Full wwPDB X-ray Structure Validation Report (i)

Feb 7, 2023 – 04:55 PM EST

PDB ID	:	7FSX
Title	:	SDCBP PanDDA analysis group deposition – The PDZ domans of SDCBP in complex with Z1328078283
Authors	:	Bradshaw, W.J.; Katis, V.L.; Bountra, C.; von Delft, F.; Brennan, P.E.
Deposited on	:	2023-01-24
Resolution	:	1.91 Å(reported)

The following versions of software and data (see references (i)) were used in the production of this report:

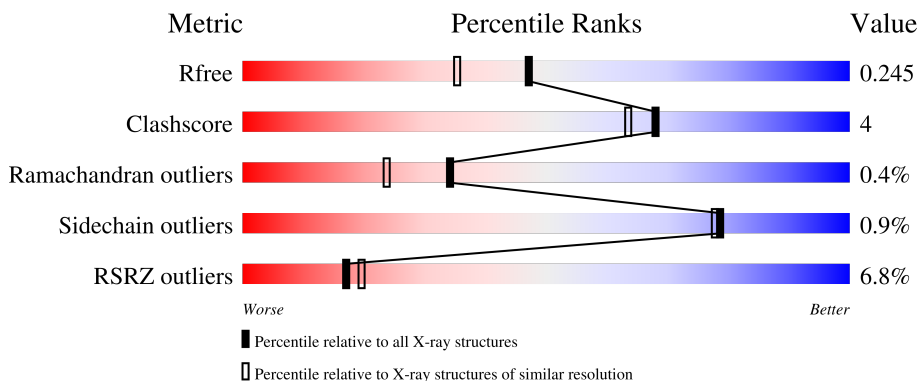|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.32.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.1

1   Overall quality at a glance ⓘ

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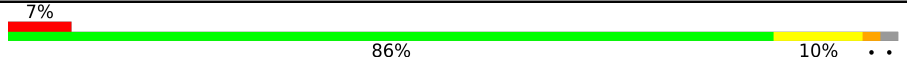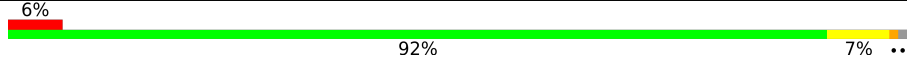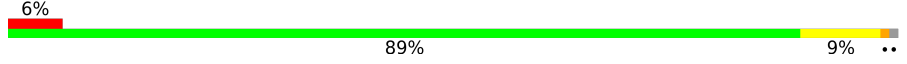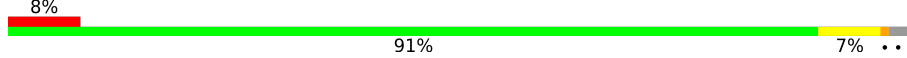*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.91 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	Percentile Ranks	Value
Rfree		0.245
Clashscore		4
Ramachandran outliers		0.4%
Sidechain outliers		0.9%
RSRZ outliers		6.8%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	7937 (1.94-1.90)
Clashscore	141614	8644 (1.94-1.90)
Ramachandran outliers	138981	8530 (1.94-1.90)
Sidechain outliers	138945	8530 (1.94-1.90)
RSRZ outliers	127900	7793 (1.94-1.90)

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	195	7% 86% 10% ··
1	B	195	6% 92% 7% ··
1	C	195	6% 89% 9% ··
1	D	195	8% 91% 7% ··

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	GLY	C	306	-	X	-	-

2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 6489 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 Syntenin-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	191	Total	C	N	O	S	0	1	0
			1481	935	262	275	9			
1	B	193	Total	C	N	O	S	0	1	0
			1495	943	264	279	9			
1	C	193	Total	C	N	O	S	0	3	0
			1514	953	270	282	9			
1	D	191	Total	C	N	O	S	0	2	0
			1489	939	263	278	9			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	104	SER	-	expression tag	UNP O00560
A	105	MET	-	expression tag	UNP O00560
B	104	SER	-	expression tag	UNP O00560
B	105	MET	-	expression tag	UNP O00560
C	104	SER	-	expression tag	UNP O00560
C	105	MET	-	expression tag	UNP O00560
D	104	SER	-	expression tag	UNP O00560
D	105	MET	-	expression tag	UNP O00560

- Molecule 2 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).

