



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 01:51 PM UTC

PDB ID : 6QAU / pdb_00006qau
Title : Crystal structure of ULK2 in complexed with MRT67307
Authors : Chaikuad, A.; Arrowsmith, C.H.; Edwards, A.M.; Bountra, C.; Knapp, S.;
Structural Genomics Consortium (SGC)
Deposited on : 2018-12-19
Resolution : 2.48 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

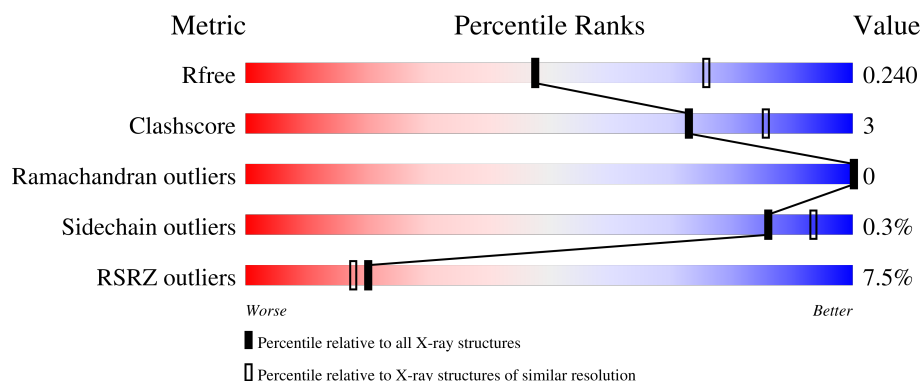
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.48 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	7589 (2.50-2.46)
Clashscore	190562	8295 (2.50-2.46)
Ramachandran outliers	187476	8164 (2.50-2.46)
Sidechain outliers	187428	8166 (2.50-2.46)
RSRZ outliers	180081	7593 (2.50-2.46)

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	280	5% 89% 9% ..
1	B	280	6% 85% 9% 5%
1	C	280	9% 83% 6% 11%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 6661 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.

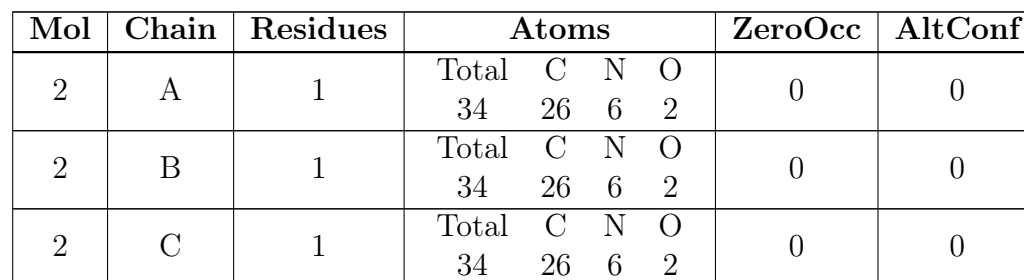
- Molecule 1 is a protein called Serine/threonine-protein kinase ULK2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	276	Total	C	N	O	S	0	1	0
			2216	1416	389	397	14			
1	B	265	Total	C	N	O	S	0	1	0
			2144	1374	378	381	11			
1	C	250	Total	C	N	O	S	0	1	0
			1982	1269	347	356	10			

There are 15 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	GLY	-	expression tag	UNP Q8IYT8
A	-2	GLY	-	expression tag	UNP Q8IYT8
A	-1	GLY	-	expression tag	UNP Q8IYT8
A	0	SER	-	expression tag	UNP Q8IYT8
A	173	ASP	THR	conflict	UNP Q8IYT8
B	-3	GLY	-	expression tag	UNP Q8IYT8
B	-2	GLY	-	expression tag	UNP Q8IYT8
B	-1	GLY	-	expression tag	UNP Q8IYT8
B	0	SER	-	expression tag	UNP Q8IYT8
B	173	ASP	THR	conflict	UNP Q8IYT8
C	-3	GLY	-	expression tag	UNP Q8IYT8
C	-2	GLY	-	expression tag	UNP Q8IYT8
C	-1	GLY	-	expression tag	UNP Q8IYT8
C	0	SER	-	expression tag	UNP Q8IYT8
C	173	ASP	THR	conflict	UNP Q8IYT8

- Molecule 2 is N-{3-[(5-cyclopropyl-2-{[3-(morpholin-4-ylmethyl)phenyl]amino}pyrimidin-4-yl)amino]propyl}cyclobutanecarboxamide (CCD ID: 1FV) (formula: C₂₆H₃₆N₆O₂).



