



# wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 1, 2016 – 05:13 AM GMT

PDB ID : 2PX1  
Title : crystal structure of the complex of bovine lactoferrin C-lobe with Ribose at 2.5 Å resolution  
Authors : Mir, R.; Vikram, G.; Sinha, M.; Sharma, S.; Kaur, P.; Singh, T.P.  
Deposited on : 2007-05-14  
Resolution : 2.50 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
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) : trunk26865

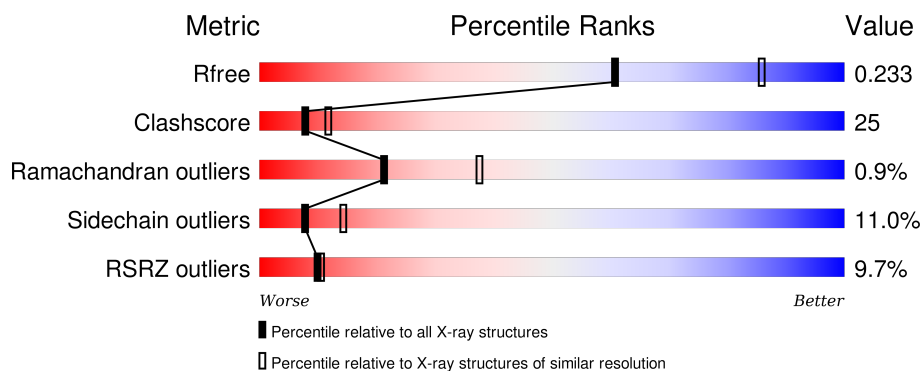
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.50 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	3553 (2.50-2.50)
Clashscore	102246	4242 (2.50-2.50)
Ramachandran outliers	100387	4156 (2.50-2.50)
Sidechain outliers	100360	4158 (2.50-2.50)
RSRZ outliers	91569	3562 (2.50-2.50)

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	345	<div> <div>10%</div> <div>66%</div> <div>27%</div> <div>6%</div> </div>

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
4	NAG	A	691	-	-	-	X

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	NDG	A	692	-	-	X	-
4	BMA	A	693	-	-	X	-
5	RIP	A	694	-	-	-	X
5	RIP	A	695	-	-	-	X
7	CO3	A	201	-	-	-	X

## 2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 2919 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 Lactotransferrin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	341	Total	C	N	O	S	0	0	0
			2605	1622	454	508	21			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	565	LYS	ASN	SEE REMARK 999	UNP P24627
A	608	GLU	LYS	SEE REMARK 999	UNP P24627

- Molecule 2 is a polymer of unknown type called SUGAR (2-MER).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	2	Total	C	N	O	0	0
			28	16	2	10		

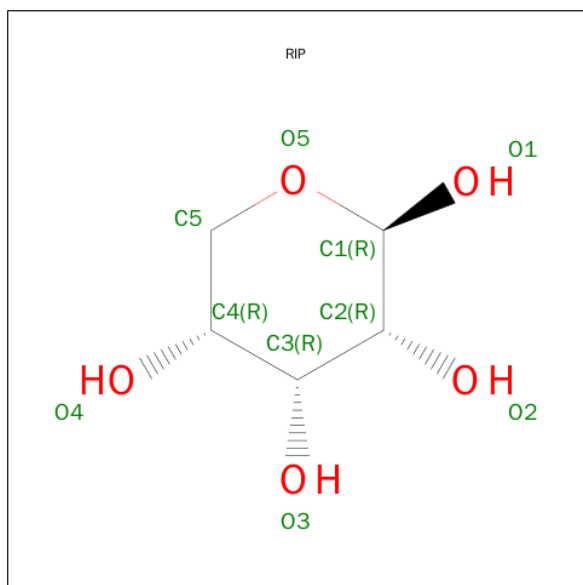
- Molecule 3 is a polymer of unknown type called SUGAR (4-MER).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	4	Total	C	N	O	0	0
			50	28	2	20		

- Molecule 4 is a polymer of unknown type called SUGAR (3-MER).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 5 is SUGAR (RIBOSE(PYRANOSE FORM)) (three-letter code: RIP) (formula: C<sub>5</sub>H<sub>10</sub>O<sub>5</sub>).

