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PDB ID	:	8ZY3
EMDB ID	:	EMD-60554
Title	:	Sarbecovirus BANAL-20-236 Spike Trimer in a Locked Conformation
Authors	:	Wang, J.; Xiong, X.
Deposited on	:	2024-06-16
Resolution	:	3.30 Å(reported)

This is a Full wwPDB EM Validation 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/EMValidationReportHelp 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:

EMDB validation analysis	:	FAILED
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.2

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure: $ELECTRON\ MICROSCOPY$

The reported resolution of this entry is 3.30 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	$egin{array}{c} { m Whole \ archive} \ (\#{ m Entries}) \end{array}$	${f EM} {f structures} \ (\#{f Entries})$
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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%

Mol	Chain	Length	Quality of chain	
1	А	1282	73% 12%	15%
1	В	1282	74% 11%	15%
1	С	1282	75% 10%	15%
2	D	2	100%	
2	Е	2	100%	
2	F	2	100%	
2	G	2	100%	
2	Н	2	100%	
2	Ι	2	100%	



2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 26295 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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.

Mol	Chain	Residues		А	AltConf	Trace			
1	Δ	1000	Total	С	Ν	Ο	S	0	0
L L	11	1050	8485	5411	1410	1623	41	0	0
1	В	1000	Total	С	Ν	Ο	\mathbf{S}	0	0
	D	1090	8485	5411	1410	1623	41	0	0
1	C	1000	Total	С	Ν	Ο	S	0	0
	U	1090	8485	5411	1410	1623	41	0	0

• Molecule 1 is a protein called Spike glycoprotein.

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



Mol	Chain	Residues	Atoms	AltConf	Trace	
2	D	2	Total C N O	0	0	
			28 16 2 10	_	_	
2	E	2	Total C N O	0	0	
2	Ľ	2	28 16 2 10	0	0	
2	F	9	Total C N O	0	0	
	Г	2	28 16 2 10	0	U	
9	С	9	Total C N O	0	0	
	G	2	28 16 2 10	0	0	
9	Ц	9	Total C N O	0	0	
	11	2	28 16 2 10	0	0	
9	Т	9	Total C N O	0	0	
			28 16 2 10	0		

• Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).





Mol	Chain	Residues	A	AltConf			
9	٨	1	Total	С	Ν	Ο	0
3	A	1	14	8	1	5	0
3	Λ	1	Total	С	Ν	Ο	0
0	Π	1	14	8	1	5	0
3	А	1	Total	С	Ν	Ο	0
		1	14	8	1	5	0
3	А	1	Total	С	Ν	Ο	0
		-	14	8	1	5	, , , , , , , , , , , , , , , , , , ,
3	А	1	Total	С	Ν	O	0
			14	8	1	5	
3	А	1	Total	С	N	Õ	0
			14	8	1	5	
3	А	1	Total	C	N	O F	0
			14	8	1 	<u>5</u>	
3	А	1		C	N 1	U F	0
			14 Tetal	$\frac{\delta}{C}$	1 N	0	
3	А	1		° C	IN 1	5	0
			Total	$\frac{\circ}{C}$	I N	$\frac{0}{0}$	
3	А	1	10tai 17	8	1N 1	5	0
			Total	$\frac{0}{C}$	N	0	
3	А	1	100ai	8	1	5	0
			Total	$\frac{0}{C}$	N	$\frac{0}{0}$	
3	A	1	14	8	1	5	0
			Total	<u>C</u>	N	0	
3	A	1	14	8	1	5	0
			Total	C	N	0	
3	A	1	14	8	1	$\widetilde{5}$	0



Continued from previous page...

Mol	Chain	Residues	A	AltConf			
2	٨	1	Total	С	Ν	Ο	0
3	А	1	14	8	1	5	0
2	٨	1	Total	С	Ν	Ο	0
3	А	1	14	8	1	5	0
	р	1	Total	С	Ν	0	0
3	В	1	14	8	1	5	0
2	р	1	Total	С	Ν	Ο	0
3	В	1	14	8	1	5	0
2	р	1	Total	С	Ν	Ο	0
3	В	1	14	8	1	5	0
2	р	1	Total	С	Ν	Ο	0
3	D	1	14	8	1	5	0
2	D	1	Total	С	Ν	Ο	0
3	D	1	14	8	1	5	0
2	D	1	Total	С	Ν	Ο	0
3	В	1	14	8	1	5	0
2	р	1	Total	С	Ν	Ο	0
3	В	1	14	8	1	5	0
2	р	1	Total	С	Ν	Ο	0
3	В	1	14	8	1	5	0
2	D	1	Total	С	Ν	Ο	0
3	В	1	14	8	1	5	0
2	р	1	Total	С	Ν	Ο	0
3	В	1	14	8	1	5	0
2	D	1	Total	С	Ν	Ο	0
3	D	1	14	8	1	5	0
2	D	1	Total	С	Ν	Ο	0
3	D	1	14	8	1	5	0
2	D	1	Total	С	Ν	Ο	0
3	D	1	14	8	1	5	0
2	В	1	Total	С	Ν	Ο	0
່ <u>ບ</u>	D	1	14	8	1	5	0
2	В	1	Total	С	Ν	Ο	0
5	D	1	14	8	1	5	0
2	R	1	Total	С	Ν	0	0
ن ا	D	L	14	8	1	5	
2	С	1	Total	С	Ν	0	0
ں ا		L	14	8	1	5	
2	C	1	Total	С	Ν	0	0
) ၂ ၁		1	14	8	1	5	
9	С	1	Total	С	Ν	0	0
ാ			14	8	1	5	



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Mol	Chain	Residues	A	AltConf			
2	C	1	Total	С	Ν	Ο	0
3	U	L	14	8	1	5	0
9	C	1	Total	С	Ν	0	0
່ <u>ບ</u>	U	L	14	8	1	5	0
3	С	1	Total	С	Ν	Ο	0
0	U	T	14	8	1	5	0
3	С	1	Total	С	Ν	Ο	0
0	U	T	14	8	1	5	0
3	С	1	Total	С	Ν	Ο	0
5	U	I	14	8	1	5	0
3	С	1	Total	С	Ν	Ο	0
0	0	T	14	8	1	5	0
3	С	1	Total	С	Ν	Ο	0
	0	1	14	8	1	5	0
3	С	1	Total	С	Ν	Ο	0
		Ŧ	14	8	1	5	Ŭ
3	С	1	Total	С	Ν	Ο	0
		*	14	8	1	5	Ŭ
3	С	1	Total	С	Ν	Ο	0
		1	14	8	1	5	Ŭ
3	С	1	Total	С	Ν	Ο	0
		1	14	8	1	5	
3	C	1	Total	С	Ν	Ο	0
		*	14	8	1	5	
3	C	1	Total	С	Ν	Ο	0
			14	8	1	5	



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. 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. 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: Spike glycoprotein





