



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 07:01 PM UTC

PDB ID : 1LOC / pdb_00001loc
Title : INTERACTION OF A LEGUME LECTIN WITH TWO COMPONENTS OF
THE BACTERIAL CELL WALL
Authors : Bourne, Y.; Cambillau, C.
Deposited on : 1993-01-27
Resolution : 2.05 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)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

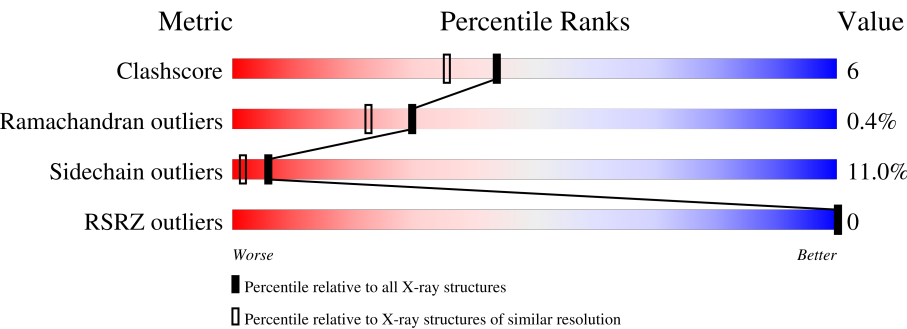
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.05 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	2333 (2.04-2.04)
Ramachandran outliers	187476	2318 (2.04-2.04)
Sidechain outliers	187428	2318 (2.04-2.04)
RSRZ outliers	180081	2260 (2.04-2.04)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	181	67%24%8%..
1	C	181	67%24%8%..
1	E	181	60%29%9%..
1	G	181	71%22%6%..
2	B	52	69%13%8%10%
2	D	52	71%17%•10%
2	F	52	65%17%6%•10%

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Mol	Chain	Length	Quality of chain
2	H	52	77% 12% 10%
3	1	2	50% 50%
3	2	2	50% 50%
3	3	2	50% 50%
3	4	2	50% 50%

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 7558 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 LEGUME ISOLECTIN I (ALPHA CHAIN).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	A	180	Total	C	N	O	0	0	0
			1397	890	230	277			
1	C	180	Total	C	N	O	0	0	0
			1397	890	230	277			
1	E	180	Total	C	N	O	0	0	0
			1397	890	230	277			
1	G	180	Total	C	N	O	0	0	0
			1397	890	230	277			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	153	ALA	LYS	conflict	UNP P04122
C	153	ALA	LYS	conflict	UNP P04122
E	153	ALA	LYS	conflict	UNP P04122
G	153	ALA	LYS	conflict	UNP P04122

- Molecule 2 is a protein called LEGUME ISOLECTIN I (BETA CHAIN).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	B	47	Total	C	N	O	0	0	0
			381	251	58	72			
2	D	47	Total	C	N	O	0	0	0
			376	248	58	70			
2	F	47	Total	C	N	O	0	0	0
			381	251	58	72			
2	H	47	Total	C	N	O	0	0	0
			376	248	58	70			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	41	TYR	PHE	conflict	UNP P12306
D	41	TYR	PHE	conflict	UNP P12306
F	41	TYR	PHE	conflict	UNP P12306
H	41	TYR	PHE	conflict	UNP P12306

- Molecule 3 is a protein called MURAMYL-DIPEPTIDE D-ALA-D-IGLN.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	1	2	Total	C	N	O	0	0	0
			15	8	3	4			
3	2	1	Total	C	N	O	0	0	0
			5	3	1	1			
3	3	2	Total	C	N	O	0	0	0
			15	8	3	4			
3	4	2	Total	C	N	O	0	0	0
			15	8	3	4			

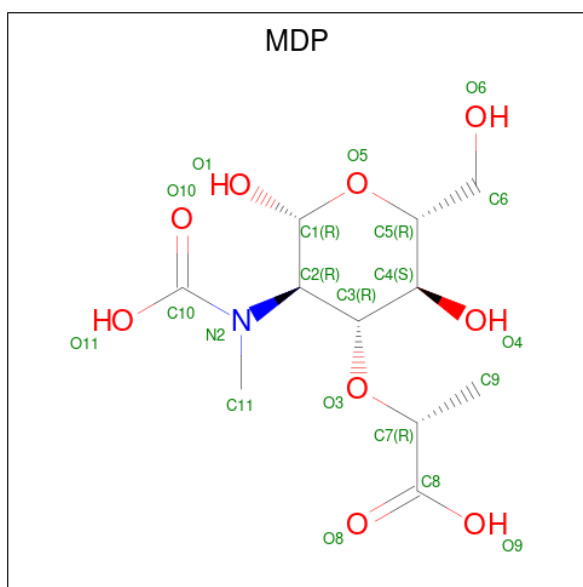
- Molecule 4 is CALCIUM ION (CCD ID: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Ca	0	0
			1	1		
4	C	1	Total	Ca	0	0
			1	1		
4	E	1	Total	Ca	0	0
			1	1		
4	G	1	Total	Ca	0	0
			1	1		

- Molecule 5 is MANGANESE (II) ION (CCD ID: MN) (formula: Mn).

