



# wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 24, 2024 – 08:04 PM EDT

PDB ID : 6XB3  
Title : Structure of AcNPV poxin in post-reactive state with Gp[2'-5']Ap[3']  
Authors : Eaglesham, J.B.; McCarty, K.L.; Kranzusch, P.J.  
Deposited on : 2020-06-05  
Resolution : 1.90 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtrriage (Phenix) : 1.20.1  
EDS : 2.37.1  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.37.1

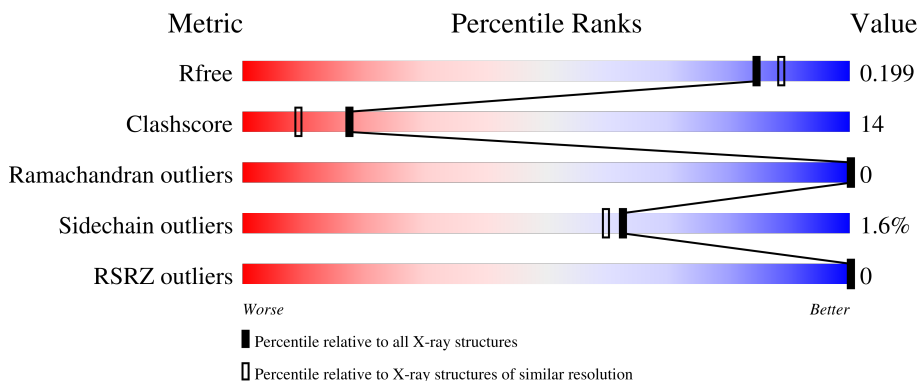
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.90 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	241	70% (green), 26% (yellow), 4% (orange), 2% (red), 0% (grey)
1	B	241	68% (green), 27% (yellow), 5% (orange), 0% (red), 0% (grey)
1	C	241	65% (green), 28% (yellow), 6% (orange), 1% (red), 0% (grey)
1	D	241	68% (green), 25% (yellow), 7% (orange), 0% (red), 0% (grey)
1	E	241	69% (green), 26% (yellow), 5% (orange), 0% (red), 0% (grey)

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Mol	Chain	Length	Quality of chain
1	F	241	 71% 21% 9%
1	G	241	 73% 20% 6%
1	H	241	 73% 23% 4%
1	I	241	 68% 27% 5%
1	J	241	 73% 22% 5%
1	K	241	 71% 20% 7%
1	L	241	 68% 25% 7%
1	M	241	 68% 26% 6%
1	N	241	 69% 23% 7%
1	O	241	 68% 24% 6%
1	P	241	 70% 24% 5%

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 33148 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.

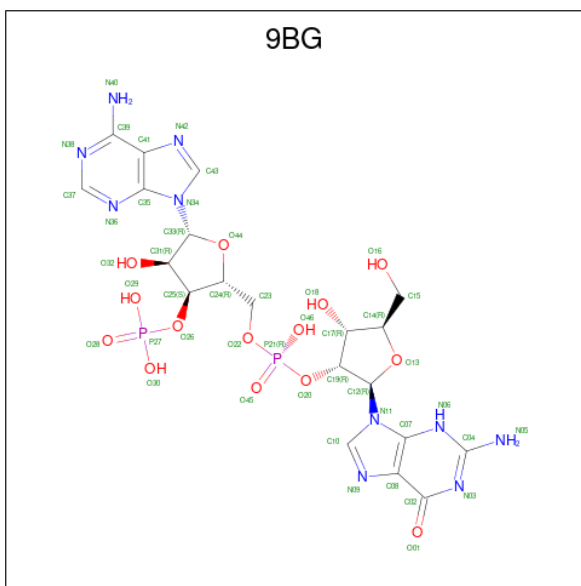
- Molecule 1 is a protein called Poxin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	234	Total 1869	C 1202	N 316	O 343	S 8	0	0	0
1	B	229	Total 1831	C 1179	N 309	O 335	S 8	0	0	0
1	C	226	Total 1810	C 1168	N 305	O 329	S 8	0	0	0
1	D	225	Total 1802	C 1162	N 304	O 328	S 8	0	0	0
1	E	231	Total 1847	C 1189	N 312	O 338	S 8	0	0	0
1	F	220	Total 1762	C 1141	N 297	O 316	S 8	0	0	0
1	G	226	Total 1807	C 1166	N 304	O 329	S 8	0	0	0
1	H	232	Total 1854	C 1194	N 313	O 339	S 8	0	0	0
1	I	229	Total 1831	C 1179	N 309	O 335	S 8	0	0	0
1	J	231	Total 1847	C 1190	N 312	O 337	S 8	0	0	0
1	K	223	Total 1785	C 1155	N 301	O 321	S 8	0	0	0
1	L	225	Total 1797	C 1162	N 302	O 325	S 8	0	0	0
1	M	226	Total 1808	C 1165	N 304	O 331	S 8	0	0	0
1	N	224	Total 1792	C 1157	N 302	O 325	S 8	0	0	0
1	O	227	Total 1815	C 1170	N 306	O 331	S 8	0	0	0
1	P	228	Total 1821	C 1174	N 307	O 332	S 8	0	0	0

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	SER	-	expression tag	UNP P08358
B	0	SER	-	expression tag	UNP P08358
C	0	SER	-	expression tag	UNP P08358
D	0	SER	-	expression tag	UNP P08358
E	0	SER	-	expression tag	UNP P08358
F	0	SER	-	expression tag	UNP P08358
G	0	SER	-	expression tag	UNP P08358
H	0	SER	-	expression tag	UNP P08358
I	0	SER	-	expression tag	UNP P08358
J	0	SER	-	expression tag	UNP P08358
K	0	SER	-	expression tag	UNP P08358
L	0	SER	-	expression tag	UNP P08358
M	0	SER	-	expression tag	UNP P08358
N	0	SER	-	expression tag	UNP P08358
O	0	SER	-	expression tag	UNP P08358
P	0	SER	-	expression tag	UNP P08358

- Molecule 2 is 2',5'-GpAp (three-letter code: 9BG) (formula: C<sub>20</sub>H<sub>26</sub>N<sub>10</sub>O<sub>14</sub>P<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	N	O			P
2	A	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	B	1	Total	C	N	O	P	0	0
			46	20	10	14	2		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	C	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	C	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	E	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	F	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	G	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	G	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	I	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	J	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	K	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	K	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	M	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	M	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	P	1	Total	C	N	O	P	0	0
			46	20	10	14	2		
2	P	1	Total	C	N	O	P	0	0
			46	20	10	14	2		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	234	Total	O	0	0
			234	234		
3	B	226	Total	O	0	0
			226	226		
3	C	211	Total	O	0	0
			211	211		
3	D	170	Total	O	0	0
			170	170		
3	E	211	Total	O	0	0
			211	211		

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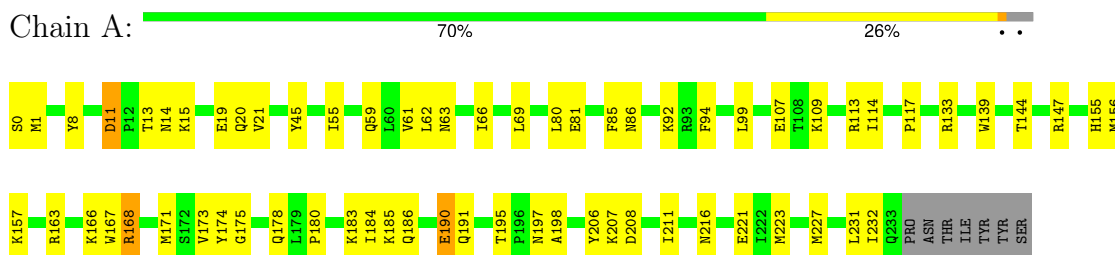
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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
3	F	208	Total 208	O 208	0	0
3	G	220	Total 220	O 220	0	0
3	H	198	Total 198	O 198	0	0
3	I	254	Total 254	O 254	0	0
3	J	228	Total 228	O 228	0	0
3	K	201	Total 201	O 201	0	0
3	L	178	Total 178	O 178	0	0
3	M	239	Total 239	O 239	0	0
3	N	205	Total 205	O 205	0	0
3	O	176	Total 176	O 176	0	0
3	P	175	Total 175	O 175	0	0

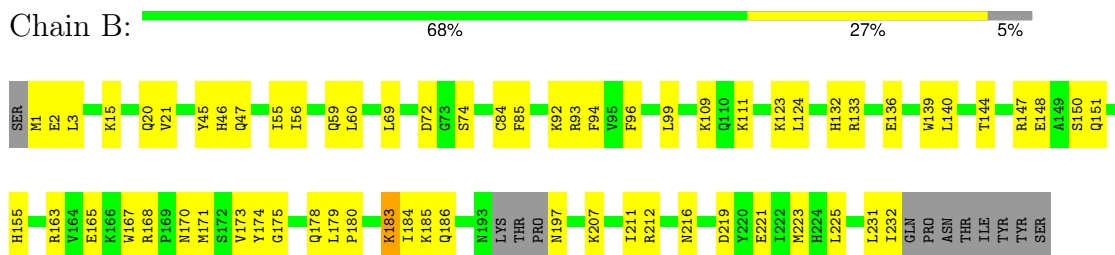
### 3 Residue-property plots [i](#)

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

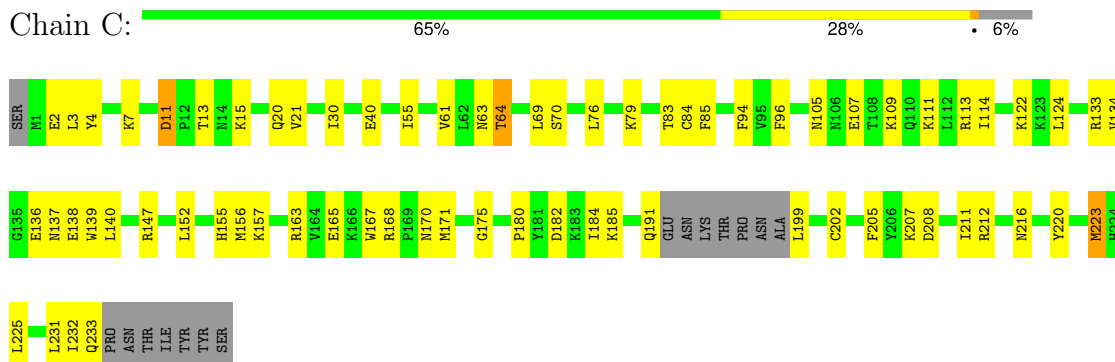
- Molecule 1: Poxin



- Molecule 1: Poxin



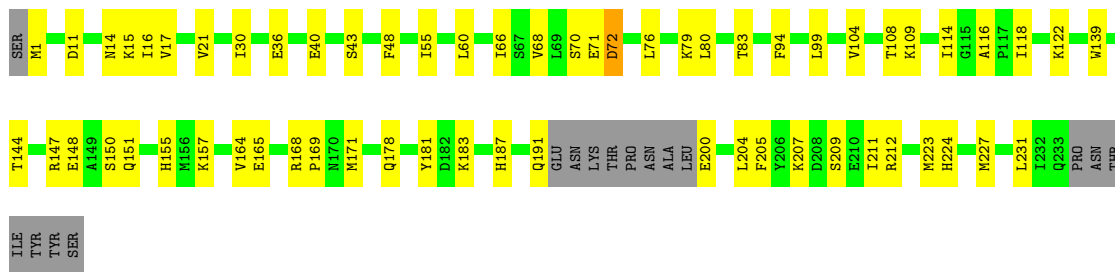
- Molecule 1: Poxin



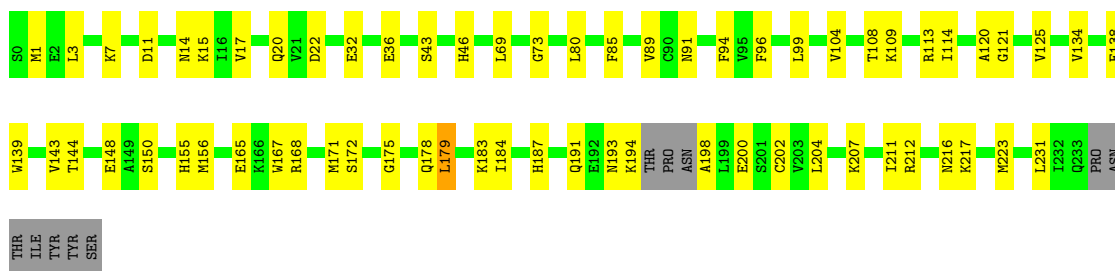
- Molecule 1: Poxin



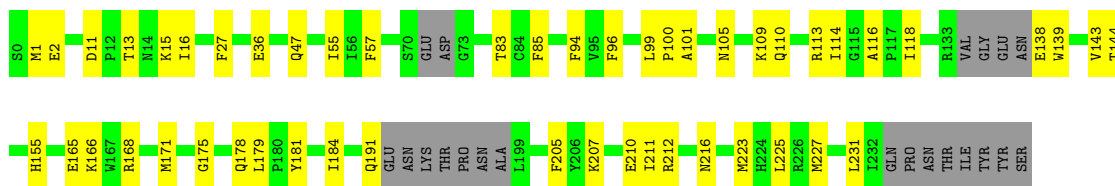




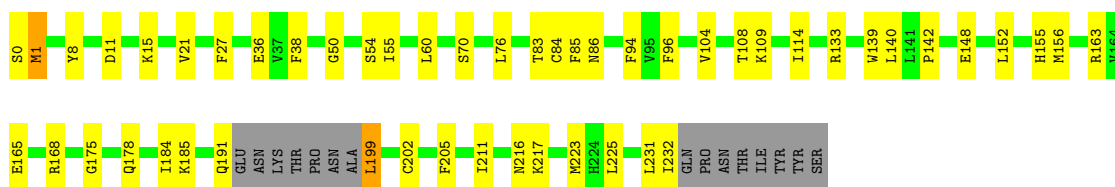
● Molecule 1: Poxin



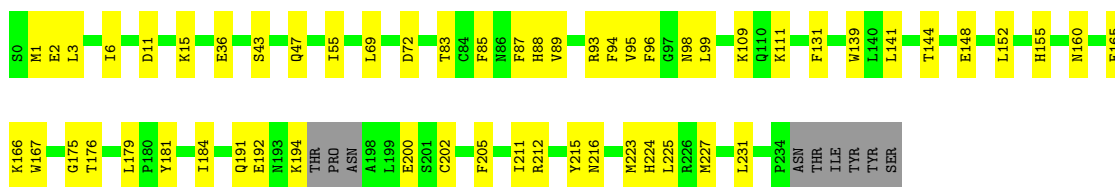
● Molecule 1: Poxin



● Molecule 1: Poxin



● Molecule 1: Poxin



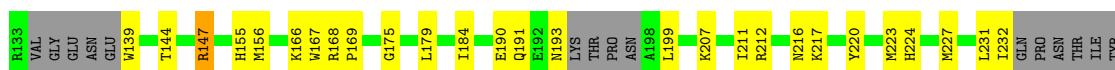
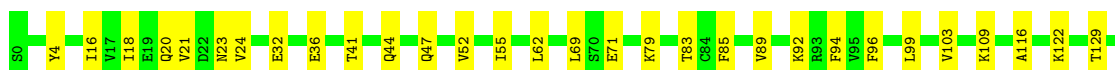




