



# wwPDB X-ray Structure Validation Summary Report ⓘ

Oct 2, 2025 – 10:11 AM EDT

PDB ID : 9PGV / pdb\_00009pgv  
Title : HIV Capsid Hexamer bound to Compound 24  
Authors : Somoza, J.R.; Anderson, R.L.; Villasenor, A.G.; Ferrao, R.D.  
Deposited on : 2025-07-08  
Resolution : 2.30 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 : 4-5-2 with Phenix2.0  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtriage (Phenix) : 2.0  
EDS : 3.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.010 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.46

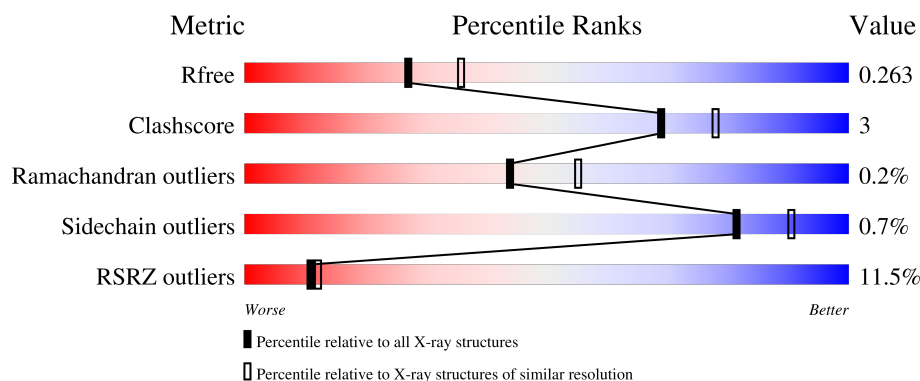
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 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))
$R_{free}$	164625	5963 (2.30-2.30)
Clashscore	180529	6698 (2.30-2.30)
Ramachandran outliers	177936	6640 (2.30-2.30)
Sidechain outliers	177891	6640 (2.30-2.30)
RSRZ outliers	164620	5963 (2.30-2.30)

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	232	<div> <div>18%</div> <div> <div>75%</div> <div>16%</div> <div>9%</div> </div> </div>
1	B	232	<div> <div>7%</div> <div> <div>80%</div> <div>9%</div> <div>10%</div> </div> </div>
1	C	232	<div> <div>5%</div> <div> <div>85%</div> <div>•</div> <div>11%</div> </div> </div>
1	D	232	<div> <div>6%</div> <div> <div>80%</div> <div>7%</div> <div>13%</div> </div> </div>
1	E	232	<div> <div>18%</div> <div> <div>83%</div> <div>8%</div> <div>9%</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	F	232	
1	G	232	
1	H	232	
1	I	232	
1	J	232	
1	K	232	
1	L	232	

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 20187 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 HIV-1 capsid.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	211	Total	C	N	O	S	0	0	0
			1621	1022	281	304	14			
1	B	208	Total	C	N	O	S	0	0	0
			1602	1007	280	301	14			
1	C	207	Total	C	N	O	S	0	0	0
			1605	1009	280	302	14			
1	D	202	Total	C	N	O	S	0	0	0
			1567	988	272	293	14			
1	E	211	Total	C	N	O	S	0	0	0
			1619	1021	281	303	14			
1	F	218	Total	C	N	O	S	0	0	0
			1674	1051	293	316	14			
1	G	203	Total	C	N	O	S	0	0	0
			1580	995	276	295	14			
1	H	213	Total	C	N	O	S	0	0	0
			1640	1031	287	308	14			
1	I	211	Total	C	N	O	S	0	0	0
			1621	1022	282	303	14			
1	J	213	Total	C	N	O	S	0	0	0
			1639	1032	286	307	14			
1	K	204	Total	C	N	O	S	0	0	0
			1578	994	274	296	14			
1	L	212	Total	C	N	O	S	0	0	0
			1629	1026	283	306	14			

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	MET	-	initiating methionine	UNP B6DRA0
A	14	CYS	ALA	conflict	UNP B6DRA0
A	45	CYS	GLU	conflict	UNP B6DRA0
A	184	ALA	TRP	conflict	UNP B6DRA0
A	185	ALA	MET	conflict	UNP B6DRA0

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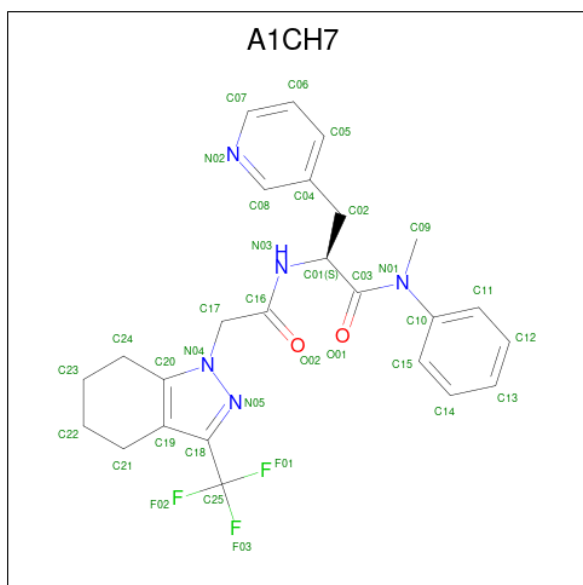
Chain	Residue	Modelled	Actual	Comment	Reference
B	0	MET	-	initiating methionine	UNP B6DRA0
B	14	CYS	ALA	conflict	UNP B6DRA0
B	45	CYS	GLU	conflict	UNP B6DRA0
B	184	ALA	TRP	conflict	UNP B6DRA0
B	185	ALA	MET	conflict	UNP B6DRA0
C	0	MET	-	initiating methionine	UNP B6DRA0
C	14	CYS	ALA	conflict	UNP B6DRA0
C	45	CYS	GLU	conflict	UNP B6DRA0
C	184	ALA	TRP	conflict	UNP B6DRA0
C	185	ALA	MET	conflict	UNP B6DRA0
D	0	MET	-	initiating methionine	UNP B6DRA0
D	14	CYS	ALA	conflict	UNP B6DRA0
D	45	CYS	GLU	conflict	UNP B6DRA0
D	184	ALA	TRP	conflict	UNP B6DRA0
D	185	ALA	MET	conflict	UNP B6DRA0
E	0	MET	-	initiating methionine	UNP B6DRA0
E	14	CYS	ALA	conflict	UNP B6DRA0
E	45	CYS	GLU	conflict	UNP B6DRA0
E	184	ALA	TRP	conflict	UNP B6DRA0
E	185	ALA	MET	conflict	UNP B6DRA0
F	0	MET	-	initiating methionine	UNP B6DRA0
F	14	CYS	ALA	conflict	UNP B6DRA0
F	45	CYS	GLU	conflict	UNP B6DRA0
F	184	ALA	TRP	conflict	UNP B6DRA0
F	185	ALA	MET	conflict	UNP B6DRA0
G	0	MET	-	initiating methionine	UNP B6DRA0
G	14	CYS	ALA	conflict	UNP B6DRA0
G	45	CYS	GLU	conflict	UNP B6DRA0
G	184	ALA	TRP	conflict	UNP B6DRA0
G	185	ALA	MET	conflict	UNP B6DRA0
H	0	MET	-	initiating methionine	UNP B6DRA0
H	14	CYS	ALA	conflict	UNP B6DRA0
H	45	CYS	GLU	conflict	UNP B6DRA0
H	184	ALA	TRP	conflict	UNP B6DRA0
H	185	ALA	MET	conflict	UNP B6DRA0
I	0	MET	-	initiating methionine	UNP B6DRA0
I	14	CYS	ALA	conflict	UNP B6DRA0
I	45	CYS	GLU	conflict	UNP B6DRA0
I	184	ALA	TRP	conflict	UNP B6DRA0
I	185	ALA	MET	conflict	UNP B6DRA0
J	0	MET	-	initiating methionine	UNP B6DRA0
J	14	CYS	ALA	conflict	UNP B6DRA0

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Chain	Residue	Modelled	Actual	Comment	Reference
J	45	CYS	GLU	conflict	UNP B6DRA0
J	184	ALA	TRP	conflict	UNP B6DRA0
J	185	ALA	MET	conflict	UNP B6DRA0
K	0	MET	-	initiating methionine	UNP B6DRA0
K	14	CYS	ALA	conflict	UNP B6DRA0
K	45	CYS	GLU	conflict	UNP B6DRA0
K	184	ALA	TRP	conflict	UNP B6DRA0
K	185	ALA	MET	conflict	UNP B6DRA0
L	0	MET	-	initiating methionine	UNP B6DRA0
L	14	CYS	ALA	conflict	UNP B6DRA0
L	45	CYS	GLU	conflict	UNP B6DRA0
L	184	ALA	TRP	conflict	UNP B6DRA0
L	185	ALA	MET	conflict	UNP B6DRA0

- Molecule 2 is N-methyl-N-phenyl-3-(pyridin-3-yl)-N 2 -{[3-(trifluoromethyl)-4,5,6,7-tetrahydro-1H-indazol-1-yl]acetyl}-L-alaninamide (CCD ID: A1CH7) (formula: C<sub>25</sub>H<sub>26</sub>F<sub>3</sub>N<sub>5</sub>O<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	B	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	C	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	D	1	Total	C	F	N	O	0	0
			35	25	3	5	2		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	D	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	F	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	G	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	H	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	I	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	J	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	K	1	Total	C	F	N	O	0	0
			35	25	3	5	2		
2	L	1	Total	C	F	N	O	0	0
			35	25	3	5	2		

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	28	Total	O	0	0
			28	28		
3	B	37	Total	O	0	0
			37	37		
3	C	32	Total	O	0	0
			32	32		
3	D	51	Total	O	0	0
			51	51		
3	E	35	Total	O	0	0
			35	35		
3	F	47	Total	O	0	0
			47	47		
3	G	30	Total	O	0	0
			30	30		
3	H	38	Total	O	0	0
			38	38		
3	I	25	Total	O	0	0
			25	25		
3	J	21	Total	O	0	0
			21	21		
3	K	17	Total	O	0	0
			17	17		

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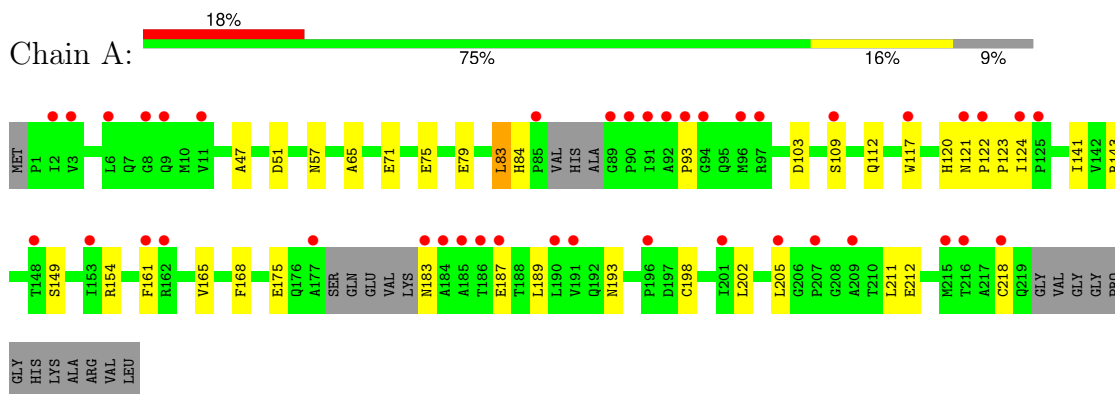
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	L	31	Total	O	0	0
			31	31		



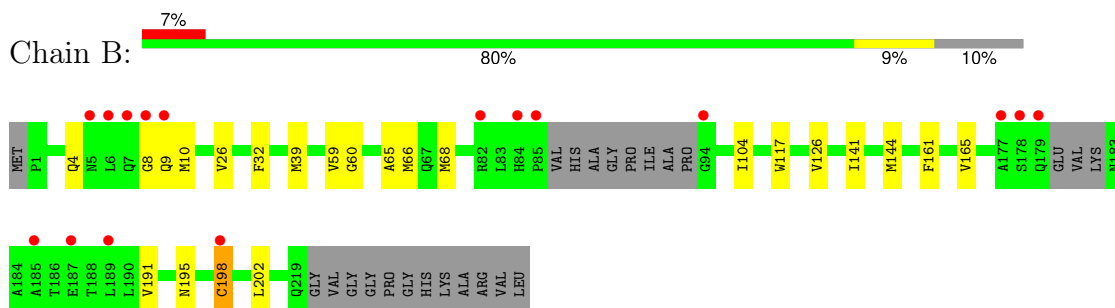
### 3 Residue-property plots

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.

