

Full wwPDB X-ray Structure Validation Report (i)

Feb 27, 2025 – 04:47 PM EST

PDB ID : 9MGM

Title : Crystal structure of PRMT5:MEP50 in complex with MTA and compound 24

Authors: Whittington, D.A.

Deposited on : 2024-12-11

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 (i) 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 (1)) were used in the production of this report:

MolProbity: 4.02b-467

Mogul : 2022.3.0, CSD as543be (2022)

Xtriage (Phenix) : 1.21

EDS : 3.0

buster-report : 1.1.7 (2018)

Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)

CCP4 : 9.0.004 (Gargrove)

Density-Fitness : 1.0.11

Ideal geometry (proteins) : Engh & Huber (2001) Ideal geometry (DNA, RNA) : Parkinson et al. (1996)

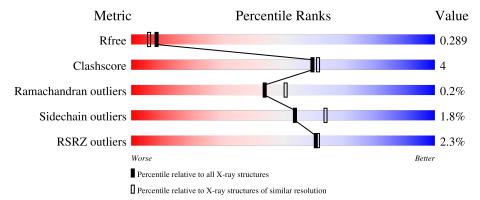
Validation Pipeline (wwPDB-VP) : 2.41.4

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure: $X\text{-}RAY\ DIFFRACTION$

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	Similar resolution
Metric	$(\# ext{Entries})$	$(\# ext{Entries}, ext{ resolution range}(ext{Å}))$
R_{free}	164625	1763 (2.26-2.26)
Clashscore	180529	1919 (2.26-2.26)
Ramachandran outliers	177936	1884 (2.26-2.26)
Sidechain outliers	177891	1885 (2.26-2.26)
RSRZ outliers	164620	1763 (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 <=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	86%			11%	-		
2	В	350	73%	11%		14%	_		



2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 7730 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		At	oms			ZeroOcc	AltConf	Trace
1	A	625	Total	C	N	0	S	0	1	0
			5069	3242	870	932	25			

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		At	oms			ZeroOcc	AltConf	Trace
2	В	300	Total 2284	C 1434	N 390	O 446	S 14	0	2	0

There are 9 discrepancies between the modelled and reference sequences:

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

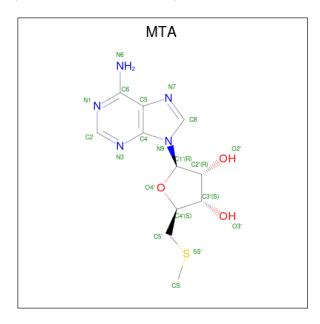
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Chain	Residue	Modelled	Actual	Comment	Reference
В	0	HIS	-	expression tag	UNP Q9BQA1
В	1	HIS	-	expression tag	UNP Q9BQA1

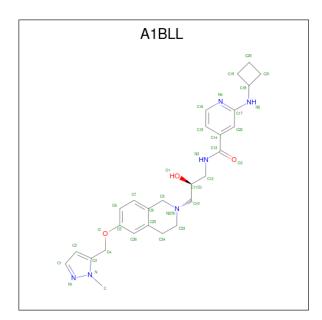
• Molecule 3 is 5'-DEOXY-5'-METHYLTHIOADENOSINE (three-letter code: MTA) (formula: $C_{11}H_{15}N_5O_3S$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
3	A	1	Total 20	C 11	N 5	O 3	S 1	0	0

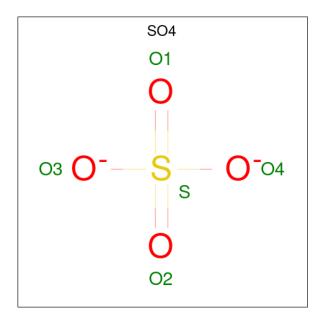
 $\hbox{$\bullet$ Molecule 4 is 2-(cyclobutylamino)-N-[(2S)-2-hydroxy-3-\{6-[(1-methyl-1H-pyrazol-5-yl)me thoxy]-3,4-dihydroisoquinolin-2(1H)-yl}propyl]pyridine-4-carboxamide (three-letter code: A1BLL) (formula: $C_{27}H_{34}N_6O_3$) (labeled as "Ligand of Interest" by depositor). }$





Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total 36	C 27	N 6	O 3	0	0

 \bullet Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: $\mathrm{O_4S}).$



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

• Molecule 6 is water.