ILE  
TYR  
TYR  
SER

- Molecule 1: Poxin

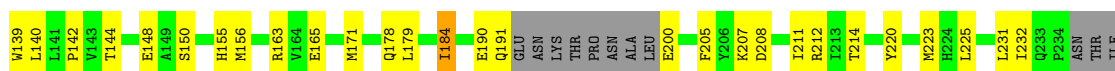
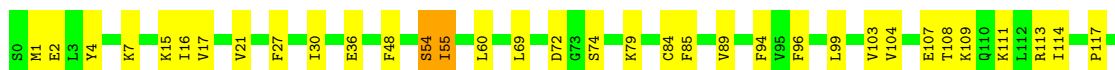
Chain N:    69% 23% 7%



TYR  
SER

- Molecule 1: Poxin

Chain O:    68% 24% 6%



TYR  
TYR  
TYR  
SER

- Molecule 1: Poxin

Chain P:    70% 24% 5%



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	127.23Å 127.19Å 127.15Å 124.81° 102.39° 102.39°	Depositor
Resolution (Å)	38.31 – 1.90 38.31 – 1.90	Depositor EDS
% Data completeness (in resolution range)	92.3 (38.31-1.90) 92.2 (38.31-1.90)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.10 (at 1.89Å)	Xtrriage
Refinement program	PHENIX 1.18.2_3874	Depositor
R, $R_{free}$	0.175 , 0.208 0.164 , 0.199	Depositor DCC
$R_{free}$ test set	2037 reflections (0.48%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	28.3	Xtrriage
Anisotropy	0.123	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 40.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.43$ , $\langle L^2 \rangle = 0.25$	Xtrriage
Estimated twinning fraction	0.458 for -l,-h,h+k+1 0.458 for -k,h+k+1,-h 0.468 for -h-k-l,l,k 0.084 for -h,-l,-k 0.084 for h+k+1,-k,-l 0.080 for k,h,-h-k-l 0.080 for l,-h-k-l,h	Xtrriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	33148	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	28.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 18.81% of the height of the origin peak. No significant pseudotranslation is detected.*

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

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

## 5 Model quality [i](#)

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

Bond lengths and bond angles in the following residue types are not validated in this section: 9BG

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	0.38	0/1910	0.64	1/2592 (0.0%)
1	B	0.40	0/1870	0.59	0/2536
1	C	0.37	0/1849	0.60	0/2507
1	D	0.36	0/1841	0.58	0/2496
1	E	0.38	0/1886	0.61	1/2556 (0.0%)
1	F	0.37	0/1799	0.59	0/2436
1	G	0.37	0/1846	0.59	0/2503
1	H	0.35	0/1894	0.60	0/2568
1	I	0.41	0/1870	0.61	0/2536
1	J	0.38	0/1887	0.61	0/2560
1	K	0.37	0/1823	0.61	0/2471
1	L	0.35	0/1836	0.62	0/2489
1	M	0.35	0/1847	0.62	1/2504 (0.0%)
1	N	0.35	0/1830	0.60	1/2480 (0.0%)
1	O	0.36	0/1855	0.58	0/2516
1	P	0.36	0/1860	0.62	0/2522
All	All	0.37	0/29703	0.60	4/40272 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	179	LEU	CA-CB-CG	5.46	127.87	115.30
1	A	168	ARG	NE-CZ-NH2	5.38	122.99	120.30
1	N	147	ARG	NE-CZ-NH1	5.22	122.91	120.30
1	M	11	ASP	CB-CG-OD1	5.08	122.87	118.30

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1869	0	1890	62	0
1	B	1831	0	1849	55	0
1	C	1810	0	1832	54	1
1	D	1802	0	1823	47	0
1	E	1847	0	1869	51	0
1	F	1762	0	1795	49	0
1	G	1807	0	1830	36	0
1	H	1854	0	1876	47	0
1	I	1831	0	1849	56	0
1	J	1847	0	1872	46	0
1	K	1785	0	1815	40	0
1	L	1797	0	1825	55	1
1	M	1808	0	1826	57	1
1	N	1792	0	1817	48	0
1	O	1815	0	1835	44	0
1	P	1821	0	1844	45	0
2	A	46	0	0	5	0
2	B	46	0	0	2	0
2	C	92	0	0	9	0
2	E	46	0	0	2	0
2	F	46	0	0	2	0
2	G	92	0	0	5	0
2	I	46	0	0	2	0
2	J	46	0	0	3	0
2	K	92	0	0	3	0
2	M	92	0	0	3	0
2	P	92	0	0	8	0
3	A	234	0	0	30	1
3	B	226	0	0	25	7
3	C	211	0	0	27	1
3	D	170	0	0	21	1
3	E	211	0	0	23	1
3	F	208	0	0	29	1
3	G	220	0	0	16	3
3	H	198	0	0	25	1
3	I	254	0	0	30	5
3	J	228	0	0	19	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	K	201	0	0	22	4
3	L	178	0	0	29	0
3	M	239	0	0	29	0
3	N	205	0	0	25	2
3	O	176	0	0	17	0
3	P	175	0	0	28	0
All	All	33148	0	29447	810	15

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 14.

The worst 5 of 810 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)
2:F:301:9BG:C33	2:F:301:9BG:O44	1.66	1.23
2:J:301:9BG:C33	2:J:301:9BG:O44	1.66	1.22
2:K:302:9BG:O44	2:K:302:9BG:C33	1.67	1.20
2:C:301:9BG:C33	2:C:301:9BG:O44	1.67	1.19
2:C:302:9BG:O44	2:C:302:9BG:C33	1.67	1.19

The worst 5 of 15 symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:429:HOH:O	3:C:434:HOH:O[1_655]	1.75	0.45
3:G:498:HOH:O	3:I:631:HOH:O[1_566]	1.81	0.39
3:B:442:HOH:O	3:F:409:HOH:O[1_655]	2.00	0.20
3:A:459:HOH:O	3:H:452:HOH:O[1_554]	2.02	0.18
3:B:445:HOH:O	3:K:458:HOH:O[1_544]	2.03	0.17

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	232/241 (96%)	226 (97%)	6 (3%)	0	100	100
1	B	225/241 (93%)	220 (98%)	5 (2%)	0	100	100
1	C	222/241 (92%)	216 (97%)	6 (3%)	0	100	100
1	D	221/241 (92%)	215 (97%)	6 (3%)	0	100	100
1	E	227/241 (94%)	221 (97%)	6 (3%)	0	100	100
1	F	212/241 (88%)	209 (99%)	3 (1%)	0	100	100
1	G	222/241 (92%)	217 (98%)	5 (2%)	0	100	100
1	H	228/241 (95%)	221 (97%)	7 (3%)	0	100	100
1	I	225/241 (93%)	221 (98%)	4 (2%)	0	100	100
1	J	227/241 (94%)	219 (96%)	8 (4%)	0	100	100
1	K	217/241 (90%)	213 (98%)	4 (2%)	0	100	100
1	L	219/241 (91%)	212 (97%)	7 (3%)	0	100	100
1	M	222/241 (92%)	218 (98%)	4 (2%)	0	100	100
1	N	218/241 (90%)	214 (98%)	4 (2%)	0	100	100
1	O	223/241 (92%)	218 (98%)	5 (2%)	0	100	100
1	P	224/241 (93%)	219 (98%)	5 (2%)	0	100	100
All	All	3564/3856 (92%)	3479 (98%)	85 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	211/218 (97%)	207 (98%)	4 (2%)	57	53
1	B	206/218 (94%)	204 (99%)	2 (1%)	76	76
1	C	204/218 (94%)	200 (98%)	4 (2%)	55	51
1	D	203/218 (93%)	199 (98%)	4 (2%)	55	51
1	E	208/218 (95%)	205 (99%)	3 (1%)	67	65

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	F	199/218 (91%)	198 (100%)	1 (0%)	88	89
1	G	204/218 (94%)	200 (98%)	4 (2%)	55	51
1	H	209/218 (96%)	207 (99%)	2 (1%)	76	76
1	I	206/218 (94%)	203 (98%)	3 (2%)	65	62
1	J	209/218 (96%)	208 (100%)	1 (0%)	88	89
1	K	201/218 (92%)	194 (96%)	7 (4%)	36	27
1	L	203/218 (93%)	200 (98%)	3 (2%)	65	62
1	M	204/218 (94%)	204 (100%)	0	100	100
1	N	202/218 (93%)	199 (98%)	3 (2%)	65	62
1	O	205/218 (94%)	199 (97%)	6 (3%)	42	35
1	P	205/218 (94%)	200 (98%)	5 (2%)	49	43
All	All	3279/3488 (94%)	3227 (98%)	52 (2%)	62	60

5 of 52 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	K	11	ASP
1	L	55	ILE
1	P	83	THR
1	K	55	ILE
1	K	134	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	224	HIS
1	D	59	GLN
1	H	98	ASN
1	I	191	GLN
1	M	63	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

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	9BG	G	302	-	42,51,51	4.76	19 (45%)	53,79,79	1.99	11 (20%)
2	9BG	K	301	-	42,51,51	4.67	20 (47%)	53,79,79	2.06	9 (16%)
2	9BG	K	302	-	42,51,51	4.78	17 (40%)	53,79,79	1.99	7 (13%)
2	9BG	M	302	-	42,51,51	4.66	19 (45%)	53,79,79	1.94	9 (16%)
2	9BG	E	301	-	42,51,51	4.70	20 (47%)	53,79,79	2.00	9 (16%)
2	9BG	A	301	-	42,51,51	4.67	20 (47%)	53,79,79	1.89	9 (16%)
2	9BG	P	301	-	42,51,51	4.78	20 (47%)	53,79,79	1.83	7 (13%)
2	9BG	F	301	-	42,51,51	4.65	18 (42%)	53,79,79	1.92	9 (16%)
2	9BG	I	301	-	42,51,51	4.64	20 (47%)	53,79,79	1.99	10 (18%)
2	9BG	J	301	-	42,51,51	4.66	19 (45%)	53,79,79	1.92	9 (16%)
2	9BG	P	302	-	42,51,51	4.78	18 (42%)	53,79,79	1.91	10 (18%)
2	9BG	C	301	-	42,51,51	4.74	18 (42%)	53,79,79	1.95	12 (22%)
2	9BG	B	301	-	42,51,51	4.63	19 (45%)	53,79,79	1.93	9 (16%)
2	9BG	C	302	-	42,51,51	4.78	21 (50%)	53,79,79	1.94	8 (15%)
2	9BG	M	301	-	42,51,51	4.63	19 (45%)	53,79,79	2.10	11 (20%)
2	9BG	G	301	-	42,51,51	4.65	19 (45%)	53,79,79	2.07	9 (16%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the

Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	9BG	G	302	-	-	7/18/58/58	0/6/6/6
2	9BG	K	301	-	-	3/18/58/58	0/6/6/6
2	9BG	K	302	-	-	6/18/58/58	0/6/6/6
2	9BG	M	302	-	-	6/18/58/58	0/6/6/6
2	9BG	E	301	-	-	5/18/58/58	0/6/6/6
2	9BG	A	301	-	-	5/18/58/58	0/6/6/6
2	9BG	P	301	-	-	4/18/58/58	0/6/6/6
2	9BG	F	301	-	-	5/18/58/58	0/6/6/6
2	9BG	I	301	-	-	9/18/58/58	0/6/6/6
2	9BG	J	301	-	-	6/18/58/58	0/6/6/6
2	9BG	P	302	-	-	6/18/58/58	0/6/6/6
2	9BG	C	301	-	-	9/18/58/58	0/6/6/6
2	9BG	B	301	-	-	6/18/58/58	0/6/6/6
2	9BG	C	302	-	-	6/18/58/58	0/6/6/6
2	9BG	M	301	-	-	7/18/58/58	0/6/6/6
2	9BG	G	301	-	-	7/18/58/58	0/6/6/6

The worst 5 of 306 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	P	301	9BG	O44-C33	20.31	1.67	1.40
2	C	302	9BG	O44-C33	20.12	1.67	1.40
2	K	302	9BG	O44-C33	20.12	1.67	1.40
2	C	301	9BG	O44-C33	20.07	1.67	1.40
2	P	302	9BG	O44-C33	19.94	1.67	1.40

The worst 5 of 148 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	301	9BG	C41-C39-N40	7.66	131.98	120.31
2	K	301	9BG	C41-C39-N40	7.38	131.56	120.31
2	K	302	9BG	C41-C39-N40	7.21	131.29	120.31
2	B	301	9BG	N36-C37-N38	-7.20	118.90	128.67
2	M	302	9BG	C41-C39-N40	7.14	131.18	120.31

There are no chirality outliers.

