



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 3, 2026 – 03:15 pm GMT

PDB ID : 9QOM / pdb_00009qom
Title : APH(2'')-IVa with a fragment
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Deposited on : 2025-03-26
Resolution : 2.13 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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	:	1.8.4, CSD as541be (2020)
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)	:	2.47

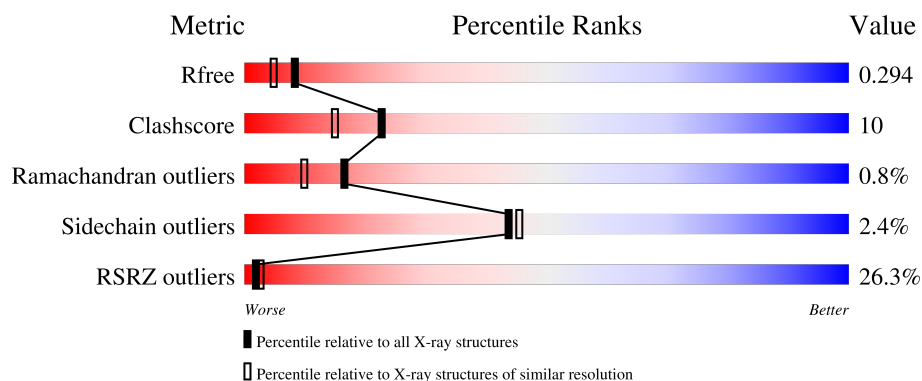
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.13 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	3336 (2.16-2.12)
Clashscore	180529	3585 (2.16-2.12)
Ramachandran outliers	177936	3554 (2.16-2.12)
Sidechain outliers	177891	3553 (2.16-2.12)
RSRZ outliers	164620	3337 (2.16-2.12)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	321	22% 69% 23% 7%
1	B	321	27% 72% 20% 7%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 4998 atoms, of which 12 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 APH(2'')-Id.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	297	Total	C	N	O	S	0	1	0
			2450	1579	399	462	10			
1	A	297	Total	C	N	O	S	0	1	0
			2434	1568	394	462	10			

There are 40 discrepancies between the modelled and reference sequences:

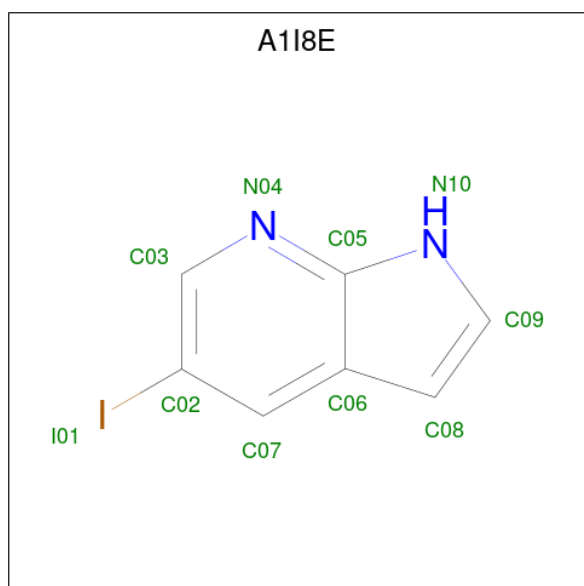
Chain	Residue	Modelled	Actual	Comment	Reference
B	-19	MET	-	initiating methionine	UNP O68183
B	-18	GLY	-	expression tag	UNP O68183
B	-17	SER	-	expression tag	UNP O68183
B	-16	SER	-	expression tag	UNP O68183
B	-15	HIS	-	expression tag	UNP O68183
B	-14	HIS	-	expression tag	UNP O68183
B	-13	HIS	-	expression tag	UNP O68183
B	-12	HIS	-	expression tag	UNP O68183
B	-11	HIS	-	expression tag	UNP O68183
B	-10	HIS	-	expression tag	UNP O68183
B	-9	SER	-	expression tag	UNP O68183
B	-8	SER	-	expression tag	UNP O68183
B	-7	GLY	-	expression tag	UNP O68183
B	-6	LEU	-	expression tag	UNP O68183
B	-5	VAL	-	expression tag	UNP O68183
B	-4	PRO	-	expression tag	UNP O68183
B	-3	ARG	-	expression tag	UNP O68183
B	-2	GLY	-	expression tag	UNP O68183
B	-1	SER	-	expression tag	UNP O68183
B	0	HIS	-	expression tag	UNP O68183
A	-19	MET	-	initiating methionine	UNP O68183
A	-18	GLY	-	expression tag	UNP O68183
A	-17	SER	-	expression tag	UNP O68183
A	-16	SER	-	expression tag	UNP O68183
A	-15	HIS	-	expression tag	UNP O68183

