



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 09:11 AM UTC

PDB ID : 4IJW / pdb_00004ijw
Title : Crystal structure of 11b-HSD1 double mutant (L262R, F278E) in complex with 3-[1-(4-chlorophenyl)cyclopropyl]-8-cyclopropyl[1,2,4]triazolo[4,3-a]pyridine
Authors : Sheriff, S.
Deposited on : 2012-12-23
Resolution : 2.35 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	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
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)	:	2.49

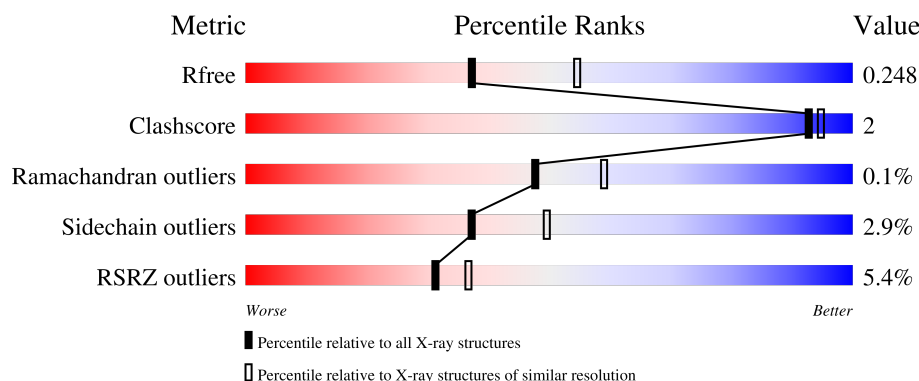
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.35 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}	180053	1596 (2.36-2.36)
Clashscore	190562	1663 (2.36-2.36)
Ramachandran outliers	187476	1646 (2.36-2.36)
Sidechain outliers	187428	1646 (2.36-2.36)
RSRZ outliers	180081	1598 (2.36-2.36)

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	286	5% 85% 6% 8%
1	B	286	5% 91% 7% .
1	D	286	3% 87% 8% .
1	E	286	7% 86% 6% 8%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 8721 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 Corticosteroid 11-beta-dehydrogenase isozyme 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	263	Total	C	N	O	S	0	0	0
			2021	1283	346	375	17			
1	B	279	Total	C	N	O	S	0	0	0
			2117	1336	363	398	20			
1	D	275	Total	C	N	O	S	0	0	0
			2086	1320	358	389	19			
1	E	264	Total	C	N	O	S	0	0	0
			2015	1277	343	378	17			

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	7	GLY	-	expression tag	UNP P28845
A	8	SER	-	expression tag	UNP P28845
A	9	HIS	-	expression tag	UNP P28845
A	10	MET	-	expression tag	UNP P28845
A	12	SER	-	expression tag	UNP P28845
A	13	MET	-	expression tag	UNP P28845
A	14	THR	-	expression tag	UNP P28845
A	15	GLY	-	expression tag	UNP P28845
A	16	GLY	-	expression tag	UNP P28845
A	17	GLN	-	expression tag	UNP P28845
A	18	GLN	-	expression tag	UNP P28845
A	19	MET	-	expression tag	UNP P28845
A	20	GLY	-	expression tag	UNP P28845
A	21	ARG	-	expression tag	UNP P28845
A	22	GLY	-	expression tag	UNP P28845
A	23	SER	-	expression tag	UNP P28845
A	262	ARG	LEU	engineered mutation	UNP P28845
A	278	GLU	PHE	engineered mutation	UNP P28845
B	7	GLY	-	expression tag	UNP P28845
B	8	SER	-	expression tag	UNP P28845
B	9	HIS	-	expression tag	UNP P28845

Continued on next page...

Continued from previous page...

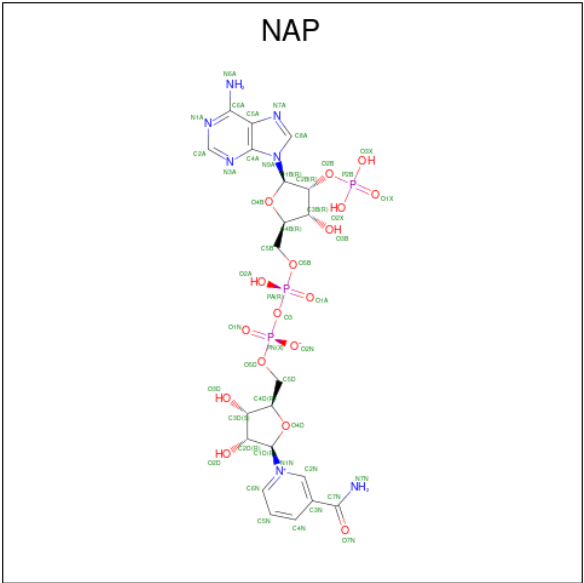
Chain	Residue	Modelled	Actual	Comment	Reference
B	10	MET	-	expression tag	UNP P28845
B	12	SER	-	expression tag	UNP P28845
B	13	MET	-	expression tag	UNP P28845
B	14	THR	-	expression tag	UNP P28845
B	15	GLY	-	expression tag	UNP P28845
B	16	GLY	-	expression tag	UNP P28845
B	17	GLN	-	expression tag	UNP P28845
B	18	GLN	-	expression tag	UNP P28845
B	19	MET	-	expression tag	UNP P28845
B	20	GLY	-	expression tag	UNP P28845
B	21	ARG	-	expression tag	UNP P28845
B	22	GLY	-	expression tag	UNP P28845
B	23	SER	-	expression tag	UNP P28845
B	262	ARG	LEU	engineered mutation	UNP P28845
B	278	GLU	PHE	engineered mutation	UNP P28845
D	7	GLY	-	expression tag	UNP P28845
D	8	SER	-	expression tag	UNP P28845
D	9	HIS	-	expression tag	UNP P28845
D	10	MET	-	expression tag	UNP P28845
D	12	SER	-	expression tag	UNP P28845
D	13	MET	-	expression tag	UNP P28845
D	14	THR	-	expression tag	UNP P28845
D	15	GLY	-	expression tag	UNP P28845
D	16	GLY	-	expression tag	UNP P28845
D	17	GLN	-	expression tag	UNP P28845
D	18	GLN	-	expression tag	UNP P28845
D	19	MET	-	expression tag	UNP P28845
D	20	GLY	-	expression tag	UNP P28845
D	21	ARG	-	expression tag	UNP P28845
D	22	GLY	-	expression tag	UNP P28845
D	23	SER	-	expression tag	UNP P28845
D	262	ARG	LEU	engineered mutation	UNP P28845
D	278	GLU	PHE	engineered mutation	UNP P28845
E	7	GLY	-	expression tag	UNP P28845
E	8	SER	-	expression tag	UNP P28845
E	9	HIS	-	expression tag	UNP P28845
E	10	MET	-	expression tag	UNP P28845
E	12	SER	-	expression tag	UNP P28845
E	13	MET	-	expression tag	UNP P28845
E	14	THR	-	expression tag	UNP P28845
E	15	GLY	-	expression tag	UNP P28845
E	16	GLY	-	expression tag	UNP P28845

Continued on next page...

Continued from previous page...

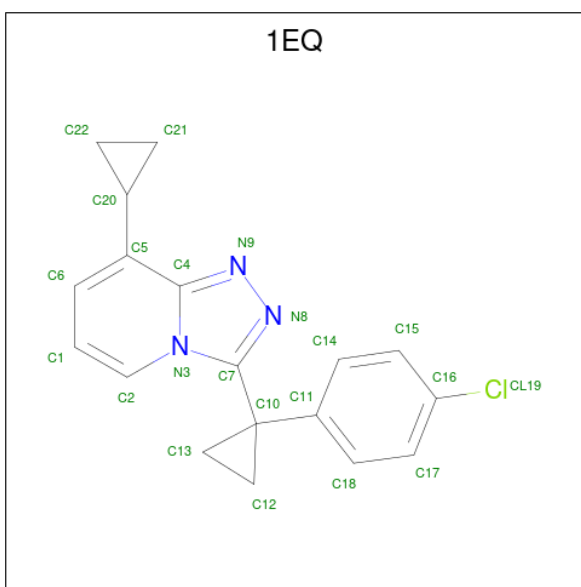
Chain	Residue	Modelled	Actual	Comment	Reference
E	17	GLN	-	expression tag	UNP P28845
E	18	GLN	-	expression tag	UNP P28845
E	19	MET	-	expression tag	UNP P28845
E	20	GLY	-	expression tag	UNP P28845
E	21	ARG	-	expression tag	UNP P28845
E	22	GLY	-	expression tag	UNP P28845
E	23	SER	-	expression tag	UNP P28845
E	262	ARG	LEU	engineered mutation	UNP P28845
E	278	GLU	PHE	engineered mutation	UNP P28845

- Molecule 2 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (CCD ID: NAP) (formula: $C_{21}H_{28}N_7O_{17}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 48	C 21	N 7	O 17	P 3	0	0
2	B	1	Total 48	C 21	N 7	O 17	P 3	0	0
2	D	1	Total 48	C 21	N 7	O 17	P 3	0	0
2	E	1	Total 48	C 21	N 7	O 17	P 3	0	0