5 of 97 torsion outliers are listed below:

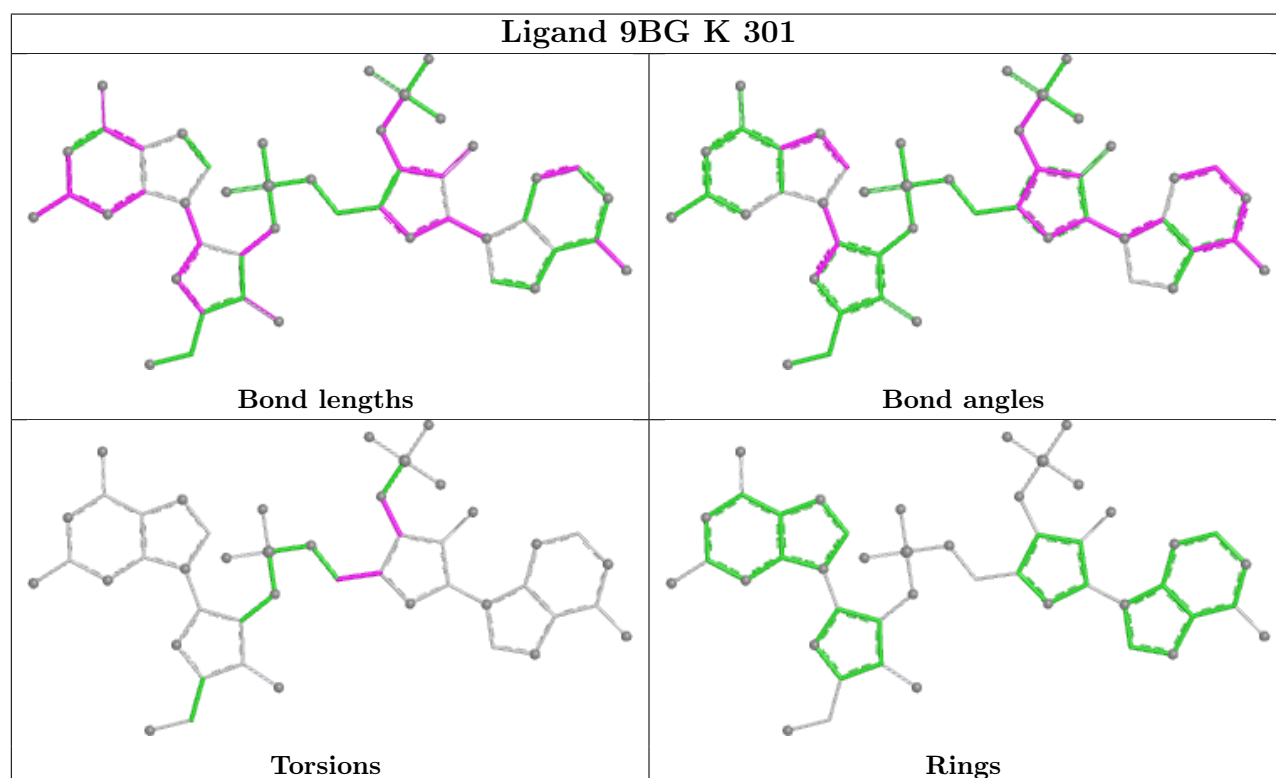
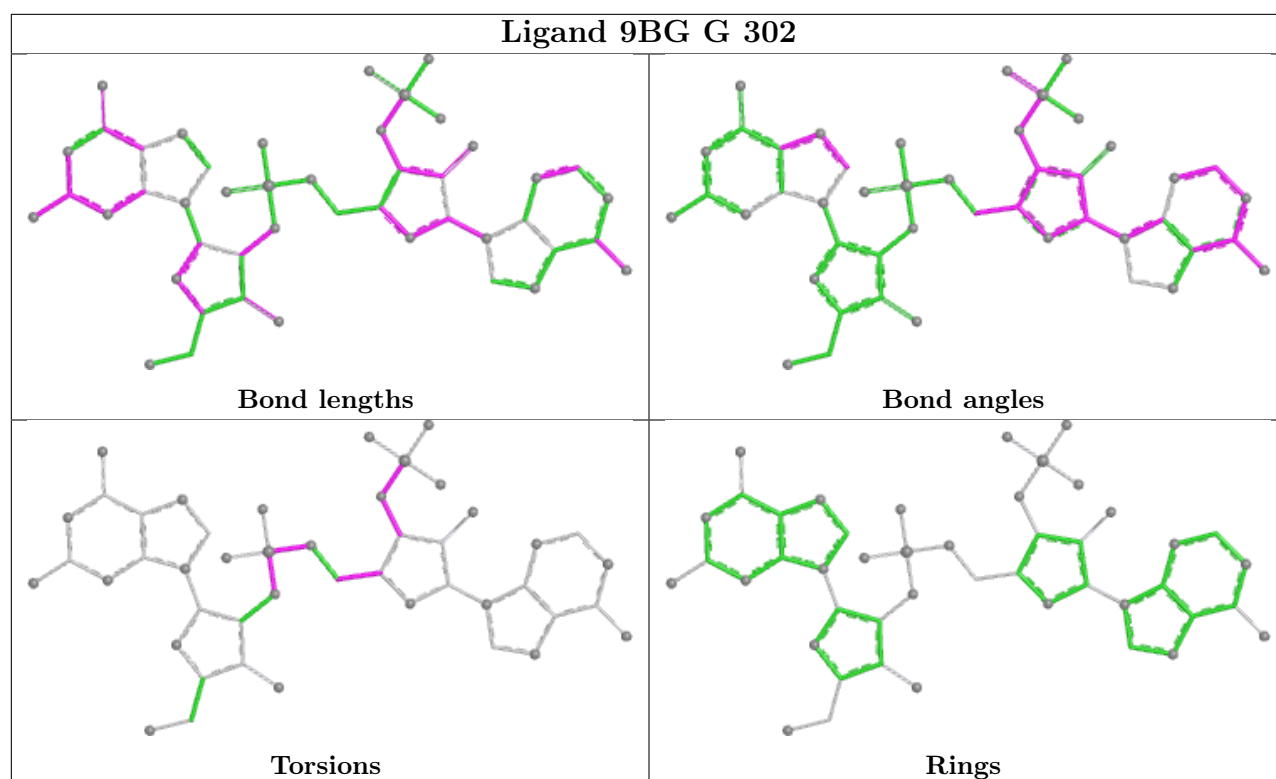
Mol	Chain	Res	Type	Atoms
2	A	301	9BG	C23-O22-P21-O20
2	A	301	9BG	C23-O22-P21-O46
2	B	301	9BG	C23-O22-P21-O20
2	B	301	9BG	C23-O22-P21-O46
2	C	301	9BG	C31-C25-O26-P27

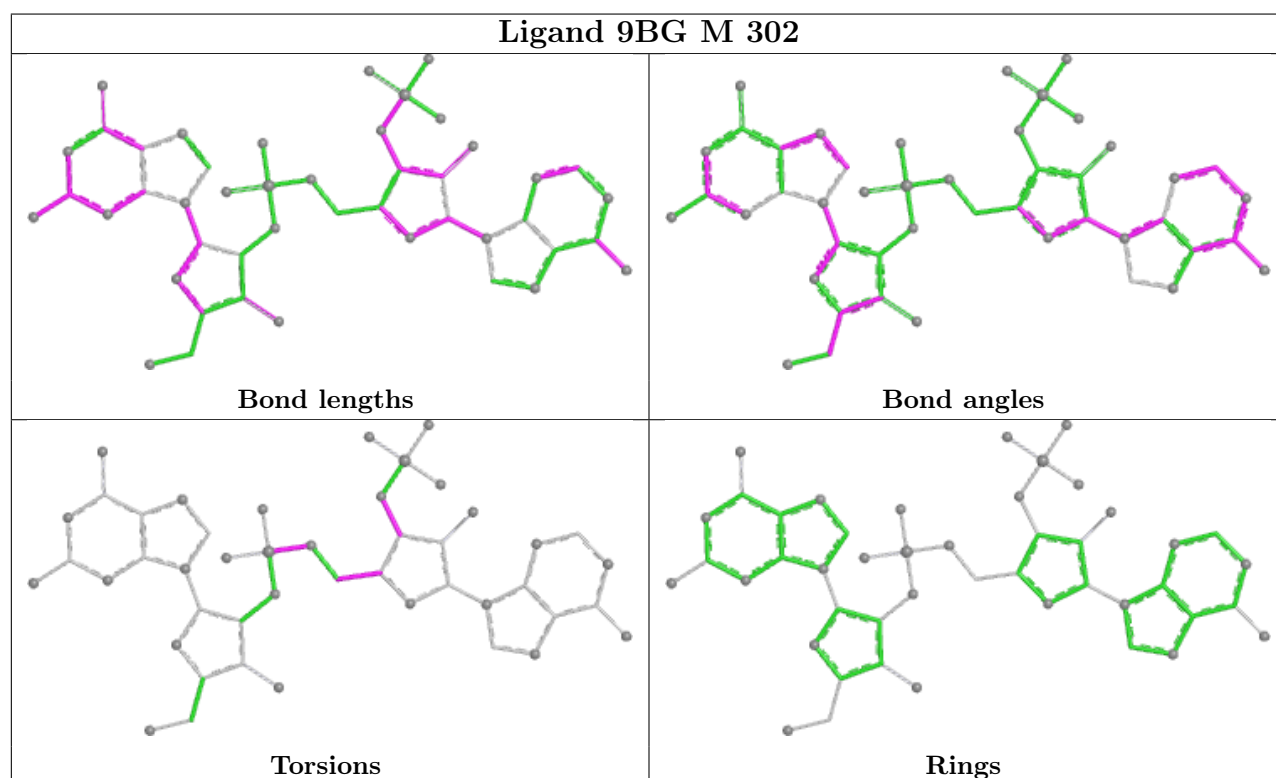
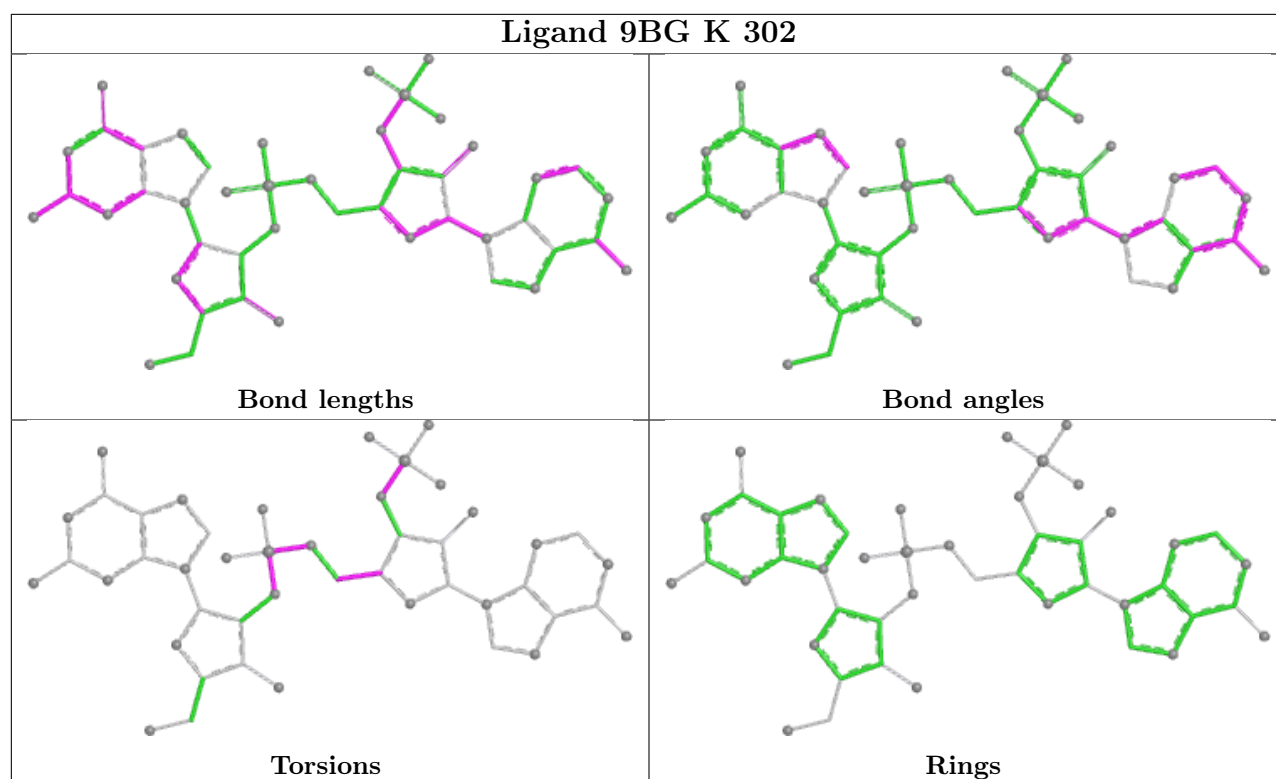
There are no ring outliers.

