



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 10:04 PM UTC

PDB ID : 2BUA / pdb_00002bua
Title : Crystal Structure Of Porcine Dipeptidyl Peptidase IV (Cd26) in Complex With a Low Molecular Weight Inhibitor.
Authors : Nordhoff, S.; Cerezo-Galvez, S.; Feurer, A.; Hill, O.; Matassa, V.G.; Metz, G.; Rummey, C.; Thiemann, M.; Edwards, P.J.
Deposited on : 2005-06-09
Resolution : 2.56 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

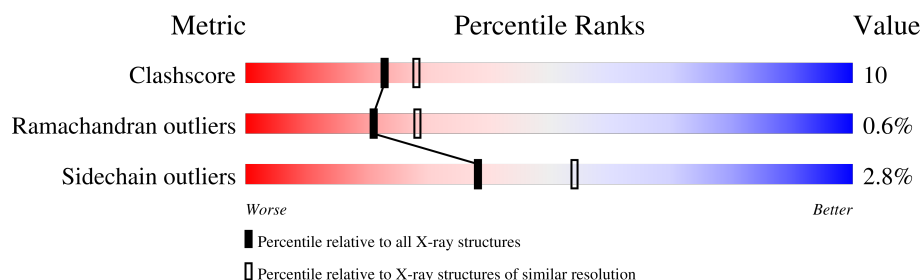
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.56 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)	Similar resolution (#Entries, resolution range(Å))
Clashscore	190562	1897 (2.58-2.54)
Ramachandran outliers	187476	1875 (2.58-2.54)
Sidechain outliers	187428	1875 (2.58-2.54)

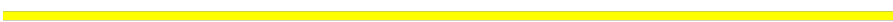
The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively.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

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	728	
1	B	728	
1	C	728	
1	D	728	
2	E	2	
2	F	2	
2	G	2	
2	H	2	

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Mol	Chain	Length	Quality of chain
2	I	2	 100%
2	J	2	 50% 50%
2	K	2	 100%
2	L	2	 100%
2	M	2	 50% 50%

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
2	NAG	F	1	X	-	-	-
2	NAG	F	2	X	-	-	-
2	NAG	G	1	X	-	-	-
2	NAG	I	2	X	-	-	-
2	NAG	J	1	X	-	-	-
2	NAG	K	1	X	-	-	-
2	NAG	L	1	X	-	-	-
2	NAG	L	2	X	-	-	-
3	NAG	A	1092	X	-	-	-
3	NAG	C	1092	X	-	-	-
3	NAG	D	1085	X	-	-	-

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 25244 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 DIPEPTIDYL PEPTIDASE IV.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	728	Total	C	N	O	S	0	0	0
			5966	3825	986	1132	23			
1	B	728	Total	C	N	O	S	0	0	0
			5966	3825	986	1132	23			
1	C	728	Total	C	N	O	S	0	0	0
			5966	3825	986	1132	23			
1	D	728	Total	C	N	O	S	0	0	0
			5966	3825	986	1132	23			

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	F	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	G	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	H	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	I	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	J	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	K	2	Total	C	N	O	0	0	0
			28	16	2	10			
2	L	2	Total	C	N	O	0	0	0
			28	16	2	10			

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	M	2	Total	C	N	O	0	0	0
			28	16	2	10			

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



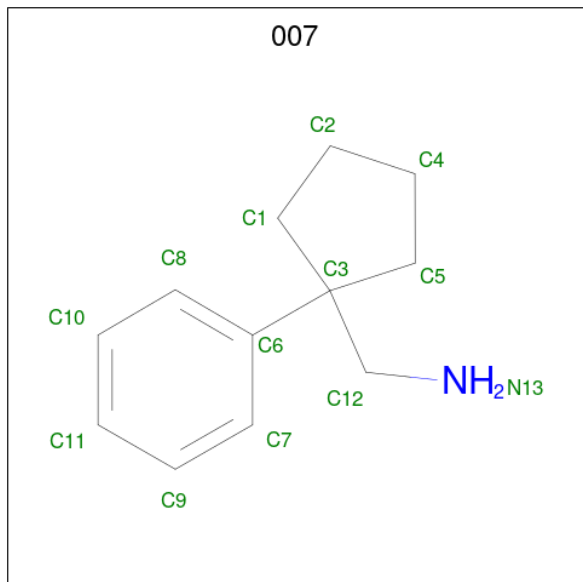
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
			14	8	1	5		
3	C	1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

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

- Molecule 4 is 1-METHYLAMINE-1-BENZYL-CYCLOPENTANE (CCD ID: 007) (formula: C₁₂H₁₇N).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	N	0	0
			13	12	1		
4	B	1	Total	C	N	0	0
			13	12	1		
4	C	1	Total	C	N	0	0
			13	12	1		
4	D	1	Total	C	N	0	0
			13	12	1		

- Molecule 5 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	O	S	0	0
			5	4	1		
5	A	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		
5	C	1	Total	O	S	0	0
			5	4	1		
5	C	1	Total	O	S	0	0
			5	4	1		
5	D	1	Total	O	S	0	0
			5	4	1		
5	D	1	Total	O	S	0	0
			5	4	1		

- Molecule 6 is water.

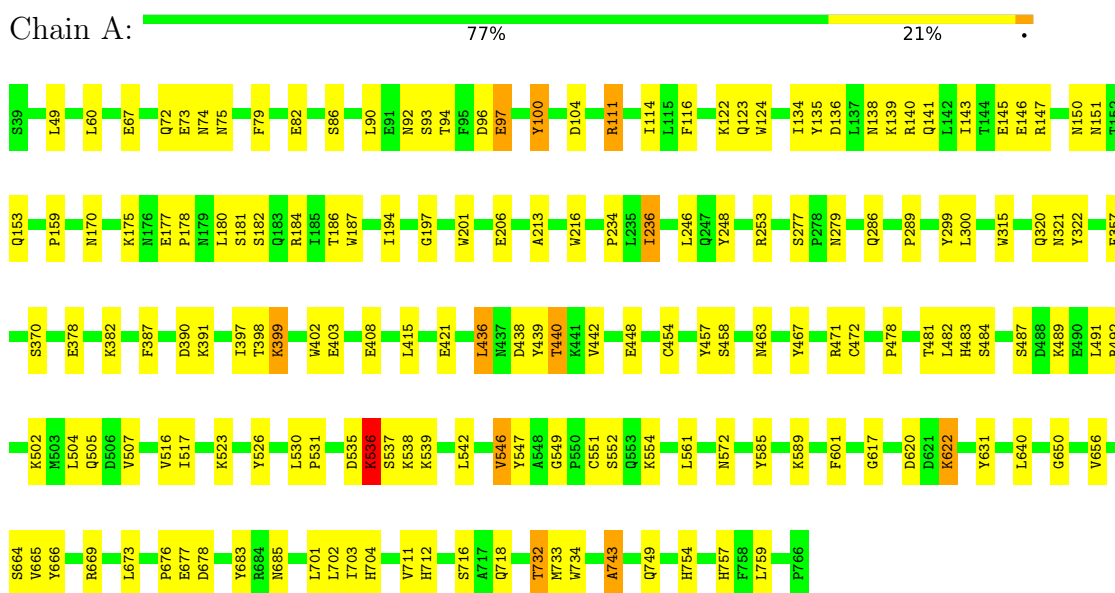
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	186	Total	O	0	0
			186	186		
6	B	254	Total	O	0	0
			254	254		
6	C	207	Total	O	0	0
			207	207		
6	D	179	Total	O	0	0
			179	179		

3 Residue-property plots

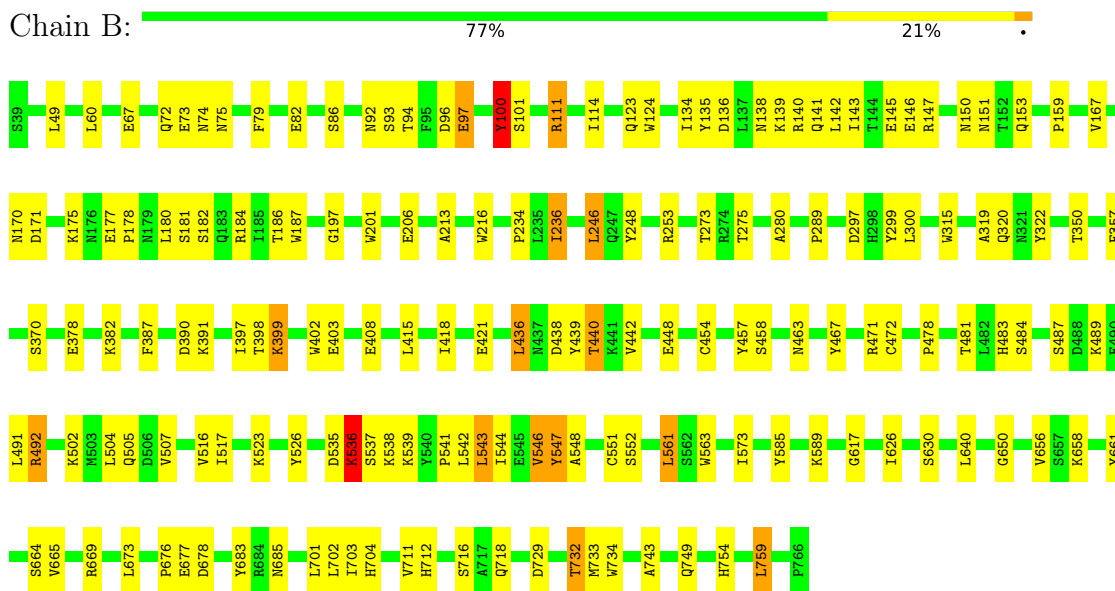
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

Note EDS was not executed.

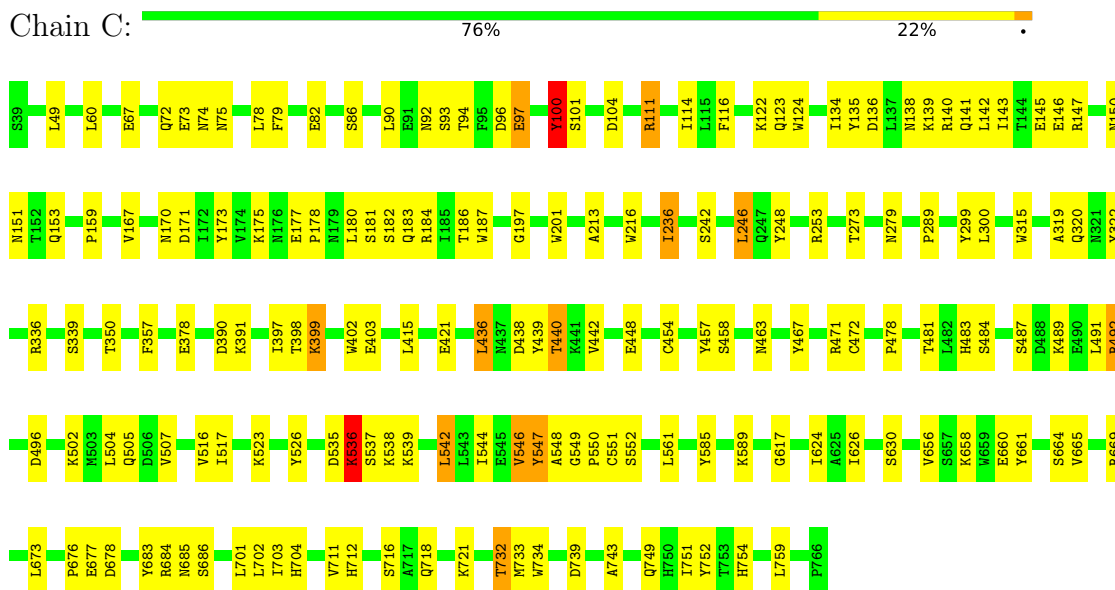
• Molecule 1: DIPEPTIDYL PEPTIDASE IV



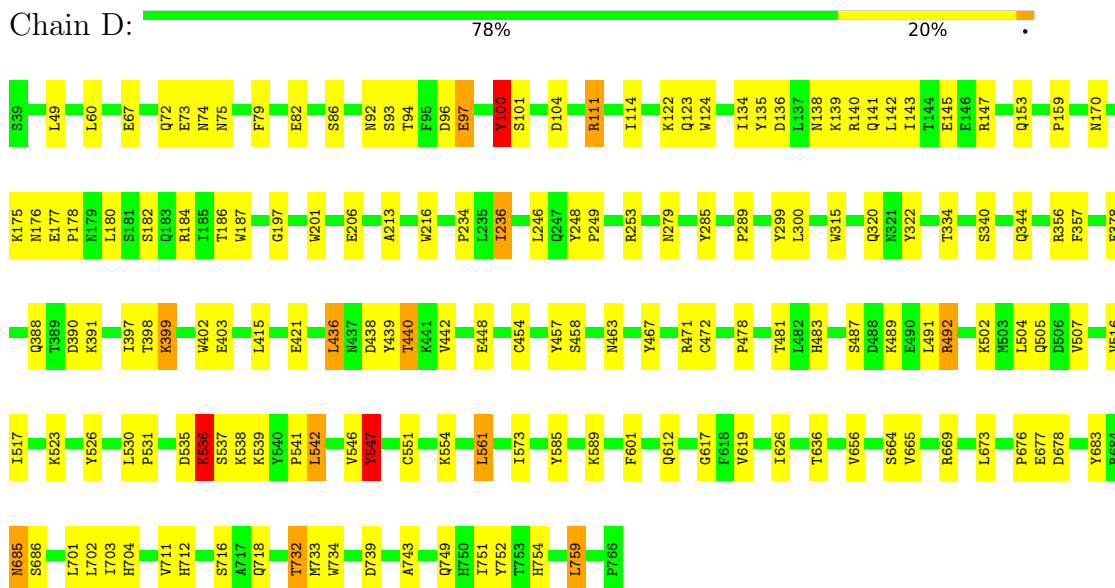
• Molecule 1: DIPEPTIDYL PEPTIDASE IV



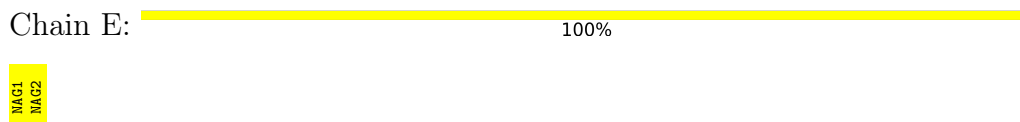
- Molecule 1: DIPEPTIDYL PEPTIDASE IV



- Molecule 1: DIPEPTIDYL PEPTIDASE IV



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

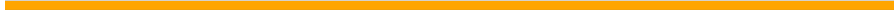


- Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:  100%

MAG1
MAG2

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

Chain G:  100%

MAG1
MAG2

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

Chain H:  50% 50%

MAG1
MAG2

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

Chain I:  100%

MAG1
MAG2

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

Chain J:  50% 50%

MAG1
MAG2

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

Chain K:  100%

MAG1
MAG2

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

Chain L:  100%

MAG1
MAG2

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

Chain M: 

MAG1
MAG2

4 Data and refinement statistics

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

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	62.42Å 118.13Å 133.32Å 112.40° 94.98° 90.99°	Depositor
Resolution (Å)	20.00 – 2.56	Depositor
% Data completeness (in resolution range)	(Not available) (20.00-2.56)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNX 2002	Depositor
R, R_{free}	0.220 , 0.256	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	25244	wwPDB-VP
Average B, all atoms (Å ²)	47.0	wwPDB-VP

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, NAG, 007

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.44	0/6141	0.91	19/8353 (0.2%)
1	B	0.45	0/6141	0.90	20/8353 (0.2%)
1	C	0.45	0/6141	0.91	21/8353 (0.3%)
1	D	0.44	0/6141	0.90	20/8353 (0.2%)
All	All	0.45	0/24564	0.91	80/33412 (0.2%)

There are no bond length outliers.

