



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 10, 2023 – 09:37 AM EDT

PDB ID : 7L1G
Title : PRMT5-MEP50 Complexed with SAM
Authors : Palte, R.L.
Deposited on : 2020-12-14
Resolution : 2.47 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 : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35.1
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) : 2.35.1

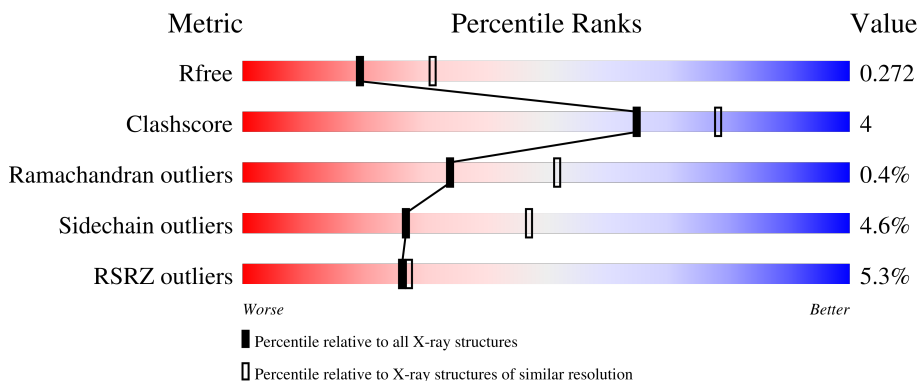
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.47 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}	130704	5857 (2.50-2.46)
Clashscore	141614	6594 (2.50-2.46)
Ramachandran outliers	138981	6469 (2.50-2.46)
Sidechain outliers	138945	6471 (2.50-2.46)
RSRZ outliers	127900	5738 (2.50-2.46)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	645	
2	B	350	

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
3	EDO	B	404	-	-	-	X

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 7677 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 Protein arginine N-methyltransferase 5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	625	5102	3264	877	935	26	0	4	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-7	MET	-	initiating methionine	UNP O14744
A	-6	ASP	-	expression tag	UNP O14744
A	-5	TYR	-	expression tag	UNP O14744
A	-4	LYS	-	expression tag	UNP O14744
A	-3	ASP	-	expression tag	UNP O14744
A	-2	ASP	-	expression tag	UNP O14744
A	-1	ASP	-	expression tag	UNP O14744
A	0	ASP	-	expression tag	UNP O14744
A	1	LYS	-	expression tag	UNP O14744

- Molecule 2 is a protein called Methylosome protein 50.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	311	2353	1475	403	460	15	0	1	0

There are 9 discrepancies between the modelled and reference sequences:

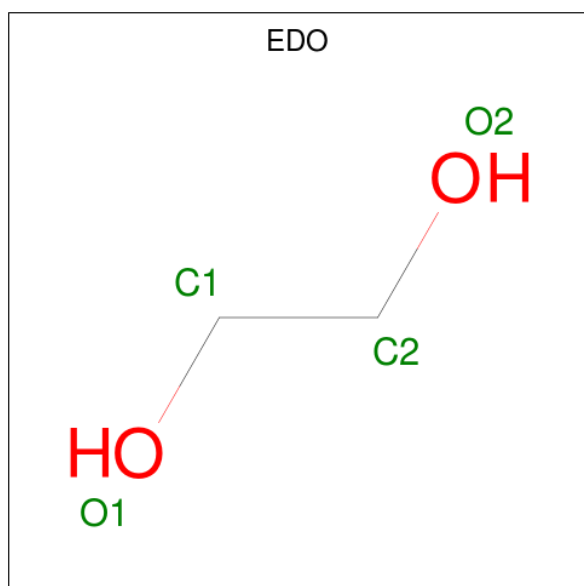
Chain	Residue	Modelled	Actual	Comment	Reference
B	-7	MET	-	initiating methionine	UNP Q9BQA1
B	-6	HIS	-	expression tag	UNP Q9BQA1
B	-5	HIS	-	expression tag	UNP Q9BQA1
B	-4	HIS	-	expression tag	UNP Q9BQA1
B	-3	HIS	-	expression tag	UNP Q9BQA1
B	-2	HIS	-	expression tag	UNP Q9BQA1
B	-1	HIS	-	expression tag	UNP Q9BQA1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	0	HIS	-	expression tag	UNP Q9BQA1
B	1	HIS	-	expression tag	UNP Q9BQA1

