



# wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 12, 2024 – 09:40 AM EDT

PDB ID : 6O1J  
Title : Alpha-L-fucosidase AlfC fucosyltransferase mutant N243A  
Authors : Klontz, E.H.; Sundberg, E.J.  
Deposited on : 2019-02-20  
Resolution : 2.00 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtrriage (Phenix) : 1.13  
EDS : 2.36.2  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

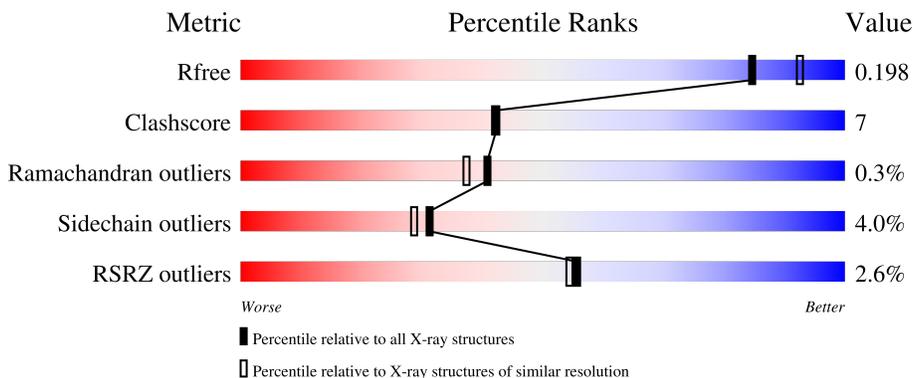
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.00 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	345	 81% 13% • 5%
1	B	345	 81% 12% • 6%
1	C	345	 78% 15% • 6%
1	D	345	 78% 15% • 6%
1	E	345	 81% 12% • 5%

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Mol	Chain	Length	Quality of chain
1	F	345	 <p>78% 14% • 6%</p>
1	G	345	 <p>78% 12% • 8%</p>
1	H	345	 <p>77% 16% • 6%</p>

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 21640 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 AlfC.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	329	Total 2636	C 1685	N 433	O 505	S 13	0	0	0
1	B	324	Total 2600	C 1660	N 427	O 500	S 13	0	0	0
1	C	323	Total 2592	C 1655	N 426	O 499	S 12	0	0	0
1	D	324	Total 2602	C 1663	N 427	O 499	S 13	0	0	0
1	E	327	Total 2624	C 1678	N 431	O 503	S 12	0	0	0
1	F	323	Total 2593	C 1655	N 426	O 499	S 13	0	0	0
1	G	317	Total 2548	C 1628	N 419	O 489	S 12	0	0	0
1	H	323	Total 2596	C 1658	N 426	O 499	S 13	0	0	0

There are 16 discrepancies between the modelled and reference sequences:

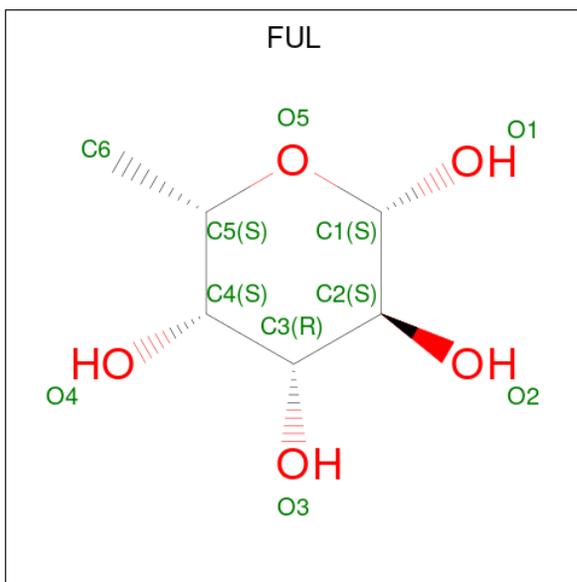
Chain	Residue	Modelled	Actual	Comment	Reference
A	243	ALA	ASN	engineered mutation	UNP K0NB39
A	345	LEU	-	expression tag	UNP K0NB39
B	243	ALA	ASN	engineered mutation	UNP K0NB39
B	345	LEU	-	expression tag	UNP K0NB39
C	243	ALA	ASN	engineered mutation	UNP K0NB39
C	345	LEU	-	expression tag	UNP K0NB39
D	243	ALA	ASN	engineered mutation	UNP K0NB39
D	345	LEU	-	expression tag	UNP K0NB39
E	243	ALA	ASN	engineered mutation	UNP K0NB39
E	345	LEU	-	expression tag	UNP K0NB39
F	243	ALA	ASN	engineered mutation	UNP K0NB39
F	345	LEU	-	expression tag	UNP K0NB39
G	243	ALA	ASN	engineered mutation	UNP K0NB39

