



# wwPDB X-ray Structure Validation Summary Report

Feb 25, 2024 – 04:54 PM EST

PDB ID : 5JM8  
Title : The structure of ATP-bound aerobactin synthetase IucA from a hypervirulent pathotype of *Klebsiella pneumoniae*  
Authors : Bailey, D.C.; Drake, E.J.; Gulick, A.M.  
Deposited on : 2016-04-28  
Resolution : 2.20 Å (reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the  symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Mogul : 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

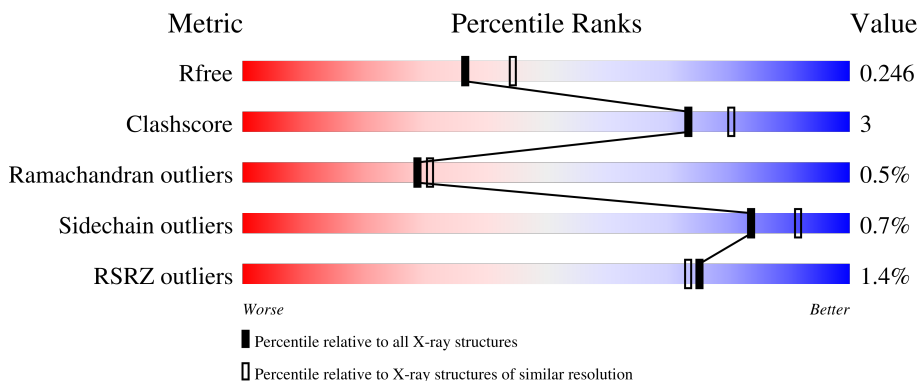
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.20 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.



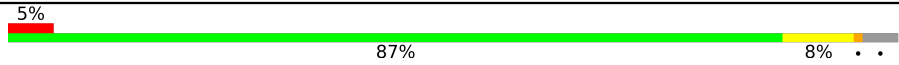


Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	576	 88% 8%
1	B	576	 91% 6%
1	C	576	 90% 6%
1	D	576	 89% 6%
1	E	576	 90% 6%

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Mol	Chain	Length	Quality of chain
1	F	576	 5% 87% 8% . .
1	G	576	 88% 8% .
1	H	576	 2% 85% 10% . 5%

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 35902 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 Aerobactin synthase IucA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	556	4388	2803	776	792	17	0	0	0
1	B	556	4383	2803	772	791	17	0	0	0
1	C	552	4360	2779	770	794	17	0	0	0
1	D	552	4338	2771	765	785	17	0	0	0
1	E	552	4378	2798	773	790	17	0	0	0
1	F	551	4248	2691	760	780	17	0	0	0
1	G	552	4359	2780	772	790	17	0	0	0
1	H	550	4258	2713	755	773	17	0	0	0

There are 16 discrepancies between the modelled and reference sequences:

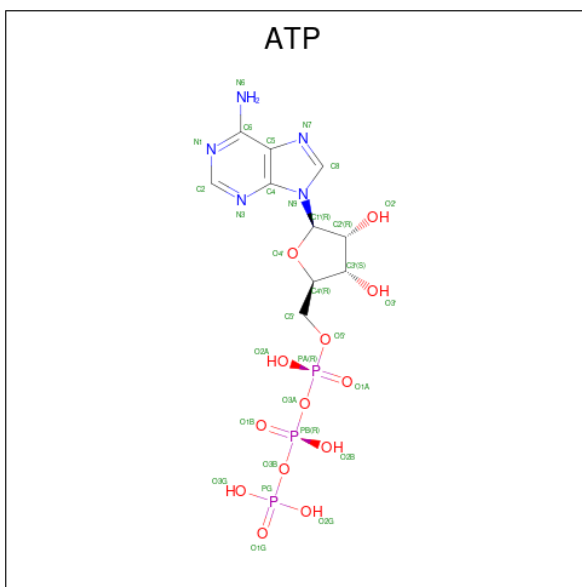
Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP A0A0X9V8F4
A	0	HIS	-	expression tag	UNP A0A0X9V8F4
B	-1	GLY	-	expression tag	UNP A0A0X9V8F4
B	0	HIS	-	expression tag	UNP A0A0X9V8F4
C	-1	GLY	-	expression tag	UNP A0A0X9V8F4
C	0	HIS	-	expression tag	UNP A0A0X9V8F4
D	-1	GLY	-	expression tag	UNP A0A0X9V8F4
D	0	HIS	-	expression tag	UNP A0A0X9V8F4
E	-1	GLY	-	expression tag	UNP A0A0X9V8F4
E	0	HIS	-	expression tag	UNP A0A0X9V8F4
F	-1	GLY	-	expression tag	UNP A0A0X9V8F4
F	0	HIS	-	expression tag	UNP A0A0X9V8F4
G	-1	GLY	-	expression tag	UNP A0A0X9V8F4

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Chain	Residue	Modelled	Actual	Comment	Reference
G	0	HIS	-	expression tag	UNP A0A0X9V8F4
H	-1	GLY	-	expression tag	UNP A0A0X9V8F4
H	0	HIS	-	expression tag	UNP A0A0X9V8F4

- Molecule 2 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula:  $C_{10}H_{16}N_5O_{13}P_3$ ).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
2	B	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
2	C	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
2	D	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
2	E	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
2	F	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
2	G	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
2	H	1	Total	C	N	O	P	0	0
			31	10	5	13	3		

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

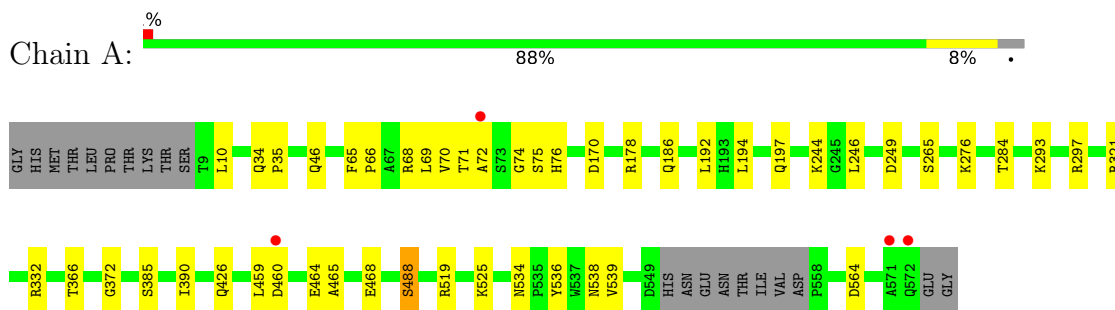
- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	124	Total O 124 124	0	0
4	B	118	Total O 118 118	0	0
4	C	127	Total O 127 127	0	0
4	D	110	Total O 110 110	0	0
4	E	115	Total O 115 115	0	0
4	F	125	Total O 125 125	0	0
4	G	111	Total O 111 111	0	0
4	H	104	Total O 104 104	0	0

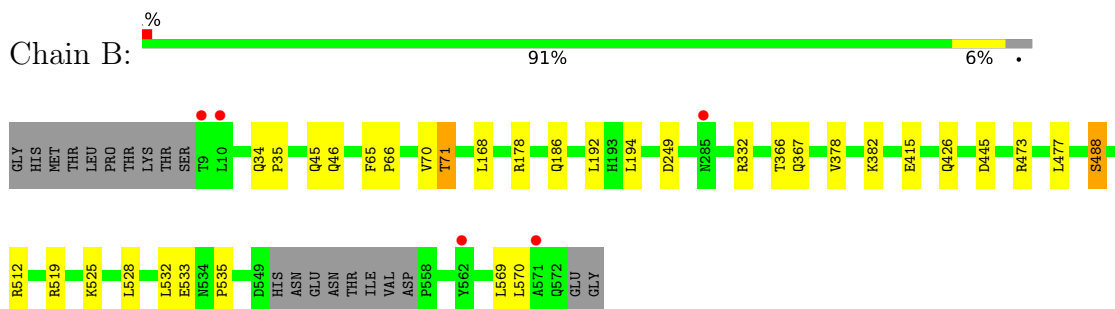
### 3 Residue-property plots [i](#)

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.

