WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Nov 11, 2024 – 04:27 AM EST

PDB ID : 1LGC

Title : INTERACTION OF A LEGUME LECTIN WITH THE N2 FRAGMENT OF HUMAN LACTOTRANSFERRIN OR WITH THE ISOLATED BIANTEN-NARY GLYCOPEPTIDE: ROLE OF THE FUCOSE MOIETY

Authors : Bourne, Y.; Cambillau, C.

Deposited on : 1994-01-07

Resolution : 2.80 Å(reported)

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

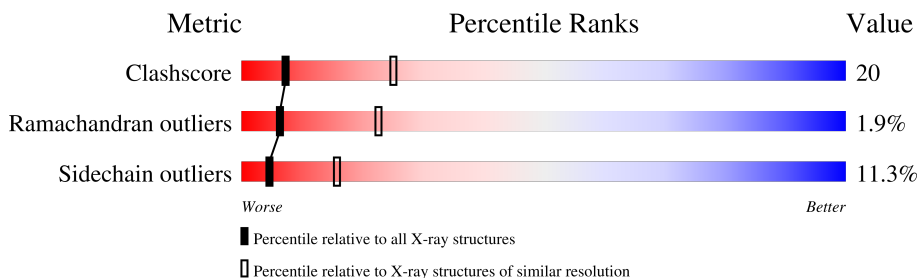|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.80 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
Clashscore		20
Ramachandran outliers		1.9%
Sidechain outliers		11.3%

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))
Clashscore	180529	4123 (2.80-2.80)
Ramachandran outliers	177936	4071 (2.80-2.80)
Sidechain outliers	177891	4073 (2.80-2.80)

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%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	181	57% 35% 7%
1	C	181	61% 33% 6%
1	E	181	48% 48% · ·
2	H	2	50% 50%
2	I	2	50% 50%
2	J	2	50% 50%
3	B	53	55% 36% 6% ·
3	D	53	58% 28% · 9%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
3	F	53	42% 40% 8% 11%
4	G	10	50% 40% 10%
5	K	9	22% 33% 44%
5	L	9	67% 22% 11%

2 Entry composition ⓘ

There are 9 unique types of molecules in this entry. The entry contains 6042 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 Lectin beta-1 and beta-2 chains.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	A	181	Total	C	N	O	0	0	0
			1407	896	232	279			
1	C	181	Total	C	N	O	0	0	0
			1407	896	232	279			
1	E	181	Total	C	N	O	0	0	0
			1397	889	231	277			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	16	PRO	GLN	variant	UNP P04122
A	168	GLY	ALA	variant	UNP P04122
C	16	PRO	GLN	variant	UNP P04122
C	168	GLY	ALA	variant	UNP P04122
E	16	PRO	GLN	variant	UNP P04122
E	168	GLY	ALA	variant	UNP P04122

- Molecule 2 is a protein called DIPEPTIDE.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	H	1	Total	C	N	O	0	0	0
			8	4	2	2			
2	I	1	Total	C	N	O	0	0	0
			8	4	2	2			
2	J	2	Total	C	N	O	0	0	0
			18	9	4	5			

- Molecule 3 is a protein called Mannose/glucose-specific lectin alpha 2 chain.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	B	51	Total	C	N	O	0	0	1
			401	261	61	79			

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	D	48	Total	C	N	O	0	0	1
			380	249	58	73			
3	F	47	Total	C	N	O	0	0	1
			371	244	57	70			

- Molecule 4 is an oligosaccharide called alpha-L-fucopyranose-(1-3)-[beta-D-galactopyranose-(1-4)]2-acetamido-2-deoxy-beta-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.
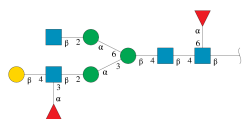
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	G	10	Total	C	N	O	0	0	0
			120	68	4	48			

- Molecule 5 is an oligosaccharide called N-acetyl-alpha-neuraminic acid-(2-6)-beta-D-galactopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.
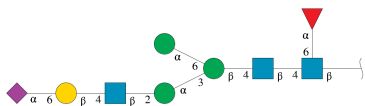
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
5	K	9	Total	C	N	O	0	0	0
			116	65	4	47			
5	L	9	Total	C	N	O	0	0	0
			116	65	4	47			

- Molecule 6 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total	Ca	0	0
			1	1		
6	C	1	Total	Ca	0	0
			1	1		

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	E	1	Total Ca 1 1		0	0

- Molecule 7 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	1	Total Mn 1 1		0	0
7	C	1	Total Mn 1 1		0	0
7	E	1	Total Mn 1 1		0	0

- Molecule 8 is (4S)-2-METHYL-2,4-PENTANEDIOL (three-letter code: MPD) (formula: $C_6H_{14}O_2$).
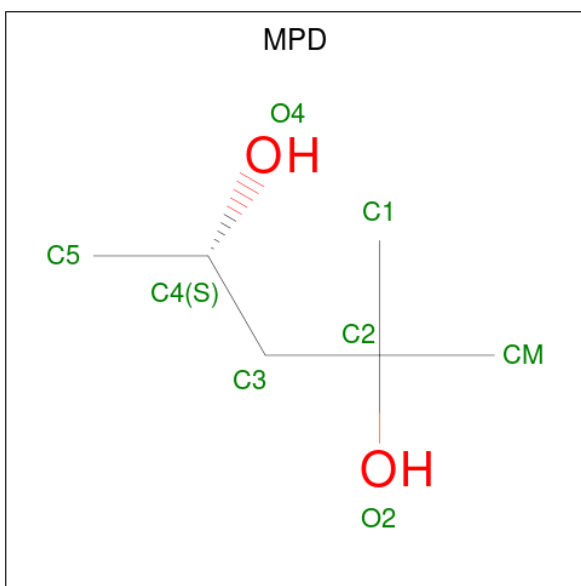
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	E	1	Total C O 8 6 2			0	0

- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	74	Total O 74 74		0	0

Continued from previous page...

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	H	15	Total 15	O 15	0	0
9	B	22	Total 22	O 22	0	0
9	C	74	Total 74	O 74	0	0
9	I	8	Total 8	O 8	0	0
9	D	21	Total 21	O 21	0	0
9	E	48	Total 48	O 48	0	0
9	J	6	Total 6	O 6	0	0
9	F	11	Total 11	O 11	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. 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.

Note EDS was not executed.