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Chain	Residue	Modelled	Actual	Comment	Reference
G	345	LEU	-	expression tag	UNP K0NB39
H	243	ALA	ASN	engineered mutation	UNP K0NB39
H	345	LEU	-	expression tag	UNP K0NB39

- Molecule 2 is beta-L-fucopyranose (three-letter code: FUL) (formula: C<sub>6</sub>H<sub>12</sub>O<sub>5</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 11 6 5	0	0
2	B	1	Total C O 11 6 5	0	0
2	C	1	Total C O 11 6 5	0	0
2	D	1	Total C O 11 6 5	0	0
2	E	1	Total C O 11 6 5	0	0
2	F	1	Total C O 11 6 5	0	0
2	G	1	Total C O 11 6 5	0	0
2	H	1	Total C O 11 6 5	0	0

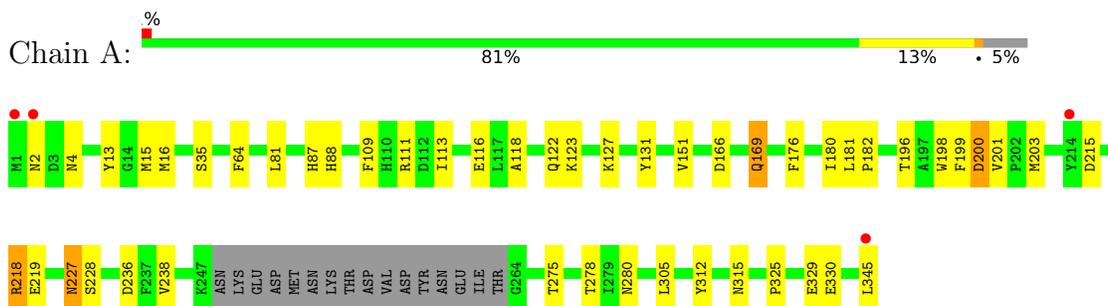
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	116	Total 116	O 116	0	0
3	B	120	Total 120	O 120	0	0
3	C	96	Total 96	O 96	0	0
3	D	95	Total 95	O 95	0	0
3	E	92	Total 92	O 92	0	0
3	F	99	Total 99	O 99	0	0
3	G	83	Total 83	O 83	0	0
3	H	60	Total 60	O 60	0	0

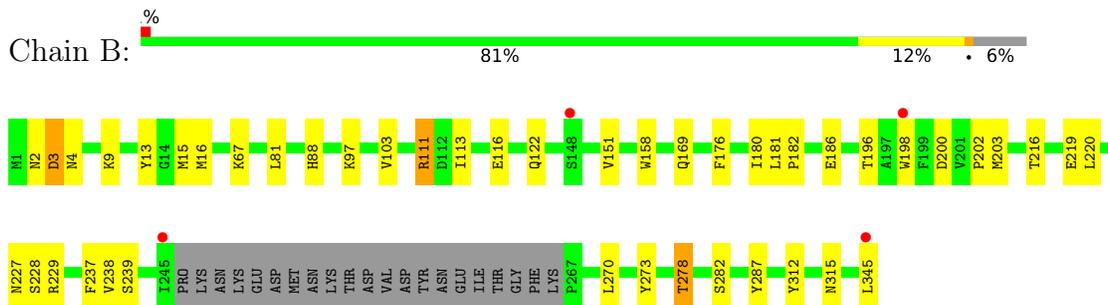
### 3 Residue-property plots [i](#)

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.

