



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 14, 2023 – 10:44 am BST

PDB ID : 7PLI  
Title : DEAD-box helicase DbpA bound to single stranded RNA and ADP/BeF3  
Authors : Wurm, J.P.  
Deposited on : 2021-08-31  
Resolution : 2.50 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 : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.35.1  
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) : 2.35.1

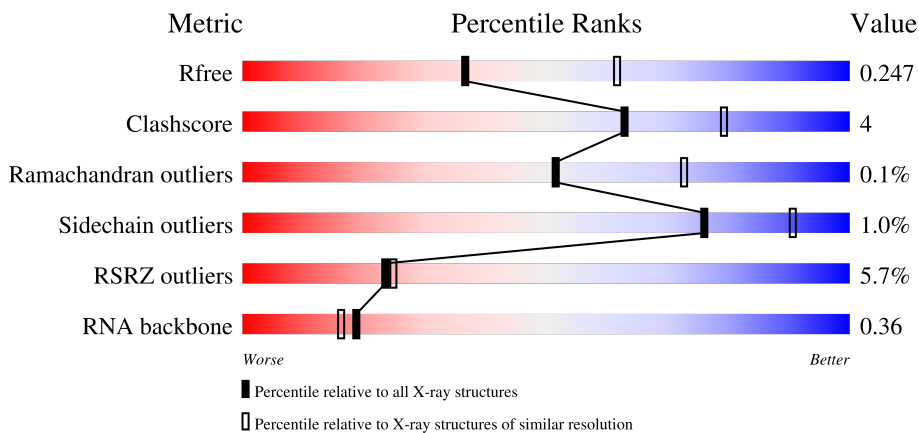
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*





The reported resolution of this entry is 2.50 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	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)
RNA backbone	3102	1008 (2.84-2.16)

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	459	 91% 8%
1	B	459	 90% 10%
1	E	459	 89% 10%
1	F	459	 14% 83% 15%

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Mol	Chain	Length	Quality of chain
1	I	459	<p>12% 84% 14%</p>
1	J	459	<p>4% 87% 11%</p>
2	C	24	<p>4% 63% 29%</p>
2	D	24	<p>12% 63% 29%</p>
2	G	24	<p>58% 29% 8%</p>
2	H	24	<p>8% 71% 21%</p>
2	K	24	<p>8% 54% 42%</p>
2	L	24	<p>63% 21% 12%</p>

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 23591 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 ATP-dependent RNA helicase DbpA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	457	3451	2167	621	645	18	0	0	0
1	B	456	3443	2163	619	643	18	0	0	0
1	E	457	3451	2167	621	645	18	0	0	0
1	J	453	3420	2149	615	639	17	0	0	0
1	I	451	3406	2140	613	636	17	0	0	0
1	F	451	3409	2142	613	637	17	0	0	0

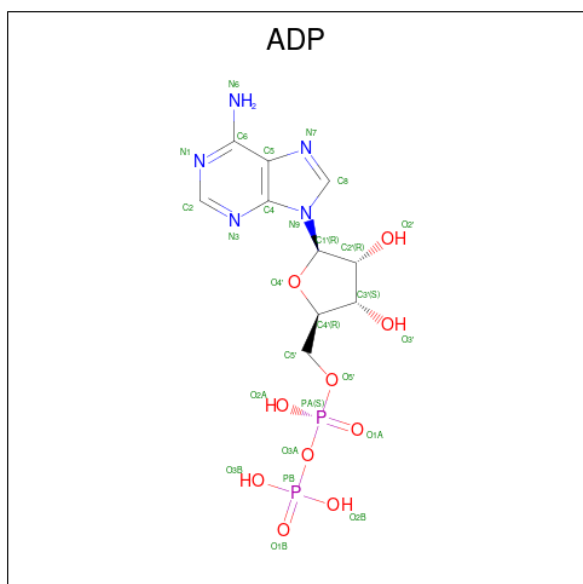
There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP P21693
A	0	GLY	-	expression tag	UNP P21693
B	-1	GLY	-	expression tag	UNP P21693
B	0	GLY	-	expression tag	UNP P21693
E	-1	GLY	-	expression tag	UNP P21693
E	0	GLY	-	expression tag	UNP P21693
J	-1	GLY	-	expression tag	UNP P21693
J	0	GLY	-	expression tag	UNP P21693
I	-1	GLY	-	expression tag	UNP P21693
I	0	GLY	-	expression tag	UNP P21693
F	-1	GLY	-	expression tag	UNP P21693
F	0	GLY	-	expression tag	UNP P21693

- Molecule 2 is a RNA chain called RNA (5'-D\*(POP))-R(P\*GP\*GP\*AP\*CP\*AP\*UP\*AP\*UP\*GP\*GP\*CP\*UP\*GP\*UP\*UP\*CP\*GP\*CP\*CP\*AP\*UP\*U)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	23	Total	C	N	O	P	0	2	0
			517	227	86	178	26			
2	C	23	Total	C	N	O	P	0	0	0
			467	204	77	162	24			
2	G	22	Total	C	N	O	P	0	0	0
			448	195	76	154	23			
2	L	23	Total	C	N	O	P	0	0	0
			451	195	75	157	24			
2	K	23	Total	C	N	O	P	0	0	0
			467	204	77	162	24			
2	H	23	Total	C	N	O	P	0	0	0
			445	191	75	155	24			

- Molecule 3 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ).



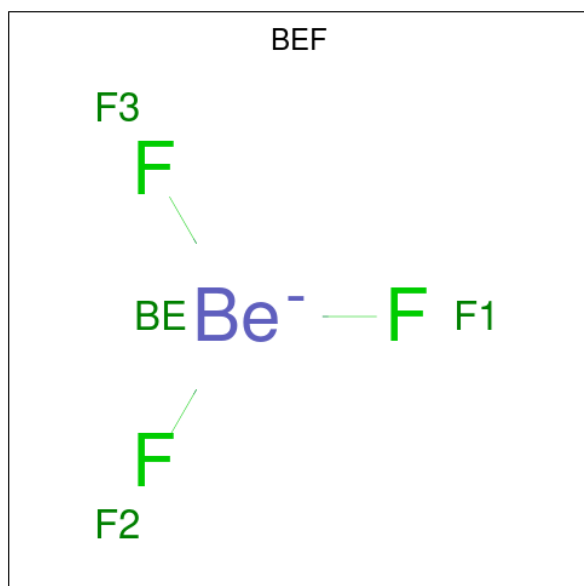
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
3	B	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
3	E	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
3	J	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
3	I	1	Total	C	N	O	P	0	0
			27	10	5	10	2		

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

- Molecule 4 is BERYLLIUM TRIFLUORIDE ION (three-letter code: BEF) (formula: BeF<sub>3</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	Be	F		
4	A	1	4	1	3	0	0
4	B	1	4	1	3	0	0
4	E	1	4	1	3	0	0
4	J	1	4	1	3	0	0
4	I	1	4	1	3	0	0
4	F	1	4	1	3	0	0

- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	E	1	Total Mg 1 1	0	0
5	J	1	Total Mg 1 1	0	0
5	I	1	Total Mg 1 1	0	0
5	F	1	Total Mg 1 1	0	0

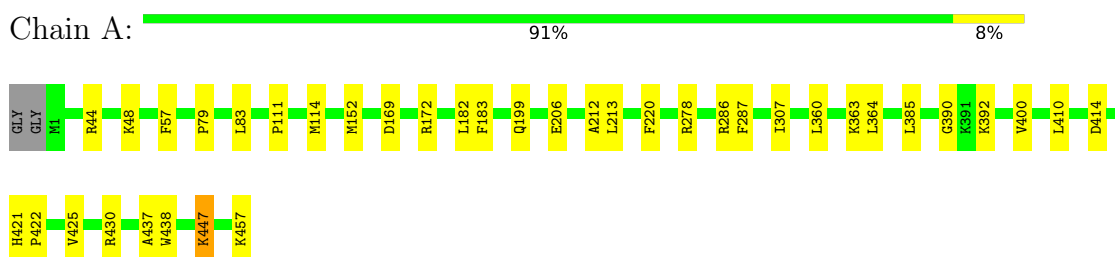
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	4	Total O 4 4	0	0
6	B	4	Total O 4 4	0	0
6	E	4	Total O 4 4	0	0
6	J	4	Total O 4 4	0	0
6	I	4	Total O 4 4	0	0
6	F	4	Total O 4 4	0	0

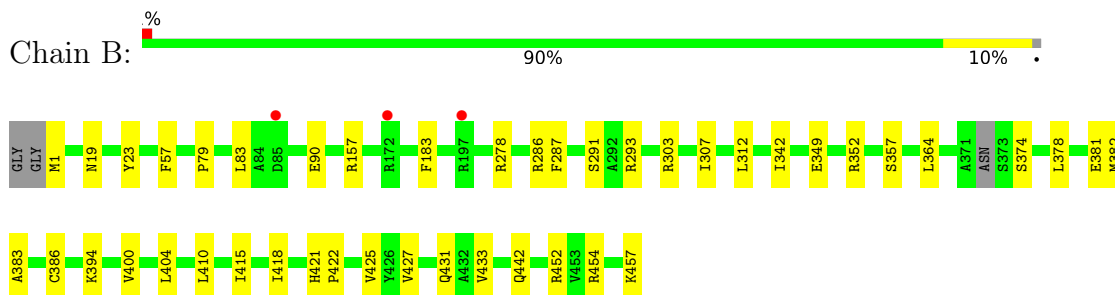
### 3 Residue-property plots [i](#)

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.