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

- Molecule 6 is N-carboxyl-N-methyl-beta-muramic acid (CCD ID: MDP) (formula: C₁₁H₁₉NO₉).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	1	1	Total	C	N	O	0	0
			20	11	1	8		
6	2	1	Total	C	N	O	0	0
			20	11	1	8		
6	3	1	Total	C	N	O	0	0
			20	11	1	8		
6	4	1	Total	C	N	O	0	0
			20	11	1	8		

- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	74	Total	O	0	0
			74	74		
7	B	14	Total	O	0	0
			14	14		
7	1	8	Total	O	0	0
			8	8		
7	C	48	Total	O	0	0
			48	48		
7	D	9	Total	O	0	0
			9	9		
7	2	1	Total	O	0	0
			1	1		
7	E	56	Total	O	0	0
			56	56		
7	F	10	Total	O	0	0
			10	10		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	3	5	Total 5	O 5	0	0
7	G	77	Total 77	O 77	0	0
7	H	8	Total 8	O 8	0	0
7	4	8	Total 8	O 8	0	0



• Molecule 2: LEGUME ISOLECTIN I (BETA CHAIN)



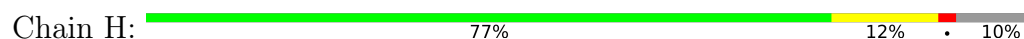
• Molecule 2: LEGUME ISOLECTIN I (BETA CHAIN)



• Molecule 2: LEGUME ISOLECTIN I (BETA CHAIN)



• Molecule 2: LEGUME ISOLECTIN I (BETA CHAIN)



• Molecule 3: MURAMYL-DIPEPTIDE D-ALA-D-IGLN



• Molecule 3: MURAMYL-DIPEPTIDE D-ALA-D-IGLN



• Molecule 3: MURAMYL-DIPEPTIDE D-ALA-D-IGLN



4951
ZGL952

- Molecule 3: MURAMYL-DIPEPTIDE D-ALA-D-IGLN

Chain 4: 

4951
ZGL952

4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	56.58Å 139.80Å 63.40Å 90.00° 91.50° 90.00°	Depositor
Resolution (Å)	6.00 – 2.05 6.00 – 2.05	Depositor EDS
% Data completeness (in resolution range)	(Not available) (6.00-2.05) 92.8 (6.00-2.05)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	6.37 (at 2.05Å)	Xtriage
Refinement program	X-PLOR	Depositor
R, R_{free}	0.189 , (Not available) 0.180 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	25.8	Xtriage
Anisotropy	0.046	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.49 , 120.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.037 for h,-k,-l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	7558	wwPDB-VP
Average B, all atoms (Å ²)	22.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.33% 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.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ZGL, DAL, CA, MDP, MN

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	1.22	9/1431 (0.6%)	1.94	44/1954 (2.3%)
1	C	1.04	7/1431 (0.5%)	1.85	31/1954 (1.6%)
1	E	1.14	6/1431 (0.4%)	1.92	43/1954 (2.2%)
1	G	1.14	8/1431 (0.6%)	1.95	35/1954 (1.8%)
2	B	1.21	3/394 (0.8%)	1.76	9/539 (1.7%)
2	D	1.23	5/389 (1.3%)	1.62	3/532 (0.6%)
2	F	1.16	2/394 (0.5%)	1.79	8/539 (1.5%)
2	H	1.24	3/389 (0.8%)	1.74	4/532 (0.8%)
All	All	1.15	43/7290 (0.6%)	1.88	177/9958 (1.8%)

All (43) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	141	VAL	CA-CB	9.32	1.66	1.54
1	A	141	VAL	CA-CB	9.12	1.66	1.54
1	A	116	VAL	CA-CB	8.81	1.66	1.54
1	G	51	HIS	CD2-NE2	-8.53	1.28	1.37
1	E	32	THR	CA-CB	7.90	1.64	1.53
1	G	50	ILE	CA-CB	7.78	1.64	1.54
1	A	32	THR	CA-CB	7.76	1.64	1.53
1	E	51	HIS	CD2-NE2	-7.74	1.29	1.37
2	B	35	HIS	CD2-NE2	-7.66	1.29	1.37
2	F	35	HIS	CD2-NE2	-7.64	1.29	1.37
2	D	35	HIS	CD2-NE2	-7.31	1.29	1.37
1	A	51	HIS	CD2-NE2	-7.06	1.30	1.37
1	E	116	VAL	CA-CB	7.00	1.64	1.54
1	G	162	VAL	CA-CB	6.88	1.65	1.55
1	G	141	VAL	CA-CB	6.85	1.62	1.54
2	D	37	VAL	CA-CB	6.81	1.62	1.54
1	C	116	VAL	CA-CB	6.69	1.63	1.54
1	C	79	VAL	CA-CB	6.38	1.63	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	43	HIS	CD2-NE2	-6.29	1.30	1.37
1	C	136	HIS	CG-ND1	-6.27	1.31	1.38
2	H	35	HIS	CD2-NE2	-6.14	1.31	1.37
2	D	35	HIS	CG-ND1	-6.13	1.31	1.38
2	B	43	HIS	CD2-NE2	-6.08	1.31	1.37
1	G	115	THR	CA-CB	6.05	1.68	1.53
1	A	136	HIS	CG-ND1	-6.04	1.31	1.38
1	E	175	VAL	CA-CB	6.03	1.63	1.54
1	C	51	HIS	CD2-NE2	-6.00	1.31	1.37
2	D	16	VAL	CA-CB	5.96	1.61	1.54
1	E	136	HIS	CG-ND1	-5.94	1.31	1.38
1	C	123	PHE	C-O	5.92	1.30	1.24
1	A	60	VAL	CA-CB	5.86	1.65	1.55
1	G	103	VAL	CA-CB	5.74	1.62	1.55
1	A	123	PHE	C-O	5.72	1.30	1.24
1	G	34	THR	CA-CB	5.60	1.63	1.53
1	C	115	THR	CA-CB	5.47	1.67	1.53
2	B	45	GLU	CA-CB	-5.38	1.45	1.53
1	A	136	HIS	CD2-NE2	-5.34	1.31	1.37
2	H	10	VAL	CA-CB	5.30	1.61	1.54
2	D	43	HIS	CD2-NE2	-5.23	1.32	1.37
2	H	35	HIS	CG-ND1	-5.20	1.32	1.38
1	A	50	ILE	CA-CB	5.18	1.61	1.54
1	E	50	ILE	CB-CG1	-5.08	1.43	1.53
1	G	136	HIS	CG-ND1	-5.05	1.32	1.38

