Full wwPDB X-ray Structure Validation Report (i)

Oct 5, 2021 – 04:07 am BST

PDB ID	:	6Y09
Title	:	Crystal structure of Atg16L in complex with GTP-bound Rab33B (Q92L)
Authors	:	Pantoom, S.; Wu, Y.W.
Deposited on	:	2020-02-07
Resolution	:	2.40 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 (i) symbol.

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

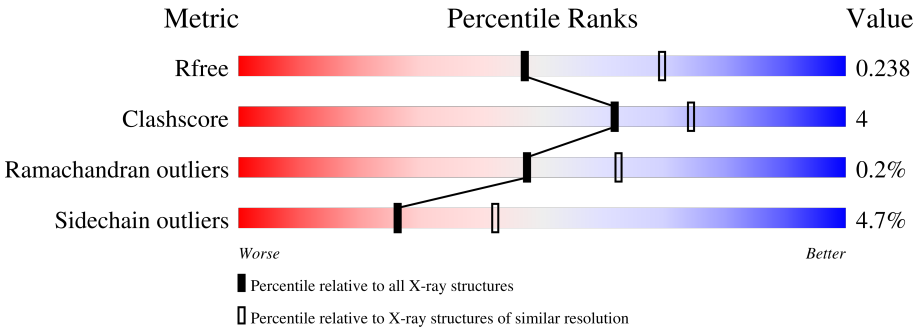
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.23.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0267
CCP4	:	7.1.010 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.23.2

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)

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 <=5%

Mol	Chain	Length	Quality of chain
1	A	192	84% 8% 8%
1	B	192	82% 8% • 9%
2	C	126	52% 14% • 32%
2	D	126	55% 12% •• 32%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	PEG	B	305	-	-	X	-

2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 4629 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 Ras-related protein Rab-33B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	176	Total	C	N	O	S	0	0	0
			1422	901	257	255	9			
1	B	175	Total	C	N	O	S	0	0	0
			1414	895	256	254	9			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	27	GLY	-	expression tag	UNP Q9H082
A	28	PRO	-	expression tag	UNP Q9H082
A	29	MET	-	expression tag	UNP Q9H082
A	92	LEU	GLN	engineered mutation	UNP Q9H082
B	27	GLY	-	expression tag	UNP Q9H082
B	28	PRO	-	expression tag	UNP Q9H082
B	29	MET	-	expression tag	UNP Q9H082
B	92	LEU	GLN	engineered mutation	UNP Q9H082

- Molecule 2 is a protein called Autophagy-related protein 16-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	86	Total	C	N	O	S	0	0	0
			711	432	131	145	3			
2	D	86	Total	C	N	O	S	0	0	0
			711	432	131	145	3			

There are 2 discrepancies between the modelled and reference sequences:

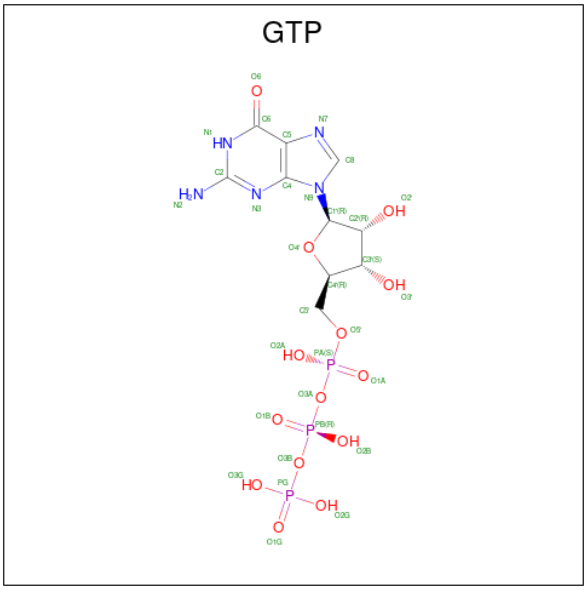
Chain	Residue	Modelled	Actual	Comment	Reference
C	140	MET	-	initiating methionine	UNP Q8C0J2
D	140	MET	-	initiating methionine	UNP Q8C0J2

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand

of Interest" by depositor).

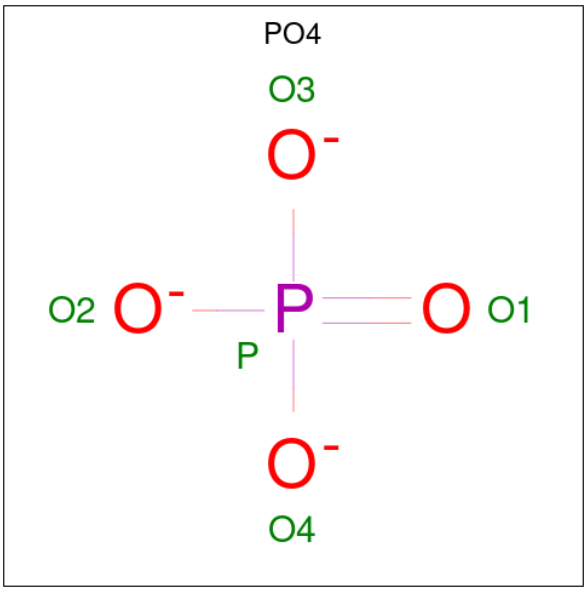
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Mg 1 1	0	0
3	B	1	Total Mg 1 1	0	0

- Molecule 4 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$) (labeled as "Ligand of Interest" by depositor).