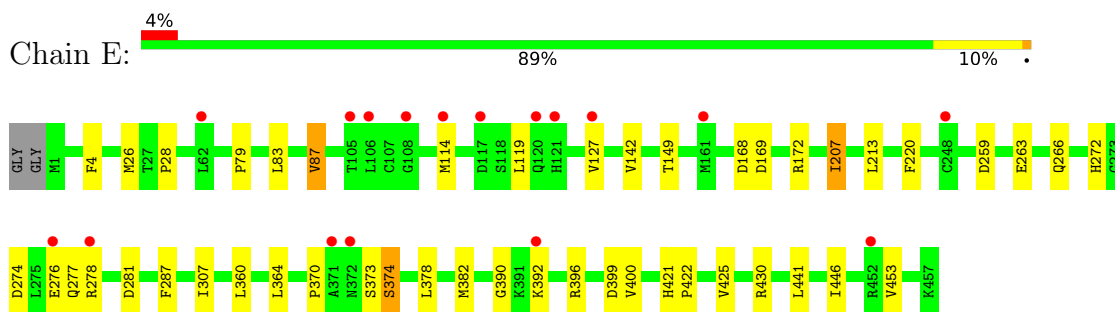
- Molecule 1: ATP-dependent RNA helicase DbpA



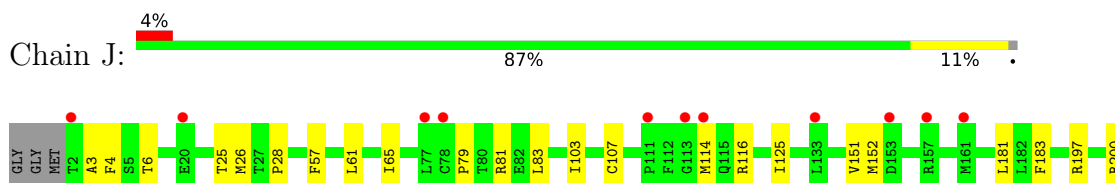
- Molecule 1: ATP-dependent RNA helicase DbpA



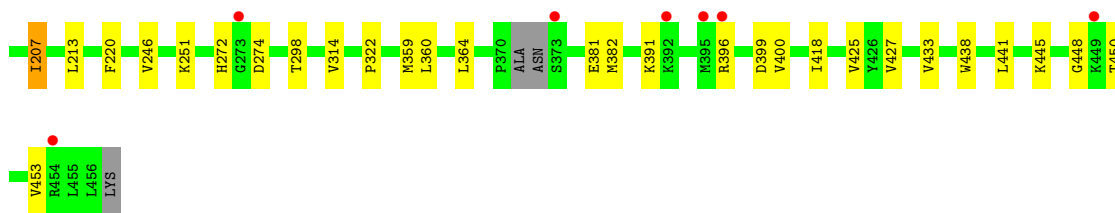
- Molecule 1: ATP-dependent RNA helicase DbpA



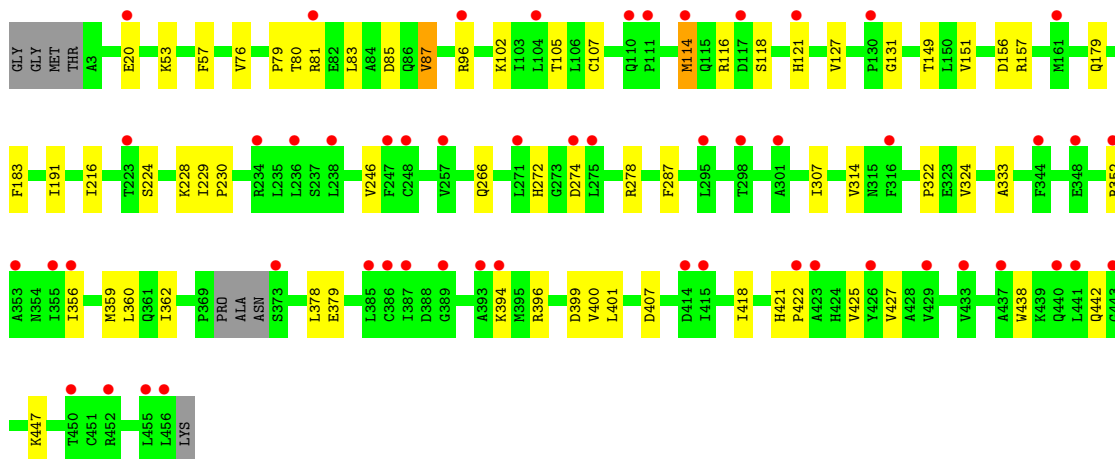
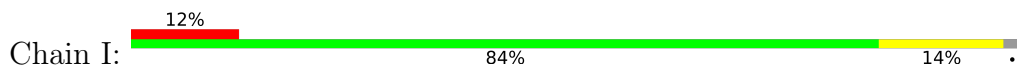
- Molecule 1: ATP-dependent RNA helicase DbpA



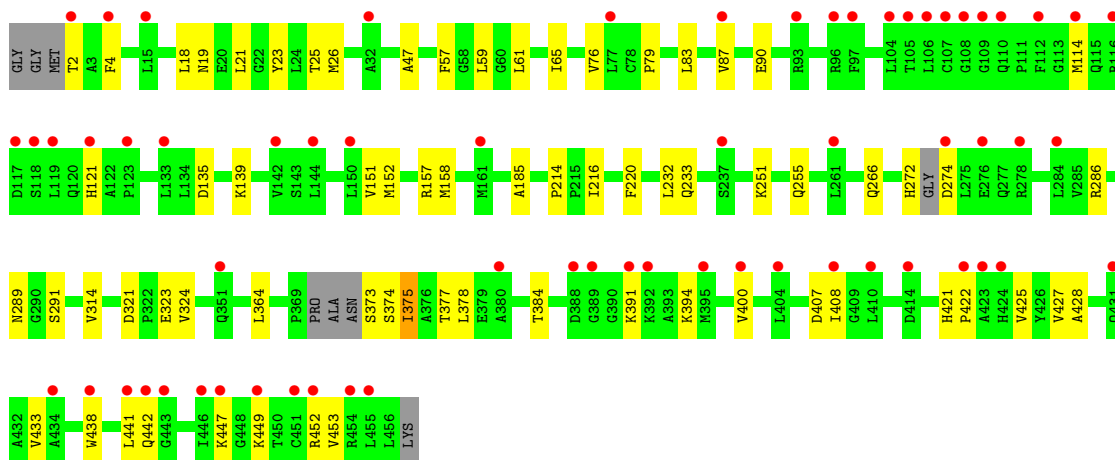
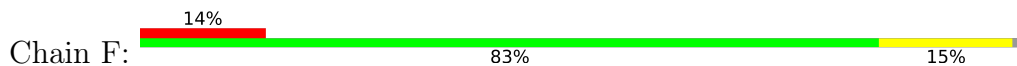




- Molecule 1: ATP-dependent RNA helicase DbpA

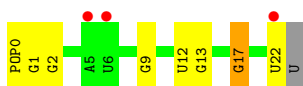


- Molecule 1: ATP-dependent RNA helicase DbpA



- Molecule 2: RNA (5'-D\*(POP))-R(P\*GP\*GP\*AP\*CP\*AP\*UP\*AP\*UP\*GP\*GP\*CP\*UP\*GP\*UP\*UP\*CP\*GP\*CP\*CP\*AP\*UP\*U)-3')





- Molecule 2: RNA (5'-D\*(POP))-R(P\*GP\*GP\*AP\*CP\*AP\*UP\*AP\*UP\*GP\*GP\*CP\*UP\*GP\*UP\*UP\*CP\*GP\*CP\*CP\*AP\*UP\*U)-3')



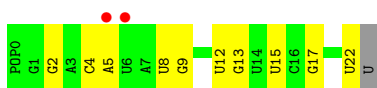
- Molecule 2: RNA (5'-D\*(POP))-R(P\*GP\*GP\*AP\*CP\*AP\*UP\*AP\*UP\*GP\*GP\*CP\*UP\*GP\*UP\*UP\*CP\*GP\*CP\*CP\*AP\*UP\*U)-3')



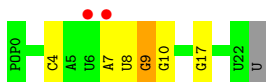
- Molecule 2: RNA (5'-D\*(POP))-R(P\*GP\*GP\*AP\*CP\*AP\*UP\*AP\*UP\*GP\*GP\*CP\*UP\*GP\*UP\*UP\*CP\*GP\*CP\*CP\*AP\*UP\*U)-3')



- Molecule 2: RNA (5'-D\*(POP))-R(P\*GP\*GP\*AP\*CP\*AP\*UP\*AP\*UP\*GP\*GP\*CP\*UP\*GP\*UP\*UP\*CP\*GP\*CP\*CP\*AP\*UP\*U)-3')



- Molecule 2: RNA (5'-D\*(POP))-R(P\*GP\*GP\*AP\*CP\*AP\*UP\*AP\*UP\*GP\*GP\*CP\*UP\*GP\*UP\*UP\*CP\*GP\*CP\*CP\*AP\*UP\*U)-3')



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	58.64Å 121.60Å 122.42Å 97.16° 92.43° 103.44°	Depositor
Resolution (Å)	56.88 – 2.50 90.71 – 2.50	Depositor EDS
% Data completeness (in resolution range)	96.6 (56.88-2.50) 96.6 (90.71-2.50)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.82 (at 2.51Å)	Xtrriage
Refinement program	PHENIX 1.18.2_3874+SVN	Depositor
R, $R_{free}$	0.213 , 0.247 0.214 , 0.247	Depositor DCC
$R_{free}$ test set	5443 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	51.8	Xtrriage
Anisotropy	0.456	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 34.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.034 for h,-h-k,-l	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	23591	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	69.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.35% 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: MG, BEF, POP, 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	0.27	0/3506	0.50	0/4756
1	B	0.27	0/3497	0.49	0/4742
1	E	0.27	0/3506	0.49	0/4756
1	F	0.29	0/3461	0.52	1/4694 (0.0%)
1	I	0.28	0/3459	0.52	0/4692
1	J	0.26	0/3474	0.49	0/4714
2	C	0.24	0/510	0.83	2/792 (0.3%)
2	D	0.22	0/566	0.78	1/879 (0.1%)
2	G	0.25	0/489	0.90	0/760
2	H	0.24	0/484	0.79	0/752
2	K	0.25	0/510	0.87	1/792 (0.1%)
2	L	0.28	0/492	0.87	0/765
All	All	0.27	0/23954	0.56	5/33094 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	21	LEU	CB-CG-CD2	-5.72	101.28	111.00
2	C	2	G	P-O3'-C3'	5.50	126.30	119.70
2	D	2	G	P-O3'-C3'	5.30	126.06	119.70
2	K	2	G	P-O3'-C3'	5.17	125.90	119.70
2	C	1	G	OP1-P-OP2	-5.06	112.00	119.60

