



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 2, 2023 – 11:28 AM EDT

PDB ID : 6N4Y
Title : Metabotropic Glutamate Receptor 5 Extracellular Domain with Nb43
Authors : Koehl, A.; Hu, H.; Feng, D.; Sun, B.; Chu, M.; Weis, W.I.; Mathiesen, J.M.;
Skiniotis, G.; Kobilka, B.K.
Deposited on : 2018-11-20
Resolution : 3.26 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

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:

MolProbity : **FAILED**
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.26 Å.

There are no overall percentile quality scores available for this entry.

MolProbity and EDS failed to run properly - the sequence quality summary graphics cannot be shown.

2 Entry composition i

There are 7 unique types of molecules in this entry. The entry contains 19626 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 Metabotropic glutamate receptor 5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	507	3937	2485	671	745	36	0	0	0
1	B	517	4018	2537	689	754	38	0	0	0
1	C	480	3737	2363	638	702	34	0	0	0
1	D	511	3947	2490	671	748	38	0	0	0

There are 180 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-16	MET	-	initiating methionine	UNP P41594
A	-15	LEU	-	expression tag	UNP P41594
A	-14	LEU	-	expression tag	UNP P41594
A	-13	VAL	-	expression tag	UNP P41594
A	-12	ASN	-	expression tag	UNP P41594
A	-11	GLN	-	expression tag	UNP P41594
A	-10	SER	-	expression tag	UNP P41594
A	-9	HIS	-	expression tag	UNP P41594
A	-8	GLN	-	expression tag	UNP P41594
A	-7	GLY	-	expression tag	UNP P41594
A	-6	PHE	-	expression tag	UNP P41594
A	-5	ASN	-	expression tag	UNP P41594
A	-4	LYS	-	expression tag	UNP P41594
A	-3	GLU	-	expression tag	UNP P41594
A	-2	HIS	-	expression tag	UNP P41594
A	-1	THR	-	expression tag	UNP P41594
A	0	SER	-	expression tag	UNP P41594
A	1	LYS	-	expression tag	UNP P41594
A	2	MET	-	expression tag	UNP P41594
A	3	VAL	-	expression tag	UNP P41594
A	4	SER	-	expression tag	UNP P41594

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Chain	Residue	Modelled	Actual	Comment	Reference
A	5	ALA	-	expression tag	UNP P41594
A	6	ILE	-	expression tag	UNP P41594
A	7	VAL	-	expression tag	UNP P41594
A	8	LEU	-	expression tag	UNP P41594
A	9	TYR	-	expression tag	UNP P41594
A	10	VAL	-	expression tag	UNP P41594
A	11	LEU	-	expression tag	UNP P41594
A	12	LEU	-	expression tag	UNP P41594
A	13	ALA	-	expression tag	UNP P41594
A	14	ALA	-	expression tag	UNP P41594
A	15	ALA	-	expression tag	UNP P41594
A	16	ALA	-	expression tag	UNP P41594
A	17	HIS	-	expression tag	UNP P41594
A	18	SER	-	expression tag	UNP P41594
A	19	ALA	-	expression tag	UNP P41594
A	20	PHE	-	expression tag	UNP P41594
A	572	HIS	-	expression tag	UNP P41594
A	573	HIS	-	expression tag	UNP P41594
A	574	HIS	-	expression tag	UNP P41594
A	575	HIS	-	expression tag	UNP P41594
A	576	HIS	-	expression tag	UNP P41594
A	577	HIS	-	expression tag	UNP P41594
A	578	HIS	-	expression tag	UNP P41594
A	579	HIS	-	expression tag	UNP P41594
B	-16	MET	-	initiating methionine	UNP P41594
B	-15	LEU	-	expression tag	UNP P41594
B	-14	LEU	-	expression tag	UNP P41594
B	-13	VAL	-	expression tag	UNP P41594
B	-12	ASN	-	expression tag	UNP P41594
B	-11	GLN	-	expression tag	UNP P41594
B	-10	SER	-	expression tag	UNP P41594
B	-9	HIS	-	expression tag	UNP P41594
B	-8	GLN	-	expression tag	UNP P41594
B	-7	GLY	-	expression tag	UNP P41594
B	-6	PHE	-	expression tag	UNP P41594
B	-5	ASN	-	expression tag	UNP P41594
B	-4	LYS	-	expression tag	UNP P41594
B	-3	GLU	-	expression tag	UNP P41594
B	-2	HIS	-	expression tag	UNP P41594
B	-1	THR	-	expression tag	UNP P41594
B	0	SER	-	expression tag	UNP P41594
B	1	LYS	-	expression tag	UNP P41594

