



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 14, 2026 – 05:28 PM UTC

PDB ID : 4L7D / pdb_00004l7d
Title : Structure of keap1 kelch domain with (1S,2R)-2-[[[(1S)-5-methyl-1-[(1-oxo-1,3-dihydro-2H-isoindol-2-yl)methyl]-3,4-dihydroisoquinolin-2(1H)-yl]carbonyl]cyclohexanecarboxylic acid
Authors : Jnoff, E.; Brookfield, F.; Albrecht, C.; Barker, J.J.; Barker, O.; Beaumont, E.; Bromidge, S.; Brooks, M.; Ceska, T.; Courade, J.P.; Crabbe, T.; Duclos, S.; Fryatt, T.; Jigorel, E.; Kwong, J.; Sands, Z.; Smith, M.A.
Deposited on : 2013-06-13
Resolution : 2.25 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)

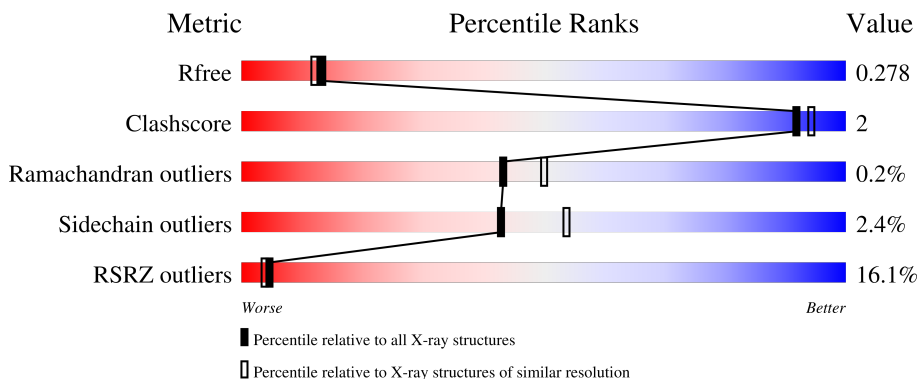
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.25 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	1898 (2.26-2.26)
Clashscore	190562	2005 (2.26-2.26)
Ramachandran outliers	187476	1965 (2.26-2.26)
Sidechain outliers	187428	1966 (2.26-2.26)
RSRZ outliers	180081	1898 (2.26-2.26)

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	300	 4% 91% 5% 5%
1	B	300	 35% 90% 5% 5%
1	C	300	 7% 90% 5% 5%

Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
 Validation Pipeline (wwPDB-VP) : 2.49

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 7081 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 Kelch-like ECH-associated protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	286	2220	1380	399	426	15	0	2	0
1	B	285	2210	1374	396	425	15	0	2	0
1	C	287	2242	1392	406	428	16	0	4	0

There are 36 discrepancies between the modelled and reference sequences:

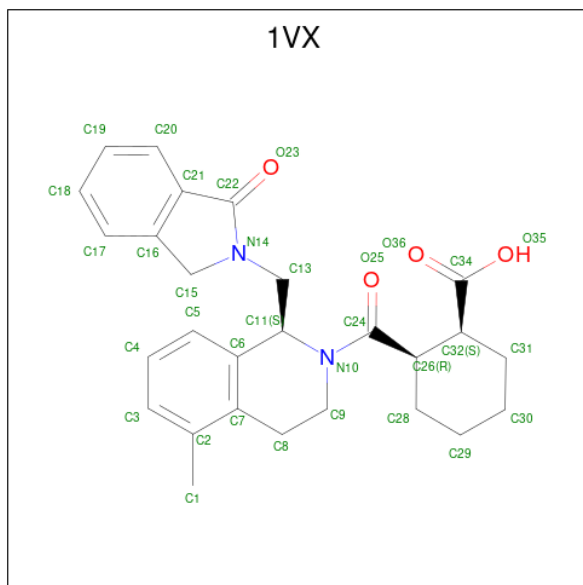
Chain	Residue	Modelled	Actual	Comment	Reference
A	318	MET	-	expression tag	UNP Q14145
A	319	GLY	-	expression tag	UNP Q14145
A	320	HIS	-	expression tag	UNP Q14145
A	354	ASP	ARG	engineered mutation	UNP Q14145
A	610	LEU	-	expression tag	UNP Q14145
A	611	GLU	-	expression tag	UNP Q14145
A	612	HIS	-	expression tag	UNP Q14145
A	613	HIS	-	expression tag	UNP Q14145
A	614	HIS	-	expression tag	UNP Q14145
A	615	HIS	-	expression tag	UNP Q14145
A	616	HIS	-	expression tag	UNP Q14145
A	617	HIS	-	expression tag	UNP Q14145
B	318	MET	-	expression tag	UNP Q14145
B	319	GLY	-	expression tag	UNP Q14145
B	320	HIS	-	expression tag	UNP Q14145
B	354	ASP	ARG	engineered mutation	UNP Q14145
B	610	LEU	-	expression tag	UNP Q14145
B	611	GLU	-	expression tag	UNP Q14145
B	612	HIS	-	expression tag	UNP Q14145
B	613	HIS	-	expression tag	UNP Q14145
B	614	HIS	-	expression tag	UNP Q14145
B	615	HIS	-	expression tag	UNP Q14145
B	616	HIS	-	expression tag	UNP Q14145

