W O R L D W I D E
wwPDB
PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Sep 7, 2020 – 02:21 PM BST

PDB ID	:	4JUJ
Title	:	Crystal structure of 1918 pandemic influenza virus hemagglutinin mutant D225G complexed with human receptor analogue LSTc
Authors	:	Zhang, W.; Shi, Y.; Qi, J.; Gao, F.; Li, Q.; Fan, Z.; Yan, J.; Gao, G.F.
Deposited on	:	2013-03-25
Resolution	:	3.01 Å(reported)

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

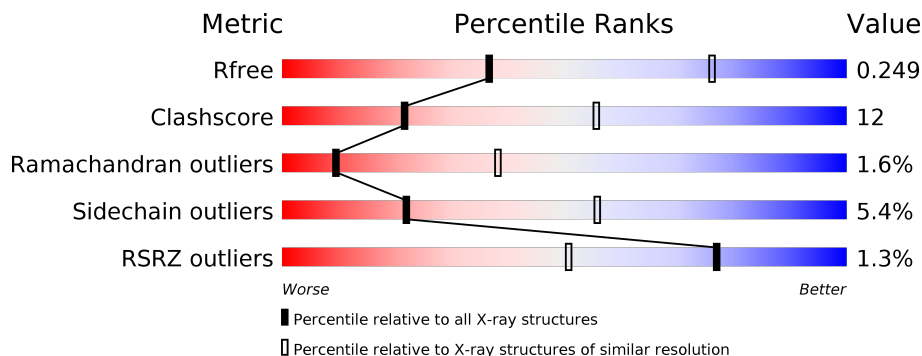|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.14.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.14.2

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 3.01 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	Percentile Ranks	Value
Rfree		0.249
Clashscore		12
Ramachandran outliers		1.6%
Sidechain outliers		5.4%
RSRZ outliers		1.3%

Worse *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2399 (3.04-3.00)
Clashscore	141614	2734 (3.04-3.00)
Ramachandran outliers	138981	2640 (3.04-3.00)
Sidechain outliers	138945	2643 (3.04-3.00)
RSRZ outliers	127900	2287 (3.04-3.00)

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 on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	324	76% 23% •
1	C	324	% 77% 22% •
1	E	324	% 76% 23% •
2	B	170	% 72% 24% •
2	D	170	3% 71% 20% 5% • •
2	F	170	4% 70% 22% • • •

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Mol	Chain	Length	Quality of chain
3	G	2	50% 50%
3	I	2	50% 50%
3	K	2	50% 50%
4	H	3	33% 67%
4	J	3	67% 33%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 11784 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.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	324	Total	C	N	O	S	0	0	0
			2512	1584	434	483	11			
1	C	324	Total	C	N	O	S	0	0	0
			2512	1584	434	483	11			
1	E	324	Total	C	N	O	S	0	0	0
			2512	1584	434	483	11			

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	225	GLY	ASP	engineered mutation	UNP Q9WFX3
A	326	ALA	-	expression tag	UNP Q9WFX3
A	327	ARG	-	expression tag	UNP Q9WFX3
C	225	GLY	ASP	engineered mutation	UNP Q9WFX3
C	326	ALA	-	expression tag	UNP Q9WFX3
C	327	ARG	-	expression tag	UNP Q9WFX3
E	225	GLY	ASP	engineered mutation	UNP Q9WFX3
E	326	ALA	-	expression tag	UNP Q9WFX3
E	327	ARG	-	expression tag	UNP Q9WFX3

- Molecule 2 is a protein called Hemagglutinin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	170	Total	C	N	O	S	0	0	0
			1368	855	236	271	6			
2	D	164	Total	C	N	O	S	0	0	0
			1317	825	225	261	6			
2	F	165	Total	C	N	O	S	0	0	0
			1326	830	226	264	6			

- Molecule 3 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
3	G	2	Total 28	C 16	N 2	O 10	0	0	0
3	I	2	Total 28	C 16	N 2	O 10	0	0	0
3	K	2	Total 28	C 16	N 2	O 10	0	0	0

- Molecule 4 is an oligosaccharide called N-acetyl-alpha-neuraminic acid-(2-6)-beta-D-galacto pyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	H	3	Total 45	C 25	N 2	O 18	0	0	0
4	J	3	Total 45	C 25	N 2	O 18	0	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	21	Total 21	O 21	0	0
5	B	6	Total 6	O 6	0	0
5	C	7	Total 7	O 7	0	0
5	D	2	Total 2	O 2	0	0
5	E	23	Total 23	O 23	0	0
5	F	4	Total 4	O 4	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.
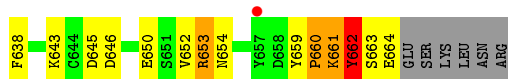
- Molecule 1: Hemagglutinin

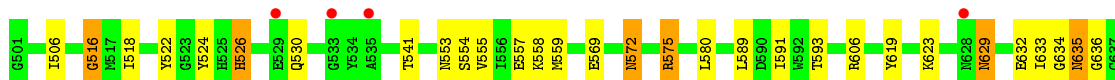- Molecule 1: Hemagglutinin
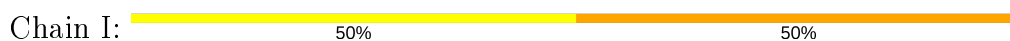

- Molecule 1: Hemagglutinin

V301 T302 V310 R311 S312 L315 L321 A326 R327

• Molecule 2: Hemagglutinin

Chain B:

%

72%   24%   ·

G501 L502 F503 G504 A505 G508 F509 I510 Y522 G523 Y524 H525 H526 Q527 N528 E529 Q530 G533 M559 N560 T561 T564 N572 R575 L580 L589 D590 I591 W592 T593 R606 T607 L608 F610 Y619 Q625 N629 A630 K631 E632 I633 G634 N635 G636 E639

K643 C644 D645 D646 M649 E650 S651 V652 R653 N654 G655 Y659 P660 K661 Y662 E665 S666 K667 R670

• Molecule 2: Hemagglutinin

Chain D:

3%

71%   20%   5% · ·

G501 I506 G516 M517 I518 Y522 G523 Y524 H525 H526 E529 Q530 G533 Y534 A535 T541 N553 S554 V555 I556 E557 K558 M559 E569 N572 R575 L580 L589 D590 I591 W592 T593 R606 Y619 K623 N628 N629 E632 I633 G634 N635 G636 C637