- Molecule 3 is 3-[1-(4-chlorophenyl)cyclopropyl]-8-cyclopropyl[1,2,4]triazolo[4,3-a]pyridine (CCD ID: 1EQ) (formula: $C_{18}H_{16}ClN_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	Cl	N	0	0
			22	18	1	3		
3	B	1	Total	C	Cl	N	0	0
			22	18	1	3		
3	D	1	Total	C	Cl	N	0	0
			22	18	1	3		
3	E	1	Total	C	Cl	N	0	0
			22	18	1	3		

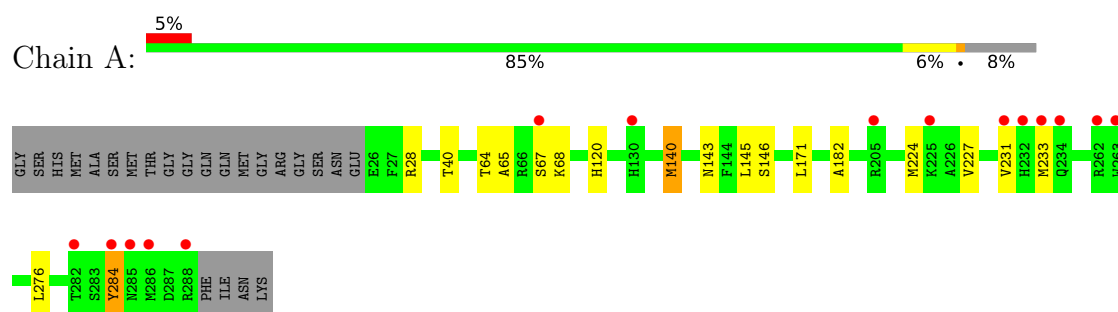
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	44	Total	O	0	0
			44	44		
4	B	46	Total	O	0	0
			46	46		
4	D	64	Total	O	0	0
			64	64		
4	E	48	Total	O	0	0
			48	48		

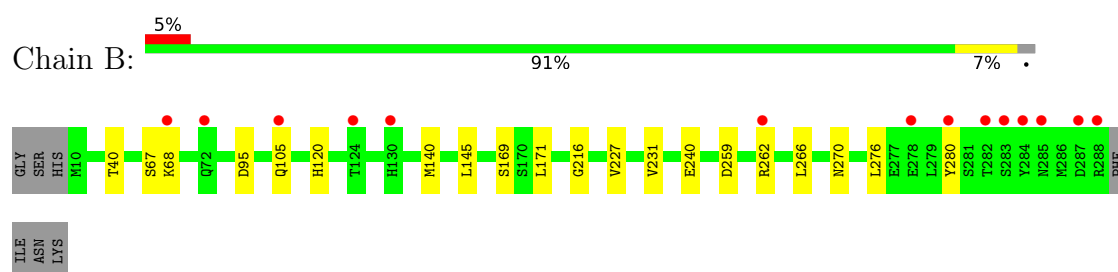
3 Residue-property plots [i](#)

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.

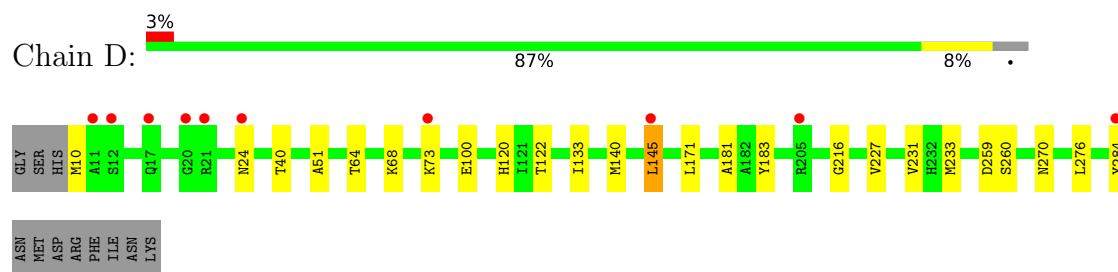
- Molecule 1: Corticosteroid 11-beta-dehydrogenase isozyme 1



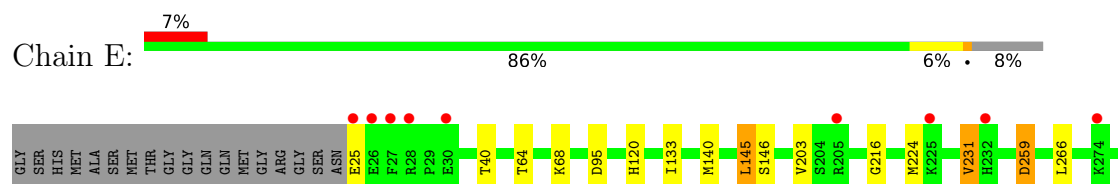
- Molecule 1: Corticosteroid 11-beta-dehydrogenase isozyme 1



- Molecule 1: Corticosteroid 11-beta-dehydrogenase isozyme 1



- Molecule 1: Corticosteroid 11-beta-dehydrogenase isozyme 1



L279	Y280	S281	T282	S283	Y284	K285	K286	D287	R288	PHE	ILE	ASN	LYS
------	------	------	------	------	------	------	------	------	------	-----	-----	-----	-----

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	74.50Å 94.30Å 167.40Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	38.76 – 2.35 38.76 – 2.35	Depositor EDS
% Data completeness (in resolution range)	96.8 (38.76-2.35) 97.0 (38.76-2.35)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.19 (at 2.34Å)	Xtriage
Refinement program	BUSTER-TNT BUSTER-TNT 2.5.1, BUSTER 2.11.4	Depositor
R, R_{free}	0.205 , 0.238 0.215 , 0.248	Depositor DCC
R_{free} test set	1093 reflections (1.93%)	wwPDB-VP
Wilson B-factor (Å ²)	25.6	Xtriage
Anisotropy	0.421	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 33.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.27$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	8721	wwPDB-VP
Average B, all atoms (Å ²)	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.46% 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: NAP, 1EQ

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	0.81	1/2054 (0.0%)	1.38	9/2771 (0.3%)
1	B	0.81	0/2150	1.36	5/2899 (0.2%)
1	D	0.80	0/2118	1.38	10/2855 (0.4%)
1	E	0.83	0/2046	1.37	5/2760 (0.2%)
All	All	0.81	1/8368 (0.0%)	1.37	29/11285 (0.3%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	140	MET	SD-CE	-5.05	1.67	1.79

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	182	ALA	CA-C-N	6.20	128.50	120.44
1	A	182	ALA	C-N-CA	6.20	128.50	120.44
1	E	64	THR	CA-C-N	5.82	132.65	121.54
1	E	64	THR	C-N-CA	5.82	132.65	121.54
1	E	259	ASP	CA-C-N	5.73	127.95	120.28
1	E	259	ASP	C-N-CA	5.73	127.95	120.28
1	D	171	LEU	N-CA-C	-5.56	105.31	111.71
1	B	171	LEU	N-CA-C	-5.55	105.33	111.71
1	D	183	TYR	CA-C-N	5.53	127.69	120.28
1	D	183	TYR	C-N-CA	5.53	127.69	120.28
1	A	64	THR	CA-C-N	5.47	131.98	121.54
1	A	64	THR	C-N-CA	5.47	131.98	121.54
1	B	95	ASP	CA-CB-CG	5.36	117.96	112.60
1	D	181	ALA	CA-C-N	5.30	127.39	120.28
1	D	181	ALA	C-N-CA	5.30	127.39	120.28
1	B	67	SER	CA-C-N	5.28	127.36	120.28

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	67	SER	C-N-CA	5.28	127.36	120.28
1	D	270	ASN	CA-CB-CG	5.26	117.86	112.60
1	A	284	TYR	N-CA-C	5.20	118.04	109.72
1	A	143	ASN	CA-CB-CG	5.19	117.79	112.60
1	D	64	THR	CA-C-N	5.18	131.44	121.54
1	D	64	THR	C-N-CA	5.18	131.44	121.54
1	A	171	LEU	N-CA-C	-5.08	105.87	111.71
1	B	270	ASN	CA-CB-CG	5.05	117.65	112.60
1	D	51	ALA	CA-C-N	5.03	126.98	120.44
1	D	51	ALA	C-N-CA	5.03	126.98	120.44
1	A	67	SER	CA-C-N	5.01	127.24	120.38
1	A	67	SER	C-N-CA	5.01	127.24	120.38
1	E	95	ASP	CA-CB-CG	5.00	117.60	112.60

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2021	0	2065	7	0
1	B	2117	0	2139	7	0
1	D	2086	0	2123	9	0
1	E	2015	0	2052	9	0
2	A	48	0	25	0	0
2	B	48	0	25	1	0
2	D	48	0	25	0	0
2	E	48	0	25	0	0
3	A	22	0	15	0	0
3	B	22	0	16	0	0
3	D	22	0	15	0	0
3	E	22	0	15	0	0
4	A	44	0	0	0	0
4	B	46	0	0	1	0
4	D	64	0	0	0	0
4	E	48	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	8721	0	8540	26	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 2.

