



Full wwPDB EM Validation Report ⓘ

Oct 7, 2024 – 02:30 PM JST

PDB ID : 8WHS
EMDB ID : EMD-37546
Title : Spike Trimer of BA.2.86 in complex with one hACE2
Authors : Yue, C.; Liu, P.
Deposited on : 2023-09-23
Resolution : 3.33 Å (reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

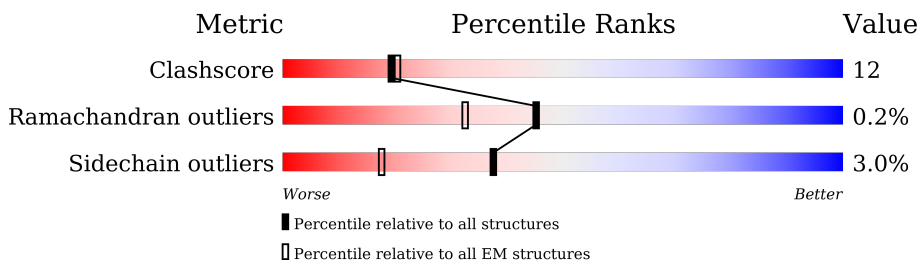
EMDB validation analysis : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.33 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	1206	61% 26% 12%
1	B	1206	64% 23% 12%
1	C	1206	61% 26% 12%
2	D	597	70% 29% .
3	E	2	50% 50%
3	F	2	50% 50%
3	G	2	100%
3	H	2	100%
3	I	2	100%

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Mol	Chain	Length	Quality of chain
3	J	2	 100%
3	K	2	 100%
3	L	2	 100%
3	M	2	 50% 50%
3	N	2	 100%
3	O	2	 100%
3	P	2	 100%
3	Q	2	 100%
3	R	2	 100%
3	S	2	 50% 50%
3	T	2	 100%
3	U	2	 100%

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
6	CL	D	902	-	-	X	-

2 Entry composition i

There are 6 unique types of molecules in this entry. The entry contains 30642 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1059	8285	5302	1376	1569	38	0	0
1	B	1059	8285	5302	1376	1569	38	0	0
1	C	1059	8285	5302	1376	1569	38	0	0

There are 273 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	ALA	-	expression tag	UNP P0DTC2
A	-1	THR	-	expression tag	UNP P0DTC2
A	0	MET	-	expression tag	UNP P0DTC2
A	1	PHE	-	expression tag	UNP P0DTC2
A	2	VAL	-	expression tag	UNP P0DTC2
A	3	PHE	-	expression tag	UNP P0DTC2
A	4	LEU	-	expression tag	UNP P0DTC2
A	5	VAL	-	expression tag	UNP P0DTC2
A	6	LEU	-	expression tag	UNP P0DTC2
A	7	LEU	-	expression tag	UNP P0DTC2
A	8	PRO	-	expression tag	UNP P0DTC2
A	9	LEU	-	expression tag	UNP P0DTC2
A	10	VAL	-	expression tag	UNP P0DTC2
A	11	SER	-	expression tag	UNP P0DTC2
A	12	SER	-	expression tag	UNP P0DTC2
A	13	GLN	-	expression tag	UNP P0DTC2
A	14	CYS	-	expression tag	UNP P0DTC2
A	15	VAL	-	expression tag	UNP P0DTC2
A	16	MET	-	expression tag	UNP P0DTC2
A	17	PRO	-	expression tag	UNP P0DTC2
A	18	LEU	-	expression tag	UNP P0DTC2
A	19	PHE	-	expression tag	UNP P0DTC2
A	20	ASN	-	expression tag	UNP P0DTC2
A	21	LEU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	22	ILE	-	expression tag	UNP P0DTC2
A	23	THR	-	expression tag	UNP P0DTC2
A	24	THR	-	expression tag	UNP P0DTC2
A	25	THR	-	expression tag	UNP P0DTC2
A	26	GLN	-	expression tag	UNP P0DTC2
A	27	SER	-	expression tag	UNP P0DTC2
A	50	LEU	SER	conflict	UNP P0DTC2
A	?	-	HIS	deletion	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	127	PHE	VAL	conflict	UNP P0DTC2
A	143	ASP	GLY	variant	UNP P0DTC2
A	?	-	TYR	deletion	UNP P0DTC2
A	157	SER	PHE	conflict	UNP P0DTC2
A	158	GLY	ARG	conflict	UNP P0DTC2
A	?	-	ASN	deletion	UNP P0DTC2
A	212	ILE	LEU	variant	UNP P0DTC2
A	213	GLY	VAL	variant	UNP P0DTC2
A	216	PHE	LEU	conflict	UNP P0DTC2
A	245	ASN	HIS	conflict	UNP P0DTC2
A	264	ASP	ALA	conflict	UNP P0DTC2
A	332	VAL	ILE	conflict	UNP P0DTC2
A	339	HIS	GLY	variant	UNP P0DTC2
A	356	THR	LYS	conflict	UNP P0DTC2
A	371	PHE	SER	variant	UNP P0DTC2
A	373	PRO	SER	variant	UNP P0DTC2
A	375	PHE	SER	variant	UNP P0DTC2
A	376	ALA	THR	variant	UNP P0DTC2
A	403	LYS	ARG	conflict	UNP P0DTC2
A	405	ASN	ASP	variant	UNP P0DTC2
A	408	SER	ARG	variant	UNP P0DTC2
A	417	ASN	LYS	variant	UNP P0DTC2
A	440	LYS	ASN	conflict	UNP P0DTC2
A	445	HIS	VAL	variant	UNP P0DTC2
A	446	SER	GLY	conflict	UNP P0DTC2
A	450	ASP	ASN	conflict	UNP P0DTC2
A	452	TRP	LEU	conflict	UNP P0DTC2
A	460	LYS	ASN	variant	UNP P0DTC2
A	477	ASN	SER	variant	UNP P0DTC2
A	478	LYS	THR	variant	UNP P0DTC2
A	481	LYS	ASN	conflict	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	484	LYS	GLU	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	486	PRO	PHE	variant	UNP P0DTC2
A	498	ARG	GLN	variant	UNP P0DTC2
A	501	TYR	ASN	variant	UNP P0DTC2
A	505	HIS	TYR	variant	UNP P0DTC2
A	554	LYS	GLU	conflict	UNP P0DTC2
A	570	VAL	ALA	conflict	UNP P0DTC2
A	614	GLY	ASP	variant	UNP P0DTC2
A	621	SER	PRO	conflict	UNP P0DTC2
A	655	TYR	HIS	variant	UNP P0DTC2
A	679	LYS	ASN	variant	UNP P0DTC2
A	681	ARG	PRO	variant	UNP P0DTC2
A	683	ALA	ARG	conflict	UNP P0DTC2
A	685	ALA	ARG	conflict	UNP P0DTC2
A	764	LYS	ASN	variant	UNP P0DTC2
A	796	TYR	ASP	variant	UNP P0DTC2
A	817	PRO	PHE	conflict	UNP P0DTC2
A	892	PRO	ALA	conflict	UNP P0DTC2
A	899	PRO	ALA	conflict	UNP P0DTC2
A	939	PHE	SER	conflict	UNP P0DTC2
A	942	PRO	ALA	conflict	UNP P0DTC2
A	954	HIS	GLN	variant	UNP P0DTC2
A	969	LYS	ASN	variant	UNP P0DTC2
A	986	PRO	LYS	variant	UNP P0DTC2
A	987	PRO	VAL	variant	UNP P0DTC2
A	1143	LEU	PRO	conflict	UNP P0DTC2
B	-2	ALA	-	expression tag	UNP P0DTC2
B	-1	THR	-	expression tag	UNP P0DTC2
B	0	MET	-	expression tag	UNP P0DTC2
B	1	PHE	-	expression tag	UNP P0DTC2
B	2	VAL	-	expression tag	UNP P0DTC2
B	3	PHE	-	expression tag	UNP P0DTC2
B	4	LEU	-	expression tag	UNP P0DTC2
B	5	VAL	-	expression tag	UNP P0DTC2
B	6	LEU	-	expression tag	UNP P0DTC2
B	7	LEU	-	expression tag	UNP P0DTC2
B	8	PRO	-	expression tag	UNP P0DTC2
B	9	LEU	-	expression tag	UNP P0DTC2
B	10	VAL	-	expression tag	UNP P0DTC2
B	11	SER	-	expression tag	UNP P0DTC2
B	12	SER	-	expression tag	UNP P0DTC2
B	13	GLN	-	expression tag	UNP P0DTC2
B	14	CYS	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	15	VAL	-	expression tag	UNP P0DTC2
B	16	MET	-	expression tag	UNP P0DTC2
B	17	PRO	-	expression tag	UNP P0DTC2
B	18	LEU	-	expression tag	UNP P0DTC2
B	19	PHE	-	expression tag	UNP P0DTC2
B	20	ASN	-	expression tag	UNP P0DTC2
B	21	LEU	-	expression tag	UNP P0DTC2
B	22	ILE	-	expression tag	UNP P0DTC2
B	23	THR	-	expression tag	UNP P0DTC2
B	24	THR	-	expression tag	UNP P0DTC2
B	25	THR	-	expression tag	UNP P0DTC2
B	26	GLN	-	expression tag	UNP P0DTC2
B	27	SER	-	expression tag	UNP P0DTC2
B	50	LEU	SER	conflict	UNP P0DTC2
B	?	-	HIS	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	127	PHE	VAL	conflict	UNP P0DTC2
B	143	ASP	GLY	variant	UNP P0DTC2
B	?	-	TYR	deletion	UNP P0DTC2
B	157	SER	PHE	conflict	UNP P0DTC2
B	158	GLY	ARG	conflict	UNP P0DTC2
B	?	-	ASN	deletion	UNP P0DTC2
B	212	ILE	LEU	variant	UNP P0DTC2
B	213	GLY	VAL	variant	UNP P0DTC2
B	216	PHE	LEU	conflict	UNP P0DTC2
B	245	ASN	HIS	conflict	UNP P0DTC2
B	264	ASP	ALA	conflict	UNP P0DTC2
B	332	VAL	ILE	conflict	UNP P0DTC2
B	339	HIS	GLY	variant	UNP P0DTC2
B	356	THR	LYS	conflict	UNP P0DTC2
B	371	PHE	SER	variant	UNP P0DTC2
B	373	PRO	SER	variant	UNP P0DTC2
B	375	PHE	SER	variant	UNP P0DTC2
B	376	ALA	THR	variant	UNP P0DTC2
B	403	LYS	ARG	conflict	UNP P0DTC2
B	405	ASN	ASP	variant	UNP P0DTC2
B	408	SER	ARG	variant	UNP P0DTC2
B	417	ASN	LYS	variant	UNP P0DTC2
B	440	LYS	ASN	conflict	UNP P0DTC2
B	445	HIS	VAL	variant	UNP P0DTC2
B	446	SER	GLY	conflict	UNP P0DTC2
B	450	ASP	ASN	conflict	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	452	TRP	LEU	conflict	UNP P0DTC2
B	460	LYS	ASN	variant	UNP P0DTC2
B	477	ASN	SER	variant	UNP P0DTC2
B	478	LYS	THR	variant	UNP P0DTC2
B	481	LYS	ASN	conflict	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	484	LYS	GLU	variant	UNP P0DTC2
B	486	PRO	PHE	variant	UNP P0DTC2
B	498	ARG	GLN	variant	UNP P0DTC2
B	501	TYR	ASN	variant	UNP P0DTC2
B	505	HIS	TYR	variant	UNP P0DTC2
B	554	LYS	GLU	conflict	UNP P0DTC2
B	570	VAL	ALA	conflict	UNP P0DTC2
B	614	GLY	ASP	variant	UNP P0DTC2
B	621	SER	PRO	conflict	UNP P0DTC2
B	655	TYR	HIS	variant	UNP P0DTC2
B	679	LYS	ASN	variant	UNP P0DTC2
B	681	ARG	PRO	variant	UNP P0DTC2
B	683	ALA	ARG	conflict	UNP P0DTC2
B	685	ALA	ARG	conflict	UNP P0DTC2
B	764	LYS	ASN	variant	UNP P0DTC2
B	796	TYR	ASP	variant	UNP P0DTC2
B	817	PRO	PHE	conflict	UNP P0DTC2
B	892	PRO	ALA	conflict	UNP P0DTC2
B	899	PRO	ALA	conflict	UNP P0DTC2
B	939	PHE	SER	conflict	UNP P0DTC2
B	942	PRO	ALA	conflict	UNP P0DTC2
B	954	HIS	GLN	variant	UNP P0DTC2
B	969	LYS	ASN	variant	UNP P0DTC2
B	986	PRO	LYS	variant	UNP P0DTC2
B	987	PRO	VAL	variant	UNP P0DTC2
B	1143	LEU	PRO	conflict	UNP P0DTC2
C	-2	ALA	-	expression tag	UNP P0DTC2
C	-1	THR	-	expression tag	UNP P0DTC2
C	0	MET	-	expression tag	UNP P0DTC2
C	1	PHE	-	expression tag	UNP P0DTC2
C	2	VAL	-	expression tag	UNP P0DTC2
C	3	PHE	-	expression tag	UNP P0DTC2
C	4	LEU	-	expression tag	UNP P0DTC2
C	5	VAL	-	expression tag	UNP P0DTC2
C	6	LEU	-	expression tag	UNP P0DTC2
C	7	LEU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	8	PRO	-	expression tag	UNP P0DTC2
C	9	LEU	-	expression tag	UNP P0DTC2
C	10	VAL	-	expression tag	UNP P0DTC2
C	11	SER	-	expression tag	UNP P0DTC2
C	12	SER	-	expression tag	UNP P0DTC2
C	13	GLN	-	expression tag	UNP P0DTC2
C	14	CYS	-	expression tag	UNP P0DTC2
C	15	VAL	-	expression tag	UNP P0DTC2
C	16	MET	-	expression tag	UNP P0DTC2
C	17	PRO	-	expression tag	UNP P0DTC2
C	18	LEU	-	expression tag	UNP P0DTC2
C	19	PHE	-	expression tag	UNP P0DTC2
C	20	ASN	-	expression tag	UNP P0DTC2
C	21	LEU	-	expression tag	UNP P0DTC2
C	22	ILE	-	expression tag	UNP P0DTC2
C	23	THR	-	expression tag	UNP P0DTC2
C	24	THR	-	expression tag	UNP P0DTC2
C	25	THR	-	expression tag	UNP P0DTC2
C	26	GLN	-	expression tag	UNP P0DTC2
C	27	SER	-	expression tag	UNP P0DTC2
C	50	LEU	SER	conflict	UNP P0DTC2
C	?	-	HIS	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	127	PHE	VAL	conflict	UNP P0DTC2
C	143	ASP	GLY	variant	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	157	SER	PHE	conflict	UNP P0DTC2
C	158	GLY	ARG	conflict	UNP P0DTC2
C	?	-	ASN	deletion	UNP P0DTC2
C	212	ILE	LEU	variant	UNP P0DTC2
C	213	GLY	VAL	variant	UNP P0DTC2
C	216	PHE	LEU	conflict	UNP P0DTC2
C	245	ASN	HIS	conflict	UNP P0DTC2
C	264	ASP	ALA	conflict	UNP P0DTC2
C	332	VAL	ILE	conflict	UNP P0DTC2
C	339	HIS	GLY	variant	UNP P0DTC2
C	356	THR	LYS	conflict	UNP P0DTC2
C	371	PHE	SER	variant	UNP P0DTC2
C	373	PRO	SER	variant	UNP P0DTC2
C	375	PHE	SER	variant	UNP P0DTC2
C	376	ALA	THR	variant	UNP P0DTC2
C	403	LYS	ARG	conflict	UNP P0DTC2

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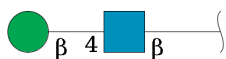
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Chain	Residue	Modelled	Actual	Comment	Reference
C	405	ASN	ASP	variant	UNP P0DTC2
C	408	SER	ARG	variant	UNP P0DTC2
C	417	ASN	LYS	variant	UNP P0DTC2
C	440	LYS	ASN	conflict	UNP P0DTC2
C	445	HIS	VAL	variant	UNP P0DTC2
C	446	SER	GLY	conflict	UNP P0DTC2
C	450	ASP	ASN	conflict	UNP P0DTC2
C	452	TRP	LEU	conflict	UNP P0DTC2
C	460	LYS	ASN	variant	UNP P0DTC2
C	477	ASN	SER	variant	UNP P0DTC2
C	478	LYS	THR	variant	UNP P0DTC2
C	481	LYS	ASN	conflict	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	484	LYS	GLU	variant	UNP P0DTC2
C	486	PRO	PHE	variant	UNP P0DTC2
C	498	ARG	GLN	variant	UNP P0DTC2
C	501	TYR	ASN	variant	UNP P0DTC2
C	505	HIS	TYR	variant	UNP P0DTC2
C	554	LYS	GLU	conflict	UNP P0DTC2
C	570	VAL	ALA	conflict	UNP P0DTC2
C	614	GLY	ASP	variant	UNP P0DTC2
C	621	SER	PRO	conflict	UNP P0DTC2
C	655	TYR	HIS	variant	UNP P0DTC2
C	679	LYS	ASN	variant	UNP P0DTC2
C	681	ARG	PRO	variant	UNP P0DTC2
C	683	ALA	ARG	conflict	UNP P0DTC2
C	685	ALA	ARG	conflict	UNP P0DTC2
C	764	LYS	ASN	variant	UNP P0DTC2
C	796	TYR	ASP	variant	UNP P0DTC2
C	817	PRO	PHE	conflict	UNP P0DTC2
C	892	PRO	ALA	conflict	UNP P0DTC2
C	899	PRO	ALA	conflict	UNP P0DTC2
C	939	PHE	SER	conflict	UNP P0DTC2
C	942	PRO	ALA	conflict	UNP P0DTC2
C	954	HIS	GLN	variant	UNP P0DTC2
C	969	LYS	ASN	variant	UNP P0DTC2
C	986	PRO	LYS	variant	UNP P0DTC2
C	987	PRO	VAL	variant	UNP P0DTC2
C	1143	LEU	PRO	conflict	UNP P0DTC2

- Molecule 2 is a protein called Processed angiotensin-converting enzyme 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	D	597	4870	3115	806	920	29	0	0

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



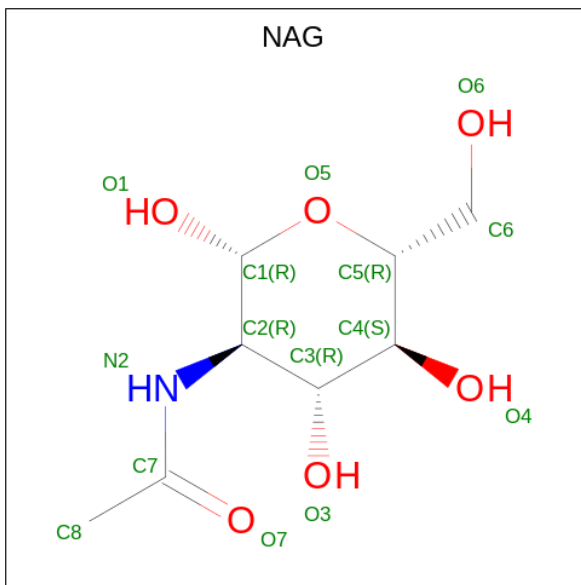
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	E	2	25	14	1	10	0	0
3	F	2	25	14	1	10	0	0
3	G	2	25	14	1	10	0	0
3	H	2	25	14	1	10	0	0
3	I	2	25	14	1	10	0	0
3	J	2	25	14	1	10	0	0
3	K	2	25	14	1	10	0	0
3	L	2	25	14	1	10	0	0
3	M	2	25	14	1	10	0	0
3	N	2	25	14	1	10	0	0
3	O	2	25	14	1	10	0	0
3	P	2	25	14	1	10	0	0
3	Q	2	25	14	1	10	0	0
3	R	2	25	14	1	10	0	0
3	S	2	25	14	1	10	0	0
3	T	2	25	14	1	10	0	0

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Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	U	2	25	14	1	10	0	0

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



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

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Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	B	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0
4	C	1	Total 14	8	1	5	0

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Mol	Chain	Residues	Atoms				AltConf
4	D	1	Total	C	N	O	0
			14	8	1	5	
4	D	1	Total	C	N	O	0
			14	8	1	5	
4	D	1	Total	C	N	O	0
			14	8	1	5	
4	D	1	Total	C	N	O	0
			14	8	1	5	

- Molecule 5 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
5	D	1	Total	Zn	0
			1	1	

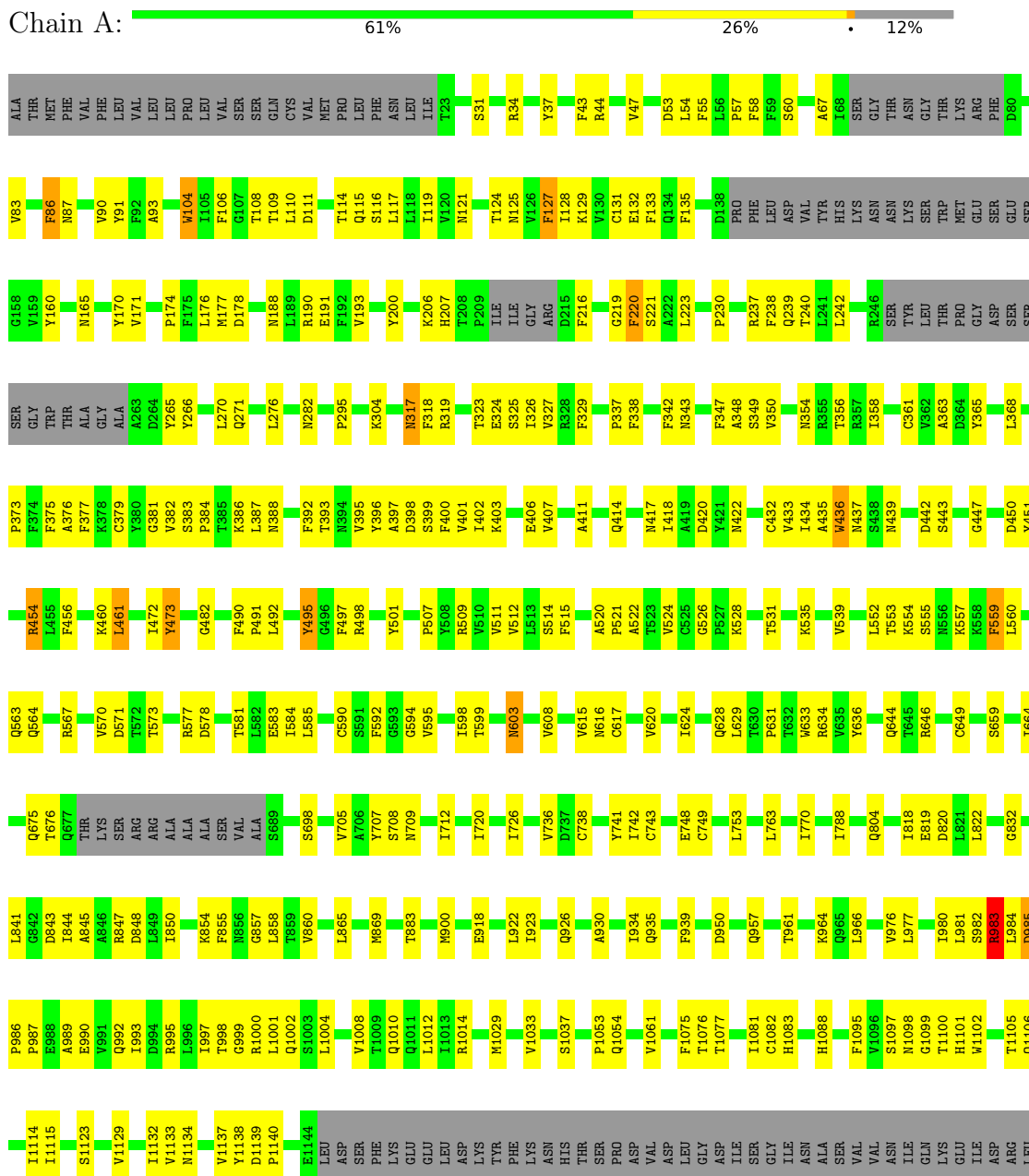
- Molecule 6 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		AltConf
6	D	1	Total	Cl	0
			1	1	

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.

