



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 18, 2026 – 02:19 AM UTC

PDB ID : 3HS0 / pdb_00003hs0
Title : Cobra Venom Factor (CVF) in complex with human factor B
Authors : Janssen, B.J.C.; Gomes, L.; Koning, R.I.; Svergun, D.I.; Koster, A.J.;
Fritzinger, D.C.; Vogel, C.-W.; Gros, P.
Deposited on : 2009-06-10
Resolution : 3.00 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

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>.

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

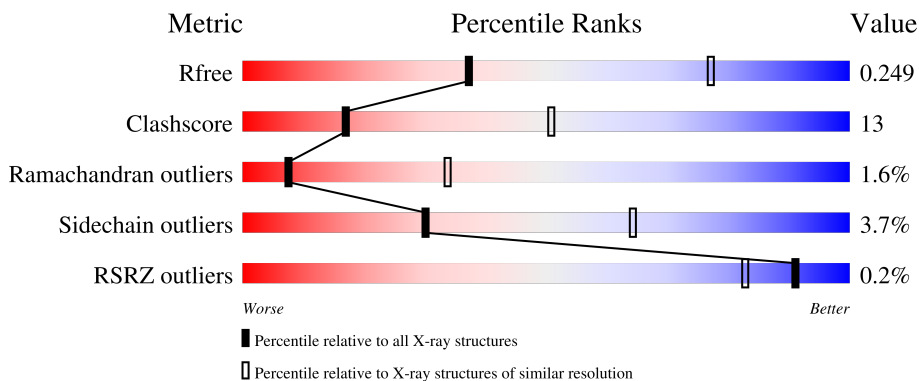
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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.






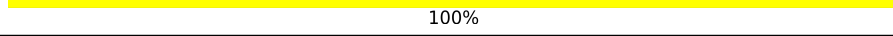
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	2672 (3.00-3.00)
Clashscore	190562	2977 (3.00-3.00)
Ramachandran outliers	187476	2877 (3.00-3.00)
Sidechain outliers	187428	2880 (3.00-3.00)
RSRZ outliers	180081	2671 (3.00-3.00)

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 ≥ 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	627	 75% 22% ..
1	F	627	 74% 22% ..
2	B	252	 71% 19% • 8%
2	G	252	 70% 21% • 8%
3	C	379	 64% 27% • • 5%

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Mol	Chain	Length	Quality of chain
3	H	379	 75% 18% . .
4	D	741	 66% 25% . . 6%
4	I	741	 65% 26% . 5%
5	E	2	 100%
5	J	2	 100%

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 30435 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 Cobra venom factor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	613	Total 4794	C 3069	N 804	O 906	S 15	0	0	0
1	F	617	Total 4826	C 3085	N 811	O 915	S 15	0	0	0

- Molecule 2 is a protein called Cobra venom factor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	233	Total 1856	C 1194	N 311	O 346	S 5	0	0	0
2	G	233	Total 1856	C 1194	N 311	O 346	S 5	0	0	0

- Molecule 3 is a protein called Cobra venom factor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	359	Total 2900	C 1831	N 484	O 566	S 19	0	0	0
3	H	366	Total 2957	C 1864	N 496	O 578	S 19	0	0	0

- Molecule 4 is a protein called Complement factor B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	699	Total 5513	C 3474	N 954	O 1052	S 33	0	0	0
4	I	704	Total 5567	C 3506	N 972	O 1056	S 33	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

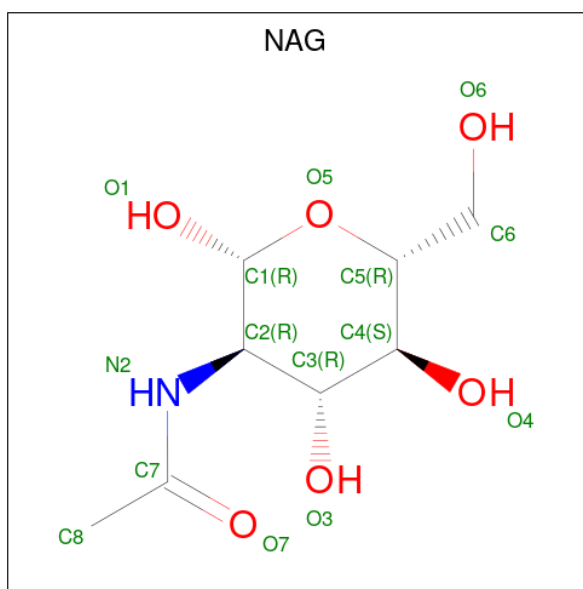
Chain	Residue	Modelled	Actual	Comment	Reference
D	254	GLY	ASP	engineered mutation	UNP P00751
D	260	ASP	ASN	engineered mutation	UNP P00751
D	740	ALA	-	insertion	UNP P00751
D	741	ALA	-	insertion	UNP P00751
I	254	GLY	ASP	engineered mutation	UNP P00751
I	260	ASP	ASN	engineered mutation	UNP P00751
I	740	ALA	-	insertion	UNP P00751
I	741	ALA	-	insertion	UNP P00751

- Molecule 5 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace	
			Total	C	N				O
5	E	2	28	16	2	10	0	0	0
5	J	2	28	16	2	10	0	0	0

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: C₈H₁₅NO₆).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total	C	N	O	0	0
			14	8	1	5		
6	C	1	Total	C	N	O	0	0
			14	8	1	5		
6	D	1	Total	C	N	O	0	0
			14	8	1	5		
6	D	1	Total	C	N	O	0	0
			14	8	1	5		
6	F	1	Total	C	N	O	0	0
			14	8	1	5		
6	H	1	Total	C	N	O	0	0
			14	8	1	5		
6	I	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 7 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	1	Total	Mg	0	0
			1	1		
7	D	1	Total	Mg	0	0
			1	1		
7	F	1	Total	Mg	0	0
			1	1		
7	I	1	Total	Mg	0	0
			1	1		