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Chain	Residue	Modelled	Actual	Comment	Reference
B	617	HIS	-	expression tag	UNP Q14145
C	318	MET	-	expression tag	UNP Q14145
C	319	GLY	-	expression tag	UNP Q14145
C	320	HIS	-	expression tag	UNP Q14145
C	354	ASP	ARG	engineered mutation	UNP Q14145
C	610	LEU	-	expression tag	UNP Q14145
C	611	GLU	-	expression tag	UNP Q14145
C	612	HIS	-	expression tag	UNP Q14145
C	613	HIS	-	expression tag	UNP Q14145
C	614	HIS	-	expression tag	UNP Q14145
C	615	HIS	-	expression tag	UNP Q14145
C	616	HIS	-	expression tag	UNP Q14145
C	617	HIS	-	expression tag	UNP Q14145

- Molecule 2 is (1S,2R)-2-{[(1S)-5-methyl-1-[(1-oxo-1,3-dihydro-2H-isoindol-2-yl)methyl]-3,4-dihydroisoquinolin-2(1H)-yl]carbonyl}cyclohexanecarboxylic acid (CCD ID: 1VX) (formula: C₂₇H₃₀N₂O₄).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
2	A	1	Total	C	N	O	0	0
			33	27	2	4		
2	B	1	Total	C	N	O	0	0
			33	27	2	4		
2	C	1	Total	C	N	O	0	0
			33	27	2	4		

- Molecule 3 is ACETATE ION (CCD ID: ACT) (formula: C₂H₃O₂).



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

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	115	Total O 115 115	0	0
4	B	44	Total O 44 44	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	111	Total 111	O 111	0	0

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 2 21	Depositor
Cell constants a, b, c, α , β , γ	75.92Å 126.00Å 130.30Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.02 – 2.25 46.02 – 2.25	Depositor EDS
% Data completeness (in resolution range)	96.3 (46.02-2.25) 96.3 (46.02-2.25)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.59 (at 2.24Å)	Xtrriage
Refinement program	REFMAC 5.7.0032	Depositor
R, R_{free}	0.252 , 0.276 0.251 , 0.278	Depositor DCC
R_{free} test set	3032 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	37.7	Xtrriage
Anisotropy	0.145	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 17.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	0.027 for -h,l,k	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	7081	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.47% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 1VX, ACT

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	0.35	0/2274	0.59	0/3098
1	B	0.38	0/2263	0.61	0/3083
1	C	0.36	0/2295	0.59	0/3124
All	All	0.36	0/6832	0.60	0/9305

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	2220	0	2100	8	0
1	B	2210	0	2094	3	0
1	C	2242	0	2127	9	0
2	A	33	0	29	0	0
2	B	33	0	29	0	0
2	C	33	0	29	1	0
3	A	8	0	6	1	0
3	B	12	0	9	0	0
3	C	20	0	15	0	0
4	A	115	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	44	0	0	0	0
4	C	111	0	0	0	0
All	All	7081	0	6438	21	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 (21) 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:575:HIS:CD2	1:C:576:THR:HG23	2.25	0.72
1:A:385:ASP:HB3	1:A:386:GLY:HA2	1.87	0.56
1:A:385:ASP:CB	1:A:386:GLY:HA2	2.41	0.51
1:A:471:LEU:HD21	3:A:703:ACT:H2	1.92	0.51
1:C:514[A]:VAL:O	1:C:514[A]:VAL:HG13	2.12	0.50
1:B:453:VAL:O	1:B:454:ALA:HB3	2.12	0.49
1:C:515:LEU:O	1:C:516:HIS:C	2.57	0.48
1:C:486:SER:HB2	1:C:499:MET:CE	2.46	0.45
1:C:416:ILE:HD11	1:C:427:ALA:HB1	1.97	0.45
1:B:342:LEU:HD22	1:B:403:TRP:CZ2	2.52	0.44
1:B:485:ASN:HB3	1:B:506:ILE:HD13	1.98	0.44
1:C:466:ALA:HB1	1:C:514[B]:VAL:HG23	1.98	0.43
1:A:466:ALA:HB2	1:A:512:VAL:HG12	2.01	0.43
1:A:515:LEU:HD22	1:A:566:ILE:HG13	2.01	0.43
1:C:362:ARG:NH2	1:C:394:ASP:OD2	2.50	0.43
2:C:701:1VX:H6	2:C:701:1VX:H20	1.67	0.42
1:A:383:SER:HB2	1:A:384:PRO:HA	2.01	0.42
1:A:466:ALA:HB1	1:A:514:VAL:CG2	2.49	0.42
1:C:530:GLN:HG3	1:C:573:ASP:C	2.44	0.42
1:A:416:ILE:HD11	1:A:427:ALA:HB1	2.01	0.41
1:C:472:LEU:HB3	1:C:490:TYR:HB3	2.02	0.41

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	286/300 (95%)	281 (98%)	5 (2%)	0	100	100
1	B	285/300 (95%)	275 (96%)	9 (3%)	1 (0%)	30	31
1	C	289/300 (96%)	280 (97%)	8 (3%)	1 (0%)	36	40
All	All	860/900 (96%)	836 (97%)	22 (3%)	2 (0%)	43	50