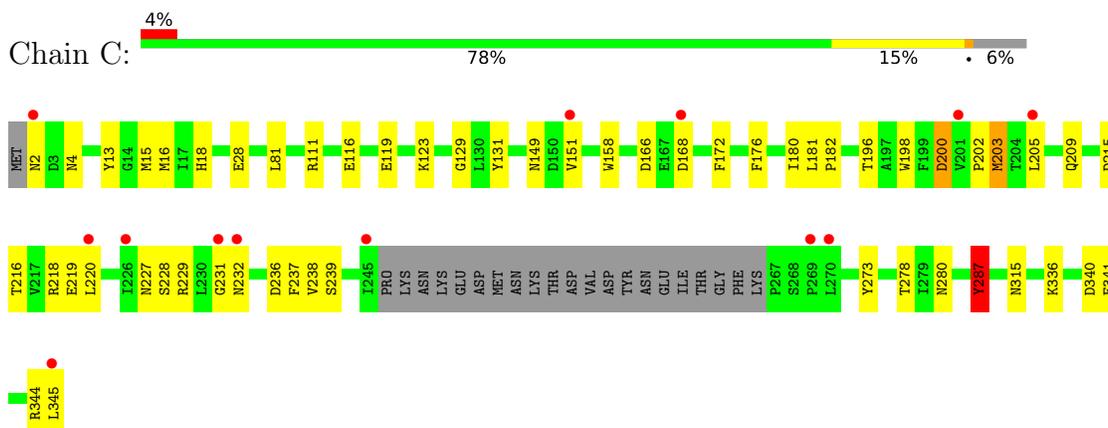
- Molecule 1: AlfC



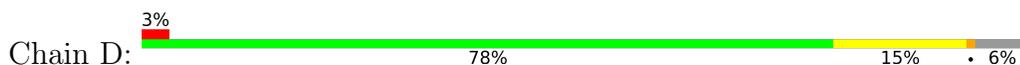
- Molecule 1: AlfC

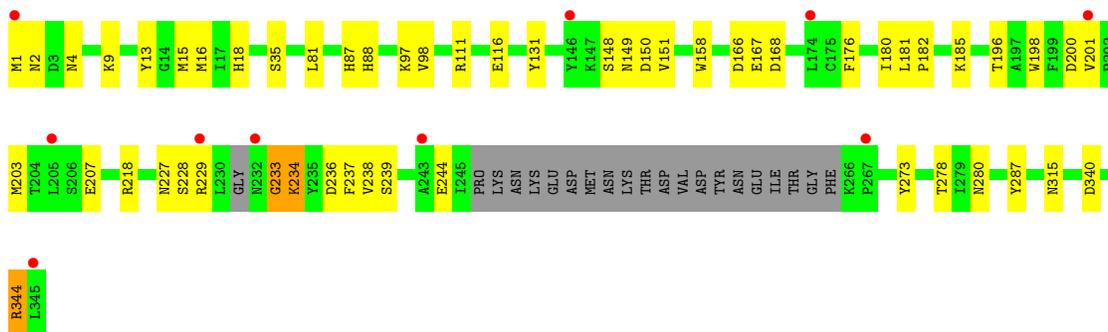


- Molecule 1: AlfC

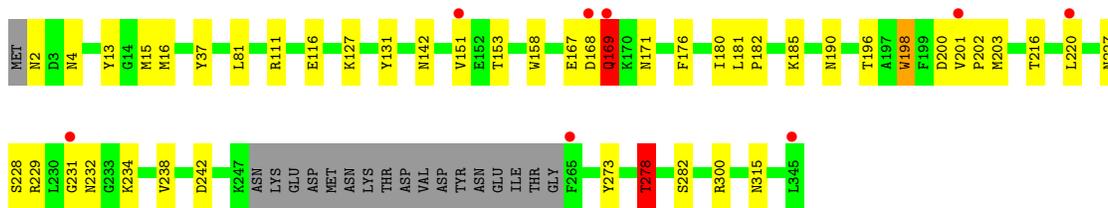
