



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2018 – 07:45 AM EST

PDB ID : 5V48  
Title : Soluble rabbit neprilysin in complex with thiorphan  
Authors : Labiuk, S.L.; Grochulski, P.; Sygusch, J.  
Deposited on : 2017-03-08  
Resolution : 3.00 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 : 1.7.2 (RC1), CSD as538be (2017)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20030736  
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)  
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-20030736

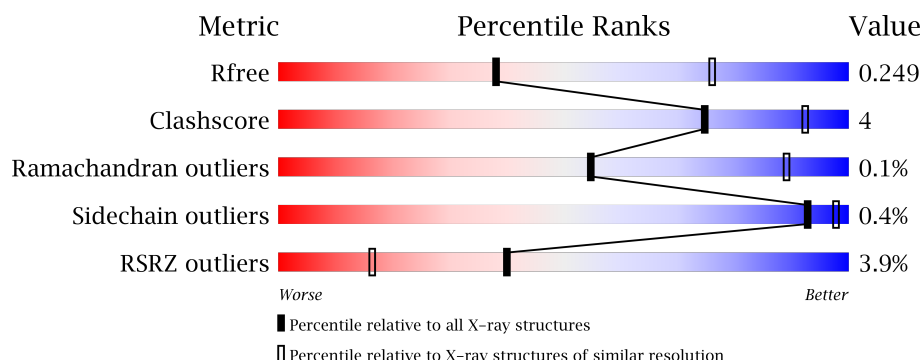
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.00 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))
$R_{free}$	100719	1692 (3.00-3.00)
Clashscore	112137	2037 (3.00-3.00)
Ramachandran outliers	110173	1973 (3.00-3.00)
Sidechain outliers	110143	1976 (3.00-3.00)
RSRZ outliers	101464	1716 (3.00-3.00)

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	696	
1	B	696	

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 12108 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 Neprilysin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	696	Total	C	N	O	S	0	0	0
			5591	3537	949	1078	27			
1	B	696	Total	C	N	O	S	0	0	0
			5591	3537	949	1078	27			

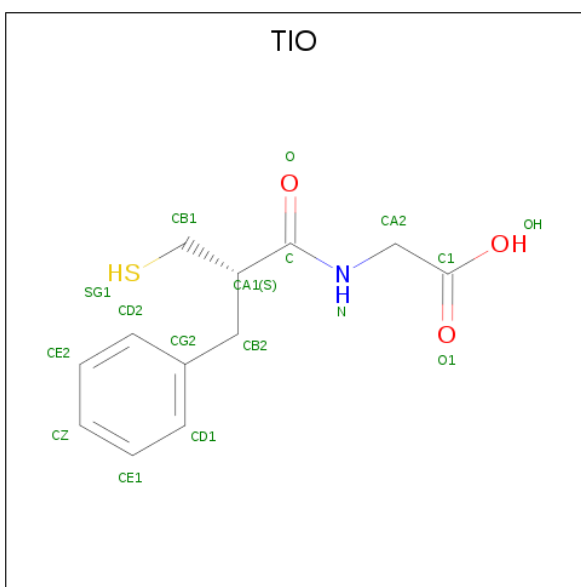
There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	194	LYS	ASN	variant	UNP P08049
A	363	SER	PHE	variant	UNP P08049
A	367	LEU	PHE	conflict	UNP P08049
A	371	MET	PHE	conflict	UNP P08049
B	194	LYS	ASN	variant	UNP P08049
B	363	SER	PHE	variant	UNP P08049
B	367	LEU	PHE	conflict	UNP P08049
B	371	MET	PHE	conflict	UNP P08049

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

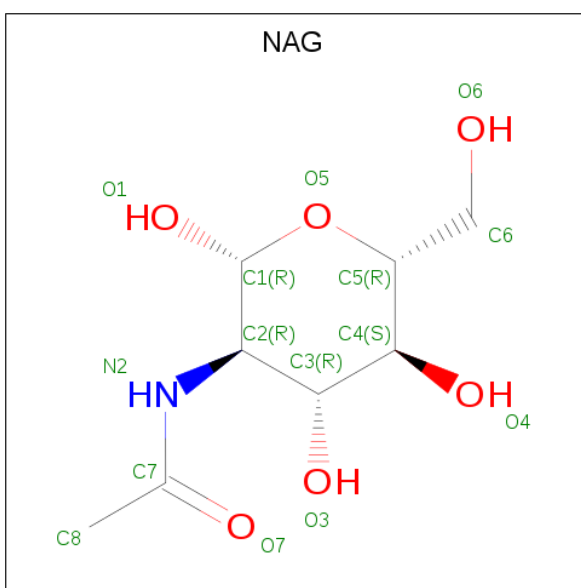
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total	Zn	0	0
			1	1		
2	A	1	Total	Zn	0	0
			1	1		