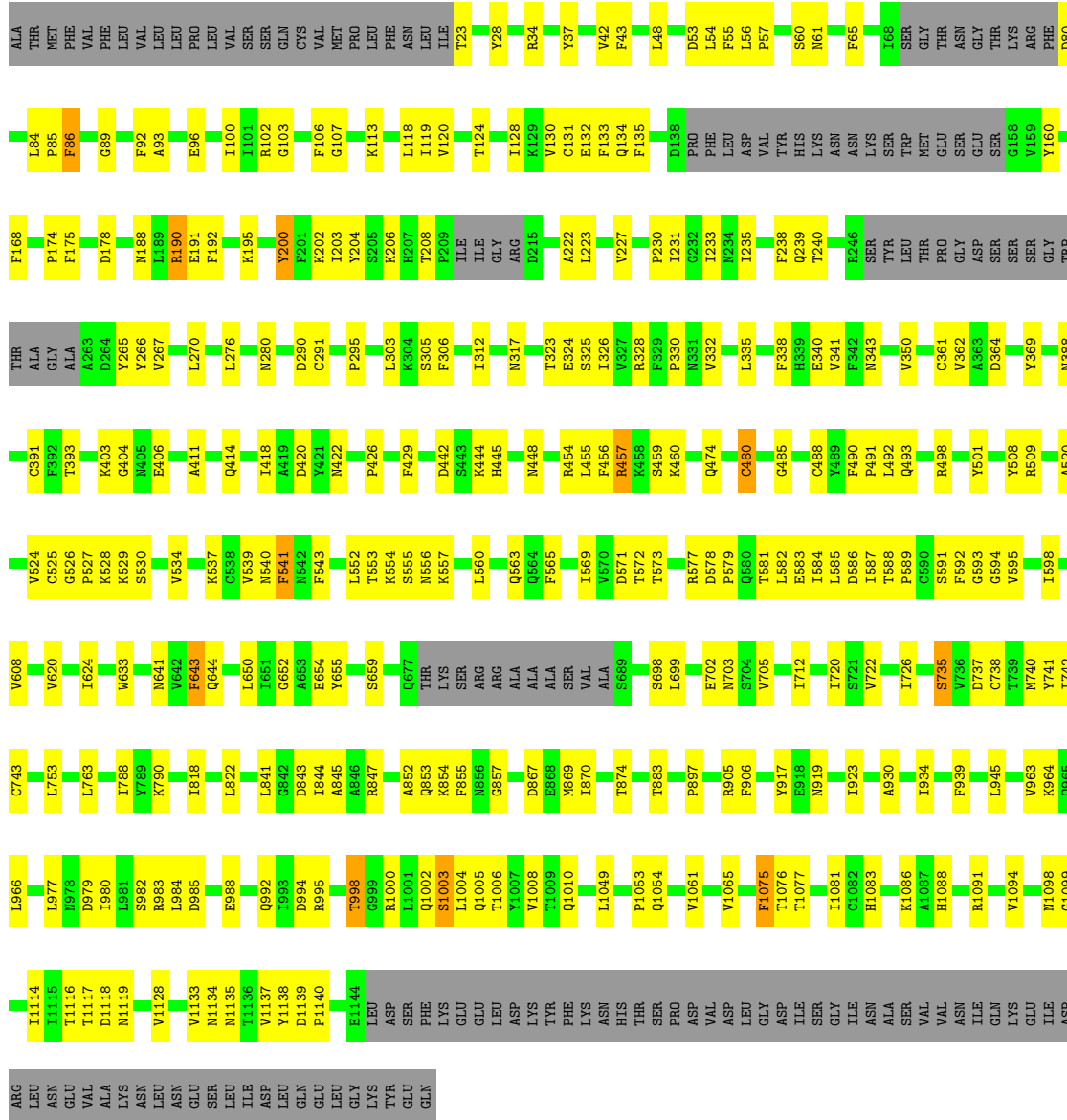
- Molecule 1: Spike glycoprotein



ASN
GLU
VAL
MET
PHE
ALA
LYS
ASN
LEU
LEU
ASN
GLU
SER
SER
PRO
LEU
LEU
ILE
ASP
LEU
LEU
GLN
SER
GLN
LEU
LEU
GLY
LYS
TYR
GLU
GLN

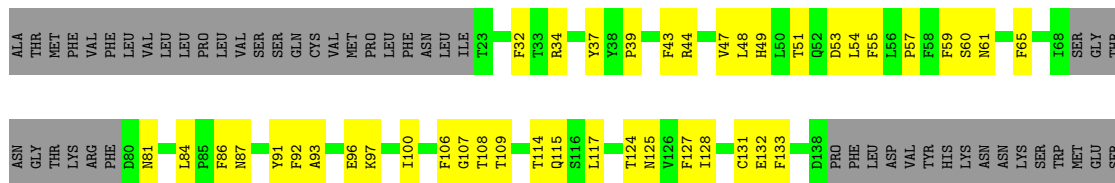
● Molecule 1: Spike glycoprotein

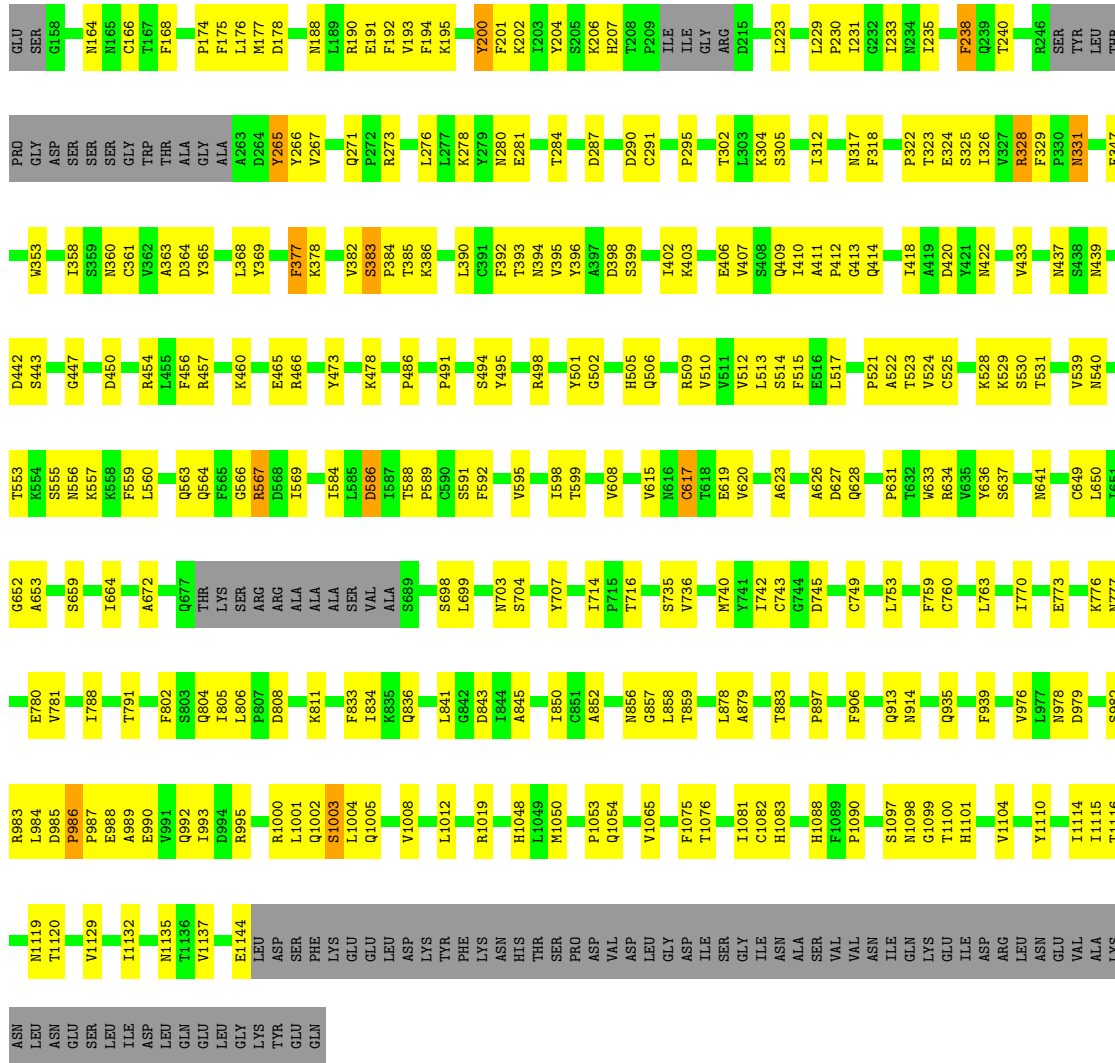
Chain B:



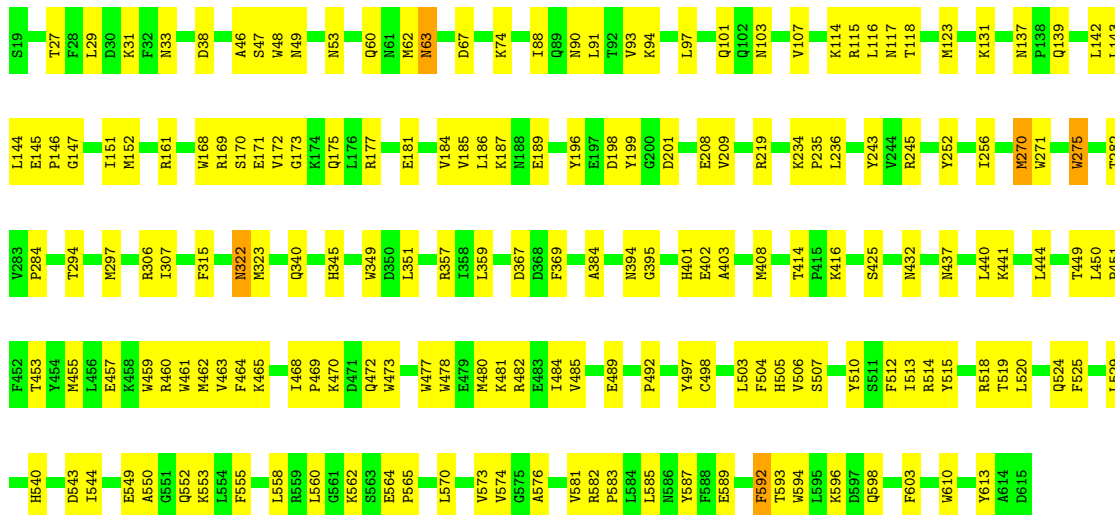
● Molecule 1: Spike glycoprotein

Chain C:





• Molecule 2: Processed angiotensin-converting enzyme 2



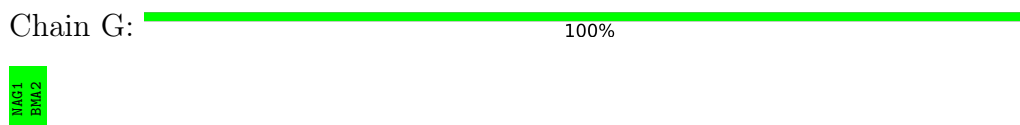
- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



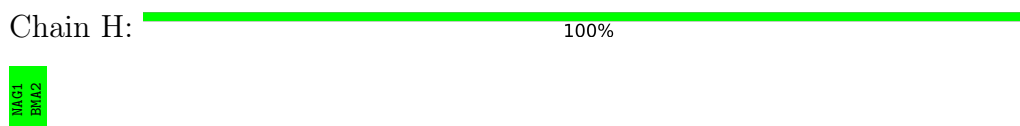
- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



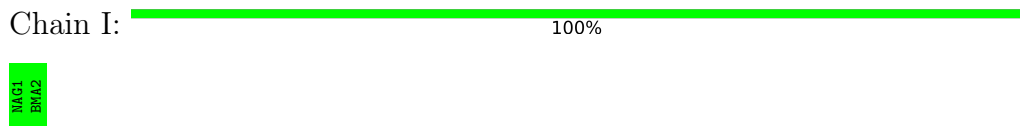
- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



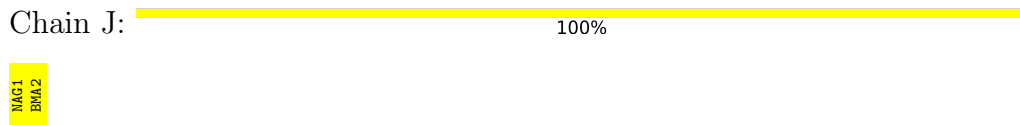
- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



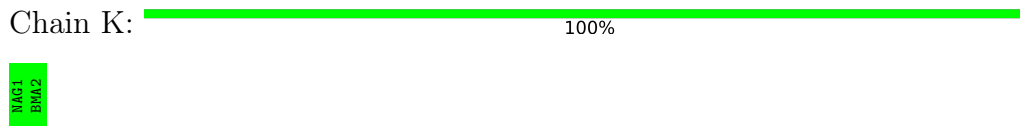
- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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



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



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



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

Chain M:

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

Chain N:

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

Chain O:

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

Chain P:

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

Chain Q:


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

Chain R:

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

Chain S:

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

Chain T:  100%

MAG1
BMA2

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

Chain U:  100%

MAG1
BMA2

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	224368	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CL, BMA, NAG, ZN

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	0.34	0/8484	0.53	0/11547
1	B	0.32	0/8484	0.53	0/11547
1	C	0.33	0/8484	0.52	0/11547
2	D	0.28	0/5007	0.47	0/6803
All	All	0.32	0/30459	0.52	0/41444

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	3
1	B	0	2
1	C	0	3
All	All	0	8

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (8) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	454	ARG	Sidechain
1	A	983	ARG	Sidechain
1	A	995	ARG	Sidechain
1	B	1000	ARG	Sidechain
1	B	995	ARG	Sidechain
1	C	1000	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	C	328	ARG	Sidechain
1	C	995	ARG	Sidechain

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	8285	0	8061	240	0
1	B	8285	0	8061	204	0
1	C	8285	0	8065	244	0
2	D	4870	0	4639	111	0
3	E	25	0	22	1	0
3	F	25	0	22	1	0
3	G	25	0	22	0	0
3	H	25	0	22	0	0
3	I	25	0	22	0	0
3	J	25	0	22	0	0
3	K	25	0	22	0	0
3	L	25	0	22	0	0
3	M	25	0	22	1	0
3	N	25	0	22	0	0
3	O	25	0	22	0	0
3	P	25	0	22	0	0
3	Q	25	0	22	0	0
3	R	25	0	22	0	0
3	S	25	0	22	1	0
3	T	25	0	22	0	0
3	U	25	0	22	0	0
4	A	140	0	130	1	0
4	B	154	0	143	3	0
4	C	140	0	130	3	0
4	D	56	0	52	1	0
5	D	1	0	0	0	0
6	D	1	0	0	2	0
All	All	30642	0	29655	746	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 12.