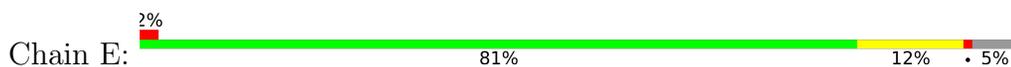


- Molecule 1: AlfC

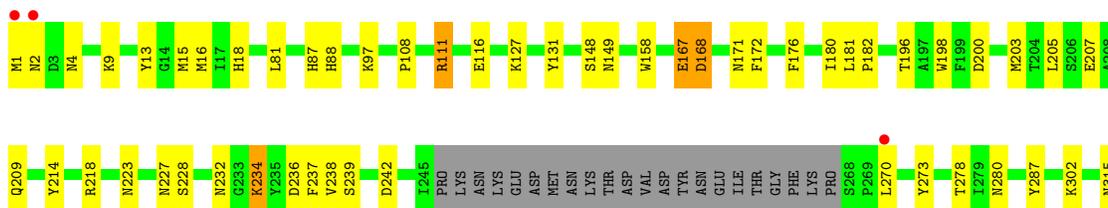
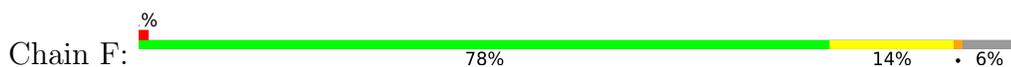




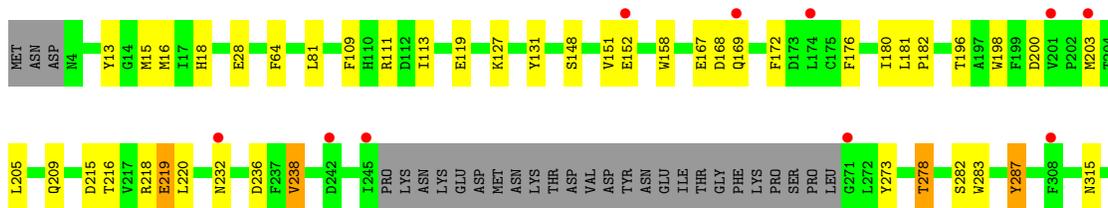
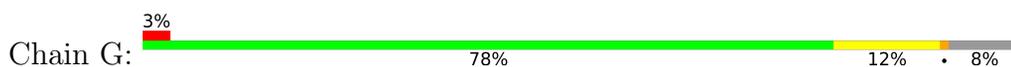
• Molecule 1: A1fC