All (26) 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:140:MET:HE2	1:E:140:MET:HE2	1.73	0.69
1:A:140:MET:HE2	1:B:140:MET:HE2	1.74	0.69
1:A:227:VAL:HB	1:A:231:VAL:HB	1.75	0.67
1:D:227:VAL:HB	1:D:231:VAL:HB	1.87	0.57
1:D:145:LEU:HD23	1:E:133:ILE:HD11	1.89	0.55
1:A:120:HIS:HE1	1:A:146:SER:OG	1.93	0.52
1:B:227:VAL:HB	1:B:231:VAL:HB	1.95	0.47
1:D:231:VAL:CG1	1:D:233:MET:HG2	2.47	0.45
1:B:216:GLY:HA3	1:B:259:ASP:OD1	2.17	0.44
1:E:40:THR:OG1	1:E:120:HIS:HD2	2.01	0.44
1:E:216:GLY:HA3	1:E:259:ASP:OD1	2.18	0.43
1:A:233:MET:HE2	1:B:280:TYR:CD1	2.54	0.43
1:D:40:THR:OG1	1:D:120:HIS:HD2	2.02	0.43
1:E:120:HIS:HE1	1:E:146:SER:OG	2.02	0.43
1:A:40:THR:OG1	1:A:120:HIS:HD2	2.02	0.43
1:B:40:THR:OG1	1:B:120:HIS:HD2	2.02	0.42
1:B:240:GLU:HB2	4:B:439:HOH:O	2.19	0.42
1:D:133:ILE:HD11	1:E:145:LEU:HD23	2.01	0.42
1:D:216:GLY:HA3	1:D:259:ASP:OD1	2.20	0.42
1:B:169:SER:O	2:B:301:NAP:H6N	2.20	0.42
1:E:203:VAL:HG21	1:E:286:MET:SD	2.59	0.42
1:A:120:HIS:CE1	1:A:146:SER:OG	2.72	0.41
1:D:24:ASN:HD22	1:D:24:ASN:H	1.69	0.41
1:E:224:MET:HA	1:E:224:MET:HE2	2.02	0.41
1:A:224:MET:HA	1:A:224:MET:HE2	2.02	0.41
1:D:284:TYR:HD1	1:E:231:VAL:HG22	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	261/286 (91%)	250 (96%)	10 (4%)	1 (0%)	30	34
1	B	277/286 (97%)	268 (97%)	9 (3%)	0	100	100
1	D	273/286 (96%)	263 (96%)	10 (4%)	0	100	100
1	E	262/286 (92%)	250 (95%)	12 (5%)	0	100	100
All	All	1073/1144 (94%)	1031 (96%)	41 (4%)	1 (0%)	48	59

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	65	ALA

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	220/237 (93%)	215 (98%)	5 (2%)	44	58
1	B	228/237 (96%)	222 (97%)	6 (3%)	40	54
1	D	224/237 (94%)	216 (96%)	8 (4%)	31	41
1	E	219/237 (92%)	212 (97%)	7 (3%)	34	46
All	All	891/948 (94%)	865 (97%)	26 (3%)	37	49

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	28	ARG
1	A	68	LYS
1	A	145	LEU
1	A	276	LEU
1	A	284	TYR
1	B	68	LYS
1	B	105	GLN
1	B	145	LEU
1	B	262	ARG
1	B	266	LEU
1	B	276	LEU
1	D	10	MET
1	D	68	LYS
1	D	73	LYS
1	D	100	GLU
1	D	122	THR
1	D	145	LEU
1	D	260	SER
1	D	276	LEU
1	E	25	GLU
1	E	68	LYS
1	E	145	LEU
1	E	231	VAL
1	E	266	LEU
1	E	279	LEU
1	E	284	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	120	HIS
1	A	130	HIS
1	A	253	GLN
1	B	24	ASN
1	B	87	HIS
1	B	105	GLN
1	B	119	ASN
1	B	120	HIS
1	B	130	HIS
1	D	24	ASN
1	D	119	ASN
1	D	120	HIS
1	E	87	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	E	105	GLN
1	E	119	ASN
1	E	120	HIS
1	E	253	GLN
1	E	270	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 ⓘ

8 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	$\# Z > 2$
3	1EQ	A	302	-	24,26,26	1.28	3 (12%)	35,40,40	1.08	3 (8%)
3	1EQ	E	302	-	24,26,26	1.45	4 (16%)	35,40,40	1.26	5 (14%)
2	NAP	A	301	-	50,52,52	0.81	1 (2%)	71,80,80	0.61	0
2	NAP	D	301	-	50,52,52	0.98	1 (2%)	71,80,80	0.74	2 (2%)
3	1EQ	D	302	-	24,26,26	1.27	1 (4%)	35,40,40	1.10	3 (8%)
2	NAP	B	301	-	50,52,52	0.82	1 (2%)	71,80,80	0.50	0
3	1EQ	B	302	-	24,26,26	1.26	3 (12%)	35,40,40	1.30	5 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	NAP	E	301	-	50,52,52	0.95	1 (2%)	71,80,80	0.62	1 (1%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	1EQ	A	302	-	-	4/10/22/22	0/5/5/5
3	1EQ	E	302	-	-	4/10/22/22	0/5/5/5
2	NAP	A	301	-	-	4/35/67/67	0/5/5/5
2	NAP	D	301	-	-	4/35/67/67	0/5/5/5
3	1EQ	D	302	-	-	5/10/22/22	0/5/5/5
2	NAP	B	301	-	-	0/35/67/67	0/5/5/5
3	1EQ	B	302	-	-	4/10/22/22	0/5/5/5
2	NAP	E	301	-	-	3/35/67/67	0/5/5/5

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	301	NAP	C2N-N1N	6.25	1.41	1.35
2	E	301	NAP	C2N-N1N	5.73	1.41	1.35
2	B	301	NAP	C2N-N1N	5.05	1.40	1.35
2	A	301	NAP	C2N-N1N	4.80	1.40	1.35
3	A	302	1EQ	C1-C6	3.48	1.50	1.41
3	E	302	1EQ	C1-C6	3.28	1.49	1.41
3	B	302	1EQ	C1-C6	3.21	1.49	1.41
3	D	302	1EQ	C1-C6	2.97	1.48	1.41
3	E	302	1EQ	C12-C10	-2.31	1.49	1.52
3	E	302	1EQ	C13-C10	-2.31	1.49	1.52
3	A	302	1EQ	C12-C10	-2.27	1.49	1.52
3	B	302	1EQ	C13-C10	-2.25	1.50	1.52
3	B	302	1EQ	C12-C10	-2.14	1.50	1.52
3	E	302	1EQ	C15-C16	2.11	1.41	1.38
3	A	302	1EQ	C13-C10	-2.01	1.50	1.52

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	302	1EQ	C13-C10-C12	3.01	59.80	58.45

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	302	1EQ	C22-C20-C5	-3.00	116.58	120.55
2	D	301	NAP	O2A-PA-O3	-2.93	99.36	107.27
2	D	301	NAP	C2B-C1B-N9A	2.92	118.56	113.75
3	B	302	1EQ	C13-C10-C12	2.88	59.74	58.45
3	E	302	1EQ	C22-C20-C5	-2.62	117.08	120.55
3	B	302	1EQ	N3-C7-N8	-2.58	108.44	110.79
2	E	301	NAP	C2B-C1B-N9A	2.53	117.91	113.75
3	A	302	1EQ	C13-C10-C12	2.51	59.57	58.45
3	D	302	1EQ	C13-C10-C12	2.36	59.51	58.45
3	E	302	1EQ	N3-C7-N8	-2.36	108.64	110.79
3	E	302	1EQ	C13-C10-C11	2.29	121.25	118.58
3	B	302	1EQ	N3-C4-N9	-2.25	108.11	110.45
3	D	302	1EQ	N3-C7-N8	-2.24	108.75	110.79
3	A	302	1EQ	C13-C10-C11	2.22	121.17	118.58
3	B	302	1EQ	C1-C6-C5	-2.08	118.50	121.02
3	A	302	1EQ	N3-C7-N8	-2.08	108.90	110.79
3	D	302	1EQ	C1-C6-C5	-2.07	118.52	121.02
3	E	302	1EQ	C14-C15-C16	2.07	121.32	119.24

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	NAP	C5D-O5D-PN-O1N
3	A	302	1EQ	C7-C10-C11-C14
3	B	302	1EQ	C7-C10-C11-C14
3	D	302	1EQ	C21-C20-C5-C6
3	A	302	1EQ	C13-C10-C11-C14
3	B	302	1EQ	C13-C10-C11-C14
2	A	301	NAP	C5D-O5D-PN-O3
3	A	302	1EQ	C7-C10-C11-C18
3	B	302	1EQ	C7-C10-C11-C18
3	D	302	1EQ	C7-C10-C11-C14
3	D	302	1EQ	C7-C10-C11-C18
3	E	302	1EQ	C7-C10-C11-C14
3	E	302	1EQ	C7-C10-C11-C18
3	A	302	1EQ	C13-C10-C11-C18
3	B	302	1EQ	C13-C10-C11-C18
3	D	302	1EQ	C13-C10-C11-C14
3	D	302	1EQ	C13-C10-C11-C18
3	E	302	1EQ	C13-C10-C11-C14
3	E	302	1EQ	C13-C10-C11-C18

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
2	A	301	NAP	C2B-O2B-P2B-O2X
2	D	301	NAP	C2B-O2B-P2B-O2X
2	E	301	NAP	C2B-O2B-P2B-O2X
2	D	301	NAP	PN-O3-PA-O1A
2	D	301	NAP	PN-O3-PA-O2A
2	A	301	NAP	C2B-O2B-P2B-O1X
2	D	301	NAP	C2B-O2B-P2B-O1X
2	E	301	NAP	C2B-O2B-P2B-O1X
2	E	301	NAP	PN-O3-PA-O2A

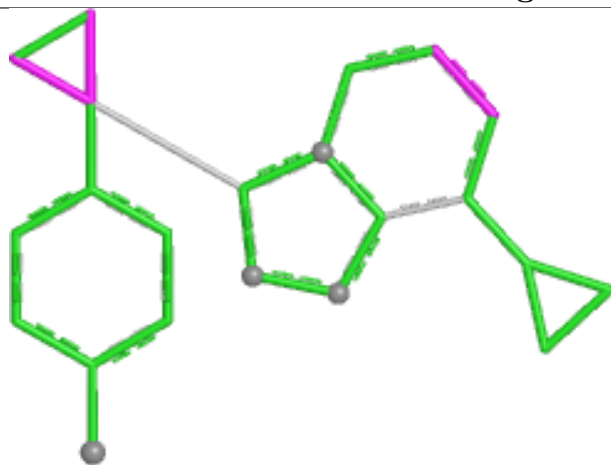
There are no ring outliers.