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- EDO
- Chemical structure of EDO (Ethane-1,2-diol) showing a zigzag conformation. The carbon atoms are labeled C1 and C2 in green. The hydroxyl groups are labeled HO and OH in red, with their oxygen atoms labeled O1 and O2 in green.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	2	2		



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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	C	1	Total	C	O	0	0
			4	2	2		

- Molecule 4 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			6	3	3		

- Molecule 5 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total 1	Cl 1	0	0

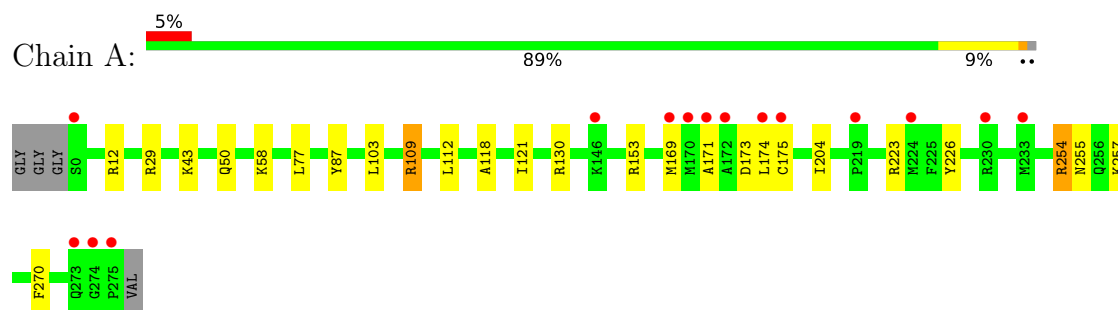
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	68	Total 68	O 68	0	0
6	B	70	Total 70	O 70	0	0
6	C	36	Total 36	O 36	0	0

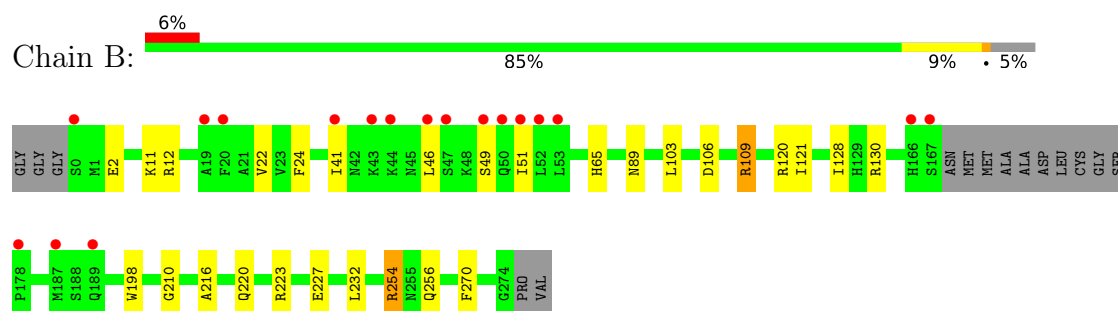
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

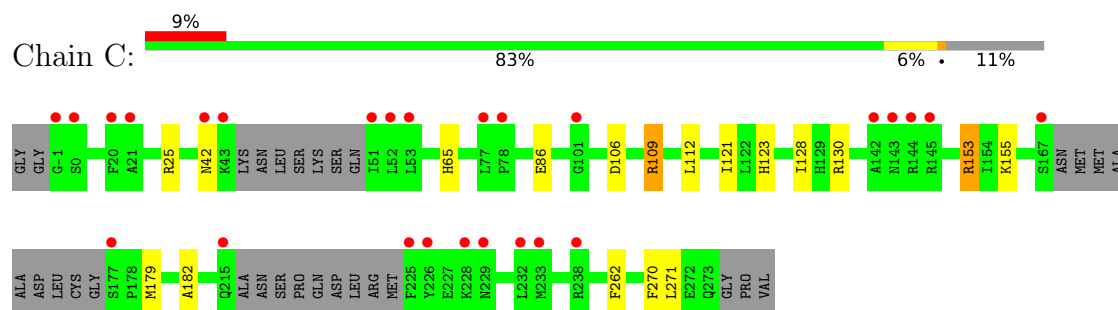
- Molecule 1: Serine/threonine-protein kinase ULK2



