Full wwPDB X-ray Structure Validation Report ⓘ

Jun 22, 2024 – 01:48 PM EDT

PDB ID	:	5LUT
Title	:	Structures of DHBN domain of Gallus gallus BLM helicase
Authors	:	Shi, J.; Chen, W.-F.; Zhang, B.; Fan, S.-H.; Ai, X.; Liu, N.-N.; Rety, S.; Xi, X.-G.
Deposited on	:	2016-09-09
Resolution	:	2.72 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:

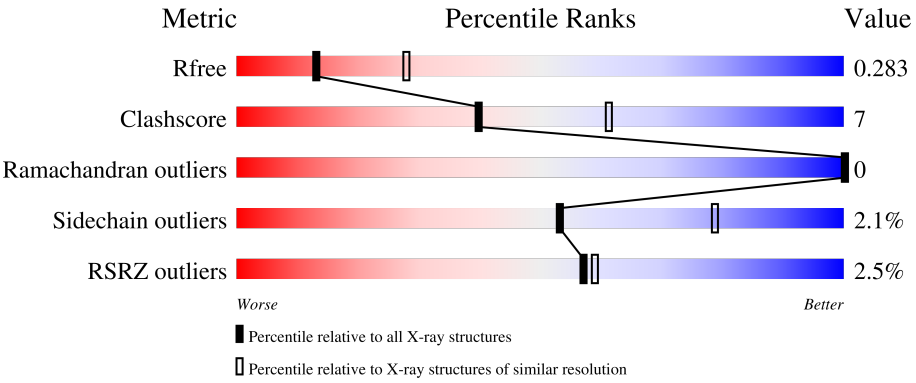
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.72 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	3359 (2.74-2.70)
Clashscore	141614	3686 (2.74-2.70)
Ramachandran outliers	138981	3622 (2.74-2.70)
Sidechain outliers	138945	3623 (2.74-2.70)
RSRZ outliers	127900	3276 (2.74-2.70)

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	68	63% 13% 24%
1	B	68	63% 13% • 22%
1	C	68	66% 9% • 24%
1	D	68	75% • 21%
1	E	68	66% 10% 24%

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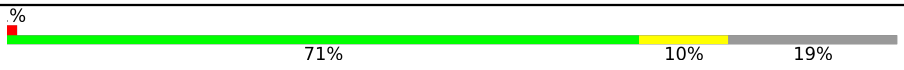
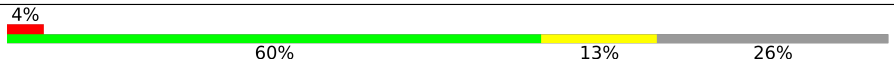
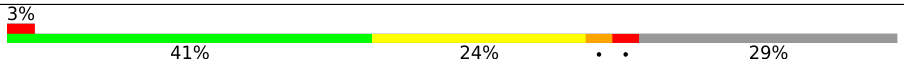
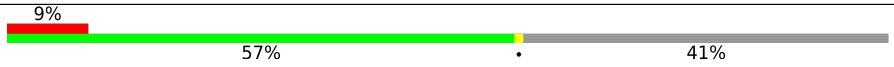
Mol	Chain	Length	Quality of chain
1	F	68	
1	G	68	
1	H	68	
1	I	68	
1	J	68	
1	K	68	

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 4113 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 BLM helicase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	52	Total	C	N	O	S	Se	0	0	0
			415	260	72	80	2	1			
1	B	53	Total	C	N	O	S	Se	0	0	0
			424	266	74	81	2	1			
1	C	52	Total	C	N	O	S	Se	0	0	0
			415	260	72	80	2	1			
1	D	54	Total	C	N	O	S	Se	0	0	0
			432	270	75	84	2	1			
1	E	52	Total	C	N	O	S	Se	0	0	0
			415	260	72	80	2	1			
1	F	55	Total	C	N	O	S	Se	0	0	0
			437	273	76	85	2	1			
1	G	52	Total	C	N	O	S	Se	0	0	0
			415	260	72	80	2	1			
1	H	50	Total	C	N	O	S	Se	0	0	0
			403	252	70	78	2	1			
1	I	48	Total	C	N	O	S	Se	0	0	0
			386	244	68	71	2	1			
1	J	40	Total	C	N	O			0	0	0
			200	120	40	40					
1	K	22	Total	C	N	O			0	0	0
			110	66	22	22					