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

- Molecule 3 is N-(cyclopropylmethyl)-2,2,3,3-tetramethylazetidine-1-carboxamide (three-letter code: I8A) (formula: $C_{12}H_{22}N_2O$) (labeled as "Ligand of Interest" by depositor).
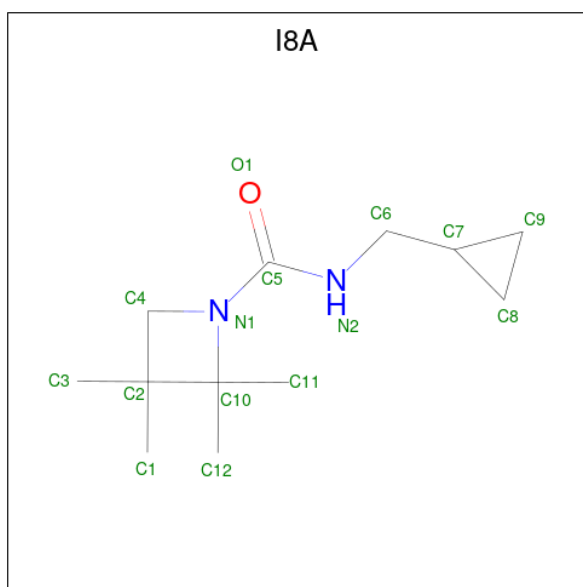
I8A

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	B	1	Total	C	N	O	0	0
			15	12	2	1		
3	C	1	Total	C	N	O	0	0
			15	12	2	1		

- Molecule 4 is D-GLUTAMIC ACID (three-letter code: DGL) (formula: $C_5H_9NO_4$).
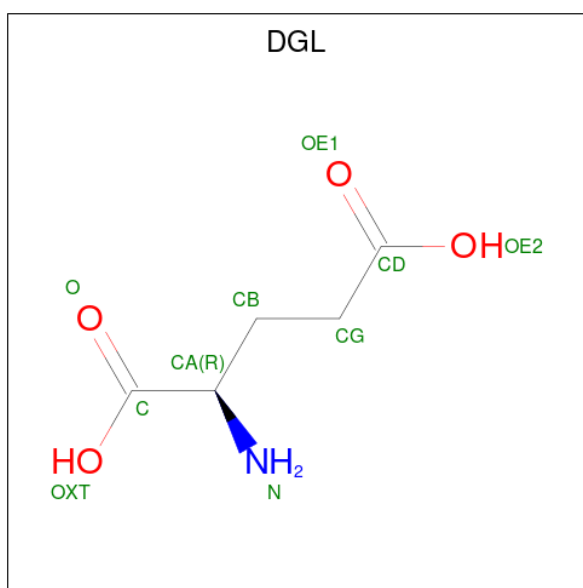
DGL

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	B	1	Total	C	N	O	0	0
			10	5	1	4		
4	D	1	Total	C	N	O	0	0
			10	5	1	4		

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	C	1	Total 5	O 4	S 1	0	0
5	D	1	Total 5	O 4	S 1	0	0
5	D	1	Total 5	O 4	S 1	0	0
5	D	1	Total 5	O 4	S 1	0	0

- Molecule 6 is GLYCINE (three-letter code: GLY) (formula: $C_2H_5NO_2$).
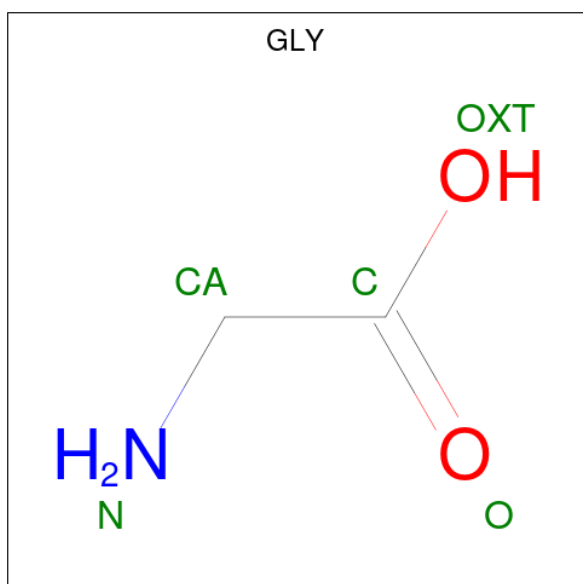
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	C	1	Total 5	C 2	N 1	O 2	0	0
6	D	1	Total 5	C 2	N 1	O 2	0	0

- Molecule 7 is ALANINE (three-letter code: ALA) (formula: $C_3H_7NO_2$).
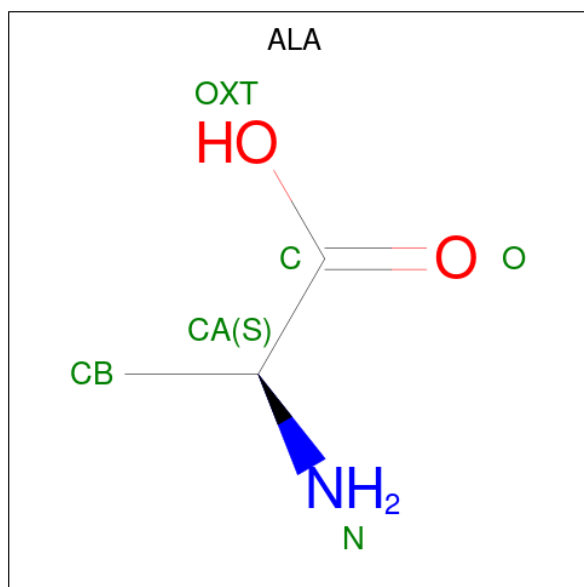
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	D	1	Total 6	C 3	N 1	O 2	0	0

