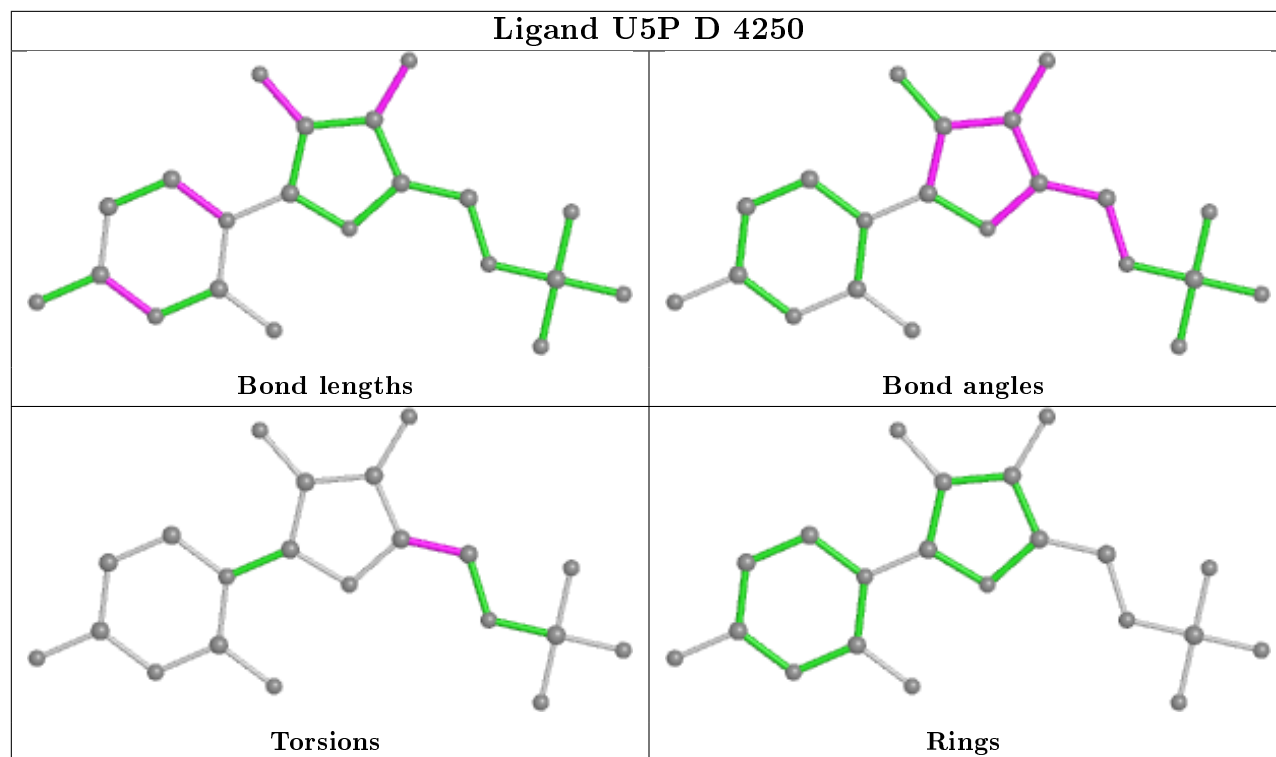


Ligand U5P C 3250

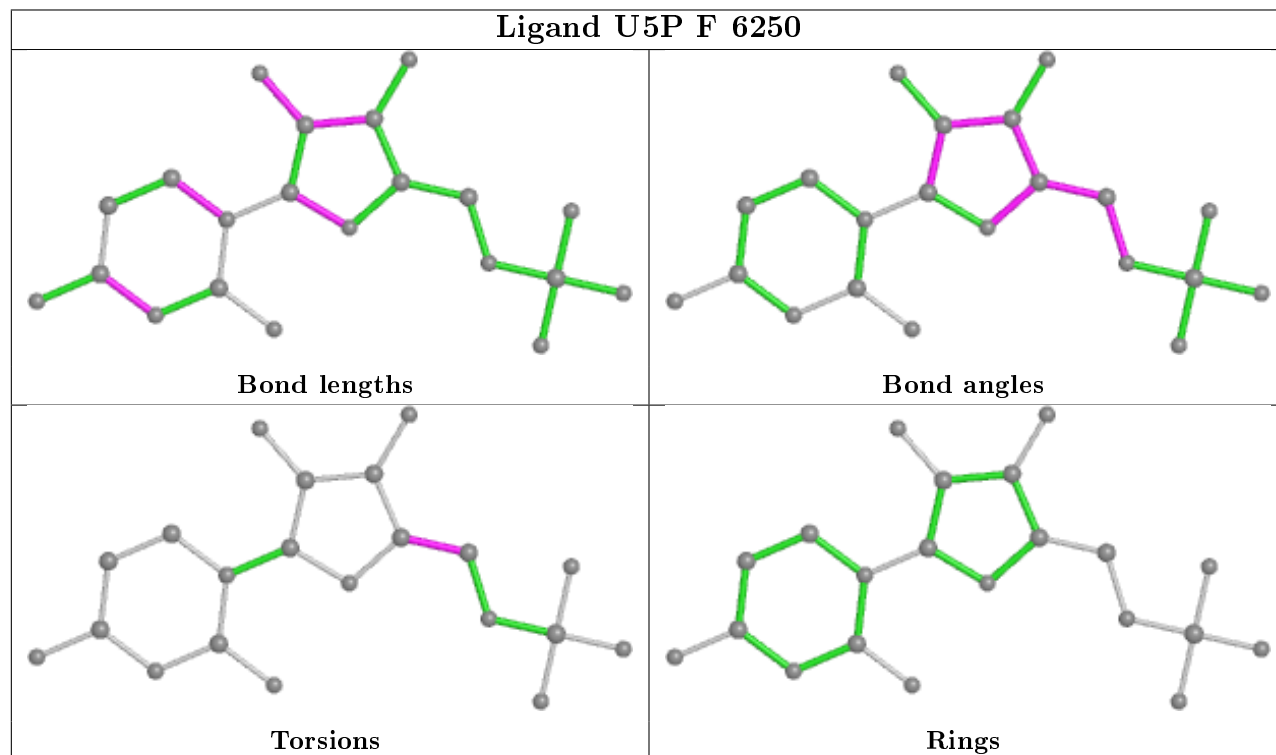


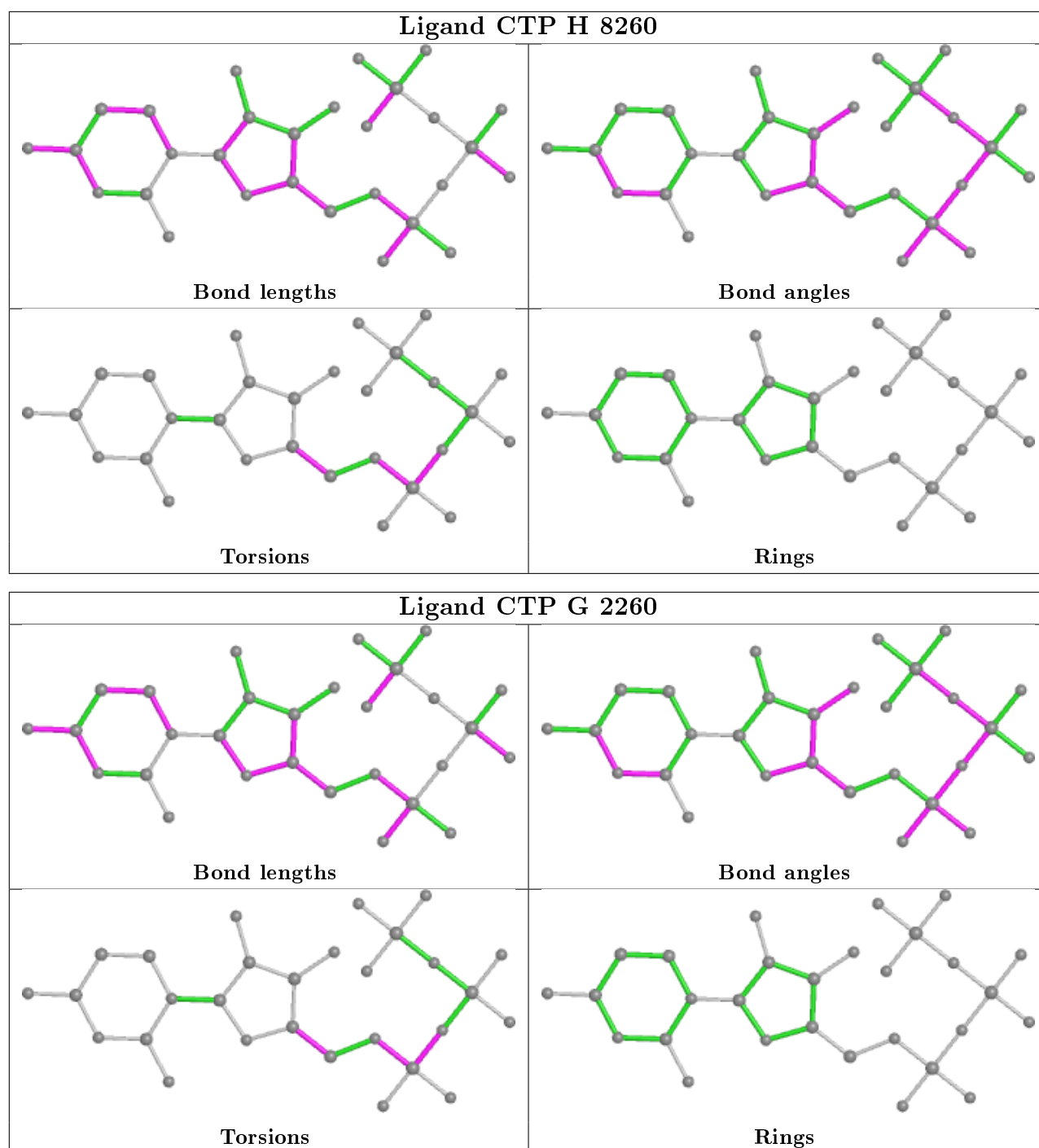


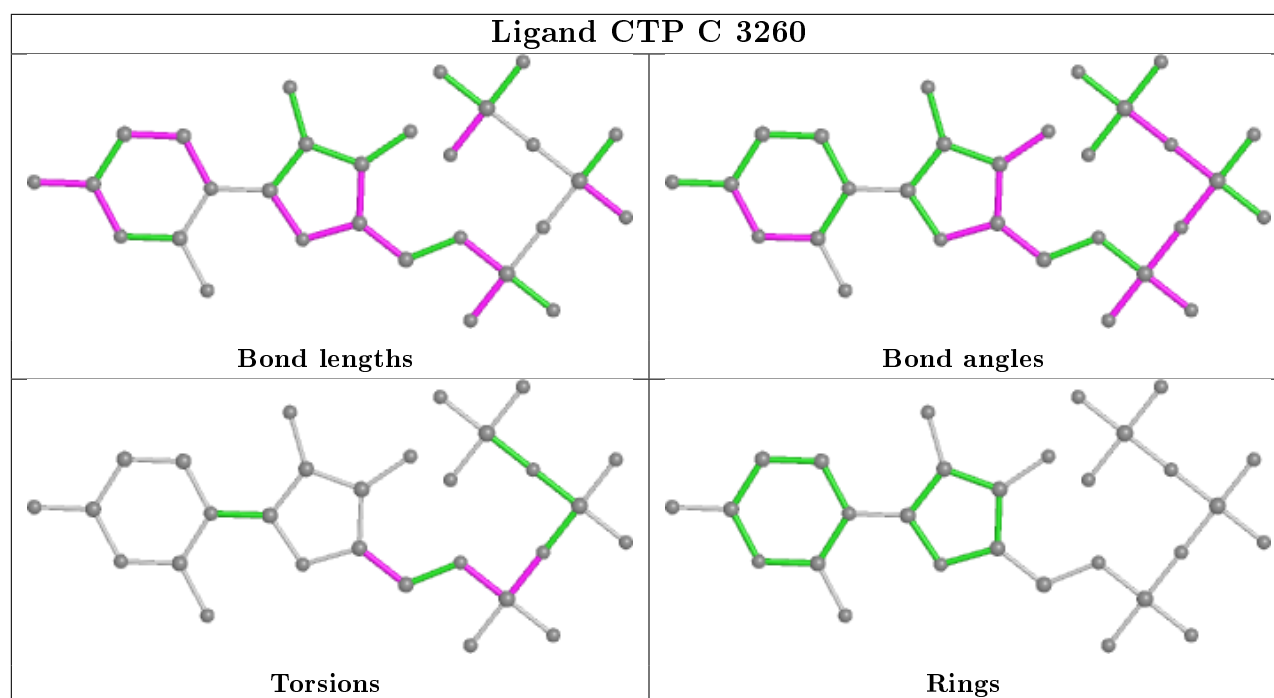
Ligand U5P D 4250



Ligand U5P F 6250







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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ > 2	OWAB(Å ²)	Q < 0.9
1	A	215/216 (99%)	-0.20	8 (3%) 41 31	22, 38, 77, 99	0
1	B	215/216 (99%)	-0.34	4 (1%) 66 59	20, 38, 68, 94	0
1	C	215/216 (99%)	-0.28	6 (2%) 53 43	24, 38, 71, 96	0
1	D	215/216 (99%)	-0.34	3 (1%) 75 70	20, 36, 68, 95	0
1	E	215/216 (99%)	-0.24	9 (4%) 36 26	25, 38, 78, 97	0
1	F	215/216 (99%)	-0.29	5 (2%) 60 51	20, 38, 66, 98	0
1	G	215/216 (99%)	-0.37	3 (1%) 75 70	23, 36, 70, 98	0
1	H	215/216 (99%)	-0.12	13 (6%) 21 14	19, 36, 83, 103	0
All	All	1720/1728 (99%)	-0.27	51 (2%) 50 40	19, 37, 75, 103	0

All (51) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	109	ASP	8.3
1	H	110	GLY	8.0