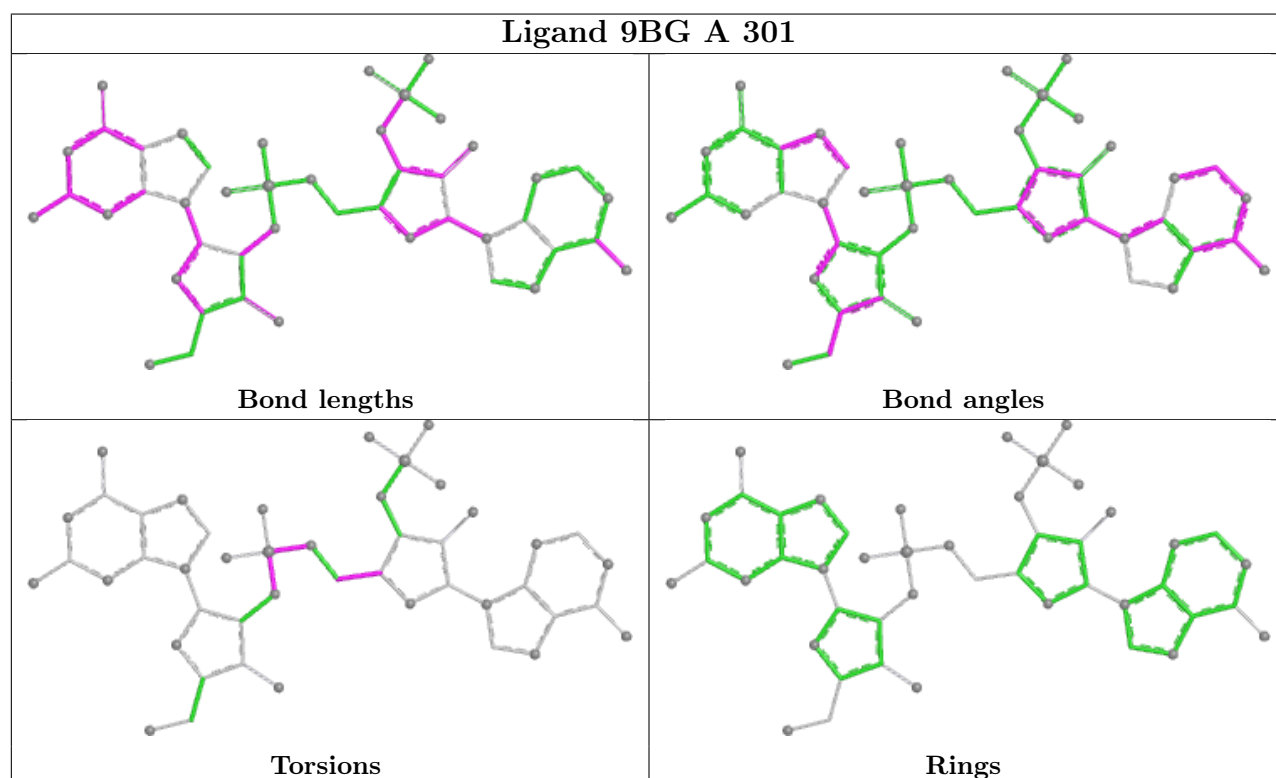
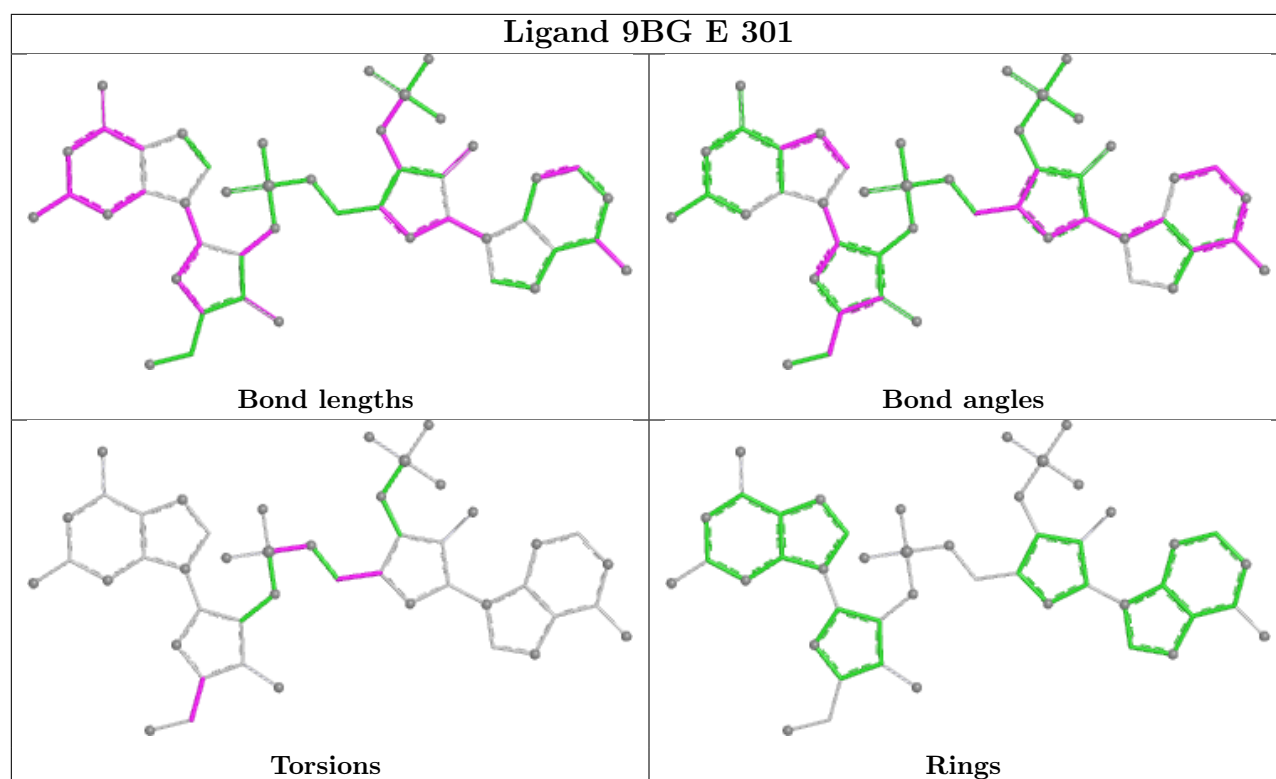
16 monomers are involved in 44 short contacts:

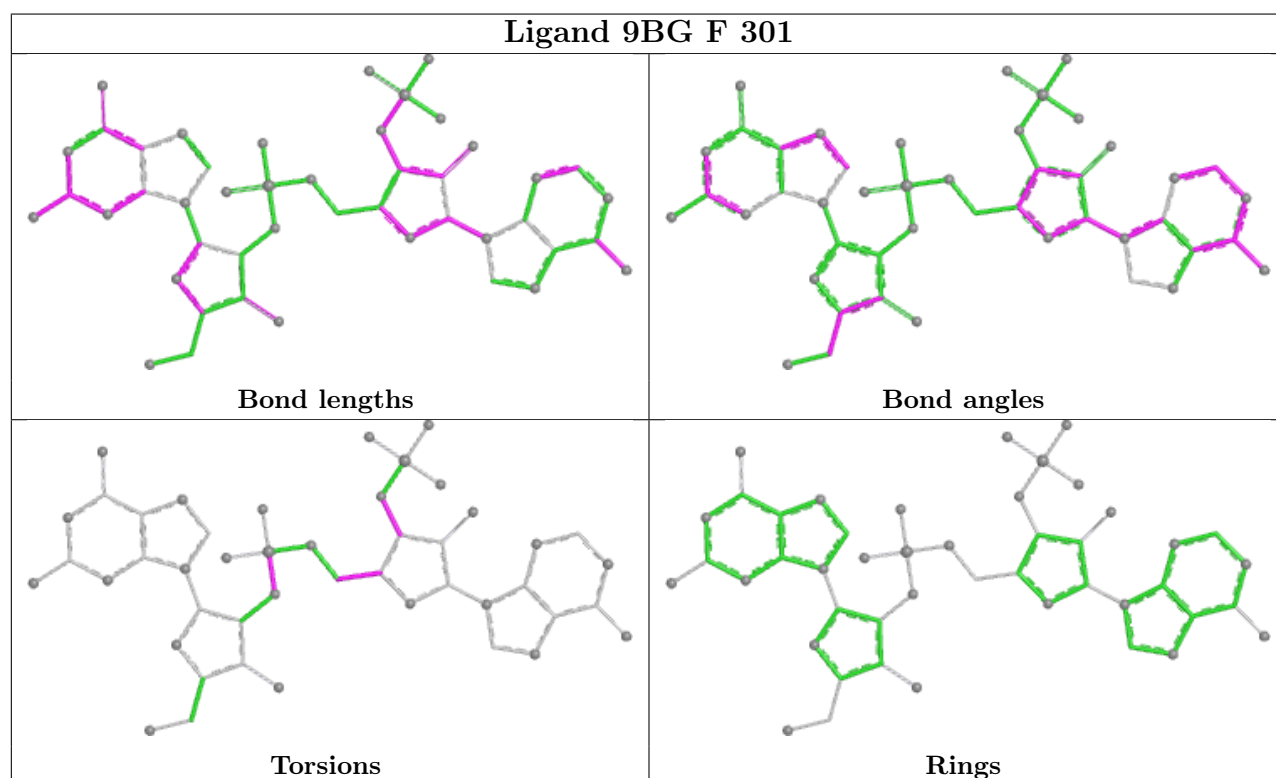
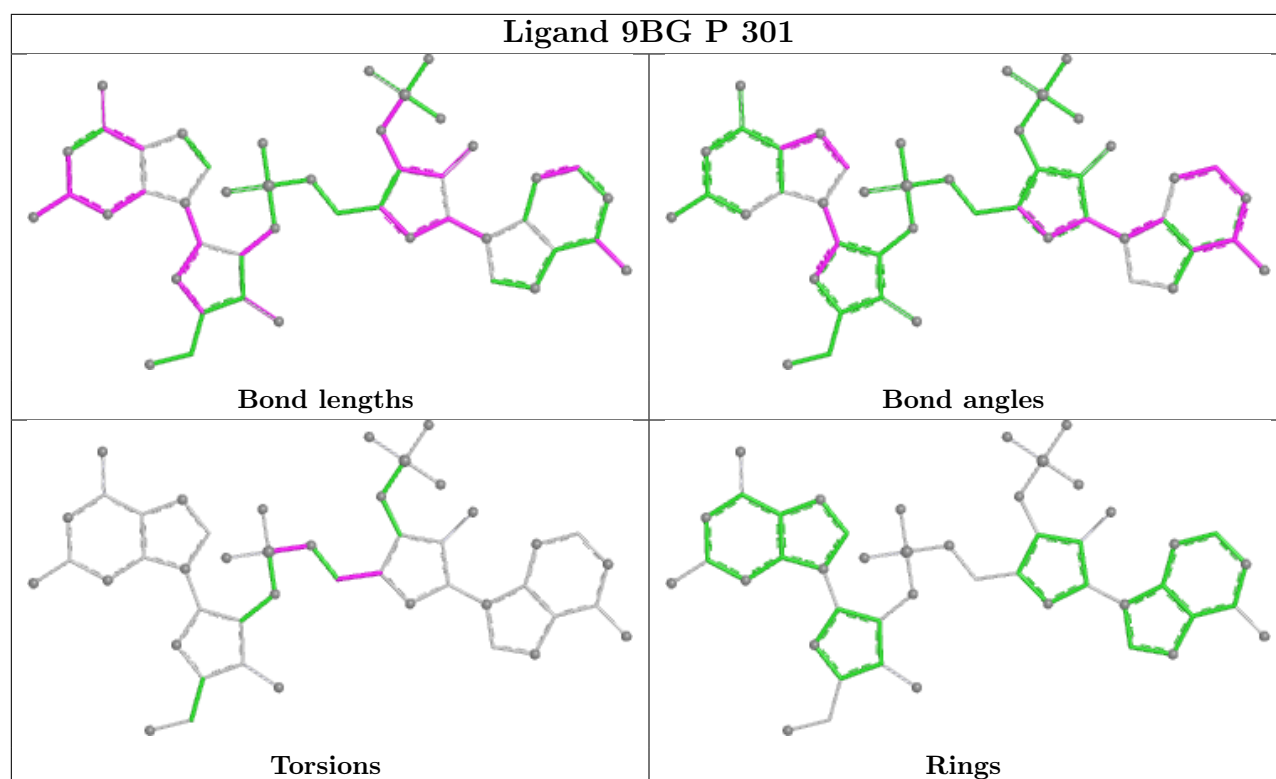
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	302	9BG	3	0
2	K	301	9BG	1	0
2	K	302	9BG	2	0
2	M	302	9BG	2	0
2	E	301	9BG	2	0
2	A	301	9BG	5	0
2	P	301	9BG	3	0
2	F	301	9BG	2	0
2	I	301	9BG	2	0
2	J	301	9BG	3	0
2	P	302	9BG	5	0
2	C	301	9BG	6	0
2	B	301	9BG	2	0
2	C	302	9BG	3	0
2	M	301	9BG	1	0
2	G	301	9BG	2	0