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	360	VAL	-	expression tag	UNP Q5ZJM1
A	361	ASP	-	expression tag	UNP Q5ZJM1
B	360	VAL	-	expression tag	UNP Q5ZJM1
B	361	ASP	-	expression tag	UNP Q5ZJM1
C	360	VAL	-	expression tag	UNP Q5ZJM1
C	361	ASP	-	expression tag	UNP Q5ZJM1
D	360	VAL	-	expression tag	UNP Q5ZJM1

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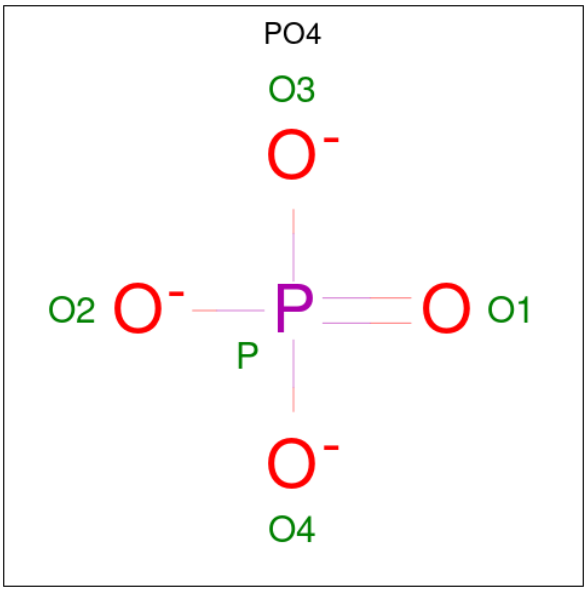
Chain	Residue	Modelled	Actual	Comment	Reference
D	361	ASP	-	expression tag	UNP Q5ZJM1
E	360	VAL	-	expression tag	UNP Q5ZJM1
E	361	ASP	-	expression tag	UNP Q5ZJM1
F	360	VAL	-	expression tag	UNP Q5ZJM1
F	361	ASP	-	expression tag	UNP Q5ZJM1
G	360	VAL	-	expression tag	UNP Q5ZJM1
G	361	ASP	-	expression tag	UNP Q5ZJM1
H	360	VAL	-	expression tag	UNP Q5ZJM1
H	361	ASP	-	expression tag	UNP Q5ZJM1
I	360	VAL	-	expression tag	UNP Q5ZJM1
I	361	ASP	-	expression tag	UNP Q5ZJM1
J	360	VAL	-	expression tag	UNP Q5ZJM1
J	361	ASP	-	expression tag	UNP Q5ZJM1
K	360	VAL	-	expression tag	UNP Q5ZJM1
K	361	ASP	-	expression tag	UNP Q5ZJM1

- Molecule 2 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total O P 5 4 1	0	0
2	D	1	Total O P 5 4 1	0	0
2	F	1	Total O P 5 4 1	0	0
2	H	1	Total O P 5 4 1	0	0

- Molecule 3 is water.

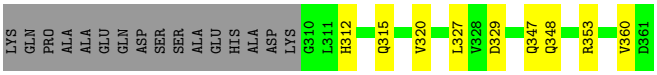
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	5	Total O 5 5	0	0
3	B	4	Total O 4 4	0	0
3	C	7	Total O 7 7	0	0
3	D	4	Total O 4 4	0	0
3	E	4	Total O 4 4	0	0
3	F	7	Total O 7 7	0	0
3	G	4	Total O 4 4	0	0
3	H	3	Total O 3 3	0	0
3	I	1	Total O 1 1	0	0
3	K	2	Total O 2 2	0	0

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.

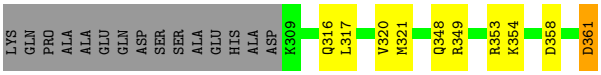
• Molecule 1: BLM helicase

Chain A:



• Molecule 1: BLM helicase

Chain B:



• Molecule 1: BLM helicase

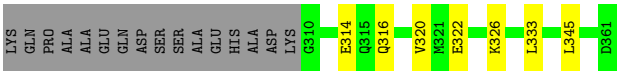
Chain C:

• Molecule 1: BLM helicase

Chain D:

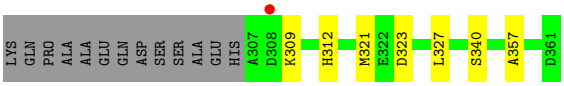
• Molecule 1: BLM helicase

Chain E:



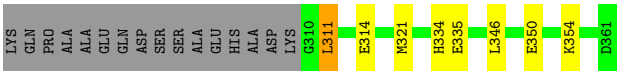
• Molecule 1: BLM helicase

Chain F:



