WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Jan 7, 2024 – 02:26 pm GMT

PDB ID	:	6FKN
Title	:	Drosophila Plexin A in complex with Semaphorin 1b
Authors	:	Rozbesky, D.; Harlos, K.; Jones, E.Y.
Deposited on	:	2018-01-24
Resolution	:	4.80 Å(reported)

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

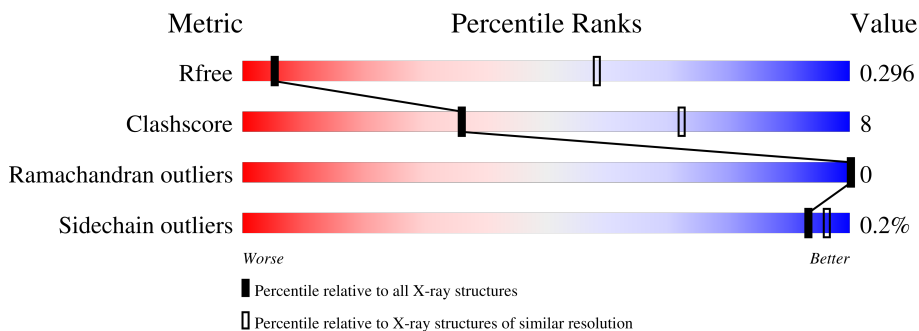|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	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 4.80 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		0.296
Clashscore		8
Ramachandran outliers		0
Sidechain outliers		0.2%

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	1096 (5.80-3.80)
Clashscore	141614	1170 (5.80-3.80)
Ramachandran outliers	138981	1105 (5.80-3.80)
Sidechain outliers	138945	1085 (5.80-3.80)

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%

Mol	Chain	Length	Quality of chain
1	A	715	59% 13% 29%
1	C	715	59% 13% 28%
2	B	578	69% 14% 17%
2	D	578	68% 14% 18%
3	E	4	75% 25%
4	F	3	100%
5	G	5	20% 80%

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Mol	Chain	Length	Quality of chain
5	H	5	60% 40%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	NAG	E	1	X	-	-	-
5	NAG	G	2	-	-	X	-

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 15600 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 Plexin A, isoform A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	511	Total	C	N	O	S	0	0	0
			3923	2466	654	777	26			
1	C	512	Total	C	N	O	S	0	0	0
			3931	2470	656	779	26			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	25	GLU	-	expression tag	UNP Q9V491
A	26	THR	-	expression tag	UNP Q9V491
A	27	GLY	-	expression tag	UNP Q9V491
A	731	GLY	-	expression tag	UNP Q9V491
A	732	THR	-	expression tag	UNP Q9V491
A	733	LYS	-	expression tag	UNP Q9V491
A	734	HIS	-	expression tag	UNP Q9V491
A	735	HIS	-	expression tag	UNP Q9V491
A	736	HIS	-	expression tag	UNP Q9V491
A	737	HIS	-	expression tag	UNP Q9V491
A	738	HIS	-	expression tag	UNP Q9V491
A	739	HIS	-	expression tag	UNP Q9V491
C	25	GLU	-	expression tag	UNP Q9V491
C	26	THR	-	expression tag	UNP Q9V491
C	27	GLY	-	expression tag	UNP Q9V491
C	731	GLY	-	expression tag	UNP Q9V491
C	732	THR	-	expression tag	UNP Q9V491
C	733	LYS	-	expression tag	UNP Q9V491
C	734	HIS	-	expression tag	UNP Q9V491
C	735	HIS	-	expression tag	UNP Q9V491
C	736	HIS	-	expression tag	UNP Q9V491
C	737	HIS	-	expression tag	UNP Q9V491
C	738	HIS	-	expression tag	UNP Q9V491
C	739	HIS	-	expression tag	UNP Q9V491

• Molecule 2 is a protein called MIP07328p.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	478	Total 3743	C 2376	N 646	O 702	S 19	0	0	0
2	D	473	Total 3708	C 2355	N 639	O 695	S 19	0	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	34	GLU	-	expression tag	UNP Q7KK54
B	35	THR	-	expression tag	UNP Q7KK54
B	36	GLY	-	expression tag	UNP Q7KK54
B	603	GLY	-	expression tag	UNP Q7KK54
B	604	THR	-	expression tag	UNP Q7KK54
B	605	LYS	-	expression tag	UNP Q7KK54
B	606	HIS	-	expression tag	UNP Q7KK54
B	607	HIS	-	expression tag	UNP Q7KK54
B	608	HIS	-	expression tag	UNP Q7KK54
B	609	HIS	-	expression tag	UNP Q7KK54
B	610	HIS	-	expression tag	UNP Q7KK54
B	611	HIS	-	expression tag	UNP Q7KK54
D	34	GLU	-	expression tag	UNP Q7KK54
D	35	THR	-	expression tag	UNP Q7KK54
D	36	GLY	-	expression tag	UNP Q7KK54
D	603	GLY	-	expression tag	UNP Q7KK54
D	604	THR	-	expression tag	UNP Q7KK54
D	605	LYS	-	expression tag	UNP Q7KK54
D	606	HIS	-	expression tag	UNP Q7KK54
D	607	HIS	-	expression tag	UNP Q7KK54
D	608	HIS	-	expression tag	UNP Q7KK54
D	609	HIS	-	expression tag	UNP Q7KK54
D	610	HIS	-	expression tag	UNP Q7KK54
D	611	HIS	-	expression tag	UNP Q7KK54

• Molecule 3 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-beta-D-mannopyranos
e-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-gluco
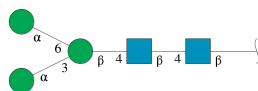pyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	E	4	Total 50	C 28	N 2	O 20	0	0	0

- Molecule 4 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
4	F	3	Total 39	C 22	N 2	O 15	0	0	0

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]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
5	G	5	Total 61	C 34	N 2	O 25	0	0	0
5	H	5	Total 61	C 34	N 2	O 25	0	0	0

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).

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

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. 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. 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: Plexin A, isoform A

Chain A:

• Molecule 1: Plexin A, isoform A

Chain C:

LEU ILE CYS ALA PHE THR THR GLU ASP LYS ALA LEU PHE THR ASN ALA THR LYS LYS ARG ASN GLY VAL ASN CYS THR THR PRO ARG THR ASP MET GLU PRO GLN ILE GLN GLN LYS HIS HIS PHE THR ALA LYS LEU SER VAL ARG THR ARG ASN GLY PRO ASP LEU VAL SER THR

ASP PHE THR PHE ASP SER CYS SER THR HIS SER SER CYS THR ARG CYS VAL SER SER GLU PHE PRO CYS ASP TRP CYS VAL GLU ALA HIS ARG CYS THR HIS ASP ALA GLU ASN CYS ASN ASP ILE LEU VAL THR GLY VAL SER ARG ILE GLY PRO SER TYR ARG SER GLY PRO

GLY PHE CYS PRO THR GLY THR LYS HIS HIS HIS HIS HIS

• Molecule 2: MIP07328p

Chain B:

• Molecule 2: MIP07328p

Chain D:

• Molecule 3: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose
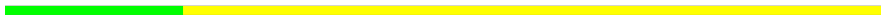
Chain E:

NAG1 NAG2 BMA3 MAN4

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

Chain F: 100%

NAG1 NAG2 BMA3

• Molecule 5: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G: 20% 80%

NAG1 NAG2 BMA3 MAN4 MAN5

• Molecule 5: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H: 60% 40%

NAG1 NAG2 BMA3 MAN4 MAN5

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 65 2 2	Depositor
Cell constants a, b, c, α, β, γ	153.63Å 153.63Å 425.37Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	133.05 – 4.80 133.05 – 4.80	Depositor EDS
% Data completeness (in resolution range)	99.9 (133.05-4.80) 89.0 (133.05-4.80)	Depositor EDS
R_{merge}	0.34	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.20 (at 4.88Å)	Xtriage
Refinement program	PHENIX (1.13rc2_2986: ???)	Depositor
R, R_{free}	0.285 , 0.297 0.285 , 0.296	Depositor DCC
R_{free} test set	819 reflections (5.35%)	wwPDB-VP
Wilson B-factor (Å^2)	185.7	Xtriage
Anisotropy	0.299	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.26 , 204.3	EDS
L-test for twinning[2]	$< |L| > = 0.46, < L^2 > = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.82	EDS
Total number of atoms	15600	wwPDB-VP
Average B, all atoms (Å^2)	271.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.72% 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: BMA, MAN, 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	0.32	0/4001	0.52	0/5436
1	C	0.32	0/4010	0.52	0/5450
2	B	0.31	0/3830	0.51	0/5200
2	D	0.31	0/3793	0.51	0/5150
All	All	0.32	0/15634	0.52	0/21236

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	3923	0	3825	67	7
1	C	3931	0	3832	81	5
2	B	3743	0	3658	84	24
2	D	3708	0	3630	51	32
3	E	50	0	43	10	0
4	F	39	0	34	0	0
5	G	61	0	52	15	0
5	H	61	0	52	0	0
6	A	42	0	39	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	C	42	0	39	2	0
All	All	15600	0	15204	245	37

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 8.