All (80) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	492	ARG	NE-CZ-NH2	9.51	127.76	119.20
1	A	492	ARG	NE-CZ-NH2	9.09	127.38	119.20
1	C	492	ARG	NE-CZ-NH1	-8.88	112.62	121.50
1	A	492	ARG	NE-CZ-NH1	-8.43	113.07	121.50
1	C	656	VAL	N-CA-C	-7.55	99.14	109.55
1	C	492	ARG	CD-NE-CZ	7.48	134.87	124.40
1	A	492	ARG	CD-NE-CZ	7.36	134.70	124.40
1	B	492	ARG	CD-NE-CZ	7.14	134.40	124.40
1	D	492	ARG	CD-NE-CZ	6.97	134.16	124.40
1	D	656	VAL	N-CA-C	-6.91	99.81	109.21
1	B	492	ARG	NE-CZ-NH2	-6.83	113.06	119.20
1	D	492	ARG	NE-CZ-NH2	-6.74	113.13	119.20
1	B	656	VAL	N-CA-C	-6.64	98.77	108.87
1	B	458	SER	N-CA-C	-6.56	99.34	109.24
1	D	458	SER	N-CA-C	-6.32	99.69	109.24
1	C	458	SER	N-CA-C	-6.29	99.74	109.24
1	A	458	SER	N-CA-C	-6.28	99.75	109.24
1	A	656	VAL	N-CA-C	-6.28	99.32	108.87
1	C	357	PHE	N-CA-C	-6.25	105.97	113.97
1	D	664	SER	N-CA-C	6.18	117.68	111.07

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	357	PHE	N-CA-C	-6.18	106.06	113.97
1	C	630	SER	CB-CA-C	-6.17	108.84	117.23
1	B	357	PHE	N-CA-C	-6.16	106.09	113.97
1	C	664	SER	N-CA-C	6.14	117.64	111.07
1	A	206	GLU	N-CA-C	6.09	120.84	113.41
1	D	357	PHE	N-CA-C	-6.08	106.19	113.97
1	A	743	ALA	N-CA-C	6.07	120.70	112.88
1	B	664	SER	N-CA-C	6.05	117.54	111.07
1	B	743	ALA	N-CA-C	6.03	120.66	112.88
1	B	546	VAL	N-CA-C	6.01	118.37	108.99
1	A	300	LEU	N-CA-C	-6.00	98.95	108.73
1	B	492	ARG	NE-CZ-NH1	5.97	127.47	121.50
1	A	664	SER	N-CA-C	5.96	117.45	111.07
1	C	546	VAL	N-CA-C	5.95	118.76	108.95
1	C	743	ALA	N-CA-C	5.94	120.54	112.88
1	D	492	ARG	NE-CZ-NH1	5.92	127.42	121.50
1	D	546	VAL	N-CA-C	5.88	117.91	108.85
1	B	448	GLU	N-CA-C	5.82	120.08	112.92
1	B	630	SER	CB-CA-C	-5.79	109.35	117.23
1	D	743	ALA	N-CA-C	5.78	120.33	112.88
1	D	547	TYR	N-CA-C	-5.75	98.56	110.80
1	D	448	GLU	N-CA-C	5.74	119.98	112.92
1	C	492	ARG	N-CA-C	5.72	116.84	108.14
1	C	683	TYR	N-CA-C	-5.66	104.50	111.40
1	B	454	CYS	N-CA-C	5.64	118.06	108.02
1	D	300	LEU	N-CA-C	-5.62	99.57	108.73
1	C	448	GLU	N-CA-C	5.61	119.82	112.92
1	C	300	LEU	N-CA-C	-5.60	99.60	108.73
1	D	454	CYS	N-CA-C	5.60	117.99	108.02
1	D	206	GLU	N-CA-C	5.59	120.75	113.88
1	A	683	TYR	N-CA-C	-5.57	104.61	111.40
1	C	454	CYS	N-CA-C	5.57	117.93	108.02
1	A	454	CYS	N-CA-C	5.53	117.86	108.02
1	B	548	ALA	N-CA-C	5.52	119.32	112.58
1	A	448	GLU	N-CA-C	5.52	119.71	112.92
1	B	300	LEU	N-CA-C	-5.50	99.76	108.73
1	D	683	TYR	N-CA-C	-5.50	104.93	111.69
1	A	492	ARG	N-CA-C	5.49	116.48	108.14
1	B	547	TYR	N-CA-C	-5.44	99.21	110.80
1	D	201	TRP	N-CA-C	5.44	116.89	111.07
1	B	236	ILE	N-CA-C	-5.43	100.62	108.71
1	C	201	TRP	N-CA-C	5.42	116.87	111.07

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	546	VAL	N-CA-C	5.36	117.35	108.99
1	A	601	PHE	N-CA-C	5.36	117.12	111.28
1	C	548	ALA	N-CA-C	5.35	119.75	113.23
1	C	236	ILE	N-CA-C	-5.32	100.78	108.87
1	B	201	TRP	N-CA-C	5.31	116.76	111.07
1	A	236	ILE	N-CA-C	-5.29	100.82	108.71
1	D	388	GLN	N-CA-C	-5.20	100.76	109.24
1	C	547	TYR	N-CA-C	-5.19	99.74	110.80
1	D	236	ILE	N-CA-C	-5.19	100.98	108.71
1	B	563	TRP	N-CA-C	-5.18	105.81	111.82
1	A	201	TRP	N-CA-C	5.16	116.59	111.07
1	C	684	ARG	N-CA-C	5.10	116.91	111.36
1	B	206	GLU	N-CA-C	5.09	120.14	113.88
1	A	104	ASP	N-CA-C	5.08	116.57	108.79
1	C	104	ASP	N-CA-C	5.08	116.56	108.79
1	B	683	TYR	N-CA-C	-5.02	105.28	111.40
1	D	601	PHE	N-CA-C	5.01	116.75	111.28
1	D	104	ASP	N-CA-C	5.01	116.46	108.79

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5966	0	5663	121	0
1	B	5966	0	5663	127	0
1	C	5966	0	5663	130	0
1	D	5966	0	5660	121	0
2	E	28	0	25	3	0
2	F	28	0	25	0	0
2	G	28	0	25	2	0
2	H	28	0	25	0	0
2	I	28	0	25	1	0
2	J	28	0	25	4	0
2	K	28	0	25	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	L	28	0	25	2	0
2	M	28	0	25	3	0
3	A	56	0	52	2	0
3	B	56	0	52	1	0
3	C	70	0	65	3	0
3	D	28	0	26	1	0
4	A	13	0	17	1	0
4	B	13	0	17	0	0
4	C	13	0	17	0	0
4	D	13	0	17	0	0
5	A	10	0	0	0	0
5	B	10	0	0	0	0
5	C	10	0	0	0	0
5	D	10	0	0	0	0
6	A	186	0	0	6	0
6	B	254	0	0	8	0
6	C	207	0	0	11	0
6	D	179	0	0	6	0
All	All	25244	0	23137	492	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 10.