All (746) 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:A:982:SER:O	1:A:983:ARG:HG3	1.27	1.26
1:A:982:SER:O	1:A:983:ARG:CG	2.17	0.91
1:B:332:VAL:HG11	1:B:527:PRO:HB3	1.52	0.90
1:C:188:ASN:HD21	1:C:207:HIS:HB3	1.41	0.86
1:B:391:CYS:HA	1:B:525:CYS:HB3	1.59	0.84
1:A:93:ALA:HB3	1:A:266:TYR:HB2	1.60	0.83
1:B:106:PHE:CZ	1:B:238:PHE:CE1	2.66	0.83
1:B:106:PHE:CZ	1:B:238:PHE:CD1	2.68	0.81
1:C:329:PHE:HB2	1:C:528:LYS:HG3	1.60	0.81
1:C:985:ASP:HB2	1:C:986:PRO:HD2	1.60	0.81
1:C:569:ILE:H	1:C:569:ILE:HD12	1.46	0.81
1:A:980:ILE:HD11	1:A:992:GLN:HB3	1.64	0.80
1:C:107:GLY:H	1:C:235:ILE:HG23	1.46	0.80
1:B:1081:ILE:HD11	1:B:1135:ASN:HB3	1.63	0.80
2:D:169:ARG:NH2	6:D:902:CL:CL	2.51	0.80
1:A:736:VAL:HG22	1:A:858:LEU:HD23	1.63	0.80
1:A:177:MET:H	1:A:207:HIS:CE1	2.00	0.79
1:A:990:GLU:HA	1:A:993:ILE:HG12	1.64	0.79
1:C:1082:CYS:HB2	1:C:1132:ILE:HD11	1.65	0.79
1:C:61:ASN:HB2	4:C:1302:NAG:N2	1.99	0.77
1:B:61:ASN:HB2	4:B:1302:NAG:N2	2.00	0.77
1:B:55:PHE:HA	1:B:270:LEU:HD23	1.67	0.77
1:B:131:CYS:SG	1:B:132:GLU:N	2.57	0.76
1:C:57:PRO:HB2	1:C:60:SER:HB3	1.69	0.75
1:A:1082:CYS:HB2	1:A:1132:ILE:HD11	1.68	0.74
1:C:560:LEU:HB2	1:C:563:GLN:HG3	1.68	0.74
1:B:855:PHE:HA	1:C:589:PRO:HG3	1.68	0.74
1:B:42:VAL:HG13	1:C:566:GLY:HA2	1.70	0.74
1:B:790:LYS:HE3	1:C:704:SER:HB2	1.68	0.74
1:A:986:PRO:HB2	1:A:987:PRO:HD3	1.70	0.74
2:D:457:GLU:HG2	2:D:513:ILE:HB	1.67	0.74
1:C:115:GLN:HE21	1:C:233:ILE:HB	1.53	0.73
1:A:109:THR:H	1:A:237:ARG:HD3	1.53	0.73
1:B:128:ILE:HD11	1:B:175:PHE:HZ	1.53	0.73
1:C:131:CYS:SG	1:C:132:GLU:N	2.61	0.73
1:A:128:ILE:HB	1:A:170:TYR:HB3	1.69	0.73
2:D:402:GLU:HB3	2:D:518:ARG:HD2	1.71	0.73
1:A:57:PRO:HB2	1:A:60:SER:HB2	1.72	0.72
1:A:804:GLN:NE2	1:A:935:GLN:OE1	2.21	0.72
1:A:396:TYR:HB2	1:A:514:SER:HB3	1.69	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:847:ARG:HH21	1:B:572:THR:HG23	1.53	0.71
1:C:93:ALA:HB3	1:C:266:TYR:HB2	1.72	0.71
1:C:92:PHE:HB3	1:C:192:PHE:HB2	1.72	0.70
1:B:92:PHE:HB3	1:B:192:PHE:HB2	1.73	0.70
1:B:326:ILE:HG13	1:B:539:VAL:HG21	1.73	0.70
1:B:107:GLY:H	1:B:235:ILE:HG23	1.56	0.70
2:D:573:VAL:HG13	2:D:574:VAL:HG13	1.72	0.70
2:D:340:GLN:HG3	4:D:906:NAG:HN2	1.57	0.69
1:B:983:ARG:HA	1:C:390:LEU:HD21	1.74	0.69
1:A:498:ARG:H	1:A:501:TYR:HE1	1.40	0.69
1:A:659:SER:HB3	1:A:698:SER:HB2	1.73	0.68
1:B:569:ILE:HD12	1:B:569:ILE:H	1.58	0.68
1:B:557:LYS:HB2	1:B:584:ILE:HG21	1.75	0.68
1:A:616:ASN:HB2	1:A:644:GLN:HE22	1.57	0.68
1:B:106:PHE:CE2	1:B:238:PHE:HD1	2.12	0.68
2:D:594:TRP:O	2:D:598:GLN:NE2	2.27	0.68
1:C:65:PHE:HB2	1:C:265:TYR:HB3	1.74	0.68
1:C:456:PHE:HB2	1:C:491:PRO:HA	1.76	0.68
1:C:627:ASP:HA	1:C:634:ARG:HH22	1.57	0.68
1:A:491:PRO:HG2	1:A:492:LEU:HD12	1.76	0.68
1:B:577:ARG:HD3	1:B:582:LEU:HD13	1.77	0.67
1:C:626:ALA:O	1:C:628:GLN:NE2	2.27	0.67
1:A:131:CYS:SG	1:A:132:GLU:N	2.67	0.67
1:B:290:ASP:OD1	1:B:291:CYS:N	2.24	0.67
1:B:917:TYR:HB3	1:C:1129:VAL:HG12	1.74	0.67
1:C:986:PRO:HB2	1:C:987:PRO:CD	2.24	0.67
1:A:736:VAL:HG11	1:A:1004:LEU:HD11	1.76	0.67
1:A:108:THR:HG22	1:A:109:THR:HG23	1.76	0.67
1:B:195:LYS:HE3	1:B:202:LYS:HD3	1.76	0.66
1:A:375:PHE:HD2	1:A:437:ASN:H	1.41	0.66
1:C:659:SER:HB3	1:C:698:SER:HB2	1.77	0.66
3:M:1:NAG:H62	3:M:2:BMA:H2	1.77	0.66
1:A:358:ILE:HB	1:A:395:VAL:HB	1.77	0.66
1:A:447:GLY:HA2	1:A:498:ARG:HG2	1.77	0.66
1:C:986:PRO:HB2	1:C:987:PRO:HD3	1.77	0.66
1:B:103:GLY:HA3	1:B:120:VAL:HA	1.77	0.65
1:A:980:ILE:HD11	1:A:992:GLN:CB	2.25	0.65
1:B:200:TYR:HA	1:B:230:PRO:HA	1.78	0.65
1:C:420:ASP:HB3	1:C:460:LYS:HD2	1.78	0.65
1:C:206:LYS:HB3	1:C:223:LEU:HD13	1.78	0.65
2:D:395:GLY:H	2:D:401:HIS:HE2	1.44	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:763:LEU:HG	1:B:1008:VAL:HG21	1.77	0.65
1:C:360:ASN:H	1:C:523:THR:HB	1.62	0.65
1:C:878:LEU:HD13	1:C:1053:PRO:HD2	1.78	0.65
1:C:377:PHE:CE2	1:C:384:PRO:HB3	2.31	0.65
1:A:629:LEU:HB3	1:A:631:PRO:HD2	1.79	0.64
1:B:643:PHE:HB3	1:B:650:LEU:HB3	1.78	0.64
1:B:335:LEU:HD13	1:B:362:VAL:HG23	1.80	0.64
1:A:748:GLU:OE2	1:A:748:GLU:N	2.30	0.64
1:B:393:THR:HG21	1:B:520:ALA:HB3	1.78	0.64
1:A:770:ILE:HD11	1:A:1012:LEU:HD23	1.80	0.64
1:B:130:VAL:HG21	1:B:231:ILE:HD12	1.79	0.64
1:B:57:PRO:HB2	1:B:60:SER:HB3	1.80	0.63
1:C:108:THR:HG22	1:C:109:THR:HG23	1.81	0.63
1:A:999:GLY:O	1:A:1001:LEU:N	2.31	0.63
1:B:48:LEU:HD12	1:B:276:LEU:HD21	1.81	0.63
1:A:603:ASN:O	1:A:603:ASN:ND2	2.32	0.63
1:C:347:PHE:HD2	1:C:399:SER:HB2	1.63	0.63
1:A:726:ILE:HG12	1:A:1061:VAL:HG22	1.80	0.62
1:C:442:ASP:OD1	1:C:509:ARG:NH2	2.32	0.62
1:C:96:GLU:OE1	1:C:100:ILE:N	2.31	0.62
1:B:106:PHE:CE2	1:B:238:PHE:CD1	2.85	0.62
1:B:985:ASP:HB3	1:C:385:THR:HB	1.82	0.62
1:B:96:GLU:OE1	1:B:100:ILE:N	2.33	0.62
1:B:722:VAL:HG22	1:B:1065:VAL:HG22	1.81	0.62
1:A:108:THR:HB	1:A:114:THR:HG21	1.82	0.62
1:B:1083:HIS:HB2	1:B:1137:VAL:HG13	1.81	0.62
1:C:1075:PHE:O	1:C:1076:THR:OG1	2.16	0.61
1:B:106:PHE:CZ	1:B:238:PHE:HE1	2.16	0.61
1:C:81:ASN:ND2	1:C:240:THR:O	2.26	0.61
1:B:442:ASP:HB2	1:B:509:ARG:HH21	1.64	0.61
1:A:624:ILE:HG13	1:A:634:ARG:HD2	1.83	0.61
1:A:592:PHE:CE1	1:C:740:MET:HG3	2.35	0.61
1:B:312:ILE:HB	1:B:598:ILE:HG22	1.81	0.61
1:B:1002:GLN:O	1:B:1005:GLN:N	2.34	0.61
2:D:152:MET:O	2:D:161:ARG:NH1	2.34	0.61
1:B:726:ILE:HG12	1:B:1061:VAL:HG22	1.84	0.60
1:B:42:VAL:HG21	1:C:567:ARG:HH21	1.66	0.60
2:D:540:HIS:HB3	2:D:587:TYR:HE1	1.66	0.60
1:B:23:THR:N	1:B:80:ASP:OD1	2.35	0.60
1:C:191:GLU:HB2	1:C:223:LEU:HD11	1.84	0.60
1:B:42:VAL:HG21	1:C:567:ARG:NH2	2.16	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:557:LYS:HB3	1:A:584:ILE:HD13	1.84	0.60
1:A:384:PRO:HA	1:A:387:LEU:HD12	1.84	0.60
1:A:855:PHE:HA	1:B:589:PRO:HG3	1.84	0.60
1:B:620:VAL:O	1:B:624:ILE:HG12	2.02	0.60
1:B:457:ARG:HD3	1:B:459:SER:H	1.66	0.59
1:B:742:ILE:HD11	1:B:753:LEU:HD22	1.84	0.59
2:D:116:LEU:HB2	2:D:186:LEU:HD13	1.85	0.59
2:D:505:HIS:HA	2:D:510:TYR:HD2	1.67	0.59
1:C:290:ASP:OD1	1:C:291:CYS:N	2.35	0.59
1:A:53:ASP:OD1	1:A:54:LEU:N	2.35	0.59
1:A:472:ILE:HA	1:A:491:PRO:HD3	1.85	0.59
1:B:325:SER:HB2	1:B:540:ASN:HB3	1.84	0.59
2:D:137:ASN:HD21	2:D:139:GLN:HE21	1.51	0.59
1:B:93:ALA:HB3	1:B:266:TYR:HB2	1.84	0.59
1:B:102:ARG:HB3	1:B:120:VAL:HG23	1.85	0.59
1:B:1053:PRO:O	1:B:1054:GLN:NE2	2.32	0.58
1:A:631:PRO:HB3	1:A:633:TRP:CH2	2.37	0.58
1:A:376:ALA:HB3	1:A:435:ALA:HB3	1.85	0.58
1:A:382:VAL:HG11	1:A:515:PHE:HE2	1.69	0.58
1:A:578:ASP:HB2	1:A:585:LEU:HD11	1.85	0.58
1:C:735:SER:OG	1:C:859:THR:OG1	2.21	0.58
2:D:593:THR:HA	2:D:596:LYS:HG2	1.86	0.58
1:A:399:SER:HA	1:A:511:VAL:HA	1.84	0.58
1:B:654:GLU:OE2	1:B:655:TYR:N	2.36	0.58
1:C:39:PRO:HG3	1:C:55:PHE:HZ	1.68	0.58
1:A:403:LYS:N	1:A:495:TYR:OH	2.37	0.58
1:B:124:THR:OG1	4:B:1301:NAG:O7	2.20	0.58
2:D:270:MET:HB3	2:D:271:TRP:CD2	2.38	0.58
2:D:574:VAL:HG23	2:D:576:ALA:H	1.68	0.58
1:A:1129:VAL:HG23	1:A:1132:ILE:HB	1.86	0.57
2:D:468:ILE:HG12	2:D:473:TRP:HD1	1.68	0.57
1:A:326:ILE:HG23	1:A:539:VAL:HG21	1.85	0.57
1:A:560:LEU:HB2	1:A:563:GLN:HG2	1.86	0.57
1:A:177:MET:H	1:A:207:HIS:HE1	1.51	0.57
2:D:414:THR:HG22	2:D:416:LYS:H	1.69	0.57
2:D:524:GLN:HG2	2:D:574:VAL:HG11	1.86	0.57
1:A:295:PRO:HG3	1:A:633:TRP:CD1	2.39	0.57
1:A:742:ILE:HD11	1:A:753:LEU:HD13	1.87	0.57
1:A:987:PRO:CD	1:C:413:GLY:HA3	2.34	0.57
1:B:43:PHE:N	1:C:563:GLN:OE1	2.38	0.57
1:C:188:ASN:ND2	1:C:207:HIS:HB3	2.17	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:202:LYS:HB3	1:C:204:TYR:CE1	2.40	0.57
1:A:454:ARG:HD3	1:A:492:LEU:HG	1.85	0.57
1:C:177:MET:H	1:C:207:HIS:CE1	2.22	0.57
1:B:712:ILE:HG12	1:B:1077:THR:HB	1.87	0.57
1:A:844:ILE:HG23	1:B:556:ASN:HB2	1.85	0.56
1:C:34:ARG:NH2	1:C:191:GLU:OE2	2.38	0.56
1:C:200:TYR:HA	1:C:230:PRO:HA	1.87	0.56
1:C:439:ASN:O	1:C:443:SER:OG	2.20	0.56
1:A:190:ARG:HD3	1:A:207:HIS:CE1	2.39	0.56
1:A:592:PHE:CE2	1:C:857:GLY:HA2	2.40	0.56
1:B:422:ASN:HD21	1:B:454:ARG:H	1.51	0.56
1:B:1075:PHE:O	1:B:1076:THR:OG1	2.17	0.56
1:C:365:TYR:HD1	1:C:368:LEU:HD13	1.70	0.56
1:C:1053:PRO:O	1:C:1054:GLN:NE2	2.30	0.56
2:D:384:ALA:HB1	2:D:558:LEU:HB3	1.87	0.56
1:A:43:PHE:N	1:B:563:GLN:OE1	2.39	0.56
1:A:432:CYS:SG	1:A:433:VAL:N	2.78	0.56
1:C:106:PHE:HB2	1:C:117:LEU:HB3	1.86	0.56
1:C:395:VAL:HG22	1:C:515:PHE:HD1	1.70	0.56
2:D:243:TYR:OH	2:D:282:THR:O	2.22	0.56
1:B:350:VAL:HG11	1:B:418:ILE:HD11	1.88	0.56
1:A:583:GLU:HG3	1:A:585:LEU:HD21	1.87	0.56
1:A:599:THR:HB	1:A:608:VAL:HG12	1.87	0.56
1:A:1081:ILE:HG23	1:A:1088:HIS:HB2	1.88	0.56
2:D:185:VAL:O	2:D:189:GLU:HG3	2.06	0.56
1:A:712:ILE:HG12	1:A:1077:THR:HB	1.88	0.55
1:A:930:ALA:O	1:A:934:ILE:HG23	2.05	0.55
1:B:738:CYS:O	1:B:742:ILE:HG12	2.05	0.55
1:B:984:LEU:HD22	1:B:988:GLU:HB3	1.88	0.55
2:D:322:ASN:OD1	2:D:322:ASN:N	2.37	0.55
1:A:176:LEU:HA	1:A:207:HIS:HE1	1.71	0.55
1:A:987:PRO:HD3	1:C:413:GLY:HA3	1.88	0.55
1:A:1075:PHE:O	1:A:1076:THR:OG1	2.23	0.55
1:B:106:PHE:CZ	1:B:238:PHE:HD1	2.20	0.55
2:D:503:LEU:HD23	2:D:506:VAL:HG23	1.88	0.55
2:D:29:LEU:O	2:D:33:ASN:ND2	2.39	0.55
1:A:90:VAL:HG21	1:A:238:PHE:CE2	2.41	0.55
1:A:206:LYS:HB3	1:A:223:LEU:HD12	1.89	0.55
1:A:356:THR:OG1	1:A:397:ALA:O	2.25	0.55
1:C:804:GLN:NE2	1:C:935:GLN:OE1	2.38	0.55
1:A:350:VAL:HG22	1:A:422:ASN:HB3	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:808:ASP:OD1	1:C:811:LYS:NZ	2.39	0.55
1:A:37:TYR:HB3	1:A:223:LEU:HB3	1.89	0.55
1:A:125:ASN:HD22	1:A:171:VAL:HG13	1.72	0.55
1:B:1002:GLN:O	1:B:1003:SER:C	2.44	0.55
1:C:736:VAL:HG22	1:C:858:LEU:HD22	1.89	0.55
1:C:1002:GLN:O	1:C:1005:GLN:N	2.40	0.55
2:D:555:PHE:HA	2:D:558:LEU:HB2	1.88	0.55
2:D:582:ARG:HH12	2:D:585:LEU:HD12	1.72	0.55
1:B:1002:GLN:O	1:B:1004:LEU:N	2.40	0.54
1:C:1104:VAL:HG23	1:C:1115:ILE:HG12	1.88	0.54
1:A:392:PHE:N	1:A:524:VAL:O	2.38	0.54
1:A:989:ALA:O	1:A:993:ILE:HG23	2.07	0.54
1:B:822:LEU:HD22	1:B:945:LEU:HD21	1.88	0.54
1:C:736:VAL:HG11	1:C:1004:LEU:HD11	1.89	0.54
2:D:236:LEU:HB2	2:D:592:PHE:HE1	1.73	0.54
1:C:760:CYS:HA	1:C:763:LEU:HG	1.89	0.54
1:C:406:GLU:OE1	1:C:406:GLU:N	2.40	0.54
1:C:989:ALA:O	1:C:993:ILE:HG12	2.08	0.54
1:A:318:PHE:CZ	1:A:615:VAL:HG11	2.43	0.53
1:A:365:TYR:CE1	1:A:387:LEU:HD22	2.43	0.53
1:A:1098:ASN:OD1	1:A:1099:GLY:N	2.41	0.53
1:B:332:VAL:HG13	1:B:362:VAL:HG11	1.89	0.53
2:D:123:MET:HE1	2:D:507:SER:HA	1.90	0.53
1:A:1123:SER:OG	1:C:914:ASN:ND2	2.42	0.53
1:B:841:LEU:HB2	1:C:553:THR:HG21	1.89	0.53
1:C:128:ILE:HD11	1:C:175:PHE:HZ	1.73	0.53
2:D:53:ASN:OD1	2:D:340:GLN:NE2	2.41	0.53
1:C:650:LEU:HD21	1:C:653:ALA:HB3	1.90	0.53
1:A:559:PHE:CE2	1:A:577:ARG:HB2	2.43	0.53
1:C:322:PRO:HG2	1:C:540:ASN:ND2	2.23	0.53
1:C:393:THR:HA	1:C:522:ALA:HA	1.91	0.53
1:B:847:ARG:O	1:C:569:ILE:HD11	2.08	0.53
2:D:245:ARG:NH2	2:D:603:PHE:O	2.42	0.53
2:D:482:ARG:NH2	2:D:489:GLU:OE1	2.42	0.53
1:B:202:LYS:HB3	1:B:204:TYR:CE2	2.44	0.53
1:C:763:LEU:HD22	1:C:1008:VAL:HG21	1.91	0.53
2:D:459:TRP:O	2:D:463:VAL:HG12	2.09	0.53
1:C:617:CYS:HA	1:C:620:VAL:HG13	1.89	0.53
1:C:280:ASN:N	1:C:284:THR:O	2.36	0.53
1:C:976:VAL:HG12	1:C:979:ASP:H	1.73	0.53
1:B:659:SER:HB3	1:B:698:SER:HB2	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1006:THR:O	1:B:1010:GLN:HG2	2.09	0.53
2:D:90:ASN:HB3	2:D:93:VAL:HG22	1.91	0.53
1:B:557:LYS:HB2	1:B:584:ILE:HD13	1.91	0.53
1:A:381:GLY:O	1:C:983:ARG:HD3	2.09	0.52
1:A:567:ARG:HG3	1:A:573:THR:HA	1.90	0.52
1:B:578:ASP:HB3	1:B:581:THR:HB	1.91	0.52
1:A:343:ASN:HB2	4:A:1302:NAG:N2	2.25	0.52
1:A:1100:THR:HG22	1:A:1101:HIS:CD2	2.44	0.52
1:A:442:ASP:OD1	1:A:509:ARG:NH2	2.42	0.52
1:A:847:ARG:NH2	1:B:573:THR:O	2.42	0.52
1:B:206:LYS:NZ	1:B:222:ALA:H	2.07	0.52
1:B:867:ASP:OD1	1:B:867:ASP:N	2.40	0.52
1:C:403:LYS:HG2	1:C:505:HIS:HA	1.91	0.52
1:C:773:GLU:OE2	1:C:1019:ARG:NE	2.41	0.52
2:D:142:LEU:HD22	2:D:151:ILE:HD11	1.91	0.52
1:A:617:CYS:H	1:A:644:GLN:NE2	2.08	0.52
1:A:922:LEU:O	1:A:926:GLN:HG3	2.10	0.52
1:B:855:PHE:HD1	1:C:589:PRO:HD3	1.74	0.52
1:C:595:VAL:HG11	1:C:633:TRP:HZ2	1.75	0.52
1:B:844:ILE:HG23	1:C:556:ASN:HB2	1.92	0.52
2:D:284:PRO:HG3	2:D:440:LEU:HD13	1.92	0.52
1:A:1083:HIS:HB2	1:A:1137:VAL:HG12	1.90	0.52
1:B:406:GLU:N	1:B:406:GLU:OE1	2.41	0.52
1:C:318:PHE:CZ	1:C:615:VAL:HG11	2.45	0.52
1:C:641:ASN:HD22	1:C:652:GLY:HA2	1.75	0.52
1:A:999:GLY:O	1:A:1002:GLN:N	2.41	0.52
1:B:42:VAL:HG22	1:C:566:GLY:H	1.75	0.52
1:C:843:ASP:O	1:C:845:ALA:N	2.43	0.51
2:D:450:LEU:HD21	2:D:519:THR:HG21	1.91	0.51
1:A:982:SER:C	1:A:983:ARG:HG3	2.22	0.51
1:A:986:PRO:O	1:A:990:GLU:N	2.41	0.51
1:A:989:ALA:O	1:A:992:GLN:HB2	2.09	0.51
1:A:498:ARG:N	1:A:501:TYR:HE1	2.08	0.51
1:A:560:LEU:HD13	1:A:563:GLN:HE21	1.75	0.51
1:B:560:LEU:HB2	1:B:563:GLN:HG3	1.92	0.51
1:C:323:THR:OG1	1:C:324:GLU:OE1	2.26	0.51
1:C:1081:ILE:HD13	1:C:1137:VAL:HG13	1.92	0.51
2:D:275:TRP:HB3	2:D:444:LEU:HD22	1.92	0.51
1:A:282:ASN:HD21	3:F:1:NAG:H83	1.76	0.51
1:B:1081:ILE:HG22	1:B:1088:HIS:HB2	1.91	0.51
1:B:1133:VAL:HG22	1:B:1134:ASN:H	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:455:MET:HE3	2:D:481:LYS:HG3	1.93	0.51
1:A:109:THR:OG1	1:A:111:ASP:OD1	2.22	0.51
1:B:131:CYS:HB3	1:B:133:PHE:CE1	2.45	0.51
1:A:91:TYR:OH	1:A:93:ALA:HB2	2.11	0.51
1:A:398:ASP:HB3	1:A:512:VAL:HG22	1.93	0.51
1:B:552:LEU:HD11	1:B:585:LEU:HD13	1.91	0.51
1:B:843:ASP:O	1:B:845:ALA:N	2.44	0.51
2:D:209:VAL:HG21	2:D:565:PRO:HG3	1.93	0.51
1:A:324:GLU:HG2	1:A:325:SER:N	2.26	0.51
1:A:788:ILE:O	1:A:788:ILE:HG13	2.09	0.51
1:C:411:ALA:HB3	1:C:414:GLN:HG3	1.92	0.51
1:A:382:VAL:HG11	1:A:515:PHE:CE2	2.46	0.50
1:A:581:THR:OG1	1:A:583:GLU:HG2	2.11	0.50
1:B:474:GLN:NE2	1:B:480:CYS:SG	2.82	0.50
1:B:735:SER:O	1:B:735:SER:OG	2.22	0.50
1:C:398:ASP:HB2	1:C:512:VAL:HG12	1.92	0.50
1:A:133:PHE:HB2	1:A:160:TYR:HB2	1.92	0.50
1:A:1105:THR:OG1	1:A:1106:GLN:N	2.45	0.50
1:B:930:ALA:O	1:B:934:ILE:HG23	2.11	0.50
1:B:119:ILE:HG23	1:B:128:ILE:HG12	1.94	0.50
1:C:178:ASP:OD1	1:C:178:ASP:N	2.44	0.50
1:A:742:ILE:HG13	1:A:743:CYS:SG	2.51	0.50
1:C:131:CYS:HB3	1:C:133:PHE:CZ	2.46	0.50
1:C:742:ILE:HG21	1:C:753:LEU:CD2	2.42	0.50
2:D:480:MET:O	2:D:484:ILE:HG22	2.10	0.50
1:A:742:ILE:CD1	1:A:753:LEU:HD13	2.42	0.50
2:D:468:ILE:HG12	2:D:473:TRP:CD1	2.47	0.50
2:D:503:LEU:HG	2:D:505:HIS:H	1.77	0.50
1:A:67:ALA:HB2	1:A:265:TYR:HE2	1.77	0.49
1:A:401:VAL:HG21	1:A:451:TYR:CZ	2.47	0.49
1:A:1114:ILE:HD12	1:A:1115:ILE:H	1.77	0.49
1:B:737:ASP:OD2	1:B:740:MET:HB2	2.12	0.49
1:C:521:PRO:HG3	1:C:564:GLN:HE21	1.77	0.49
1:C:1002:GLN:O	1:C:1004:LEU:N	2.44	0.49
1:A:342:PHE:CE2	1:A:368:LEU:HD13	2.47	0.49
1:C:1081:ILE:HD11	1:C:1135:ASN:HB3	1.94	0.49
1:A:323:THR:OG1	1:A:324:GLU:N	2.46	0.49
1:A:521:PRO:HB3	1:A:564:GLN:HG2	1.94	0.49
1:B:977:LEU:HD12	1:B:980:ILE:HG21	1.94	0.49
1:B:994:ASP:O	1:B:998:THR:HG22	2.12	0.49
1:C:450:ASP:N	1:C:450:ASP:OD1	2.45	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:848:ASP:OD1	1:A:848:ASP:N	2.39	0.49
1:A:900:MET:HE1	1:B:1094:VAL:HG23	1.94	0.49
1:C:358:ILE:HB	1:C:395:VAL:HB	1.95	0.49
1:C:365:TYR:CD1	1:C:368:LEU:HD13	2.47	0.49
1:A:37:TYR:CE1	1:A:193:VAL:HG11	2.48	0.49
1:A:86:PHE:CD2	1:A:238:PHE:HB2	2.48	0.49
1:B:84:LEU:HD12	1:B:85:PRO:HD2	1.94	0.49
1:B:870:ILE:O	1:B:874:THR:HG23	2.12	0.49
1:C:529:LYS:HG2	1:C:531:THR:HG23	1.94	0.49
2:D:469:PRO:HD2	2:D:472:GLN:NE2	2.28	0.49
1:A:850:ILE:HD12	1:A:850:ILE:H	1.77	0.49
1:B:317:ASN:HB2	1:B:593:GLY:O	2.12	0.49
1:B:857:GLY:HA2	1:C:592:PHE:CE1	2.47	0.49
1:C:37:TYR:OH	1:C:195:LYS:HD2	2.11	0.49
1:C:177:MET:H	1:C:207:HIS:HE1	1.61	0.49
1:C:361:CYS:O	1:C:524:VAL:HA	2.13	0.49
2:D:114:LYS:HA	2:D:117:ASN:ND2	2.28	0.49
1:A:106:PHE:HE1	1:A:119:ILE:HG12	1.78	0.49
1:A:402:ILE:HD11	1:A:418:ILE:HG21	1.94	0.49
1:B:426:PRO:HG2	1:B:429:PHE:HB2	1.94	0.49
1:B:420:ASP:OD2	1:B:460:LYS:NZ	2.37	0.49
1:C:131:CYS:HB2	1:C:166:CYS:HB3	1.64	0.49
1:A:741:TYR:CD2	1:A:742:ILE:HG22	2.48	0.48
1:B:330:PRO:HA	1:B:579:PRO:HB2	1.94	0.48
1:C:48:LEU:HD13	1:C:305:SER:HA	1.93	0.48
1:C:714:ILE:HG22	1:C:1110:TYR:HB2	1.95	0.48
1:A:104:TRP:HD1	1:A:240:THR:HG23	1.79	0.48
1:A:439:ASN:O	1:A:443:SER:OG	2.24	0.48
1:A:987:PRO:HA	1:A:990:GLU:HB3	1.94	0.48
1:B:485:GLY:H	1:B:488:CYS:HB2	1.77	0.48
2:D:462:MET:HA	2:D:465:LYS:HE2	1.94	0.48
1:A:55:PHE:HA	1:A:270:LEU:HD23	1.94	0.48
1:B:107:GLY:N	1:B:235:ILE:HG23	2.28	0.48
1:B:326:ILE:HG13	1:B:539:VAL:CG2	2.41	0.48
1:A:1133:VAL:HG22	1:A:1134:ASN:N	2.28	0.48
1:B:200:TYR:OH	1:C:394:ASN:ND2	2.46	0.48
1:B:1098:ASN:OD1	1:B:1099:GLY:N	2.47	0.48
1:A:595:VAL:HG11	1:A:633:TRP:HZ2	1.79	0.48
1:A:957:GLN:O	1:A:961:THR:HG23	2.14	0.48
1:B:34:ARG:O	1:B:56:LEU:HD23	2.13	0.48
1:B:332:VAL:HG11	1:B:527:PRO:CB	2.35	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:741:TYR:CE1	1:B:966:LEU:HD11	2.49	0.48
1:B:983:ARG:HD3	1:C:517:LEU:HD22	1.95	0.48
1:C:280:ASN:OD1	1:C:281:GLU:N	2.46	0.48
2:D:177:ARG:O	2:D:181:GLU:HG3	2.13	0.48
1:A:1029:MET:O	1:A:1033:VAL:HB	2.13	0.48
1:B:361:CYS:H	1:B:524:VAL:HG12	1.79	0.48
