

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

#### Aug 8, 2023 – 05:54 PM EDT

PDB ID : 1QFK

Title : STRUCTURE OF HUMAN FACTOR VIIA AND ITS IMPLICATIONS FOR

THE TRIGGERING OF BLOOD COAGULATION

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Deposited on : 1999-04-12

Resolution : 2.80 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:

MolProbity : 4.02b-467

Mogul : 1.8.5 (274361), CSD as541be (2020)

Xtriage (Phenix) : 1.13

EDS : 2.35

buster-report : 1.1.7 (2018)

Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)

 $Refmac \quad : \quad 5.8.0158$ 

CCP4 : 7.0.044 (Gargrove)

Ideal geometry (proteins) : Engh & Huber (2001) Ideal geometry (DNA, RNA) : Parkinson et al. (1996)

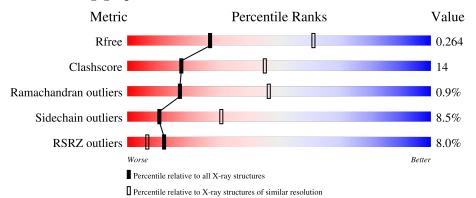
Validation Pipeline (wwPDB-VP) : 2.35

## 1 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 2.80 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	Similar resolution
Metric	$(\# \mathrm{Entries})$	$(\#  ext{Entries},  ext{ resolution range}(\mathring{A}))$
$R_{free}$	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	L	104	23%	36%	13%	• 8%		
2	Н	254	67%		27%	5% ••		
3	A	3		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
5	FUC	L	160	X	-	-	-
6	0Z6	Н	1	X	-	-	=



## 2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 2928 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 COAGULATION FACTOR VIIA LIGHT CHAIN.

Mol	Chain	Residues		A	toms			ZeroOcc	AltConf	Trace
1	L	96	Total	C 465	N 141	O 159	S 13	0	9	0

• Molecule 2 is a protein called COAGULATION FACTOR VIIA HEAVY CHAIN.

Mol	Chain	Residues		At	oms			ZeroOcc	AltConf	Trace
2	Н	252	Total	С	N	О	S	0	5	0
	11	202	1972	1249	351	359	13	0		

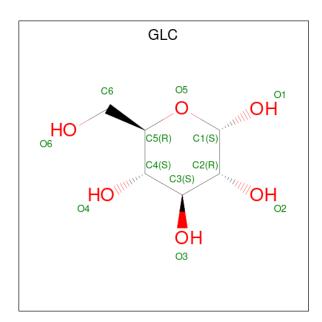
• Molecule 3 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[be ta-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	I	Aton	ns		ZeroOcc	AltConf	Trace
3	A	3	Total 38	C 22	N 2	O 14	0	0	0

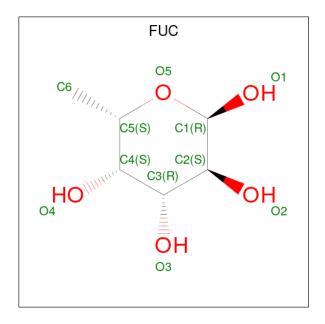
• Molecule 4 is alpha-D-glucopyranose (three-letter code: GLC) (formula:  $C_6H_{12}O_6$ ).





Mol	Chain	Residues	Atom	5	ZeroOcc	AltConf
4	L	1	Total C 11 6	O 5	0	0

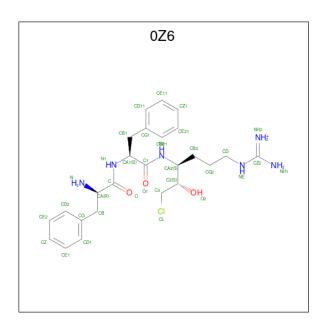
• Molecule 5 is alpha-L-fucopyranose (three-letter code: FUC) (formula:  $C_6H_{12}O_5$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	L	1	Total C O 10 6 4	0	0

 $\bullet \ \, Molecule \ 6 \ is \ D-phenylalanyl-N-[(2S,3S)-6-\{[amino(iminio)methyl]amino\}-1-chloro-2-hydro \ \, xyhexan-3-yl]-L-phenylalaninamide (three-letter code: 0Z6) (formula: $C_{25}H_{36}ClN_6O_3$).$ 





Mol	Chain	Residues	Α	Aton	ns		ZeroOcc	AltConf
6	Н	1	Total 34	C 25	N 6	O 3	0	0

• Molecule 7 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	Н	1	Total Ca 1 1	0	0

• Molecule 8 is water.