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	516	HIS
1	B	454	ALA

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	235/244 (96%)	232 (99%)	3 (1%)	61	72
1	B	234/244 (96%)	224 (96%)	10 (4%)	26	31
1	C	237/244 (97%)	233 (98%)	4 (2%)	53	65
All	All	706/732 (96%)	689 (98%)	17 (2%)	43	54

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	359	GLN
1	A	382	ASN
1	A	385	ASP
1	B	327	LEU
1	B	359	GLN
1	B	365	LEU
1	B	382	ASN
1	B	402	GLN

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Mol	Chain	Res	Type
1	B	415	ARG
1	B	420	VAL
1	B	467	VAL
1	B	553	ARG
1	B	610	LEU
1	C	326	ARG
1	C	415	ARG
1	C	515	LEU
1	C	516	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	414	ASN
1	A	424	HIS
1	B	359	GLN
1	B	382	ASN
1	B	562	HIS
1	C	387	ASN
1	C	451	HIS
1	C	562	HIS
1	C	575	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](#)

13 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	1VX	C	701	-	36,37,37	2.50	15 (41%)	48,54,54	1.48	4 (8%)
3	ACT	C	705	-	3,3,3	0.82	0	3,3,3	0.76	0
2	1VX	B	701	-	36,37,37	1.18	3 (8%)	48,54,54	1.23	4 (8%)
3	ACT	B	704	-	3,3,3	0.81	0	3,3,3	0.74	0
2	1VX	A	701	-	36,37,37	1.17	3 (8%)	48,54,54	1.26	4 (8%)
3	ACT	C	704	-	3,3,3	0.82	0	3,3,3	0.78	0
3	ACT	B	702	-	3,3,3	0.81	0	3,3,3	0.74	0
3	ACT	B	703	-	3,3,3	0.81	0	3,3,3	0.75	0
3	ACT	C	706	-	3,3,3	0.83	0	3,3,3	0.72	0
3	ACT	A	703	-	3,3,3	0.82	0	3,3,3	0.69	0
3	ACT	C	703	-	3,3,3	0.81	0	3,3,3	0.75	0
3	ACT	C	702	-	3,3,3	0.81	0	3,3,3	0.74	0
3	ACT	A	702	-	3,3,3	0.83	0	3,3,3	0.69	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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	1VX	C	701	-	-	2/16/52/52	0/5/5/5
2	1VX	A	701	-	-	4/16/52/52	0/5/5/5
2	1VX	B	701	-	-	1/16/52/52	0/5/5/5

All (21) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	701	1VX	C11-N10	-6.45	1.40	1.47
2	C	701	1VX	C21-C16	-3.92	1.34	1.39
2	C	701	1VX	C15-N14	-3.89	1.41	1.46
2	C	701	1VX	C6-C11	-3.68	1.46	1.52
2	C	701	1VX	C21-C22	-3.66	1.42	1.48
2	C	701	1VX	C15-C16	-3.45	1.45	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	701	1VX	C9-N10	-3.37	1.41	1.47
2	C	701	1VX	C5-C6	-3.18	1.35	1.39
2	C	701	1VX	C8-C7	-3.15	1.46	1.51
2	C	701	1VX	C13-N14	-3.08	1.41	1.47
2	C	701	1VX	C7-C6	-2.70	1.36	1.40
2	A	701	1VX	C11-N10	-2.50	1.45	1.47
2	B	701	1VX	C11-N10	-2.49	1.45	1.47
2	C	701	1VX	C1-C2	-2.38	1.46	1.51
2	C	701	1VX	C20-C21	-2.33	1.36	1.39
2	B	701	1VX	C24-N10	2.30	1.39	1.34
2	C	701	1VX	C31-C32	-2.29	1.49	1.53
2	C	701	1VX	C2-C7	-2.26	1.36	1.40
2	A	701	1VX	C24-N10	2.25	1.39	1.34
2	B	701	1VX	C21-C16	-2.21	1.36	1.39
2	A	701	1VX	C21-C16	-2.20	1.36	1.39

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	701	1VX	C16-C15-N14	-5.85	99.67	102.42
2	C	701	1VX	C13-N14-C22	-5.02	118.65	123.67
2	A	701	1VX	C16-C15-N14	-3.95	100.56	102.42
2	B	701	1VX	C16-C15-N14	-3.92	100.58	102.42
2	A	701	1VX	O23-C22-N14	3.06	131.56	125.26
2	B	701	1VX	O23-C22-N14	2.99	131.41	125.26
2	C	701	1VX	C15-C16-C21	2.52	111.31	109.73
2	A	701	1VX	O23-C22-C21	-2.41	124.00	128.66
2	C	701	1VX	C26-C24-N10	-2.35	114.63	118.85
2	B	701	1VX	O23-C22-C21	-2.32	124.17	128.66
2	B	701	1VX	C15-C16-C21	2.11	111.06	109.73
2	A	701	1VX	C26-C32-C34	-2.04	108.97	112.12

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	701	1VX	C31-C32-C34-O35
2	A	701	1VX	C31-C32-C34-O36
2	A	701	1VX	C26-C32-C34-O35
2	C	701	1VX	C31-C32-C34-O35
2	A	701	1VX	C26-C32-C34-O36
2	C	701	1VX	C31-C32-C34-O36