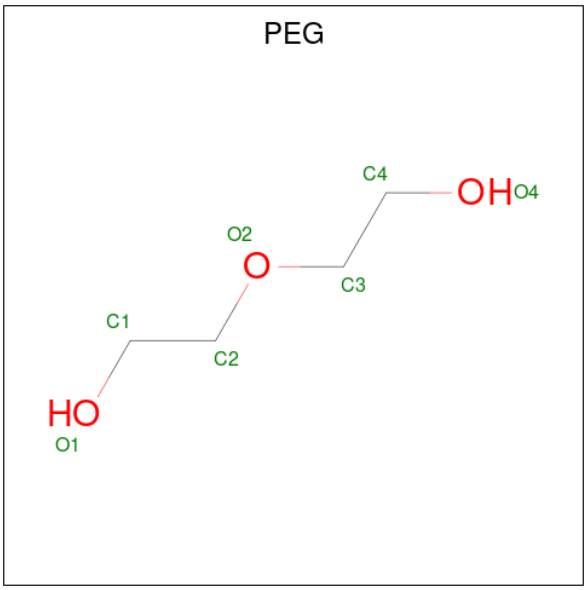
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C N O P 32 10 5 14 3	0	0
4	B	1	Total C N O P 32 10 5 14 3	0	0

- Molecule 5 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



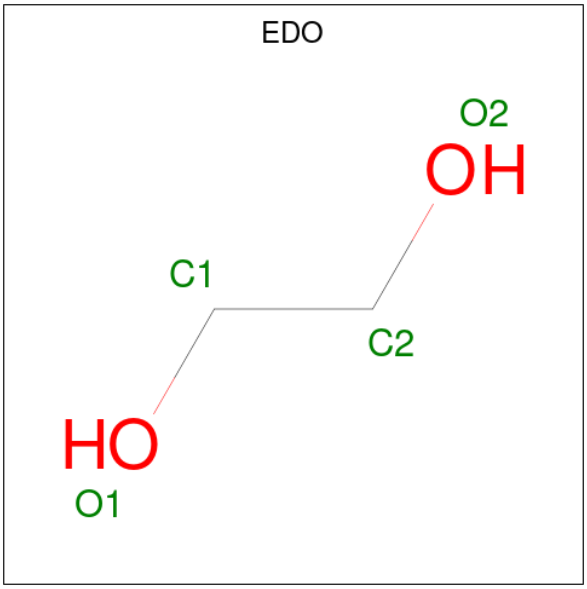
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total O P 5 4 1	0	0
5	C	1	Total O P 5 4 1	0	0
5	B	1	Total O P 5 4 1	0	0
5	D	1	Total O P 5 4 1	0	0

- Molecule 6 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C O 7 4 3	0	0
6	A	1	Total C O 7 4 3	0	0
6	A	1	Total C O 7 4 3	0	0
6	B	1	Total C O 7 4 3	0	0
6	B	1	Total C O 7 4 3	0	0
6	B	1	Total C O 7 4 3	0	0
6	B	1	Total C O 7 4 3	0	0
6	B	1	Total C O 7 4 3	0	0
6	B	1	Total C O 7 4 3	0	0

- Molecule 7 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	B	1	Total C O 4 2 2	0	0
7	B	1	Total C O 4 2 2	0	0

- Molecule 8 is water.

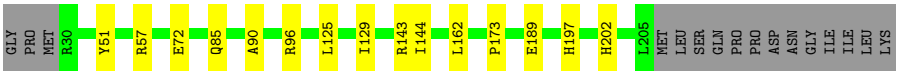
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	98	Total O 98 98	0	0
8	C	9	Total O 9 9	0	0
8	B	88	Total O 88 88	0	0
8	D	19	Total O 19 19	0	0

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. 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. 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: Ras-related protein Rab-33B

Chain A:



• Molecule 1: Ras-related protein Rab-33B

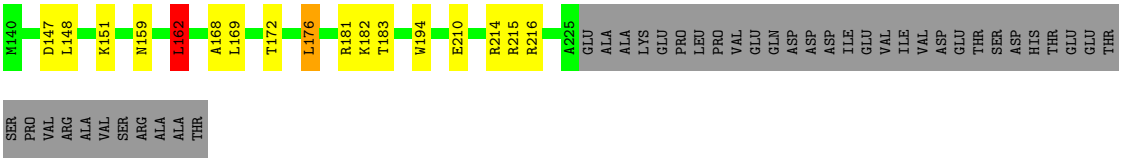
Chain B:

• Molecule 2: Autophagy-related protein 16-1

Chain C:

• Molecule 2: Autophagy-related protein 16-1

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	56.95Å 132.42Å 155.13Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.17 – 2.40 48.17 – 2.40	Depositor EDS
% Data completeness (in resolution range)	99.7 (48.17-2.40) 99.9 (48.17-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.63 (at 2.39Å)	Xtriage
Refinement program	REFMAC 1.9_1692	Depositor
R, R_{free}	0.192 , 0.231 0.202 , 0.238	Depositor DCC
R_{free} test set	2337 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	39.5	Xtriage
Anisotropy	0.811	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	(Not available) , (Not available)	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	4629	wwPDB-VP
Average B, all atoms (Å^2)	64.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 39.56 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.1185e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, GTP, EDO, PO4, PEG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.42	0/1454	0.54	0/1964
1	B	0.46	0/1446	0.56	0/1953
2	C	0.34	0/714	0.43	0/957
2	D	0.32	0/714	0.47	0/957
All	All	0.41	0/4328	0.52	0/5831

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	1422	0	1415	7	0
1	B	1414	0	1404	13	0
2	C	711	0	713	12	0
2	D	711	0	713	10	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	32	0	12	0	0
4	B	32	0	12	0	0
5	A	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	5	0	0	0	0
5	C	5	0	0	0	0
5	D	5	0	0	0	0
6	A	21	0	30	3	0
6	B	42	0	60	9	0
7	B	8	0	12	1	0
8	A	98	0	0	0	0
8	B	88	0	0	0	0
8	C	9	0	0	0	0
8	D	19	0	0	0	0
All	All	4629	0	4371	39	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 (39) 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:A:162:LEU:HD11	6:A:305:PEG:H31	1.67	0.76
2:D:159:ASN:HA	2:D:162:LEU:HB3	1.66	0.76
2:C:193:ARG:HG2	2:D:194:TRP:HH2	1.52	0.74
1:B:118:ASN:HD22	6:B:311:PEG:H12	1.54	0.73
2:C:170:GLN:HG3	2:C:171:ILE:HG12	1.72	0.70
2:D:162:LEU:C	2:D:162:LEU:HD12	2.14	0.68
1:A:90:ALA:O	1:A:96:ARG:NH1	2.33	0.60
1:A:51:TYR:OH	1:A:57:ARG:NH1	2.34	0.60
2:C:210:GLU:OE2	2:C:214:ARG:NH2	2.36	0.59
2:D:215:ARG:HH21	2:D:216:ARG:HB2	1.67	0.58
2:C:146:LEU:O	2:C:150:THR:HG22	2.06	0.55
2:D:210:GLU:HG2	2:D:214:ARG:NH1	2.22	0.53
2:C:193:ARG:HG2	2:D:194:TRP:CH2	2.39	0.53
2:D:168:ALA:O	2:D:172:THR:HG23	2.09	0.53
1:B:181:ASN:ND2	6:B:305:PEG:O1	2.41	0.51
2:C:183:THR:HG22	2:D:183:THR:HG22	1.93	0.51
1:B:170:HIS:CE1	7:B:307:EDO:H22	2.46	0.50
1:B:47:THR:HG23	1:B:71:ARG:NH1	2.26	0.50
1:B:137:LEU:HB2	6:B:309:PEG:H41	1.93	0.49
2:C:169:LEU:HA	2:C:172:THR:HG22	1.94	0.49
2:C:178:GLU:OE2	2:C:181:ARG:NH1	2.44	0.49
1:B:52:ARG:HH22	6:B:305:PEG:H22	1.77	0.49
1:B:181:ASN:HD22	6:B:305:PEG:HO1	1.62	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:125:LEU:O	1:A:129:ILE:HG12	2.14	0.47
1:B:131:GLU:OE2	6:B:310:PEG:H42	2.15	0.46
2:C:176:LEU:HD23	2:D:176:LEU:HD13	1.99	0.45
2:C:171:ILE:HA	2:C:174:THR:OG1	2.18	0.44
1:B:118:ASN:HD22	6:B:311:PEG:C1	2.28	0.44
1:B:143:ARG:NH2	1:B:170:HIS:O	2.39	0.43
1:B:198:LYS:HE3	1:B:204:PRO:O	2.19	0.43
2:C:219:ARG:HA	2:C:222:LYS:HE3	2.00	0.43
1:B:120:ALA:HB1	6:B:306:PEG:H11	2.01	0.43
6:A:306:PEG:H41	6:A:306:PEG:H21	1.62	0.43
1:A:162:LEU:CD1	6:A:305:PEG:H12	2.50	0.42
1:A:144:ILE:HG22	1:A:173:PRO:HG2	2.01	0.42
6:B:305:PEG:H11	6:B:305:PEG:H32	1.83	0.41
2:C:177:GLU:HG3	2:D:176:LEU:HD11	2.03	0.41
1:B:35:LYS:HE3	1:B:87:TRP:CE2	2.55	0.41
1:A:72:GLU:HG2	1:A:85:GLN:HG3	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	174/192 (91%)	169 (97%)	5 (3%)	0	100	100
1	B	173/192 (90%)	170 (98%)	3 (2%)	0	100	100
2	C	84/126 (67%)	84 (100%)	0	0	100	100
2	D	84/126 (67%)	79 (94%)	4 (5%)	1 (1%)	13	19
All	All	515/636 (81%)	502 (98%)	12 (2%)	1 (0%)	47	62

