W O R L D W I D E
wwPDB
P R O T E I N   D A T A   B A N K

wwPDB X-ray Structure Validation Summary Report ⓘ

Jan 4, 2024 – 11:00 pm GMT

PDB ID	:	4XZV
Title	:	Crystal Structure of SLMO1-TRIAP1 Complex
Authors	:	Miliara, X.; Garnett, J.A.; Matthews, S.J.
Deposited on	:	2015-02-05
Resolution	:	3.58 Å(reported)

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

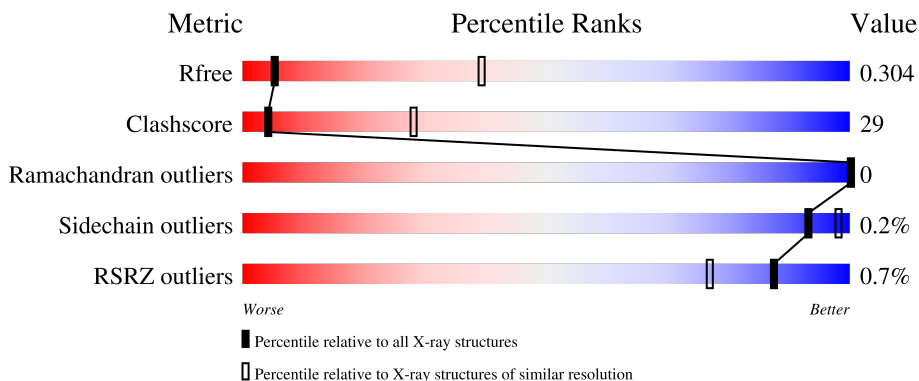|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 3.58 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		0.304
Clashscore		29
Ramachandran outliers		0
Sidechain outliers		0.2%
RSRZ outliers		0.7%

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	1094 (3.66-3.50)
Clashscore	141614	1181 (3.66-3.50)
Ramachandran outliers	138981	1143 (3.66-3.50)
Sidechain outliers	138945	1143 (3.66-3.50)
RSRZ outliers	127900	1012 (3.66-3.50)

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 <=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	446	79% 14% 7%
1	C	446	79% 14% 7%
1	E	446	79% 13% 7%
1	G	446	80% 13% 7%
2	B	186	% 26% 51% 24%

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Mol	Chain	Length	Quality of chain
2	D	186	2% · 32% · 44% · 24%
2	F	186	% · 29% · 47% · 24%
2	H	186	3% · 26% · 45% · 28%
3	I	2	100%
3	J	2	50% · 50%
3	K	2	50% · 50%
3	L	2	100%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 17248 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 Maltose-binding periplasmic protein,TP53-regulated inhibitor of apoptosis 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	416	Total	C	N	O	S	0	0	0
			3203	2054	525	613	11			
1	C	416	Total	C	N	O	S	0	0	0
			3203	2054	525	613	11			
1	E	413	Total	C	N	O	S	0	0	0
			3181	2040	522	608	11			
1	G	415	Total	C	N	O	S	0	0	0
			3194	2049	524	610	11			

There are 52 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	MET	-	initiating methionine	UNP P0AEX9
A	82	ALA	ASP	conflict	UNP P0AEX9
A	83	ALA	LYS	conflict	UNP P0AEX9
A	172	ALA	GLU	conflict	UNP P0AEX9
A	173	ALA	ASN	conflict	UNP P0AEX9
A	239	ALA	LYS	conflict	UNP P0AEX9
A	359	ALA	GLU	conflict	UNP P0AEX9
A	362	ALA	LYS	conflict	UNP P0AEX9
A	363	ALA	ASP	conflict	UNP P0AEX9
A	367	ASN	-	linker	UNP P0AEX9
A	368	ALA	-	linker	UNP P0AEX9
A	369	ALA	-	linker	UNP P0AEX9
A	370	ALA	-	linker	UNP P0AEX9
C	0	MET	-	initiating methionine	UNP P0AEX9
C	82	ALA	ASP	conflict	UNP P0AEX9
C	83	ALA	LYS	conflict	UNP P0AEX9
C	172	ALA	GLU	conflict	UNP P0AEX9
C	173	ALA	ASN	conflict	UNP P0AEX9
C	239	ALA	LYS	conflict	UNP P0AEX9
C	359	ALA	GLU	conflict	UNP P0AEX9

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Chain	Residue	Modelled	Actual	Comment	Reference
C	362	ALA	LYS	conflict	UNP P0AEX9
C	363	ALA	ASP	conflict	UNP P0AEX9
C	367	ASN	-	linker	UNP P0AEX9
C	368	ALA	-	linker	UNP P0AEX9
C	369	ALA	-	linker	UNP P0AEX9
C	370	ALA	-	linker	UNP P0AEX9
E	0	MET	-	initiating methionine	UNP P0AEX9
E	82	ALA	ASP	conflict	UNP P0AEX9
E	83	ALA	LYS	conflict	UNP P0AEX9
E	172	ALA	GLU	conflict	UNP P0AEX9
E	173	ALA	ASN	conflict	UNP P0AEX9
E	239	ALA	LYS	conflict	UNP P0AEX9
E	359	ALA	GLU	conflict	UNP P0AEX9
E	362	ALA	LYS	conflict	UNP P0AEX9
E	363	ALA	ASP	conflict	UNP P0AEX9
E	367	ASN	-	linker	UNP P0AEX9
E	368	ALA	-	linker	UNP P0AEX9
E	369	ALA	-	linker	UNP P0AEX9
E	370	ALA	-	linker	UNP P0AEX9
G	0	MET	-	initiating methionine	UNP P0AEX9
G	82	ALA	ASP	conflict	UNP P0AEX9
G	83	ALA	LYS	conflict	UNP P0AEX9
G	172	ALA	GLU	conflict	UNP P0AEX9
G	173	ALA	ASN	conflict	UNP P0AEX9
G	239	ALA	LYS	conflict	UNP P0AEX9
G	359	ALA	GLU	conflict	UNP P0AEX9
G	362	ALA	LYS	conflict	UNP P0AEX9
G	363	ALA	ASP	conflict	UNP P0AEX9
G	367	ASN	-	linker	UNP P0AEX9
G	368	ALA	-	linker	UNP P0AEX9
G	369	ALA	-	linker	UNP P0AEX9
G	370	ALA	-	linker	UNP P0AEX9

- Molecule 2 is a protein called Protein slowmo homolog 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	142	Total	C	N	O	S	0	0	0
			1112	706	194	206	6			
2	D	141	Total	C	N	O	S	0	0	0
			1105	701	193	205	6			
2	F	142	Total	C	N	O	S	0	0	0
			1112	706	194	206	6			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	H	133	1046	664	185	192	5	0	0	0

