

# wwPDB X-ray Structure Validation Summary Report (i)

#### Jun 17, 2024 – 11:13 PM EDT

PDB ID	:	2X96
Title	:	Crystal structure of AnCE-RXPA380 complex
Authors	:	Akif, M.; Georgiadis, D.; Mahajan, A.; Dive, V.; Sturrock, E.D.; Isaac, R.E.;
		Acharya, K.R.
Deposited on		
Resolution	:	1.85  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 A user guide is available at https://www.wwpdb.org/validation/2017/XrayValidationReportHelp with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (1)) were used in the production of this report:

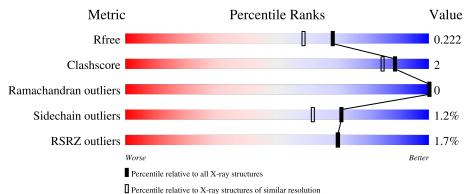
Mogul Xtriage (Phenix) EDS buster-report Percentile statistics Refmac CCP4 Ideal geometry (proteins)	:::::::::::::::::::::::::::::::::::::::	2022.3.0, CSD as543be (2022) 1.20.1 2.37.1 1.1.7 (2018) 20191225.v01 (using entries in the PDB archive December 25th 2019) 5.8.0158 7.0.044 (Gargrove) Engh & Huber (2001)
Ideal geometry (proteins)	:	Engh & Huber $(2001)$
Ideal geometry (DNA, RNA)		
Validation Pipeline (wwPDB-VP)	:	2.37.1

# 1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:  $X\text{-}RAY \, DIFFRACTION$ 

The reported resolution of this entry is 1.85 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	$\begin{array}{c} \textbf{Whole archive} \\ (\#\textbf{Entries}) \end{array}$	${f Similar\ resolution}\ (\#{ m Entries,\ resolution\ range}({ m \AA}))$
$R_{free}$	130704	2469(1.86-1.86)
Clashscore	141614	2625 (1.86-1.86)
Ramachandran outliers	138981	2592 (1.86-1.86)
Sidechain outliers	138945	2592 (1.86-1.86)
RSRZ outliers	127900	2436 (1.86-1.86)

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 >=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 <=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	А	598	<sup>2%</sup> 94%	6%
2	В	6	50%	50%

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	EPE	А	1616	-	-	-	Х
6	NAG	А	1624	-	-	-	Х



# 2 Entry composition (i)

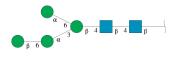
There are 7 unique types of molecules in this entry. The entry contains 5701 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 ANGIOTENSIN CONVERTING ENZYME.

Mol	Chain	Residues		At	oms			ZeroOcc	AltConf	Trace
1	А	598	Total 4883	C 3124	N 806	O 933	S 20	0	2	0

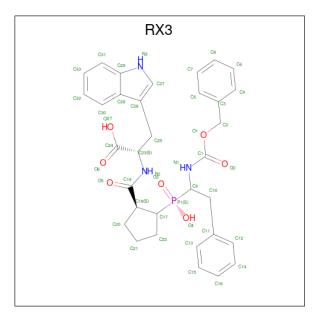
• Molecule 2 is an oligosaccharide called beta-D-mannopyranose-(1-6)-alpha-D-mannopyranos e-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-be ta-D-glucopyranose.



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf	Trace
2	В	6	$\begin{array}{ccccc} Total & C & N & O \\ 72 & 40 & 2 & 30 \end{array}$	0	0	0

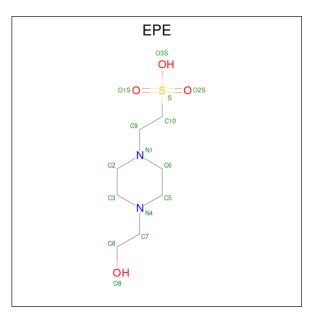
• Molecule 3 is N-({(1S,2R)-2-[(S)-[(1R)-1-{[(BENZYLOXY)CARBONYL]AMINO}-2-PHE NYLETHYL](HYDROXY)PHOSPHORYL]CYCLOPENTYL}CARBONYL)-L-TRYPT OPHAN (three-letter code: RX3) (formula: C<sub>33</sub>H<sub>36</sub>N<sub>3</sub>O<sub>7</sub>P).





Mol	Chain	Residues		Ato	oms			ZeroOcc	AltConf
2	Λ	1	Total	С	Ν	0	Р	0	0
5	A	1	44	33	3	7	1	0	0

• Molecule 4 is 4-(2-HYDROXYETHYL)-1-PIPERAZINE ETHANESULFONIC ACID (three-letter code: EPE) (formula:  $C_8H_{18}N_2O_4S$ ).