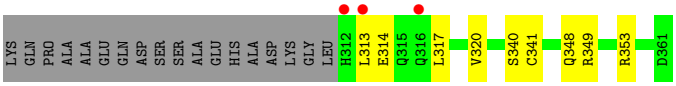
• Molecule 1: BLM helicase

Chain G:



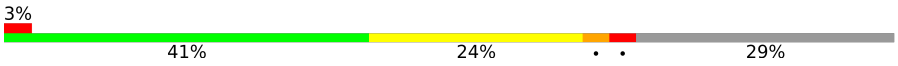
• Molecule 1: BLM helicase

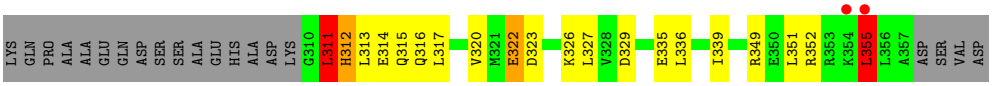
Chain H:



• Molecule 1: BLM helicase

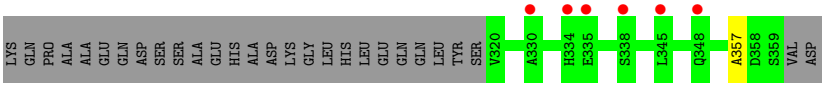
Chain I:





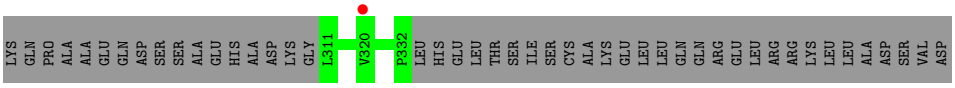
• Molecule 1: BLM helicase

Chain J:



• Molecule 1: BLM helicase

Chain K:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	76.69Å 230.80Å 50.92Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	72.77 – 2.72 72.77 – 2.34	Depositor EDS
% Data completeness (in resolution range)	98.8 (72.77-2.72) 75.8 (72.77-2.34)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.45 (at 2.34Å)	Xtriage
Refinement program	PHENIX (dev_2650: ???)	Depositor
R, R_{free}	0.236 , 0.283 0.236 , 0.283	Depositor DCC
R_{free} test set	1478 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	67.1	Xtriage
Anisotropy	0.047	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 55.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.52$, $< L^2 > = 0.36$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	4113	wwPDB-VP
Average B, all atoms (Å^2)	76.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 22.43 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 5.7094e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: PO4

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	0.41	0/417	0.61	0/559
1	B	0.46	0/426	0.69	0/570
1	C	0.41	0/417	0.63	0/559
1	D	0.46	0/434	0.65	0/581
1	E	0.41	0/417	0.62	0/559
1	F	0.41	0/439	0.60	0/588
1	G	0.49	0/417	0.64	0/559
1	H	0.46	0/405	0.70	1/543 (0.2%)
1	I	0.45	0/388	0.79	2/519 (0.4%)
1	J	0.24	0/198	0.51	0/274
1	K	0.25	0/108	0.44	0/148
All	All	0.43	0/4066	0.65	3/5459 (0.1%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	I	311	LEU	CA-CB-CG	7.26	132.01	115.30
1	I	355	LEU	CB-CG-CD1	-5.24	102.10	111.00
1	H	313	LEU	CA-CB-CG	5.22	127.31	115.30

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	415	0	430	8	0
1	B	424	0	443	6	0
1	C	415	0	430	6	0
1	D	432	0	447	3	0
1	E	415	0	430	5	0
1	F	437	0	452	7	0
1	G	415	0	430	5	0
1	H	403	0	416	9	0
1	I	386	0	408	24	0
1	J	200	0	87	1	0
1	K	110	0	45	0	0
2	B	5	0	0	0	0
2	D	5	0	0	0	0
2	F	5	0	0	0	0
2	H	5	0	0	1	0
3	A	5	0	0	1	0
3	B	4	0	0	0	0
3	C	7	0	0	1	0
3	D	4	0	0	0	0
3	E	4	0	0	1	0
3	F	7	0	0	0	0
3	G	4	0	0	1	0
3	H	3	0	0	1	0
3	I	1	0	0	0	0
3	K	2	0	0	0	0
All	All	4113	0	4018	59	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 7.