1:C:802:PHE:HB3	1:C:806:LEU:HD11	1.96	0.48
1:A:361:CYS:O	1:A:524:VAL:HA	2.13	0.47
1:A:373:PRO:HD2	1:A:436:TRP:CD1	2.49	0.47
1:A:383:SER:HB2	1:C:984:LEU:HD23	1.96	0.47
1:A:406:GLU:HG2	1:A:418:ILE:HG13	1.96	0.47
1:A:918:GLU:OE2	1:B:1128:VAL:HG21	2.13	0.47
1:B:459:SER:OG	1:B:460:LYS:N	2.46	0.47
1:C:39:PRO:HG2	1:C:51:THR:HG21	1.96	0.47
2:D:198:ASP:OD1	2:D:201:ASP:N	2.43	0.47
1:A:34:ARG:HG2	1:A:216:PHE:CE2	2.49	0.47
1:A:178:ASP:OD1	1:A:178:ASP:N	2.45	0.47
1:A:393:THR:HA	1:A:522:ALA:HA	1.96	0.47
1:A:451:TYR:HB2	1:A:495:TYR:HB3	1.96	0.47
1:A:841:LEU:HD13	1:B:553:THR:HG21	1.97	0.47
1:A:987:PRO:HD2	1:C:413:GLY:O	2.14	0.47
1:A:705:VAL:HG11	1:C:883:THR:OG1	2.13	0.47
1:B:455:LEU:HD12	1:B:493:GLN:HG3	1.94	0.47
1:C:97:LYS:O	1:C:97:LYS:NZ	2.45	0.47
1:C:276:LEU:CD1	1:C:304:LYS:HA	2.44	0.47
1:C:743:CYS:HB3	1:C:749:CYS:HB3	1.71	0.47
1:C:1076:THR:HB	1:C:1097:SER:HB3	1.96	0.47
1:A:620:VAL:O	1:A:624:ILE:HG22	2.14	0.47
1:B:490:PHE:CE2	1:B:492:LEU:HB2	2.49	0.47
1:B:853:GLN:HG2	1:B:963:VAL:HG21	1.96	0.47
1:C:231:ILE:HG22	1:C:233:ILE:HG12	1.95	0.47
1:C:1048:HIS:NE2	1:C:1050:MET:O	2.48	0.47
2:D:307:ILE:HD12	2:D:369:PHE:HD1	1.79	0.47
1:B:191:GLU:HB2	1:B:223:LEU:HD21	1.96	0.47
1:A:570:VAL:HG21	1:C:852:ALA:HB1	1.95	0.47
1:B:534:VAL:HB	1:B:537:LYS:HE3	1.97	0.47
1:B:552:LEU:HG	1:B:585:LEU:HB3	1.97	0.47
1:B:1091:ARG:NH1	1:B:1118:ASP:O	2.48	0.47
1:C:37:TYR:CE2	1:C:193:VAL:HG11	2.50	0.47
2:D:492:PRO:HD3	2:D:613:TYR:CG	2.48	0.47
2:D:525:PHE:CZ	2:D:573:VAL:HG11	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:553:LYS:HD2	2:D:573:VAL:HA	1.96	0.47
1:B:588:THR:HG23	1:B:589:PRO:HD2	1.97	0.47
1:C:53:ASP:OD1	1:C:54:LEU:N	2.38	0.47
1:A:763:LEU:HD22	1:A:1008:VAL:HG21	1.97	0.47
1:B:28:TYR:HD2	1:B:61:ASN:ND2	2.12	0.47
1:C:164:ASN:OD1	1:C:164:ASN:N	2.48	0.47
1:A:843:ASP:O	1:A:845:ALA:N	2.46	0.47
1:C:447:GLY:HA2	1:C:498:ARG:HG2	1.97	0.47
1:C:788:ILE:O	1:C:788:ILE:HG13	2.14	0.47
2:D:570:LEU:O	2:D:574:VAL:HG22	2.15	0.47
1:A:108:THR:O	1:A:109:THR:OG1	2.32	0.46
1:A:598:ILE:HG23	1:A:664:ILE:HG21	1.96	0.46
1:B:641:ASN:HB2	1:B:652:GLY:H	1.79	0.46
1:C:631:PRO:HB3	1:C:633:TRP:CH2	2.51	0.46
1:C:777:ASN:O	1:C:781:VAL:HG23	2.15	0.46
1:A:1010:GLN:O	1:A:1014:ARG:HG3	2.15	0.46
2:D:455:MET:HG3	2:D:477:TRP:CZ3	2.50	0.46
1:A:317:ASN:HA	1:A:594:GLY:HA2	1.97	0.46
1:C:1098:ASN:OD1	1:C:1099:GLY:N	2.49	0.46
1:A:115:GLN:NE2	1:A:165:ASN:O	2.48	0.46
1:B:133:PHE:HB3	1:B:160:TYR:HB2	1.97	0.46
1:B:985:ASP:HA	1:C:386:LYS:HZ3	1.80	0.46
1:C:770:ILE:HD11	1:C:1012:LEU:HD23	1.97	0.46
2:D:271:TRP:HB3	6:D:902:CL:CL	2.53	0.46
1:A:206:LYS:HD2	1:A:207:HIS:H	1.81	0.46
1:C:555:SER:HB2	1:C:586:ASP:OD2	2.15	0.46
1:C:804:GLN:OE1	3:S:1:NAG:O6	2.33	0.46
1:A:354:ASN:O	1:A:398:ASP:HA	2.16	0.46
1:A:497:PHE:CD1	1:A:507:PRO:HG3	2.51	0.46
1:B:984:LEU:O	1:C:386:LYS:HD2	2.16	0.46
2:D:270:MET:HB3	2:D:271:TRP:CE2	2.51	0.46
1:C:382:VAL:HG11	1:C:515:PHE:CE2	2.50	0.46
1:C:1082:CYS:HB2	1:C:1132:ILE:CD1	2.38	0.46
1:A:363:ALA:HB1	1:A:365:TYR:CE1	2.51	0.46
1:B:37:TYR:HA	1:B:223:LEU:HB2	1.98	0.46
1:B:369:TYR:OH	1:C:478:LYS:NZ	2.44	0.46
1:B:1083:HIS:ND1	1:B:1137:VAL:HG22	2.31	0.46
1:C:1116:THR:O	1:C:1120:THR:HG22	2.16	0.46
2:D:97:LEU:O	2:D:101:GLN:HB2	2.16	0.46
2:D:145:GLU:HB3	2:D:146:PRO:HD3	1.98	0.46
1:A:337:PRO:HG2	1:A:358:ILE:HD13	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:997:ILE:O	1:A:999:GLY:N	2.49	0.46
1:C:229:LEU:HD23	1:C:229:LEU:H	1.80	0.46
1:C:1083:HIS:CG	1:C:1137:VAL:HG22	2.51	0.46
1:A:347:PHE:HD2	1:A:399:SER:HB2	1.81	0.46
1:B:444:LYS:NZ	1:B:445:HIS:O	2.37	0.46
1:B:643:PHE:HD1	1:B:644:GLN:N	2.13	0.46
1:C:44:ARG:HB3	1:C:47:VAL:HG11	1.98	0.46
1:A:127:PHE:CE2	1:A:129:LYS:HE3	2.51	0.45
1:B:203:ILE:HB	1:B:227:VAL:HG22	1.98	0.45
1:B:883:THR:HB	1:C:707:TYR:HB2	1.98	0.45
2:D:457:GLU:HG3	2:D:461:TRP:CE2	2.51	0.45
2:D:470:LYS:HA	2:D:473:TRP:CE2	2.51	0.45
1:B:702:GLU:OE1	1:B:703:ASN:N	2.49	0.45
1:C:124:THR:HG22	1:C:125:ASN:OD1	2.16	0.45
2:D:46:ALA:HA	2:D:49:ASN:ND2	2.31	0.45
2:D:437:ASN:O	2:D:441:LYS:HG2	2.17	0.45
1:A:393:THR:HG21	1:A:520:ALA:HB3	1.97	0.45
1:B:529:LYS:HG2	1:B:530:SER:H	1.81	0.45
1:B:847:ARG:HH12	1:B:852:ALA:HA	1.82	0.45
1:C:265:TYR:O	1:C:267:VAL:HG13	2.16	0.45
1:C:641:ASN:HB2	1:C:652:GLY:H	1.82	0.45
1:C:1081:ILE:CG2	1:C:1088:HIS:HB2	2.46	0.45
1:C:1144:GLU:OE1	1:C:1144:GLU:N	2.47	0.45
2:D:117:ASN:OD1	2:D:118:THR:N	2.49	0.45
1:A:535:LYS:NZ	1:A:552:LEU:HB3	2.32	0.45
1:B:964:LYS:HB2	1:B:964:LYS:HE2	1.84	0.45
1:B:984:LEU:HD23	1:C:383:SER:HB2	1.98	0.45
1:C:39:PRO:HG3	1:C:55:PHE:CZ	2.50	0.45
1:C:317:ASN:OD1	1:C:318:PHE:N	2.49	0.45
1:A:456:PHE:HB2	1:A:491:PRO:HA	1.98	0.45
1:B:206:LYS:HD2	1:B:222:ALA:O	2.17	0.45
1:C:325:SER:HB3	1:C:540:ASN:HB2	1.98	0.45
1:C:703:ASN:OD1	1:C:704:SER:N	2.48	0.45
2:D:60:GLN:HA	2:D:63:ASN:OD1	2.16	0.45
2:D:91:LEU:HA	2:D:94:LYS:HE3	1.98	0.45
2:D:115:ARG:HG2	2:D:186:LEU:HD11	1.99	0.45
1:B:541:PHE:HD2	1:B:543:PHE:HD2	1.65	0.45
1:C:742:ILE:HG21	1:C:753:LEU:HD22	1.99	0.45
2:D:484:ILE:HG23	2:D:485:VAL:HG13	1.99	0.45
1:A:117:LEU:HD12	1:A:129:LYS:O	2.16	0.45
1:B:37:TYR:HB3	1:B:223:LEU:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:54:LEU:HD12	1:B:54:LEU:O	2.17	0.45
1:B:317:ASN:HA	1:B:594:GLY:HA2	1.99	0.45
1:C:312:ILE:HG13	1:C:598:ILE:HG22	1.99	0.45
1:C:318:PHE:HZ	1:C:615:VAL:HG11	1.81	0.45
2:D:432:ASN:OD1	2:D:432:ASN:N	2.49	0.45
1:C:422:ASN:ND2	1:C:454:ARG:O	2.30	0.45
1:C:1129:VAL:HG23	1:C:1132:ILE:HB	1.99	0.45
2:D:47:SER:HG	2:D:349:TRP:HZ3	1.64	0.45
2:D:351:LEU:HD22	2:D:357:ARG:HE	1.82	0.45
2:D:394:ASN:OD1	2:D:401:HIS:NE2	2.44	0.45
1:A:420:ASP:HB3	1:A:460:LYS:HD2	1.99	0.45
1:A:379:CYS:HB3	1:A:382:VAL:O	2.17	0.44
1:A:883:THR:OG1	1:B:705:VAL:HG11	2.17	0.44
1:A:206:LYS:C	1:A:207:HIS:HD2	2.20	0.44
1:A:220:PHE:HD2	1:A:221:SER:N	2.16	0.44
1:B:239:GLN:NE2	1:B:240:THR:O	2.50	0.44
1:C:125:ASN:HB2	4:C:1301:NAG:H5	1.99	0.44
1:C:501:TYR:HB3	1:C:505:HIS:HB2	1.99	0.44
1:C:836:GLN:HE22	1:C:850:ILE:HB	1.82	0.44
2:D:315:PHE:CZ	2:D:408:MET:HG3	2.52	0.44
1:C:502:GLY:O	1:C:506:GLN:HG2	2.17	0.44
1:C:987:PRO:O	1:C:990:GLU:HB2	2.17	0.44
2:D:184:VAL:HG22	2:D:464:PHE:HE1	1.81	0.44
1:A:191:GLU:HB2	1:A:223:LEU:CD1	2.47	0.44
1:A:365:TYR:HD2	1:A:368:LEU:HD23	1.82	0.44
1:A:411:ALA:HB3	1:A:414:GLN:HG3	1.98	0.44
1:C:791:THR:HG22	1:C:879:ALA:HB2	2.00	0.44
1:C:1002:GLN:O	1:C:1003:SER:C	2.55	0.44
1:A:338:PHE:HB3	1:A:342:PHE:CE2	2.51	0.44
1:C:49:HIS:NE2	1:C:51:THR:HG22	2.33	0.44
1:C:513:LEU:HD12	1:C:513:LEU:HA	1.81	0.44
1:C:1115:ILE:HG21	1:C:1137:VAL:HG12	1.99	0.44
1:A:461:LEU:HD23	1:A:461:LEU:HA	1.76	0.44
1:A:675:GLN:NE2	1:A:676:THR:O	2.51	0.44
1:C:437:ASN:OD1	1:C:439:ASN:ND2	2.50	0.44
1:B:404:GLY:HA2	1:B:508:TYR:HD2	1.82	0.44
1:B:897:PRO:HA	1:C:707:TYR:HE1	1.82	0.44
1:C:418:ILE:H	1:C:418:ILE:HD12	1.82	0.44
1:C:631:PRO:HB3	1:C:633:TRP:CZ2	2.52	0.44
2:D:168:TRP:O	2:D:172:VAL:HG22	2.17	0.44
1:B:456:PHE:HB2	1:B:491:PRO:HB3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:295:PRO:HG3	1:C:633:TRP:CD1	2.52	0.44
1:C:363:ALA:N	1:C:525:CYS:O	2.42	0.44
1:C:637:SER:O	1:C:637:SER:OG	2.34	0.44
1:C:834:ILE:HG23	1:C:836:GLN:H	1.82	0.44
2:D:198:ASP:OD2	2:D:465:LYS:HG2	2.18	0.44
2:D:256:ILE:HA	2:D:610:TRP:CH2	2.53	0.44
1:A:327:VAL:HG22	1:A:531:THR:HG23	1.99	0.43
1:A:616:ASN:CB	1:A:644:GLN:HE22	2.28	0.43
1:B:295:PRO:HG3	1:B:633:TRP:CE3	2.53	0.43
1:B:418:ILE:HD12	1:B:422:ASN:HD22	1.83	0.43
1:C:91:TYR:OH	1:C:93:ALA:HB2	2.18	0.43
1:C:395:VAL:HG22	1:C:515:PHE:CD1	2.49	0.43
1:C:1050:MET:HB2	1:C:1065:VAL:HB	2.00	0.43
1:A:631:PRO:HB3	1:A:633:TRP:CZ2	2.54	0.43
1:A:646:ARG:NH1	1:C:833:PHE:O	2.51	0.43
1:A:708:SER:OG	1:A:709:ASN:N	2.50	0.43
1:A:720:ILE:HG13	1:A:923:ILE:HG13	2.00	0.43
1:A:987:PRO:HG2	1:C:412:PRO:O	2.19	0.43
1:C:623:ALA:O	1:C:627:ASP:N	2.51	0.43
1:C:736:VAL:HG22	1:C:858:LEU:CD2	2.48	0.43
1:C:978:ASN:O	1:C:982:SER:N	2.52	0.43
1:A:743:CYS:HB3	1:A:749:CYS:HB3	1.84	0.43
1:B:305:SER:OG	1:B:306:PHE:N	2.52	0.43
1:C:108:THR:HB	1:C:114:THR:HG21	2.00	0.43
2:D:170:SER:HA	2:D:497:TYR:HE1	1.82	0.43
2:D:529:LEU:HD12	2:D:550:ALA:HB1	2.00	0.43
1:A:127:PHE:HE2	1:A:129:LYS:HE3	1.82	0.43
1:A:323:THR:HG22	1:A:628:GLN:OE1	2.19	0.43
1:A:356:THR:HG22	3:E:1:NAG:H3	2.00	0.43
1:B:905:ARG:HD2	1:B:1049:LEU:O	2.18	0.43
1:B:919:ASN:O	1:B:923:ILE:HG22	2.19	0.43
1:B:188:ASN:HB3	1:B:190:ARG:NH2	2.34	0.43
1:B:444:LYS:HG2	1:B:448:ASN:HD22	1.84	0.43
1:C:378:LYS:O	1:C:433:VAL:HG12	2.19	0.43
1:A:83:VAL:HG13	1:A:239:GLN:HE21	1.83	0.43
1:A:87:ASN:OD1	1:A:87:ASN:N	2.52	0.43
1:B:444:LYS:HE2	1:B:444:LYS:HB2	1.84	0.43
1:B:979:ASP:O	1:B:983:ARG:N	2.39	0.43
1:C:331:ASN:H	4:C:1310:NAG:H83	1.84	0.43
1:C:364:ASP:N	1:C:364:ASP:OD1	2.45	0.43
2:D:453:THR:HG22	2:D:512:PHE:CE2	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:524:GLN:HA	2:D:583:PRO:HG2	2.01	0.43
2:D:543:ASP:OD1	2:D:544:ILE:N	2.51	0.43
2:D:555:PHE:HA	2:D:558:LEU:HD12	2.01	0.43
1:A:116:SER:N	1:A:131:CYS:O	2.39	0.43
1:A:563:GLN:OE1	1:C:43:PHE:N	2.52	0.43
1:B:113:LYS:HB3	1:B:113:LYS:HE2	1.73	0.43
1:C:323:THR:HG22	1:C:628:GLN:HG2	2.01	0.43
1:C:985:ASP:HB2	1:C:986:PRO:CD	2.39	0.43
1:A:1114:ILE:HD12	1:A:1115:ILE:N	2.34	0.43
1:B:411:ALA:HB3	1:B:414:GLN:HG3	2.01	0.43
1:A:348:ALA:O	1:A:400:PHE:HA	2.19	0.42
1:B:325:SER:CB	1:B:540:ASN:HB3	2.49	0.42
1:C:128:ILE:HD11	1:C:175:PHE:CZ	2.54	0.42
1:C:326:ILE:HG12	1:C:539:VAL:HG11	2.01	0.42
2:D:514:ARG:HG3	2:D:515:TYR:HD2	1.84	0.42
1:A:329:PHE:CE2	1:A:528:LYS:HG3	2.54	0.42
1:B:742:ILE:HG13	1:B:743:CYS:SG	2.59	0.42
1:B:869:MET:SD	1:C:699:LEU:HD21	2.59	0.42
1:C:353:TRP:CE2	1:C:466:ARG:HG2	2.54	0.42
1:C:588:THR:HG22	1:C:589:PRO:HD2	2.01	0.42
1:C:878:LEU:HD12	1:C:878:LEU:HA	1.82	0.42
2:D:403:ALA:HB2	2:D:518:ARG:HG3	2.01	0.42
1:A:271:GLN:OE1	1:A:271:GLN:N	2.52	0.42
1:B:343:ASN:OD1	4:B:1305:NAG:N2	2.52	0.42
1:C:124:THR:O	1:C:174:PRO:HD3	2.19	0.42
1:C:271:GLN:O	1:C:273:ARG:HG3	2.19	0.42
1:C:557:LYS:HB2	1:C:584:ILE:HD13	2.01	0.42
1:C:986:PRO:CB	1:C:987:PRO:CD	2.96	0.42
2:D:187:LYS:HD2	2:D:199:TYR:CE1	2.54	0.42
1:A:324:GLU:HG2	1:A:325:SER:H	1.83	0.42
1:A:403:LYS:O	1:A:407:VAL:HG23	2.20	0.42
1:A:456:PHE:HB3	1:A:473:TYR:HD2	1.85	0.42
1:A:472:ILE:HG13	1:A:490:PHE:HA	2.01	0.42
1:B:84:LEU:CD2	1:B:267:VAL:HG11	2.49	0.42
1:B:106:PHE:CE1	1:B:238:PHE:HE1	2.38	0.42
1:B:124:THR:O	1:B:174:PRO:HD3	2.20	0.42
1:C:108:THR:O	1:C:109:THR:OG1	2.37	0.42
2:D:143:LEU:HD23	2:D:146:PRO:HD3	2.02	0.42
2:D:306:ARG:HG3	2:D:306:ARG:HH11	1.84	0.42
2:D:589:GLU:HA	2:D:592:PHE:HB2	2.01	0.42
1:A:554:LYS:NZ	1:A:583:GLU:HB2	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:964:LYS:HB3	1:A:964:LYS:HE3	1.83	0.42
1:B:555:SER:HB2	1:B:586:ASP:OD2	2.19	0.42
1:C:1081:ILE:HG23	1:C:1088:HIS:HB2	2.01	0.42
2:D:27:THR:O	2:D:31:LYS:HG2	2.19	0.42
2:D:294:THR:HA	2:D:297:MET:HB2	2.00	0.42
1:A:319:ARG:NH1	1:C:740:MET:SD	2.92	0.42
1:A:388:ASN:O	1:A:526:GLY:HA3	2.19	0.42
1:A:617:CYS:HA	1:A:620:VAL:HG22	2.01	0.42
1:A:832:GLY:HA2	1:A:860:VAL:CG2	2.50	0.42
1:A:472:ILE:HG12	1:A:482:GLY:O	2.20	0.42
1:B:231:ILE:HG22	1:B:233:ILE:HG12	2.01	0.42
1:B:854:LYS:HD2	1:B:854:LYS:HA	1.78	0.42
1:B:980:ILE:HD11	1:B:992:GLN:HB2	2.00	0.42
1:C:194:PHE:HB3	1:C:201:PHE:CZ	2.55	0.42
1:C:396:TYR:HB2	1:C:514:SER:HB3	2.01	0.42
1:C:1116:THR:O	1:C:1119:ASN:N	2.52	0.42
2:D:234:LYS:N	2:D:235:PRO:HD2	2.35	0.42
1:B:1086:LYS:HE3	1:B:1086:LYS:HB2	1.85	0.42
1:C:456:PHE:HB3	1:C:473:TYR:HB2	2.02	0.42
1:C:599:THR:HB	1:C:608:VAL:HG12	2.01	0.42
1:C:619:GLU:HG3	1:C:620:VAL:N	2.35	0.42
1:C:634:ARG:HA	1:C:634:ARG:HD2	1.89	0.42
1:C:976:VAL:HB	1:C:979:ASP:HB2	2.01	0.42
1:C:1100:THR:HG22	1:C:1101:HIS:CD2	2.54	0.42
2:D:103:ASN:ND2	2:D:107:VAL:HB	2.35	0.42
2:D:520:LEU:HD11	2:D:581:VAL:HG12	2.01	0.42
1:A:200:TYR:CE1	1:A:230:PRO:HB3	2.55	0.42
1:A:386:LYS:HB2	1:A:386:LYS:HE3	1.91	0.42
1:A:818:ILE:O	1:A:822:LEU:HG	2.20	0.42
1:B:65:PHE:HB2	1:B:265:TYR:HB2	2.00	0.42
2:D:450:LEU:HB2	2:D:451:PRO:HD3	2.02	0.42
1:A:865:LEU:HD23	1:A:865:LEU:HA	1.81	0.42
1:B:118:LEU:HD21	1:B:120:VAL:HG12	2.02	0.42
1:B:498:ARG:HB2	1:B:501:TYR:CZ	2.55	0.42
1:B:1114:ILE:O	1:B:1116:THR:HG23	2.20	0.42
2:D:48:TRP:CZ3	2:D:359:LEU:HB2	2.55	0.42
2:D:171:GLU:O	2:D:175:GLN:NE2	2.53	0.42
2:D:478:TRP:HB3	2:D:482:ARG:NH2	2.35	0.42
1:A:34:ARG:NH2	1:A:219:GLY:O	2.53	0.41
1:A:854:LYS:HA	1:A:854:LYS:HD2	1.85	0.41
1:B:490:PHE:HA	1:B:491:PRO:HD3	1.95	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:617:CYS:HA	1:C:620:VAL:CG1	2.50	0.41
2:D:549:GLU:O	2:D:552:GLN:HG3	2.20	0.41
1:A:176:LEU:HA	1:A:207:HIS:CE1	2.55	0.41
1:B:323:THR:OG1	1:B:324:GLU:N	2.53	0.41
1:B:554:LYS:NZ	1:B:583:GLU:HB2	2.35	0.41
1:B:818:ILE:O	1:B:822:LEU:HG	2.20	0.41
1:C:106:PHE:HB3	1:C:235:ILE:HD13	2.02	0.41
1:C:776:LYS:O	1:C:780:GLU:HG2	2.20	0.41
2:D:468:ILE:HD11	2:D:473:TRP:HA	2.02	0.41
1:A:707:TYR:HB2	1:C:883:THR:HB	2.02	0.41
1:A:847:ARG:NH1	1:B:587:ILE:O	2.54	0.41
1:A:850:ILE:O	1:A:854:LYS:HG2	2.19	0.41
1:A:984:LEU:HD12	1:A:985:ASP:H	1.85	0.41
1:A:1053:PRO:O	1:A:1054:GLN:NE2	2.35	0.41
1:B:788:ILE:O	1:B:788:ILE:HG13	2.21	0.41
2:D:564:GLU:OE1	2:D:564:GLU:N	2.53	0.41
1:A:110:LEU:HD11	1:A:239:GLN:HG2	2.01	0.41
1:A:418:ILE:HG23	1:A:422:ASN:HB2	2.02	0.41
1:A:450:ASP:OD1	1:A:450:ASP:N	2.50	0.41
1:A:869:MET:HB3	1:B:699:LEU:HD21	2.01	0.41
1:B:340:GLU:OE1	1:B:340:GLU:N	2.52	0.41
1:B:388:ASN:OD1	1:B:526:GLY:HA3	2.20	0.41
1:B:1139:ASP:HA	1:B:1140:PRO:HD3	1.92	0.41
1:C:318:PHE:HB3	1:C:595:VAL:HG23	2.02	0.41
2:D:524:GLN:OE1	2:D:570:LEU:HD11	2.20	0.41
1:A:119:ILE:HD12	1:A:128:ILE:HD12	2.01	0.41
1:B:106:PHE:CE1	1:B:238:PHE:CE1	3.07	0.41
1:C:87:ASN:N	1:C:87:ASN:OD1	2.54	0.41
1:C:324:GLU:HG2	1:C:539:VAL:HG22	2.03	0.41
1:C:406:GLU:HG3	1:C:418:ILE:HD13	2.01	0.41
1:A:553:THR:HG21	1:C:841:LEU:HB2	2.02	0.41
1:A:738:CYS:O	1:A:742:ILE:HG23	2.21	0.41
1:B:86:PHE:HE2	1:B:89:GLY:H	1.68	0.41
1:B:979:ASP:HA	1:B:982:SER:HB2	2.01	0.41
1:C:202:LYS:HB3	1:C:204:TYR:HE1	1.84	0.41
2:D:582:ARG:NH1	2:D:582:ARG:HA	2.36	0.41
1:A:368:LEU:HD11	1:A:434:ILE:HD13	2.02	0.41
1:A:976:VAL:O	1:A:980:ILE:HG22	2.20	0.41
1:A:1114:ILE:HD11	1:A:1138:TYR:CE2	2.56	0.41
1:B:208:THR:O	1:B:208:THR:OG1	2.35	0.41
1:B:364:ASP:OD1	1:B:364:ASP:N	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1117:THR:N	1:B:1138:TYR:O	2.54	0.41
1:A:977:LEU:O	1:A:981:LEU:HG	2.21	0.41
1:C:37:TYR:HA	1:C:223:LEU:HB2	2.02	0.41
1:C:988:GLU:O	1:C:989:ALA:C	2.57	0.41
2:D:459:TRP:HA	2:D:462:MET:HG3	2.02	0.41
2:D:460:ARG:NH2	2:D:510:TYR:O	2.53	0.41
1:A:188:ASN:OD1	1:A:188:ASN:N	2.45	0.41
1:A:707:TYR:HE1	1:C:897:PRO:HA	1.85	0.41
1:A:1102:TRP:CZ2	1:A:1133:VAL:HG21	2.55	0.41
1:B:984:LEU:HA	1:C:383:SER:HB2	2.02	0.41
1:C:402:ILE:HD11	1:C:510:VAL:HG21	2.03	0.41
1:C:407:VAL:HA	1:C:410:ILE:HG22	2.02	0.41
1:C:716:THR:O	1:C:716:THR:OG1	2.31	0.41
1:C:1090:PRO:HA	1:C:1119:ASN:O	2.21	0.41
1:C:1114:ILE:O	1:C:1116:THR:HG23	2.21	0.41
2:D:131:LYS:HE3	2:D:131:LYS:HB3	1.81	0.41
2:D:144:LEU:HB2	2:D:168:TRP:CZ2	2.56	0.41
2:D:560:LEU:HB3	2:D:564:GLU:OE1	2.21	0.41
1:A:966:LEU:HD23	1:A:966:LEU:HA	1.83	0.41
1:B:403:LYS:HB2	1:B:406:GLU:OE1	2.21	0.41
1:B:720:ILE:HD11	1:B:923:ILE:HG13	2.03	0.41
1:C:32:PHE:HA	1:C:59:PHE:CD2	2.56	0.41
1:C:84:LEU:HB2	1:C:238:PHE:HD2	1.86	0.41
1:C:913:GLN:H	1:C:913:GLN:HG2	1.70	0.41
1:A:276:LEU:CD1	1:A:304:LYS:HA	2.50	0.40
1:A:1075:PHE:HB3	1:A:1097:SER:O	2.21	0.40
1:C:176:LEU:HD22	1:C:190:ARG:HD2	2.03	0.40
1:C:377:PHE:HE2	1:C:384:PRO:HB3	1.84	0.40
2:D:173:GLY:HA3	2:D:498:CYS:H	1.86	0.40
2:D:449:THR:O	2:D:453:THR:HG23	2.21	0.40
1:A:555:SER:HB3	1:A:584:ILE:HB	2.03	0.40
1:B:295:PRO:HB2	1:B:608:VAL:HG21	2.03	0.40
1:B:595:VAL:HG21	1:B:633:TRP:HZ2	1.86	0.40
1:B:1114:ILE:HD13	1:B:1114:ILE:HA	1.97	0.40
2:D:88:ILE:HG22	2:D:94:LYS:HG3	2.03	0.40
2:D:208:GLU:CD	2:D:219:ARG:HG3	2.41	0.40
1:A:857:GLY:HA2	1:B:592:PHE:CE2	2.57	0.40
1:C:402:ILE:HD12	1:C:406:GLU:HB3	2.03	0.40
1:C:406:GLU:HA	1:C:409:GLN:HB3	2.03	0.40
1:C:664:ILE:HG12	1:C:672:ALA:O	2.21	0.40
1:C:805:ILE:HB	1:C:878:LEU:HD21	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:124:THR:O	1:A:174:PRO:HD3	2.21	0.40
1:A:999:GLY:C	1:A:1001:LEU:N	2.74	0.40
1:A:1081:ILE:HG22	1:A:1095:PHE:CE2	2.56	0.40
1:A:1139:ASP:HA	1:A:1140:PRO:HD3	1.96	0.40
1:B:338:PHE:HA	1:B:341:VAL:HG12	2.04	0.40
1:A:44:ARG:HD3	1:A:47:VAL:HG21	2.02	0.40
1:A:377:PHE:CE1	1:A:434:ILE:HG12	2.56	0.40
1:C:278:LYS:HG2	1:C:287:ASP:H	1.87	0.40
2:D:394:ASN:HB3	2:D:562:LYS:HD3	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	1047/1206 (87%)	955 (91%)	89 (8%)	3 (0%)	37	66
1	B	1047/1206 (87%)	958 (92%)	87 (8%)	2 (0%)	44	72
1	C	1047/1206 (87%)	950 (91%)	94 (9%)	3 (0%)	37	66
2	D	595/597 (100%)	585 (98%)	9 (2%)	1 (0%)	44	72
All	All	3736/4215 (89%)	3448 (92%)	279 (8%)	9 (0%)	45	72