- Molecule 1: Serine/threonine-protein kinase ULK2



- Molecule 1: Serine/threonine-protein kinase ULK2



4 Data and refinement statistics

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α , β , γ	117.01Å 117.01Å 141.49Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	58.50 – 2.48 58.50 – 2.48	Depositor EDS
% Data completeness (in resolution range)	100.0 (58.50-2.48) 100.0 (58.50-2.48)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.10 (at 2.48Å)	Xtriage
Refinement program	REFMAC 5.8.0230	Depositor
R, R_{free}	0.196 , 0.237 0.202 , 0.240	Depositor DCC
R_{free} test set	2088 reflections (5.19%)	wwPDB-VP
Wilson B-factor (Å ²)	43.9	Xtriage
Anisotropy	0.196	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 36.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.027 for -h,-k,l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	6661	wwPDB-VP
Average B, all atoms (Å ²)	57.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.24% 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: CL, 1FV, GOL, EDO

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	0.94	1/2267 (0.0%)	0.93	0/3055
1	B	0.93	1/2194 (0.0%)	0.91	0/2954
1	C	0.90	1/2027 (0.0%)	0.90	0/2735
All	All	0.93	3/6488 (0.0%)	0.91	0/8744

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	7
1	B	0	4
1	C	0	3
All	All	0	14

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	210	GLY	C-O	-5.55	1.16	1.24
1	C	42	ASN	N-CA	5.17	1.52	1.46
1	A	87	TYR	C-O	-5.11	1.17	1.24

There are no bond angle outliers.

There are no chirality outliers.

All (14) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	109	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	A	12	ARG	Sidechain
1	A	130	ARG	Sidechain
1	A	153	ARG	Sidechain
1	A	223	ARG	Sidechain
1	A	254	ARG	Sidechain
1	A	29	ARG	Sidechain
1	B	109	ARG	Sidechain
1	B	12	ARG	Sidechain
1	B	120	ARG	Sidechain
1	B	254	ARG	Sidechain
1	C	109	ARG	Sidechain
1	C	153	ARG	Sidechain
1	C	25	ARG	Sidechain

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	2216	0	2236	12	0
1	B	2144	0	2166	15	0
1	C	1982	0	1947	10	0
2	A	34	0	35	2	0
2	B	34	0	35	3	0
2	C	34	0	35	3	0
3	A	16	0	24	0	0
3	B	16	0	24	1	0
3	C	4	0	6	0	0
4	A	6	0	8	0	0
5	A	1	0	0	0	0
6	A	68	0	0	2	0
6	B	70	0	0	0	0
6	C	36	0	0	0	0
All	All	6661	0	6516	41	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.