V323	L331	N356 C357	V363 L364	F370	V391	E402	N435	S439	Y449	Y491	5510 F511	T5 19 V5 20	K524 K525	N538	D564	T568	1594 T595	T598	V604	I620	L625	R630	CODO D659 I660	C667
TG70	GLN	ASN SER	ARG SER VAL	ALA S681	1718	K725	M732	Y733 1734	F751	L755	1762 A763	0766	1780	0785 1786	D800	K817	<mark>A821</mark> ASP	ALA GLY	PRE ILE KR77	0828 0828 7829	A868	<mark>0887</mark>	F898	19 <mark>01</mark>
T904	K913	F919	A922	<mark>q941</mark> D942 V943	Q946	T953	1972	L976 D977	R992 L993	0994 8995 1006	1996 1997	R1006	L1026	61027	V1053	T1058	N1066	D1076	C1085	V1086 F1087	V1088 S1089	W1094	T1097 01098	R1099
E1103	11107	V1121	P1132 LEU GLN	PRO GLU LEU	ASP SER	PHE LYS GLU	GLU	ASP LYS TVR	PHE	ASN HIS	IHK SER PRO	ASP VAL	LEU GLY	ASP ILE SER	GLY ILE	ASN ALA SFR	VAL VAL	ASN ILE	CT 11 CT 11 GT 11	ILE ASP	ARG LEU	GLU	VAL ALA LYS	ASN LEU
ASN	SER	ILE ASP	GLN GLN	LEU GLY I.YS	TYR GLU	GLN TYR TLF	GLY GLY	SER GLY TVR	ILE PRO	GLU ALA	ARG ASP	GLY GLN	TYR VAL	ARG LYS ASP	GLU GLU	VAL VAL	LEU SER	THR PHE	LEU	VAL	PHE	GLY PRO	SIH ALI	SIH
HIS	SIH	SER ALA	TRP SER HIS	PRO GLN PHE	GLU	GLY GLY	SER	GLY GLY	SER	GLY SER	ALA TRP SER	HIS PRO	PHE	LYS SER ALA										
•	Mo	lecı	ıle i	1: Sj	pike	e gly	ycoj	prot	tein															
Cl	hai	n C	:							75%								10%)	1	15%	_		
TE III	ьпп	ыы	D 20 H	A R L	l z et						* 7 5	-		10		2 ~	. .	54	27 80	ຸຄຸວ	2	12	0 7 7	
W C	Hd	Hd Hd	E C E	ALSE	ASI	Q1 R3	D4	. 1 4	MGE		ASI	AL/ E70	N R78 V79	D8	E96		N1:	TI	112	K13	S14	F14	ASI	THE
TRP M	THR PH	GLU PH	E168 V169 PH	V170 AL SE SE VA	M175 ASI L176 SEI	D186 D186 T187	L188 R189 D4	F200	L215 P216	S220 LY(L228 ASI GL	R236 AL/ F237 E76	L241 R78 T242 V78	1243 H244 R245	N252	G253 110 W254 1.11 T255 1.11	V256 N12	A260 T12	V 203	L299 V13	V304 S14	R324 F12	P326 ASI ASI	F334 LYE
R353 TRP M	N356 THR PH ARG ARG PH	L364 GLU PH	N390 EE CY V391 E168 CY V169 PH	1414 V170 AL	M175 ASI C427 L176 SEI	D438 D186 01	R453 L188 L188 D4	L457 F200 N4	K489 L216 W6	T70 R505 S220 LY	111 S510 L228 ASI F511 GL	A518 F237 E76 AL/ A518 F237 E76 T0 TE10	L241 R7 L529 T242 V7	1243 F539 1244 D8 R245	4576 E89	1004 0253 110 110 110 110 110 110 110 110 110 11	V256 N12	A260 V611 T12	I620 V.263 I12 V275 I12	L625 L625 K12	q640 T641 V304 S14	R642 A643 R324 F14	C645 F326 ASI	I660 F334 LYS
IG62 R353 TRP M	A668 N356 THR PH	T672 L364 GLU PH GLN F156 PH	THR N390 LE ASN V391 E168 CY SER Y169 PH	ARG 1414 V170 AL SER 1414 V170 AL SER 1418 F174 VA	ALA M175 ASI 8581 G427 L176 SEI	1706 D438 D186 01	K725 R453 L188 R189 D4	1734 L457 F200 N4 R767 D463	A763 K489 P216 W6	77(q796 R505 S220 LV	A821 S510 L228 ASI ASP F511 GL	ALA R236 ALA GLY A518 F237 E76 DUE T640	LE 1013 10141 R7 1014110141 R7 10141 R7 10141 R7	1243 1836 F539 H244 D8 4837 R245	A838 q576 E9	L841 1094 6253 111 1026 1254 111 10845 17598 171	L850 Y608 N12	Q87 V611 A260 T12	1000 1000 1000 1000 1000 1000 1000 100	M892 L625 L299 V12	Y896 q640 R897 T641 V304 S14	F898 R642 R324 F1	1904 0044 5.25 0.01 1905 0645 7.326 ASI	L908 I660 F334 LYS
1662 R353 TRP M 0927 SFR 1	10042 A668 N356 THR PH	T672 L364 GU PH Q346 GLN PH PH PH	THR N390 LE N952 ASN V391 E168 CY SER V169 PH	V968 ARG 1414 V170 AL V969 SR 0	L976 S681 G427 L176 SE	0077 1706 0438 0186 04 498 1706 0438 0186 83	R453 L188 D4	1734 L457 L996 L910 M4 0027 M47	491 A101 A101 A101 A101 A101 A101 A101 A1	T/ V1032 q796 R505 S220 LY	11035 11035 111 11034 A821 S510 L228 A81 ASP F511 GL	H1040 ALA R236 ALI CLY A518 F237 EV F106 GLY F518 F237 EV F107 F519 F237 F51	1000 III 1010 III 1010 VI	C1074 I836 F539 1243 D8 H1075 A837 F539 R245 D8	D1076 A838 Q576 B3	01025 L041 L544 0225 L11 V1088 D245 T598 T2554 [11	1089 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	W1094 A260 A260 T12 A	1109/ 1008 1620 1203 111	C1118 M892 L625 L299 V10	D1131 Y896 q640 P1132 R897 T641 V304 S12	LEU F898 R642 R324 F1	FAU 1904 0044 FAZO ALI GLU (2005 C645 P326 Ali LEU ASI	ASP L908 I600 F334 LVX SER Y909 P661 H1
PHE I 1662 R353 TRP M 1 VS 0927 SEB 1	GLU <u>POZIO AG68 N356 THR</u> PH GLU <u>D942</u> A668 N356 THR PH GLU <u>D942</u> ARG PH	LEU T672 1.364 GLU PH ASP Q946 GLN PH	LYS N952 ASN V391 E168 CV TYR N952 ASN V391 E168 CV PHE SKR V169 PH	LYS V968 ARG 1414 V170 AL ASN 1.969 SER 1416 V170 AL 450 1.969 SER 1418 1724 VA	THR ALA ALA <td>PR0 D977 1706 D438 D186 01 Val. 4481 T1706 D438 01 P186 P186 P186 P186 P186 P186 P186 P18</td> <td>ASP 143 1489 1463 1489 1463 1489 1463 1489 1489 1489 1489 1489 1489 1489 1489</td> <td>GLY L96 I734 L457 F200 M4 ASP L966 F75 AA63</td> <td>SEX X100 A763 X489 P216 W8</td> <td>ILE 177 ASN 11032 0796 RE05 S220 LV AND 1032 0796 RE05 S220 LV</td> <td>ALA U1033 A821 S510 L228 A11 VAL ASP F511 C228 A12 VAL ASP F511 GL</td> <td>VAL H1040 ALA R236 ALA ASN H020 CLY AE18 F237 E1 TYOED DLY AE18 F237 E17 TYOED DLY F1020 VY</td> <td>LIN 1100 ILE 125 IL241 KI GLN 11066 K827 L529 I242 VI</td> <td>GLU C1074 I836 F539 I244 D8 LLE C1074 I836 F539 R244 D8 ASP H1075 A837 R245 A837</td> <td>ARG D1076 A838 Q576 E91</td> <td>ASN 61085 L641 L94 6253 11 GLU V1088 D845 T568 111 V11</td> <td>ALA 51089 410 10 10 10 10 10 10 10 10 10 10 10 10 1</td> <td>ASN W1094 AST A260 AST LEU A260 T12 A260 T12 A260 T12 A260 AST A360 AST A36</td> <td>Ala 11097 1000 GLU (1098 P889 1620 7203 AGE (1098 P889 1620 725 111</td> <td>LEU C1118 M892 L625 L209 V10</td> <td>ASP D1131 Y896 Q640 LEU P1132 R897 T641 V304 S1</td> <td>GLN LEU F898 8642 834 F1 GLN GLN 7643 8324 F1</td> <td>LEU FAU 1904 0044 FAU 1014 0044 1017 0011 0011 0011 0011 0011</td> <td>TYR ASP L908 1660 F334 LVW CLU SER Y909 P661 TH</td>	PR0 D977 1706 D438 D186 01 Val. 4481 T1706 D438 01 P186 P186 P186 P186 P186 P186 P186 P18	ASP 143 1489 1463 1489 1463 1489 1463 1489 1489 1489 1489 1489 1489 1489 1489	GLY L96 I734 L457 F200 M4 ASP L966 F75 AA63	SEX X100 A763 X489 P216 W8	ILE 177 ASN 11032 0796 RE05 S220 LV AND 1032 0796 RE05 S220 LV	ALA U1033 A821 S510 L228 A11 VAL ASP F511 C228 A12 VAL ASP F511 GL	VAL H1040 ALA R236 ALA ASN H020 CLY AE18 F237 E1 TYOED DLY AE18 F237 E17 TYOED DLY F1020 VY	LIN 1100 ILE 125 IL241 KI GLN 11066 K827 L529 I242 VI	GLU C1074 I836 F539 I244 D8 LLE C1074 I836 F539 R244 D8 ASP H1075 A837 R245 A837	ARG D1076 A838 Q576 E91	ASN 61085 L641 L94 6253 11 GLU V1088 D845 T568 111 V11	ALA 51089 410 10 10 10 10 10 10 10 10 10 10 10 10 1	ASN W1094 AST A260 AST LEU A260 T12 A260 T12 A260 T12 A260 AST A360 AST A36	Ala 11097 1000 GLU (1098 P889 1620 7203 AGE (1098 P889 1620 725 111	LEU C1118 M892 L625 L209 V10	ASP D1131 Y896 Q640 LEU P1132 R897 T641 V304 S1	GLN LEU F898 8642 834 F1 GLN GLN 7643 8324 F1	LEU FAU 1904 0044 FAU 1014 0044 1017 0011 0011 0011 0011 0011	TYR ASP L908 1660 F334 LVW CLU SER Y909 P661 TH
GLN PHE I662 R353 TRP M TVR IVS 0027 SER 11	1111 U.U. 4221 A668 N356 THR PH LLE GLU D942 A668 N356 THR PH LYS GLU D942 A668 N356 THR PH	GLY LEU T672 L364 GLU PH SER ASP Q946 GLN PH PH PH	GLY LYS 17HR N300 LE TYR TYR 1952 ASN 1391 E168 CY TLE PHE SER 7159 PH	PR0 LYS V968 ARG T414 V170 AL GLU ASN L969 SR SR	PR0 THR ALA ALA <td>ASP PRO D977 ASP 200 D438 D186 01 CLY ASP 1706 D438 D186 03 CLM VAL 4481 T1705 P438 T187 R3</td> <td>ALA ASP 178 LEU R992 P4 189 P4 189 P4 189 P4</td> <td>VAL GLY 1734 L457 1457 1457 1457 1457 1457 1457 1457 1</td> <td>ASP SLIL 4991 101 1410 1410 1410 1410 1410 1410</td> <td>GLU ILE TY TRP ASN Y1032 Q796 RE05 S220 LY VVI ASN Y1032 Q796 RE05 S220 LY</td> <td>VAL ALA DIUGA NA21 S510 L228 AN LEU SER F1034 A821 S510 L228 AN LEU VAL ASP F511 GL</td> <td>SER VAL H1040 ALA R236 ALI TER ASN GLY AE18 F37 E1 DUE THE TAGED DUE F37 E1</td> <td>LEU GLM 1100 TILE 115 125 1241 KI LEU LY MI066 K827 L529 1242 VI</td> <td>GLU GLU GLU 1243 VAL ILE C1074 1836 F539 1244 D8 LEU ASP H1075 A837 R245 A837</td> <td>PHE ARG D1076 A838 Q576 E90 CLN LEU</td> <td>GLY ASN 01065 L841 1994 U223 110 PRO GLU V108 1845 1598 17554 111</td> <td>HIS ALA 51089 410 10 10 10 10 10 10 10 10 10 10 10 10 1</td> <td>HIS ASN W1094 A200 A260 A260 A260 A260 A260 A260 A260</td> <td>HLS A.M 1109/ 10889 1620 V.203 HLS CLU Q1098 P889 1620 V.205 HTS CER 710</td> <td>HILLO CI118 M892 L625 L70 K11 SER ILE C1118 M892 L625 L629 V10</td> <td>ALA ASP D1131 Y896 Q640 TRP LEU P1132 R897 T641 V304 S1</td> <td>SER CLN LEU F898 1642 HIS CLN CLN F304 1642 HIS CLN CLN CLN A643 F324 F1 HIS CLN CLN CLN A643 F124 F124</td> <td>гио до гло 1904 0041 F326 ил 1905 0645 <mark>F326</mark> All PHE JZS LEU 005 0645 F326 All</td> <td>GUU TYR ASP L908 1660 F334 LYU LYS GLU SER Y909 P661 TH</td>	ASP PRO D977 ASP 200 D438 D186 01 CLY ASP 1706 D438 D186 03 CLM VAL 4481 T1705 P438 T187 R3	ALA ASP 178 LEU R992 P4 189 P4 189 P4 189 P4	VAL GLY 1734 L457 1457 1457 1457 1457 1457 1457 1457 1	ASP SLIL 4991 101 1410 1410 1410 1410 1410 1410	GLU ILE TY TRP ASN Y1032 Q796 RE05 S220 LY VVI ASN Y1032 Q796 RE05 S220 LY	VAL ALA DIUGA NA21 S510 L228 AN LEU SER F1034 A821 S510 L228 AN LEU VAL ASP F511 GL	SER VAL H1040 ALA R236 ALI TER ASN GLY AE18 F37 E1 DUE THE TAGED DUE F37 E1	LEU GLM 1100 TILE 115 125 1241 KI LEU LY MI066 K827 L529 1242 VI	GLU GLU GLU 1243 VAL ILE C1074 1836 F539 1244 D8 LEU ASP H1075 A837 R245 A837	PHE ARG D1076 A838 Q576 E90 CLN LEU	GLY ASN 01065 L841 1994 U223 110 PRO GLU V108 1845 1598 17554 111	HIS ALA 51089 410 10 10 10 10 10 10 10 10 10 10 10 10 1	HIS ASN W1094 A200 A260 A260 A260 A260 A260 A260 A260	HLS A.M 1109/ 10889 1620 V.203 HLS CLU Q1098 P889 1620 V.205 HTS CER 710	HILLO CI118 M892 L625 L70 K11 SER ILE C1118 M892 L625 L629 V10	ALA ASP D1131 Y896 Q640 TRP LEU P1132 R897 T641 V304 S1	SER CLN LEU F898 1642 HIS CLN CLN F304 1642 HIS CLN CLN CLN A643 F324 F1 HIS CLN CLN CLN A643 F124 F124	гио до гло 1904 00 41 F326 ил 1905 0645 <mark>F326</mark> All PHE JZS LEU 005 0645 F326 All	GUU TYR ASP L908 1660 F334 LYU LYS GLU SER Y909 P661 TH