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



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	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0
3	A	1	Total C O 4 2 2	0	0

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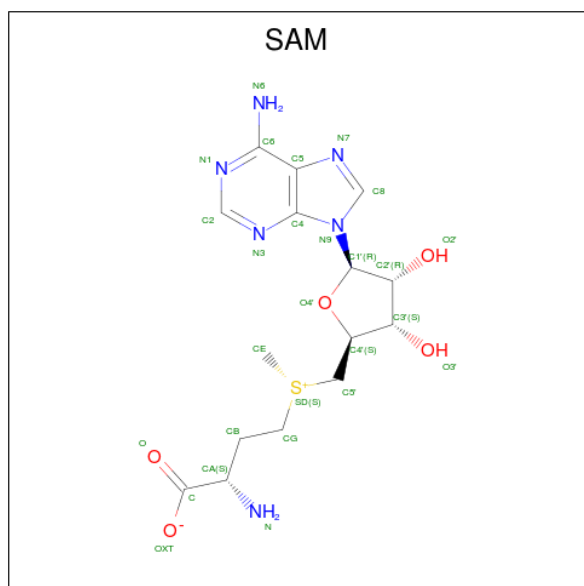
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 4 2 2	0	0
3	B	1	Total C O 4 2 2	0	0
3	B	1	Total C O 4 2 2	0	0
3	B	1	Total C O 4 2 2	0	0
3	B	1	Total C O 4 2 2	0	0

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	2	Total Cl 2 2	0	0

- Molecule 5 is S-ADENOSYLMETHIONINE (three-letter code: SAM) (formula: C₁₅H₂₂N₆O₅S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C N O S 27 15 6 5 1	0	0

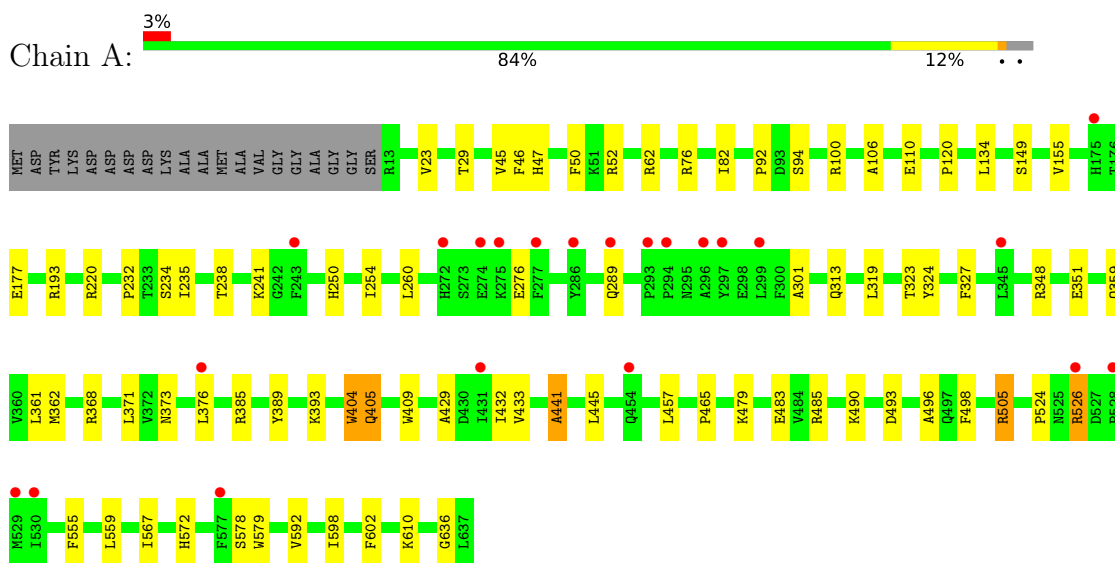
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	107	Total 107	O 107	0	0
6	B	26	Total 26	O 26	0	0