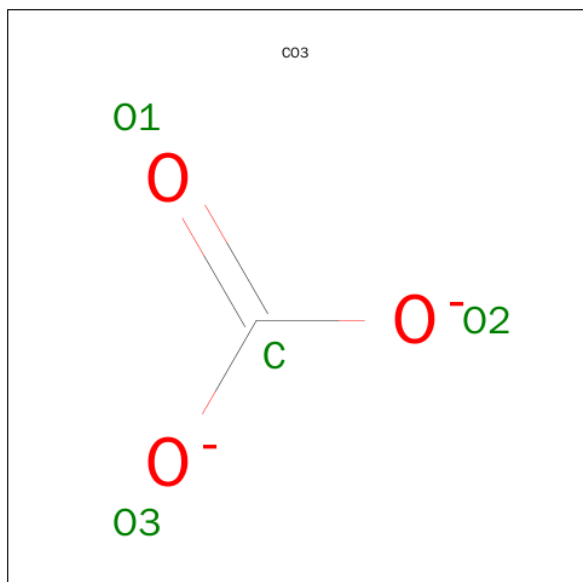


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			10	5	5		
5	A	1	Total	C	O	0	0
			10	5	5		

- Molecule 6 is FE (III) ION (three-letter code: FE) (formula: Fe).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total	Fe	0	0
			1	1		

- Molecule 7 is CARBONATE ION (three-letter code: CO3) (formula: CO<sub>3</sub>).

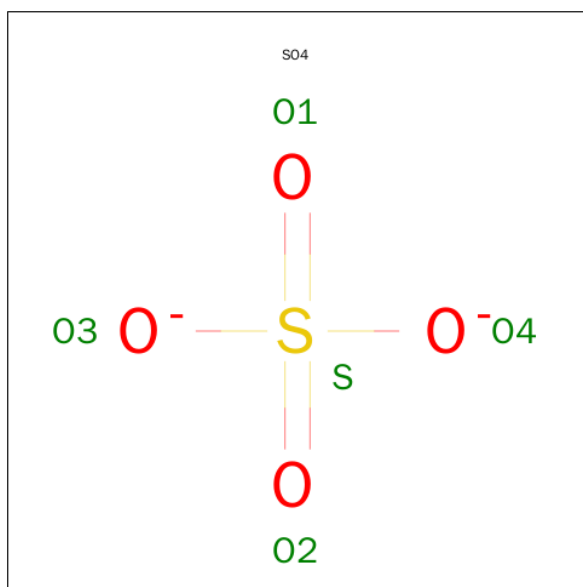


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	1	Total	C	O	0	0
			4	1	3		

- Molecule 8 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	A	2	Total	Zn		0	0
			2	2			

- Molecule 9 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



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

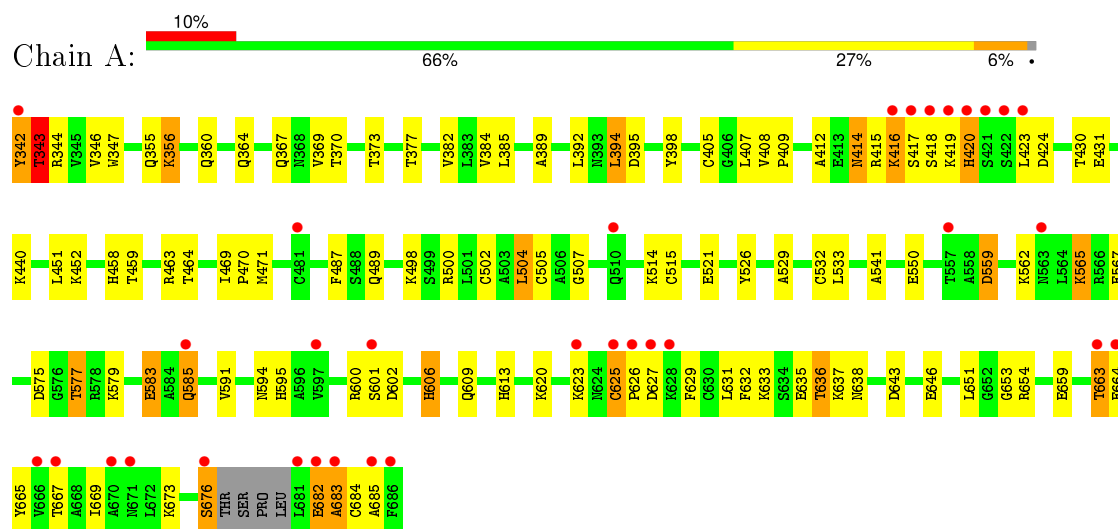
- Molecule 10 is water.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	A	165	Total	O		0	0
			165	165			