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	162	LEU

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	156/170 (92%)	152 (97%)	4 (3%)	46 66
1	B	155/170 (91%)	150 (97%)	5 (3%)	39 59
2	C	77/112 (69%)	72 (94%)	5 (6%)	17 27
2	D	77/112 (69%)	69 (90%)	8 (10%)	7 10
All	All	465/564 (82%)	443 (95%)	22 (5%)	26 42

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	143	ARG
1	A	189	GLU
1	A	197	HIS
1	A	202	HIS
2	C	155	LEU
2	C	160	GLN
2	C	172	THR
2	C	176	LEU
2	C	187	ASN
1	B	62	THR
1	B	98	SER
1	B	143	ARG
1	B	198	LYS
1	B	202	HIS
2	D	147	ASP
2	D	148	LEU
2	D	151	LYS
2	D	162	LEU
2	D	169	LEU
2	D	176	LEU
2	D	181	ARG

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Mol	Chain	Res	Type
2	D	182	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 19 ligands modelled in this entry, 2 are monoatomic - leaving 17 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	$\#\|Z\| > 2$
6	PEG	B	305	-	6,6,6	0.56	0	5,5,5	0.43	0
6	PEG	B	306	-	6,6,6	0.62	0	5,5,5	0.34	0
6	PEG	B	311	-	6,6,6	0.65	0	5,5,5	0.30	0
5	PO4	B	303	-	4,4,4	0.67	0	6,6,6	0.61	0
7	EDO	B	304	-	3,3,3	0.58	0	2,2,2	0.31	0
6	PEG	B	308	-	6,6,6	0.70	0	5,5,5	0.35	0
6	PEG	A	305	-	6,6,6	0.52	0	5,5,5	0.50	0
6	PEG	B	309	-	6,6,6	0.55	0	5,5,5	0.34	0
4	GTP	A	302	3	26,34,34	0.96	1 (3%)	33,54,54	1.70	7 (21%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	PO4	A	303	-	4,4,4	0.72	0	6,6,6	0.42	0
6	PEG	A	304	-	6,6,6	0.67	0	5,5,5	0.49	0
6	PEG	B	310	-	6,6,6	0.51	0	5,5,5	0.43	0
7	EDO	B	307	-	3,3,3	0.53	0	2,2,2	0.36	0
6	PEG	A	306	-	6,6,6	0.55	0	5,5,5	0.55	0
5	PO4	D	301	-	4,4,4	0.89	0	6,6,6	0.47	0
5	PO4	C	301	-	4,4,4	0.85	0	6,6,6	0.47	0
4	GTP	B	302	3	26,34,34	1.04	2 (7%)	33,54,54	1.69	6 (18%)

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
6	PEG	B	305	-	-	1/4/4/4	-
6	PEG	B	306	-	-	2/4/4/4	-
6	PEG	B	311	-	-	1/4/4/4	-
7	EDO	B	304	-	-	0/1/1/1	-
6	PEG	B	308	-	-	1/4/4/4	-
6	PEG	B	309	-	-	0/4/4/4	-
4	GTP	A	302	3	-	4/18/38/38	0/3/3/3
6	PEG	A	304	-	-	0/4/4/4	-
6	PEG	B	310	-	-	1/4/4/4	-
7	EDO	B	307	-	-	0/1/1/1	-
6	PEG	A	306	-	-	1/4/4/4	-
6	PEG	A	305	-	-	0/4/4/4	-
4	GTP	B	302	3	-	2/18/38/38	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	302	GTP	C6-N1	3.23	1.38	1.33
4	A	302	GTP	C6-N1	2.97	1.38	1.33
4	B	302	GTP	C2-N1	2.01	1.39	1.35

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	302	GTP	N3-C2-N1	-5.38	120.05	127.22
4	A	302	GTP	N3-C2-N1	-4.99	120.56	127.22

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	302	GTP	C2-N3-C4	4.04	119.97	115.36
4	B	302	GTP	C5-C6-N1	-3.44	118.73	123.43
4	A	302	GTP	C5-C6-N1	-3.32	118.89	123.43
4	A	302	GTP	C2-N3-C4	3.30	119.13	115.36
4	A	302	GTP	C6-N1-C2	2.94	120.60	115.93
4	B	302	GTP	C6-N1-C2	2.84	120.44	115.93
4	A	302	GTP	PB-O3B-PG	-2.78	123.30	132.83
4	A	302	GTP	PA-O3A-PB	-2.51	124.21	132.83
4	B	302	GTP	N2-C2-N1	2.35	120.91	117.25
4	B	302	GTP	PB-O3B-PG	-2.06	125.75	132.83
4	A	302	GTP	O2G-PG-O3B	2.06	111.53	104.64

