Full wwPDB X-ray Structure Validation Report ⓘ

Nov 11, 2026 – 07:28 PM JST

PDB ID	:	25UE / pdb_000025ue
Title	:	Crystal structure of SktA in complex with 7-bromo-L-tryptophan
Authors	:	Li, H.; Liu, J.; Huang, J.-W.; Chen, C.-C.; Guo, R.-T.
Deposited on	:	2026-04-17
Resolution	:	1.94 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:

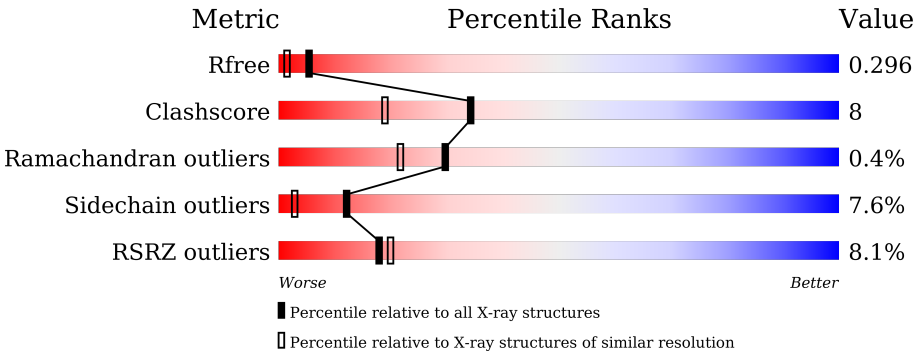
MolProbity	:	4-5-2 with Phenix2.2
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.2
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.94 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	1452 (1.94-1.94)
Clashscore	190562	1494 (1.94-1.94)
Ramachandran outliers	187476	1479 (1.94-1.94)
Sidechain outliers	187428	1479 (1.94-1.94)
RSRZ outliers	180081	1453 (1.94-1.94)

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 <=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	248	6% 69% 16% • 12%
1	B	248	4% 72% 17% • 10%
1	C	248	12% 65% 20% • 12%
1	D	248	6% 68% 17% • 13%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 7821 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 Iron-containing redox enzyme family protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	222	Total	C	N	O	S	0	0	0
			1859	1200	306	346	7			
1	A	218	Total	C	N	O	S	0	0	0
			1818	1171	299	341	7			
1	C	218	Total	C	N	O	S	0	0	0
			1822	1174	302	339	7			
1	D	216	Total	C	N	O	S	0	0	0
			1796	1158	295	336	7			

There are 44 discrepancies between the modelled and reference sequences:

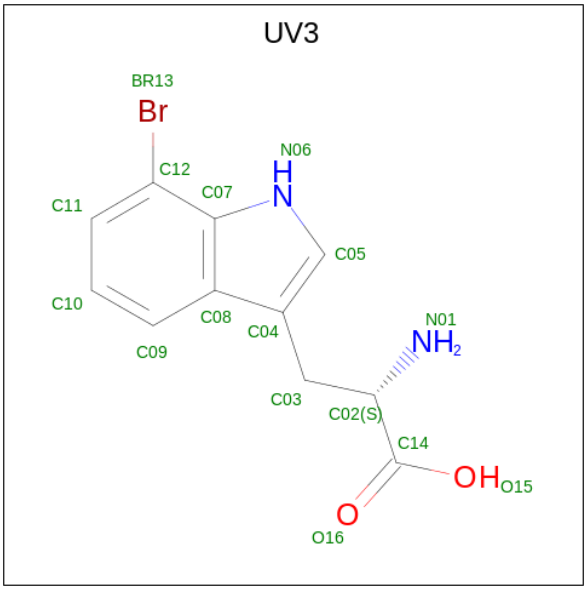
Chain	Residue	Modelled	Actual	Comment	Reference
B	-10	GLY	-	expression tag	UNP A0A367RF96
B	-9	ALA	-	expression tag	UNP A0A367RF96
B	-8	GLY	-	expression tag	UNP A0A367RF96
B	-7	ALA	-	expression tag	UNP A0A367RF96
B	-6	GLY	-	expression tag	UNP A0A367RF96
B	-5	ALA	-	expression tag	UNP A0A367RF96
B	-4	GLY	-	expression tag	UNP A0A367RF96
B	-3	ALA	-	expression tag	UNP A0A367RF96
B	-2	GLY	-	expression tag	UNP A0A367RF96
B	-1	ALA	-	expression tag	UNP A0A367RF96
B	0	GLY	-	expression tag	UNP A0A367RF96
A	-10	GLY	-	expression tag	UNP A0A367RF96
A	-9	ALA	-	expression tag	UNP A0A367RF96
A	-8	GLY	-	expression tag	UNP A0A367RF96
A	-7	ALA	-	expression tag	UNP A0A367RF96
A	-6	GLY	-	expression tag	UNP A0A367RF96
A	-5	ALA	-	expression tag	UNP A0A367RF96
A	-4	GLY	-	expression tag	UNP A0A367RF96
A	-3	ALA	-	expression tag	UNP A0A367RF96
A	-2	GLY	-	expression tag	UNP A0A367RF96
A	-1	ALA	-	expression tag	UNP A0A367RF96

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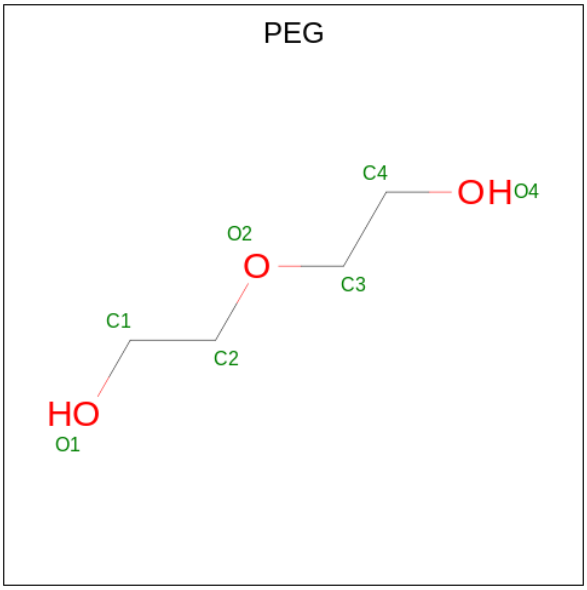
Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP A0A367RF96
C	-10	GLY	-	expression tag	UNP A0A367RF96
C	-9	ALA	-	expression tag	UNP A0A367RF96
C	-8	GLY	-	expression tag	UNP A0A367RF96
C	-7	ALA	-	expression tag	UNP A0A367RF96
C	-6	GLY	-	expression tag	UNP A0A367RF96
C	-5	ALA	-	expression tag	UNP A0A367RF96
C	-4	GLY	-	expression tag	UNP A0A367RF96
C	-3	ALA	-	expression tag	UNP A0A367RF96
C	-2	GLY	-	expression tag	UNP A0A367RF96
C	-1	ALA	-	expression tag	UNP A0A367RF96
C	0	GLY	-	expression tag	UNP A0A367RF96
D	-10	GLY	-	expression tag	UNP A0A367RF96
D	-9	ALA	-	expression tag	UNP A0A367RF96
D	-8	GLY	-	expression tag	UNP A0A367RF96
D	-7	ALA	-	expression tag	UNP A0A367RF96
D	-6	GLY	-	expression tag	UNP A0A367RF96
D	-5	ALA	-	expression tag	UNP A0A367RF96
D	-4	GLY	-	expression tag	UNP A0A367RF96
D	-3	ALA	-	expression tag	UNP A0A367RF96
D	-2	GLY	-	expression tag	UNP A0A367RF96
D	-1	ALA	-	expression tag	UNP A0A367RF96
D	0	GLY	-	expression tag	UNP A0A367RF96