- Molecule 3 is (2-MERCAPTOMETHYL-3-PHENYL-PROPIONYL)-GLYCINE (three-letter code: TIO) (formula: C<sub>12</sub>H<sub>15</sub>NO<sub>3</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	S	0	0
			17	12	1	3	1		
3	B	1	Total	C	N	O	S	0	0
			17	12	1	3	1		

- Molecule 4 is N-ACETYL-D-GLUCOSAMINE (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	A	1	Total	C	N	O	0	0
			14	8	1	5		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	B	1	Total	C	N	O	0	0
			14	8	1	5		
4	B	1	Total	C	N	O	0	0
			14	8	1	5		
4	B	1	Total	C	N	O	0	0
			14	8	1	5		
4	B	1	Total	C	N	O	0	0
			14	8	1	5		

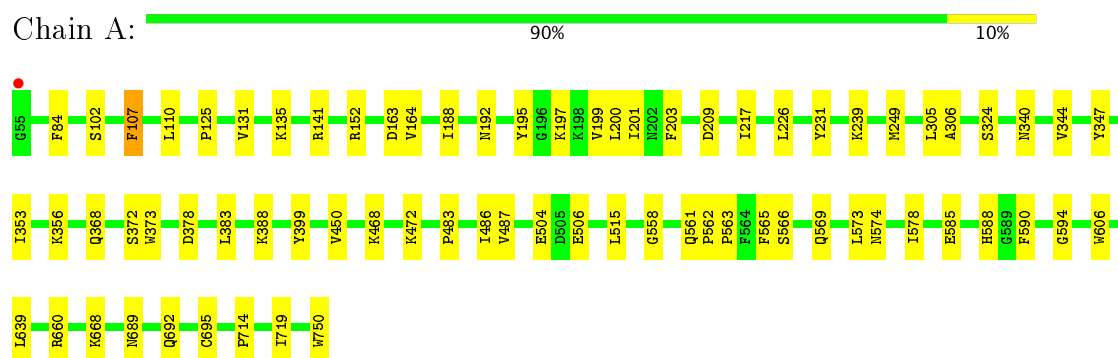
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	542	Total	O	0	0
			542	542		
5	B	194	Total	O	0	0
			194	194		