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

Chain D:

100%



NAG1 NAG2

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

Chain	E:
-------	----

100%

100%

NAG1 NAG2

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

Chain F:

NAG1 NAG2

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

Chain G:	100%
NAG1 NAG2	
• Molecule	e 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluc

opyranose Chain H: 100%

NAG1 NAG2

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

α	•	т	
(:h	am	1.	
OII	am	т.	

100%

NAG1 NAG2



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	112073	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE	Depositor
	CORRECTION	
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose $(e^-/\text{\AA}^2)$	60	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor



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: 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).

Mal Chain		Bond lengths		Bond angles	
		RMSZ	# Z > 5	RMSZ	# Z > 5
1	А	0.31	0/8679	0.53	0/11813
1	В	0.30	0/8679	0.51	0/11813
1	С	0.30	0/8679	0.53	0/11813
All	All	0.30	0/26037	0.52	0/35439

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	А	8485	0	8245	98	0
1	В	8485	0	8246	89	0
1	С	8485	0	8245	80	0
2	D	28	0	25	0	0
2	Ε	28	0	25	0	0
2	F	28	0	25	0	0
2	G	28	0	25	0	0
2	Н	28	0	25	0	0
2	Ι	28	0	25	0	0
3	A	224	0	208	1	0



CONTROL	Contrinued from precious page					
Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	В	224	0	208	1	0
3	С	224	0	208	0	0
All	All	26295	0	25510	252	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 5.

All (252) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom 1	Atom 2	Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
1:A:128:ILE:HG21	1:A:228:LEU:HD21	1.65	0.77
1:C:245:ARG:HA	1:C:254:TRP:H	1.48	0.77
1:C:252:ASN:OD1	1:C:254:TRP:HB3	1.87	0.74
1:B:391:VAL:HA	1:B:510:SER:O	1.92	0.68
1:A:22:ARG:HH21	1:A:25:ILE:HD11	1.58	0.68
1:A:391:VAL:HA	1:A:510:SER:O	1.94	0.68
1:C:391:VAL:HA	1:C:510:SER:O	1.96	0.65
1:A:200:PHE:HB3	1:A:228:LEU:HB2	1.77	0.65
1:B:65:TRP:HE1	1:B:260:ALA:HB1	1.60	0.64
1:A:23:ALA:HB3	1:A:78:ARG:HB3	1.81	0.61
1:C:65:TRP:HE1	1:C:260:ALA:HB1	1.64	0.61
1:C:1020:LYS:NZ	1:C:1034:PHE:O	2.34	0.61
1:A:35:ARG:NH1	1:A:220:SER:OG	2.34	0.61
1:C:70:THR:OG1	1:C:77:LYS:HA	2.01	0.60
1:C:641:THR:HG23	1:C:643:ALA:H	1.66	0.60
1:B:175:MET:SD	1:B:189:ARG:NH1	2.73	0.60
1:A:128:ILE:HG21	1:A:228:LEU:CD2	2.32	0.60
1:B:1040:HIS:HA	1:B:1058:THR:HG22	1.85	0.59
1:A:723:MET:H	1:A:766:GLN:HG2	1.67	0.58
1:A:35:ARG:HD2	1:A:215:LEU:HD21	1.86	0.57
1:A:65:TRP:HE1	1:A:260:ALA:HB1	1.69	0.57
1:A:35:ARG:NH1	1:A:190:GLU:OE2	2.37	0.56
1:A:785:GLN:HG2	1:A:786:ILE:HG23	1.87	0.56
1:B:128:ILE:HD12	1:B:228:LEU:HD21	1.86	0.56
1:C:128:ILE:HD13	1:C:169:TYR:HD2	1.69	0.56
1:A:28:SER:HB2	1:A:65:TRP:HE3	1.70	0.56
1:A:734:ILE:O	1:A:992:ARG:NH1	2.35	0.56
1:B:129:LYS:HG2	1:B:168:GLU:HG3	1.85	0.56
1:A:103:GLY:HA2	1:A:119:ILE:O	2.05	0.56
1:B:35:ARG:NH1	1:B:220:SER:OG	2.39	0.56
1:A:722:SER:HB2	1:A:766:GLN:HB3	1.88	0.56