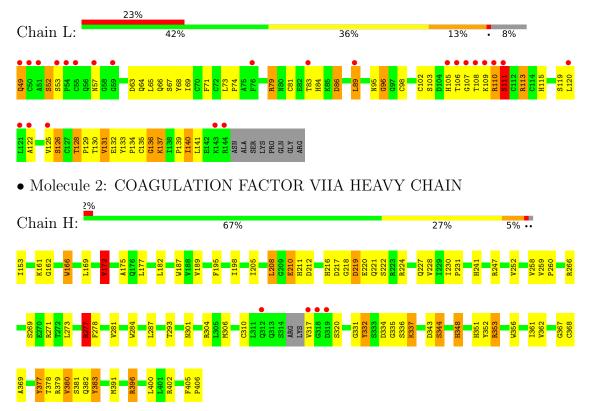
$\mathbf{Mol}$	Chain	Residues	Atoms	ZeroOcc	AltConf
8	L	10	Total O 10 10	0	0
8	Н	74	Total O 74 74	0	0



## 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: COAGULATION FACTOR VIIA LIGHT CHAIN



• Molecule 3: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[beta-L-fucopyranose-(1-6)]2-acet amido-2-deoxy-beta-D-glucopyranose

Chain A:

NAG NAG FUL



# 4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 43 2 2	Depositor
Cell constants	115.30Å 115.30Å 98.00Å	Donositor
a, b, c, $\alpha$ , $\beta$ , $\gamma$	90.00° 90.00° 90.00°	Depositor
Resolution (Å)	35.00 - 2.80	Depositor
Resolution (A)	34.17 - 2.80	EDS
% Data completeness	95.4 (35.00-2.80)	Depositor
(in resolution range)	95.5 (34.17-2.80)	EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.06	Depositor
$< I/\sigma(I) > 1$	3.12 (at 2.81Å)	Xtriage
Refinement program	REFMAC	Depositor
P. P.	0.215 , 0.267	Depositor
$R, R_{free}$	0.213 , 0.264	DCC
$R_{free}$ test set	818 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	59.4	Xtriage
Anisotropy	0.027	Xtriage
Bulk solvent $k_{sol}(e/Å^3)$ , $B_{sol}(Å^2)$	0.35, 49.3	EDS
L-test for twinning <sup>2</sup>	$ < L >=0.52, < L^2>=0.36$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	2928	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: The largest off-origin peak in the Patterson function is 4.32% of the height of the origin peak. No significant pseudotranslation is detected.

<sup>&</sup>lt;sup>2</sup>Theoretical values of <|L|>,  $<L^2>$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.



<sup>&</sup>lt;sup>1</sup>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: FUC, GLC, 0Z6, NAG, CA, FUL

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		Bo	nd lengths	Bond angles		
		RMSZ	# Z  > 5	RMSZ	# Z  > 5	
1	L	0.62	0/797	1.58	$12/1076 \ (1.1\%)$	
2	Н	0.76	1/2043 (0.0%)	1.87	49/2780 (1.8%)	
All	All	0.73	1/2840 (0.0%)	1.79	$61/3856 \ (1.6\%)$	

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a maintenain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	L	0	1

#### All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$\mathbf{Observed}(\mathbf{\mathring{A}})$	$\operatorname{Ideal}( ext{\AA})$
2	Н	344	SER	CB-OG	7.13	1.51	1.42

The worst 5 of 61 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$Observed(^o)$	$Ideal(^{o})$
2	Н	396	ARG	CD-NE-CZ	13.83	142.97	123.60
2	Н	266	ARG	NE-CZ-NH2	10.83	125.71	120.30
2	Н	379	ARG	NE-CZ-NH2	-10.48	115.06	120.30
2	Н	212	ASP	CB-CG-OD2	-10.25	109.07	118.30
2	Н	396	ARG	NE-CZ-NH2	-10.02	115.29	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:



$\mathbf{Mol}$	Chain	Res	Type	Group
1	L	111[B]	SER	Mainchain

### 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	L	778	0	699	34	0
2	Н	1972	0	1935	45	0
3	A	38	0	33	0	0
4	L	11	0	10	1	0
5	L	10	0	10	0	0
6	Н	34	0	31	0	0
7	Н	1	0	0	0	0
8	Н	74	0	0	1	0
8	L	10	0	0	1	0
All	All	2928	0	2718	76	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 14.