There are 56 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-13	MET	-	initiating methionine	UNP Q96N28
B	-12	ALA	-	expression tag	UNP Q96N28
B	-11	HIS	-	expression tag	UNP Q96N28
B	-10	HIS	-	expression tag	UNP Q96N28
B	-9	HIS	-	expression tag	UNP Q96N28
B	-8	HIS	-	expression tag	UNP Q96N28
B	-7	HIS	-	expression tag	UNP Q96N28
B	-6	HIS	-	expression tag	UNP Q96N28
B	-5	VAL	-	expression tag	UNP Q96N28
B	-4	ASP	-	expression tag	UNP Q96N28
B	-3	ASP	-	expression tag	UNP Q96N28
B	-2	ASP	-	expression tag	UNP Q96N28
B	-1	ASP	-	expression tag	UNP Q96N28
B	0	LYS	-	expression tag	UNP Q96N28
D	-13	MET	-	initiating methionine	UNP Q96N28
D	-12	ALA	-	expression tag	UNP Q96N28
D	-11	HIS	-	expression tag	UNP Q96N28
D	-10	HIS	-	expression tag	UNP Q96N28
D	-9	HIS	-	expression tag	UNP Q96N28
D	-8	HIS	-	expression tag	UNP Q96N28
D	-7	HIS	-	expression tag	UNP Q96N28
D	-6	HIS	-	expression tag	UNP Q96N28
D	-5	VAL	-	expression tag	UNP Q96N28
D	-4	ASP	-	expression tag	UNP Q96N28
D	-3	ASP	-	expression tag	UNP Q96N28
D	-2	ASP	-	expression tag	UNP Q96N28
D	-1	ASP	-	expression tag	UNP Q96N28
D	0	LYS	-	expression tag	UNP Q96N28
F	-13	MET	-	initiating methionine	UNP Q96N28
F	-12	ALA	-	expression tag	UNP Q96N28
F	-11	HIS	-	expression tag	UNP Q96N28
F	-10	HIS	-	expression tag	UNP Q96N28
F	-9	HIS	-	expression tag	UNP Q96N28
F	-8	HIS	-	expression tag	UNP Q96N28
F	-7	HIS	-	expression tag	UNP Q96N28
F	-6	HIS	-	expression tag	UNP Q96N28

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Chain	Residue	Modelled	Actual	Comment	Reference
F	-5	VAL	-	expression tag	UNP Q96N28
F	-4	ASP	-	expression tag	UNP Q96N28
F	-3	ASP	-	expression tag	UNP Q96N28
F	-2	ASP	-	expression tag	UNP Q96N28
F	-1	ASP	-	expression tag	UNP Q96N28
F	0	LYS	-	expression tag	UNP Q96N28
H	-13	MET	-	initiating methionine	UNP Q96N28
H	-12	ALA	-	expression tag	UNP Q96N28
H	-11	HIS	-	expression tag	UNP Q96N28
H	-10	HIS	-	expression tag	UNP Q96N28
H	-9	HIS	-	expression tag	UNP Q96N28
H	-8	HIS	-	expression tag	UNP Q96N28
H	-7	HIS	-	expression tag	UNP Q96N28
H	-6	HIS	-	expression tag	UNP Q96N28
H	-5	VAL	-	expression tag	UNP Q96N28
H	-4	ASP	-	expression tag	UNP Q96N28
H	-3	ASP	-	expression tag	UNP Q96N28
H	-2	ASP	-	expression tag	UNP Q96N28
H	-1	ASP	-	expression tag	UNP Q96N28
H	0	LYS	-	expression tag	UNP Q96N28

- Molecule 3 is an oligosaccharide called alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose.

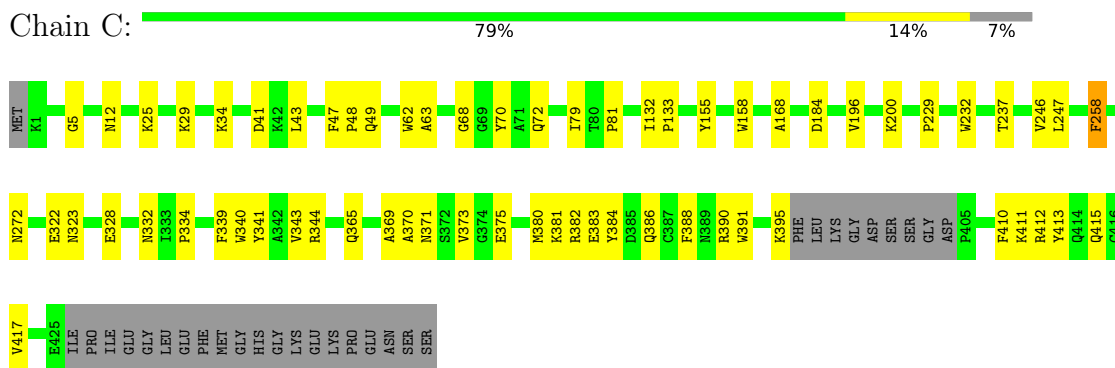| Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	Trace
3	I	2	Total 23	C 12	O 11	0	0	0
3	J	2	Total 23	C 12	O 11	0	0	0
3	K	2	Total 23	C 12	O 11	0	0	0
3	L	2	Total 23	C 12	O 11	0	0	0

3 Residue-property plots ⓘ

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: Maltose-binding periplasmic protein,TP53-regulated inhibitor of apoptosis 1
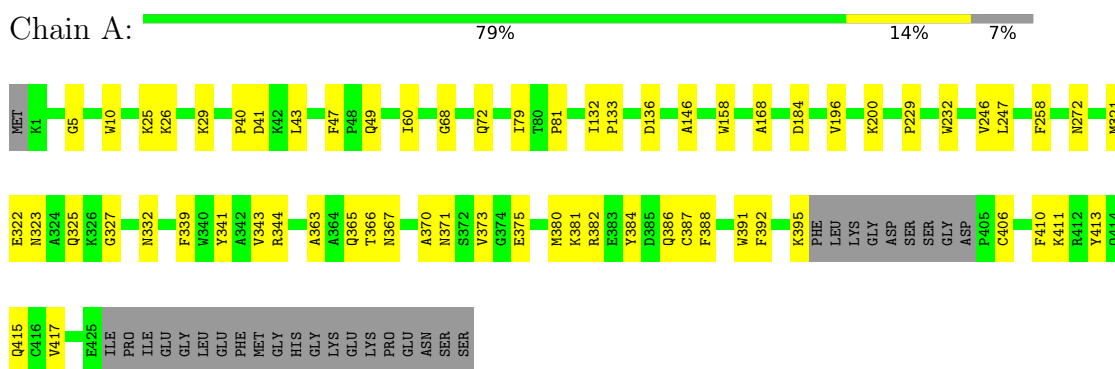
Chain A:

• Molecule 1: Maltose-binding periplasmic protein,TP53-regulated inhibitor of apoptosis 1

Chain C:

• Molecule 1: Maltose-binding periplasmic protein,TP53-regulated inhibitor of apoptosis 1

Chain E:

Q415 C416 V417 E425 ILE PRO ILE GLU GLY LEU GLU PHE MET GLY HIS GLY LYS GLU LYS PRO GLU ASN SER SER
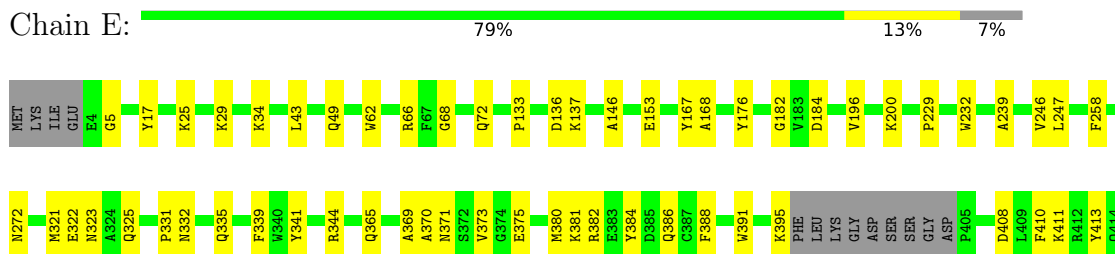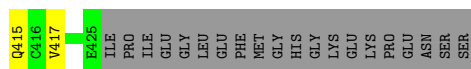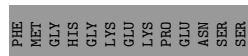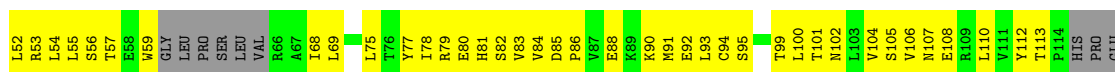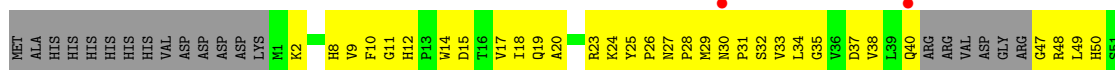
- Molecule 1: Maltose-binding periplasmic protein,TP53-regulated inhibitor of apoptosis 1

Chain G:

80%   13%   7%

MET K1 G5 N12 K25 K29 L43 E44 E45 K46 F47 P48 Q49 W62 G68 Q72 I79 T80 P81 D136 A146 Y167 A168 G182 V183 D184 V196 K200 P229 W232 G243 V246 L247 F258 N272 E322 N323

N332 F339 W340 Y341 A342 V343 R344 Q365 T366 A369 A370 N371 S372 V373 G374 E375 M380 K381 R382 E383 Y384 D385 Q386 C387 W391 K395 PHE LEU LYS GLY ASP SER SER GLY ASP P405 C406 F410 K411 R412 Y413 I421 K424 GLU ILE PRO ILE GLU GLY LEU GLU

PHE MET GLY HIS GLY LYS GLU LYS PRO GLU ASN SER SER

- Molecule 2: Protein slowmo homolog 1

Chain B:

%

26%   51%   24%

MET ALA HIS HIS HIS HIS HIS VAL ASP ASP ASP LYS M1 K2 H8 V9 F10 G11 H12 P13 W14 D15 T16 V17 I18 Q19 A20 R23 K24 Y25 P26 N27 P28 M29 N30 P31 S32 V33 L34 G35 V36 D37 V38 L39 Q40 ARG VAL ASP GLY ARG G47 R48 L49 H50 S51

L52 R53 L54 L55 S56 T57 E58 W59 GLY LEU PRO SER LEU VAL R66 A67 I68 L69 L75 T76 Y77 I78 R79 E80 H81 S82 V83 V84 D85 P86 V87 E88 K89 K90 M91 E92 L93 C94 S95 T99 L100 T101 N102 L103 V104 S105 V106 N107 E108 R109 L110 V111 Y112 T113 P114 HIS PRO GLU

ASN PRO E120 M121 T122 V123 L124 T125 Q126 E127 I130 T131 V132 LYS GLY ILE SER LEU GLY SER TYR L141 E142 S143 L144 M145 A146 I149 S150 S151 K155 G156 W157 I160 E161 W162 I163 I164 S167 GLU SER ALA VAL SER

- Molecule 2: Protein slowmo homolog 1

Chain D:

2%

32%   44%   24%

MET ALA HIS HIS HIS HIS HIS VAL ASP ASP ASP LYS M1 E7 H8 V9 F10 G11 H12 P13 W14 D15 T16 V17 I18 Q19 A20 R23 K24 Y25 P26 N27 P28 P31 S32 V33 L34 G35 V36 D37 V38 L39 Q40 ARG ARG VAL ASP GLY ARG G47 R48 L49 H50 S51 L52

R53 L54 L55 S56 T57 E58 W59 GLY LEU PRO SER LEU VAL R66 A67 I68 L69 G70 T71 L75 T76 Y77 I78 R79 E80 H81 S82 V83 V84 D85 P86 K89 K90 M91 E92 L93 C94 S95 T96 N97 I98 T99 L100 T101 N102 L103 V104 S105 V106 N107 E108 R109 L110 P114 HIS PRO GLU

ASN PRO E120 M121 T122 V123 L124 T125 Q126 E127 I130 T131 VAL LYS GLY ILE SER LEU GLY SER TYR L141 I149 S150 S151 K155 G156 W157 A158 A159 I160 E161 W162 I163 I164 S167 GLU SER ALA VAL SER
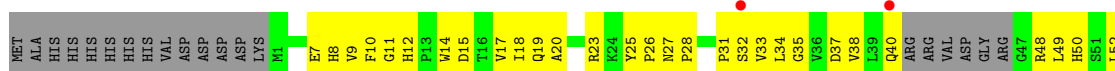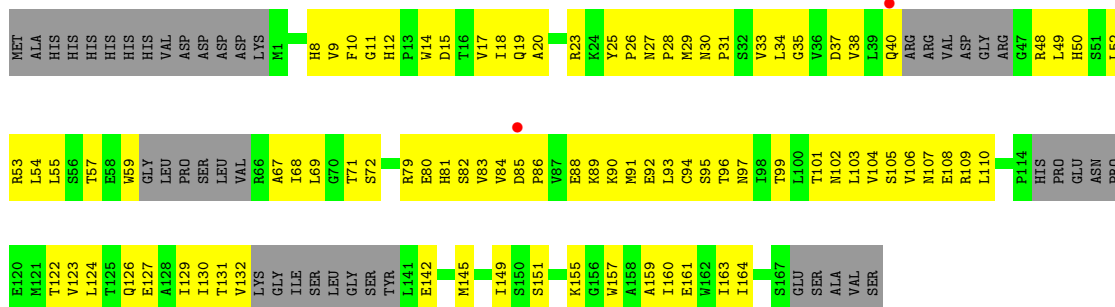
- Molecule 2: Protein slowmo homolog 1

Chain F:

%

29%   47%   24%

• Molecule 2: Protein slowmo homolog 1

Chain H:

3%

26%　　　　　　45%　　　　　　28%

• Molecule 3: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain I:

100%

GLC1 GLC2

• Molecule 3: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain J:

50%　　　　　　50%

GLC1 GLC2

• Molecule 3: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain K:

50%　　　　　　50%

GLC1 GLC2

• Molecule 3: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain L:

100%

GLC1 GLC2
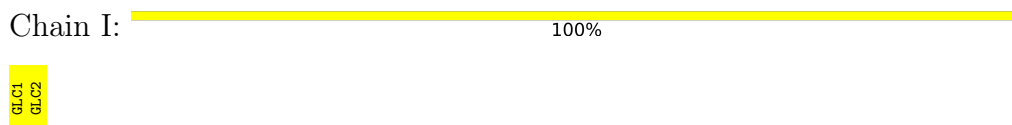
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	79.62Å 80.68Å 98.02Å 87.25° 85.62° 89.92°	Depositor
Resolution (Å)	97.62 – 3.58 97.62 – 3.58	Depositor EDS
% Data completeness (in resolution range)	98.9 (97.62-3.58) 98.9 (97.62-3.58)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.11	Depositor
$< I/\sigma(I) >$ [1]	2.67 (at 3.58Å)	Xtriage
Refinement program	REFMAC 5.8.0073	Depositor
R, R_{free}	0.273 , 0.309 0.270 , 0.304	Depositor DCC
R_{free} test set	1499 reflections (5.29%)	wwPDB-VP
Wilson B-factor (Å^2)	93.4	Xtriage
Anisotropy	0.271	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.23 , 112.7	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.026 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.87	EDS
Total number of atoms	17248	wwPDB-VP
Average B, all atoms (Å^2)	181.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.36% 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 ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: GLC

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	0.57	0/3279	0.71	1/4454 (0.0%)
1	C	0.57	0/3279	0.72	0/4454
1	E	0.50	0/3257	0.67	0/4424
1	G	0.48	0/3270	0.67	0/4442
2	B	0.59	0/1131	0.87	1/1536 (0.1%)
2	D	0.58	0/1124	0.82	0/1526
2	F	0.50	0/1131	0.78	0/1536
2	H	0.50	0/1062	0.77	1/1438 (0.1%)
All	All	0.54	0/17533	0.72	3/23810 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	H	79	ARG	NE-CZ-NH1	5.65	123.12	120.30
1	A	41	ASP	CB-CG-OD1	5.31	123.08	118.30
2	B	30	ASN	C-N-CD	5.03	138.97	128.40

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of 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	3203	0	3125	101	0
1	C	3203	0	3123	93	0
1	E	3181	0	3101	80	0
1	G	3194	0	3117	84	0
2	B	1112	0	1122	187	0
2	D	1105	0	1113	168	0
2	F	1112	0	1122	176	0
2	H	1046	0	1059	151	0
3	I	23	0	21	0	0
3	J	23	0	21	3	0
3	K	23	0	21	1	0
3	L	23	0	21	0	0
All	All	17248	0	16966	1006	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 29.

The worst 5 of 1006 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:D:18:ILE:HD12	2:D:91:MET:CE	1.43	1.45
1:A:387:CYS:SG	1:A:406:CYS:SG	1.44	1.43
2:B:48:ARG:HB3	2:B:85:ASP:CG	1.40	1.42
2:H:18:ILE:HD12	2:H:91:MET:CE	1.55	1.35
2:F:18:ILE:HD12	2:F:91:MET:CE	1.58	1.32

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	412/446 (92%)	402 (98%)	10 (2%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	412/446 (92%)	399 (97%)	13 (3%)	0	100	100
1	E	409/446 (92%)	399 (98%)	10 (2%)	0	100	100
1	G	411/446 (92%)	400 (97%)	11 (3%)	0	100	100
2	B	132/186 (71%)	123 (93%)	9 (7%)	0	100	100
2	D	131/186 (70%)	123 (94%)	8 (6%)	0	100	100
2	F	132/186 (71%)	124 (94%)	8 (6%)	0	100	100
2	H	121/186 (65%)	111 (92%)	10 (8%)	0	100	100
All	All	2160/2528 (85%)	2081 (96%)	79 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	323/353 (92%)	322 (100%)	1 (0%)	92	98
1	C	323/353 (92%)	322 (100%)	1 (0%)	92	98
1	E	321/353 (91%)	320 (100%)	1 (0%)	92	98
1	G	322/353 (91%)	321 (100%)	1 (0%)	92	98
2	B	125/167 (75%)	125 (100%)	0	100	100
2	D	124/167 (74%)	124 (100%)	0	100	100
2	F	125/167 (75%)	125 (100%)	0	100	100
2	H	117/167 (70%)	117 (100%)	0	100	100
All	All	1780/2080 (86%)	1776 (100%)	4 (0%)	93	98

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	258	PHE
1	C	258	PHE

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Mol	Chain	Res	Type
1	E	258	PHE
1	G	258	PHE

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

Mol	Chain	Res	Type
1	G	205	ASN
2	H	97	ASN
1	G	272	ASN
2	H	8	HIS
1	C	415	GLN

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 ⓘ

8 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	GLC	I	1	3	12,12,12	0.92	1 (8%)	17,17,17	2.04	6 (35%)
3	GLC	I	2	3	11,11,12	0.94	0	15,15,17	1.58	3 (20%)
3	GLC	J	1	3	12,12,12	0.77	0	17,17,17	2.31	6 (35%)
3	GLC	J	2	3	11,11,12	1.01	1 (9%)	15,15,17	1.22	2 (13%)
3	GLC	K	1	3	12,12,12	0.59	0	17,17,17	2.10	3 (17%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
3	GLC	K	2	3	11,11,12	0.54	0	15,15,17	1.18	1 (6%)
3	GLC	L	1	3	12,12,12	0.72	0	17,17,17	2.08	7 (41%)
3	GLC	L	2	3	11,11,12	0.63	0	15,15,17	1.16	1 (6%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GLC	I	1	3	-	0/2/22/22	0/1/1/1
3	GLC	I	2	3	-	0/2/19/22	0/1/1/1
3	GLC	J	1	3	-	0/2/22/22	0/1/1/1
3	GLC	J	2	3	-	0/2/19/22	0/1/1/1
3	GLC	K	1	3	-	0/2/22/22	0/1/1/1
3	GLC	K	2	3	-	1/2/19/22	0/1/1/1
3	GLC	L	1	3	-	0/2/22/22	0/1/1/1
3	GLC	L	2	3	-	1/2/19/22	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	J	2	GLC	O5-C1	-2.34	1.40	1.43
3	I	1	GLC	O5-C5	-2.05	1.39	1.44

The worst 5 of 29 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	J	1	GLC	O5-C1-C2	5.98	120.96	110.28
3	K	1	GLC	O5-C1-C2	5.37	119.87	110.28
3	I	1	GLC	O5-C1-C2	4.90	119.02	110.28
3	L	1	GLC	O5-C1-C2	4.46	118.23	110.28
3	K	1	GLC	C1-O5-C5	4.32	121.82	113.66

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	L	2	GLC	C4-C5-C6-O6
3	K	2	GLC	C4-C5-C6-O6

There are no ring outliers.

2 monomers are involved in 4 short contacts:

| Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	J	2	GLC	3	0
3	K	2	GLC	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.