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	3451	0	3538	24	0
1	B	3443	0	3531	26	0
1	E	3451	0	3538	30	0
1	F	3409	0	3490	44	0
1	I	3406	0	3487	45	0
1	J	3420	0	3501	33	0
2	C	467	0	232	1	0
2	D	517	0	257	3	0
2	G	448	0	223	3	0
2	H	445	0	215	3	0
2	K	467	0	232	3	0
2	L	451	0	221	2	0
3	A	27	0	12	0	0
3	B	27	0	12	1	0
3	E	27	0	12	0	0
3	F	27	0	12	1	0
3	I	27	0	12	1	0
3	J	27	0	12	1	0
4	A	4	0	0	0	0
4	B	4	0	0	0	0
4	E	4	0	0	0	0
4	F	4	0	0	0	0
4	I	4	0	0	0	0
4	J	4	0	0	0	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	E	1	0	0	0	0
5	F	1	0	0	0	0
5	I	1	0	0	0	0
5	J	1	0	0	0	0
6	A	4	0	0	0	0
6	B	4	0	0	1	0
6	E	4	0	0	0	0
6	F	4	0	0	0	0
6	I	4	0	0	0	0
6	J	4	0	0	0	0
All	All	23591	0	22537	198	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 (198) 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:E:278:ARG:NH2	1:F:452:ARG:HH12	1.72	0.86
1:F:272:HIS:HE1	1:F:274:ASP:HB2	1.42	0.82
1:B:410:LEU:HD21	1:B:433:VAL:HG11	1.64	0.79
1:E:278:ARG:NH2	1:F:452:ARG:NH1	2.32	0.78
1:J:381:GLU:HG3	1:J:382:MET:HG2	1.67	0.77
1:E:278:ARG:CZ	1:F:452:ARG:NH1	2.50	0.74
1:I:149:THR:HG22	1:I:179:GLN:HB3	1.73	0.70
1:I:400:VAL:HG21	1:I:425:VAL:HG11	1.75	0.68
1:F:157:ARG:HH22	1:F:324:VAL:HG22	1.59	0.68
1:F:121:HIS:ND1	2:H:8:U:O2'	2.22	0.68
1:I:266:GLN:HG2	1:I:378:LEU:HD13	1.77	0.67
1:B:381:GLU:HG3	1:B:382:MET:HG2	1.77	0.66
1:E:169:ASP:OD1	1:E:172:ARG:NH1	2.29	0.65
1:F:272:HIS:CE1	1:F:274:ASP:HB2	2.30	0.65
1:B:400:VAL:HG21	1:B:425:VAL:HG11	1.80	0.64
1:A:414:ASP:OD1	1:A:430:ARG:NH2	2.32	0.63
1:I:272:HIS:HD1	1:I:274:ASP:H	1.45	0.63
1:I:157:ARG:HH22	1:I:324:VAL:HG22	1.63	0.63
1:I:272:HIS:CE1	1:I:274:ASP:HB2	2.34	0.62
1:B:386:CYS:HB3	1:B:454:ARG:HG2	1.82	0.61
1:J:418:ILE:HG12	1:J:427:VAL:HG13	1.85	0.59
1:I:287:PHE:HE2	1:I:307:ILE:HD13	1.68	0.59
1:E:278:ARG:CZ	1:F:452:ARG:HH11	2.16	0.58
1:B:357:SER:HB2	1:B:364:LEU:HD11	1.84	0.58
1:A:111:PRO:HG2	1:A:114:MET:HG3	1.86	0.58
1:E:79:PRO:HD2	1:E:83:LEU:HD23	1.85	0.58
2:L:5:A:H5''	1:I:131:GLY:HA3	1.87	0.57
1:B:286:ARG:NH1	1:B:457:LYS:OXT	2.37	0.57
1:J:400:VAL:HG21	1:J:425:VAL:HG11	1.87	0.57
1:I:79:PRO:HD2	1:I:83:LEU:HD23	1.87	0.57
1:A:169:ASP:OD1	1:A:172:ARG:NH1	2.39	0.56
1:I:80:THR:HG22	1:I:83:LEU:H	1.70	0.56
1:F:266:GLN:HA	1:F:378:LEU:HB2	1.87	0.56
1:F:79:PRO:HD2	1:F:83:LEU:HD23	1.86	0.56
1:B:287:PHE:HE2	1:B:307:ILE:HD13	1.71	0.55
1:J:445:LYS:HD3	1:J:448:GLY:O	2.06	0.55
1:F:321:ASP:HB3	1:F:323:GLU:OE2	2.08	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:213:LEU:HD11	1:E:360:LEU:HD13	1.88	0.54
1:B:1:MET:HA	1:B:19:ASN:HD21	1.73	0.54
1:F:25:THR:O	3:F:500:ADP:N6	2.37	0.54
1:B:157:ARG:NH2	1:B:303:ARG:HE	2.05	0.54
1:J:116:ARG:HD3	1:I:116:ARG:HD3	1.90	0.54
2:L:2:G:O2'	2:L:3:A:O5'	2.21	0.54
2:G:0:POP:O2	2:G:1:G:OP1	2.25	0.53
1:I:156:ASP:HA	1:I:191:ILE:HG21	1.89	0.53
1:A:220:PHE:CE1	1:A:364:LEU:HD22	2.43	0.53
1:F:2:THR:HB	1:F:19:ASN:OD1	2.09	0.53
1:I:396:ARG:HG2	1:I:399:ASP:OD2	2.09	0.53
1:A:48:LYS:HE3	1:A:212:ALA:O	2.08	0.52
1:E:441:LEU:HD21	1:E:446:ILE:HD11	1.90	0.52
1:F:157:ARG:NH2	1:F:324:VAL:HG22	2.23	0.52
1:A:286:ARG:NH1	1:A:457:LYS:OXT	2.41	0.52
1:B:23:TYR:OH	1:B:90:GLU:OE1	2.25	0.52
1:E:396:ARG:HG2	1:E:399:ASP:OD2	2.10	0.52
1:I:272:HIS:HE1	1:I:274:ASP:HB2	1.75	0.51
1:B:404:LEU:O	1:B:410:LEU:HB2	2.11	0.51
1:F:289:ASN:HB2	1:F:428:ALA:HB2	1.92	0.51
1:J:322:PRO:HB2	1:J:359:MET:SD	2.51	0.50
1:I:418:ILE:HG12	1:I:427:VAL:HG13	1.93	0.50
1:I:85:ASP:OD1	1:I:105:THR:HG21	2.12	0.50
1:I:87:VAL:HG22	1:I:127:VAL:HG11	1.94	0.50
1:J:438:TRP:CH2	1:I:438:TRP:HH2	2.29	0.49
1:E:79:PRO:O	2:H:4:C:H5'	2.12	0.49
1:I:81:ARG:HG2	1:I:107:CYS:HB3	1.95	0.49
1:I:102:LYS:NZ	1:I:118:SER:O	2.46	0.49
1:E:83:LEU:O	1:E:87:VAL:HG13	2.12	0.49
1:E:266:GLN:HA	1:E:378:LEU:HB2	1.95	0.49
1:A:44:ARG:NH2	1:A:206:GLU:OE2	2.31	0.48
1:J:79:PRO:HD2	1:J:83:LEU:HD23	1.95	0.48
1:B:394:LYS:NZ	2:C:9:G:O6	2.45	0.48
1:E:382:MET:SD	1:E:430:ARG:HD3	2.54	0.48
1:A:447:LYS:NZ	2:D:17:G:N7	2.44	0.48
1:F:220:PHE:CE1	1:F:364:LEU:HD22	2.49	0.48
1:I:83:LEU:O	1:I:87:VAL:HG13	2.13	0.47
1:I:401:LEU:HD22	2:K:13:G:H1'	1.96	0.47
1:E:287:PHE:HE2	1:E:307:ILE:HD13	1.79	0.47
1:F:233:GLN:HB3	1:F:375:ILE:HG21	1.97	0.47
1:F:83:LEU:O	1:F:87:VAL:HG13	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:79:PRO:HD2	1:A:83:LEU:HD23	1.96	0.47
1:E:28:PRO:HB2	1:E:207:ILE:HD13	1.96	0.47
1:J:220:PHE:CE1	1:J:364:LEU:HD22	2.50	0.47
1:E:277:GLN:NE2	1:E:281:ASP:OD1	2.48	0.46
1:J:28:PRO:HB2	1:J:207:ILE:HD13	1.98	0.46
1:A:287:PHE:HE2	1:A:307:ILE:HD13	1.81	0.46
1:J:152:MET:HB3	1:J:152:MET:HE3	1.61	0.46
1:I:447:LYS:HG2	1:I:447:LYS:O	2.15	0.46
1:E:168:ASP:O	1:E:172:ARG:HG3	2.16	0.46
1:E:373:SER:OG	1:E:374:SER:N	2.48	0.46
1:B:312:LEU:HD11	1:B:342:ILE:HD12	1.98	0.46
1:B:287:PHE:CE2	1:B:307:ILE:HD13	2.49	0.46
1:I:438:TRP:O	1:I:442:GLN:HG2	2.16	0.46
1:F:438:TRP:O	1:F:442:GLN:HG2	2.16	0.45
1:I:360:LEU:O	1:I:362:ILE:HG23	2.16	0.45
1:J:25:THR:O	3:J:500:ADP:N6	2.48	0.45
1:E:87:VAL:HG22	1:E:127:VAL:HG11	1.99	0.45
1:F:400:VAL:HG21	1:F:425:VAL:HG11	1.97	0.45
1:E:276:GLU:OE2	1:F:449:LYS:NZ	2.41	0.45
1:F:391:LYS:HB2	1:F:422:PRO:HA	1.98	0.45
1:A:390:GLY:HA2	1:A:425:VAL:HG23	1.98	0.44
1:J:213:LEU:HD11	1:J:360:LEU:HD13	1.99	0.44
1:B:383:ALA:HB2	1:B:431:GLN:HG2	1.99	0.44
1:A:421:HIS:HB3	1:A:422:PRO:HD2	2.00	0.44
1:E:390:GLY:HA2	1:E:425:VAL:HG23	1.99	0.44
1:E:259:ASP:O	1:E:263:GLU:HG2	2.17	0.44
2:D:12:U:O2'	2:D:13:G:H5''	2.18	0.44
1:F:23:TYR:OH	1:F:90:GLU:OE2	2.35	0.43
1:F:61:LEU:O	1:F:65:ILE:HG12	2.18	0.43
1:F:378:LEU:HD23	1:F:378:LEU:HA	1.88	0.43
1:F:394:LYS:O	1:F:447:LYS:NZ	2.30	0.43
1:A:111:PRO:HG2	1:A:114:MET:CG	2.46	0.43
1:A:152:MET:HB3	1:A:152:MET:HE2	1.61	0.43
1:B:433:VAL:O	1:B:433:VAL:HG12	2.18	0.43
1:J:445:LYS:NZ	1:J:450:THR:HG23	2.33	0.43
1:F:135:ASP:OD1	1:F:139:LYS:HE3	2.18	0.43
1:F:233:GLN:HB3	1:F:375:ILE:CG2	2.49	0.43
1:I:396:ARG:HH22	1:I:447:LYS:NZ	2.16	0.43
1:F:232:LEU:HD13	1:F:314:VAL:HG11	2.01	0.43
1:A:287:PHE:CE2	1:A:307:ILE:HD13	2.54	0.43
1:B:349:GLU:HG2	1:B:352:ARG:NH1	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:433:VAL:O	1:F:433:VAL:HG12	2.19	0.43
1:E:272:HIS:CE1	1:E:274:ASP:HB2	2.53	0.43
1:F:57:PHE:CD1	1:F:151:VAL:HG11	2.54	0.43
2:G:3:A:OP1	1:F:272:HIS:HB2	2.19	0.43
2:G:3:A:OP2	1:F:251:LYS:HD3	2.19	0.43
1:J:246:VAL:HG22	1:J:314:VAL:HB	2.01	0.43
1:E:421:HIS:HB3	1:E:422:PRO:HD2	2.01	0.42
1:J:103:ILE:HG12	1:J:125:ILE:HB	2.01	0.42
1:I:121:HIS:HB3	2:K:8:U:O2'	2.18	0.42
1:F:421:HIS:HB3	1:F:422:PRO:HD2	2.01	0.42
1:B:421:HIS:HB3	1:B:422:PRO:HD2	2.00	0.42
1:J:400:VAL:HG11	1:J:427:VAL:HG21	2.00	0.42
1:I:76:VAL:HG22	1:I:151:VAL:HB	2.00	0.42
1:F:407:ASP:HB3	1:F:408:ILE:HD12	2.01	0.42
1:A:182:LEU:HG	1:A:199:GLN:NE2	2.35	0.42
1:J:3:ALA:HB3	1:J:6:THR:HG23	2.01	0.42
1:I:20:GLU:OE1	1:I:96:ARG:NH1	2.52	0.42
1:B:286:ARG:HB3	1:B:291:SER:HB2	2.01	0.42
1:J:272:HIS:CE1	1:J:274:ASP:HB2	2.55	0.42
1:I:53:LYS:NZ	3:I:500:ADP:O3B	2.50	0.42
1:I:229:ILE:HB	1:I:230:PRO:HD3	2.00	0.42
1:A:410:LEU:HD11	1:A:437:ALA:HB2	2.02	0.42
2:D:0:POP:O	2:D:1:G:OP1	2.37	0.42
1:B:157:ARG:CZ	1:B:303:ARG:HE	2.32	0.42
1:J:61:LEU:O	1:J:65:ILE:HG12	2.20	0.42
1:J:433:VAL:O	1:J:433:VAL:HG12	2.19	0.42
1:F:47:ALA:O	1:F:185:ALA:HA	2.20	0.42
1:F:441:LEU:HB3	1:F:453:VAL:HG21	2.00	0.42
1:A:392:LYS:HG2	1:A:422:PRO:O	2.20	0.42
1:A:400:VAL:HG21	1:A:425:VAL:HG11	2.01	0.42
1:E:220:PHE:CE1	1:E:364:LEU:HD22	2.55	0.42
1:J:57:PHE:HB3	1:J:183:PHE:CE1	2.55	0.42
1:J:81:ARG:HG2	1:J:107:CYS:HB3	2.01	0.42
1:I:224:SER:O	1:I:228:LYS:HG3	2.19	0.42
1:A:213:LEU:HD11	1:A:360:LEU:HD13	2.01	0.42
1:B:418:ILE:HG12	1:B:427:VAL:HG13	2.01	0.42
1:E:4:PHE:CE1	1:E:26:MET:HG2	2.54	0.42
1:E:392:LYS:HG2	1:E:422:PRO:O	2.20	0.41
1:F:18:LEU:HD21	1:F:59:LEU:HD21	2.01	0.41
1:J:4:PHE:CE1	1:J:26:MET:HG2	2.55	0.41
1:J:220:PHE:CZ	1:J:364:LEU:HD22	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:114:MET:H	1:A:114:MET:HG2	1.55	0.41
1:J:441:LEU:HB3	1:J:453:VAL:HG21	2.02	0.41
1:A:385:LEU:HD21	1:A:438:TRP:HB2	2.01	0.41
1:J:114:MET:HG3	1:I:114:MET:HE3	2.02	0.41
1:I:57:PHE:HB3	1:I:183:PHE:CE1	2.55	0.41
1:I:278:ARG:HH21	1:I:278:ARG:HD3	1.73	0.41
1:I:421:HIS:HB3	1:I:422:PRO:HD2	2.01	0.41
1:F:286:ARG:HB3	1:F:291:SER:HB2	2.02	0.41
3:B:500:ADP:O1A	6:B:601:HOH:O	2.22	0.41
1:I:352:ARG:O	1:I:356:ILE:HG12	2.20	0.41
1:F:4:PHE:CE1	1:F:26:MET:HG2	2.56	0.41
1:J:151:VAL:HG22	1:J:181:LEU:HB2	2.01	0.41
1:I:246:VAL:HG22	1:I:314:VAL:HB	2.02	0.41
1:I:322:PRO:HB2	1:I:359:MET:CE	2.51	0.41
1:E:400:VAL:HG21	1:E:425:VAL:HG11	2.01	0.41
1:J:251:LYS:HG2	1:J:298:THR:HG21	2.02	0.41
1:J:438:TRP:HH2	1:I:438:TRP:HH2	1.67	0.41
1:I:216:ILE:HG12	1:I:333:ALA:HB3	2.03	0.41
1:I:394:LYS:O	1:I:447:LYS:HE3	2.21	0.41
1:A:363:LYS:HD2	1:A:363:LYS:N	2.36	0.41
1:B:79:PRO:HD2	1:B:83:LEU:HD23	2.02	0.41
1:J:114:MET:HG3	1:I:114:MET:CE	2.51	0.40
2:H:9:G:H2'	2:H:10:G:H8	1.85	0.40
1:A:57:PHE:HB3	1:A:183:PHE:CE1	2.57	0.40
1:B:57:PHE:HB3	1:B:183:PHE:CE1	2.57	0.40
1:J:4:PHE:CZ	1:J:26:MET:HG2	2.56	0.40
1:J:396:ARG:HG2	1:J:399:ASP:OD2	2.21	0.40
1:F:214:PRO:O	1:F:216:ILE:N	2.55	0.40
1:B:410:LEU:HD21	1:B:433:VAL:CG1	2.42	0.40
1:I:322:PRO:HB2	1:I:359:MET:HE2	2.02	0.40
1:B:293:ARG:NH2	1:B:378:LEU:HD22	2.37	0.40
1:B:404:LEU:HD13	1:B:415:ILE:HG12	2.02	0.40
1:E:441:LEU:HD23	1:E:453:VAL:HG21	2.03	0.40
1:F:152:MET:HE3	1:F:158:MET:HB2	2.02	0.40
1:F:384:THR:HA	1:F:427:VAL:O	2.21	0.40
1:E:119:LEU:HD22	1:E:142:VAL:HG22	2.03	0.40
1:I:407:ASP:HB2	2:K:15:U:O4	2.22	0.40
1:F:76:VAL:HG22	1:F:151:VAL:HB	2.02	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	455/459 (99%)	448 (98%)	7 (2%)	0	100	100
1	B	452/459 (98%)	445 (98%)	7 (2%)	0	100	100
1	E	455/459 (99%)	447 (98%)	6 (1%)	2 (0%)	34	54
1	F	445/459 (97%)	437 (98%)	8 (2%)	0	100	100
1	I	447/459 (97%)	439 (98%)	8 (2%)	0	100	100
1	J	449/459 (98%)	443 (99%)	6 (1%)	0	100	100
All	All	2703/2754 (98%)	2659 (98%)	42 (2%)	2 (0%)	51	73