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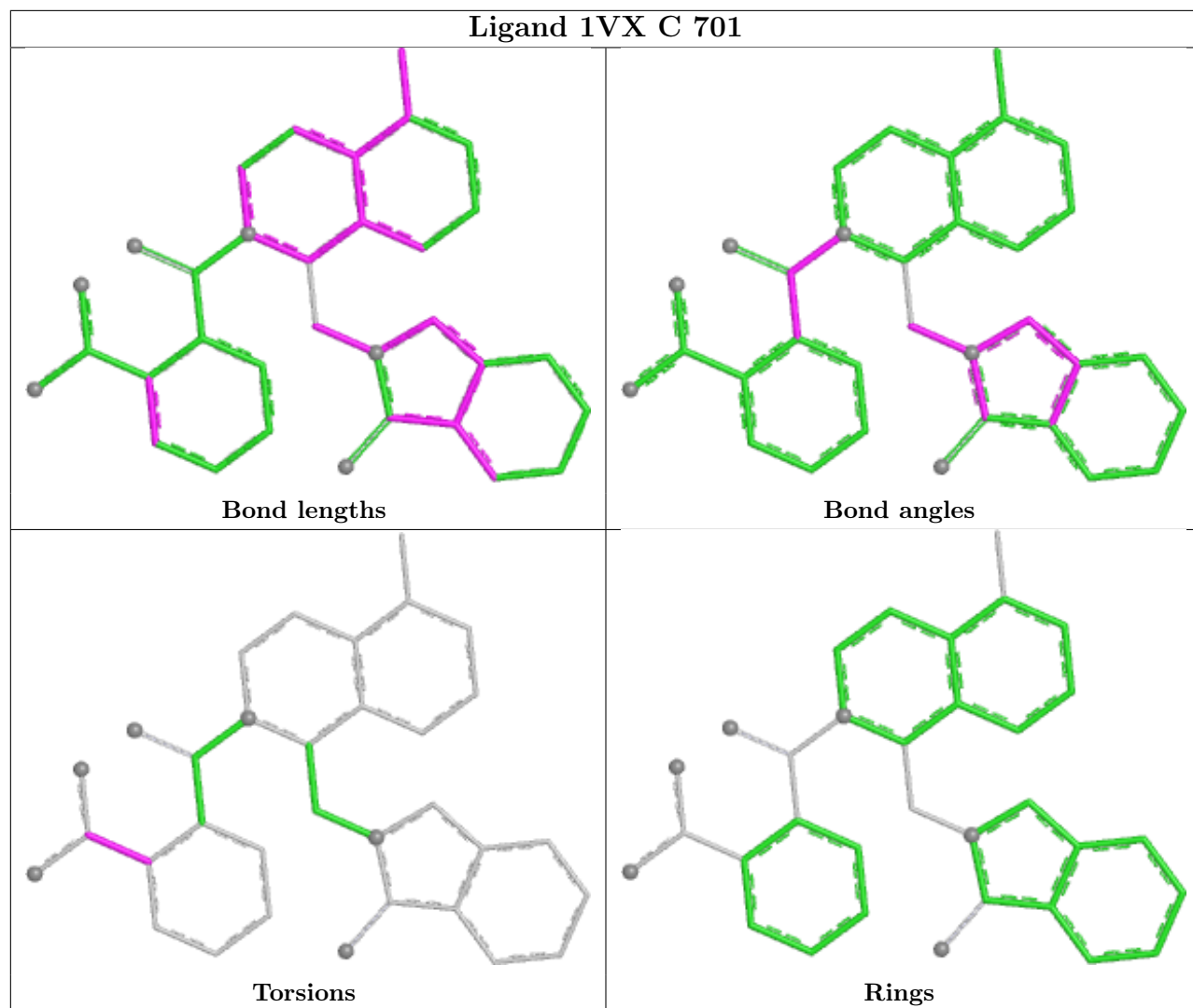
Mol	Chain	Res	Type	Atoms
2	B	701	1VX	C31-C32-C34-O36

There are no ring outliers.