- Molecule 2 is 7-bromo-L-tryptophan (CCD ID: UV3) (formula: $C_{11}H_{11}BrN_2O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	B	1	Total	Br	C	N	O	0	0
			16	1	11	2	2		
2	A	1	Total	Br	C	N	O	0	0
			16	1	11	2	2		
2	C	1	Total	Br	C	N	O	0	0
			16	1	11	2	2		
2	D	1	Total	Br	C	N	O	0	0
			16	1	11	2	2		

- Molecule 3 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	C	1	Total	C	O	0	0
			7	4	3		
3	C	1	Total	C	O	0	0
			7	4	3		

- Molecule 4 is water.

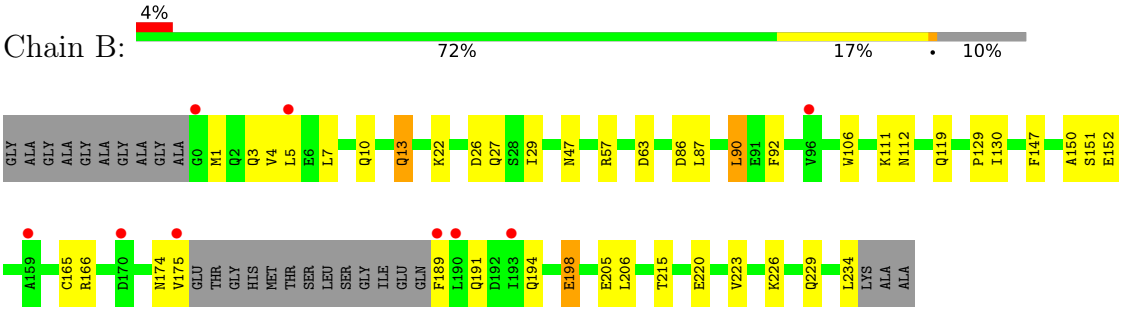
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	132	Total	O	0	0
			132	132		
4	A	132	Total	O	0	0
			132	132		
4	C	84	Total	O	0	0
			84	84		
4	D	100	Total	O	0	0
			100	100		

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.

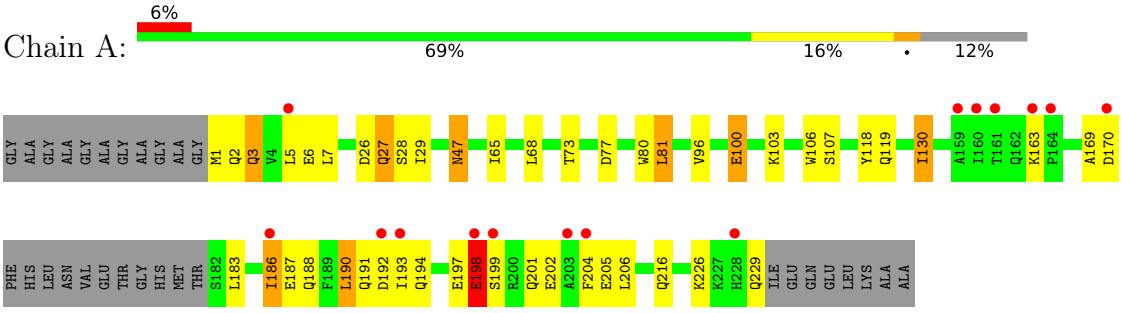
• Molecule 1: Iron-containing redox enzyme family protein

Chain B:



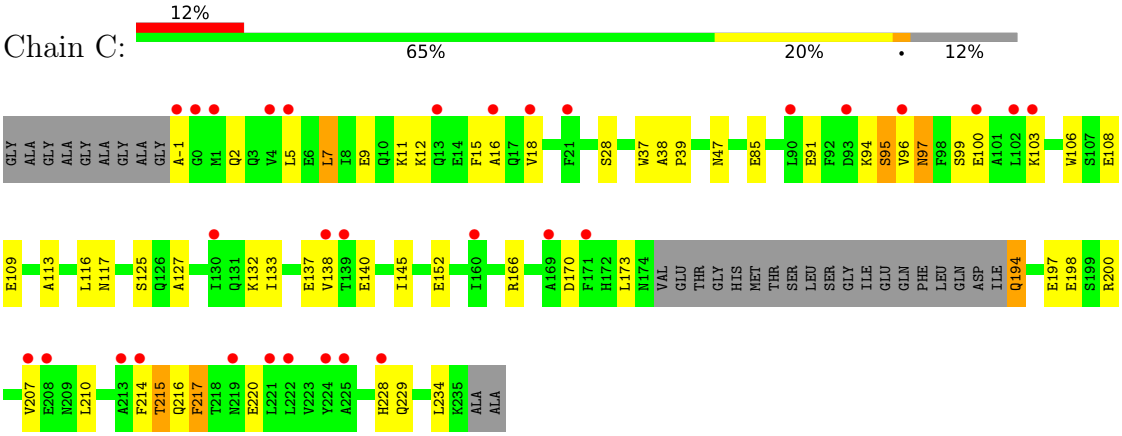
• Molecule 1: Iron-containing redox enzyme family protein

Chain A:



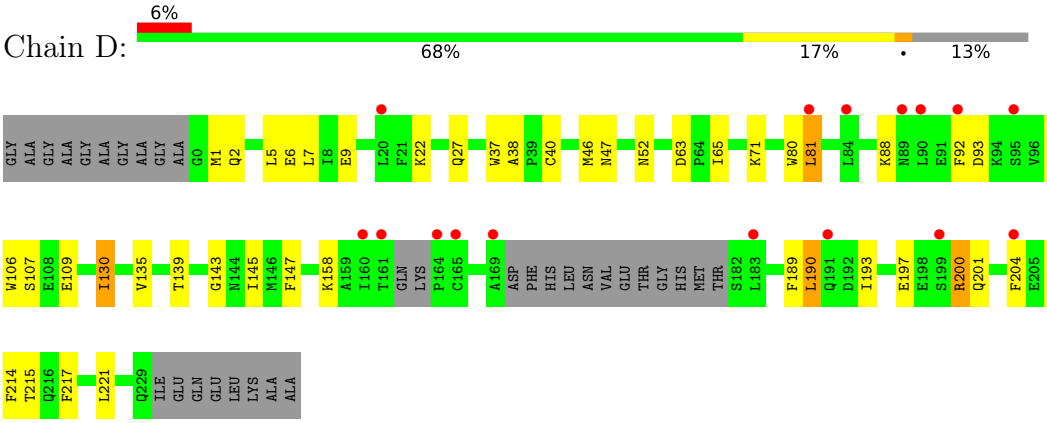
• Molecule 1: Iron-containing redox enzyme family protein