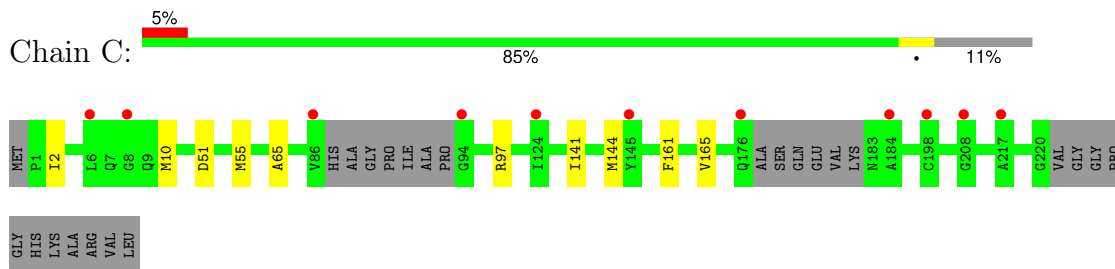
#### • Molecule 1: HIV-1 capsid



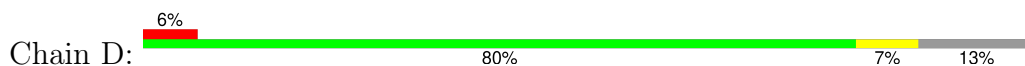
#### • Molecule 1: HIV-1 capsid

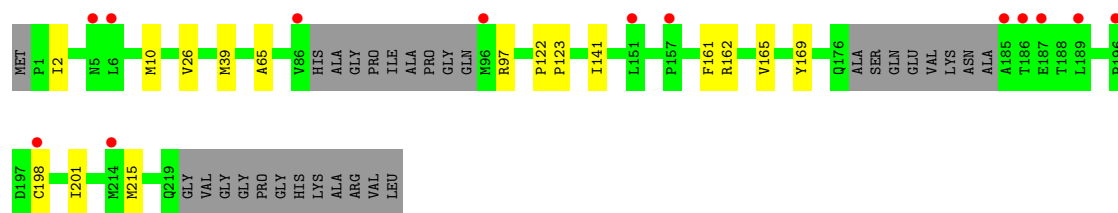


#### • Molecule 1: HIV-1 capsid

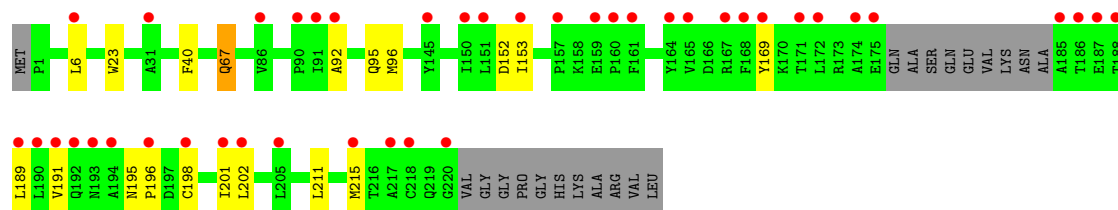
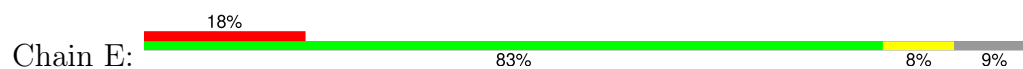


#### • Molecule 1: HIV-1 capsid

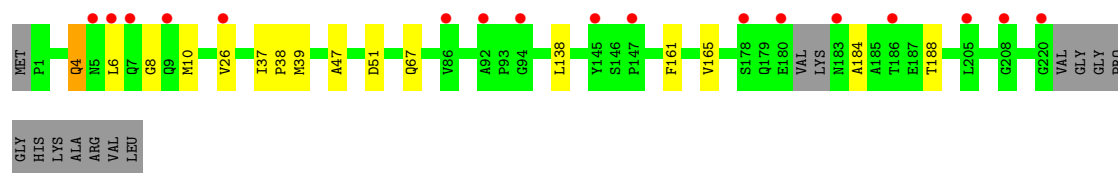
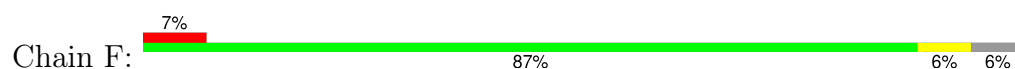




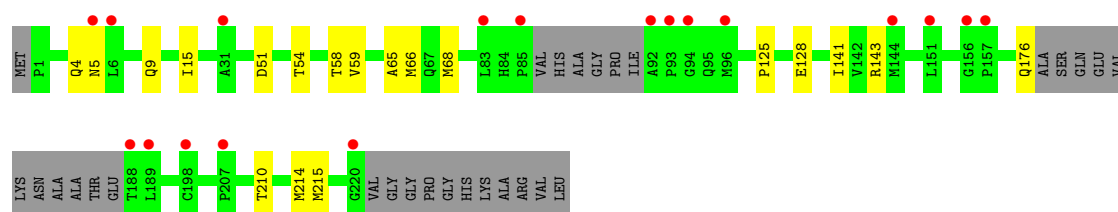
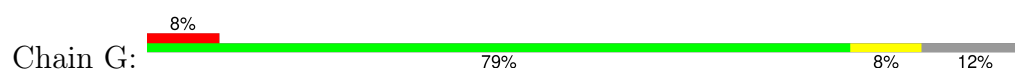
● Molecule 1: HIV-1 capsid



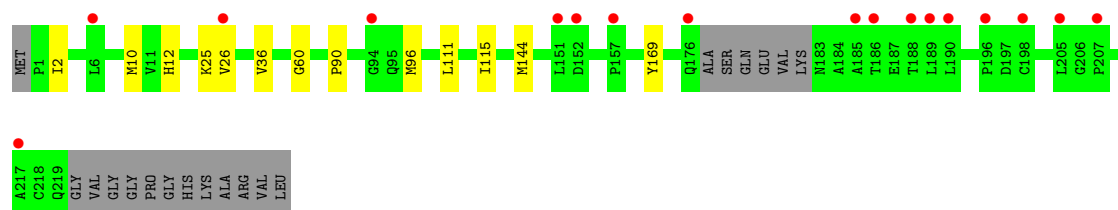
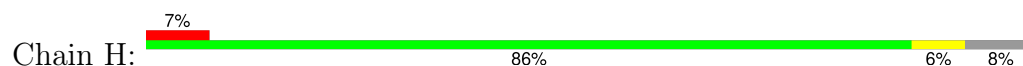
● Molecule 1: HIV-1 capsid



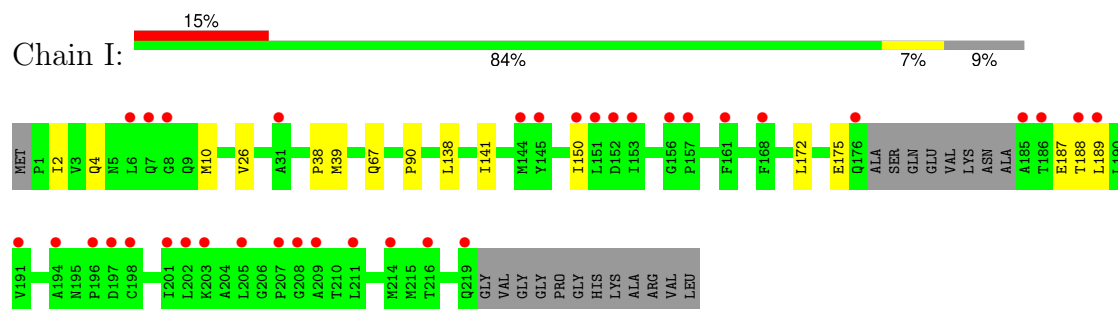
● Molecule 1: HIV-1 capsid



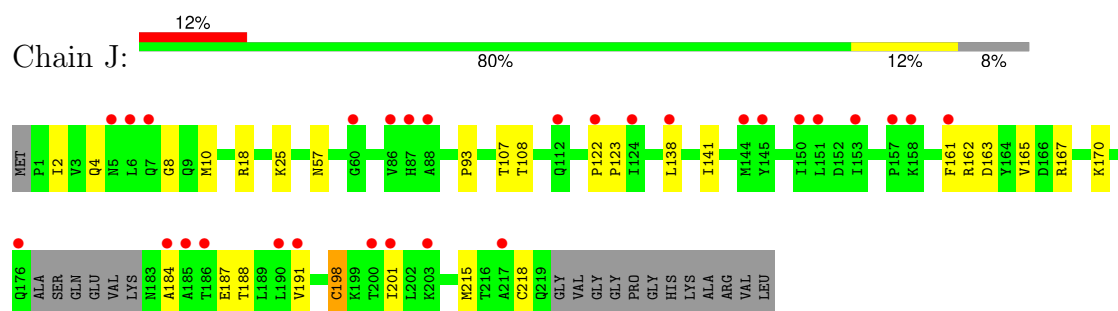
● Molecule 1: HIV-1 capsid



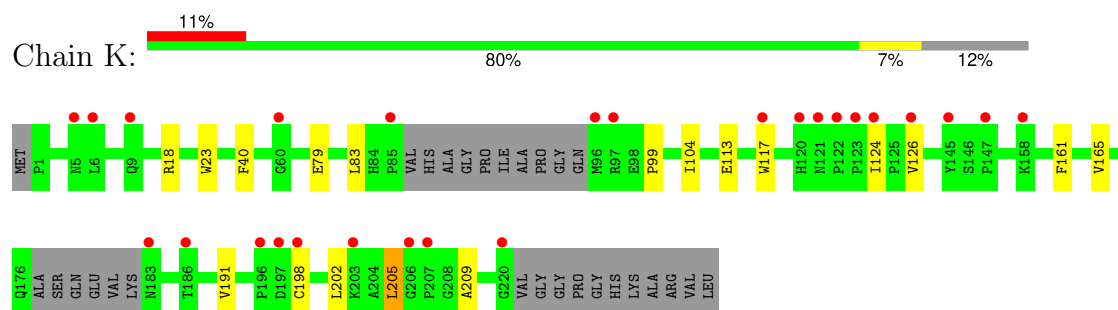
- Molecule 1: HIV-1 capsid



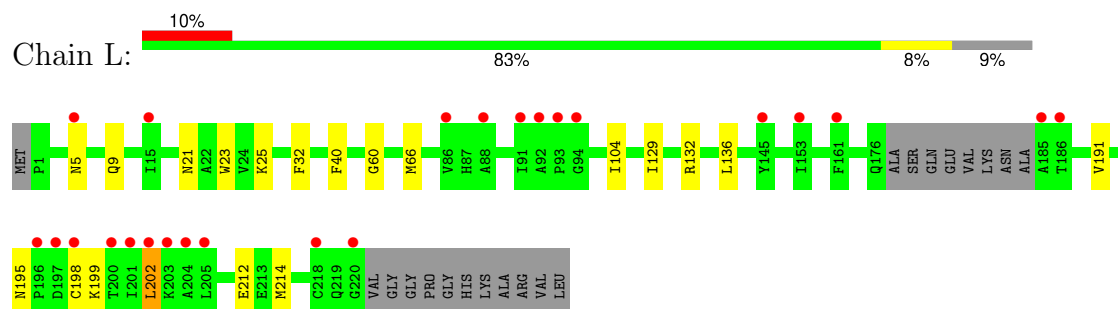
- Molecule 1: HIV-1 capsid



- Molecule 1: HIV-1 capsid



- Molecule 1: HIV-1 capsid



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	94.74Å 156.55Å 119.23Å 90.00° 97.05° 90.00°	Depositor
Resolution (Å)	47.51 – 2.30 47.51 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.8 (47.51-2.30) 91.2 (47.51-2.30)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	0.60 (at 2.29Å)	Xtriage
Refinement program	PHENIX 1.21.2_5419	Depositor
R, $R_{free}$	0.232 , 0.263 0.232 , 0.263	Depositor DCC
$R_{free}$ test set	2000 reflections (1.30%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	49.4	Xtriage
Anisotropy	0.127	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 36.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	20187	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	66.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.00% 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: A1CH7

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	0.15	0/1655	0.33	0/2250
1	B	0.12	0/1634	0.30	0/2219
1	C	0.08	0/1637	0.22	0/2222
1	D	0.09	0/1599	0.24	0/2172
1	E	0.10	0/1655	0.26	0/2252
1	F	0.11	0/1710	0.25	0/2325
1	G	0.10	0/1613	0.25	0/2189
1	H	0.10	0/1676	0.24	0/2280
1	I	0.08	0/1657	0.22	0/2255
1	J	0.09	0/1675	0.23	0/2279
1	K	0.09	0/1610	0.25	0/2186
1	L	0.09	0/1664	0.25	0/2263
All	All	0.10	0/19785	0.26	0/26892

