



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 17, 2026 – 05:06 PM EDT

PDB ID : 9YOJ / pdb_00009yoj
Title : Crystal structure of H7 hemagglutinin with HA2 N95L mutation from the influenza virus A/Shanghai/2/2013 (H7N9)
Authors : Zhu, X.; Wilson, I.A.
Deposited on : 2025-10-13
Resolution : 2.90 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

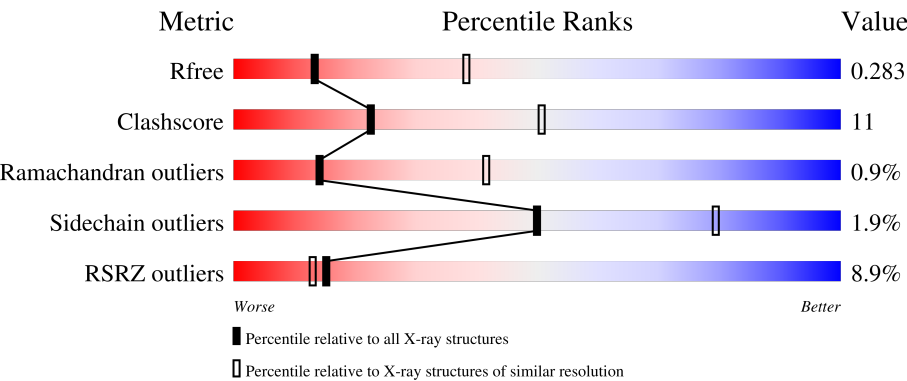
MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.015 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.50

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 2.90 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	2481 (2.90-2.90)
Clashscore	190562	2690 (2.90-2.90)
Ramachandran outliers	187476	2623 (2.90-2.90)
Sidechain outliers	187428	2625 (2.90-2.90)
RSRZ outliers	180081	2481 (2.90-2.90)

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	324	3% 80% 19% .
1	D	324	6% 71% 26% ..
1	F	324	% 83% 15% ..
1	G	324	10% 73% 25% .
1	I	324	23% 68% 30% ..

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Mol	Chain	Length	Quality of chain
1	K	324	
2	B	183	
2	C	183	
2	E	183	
2	H	183	
2	J	183	
2	L	183	
3	M	3	
3	N	3	
3	O	3	
3	P	3	
3	Q	3	
4	R	2	

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 23467 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 Hemagglutinin HA1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	321	Total	C	N	O	S	0	0	0
			2446	1520	441	470	15			
1	F	319	Total	C	N	O	S	0	0	0
			2431	1511	439	466	15			
1	D	319	Total	C	N	O	S	0	0	0
			2431	1511	439	466	15			
1	G	321	Total	C	N	O	S	0	0	0
			2446	1520	441	470	15			
1	I	318	Total	C	N	O	S	0	0	0
			2427	1509	438	465	15			
1	K	319	Total	C	N	O	S	0	0	0
			2431	1511	439	466	15			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	8	ASP	-	expression tag	UNP A0A8E4VRM3
A	9	PRO	-	expression tag	UNP A0A8E4VRM3
A	10	GLY	-	expression tag	UNP A0A8E4VRM3
A	261	ARG	LYS	conflict	UNP A0A8E4VRM3
F	8	ASP	-	expression tag	UNP A0A8E4VRM3
F	9	PRO	-	expression tag	UNP A0A8E4VRM3
F	10	GLY	-	expression tag	UNP A0A8E4VRM3
F	261	ARG	LYS	conflict	UNP A0A8E4VRM3
D	8	ASP	-	expression tag	UNP A0A8E4VRM3
D	9	PRO	-	expression tag	UNP A0A8E4VRM3
D	10	GLY	-	expression tag	UNP A0A8E4VRM3
D	261	ARG	LYS	conflict	UNP A0A8E4VRM3
G	8	ASP	-	expression tag	UNP A0A8E4VRM3
G	9	PRO	-	expression tag	UNP A0A8E4VRM3
G	10	GLY	-	expression tag	UNP A0A8E4VRM3
G	261	ARG	LYS	conflict	UNP A0A8E4VRM3
I	8	ASP	-	expression tag	UNP A0A8E4VRM3

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Chain	Residue	Modelled	Actual	Comment	Reference
I	9	PRO	-	expression tag	UNP A0A8E4VRM3
I	10	GLY	-	expression tag	UNP A0A8E4VRM3
I	261	ARG	LYS	conflict	UNP A0A8E4VRM3
K	8	ASP	-	expression tag	UNP A0A8E4VRM3
K	9	PRO	-	expression tag	UNP A0A8E4VRM3
K	10	GLY	-	expression tag	UNP A0A8E4VRM3
K	261	ARG	LYS	conflict	UNP A0A8E4VRM3

- Molecule 2 is a protein called Hemagglutinin HA2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	173	Total	C	N	O	S	0	0	0
			1403	867	244	285	7			
2	C	174	Total	C	N	O	S	0	0	0
			1409	870	245	287	7			
2	E	179	Total	C	N	O	S	0	0	0
			1446	894	253	292	7			
2	H	174	Total	C	N	O	S	0	0	0
			1409	870	245	287	7			
2	J	171	Total	C	N	O	S	0	0	0
			1389	857	242	283	7			
2	L	178	Total	C	N	O	S	0	0	0
			1437	889	251	290	7			

There are 48 discrepancies between the modelled and reference sequences:

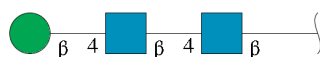
Chain	Residue	Modelled	Actual	Comment	Reference
B	95	LEU	ASN	engineered mutation	UNP A0A2S1Q2Q6
B	177	SER	-	expression tag	UNP A0A2S1Q2Q6
B	178	GLY	-	expression tag	UNP A0A2S1Q2Q6
B	179	ARG	-	expression tag	UNP A0A2S1Q2Q6
B	180	LEU	-	expression tag	UNP A0A2S1Q2Q6
B	181	VAL	-	expression tag	UNP A0A2S1Q2Q6
B	182	PRO	-	expression tag	UNP A0A2S1Q2Q6
B	183	ARG	-	expression tag	UNP A0A2S1Q2Q6
C	95	LEU	ASN	engineered mutation	UNP A0A2S1Q2Q6
C	177	SER	-	expression tag	UNP A0A2S1Q2Q6
C	178	GLY	-	expression tag	UNP A0A2S1Q2Q6
C	179	ARG	-	expression tag	UNP A0A2S1Q2Q6
C	180	LEU	-	expression tag	UNP A0A2S1Q2Q6
C	181	VAL	-	expression tag	UNP A0A2S1Q2Q6
C	182	PRO	-	expression tag	UNP A0A2S1Q2Q6

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Chain	Residue	Modelled	Actual	Comment	Reference
C	183	ARG	-	expression tag	UNP A0A2S1Q2Q6
E	95	LEU	ASN	engineered mutation	UNP A0A2S1Q2Q6
E	177	SER	-	expression tag	UNP A0A2S1Q2Q6
E	178	GLY	-	expression tag	UNP A0A2S1Q2Q6
E	179	ARG	-	expression tag	UNP A0A2S1Q2Q6
E	180	LEU	-	expression tag	UNP A0A2S1Q2Q6
E	181	VAL	-	expression tag	UNP A0A2S1Q2Q6
E	182	PRO	-	expression tag	UNP A0A2S1Q2Q6
E	183	ARG	-	expression tag	UNP A0A2S1Q2Q6
H	95	LEU	ASN	engineered mutation	UNP A0A2S1Q2Q6
H	177	SER	-	expression tag	UNP A0A2S1Q2Q6
H	178	GLY	-	expression tag	UNP A0A2S1Q2Q6
H	179	ARG	-	expression tag	UNP A0A2S1Q2Q6
H	180	LEU	-	expression tag	UNP A0A2S1Q2Q6
H	181	VAL	-	expression tag	UNP A0A2S1Q2Q6
H	182	PRO	-	expression tag	UNP A0A2S1Q2Q6
H	183	ARG	-	expression tag	UNP A0A2S1Q2Q6
J	95	LEU	ASN	engineered mutation	UNP A0A2S1Q2Q6
J	177	SER	-	expression tag	UNP A0A2S1Q2Q6
J	178	GLY	-	expression tag	UNP A0A2S1Q2Q6
J	179	ARG	-	expression tag	UNP A0A2S1Q2Q6
J	180	LEU	-	expression tag	UNP A0A2S1Q2Q6
J	181	VAL	-	expression tag	UNP A0A2S1Q2Q6
J	182	PRO	-	expression tag	UNP A0A2S1Q2Q6
J	183	ARG	-	expression tag	UNP A0A2S1Q2Q6
L	95	LEU	ASN	engineered mutation	UNP A0A2S1Q2Q6
L	177	SER	-	expression tag	UNP A0A2S1Q2Q6
L	178	GLY	-	expression tag	UNP A0A2S1Q2Q6
L	179	ARG	-	expression tag	UNP A0A2S1Q2Q6
L	180	LEU	-	expression tag	UNP A0A2S1Q2Q6
L	181	VAL	-	expression tag	UNP A0A2S1Q2Q6
L	182	PRO	-	expression tag	UNP A0A2S1Q2Q6
L	183	ARG	-	expression tag	UNP A0A2S1Q2Q6

- Molecule 3 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	M	3	Total	C	N	O	0	0	0
			39	22	2	15			
3	N	3	Total	C	N	O	0	0	0
			39	22	2	15			
3	O	3	Total	C	N	O	0	0	0
			39	22	2	15			
3	P	3	Total	C	N	O	0	0	0
			39	22	2	15			
3	Q	3	Total	C	N	O	0	0	0
			39	22	2	15			

- Molecule 4 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
4	R	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	1	Total	Mg	0	0
			1	1		
5	C	1	Total	Mg	0	0
			1	1		
5	E	1	Total	Mg	0	0
			1	1		
5	H	2	Total	Mg	0	0
			2	2		
5	J	1	Total	Mg	0	0
			1	1		

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	F	1	Total	C	N	O	0	0
			14	8	1	5		
6	G	1	Total	C	N	O	0	0
			14	8	1	5		
6	I	1	Total	C	N	O	0	0
			14	8	1	5		
6	K	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	3	Total	O	0	0
			3	3		
7	B	9	Total	O	0	0
			9	9		
7	F	8	Total	O	0	0
			8	8		
7	C	17	Total	O	0	0
			17	17		
7	D	4	Total	O	0	0
			4	4		
7	E	3	Total	O	0	0
			3	3		
7	G	1	Total	O	0	0
			1	1		
7	H	8	Total	O	0	0
			8	8		

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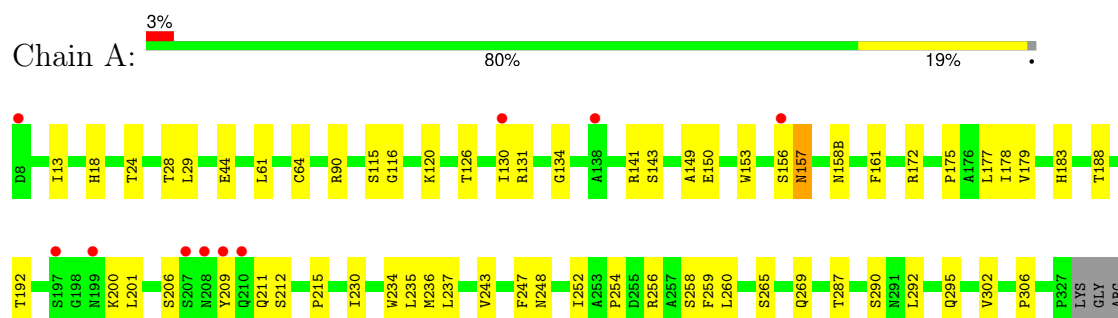
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	I	4	Total 4	O 4	0	0
7	J	12	Total 12	O 12	0	0
7	L	8	Total 8	O 8	0	0

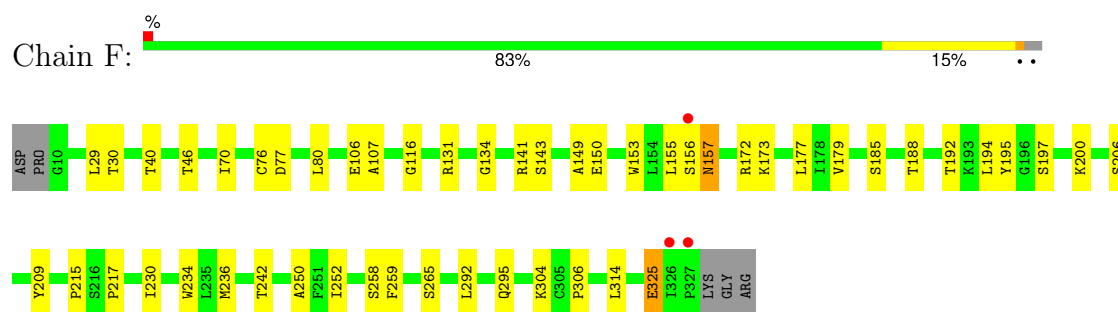
3 Residue-property plots [i](#)

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.