The worst 5 of 76 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:L:129:PRO:HB3	1:L:134:PRO:HG3	1.59	0.83
1:L:89:LEU:HD11	1:L:110[B]:ARG:HH11	1.48	0.78
2:H:195:PHE:HA	2:H:198:ILE:HD12	1.71	0.71
1:L:108[B]:THR:OG1	1:L:109[B]:LYS:N	2.25	0.69
1:L:105[B]:HIS:NE2	1:L:111[B]:SER:HB3	2.08	0.68

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	L	103/104 (99%)	83 (81%)	17 (16%)	3 (3%)	4 15
2	Н	253/254 (100%)	239 (94%)	14 (6%)	0	100 100
All	All	356/358~(99%)	322 (90%)	31 (9%)	3 (1%)	17 49

#### All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L	96	GLY
1	L	122	ALA
1	L	86	ASP

#### 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	L	89/90 (99%)	70 (79%)	19 (21%)	1 3
2	Н	217/216 (100%)	206 (95%)	11 (5%)	24 55
All	All	306/306 (100%)	276 (90%)	30 (10%)	10 24

5 of 30 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	L	113	ARG
2	Н	317	VAL
1	L	128	THR
2	Н	396	ARG
2	Н	222	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:



Mol	Chain	Res	Type
2	Н	203	ASN
2	Н	286	GLN
2	Н	312	GLN
2	Н	301	ASN
1	L	84	HIS

#### 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)

3 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			В	ond ang	eles
MIOI	Туре	Chain	nes	LIIIK	Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	NAG	A	1	3,2	14,14,15	1.33	1 (7%)	17,19,21	1.90	6 (35%)
3	NAG	A	2	3	14,14,15	1.29	1 (7%)	17,19,21	1.68	4 (23%)
3	FUL	A	3	3	10,10,11	0.71	0	14,14,16	3.11	5 (35%)

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	A	1	3,2	-	2/6/23/26	0/1/1/1
3	NAG	A	2	3	-	1/6/23/26	0/1/1/1
3	FUL	A	3	3	-	-	0/1/1/1



All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	$\mathbf{Z}$	$\operatorname{Observed}(\text{\AA})$	$\operatorname{Ideal}( ext{\AA})$
3	A	1	NAG	O7-C7	-4.03	1.14	1.23
3	A	2	NAG	O7-C7	-2.80	1.16	1.23

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

Mol	Chain	Res	Type	Atoms	$\mathbf{Z}$	$Observed(^o)$	$\mathrm{Ideal}(^{o})$
3	A	3	FUL	O2-C2-C1	8.04	125.61	109.15
3	A	3	FUL	O5-C1-C2	-4.79	103.38	110.77
3	A	3	FUL	O3-C3-C4	-3.68	101.84	110.35
3	A	3	FUL	O3-C3-C2	-3.64	103.02	109.99
3	A	1	NAG	C3-C4-C5	3.37	116.26	110.24

There are no chirality outliers.

All (3) torsion outliers are listed below:

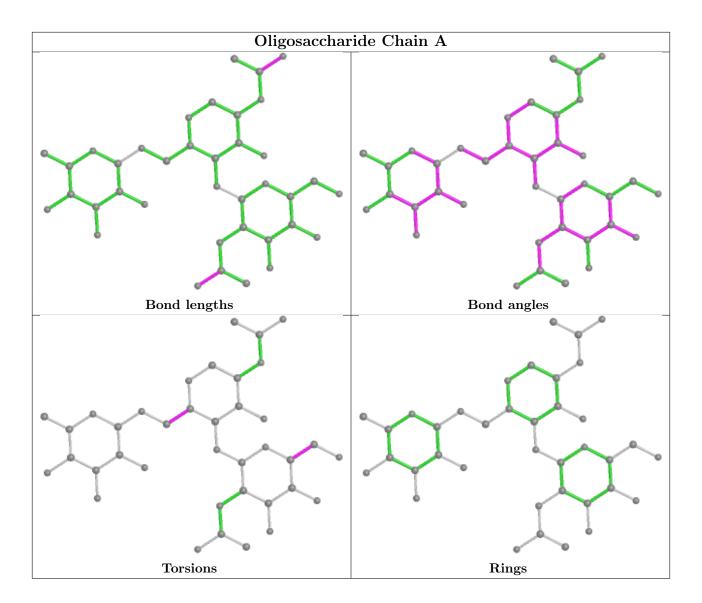
Mol	Chain	Res	Type	Atoms
3	A	1	NAG	O5-C5-C6-O6
3	A	1	NAG	C4-C5-C6-O6
3	A	2	NAG	O5-C5-C6-O6