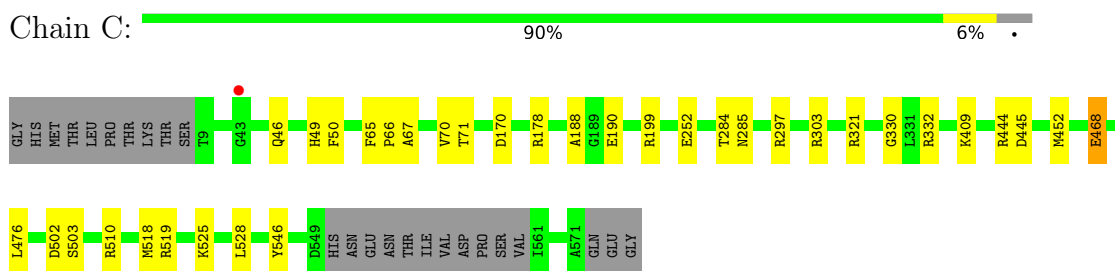
- Molecule 1: Aerobactin synthase IucA



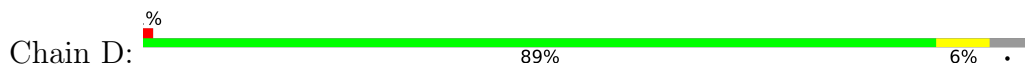
- Molecule 1: Aerobactin synthase IucA

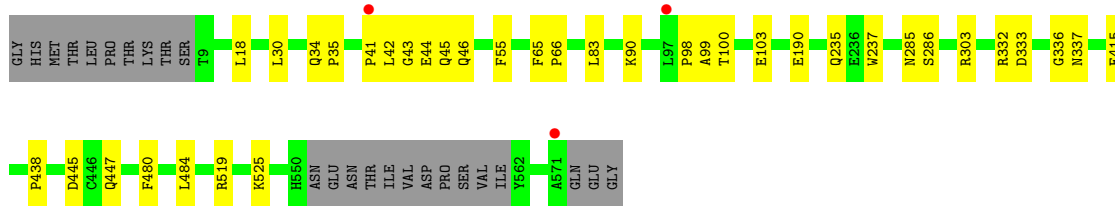


- Molecule 1: Aerobactin synthase IucA

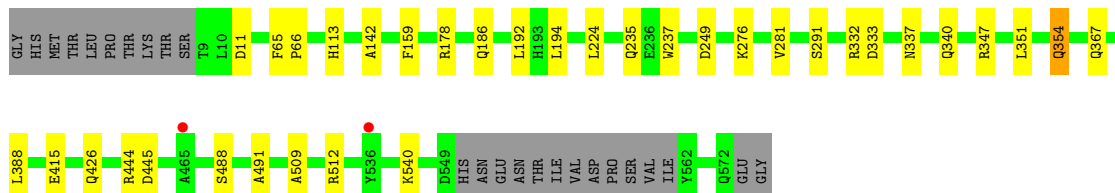
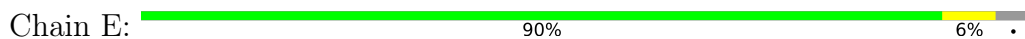


- Molecule 1: Aerobactin synthase IucA

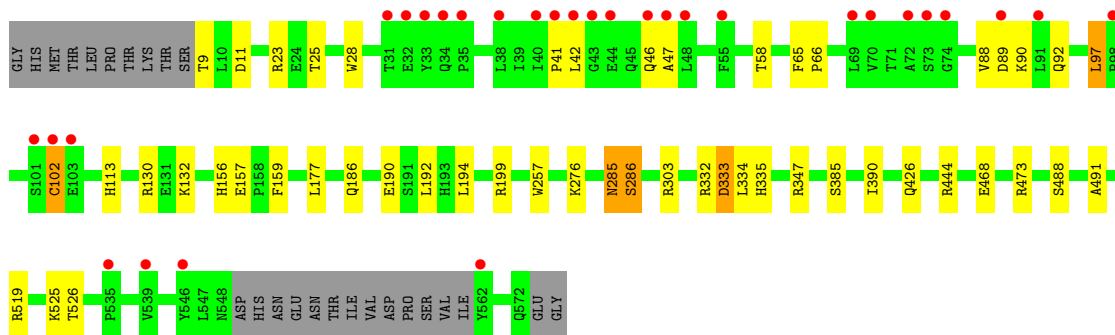
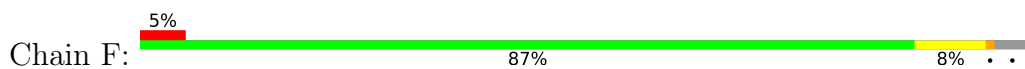




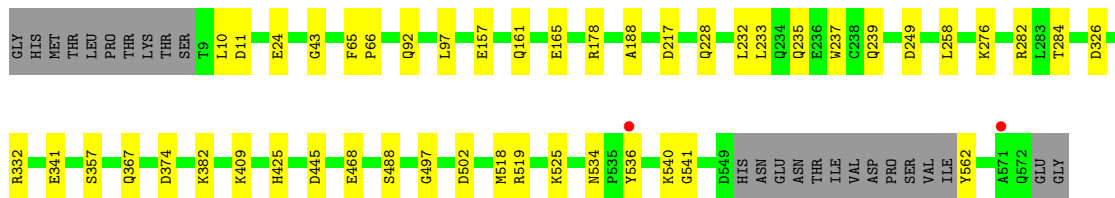
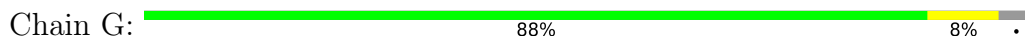
● Molecule 1: Aerobactin synthase IucA



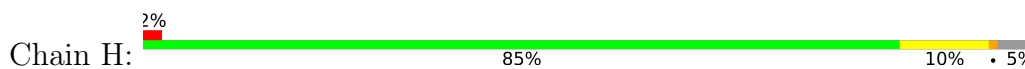
● Molecule 1: Aerobactin synthase IucA



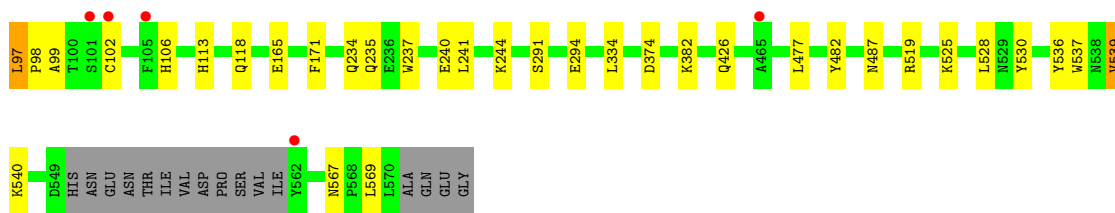
● Molecule 1: Aerobactin synthase IucA



● Molecule 1: Aerobactin synthase IucA







## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	170.85Å 96.63Å 173.23Å 90.00° 90.02° 90.00°	Depositor
Resolution (Å)	49.57 – 2.20 49.57 – 2.20	Depositor EDS
% Data completeness (in resolution range)	99.2 (49.57-2.20) 96.7 (49.57-2.20)	Depositor EDS
$R_{merge}$	0.12	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.90 (at 2.20Å)	Xtriage
Refinement program	PHENIX 1.10_2155	Depositor
R, $R_{free}$	0.214 , 0.249 0.214 , 0.246	Depositor DCC
$R_{free}$ test set	14176 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	20.0	Xtriage
Anisotropy	0.635	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 13.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.000 for l,k,-h 0.458 for h,-k,-l 0.000 for l,-k,h	Xtriage
Reported twinning fraction	0.500 for h,-k,-l	Depositor
Outliers	7 of 283617 reflections (0.002%)	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	35902	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 82.13 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.0085e-07. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<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, ATP

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	0.26	0/4500	0.43	0/6133
1	B	0.25	0/4496	0.42	0/6125
1	C	0.23	0/4472	0.41	0/6095
1	D	0.24	0/4450	0.42	0/6066
1	E	0.23	0/4490	0.41	0/6117
1	F	0.23	0/4354	0.41	0/5938
1	G	0.25	0/4471	0.42	0/6094
1	H	0.24	0/4367	0.43	1/5957 (0.0%)
All	All	0.24	0/35600	0.42	1/48525 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	97	LEU	C-N-CD	5.06	139.02	128.40

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	4388	0	4258	30	0
1	B	4383	0	4245	17	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	4360	0	4207	19	0
1	D	4338	0	4175	22	0
1	E	4378	0	4259	19	0
1	F	4248	0	3983	34	0
1	G	4359	0	4208	33	0
1	H	4258	0	4029	53	0
2	A	31	0	12	2	0
2	B	31	0	12	0	0
2	C	31	0	12	0	0
2	D	31	0	12	0	0
2	E	31	0	12	2	0
2	F	31	0	12	2	0
2	G	31	0	12	1	0
2	H	31	0	12	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
4	A	124	0	0	1	0
4	B	118	0	0	2	0
4	C	127	0	0	4	0
4	D	110	0	0	3	0
4	E	115	0	0	2	0
4	F	125	0	0	3	0
4	G	111	0	0	11	0
4	H	104	0	0	1	0
All	All	35902	0	33460	223	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 3.