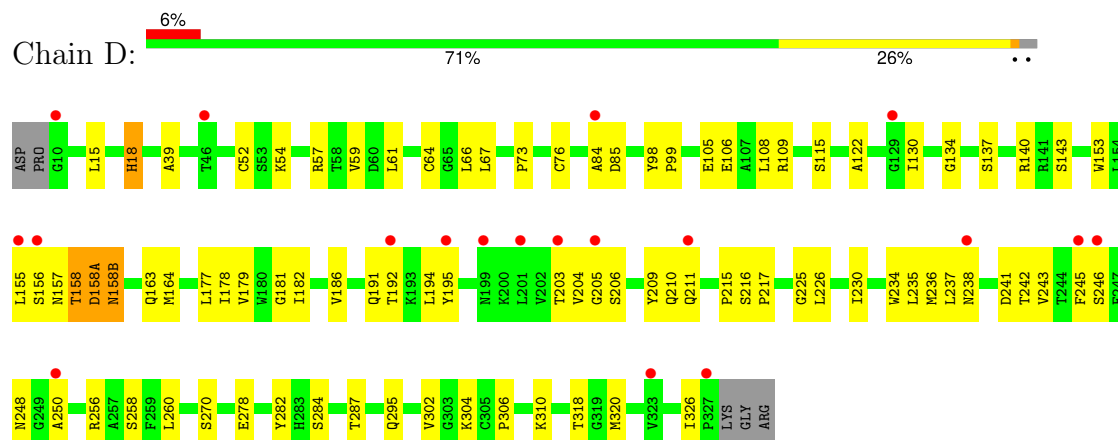
• Molecule 1: Hemagglutinin HA1



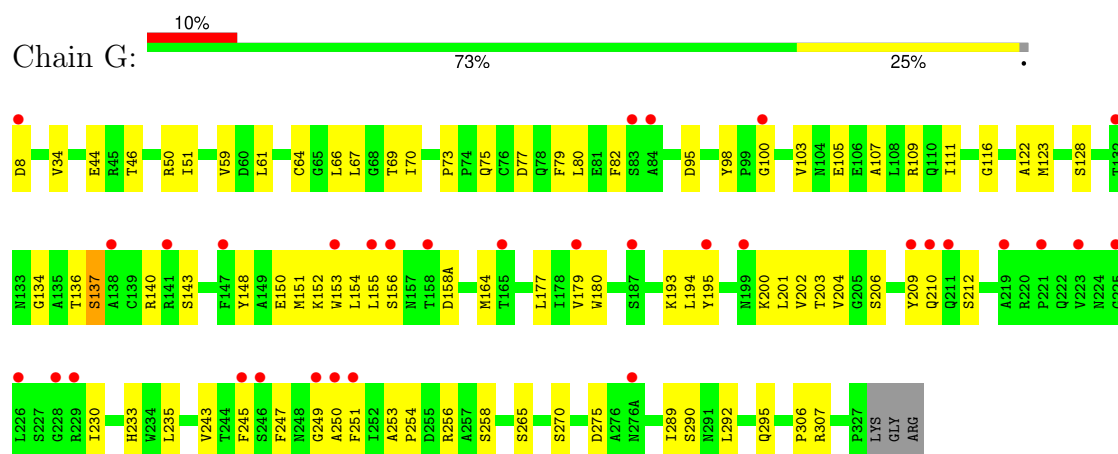
• Molecule 1: Hemagglutinin HA1



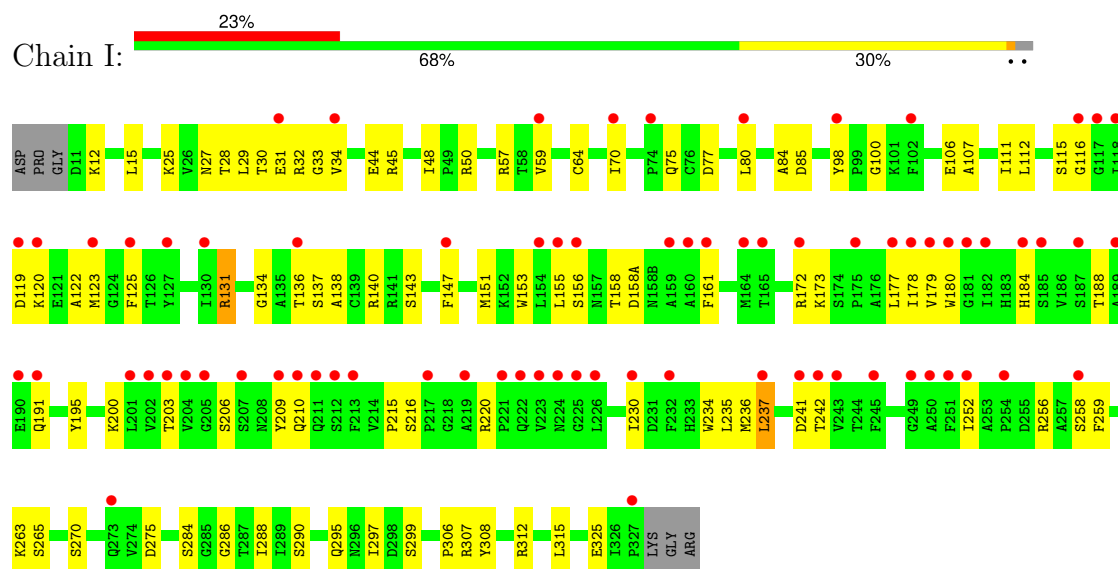
• Molecule 1: Hemagglutinin HA1



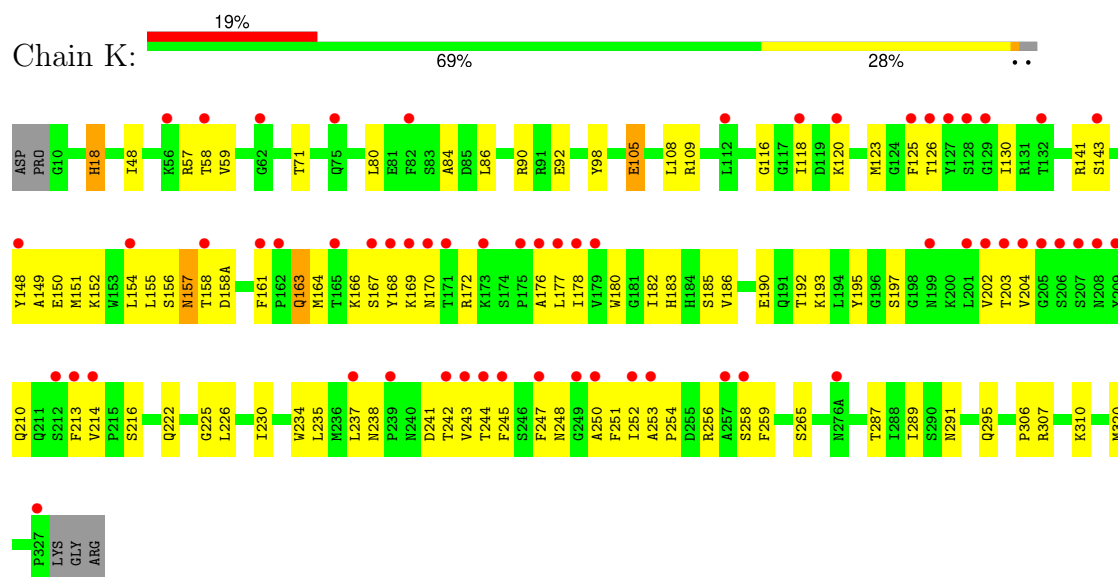
• Molecule 1: Hemagglutinin HA1



• Molecule 1: Hemagglutinin HA1

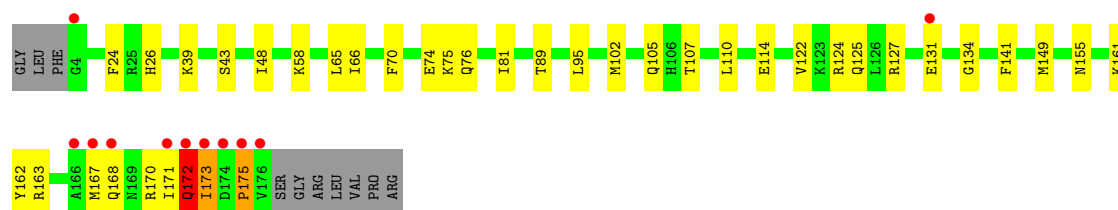


• Molecule 1: Hemagglutinin HA1



- Molecule 2: Hemagglutinin HA2

Chain B:  6% 73% 20% .. 5%



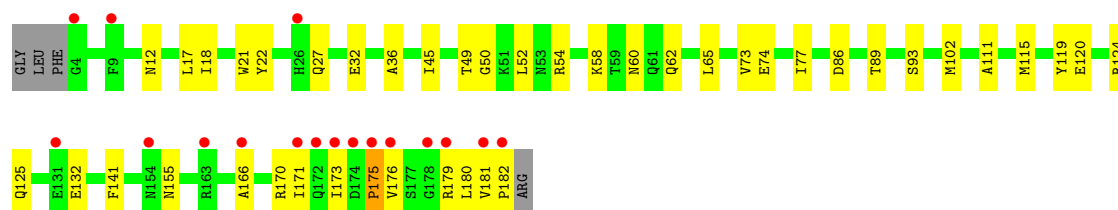
- Molecule 2: Hemagglutinin HA2

Chain C:  5% 81% 11% .. 5%



- Molecule 2: Hemagglutinin HA2

Chain E:  9% 74% 23% ..



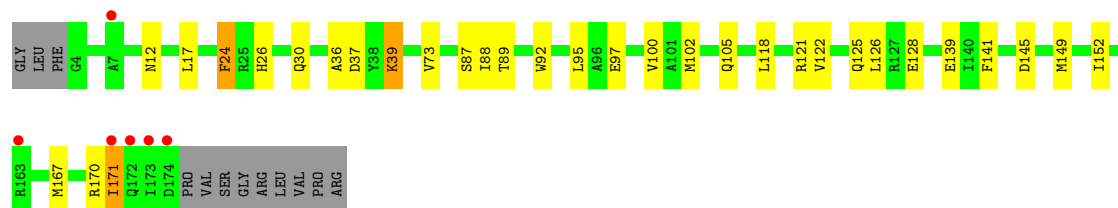
- Molecule 2: Hemagglutinin HA2

Chain H:  5% 80% 13% .. 5%

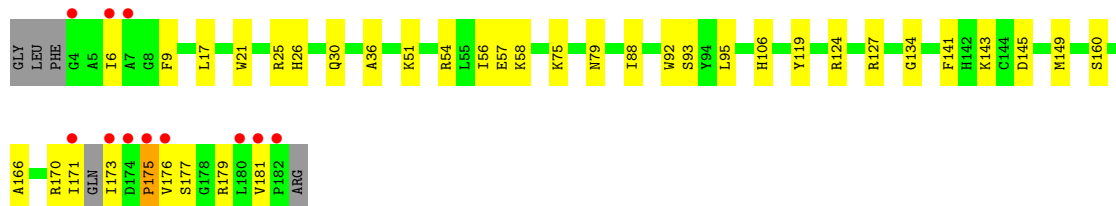
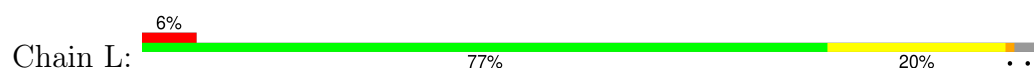


- Molecule 2: Hemagglutinin HA2

Chain J:  3% 76% 16% • 7%



- Molecule 2: Hemagglutinin HA2



- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	69.52Å 115.53Å 258.98Å 90.00° 95.78° 90.00°	Depositor
Resolution (Å)	49.70 – 2.90 49.70 – 2.90	Depositor EDS
% Data completeness (in resolution range)	92.6 (49.70-2.90) 95.4 (49.70-2.90)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.17	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.63 (at 2.91Å)	Xtriage
Refinement program	PHENIX (1.21.2_5419: ???)	Depositor
R, R_{free}	0.242 , 0.281 0.245 , 0.283	Depositor DCC
R_{free} test set	4248 reflections (4.69%)	wwPDB-VP
Wilson B-factor (Å ²)	49.9	Xtriage
Anisotropy	0.891	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 61.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	0.034 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	23467	wwPDB-VP
Average B, all atoms (Å ²)	71.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.81% 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, BMA

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	0.21	0/2494	0.49	0/3373
1	D	0.29	0/2478	0.58	0/3350
1	F	0.22	0/2478	0.50	0/3350
1	G	0.30	0/2494	0.58	0/3373
1	I	0.29	0/2474	0.59	0/3345
1	K	0.28	0/2478	0.60	0/3350
2	B	0.28	0/1427	0.52	0/1925
2	C	0.25	0/1433	0.50	0/1933
2	E	0.27	0/1471	0.54	0/1985
2	H	0.24	0/1433	0.54	0/1933
2	J	0.28	0/1412	0.52	0/1903
2	L	0.30	0/1461	0.61	0/1970
All	All	0.27	0/23533	0.55	0/31790

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2446	0	2402	39	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	2431	0	2391	70	0
1	F	2431	0	2390	32	0
1	G	2446	0	2401	58	0
1	I	2427	0	2387	78	0
1	K	2431	0	2390	81	0
2	B	1403	0	1309	43	0
2	C	1409	0	1315	22	0
2	E	1446	0	1358	39	0
2	H	1409	0	1315	37	0
2	J	1389	0	1294	23	0
2	L	1437	0	1349	34	0
3	M	39	0	34	1	0
3	N	39	0	34	2	0
3	O	39	0	34	1	0
3	P	39	0	34	0	0
3	Q	39	0	34	0	0
4	R	28	0	25	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	E	1	0	0	0	0
5	H	2	0	0	0	0
5	J	1	0	0	0	0
6	F	14	0	13	0	0
6	G	14	0	13	0	0
6	I	14	0	13	0	0
6	K	14	0	13	0	0
7	A	3	0	0	0	0
7	B	9	0	0	0	0
7	C	17	0	0	0	0
7	D	4	0	0	0	0
7	E	3	0	0	0	0
7	F	8	0	0	0	0
7	G	1	0	0	0	0
7	H	8	0	0	0	0
7	I	4	0	0	0	0
7	J	12	0	0	0	0
7	L	8	0	0	0	0
All	All	23467	0	22548	484	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 11.