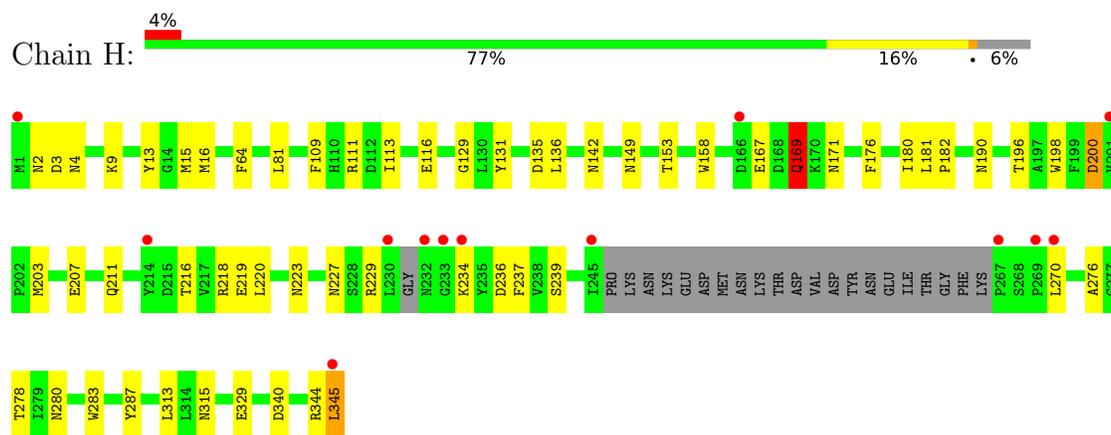
• Molecule 1: A1fC



• Molecule 1: A1fC



- Molecule 1: AlfC



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	80.30Å 259.92Å 80.35Å 90.00° 118.81° 90.00°	Depositor
Resolution (Å)	47.75 – 2.00 47.75 – 2.00	Depositor EDS
% Data completeness (in resolution range)	91.3 (47.75-2.00) 91.3 (47.75-2.00)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.30 (at 2.00Å)	Xtrriage
Refinement program	REFMAC 5.8.0238	Depositor
R, $R_{free}$	0.230 , 0.243 0.181 , 0.198	Depositor DCC
$R_{free}$ test set	9045 reflections (5.11%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	38.5	Xtrriage
Anisotropy	0.363	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 27.3	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.39$ , $\langle L^2 \rangle = 0.21$	Xtrriage
Estimated twinning fraction	0.088 for -h-l,k,h 0.088 for l,k,-h-l 0.088 for h,-k,-h-l 0.087 for -h-l,-k,l 0.356 for l,-k,h	Xtrriage
Reported twinning fraction	0.645 for H, K, L 0.355 for -L, -K, -H	Depositor
Outliers	0 of 176954 reflections	Xtrriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	21640	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	52.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.52% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 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	Bond lengths		Bond angles	
		RMSZ	# $ Z  > 5$	RMSZ	# $ Z  > 5$
1	A	0.75	2/2710 (0.1%)	0.84	2/3679 (0.1%)
1	B	0.74	1/2672 (0.0%)	0.86	2/3627 (0.1%)
1	C	0.70	1/2664 (0.0%)	0.81	1/3617 (0.0%)
1	D	0.74	0/2673	0.82	0/3627
1	E	0.71	0/2698	0.83	4/3664 (0.1%)
1	F	0.70	0/2664	0.81	1/3616 (0.0%)
1	G	0.69	1/2618 (0.0%)	0.82	3/3553 (0.1%)
1	H	0.70	1/2667 (0.0%)	0.79	1/3619 (0.0%)
All	All	0.72	6/21366 (0.0%)	0.82	14/29002 (0.0%)

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	E	0	1
1	H	0	1
All	All	0	2

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	28	GLU	CD-OE1	6.24	1.32	1.25
1	B	3	ASP	CG-OD2	5.72	1.38	1.25
1	A	329	GLU	CD-OE1	-5.68	1.19	1.25
1	A	330	GLU	CD-OE1	-5.29	1.19	1.25
1	C	28	GLU	CD-OE2	5.25	1.31	1.25

The worst 5 of 14 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	111	ARG	NE-CZ-NH2	-6.23	117.18	120.30
1	G	287	TYR	CB-CA-C	6.09	122.58	110.40
1	A	218	ARG	NE-CZ-NH2	-6.06	117.27	120.30
1	F	111	ARG	NE-CZ-NH2	-5.51	117.55	120.30
1	G	111	ARG	NE-CZ-NH2	-5.49	117.55	120.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	E	169	GLN	Peptide
1	H	169	GLN	Peptide

