



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 3, 2023 – 10:08 PM EST

PDB ID : 8UH7  
Title : Structure of T4 Bacteriophage clamp loader bound to the T4 clamp, primer-template DNA, and ATP analog  
Authors : Gee, C.L.; Marcus, K.; Kelch, B.A.; Makino, D.L.  
Deposited on : 2023-10-07  
Resolution : 2.63 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

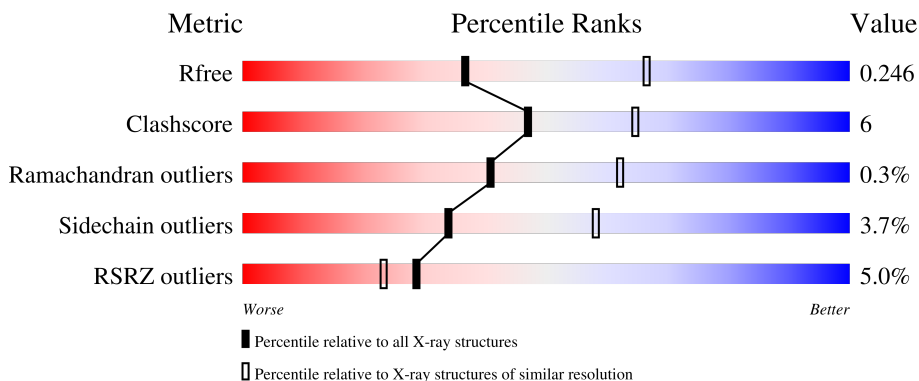
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.63 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	3797 (2.64-2.60)
Clashscore	141614	4168 (2.64-2.60)
Ramachandran outliers	138981	4093 (2.64-2.60)
Sidechain outliers	138945	4093 (2.64-2.60)
RSRZ outliers	127900	3731 (2.64-2.60)

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	187	<div style="display: flex; align-items: center;"> <div style="width: 3%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 77%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 20%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div>
2	B	324	<div style="display: flex; align-items: center;"> <div style="width: 86%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 13%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div>
2	C	324	<div style="display: flex; align-items: center;"> <div style="width: 83%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 15%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 2%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div>
2	D	324	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 85%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 12%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div>
2	E	324	<div style="display: flex; align-items: center;"> <div style="width: 81%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 13%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div>

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Mol	Chain	Length	Quality of chain
3	F	228	
3	G	228	
3	H	228	
4	I	30	
5	J	20	

## 2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 17800 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 Sliding-clamp-loader small subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	186	1495	963	247	279	6	0	0	0

- Molecule 2 is a protein called Sliding-clamp-loader large subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	319	2509	1587	431	474	17	0	0	0
2	C	320	2515	1590	432	476	17	0	0	0
2	D	319	2509	1587	431	474	17	0	0	0
2	E	314	2467	1564	422	465	16	0	0	0

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-4	GLY	-	expression tag	UNP P04526
B	-3	PRO	-	expression tag	UNP P04526
B	-2	GLY	-	expression tag	UNP P04526
B	-1	GLY	-	expression tag	UNP P04526
B	0	SER	-	expression tag	UNP P04526
C	-4	GLY	-	expression tag	UNP P04526
C	-3	PRO	-	expression tag	UNP P04526
C	-2	GLY	-	expression tag	UNP P04526
C	-1	GLY	-	expression tag	UNP P04526
C	0	SER	-	expression tag	UNP P04526
D	-4	GLY	-	expression tag	UNP P04526
D	-3	PRO	-	expression tag	UNP P04526
D	-2	GLY	-	expression tag	UNP P04526
D	-1	GLY	-	expression tag	UNP P04526

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Chain	Residue	Modelled	Actual	Comment	Reference
D	0	SER	-	expression tag	UNP P04526
E	-4	GLY	-	expression tag	UNP P04526
E	-3	PRO	-	expression tag	UNP P04526
E	-2	GLY	-	expression tag	UNP P04526
E	-1	GLY	-	expression tag	UNP P04526
E	0	SER	-	expression tag	UNP P04526

- Molecule 3 is a protein called Sliding clamp.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	F	228	Total	C	N	O	Se	0	0	0
			1750	1113	288	343	6			
3	G	228	Total	C	N	O	Se	0	0	0
			1750	1113	288	343	6			
3	H	228	Total	C	N	O	Se	0	0	0
			1750	1113	288	343	6			

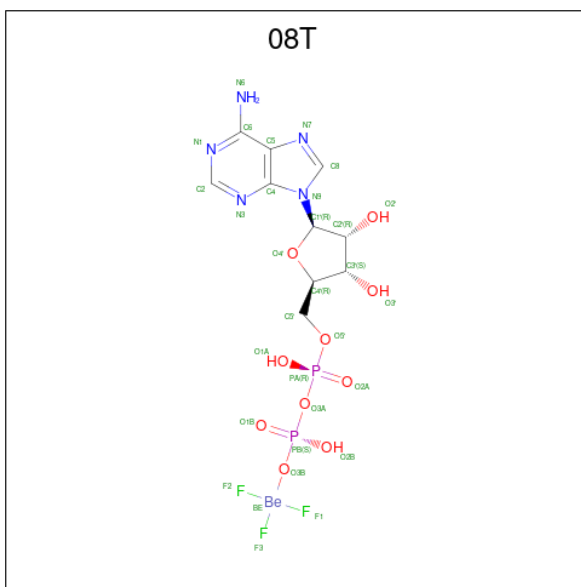
- Molecule 4 is a DNA chain called Template DNA strand.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	I	24	Total	C	N	O	P	0	0	0
			489	236	76	153	24			

- Molecule 5 is a DNA chain called Primer DNA strand.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	J	20	Total	C	N	O	P	0	0	0
			408	195	81	113	19			

- Molecule 6 is [[[(2R,3S,4R,5R)-5-(6-aminopurin-9-yl)-3,4-bis(oxidanyl)oxolan-2-yl]methoxy-oxidanyl-phosphoryl]oxy-oxidanyl-phosphoryl]oxy-tris(fluoranyl)beryllium (three-letter code: 08T) (formula: C<sub>10</sub>H<sub>14</sub>BeF<sub>3</sub>N<sub>5</sub>O<sub>10</sub>P<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	
			Total	Be	C	F	N	O			P
6	B	1	Total	Be	C	F	N	O	P	0	0
			31	1	10	3	5	10	2		
6	C	1	Total	Be	C	F	N	O	P	0	0
			31	1	10	3	5	10	2		
6	D	1	Total	Be	C	F	N	O	P	0	0
			31	1	10	3	5	10	2		

- Molecule 7 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
7	B	1	Total	Mg	0	0
			1	1		
7	C	1	Total	Mg	0	0
			1	1		
7	D	1	Total	Mg	0	0
			1	1		
7	E	1	Total	Mg	0	0
			1	1		

- Molecule 8 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>10</sub>P<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
8	E	1	27	10	5	10	2	0	0

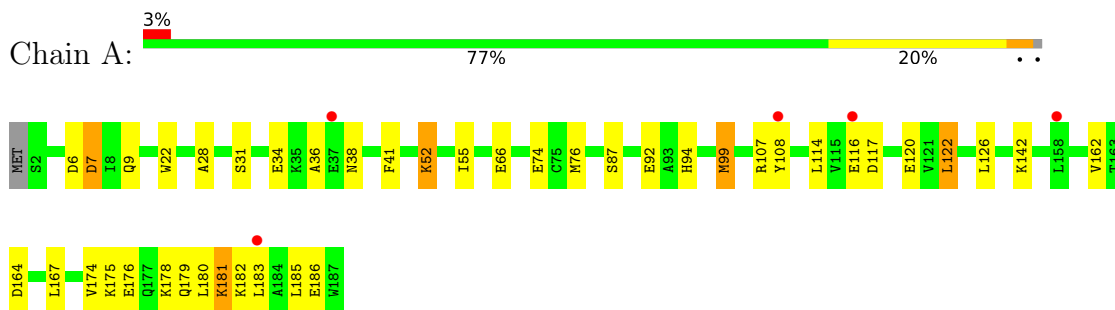
- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	1	Total	O	0	0
			1	1		
9	B	7	Total	O	0	0
			7	7		
9	C	6	Total	O	0	0
			6	6		
9	D	9	Total	O	0	0
			9	9		
9	E	7	Total	O	0	0
			7	7		
9	F	1	Total	O	0	0
			1	1		
9	G	2	Total	O	0	0
			2	2		
9	J	1	Total	O	0	0
			1	1		

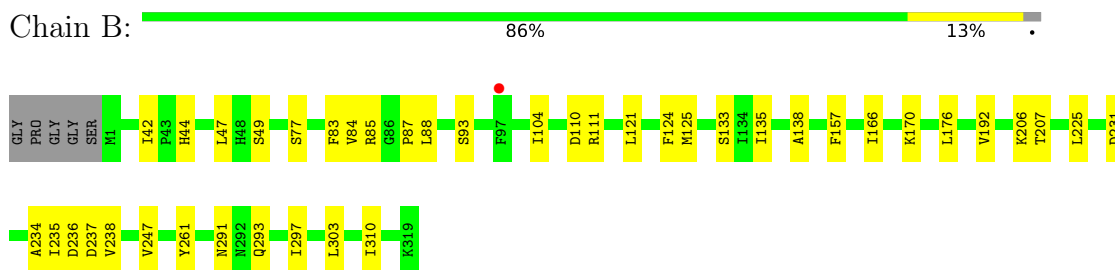
### 3 Residue-property plots

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.