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	53	Total 53	O 53	0	0
8	B	104	Total 104	O 104	0	1
8	C	94	Total 95	O 95	0	1
8	D	140	Total 140	O 140	0	1

3 Residue-property plots ⓘ

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: Syntenin-1

Chain A:

- Molecule 1: Syntenin-1

Chain B:

- Molecule 1: Syntenin-1

Chain C:

- Molecule 1: Syntenin-1

Chain D:
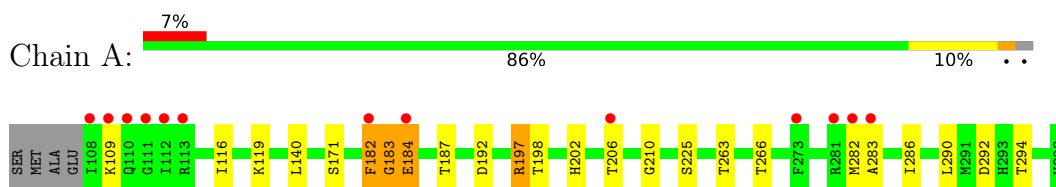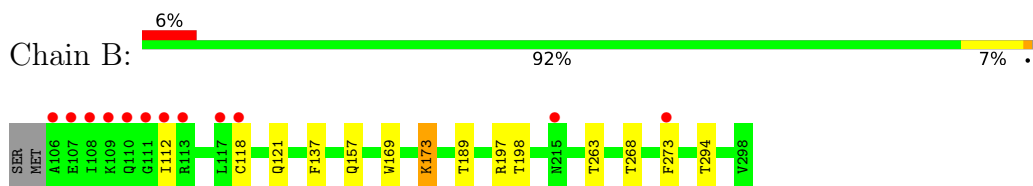
4   Data and refinement statistics ⓘ

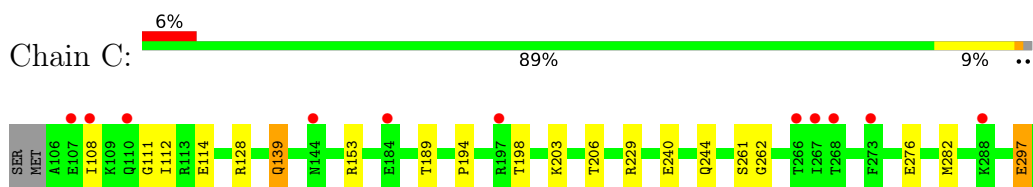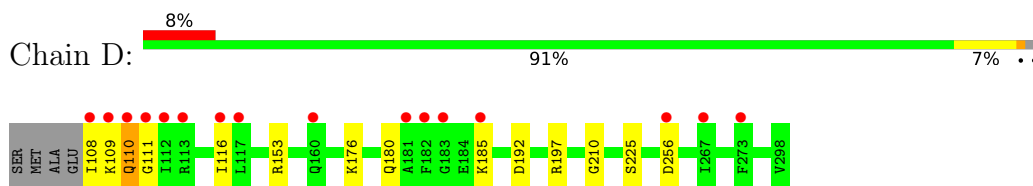| Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	80.63Å 49.54Å 115.27Å 90.00° 95.43° 90.00°	Depositor
Resolution (Å)	114.75 – 1.91 114.75 – 1.91	Depositor EDS
% Data completeness (in resolution range)	99.7 (114.75-1.91) 99.7 (114.75-1.91)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.38 (at 1.91Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.196 , 0.235 0.210 , 0.245	Depositor DCC
R_{free} test set	3446 reflections (4.87%)	wwPDB-VP
Wilson B-factor (Å^2)	30.9	Xtriage
Anisotropy	0.154	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 41.5	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	6489	wwPDB-VP
Average B, all atoms (Å^2)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 19.15% 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 ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, EDO, I8A, DGL

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	0.82	0/1502	0.99	2/2019 (0.1%)
1	B	0.85	0/1516	1.00	1/2038 (0.0%)
1	C	0.86	1/1535 (0.1%)	1.02	2/2063 (0.1%)
1	D	0.91	0/1510	1.02	2/2030 (0.1%)
All	All	0.86	1/6063 (0.0%)	1.01	7/8150 (0.1%)