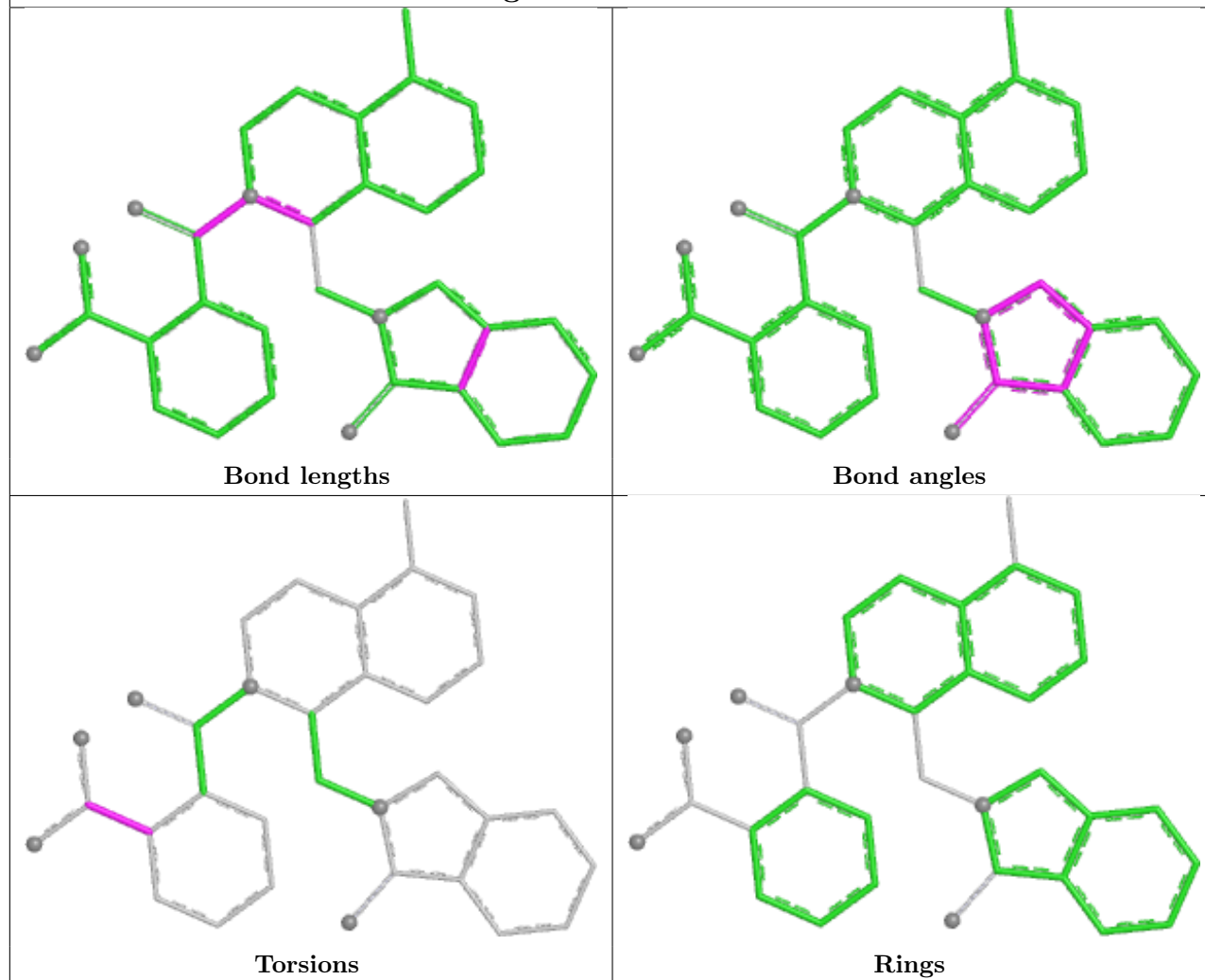
2 monomers are involved in 2 short contacts:

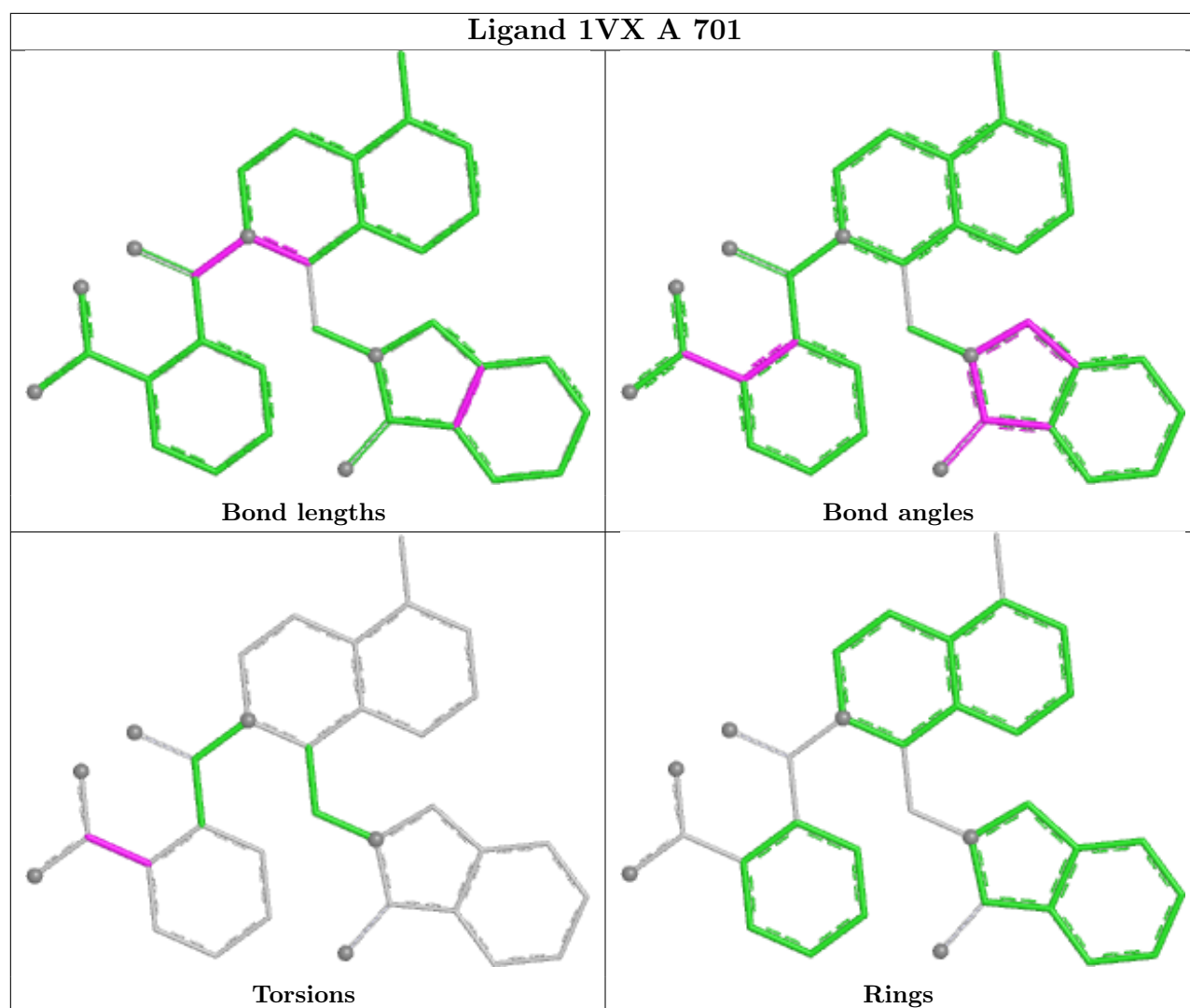
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	701	1VX	1	0
3	A	703	ACT	1	0