	h i a	Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
1:A:887:GLN:NE2	1:C:1066:ASN:OD1	2.39	0.56
1:C:845:GLN:HB2	1:C:850:LEU:HB2	1.88	0.56
1:B:734:ILE:O	1:B:992:ARG:NH1	2.39	0.56
1:A:1040:HIS:HA	1:A:1058:THR:HG22	1.87	0.55
1:A:128:ILE:HB	1:A:169:TYR:HB3	1.87	0.55
1:C:79:VAL:HB	1:C:256:VAL:HG11	1.89	0.55
1:A:121:ASN:HB3	1:A:126:VAL:HG12	1.88	0.55
1:C:324:ARG:NH2	1:C:576:GLN:OE1	2.39	0.55
1:B:127:ILE:HG13	1:B:170:VAL:HG23	1.89	0.55
1:C:245:ARG:HA	1:C:254:TRP:N	2.19	0.55
1:C:1040:HIS:HA	1:C:1058:THR:HG22	1.89	0.55
1:C:734:ILE:O	1:C:992:ARG:NH1	2.36	0.55
1:C:96:GLU:OE2	1:C:189:ARG:NH1	2.40	0.55
1:A:391:VAL:HG22	1:A:511:PHE:HD1	1.72	0.54
1:B:1121:VAL:HG13	1:C:909:TYR:HB3	1.89	0.54
1:A:225:LEU:HG	1:A:226:VAL:HG23	1.90	0.54
1:A:542:LEU:HD21	1:A:569:THR:HG21	1.88	0.54
1:A:1066:ASN:OD1	1:B:887:GLN:NE2	2.40	0.54
1:A:1027:GLY:HA3	1:C:1032:VAL:HG21	1.89	0.54
1:A:1032:VAL:HG21	1:B:1027:GLY:HA3	1.88	0.54
1:C:662:ILE:HD11	1:C:668:ALA:HB2	1.89	0.54
1:A:63:ILE:HG21	1:A:262:TYR:HB3	1.90	0.54
1:A:1085:GLY:HA3	1:A:1097:THR:O	2.09	0.53
1:C:129:LYS:HG2	1:C:168:GLU:HG2	1.91	0.53
1:B:129:LYS:NZ	1:B:168:GLU:OE2	2.42	0.53
1:B:785:GLN:HG2	1:B:786:ILE:HG23	1.92	0.52
1:B:946:GLN:O	1:B:1006:ARG:NH1	2.43	0.52
1:A:451:LEU:HD13	1:A:489:LYS:HD3	1.92	0.52
1:A:625:LEU:O	1:A:630:ARG:NH2	2.42	0.52
1:B:942:ASP:O	1:B:946:GLN:N	2.41	0.52
1:C:324:ARG:HD2	1:C:529:LEU:HB2	1.91	0.52
1:C:904:THR:OG1	1:C:1098:GLN:NE2	2.42	0.52
1:A:99:ASN:HD22	1:A:177:ASP:H	1.57	0.52
1:B:620:ILE:HG22	1:B:625:LEU:HD11	1.92	0.52
1:B:1022:SER:HA	1:B:1026:LEU:HD12	1.92	0.52
1:C:35:ARG:NH1	1:C:220:SER:OG	2.42	0.52
1:A:294:GLU:OE2	1:A:314:PHE:N	2.41	0.52
1:B:1066:ASN:OD1	1:C:887:GLN:NE2	2.43	0.51
1:A:102:ARG:HD3	1:A:242:THR:HB	1.93	0.51
1:B:23:ALA:HB3	1:B:78:ARG:HB3	1.93	0.51
1:B:112:ASN:HB3	1:B:134:GLN:HB2	1.91	0.51



	h h	Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
1:A:324:ARG:HE	1:A:529:LEU:HB2	1.75	0.51
1:B:357:CYS:HB2	1:B:520:VAL:HG23	1.92	0.51
1:B:1082:PRO:O	1:C:905:GLN:NE2	2.43	0.51
1:C:608:TYR:O	1:C:644:GLY:HA3	2.11	0.51
1:A:1022:SER:HA	1:A:1026:LEU:HD12	1.93	0.50
1:C:453:ARG:NE	1:C:463:ASP:OD2	2.43	0.50
1:C:121:ASN:HD21	1:C:174:PHE:HB3	1.77	0.50
1:B:63:ILE:HG21	1:B:262:TYR:HB3	1.93	0.50
1:A:356:ASN:H	1:A:519:THR:HG22	1.77	0.50
1:B:904:THR:OG1	1:B:1098:GLN:NE2	2.44	0.50
1:A:725:LYS:HE3	1:A:763:ALA:HB1	1.94	0.50
1:C:334:PHE:HB3	1:C:364:LEU:HD21	1.93	0.50
1:B:323:VAL:HG11	1:B:524:LYS:HD3	1.94	0.49
1:B:391:VAL:HG22	1:B:511:PHE:HD1	1.76	0.49
1:A:994:GLN:NE2	1:B:997:GLN:OE1	2.38	0.49
1:B:940:LEU:O	1:B:943:VAL:HB	2.13	0.49
1:B:331:LEU:HD21	1:B:363:VAL:HG11	1.94	0.49
1:C:85:ASP:HA	1:C:236:ARG:HA	1.93	0.49
1:C:124:THR:HA	1:C:176:LEU:HD23	1.95	0.49
1:C:438:ASP:OD2	1:C:505:ARG:NE	2.42	0.49
1:A:106:PHE:HB3	1:A:234:ILE:HD12	1.95	0.49
1:C:1085:GLY:CA	1:C:1097:THR:O	2.61	0.49
1:B:21:GLY:H	1:B:254:TRP:HH2	1.61	0.48
1:C:142:SER:HA	1:C:243:ILE:HG22	1.93	0.48
1:C:1085:GLY:HA3	1:C:1097:THR:O	2.13	0.48
1:C:725:LYS:HE3	1:C:763:ALA:HB1	1.96	0.48
1:A:835:ASP:N	1:A:835:ASP:OD1	2.46	0.48
1:A:435:ASN:OD1	1:A:439:SER:OG	2.31	0.48
1:A:360:ASP:HB3	1:A:523:PRO:HB3	1.95	0.48
1:B:725:LYS:HE3	1:B:763:ALA:HB1	1.94	0.48
1:A:435:ASN:ND2	1:A:502:GLN:OE1	2.36	0.48
1:B:953:THR:HG21	1:C:757:ARG:HH22	1.78	0.48
1:C:977:ASP:OD1	1:C:977:ASP:N	2.47	0.48
1:B:435:ASN:O	1:B:439:SER:OG	2.31	0.47
1:A:499:VAL:HA	1:A:502:GLN:HE21	1.79	0.47
1:A:291:PRO:HB2	1:A:604:VAL:HG21	1.96	0.47
1:A:1076:ASP:OD1	1:A:1076:ASP:N	2.45	0.47
1:B:323:VAL:HG12	1:B:538:ASN:HB3	1.97	0.47
1:B:994:GLN:NE2	1:C:997:GLN:OE1	2.40	0.47
1:A:1085:GLY:CA	1:A:1097:THR:O	2.61	0.47
1:B:117:LEU:HD13	1:B:130:VAL:HG22	1.96	0.47