Chain C:



• Molecule 1: Iron-containing redox enzyme family protein

Chain D:


6%
68%
17%
13%
GLY ALA GLY ALA GLY ALA GLY ALA GLY ALA G0 M1 Q2 L5 E6 L7 I8 E9 L20 F21 K22 Q27 W37 A38 P39 C40 M46 N47 N52 D63 P64 I65 K71 W80 L81 L84 K88 N89 L90 E91 F92 D93 K94 S95 V96 N97 K103
W106 S107 E108 E109 I130 V135 T139 G143 N144 I145 M146 F147 K158 A159 I160 T161 GLN LYS P164 C165 A169 ASP PHE HIS LEU ASN VAL GLU THR GLY HIS MET THR S182 L183 F189 L190 Q191 D192 I193 E197 E198 S199 R200 Q201 F204 E205 L206 V207 E208
F214 T215 Q216 F217 L221 Q229 ILE GLU GLN GLU LEU LYS ALA ALA

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	55.68Å 67.09Å 69.18Å 72.48° 76.13° 76.34°	Depositor
Resolution (Å)	24.86 – 1.94 24.86 – 1.94	Depositor EDS
% Data completeness (in resolution range)	97.1 (24.86-1.94) 97.3 (24.86-1.94)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.00 (at 1.93Å)	Xtriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.217 , 0.295 0.222 , 0.296	Depositor DCC
R_{free} test set	3375 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å^2)	32.0	Xtriage
Anisotropy	0.481	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 40.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.013 for -h,-l,-k	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	7821	wwPDB-VP
Average B, all atoms (Å^2)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 16.40% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: UV3, PEG

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	1.11	1/1860 (0.1%)	1.48	7/2513 (0.3%)
1	B	1.09	2/1903 (0.1%)	1.47	5/2572 (0.2%)
1	C	1.07	1/1865 (0.1%)	1.54	7/2519 (0.3%)
1	D	1.07	0/1837	1.52	2/2480 (0.1%)
All	All	1.09	4/7465 (0.1%)	1.50	21/10084 (0.2%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	125	SER	CA-CB	-5.13	1.46	1.53
1	A	118	TYR	C-O	5.08	1.30	1.24
1	B	129	PRO	C-O	-5.05	1.17	1.24
1	B	57	ARG	C-O	5.00	1.29	1.23

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	52	ASN	CA-CB-CG	-6.73	105.87	112.60
1	C	217	PHE	CA-C-O	-6.17	114.52	121.00
1	C	215	THR	CB-CA-C	5.90	120.09	110.95
1	C	217	PHE	O-C-N	5.84	128.10	122.03
1	A	204	PHE	N-CA-C	-5.63	105.22	111.36
1	B	119	GLN	N-CA-C	-5.54	105.33	111.36
1	A	119	GLN	N-CA-C	-5.43	105.44	111.36
1	B	215	THR	CA-CB-OG1	-5.42	101.46	109.60
1	A	204	PHE	CA-C-N	5.37	127.74	120.65
1	A	204	PHE	C-N-CA	5.37	127.74	120.65
1	C	113	ALA	CA-C-N	5.36	127.73	120.44
1	C	113	ALA	C-N-CA	5.36	127.73	120.44
1	B	223	VAL	N-CA-C	-5.34	104.75	110.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	215	THR	CA-CB-OG1	-5.25	101.73	109.60
1	A	192	ASP	CA-CB-CG	5.14	117.74	112.60
1	A	100	GLU	CB-CG-CD	5.11	121.29	112.60
1	A	96	VAL	CA-C-O	-5.11	116.57	121.63
1	B	22	LYS	CA-C-N	5.05	127.01	120.44
1	B	22	LYS	C-N-CA	5.05	127.01	120.44
1	C	217	PHE	CA-C-N	5.05	127.05	120.28
1	C	217	PHE	C-N-CA	5.05	127.05	120.28

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	1818	0	1778	32	0
1	B	1859	0	1816	22	0
1	C	1822	0	1782	34	0
1	D	1796	0	1756	30	0
2	A	16	0	0	0	0
2	B	16	0	0	0	0
2	C	16	0	0	0	0
2	D	16	0	0	0	0
3	C	14	0	20	0	0
4	A	132	0	0	8	0
4	B	132	0	0	5	0
4	C	84	0	0	6	0
4	D	100	0	0	7	0
All	All	7821	0	7152	110	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 8.

