



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 6, 2020 – 10:31 AM BST

PDB ID : 6V81  
Title : The crystal structure of the outer-membrane transporter YncD  
Authors : Grinter, R.  
Deposited on : 2019-12-10  
Resolution : 2.96 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

<https://www.wwpdb.org/validation/2017/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 : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.13.1  
buster-report : 1.1.7 (2018)  
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) : 2.13.1

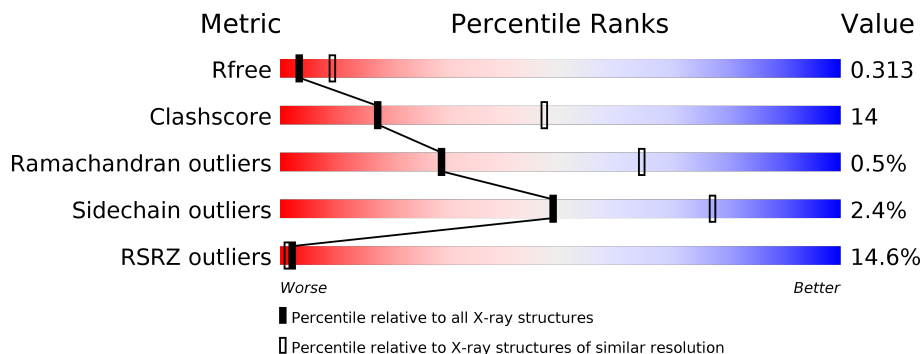
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.96 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	3104 (3.00-2.92)
Clashscore	141614	3462 (3.00-2.92)
Ramachandran outliers	138981	3340 (3.00-2.92)
Sidechain outliers	138945	3343 (3.00-2.92)
RSRZ outliers	127900	2986 (3.00-2.92)

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 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  $\leq 5\%$ . 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	700	

## 2 Entry composition [i](#)

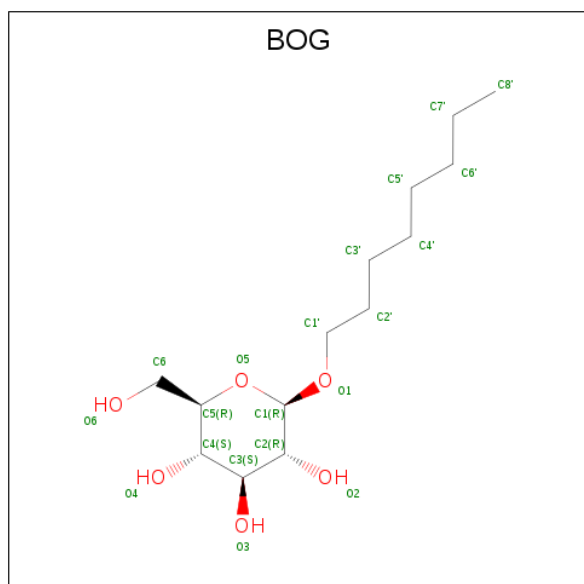
There are 3 unique types of molecules in this entry. The entry contains 5106 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Probable TonB-dependent receptor YncD.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	652	5085	3154	903	1010	18	0	0	0

- Molecule 2 is octyl beta-D-glucopyranoside (three-letter code: BOG) (formula: C<sub>14</sub>H<sub>28</sub>O<sub>6</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	A	1	20	14	6	0	0