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-14	HIS	-	expression tag	UNP O68183
A	-13	HIS	-	expression tag	UNP O68183
A	-12	HIS	-	expression tag	UNP O68183
A	-11	HIS	-	expression tag	UNP O68183
A	-10	HIS	-	expression tag	UNP O68183
A	-9	SER	-	expression tag	UNP O68183
A	-8	SER	-	expression tag	UNP O68183
A	-7	GLY	-	expression tag	UNP O68183
A	-6	LEU	-	expression tag	UNP O68183
A	-5	VAL	-	expression tag	UNP O68183
A	-4	PRO	-	expression tag	UNP O68183
A	-3	ARG	-	expression tag	UNP O68183
A	-2	GLY	-	expression tag	UNP O68183
A	-1	SER	-	expression tag	UNP O68183
A	0	HIS	-	expression tag	UNP O68183

- Molecule 2 is 5-iodanyl-1 {H}-pyrrolo[2,3-b]pyridine (CCD ID: A1I8E) (formula: C₇H₅IN₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	I	N	0	0
			10	7	1	2		
2	A	1	Total	C	I	N	0	0
			10	7	1	2		

- Molecule 3 is DIMETHYL SULFOXIDE (CCD ID: DMS) (formula: C₂H₆OS).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	B	1	Total	C	H	O	S	0	0
			10	2	6	1	1		
3	B	1	Total	C	H	O	S	0	0
			10	2	6	1	1		

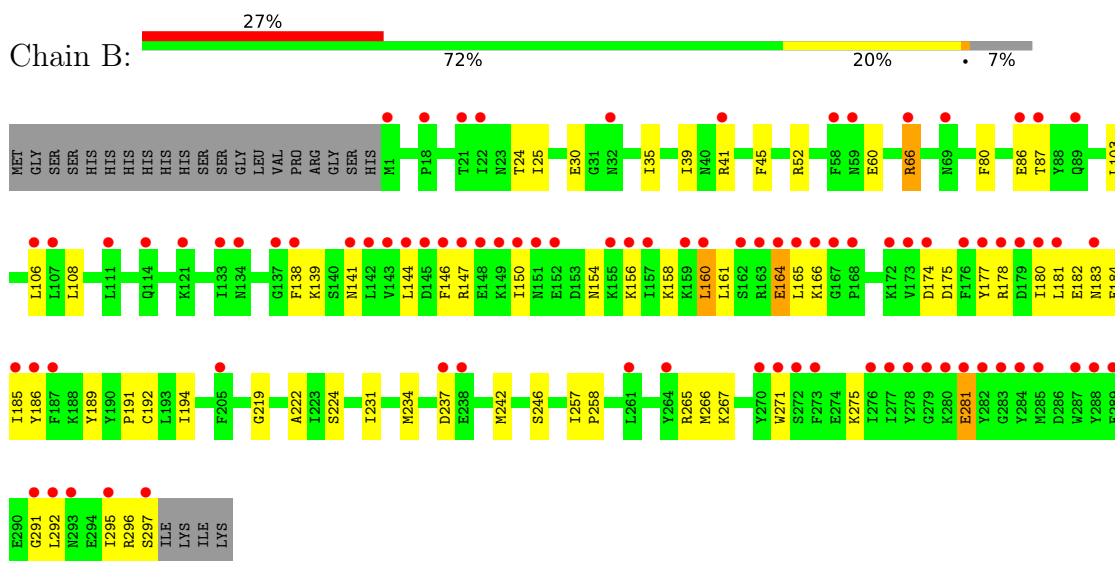
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	46	Total	O	0	0
			46	46		
4	A	28	Total	O	0	0
			28	28		