- Molecule 1: Lectin beta-1 and beta-2 chains
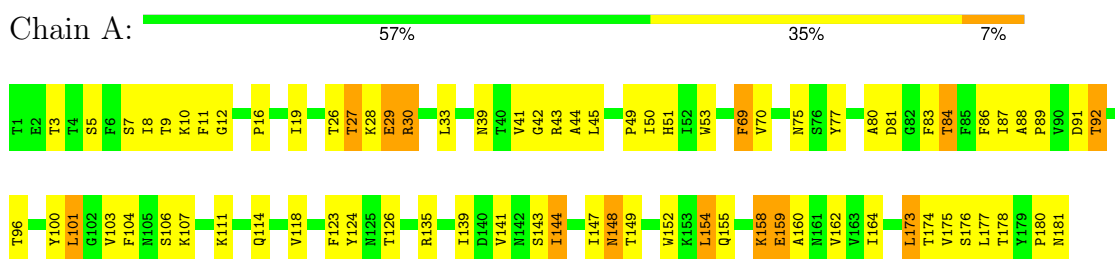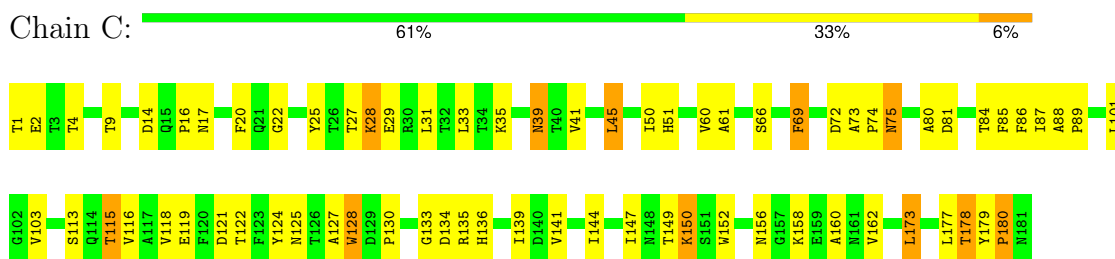
Chain A:

- Molecule 1: Lectin beta-1 and beta-2 chains

Chain C:

- Molecule 1: Lectin beta-1 and beta-2 chains

Chain E:

- Molecule 2: DIPEPTIDE

Chain H:

N512 GLN

• Molecule 2: DIPEPTIDE

Chain I:

50% 50%

N512 GLN

• Molecule 2: DIPEPTIDE

Chain J:

50% 50%

N512 Q513

• Molecule 3: Mannose/glucose-specific lectin alpha 2 chain

Chain B:

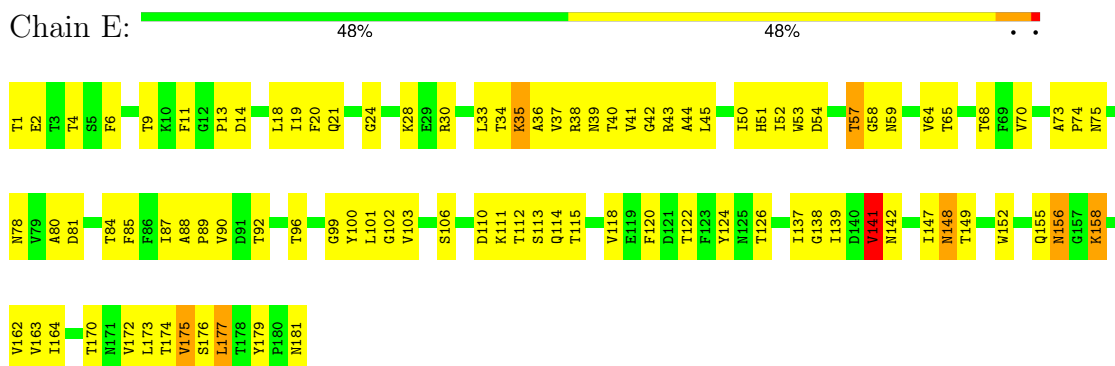55% 36% 6% ·

E1 T2 S3 Y4 T5 L6 N7 P11 E14 F15 V16 P17 E18 W19 V20 F24 S25 A26 T27 F32 E36 V37 L38 Y41 F42 N43 S44 V48 S51 SER ASN

• Molecule 3: Mannose/glucose-specific lectin alpha 2 chain

Chain D:

58% 28% · 9%

E1 Y4 T5 L6 N7 K13 W19 V20 R21 I22 G23 F24 S25 E31 V37 L38 F42 M43 S44 E45 L46 S47 V48 THR SER SER ASN

• Molecule 3: Mannose/glucose-specific lectin alpha 2 chain

Chain F:

42% 40% 8% 11%

GLU T2 S3 Y4 T5 L6 N7 E8 V9 V10 P11 V16 P17 E18 W19 V20 R21 I22 G23 F24 S25 A26 T27 E31 F32 H35 L38 S39 W40 Y41 F42 L46 S47 V48 THR SER SER ASN

• Molecule 4: alpha-L-fucopyranose-(1-3)-[beta-D-galactopyranose-(1-4)]2-acetamido-2-deoxy-bet
a-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyra
nose-(1-2)-alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-bet
a-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranos
e

Chain G:

50% 40% 10%

NAG1 NAG2 BMA3 MAN4 NAG5 FUC6 GAL7 MAN8 NAG9 FUC10

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

beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:

22%   33%   44%

NAG1 NAG2 BMA3 MAN4 NAG5 GAL6 SIA7 MAN8 FUC9

• Molecule 5: N-acetyl-alpha-neuraminic acid-(2-6)-beta-D-galactopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain L:

67%   22%   11%

NAG1 NAG2 BMA3 MAN4 NAG5 GAL6 SIA7 MAN8 FUC9
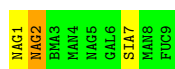
4 Data and refinement statistics (i)

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α, β, γ	117.00Å 117.00Å 120.10Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	6.00 – 2.80	Depositor
% Data completeness (in resolution range)	(Not available) (6.00-2.80)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR	Depositor
R, R_{free}	0.185 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	6042	wwPDB-VP
Average B, all atoms (Å^2)	41.0	wwPDB-VP

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: GAL, MN, CA, MPD, NAG, MAN, BMA, SIA, FUC

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	0.44	0/1442	0.76	1/1967 (0.1%)
1	C	0.44	0/1442	0.74	0/1967
1	E	0.44	0/1431	0.74	0/1952
2	H	0.85	0/7	0.72	0/8
2	I	0.67	0/7	0.66	0/8
2	J	0.65	0/17	0.56	0/20
3	B	0.47	0/413	0.66	0/566
3	D	0.50	0/392	0.70	0/537
3	F	0.50	0/383	0.65	0/525
All	All	0.45	0/5534	0.73	1/7550 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	154	LEU	CA-CB-CG	5.12	127.08	115.30

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	1407	0	1357	61	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	1407	0	1357	51	0
1	E	1397	0	1346	83	0
2	H	8	0	4	1	0
2	I	8	0	4	0	0
2	J	18	0	11	2	0
3	B	401	0	377	23	0
3	D	380	0	353	18	0
3	F	371	0	344	41	0
4	G	120	0	103	5	0
5	K	116	0	98	5	0
5	L	116	0	98	3	0
6	A	1	0	0	0	0
6	C	1	0	0	0	0
6	E	1	0	0	0	0
7	A	1	0	0	0	0
7	C	1	0	0	0	0
7	E	1	0	0	0	0
8	E	8	0	14	1	0
9	A	74	0	0	2	0
9	B	22	0	0	1	0
9	C	74	0	0	2	0
9	D	21	0	0	0	0
9	E	48	0	0	4	0
9	F	11	0	0	1	0
9	H	15	0	0	1	0
9	I	8	0	0	0	0
9	J	6	0	0	0	0
All	All	6042	0	5466	228	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 20.