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	1621	0	1603	23	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	1602	0	1586	15	0
1	C	1605	0	1594	6	0
1	D	1567	0	1551	10	0
1	E	1619	0	1598	12	0
1	F	1674	0	1653	10	0
1	G	1580	0	1577	12	0
1	H	1640	0	1615	11	0
1	I	1621	0	1598	10	0
1	J	1639	0	1617	17	0
1	K	1578	0	1564	12	0
1	L	1629	0	1610	12	0
2	A	35	0	0	0	0
2	B	35	0	0	0	0
2	C	35	0	0	0	0
2	D	70	0	0	0	0
2	F	35	0	0	0	0
2	G	35	0	0	0	0
2	H	35	0	0	0	0
2	I	35	0	0	0	0
2	J	35	0	0	0	0
2	K	35	0	0	0	0
2	L	35	0	0	0	0
3	A	28	0	0	0	0
3	B	37	0	0	0	0
3	C	32	0	0	0	0
3	D	51	0	0	0	0
3	E	35	0	0	0	0
3	F	47	0	0	0	0
3	G	30	0	0	0	0
3	H	38	0	0	0	0
3	I	25	0	0	0	0
3	J	21	0	0	0	0
3	K	17	0	0	0	0
3	L	31	0	0	0	0
All	All	20187	0	19166	132	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 132 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:G:59:VAL:HG11	1:G:66:MET:HE3	1.67	0.76
1:A:212:GLU:HG3	1:B:144:MET:HE1	1.68	0.75
1:G:5:ASN:HD22	1:G:9:GLN:HE21	1.35	0.75
1:G:143:ARG:HD3	1:G:176:GLN:HE22	1.55	0.72
1:B:59:VAL:HG11	1:B:66:MET:HE3	1.72	0.72

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	205/232 (88%)	198 (97%)	7 (3%)	0	100	100
1	B	202/232 (87%)	198 (98%)	2 (1%)	2 (1%)	13	15
1	C	201/232 (87%)	197 (98%)	4 (2%)	0	100	100
1	D	196/232 (84%)	192 (98%)	4 (2%)	0	100	100
1	E	207/232 (89%)	198 (96%)	9 (4%)	0	100	100
1	F	214/232 (92%)	213 (100%)	1 (0%)	0	100	100
1	G	197/232 (85%)	195 (99%)	2 (1%)	0	100	100
1	H	209/232 (90%)	205 (98%)	3 (1%)	1 (0%)	25	32
1	I	207/232 (89%)	203 (98%)	4 (2%)	0	100	100
1	J	209/232 (90%)	206 (99%)	3 (1%)	0	100	100
1	K	198/232 (85%)	191 (96%)	7 (4%)	0	100	100
1	L	208/232 (90%)	203 (98%)	4 (2%)	1 (0%)	25	32
All	All	2453/2784 (88%)	2399 (98%)	50 (2%)	4 (0%)	44	55

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L	60	GLY
1	H	60	GLY
1	B	60	GLY
1	B	8	GLY

### 5.3.2 Protein sidechains ⓘ

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	174/194 (90%)	171 (98%)	3 (2%)	56	72
1	B	173/194 (89%)	172 (99%)	1 (1%)	84	92
1	C	175/194 (90%)	175 (100%)	0	100	100
1	D	170/194 (88%)	170 (100%)	0	100	100
1	E	174/194 (90%)	170 (98%)	4 (2%)	45	63
1	F	180/194 (93%)	179 (99%)	1 (1%)	84	92
1	G	173/194 (89%)	172 (99%)	1 (1%)	84	92
1	H	176/194 (91%)	176 (100%)	0	100	100
1	I	174/194 (90%)	173 (99%)	1 (1%)	84	92
1	J	176/194 (91%)	174 (99%)	2 (1%)	70	83
1	K	171/194 (88%)	170 (99%)	1 (1%)	84	92
1	L	175/194 (90%)	174 (99%)	1 (1%)	84	92
All	All	2091/2328 (90%)	2076 (99%)	15 (1%)	81	90

5 of 15 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	189	LEU
1	K	205	LEU
1	F	4	GLN
1	L	202	LEU
1	J	198	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 28



such sidechains are listed below:

Mol	Chain	Res	Type
1	G	9	GLN
1	L	50	GLN
1	H	50	GLN
1	J	67	GLN
1	H	21	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

12 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
2	A1CH7	J	301	-	36,38,38	0.83	0	44,54,54	0.75	1 (2%)
2	A1CH7	I	301	-	36,38,38	0.82	0	44,54,54	0.76	1 (2%)
2	A1CH7	G	301	-	36,38,38	0.83	0	44,54,54	0.76	1 (2%)
2	A1CH7	C	301	-	36,38,38	0.81	0	44,54,54	0.80	2 (4%)
2	A1CH7	A	301	-	36,38,38	0.82	0	44,54,54	0.77	1 (2%)
2	A1CH7	K	301	-	36,38,38	0.81	0	44,54,54	0.77	1 (2%)
2	A1CH7	F	301	-	36,38,38	0.82	0	44,54,54	0.80	1 (2%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	A1CH7	L	301	-	36,38,38	0.83	0	44,54,54	0.78	1 (2%)
2	A1CH7	B	301	-	36,38,38	0.82	0	44,54,54	0.78	1 (2%)
2	A1CH7	H	301	-	36,38,38	0.83	0	44,54,54	0.76	1 (2%)
2	A1CH7	D	301	-	36,38,38	0.81	0	44,54,54	0.75	1 (2%)
2	A1CH7	D	302	-	36,38,38	0.80	0	44,54,54	0.75	1 (2%)

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	A1CH7	J	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	I	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	G	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	C	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	A	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	K	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	F	301	-	-	1/30/37/37	0/4/4/4
2	A1CH7	L	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	B	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	H	301	-	-	0/30/37/37	0/4/4/4
2	A1CH7	D	301	-	-	3/30/37/37	0/4/4/4
2	A1CH7	D	302	-	-	3/30/37/37	0/4/4/4

There are no bond length outliers.

The worst 5 of 13 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	I	301	A1CH7	C02-C01-C03	2.54	115.27	109.94
2	F	301	A1CH7	C02-C01-C03	2.54	115.25	109.94
2	L	301	A1CH7	C02-C01-C03	2.48	115.14	109.94
2	D	302	A1CH7	C02-C01-C03	2.47	115.10	109.94
2	B	301	A1CH7	C02-C01-C03	2.41	114.99	109.94

There are no chirality outliers.

5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	302	A1CH7	N05-C18-C25-F01

*Continued on next page...*

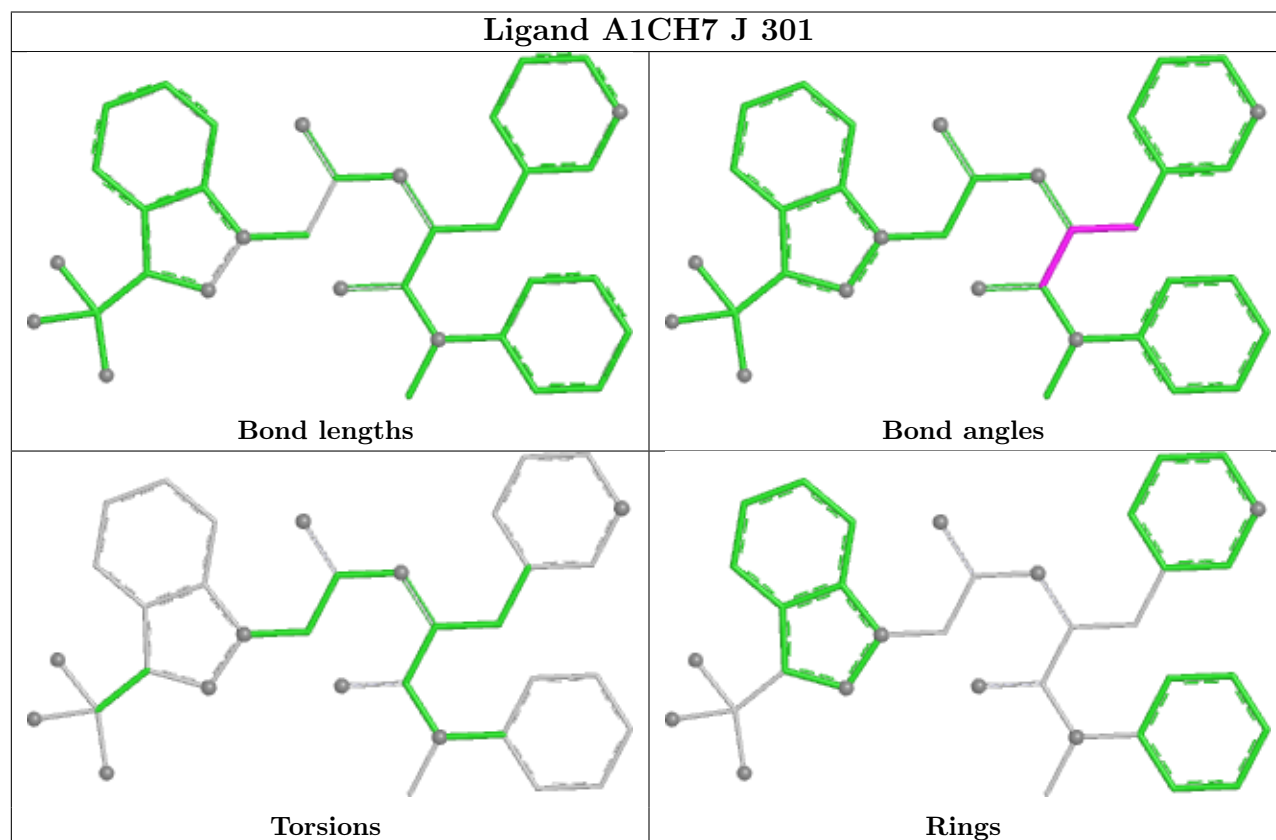
*Continued from previous page...*

Mol	Chain	Res	Type	Atoms
2	D	301	A1CH7	N05-C18-C25-F03
2	D	302	A1CH7	N05-C18-C25-F02
2	D	301	A1CH7	N05-C18-C25-F01
2	D	301	A1CH7	N05-C18-C25-F02

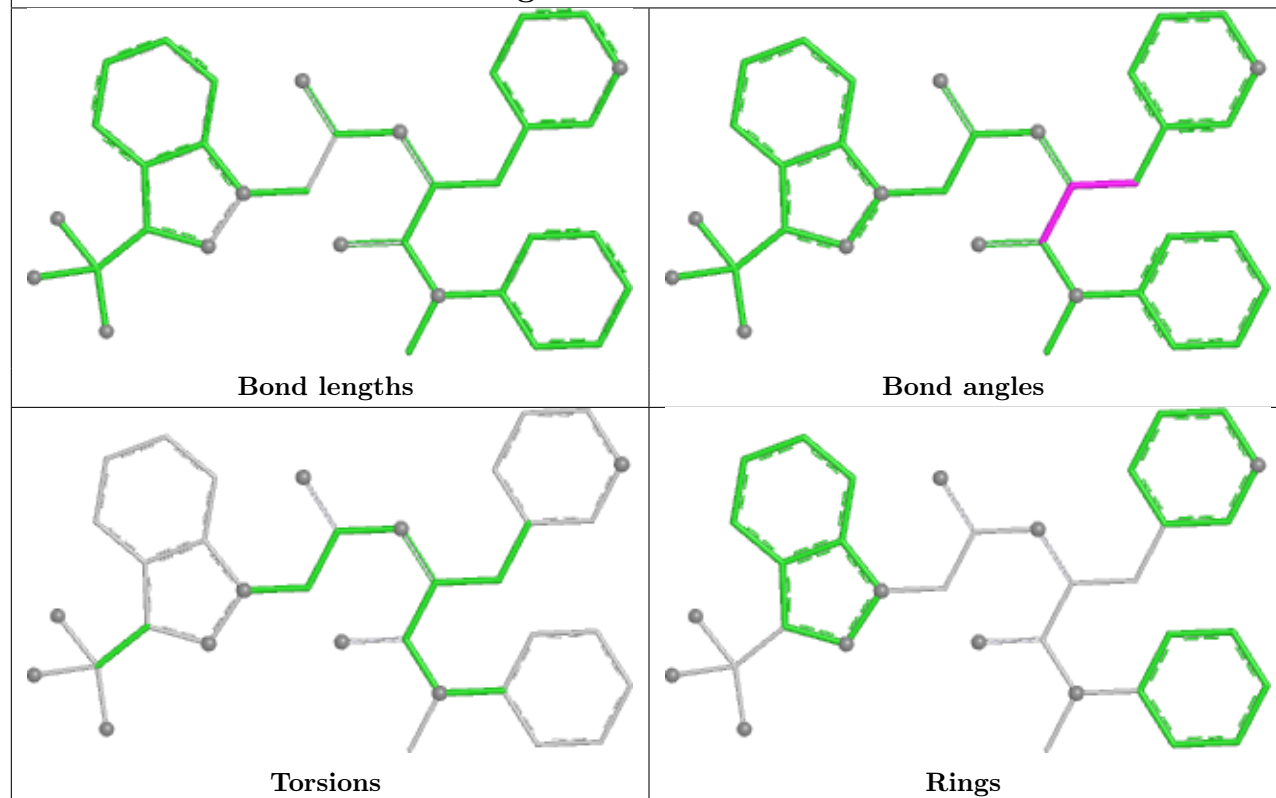
There are no ring outliers.