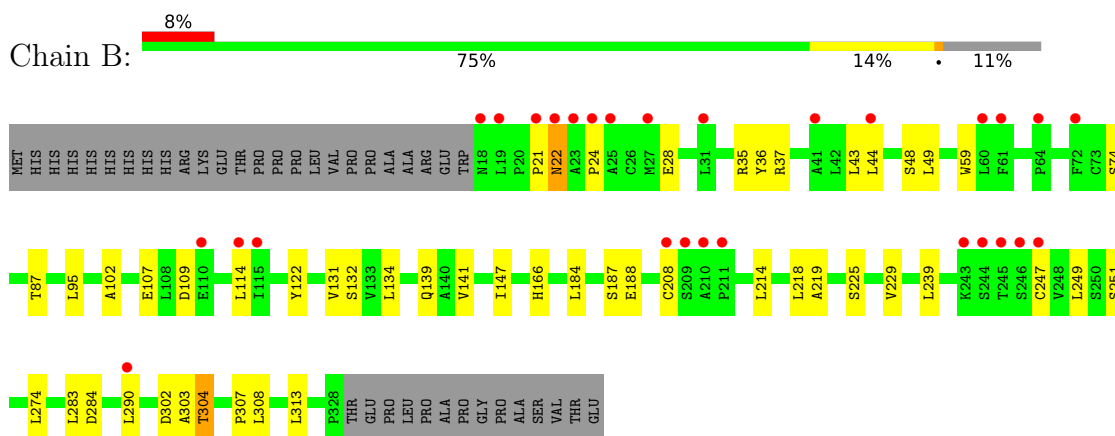
3 Residue-property plots [i](#)

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

- Molecule 1: Protein arginine N-methyltransferase 5



- Molecule 2: Methylosome protein 50



4 Data and refinement statistics

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	101.55Å 138.78Å 178.16Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.07 – 2.47 46.06 – 2.46	Depositor EDS
% Data completeness (in resolution range)	96.6 (46.07-2.47) 96.6 (46.06-2.46)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.29 (at 2.45Å)	Xtrriage
Refinement program	BUSTER 2.11.7	Depositor
R, R_{free}	0.214 , 0.255 0.226 , 0.272	Depositor DCC
R_{free} test set	2274 reflections (5.12%)	wwPDB-VP
Wilson B-factor (Å ²)	62.7	Xtrriage
Anisotropy	0.042	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 51.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	7677	wwPDB-VP
Average B, all atoms (Å ²)	77.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.00% 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: SAM, EDO, CL

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	0.52	0/5246	0.45	0/7135
2	B	0.52	0/2410	0.49	0/3294
All	All	0.52	0/7656	0.46	0/10429