All (228) 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:160:ALA:HB1	1:C:177:LEU:HD11	1.38	1.04
1:E:54:ASP:HB2	3:F:46:LEU:HD21	1.62	0.82
1:C:14:ASP:HA	9:C:306:HOH:O	1.80	0.79
3:F:16:VAL:HG22	3:F:17:PRO:HD2	1.66	0.77
1:A:33:LEU:O	1:A:42:GLY:HA3	1.86	0.76
1:A:45:LEU:HD21	1:A:86:PHE:CZ	2.26	0.71

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:160:ALA:HB1	1:C:177:LEU:CD1	2.19	0.69
1:E:4:THR:HG21	1:E:50:ILE:HG22	1.74	0.68
1:A:118:VAL:HG11	1:A:164:ILE:HD13	1.75	0.68
1:E:162:VAL:HG22	1:E:177:LEU:HD22	1.76	0.68
3:F:17:PRO:HB2	9:F:163:HOH:O	1.93	0.68
1:E:87:ILE:HG22	3:F:16:VAL:HG21	1.75	0.67
3:D:43:ASN:HD22	3:D:44:SER:N	1.93	0.66
1:C:88:ALA:HB1	1:C:89:PRO:HD2	1.79	0.65
1:C:150:LYS:HD2	3:D:5:THR:O	1.96	0.65
1:A:107:LYS:NZ	1:A:107:LYS:HB3	2.13	0.64
1:E:57:THR:HB	1:E:59:ASN:OD1	1.98	0.64
9:E:347:HOH:O	3:F:22:ILE:HD13	1.96	0.64
1:E:68:THR:HG23	3:F:38:LEU:HB2	1.80	0.64
1:C:113:SER:O	1:C:115:THR:HG22	1.97	0.63
1:E:52:ILE:HG22	3:F:18:GLU:O	1.99	0.63
1:A:88:ALA:HB1	1:A:89:PRO:HD2	1.80	0.63
1:E:84:THR:HG21	1:E:103:VAL:HG21	1.79	0.63
1:E:158:LYS:HB2	1:E:179:TYR:CE2	2.34	0.62
1:E:33:LEU:O	1:E:42:GLY:HA3	2.00	0.61
1:E:33:LEU:HD11	3:F:24:PHE:HB2	1.82	0.61
3:D:13:LYS:HB2	3:D:13:LYS:NZ	2.15	0.61
1:E:137:ILE:HD11	1:E:177:LEU:HB2	1.82	0.61
1:E:147:ILE:O	1:E:148:ASN:HB2	2.00	0.61
1:C:173:LEU:O	3:D:7:ASN:HA	2.02	0.60
1:A:111:LYS:NZ	1:A:111:LYS:HB3	2.17	0.59
1:E:111:LYS:HD3	9:E:320:HOH:O	2.02	0.59
1:E:155:GLN:HB2	1:E:179:TYR:CE2	2.38	0.59
5:K:3:BMA:H4	5:K:8:MAN:C2	2.31	0.59
1:E:148:ASN:OD1	3:F:6:LEU:HD21	2.03	0.58
1:C:122:THR:HA	1:C:135:ARG:HG2	1.85	0.58
1:E:35:LYS:O	1:E:37:VAL:N	2.37	0.58
1:E:90:VAL:HG13	3:F:21:ARG:NH2	2.18	0.58
1:A:12:GLY:O	1:A:26:THR:HG21	2.04	0.57
1:C:84:THR:HB	3:D:25:SER:HB3	1.87	0.57
1:C:160:ALA:CB	1:C:177:LEU:HD11	2.26	0.57
1:A:49:PRO:HD2	1:C:17:ASN:HA	1.87	0.57
3:B:38:LEU:N	3:B:38:LEU:HD12	2.20	0.57
5:K:3:BMA:H4	5:K:8:MAN:C1	2.35	0.57
1:A:152:TRP:CZ2	1:A:154:LEU:HD23	2.40	0.56
1:A:80:ALA:HB2	1:A:123:PHE:CD2	2.40	0.56
3:B:16:VAL:HG13	3:B:20:VAL:HG11	1.87	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:73:ALA:HB3	1:E:156:ASN:OD1	2.04	0.56
4:G:5:NAG:N2	4:G:6:FUC:O5	2.39	0.56
1:E:118:VAL:HG21	1:E:164:ILE:HD13	1.86	0.56
1:A:80:ALA:HB2	1:A:123:PHE:HD2	1.71	0.56
3:B:11:PRO:HG2	3:B:15:PHE:HE2	1.71	0.56
1:E:38:ARG:O	1:E:40:THR:HG23	2.06	0.56
1:C:136:HIS:HA	1:C:152:TRP:HB3	1.87	0.55
1:E:173:LEU:O	3:F:7:ASN:HA	2.06	0.55
1:E:120:PHE:CE2	1:E:177:LEU:HD23	2.42	0.55
1:A:148:ASN:HD22	1:A:149:THR:H	1.54	0.55
3:D:22:ILE:HD13	3:D:42:PHE:CE1	2.42	0.55
3:B:48:VAL:HG21	1:C:9:THR:OG1	2.07	0.55
4:G:5:NAG:N2	4:G:6:FUC:C1	2.69	0.55
1:C:87:ILE:HB	1:C:116:VAL:HG22	1.89	0.54
1:E:158:LYS:HB2	1:E:179:TYR:HE2	1.70	0.54
1:E:176:SER:HA	3:F:4:TYR:O	2.07	0.54
1:E:33:LEU:HD11	3:F:24:PHE:CB	2.37	0.54
1:E:152:TRP:HE1	1:E:179:TYR:HE1	1.54	0.54
1:E:84:THR:HB	3:F:25:SER:OG	2.07	0.54
1:E:110:ASP:OD2	1:E:112:THR:HB	2.09	0.53
1:C:80:ALA:CB	3:D:31:GLU:HB2	2.38	0.53
1:E:92:THR:HA	9:E:336:HOH:O	2.09	0.53
1:E:148:ASN:ND2	3:F:8:GLU:HG2	2.24	0.53
1:E:139:ILE:HD12	3:F:8:GLU:HB2	1.90	0.52
1:C:14:ASP:O	1:C:16:PRO:HD3	2.10	0.52
1:C:45:LEU:HD12	3:D:21:ARG:HD3	1.90	0.52
1:E:19:ILE:O	1:E:44:ALA:HA	2.09	0.52
1:E:162:VAL:CG2	1:E:177:LEU:HD22	2.39	0.52
1:A:87:ILE:HG22	3:B:16:VAL:HG21	1.91	0.52
1:A:160:ALA:HB1	1:A:177:LEU:HG	1.92	0.52
