



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2018 – 09:41 pm GMT

PDB ID : 2OS2
Title : Crystal structure of JMJD2A complexed with histone H3 peptide trimethylated at Lys36
Authors : Kavanagh, K.L.; Ng, S.S.; Pilka, E.; McDonough, M.A.; Savitsky, P.; von Delft, F.; Arrowsmith, C.H.; Weigelt, J.; Edwards, A.; Sundstrom, M.; Schofield, C.J.; Oppermann, U.; Structural Genomics Consortium (SGC)
Deposited on : 2007-02-05
Resolution : 2.30 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : trunk30967
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk30967

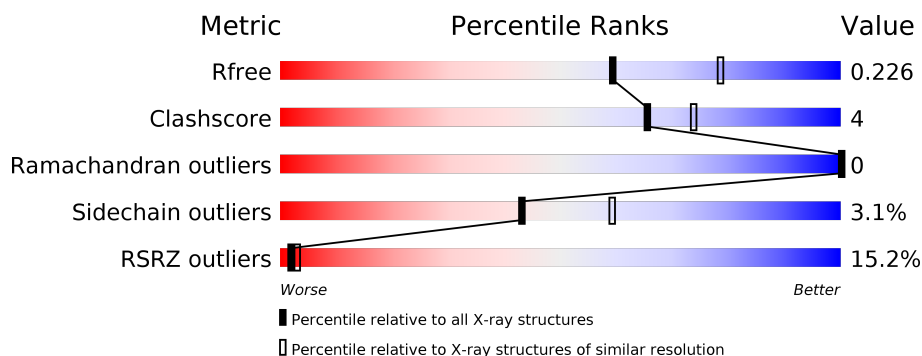
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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}	111664	4477 (2.30-2.30)
Clashscore	122126	5072 (2.30-2.30)
Ramachandran outliers	120053	5022 (2.30-2.30)
Sidechain outliers	120020	5021 (2.30-2.30)
RSRZ outliers	108989	4374 (2.30-2.30)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	381	<div> <div>11%</div> <div>80% 10% 9%</div> </div>
1	B	381	<div> <div>13%</div> <div>81% 9% • 9%</div> </div>
2	C	11	<div> <div>91%</div> <div>82% 18%</div> </div>
2	D	11	<div> <div>82%</div> <div>73% 27%</div> </div>

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 5983 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 JmjC domain-containing histone demethylation protein 3A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	347	Total	C	N	O	S	0	1	0
			2778	1806	455	502	15			
1	B	348	Total	C	N	O	S	0	0	0
			2815	1825	467	508	15			

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-21	MET	-	EXPRESSION TAG	UNP O75164
A	-20	HIS	-	EXPRESSION TAG	UNP O75164
A	-19	HIS	-	EXPRESSION TAG	UNP O75164
A	-18	HIS	-	EXPRESSION TAG	UNP O75164
A	-17	HIS	-	EXPRESSION TAG	UNP O75164
A	-16	HIS	-	EXPRESSION TAG	UNP O75164
A	-15	HIS	-	EXPRESSION TAG	UNP O75164
A	-14	SER	-	EXPRESSION TAG	UNP O75164
A	-13	SER	-	EXPRESSION TAG	UNP O75164
A	-12	GLY	-	EXPRESSION TAG	UNP O75164
A	-11	VAL	-	EXPRESSION TAG	UNP O75164
A	-10	ASP	-	EXPRESSION TAG	UNP O75164
A	-9	LEU	-	EXPRESSION TAG	UNP O75164
A	-8	GLY	-	EXPRESSION TAG	UNP O75164
A	-7	THR	-	EXPRESSION TAG	UNP O75164
A	-6	GLU	-	EXPRESSION TAG	UNP O75164
A	-5	ASN	-	EXPRESSION TAG	UNP O75164
A	-4	LEU	-	EXPRESSION TAG	UNP O75164
A	-3	TYR	-	EXPRESSION TAG	UNP O75164
A	-2	PHE	-	EXPRESSION TAG	UNP O75164
A	-1	GLN	-	EXPRESSION TAG	UNP O75164
A	0	SER	-	EXPRESSION TAG	UNP O75164
B	-21	MET	-	EXPRESSION TAG	UNP O75164
B	-20	HIS	-	EXPRESSION TAG	UNP O75164
B	-19	HIS	-	EXPRESSION TAG	UNP O75164