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

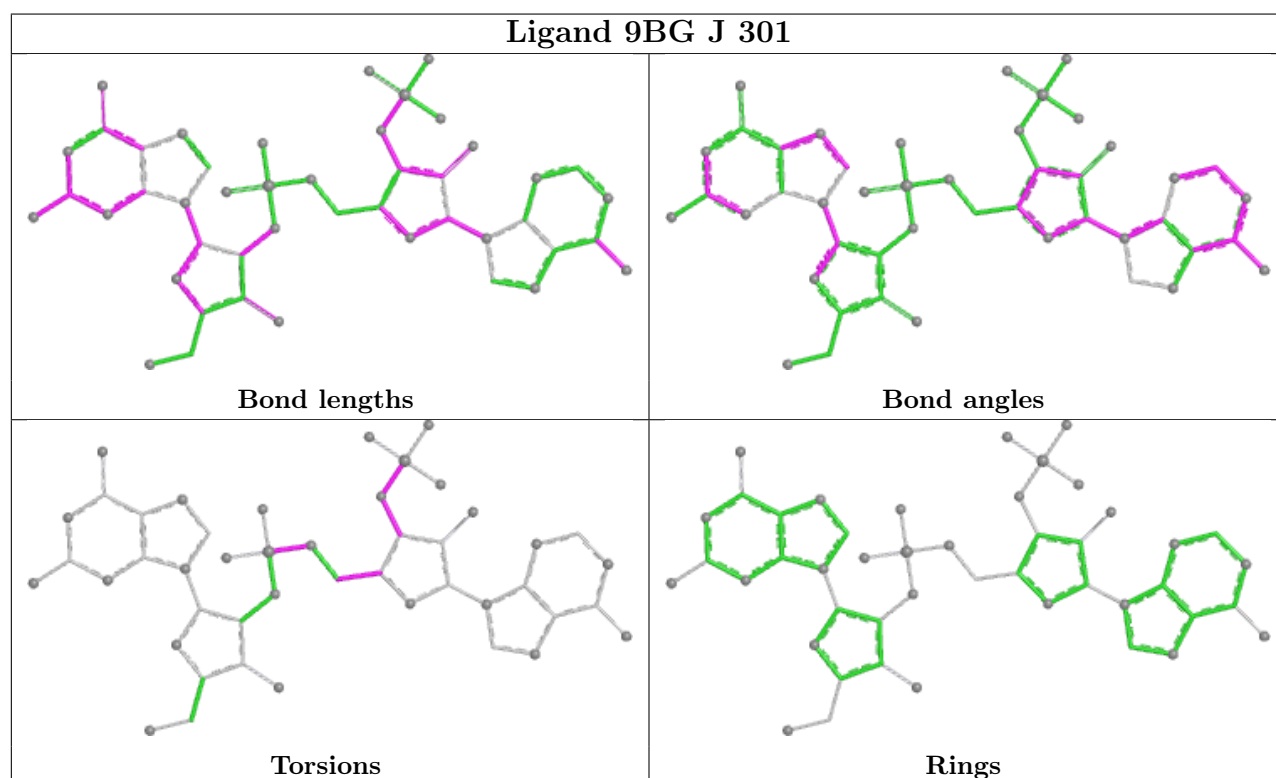
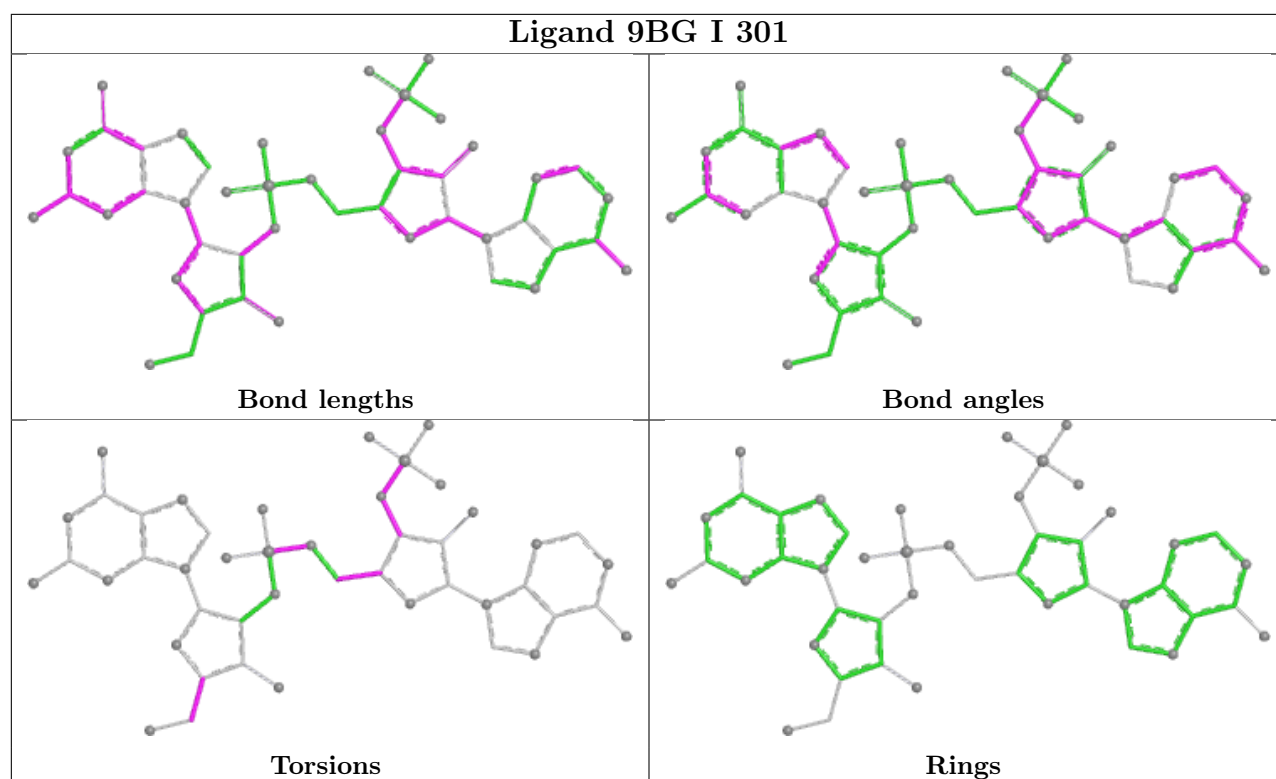


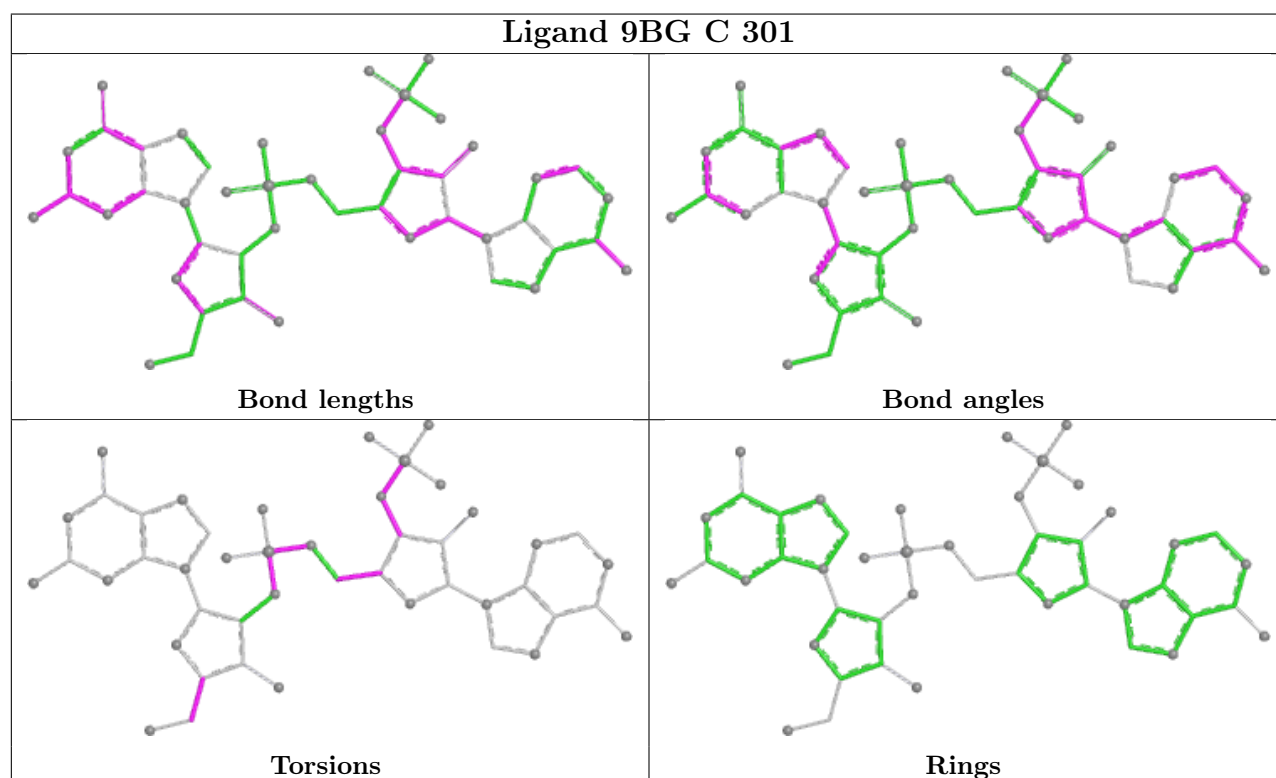
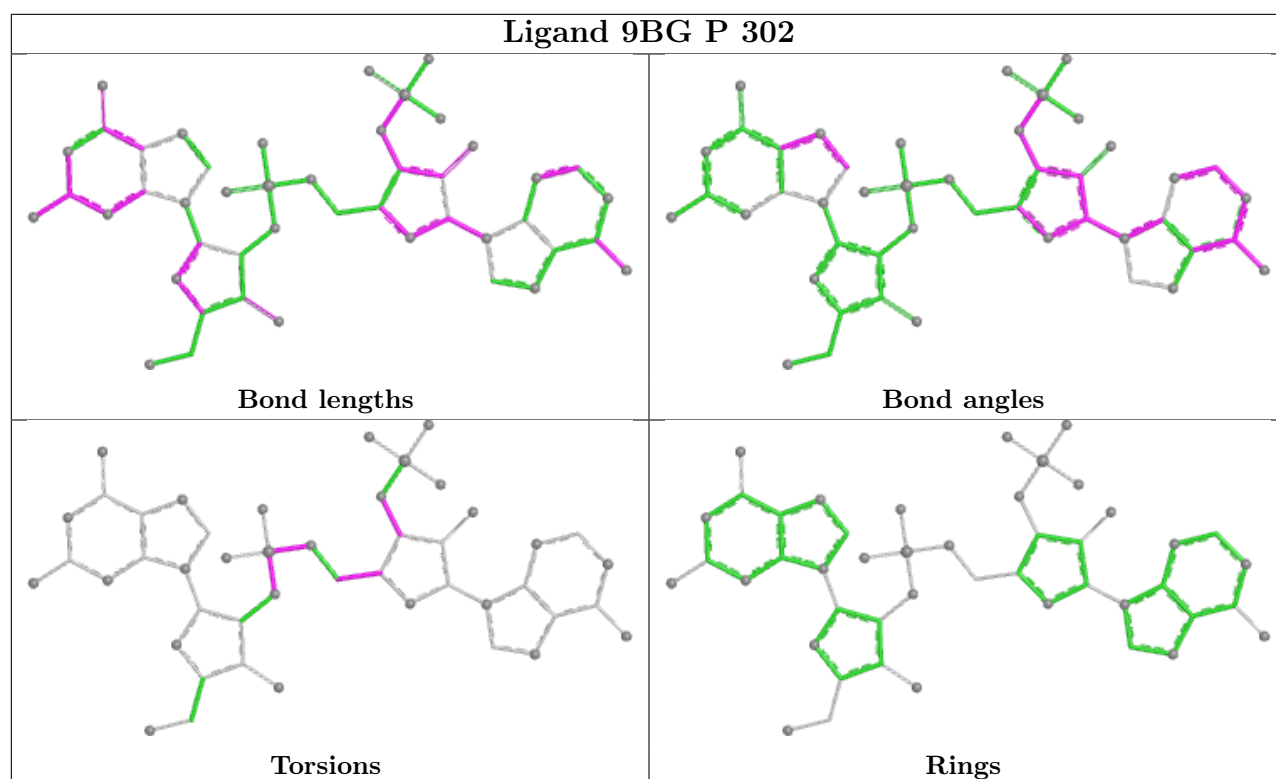


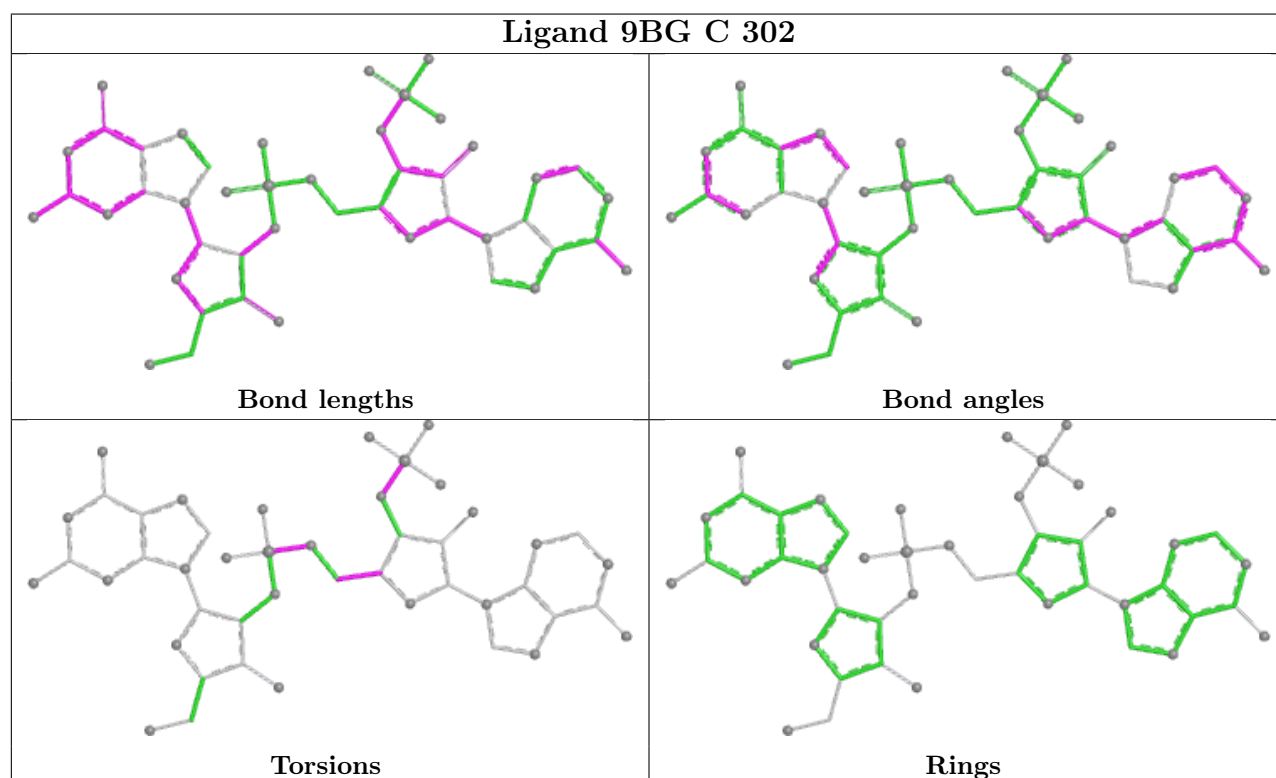
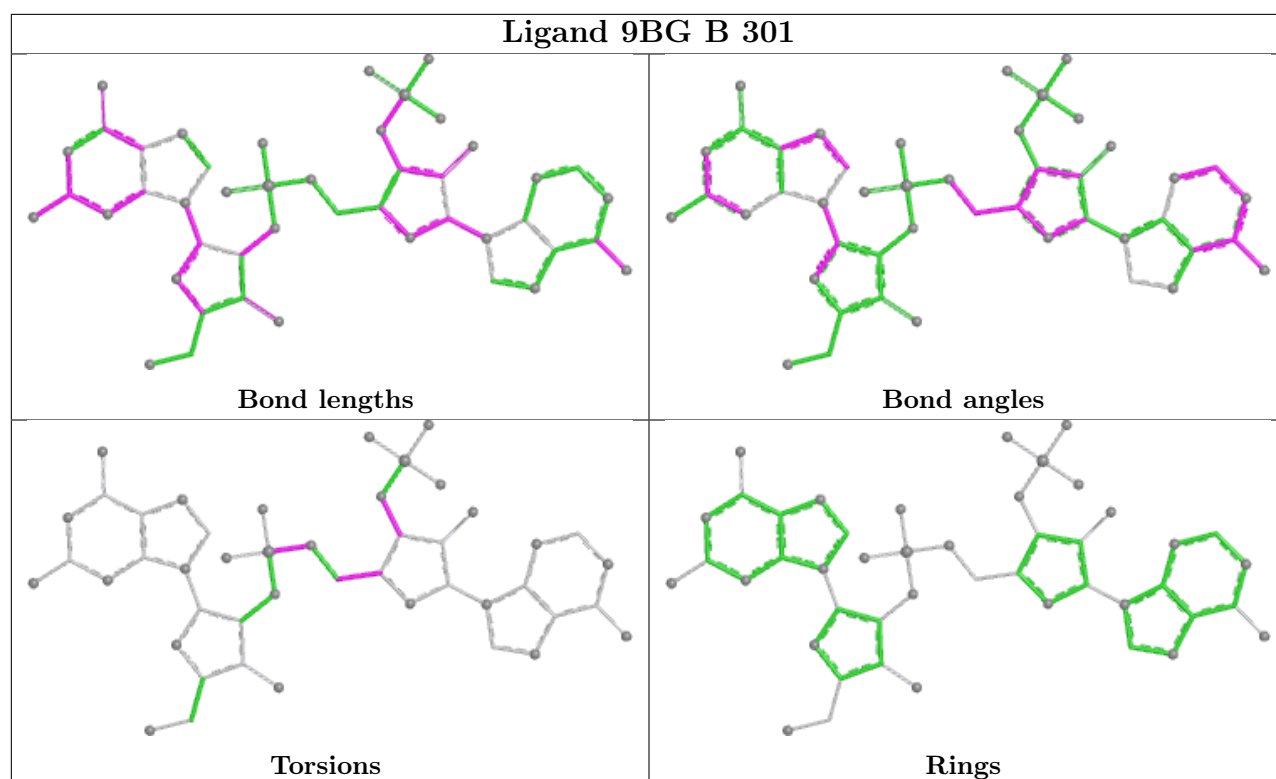