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Chain	Residue	Modelled	Actual	Comment	Reference
B	2	MET	-	expression tag	UNP P41594
B	3	VAL	-	expression tag	UNP P41594
B	4	SER	-	expression tag	UNP P41594
B	5	ALA	-	expression tag	UNP P41594
B	6	ILE	-	expression tag	UNP P41594
B	7	VAL	-	expression tag	UNP P41594
B	8	LEU	-	expression tag	UNP P41594
B	9	TYR	-	expression tag	UNP P41594
B	10	VAL	-	expression tag	UNP P41594
B	11	LEU	-	expression tag	UNP P41594
B	12	LEU	-	expression tag	UNP P41594
B	13	ALA	-	expression tag	UNP P41594
B	14	ALA	-	expression tag	UNP P41594
B	15	ALA	-	expression tag	UNP P41594
B	16	ALA	-	expression tag	UNP P41594
B	17	HIS	-	expression tag	UNP P41594
B	18	SER	-	expression tag	UNP P41594
B	19	ALA	-	expression tag	UNP P41594
B	20	PHE	-	expression tag	UNP P41594
B	572	HIS	-	expression tag	UNP P41594
B	573	HIS	-	expression tag	UNP P41594
B	574	HIS	-	expression tag	UNP P41594
B	575	HIS	-	expression tag	UNP P41594
B	576	HIS	-	expression tag	UNP P41594
B	577	HIS	-	expression tag	UNP P41594
B	578	HIS	-	expression tag	UNP P41594
B	579	HIS	-	expression tag	UNP P41594
C	-16	MET	-	initiating methionine	UNP P41594
C	-15	LEU	-	expression tag	UNP P41594
C	-14	LEU	-	expression tag	UNP P41594
C	-13	VAL	-	expression tag	UNP P41594
C	-12	ASN	-	expression tag	UNP P41594
C	-11	GLN	-	expression tag	UNP P41594
C	-10	SER	-	expression tag	UNP P41594
C	-9	HIS	-	expression tag	UNP P41594
C	-8	GLN	-	expression tag	UNP P41594
C	-7	GLY	-	expression tag	UNP P41594
C	-6	PHE	-	expression tag	UNP P41594
C	-5	ASN	-	expression tag	UNP P41594
C	-4	LYS	-	expression tag	UNP P41594
C	-3	GLU	-	expression tag	UNP P41594
C	-2	HIS	-	expression tag	UNP P41594

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-1	THR	-	expression tag	UNP P41594
C	0	SER	-	expression tag	UNP P41594
C	1	LYS	-	expression tag	UNP P41594
C	2	MET	-	expression tag	UNP P41594
C	3	VAL	-	expression tag	UNP P41594
C	4	SER	-	expression tag	UNP P41594
C	5	ALA	-	expression tag	UNP P41594
C	6	ILE	-	expression tag	UNP P41594
C	7	VAL	-	expression tag	UNP P41594
C	8	LEU	-	expression tag	UNP P41594
C	9	TYR	-	expression tag	UNP P41594
C	10	VAL	-	expression tag	UNP P41594
C	11	LEU	-	expression tag	UNP P41594
C	12	LEU	-	expression tag	UNP P41594
C	13	ALA	-	expression tag	UNP P41594
C	14	ALA	-	expression tag	UNP P41594
C	15	ALA	-	expression tag	UNP P41594
C	16	ALA	-	expression tag	UNP P41594
C	17	HIS	-	expression tag	UNP P41594
C	18	SER	-	expression tag	UNP P41594
C	19	ALA	-	expression tag	UNP P41594
C	20	PHE	-	expression tag	UNP P41594
C	572	HIS	-	expression tag	UNP P41594
C	573	HIS	-	expression tag	UNP P41594
C	574	HIS	-	expression tag	UNP P41594
C	575	HIS	-	expression tag	UNP P41594
C	576	HIS	-	expression tag	UNP P41594
C	577	HIS	-	expression tag	UNP P41594
C	578	HIS	-	expression tag	UNP P41594
C	579	HIS	-	expression tag	UNP P41594
D	-16	MET	-	initiating methionine	UNP P41594
D	-15	LEU	-	expression tag	UNP P41594
D	-14	LEU	-	expression tag	UNP P41594
D	-13	VAL	-	expression tag	UNP P41594
D	-12	ASN	-	expression tag	UNP P41594
D	-11	GLN	-	expression tag	UNP P41594
D	-10	SER	-	expression tag	UNP P41594
D	-9	HIS	-	expression tag	UNP P41594
D	-8	GLN	-	expression tag	UNP P41594
D	-7	GLY	-	expression tag	UNP P41594
D	-6	PHE	-	expression tag	UNP P41594
D	-5	ASN	-	expression tag	UNP P41594