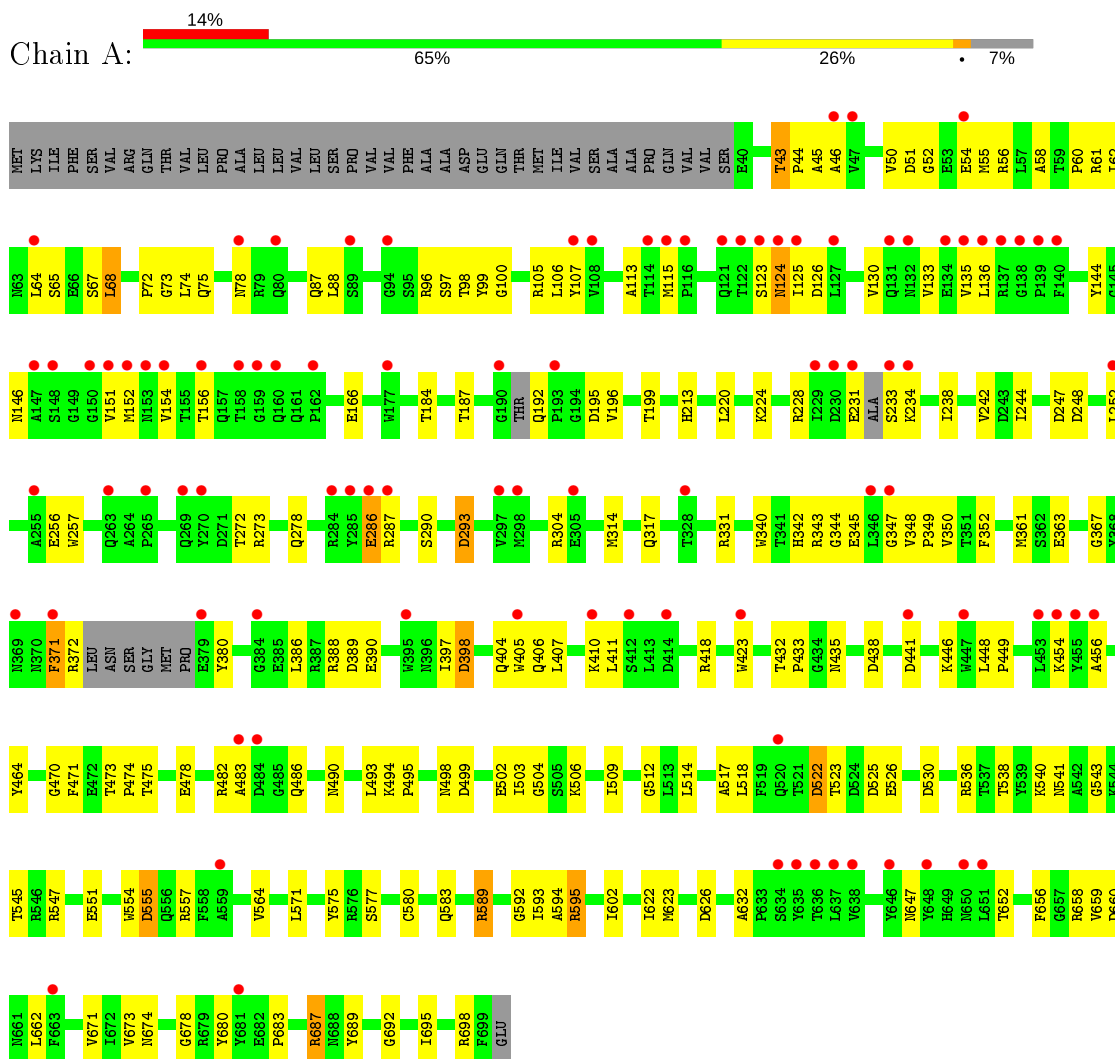
- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Ca	0	0
			1	1		

### 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: Probable TonB-dependent receptor YncD



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	87.94Å 98.64Å 124.86Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	43.97 – 2.96 49.32 – 2.96	Depositor EDS
% Data completeness (in resolution range)	75.5 (43.97-2.96) 75.6 (49.32-2.96)	Depositor EDS
$R_{merge}$	0.16	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.62 (at 2.96Å)	Xtrriage
Refinement program	PHENIX 1.13_2998	Depositor
R, $R_{free}$	0.277 , 0.314 0.277 , 0.313	Depositor DCC
$R_{free}$ test set	914 reflections (5.18%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	76.0	Xtrriage
Anisotropy	0.759	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.26 , 36.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.84	EDS
Total number of atoms	5106	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	84.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.25% 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 [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: CA, BOG

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	0.32	0/5195	0.54	0/7042

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	5085	0	4819	137	0
2	A	20	0	28	0	0
3	A	1	0	0	0	0
All	All	5106	0	4847	137	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 14.

