



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 25, 2023 – 09:34 AM EDT

PDB ID : 5WKU  
Title : Structure of an acid sensing ion channel in a resting state with barium  
Authors : Yoder, N.; Gouaux, E.  
Deposited on : 2017-07-25  
Resolution : 2.95 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.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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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)  
Xtrriage (Phenix) : 1.13  
EDS : 2.35.1  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.35.1

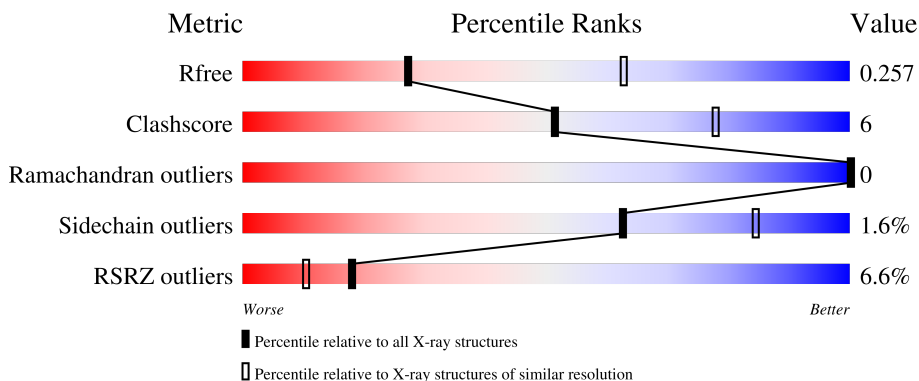
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.95 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 of 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	439	 6% 79% 15% • 5%
1	B	439	 5% 84% 11% 5%
1	C	439	 9% 82% 12% 6%
2	D	2	 100%

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	CL	B	504	-	-	-	X

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 9355 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 Acid-sensing ion channel 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	417	Total 3140	C 2019	N 515	O 579	S 27	0	0	0
1	C	414	Total 3012	C 1933	N 494	O 559	S 26	0	0	0
1	B	418	Total 3115	C 2000	N 508	O 580	S 27	0	0	0

- Molecule 2 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



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

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C<sub>8</sub>H<sub>15</sub>NO<sub>6</sub>).



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

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Cl	0	0
			1	1		
4	C	1	Total	Cl	0	0
			1	1		
4	B	1	Total	Cl	0	0
			1	1		

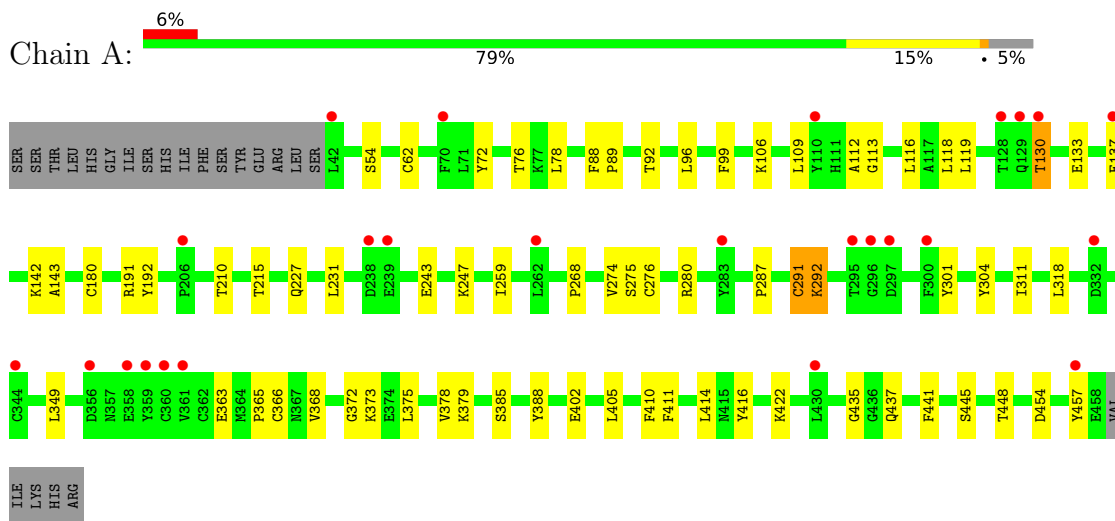
- Molecule 5 is BARIUM ION (three-letter code: BA) (formula: Ba).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	Ba	0	0
			1	1		