No monomer is involved in short contacts.

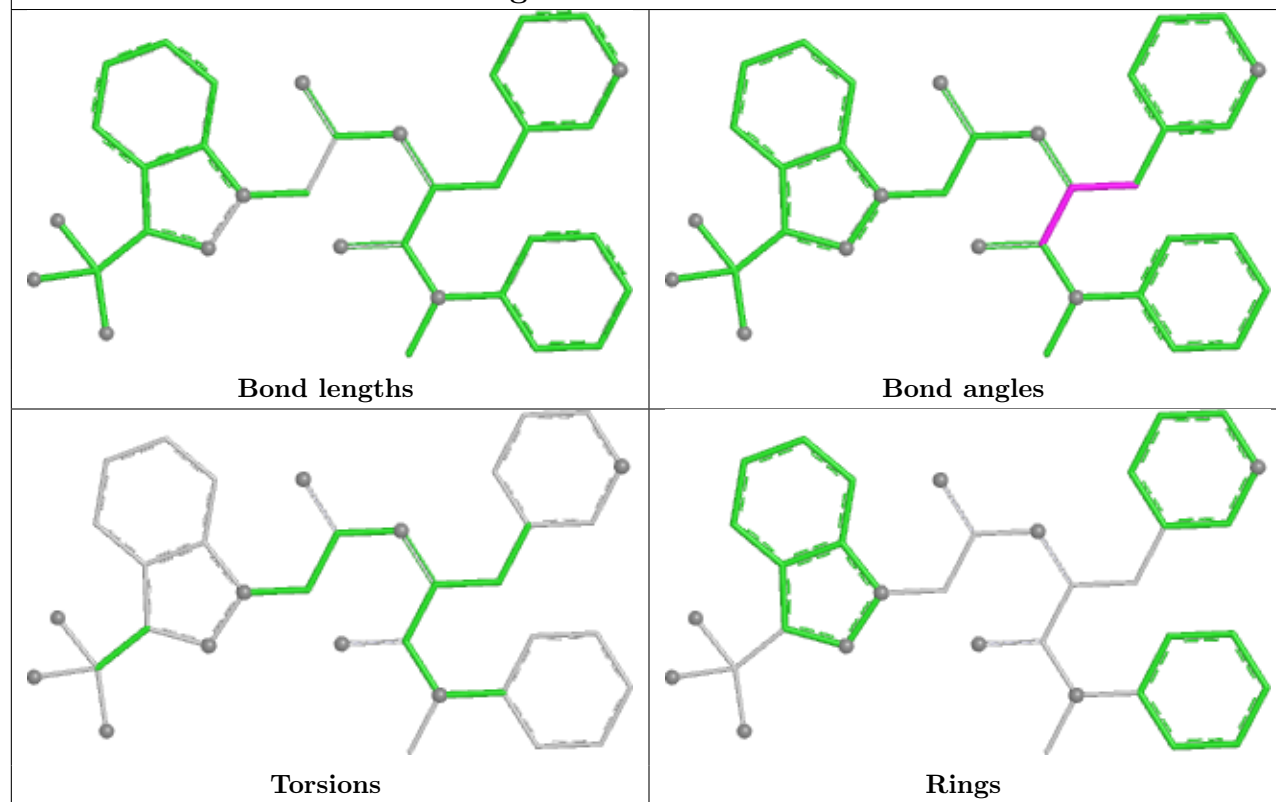
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.



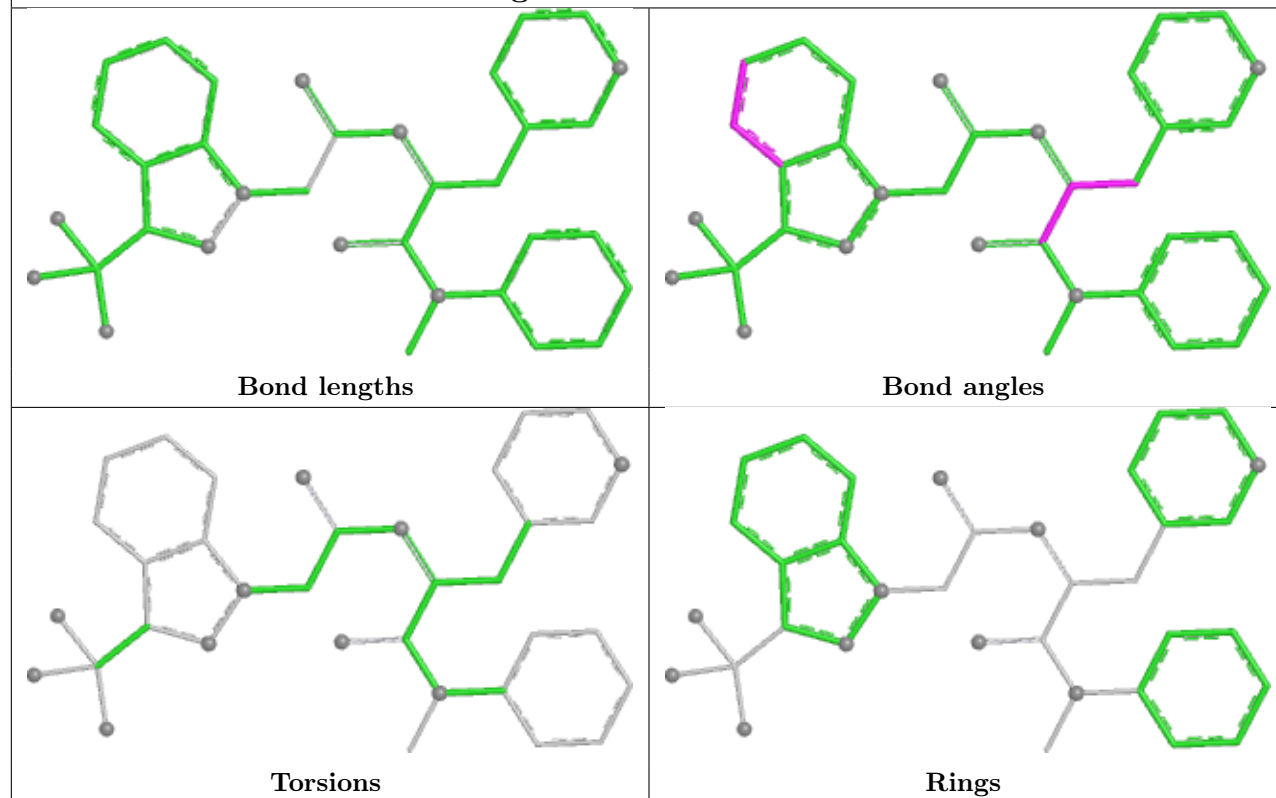
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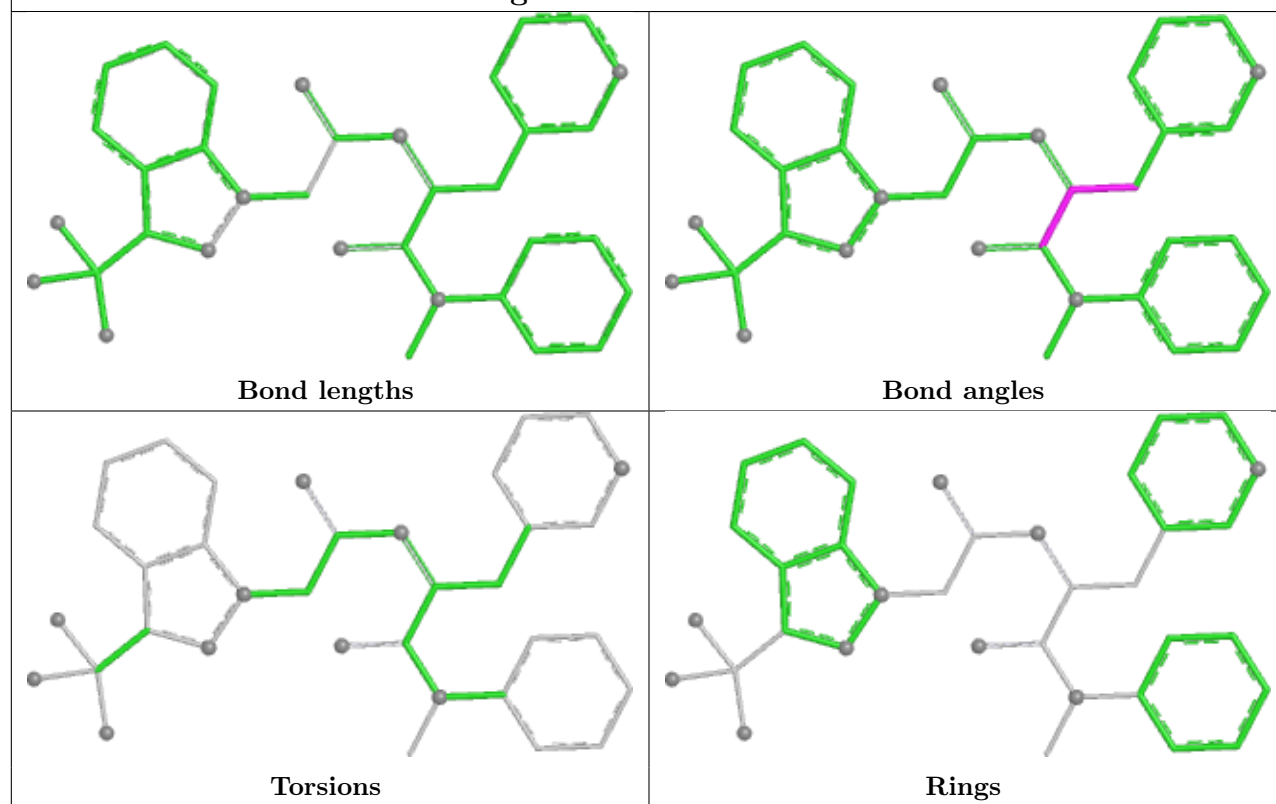
## Ligand A1CH7 G 301