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	374	SER
1	E	370	PRO

### 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	368/368 (100%)	366 (100%)	2 (0%)	88	96
1	B	367/368 (100%)	363 (99%)	4 (1%)	73	89
1	E	368/368 (100%)	364 (99%)	4 (1%)	73	89
1	F	364/368 (99%)	358 (98%)	6 (2%)	62	84
1	I	363/368 (99%)	360 (99%)	3 (1%)	81	93

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	J	365/368 (99%)	361 (99%)	4 (1%)	73 89
All	All	2195/2208 (99%)	2172 (99%)	23 (1%)	76 90

All (23) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	278	ARG
1	A	447	LYS
1	B	278	ARG
1	B	374	SER
1	B	442	GLN
1	B	452	ARG
1	E	87	VAL
1	E	114	MET
1	E	149	THR
1	E	207	ILE
1	J	197	ARG
1	J	200	ARG
1	J	207	ILE
1	J	391	LYS
1	I	87	VAL
1	I	114	MET
1	I	379	GLU
1	F	114	MET
1	F	255	GLN
1	F	373	SER
1	F	374	SER
1	F	375	ILE
1	F	377	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	I	255	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	C	21/24 (87%)	6 (28%)	0

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	D	19/24 (79%)	3 (15%)	0
2	G	20/24 (83%)	5 (25%)	1 (5%)
2	H	19/24 (79%)	3 (15%)	0
2	K	21/24 (87%)	6 (28%)	0
2	L	20/24 (83%)	7 (35%)	1 (5%)
All	All	120/144 (83%)	30 (25%)	2 (1%)

All (30) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	D	9	G
2	D	17	G
2	D	22	U
2	C	5	A
2	C	9	G
2	C	12	U
2	C	13	G
2	C	17	G
2	C	22	U
2	G	4	C
2	G	6	U
2	G	7	A
2	G	9	G
2	G	17	G
2	L	3	A
2	L	4	C
2	L	5	A
2	L	9	G
2	L	12	U
2	L	13	G
2	L	17	G
2	K	4	C
2	K	5	A
2	K	9	G
2	K	12	U
2	K	17	G
2	K	22	U
2	H	7	A
2	H	9	G
2	H	17	G

All (2) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	G	3	A
2	L	2	G

## 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 18 ligands modelled in this entry, 6 are monoatomic - leaving 12 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
3	ADP	A	500	5,4	24,29,29	0.96	1 (4%)	29,45,45	1.33	3 (10%)
3	ADP	I	500	5	24,29,29	0.98	1 (4%)	29,45,45	1.37	3 (10%)
4	BEF	A	501	3	0,3,3	-	-	-	-	-
3	ADP	B	500	5,4	24,29,29	0.96	1 (4%)	29,45,45	1.31	3 (10%)
3	ADP	F	500	5,4	24,29,29	0.96	1 (4%)	29,45,45	1.36	3 (10%)
4	BEF	J	501	-	0,3,3	-	-	-	-	-
4	BEF	E	501	3	0,3,3	-	-	-	-	-
3	ADP	J	500	5	24,29,29	0.95	1 (4%)	29,45,45	1.37	3 (10%)
4	BEF	I	501	-	0,3,3	-	-	-	-	-
4	BEF	F	501	3	0,3,3	-	-	-	-	-
3	ADP	E	500	5,4	24,29,29	0.96	1 (4%)	29,45,45	1.33	3 (10%)
4	BEF	B	501	3	0,3,3	-	-	-	-	-