All (484) 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)
2:H:170:ARG:HG3	2:H:170:ARG:HH11	0.98	1.06
2:H:170:ARG:HG2	2:H:171:ILE:H	1.22	1.04
1:K:152:LYS:HB2	1:K:253:ALA:HB3	1.44	0.98
1:K:130:ILE:HD13	1:K:164:MET:HE1	1.48	0.95
1:I:177:LEU:HB3	1:I:258:SER:HB2	1.47	0.95
2:B:26:HIS:HB2	2:B:149:MET:HE3	1.49	0.94
2:H:170:ARG:HG3	2:H:170:ARG:NH1	1.69	0.93
1:G:111:ILE:HG12	2:L:75:LYS:HE3	1.55	0.89
2:H:170:ARG:HG2	2:H:171:ILE:N	1.87	0.88
1:K:222:GLN:HE21	1:K:225:GLY:HA2	1.37	0.88
2:E:170:ARG:HG2	2:E:171:ILE:H	1.40	0.86
1:I:70:ILE:HD11	1:I:112:LEU:HD11	1.56	0.86
2:H:170:ARG:HH11	2:H:170:ARG:CG	1.86	0.86
1:K:141:ARG:HH22	1:K:149:ALA:HB2	1.38	0.85
1:D:237:LEU:HD12	1:D:243:VAL:HG23	1.59	0.85
1:G:177:LEU:HB3	1:G:258:SER:HB2	1.59	0.84
1:I:216:SER:HB3	1:K:203:THR:HG21	1.58	0.84
1:I:206:SER:HB3	1:I:209:TYR:HB3	1.61	0.83
1:I:136:THR:HG22	1:I:138:ALA:H	1.44	0.79
1:K:59:VAL:HG13	1:K:84:ALA:HB2	1.64	0.78
2:B:163:ARG:HD2	2:E:181:VAL:HG23	1.67	0.76
1:F:141:ARG:HH12	1:F:149:ALA:HB2	1.50	0.76
1:G:64:CYS:HA	1:G:75:GLN:HG3	1.69	0.75
2:H:168:GLN:HA	2:H:172:GLN:HG2	1.68	0.75
2:E:175:PRO:HD2	2:E:180:LEU:HD12	1.71	0.73
1:I:98:TYR:HD2	1:I:136:THR:HG21	1.52	0.73
1:D:295:GLN:HG2	1:D:306:PRO:HG2	1.70	0.72
2:B:125:GLN:HE22	2:B:155:ASN:HA	1.54	0.72
1:K:18:HIS:CD2	2:L:21:TRP:HA	2.24	0.72
2:B:167:MET:HG2	2:B:172:GLN:HG3	1.71	0.71
1:K:80:LEU:HD12	1:K:120:LYS:HE3	1.71	0.71
1:G:155:LEU:HD22	1:G:194:LEU:HB3	1.73	0.71
1:A:183:HIS:HB2	1:A:252:ILE:HD11	1.71	0.70
1:D:57:ARG:HB3	1:D:85:ASP:H	1.54	0.70
2:E:125:GLN:NE2	2:E:155:ASN:HA	2.06	0.70
1:I:120:LYS:HD3	1:I:258:SER:HA	1.71	0.70
1:K:80:LEU:O	1:K:120:LYS:HE2	1.91	0.70
1:G:123:MET:HE1	1:G:254:PRO:HG2	1.74	0.70
1:I:32:ARG:HH21	2:L:54:ARG:HB2	1.58	0.69
1:K:176:ALA:HB3	1:K:237:LEU:HB3	1.74	0.69
1:D:52:CYS:H	1:D:287:THR:HG21	1.58	0.68
1:A:212:SER:HB2	1:D:216:SER:HB3	1.75	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:177:LEU:CB	1:I:258:SER:HB2	2.24	0.68
1:A:13:ILE:HD12	2:B:26:HIS:HB3	1.75	0.67
1:K:177:LEU:HB3	1:K:258:SER:HB2	1.75	0.67
1:A:141:ARG:HH12	1:A:149:ALA:HB2	1.58	0.67
1:I:295:GLN:HG2	1:I:306:PRO:HG2	1.75	0.67
1:D:215:PRO:HG3	1:D:250:ALA:CB	2.24	0.67
1:K:123:MET:HE1	1:K:254:PRO:HB2	1.77	0.67
1:D:18:HIS:CD2	2:E:21:TRP:HA	2.30	0.67
1:I:98:TYR:CD2	1:I:136:THR:HG21	2.30	0.67
2:L:17:LEU:HD11	2:L:36:ALA:HB2	1.76	0.67
1:I:180:TRP:HH2	1:I:209:TYR:HH	1.42	0.66
1:K:166:LYS:HB2	1:K:245:PHE:HB2	1.76	0.66
2:B:125:GLN:NE2	2:B:155:ASN:HA	2.08	0.66
2:H:172:GLN:HG3	2:L:179:ARG:CZ	2.25	0.66
1:G:152:LYS:HB2	1:G:253:ALA:HB3	1.75	0.66
2:J:121:ARG:HE	2:J:125:GLN:HE22	1.43	0.66
1:G:206:SER:HB3	1:G:209:TYR:HB3	1.79	0.65
1:D:203:THR:HG23	1:D:246:SER:OG	1.97	0.65
1:I:59:VAL:HG23	1:I:84:ALA:HB2	1.77	0.65
1:D:54:LYS:HB3	1:D:278:GLU:HB3	1.79	0.65
1:I:25:LYS:HD3	1:I:33:GLY:C	2.21	0.65
1:D:302:VAL:HG11	2:E:65:LEU:HD22	1.77	0.64
1:I:325:GLU:HA	2:J:12:ASN:OD1	1.97	0.64
1:K:222:GLN:NE2	1:K:225:GLY:HA2	2.10	0.64
2:L:6:ILE:HD12	2:L:25:ARG:HG2	1.80	0.64
2:C:144:CYS:SG	2:C:149:MET:HE3	2.38	0.64
2:C:170:ARG:HG2	2:C:171:ILE:H	1.63	0.64
1:A:172:ARG:HD3	1:A:259:PHE:CZ	2.34	0.63
1:D:98:TYR:HD1	1:D:99:PRO:HD2	1.64	0.63
1:I:106:GLU:HG3	2:J:73:VAL:HG12	1.80	0.63
2:H:106:HIS:CE1	2:H:110:LEU:HD23	2.34	0.63
1:I:137:SER:O	1:I:140:ARG:HG3	1.99	0.63
1:D:320:MET:HE1	2:E:22:TYR:CE1	2.34	0.63
2:E:173:ILE:HG23	2:E:175:PRO:HD3	1.81	0.63
1:D:237:LEU:CD2	1:D:241:ASP:HB3	2.27	0.63
1:D:206:SER:HB3	1:D:209:TYR:HB3	1.81	0.62
1:G:77:ASP:O	1:G:80:LEU:HD12	2.00	0.62
2:L:170:ARG:HG2	2:L:171:ILE:H	1.62	0.62
1:K:163:GLN:HE21	1:K:248:ASN:HB3	1.65	0.62
1:I:134:GLY:HA3	1:I:153:TRP:HB3	1.82	0.61
1:K:183:HIS:HE1	1:K:185:SER:HA	1.65	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:172:ARG:HE	1:K:259:PHE:HE2	1.48	0.61
1:F:70:ILE:O	1:F:150:GLU:HG3	2.00	0.61
1:G:295:GLN:HG2	1:G:306:PRO:HG2	1.83	0.61
1:K:295:GLN:HG2	1:K:306:PRO:HG2	1.81	0.61
2:J:121:ARG:HE	2:J:125:GLN:NE2	1.99	0.61
2:L:26:HIS:HB2	2:L:149:MET:HE3	1.83	0.61
1:F:29:LEU:HD21	2:C:102:MET:HA	1.83	0.61
2:J:105:GLN:HE21	2:L:106:HIS:CE1	2.18	0.61
2:B:170:ARG:HG3	2:B:170:ARG:HH11	1.65	0.60
2:J:141:PHE:CE2	2:J:170:ARG:NH1	2.69	0.60
1:F:172:ARG:HD3	1:F:259:PHE:CZ	2.36	0.60
1:G:98:TYR:HD2	1:G:136:THR:HG21	1.65	0.60
2:E:173:ILE:HG21	2:E:182:PRO:HD2	1.83	0.60
2:H:167:MET:HE1	2:L:181:VAL:HA	1.83	0.60
1:G:289:ILE:HD12	1:G:289:ILE:O	2.01	0.60
2:E:125:GLN:HE22	2:E:155:ASN:HA	1.65	0.60
2:E:141:PHE:O	2:E:166:ALA:HA	2.01	0.60
1:K:230:ILE:HD13	1:K:252:ILE:HG13	1.84	0.60
1:I:178:ILE:HB	1:I:235:LEU:HG	1.84	0.59
1:K:71:THR:O	1:K:150:GLU:HB2	2.01	0.59
2:B:141:PHE:CD2	2:B:170:ARG:HD2	2.37	0.59
2:B:171:ILE:HG13	2:C:163:ARG:HH21	1.68	0.59
1:D:98:TYR:CD1	1:D:99:PRO:HD2	2.38	0.59
2:E:170:ARG:HG2	2:E:171:ILE:N	2.16	0.58
2:J:122:VAL:HA	2:J:125:GLN:NE2	2.18	0.58
1:D:237:LEU:CD1	1:D:243:VAL:HG23	2.30	0.58
2:H:141:PHE:CE2	2:H:170:ARG:CZ	2.86	0.58
1:K:291:ASN:HB3	2:L:56:ILE:HG23	1.84	0.58
1:G:137:SER:O	1:G:140:ARG:HG2	2.04	0.57
1:I:234:TRP:HZ3	1:I:236:MET:HG2	1.68	0.57
1:A:130:ILE:HD12	1:A:131:ARG:H	1.70	0.57
2:H:170:ARG:NH1	2:H:170:ARG:CG	2.52	0.57
1:I:25:LYS:HA	1:I:34:VAL:O	2.05	0.57
1:D:304:LYS:HE2	2:E:60:ASN:O	2.05	0.57
1:K:150:GLU:OE1	1:K:256:ARG:HB2	2.04	0.57
1:K:289:ILE:HD12	1:K:289:ILE:O	2.05	0.57
1:I:200:LYS:HB2	1:I:215:PRO:HG2	1.86	0.56
1:I:32:ARG:NH2	2:L:54:ARG:HB2	2.20	0.56
1:K:161:PHE:HE1	1:K:164:MET:HE3	1.71	0.56
2:H:173:ILE:N	2:L:179:ARG:HH12	2.02	0.56
2:J:30:GLN:HE22	2:J:145:ASP:HB2	1.71	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:209:TYR:HE1	1:A:211:GLN:HE22	1.53	0.56
2:H:171:ILE:HG23	2:J:167:MET:SD	2.46	0.56
1:D:130:ILE:HD13	1:D:164:MET:HE1	1.88	0.55
1:D:237:LEU:HD21	1:D:241:ASP:C	2.31	0.55
1:I:270:SER:HA	1:I:284:SER:HA	1.88	0.55
2:J:87:SER:HB3	2:L:88:ILE:HD13	1.88	0.55
2:H:167:MET:SD	2:L:171:ILE:HG23	2.46	0.55
1:D:39:ALA:HA	1:D:318:THR:HG22	1.87	0.55
2:B:163:ARG:HH11	2:E:171:ILE:HD11	1.72	0.55
1:D:237:LEU:HD23	1:D:241:ASP:HB3	1.86	0.55
1:I:237:LEU:HD22	1:I:241:ASP:HB3	1.88	0.55
1:K:116:GLY:HA2	1:K:265:SER:HB3	1.88	0.54
2:J:24:PHE:HE1	2:J:37:ASP:HB2	1.72	0.54
1:D:15:LEU:HD22	2:E:119:TYR:HA	1.90	0.54
1:I:161:PHE:HB2	1:I:195:TYR:O	2.06	0.54
1:I:180:TRP:HH2	1:I:209:TYR:OH	1.89	0.54
1:F:295:GLN:HG2	1:F:306:PRO:HG2	1.90	0.54
1:I:147:PHE:CE2	1:I:153:TRP:HB2	2.42	0.54
1:I:209:TYR:C	1:I:210:GLN:HG2	2.33	0.54
1:A:115:SER:HB2	1:A:260:LEU:HD12	1.90	0.54
2:H:124:ARG:HD2	2:L:134:GLY:HA2	1.90	0.54
1:D:59:VAL:HG13	1:D:84:ALA:HB2	1.89	0.54
1:K:151:MET:HE3	1:K:252:ILE:HG22	1.89	0.54
2:B:172:GLN:NE2	2:E:179:ARG:HB2	2.22	0.53
1:G:200:LYS:HZ1	1:G:249:GLY:HA3	1.73	0.53
1:A:116:GLY:HA2	1:A:265:SER:HB3	1.90	0.53
1:A:188:THR:O	1:A:192:THR:HG23	2.07	0.53
1:F:116:GLY:HA2	1:F:265:SER:HB3	1.90	0.53
1:I:77:ASP:HA	1:I:80:LEU:CD2	2.39	0.53
1:I:77:ASP:O	1:I:80:LEU:HD22	2.09	0.53
1:F:179:VAL:HG22	1:F:234:TRP:HB3	1.90	0.53
1:D:130:ILE:HA	1:D:157:ASN:HD21	1.74	0.53
1:D:205:GLY:O	1:D:243:VAL:HA	2.07	0.53
1:F:200:LYS:HB2	1:F:215:PRO:HG3	1.90	0.53
1:I:172:ARG:CG	1:I:173:LYS:H	2.22	0.53
1:I:230:ILE:HG23	1:I:252:ILE:HD13	1.91	0.52
1:F:177:LEU:HB3	1:F:258:SER:HB2	1.90	0.52
1:G:203:THR:HG22	1:G:212:SER:HB2	1.91	0.52
1:G:235:LEU:HD21	1:G:243:VAL:HG21	1.91	0.52
1:A:161:PHE:HD2	1:A:248:ASN:C	2.18	0.52
2:H:170:ARG:CG	2:H:171:ILE:N	2.58	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:304:LYS:HE3	2:E:62:GLN:HB2	1.91	0.52
2:J:17:LEU:HD11	2:J:36:ALA:HB2	1.92	0.52
1:K:48:ILE:HG13	1:K:48:ILE:O	2.08	0.52
2:J:26:HIS:HB2	2:J:149:MET:HE3	1.91	0.52
1:G:107:ALA:HB1	2:L:75:LYS:HB3	1.92	0.52
1:G:134:GLY:HA3	1:G:153:TRP:HB3	1.92	0.52
1:G:200:LYS:NZ	1:G:249:GLY:HA3	2.24	0.52
1:K:170:ASN:ND2	1:K:176:ALA:HB2	2.25	0.52
2:H:87:SER:HB3	2:J:88:ILE:HD13	1.92	0.52
1:A:178:ILE:HB	1:A:235:LEU:HG	1.92	0.51
1:D:306:PRO:CA	2:E:58:LYS:HD2	2.39	0.51
1:D:130:ILE:HA	1:D:157:ASN:ND2	2.26	0.51
1:G:73:PRO:HG3	1:G:148:TYR:HE1	1.74	0.51
1:G:195:TYR:CE2	1:G:250:ALA:HA	2.45	0.51
2:C:141:PHE:O	2:C:166:ALA:HA	2.10	0.51
1:I:64:CYS:HB2	1:I:75:GLN:O	2.11	0.51
2:L:173:ILE:HG23	2:L:175:PRO:HD3	1.93	0.51
1:D:177:LEU:HB3	1:D:258:SER:HB2	1.93	0.51
2:H:26:HIS:HB2	2:H:149:MET:HE3	1.93	0.51
1:G:50:ARG:HD2	1:G:275:ASP:HB2	1.93	0.51
2:H:125:GLN:NE2	2:H:155:ASN:HA	2.26	0.51
1:I:45:ARG:CZ	1:I:312:ARG:HH21	2.24	0.51
1:F:177:LEU:HD13	1:F:236:MET:HE2	1.93	0.51
2:E:173:ILE:CG2	2:E:182:PRO:HD2	2.41	0.51
1:K:225:GLY:C	1:K:226:LEU:HD12	2.36	0.51
1:D:209:TYR:CZ	1:D:235:LEU:HB3	2.46	0.50
1:I:25:LYS:HB3	1:I:34:VAL:N	2.25	0.50
1:K:90:ARG:HB3	1:K:92:GLU:OE2	2.11	0.50
2:B:95:LEU:HD21	2:C:95:LEU:HD21	1.93	0.50
2:B:107:THR:O	2:B:110:LEU:HD23	2.11	0.50
1:D:18:HIS:HE2	2:E:21:TRP:CD1	2.29	0.50
1:G:103:VAL:HG11	1:G:233:HIS:CE1	2.47	0.50
1:G:155:LEU:HD23	1:G:195:TYR:CE1	2.47	0.50
2:L:141:PHE:O	2:L:166:ALA:HA	2.12	0.50
1:F:156:SER:O	1:F:157:ASN:HB2	2.11	0.50
1:A:306:PRO:HD3	2:B:58:LYS:HD2	1.93	0.50
1:D:61:LEU:HD11	1:D:66:LEU:HD13	1.93	0.50
1:G:180:TRP:HH2	1:G:209:TYR:HH	1.57	0.50
1:I:12:LYS:HE2	2:J:139:GLU:HG2	1.93	0.50
1:A:156:SER:O	1:A:157:ASN:HB2	2.11	0.50
2:B:170:ARG:HG2	2:B:171:ILE:H	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:73:PRO:HG3	1:G:148:TYR:CE1	2.47	0.50
1:G:204:VAL:HG12	1:G:245:PHE:CD1	2.46	0.50
1:K:237:LEU:HD23	1:K:238:ASN:O	2.12	0.49
1:D:191:GLN:NE2	1:D:217:PRO:HG3	2.25	0.49
1:K:192:THR:HG22	1:K:197:SER:HA	1.93	0.49
1:I:28:THR:OG1	1:I:31:GLU:HB2	2.12	0.49
1:I:44:GLU:HG2	1:I:290:SER:OG	2.13	0.49
1:I:216:SER:O	1:I:220:ARG:NH2	2.45	0.49
2:C:154:ASN:O	2:C:154:ASN:ND2	2.42	0.49
2:B:75:LYS:HB3	1:F:107:ALA:HB1	1.94	0.49
2:B:170:ARG:HG3	2:B:170:ARG:NH1	2.26	0.49
2:E:49:THR:HA	2:E:52:LEU:HD12	1.95	0.49
1:I:29:LEU:HD21	2:J:102:MET:HA	1.94	0.49
1:I:107:ALA:O	1:I:111:ILE:HG13	2.12	0.49
1:F:172:ARG:HD3	1:F:259:PHE:CE2	2.48	0.49
1:G:61:LEU:HB3	1:G:64:CYS:O	2.12	0.49
1:I:119:ASP:O	1:I:259:PHE:HB2	2.12	0.49
1:G:122:ALA:HA	1:G:256:ARG:HG2	1.94	0.49
1:G:116:GLY:HA2	1:G:265:SER:HB3	1.95	0.49
2:H:167:MET:HB3	2:H:172:GLN:OE1	2.13	0.49
1:K:170:ASN:HD22	1:K:176:ALA:HB2	1.76	0.49
2:C:27:GLN:HB3	2:C:32:GLU:HG3	1.94	0.49
1:A:230:ILE:HG23	1:A:252:ILE:HD13	1.94	0.49
1:G:8:ASP:HB3	2:H:169:ASN:HB3	1.94	0.49
1:I:151:MET:HE1	1:I:180:TRP:HA	1.94	0.49
2:H:170:ARG:CG	2:H:171:ILE:H	1.97	0.48
2:C:170:ARG:HG2	2:C:171:ILE:N	2.29	0.48
1:D:194:LEU:HB2	1:D:195:TYR:CD2	2.48	0.48
1:D:209:TYR:CZ	1:D:211:GLN:NE2	2.79	0.48
1:D:282:TYR:CD1	1:D:287:THR:HG22	2.49	0.48
1:G:307:ARG:NH2	2:H:59:THR:HB	2.27	0.48
1:I:177:LEU:HB2	1:I:236:MET:HE1	1.96	0.48
1:G:67:LEU:HB2	1:G:95:ASP:CG	2.38	0.48
1:K:204:VAL:O	1:K:210:GLN:HA	2.13	0.48
2:H:171:ILE:O	2:H:171:ILE:HG22	2.14	0.48