All (41) 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:C:109:ARG:HD3	1:C:270:PHE:O	1.90	0.72
1:B:220:GLN:OE1	1:B:223:ARG:NH2	2.25	0.69
1:B:109:ARG:HD3	1:B:270:PHE:O	1.94	0.68
1:A:255:ASN:OD1	1:A:257:LYS:HG2	1.96	0.65
1:A:118:ALA:O	1:A:121:ILE:HG22	2.02	0.59
2:C:301:1FV:H24	2:C:301:1FV:N3	2.20	0.57
1:B:223:ARG:O	1:B:227:GLU:HG3	2.06	0.56
1:A:50:GLN:HG2	6:A:435:HOH:O	2.05	0.55
1:A:58:LYS:HE3	6:A:439:HOH:O	2.06	0.55
1:C:153:ARG:HG2	1:C:155:LYS:HE2	1.91	0.53
2:B:301:1FV:H24	2:B:301:1FV:N3	2.24	0.52
1:A:171:ALA:O	1:A:175:CYS:HB2	2.11	0.50
1:A:112:LEU:HD13	1:A:204:ILE:HD11	1.94	0.50
2:A:301:1FV:H24	2:A:301:1FV:N3	2.28	0.49
1:A:226:TYR:O	1:A:254:ARG:NH2	2.45	0.48
1:A:109:ARG:HD3	1:A:270:PHE:O	2.14	0.48
1:C:65:HIS:CD2	1:C:121:ILE:HG13	2.48	0.48
1:A:169:MET:O	1:A:173:ASP:HB2	2.14	0.48
1:A:43:LYS:NZ	1:A:77:LEU:O	2.44	0.45
1:B:198:TRP:CD1	1:C:182:ALA:HA	2.52	0.45
2:C:301:1FV:N3	2:C:301:1FV:CAD	2.77	0.45
1:C:106:ASP:OD1	1:C:109:ARG:NH2	2.51	0.43
1:A:254:ARG:O	1:A:254:ARG:HD3	2.18	0.43
1:B:216:ALA:H	1:C:179:MET:HE2	1.83	0.43
1:B:89:ASN:O	2:B:301:1FV:H34	2.18	0.43
1:B:106:ASP:OD1	1:B:109:ARG:NH2	2.52	0.43
1:B:128:ILE:HG13	1:B:130:ARG:HG3	2.01	0.43
1:C:128:ILE:HG13	1:C:130:ARG:HG3	2.00	0.43
2:A:301:1FV:N3	2:A:301:1FV:CAD	2.82	0.43
1:B:49:SER:OG	1:B:51:ILE:HG22	2.20	0.42
2:B:301:1FV:N3	2:B:301:1FV:CAD	2.80	0.42
1:C:86:GLU:O	2:C:301:1FV:H21	2.19	0.42
1:C:123:HIS:CE1	1:C:262:PHE:CD2	3.08	0.42
1:B:256:GLN:NE2	3:B:303:EDO:O2	2.53	0.41
1:B:65:HIS:CD2	1:B:121:ILE:HG13	2.55	0.41
1:A:174:LEU:HD12	1:A:175:CYS:SG	2.61	0.41
1:B:41:ILE:HG21	1:B:46:LEU:HD12	2.01	0.41
1:C:112:LEU:HG	1:C:271:LEU:HD21	2.03	0.41
1:B:22:VAL:HG23	1:B:24:PHE:CE2	2.56	0.41
1:B:232:LEU:HD12	1:B:254:ARG:HB2	2.03	0.40
1:B:2:GLU:OE2	1:B:11:LYS:HE2	2.22	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	275/280 (98%)	266 (97%)	9 (3%)	0	100	100
1	B	262/280 (94%)	254 (97%)	8 (3%)	0	100	100
1	C	243/280 (87%)	236 (97%)	7 (3%)	0	100	100
All	All	780/840 (93%)	756 (97%)	24 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	240/241 (100%)	239 (100%)	1 (0%)	84	92
1	B	232/241 (96%)	231 (100%)	1 (0%)	84	92
1	C	207/241 (86%)	207 (100%)	0	100	100
All	All	679/723 (94%)	677 (100%)	2 (0%)	86	93

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	103	LEU
1	B	103	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	166	HIS
1	C	123	HIS
1	C	190	HIS

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](#)