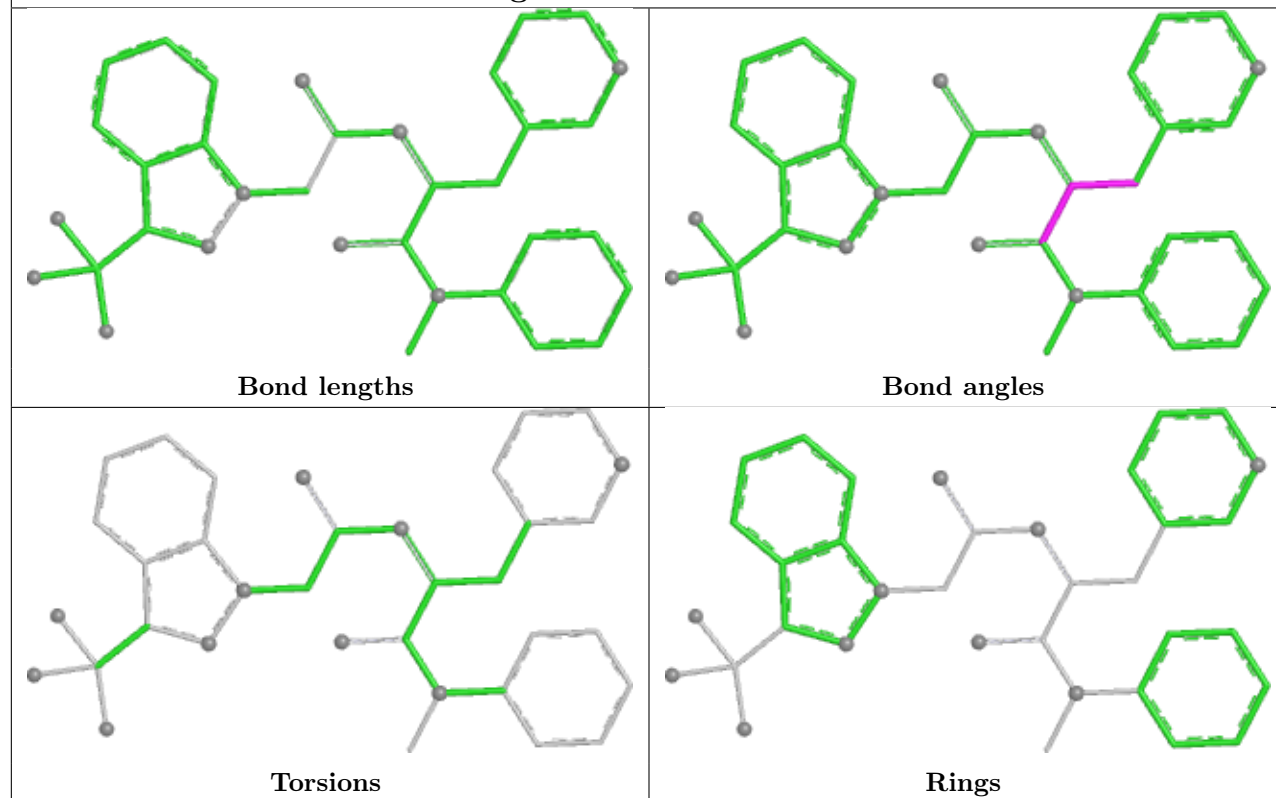
## Ligand A1CH7 C 301



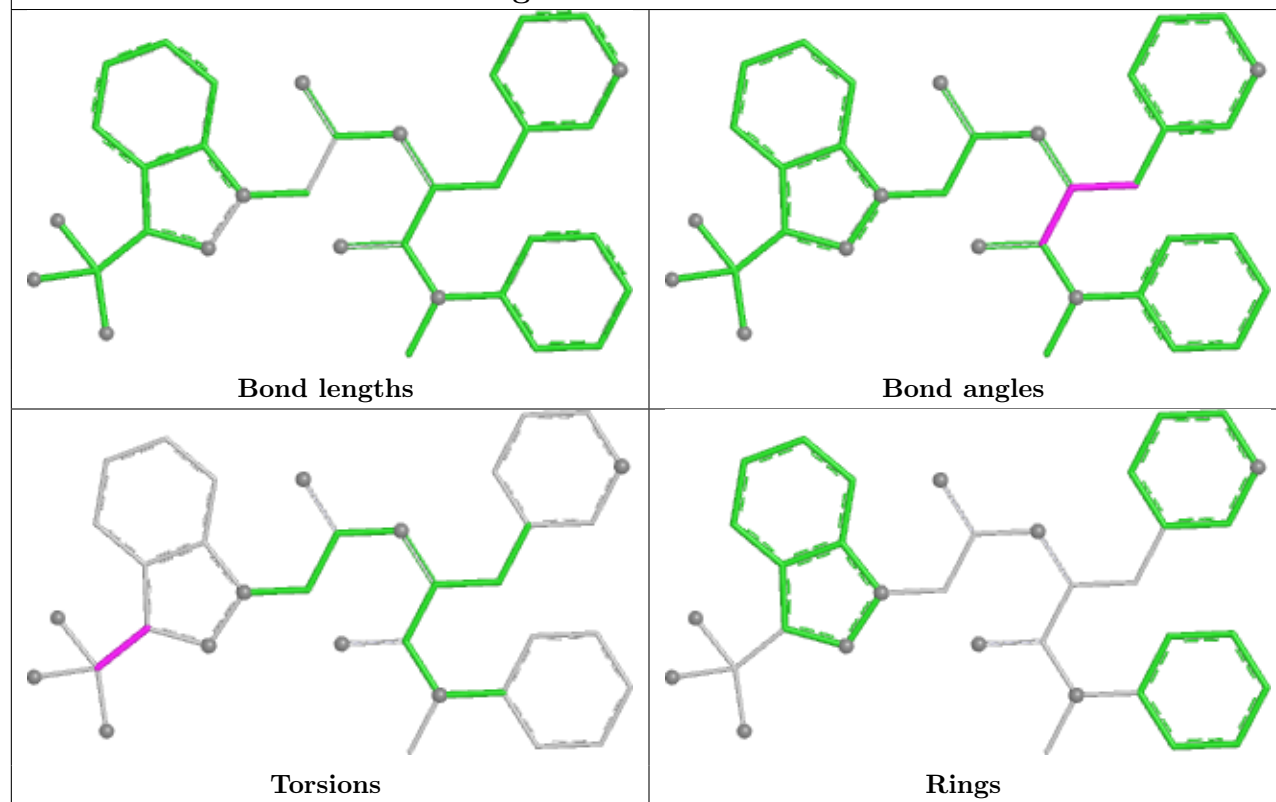
## Ligand A1CH7 A 301



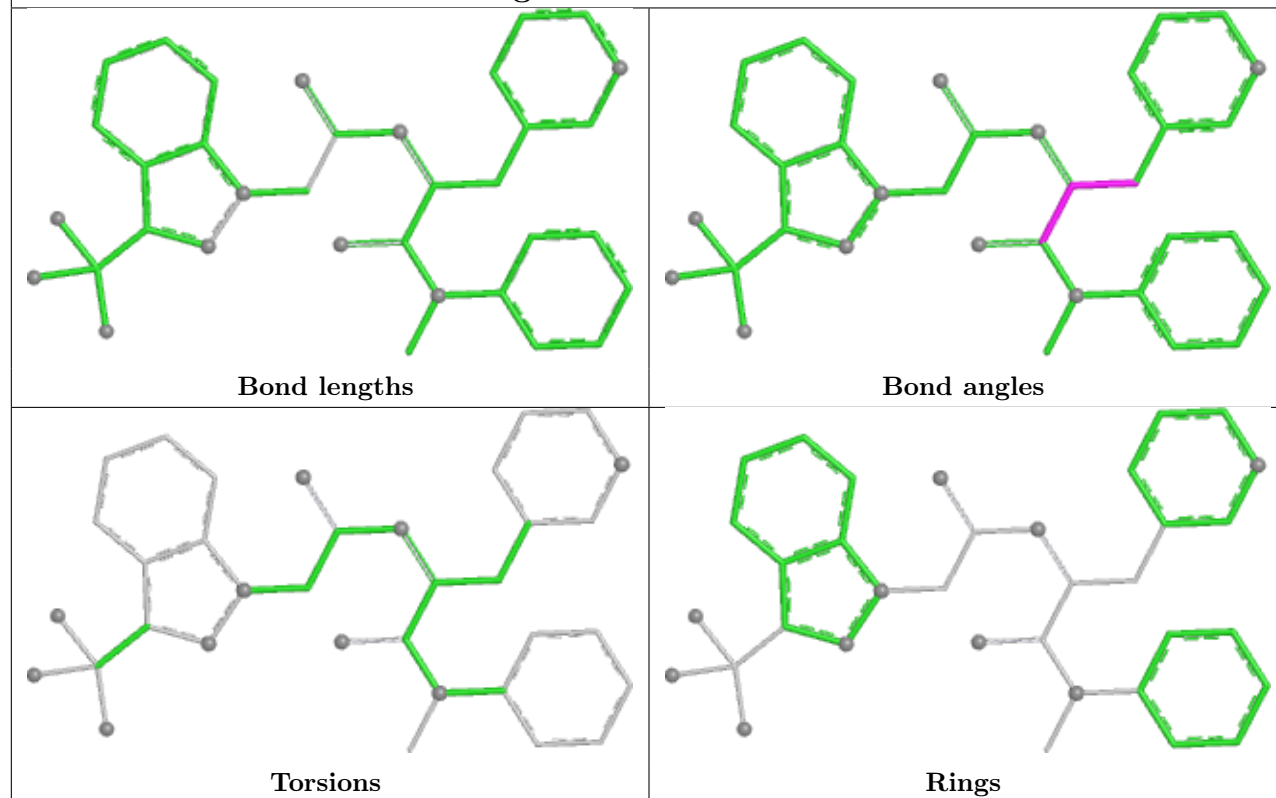
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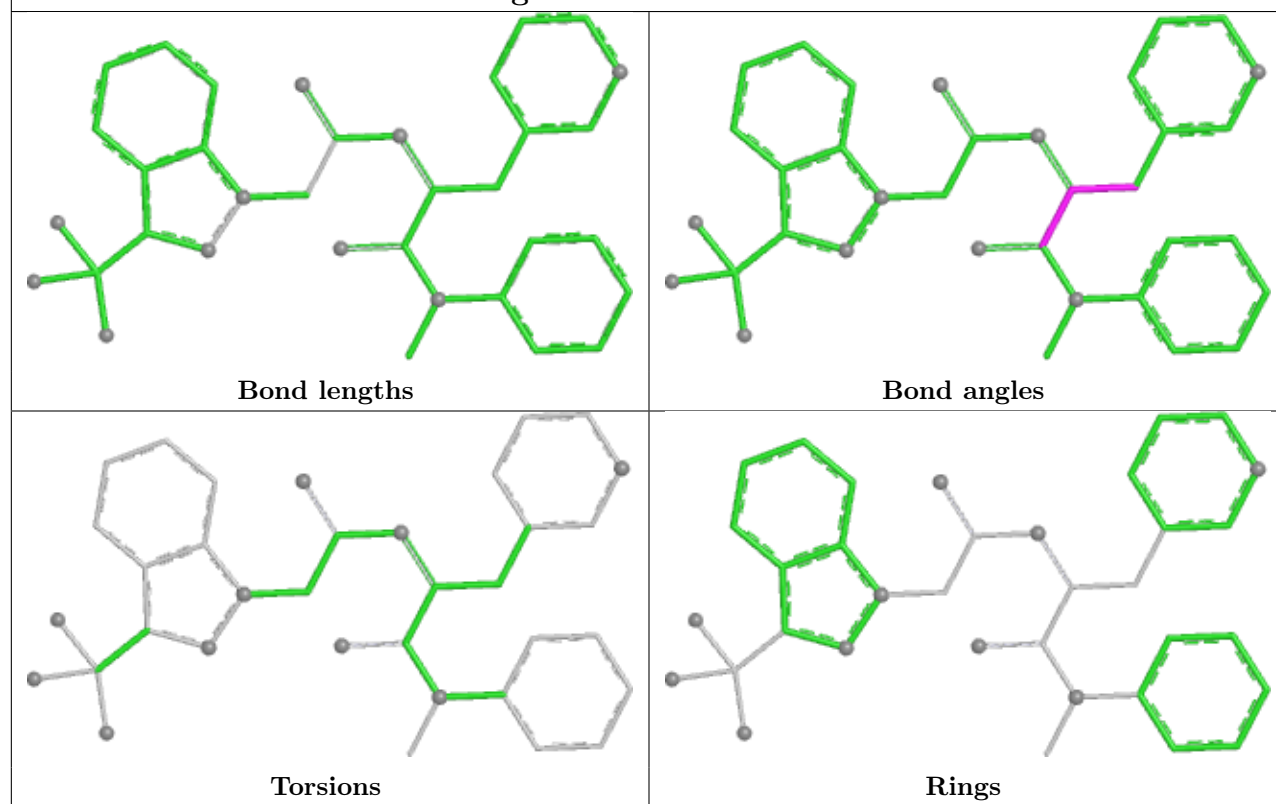
## Ligand A1CH7 F 301