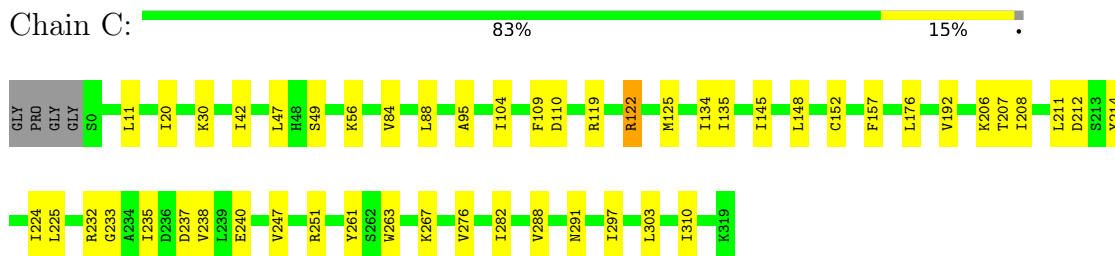
- Molecule 1: Sliding-clamp-loader small subunit



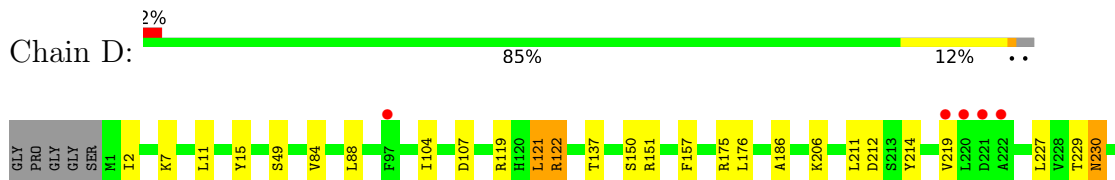
- Molecule 2: Sliding-clamp-loader large subunit



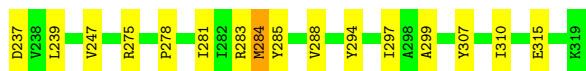
- Molecule 2: Sliding-clamp-loader large subunit



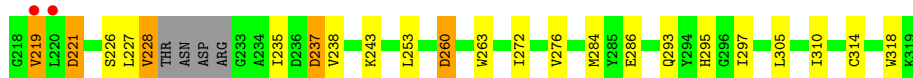
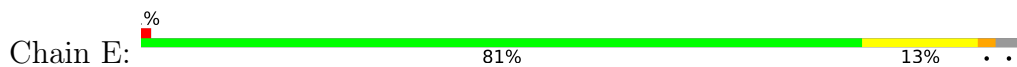
- Molecule 2: Sliding-clamp-loader large subunit



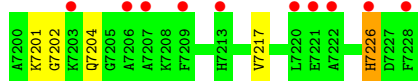
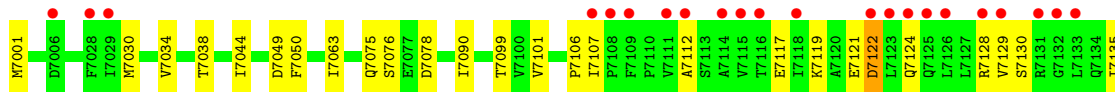
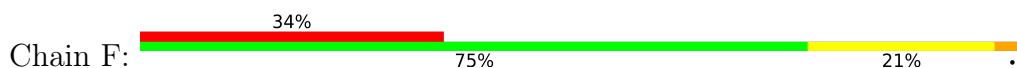




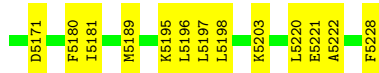
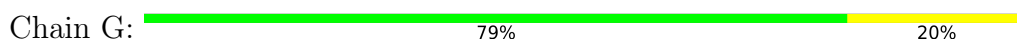
- Molecule 2: Sliding-clamp-loader large subunit



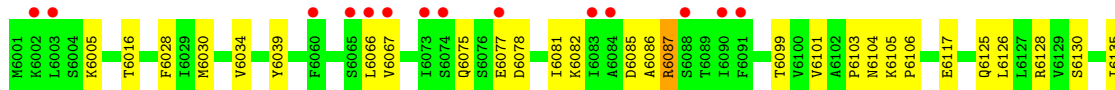
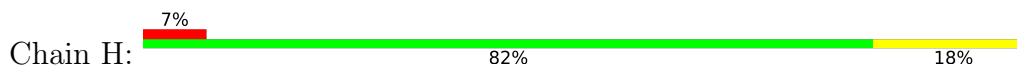
- Molecule 3: Sliding clamp

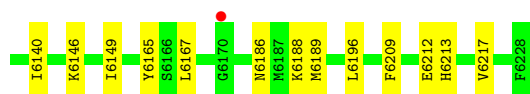


- Molecule 3: Sliding clamp

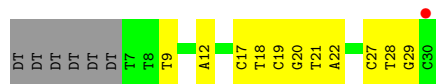


- Molecule 3: Sliding clamp

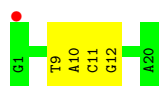
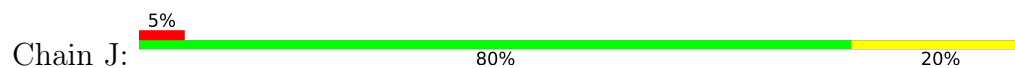




- Molecule 4: Template DNA strand



- Molecule 5: Primer DNA strand



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	93.35Å 118.33Å 132.88Å 90.00° 102.05° 90.00°	Depositor
Resolution (Å)	49.65 – 2.63 49.65 – 2.63	Depositor EDS
% Data completeness (in resolution range)	65.9 (49.65-2.63) 65.9 (49.65-2.63)	Depositor EDS
$R_{merge}$	0.33	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.03 (at 2.61Å)	Xtrriage
Refinement program	PHENIX 1.14_3260	Depositor
R, $R_{free}$	0.193 , 0.244 0.196 , 0.246	Depositor DCC
$R_{free}$ test set	2000 reflections (3.60%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	44.7	Xtrriage
Anisotropy	0.177	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 42.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	17800	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	48.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.05% 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: 08T, MG, ADP

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	0.25	0/1523	0.42	0/2051
2	B	0.25	0/2553	0.41	0/3441
2	C	0.26	0/2559	0.42	0/3449
2	D	0.25	0/2553	0.42	0/3441
2	E	0.26	0/2510	0.43	0/3382
3	F	0.25	0/1774	0.44	0/2395
3	G	0.25	0/1774	0.44	0/2395
3	H	0.25	0/1774	0.45	0/2395
4	I	0.55	0/544	1.07	0/838
5	J	0.52	0/459	0.82	0/706
All	All	0.28	0/18023	0.48	0/24493

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1495	0	1521	26	0
2	B	2509	0	2537	26	0
2	C	2515	0	2542	32	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	2509	0	2538	29	0
2	E	2467	0	2495	33	0
3	F	1750	0	1752	33	0
3	G	1750	0	1752	28	0
3	H	1750	0	1752	23	0
4	I	489	0	277	7	0
5	J	408	0	225	2	0
6	B	31	0	13	0	0
6	C	31	0	13	1	0
6	D	31	0	13	1	0
7	B	1	0	0	0	0
7	C	1	0	0	0	0
7	D	1	0	0	0	0
7	E	1	0	0	0	0
8	E	27	0	12	1	0
9	A	1	0	0	0	0
9	B	7	0	0	0	0
9	C	6	0	0	0	0
9	D	9	0	0	0	0
9	E	7	0	0	0	0
9	F	1	0	0	2	0
9	G	2	0	0	0	0
9	J	1	0	0	0	0
All	All	17800	0	17442	216	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 6.