### 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 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 ( $\text{RSRZ} > 2$ ). 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: Lactotransferrin



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	59.91Å 49.63Å 64.70Å 90.00° 105.88° 90.00°	Depositor
Resolution (Å)	19.96 – 2.50 29.39 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.6 (19.96-2.50) 99.4 (29.39-2.50)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	5.00	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.22 (at 2.51Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, $R_{free}$	0.204 , 0.228 0.210 , 0.233	Depositor DCC
$R_{free}$ test set	655 reflections (5.12%)	DCC
Wilson B-factor (Å <sup>2</sup> )	41.3	Xtriage
Anisotropy	0.619	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 44.9	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	0 of 12820 reflections	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	2919	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.09% 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: ZN, BMA, NAG, SO4, CO3, NDG, RIP, FE

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	0.53	0/2653	0.84	3/3591 (0.1%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
1	A	343	THR	N-CA-C	8.95	135.17	111.00
1	A	342	TYR	CA-CB-CG	7.05	126.79	113.40
1	A	394	LEU	CA-CB-CG	5.54	128.04	115.30

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	2605	0	2519	117	0
2	A	28	0	25	2	0
3	A	50	0	43	2	0
4	A	39	0	34	13	0
5	A	20	0	20	3	0
6	A	1	0	0	0	0
7	A	4	0	0	1	0
8	A	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
9	A	5	0	0	0	0
10	A	165	0	0	57	0
All	All	2919	0	2641	134	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 25.

The worst 5 of 134 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:A:369:VAL:HG13	10:A:1107:HOH:O	1.41	1.21
4:A:693:BMA:H62	10:A:1137:HOH:O	1.43	1.16
1:A:514:LYS:HE3	10:A:1110:HOH:O	1.44	1.15
1:A:419:LYS:HB3	10:A:1105:HOH:O	1.62	0.99
1:A:585:GLN:CD	1:A:585:GLN:H	1.63	0.98

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	337/345 (98%)	308 (91%)	26 (8%)	3 (1%)	21	37

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	625	CYS
1	A	343	THR
1	A	683	ALA

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	282/286 (99%)	251 (89%)	31 (11%)	<b>8</b> <b>14</b>

5 of 31 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	565	LYS
1	A	585	GLN
1	A	664	GLU
1	A	577	THR
1	A	591	VAL

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 9 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	449	ASN
1	A	638	ASN
1	A	609	GLN
1	A	393	ASN
1	A	606	HIS

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

## 5.5 Carbohydrates [i](#)

9 carbohydrates 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	NAG	A	1	1,2	14,14,15	0.54	0	15,19,21	1.43	1 (6%)
2	NAG	A	2	2	14,14,15	0.59	0	15,19,21	1.03	1 (6%)
3	NAG	A	687	1,3	14,14,15	0.88	1 (7%)	15,19,21	2.32	4 (26%)
3	NAG	A	688	3	14,14,15	0.82	1 (7%)	15,19,21	1.54	4 (26%)
3	BMA	A	689	3	11,11,12	1.36	1 (9%)	14,15,17	0.74	0
3	BMA	A	690	3	11,11,12	0.99	1 (9%)	14,15,17	1.41	2 (14%)
4	NAG	A	691	1,4	14,14,15	0.89	1 (7%)	15,19,21	1.38	2 (13%)
4	NDG	A	692	4	14,14,15	0.79	0	15,19,21	1.85	4 (26%)
4	BMA	A	693	4	11,11,12	1.12	1 (9%)	14,15,17	2.46	3 (21%)

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	NAG	A	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	2	2	-	0/6/23/26	0/1/1/1
3	NAG	A	687	1,3	-	0/6/23/26	0/1/1/1
3	NAG	A	688	3	-	1/6/23/26	0/1/1/1
3	BMA	A	689	3	-	0/2/19/22	0/1/1/1
3	BMA	A	690	3	-	0/2/19/22	0/1/1/1
4	NAG	A	691	1,4	-	0/6/23/26	0/1/1/1
4	NDG	A	692	4	-	0/6/23/26	0/1/1/1
4	BMA	A	693	4	-	0/2/19/22	0/1/1/1