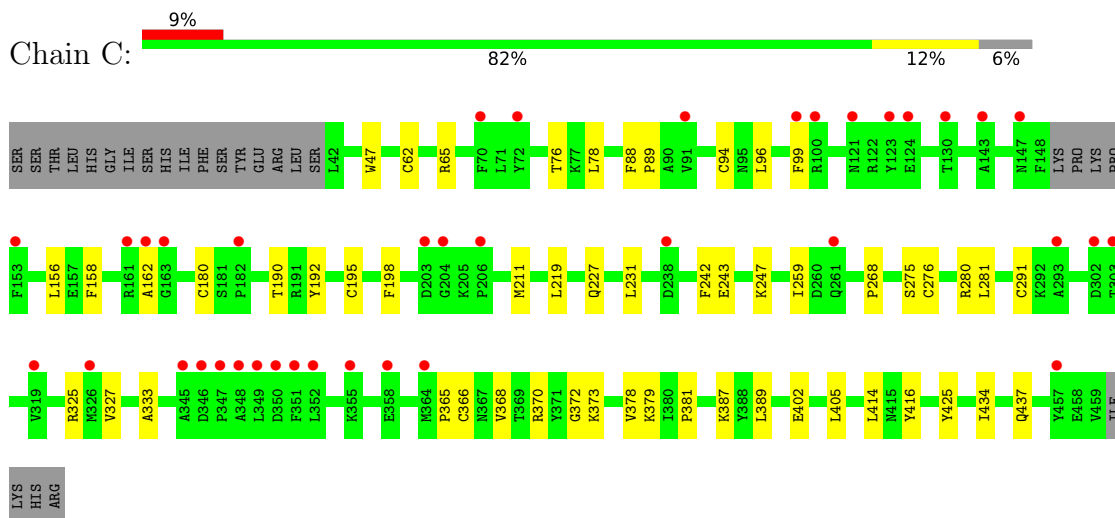
### 3 Residue-property plots [i](#)

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.

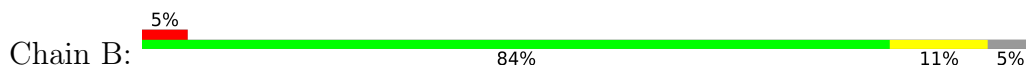
- Molecule 1: Acid-sensing ion channel 1