1:A:150:GLU:OE1	1:A:256:ARG:HD3	2.13	0.48
1:D:310:LYS:HG3	2:E:93:SER:OG	2.13	0.48
1:G:79:PHE:HA	1:G:82:PHE:HB3	1.96	0.48
1:I:77:ASP:HA	1:I:80:LEU:HD21	1.94	0.48
1:K:170:ASN:CB	1:K:237:LEU:HD22	2.44	0.48
1:G:179:VAL:O	1:G:254:PRO:HB3	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:136:THR:HG22	1:I:138:ALA:N	2.21	0.48
1:K:156:SER:O	1:K:157:ASN:HB2	2.13	0.48
1:K:170:ASN:HB3	1:K:237:LEU:HD22	1.96	0.48
1:K:204:VAL:HG22	1:K:213:PHE:CE2	2.49	0.48
1:I:307:ARG:HG2	2:J:92:TRP:CD2	2.49	0.48
2:E:21:TRP:CE2	2:E:45:ILE:HD11	2.49	0.47
1:K:130:ILE:HD12	1:K:154:LEU:HB3	1.96	0.47
1:D:320:MET:HE2	2:E:111:ALA:HB1	1.97	0.47
1:I:131:ARG:HG3	1:I:155:LEU:HB2	1.96	0.47
1:A:115:SER:CB	1:A:260:LEU:HD12	2.44	0.47
1:I:25:LYS:HD3	1:I:33:GLY:O	2.13	0.47
1:K:182:ILE:HD11	1:K:202:VAL:HG11	1.96	0.47
1:D:52:CYS:H	1:D:287:THR:CG2	2.25	0.47
2:E:17:LEU:HD11	2:E:36:ALA:HB2	1.96	0.47
2:L:30:GLN:OE1	2:L:145:ASP:HB2	2.15	0.47
1:D:73:PRO:HD2	1:D:76:CYS:HB2	1.97	0.47
1:I:70:ILE:HD13	1:I:177:LEU:HD21	1.97	0.47
1:I:77:ASP:O	1:I:80:LEU:CD2	2.63	0.47
2:C:173:ILE:HG23	2:C:175:PRO:HD3	1.96	0.47
2:H:168:GLN:O	2:H:172:GLN:HB3	2.15	0.47
2:B:39:LYS:HE3	2:B:39:LYS:HB3	1.63	0.47
2:B:48:ILE:HD11	2:B:107:THR:HG23	1.97	0.47
1:I:27:ASN:ND2	1:I:32:ARG:HG3	2.30	0.47
1:I:57:ARG:HG3	1:I:85:ASP:H	1.77	0.47
1:K:92:GLU:CD	1:K:92:GLU:H	2.21	0.47
1:K:98:TYR:CD2	1:K:230:ILE:HG13	2.49	0.47
2:C:161:LYS:HD2	2:C:162:TYR:CE1	2.51	0.47
1:I:123:MET:HE2	1:I:125:PHE:CE2	2.51	0.47
1:D:134:GLY:HA3	1:D:153:TRP:HB3	1.96	0.46
2:B:66:ILE:HD12	2:B:81:ILE:HD13	1.97	0.46
2:B:168:GLN:HA	2:B:172:GLN:CB	2.45	0.46
1:G:66:LEU:O	1:G:69:THR:HG22	2.16	0.46
1:I:188:THR:O	1:I:191:GLN:HG3	2.16	0.46
2:C:171:ILE:O	2:C:172:GLN:HB2	2.16	0.46
1:G:251:PHE:HE2	1:G:253:ALA:HB2	1.80	0.46
1:I:57:ARG:HG3	1:I:84:ALA:HA	1.98	0.46
1:I:307:ARG:HG2	2:J:92:TRP:CE2	2.51	0.46
1:K:166:LYS:O	1:K:244:THR:HA	2.16	0.46
1:F:131:ARG:HG3	1:F:157:ASN:HA	1.97	0.46
1:G:51:ILE:HD11	1:G:270:SER:OG	2.16	0.46
1:I:25:LYS:HA	1:I:34:VAL:C	2.40	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:100:GLY:HA3	1:I:230:ILE:O	2.16	0.46
2:J:39:LYS:NZ	2:J:39:LYS:HB3	2.30	0.46
1:D:57:ARG:HB3	1:D:85:ASP:N	2.26	0.46
1:I:177:LEU:HB3	1:I:258:SER:CB	2.32	0.46
1:I:184:HIS:HB3	1:I:220:ARG:HH22	1.81	0.46
1:K:172:ARG:HH21	1:K:259:PHE:HD2	1.62	0.46
3:O:1:NAG:H61	3:O:2:NAG:N2	2.31	0.46
1:G:193:LYS:HD2	1:G:193:LYS:O	2.15	0.46
1:A:29:LEU:HD21	2:B:102:MET:HA	1.98	0.46
1:A:175:PRO:HB2	1:A:236:MET:HG3	1.98	0.46
2:B:141:PHE:CE2	2:B:170:ARG:NH1	2.84	0.45
1:F:192:THR:HG22	1:F:197:SER:HA	1.98	0.45
2:C:102:MET:HE2	2:E:102:MET:SD	2.56	0.45
1:A:201:LEU:O	1:A:247:PHE:HA	2.16	0.45
1:D:215:PRO:HG3	1:D:250:ALA:HB1	1.97	0.45
2:B:134:GLY:HA2	2:C:124:ARG:HD2	1.97	0.45
2:B:141:PHE:CZ	2:B:170:ARG:NH1	2.85	0.45
2:J:170:ARG:HG2	2:J:171:ILE:H	1.81	0.45
2:B:167:MET:SD	2:E:171:ILE:HG23	2.56	0.45
1:F:314:LEU:HD21	2:C:97:GLU:OE1	2.16	0.45
1:D:98:TYR:CD2	1:D:230:ILE:HG13	2.52	0.45
1:D:158(B):ASN:HA	1:D:192:THR:O	2.16	0.45
2:H:141:PHE:O	2:H:166:ALA:HA	2.17	0.45
1:A:120:LYS:HB2	1:A:256:ARG:HH21	1.81	0.45
1:G:202:VAL:HG22	1:G:247:PHE:HB2	1.97	0.45
1:K:190:GLU:OE1	1:K:193:LYS:HE3	2.15	0.45
2:L:75:LYS:NZ	2:L:79:ASN:HD21	2.14	0.45
2:E:120:GLU:HB3	2:E:124:ARG:HH12	1.82	0.45
1:G:150:GLU:O	1:G:151:MET:HE2	2.17	0.45
1:I:209:TYR:CZ	1:I:235:LEU:HB3	2.52	0.45
3:M:1:NAG:H61	3:M:2:NAG:N2	2.32	0.45
2:H:172:GLN:HG3	2:L:179:ARG:NH2	2.32	0.45
1:K:58:THR:HA	1:K:86:LEU:O	2.17	0.45
1:K:105:GLU:HG3	1:K:109:ARG:HH12	1.81	0.45
1:K:172:ARG:NH2	1:K:259:PHE:HD2	2.14	0.45
1:A:158(B):ASN:HA	1:A:192:THR:O	2.16	0.45
1:D:155:LEU:HB3	1:D:156:SER:H	1.65	0.45
1:G:44:GLU:OE1	1:G:292:LEU:HD22	2.17	0.45
1:F:230:ILE:HD13	1:F:252:ILE:HG13	1.99	0.45
1:A:237:LEU:HD22	1:A:243:VAL:HG23	1.98	0.44
1:F:29:LEU:HD22	2:E:54:ARG:NH2	2.31	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:299:SER:HA	1:I:308:TYR:CG	2.52	0.44
1:A:206:SER:HB3	1:A:209:TYR:HB3	1.99	0.44
2:B:155:ASN:C	2:B:155:ASN:HD22	2.25	0.44
2:H:24:PHE:HE1	2:H:37:ASP:HB2	1.82	0.44
2:H:141:PHE:CD2	2:H:170:ARG:HD2	2.53	0.44
2:B:161:LYS:HE2	2:B:162:TYR:CE1	2.52	0.44
1:F:325:GLU:HG3	2:C:13:GLY:O	2.17	0.44
1:G:251:PHE:CE2	1:G:253:ALA:HB2	2.53	0.44
1:G:70:ILE:HG22	1:G:179:VAL:HG11	1.99	0.44
2:H:16:GLY:O	2:H:18:ILE:HG23	2.18	0.44
2:B:124:ARG:HD3	2:E:132:GLU:OE1	2.16	0.44
2:B:167:MET:HE3	2:B:172:GLN:HE21	1.82	0.44
1:D:237:LEU:HD21	1:D:241:ASP:HB3	1.97	0.44
1:I:70:ILE:HG22	1:I:179:VAL:HG11	1.98	0.44
1:K:98:TYR:CE2	1:K:230:ILE:HG13	2.53	0.44
1:A:134:GLY:HA3	1:A:153:TRP:HB3	2.00	0.44
2:C:170:ARG:HG2	2:C:171:ILE:HD12	1.99	0.44
1:K:183:HIS:CE1	1:K:185:SER:HA	2.50	0.44
1:K:310:LYS:HG3	2:L:93:SER:OG	2.18	0.44
2:B:173:ILE:HG23	2:B:175:PRO:HD3	2.00	0.44
1:G:44:GLU:OE2	1:G:46:THR:HB	2.18	0.44
1:G:59:VAL:HG12	1:G:61:LEU:HD12	1.98	0.44
1:K:158:THR:HB	1:K:158(A):ASP:H	1.65	0.44
1:K:202:VAL:O	1:K:213:PHE:HD2	2.00	0.44
1:A:28:THR:HB	2:B:105:GLN:OE1	2.18	0.43
1:I:48:ILE:O	1:I:286:GLY:HA3	2.18	0.43
1:I:122:ALA:HA	1:I:256:ARG:HG2	1.99	0.43
1:K:118:ILE:O	1:K:118:ILE:HD12	2.18	0.43
1:A:161:PHE:CD2	1:A:248:ASN:C	2.96	0.43
1:A:179:VAL:HG22	1:A:234:TRP:HB3	2.00	0.43
1:D:163:GLN:CD	1:D:248:ASN:HB3	2.43	0.43
1:K:307:ARG:HH21	2:L:92:TRP:NE1	2.16	0.43
1:D:115:SER:CB	1:D:260:LEU:HD12	2.48	0.43
1:G:73:PRO:HB2	1:G:75:GLN:CD	2.43	0.43
1:I:158:THR:HB	1:I:158(A):ASP:H	1.65	0.43
2:L:124:ARG:O	2:L:127:ARG:HG2	2.19	0.43
1:K:202:VAL:HG22	1:K:247:PHE:HB2	2.00	0.43
2:L:9:PHE:HE2	2:L:119:TYR:CD2	2.36	0.43
1:F:134:GLY:HA3	1:F:153:TRP:HB3	2.00	0.43
1:G:105:GLU:HB2	1:G:109:ARG:NH1	2.33	0.43
1:K:71:THR:O	1:K:148:TYR:HB3	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:30:THR:O	2:E:50:GLY:HA3	2.17	0.43
1:F:40:THR:HB	3:N:1:NAG:H62	2.01	0.43
1:D:181:GLY:C	1:D:182:ILE:HD12	2.44	0.43
1:K:118:ILE:HA	1:K:259:PHE:O	2.18	0.43
1:K:168:TYR:O	1:K:242:THR:HG23	2.19	0.43
2:B:124:ARG:O	2:B:127:ARG:HG2	2.19	0.43
1:D:106:GLU:HG2	2:E:73:VAL:HG12	2.00	0.43
1:I:116:GLY:HA2	1:I:265:SER:HB3	2.01	0.43
1:K:167:SER:HA	1:K:243:VAL:O	2.19	0.43
2:B:167:MET:HE1	2:E:180:LEU:HA	1.99	0.43
1:F:131:ARG:HB2	1:F:155:LEU:HB2	2.01	0.43
1:G:103:VAL:HG22	1:G:233:HIS:HA	1.99	0.43
2:H:170:ARG:O	2:H:172:GLN:N	2.52	0.43
1:K:57:ARG:HG3	1:K:58:THR:H	1.84	0.43
1:D:105:GLU:HB2	1:D:109:ARG:NH1	2.34	0.43
1:I:112:LEU:HA	1:I:115:SER:OG	2.19	0.43
1:K:163:GLN:HA	1:K:248:ASN:HB3	2.00	0.43
1:K:190:GLU:OE1	1:K:190:GLU:HA	2.19	0.43
1:D:177:LEU:HD12	1:D:236:MET:HE1	2.00	0.43
2:E:115:MET:HE3	2:E:115:MET:HA	2.00	0.43
1:G:44:GLU:HG2	1:G:290:SER:OG	2.19	0.43
1:I:288:ILE:HD12	1:I:297:ILE:HD12	2.01	0.43
1:D:270:SER:HA	1:D:284:SER:HA	2.00	0.42
1:I:15:LEU:HD21	2:J:118:LEU:HG	2.01	0.42
1:D:108:LEU:HD11	1:D:177:LEU:HD11	2.01	0.42
1:D:243:VAL:HG11	1:D:245:PHE:CZ	2.54	0.42
1:A:44:GLU:HG2	1:A:290:SER:OG	2.20	0.42
1:D:158:THR:HB	1:D:158(A):ASP:H	1.69	0.42
2:E:86:ASP:O	2:E:89:THR:HG22	2.19	0.42
2:B:131:GLU:OE1	2:B:170:ARG:NH2	2.53	0.42
1:F:106:GLU:HG2	2:C:73:VAL:HG12	2.01	0.42
1:K:155:LEU:HD23	1:K:155:LEU:HA	1.82	0.42
1:K:306:PRO:HD3	2:L:58:LYS:HD2	2.02	0.42
1:K:320:MET:HE2	1:K:320:MET:HB3	1.77	0.42
1:A:200:LYS:HB2	1:A:215:PRO:HG3	2.02	0.42
1:A:292:LEU:O	1:A:306:PRO:HB3	2.19	0.42
2:C:173:ILE:HG23	2:C:175:PRO:HG3	2.01	0.42
1:D:178:ILE:HD13	1:D:237:LEU:HB2	2.02	0.42
1:K:310:LYS:HE3	1:K:310:LYS:HB2	1.81	0.42
1:A:302:VAL:HG11	2:B:65:LEU:HG	2.01	0.42
2:B:74:GLU:OE1	2:B:76:GLN:HB3	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:137:SER:O	1:D:140:ARG:HG2	2.19	0.42
1:G:201:LEU:HD21	1:K:216:SER:OG	2.19	0.42
2:B:105:GLN:HE21	2:C:106:HIS:CE1	2.36	0.42
1:D:204:VAL:HG22	1:D:211:GLN:O	2.20	0.42
1:I:216:SER:HB3	1:K:203:THR:CG2	2.41	0.42
1:A:295:GLN:HG2	1:A:306:PRO:HG2	2.01	0.42
1:G:158(A):ASP:CG	1:G:193:LYS:HD3	2.45	0.42
2:H:167:MET:HE2	2:L:171:ILE:HG12	2.02	0.42
1:K:252:ILE:HD12	1:K:252:ILE:HG23	1.76	0.42
1:G:105:GLU:HB2	1:G:109:ARG:HH12	1.85	0.42
2:B:43:SER:HB3	2:B:114:GLU:OE2	2.20	0.41
1:G:100:GLY:HA3	1:G:230:ILE:O	2.20	0.41
2:H:17:LEU:HD11	2:H:36:ALA:HB2	2.02	0.41
2:J:126:LEU:HD21	2:J:152:ILE:CD1	2.50	0.41
2:B:26:HIS:CB	2:B:149:MET:HE3	2.34	0.41
1:I:30:THR:HG22	2:L:51:LYS:HG3	2.01	0.41
1:I:50:ARG:NH1	1:I:275:ASP:OD2	2.53	0.41
1:I:200:LYS:HB2	1:I:215:PRO:CD	2.50	0.41
1:K:176:ALA:HA	1:K:259:PHE:CE1	2.55	0.41
1:A:179:VAL:O	1:A:254:PRO:HB3	2.20	0.41
1:F:77:ASP:HA	1:F:80:LEU:CD2	2.50	0.41
1:F:156:SER:HB3	1:F:194:LEU:O	2.20	0.41
1:D:122:ALA:HA	1:D:256:ARG:HG2	2.02	0.41
1:G:8:ASP:CB	2:H:169:ASN:HB3	2.50	0.41
2:L:143:LYS:HD2	2:L:143:LYS:HA	1.70	0.41
2:H:95:LEU:HD21	2:L:95:LEU:HD21	2.02	0.41
1:D:237:LEU:HD23	1:D:238:ASN:O	2.21	0.41
1:I:315:LEU:HD23	1:I:315:LEU:HA	1.93	0.41
1:K:251:PHE:CE1	1:K:253:ALA:HA	2.56	0.41
1:A:177:LEU:HB3	1:A:258:SER:HB2	2.03	0.41
2:B:170:ARG:HG2	2:B:171:ILE:N	2.36	0.41
2:E:27:GLN:HB3	2:E:32:GLU:HG2	2.01	0.41
1:G:154:LEU:O	1:G:195:TYR:HE1	2.03	0.41
1:K:108:LEU:HD23	1:K:234:TRP:CD2	2.55	0.41
1:K:195:TYR:CZ	1:K:250:ALA:HA	2.55	0.41
1:K:237:LEU:HD21	1:K:241:ASP:C	2.46	0.41
1:F:206:SER:HB3	1:F:209:TYR:HB3	2.03	0.41
1:D:204:VAL:O	1:D:210:GLN:HA	2.20	0.41
1:F:195:TYR:CE2	1:F:250:ALA:HA	2.56	0.41
1:D:226:LEU:HD23	1:D:226:LEU:HA	1.79	0.41
1:K:178:ILE:CG1	1:K:235:LEU:HB3	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:61:LEU:HB3	1:A:64:CYS:O	2.21	0.41
1:A:90:ARG:HD3	1:A:90:ARG:HA	1.84	0.41
1:F:292:LEU:O	1:F:306:PRO:HB3	2.21	0.41
1:D:179:VAL:HG22	1:D:234:TRP:HB3	2.02	0.41
1:D:215:PRO:HG3	1:D:250:ALA:HB2	2.00	0.41
2:E:74:GLU:HB3	2:E:77:ILE:HG22	2.02	0.41
1:G:156:SER:HB3	1:G:194:LEU:O	2.20	0.41
2:H:141:PHE:CE2	2:H:170:ARG:NE	2.89	0.41
1:K:180:TRP:CZ2	1:K:204:VAL:HG21	2.56	0.41
1:K:180:TRP:HZ2	1:K:213:PHE:CZ	2.39	0.41
2:L:54:ARG:O	2:L:57:GLU:HG2	2.21	0.41
1:G:128:SER:H	1:G:164:MET:HE1	1.86	0.41
1:K:90:ARG:HD3	1:K:90:ARG:HA	1.82	0.41
1:K:168:TYR:CD1	1:K:169:LYS:N	2.89	0.41
3:N:1:NAG:H61	3:N:2:NAG:N2	2.36	0.41
1:F:76:CYS:O	1:F:80:LEU:HD22	2.21	0.40
2:J:95:LEU:HD21	2:L:95:LEU:HD21	2.03	0.40
1:F:304:LYS:HE3	2:C:60:ASN:O	2.21	0.40
1:F:185:SER:O	1:F:217:PRO:HA	2.22	0.40
2:C:121:ARG:NE	2:C:125:GLN:HE22	2.19	0.40
1:D:98:TYR:CE1	1:D:226:LEU:HD13	2.56	0.40
1:D:326:ILE:HG22	2:E:12:ASN:OD1	2.22	0.40
1:G:107:ALA:O	1:G:111:ILE:HG13	2.22	0.40
1:A:130:ILE:HG13	1:A:131:ARG:O	2.21	0.40
1:A:269:GLN:HB3	2:B:70:PHE:CE2	2.57	0.40
2:E:170:ARG:CG	2:E:171:ILE:H	2.15	0.40
2:H:172:GLN:HG3	2:L:179:ARG:NE	2.36	0.40
2:B:24:PHE:HE2	2:B:122:VAL:HG21	1.87	0.40
1:D:61:LEU:HB3	1:D:64:CYS:O	2.22	0.40
1:D:225:GLY:O	1:D:226:LEU:HD23	2.21	0.40
1:I:77:ASP:C	1:I:80:LEU:HD22	2.46	0.40
1:K:125:PHE:CE2	1:K:254:PRO:HG2	2.57	0.40

