



# wwPDB X-ray Structure Validation Summary Report

Feb 28, 2014 – 11:11 AM GMT

PDB ID : 1FLC  
Title : X-RAY STRUCTURE OF THE HAEMAGGLUTININ-ESTERASE-FUSION GLYCOPROTEIN OF INFLUENZA C VIRUS  
Authors : Rosenthal, P.B.; Zhang, X.; Formanowski, F.; Fitz, W.; Wong, C.H.; Meier-Ewert, H.; Skehel, J.J.; Wiley, D.C.  
Deposited on : 1999-02-22  
Resolution : 3.20 Å(reported)

This is a wwPDB validation summary report for a publicly released PDB entry.  
We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)  
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

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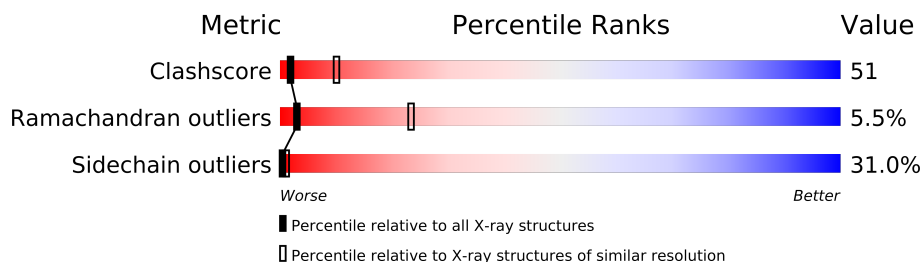
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.15 2013  
Xtriage (Phenix) : **NOT EXECUTED**  
EDS : **NOT EXECUTED**  
Percentile statistics : 21963  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)  
Validation Pipeline (wwPDB-VP) : stable22683

# 1 Overall quality at a glance

The reported resolution of this entry is 3.20 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	79885	1078 (3.26-3.14)
Ramachandran outliers	78287	1059 (3.26-3.14)
Sidechain outliers	78261	1058 (3.26-3.14)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	432	
1	C	432	
1	E	432	
2	B	175	
2	D	175	
2	F	175	

## 2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 14285 atoms, of which 0 are hydrogen and 0 are deuterium.

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 HAEMAGGLUTININ-ESTERASE-FUSIONGLYCOPROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	427	Total	C	N	O	S	0	0	0
			3339	2113	565	636	25			
1	C	427	Total	C	N	O	S	0	0	0
			3338	2112	565	636	25			
1	E	427	Total	C	N	O	S	0	0	0
			3339	2113	565	636	25			

- Molecule 2 is a protein called HAEMAGGLUTININ-ESTERASE-FUSIONGLYCOPROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	162	Total	C	N	O	S	0	0	0
			1228	773	206	246	3			
2	D	162	Total	C	N	O	S	0	0	0
			1228	773	206	246	3			
2	F	162	Total	C	N	O	S	0	0	0
			1228	773	206	246	3			

- Molecule 3 is a polymer of unknown type called SUGAR (3-MER).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	3	Total	C	N	O	0	0
			39	22	2	15		
3	C	3	Total	C	N	O	0	0
			39	22	2	15		
3	E	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 4 is a polymer of unknown type called SUGAR (3-MER).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	3	Total	C	N	O	0	0
			39	22	2	15		
4	A	3	Total	C	N	O	0	0
			39	22	2	15		
4	A	3	Total	C	N	O	0	0
			39	22	2	15		
4	C	3	Total	C	N	O	0	0
			39	22	2	15		
4	C	3	Total	C	N	O	0	0
			39	22	2	15		
4	E	3	Total	C	N	O	0	0
			39	22	2	15		
4	E	3	Total	C	N	O	0	0
			39	22	2	15		
4	E	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 5 is a polymer of unknown type called SUGAR (3-MER).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	B	3	Total	C	N	O	0	0
			39	22	2	15		
5	D	3	Total	C	N	O	0	0
			39	22	2	15		
5	F	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 6 is a polymer of unknown type called SUGAR (3-MER).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	C	3	Total	C	N	O	0	0
			39	22	2	15		

