



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 14, 2026 – 01:53 AM UTC

PDB ID : 7VZ6 / pdb_00007vz6
Title : The crystal structure of Non-hydrolyzing UDPGlcNAc 2-epimerase in complex with UDP-glucose
Authors : Li, T.L.; Rattinam, R.
Deposited on : 2021-11-15
Resolution : 2.09 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

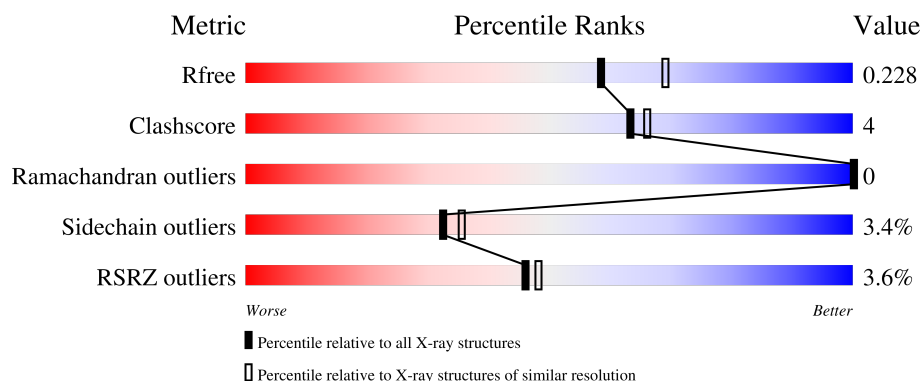
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.09 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}	180053	6658 (2.10-2.10)
Clashscore	190562	7164 (2.10-2.10)
Ramachandran outliers	187476	7099 (2.10-2.10)
Sidechain outliers	187428	7100 (2.10-2.10)
RSRZ outliers	180081	6662 (2.10-2.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	386	 3% 87% 8% 2% 2%
1	B	386	 5% 79% 12% 3% 3%
1	C	386	 2% 85% 7% 3% 3%
1	D	386	 3% 85% 8% 3% 1%
1	E	386	 2% 88% 6% 3% 1%

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Mol	Chain	Length	Quality of chain
1	F	386	 3% 86% 8% • 5%
1	G	386	 4% 84% 9% 6%
1	H	386	 5% 82% 13% • •

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 24197 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 Putative UDP-N-acetylglucosamine 2-epimerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	372	Total	C	N	O	S	0	0	0
			2857	1791	522	529	15			
1	B	357	Total	C	N	O	S	0	0	0
			2758	1733	503	508	14			
1	C	359	Total	C	N	O	S	0	0	0
			2766	1740	502	510	14			
1	D	362	Total	C	N	O	S	0	0	0
			2785	1750	508	513	14			
1	E	367	Total	C	N	O	S	0	0	0
			2817	1765	511	526	15			
1	F	365	Total	C	N	O	S	0	0	0
			2808	1764	511	518	15			
1	G	361	Total	C	N	O	S	0	0	0
			2780	1745	505	515	15			
1	H	369	Total	C	N	O	S	0	0	0
			2832	1775	516	526	15			

There are 16 discrepancies between the modelled and reference sequences:

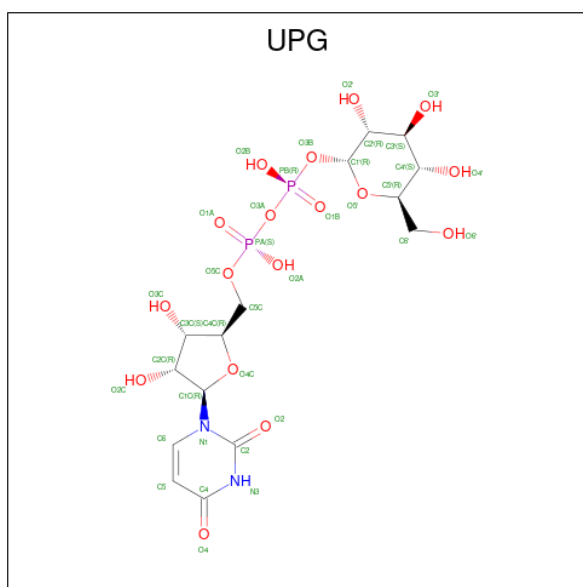
Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	SER	-	expression tag	UNP A0A0K1H2R6
A	0	HIS	-	expression tag	UNP A0A0K1H2R6
B	-1	SER	-	expression tag	UNP A0A0K1H2R6
B	0	HIS	-	expression tag	UNP A0A0K1H2R6
C	-1	SER	-	expression tag	UNP A0A0K1H2R6
C	0	HIS	-	expression tag	UNP A0A0K1H2R6
D	-1	SER	-	expression tag	UNP A0A0K1H2R6
D	0	HIS	-	expression tag	UNP A0A0K1H2R6
E	-1	SER	-	expression tag	UNP A0A0K1H2R6
E	0	HIS	-	expression tag	UNP A0A0K1H2R6
F	-1	SER	-	expression tag	UNP A0A0K1H2R6
F	0	HIS	-	expression tag	UNP A0A0K1H2R6
G	-1	SER	-	expression tag	UNP A0A0K1H2R6

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Chain	Residue	Modelled	Actual	Comment	Reference
G	0	HIS	-	expression tag	UNP A0A0K1H2R6
H	-1	SER	-	expression tag	UNP A0A0K1H2R6
H	0	HIS	-	expression tag	UNP A0A0K1H2R6

- Molecule 2 is URIDINE-5'-DIPHOSPHATE-GLUCOSE (CCD ID: UPG) (formula: $C_{15}H_{24}N_2O_{17}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
2	B	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
2	C	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
2	D	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
2	E	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
2	F	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
2	G	1	Total	C	N	O	P	0	0
			36	15	2	17	2		
2	H	1	Total	C	N	O	P	0	0
			36	15	2	17	2		

- Molecule 3 is SODIUM ION (CCD ID: NA) (formula: Na) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Na 1 1	0	0
3	C	1	Total Na 1 1	0	0
3	D	1	Total Na 1 1	0	0
3	E	1	Total Na 1 1	0	0
3	F	1	Total Na 1 1	0	0
3	G	1	Total Na 1 1	0	0
3	H	1	Total Na 1 1	0	0

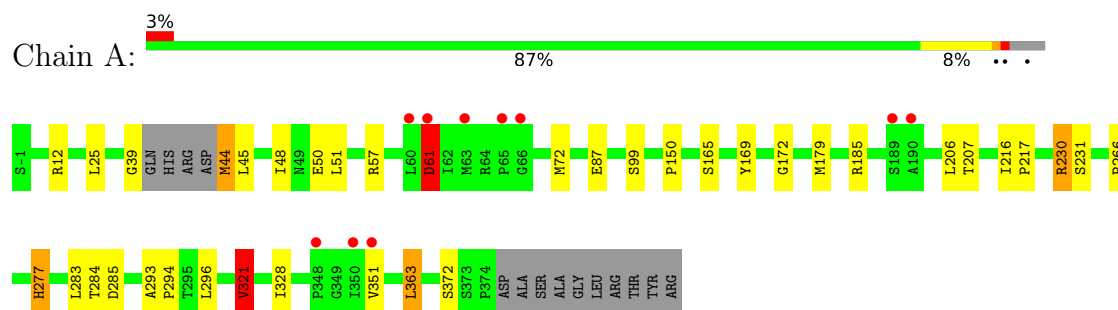
- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	235	Total O 235 235	0	0
4	B	149	Total O 149 149	0	0
4	C	197	Total O 197 197	0	0
4	D	231	Total O 231 231	0	0
4	E	214	Total O 214 214	0	0
4	F	149	Total O 149 149	0	0
4	G	144	Total O 144 144	0	0
4	H	180	Total O 180 180	0	0

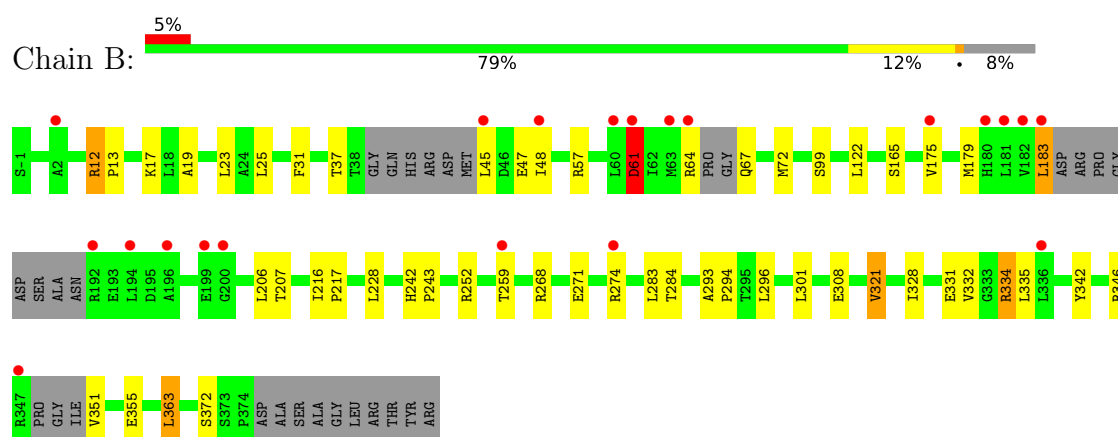
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

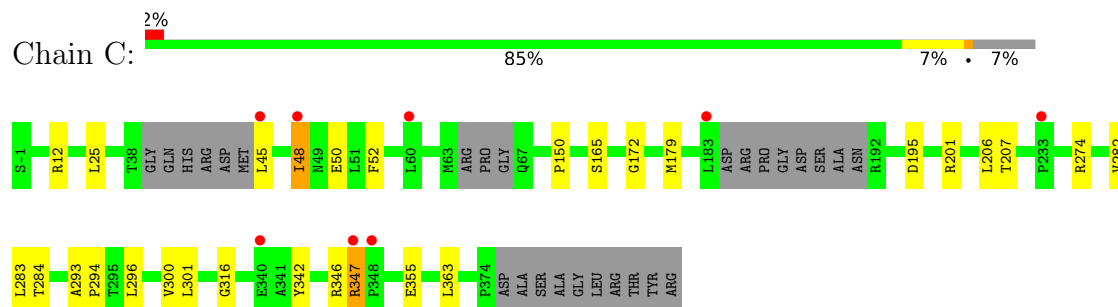
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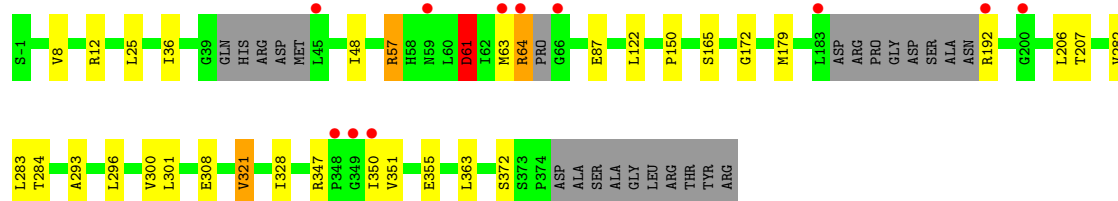
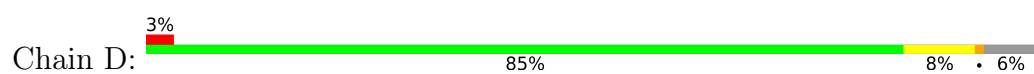
- Molecule 1: Putative UDP-N-acetylglucosamine 2-epimerase



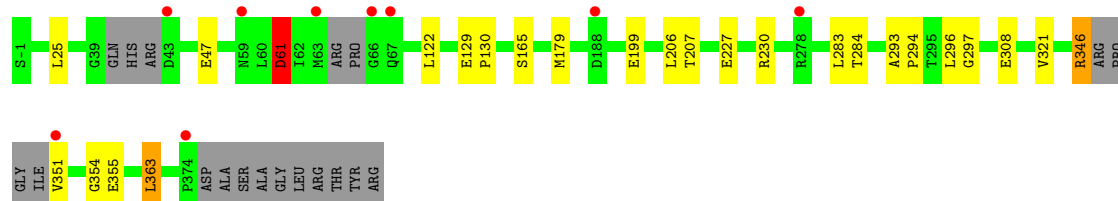
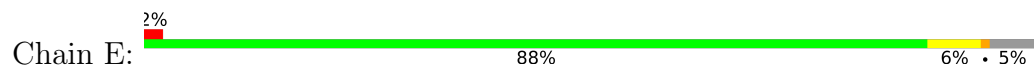
- Molecule 1: Putative UDP-N-acetylglucosamine 2-epimerase



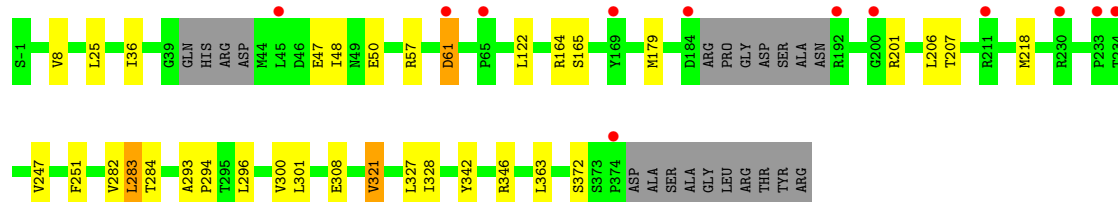
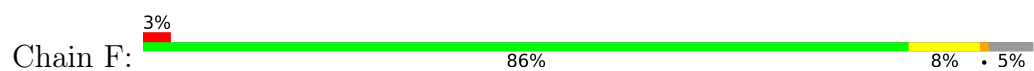
- Molecule 1: Putative UDP-N-acetylglucosamine 2-epimerase



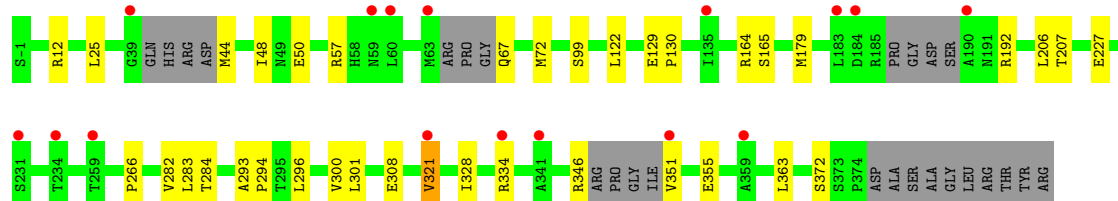
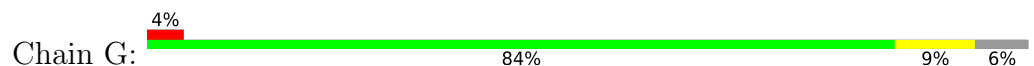
• Molecule 1: Putative UDP-N-acetylglucosamine 2-epimerase



