Full wwPDB X-ray Structure Validation Report (i)

Mar 9, 2026 – 04:41 PM UTC

PDB ID	:	9X2Y / pdb_00009x2y
Title	:	GSK3beta complexed with BiS-8
Authors	:	Haslboeck, S.; Vinogradov, A.; Okada, C.; Aikawa, H.; Suga, H.; Sengoku, T.
Deposited on	:	2025-10-08
Resolution	:	1.96 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:

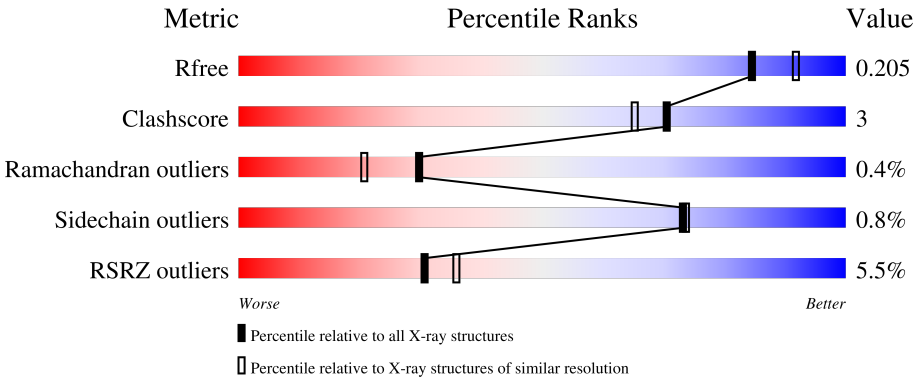
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

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 1.96 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	3494 (1.96-1.96)
Clashscore	190562	3612 (1.96-1.96)
Ramachandran outliers	187476	3587 (1.96-1.96)
Sidechain outliers	187428	3587 (1.96-1.96)
RSRZ outliers	180081	3495 (1.96-1.96)

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	359	4% 90% 7% .
1	B	359	5% 86% 10% .
2	C	15	13% 60% 13% 27%
2	D	15	33% 53% 13% 33%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 6152 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 Glycogen synthase kinase-3 beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	348	Total	C	N	O	S	0	2	0
			2797	1798	478	508	13			
1	B	346	Total	C	N	O	S	0	1	0
			2776	1786	474	504	12			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	25	GLY	-	expression tag	UNP P49841
A	26	PRO	-	expression tag	UNP P49841
B	25	GLY	-	expression tag	UNP P49841
B	26	PRO	-	expression tag	UNP P49841

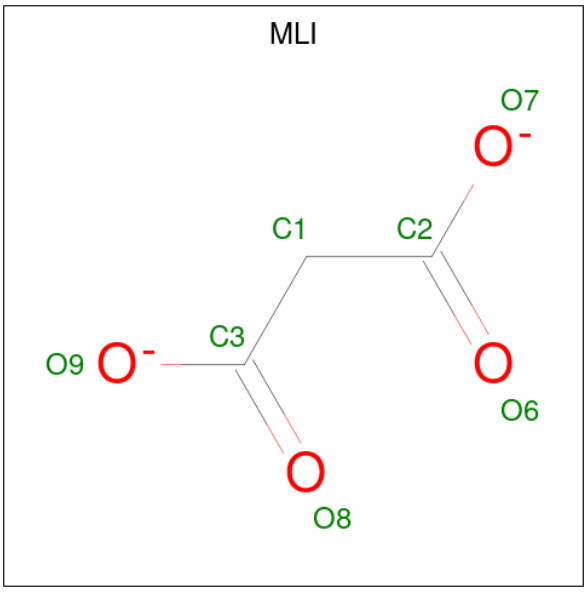
- Molecule 2 is a protein called BiS-8.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	11	Total	C	N	O	S	0	0	0
			115	74	24	16	1			
2	D	10	Total	C	N	O	S	0	0	0
			106	69	23	13	1			