	t i a	Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
1:B:65:TRP:NE1	1:B:260:ALA:HB1	2.28	0.47
1:C:299:LEU:HD12	1:C:304:VAL:HG12	1.96	0.47
1:C:640:GLN:NE2	1:C:641:THR:O	2.47	0.47
1:B:1085:GLY:HA3	1:B:1097:THR:O	2.14	0.47
1:A:360:ASP:OD1	1:A:360:ASP:N	2.47	0.47
1:C:841:LEU:HD21	1:C:952:ASN:HD21	1.79	0.47
1:C:1076:ASP:OD1	1:C:1076:ASP:N	2.48	0.47
1:A:904:THR:OG1	1:A:1098:GLN:NE2	2.47	0.47
1:B:356:ASN:H	1:B:519:THR:HG22	1.79	0.47
1:A:750:SER:O	1:A:750:SER:OG	2.30	0.46
1:C:304:VAL:N	1:C:598:THR:OG1	2.45	0.46
1:C:1074:CYS:HB2	1:C:1118:CYS:HB2	1.77	0.46
1:C:640:GLN:HA	1:C:645:CYS:HB3	1.97	0.46
1:C:976:LEU:HB2	1:C:981:ALA:HB2	1.96	0.46
1:A:942:ASP:O	1:A:946:GLN:N	2.47	0.46
1:A:215:LEU:HB2	1:A:262:TYR:CE2	2.51	0.46
1:B:780:ILE:HG23	1:B:868:ALA:HB2	1.98	0.46
1:A:829:TYR:HB3	1:C:611:VAL:HG12	1.98	0.46
1:C:427:GLY:HA2	1:C:511:PHE:HD2	1.81	0.46
1:B:132:ASN:HB3	1:B:163:ALA:HB3	1.98	0.46
1:A:174:PHE:HZ	1:A:189:ARG:HD3	1.81	0.46
1:C:620:ILE:HG22	1:C:625:LEU:HD11	1.97	0.46
1:A:976:LEU:HB2	1:A:981:ALA:HB2	1.97	0.45
1:B:800:ASP:OD1	1:B:800:ASP:N	2.48	0.45
1:C:47:ASN:HA	1:C:275:TYR:O	2.15	0.45
1:B:169:TYR:HE2	1:B:172:LYS:HG2	1.81	0.45
1:B:1085:GLY:CA	1:B:1097:THR:O	2.64	0.45
1:B:1099:ARG:HD3	1:C:896:TYR:CZ	2.51	0.45
1:B:83:ILE:HD11	1:B:236:ARG:HE	1.82	0.45
1:A:130:VAL:HG13	1:A:232:ILE:HD13	1.99	0.45
1:A:453:ARG:NE	1:A:463:ASP:OD2	2.50	0.45
1:C:489:LYS:HE2	1:C:489:LYS:HB2	1.81	0.45
1:A:811:GLU:HG2	1:A:1046:GLN:HB3	1.97	0.45
1:C:968:VAL:HG12	1:C:970:ASN:H	1.81	0.45
1:C:356:ASN:H	1:C:519:THR:HG22	1.82	0.45
1:A:65:TRP:NE1	1:A:260:ALA:HB1	2.32	0.45
1:A:658:CYS:HB2	1:A:667:CYS:HB3	1.65	0.45
1:C:996:LEU:HD23	1:C:996:LEU:HA	1.87	0.45
1:B:418:ASN:HD21	1:B:449:TYR:HB2	1.82	0.44
1:B:977:ASP:OD1	1:B:977:ASP:N	2.50	0.44
1:C:127:ILE:HG13	1:C:170:VAL:HG23	1.99	0.44



	h a	Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
1:C:1131:ASP:N	1:C:1131:ASP:OD1	2.49	0.44
1:B:118:LEU:O	1:B:128:ILE:HA	2.16	0.44
1:C:414:ILE:HA	1:C:418:ASN:HD22	1.81	0.44
1:C:942:ASP:O	1:C:946:GLN:N	2.50	0.44
1:A:51:LEU:HD23	1:A:51:LEU:HA	1.84	0.44
1:A:108:THR:HG23	1:A:109:THR:HG23	1.99	0.44
1:B:658:CYS:HB2	1:B:667:CYS:HB3	1.64	0.44
1:B:762:ILE:O	1:B:766:GLN:HG2	2.18	0.44
1:C:200:PHE:HB3	1:C:228:LEU:HB2	1.99	0.44
1:C:353:ARG:NH1	1:C:390:ASN:OD1	2.51	0.44
1:C:427:GLY:HA2	1:C:511:PHE:CD2	2.53	0.44
1:A:800:ASP:OD1	1:A:800:ASP:N	2.48	0.44
1:B:191:PHE:HA	1:B:203:TYR:O	2.18	0.44
1:B:595:THR:HB	1:B:604:VAL:HG12	1.99	0.44
1:B:972:ILE:HG23	1:B:976:LEU:HD12	1.99	0.44
1:A:304:VAL:N	1:A:598:THR:OG1	2.50	0.43
1:A:99:ASN:OD1	1:A:189:ARG:NH2	2.50	0.43
1:A:298:THR:HG21	1:A:312:SER:H	1.84	0.43
1:B:85:ASP:HA	1:B:236:ARG:HA	2.00	0.43
1:C:117:LEU:HB2	1:C:130:VAL:HG12	2.00	0.43
1:A:47:ASN:HA	1:A:275:TYR:O	2.17	0.43
1:A:548:LEU:HD23	1:A:581:LEU:HD13	1.98	0.43
1:A:605:ALA:HB1	1:A:646:LEU:HD11	2.01	0.43
1:A:620:ILE:HG22	1:A:625:LEU:HD11	2.00	0.43
1:C:186:ASP:HB3	1:C:187:THR:HG23	2.00	0.43
1:A:994:GLN:NE2	1:B:994:GLN:OE1	2.52	0.43
1:B:85:ASP:N	1:B:85:ASP:OD1	2.52	0.43
1:B:625:LEU:O	1:B:630:ARG:NH2	2.52	0.43
1:A:292:LEU:O	1:A:296:LYS:HB2	2.17	0.43
1:C:237:PHE:HZ	1:C:263:VAL:HG21	1.83	0.43
1:A:776:GLN:HG3	1:A:1021:MET:HG2	2.01	0.43
1:A:898:PHE:HD2	1:A:908:LEU:HB2	1.84	0.43
1:B:35:ARG:NH1	1:B:190:GLU:OE2	2.45	0.43
1:B:364:LEU:HD13	1:B:370:PHE:HZ	1.84	0.43
1:A:402:GLU:OE1	1:A:491:TYR:OH	2.34	0.43
1:B:128:ILE:HG13	1:B:169:TYR:HB3	2.00	0.43
1:A:323:VAL:HG12	1:A:538:ASN:HB3	2.00	0.43
1:A:1074:CYS:HB2	1:A:1118:CYS:HB2	1.83	0.43
1:B:121:ASN:HB3	1:B:126:VAL:HG12	2.00	0.43
1:B:913:LYS:HE3	1:B:913:LYS:HB3	1.92	0.43
1:C:898:PHE:CD2	1:C:908:LEU:HB2	2.53	0.43



		Interatomic	Clash
Atom-1	Atom-2	distance (Å)	overlap (Å)
1:A:41:ASP:OD1	1:A:41:ASP:N	2.51	0.42
1:A:248:PRO:HG2	1:A:249:MET:SD	2.58	0.42
1:A:1097:THR:HG23	1:A:1103:GLU:H	1.83	0.42
1:B:299:LEU:HD12	1:B:304:VAL:HG12	2.01	0.42
1:A:80:ASP:O	1:A:261:TYR:OH	2.26	0.42
1:A:836:ILE:HG23	1:A:838:ALA:H	1.85	0.42
1:C:594:ILE:HG23	1:C:660:ILE:HG21	2.01	0.42
1:A:611:VAL:HG12	1:B:829:TYR:HB3	2.01	0.42
1:B:402:GLU:OE1	1:B:491:TYR:OH	2.36	0.42
1:B:718:ILE:HG13	1:B:1053:VAL:HG23	2.02	0.42
1:B:755:LEU:HD21	1:B:996:LEU:HB3	2.02	0.42
1:A:414:ILE:HD13	1:A:418:ASN:HD22	1.85	0.42
1:B:564:ASP:OD1	1:B:568:THR:OG1	2.30	0.42
1:B:1076:ASP:N	1:B:1076:ASP:OD1	2.50	0.42
1:C:128:ILE:HG21	1:C:228:LEU:HD21	2.02	0.42
1:B:776:GLN:OE1	1:B:1022:SER:OG	2.30	0.42
1:C:706:ILE:HD11	1:C:1088:VAL:HG11	2.01	0.42
1:B:31:ASN:HA	1:B:61:SER:O	2.19	0.42
1:A:83:ILE:HD12	1:A:238:ARG:HH21	1.83	0.42
1:C:457:LEU:HD23	1:C:457:LEU:HA	1.91	0.42
1:B:66:TYR:HB3	1:B:80:ASP:HB3	2.01	0.42
1:B:1097:THR:HG23	1:B:1103:GLU:H	1.85	0.42
1:C:100:ILE:HG22	1:C:241:LEU:HD22	2.02	0.42
1:B:1089:SER:HB2	1:B:1094:TRP:CD2	2.55	0.41
1:C:326:PRO:HG2	1:C:518:ALA:HB3	2.02	0.41
1:A:794:PHE:HD1	1:A:797:ILE:HD11	1.85	0.41
1:B:817:LYS:HD2	1:B:817:LYS:HA	1.88	0.41
1:B:919:PHE:O	1:B:922:ALA:HB3	2.20	0.41
1:C:1089:SER:HB2	1:C:1094:TRP:CD2	2.55	0.41
1:C:796:GLN:HG2	1:C:927:GLN:HE22	1.85	0.41
1:B:323:VAL:HG23	1:B:526:SER:HA	2.01	0.41
1:C:215:LEU:HD12	1:C:216:PRO:HD2	2.01	0.41
1:A:968:VAL:HG12	1:A:970:ASN:H	1.86	0.41
1:A:993:LEU:HD12	1:A:993:LEU:HA	1.95	0.41
1:C:41:ASP:OD1	1:C:41:ASP:N	2.52	0.41
1:A:913:LYS:HE3	1:A:913:LYS:HB3	1.92	0.41
1:B:127:ILE:HD11	3:B:1305:NAG:H2	2.03	0.41
1:B:304:VAL:N	1:B:598:THR:OG1	2.53	0.41
1:B:729:ASP:HB3	1:B:732:MET:HG3	2.03	0.41
1:C:324:ARG:HD3	1:C:539:PHE:HE1	1.86	0.41
1:C:836:ILE:HG23	1:C:838:ALA:H	1.86	0.41