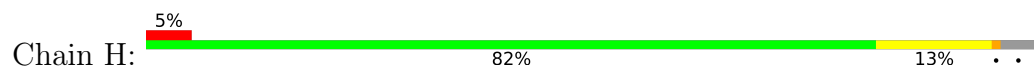
• Molecule 1: Putative UDP-N-acetylglucosamine 2-epimerase

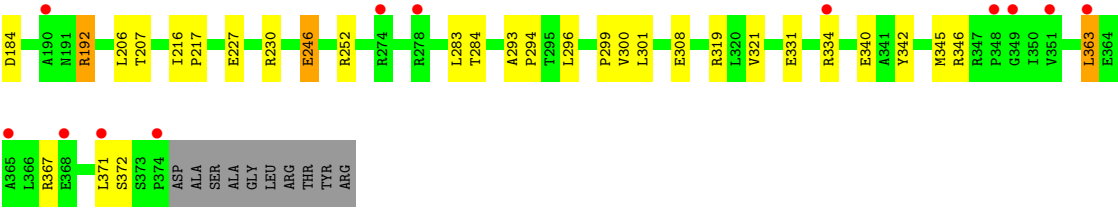


• Molecule 1: Putative UDP-N-acetylglucosamine 2-epimerase



• Molecule 1: Putative UDP-N-acetylglucosamine 2-epimerase





4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	82.83Å 104.94Å 106.84Å 74.87° 72.92° 68.08°	Depositor
Resolution (Å)	21.56 – 2.09 21.56 – 2.09	Depositor EDS
% Data completeness (in resolution range)	95.1 (21.56-2.09) 95.1 (21.56-2.09)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.56 (at 2.09Å)	Xtriage
Refinement program	PHENIX 5.8.0267	Depositor
R, R_{free}	0.201 , 0.228 0.204 , 0.228	Depositor DCC
R_{free} test set	8824 reflections (4.75%)	wwPDB-VP
Wilson B-factor (Å ²)	24.3	Xtriage
Anisotropy	0.011	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 40.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	24197	wwPDB-VP
Average B, all atoms (Å ²)	30.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.04% 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: NA, UPG

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	1.04	0/2909	1.32	5/3954 (0.1%)
1	B	1.02	0/2804	1.32	2/3806 (0.1%)
1	C	1.02	0/2814	1.31	2/3823 (0.1%)
1	D	1.04	0/2833	1.33	2/3847 (0.1%)
1	E	1.03	0/2865	1.33	2/3891 (0.1%)
1	F	1.02	0/2858	1.30	2/3883 (0.1%)
1	G	1.03	0/2826	1.32	0/3836
1	H	1.07	1/2882 (0.0%)	1.35	1/3916 (0.0%)
All	All	1.03	1/22791 (0.0%)	1.32	16/30956 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	H	299	PRO	C-O	5.06	1.29	1.23

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	277	HIS	CA-CB-CG	-8.42	105.38	113.80
1	H	246	GLU	CB-CG-CD	7.91	126.05	112.60
1	B	61	ASP	CA-CB-CG	7.64	120.24	112.60
1	D	61	ASP	CA-CB-CG	7.55	120.15	112.60
1	A	61	ASP	CA-CB-CG	7.29	119.89	112.60
1	F	61	ASP	CA-CB-CG	6.76	119.36	112.60
1	E	61	ASP	CA-CB-CG	6.62	119.22	112.60
1	D	61	ASP	CB-CA-C	5.88	119.80	111.74
1	A	61	ASP	CB-CA-C	5.75	119.62	111.74
1	B	61	ASP	CB-CA-C	5.48	119.25	111.74
1	F	201	ARG	CB-CG-CD	5.29	123.47	111.30
1	A	285	ASP	CA-CB-CG	5.22	117.82	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	316	GLY	CA-C-N	5.15	128.13	120.31
1	C	316	GLY	C-N-CA	5.15	128.13	120.31
1	E	354	GLY	CA-C-O	-5.13	118.76	122.45
1	A	321	VAL	N-CA-CB	-5.03	102.93	111.23

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2857	0	2888	22	0
1	B	2758	0	2795	45	0
1	C	2766	0	2804	14	0
1	D	2785	0	2823	18	0
1	E	2817	0	2836	10	0
1	F	2808	0	2844	19	0
1	G	2780	0	2809	24	0
1	H	2832	0	2855	29	0
2	A	36	0	22	0	0
2	B	36	0	22	0	0
2	C	36	0	22	0	0
2	D	36	0	22	0	0
2	E	36	0	22	0	0
2	F	36	0	22	0	0
2	G	36	0	22	1	0
2	H	36	0	22	0	0
3	A	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
4	A	235	0	0	2	0
4	B	149	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	C	197	0	0	0	0
4	D	231	0	0	1	0
4	E	214	0	0	1	0
4	F	149	0	0	2	0
4	G	144	0	0	2	0
4	H	180	0	0	5	0
All	All	24197	0	22830	180	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (180) 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:B:12:ARG:HG3	1:B:13:PRO:HD3	1.31	1.06
1:B:17:LYS:HE3	1:B:175:VAL:HG11	1.40	1.00
1:B:17:LYS:HE3	1:B:175:VAL:CG1	1.97	0.94
1:B:17:LYS:CE	1:B:175:VAL:CG1	2.46	0.93
1:B:17:LYS:HG2	1:B:175:VAL:HG13	1.53	0.90
1:B:12:ARG:HG3	1:B:13:PRO:CD	2.05	0.86
1:B:17:LYS:CE	1:B:175:VAL:HG11	2.06	0.85
1:B:228:LEU:HD11	1:B:332:VAL:HG11	1.59	0.81
1:F:218:MET:HE1	1:F:247:VAL:HA	1.64	0.80
1:B:17:LYS:CE	1:B:175:VAL:HG13	2.12	0.78
1:B:228:LEU:CD1	1:B:332:VAL:HG11	2.13	0.78
1:B:17:LYS:CG	1:B:175:VAL:HG13	2.14	0.76
1:G:44:MET:HE2	1:G:266:PRO:CB	2.15	0.75
1:B:31:PHE:CE2	1:B:363:LEU:HD22	2.24	0.72
1:B:17:LYS:HE2	1:B:175:VAL:HG13	1.71	0.71
1:B:17:LYS:HE2	1:B:175:VAL:CG1	2.21	0.70
1:G:164:ARG:NH1	4:G:603:HOH:O	2.29	0.66
1:C:45:LEU:O	1:C:48:ILE:HG22	1.95	0.66
1:F:283:LEU:HD22	1:F:301:LEU:HB2	1.78	0.65
1:F:48:ILE:HD13	4:F:698:HOH:O	1.96	0.64
1:C:282:VAL:CG2	1:C:300:VAL:HG22	2.28	0.63
1:D:282:VAL:CG2	1:D:300:VAL:HG22	2.28	0.63
1:F:282:VAL:CG2	1:F:300:VAL:HG22	2.28	0.62
1:B:17:LYS:CG	1:B:175:VAL:CG1	2.78	0.61
1:G:282:VAL:CG2	1:G:300:VAL:HG22	2.31	0.61
1:B:242:HIS:CD2	1:B:243:PRO:HD2	2.37	0.60
1:H:25:LEU:HD23	1:H:363:LEU:HD11	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:25:LEU:HD23	1:G:363:LEU:HD11	1.84	0.60
1:F:218:MET:HE3	1:F:251:PHE:CE2	2.37	0.60
1:F:25:LEU:HD23	1:F:363:LEU:HD11	1.84	0.60
1:E:25:LEU:HD23	1:E:363:LEU:HD11	1.83	0.60
1:C:25:LEU:HD23	1:C:363:LEU:HD11	1.82	0.59
1:D:25:LEU:HD23	1:D:363:LEU:HD11	1.84	0.59
1:B:228:LEU:HD21	1:B:332:VAL:CG1	2.33	0.59
1:A:25:LEU:HD23	1:A:363:LEU:HD11	1.84	0.58
1:B:328:ILE:O	1:B:332:VAL:HG12	2.03	0.58
1:C:179:MET:HE1	1:C:296:LEU:HG	1.86	0.57
1:D:57:ARG:HD3	1:D:87:GLU:OE1	2.04	0.57
1:G:12:ARG:HG3	1:G:48:ILE:HD11	1.88	0.56
1:G:44:MET:HE2	1:G:266:PRO:HB3	1.87	0.56
1:C:48:ILE:HD13	1:C:52:PHE:HD2	1.71	0.56
1:G:207:THR:O	1:G:284:THR:HA	2.06	0.56
1:H:283:LEU:HD22	1:H:301:LEU:HB2	1.88	0.56
1:E:179:MET:HE1	1:E:296:LEU:HG	1.88	0.55
1:A:179:MET:HE1	1:A:296:LEU:HG	1.88	0.55
1:H:227:GLU:HG3	4:H:610:HOH:O	2.06	0.55
1:B:207:THR:O	1:B:284:THR:HA	2.07	0.55
1:D:207:THR:O	1:D:284:THR:HA	2.06	0.55
1:F:207:THR:O	1:F:284:THR:HA	2.07	0.55
1:C:207:THR:O	1:C:284:THR:HA	2.07	0.55
1:B:37:THR:HG22	4:B:716:HOH:O	2.07	0.55
1:E:207:THR:O	1:E:284:THR:HA	2.07	0.55
1:A:207:THR:O	1:A:284:THR:HA	2.07	0.54
1:B:179:MET:HE1	1:B:296:LEU:HG	1.88	0.54
1:G:44:MET:CE	1:G:266:PRO:CG	2.85	0.54
1:H:207:THR:O	1:H:284:THR:HA	2.08	0.54
1:B:252:ARG:HG3	1:H:1:MET:HE1	1.90	0.54
1:B:17:LYS:HG2	1:B:175:VAL:CG1	2.34	0.54
1:G:283:LEU:HD23	1:G:301:LEU:HB2	1.89	0.54
1:B:271:GLU:O	1:B:274:ARG:HG2	2.08	0.54
1:C:283:LEU:HD23	1:C:301:LEU:HB2	1.89	0.54
1:H:63:MET:HB3	1:H:67:GLN:NE2	2.22	0.54
1:F:179:MET:HE1	1:F:296:LEU:HG	1.89	0.53
1:B:283:LEU:HD23	1:B:301:LEU:HB2	1.91	0.53
1:G:179:MET:HE1	1:G:296:LEU:HG	1.89	0.53
1:D:179:MET:HE1	1:D:296:LEU:HG	1.90	0.53
1:G:44:MET:CE	1:G:266:PRO:HG2	2.39	0.53
1:D:12:ARG:HG3	1:D:48:ILE:HD11	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:25:LEU:HD23	1:B:363:LEU:HD21	1.91	0.52
1:D:283:LEU:HD23	1:D:301:LEU:HB2	1.91	0.52
1:C:195:ASP:OD1	1:C:274:ARG:NH1	2.43	0.51
1:C:282:VAL:HG21	1:C:300:VAL:HG22	1.92	0.51
1:G:67:GLN:HA	4:G:706:HOH:O	2.10	0.51
1:A:12:ARG:HG3	1:A:48:ILE:HD11	1.92	0.50
1:H:179:MET:HE1	1:H:296:LEU:HG	1.94	0.50
1:A:57:ARG:NH1	1:A:87:GLU:OE1	2.44	0.50
1:H:331:GLU:HA	1:H:334:ARG:HG2	1.94	0.50
1:A:44:MET:HE1	1:A:266:PRO:HG2	1.93	0.49
1:F:282:VAL:HG21	1:F:300:VAL:HG22	1.93	0.49
1:B:45:LEU:HG	1:B:47:GLU:OE1	2.12	0.49
1:A:169:TYR:CZ	1:C:347:ARG:NH2	2.81	0.48
1:D:282:VAL:HG21	1:D:300:VAL:HG22	1.94	0.48
1:G:44:MET:CE	1:G:266:PRO:CB	2.88	0.48
1:D:63:MET:O	1:D:64:ARG:HD2	2.13	0.48
1:E:297:GLY:O	1:E:346:ARG:HD2	2.13	0.48
1:B:72:MET:HE1	1:B:99:SER:CB	2.44	0.48
1:H:252:ARG:NH2	4:H:609:HOH:O	2.44	0.47
1:G:44:MET:HE2	1:G:266:PRO:HB2	1.97	0.47
1:B:72:MET:HE1	1:B:99:SER:HB3	1.96	0.47
1:H:192:ARG:H	1:H:192:ARG:HG3	1.54	0.47
1:B:45:LEU:HB3	1:B:48:ILE:HD13	1.97	0.47
1:G:206:LEU:HA	1:G:283:LEU:O	2.15	0.47
1:H:147:HIS:HE1	4:H:749:HOH:O	1.97	0.47
1:H:319:ARG:HD2	1:H:345:MET:SD	2.54	0.47
1:A:72:MET:HE1	1:A:99:SER:CB	2.45	0.47
1:A:216:ILE:HB	1:A:217:PRO:HD3	1.97	0.47
1:G:282:VAL:HG21	1:G:300:VAL:HG22	1.96	0.47
1:H:230:ARG:NE	4:H:610:HOH:O	2.44	0.47
1:B:206:LEU:HA	1:B:283:LEU:O	2.15	0.47
1:A:51:LEU:O	1:A:185:ARG:NH1	2.48	0.46
1:A:277:HIS:O	1:A:277:HIS:ND1	2.48	0.46
1:A:230:ARG:CD	1:A:231:SER:N	2.78	0.46
1:H:62:ILE:O	1:H:63:MET:HB3	2.15	0.46
1:F:206:LEU:HA	1:F:283:LEU:O	2.16	0.46
1:G:44:MET:HE1	1:G:266:PRO:CG	2.46	0.46
1:D:206:LEU:HA	1:D:283:LEU:O	2.16	0.45
1:E:206:LEU:HA	1:E:283:LEU:O	2.17	0.45
1:A:206:LEU:HA	1:A:283:LEU:O	2.17	0.45
1:B:19:ALA:O	1:B:23:LEU:HD13	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:227:GLU:HG3	4:E:693:HOH:O	2.15	0.45
1:H:72:MET:HE1	1:H:99:SER:CB	2.47	0.45
1:C:206:LEU:HA	1:C:283:LEU:O	2.17	0.45
1:H:206:LEU:HA	1:H:283:LEU:O	2.17	0.45
1:A:44:MET:HE3	1:A:44:MET:HB2	1.88	0.44
1:C:342:TYR:CE2	1:C:346:ARG:HD2	2.52	0.44
1:D:122:LEU:HB3	1:D:308:GLU:HB3	1.99	0.44
1:F:342:TYR:CE2	1:F:346:ARG:HD2	2.53	0.44
1:A:321:VAL:HG13	1:A:328:ILE:HG12	2.00	0.44
1:A:230:ARG:HD2	1:A:231:SER:N	2.32	0.43
1:D:64:ARG:HD3	4:D:805:HOH:O	2.17	0.43
1:H:184:ASP:O	1:H:184:ASP:OD1	2.37	0.43
1:B:228:LEU:HD21	1:B:332:VAL:HG13	1.99	0.43
1:G:293:ALA:HB3	1:G:294:PRO:HD3	2.00	0.43
1:H:57:ARG:HG2	4:H:676:HOH:O	2.17	0.43
1:H:122:LEU:HB3	1:H:308:GLU:HB3	2.00	0.43
1:B:228:LEU:CD2	1:B:332:VAL:HG11	2.49	0.43
1:F:218:MET:HE1	1:F:247:VAL:CA	2.43	0.43
1:G:72:MET:HE1	1:G:99:SER:HB3	2.01	0.43
1:C:293:ALA:HB3	1:C:294:PRO:HD3	2.01	0.43
1:F:218:MET:HE3	1:F:251:PHE:HE2	1.81	0.43
1:G:122:LEU:HB3	1:G:308:GLU:HB3	1.99	0.43
1:G:72:MET:HE1	1:G:99:SER:CB	2.49	0.42
1:B:122:LEU:HB3	1:B:308:GLU:HB3	2.01	0.42
1:B:48:ILE:HD12	1:B:48:ILE:N	2.35	0.42
1:F:122:LEU:HB3	1:F:308:GLU:HB3	2.01	0.42
1:G:129:GLU:HA	1:G:130:PRO:HA	1.91	0.42
1:B:331:GLU:OE1	1:B:334:ARG:NH2	2.51	0.42
1:F:321:VAL:HG13	1:F:328:ILE:HG12	2.02	0.42
1:A:293:ALA:HB3	1:A:294:PRO:HD3	2.01	0.42
1:B:293:ALA:HB3	1:B:294:PRO:HD3	2.02	0.42
1:F:293:ALA:HB3	1:F:294:PRO:HD3	2.02	0.42
1:G:355:GLU:OE1	1:G:355:GLU:N	2.53	0.42
1:D:321:VAL:HG13	1:D:328:ILE:HG12	2.02	0.42
1:E:122:LEU:HB3	1:E:308:GLU:HB3	2.01	0.42
1:G:321:VAL:HG13	1:G:328:ILE:HG12	2.02	0.42
1:A:216:ILE:HG12	4:A:738:HOH:O	2.20	0.42
1:B:342:TYR:CE2	1:B:346:ARG:HD2	2.55	0.41
1:D:150:PRO:O	1:D:172:GLY:HA2	2.21	0.41
1:B:183:LEU:HD12	1:B:183:LEU:HA	1.78	0.41
1:H:129:GLU:HA	1:H:130:PRO:HA	1.91	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:39:GLY:C	4:A:766:HOH:O	2.63	0.41
1:A:150:PRO:O	1:A:172:GLY:HA2	2.20	0.41
1:D:8:VAL:HA	1:D:36:ILE:O	2.20	0.41
1:H:293:ALA:HB3	1:H:294:PRO:HD3	2.02	0.41
1:E:293:ALA:HB3	1:E:294:PRO:HD3	2.03	0.41
1:B:228:LEU:CD2	1:B:332:VAL:CG1	2.98	0.41
1:H:367:ARG:HA	1:H:371:LEU:HB2	2.03	0.41
1:B:355:GLU:N	1:B:355:GLU:OE1	2.54	0.41
1:C:150:PRO:O	1:C:172:GLY:HA2	2.21	0.41
1:B:321:VAL:HG13	1:B:328:ILE:HG12	2.02	0.41
1:E:129:GLU:HA	1:E:130:PRO:HA	1.90	0.41
1:H:293:ALA:HB3	1:H:300:VAL:CG2	2.50	0.41
1:H:150:PRO:O	1:H:172:GLY:HA2	2.20	0.41
1:D:293:ALA:HB3	1:D:300:VAL:CG2	2.51	0.40
1:F:218:MET:HE1	1:F:247:VAL:HG13	2.03	0.40
1:H:9:TYR:O	1:H:37:THR:HA	2.21	0.40
1:A:72:MET:HE1	1:A:99:SER:HB3	2.02	0.40
1:B:216:ILE:HB	1:B:217:PRO:HD3	2.03	0.40
1:D:61:ASP:CG	1:D:61:ASP:O	2.64	0.40
1:H:131:PHE:HA	1:H:132:PRO:HA	1.87	0.40
1:H:216:ILE:HB	1:H:217:PRO:HD3	2.02	0.40
1:D:355:GLU:OE1	1:D:355:GLU:N	2.54	0.40
1:A:61:ASP:O	1:A:61:ASP:CG	2.65	0.40
1:B:61:ASP:O	1:B:61:ASP:CG	2.64	0.40
1:F:8:VAL:HA	1:F:36:ILE:O	2.22	0.40
2:G:501:UPG:H5C2	2:G:501:UPG:O2B	2.21	0.40
1:H:371:LEU:HD23	1:H:371:LEU:HA	1.97	0.40
1:E:61:ASP:O	1:E:61:ASP:CG	2.65	0.40
1:F:327:LEU:HD21	4:F:712:HOH:O	2.21	0.40
1:H:342:TYR:CE2	1:H:346:ARG:HD2	2.57	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	368/386 (95%)	363 (99%)	5 (1%)	0	100	100
1	B	347/386 (90%)	342 (99%)	5 (1%)	0	100	100
1	C	351/386 (91%)	346 (99%)	5 (1%)	0	100	100
1	D	354/386 (92%)	349 (99%)	5 (1%)	0	100	100
1	E	359/386 (93%)	356 (99%)	3 (1%)	0	100	100
1	F	359/386 (93%)	353 (98%)	6 (2%)	0	100	100
1	G	351/386 (91%)	347 (99%)	4 (1%)	0	100	100
1	H	363/386 (94%)	359 (99%)	4 (1%)	0	100	100
All	All	2852/3088 (92%)	2815 (99%)	37 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	302/313 (96%)	292 (97%)	10 (3%)	33	37
1	B	292/313 (93%)	277 (95%)	15 (5%)	21	21
1	C	293/313 (94%)	286 (98%)	7 (2%)	43	49
1	D	294/313 (94%)	284 (97%)	10 (3%)	32	35
1	E	298/313 (95%)	288 (97%)	10 (3%)	32	35
1	F	297/313 (95%)	288 (97%)	9 (3%)	36	41
1	G	294/313 (94%)	284 (97%)	10 (3%)	32	35
1	H	299/313 (96%)	289 (97%)	10 (3%)	33	37
All	All	2369/2504 (95%)	2288 (97%)	81 (3%)	32	35