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	5102	0	4989	38	0
2	B	2353	0	2266	24	0
3	A	44	0	66	1	0
3	B	16	0	24	0	0
4	A	2	0	0	0	0
5	A	27	0	22	2	0
6	A	107	0	0	0	0
6	B	26	0	0	0	0
All	All	7677	0	7367	61	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 (61) 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:A:404[B]:TRP:HA	1:A:404[B]:TRP:CE3	2.26	0.70
2:B:28:GLU:HG2	2:B:48:SER:HB2	1.75	0.69
2:B:36:TYR:H	2:B:304:THR:HG21	1.58	0.69
1:A:404[B]:TRP:HA	1:A:404[B]:TRP:HE3	1.59	0.66
1:A:94:SER:O	1:A:100:ARG:HD3	2.00	0.62
2:B:37:ARG:O	2:B:307:PRO:HG3	2.01	0.60
1:A:324:TYR:HB2	1:A:368:ARG:HD2	1.83	0.59
2:B:102:ALA:HB2	2:B:122:TYR:CD1	2.38	0.58
1:A:432:ILE:HG12	1:A:457:LEU:HD13	1.85	0.58
1:A:567:ILE:HG21	1:A:579:TRP:HB2	1.86	0.56
1:A:441:ALA:HB2	1:A:555:PHE:HB2	1.87	0.56
1:A:362:MET:HG2	1:A:389:TYR:HB2	1.88	0.55
1:A:524:PRO:HG2	1:A:526:ARG:HH21	1.73	0.53
2:B:35:ARG:HB2	2:B:43:LEU:HB3	1.92	0.52
2:B:21:PRO:O	2:B:22:ASN:HB2	2.09	0.52
2:B:239:LEU:HB3	2:B:249:LEU:HB3	1.91	0.52
1:A:567:ILE:HA	1:A:572:HIS:CD2	2.44	0.51
1:A:23:VAL:HG22	1:A:29:THR:HG21	1.93	0.50
2:B:35:ARG:HA	2:B:304:THR:HG21	1.94	0.49
1:A:405:GLN:HA	1:A:409:TRP:HB2	1.93	0.49
1:A:47:HIS:HB3	1:A:50:PHE:HB2	1.94	0.49
1:A:313:GLN:HE22	1:A:636:GLY:H	1.59	0.49
2:B:284:ASP:HB3	2:B:290:LEU:HD11	1.95	0.48
2:B:274:LEU:HD21	2:B:302:ASP:HA	1.95	0.48
1:A:371:LEU:HD13	1:A:433:VAL:HG12	1.95	0.48
1:A:362:MET:SD	1:A:429:ALA:HB2	2.54	0.47
1:A:324:TYR:CB	1:A:368:ARG:HD2	2.45	0.47
1:A:250:HIS:O	1:A:254:ILE:HG12	2.13	0.47
1:A:327:PHE:CE2	5:A:714:SAM:HA	2.49	0.47
1:A:485[A]:ARG:HG3	1:A:498:PHE:HZ	1.79	0.47
1:A:404[B]:TRP:HE1	3:A:708:EDO:H12	1.80	0.46
1:A:92:PRO:HG2	1:A:134:LEU:HD12	1.97	0.46
1:A:493:ASP:HB3	1:A:496:ALA:HB2	1.96	0.46
2:B:303:ALA:HB1	2:B:313:LEU:HD11	1.98	0.46
2:B:219:ALA:HB3	2:B:229:VAL:CG2	2.45	0.46
2:B:36:TYR:HB3	2:B:307:PRO:HD3	1.98	0.45
2:B:188:GLU:HG2	2:B:214:LEU:HD13	1.97	0.45
1:A:45:VAL:HG23	1:A:46:PHE:HD1	1.82	0.44
2:B:134:LEU:HD12	2:B:139:GLN:HB3	2.00	0.44
1:A:319:LEU:HD13	1:A:327:PHE:HE2	1.81	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:87:THR:HG22	2:B:95:LEU:HB3	1.98	0.44
1:A:592:VAL:HG21	1:A:598:ILE:HD11	2.00	0.44
2:B:44:LEU:HB2	2:B:59:TRP:HB2	2.00	0.44
1:A:348:ARG:HE	1:A:359:GLN:HE22	1.66	0.44
1:A:47:HIS:CE1	2:B:49:LEU:HD22	2.53	0.43
1:A:106:ALA:O	1:A:110:GLU:HG3	2.18	0.43
1:A:465:PRO:HB3	1:A:559:LEU:HD23	1.99	0.43
2:B:166:HIS:ND1	2:B:187:SER:HB3	2.33	0.43
1:A:301:ALA:HB1	1:A:505:ARG:HG3	2.01	0.42
1:A:319:LEU:HD22	1:A:323:THR:HG21	2.01	0.42
1:A:373:ASN:HA	1:A:376:LEU:HD12	2.01	0.42
2:B:109:ASP:HB2	2:B:114:LEU:H	1.85	0.42
1:A:260:LEU:HD23	1:A:260:LEU:HA	1.87	0.42
2:B:24:PRO:HD2	2:B:59:TRP:CH2	2.55	0.42
1:A:232:PRO:O	1:A:235:ILE:HG12	2.19	0.41
1:A:327:PHE:CZ	5:A:714:SAM:HA	2.55	0.41
2:B:184:LEU:HB3	2:B:218:LEU:HD13	2.02	0.41
2:B:274:LEU:HD12	2:B:274:LEU:N	2.35	0.41
1:A:82:ILE:O	1:A:120:PRO:HD2	2.21	0.41
1:A:92:PRO:O	1:A:100:ARG:HG3	2.21	0.41
2:B:307:PRO:HG2	2:B:308:LEU:HD13	2.02	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	627/645 (97%)	603 (96%)	23 (4%)	1 (0%)	47	66
2	B	310/350 (89%)	287 (93%)	20 (6%)	3 (1%)	15	26
All	All	937/995 (94%)	890 (95%)	43 (5%)	4 (0%)	34	52