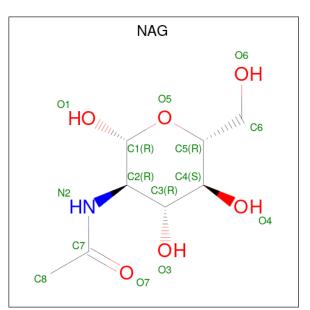
Mol	Chain	Residues		Ato	oms			ZeroOcc	AltConf
4	А	1	Total	С	N	0	S	0	0
		-	15	8	2	4	1	Ŭ	Ű

• Molecule 5 is ZINC ION (three-letter code: ZN) (formula: Zn).



Mol	Chain	Residues	Ator	ns	ZeroOcc	AltConf
5	А	1	Total 1	Zn 1	0	0

• Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	А	1	Total         C         N         O           14         8         1         5	0	0
6	А	1	Total         C         N         O           14         8         1         5	0	0

• Molecule 7 is water.

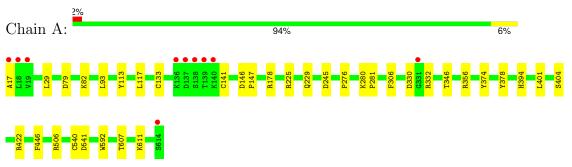
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	А	658	Total O 658 658	0	0



# 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: ANGIOTENSIN CONVERTING ENZYME



 $\label{eq:mannopyranose-(1-6)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]} beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2$ 

Chain B:	50%	50%
VAG 1 VAG 2 SMA 3 AAN 4 AAN 6 4AN 6		



# 4 Data and refinement statistics (i)

Property	Value	Source
Space group	H 3	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	Depositor
Resolution (Å)	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	Depositor EDS
% Data completeness	91.1 (32.71-1.85)	Depositor
(in resolution range)	65.9(32.71-1.85)	EDS
R <sub>merge</sub>	0.09	Depositor
R <sub>sym</sub>	(Not available)	Depositor
$< I/\sigma(I) > 1$	3.17 (at 1.85 Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
D D	0.194 , $0.215$	Depositor
$R, R_{free}$	0.198 , $0.222$	DCC
$R_{free}$ test set	3180 reflections $(4.98%)$	wwPDB-VP
Wilson B-factor $(Å^2)$	28.1	Xtriage
Anisotropy	0.142	Xtriage
Bulk solvent $k_{sol}(e/Å^3)$ , $B_{sol}(Å^2)$	0.39 , $41.2$	EDS
L-test for $twinning^2$	$<  L  > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	$\begin{array}{c} 0.017 \ {\rm for} \ -2/3^{*}{\rm h-1}/3^{*}{\rm k-4}/3^{*}{\rm l,-1}/3^{*}{\rm h-2}/3^{*}{\rm k+} \\ 4/3^{*}{\rm l,-1}/3^{*}{\rm h-1}/3^{*}{\rm k}+1/3^{*}{\rm l} \\ 0.013 \ {\rm for} \ -{\rm h,1}/3^{*}{\rm h-1}/3^{*}{\rm k}-4/3^{*}{\rm l,-1}/3^{*}{\rm h-2}/3^{*}{\rm k} \\ +1/3^{*}{\rm l} \\ 0.005 \ {\rm for} \ -1/3^{*}{\rm h}+1/3^{*}{\rm k}+4/3^{*}{\rm l,-k},2/3^{*}{\rm h}+1/ \\ 3^{*}{\rm k}+1/3^{*}{\rm l} \\ 0.015 \ {\rm for} \ -{\rm h,2}/3^{*}{\rm h}+1/3^{*}{\rm k}+4/3^{*}{\rm l,-k},2/3^{*}{\rm h}+2/3 \\ & {\rm *k-1}/3^{*}{\rm l} \\ 0.038 \ {\rm for} \ -1/3^{*}{\rm h-2}/3^{*}{\rm k}+4/3^{*}{\rm l,-2}/3^{*}{\rm h}-1/3^{*}{\rm k} \\ 4/3^{*}{\rm l,1}/3^{*}{\rm h-1}/3^{*}{\rm k}-1/3^{*}{\rm l} \\ 0.034 \ {\rm for} \ 1/3^{*}{\rm h}+2/3^{*}{\rm k}-4/3^{*}{\rm l,-k},-2/3^{*}{\rm h}-1/3^{*} \\ {\rm k-1}/3^{*}{\rm l} \\ 0.181 \ {\rm for} \ {\rm h,-h-k,-l} \end{array}$	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	5701	wwPDB-VP
Average B, all atoms $(Å^2)$	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: The largest off-origin peak in the Patterson function is 5.82% of the height of the origin peak. No significant pseudotranslation is detected.