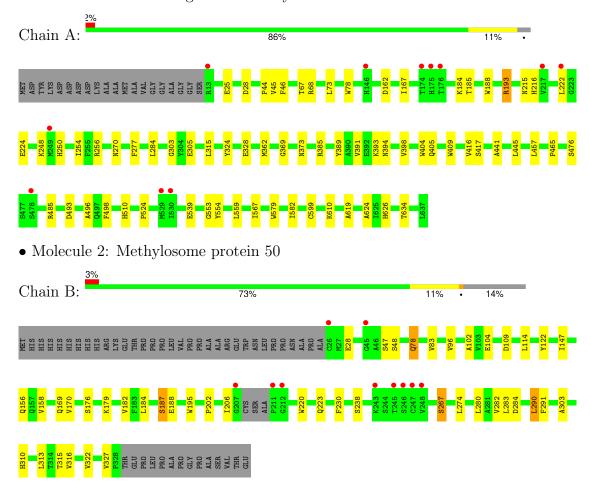
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	239	Total O 239 239	0	0
6	В	77	Total O 77 77	0	0



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





4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants	100.33Å 137.12Å 178.59Å	Donositon
a, b, c, α , β , γ	90.00° 90.00° 90.00°	Depositor
Resolution (Å)	39.10 - 2.25	Depositor
Resolution (A)	39.10 - 2.25	EDS
% Data completeness	97.2 (39.10-2.25)	Depositor
(in resolution range)	97.3 (39.10-2.25)	EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) > 1$	1.86 (at 2.24Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
D D.	0.246 , 0.289	Depositor
R, R_{free}	0.246 , 0.289	DCC
R_{free} test set	4402 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	37.3	Xtriage
Anisotropy	0.812	Xtriage
Bulk solvent $k_{sol}(e/Å^3)$, $B_{sol}(Å^2)$	0.30 , 38.0	EDS
L-test for twinning ²	$ < L >=0.50, < L^2>=0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	7730	wwPDB-VP
Average B, all atoms (Å ²)	62.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: The largest off-origin peak in the Patterson function is 3.01% of the height of the origin peak. No significant pseudotranslation is detected.

²Theoretical 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.



¹Intensities estimated from amplitudes.

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: MTA, A1BLL, SO4

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		
MIOI	Mol Chain		# Z > 5	RMSZ	# Z > 5	
1	A	0.24	0/5211	0.48	0/7088	
2	В	0.26	0/2343	0.50	0/3196	
All	All	0.25	0/7554	0.48	0/10284	

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	5069	0	4960	38	0
2	В	2284	0	2208	24	0
3	A	20	0	15	0	0
4	A	36	0	0	0	0
5	A	5	0	0	0	0
6	A	239	0	0	1	0
6	В	77	0	0	0	0
All	All	7730	0	7183	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.