Of 14 ligands modelled in this entry, 1 is monoatomic - leaving 13 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	1FV	B	301	-	38,38,38	0.21	0	46,51,51	0.34	0
3	EDO	A	303	-	3,3,3	0.55	0	2,2,2	0.18	0
2	1FV	C	301	-	38,38,38	0.37	0	46,51,51	0.46	0
4	GOL	A	306	-	5,5,5	0.58	0	5,5,5	0.45	0
3	EDO	B	304	-	3,3,3	0.39	0	2,2,2	0.43	0
3	EDO	C	302	-	3,3,3	0.58	0	2,2,2	0.16	0
2	1FV	A	301	-	38,38,38	0.34	0	46,51,51	0.31	0
3	EDO	B	305	-	3,3,3	0.39	0	2,2,2	0.37	0
3	EDO	A	302	-	3,3,3	0.57	0	2,2,2	0.13	0
3	EDO	B	302	-	3,3,3	0.49	0	2,2,2	0.30	0
3	EDO	B	303	-	3,3,3	0.52	0	2,2,2	0.19	0
3	EDO	A	304	-	3,3,3	0.47	0	2,2,2	0.33	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	EDO	A	305	-	3,3,3	0.48	0	2,2,2	0.37	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	1FV	B	301	-	-	0/24/40/40	0/5/5/5
3	EDO	A	303	-	-	1/1/1/1	-
2	1FV	C	301	-	-	2/24/40/40	0/5/5/5
4	GOL	A	306	-	-	2/4/4/4	-
3	EDO	B	304	-	-	0/1/1/1	-
3	EDO	C	302	-	-	1/1/1/1	-
2	1FV	A	301	-	-	2/24/40/40	0/5/5/5
3	EDO	B	305	-	-	1/1/1/1	-
3	EDO	A	302	-	-	0/1/1/1	-
3	EDO	B	302	-	-	1/1/1/1	-
3	EDO	B	303	-	-	1/1/1/1	-
3	EDO	A	304	-	-	1/1/1/1	-
3	EDO	A	305	-	-	0/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (12) torsion outliers are listed below:

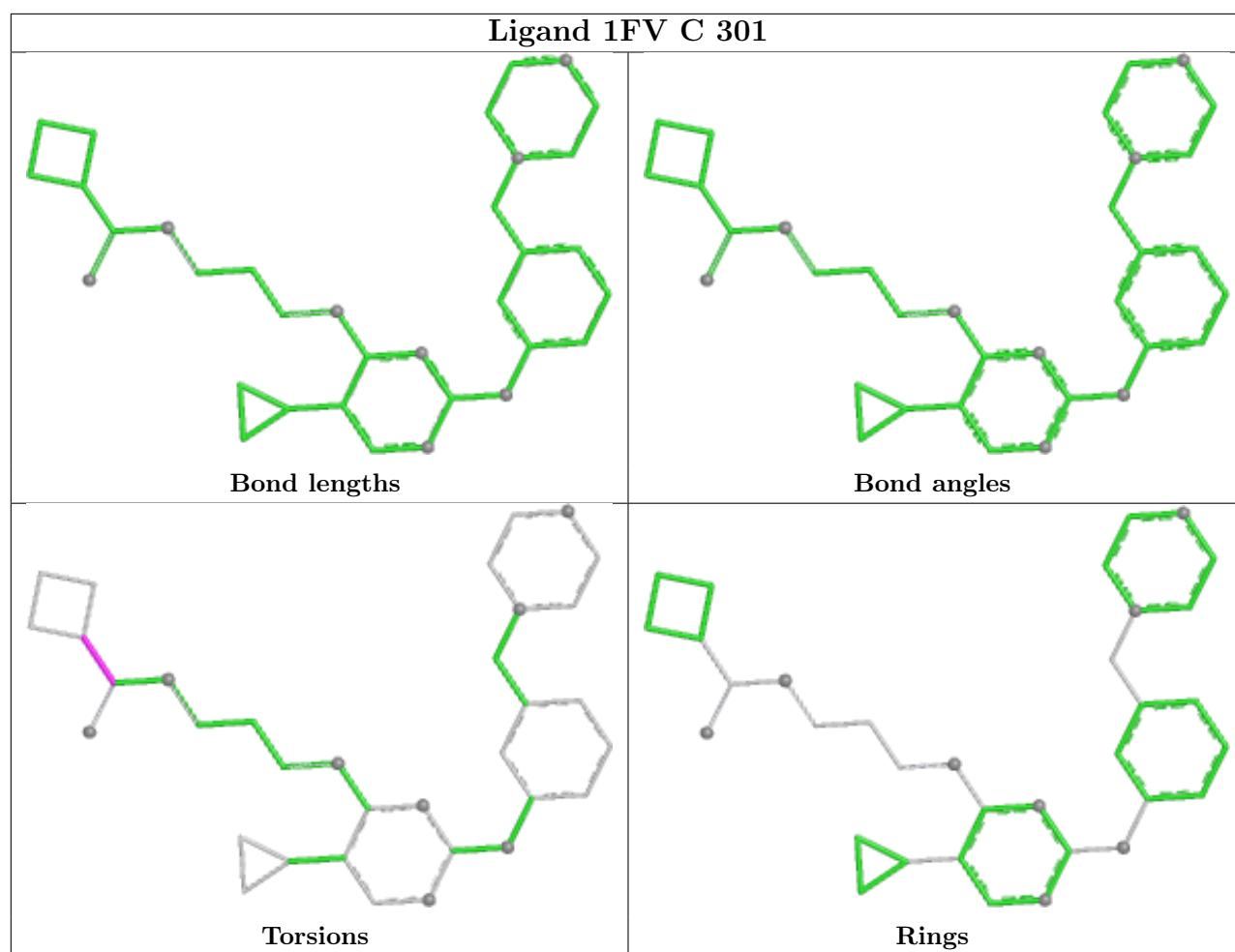
Mol	Chain	Res	Type	Atoms
2	C	301	1FV	OAA-CAZ-CBF-CAM
2	C	301	1FV	NAV-CAZ-CBF-CAM
4	A	306	GOL	O1-C1-C2-O2
4	A	306	GOL	O1-C1-C2-C3
3	A	303	EDO	O1-C1-C2-O2
3	A	304	EDO	O1-C1-C2-O2
3	B	305	EDO	O1-C1-C2-O2
3	B	302	EDO	O1-C1-C2-O2
2	A	301	1FV	OAA-CAZ-CBF-CAM
2	A	301	1FV	NAV-CAZ-CBF-CAM
3	C	302	EDO	O1-C1-C2-O2
3	B	303	EDO	O1-C1-C2-O2