All (110) 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:197:GLU:OE2	1:D:200:ARG:HD3	1.71	0.90
1:D:197:GLU:OE2	1:D:197:GLU:HA	1.93	0.69
1:D:109:GLU:HG2	4:D:463:HOH:O	1.93	0.68
1:C:47:ASN:ND2	1:D:106:TRP:HE1	1.92	0.68
1:A:198:GLU:O	1:A:201:GLN:N	2.25	0.67
1:A:183:LEU:O	1:A:187:GLU:HG3	1.95	0.66
1:C:228:HIS:HA	4:C:451:HOH:O	1.96	0.65
1:B:165:CYS:SG	4:B:478:HOH:O	2.54	0.65
1:D:109:GLU:CG	4:D:463:HOH:O	2.46	0.63
1:A:1:MET:N	4:A:704:HOH:O	2.32	0.62
1:B:10:GLN:O	1:B:13:GLN:HG3	2.00	0.61
1:B:194:GLN:NE2	4:B:402:HOH:O	2.33	0.61
1:C:207:VAL:O	1:C:210:LEU:N	2.33	0.60
1:A:183:LEU:O	1:A:186:ILE:HD13	2.02	0.59
1:C:91:GLU:HA	4:C:450:HOH:O	2.02	0.59
1:C:214:PHE:O	1:C:217:PHE:HB3	2.03	0.59
1:D:206:LEU:HD23	1:D:206:LEU:C	2.28	0.59
1:A:197:GLU:O	1:A:201:GLN:HG2	2.02	0.59
1:B:198:GLU:HB2	4:B:503:HOH:O	2.04	0.58
1:C:229:GLN:CG	4:C:433:HOH:O	2.52	0.58
1:C:9:GLU:O	1:C:12:LYS:HB3	2.04	0.58
1:A:80:TRP:CE2	1:A:81:LEU:HD22	2.38	0.57
1:C:229:GLN:HG3	4:C:433:HOH:O	2.04	0.57
1:C:38:ALA:N	1:C:39:PRO:CD	2.69	0.56
1:A:68:LEU:HD21	1:A:186:ILE:HD12	1.88	0.56
1:D:63:ASP:OD1	1:D:63:ASP:C	2.49	0.55
1:B:112:ASN:HD22	1:B:220:GLU:HB2	1.72	0.54
1:C:194:GLN:HE21	1:C:194:GLN:N	2.05	0.54
1:C:47:ASN:HD22	1:D:106:TRP:HE1	1.55	0.54
1:C:97:ASN:HD22	1:C:97:ASN:N	2.07	0.53
1:D:22:LYS:HD2	4:D:492:HOH:O	2.09	0.53
1:D:103:LYS:O	1:D:107:SER:HB3	2.09	0.53
1:D:197:GLU:O	1:D:201:GLN:HG2	2.09	0.53
1:B:87:LEU:HD12	1:B:92:PHE:HB2	1.91	0.53
1:A:130:ILE:O	1:A:130:ILE:HD13	2.08	0.53
1:C:99:SER:OG	1:C:100:GLU:N	2.42	0.52
1:C:106:TRP:HE1	1:D:47:ASN:ND2	2.07	0.52
1:A:186:ILE:HD13	1:A:186:ILE:H	1.74	0.52
1:A:216:GLN:NE2	4:A:707:HOH:O	2.36	0.51
1:B:47:ASN:ND2	1:A:106:TRP:HE1	2.09	0.51
1:A:100:GLU:CG	4:A:762:HOH:O	2.58	0.51
1:D:37:TRP:O	1:D:38:ALA:C	2.54	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:1:MET:SD	1:D:130:ILE:HD11	2.51	0.50
1:A:26:ASP:HB3	1:A:29:ILE:HD12	1.93	0.50
1:C:194:GLN:N	1:C:194:GLN:NE2	2.60	0.49
1:A:100:GLU:HG2	4:A:762:HOH:O	2.13	0.49
1:C:137:GLU:OE2	1:C:137:GLU:HA	2.13	0.49
1:D:214:PHE:O	1:D:217:PHE:HB3	2.13	0.49
1:A:197:GLU:HA	1:A:197:GLU:OE1	2.12	0.49
1:B:1:MET:HG3	1:B:5:LEU:CD2	2.43	0.49
1:B:106:TRP:HE1	1:A:47:ASN:ND2	2.11	0.49
1:C:16:ALA:HA	1:C:145:ILE:HG21	1.93	0.49
1:C:37:TRP:C	1:C:39:PRO:HD2	2.38	0.48
1:A:206:LEU:C	1:A:206:LEU:HD23	2.38	0.48
1:D:80:TRP:CZ3	1:D:81:LEU:HD13	2.48	0.48
1:C:109:GLU:O	1:C:220:GLU:CD	2.57	0.47
1:D:9:GLU:HG3	4:D:421:HOH:O	2.13	0.47
1:C:198:GLU:HG2	4:C:437:HOH:O	2.15	0.47
1:C:106:TRP:HE1	1:D:47:ASN:HD22	1.63	0.47
1:A:68:LEU:CD2	1:A:186:ILE:HD12	2.44	0.47
1:A:187:GLU:O	1:A:191:GLN:HG2	2.15	0.46
1:C:95:SER:C	1:C:96:VAL:HG13	2.40	0.46
1:A:27:GLN:HE21	1:A:27:GLN:H	1.63	0.46
1:B:63:ASP:OD1	1:B:63:ASP:C	2.58	0.46
1:D:22:LYS:CD	4:D:492:HOH:O	2.64	0.46
1:B:229:GLN:HG3	4:B:496:HOH:O	2.15	0.46
1:B:111:LYS:NZ	1:C:108:GLU:OE2	2.49	0.46
1:C:106:TRP:CG	1:D:46:MET:HE3	2.51	0.46
1:A:163:LYS:NZ	4:A:716:HOH:O	2.49	0.45
1:A:47:ASN:HD22	1:A:47:ASN:HA	1.61	0.45
1:A:103:LYS:O	1:A:107:SER:HB3	2.16	0.45
1:C:103:LYS:NZ	4:C:410:HOH:O	2.50	0.45
1:C:127:ALA:O	1:C:132:LYS:HE3	2.17	0.45
1:B:147:PHE:O	1:B:151:SER:OG	2.27	0.45
1:B:147:PHE:HA	1:B:150:ALA:HB3	1.98	0.45
1:C:-1:ALA:HB3	1:C:2:GLN:HG2	1.98	0.44
1:C:170:ASP:HA	1:C:173:LEU:HD23	1.99	0.44
1:B:27:GLN:NE2	4:B:401:HOH:O	2.21	0.44
1:B:206:LEU:C	1:B:206:LEU:HD23	2.42	0.44
1:C:15:PHE:O	1:C:18:VAL:HG22	2.17	0.44
1:D:2:GLN:NE2	4:D:404:HOH:O	2.49	0.44
1:B:226:LYS:O	1:B:229:GLN:NE2	2.44	0.44
1:A:3:GLN:N	4:A:704:HOH:O	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:40:CYS:HB3	1:D:221:LEU:HD23	2.00	0.43
1:A:183:LEU:O	1:A:186:ILE:CD1	2.65	0.43
1:A:1:MET:HE2	1:A:190:LEU:HG	2.00	0.43
1:D:190:LEU:HD12	1:D:190:LEU:HA	1.74	0.43
1:C:138:VAL:HG11	1:C:210:LEU:HB3	2.00	0.43
1:B:26:ASP:HB3	1:B:29:ILE:HD12	2.01	0.43
1:C:12:LYS:O	1:C:15:PHE:HB3	2.19	0.43
1:B:86:ASP:O	1:B:90:LEU:HB2	2.18	0.43
1:A:26:ASP:OD1	1:A:28:SER:OG	2.22	0.43
1:C:7:LEU:O	1:C:11:LYS:CG	2.67	0.43
1:C:215:THR:O	1:C:216:GLN:C	2.60	0.42
1:D:200:ARG:NH2	1:D:204:PHE:CE1	2.87	0.42
1:D:63:ASP:OD1	1:D:65:ILE:N	2.50	0.42
1:D:143:GLY:O	1:D:147:PHE:HD2	2.03	0.42
1:A:1:MET:HB2	1:A:193:ILE:O	2.19	0.41
1:B:47:ASN:HD22	1:B:47:ASN:HA	1.68	0.41
1:D:189:PHE:CE2	1:D:193:ILE:HD11	2.56	0.41
1:B:1:MET:O	1:B:4:VAL:HB	2.21	0.41
1:D:97:ASN:ND2	4:D:406:HOH:O	2.50	0.41
1:B:1:MET:O	1:B:4:VAL:N	2.52	0.41
1:A:1:MET:C	4:A:704:HOH:O	2.63	0.41
1:D:135:VAL:O	1:D:139:THR:HG23	2.20	0.41
1:C:116:LEU:O	1:C:117:ASN:C	2.64	0.41
1:A:73:THR:O	1:A:77:ASP:HB3	2.22	0.40
1:A:202:GLU:HG3	4:A:767:HOH:O	2.21	0.40
1:D:92:PHE:O	1:D:93:ASP:C	2.65	0.40
1:A:186:ILE:HD13	1:A:186:ILE:N	2.35	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	214/248 (86%)	203 (95%)	8 (4%)	3 (1%)	9 2
1	B	218/248 (88%)	215 (99%)	3 (1%)	0	100 100
1	C	214/248 (86%)	201 (94%)	13 (6%)	0	100 100
1	D	210/248 (85%)	201 (96%)	9 (4%)	0	100 100
All	All	856/992 (86%)	820 (96%)	33 (4%)	3 (0%)	30 22

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	198	GLU
1	A	169	ALA
1	A	199	SER

