



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 19, 2016 – 08:05 PM GMT

PDB ID : 4X8W  
Title : dsRBD3 of Loquacious  
Authors : Jakob, L.; Treiber, N.; Treiber, T.; Stotz, M.; Meister, G.  
Deposited on : 2014-12-10  
Resolution : 2.65 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](mailto:validation@mail.wwpdb.org)  
A user guide is available at  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.7.1 (RC1), CSD as537be (2016)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026982  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : rb-20026982

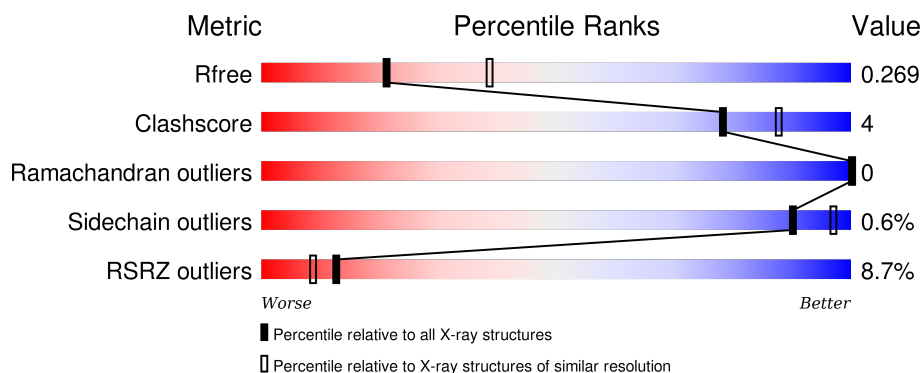
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.65 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.





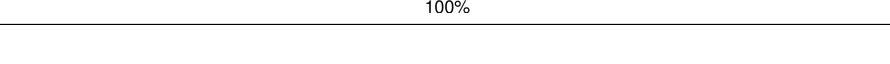
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	91344	3377 (2.68-2.60)
Clashscore	102246	3781 (2.68-2.60)
Ramachandran outliers	100387	3722 (2.68-2.60)
Sidechain outliers	100360	3722 (2.68-2.60)
RSRZ outliers	91569	3388 (2.68-2.60)

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  $\geq 3$ , 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	75	<div> <div>4%</div> <div>85% 9% . .</div> </div>
1	B	75	<div> <div>4%</div> <div>91% 5% .</div> </div>
1	C	75	<div> <div>%</div> <div>83% 13% .</div> </div>
1	D	75	<div> <div>3%</div> <div>88% 9% .</div> </div>
1	E	75	<div> <div>3%</div> <div>91% 9%</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	75	
1	G	75	
2	H	48	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	GOL	A	501	-	-	-	X

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 3699 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 Loquacious, isoform B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	72	Total	C	N	O	S	0	0	0
			551	351	89	108	3			
1	B	72	Total	C	N	O	S	0	0	0
			543	347	88	105	3			
1	C	72	Total	C	N	O	S	0	0	0
			558	356	90	109	3			
1	D	73	Total	C	N	O	S	0	0	0
			565	360	91	111	3			
1	E	75	Total	C	N	O	S	0	0	0
			567	359	92	113	3			
1	F	35	Total	C	N	O	S	0	0	0
			254	158	46	48	2			
1	G	44	Total	C	N	O	S	0	0	0
			348	225	51	71	1			

There are 21 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	389	GLY	-	expression tag	UNP Q9VJY9
A	390	GLY	-	expression tag	UNP Q9VJY9
A	391	GLY	-	expression tag	UNP Q9VJY9
B	389	GLY	-	expression tag	UNP Q9VJY9
B	390	GLY	-	expression tag	UNP Q9VJY9
B	391	GLY	-	expression tag	UNP Q9VJY9
C	389	GLY	-	expression tag	UNP Q9VJY9
C	390	GLY	-	expression tag	UNP Q9VJY9
C	391	GLY	-	expression tag	UNP Q9VJY9
D	389	GLY	-	expression tag	UNP Q9VJY9
D	390	GLY	-	expression tag	UNP Q9VJY9
D	391	GLY	-	expression tag	UNP Q9VJY9
E	389	GLY	-	expression tag	UNP Q9VJY9
E	390	GLY	-	expression tag	UNP Q9VJY9
E	391	GLY	-	expression tag	UNP Q9VJY9