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-4	LYS	-	expression tag	UNP P41594
D	-3	GLU	-	expression tag	UNP P41594
D	-2	HIS	-	expression tag	UNP P41594
D	-1	THR	-	expression tag	UNP P41594
D	0	SER	-	expression tag	UNP P41594
D	1	LYS	-	expression tag	UNP P41594
D	2	MET	-	expression tag	UNP P41594
D	3	VAL	-	expression tag	UNP P41594
D	4	SER	-	expression tag	UNP P41594
D	5	ALA	-	expression tag	UNP P41594
D	6	ILE	-	expression tag	UNP P41594
D	7	VAL	-	expression tag	UNP P41594
D	8	LEU	-	expression tag	UNP P41594
D	9	TYR	-	expression tag	UNP P41594
D	10	VAL	-	expression tag	UNP P41594
D	11	LEU	-	expression tag	UNP P41594
D	12	LEU	-	expression tag	UNP P41594
D	13	ALA	-	expression tag	UNP P41594
D	14	ALA	-	expression tag	UNP P41594
D	15	ALA	-	expression tag	UNP P41594
D	16	ALA	-	expression tag	UNP P41594
D	17	HIS	-	expression tag	UNP P41594
D	18	SER	-	expression tag	UNP P41594
D	19	ALA	-	expression tag	UNP P41594
D	20	PHE	-	expression tag	UNP P41594
D	572	HIS	-	expression tag	UNP P41594
D	573	HIS	-	expression tag	UNP P41594
D	574	HIS	-	expression tag	UNP P41594
D	575	HIS	-	expression tag	UNP P41594
D	576	HIS	-	expression tag	UNP P41594
D	577	HIS	-	expression tag	UNP P41594
D	578	HIS	-	expression tag	UNP P41594
D	579	HIS	-	expression tag	UNP P41594

- Molecule 2 is a protein called Nanobody 43.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	E	123	Total	C	N	O	S	0	0	0
			933	580	161	187	5			
2	F	123	Total	C	N	O	S	0	0	0
			927	577	158	187	5			
2	G	123	Total	C	N	O	S	0	0	0
			929	577	160	187	5			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	H	119	893	558	152	178	5	0	0	0

- Molecule 3 is an oligosaccharide called 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
			Total	C	N	O			
3	I	3	38	22	2	14	0	0	0

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)][alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
4	J	7	81	46	2	33	0	0	0

- Molecule 5 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-3)-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
			Total	C	N	O			
5	K	5	60	34	2	24	0	0	0

- Molecule 6 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)][alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
6	L	6	70	40	2	28	0	0	0

- Molecule 7 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



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

MolProbity and EDS failed to run properly - this section is therefore empty.

3 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	95.53Å 158.39Å 111.96Å 90.00° 101.93° 90.00°	Depositor
Resolution (Å)	38.87 – 3.26	Depositor
% Data completeness (in resolution range)	98.2 (38.87-3.26)	Depositor
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.99 (at 3.25Å)	Xtrriage
Refinement program	PHENIX 1.14_3211	Depositor
R, R_{free}	0.199 , 0.251	Depositor
Wilson B-factor (Å ²)	70.7	Xtrriage
Anisotropy	0.610	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	19626	wwPDB-VP
Average B, all atoms (Å ²)	79.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 11.41% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

4 Model quality [i](#)

4.1 Standard geometry [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.2 Too-close contacts [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3 Torsion angles [i](#)

4.3.1 Protein backbone [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3.2 Protein sidechains [i](#)

MolProbity failed to run properly - this section is therefore empty.

4.3.3 RNA [i](#)

MolProbity failed to run properly - this section is therefore empty.