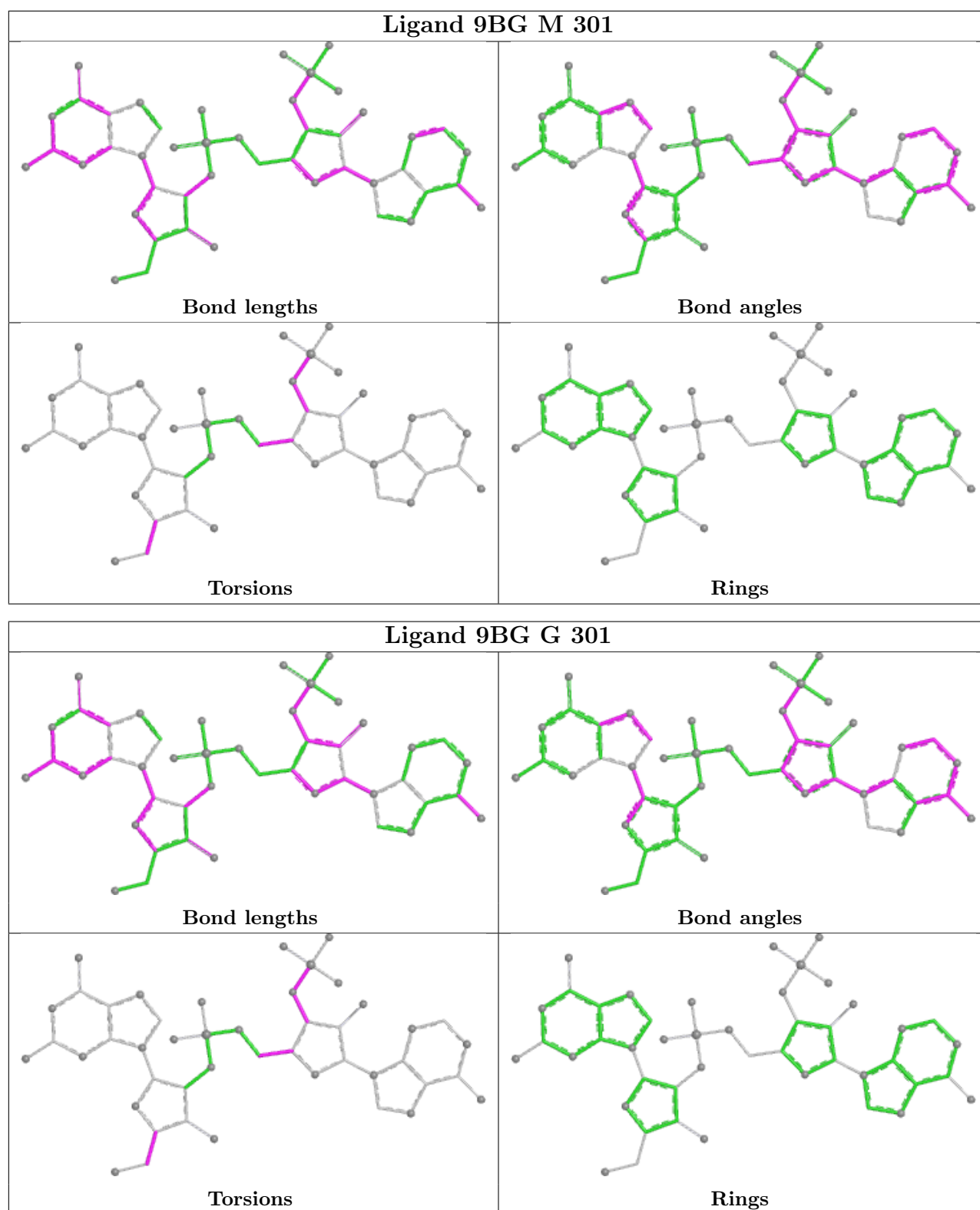












## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	234/241 (97%)	-0.30	0 100 100	15, 24, 38, 48	0
1	B	229/241 (95%)	-0.30	0 100 100	16, 24, 35, 54	0
1	C	226/241 (93%)	-0.31	0 100 100	18, 28, 39, 47	0
1	D	225/241 (93%)	-0.27	0 100 100	19, 28, 44, 57	0
1	E	231/241 (95%)	-0.31	0 100 100	18, 26, 37, 54	0
1	F	220/241 (91%)	-0.31	0 100 100	18, 27, 38, 48	0
1	G	226/241 (93%)	-0.28	0 100 100	18, 26, 41, 52	0
1	H	232/241 (96%)	-0.27	0 100 100	17, 26, 43, 61	0
1	I	229/241 (95%)	-0.25	0 100 100	15, 24, 36, 53	0
1	J	231/241 (95%)	-0.25	0 100 100	15, 23, 39, 46	0
1	K	223/241 (92%)	-0.29	0 100 100	18, 26, 37, 49	0
1	L	225/241 (93%)	-0.25	0 100 100	17, 26, 39, 55	0
1	M	226/241 (93%)	-0.26	0 100 100	18, 25, 37, 53	0
1	N	224/241 (92%)	-0.27	0 100 100	19, 27, 42, 55	0
1	O	227/241 (94%)	-0.23	0 100 100	19, 28, 43, 55	0
1	P	228/241 (94%)	-0.27	0 100 100	19, 28, 40, 58	0
All	All	3636/3856 (94%)	-0.28	0 100 100	15, 26, 40, 61	0

There are no RSRZ outliers to report.

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

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

### 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 6.4 Ligands [i](#)

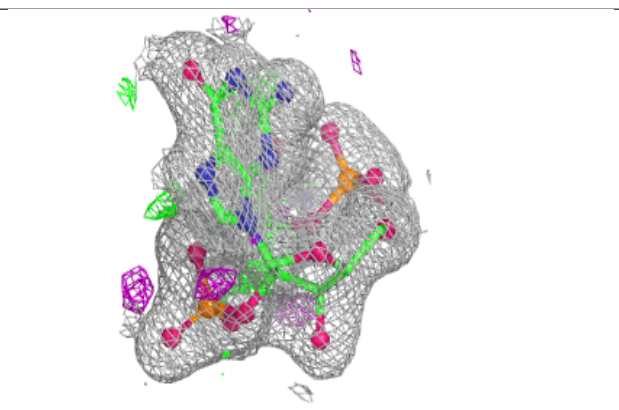
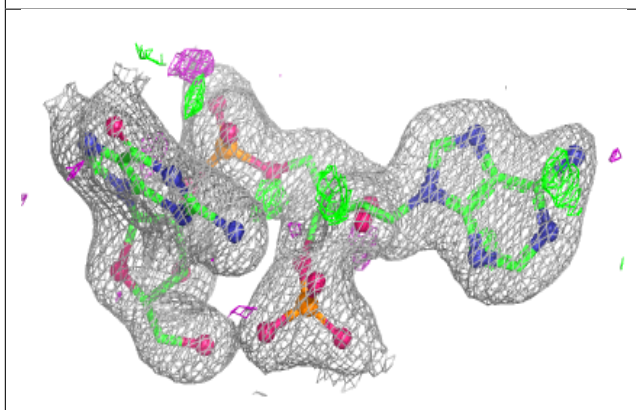
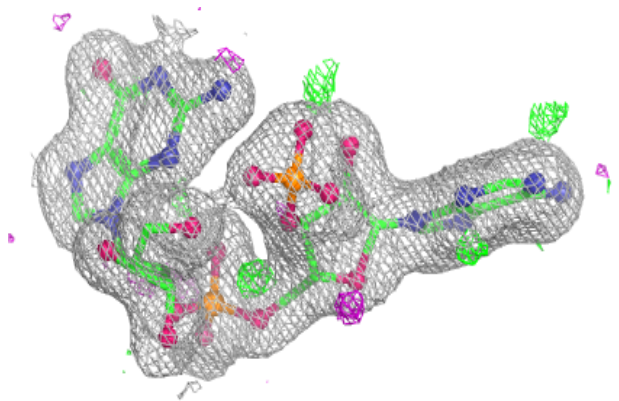
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	9BG	C	301	46/46	0.97	0.09	16,26,30,30	0
2	9BG	C	302	46/46	0.97	0.09	18,26,34,37	0
2	9BG	F	301	46/46	0.97	0.10	15,27,32,34	0
2	9BG	G	301	46/46	0.97	0.09	15,21,26,31	0
2	9BG	G	302	46/46	0.97	0.09	17,27,33,39	0
2	9BG	M	301	46/46	0.97	0.10	16,22,26,30	0
2	9BG	M	302	46/46	0.97	0.09	17,25,32,34	0
2	9BG	P	302	46/46	0.97	0.09	17,26,30,31	0
2	9BG	I	301	46/46	0.98	0.10	13,19,24,27	0
2	9BG	J	301	46/46	0.98	0.08	13,20,26,27	0
2	9BG	K	301	46/46	0.98	0.09	16,20,25,29	0
2	9BG	K	302	46/46	0.98	0.08	17,27,32,36	0
2	9BG	A	301	46/46	0.98	0.09	14,21,26,29	0
2	9BG	B	301	46/46	0.98	0.09	12,20,24,25	0
2	9BG	P	301	46/46	0.98	0.07	17,28,33,34	0
2	9BG	E	301	46/46	0.98	0.08	16,22,27,33	0

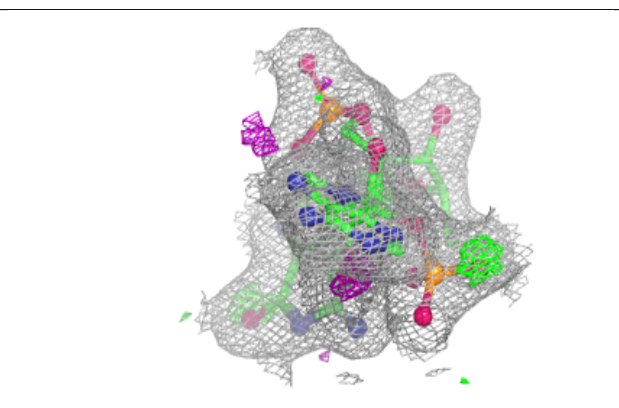
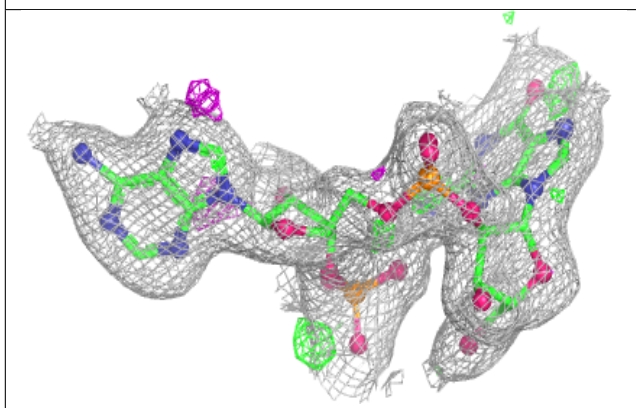
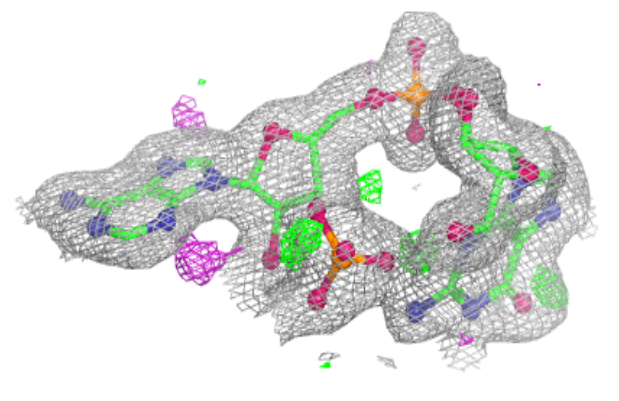
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