All (216) 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:VAL:HG11	1:A:183:LEU:HD13	1.61	0.82
1:A:162:VAL:HG21	1:A:183:LEU:HD22	1.64	0.78
3:G:5146:LYS:HA	3:G:5171:ASP:HA	1.67	0.77
1:A:122:LEU:HD21	1:A:183:LEU:HD21	1.70	0.72
1:A:175:LYS:HG2	1:A:178:LYS:HG3	1.69	0.72
2:D:229:THR:O	2:D:230:ASN:ND2	2.22	0.72
2:B:88:LEU:HD22	2:B:104:ILE:HD13	1.74	0.69
2:E:116:GLU:OE1	2:E:119:ARG:NH1	2.26	0.68
3:F:7140:ILE:HG22	3:F:7149:ILE:HG12	1.75	0.67
1:A:55:ILE:HD11	1:A:92:GLU:HA	1.76	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:7149:ILE:HG13	3:F:7169:LEU:HD11	1.75	0.66
2:D:84:VAL:HG22	2:D:88:LEU:HD22	1.77	0.66
3:F:7030:MSE:HE1	3:F:7106:PRO:HA	1.78	0.64
2:D:88:LEU:HG	2:D:104:ILE:HD13	1.79	0.63
3:G:5063:ILE:HD13	3:G:5090:ILE:HG21	1.79	0.63
2:E:272:ILE:HG21	2:E:284:MET:HG3	1.80	0.62
3:F:7117:GLU:HG2	3:F:7195:LYS:HA	1.80	0.62
2:E:88:LEU:HD22	2:E:104:ILE:HD13	1.83	0.61
2:D:278:PRO:HA	2:D:281:ILE:HD13	1.84	0.60
3:H:6034:VAL:HG13	3:H:6101:VAL:HG21	1.84	0.59
4:I:21:DT:H2 <sup>+</sup>	4:I:22:DA:C8	2.37	0.59
2:D:84:VAL:HA	2:D:88:LEU:HB2	1.84	0.59
3:H:6085:ASP:O	3:H:6087:ARG:N	2.36	0.59
2:C:235:ILE:HG22	2:C:238:VAL:HB	1.83	0.59
2:E:260:ASP:N	2:E:260:ASP:OD1	2.34	0.59
2:B:93:SER:HA	3:F:7099:THR:HG21	1.83	0.58
3:G:5140:ILE:HD13	3:G:5196:LEU:HD21	1.85	0.58
2:B:297:ILE:HD13	2:C:297:ILE:HD11	1.84	0.58
3:G:5129:VAL:HG13	3:G:5133:LEU:HD13	1.86	0.58
2:E:12:GLU:O	8:E:401:ADP:O3'	2.18	0.58
1:A:164:ASP:HA	1:A:167:LEU:HD12	1.85	0.57
2:B:303:LEU:HD21	2:C:288:VAL:HG12	1.85	0.57
2:C:88:LEU:HD22	2:C:104:ILE:HD13	1.87	0.56
1:A:120:GLU:HG3	1:A:142:LYS:HE3	1.86	0.56
1:A:179:GLN:HA	1:A:182:LYS:HB2	1.86	0.56
2:E:111:ARG:HH11	2:E:260:ASP:HB2	1.71	0.55
3:F:7038:THR:HB	3:F:7186:ASN:HB3	1.89	0.55
2:E:90:ASN:OD1	3:H:6186:ASN:ND2	2.37	0.55
2:E:235:ILE:HG22	2:E:238:VAL:HB	1.89	0.55
2:E:237:ASP:N	2:E:237:ASP:OD1	2.39	0.55
2:E:227:LEU:HD12	2:E:228:VAL:H	1.73	0.54
2:D:119:ARG:HA	2:D:122:ARG:HD3	1.91	0.53
2:D:283:ARG:NE	2:D:315:GLU:OE1	2.37	0.52
3:G:5078:ASP:OD1	3:G:5078:ASP:N	2.39	0.52
2:B:84:VAL:HG22	2:B:88:LEU:HD12	1.92	0.52
3:F:7112:ALA:HB2	3:F:7197:LEU:HD23	1.91	0.52
2:C:95:ALA:HB2	3:G:5222:ALA:HA	1.91	0.52
2:E:111:ARG:HH12	2:E:263:TRP:H	1.57	0.52
2:C:233:GLY:O	2:C:267:LYS:NZ	2.43	0.52
2:D:176:LEU:HD22	2:D:211:LEU:HD22	1.91	0.52
2:B:83:PHE:HA	2:B:87:PRO:HD2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:77:SER:OG	2:B:111:ARG:NH1	2.43	0.51
2:E:186:ALA:HB3	2:E:219:VAL:HG13	1.91	0.51
4:I:28:DT:H2''	4:I:29:DG:N7	2.26	0.51
2:C:247:VAL:HG13	2:C:310:ILE:HD11	1.93	0.51
2:E:180:CYS:HA	2:E:185:ILE:HG13	1.94	0.51
3:G:5060:PHE:O	3:G:5063:ILE:HG13	2.11	0.50
3:G:5130:SER:HA	3:G:5135:ILE:HG13	1.92	0.50
2:D:11:LEU:HD12	2:D:212:ASP:HB2	1.93	0.50
5:J:9:DT:H2''	5:J:10:DA:C8	2.47	0.50
2:B:261:TYR:OH	2:B:291:ASN:OD1	2.22	0.50
1:A:41:PHE:O	1:A:108:TYR:OH	2.29	0.50
3:G:5122:ASP:HB3	3:G:5167:LEU:HD21	1.94	0.50
2:C:119:ARG:HA	2:C:122:ARG:HD3	1.94	0.50
2:B:110:ASP:HB3	2:B:138:ALA:HB1	1.94	0.50
3:F:7107:ILE:HD11	3:F:7217:VAL:HG21	1.93	0.50
2:C:237:ASP:OD1	2:C:238:VAL:N	2.44	0.49
3:H:6075:GLN:HA	3:H:6081:ILE:HA	1.92	0.49
2:C:20:ILE:O	2:C:30:LYS:NZ	2.45	0.49
2:B:110:ASP:OD1	2:C:122:ARG:NH2	2.34	0.49
2:C:247:VAL:O	2:C:251:ARG:HG3	2.12	0.49
3:F:7122:ASP:HB3	3:F:7167:LEU:HD21	1.95	0.49
3:F:7172:TYR:OH	3:F:7176:ASN:OD1	2.31	0.49
2:C:214:TYR:HB3	2:C:224:ILE:HG23	1.94	0.49
3:H:6140:ILE:HG12	3:H:6149:ILE:HG12	1.95	0.49
2:E:42:ILE:HD11	2:E:67:VAL:HG21	1.94	0.48
1:A:114:LEU:HD11	2:E:253:LEU:HD23	1.96	0.48
1:A:181:LYS:HD3	1:A:185:LEU:HD13	1.95	0.48
2:C:11:LEU:HD22	2:C:212:ASP:HB2	1.95	0.48
2:C:56:LYS:N	6:C:401:08T:O1B	2.37	0.48
2:E:272:ILE:HG23	2:E:276:VAL:HG21	1.94	0.48
3:G:5015:ALA:HB2	3:G:5057:LEU:HD23	1.95	0.48
3:G:5118:ILE:HD11	3:G:5196:LEU:HD22	1.96	0.47
2:C:110:ASP:OD1	2:D:122:ARG:NH2	2.36	0.47
2:D:49:SER:HB3	2:D:157:PHE:HB2	1.96	0.47
3:F:7152:PHE:HE2	3:F:7163:VAL:HG22	1.79	0.47
1:A:126:LEU:HD21	1:A:162:VAL:HG22	1.96	0.47
2:B:231:ASP:HB3	2:B:234:ALA:HB2	1.96	0.47
6:D:401:08T:F1	6:D:401:08T:O2B	2.23	0.47
2:E:26:PRO:HG2	2:E:158:GLY:HA2	1.97	0.47
3:H:6030:MSE:SE	3:H:6103:PRO:HG2	2.65	0.47
2:B:206:LYS:NZ	2:C:152:CYS:O	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:15:TYR:O	2:D:175:ARG:NH2	2.47	0.47
3:H:6028:PHE:CE2	3:H:6030:MSE:HE3	2.49	0.47
2:B:47:LEU:HD22	2:B:157:PHE:HE1	1.79	0.47
1:A:28:ALA:O	1:A:31:SER:HB3	2.15	0.47
2:D:107:ASP:OD1	2:D:137:THR:OG1	2.30	0.47
2:C:47:LEU:HD23	2:C:157:PHE:CZ	2.49	0.47
3:F:7162:ARG:HH12	3:F:7164:LYS:HD2	1.80	0.46
1:A:76:MET:HG3	2:E:310:ILE:HD12	1.97	0.46
2:C:261:TYR:OH	2:C:291:ASN:OD1	2.23	0.46
2:C:49:SER:HB3	2:C:157:PHE:HB2	1.97	0.46
3:G:5113:SER:HB3	3:G:5228:PHE:CE1	2.51	0.46
3:G:5134:GLN:O	3:G:5153:ASN:ND2	2.48	0.46
3:H:6067:VAL:HG22	3:H:6085:ASP:HB3	1.98	0.46
3:H:6212:GLU:HG3	3:H:6213:HIS:ND1	2.30	0.46
2:E:125:MET:HG2	2:E:134:ILE:HD12	1.96	0.46
3:H:6030:MSE:HE1	3:H:6106:PRO:HA	1.96	0.46
2:D:237:ASP:OD1	2:D:237:ASP:N	2.47	0.46
3:H:6103:PRO:O	3:H:6105:LYS:N	2.44	0.46
3:H:6140:ILE:HD13	3:H:6196:LEU:HD21	1.98	0.46
2:E:272:ILE:O	2:E:276:VAL:HG23	2.16	0.46
3:G:5195:LYS:HE3	3:G:5197:LEU:HD11	1.97	0.46
4:I:27:DC:H2"	4:I:28:DT:C6	2.51	0.45
2:E:217:LYS:NZ	2:E:221:ASP:OD2	2.48	0.45
3:F:7034:VAL:HG22	3:F:7101:VAL:HG21	1.97	0.45
3:F:7063:ILE:HD11	3:G:5132:GLY:HA3	1.99	0.45
3:F:7180:PHE:HE2	3:F:7226:HIS:HA	1.80	0.45
3:G:5055:TYR:HB2	3:G:5095:ALA:HB2	1.99	0.45
3:G:5164:LYS:HA	3:G:5164:LYS:HD3	1.81	0.45
1:A:181:LYS:HE3	1:A:181:LYS:HB2	1.86	0.45
1:A:87:SER:OG	2:B:293:GLN:NE2	2.40	0.45
3:G:5129:VAL:HG11	3:G:5165:TYR:CD1	2.51	0.45
3:G:5066:LEU:HD21	3:H:6128:ARG:HB3	1.99	0.45
1:A:52:LYS:HD3	1:A:52:LYS:HA	1.40	0.44
2:B:49:SER:HB3	2:B:157:PHE:HB2	1.98	0.44
3:F:7129:VAL:HG21	3:F:7165:TYR:CZ	2.52	0.44
2:D:206:LYS:NZ	2:E:149:GLN:O	2.48	0.44
2:D:284:MET:HG3	2:D:285:TYR:N	2.33	0.44
3:F:7076:SER:OG	3:F:7078:ASP:OD1	2.28	0.44
2:C:84:VAL:HG22	2:C:88:LEU:HD12	1.99	0.44
2:D:122:ARG:HB2	2:D:151:ARG:CZ	2.47	0.44
2:D:297:ILE:HD12	2:E:297:ILE:HD11	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:192:VAL:HG22	2:B:225:LEU:HB2	2.00	0.44
2:D:299:ALA:HB2	2:E:295:HIS:ND1	2.33	0.44
3:F:7162:ARG:O	3:F:7162:ARG:HD3	2.18	0.44
4:I:17:DC:H2'	4:I:18:DT:H71	1.99	0.44
2:B:310:ILE:HD12	2:C:282:ILE:HD13	1.99	0.44
2:E:42:ILE:HG12	2:E:67:VAL:HG11	1.99	0.44
3:F:7187:MSE:HG3	3:F:7189:MSE:SE	2.68	0.44
2:C:303:LEU:HD21	2:D:288:VAL:HG12	2.00	0.43
3:G:5203:LYS:H	3:G:5203:LYS:HG2	1.58	0.43
5:J:11:DC:H2''	5:J:12:DG:C8	2.53	0.43
2:D:119:ARG:HB3	2:D:122:ARG:NH1	2.33	0.43
3:F:7049:ASP:OD1	3:F:7049:ASP:N	2.47	0.43
2:C:232:ARG:HB2	2:C:263:TRP:CE2	2.54	0.43
3:H:6146:LYS:N	3:H:6146:LYS:HD2	2.34	0.43
1:A:74:GLU:OE1	1:A:107:ARG:NH1	2.52	0.43
2:D:294:TYR:HB3	2:E:293:GLN:HG3	2.00	0.43
2:B:166:ILE:O	2:B:170:LYS:HG2	2.18	0.43
2:C:192:VAL:HG22	2:C:225:LEU:HB2	2.00	0.43
3:F:7202:GLY:C	3:F:7204:GLN:H	2.22	0.43
2:B:121:LEU:O	2:B:124:PHE:HB3	2.19	0.43
2:E:36:ILE:HD11	2:E:153:ARG:HH21	1.84	0.43
3:H:6005:LYS:HD3	3:H:6005:LYS:HA	1.86	0.43
2:B:237:ASP:OD1	2:B:238:VAL:N	2.52	0.43
2:D:214:TYR:HE1	2:D:227:LEU:HG	1.82	0.43
3:H:6196:LEU:HD13	3:H:6209:PHE:CE2	2.54	0.42
2:B:42:ILE:HG21	2:B:135:ILE:HD11	2.01	0.42
3:F:7063:ILE:HG21	3:F:7090:ILE:HG21	1.99	0.42
3:G:5088:SER:HB3	3:H:6167:LEU:HD13	2.01	0.42
1:A:38:ASN:ND2	4:I:9:DT:O2	2.52	0.42
2:C:176:LEU:HD11	2:C:207:THR:HG22	2.00	0.42
2:D:239:LEU:HD13	2:D:275:ARG:HD3	2.01	0.42
3:G:5028:PHE:CE1	3:G:5041:GLU:HB2	2.55	0.42
1:A:99:MET:HE3	1:A:99:MET:HB2	1.91	0.42
2:C:11:LEU:HB3	2:C:208:ILE:HG22	2.01	0.42
3:F:7044:ILE:HD12	3:F:7044:ILE:HA	1.87	0.42
2:C:42:ILE:HG21	2:C:135:ILE:HD11	2.02	0.42
3:F:7164:LYS:NZ	9:F:7301:HOH:O	2.38	0.42
4:I:19:DC:H2''	4:I:20:DG:C8	2.55	0.42
3:F:7121:GLU:O	3:F:7124:GLN:HG3	2.19	0.42
2:D:121:LEU:HD12	2:D:121:LEU:HA	1.86	0.42
3:F:7139:ALA:HA	3:F:7180:PHE:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:145:ILE:HD11	2:C:148:LEU:HD13	2.02	0.42
2:E:20:ILE:HD13	2:E:20:ILE:HA	1.88	0.42
2:D:186:ALA:HB3	2:D:219:VAL:HG13	2.01	0.41
3:F:7050:PHE:CD2	3:F:7075:GLN:HB2	2.55	0.41
1:A:22:TRP:CE3	2:B:85:ARG:HD3	2.54	0.41
2:C:125:MET:HG2	2:C:134:ILE:HD12	2.03	0.41
2:D:307:TYR:CE1	2:E:286:GLU:HA	2.55	0.41
2:E:91:PHE:CE2	2:E:102:LYS:HB3	2.56	0.41
2:B:247:VAL:HG13	2:B:310:ILE:HD11	2.03	0.41
2:B:121:LEU:O	2:B:125:MET:HG3	2.20	0.41
3:F:7176:ASN:OD1	3:F:7176:ASN:N	2.54	0.41
1:A:174:VAL:C	1:A:176:GLU:N	2.74	0.41
3:F:7130:SER:HA	3:F:7135:ILE:HB	2.03	0.41
3:G:5026:GLY:O	3:G:5048:ILE:N	2.47	0.41
2:C:176:LEU:HD22	2:C:211:LEU:HD22	2.03	0.41
3:G:5003:LEU:HD23	3:G:5003:LEU:HA	1.95	0.41
3:G:5181:ILE:HB	3:G:5221:GLU:HB2	2.02	0.41
3:H:6016:THR:HG22	3:H:6188:LYS:HD2	2.03	0.41
1:A:6:ASP:HB3	1:A:7:ASP:H	1.59	0.41
1:A:66:GLU:OE2	1:A:94:HIS:NE2	2.43	0.41
3:G:5140:ILE:HG21	3:G:5198:LEU:HD21	2.03	0.41
3:G:5180:PHE:CD1	3:G:5220:LEU:HD13	2.56	0.41
3:H:6087:ARG:HD2	3:H:6087:ARG:H	1.85	0.41
4:I:12:DA:H5'	4:I:12:DA:C8	2.56	0.41
2:B:44:HIS:CE1	2:B:133:SER:HA	2.56	0.41
2:C:206:LYS:HE2	2:D:150:SER:HA	2.03	0.41
2:E:305:LEU:HD12	2:E:305:LEU:HA	1.89	0.41
3:G:5196:LEU:HG	3:G:5198:LEU:HD11	2.03	0.41
2:E:119:ARG:HB3	2:E:122:ARG:HH21	1.86	0.40
3:H:6028:PHE:HE2	3:H:6030:MSE:HE3	1.85	0.40
3:H:6189:MSE:HE2	3:H:6189:MSE:HB3	2.03	0.40
1:A:181:LYS:HG3	1:A:182:LYS:N	2.36	0.40
2:B:176:LEU:HD11	2:B:207:THR:HG22	2.03	0.40
2:D:247:VAL:HG13	2:D:310:ILE:HD11	2.03	0.40
3:F:7140:ILE:O	3:F:7179:ASN:HA	2.20	0.40
3:F:7178:PHE:N	3:F:7178:PHE:CD1	2.89	0.40
3:H:6130:SER:HA	3:H:6135:ILE:HB	2.04	0.40
1:A:183:LEU:HD23	1:A:186:GLU:OE1	2.21	0.40
3:F:7162:ARG:NH2	9:F:7301:HOH:O	2.55	0.40
3:F:7140:ILE:HD11	3:F:7180:PHE:CD1	2.56	0.40
2:E:243:LYS:HG2	2:E:318:TRP:CD2	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:6125:GLN:OE1	3:H:6165:TYR:OH	2.38	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	184/187 (98%)	177 (96%)	4 (2%)	3 (2%)	9	18
2	B	317/324 (98%)	303 (96%)	13 (4%)	1 (0%)	41	62
2	C	318/324 (98%)	304 (96%)	14 (4%)	0	100	100
2	D	317/324 (98%)	307 (97%)	10 (3%)	0	100	100
2	E	310/324 (96%)	295 (95%)	14 (4%)	1 (0%)	41	62
3	F	226/228 (99%)	206 (91%)	20 (9%)	0	100	100
3	G	226/228 (99%)	216 (96%)	10 (4%)	0	100	100
3	H	226/228 (99%)	209 (92%)	16 (7%)	1 (0%)	34	55
All	All	2124/2167 (98%)	2017 (95%)	101 (5%)	6 (0%)	41	62