All (492) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:253:ARG:HH21	1:D:253:ARG:HH21	1.07	1.00
1:A:253:ARG:HH21	1:B:253:ARG:HH21	1.24	0.86
1:A:536:LYS:HD2	1:A:536:LYS:H	1.42	0.84
1:D:536:LYS:H	1:D:536:LYS:HD2	1.45	0.81
1:B:536:LYS:H	1:B:536:LYS:HD2	1.46	0.79
1:C:536:LYS:H	1:C:536:LYS:HD2	1.46	0.78
1:A:536:LYS:HD2	1:A:536:LYS:N	2.01	0.76
1:C:253:ARG:HH21	1:D:253:ARG:NH2	1.84	0.75
1:C:253:ARG:NH2	1:D:253:ARG:HH21	1.83	0.75
1:C:496:ASP:HB2	6:C:2124:HOH:O	1.87	0.75
1:D:536:LYS:HD2	1:D:536:LYS:N	2.03	0.73
1:C:75:ASN:OD1	1:C:92:ASN:HB3	1.89	0.72
1:A:732:THR:HG22	1:B:732:THR:HG22	1.71	0.72
1:C:536:LYS:HD2	1:C:536:LYS:N	2.03	0.72
1:B:536:LYS:HD2	1:B:536:LYS:N	2.05	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:75:ASN:OD1	1:A:92:ASN:HB3	1.91	0.71
1:D:676:PRO:HG2	1:D:677:GLU:OE1	1.91	0.70
1:C:676:PRO:HG2	1:C:677:GLU:OE1	1.91	0.70
1:B:676:PRO:HG2	1:B:677:GLU:OE1	1.92	0.69
1:B:378:GLU:CD	1:B:378:GLU:H	2.01	0.69
1:C:378:GLU:H	1:C:378:GLU:CD	2.01	0.69
1:A:676:PRO:HG2	1:A:677:GLU:OE1	1.92	0.68
1:D:75:ASN:OD1	1:D:92:ASN:HB3	1.94	0.68
1:A:378:GLU:CD	1:A:378:GLU:H	2.01	0.68
1:A:743:ALA:HB3	6:A:2178:HOH:O	1.92	0.68
1:D:378:GLU:CD	1:D:378:GLU:H	2.00	0.68
1:B:150:ASN:ND2	6:B:2024:HOH:O	2.27	0.67
1:A:253:ARG:NH2	1:B:253:ARG:HH21	1.93	0.66
1:B:399:LYS:HD3	1:B:399:LYS:N	2.11	0.66
1:B:75:ASN:OD1	1:B:92:ASN:HB3	1.95	0.66
1:A:253:ARG:HH21	1:B:253:ARG:NH2	1.94	0.66
1:A:408:GLU:HG2	6:A:2106:HOH:O	1.96	0.65
1:C:481:THR:OG1	1:C:483:HIS:HE1	1.79	0.65
1:D:481:THR:OG1	1:D:483:HIS:HE1	1.80	0.64
1:A:153:GLN:HE22	1:A:170:ASN:ND2	1.96	0.64
1:A:481:THR:OG1	1:A:483:HIS:HE1	1.80	0.64
1:D:153:GLN:HE22	1:D:170:ASN:ND2	1.95	0.64
1:C:589:LYS:HB3	6:C:2154:HOH:O	1.98	0.63
1:D:320:GLN:OE1	1:D:669:ARG:HD3	1.97	0.63
1:A:139:LYS:O	1:A:141:GLN:HG3	1.98	0.63
1:A:382:LYS:HE2	6:A:2140:HOH:O	1.97	0.63
2:J:1:NAG:H62	2:J:2:NAG:HN2	1.64	0.63
2:E:1:NAG:O6	2:E:2:NAG:H82	1.97	0.63
1:B:280:ALA:HB2	1:D:285:TYR:HD1	1.63	0.63
1:B:481:THR:OG1	1:B:483:HIS:HE1	1.80	0.63
1:B:153:GLN:HE22	1:B:170:ASN:ND2	1.97	0.63
1:A:589:LYS:HB3	6:A:2139:HOH:O	1.99	0.62
1:C:139:LYS:O	1:C:141:GLN:HG3	2.00	0.62
1:C:492:ARG:NH1	6:C:2135:HOH:O	2.32	0.62
1:B:502:LYS:O	1:B:505:GLN:HG2	1.99	0.62
1:A:640:LEU:HD11	1:A:650:GLY:HA3	1.82	0.62
1:A:535:ASP:C	1:A:537:SER:H	2.06	0.62
1:A:286:GLN:HB3	1:C:279:ASN:HB3	1.82	0.61
1:D:502:LYS:O	1:D:505:GLN:HG2	1.99	0.61
1:B:139:LYS:O	1:B:141:GLN:HG3	2.00	0.61
1:C:153:GLN:HE22	1:C:170:ASN:ND2	1.99	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:535:ASP:OD2	1:A:537:SER:HB3	2.00	0.61
1:A:502:LYS:O	1:A:505:GLN:HG2	2.01	0.61
1:D:535:ASP:C	1:D:537:SER:H	2.09	0.61
1:B:718:GLN:HA	1:B:718:GLN:HE21	1.66	0.61
1:C:320:GLN:OE1	1:C:669:ARG:HD3	2.01	0.61
1:C:535:ASP:C	1:C:537:SER:H	2.09	0.61
1:A:718:GLN:HE21	1:A:718:GLN:HA	1.65	0.61
1:C:502:LYS:O	1:C:505:GLN:HG2	2.01	0.60
1:B:535:ASP:C	1:B:537:SER:H	2.09	0.60
1:B:184:ARG:HD3	1:B:186:THR:O	2.02	0.60
1:C:718:GLN:HA	1:C:718:GLN:HE21	1.67	0.60
1:A:79:PHE:CD1	1:A:86:SER:HB3	2.36	0.60
1:A:248:TYR:CZ	1:B:234:PRO:HB2	2.37	0.59
3:C:1092:NAG:O3	3:C:1092:NAG:H83	2.02	0.59
1:D:139:LYS:O	1:D:141:GLN:HG3	2.01	0.59
1:A:320:GLN:OE1	1:A:669:ARG:HD3	2.01	0.59
1:B:320:GLN:OE1	1:B:669:ARG:HD3	2.02	0.59
1:C:516:VAL:HG11	1:C:523:LYS:HB2	1.85	0.59
1:A:516:VAL:HG11	1:A:523:LYS:HB2	1.85	0.59
1:C:79:PHE:CD1	1:C:86:SER:HB3	2.38	0.58
1:C:536:LYS:H	1:C:536:LYS:CD	2.16	0.58
1:A:399:LYS:HD3	1:A:399:LYS:N	2.19	0.58
1:C:399:LYS:HD3	1:C:399:LYS:N	2.19	0.58
1:B:79:PHE:CD1	1:B:86:SER:HB3	2.39	0.58
1:D:399:LYS:HD3	1:D:399:LYS:N	2.19	0.58
1:A:535:ASP:CG	1:A:537:SER:HB3	2.29	0.58
1:D:79:PHE:CD1	1:D:86:SER:HB3	2.38	0.58
1:D:402:TRP:CD2	1:D:421:GLU:HB2	2.38	0.58
1:C:402:TRP:CD2	1:C:421:GLU:HB2	2.39	0.57
1:D:516:VAL:HG11	1:D:523:LYS:HB2	1.86	0.57
1:A:546:VAL:HG22	1:A:547:TYR:N	2.19	0.57
1:D:718:GLN:HA	1:D:718:GLN:HE21	1.69	0.57
1:D:536:LYS:H	1:D:536:LYS:CD	2.16	0.57
1:A:184:ARG:HD3	1:A:186:THR:O	2.03	0.57
1:B:536:LYS:H	1:B:536:LYS:CD	2.17	0.57
1:A:402:TRP:CD2	1:A:421:GLU:HB2	2.40	0.57
1:B:402:TRP:CD2	1:B:421:GLU:HB2	2.39	0.57
1:B:93:SER:HA	1:B:96:ASP:OD2	2.06	0.56
1:B:516:VAL:HG11	1:B:523:LYS:HB2	1.87	0.56
1:C:184:ARG:HD3	1:C:186:THR:O	2.06	0.56
1:B:399:LYS:N	1:B:399:LYS:CD	2.69	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:49:LEU:HD22	1:D:749:GLN:HA	1.88	0.56
1:D:184:ARG:HD3	1:D:186:THR:O	2.05	0.56
1:A:93:SER:HA	1:A:96:ASP:OD2	2.06	0.56
1:C:491:LEU:HD12	6:C:2135:HOH:O	2.06	0.56
1:D:739:ASP:HB2	6:D:2169:HOH:O	2.05	0.56
1:A:49:LEU:HD22	1:A:749:GLN:HA	1.88	0.55
1:B:280:ALA:HB2	1:D:285:TYR:CD1	2.42	0.55
1:B:535:ASP:CG	1:B:537:SER:HB3	2.32	0.55
1:C:463:ASN:N	1:C:463:ASN:HD22	2.05	0.55
1:C:732:THR:HG22	1:D:732:THR:HG22	1.89	0.55
1:C:546:VAL:HG22	1:C:547:TYR:N	2.21	0.55
1:B:114:ILE:CG2	1:B:135:TYR:HB3	2.37	0.55
1:D:93:SER:HA	1:D:96:ASP:OD2	2.07	0.55
1:D:535:ASP:CG	1:D:537:SER:HB3	2.32	0.55
1:B:159:PRO:HD3	1:B:216:TRP:CB	2.37	0.55
1:D:249:PRO:HB2	6:D:2055:HOH:O	2.06	0.55
1:D:279:ASN:OD1	3:D:1279:NAG:N2	2.41	0.54
1:A:546:VAL:CG2	1:A:547:TYR:N	2.71	0.54
1:D:542:LEU:HD12	1:D:619:VAL:HG11	1.88	0.54
1:C:49:LEU:HD22	1:C:749:GLN:HA	1.90	0.54
1:B:49:LEU:HD22	1:B:749:GLN:HA	1.89	0.53
1:C:93:SER:HA	1:C:96:ASP:OD2	2.07	0.53
1:B:143:ILE:HD12	1:B:143:ILE:H	1.74	0.53
1:C:159:PRO:HD3	1:C:216:TRP:CB	2.38	0.53
1:C:535:ASP:CG	1:C:537:SER:HB3	2.33	0.53
1:D:159:PRO:HD3	1:D:216:TRP:CB	2.39	0.53
1:D:535:ASP:OD2	1:D:537:SER:HB3	2.08	0.53
1:A:733:MET:HE3	1:A:754:HIS:CE1	2.44	0.53
1:C:236:ILE:HG12	1:C:712:HIS:CE1	2.43	0.53
1:D:547:TYR:HB2	1:D:554:LYS:HD3	1.90	0.53
1:B:547:TYR:CD2	1:B:552:SER:HB2	2.43	0.53
1:A:143:ILE:H	1:A:143:ILE:HD12	1.74	0.53
1:B:535:ASP:OD2	1:B:537:SER:HB3	2.08	0.53
1:C:516:VAL:HG12	1:C:517:ILE:N	2.24	0.53
1:A:234:PRO:HB2	1:B:248:TYR:CZ	2.44	0.53
1:A:139:LYS:HD3	1:A:141:GLN:NE2	2.24	0.52
1:A:549:GLY:HA2	1:A:631:TYR:CE1	2.45	0.52
1:C:399:LYS:N	1:C:399:LYS:CD	2.73	0.52
1:D:685:ASN:O	2:M:1:NAG:H82	2.09	0.52
1:A:159:PRO:HD3	1:A:216:TRP:CB	2.39	0.52
1:B:546:VAL:HG22	1:B:547:TYR:N	2.23	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:114:ILE:CG2	1:A:135:TYR:HB3	2.39	0.52
1:B:350:THR:HG22	3:B:1321:NAG:H81	1.92	0.52
1:D:114:ILE:CG2	1:D:135:TYR:HB3	2.39	0.52
1:B:382:LYS:HD3	6:B:2128:HOH:O	2.10	0.52
1:B:516:VAL:HG12	1:B:517:ILE:N	2.25	0.52
1:C:73:GLU:O	1:C:74:ASN:HB2	2.10	0.52
1:D:463:ASN:N	1:D:463:ASN:HD22	2.06	0.52
2:G:1:NAG:H62	2:G:2:NAG:H82	1.92	0.52
1:D:704:HIS:HE1	1:D:711:VAL:O	1.94	0.51
1:A:516:VAL:HG12	1:A:517:ILE:N	2.25	0.51
1:A:718:GLN:HA	1:A:718:GLN:NE2	2.24	0.51
1:D:143:ILE:HD12	1:D:143:ILE:H	1.74	0.51
1:A:536:LYS:H	1:A:536:LYS:CD	2.15	0.51
1:B:463:ASN:N	1:B:463:ASN:HD22	2.08	0.51
1:D:399:LYS:N	1:D:399:LYS:CD	2.73	0.51
1:A:236:ILE:HG12	1:A:712:HIS:CE1	2.46	0.51
1:A:399:LYS:N	1:A:399:LYS:CD	2.72	0.51
1:B:147:ARG:HG3	1:B:147:ARG:HH11	1.76	0.51
1:A:535:ASP:O	1:A:537:SER:N	2.44	0.51
1:C:491:LEU:HD22	1:C:491:LEU:H	1.76	0.51
1:C:535:ASP:OD2	1:C:537:SER:HB3	2.09	0.51
1:D:733:MET:HE3	1:D:754:HIS:CE1	2.45	0.51
2:J:1:NAG:C6	2:J:2:NAG:HN2	2.22	0.51
1:A:415:LEU:HB2	1:A:436:LEU:HD11	1.93	0.51
1:C:143:ILE:HD12	1:C:143:ILE:H	1.75	0.51
1:D:589:LYS:HB3	6:D:2131:HOH:O	2.11	0.51
1:A:415:LEU:HD23	1:A:415:LEU:C	2.35	0.51
1:C:114:ILE:CG2	1:C:135:TYR:HB3	2.41	0.51
1:C:704:HIS:HE1	1:C:711:VAL:O	1.92	0.51
1:A:277:SER:OG	1:C:336:ARG:HD3	2.12	0.50
1:D:472:CYS:O	1:D:478:PRO:HA	2.11	0.50
1:D:551:CYS:HB2	6:D:2094:HOH:O	2.11	0.50
1:B:236:ILE:HG12	1:B:712:HIS:CE1	2.46	0.50
1:A:491:LEU:HD22	1:A:491:LEU:H	1.77	0.50
1:D:147:ARG:HG3	1:D:147:ARG:HH11	1.76	0.50
1:B:134:ILE:HG21	1:B:178:PRO:HB3	1.92	0.50
2:J:1:NAG:O3	2:J:1:NAG:H83	2.11	0.50
1:C:504:LEU:HA	1:C:507:VAL:HG12	1.94	0.50
1:D:541:PRO:HG2	1:D:573:ILE:HG12	1.92	0.50
1:B:197:GLY:C	1:B:213:ALA:HB3	2.37	0.50
1:B:472:CYS:O	1:B:478:PRO:HA	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:408:GLU:HG2	6:B:2145:HOH:O	2.12	0.50
1:B:491:LEU:H	1:B:491:LEU:HD22	1.76	0.50
1:C:134:ILE:HG21	1:C:178:PRO:HB3	1.93	0.50
1:A:463:ASN:HD22	1:A:463:ASN:N	2.08	0.50
1:D:134:ILE:HG21	1:D:178:PRO:HB3	1.93	0.50
1:A:134:ILE:HG21	1:A:178:PRO:HB3	1.93	0.49
1:B:535:ASP:C	1:B:537:SER:N	2.70	0.49
1:C:704:HIS:CE1	1:C:711:VAL:O	2.65	0.49
1:D:487:SER:C	1:D:489:LYS:H	2.19	0.49
1:A:504:LEU:HA	1:A:507:VAL:HG12	1.94	0.49
1:A:757:HIS:HD2	1:B:729:ASP:OD2	1.96	0.49
1:C:403:GLU:OE1	1:C:585:TYR:HA	2.12	0.49
1:D:516:VAL:HG12	1:D:517:ILE:N	2.26	0.49
1:B:704:HIS:HE1	1:B:711:VAL:O	1.95	0.49
1:C:415:LEU:HB2	1:C:436:LEU:HD11	1.94	0.49
1:D:487:SER:C	1:D:489:LYS:N	2.70	0.49
1:B:487:SER:C	1:B:489:LYS:H	2.21	0.49
1:B:589:LYS:HB3	6:B:2199:HOH:O	2.12	0.49
1:D:504:LEU:HA	1:D:507:VAL:HG12	1.94	0.49
1:A:704:HIS:HE1	1:A:711:VAL:O	1.96	0.49
1:B:718:GLN:HA	1:B:718:GLN:NE2	2.27	0.49
1:C:147:ARG:HG3	1:C:147:ARG:HH11	1.76	0.49
1:C:733:MET:HE3	1:C:754:HIS:CE1	2.47	0.49
1:D:73:GLU:O	1:D:74:ASN:HB2	2.12	0.49
1:D:491:LEU:H	1:D:491:LEU:HD22	1.77	0.49
1:A:194:ILE:CD1	2:E:1:NAG:H82	2.42	0.49
1:B:97:GLU:CD	1:B:97:GLU:N	2.71	0.49
1:B:535:ASP:OD1	1:B:537:SER:HB3	2.13	0.49
1:A:472:CYS:O	1:A:478:PRO:HA	2.13	0.49
1:B:399:LYS:HD3	1:B:399:LYS:H	1.75	0.49
1:C:139:LYS:HD3	1:C:141:GLN:NE2	2.27	0.49
1:C:175:LYS:HG2	1:C:182:SER:HB3	1.94	0.49
1:C:289:PRO:HB3	1:C:315:TRP:CD2	2.47	0.49
1:D:197:GLY:C	1:D:213:ALA:HB3	2.38	0.49
1:A:572:ASN:ND2	6:A:2135:HOH:O	2.40	0.49
1:D:139:LYS:HD3	1:D:141:GLN:NE2	2.28	0.49
1:D:236:ILE:HG12	1:D:712:HIS:CE1	2.48	0.49
1:D:704:HIS:CE1	1:D:711:VAL:O	2.66	0.49
1:B:704:HIS:HD2	1:B:716:SER:OG	1.95	0.48
1:B:73:GLU:O	1:B:74:ASN:HB2	2.13	0.48
1:B:138:ASN:C	1:B:140:ARG:H	2.21	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:504:LEU:HA	1:B:507:VAL:HG12	1.95	0.48
1:D:415:LEU:HB2	1:D:436:LEU:HD11	1.94	0.48
1:C:487:SER:C	1:C:489:LYS:H	2.20	0.48
1:D:535:ASP:O	1:D:537:SER:N	2.47	0.48
1:C:472:CYS:O	1:C:478:PRO:HA	2.14	0.48
1:C:718:GLN:HA	1:C:718:GLN:NE2	2.27	0.48
1:A:538:LYS:HG2	1:A:539:LYS:N	2.28	0.48
1:A:289:PRO:HB3	1:A:315:TRP:CD2	2.48	0.48
1:B:403:GLU:OE1	1:B:585:TYR:HA	2.14	0.48
1:A:147:ARG:HG3	1:A:147:ARG:HH11	1.78	0.48
1:B:415:LEU:HB2	1:B:436:LEU:HD11	1.95	0.48
1:C:97:GLU:N	1:C:97:GLU:CD	2.72	0.48
1:C:487:SER:C	1:C:489:LYS:N	2.70	0.48
1:C:739:ASP:HB2	6:C:2182:HOH:O	2.14	0.48
1:D:535:ASP:OD1	1:D:537:SER:HB3	2.14	0.48
1:A:73:GLU:O	1:A:74:ASN:HB2	2.13	0.48
1:C:397:ILE:HG13	1:C:398:THR:HG23	1.96	0.48
1:D:82:GLU:HG2	1:D:467:TYR:OH	2.14	0.48
1:D:97:GLU:CD	1:D:97:GLU:N	2.71	0.48
1:B:733:MET:HE3	1:B:754:HIS:CE1	2.49	0.47
1:C:535:ASP:O	1:C:537:SER:N	2.47	0.47
1:A:97:GLU:N	1:A:97:GLU:CD	2.72	0.47
1:B:517:ILE:HG23	1:B:526:TYR:CE2	2.49	0.47
1:C:197:GLY:C	1:C:213:ALA:HB3	2.39	0.47
1:A:138:ASN:C	1:A:140:ARG:H	2.22	0.47
1:A:487:SER:C	1:A:489:LYS:N	2.71	0.47
1:A:547:TYR:HD2	1:A:552:SER:HB2	1.80	0.47
1:B:704:HIS:CE1	1:B:711:VAL:O	2.67	0.47
1:D:733:MET:HE3	1:D:754:HIS:NE2	2.29	0.47