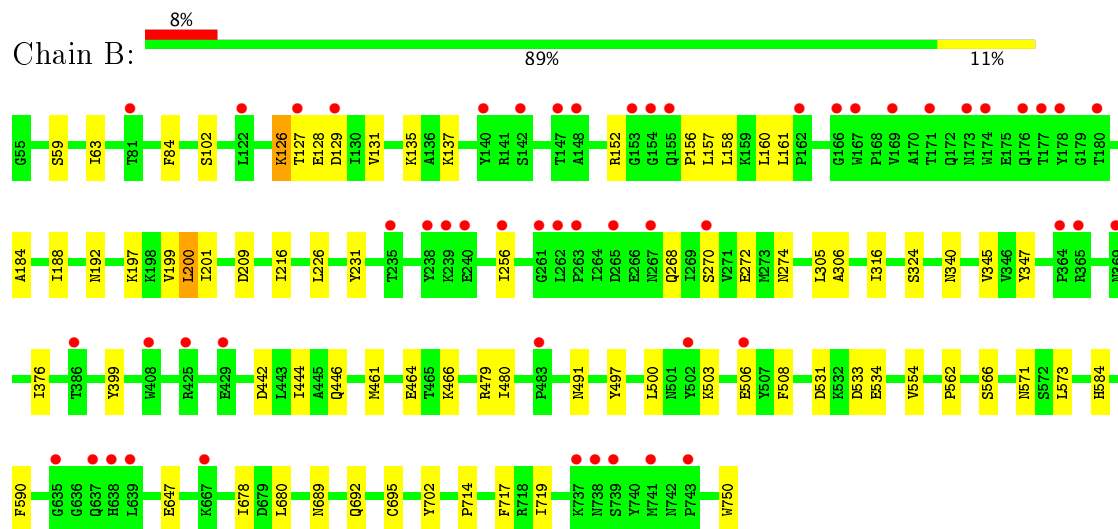
### 3 Residue-property plots

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: Neprilysin



#### • Molecule 1: Neprilysin



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	68.99Å 108.45Å 211.89Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	39.47 – 3.00 39.47 – 3.00	Depositor EDS
% Data completeness (in resolution range)	79.0 (39.47-3.00) 76.7 (39.47-3.00)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.25 (at 3.01Å)	Xtriage
Refinement program	PHENIX 1.10.1 _2155	Depositor
R, $R_{free}$	0.195 , 0.245 0.200 , 0.249	Depositor DCC
$R_{free}$ test set	1978 reflections (7.16%)	DCC
Wilson B-factor (Å <sup>2</sup> )	37.5	Xtriage
Anisotropy	0.607	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.29 , 46.5	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.45$ , $\langle L^2 \rangle = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.89	EDS
Total number of atoms	12108	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.54% 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, 0.333 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: ZN, TIO, NAG

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	0.24	0/5711	0.38	0/7727
1	B	0.24	0/5711	0.38	0/7727
All	All	0.24	0/11422	0.38	0/15454