All (81) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	44	MET
1	A	45	LEU
1	A	50	GLU
1	A	61	ASP
1	A	165	SER
1	A	230	ARG
1	A	321	VAL
1	A	351	VAL
1	A	363	LEU
1	A	372	SER
1	B	12	ARG
1	B	57	ARG
1	B	61	ASP
1	B	64	ARG
1	B	67	GLN
1	B	165	SER
1	B	183	LEU
1	B	259	THR
1	B	268	ARG
1	B	321	VAL
1	B	334	ARG
1	B	335	LEU
1	B	351	VAL
1	B	363	LEU
1	B	372	SER
1	C	12	ARG
1	C	48	ILE
1	C	50	GLU
1	C	165	SER
1	C	201	ARG
1	C	347	ARG
1	C	355	GLU
1	D	57	ARG
1	D	61	ASP
1	D	64	ARG
1	D	165	SER
1	D	192	ARG
1	D	321	VAL
1	D	347	ARG
1	D	350	ILE
1	D	351	VAL
1	D	372	SER
1	E	47	GLU

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Mol	Chain	Res	Type
1	E	61	ASP
1	E	165	SER
1	E	199	GLU
1	E	230	ARG
1	E	321	VAL
1	E	346	ARG
1	E	351	VAL
1	E	355	GLU
1	E	363	LEU
1	F	47	GLU
1	F	50	GLU
1	F	57	ARG
1	F	61	ASP
1	F	164	ARG
1	F	165	SER
1	F	283	LEU
1	F	321	VAL
1	F	372	SER
1	G	50	GLU
1	G	57	ARG
1	G	165	SER
1	G	192	ARG
1	G	227	GLU
1	G	321	VAL
1	G	334	ARG
1	G	346	ARG
1	G	351	VAL
1	G	372	SER
1	H	45	LEU
1	H	50	GLU
1	H	164	ARG
1	H	165	SER
1	H	192	ARG
1	H	246	GLU
1	H	321	VAL
1	H	340	GLU
1	H	363	LEU
1	H	372	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	202	GLN
1	A	290	GLN
1	B	202	GLN
1	B	260	GLN
1	B	290	GLN
1	C	49	ASN
1	C	202	GLN
1	D	290	GLN
1	E	49	ASN
1	E	202	GLN
1	E	242	HIS
1	F	58	HIS
1	F	202	GLN
1	F	290	GLN
1	G	290	GLN
1	H	147	HIS
1	H	202	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 15 ligands modelled in this entry, 7 are monoatomic - leaving 8 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
2	UPG	A	501	-	37,38,38	0.63	1 (2%)	55,58,58	0.74	0
2	UPG	F	501	-	37,38,38	0.48	0	55,58,58	0.81	2 (3%)
2	UPG	E	501	-	37,38,38	0.80	2 (5%)	55,58,58	0.71	0
2	UPG	G	501	-	37,38,38	0.52	0	55,58,58	1.12	5 (9%)
2	UPG	B	501	-	37,38,38	0.88	1 (2%)	55,58,58	0.83	1 (1%)
2	UPG	H	501	-	37,38,38	0.59	0	55,58,58	0.84	2 (3%)
2	UPG	C	501	-	37,38,38	0.72	1 (2%)	55,58,58	0.87	2 (3%)
2	UPG	D	501	-	37,38,38	0.77	1 (2%)	55,58,58	0.87	1 (1%)

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	UPG	A	501	-	-	1/23/59/59	0/3/3/3
2	UPG	F	501	-	-	1/23/59/59	0/3/3/3
2	UPG	E	501	-	-	3/23/59/59	0/3/3/3
2	UPG	G	501	-	-	3/23/59/59	0/3/3/3
2	UPG	B	501	-	-	1/23/59/59	0/3/3/3
2	UPG	H	501	-	-	1/23/59/59	0/3/3/3
2	UPG	C	501	-	-	1/23/59/59	0/3/3/3
2	UPG	D	501	-	-	1/23/59/59	0/3/3/3

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	501	UPG	PA-O3A	4.09	1.63	1.59
2	D	501	UPG	PA-O3A	3.17	1.62	1.59
2	C	501	UPG	PA-O3A	2.92	1.62	1.59
2	E	501	UPG	C4'-C5'	2.42	1.58	1.53
2	E	501	UPG	PA-O3A	2.36	1.62	1.59
2	A	501	UPG	PA-O3A	2.01	1.61	1.59

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	501	UPG	O5'-C1'-O3B	-3.70	106.52	111.36
2	B	501	UPG	O5'-C1'-O3B	-3.08	107.34	111.36
2	H	501	UPG	O5'-C1'-O3B	-3.04	107.39	111.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	501	UPG	PB-O3B-C1'	2.78	132.56	121.21
2	C	501	UPG	PB-O3B-C1'	2.78	132.55	121.21
2	F	501	UPG	PB-O3B-C1'	2.70	132.21	121.21
2	F	501	UPG	O5'-C1'-O3B	-2.60	107.96	111.36
2	G	501	UPG	O2B-PB-O1B	2.54	124.26	112.44
2	G	501	UPG	O3A-PA-O1A	-2.49	103.20	110.70
2	C	501	UPG	O2B-PB-O3B	-2.49	96.55	106.70
2	D	501	UPG	PB-O3B-C1'	2.38	130.91	121.21
2	G	501	UPG	O2B-PB-O3A	-2.31	101.03	107.27
2	H	501	UPG	O2C-C2C-C1C	2.17	117.58	110.10

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	UPG	O5'-C1'-O3B-PB
2	B	501	UPG	O5'-C1'-O3B-PB
2	C	501	UPG	O5'-C1'-O3B-PB
2	D	501	UPG	O5'-C1'-O3B-PB
2	E	501	UPG	O5'-C1'-O3B-PB
2	F	501	UPG	O5'-C1'-O3B-PB
2	G	501	UPG	O5'-C1'-O3B-PB
2	H	501	UPG	O5'-C1'-O3B-PB
2	G	501	UPG	O4C-C4C-C5C-O5C
2	G	501	UPG	C3C-C4C-C5C-O5C
2	E	501	UPG	PB-O3A-PA-O1A
2	E	501	UPG	PB-O3A-PA-O2A

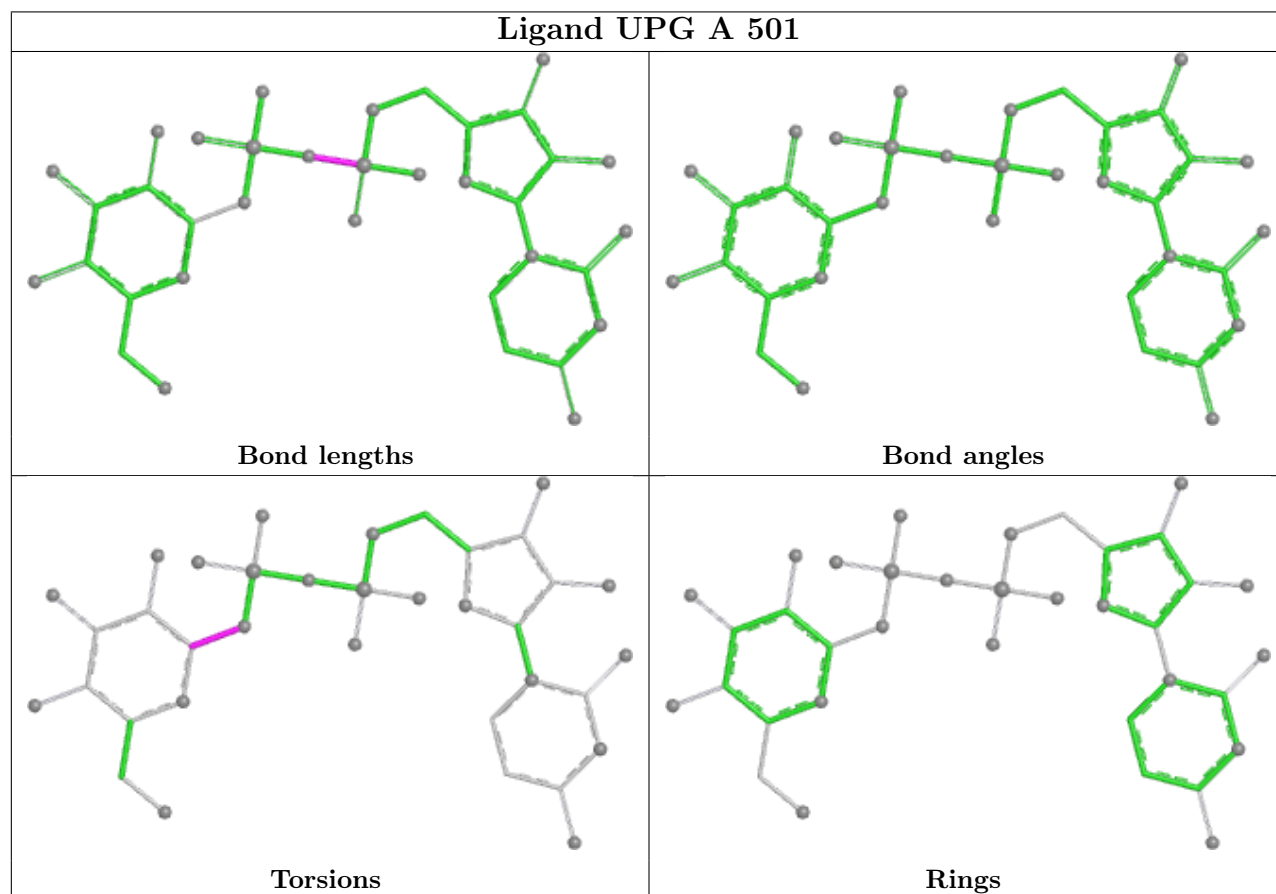
There are no ring outliers.