Continued from pretto	jus page		
Atom-1	Atom-2	Interatomic	Clash
		distance (A)	overlap (A)
1:B:594:ILE:HG23	1:B:660:ILE:HG21	2.02	0.41
1:B:211:VAL:HG11	1:B:216:PRO:HG3	2.02	0.40
1:C:889:PRO:HB2	1:C:892:MET:HG3	2.03	0.40
1:A:778:LYS:HA	1:A:778:LYS:HD2	1.91	0.40
1:A:962:PHE:HE1	1:B:751:PHE:HE2	1.68	0.40
1:A:977:ASP:OD1	1:A:977:ASP:N	2.48	0.40
1:A:323:VAL:HG11	1:A:524:LYS:HD3	2.03	0.40
1:A:332:CYS:HB2	1:A:357:CYS:HB3	1.97	0.40
1:A:762:ILE:HG23	1:A:766:GLN:HE22	1.86	0.40
1:A:1089:SER:HB2	1:A:1094:TRP:CD2	2.57	0.40
1:B:96:GLU:HG3	1:B:99:ASN:HA	2.03	0.40
1:B:301:SER:OG	1:B:302:PHE:N	2.55	0.40
1:B:898:PHE:HA	1:B:901:ILE:HG12	2.02	0.40
1:A:127:ILE:HD11	3:A:1305:NAG:H2	2.03	0.40
1:B:1087:PHE:HE1	1:B:1107:ILE:HD12	1.86	0.40
1:A:315:ARG:H	1:A:315:ARG:HG2	1.58	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 PDB entries followed by that with respect to all EM entries.

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	Perce	entiles
1	А	1080/1282~(84%)	1026 (95%)	54 (5%)	0	100	100
1	В	1080/1282~(84%)	1028 (95%)	52 (5%)	0	100	100
1	С	1080/1282~(84%)	1025 (95%)	55 (5%)	0	100	100
All	All	3240/3846~(84%)	3079~(95%)	161 (5%)	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 side chain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	Perce	ntiles
1	А	943/1106~(85%)	943 (100%)	0	100	100
1	В	943/1106~(85%)	943 (100%)	0	100	100
1	С	943/1106~(85%)	942 (100%)	1 (0%)	92	96
All	All	2829/3318~(85%)	2828 (100%)	1 (0%)	100	100

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	С	175	MET

Sometimes side chains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such side chains are listed below:

Mol	Chain	Res	Type
1	В	947	ASN
1	В	1003	GLN

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)

12 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	Turne	Chain	Dec	Tink	Bond lengths			Bond angles			
	Type	Ullalli	nes		Counts	RMSZ	# Z >2	Counts	RMSZ	# Z > 2	
2	NAG	D	1	1,2	14,14,15	0.32	0	$17,\!19,\!21$	0.61	0	
2	NAG	D	2	2	14,14,15	0.35	0	17,19,21	0.42	0	
2	NAG	Е	1	1,2	14,14,15	0.59	0	$17,\!19,\!21$	1.03	2 (11%)	
2	NAG	Е	2	2	14,14,15	0.63	0	17,19,21	1.97	2 (11%)	
2	NAG	F	1	1,2	14,14,15	0.33	0	17,19,21	0.61	0	
2	NAG	F	2	2	14,14,15	0.32	0	17,19,21	0.43	0	
2	NAG	G	1	1,2	14,14,15	0.50	0	$17,\!19,\!21$	1.01	1 (5%)	
2	NAG	G	2	2	14,14,15	0.60	0	17,19,21	1.97	2 (11%)	
2	NAG	Н	1	1,2	14,14,15	0.31	0	17,19,21	0.60	0	
2	NAG	Н	2	2	14,14,15	0.32	0	17,19,21	0.42	0	
2	NAG	Ι	1	1,2	14,14,15	0.33	0	17,19,21	0.81	1 (5%)	
2	NAG	Ι	2	2	14,14,15	0.66	0	17,19,21	1.96	2 (11%)	

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	1,2	-	0/6/23/26	0/1/1/1
2	NAG	D	2	2	-	2/6/23/26	0/1/1/1
2	NAG	Е	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	Е	2	2	-	4/6/23/26	0/1/1/1
2	NAG	F	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	F	2	2	-	2/6/23/26	0/1/1/1
2	NAG	G	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	G	2	2	-	4/6/23/26	0/1/1/1
2	NAG	Н	1	1,2	-	2/6/23/26	0/1/1/1
2	NAG	Н	2	2	-	2/6/23/26	0/1/1/1
2	NAG	Ι	1	1,2	-	1/6/23/26	0/1/1/1
2	NAG	Ι	2	2	-	5/6/23/26	0/1/1/1

There are no bond length outliers.

All (10) bond angle outliers are listed below:



Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
2	Е	2	NAG	C2-N2-C7	6.86	132.67	122.90
2	G	2	NAG	C2-N2-C7	6.86	132.66	122.90
2	Ι	2	NAG	C2-N2-C7	6.85	132.66	122.90
2	Е	2	NAG	C1-C2-N2	3.28	116.08	110.49
2	Ι	2	NAG	C1-C2-N2	3.26	116.05	110.49
2	G	2	NAG	C1-C2-N2	3.26	116.05	110.49
2	Ι	1	NAG	C1-O5-C5	2.35	115.38	112.19
2	G	1	NAG	C2-N2-C7	2.34	126.24	122.90
2	Е	1	NAG	C2-N2-C7	2.30	126.18	122.90
2	Е	1	NAG	C1-O5-C5	2.00	114.90	112.19

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	2	NAG	O5-C5-C6-O6
2	Н	2	NAG	O5-C5-C6-O6
2	D	2	NAG	C4-C5-C6-O6
2	Н	2	NAG	C4-C5-C6-O6
2	F	2	NAG	C4-C5-C6-O6
2	Ι	2	NAG	O5-C5-C6-O6
2	F	2	NAG	O5-C5-C6-O6
2	Е	2	NAG	C8-C7-N2-C2
2	Е	2	NAG	O7-C7-N2-C2
2	G	2	NAG	C8-C7-N2-C2
2	G	2	NAG	O7-C7-N2-C2
2	Ι	2	NAG	C8-C7-N2-C2
2	Ι	2	NAG	O7-C7-N2-C2
2	Ι	2	NAG	C4-C5-C6-O6
2	F	1	NAG	C4-C5-C6-O6
2	G	2	NAG	O5-C5-C6-O6
2	Е	1	NAG	O5-C5-C6-O6
2	G	1	NAG	O5-C5-C6-O6
2	Ι	1	NAG	O5-C5-C6-O6
2	F	1	NAG	O5-C5-C6-O6
2	Е	2	NAG	O5-C5-C6-O6
2	Н	1	NAG	C4-C5-C6-O6
2	Е	2	NAG	C3-C2-N2-C7
2	G	2	NAG	C3-C2-N2-C7
2	Н	1	NAG	O5-C5-C6-O6
2	Е	1	NAG	C3-C2-N2-C7
2	G	1	NAG	C3-C2-N2-C7
2	Ι	2	NAG	C3-C2-N2-C7



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)

48 ligands 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	Turne	Chain	Dec	Tink	Bo	ond leng	gths	B	ond ang	les
	Ullalli	Ites	LIIIK	Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2	
3	NAG	C	1301	1	14,14,15	0.24	0	17,19,21	0.47	0
3	NAG	А	1316	1	14,14,15	0.52	0	17,19,21	0.75	1 (5%)
3	NAG	А	1308	1	14,14,15	0.68	1 (7%)	17,19,21	1.96	2 (11%)