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-18	HIS	-	EXPRESSION TAG	UNP O75164
B	-17	HIS	-	EXPRESSION TAG	UNP O75164
B	-16	HIS	-	EXPRESSION TAG	UNP O75164
B	-15	HIS	-	EXPRESSION TAG	UNP O75164
B	-14	SER	-	EXPRESSION TAG	UNP O75164
B	-13	SER	-	EXPRESSION TAG	UNP O75164
B	-12	GLY	-	EXPRESSION TAG	UNP O75164
B	-11	VAL	-	EXPRESSION TAG	UNP O75164
B	-10	ASP	-	EXPRESSION TAG	UNP O75164
B	-9	LEU	-	EXPRESSION TAG	UNP O75164
B	-8	GLY	-	EXPRESSION TAG	UNP O75164
B	-7	THR	-	EXPRESSION TAG	UNP O75164
B	-6	GLU	-	EXPRESSION TAG	UNP O75164
B	-5	ASN	-	EXPRESSION TAG	UNP O75164
B	-4	LEU	-	EXPRESSION TAG	UNP O75164
B	-3	TYR	-	EXPRESSION TAG	UNP O75164
B	-2	PHE	-	EXPRESSION TAG	UNP O75164
B	-1	GLN	-	EXPRESSION TAG	UNP O75164
B	0	SER	-	EXPRESSION TAG	UNP O75164

- Molecule 2 is a protein called histone 3 peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	C	11	Total	C	N	O	0	0	0
			76	50	12	14			
2	D	11	Total	C	N	O	0	0	0
			79	51	13	15			

- Molecule 3 is NICKEL (II) ION (three-letter code: NI) (formula: Ni).

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

- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn).

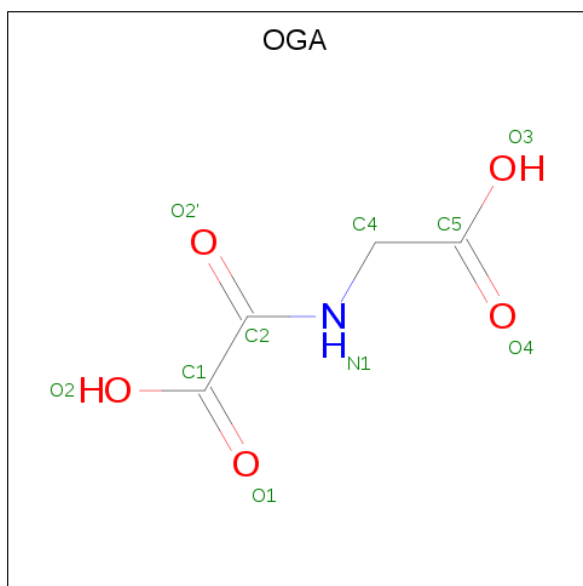
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	1	Total	Zn	0	0
			1	1		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Zn	0	0
			1	1		

- Molecule 5 is N-OXALYLGLYCINE (three-letter code: OGA) (formula: $C_4H_5NO_5$).



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

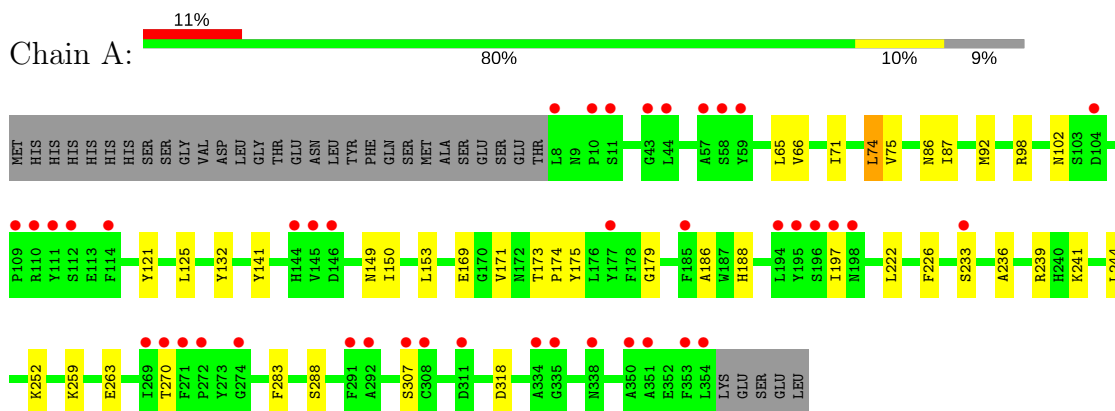
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	99	Total	O	0	1
			100	100		
6	B	108	Total	O	0	0
			108	108		
6	C	2	Total	O	0	0
			2	2		
6	D	1	Total	O	0	0
			1	1		