1 monomer is involved in 1 short contact:

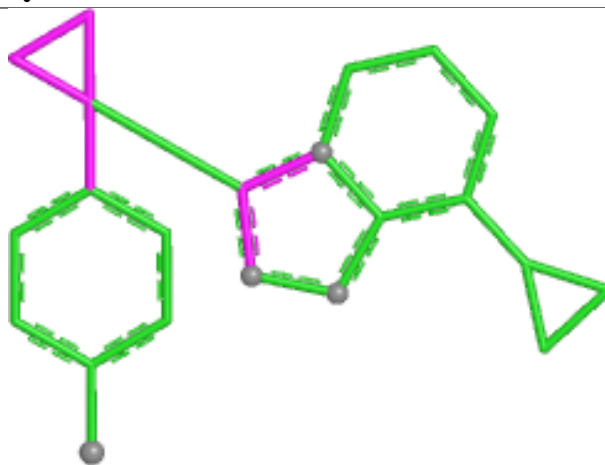
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	301	NAP	1	0

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.

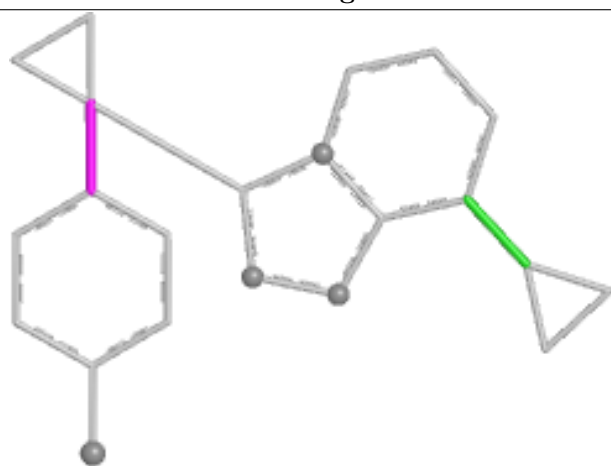
Ligand 1EQ A 302



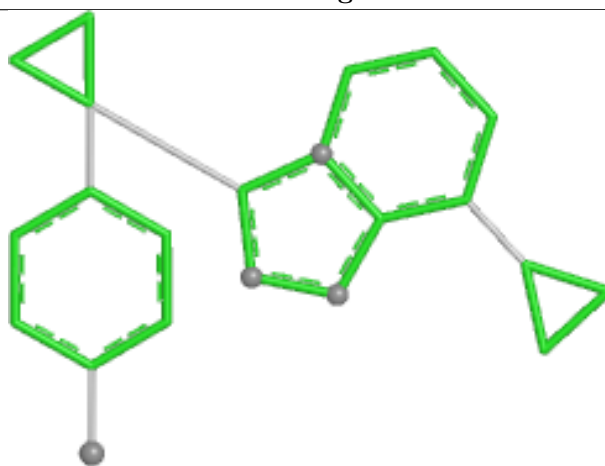
Bond lengths



Bond angles

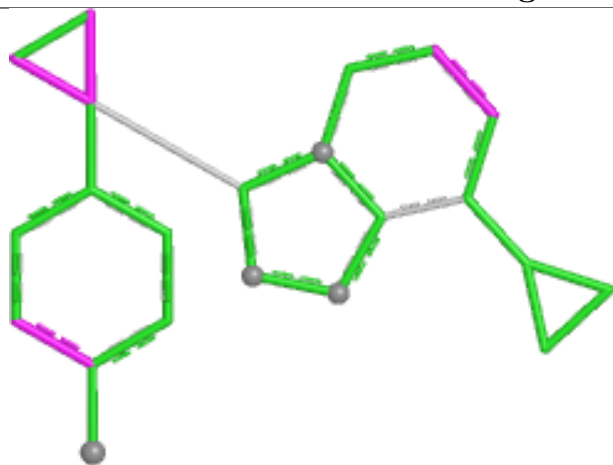


Torsions

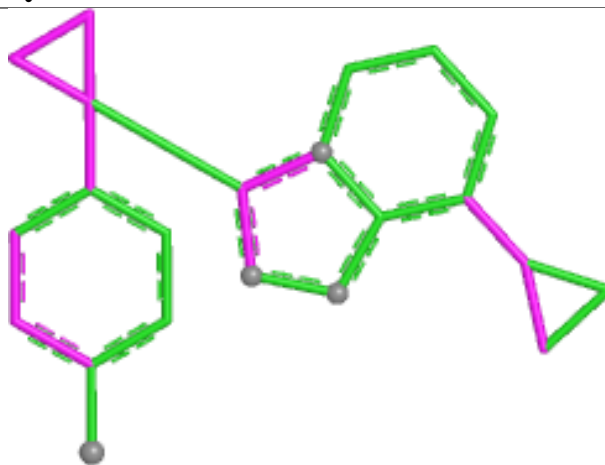


Rings

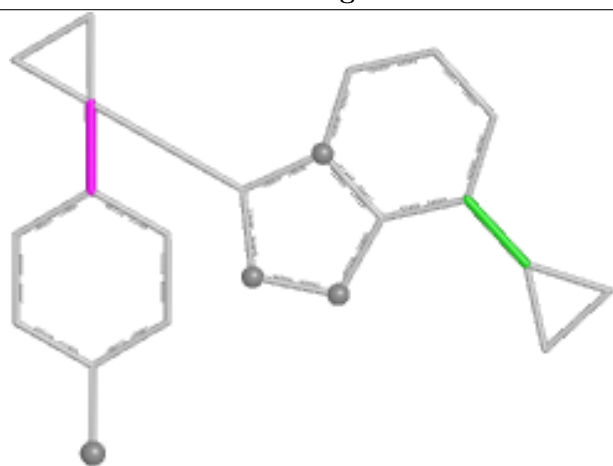
Ligand 1EQ E 302



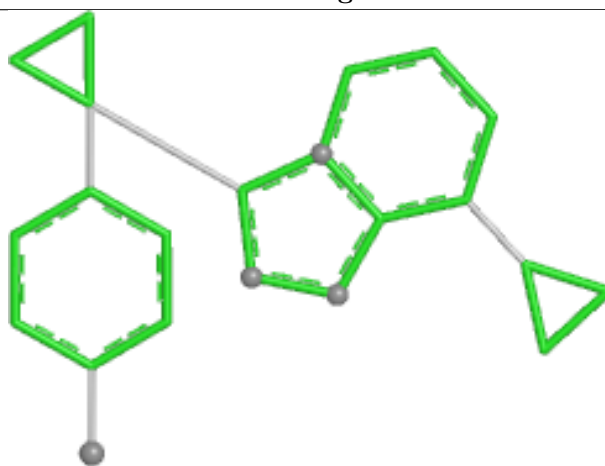
Bond lengths



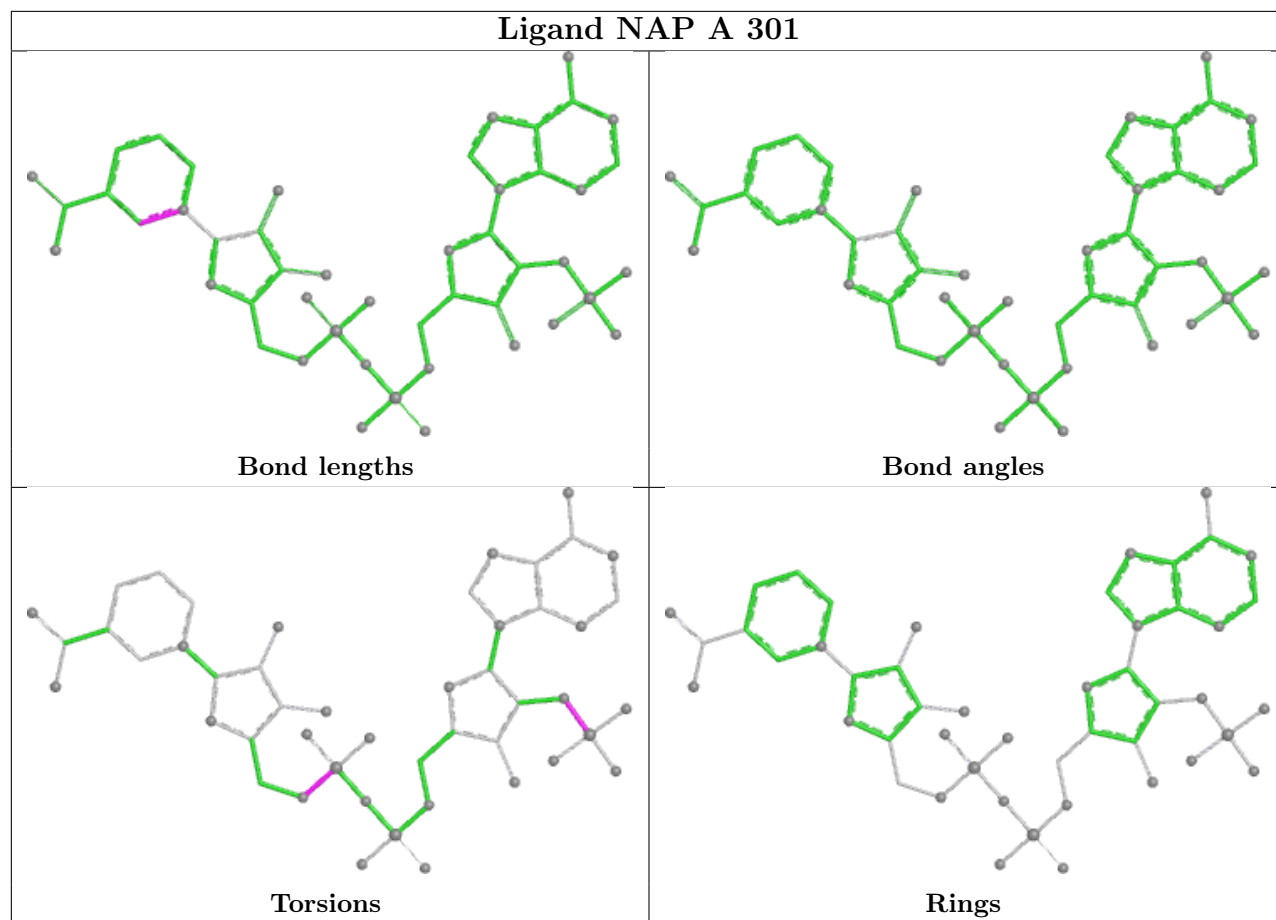
Bond angles

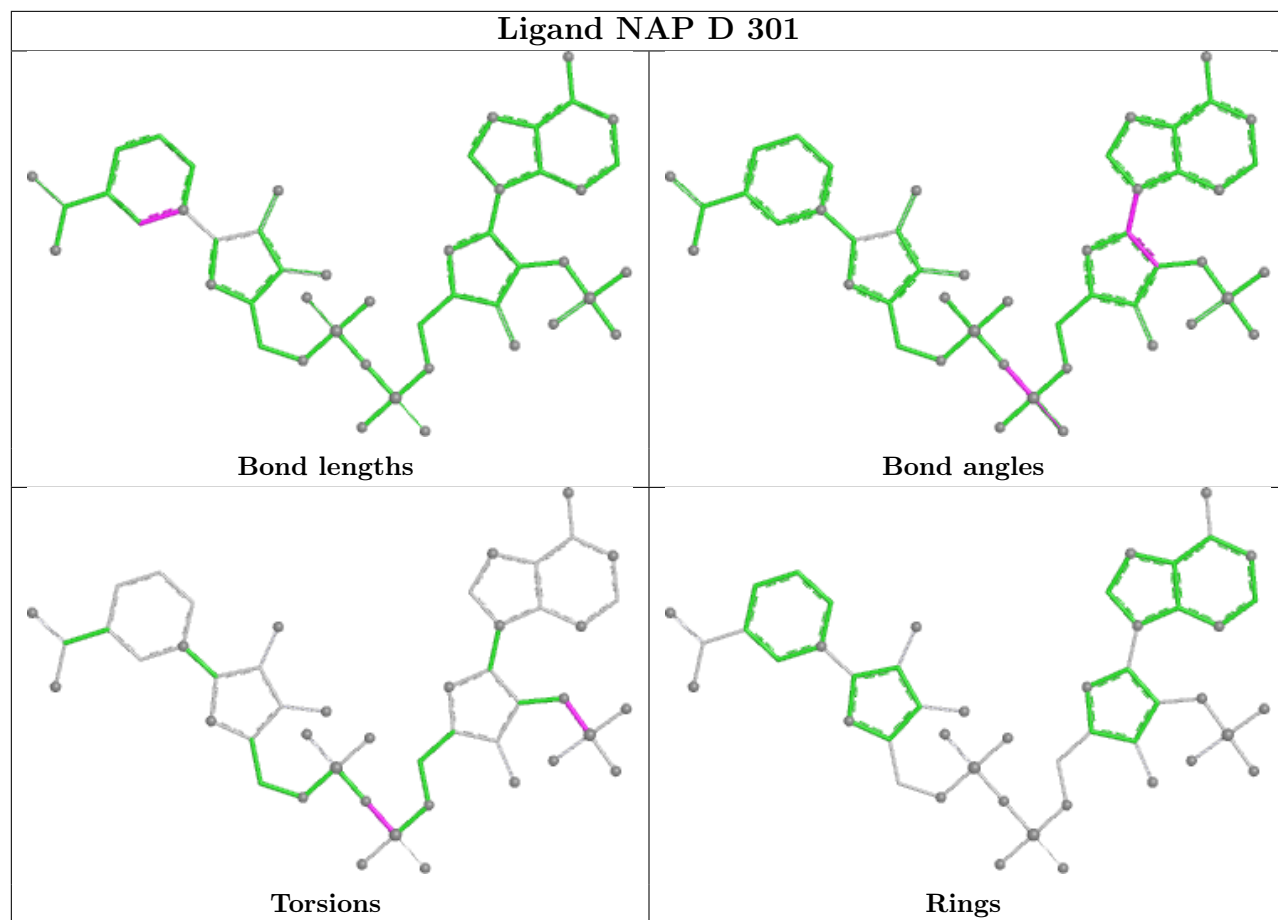


Torsions

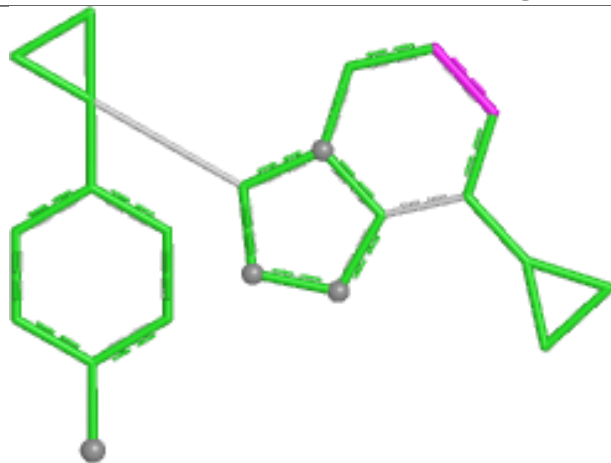


Rings

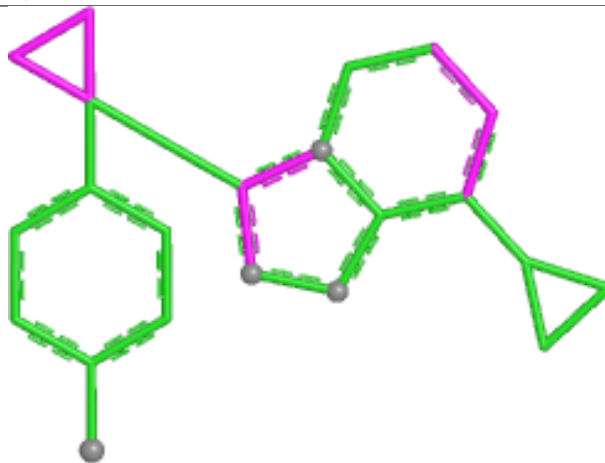




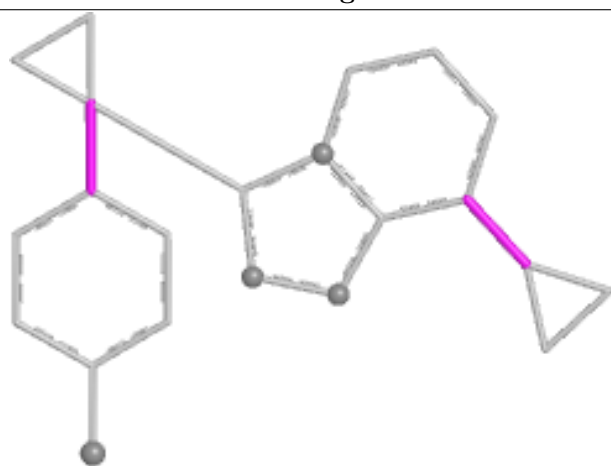
Ligand 1EQ D 302



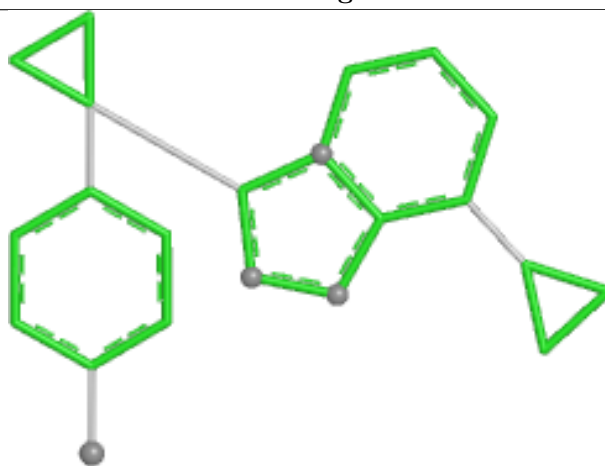
Bond lengths



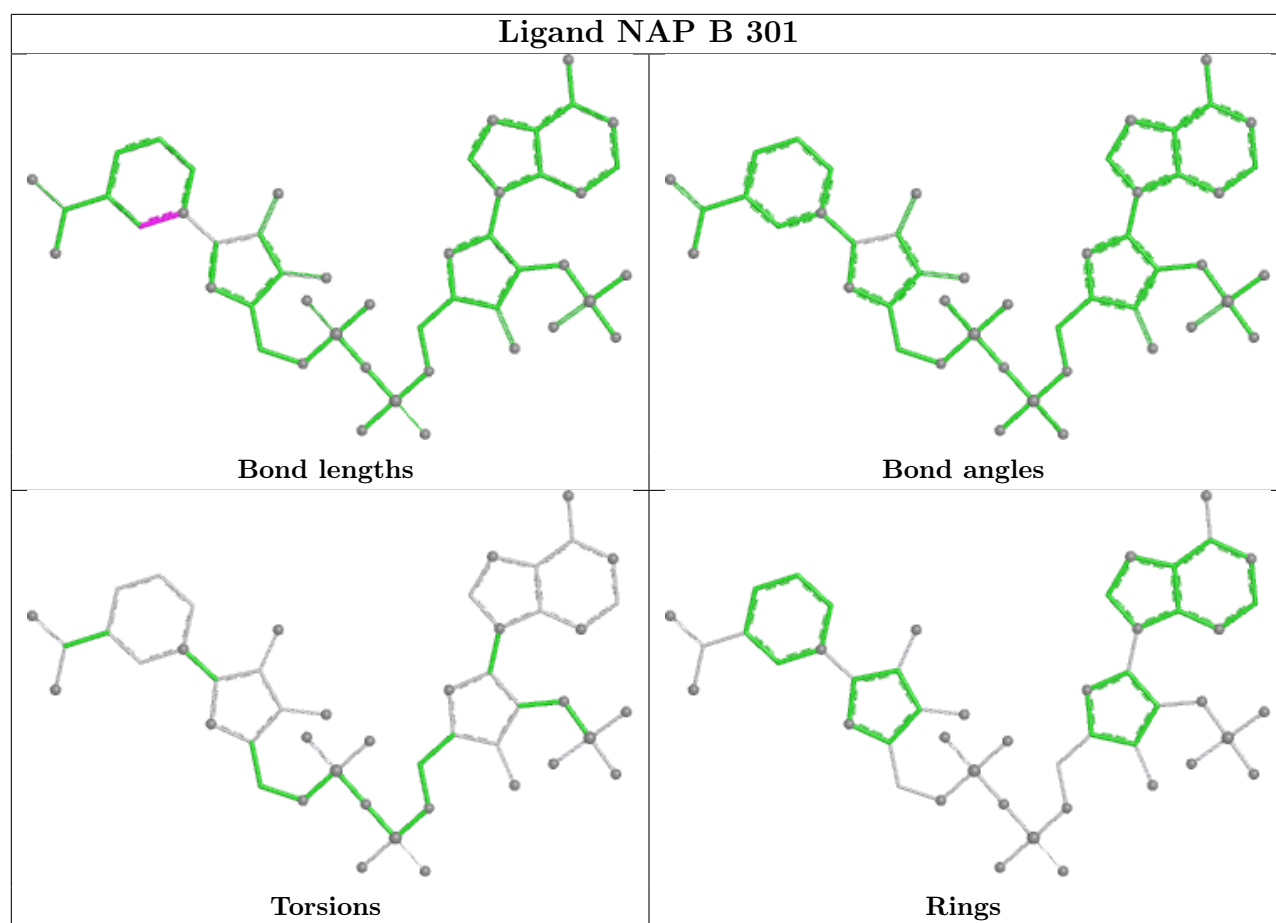
Bond angles