N.T. 1	— ———————————————————————————————————	Class	Der	т	Bo	ond leng	ths	В	ond ang	les
IVIOI	Type	Chain	Res	Link	Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z >2
3	NAG	А	1311	1	14,14,15	0.25	0	17,19,21	0.52	0
3	NAG	В	1302	1	$14,\!14,\!15$	0.62	0	$17,\!19,\!21$	1.95	2 (11%)
3	NAG	С	1305	1	14,14,15	0.37	0	17,19,21	0.49	0
3	NAG	С	1314	1	14,14,15	0.66	0	17,19,21	1.99	2 (11%)
3	NAG	С	1306	1	14,14,15	0.21	0	17,19,21	0.52	0
3	NAG	А	1303	1	14,14,15	0.27	0	$17,\!19,\!21$	0.49	0
3	NAG	В	1307	1	14,14,15	0.24	0	$17,\!19,\!21$	0.42	0
3	NAG	В	1309	1	14,14,15	0.29	0	$17,\!19,\!21$	0.47	0
3	NAG	С	1309	1	14,14,15	0.28	0	$17,\!19,\!21$	0.47	0
3	NAG	В	1301	1	14,14,15	0.24	0	$17,\!19,\!21$	0.42	0
3	NAG	В	1315	1	$14,\!14,\!15$	0.30	0	$17,\!19,\!21$	0.82	1 (5%)
3	NAG	А	1305	1	14,14,15	0.46	0	17,19,21	0.36	0
3	NAG	В	1306	1	14,14,15	0.22	0	17,19,21	0.52	0
3	NAG	А	1312	1	14,14,15	0.21	0	$17,\!19,\!21$	0.47	0
3	NAG	А	1314	1	14,14,15	0.71	1 (7%)	$17,\!19,\!21$	1.99	2 (11%)
3	NAG	С	1302	1	14,14,15	0.63	0	17,19,21	1.97	2 (11%)
3	NAG	А	1304	1	14,14,15	0.37	0	17,19,21	0.80	1 (5%)
3	NAG	А	1309	1	14,14,15	0.28	0	17,19,21	0.44	0
3	NAG	А	1313	1	14,14,15	0.28	0	17,19,21	0.49	0
3	NAG	С	1312	1	14,14,15	0.23	0	$17,\!19,\!21$	0.47	0
3	NAG	А	1301	1	14,14,15	0.21	0	$17,\!19,\!21$	0.40	0
3	NAG	С	1307	1	14,14,15	0.50	0	$17,\!19,\!21$	0.94	2 (11%)
3	NAG	В	1316	1	14,14,15	0.46	0	$17,\!19,\!21$	0.73	1 (5%)
3	NAG	В	1311	1	14,14,15	0.25	0	17,19,21	0.52	0
3	NAG	С	1304	1	14,14,15	0.25	0	17,19,21	0.79	1 (5%)
3	NAG	А	1302	1	14,14,15	0.61	0	17,19,21	1.95	2 (11%)
3	NAG	В	1314	1	14,14,15	0.66	0	17,19,21	1.98	2 (11%)
3	NAG	С	1310	1	14,14,15	0.33	0	17,19,21	0.48	0
3	NAG	С	1316	1	14,14,15	0.53	0	17,19,21	0.75	1 (5%)
3	NAG	В	1310	1	14,14,15	0.33	0	17,19,21	0.56	0
3	NAG	В	1313	1	14,14,15	0.27	0	17,19,21	0.52	0
3	NAG	В	1303	1	14,14,15	0.30	0	17,19,21	0.47	0
3	NAG	В	1304	1	14,14,15	0.35	0	17,19,21	0.80	1 (5%)
3	NAG	С	1313	1	14,14,15	0.28	0	17,19,21	0.49	0
3	NAG	C	1308	1	14,14,15	0.24	0	17,19,21	0.39	0
3	NAG	С	1303	1	14,14,15	0.24	0	17,19,21	0.50	0
3	NAG	В	1305	1	14,14,15	$0.3\overline{4}$	0	17,19,21	$0.3\overline{4}$	0
3	NAG	С	1315	1	14,14,15	0.30	0	17,19,21	0.82	1 (5%)
3	NAG	В	1308	-	14,14,15	0.69	1 (7%)	17,19,21	1.96	2 (11%)



Mal	Turne	Chain	Dec	Tink	Bo	ond leng	ths	Bond angles			
1VIOI	туре	Unam	nes	LIIIK	Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z >2	
3	NAG	С	1311	1	$14,\!14,\!15$	0.26	0	17,19,21	0.50	0	
3	NAG	А	1310	1	$14,\!14,\!15$	0.30	0	17,19,21	0.44	0	
3	NAG	В	1312	1	$14,\!14,\!15$	0.21	0	$17,\!19,\!21$	0.47	0	
3	NAG	А	1307	1	$14,\!14,\!15$	0.83	1 (7%)	$17,\!19,\!21$	2.03	3 (17%)	
3	NAG	А	1306	1	14,14,15	0.20	0	17,19,21	0.52	0	
3	NAG	А	1315	1	$14,\!14,\!15$	0.30	0	17,19,21	0.81	1 (5%)	

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	С	1301	1	-	1/6/23/26	0/1/1/1
3	NAG	А	1316	1	-	0/6/23/26	0/1/1/1
3	NAG	А	1308	1	-	3/6/23/26	0/1/1/1
3	NAG	А	1311	1	-	4/6/23/26	0/1/1/1
3	NAG	В	1302	1	-	5/6/23/26	0/1/1/1
3	NAG	С	1305	1	-	2/6/23/26	0/1/1/1
3	NAG	С	1314	1	-	5/6/23/26	0/1/1/1
3	NAG	С	1306	1	-	2/6/23/26	0/1/1/1
3	NAG	А	1303	1	-	2/6/23/26	0/1/1/1
3	NAG	В	1307	1	-	2/6/23/26	0/1/1/1
3	NAG	В	1309	1	-	3/6/23/26	0/1/1/1
3	NAG	С	1309	1	-	3/6/23/26	0/1/1/1
3	NAG	В	1301	1	-	2/6/23/26	0/1/1/1
3	NAG	В	1315	1	-	3/6/23/26	0/1/1/1
3	NAG	А	1305	1	-	0/6/23/26	0/1/1/1
3	NAG	В	1306	1	-	2/6/23/26	0/1/1/1
3	NAG	А	1312	1	-	3/6/23/26	0/1/1/1
3	NAG	А	1314	1	-	5/6/23/26	0/1/1/1
3	NAG	С	1302	1	-	5/6/23/26	0/1/1/1
3	NAG	А	1304	1	-	3/6/23/26	0/1/1/1
3	NAG	А	1309	1	-	3/6/23/26	0/1/1/1
3	NAG	А	1313	1	-	2/6/23/26	0/1/1/1
3	NAG	С	1312	1	-	2/6/23/26	0/1/1/1
3	NAG	А	1301	1	-	1/6/23/26	0/1/1/1



Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	С	1307	1	-	3/6/23/26	0/1/1/1
3	NAG	В	1316	1	-	0/6/23/26	0/1/1/1
3	NAG	В	1311	1	-	4/6/23/26	0/1/1/1
3	NAG	С	1304	1	-	3/6/23/26	0/1/1/1
3	NAG	А	1302	1	-	5/6/23/26	0/1/1/1
3	NAG	В	1314	1	-	5/6/23/26	0/1/1/1
3	NAG	С	1310	1	-	2/6/23/26	0/1/1/1
3	NAG	С	1316	1	-	0/6/23/26	0/1/1/1
3	NAG	В	1310	1	-	4/6/23/26	0/1/1/1
3	NAG	В	1313	1	-	2/6/23/26	0/1/1/1
3	NAG	В	1303	1	-	2/6/23/26	0/1/1/1
3	NAG	В	1304	1	-	3/6/23/26	0/1/1/1
3	NAG	С	1313	1	-	2/6/23/26	0/1/1/1
3	NAG	С	1308	1	-	0/6/23/26	0/1/1/1
3	NAG	С	1303	1	-	2/6/23/26	0/1/1/1
3	NAG	В	1305	1	-	2/6/23/26	0/1/1/1
3	NAG	С	1315	1	-	3/6/23/26	0/1/1/1
3	NAG	В	1308	-	-	5/6/23/26	0/1/1/1
3	NAG	С	1311	1	-	4/6/23/26	0/1/1/1
3	NAG	А	1310	1	-	4/6/23/26	0/1/1/1
3	NAG	В	1312	1	-	2/6/23/26	0/1/1/1
3	NAG	А	1307	1	-	5/6/23/26	0/1/1/1
3	NAG	А	1306	1	-	2/6/23/26	0/1/1/1
3	NAG	А	1315	1	-	3/6/23/26	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	$\mathrm{Ideal}(\mathrm{\AA})$
3	А	1307	NAG	C1-C2	2.58	1.56	1.52
3	А	1314	NAG	C1-C2	2.11	1.55	1.52
3	В	1308	NAG	C1-C2	2.10	1.55	1.52
3	А	1308	NAG	C1-C2	2.01	1.55	1.52

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
3	А	1314	NAG	C2-N2-C7	6.92	132.75	122.90



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Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
3	В	1302	NAG	C2-N2-C7	6.91	132.75	122.90
3	А	1302	NAG	C2-N2-C7	6.89	132.72	122.90
3	С	1314	NAG	C2-N2-C7	6.89	132.72	122.90
3	А	1308	NAG	C2-N2-C7	6.89	132.71	122.90
3	С	1302	NAG	C2-N2-C7	6.89	132.71	122.90
3	В	1308	NAG	C2-N2-C7	6.87	132.69	122.90
3	А	1307	NAG	C2-N2-C7	6.87	132.69	122.90
3	В	1314	NAG	C2-N2-C7	6.86	132.67	122.90
3	В	1314	NAG	C1-C2-N2	3.27	116.08	110.49
3	С	1314	NAG	C1-C2-N2	3.24	116.03	110.49
3	А	1314	NAG	C1-C2-N2	3.17	115.91	110.49
3	В	1308	NAG	C1-C2-N2	3.17	115.90	110.49
3	А	1308	NAG	C1-C2-N2	3.14	115.86	110.49
3	С	1302	NAG	C1-C2-N2	3.12	115.81	110.49
3	А	1302	NAG	C1-C2-N2	3.10	115.79	110.49
3	В	1302	NAG	C1-C2-N2	3.05	115.70	110.49
3	А	1307	NAG	C1-C2-N2	3.04	115.68	110.49
3	А	1316	NAG	C1-O5-C5	2.73	115.90	112.19
3	С	1316	NAG	C1-O5-C5	2.73	115.89	112.19
3	В	1316	NAG	C1-O5-C5	2.65	115.78	112.19
3	А	1307	NAG	C1-O5-C5	2.61	115.72	112.19
3	С	1304	NAG	C2-N2-C7	2.48	126.44	122.90
3	С	1315	NAG	C2-N2-C7	2.45	126.39	122.90
3	В	1304	NAG	C2-N2-C7	2.44	126.38	122.90
3	А	1315	NAG	C2-N2-C7	2.42	126.35	122.90
3	В	1315	NAG	C2-N2-C7	2.41	126.34	122.90
3	С	1307	NAG	C1-O5-C5	2.41	115.45	112.19
3	А	1304	NAG	C2-N2-C7	2.40	126.31	122.90
3	С	1307	NAG	C2-N2-C7	2.39	126.30	122.90

There are no chirality outliers.