<sup>&</sup>lt;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.



 $<sup>^1 \</sup>mathrm{Intensities}$  estimated from amplitudes.

# 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: EPE, RX3, BMA, NAG, MAN, ZN

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		Boi	nd lengths	Bond angles		
	Chain	RMSZ	# Z  > 5	RMSZ	# Z  > 5	
1	А	0.38	2/5015~(0.0%)	0.47	0/6796	

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	$\mathbf{Z}$	Observed(Å)	Ideal(Å)
1	А	346	THR	CB-OG1	5.44	1.54	1.43
1	А	607	THR	CB-OG1	5.31	1.53	1.43

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	А	4883	0	4677	18	0
2	В	72	0	61	0	0
3	А	44	0	31	1	0
4	А	15	0	17	3	0
5	А	1	0	0	0	0
6	А	28	0	26	0	0
7	А	658	0	0	4	0
All	All	5701	0	4812	19	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 2.

The worst 5 of 19 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:404:SER:HB2	1:A:541:ASP:HA	1.84	0.59
1:A:276:PRO:HB3	1:A:592:TRP:CH2	2.42	0.55
1:A:506:ARG:HH12	4:A:1616:EPE:H32	1.72	0.54
1:A:113:TYR:CE2	1:A:117:LEU:HD11	2.44	0.52
1:A:306:PHE:CD2	1:A:401:LEU:HD13	2.46	0.51

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	А	598/598~(100%)	591 (99%)	7 (1%)	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	А	521/520~(100%)	515~(99%)	6 (1%)	71 62	



Mol	Chain	$\operatorname{Res}$	Type
1	А	394	HIS
1	А	446	PHE
1	А	540	CYS
1	А	374	TYR
1	А	245	ASP

5 of 6 residues with a non-rotameric sidechain are listed below:

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)

6 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).

Mal	Mol Type Chain Re		Res	Link	Bond lengths			Bond angles		
	Mol Type Chain	nes		Counts	RMSZ	# Z >2	Counts	RMSZ	# Z  > 2	
2	NAG	В	1	1,2	$14,\!14,\!15$	0.47	0	$17,\!19,\!21$	0.68	0
2	NAG	В	2	2	$14,\!14,\!15$	0.46	0	$17,\!19,\!21$	1.32	2 (11%)
2	BMA	В	3	2	11,11,12	0.59	0	$15,\!15,\!17$	0.76	0
2	MAN	В	4	2	$11,\!11,\!12$	0.59	0	$15,\!15,\!17$	0.87	0
2	BMA	В	5	2	$11,\!11,\!12$	0.51	0	$15,\!15,\!17$	1.21	1 (6%)
2	MAN	В	6	2	11,11,12	0.60	0	$15,\!15,\!17$	0.87	1 (6%)

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



Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	В	1	1,2	-	0/6/23/26	0/1/1/1
2	NAG	В	2	2	-	3/6/23/26	0/1/1/1
2	BMA	В	3	2	-	1/2/19/22	0/1/1/1
2	MAN	В	4	2	-	2/2/19/22	0/1/1/1
2	BMA	В	5	2	-	2/2/19/22	0/1/1/1
2	MAN	В	6	2	-	1/2/19/22	0/1/1/1

Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
2	В	5	BMA	C1-O5-C5	3.84	117.33	112.19
2	В	2	NAG	C2-N2-C7	3.19	127.17	122.90
2	В	2	NAG	C1-O5-C5	2.83	115.98	112.19
2	В	6	MAN	C1-O5-C5	2.03	114.91	112.19

There are no chirality outliers.