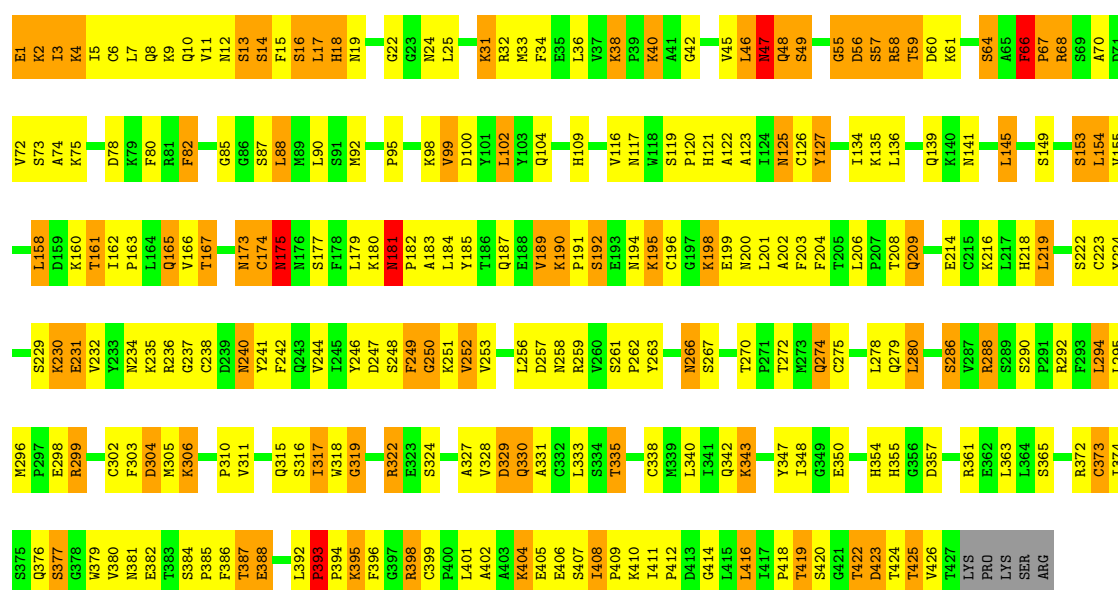
### 3 Residue-property plots

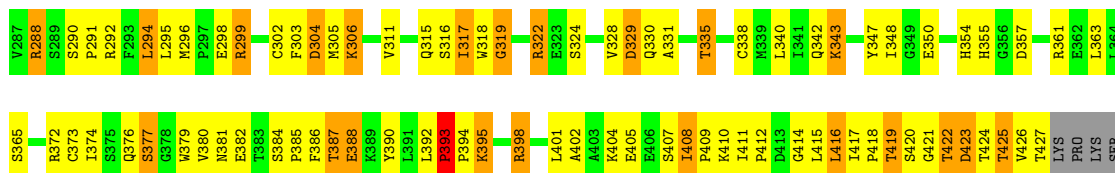
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according 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.

Note EDS was not executed.

#### • Molecule 1: HAEMAGGLUTININ-ESTERASE-FUSIONGLYCOPROTEIN

Chain A:

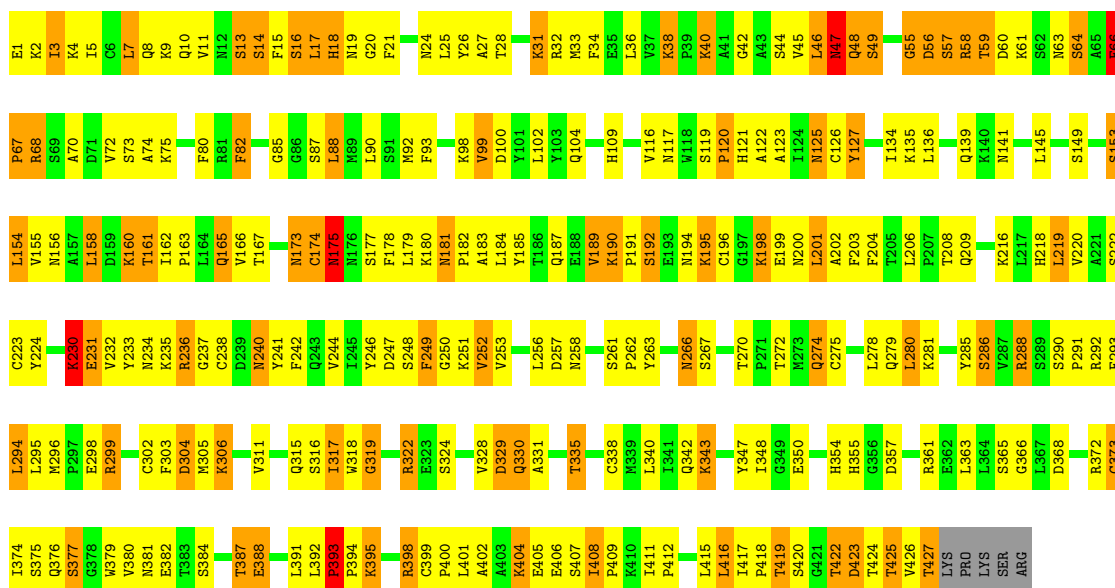




ARG

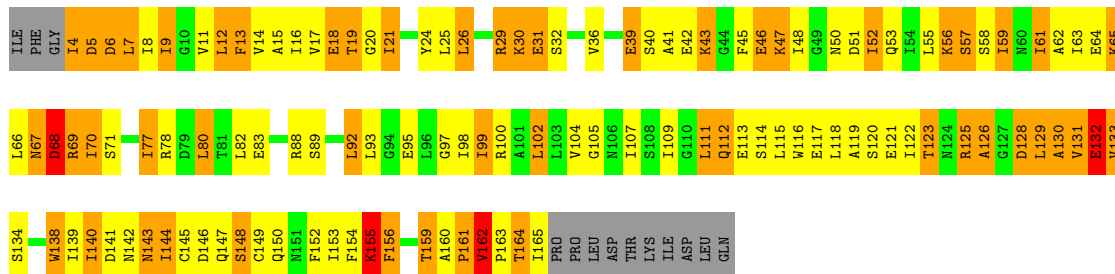
• Molecule 1: HAEMAGGLUTININ-ESTERASE-FUSIONGLYCOPROTEIN

Chain E:



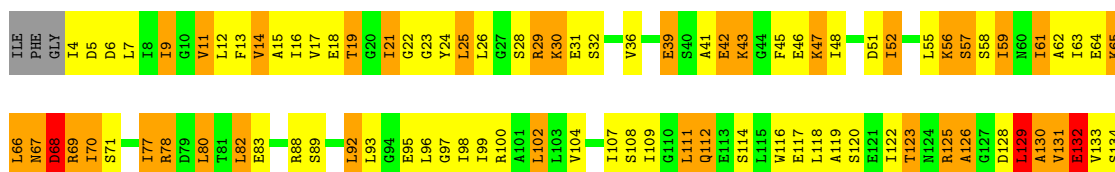
• Molecule 2: HAEMAGGLUTININ-ESTERASE-FUSIONGLYCOPROTEIN

Chain B:



• Molecule 2: HAEMAGGLUTININ-ESTERASE-FUSIONGLYCOPROTEIN

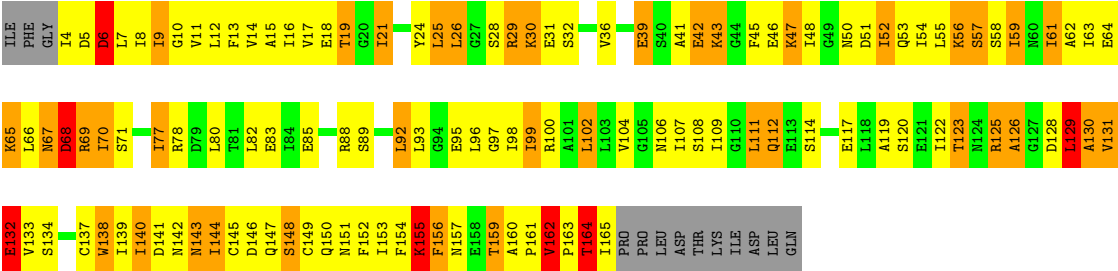
Chain D:





● Molecule 2: HAEMAGGLUTININ-ESTERASE-FUSIONGLYCOPROTEIN

Chain F:



## 4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section will therefore be incomplete.

Property	Value	Source
Space group	P 43 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	155.40Å 155.40Å 414.40Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	10.00 – 3.20	Depositor
% Data completeness (in resolution range)	99.0 (10.00-3.20)	Depositor
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.10	Depositor
Refinement program	X-PLOR 3.54	Depositor
R, $R_{free}$	0.223 , 0.267	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	14285	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	59.0	wwPDB-VP



## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: BMA, NAG, NDG, MAN

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z  > 5$	RMSZ	# $ Z  > 5$
1	A	0.68	0/3420	0.87	7/4622 (0.2%)
1	C	0.67	0/3418	0.87	6/4618 (0.1%)
1	E	0.68	0/3420	0.86	6/4622 (0.1%)
2	B	0.61	1/1241 (0.1%)	0.75	1/1678 (0.1%)
2	D	0.61	1/1241 (0.1%)	0.77	2/1678 (0.1%)
2	F	0.63	1/1241 (0.1%)	0.80	3/1678 (0.2%)
All	All	0.66	3/13981 (0.0%)	0.84	25/18896 (0.1%)