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	1
1	C	0	1
All	All	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	114	GLU	CD-OE1	5.40	1.31	1.25

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	197	ARG	NE-CZ-NH2	-7.43	116.58	120.30
1	D	153	ARG	CG-CD-NE	-6.62	97.90	111.80
1	D	153	ARG	NE-CZ-NH1	-6.56	117.02	120.30
1	C	128	ARG	NE-CZ-NH1	-6.30	117.15	120.30
1	A	197	ARG	NE-CZ-NH1	6.15	123.38	120.30
1	C	153	ARG	NE-CZ-NH2	-5.78	117.41	120.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	263	THR	CA-CB-OG1	-5.30	97.88	109.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	182	PHE	Peptide
1	C	111	GLY	Peptide

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	1481	0	1530	16	0
1	B	1495	0	1541	11	0
1	C	1514	0	1558	11	0
1	D	1489	0	1533	11	0
2	A	4	0	6	0	0
2	B	8	0	12	0	0
2	C	12	0	18	0	0
2	D	8	0	12	0	0
3	B	15	0	0	0	0
3	C	15	0	0	0	0
4	B	10	0	7	0	0
4	D	10	0	7	0	0
5	C	5	0	0	0	0
5	D	15	0	0	0	0
6	C	5	0	2	0	0
6	D	5	0	2	0	0
7	D	6	0	4	0	0
8	A	53	0	0	0	0
8	B	104	0	0	3	0
8	C	95	0	0	2	0
8	D	140	0	0	3	0
All	All	6489	0	6232	47	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 4.

All (47) 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:229:ARG:NH2	8:C:401:HOH:O	1.99	0.95
1:D:197:ARG:NH2	8:D:401:HOH:O	2.00	0.86
1:D:110:GLN:O	1:D:110:GLN:HG2	1.94	0.67
1:A:286:ILE:HG23	1:A:290:LEU:HD12	1.79	0.65
1:B:112:ILE:CG2	1:B:189:THR:HG22	2.28	0.64
1:B:118:CYS:SG	1:B:118:CYS:O	2.59	0.60
1:A:197:ARG:HD3	1:C:194:PRO:O	2.03	0.58
1:A:286:ILE:HG23	1:A:290:LEU:CD1	2.34	0.57
1:D:110:GLN:O	1:D:110:GLN:CG	2.54	0.56
1:C:108:ILE:CD1	1:C:198:THR:HG23	2.36	0.55
1:A:292:ASP:OD1	1:A:294:THR:OG1	2.25	0.55
1:A:202:HIS:HA	1:A:263:THR:O	2.07	0.54
1:A:109:LYS:N	1:A:192:ASP:OD2	2.40	0.54
1:C:297:GLU:N	1:C:297:GLU:OE2	2.40	0.54
1:D:185:LYS:NZ	8:D:405:HOH:O	2.38	0.53
1:B:112:ILE:CG2	1:B:189:THR:CG2	2.87	0.53
1:A:283:ALA:HB3	1:A:286:ILE:HG13	1.93	0.51
1:D:109:LYS:O	1:D:111:GLY:N	2.44	0.51
1:C:139:GLN:HG3	1:C:282:MET:HE2	1.91	0.50
1:D:116:ILE:HG21	1:D:185:LYS:HD3	1.94	0.50
1:A:206:THR:HG22	1:A:206:THR:O	2.11	0.50
1:A:210:GLY:HA3	1:A:225:SER:CB	2.42	0.49
1:B:294:THR:CG2	8:B:462:HOH:O	2.61	0.48
1:B:169:TRP:CD1	1:B:173:LYS:HE2	2.49	0.48
1:C:112:ILE:CG2	1:C:189:THR:CG2	2.92	0.47
1:C:276:GLU:HG3	8:C:489:HOH:O	2.13	0.47
1:B:169:TRP:NE1	1:B:173:LYS:HE2	2.30	0.47
1:A:171:SER:HB2	1:B:121:GLN:HB3	1.96	0.46
1:A:119:LYS:HG3	1:A:183:GLY:HA2	1.97	0.46
1:D:176:LYS:HE2	1:D:180:GLN:NE2	2.31	0.46
1:C:112:ILE:HG23	1:C:189:THR:HG22	1.98	0.46
1:A:140:LEU:HG	1:A:282:MET:SD	2.57	0.45
1:A:182:PHE:O	1:A:184:GLU:N	2.50	0.44
1:A:210:GLY:HA3	1:A:225:SER:HB2	1.99	0.44
1:D:197:ARG:NH1	8:D:412:HOH:O	2.50	0.44
1:B:273[A]:PHE:HD1	8:B:475:HOH:O	2.00	0.44
1:C:240:GLU:HA	1:C:244:GLN:O	2.18	0.43
1:A:198:THR:HG23	1:A:266:THR:CG2	2.50	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:294:THR:HG22	8:B:462:HOH:O	2.20	0.42
1:B:198:THR:HG22	1:B:268:THR:OG1	2.20	0.41
1:B:137:PHE:CE2	1:B:157:GLN:HB2	2.55	0.41
1:A:116:ILE:HG12	1:A:187:THR:HG22	2.02	0.41
1:C:203:LYS:HE3	1:C:262:GLY:O	2.21	0.41
1:D:116:ILE:CG2	1:D:185:LYS:HD3	2.51	0.41
1:C:261:SER:OG	1:C:262:GLY:N	2.54	0.41
1:D:108:ILE:HA	1:D:192:ASP:OD2	2.20	0.41
1:D:210:GLY:HA3	1:D:225:SER:CB	2.52	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	190/195 (97%)	178 (94%)	10 (5%)	2 (1%)	14	5
1	B	192/195 (98%)	189 (98%)	3 (2%)	0	100	100
1	C	194/195 (100%)	190 (98%)	4 (2%)	0	100	100
1	D	191/195 (98%)	186 (97%)	4 (2%)	1 (0%)	29	18
All	All	767/780 (98%)	743 (97%)	21 (3%)	3 (0%)	34	24