1:C:101:LEU:HD23	1:C:144:ILE:HD11	1.92	0.52
1:A:162:VAL:HA	1:A:176:SER:O	2.10	0.52
1:E:51:HIS:HB2	3:F:19:TRP:CZ3	2.45	0.52
1:E:51:HIS:HB2	3:F:19:TRP:CH2	2.45	0.51
1:C:28:LYS:HG2	9:C:362:HOH:O	2.11	0.51
1:E:87:ILE:O	1:E:115:THR:HG23	2.11	0.50
1:A:43:ARG:HH22	1:A:92:THR:CG2	2.23	0.50
1:C:22:GLY:HA3	1:C:41:VAL:O	2.11	0.50
1:C:150:LYS:NZ	1:C:150:LYS:HB2	2.26	0.50
3:F:16:VAL:CG2	3:F:17:PRO:HD2	2.37	0.50
3:B:11:PRO:HG2	3:B:15:PHE:CE2	2.45	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:84:THR:HG21	1:C:103:VAL:HG21	1.93	0.50
1:A:164:ILE:HA	1:A:174:THR:O	2.12	0.50
1:C:4:THR:HG21	1:C:50:ILE:CD1	2.41	0.50
1:E:81:ASP:OD1	1:E:99:GLY:HA2	2.11	0.50
1:E:122:THR:HG22	1:E:152:TRP:CZ3	2.47	0.50
1:A:124:TYR:CE2	1:A:126:THR:HG22	2.47	0.49
1:E:70:VAL:HG23	3:F:38:LEU:HD11	1.94	0.49
1:C:80:ALA:HB3	3:D:31:GLU:HB2	1.94	0.49
1:E:30:ARG:HE	3:F:38:LEU:HD21	1.75	0.49
1:A:75:ASN:OD1	1:A:77:TYR:HD2	1.95	0.49
4:G:5:NAG:H61	4:G:7:GAL:O2	2.13	0.49
5:L:2:NAG:C1	5:L:2:NAG:O7	2.60	0.49
1:A:144:ILE:HD13	1:A:144:ILE:O	2.12	0.49
1:C:75:ASN:HD22	1:C:75:ASN:H	1.58	0.49
1:E:1:THR:HA	3:F:46:LEU:O	2.13	0.49
3:F:22:ILE:HD13	3:F:22:ILE:H	1.78	0.49
1:E:149:THR:HG23	8:E:303:MPD:H53	1.95	0.48
1:E:148:ASN:HD22	3:F:8:GLU:HG2	1.78	0.48
1:C:25:TYR:OH	1:C:35:LYS:HD3	2.13	0.48
1:E:37:VAL:HG12	1:E:38:ARG:N	2.29	0.48
1:E:101:LEU:O	1:E:103:VAL:HG23	2.14	0.48
1:E:74:PRO:HG3	3:F:32:PHE:CE2	2.49	0.48
1:A:155:GLN:HB3	1:A:158:LYS:HB2	1.96	0.47
1:E:164:ILE:HG12	1:E:175:VAL:HB	1.96	0.47
1:A:96:THR:HG23	4:G:6:FUC:H63	1.96	0.47
1:A:101:LEU:HA	3:B:27:THR:OG1	2.15	0.47
1:A:70:VAL:HG22	1:A:159:GLU:HB3	1.97	0.47
1:A:100:TYR:CE1	1:A:106:SER:HA	2.49	0.47
1:A:100:TYR:HA	1:A:144:ILE:HG13	1.97	0.47
1:C:141:VAL:O	1:C:141:VAL:HG23	2.14	0.47
1:E:13:PRO:HB3	9:E:328:HOH:O	2.13	0.47
1:E:114:GLN:O	3:F:16:VAL:HG23	2.14	0.47
1:C:119:GLU:OE2	1:C:121:ASP:HB2	2.14	0.47
1:A:9:THR:O	1:A:10:LYS:HG3	2.15	0.47
1:A:26:THR:HG22	9:A:336:HOH:O	2.14	0.47
1:A:173:LEU:O	3:B:7:ASN:HB2	2.15	0.47
9:H:265:HOH:O	4:G:8:MAN:O4	2.20	0.47
1:C:149:THR:CG2	1:C:150:LYS:N	2.77	0.47
1:E:80:ALA:HB3	3:F:31:GLU:HB2	1.97	0.47
1:A:11:PHE:O	1:A:29:GLU:HA	2.15	0.46
1:E:21:GLN:HE22	1:E:43:ARG:HH21	1.63	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:141:VAL:O	1:E:142:ASN:HB2	2.15	0.46
1:A:180:PRO:O	1:A:181:ASN:HB2	2.16	0.46
1:A:26:THR:O	1:A:26:THR:HG23	2.16	0.46
1:A:43:ARG:HH22	1:A:92:THR:HG22	1.80	0.46
1:E:89:PRO:O	1:E:92:THR:HG22	2.16	0.46
1:E:80:ALA:CB	3:F:31:GLU:HB2	2.46	0.46
1:A:69:PHE:CE1	1:A:160:ALA:HB3	2.51	0.45
1:C:25:TYR:CE2	1:C:27:THR:OG1	2.69	0.45
1:C:69:PHE:HA	3:D:37:VAL:HA	1.98	0.45
1:E:88:ALA:HB1	1:E:89:PRO:HD2	1.98	0.45
1:E:137:ILE:HG22	1:E:138:GLY:N	2.31	0.45
3:B:14:GLU:HB2	9:B:75:HOH:O	2.16	0.45
1:A:139:ILE:O	1:A:147:ILE:HG12	2.16	0.45
1:A:111:LYS:HB3	1:A:111:LYS:HZ2	1.81	0.45
1:A:80:ALA:O	3:B:32:PHE:HA	2.17	0.45
1:E:96:THR:O	1:E:102:GLY:HA2	2.17	0.45
5:K:7:SIA:O6	5:K:7:SIA:C9	2.64	0.45
1:C:51:HIS:CD2	3:D:46:LEU:HD23	2.51	0.45
1:E:78:ASN:HD21	2:J:512:ASN:ND2	2.14	0.45
1:C:152:TRP:HA	3:D:4:TYR:CE2	2.52	0.45
3:D:13:LYS:HB2	3:D:13:LYS:HZ3	1.82	0.44
1:A:83:PHE:CZ	3:B:24:PHE:CD1	3.05	0.44
1:C:60:VAL:HG12	1:C:61:ALA:N	2.33	0.44
1:E:20:PHE:HB3	1:E:24:GLY:O	2.18	0.44
1:E:122:THR:HG22	1:E:152:TRP:HZ3	1.83	0.44
1:A:159:GLU:H	1:A:159:GLU:HG2	1.70	0.44
1:E:102:GLY:N	3:F:27:THR:HG21	2.33	0.44
1:A:5:SER:OG	3:B:43:ASN:ND2	2.50	0.44