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	983	ARG
1	A	1000	ARG
1	B	591	SER
1	C	986	PRO
1	C	1003	SER
2	D	147	GLY

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Mol	Chain	Res	Type
1	B	1003	SER
1	C	591	SER
1	A	590	CYS

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	922/1054 (88%)	894 (97%)	28 (3%)	36	62
1	B	922/1054 (88%)	898 (97%)	24 (3%)	41	66
1	C	922/1054 (88%)	890 (96%)	32 (4%)	31	58
2	D	527/527 (100%)	511 (97%)	16 (3%)	36	62
All	All	3293/3689 (89%)	3193 (97%)	100 (3%)	37	62

All (100) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	31	SER
1	A	58	PHE
1	A	86	PHE
1	A	104	TRP
1	A	121	ASN
1	A	127	PHE
1	A	135	PHE
1	A	220	PHE
1	A	242	LEU
1	A	317	ASN
1	A	349	SER
1	A	417	ASN
1	A	436	TRP
1	A	461	LEU
1	A	473	TYR
1	A	495	TYR
1	A	559	PHE
1	A	571	ASP

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Mol	Chain	Res	Type
1	A	603	ASN
1	A	636	TYR
1	A	649	CYS
1	A	819	GLU
1	A	820	ASP
1	A	939	PHE
1	A	950	ASP
1	A	985	ASP
1	A	998	THR
1	A	1037	SER
1	B	53	ASP
1	B	86	PHE
1	B	134	GLN
1	B	135	PHE
1	B	168	PHE
1	B	178	ASP
1	B	190	ARG
1	B	200	TYR
1	B	280	ASN
1	B	303	LEU
1	B	328	ARG
1	B	457	ARG
1	B	480	CYS
1	B	528	LYS
1	B	541	PHE
1	B	565	PHE
1	B	571	ASP
1	B	643	PHE
1	B	735	SER
1	B	906	PHE
1	B	939	PHE
1	B	998	THR
1	B	1075	PHE
1	B	1119	ASN
1	C	86	PHE
1	C	127	PHE
1	C	168	PHE
1	C	200	TYR
1	C	238	PHE
1	C	265	TYR
1	C	302	THR
1	C	328	ARG

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Mol	Chain	Res	Type
1	C	331	ASN
1	C	369	TYR
1	C	377	PHE
1	C	383	SER
1	C	392	PHE
1	C	457	ARG
1	C	465	GLU
1	C	486	PRO
1	C	494	SER
1	C	495	TYR
1	C	530	SER
1	C	559	PHE
1	C	567	ARG
1	C	586	ASP
1	C	617	CYS
1	C	636	TYR
1	C	649	CYS
1	C	745	ASP
1	C	759	PHE
1	C	856	ASN
1	C	906	PHE
1	C	939	PHE
1	C	992	GLN
1	C	1001	LEU
2	D	38	ASP
2	D	62	MET
2	D	63	ASN
2	D	67	ASP
2	D	74	LYS
2	D	196	TYR
2	D	252	TYR
2	D	270	MET
2	D	275	TRP
2	D	322	ASN
2	D	323	MET
2	D	345	HIS
2	D	367	ASP
2	D	425	SER
2	D	504	PHE
2	D	592	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	125	ASN
1	A	207	HIS
1	A	239	GLN
1	A	540	ASN
1	A	644	GLN
1	B	422	ASN
1	B	437	ASN
1	B	506	GLN
1	B	542	ASN
1	B	787	GLN
1	B	901	GLN
1	C	207	HIS
1	C	580	GLN
2	D	139	GLN
2	D	598	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

34 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	3,1	14,14,15	0.63	1 (7%)	17,19,21	0.60	0
3	BMA	E	2	3	11,11,12	0.68	0	15,15,17	0.66	0
3	NAG	F	1	3	14,14,15	0.28	0	17,19,21	0.43	0
3	BMA	F	2	3	11,11,12	0.53	0	15,15,17	0.74	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAG	G	1	3,1	14,14,15	0.31	0	17,19,21	0.37	0
3	BMA	G	2	3	11,11,12	0.59	0	15,15,17	0.68	0
3	NAG	H	1	3,1	14,14,15	0.27	0	17,19,21	0.49	0
3	BMA	H	2	3	11,11,12	0.57	0	15,15,17	0.71	0
3	NAG	I	1	3,1	14,14,15	0.19	0	17,19,21	0.39	0
3	BMA	I	2	3	11,11,12	0.55	0	15,15,17	0.66	0
3	NAG	J	1	3,1	14,14,15	1.22	1 (7%)	17,19,21	1.14	1 (5%)
3	BMA	J	2	3	11,11,12	0.63	0	15,15,17	1.33	3 (20%)
3	NAG	K	1	3,1	14,14,15	0.23	0	17,19,21	0.41	0
3	BMA	K	2	3	11,11,12	0.54	0	15,15,17	0.70	0
3	NAG	L	1	3,1	14,14,15	0.26	0	17,19,21	0.36	0
3	BMA	L	2	3	11,11,12	0.62	0	15,15,17	0.70	0
3	NAG	M	1	3,1	14,14,15	0.72	1 (7%)	17,19,21	0.46	0
3	BMA	M	2	3	11,11,12	0.63	0	15,15,17	0.69	0
3	NAG	N	1	3,1	14,14,15	0.21	0	17,19,21	0.43	0
3	BMA	N	2	3	11,11,12	0.55	0	15,15,17	0.75	0
3	NAG	O	1	3,1	14,14,15	1.36	1 (7%)	17,19,21	1.21	1 (5%)
3	BMA	O	2	3	11,11,12	0.60	0	15,15,17	1.16	1 (6%)
3	NAG	P	1	3,1	14,14,15	0.21	0	17,19,21	0.41	0
3	BMA	P	2	3	11,11,12	0.59	0	15,15,17	0.83	0
3	NAG	Q	1	3,1	14,14,15	0.28	0	17,19,21	0.38	0
3	BMA	Q	2	3	11,11,12	0.56	0	15,15,17	0.66	0
3	NAG	R	1	3,1	14,14,15	0.34	0	17,19,21	0.40	0
3	BMA	R	2	3	11,11,12	0.63	0	15,15,17	0.79	0
3	NAG	S	1	3,1	14,14,15	0.28	0	17,19,21	0.41	0
3	BMA	S	2	3	11,11,12	0.58	0	15,15,17	0.72	0
3	NAG	T	1	3,1	14,14,15	0.26	0	17,19,21	0.43	0
3	BMA	T	2	3	11,11,12	0.57	0	15,15,17	0.71	0
3	NAG	U	1	3,1	14,14,15	1.36	1 (7%)	17,19,21	1.26	1 (5%)
3	BMA	U	2	3	11,11,12	0.57	0	15,15,17	1.14	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	3,1	-	0/6/23/26	0/1/1/1
3	BMA	E	2	3	-	1/2/19/22	0/1/1/1
3	NAG	F	1	3	-	2/6/23/26	0/1/1/1
3	BMA	F	2	3	-	0/2/19/22	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	G	1	3,1	-	0/6/23/26	0/1/1/1
3	BMA	G	2	3	-	0/2/19/22	0/1/1/1
3	NAG	H	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	H	2	3	-	0/2/19/22	0/1/1/1
3	NAG	I	1	3,1	-	1/6/23/26	0/1/1/1
3	BMA	I	2	3	-	0/2/19/22	0/1/1/1
3	NAG	J	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	J	2	3	-	1/2/19/22	0/1/1/1
3	NAG	K	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	K	2	3	-	0/2/19/22	0/1/1/1
3	NAG	L	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	L	2	3	-	0/2/19/22	0/1/1/1
3	NAG	M	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	M	2	3	-	1/2/19/22	0/1/1/1
3	NAG	N	1	3,1	-	1/6/23/26	0/1/1/1
3	BMA	N	2	3	-	1/2/19/22	0/1/1/1
3	NAG	O	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	O	2	3	-	0/2/19/22	0/1/1/1
3	NAG	P	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	P	2	3	-	0/2/19/22	0/1/1/1
3	NAG	Q	1	3,1	-	4/6/23/26	0/1/1/1
3	BMA	Q	2	3	-	0/2/19/22	0/1/1/1
3	NAG	R	1	3,1	-	0/6/23/26	0/1/1/1
3	BMA	R	2	3	-	0/2/19/22	0/1/1/1
3	NAG	S	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	S	2	3	-	0/2/19/22	0/1/1/1
3	NAG	T	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	T	2	3	-	0/2/19/22	0/1/1/1
3	NAG	U	1	3,1	-	2/6/23/26	0/1/1/1
3	BMA	U	2	3	-	0/2/19/22	0/1/1/1

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	U	1	NAG	O5-C1	-4.69	1.36	1.43
3	O	1	NAG	O5-C1	-4.68	1.36	1.43
3	J	1	NAG	O5-C1	-4.22	1.37	1.43
3	M	1	NAG	O5-C1	-2.56	1.39	1.43
3	E	1	NAG	O5-C1	-2.20	1.40	1.43

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	U	1	NAG	C3-C4-C5	3.84	117.08	110.24
3	O	1	NAG	C3-C4-C5	3.61	116.68	110.24
3	J	1	NAG	C3-C4-C5	3.21	115.97	110.24
3	J	2	BMA	C1-O5-C5	2.81	116.00	112.19
3	U	2	BMA	C1-O5-C5	2.62	115.74	112.19
3	O	2	BMA	C1-O5-C5	2.57	115.67	112.19
3	J	2	BMA	O5-C1-C2	2.43	114.52	110.77
3	J	2	BMA	C1-C2-C3	2.36	112.56	109.67

There are no chirality outliers.

All (32) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	U	1	NAG	O5-C5-C6-O6
3	O	1	NAG	C4-C5-C6-O6
3	J	1	NAG	O5-C5-C6-O6
3	O	1	NAG	O5-C5-C6-O6
3	P	1	NAG	O5-C5-C6-O6
3	S	1	NAG	O5-C5-C6-O6
3	M	1	NAG	C4-C5-C6-O6
3	H	1	NAG	O5-C5-C6-O6
3	M	1	NAG	O5-C5-C6-O6
3	U	1	NAG	C4-C5-C6-O6
3	J	1	NAG	C4-C5-C6-O6
3	F	1	NAG	C8-C7-N2-C2
3	F	1	NAG	O7-C7-N2-C2
3	K	1	NAG	C8-C7-N2-C2
3	K	1	NAG	O7-C7-N2-C2
3	Q	1	NAG	C8-C7-N2-C2
3	Q	1	NAG	O7-C7-N2-C2
3	S	1	NAG	C4-C5-C6-O6
3	Q	1	NAG	O5-C5-C6-O6
3	H	1	NAG	C4-C5-C6-O6
3	Q	1	NAG	C4-C5-C6-O6
3	P	1	NAG	C4-C5-C6-O6
3	T	1	NAG	O5-C5-C6-O6
3	E	2	BMA	O5-C5-C6-O6
3	L	1	NAG	C4-C5-C6-O6
3	J	2	BMA	O5-C5-C6-O6
3	N	2	BMA	O5-C5-C6-O6
3	I	1	NAG	O5-C5-C6-O6

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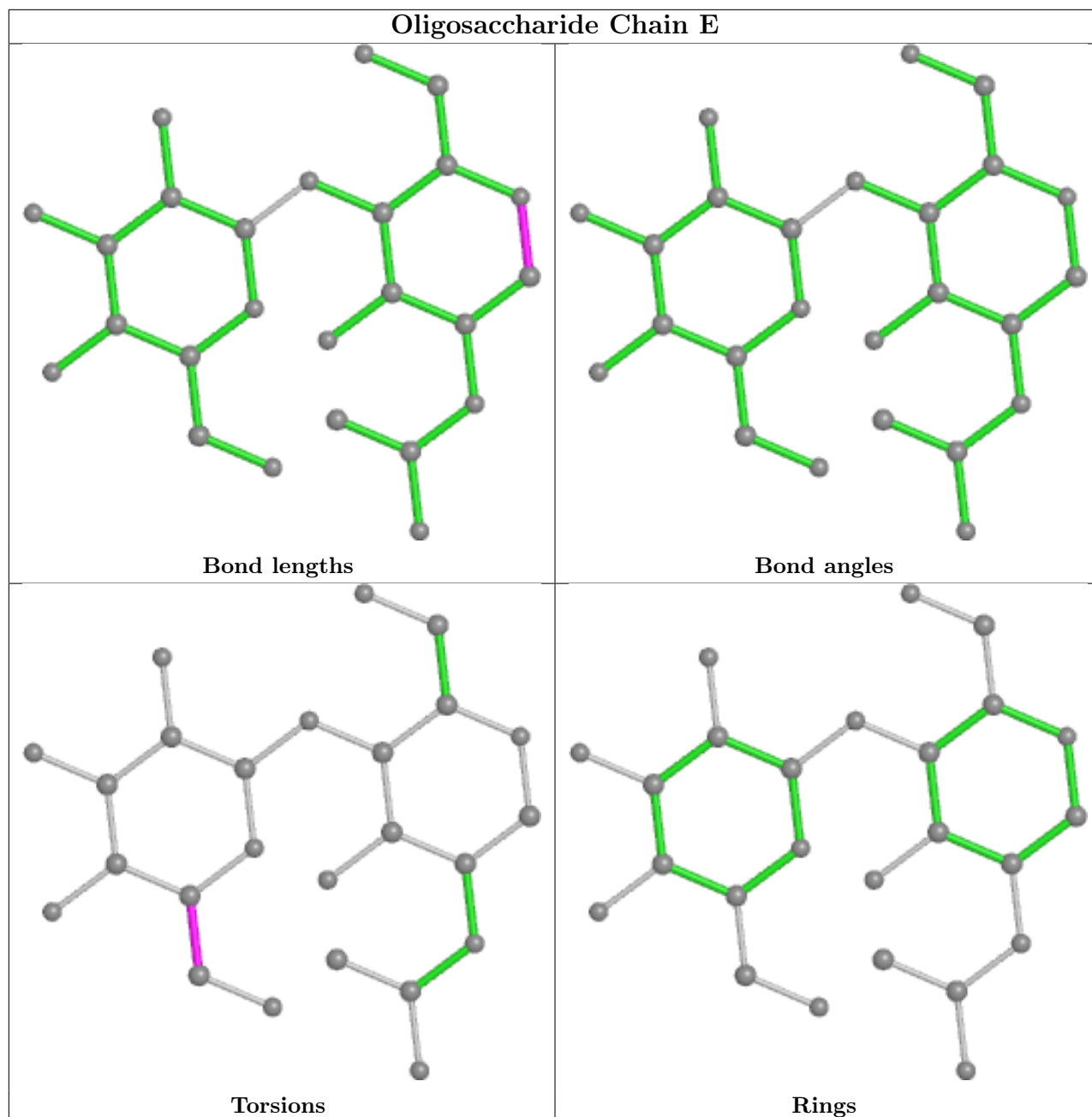
Mol	Chain	Res	Type	Atoms
3	N	1	NAG	O5-C5-C6-O6
3	L	1	NAG	O5-C5-C6-O6
3	M	2	BMA	O5-C5-C6-O6
3	T	1	NAG	C4-C5-C6-O6

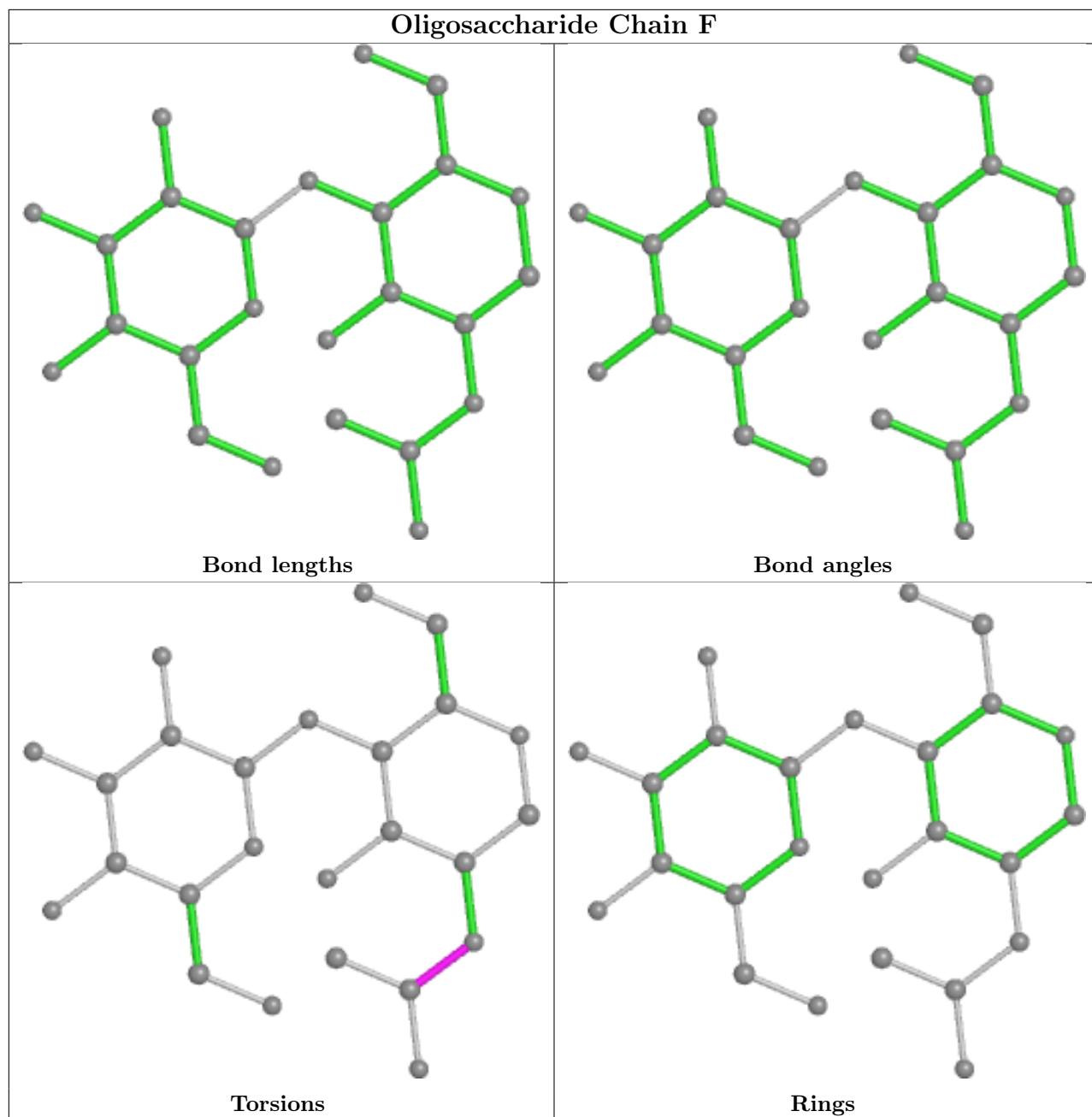
There are no ring outliers.