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	183	GLY
1	D	110	GLN
1	A	184	GLU

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	166/168 (99%)	166 (100%)	0	100	100
1	B	167/168 (99%)	165 (99%)	2 (1%)	71	69
1	C	169/168 (101%)	166 (98%)	3 (2%)	59	53
1	D	167/168 (99%)	165 (99%)	2 (1%)	71	69
All	All	669/672 (100%)	662 (99%)	7 (1%)	78	75

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	173	LYS
1	B	197	ARG
1	C	139	GLN
1	C	206	THR
1	C	297	GLU
1	D	256[A]	ASP
1	D	256[B]	ASP

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

Mol	Chain	Res	Type
1	A	237	ASN
1	B	110	GLN
1	C	121	GLN

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.

W O R L D W I D E
wwPDB
PROTEIN DATA BANK

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

19 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	EDO	C	303	-	3,3,3	0.13	0	2,2,2	0.32	0
2	EDO	D	301	-	3,3,3	0.36	0	2,2,2	0.51	0
2	EDO	C	304	-	3,3,3	0.41	0	2,2,2	0.68	0
2	EDO	A	301	-	3,3,3	0.15	0	2,2,2	0.09	0
5	SO4	C	305	-	4,4,4	0.37	0	6,6,6	0.06	0
5	SO4	D	305	-	4,4,4	0.26	0	6,6,6	0.29	0
5	SO4	D	303	-	4,4,4	0.41	0	6,6,6	0.04	0
3	I8A	C	301	-	14,16,16	2.19	4 (28%)	16,26,26	2.33	3 (18%)
6	GLY	D	308	-	4,4,4	1.27	1 (25%)	3,4,4	1.25	0
2	EDO	B	303	-	3,3,3	0.40	0	2,2,2	0.15	0
4	DGL	D	307	-	8,9,9	1.34	1 (12%)	10,11,11	1.23	1 (10%)
5	SO4	D	304	-	4,4,4	0.35	0	6,6,6	0.07	0
6	GLY	C	306	-	4,4,4	0.93	0	3,4,4	1.92	2 (66%)
3	I8A	B	301	-	14,16,16	2.04	5 (35%)	16,26,26	1.72	3 (18%)
7	ALA	D	306	-	5,5,5	1.25	1 (20%)	6,6,6	0.51	0
4	DGL	B	304	-	8,9,9	0.97	0	10,11,11	1.08	0
2	EDO	C	302	-	3,3,3	0.08	0	2,2,2	0.11	0
2	EDO	B	302	-	3,3,3	0.16	0	2,2,2	0.39	0
2	EDO	D	302	-	3,3,3	0.19	0	2,2,2	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. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	ALA	D	306	-	-	0/4/4/4	-
2	EDO	C	303	-	-	0/1/1/1	-
4	DGL	B	304	-	-	2/9/9/9	-
4	DGL	D	307	-	-	4/9/9/9	-
2	EDO	D	301	-	-	0/1/1/1	-
2	EDO	B	303	-	-	0/1/1/1	-
6	GLY	C	306	-	-	2/2/2/2	-
3	I8A	C	301	-	-	1/5/31/31	0/2/2/2
6	GLY	D	308	-	-	0/2/2/2	-
2	EDO	C	304	-	-	1/1/1/1	-
2	EDO	A	301	-	-	0/1/1/1	-
2	EDO	C	302	-	-	0/1/1/1	-
2	EDO	B	302	-	-	0/1/1/1	-
3	I8A	B	301	-	-	0/5/31/31	0/2/2/2
2	EDO	D	302	-	-	0/1/1/1	-