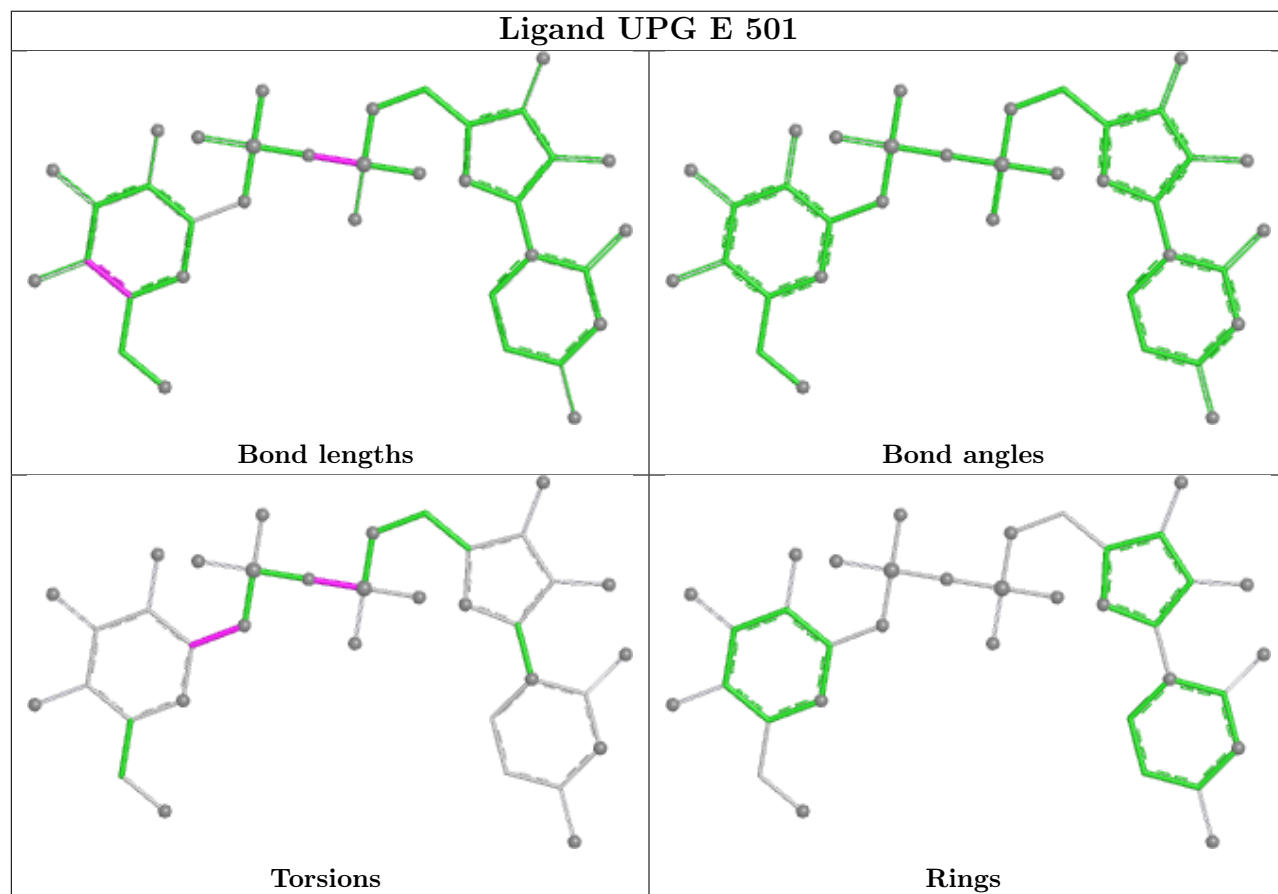
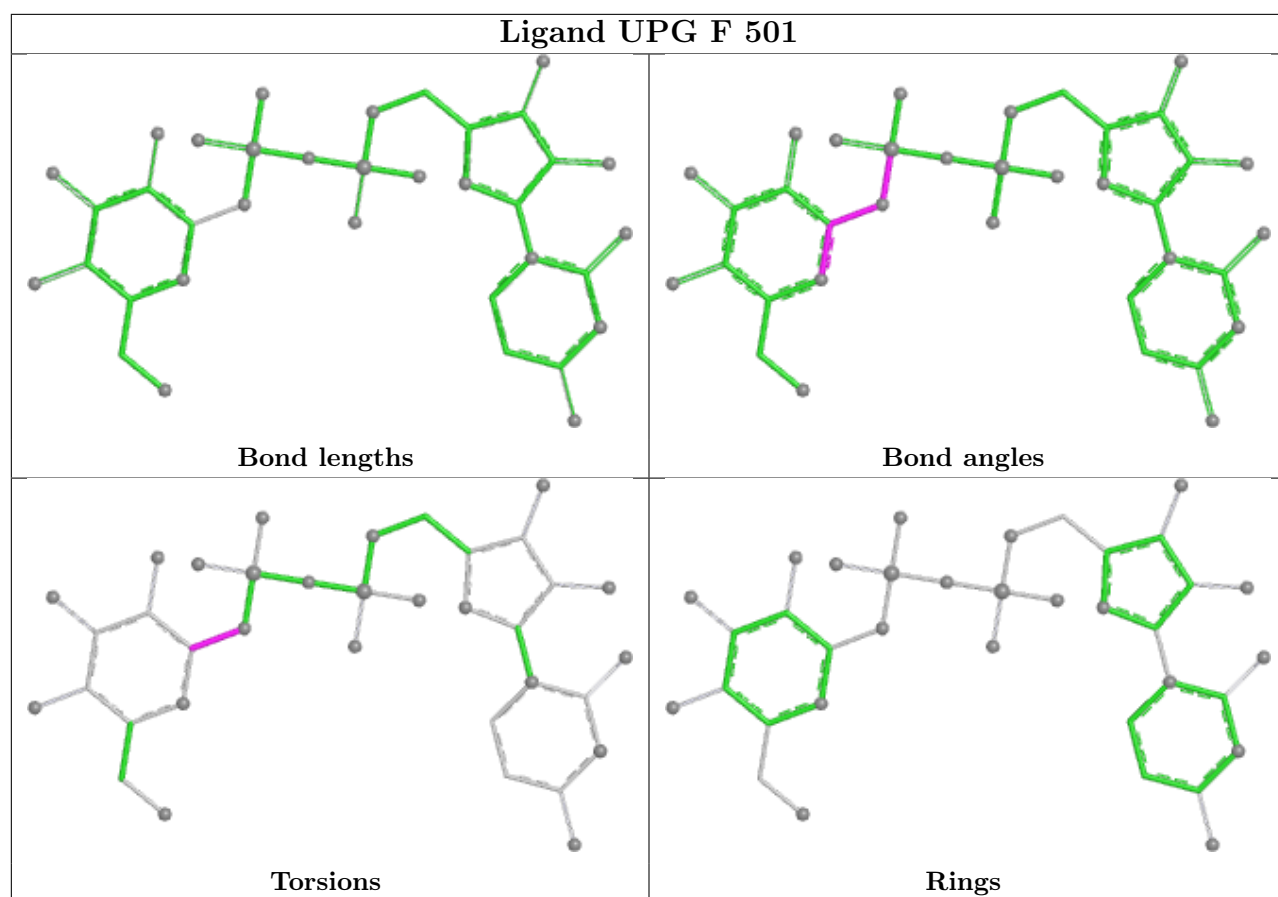
1 monomer is involved in 1 short contact:

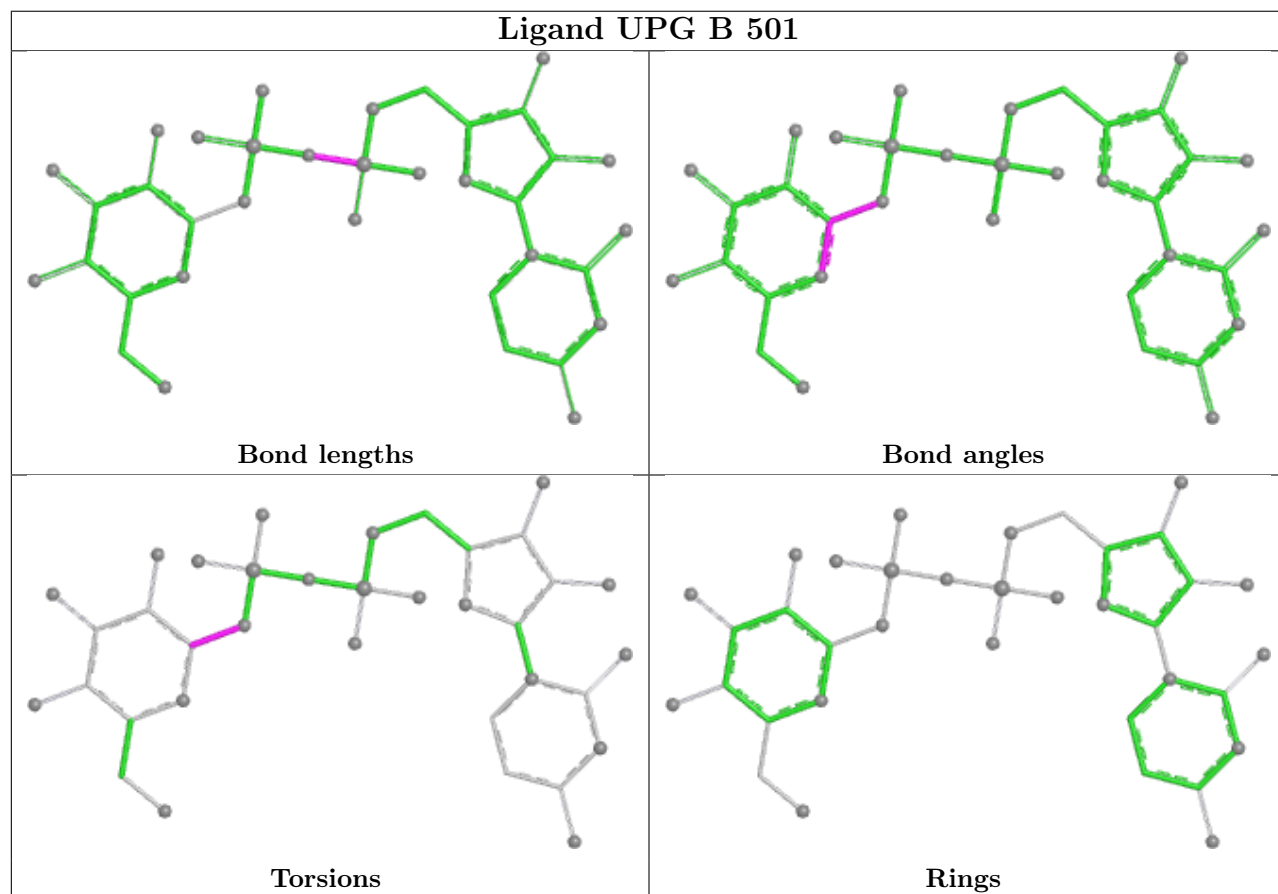
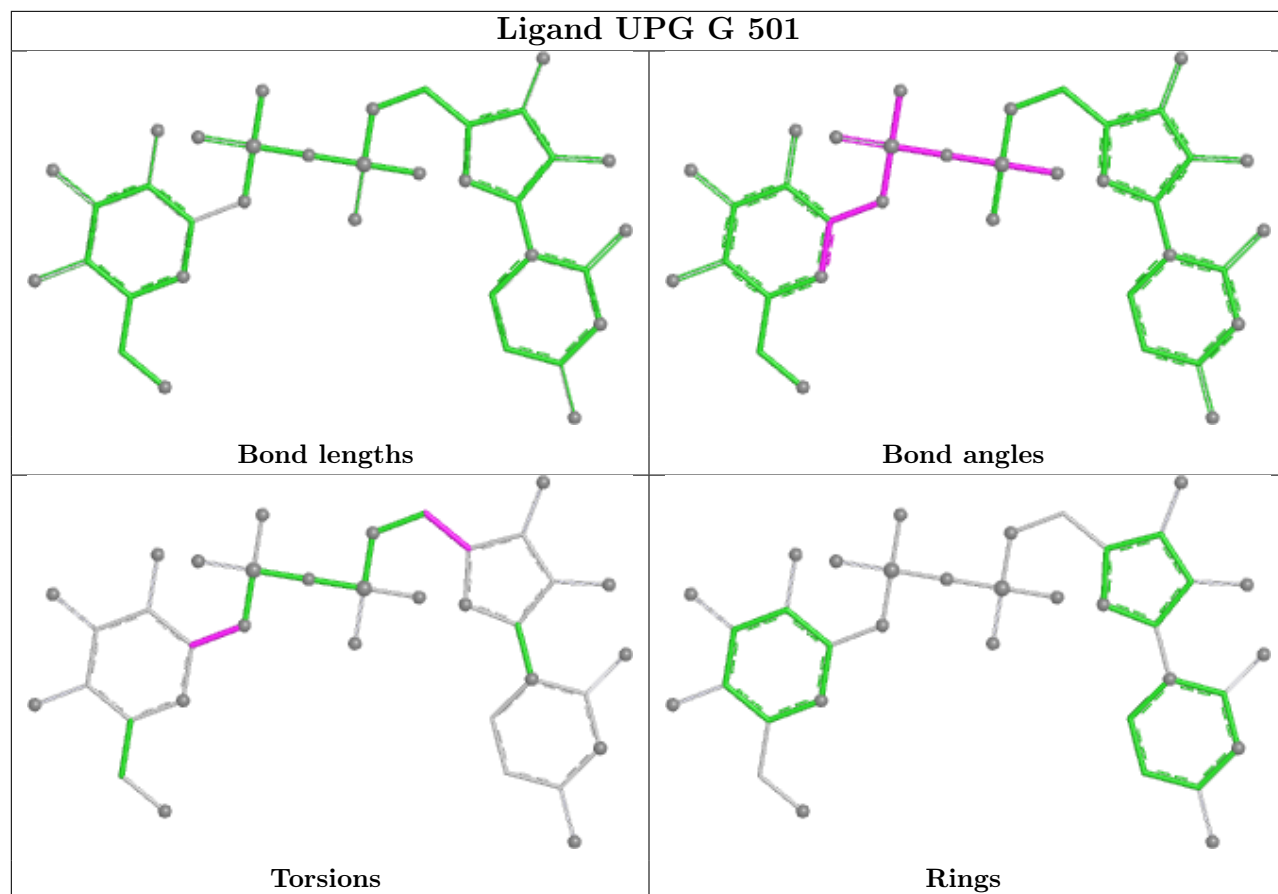
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	501	UPG	1	0