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 1VX B 701





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, 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	286/300 (95%)	0.67	12 (4%) 40 40	20, 36, 47, 53	2 (0%)
1	B	285/300 (95%)	1.84	105 (36%) 1 0	24, 52, 70, 76	3 (1%)
1	C	287/300 (95%)	0.73	21 (7%) 21 19	14, 36, 46, 51	4 (1%)
All	All	858/900 (95%)	1.08	138 (16%) 4 4	14, 39, 62, 76	9 (1%)

All (138) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	402	GLN	10.6
1	A	386	GLY	8.3
1	A	384	PRO	6.1
1	B	399	MET	5.9
1	B	373	LEU	5.8
1	B	329	TYR	5.7
1	B	356	ALA	5.6
1	B	400	THR	5.6
1	B	375	TYR	5.5
1	B	372	GLY	5.3
1	B	398	PRO	4.9
1	B	368	CYS	4.9
1	B	397	ASN	4.8
1	B	371	GLY	4.8
1	B	610	LEU	4.7
1	B	340	SER	4.6
1	C	385	ASP	4.6
1	B	396	TYR	4.5
1	C	498[A]	ARG	4.5
1	B	401	ASN	4.4
1	A	575[A]	HIS	4.2
1	B	327	LEU	4.1
1	C	325	GLY	4.1

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Mol	Chain	Res	Type	RSRZ
1	B	352	TRP	4.1
1	B	395	CYS	4.0
1	B	351	THR	3.9
1	B	377	VAL	3.9
1	C	384	PRO	3.9
1	A	385	ASP	3.8
1	B	350	GLY	3.7
1	B	470	ARG	3.6
1	B	608	VAL	3.6
1	C	336	ARG	3.5
1	B	403	TRP	3.5
1	A	383	SER	3.4
1	B	454	ALA	3.4
1	B	607	ALA	3.4
1	A	611	GLU	3.4
1	B	386	GLY	3.4
1	B	609	THR	3.3
1	B	360	VAL	3.3
1	B	418	VAL	3.3
1	B	342	LEU	3.3
1	B	603	GLY	3.3
1	B	344	ALA	3.2
1	C	611	GLU	3.2
1	B	369	VAL	3.2
1	B	355	LEU	3.2
1	B	328	ILE	3.2
1	B	353	LEU	3.2
1	B	379	GLY	3.2
1	B	450	TRP	3.2
1	B	326	ARG	3.1
1	B	359	GLN	3.1
1	B	358	LEU	3.1
1	B	370	VAL	3.1
1	B	423	GLY	3.0
1	C	422	ASP	3.0
1	B	393	LEU	3.0
1	B	385	ASP	2.9
1	B	493	GLU	2.9
1	B	384	PRO	2.9
1	B	366	ALA	2.9
1	B	392	ALA	2.9
1	B	364	GLY	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	469	ASN	2.9
1	B	445	PRO	2.8
1	B	420	VAL	2.8
1	B	593[A]	GLU	2.8
1	B	606	VAL	2.8
1	B	404	SER	2.8
1	B	354	ASP	2.7
1	B	563	GLN	2.7
1	B	419	GLY	2.7
1	B	564	GLY	2.7
1	B	374	LEU	2.7
1	B	516	HIS	2.6
1	B	367	GLY	2.6
1	B	467	VAL	2.6
1	B	405	PRO	2.6
1	C	348	SER	2.6
1	B	540	GLU	2.6
1	C	528	GLN	2.6
1	B	543[A]	THR	2.5
1	C	371	GLY	2.5
1	B	453	VAL	2.5
1	B	517	ASN	2.5
1	B	444	GLU	2.4
1	C	326	ARG	2.4
1	B	443	TYR	2.4
1	B	553	ARG	2.4
1	C	540	GLU	2.4
1	B	330	THR	2.4
1	B	339	LEU	2.4
1	B	424	HIS	2.4
1	B	376	ALA	2.4
1	B	465	VAL	2.4
1	B	471	LEU	2.4
1	C	386	GLY	2.3
1	B	421	ILE	2.3
1	C	359	GLN	2.3
1	C	610	LEU	2.3
1	C	382	ASN	2.3
1	C	446	GLU	2.3
1	B	583	CYS	2.3
1	C	530	GLN	2.3
1	A	610	LEU	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	347	PRO	2.2
1	A	336	ARG	2.2
1	B	365	LEU	2.2
1	A	516	HIS	2.2
1	B	427	ALA	2.2
1	B	562	HIS	2.2
1	B	508	SER	2.2
1	B	447	ARG	2.2
1	B	498	ARG	2.2
1	B	341	TYR	2.1
1	B	452	LEU	2.1
1	B	519	ILE	2.1
1	B	599	SER	2.1
1	B	604	VAL	2.1
1	A	563	GLN	2.1
1	B	406	CYS	2.1
1	B	541	THR	2.1
1	B	597	MET	2.1
1	B	349	ASP	2.1
1	B	394	ASP	2.1
1	C	539	VAL	2.1
1	B	605	GLY	2.1
1	A	498	ARG	2.1
1	B	590	THR	2.0
1	B	515	LEU	2.0
1	B	336	ARG	2.0
1	C	543	THR	2.0
1	B	407	ALA	2.0
1	B	556	ALA	2.0
1	A	596	ARG	2.0
1	C	459[A]	ARG	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