- Molecule 3 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

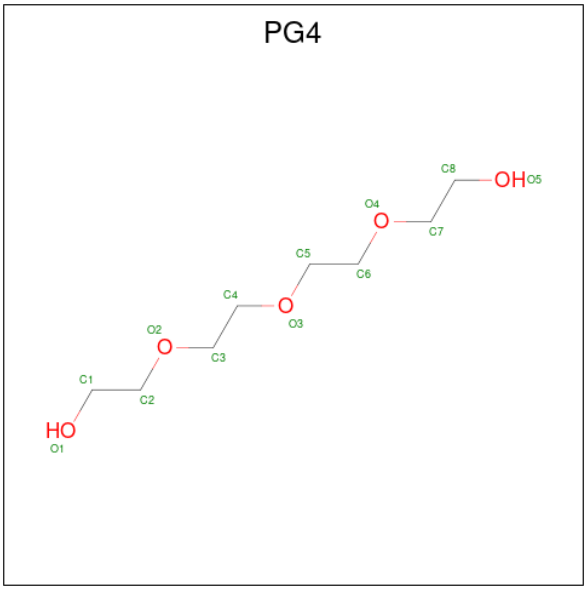
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Cl	0	0
			1	1		
3	B	1	Total	Cl	0	0
			1	1		

- Molecule 4 is MALONATE ION (CCD ID: MLI) (formula: $C_3H_2O_4$).



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

- Molecule 5 is TETRAETHYLENE GLYCOL (CCD ID: PG4) (formula: $C_8H_{18}O_5$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 13 8 5	0	0

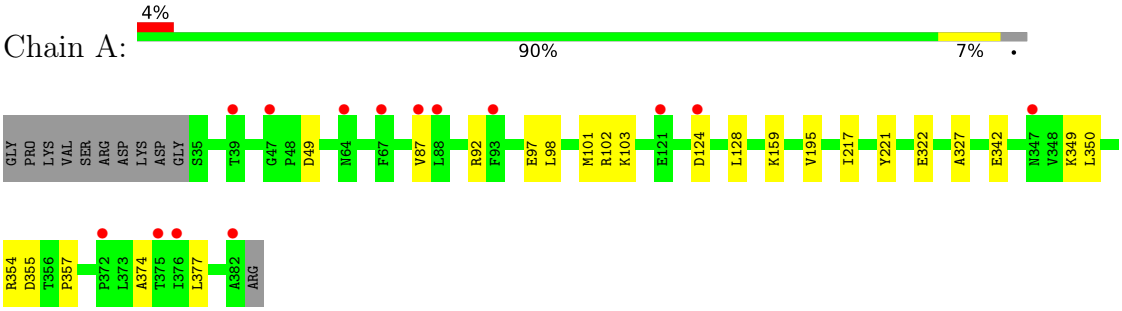
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	193	Total O 193 193	0	0
6	B	126	Total O 126 126	0	0
6	C	6	Total O 6 6	0	0
6	D	4	Total O 4 4	0	0

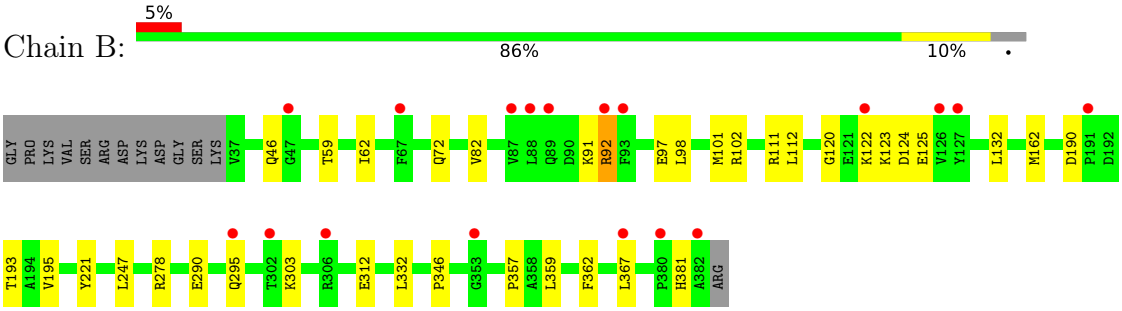
3 Residue-property plots (i)

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.