1:A:148:ASN:HD22	1:A:149:THR:N	2.14	0.44
1:E:100:TYR:HE2	1:E:106:SER:HA	1.83	0.44
1:A:41:VAL:HA	3:B:27:THR:HG22	2.00	0.44
1:A:70:VAL:CG2	1:A:159:GLU:HB3	2.48	0.44
1:C:69:PHE:HD1	1:C:69:PHE:H	1.66	0.44
1:C:84:THR:CG2	1:C:85:PHE:N	2.80	0.44
1:C:45:LEU:HD22	1:C:86:PHE:CZ	2.53	0.44
1:E:52:ILE:HG23	1:E:53:TRP:HD1	1.83	0.44
1:A:27:THR:O	1:A:30:ARG:HG2	2.17	0.44
1:C:125:ASN:HB2	1:C:128:TRP:NE1	2.33	0.43
1:C:130:PRO:HG2	1:C:149:THR:HG21	1.99	0.43
1:E:11:PHE:HE1	3:F:39:SER:HA	1.84	0.43
1:A:114:GLN:HA	3:B:15:PHE:O	2.19	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:177:LEU:HD12	1:C:178:THR:N	2.32	0.43
1:E:41:VAL:HG13	3:F:27:THR:HG22	1.99	0.43
1:E:162:VAL:HG12	1:E:163:VAL:N	2.33	0.43
1:E:174:THR:HA	3:F:6:LEU:O	2.18	0.43
1:E:84:THR:CG2	1:E:85:PHE:N	2.82	0.43
1:A:51:HIS:HB3	9:A:305:HOH:O	2.19	0.43
3:B:6:LEU:HD12	3:B:7:ASN:H	1.84	0.43
1:E:9:THR:HG22	1:E:9:THR:O	2.18	0.43
1:A:19:ILE:O	1:A:44:ALA:HA	2.19	0.43
1:E:65:THR:HB	3:F:42:PHE:HD2	1.83	0.43
1:A:9:THR:O	1:A:9:THR:HG22	2.19	0.42
1:A:53:TRP:O	3:B:18:GLU:HG2	2.19	0.42
1:A:107:LYS:HB3	1:A:107:LYS:HZ3	1.81	0.42
1:E:34:THR:HG23	1:E:40:THR:OG1	2.19	0.42
1:A:178:THR:O	1:A:180:PRO:HD3	2.19	0.42
3:F:17:PRO:HG2	3:F:20:VAL:HG12	2.00	0.42
1:C:124:TYR:CD1	1:C:133:GLY:HA2	2.53	0.42
1:E:30:ARG:HE	3:F:38:LEU:CD2	2.33	0.42
1:A:3:THR:HG23	3:B:44:SER:O	2.19	0.42
3:D:5:THR:CG2	3:D:6:LEU:N	2.83	0.42
2:H:512:ASN:OD1	2:H:512:ASN:N	2.52	0.42
1:C:139:ILE:O	1:C:147:ILE:HG22	2.19	0.42
2:J:512:ASN:ND2	5:L:1:NAG:O7	2.52	0.42
1:A:80:ALA:HA	1:A:81:ASP:HA	1.64	0.42
1:C:179:TYR:HA	1:C:180:PRO:HD2	1.83	0.42
3:D:5:THR:HG22	3:D:6:LEU:N	2.34	0.42
1:E:90:VAL:HG13	3:F:21:ARG:HH21	1.83	0.42
1:A:7:SER:HB2	1:C:1:THR:O	2.20	0.42
5:K:1:NAG:H61	5:K:2:NAG:O7	2.20	0.42
3:F:6:LEU:HD23	3:F:6:LEU:HA	1.82	0.42
1:C:20:PHE:HE1	1:C:31:LEU:CD1	2.33	0.41
1:A:8:ILE:HG21	1:A:11:PHE:CE2	2.55	0.41
1:E:78:ASN:HD21	5:L:1:NAG:H2	1.84	0.41
1:E:148:ASN:HD22	3:F:8:GLU:CG	2.33	0.41
1:A:16:PRO:HD2	3:D:19:TRP:CE2	2.55	0.41
1:E:33:LEU:HD23	1:E:33:LEU:HA	1.84	0.41
1:A:103:VAL:HG23	1:A:104:PHE:CD2	2.56	0.41
1:E:124:TYR:CE2	1:E:126:THR:HG22	2.56	0.41
1:E:172:VAL:O	1:E:172:VAL:HG13	2.21	0.41
1:E:28:LYS:HD3	1:E:30:ARG:HH11	1.86	0.41
5:K:4:MAN:H2	5:K:5:NAG:H2	1.77	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:34:THR:HB	3:F:35:HIS:HD2	1.84	0.41
1:A:5:SER:HA	3:B:42:PHE:O	2.21	0.41
3:B:16:VAL:HG13	3:B:20:VAL:CG1	2.50	0.41
3:B:41:TYR:OH	3:B:43:ASN:HB2	2.21	0.41
1:A:181:ASN:O	3:B:1:GLU:N	2.53	0.41
1:C:45:LEU:HA	3:D:23:GLY:HA3	2.03	0.40
1:C:136:HIS:HB2	1:C:149:THR:HG23	2.04	0.40
1:A:84:THR:HG22	3:B:25:SER:HB3	2.04	0.40
1:C:4:THR:HG21	1:C:50:ILE:HD13	2.03	0.40
3:D:43:ASN:HD22	3:D:43:ASN:C	2.23	0.40
1:E:6:PHE:HZ	3:F:40:TRP:CZ2	2.39	0.40
1:E:88:ALA:HB2	1:E:115:THR:HG23	2.04	0.40
1:A:152:TRP:HA	3:B:4:TYR:CE2	2.57	0.40
1:C:14:ASP:C	1:C:16:PRO:HD3	2.42	0.40
1:C:73:ALA:HB3	1:C:156:ASN:ND2	2.36	0.40
3:F:9:VAL:O	3:F:11:PRO:HD3	2.21	0.40
1:C:73:ALA:HA	1:C:74:PRO:HD3	1.92	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	179/181 (99%)	164 (92%)	14 (8%)	1 (1%)	22	51
1	C	179/181 (99%)	145 (81%)	29 (16%)	5 (3%)	4	14
1	E	179/181 (99%)	147 (82%)	25 (14%)	7 (4%)	2	9
3	B	49/53 (92%)	44 (90%)	5 (10%)	0	100	100
3	D	46/53 (87%)	41 (89%)	5 (11%)	0	100	100
3	F	45/53 (85%)	39 (87%)	6 (13%)	0	100	100
All	All	677/702 (96%)	580 (86%)	84 (12%)	13 (2%)	6	23