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	301	I8A	C4-C2	-5.04	1.49	1.54
3	B	301	I8A	C4-C2	-4.68	1.50	1.54
3	C	301	I8A	C5-N1	3.99	1.45	1.37
3	B	301	I8A	C5-N1	3.19	1.44	1.37
3	C	301	I8A	C4-N1	3.16	1.51	1.47
4	D	307	DGL	O-C	2.93	1.31	1.22
3	C	301	I8A	C5-N2	2.89	1.47	1.34
3	B	301	I8A	C4-N1	2.51	1.50	1.47
3	B	301	I8A	C5-N2	2.46	1.45	1.34
6	D	308	GLY	OXT-C	-2.35	1.22	1.30
3	B	301	I8A	O1-C5	-2.33	1.18	1.23
7	D	306	ALA	OXT-C	-2.29	1.23	1.30

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	301	I8A	C7-C6-N2	-5.46	102.44	112.73
3	C	301	I8A	C3-C2-C10	5.11	122.37	113.19
3	C	301	I8A	C12-C10-N1	-4.89	101.23	112.50
3	B	301	I8A	C7-C6-N2	-3.80	105.58	112.73
3	B	301	I8A	C12-C10-N1	-3.49	104.46	112.50
3	B	301	I8A	N2-C5-N1	-3.08	115.72	117.57
6	C	306	GLY	OXT-C-O	-2.35	117.44	123.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	C	306	GLY	OXT-C-CA	2.28	122.53	113.45
4	D	307	DGL	CB-CA-C	2.14	115.40	110.30

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	C	306	GLY	O-C-CA-N
6	C	306	GLY	OXT-C-CA-N
2	C	304	EDO	O1-C1-C2-O2
4	D	307	DGL	O-C-CA-CB
4	D	307	DGL	OXT-C-CA-CB
4	D	307	DGL	C-CA-CB-CG
3	C	301	I8A	C7-C6-N2-C5
4	B	304	DGL	OE2-CD-CG-CB
4	B	304	DGL	OE1-CD-CG-CB
4	D	307	DGL	N-CA-CB-CG