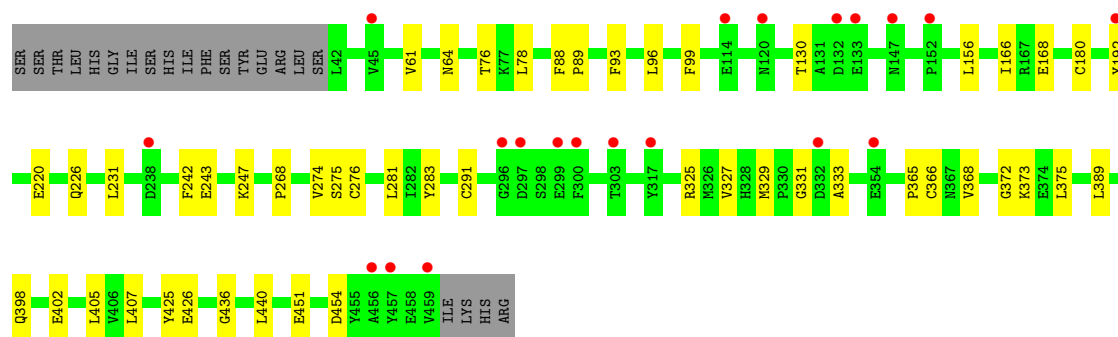


- Molecule 1: Acid-sensing ion channel 1



- Molecule 1: Acid-sensing ion channel 1





- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain D: 100%

WAG1  
WAG2

## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	109.94Å 130.41Å 157.85Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	24.88 – 2.95 24.88 – 2.95	Depositor EDS
% Data completeness (in resolution range)	100.0 (24.88-2.95) 100.0 (24.88-2.95)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.29 (at 2.94Å)	Xtrriage
Refinement program	PHENIX (dev_2597: ???)	Depositor
R, $R_{free}$	0.226 , 0.258 0.225 , 0.257	Depositor DCC
$R_{free}$ test set	2421 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	108.1	Xtrriage
Anisotropy	0.377	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.24 , 76.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	9355	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	145.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.14% 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: CL, NAG, BA

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	0.31	0/3215	0.50	0/4376
1	B	0.30	0/3189	0.50	0/4349
1	C	0.28	0/3081	0.48	0/4206
All	All	0.30	0/9485	0.49	0/12931

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	3140	0	2895	48	0
1	B	3115	0	2836	32	0
1	C	3012	0	2680	33	0
2	D	28	0	25	0	0
3	A	14	0	13	0	0
3	B	14	0	13	0	0
3	C	28	0	26	0	0
4	A	1	0	0	1	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	1	0	0	0	0
All	All	9355	0	8488	99	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 6.