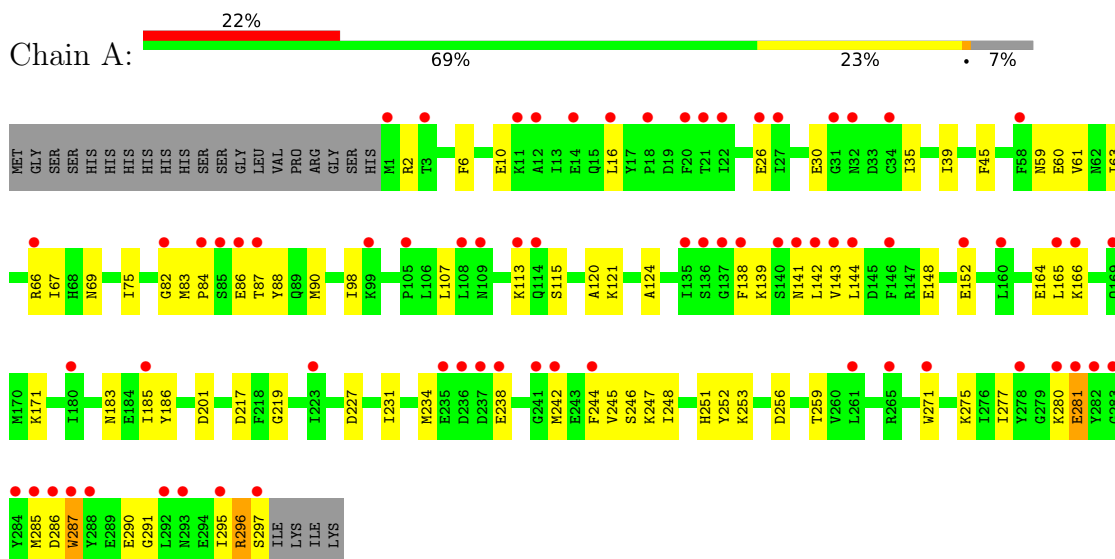
3 Residue-property plots [i](#)

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: APH(2'')-Id



• Molecule 1: APH(2'')-Id



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	76.00Å 65.06Å 78.36Å 90.00° 91.66° 90.00°	Depositor
Resolution (Å)	78.32 – 2.13 78.32 – 2.13	Depositor EDS
% Data completeness (in resolution range)	82.8 (78.32-2.13) 81.6 (78.32-2.13)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.23 (at 2.12Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.225 , 0.293 0.228 , 0.294	Depositor DCC
R_{free} test set	2068 reflections (4.79%)	wwPDB-VP
Wilson B-factor (Å ²)	18.0	Xtriage
Anisotropy	0.326	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 36.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.001 for l,k,-h 0.039 for h,-k,-l 0.042 for l,-k,h	Xtriage
F_o, F_c correlation	0.86	EDS
Total number of atoms	4998	wwPDB-VP
Average B, all atoms (Å ²)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.72% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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 ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: A1I8E, DMS

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	0.46	0/2495	0.63	1/3368 (0.0%)
1	B	0.36	0/2512	0.55	0/3389
All	All	0.42	0/5007	0.59	1/6757 (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	A	287	TRP	N-CA-C	-7.40	102.59	111.69

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	2434	0	2369	48	0
1	B	2450	0	2394	52	0
2	A	10	0	0	0	0
2	B	10	0	0	0	0
3	B	8	12	12	1	0
4	A	28	0	0	0	0
4	B	46	0	0	2	0
All	All	4986	12	4775	100	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 10.