1	H	108	VAL	5.9
1	H	106	VAL	5.4
1	A	109	ASP	4.8
1	F	109	ASP	4.1
1	D	111	LYS	4.0
1	H	111	LYS	3.8
1	F	110	GLY	3.6
1	G	109	ASP	3.6
1	E	112	GLU	3.6
1	A	112	GLU	3.5
1	H	112	GLU	3.4
1	E	111	LYS	3.4
1	H	117	MET	3.2
1	E	108	VAL	3.2

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Mol	Chain	Res	Type	RSRZ
1	G	111	LYS	3.2
1	C	108	VAL	3.2
1	H	113	VAL	3.1
1	H	116	ASP	3.1
1	H	115	LYS	3.0
1	F	139	ALA	2.9
1	E	140	ASP	2.9
1	A	108	VAL	2.9
1	C	111	LYS	2.8
1	E	110	GLY	2.8
1	A	111	LYS	2.8
1	F	63	LYS	2.8
1	H	105	ARG	2.8
1	E	109	ASP	2.7
1	C	139	ALA	2.7
1	E	139	ALA	2.6
1	B	109	ASP	2.6
1	A	139	ALA	2.5
1	B	139	ALA	2.5
1	B	111	LYS	2.5
1	C	109	ASP	2.5
1	A	114	PRO	2.5
1	G	110	GLY	2.5
1	B	120	TYR	2.4
1	H	107	GLU	2.4
1	A	116	ASP	2.2
1	E	120	TYR	2.2
1	C	140	ASP	2.2
1	A	120	TYR	2.2
1	H	199	ASN	2.1
1	D	110	GLY	2.1
1	D	109	ASP	2.1
1	E	107	GLU	2.0
1	F	113	VAL	2.0
1	C	112	GLU	2.0

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

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