All (99) 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:191:ARG:HH22	1:A:349:LEU:HD13	1.46	0.81
1:A:192:TYR:HE2	1:A:247:LYS:HD3	1.53	0.73
1:A:291:CYS:SG	1:A:292:LYS:N	2.64	0.71
1:C:96:LEU:HD13	1:C:243:GLU:HG3	1.72	0.70
1:A:133:GLU:O	1:A:137:GLU:HG2	1.95	0.66
1:B:192:TYR:HE2	1:B:247:LYS:HD3	1.63	0.64
1:C:192:TYR:HE2	1:C:247:LYS:HD3	1.62	0.63
1:A:365:PRO:HG2	1:A:368:VAL:HG22	1.80	0.62
1:C:275:SER:O	1:C:373:LYS:HA	1.99	0.62
1:B:276:CYS:HA	1:B:372:GLY:O	1.99	0.62
1:A:96:LEU:HD13	1:A:243:GLU:HG3	1.80	0.62
1:A:304:TYR:OH	1:A:363:GLU:O	2.17	0.61
1:C:325:ARG:HD3	1:C:333:ALA:HB3	1.83	0.61
1:B:192:TYR:CE2	1:B:247:LYS:HD3	2.34	0.61
1:B:130:THR:O	1:B:130:THR:HG22	2.00	0.60
1:A:99:PHE:CE2	1:A:231:LEU:HD21	2.36	0.59
1:A:76:THR:HG21	1:C:78:LEU:HD12	1.84	0.59
1:A:78:LEU:HD12	1:B:76:THR:HG21	1.85	0.59
1:A:276:CYS:HA	1:A:372:GLY:O	2.03	0.58
1:C:276:CYS:HA	1:C:372:GLY:O	2.04	0.57
1:B:275:SER:O	1:B:373:LYS:HA	2.05	0.56
1:B:325:ARG:HH22	1:B:331:GLY:C	2.09	0.55
1:A:275:SER:O	1:A:373:LYS:HA	2.07	0.55
1:C:76:THR:HG21	1:B:78:LEU:HD12	1.88	0.55
1:A:378:VAL:HG11	1:B:96:LEU:HD11	1.87	0.55
1:A:422:LYS:NZ	4:A:502:CL:CL	2.77	0.54
1:C:192:TYR:CE2	1:C:247:LYS:HD3	2.43	0.54
1:C:365:PRO:HG2	1:C:368:VAL:HG22	1.90	0.54
1:C:156:LEU:HD11	1:C:327:VAL:HA	1.91	0.53
1:C:99:PHE:CZ	1:C:231:LEU:HD21	2.45	0.52
1:A:96:LEU:HD11	1:C:378:VAL:HG11	1.91	0.52
1:A:99:PHE:CE1	1:A:116:LEU:HD22	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:451:GLU:O	1:B:454:ASP:HB3	2.11	0.51
1:A:227:GLN:NE2	1:A:402:GLU:O	2.43	0.51
1:A:113:GLY:HA3	1:A:119:LEU:HD12	1.93	0.51
1:A:268:PRO:HA	1:A:405:LEU:HB3	1.93	0.51
1:C:158:PHE:O	1:C:162:ALA:HB3	2.11	0.50
1:C:190:THR:OG1	1:C:195:CYS:SG	2.70	0.50
1:B:156:LEU:HD12	1:B:327:VAL:HG12	1.93	0.50
1:B:99:PHE:CZ	1:B:231:LEU:HD21	2.46	0.50
1:A:88:PHE:CG	1:A:89:PRO:HD2	2.48	0.49
1:C:227:GLN:NE2	1:C:402:GLU:O	2.45	0.49
1:A:385:SER:HB2	1:B:242:PHE:HD1	1.77	0.49
1:B:281:LEU:HD23	1:B:283:TYR:OH	2.13	0.49
1:A:192:TYR:CE2	1:A:247:LYS:HD3	2.40	0.49
1:A:118:LEU:HD21	1:A:231:LEU:HD22	1.95	0.49
1:A:268:PRO:HD2	1:C:379:LYS:HB2	1.95	0.49
1:A:210:THR:HG21	1:A:411:PHE:HD2	1.77	0.48
1:A:379:LYS:HB2	1:B:268:PRO:HD2	1.93	0.48
1:B:88:PHE:CG	1:B:89:PRO:HD2	2.48	0.48
1:A:109:LEU:HD23	1:A:143:ALA:HB2	1.96	0.47
1:A:130:THR:HG22	1:C:387:LYS:HB3	1.97	0.47
1:C:414:LEU:HD23	1:C:414:LEU:HA	1.74	0.47
1:C:88:PHE:CG	1:C:89:PRO:HD2	2.50	0.46