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

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

4.5 Carbohydrates [i](#)

21 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	I	1	1,3	14,14,15	0.37	0	17,19,21	0.93	1 (5%)
3	NAG	I	2	3	14,14,15	0.40	0	17,19,21	0.60	0
3	FUC	I	3	3	10,10,11	1.10	0	14,14,16	1.20	1 (7%)
4	NAG	J	1	1,4	14,14,15	1.06	1 (7%)	17,19,21	0.75	0
4	NAG	J	2	4	14,14,15	0.64	1 (7%)	17,19,21	0.86	1 (5%)
4	BMA	J	3	4	11,11,12	1.22	2 (18%)	15,15,17	1.31	2 (13%)
4	MAN	J	4	4	11,11,12	0.74	0	15,15,17	0.99	2 (13%)
4	MAN	J	5	4	11,11,12	0.61	0	15,15,17	1.06	2 (13%)
4	FUC	J	6	4	10,10,11	1.46	2 (20%)	14,14,16	1.34	3 (21%)
4	FUC	J	7	4	10,10,11	0.77	0	14,14,16	0.88	0
5	NAG	K	1	1,5	14,14,15	0.33	0	17,19,21	0.81	1 (5%)
5	NAG	K	2	5	14,14,15	0.65	1 (7%)	17,19,21	0.64	0
5	BMA	K	3	5	11,11,12	0.69	0	15,15,17	0.98	1 (6%)
5	MAN	K	4	5	11,11,12	0.61	0	15,15,17	1.02	2 (13%)
5	FUC	K	5	5	10,10,11	0.69	0	14,14,16	0.80	0
6	NAG	L	1	1,6	14,14,15	0.30	0	17,19,21	0.59	0
6	NAG	L	2	6	14,14,15	0.27	0	17,19,21	0.50	0
6	BMA	L	3	6	11,11,12	0.70	0	15,15,17	0.81	0
6	MAN	L	4	6	11,11,12	0.75	0	15,15,17	1.17	2 (13%)
6	FUC	L	5	6	10,10,11	0.69	0	14,14,16	0.96	1 (7%)
6	FUC	L	6	6	10,10,11	0.90	1 (10%)	14,14,16	0.76	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	I	1	1,3	-	2/6/23/26	0/1/1/1
3	NAG	I	2	3	-	0/6/23/26	0/1/1/1
3	FUC	I	3	3	-	-	0/1/1/1
4	NAG	J	1	1,4	-	4/6/23/26	0/1/1/1
4	NAG	J	2	4	-	0/6/23/26	0/1/1/1
4	BMA	J	3	4	-	2/2/19/22	0/1/1/1
4	MAN	J	4	4	-	0/2/19/22	0/1/1/1
4	MAN	J	5	4	-	0/2/19/22	0/1/1/1
4	FUC	J	6	4	-	-	0/1/1/1
4	FUC	J	7	4	-	-	0/1/1/1

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

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	J	1	NAG	O5-C1	-3.70	1.37	1.43
4	J	6	FUC	C1-C2	2.87	1.58	1.52
4	J	3	BMA	O3-C3	2.65	1.49	1.43
5	K	2	NAG	O5-C1	-2.24	1.40	1.43
4	J	2	NAG	O5-C1	-2.20	1.40	1.43
6	L	6	FUC	O5-C1	-2.18	1.40	1.43
4	J	6	FUC	C4-C5	2.13	1.57	1.52
4	J	3	BMA	C4-C5	2.00	1.57	1.53

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	I	1	NAG	C1-O5-C5	3.43	116.84	112.19
4	J	3	BMA	O3-C3-C2	3.39	116.49	109.99
4	J	5	MAN	C1-O5-C5	3.02	116.28	112.19
6	L	4	MAN	C1-O5-C5	2.97	116.21	112.19
5	K	4	MAN	C1-O5-C5	2.74	115.91	112.19
4	J	4	MAN	C1-O5-C5	2.74	115.91	112.19
4	J	6	FUC	O5-C5-C4	2.65	114.28	109.52
4	J	6	FUC	O2-C2-C1	2.56	114.40	109.15
5	K	1	NAG	C1-O5-C5	2.56	115.66	112.19
3	I	3	FUC	O5-C5-C4	2.56	114.12	109.52
4	J	2	NAG	O4-C4-C3	-2.39	104.83	110.35
4	J	3	BMA	C1-O5-C5	2.24	115.22	112.19
4	J	6	FUC	O5-C1-C2	-2.21	107.36	110.77
5	K	3	BMA	C1-C2-C3	-2.21	106.95	109.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	L	5	FUC	C1-O5-C5	2.16	117.68	112.78
5	K	4	MAN	O2-C2-C3	-2.16	105.80	110.14
4	J	5	MAN	O2-C2-C3	-2.10	105.94	110.14
6	L	4	MAN	O2-C2-C3	-2.07	106.00	110.14
4	J	4	MAN	O2-C2-C3	-2.06	106.00	110.14

There are no chirality outliers.