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	E	226	SER
3	H	6086	ALA
1	A	36	ALA
1	A	7	ASP
1	A	9	GLN
2	B	236	ASP

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

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	162/163 (99%)	154 (95%)	8 (5%)	25	46
2	B	277/279 (99%)	276 (100%)	1 (0%)	91	97
2	C	278/279 (100%)	274 (99%)	4 (1%)	67	84
2	D	277/279 (99%)	271 (98%)	6 (2%)	52	74
2	E	272/279 (98%)	260 (96%)	12 (4%)	28	52
3	F	189/183 (103%)	171 (90%)	18 (10%)	8	15
3	G	189/183 (103%)	182 (96%)	7 (4%)	34	58
3	H	189/183 (103%)	178 (94%)	11 (6%)	20	38
All	All	1833/1828 (100%)	1766 (96%)	67 (4%)	34	58

All (67) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	GLU
1	A	52	LYS
1	A	99	MET
1	A	116	GLU
1	A	117	ASP
1	A	122	LEU
1	A	180	LEU
1	A	181	LYS
2	B	235	ILE
2	C	109	PHE
2	C	122	ARG
2	C	240	GLU
2	C	276	VAL
2	D	2	ILE
2	D	7	LYS
2	D	121	LEU
2	D	122	ARG
2	D	230	ASN
2	D	284	MET

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	E	90	ASN
2	E	109	PHE
2	E	111	ARG
2	E	170	LYS
2	E	185	ILE
2	E	214	TYR
2	E	219	VAL
2	E	221	ASP
2	E	228	VAL
2	E	237	ASP
2	E	260	ASP
2	E	314	CYS
3	F	7001	MSE
3	F	7119	LYS
3	F	7122	ASP
3	F	7128	ARG
3	F	7138	ILE
3	F	7142	VAL
3	F	7147	ILE
3	F	7150	ASN
3	F	7152	PHE
3	F	7162	ARG
3	F	7169	LEU
3	F	7176	ASN
3	F	7178	PHE
3	F	7184	MSE
3	F	7189	MSE
3	F	7196	LEU
3	F	7201	LYS
3	F	7226	HIS
3	G	5001	MSE
3	G	5038	THR
3	G	5066	LEU
3	G	5078	ASP
3	G	5117	GLU
3	G	5119	LYS
3	G	5189	MSE
3	H	6039	TYR
3	H	6066	LEU
3	H	6077	GLU
3	H	6078	ASP
3	H	6082	LYS

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Mol	Chain	Res	Type
3	H	6087	ARG
3	H	6099	THR
3	H	6104	ASN
3	H	6117	GLU
3	H	6126	LEU
3	H	6217	VAL