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 4 ligands modelled in this entry, 1 is monoatomic - leaving 3 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	Trme	Chain	Dag	T inle	Bond lengths			В	ond ang	cles
IVIOI	Type	Chain	Res	Link	Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	GLC	L	153	1	11,11,12	0.63	0	15,15,17	1.50	3 (20%)
6	0Z6	Н	1	2	34,35,36	1.18	2 (5%)	41,45,46	1.87	8 (19%)



Mol	Type	Chain	Res	Link	Bo	ond leng	ths	В	ond ang	les
IVIOI	Туре	Chain	rtes	LIIIK	Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	FUC	L	160	1	10,10,11	0.86	1 (10%)	14,14,16	2.38	4 (28%)

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	GLC	L	153	1	-	2/2/19/22	0/1/1/1
6	0Z6	Н	1	2	1/1/7/10	6/35/35/37	0/2/2/2
5	FUC	L	160	1	1/1/4/5	-	0/1/1/1

#### All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$\operatorname{Observed}(\text{\AA})$	$Ideal(\AA)$
6	Н	1	0Z6	O2-C2	-4.83	1.29	1.43
6	Н	1	0Z6	C3-C2	3.89	1.63	1.51
5	L	160	FUC	O5-C1	-2.09	1.40	1.43

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

Mol	Chain	Res	Type	Atoms	$\mathbf{Z}$	$Observed(^o)$	$Ideal(^{o})$
6	Н	1	0Z6	CB2-CA2-C2	8.28	126.89	112.51
5	L	160	FUC	C1-O5-C5	6.35	127.17	112.78
5	L	160	FUC	O5-C5-C4	3.37	115.57	109.52
4	L	153	GLC	O2-C2-C1	3.23	115.77	109.15
6	Н	1	0Z6	CB-CA-C	-3.15	101.61	108.97

#### All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	L	160	FUC	C1
6	Н	1	0Z6	C2

#### 5 of 8 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	Н	1	0Z6	C3-C2-CA2-N2
6	Н	1	0Z6	C3-C2-CA2-CB2
6	Н	1	0Z6	C1-CA1-CB1-CG1
4	L	153	GLC	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	L	153	GLC	C4-C5-C6-O6

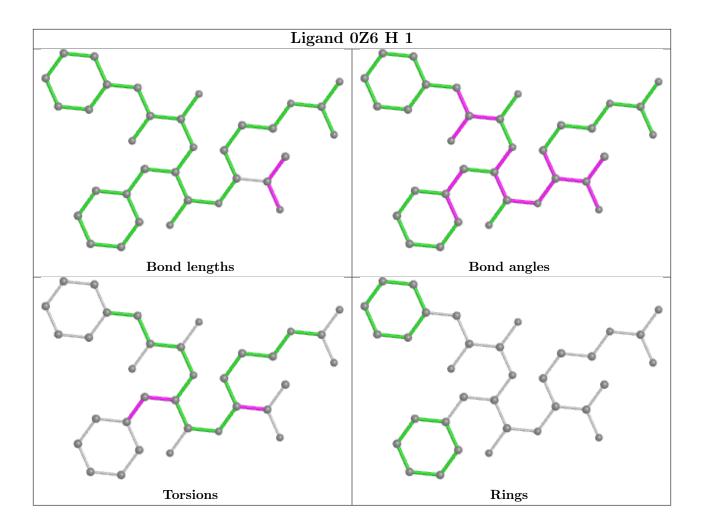
There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	L	153	GLC	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	$\langle { m RSRZ} \rangle$	# RSRZ > 2	$OWAB(A^2)$	Q < 0.9
1	L	96/104 (92%)	1.10	24 (25%) 0 0	49, 79, 95, 98	0
2	Н	252/254~(99%)	-0.13	4 (1%) 72 66	27, 44, 72, 105	0
All	All	348/358 (97%)	0.21	28 (8%) 12 6	27, 50, 93, 105	0