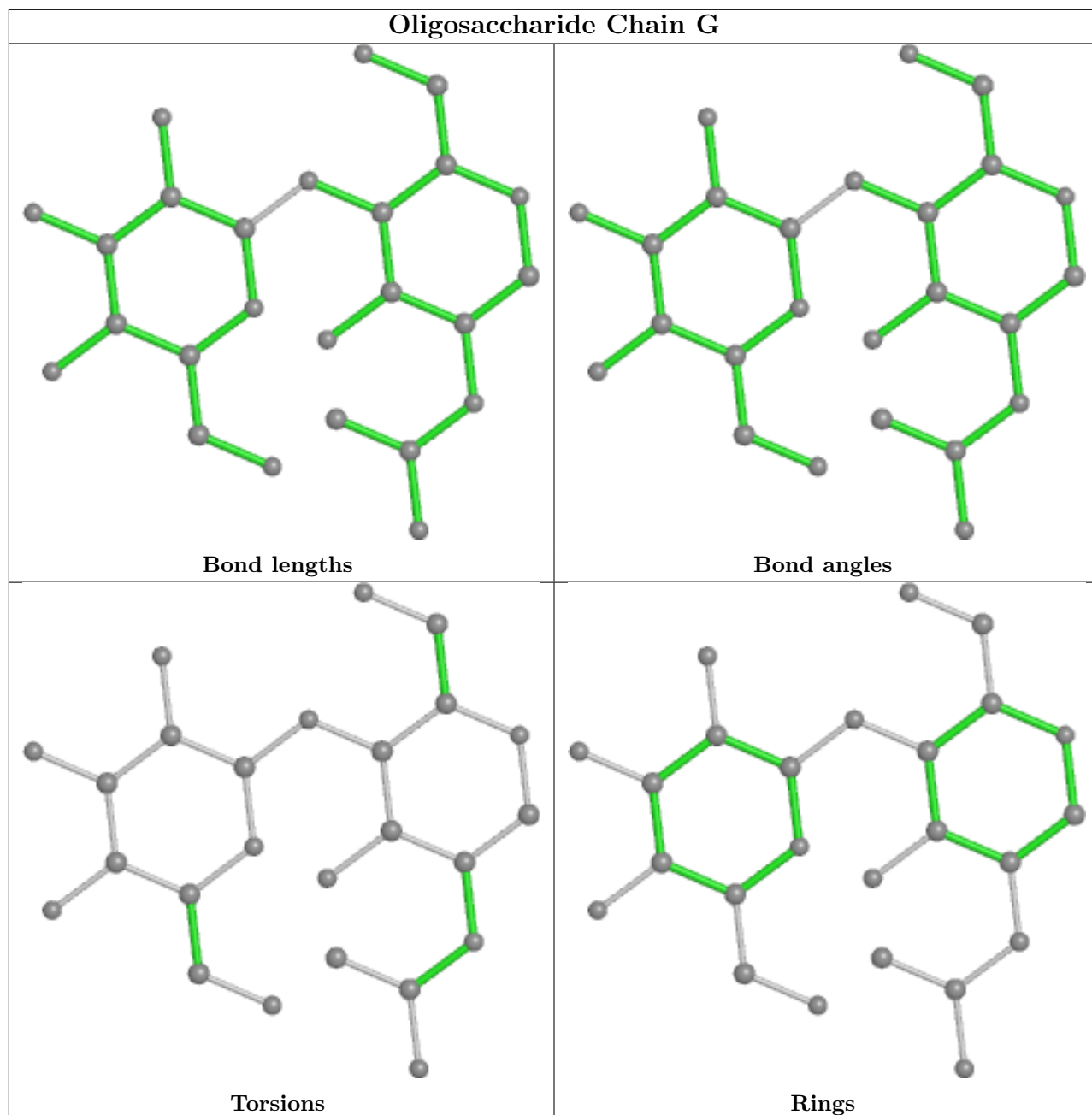
5 monomers are involved in 4 short contacts:

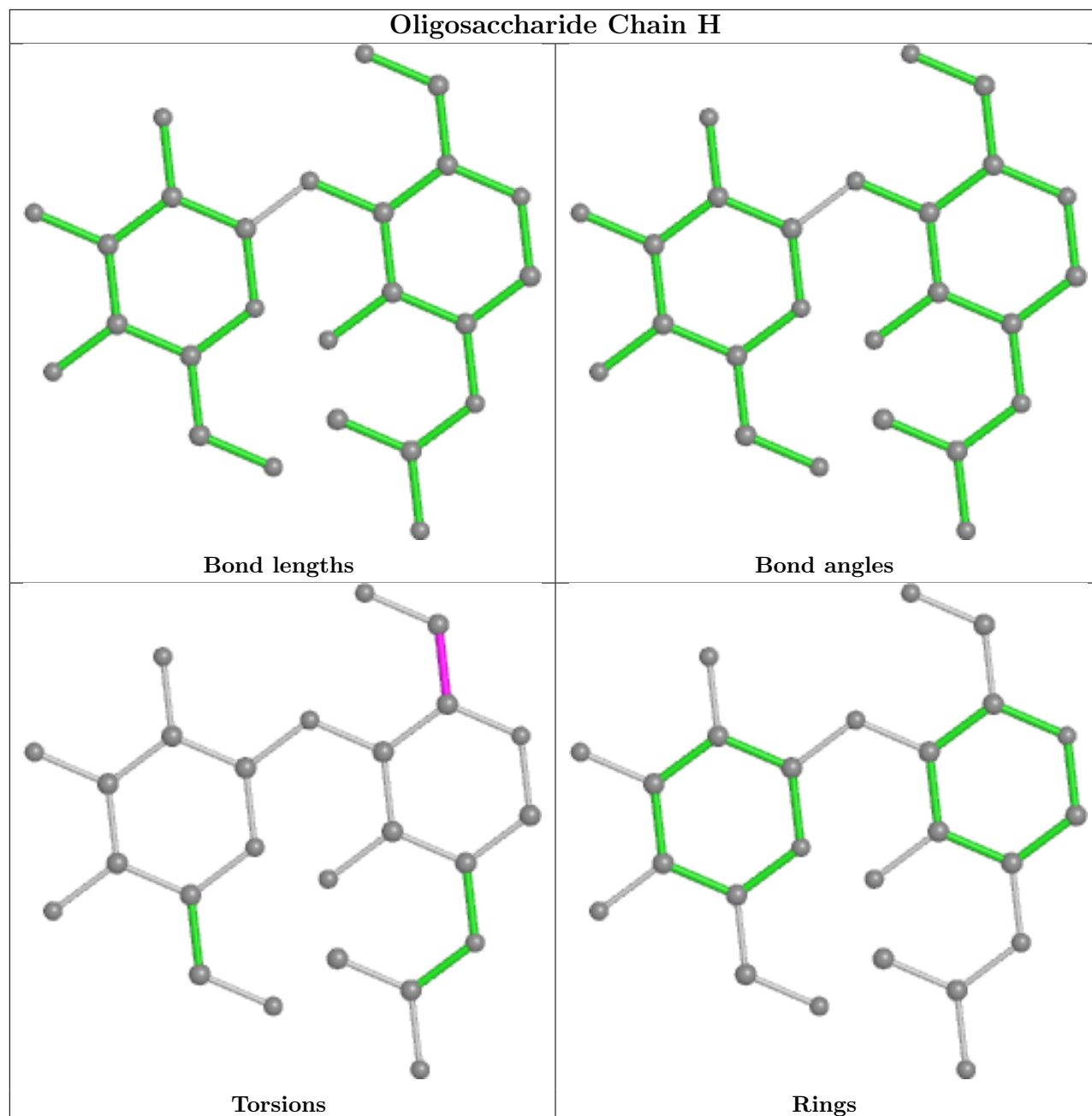
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	1	NAG	1	0
3	M	1	NAG	1	0
3	S	1	NAG	1	0
3	M	2	BMA	1	0
3	F	1	NAG	1	0

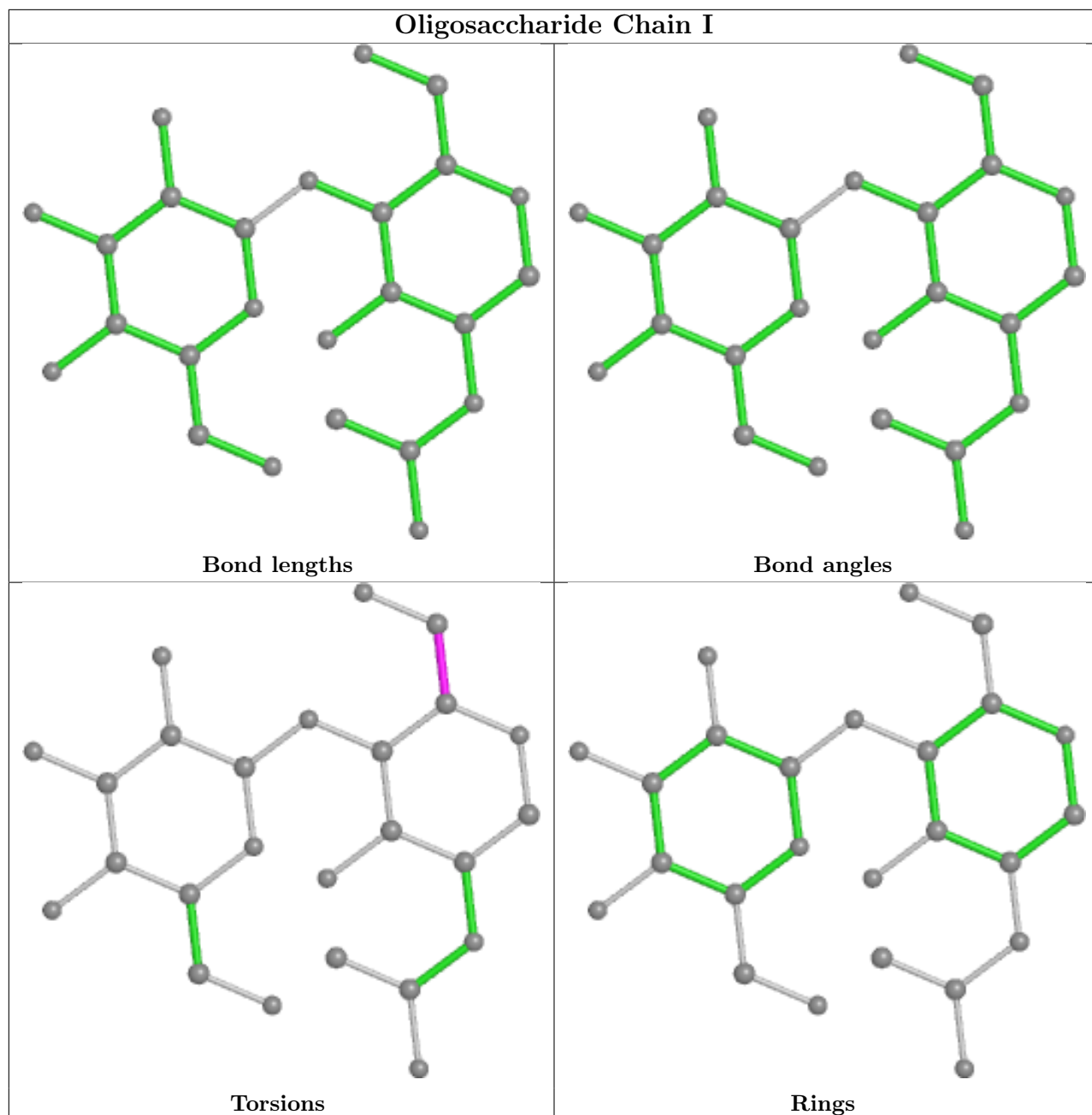
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