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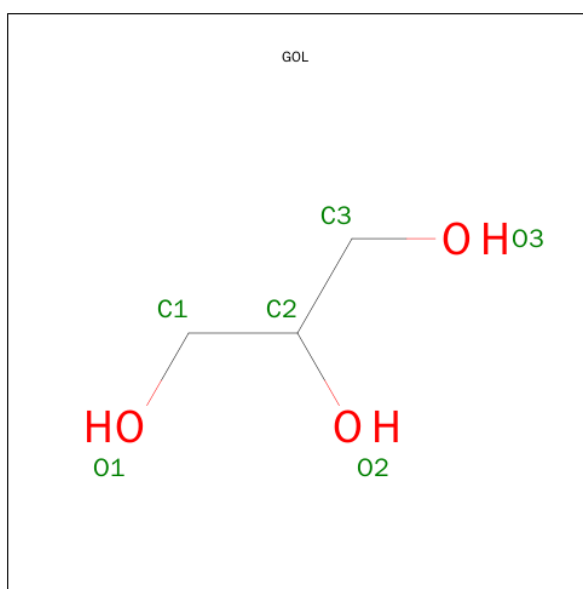
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Chain	Residue	Modelled	Actual	Comment	Reference
F	389	GLY	-	expression tag	UNP Q9VJY9
F	390	GLY	-	expression tag	UNP Q9VJY9
F	391	GLY	-	expression tag	UNP Q9VJY9
G	389	GLY	-	expression tag	UNP Q9VJY9
G	390	GLY	-	expression tag	UNP Q9VJY9
G	391	GLY	-	expression tag	UNP Q9VJY9

- Molecule 2 is a protein called Loquacious.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	H	48	Total	C	N	O	0	0	0
			240	144	48	48			

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			6	3	3		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	15	Total	O	0	0
			15	15		
4	B	7	Total	O	0	0
			7	7		

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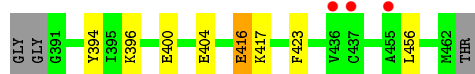
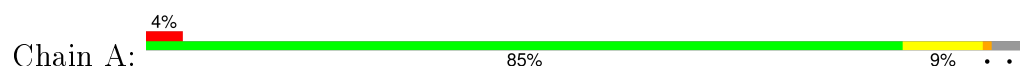
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	18	Total 18	O 18	0	0
4	D	8	Total 8	O 8	0	0
4	E	5	Total 5	O 5	0	0
4	F	6	Total 6	O 6	0	0
4	G	6	Total 6	O 6	0	0
4	H	2	Total 2	O 2	0	0

### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

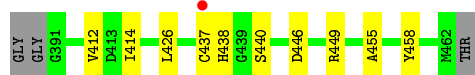
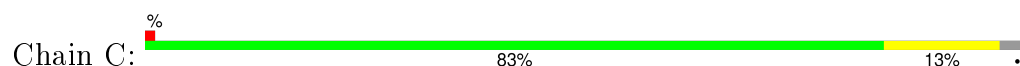
- Molecule 1: Loquacious, isoform B



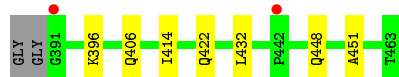
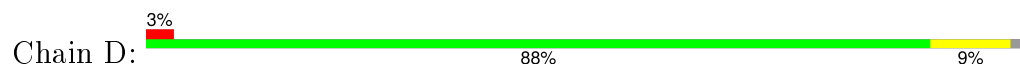
- Molecule 1: Loquacious, isoform B