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	319/324 (98%)	302 (95%)	15 (5%)	2 (1%)	21	51
1	D	317/324 (98%)	298 (94%)	18 (6%)	1 (0%)	36	65
1	F	317/324 (98%)	302 (95%)	13 (4%)	2 (1%)	21	51
1	G	319/324 (98%)	303 (95%)	15 (5%)	1 (0%)	36	65
1	I	316/324 (98%)	297 (94%)	17 (5%)	2 (1%)	21	51
1	K	317/324 (98%)	302 (95%)	13 (4%)	2 (1%)	21	51
2	B	171/183 (93%)	158 (92%)	11 (6%)	2 (1%)	10	34
2	C	172/183 (94%)	159 (92%)	10 (6%)	3 (2%)	7	26
2	E	177/183 (97%)	162 (92%)	13 (7%)	2 (1%)	11	36
2	H	172/183 (94%)	158 (92%)	10 (6%)	4 (2%)	5	19
2	J	169/183 (92%)	158 (94%)	10 (6%)	1 (1%)	21	51
2	L	174/183 (95%)	160 (92%)	11 (6%)	3 (2%)	7	26
All	All	2940/3042 (97%)	2759 (94%)	156 (5%)	25 (1%)	14	41

All (25) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	157	ASN
1	F	157	ASN
1	K	157	ASN
2	B	172	GLN
2	C	172	GLN
1	D	143	SER
2	H	171	ILE
1	I	156	SER
1	K	143	SER
1	A	143	SER
1	F	143	SER
2	H	172	GLN
2	C	175	PRO
2	E	175	PRO
1	G	143	SER
2	H	175	PRO
1	I	143	SER
2	B	175	PRO

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Mol	Chain	Res	Type
2	E	176	VAL
2	H	176	VAL
2	L	177	SER
2	L	175	PRO
2	C	173	ILE
2	L	176	VAL
2	J	171	ILE

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	269/271 (99%)	265 (98%)	4 (2%)	57	84
1	D	267/271 (98%)	260 (97%)	7 (3%)	40	73
1	F	267/271 (98%)	262 (98%)	5 (2%)	50	79
1	G	269/271 (99%)	266 (99%)	3 (1%)	65	88
1	I	267/271 (98%)	262 (98%)	5 (2%)	50	79
1	K	267/271 (98%)	260 (97%)	7 (3%)	40	73
2	B	149/157 (95%)	146 (98%)	3 (2%)	48	78
2	C	150/157 (96%)	148 (99%)	2 (1%)	61	86
2	E	154/157 (98%)	153 (99%)	1 (1%)	78	93
2	H	150/157 (96%)	147 (98%)	3 (2%)	48	78
2	J	147/157 (94%)	141 (96%)	6 (4%)	27	61
2	L	153/157 (98%)	152 (99%)	1 (1%)	76	92
All	All	2509/2568 (98%)	2462 (98%)	47 (2%)	50	79

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	HIS
1	A	24	THR
1	A	126	THR

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Mol	Chain	Res	Type
1	A	287	THR
2	B	89	THR
2	B	172	GLN
2	B	173	ILE
1	F	46	THR
1	F	173	LYS
1	F	188	THR
1	F	242	THR
1	F	325	GLU
2	C	171	ILE
2	C	173	ILE
1	D	18	HIS
1	D	67	LEU
1	D	158	THR
1	D	158(A)	ASP
1	D	158(B)	ASN
1	D	186	VAL
1	D	242	THR
2	E	18	ILE
1	G	34	VAL
1	G	137	SER
1	G	210	GLN
2	H	24	PHE
2	H	170	ARG
2	H	172	GLN
1	I	131	ARG
1	I	203	THR
1	I	237	LEU
1	I	242	THR
1	I	263	LYS
2	J	24	PHE
2	J	39	LYS
2	J	89	THR
2	J	97	GLU
2	J	100	VAL
2	J	128	GLU
1	K	18	HIS
1	K	105	GLU
1	K	126	THR
1	K	163	GLN
1	K	186	VAL
1	K	214	VAL

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Mol	Chain	Res	Type
1	K	287	THR
2	L	160	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (45) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	163	GLN
1	A	183	HIS
2	B	125	GLN
2	B	155	ASN
2	B	172	GLN
1	F	291	ASN
1	F	296	ASN
2	C	60	ASN
2	C	61	GLN
2	C	82	ASN
2	C	125	GLN
2	C	159	HIS
1	D	22	ASN
1	D	157	ASN
1	D	199	ASN
1	D	240	ASN
1	D	248	ASN
1	D	273	GLN
2	E	62	GLN
2	E	168	GLN
1	G	18	HIS
1	G	158(B)	ASN
1	G	163	GLN
1	G	210	GLN
1	G	238	ASN
2	H	47	GLN
2	H	125	GLN
2	H	168	GLN
2	H	172	GLN
1	I	18	HIS
1	I	47	ASN
1	I	291	ASN
2	J	27	GLN
2	J	47	GLN
2	J	60	ASN
2	J	105	GLN

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Mol	Chain	Res	Type
2	J	125	GLN
2	J	129	ASN
2	J	154	ASN
1	K	163	GLN
1	K	222	GLN
1	K	233	HIS
1	K	291	ASN
2	L	61	GLN
2	L	79	ASN

5.3.3 RNA ⓘ

There are no RNA molecules 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 ⓘ

17 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	$\# Z > 2$
3	NAG	M	1	3,1	14,14,15	0.79	0	17,19,21	1.07	1 (5%)
3	NAG	M	2	3	14,14,15	0.93	1 (7%)	17,19,21	1.10	1 (5%)
3	BMA	M	3	3	11,11,12	0.90	1 (9%)	15,15,17	2.55	5 (33%)
3	NAG	N	1	3,1	14,14,15	0.77	0	17,19,21	0.93	1 (5%)
3	NAG	N	2	3	14,14,15	0.73	0	17,19,21	0.97	0
3	BMA	N	3	3	11,11,12	0.93	0	15,15,17	2.45	6 (40%)
3	NAG	O	1	3,1	14,14,15	0.74	0	17,19,21	1.07	3 (17%)
3	NAG	O	2	3	14,14,15	0.68	0	17,19,21	0.93	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	BMA	O	3	3	11,11,12	0.93	0	15,15,17	2.48	5 (33%)
3	NAG	P	1	3,1	14,14,15	0.76	0	17,19,21	1.00	1 (5%)
3	NAG	P	2	3	14,14,15	0.74	0	17,19,21	0.96	0
3	BMA	P	3	3	11,11,12	0.93	0	15,15,17	2.38	6 (40%)
3	NAG	Q	1	3,1	14,14,15	0.73	0	17,19,21	0.97	1 (5%)
3	NAG	Q	2	3	14,14,15	0.71	0	17,19,21	0.96	0
3	BMA	Q	3	3	11,11,12	0.90	0	15,15,17	2.37	5 (33%)
4	NAG	R	1	4,1	14,14,15	0.79	0	17,19,21	0.88	1 (5%)
4	NAG	R	2	4	14,14,15	0.75	0	17,19,21	0.93	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	NAG	M	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	M	2	3	-	2/6/23/26	0/1/1/1
3	BMA	M	3	3	-	2/2/19/22	0/1/1/1
3	NAG	N	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	N	2	3	-	2/6/23/26	0/1/1/1
3	BMA	N	3	3	-	2/2/19/22	0/1/1/1
3	NAG	O	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	O	2	3	-	2/6/23/26	0/1/1/1
3	BMA	O	3	3	-	2/2/19/22	0/1/1/1
3	NAG	P	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	P	2	3	-	2/6/23/26	0/1/1/1
3	BMA	P	3	3	-	2/2/19/22	0/1/1/1
3	NAG	Q	1	3,1	-	0/6/23/26	0/1/1/1
3	NAG	Q	2	3	-	2/6/23/26	0/1/1/1
3	BMA	Q	3	3	-	2/2/19/22	0/1/1/1
4	NAG	R	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	R	2	4	-	2/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	M	2	NAG	O5-C1	-2.79	1.39	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	M	3	BMA	C2-C3	2.05	1.55	1.52

All (37) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	M	3	BMA	C1-O5-C5	7.14	121.75	112.19
3	O	3	BMA	C1-O5-C5	6.72	121.19	112.19
3	N	3	BMA	C1-O5-C5	6.55	120.97	112.19
3	Q	3	BMA	C1-O5-C5	6.29	120.61	112.19
3	P	3	BMA	C1-O5-C5	6.23	120.54	112.19
3	N	3	BMA	C3-C4-C5	4.03	117.54	110.23
3	O	3	BMA	C3-C4-C5	3.93	117.35	110.23
3	Q	3	BMA	C3-C4-C5	3.92	117.35	110.23
3	M	3	BMA	C3-C4-C5	3.89	117.29	110.23
3	P	3	BMA	C3-C4-C5	3.87	117.24	110.23
3	P	3	BMA	C2-C3-C4	3.44	116.91	110.86
3	O	3	BMA	C2-C3-C4	3.43	116.89	110.86
3	M	3	BMA	C2-C3-C4	3.35	116.76	110.86
3	N	3	BMA	C2-C3-C4	3.30	116.67	110.86
3	Q	3	BMA	C2-C3-C4	3.14	116.38	110.86
3	O	1	NAG	C1-O5-C5	2.39	115.39	112.19
3	M	2	NAG	O5-C1-C2	-2.34	107.66	111.29
3	M	3	BMA	O5-C5-C4	2.34	116.51	110.83
3	Q	3	BMA	O5-C5-C4	2.29	116.40	110.83
3	Q	1	NAG	O4-C4-C3	-2.28	105.00	110.38
3	O	3	BMA	O4-C4-C3	-2.27	105.02	110.38
3	P	3	BMA	O4-C4-C3	-2.25	105.07	110.38
3	N	3	BMA	O5-C5-C4	2.22	116.24	110.83
4	R	1	NAG	O4-C4-C3	-2.18	105.24	110.38
3	O	3	BMA	O5-C5-C4	2.17	116.11	110.83
3	P	3	BMA	O5-C5-C4	2.17	116.11	110.83
3	Q	3	BMA	O4-C4-C3	-2.15	105.32	110.38
3	N	3	BMA	O3-C3-C2	-2.14	105.70	110.05
3	M	3	BMA	O4-C4-C3	-2.13	105.36	110.38
3	N	1	NAG	O4-C4-C3	-2.11	105.40	110.38
3	M	1	NAG	C1-O5-C5	2.11	115.01	112.19
3	N	3	BMA	O4-C4-C3	-2.11	105.41	110.38
3	O	2	NAG	C1-O5-C5	2.09	114.99	112.19
3	O	1	NAG	O5-C1-C2	-2.09	108.06	111.29
3	P	1	NAG	O4-C4-C3	-2.05	105.55	110.38
3	O	1	NAG	O4-C4-C3	-2.04	105.57	110.38
3	P	3	BMA	O3-C3-C2	-2.02	105.92	110.05

There are no chirality outliers.