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 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	08T	D	401	7	26,33,33	1.84	6 (23%)	25,52,52	1.60	4 (16%)
8	ADP	E	401	7	24,29,29	0.96	1 (4%)	29,45,45	1.50	4 (13%)
6	08T	C	401	7	26,33,33	1.86	6 (23%)	25,52,52	1.60	4 (16%)
6	08T	B	401	7	26,33,33	1.85	6 (23%)	25,52,52	1.61	5 (20%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	08T	D	401	7	-	2/12/38/38	0/3/3/3
8	ADP	E	401	7	-	2/12/32/32	0/3/3/3
6	08T	C	401	7	-	0/12/38/38	0/3/3/3
6	08T	B	401	7	-	3/12/38/38	0/3/3/3

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	C	401	08T	C2'-C1'	-4.69	1.46	1.53
6	D	401	08T	C2'-C1'	-4.63	1.46	1.53
6	B	401	08T	C2'-C1'	-4.54	1.46	1.53
6	B	401	08T	C2'-C3'	-4.18	1.41	1.53
6	D	401	08T	C2'-C3'	-4.10	1.42	1.53
6	C	401	08T	C2'-C3'	-4.09	1.42	1.53
6	D	401	08T	F2-BE	-3.54	1.45	1.54
6	B	401	08T	F2-BE	-3.49	1.45	1.54
6	C	401	08T	F2-BE	-3.47	1.45	1.54
6	C	401	08T	O4'-C4'	-2.70	1.39	1.45
6	B	401	08T	O4'-C4'	-2.64	1.39	1.45
6	D	401	08T	O4'-C4'	-2.54	1.39	1.45
8	E	401	ADP	C5-C4	2.48	1.47	1.40
6	C	401	08T	C6-N6	2.35	1.42	1.34
6	D	401	08T	C6-N6	2.35	1.42	1.34
6	B	401	08T	C6-N6	2.32	1.42	1.34
6	C	401	08T	C3'-C4'	-2.22	1.47	1.53
6	B	401	08T	C3'-C4'	-2.18	1.47	1.53
6	D	401	08T	C3'-C4'	-2.11	1.47	1.53

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	C	401	08T	N3-C2-N1	-5.47	120.13	128.68
6	B	401	08T	N3-C2-N1	-5.36	120.30	128.68
6	D	401	08T	N3-C2-N1	-5.28	120.43	128.68
8	E	401	ADP	C3'-C2'-C1'	3.73	106.60	100.98
8	E	401	ADP	PA-O3A-PB	-3.41	121.14	132.83
8	E	401	ADP	N3-C2-N1	-3.11	123.82	128.68
6	D	401	08T	PB-O3A-PA	-3.07	122.28	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	B	401	08T	PB-O3A-PA	-3.06	122.31	132.83
6	C	401	08T	PB-O3A-PA	-2.98	122.62	132.83
8	E	401	ADP	C4-C5-N7	-2.67	106.61	109.40
6	C	401	08T	O5'-C5'-C4'	2.49	117.55	108.99
6	B	401	08T	O5'-C5'-C4'	2.41	117.30	108.99
6	D	401	08T	C4-C5-N7	-2.40	106.89	109.40
6	D	401	08T	O5'-C5'-C4'	2.37	117.16	108.99
6	B	401	08T	C4-C5-N7	-2.35	106.95	109.40
6	C	401	08T	C4-C5-N7	-2.31	107.00	109.40
6	B	401	08T	C3'-C2'-C1'	2.03	104.03	100.98

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	E	401	ADP	O4'-C4'-C5'-O5'
8	E	401	ADP	C3'-C4'-C5'-O5'
6	B	401	08T	PA-O3A-PB-O2B
6	D	401	08T	C3'-C4'-C5'-O5'
6	D	401	08T	O4'-C4'-C5'-O5'
6	B	401	08T	C5'-O5'-PA-O3A
6	B	401	08T	C5'-O5'-PA-O2A

There are no ring outliers.

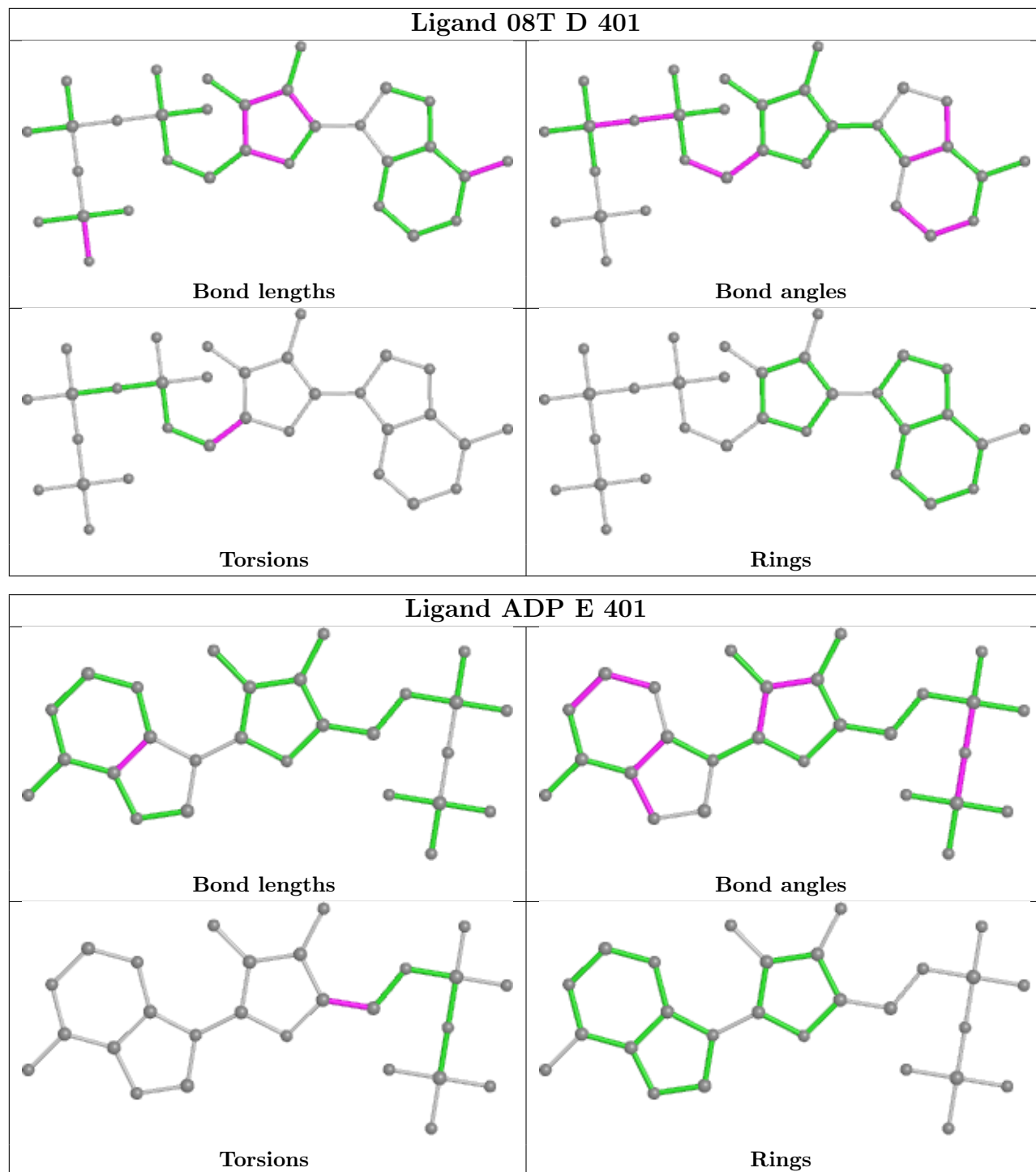
3 monomers are involved in 3 short contacts:

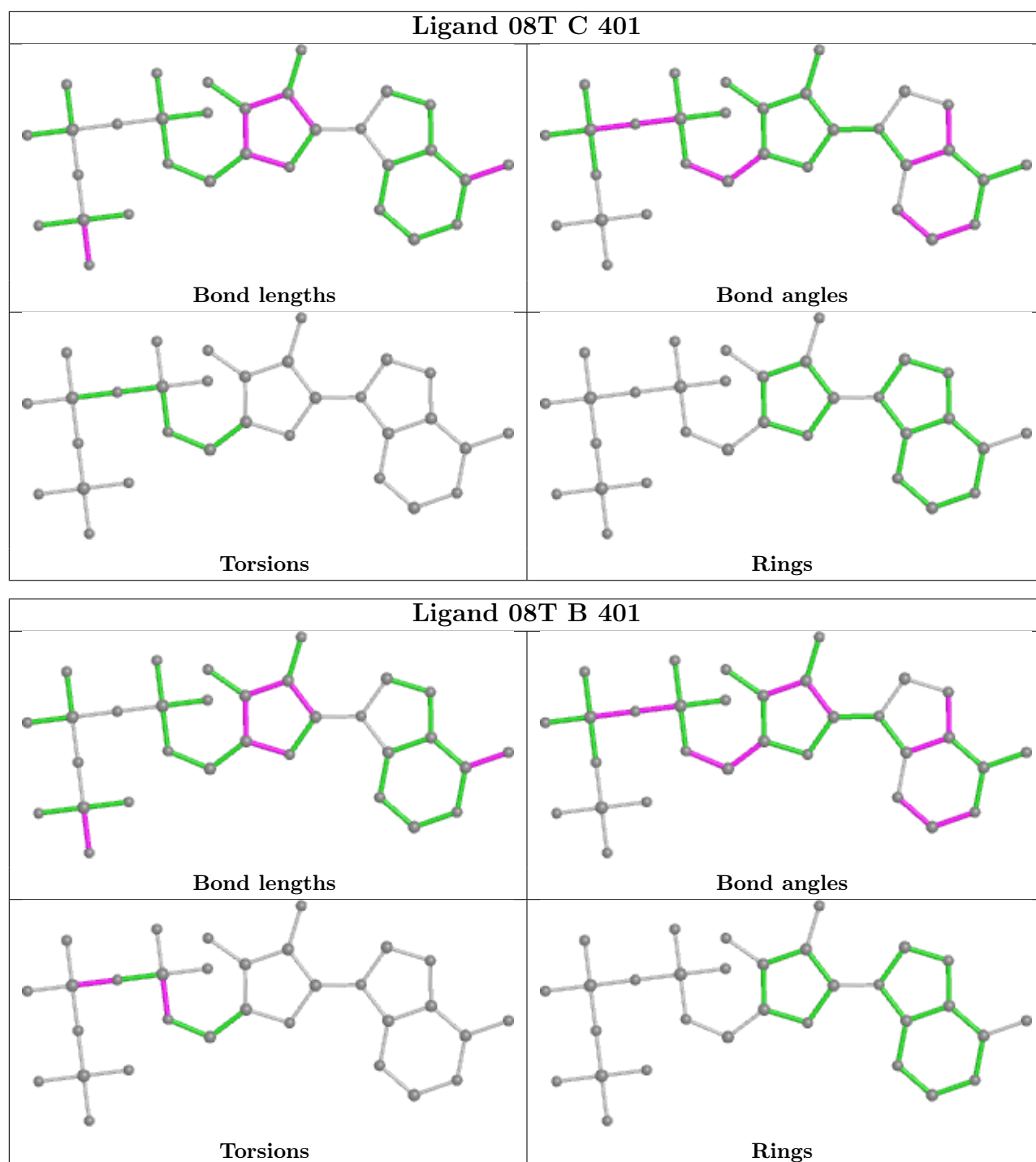
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	D	401	08T	1	0
8	E	401	ADP	1	0
6	C	401	08T	1	0