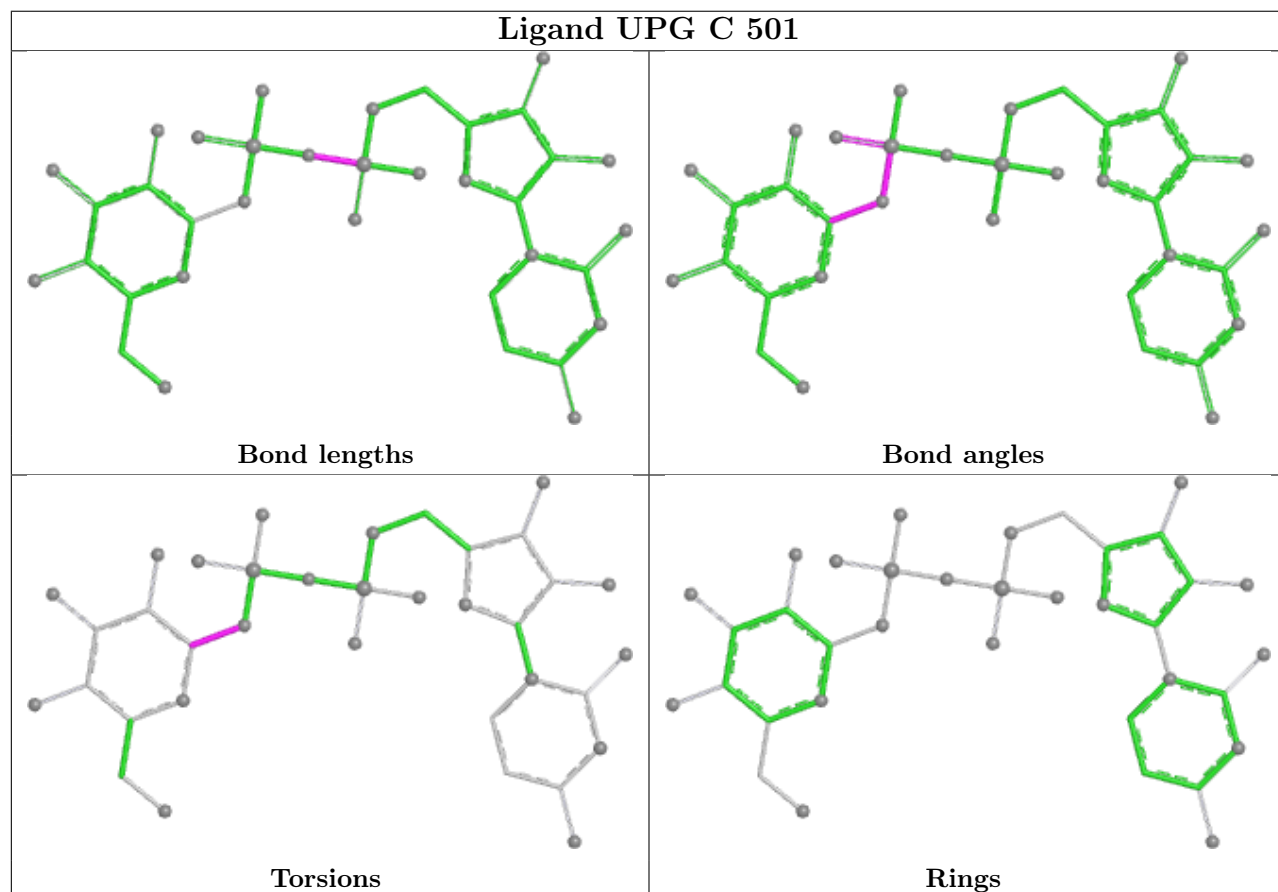
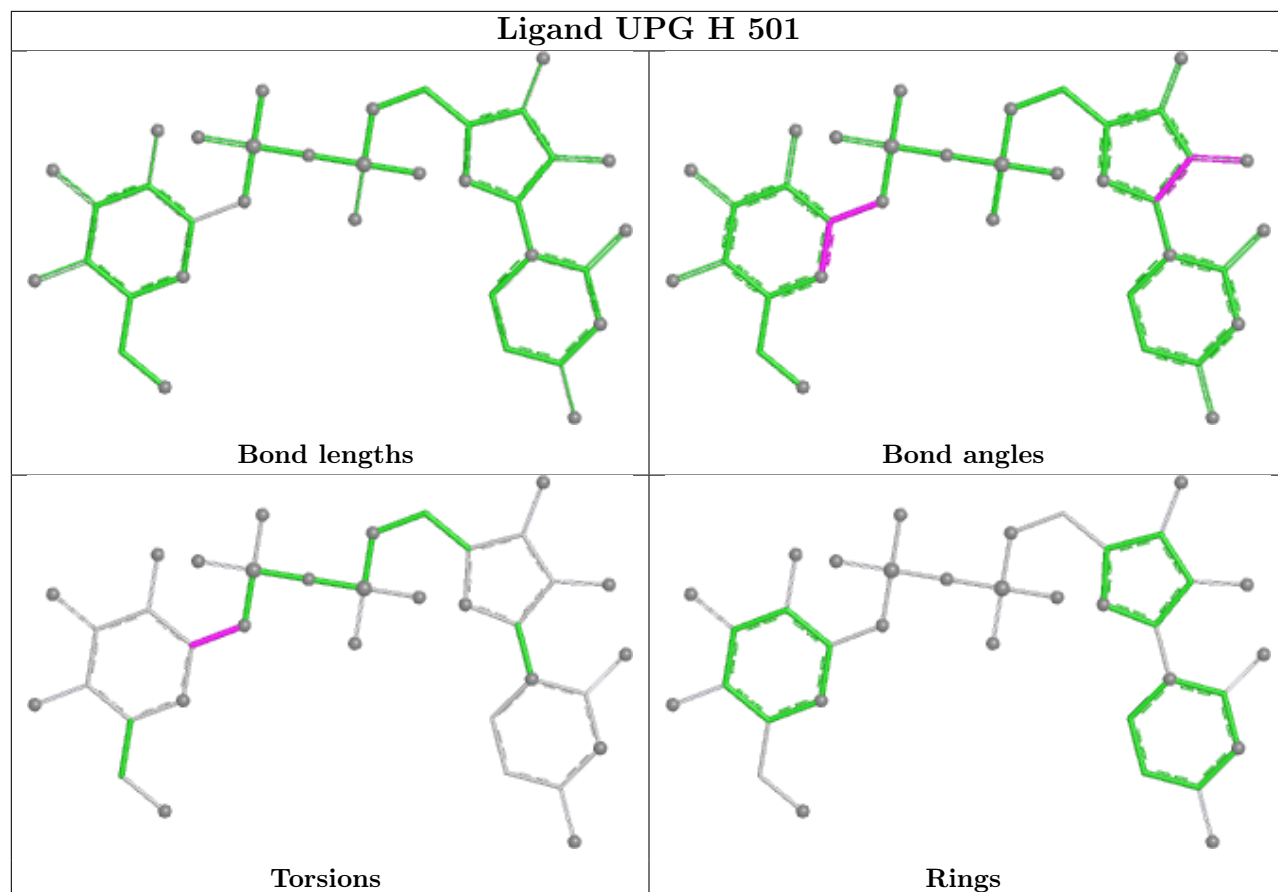
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

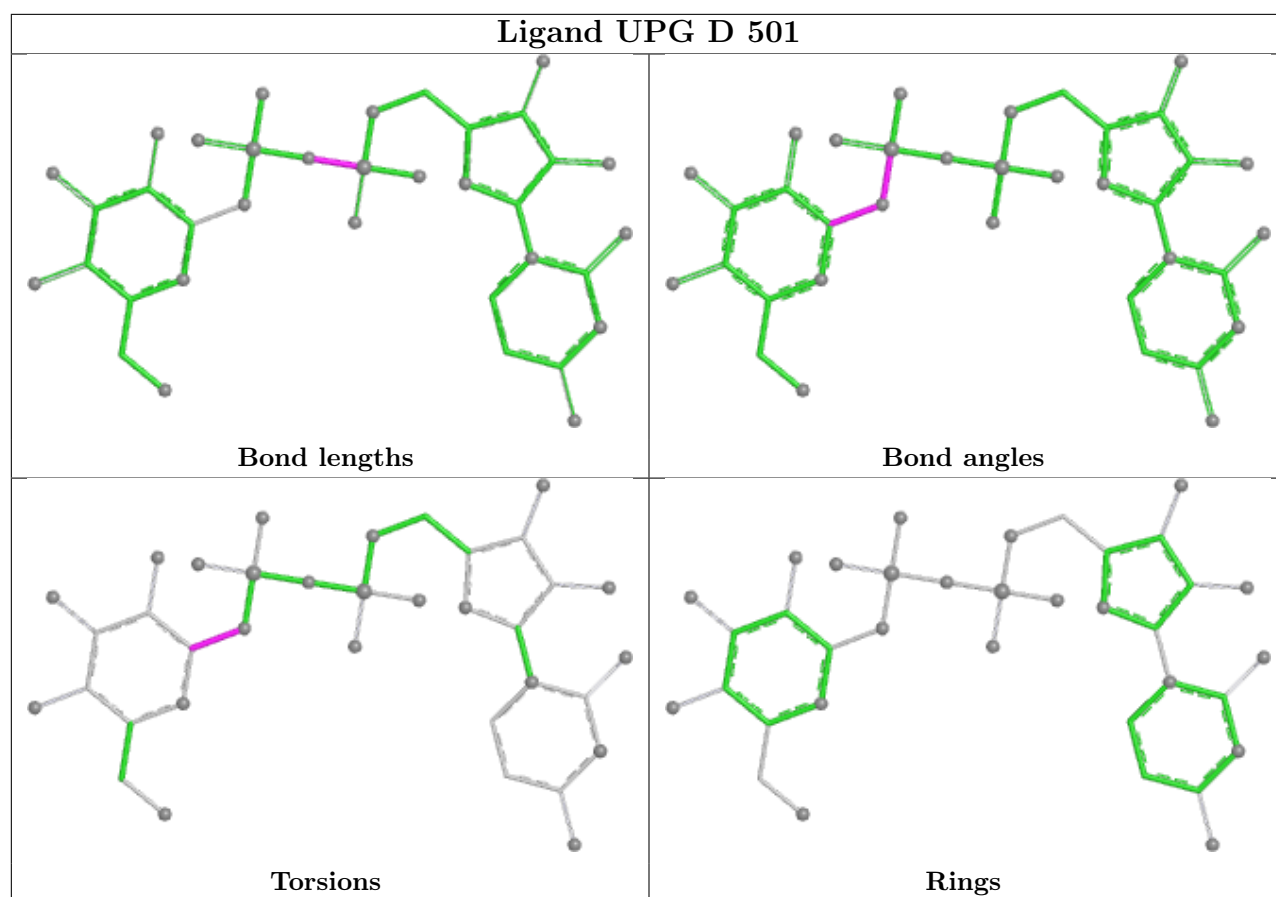
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents 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, 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	372/386 (96%)	-0.03	10 (2%) 56 59	9, 22, 50, 91	0
1	B	357/386 (92%)	0.52	21 (5%) 28 30	12, 34, 60, 84	0
1	C	359/386 (93%)	0.18	8 (2%) 62 65	9, 27, 51, 67	0
1	D	362/386 (93%)	0.10	11 (3%) 52 55	11, 24, 50, 85	0
1	E	367/386 (95%)	-0.02	9 (2%) 58 61	12, 24, 46, 71	0
1	F	365/386 (94%)	0.32	12 (3%) 49 51	14, 31, 59, 88	0
1	G	361/386 (93%)	0.48	16 (4%) 39 41	18, 31, 58, 73	0
1	H	369/386 (95%)	0.56	18 (4%) 35 37	19, 29, 54, 67	0
All	All	2912/3088 (94%)	0.26	105 (3%) 46 48	9, 28, 54, 91	0

All (105) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	45	LEU	5.0
1	A	190	ALA	4.8
1	D	200	GLY	4.7
1	A	65	PRO	4.4
1	H	348	PRO	4.1
1	A	348	PRO	4.0
1	B	200	GLY	3.9
1	F	65	PRO	3.9
1	H	169	TYR	3.9
1	B	183	LEU	3.8
1	B	63	MET	3.7
1	E	63	MET	3.6
1	B	181	LEU	3.6
1	E	351	VAL	3.6
1	H	374	PRO	3.4
1	H	351	VAL	3.3