The worst 5 of 223 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:D:100:THR:HA	1:D:103:GLU:OE2	1.25	1.29
1:H:42:LEU:HA	1:H:90:LYS:NZ	1.50	1.25
1:A:72:ALA:HB2	1:F:335:HIS:NE2	1.62	1.12

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:157:GLU:OE2	1:G:282:ARG:HD2	1.64	0.96
1:D:99:ALA:O	1:D:103:GLU:OE1	1.84	0.95

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	552/576 (96%)	535 (97%)	14 (2%)	3 (0%)	29	31
1	B	552/576 (96%)	530 (96%)	19 (3%)	3 (0%)	29	31
1	C	548/576 (95%)	528 (96%)	18 (3%)	2 (0%)	34	37
1	D	548/576 (95%)	524 (96%)	20 (4%)	4 (1%)	22	22
1	E	548/576 (95%)	531 (97%)	15 (3%)	2 (0%)	34	37
1	F	547/576 (95%)	522 (95%)	21 (4%)	4 (1%)	22	22
1	G	548/576 (95%)	533 (97%)	12 (2%)	3 (0%)	29	31
1	H	546/576 (95%)	512 (94%)	31 (6%)	3 (0%)	29	31
All	All	4389/4608 (95%)	4215 (96%)	150 (3%)	24 (0%)	29	31

5 of 24 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	44	GLU
1	D	286	SER
1	F	285	ASN
1	F	286	SER
1	H	93	HIS

### 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	453/488 (93%)	451 (100%)	2 (0%)	91	96
1	B	450/488 (92%)	447 (99%)	3 (1%)	84	91
1	C	451/488 (92%)	447 (99%)	4 (1%)	78	88
1	D	443/488 (91%)	443 (100%)	0	100	100
1	E	454/488 (93%)	452 (100%)	2 (0%)	91	96
1	F	419/488 (86%)	413 (99%)	6 (1%)	67	80
1	G	449/488 (92%)	446 (99%)	3 (1%)	84	91
1	H	423/488 (87%)	417 (99%)	6 (1%)	67	80
All	All	3542/3904 (91%)	3516 (99%)	26 (1%)	84	91

5 of 26 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	199	ARG
1	G	367	GLN
1	H	539	VAL
1	F	468	GLU
1	G	425	HIS

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

Mol	Chain	Res	Type
1	C	534	ASN
1	D	161	GLN
1	E	213	ASN
1	G	306	GLN
1	H	92	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 16 ligands modelled in this entry, 8 are monoatomic - leaving 8 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	ATP	C	600	3	26,33,33	0.91	1 (3%)	31,52,52	1.35	5 (16%)
2	ATP	F	600	3	26,33,33	0.92	1 (3%)	31,52,52	1.48	5 (16%)
2	ATP	B	600	3	26,33,33	0.93	1 (3%)	31,52,52	1.39	5 (16%)
2	ATP	H	600	3	26,33,33	0.95	1 (3%)	31,52,52	1.32	4 (12%)
2	ATP	G	600	3	26,33,33	0.91	1 (3%)	31,52,52	1.33	4 (12%)
2	ATP	E	600	3	26,33,33	0.92	1 (3%)	31,52,52	1.42	5 (16%)
2	ATP	A	600	3	26,33,33	0.92	1 (3%)	31,52,52	1.36	4 (12%)
2	ATP	D	600	3	26,33,33	0.88	1 (3%)	31,52,52	1.31	4 (12%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	ATP	C	600	3	-	1/18/38/38	0/3/3/3
2	ATP	F	600	3	-	3/18/38/38	0/3/3/3
2	ATP	B	600	3	-	1/18/38/38	0/3/3/3
2	ATP	H	600	3	-	5/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	ATP	G	600	3	-	3/18/38/38	0/3/3/3
2	ATP	E	600	3	-	3/18/38/38	0/3/3/3
2	ATP	A	600	3	-	5/18/38/38	0/3/3/3
2	ATP	D	600	3	-	5/18/38/38	0/3/3/3

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	600	ATP	C5-C4	2.45	1.47	1.40
2	H	600	ATP	C5-C4	2.38	1.47	1.40
2	C	600	ATP	C5-C4	2.38	1.47	1.40
2	A	600	ATP	C5-C4	2.38	1.47	1.40
2	E	600	ATP	C5-C4	2.34	1.47	1.40

The worst 5 of 36 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	600	ATP	N3-C2-N1	-3.87	122.62	128.68
2	B	600	ATP	N3-C2-N1	-3.70	122.90	128.68
2	C	600	ATP	N3-C2-N1	-3.68	122.92	128.68
2	F	600	ATP	N3-C2-N1	-3.67	122.94	128.68
2	E	600	ATP	N3-C2-N1	-3.66	122.95	128.68

There are no chirality outliers.

5 of 26 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	600	ATP	PB-O3B-PG-O3G
2	D	600	ATP	C5'-O5'-PA-O2A
2	H	600	ATP	PB-O3B-PG-O2G
2	D	600	ATP	O4'-C4'-C5'-O5'
2	H	600	ATP	PB-O3B-PG-O1G

There are no ring outliers.

4 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	600	ATP	2	0
2	G	600	ATP	1	0
2	E	600	ATP	2	0

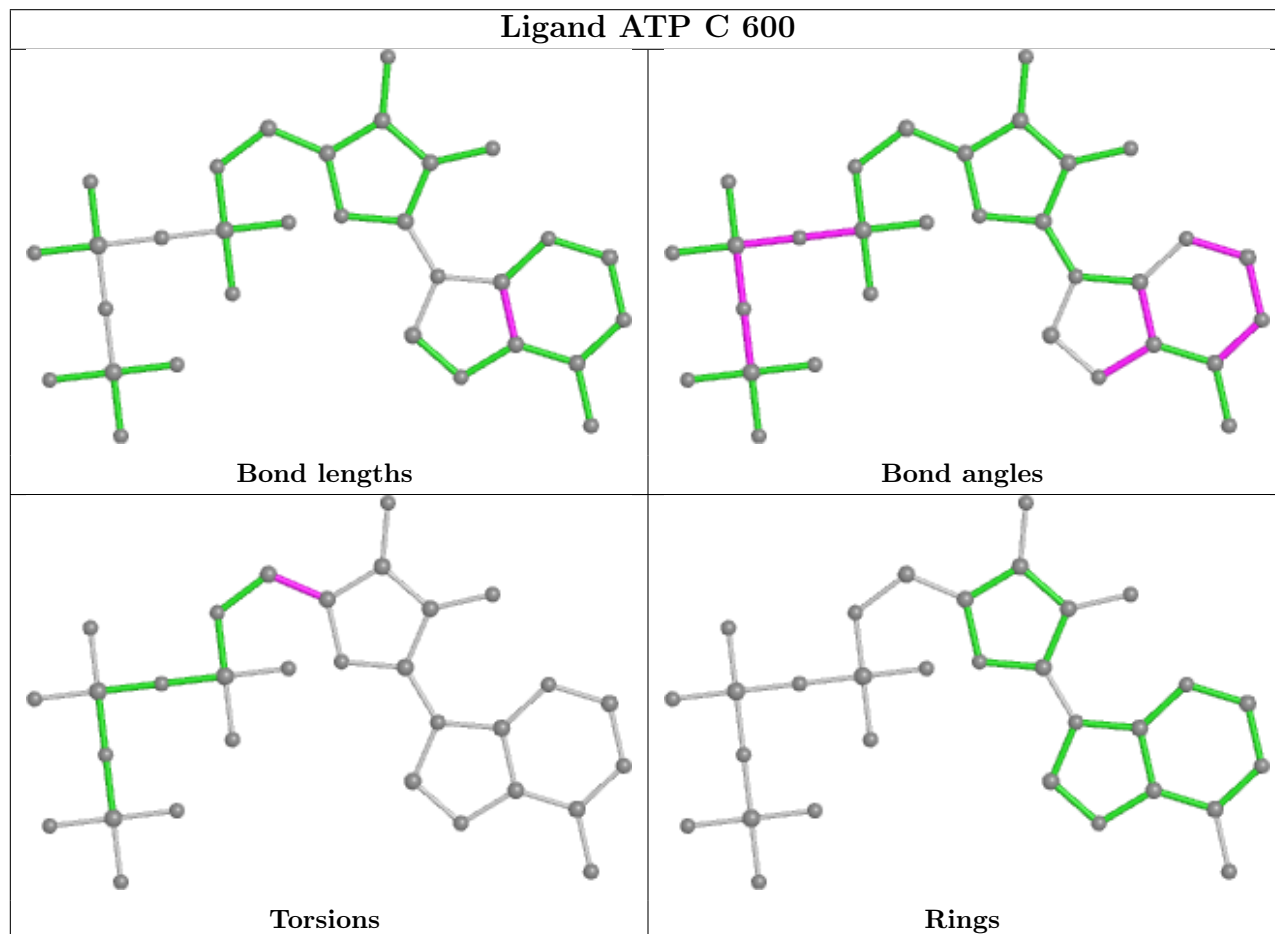
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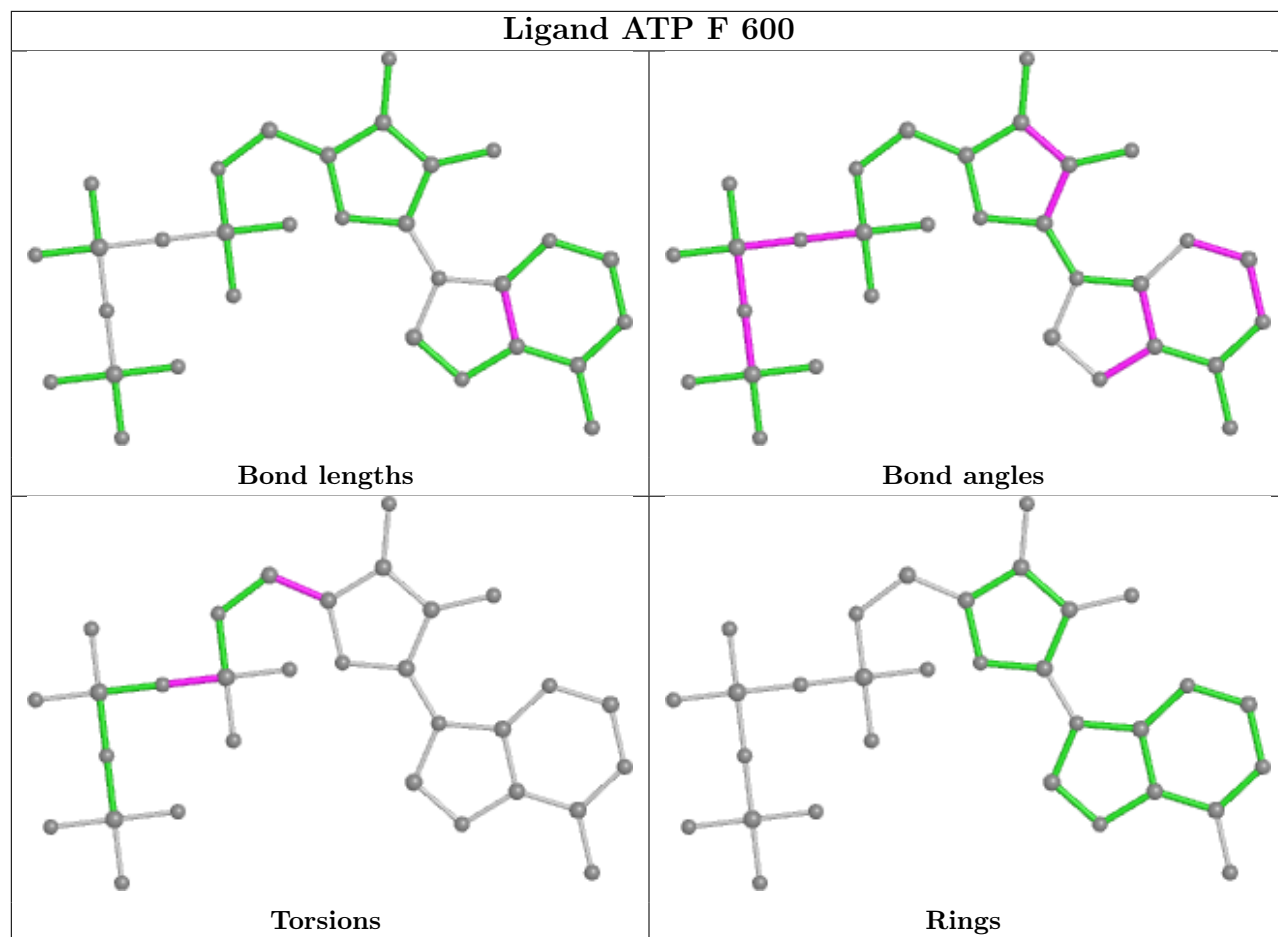