Oligosaccharide Chain I

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain J

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain K

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain L

Bond lengths

Bond angles

Torsions

Rings
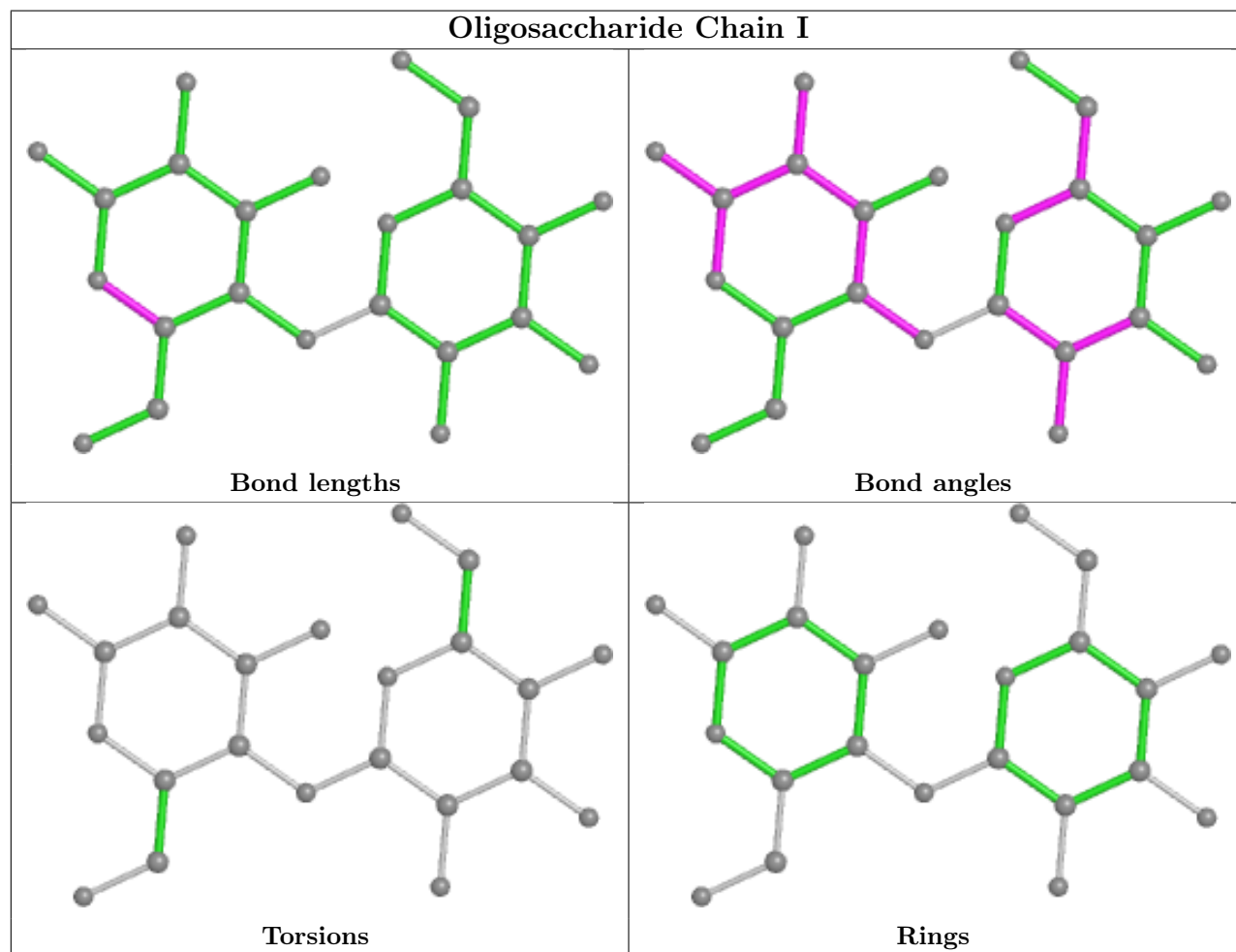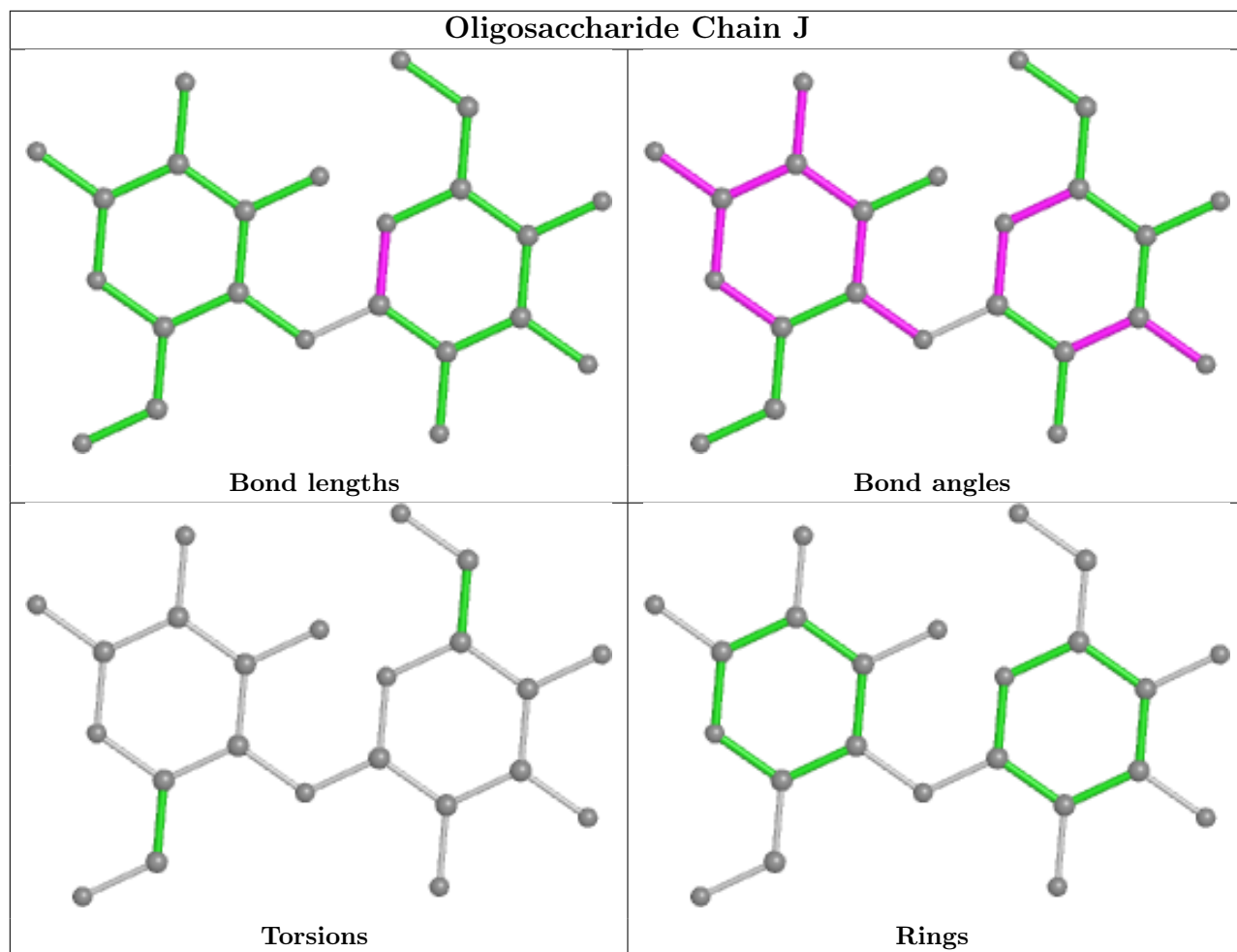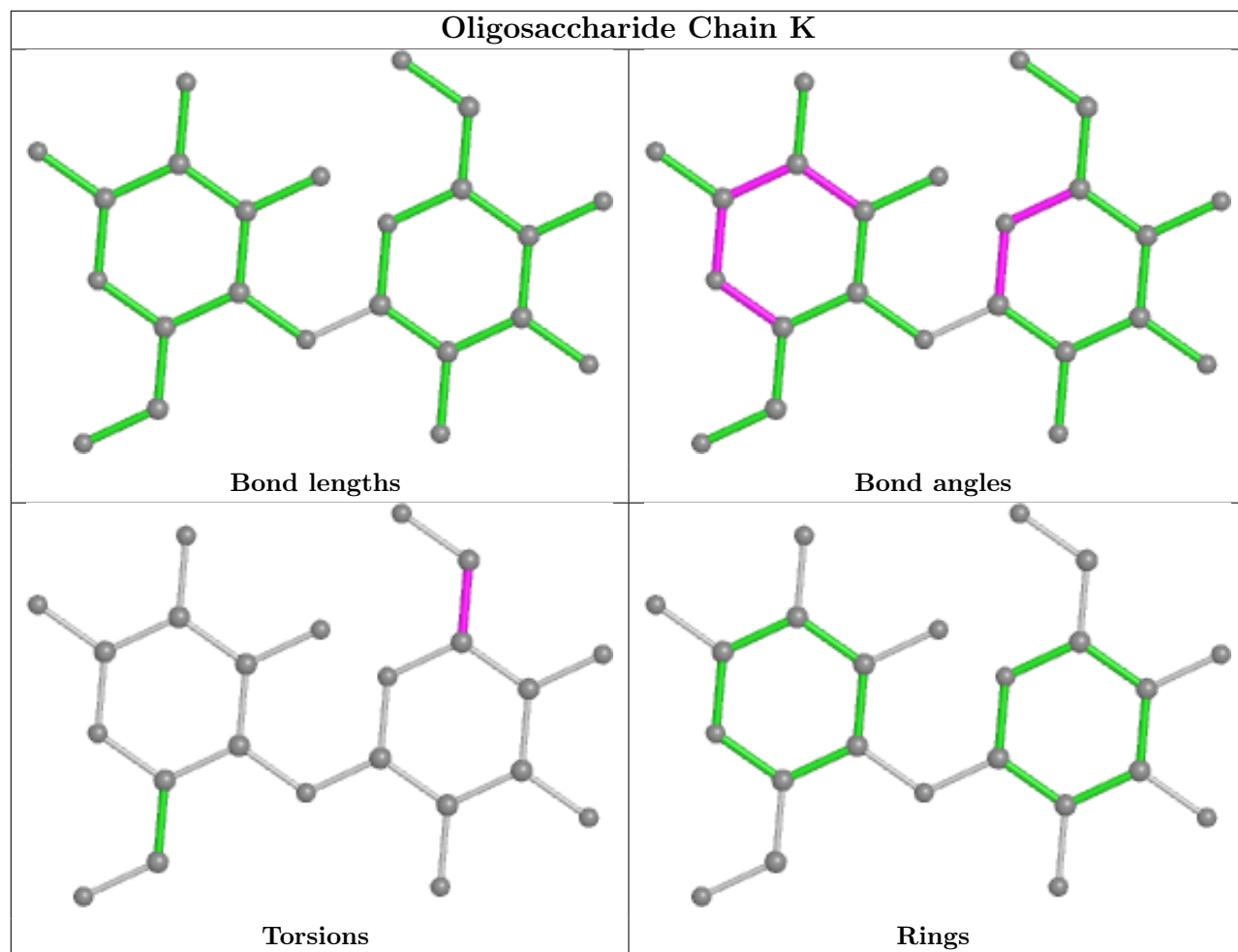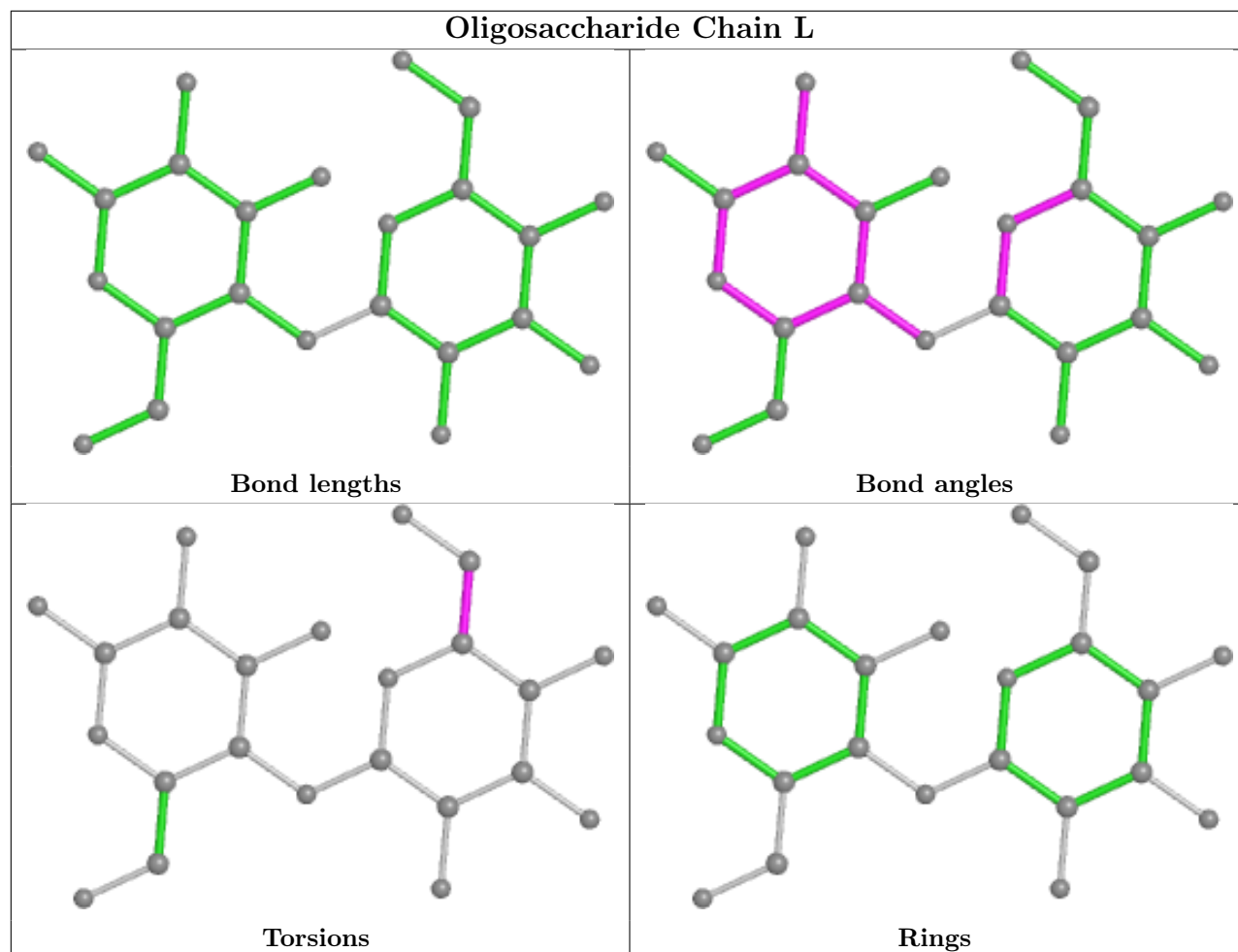
5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Fit of model and data (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	416/446 (93%)	-0.80	0	100	100	67, 125, 193, 260	0
1	C	416/446 (93%)	-0.68	0	100	100	80, 136, 205, 262	0
1	E	413/446 (92%)	-0.41	0	100	100	131, 193, 285, 377	0
1	G	415/446 (93%)	-0.42	1 (0%)	95	91	134, 195, 270, 323	0
2	B	142/186 (76%)	-0.08	2 (1%)	75	59	123, 190, 264, 315	0
2	D	141/186 (75%)	-0.10	4 (2%)	53	35	120, 195, 273, 313	0
2	F	142/186 (76%)	-0.03	2 (1%)	75	59	195, 232, 290, 332	0
2	H	133/186 (71%)	0.13	6 (4%)	33	19	196, 259, 302, 326	0
All	All	2218/2528 (87%)	-0.44	15 (0%)	87	77	67, 176, 274, 377	0