5 of 9 torsion outliers are listed below:

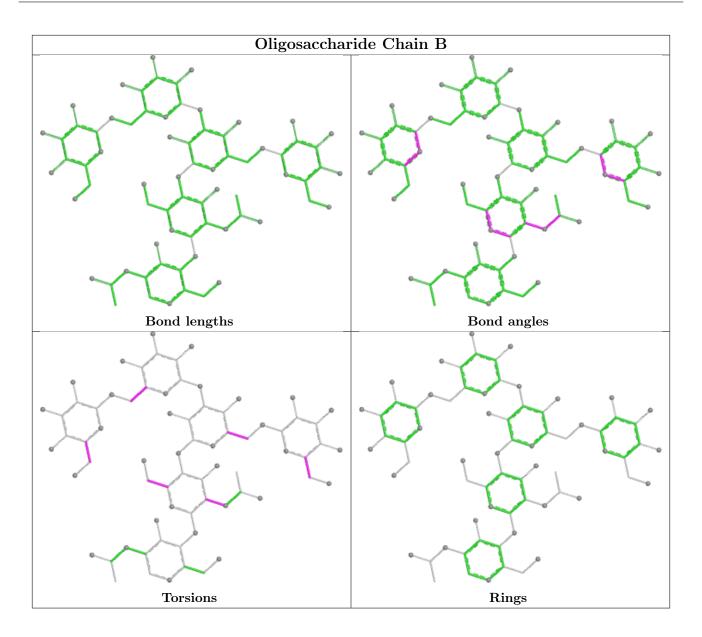
Mol	Chain	Res	Type	Atoms
2	В	5	BMA	C4-C5-C6-O6
2	В	5	BMA	O5-C5-C6-O6
2	В	4	MAN	O5-C5-C6-O6
2	В	2	NAG	C4-C5-C6-O6
2	В	4	MAN	C4-C5-C6-O6

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 5 ligands modelled in this entry, 1 is 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	Bo	ond leng	ths	В	ond ang	gles
WIOI	Type	Unam	nes	LIIIK	Counts	RMSZ	# Z >2	Counts	RMSZ	# Z >2
4	EPE	А	1616	-	$15,\!15,\!15$	0.86	1 (6%)	19,20,20	1.83	4 (21%)



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
	туре	Unam	nes	LIIIK	Counts	RMSZ	# Z >2	Counts	RMSZ	# Z >2
6	NAG	А	1624	1	$14,\!14,\!15$	0.57	0	17,19,21	0.63	0
6	NAG	А	1623	1	14,14,15	0.56	0	17,19,21	0.58	0
3	RX3	А	1615	5	43,48,48	1.85	4 (9%)	56,67,67	2.05	11 (19%)

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
4	EPE	А	1616	-	-	2/9/19/19	0/1/1/1
6	NAG	А	1624	1	-	2/6/23/26	0/1/1/1
6	NAG	А	1623	1	-	2/6/23/26	0/1/1/1
3	RX3	А	1615	5	-	14/37/51/51	0/5/5/5

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	А	1615	RX3	C9-N1	-8.89	1.36	1.46
3	А	1615	RX3	O1-C1	5.01	1.45	1.35
4	А	1616	EPE	C10-S	2.82	1.81	1.77
3	А	1615	RX3	P1-O4	-2.28	1.50	1.54
3	А	1615	RX3	C33-C31	2.01	1.41	1.36

The worst 5 of 15 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Ζ	$\mathbf{Observed}(^{o})$	$Ideal(^{o})$
3	А	1615	RX3	P1-C9-C10	8.43	125.07	110.98
3	А	1615	RX3	C17-P1-C9	5.23	121.64	106.88
4	А	1616	EPE	C5-N4-C3	5.07	119.76	108.84
3	А	1615	RX3	C10-C9-N1	5.02	117.21	111.36
3	А	1615	RX3	C22-C17-C18	3.87	111.55	104.45

There are no chirality outliers.

5 of 20 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	А	1615	RX3	C10-C9-P1-O3
3	А	1615	RX3	N1-C9-P1-C17
3	А	1615	RX3	C18-C17-P1-O4

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Mol	Chain	Res	Type	Atoms
3	А	1615	RX3	C18-C17-P1-C9
3	А	1615	RX3	P1-C9-N1-C1

There are no ring outliers.

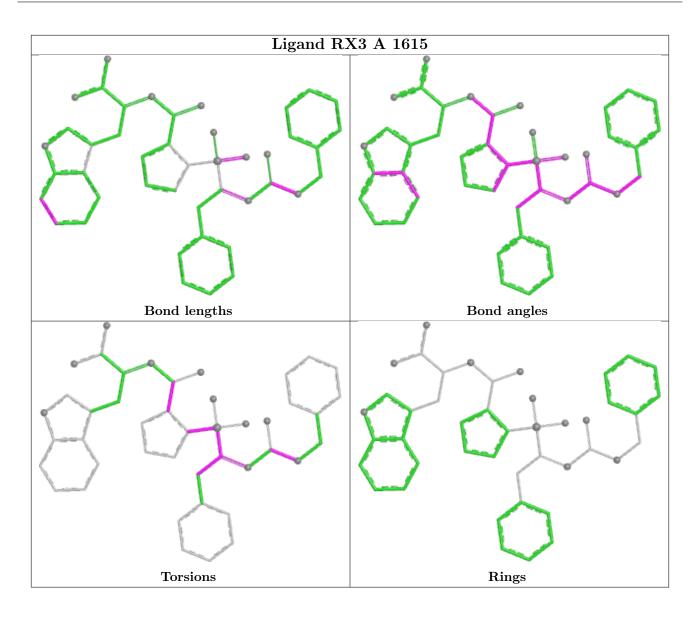
2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	А	1616	EPE	3	0
3	А	1615	RX3	1	0