1:A:403:GLU:OE1	1:A:585:TYR:HA	2.15	0.47
1:B:139:LYS:HD3	1:B:141:GLN:NE2	2.29	0.47
1:B:275:THR:HA	1:D:334:THR:O	2.14	0.47
1:D:356:ARG:HB3	1:D:551:CYS:SG	2.54	0.47
1:D:704:HIS:HD2	1:D:716:SER:OG	1.97	0.47
1:A:487:SER:C	1:A:489:LYS:H	2.21	0.47
1:C:542:LEU:HB3	1:C:624:ILE:HG23	1.97	0.47
1:B:136:ASP:CG	1:B:139:LYS:HG2	2.40	0.47
1:C:673:LEU:O	1:C:678:ASP:HB3	2.14	0.47
1:D:136:ASP:CG	1:D:139:LYS:HG2	2.39	0.47
1:B:415:LEU:C	1:B:415:LEU:HD23	2.40	0.47
1:B:487:SER:C	1:B:489:LYS:N	2.71	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:535:ASP:O	1:B:537:SER:N	2.47	0.47
1:C:535:ASP:C	1:C:537:SER:N	2.71	0.47
2:L:2:NAG:H83	2:L:2:NAG:O3	2.14	0.47
1:A:733:MET:HE3	1:A:754:HIS:NE2	2.30	0.47
1:C:535:ASP:OD1	1:C:537:SER:HB3	2.13	0.47
1:D:517:ILE:HG23	1:D:526:TYR:CE2	2.50	0.47
1:A:175:LYS:HG2	1:A:182:SER:HB3	1.97	0.47
1:A:535:ASP:C	1:A:537:SER:N	2.68	0.47
1:B:97:GLU:N	1:B:97:GLU:OE1	2.45	0.47
1:B:397:ILE:HG13	1:B:398:THR:HG23	1.97	0.47
1:A:704:HIS:HD2	1:A:716:SER:OG	1.98	0.47
1:C:138:ASN:C	1:C:140:ARG:H	2.22	0.47
1:C:415:LEU:HD23	1:C:415:LEU:C	2.40	0.47
1:D:403:GLU:OE1	1:D:585:TYR:HA	2.15	0.47
1:D:718:GLN:HA	1:D:718:GLN:NE2	2.29	0.46
1:A:143:ILE:HD12	1:A:143:ILE:N	2.31	0.46
1:B:289:PRO:HB3	1:B:315:TRP:CD2	2.49	0.46
1:C:517:ILE:HG23	1:C:526:TYR:CE2	2.49	0.46
1:D:535:ASP:C	1:D:537:SER:N	2.70	0.46
1:C:516:VAL:CG1	1:C:517:ILE:N	2.78	0.46
1:C:718:GLN:HE21	1:C:718:GLN:CA	2.25	0.46
1:D:67:GLU:CD	1:D:111:ARG:HH12	2.23	0.46
1:D:626:ILE:HG23	1:D:636:THR:HG23	1.97	0.46
1:A:197:GLY:C	1:A:213:ALA:HB3	2.41	0.46
1:A:703:ILE:HG12	1:A:733:MET:HB3	1.98	0.46
1:B:297:ASP:HA	6:B:2103:HOH:O	2.14	0.46
1:C:67:GLU:CD	1:C:111:ARG:HH12	2.22	0.46
1:A:718:GLN:HE21	1:A:718:GLN:CA	2.24	0.46
1:B:516:VAL:CG1	1:B:517:ILE:N	2.79	0.46
1:D:175:LYS:HG2	1:D:182:SER:HB3	1.97	0.46
1:D:538:LYS:HG2	1:D:539:LYS:N	2.31	0.46
1:A:279:ASN:OD1	3:A:1279:NAG:O5	2.33	0.46
1:A:517:ILE:HG23	1:A:526:TYR:CE2	2.51	0.46
1:C:273:THR:HB	6:C:2024:HOH:O	2.15	0.46
1:D:138:ASN:C	1:D:140:ARG:H	2.22	0.46
1:D:703:ILE:HG12	1:D:733:MET:HB3	1.98	0.46
1:B:82:GLU:HG2	1:B:467:TYR:OH	2.16	0.46
1:D:143:ILE:HD12	1:D:143:ILE:N	2.31	0.46
1:D:397:ILE:HG13	1:D:398:THR:HG23	1.97	0.46
1:A:150:ASN:O	1:A:151:ASN:HB2	2.15	0.46
1:A:704:HIS:CE1	1:A:711:VAL:O	2.68	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:175:LYS:HG2	1:B:182:SER:HB3	1.98	0.46
1:C:538:LYS:HG2	1:C:539:LYS:N	2.31	0.46
1:D:516:VAL:CG1	1:D:517:ILE:N	2.79	0.46
1:B:100:TYR:HB2	1:B:101:SER:H	1.57	0.45
1:C:150:ASN:O	1:C:151:ASN:HB2	2.16	0.45
1:D:97:GLU:N	1:D:97:GLU:OE1	2.46	0.45
1:D:299:TYR:CZ	1:D:665:VAL:HG22	2.51	0.45
1:A:516:VAL:CG1	1:A:517:ILE:N	2.79	0.45
1:B:72:GLN:O	1:B:73:GLU:HB2	2.16	0.45
1:B:457:TYR:HA	1:B:471:ARG:O	2.16	0.45
1:C:82:GLU:HG2	1:C:467:TYR:OH	2.15	0.45
1:D:289:PRO:HB3	1:D:315:TRP:CD2	2.50	0.45
1:A:184:ARG:HH11	1:A:187:TRP:HA	1.80	0.45
1:C:97:GLU:N	1:C:97:GLU:OE1	2.46	0.45
1:D:536:LYS:N	1:D:536:LYS:CD	2.78	0.45
1:A:136:ASP:CG	1:A:139:LYS:HG2	2.42	0.45
1:A:438:ASP:C	1:A:440:THR:H	2.25	0.45
1:C:299:TYR:CZ	1:C:665:VAL:HG22	2.51	0.45
2:L:1:NAG:O3	2:L:2:NAG:C1	2.65	0.45
1:A:82:GLU:HG2	1:A:467:TYR:OH	2.16	0.45
1:A:397:ILE:HG13	1:A:398:THR:HG23	1.98	0.45
1:B:67:GLU:CD	1:B:111:ARG:HH12	2.25	0.45
1:D:686:SER:HA	2:M:1:NAG:H82	1.98	0.45
1:A:97:GLU:N	1:A:97:GLU:OE1	2.46	0.45
1:A:194:ILE:HD12	2:E:1:NAG:H82	1.99	0.45
1:A:397:ILE:HG22	1:A:439:TYR:CE2	2.52	0.45
1:B:538:LYS:HG2	1:B:539:LYS:N	2.32	0.45
1:C:136:ASP:CG	1:C:139:LYS:HG2	2.42	0.45
1:D:415:LEU:C	1:D:415:LEU:HD23	2.42	0.45
1:A:72:GLN:O	1:A:73:GLU:HB2	2.17	0.45
1:A:321:ASN:ND2	3:A:1321:NAG:C7	2.80	0.45
1:B:546:VAL:CG2	1:B:547:TYR:N	2.79	0.45
1:D:184:ARG:HH11	1:D:187:TRP:HA	1.82	0.45
2:M:2:NAG:H83	2:M:2:NAG:H2	1.89	0.45
1:A:399:LYS:HD3	1:A:399:LYS:H	1.81	0.45
1:B:143:ILE:HD12	1:B:143:ILE:N	2.31	0.45
1:C:177:GLU:HB2	1:C:180:LEU:HB2	1.99	0.45
1:D:60:LEU:HD12	1:D:60:LEU:C	2.42	0.45
1:D:397:ILE:HG22	1:D:439:TYR:CE2	2.51	0.45
1:A:67:GLU:CD	1:A:111:ARG:HH12	2.25	0.44
1:C:350:THR:HA	3:C:1321:NAG:H81	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:397:ILE:HG22	1:C:439:TYR:CE2	2.53	0.44
1:D:530:LEU:HA	1:D:531:PRO:HD3	1.89	0.44
1:B:418:ILE:HD12	6:B:2144:HOH:O	2.17	0.44
1:B:438:ASP:C	1:B:440:THR:H	2.25	0.44
1:C:704:HIS:HD2	1:C:716:SER:OG	2.00	0.44
1:B:640:LEU:HD11	1:B:650:GLY:HA3	1.99	0.44
1:D:438:ASP:C	1:D:440:THR:H	2.25	0.44
1:B:159:PRO:HD3	1:B:216:TRP:HB3	2.00	0.44
1:B:703:ILE:HG12	1:B:733:MET:HB3	1.98	0.44
1:C:551:CYS:HB2	6:C:2094:HOH:O	2.16	0.44
1:B:718:GLN:HE21	1:B:718:GLN:CA	2.26	0.44
1:C:159:PRO:HD3	1:C:216:TRP:HB3	2.00	0.44
1:C:546:VAL:CG2	1:C:547:TYR:N	2.81	0.44
1:C:733:MET:HE3	1:C:754:HIS:NE2	2.33	0.44
1:C:463:ASN:N	1:C:463:ASN:ND2	2.65	0.44
1:D:457:TYR:HA	1:D:471:ARG:O	2.18	0.43
1:D:718:GLN:HE21	1:D:718:GLN:CA	2.27	0.43
1:A:530:LEU:HA	1:A:531:PRO:HD3	1.88	0.43
1:A:734:TRP:C	1:A:734:TRP:CD1	2.95	0.43
1:B:418:ILE:CD1	6:B:2144:HOH:O	2.67	0.43
1:C:660:GLU:HG3	6:C:2167:HOH:O	2.17	0.43
1:A:547:TYR:HB2	1:A:554:LYS:HD3	1.99	0.43
1:B:184:ARG:HH11	1:B:187:TRP:HA	1.82	0.43
1:C:167:VAL:HA	1:C:171:ASP:O	2.18	0.43
1:B:167:VAL:HA	1:B:171:ASP:O	2.19	0.43
1:C:72:GLN:O	1:C:73:GLU:HB2	2.18	0.43
1:C:549:GLY:O	1:C:550:PRO:C	2.61	0.43
1:D:72:GLN:O	1:D:73:GLU:HB2	2.16	0.43
1:D:734:TRP:CD1	1:D:734:TRP:C	2.96	0.43
1:C:516:VAL:CG1	1:C:523:LYS:HB2	2.49	0.43
1:D:159:PRO:HD3	1:D:216:TRP:HB3	1.99	0.43
1:A:159:PRO:HD3	1:A:216:TRP:HB3	2.00	0.43
1:A:620:ASP:OD1	1:A:622:LYS:HB2	2.19	0.43
1:C:457:TYR:HA	1:C:471:ARG:O	2.19	0.43
1:D:612:GLN:NE2	6:D:2138:HOH:O	2.52	0.43
1:B:177:GLU:HB2	1:B:180:LEU:HB2	1.99	0.43
1:B:319:ALA:O	1:B:320:GLN:HB2	2.19	0.43
1:B:544:ILE:O	1:B:626:ILE:HA	2.19	0.43
1:B:673:LEU:O	1:B:678:ASP:HB3	2.18	0.43
1:C:438:ASP:C	1:C:440:THR:H	2.26	0.43
1:C:547:TYR:HD2	1:C:552:SER:HB2	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:123:GLN:HG2	1:B:124:TRP:CD2	2.54	0.43
1:D:547:TYR:C	1:D:547:TYR:CD2	2.96	0.43
1:D:153:GLN:HE22	1:D:170:ASN:HD21	1.65	0.43
1:A:516:VAL:CG1	1:A:523:LYS:HB2	2.49	0.42
1:A:673:LEU:O	1:A:678:ASP:HB3	2.18	0.42
1:C:173:TYR:CE2	1:C:184:ARG:HG3	2.54	0.42
1:C:399:LYS:HD3	1:C:399:LYS:H	1.83	0.42
1:C:143:ILE:HD12	1:C:143:ILE:N	2.33	0.42
1:C:703:ILE:HG12	1:C:733:MET:HB3	2.01	0.42
1:A:299:TYR:CZ	1:A:665:VAL:HG22	2.54	0.42
1:C:123:GLN:HG2	1:C:124:TRP:CD2	2.54	0.42
1:C:184:ARG:HH11	1:C:187:TRP:HA	1.82	0.42
1:C:319:ALA:O	1:C:320:GLN:HB2	2.20	0.42
1:D:177:GLU:HB2	1:D:180:LEU:HB2	2.00	0.42
1:D:399:LYS:HD3	1:D:399:LYS:H	1.82	0.42
1:A:457:TYR:HA	1:A:471:ARG:O	2.19	0.42
1:C:686:SER:HA	2:I:1:NAG:H82	2.01	0.42
1:D:123:GLN:HG2	1:D:124:TRP:CD2	2.54	0.42
1:A:90:LEU:HD21	1:A:116:PHE:HZ	1.85	0.42
1:A:177:GLU:HB2	1:A:180:LEU:HB2	2.01	0.42
1:A:732:THR:CG2	1:B:732:THR:HG22	2.45	0.42
1:B:551:CYS:SG	1:B:551:CYS:O	2.77	0.42
1:D:176:ASN:ND2	6:D:2028:HOH:O	2.47	0.42
1:D:187:TRP:CD1	1:D:187:TRP:N	2.87	0.42
1:C:398:THR:HA	6:C:2109:HOH:O	2.20	0.42
1:C:721:LYS:NZ	6:C:2187:HOH:O	2.52	0.42
1:A:535:ASP:OD1	1:A:537:SER:HB3	2.19	0.42
1:C:734:TRP:CD1	1:C:734:TRP:C	2.97	0.42
1:D:322:TYR:CD1	1:D:322:TYR:C	2.98	0.42
1:D:438:ASP:OD1	1:D:440:THR:HB	2.20	0.42
1:A:139:LYS:HD3	1:A:141:GLN:CD	2.44	0.42
1:B:658:LYS:HB3	1:B:661:TYR:CD2	2.55	0.42
1:D:516:VAL:CG1	1:D:523:LYS:HB2	2.50	0.42
1:D:673:LEU:O	1:D:678:ASP:HB3	2.19	0.42
1:B:60:LEU:C	1:B:60:LEU:HD12	2.44	0.42
1:B:150:ASN:O	1:B:151:ASN:HB2	2.20	0.42
1:B:299:TYR:CZ	1:B:665:VAL:HG22	2.54	0.42
1:B:463:ASN:N	1:B:463:ASN:ND2	2.67	0.42
1:B:734:TRP:CD1	1:B:734:TRP:C	2.97	0.42
1:C:183:GLN:HE21	1:C:183:GLN:HB2	1.71	0.42
1:C:438:ASP:OD1	1:C:440:THR:HB	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:463:ASN:N	1:D:463:ASN:ND2	2.66	0.42
1:B:484:SER:HB2	1:B:491:LEU:HD21	2.02	0.41
1:D:561:LEU:HD12	1:D:561:LEU:HA	1.84	0.41
1:A:60:LEU:HD12	1:A:60:LEU:C	2.45	0.41
1:B:541:PRO:HG2	1:B:573:ILE:HG12	2.02	0.41
1:B:561:LEU:HD12	1:B:561:LEU:HA	1.85	0.41
1:B:759:LEU:HD23	1:B:759:LEU:HA	1.90	0.41
1:C:175:LYS:CG	1:C:182:SER:HB3	2.50	0.41
1:B:397:ILE:HG22	1:B:439:TYR:CE2	2.55	0.41
1:C:122:LYS:HG2	1:C:123:GLN:N	2.34	0.41
1:C:248:TYR:CZ	1:D:234:PRO:HB2	2.56	0.41
1:B:146:GLU:OE1	1:B:181:SER:HA	2.20	0.41
1:B:187:TRP:CD1	1:B:187:TRP:N	2.88	0.41
1:B:322:TYR:CD1	1:B:322:TYR:C	2.98	0.41
1:B:733:MET:HE3	1:B:754:HIS:NE2	2.35	0.41
1:A:551:CYS:HB2	6:A:2090:HOH:O	2.21	0.41
1:B:390:ASP:O	1:B:391:LYS:HD2	2.21	0.41
1:A:666:TYR:CZ	4:A:1767:007:H8	2.56	0.41
1:B:543:LEU:C	1:B:543:LEU:HD22	2.46	0.41
1:B:732:THR:HG23	1:B:733:MET:N	2.36	0.41
1:C:187:TRP:CD1	1:C:187:TRP:N	2.88	0.41
1:D:751:ILE:HG23	1:D:752:TYR:N	2.36	0.41
2:J:2:NAG:O3	2:J:2:NAG:C7	2.69	0.41
1:A:122:LYS:HG2	1:A:123:GLN:N	2.35	0.41
1:C:146:GLU:OE1	1:C:181:SER:HA	2.20	0.41
1:D:759:LEU:HD23	1:D:759:LEU:HA	1.90	0.41
1:A:484:SER:HB2	1:A:491:LEU:HD21	2.02	0.41
1:B:273:THR:HB	6:B:2037:HOH:O	2.21	0.41
1:B:516:VAL:CG1	1:B:523:LYS:HB2	2.51	0.41
1:C:60:LEU:C	1:C:60:LEU:HD12	2.45	0.41
1:D:390:ASP:O	1:D:391:LYS:HD2	2.21	0.41
1:A:92:ASN:OD1	1:A:92:ASN:C	2.64	0.41
1:A:146:GLU:OE1	1:A:181:SER:HA	2.21	0.41
1:A:390:ASP:O	1:A:391:LYS:HD2	2.21	0.41
1:A:438:ASP:OD1	1:A:440:THR:HB	2.21	0.41
1:B:142:LEU:C	1:B:142:LEU:HD23	2.46	0.41
1:B:370:SER:HB2	1:B:387:PHE:O	2.21	0.41
1:C:139:LYS:HD3	1:C:141:GLN:CD	2.46	0.41
1:C:242:SER:HB3	1:C:246:LEU:HD12	2.03	0.41
1:C:484:SER:HB2	1:C:491:LEU:HD21	2.03	0.41
1:C:751:ILE:HG23	1:C:752:TYR:N	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:322:TYR:CD1	1:C:322:TYR:C	2.99	0.41
1:C:339:SER:HB2	6:C:2085:HOH:O	2.20	0.41
1:C:390:ASP:O	1:C:391:LYS:HD2	2.21	0.41
1:D:100:TYR:HB2	1:D:101:SER:H	1.57	0.41
1:A:123:GLN:HG2	1:A:124:TRP:CD2	2.56	0.40
1:A:150:ASN:O	1:A:151:ASN:CB	2.69	0.40
1:A:322:TYR:CD1	1:A:322:TYR:C	2.99	0.40
1:B:92:ASN:OD1	1:B:92:ASN:C	2.65	0.40
1:B:246:LEU:HD13	1:B:248:TYR:O	2.21	0.40
1:D:139:LYS:HD3	1:D:141:GLN:CD	2.46	0.40
1:C:100:TYR:HB2	1:C:101:SER:H	1.57	0.40
1:C:544:ILE:O	1:C:626:ILE:HA	2.20	0.40
1:D:142:LEU:HD23	1:D:142:LEU:C	2.46	0.40
1:C:658:LYS:HB3	1:C:661:TYR:CD2	2.56	0.40
1:D:248:TYR:HA	1:D:249:PRO:HD3	1.97	0.40
1:B:153:GLN:HE22	1:B:170:ASN:HD21	1.67	0.40
1:D:92:ASN:OD1	1:D:92:ASN:C	2.65	0.40
1:D:122:LYS:HG2	1:D:123:GLN:N	2.35	0.40
1:D:340:SER:O	1:D:344:GLN:HG3	2.22	0.40
1:A:370:SER:HB2	1:A:387:PHE:O	2.21	0.40
1:C:67:GLU:HB3	1:C:78:LEU:HD11	2.03	0.40
1:C:90:LEU:HD21	1:C:116:PHE:HZ	1.86	0.40
1:C:92:ASN:CG	3:C:1092:NAG:N2	2.80	0.40
1:C:142:LEU:HD23	1:C:142:LEU:C	2.47	0.40
1:C:150:ASN:O	1:C:151:ASN:CB	2.70	0.40
2:G:1:NAG:H62	2:G:2:NAG:C8	2.51	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 X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	726/728 (100%)	677 (93%)	45 (6%)	4 (1%)	21	28
1	B	726/728 (100%)	678 (93%)	44 (6%)	4 (1%)	21	28
1	C	726/728 (100%)	676 (93%)	46 (6%)	4 (1%)	21	28
1	D	726/728 (100%)	676 (93%)	46 (6%)	4 (1%)	21	28
All	All	2904/2912 (100%)	2707 (93%)	181 (6%)	16 (1%)	21	28