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	200/216 (93%)	181 (90%)	19 (10%)	8 1
1	B	204/216 (94%)	190 (93%)	14 (7%)	14 3
1	C	199/216 (92%)	184 (92%)	15 (8%)	12 3
1	D	197/216 (91%)	184 (93%)	13 (7%)	15 4
All	All	800/864 (93%)	739 (92%)	61 (8%)	12 3

All (61) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	3	GLN
1	B	7	LEU
1	B	13	GLN
1	B	90	LEU
1	B	130	ILE
1	B	152	GLU
1	B	166	ARG
1	B	174	ASN

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Mol	Chain	Res	Type
1	B	175	VAL
1	B	189	PHE
1	B	191	GLN
1	B	198	GLU
1	B	205	GLU
1	B	234	LEU
1	A	2	GLN
1	A	3	GLN
1	A	5	LEU
1	A	6	GLU
1	A	7	LEU
1	A	27	GLN
1	A	47	ASN
1	A	65	ILE
1	A	81	LEU
1	A	130	ILE
1	A	170	ASP
1	A	186	ILE
1	A	188	GLN
1	A	190	LEU
1	A	194	GLN
1	A	198	GLU
1	A	205	GLU
1	A	226	LYS
1	A	229	GLN
1	C	5	LEU
1	C	7	LEU
1	C	28	SER
1	C	85	GLU
1	C	94	LYS
1	C	95	SER
1	C	97	ASN
1	C	133	ILE
1	C	140	GLU
1	C	152	GLU
1	C	166	ARG
1	C	194	GLN
1	C	197	GLU
1	C	200	ARG
1	C	234	LEU
1	D	5	LEU
1	D	6	GLU

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Mol	Chain	Res	Type
1	D	7	LEU
1	D	27	GLN
1	D	71	LYS
1	D	81	LEU
1	D	88	LYS
1	D	130	ILE
1	D	145	ILE
1	D	158	LYS
1	D	190	LEU
1	D	200	ARG
1	D	208	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	13	GLN
1	B	47	ASN
1	B	112	ASN
1	B	162	GLN
1	B	191	GLN
1	B	194	GLN
1	A	2	GLN
1	A	13	GLN
1	A	27	GLN
1	A	47	ASN
1	A	66	GLN
1	A	72	HIS
1	A	97	ASN
1	A	119	GLN
1	A	194	GLN
1	A	229	GLN
1	C	25	GLN
1	C	47	ASN
1	C	97	ASN
1	C	162	GLN
1	C	201	GLN
1	C	216	GLN
1	C	229	GLN
1	D	2	GLN
1	D	3	GLN
1	D	27	GLN
1	D	47	ASN

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Mol	Chain	Res	Type
1	D	97	ASN
1	D	119	GLN
1	D	191	GLN
1	D	216	GLN
1	D	228	HIS

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

6 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	UV3	C	301	-	15,17,17	3.47	7 (46%)	21,24,24	1.54	3 (14%)
2	UV3	A	301	-	15,17,17	3.75	9 (60%)	21,24,24	1.87	5 (23%)
2	UV3	D	301	-	15,17,17	2.97	6 (40%)	21,24,24	2.02	7 (33%)
3	PEG	C	303	-	6,6,6	0.19	0	5,5,5	0.14	0
2	UV3	B	301	-	15,17,17	3.47	8 (53%)	21,24,24	1.96	6 (28%)
3	PEG	C	302	-	6,6,6	0.21	0	5,5,5	0.10	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	UV3	C	301	-	-	0/8/8/8	0/2/2/2
2	UV3	A	301	-	-	0/8/8/8	0/2/2/2
2	UV3	D	301	-	-	0/8/8/8	0/2/2/2
3	PEG	C	303	-	-	3/4/4/4	-
2	UV3	B	301	-	-	1/8/8/8	0/2/2/2
3	PEG	C	302	-	-	2/4/4/4	-

All (30) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	301	UV3	BR13-C12	8.64	2.09	1.89
2	A	301	UV3	C08-C04	-8.26	1.29	1.44
2	C	301	UV3	BR13-C12	8.12	2.08	1.89
2	A	301	UV3	BR13-C12	7.71	2.07	1.89
2	D	301	UV3	C08-C07	-6.41	1.34	1.41
2	D	301	UV3	BR13-C12	5.96	2.03	1.89
2	A	301	UV3	C08-C07	-5.56	1.35	1.41
2	C	301	UV3	C08-C04	-5.32	1.34	1.44
2	D	301	UV3	C08-C04	-4.95	1.35	1.44
2	B	301	UV3	C03-C04	4.58	1.59	1.50
2	C	301	UV3	C08-C07	-4.56	1.36	1.41
2	C	301	UV3	C03-C04	4.35	1.59	1.50
2	C	301	UV3	C09-C08	-4.06	1.33	1.39
2	B	301	UV3	C07-C12	-4.02	1.32	1.39
2	B	301	UV3	C08-C07	-3.93	1.37	1.41
2	B	301	UV3	C09-C08	-3.90	1.33	1.39
2	B	301	UV3	C08-C04	-3.72	1.37	1.44
2	A	301	UV3	C09-C08	-3.64	1.34	1.39
2	B	301	UV3	C07-N06	-3.55	1.31	1.37
2	D	301	UV3	C03-C04	3.41	1.57	1.50
2	C	301	UV3	C07-C12	-3.36	1.34	1.39
2	A	301	UV3	C07-N06	-3.13	1.32	1.37
2	C	301	UV3	C07-N06	-2.91	1.32	1.37
2	D	301	UV3	C09-C08	-2.65	1.35	1.39
2	B	301	UV3	O15-C14	-2.61	1.22	1.30
2	A	301	UV3	C05-N06	-2.48	1.33	1.37
2	A	301	UV3	C07-C12	-2.44	1.35	1.39
2	A	301	UV3	C03-C04	2.44	1.55	1.50
2	A	301	UV3	C05-C04	-2.31	1.33	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	301	UV3	C05-C04	-2.29	1.33	1.36

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	301	UV3	BR13-C12-C07	5.52	125.83	119.65
2	D	301	UV3	BR13-C12-C07	4.38	124.55	119.65
2	C	301	UV3	C07-C08-C04	4.16	109.29	106.53
2	B	301	UV3	C07-N06-C05	4.09	111.50	108.81
2	B	301	UV3	C03-C04-C08	3.71	133.03	126.75
2	D	301	UV3	C04-C05-N06	-3.67	106.05	110.31
2	B	301	UV3	C03-C04-C05	-3.54	120.56	126.90
2	D	301	UV3	C08-C04-C05	3.18	109.59	106.15
2	B	301	UV3	C07-C08-C04	3.15	108.62	106.53
2	C	301	UV3	BR13-C12-C07	2.98	122.98	119.65
2	A	301	UV3	C08-C04-C05	2.93	109.32	106.15
2	B	301	UV3	C04-C05-N06	-2.81	107.06	110.31
2	D	301	UV3	C08-C07-N06	-2.76	105.62	107.89
2	A	301	UV3	C04-C05-N06	-2.74	107.13	110.31
2	A	301	UV3	C03-C04-C05	-2.62	122.22	126.90
2	D	301	UV3	C07-N06-C05	2.58	110.51	108.81
2	D	301	UV3	C07-C08-C04	2.56	108.23	106.53
2	B	301	UV3	BR13-C12-C07	2.42	122.36	119.65
2	C	301	UV3	C09-C08-C04	-2.38	130.35	133.83
2	D	301	UV3	C02-C03-C04	-2.18	109.33	113.50
2	A	301	UV3	C07-C08-C04	2.01	107.86	106.53