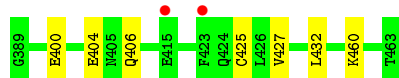
- Molecule 1: Loquacious, isoform B



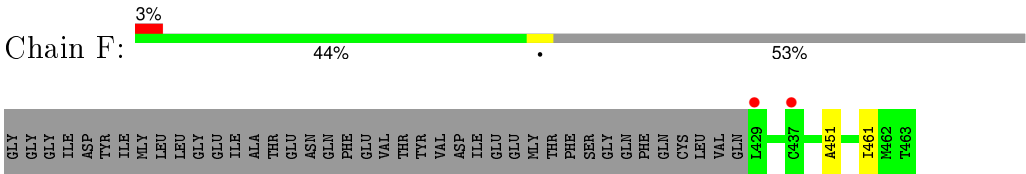
- Molecule 1: Loquacious, isoform B



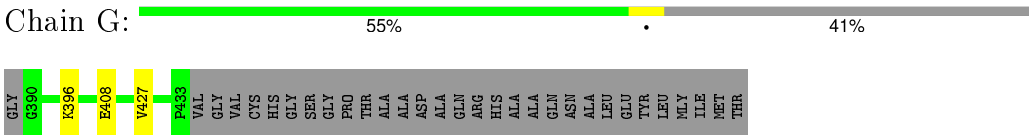
- Molecule 1: Loquacious, isoform B



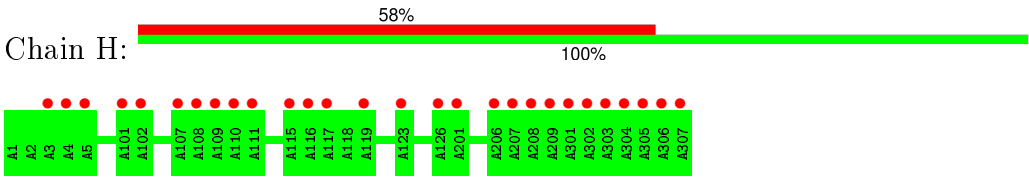
- Molecule 1: Loquacious, isoform B



• Molecule 1: Loquacious, isoform B



• Molecule 2: Loquacious





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	66.02Å 112.97Å 114.05Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	25.45 – 2.65 25.97 – 2.65	Depositor EDS
% Data completeness (in resolution range)	99.8 (25.45-2.65) 99.9 (25.97-2.65)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.05	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.72 (at 2.64Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.9_1692)	Depositor
R, $R_{free}$	0.206 , 0.251 0.231 , 0.269	Depositor DCC
$R_{free}$ test set	1308 reflections (5.41%)	DCC
Wilson B-factor (Å <sup>2</sup> )	52.1	Xtriage
Anisotropy	0.521	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 63.8	EDS
Estimated twinning fraction	0.022 for -h,l,k	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	0 of 25493 reflections	Xtriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	3699	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	65.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.48% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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: GOL, MLY

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	0.44	0/527	0.66	0/718
1	B	0.39	0/525	0.51	0/717
1	C	0.52	0/534	0.68	0/727
1	D	0.49	0/541	0.61	0/737
1	E	0.43	0/549	0.60	0/747
1	F	0.43	0/247	0.53	0/337
1	G	0.43	0/331	0.55	0/450
2	H	0.31	0/234	0.39	0/318
All	All	0.44	0/3488	0.59	0/4751