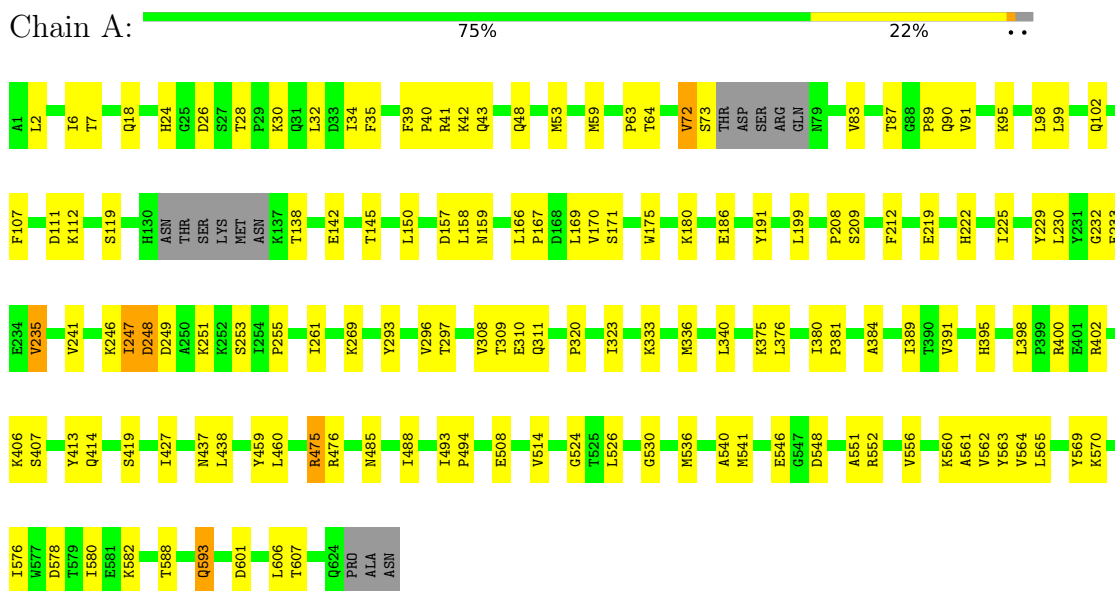
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	2	Total	O	0	0
			2	2		
8	C	1	Total	O	0	0
			1	1		
8	D	1	Total	O	0	0
			1	1		
8	F	2	Total	O	0	0
			2	2		
8	H	1	Total	O	0	0
			1	1		
8	I	1	Total	O	0	0
			1	1		

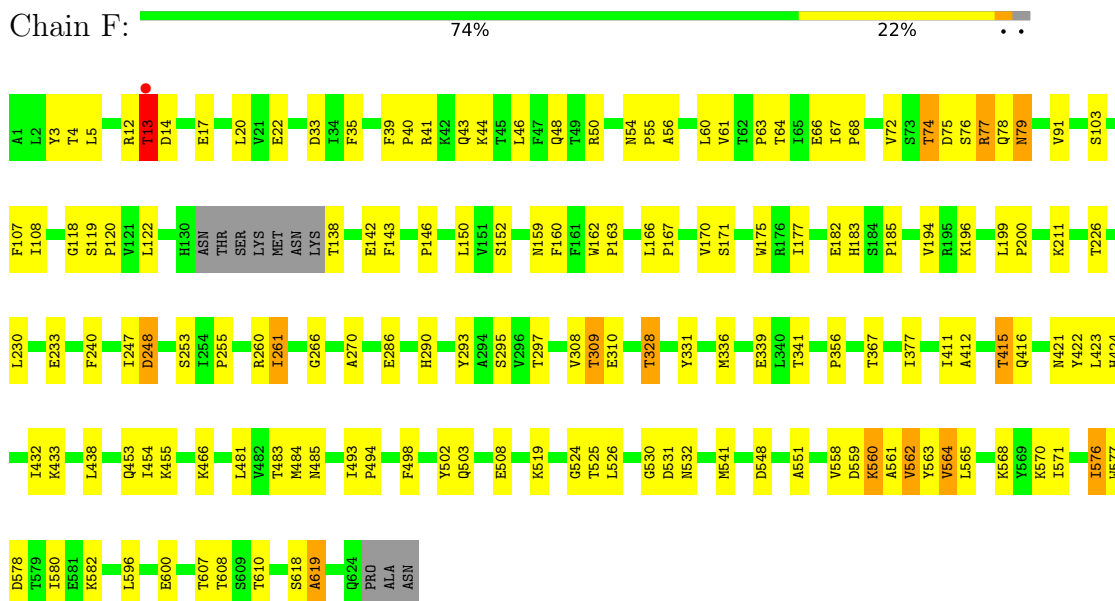
3 Residue-property plots [i](#)

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.