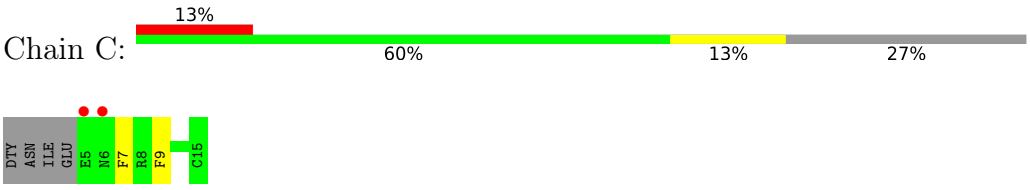
• Molecule 1: Glycogen synthase kinase-3 beta



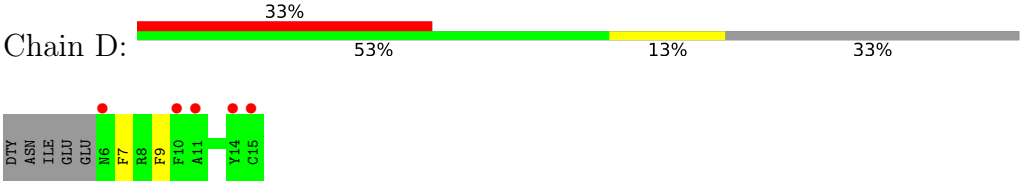
• Molecule 1: Glycogen synthase kinase-3 beta



• Molecule 2: BiS-8



• Molecule 2: BiS-8



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 2 21	Depositor
Cell constants a, b, c, α, β, γ	88.88Å 92.28Å 120.27Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.81 – 1.96 49.81 – 1.96	Depositor EDS
% Data completeness (in resolution range)	100.0 (49.81-1.96) 100.0 (49.81-1.96)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.08 (at 1.97Å)	Xtriage
Refinement program	PHENIX (1.21.1_5286: ???)	Depositor
R, R_{free}	0.182 , 0.205 0.182 , 0.205	Depositor DCC
R_{free} test set	1990 reflections (2.78%)	wwPDB-VP
Wilson B-factor (Å^2)	36.7	Xtriage
Anisotropy	0.277	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 53.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.023 for k,h,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	6152	wwPDB-VP
Average B, all atoms (Å^2)	52.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.90% 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: CL, MLI, PG4, A1MCG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.35	0/2868	0.50	0/3902
1	B	0.30	0/2847	0.47	0/3875
2	C	0.24	0/78	0.25	0/99
2	D	0.22	0/69	0.24	0/87
All	All	0.32	0/5862	0.48	0/7963

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

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	2797	0	2817	14	0
1	B	2776	0	2795	27	0
2	C	115	0	70	0	0
2	D	106	0	64	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	7	0	2	0	0
4	B	7	0	2	0	0
5	A	13	0	18	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	A	193	0	0	1	0
6	B	126	0	0	0	0
6	C	6	0	0	0	0
6	D	4	0	0	0	0
All	All	6152	0	5768	39	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 3.