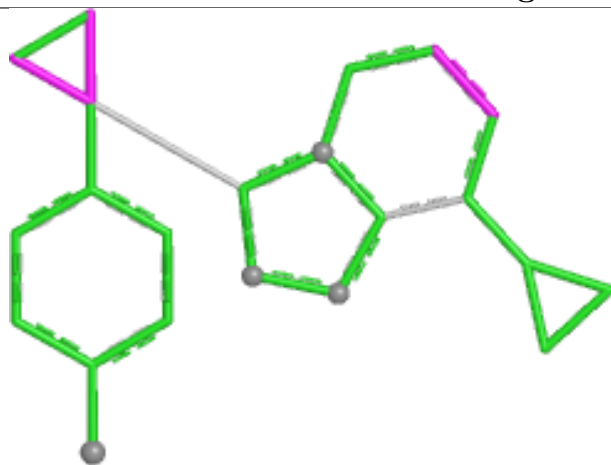
Torsions



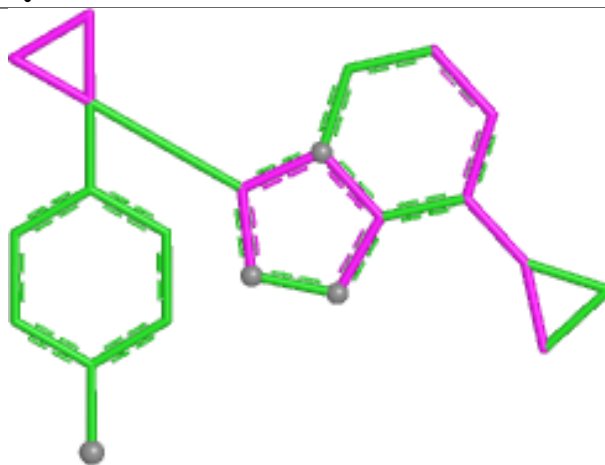
Rings



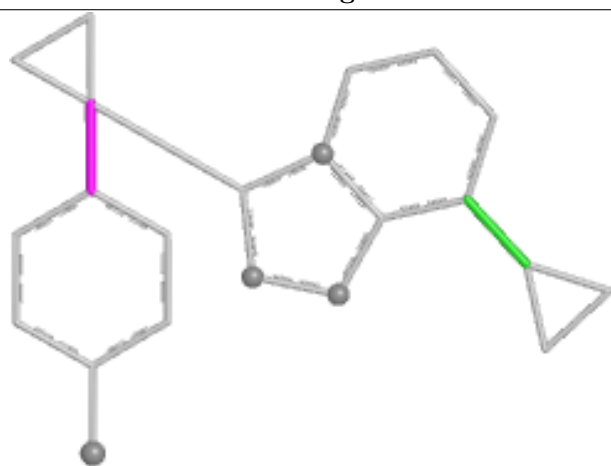
Ligand 1EQ B 302



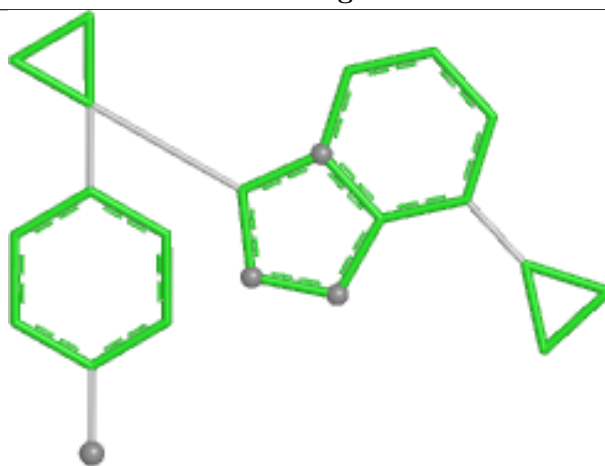
Bond lengths



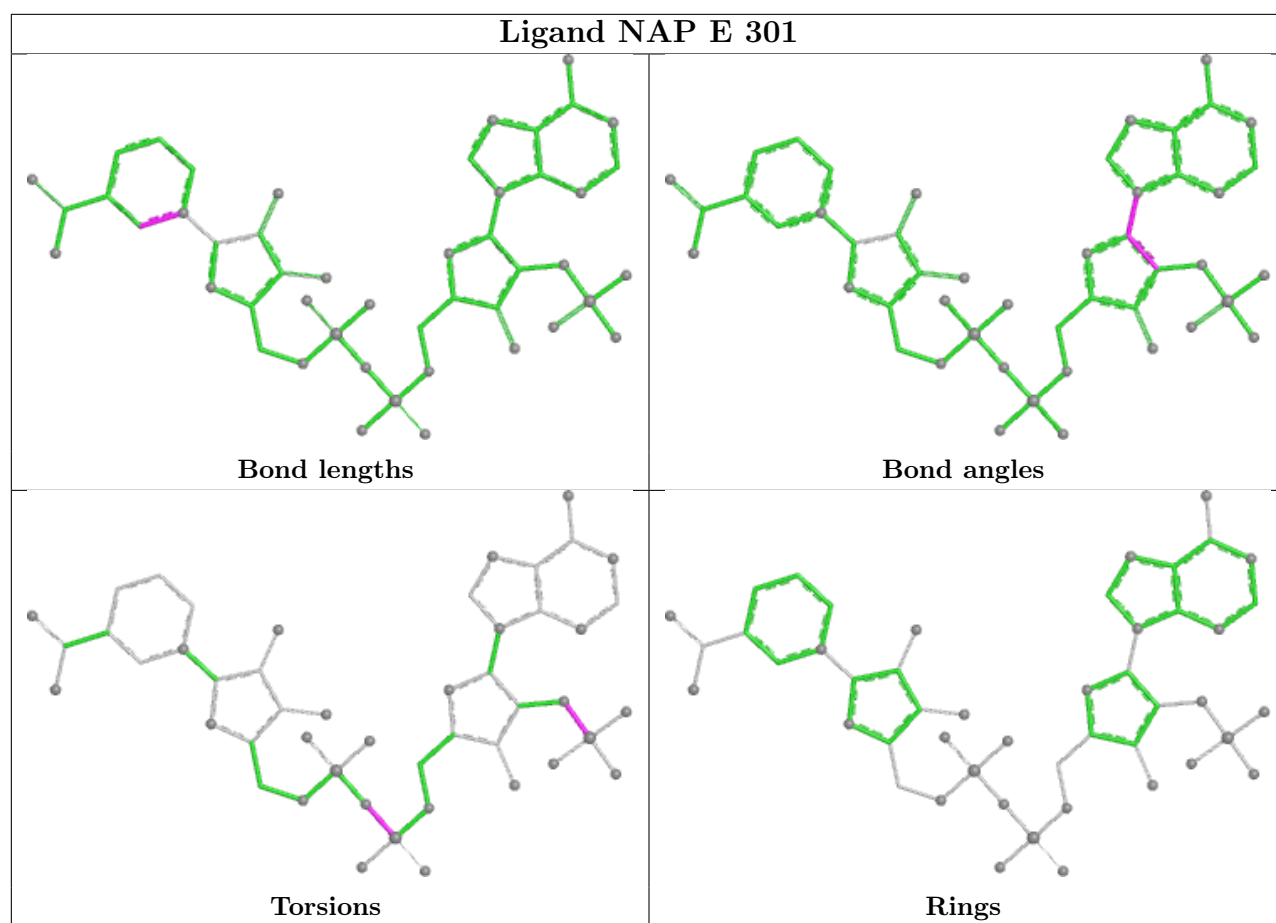
Bond angles



Torsions



Rings



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

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	263/286 (91%)	0.13	15 (5%)	29 34	12, 25, 51, 89	0
1	B	279/286 (97%)	0.25	14 (5%)	34 40	13, 28, 55, 69	0
1	D	275/286 (96%)	-0.10	10 (3%)	46 52	12, 22, 52, 73	0
1	E	264/286 (92%)	0.36	19 (7%)	21 24	13, 28, 56, 112	0
All	All	1081/1144 (94%)	0.16	58 (5%)	31 37	12, 26, 55, 112	0

All (58) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	284	TYR	6.2
1	E	280	TYR	6.1
1	E	282	THR	6.1
1	E	281	SER	5.5
1	B	283	SER	4.7
1	E	288	ARG	4.5
1	E	283	SER	4.5
1	E	279	LEU	4.4
1	A	263	TRP	4.4
1	E	286	MET	4.4
1	A	284	TYR	4.2
1	E	285	ASN	4.0