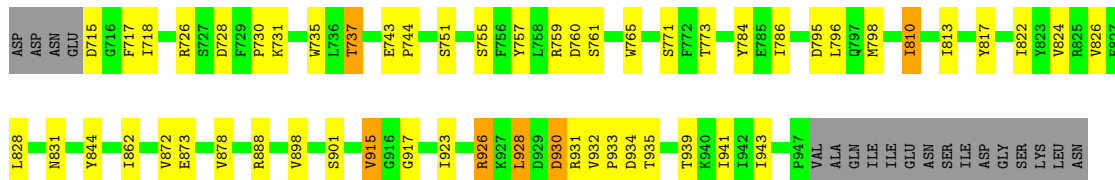
- Molecule 1: Cobra venom factor



- Molecule 1: Cobra venom factor



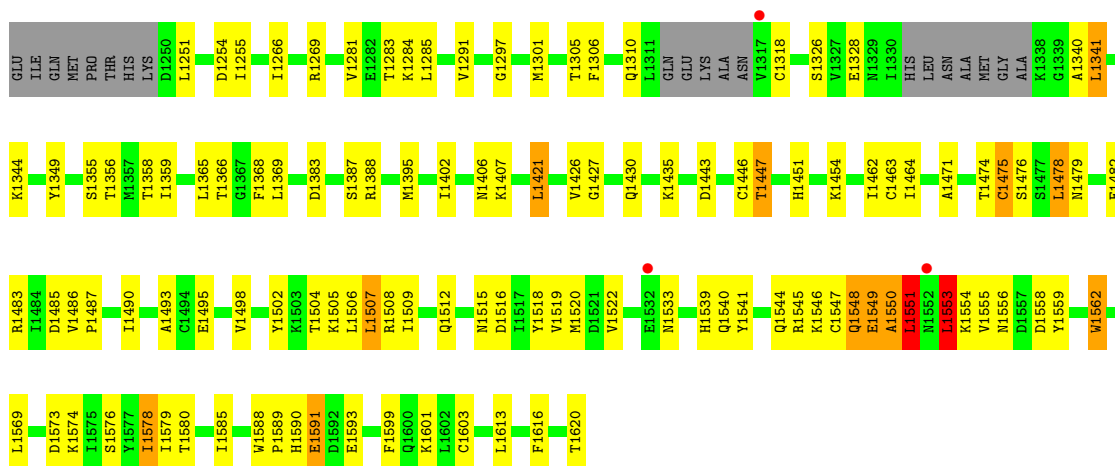
• Molecule 2: Cobra venom factor



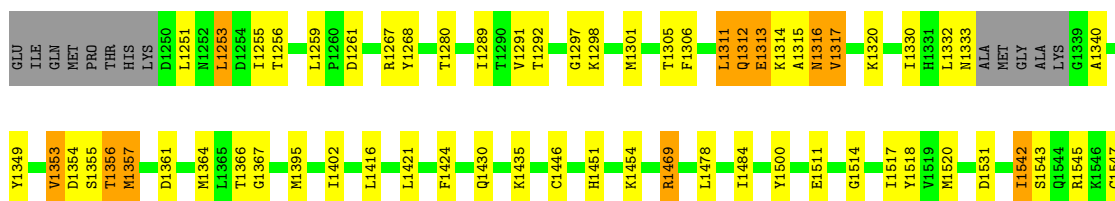
• Molecule 2: Cobra venom factor

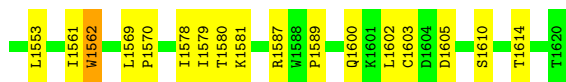


• Molecule 3: Cobra venom factor



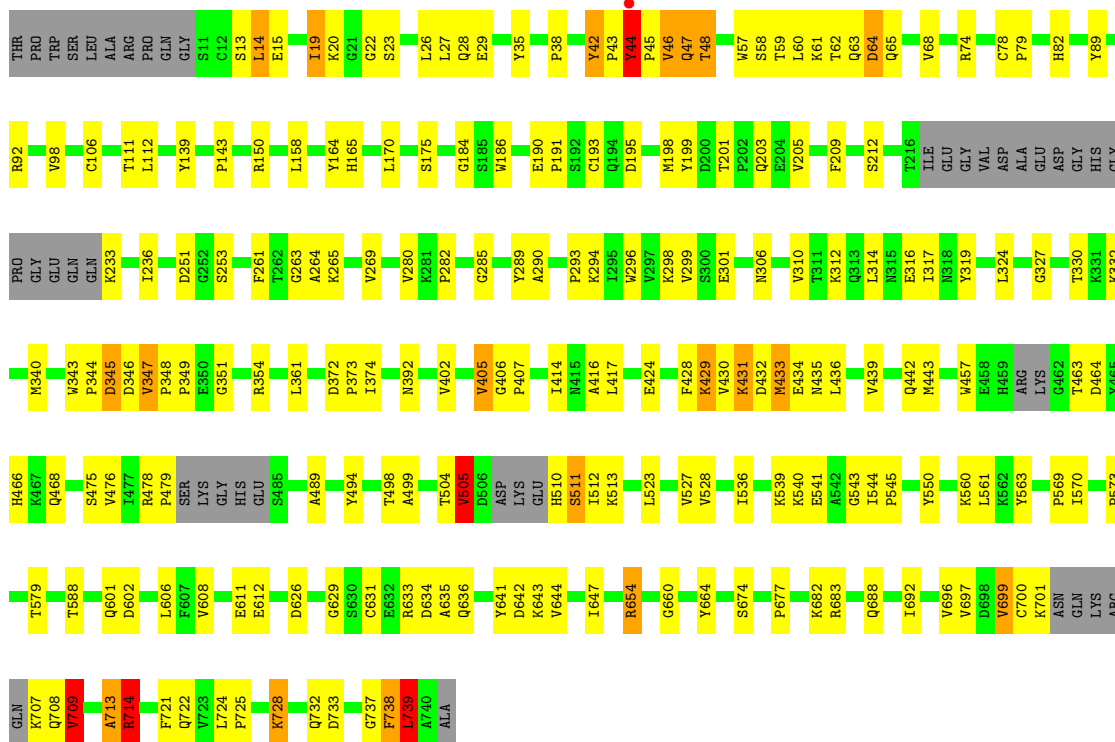
• Molecule 3: Cobra venom factor





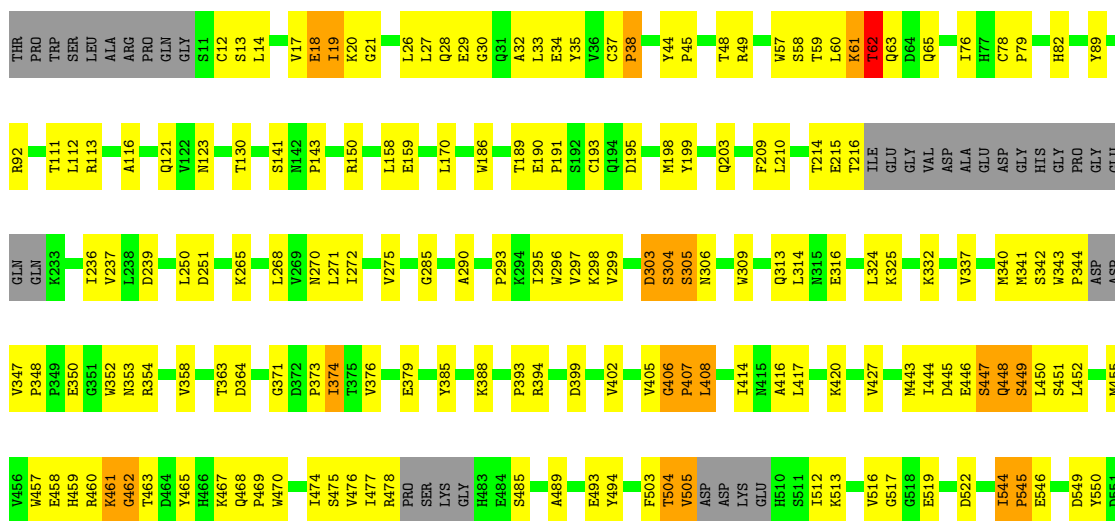
• Molecule 4: Complement factor B

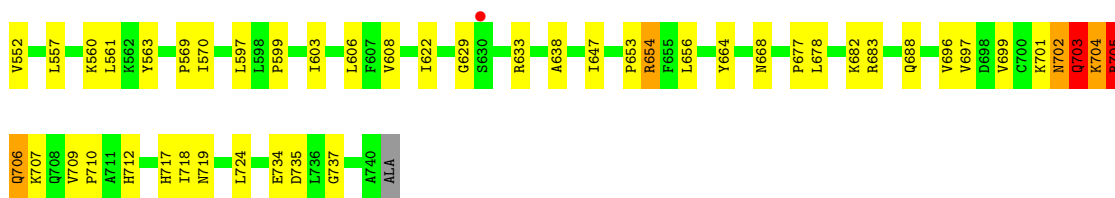
Chain D: 66% 25% 6%



• Molecule 4: Complement factor B

Chain I: 65% 26% 5%





- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E: 100%

MAG1
MAG2

- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J: 100%

MAG1
MAG2

4 Data and refinement statistics i

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	134.03Å 136.97Å 283.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.88 – 3.00 34.88 – 3.00	Depositor EDS
% Data completeness (in resolution range)	99.8 (34.88-3.00) 85.2 (34.88-3.00)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	0.09	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.47 (at 3.00Å)	Xtrriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.189 , 0.243 (Not available) , 0.249	Depositor DCC
R_{free} test set	2093 reflections (2.00%)	wwPDB-VP
Wilson B-factor (Å ²)	72.0	Xtrriage
Anisotropy	0.299	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.25 , 52.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	0.019 for k,h,-l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	30435	wwPDB-VP