**Electron density around 9BG C 301:**

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

**Electron density around 9BG C 302:**

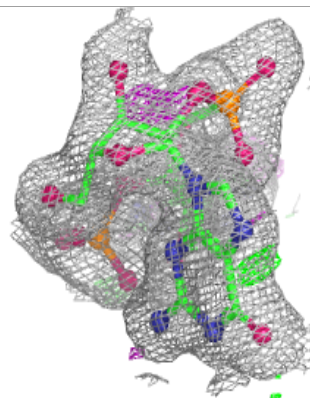
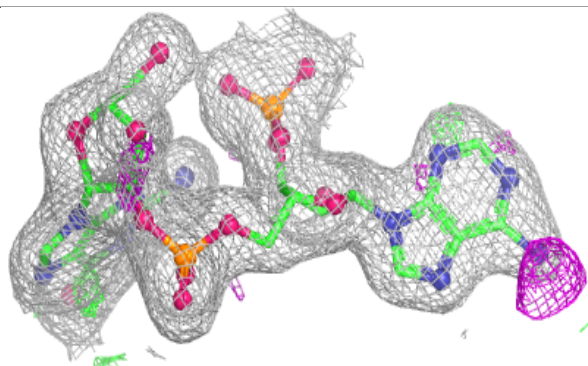
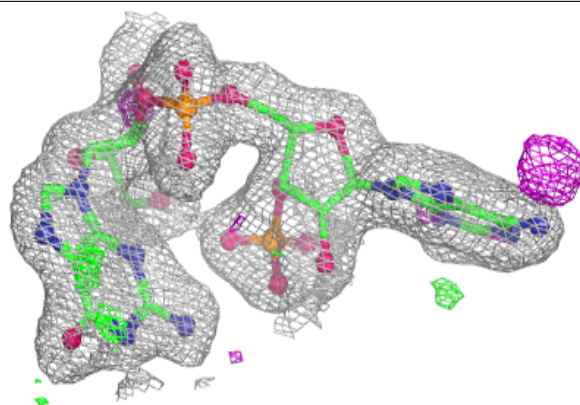
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



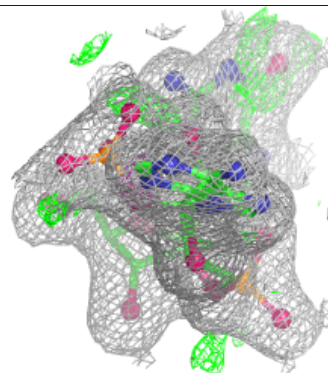
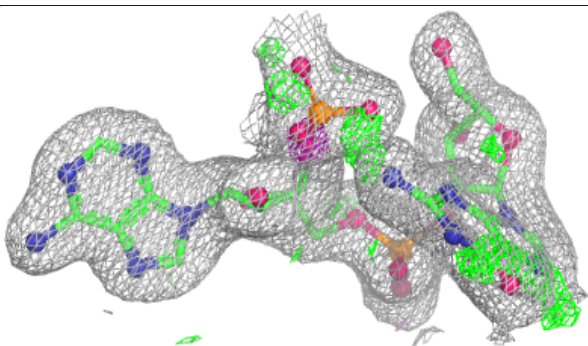
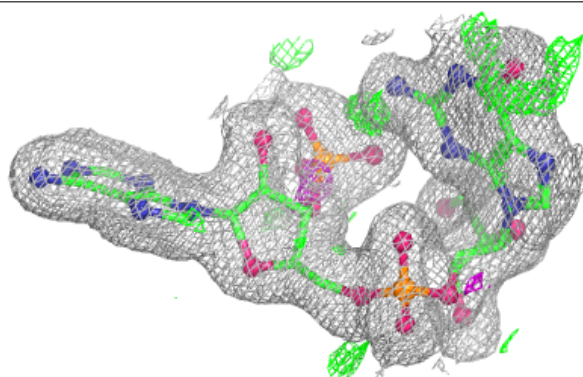


**Electron density around 9BG F 301:**

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

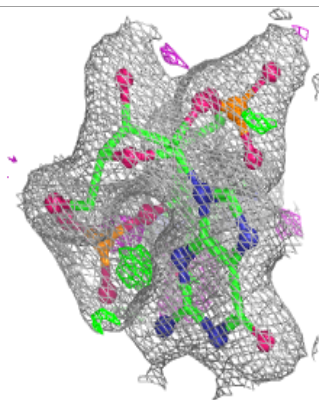
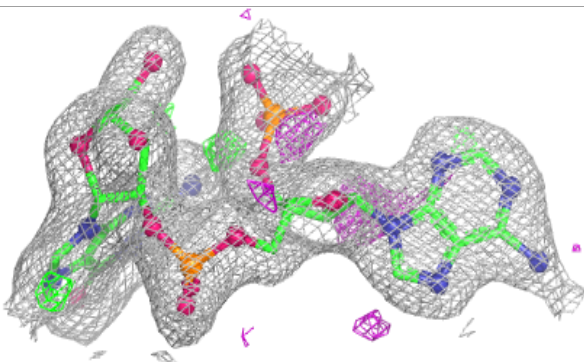
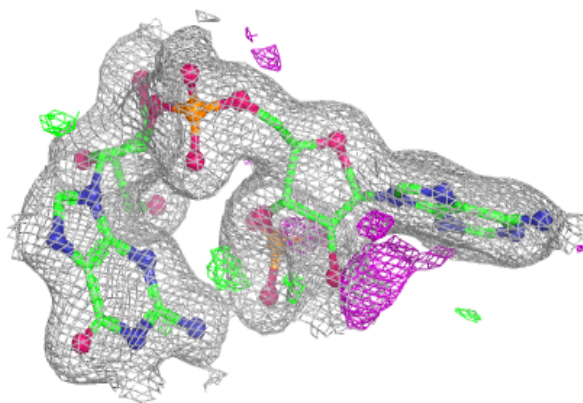
**Electron density around 9BG G 301:**

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

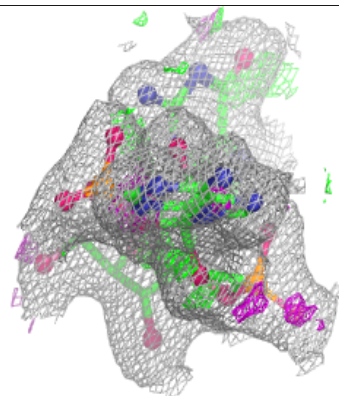
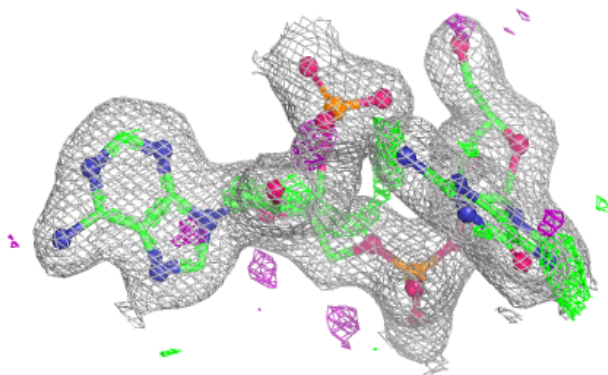
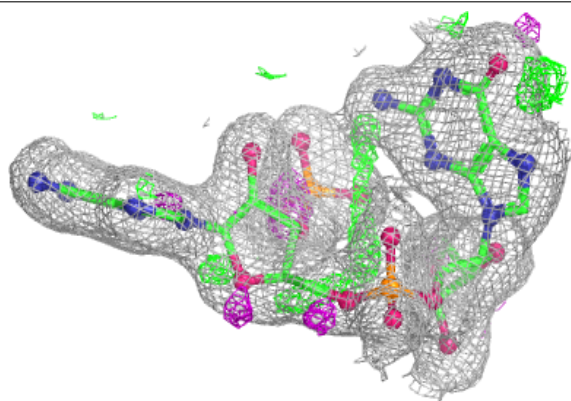


**Electron density around 9BG G 302:**

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

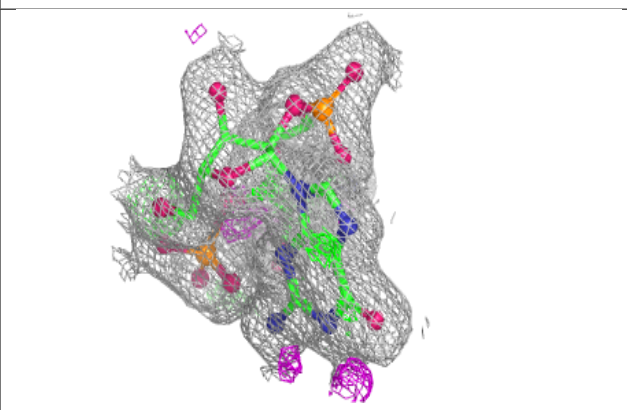
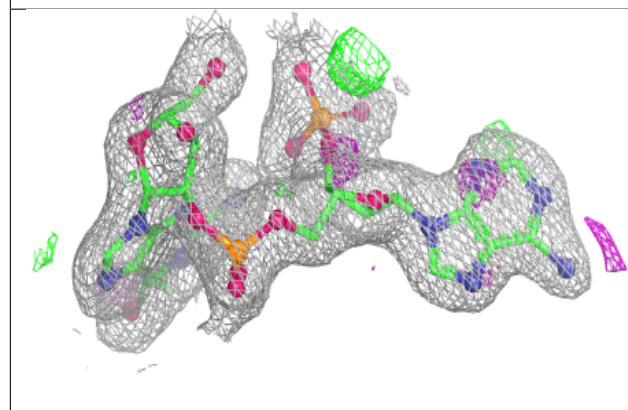
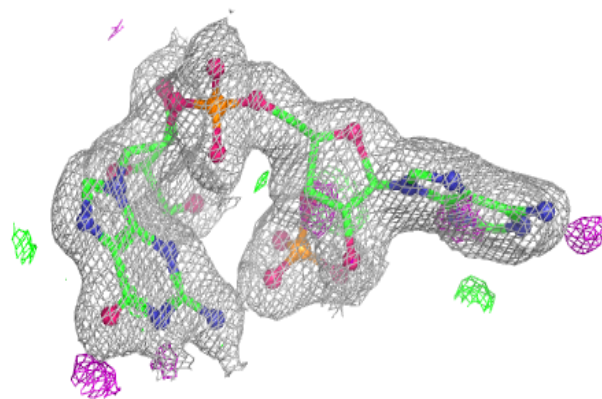
**Electron density around 9BG M 301:**

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

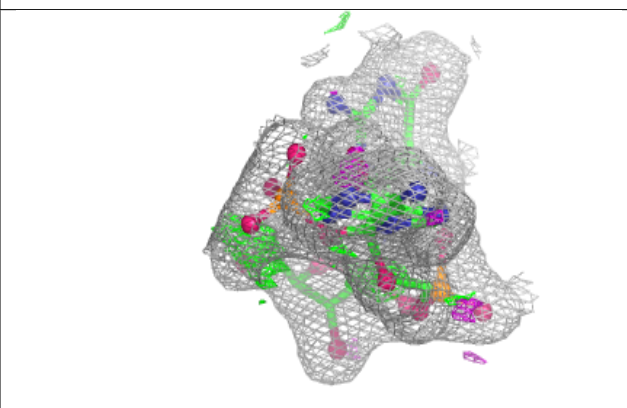
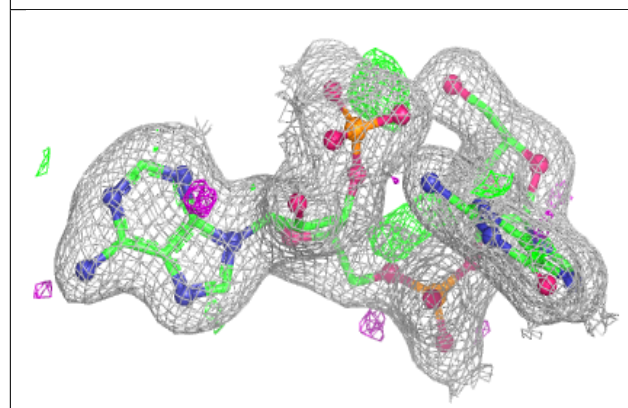
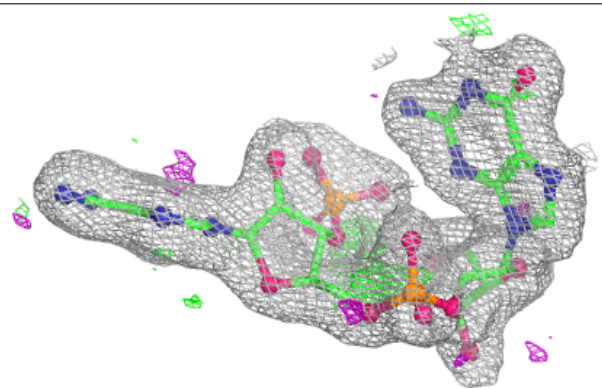


**Electron density around 9BG M 302:**

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

**Electron density around 9BG P 302:**

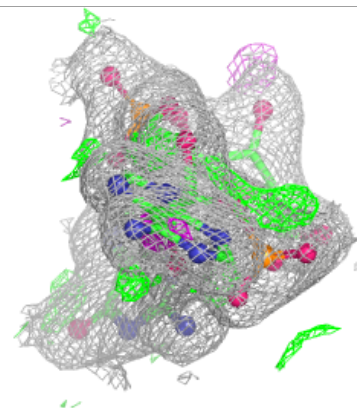
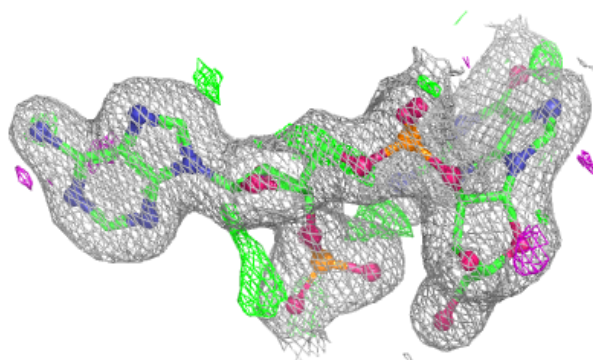
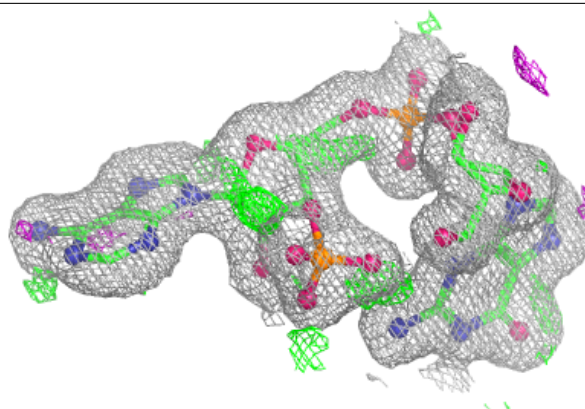
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