F638 K643 C644 D645 D646 E650 S651 V652 R653 N654 Y657 D658 Y659 P660 K661 Y662 S663 E664 GLU SER LYS LEU ASN ARG

• Molecule 2: Hemagglutinin

Chain F:

4%

70%   22%   · · ·

G501 I506 M517 I518 D519 Y522 G523 Y524 H525 H526 Q527 N528 E529 Q530 G531 T541 N550 S554 V555 K558 M559 N572 R575 L580 I591 W592 T593 E605 R606 D612 Y619 K623 N629 E632 I633 G634 N635 G636 C637 F638 E639 F640 Y641

H642 K643 C644 D645 D646 A647 E650 S651 V652 R653 N654 Y657 D658 Y659 P660 K661 Y662 S663 E664 E665 SER LYS LEU ASN ARG

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

Chain G:

50%   50%

NAG1 NAG2

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

Chain I:

50%   50%

NAG1
NAG2

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

Chain K:

NAG1
NAG2

• Molecule 4: N-acetyl-alpha-neuraminic acid-(2-6)-beta-D-galactopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:

NAG1
GAL2
SIA3

• Molecule 4: N-acetyl-alpha-neuraminic acid-(2-6)-beta-D-galactopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:

NAG1
GAL2
SIA3

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	71.91Å 242.15Å 71.75Å 90.00° 119.66° 90.00°	Depositor
Resolution (Å)	38.25 – 3.01 43.48 – 3.01	Depositor EDS
% Data completeness (in resolution range)	88.7 (38.25-3.01) 96.3 (43.48-3.01)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.38 (at 3.01Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.5_2)	Depositor
R, R_{free}	0.202 , 0.247 0.205 , 0.249	Depositor DCC
R_{free} test set	2044 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	56.8	Xtriage
Anisotropy	0.483	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 43.2	EDS
L-test for twinning[2]	$< |L| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.000 for l,k,-h-l 0.000 for -h-l,k,h 0.017 for -h-l,-k,l 0.019 for h,-k,-h-l 0.015 for l,-k,h	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	11784	wwPDB-VP
Average B, all atoms (Å^2)	69.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.67% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

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: SIA, GAL, 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	0.31	1/2576 (0.0%)	0.43	0/3508
1	C	0.23	0/2576	0.46	2/3508 (0.1%)
1	E	0.24	0/2576	0.45	2/3508 (0.1%)
2	B	0.28	0/1395	0.43	0/1878
2	D	0.27	0/1344	0.44	0/1811
2	F	0.23	0/1353	0.49	1/1823 (0.1%)
All	All	0.26	1/11820 (0.0%)	0.45	5/16036 (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
2	D	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	195	TYR	CE1-CZ	-5.29	1.31	1.38

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	F	664	GLU	N-CA-CB	10.56	129.61	110.60
1	C	195	TYR	CB-CA-C	8.68	127.76	110.40
1	C	196	GLN	CB-CA-C	-8.43	93.53	110.40
1	E	195	TYR	CB-CA-C	8.08	126.57	110.40
1	E	196	GLN	CB-CA-C	-6.39	97.62	110.40

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	D	662	TYR	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	2512	0	2440	59	0
1	C	2512	0	2440	56	0
1	E	2512	0	2440	51	0
2	B	1368	0	1285	43	0
2	D	1317	0	1231	42	0
2	F	1326	0	1237	41	0
3	G	28	0	25	1	0
3	I	28	0	25	1	0
3	K	28	0	25	1	0
4	H	45	0	38	2	0
4	J	45	0	38	3	0
5	A	21	0	0	0	0
5	B	6	0	0	0	0
5	C	7	0	0	0	0
5	D	2	0	0	0	0
5	E	23	0	0	0	0
5	F	4	0	0	0	0
All	All	11784	0	11224	273	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 12.

The worst 5 of 273 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:196:GLN:OE1	1:C:196:GLN:O	1.71	1.08
2:D:661:LYS:HD3	2:D:662:TYR:N	1.74	1.02
2:F:662:TYR:O	2:F:663:SER:HB3	1.62	0.97

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:663:SER:O	2:F:664:GLU:HG2	1.72	0.88
1:E:310:VAL:HG12	1:E:312:SER:H	1.36	0.88

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	322/324 (99%)	300 (93%)	21 (6%)	1 (0%)	41	75
1	C	322/324 (99%)	300 (93%)	21 (6%)	1 (0%)	41	75
1	E	322/324 (99%)	303 (94%)	18 (6%)	1 (0%)	41	75
2	B	168/170 (99%)	150 (89%)	13 (8%)	5 (3%)	4	22
2	D	162/170 (95%)	141 (87%)	13 (8%)	8 (5%)	2	12
2	F	163/170 (96%)	139 (85%)	17 (10%)	7 (4%)	2	14
All	All	1459/1482 (98%)	1333 (91%)	103 (7%)	23 (2%)	9	38

5 of 23 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	F	663	SER
2	F	664	GLU
2	B	561	THR
2	B	635	ASN
2	D	643	LYS

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	278/278 (100%)	266 (96%)	12 (4%)	29	64
1	C	278/278 (100%)	266 (96%)	12 (4%)	29	64
1	E	278/278 (100%)	267 (96%)	11 (4%)	31	67
2	B	145/145 (100%)	136 (94%)	9 (6%)	18	50
2	D	139/145 (96%)	128 (92%)	11 (8%)	12	39
2	F	140/145 (97%)	127 (91%)	13 (9%)	9	32
All	All	1258/1269 (99%)	1190 (95%)	68 (5%)	22	56

5 of 68 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	196	GLN
2	D	575	ARG
2	F	580	LEU
1	C	302	THR
2	D	526	HIS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 37 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	250	ASN
2	D	629	ASN
2	F	625	GLN
2	D	530	GLN
2	D	572	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 (i)