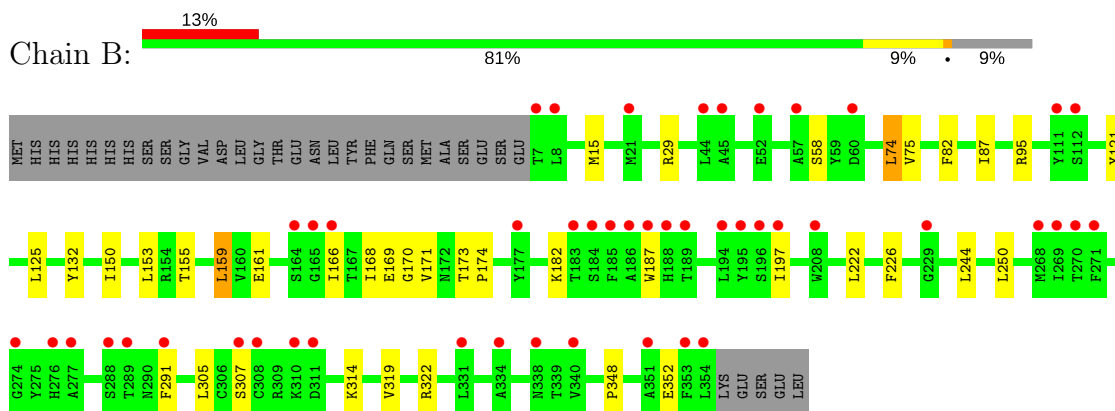
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA 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.

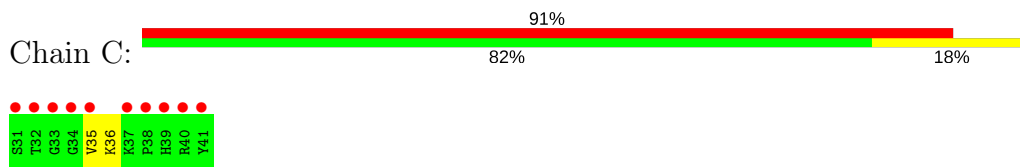
- Molecule 1: JmjC domain-containing histone demethylation protein 3A



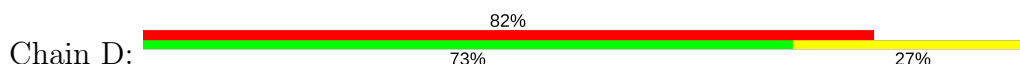
- Molecule 1: JmjC domain-containing histone demethylation protein 3A



- Molecule 2: histone 3 peptide



- Molecule 2: histone 3 peptide



S31	T32	G33	G34	V35	K36	K37	F38	H39	R40	Y41
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4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	100.94Å 148.89Å 56.98Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.30 30.06 – 2.30	Depositor EDS
% Data completeness (in resolution range)	98.2 (30.00-2.30) 98.2 (30.06-2.30)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.97 (at 2.31Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.176 , 0.226 0.180 , 0.226	Depositor DCC
R_{free} test set	1608 reflections (4.20%)	wwPDB-VP
Wilson B-factor (Å ²)	41.4	Xtriage
Anisotropy	0.289	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 55.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	5983	wwPDB-VP
Average B, all atoms (Å ²)	35.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.35% 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: NI, ZN, M3L, OGA