## Ligand A1CH7 L 301

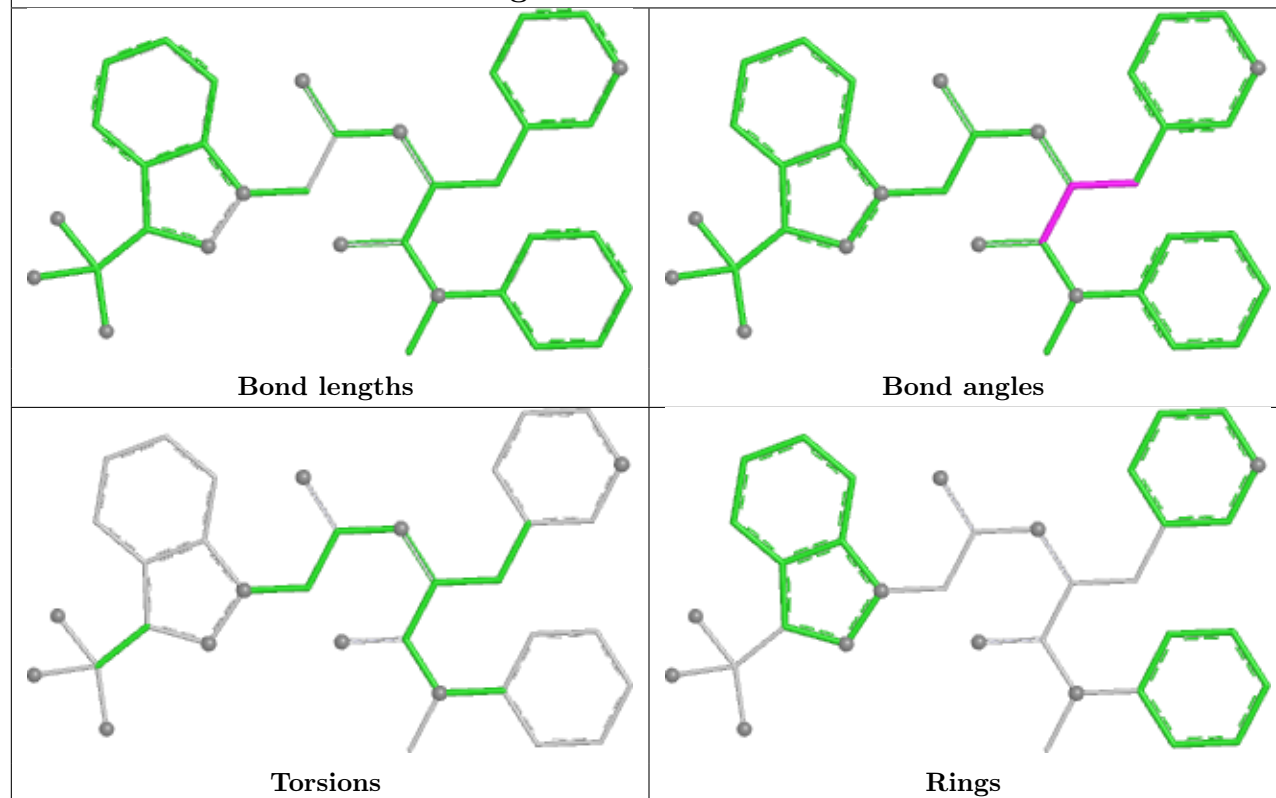


## Ligand A1CH7 B 301

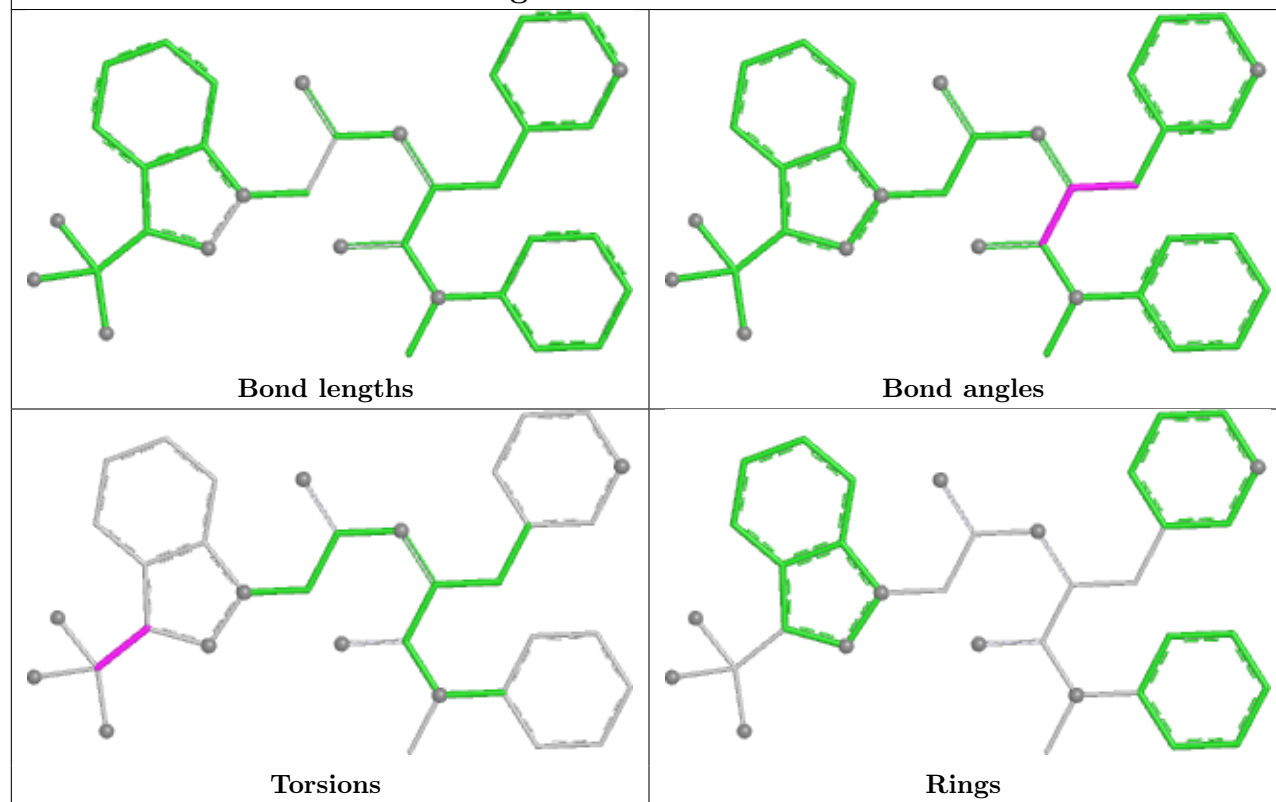




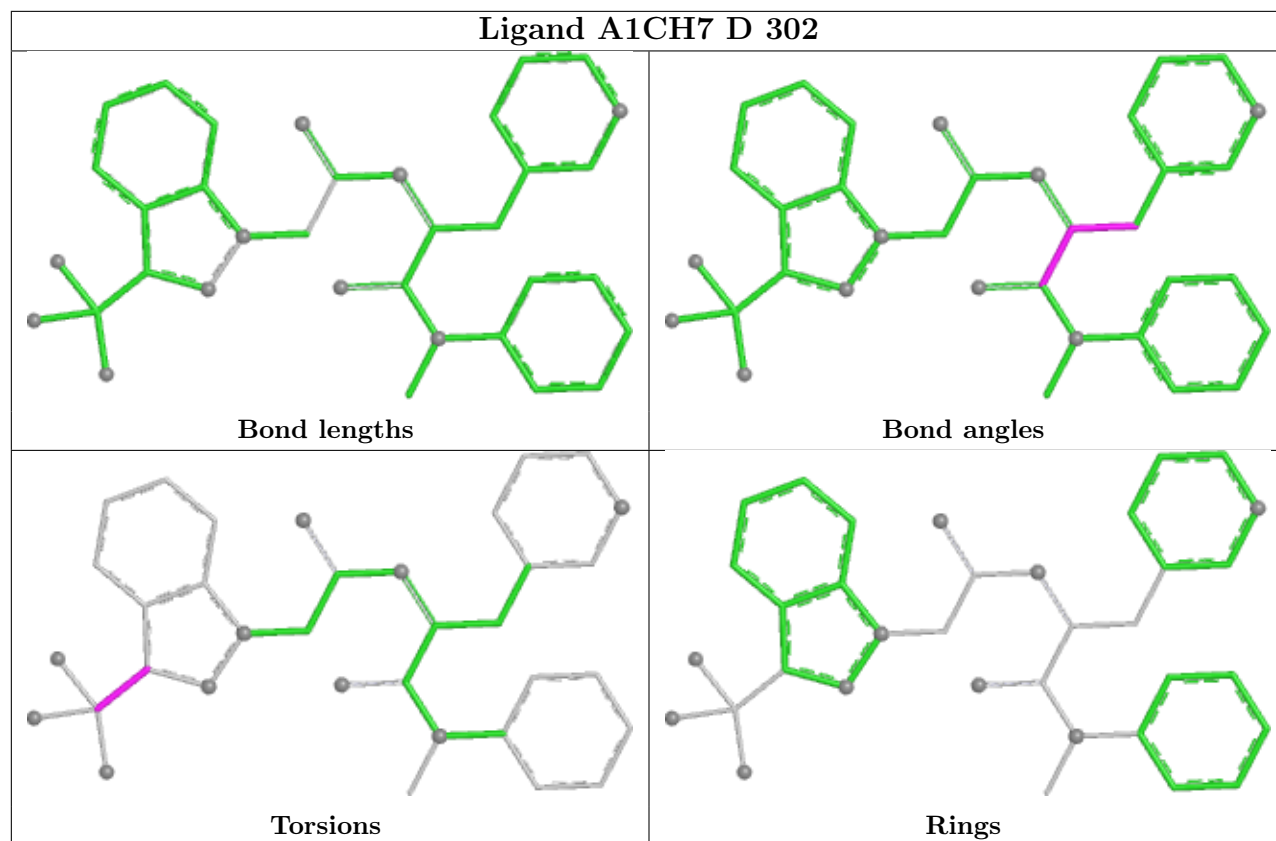
## Ligand A1CH7 H 301



## Ligand A1CH7 D 301







## 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	211/232 (90%)	1.16	41 (19%) 4 5	41, 71, 104, 112	0
1	B	208/232 (89%)	0.68	16 (7%) 21 22	45, 62, 85, 106	0
1	C	207/232 (89%)	0.55	11 (5%) 33 34	43, 59, 81, 94	0
1	D	202/232 (87%)	0.53	13 (6%) 27 28	37, 56, 90, 106	0
1	E	211/232 (90%)	0.95	42 (19%) 3 4	39, 63, 111, 120	0
1	F	218/232 (93%)	0.55	17 (7%) 20 22	41, 58, 86, 101	0
1	G	203/232 (87%)	0.66	18 (8%) 17 18	42, 62, 88, 105	0
1	H	213/232 (91%)	0.84	17 (7%) 20 21	45, 65, 108, 115	0
1	I	211/232 (90%)	0.90	35 (16%) 5 6	47, 69, 105, 112	0
1	J	213/232 (91%)	0.98	29 (13%) 8 9	52, 73, 99, 109	0
1	K	204/232 (87%)	0.90	26 (12%) 9 10	49, 66, 90, 118	0
1	L	212/232 (91%)	0.80	24 (11%) 11 12	40, 61, 93, 123	0
All	All	2513/2784 (90%)	0.79	289 (11%) 11 12	37, 64, 100, 123	0

The worst 5 of 289 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	K	6	LEU	6.4
1	E	189	LEU	5.1
1	E	190	LEU	5.0
1	E	191	VAL	4.9
1	B	177	ALA	4.7

### 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 oligosaccharides in this entry.

### 6.4 Ligands [i](#)

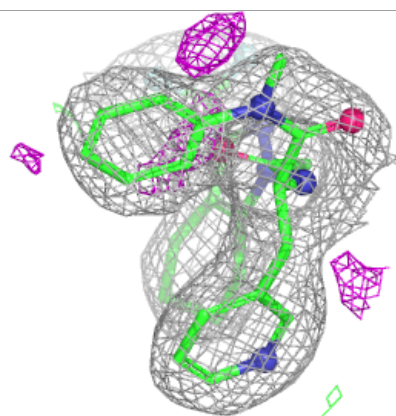
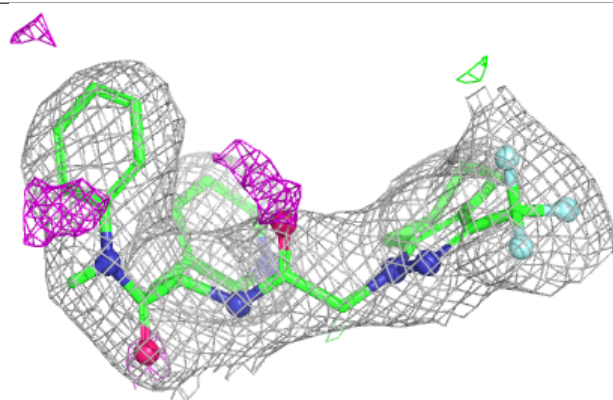
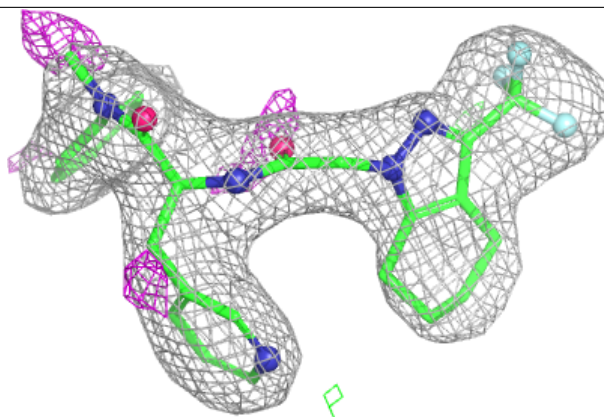
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 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
2	A1CH7	F	301	35/35	0.93	0.12	48,55,72,74	0
2	A1CH7	H	301	35/35	0.93	0.10	42,51,59,63	0
2	A1CH7	G	301	35/35	0.94	0.09	36,51,57,61	0
2	A1CH7	B	301	35/35	0.94	0.10	42,57,67,69	0
2	A1CH7	J	301	35/35	0.94	0.10	52,61,70,77	0
2	A1CH7	C	301	35/35	0.95	0.09	41,48,58,61	0
2	A1CH7	D	302	35/35	0.95	0.09	38,47,57,64	0
2	A1CH7	I	301	35/35	0.95	0.08	47,55,70,75	0
2	A1CH7	A	301	35/35	0.95	0.10	39,46,53,55	0
2	A1CH7	K	301	35/35	0.95	0.10	47,59,72,76	0
2	A1CH7	L	301	35/35	0.95	0.08	36,48,56,60	0
2	A1CH7	D	301	35/35	0.96	0.08	35,43,48,53	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.