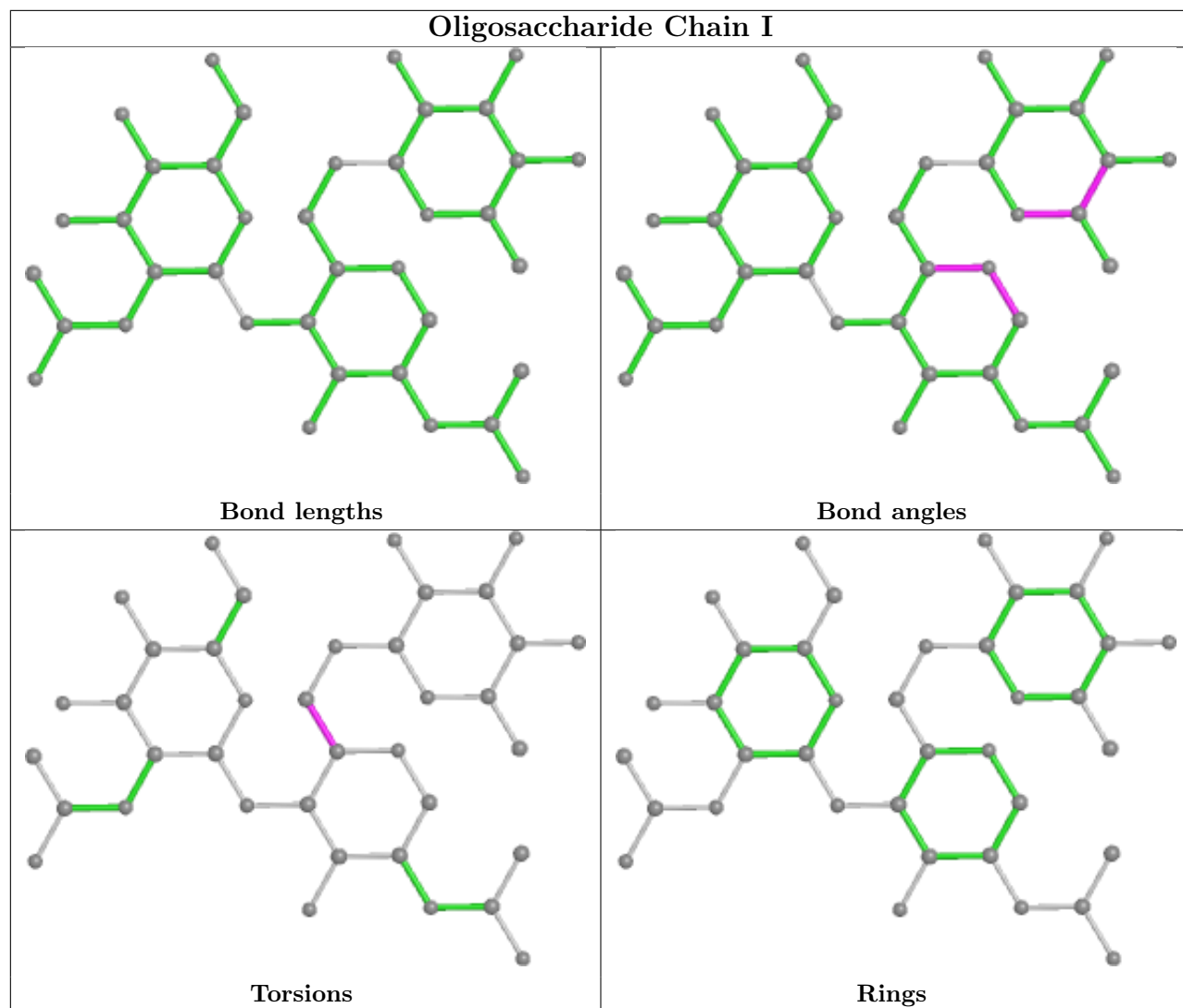
All (14) torsion outliers are listed below:

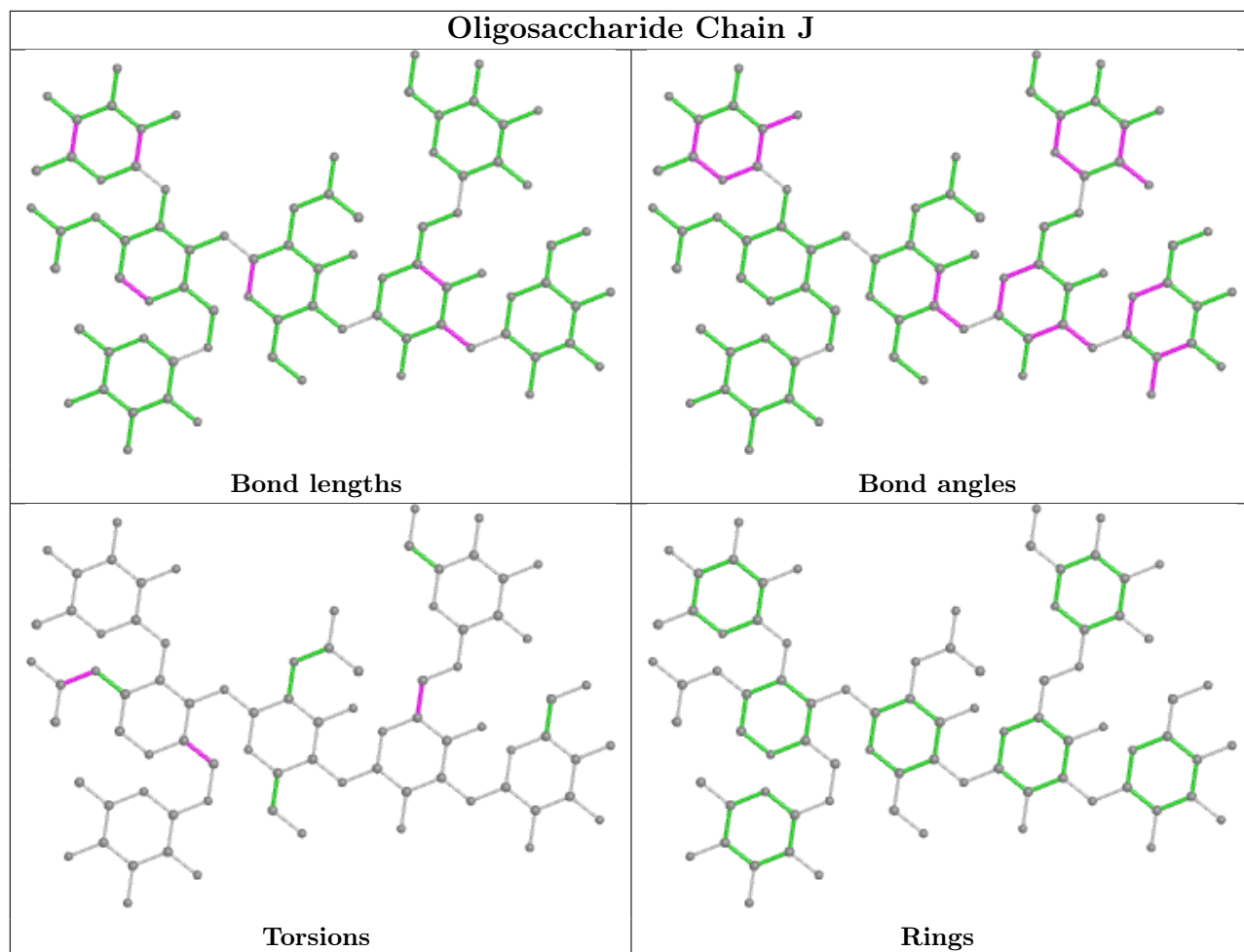
Mol	Chain	Res	Type	Atoms
4	J	3	BMA	O5-C5-C6-O6
3	I	1	NAG	O5-C5-C6-O6
4	J	3	BMA	C4-C5-C6-O6
4	J	1	NAG	O5-C5-C6-O6
5	K	1	NAG	O5-C5-C6-O6
6	L	3	BMA	O5-C5-C6-O6
3	I	1	NAG	C4-C5-C6-O6
4	J	1	NAG	C4-C5-C6-O6
5	K	1	NAG	C4-C5-C6-O6
4	J	1	NAG	C8-C7-N2-C2
4	J	1	NAG	O7-C7-N2-C2
6	L	3	BMA	C4-C5-C6-O6
5	K	2	NAG	O5-C5-C6-O6
5	K	2	NAG	C4-C5-C6-O6