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 mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	1
1	E	0	1
All	All	0	3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	39	GLU	CD-OE2	7.87	1.34	1.25
2	F	39	GLU	CD-OE2	7.71	1.34	1.25
2	B	39	GLU	CD-OE2	7.51	1.33	1.25

The worst 5 of 25 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	55	GLY	N-CA-C	6.17	128.54	113.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	175	ASN	C-N-CA	-6.11	106.43	121.70
1	A	304	ASP	N-CA-C	-6.03	94.71	111.00
1	E	304	ASP	N-CA-C	-5.91	95.04	111.00
1	C	304	ASP	N-CA-C	-5.87	95.15	111.00

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	249	PHE	Sidechain
1	C	249	PHE	Sidechain
1	E	249	PHE	Sidechain

## 5.2 Close contacts ⓘ

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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3339	0	3251	331	0
1	C	3338	0	3245	349	0
1	E	3339	0	3250	336	0
2	B	1228	0	1232	198	0
2	D	1228	0	1232	234	0
2	F	1228	0	1232	188	0
3	A	39	0	34	1	0
3	C	39	0	34	3	0
3	E	39	0	34	6	0
4	A	117	0	102	0	0
4	C	78	0	68	0	0
4	E	117	0	102	4	0
5	B	39	0	34	11	0
5	D	39	0	34	5	0
5	F	39	0	34	8	0
6	C	39	0	34	0	0
All	All	14285	0	13952	1440	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 51.

The worst 5 of 1440 close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:55:GLY:HA3	1:A:82:PHE:HB3	1.26	1.17
1:E:55:GLY:HA3	1:E:82:PHE:HB3	1.23	1.17
1:C:55:GLY:HA3	1:C:82:PHE:HB3	1.19	1.16
2:F:126:ALA:HB3	2:F:129:LEU:HG	1.25	1.15
2:B:126:ALA:HB3	2:B:129:LEU:HG	1.21	1.14

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	425/432 (98%)	359 (84%)	49 (12%)	17 (4%)	5	32
1	C	425/432 (98%)	359 (84%)	50 (12%)	16 (4%)	5	34
1	E	425/432 (98%)	358 (84%)	51 (12%)	16 (4%)	5	34
2	B	160/175 (91%)	113 (71%)	32 (20%)	15 (9%)	1	7
2	D	160/175 (91%)	111 (69%)	32 (20%)	17 (11%)	1	5
2	F	160/175 (91%)	115 (72%)	29 (18%)	16 (10%)	1	6
All	All	1755/1821 (96%)	1415 (81%)	243 (14%)	97 (6%)	3	23

5 of 97 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	47	ASN
1	A	48	GLN
1	A	66	PHE
1	A	393	PRO
2	B	18	GLU

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	369/374 (99%)	269 (73%)	100 (27%)	1	2
1	C	368/374 (98%)	265 (72%)	103 (28%)	0	2
1	E	369/374 (99%)	265 (72%)	104 (28%)	0	2
2	B	134/147 (91%)	78 (58%)	56 (42%)	0	0
2	D	134/147 (91%)	82 (61%)	52 (39%)	0	0
2	F	134/147 (91%)	81 (60%)	53 (40%)	0	0
All	All	1508/1563 (96%)	1040 (69%)	468 (31%)	0	1

5 of 468 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	231	GLU
2	D	11	VAL
2	F	58	SER
1	C	266	ASN
1	C	335	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 57 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	209	GLN
1	C	342	GLN
1	E	376	GLN
1	C	234	ASN
1	C	266	ASN