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
3	ADP	A	500	5,4	-	5/12/32/32	0/3/3/3
3	ADP	I	500	5	-	4/12/32/32	0/3/3/3
3	ADP	B	500	5,4	-	6/12/32/32	0/3/3/3
3	ADP	F	500	5,4	-	6/12/32/32	0/3/3/3
3	ADP	J	500	5	-	6/12/32/32	0/3/3/3
3	ADP	E	500	5,4	-	6/12/32/32	0/3/3/3

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	I	500	ADP	C5-C4	2.50	1.47	1.40
3	E	500	ADP	C5-C4	2.47	1.47	1.40
3	B	500	ADP	C5-C4	2.47	1.47	1.40
3	F	500	ADP	C5-C4	2.45	1.47	1.40
3	A	500	ADP	C5-C4	2.43	1.47	1.40
3	J	500	ADP	C5-C4	2.43	1.47	1.40

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	I	500	ADP	PA-O3A-PB	-3.92	119.39	132.83
3	A	500	ADP	PA-O3A-PB	-3.71	120.10	132.83
3	F	500	ADP	PA-O3A-PB	-3.68	120.19	132.83
3	J	500	ADP	PA-O3A-PB	-3.65	120.31	132.83
3	B	500	ADP	PA-O3A-PB	-3.52	120.74	132.83
3	E	500	ADP	PA-O3A-PB	-3.51	120.80	132.83
3	F	500	ADP	N3-C2-N1	-3.27	123.56	128.68
3	J	500	ADP	N3-C2-N1	-3.26	123.58	128.68
3	I	500	ADP	N3-C2-N1	-3.26	123.58	128.68
3	A	500	ADP	N3-C2-N1	-3.26	123.59	128.68
3	E	500	ADP	N3-C2-N1	-3.24	123.61	128.68
3	B	500	ADP	N3-C2-N1	-3.21	123.66	128.68
3	F	500	ADP	C4-C5-N7	-2.69	106.60	109.40
3	J	500	ADP	C4-C5-N7	-2.64	106.65	109.40
3	E	500	ADP	C4-C5-N7	-2.61	106.68	109.40
3	B	500	ADP	C4-C5-N7	-2.59	106.70	109.40
3	A	500	ADP	C4-C5-N7	-2.47	106.83	109.40
3	I	500	ADP	C4-C5-N7	-2.44	106.85	109.40

There are no chirality outliers.

All (33) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	500	ADP	C5'-O5'-PA-O1A
3	B	500	ADP	PA-O3A-PB-O3B
3	E	500	ADP	PA-O3A-PB-O3B
3	J	500	ADP	PA-O3A-PB-O3B
3	J	500	ADP	C5'-O5'-PA-O1A
3	F	500	ADP	PA-O3A-PB-O3B
3	F	500	ADP	C5'-O5'-PA-O1A
3	A	500	ADP	O4'-C4'-C5'-O5'
3	B	500	ADP	O4'-C4'-C5'-O5'
3	E	500	ADP	O4'-C4'-C5'-O5'
3	J	500	ADP	O4'-C4'-C5'-O5'
3	I	500	ADP	O4'-C4'-C5'-O5'
3	F	500	ADP	O4'-C4'-C5'-O5'
3	A	500	ADP	PA-O3A-PB-O3B
3	B	500	ADP	PA-O3A-PB-O2B
3	E	500	ADP	PA-O3A-PB-O2B
3	I	500	ADP	PA-O3A-PB-O3B
3	A	500	ADP	C5'-O5'-PA-O3A
3	B	500	ADP	C5'-O5'-PA-O3A
3	E	500	ADP	C5'-O5'-PA-O3A
3	J	500	ADP	C5'-O5'-PA-O3A
3	I	500	ADP	C5'-O5'-PA-O3A
3	F	500	ADP	C5'-O5'-PA-O3A
3	F	500	ADP	C3'-C4'-C5'-O5'
3	E	500	ADP	C3'-C4'-C5'-O5'
3	I	500	ADP	C3'-C4'-C5'-O5'
3	A	500	ADP	C3'-C4'-C5'-O5'
3	B	500	ADP	C3'-C4'-C5'-O5'
3	J	500	ADP	C3'-C4'-C5'-O5'
3	B	500	ADP	PA-O3A-PB-O1B
3	E	500	ADP	PA-O3A-PB-O1B
3	J	500	ADP	PA-O3A-PB-O1B
3	F	500	ADP	PA-O3A-PB-O1B

There are no ring outliers.

4 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	I	500	ADP	1	0
3	B	500	ADP	1	0
3	F	500	ADP	1	0

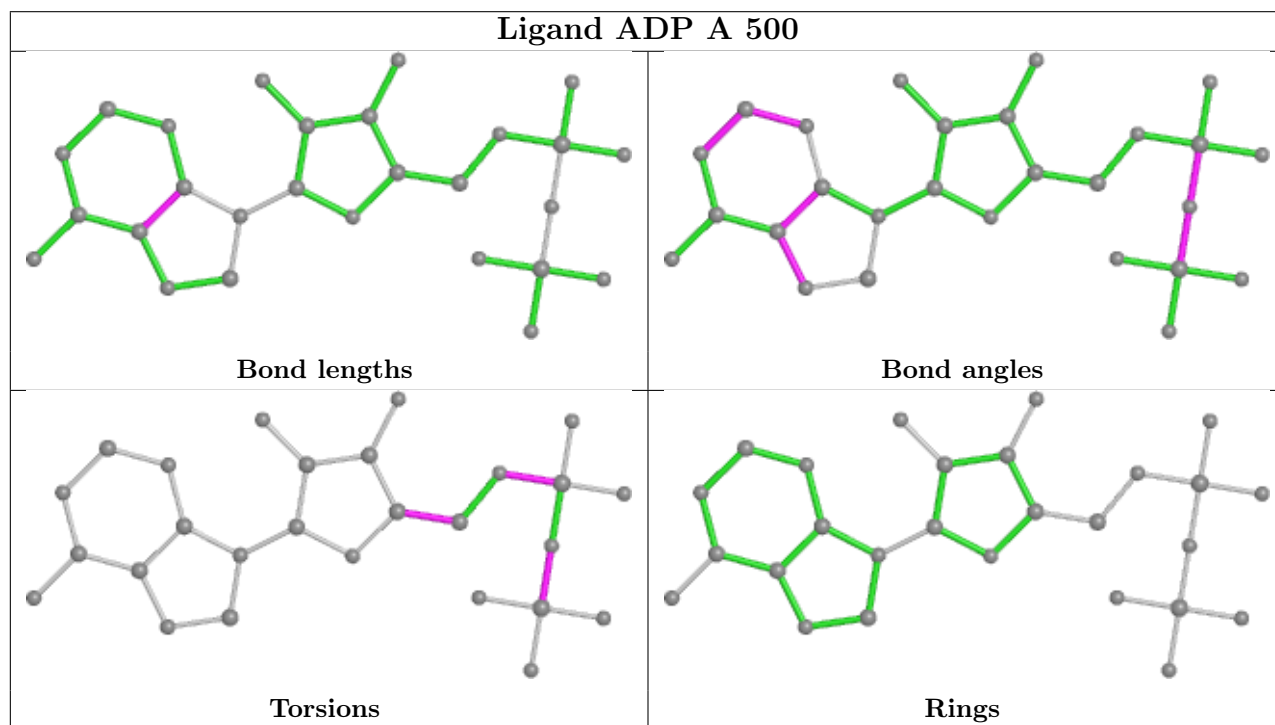
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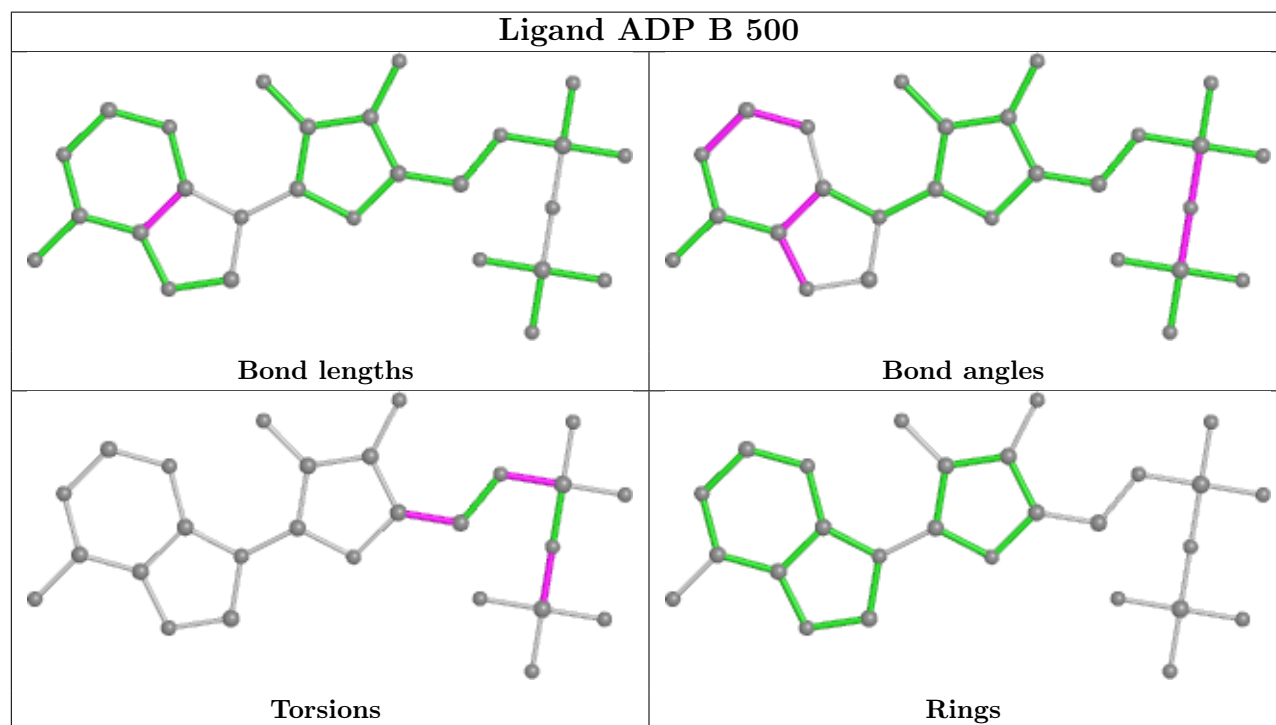
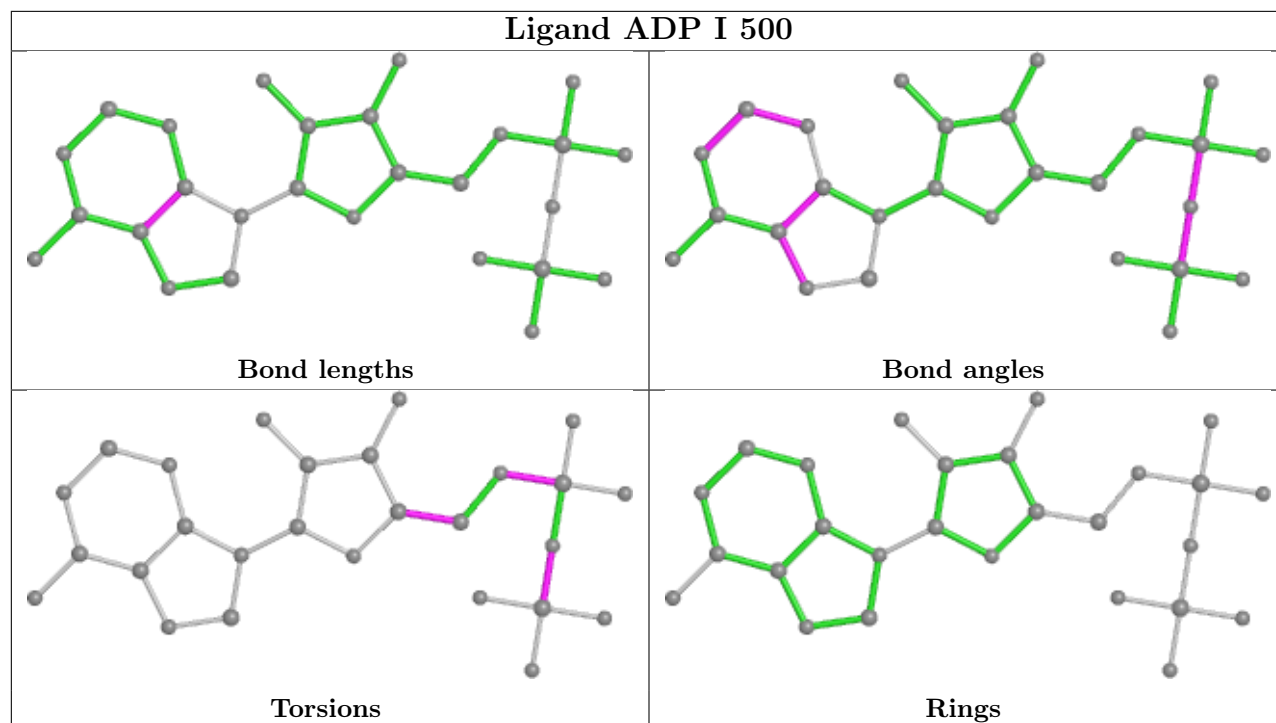