All (137) 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:146:ASN:OD1	1:A:473:THR:HG23	1.55	1.06

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:234:LYS:HG3	1:A:286:GLU:HG3	1.65	0.76
1:A:68:LEU:H	1:A:68:LEU:HD23	1.52	0.74
1:A:135:VAL:HG22	1:A:152:MET:HG3	1.69	0.73
1:A:43:THR:H	1:A:44:PRO:HD2	1.56	0.71
1:A:55:MET:HB2	1:A:67:SER:HB3	1.72	0.71
1:A:64:LEU:HB3	1:A:68:LEU:HD21	1.76	0.67
1:A:386:LEU:HD11	1:A:388:ARG:O	1.98	0.64
1:A:483:ALA:H	1:A:538:THR:HG21	1.63	0.62
1:A:146:ASN:OD1	1:A:473:THR:CG2	2.42	0.62
1:A:65:SER:OG	1:A:78:ASN:HB2	2.01	0.60
1:A:438:ASP:OD2	1:A:536:ARG:NH2	2.35	0.60
1:A:72:PRO:HB2	1:A:551:GLU:HB3	1.84	0.60
1:A:231:GLU:N	1:A:231:GLU:OE2	2.26	0.59
1:A:58:ALA:O	1:A:658:ARG:HD2	2.02	0.59
1:A:136:LEU:HB3	1:A:151:VAL:HG13	1.84	0.59
1:A:571:LEU:HD23	1:A:593:ILE:HB	1.86	0.58
1:A:43:THR:HG22	1:A:44:PRO:HD3	1.86	0.58
1:A:54:GLU:HA	1:A:54:GLU:OE2	2.04	0.57
1:A:248:ASP:HB3	1:A:272:THR:HG22	1.86	0.57
1:A:658:ARG:NH1	1:A:660:ASP:OD1	2.36	0.57
1:A:398:ASP:OD1	1:A:398:ASP:N	2.38	0.57
1:A:233:SER:HB2	1:A:287:ARG:HG3	1.86	0.56
1:A:342:HIS:HB3	1:A:352:PHE:CE2	2.39	0.56
1:A:46:ALA:HB2	1:A:502:GLU:OE2	2.06	0.55
1:A:184:THR:OG1	1:A:199:THR:OG1	2.21	0.55
1:A:51:ASP:OD1	1:A:52:GLY:N	2.40	0.55
1:A:622:ILE:HG12	1:A:632:ALA:HB3	1.89	0.54
1:A:626:ASP:OD2	1:A:674:ASN:ND2	2.39	0.54
1:A:347:GLY:O	1:A:348:VAL:HG13	2.08	0.53
1:A:512:GLY:HA3	1:A:555:ASP:O	2.08	0.53
1:A:348:VAL:CG2	1:A:405:TRP:HE3	2.21	0.53
1:A:64:LEU:O	1:A:68:LEU:HD23	2.08	0.53
1:A:317:GLN:HB2	1:A:371:PHE:HZ	1.74	0.53
1:A:184:THR:HG1	1:A:199:THR:HG1	1.55	0.53
1:A:314:MET:HG3	1:A:371:PHE:CE1	2.44	0.53
1:A:331:ARG:HB3	1:A:363:GLU:HB3	1.91	0.52
1:A:371:PHE:O	1:A:372:ARG:HG2	2.09	0.52
1:A:372:ARG:HD3	1:A:380:TYR:CE2	2.45	0.52
1:A:45:ALA:O	1:A:506:LYS:NZ	2.40	0.51
1:A:74:LEU:HD11	1:A:88:LEU:HD22	1.93	0.50
1:A:490:ASN:OD1	1:A:493:LEU:HB2	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:106:LEU:HB3	1:A:113:ALA:HB3	1.93	0.50
1:A:471:PHE:HE1	1:A:495:PRO:CG	2.25	0.50
1:A:224:LYS:HG3	1:A:238:ILE:CD1	2.41	0.50