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	C	303	PEG	O2-C3-C4-O4
3	C	302	PEG	O2-C3-C4-O4
3	C	302	PEG	C4-C3-O2-C2
3	C	303	PEG	C1-C2-O2-C3
2	B	301	UV3	N01-C02-C03-C04
3	C	303	PEG	C4-C3-O2-C2

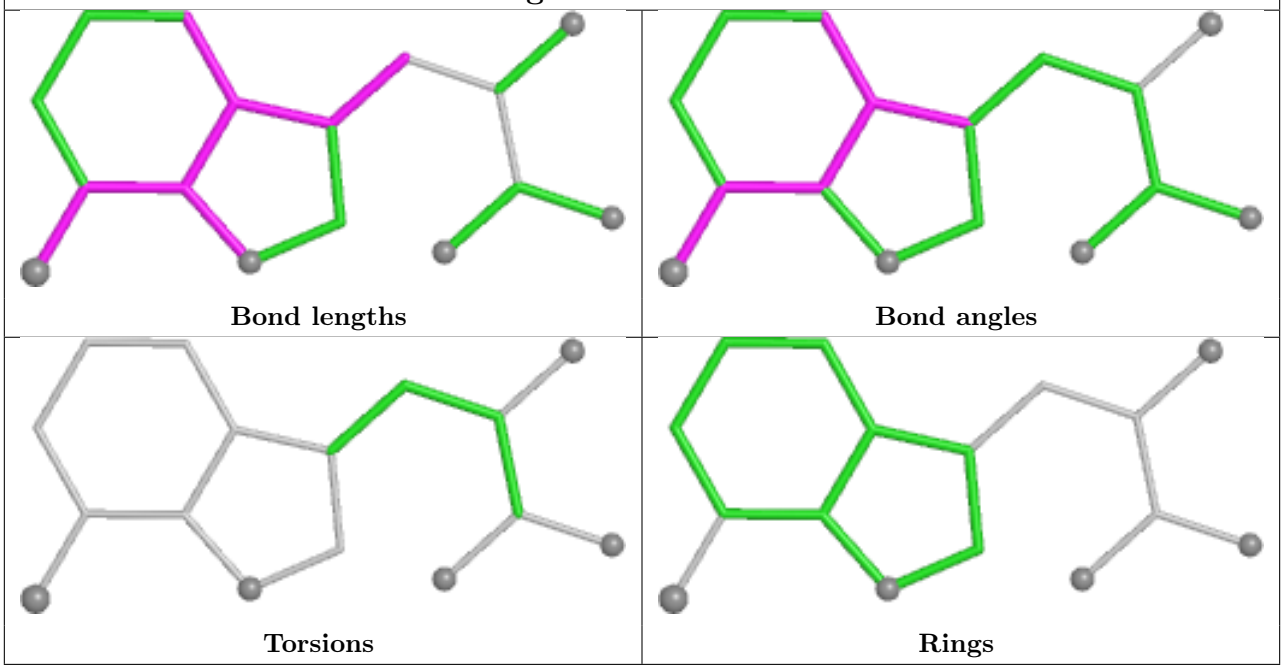
There are no ring outliers.

No monomer is involved in short contacts.

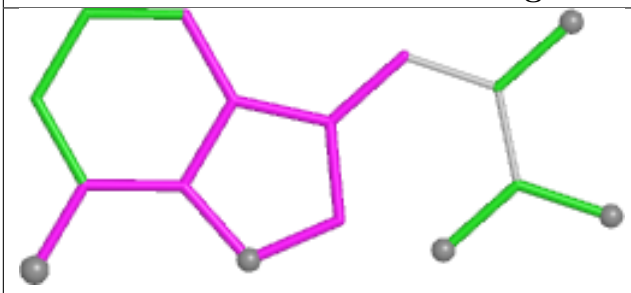
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths,

bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 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.