All (39) 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:B:362:PHE:HB3	1:B:367:LEU:HD21	1.62	0.80
1:A:49:ASP:OD1	1:A:102:ARG:NH2	2.23	0.71
1:B:362:PHE:HB3	1:B:367:LEU:CD2	2.21	0.69
1:B:346:PRO:HG3	1:B:381:HIS:CD2	2.32	0.65
1:A:349:LYS:NZ	1:A:355:ASP:OD1	2.30	0.65
1:B:46:GLN:OE1	1:B:111:ARG:NH1	2.30	0.64
1:A:350:LEU:HD12	1:A:354:ARG:HB2	1.86	0.58
1:B:193:THR:HG23	1:B:195:VAL:HG12	1.87	0.57
1:B:122:LYS:H	1:B:122:LYS:HD2	1.71	0.56
1:B:303:LYS:HD2	1:B:303:LYS:N	2.23	0.54
1:B:193:THR:CG2	1:B:195:VAL:HG12	2.38	0.52
1:A:92:ARG:HH11	1:B:295:GLN:HB2	1.73	0.52
1:B:112:LEU:HA	1:B:132:LEU:HD23	1.93	0.51
1:B:193:THR:HG23	1:B:195:VAL:H	1.75	0.50
1:A:195:VAL:HG22	1:A:357:PRO:HB3	1.94	0.50
1:B:91:LYS:HG3	1:B:92:ARG:N	2.27	0.49
1:B:332:LEU:HD21	1:B:367:LEU:HD13	1.97	0.47
1:B:312:GLU:H	1:B:312:GLU:CD	2.23	0.47
5:A:503:PG4:H81	6:A:603:HOH:O	2.15	0.47
1:B:120:GLY:N	1:B:125:GLU:O	2.44	0.46
1:A:92:ARG:NH1	1:B:295:GLN:HB2	2.31	0.45
1:B:59:THR:HA	1:B:72:GLN:O	2.17	0.45
1:B:362:PHE:CB	1:B:367:LEU:HD21	2.42	0.45
1:B:190:ASP:OD2	1:B:193:THR:HG22	2.16	0.45
1:A:98:LEU:HB2	1:A:128:LEU:HD21	1.98	0.44
1:A:159:LYS:NZ	1:A:342:GLU:OE1	2.44	0.44
1:A:374:ALA:HA	1:A:377:LEU:HB2	2.00	0.43
1:A:124:ASP:OD2	1:A:124:ASP:C	2.61	0.43
1:B:162:MET:HG3	1:B:247:LEU:HD13	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:381:HIS:CD2	1:B:381:HIS:H	2.37	0.42
1:A:92:ARG:NH1	1:B:295:GLN:OE1	2.53	0.41
1:A:103:LYS:HE2	1:A:103:LYS:HB3	1.78	0.41
1:A:97:GLU:O	1:A:101:MET:HG2	2.20	0.41
1:B:357:PRO:O	1:B:359:LEU:HG	2.20	0.41
1:B:97:GLU:O	1:B:101:MET:HG2	2.20	0.41
1:B:98:LEU:O	1:B:102:ARG:HG3	2.19	0.41
1:B:278:ARG:NH2	1:B:290:GLU:OE1	2.54	0.41
1:B:62:ILE:HD13	1:B:72:GLN:HB2	2.01	0.40
1:A:322:GLU:HG2	1:A:327:ALA:HB3	2.03	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	348/359 (97%)	334 (96%)	13 (4%)	1 (0%)	36	28
1	B	345/359 (96%)	335 (97%)	8 (2%)	2 (1%)	21	12
2	C	7/15 (47%)	6 (86%)	1 (14%)	0	100	100
2	D	6/15 (40%)	6 (100%)	0	0	100	100
All	All	706/748 (94%)	681 (96%)	22 (3%)	3 (0%)	30	21

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	221	TYR
1	A	221	TYR
1	B	124	ASP

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	312/319 (98%)	310 (99%)	2 (1%)	78 79
1	B	309/319 (97%)	306 (99%)	3 (1%)	68 67
2	C	8/11 (73%)	8 (100%)	0	100 100
2	D	7/11 (64%)	7 (100%)	0	100 100
All	All	636/660 (96%)	631 (99%)	5 (1%)	73 74

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	87	VAL
1	A	217	ILE
1	B	82	VAL
1	B	92	ARG
1	B	123	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	99	GLN
1	B	151	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