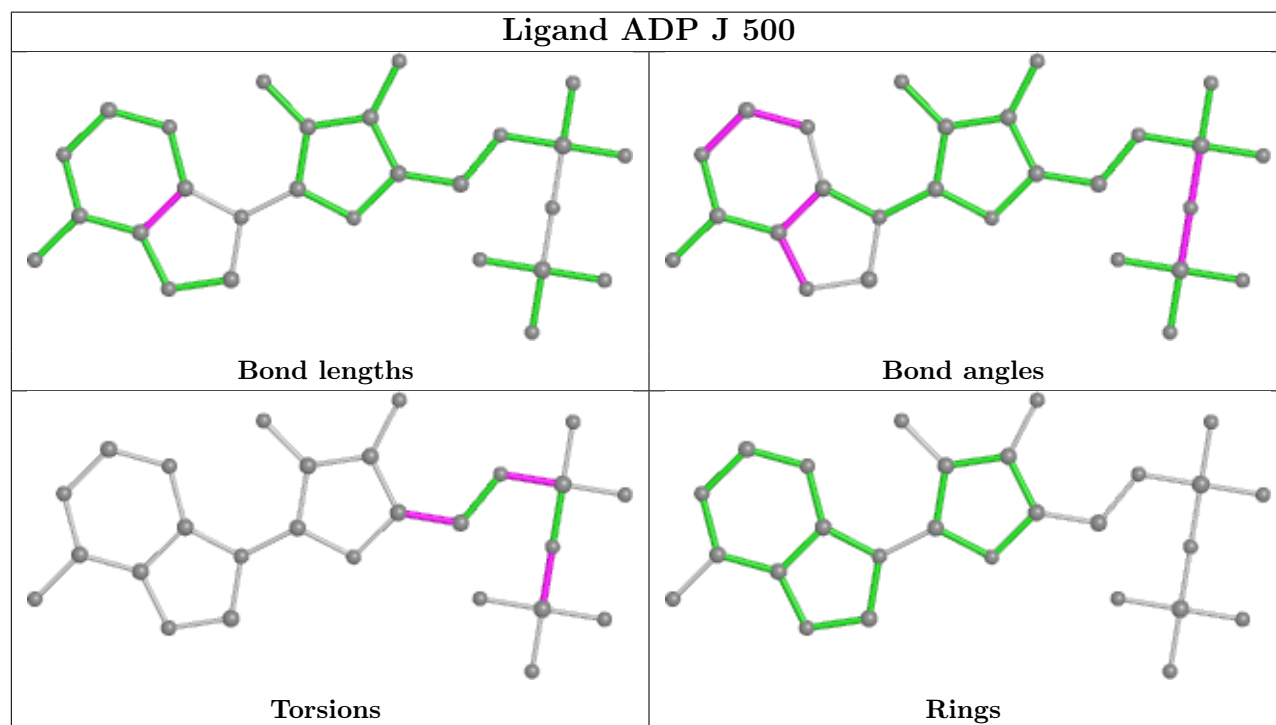
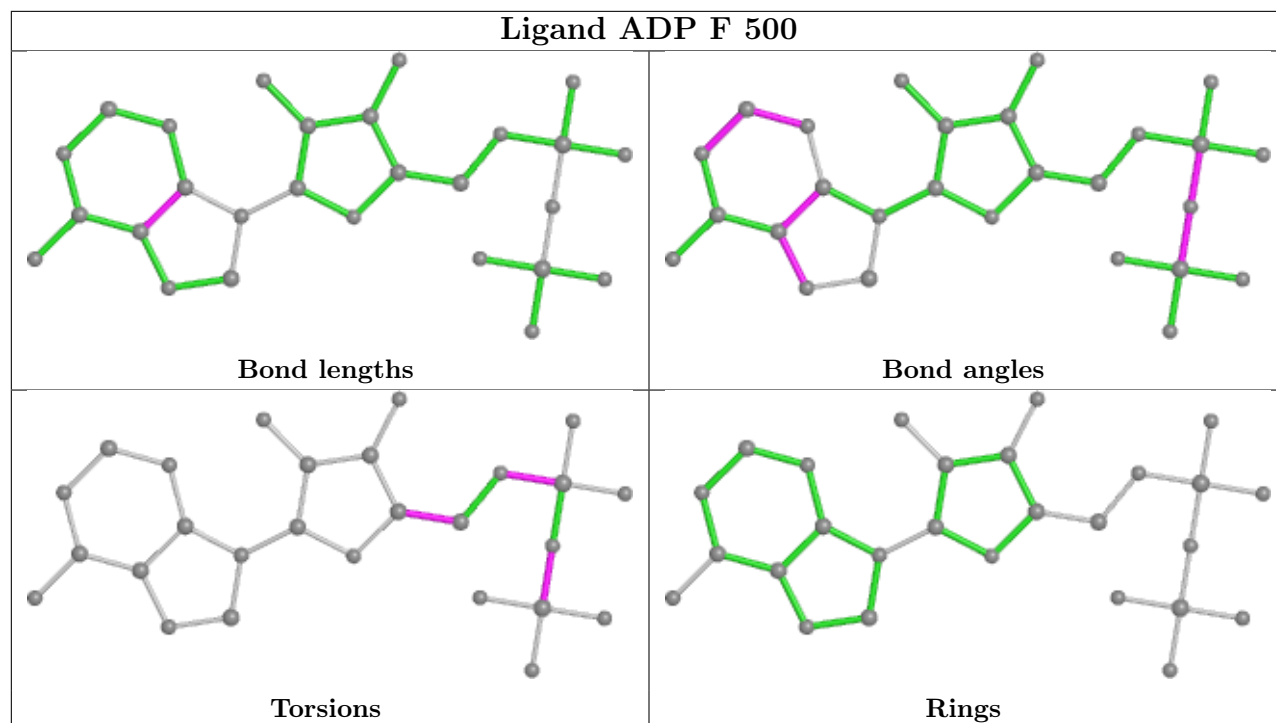
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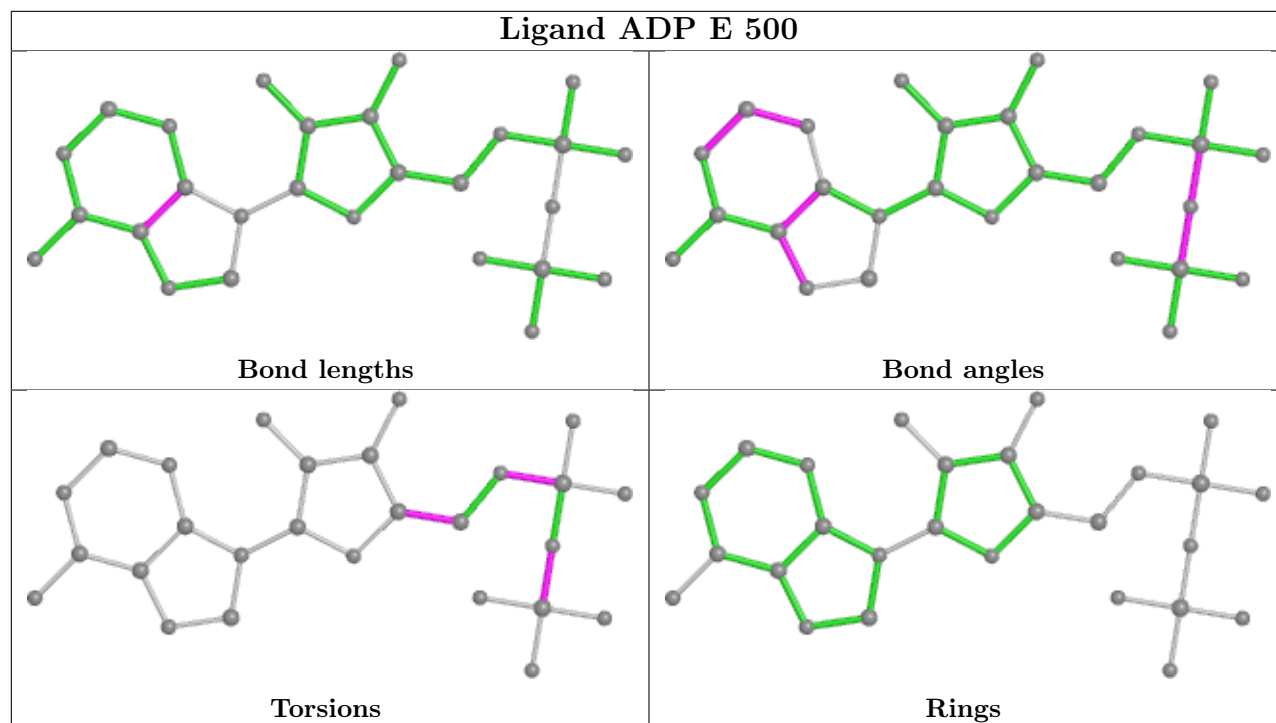
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	J	500	ADP	1	0