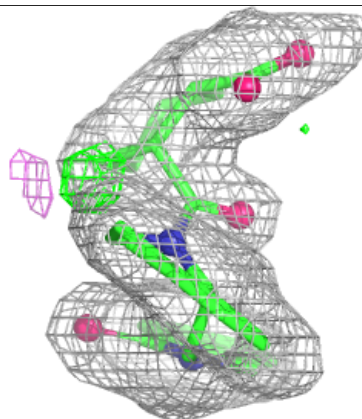
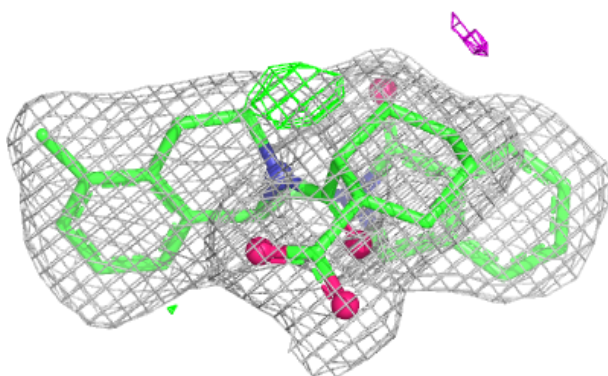
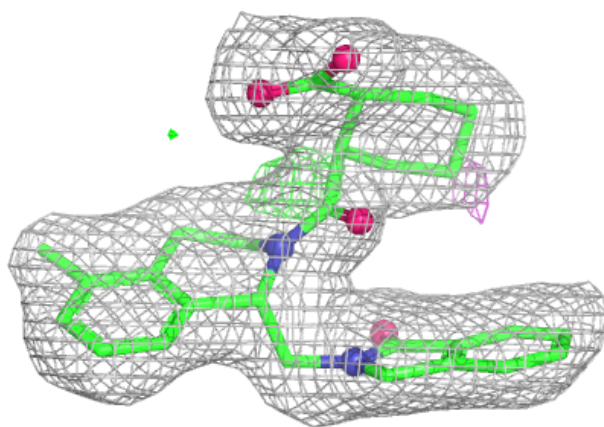
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	ACT	C	703	4/4	0.77	0.24	46,46,46,46	0
3	ACT	B	703	4/4	0.82	0.23	48,48,48,49	0
3	ACT	C	702	4/4	0.83	0.22	36,36,36,37	0
3	ACT	B	704	4/4	0.83	0.20	53,53,53,53	0
3	ACT	C	705	4/4	0.84	0.17	45,45,45,45	0
3	ACT	C	706	4/4	0.84	0.18	40,40,40,40	0
3	ACT	A	702	4/4	0.88	0.15	46,46,46,46	0
3	ACT	C	704	4/4	0.91	0.14	34,34,34,34	0
2	1VX	B	701	33/33	0.91	0.10	38,38,39,39	0
2	1VX	A	701	33/33	0.91	0.11	36,36,36,36	0
2	1VX	C	701	33/33	0.93	0.09	33,34,34,34	0
3	ACT	B	702	4/4	0.94	0.08	40,40,40,40	0
3	ACT	A	703	4/4	0.94	0.10	34,34,34,34	0