Average B, all atoms (Å ²)	89.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.03% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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 i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: MG, 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).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	0.33	0/4902	0.76	5/6668 (0.1%)
1	F	0.34	0/4935	0.77	3/6715 (0.0%)
2	B	0.34	0/1894	0.79	2/2570 (0.1%)
2	G	0.36	0/1894	0.81	6/2570 (0.2%)
3	C	0.32	0/2950	0.76	4/3989 (0.1%)
3	H	0.32	0/3009	0.73	1/4071 (0.0%)
4	D	0.34	1/5636 (0.0%)	0.83	18/7629 (0.2%)
4	I	0.33	0/5691	0.77	5/7699 (0.1%)
All	All	0.33	1/30911 (0.0%)	0.78	44/41911 (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	F	1	0
3	C	0	1
All	All	1	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	739	LEU	CA-C	6.26	1.55	1.52

The worst 5 of 44 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	1553	LEU	N-CA-C	10.92	127.12	109.76
4	D	64	ASP	N-CA-C	-10.08	101.00	113.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	44	TYR	CA-C-N	-9.17	111.33	120.31
4	D	44	TYR	C-N-CA	-9.17	111.33	120.31
4	D	42	TYR	CA-C-N	8.07	128.09	119.78

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	F	13	THR	CA

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	C	1551	LEU	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	4794	0	4801	96	0
1	F	4826	0	4826	121	0
2	B	1856	0	1900	46	0
2	G	1856	0	1900	41	0
3	C	2900	0	2851	108	0
3	H	2957	0	2900	70	0
4	D	5513	0	5376	161	0
4	I	5567	0	5446	172	0
5	E	28	0	25	0	0
5	J	28	0	25	0	0
6	A	14	0	13	2	0
6	C	14	0	13	0	0
6	D	28	0	26	0	0
6	F	14	0	13	0	0
6	H	14	0	13	0	0
6	I	14	0	13	0	0
7	A	1	0	0	0	0
7	D	1	0	0	0	0
7	F	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	I	1	0	0	0	0
8	A	2	0	0	0	0
8	C	1	0	0	0	0
8	D	1	0	0	0	0
8	F	2	0	0	0	0
8	H	1	0	0	0	0
8	I	1	0	0	0	0
All	All	30435	0	30141	770	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 13.