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	457/459 (99%)	0.14	0 <a href="#">100</a> <a href="#">100</a>	35, 50, 69, 100	0
1	B	456/459 (99%)	0.18	3 (0%) <a href="#">87</a> <a href="#">89</a>	34, 47, 65, 109	0
1	E	457/459 (99%)	0.33	17 (3%) <a href="#">41</a> <a href="#">45</a>	44, 59, 84, 135	0
1	F	451/459 (98%)	0.85	63 (13%) <a href="#">2</a> <a href="#">2</a>	54, 88, 126, 147	0
1	I	451/459 (98%)	0.73	53 (11%) <a href="#">4</a> <a href="#">4</a>	42, 78, 124, 141	0
1	J	453/459 (98%)	0.40	18 (3%) <a href="#">38</a> <a href="#">41</a>	47, 69, 96, 125	0
2	C	22/24 (91%)	-0.20	1 (4%) <a href="#">33</a> <a href="#">36</a>	46, 54, 79, 102	0
2	D	22/24 (91%)	0.05	3 (13%) <a href="#">3</a> <a href="#">2</a>	47, 55, 72, 113	0
2	G	21/24 (87%)	-0.26	0 <a href="#">100</a> <a href="#">100</a>	61, 77, 107, 134	0
2	H	22/24 (91%)	0.61	2 (9%) <a href="#">9</a> <a href="#">9</a>	62, 123, 141, 153	0
2	K	22/24 (91%)	0.15	2 (9%) <a href="#">9</a> <a href="#">9</a>	73, 89, 112, 120	0
2	L	22/24 (91%)	-0.31	0 <a href="#">100</a> <a href="#">100</a>	73, 91, 101, 125	0
All	All	2856/2898 (98%)	0.42	162 (5%) <a href="#">23</a> <a href="#">25</a>	34, 62, 114, 153	0

All (162) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	114	MET	7.4
1	F	107	CYS	6.4
1	F	116	ARG	6.0
1	F	104	LEU	6.0
1	F	395	MET	5.9
1	F	443	GLY	5.7
1	F	452	ARG	5.7
1	F	108	GLY	5.6
1	F	423	ALA	5.2
1	I	385	LEU	5.2
1	F	96	ARG	5.1

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	F	410	LEU	4.9
1	F	441	LEU	4.7
1	I	455	LEU	4.5
1	F	424	HIS	4.4
1	F	389	GLY	4.4
1	F	400	VAL	4.3
1	I	316	PHE	4.2
1	F	112	PHE	4.1
1	I	433	VAL	4.1
1	F	446	ILE	4.0
1	E	371	ALA	4.0
1	F	109	GLY	3.8
1	I	437	ALA	3.7
1	I	443	GLY	3.7
1	F	237	SER	3.7
1	F	110	GLN	3.6
1	F	119	LEU	3.6
1	F	442	GLN	3.6
1	I	348	GLU	3.5
1	F	105	THR	3.5
1	E	278	ARG	3.5
1	F	276	GLU	3.4
1	I	441	LEU	3.4
1	F	121	HIS	3.4
1	F	404	LEU	3.4
1	F	438	TRP	3.3
1	I	414	ASP	3.2
1	I	295	LEU	3.2
1	B	197	ARG	3.2
2	H	7	A	3.1
1	I	423	ALA	3.1
1	I	110	GLN	3.1
1	I	247	PHE	3.1
1	I	130	PRO	3.1
1	F	2	THR	3.1
1	J	133	LEU	3.1
1	I	450	THR	3.1
1	I	301	ALA	3.0
1	J	20	GLU	3.0
1	J	395	MET	2.9
1	I	373	SER	2.9
1	E	117	ASP	2.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	I	114	MET	2.9
1	E	392	LYS	2.9
1	E	106	LEU	2.9
1	I	353	ALA	2.9
1	F	133	LEU	2.9
1	E	108	GLY	2.8
1	E	372	ASN	2.8
1	E	114	MET	2.8
1	J	78	CYS	2.8
2	C	22	U	2.8
1	F	351	GLN	2.7
1	E	105	THR	2.7
2	D	5[A]	A	2.7
1	J	114	MET	2.7
1	J	392	LYS	2.7
2	D	22	U	2.7
1	J	454	ARG	2.7
1	J	77	LEU	2.7
1	F	161	MET	2.7
1	F	431	GLN	2.7
1	I	111	PRO	2.6
1	I	426	TYR	2.6
1	I	271	LEU	2.6
1	I	275	LEU	2.6
1	I	161	MET	2.6
1	E	127	VAL	2.6
1	I	452	ARG	2.6
1	F	451	CYS	2.6
1	F	422	PRO	2.5
1	I	393	ALA	2.5
1	J	161	MET	2.5
1	I	429	VAL	2.5
1	I	389	GLY	2.5
1	E	276	GLU	2.5
1	I	344	PHE	2.5
1	I	387	ILE	2.5
1	B	85	ASP	2.5
1	F	117	ASP	2.5
1	F	15	LEU	2.4
2	H	6	U	2.4
1	E	161	MET	2.4
1	F	414	ASP	2.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	F	447	LYS	2.4
1	F	32	ALA	2.4
1	F	142	VAL	2.4
1	I	352	ARG	2.4
1	I	104	LEU	2.4
1	I	415	ILE	2.4
1	I	117	ASP	2.4
1	I	440	GLN	2.4
1	F	77	LEU	2.4
1	I	96	ARG	2.3
1	I	121	HIS	2.3
1	F	261	LEU	2.3
1	J	111	PRO	2.3
1	I	248	CYS	2.3
1	I	223	THR	2.3
1	I	298	THR	2.3
2	K	5	A	2.3
1	F	144	LEU	2.3
1	I	238	LEU	2.3
1	F	284	LEU	2.3
1	E	120	GLN	2.3
1	I	356	ILE	2.3
1	F	87	VAL	2.2
1	I	257	VAL	2.2
1	F	392	LYS	2.2
1	I	274	ASP	2.2
1	E	62	LEU	2.2
1	J	273	GLY	2.2
1	F	388	ASP	2.2
1	J	157	ARG	2.2
1	E	248	CYS	2.2
1	I	20	GLU	2.2
1	F	123	PRO	2.2
1	E	452	ARG	2.2
1	F	278	ARG	2.2
2	D	6[A]	U	2.2
1	J	449	LYS	2.2
1	I	394	LYS	2.2
1	F	4	PHE	2.2
1	I	386	CYS	2.2
1	J	396	ARG	2.2
1	E	121	HIS	2.2

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Mol	Chain	Res	Type	RSRZ
1	I	81	ARG	2.2
1	I	234	ARG	2.1
1	F	93	ARG	2.1
1	F	97	PHE	2.1
1	F	455	LEU	2.1
1	B	172	ARG	2.1
1	F	434	ALA	2.1
1	J	153	ASP	2.1
1	J	113	GLY	2.1
1	F	380	ALA	2.1
1	I	422	PRO	2.1
1	F	106	LEU	2.1
1	F	150	LEU	2.1
1	I	236	LEU	2.1
1	F	274	ASP	2.1
1	J	2	THR	2.1
2	K	6	U	2.1
1	J	373	SER	2.1
1	I	355	ILE	2.1
1	F	118	SER	2.1
1	I	456	LEU	2.0
1	F	391	LYS	2.0
1	F	408	ILE	2.0
1	F	449	LYS	2.0
1	F	454	ARG	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](#)

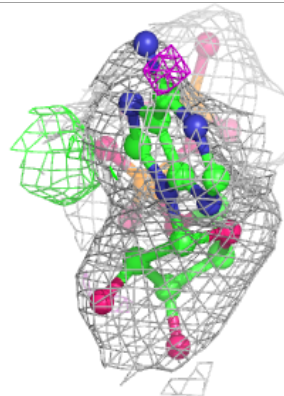
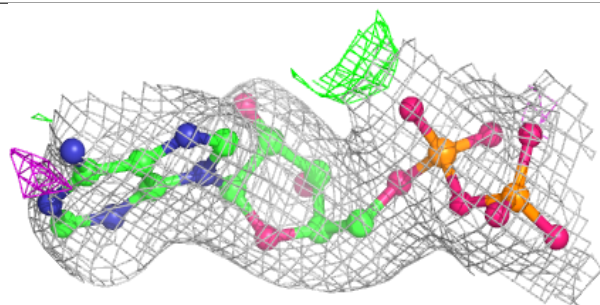
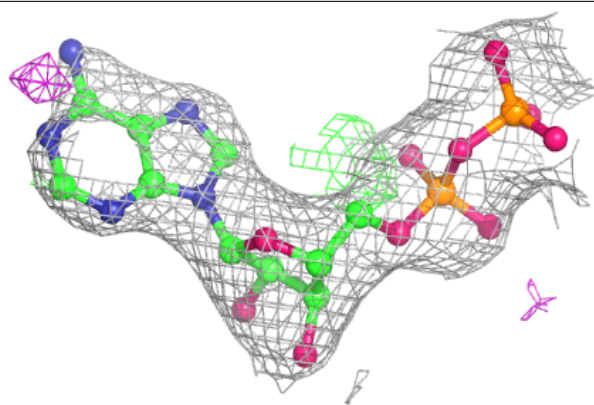
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	BEF	I	501	4/4	0.91	0.17	47,49,50,53	0
4	BEF	J	501	4/4	0.94	0.09	47,48,49,50	0
3	ADP	F	500	27/27	0.95	0.18	53,67,74,80	0
4	BEF	A	501	4/4	0.95	0.09	37,40,41,41	0
4	BEF	F	501	4/4	0.95	0.16	55,56,57,58	0
4	BEF	E	501	4/4	0.96	0.13	44,47,47,50	0
3	ADP	I	500	27/27	0.96	0.17	42,53,59,60	0
5	MG	J	502	1/1	0.96	0.07	51,51,51,51	0
5	MG	F	502	1/1	0.96	0.10	53,53,53,53	0
3	ADP	A	500	27/27	0.97	0.15	36,45,49,51	0
3	ADP	B	500	27/27	0.97	0.14	28,40,43,48	0
3	ADP	E	500	27/27	0.97	0.14	41,46,50,53	0
5	MG	A	502	1/1	0.97	0.15	40,40,40,40	0
5	MG	B	502	1/1	0.97	0.13	34,34,34,34	0
4	BEF	B	501	4/4	0.97	0.13	31,35,35,36	0
3	ADP	J	500	27/27	0.97	0.15	46,52,55,56	0
5	MG	I	502	1/1	0.98	0.10	49,49,49,49	0
5	MG	E	502	1/1	0.99	0.07	47,47,47,47	0