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	551	0	534	6	0
1	B	543	0	524	3	0
1	C	558	0	549	7	0
1	D	565	0	556	6	0
1	E	567	0	547	5	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	254	0	254	2	0
1	G	348	0	335	3	0
2	H	240	0	237	0	0
3	A	6	0	8	1	0
4	A	15	0	0	1	0
4	B	7	0	0	0	0
4	C	18	0	0	1	0
4	D	8	0	0	1	0
4	E	5	0	0	0	0
4	F	6	0	0	0	0
4	G	6	0	0	0	0
4	H	2	0	0	0	0
All	All	3699	0	3544	26	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 (26) 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:C:412:VAL:HG11	1:F:461:ILE:HG21	1.64	0.80
1:C:438:HIS:ND1	4:C:501:HOH:O	2.20	0.73
1:C:414:ILE:HD11	1:C:426:LEU:HG	1.72	0.72
1:A:417:MLY:HH13	1:A:423:PHE:CE2	2.44	0.53
1:A:417:MLY:HH13	1:A:423:PHE:CZ	2.45	0.52
1:D:448:GLN:HG2	1:E:425:CYS:SG	2.54	0.48
1:A:394:TYR:CE1	3:A:501:GOL:H32	2.50	0.46
1:B:461:ILE:HD13	1:D:414:ILE:HG13	1.96	0.46
1:D:422:GLN:NE2	4:D:502:HOH:O	2.37	0.45
1:C:437:CYS:SG	1:C:458:TYR:HB2	2.57	0.45
1:E:406:GLN:HB3	1:E:432:LEU:HD12	1.98	0.44
1:G:396:MLY:HH22	1:G:396:MLY:HD3	1.59	0.44
1:D:451:ALA:HB1	1:E:427:VAL:HG23	1.99	0.44
1:B:416:GLU:OE1	1:E:460:MLY:HH22	2.18	0.44
1:B:399:GLY:O	1:B:403:THR:HG23	2.19	0.43
1:A:400:GLU:O	1:A:404:GLU:HG2	2.19	0.43
1:A:396:MLY:HH12	1:A:396:MLY:HD3	1.82	0.43
1:D:396:MLY:HH22	1:D:396:MLY:HD2	1.74	0.42
1:G:408:GLU:N	1:G:408:GLU:OE1	2.52	0.42
1:D:406:GLN:O	1:D:432:LEU:HD13	2.20	0.42
1:F:451:ALA:HB1	1:G:427:VAL:HG23	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:446:ASP:OD1	1:C:449:ARG:NH1	2.52	0.41
1:A:416:GLU:OE2	4:A:601:HOH:O	2.22	0.41
1:C:437:CYS:SG	1:C:455:ALA:HA	2.61	0.41
1:C:438:HIS:HE1	1:C:440:SER:OG	2.03	0.41
1:E:400:GLU:O	1:E:404:GLU:HG3	2.20	0.41

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	67/75 (89%)	65 (97%)	2 (3%)	0	100	100
1	B	67/75 (89%)	65 (97%)	2 (3%)	0	100	100
1	C	67/75 (89%)	66 (98%)	1 (2%)	0	100	100
1	D	68/75 (91%)	68 (100%)	0	0	100	100
1	E	70/75 (93%)	70 (100%)	0	0	100	100
1	F	32/75 (43%)	32 (100%)	0	0	100	100
1	G	40/75 (53%)	40 (100%)	0	0	100	100
2	H	36/48 (75%)	28 (78%)	8 (22%)	0	100	100
All	All	447/573 (78%)	434 (97%)	13 (3%)	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	54/57 (95%)	52 (96%)	2 (4%)	41	67
1	B	54/57 (95%)	54 (100%)	0	100	100
1	C	56/57 (98%)	56 (100%)	0	100	100
1	D	57/57 (100%)	57 (100%)	0	100	100
1	E	57/57 (100%)	57 (100%)	0	100	100
1	F	25/57 (44%)	25 (100%)	0	100	100
1	G	36/57 (63%)	36 (100%)	0	100	100
All	All	339/399 (85%)	337 (99%)	2 (1%)	90	97

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	416	GLU
1	A	456	LEU

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

Mol	Chain	Res	Type
1	C	438	HIS
1	E	406	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