The worst 5 of 770 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)
3:H:1469:ARG:HG2	3:H:1469:ARG:HH11	1.10	1.12
4:D:714:ARG:HG2	4:D:714:ARG:HH11	1.17	1.07
4:I:705:ARG:HB3	4:I:707:LYS:HG2	1.37	1.04
4:D:699:VAL:HG23	4:D:707:LYS:HD2	1.42	1.01
1:F:13:THR:HG23	1:F:14:ASP:CB	1.89	1.01

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	A	607/627 (97%)	577 (95%)	26 (4%)	4 (1%)	18 53
1	F	613/627 (98%)	571 (93%)	36 (6%)	6 (1%)	12 45
2	B	231/252 (92%)	218 (94%)	13 (6%)	0	100 100
2	G	231/252 (92%)	218 (94%)	12 (5%)	1 (0%)	30 65

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	353/379 (93%)	318 (90%)	29 (8%)	6 (2%)	7	32
3	H	362/379 (96%)	333 (92%)	24 (7%)	5 (1%)	9	36
4	D	687/741 (93%)	608 (88%)	63 (9%)	16 (2%)	5	25
4	I	694/741 (94%)	605 (87%)	65 (9%)	24 (4%)	3	16
All	All	3778/3998 (94%)	3448 (91%)	268 (7%)	62 (2%)	7	34

5 of 62 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	247	ILE
4	D	44	TYR
4	D	46	VAL
4	D	344	PRO
4	D	505	VAL

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	535/548 (98%)	524 (98%)	11 (2%)	47	75
1	F	539/548 (98%)	520 (96%)	19 (4%)	32	65
2	B	210/227 (92%)	197 (94%)	13 (6%)	16	49
2	G	210/227 (92%)	201 (96%)	9 (4%)	26	60
3	C	329/345 (95%)	310 (94%)	19 (6%)	18	51
3	H	335/345 (97%)	323 (96%)	12 (4%)	31	65
4	D	610/643 (95%)	587 (96%)	23 (4%)	29	63
4	I	615/643 (96%)	596 (97%)	19 (3%)	35	68
All	All	3383/3526 (96%)	3258 (96%)	125 (4%)	30	64

5 of 125 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	D	541	GLU
4	I	130	THR
1	F	233	GLU
4	I	111	THR
4	I	468	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 23 such sidechains are listed below:

Mol	Chain	Res	Type
1	F	443	ASN
1	F	506	ASN
1	F	473	GLN
1	F	593	GLN
3	C	1528	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](#)

4 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			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	E	1	5,4	14,14,15	0.50	0	17,19,21	1.86	5 (29%)
5	NAG	E	2	5	14,14,15	0.49	0	17,19,21	1.06	1 (5%)
5	NAG	J	1	5,4	14,14,15	0.42	0	17,19,21	1.13	1 (5%)
5	NAG	J	2	5	14,14,15	0.48	0	17,19,21	1.11	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
5	NAG	E	1	5,4	-	4/6/23/26	0/1/1/1
5	NAG	E	2	5	-	3/6/23/26	0/1/1/1
5	NAG	J	1	5,4	-	4/6/23/26	0/1/1/1
5	NAG	J	2	5	-	5/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	1	NAG	C1-O5-C5	4.57	118.31	112.19
5	J	2	NAG	O5-C5-C6	3.22	113.92	107.66
5	J	1	NAG	C1-O5-C5	3.22	116.50	112.19
5	E	1	NAG	C2-N2-C7	2.98	126.90	122.90
5	E	1	NAG	C3-C4-C5	2.77	115.26	110.23

There are no chirality outliers.

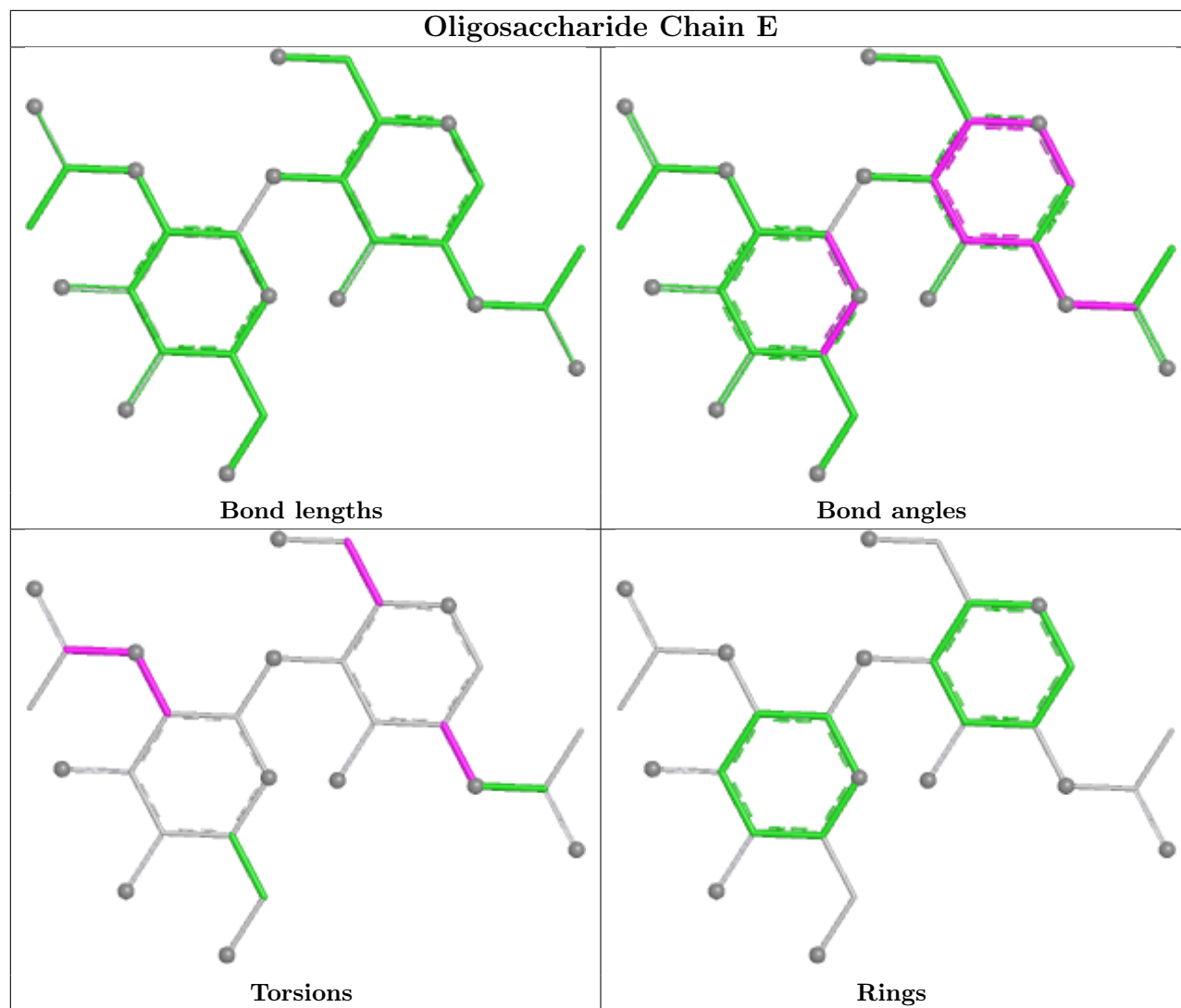
5 of 16 torsion outliers are listed below:

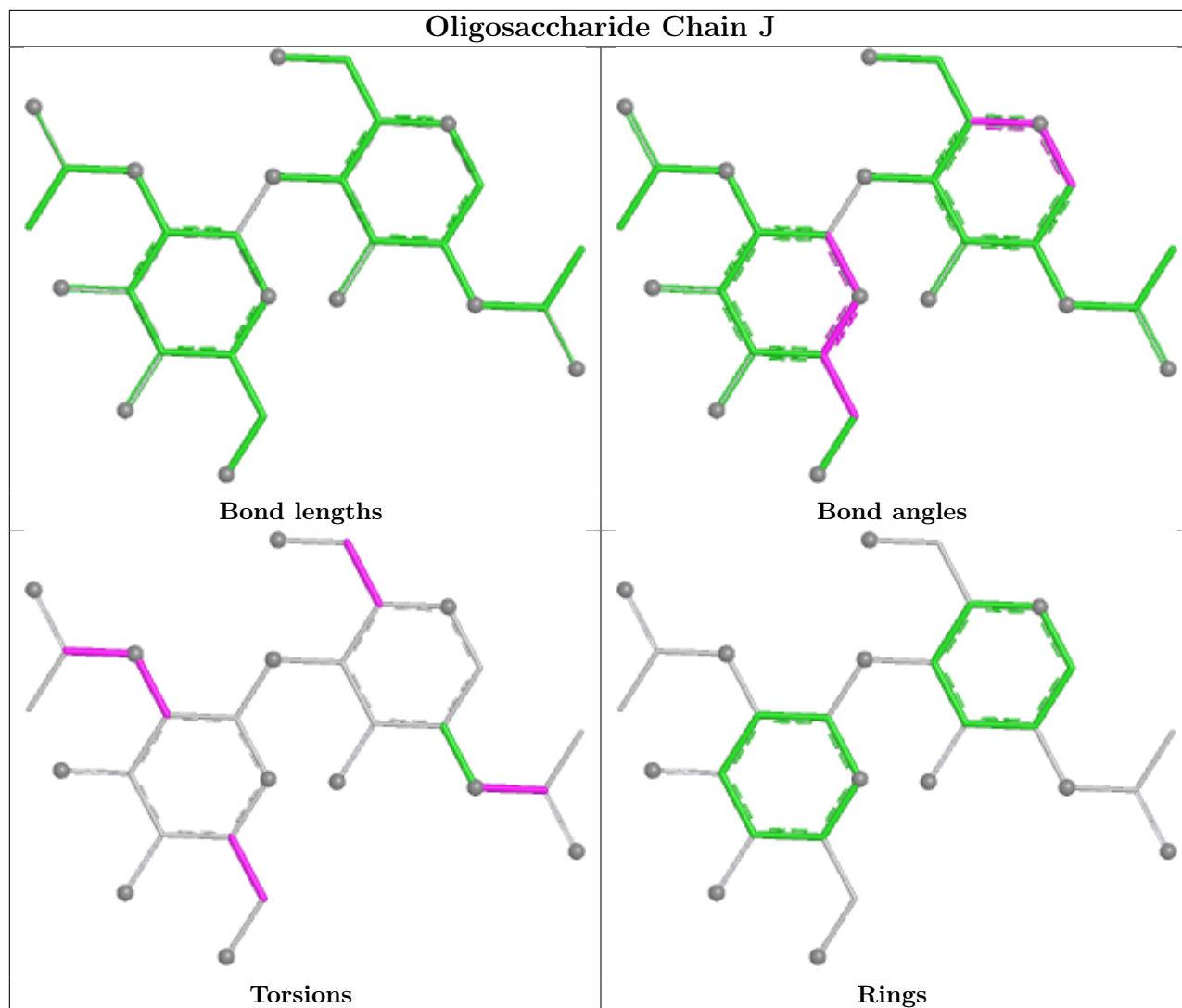
Mol	Chain	Res	Type	Atoms
5	E	1	NAG	C3-C2-N2-C7
5	E	2	NAG	C8-C7-N2-C2
5	E	2	NAG	O7-C7-N2-C2
5	J	1	NAG	C8-C7-N2-C2
5	J	1	NAG	O7-C7-N2-C2