All (245) 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:B:294:GLY:N	3:E:2:NAG:C7	1.96	1.28
2:B:386:ILE:HG23	2:B:390:PHE:CZ	1.69	1.25
2:D:293:PRO:CA	5:G:2:NAG:H82	1.67	1.24
2:B:386:ILE:HG22	2:B:390:PHE:CE2	1.81	1.16
2:B:349:GLU:OE2	1:C:486:PHE:CB	1.96	1.12
2:B:386:ILE:CG2	2:B:390:PHE:CZ	2.32	1.12
2:B:294:GLY:N	3:E:2:NAG:C8	2.15	1.09
2:D:293:PRO:HA	5:G:2:NAG:H82	1.15	1.09
2:D:293:PRO:C	5:G:2:NAG:C8	2.25	1.05
2:D:293:PRO:HA	5:G:2:NAG:C8	1.88	1.03
2:D:400:ALA:HB3	5:G:1:NAG:H82	1.37	1.02
2:D:400:ALA:HB3	5:G:1:NAG:C8	1.90	1.01
2:B:386:ILE:CG2	2:B:390:PHE:CE2	2.42	1.01
6:A:803:NAG:O4	1:C:132:PRO:HG2	1.59	1.00
2:B:349:GLU:OE2	1:C:486:PHE:HA	1.64	0.98
2:D:293:PRO:CA	5:G:2:NAG:C8	2.42	0.98
1:A:256:GLU:O	1:C:360:GLU:OE1	1.84	0.96
2:B:252:MET:HB2	1:C:443:ASN:OD1	1.67	0.95
2:B:349:GLU:OE2	1:C:486:PHE:CA	2.16	0.94
2:B:252:MET:CB	1:C:443:ASN:OD1	2.17	0.92
2:B:294:GLY:O	3:E:2:NAG:O3	1.91	0.87
2:B:252:MET:CG	1:C:443:ASN:OD1	2.23	0.87
2:B:352:SER:HB2	1:C:444:THR:HG21	1.57	0.86
2:B:349:GLU:OE2	1:C:486:PHE:HB3	1.75	0.85
2:D:400:ALA:CB	5:G:1:NAG:H82	2.06	0.84
6:A:803:NAG:O3	1:C:132:PRO:O	1.97	0.82
2:B:386:ILE:HG23	2:B:390:PHE:HZ	1.41	0.80
2:D:297:PRO:HG3	5:G:2:NAG:O7	1.82	0.79
1:C:311:PRO:HG2	1:C:433:PRO:HB3	1.66	0.77
1:A:257:THR:HA	1:C:360:GLU:CD	2.04	0.77
2:B:294:GLY:N	3:E:2:NAG:O7	2.17	0.77
1:A:311:PRO:HG2	1:A:433:PRO:HB3	1.66	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:294:GLY:N	3:E:2:NAG:H83	1.99	0.76
2:B:352:SER:HB2	1:C:444:THR:CG2	2.20	0.71
2:B:349:GLU:OE2	1:C:486:PHE:HB2	1.88	0.70
2:B:252:MET:HG3	1:C:443:ASN:OD1	1.92	0.67
1:A:199:HIS:O	1:A:201:VAL:N	2.25	0.67
1:A:464:THR:HG22	1:A:466:ASP:H	1.59	0.67
1:C:464:THR:HG22	1:C:466:ASP:H	1.59	0.66
2:B:252:MET:HB2	1:C:443:ASN:CG	2.16	0.66
2:B:209:LEU:HD13	2:B:211:TYR:HB2	1.76	0.66
2:D:209:LEU:HD13	2:D:211:TYR:HB2	1.76	0.65
2:D:293:PRO:C	5:G:2:NAG:H83	2.15	0.64
1:C:243:THR:O	2:D:219:GLN:NE2	2.28	0.64
2:D:238:GLY:HA2	2:D:267:LYS:HE2	1.80	0.63
1:C:199:HIS:O	1:C:201:VAL:N	2.25	0.62
1:A:411:LYS:HB2	2:B:107:LEU:HD12	1.81	0.62
2:D:534:THR:HG22	2:D:536:GLU:H	1.64	0.62
2:D:400:ALA:HB3	5:G:1:NAG:H81	1.81	0.62
2:B:534:THR:HG22	2:B:536:GLU:H	1.64	0.62
6:A:803:NAG:O4	1:C:132:PRO:CG	2.43	0.62
2:D:400:ALA:CB	5:G:1:NAG:C8	2.72	0.62
1:A:138:LYS:HB2	1:A:180:VAL:HG11	1.82	0.61
1:A:122:LEU:HD22	2:B:274:TYR:CZ	2.34	0.61
2:B:238:GLY:HA2	2:B:267:LYS:HE2	1.81	0.61
2:B:394:HIS:CE1	1:C:466:ASP:OD1	2.53	0.61
2:D:293:PRO:CB	5:G:2:NAG:H82	2.31	0.61
2:B:553:LEU:HD21	2:B:566:LEU:HB3	1.82	0.61
2:B:299:TYR:OH	3:E:1:NAG:O3	2.14	0.61
2:D:553:LEU:HD21	2:D:566:LEU:HB3	1.82	0.61
1:C:138:LYS:HB2	1:C:180:VAL:HG11	1.82	0.60
2:B:349:GLU:OE1	1:C:485:SER:O	2.20	0.59
6:A:803:NAG:H81	1:C:134:ASP:CG	2.22	0.59
1:C:315:ILE:HD12	1:C:323:LYS:HG2	1.85	0.59
2:D:129:GLU:HG3	2:D:146:THR:HG22	1.83	0.59
2:B:129:GLU:HG3	2:B:146:THR:HG22	1.83	0.59
2:B:349:GLU:CD	1:C:486:PHE:HA	2.21	0.59
1:C:72:ASP:OD1	1:C:96:TYR:OH	2.21	0.58
1:A:315:ILE:HD12	1:A:323:LYS:HG2	1.85	0.58
1:A:253:TYR:CE2	2:B:222:LEU:HD13	2.38	0.58
1:A:253:TYR:HE2	2:B:222:LEU:HD13	1.67	0.58
2:D:293:PRO:C	5:G:2:NAG:H81	2.19	0.58
1:A:72:ASP:OD1	1:A:96:TYR:OH	2.21	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:59:ASP:HB3	2:B:76:LYS:HB2	1.85	0.57
1:A:125:PRO:HB3	2:B:386:ILE:HD11	1.86	0.57
1:C:345:ILE:HG22	1:C:376:LYS:HD3	1.86	0.57
2:B:252:MET:CE	1:C:367:ASN:OD1	2.52	0.57
2:D:521:LEU:HB3	2:D:563:ALA:HB1	1.86	0.57
2:D:59:ASP:HB3	2:D:76:LYS:HB2	1.85	0.57
1:A:215:SER:HB3	1:A:218:ARG:HG2	1.86	0.56
1:C:215:SER:HB3	1:C:218:ARG:HG2	1.86	0.56
2:B:412:LYS:HD2	2:B:419:LEU:HD11	1.87	0.56
1:C:464:THR:HB	1:C:468:PHE:H	1.69	0.56
1:A:464:THR:HB	1:A:468:PHE:H	1.69	0.56
1:A:544:SER:N	1:A:564:TYR:O	2.39	0.56
2:D:412:LYS:HD2	2:D:419:LEU:HD11	1.86	0.56
1:A:345:ILE:HG22	1:A:376:LYS:HD3	1.86	0.56
2:B:521:LEU:HB3	2:B:563:ALA:HB1	1.86	0.55
1:A:410:THR:HG22	1:A:412:LEU:H	1.70	0.55
1:C:544:SER:N	1:C:564:TYR:O	2.39	0.55
1:C:410:THR:HG22	1:C:412:LEU:H	1.70	0.55
1:C:495:ASN:OD1	1:C:496:ARG:N	2.40	0.54
1:A:343:LEU:HD13	1:A:374:SER:HB3	1.89	0.54
2:B:386:ILE:O	2:B:390:PHE:CG	2.60	0.54
1:A:282:SER:HB3	1:A:399:ASP:OD2	2.07	0.54
2:D:377:VAL:HG11	2:D:383:LEU:HD21	1.89	0.54
1:C:274:PHE:HB2	1:C:295:VAL:HB	1.90	0.54
1:C:426:SER:HB2	1:C:427:PRO:HD3	1.90	0.53
1:A:122:LEU:HD22	2:B:274:TYR:CE1	2.43	0.53
1:A:495:ASN:OD1	1:A:496:ARG:N	2.40	0.53
2:B:377:VAL:HG11	2:B:383:LEU:HD21	1.89	0.53
2:B:252:MET:HE3	1:C:367:ASN:OD1	2.08	0.53
1:C:343:LEU:HD13	1:C:374:SER:HB3	1.89	0.53
1:A:251:ASN:ND2	2:B:220:TYR:O	2.41	0.53
1:C:282:SER:HB3	1:C:399:ASP:OD2	2.08	0.53
2:B:252:MET:HA	1:C:443:ASN:HD21	1.75	0.52
1:A:426:SER:HB2	1:A:427:PRO:HD3	1.90	0.52
2:B:250:GLU:OE1	2:B:261:ARG:NH1	2.40	0.52
1:A:274:PHE:HB2	1:A:295:VAL:HB	1.90	0.52
2:B:212:ARG:HG2	2:B:213:GLU:H	1.75	0.52
2:D:212:ARG:HG2	2:D:213:GLU:H	1.75	0.52
1:C:453:SER:OG	1:C:458:THR:HG22	2.10	0.52
2:D:250:GLU:OE1	2:D:261:ARG:NH1	2.40	0.52
1:C:396:ARG:HD2	1:C:427:PRO:HD2	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:180:VAL:HG13	1:A:188:THR:HG21	1.91	0.51
1:C:180:VAL:HG13	1:C:188:THR:HG21	1.91	0.51
1:A:453:SER:OG	1:A:458:THR:HG22	2.10	0.51
2:B:453:ASN:HB3	2:B:466:LEU:HD11	1.91	0.51
1:A:422:LEU:O	1:A:426:SER:OG	2.28	0.51
1:A:396:ARG:HD2	1:A:427:PRO:HD2	1.91	0.51
1:A:399:ASP:OD1	1:A:399:ASP:N	2.43	0.51
2:D:453:ASN:HB3	2:D:466:LEU:HD11	1.91	0.51
2:B:299:TYR:OH	3:E:1:NAG:C3	2.60	0.49