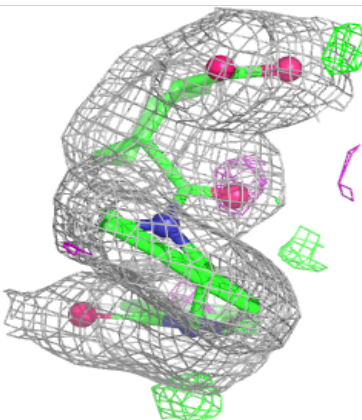
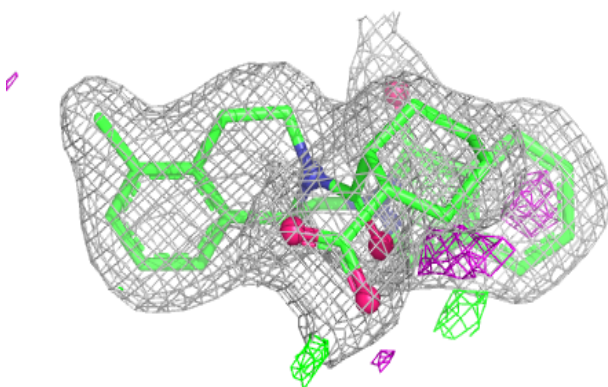
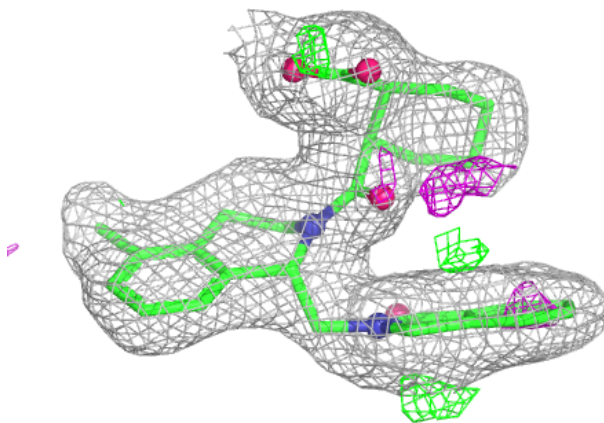
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

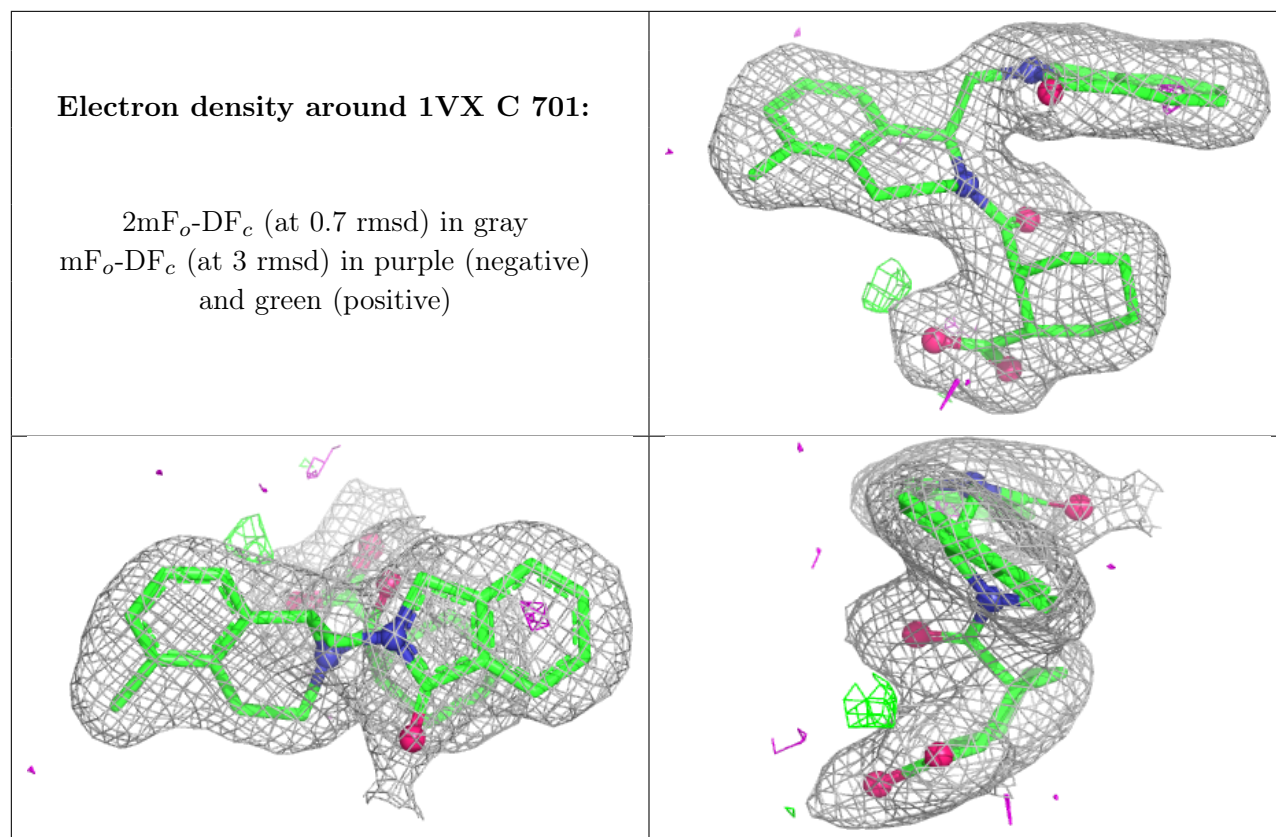
Electron density around 1VX B 701:

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

**Electron density around 1VX A 701:**

$2mF_o-DF_c$ (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.