1:B:220:GLU:HA	1:B:407:LEU:O	2.15	0.46
1:A:365:PRO:HG2	1:A:368:VAL:CG2	2.45	0.46
1:C:198:PHE:CD2	1:C:219:LEU:HD22	2.51	0.46
1:A:435:GLY:HA3	1:B:436:GLY:O	2.16	0.45
1:C:268:PRO:HA	1:C:405:LEU:HB3	1.99	0.45
1:A:388:TYR:N	1:B:130:THR:HG21	2.31	0.45
1:A:445:SER:H	1:A:448:THR:HB	1.81	0.45
1:C:62:CYS:HA	1:C:437:GLN:NE2	2.32	0.45
1:A:112:ALA:O	1:A:116:LEU:HG	2.17	0.44
1:C:280:ARG:HD2	1:C:416:TYR:CD2	2.52	0.44
1:B:61:VAL:O	1:B:64:ASN:HB3	2.17	0.44
1:B:398:GLN:O	1:B:402:GLU:HG2	2.17	0.44
1:B:268:PRO:HA	1:B:405:LEU:HB3	1.98	0.44
1:B:325:ARG:NH2	1:B:333:ALA:H	2.15	0.44
1:A:280:ARG:HD2	1:A:416:TYR:CD1	2.53	0.44
1:C:94:CYS:SG	1:C:259:ILE:HG21	2.57	0.43
1:B:93:PHE:HZ	1:B:166:ILE:HD13	1.82	0.43
1:B:96:LEU:HD13	1:B:243:GLU:HG3	2.00	0.43
1:B:168:GLU:HB3	1:B:226:GLN:NE2	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:365:PRO:HG2	1:B:368:VAL:HG22	1.99	0.43
1:C:94:CYS:SG	1:C:259:ILE:HD13	2.59	0.43
1:B:325:ARG:CG	1:B:329:MET:HB2	2.48	0.43
1:A:72:TYR:CD1	1:A:287:PRO:HG2	2.53	0.43
1:A:62:CYS:HA	1:A:437:GLN:NE2	2.35	0.42
1:B:274:VAL:HG22	1:B:375:LEU:CD2	2.49	0.42
1:A:54:SER:OG	1:A:441:PHE:O	2.34	0.42
1:C:381:PRO:HB3	1:C:389:LEU:HD12	2.00	0.42
1:C:281:LEU:HD21	1:C:370:ARG:HH21	1.85	0.42
1:C:211:MET:C	1:C:414:LEU:HD11	2.41	0.42
1:A:92:THR:CG2	1:A:259:ILE:HD11	2.50	0.41
1:A:414:LEU:HD23	1:A:414:LEU:HA	1.91	0.41
1:C:434:ILE:HA	1:C:437:GLN:NE2	2.34	0.41
1:A:99:PHE:CZ	1:A:231:LEU:HD11	2.55	0.41
1:A:227:GLN:HE21	1:A:227:GLN:HB2	1.62	0.41
1:C:242:PHE:CE2	1:B:389:LEU:HD21	2.56	0.41
1:A:215:THR:HA	1:A:410:PHE:CD1	2.56	0.41
1:C:280:ARG:HD2	1:C:416:TYR:CE2	2.55	0.41
1:A:301:TYR:CE2	1:A:311:ILE:HD11	2.56	0.41
1:A:435:GLY:HA3	1:B:440:LEU:HB2	2.02	0.41
1:C:227:GLN:HE21	1:C:227:GLN:HB2	1.70	0.41
1:A:454:ASP:O	1:A:457:TYR:HB3	2.21	0.40
1:A:274:VAL:HG22	1:A:375:LEU:CD2	2.51	0.40
1:A:318:LEU:HD23	1:A:318:LEU:HA	1.85	0.40
1:A:106:LYS:HG3	1:A:142:LYS:O	2.21	0.40
1:C:65:ARG:NH1	1:B:426:GLU:OE1	2.53	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	415/439 (94%)	409 (99%)	6 (1%)	0	100	100
1	B	416/439 (95%)	408 (98%)	8 (2%)	0	100	100
1	C	410/439 (93%)	403 (98%)	7 (2%)	0	100	100
All	All	1241/1317 (94%)	1220 (98%)	21 (2%)	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	308/384 (80%)	303 (98%)	5 (2%)	62	84
1	B	303/384 (79%)	299 (99%)	4 (1%)	69	87
1	C	278/384 (72%)	273 (98%)	5 (2%)	59	82
All	All	889/1152 (77%)	875 (98%)	14 (2%)	62	84