1:A:580:CYS:HB2	1:A:583:GLN:O	2.13	0.49
1:A:350:VAL:HA	1:A:404:GLN:O	2.13	0.49
1:A:349:PRO:HB2	1:A:406:GLN:HB2	1.95	0.48
1:A:432:THR:HG22	1:A:435:ASN:HB3	1.94	0.48
1:A:342:HIS:HB3	1:A:352:PHE:CZ	2.49	0.48
1:A:43:THR:O	1:A:454:LYS:HD2	2.13	0.48
1:A:446:LYS:HG2	1:A:448:LEU:HD23	1.94	0.48
1:A:345:GLU:HB3	1:A:349:PRO:HA	1.97	0.47
1:A:106:LEU:HD23	1:A:107:TYR:N	2.30	0.47
1:A:398:ASP:OD2	1:A:418:ARG:NH2	2.42	0.47
1:A:136:LEU:HB3	1:A:151:VAL:CG1	2.43	0.47
1:A:187:THR:HB	1:A:196:VAL:HG22	1.97	0.47
1:A:483:ALA:N	1:A:538:THR:HG21	2.29	0.47
1:A:543:GLY:HA2	1:A:577:SER:CB	2.45	0.47
1:A:342:HIS:NE2	1:A:344:GLY:HA3	2.30	0.46
1:A:124:ASN:HA	1:A:242:VAL:HG21	1.97	0.46
1:A:97:SER:OG	1:A:100:GLY:O	2.24	0.46
1:A:126:ASP:HA	1:A:220:LEU:HD13	1.97	0.46
1:A:474:PRO:CG	1:A:493:LEU:HD22	2.46	0.46
1:A:494:LYS:HB2	1:A:495:PRO:HD2	1.98	0.45
1:A:464:TYR:CZ	1:A:504:GLY:HA3	2.51	0.45
1:A:662:LEU:O	1:A:662:LEU:HD23	2.15	0.45
1:A:589:ARG:HD3	1:A:623:MET:HG3	1.99	0.45
1:A:345:GLU:HG2	1:A:350:VAL:N	2.32	0.45
1:A:166:GLU:HA	1:A:695:ILE:O	2.16	0.45
1:A:343:ARG:O	1:A:345:GLU:HG3	2.17	0.45
1:A:543:GLY:CA	1:A:577:SER:HB3	2.47	0.45
1:A:96:ARG:HA	1:A:673:VAL:HG11	1.99	0.45
1:A:56:ARG:HG3	1:A:61:ARG:HG2	1.98	0.44
1:A:389:ASP:O	1:A:390:GLU:HG3	2.18	0.44
1:A:509:ILE:HD11	1:A:554:TRP:NE1	2.32	0.44
1:A:73:GLY:HA3	1:A:551:GLU:OE1	2.16	0.44
1:A:74:LEU:HD11	1:A:88:LEU:CD2	2.47	0.44
1:A:678:GLY:HA2	1:A:680:TYR:CZ	2.52	0.44
1:A:213:HIS:CD2	1:A:247:ASP:HB3	2.52	0.44
1:A:43:THR:N	1:A:44:PRO:HD2	2.30	0.44
1:A:252:LEU:HD22	1:A:256:GLU:HB3	2.00	0.44
1:A:482:ARG:HB3	1:A:490:ASN:HB2	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:656:PHE:CZ	1:A:692:GLY:HA3	2.52	0.44
1:A:523:THR:HG21	1:A:526:GLU:OE1	2.18	0.43
1:A:530:ASP:HB2	1:A:540:LYS:HB2	2.00	0.43
1:A:662:LEU:O	1:A:687:ARG:HD3	2.18	0.43
1:A:474:PRO:HG3	1:A:493:LEU:HD22	2.00	0.43
1:A:545:THR:HG22	1:A:575:TYR:HD1	1.83	0.43
1:A:125:ILE:HD12	1:A:125:ILE:N	2.33	0.43
1:A:278:GLN:HG3	1:A:304:ARG:HG3	2.01	0.43
1:A:133:VAL:HG22	1:A:154:VAL:HG13	2.01	0.43