All (100) 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:B:265[B]:ARG:HG2	1:B:265[B]:ARG:HH11	1.38	0.86
1:B:164:GLU:HG2	1:B:292:LEU:HD21	1.59	0.82
1:B:242:MET:HE3	1:B:246:SER:OG	1.84	0.77
1:B:66:ARG:HH22	1:B:138:PHE:HA	1.57	0.70
1:B:30:GLU:HG3	1:B:35:ILE:HG12	1.73	0.70
1:B:66:ARG:NH2	1:B:138:PHE:HA	2.06	0.70
1:A:121:LYS:HD2	1:A:251:HIS:ND1	2.08	0.68
1:A:164:GLU:O	1:A:165:LEU:HD23	1.95	0.66
1:A:227:ASP:O	1:A:231:ILE:HG12	1.97	0.65
1:B:139:LYS:HB2	1:B:141:ASN:OD1	1.97	0.64
1:B:178:ARG:HG2	1:B:182:GLU:OE2	1.99	0.63
1:B:60:GLU:HB2	1:B:219:GLY:HA2	1.83	0.61
1:B:265[B]:ARG:HG2	1:B:265[B]:ARG:NH1	2.14	0.59
1:A:148:GLU:O	1:A:152:GLU:HG3	2.04	0.58
1:A:296:ARG:O	1:A:297:SER:HB2	2.04	0.57
1:B:231:ILE:CD1	1:B:267:LYS:HD3	2.34	0.57
1:A:86:GLU:C	1:A:87:THR:HG23	2.29	0.57
1:A:16:LEU:HD12	1:A:82:GLY:HA2	1.85	0.57
1:A:30:GLU:HG2	1:A:35:ILE:HG12	1.87	0.57
1:A:183:ASN:ND2	1:A:185:ILE:HD11	2.20	0.57
1:B:86:GLU:C	1:B:87:THR:HG22	2.30	0.56
1:A:148:GLU:HA	1:A:148:GLU:OE1	2.06	0.56
1:A:271:TRP:CD1	1:A:275:LYS:HE2	2.42	0.55
1:B:175:ASP:HA	1:B:178:ARG:NH1	2.22	0.55
1:A:247:LYS:O	1:A:251:HIS:HD2	1.90	0.55
1:B:231:ILE:HD13	1:B:267:LYS:HD3	1.88	0.55
1:A:6:PHE:O	1:A:10:GLU:HG3	2.08	0.54
1:B:86:GLU:O	1:B:87:THR:CG2	2.56	0.54
1:B:291:GLY:O	1:B:295:ILE:HD12	2.07	0.54
1:A:143:VAL:C	1:A:144:LEU:HD23	2.33	0.54
1:B:25:ILE:HG13	1:B:39:ILE:HG12	1.88	0.53
1:A:185:ILE:HD12	1:A:186:TYR:N	2.24	0.53
1:A:285:MET:O	1:A:285:MET:HG3	2.09	0.53
1:B:156:LYS:O	1:B:160:LEU:HD23	2.09	0.53
1:B:234:MET:HE3	1:B:242:MET:SD	2.49	0.52
1:B:296:ARG:O	1:B:297:SER:HB2	2.09	0.52
1:B:183:ASN:HB3	1:B:186:TYR:CD2	2.45	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:150:ILE:CD1	1:B:180:ILE:HG21	2.40	0.51
1:A:275:LYS:NZ	1:A:290:GLU:OE2	2.44	0.51
1:B:52:ARG:NH2	1:B:281:GLU:OE2	2.41	0.50
1:B:103:LEU:HD11	1:B:108:LEU:HB2	1.93	0.50
1:B:271:TRP:CD1	1:B:275:LYS:HE2	2.47	0.50
1:A:2:ARG:HD2	1:A:88:TYR:OH	2.12	0.49
1:A:295:ILE:O	1:A:297:SER:N	2.45	0.49
1:B:106:LEU:C	1:B:106:LEU:HD13	2.37	0.49
1:B:24:THR:HG21	1:B:41:ARG:NH2	2.28	0.49
1:A:66:ARG:HD2	1:A:138:PHE:CE2	2.47	0.49
1:B:86:GLU:C	1:B:87:THR:CG2	2.85	0.49
1:A:121:LYS:CD	1:A:251:HIS:ND1	2.76	0.48
1:B:146:PHE:O	1:B:150:ILE:HG13	2.14	0.48
1:B:192:CYS:HB2	4:B:514:HOH:O	2.13	0.48
1:A:238:GLU:HA	1:A:238:GLU:OE1	2.13	0.48
1:A:86:GLU:O	1:A:87:THR:OG1	2.24	0.48
1:B:154:ASN:ND2	1:B:177:TYR:CG	2.81	0.48
1:B:144:LEU:HD13	1:B:222:ALA:CB	2.44	0.47
1:A:61:VAL:HG21	1:A:90:MET:HE3	1.97	0.47
1:A:234:MET:HG3	1:A:245:VAL:HG11	1.97	0.47
1:A:107:LEU:O	1:A:107:LEU:HD23	2.15	0.46
1:A:60:GLU:HB2	1:A:219:GLY:HA2	1.97	0.46
1:A:252:TYR:O	1:A:253:LYS:HB2	2.16	0.46
1:B:158:LYS:HE2	1:B:174:ASP:OD1	2.16	0.46
1:B:80:PHE:CE2	3:B:402:DMS:H12	2.50	0.46
1:B:154:ASN:HD22	1:B:177:TYR:CB	2.28	0.46
1:B:257:ILE:N	1:B:258:PRO:CD	2.78	0.46
1:A:59[B]:ASN:OD1	1:A:142:LEU:CD1	2.64	0.46
1:A:124:ALA:HB2	1:A:248:ILE:HG23	1.97	0.45
1:A:277:ILE:O	1:A:281:GLU:HG3	2.17	0.45
1:B:39:ILE:HD12	1:B:45:PHE:CD1	2.52	0.45
1:B:265[B]:ARG:HH11	1:B:265[B]:ARG:CG	2.18	0.45
1:B:186:TYR:CZ	1:B:266:MET:HG3	2.51	0.45
1:A:16:LEU:CD1	1:A:82:GLY:HA2	2.45	0.45
1:B:154:ASN:ND2	1:B:177:TYR:CB	2.80	0.45
1:A:242:MET:HE3	1:A:246:SER:OG	2.16	0.45
1:B:231:ILE:C	1:B:231:ILE:HD12	2.42	0.44
1:A:144:LEU:HD23	1:A:144:LEU:N	2.31	0.44
1:A:256:ASP:CG	1:A:259:THR:HG23	2.42	0.44
1:B:86:GLU:O	1:B:87:THR:HG23	2.18	0.44
1:B:25:ILE:O	1:B:25:ILE:HG23	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:189:TYR:O	1:B:191:PRO:HD3	2.18	0.44
1:A:39:ILE:HD12	1:A:45:PHE:CD1	2.53	0.43
1:B:139:LYS:HG2	4:B:507:HOH:O	2.17	0.43
1:A:113:LYS:N	1:A:113:LYS:HD3	2.33	0.43
1:A:86:GLU:O	1:A:87:THR:CB	2.67	0.43
1:A:86:GLU:O	1:A:87:THR:HG23	2.19	0.43
1:B:194:ILE:CD1	1:B:224:SER:HB3	2.49	0.42
1:B:184:GLU:OE2	1:B:184:GLU:HA	2.18	0.42
1:A:63:ILE:O	1:A:67:ILE:HG12	2.20	0.42
1:A:121:LYS:HD2	1:A:121:LYS:HA	1.94	0.42
1:B:165:LEU:HD23	1:B:165:LEU:HA	1.75	0.41
1:A:120:ALA:HB2	1:A:244:PHE:CE1	2.55	0.41
1:B:265[B]:ARG:NH1	1:B:265[B]:ARG:CG	2.80	0.41
1:A:75:ILE:C	1:A:98:ILE:HD11	2.46	0.41
1:A:139:LYS:HB2	1:A:141:ASN:OD1	2.21	0.41
1:A:183:ASN:OD1	1:A:185:ILE:HG13	2.21	0.41
1:B:147:ARG:HG3	1:B:181:LEU:HD22	2.02	0.41
1:A:83:MET:HG3	1:A:84:PRO:HD2	2.03	0.41
1:B:266:MET:HE3	1:B:266:MET:HB3	1.94	0.40
1:B:161:LEU:HD22	1:B:292:LEU:CD1	2.50	0.40
1:A:291:GLY:O	1:A:295:ILE:HG12	2.22	0.40
1:A:280:LYS:HD3	1:A:280:LYS:HA	1.74	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	296/321 (92%)	276 (93%)	17 (6%)	3 (1%)	13	7
1	B	296/321 (92%)	281 (95%)	13 (4%)	2 (1%)	19	13
All	All	592/642 (92%)	557 (94%)	30 (5%)	5 (1%)	16	10