The worst 5 of 15 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	F	40	GLN	4.0
2	B	40	GLN	3.2
2	D	32	SER	2.8
2	H	59	TRP	2.8
2	D	85	ASP	2.7

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

There are no non-standard protein/DNA/RNA residues in this entry.
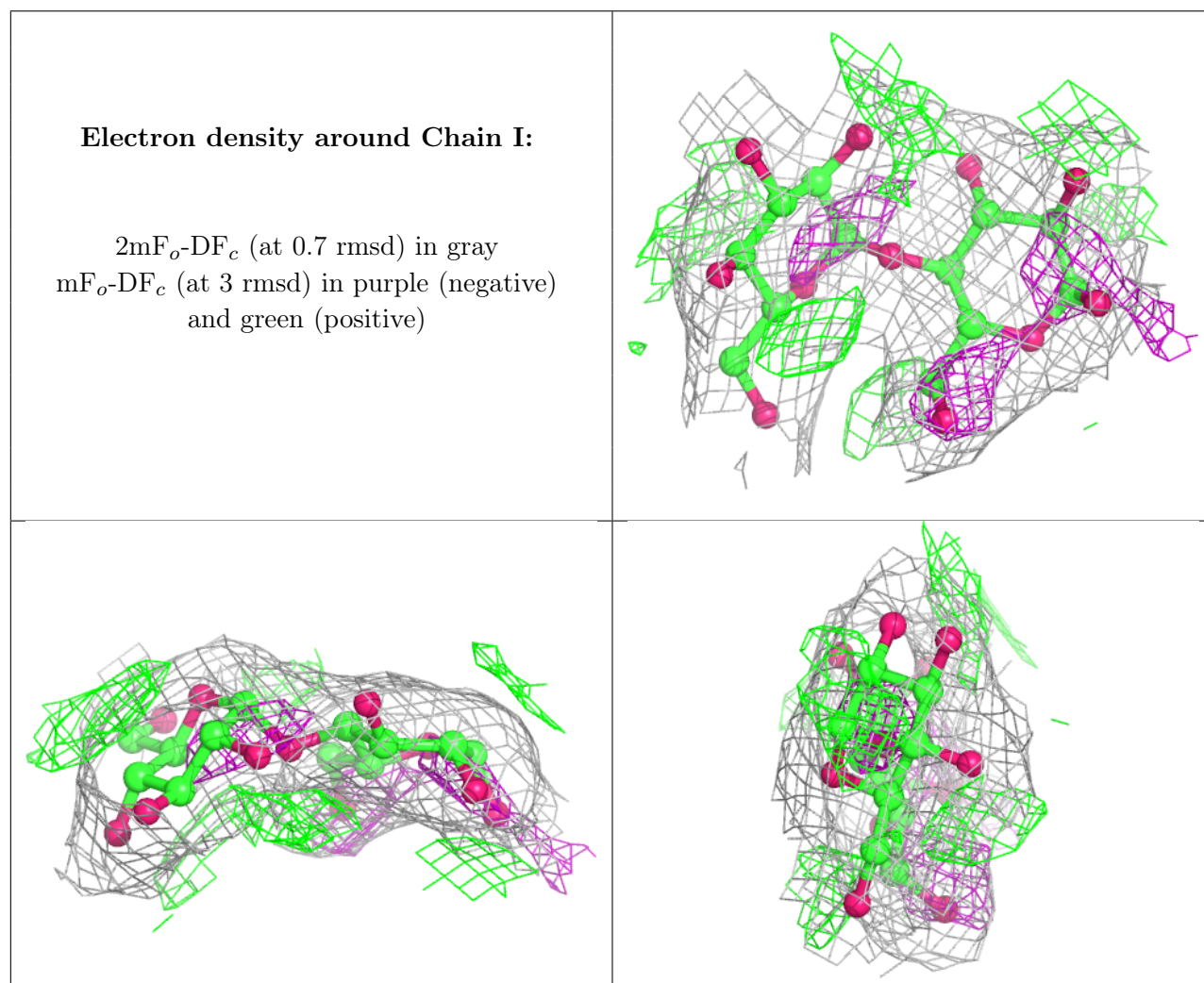
6.3   Carbohydrates (i)

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
3	GLC	K	1	12/12	0.94	0.15	89,98,110,112	0
3	GLC	L	2	11/12	0.96	0.12	67,80,86,89	0
3	GLC	I	2	11/12	0.97	0.10	35,36,43,50	0
3	GLC	K	2	11/12	0.97	0.09	68,82,96,107	0
3	GLC	L	1	12/12	0.97	0.13	74,81,90,92	0
3	GLC	J	1	12/12	0.97	0.15	48,61,68,80	0
3	GLC	I	1	12/12	0.98	0.11	36,41,46,54	0
3	GLC	J	2	11/12	0.98	0.09	35,41,48,56	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 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 J:

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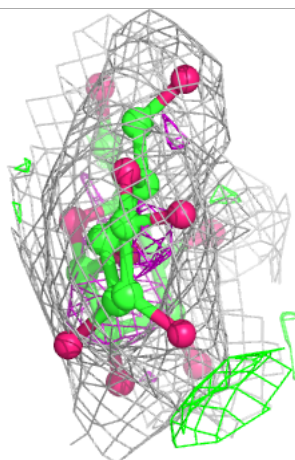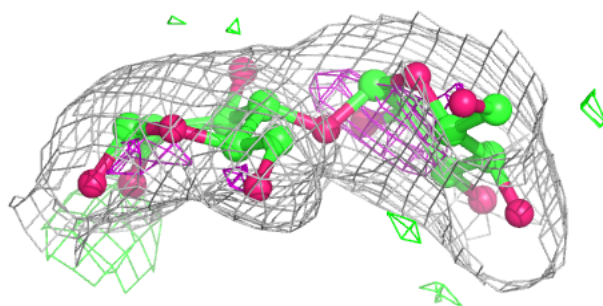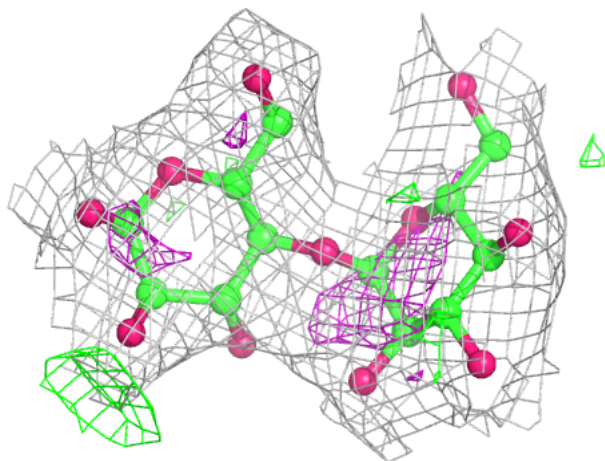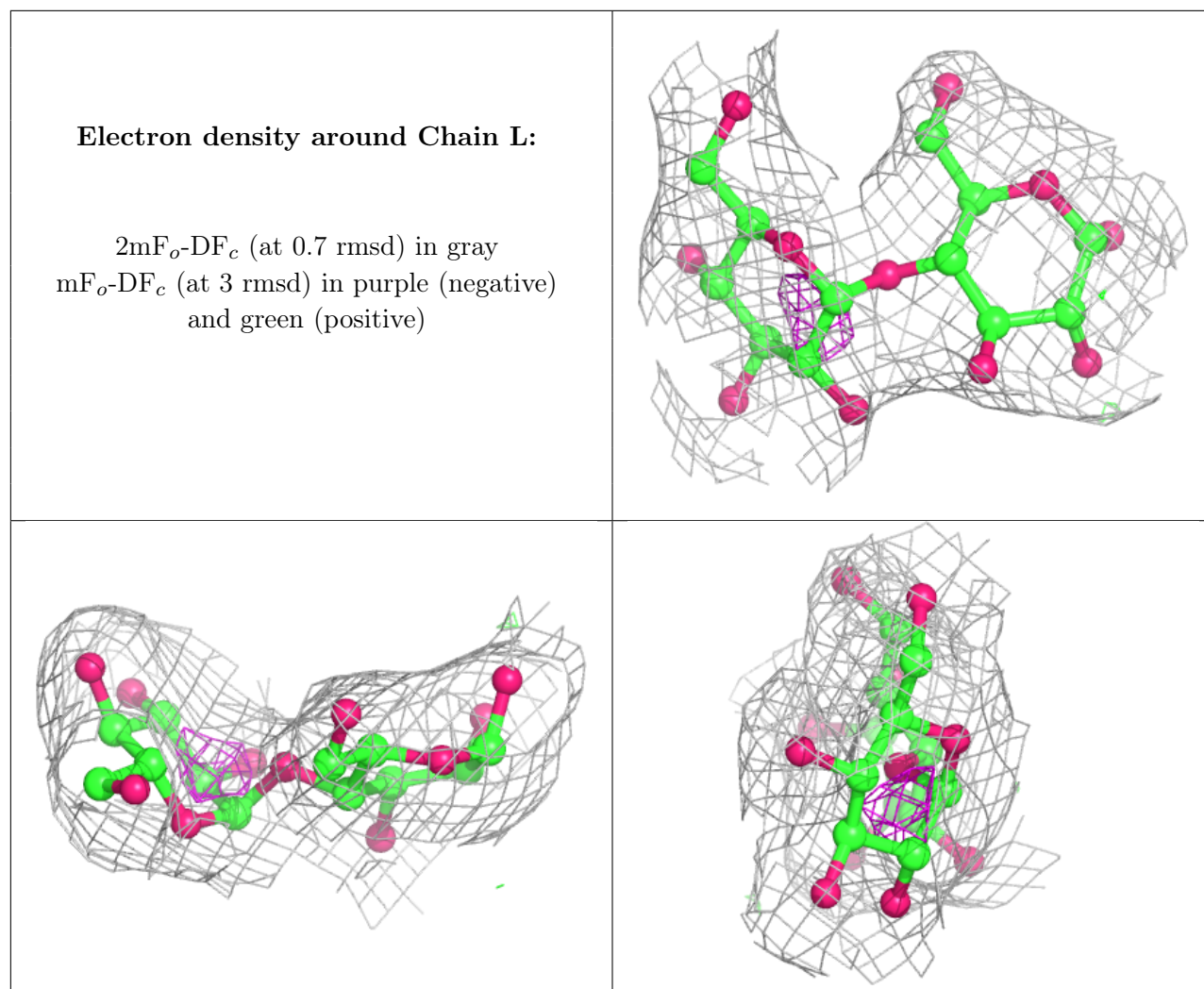
Electron density around Chain K:

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

Electron density around Chain L:

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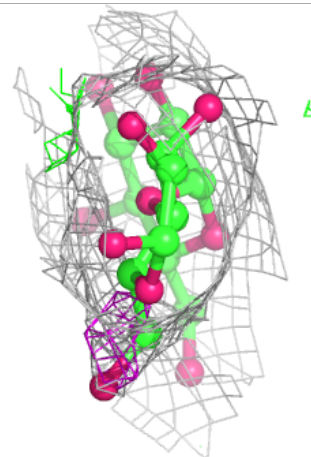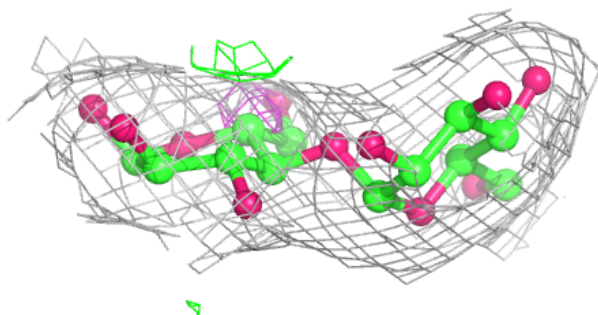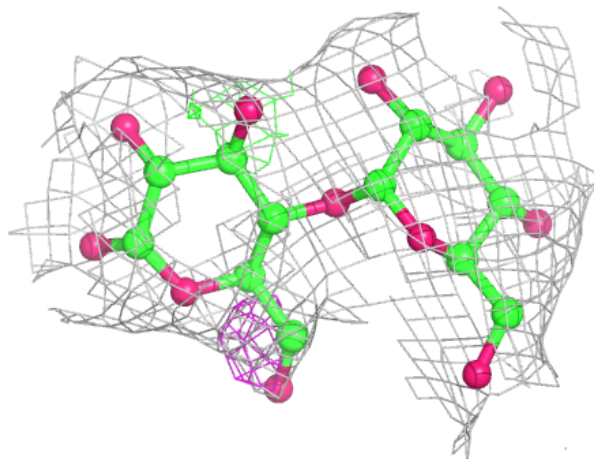
6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.