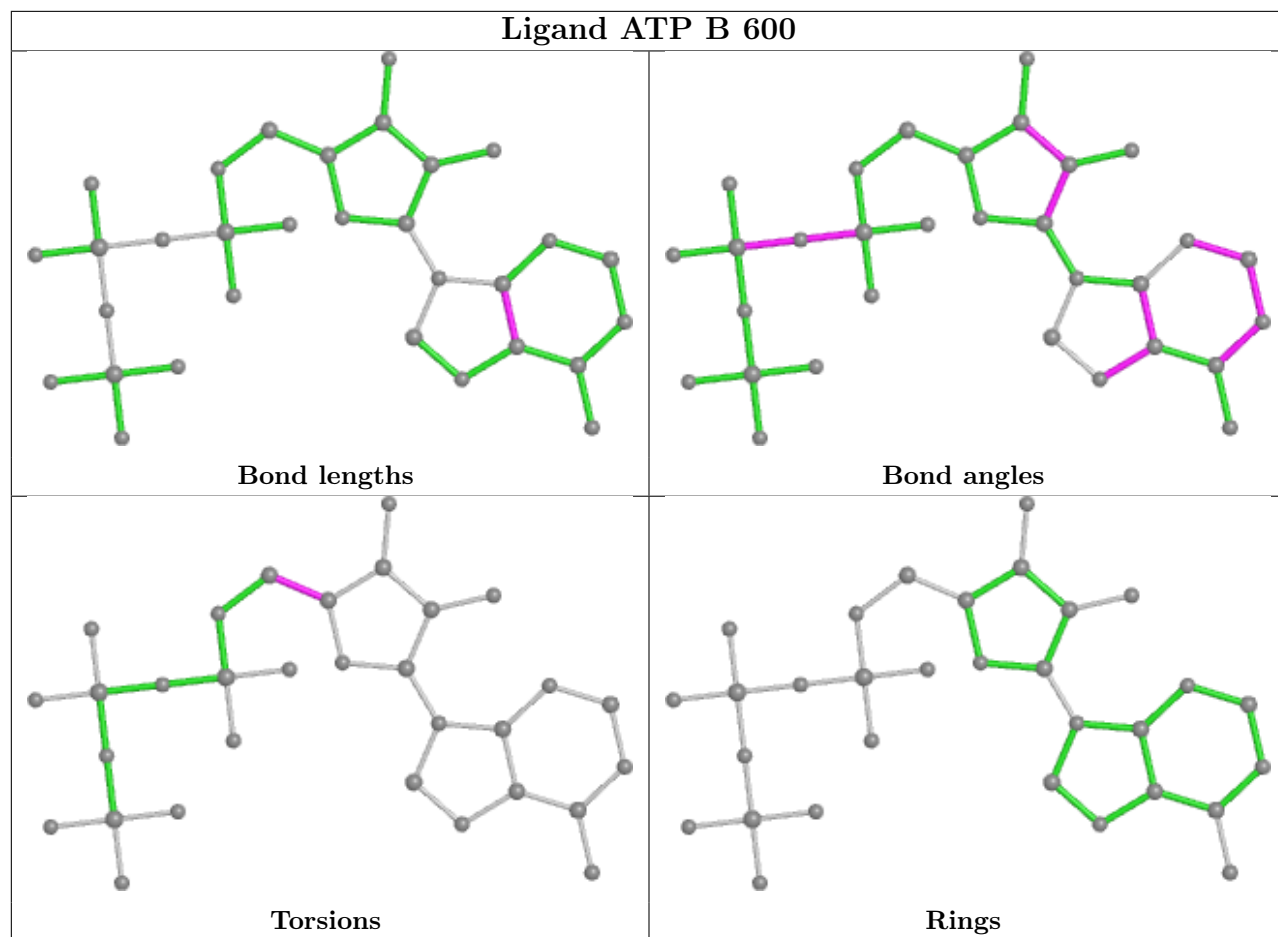
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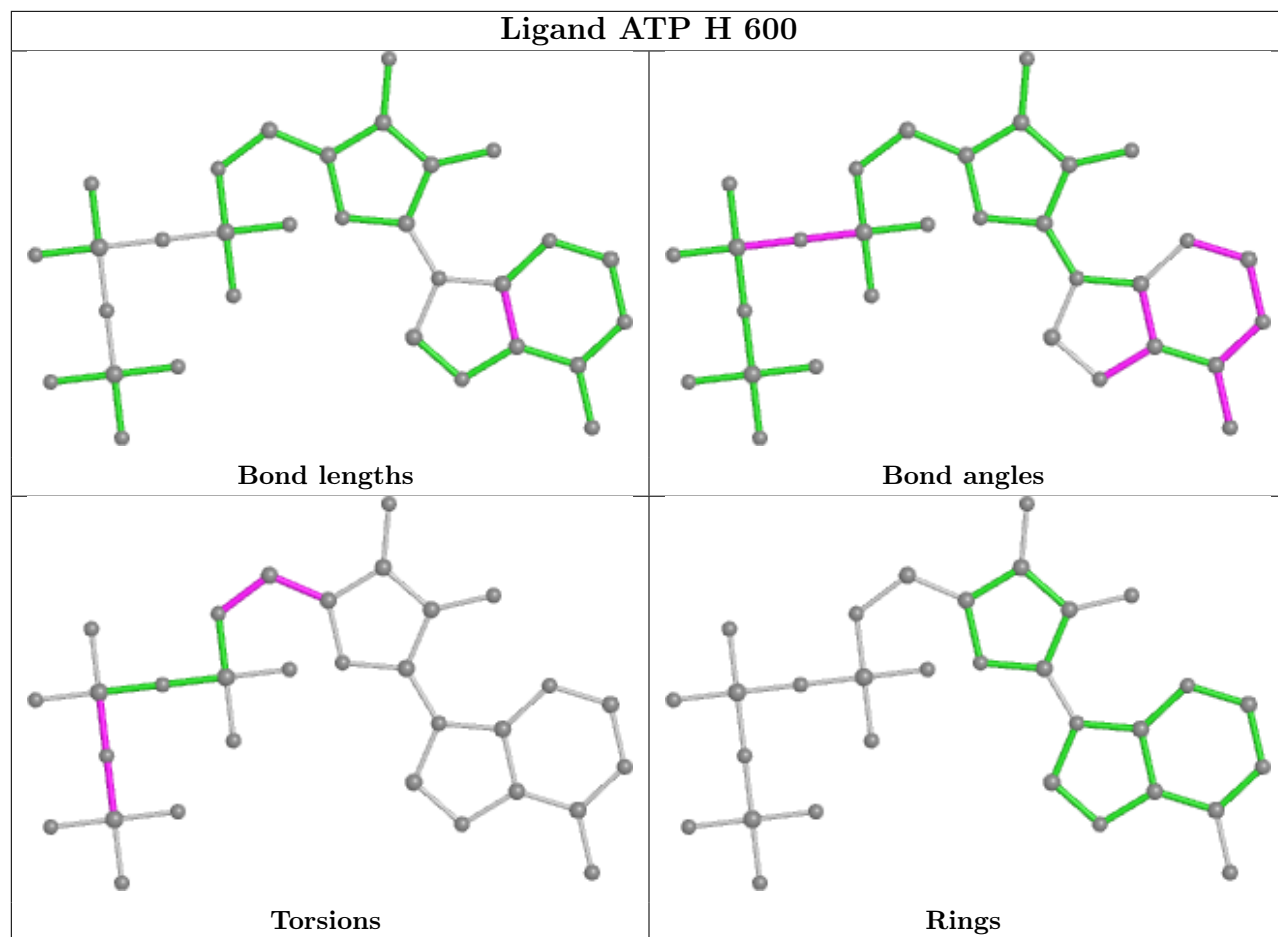
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	600	ATP	2	0