### 5.3.3 RNA ⓘ

There are no RNA chains in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

## 5.5 Carbohydrates ⓘ

45 carbohydrates are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z  > 2$	Counts	RMSZ	# $ Z  > 2$
3	NDG	A	1500	1,3	12,14,15	0.64	0	15,19,21	1.09	1 (6%)
3	NAG	A	1501	3	12,14,15	0.69	0	15,19,21	1.40	2 (13%)
3	BMA	A	1502	3	10,11,12	0.83	0	11,15,17	0.51	0
4	NAG	A	1550	1,4	12,14,15	0.71	0	15,19,21	1.36	2 (13%)
4	NAG	A	1551	4	12,14,15	0.59	0	15,19,21	0.70	0
4	BMA	A	1552	4	10,11,12	0.67	0	11,15,17	0.43	0
4	NAG	A	1600	1,4	12,14,15	0.49	0	15,19,21	0.99	2 (13%)
4	NAG	A	1601	4	12,14,15	0.64	0	15,19,21	1.04	2 (13%)
4	BMA	A	1602	4	10,11,12	0.93	1 (10%)	11,15,17	0.85	1 (9%)
4	NAG	A	1650	1,4	12,14,15	0.68	0	15,19,21	0.93	1 (6%)
4	NAG	A	1651	4	12,14,15	0.54	0	15,19,21	0.77	0
4	BMA	A	1652	4	10,11,12	0.57	0	11,15,17	0.36	0
5	NAG	B	1300	2,5	12,14,15	0.68	0	15,19,21	1.29	3 (20%)
5	NDG	B	1301	5	12,14,15	0.53	0	15,19,21	1.60	2 (13%)
5	MAN	B	1302	5	10,11,12	0.52	0	11,15,17	0.46	0
3	NDG	C	2500	1,3	12,14,15	0.54	0	15,19,21	1.22	2 (13%)
3	NAG	C	2501	3	12,14,15	0.62	0	15,19,21	0.81	1 (6%)
3	BMA	C	2502	3	10,11,12	0.61	0	11,15,17	0.45	0
4	NAG	C	2550	1,4	12,14,15	0.78	0	15,19,21	1.10	1 (6%)
4	NAG	C	2551	4	12,14,15	0.70	0	15,19,21	0.84	1 (6%)
4	BMA	C	2552	4	10,11,12	0.76	0	11,15,17	0.71	0
6	NAG	C	2600	1,6	12,14,15	0.84	0	15,19,21	0.93	1 (6%)
6	NDG	C	2601	6	12,14,15	0.76	0	15,19,21	0.96	0
6	BMA	C	2602	6	10,11,12	0.59	0	11,15,17	0.57	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	NAG	C	2650	1,4	12,14,15	0.81	0	15,19,21	1.24	2 (13%)
4	NAG	C	2651	4	12,14,15	0.65	0	15,19,21	0.95	1 (6%)
4	BMA	C	2652	4	10,11,12	0.50	0	11,15,17	0.90	1 (9%)
5	NAG	D	2300	2,5	12,14,15	0.81	0	15,19,21	1.15	2 (13%)
5	NDG	D	2301	5	12,14,15	0.66	0	15,19,21	1.21	2 (13%)
5	MAN	D	2302	5	10,11,12	0.59	0	11,15,17	0.36	0
3	NDG	E	3500	1,3	12,14,15	0.55	0	15,19,21	1.05	0
3	NAG	E	3501	3	12,14,15	0.59	0	15,19,21	1.08	1 (6%)
3	BMA	E	3502	3	10,11,12	0.65	0	11,15,17	0.29	0
4	NAG	E	3550	1,4	12,14,15	0.68	0	15,19,21	0.79	1 (6%)
4	NAG	E	3551	4	12,14,15	0.82	0	15,19,21	0.77	0
4	BMA	E	3552	4	10,11,12	0.69	0	11,15,17	0.66	0
4	NAG	E	3600	1,4	12,14,15	0.58	0	15,19,21	0.83	0
4	NAG	E	3601	4	12,14,15	0.73	0	15,19,21	1.19	2 (13%)
4	BMA	E	3602	4	10,11,12	0.73	0	11,15,17	0.62	0
4	NAG	E	3650	1,4	12,14,15	0.60	0	15,19,21	0.83	1 (6%)
4	NAG	E	3651	4	12,14,15	0.58	0	15,19,21	0.64	0
4	BMA	E	3652	4	10,11,12	0.68	0	11,15,17	0.51	0
5	NAG	F	3300	2,5	12,14,15	0.52	0	15,19,21	1.52	2 (13%)
5	NDG	F	3301	5	12,14,15	0.67	0	15,19,21	1.82	3 (20%)
5	MAN	F	3302	5	10,11,12	0.52	0	11,15,17	0.47	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NDG	A	1500	1,3	-	0/6/23/26	1/1/1/1
3	NAG	A	1501	3	-	0/6/23/26	0/1/1/1
3	BMA	A	1502	3	-	0/2/19/22	0/1/1/1
4	NAG	A	1550	1,4	-	0/6/23/26	0/1/1/1