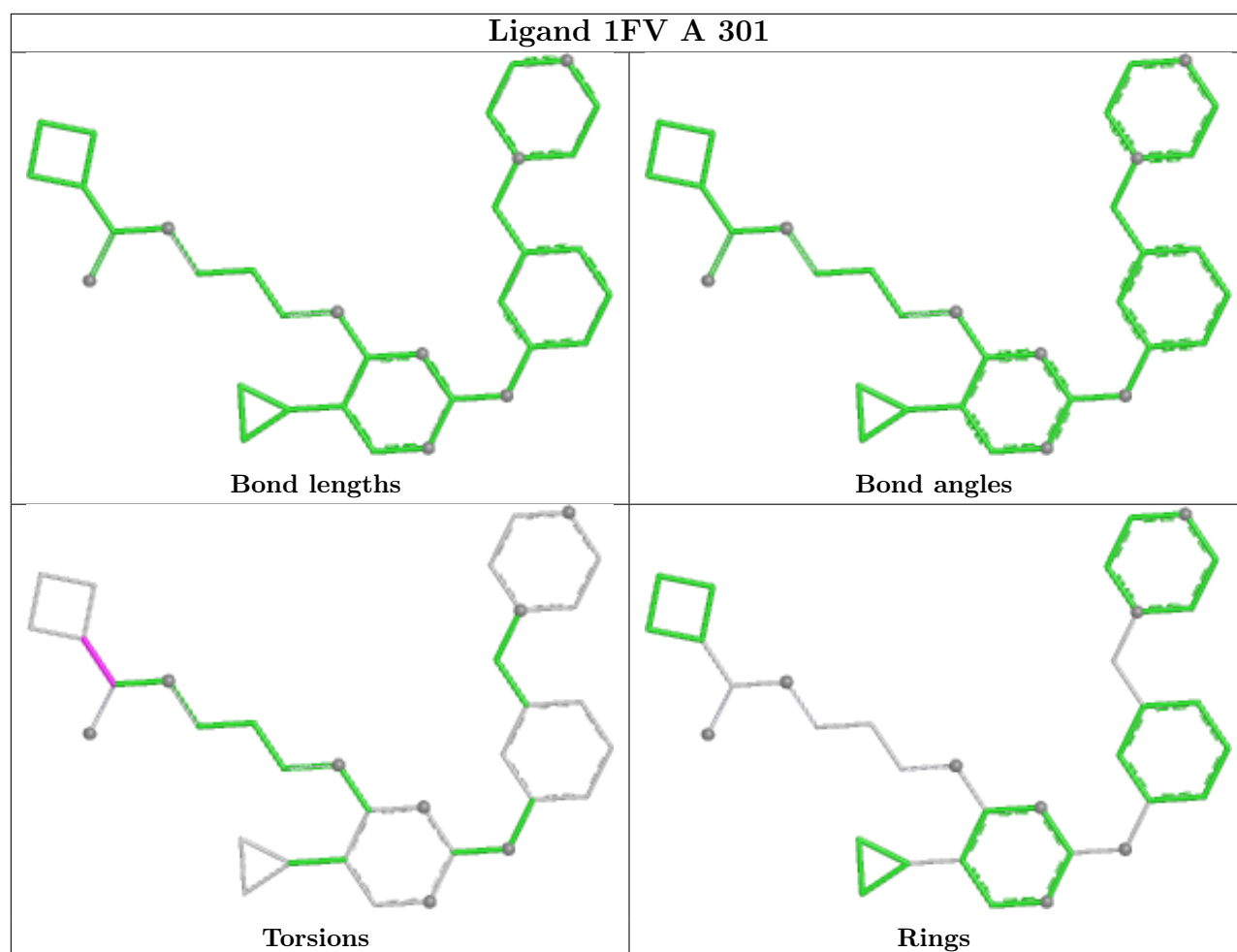
There are no ring outliers.