12 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	G	1	1,3	14,14,15	0.49	0	17,19,21	0.80	0
3	NAG	G	2	3	14,14,15	0.52	0	17,19,21	0.69	0
4	NAG	H	1	4	14,14,15	0.54	0	17,19,21	1.01	1 (5%)
4	GAL	H	2	4	11,11,12	0.63	0	15,15,17	0.92	0
4	SIA	H	3	4	17,20,21	0.40	0	21,28,31	3.44	4 (19%)
3	NAG	I	1	1,3	14,14,15	0.49	0	17,19,21	0.91	1 (5%)
3	NAG	I	2	3	14,14,15	0.49	0	17,19,21	0.81	1 (5%)
4	NAG	J	1	4	14,14,15	0.57	0	17,19,21	0.81	0
4	GAL	J	2	4	11,11,12	0.65	0	15,15,17	1.18	2 (13%)
4	SIA	J	3	4	17,20,21	0.35	0	21,28,31	3.77	5 (23%)
3	NAG	K	1	1,3	14,14,15	0.58	0	17,19,21	0.63	0
3	NAG	K	2	3	14,14,15	0.56	0	17,19,21	0.83	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	G	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	G	2	3	-	0/6/23/26	0/1/1/1
4	NAG	H	1	4	-	0/6/23/26	0/1/1/1
4	GAL	H	2	4	-	0/2/19/22	0/1/1/1
4	SIA	H	3	4	-	0/14/34/38	0/1/1/1
3	NAG	I	1	1,3	-	0/6/23/26	0/1/1/1
3	NAG	I	2	3	-	0/6/23/26	0/1/1/1
4	NAG	J	1	4	-	0/6/23/26	0/1/1/1
4	GAL	J	2	4	-	0/2/19/22	0/1/1/1
4	SIA	J	3	4	-	2/14/34/38	0/1/1/1
3	NAG	K	1	1,3	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	K	2	3	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

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

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	J	3	SIA	C3-C2-C1	-12.09	85.54	111.93
4	H	3	SIA	C3-C2-C1	-10.97	87.97	111.93
4	J	3	SIA	O6-C2-C3	-10.78	90.97	109.87
4	H	3	SIA	O6-C2-C3	-9.73	92.81	109.87
4	H	3	SIA	C4-C3-C2	4.41	117.72	109.81

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	J	3	SIA	C11-C10-N5-C5
4	J	3	SIA	O10-C10-N5-C5

There are no ring outliers.

7 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	1	NAG	1	0
4	H	1	NAG	1	0
4	J	3	SIA	1	0
4	H	3	SIA	1	0
3	K	1	NAG	1	0
3	I	1	NAG	1	0
4	J	1	NAG	2	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.