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 I8A C 301

Bond lengths

Bond angles

Torsions

Rings

Ligand I8A B 301

Bond lengths

Bond angles

Torsions

Rings
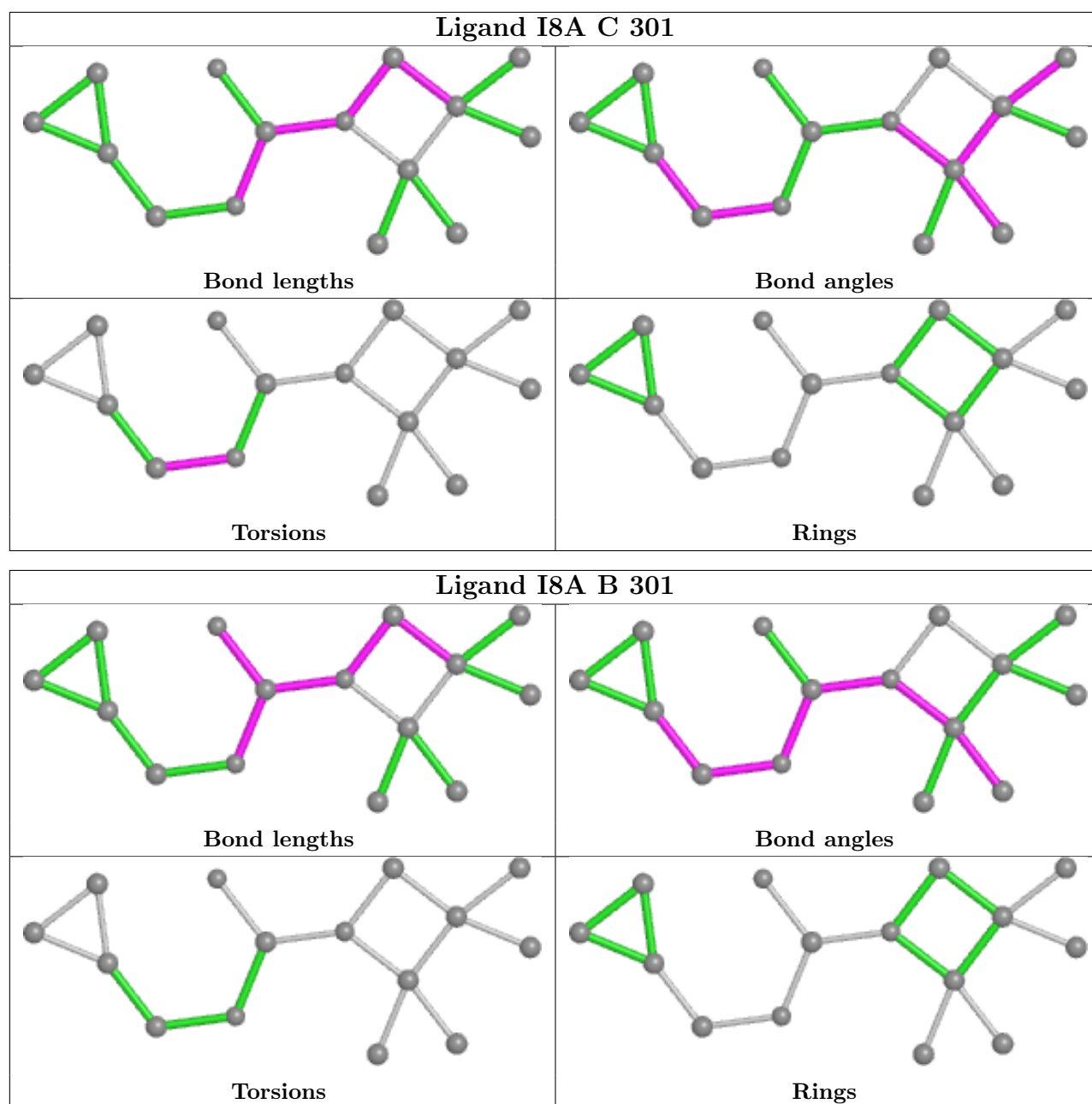
5.7 Other polymers ⓘ

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, 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(Å²)	Q<0.9
1	A	191/195 (97%)	0.41	13 (6%)	17	19	26, 44, 72, 94	11 (5%)
1	B	193/195 (98%)	0.14	12 (6%)	20	23	24, 36, 52, 62	13 (6%)
1	C	193/195 (98%)	0.16	11 (5%)	23	26	25, 35, 61, 98	11 (5%)
1	D	191/195 (97%)	0.05	16 (8%)	11	13	21, 30, 45, 89	18 (9%)
All	All	768/780 (98%)	0.19	52 (6%)	17	19	21, 36, 62, 98	53 (6%)

All (52) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	108	ILE	10.1
1	A	112	ILE	9.7
1	B	108	ILE	8.3
1	C	267	ILE	8.2
1	B	112	ILE	7.7
1	B	106	ALA	7.6
1	D	267	ILE	7.4
1	A	111	GLY	7.4
1	C	268	THR	6.8
1	C	266	THR	6.6
1	D	108	ILE	6.3
1	B	111	GLY	5.8
1	D	110	GLN	5.5
1	D	112	ILE	5.4
1	D	117	LEU	5.4
1	A	109	LYS	5.1
1	B	107	GLU	5.0
1	B	113	ARG	4.9
1	A	273[A]	PHE	4.5
1	A	110	GLN	4.5
1	A	113	ARG	4.5

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	108	ILE	4.4
1	B	215	ASN	4.3
1	D	273[A]	PHE	4.3
1	A	182	PHE	4.2
1	B	273[A]	PHE	4.2
1	C	110	GLN	4.2
1	C	273[A]	PHE	3.9
1	B	110	GLN	3.8
1	C	288	LYS	3.5
1	A	283	ALA	3.5
1	B	117	LEU	3.3
1	D	160	GLN	3.1
1	C	197[A]	ARG	3.1
1	A	282	MET	3.1
1	A	281	ARG	3.0
1	B	118	CYS	2.9
1	C	107	GLU	2.8
1	D	111	GLY	2.8
1	D	109	LYS	2.8
1	D	181	ALA	2.7
1	C	144[A]	ASN	2.6
1	D	185	LYS	2.5
1	A	184	GLU	2.4
1	D	113	ARG	2.4
1	D	116	ILE	2.4
1	B	109	LYS	2.4
1	C	184	GLU	2.4
1	A	206	THR	2.3
1	D	182	PHE	2.3
1	D	256[A]	ASP	2.3
1	D	183	GLY	2.2

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 ⓘ

There are no monosaccharides 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.