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	687	NAG	C1-C2	-2.02	1.49	1.52
3	A	688	NAG	C4-C5	2.04	1.57	1.53
4	A	693	BMA	C2-C3	2.25	1.55	1.52
3	A	690	BMA	O5-C5	2.39	1.48	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	691	NAG	C4-C5	2.42	1.58	1.53

The worst 5 of 21 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	687	NAG	C4-C3-C2	-5.46	102.74	111.23
3	A	690	BMA	C1-C2-C3	-3.30	105.64	109.54
3	A	690	BMA	C6-C5-C4	-2.95	105.73	113.02
3	A	688	NAG	C6-C5-C4	-2.66	106.45	113.02
3	A	688	NAG	C2-N2-C7	-2.63	119.66	123.04

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	688	NAG	O7-C7-N2-C2

There are no ring outliers.

6 monomers are involved in 17 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1	NAG	1	0
2	A	2	NAG	1	0
3	A	687	NAG	2	0
4	A	691	NAG	1	0
4	A	692	NDG	7	0
4	A	693	BMA	6	0

## 5.6 Ligand geometry

Of 7 ligands modelled in this entry, 3 are monoatomic - leaving 4 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
9	SO4	A	1002	-	4,4,4	0.30	0	6,6,6	0.18	0
7	CO3	A	201	6	0,3,3	0.00	-	0,3,3	0.00	-
5	RIP	A	694	-	10,10,10	1.48	1 (10%)	12,14,14	1.65	2 (16%)
5	RIP	A	695	-	10,10,10	1.23	1 (10%)	12,14,14	1.36	3 (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
9	SO4	A	1002	-	-	0/0/0/0	0/0/0/0
7	CO3	A	201	6	-	0/0/0/0	0/0/0/0
5	RIP	A	694	-	-	0/0/17/17	0/1/1/1
5	RIP	A	695	-	-	0/0/17/17	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	695	RIP	O3-C3	-2.17	1.37	1.43
5	A	694	RIP	C4-C3	3.72	1.57	1.52

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	695	RIP	O4-C4-C5	2.01	113.24	109.21
5	A	695	RIP	O3-C3-C2	2.30	115.50	110.34
5	A	695	RIP	C5-C4-C3	2.37	112.34	109.54
5	A	694	RIP	O5-C5-C4	3.11	115.90	110.86
5	A	694	RIP	C5-C4-C3	3.24	113.37	109.54

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	A	201	CO3	1	0
5	A	694	RIP	3	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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<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	341/345 (98%)	0.55	33 (9%) 10 10	21, 41, 65, 88	7 (2%)

The worst 5 of 33 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	421	SER	9.9
1	A	422	SER	9.0
1	A	418	SER	7.4
1	A	601	SER	6.5
1	A	420	HIS	6.5

### 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](#)

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
4	NAG	A	691	14/15	0.88	0.37	2.31	40,42,46,51	14
3	NAG	A	687	14/15	0.86	0.26	0.27	39,42,44,46	14
2	NAG	A	1	14/15	0.79	0.21	0.26	48,51,53,56	14
3	BMA	A	689	11/12	0.73	0.22	-	58,60,61,64	11
4	NDG	A	692	14/15	0.63	0.31	-	55,57,60,63	14

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
4	BMA	A	693	11/12	0.75	0.46	-	66,68,69,70	11
3	BMA	A	690	11/12	0.51	0.54	-	66,67,68,69	11
3	NAG	A	688	14/15	0.83	0.21	-	49,50,52,55	14
2	NAG	A	2	14/15	0.56	0.63	-	59,61,63,63	14

## 6.4 Ligands

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
5	RIP	A	694	10/10	0.42	0.52	6.08	59,59,60,60	10
5	RIP	A	695	10/10	0.69	0.59	3.87	56,57,57,57	10
7	CO3	A	201	4/4	0.99	0.27	2.60	28,29,29,30	0
8	ZN	A	301	1/1	0.99	0.10	-1.09	35,35,35,35	0
6	FE	A	1001	1/1	0.99	0.14	-1.47	32,32,32,32	0
9	SO4	A	1002	5/5	0.95	0.20	-	30,30,31,31	5
8	ZN	A	302	1/1	0.98	0.10	-	46,46,46,46	0

## 6.5 Other polymers

There are no such residues in this entry.