Oligosaccharide Chain G

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain I

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain K

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain H

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain J

Bond lengths

Bond angles

Torsions

Rings
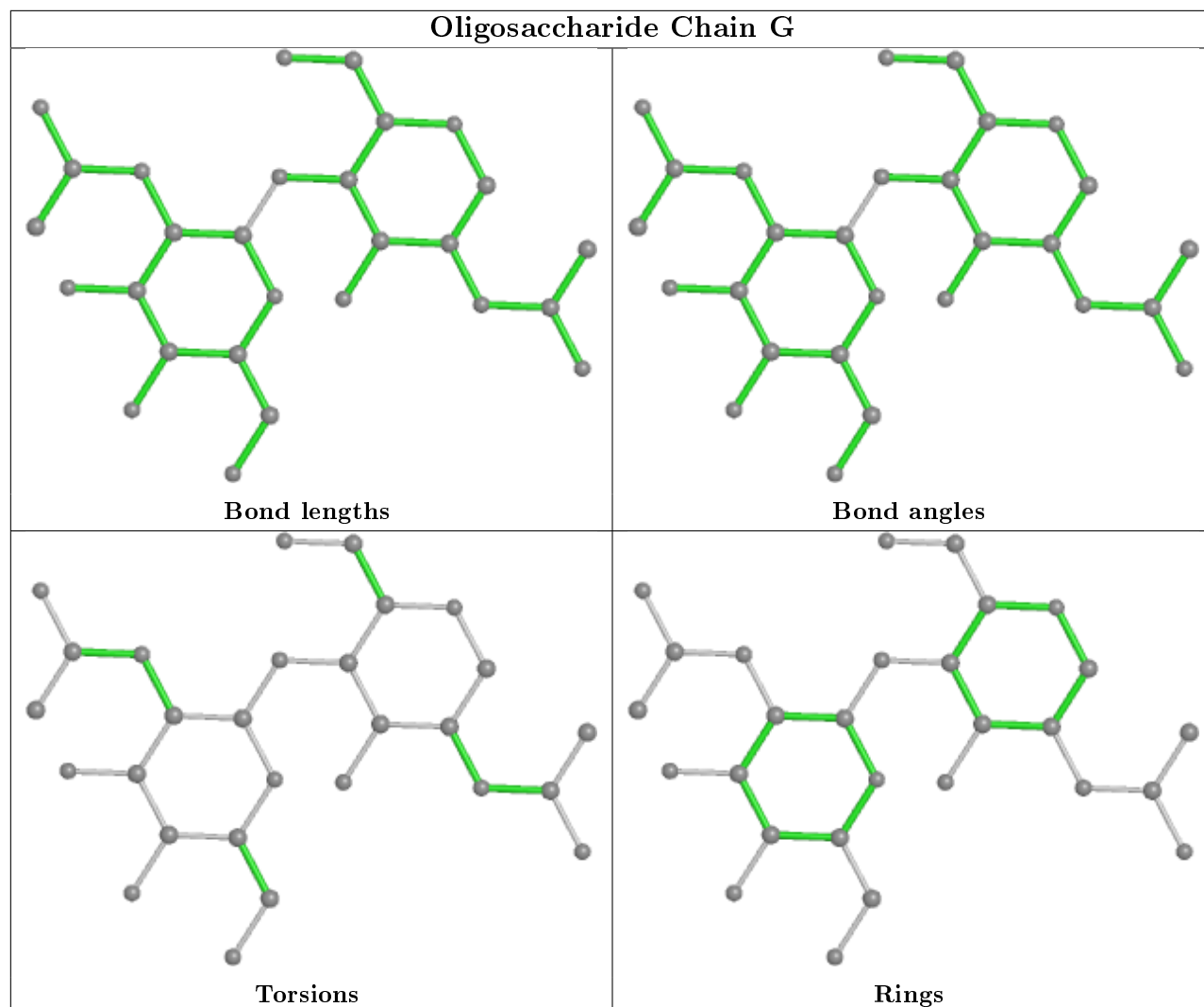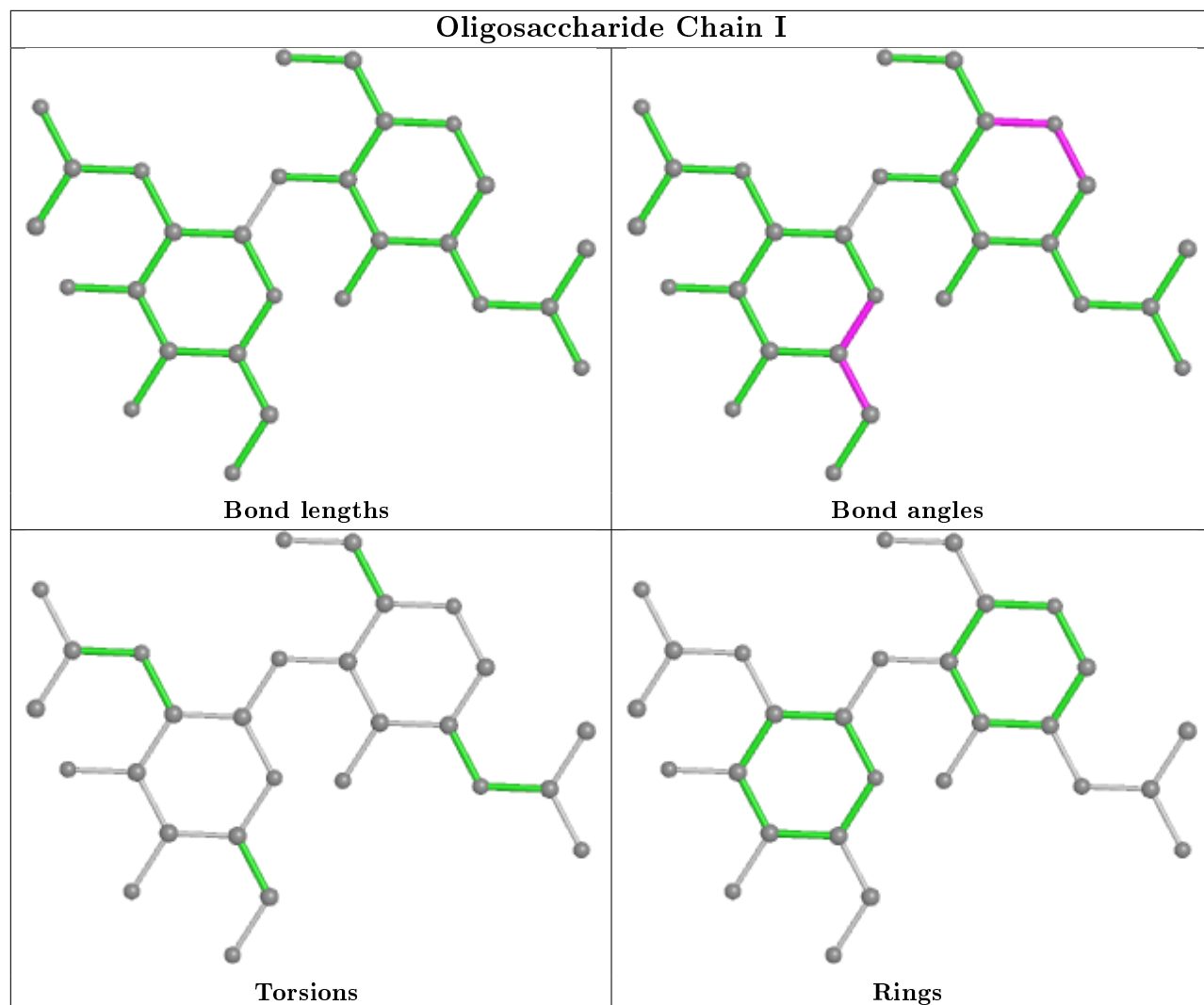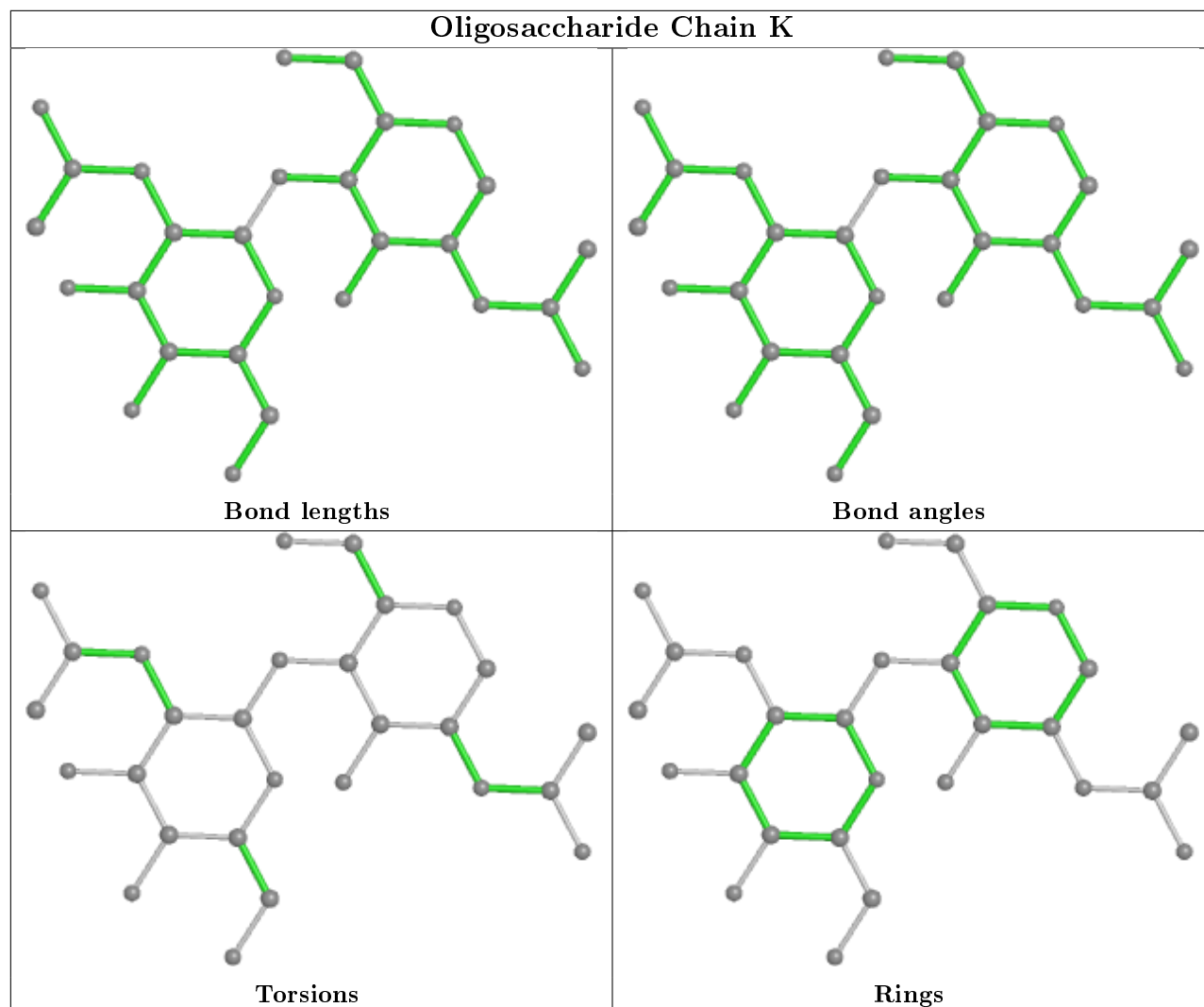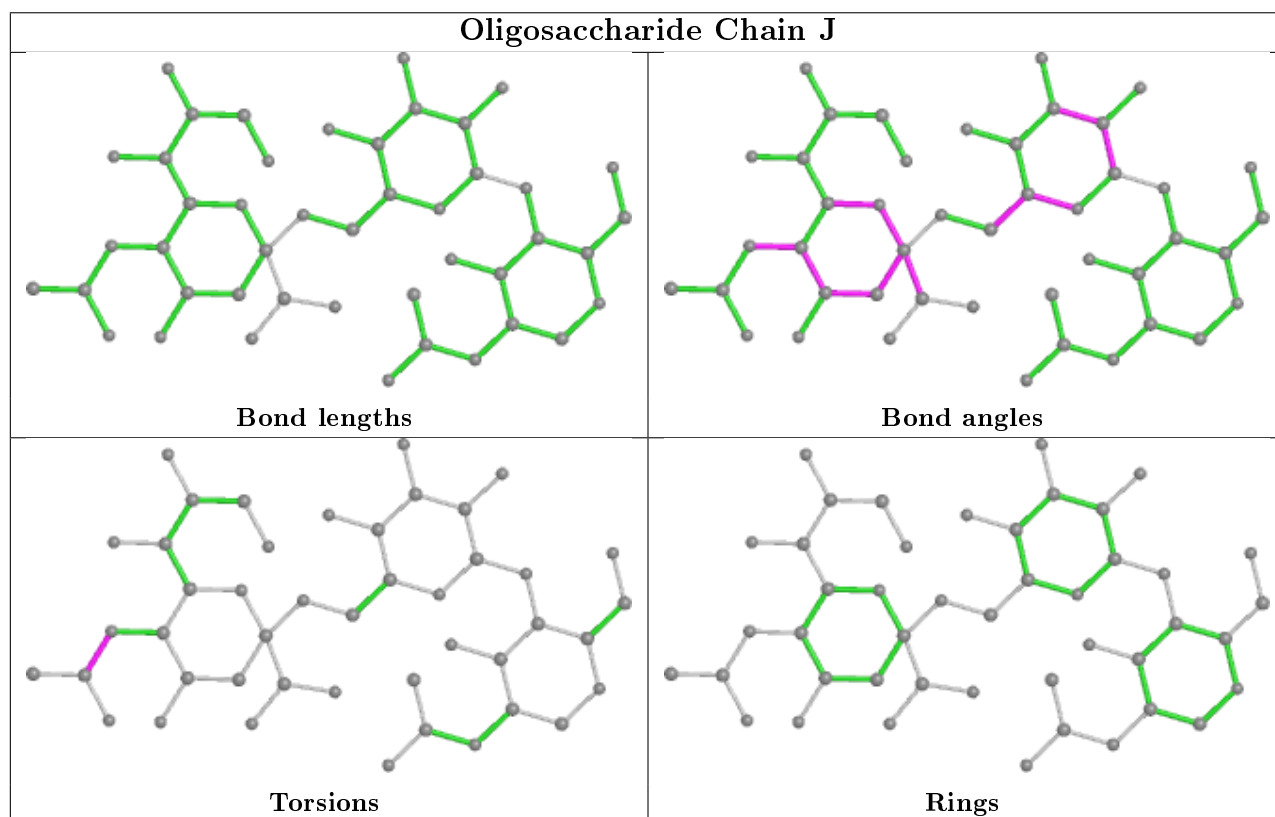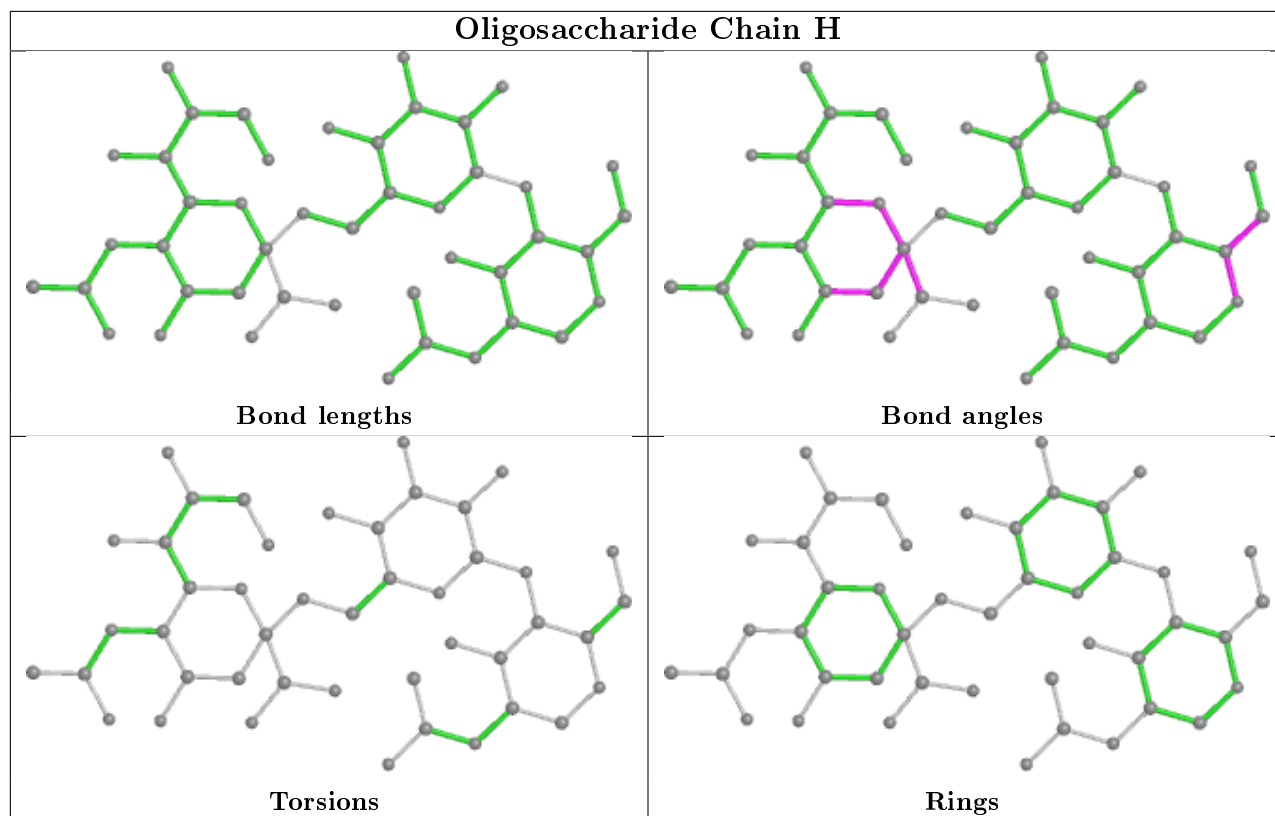
5.6 Ligand geometry (i)