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	0.58	0/2868	0.67	0/3900
1	B	0.61	0/2902	0.70	0/3939
2	C	0.82	0/65	0.70	0/86
2	D	0.81	0/68	0.60	0/90
All	All	0.60	0/5903	0.69	0/8015

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	2778	0	2622	25	0
1	B	2815	0	2686	26	0
2	C	76	0	74	3	0
2	D	79	0	78	3	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
5	A	10	0	3	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	10	0	3	0	0
6	A	100	0	0	0	0
6	B	108	0	0	2	0
6	C	2	0	0	0	0
6	D	1	0	0	0	0
All	All	5983	0	5466	49	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 (49) 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:74:LEU:CD1	1:B:87:ILE:HD12	2.12	0.78
1:A:222:LEU:HG	1:A:226:PHE:CE2	2.24	0.73
1:B:74:LEU:HD13	1:B:87:ILE:HD12	1.74	0.70
1:B:74:LEU:HD13	1:B:87:ILE:CD1	2.26	0.66
1:A:74:LEU:CD1	1:A:87:ILE:HD11	2.30	0.61
1:A:74:LEU:HD13	1:A:87:ILE:HD11	1.83	0.61
1:B:169:GLU:HB2	2:D:35:VAL:HG23	1.83	0.60
1:A:74:LEU:CD1	1:A:87:ILE:CD1	2.83	0.56
1:A:74:LEU:HD12	1:A:87:ILE:CD1	2.36	0.56
1:A:74:LEU:HD12	1:A:87:ILE:HD12	1.89	0.55
1:B:170:GLY:O	2:D:36:M3L:HM23	2.09	0.53
1:B:153:LEU:HD11	1:B:197:ILE:HG21	1.91	0.53
1:A:150:ILE:HG22	1:A:174:PRO:HB3	1.93	0.51
1:A:71:ILE:HG21	1:A:86:ASN:HB3	1.92	0.50
1:B:121:TYR:CZ	1:B:125:LEU:HD13	2.46	0.50
1:B:168:ILE:HG22	1:B:171:VAL:CG2	2.43	0.48
1:A:153:LEU:HD11	1:A:197:ILE:HG21	1.96	0.48
1:A:71:ILE:CG2	1:A:86:ASN:HB3	2.43	0.48
1:A:252:LYS:HD3	1:B:15:MET:HE3	1.96	0.47
1:A:236:ALA:HB1	1:A:239:ARG:HG3	1.96	0.47
1:B:182:LYS:HE3	6:B:579:HOH:O	2.13	0.47
1:B:159:LEU:HD23	1:B:319:VAL:HG22	1.96	0.47
1:A:252:LYS:HD3	1:B:15:MET:CE	2.45	0.47
1:A:169:GLU:HA	1:A:173:THR:OG1	2.14	0.47
1:A:188:HIS:CD2	1:A:241:LYS:HE2	2.51	0.46
1:B:187:TRP:CZ2	1:B:250:LEU:HD11	2.50	0.46
1:A:179:GLY:O	1:A:283:PHE:HA	2.17	0.45
1:B:182:LYS:NZ	6:B:510:HOH:O	2.45	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:82:PHE:HB2	1:B:244:LEU:HB2	1.99	0.45
1:A:288:SER:OG	2:C:36:M3L:HM11	2.17	0.44
1:B:150:ILE:HG22	1:B:174:PRO:HB3	1.99	0.44
1:A:186:ALA:HA	1:A:244:LEU:HD23	1.98	0.44
1:B:222:LEU:HG	1:B:226:PHE:CE1	2.53	0.44
1:B:169:GLU:HA	1:B:173:THR:OG1	2.17	0.44
1:A:169:GLU:HB2	2:C:35:VAL:HG23	2.00	0.43
1:B:29:ARG:NH2	1:B:352:GLU:OE2	2.52	0.43
1:A:75:VAL:HG11	1:A:125:LEU:HG	2.01	0.43
1:B:29:ARG:CZ	1:B:352:GLU:OE2	2.68	0.42
1:A:121:TYR:CE1	1:A:125:LEU:HD13	2.55	0.42
1:B:95:ARG:NH1	1:B:95:ARG:HB3	2.35	0.42
1:A:141:TYR:CE2	1:A:149:ASN:HA	2.55	0.42
1:B:75:VAL:HG11	1:B:125:LEU:HG	2.02	0.42
1:B:305:LEU:HD13	1:B:314:LYS:HG3	2.02	0.41
1:B:74:LEU:HD13	1:B:87:ILE:HD11	2.02	0.41
1:A:65:LEU:HD23	1:A:66:VAL:N	2.36	0.40
1:B:166:ILE:HG21	2:D:32:THR:HG22	2.03	0.40
1:B:155:THR:HG21	1:B:291:PHE:HB2	2.02	0.40
1:A:98:ARG:HG2	1:A:102:ASN:ND2	2.36	0.40
1:A:171:VAL:HG23	2:C:36:M3L:HB3	2.04	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	346/381 (91%)	340 (98%)	6 (2%)	0	100	100
1	B	346/381 (91%)	339 (98%)	7 (2%)	0	100	100
2	C	8/11 (73%)	8 (100%)	0	0	100	100
2	D	8/11 (73%)	8 (100%)	0	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	708/784 (90%)	695 (98%)	13 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	283/335 (84%)	273 (96%)	10 (4%)	39	53
1	B	291/335 (87%)	283 (97%)	8 (3%)	48	65
2	C	5/8 (62%)	5 (100%)	0	100	100
2	D	6/8 (75%)	6 (100%)	0	100	100
All	All	585/686 (85%)	567 (97%)	18 (3%)	43	59