All (14) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	130	THR
1	A	180	CYS
1	A	291	CYS
1	A	292	LYS
1	A	366	CYS
1	C	47	TRP
1	C	180	CYS
1	C	291	CYS
1	C	366	CYS
1	C	425	TYR
1	B	180	CYS
1	B	291	CYS
1	B	366	CYS
1	B	425	TYR

Sometimes 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](#)

2 monosaccharides 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	D	1	2,1	14,14,15	0.25	0	17,19,21	0.43	0
2	NAG	D	2	2	14,14,15	0.27	0	17,19,21	0.43	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
2	NAG	D	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	D	2	2	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

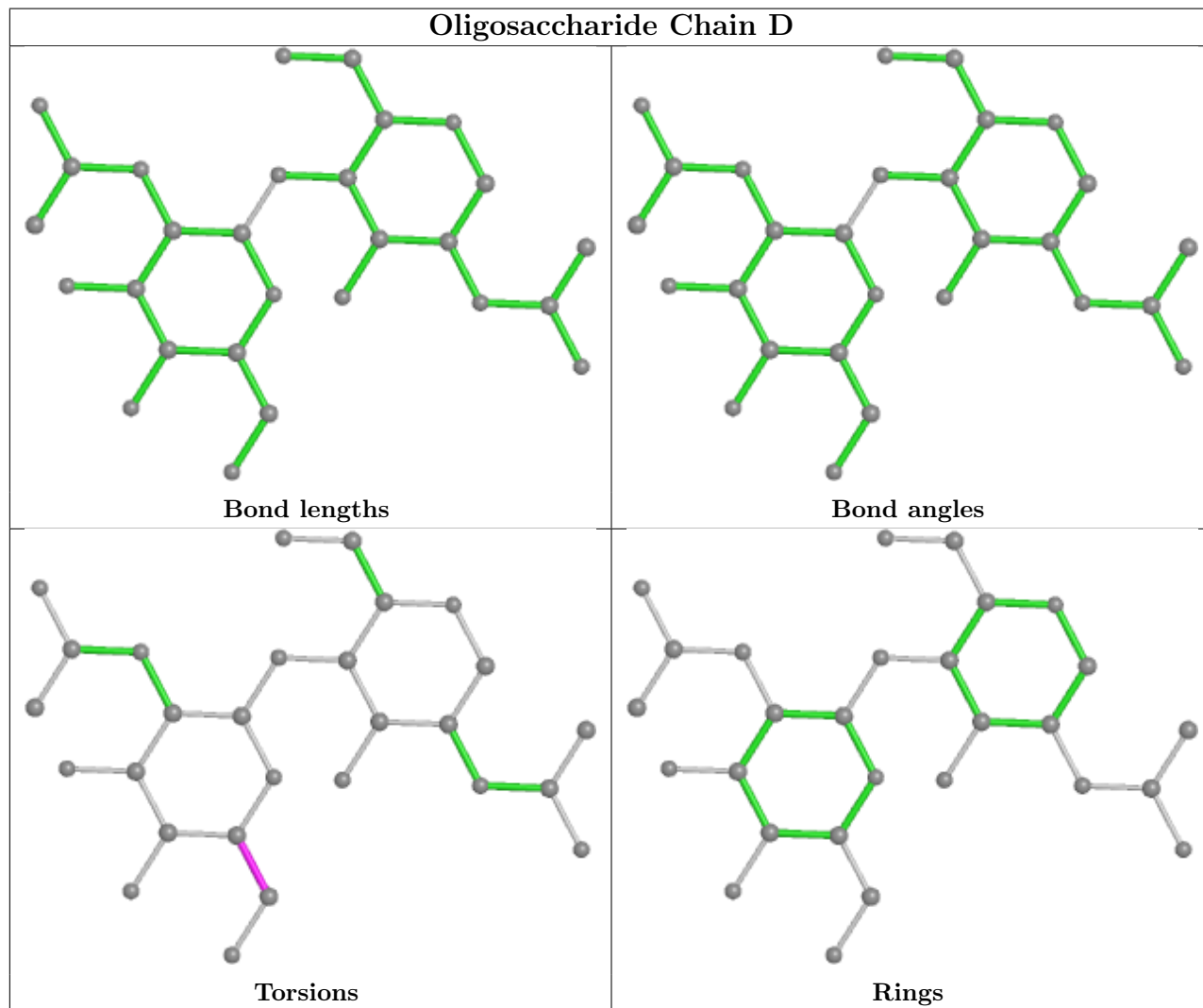
All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	2	NAG	C4-C5-C6-O6
2	D	2	NAG	O5-C5-C6-O6

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 oligosaccharide.



## 5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 4 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
3	NAG	C	502	1	14,14,15	0.29	0	17,19,21	0.45	0
3	NAG	C	501	1	14,14,15	0.22	0	17,19,21	0.56	0
3	NAG	B	503	1	14,14,15	0.32	0	17,19,21	0.46	0
3	NAG	A	501	1	14,14,15	0.24	0	17,19,21	0.40	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	NAG	C	502	1	-	1/6/23/26	0/1/1/1
3	NAG	C	501	1	-	2/6/23/26	0/1/1/1
3	NAG	B	503	1	-	2/6/23/26	0/1/1/1
3	NAG	A	501	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	503	NAG	C4-C5-C6-O6
3	B	503	NAG	O5-C5-C6-O6
3	C	501	NAG	C1-C2-N2-C7
3	C	501	NAG	C3-C2-N2-C7
3	C	502	NAG	C4-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.



## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<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	417/439 (94%)	0.09	25 (5%) 21 13	74, 129, 204, 240	0
1	B	418/439 (95%)	0.07	20 (4%) 30 19	79, 137, 207, 250	0
1	C	414/439 (94%)	0.42	38 (9%) 9 5	91, 157, 251, 273	0
All	All	1249/1317 (94%)	0.19	83 (6%) 18 10	74, 140, 226, 273	0

All (83) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	72	TYR	5.9
1	C	147	ASN	5.8
1	C	206	PRO	5.5
1	C	349	LEU	5.2
1	C	348	ALA	4.6
1	C	130	THR	4.6
1	B	457	TYR	4.4
1	A	360	CYS	4.4
1	C	204	GLY	4.3
1	A	358	GLU	4.2
1	C	123	TYR	4.1
1	A	359	TYR	4.1
1	C	162	ALA	4.1
1	C	153	PHE	4.0
1	C	100	ARG	4.0
1	C	203	ASP	3.9
1	A	130	THR	3.9
1	A	332	ASP	3.9
1	A	110	TYR	3.8
1	A	295	THR	3.7
1	A	206	PRO	3.7
1	B	147	ASN	3.7
1	B	132	ASP	3.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	133	GLU	3.6
1	C	303	THR	3.5
1	C	99	PHE	3.5
1	C	350	ASP	3.5
1	C	163	GLY	3.4
1	B	238	ASP	3.4
1	B	192	TYR	3.4
1	C	238	ASP	3.3
1	B	297	ASP	3.3
1	C	326	MET	3.3
1	B	456	ALA	3.3
1	B	459	VAL	3.3
1	C	124	GLU	3.2
1	B	152	PRO	3.2
1	C	346	ASP	3.2
1	C	352	LEU	3.2
1	A	296	GLY	3.1
1	C	182	PRO	3.1
1	B	296	GLY	3.1
1	C	302	ASP	3.0
1	C	347	PRO	3.0
1	A	128	THR	3.0
1	C	345	ALA	3.0
1	A	238	ASP	2.8
1	C	319	VAL	2.8
1	C	293	ALA	2.8
1	B	332	ASP	2.8
1	C	351	PHE	2.7
1	C	355	LYS	2.6
1	C	91	VAL	2.6
1	B	303	THR	2.6
1	A	137	GLU	2.6
1	A	356	ASP	2.4
1	A	42	LEU	2.3
1	A	70	PHE	2.3
1	A	129	GLN	2.3
1	C	143	ALA	2.3
1	C	70	PHE	2.3
1	A	262	LEU	2.2
1	B	45	VAL	2.2
1	A	239	GLU	2.2
1	C	358	GLU	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	299	GLU	2.2
1	B	300	PHE	2.2
1	A	344	CYS	2.2
1	A	457	TYR	2.2
1	B	354	GLU	2.2
1	C	161	ARG	2.2
1	A	297	ASP	2.2
1	C	364	MET	2.2
1	A	283	TYR	2.2
1	A	361	VAL	2.2
1	B	317	TYR	2.1
1	A	300	PHE	2.1
1	B	114	GLU	2.1
1	B	120	ASN	2.1
1	A	430	LEU	2.0
1	C	457	TYR	2.0
1	C	121	ASN	2.0
1	C	261	GLN	2.0