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 [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	186/187 (99%)	-0.03	5 (2%) 54 49	18, 46, 87, 108	0
2	B	319/324 (98%)	-0.40	1 (0%) 94 93	16, 33, 55, 74	0
2	C	320/324 (98%)	-0.33	0 100 100	12, 26, 50, 88	0
2	D	319/324 (98%)	-0.19	5 (1%) 72 68	9, 27, 74, 107	0
2	E	314/324 (96%)	-0.20	3 (0%) 82 80	14, 36, 68, 92	0
3	F	222/228 (97%)	1.51	77 (34%) 0 0	41, 87, 136, 147	0
3	G	222/228 (97%)	-0.20	0 100 100	26, 48, 73, 95	0
3	H	222/228 (97%)	0.32	15 (6%) 17 13	31, 60, 108, 128	0
4	I	24/30 (80%)	0.07	1 (4%) 36 30	20, 47, 165, 185	0
5	J	20/20 (100%)	-0.26	1 (5%) 28 23	29, 67, 170, 177	0
All	All	2168/2217 (97%)	-0.00	108 (4%) 28 23	9, 40, 104, 185	0

All (108) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	F	7178	PHE	7.7
3	F	7140	ILE	7.6
3	F	7147	ILE	7.4
3	F	7145	GLY	7.1
3	F	7165	TYR	6.9
4	I	30	DC	6.2
3	F	7148	VAL	6.0
3	F	7123	LEU	5.9
3	F	7111	VAL	5.9
3	F	7169	LEU	5.5
3	F	7159	ALA	5.4
1	A	183	LEU	5.4
3	F	7152	PHE	5.2

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
3	H	6073	ILE	5.2
3	F	7138	ILE	5.1
3	F	7196	LEU	5.0
3	F	7141	THR	4.9
3	F	7197	LEU	4.9
3	F	7167	LEU	4.7
3	F	7206	ALA	4.6
3	F	7144	GLU	4.6
3	F	7125	GLN	4.5
3	F	7151	GLY	4.4
3	F	7150	ASN	4.3
3	H	6083	ILE	4.2
3	F	7180	PHE	4.2
3	F	7146	LYS	4.2
3	F	7133	LEU	4.2
3	F	7220	LEU	4.1
3	F	7155	VAL	4.1
3	F	7166	SER	4.1
3	F	7149	ILE	4.0
3	F	7182	ILE	4.0
3	F	7122	ASP	4.0
3	F	7129	VAL	4.0
3	F	7168	THR	3.8
3	F	7171	ASP	3.8
3	F	7173	ASP	3.8
3	F	7132	GLY	3.8
3	H	6003	LEU	3.8
3	F	7160	LEU	3.7
3	H	6077	GLU	3.7
2	B	97	PHE	3.7
2	E	220	LEU	3.7
3	F	7198	LEU	3.7
5	J	1	DG	3.6
3	F	7115	VAL	3.6
3	F	7118	ILE	3.5
2	D	97	PHE	3.5
3	F	7164	LYS	3.5
3	F	7179	ASN	3.3
3	F	7209	PHE	3.3
3	H	6088	SER	3.3
3	F	7142	VAL	3.3
1	A	108	TYR	3.2

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Mol	Chain	Res	Type	RSRZ
3	F	7139	ALA	3.2
2	D	220	LEU	3.2
3	H	6091	PHE	3.2
3	F	7163	VAL	3.1
3	H	6002	LYS	3.0
3	F	7188	LYS	2.9
3	H	6060	PHE	2.9
2	E	187	ILE	2.9
3	F	7006	ASP	2.9
3	F	7109	PHE	2.9
3	H	6074	SER	2.9
3	F	7116	THR	2.9
3	H	6090	ILE	2.9
3	H	6170	GLY	2.8
3	F	7156	GLU	2.8
3	H	6084	ALA	2.7
3	F	7136	ASP	2.7
3	F	7131	ARG	2.7
3	F	7137	THR	2.5
2	D	219	VAL	2.5
3	H	6067	VAL	2.5
3	F	7203	LYS	2.5
3	F	7170	GLY	2.5
3	F	7191	PRO	2.4
3	F	7143	LYS	2.4
3	F	7124	GLN	2.4
3	F	7226	HIS	2.4
3	H	6066	LEU	2.3
3	F	7199	TRP	2.3
3	F	7172	TYR	2.3
2	D	221	ASP	2.3
1	A	37	GLU	2.3
3	F	7029	ILE	2.3
3	F	7126	LEU	2.2
3	F	7213	HIS	2.2
2	E	219	VAL	2.2
3	F	7175	GLU	2.2
3	F	7222	ALA	2.2
3	F	7107	ILE	2.2
3	F	7181	ILE	2.2
3	F	7114	ALA	2.2
3	F	7028	PHE	2.2

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Mol	Chain	Res	Type	RSRZ
3	F	7128	ARG	2.1
1	A	158	LEU	2.1
3	H	6065	SER	2.1
3	F	7228	PHE	2.1
3	F	7112	ALA	2.1
1	A	116	GLU	2.1
3	F	7108	PRO	2.0
3	F	7207	ALA	2.0
2	D	222	ALA	2.0
3	F	7221	GLU	2.0
3	F	7161	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 monosaccharides in this entry.

## 6.4 Ligands [i](#)

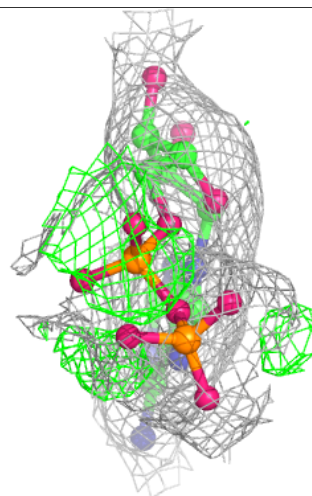
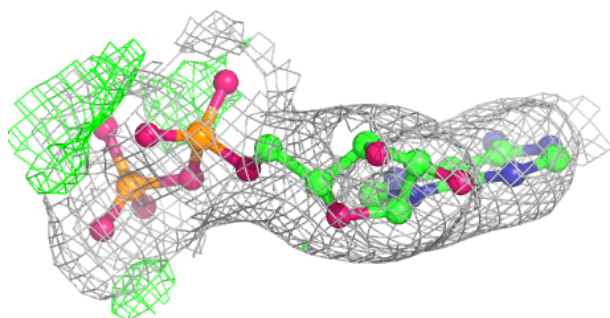
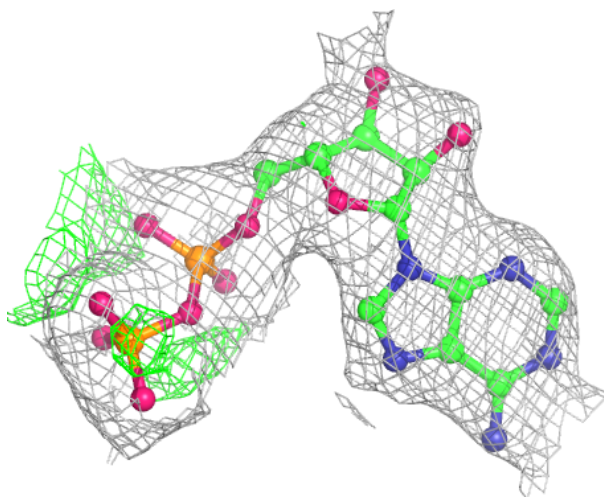
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 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
8	ADP	E	401	27/27	0.96	0.18	25,36,49,68	0
6	08T	D	401	31/31	0.97	0.16	14,21,29,33	0
6	08T	C	401	31/31	0.97	0.19	10,18,24,25	0
7	MG	B	402	1/1	0.98	0.29	22,22,22,22	0
6	08T	B	401	31/31	0.98	0.17	14,26,37,49	0
7	MG	D	402	1/1	0.99	0.23	11,11,11,11	0
7	MG	E	402	1/1	0.99	0.34	20,20,20,20	0
7	MG	C	402	1/1	0.99	0.25	12,12,12,12	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.