All (177) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	50	ILE	CB-CG1-CD1	-11.91	88.80	113.80
1	G	103	VAL	CB-CA-C	11.49	121.43	110.63
2	F	16	VAL	N-CA-CB	-10.34	96.73	111.21
2	H	21	ARG	NE-CZ-NH1	9.72	131.22	121.50
1	G	125	ASN	OD1-CG-ND2	-9.45	113.15	122.60
1	E	172	VAL	CB-CA-C	-9.28	99.41	110.91
1	E	30	ARG	N-CA-C	9.23	124.49	109.72
2	B	16	VAL	N-CA-CB	-9.02	98.58	111.21
1	E	172	VAL	N-CA-CB	8.98	120.51	110.72
1	C	167	ASN	OD1-CG-ND2	-8.79	113.81	122.60
1	G	16	GLN	OE1-CD-NE2	-8.71	113.89	122.60
1	E	167	ASN	OD1-CG-ND2	-8.64	113.96	122.60
1	G	59	ASN	OD1-CG-ND2	-8.51	114.09	122.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	125	ASN	N-CA-C	-8.30	94.89	108.41
1	A	50	ILE	CB-CG1-CD1	-8.06	96.87	113.80
1	G	75	ASN	CA-CB-CG	7.87	120.47	112.60
1	G	172	VAL	N-CA-CB	-7.82	101.61	110.99
2	F	21	ARG	NE-CZ-NH2	-7.81	112.17	119.20
1	G	63	PHE	CA-CB-CG	7.81	121.61	113.80
1	A	47	SER	N-CA-C	7.79	119.77	111.28
2	F	21	ARG	NE-CZ-NH1	7.77	129.27	121.50
1	G	167	ASN	OD1-CG-ND2	-7.72	114.88	122.60
1	A	155	GLN	OE1-CD-NE2	-7.60	115.00	122.60
1	G	161	ASN	OD1-CG-ND2	-7.51	115.09	122.60
1	G	51	HIS	CB-CG-CD2	-7.41	121.57	131.20
1	E	103	VAL	CG1-CB-CG2	-7.39	94.53	110.80
1	C	103	VAL	N-CA-CB	-7.31	102.25	112.12
1	C	51	HIS	CB-CG-CD2	-7.28	121.73	131.20
1	C	63	PHE	CA-CB-CG	7.27	121.07	113.80
1	A	37	VAL	N-CA-CB	-7.18	97.98	111.62
1	A	9	THR	CA-CB-OG1	-7.16	98.87	109.60
1	G	103	VAL	N-CA-CB	-7.13	100.58	111.57
1	E	156	ASN	OD1-CG-ND2	-7.09	115.51	122.60
1	A	9	THR	N-CA-CB	-6.97	99.51	110.46
1	E	3	THR	N-CA-CB	-6.96	98.41	111.00
1	G	9	THR	N-CA-CB	-6.92	99.64	110.30
1	C	132	ASN	OD1-CG-ND2	-6.90	115.70	122.60
2	B	43	HIS	CB-CG-CD2	-6.83	122.33	131.20
1	C	114	GLN	OE1-CD-NE2	-6.81	115.79	122.60
1	A	75	ASN	OD1-CG-ND2	-6.78	115.82	122.60
1	C	83	PHE	CA-CB-CG	6.78	120.58	113.80
1	E	39	ASN	OD1-CG-ND2	-6.74	115.86	122.60
2	F	35	HIS	CB-CG-CD2	-6.71	122.47	131.20
1	E	41	VAL	CB-CA-C	-6.69	100.20	110.50
1	A	142	ASN	OD1-CG-ND2	-6.57	116.03	122.60
1	A	140	ASP	CA-CB-CG	6.54	119.14	112.60
1	E	21	GLN	OE1-CD-NE2	-6.52	116.08	122.60
1	A	16	GLN	CG-CD-NE2	6.49	126.14	116.40
1	C	132	ASN	CB-CG-ND2	6.40	126.01	116.40
1	E	1	THR	CA-CB-OG1	-6.38	100.02	109.60
1	E	62	ASN	OD1-CG-ND2	-6.36	116.24	122.60
1	A	95	GLN	OE1-CD-NE2	-6.33	116.28	122.60
1	C	155	GLN	CA-CB-CG	-6.25	101.59	114.10
1	C	140	ASP	CA-CB-CG	6.18	118.78	112.60
2	H	21	ARG	NE-CZ-NH2	-6.17	113.64	119.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	43	HIS	CB-CG-ND1	6.14	131.91	122.70
1	A	39	ASN	OD1-CG-ND2	-6.14	116.46	122.60
1	E	31	LEU	O-C-N	-6.12	115.76	123.05
1	C	79	VAL	N-CA-C	6.11	117.08	108.17
1	E	63	PHE	CA-CB-CG	6.11	119.91	113.80
1	A	16	GLN	OE1-CD-NE2	-6.08	116.52	122.60
2	H	6	LEU	O-C-N	-6.06	116.32	123.41
1	A	78	ASN	OD1-CG-ND2	-6.05	116.55	122.60
1	G	128	TRP	CG-CD2-CE3	6.05	139.95	133.90
1	C	103	VAL	CB-CA-C	6.04	116.57	110.65
1	G	85	PHE	N-CA-C	-5.99	99.94	109.59
2	F	43	HIS	CB-CG-CD2	-5.99	123.42	131.20
1	E	142	ASN	OD1-CG-ND2	-5.98	116.62	122.60
1	G	105	ASN	OD1-CG-ND2	-5.97	116.63	122.60
1	G	39	ASN	N-CA-C	5.95	119.60	111.39
1	C	51	HIS	CB-CG-ND1	5.95	131.62	122.70
1	E	118	VAL	N-CA-C	-5.94	99.08	107.75
1	G	176	SER	CA-C-O	-5.94	113.73	120.32
2	H	31	GLU	CA-CB-CG	-5.93	102.23	114.10
1	A	80	ALA	O-C-N	-5.92	117.05	123.26
1	A	148	ASN	CB-CG-ND2	5.90	125.25	116.40
1	G	134	ASP	N-CA-C	5.89	118.80	110.50
1	G	80	ALA	O-C-N	-5.88	117.08	123.26
1	E	156	ASN	CB-CG-ND2	5.87	125.21	116.40
1	A	62	ASN	O-C-N	-5.87	116.35	123.16
1	G	53	TRP	CA-CB-CG	5.87	124.76	113.60
1	C	17	ASN	CA-CB-CG	5.83	118.42	112.60
2	B	19	TRP	CG-CD1-NE1	-5.78	102.69	110.20
1	A	177	LEU	CA-CB-CG	5.77	136.50	116.30
2	B	35	HIS	CB-CG-CD2	-5.76	123.71	131.20
1	A	73	ALA	CA-C-N	5.75	125.61	119.28
1	A	73	ALA	C-N-CA	5.75	125.61	119.28
2	D	12	LEU	N-CA-C	5.73	118.30	111.71
1	A	69	PHE	CA-CB-CG	5.72	119.52	113.80
1	G	155	GLN	OE1-CD-NE2	-5.71	116.89	122.60
1	G	172	VAL	CB-CA-C	5.71	118.60	110.84
1	A	125	ASN	CA-CB-CG	5.70	118.30	112.60
1	C	16	GLN	OE1-CD-NE2	-5.70	116.90	122.60
1	E	177	LEU	CA-CB-CG	5.67	136.13	116.30
2	F	35	HIS	CB-CG-ND1	5.66	131.19	122.70
1	A	112	THR	N-CA-CB	-5.62	100.76	110.32
1	A	85	PHE	O-C-N	-5.59	116.95	123.27