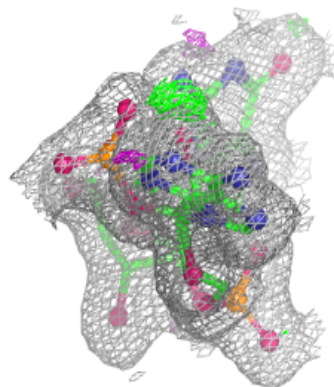
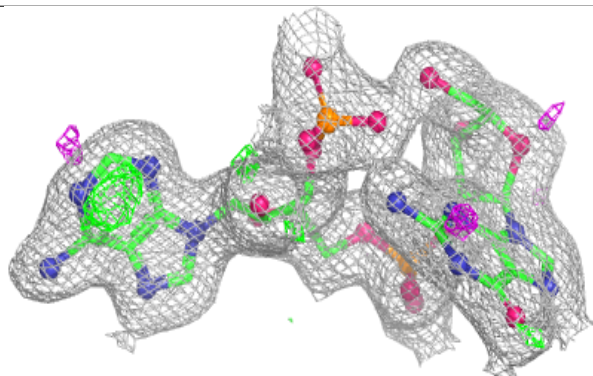
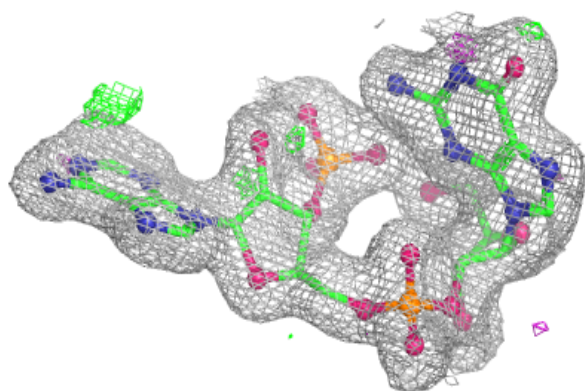


**Electron density around 9BG I 301:**

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

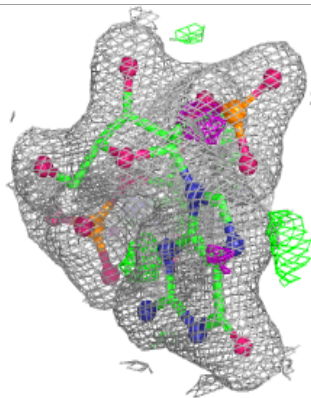
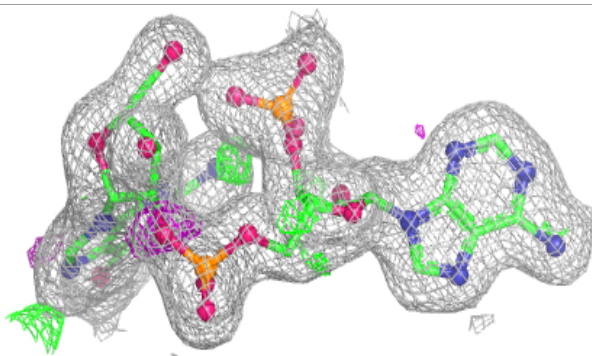
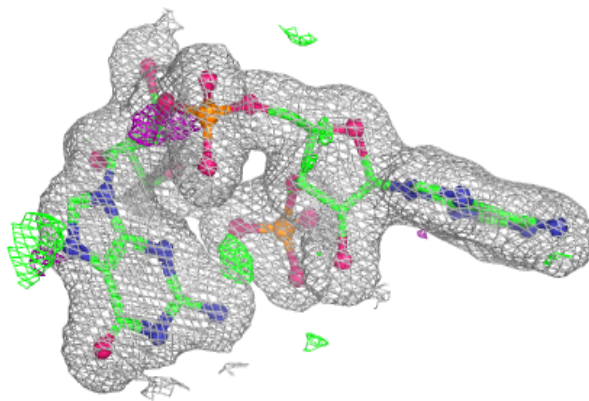
**Electron density around 9BG J 301:**

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

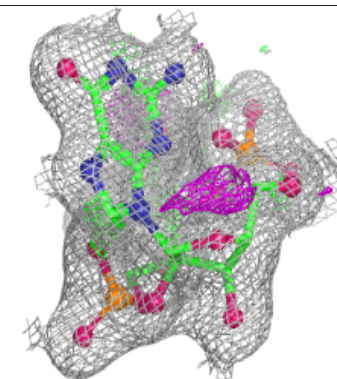
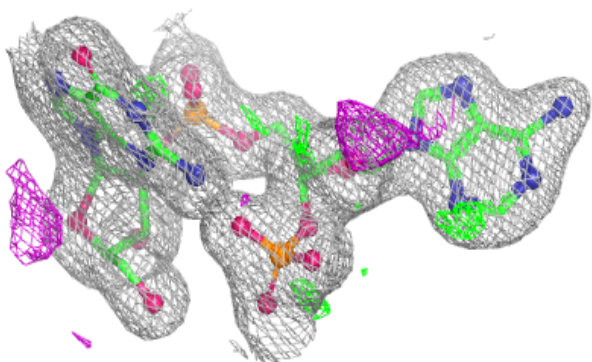
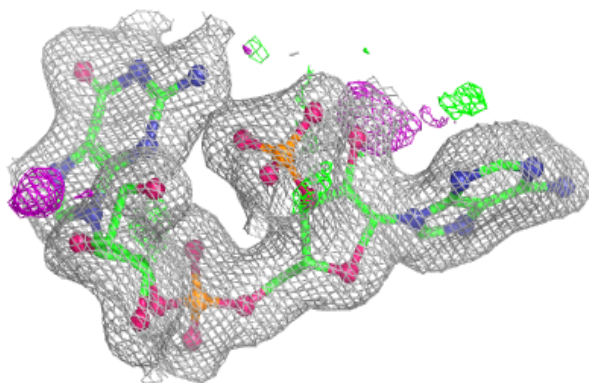


**Electron density around 9BG K 301:**

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

**Electron density around 9BG K 302:**

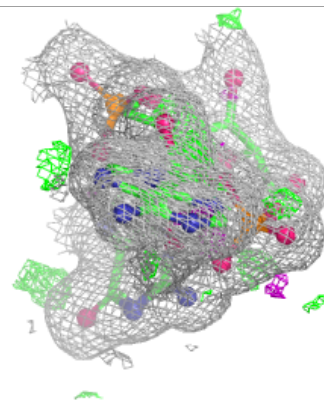
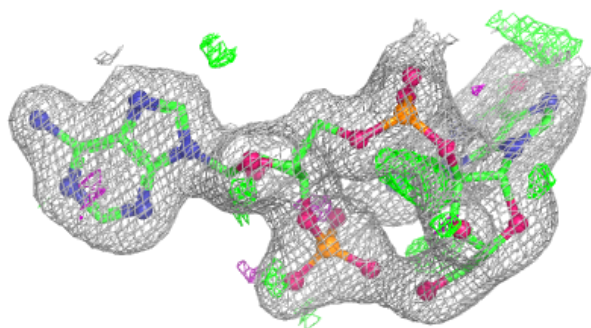
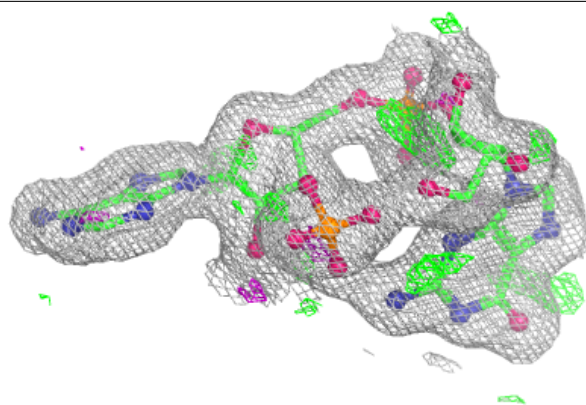
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



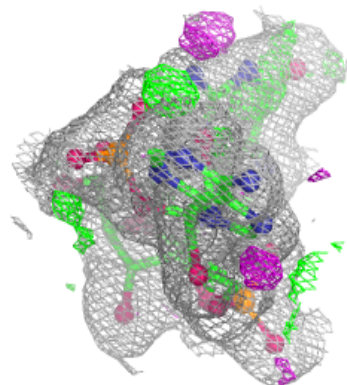
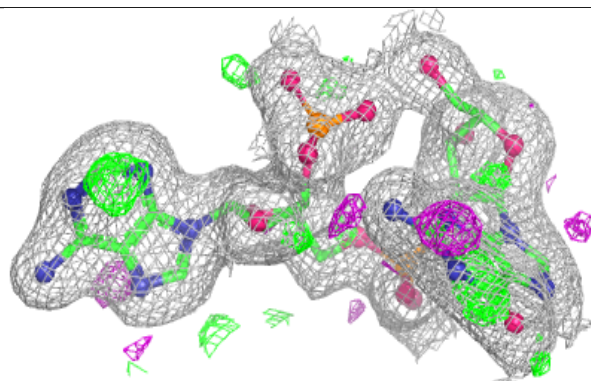
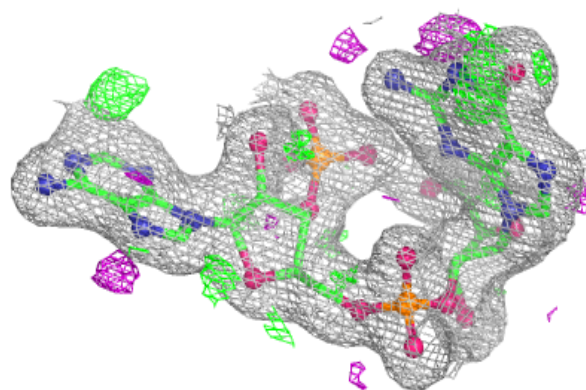


**Electron density around 9BG A 301:**

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

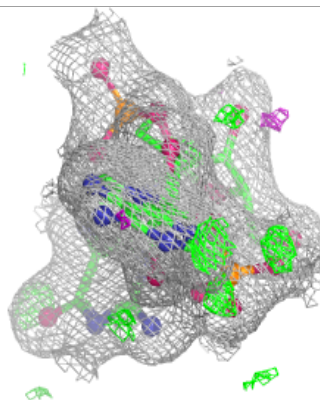
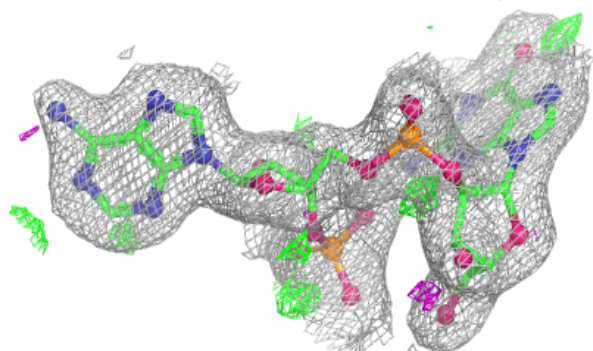
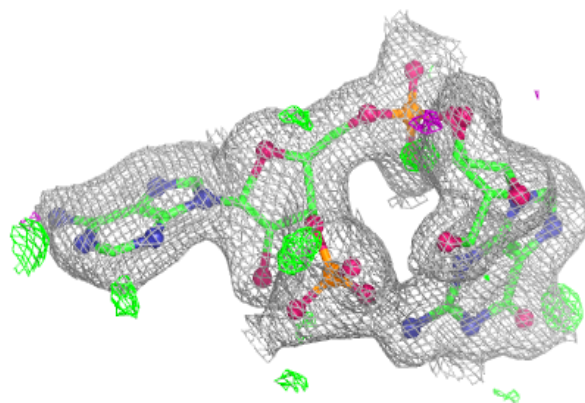
**Electron density around 9BG B 301:**

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

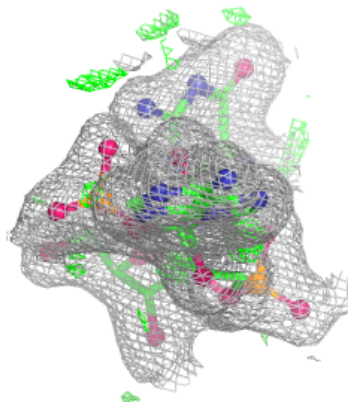
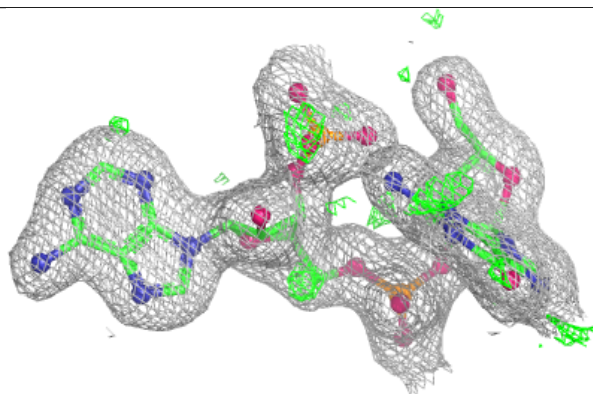
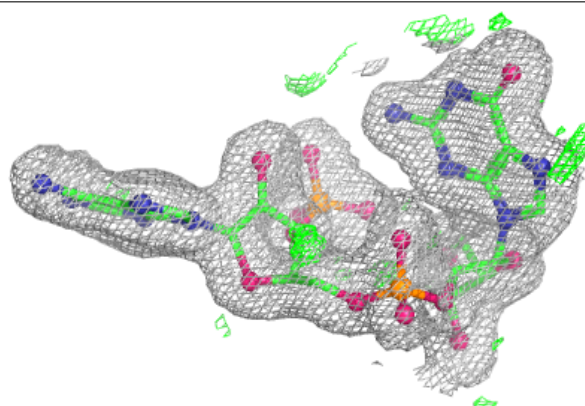


**Electron density around 9BG P 301:**

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

**Electron density around 9BG E 301:**

$2mF_o-DF_c$  (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.