All (59) 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)
2:H:401:PO4:O3	3:H:501:HOH:O	1.86	0.93
1:C:311:LEU:HD13	1:C:311:LEU:O	1.76	0.85
1:I:351:LEU:O	1:I:355:LEU:HD23	1.82	0.79
1:I:329:ASP:HA	1:I:349:ARG:HD2	1.68	0.74
1:C:353:ARG:NH2	3:C:401:HOH:O	2.23	0.70
1:I:312:HIS:HA	1:I:315:GLN:OE1	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:351:LEU:CD2	1:I:355:LEU:HD22	2.25	0.66
1:A:360:VAL:HG21	1:F:323:ASP:HB3	1.77	0.66
1:I:314:GLU:N	1:I:314:GLU:OE2	2.30	0.61
1:A:329:ASP:OD1	1:A:353:ARG:NH1	2.35	0.60
1:C:329:ASP:OD1	1:C:353:ARG:NH1	2.36	0.59
1:H:317:LEU:HB2	1:I:355:LEU:HD11	1.85	0.59
1:I:316:GLN:O	1:I:320:VAL:HG23	2.02	0.59
1:F:309:LYS:HB3	1:F:312:HIS:HB3	1.85	0.58
1:A:347:GLN:OE1	3:A:401:HOH:O	2.17	0.57
1:H:348:GLN:NE2	1:I:323:ASP:OD2	2.38	0.57
1:I:326:LYS:HB3	1:J:357:ALA:HA	1.87	0.55
1:I:351:LEU:HD23	1:I:355:LEU:HD22	1.89	0.54
1:I:351:LEU:O	1:I:355:LEU:CD2	2.53	0.54
1:I:352:ARG:HA	1:I:355:LEU:CD2	2.37	0.53
1:E:322:GLU:O	1:E:326:LYS:HG3	2.09	0.53
1:G:334:HIS:HB2	3:G:403:HOH:O	2.09	0.52
1:G:346:LEU:O	1:G:350:GLU:HG3	2.10	0.52
1:H:320:VAL:HG21	1:I:351:LEU:HD22	1.93	0.51
1:I:351:LEU:HD22	1:I:355:LEU:HD22	1.93	0.51
1:C:318:TYR:HA	1:C:321:MSE:HG3	1.93	0.50
1:B:349:ARG:O	1:B:353:ARG:HG3	2.12	0.50
1:D:344:GLU:OE1	1:D:344:GLU:N	2.39	0.49
1:I:313:LEU:O	1:I:317:LEU:N	2.42	0.49
1:A:312:HIS:HA	1:A:315:GLN:HE21	1.79	0.47
1:E:314:GLU:OE1	3:E:401:HOH:O	2.19	0.47
1:H:314:GLU:OE1	1:H:317:LEU:HD23	2.15	0.47
1:G:311:LEU:HA	1:G:314:GLU:OE1	2.15	0.47
1:H:340:SER:N	1:I:335:GLU:OE2	2.37	0.46
1:I:352:ARG:HA	1:I:355:LEU:HD23	1.97	0.46
1:F:309:LYS:HB3	1:F:312:HIS:CB	2.45	0.46
1:I:336:LEU:HA	1:I:339:ILE:HD12	1.97	0.45
1:B:361:ASP:OD1	1:B:361:ASP:N	2.49	0.44
1:B:317:LEU:O	1:B:321:MSE:HG3	2.16	0.44
1:I:322:GLU:O	1:I:326:LYS:HG3	2.16	0.44
1:C:358:ASP:HB2	1:D:313:LEU:HD11	2.00	0.44
1:F:321:MSE:HB3	1:G:321:MSE:HE2	2.00	0.43
1:A:327:LEU:HD23	1:F:357:ALA:HB1	1.98	0.43
1:I:352:ARG:HA	1:I:355:LEU:HD21	2.00	0.43
1:D:309:LYS:H	1:D:309:LYS:HG2	1.51	0.43
1:A:348:GLN:HG3	1:B:320:VAL:HG13	2.01	0.43
1:E:316:GLN:O	1:E:320:VAL:HG23	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:341:CYS:SG	1:I:327:LEU:HB3	2.60	0.42
1:E:333:LEU:HD12	1:E:333:LEU:HA	1.84	0.41
1:H:349:ARG:O	1:H:353:ARG:HG3	2.20	0.41
1:A:360:VAL:HG11	1:F:327:LEU:HG	2.02	0.41
1:E:345:LEU:HD12	1:E:345:LEU:HA	1.85	0.41
1:H:317:LEU:HB2	1:I:355:LEU:CD1	2.50	0.41
1:F:340:SER:OG	1:G:335:GLU:OE2	2.36	0.41
1:H:317:LEU:CB	1:I:355:LEU:HD11	2.51	0.41
1:B:354:LYS:HE2	1:B:358:ASP:OD2	2.22	0.40
1:C:336:LEU:HD23	1:C:336:LEU:HA	1.79	0.40
1:I:311:LEU:O	1:I:311:LEU:HD22	2.22	0.40
1:A:320:VAL:HG13	1:B:348:GLN:HE21	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	50/68 (74%)	50 (100%)	0	0	100	100
1	B	51/68 (75%)	51 (100%)	0	0	100	100
1	C	50/68 (74%)	50 (100%)	0	0	100	100
1	D	52/68 (76%)	52 (100%)	0	0	100	100
1	E	50/68 (74%)	50 (100%)	0	0	100	100
1	F	53/68 (78%)	53 (100%)	0	0	100	100
1	G	50/68 (74%)	50 (100%)	0	0	100	100
1	H	48/68 (71%)	48 (100%)	0	0	100	100
1	I	46/68 (68%)	43 (94%)	3 (6%)	0	100	100
1	J	38/68 (56%)	37 (97%)	1 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	K	20/68 (29%)	19 (95%)	1 (5%)	0	100	100
All	All	508/748 (68%)	503 (99%)	5 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	48/59 (81%)	48 (100%)	0	100	100
1	B	49/59 (83%)	47 (96%)	2 (4%)	30	57
1	C	48/59 (81%)	47 (98%)	1 (2%)	53	79
1	D	50/59 (85%)	50 (100%)	0	100	100
1	E	48/59 (81%)	48 (100%)	0	100	100
1	F	50/59 (85%)	50 (100%)	0	100	100
1	G	48/59 (81%)	46 (96%)	2 (4%)	30	56
1	H	47/59 (80%)	47 (100%)	0	100	100
1	I	44/59 (75%)	40 (91%)	4 (9%)	9	21
All	All	432/531 (81%)	423 (98%)	9 (2%)	53	79