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 then 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 (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,  $95^{th}$  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	$OWAB(Å^2)$	Q < 0.9
1	А	598/598~(100%)	-0.42	10 (1%) 70 70	18, 27, 39, 47	7(1%)

The worst 5 of 10 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	А	139	THR	4.7
1	А	614	SER	3.9
1	А	17	ALA	3.3
1	А	19	VAL	3.0
1	А	140	LYS	2.9

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

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

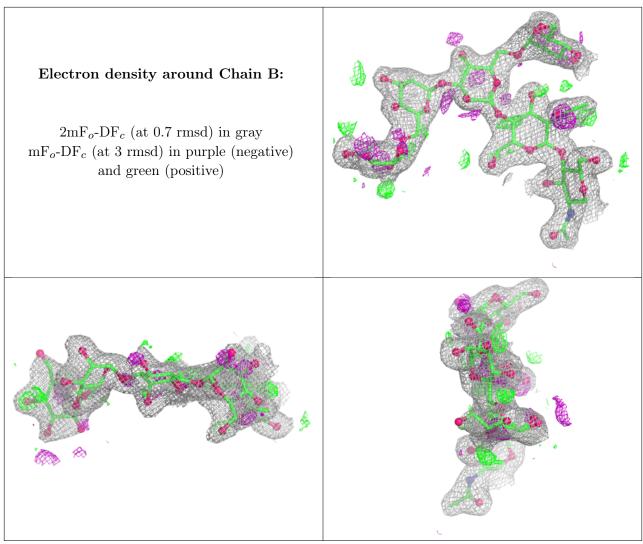
### 6.3 Carbohydrates (i)

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,  $95^{th}$  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	$\mathbf{B} ext{-factors}(\mathbf{A}^2)$	Q < 0.9
2	MAN	В	6	11/12	0.81	0.29	60,62,62,62	0
2	BMA	В	5	11/12	0.86	0.18	60,62,62,63	0
2	BMA	В	3	11/12	0.87	0.25	49,53,56,58	0
2	MAN	В	4	11/12	0.90	0.12	55, 56, 58, 59	0
2	NAG	В	2	14/15	0.93	0.12	36,39,41,45	0
2	NAG	В	1	14/15	0.98	0.06	27,29,30,33	0

The following is a graphical depiction of the model fit to experimental electron density for oligosac-





#### charide. Each fit is shown from different orientation to approximate a three-dimensional view.

## 6.4 Ligands (i)

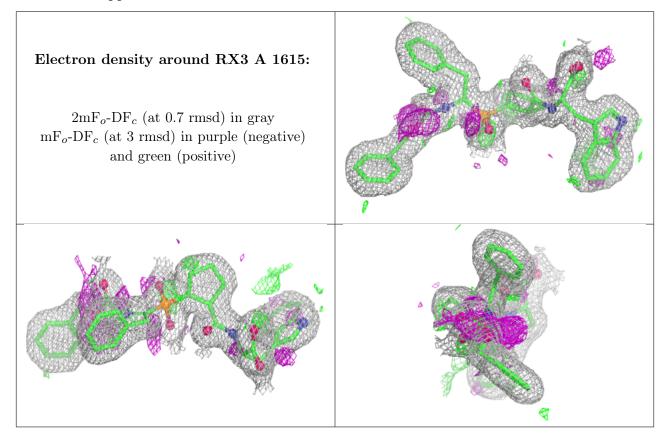
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median,  $95^{th}$  percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	$B-factors(Å^2)$	Q<0.9
6	NAG	А	1624	14/15	0.64	0.49	44,45,45,45	14
4	EPE	А	1616	15/15	0.66	0.47	118,118,119,119	0
6	NAG	А	1623	14/15	0.84	0.30	33,33,34,34	14
3	RX3	А	1615	44/44	0.96	0.15	27,29,34,37	0
5	ZN	А	1617	1/1	1.00	0.07	22,22,22,22	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.