4 non-standard protein/DNA/RNA residues 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	A1MCG	D	9	2	18,19,20	1.57	3 (16%)	19,24,26	2.40	6 (31%)
2	A1MCG	C	9	2	18,19,20	1.53	3 (16%)	19,24,26	2.32	6 (31%)
2	A1MCG	C	7	2	18,19,20	1.50	3 (16%)	19,24,26	2.27	7 (36%)
2	A1MCG	D	7	2	18,19,20	1.51	3 (16%)	19,24,26	2.49	6 (31%)

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	A1MCG	D	9	2	-	0/9/10/12	0/2/2/2
2	A1MCG	C	9	2	-	0/9/10/12	0/2/2/2
2	A1MCG	C	7	2	-	2/9/10/12	0/2/2/2
2	A1MCG	D	7	2	-	2/9/10/12	0/2/2/2

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	7	A1MCG	C14-N13	4.50	1.45	1.36
2	D	9	A1MCG	C14-N13	4.49	1.45	1.36
2	C	7	A1MCG	C14-N13	4.38	1.45	1.36
2	C	9	A1MCG	C14-N13	4.26	1.45	1.36
2	C	9	A1MCG	C14-N19	2.56	1.38	1.34
2	D	9	A1MCG	CZ-N13	2.51	1.46	1.40
2	C	9	A1MCG	CZ-N13	2.38	1.46	1.40
2	D	9	A1MCG	C14-N19	2.35	1.37	1.34
2	C	7	A1MCG	CZ-N13	2.35	1.45	1.40
2	D	7	A1MCG	CZ-N13	2.30	1.45	1.40
2	C	7	A1MCG	C14-N19	2.27	1.37	1.34
2	D	7	A1MCG	C14-N19	2.09	1.37	1.34

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	7	A1MCG	C16-N15-C14	6.58	120.92	115.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	9	A1MCG	C16-N15-C14	6.05	120.48	115.42
2	D	9	A1MCG	N19-C14-N15	-6.01	120.34	126.43
2	D	7	A1MCG	N19-C14-N15	-5.75	120.60	126.43
2	C	9	A1MCG	N19-C14-N15	-5.75	120.60	126.43
2	C	7	A1MCG	C16-N15-C14	5.75	120.22	115.42
2	C	9	A1MCG	C16-N15-C14	5.63	120.13	115.42
2	C	7	A1MCG	N19-C14-N15	-5.37	120.99	126.43
2	D	9	A1MCG	C18-N19-C14	3.22	118.11	115.42
2	D	7	A1MCG	CZ-N13-C14	-3.20	120.76	129.38
2	C	7	A1MCG	C18-C17-C16	3.17	120.75	116.63
2	D	7	A1MCG	C18-C17-C16	3.16	120.74	116.63
2	C	9	A1MCG	C18-N19-C14	3.14	118.05	115.42
2	C	9	A1MCG	C18-C17-C16	2.97	120.49	116.63
2	D	9	A1MCG	C18-C17-C16	2.89	120.38	116.63
2	C	7	A1MCG	C18-N19-C14	2.76	117.73	115.42
2	C	7	A1MCG	CZ-N13-C14	-2.58	122.41	129.38
2	D	7	A1MCG	C18-N19-C14	2.56	117.56	115.42
2	D	7	A1MCG	C17-C16-N15	-2.28	119.80	123.42
2	C	9	A1MCG	C17-C18-N19	-2.20	119.94	123.42
2	D	9	A1MCG	N13-C14-N15	2.19	122.49	116.29
2	D	9	A1MCG	C17-C18-N19	-2.12	120.06	123.42
2	C	9	A1MCG	N13-C14-N15	2.07	122.17	116.29
2	C	7	A1MCG	C17-C18-N19	-2.06	120.15	123.42
2	C	7	A1MCG	C17-C16-N15	-2.06	120.17	123.42

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	7	A1MCG	CE1-CZ-N13-C14
2	C	7	A1MCG	CE1-CZ-N13-C14
2	D	7	A1MCG	CE2-CZ-N13-C14
2	C	7	A1MCG	CE2-CZ-N13-C14