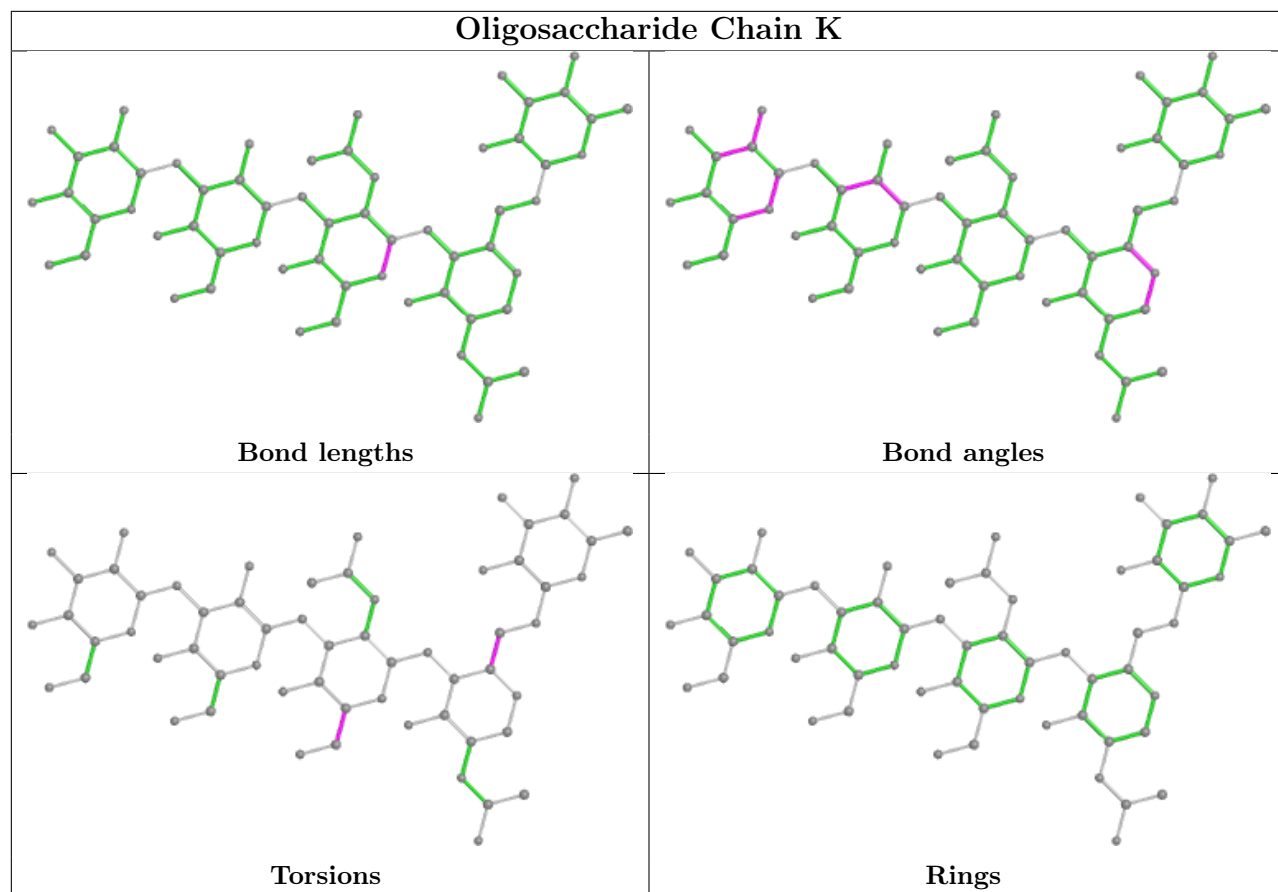
There are no ring outliers.