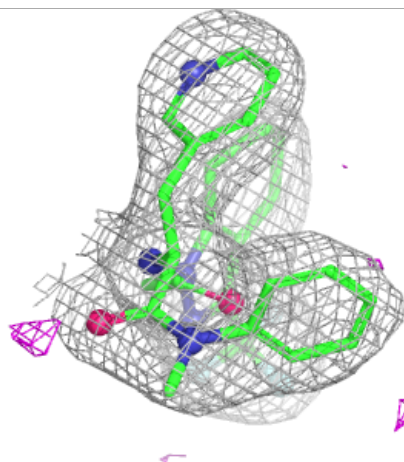
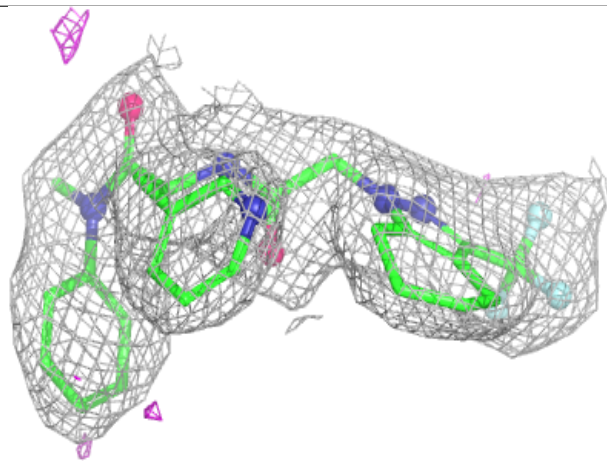
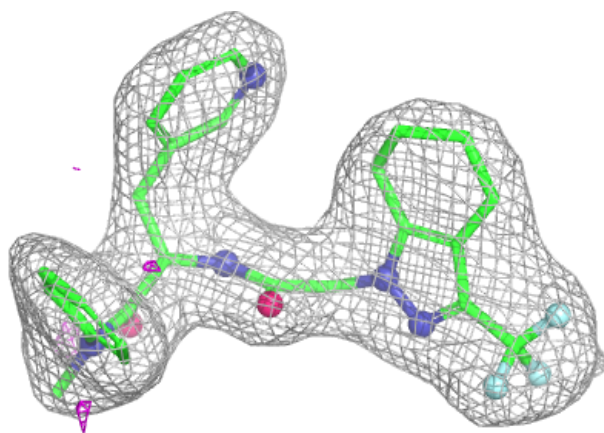
**Electron density around A1CH7 F 301:**

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



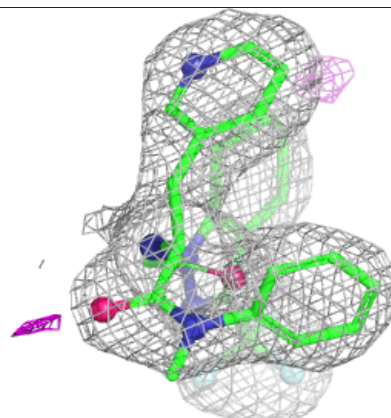
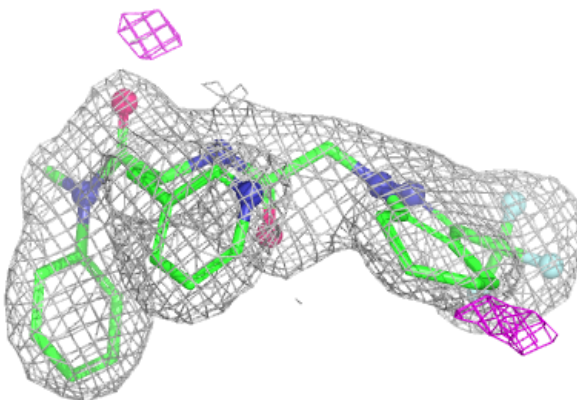
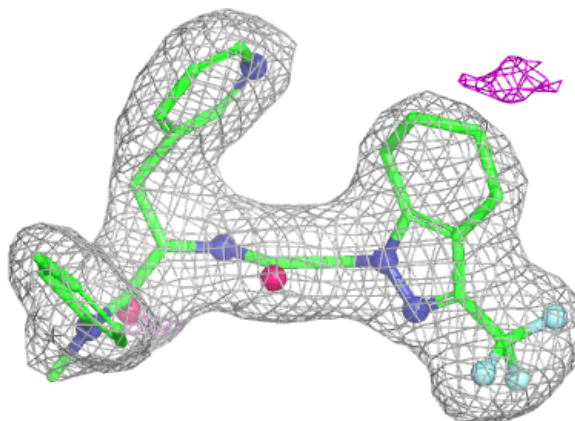
**Electron density around A1CH7 H 301:**

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and green (positive)



**Electron density around A1CH7 G 301:**

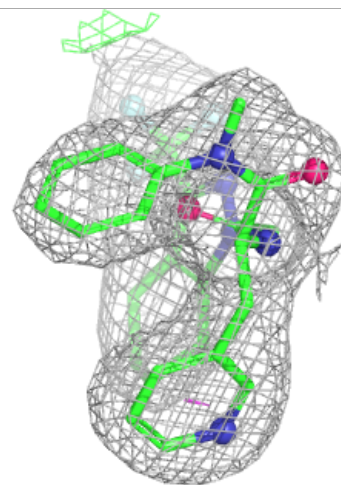
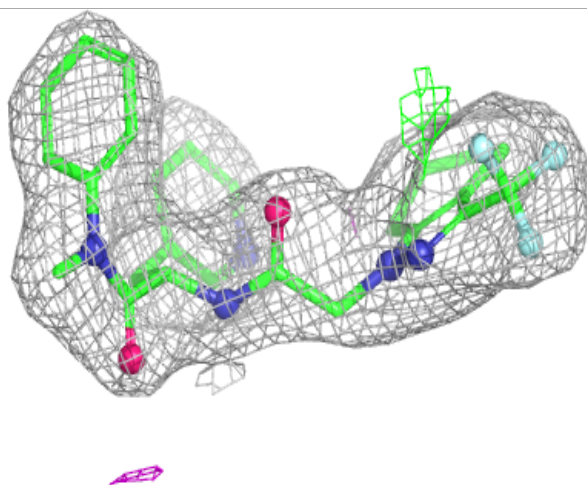
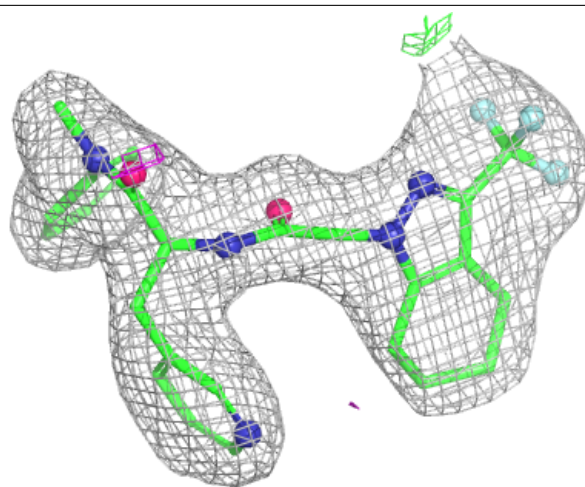
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and green (positive)





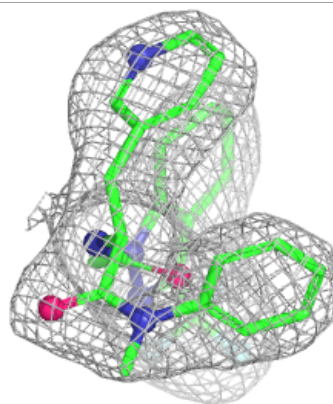
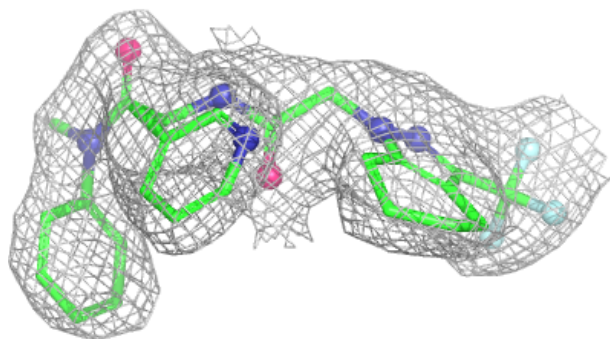
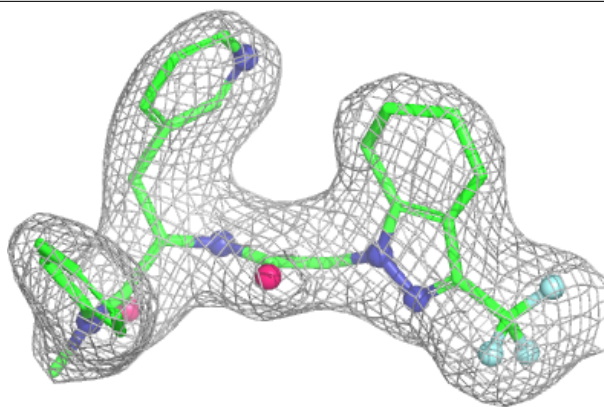
**Electron density around A1CH7 B 301:**

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and green (positive)

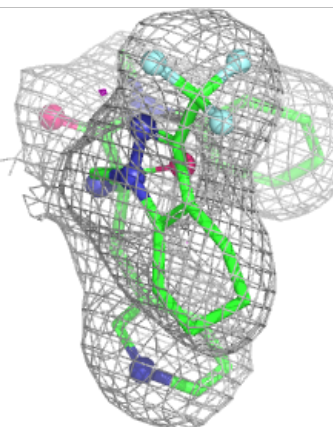
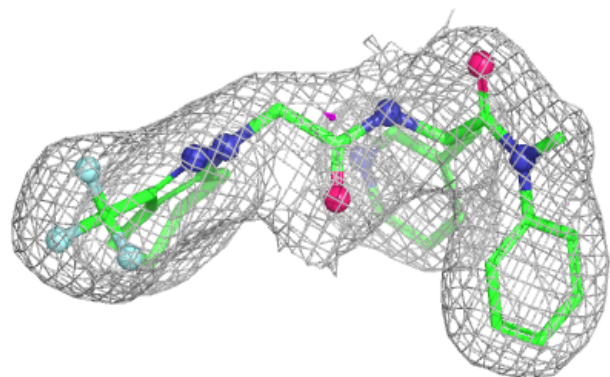
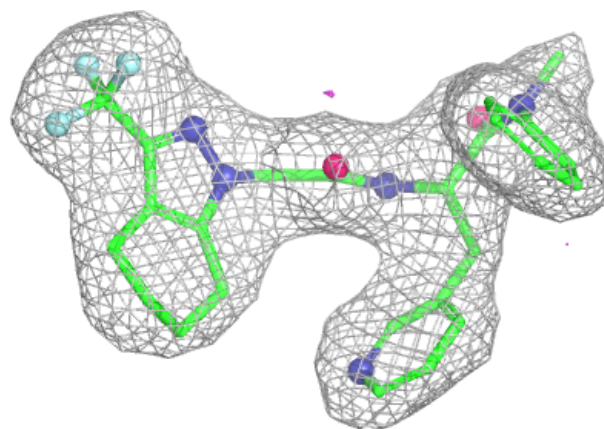