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	302	GTP	C5'-O5'-PA-O3A
6	B	310	PEG	C1-C2-O2-C3
6	A	306	PEG	C4-C3-O2-C2
6	B	305	PEG	C1-C2-O2-C3
6	B	306	PEG	C1-C2-O2-C3
4	B	302	GTP	C5'-O5'-PA-O3A
4	B	302	GTP	PA-O3A-PB-O1B
4	A	302	GTP	C5'-O5'-PA-O2A
6	B	311	PEG	C1-C2-O2-C3
6	B	306	PEG	C4-C3-O2-C2
4	A	302	GTP	PA-O3A-PB-O2B
6	B	308	PEG	C1-C2-O2-C3
4	A	302	GTP	PA-O3A-PB-O1B

There are no ring outliers.

8 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	305	PEG	4	0
6	B	306	PEG	1	0
6	B	311	PEG	2	0
6	A	305	PEG	2	0
6	B	309	PEG	1	0
6	B	310	PEG	1	0
7	B	307	EDO	1	0

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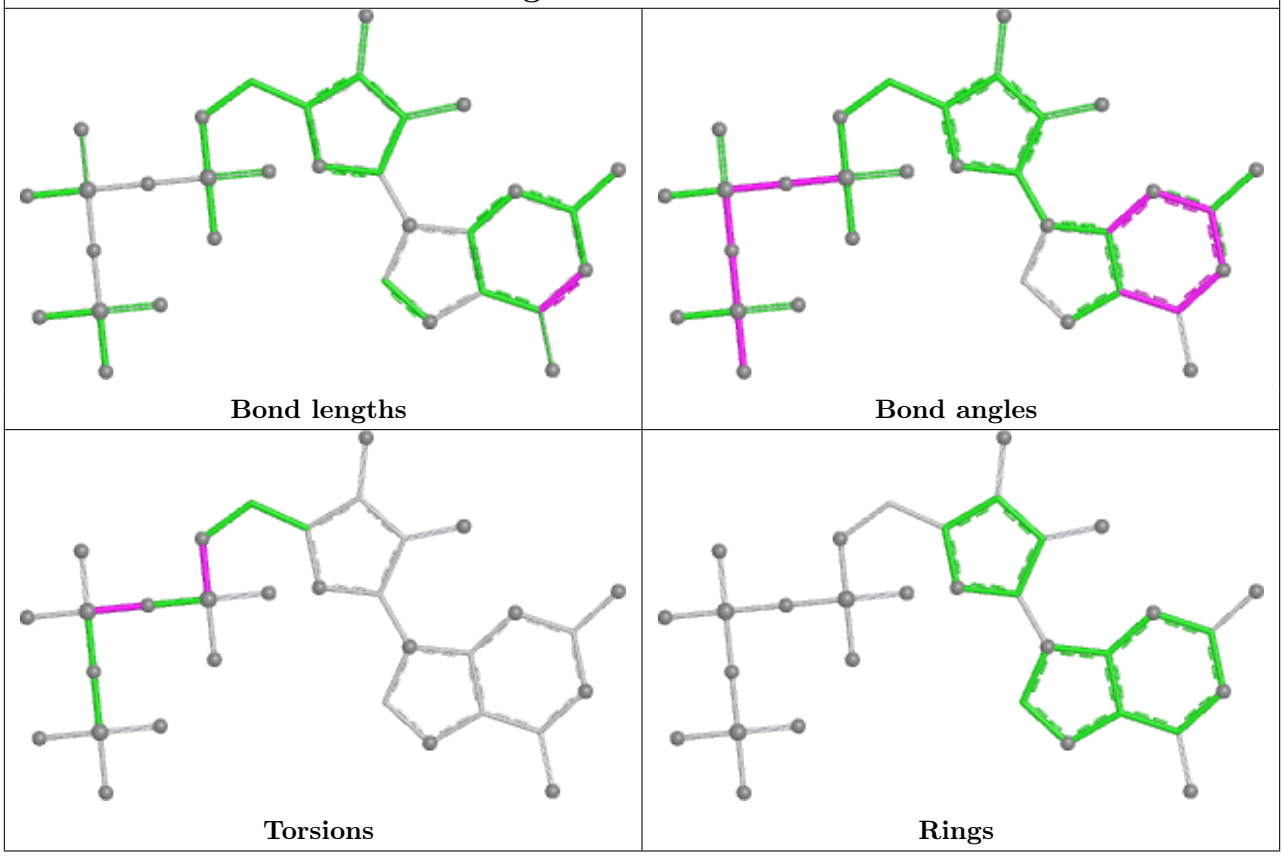
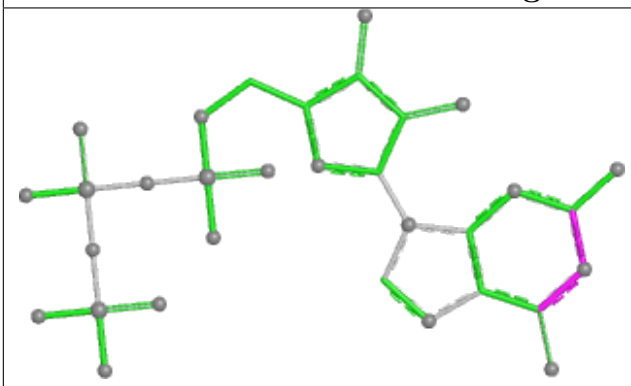
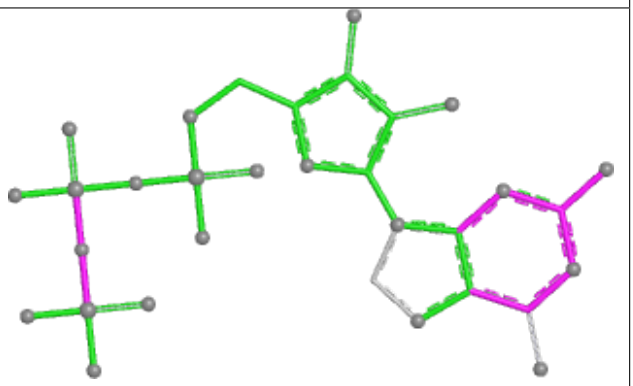
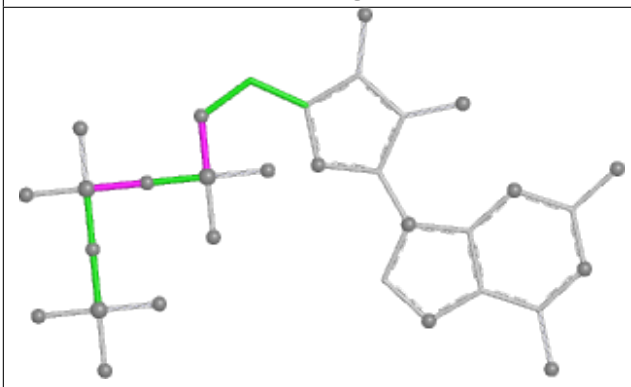
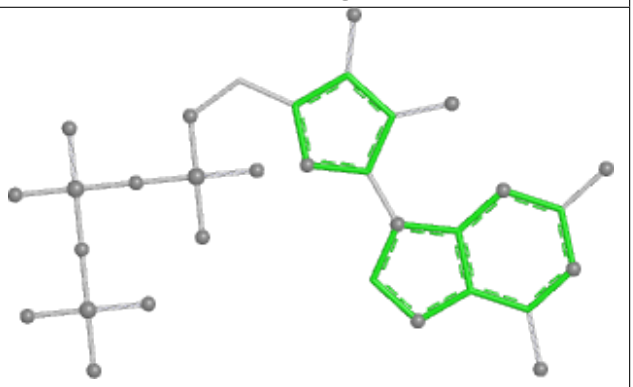
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	306	PEG	1	0