1:A:367:GLY:O	1:A:386:LEU:HD12	2.18	0.43
1:A:115:MET:SD	1:A:361:MET:HG3	2.58	0.43
1:A:482:ARG:HH11	1:A:486:GLN:HB2	1.84	0.43
1:A:517:ALA:O	1:A:518:LEU:HD23	2.18	0.43
1:A:75:GLN:NE2	1:A:592:GLY:O	2.52	0.43
1:A:293:ASP:OD2	1:A:340:TRP:NE1	2.52	0.42
1:A:397:ILE:HG22	1:A:423:TRP:CZ3	2.54	0.42
1:A:564:VAL:HG22	1:A:602:ILE:HG12	2.01	0.42
1:A:88:LEU:HA	1:A:88:LEU:HD23	1.91	0.42
1:A:98:THR:HG22	1:A:99:TYR:CD1	2.54	0.42
1:A:470:GLY:N	1:A:498:ASN:HB2	2.34	0.42
1:A:317:GLN:HB2	1:A:371:PHE:CZ	2.52	0.42
1:A:371:PHE:N	1:A:371:PHE:CD1	2.85	0.42
1:A:410:LYS:HG2	1:A:456:ALA:HB3	2.01	0.42
1:A:50:VAL:HG12	1:A:133:VAL:HB	2.01	0.42
1:A:647:ASN:HB3	1:A:652:THR:HG23	2.02	0.42
1:A:228:ARG:HH11	1:A:231:GLU:HA	1.84	0.42
1:A:345:GLU:HA	1:A:350:VAL:HG12	2.01	0.42
1:A:407:LEU:HD12	1:A:411:LEU:HD21	2.01	0.42
1:A:589:ARG:HE	1:A:595:ARG:HH21	1.68	0.42
1:A:61:ARG:NH2	1:A:166:GLU:OE2	2.50	0.41
1:A:56:ARG:NH1	1:A:130:VAL:O	2.53	0.41
1:A:514:LEU:O	1:A:514:LEU:HD23	2.19	0.41
1:A:659:VAL:HG13	1:A:689:TYR:CE1	2.55	0.41
1:A:213:HIS:NE2	1:A:272:THR:O	2.42	0.41
1:A:43:THR:H	1:A:44:PRO:CD	2.27	0.41
1:A:473:THR:HA	1:A:495:PRO:HB3	2.03	0.41
1:A:499:ASP:HB3	1:A:522:ASP:HB2	2.02	0.41
1:A:525:ASP:O	1:A:541:ASN:ND2	2.53	0.41
1:A:290:SER:HB2	1:A:293:ASP:HB3	2.00	0.41
1:A:432:THR:OG1	1:A:433:PRO:HD2	2.21	0.41
1:A:475:THR:OG1	1:A:478:GLU:HG3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:502:GLU:HG2	1:A:503:ILE:N	2.35	0.41
1:A:523:THR:OG1	1:A:547:ARG:NH1	2.53	0.41
1:A:60:PRO:HB2	1:A:62:ILE:HG12	2.02	0.41
1:A:594:ALA:HA	1:A:622:ILE:HG22	2.03	0.41
1:A:192:GLN:O	1:A:195:ASP:HB2	2.21	0.41
1:A:123:SER:HB3	1:A:244:ILE:HD11	2.02	0.40
1:A:105:ARG:HD2	1:A:144:TYR:O	2.22	0.40
1:A:248:ASP:H	1:A:273:ARG:HA	1.87	0.40
1:A:530:ASP:HB2	1:A:540:LYS:CB	2.52	0.40
1:A:257:TRP:CD1	1:A:683:PRO:HG3	2.56	0.40
1:A:156:THR:HG23	1:A:224:LYS:HD2	2.03	0.40
1:A:87:GLN:OE1	1:A:671:VAL:O	2.39	0.40
1:A:184:THR:HG23	1:A:184:THR:O	2.20	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	644/700 (92%)	607 (94%)	34 (5%)	3 (0%)	29 64