1	A	233	MET	3.6
1	B	280	TYR	3.5
1	E	30	GLU	3.4
1	D	284	TYR	3.3
1	A	285	ASN	3.3
1	A	288	ARG	3.3
1	A	286	MET	3.1
1	E	28	ARG	2.9
1	A	232	HIS	2.9

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	262	ARG	2.8
1	B	284	TYR	2.8
1	E	25	GLU	2.8
1	E	232	HIS	2.7
1	E	287	ASP	2.7
1	E	274	LYS	2.7
1	D	21	ARG	2.7
1	B	285	ASN	2.6
1	B	105	GLN	2.5
1	A	231	VAL	2.5
1	B	262	ARG	2.5
1	B	287	ASP	2.5
1	B	124	THR	2.5
1	D	17	GLN	2.5
1	D	12	SER	2.4
1	E	27	PHE	2.4
1	E	225	LYS	2.4
1	E	205	ARG	2.4
1	D	20	GLY	2.4
1	A	282	THR	2.4
1	D	205	ARG	2.4
1	D	11	ALA	2.3
1	E	26	GLU	2.3
1	D	73	LYS	2.3
1	A	130	HIS	2.2
1	A	234	GLN	2.2
1	B	288	ARG	2.1
1	D	145	LEU	2.1
1	B	72	GLN	2.1
1	A	67	SER	2.1
1	B	282	THR	2.1
1	B	130	HIS	2.1
1	D	24	ASN	2.1
1	A	225	LYS	2.0
1	B	278	GLU	2.0
1	B	68	LYS	2.0
1	A	205	ARG	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

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](#)

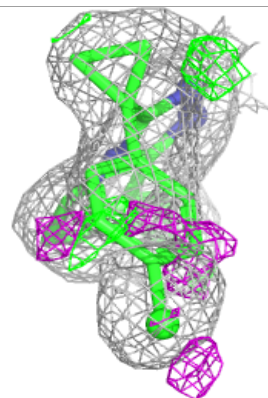