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5591	0	5431	40	0
1	B	5591	0	5432	43	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	17	0	13	1	0
3	B	17	0	13	1	0
4	A	84	0	76	0	0
4	B	70	0	63	0	0
5	A	542	0	0	3	0
5	B	194	0	0	3	0
All	All	12108	0	11028	83	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 (83) 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:197:LYS:NZ	1:A:378:ASP:OD2	2.26	0.68
1:B:270:SER:O	1:B:274:ASN:ND2	2.28	0.65
1:A:383:LEU:O	1:A:388:LYS:NZ	2.35	0.60
1:B:158:LEU:HD21	1:B:256:ILE:HG23	1.84	0.60
1:B:503:LYS:HB2	1:B:506:GLU:HB2	1.84	0.60
1:B:126:LYS:O	1:B:128:GLU:N	2.35	0.60
1:A:566:SER:HB3	1:A:569:GLN:HB2	1.84	0.60
1:B:714:PRO:HG2	1:B:717:PHE:HD2	1.66	0.59
1:B:479:ARG:HH22	1:B:533:ASP:HA	1.68	0.58
1:A:468:LYS:HD3	1:A:606:TRP:HB2	1.86	0.57
1:A:102:SER:HB3	1:A:399:TYR:HB3	1.87	0.56
1:A:107:PHE:HE2	3:A:802:TIO:HA21	1.72	0.55
1:A:569:GLN:NE2	1:A:574:ASN:OD1	2.39	0.54
1:A:353:ILE:HA	1:A:356:LYS:HZ3	1.73	0.54
1:B:226:LEU:HD13	1:B:231:TYR:HB3	1.89	0.53
1:B:678:ILE:HD11	1:B:680:LEU:HD12	1.89	0.53
1:B:102:SER:HB2	1:B:702:TYR:HB2	1.91	0.53
1:A:668:LYS:NZ	5:A:918:HOH:O	2.37	0.53
1:B:562:PRO:HG3	1:B:566:SER:HB2	1.90	0.53
1:A:472:LYS:NZ	1:A:594:GLY:O	2.42	0.53
1:A:486:ILE:HG13	1:A:487:VAL:HG23	1.90	0.53
1:B:305:LEU:HD21	1:B:324:SER:HA	1.91	0.53
1:A:249:MET:HG2	1:A:373:TRP:CE2	2.45	0.52
1:B:199:VAL:O	1:B:201:ILE:N	2.43	0.52
1:B:129:ASP:OD2	1:B:137:LYS:NZ	2.40	0.51
1:B:184:ALA:HB2	1:B:316:ILE:HG21	1.91	0.51
1:A:504:GLU:OE2	5:A:901:HOH:O	2.19	0.51
1:B:84:PHE:HD1	1:B:719:ILE:HD12	1.75	0.51
1:B:160:LEU:HD21	1:B:508:PHE:HE1	1.75	0.51
1:B:209:ASP:OD2	1:B:347:TYR:OH	2.28	0.51
1:A:226:LEU:HD13	1:A:231:TYR:HB3	1.92	0.51
1:A:164:VAL:O	1:A:368:GLN:NE2	2.43	0.50
1:A:573:LEU:HD22	1:A:689:ASN:HB2	1.92	0.50
1:A:84:PHE:HD1	1:A:719:ILE:HD12	1.77	0.50
1:B:192:ASN:ND2	5:B:907:HOH:O	2.37	0.49
1:B:158:LEU:HD23	1:B:161:LEU:HD12	1.92	0.49
1:B:442:ASP:OD2	1:B:446:GLN:NE2	2.38	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:305:LEU:HD21	1:A:324:SER:HA	1.93	0.49
1:A:110:LEU:HD11	1:A:563:PRO:HD2	1.95	0.48
1:B:692:GLN:HA	1:B:695:CYS:SG	2.53	0.47
1:A:239:LYS:NZ	5:A:928:HOH:O	2.43	0.47
1:B:571:ASN:ND2	5:B:908:HOH:O	2.38	0.47
1:B:491:ASN:ND2	5:B:917:HOH:O	2.48	0.46
1:A:195:TYR:HA	1:A:515:LEU:HB3	1.97	0.46
1:A:199:VAL:O	1:A:201:ILE:N	2.48	0.46
1:B:131:VAL:HG12	1:B:135:LYS:HE3	1.98	0.46
1:B:157:LEU:HD21	1:B:376:ILE:HG23	1.98	0.46
1:A:306:ALA:HB2	1:A:340:ASN:HB3	1.98	0.45
1:B:188:ILE:HD11	1:B:200:LEU:HD12	1.97	0.45
1:A:368:GLN:NE2	1:A:372:SER:OG	2.48	0.45
1:B:584:HIS:CE1	1:B:647:GLU:OE1	2.69	0.45
1:A:565:PHE:HB2	1:A:578:ILE:HG21	1.98	0.45
1:B:444:ILE:HD12	1:B:480:ILE:HD11	1.98	0.45
1:A:590:PHE:HB3	1:A:750:TRP:CZ2	2.53	0.44
1:A:152:ARG:NH2	1:A:506:GLU:OE2	2.42	0.44
1:B:152:ARG:NH2	1:B:506:GLU:OE2	2.51	0.44
1:A:562:PRO:HG3	1:A:566:SER:HB2	1.99	0.43
1:A:163:ASP:OD2	1:A:195:TYR:OH	2.22	0.43
1:B:216:ILE:HD13	1:B:345:VAL:HG23	1.99	0.43
1:A:131:VAL:HG12	1:A:135:LYS:HE3	2.01	0.43
1:A:639:LEU:HD21	1:A:714:PRO:HD2	2.00	0.43
1:A:692:GLN:HA	1:A:695:CYS:SG	2.59	0.43
1:B:497:TYR:HB3	1:B:500:LEU:HD12	2.01	0.43
1:A:558:GLY:O	1:A:561:GLN:NE2	2.48	0.43
1:B:197:LYS:HG3	1:B:199:VAL:HG13	2.01	0.42
1:B:306:ALA:HB2	1:B:340:ASN:HB3	2.02	0.42
1:B:268:GLN:NE2	1:B:272:GLU:OE1	2.53	0.42
1:B:590:PHE:HB3	1:B:750:TRP:CZ2	2.54	0.42
1:A:450:VAL:HG13	1:A:660:ARG:HD3	2.02	0.42
1:B:479:ARG:HB2	1:B:554:VAL:HG22	2.01	0.42
1:B:531:ASP:HB3	1:B:534:GLU:HB2	2.02	0.42
1:B:573:LEU:HD22	1:B:689:ASN:HB2	2.02	0.41
1:A:188:ILE:HD11	1:A:200:LEU:HD12	2.03	0.41
1:B:59:SER:O	1:B:63:ILE:HG12	2.21	0.41
1:A:209:ASP:OD2	1:A:347:TYR:OH	2.37	0.41
1:A:217:ILE:HG22	1:A:344:VAL:HG13	2.03	0.41
1:A:483:PRO:O	1:A:486:ILE:HG12	2.20	0.41
1:A:192:ASN:ND2	1:A:203:PHE:HB3	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:152:ARG:HB3	1:B:156:PRO:HD3	2.03	0.41
1:A:125:PRO:HG3	1:A:141:ARG:NH1	2.35	0.40
1:B:461:MET:HE3	1:B:466:LYS:HG2	2.02	0.40
1:B:584:HIS:CD2	3:B:802:TIO:HD1	2.56	0.40
1:B:102:SER:HB3	1:B:399:TYR:HB3	2.03	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	694/696 (100%)	674 (97%)	20 (3%)	0	100	100
1	B	694/696 (100%)	672 (97%)	20 (3%)	2 (0%)	44	81
All	All	1388/1392 (100%)	1346 (97%)	40 (3%)	2 (0%)	55	89