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	74	LEU
1	A	92	MET
1	A	132	TYR
1	A	175	TYR
1	A	233	SER
1	A	259	LYS
1	A	263	GLU
1	A	270	THR
1	A	307	SER
1	A	318	ASP
1	B	58	SER
1	B	74	LEU
1	B	132	TYR
1	B	159	LEU
1	B	161	GLU
1	B	307	SER
1	B	322	ARG

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Mol	Chain	Res	Type
1	B	348	PRO

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

2 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	M3L	C	36	2	11,11,12	0.92	1 (9%)	11,14,16	0.91	0
2	M3L	D	36	2	11,11,12	0.85	0	11,14,16	0.77	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	M3L	C	36	2	-	0/8/10/12	0/0/0/0
2	M3L	D	36	2	-	0/8/10/12	0/0/0/0

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	36	M3L	CA-C	2.26	1.53	1.50

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	36	M3L	2	0
2	D	36	M3L	1	0

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 4 are monoatomic - leaving 2 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	OGA	A	500	3	3,9,9	0.47	0	4,11,11	2.96	1 (25%)
5	OGA	B	500	3	3,9,9	0.66	0	4,11,11	1.90	1 (25%)

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	OGA	A	500	3	-	0/3/9/9	0/0/0/0
5	OGA	B	500	3	-	0/3/9/9	0/0/0/0

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
5	B	500	OGA	C1-C2-N1	3.58	119.01	115.65
5	A	500	OGA	C1-C2-N1	5.69	120.99	115.65

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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	347/381 (91%)	0.53	42 (12%) 4 6	25, 33, 49, 62	0
1	B	348/381 (91%)	0.61	48 (13%) 3 4	26, 33, 50, 62	0
2	C	10/11 (90%)	3.56	10 (100%) 0 0	43, 49, 67, 68	0
2	D	10/11 (90%)	3.79	9 (90%) 0 0	44, 61, 75, 76	0
All	All	715/784 (91%)	0.65	109 (15%) 2 3	25, 33, 53, 76	0

All (109) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	8	LEU	5.9
1	A	197	ILE	5.5
1	A	351	ALA	5.5
1	A	57	ALA	5.5
2	C	39	HIS	5.4
2	D	31	SER	5.3
2	C	35	VAL	5.2
2	D	34	GLY	5.1
2	D	32	THR	4.9
2	D	41	TYR	4.9
2	C	34	GLY	4.5
1	B	197	ILE	4.4
1	B	311	ASP	4.4
2	D	33	GLY	4.4
1	B	269	ILE	4.4
2	C	41	TYR	4.3
1	A	269	ILE	4.2
1	B	57	ALA	4.2
1	A	307	SER	4.2
1	A	196	SER	4.1
1	A	354	LEU	4.0