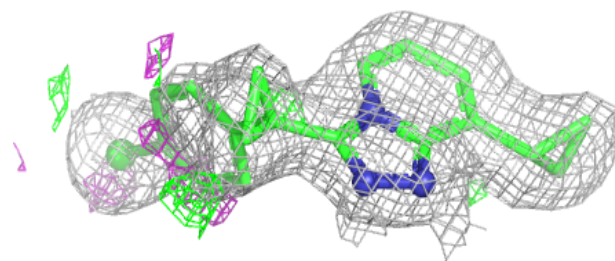
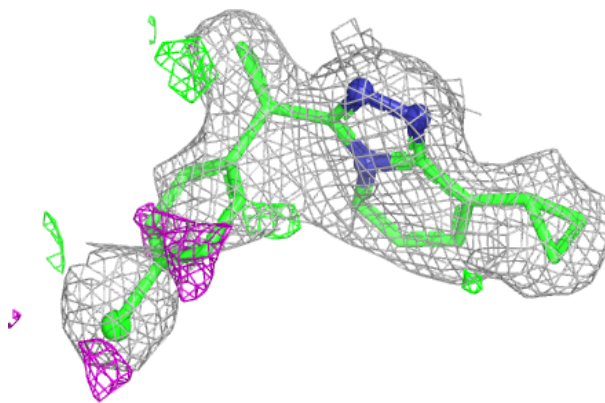
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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	1EQ	B	302	22/22	0.86	0.14	20,31,44,45	0
3	1EQ	A	302	22/22	0.94	0.08	25,27,32,33	0
3	1EQ	D	302	22/22	0.96	0.06	11,15,20,23	0
2	NAP	A	301	48/48	0.97	0.06	15,20,23,24	0
2	NAP	B	301	48/48	0.97	0.06	12,21,31,37	0
2	NAP	E	301	48/48	0.97	0.06	12,23,27,29	0
3	1EQ	E	302	22/22	0.97	0.06	13,20,22,22	0
2	NAP	D	301	48/48	0.98	0.05	10,17,20,23	0

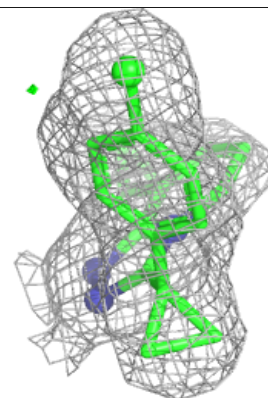
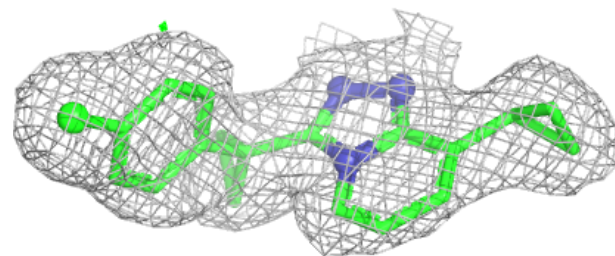
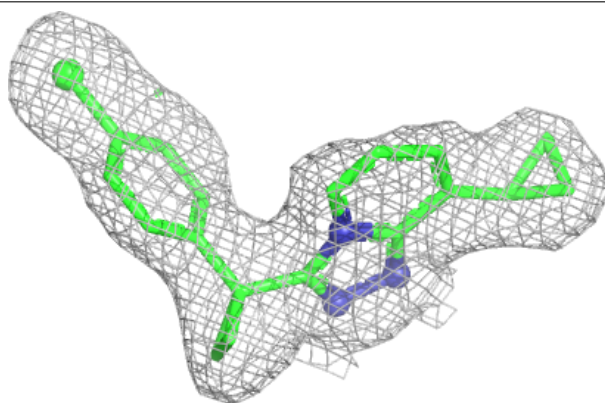
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around 1EQ B 302:

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

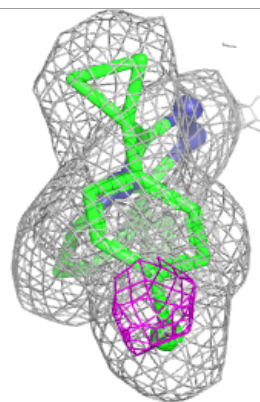
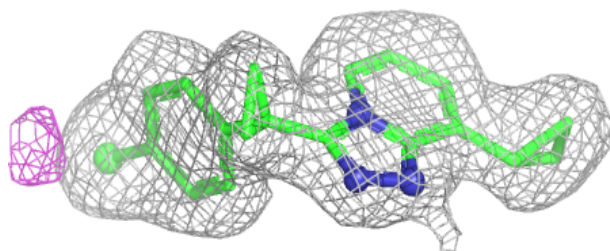
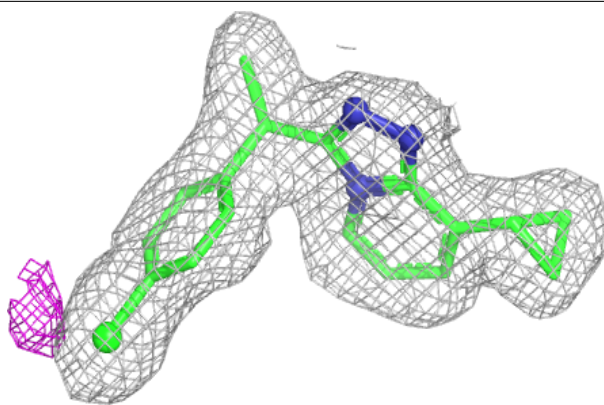
**Electron density around 1EQ A 302:**