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

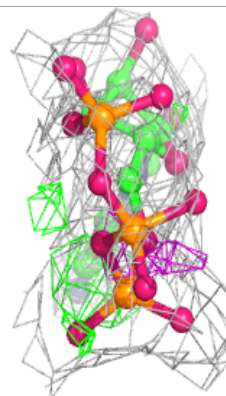
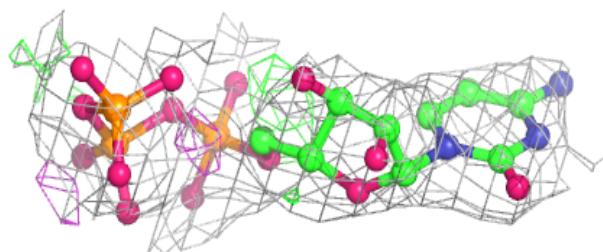
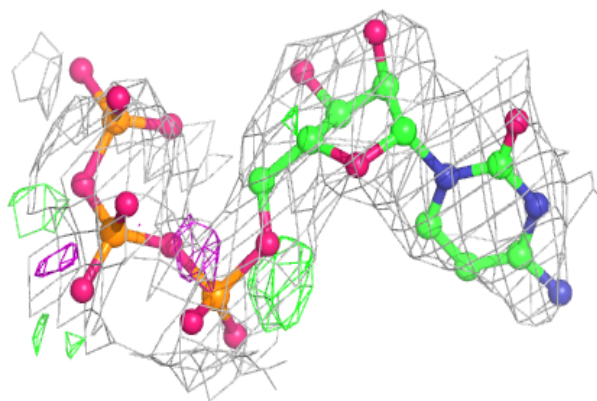
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	CTP	C	3260	29/29	0.79	0.23	47,57,107,107	0
3	CTP	E	5260	29/29	0.85	0.18	46,54,101,102	0
3	CTP	D	4260	29/29	0.86	0.17	46,52,104,106	0
3	CTP	G	7260	29/29	0.86	0.17	49,58,103,104	0
3	CTP	F	6260	29/29	0.86	0.18	46,55,101,102	0
3	CTP	G	2260	29/29	0.87	0.18	43,57,103,105	0
3	CTP	A	1260	29/29	0.89	0.17	44,58,105,107	0
3	CTP	H	8260	29/29	0.91	0.16	42,54,100,101	0
2	U5P	H	8250	21/21	0.92	0.20	46,52,54,56	0
2	U5P	F	6250	21/21	0.92	0.24	37,50,54,55	0
2	U5P	C	3250	21/21	0.93	0.18	38,45,50,52	0
2	U5P	B	2250	21/21	0.94	0.21	40,47,49,53	0
2	U5P	A	1250	21/21	0.94	0.19	35,43,50,53	0
2	U5P	D	4250	21/21	0.95	0.22	34,40,45,49	0
2	U5P	G	7250	21/21	0.96	0.20	36,40,46,48	0
2	U5P	E	5250	21/21	0.96	0.20	37,42,47,48	0