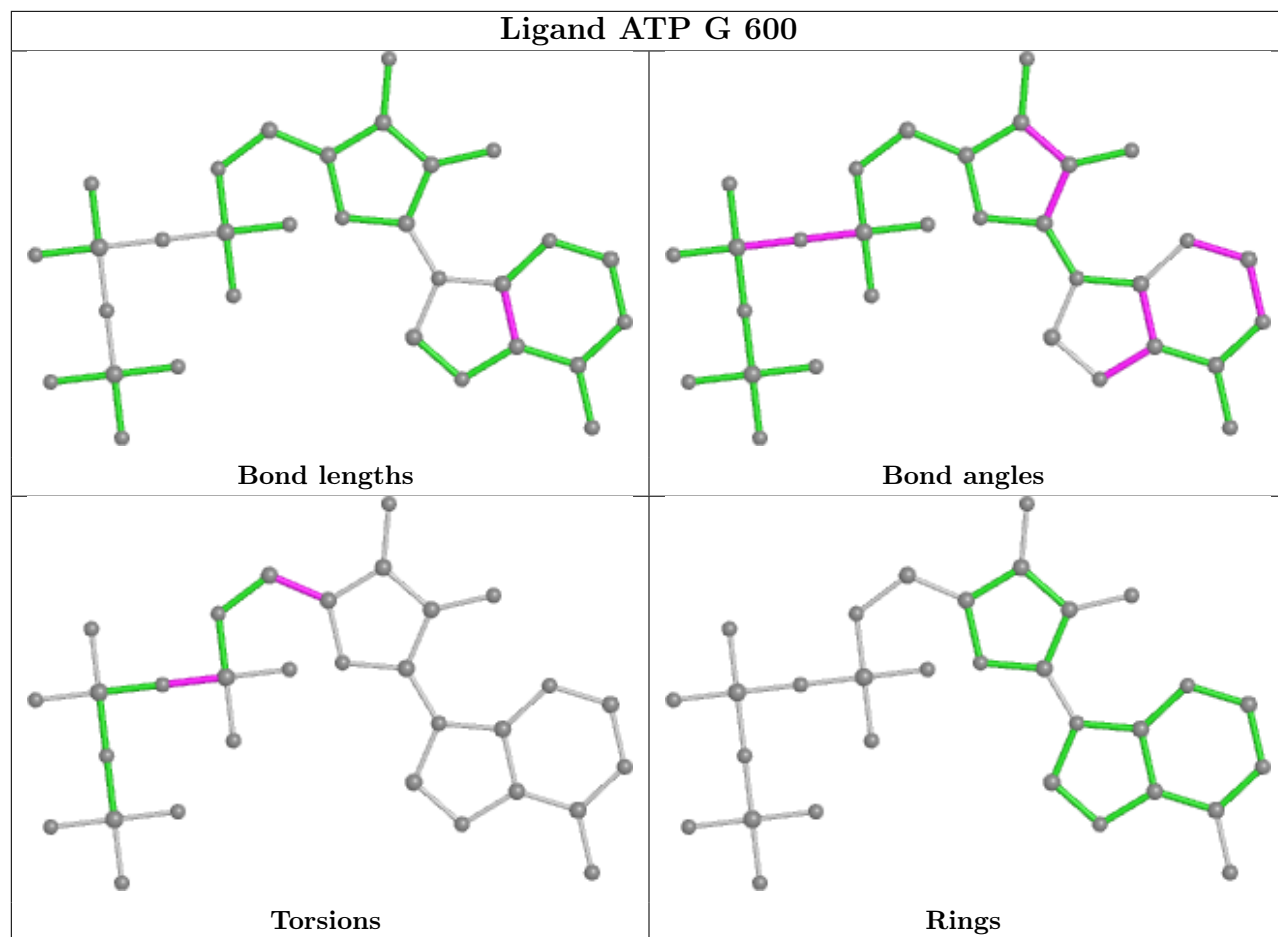
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