There are no ligands in this entry.

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	324/324 (100%)	-0.29	1 (0%)	94	83	29, 54, 85, 187	0
1	C	324/324 (100%)	-0.12	3 (0%)	84	62	40, 69, 101, 176	0
1	E	324/324 (100%)	-0.36	2 (0%)	89	72	30, 56, 91, 168	0
2	B	170/170 (100%)	-0.12	1 (0%)	89	72	42, 65, 94, 134	0
2	D	164/170 (96%)	0.16	5 (3%)	50	22	43, 90, 144, 174	0
2	F	165/170 (97%)	0.16	7 (4%)	36	14	40, 81, 141, 161	0
All	All	1471/1482 (99%)	-0.15	19 (1%)	77	51	29, 64, 118, 187	0

The worst 5 of 19 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	327	ARG	6.5
1	E	327	ARG	5.0
1	A	327	ARG	3.8
2	D	533	GLY	3.2
2	F	518	ILE	2.9

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

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

6.3 Carbohydrates ⓘ

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
4	NAG	J	1	14/15	0.81	0.29	107,114,121,122	0
4	NAG	H	1	14/15	0.83	0.32	101,118,124,128	0
4	GAL	J	2	11/12	0.88	0.19	84,94,105,108	0
4	GAL	H	2	11/12	0.90	0.21	75,95,108,109	0
3	NAG	I	2	14/15	0.91	0.15	70,79,96,96	0
3	NAG	G	2	14/15	0.91	0.20	63,70,85,87	0
3	NAG	K	2	14/15	0.92	0.18	70,87,94,95	0
4	SIA	J	3	20/21	0.93	0.17	62,78,84,85	0
3	NAG	G	1	14/15	0.96	0.14	43,50,59,60	0
4	SIA	H	3	20/21	0.96	0.17	38,55,67,68	0
3	NAG	I	1	14/15	0.96	0.12	64,71,75,81	0
3	NAG	K	1	14/15	0.97	0.14	50,54,60,62	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.
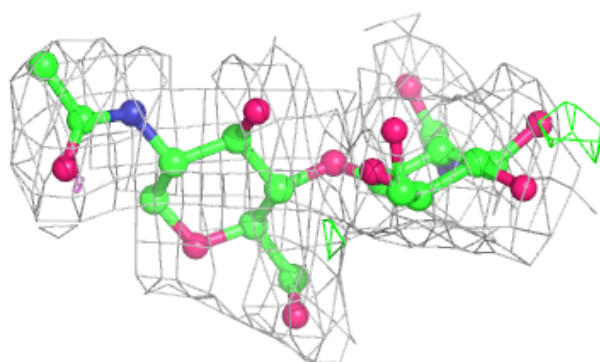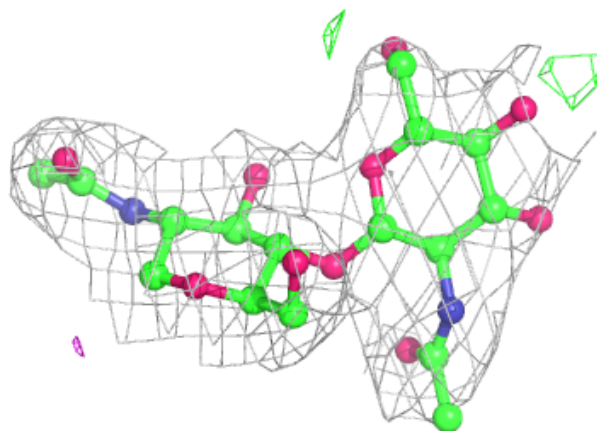