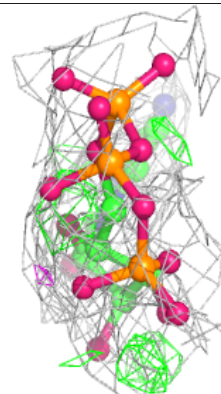
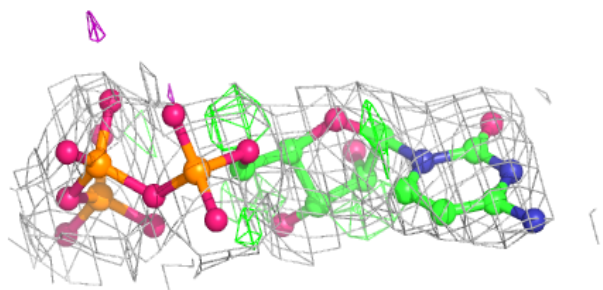
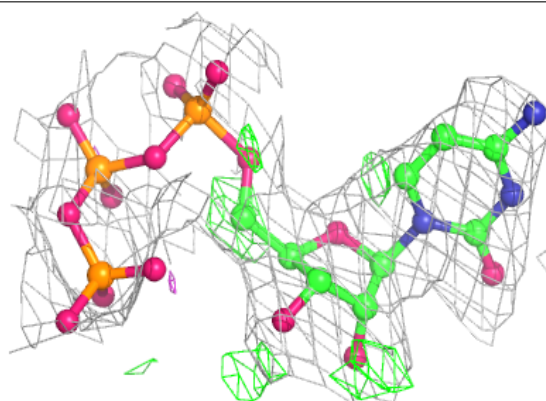
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around CTP C 3260:

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

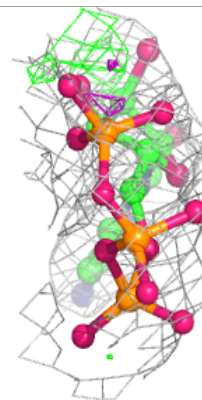
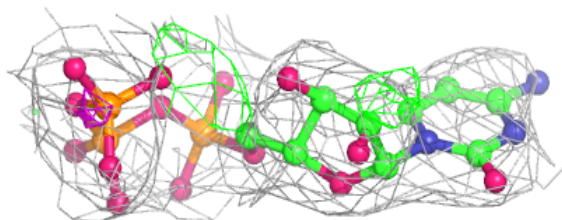
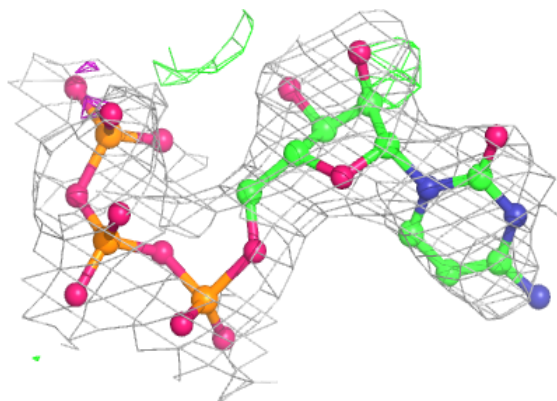
**Electron density around CTP E 5260:**

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

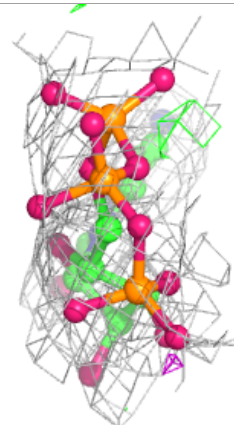
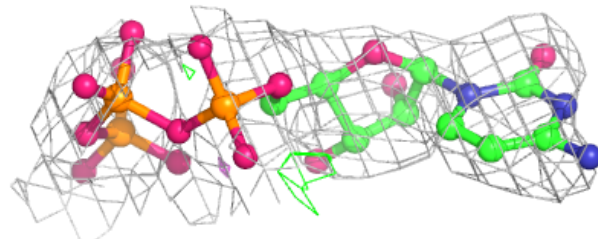
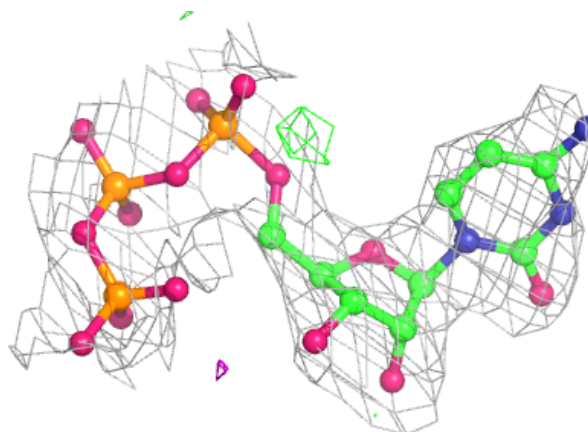


Electron density around CTP D 4260:

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

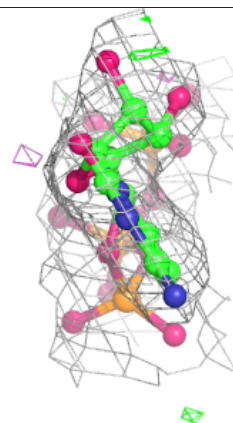
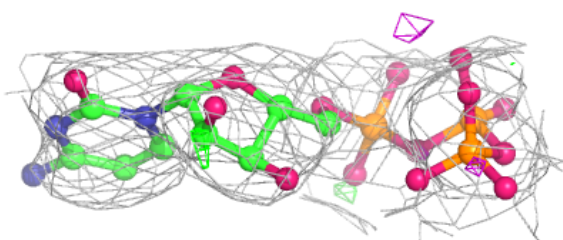
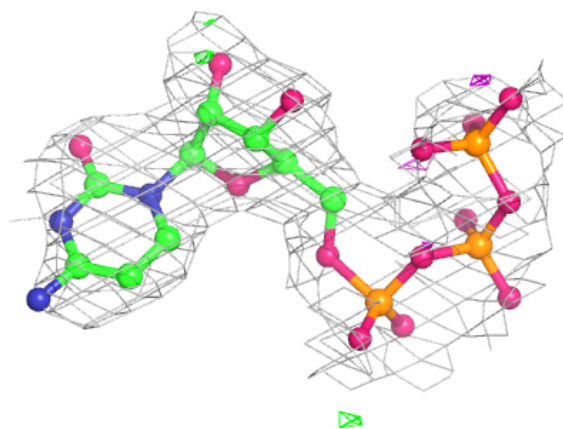
**Electron density around CTP G 7260:**

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

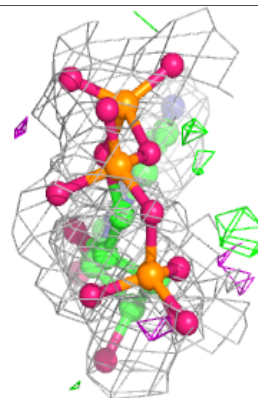
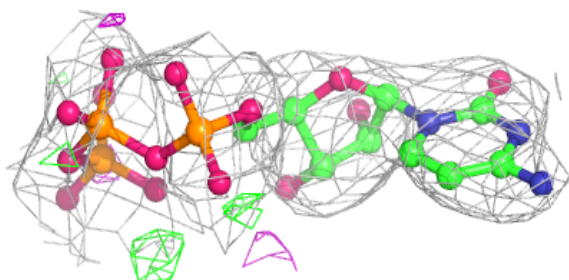
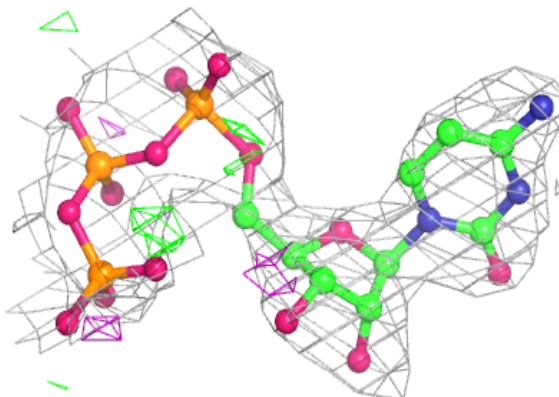


Electron density around CTP F 6260:

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and green (positive)

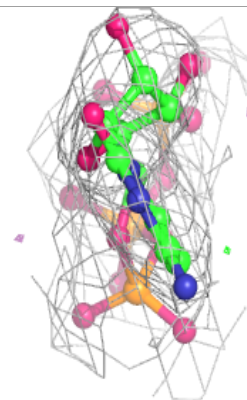
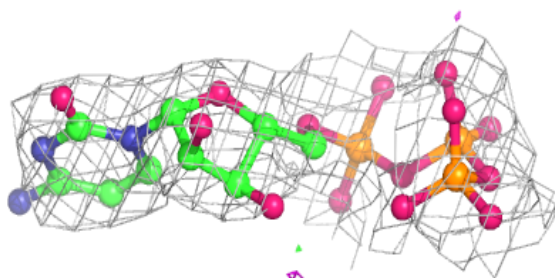
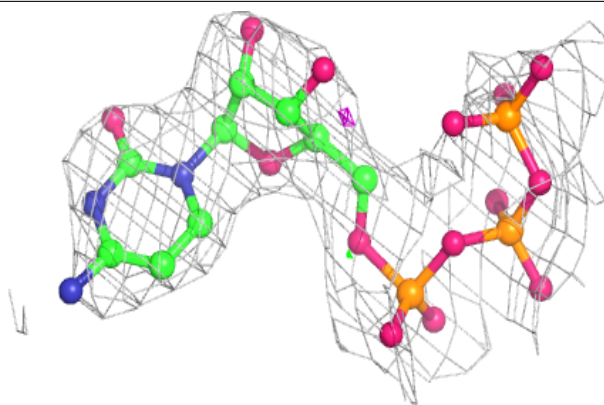
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and green (positive)

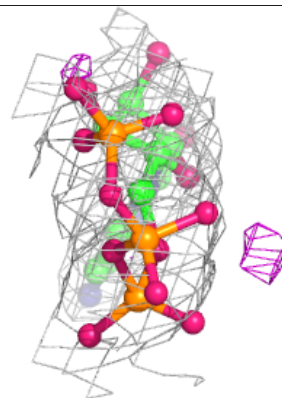
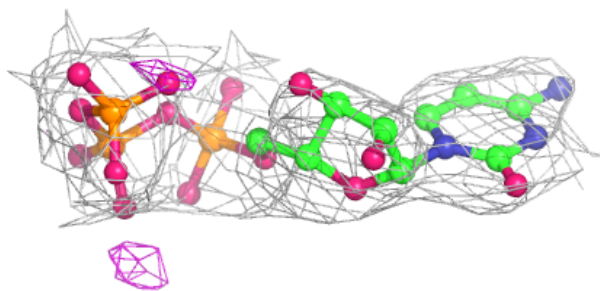
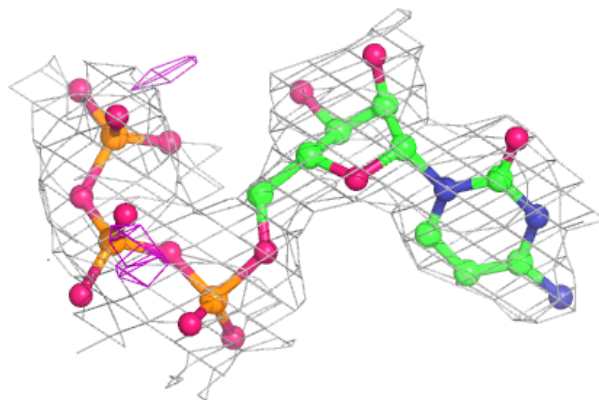