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	83	PHE	N-CA-CB	-5.58	101.16	111.53
1	C	29	GLU	N-CA-C	5.56	119.24	111.90
1	A	9	THR	OG1-CB-CG2	5.50	120.31	109.30
1	G	64	VAL	CG1-CB-CG2	-5.50	98.69	110.80
1	E	96	THR	N-CA-C	5.50	118.42	110.28
1	G	48	SER	CA-C-N	5.49	125.50	119.90
1	G	48	SER	C-N-CA	5.49	125.50	119.90
1	G	95	GLN	OE1-CD-NE2	-5.48	117.12	122.60
2	F	16	VAL	CB-CA-C	5.46	121.31	111.36
1	E	95	GLN	OE1-CD-NE2	-5.46	117.14	122.60
2	B	21	ARG	CA-CB-CG	-5.46	103.19	114.10
1	E	59	ASN	OD1-CG-ND2	-5.45	117.15	122.60
1	G	51	HIS	CB-CG-ND1	5.45	130.87	122.70
1	E	142	ASN	CB-CG-ND2	5.43	124.54	116.40
1	C	126	THR	N-CA-C	5.41	117.88	111.33
2	B	16	VAL	CG1-CB-CG2	5.41	122.70	110.80
1	G	86	PHE	CA-CB-CG	5.40	119.20	113.80
2	F	43	HIS	CB-CG-ND1	5.40	130.79	122.70
1	E	91	ASP	CA-CB-CG	5.39	117.99	112.60
1	A	148	ASN	OD1-CG-ND2	-5.38	117.22	122.60
1	G	136	HIS	N-CA-C	5.38	117.03	108.79
1	A	123	PHE	CA-C-O	5.36	126.27	120.32
1	C	54	ASP	O-C-N	-5.36	117.04	123.31
1	E	39	ASN	CB-CG-ND2	5.36	124.43	116.40
1	G	67	PHE	CA-CB-CG	5.33	119.13	113.80
1	A	141	VAL	CA-C-O	5.33	125.53	120.31
1	E	80	ALA	O-C-N	-5.32	117.19	123.25
1	C	85	PHE	N-CA-C	-5.32	100.51	109.07
1	A	48	SER	CA-C-N	5.31	125.32	119.90
1	A	48	SER	C-N-CA	5.31	125.32	119.90
2	B	19	TRP	CG-CD2-CE3	5.30	139.20	133.90
1	A	63	PHE	CA-CB-CG	5.29	119.09	113.80
1	A	84	THR	N-CA-CB	-5.28	101.71	111.53
1	C	177	LEU	O-C-N	-5.27	117.07	123.29
1	E	125	ASN	OD1-CG-ND2	-5.27	117.33	122.60
1	C	120	PHE	N-CA-C	-5.26	96.72	107.70
1	A	21	GLN	CG-CD-NE2	5.25	124.28	116.40
1	E	9	THR	N-CA-CB	-5.24	101.61	110.41
1	C	80	ALA	O-C-N	-5.24	117.82	123.42
1	E	52	ILE	CB-CA-C	5.24	119.03	111.65
1	C	84	THR	N-CA-CB	-5.23	101.86	111.37
1	A	93	LYS	CA-C-N	5.22	125.22	119.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	93	LYS	C-N-CA	5.22	125.22	119.90
1	E	131	SER	N-CA-C	5.21	117.63	111.33
1	A	85	PHE	N-CA-C	-5.19	100.78	109.24
1	E	121	ASP	CA-CB-CG	5.17	117.77	112.60
1	G	83	PHE	N-CA-CB	-5.17	101.97	111.37
1	A	83	PHE	CA-CB-CG	5.16	118.96	113.80
1	C	101	LEU	N-CA-CB	-5.15	104.90	112.78
1	G	59	ASN	CB-CG-ND2	5.15	124.12	116.40
1	E	161	ASN	CA-C-O	-5.15	114.77	120.38
1	E	51	HIS	CB-CG-CD2	-5.14	124.51	131.20
1	A	152	TRP	CG-CD2-CE3	5.14	139.04	133.90
1	G	101	LEU	N-CA-CB	-5.14	104.91	112.78
1	G	53	TRP	CE2-CD2-CG	-5.14	101.03	107.20
1	A	53	TRP	CG-CD2-CE3	5.13	139.03	133.90
1	A	75	ASN	CA-CB-CG	5.13	117.73	112.60
1	C	91	ASP	CA-CB-CG	5.13	117.73	112.60
1	E	48	SER	CA-C-N	5.13	125.06	119.78
1	E	48	SER	C-N-CA	5.13	125.06	119.78
1	A	59	ASN	CA-CB-CG	5.11	117.71	112.60
1	C	59	ASN	OD1-CG-ND2	-5.10	117.50	122.60
1	G	152	TRP	CA-CB-CG	5.10	123.29	113.60
1	A	37	VAL	CB-CA-C	5.09	120.34	111.18
1	C	14	ASP	CA-CB-CG	5.09	117.69	112.60
1	C	172	VAL	N-CA-CB	-5.08	104.89	110.99
1	A	86	PHE	CA-CB-CG	5.08	118.88	113.80
1	E	92	THR	N-CA-C	5.08	117.71	110.24
1	E	38	ARG	O-C-N	5.07	129.64	123.10
1	E	155	GLN	OE1-CD-NE2	-5.07	117.53	122.60
1	C	123	PHE	CA-C-O	5.06	125.94	120.32
1	E	67	PHE	CA-CB-CG	5.06	118.86	113.80
1	C	12	GLY	CA-C-N	5.05	124.83	119.28
1	C	12	GLY	C-N-CA	5.05	124.83	119.28
2	D	7	ASN	OD1-CG-ND2	-5.04	117.56	122.60
1	E	8	ILE	N-CA-C	-5.03	98.89	109.34
2	D	21	ARG	CA-CB-CG	-5.02	104.06	114.10
1	E	16	GLN	N-CA-C	5.01	118.66	112.54
2	B	35	HIS	CB-CG-ND1	5.01	130.21	122.70
1	A	161	ASN	CA-CB-CG	-5.00	107.60	112.60