4	NAG	A	1551	4	-	0/6/23/26	0/1/1/1
4	BMA	A	1552	4	-	0/2/19/22	0/1/1/1
4	NAG	A	1600	1,4	-	0/6/23/26	0/1/1/1
4	NAG	A	1601	4	-	0/6/23/26	0/1/1/1
4	BMA	A	1602	4	-	0/2/19/22	0/1/1/1
4	NAG	A	1650	1,4	-	0/6/23/26	0/1/1/1
4	NAG	A	1651	4	-	0/6/23/26	0/1/1/1
4	BMA	A	1652	4	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	B	1300	2,5	-	0/6/23/26	0/1/1/1
5	NDG	B	1301	5	-	1/6/23/26	0/1/1/1
5	MAN	B	1302	5	-	0/2/19/22	0/1/1/1
3	NDG	C	2500	1,3	-	0/6/23/26	0/1/1/1
3	NAG	C	2501	3	-	0/6/23/26	0/1/1/1
3	BMA	C	2502	3	-	0/2/19/22	0/1/1/1
4	NAG	C	2550	1,4	-	0/6/23/26	0/1/1/1
4	NAG	C	2551	4	-	0/6/23/26	0/1/1/1
4	BMA	C	2552	4	-	0/2/19/22	0/1/1/1
6	NAG	C	2600	1,6	-	0/6/23/26	0/1/1/1
6	NDG	C	2601	6	-	0/6/23/26	1/1/1/1
6	BMA	C	2602	6	-	0/2/19/22	0/1/1/1
4	NAG	C	2650	1,4	-	0/6/23/26	0/1/1/1
4	NAG	C	2651	4	-	0/6/23/26	0/1/1/1
4	BMA	C	2652	4	-	0/2/19/22	0/1/1/1
5	NAG	D	2300	2,5	-	0/6/23/26	0/1/1/1
5	NDG	D	2301	5	-	0/6/23/26	1/1/1/1
5	MAN	D	2302	5	-	0/2/19/22	0/1/1/1
3	NDG	E	3500	1,3	-	0/6/23/26	0/1/1/1
3	NAG	E	3501	3	-	0/6/23/26	0/1/1/1
3	BMA	E	3502	3	-	0/2/19/22	0/1/1/1
4	NAG	E	3550	1,4	-	0/6/23/26	0/1/1/1
4	NAG	E	3551	4	-	0/6/23/26	0/1/1/1
4	BMA	E	3552	4	-	0/2/19/22	0/1/1/1
4	NAG	E	3600	1,4	-	0/6/23/26	0/1/1/1
4	NAG	E	3601	4	-	0/6/23/26	0/1/1/1
4	BMA	E	3602	4	-	0/2/19/22	0/1/1/1
4	NAG	E	3650	1,4	-	0/6/23/26	0/1/1/1
4	NAG	E	3651	4	-	0/6/23/26	0/1/1/1
4	BMA	E	3652	4	-	0/2/19/22	0/1/1/1
5	NAG	F	3300	2,5	-	0/6/23/26	0/1/1/1
5	NDG	F	3301	5	-	0/6/23/26	0/1/1/1
5	MAN	F	3302	5	-	0/2/19/22	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1602	BMA	C4-C5	2.45	1.58	1.53

The worst 5 of 40 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	F	3301	NDG	C3-C4-C5	-5.30	100.73	110.20
5	B	1301	NDG	C3-C4-C5	-4.44	102.27	110.20
4	A	1550	NAG	O5-C5-C6	-3.73	103.06	106.98
5	F	3300	NAG	C3-C4-C5	-3.53	103.90	110.20
3	A	1501	NAG	C4-C3-C2	-3.34	103.15	111.32

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	1301	NDG	C3-C2-N2-C7

All (3) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	D	2301	NDG	C1-C2-C3-C4-C5-O
6	C	2601	NDG	C1-C2-C3-C4-C5-O
3	A	1500	NDG	C1-C2-C3-C4-C5-O

## 5.6 Ligand geometry

There are no ligands in this entry.

## 5.7 Other polymers

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.



## 6 Fit of model and data ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

EDS was not executed - this section will therefore be empty.

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

EDS was not executed - this section will therefore be empty.

### 6.3 Carbohydrates ⓘ

EDS was not executed - this section will therefore be empty.

### 6.4 Ligands ⓘ

EDS was not executed - this section will therefore be empty.

### 6.5 Other polymers ⓘ

EDS was not executed - this section will therefore be empty.