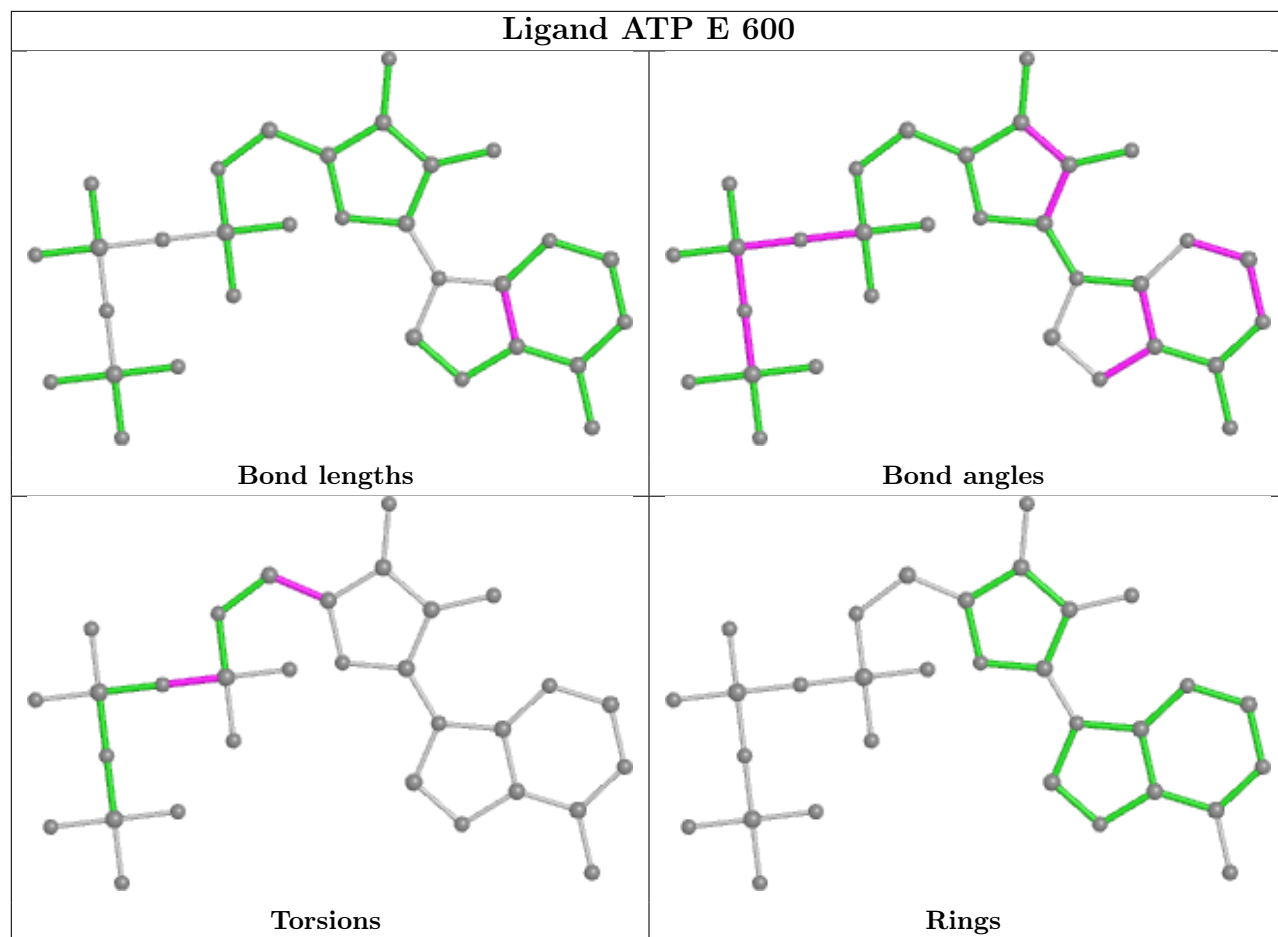


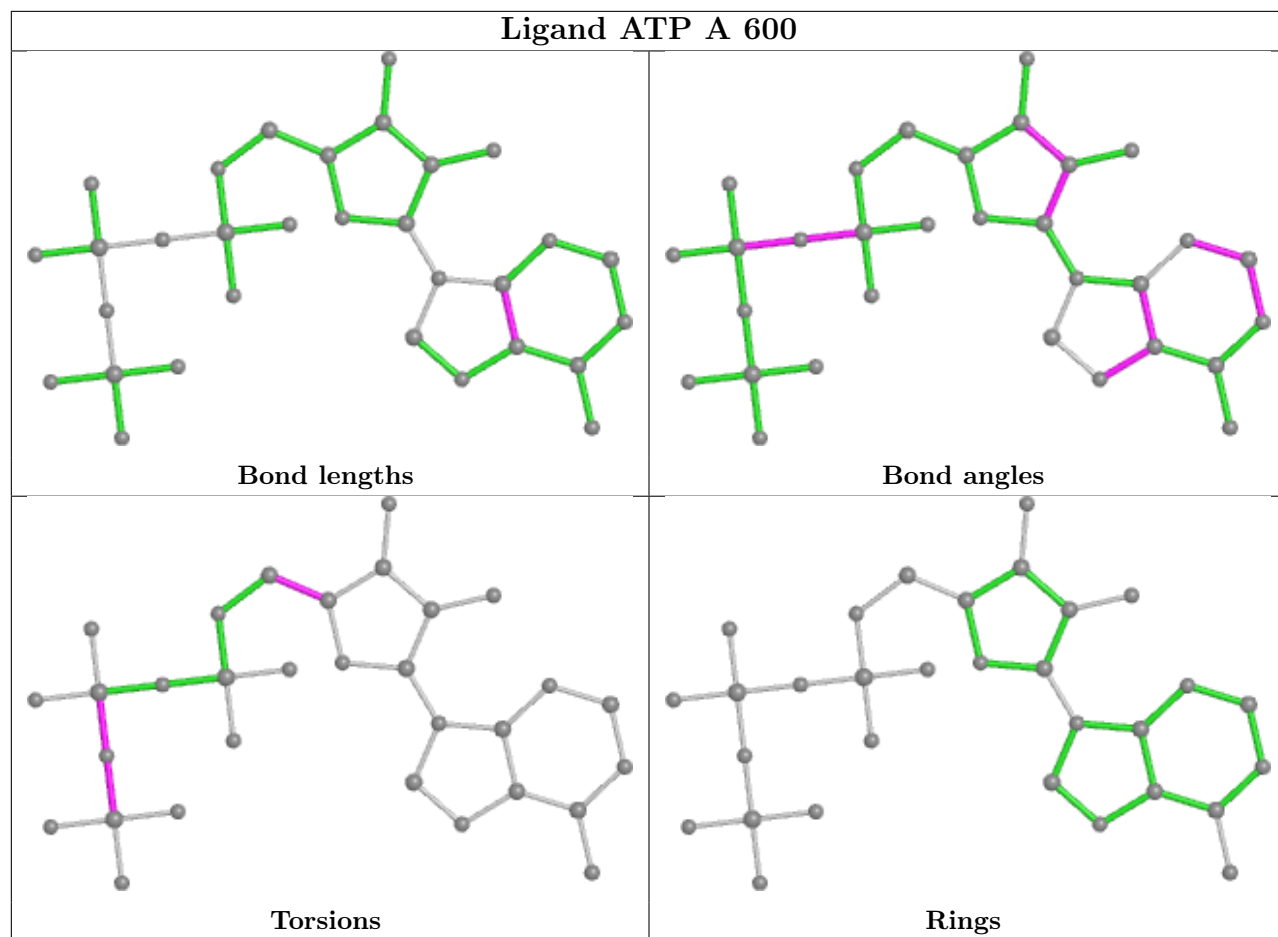


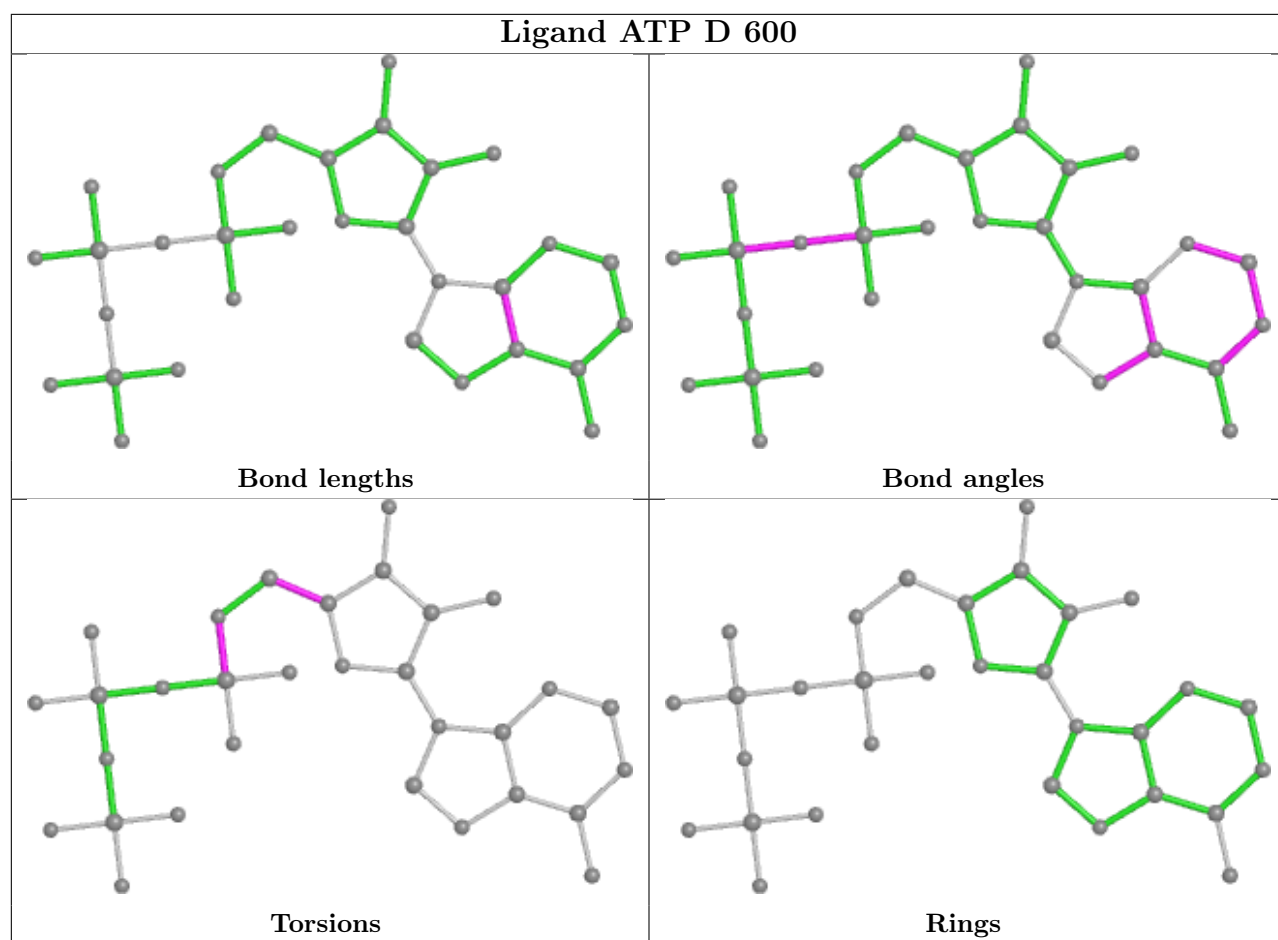












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [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	556/576 (96%)	-0.57	4 (0%) 87 86	12, 26, 47, 69	0
1	B	556/576 (96%)	-0.53	5 (0%) 84 83	14, 29, 48, 68	0
1	C	552/576 (95%)	-0.62	1 (0%) 95 94	11, 23, 44, 61	0
1	D	552/576 (95%)	-0.48	3 (0%) 91 90	13, 27, 51, 71	0
1	E	552/576 (95%)	-0.61	2 (0%) 92 91	11, 21, 41, 67	0
1	F	551/576 (95%)	-0.00	30 (5%) 25 24	21, 40, 83, 114	0
1	G	552/576 (95%)	-0.69	2 (0%) 92 91	8, 18, 36, 58	0
1	H	550/576 (95%)	-0.26	14 (2%) 57 55	14, 32, 71, 90	0
All	All	4421/4608 (95%)	-0.47	61 (1%) 75 73	8, 27, 58, 114	0