## 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2636	0	2481	26	1
1	B	2600	0	2448	33	1
1	C	2592	0	2436	38	0
1	D	2602	0	2452	34	1
1	E	2624	0	2466	33	1
1	F	2593	0	2440	44	1
1	G	2548	0	2395	31	0
1	H	2596	0	2444	46	1
2	A	11	0	11	1	0
2	B	11	0	11	0	0
2	C	11	0	12	1	0
2	D	11	0	12	0	0
2	E	11	0	11	0	0
2	F	11	0	11	3	0
2	G	11	0	11	0	0
2	H	11	0	11	0	0
3	A	116	0	0	0	0
3	B	120	0	0	1	0
3	C	96	0	0	6	0
3	D	95	0	0	3	0
3	E	92	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	F	99	0	0	9	1
3	G	83	0	0	0	0
3	H	60	0	0	0	1
All	All	21640	0	19652	280	4

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 7.

The worst 5 of 280 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:C:341:GLU:HA	3:C:516:HOH:O	1.39	1.18
1:F:108:PRO:O	3:F:501:HOH:O	1.71	1.05
1:H:169:GLN:HE21	1:H:169:GLN:HA	1.36	0.89
1:G:215:ASP:O	1:G:219:GLU:HG2	1.74	0.88
1:G:278:THR:HG23	1:G:315:ASN:HB3	1.57	0.87

All (4) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:531:HOH:O	3:H:508:HOH:O[1_655]	1.79	0.41
1:F:287:TYR:CE1	1:H:287:TYR:CE1[1_655]	1.85	0.35
1:B:287:TYR:CE1	1:D:287:TYR:CE1[1_455]	1.89	0.31
1:A:123:LYS:NZ	1:E:169:GLN:O[1_556]	2.19	0.01

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	325/345 (94%)	311 (96%)	12 (4%)	2 (1%)	25 19

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	320/345 (93%)	306 (96%)	14 (4%)	0	100	100
1	C	319/345 (92%)	305 (96%)	12 (4%)	2 (1%)	25	19
1	D	318/345 (92%)	306 (96%)	11 (4%)	1 (0%)	41	37
1	E	323/345 (94%)	308 (95%)	14 (4%)	1 (0%)	41	37
1	F	319/345 (92%)	303 (95%)	15 (5%)	1 (0%)	41	37
1	G	313/345 (91%)	297 (95%)	15 (5%)	1 (0%)	41	37
1	H	317/345 (92%)	300 (95%)	17 (5%)	0	100	100
All	All	2554/2760 (92%)	2436 (95%)	110 (4%)	8 (0%)	41	37

5 of 8 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	232	ASN
1	C	231	GLY
1	A	35	SER
1	A	201	VAL
1	C	232	ASN

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	275/292 (94%)	265 (96%)	10 (4%)	35	34
1	B	272/292 (93%)	261 (96%)	11 (4%)	31	29
1	C	271/292 (93%)	264 (97%)	7 (3%)	46	48
1	D	272/292 (93%)	260 (96%)	12 (4%)	28	25
1	E	274/292 (94%)	263 (96%)	11 (4%)	31	29
1	F	271/292 (93%)	259 (96%)	12 (4%)	28	25
1	G	265/292 (91%)	251 (95%)	14 (5%)	22	18
1	H	272/292 (93%)	263 (97%)	9 (3%)	38	37
All	All	2172/2336 (93%)	2086 (96%)	86 (4%)	31	29

5 of 86 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	196	THR
1	G	198	TRP
1	F	200	ASP
1	G	127	LYS
1	G	278	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 26 such sidechains are listed below:

Mol	Chain	Res	Type
1	F	149	ASN
1	F	315	ASN
1	H	223	ASN
1	F	306	ASN
1	G	306	ASN

### 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](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

8 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	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	FUL	A	401	-	11,11,11	1.39	1 (9%)	15,16,16	1.47	2 (13%)
2	FUL	C	401	-	11,11,11	1.34	1 (9%)	15,16,16	1.21	2 (13%)
2	FUL	G	401	-	11,11,11	1.35	1 (9%)	15,16,16	0.78	0
2	FUL	F	401	-	11,11,11	1.39	1 (9%)	15,16,16	1.46	2 (13%)
2	FUL	D	401	-	11,11,11	1.45	1 (9%)	15,16,16	2.14	4 (26%)
2	FUL	H	401	-	11,11,11	1.25	1 (9%)	15,16,16	0.87	0
2	FUL	B	401	-	11,11,11	1.51	1 (9%)	15,16,16	1.43	3 (20%)
2	FUL	E	401	-	11,11,11	1.31	1 (9%)	15,16,16	1.06	1 (6%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the 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	FUL	A	401	-	-	-	0/1/1/1
2	FUL	C	401	-	-	-	0/1/1/1
2	FUL	G	401	-	-	-	0/1/1/1
2	FUL	F	401	-	-	-	0/1/1/1
2	FUL	D	401	-	-	-	0/1/1/1
2	FUL	H	401	-	-	-	0/1/1/1
2	FUL	B	401	-	-	-	0/1/1/1
2	FUL	E	401	-	-	-	0/1/1/1

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	FUL	O5-C1	3.57	1.51	1.42
2	F	401	FUL	O5-C1	3.42	1.51	1.42
2	B	401	FUL	O5-C1	3.38	1.51	1.42
2	D	401	FUL	O5-C1	3.32	1.51	1.42
2	C	401	FUL	O5-C1	3.21	1.50	1.42

The worst 5 of 14 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	401	FUL	O5-C5-C4	4.81	118.15	109.52
2	D	401	FUL	C3-C4-C5	4.10	116.15	109.77
2	A	401	FUL	C3-C4-C5	3.70	115.54	109.77
2	F	401	FUL	C3-C4-C5	3.68	115.51	109.77

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	401	FUL	O5-C5-C4	2.83	114.60	109.52

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	FUL	1	0
2	C	401	FUL	1	0
2	F	401	FUL	3	0

## 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<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	329/345 (95%)	-0.14	4 (1%) 79 78	30, 44, 64, 113	0
1	B	324/345 (93%)	-0.17	4 (1%) 79 78	29, 44, 66, 89	0
1	C	323/345 (93%)	0.13	13 (4%) 38 37	33, 53, 81, 101	0
1	D	324/345 (93%)	0.00	10 (3%) 49 48	33, 47, 76, 97	0
1	E	327/345 (94%)	0.09	8 (2%) 59 57	33, 53, 90, 116	0
1	F	323/345 (93%)	-0.03	4 (1%) 79 78	34, 49, 74, 119	0
1	G	317/345 (91%)	0.09	11 (3%) 44 43	33, 54, 84, 114	0
1	H	323/345 (93%)	0.10	13 (4%) 38 37	37, 56, 88, 108	0
All	All	2590/2760 (93%)	0.01	67 (2%) 56 54	29, 50, 82, 119	0

The worst 5 of 67 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	345	LEU	8.8
1	E	345	LEU	8.5
1	C	232	ASN	8.0
1	A	1	MET	7.8
1	E	201	VAL	6.7

### 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](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	FUL	A	401	11/11	0.84	0.13	38,45,55,63	0
2	FUL	C	401	11/11	0.86	0.16	50,61,65,72	0
2	FUL	F	401	11/11	0.86	0.15	51,58,69,75	0
2	FUL	G	401	11/11	0.87	0.14	51,57,64,68	0
2	FUL	B	401	11/11	0.88	0.14	34,48,52,61	0
2	FUL	D	401	11/11	0.91	0.11	44,52,57,59	0
2	FUL	E	401	11/11	0.92	0.19	45,52,56,60	0
2	FUL	H	401	11/11	0.93	0.12	57,60,63,68	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.