All (22) torsion outliers are listed below:

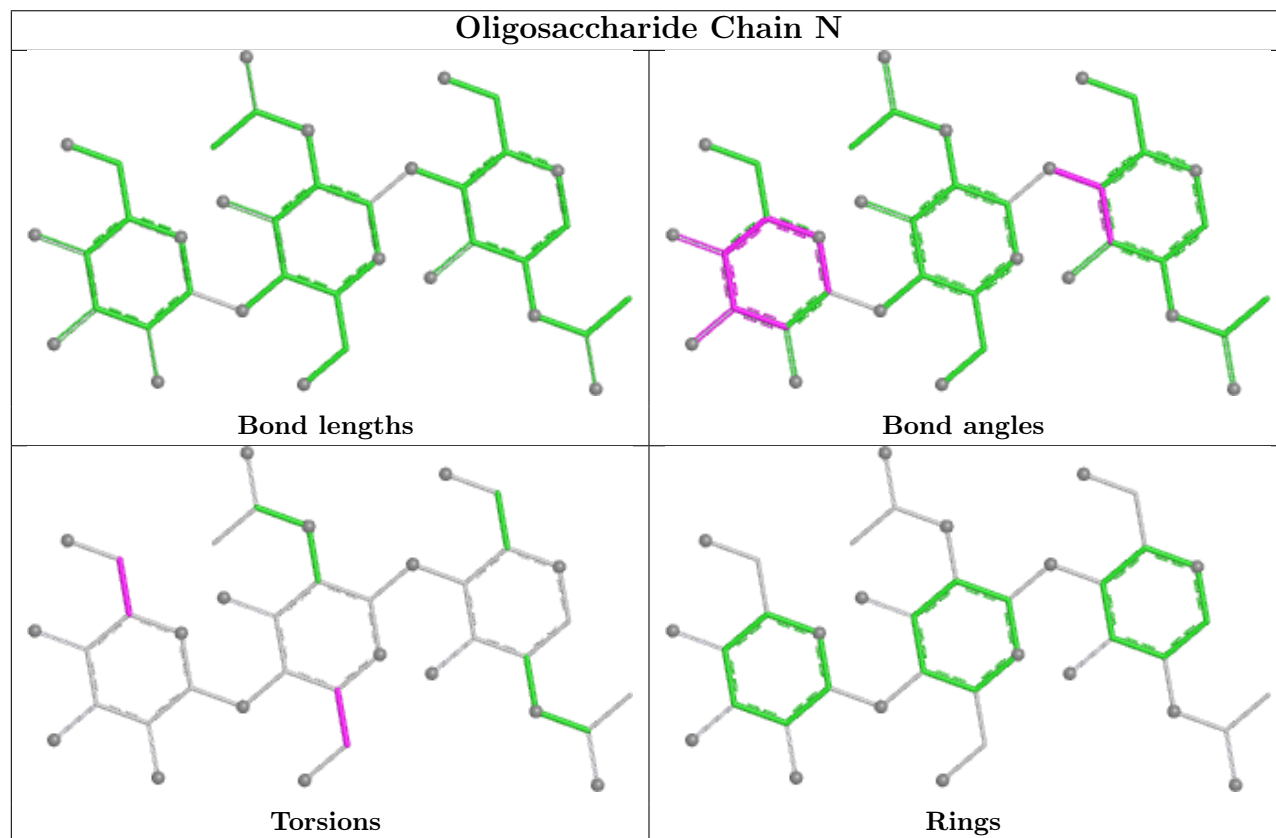
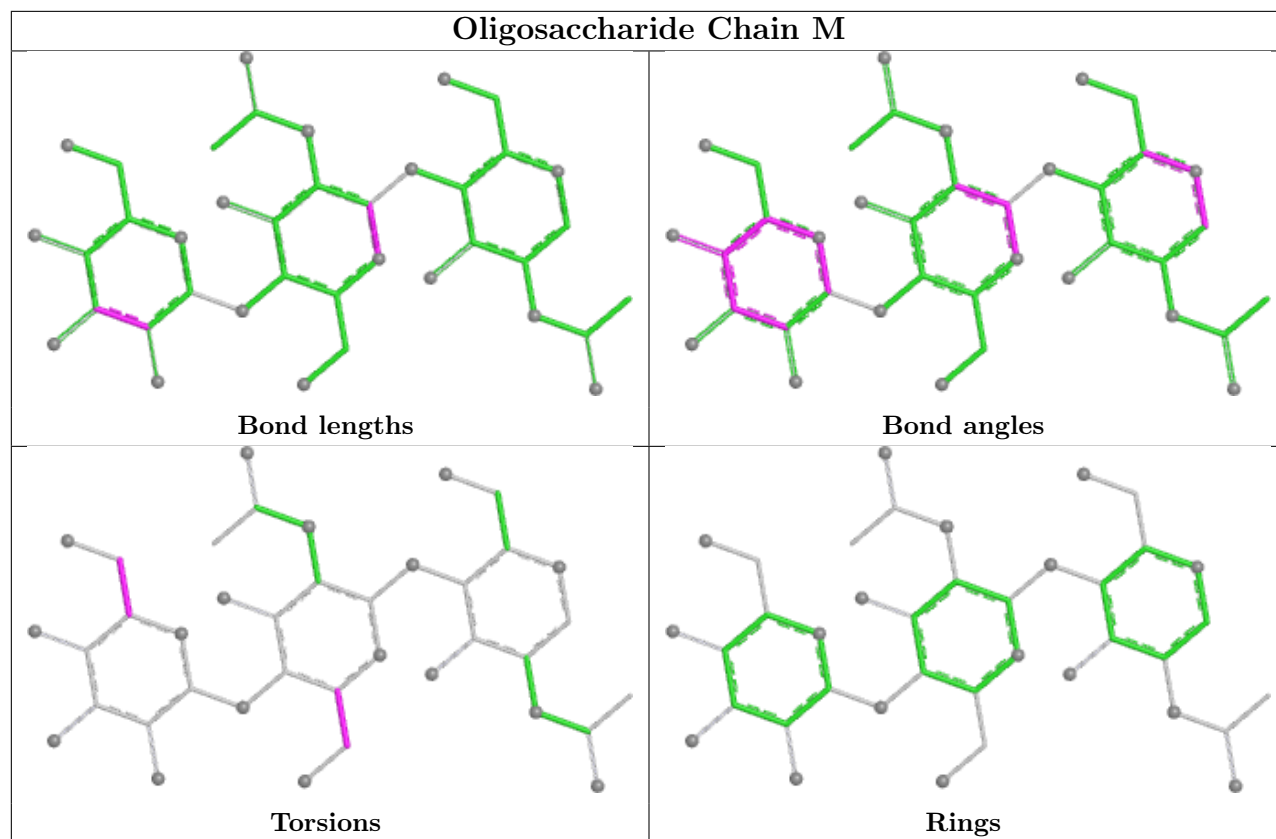
Mol	Chain	Res	Type	Atoms
3	M	3	BMA	O5-C5-C6-O6
3	N	2	NAG	O5-C5-C6-O6
3	O	2	NAG	O5-C5-C6-O6
3	P	2	NAG	O5-C5-C6-O6
3	Q	2	NAG	O5-C5-C6-O6
4	R	2	NAG	O5-C5-C6-O6
3	M	2	NAG	O5-C5-C6-O6
3	Q	3	BMA	O5-C5-C6-O6
3	N	3	BMA	O5-C5-C6-O6
3	O	3	BMA	O5-C5-C6-O6
3	P	3	BMA	O5-C5-C6-O6
3	M	2	NAG	C4-C5-C6-O6
3	N	2	NAG	C4-C5-C6-O6
3	P	2	NAG	C4-C5-C6-O6
3	O	2	NAG	C4-C5-C6-O6
3	Q	2	NAG	C4-C5-C6-O6
4	R	2	NAG	C4-C5-C6-O6
3	O	3	BMA	C4-C5-C6-O6
3	N	3	BMA	C4-C5-C6-O6
3	P	3	BMA	C4-C5-C6-O6
3	Q	3	BMA	C4-C5-C6-O6
3	M	3	BMA	C4-C5-C6-O6

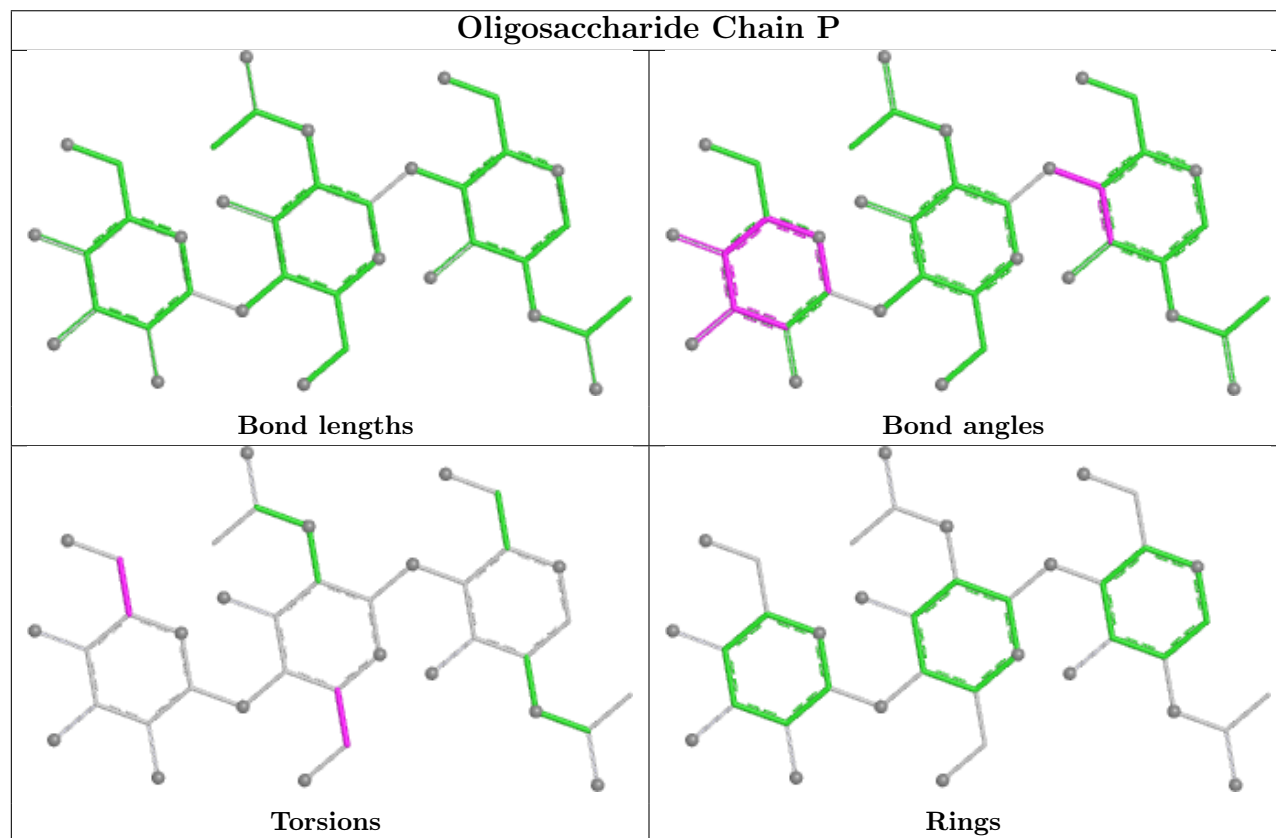
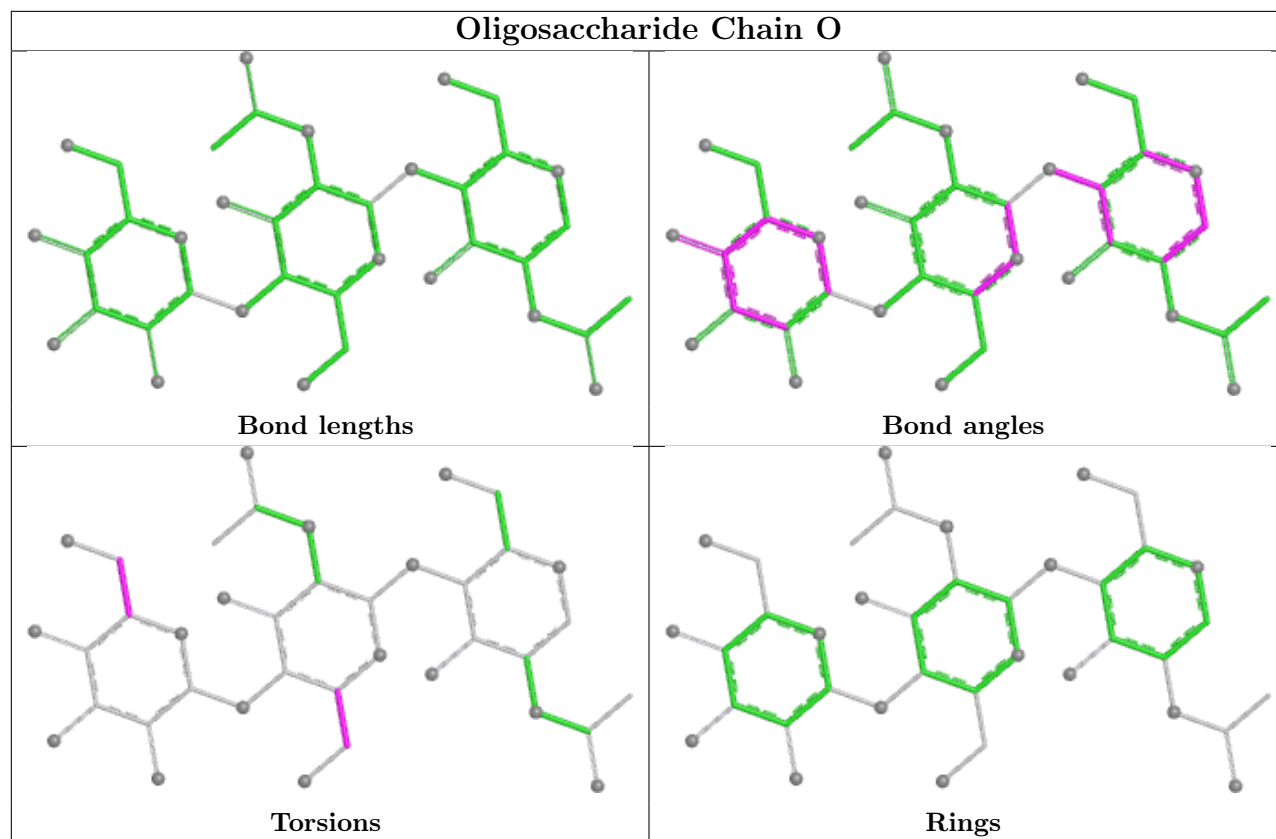
There are no ring outliers.