All (13) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	39	ASN
1	C	134	ASP
1	E	36	ALA
1	E	39	ASN
1	A	101	LEU
1	E	148	ASN
1	C	127	ALA
1	E	75	ASN
1	E	156	ASN
1	C	128	TRP
1	E	58	GLY
1	E	141	VAL
1	C	180	PRO

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	156/156 (100%)	137 (88%)	19 (12%)	4	13
1	C	156/156 (100%)	138 (88%)	18 (12%)	4	15
1	E	154/156 (99%)	140 (91%)	14 (9%)	7	24
2	H	1/2 (50%)	0	1 (100%)	0	0
2	I	1/2 (50%)	1 (100%)	0	100	100
2	J	2/2 (100%)	0	2 (100%)	0	0
3	B	44/47 (94%)	39 (89%)	5 (11%)	4	15
3	D	40/47 (85%)	37 (92%)	3 (8%)	11	33
3	F	39/47 (83%)	34 (87%)	5 (13%)	3	12
All	All	593/615 (96%)	526 (89%)	67 (11%)	4	16

All (67) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	27	THR
1	A	28	LYS
1	A	29	GLU
1	A	30	ARG
1	A	39	ASN
1	A	50	ILE
1	A	69	PHE
1	A	84	THR
1	A	91	ASP
1	A	92	THR
1	A	135	ARG
1	A	141	VAL
1	A	143	SER
1	A	144	ILE
1	A	148	ASN
1	A	158	LYS
1	A	159	GLU
1	A	173	LEU
1	A	175	VAL
2	H	512	ASN
3	B	2	THR
3	B	16	VAL
3	B	36	GLU
3	B	43	ASN
3	B	48	VAL
1	C	2	GLU
1	C	28	LYS
1	C	29	GLU
1	C	33	LEU
1	C	39	ASN
1	C	45	LEU
1	C	66	SER
1	C	69	PHE
1	C	72	ASP
1	C	75	ASN
1	C	81	ASP
1	C	115	THR
1	C	118	VAL
1	C	150	LYS
1	C	158	LYS
1	C	162	VAL
1	C	173	LEU
1	C	178	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	D	21	ARG
3	D	38	LEU
3	D	43	ASN
1	E	2	GLU
1	E	14	ASP
1	E	18	LEU
1	E	35	LYS
1	E	45	LEU
1	E	57	THR
1	E	64	VAL
1	E	113	SER
1	E	141	VAL
1	E	158	LYS
1	E	170	THR
1	E	175	VAL
1	E	177	LEU
1	E	181	ASN
2	J	512	ASN
2	J	513	GLN
3	F	2	THR
3	F	6	LEU
3	F	16	VAL
3	F	22	ILE
3	F	39	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	39	ASN
1	A	148	ASN
1	A	155	GLN
3	B	35	HIS
3	B	43	ASN
1	C	21	GLN
1	C	51	HIS
1	C	59	ASN
1	C	75	ASN
1	C	114	GLN
3	D	43	ASN
1	E	21	GLN
1	E	78	ASN
1	E	181	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	F	35	HIS
3	F	43	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 ⓘ

28 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	$\#|Z| > 2$
4	NAG	G	1	2,4	14,14,15	0.60	0	17,19,21	0.61	0
4	FUC	G	10	4	10,10,11	0.45	0	14,14,16	0.54	0
4	NAG	G	2	4	14,14,15	0.42	0	17,19,21	0.79	0
4	BMA	G	3	4	11,11,12	0.46	0	15,15,17	1.07	2 (13%)
4	MAN	G	4	4	11,11,12	0.61	0	15,15,17	0.75	0
4	NAG	G	5	4	14,14,15	1.02	0	17,19,21	0.91	1 (5%)
4	FUC	G	6	4	10,10,11	0.66	0	14,14,16	0.89	0
4	GAL	G	7	4	11,11,12	0.51	0	15,15,17	0.73	0
4	MAN	G	8	4	11,11,12	0.66	0	15,15,17	0.65	0
4	NAG	G	9	4	14,14,15	0.58	0	17,19,21	0.58	0
5	NAG	K	1	5,2	14,14,15	0.58	0	17,19,21	0.76	1 (5%)
5	NAG	K	2	5	14,14,15	0.53	0	17,19,21	1.22	2 (11%)
5	BMA	K	3	5	11,11,12	0.68	0	15,15,17	0.54	0
5	MAN	K	4	5	11,11,12	0.39	0	15,15,17	0.80	0
5	NAG	K	5	5	14,14,15	0.57	0	17,19,21	0.54	0
5	GAL	K	6	5	11,11,12	0.45	0	15,15,17	0.48	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
5	SIA	K	7	5	20,20,21	0.89	0	21,28,31	0.91	2 (9%)
5	MAN	K	8	5	11,11,12	0.57	0	15,15,17	1.02	1 (6%)
5	FUC	K	9	5	10,10,11	0.34	0	14,14,16	0.52	0
5	NAG	L	1	5,2	14,14,15	0.56	0	17,19,21	0.89	0
5	NAG	L	2	5	14,14,15	0.64	0	17,19,21	1.08	3 (17%)
5	BMA	L	3	5	11,11,12	0.60	0	15,15,17	0.47	0
5	MAN	L	4	5	11,11,12	0.56	0	15,15,17	0.75	0
5	NAG	L	5	5	14,14,15	0.45	0	17,19,21	0.53	0
5	GAL	L	6	5	11,11,12	0.38	0	15,15,17	0.71	0
5	SIA	L	7	5	20,20,21	0.85	0	21,28,31	0.91	1 (4%)
5	MAN	L	8	5	11,11,12	0.53	0	15,15,17	0.50	0
5	FUC	L	9	5	10,10,11	0.29	0	14,14,16	0.37	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
4	NAG	G	1	2,4	-	0/6/23/26	0/1/1/1
4	FUC	G	10	4	-	-	0/1/1/1
4	NAG	G	2	4	-	2/6/23/26	0/1/1/1
4	BMA	G	3	4	-	0/2/19/22	0/1/1/1
4	MAN	G	4	4	-	1/2/19/22	0/1/1/1
4	NAG	G	5	4	-	0/6/23/26	0/1/1/1
4	FUC	G	6	4	-	-	0/1/1/1
4	GAL	G	7	4	-	2/2/19/22	0/1/1/1
4	MAN	G	8	4	-	0/2/19/22	0/1/1/1
4	NAG	G	9	4	-	2/6/23/26	0/1/1/1
5	NAG	K	1	5,2	-	0/6/23/26	0/1/1/1
5	NAG	K	2	5	-	1/6/23/26	0/1/1/1
5	BMA	K	3	5	-	2/2/19/22	0/1/1/1
5	MAN	K	4	5	-	2/2/19/22	0/1/1/1
5	NAG	K	5	5	-	0/6/23/26	0/1/1/1
5	GAL	K	6	5	-	1/2/19/22	0/1/1/1
5	SIA	K	7	5	-	3/18/34/38	0/1/1/1
5	MAN	K	8	5	-	0/2/19/22	0/1/1/1
5	FUC	K	9	5	-	-	0/1/1/1
5	NAG	L	1	5,2	-	0/6/23/26	0/1/1/1
5	NAG	L	2	5	-	1/6/23/26	0/1/1/1

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	BMA	L	3	5	-	2/2/19/22	0/1/1/1
5	MAN	L	4	5	-	1/2/19/22	0/1/1/1
5	NAG	L	5	5	-	1/6/23/26	0/1/1/1
5	GAL	L	6	5	-	2/2/19/22	0/1/1/1
5	SIA	L	7	5	-	9/18/34/38	0/1/1/1
5	MAN	L	8	5	-	0/2/19/22	0/1/1/1
5	FUC	L	9	5	-	-	0/1/1/1

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	K	2	NAG	C4-C3-C2	-3.69	105.61	111.02
5	K	8	MAN	C1-O5-C5	2.99	116.19	112.19
4	G	3	BMA	C6-C5-C4	-2.93	105.81	113.02
5	L	7	SIA	O1B-C1-C2	2.57	119.40	112.71
5	L	2	NAG	C1-C2-N2	2.54	114.44	110.43
5	K	7	SIA	O1B-C1-C2	2.42	119.00	112.71
5	L	2	NAG	O5-C1-C2	-2.41	107.56	111.29
5	L	2	NAG	C4-C3-C2	-2.40	107.50	111.02
4	G	5	NAG	C6-C5-C4	2.25	118.55	113.02
5	K	2	NAG	O5-C1-C2	-2.15	107.96	111.29
4	G	3	BMA	C3-C4-C5	2.09	114.02	110.23
5	K	7	SIA	O1A-C1-C2	-2.03	118.47	122.85
5	K	1	NAG	C3-C4-C5	-2.01	106.59	110.23

There are no chirality outliers.