1:A:130:ARG:O	6:A:803:NAG:H82	2.12	0.49
1:A:183:ASP:OD1	1:A:184:ALA:N	2.45	0.49
1:A:423:ASP:HB2	2:B:108:LYS:HE3	1.94	0.49
1:C:475:GLU:OE2	1:C:569:LYS:NZ	2.38	0.49
1:A:75:LEU:HD13	1:A:510:MET:HE2	1.94	0.49
1:C:183:ASP:OD1	1:C:184:ALA:N	2.45	0.49
1:C:130:ARG:O	6:C:803:NAG:H82	2.13	0.49
2:B:144:HIS:HB2	2:B:170:ARG:HB3	1.95	0.49
1:A:83:ILE:HG13	1:A:84:THR:HG23	1.96	0.48
1:A:122:LEU:CD2	2:B:274:TYR:CZ	2.96	0.48
1:C:175:VAL:HG21	1:C:235:PHE:HD2	1.79	0.48
1:C:541:GLY:HA3	1:C:565:TRP:CE2	2.49	0.48
1:C:75:LEU:HD13	1:C:510:MET:HE2	1.95	0.48
2:B:299:TYR:HH	3:E:1:NAG:HO3	1.57	0.48
2:D:476:VAL:HG11	2:D:497:VAL:HG21	1.96	0.48
2:D:144:HIS:HB2	2:D:170:ARG:HB3	1.95	0.48
1:A:541:GLY:HA3	1:A:565:TRP:CE2	2.49	0.48
1:C:83:ILE:HG13	1:C:84:THR:HG23	1.96	0.48
2:B:476:VAL:HG11	2:B:497:VAL:HG21	1.96	0.47
1:C:422:LEU:O	1:C:426:SER:OG	2.28	0.47
2:D:293:PRO:HB3	5:G:1:NAG:O6	2.14	0.47
1:A:181:ALA:HA	1:A:218:ARG:HH22	1.78	0.47
1:A:475:GLU:OE2	1:A:569:LYS:NZ	2.39	0.47
1:A:442:PHE:CD1	1:A:446:LEU:HD11	2.50	0.47
2:B:386:ILE:HG22	2:B:390:PHE:HE2	1.65	0.47
1:C:181:ALA:HA	1:C:218:ARG:HH22	1.78	0.47
1:C:552:ARG:HG2	1:C:565:TRP:CE2	2.50	0.47
1:C:442:PHE:CD1	1:C:446:LEU:HD11	2.50	0.47
2:D:199:THR:OG1	2:D:200:VAL:N	2.48	0.47
1:A:257:THR:HA	1:C:360:GLU:OE1	2.14	0.46
1:A:552:ARG:HG2	1:A:565:TRP:CE2	2.50	0.46
1:C:399:ASP:OD1	1:C:399:ASP:N	2.43	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:531:ASP:OD1	2:B:532:LEU:N	2.48	0.46
2:D:136:ASN:HB3	2:D:139:LYS:O	2.15	0.46
1:A:122:LEU:HD23	2:B:274:TYR:OH	2.13	0.46
1:A:175:VAL:HG21	1:A:235:PHE:HD2	1.79	0.46
2:B:219:GLN:HG2	2:B:220:TYR:CD2	2.51	0.46
1:C:552:ARG:HG2	1:C:565:TRP:CD2	2.51	0.46
2:D:219:GLN:HG2	2:D:220:TYR:CD2	2.51	0.46
2:B:199:THR:OG1	2:B:200:VAL:N	2.48	0.46
1:A:158:GLY:HA3	1:A:180:VAL:O	2.16	0.46
1:A:552:ARG:HG2	1:A:565:TRP:CD2	2.51	0.46
1:A:390:PHE:CD2	1:A:412:LEU:HD12	2.50	0.45
1:C:158:GLY:HA3	1:C:180:VAL:O	2.16	0.45
1:C:536:ARG:NH2	3:E:4:MAN:O2	2.50	0.45
2:D:351:LYS:HD2	2:D:396:LEU:HD23	1.98	0.45
2:D:531:ASP:OD1	2:D:532:LEU:N	2.48	0.45
1:C:390:PHE:CD2	1:C:412:LEU:HD12	2.50	0.45
1:C:411:LYS:HB2	2:D:107:LEU:HD12	1.99	0.45
2:B:351:LYS:HD2	2:B:396:LEU:HD23	1.98	0.45
1:C:247:ARG:HG3	1:C:247:ARG:HH11	1.82	0.45
1:A:292:THR:HG22	1:A:312:VAL:HB	1.97	0.45
1:A:295:VAL:HG22	1:A:309:GLU:HG2	1.98	0.45
2:B:136:ASN:HB3	2:B:139:LYS:O	2.16	0.45
1:C:292:THR:HG22	1:C:312:VAL:HB	1.98	0.45
1:A:122:LEU:CD2	2:B:274:TYR:CE1	3.00	0.45
2:B:119:LEU:HD23	2:B:119:LEU:HA	1.74	0.45
1:C:295:VAL:HG22	1:C:309:GLU:HG2	1.98	0.45
1:A:253:TYR:HE2	2:B:222:LEU:CD1	2.29	0.45
1:C:175:VAL:HG21	1:C:235:PHE:CD2	2.51	0.45
1:C:313:GLU:HB3	1:C:315:ILE:HD11	1.99	0.45
1:A:175:VAL:HG21	1:A:235:PHE:CD2	2.52	0.45
1:A:247:ARG:HG3	1:A:247:ARG:HH11	1.82	0.45
2:D:555:SER:OG	2:D:558:SER:OG	2.34	0.44
1:A:313:GLU:HB3	1:A:315:ILE:HD11	1.99	0.44
2:B:221:ASP:OD1	2:B:223:LYS:HG2	2.18	0.44
2:D:221:ASP:OD1	2:D:223:LYS:HG2	2.18	0.44
6:A:803:NAG:H81	1:C:134:ASP:OD2	2.18	0.44
1:A:178:ALA:HB1	1:A:221:ILE:HD11	2.00	0.43
2:B:135:THR:HB	2:B:180:TYR:O	2.19	0.43
1:C:465:SER:HA	1:C:493:GLU:HG3	2.00	0.43
2:D:121:VAL:HB	2:D:133:CYS:HB2	2.00	0.43
1:C:178:ALA:HB1	1:C:221:ILE:HD11	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:119:LEU:HD23	2:D:119:LEU:HA	1.74	0.43
2:B:121:VAL:HB	2:B:133:CYS:HB2	2.00	0.43
1:A:332:LEU:HD11	1:A:350:ASP:HB3	2.00	0.43
1:C:556:GLN:HG3	1:C:558:ASP:H	1.83	0.43
1:A:439:VAL:HB	1:A:480:ALA:HB3	2.01	0.43
2:B:323:THR:HB	2:B:418:ARG:NH1	2.34	0.43
1:C:332:LEU:HD11	1:C:350:ASP:HB3	2.00	0.43
2:D:323:THR:HB	2:D:418:ARG:NH1	2.34	0.43
1:A:381:LYS:HD2	1:A:381:LYS:HA	1.91	0.43
1:A:165:LEU:HD23	1:A:165:LEU:HA	1.83	0.42
1:A:465:SER:HA	1:A:493:GLU:HG3	2.00	0.42
1:C:318:ALA:O	1:C:322:THR:OG1	2.30	0.42
2:B:310:VAL:HG13	2:B:426:PRO:HB3	2.02	0.42
1:C:165:LEU:HD23	1:C:165:LEU:HA	1.83	0.42
2:B:118:TYR:O	2:B:135:THR:HG23	2.20	0.42
2:D:104:LEU:O	2:D:108:LYS:HG3	2.20	0.42
2:B:485:GLU:O	2:B:486:LEU:HD23	2.20	0.42
1:A:412:LEU:HA	1:A:412:LEU:HD23	1.74	0.42
2:B:386:ILE:O	2:B:390:PHE:CD2	2.72	0.42
1:C:439:VAL:HB	1:C:480:ALA:HB3	2.01	0.42
2:D:485:GLU:O	2:D:486:LEU:HD23	2.20	0.42
1:A:556:GLN:HG3	1:A:558:ASP:H	1.83	0.41
2:B:502:SER:O	2:B:503:LEU:HD23	2.20	0.41
2:B:104:LEU:O	2:B:108:LYS:HG3	2.20	0.41
2:B:252:MET:CA	1:C:443:ASN:HD21	2.33	0.41
1:C:381:LYS:HD2	1:C:381:LYS:HA	1.91	0.41
2:D:135:THR:HB	2:D:180:TYR:O	2.19	0.41
2:D:321:VAL:HG23	2:D:422:ILE:HB	2.01	0.41
1:A:251:ASN:ND2	2:B:220:TYR:HB3	2.35	0.41
2:B:177:LEU:HD22	2:B:195:LEU:HD23	2.03	0.41
2:B:299:TYR:OH	3:E:1:NAG:H3	2.20	0.41
2:D:78:VAL:HG21	2:D:80:TYR:CZ	2.56	0.41
2:D:409:LEU:HB3	2:D:453:ASN:OD1	2.21	0.41
2:D:502:SER:O	2:D:503:LEU:HD23	2.20	0.41
1:A:561:ASP:OD1	1:A:561:ASP:N	2.52	0.41
2:B:78:VAL:HG21	2:B:80:TYR:CZ	2.56	0.41
2:B:252:MET:HE1	1:C:367:ASN:OD1	2.18	0.41
2:B:312:SER:OG	2:B:437:ASP:OD2	2.34	0.41
2:D:118:TYR:O	2:D:135:THR:HG23	2.20	0.41
2:B:196:TYR:CE2	2:B:212:ARG:HD3	2.56	0.41
1:C:106:GLU:OE2	6:C:801:NAG:O7	2.39	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:173:HIS:CE1	1:C:175:VAL:HG12	2.56	0.41
2:D:177:LEU:HD22	2:D:195:LEU:HD23	2.03	0.41
1:A:106:GLU:OE2	6:A:801:NAG:O7	2.39	0.40
1:A:173:HIS:CE1	1:A:175:VAL:HG12	2.56	0.40
2:D:310:VAL:HG13	2:D:426:PRO:HB3	2.01	0.40
1:A:555:CYS:SG	1:A:565:TRP:HD1	2.44	0.40
2:B:321:VAL:HG23	2:B:422:ILE:HB	2.01	0.40
1:C:555:CYS:SG	1:C:565:TRP:HD1	2.44	0.40