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

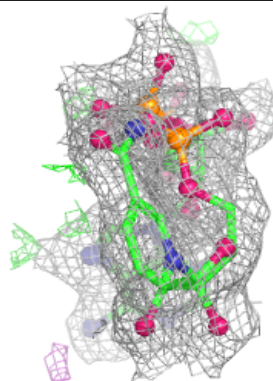
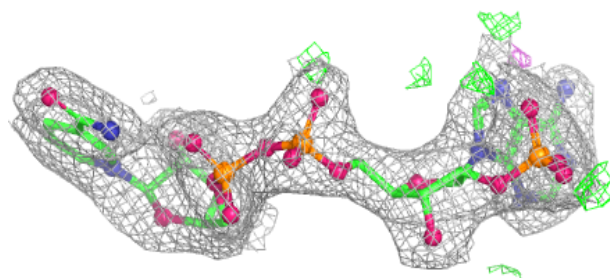
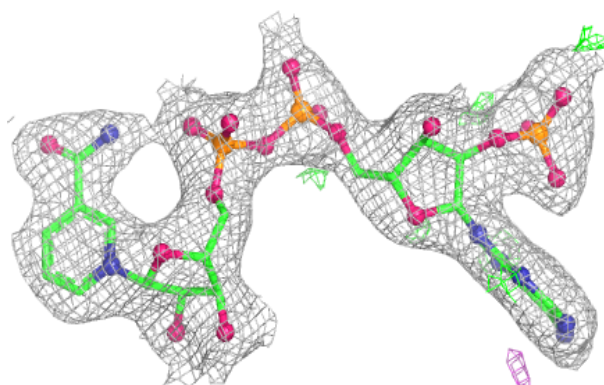


Electron density around 1EQ D 302:

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

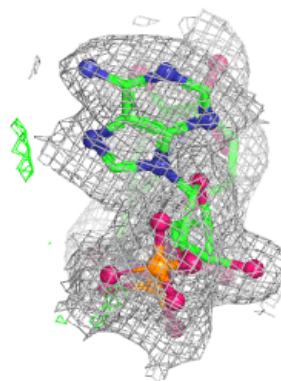
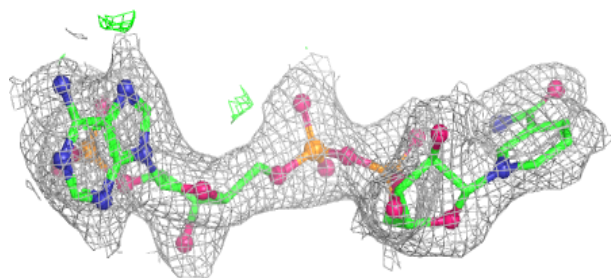
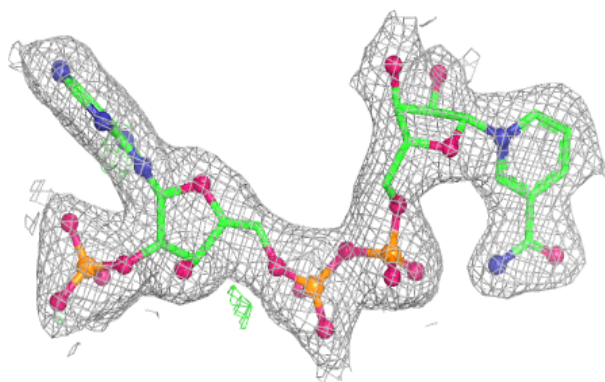
**Electron density around NAP A 301:**

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

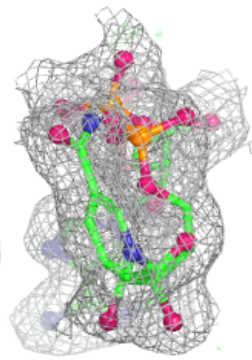
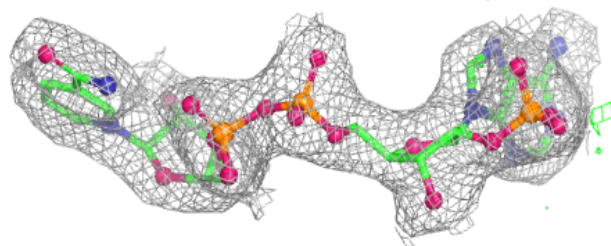
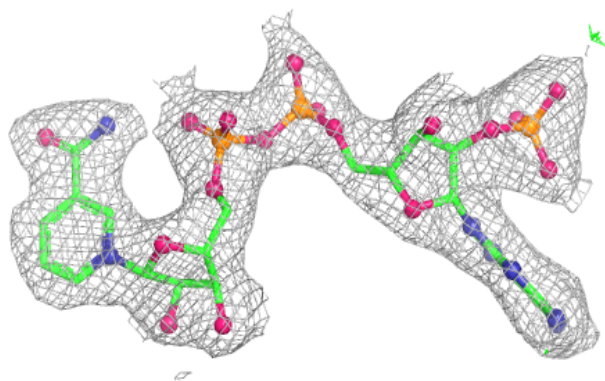


Electron density around NAP B 301:

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

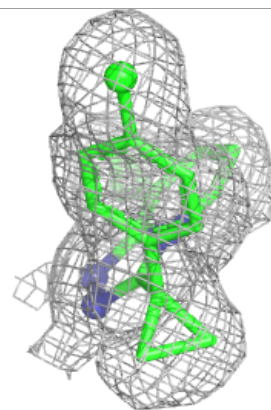
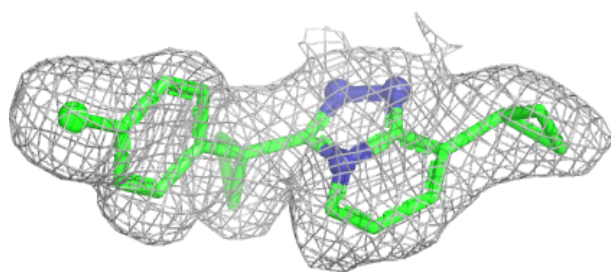
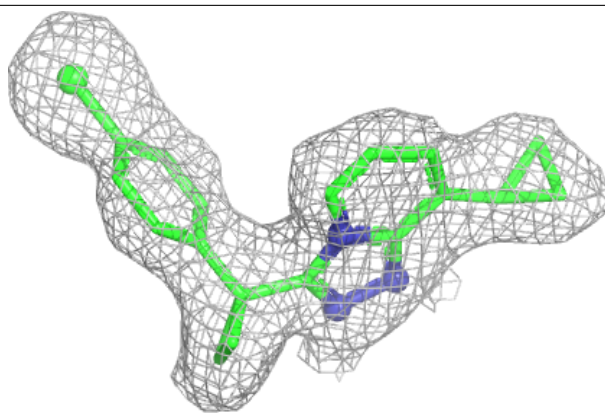
**Electron density around NAP E 301:**

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

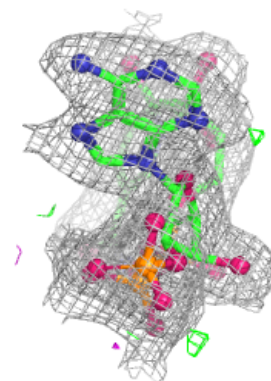
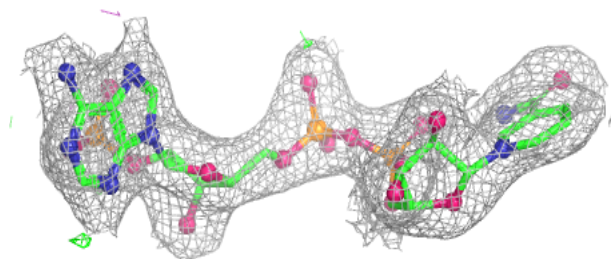
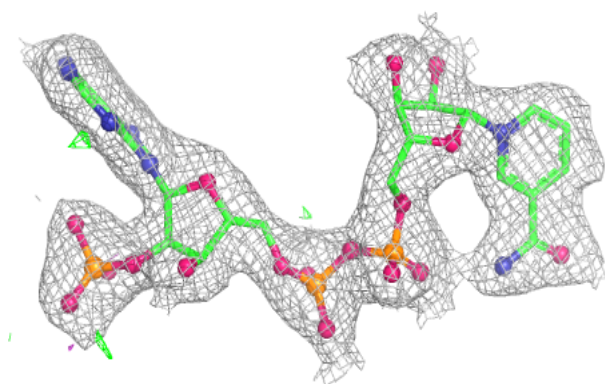


Electron density around 1EQ E 302:

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

**Electron density around NAP 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 ⓘ

There are no such residues in this entry.