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	1397	0	1346	21	0
1	C	1397	0	1346	13	0
1	E	1397	0	1346	26	0
1	G	1397	0	1346	14	0
2	B	381	0	357	8	0
2	D	376	0	351	3	0
2	F	381	0	357	8	0
2	H	376	0	351	2	0
3	1	15	0	8	0	0
3	2	5	0	4	0	0
3	3	15	0	9	0	0
3	4	15	0	9	0	0
4	A	1	0	0	0	0
4	C	1	0	0	0	0
4	E	1	0	0	0	0
4	G	1	0	0	0	0
5	A	1	0	0	1	0
5	C	1	0	0	0	0
5	E	1	0	0	0	0
5	G	1	0	0	0	0
6	1	20	0	16	1	0
6	2	20	0	17	4	0
6	3	20	0	17	2	0
6	4	20	0	17	4	0
7	1	8	0	0	0	0
7	2	1	0	0	0	0
7	3	5	0	0	0	0
7	4	8	0	0	0	0
7	A	74	0	0	2	0
7	B	14	0	0	0	0
7	C	48	0	0	0	0
7	D	9	0	0	0	0
7	E	56	0	0	1	0
7	F	10	0	0	0	0
7	G	77	0	0	2	0
7	H	8	0	0	0	0
All	All	7558	0	6897	86	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 6.