All (37) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:326:VAL:O	2:D:414:ASN:OD1[8_665]	1.13	1.07
2:D:549:THR:CG2	2:D:551:THR:CB[10_555]	1.13	1.07
2:B:414:ASN:CB	2:D:327:ASN:CB[8_665]	1.32	0.88
2:B:327:ASN:CB	2:D:414:ASN:CB[8_665]	1.36	0.84
1:A:391:ASN:ND2	2:D:514:ILE:CD1[8_665]	1.39	0.81
1:A:145:ALA:O	1:C:147:SER:OG[6_554]	1.43	0.77
2:B:414:ASN:CA	2:D:327:ASN:CB[8_665]	1.45	0.75
2:B:414:ASN:OD1	2:D:326:VAL:O[8_665]	1.55	0.65
2:D:549:THR:CG2	2:D:551:THR:OG1[10_555]	1.55	0.65
2:D:549:THR:CB	2:D:551:THR:OG1[10_555]	1.57	0.63
2:D:549:THR:CB	2:D:551:THR:CB[10_555]	1.59	0.61
2:B:57:SER:OG	2:D:57:SER:OG[8_665]	1.65	0.55
2:B:326:VAL:C	2:D:414:ASN:OD1[8_665]	1.65	0.55
1:A:144:ARG:CD	1:C:144:ARG:CD[6_554]	1.68	0.52
2:D:549:THR:OG1	2:D:551:THR:OG1[10_555]	1.70	0.50
2:B:414:ASN:CG	2:D:327:ASN:CB[8_665]	1.74	0.46
1:A:145:ALA:O	1:C:147:SER:CB[6_554]	1.80	0.40
1:A:147:SER:OG	1:C:145:ALA:O[6_554]	1.80	0.40
2:B:327:ASN:CB	2:D:414:ASN:CA[8_665]	1.82	0.38
2:B:414:ASN:OD1	2:D:327:ASN:CB[8_665]	1.83	0.37
2:B:327:ASN:CB	2:D:414:ASN:CG[8_665]	1.84	0.36
2:B:414:ASN:CB	2:D:327:ASN:CG[8_665]	1.85	0.35
2:D:549:THR:CB	2:D:551:THR:CG2[10_555]	1.86	0.34
2:B:414:ASN:OD1	2:D:327:ASN:CA[8_665]	1.91	0.29
1:A:384:GLN:OE1	2:D:569:HIS:O[8_665]	1.92	0.28
2:B:327:ASN:CA	2:D:414:ASN:OD1[8_665]	1.93	0.27
2:B:414:ASN:CB	2:D:327:ASN:ND2[8_665]	1.93	0.27