18 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
1	MLY	A	396	1	8,10,11	0.60	0	9,11,13	0.96	0
1	MLY	A	417	1	8,10,11	0.78	0	9,11,13	1.40	1 (11%)
1	MLY	A	460	1	8,10,11	0.72	0	9,11,13	0.87	1 (11%)
1	MLY	B	396	1	1,4,11	0.74	0	1,4,13	0.32	0
1	MLY	B	417	1	8,10,11	0.63	0	9,11,13	0.85	0
1	MLY	B	460	1	8,10,11	0.45	0	9,11,13	1.30	1 (11%)
1	MLY	C	396	1	8,10,11	0.62	0	9,11,13	0.80	0
1	MLY	C	417	1	8,10,11	0.52	0	9,11,13	0.87	0
1	MLY	C	460	1	8,10,11	0.83	0	9,11,13	1.04	0
1	MLY	D	396	1	8,10,11	0.54	0	9,11,13	0.88	0
1	MLY	D	417	1	8,10,11	0.51	0	9,11,13	1.10	1 (11%)
1	MLY	D	460	1	8,10,11	0.71	0	9,11,13	0.88	0
1	MLY	E	396	1	1,4,11	0.76	0	1,4,13	0.12	0
1	MLY	E	417	1	8,10,11	0.57	0	9,11,13	0.88	0
1	MLY	E	460	1	8,10,11	0.74	0	9,11,13	0.81	0
1	MLY	F	460	1	8,10,11	0.56	0	9,11,13	1.00	1 (11%)
1	MLY	G	396	1	8,10,11	0.65	0	9,11,13	0.88	0
1	MLY	G	417	1	8,10,11	0.71	0	9,11,13	1.13	1 (11%)

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
1	MLY	A	396	1	-	0/7/9/11	0/0/0/0
1	MLY	A	417	1	-	0/7/9/11	0/0/0/0
1	MLY	A	460	1	-	0/7/9/11	0/0/0/0
1	MLY	B	396	1	-	0/0/2/11	0/0/0/0
1	MLY	B	417	1	-	0/7/9/11	0/0/0/0
1	MLY	B	460	1	-	0/7/9/11	0/0/0/0
1	MLY	C	396	1	-	0/7/9/11	0/0/0/0
1	MLY	C	417	1	-	0/7/9/11	0/0/0/0
1	MLY	C	460	1	-	0/7/9/11	0/0/0/0
1	MLY	D	396	1	-	0/7/9/11	0/0/0/0
1	MLY	D	417	1	-	0/7/9/11	0/0/0/0
1	MLY	D	460	1	-	0/7/9/11	0/0/0/0
1	MLY	E	396	1	-	0/0/2/11	0/0/0/0
1	MLY	E	417	1	-	0/7/9/11	0/0/0/0
1	MLY	E	460	1	-	0/7/9/11	0/0/0/0
1	MLY	F	460	1	-	0/7/9/11	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	MLY	G	396	1	-	0/7/9/11	0/0/0/0
1	MLY	G	417	1	-	0/7/9/11	0/0/0/0

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	460	MLY	CD-CE-NZ	-3.11	106.08	113.83
1	A	417	MLY	CH2-NZ-CH1	-3.09	101.58	109.71
1	A	460	MLY	O-C-CA	-2.18	119.89	125.72
1	G	417	MLY	O-C-CA	-2.16	119.94	125.72
1	D	417	MLY	O-C-CA	-2.12	120.05	125.72
1	F	460	MLY	O-C-CA	-2.11	120.05	125.72

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	396	MLY	1	0
1	A	417	MLY	2	0
1	D	396	MLY	1	0
1	E	460	MLY	1	0
1	G	396	MLY	1	0

## 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

1 ligand is 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	$\# Z  > 2$
3	GOL	A	501	-	5,5,5	0.32	0	5,5,5	0.29	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	501	-	-	0/4/4/4	0/0/0/0

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
3	A	501	GOL	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	H	5

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	H	209:ALA	C	301:ALA	N	26.85
1	H	7:ALA	C	101:ALA	N	22.72

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	H	113:ALA	C	114:ALA	N	15.78
1	H	126:ALA	C	201:ALA	N	8.81
1	H	119:ALA	C	121:ALA	N	4.50