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

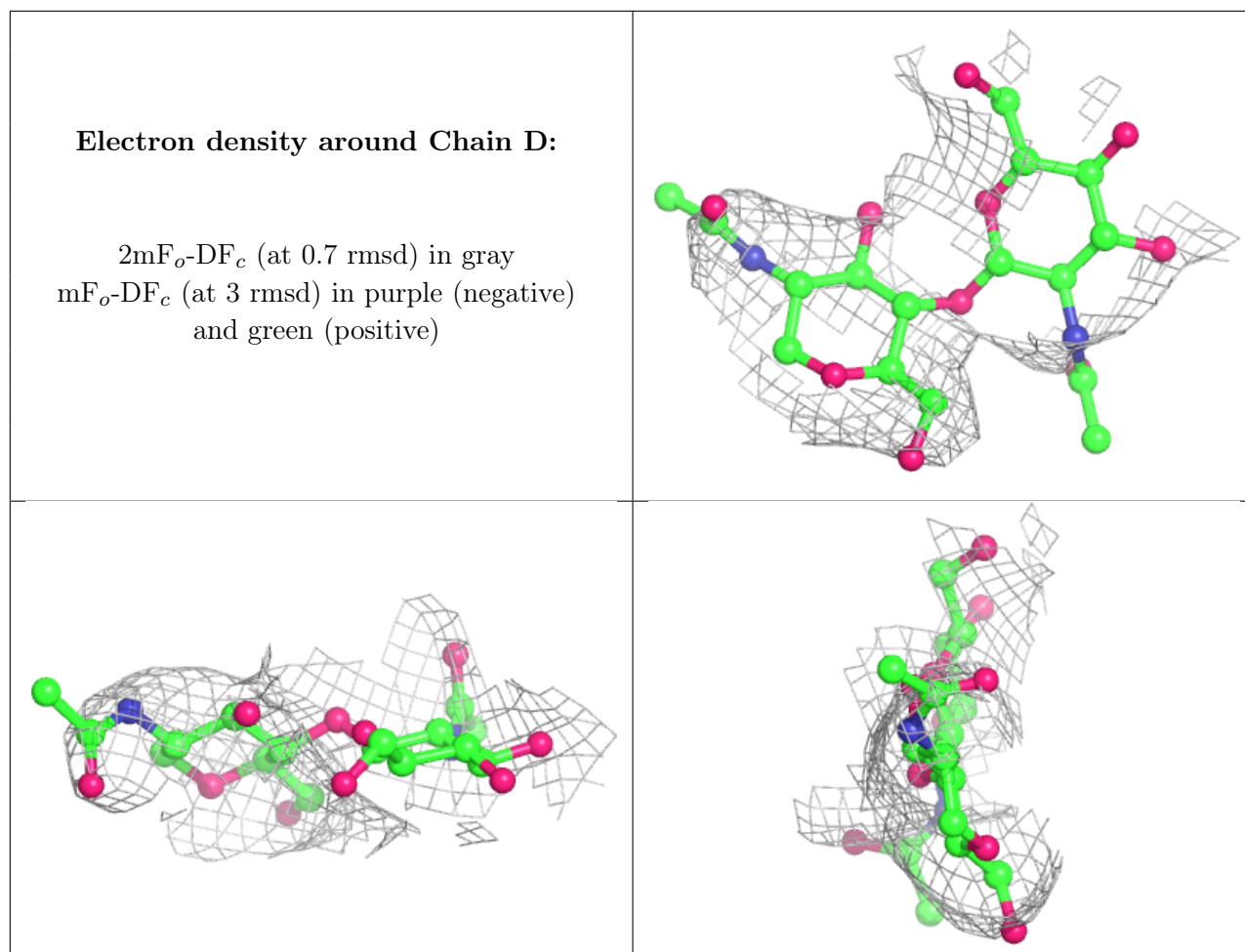
There are no non-standard protein/DNA/RNA residues in this entry.

## 6.3 Carbohydrates [i](#)

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(Å <sup>2</sup> )	Q<0.9
2	NAG	D	2	14/15	0.81	0.44	164,202,232,233	0
2	NAG	D	1	14/15	0.90	0.40	143,172,213,229	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.



## 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(Å <sup>2</sup> )	Q<0.9
4	CL	C	503	1/1	0.35	0.39	168,168,168,168	0
4	CL	A	502	1/1	0.50	0.39	124,124,124,124	0
5	BA	A	503	1/1	0.66	0.10	267,267,267,267	1
4	CL	B	504	1/1	0.77	0.42	138,138,138,138	0
3	NAG	C	502	14/15	0.77	0.33	190,212,230,231	0
3	NAG	C	501	14/15	0.86	0.25	165,188,204,205	0
3	NAG	A	501	14/15	0.87	0.39	166,190,204,208	0
3	NAG	B	503	14/15	0.92	0.40	162,194,205,220	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.