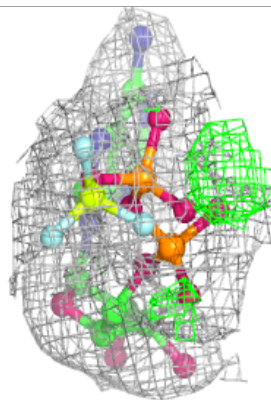
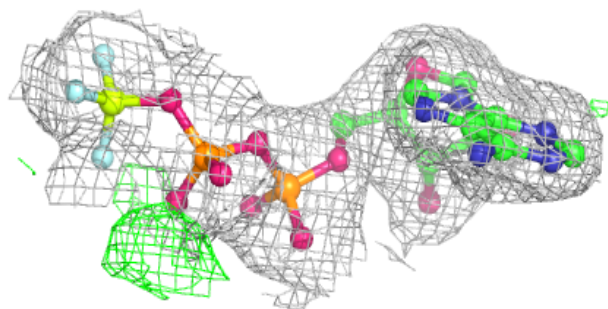
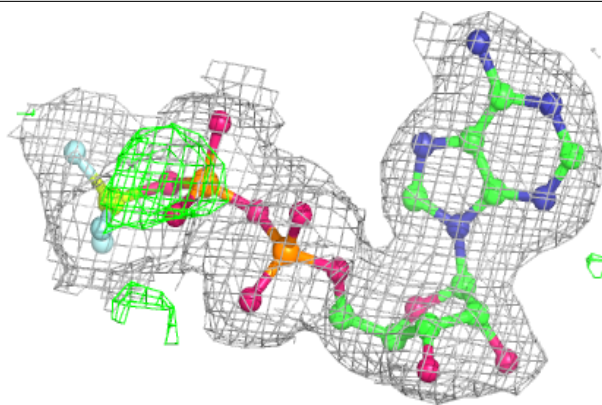
**Electron density around ADP E 401:**

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

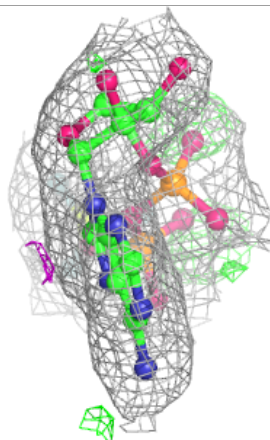
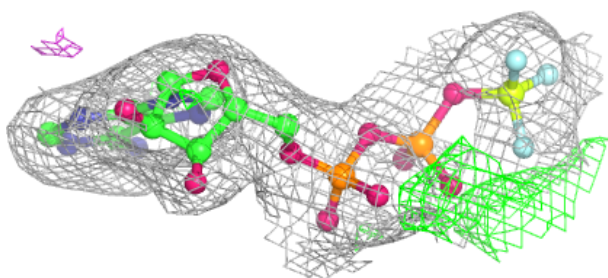
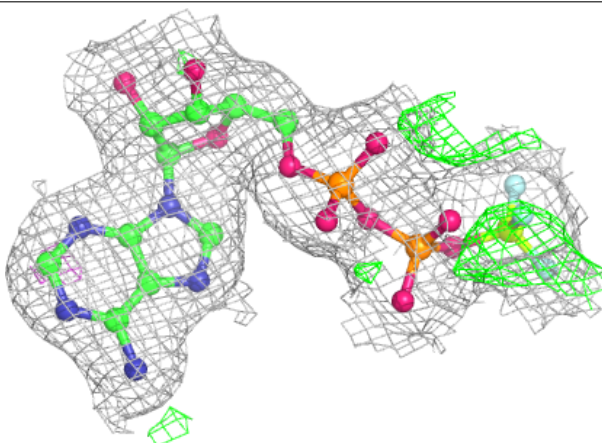


**Electron density around 08T D 401:**

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

**Electron density around 08T C 401:**

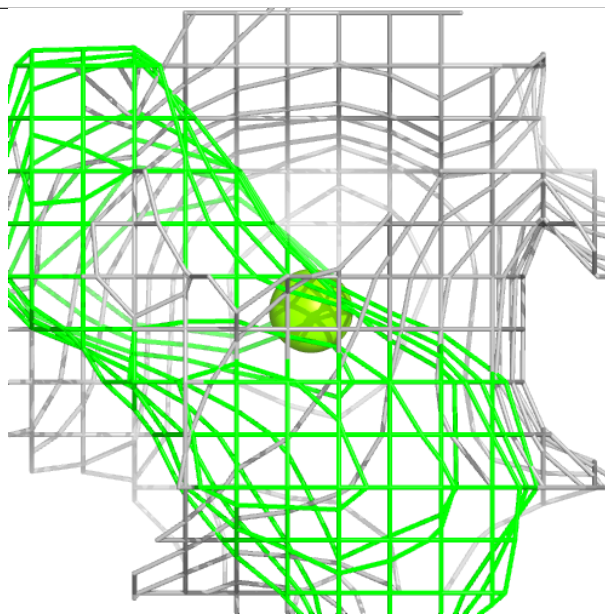
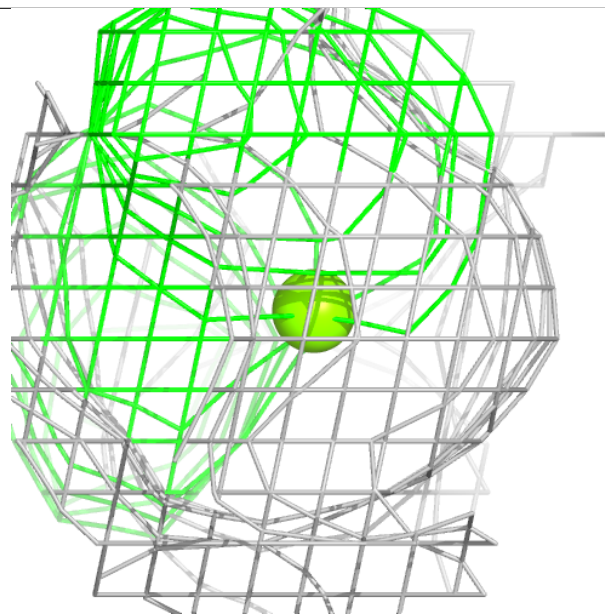
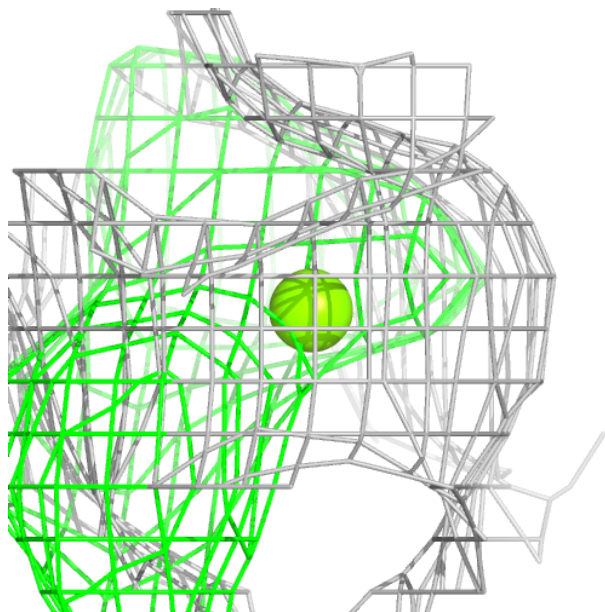
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 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





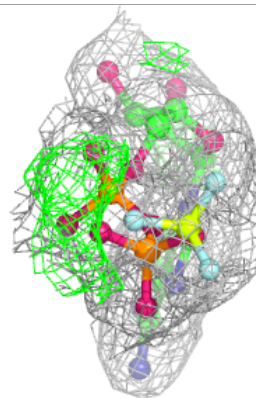
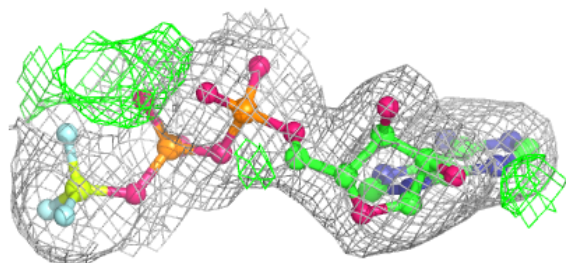
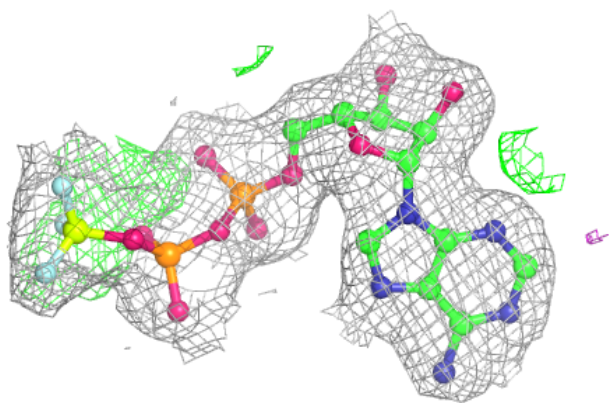
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 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