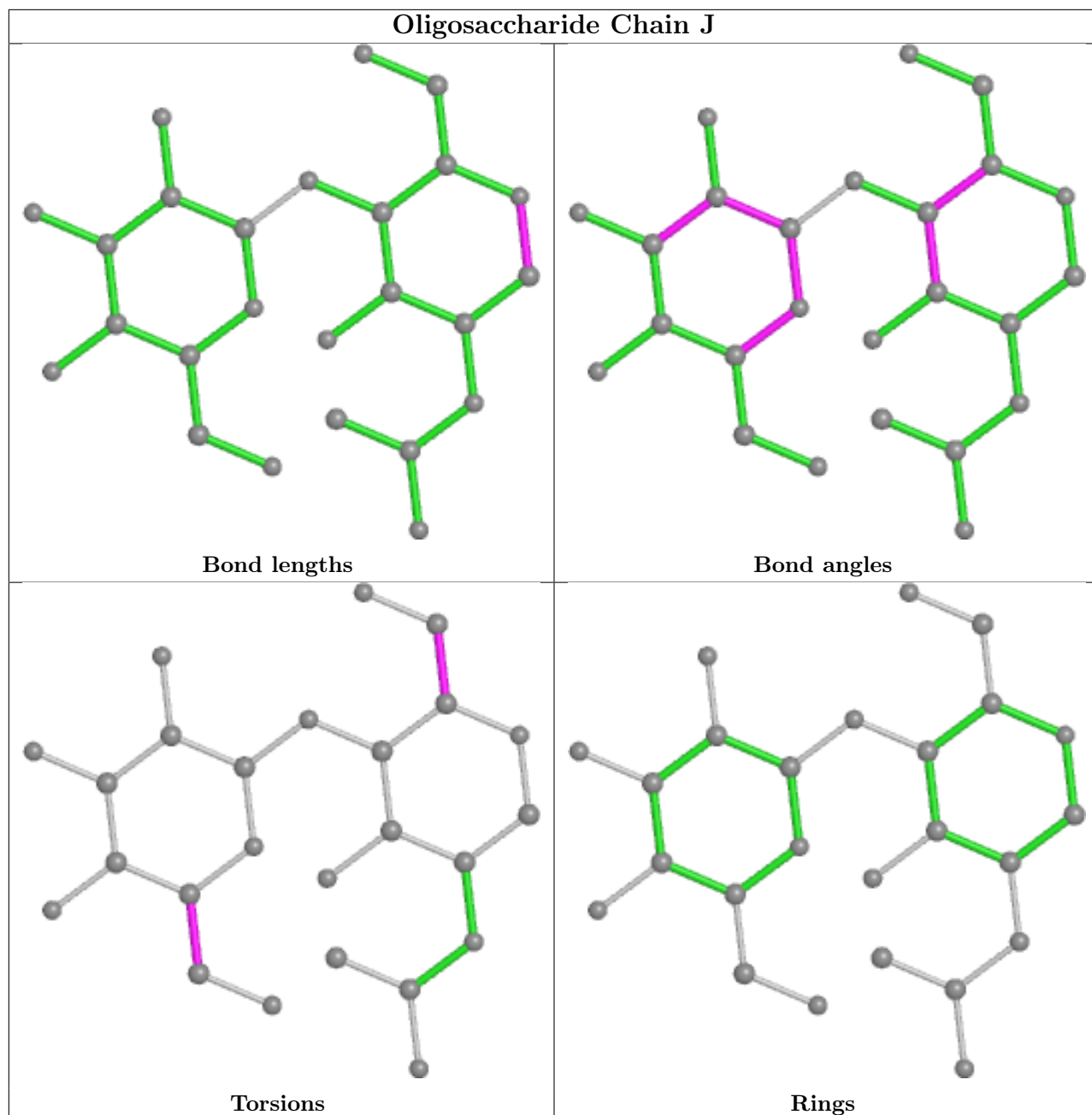


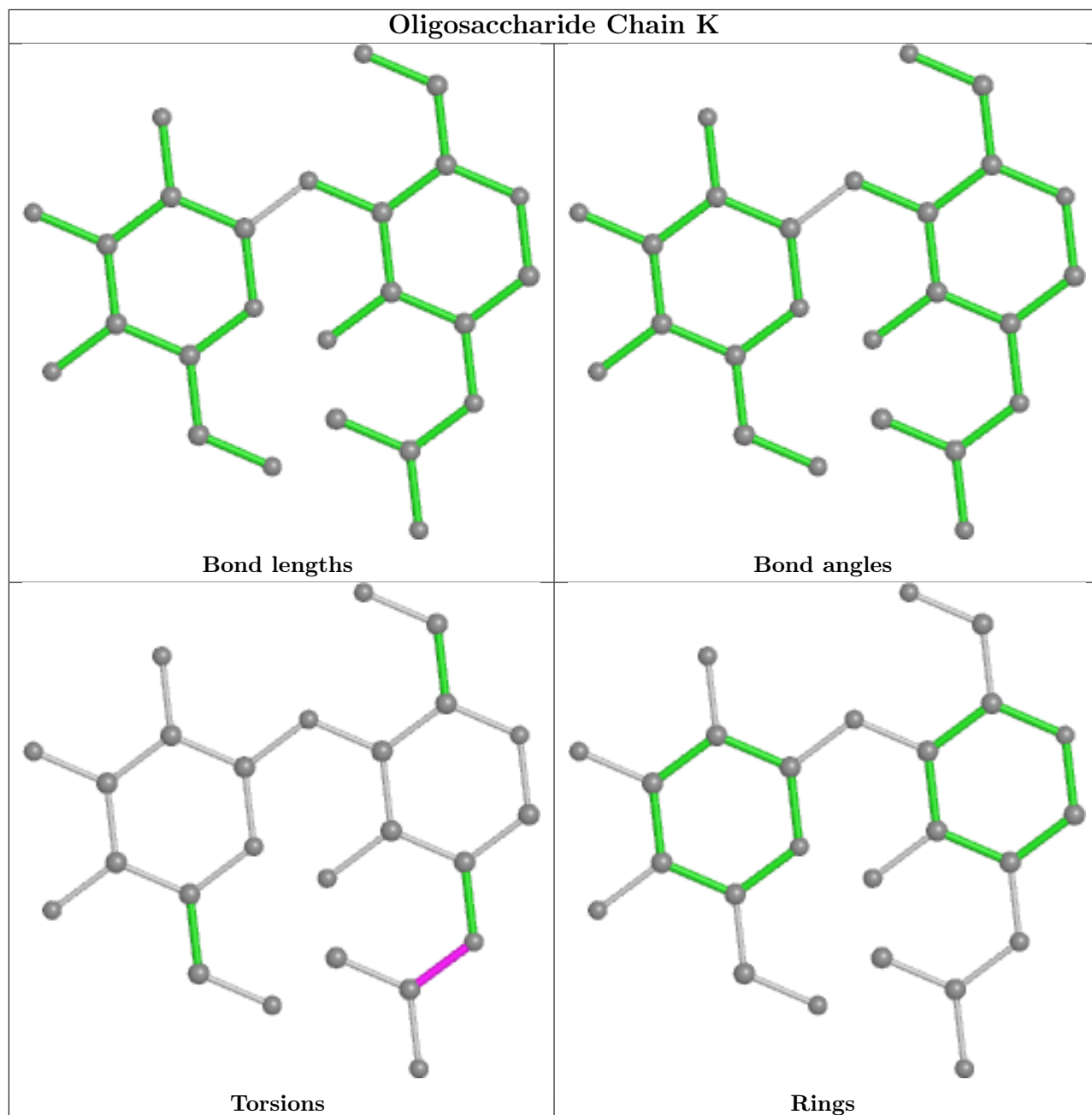


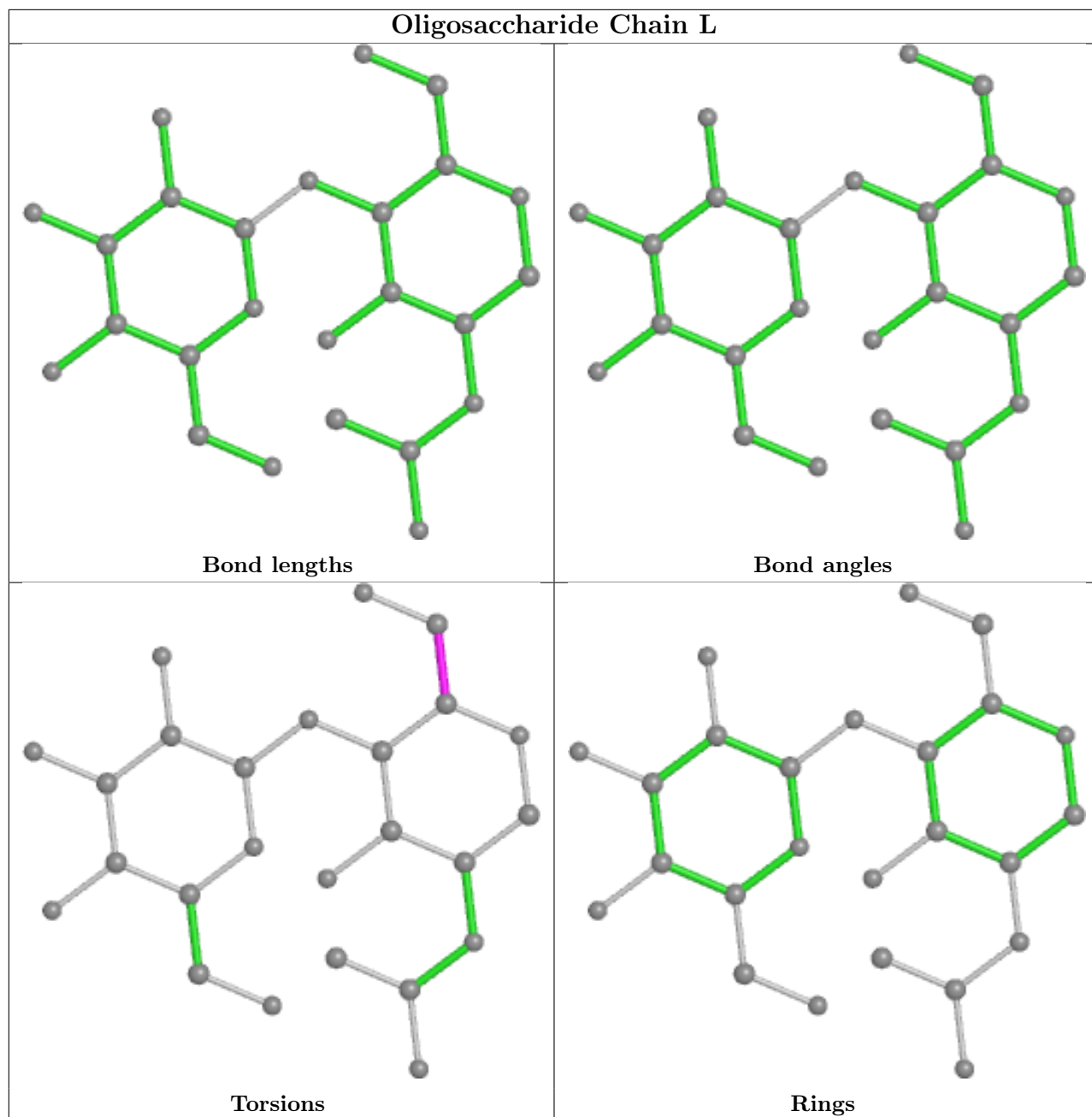


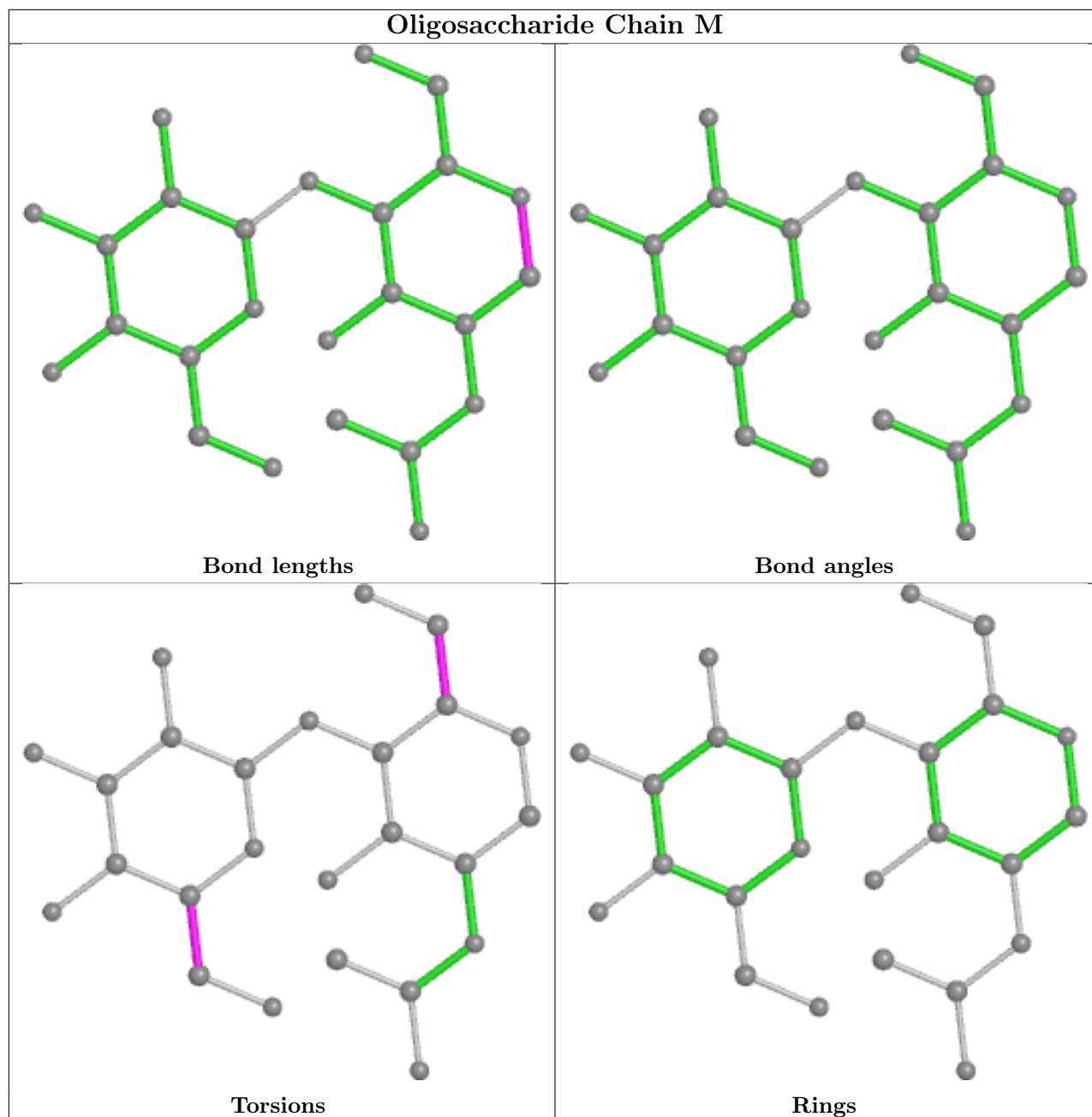


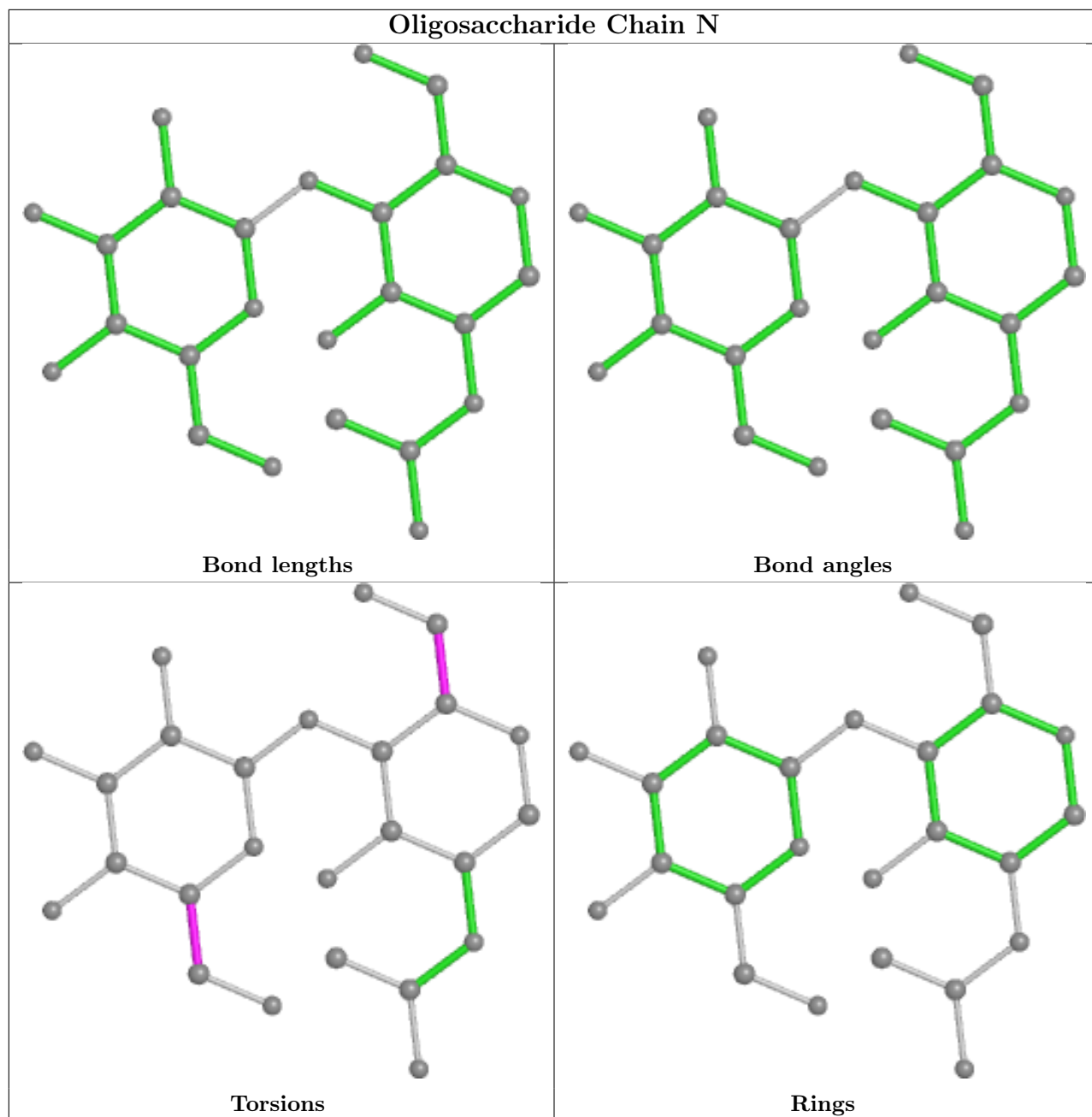


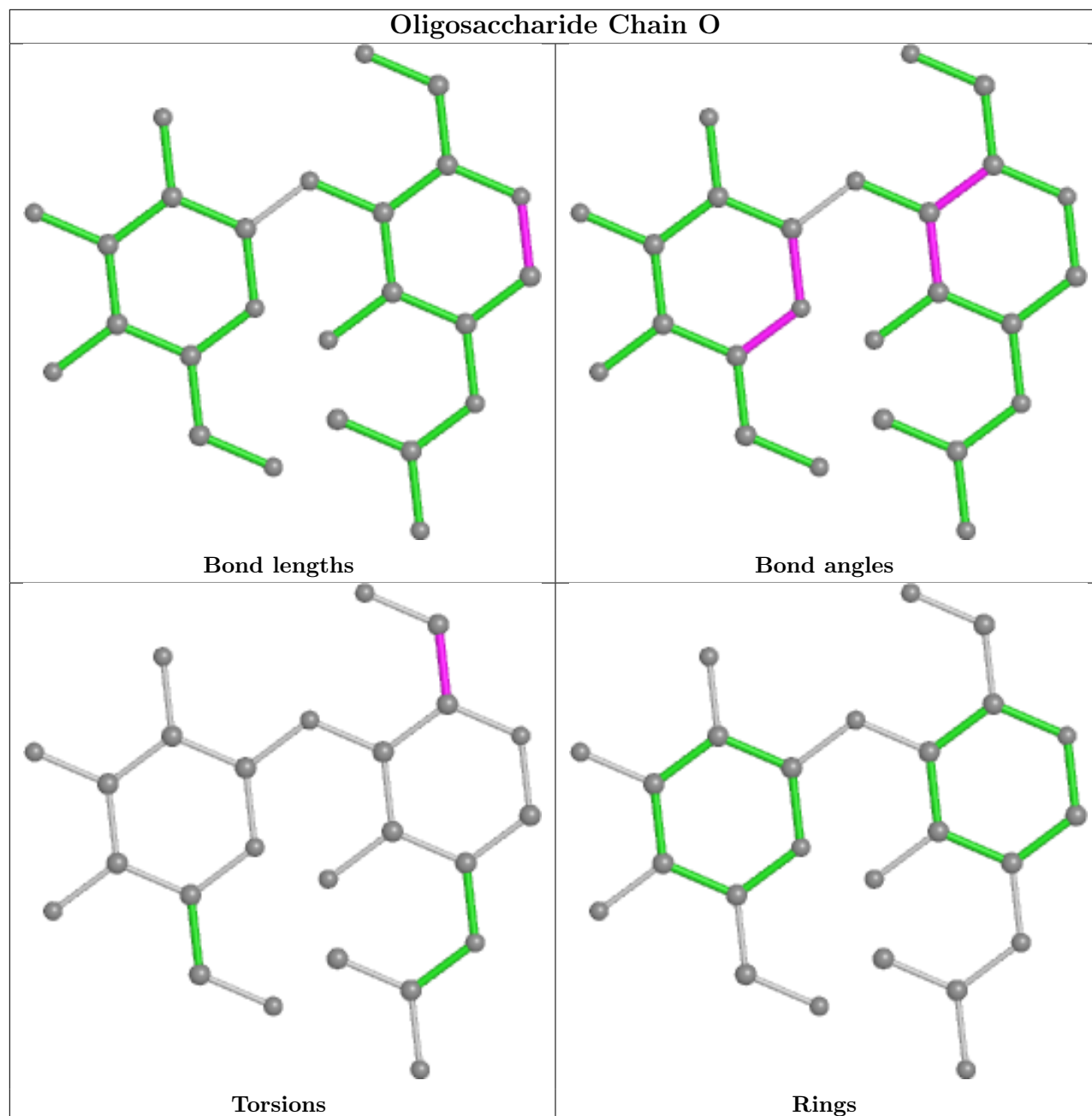


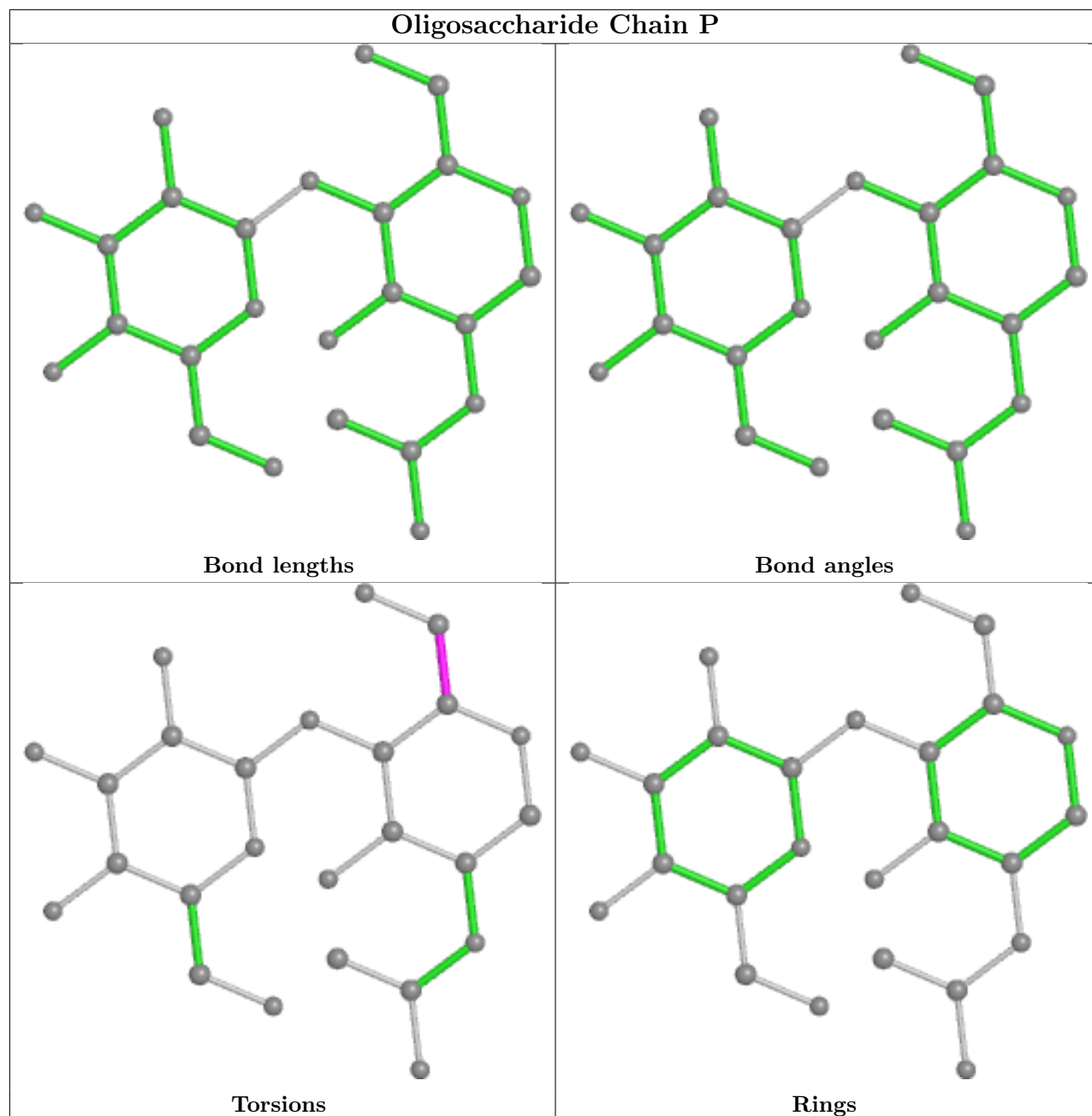


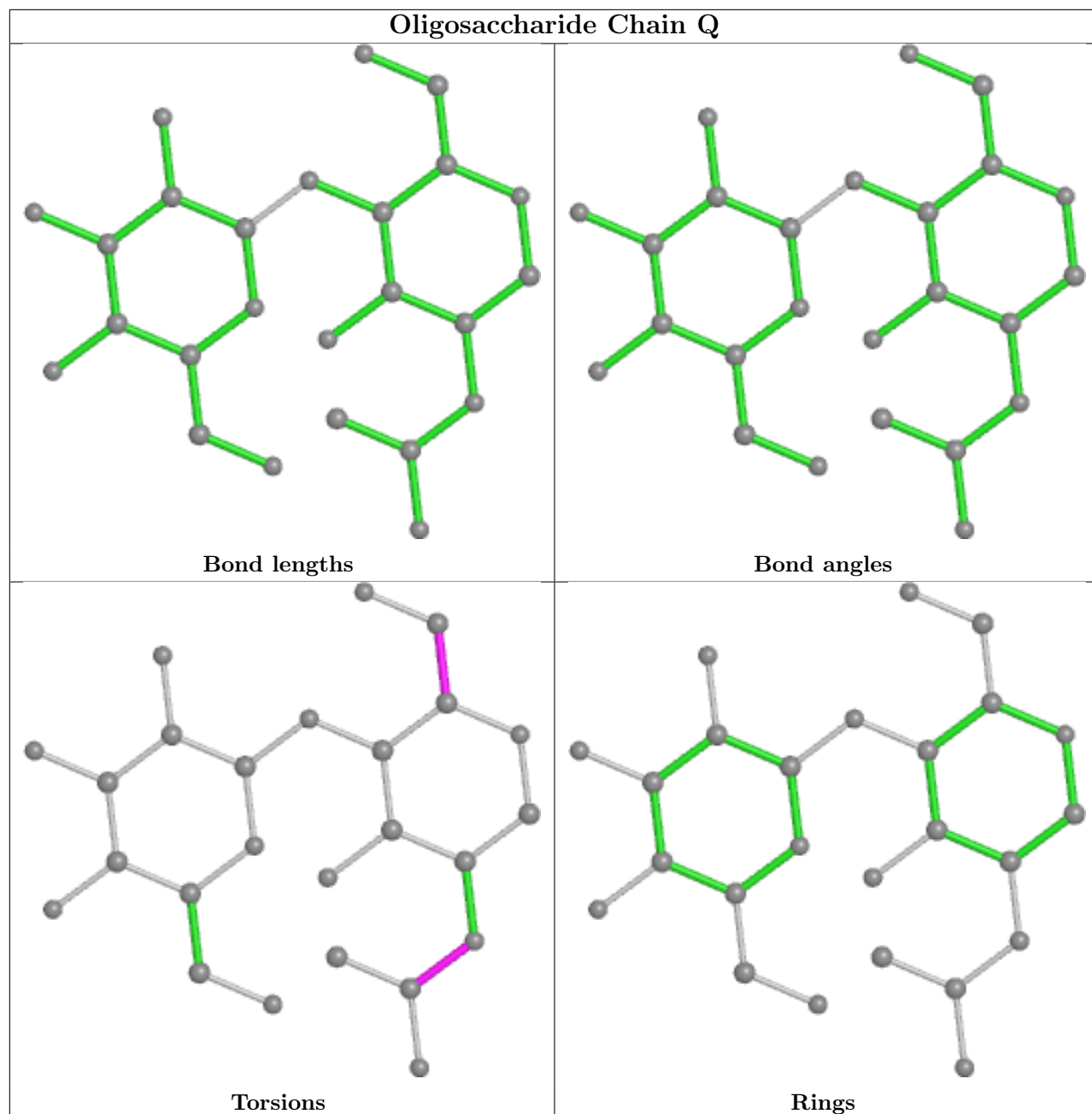


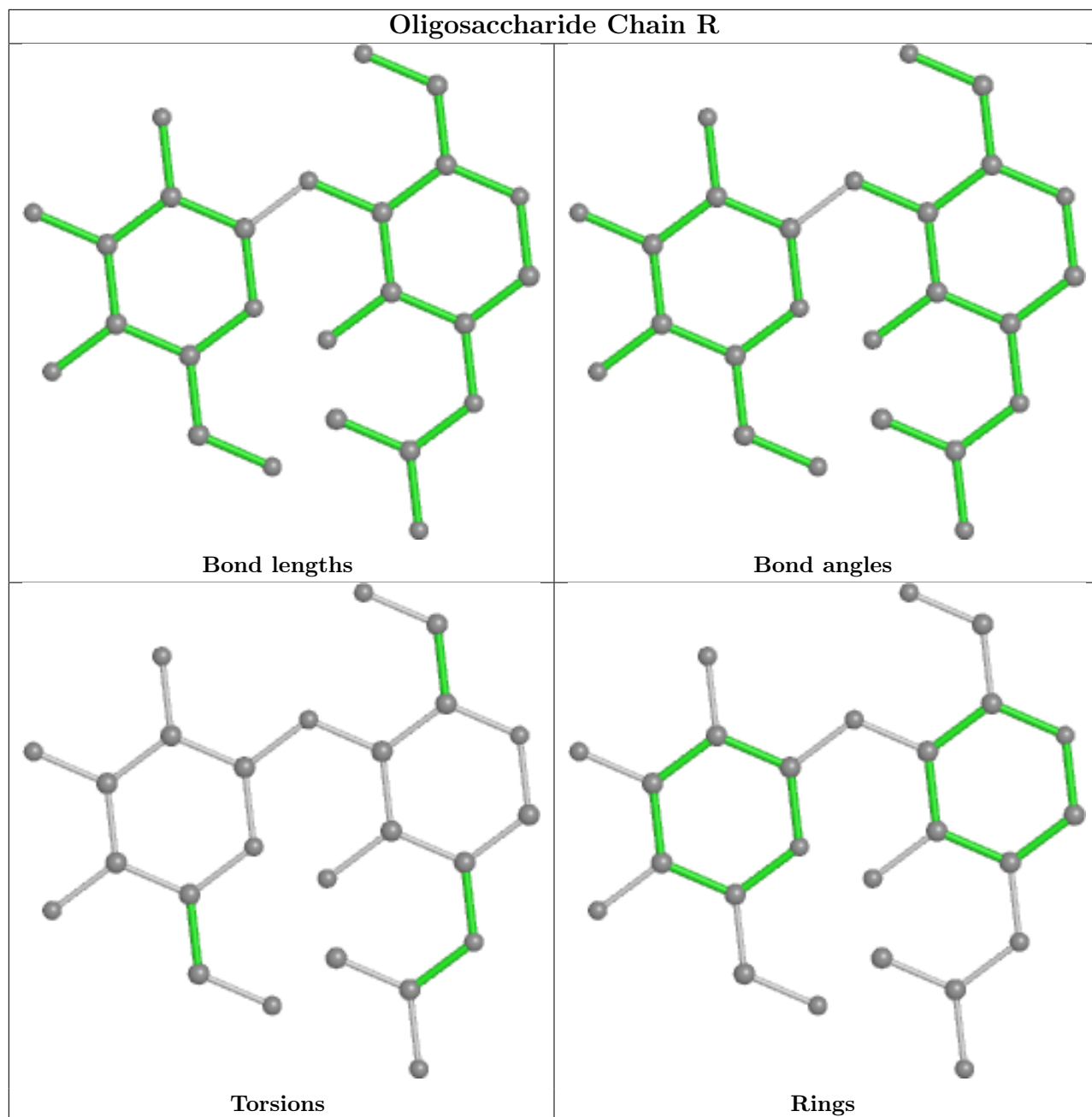


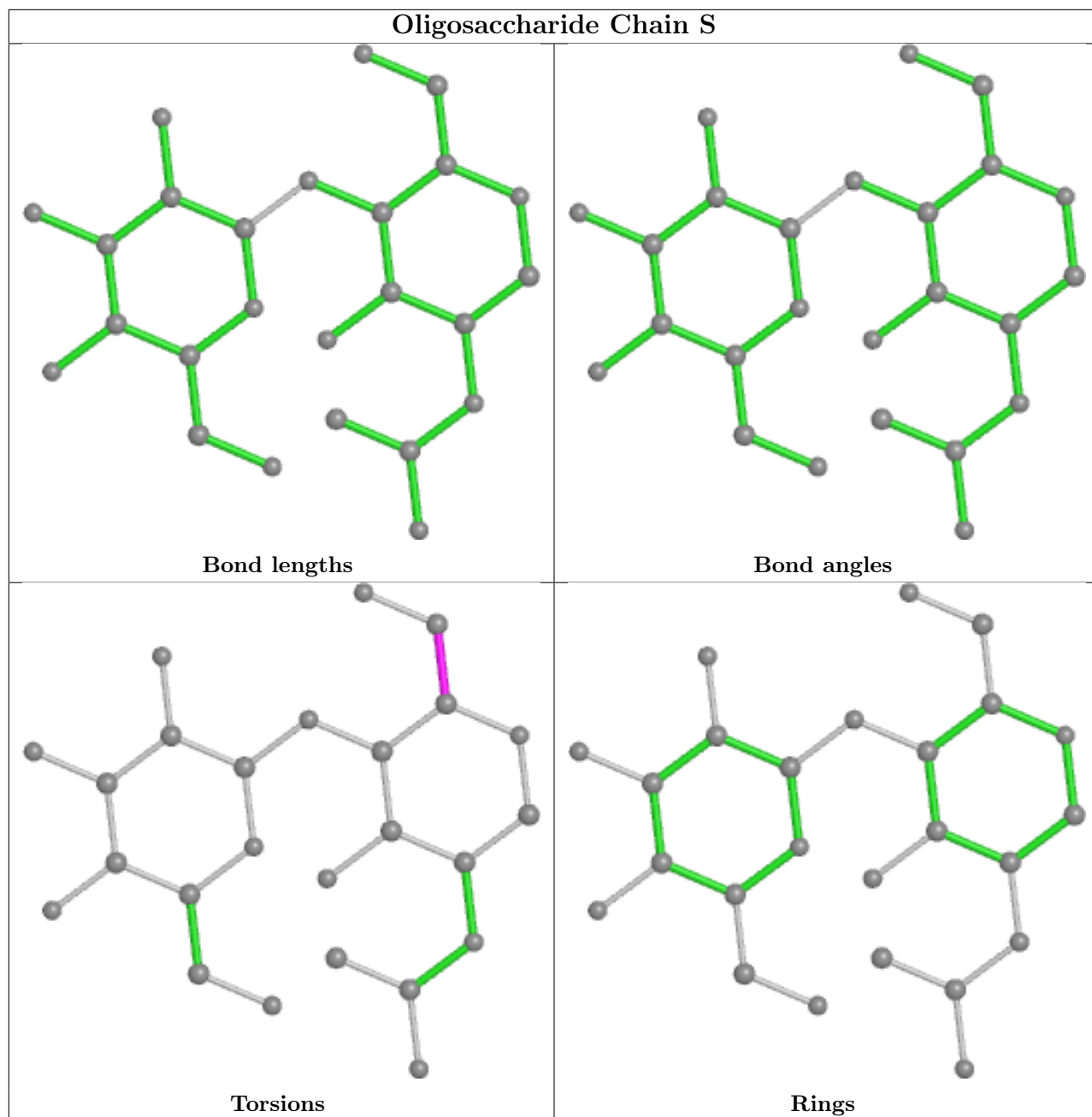


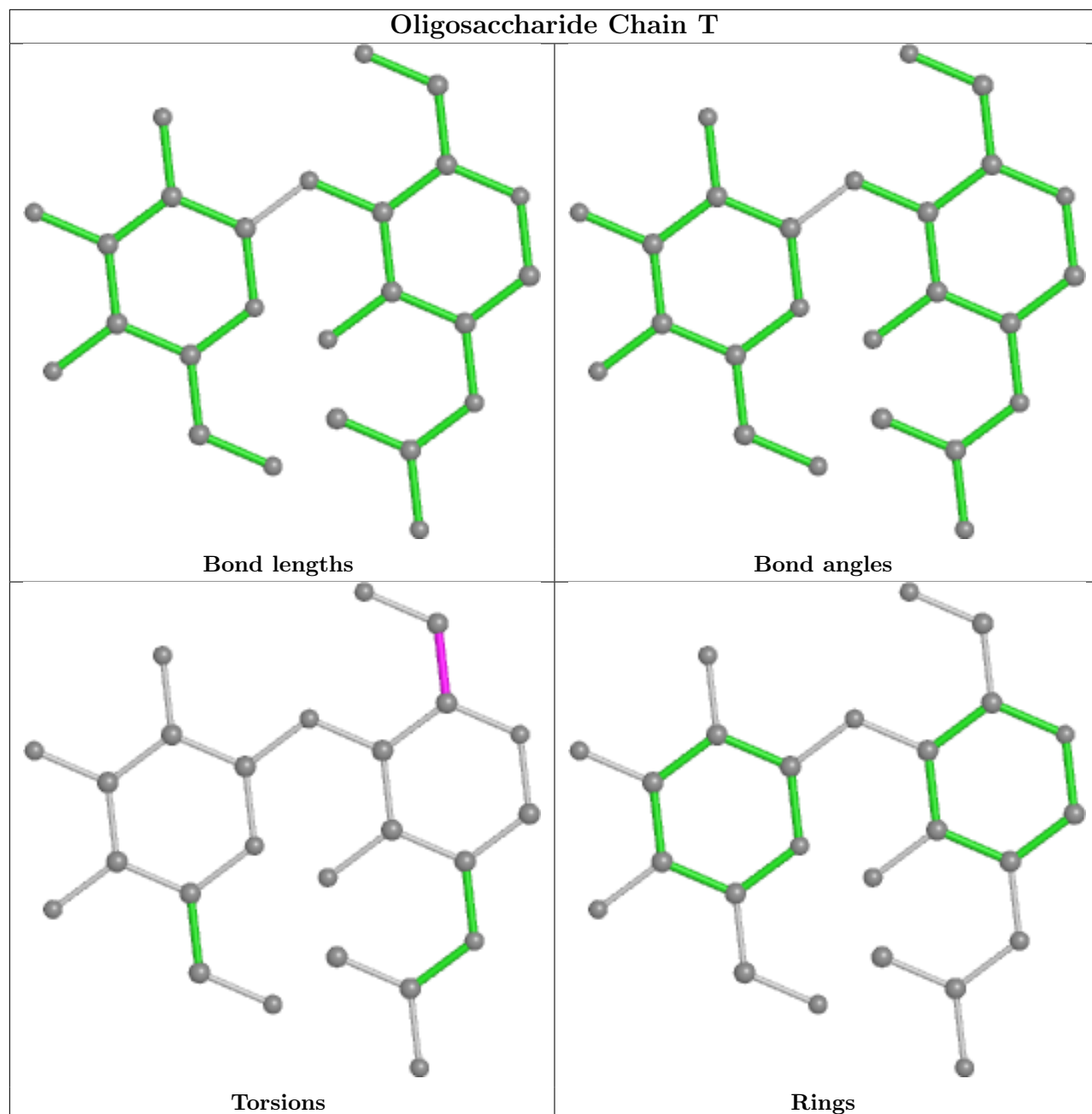


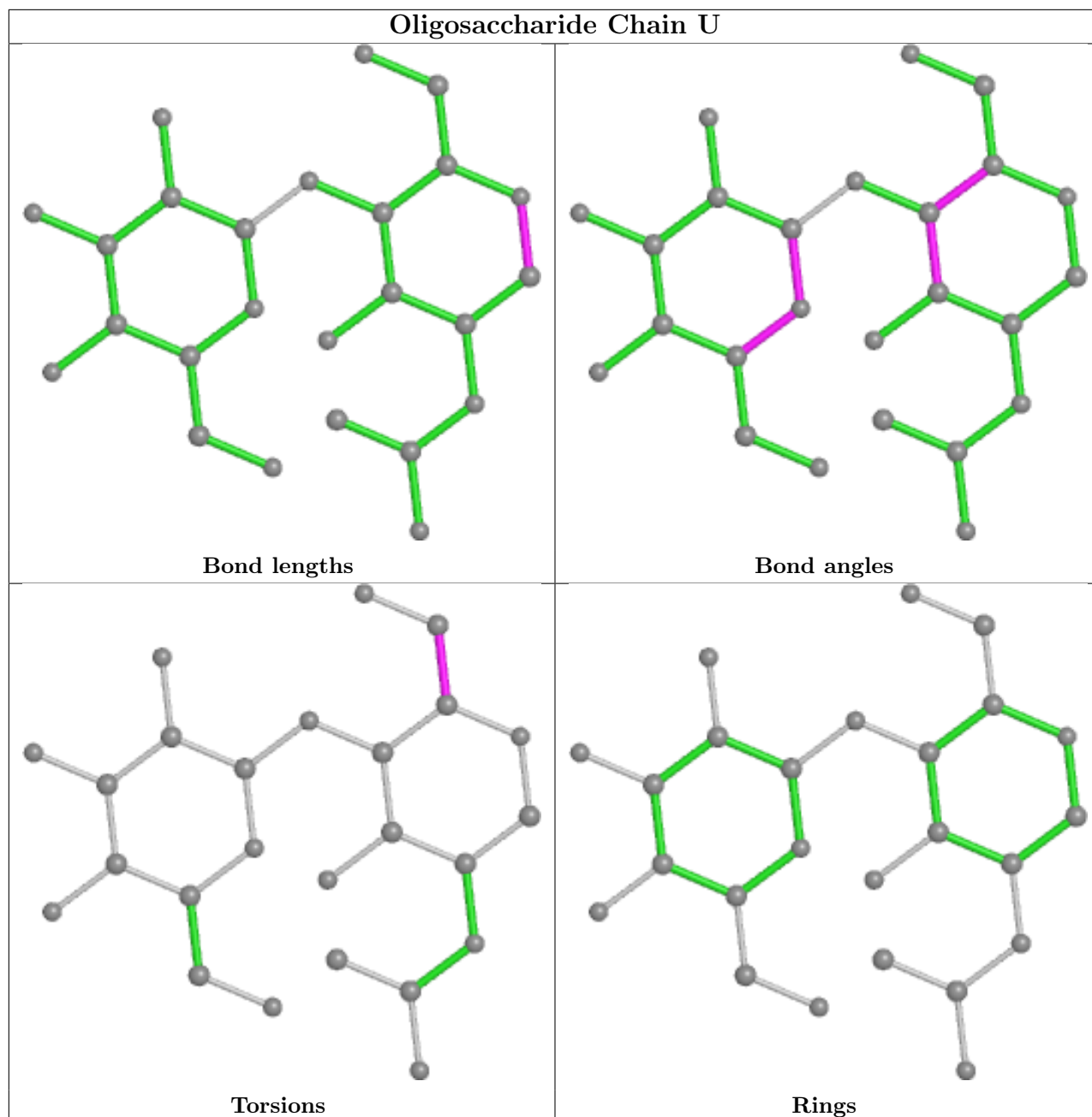












5.6 Ligand geometry [i](#)

Of 37 ligands modelled in this entry, 2 are monoatomic - leaving 35 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
4	NAG	C	1310	1	14,14,15	0.40	0	17,19,21	1.15	3 (17%)
4	NAG	C	1303	1	14,14,15	0.25	0	17,19,21	0.47	0
4	NAG	B	1303	1	14,14,15	0.27	0	17,19,21	0.46	0
4	NAG	B	1306	1	14,14,15	0.40	0	17,19,21	0.29	0
4	NAG	B	1310	1	14,14,15	0.26	0	17,19,21	0.44	0
4	NAG	D	904	2	14,14,15	0.34	0	17,19,21	0.48	0
4	NAG	B	1305	1	14,14,15	0.33	0	17,19,21	0.55	0
4	NAG	A	1305	1	14,14,15	0.27	0	17,19,21	0.35	0
4	NAG	D	906	2	14,14,15	0.24	0	17,19,21	0.46	0
4	NAG	A	1308	1	14,14,15	0.72	1 (7%)	17,19,21	0.72	1 (5%)
4	NAG	A	1303	1	14,14,15	0.38	0	17,19,21	0.37	0
4	NAG	C	1309	1	14,14,15	0.38	0	17,19,21	0.46	0
4	NAG	B	1301	1	14,14,15	0.25	0	17,19,21	0.55	0
4	NAG	A	1306	1	14,14,15	0.25	0	17,19,21	0.41	0
4	NAG	D	905	2	14,14,15	0.39	0	17,19,21	0.39	0
4	NAG	B	1308	1	14,14,15	0.39	0	17,19,21	0.41	0
4	NAG	C	1307	1	14,14,15	0.24	0	17,19,21	0.40	0
4	NAG	C	1302	1	14,14,15	0.73	1 (7%)	17,19,21	0.72	1 (5%)
4	NAG	B	1309	1	14,14,15	0.29	0	17,19,21	0.41	0
4	NAG	A	1309	1	14,14,15	0.25	0	17,19,21	0.44	0
4	NAG	C	1304	1	14,14,15	0.25	0	17,19,21	0.39	0
4	NAG	A	1310	1	14,14,15	0.33	0	17,19,21	0.43	0
4	NAG	C	1305	1	14,14,15	0.30	0	17,19,21	1.36	1 (5%)
4	NAG	C	1301	1	14,14,15	0.21	0	17,19,21	0.51	0
4	NAG	B	1304	1	14,14,15	0.28	0	17,19,21	0.46	0
4	NAG	C	1306	1	14,14,15	0.28	0	17,19,21	0.40	0
4	NAG	D	903	2	14,14,15	0.23	0	17,19,21	0.44	0
4	NAG	A	1307	1	14,14,15	0.42	0	17,19,21	0.73	1 (5%)
4	NAG	C	1308	1	14,14,15	0.25	0	17,19,21	0.47	0
4	NAG	A	1304	1	14,14,15	0.45	0	17,19,21	1.27	1 (5%)
4	NAG	A	1302	1	14,14,15	0.72	1 (7%)	17,19,21	0.62	1 (5%)
4	NAG	A	1301	1	14,14,15	0.20	0	17,19,21	0.39	0
4	NAG	B	1307	1	14,14,15	0.40	0	17,19,21	0.93	2 (11%)
4	NAG	B	1302	1	14,14,15	0.62	1 (7%)	17,19,21	0.64	1 (5%)
4	NAG	B	1311	1	14,14,15	0.40	0	17,19,21	0.71	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	C	1310	1	-	3/6/23/26	0/1/1/1
4	NAG	C	1303	1	-	4/6/23/26	0/1/1/1
4	NAG	B	1303	1	-	2/6/23/26	0/1/1/1
4	NAG	B	1306	1	-	2/6/23/26	0/1/1/1
4	NAG	B	1310	1	-	2/6/23/26	0/1/1/1
4	NAG	D	904	2	-	0/6/23/26	0/1/1/1
4	NAG	B	1305	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1305	1	-	2/6/23/26	0/1/1/1
4	NAG	D	906	2	-	4/6/23/26	0/1/1/1
4	NAG	A	1308	1	-	4/6/23/26	0/1/1/1
4	NAG	A	1303	1	-	0/6/23/26	0/1/1/1
4	NAG	C	1309	1	-	0/6/23/26	0/1/1/1
4	NAG	B	1301	1	-	3/6/23/26	0/1/1/1
4	NAG	A	1306	1	-	0/6/23/26	0/1/1/1
4	NAG	D	905	2	-	0/6/23/26	0/1/1/1
4	NAG	B	1308	1	-	0/6/23/26	0/1/1/1
4	NAG	C	1307	1	-	2/6/23/26	0/1/1/1
4	NAG	C	1302	1	-	0/6/23/26	0/1/1/1
4	NAG	B	1309	1	-	0/6/23/26	0/1/1/1
4	NAG	A	1309	1	-	4/6/23/26	0/1/1/1
4	NAG	C	1304	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1310	1	-	3/6/23/26	0/1/1/1
4	NAG	C	1305	1	-	0/6/23/26	0/1/1/1