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	281	GLU
1	A	166	LYS
1	A	296	ARG
1	B	237	ASP
1	A	217	ASP

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	269/296 (91%)	261 (97%)	8 (3%)	36	35
1	B	271/296 (92%)	266 (98%)	5 (2%)	54	57
All	All	540/592 (91%)	527 (98%)	13 (2%)	44	45

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	66	ARG
1	B	160	LEU
1	B	164	GLU
1	B	166	LYS
1	B	185	ILE
1	A	26	GLU
1	A	69	ASN
1	A	115	SER
1	A	171	LYS
1	A	201	ASP
1	A	281	GLU
1	A	286	ASP
1	A	287	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	56	ASN
1	B	69	ASN
1	B	89	GLN
1	B	154	ASN
1	A	109	ASN
1	A	293	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

4 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	A1I8E	B	401	-	10,11,11	2.18	4 (40%)	8,15,15	0.89	0
2	A1I8E	A	401	-	10,11,11	2.30	3 (30%)	8,15,15	0.86	0
3	DMS	B	402	-	3,3,3	0.71	0	3,3,3	0.68	0
3	DMS	B	403	-	3,3,3	0.72	0	3,3,3	0.94	0

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	A1I8E	B	401	-	-	-	0/2/2/2
2	A1I8E	A	401	-	-	-	0/2/2/2

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	A1I8E	C03-C02	5.45	1.43	1.38
2	B	401	A1I8E	C03-C02	4.77	1.42	1.38
2	A	401	A1I8E	C05-N10	3.82	1.41	1.34
2	B	401	A1I8E	C05-N10	3.38	1.41	1.34
2	B	401	A1I8E	C05-N04	2.35	1.40	1.37
2	B	401	A1I8E	C03-N04	2.17	1.35	1.31
2	A	401	A1I8E	C03-N04	2.13	1.35	1.31

There are no bond angle outliers.

There are no chirality outliers.