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:327:ASN:N	2:D:414:ASN:OD1[8_665]	1.94	0.26
2:B:326:VAL:O	2:D:414:ASN:CG[8_665]	1.95	0.25
2:B:327:ASN:OD1	2:D:329:ILE:CG2[8_665]	1.96	0.24
1:A:145:ALA:C	1:C:147:SER:OG[6_554]	1.98	0.22
2:B:327:ASN:CB	2:D:414:ASN:OD1[8_665]	2.01	0.19
2:B:414:ASN:OD1	2:D:327:ASN:C[8_665]	2.01	0.19
2:B:330:PRO:CG	2:D:327:ASN:N[8_665]	2.11	0.09
2:B:330:PRO:CD	2:D:328:ALA:N[8_665]	2.13	0.07
2:B:414:ASN:OD1	2:D:326:VAL:C[8_665]	2.16	0.04
2:B:327:ASN:N	2:D:330:PRO:CG[8_665]	2.19	0.01

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	507/715 (71%)	485 (96%)	22 (4%)	0	100	100
1	C	510/715 (71%)	487 (96%)	23 (4%)	0	100	100
2	B	470/578 (81%)	449 (96%)	21 (4%)	0	100	100
2	D	463/578 (80%)	443 (96%)	20 (4%)	0	100	100
All	All	1950/2586 (75%)	1864 (96%)	86 (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	451/633 (71%)	449 (100%)	2 (0%)	91	94
1	C	452/633 (71%)	450 (100%)	2 (0%)	91	94
2	B	416/502 (83%)	416 (100%)	0	100	100
2	D	413/502 (82%)	413 (100%)	0	100	100
All	All	1732/2270 (76%)	1728 (100%)	4 (0%)	93	96

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

Mol	Chain	Res	Type
1	A	297	ILE
1	A	371	CYS
1	C	297	ILE
1	C	371	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	278	GLN
2	B	394	HIS
1	C	278	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 ⓘ

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	E	1	3,2	14,14,15	0.36	0	17,19,21	0.50	0
3	NAG	E	2	3	14,14,15	0.29	0	17,19,21	0.49	0
3	BMA	E	3	3	11,11,12	0.38	0	15,15,17	1.23	3 (20%)
3	MAN	E	4	3	11,11,12	0.27	0	15,15,17	1.13	1 (6%)
4	NAG	F	1	2,4	14,14,15	0.31	0	17,19,21	0.50	0
4	NAG	F	2	4	14,14,15	0.36	0	17,19,21	0.51	0
4	BMA	F	3	4	11,11,12	0.83	0	15,15,17	0.75	0
5	NAG	G	1	2,5	14,14,15	0.36	0	17,19,21	0.48	0
5	NAG	G	2	5	14,14,15	0.29	0	17,19,21	0.49	0
5	BMA	G	3	5	11,11,12	0.38	0	15,15,17	2.32	4 (26%)
5	MAN	G	4	5	11,11,12	1.01	1 (9%)	15,15,17	1.05	2 (13%)
5	MAN	G	5	5	11,11,12	0.26	0	15,15,17	0.73	0
5	NAG	H	1	2,5	14,14,15	0.30	0	17,19,21	0.51	0
5	NAG	H	2	5	14,14,15	0.36	0	17,19,21	0.49	0
5	BMA	H	3	5	11,11,12	0.83	0	15,15,17	0.77	0
5	MAN	H	4	5	11,11,12	0.97	1 (9%)	15,15,17	1.22	2 (13%)
5	MAN	H	5	5	11,11,12	0.82	0	15,15,17	1.08	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	NAG	E	1	3,2	1/1/5/7	2/6/23/26	0/1/1/1
3	NAG	E	2	3	-	2/6/23/26	0/1/1/1
3	BMA	E	3	3	-	0/2/19/22	0/1/1/1
3	MAN	E	4	3	-	1/2/19/22	0/1/1/1
4	NAG	F	1	2,4	-	1/6/23/26	0/1/1/1
4	NAG	F	2	4	-	0/6/23/26	0/1/1/1
4	BMA	F	3	4	-	2/2/19/22	0/1/1/1
5	NAG	G	1	2,5	-	2/6/23/26	0/1/1/1
5	NAG	G	2	5	-	2/6/23/26	0/1/1/1
5	BMA	G	3	5	-	1/2/19/22	0/1/1/1
5	MAN	G	4	5	-	0/2/19/22	0/1/1/1
5	MAN	G	5	5	-	1/2/19/22	0/1/1/1
5	NAG	H	1	2,5	-	1/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	H	2	5	-	0/6/23/26	0/1/1/1
5	BMA	H	3	5	-	2/2/19/22	0/1/1/1
5	MAN	H	4	5	-	0/2/19/22	0/1/1/1
5	MAN	H	5	5	-	0/2/19/22	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	H	4	MAN	C1-C2	2.54	1.58	1.52
5	G	4	MAN	O5-C5	2.00	1.47	1.43

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	G	3	BMA	C1-C2-C3	-6.90	101.19	109.67
5	H	4	MAN	C1-O5-C5	3.44	116.85	112.19
3	E	4	MAN	O5-C1-C2	-3.07	106.03	110.77
5	H	5	MAN	C1-O5-C5	3.07	116.35	112.19
5	G	3	BMA	O3-C3-C4	2.99	117.26	110.35
5	G	3	BMA	O3-C3-C2	2.82	115.40	109.99
5	G	4	MAN	C1-O5-C5	2.54	115.63	112.19
5	G	3	BMA	C2-C3-C4	-2.34	106.84	110.89
3	E	3	BMA	C1-O5-C5	2.34	115.36	112.19
3	E	3	BMA	O3-C3-C4	2.32	115.72	110.35
5	H	4	MAN	O2-C2-C3	-2.18	105.76	110.14
3	E	3	BMA	O5-C1-C2	-2.08	107.56	110.77
5	G	4	MAN	O2-C2-C3	-2.08	105.98	110.14

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	E	1	NAG	C1

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	E	2	NAG	O5-C5-C6-O6
5	G	2	NAG	O5-C5-C6-O6
3	E	2	NAG	C4-C5-C6-O6
5	G	2	NAG	C4-C5-C6-O6
3	E	1	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	G	1	NAG	O5-C5-C6-O6
5	G	1	NAG	C4-C5-C6-O6
3	E	1	NAG	C4-C5-C6-O6
3	E	4	MAN	O5-C5-C6-O6
4	F	3	BMA	C4-C5-C6-O6
4	F	1	NAG	C1-C2-N2-C7
5	H	1	NAG	C1-C2-N2-C7
5	H	3	BMA	C4-C5-C6-O6
5	H	3	BMA	O5-C5-C6-O6
5	G	5	MAN	C4-C5-C6-O6
4	F	3	BMA	O5-C5-C6-O6
5	G	3	BMA	C4-C5-C6-O6

There are no ring outliers.