All (32) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	K	2	NAG	C1-C2-N2-C7
5	K	7	SIA	C7-C8-C9-O9
5	K	7	SIA	O8-C8-C9-O9
5	L	2	NAG	C1-C2-N2-C7
5	L	7	SIA	C5-C6-C7-O7
5	L	7	SIA	O6-C6-C7-O7
4	G	7	GAL	O5-C5-C6-O6
5	L	3	BMA	C4-C5-C6-O6
5	L	3	BMA	O5-C5-C6-O6
4	G	7	GAL	C4-C5-C6-O6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
5	L	6	GAL	C4-C5-C6-O6
5	L	6	GAL	O5-C5-C6-O6
5	K	6	GAL	O5-C5-C6-O6
4	G	2	NAG	C3-C2-N2-C7
5	L	7	SIA	O1A-C1-C2-O6
4	G	9	NAG	C4-C5-C6-O6
5	K	4	MAN	C4-C5-C6-O6
5	K	3	BMA	C4-C5-C6-O6
4	G	9	NAG	O5-C5-C6-O6
5	L	7	SIA	O1A-C1-C2-C3
5	L	7	SIA	O1B-C1-C2-C3
5	K	4	MAN	O5-C5-C6-O6
5	L	7	SIA	C5-C6-C7-C8
5	L	7	SIA	C6-C7-C8-O8
5	K	7	SIA	O1A-C1-C2-O6
5	L	4	MAN	O5-C5-C6-O6
5	K	3	BMA	O5-C5-C6-O6
5	L	7	SIA	O7-C7-C8-O8
4	G	4	MAN	O5-C5-C6-O6
5	L	5	NAG	C4-C5-C6-O6
4	G	2	NAG	C4-C5-C6-O6
5	L	7	SIA	O6-C6-C7-C8

There are no ring outliers.

13 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	L	2	NAG	1	0
5	K	5	NAG	1	0
5	K	7	SIA	1	0
5	K	8	MAN	2	0
4	G	8	MAN	1	0
5	L	1	NAG	2	0
4	G	6	FUC	3	0
5	K	1	NAG	1	0
4	G	7	GAL	1	0
5	K	3	BMA	2	0
4	G	5	NAG	3	0
5	K	2	NAG	1	0
5	K	4	MAN	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 G	
 Bond lengths	 Bond angles
 Torsions	 Rings