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Mol	Chain	Res	Type	RSRZ
1	H	39	GLY	3.3
1	B	347	ARG	3.3
1	D	349	GLY	3.2
1	D	45	LEU	3.2
1	D	348	PRO	3.2
1	D	64	ARG	3.1
1	F	192	ARG	3.1
1	B	48	ILE	3.1
1	D	192	ARG	3.1
1	H	60	LEU	3.1
1	G	59	ASN	3.0
1	D	350	ILE	3.0
1	A	63	MET	3.0
1	F	200	GLY	3.0
1	B	182	VAL	2.8
1	B	199	GLU	2.8
1	H	47	GLU	2.8
1	E	66	GLY	2.8
1	G	334	ARG	2.8
1	E	43	ASP	2.8
1	H	349	GLY	2.8
1	G	184	ASP	2.8
1	G	351	VAL	2.8
1	G	63	MET	2.7
1	G	60	LEU	2.7
1	B	180	HIS	2.7
1	C	340	GLU	2.6
1	F	169	TYR	2.6
1	D	66	GLY	2.6
1	E	67	GLN	2.6
1	G	341	ALA	2.6
1	D	183	LEU	2.6
1	B	64	ARG	2.5
1	H	368	GLU	2.5
1	B	175	VAL	2.5
1	A	189	SER	2.5
1	C	183	LEU	2.5
1	B	274	ARG	2.5
1	B	194	LEU	2.5
1	C	45	LEU	2.5
1	E	188	ASP	2.4
1	F	234	THR	2.4

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Mol	Chain	Res	Type	RSRZ
1	C	233	PRO	2.4
1	C	348	PRO	2.4
1	G	190	ALA	2.4
1	G	39	GLY	2.4
1	H	278	ARG	2.4
1	E	278	ARG	2.3
1	F	211	ARG	2.3
1	H	190	ALA	2.3
1	F	61	ASP	2.3
1	C	48	ILE	2.2
1	B	259	THR	2.2
1	F	233	PRO	2.2
1	C	347	ARG	2.2
1	A	61	ASP	2.2
1	F	230	ARG	2.2
1	D	59	ASN	2.2
1	F	374	PRO	2.2
1	G	183	LEU	2.2
1	H	334	ARG	2.2
1	H	365	ALA	2.2
1	B	60	LEU	2.2
1	H	181	LEU	2.2
1	H	363	LEU	2.1
1	E	374	PRO	2.1
1	A	350	ILE	2.1
1	B	192	ARG	2.1
1	G	359	ALA	2.1
1	B	336	LEU	2.1
1	C	60	LEU	2.1
1	F	45	LEU	2.1
1	A	60	LEU	2.1
1	G	231	SER	2.1
1	B	61	ASP	2.1
1	A	66	GLY	2.1
1	G	135	ILE	2.1
1	A	351	VAL	2.1
1	G	321	VAL	2.1
1	B	196	ALA	2.1
1	F	184	ASP	2.0
1	G	234	THR	2.0
1	D	63	MET	2.0
1	B	2	ALA	2.0

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Mol	Chain	Res	Type	RSRZ
1	E	59	ASN	2.0
1	H	49	ASN	2.0
1	H	371	LEU	2.0
1	H	274	ARG	2.0
1	G	259	THR	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 oligosaccharides 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, 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.

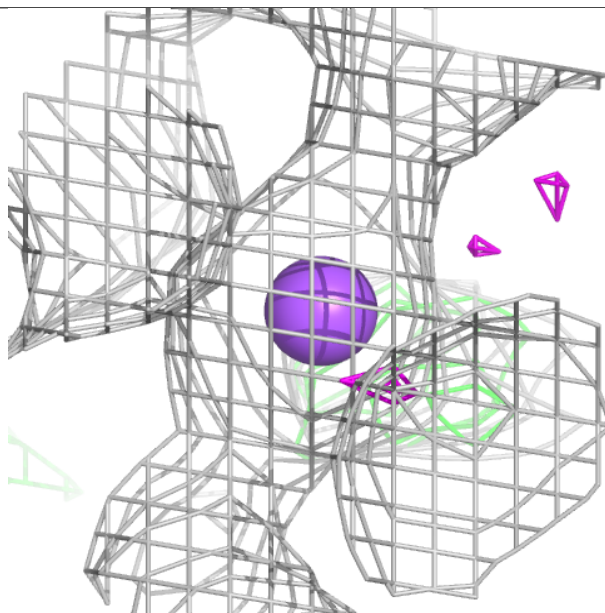
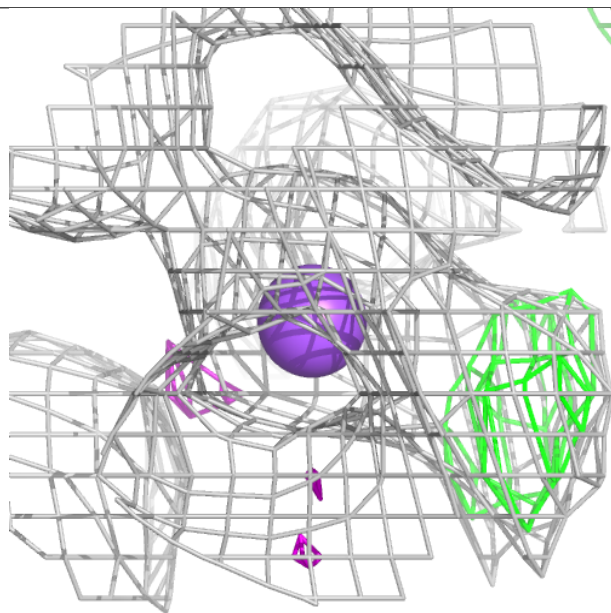
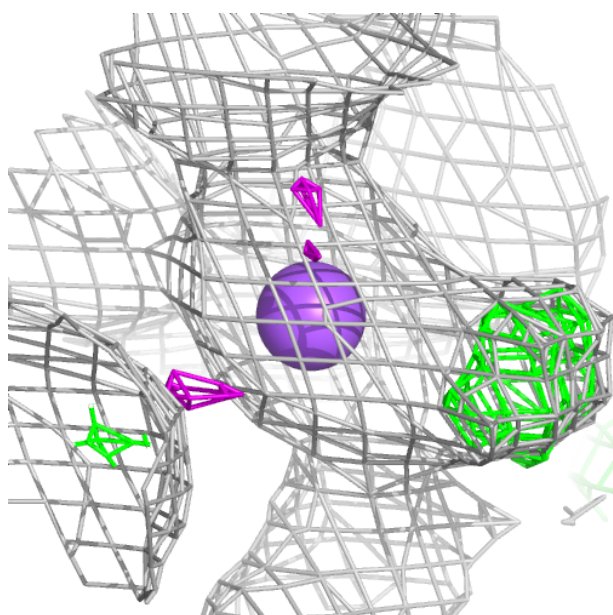
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	NA	H	502	1/1	0.81	0.14	33,33,33,33	0
3	NA	G	502	1/1	0.87	0.08	45,45,45,45	0
3	NA	C	502	1/1	0.89	0.05	27,27,27,27	0
3	NA	A	502	1/1	0.90	0.10	30,30,30,30	0
2	UPG	G	501	36/36	0.96	0.06	19,22,26,31	0
3	NA	D	502	1/1	0.96	0.07	30,30,30,30	0
3	NA	F	502	1/1	0.96	0.04	26,26,26,26	0
2	UPG	H	501	36/36	0.96	0.06	18,23,28,30	0
2	UPG	B	501	36/36	0.96	0.06	18,25,28,29	0
2	UPG	F	501	36/36	0.97	0.05	20,24,26,27	0
2	UPG	C	501	36/36	0.97	0.05	15,20,23,24	0
3	NA	E	502	1/1	0.97	0.07	19,19,19,19	0
2	UPG	D	501	36/36	0.98	0.05	13,17,20,20	0
2	UPG	E	501	36/36	0.98	0.04	15,17,21,22	0
2	UPG	A	501	36/36	0.98	0.04	10,13,15,16	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.

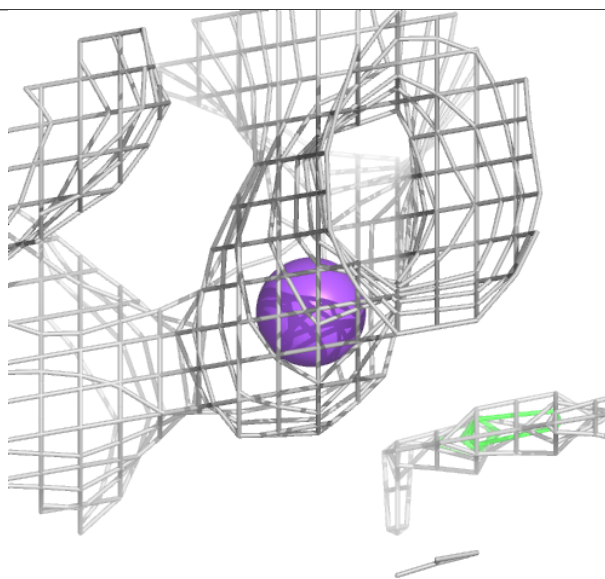
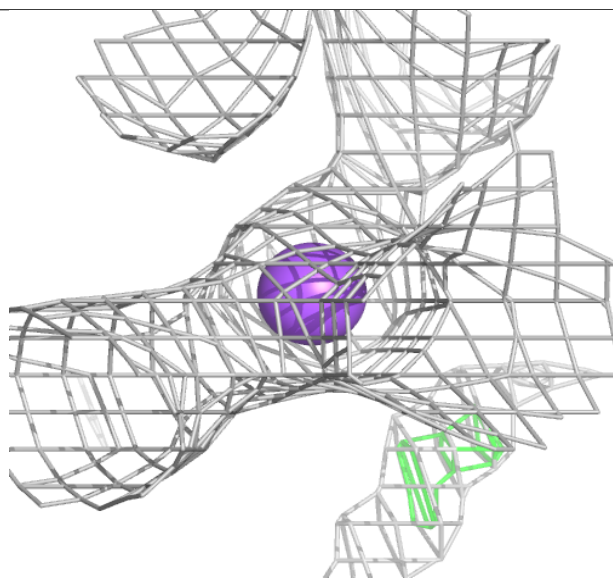
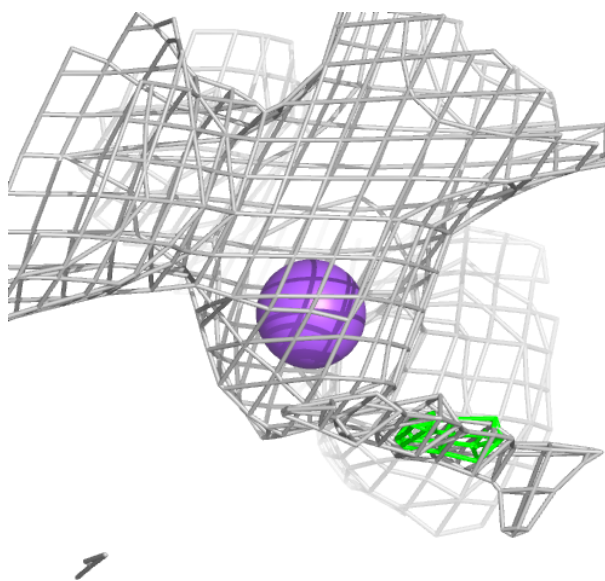
Electron density around NA H 502:

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



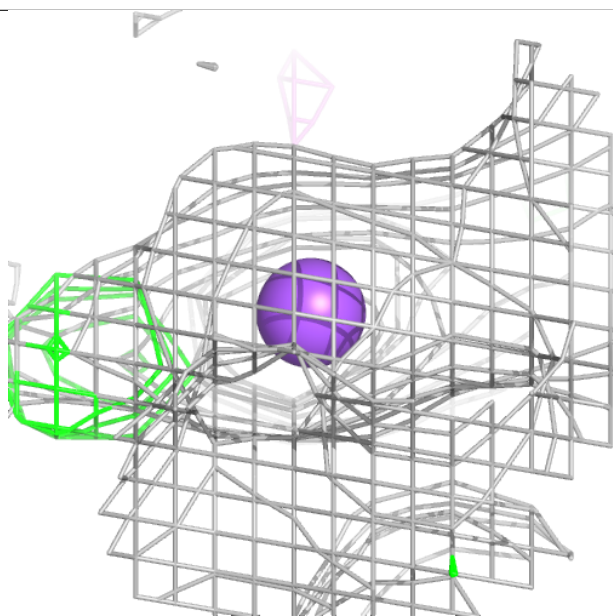
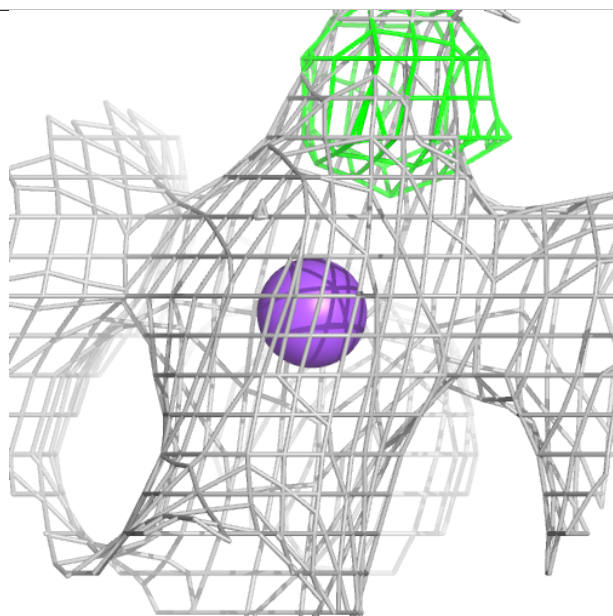
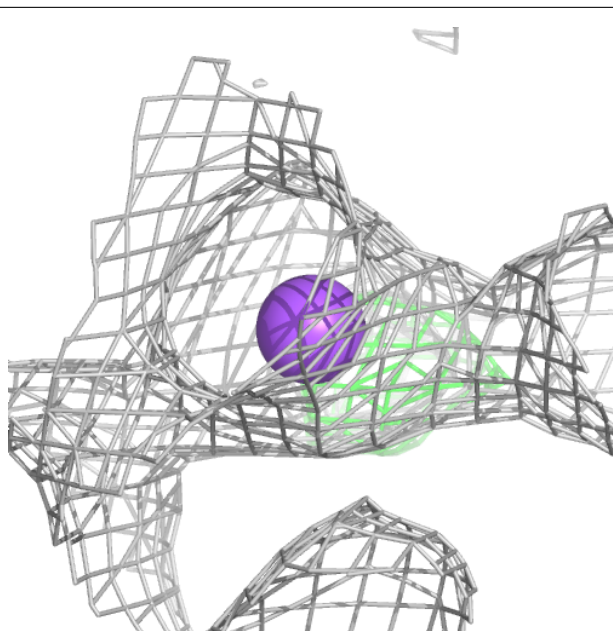
Electron density around NA G 502:

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



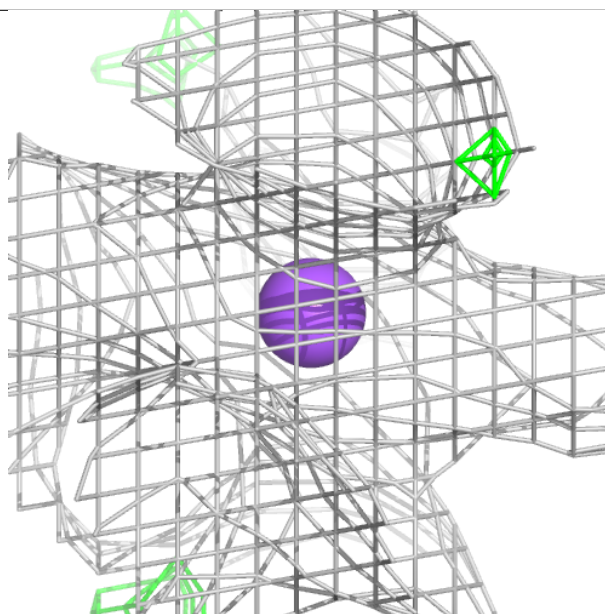
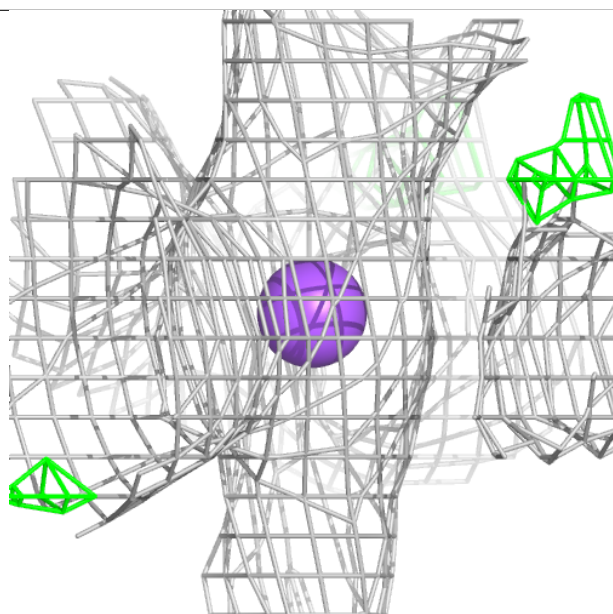
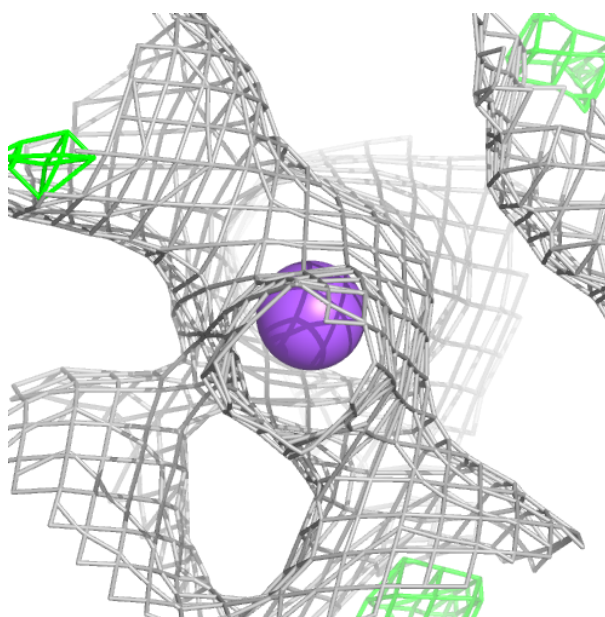
Electron density around NA C 502:

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



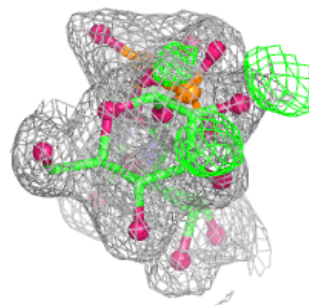
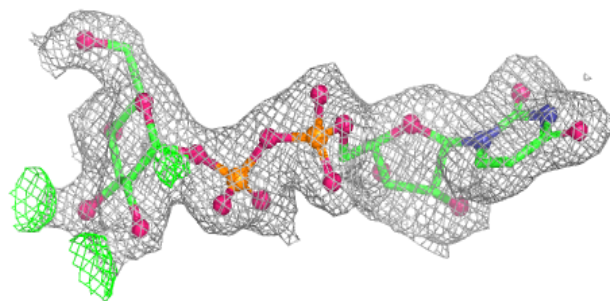
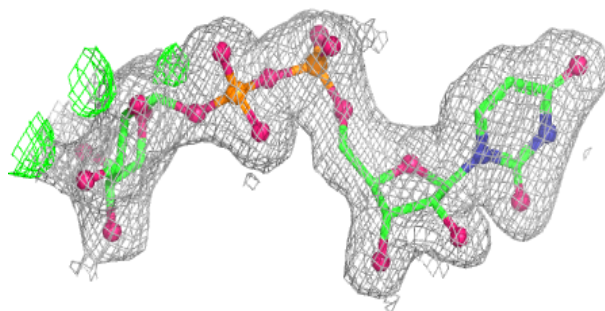
Electron density around NA A 502:

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and green (positive)



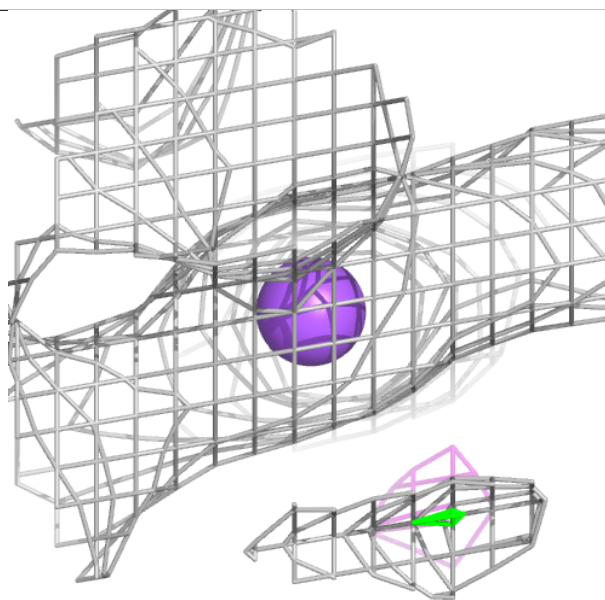
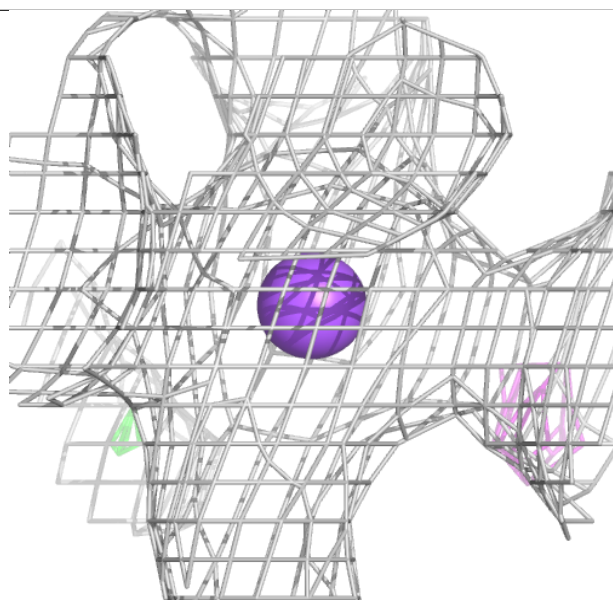
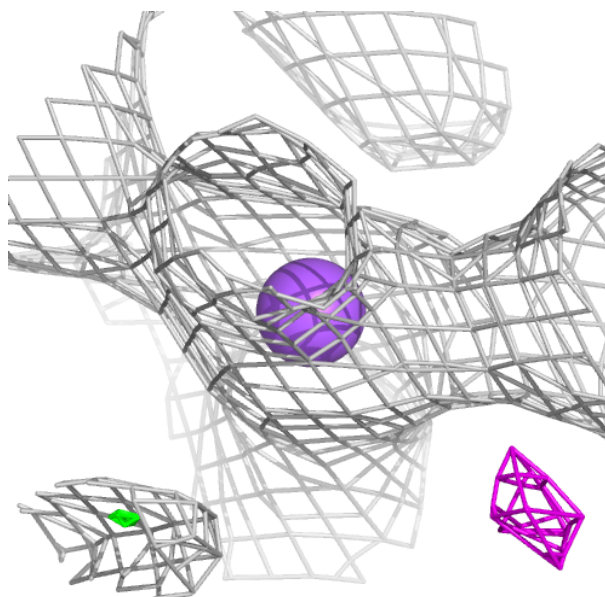
Electron density around UPG G 501:

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



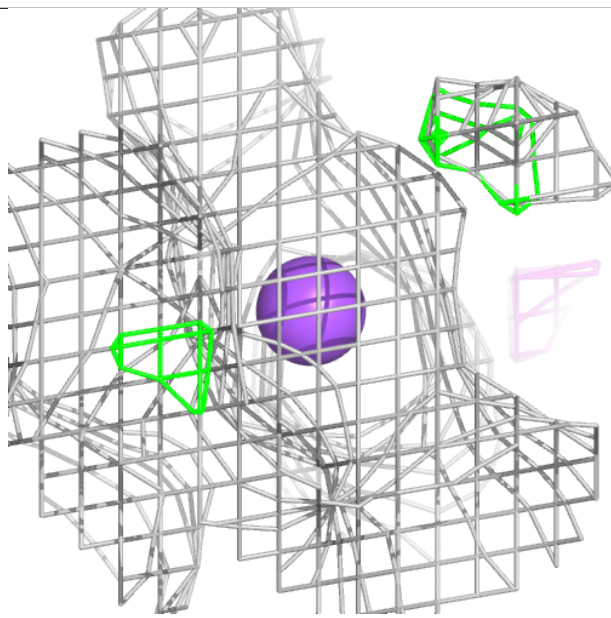
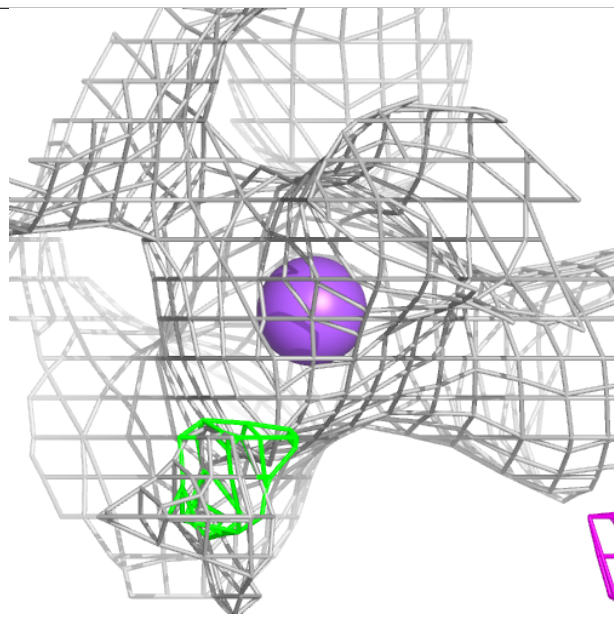
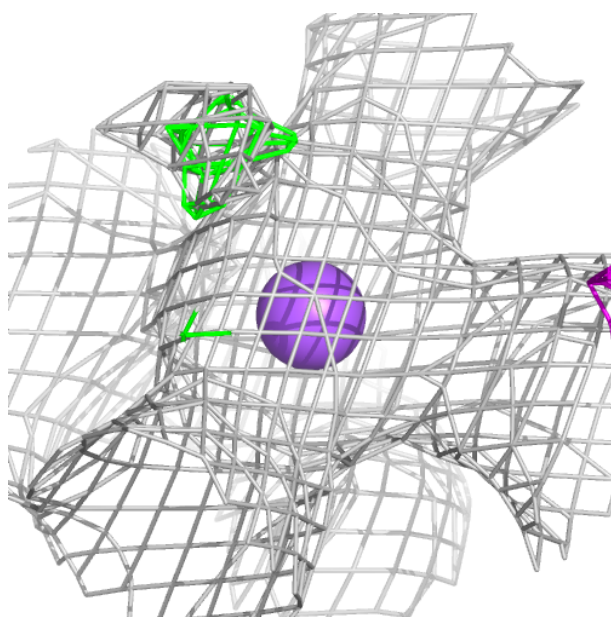
Electron density around NA D 502:

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



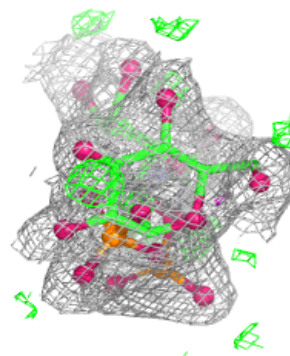
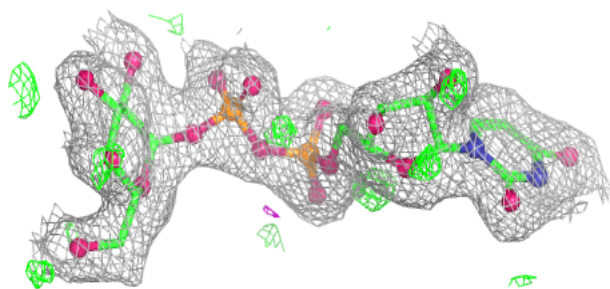
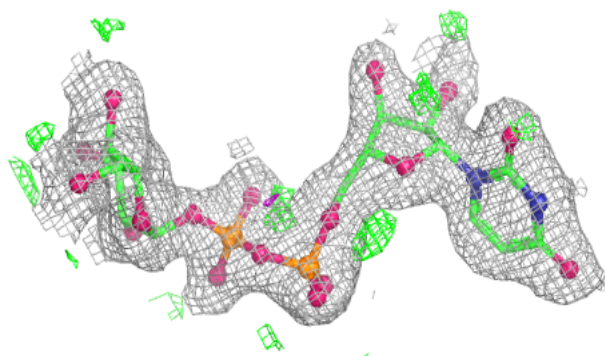
Electron density around NA F 502:

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and green (positive)