A	A	Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
2:B:284:ASP:HB3	2:B:290:LEU:HD11	1.70	0.70
2:B:182:VAL:HA	2:B:195:TRP:O	1.96	0.65
2:B:28:GLU:HG2	2:B:48:SER:HB2	1.79	0.65
2:B:282:VAL:HB	2:B:291:PHE:HB3	1.79	0.63
1:A:248:LYS:NZ	6:A:802:HOH:O	2.32	0.61
1:A:493:ASP:HB3	1:A:496:ALA:HB2	1.84	0.59
1:A:610:LYS:HD2	1:A:634:THR:HG21	1.86	0.57
1:A:567:ILE:HG21	1:A:579:TRP:HB2	1.89	0.55
1:A:398:VAL:HG11	1:A:417:SER:HB2	1.89	0.55
1:A:25:GLU:HB3	1:A:28:ASP:HB2	1.88	0.54
2:B:96:VAL:HB	2:B:104:GLU:HG3	1.90	0.54
2:B:109:ASP:HB2	2:B:114:LEU:H	1.72	0.54
1:A:485:ARG:HG3	1:A:498:PHE:HZ	1.74	0.53
1:A:270:ASN:HB2	1:A:277:PHE:HD2	1.75	0.52
2:B:169:GLN:HG3	2:B:188:GLU:HG3	1.91	0.52
1:A:162:ASP:OD2	1:A:184:LYS:NZ	2.37	0.52
1:A:465:PRO:HA	1:A:559:LEU:HA	1.91	0.52
1:A:369:GLY:O	1:A:373:ASN:ND2	2.45	0.50
1:A:324:TYR:O	1:A:328:GLU:HB2	2.12	0.49
2:B:102:ALA:HB2	2:B:122:TYR:CD2	2.47	0.49
2:B:170:VAL:HA	2:B:187:SER:HB2	1.95	0.49
1:A:599:CYS:HB3	1:A:619:ALA:HB3	1.95	0.48
1:A:45:VAL:HG23	1:A:46:PHE:HD1	1.78	0.48
1:A:167:ILE:HB	2:B:202:PRO:HD2	1.95	0.48
1:A:305:GLU:OE1	1:A:305:GLU:N	2.45	0.47
2:B:282:VAL:HG11	2:B:327:VAL:HG11	1.96	0.47
2:B:223:GLN:NE2	2:B:267:SER:O	2.47	0.47
1:A:405:GLN:HA	1:A:409:TRP:HB2	1.96	0.47
1:A:193:ARG:NH1	1:A:224:GLU:OE1	2.48	0.46
2:B:316:VAL:HG12	2:B:322:VAL:HG22	1.97	0.46
2:B:28:GLU:OE2	2:B:78:GLN:NE2	2.48	0.46
1:A:476:SER:HB3	1:A:510:HIS:HB3	1.98	0.46
1:A:44:PRO:HB2	1:A:46:PHE:O	2.16	0.45
1:A:250:HIS:O	1:A:254:ILE:HG12	2.17	0.45
1:A:624:ALA:O	1:A:626:HIS:ND1	2.47	0.45
1:A:554:TYR:HB3	1:A:567:ILE:HG13	1.98	0.44
1:A:185:THR:O	1:A:188:TRP:HB2	2.17	0.44
1:A:270:ASN:HB2	1:A:277:PHE:CD2	2.53	0.44
1:A:73:LEU:HB2	1:A:78:TRP:CE2	2.53	0.43
2:B:303:ALA:HB1	2:B:313:LEU:HD11	1.99	0.43

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A 4 1	A4 a 0	Interatomic	Clash
Atom-1	Atom-2	${\rm distance} \ (\mathring{\rm A})$	overlap (Å)
1:A:216:HIS:H	1:A:216:HIS:CD2	2.36	0.43
1:A:303:GLY:N	1:A:305:GLU:OE1	2.47	0.43
1:A:46:PHE:CD2	1:A:67:THR:HB	2.54	0.42
2:B:230:PHE:CE1	2:B:238:SER:HB2	2.54	0.42
2:B:184:LEU:HG	2:B:220:TRP:CZ2	2.55	0.42
2:B:187:SER:OG	2:B:188:GLU:N	2.52	0.42
1:A:394:ASN:O	1:A:398:VAL:HG23	2.20	0.42
1:A:222:LEU:HD11	1:A:256:ARG:HE	1.85	0.42
1:A:553:GLY:HA3	1:A:582:ILE:HG22	2.02	0.42
1:A:45:VAL:HG23	1:A:46:PHE:CD1	2.54	0.42
1:A:457:LEU:HD23	1:A:524:PRO:HG3	2.01	0.42
2:B:176:SER:OG	2:B:179:LYS:O	2.37	0.42
2:B:83:VAL:HG13	2:B:96:VAL:HG13	2.02	0.41
1:A:362:MET:HG2	1:A:389:TYR:HB2	2.02	0.41
1:A:391:VAL:HG22	1:A:416:VAL:HB	2.01	0.41
2:B:28:GLU:CG	2:B:48:SER:HB2	2.49	0.41
1:A:284:LEU:HD23	1:A:284:LEU:HA	1.82	0.41
1:A:315:LEU:HD12	1:A:445:LEU:HD12	2.03	0.41
2:B:280:LEU:HD22	2:B:315:THR:HG21	2.03	0.40
2:B:156:GLN:HB3	2:B:158:VAL:HG22	2.03	0.40
2:B:47:SER:HB3	2:B:83:VAL:H	1.87	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	624/645 (97%)	600 (96%)	23 (4%)	1 (0%)	44 51
2	В	298/350 (85%)	285 (96%)	12 (4%)	1 (0%)	37 41
All	All	922/995 (93%)	885 (96%)	35 (4%)	2 (0%)	44 51