All (130) torsion outliers are listed below:

Mol	Chain	\mathbf{Res}	Type	Atoms
3	В	1302	NAG	O5-C5-C6-O6
3	В	1315	NAG	C4-C5-C6-O6
3	А	1302	NAG	O5-C5-C6-O6
3	В	1303	NAG	O5-C5-C6-O6
3	В	1307	NAG	O5-C5-C6-O6
3	С	1311	NAG	C4-C5-C6-O6
3	А	1311	NAG	C4-C5-C6-O6
3	А	1315	NAG	C4-C5-C6-O6



Mol	Chain	Res	Type	Atoms
3	В	1311	NAG	C4-C5-C6-O6
3	С	1315	NAG	C4-C5-C6-O6
3	В	1310	NAG	O5-C5-C6-O6
3	В	1308	NAG	O5-C5-C6-O6
3	С	1303	NAG	O5-C5-C6-O6
3	С	1311	NAG	O5-C5-C6-O6
3	А	1302	NAG	C4-C5-C6-O6
3	В	1307	NAG	C4-C5-C6-O6
3	В	1302	NAG	C4-C5-C6-O6
3	А	1304	NAG	O5-C5-C6-O6
3	А	1304	NAG	C4-C5-C6-O6
3	А	1307	NAG	O5-C5-C6-O6
3	В	1304	NAG	O5-C5-C6-O6
3	С	1302	NAG	O5-C5-C6-O6
3	С	1306	NAG	O5-C5-C6-O6
3	В	1303	NAG	C4-C5-C6-O6
3	А	1311	NAG	O5-C5-C6-O6
3	В	1315	NAG	O5-C5-C6-O6
3	С	1314	NAG	C4-C5-C6-O6
3	В	1311	NAG	O5-C5-C6-O6
3	С	1315	NAG	O5-C5-C6-O6
3	В	1308	NAG	C4-C5-C6-O6
3	А	1307	NAG	C4-C5-C6-O6
3	А	1310	NAG	C4-C5-C6-O6
3	А	1303	NAG	O5-C5-C6-O6
3	А	1306	NAG	O5-C5-C6-O6
3	А	1314	NAG	O5-C5-C6-O6
3	В	1310	NAG	C4-C5-C6-O6
3	С	1302	NAG	C4-C5-C6-O6
3	С	1306	NAG	C4-C5-C6-O6
3	A	1302	NAG	$C8-C7-N\overline{2-C2}$
3	A	1302	NAG	07-C7-N2-C2
3	A	1307	NAG	C8-C7-N2-C2
3	A	1307	NAG	O7-C7-N2-C2
3	A	1308	NAG	C8-C7-N2-C2
3	A	1308	NAG	O7-C7-N2-C2
3	А	1309	NAG	C8-C7-N2-C2
3	A	1309	NAG	O7-C7-N2-C2
3	A	1310	NAG	C8-C7-N2-C2
3	A	1310	NAG	O7-C7-N2-C2
3	А	1311	NAG	C8-C7-N2-C2
3	A	1311	NAG	O7-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
3	А	1312	NAG	C8-C7-N2-C2
3	А	1312	NAG	O7-C7-N2-C2
3	А	1314	NAG	C8-C7-N2-C2
3	А	1314	NAG	O7-C7-N2-C2
3	В	1302	NAG	C8-C7-N2-C2
3	В	1302	NAG	O7-C7-N2-C2
3	В	1308	NAG	C8-C7-N2-C2
3	В	1308	NAG	O7-C7-N2-C2
3	В	1309	NAG	C8-C7-N2-C2
3	В	1309	NAG	O7-C7-N2-C2
3	В	1310	NAG	C8-C7-N2-C2
3	В	1310	NAG	O7-C7-N2-C2
3	В	1311	NAG	C8-C7-N2-C2
3	В	1311	NAG	O7-C7-N2-C2
3	В	1312	NAG	C8-C7-N2-C2
3	В	1312	NAG	O7-C7-N2-C2
3	В	1314	NAG	C8-C7-N2-C2
3	В	1314	NAG	O7-C7-N2-C2
3	С	1302	NAG	C8-C7-N2-C2
3	С	1302	NAG	O7-C7-N2-C2
3	С	1309	NAG	C8-C7-N2-C2
3	С	1309	NAG	O7-C7-N2-C2
3	С	1310	NAG	C8-C7-N2-C2
3	С	1310	NAG	O7-C7-N2-C2
3	С	1311	NAG	C8-C7-N2-C2
3	С	1311	NAG	O7-C7-N2-C2
3	С	1312	NAG	C8-C7-N2-C2
3	С	1312	NAG	O7-C7-N2-C2
3	С	1314	NAG	C8-C7-N2-C2
3	С	1314	NAG	O7-C7-N2-C2
3	В	1313	NAG	O5-C5-C6-O6
3	A	1306	NAG	C4-C5-C6-O6
3	A	1314	NAG	C4-C5-C6-O6
3	С	1303	NAG	C4-C5-C6-O6
3	С	1304	NAG	O5-C5-C6-O6
3	С	1307	NAG	O5-C5-C6-O6
3	В	1306	NAG	O5-C5-C6-O6
3	A	1315	NAG	O5-C5-C6-O6
3	С	1313	NAG	O5-C5-C6-O6
3	В	1305	NAG	C4-C5-C6-O6
3	A	1310	NAG	O5-C5-C6-O6
3	В	1306	NAG	C4-C5-C6-O6

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	5	1	1 5	
Mol	Chain	Res	Type	Atoms
3	А	1309	NAG	O5-C5-C6-O6
3	В	1313	NAG	C4-C5-C6-O6
3	С	1314	NAG	O5-C5-C6-O6
3	В	1314	NAG	C4-C5-C6-O6
3	С	1307	NAG	C4-C5-C6-O6
3	А	1313	NAG	O5-C5-C6-O6
3	В	1305	NAG	O5-C5-C6-O6
3	С	1305	NAG	O5-C5-C6-O6
3	В	1301	NAG	C4-C5-C6-O6
3	С	1301	NAG	O5-C5-C6-O6
3	В	1309	NAG	O5-C5-C6-O6
3	С	1309	NAG	O5-C5-C6-O6
3	В	1314	NAG	O5-C5-C6-O6
3	А	1301	NAG	O5-C5-C6-O6
3	А	1312	NAG	O5-C5-C6-O6
3	С	1313	NAG	C4-C5-C6-O6
3	В	1304	NAG	C4-C5-C6-O6
3	В	1301	NAG	O5-C5-C6-O6
3	А	1303	NAG	C4-C5-C6-O6
3	А	1302	NAG	C3-C2-N2-C7
3	А	1308	NAG	C3-C2-N2-C7
3	А	1314	NAG	C3-C2-N2-C7
3	В	1302	NAG	C3-C2-N2-C7
3	В	1308	NAG	C3-C2-N2-C7
3	В	1314	NAG	C3-C2-N2-C7
3	С	1302	NAG	C3-C2-N2-C7
3	С	1307	NAG	C3-C2-N2-C7
3	С	1314	NAG	C3-C2-N2-C7
3	С	1304	NAG	C4-C5-C6-O6
3	A	1313	NAG	C4-C5-C6-O6
3	С	1305	NAG	C4-C5-C6-O6
3	А	1304	NAG	C3-C2-N2-C7
3	A	1307	NAG	C3-C2-N2-C7
3	А	1315	NAG	C3-C2-N2-C7
3	В	1304	NAG	C3-C2-N2-C7
3	В	1315	NAG	C3-C2-N2-C7
3	С	1304	NAG	C3-C2-N2-C7
3	С	1315	NAG	C3-C2-N2-C7

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There are no ring outliers.

2 monomers are involved in 2 short contacts:



Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	А	1305	NAG	1	0
3	В	1305	NAG	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.