5 monomers are involved in 25 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	2	NAG	5	0
3	E	1	NAG	4	0
5	G	2	NAG	9	0
3	E	4	MAN	1	0
5	G	1	NAG	6	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 E

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain F

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain G

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain H

Bond lengths

Bond angles

Torsions

Rings
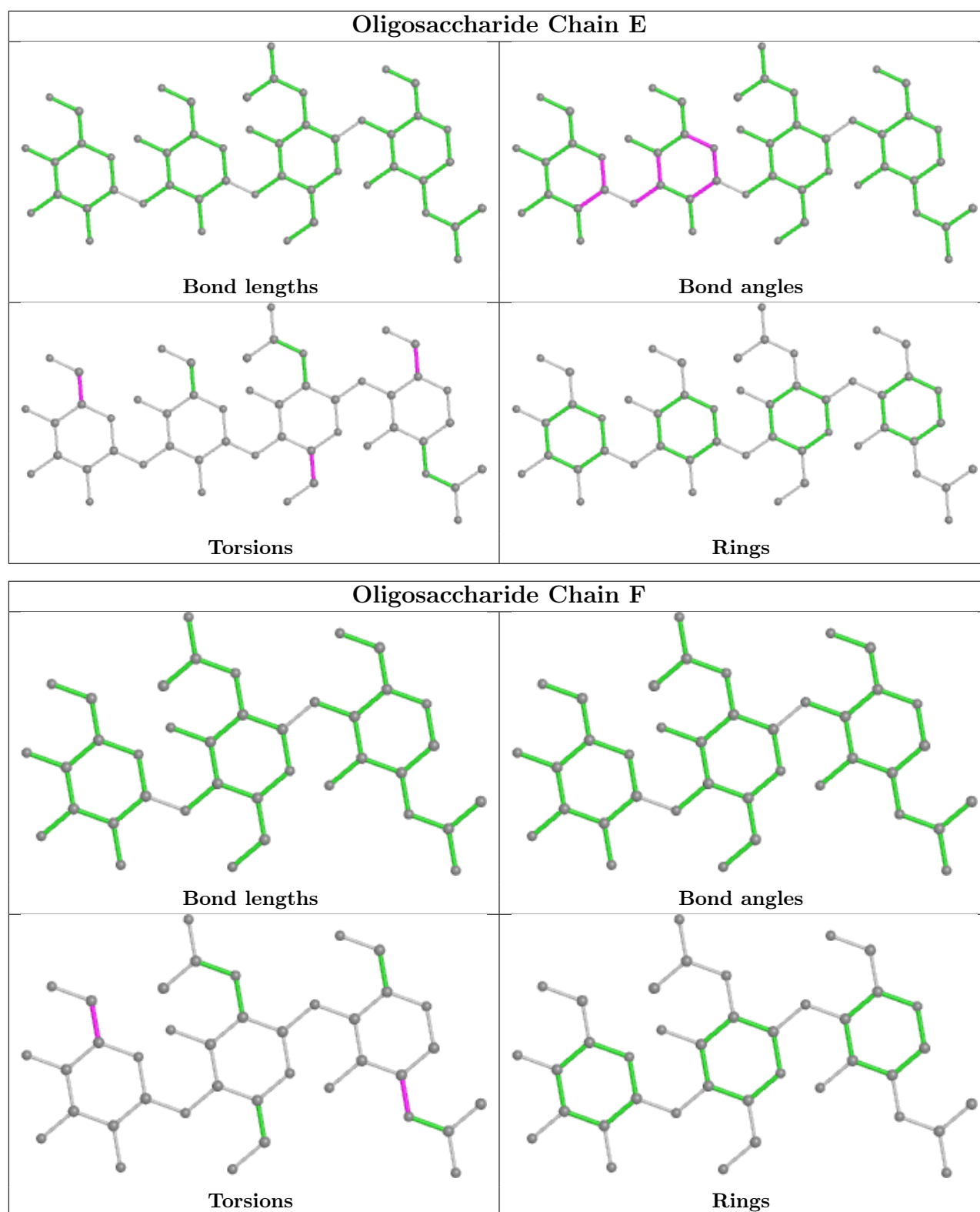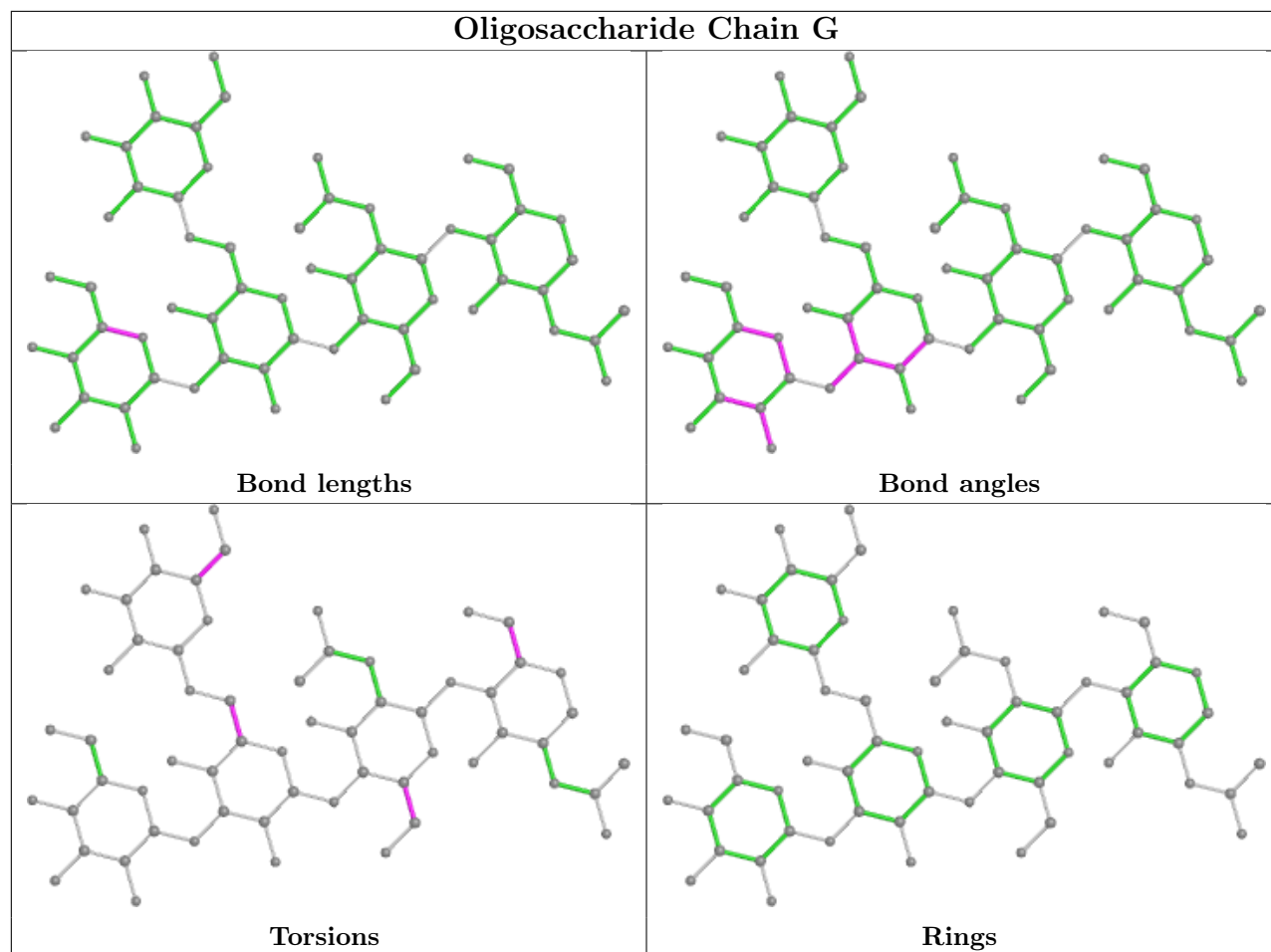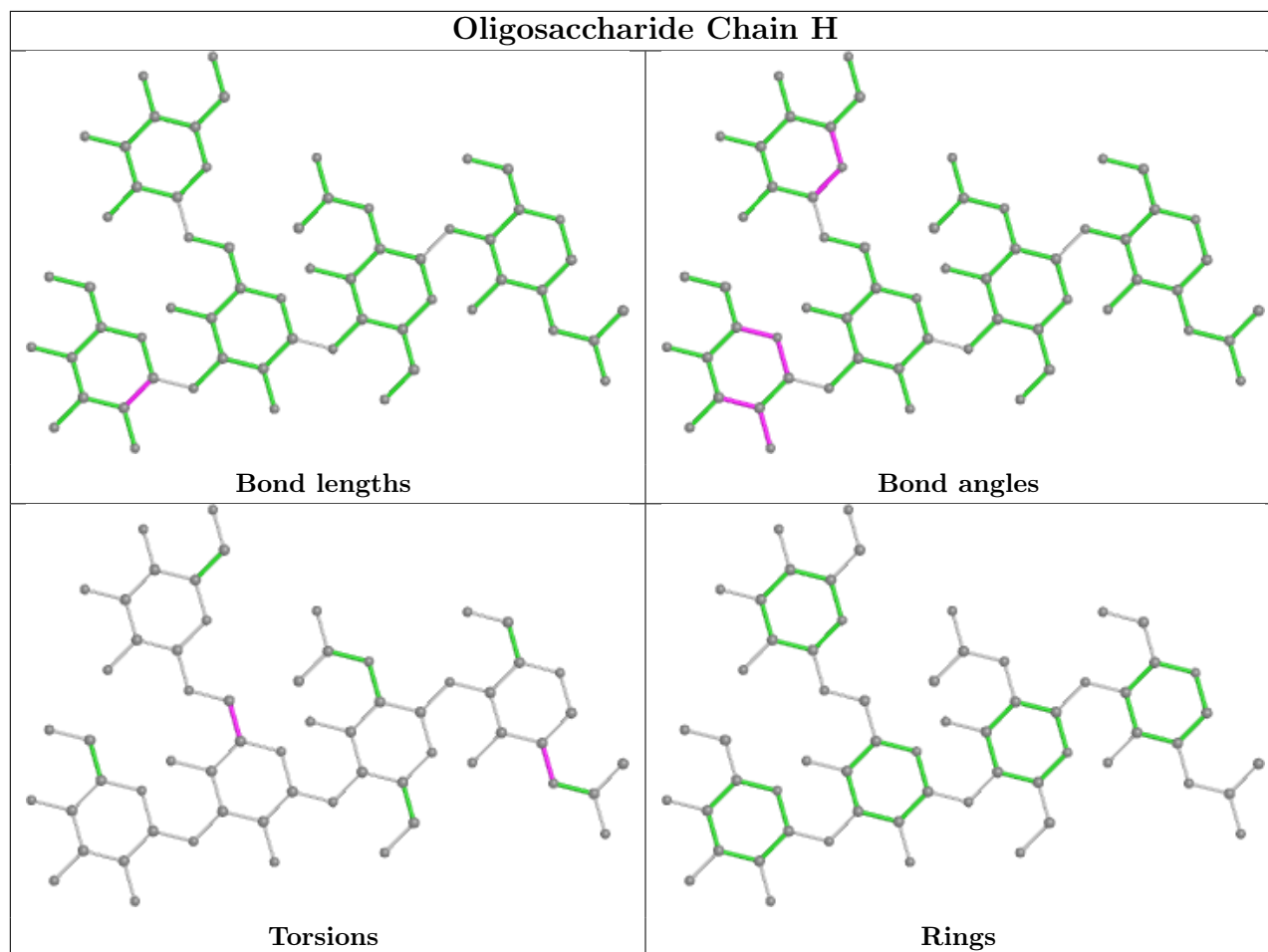
5.6 Ligand geometry ⓘ