4 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	301	1FV	3	0
2	C	301	1FV	3	0
2	A	301	1FV	2	0
3	B	303	EDO	1	0

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





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

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	276/280 (98%)	0.09	15 (5%) 31 28	31, 48, 106, 142	1 (0%)
1	B	265/280 (94%)	0.03	18 (6%) 23 20	19, 48, 106, 135	1 (0%)
1	C	250/280 (89%)	0.38	26 (10%) 11 9	27, 59, 113, 147	1 (0%)
All	All	791/840 (94%)	0.16	59 (7%) 20 18	19, 51, 111, 147	3 (0%)

All (59) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	-1	GLY	5.6
1	B	52	LEU	5.3
1	C	0	SER	5.2
1	A	275	PRO	4.8
1	B	20	PHE	4.7
1	C	225	PHE	4.4
1	C	226	TYR	4.4
1	C	52	LEU	4.3
1	B	167	SER	4.2
1	A	172	ALA	3.9
1	B	51	ILE	3.8
1	C	228	LYS	3.7
1	B	0	SER	3.6
1	A	174	LEU	3.6
1	C	43	LYS	3.6
1	C	232	LEU	3.5
1	A	171	ALA	3.4
1	A	273	GLN	3.3
1	B	46	LEU	3.3
1	C	77	LEU	3.2
1	C	145	ARG	3.1
1	C	167	SER	3.1
1	C	20	PHE	3.0

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Mol	Chain	Res	Type	RSRZ
1	C	51	ILE	2.9
1	A	0	SER	2.8
1	C	78	PRO	2.8
1	A	170	MET	2.7
1	C	238	ARG	2.6
1	A	169	MET	2.6
1	C	53	LEU	2.6
1	B	189	GLN	2.5
1	B	49	SER	2.4
1	C	42	ASN	2.4
1	C	142	ALA	2.4
1	C	143	ASN	2.4
1	B	166	HIS	2.3
1	A	224	MET	2.3
1	B	187	MET	2.3
1	A	175	CYS	2.3
1	B	47	SER	2.3
1	C	229	ASN	2.2
1	A	233	MET	2.2
1	B	50	GLN	2.2
1	B	41	ILE	2.2
1	C	144	ARG	2.2
1	B	19	ALA	2.1
1	A	274	GLY	2.1
1	B	53	LEU	2.1
1	C	101	GLY	2.1
1	C	233	MET	2.1
1	C	215	GLN	2.1
1	B	178	PRO	2.1
1	A	146	LYS	2.1
1	B	44	LYS	2.1
1	C	177	SER	2.1
1	C	21	ALA	2.0
1	B	43	LYS	2.0
1	A	230	ARG	2.0
1	A	219	PRO	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](#)