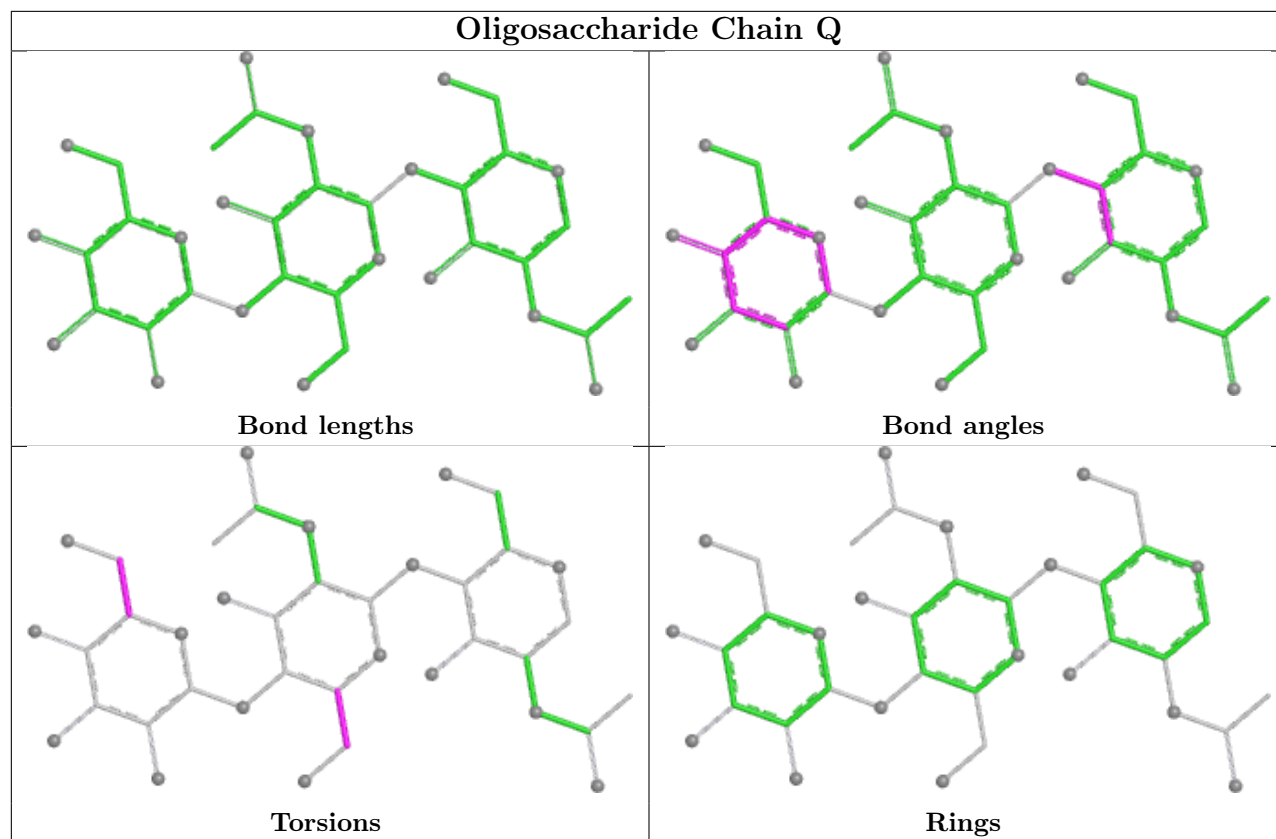
6 monomers are involved in 4 short contacts:

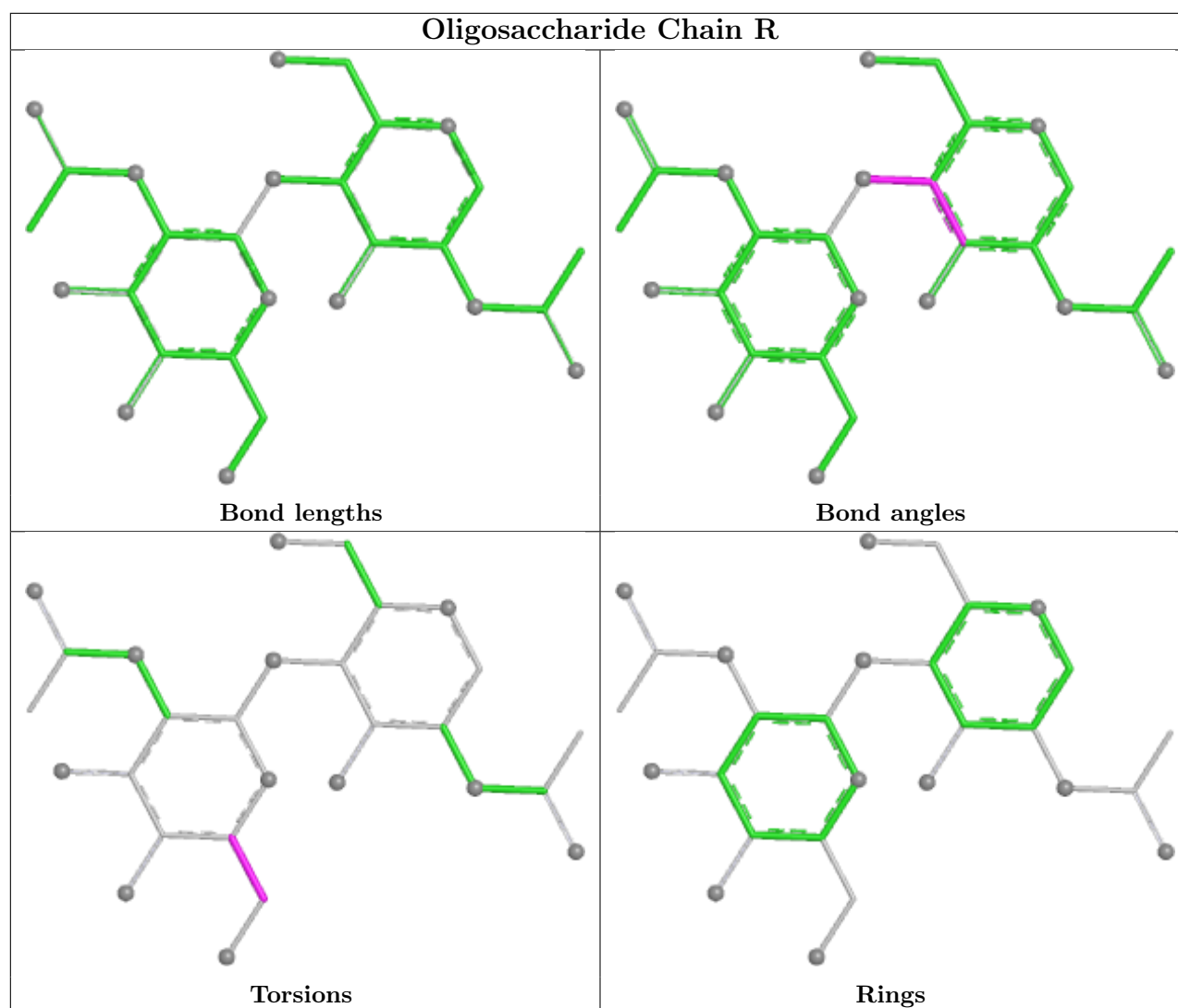
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	N	1	NAG	2	0
3	O	1	NAG	1	0
3	N	2	NAG	1	0
3	M	2	NAG	1	0
3	O	2	NAG	1	0
3	M	1	NAG	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.









5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 6 are monoatomic - leaving 4 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	F	401	1	14,14,15	0.59	0	17,19,21	1.39	2 (11%)
6	NAG	I	401	1	14,14,15	0.75	0	17,19,21	1.66	2 (11%)
6	NAG	G	401	1	14,14,15	0.70	0	17,19,21	1.71	2 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	NAG	K	401	1	14,14,15	0.73	0	17,19,21	1.29	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	F	401	1	-	2/6/23/26	0/1/1/1
6	NAG	I	401	1	-	1/6/23/26	0/1/1/1
6	NAG	G	401	1	-	2/6/23/26	0/1/1/1
6	NAG	K	401	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	G	401	NAG	C2-N2-C7	4.90	129.47	122.90
6	I	401	NAG	C2-N2-C7	4.58	129.03	122.90
6	F	401	NAG	C2-N2-C7	3.90	128.12	122.90
6	K	401	NAG	C2-N2-C7	3.64	127.78	122.90
6	G	401	NAG	C1-O5-C5	3.58	116.99	112.19
6	I	401	NAG	C1-O5-C5	3.04	116.26	112.19
6	F	401	NAG	C1-O5-C5	2.84	115.99	112.19

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	G	401	NAG	C3-C2-N2-C7
6	I	401	NAG	C3-C2-N2-C7
6	F	401	NAG	C3-C2-N2-C7
6	K	401	NAG	C3-C2-N2-C7
6	F	401	NAG	C1-C2-N2-C7
6	K	401	NAG	C1-C2-N2-C7
6	G	401	NAG	C4-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

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

6.1 Protein, DNA and RNA chains

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	321/324 (99%)	0.32	10 (3%) 51 42	31, 58, 93, 136	0
1	D	319/324 (98%)	0.57	19 (5%) 27 21	36, 66, 111, 139	0
1	F	319/324 (98%)	0.11	3 (0%) 81 75	34, 55, 80, 143	0
1	G	321/324 (99%)	0.86	33 (10%) 12 10	37, 85, 127, 174	0
1	I	318/324 (98%)	1.27	75 (23%) 2 2	45, 86, 132, 164	0
1	K	319/324 (98%)	1.05	60 (18%) 3 3	37, 86, 151, 200	0
2	B	173/183 (94%)	0.47	11 (6%) 25 20	37, 55, 93, 207	0
2	C	174/183 (95%)	0.44	10 (5%) 29 23	33, 61, 103, 162	0
2	E	179/183 (97%)	0.66	17 (9%) 14 11	35, 72, 103, 185	0
2	H	174/183 (95%)	0.36	10 (5%) 29 23	36, 54, 86, 198	0
2	J	171/183 (93%)	0.35	6 (3%) 47 38	40, 62, 101, 150	0
2	L	178/183 (97%)	0.27	11 (6%) 26 21	37, 59, 97, 119	0
All	All	2966/3042 (97%)	0.60	265 (8%) 15 13	31, 65, 123, 207	0

All (265) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	171	ILE	10.4
2	H	171	ILE	8.0
2	E	171	ILE	7.6
2	C	171	ILE	6.5
1	I	204	VAL	6.2
2	B	172	GLN	5.9
1	K	249	GLY	5.9
1	I	258	SER	5.8
1	I	249	GLY	5.8
2	L	171	ILE	5.7
2	J	171	ILE	5.5

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Mol	Chain	Res	Type	RSRZ
1	G	249	GLY	5.4
1	I	155	LEU	5.0
1	K	245	PHE	5.0
2	E	179	ARG	4.9
1	G	155	LEU	4.7
1	K	167	SER	4.6
2	E	131	GLU	4.6
1	K	209	TYR	4.5
1	G	250	ALA	4.5
1	D	250	ALA	4.5
1	A	8	ASP	4.5
2	H	177	SER	4.4
2	B	173	ILE	4.4
1	I	225	GLY	4.3
1	I	185	SER	4.3
1	K	204	VAL	4.2
1	K	253	ALA	4.2
2	E	175	PRO	4.2
2	B	176	VAL	4.1
2	L	173	ILE	4.1
2	H	173	ILE	4.1
1	K	212	SER	4.1
1	K	165	THR	4.0
1	I	165	THR	4.0
1	G	225	GLY	4.0
1	I	80	LEU	3.9
1	K	127	TYR	3.9
2	B	175	PRO	3.9
2	H	172	GLN	3.8
1	I	226	LEU	3.8
1	G	84	ALA	3.8
1	D	203	THR	3.8
1	G	223	VAL	3.7
1	G	83	SER	3.7
1	K	203	THR	3.6
1	F	156	SER	3.6
1	I	237	LEU	3.6
2	H	174	ASP	3.5
1	K	257	ALA	3.5
2	B	4	GLY	3.5
2	L	182	PRO	3.5
1	I	224	ASN	3.4

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Mol	Chain	Res	Type	RSRZ
2	C	173	ILE	3.4
1	I	232	PHE	3.4
1	I	154	LEU	3.4
1	K	207	SER	3.4
1	I	210	GLN	3.4
1	K	244	THR	3.4
1	K	327	PRO	3.3
1	K	242	THR	3.3
2	C	177	SER	3.3
1	I	230	ILE	3.3
1	I	242	THR	3.3
1	F	327	PRO	3.3
1	I	102	PHE	3.3
1	A	156	SER	3.3
1	I	120	LYS	3.3
1	K	202	VAL	3.3
1	K	82	PHE	3.2
2	C	175	PRO	3.2
1	K	250	ALA	3.2
1	A	210	GLN	3.2
1	G	187	SER	3.2
2	L	180	LEU	3.2
1	K	125	PHE	3.2
1	K	205	GLY	3.2
2	B	174	ASP	3.1
1	I	209	TYR	3.1
1	K	243	VAL	3.1
2	C	174	ASP	3.1
1	I	181	GLY	3.1
2	H	170	ARG	3.1
2	C	166	ALA	3.0
1	I	179	VAL	3.0
1	I	74	PRO	3.0
2	L	181	VAL	3.0
2	C	176	VAL	3.0
2	J	163	ARG	2.9
1	G	210	GLN	2.9
1	I	251	PHE	2.9
2	L	4	GLY	2.9
2	E	172	GLN	2.9
1	D	245	PHE	2.9
1	G	219	ALA	2.9

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Mol	Chain	Res	Type	RSRZ
2	H	176	VAL	2.9
2	B	167	MET	2.9
2	L	175	PRO	2.9
1	K	208	ASN	2.9
1	I	160	ALA	2.9
1	I	116	GLY	2.8
1	I	180	TRP	2.8
1	I	119	ASP	2.8
1	D	46	THR	2.8
1	K	158	THR	2.8
1	K	237	LEU	2.8
1	D	327	PRO	2.8
1	D	156	SER	2.8
1	I	127	TYR	2.8
1	D	201	LEU	2.8
1	D	238	ASN	2.8
1	G	246	SER	2.8
1	I	221	PRO	2.8
1	K	177	LEU	2.7
1	K	120	LYS	2.7
1	I	203	THR	2.7
2	E	166	ALA	2.7
1	I	252	ILE	2.7
1	K	58	THR	2.7
1	I	117	GLY	2.7
2	E	9	PHE	2.7
1	K	169	LYS	2.7
1	G	165	THR	2.7
1	I	201	LEU	2.7
1	K	178	ILE	2.7
2	E	173	ILE	2.7
2	E	154	ASN	2.7
1	G	8	ASP	2.7
1	K	252	ILE	2.6
1	I	250	ALA	2.6
1	I	327	PRO	2.6
1	G	147	PHE	2.6
1	I	205	GLY	2.6
1	D	155	LEU	2.6
2	L	174	ASP	2.6
2	E	26	HIS	2.6
1	G	141	ARG	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	209	TYR	2.6
1	D	205	GLY	2.6
1	K	162	PRO	2.6
1	K	214	VAL	2.6
1	K	170	ASN	2.6
1	K	154	LEU	2.6
1	D	323	VAL	2.6
1	G	158	THR	2.6
2	J	7	ALA	2.6
1	I	189	ALA	2.5
2	E	182	PRO	2.5
1	G	251	PHE	2.5
1	I	147	PHE	2.5
1	I	172	ARG	2.5
1	I	254	PRO	2.5
2	L	6	ILE	2.5
1	G	245	PHE	2.5
1	D	10	GLY	2.5
1	I	59	VAL	2.5
1	I	202	VAL	2.5
2	B	166	ALA	2.5
2	H	175	PRO	2.4
1	K	129	GLY	2.4
1	I	212	SER	2.4
1	K	247	PHE	2.4
1	I	136	THR	2.4
1	K	199	ASN	2.4
1	I	182	ILE	2.4
2	E	4	GLY	2.4
2	J	174	ASP	2.4
1	I	156	SER	2.4
1	I	187	SER	2.4
1	K	75	GLN	2.4
1	G	209	TYR	2.4
1	I	184	HIS	2.4
1	F	326	ILE	2.4
2	E	163	ARG	2.4
1	I	213	PHE	2.4
1	I	245	PHE	2.4
1	G	199	ASN	2.3
1	I	125	PHE	2.3
1	K	161	PHE	2.3