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	100	TYR
1	A	536	LYS
1	A	617	GLY
1	B	100	TYR
1	B	536	LYS
1	B	617	GLY
1	C	100	TYR
1	C	536	LYS
1	C	617	GLY
1	D	100	TYR
1	D	536	LYS
1	D	617	GLY
1	A	94	THR
1	B	94	THR
1	C	94	THR
1	D	94	THR

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	652/652 (100%)	633 (97%)	19 (3%)	37	53
1	B	652/652 (100%)	633 (97%)	19 (3%)	37	53
1	C	652/652 (100%)	635 (97%)	17 (3%)	40	57
1	D	652/652 (100%)	633 (97%)	19 (3%)	37	53

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	2608/2608 (100%)	2534 (97%)	74 (3%)	38 54

All (74) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	97	GLU
1	A	100	TYR
1	A	111	ARG
1	A	145	GLU
1	A	246	LEU
1	A	399	LYS
1	A	436	LEU
1	A	440	THR
1	A	442	VAL
1	A	482	LEU
1	A	536	LYS
1	A	542	LEU
1	A	561	LEU
1	A	622	LYS
1	A	685	ASN
1	A	701	LEU
1	A	702	LEU
1	A	732	THR
1	A	759	LEU
1	B	97	GLU
1	B	100	TYR
1	B	111	ARG
1	B	145	GLU
1	B	246	LEU
1	B	399	LYS
1	B	436	LEU
1	B	440	THR
1	B	442	VAL
1	B	492	ARG
1	B	536	LYS
1	B	542	LEU
1	B	543	LEU
1	B	561	LEU
1	B	685	ASN
1	B	701	LEU
1	B	702	LEU
1	B	732	THR

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Mol	Chain	Res	Type
1	B	759	LEU
1	C	97	GLU
1	C	100	TYR
1	C	111	ARG
1	C	145	GLU
1	C	246	LEU
1	C	399	LYS
1	C	436	LEU
1	C	440	THR
1	C	442	VAL
1	C	536	LYS
1	C	542	LEU
1	C	561	LEU
1	C	685	ASN
1	C	701	LEU
1	C	702	LEU
1	C	732	THR
1	C	759	LEU
1	D	97	GLU
1	D	100	TYR
1	D	111	ARG
1	D	145	GLU
1	D	246	LEU
1	D	399	LYS
1	D	436	LEU
1	D	440	THR
1	D	442	VAL
1	D	492	ARG
1	D	536	LYS
1	D	542	LEU
1	D	547	TYR
1	D	561	LEU
1	D	685	ASN
1	D	701	LEU
1	D	702	LEU
1	D	732	THR
1	D	759	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (113) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	61	GLN

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Mol	Chain	Res	Type
1	A	72	GLN
1	A	123	GLN
1	A	141	GLN
1	A	169	ASN
1	A	170	ASN
1	A	176	ASN
1	A	183	GLN
1	A	192	ASN
1	A	247	GLN
1	A	345	HIS
1	A	369	ASN
1	A	393	ASN
1	A	430	ASN
1	A	463	ASN
1	A	483	HIS
1	A	505	GLN
1	A	518	ASN
1	A	586	GLN
1	A	612	GLN
1	A	679	ASN
1	A	694	ASN
1	A	704	HIS
1	A	718	GLN
1	A	745	ASN
1	A	748	HIS
1	A	757	HIS
1	A	761	GLN
1	B	61	GLN
1	B	72	GLN
1	B	123	GLN
1	B	141	GLN
1	B	169	ASN
1	B	170	ASN
1	B	176	ASN
1	B	183	GLN
1	B	192	ASN
1	B	247	GLN
1	B	369	ASN
1	B	383	HIS
1	B	393	ASN
1	B	430	ASN
1	B	463	ASN

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Mol	Chain	Res	Type
1	B	483	HIS
1	B	505	GLN
1	B	518	ASN
1	B	520	HIS
1	B	586	GLN
1	B	612	GLN
1	B	679	ASN
1	B	694	ASN
1	B	704	HIS
1	B	718	GLN
1	B	745	ASN
1	B	757	HIS
1	B	761	GLN
1	C	61	GLN
1	C	72	GLN
1	C	123	GLN
1	C	141	GLN
1	C	169	ASN
1	C	170	ASN
1	C	176	ASN
1	C	183	GLN
1	C	192	ASN
1	C	247	GLN
1	C	369	ASN
1	C	383	HIS
1	C	393	ASN
1	C	430	ASN
1	C	450	ASN
1	C	455	GLN
1	C	463	ASN
1	C	483	HIS
1	C	505	GLN
1	C	518	ASN
1	C	520	HIS
1	C	612	GLN
1	C	679	ASN
1	C	694	ASN
1	C	704	HIS
1	C	718	GLN
1	C	745	ASN
1	C	757	HIS
1	C	761	GLN

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Mol	Chain	Res	Type
1	D	61	GLN
1	D	72	GLN
1	D	123	GLN
1	D	141	GLN
1	D	169	ASN
1	D	170	ASN
1	D	176	ASN
1	D	183	GLN
1	D	192	ASN
1	D	247	GLN
1	D	369	ASN
1	D	383	HIS
1	D	393	ASN
1	D	430	ASN
1	D	463	ASN
1	D	483	HIS
1	D	505	GLN
1	D	518	ASN
1	D	520	HIS
1	D	586	GLN
1	D	595	ASN
1	D	612	GLN
1	D	679	ASN
1	D	694	ASN
1	D	704	HIS
1	D	718	GLN
1	D	745	ASN
1	D	761	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

18 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	$\# Z > 2$
2	NAG	E	1	2,1	14,14,15	0.52	0	17,19,21	0.66	0
2	NAG	E	2	2	14,14,15	0.70	0	17,19,21	0.70	0
2	NAG	F	1	2,1	14,14,15	0.90	0	17,19,21	1.48	3 (17%)
2	NAG	F	2	2	14,14,15	0.86	1 (7%)	17,19,21	0.84	0
2	NAG	G	1	2,1	14,14,15	0.79	0	17,19,21	1.14	3 (17%)
2	NAG	G	2	2	14,14,15	0.63	0	17,19,21	1.14	2 (11%)
2	NAG	H	1	2,1	14,14,15	0.60	0	17,19,21	0.66	0
2	NAG	H	2	2	14,14,15	0.59	0	17,19,21	0.81	1 (5%)
2	NAG	I	1	2,1	14,14,15	0.74	0	17,19,21	0.59	0
2	NAG	I	2	2	14,14,15	0.89	1 (7%)	17,19,21	0.79	0
2	NAG	J	1	2,1	14,14,15	0.90	1 (7%)	17,19,21	0.99	1 (5%)
2	NAG	J	2	2	14,14,15	0.59	0	17,19,21	0.70	0
2	NAG	K	1	2,1	14,14,15	0.71	0	17,19,21	1.55	4 (23%)
2	NAG	K	2	2	14,14,15	0.82	1 (7%)	17,19,21	0.67	0
2	NAG	L	1	2,1	14,14,15	1.03	1 (7%)	17,19,21	1.34	3 (17%)
2	NAG	L	2	2	14,14,15	0.87	1 (7%)	17,19,21	0.87	0
2	NAG	M	1	2,1	14,14,15	0.62	0	17,19,21	0.73	0
2	NAG	M	2	2	14,14,15	0.58	0	17,19,21	0.97	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
2	NAG	E	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	E	2	2	-	4/6/23/26	0/1/1/1
2	NAG	F	1	2,1	1/1/5/7	2/6/23/26	0/1/1/1
2	NAG	F	2	2	1/1/5/7	2/6/23/26	0/1/1/1
2	NAG	G	1	2,1	1/1/5/7	2/6/23/26	0/1/1/1
2	NAG	G	2	2	-	4/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	H	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	H	2	2	-	4/6/23/26	0/1/1/1
2	NAG	I	1	2,1	-	4/6/23/26	0/1/1/1
2	NAG	I	2	2	1/1/5/7	4/6/23/26	0/1/1/1
2	NAG	J	1	2,1	1/1/5/7	2/6/23/26	0/1/1/1
2	NAG	J	2	2	-	4/6/23/26	0/1/1/1
2	NAG	K	1	2,1	1/1/5/7	4/6/23/26	0/1/1/1
2	NAG	K	2	2	-	0/6/23/26	0/1/1/1
2	NAG	L	1	2,1	1/1/5/7	2/6/23/26	0/1/1/1
2	NAG	L	2	2	1/1/5/7	4/6/23/26	0/1/1/1
2	NAG	M	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	M	2	2	-	2/6/23/26	0/1/1/1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	L	1	NAG	C1-C2	2.77	1.56	1.52
2	J	1	NAG	C1-C2	2.73	1.56	1.52
2	F	2	NAG	C1-C2	2.37	1.55	1.52
2	I	2	NAG	C1-C2	2.34	1.55	1.52
2	L	2	NAG	C1-C2	2.34	1.55	1.52
2	K	2	NAG	C1-C2	2.27	1.55	1.52

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	1	NAG	C4-C3-C2	-4.18	104.90	111.02
2	K	1	NAG	C1-O5-C5	3.85	117.34	112.19
2	K	1	NAG	O5-C1-C2	3.32	116.43	111.29
2	L	1	NAG	O5-C1-C2	2.94	115.85	111.29
2	G	2	NAG	C4-C3-C2	-2.88	106.79	111.02
2	F	1	NAG	C2-N2-C7	-2.70	119.28	122.90
2	G	2	NAG	C2-N2-C7	-2.69	119.29	122.90
2	L	1	NAG	C3-C4-C5	-2.65	105.42	110.23
2	G	1	NAG	O5-C1-C2	2.53	115.20	111.29
2	L	1	NAG	C1-O5-C5	2.52	115.57	112.19
2	M	2	NAG	C2-N2-C7	-2.48	119.58	122.90
2	G	1	NAG	C1-O5-C5	2.44	115.45	112.19
2	F	1	NAG	O4-C4-C3	2.35	115.92	110.38
2	H	2	NAG	C2-N2-C7	-2.30	119.81	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	G	1	NAG	C2-N2-C7	-2.26	119.87	122.90
2	K	1	NAG	C2-N2-C7	-2.25	119.89	122.90
2	J	1	NAG	O5-C1-C2	2.21	114.72	111.29
2	K	1	NAG	C3-C4-C5	-2.02	106.57	110.23

All (8) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	F	1	NAG	C1
2	F	2	NAG	C1
2	G	1	NAG	C1
2	I	2	NAG	C1
2	J	1	NAG	C1
2	K	1	NAG	C1
2	L	1	NAG	C1
2	L	2	NAG	C1