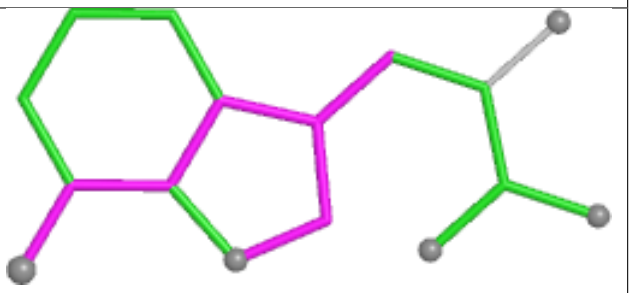
Ligand UV3 C 301



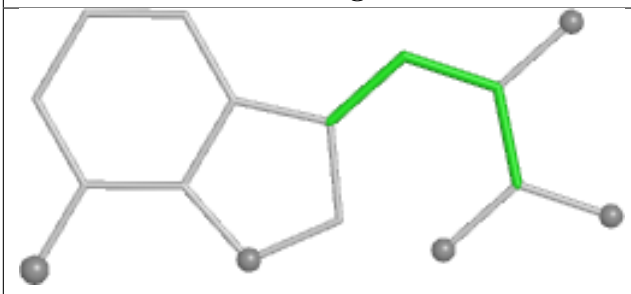
Ligand UV3 A 301



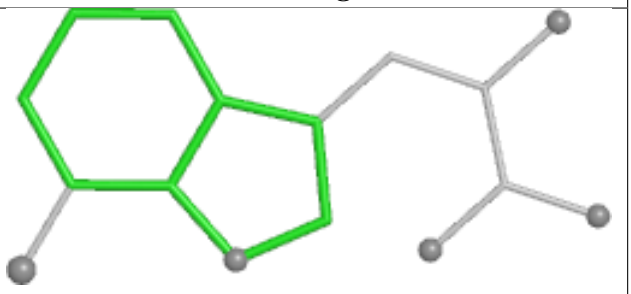
Bond lengths



Bond angles

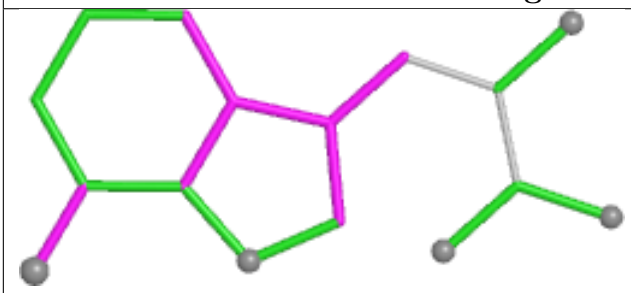


Torsions

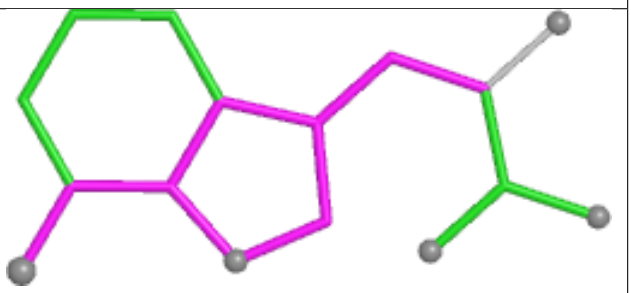


Rings

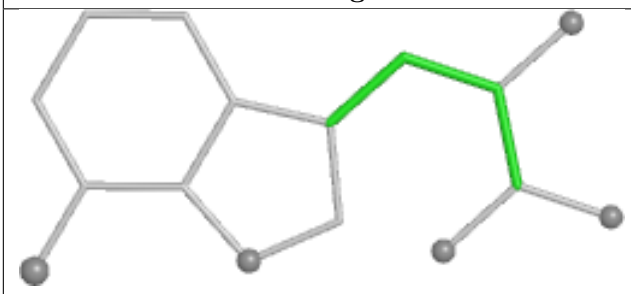
Ligand UV3 D 301



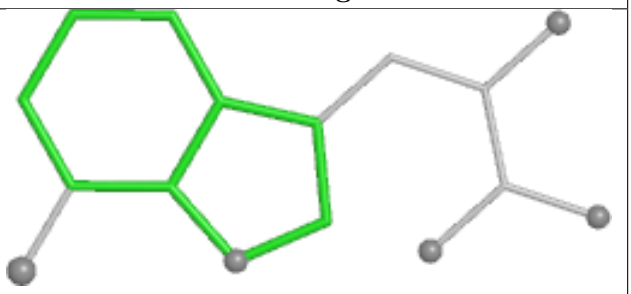
Bond lengths



Bond angles

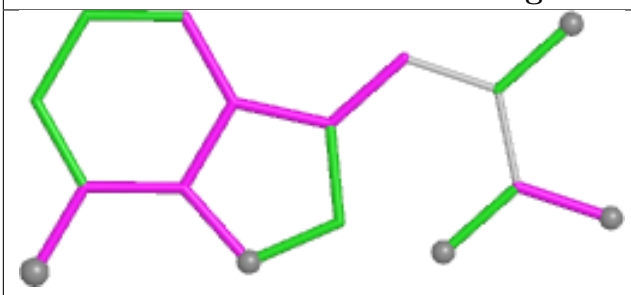


Torsions

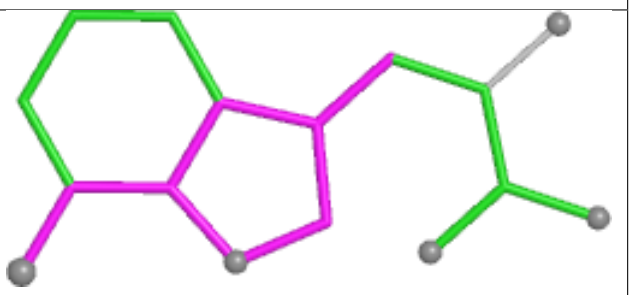


Rings

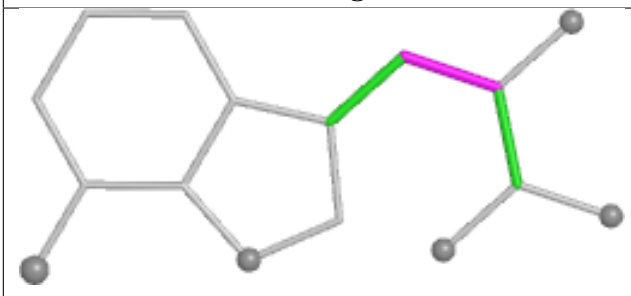
Ligand UV3 B 301



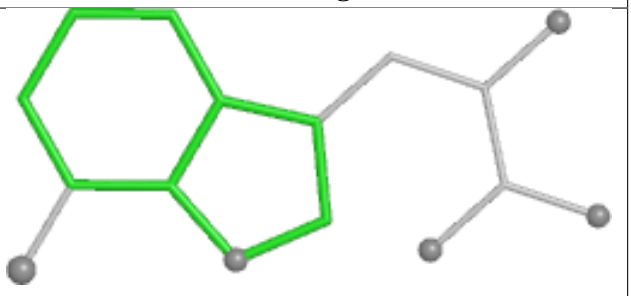
Bond lengths



Bond angles



Torsions



Rings

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, 95^{th} 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	218/248 (87%)	0.56	15 (6%) 23 26	18, 35, 68, 105	0
1	B	222/248 (89%)	0.56	9 (4%) 41 46	21, 33, 64, 94	0
1	C	218/248 (87%)	1.11	31 (14%) 6 7	24, 47, 72, 86	0
1	D	216/248 (87%)	0.77	16 (7%) 20 23	25, 44, 70, 92	0
All	All	874/992 (88%)	0.75	71 (8%) 18 20	18, 40, 69, 105	0

All (71) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	204	PHE	3.8
1	A	192	ASP	3.6
1	B	159	ALA	3.4
1	B	190	LEU	3.4
1	C	-1	ALA	3.2
1	C	96	VAL	3.2
1	C	160	ILE	3.2
1	C	0	GLY	3.1
1	D	84	LEU	3.1
1	A	159	ALA	3.1
1	A	198	GLU	3.1
1	C	103	LYS	2.9
1	C	224	TYR	2.9
1	D	90	LEU	2.9
1	C	222	LEU	2.8
1	C	90	LEU	2.7
1	A	160	ILE	2.7
1	B	96	VAL	2.7
1	B	175	VAL	2.6
1	C	102	LEU	2.6
1	C	16	ALA	2.6

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Mol	Chain	Res	Type	RSRZ
1	C	214	PHE	2.5
1	A	161	THR	2.5
1	B	5	LEU	2.5
1	C	18	VAL	2.5
1	B	0	GLY	2.5
1	D	169	ALA	2.5
1	C	207	VAL	2.5
1	D	165	CYS	2.4
1	A	228	HIS	2.4
1	D	183	LEU	2.4
1	D	199	SER	2.4
1	C	139	THR	2.4
1	C	225	ALA	2.4
1	A	170	ASP	2.4
1	A	163	LYS	2.4
1	D	89	ASN	2.4
1	B	189	PHE	2.3
1	C	21	PHE	2.3
1	C	213	ALA	2.3
1	D	161	THR	2.3
1	D	92	PHE	2.3
1	A	5	LEU	2.3
1	A	186	ILE	2.2
1	C	138	VAL	2.2
1	C	228	HIS	2.2
1	C	208	GLU	2.2
1	A	193	ILE	2.2
1	C	1	MET	2.2
1	B	170	ASP	2.2
1	B	193	ILE	2.2
1	C	130	ILE	2.2
1	A	199	SER	2.2
1	C	100	GLU	2.1
1	D	191	GLN	2.1
1	C	13	GLN	2.1
1	D	204	PHE	2.1
1	C	5	LEU	2.1
1	C	219	ASN	2.1
1	C	221	LEU	2.1
1	D	20	LEU	2.1
1	D	164	PRO	2.1
1	C	171	PHE	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	160	ILE	2.1
1	D	81	LEU	2.1
1	C	4	VAL	2.0
1	A	203	ALA	2.0
1	C	169	ALA	2.0
1	C	93	ASP	2.0
1	D	95	SER	2.0
1	A	164	PRO	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)