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Mol	Chain	Res	Type	RSRZ
1	G	138	ALA	2.3
1	D	211	GLN	2.3
2	C	172	GLN	2.3
1	G	156	SER	2.3
1	I	178	ILE	2.3
1	I	175	PRO	2.3
1	I	243	VAL	2.3
2	E	181	VAL	2.3
1	A	199	ASN	2.3
1	D	129	GLY	2.3
1	I	177	LEU	2.3
1	I	273	GLN	2.3
1	K	143	SER	2.3
1	K	173	LYS	2.3
1	G	132	THR	2.3
1	D	195	TYR	2.3
1	G	100	GLY	2.3
1	G	195	TYR	2.3
1	K	112	LEU	2.2
1	G	211	GLN	2.2
1	D	192	THR	2.2
1	A	197	SER	2.2
1	K	128	SER	2.2
1	I	159	ALA	2.2
2	L	7	ALA	2.2
1	G	226	LEU	2.2
1	I	211	GLN	2.2
2	E	174	ASP	2.2
1	G	221	PRO	2.2
1	I	207	SER	2.2
1	K	148	TYR	2.2
1	D	84	ALA	2.2
1	K	56	LYS	2.2
1	K	201	LEU	2.2
2	J	172	GLN	2.2
1	I	241	ASP	2.2
1	K	239	PRO	2.2
1	G	153	TRP	2.2
1	I	70	ILE	2.2
1	D	199	ASN	2.2
1	I	34	VAL	2.2
1	K	132	THR	2.2

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Mol	Chain	Res	Type	RSRZ
1	I	98	TYR	2.2
1	K	206	SER	2.2
1	K	213	PHE	2.2
1	A	138	ALA	2.2
1	K	176	ALA	2.2
2	B	131	GLU	2.2
1	I	130	ILE	2.1
1	K	118	ILE	2.1
1	I	217	PRO	2.1
1	D	246	SER	2.1
1	I	219	ALA	2.1
1	K	258	SER	2.1
1	G	276(A)	ASN	2.1
2	H	147	ASP	2.1
1	K	126	THR	2.1
1	K	171	THR	2.1
2	C	18	ILE	2.1
1	A	208	ASN	2.1
1	I	123	MET	2.1
1	I	164	MET	2.1
1	K	179	VAL	2.1
1	K	175	PRO	2.1
1	K	276(A)	ASN	2.1
2	L	176	VAL	2.1
1	G	228	GLY	2.1
1	K	62	GLY	2.1
2	C	20	GLY	2.1
1	I	161	PHE	2.1
1	A	130	ILE	2.1
1	A	207	SER	2.1
1	I	191	GLN	2.1
2	E	176	VAL	2.1
1	I	118	ILE	2.1
2	H	11	GLU	2.1
1	I	222	GLN	2.0
1	G	179	VAL	2.0
1	K	168	TYR	2.0
2	B	168	GLN	2.0
1	G	229	ARG	2.0
2	E	178	GLY	2.0
2	J	173	ILE	2.0
1	I	31	GLU	2.0

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Mol	Chain	Res	Type	RSRZ
1	I	190	GLU	2.0
1	I	223	VAL	2.0

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](#)

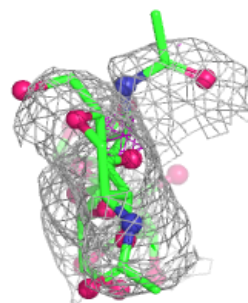
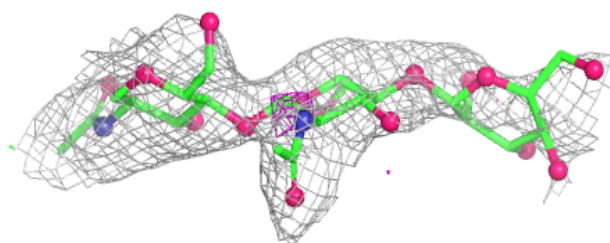
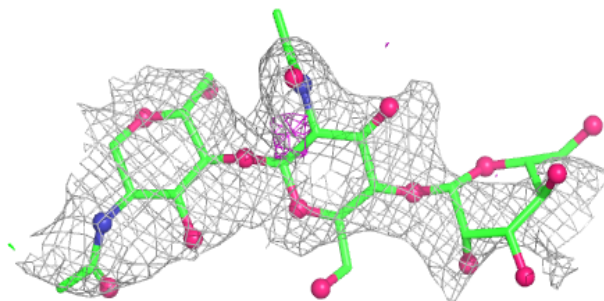
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	BMA	N	3	11/12	0.07	0.20	112,119,136,137	0
3	BMA	Q	3	11/12	0.10	0.16	108,126,133,135	0
3	BMA	M	3	11/12	0.18	0.15	117,125,131,133	0
3	BMA	O	3	11/12	0.28	0.14	124,133,140,143	0
3	BMA	P	3	11/12	0.36	0.13	107,112,119,120	0
4	NAG	R	2	14/15	0.52	0.14	82,103,111,120	0
3	NAG	O	2	14/15	0.55	0.14	104,130,133,140	0
3	NAG	Q	2	14/15	0.58	0.14	95,122,130,131	0
3	NAG	N	2	14/15	0.66	0.12	81,96,104,109	0
4	NAG	R	1	14/15	0.69	0.14	67,83,95,96	0
3	NAG	M	1	14/15	0.72	0.12	62,77,83,93	0
3	NAG	Q	1	14/15	0.72	0.14	79,90,107,118	0
3	NAG	O	1	14/15	0.77	0.13	97,108,119,126	0
3	NAG	P	2	14/15	0.77	0.12	81,99,109,115	0
3	NAG	M	2	14/15	0.79	0.11	84,102,113,115	0
3	NAG	N	1	14/15	0.79	0.14	65,80,87,89	0
3	NAG	P	1	14/15	0.82	0.12	60,75,83,89	0

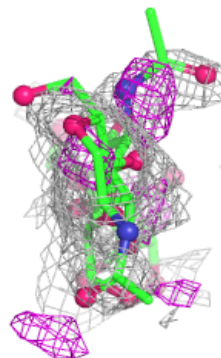
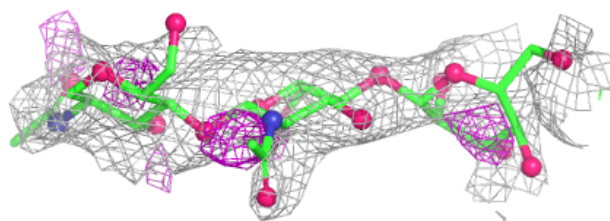
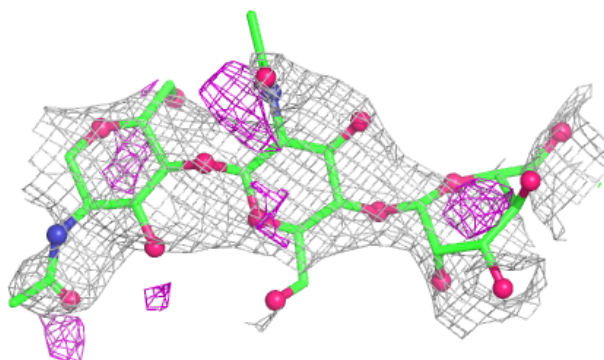
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain M:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

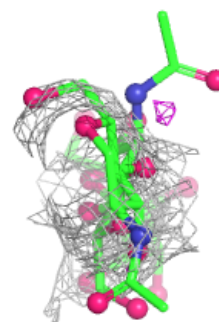
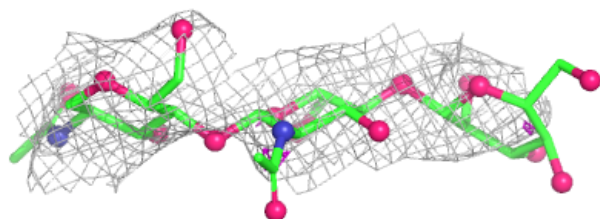
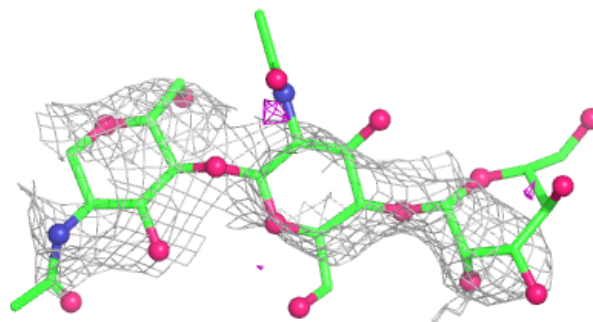
**Electron density around Chain N:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

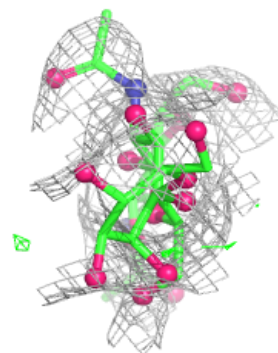
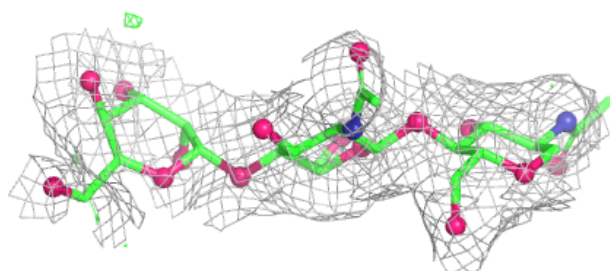
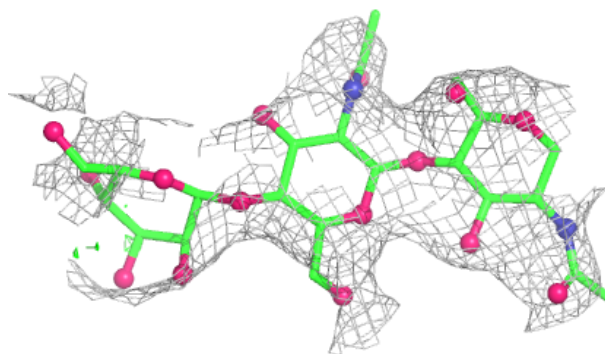


Electron density around Chain O:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

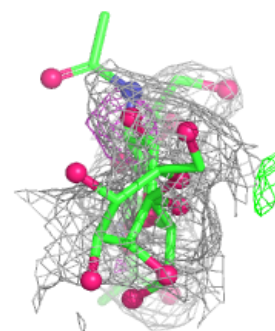
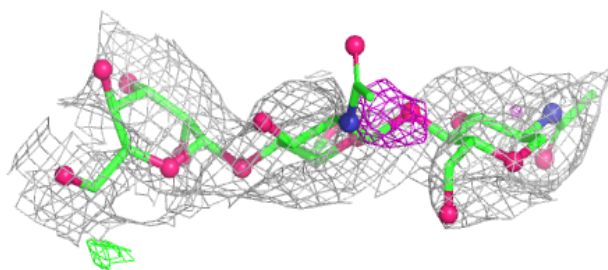
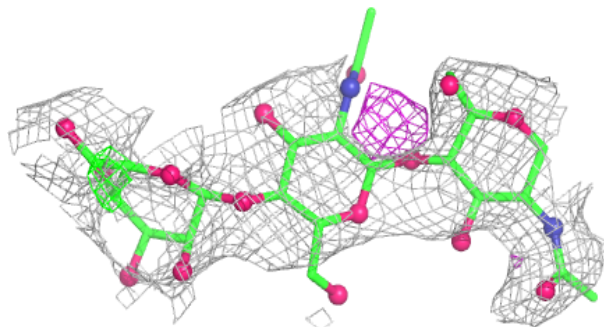
**Electron density around Chain P:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

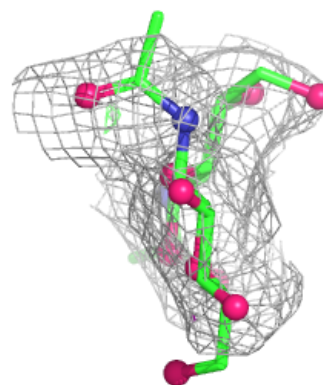
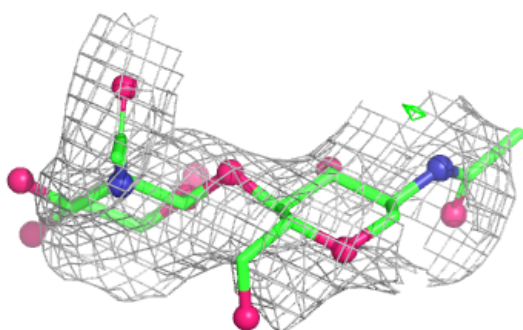
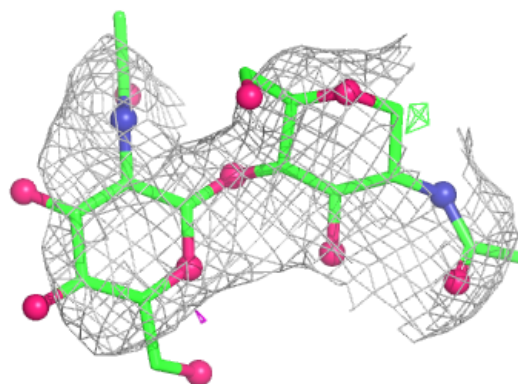


Electron density around Chain Q:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around Chain R:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



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(Å ²)	Q<0.9
6	NAG	G	401	14/15	-0.19	0.21	119,139,143,144	0
6	NAG	F	401	14/15	0.04	0.18	91,112,121,121	0
6	NAG	K	401	14/15	0.21	0.16	125,132,141,147	0
6	NAG	I	401	14/15	0.37	0.18	126,133,143,147	0
5	MG	H	202	1/1	0.77	0.27	52,52,52,52	0
5	MG	B	201	1/1	0.95	0.23	46,46,46,46	0
5	MG	J	201	1/1	0.95	0.21	50,50,50,50	0
5	MG	C	201	1/1	0.96	0.20	39,39,39,39	0
5	MG	E	201	1/1	0.96	0.18	58,58,58,58	0
5	MG	H	201	1/1	0.97	0.17	46,46,46,46	0

6.5 Other polymers [i](#)

There are no such residues in this entry.