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 11 ligands modelled in this entry, 4 are monoatomic - leaving 7 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
6	NAG	I	9117	4	14,14,15	0.44	0	17,19,21	1.10	1 (5%)
6	NAG	D	9117	4	14,14,15	0.36	0	17,19,21	2.45	4 (23%)
6	NAG	F	9187	1	14,14,15	0.44	0	17,19,21	1.37	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	NAG	D	9353	4	14,14,15	0.46	0	17,19,21	0.88	1 (5%)
6	NAG	A	9187	1	14,14,15	0.45	0	17,19,21	1.19	2 (11%)
6	NAG	C	9324	3	14,14,15	0.52	0	17,19,21	1.00	1 (5%)
6	NAG	H	9324	3	14,14,15	0.45	0	17,19,21	0.77	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
6	NAG	I	9117	4	-	4/6/23/26	0/1/1/1
6	NAG	D	9117	4	-	4/6/23/26	0/1/1/1
6	NAG	F	9187	1	-	3/6/23/26	0/1/1/1
6	NAG	D	9353	4	-	2/6/23/26	0/1/1/1
6	NAG	A	9187	1	-	3/6/23/26	0/1/1/1
6	NAG	C	9324	3	-	2/6/23/26	0/1/1/1
6	NAG	H	9324	3	-	3/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 11 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	D	9117	NAG	C1-O5-C5	8.61	123.73	112.19
6	F	9187	NAG	C1-O5-C5	3.84	117.33	112.19
6	A	9187	NAG	C1-O5-C5	3.43	116.79	112.19
6	I	9117	NAG	C1-O5-C5	3.42	116.76	112.19
6	C	9324	NAG	C1-O5-C5	3.24	116.52	112.19

There are no chirality outliers.

5 of 21 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	9187	NAG	C8-C7-N2-C2
6	A	9187	NAG	O7-C7-N2-C2
6	C	9324	NAG	C8-C7-N2-C2
6	C	9324	NAG	O7-C7-N2-C2
6	D	9117	NAG	C8-C7-N2-C2

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	9187	NAG	2	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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	613/627 (97%)	-0.69	0 100 100	31, 68, 125, 182	0
1	F	617/627 (98%)	-0.62	1 (0%) 91 83	37, 75, 132, 187	0
2	B	233/252 (92%)	-0.73	0 100 100	34, 63, 111, 123	0
2	G	233/252 (92%)	-0.69	0 100 100	33, 66, 115, 151	0
3	C	359/379 (94%)	-0.35	3 (0%) 82 64	40, 94, 210, 291	0
3	H	366/379 (96%)	-0.54	0 100 100	33, 81, 135, 216	0
4	D	699/741 (94%)	-0.36	1 (0%) 92 86	35, 88, 189, 233	0
4	I	704/741 (95%)	-0.41	1 (0%) 92 86	37, 91, 191, 244	0
All	All	3824/3998 (95%)	-0.52	6 (0%) 91 83	31, 79, 168, 291	0

The worst 5 of 6 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	1532	GLU	2.9
4	D	44	TYR	2.8
4	I	630	SER	2.4
3	C	1317	VAL	2.3
3	C	1552	ASN	2.2

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

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

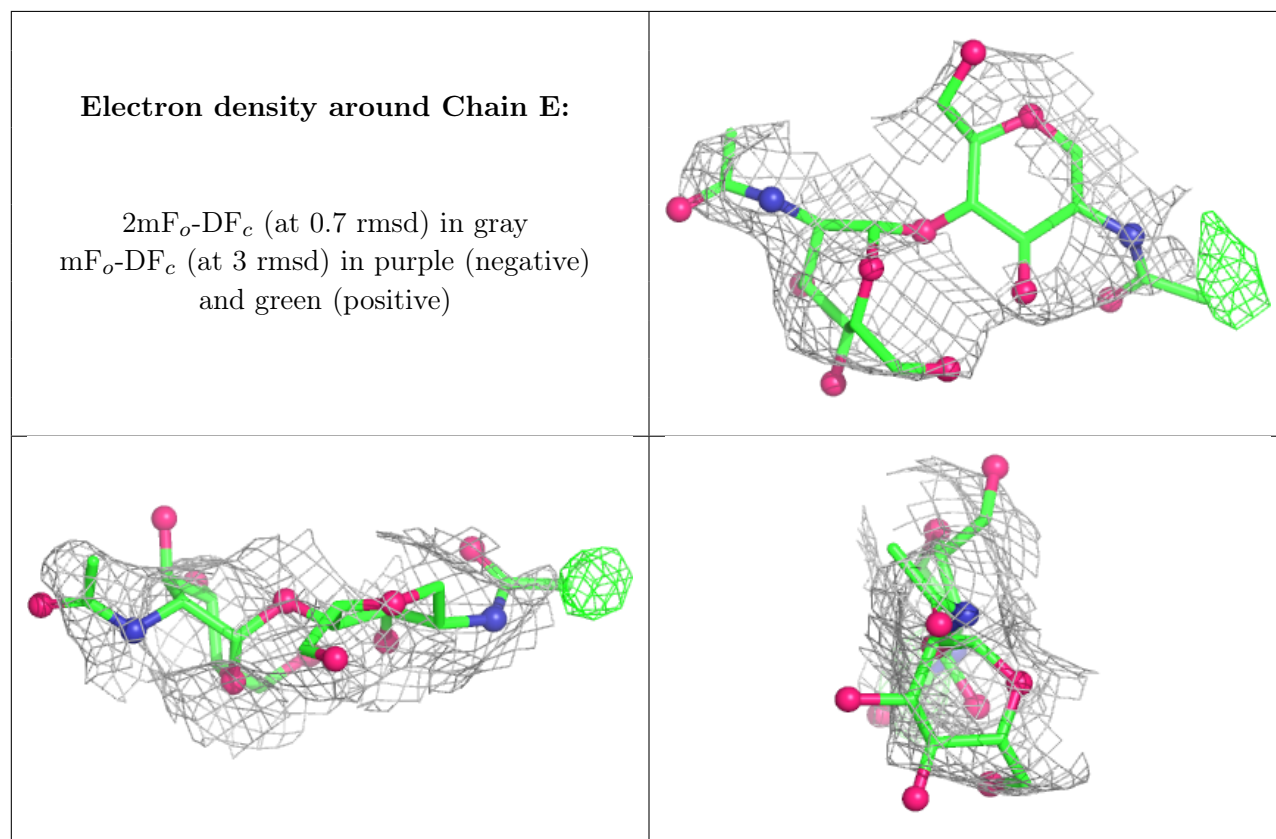
6.3 Carbohydrates [i](#)