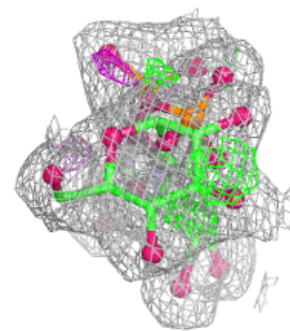
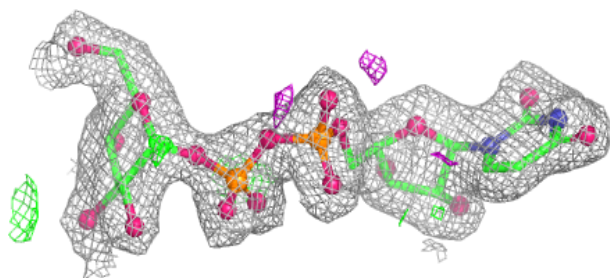
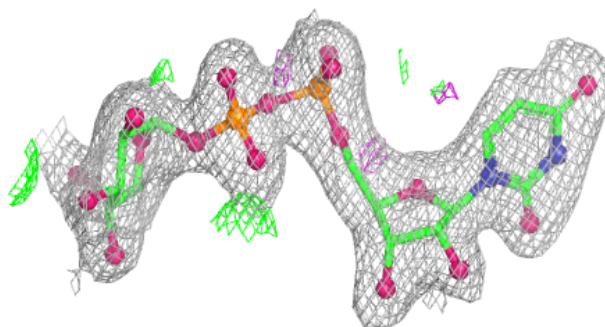


Electron density around UPG H 501:

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

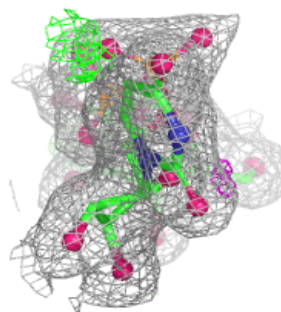
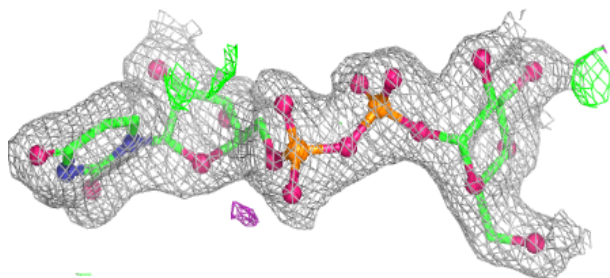
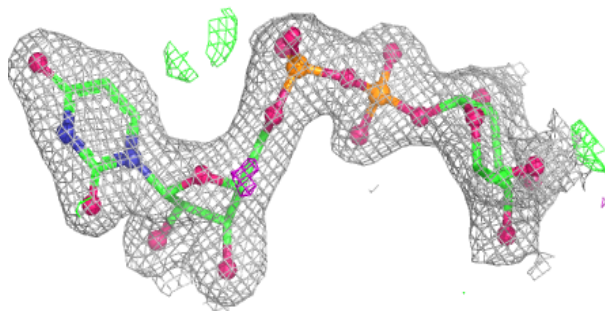
**Electron density around UPG B 501:**

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

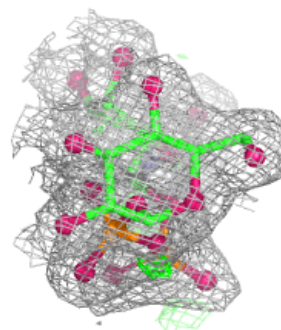
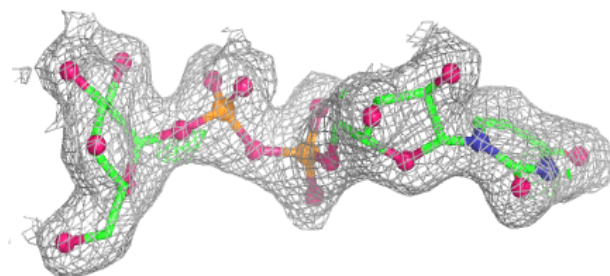
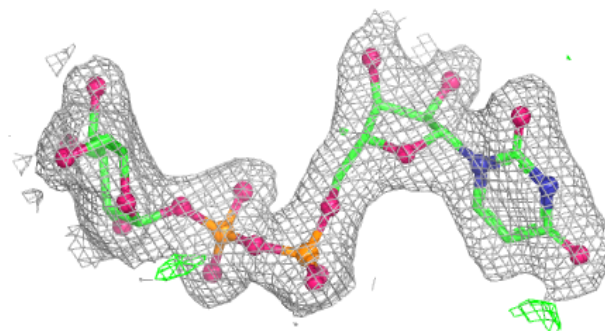


Electron density around UPG F 501:

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

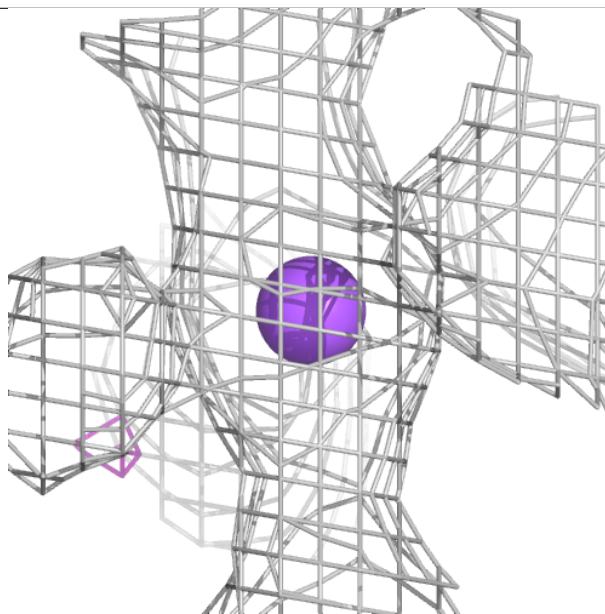
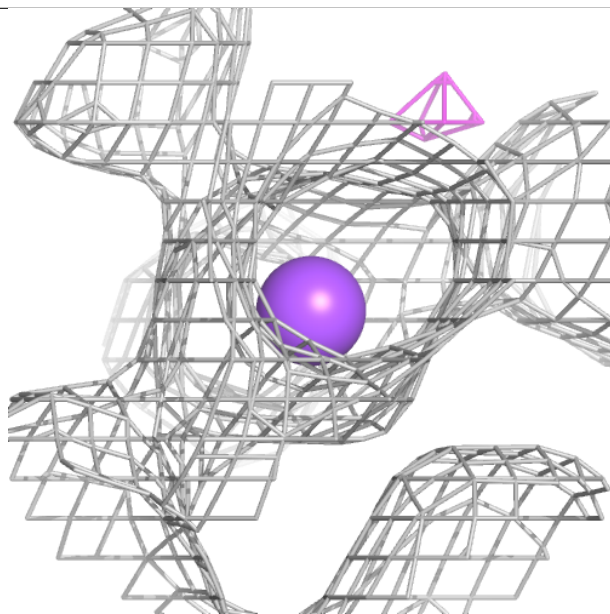
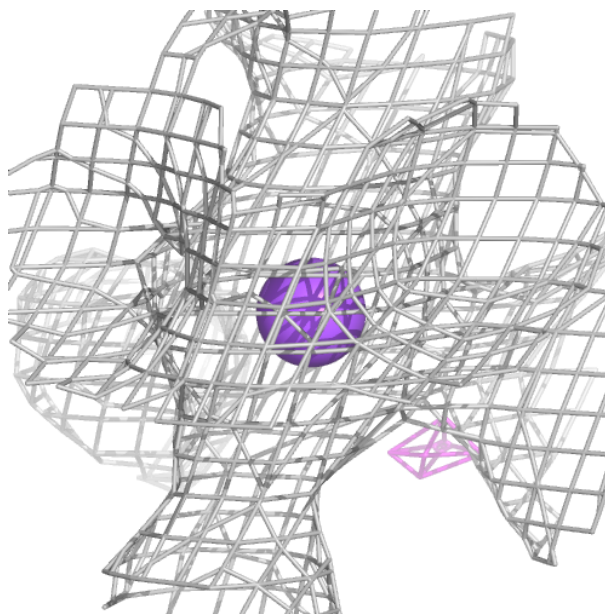
**Electron density around UPG C 501:**

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



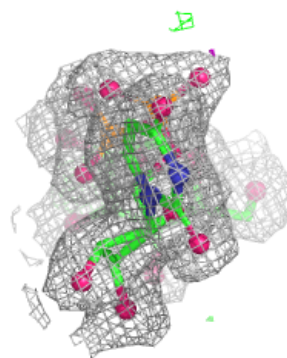
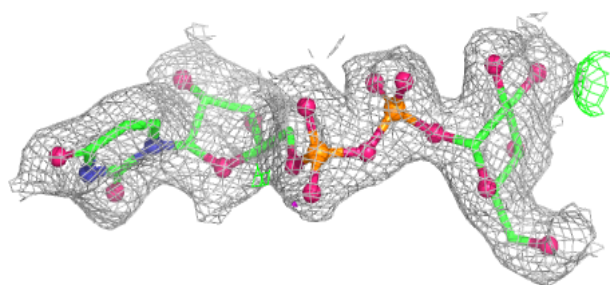
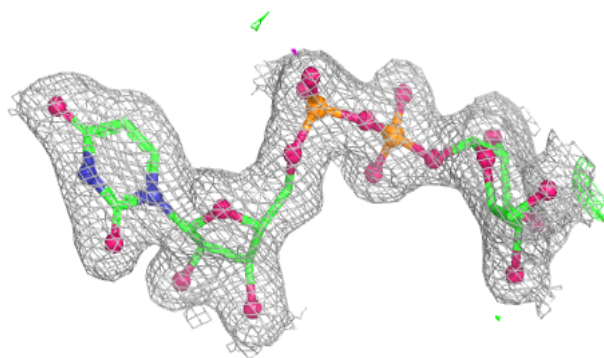
Electron density around NA E 502:

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

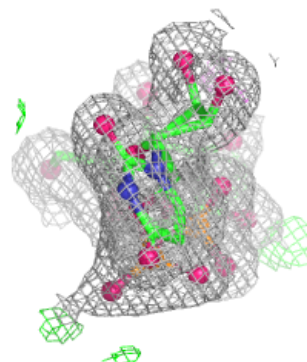
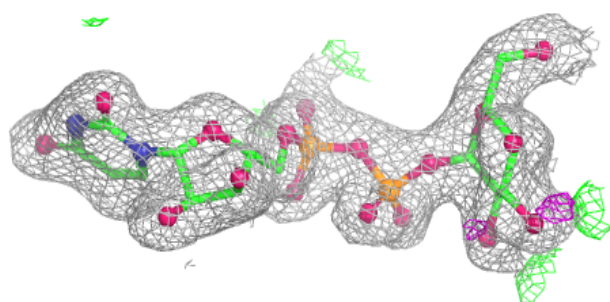
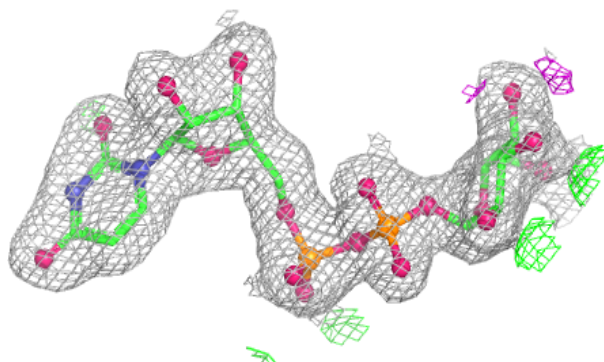


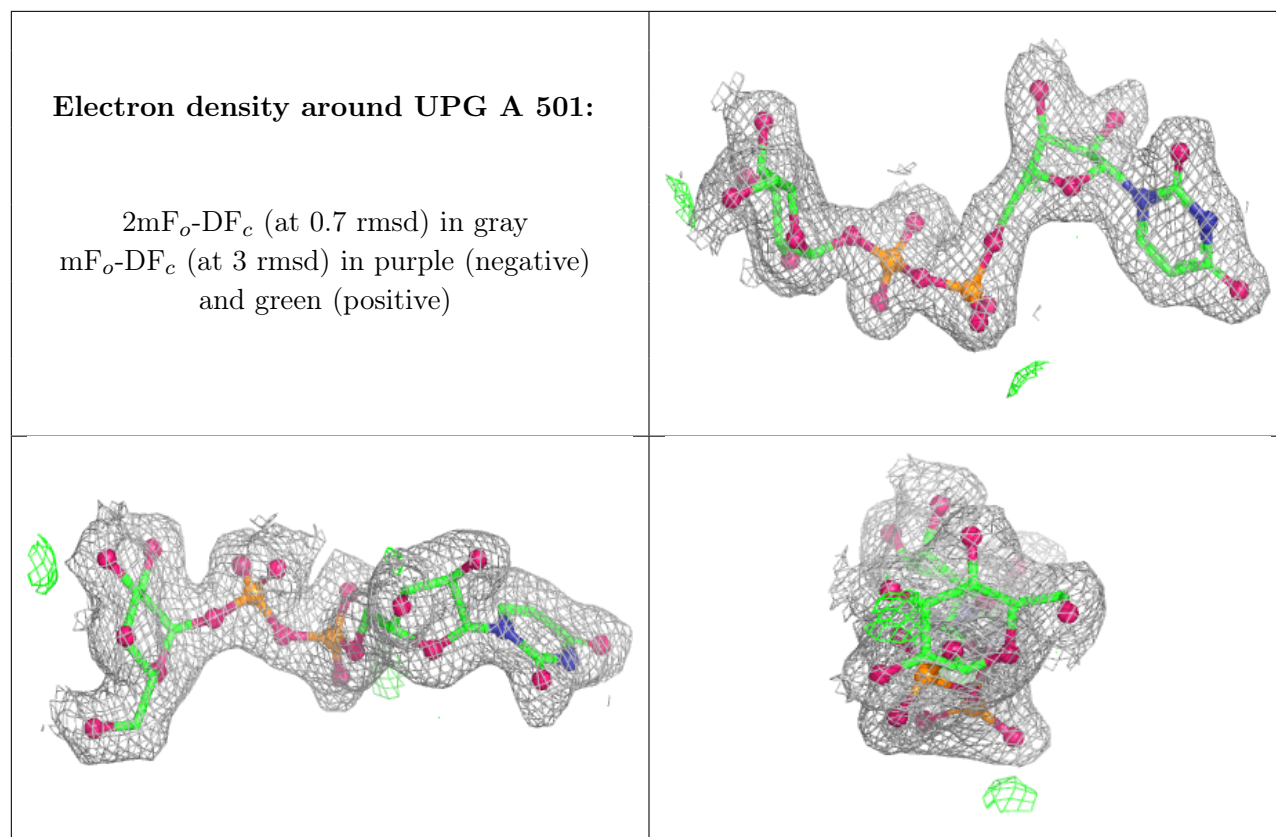
Electron density around UPG D 501:

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

**Electron density around UPG E 501:**

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





6.5 Other polymers [i](#)

There are no such residues in this entry.