All (48) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	G	1	NAG	C8-C7-N2-C2
2	G	1	NAG	O7-C7-N2-C2
2	I	2	NAG	C8-C7-N2-C2
2	I	2	NAG	O7-C7-N2-C2
2	J	1	NAG	C8-C7-N2-C2
2	J	1	NAG	O7-C7-N2-C2
2	J	2	NAG	C8-C7-N2-C2
2	J	2	NAG	O7-C7-N2-C2
2	L	2	NAG	C8-C7-N2-C2
2	L	2	NAG	O7-C7-N2-C2
2	M	2	NAG	C8-C7-N2-C2
2	M	2	NAG	O7-C7-N2-C2
2	G	2	NAG	C8-C7-N2-C2
2	G	2	NAG	O7-C7-N2-C2
2	I	2	NAG	C4-C5-C6-O6
2	L	1	NAG	C4-C5-C6-O6
2	E	1	NAG	O5-C5-C6-O6
2	I	2	NAG	O5-C5-C6-O6
2	E	1	NAG	C4-C5-C6-O6
2	K	1	NAG	O5-C5-C6-O6
2	H	2	NAG	C4-C5-C6-O6
2	F	2	NAG	O5-C5-C6-O6

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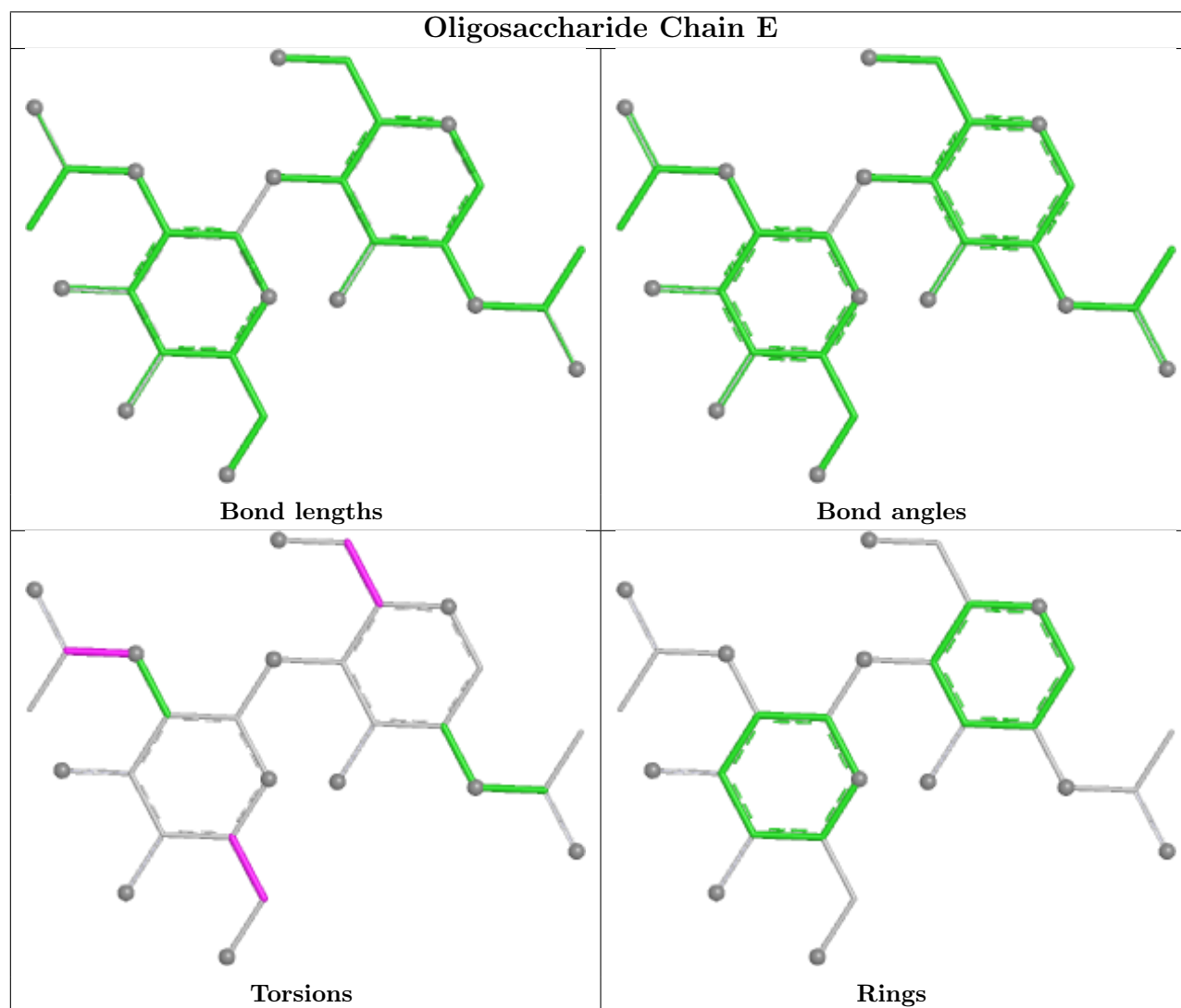
Mol	Chain	Res	Type	Atoms
2	L	1	NAG	O5-C5-C6-O6
2	F	1	NAG	O5-C5-C6-O6
2	F	2	NAG	C4-C5-C6-O6
2	H	2	NAG	O5-C5-C6-O6
2	E	2	NAG	C8-C7-N2-C2
2	G	2	NAG	O5-C5-C6-O6
2	I	1	NAG	C4-C5-C6-O6
2	E	2	NAG	O7-C7-N2-C2
2	K	1	NAG	C4-C5-C6-O6
2	K	1	NAG	C8-C7-N2-C2
2	I	1	NAG	O5-C5-C6-O6
2	L	2	NAG	C4-C5-C6-O6
2	K	1	NAG	O7-C7-N2-C2
2	G	2	NAG	C4-C5-C6-O6
2	F	1	NAG	C4-C5-C6-O6
2	I	1	NAG	C8-C7-N2-C2
2	M	1	NAG	C8-C7-N2-C2
2	H	2	NAG	C8-C7-N2-C2
2	L	2	NAG	O5-C5-C6-O6
2	I	1	NAG	O7-C7-N2-C2
2	J	2	NAG	C3-C2-N2-C7
2	M	1	NAG	O7-C7-N2-C2
2	H	2	NAG	O7-C7-N2-C2
2	E	2	NAG	C4-C5-C6-O6
2	J	2	NAG	C4-C5-C6-O6
2	E	2	NAG	O5-C5-C6-O6

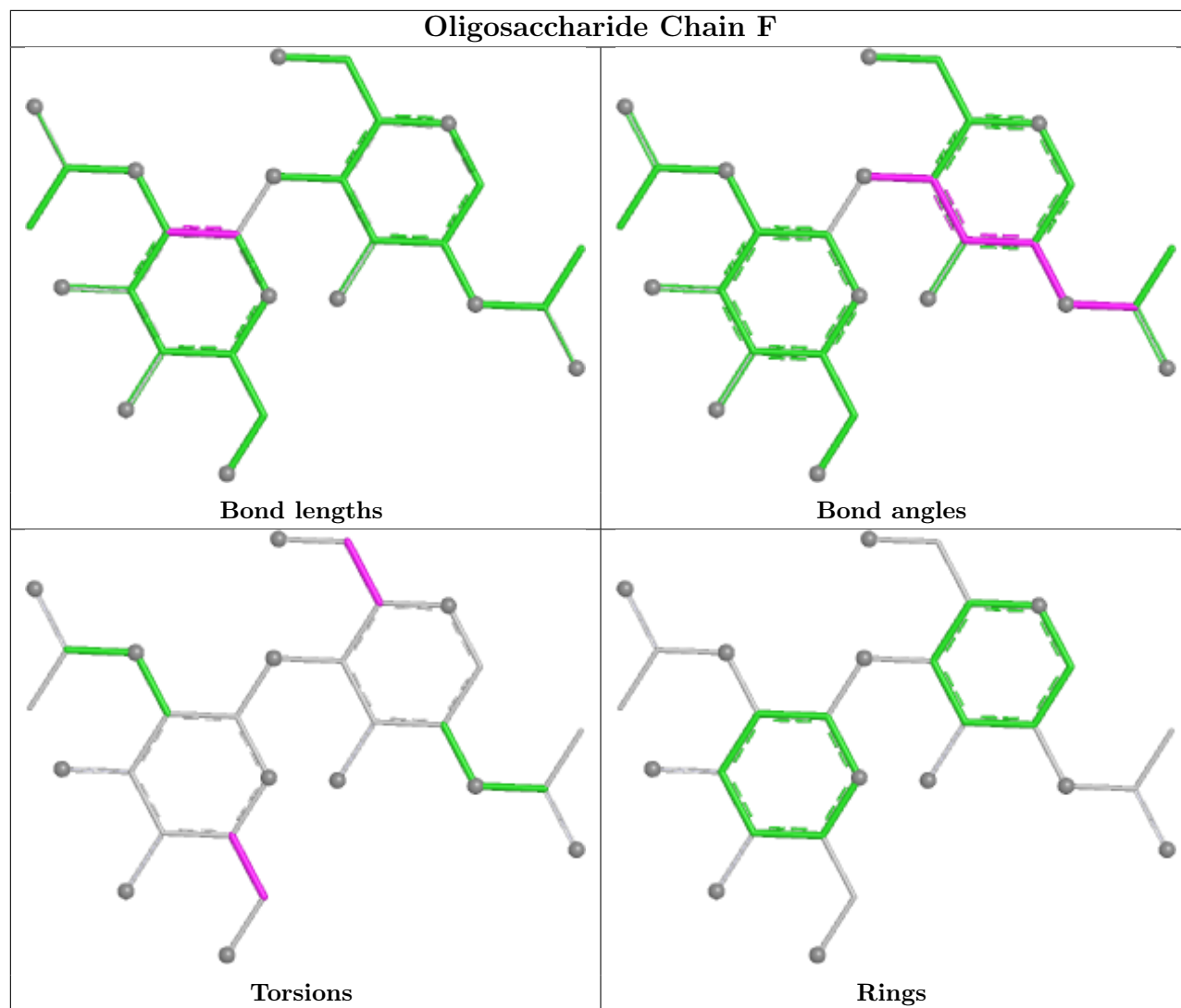
There are no ring outliers.

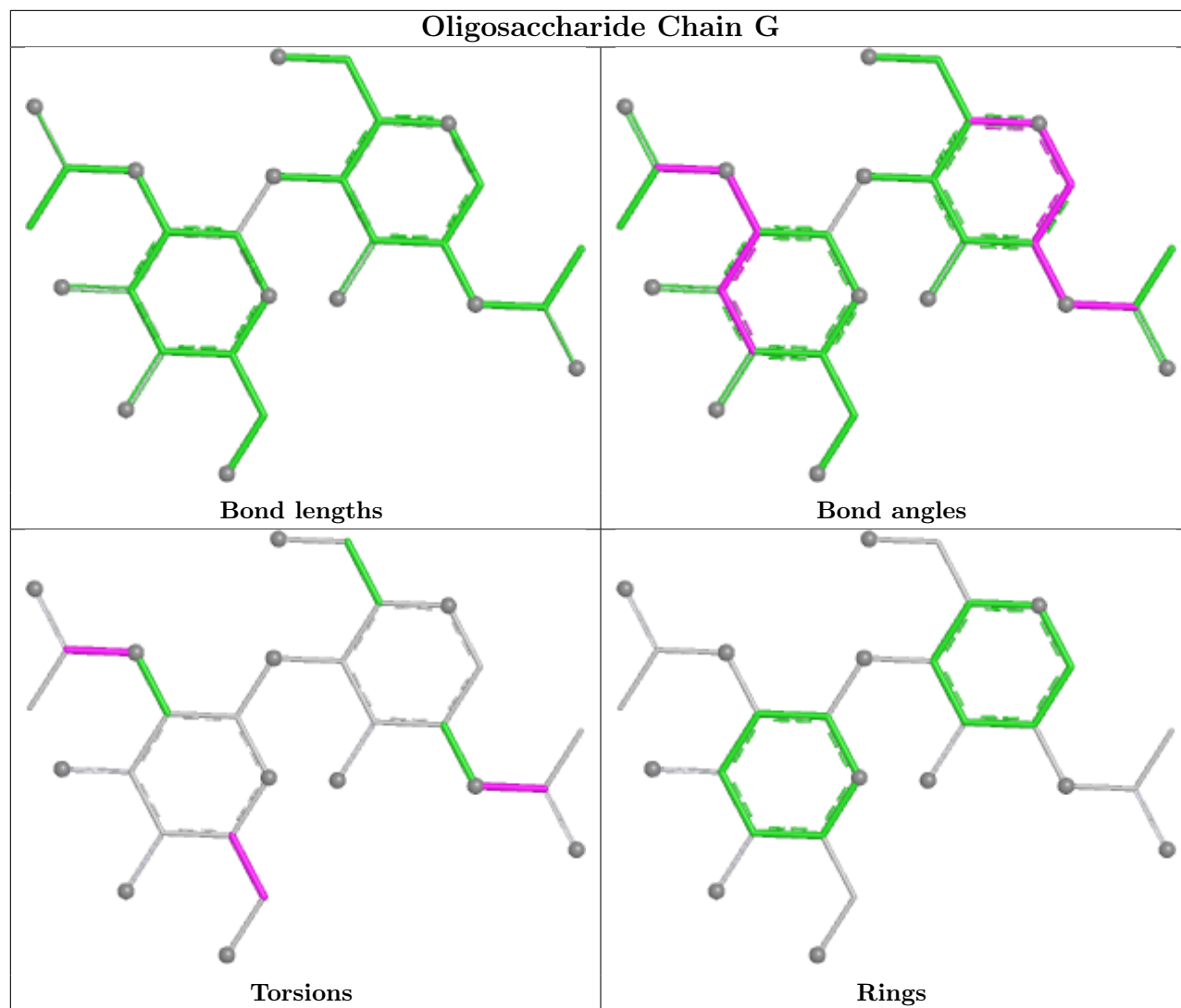
11 monomers are involved in 15 short contacts:

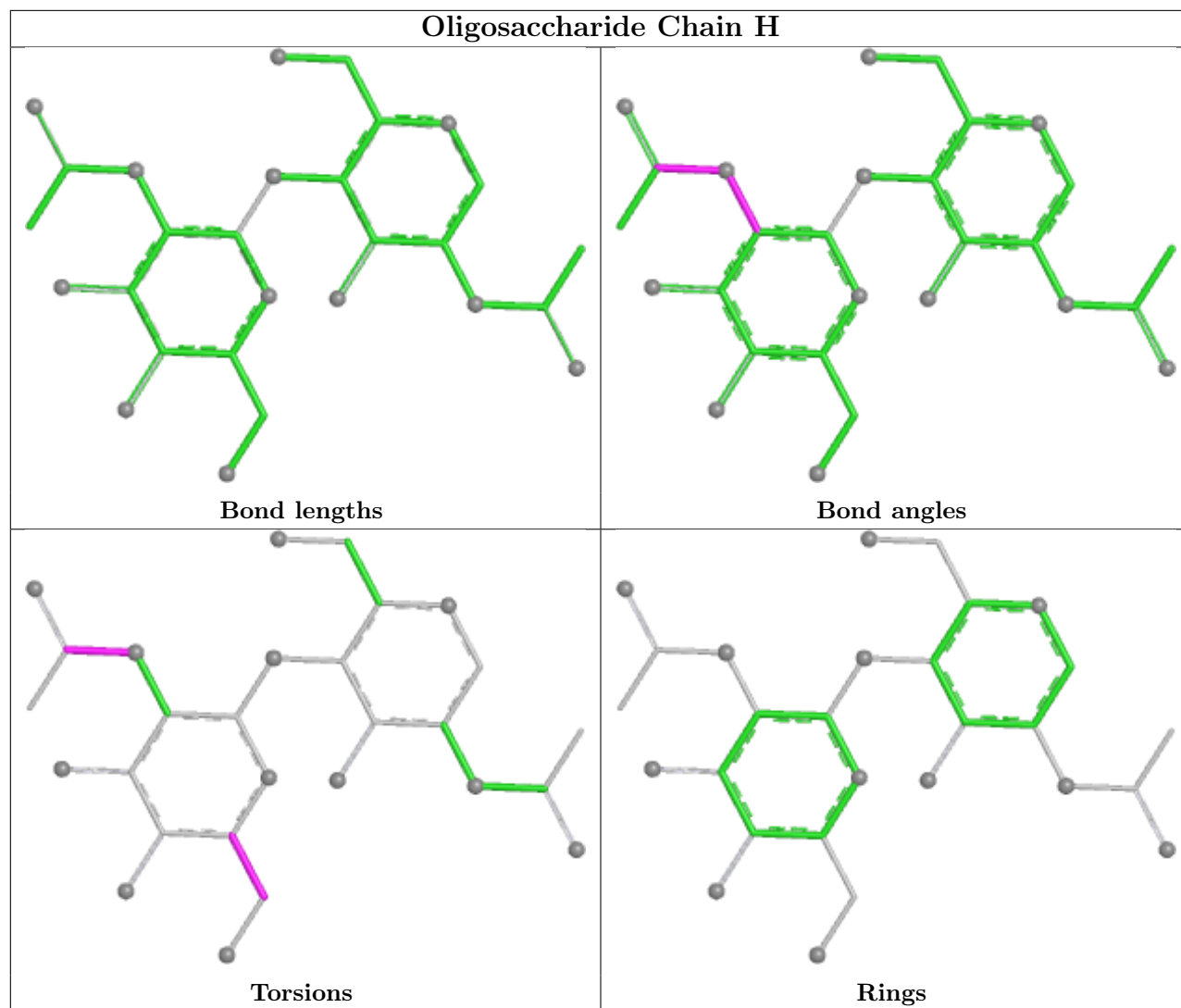
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	1	NAG	3	0
2	G	2	NAG	2	0
2	J	1	NAG	3	0
2	G	1	NAG	2	0
2	M	2	NAG	1	0
2	I	1	NAG	1	0
2	J	2	NAG	3	0
2	L	1	NAG	1	0
2	M	1	NAG	2	0
2	E	2	NAG	1	0
2	L	2	NAG	2	0

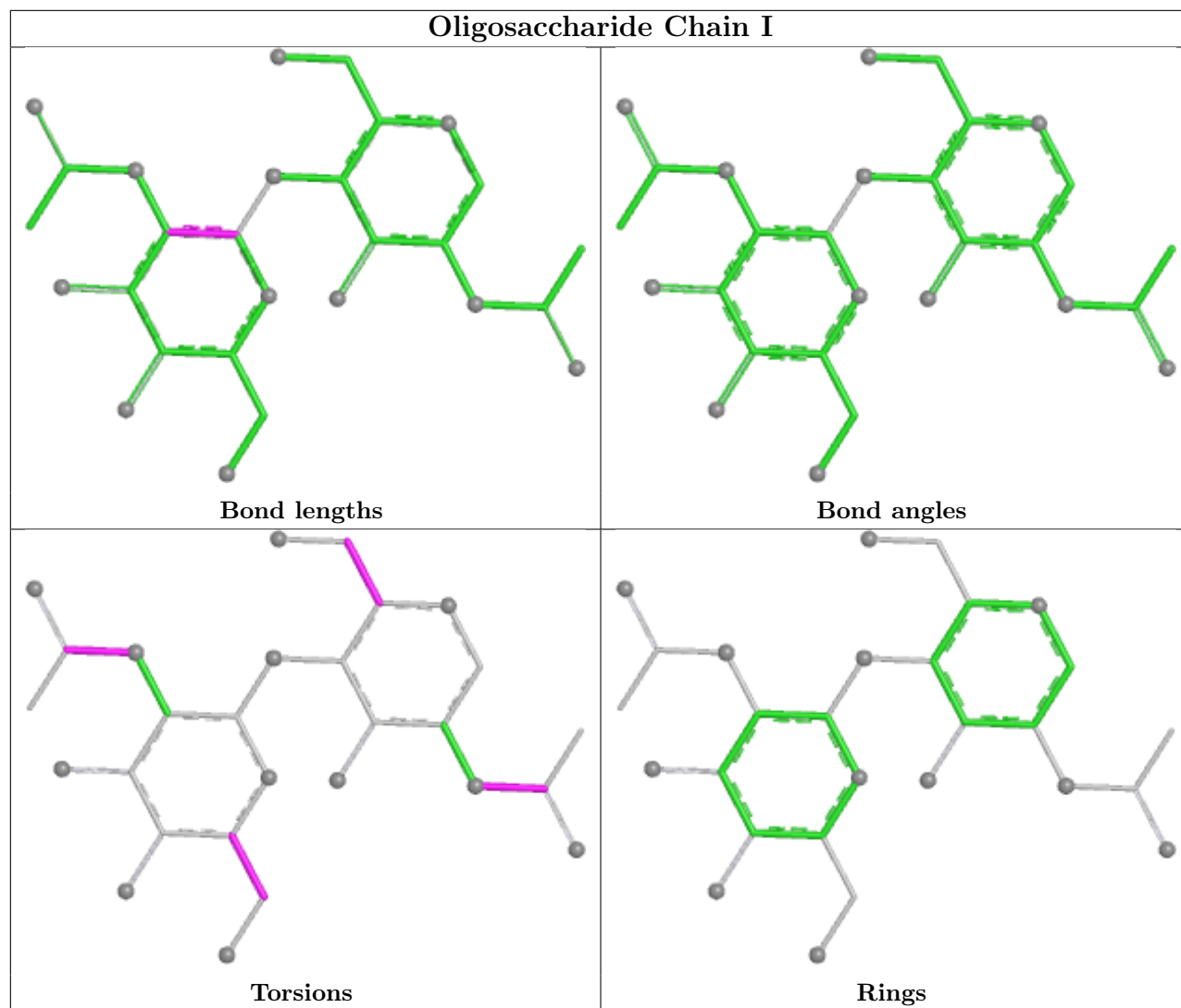
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