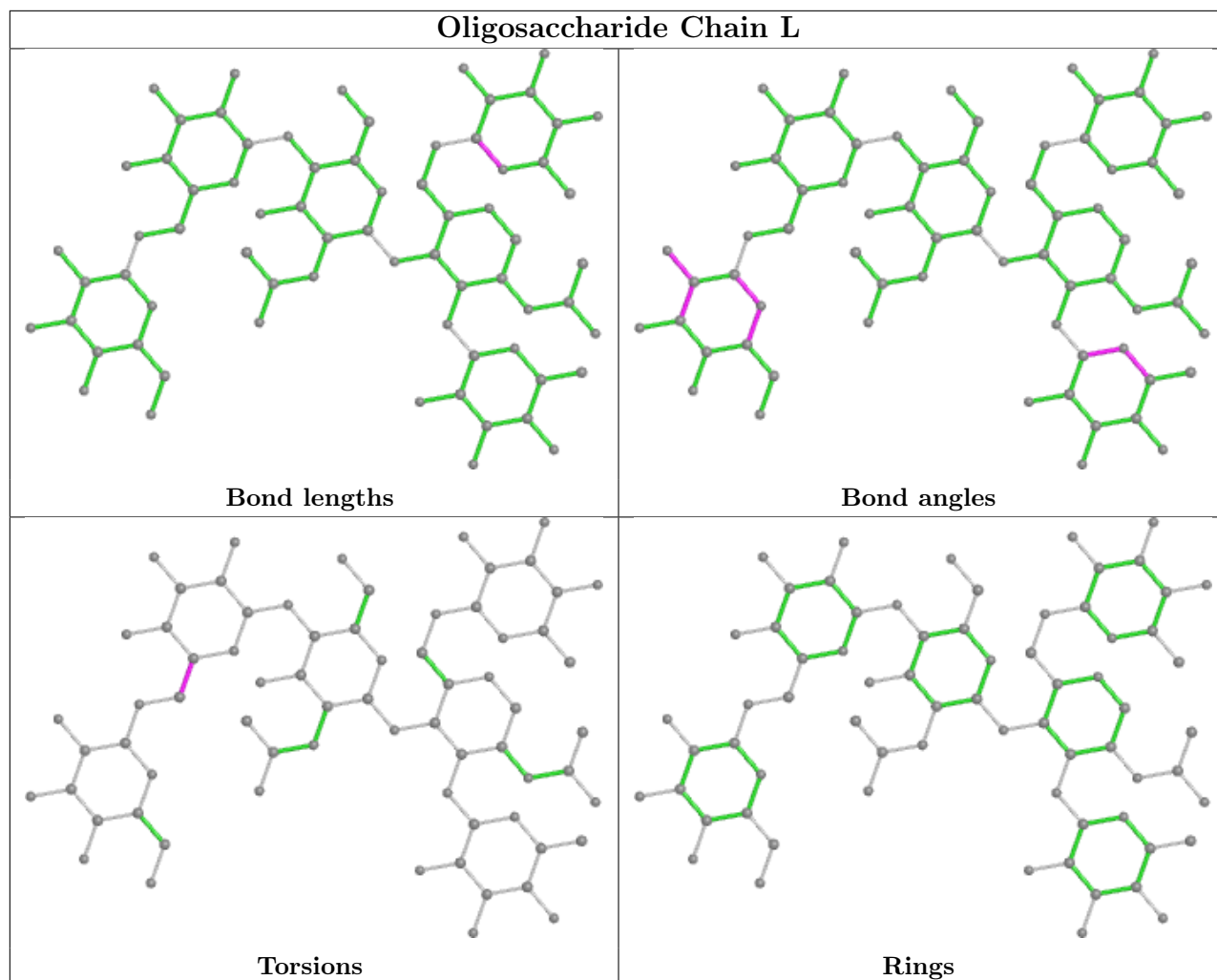
No monomer is involved in short contacts.

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









4.6 Ligand geometry [i](#)

4 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
7	NAG	C	606	1	14,14,15	0.62	0	17,19,21	0.62	1 (5%)
7	NAG	D	607	1	14,14,15	0.50	0	17,19,21	0.52	0
7	NAG	B	608	1	14,14,15	0.51	0	17,19,21	0.59	1 (5%)
7	NAG	A	601	1	14,14,15	0.25	0	17,19,21	0.36	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
7	NAG	C	606	1	-	0/6/23/26	0/1/1/1
7	NAG	D	607	1	-	2/6/23/26	0/1/1/1
7	NAG	B	608	1	-	1/6/23/26	0/1/1/1
7	NAG	A	601	1	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	C	606	NAG	C1-O5-C5	2.09	115.03	112.19
7	B	608	NAG	C1-O5-C5	2.00	114.91	112.19

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	D	607	NAG	O5-C5-C6-O6
7	D	607	NAG	C4-C5-C6-O6
7	B	608	NAG	O5-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

4.7 Other polymers [i](#)

There are no such residues in this entry.

4.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

5 Fit of model and data [i](#)

5.1 Protein, DNA and RNA chains [i](#)

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

5.3 Carbohydrates [i](#)

EDS failed to run properly - this section is therefore empty.

5.4 Ligands [i](#)

EDS failed to run properly - this section is therefore empty.

5.5 Other polymers [i](#)

EDS failed to run properly - this section is therefore empty.