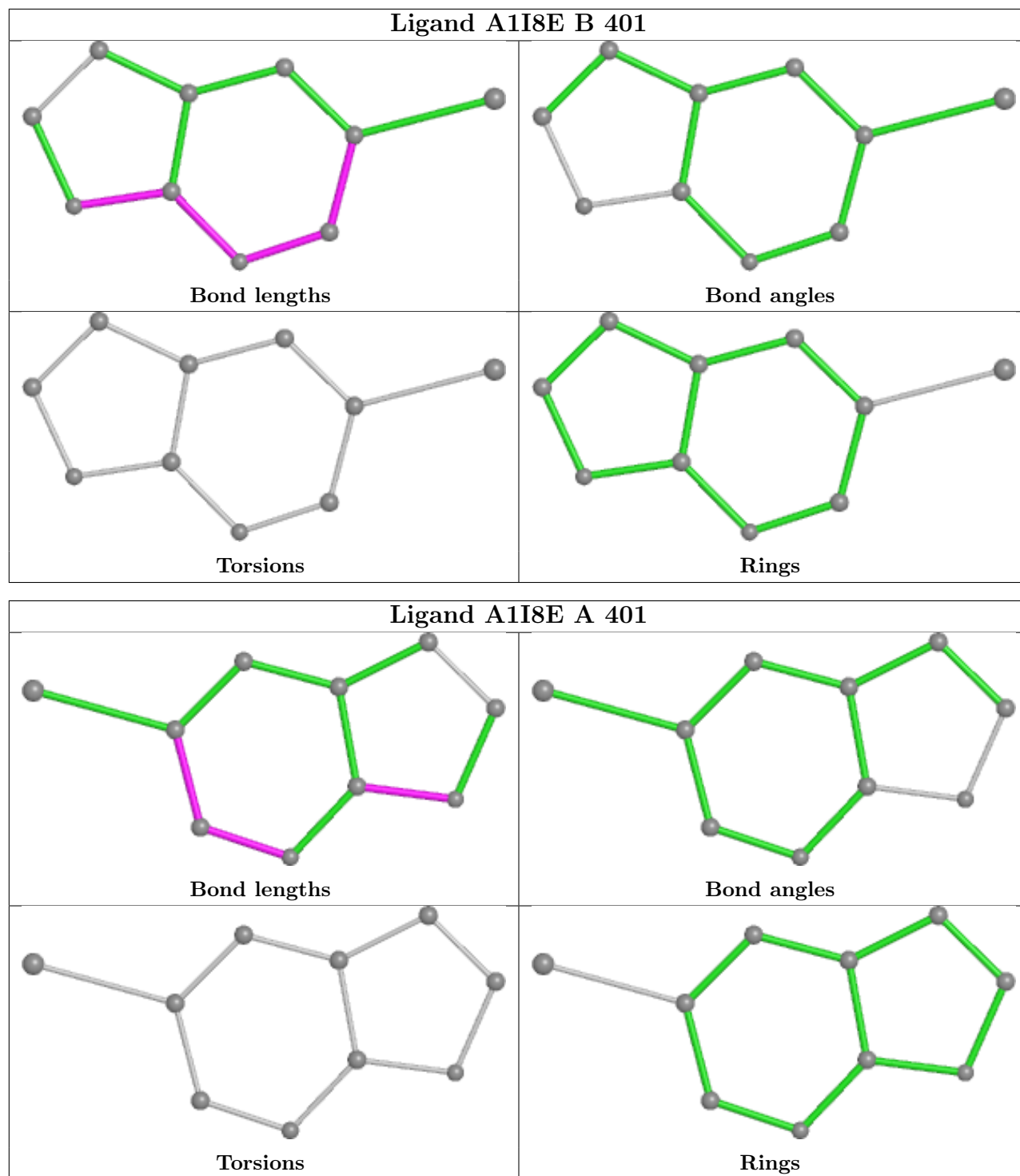
There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	402	DMS	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 ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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, 95th 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 ²)	Q<0.9
1	A	297/321 (92%)	1.54	70 (23%) 2 3	25, 47, 73, 101	1 (0%)
1	B	297/321 (92%)	1.63	86 (28%) 1 2	28, 47, 81, 129	1 (0%)
All	All	594/642 (92%)	1.59	156 (26%) 2 3	25, 47, 77, 129	2 (0%)