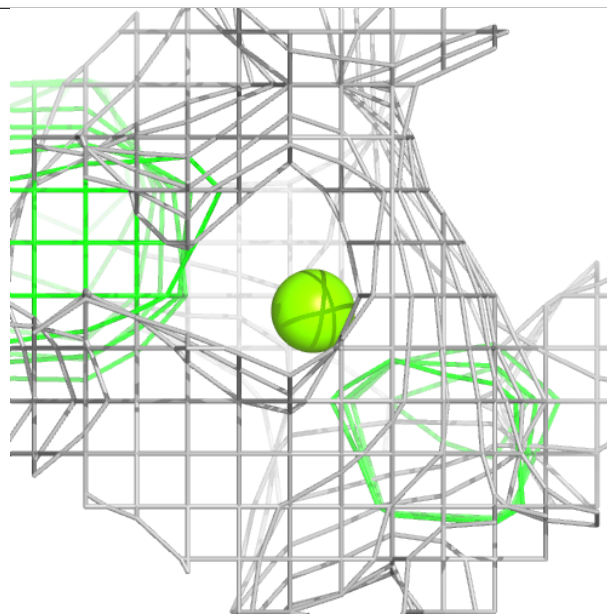
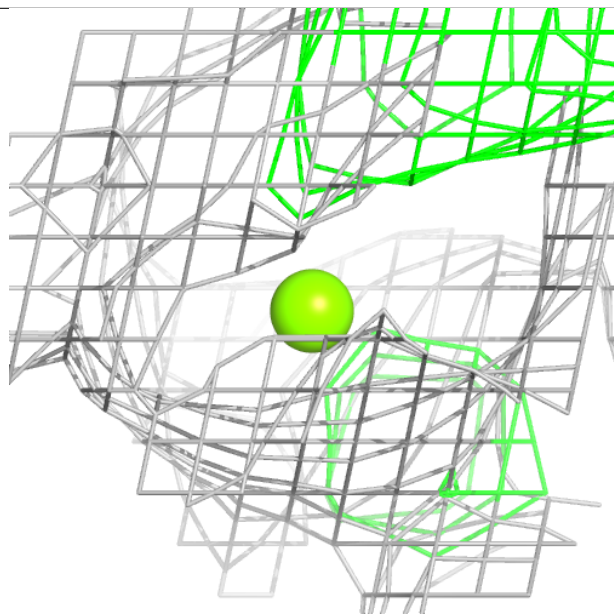
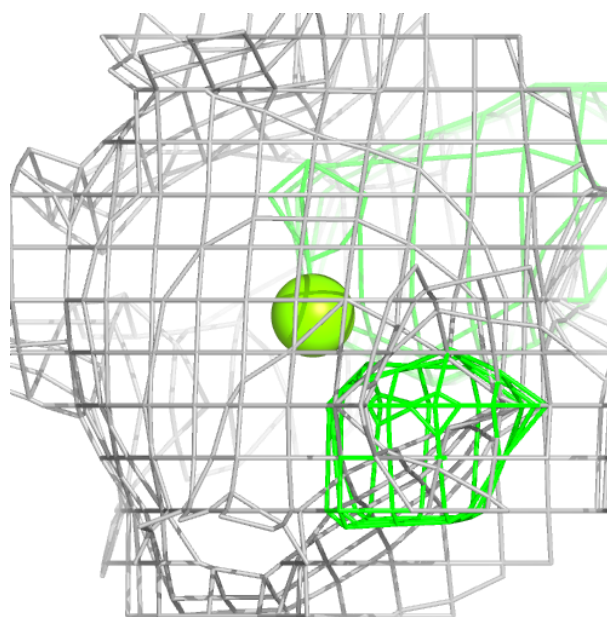
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 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



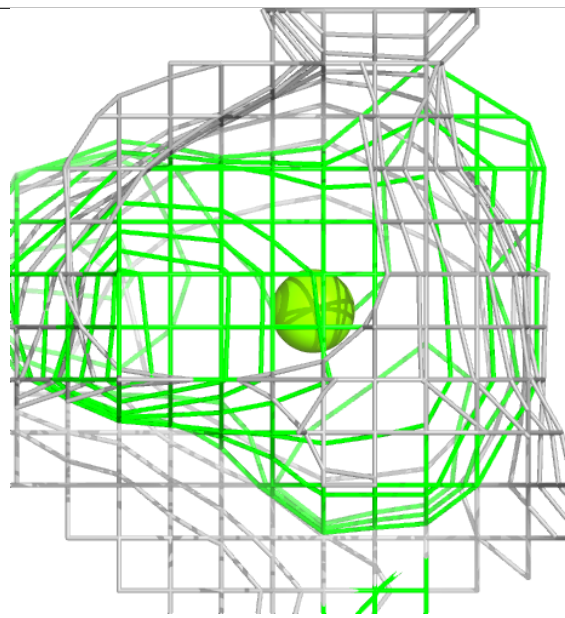
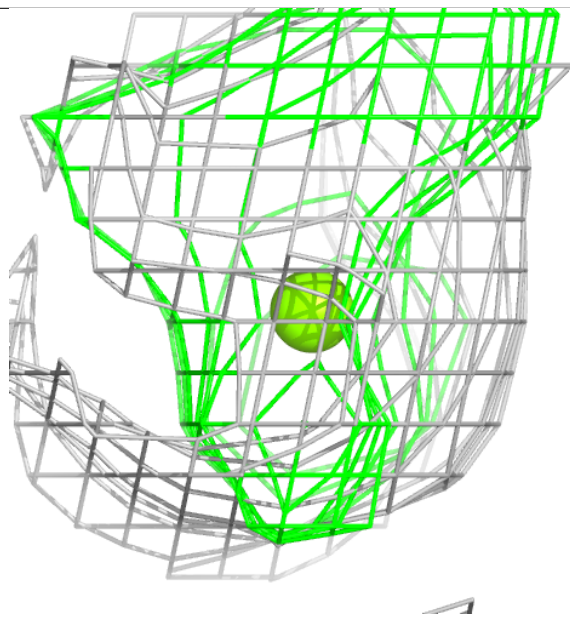
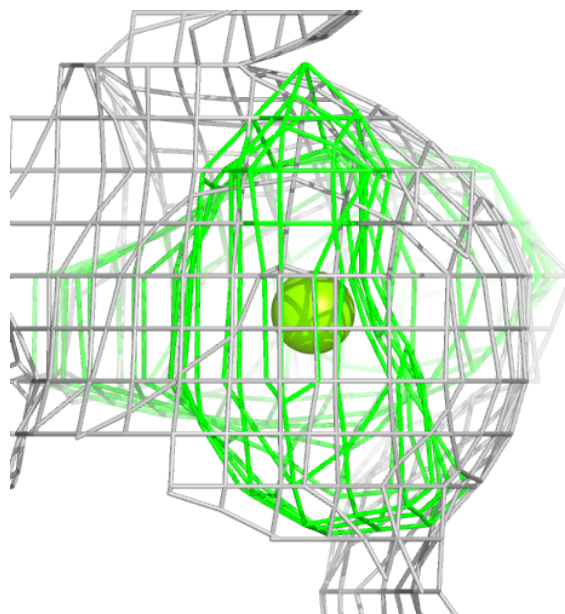
**Electron density around MG D 402:**

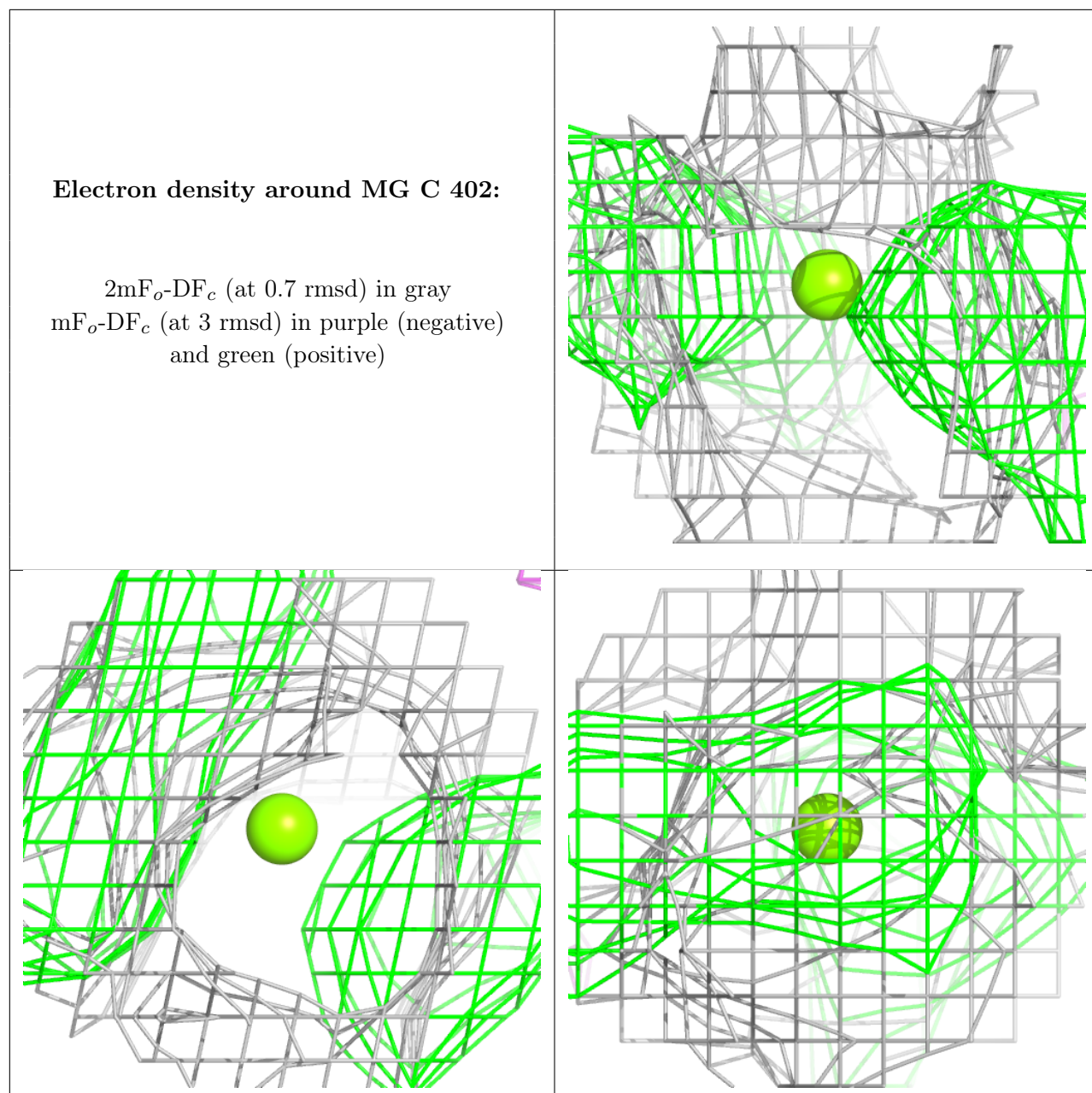
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



**Electron density around MG E 402:**

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





## 6.5 Other polymers ⓘ

There are no such residues in this entry.