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 then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand GTP A 302



Ligand GTP B 302	
 Bond lengths	 Bond angles
 Torsions	 Rings

5.7 Other polymers

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

6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

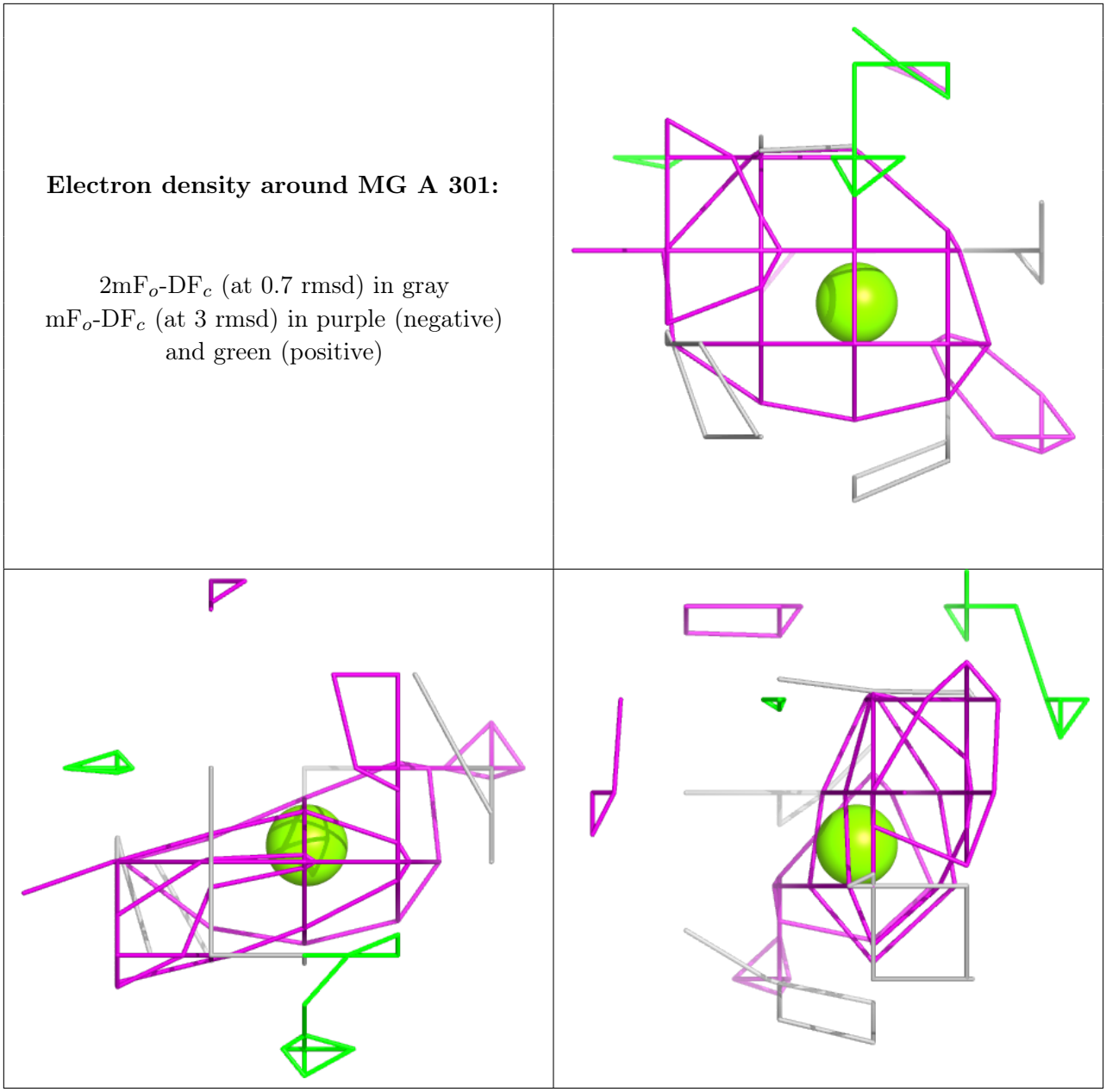
6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

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.

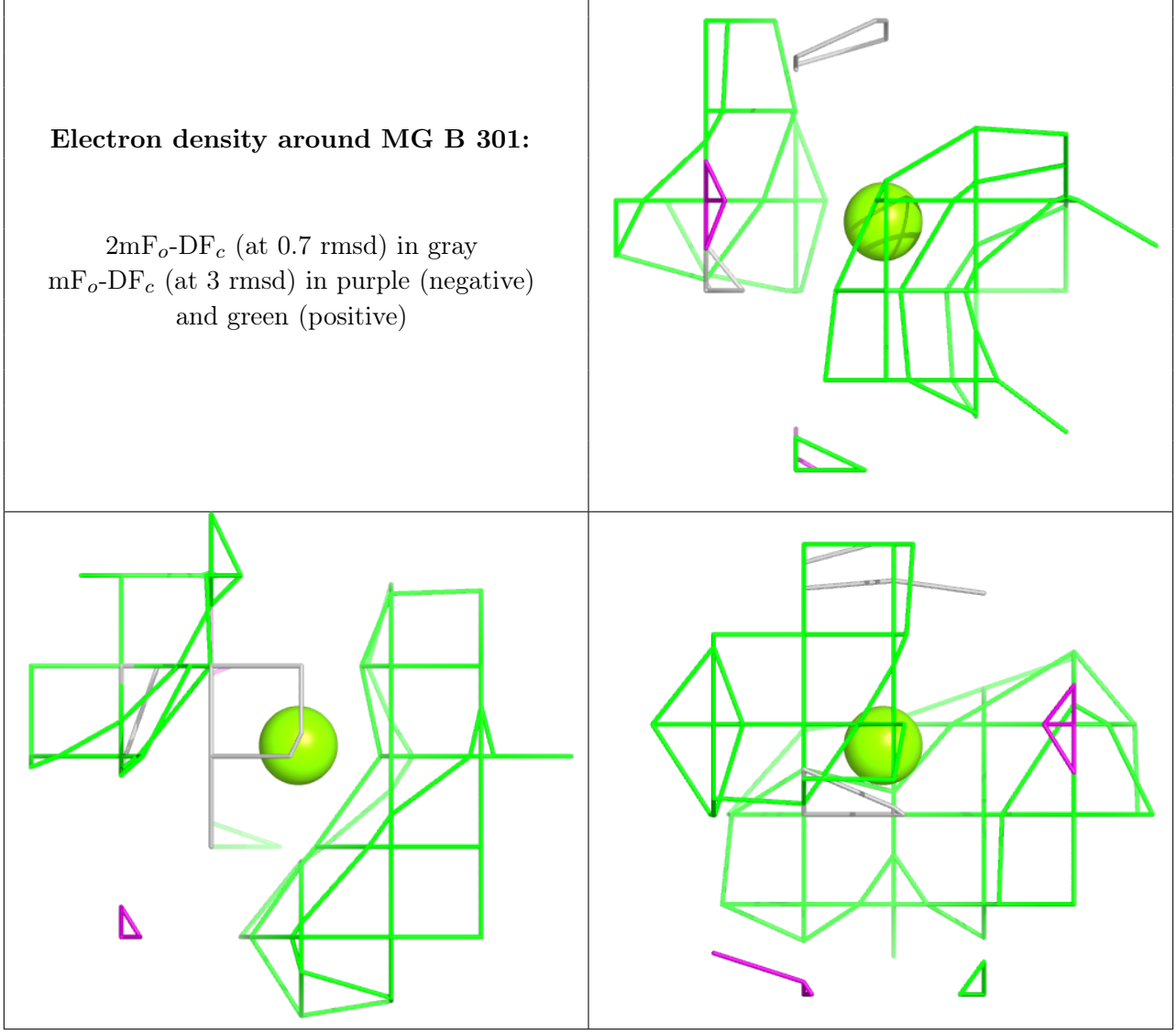
Electron density around MG A 301:

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



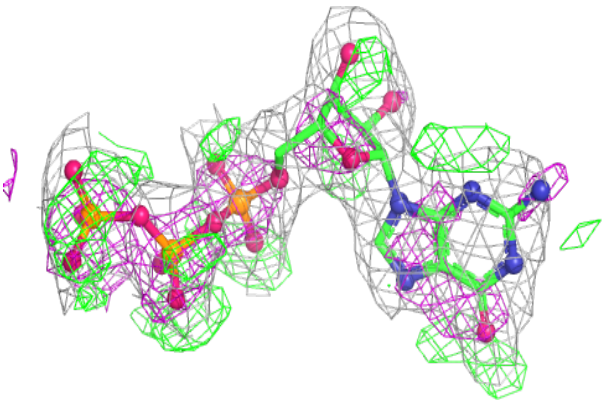
Electron density around MG B 301:

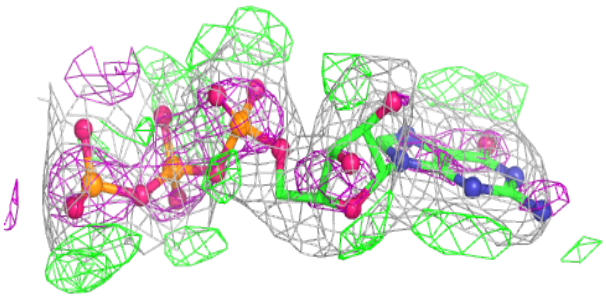
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

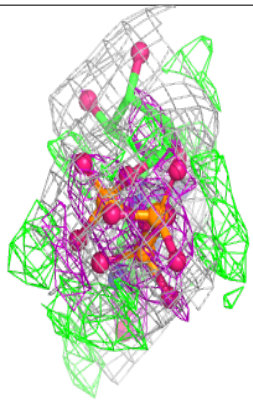


Electron density around GTP A 302:

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

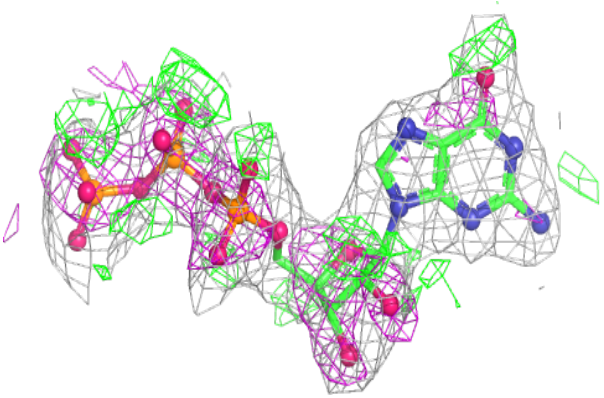


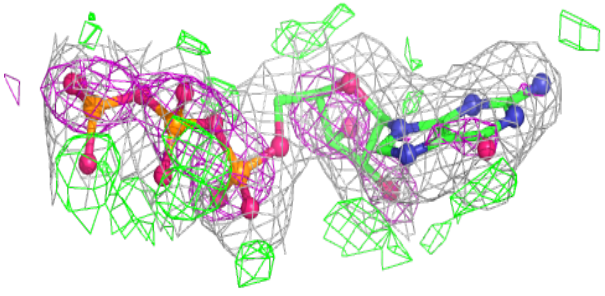


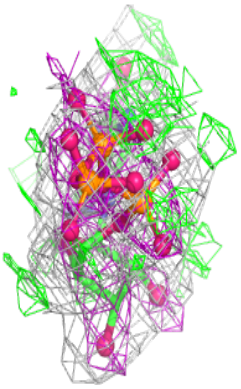


Electron density around GTP B 302:

$2mF_o$-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)

Unable to reproduce the depositors R factor - this section is therefore empty.