Oligosaccharide Chain K

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain L

Bond lengths

Bond angles

Torsions

Rings
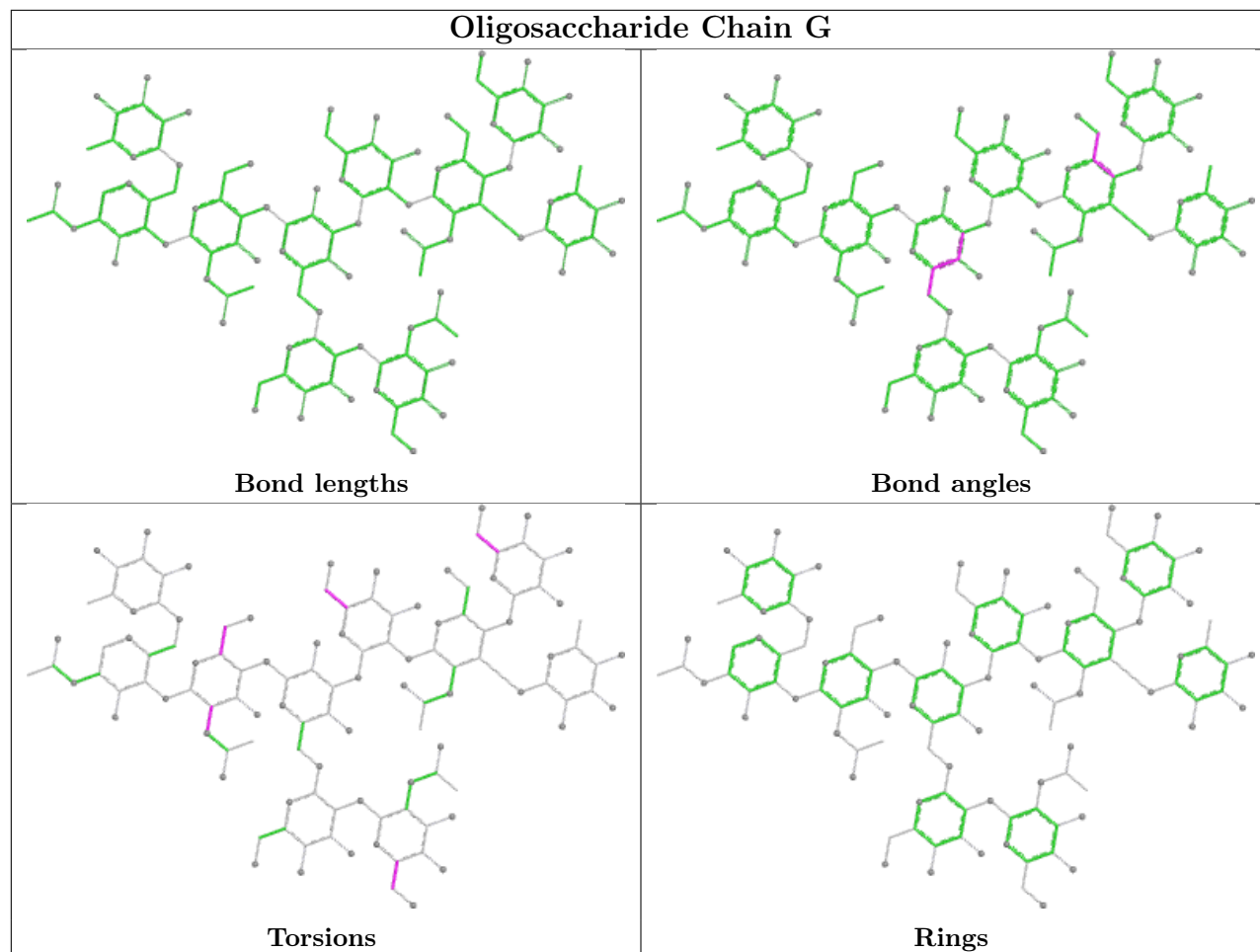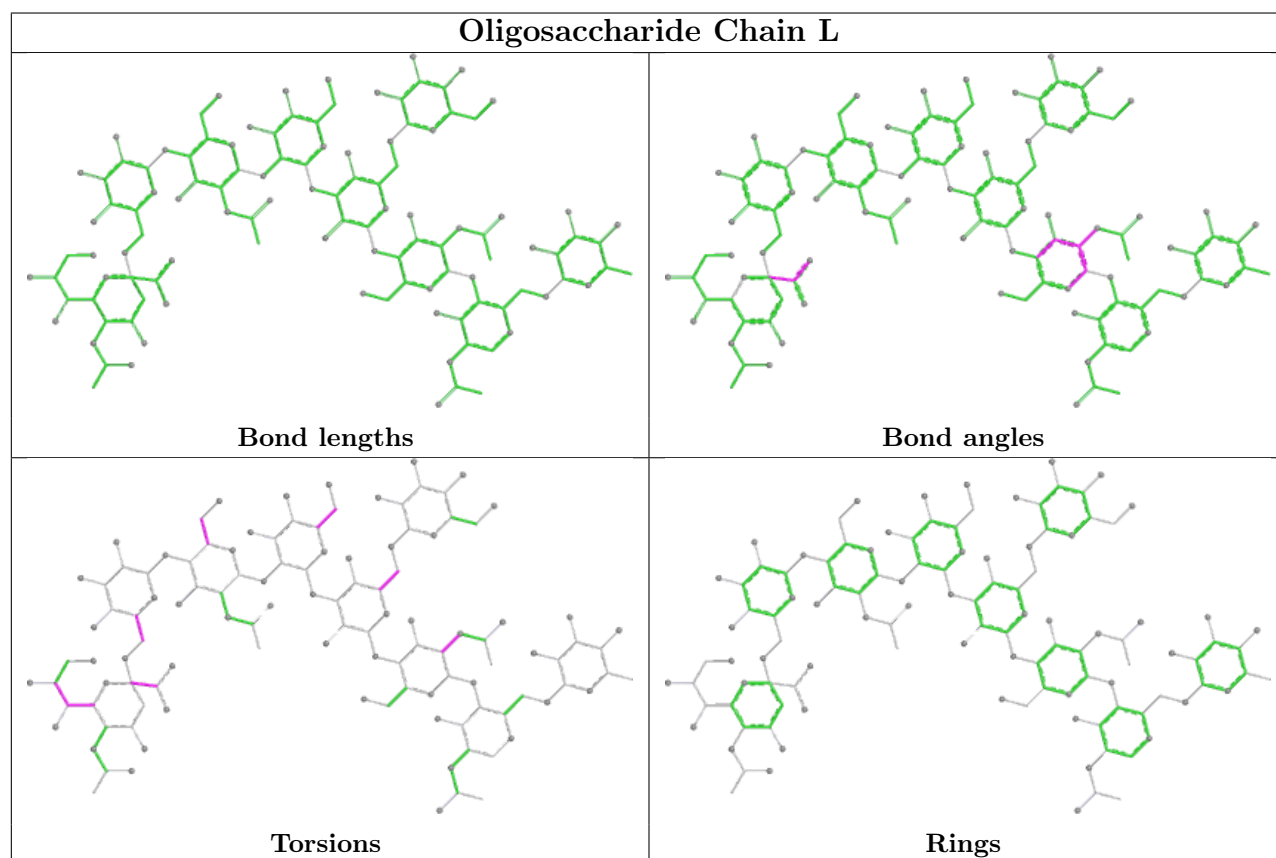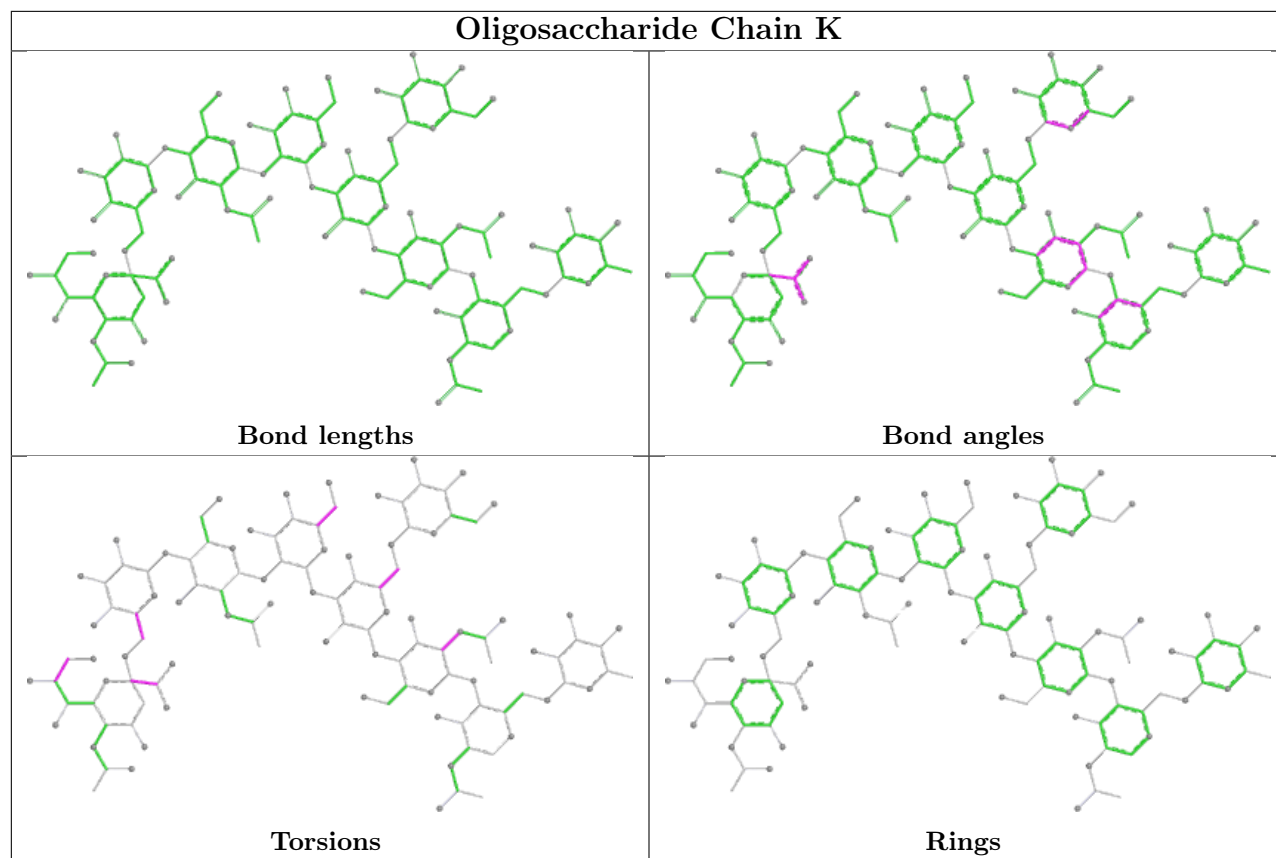
5.6 Ligand geometry ⓘ

Of 7 ligands modelled in this entry, 6 are monoatomic - leaving 1 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
8	MPD	E	303	-	7,7,7	0.52	0	9,10,10	0.38	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
8	MPD	E	303	-	-	0/5/5/5	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	E	303	MPD	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 ⓘ

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates ⓘ

EDS was not executed - this section is therefore empty.

6.4 Ligands ⓘ

EDS was not executed - this section is therefore empty.

6.5 Other polymers ⓘ

EDS was not executed - this section is therefore empty.