All (156) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	278	TYR	6.9
1	B	282	TYR	6.0
1	B	271	TRP	5.5
1	A	1	MET	5.4
1	B	287	TRP	5.1
1	A	284	TYR	4.8
1	B	145	ASP	4.7
1	B	284	TYR	4.4
1	A	282	TYR	4.4
1	B	143	VAL	4.2
1	A	297	SER	4.1
1	B	87	THR	4.0
1	A	295	ILE	4.0
1	B	146	PHE	3.8
1	A	285	MET	3.8
1	A	169	GLN	3.7
1	B	285	MET	3.7
1	A	287	TRP	3.7
1	B	142	LEU	3.6
1	A	144	LEU	3.6
1	B	180	ILE	3.6
1	A	26	GLU	3.6
1	B	237	ASP	3.5
1	B	277	ILE	3.4

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Mol	Chain	Res	Type	RSRZ
1	B	86	GLU	3.3
1	B	176	PHE	3.3
1	A	141	ASN	3.3
1	B	173	VAL	3.3
1	B	160	LEU	3.3
1	A	241	GLY	3.2
1	A	166	LYS	3.2
1	A	261	LEU	3.2
1	B	141	ASN	3.2
1	B	281	GLU	3.2
1	A	87	THR	3.1
1	A	142	LEU	3.1
1	B	157	ILE	3.1
1	A	293	ASN	3.1
1	A	140	SER	3.1
1	B	147	ARG	3.1
1	A	265	ARG	3.1
1	B	152	GLU	3.1
1	A	138	PHE	3.0
1	B	276	ILE	3.0
1	A	271	TRP	3.0
1	B	1	MET	3.0
1	B	168	PRO	3.0
1	A	143	VAL	3.0
1	B	270	TYR	3.0
1	B	280	LYS	3.0
1	B	167	GLY	3.0
1	B	144	LEU	3.0
1	A	66	ARG	3.0
1	A	86	GLU	3.0
1	A	185	ILE	2.9
1	A	278	TYR	2.9
1	B	159	LYS	2.9
1	B	272	SER	2.9
1	B	288	TYR	2.9
1	A	3	THR	2.9
1	A	152	GLU	2.8
1	A	160	LEU	2.8
1	A	292	LEU	2.8
1	B	148	GLU	2.8
1	A	180	ILE	2.7
1	B	181	LEU	2.7

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Mol	Chain	Res	Type	RSRZ
1	B	297	SER	2.7
1	B	273	PHE	2.7
1	B	186	TYR	2.7
1	A	113	LYS	2.7
1	B	107	LEU	2.7
1	B	59	ASN	2.7
1	A	135	ILE	2.7
1	B	155	LYS	2.7
1	B	69	ASN	2.7
1	A	32	ASN	2.7
1	A	137	GLY	2.7
1	B	32	ASN	2.6
1	B	291	GLY	2.6
1	A	20	PHE	2.6
1	B	151	ASN	2.6
1	B	165	LEU	2.6
1	B	114	GLN	2.6
1	B	279	GLY	2.6
1	B	172	LYS	2.6
1	A	11	LYS	2.6
1	B	106	LEU	2.6
1	A	237	ASP	2.6
1	A	18	PRO	2.6
1	A	85	SER	2.6
1	A	136	SER	2.6
1	B	174	ASP	2.5
1	B	21	THR	2.5
1	B	264	TYR	2.5
1	B	292	LEU	2.5
1	A	286	ASP	2.5
1	B	150	ILE	2.5
1	A	22	ILE	2.5
1	B	178	ARG	2.5
1	B	293	ASN	2.5
1	B	185	ILE	2.4
1	B	295	ILE	2.4
1	A	236	ASP	2.4
1	A	114	GLN	2.4
1	B	134	ASN	2.4
1	B	18	PRO	2.4
1	A	283	GLY	2.4
1	B	162	SER	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	163	ARG	2.4
1	B	137	GLY	2.4
1	A	84	PRO	2.3
1	B	187	PHE	2.3
1	A	146	PHE	2.3
1	A	165	LEU	2.3
1	B	41	ARG	2.3
1	B	289	GLU	2.3
1	B	261	LEU	2.3
1	A	108	LEU	2.3
1	A	82	GLY	2.3
1	B	22	ILE	2.3
1	A	21	THR	2.3
1	B	283	GLY	2.2
1	A	99	LYS	2.2
1	B	205	PHE	2.2
1	A	244	PHE	2.2
1	A	14	GLU	2.2
1	A	235	GLU	2.2
1	A	238	GLU	2.2
1	B	183	ASN	2.2
1	A	281	GLU	2.2
1	B	179	ASP	2.2
1	B	58	PHE	2.2
1	A	34	CYS	2.2
1	A	109	ASN	2.2
1	B	138	PHE	2.1
1	A	58	PHE	2.1
1	B	166	LYS	2.1
1	A	12	ALA	2.1
1	A	242	MET	2.1
1	B	238	GLU	2.1
1	B	149	LYS	2.1
1	A	280	LYS	2.1
1	A	105	PRO	2.1
1	B	177	TYR	2.1
1	B	164	GLU	2.1
1	A	27	ILE	2.1
1	A	223	ILE	2.1
1	B	89	GLN	2.1
1	A	31	GLY	2.0
1	B	66	ARG	2.0