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Mol	Chain	Res	Type	RSRZ
2	D	39	HIS	3.9
1	A	195	TYR	3.9
1	B	270	THR	3.8
2	C	33	GLY	3.8
1	A	270	THR	3.8
1	A	291	PHE	3.7
1	B	194	LEU	3.6
1	B	196	SER	3.6
1	A	350	ALA	3.6
1	A	194	LEU	3.5
1	A	144	HIS	3.5
1	B	165	GLY	3.4
1	B	354	LEU	3.4
1	A	338	ASN	3.4
1	B	229	GLY	3.4
1	A	353	PHE	3.4
1	A	111	TYR	3.4
1	B	111	TYR	3.4
2	C	32	THR	3.4
1	B	195	TYR	3.3
1	B	338	ASN	3.3
1	A	58	SER	3.3
1	A	110	ARG	3.2
1	B	44	LEU	3.2
1	B	21	MET	3.2
1	B	271	PHE	3.2
1	B	291	PHE	3.1
1	A	311	ASP	3.1
1	B	208	TRP	3.0
1	B	177	TYR	3.0
1	B	307	SER	3.0
1	A	59	TYR	3.0
2	D	40	ARG	3.0
1	B	351	ALA	2.9
1	A	271	PHE	2.8
1	B	334	ALA	2.8
1	A	112	SER	2.8
1	B	268	MET	2.7
1	A	10	PRO	2.7
1	B	164	SER	2.7
1	B	184	SER	2.6
1	B	276	HIS	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	353	PHE	2.6
1	A	198	ASN	2.6
2	D	38	PRO	2.6
2	C	40	ARG	2.6
1	A	292	ALA	2.6
1	B	112	SER	2.6
1	A	177	TYR	2.6
1	A	44	LEU	2.6
1	B	185	PHE	2.5
1	A	185	PHE	2.5
1	B	308	CYS	2.5
1	B	183	THR	2.4
1	B	310	LYS	2.4
1	A	11	SER	2.4
1	B	274	GLY	2.4
1	A	335	GLY	2.4
1	A	233	SER	2.4
2	D	35	VAL	2.4
1	A	308	CYS	2.4
1	A	334	ALA	2.3
1	B	7	THR	2.3
1	A	145	VAL	2.3
1	A	146	ASP	2.3
1	B	331	LEU	2.3
1	B	189	THR	2.3
1	B	8	LEU	2.3
1	A	274	GLY	2.3
1	B	166	ILE	2.3
1	B	188	HIS	2.2
1	B	52	GLU	2.2
1	B	340	VAL	2.2
1	B	288	SER	2.2
1	B	45	ALA	2.2
1	B	60	ASP	2.2
1	A	272	PRO	2.2
2	C	38	PRO	2.2
1	A	43	GLY	2.1
1	A	114	PHE	2.1
1	B	277	ALA	2.1
1	B	186	ALA	2.1
1	B	289	THR	2.1
2	C	31	SER	2.1

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Mol	Chain	Res	Type	RSRZ
2	C	37	LYS	2.1
1	B	187	TRP	2.1
1	A	109	PRO	2.1
1	A	104	ASP	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, 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
2	M3L	D	36	12/13	0.83	0.21	27,38,54,57	0
2	M3L	C	36	12/13	0.86	0.18	25,33,41,43	0

6.3 Carbohydrates [i](#)

There are no carbohydrates 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(Å ²)	Q<0.9
5	OGA	A	500	10/10	0.97	0.15	30,36,41,44	0
4	ZN	B	502	1/1	0.98	0.06	41,41,41,41	0
3	NI	B	501	1/1	0.98	0.15	41,41,41,41	0
5	OGA	B	500	10/10	0.98	0.25	29,37,44,45	0
4	ZN	A	502	1/1	0.99	0.06	40,40,40,40	0
3	NI	A	501	1/1	0.99	0.14	38,38,38,38	0

6.5 Other polymers [i](#)

There are no such residues in this entry.