The worst 5 of 28 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	L	49	GLN	4.6
1	L	106[A]	THR	4.3
1	L	122	ALA	4.2
2	Н	318	GLY	4.2
1	L	59	GLY	3.7

### 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)

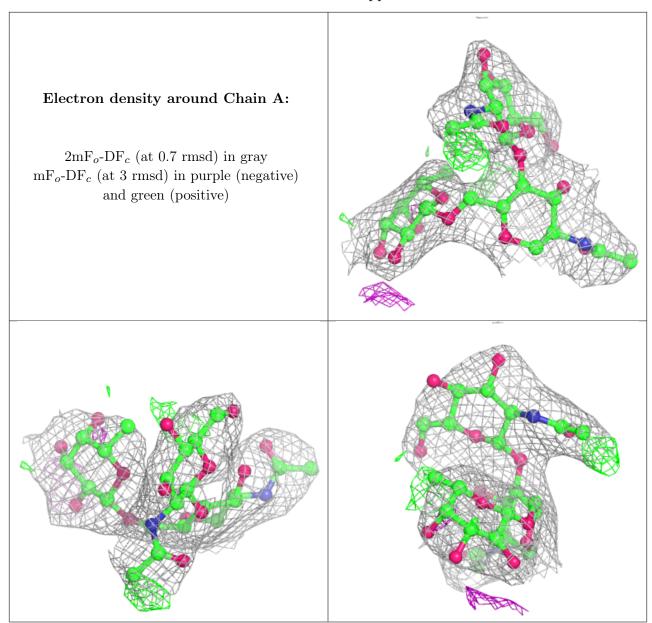
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median,  $95^{th}$  percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	$\mathbf{B} ext{-}\mathbf{factors}(\mathbf{\mathring{A}}^2)$	Q < 0.9
3	NAG	A	2	14/15	0.86	0.33	68,72,74,76	0
3	FUL	A	3	10/11	0.92	0.22	57,59,60,62	0
3	NAG	A	1	14/15	0.93	0.17	52,54,59,65	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	$\mathbf{B} ext{-}\mathbf{factors}(\mathbf{\mathring{A}}^2)$	Q < 0.9
4	GLC	L	153	11/12	0.86	0.31	96,97,97,97	0
5	FUC	L	160	10/11	0.87	0.15	100,101,102,102	0
6	0Z6	Н	1	34/35	0.92	0.20	34,40,45,46	0

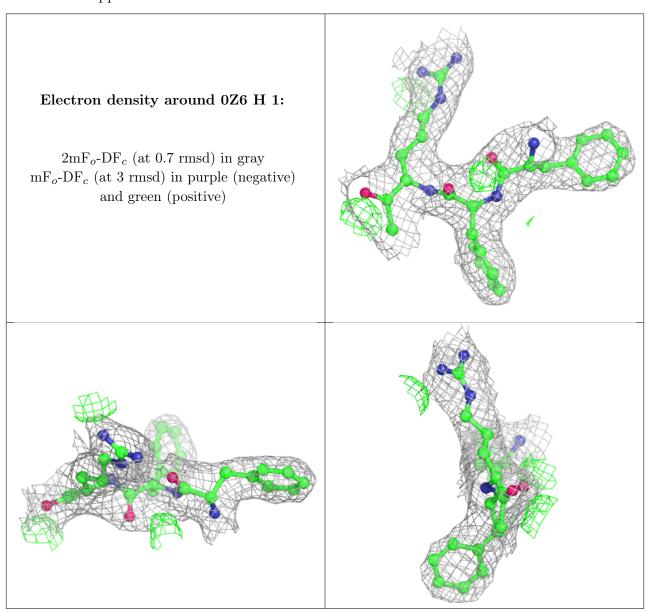
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	$\mathbf{B} ext{-}\mathbf{factors}(\mathbf{\mathring{A}}^2)$	Q < 0.9
7	CA	Н	500	1/1	0.96	0.15	73,73,73,73	0

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.