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	43	THR
1	A	687	ARG
1	A	449	PRO

### 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	535/577 (93%)	522 (98%)	13 (2%)	49 77

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	68	LEU
1	A	124	ASN
1	A	286	GLU
1	A	293	ASP
1	A	371	PHE
1	A	398	ASP
1	A	441	ASP
1	A	522	ASP
1	A	555	ASP
1	A	557	ARG
1	A	589	ARG
1	A	595	ARG
1	A	698	ARG

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

### 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

Of 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 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
2	BOG	A	801	-	20,20,20	0.67	0	25,25,25	1.03	1 (4%)

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	BOG	A	801	-	-	4/11/31/31	0/1/1/1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	801	BOG	C1-O5-C5	-2.85	108.09	113.69

There are no chirality outliers.

All (4) torsion outliers are listed below:

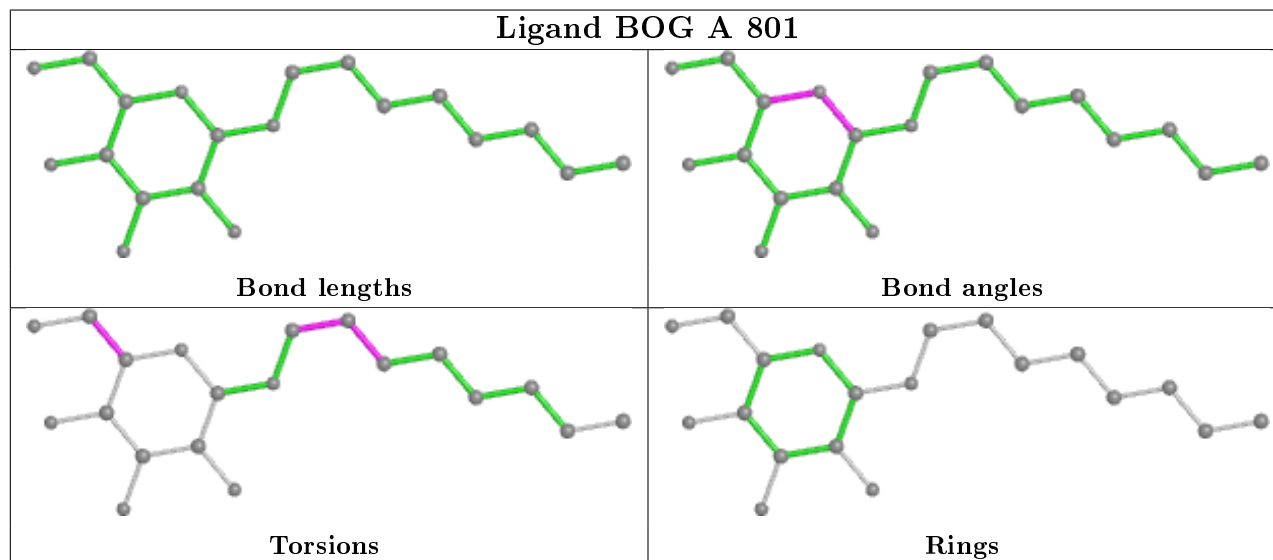
Mol	Chain	Res	Type	Atoms
2	A	801	BOG	O5-C5-C6-O6
2	A	801	BOG	O1-C1'-C2'-C3'
2	A	801	BOG	C4-C5-C6-O6
2	A	801	BOG	C1'-C2'-C3'-C4'