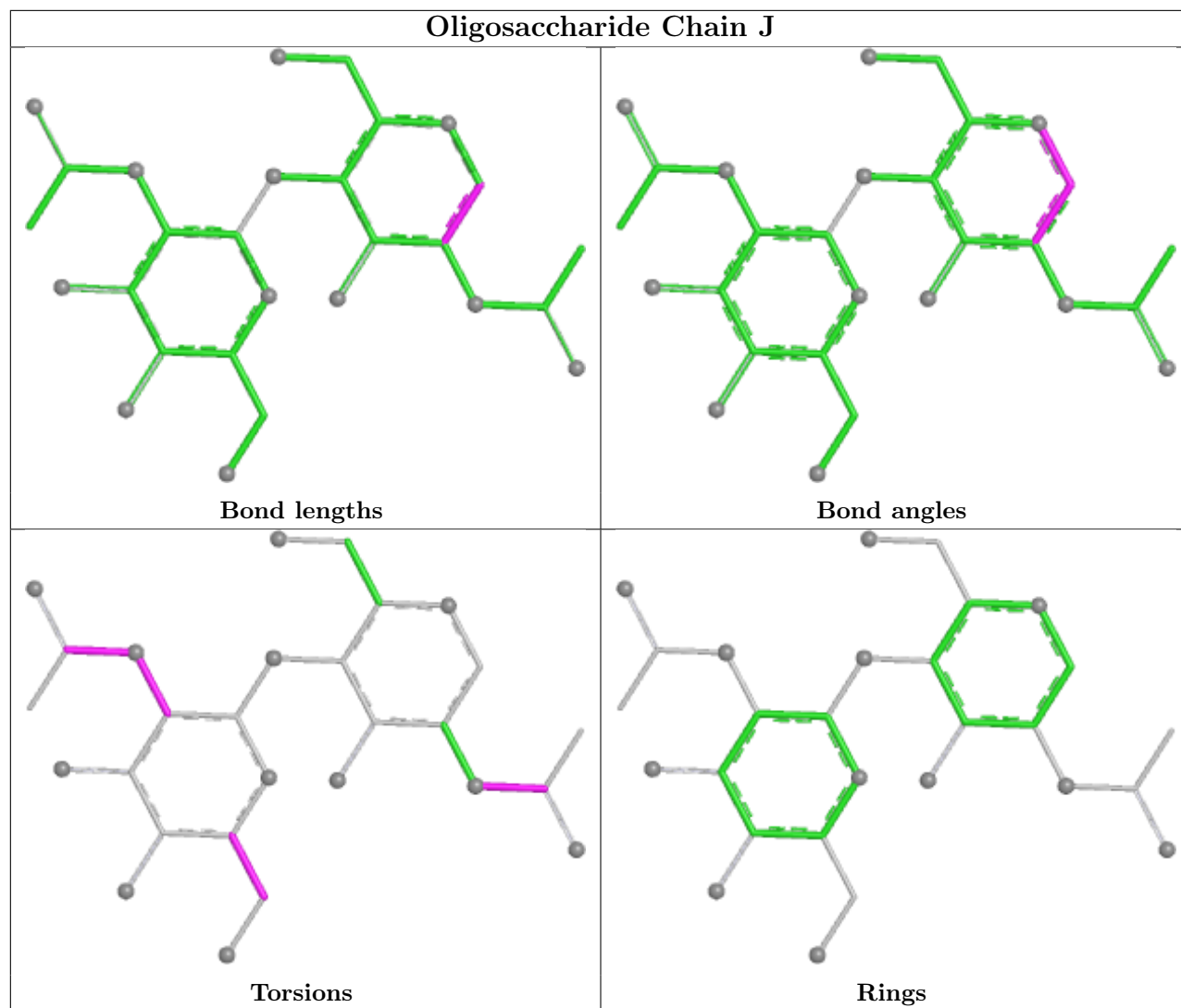


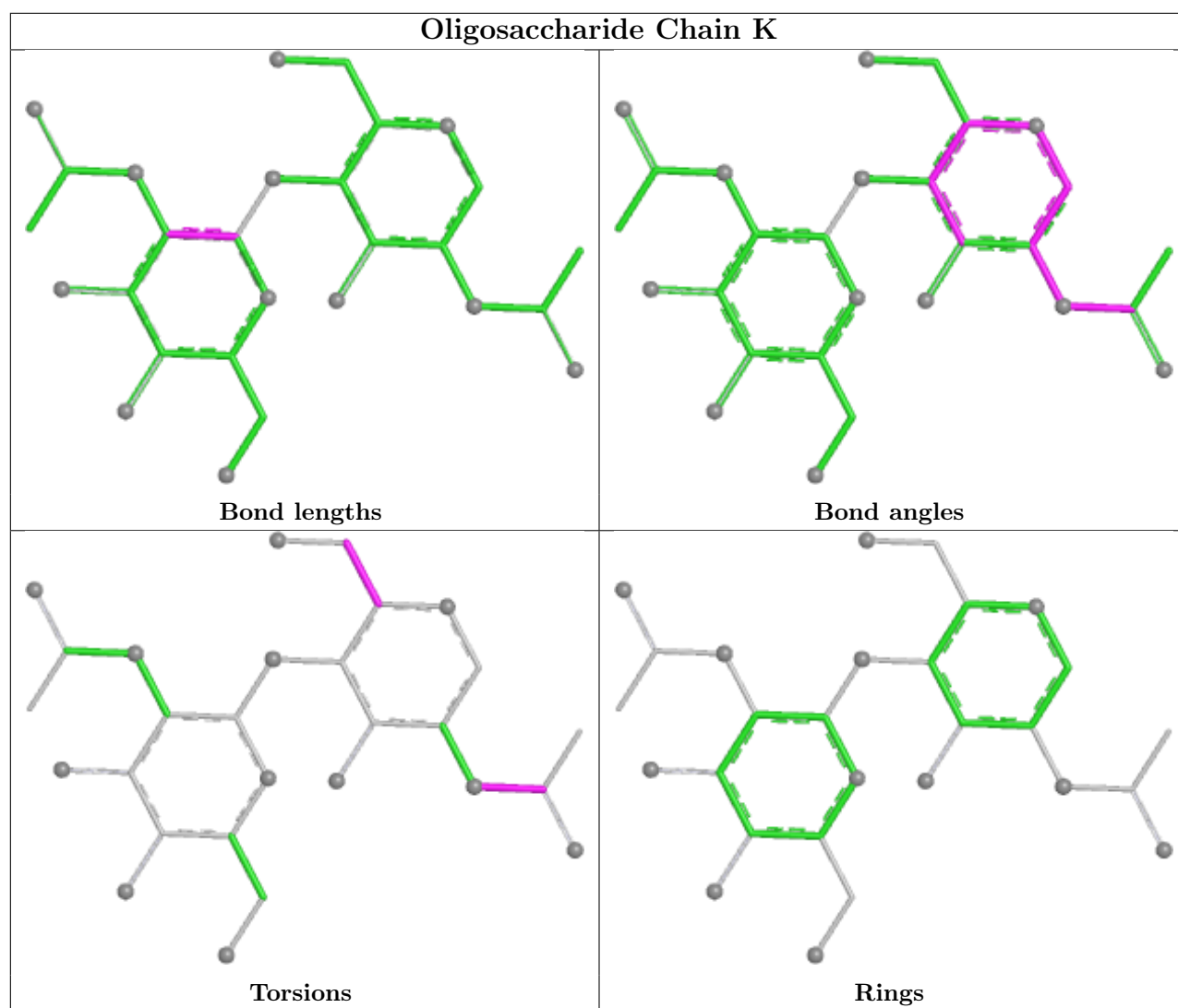


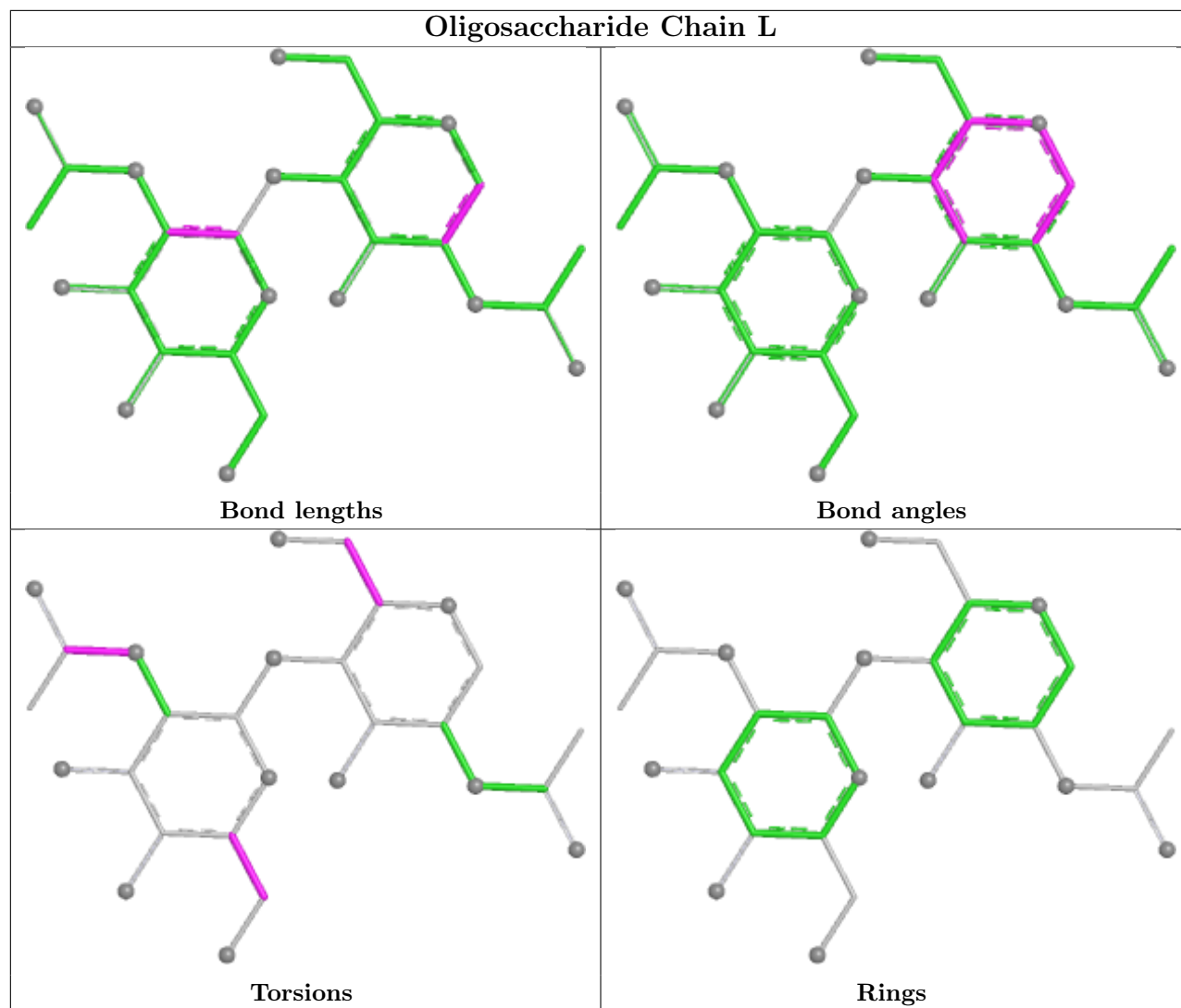


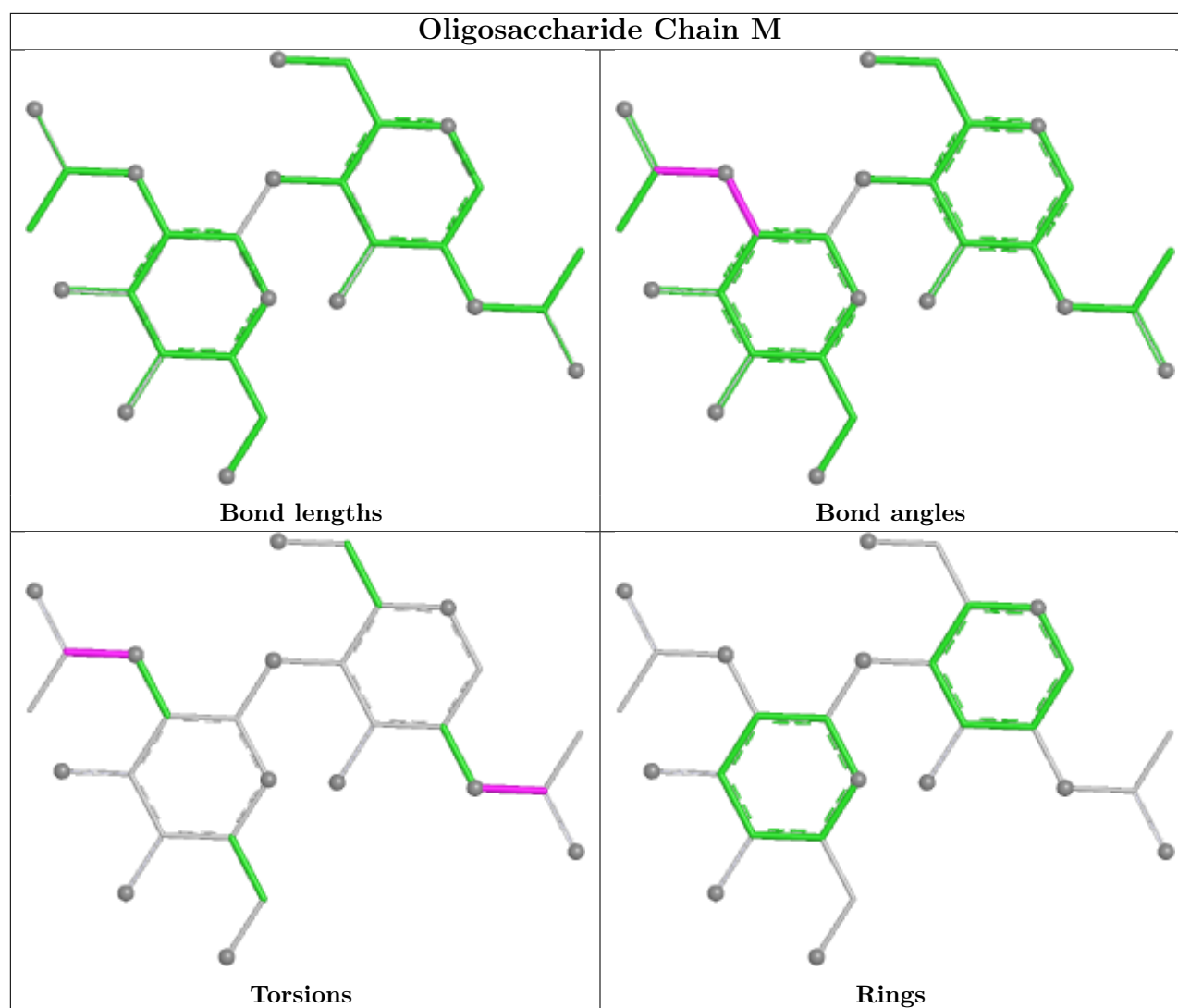












5.6 Ligand geometry [i](#)

27 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	$\# Z > 2$
4	007	B	1767	-	13,14,14	1.24	1 (7%)	13,19,19	0.71	0
3	NAG	D	1279	1	14,14,15	0.71	1 (7%)	17,19,21	0.62	0
3	NAG	B	1321	1	14,14,15	0.48	0	17,19,21	0.74	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	SO4	A	1769	-	4,4,4	0.52	0	6,6,6	0.23	0
3	NAG	A	1321	1	14,14,15	0.60	0	17,19,21	1.12	2 (11%)
3	NAG	C	1321	1	14,14,15	0.61	0	17,19,21	0.98	0
5	SO4	C	1769	-	4,4,4	0.46	0	6,6,6	0.08	0
3	NAG	A	1279	1	14,14,15	0.71	0	17,19,21	0.61	0
3	NAG	A	1092	1	14,14,15	0.79	1 (7%)	17,19,21	0.76	0
3	NAG	B	1085	1	14,14,15	0.53	0	17,19,21	0.81	0
3	NAG	C	1092	1	14,14,15	1.01	1 (7%)	17,19,21	0.84	0
5	SO4	A	1768	-	4,4,4	0.38	0	6,6,6	0.08	0
3	NAG	D	1085	1	14,14,15	0.78	0	17,19,21	0.84	0
3	NAG	A	1085	1	14,14,15	0.72	0	17,19,21	0.56	0
3	NAG	C	1085	1	14,14,15	0.62	0	17,19,21	0.68	0
5	SO4	B	1769	-	4,4,4	0.48	0	6,6,6	0.10	0
5	SO4	D	1769	-	4,4,4	0.47	0	6,6,6	0.10	0
4	007	A	1767	-	13,14,14	1.51	3 (23%)	13,19,19	1.05	2 (15%)
3	NAG	B	1279	1	14,14,15	0.58	0	17,19,21	0.72	1 (5%)
4	007	C	1767	-	13,14,14	1.42	3 (23%)	13,19,19	0.76	1 (7%)
3	NAG	C	1229	1	14,14,15	0.53	0	17,19,21	0.84	0
5	SO4	D	1768	-	4,4,4	0.40	0	6,6,6	0.11	0
3	NAG	C	1279	1	14,14,15	0.66	0	17,19,21	0.77	0
5	SO4	B	1768	-	4,4,4	0.42	0	6,6,6	0.23	0
4	007	D	1767	-	13,14,14	1.45	3 (23%)	13,19,19	0.93	1 (7%)
3	NAG	B	1229	1	14,14,15	0.55	0	17,19,21	0.73	0
5	SO4	C	1768	-	4,4,4	0.42	0	6,6,6	0.18	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	007	B	1767	-	-	0/6/18/18	0/2/2/2
3	NAG	D	1279	1	-	2/6/23/26	0/1/1/1
3	NAG	B	1321	1	-	4/6/23/26	0/1/1/1
3	NAG	A	1321	1	-	4/6/23/26	0/1/1/1
3	NAG	C	1321	1	-	5/6/23/26	0/1/1/1
3	NAG	A	1279	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1092	1	1/1/5/7	4/6/23/26	0/1/1/1
3	NAG	B	1085	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	C	1092	1	1/1/5/7	4/6/23/26	0/1/1/1
3	NAG	D	1085	1	1/1/5/7	2/6/23/26	0/1/1/1
3	NAG	A	1085	1	-	4/6/23/26	0/1/1/1
3	NAG	C	1085	1	-	4/6/23/26	0/1/1/1
4	007	A	1767	-	-	0/6/18/18	0/2/2/2
3	NAG	B	1279	1	-	2/6/23/26	0/1/1/1
4	007	C	1767	-	-	0/6/18/18	0/2/2/2
3	NAG	C	1229	1	-	1/6/23/26	0/1/1/1
3	NAG	C	1279	1	-	3/6/23/26	0/1/1/1
4	007	D	1767	-	-	0/6/18/18	0/2/2/2
3	NAG	B	1229	1	-	0/6/23/26	0/1/1/1

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	1092	NAG	C1-C2	3.44	1.57	1.52
4	A	1767	007	C3-C6	2.78	1.59	1.53
4	A	1767	007	C7-C6	2.57	1.43	1.39
4	C	1767	007	C3-C6	2.52	1.58	1.53
4	D	1767	007	C7-C6	2.50	1.43	1.39
4	A	1767	007	C8-C6	2.50	1.43	1.39
4	D	1767	007	C8-C6	2.48	1.43	1.39
4	C	1767	007	C8-C6	2.47	1.43	1.39
4	D	1767	007	C3-C6	2.43	1.58	1.53
3	A	1092	NAG	C1-C2	2.34	1.55	1.52
4	B	1767	007	C8-C6	2.19	1.43	1.39
4	C	1767	007	C7-C6	2.16	1.42	1.39
3	D	1279	NAG	C1-C2	2.04	1.55	1.52

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1321	NAG	C2-N2-C7	-2.95	118.94	122.90
4	A	1767	007	C4-C5-C3	2.71	108.31	105.00
4	D	1767	007	C2-C1-C3	2.69	108.28	105.00
3	A	1321	NAG	C4-C3-C2	-2.41	107.49	111.02
4	A	1767	007	C2-C1-C3	2.32	107.83	105.00
3	B	1321	NAG	C2-N2-C7	-2.14	120.04	122.90
4	C	1767	007	C2-C1-C3	2.11	107.57	105.00
3	B	1279	NAG	C2-N2-C7	-2.02	120.20	122.90

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	A	1092	NAG	C1
3	C	1092	NAG	C1
3	D	1085	NAG	C1

All (43) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1085	NAG	C8-C7-N2-C2
3	A	1085	NAG	O7-C7-N2-C2
3	A	1092	NAG	C8-C7-N2-C2
3	A	1092	NAG	O7-C7-N2-C2
3	A	1279	NAG	C8-C7-N2-C2
3	A	1279	NAG	O7-C7-N2-C2
3	B	1085	NAG	C8-C7-N2-C2
3	B	1085	NAG	O7-C7-N2-C2
3	C	1085	NAG	C8-C7-N2-C2
3	C	1085	NAG	O7-C7-N2-C2
3	C	1092	NAG	C8-C7-N2-C2
3	C	1092	NAG	O7-C7-N2-C2
3	C	1279	NAG	C8-C7-N2-C2
3	C	1279	NAG	O7-C7-N2-C2
3	C	1321	NAG	C8-C7-N2-C2
3	C	1321	NAG	O7-C7-N2-C2
3	D	1085	NAG	C8-C7-N2-C2
3	D	1085	NAG	O7-C7-N2-C2
3	D	1279	NAG	C8-C7-N2-C2
3	D	1279	NAG	O7-C7-N2-C2
3	B	1321	NAG	C4-C5-C6-O6
3	C	1321	NAG	C4-C5-C6-O6
3	B	1321	NAG	O5-C5-C6-O6
3	B	1279	NAG	C8-C7-N2-C2
3	B	1279	NAG	O7-C7-N2-C2
3	A	1321	NAG	O5-C5-C6-O6
3	A	1085	NAG	C4-C5-C6-O6
3	C	1321	NAG	O5-C5-C6-O6
3	A	1085	NAG	O5-C5-C6-O6
3	A	1321	NAG	C8-C7-N2-C2
3	A	1092	NAG	O5-C5-C6-O6
3	A	1321	NAG	O7-C7-N2-C2
3	B	1321	NAG	C8-C7-N2-C2
3	C	1092	NAG	O5-C5-C6-O6
3	B	1321	NAG	O7-C7-N2-C2

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Mol	Chain	Res	Type	Atoms
3	A	1321	NAG	C4-C5-C6-O6
3	C	1085	NAG	C1-C2-N2-C7
3	A	1092	NAG	C4-C5-C6-O6
3	C	1229	NAG	C4-C5-C6-O6
3	C	1085	NAG	C3-C2-N2-C7
3	C	1092	NAG	C4-C5-C6-O6
3	C	1321	NAG	C1-C2-N2-C7
3	C	1279	NAG	C3-C2-N2-C7

There are no ring outliers.

7 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	1279	NAG	1	0
3	B	1321	NAG	1	0
3	A	1321	NAG	1	0
3	C	1321	NAG	1	0
3	A	1279	NAG	1	0
3	C	1092	NAG	2	0
4	A	1767	007	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.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.