All (86) 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)
6:4:1001:MDP:H113	6:4:1001:MDP:H7	1.38	1.05
6:3:1001:MDP:H7	6:3:1001:MDP:H113	1.54	0.89
6:2:1001:MDP:C8	6:2:1001:MDP:H113	2.03	0.89
6:4:1001:MDP:H113	6:4:1001:MDP:C7	2.07	0.84
6:1:1001:MDP:H113	6:1:1001:MDP:H7	1.62	0.82
1:A:21:GLN:HE22	1:A:43:ARG:HH21	1.32	0.75
6:4:1001:MDP:H113	6:4:1001:MDP:C8	2.18	0.72
1:G:12:GLY:O	1:G:26:THR:HG21	1.89	0.72
1:E:21:GLN:HE22	1:E:43:ARG:HH21	1.37	0.71
1:E:38:ARG:HB2	2:F:29:GLY:O	1.92	0.70
5:A:202:MN:MN	7:A:301:HOH:O	0.10	0.69
1:A:34:THR:HG21	2:B:35:HIS:HD2	1.58	0.69
1:C:11:PHE:O	1:C:29:GLU:HA	1.98	0.63
1:A:75:ASN:HD21	1:A:78:ASN:HD22	1.47	0.62
1:A:5:SER:OG	2:B:43:HIS:HD2	1.83	0.62
6:4:1001:MDP:H7	6:4:1001:MDP:C11	2.25	0.61
6:2:1001:MDP:H113	6:2:1001:MDP:H7	1.83	0.60
1:A:124:TYR:CE2	1:A:126:THR:HG22	2.35	0.60
1:E:25:TYR:CE2	1:E:27:THR:HB	2.37	0.60
1:G:79:VAL:HG23	1:G:122:THR:HB	1.85	0.59
1:A:34:THR:CG2	2:B:35:HIS:HD2	2.14	0.59
6:3:1001:MDP:H113	6:3:1001:MDP:C7	2.32	0.58
1:G:7:SER:HB3	2:H:41:TYR:HD1	1.67	0.58
1:E:5:SER:OG	2:F:43:HIS:HD2	1.86	0.58
1:C:35:LYS:HE3	1:C:35:LYS:HA	1.87	0.57
1:E:25:TYR:HE2	1:E:27:THR:HB	1.70	0.56
1:C:10:LYS:HG2	1:C:29:GLU:HB3	1.87	0.56
1:C:79:VAL:HG13	1:C:135:ARG:NH2	2.21	0.55
1:E:155:GLN:NE2	1:E:158:LYS:HD2	2.20	0.55
1:E:10:LYS:HG3	1:E:29:GLU:HA	1.88	0.55
1:E:34:THR:CG2	2:F:35:HIS:HD2	2.19	0.55
1:C:128:TRP:HB2	1:C:145:LYS:HG2	1.88	0.55
1:E:21:GLN:HE21	1:E:43:ARG:HE	1.54	0.54
1:E:37:VAL:HG13	1:E:40:THR:HG21	1.88	0.54
1:G:155:GLN:OE1	1:G:158:LYS:HD3	2.07	0.54
1:A:12:GLY:O	1:A:26:THR:HG21	2.07	0.54
1:A:124:TYR:CZ	1:A:126:THR:HG22	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:21:GLN:NE2	1:E:43:ARG:HE	2.05	0.54
1:E:84:THR:HG21	1:E:103:VAL:HG21	1.89	0.54
1:A:21:GLN:HE21	1:A:43:ARG:HE	1.55	0.53
6:2:1001:MDP:H7	6:2:1001:MDP:C11	2.39	0.53
1:E:12:GLY:O	1:E:26:THR:HG21	2.08	0.52
1:G:115:THR:HG21	7:G:358:HOH:O	2.09	0.52
1:C:107:LYS:HB2	1:C:145:LYS:HG3	1.91	0.52
1:G:103:VAL:HG13	1:G:104:PHE:CD2	2.44	0.52
1:E:124:TYR:CE2	1:E:126:THR:HG22	2.46	0.51
1:A:159:GLU:HG2	7:A:354:HOH:O	2.10	0.50