All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	В	147	ILE
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	559/570 (98%)	552 (99%)	7 (1%)	65 74		
2	В	258/298 (87%)	250 (97%)	8 (3%)	35 43		
All	All	817/868 (94%)	802 (98%)	15 (2%)	54 64		

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	68	ARG
1	A	193	ARG
1	A	215	ASN
1	A	385	ARG
1	A	393	LYS
1	A	404	TRP
1	A	539	GLU
2	В	78	GLN
2	В	187	SER
2	В	206	ILE
2	В	267	SER
2	В	274	LEU
2	В	283	LEU
2	В	290	LEU
2	В	310	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:



Mol	Chain	Res	Type
1	A	216	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)

3 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	Bo	ond leng	$_{ m ths}$	В	ond ang	cles
MIOI	Type	Chain	nes	Lilik	Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	SO4	A	703	-	4,4,4	0.23	0	6,6,6	0.06	0
4	A1BLL	A	702	-	39,40,40	0.32	0	49,55,55	0.59	1 (2%)
3	MTA	A	701	-	18,22,22	0.97	2 (11%)	18,32,32	0.88	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
4	A1BLL	A	702	-	-	1/21/37/37	0/5/5/5
3	MTA	A	701	-	-	0/3/23/23	0/3/3/3



All (2) bond length outliers are listed below:

Mo	Chain	Res	Type	Atoms	\mathbf{Z}	Observed(A)	$Ideal(\AA)$
3	A	701	MTA	C8-N7	-2.38	1.30	1.34
3	A	701	MTA	C1'-N9	-2.06	1.44	1.49

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$\operatorname{Observed}(^{o})$	$\operatorname{Ideal}({}^{o})$
4	A	702	A1BLL	C8-C9-N2	2.29	114.77	112.14

There are no chirality outliers.

All (1) torsion outliers are listed below:

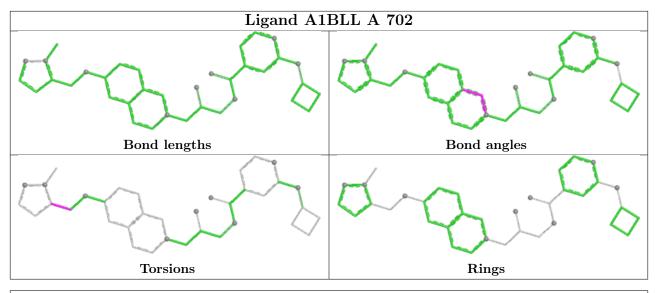
Mol	Chain	Res	Type	Atoms
4	A	702	A1BLL	N-C3-C4-O

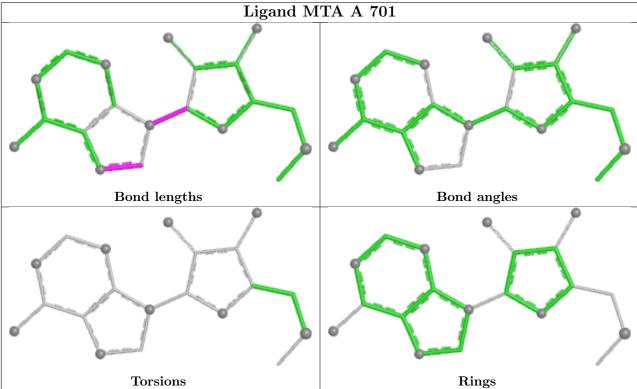
There are no ring outliers.