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	147	ILE
2	B	22	ASN
2	B	247	CYS
1	A	441	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	562/570 (99%)	533 (95%)	29 (5%)	23	41
2	B	265/298 (89%)	255 (96%)	10 (4%)	33	56
All	All	827/868 (95%)	788 (95%)	39 (5%)	27	46

All (39) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	52	ARG
1	A	62	ARG
1	A	76	ARG
1	A	149	SER
1	A	155	VAL
1	A	177	GLU
1	A	193	ARG
1	A	220	ARG
1	A	234	SER
1	A	238	THR
1	A	241	LYS
1	A	276	GLU
1	A	289	GLN
1	A	351	GLU
1	A	361	LEU
1	A	385	ARG
1	A	393	LYS
1	A	404[A]	TRP
1	A	404[B]	TRP

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Mol	Chain	Res	Type
1	A	405	GLN
1	A	445	LEU
1	A	479	LYS
1	A	483	GLU
1	A	490	LYS
1	A	505	ARG
1	A	526	ARG
1	A	578	SER
1	A	602	PHE
1	A	610	LYS
2	B	74	SER
2	B	107	GLU
2	B	131	VAL
2	B	132	SER
2	B	141	VAL
2	B	208	CYS
2	B	225	SER
2	B	251	SER
2	B	283	LEU
2	B	304	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	271	HIS
1	A	313	GLN
1	A	359	GLN
1	A	572	HIS
2	B	169	GLN
2	B	310	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 18 ligands modelled in this entry, 2 are monoatomic - leaving 16 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	EDO	A	701	-	3,3,3	0.58	0	2,2,2	0.42	0
3	EDO	B	403	-	3,3,3	0.55	0	2,2,2	0.35	0
3	EDO	A	710	-	3,3,3	0.58	0	2,2,2	0.33	0
3	EDO	A	704	-	3,3,3	0.51	0	2,2,2	0.47	0
3	EDO	B	401	-	3,3,3	0.67	0	2,2,2	0.16	0
3	EDO	A	707	-	3,3,3	0.71	0	2,2,2	0.14	0
3	EDO	B	404	-	3,3,3	0.66	0	2,2,2	0.31	0
3	EDO	A	703	-	3,3,3	0.54	0	2,2,2	0.39	0
3	EDO	A	702	-	3,3,3	0.48	0	2,2,2	0.42	0
3	EDO	A	709	-	3,3,3	0.70	0	2,2,2	0.28	0
3	EDO	A	705	-	3,3,3	0.65	0	2,2,2	0.24	0
3	EDO	A	708	-	3,3,3	0.56	0	2,2,2	0.23	0
3	EDO	A	706	-	3,3,3	0.59	0	2,2,2	0.37	0
3	EDO	A	711	-	3,3,3	0.76	0	2,2,2	0.12	0
5	SAM	A	714	-	24,29,29	0.77	0	23,42,42	0.92	1 (4%)
3	EDO	B	402	-	3,3,3	0.48	0	2,2,2	0.39	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
3	EDO	A	701	-	-	0/1/1/1	-
3	EDO	B	403	-	-	0/1/1/1	-
3	EDO	A	710	-	-	1/1/1/1	-
3	EDO	A	704	-	-	0/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	EDO	B	401	-	-	0/1/1/1	-
3	EDO	A	707	-	-	0/1/1/1	-
3	EDO	B	404	-	-	0/1/1/1	-
3	EDO	A	703	-	-	0/1/1/1	-
3	EDO	A	702	-	-	1/1/1/1	-
3	EDO	A	709	-	-	1/1/1/1	-
3	EDO	A	705	-	-	0/1/1/1	-
3	EDO	A	708	-	-	0/1/1/1	-
3	EDO	A	706	-	-	1/1/1/1	-
3	EDO	A	711	-	-	0/1/1/1	-
5	SAM	A	714	-	-	9/12/33/33	0/3/3/3
3	EDO	B	402	-	-	0/1/1/1	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	714	SAM	C5-C6-N6	2.23	123.74	120.35