1:A:150:LYS:HZ2	2:B:5:THR:H	1.60	0.50
1:C:27:THR:OG1	1:C:28:LYS:HD2	2.12	0.50
1:E:68:THR:HG22	1:E:161:ASN:HD22	1.76	0.49
1:A:21:GLN:NE2	1:A:43:ARG:HE	2.09	0.49
1:C:113:SER:HB3	1:C:142:ASN:HD22	1.76	0.49
6:2:1001:MDP:H113	6:2:1001:MDP:C7	2.43	0.49
1:E:38:ARG:HH21	2:F:32:PHE:HE2	1.61	0.49
1:C:68:THR:HA	1:C:160:ALA:O	2.13	0.48
1:E:27:THR:O	1:E:27:THR:HG23	2.13	0.48
1:E:35:LYS:HA	1:E:35:LYS:HE2	1.95	0.48
1:G:113:SER:O	1:G:115:THR:HG22	2.13	0.48
1:C:130:PRO:HG2	1:C:149:THR:HG21	1.96	0.47
1:A:5:SER:OG	2:B:43:HIS:CD2	2.66	0.47
1:A:38:ARG:HD3	2:B:30:ALA:O	2.15	0.46
1:G:1:THR:N	7:G:301:HOH:O	2.48	0.46
1:E:1:THR:N	1:G:10:LYS:HE3	2.30	0.46
1:C:66:SER:HA	1:C:162:VAL:O	2.16	0.45
1:E:174:THR:HG23	2:F:7:ASN:ND2	2.32	0.45
1:A:11:PHE:O	1:A:29:GLU:HA	2.16	0.45
1:A:34:THR:HG21	2:B:35:HIS:CD2	2.44	0.45
1:C:173:LEU:HB2	2:D:10:VAL:HG12	1.99	0.44
1:E:1:THR:HA	2:F:46:LEU:O	2.18	0.44
1:E:34:THR:HG22	2:F:35:HIS:HD2	1.82	0.44
1:A:150:LYS:HZ2	2:B:4:TYR:HA	1.83	0.43
1:G:79:VAL:CG2	1:G:122:THR:HB	2.48	0.43
2:D:10:VAL:HG13	2:D:10:VAL:O	2.19	0.43
1:E:34:THR:HG23	1:E:35:LYS:O	2.18	0.43
1:G:113:SER:OG	1:G:115:THR:HG23	2.19	0.43
2:F:16:VAL:HA	2:F:17:PRO:HD3	1.86	0.43
1:A:27:THR:HG22	1:A:32:THR:CG2	2.49	0.42
1:G:158:LYS:HE2	1:G:158:LYS:HB3	1.66	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:135:ARG:HD2	7:E:347:HOH:O	2.20	0.42
1:A:110:ASP:OD1	1:A:112:THR:HB	2.20	0.41
1:A:27:THR:HG22	1:A:32:THR:HG21	2.02	0.41
1:E:9:THR:HG22	1:G:1:THR:H3	1.86	0.41
1:E:111:LYS:HG3	1:E:112:THR:N	2.35	0.41
1:A:16:GLN:HB2	2:D:19:TRP:CD2	2.56	0.40
1:G:90:VAL:HA	2:H:21:ARG:HG3	2.03	0.40
1:C:145:LYS:HE2	1:C:145:LYS:HB3	1.82	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	178/181 (98%)	174 (98%)	4 (2%)	0	100	100
1	C	178/181 (98%)	175 (98%)	3 (2%)	0	100	100
1	E	178/181 (98%)	169 (95%)	8 (4%)	1 (1%)	21	13
1	G	178/181 (98%)	174 (98%)	4 (2%)	0	100	100
2	B	45/52 (86%)	43 (96%)	1 (2%)	1 (2%)	5	1
2	D	45/52 (86%)	43 (96%)	1 (2%)	1 (2%)	5	1
2	F	45/52 (86%)	42 (93%)	2 (4%)	1 (2%)	5	1
2	H	45/52 (86%)	44 (98%)	1 (2%)	0	100	100
All	All	892/932 (96%)	864 (97%)	24 (3%)	4 (0%)	30	22