## 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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	69/75 (92%)	0.19	3 (4%) 39 32	37, 53, 85, 113	0
1	B	69/75 (92%)	0.11	3 (4%) 39 32	40, 65, 105, 133	0
1	C	69/75 (92%)	-0.19	1 (1%) 78 74	30, 49, 77, 97	0
1	D	70/75 (93%)	0.14	2 (2%) 55 49	39, 60, 90, 121	0
1	E	72/75 (96%)	0.11	2 (2%) 56 50	41, 65, 91, 105	0
1	F	34/75 (45%)	0.36	2 (5%) 26 20	36, 52, 86, 105	0
1	G	42/75 (56%)	-0.04	0 100 100	36, 64, 89, 103	0
2	H	48/48 (100%)	2.23	28 (58%) 0 0	86, 117, 131, 140	0
All	All	473/573 (82%)	0.30	41 (8%) 13 9	30, 60, 117, 140	0

All (41) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	H	201	ALA	6.1
2	H	109	ALA	5.8
1	F	429	LEU	4.6
2	H	4	ALA	4.4
2	H	115	ALA	3.8
1	B	419	PHE	3.8
1	C	437	CYS	3.5
2	H	108	ALA	3.5
2	H	303	ALA	3.3
2	H	123	ALA	3.3
2	H	101	ALA	3.3
2	H	3	ALA	3.2
1	A	437	CYS	3.2
2	H	110	ALA	3.1
2	H	207	ALA	3.1
2	H	102	ALA	3.1

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Mol	Chain	Res	Type	RSRZ
1	E	423	PHE	3.0
2	H	126	ALA	2.9
2	H	206	ALA	2.8
2	H	307	ALA	2.7
2	H	301	ALA	2.7
2	H	302	ALA	2.7
2	H	5	ALA	2.7
2	H	116	ALA	2.6
2	H	304	ALA	2.6
1	B	463	THR	2.5
1	A	436	VAL	2.5
2	H	306	ALA	2.4
1	B	392	ILE	2.4
2	H	107	ALA	2.4
2	H	208	ALA	2.3
2	H	117	ALA	2.3
2	H	305	ALA	2.3
1	F	437	CYS	2.3
1	D	442	PRO	2.2
1	E	415	GLU	2.2
2	H	119	ALA	2.2
2	H	209	ALA	2.2
1	D	391	GLY	2.2
2	H	111	ALA	2.2
1	A	455	ALA	2.1

## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
1	MLY	F	460	11/12	0.93	0.23	-	42,55,85,85	0
1	MLY	G	417	11/12	0.95	0.33	-	54,56,77,78	0
1	MLY	B	460	11/12	0.96	0.10	-	57,58,64,66	0
1	MLY	B	417	11/12	0.88	0.42	-	65,77,95,98	0
1	MLY	A	417	11/12	0.96	0.19	-	52,55,69,81	0
1	MLY	A	460	11/12	0.95	0.16	-	60,69,82,92	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
1	MLY	E	417	11/12	0.88	0.28	-	71,85,94,95	0
1	MLY	D	417	11/12	0.96	0.16	-	31,53,59,63	0
1	MLY	C	417	11/12	0.97	0.18	-	41,48,86,91	0
1	MLY	A	396	11/12	0.95	0.15	-	50,61,93,95	0
1	MLY	C	460	11/12	0.93	0.15	-	49,58,83,87	0
1	MLY	E	460	11/12	0.92	0.18	-	57,70,92,93	0
1	MLY	D	396	11/12	0.92	0.24	-	73,87,101,103	0
1	MLY	G	396	11/12	0.95	0.34	-	52,63,85,90	0
1	MLY	C	396	11/12	0.95	0.18	-	54,57,86,88	0
1	MLY	B	396	5/12	0.94	0.13	-	71,76,78,79	0
1	MLY	E	396	5/12	0.93	0.15	-	64,65,79,88	0
1	MLY	D	460	11/12	0.94	0.17	-	48,69,80,83	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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> 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	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
3	GOL	A	501	6/6	0.92	0.24	2.26	70,78,83,84	0

### 6.5 Other polymers [i](#)

There are no such residues in this entry.