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Mol	Chain	Res	Type	RSRZ
1	B	156	LYS	2.0
1	B	111	LEU	2.0
1	A	16	LEU	2.0
1	B	133	ILE	2.0
1	B	121	LYS	2.0
1	A	288	TYR	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

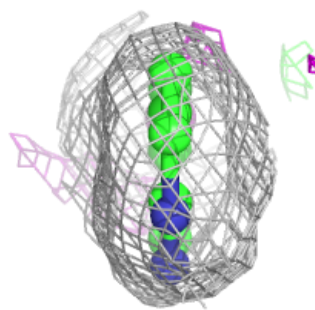
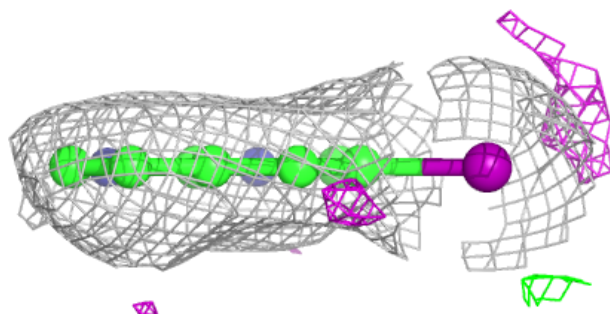
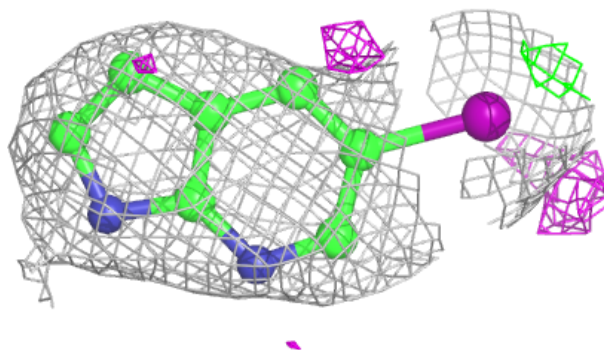
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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
3	DMS	B	402	4/4	0.70	0.23	65,78,85,90	0
3	DMS	B	403	4/4	0.80	0.22	48,58,72,72	0
2	A1I8E	B	401	10/10	0.94	0.13	38,40,52,105	0
2	A1I8E	A	401	10/10	0.95	0.12	47,51,56,86	0

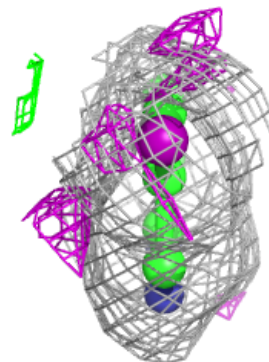
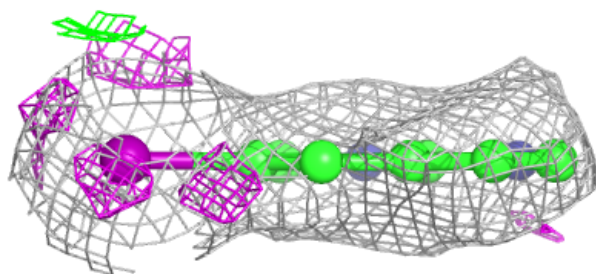
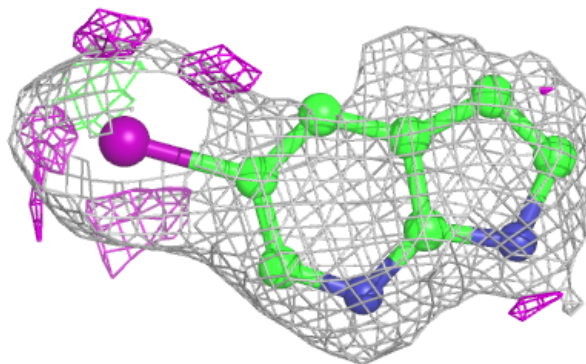
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around A1I8E B 401:

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

**Electron density around A1I8E A 401:**

$2mF_o - DF_c$ (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.