The worst 5 of 61 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	47	ALA	10.3
1	F	70	VAL	5.9
1	F	74	GLY	5.9
1	F	69	LEU	5.7
1	F	41	PRO	5.2

### 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

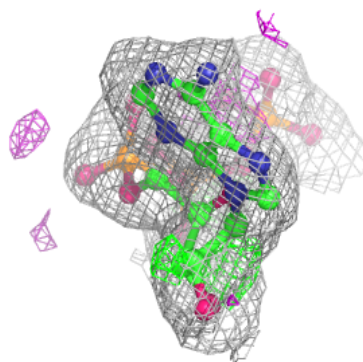
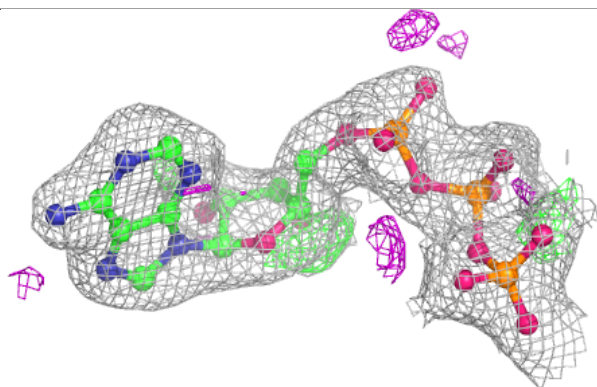
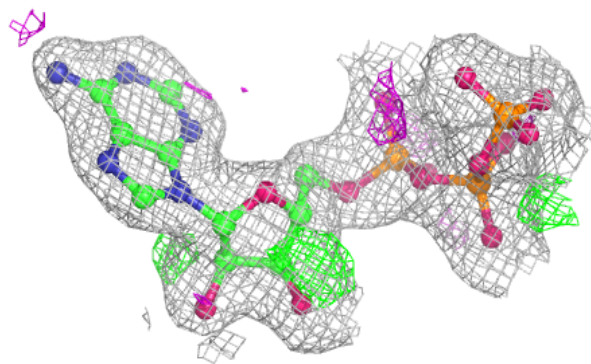
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	ATP	H	600	31/31	0.96	0.11	13,25,32,37	0
3	MG	E	601	1/1	0.96	0.10	21,21,21,21	0
2	ATP	D	600	31/31	0.97	0.10	11,16,23,27	0
2	ATP	E	600	31/31	0.97	0.09	8,18,24,25	0
2	ATP	F	600	31/31	0.97	0.10	15,21,32,35	0
2	ATP	G	600	31/31	0.97	0.10	5,14,22,28	0
2	ATP	A	600	31/31	0.97	0.10	14,20,25,28	0
2	ATP	B	600	31/31	0.97	0.11	11,27,30,35	0
3	MG	H	601	1/1	0.97	0.08	30,30,30,30	0
3	MG	B	601	1/1	0.98	0.06	24,24,24,24	0
3	MG	D	601	1/1	0.98	0.10	21,21,21,21	0
2	ATP	C	600	31/31	0.98	0.09	7,13,20,23	0
3	MG	A	601	1/1	0.98	0.08	19,19,19,19	0
3	MG	F	601	1/1	0.99	0.07	27,27,27,27	0
3	MG	G	601	1/1	0.99	0.05	17,17,17,17	0
3	MG	C	601	1/1	0.99	0.05	14,14,14,14	0

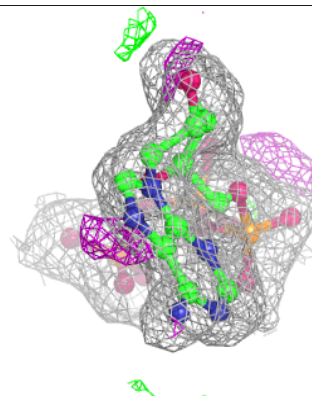
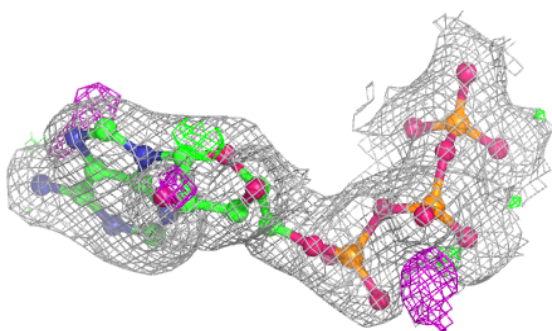
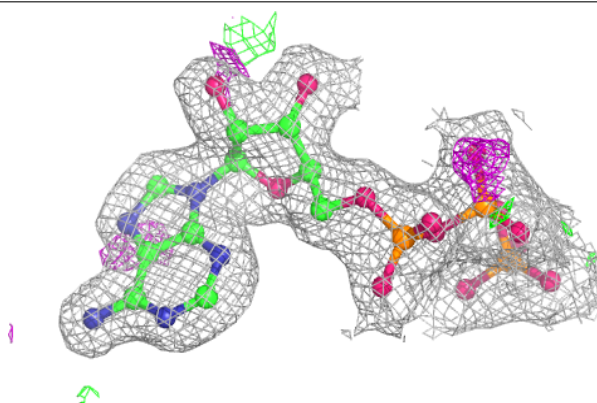
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

**Electron density around ATP H 600:**

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

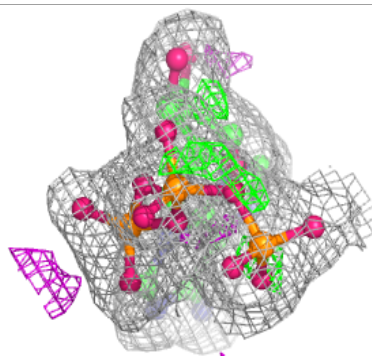
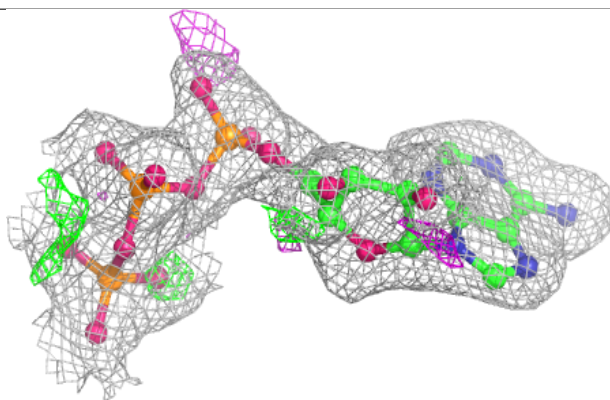
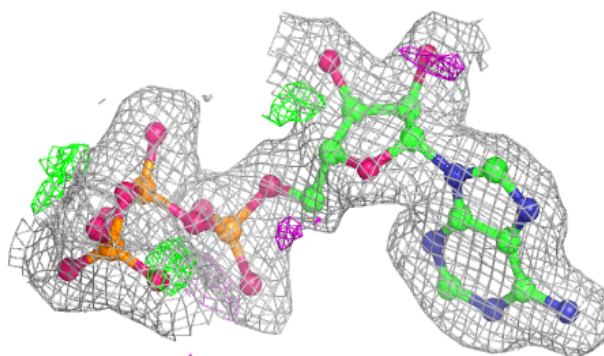
**Electron density around ATP D 600:**

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

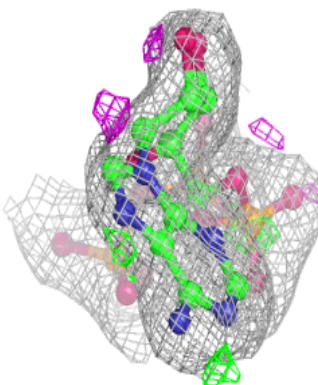
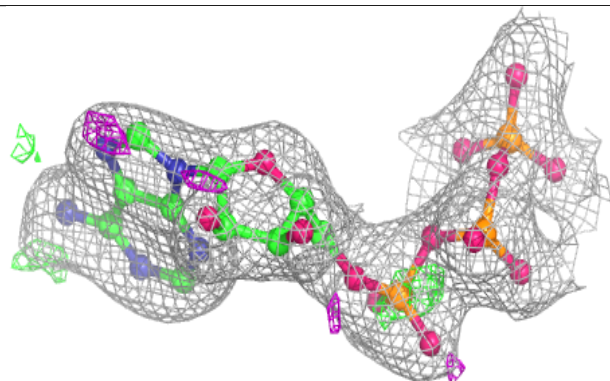
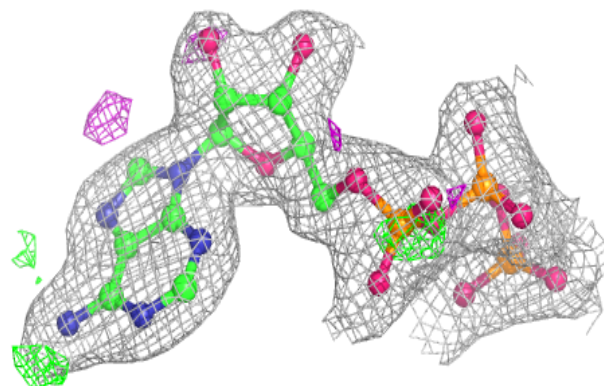