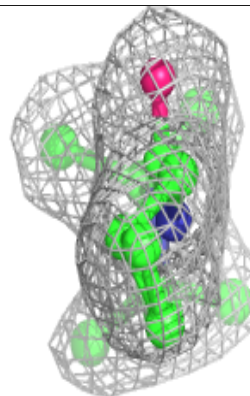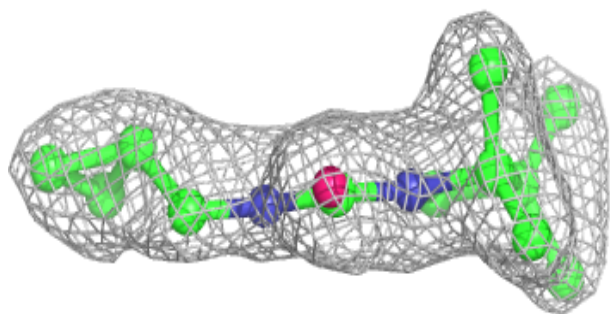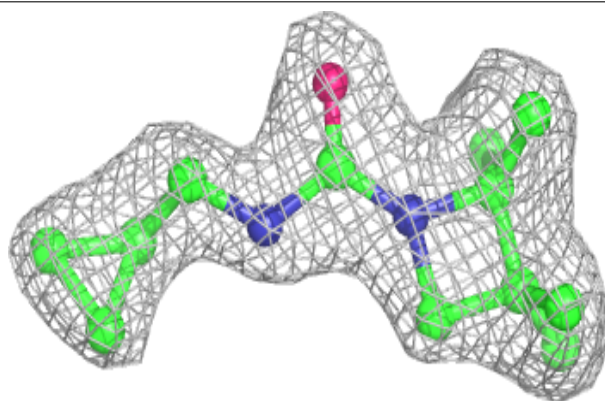| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	DGL	D	307	10/10	0.78	0.28	36,73,82,83	0
2	EDO	C	304	4/4	0.80	0.17	50,52,59,60	0
6	GLY	C	306	5/5	0.83	0.20	61,72,78,82	0
4	DGL	B	304	10/10	0.86	0.26	42,63,69,70	0
6	GLY	D	308	5/5	0.88	0.24	56,57,65,68	0
7	ALA	D	306	6/6	0.90	0.21	43,56,60,66	0
3	I8A	B	301	15/15	0.92	0.21	33,40,50,52	15
5	SO4	C	305	5/5	0.92	0.30	86,86,92,95	0
5	SO4	D	304	5/5	0.92	0.17	68,77,88,99	0
5	SO4	D	305	5/5	0.93	0.22	45,54,61,74	0
5	SO4	D	303	5/5	0.94	0.41	53,59,63,65	5
2	EDO	C	303	4/4	0.94	0.11	33,37,38,39	0
2	EDO	C	302	4/4	0.94	0.10	35,36,39,40	0
2	EDO	D	301	4/4	0.95	0.12	25,28,29,29	0
2	EDO	B	302	4/4	0.95	0.10	34,36,36,38	0
3	I8A	C	301	15/15	0.95	0.13	26,28,31,32	15
2	EDO	A	301	4/4	0.96	0.15	44,44,44,45	0
2	EDO	D	302	4/4	0.97	0.11	29,30,31,33	0
2	EDO	B	303	4/4	0.98	0.08	25,30,30,34	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 I8A 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)
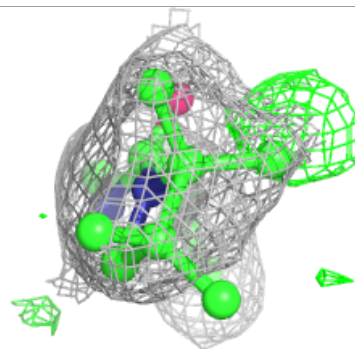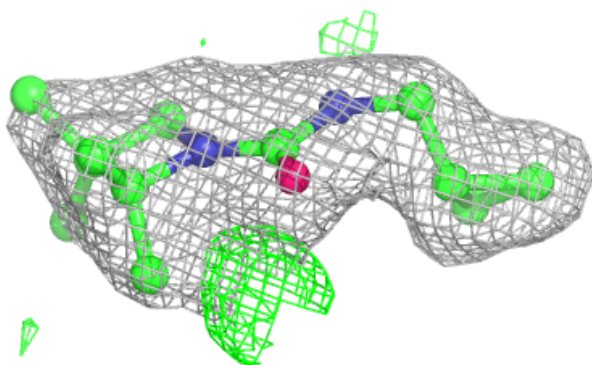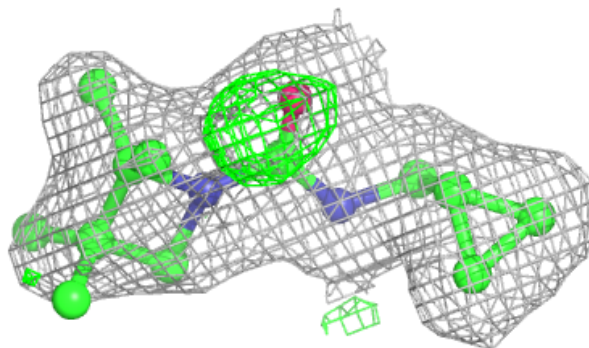
Electron density around I8A C 301:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.