6 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
6	NAG	A	803	1	14,14,15	0.64	1 (7%)	17,19,21	0.44	0
6	NAG	C	803	1	14,14,15	0.61	1 (7%)	17,19,21	0.44	0
6	NAG	C	802	1	14,14,15	0.21	0	17,19,21	0.59	0
6	NAG	A	801	1	14,14,15	0.22	0	17,19,21	0.78	0
6	NAG	C	801	1	14,14,15	0.22	0	17,19,21	0.78	0
6	NAG	A	802	1	14,14,15	0.23	0	17,19,21	0.58	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	A	803	1	-	4/6/23/26	0/1/1/1
6	NAG	C	803	1	-	4/6/23/26	0/1/1/1
6	NAG	C	802	1	-	2/6/23/26	0/1/1/1
6	NAG	A	801	1	-	1/6/23/26	0/1/1/1
6	NAG	C	801	1	-	1/6/23/26	0/1/1/1
6	NAG	A	802	1	-	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)
6	A	803	NAG	C1-C2	2.16	1.55	1.52
6	C	803	NAG	C1-C2	2.06	1.55	1.52

There are no bond angle outliers.

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	803	NAG	C1-C2-N2-C7
6	C	803	NAG	C1-C2-N2-C7
6	A	801	NAG	C3-C2-N2-C7
6	C	801	NAG	C3-C2-N2-C7
6	A	803	NAG	C4-C5-C6-O6
6	C	803	NAG	C4-C5-C6-O6
6	A	802	NAG	C4-C5-C6-O6
6	C	802	NAG	C4-C5-C6-O6
6	A	803	NAG	O5-C5-C6-O6
6	C	803	NAG	O5-C5-C6-O6
6	C	802	NAG	O5-C5-C6-O6
6	A	802	NAG	O5-C5-C6-O6
6	A	803	NAG	C3-C2-N2-C7
6	C	803	NAG	C3-C2-N2-C7

There are no ring outliers.

4 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	803	NAG	6	0
6	C	803	NAG	1	0
6	A	801	NAG	1	0
6	C	801	NAG	1	0

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 ⓘ

6.1 Protein, DNA and RNA chains ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

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 E:

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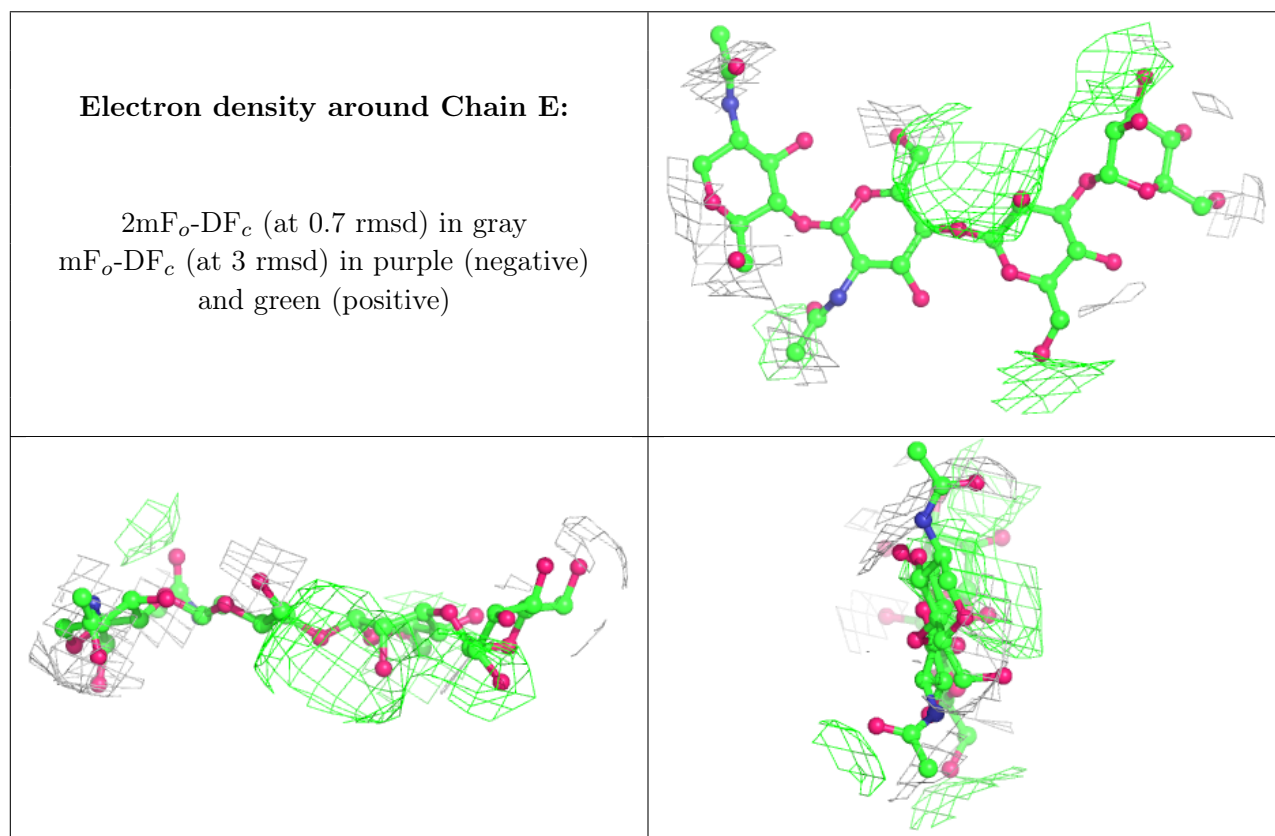
Electron density around Chain F:

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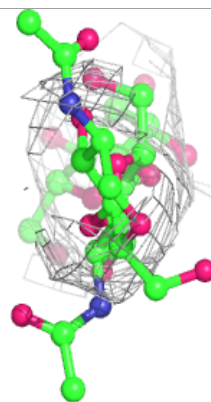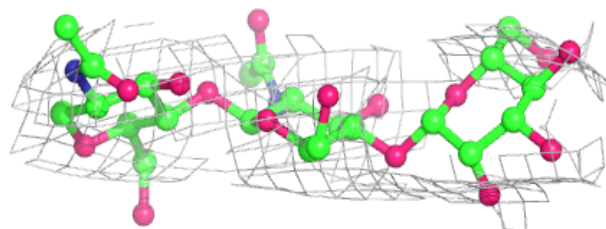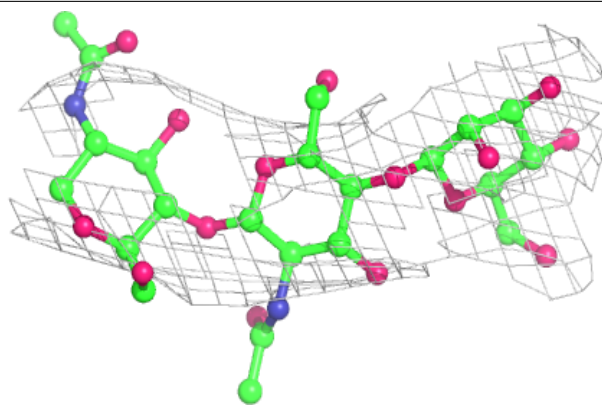
Electron density around Chain G:

$2mF_o$-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 H:

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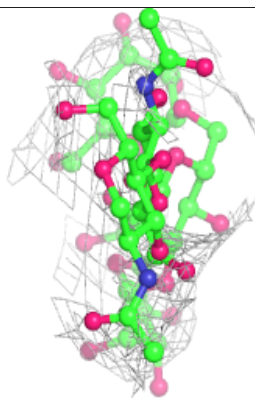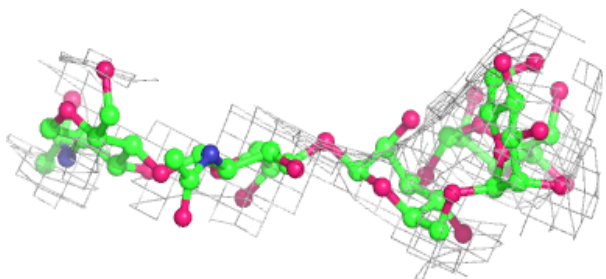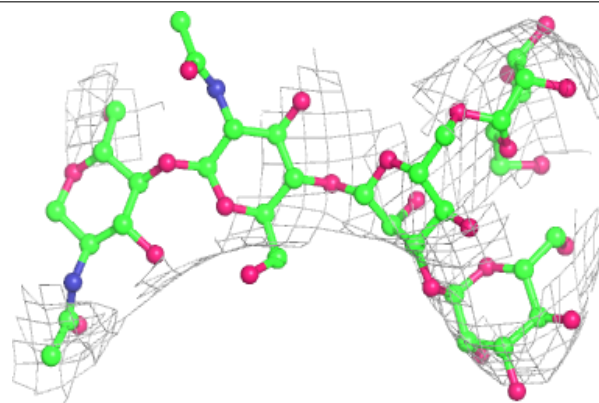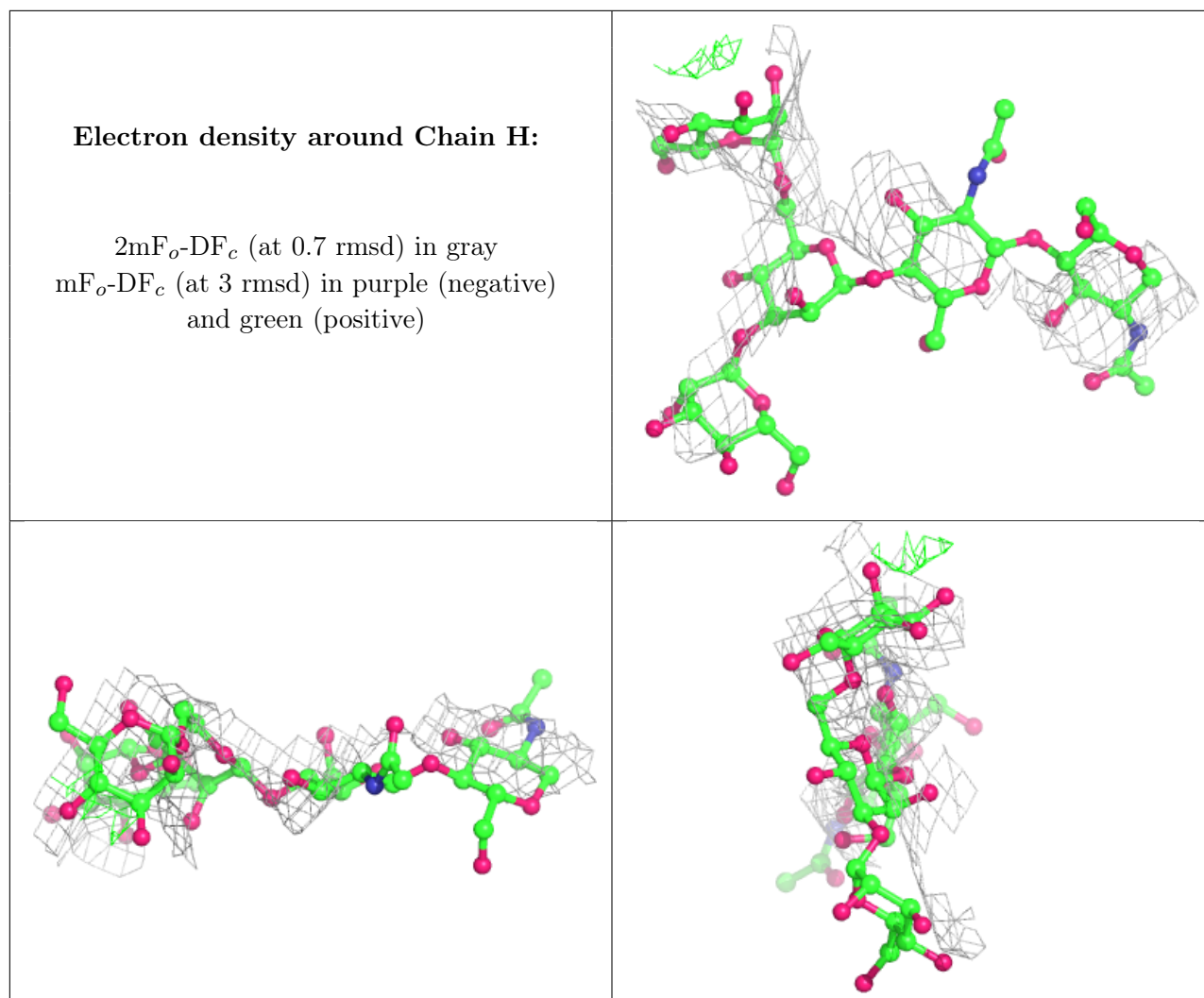
6.4 Ligands ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers ⓘ

Unable to reproduce the depositors R factor - this section is therefore empty.