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	127	THR
1	B	200	LEU

### 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	610/610 (100%)	607 (100%)	3 (0%)	91 97
1	B	610/610 (100%)	608 (100%)	2 (0%)	94 98
All	All	1220/1220 (100%)	1215 (100%)	5 (0%)	93 98

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

Mol	Chain	Res	Type
1	A	107	PHE
1	A	585	GLU
1	A	588	HIS
1	B	126	LYS
1	B	464	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	294	ASN
1	A	568	GLN
1	A	643	ASN
1	B	294	ASN
1	B	311	ASN
1	B	491	ASN
1	B	568	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

Of 15 ligands modelled in this entry, 2 are monoatomic - leaving 13 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	$\# Z  > 2$
3	TIO	A	802	2	14,17,17	1.71	2 (14%)	15,21,21	1.57	4 (26%)
4	NAG	A	803	1	14,14,15	0.22	0	15,19,21	0.41	0
4	NAG	A	804	1,4	14,14,15	0.24	0	15,19,21	0.51	0
4	NAG	A	805	4	14,14,15	0.21	0	15,19,21	0.48	0
4	NAG	A	806	1,4	14,14,15	0.32	0	15,19,21	0.55	0
4	NAG	A	807	4	14,14,15	0.21	0	15,19,21	0.44	0
4	NAG	A	808	1	14,14,15	0.25	0	15,19,21	0.53	0
3	TIO	B	802	2	14,17,17	1.73	2 (14%)	15,21,21	1.37	3 (20%)
4	NAG	B	803	1,4	14,14,15	0.21	0	15,19,21	0.47	0
4	NAG	B	804	4	14,14,15	0.20	0	15,19,21	0.49	0
4	NAG	B	805	1	14,14,15	0.20	0	15,19,21	0.45	0
4	NAG	B	806	1,4	14,14,15	0.24	0	15,19,21	0.50	0
4	NAG	B	807	4	14,14,15	0.21	0	15,19,21	0.49	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	TIO	A	802	2	-	0/13/15/15	0/1/1/1
4	NAG	A	803	1	-	0/6/23/26	0/1/1/1
4	NAG	A	804	1,4	-	0/6/23/26	0/1/1/1
4	NAG	A	805	4	-	0/6/23/26	0/1/1/1
4	NAG	A	806	1,4	-	0/6/23/26	0/1/1/1
4	NAG	A	807	4	-	0/6/23/26	0/1/1/1
4	NAG	A	808	1	-	0/6/23/26	0/1/1/1
3	TIO	B	802	2	-	0/13/15/15	0/1/1/1
4	NAG	B	803	1,4	-	0/6/23/26	0/1/1/1
4	NAG	B	804	4	-	0/6/23/26	0/1/1/1
4	NAG	B	805	1	-	0/6/23/26	0/1/1/1
4	NAG	B	806	1,4	-	0/6/23/26	0/1/1/1
4	NAG	B	807	4	-	0/6/23/26	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	802	TIO	O-C	-2.37	1.18	1.23
3	A	802	TIO	O-C	-2.33	1.18	1.23
3	A	802	TIO	C-N	5.79	1.45	1.33
3	B	802	TIO	C-N	5.88	1.45	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	802	TIO	CG2-CB2-CA1	-2.55	108.65	113.60
3	A	802	TIO	CA1-CB1-SG1	-2.40	109.38	114.31
3	A	802	TIO	CA2-N-C	-2.32	119.25	122.39
3	B	802	TIO	CG2-CB2-CA1	-2.32	109.11	113.60
3	B	802	TIO	CA1-CB1-SG1	-2.23	109.73	114.31
3	B	802	TIO	CA1-C-N	2.80	119.67	115.99
3	A	802	TIO	CA1-C-N	3.32	120.35	115.99