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 5 ligands modelled in this entry, 2 are monoatomic - leaving 3 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	$\#\|Z\| > 2$
5	PG4	A	503	-	12,12,12	0.29	0	11,11,11	0.32	0
4	MLI	A	502	-	6,6,6	1.55	1 (16%)	7,7,7	1.24	0
4	MLI	B	502	-	6,6,6	1.70	1 (16%)	7,7,7	1.31	1 (14%)

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
5	PG4	A	503	-	-	6/10/10/10	-
4	MLI	A	502	-	-	0/4/4/4	-
4	MLI	B	502	-	-	0/4/4/4	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	502	MLI	C1-C3	2.59	1.55	1.51
4	A	502	MLI	C1-C3	2.20	1.54	1.51

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	502	MLI	O8-C3-C1	-2.00	116.41	122.11

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	503	PG4	O3-C5-C6-O4
5	A	503	PG4	O1-C1-C2-O2
5	A	503	PG4	C1-C2-O2-C3
5	A	503	PG4	C6-C5-O3-C4
5	A	503	PG4	C4-C3-O2-C2
5	A	503	PG4	O4-C7-C8-O5

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	503	PG4	1	0

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, 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	348/359 (96%)	0.16	14 (4%)	42	49	16, 42, 76, 95	2 (0%)
1	B	346/359 (96%)	0.46	18 (5%)	33	38	24, 54, 92, 128	1 (0%)
2	C	9/15 (60%)	1.14	2 (22%)	2	2	57, 69, 89, 115	0
2	D	8/15 (53%)	2.36	5 (62%)	0	0	82, 85, 106, 123	0
All	All	711/748 (95%)	0.34	39 (5%)	30	36	16, 49, 84, 128	3 (0%)

All (39) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	93	PHE	4.4
1	B	88	LEU	3.9
1	B	92	ARG	3.9
2	D	14	TYR	3.4
1	A	93	PHE	3.4
1	B	47	GLY	3.3
1	B	89	GLN	3.2
1	A	382	ALA	3.1
2	D	15	CYS	3.0
1	A	88	LEU	2.9
1	A	47	GLY	2.9
2	D	11	ALA	2.7
1	B	295	GLN	2.7
2	D	6	ASN	2.7
1	A	372	PRO	2.6
1	B	87	VAL	2.5
2	C	5	GLU	2.5
1	B	67	PHE	2.5
1	B	122	LYS	2.5
1	B	382	ALA	2.5
1	B	126	VAL	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	376	ILE	2.4
1	A	124	ASP	2.3
1	B	306	ARG	2.3
1	A	64	ASN	2.3
1	A	347	ASN	2.3
1	B	127	TYR	2.3
1	A	87	VAL	2.3
1	B	380	PRO	2.2
2	C	6	ASN	2.2
2	D	10	PHE	2.2
1	A	39	THR	2.1
1	A	121	GLU	2.1
1	A	67	PHE	2.0
1	A	375	THR	2.0
1	B	353	GLY	2.0
1	B	191	PRO	2.0
1	B	367	LEU	2.0
1	B	302	THR	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (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
2	A1MCG	D	7	18/19	0.87	0.13	82,84,88,88	0
2	A1MCG	D	9	18/19	0.91	0.14	78,79,83,83	0
2	A1MCG	C	7	18/19	0.92	0.10	61,66,73,74	0
2	A1MCG	C	9	18/19	0.95	0.09	53,55,61,61	0

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
5	PG4	A	503	13/13	0.88	0.14	44,63,74,77	0
4	MLI	B	502	7/7	0.97	0.06	35,39,45,47	0
3	CL	B	501	1/1	0.97	0.15	54,54,54,54	0
4	MLI	A	502	7/7	0.98	0.04	34,38,44,53	0
3	CL	A	501	1/1	0.99	0.11	40,40,40,40	0

6.5 Other polymers (i)

There are no such residues in this entry.