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



## 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	652/700 (93%)	0.63	95 (14%) <b>2</b>   <b>1</b>	53, 81, 113, 134	0

All (95) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	455	TYR	7.4
1	A	122	THR	7.2
1	A	648	TYR	6.9
1	A	635	TYR	6.6
1	A	346	LEU	6.5
1	A	646	TYR	6.3
1	A	285	TYR	5.9
1	A	636	THR	5.4
1	A	456	ALA	5.3
1	A	190	GLY	5.2
1	A	286	GLU	4.8
1	A	395	TRP	4.8
1	A	231	GLU	4.6
1	A	124	ASN	4.4
1	A	234	LYS	4.4
1	A	156	THR	4.3
1	A	453	LEU	4.1
1	A	412	SER	4.1
1	A	233	SER	4.0
1	A	638	VAL	4.0
1	A	160	GLN	3.9
1	A	125	ILE	3.8
1	A	229	ILE	3.8
1	A	410	LYS	3.7
1	A	637	LEU	3.6
1	A	138	GLY	3.6
1	A	177	TRP	3.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	650	ASN	3.4
1	A	123	SER	3.3
1	A	159	GLY	3.3
1	A	230	ASP	3.3
1	A	46	ALA	3.2
1	A	136	LEU	3.2
1	A	47	VAL	3.2
1	A	441	ASP	3.2
1	A	114	THR	3.2
1	A	287	ARG	3.2
1	A	379	GLU	3.1
1	A	269	GLN	3.1
1	A	347	GLY	3.1
1	A	135	VAL	3.0
1	A	284	ARG	3.0
1	A	152	MET	2.9
1	A	328	THR	2.9
1	A	447	TRP	2.8
1	A	369	ASN	2.8
1	A	252	LEU	2.8
1	A	162	PRO	2.8
1	A	651	LEU	2.8
1	A	270	TYR	2.8
1	A	148	SER	2.8
1	A	423	TRP	2.7
1	A	137	ARG	2.7
1	A	483	ALA	2.7
1	A	153	ASN	2.7
1	A	634	SER	2.6
1	A	121	GLN	2.6
1	A	384	GLY	2.6
1	A	559	ALA	2.6
1	A	297	VAL	2.6
1	A	193	PRO	2.6
1	A	139	PRO	2.6
1	A	298	MET	2.6
1	A	108	VAL	2.5
1	A	158	THR	2.5
1	A	134	GLU	2.5
1	A	116	PRO	2.5
1	A	681	TYR	2.5
1	A	663	PHE	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	54	GLU	2.4
1	A	64	LEU	2.4
1	A	520	GLN	2.4
1	A	147	ALA	2.4
1	A	484	ASP	2.4
1	A	107	TYR	2.3
1	A	150	GLY	2.3
1	A	80	GLN	2.3
1	A	265	PRO	2.3
1	A	94	GLY	2.3
1	A	132	ASN	2.3
1	A	151	VAL	2.3
1	A	78	ASN	2.3
1	A	127	LEU	2.2
1	A	115	MET	2.2
1	A	414	ASP	2.2
1	A	131	GLN	2.2
1	A	263	GLN	2.1
1	A	140	PHE	2.1
1	A	454	LYS	2.1
1	A	405	TRP	2.1
1	A	154	VAL	2.1
1	A	255	ALA	2.1
1	A	371	PHE	2.1
1	A	305	GLU	2.0
1	A	89	SER	2.0