There are no chirality outliers.

All (13) torsion outliers are listed below:

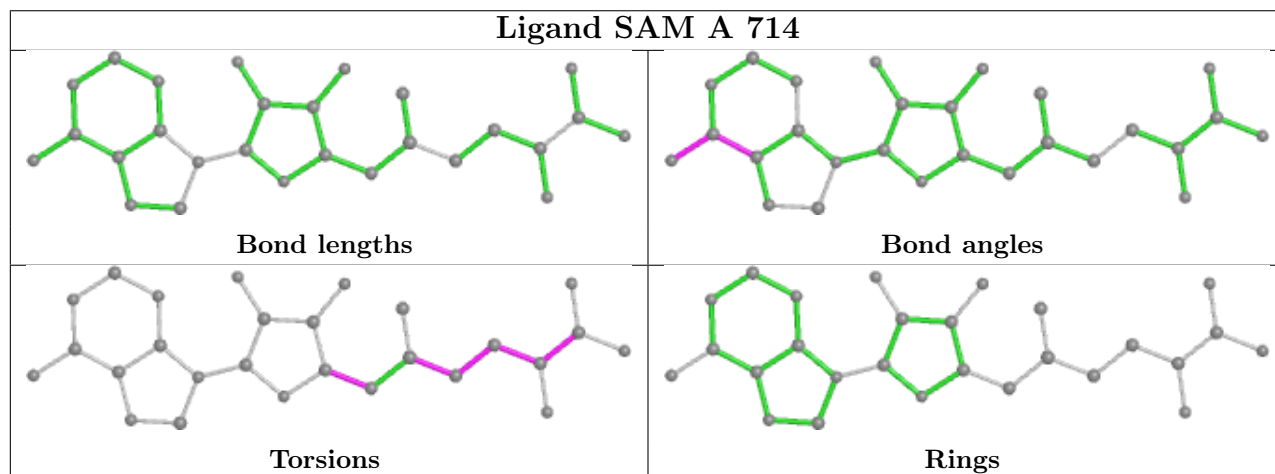
Mol	Chain	Res	Type	Atoms
5	A	714	SAM	N-CA-CB-CG
5	A	714	SAM	C-CA-CB-CG
5	A	714	SAM	CA-CB-CG-SD
5	A	714	SAM	O4'-C4'-C5'-SD
5	A	714	SAM	C3'-C4'-C5'-SD
5	A	714	SAM	CB-CG-SD-CE
3	A	706	EDO	O1-C1-C2-O2
5	A	714	SAM	O-C-CA-CB
5	A	714	SAM	OXT-C-CA-CB
3	A	702	EDO	O1-C1-C2-O2
3	A	710	EDO	O1-C1-C2-O2
3	A	709	EDO	O1-C1-C2-O2
5	A	714	SAM	CB-CG-SD-C5'