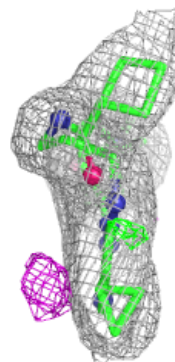
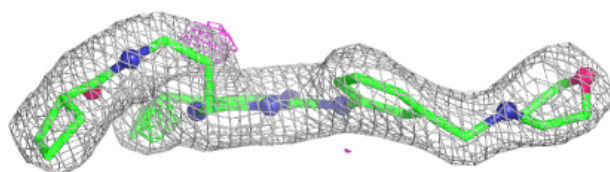
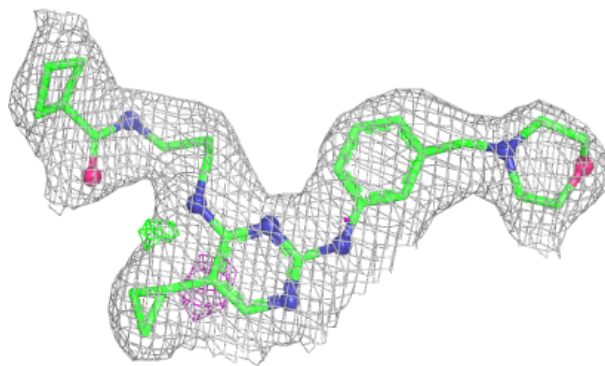
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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	EDO	B	305	4/4	0.60	0.36	88,90,92,93	0
3	EDO	A	305	4/4	0.69	0.28	91,94,95,97	0
3	EDO	A	302	4/4	0.73	0.24	75,78,82,82	0
3	EDO	B	303	4/4	0.74	0.19	72,78,79,80	0
3	EDO	B	304	4/4	0.75	0.22	74,75,76,78	0
3	EDO	B	302	4/4	0.81	0.18	71,74,76,78	0
3	EDO	A	304	4/4	0.83	0.23	71,79,82,86	0
3	EDO	C	302	4/4	0.87	0.18	62,66,67,67	0
2	1FV	C	301	34/34	0.91	0.12	45,52,86,88	0
4	GOL	A	306	6/6	0.91	0.16	64,67,71,72	0
3	EDO	A	303	4/4	0.93	0.13	63,72,74,75	0
5	CL	A	307	1/1	0.95	0.13	62,62,62,62	0
2	1FV	B	301	34/34	0.96	0.07	31,39,54,56	0
2	1FV	A	301	34/34	0.97	0.06	25,33,53,54	0

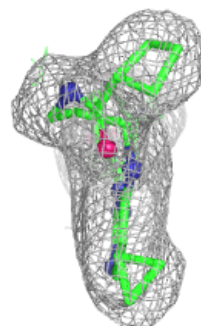
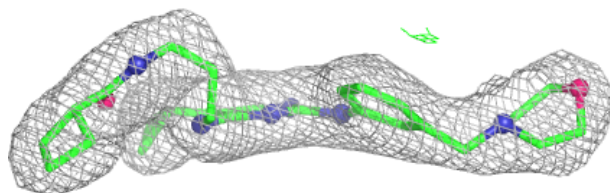
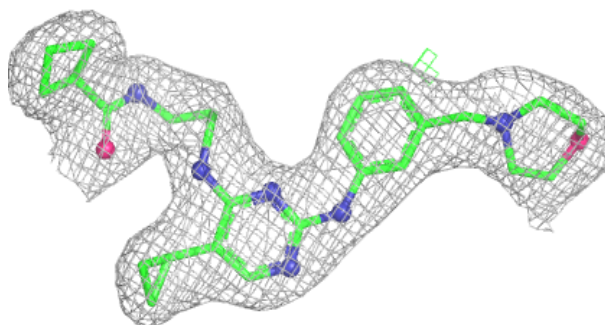
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around 1FV 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 1FV 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)



6.5 Other polymers [i](#)

There are no such residues in this entry.