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	316	GLN
1	B	361	ASP
1	C	321	MSE
1	G	311	LEU
1	G	354	LYS
1	I	311	LEU
1	I	312	HIS
1	I	322	GLU
1	I	355	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	315	GLN
1	B	316	GLN
1	B	348	GLN
1	H	315	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)

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)

4 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	PO4	B	401	-	4,4,4	0.60	0	6,6,6	0.82	0
2	PO4	F	401	-	4,4,4	0.79	0	6,6,6	0.54	0
2	PO4	H	401	-	4,4,4	0.80	0	6,6,6	0.53	0
2	PO4	D	401	-	4,4,4	0.65	0	6,6,6	0.60	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	H	401	PO4	1	0

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	51/68 (75%)	-0.28	0 100 100	40, 58, 102, 124	0
1	B	52/68 (76%)	-0.36	0 100 100	42, 57, 101, 111	0
1	C	51/68 (75%)	-0.20	0 100 100	43, 62, 111, 126	0
1	D	53/68 (77%)	-0.28	0 100 100	46, 64, 112, 145	0
1	E	51/68 (75%)	-0.22	0 100 100	48, 68, 116, 125	0
1	F	54/68 (79%)	-0.18	1 (1%) 66 69	44, 62, 129, 166	0
1	G	51/68 (75%)	-0.33	0 100 100	39, 56, 105, 126	0
1	H	49/68 (72%)	0.01	3 (6%) 21 20	42, 72, 141, 159	0
1	I	47/68 (69%)	-0.10	2 (4%) 35 34	47, 74, 128, 140	0
1	J	39/68 (57%)	0.90	6 (15%) 2 1	107, 156, 197, 200	0
1	K	21/68 (30%)	0.10	1 (4%) 30 29	95, 124, 143, 155	0
All	All	519/748 (69%)	-0.12	13 (2%) 57 59	39, 66, 154, 200	0

All (13) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	J	334	HIS	3.9
1	F	308	ASP	3.6
1	J	330	ALA	3.5
1	H	312	HIS	3.4
1	J	335	GLU	2.9
1	H	313	LEU	2.9
1	K	320	VAL	2.5
1	J	338	SER	2.4
1	I	355	LEU	2.3
1	J	345	LEU	2.3
1	J	348	GLN	2.3
1	I	354	LYS	2.1

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Mol	Chain	Res	Type	RSRZ
1	H	316	GLN	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	B-factors(Å^2)	Q<0.9
2	PO4	B	401	5/5	0.81	0.12	99,107,113,114	0
2	PO4	H	401	5/5	0.85	0.11	134,134,136,139	0
2	PO4	D	401	5/5	0.88	0.10	114,115,119,122	0
2	PO4	F	401	5/5	0.92	0.13	106,113,121,121	0

6.5 Other polymers (i)

There are no such residues in this entry.