Electron density around CTP A 1260:

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

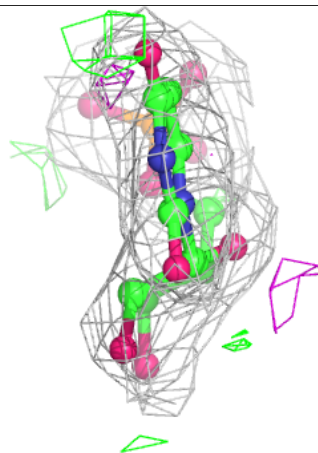
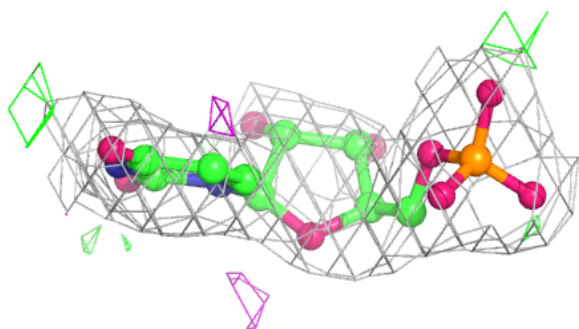
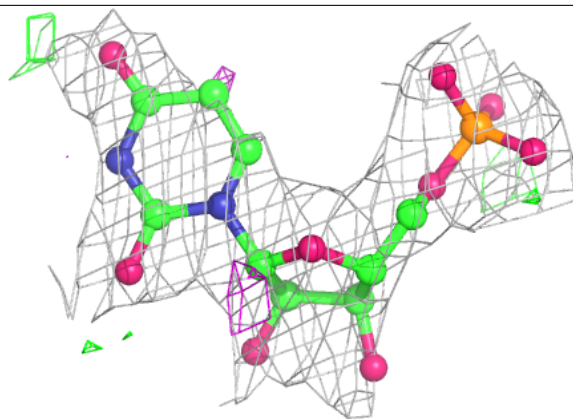
**Electron density around CTP H 8260:**

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



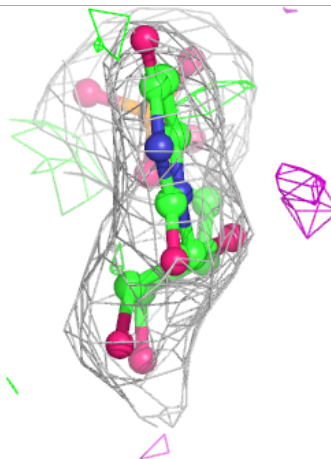
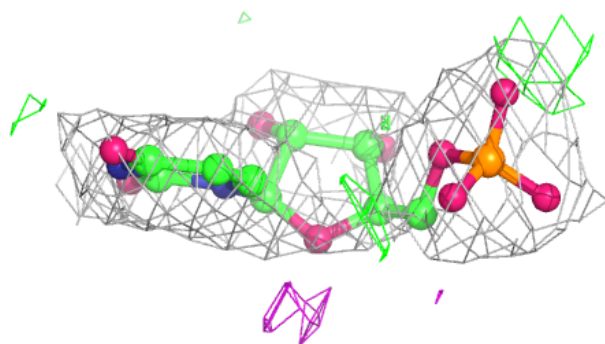
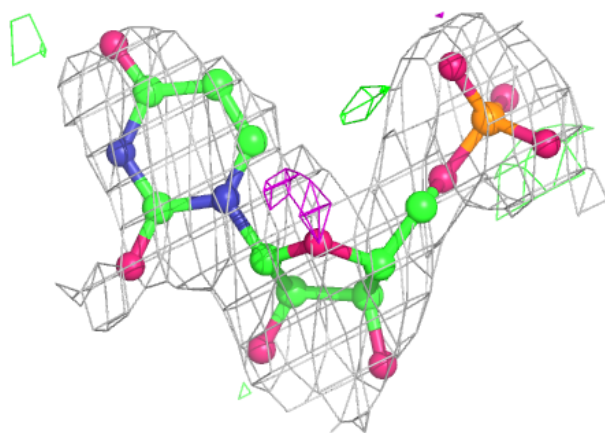
Electron density around U5P H 8250:

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



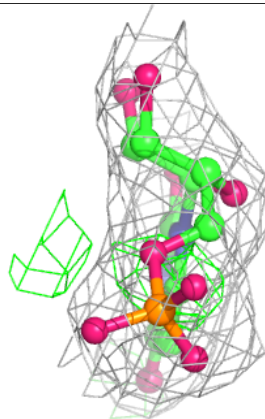
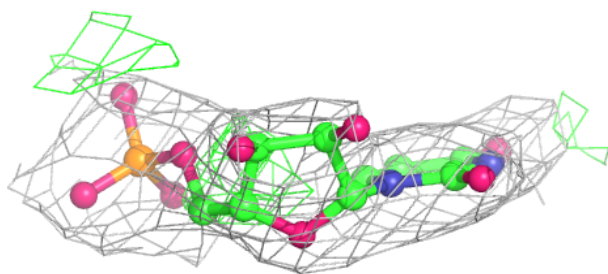
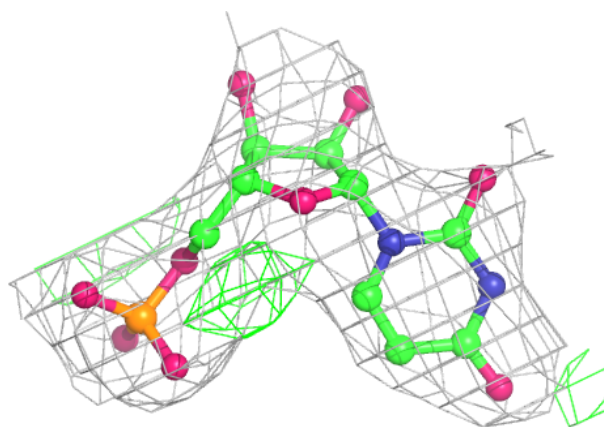
Electron density around U5P F 6250:

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



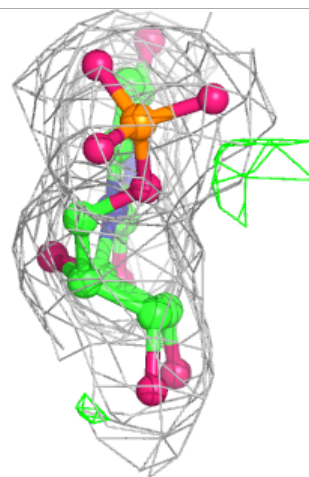
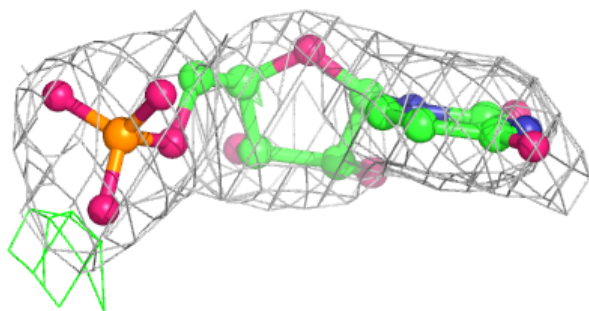
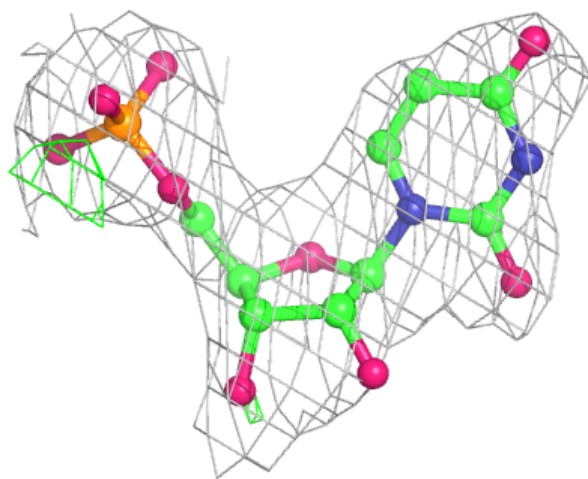
Electron density around U5P C 3250:

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



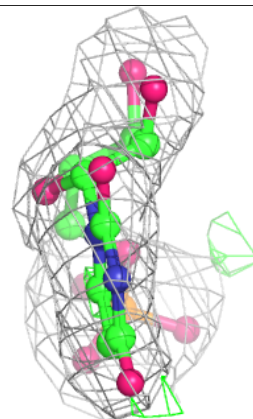
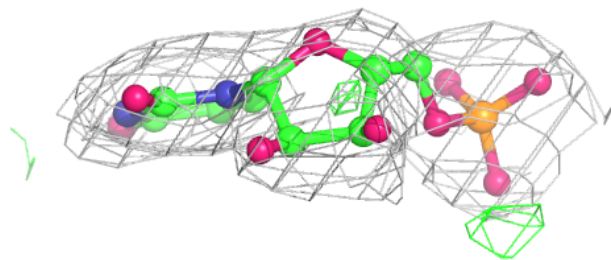
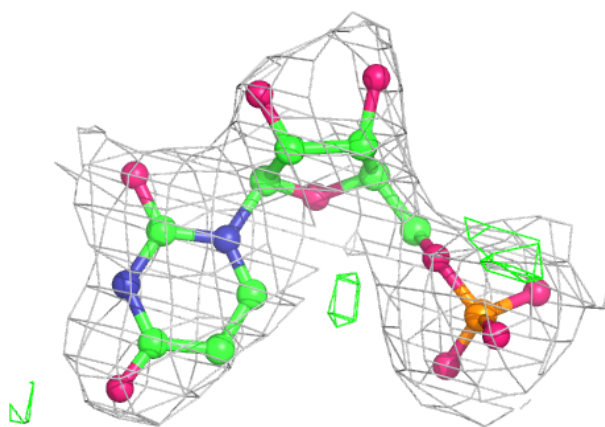
Electron density around U5P B 2250:

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



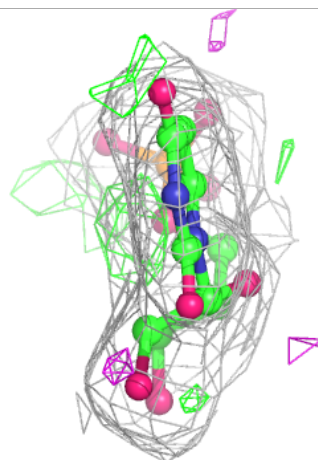
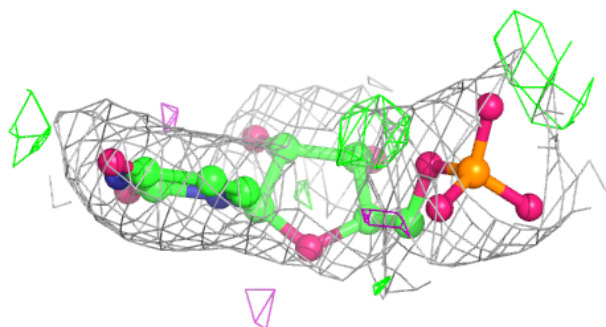
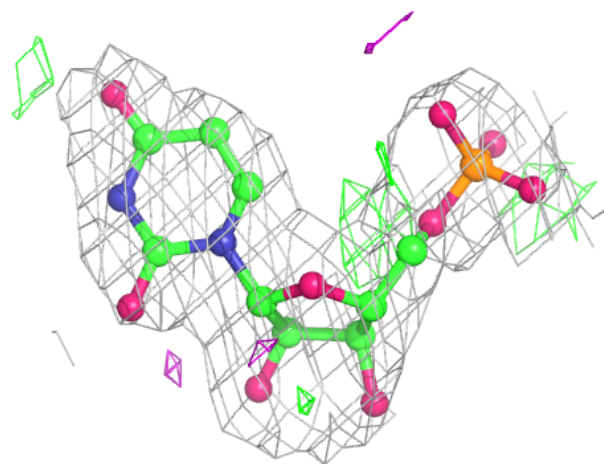
Electron density around U5P A 1250:

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



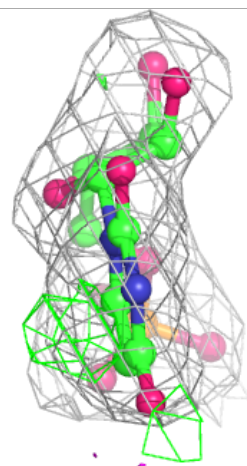
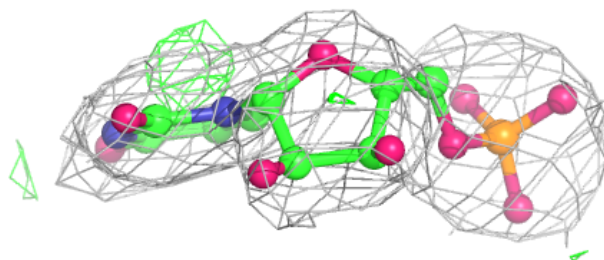
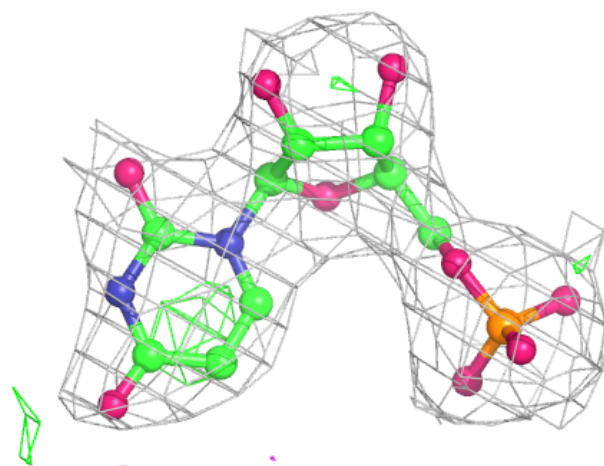
Electron density around U5P D 4250:

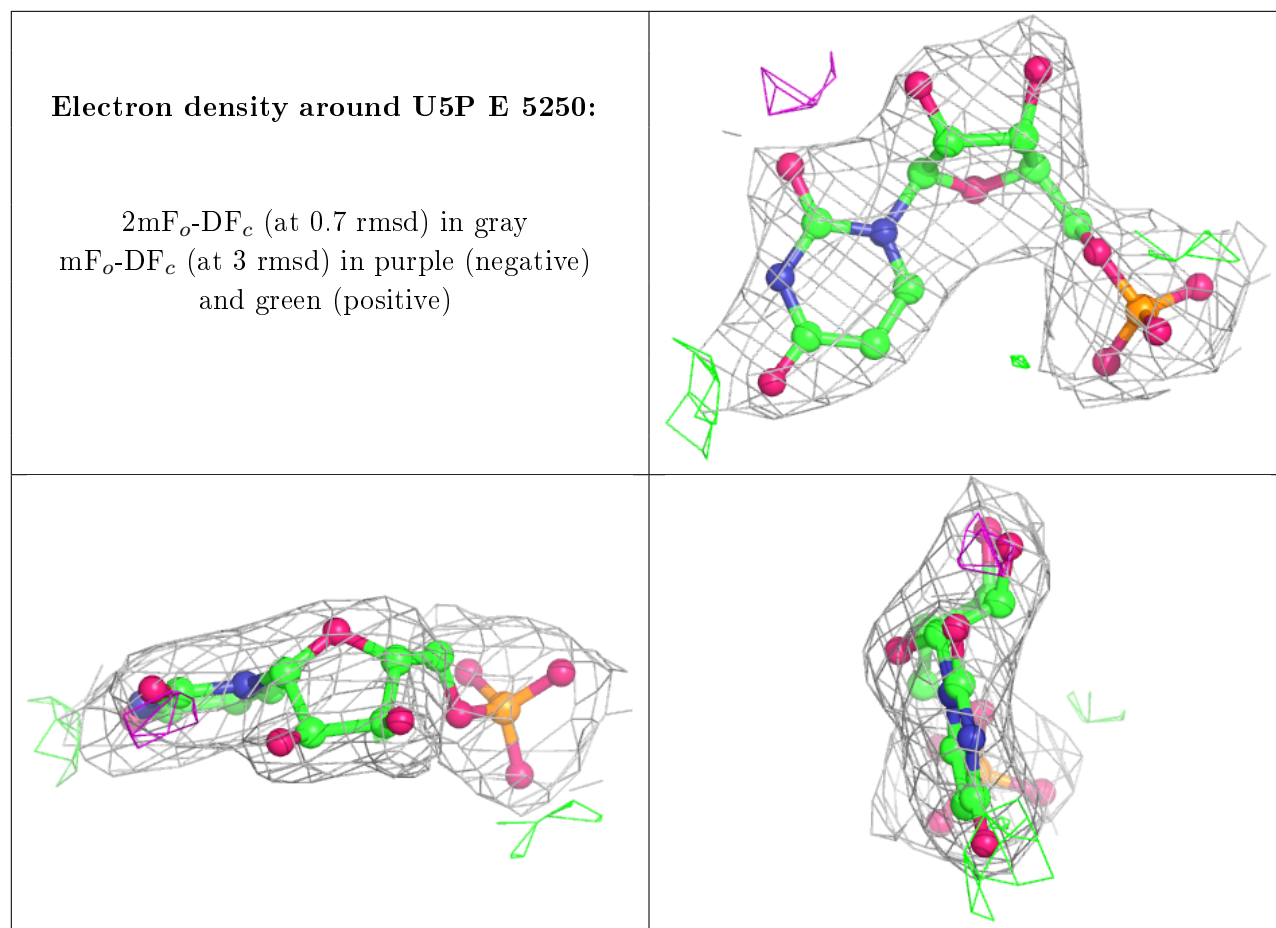
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
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and green (positive)



Electron density around U5P G 7250:

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





6.5 Other polymers ⓘ

There are no such residues in this entry.