**Electron density around Chain G:**

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
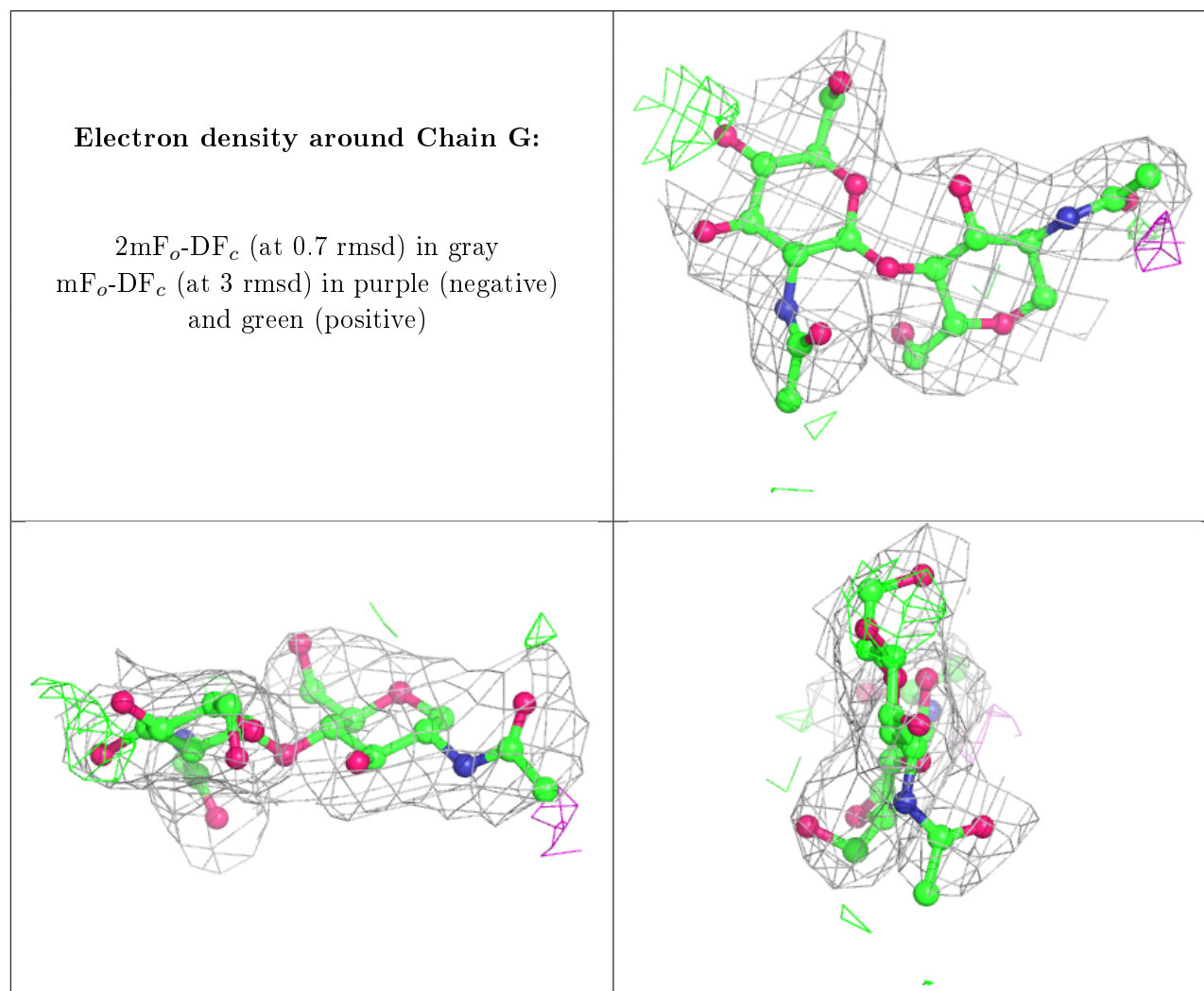
Electron density around Chain I:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
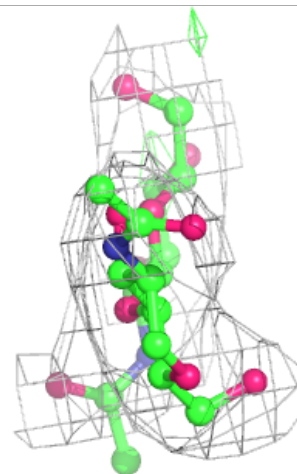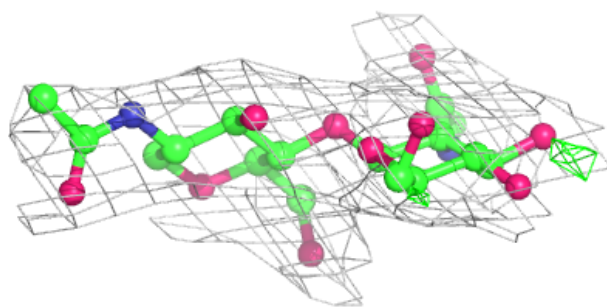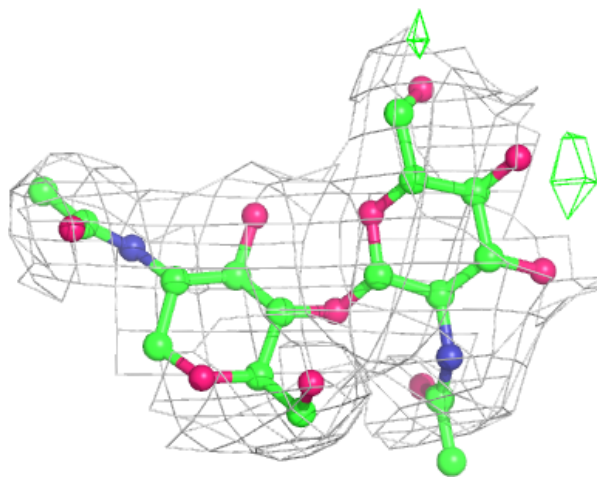
Electron density around Chain K:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
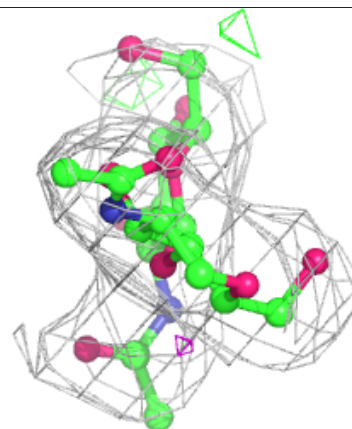
Electron density around Chain H:

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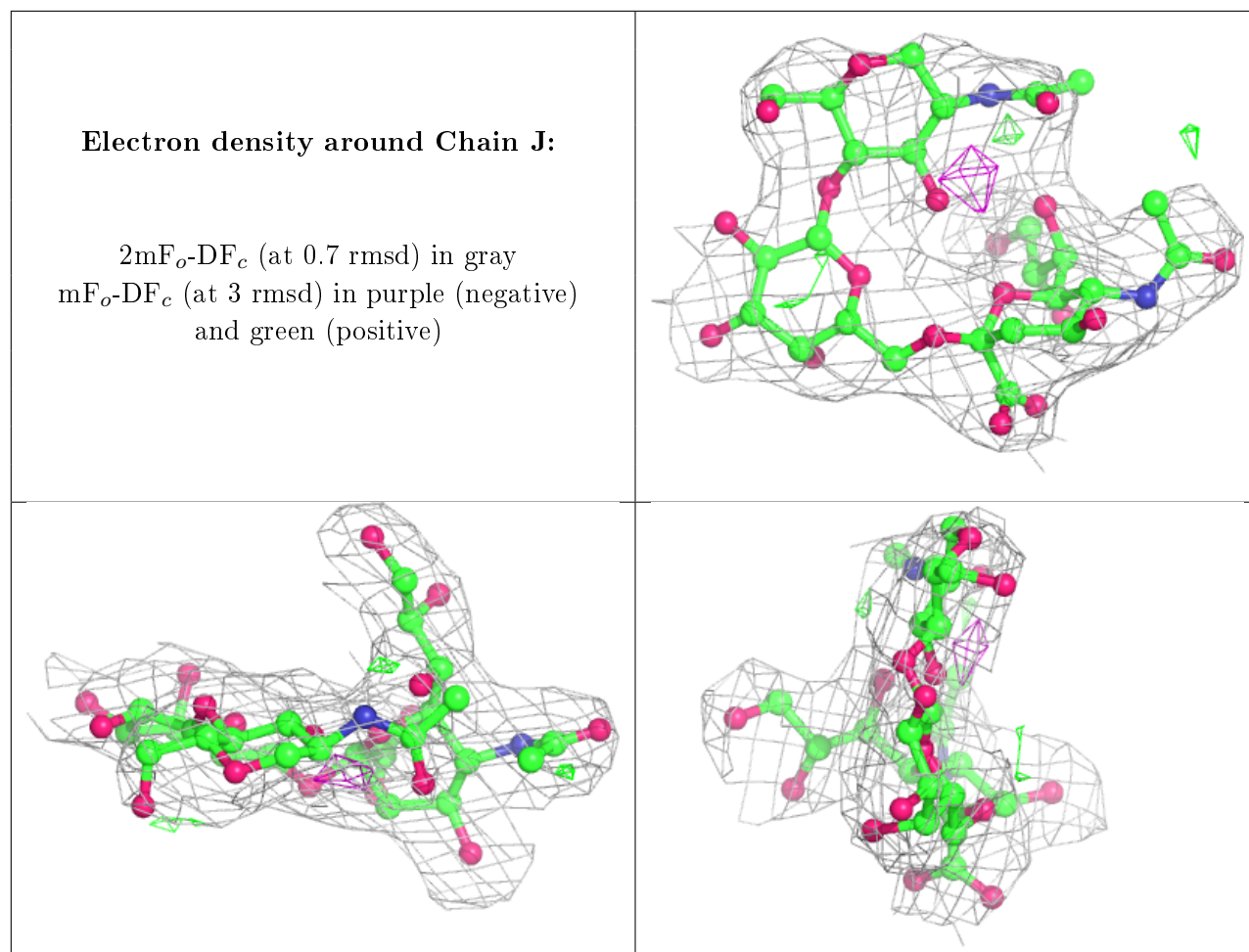and green (positive)

Electron density around Chain J:

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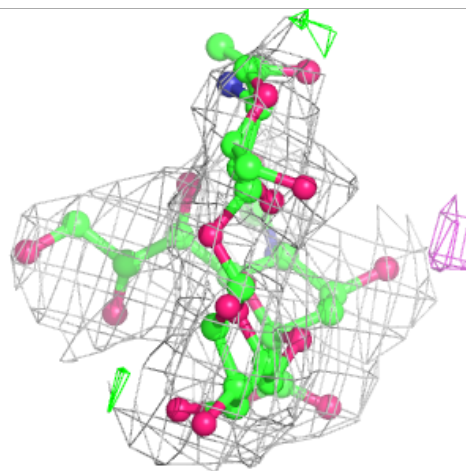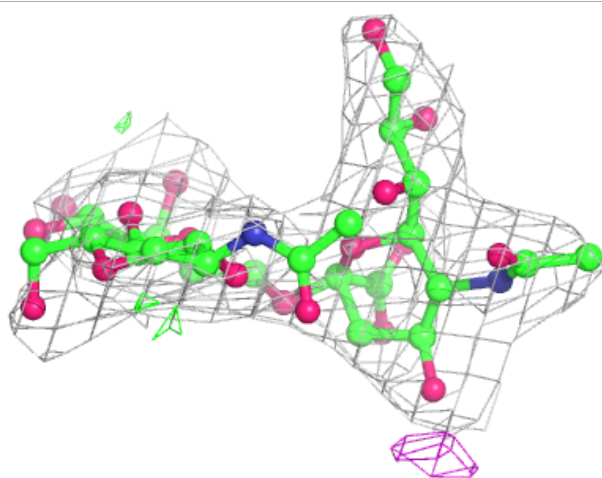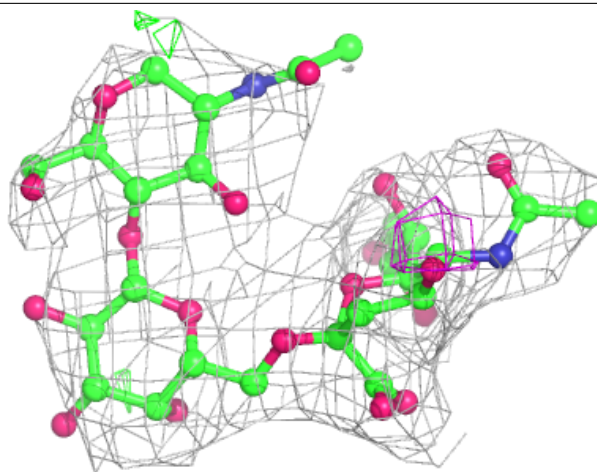
6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.