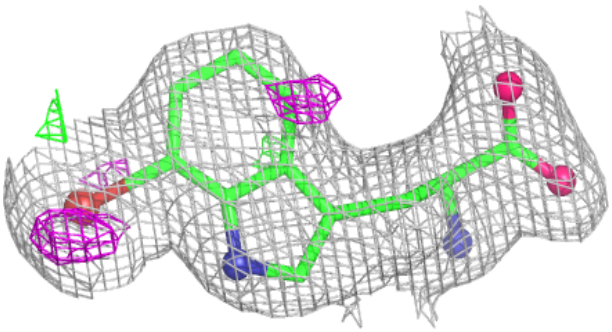
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

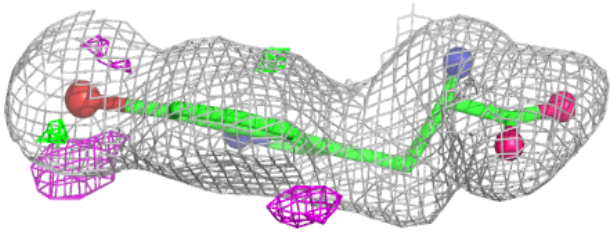
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	PEG	C	303	7/7	0.75	0.16	59,62,65,66	0
3	PEG	C	302	7/7	0.82	0.10	64,66,69,71	0
2	UV3	C	301	16/16	0.92	0.10	35,37,48,60	0
2	UV3	B	301	16/16	0.96	0.08	23,24,30,40	0
2	UV3	D	301	16/16	0.96	0.08	36,40,44,50	0
2	UV3	A	301	16/16	0.98	0.06	24,28,33,44	0

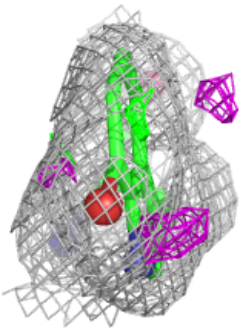
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around UV3 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)

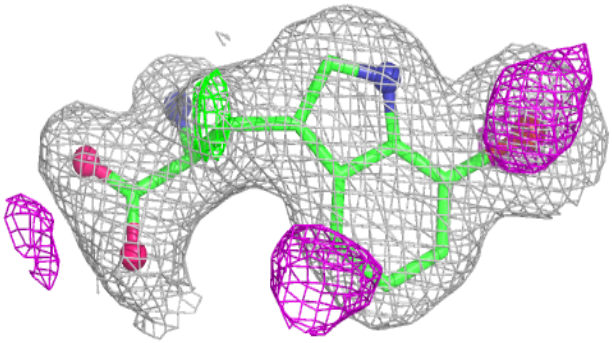


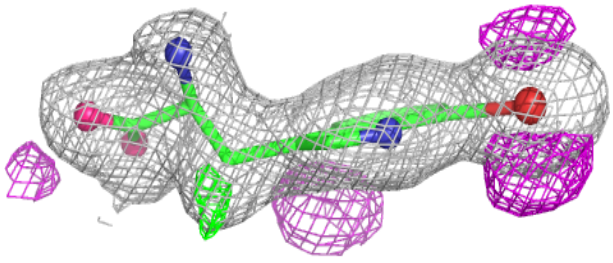


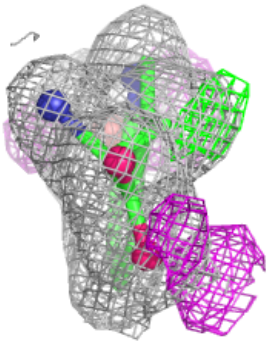


Electron density around UV3 B 301:

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

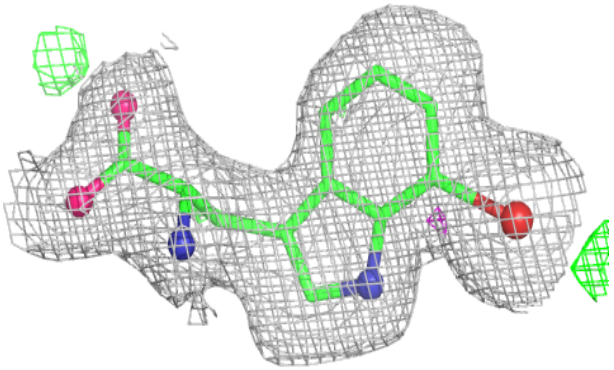


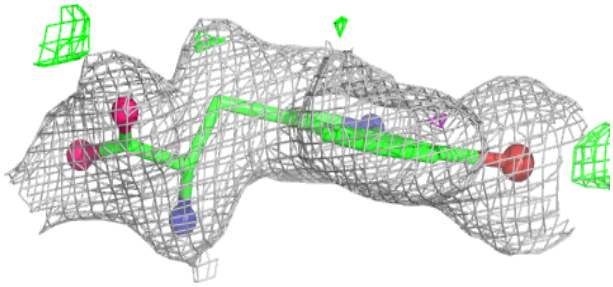


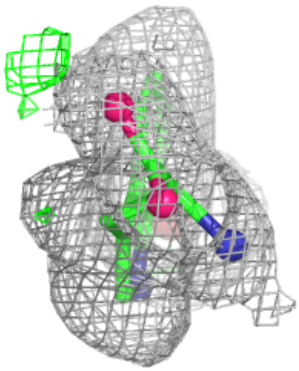


Electron density around UV3 D 301:

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

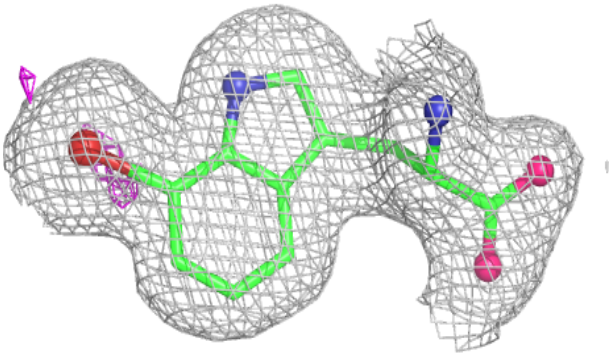


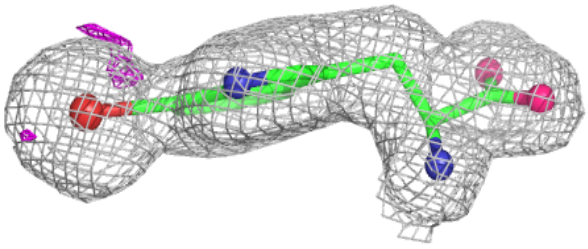


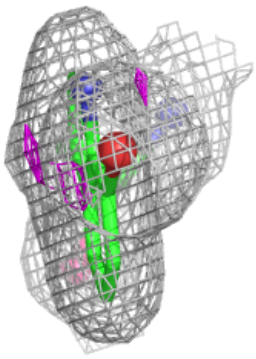


Electron density around UV3 A 301:

$2mF_o$-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.