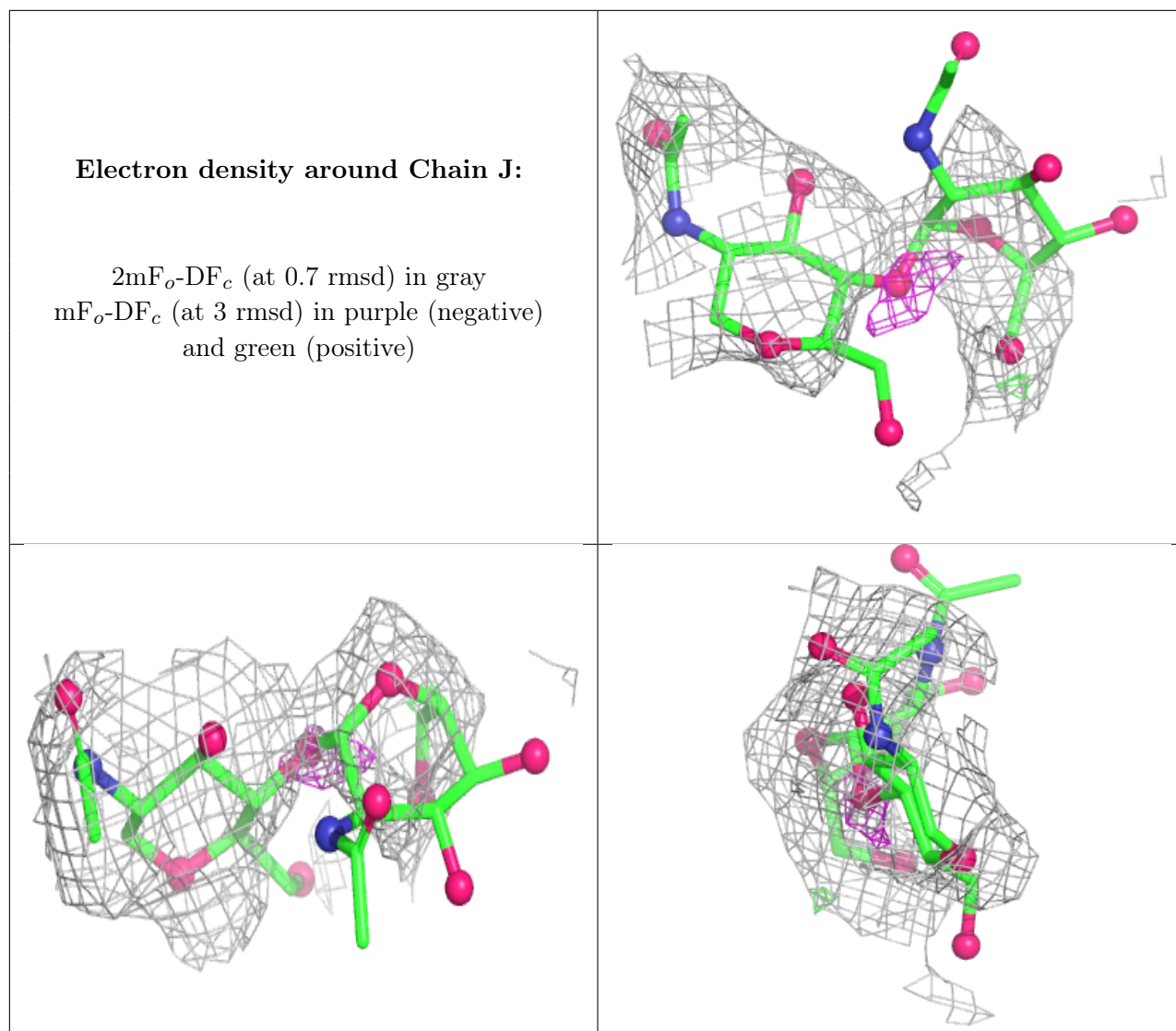
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum,

median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
5	NAG	E	1	14/15	-	-	136,146,153,163	0
5	NAG	E	2	14/15	-	-	161,168,182,183	0
5	NAG	J	2	14/15	0.50	0.12	173,184,194,201	0
5	NAG	J	1	14/15	0.71	0.10	126,139,157,173	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. 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, 95th 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(\AA^2)	Q<0.9
6	NAG	H	9324	14/15	0.24	0.16	129,140,144,146	0
6	NAG	C	9324	14/15	0.67	0.17	111,123,130,134	0
6	NAG	F	9187	14/15	0.69	0.14	106,116,125,127	0
6	NAG	D	9117	14/15	0.76	0.11	98,117,131,132	0
6	NAG	D	9353	14/15	0.78	0.08	122,136,142,146	0
6	NAG	A	9187	14/15	0.83	0.11	87,102,110,114	0
6	NAG	I	9117	14/15	0.83	0.10	116,129,142,143	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
7	MG	F	628	1/1	0.98	0.07	73,73,73,73	0
7	MG	D	742	1/1	0.99	0.04	107,107,107,107	0
7	MG	A	628	1/1	0.99	0.05	105,105,105,105	0
7	MG	I	742	1/1	0.99	0.03	97,97,97,97	0

6.5 Other polymers [i](#)

There are no such residues in this entry.