4	NAG	C	1301	1	-	4/6/23/26	0/1/1/1
4	NAG	B	1304	1	-	4/6/23/26	0/1/1/1
4	NAG	C	1306	1	-	2/6/23/26	0/1/1/1
4	NAG	D	903	2	-	0/6/23/26	0/1/1/1
4	NAG	A	1307	1	-	4/6/23/26	0/1/1/1
4	NAG	C	1308	1	-	4/6/23/26	0/1/1/1
4	NAG	A	1304	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1302	1	-	1/6/23/26	0/1/1/1
4	NAG	A	1301	1	-	2/6/23/26	0/1/1/1
4	NAG	B	1307	1	-	1/6/23/26	0/1/1/1
4	NAG	B	1302	1	-	0/6/23/26	0/1/1/1
4	NAG	B	1311	1	-	4/6/23/26	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1308	NAG	O5-C1	-2.48	1.39	1.43
4	A	1302	NAG	C1-C2	2.45	1.56	1.52
4	C	1302	NAG	C1-C2	2.45	1.56	1.52
4	B	1302	NAG	C1-C2	2.03	1.55	1.52

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	1305	NAG	C1-O5-C5	4.90	118.83	112.19
4	A	1304	NAG	C1-O5-C5	4.00	117.61	112.19
4	C	1310	NAG	C2-N2-C7	2.75	126.82	122.90
4	B	1307	NAG	C1-O5-C5	2.61	115.73	112.19
4	A	1307	NAG	C1-O5-C5	2.60	115.72	112.19
4	C	1302	NAG	C1-O5-C5	2.57	115.67	112.19
4	B	1311	NAG	C1-O5-C5	2.50	115.58	112.19
4	C	1310	NAG	C1-C2-N2	2.48	114.73	110.49
4	B	1307	NAG	O5-C1-C2	2.46	115.18	111.29
4	B	1302	NAG	C1-O5-C5	2.22	115.20	112.19
4	C	1310	NAG	O5-C1-C2	2.21	114.77	111.29
4	A	1302	NAG	C1-O5-C5	2.08	115.02	112.19
4	A	1308	NAG	C3-C4-C5	2.07	113.93	110.24

There are no chirality outliers.

All (67) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	1310	NAG	C1-C2-N2-C7
4	C	1308	NAG	C4-C5-C6-O6
4	A	1309	NAG	C4-C5-C6-O6
4	C	1308	NAG	O5-C5-C6-O6
4	A	1307	NAG	C4-C5-C6-O6
4	A	1309	NAG	O5-C5-C6-O6
4	A	1310	NAG	C4-C5-C6-O6
4	B	1304	NAG	C4-C5-C6-O6
4	B	1301	NAG	C4-C5-C6-O6
4	C	1303	NAG	C4-C5-C6-O6
4	B	1306	NAG	C8-C7-N2-C2
4	C	1310	NAG	C8-C7-N2-C2
4	B	1311	NAG	O5-C5-C6-O6
4	A	1308	NAG	O5-C5-C6-O6
4	A	1307	NAG	O5-C5-C6-O6
4	B	1304	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	B	1305	NAG	O5-C5-C6-O6
4	B	1310	NAG	O5-C5-C6-O6
4	C	1304	NAG	O5-C5-C6-O6
4	A	1310	NAG	O5-C5-C6-O6
4	B	1301	NAG	O5-C5-C6-O6
4	C	1303	NAG	O5-C5-C6-O6
4	B	1311	NAG	C4-C5-C6-O6
4	B	1306	NAG	O7-C7-N2-C2
4	C	1310	NAG	O7-C7-N2-C2
4	C	1301	NAG	O5-C5-C6-O6
4	B	1310	NAG	C4-C5-C6-O6
4	B	1305	NAG	C4-C5-C6-O6
4	C	1306	NAG	O5-C5-C6-O6
4	A	1301	NAG	C8-C7-N2-C2
4	A	1301	NAG	O7-C7-N2-C2
4	A	1307	NAG	C8-C7-N2-C2
4	A	1307	NAG	O7-C7-N2-C2
4	A	1308	NAG	C8-C7-N2-C2
4	A	1308	NAG	O7-C7-N2-C2
4	A	1309	NAG	C8-C7-N2-C2
4	A	1309	NAG	O7-C7-N2-C2
4	B	1303	NAG	C8-C7-N2-C2
4	B	1303	NAG	O7-C7-N2-C2
4	B	1304	NAG	C8-C7-N2-C2
4	B	1304	NAG	O7-C7-N2-C2
4	B	1311	NAG	C8-C7-N2-C2
4	B	1311	NAG	O7-C7-N2-C2
4	C	1303	NAG	C8-C7-N2-C2
4	C	1303	NAG	O7-C7-N2-C2
4	C	1308	NAG	C8-C7-N2-C2
4	C	1308	NAG	O7-C7-N2-C2
4	D	906	NAG	C8-C7-N2-C2
4	D	906	NAG	O7-C7-N2-C2
4	A	1308	NAG	C4-C5-C6-O6
4	C	1304	NAG	C4-C5-C6-O6
4	C	1307	NAG	O5-C5-C6-O6
4	C	1307	NAG	C4-C5-C6-O6
4	A	1305	NAG	O5-C5-C6-O6
4	C	1306	NAG	C4-C5-C6-O6
4	A	1304	NAG	C1-C2-N2-C7
4	B	1307	NAG	O5-C5-C6-O6
4	A	1302	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	A	1305	NAG	C4-C5-C6-O6
4	D	906	NAG	C4-C5-C6-O6
4	C	1301	NAG	C4-C5-C6-O6
4	B	1301	NAG	C3-C2-N2-C7
4	D	906	NAG	O5-C5-C6-O6
4	A	1304	NAG	C3-C2-N2-C7
4	C	1301	NAG	C3-C2-N2-C7
4	A	1310	NAG	C1-C2-N2-C7
4	C	1301	NAG	C1-C2-N2-C7

There are no ring outliers.

8 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	1310	NAG	1	0
4	B	1305	NAG	1	0
4	D	906	NAG	1	0
4	B	1301	NAG	1	0
4	C	1302	NAG	1	0
4	C	1301	NAG	1	0
4	A	1302	NAG	1	0
4	B	1302	NAG	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.