**Electron density around ATP E 600:**

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

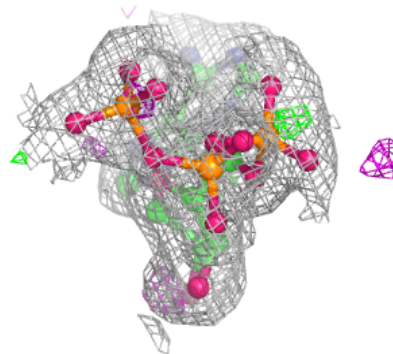
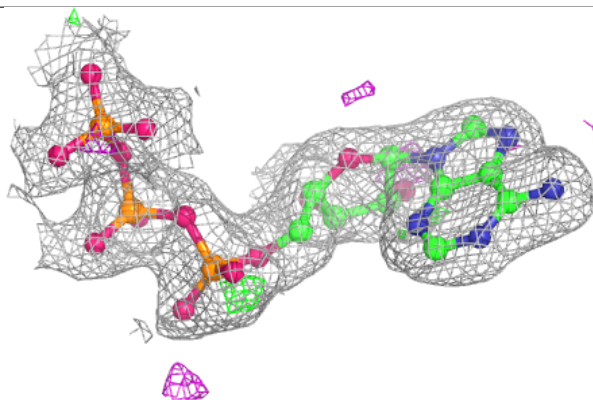
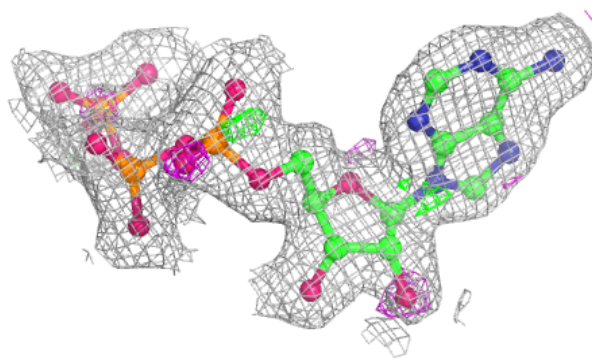
**Electron density around ATP F 600:**

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

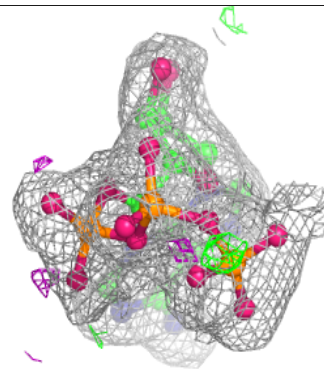
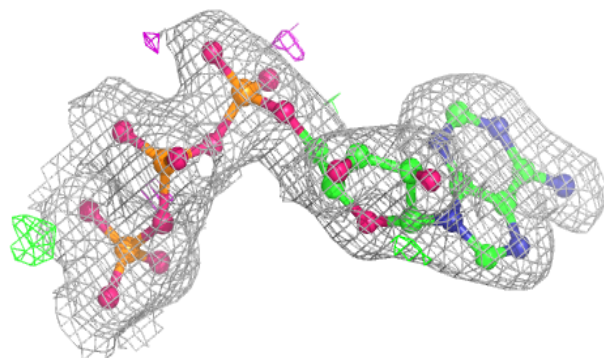
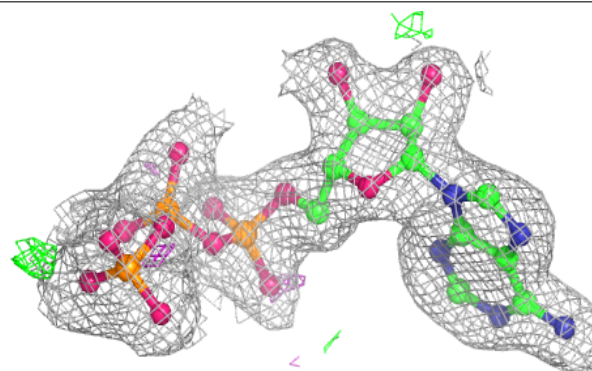


**Electron density around ATP G 600:**

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

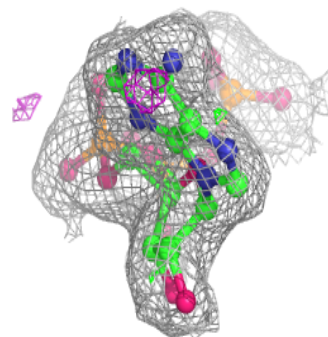
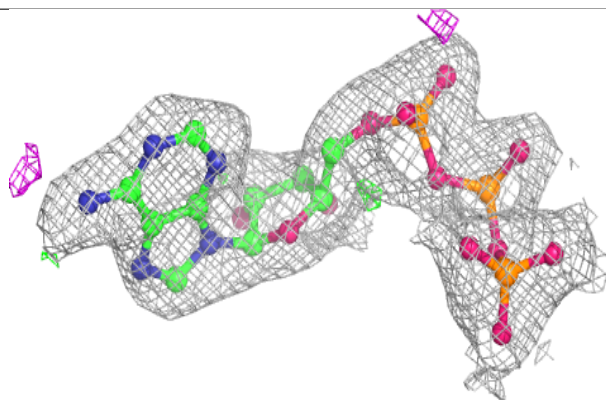
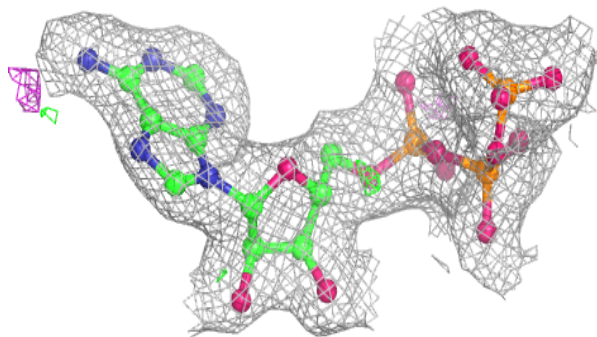
**Electron density around ATP A 600:**

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

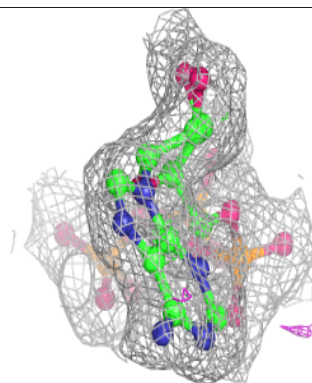
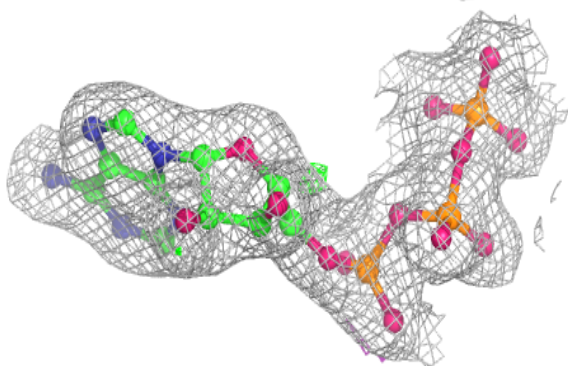
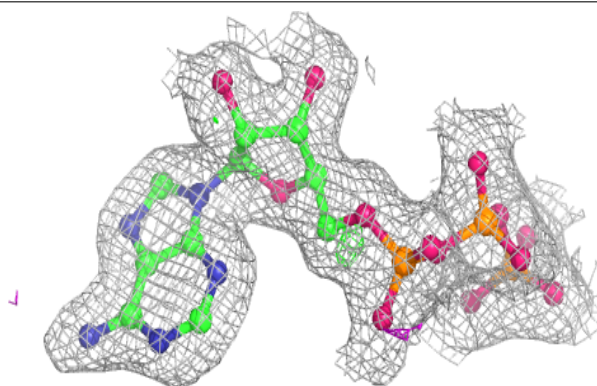


**Electron density around ATP B 600:**

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

**Electron density around ATP C 600:**

$2mF_o-DF_c$  (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.