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	802	TIO	1	0
3	B	802	TIO	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<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	696/696 (100%)	-0.48	1 (0%) 95 88	17, 29, 49, 64	0
1	B	696/696 (100%)	0.38	53 (7%) 15 6	31, 57, 100, 125	0
All	All	1392/1392 (100%)	-0.05	54 (3%) 40 16	17, 40, 88, 125	0

All (54) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	180	THR	5.5
1	A	55	GLY	5.4
1	B	176	GLN	5.2
1	B	162	PRO	4.6
1	B	177	THR	4.4
1	B	637	GLN	4.2
1	B	174	TRP	4.2
1	B	639	LEU	4.1
1	B	167	TRP	3.7
1	B	178	TYR	3.5
1	B	483	PRO	3.5
1	B	148	ALA	3.5
1	B	169	VAL	3.5
1	B	738	ASN	3.4
1	B	240	GLU	3.2
1	B	147	THR	3.1
1	B	262	LEU	3.1
1	B	502	TYR	3.0
1	B	122	LEU	3.0
1	B	638	HIS	3.0
1	B	238	TYR	3.0
1	B	743	PRO	2.9
1	B	741	MET	2.9
1	B	265	ASP	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	235	THR	2.8
1	B	129	ASP	2.7
1	B	153	GLY	2.7
1	B	142	SER	2.7
1	B	386	THR	2.6
1	B	429	GLU	2.6
1	B	425	ARG	2.6
1	B	263	PRO	2.5
1	B	667	LYS	2.5
1	B	171	THR	2.4
1	B	506	GLU	2.4
1	B	140	TYR	2.4
1	B	270	SER	2.3
1	B	127	THR	2.3
1	B	635	GLY	2.3
1	B	154	GLY	2.3
1	B	364	PRO	2.2
1	B	81	THR	2.1
1	B	256	ILE	2.1
1	B	166	GLY	2.1
1	B	739	SER	2.1
1	B	737	LYS	2.1
1	B	365	ARG	2.1
1	B	155	GLN	2.0
1	B	369	ASN	2.0
1	B	239	LYS	2.0
1	B	173	ASN	2.0
1	B	261	GLY	2.0
1	B	408	TRP	2.0
1	B	267	ASN	2.0

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

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

## 6.3 Carbohydrates ⓘ

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(Å <sup>2</sup> )	Q<0.9
3	TIO	A	802	17/17	0.95	0.16	0.57	30,30,30,30	0
3	TIO	B	802	17/17	0.96	0.18	-0.00	43,43,43,43	0
4	NAG	A	806	14/15	0.89	0.15	-0.25	40,51,59,60	0
2	ZN	A	801	1/1	0.98	0.08	-2.20	25,25,25,25	0
2	ZN	B	801	1/1	0.97	0.09	-3.31	49,49,49,49	0
4	NAG	B	803	14/15	0.71	0.31	-	96,105,115,115	0
4	NAG	A	805	14/15	0.88	0.27	-	38,55,65,76	0
4	NAG	B	806	14/15	0.82	0.30	-	67,73,82,86	0
4	NAG	A	804	14/15	0.90	0.19	-	34,45,54,56	0
4	NAG	B	804	14/15	0.73	0.32	-	91,115,119,121	0
4	NAG	B	807	14/15	0.81	0.33	-	74,87,100,103	0
4	NAG	A	803	14/15	0.86	0.23	-	38,51,63,63	0
4	NAG	A	807	14/15	0.80	0.22	-	53,71,78,84	0
4	NAG	A	808	14/15	0.89	0.26	-	44,69,79,92	0
4	NAG	B	805	14/15	0.82	0.29	-	76,84,90,92	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.