**Electron density around A1CH7 J 301:**

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

**Electron density around A1CH7 C 301:**

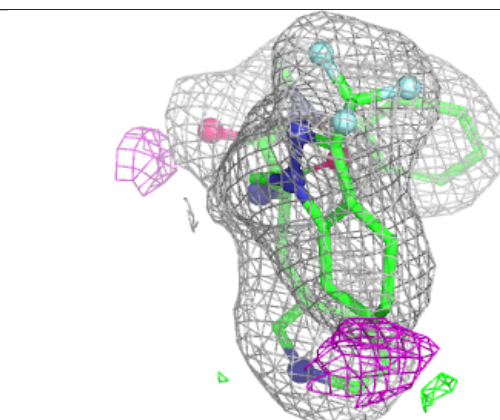
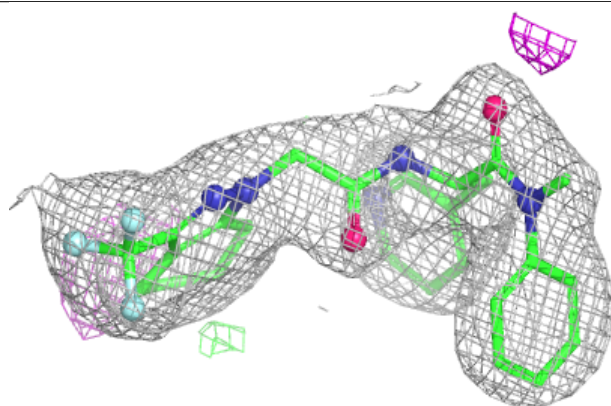
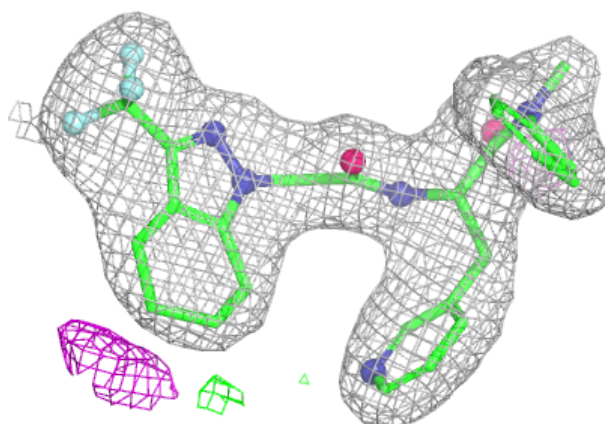
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



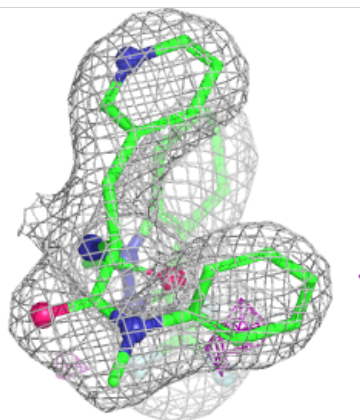
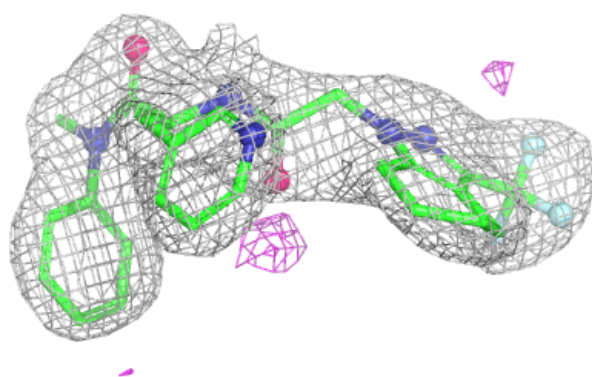
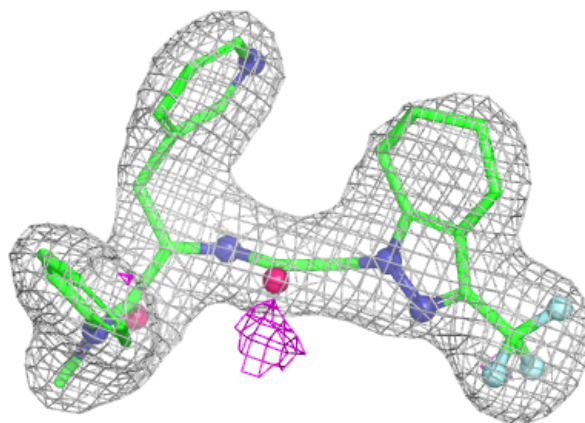


**Electron density around A1CH7 D 302:**

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

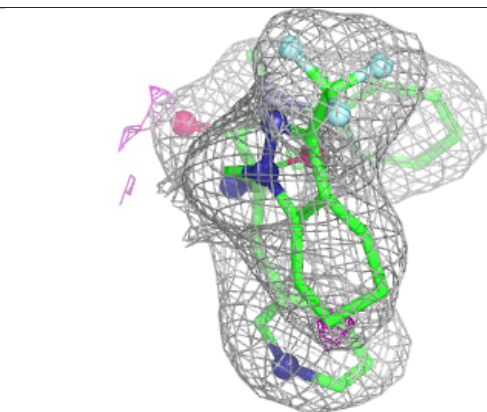
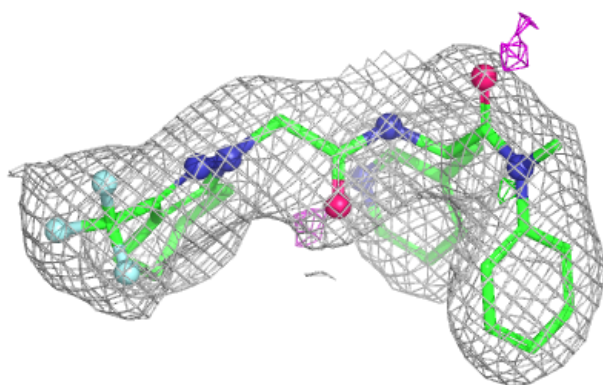
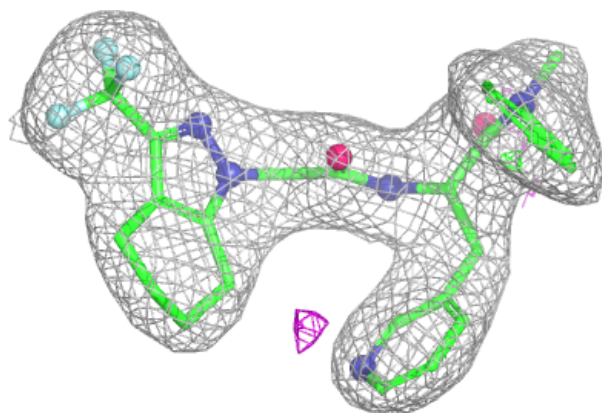
**Electron density around A1CH7 I 301:**

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

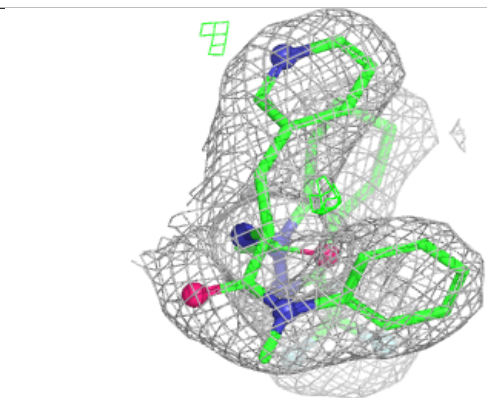
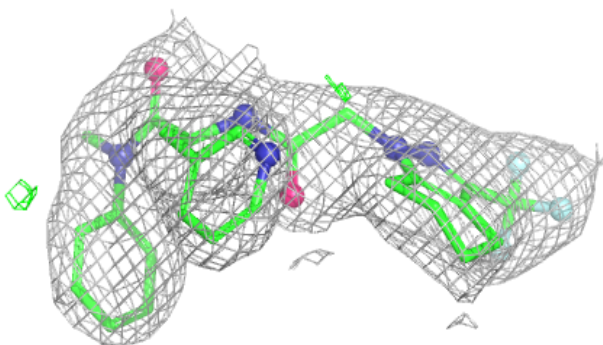
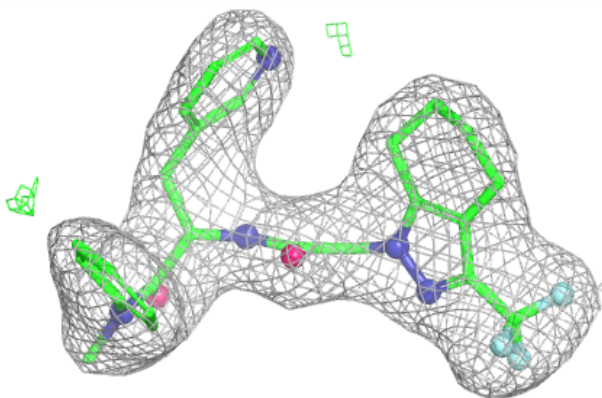


**Electron density around A1CH7 A 301:**

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

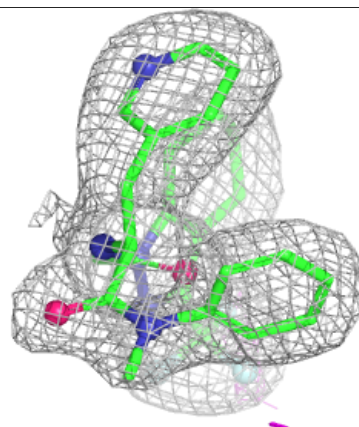
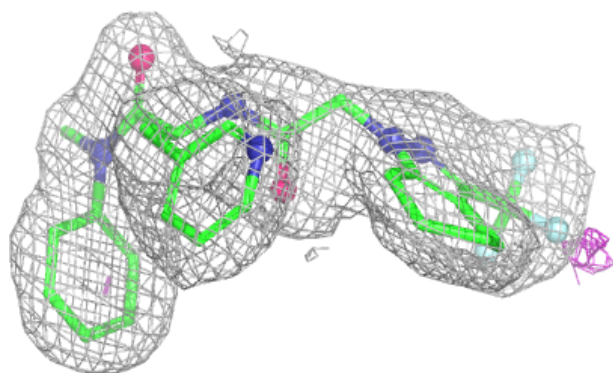
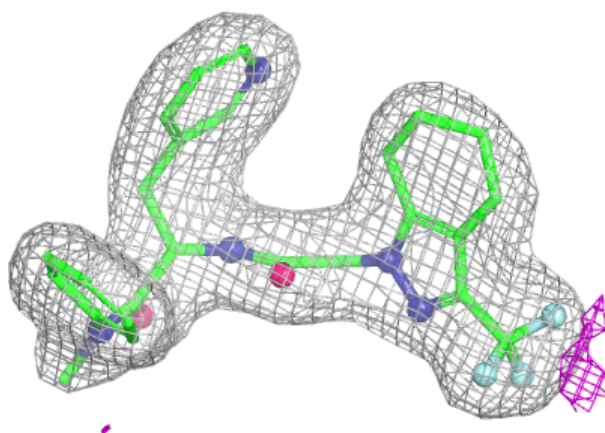
**Electron density around A1CH7 K 301:**

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



**Electron density around A1CH7 L 301:**

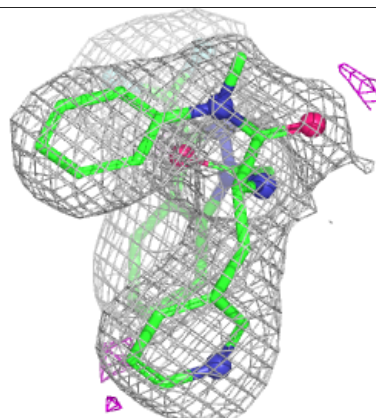
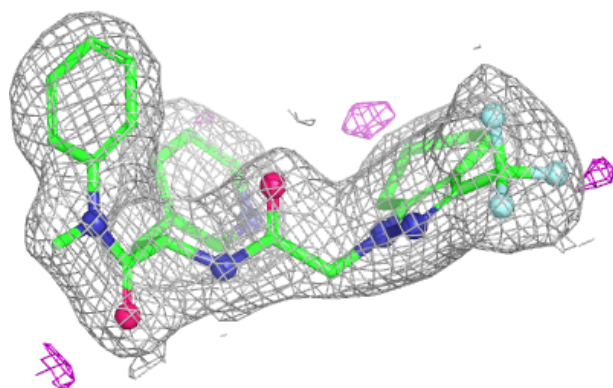
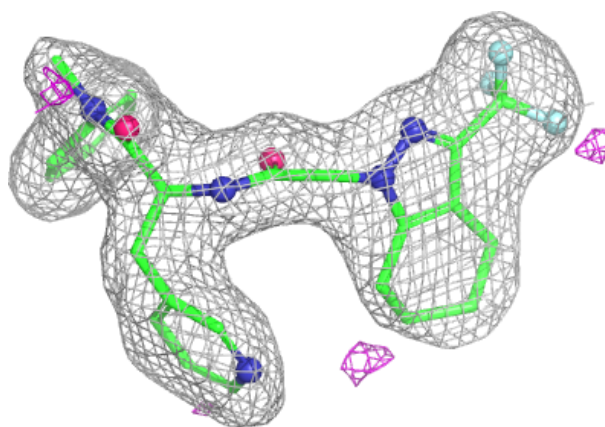
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





**Electron density around A1CH7 D 301:**

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



## 6.5 Other polymers [i](#)

There are no such residues in this entry.