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	708	EDO	1	0
5	A	714	SAM	2	0

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



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	625/645 (96%)	0.04	22 (3%) 44 46	48, 68, 107, 145	0
2	B	311/350 (88%)	0.43	28 (9%) 9 9	61, 85, 123, 155	0
All	All	936/995 (94%)	0.17	50 (5%) 26 27	48, 75, 114, 155	0

All (50) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	21	PRO	6.5
2	B	23	ALA	5.9
2	B	290	LEU	5.9
2	B	209	SER	5.6
1	A	243	PHE	5.1
2	B	247	CYS	5.0
2	B	208	CYS	4.9
2	B	19	LEU	4.5
2	B	245	THR	4.0
1	A	530	ILE	3.8
2	B	243	LYS	3.8
1	A	294	PRO	3.7
2	B	22	ASN	3.7
1	A	526	ARG	3.6
1	A	175	HIS	3.6
2	B	114	LEU	3.6
2	B	18	ASN	3.5
1	A	528	PRO	3.3
2	B	25	ALA	3.3
1	A	272	HIS	3.0
2	B	210	ALA	3.0
1	A	293	PRO	2.9
1	A	529	MET	2.8
2	B	24	PRO	2.6

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Mol	Chain	Res	Type	RSRZ
2	B	72	PHE	2.6
1	A	454	GLN	2.6
1	A	296	ALA	2.6
2	B	110	GLU	2.5
1	A	289	GLN	2.5
1	A	345	LEU	2.5
1	A	286	TYR	2.5
2	B	115	ILE	2.4
2	B	61	PHE	2.4
2	B	244	SER	2.4
2	B	246	SER	2.4
1	A	577	PHE	2.4
1	A	297	TYR	2.3
1	A	431	ILE	2.3
1	A	277	PHE	2.2
1	A	274	GLU	2.2
1	A	299	LEU	2.2
2	B	60	LEU	2.2
2	B	211	PRO	2.1
2	B	44	LEU	2.1
2	B	27	MET	2.1
1	A	376	LEU	2.1
1	A	275	LYS	2.1
2	B	64	PRO	2.0
2	B	41	ALA	2.0
2	B	31	LEU	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 [\(i\)](#)