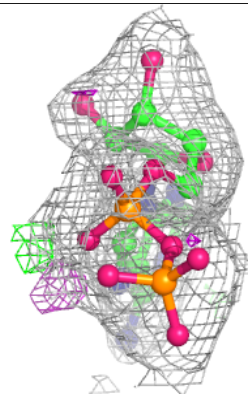
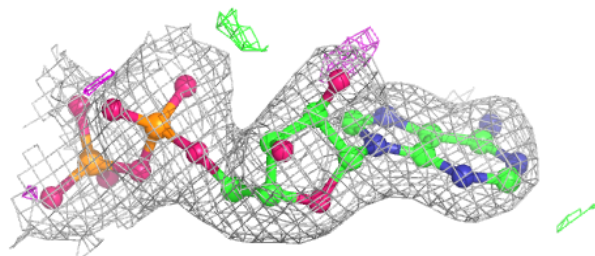
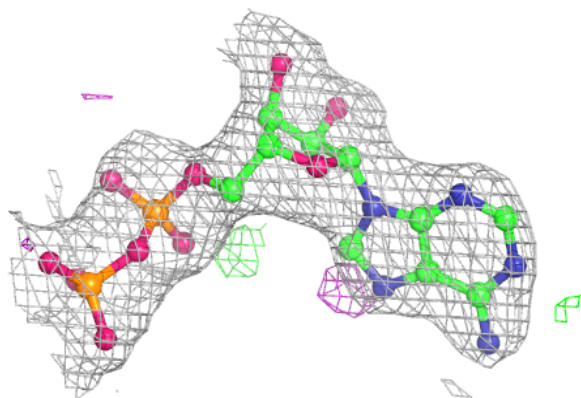
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

**Electron density around ADP F 500:**

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

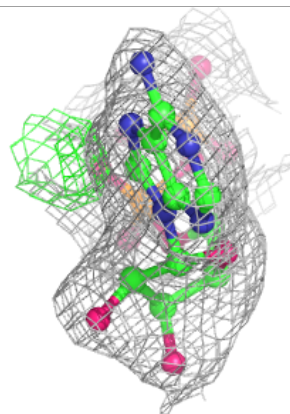
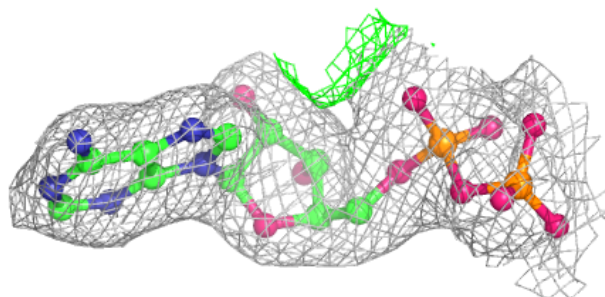
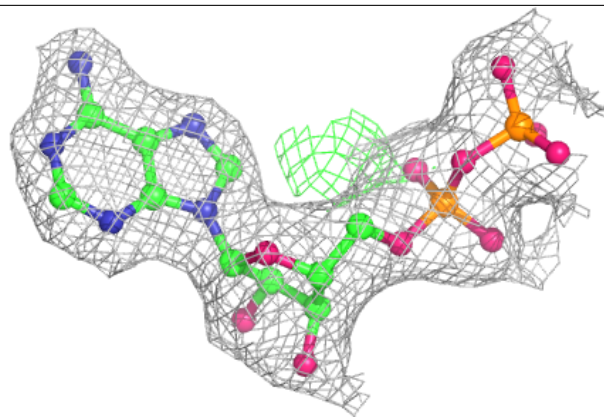
**Electron density around ADP I 500:**

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

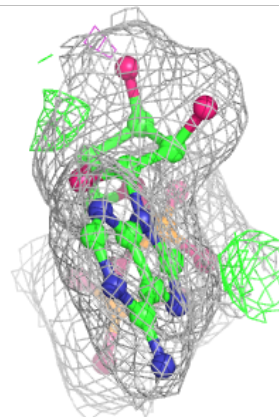
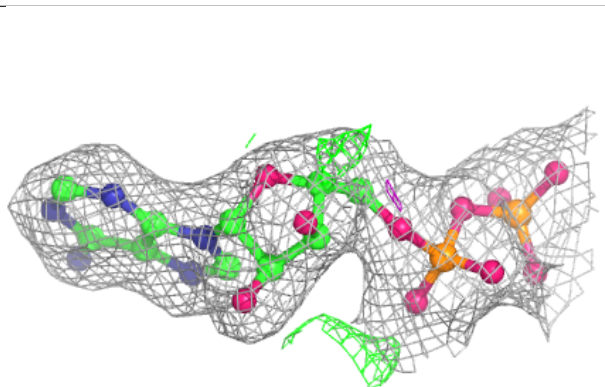
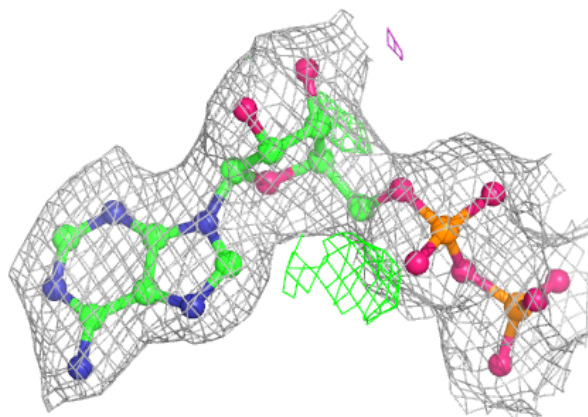


**Electron density around ADP A 500:**

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

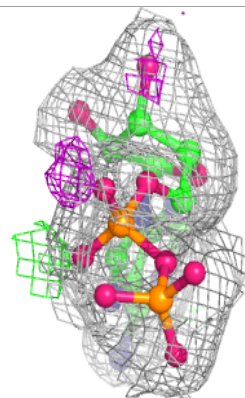
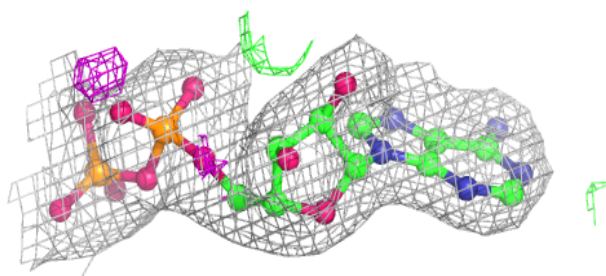
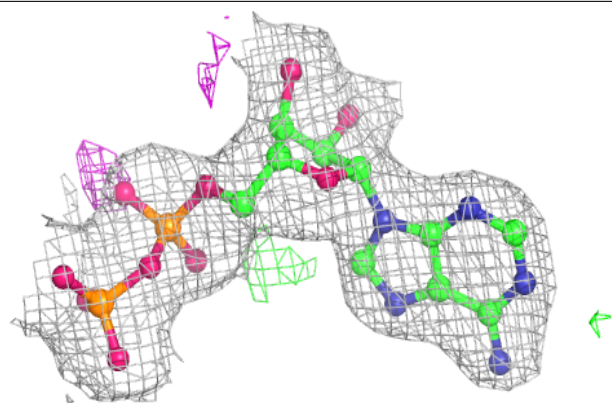
**Electron density around ADP B 500:**

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

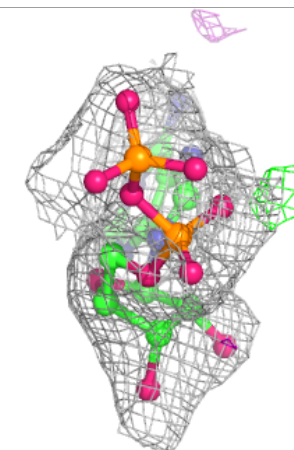
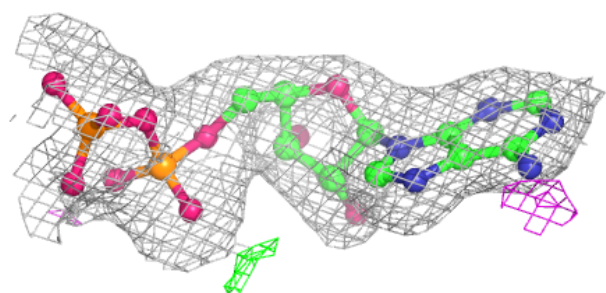
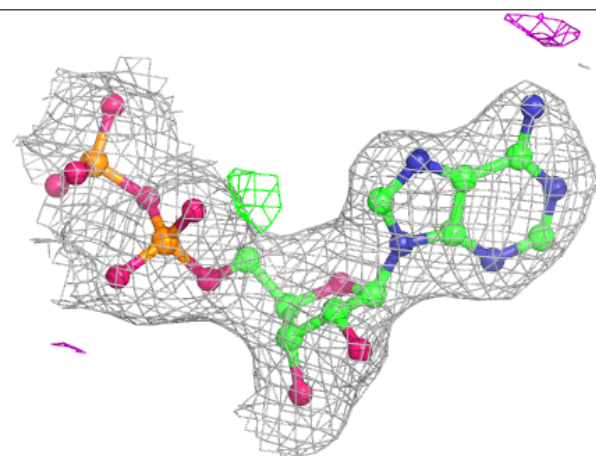


**Electron density around ADP E 500:**

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

**Electron density around ADP J 500:**

$2mF_o-DF_c$  (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.