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.







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, 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		$OWAB(A^2)$	Q<0.9
1	A	625/645~(96%)	0.20	11 (1%) 67 68	21, 53, 90, 146	1 (0%)
2	В	300/350~(85%)	0.55	10 (3%) 49 50	38, 72, 100, 141	2 (0%)
All	All	925/995~(92%)	0.31	21 (2%) 61 61	21, 61, 97, 146	3 (0%)

All (21) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	В	211	PRO	3.8
1	A	222	LEU	3.4
2	В	207	GLY	3.3
1	A	529	MET	3.3
2	В	26	CYS	3.1
1	A	249	MET	2.7
1	A	478	SER	2.6
1	A	146	HIS	2.4
1	A	530	ILE	2.4
2	В	243	LYS	2.4
1	A	174	THR	2.4
2	В	45	GLY	2.4
1	A	217	VAL	2.3
2	В	248	VAL	2.3
1	A	175	HIS	2.3
2	В	247	CYS	2.3
2	В	212	GLY	2.3
2	В	246	SER	2.3
1	A	13	ARG	2.2
1	A	176	THR	2.1
2	В	245	THR	2.1



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.

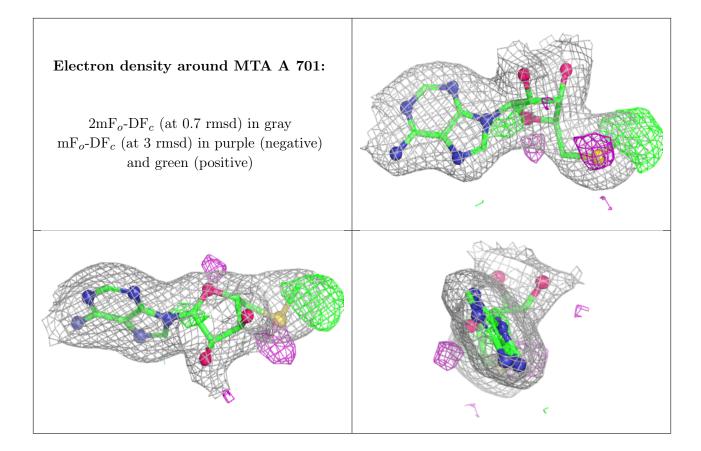
6.4 Ligands (i)

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, 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.

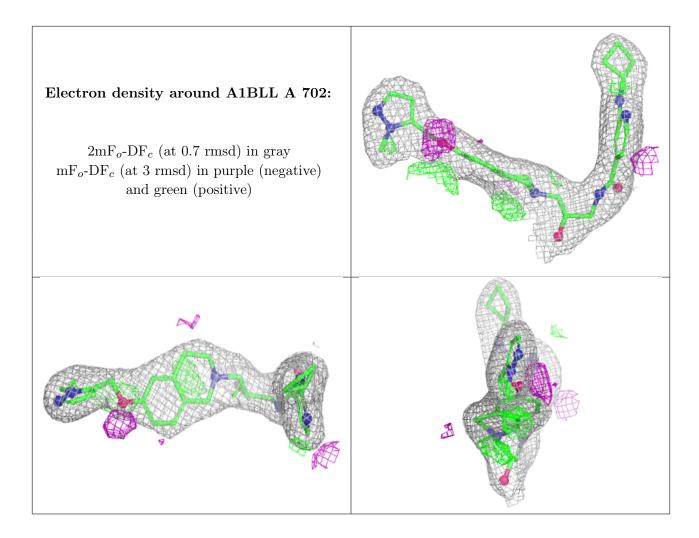
Mol	Type	Chain	Res	Atoms	RSCC	RSR	$\mathbf{B} ext{-}\mathbf{factors}(\mathbf{\mathring{A}}^2)$	Q<0.9
5	SO4	A	703	5/5	0.80	0.23	62,66,72,75	0
3	MTA	A	701	20/20	0.91	0.09	35,40,45,45	0
4	A1BLL	A	702	36/36	0.92	0.09	34,44,49,50	0

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.