## 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.

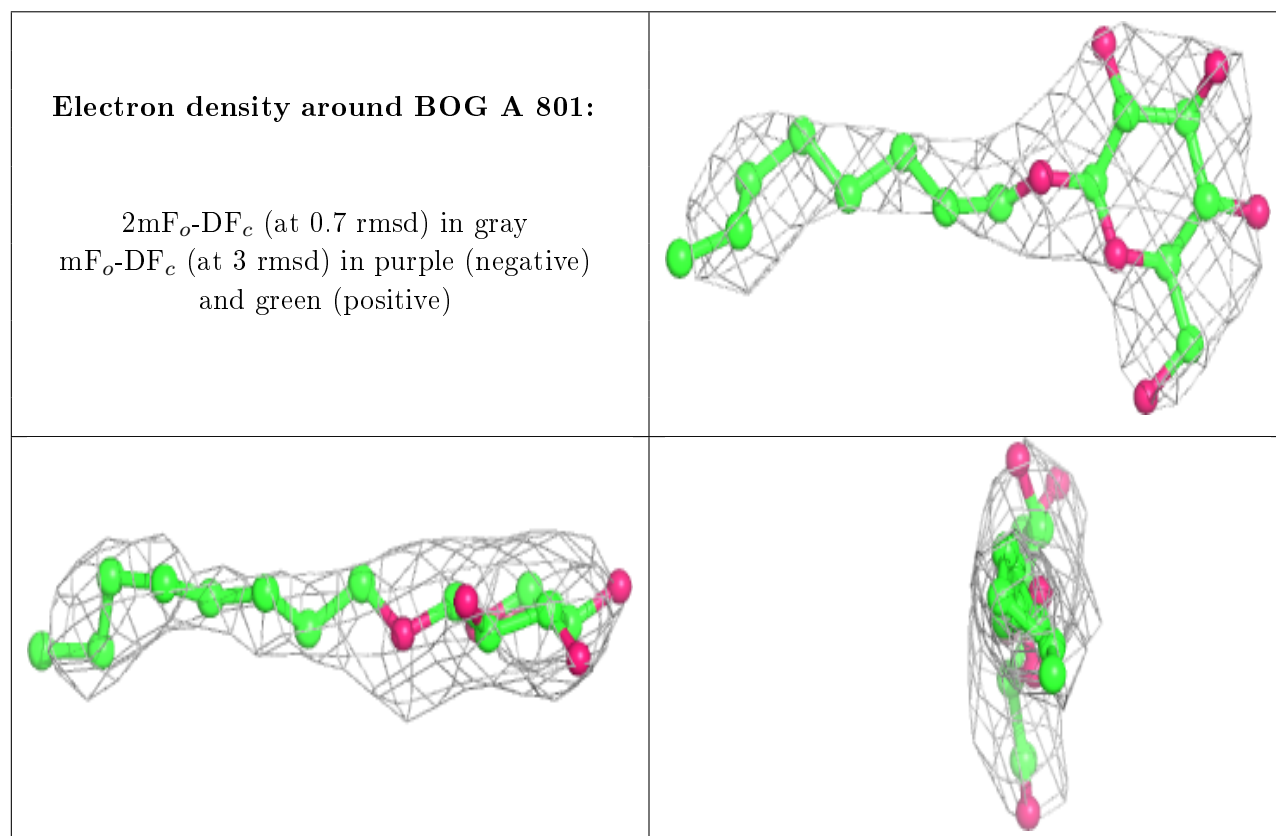
## 6.4 Ligands [\(i\)](#)

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<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	B-factors( $\text{\AA}^2$ )	Q<0.9
2	BOG	A	801	20/20	0.91	0.45	64,85,115,115	0
3	CA	A	802	1/1	0.97	0.18	57,57,57,57	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



## 6.5 Other polymers [i](#)

There are no such residues in this entry.