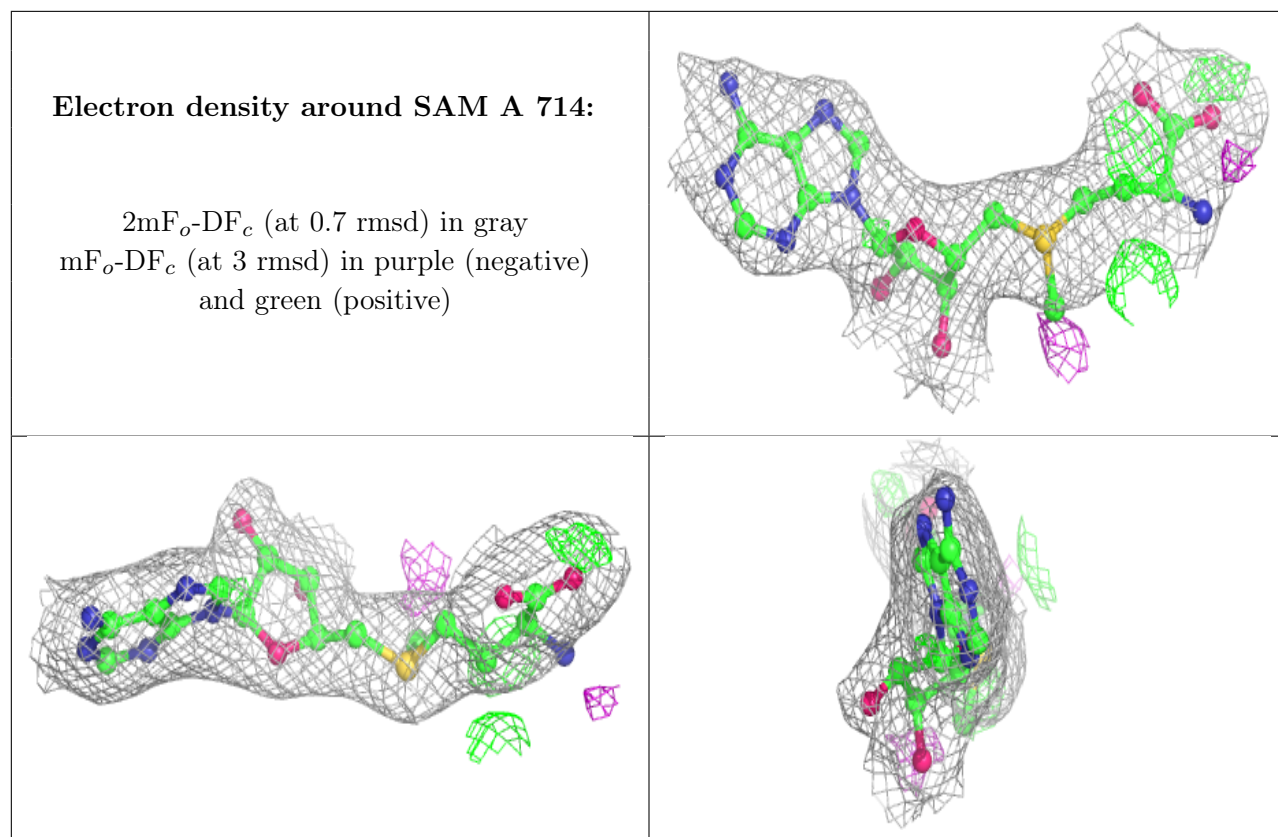
There are no monosaccharides in this entry.

6.4 Ligands [\(i\)](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	EDO	A	705	4/4	0.67	0.38	99,99,100,100	0
3	EDO	B	404	4/4	0.71	0.58	106,107,107,107	0
3	EDO	A	708	4/4	0.78	0.28	92,92,93,94	0
3	EDO	B	403	4/4	0.81	0.33	95,96,97,98	0
3	EDO	B	402	4/4	0.81	0.31	110,110,110,111	0
3	EDO	A	709	4/4	0.82	0.30	86,90,92,93	0
3	EDO	A	710	4/4	0.84	0.24	96,97,98,99	0
3	EDO	A	706	4/4	0.87	0.18	64,67,69,73	0
3	EDO	A	704	4/4	0.88	0.18	85,85,87,87	0
3	EDO	B	401	4/4	0.90	0.26	79,81,84,85	0
3	EDO	A	711	4/4	0.91	0.23	69,71,71,72	0
4	CL	A	713	1/1	0.92	0.16	90,90,90,90	0
3	EDO	A	703	4/4	0.93	0.15	74,74,75,76	0
3	EDO	A	707	4/4	0.94	0.29	67,67,69,70	0
3	EDO	A	701	4/4	0.94	0.16	49,52,56,59	0
4	CL	A	712	1/1	0.95	0.12	80,80,80,80	0
3	EDO	A	702	4/4	0.95	0.20	70,72,72,73	0
5	SAM	A	714	27/27	0.95	0.17	55,62,78,82	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.



6.5 Other polymers [i](#)

There are no such residues in this entry.