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	E	28	LYS
2	B	11	PRO

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Mol	Chain	Res	Type
2	F	11	PRO
2	D	11	PRO

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	154/155 (99%)	139 (90%)	15 (10%)	8	3
1	C	154/155 (99%)	131 (85%)	23 (15%)	3	0
1	E	154/155 (99%)	134 (87%)	20 (13%)	4	1
1	G	154/155 (99%)	138 (90%)	16 (10%)	7	2
2	B	40/44 (91%)	37 (92%)	3 (8%)	12	6
2	D	39/44 (89%)	38 (97%)	1 (3%)	40	37
2	F	40/44 (91%)	35 (88%)	5 (12%)	4	1
2	H	39/44 (89%)	37 (95%)	2 (5%)	21	14
All	All	774/796 (97%)	689 (89%)	85 (11%)	6	2

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	THR
1	A	9	THR
1	A	28	LYS
1	A	32	THR
1	A	34	THR
1	A	37	VAL
1	A	50	ILE
1	A	60	VAL
1	A	68	THR
1	A	84	THR
1	A	116	VAL
1	A	141	VAL
1	A	154	LEU

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Mol	Chain	Res	Type
1	A	177	LEU
1	A	180	PRO
2	B	12	LEU
2	B	16	VAL
2	B	21	ARG
1	C	28	LYS
1	C	33	LEU
1	C	35	LYS
1	C	50	ILE
1	C	51	HIS
1	C	52	ILE
1	C	64	VAL
1	C	72	ASP
1	C	79	VAL
1	C	84	THR
1	C	101	LEU
1	C	106	SER
1	C	115	THR
1	C	116	VAL
1	C	131	SER
1	C	132	ASN
1	C	141	VAL
1	C	149	THR
1	C	150	LYS
1	C	158	LYS
1	C	162	VAL
1	C	172	VAL
1	C	173	LEU
2	D	21	ARG
1	E	3	THR
1	E	9	THR
1	E	18	LEU
1	E	28	LYS
1	E	29	GLU
1	E	32	THR
1	E	34	THR
1	E	50	ILE
1	E	72	ASP
1	E	76	SER
1	E	81	ASP
1	E	84	THR
1	E	106	SER

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Mol	Chain	Res	Type
1	E	107	LYS
1	E	116	VAL
1	E	141	VAL
1	E	154	LEU
1	E	172	VAL
1	E	175	VAL
1	E	177	LEU
2	F	1	GLU
2	F	12	LEU
2	F	14	GLU
2	F	16	VAL
2	F	21	ARG
1	G	9	THR
1	G	10	LYS
1	G	25	TYR
1	G	26	THR
1	G	33	LEU
1	G	35	LYS
1	G	79	VAL
1	G	84	THR
1	G	101	LEU
1	G	115	THR
1	G	141	VAL
1	G	149	THR
1	G	152	TRP
1	G	162	VAL
1	G	172	VAL
1	G	177	LEU
2	H	7	ASN
2	H	21	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (30) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	16	GLN
1	A	21	GLN
1	A	78	ASN
1	A	95	GLN
1	A	105	ASN
1	A	142	ASN
1	A	148	ASN
1	A	171	ASN

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Mol	Chain	Res	Type
2	B	7	ASN
2	B	35	HIS
2	B	43	HIS
1	C	78	ASN
1	C	142	ASN
1	C	171	ASN
1	E	21	GLN
1	E	95	GLN
1	E	105	ASN
1	E	114	GLN
1	E	148	ASN
1	E	155	GLN
1	E	161	ASN
2	F	7	ASN
2	F	35	HIS
2	F	43	HIS
1	G	16	GLN
1	G	51	HIS
1	G	95	GLN
1	G	105	ASN
1	G	161	ASN
1	G	167	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

7 non-standard protein/DNA/RNA residues 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	ZGL	3	952	3	9,9,9	0.91	0	10,11,11	1.63	4 (40%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	ZGL	1	952	3	9,9,9	1.23	1 (11%)	10,11,11	1.23	1 (10%)
3	ZGL	4	952	3	9,9,9	1.26	1 (11%)	10,11,11	1.62	3 (30%)

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	ZGL	3	952	3	-	1/9/9/9	-
3	ZGL	1	952	3	-	5/9/9/9	-
3	ZGL	4	952	3	-	5/9/9/9	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	4	952	ZGL	CB-CA	-2.47	1.47	1.53
3	1	952	ZGL	CG-C	2.10	1.55	1.50

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	4	952	ZGL	CG-CB-CA	-3.02	106.94	113.86
3	1	952	ZGL	O2-CD-N1	-2.94	117.85	123.04
3	3	952	ZGL	OXT-C-O	-2.49	116.93	123.33
3	3	952	ZGL	OXT-C-CG	2.42	121.65	114.00
3	3	952	ZGL	CA-CD-N1	-2.34	112.74	116.75
3	3	952	ZGL	O2-CD-CA	2.13	123.42	120.25
3	4	952	ZGL	CB-CG-C	-2.09	106.93	112.49
3	4	952	ZGL	OXT-C-CG	2.01	120.36	114.00

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	1	952	ZGL	CD-CA-CB-CG
3	1	952	ZGL	N-CA-CB-CG
3	4	952	ZGL	N-CA-CB-CG
3	1	952	ZGL	CA-CB-CG-C
3	4	952	ZGL	CD-CA-CB-CG

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Mol	Chain	Res	Type	Atoms
3	4	952	ZGL	CA-CB-CG-C
3	4	952	ZGL	O-C-CG-CB
3	1	952	ZGL	OXT-C-CG-CB
3	4	952	ZGL	OXT-C-CG-CB
3	1	952	ZGL	O-C-CG-CB
3	3	952	ZGL	N-CA-CD-O2

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 12 ligands modelled in this entry, 8 are monoatomic - leaving 4 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
6	MDP	4	1001	3	16,20,21	1.04	1 (6%)	19,28,30	2.28	7 (36%)
6	MDP	1	1001	3	16,20,21	1.02	1 (6%)	19,28,30	3.38	8 (42%)
6	MDP	3	1001	3	16,20,21	1.46	3 (18%)	19,28,30	2.33	3 (15%)
6	MDP	2	1001	3	16,20,21	1.59	3 (18%)	19,28,30	3.61	10 (52%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	MDP	4	1001	3	-	5/13/36/38	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	MDP	1	1001	3	-	3/13/36/38	0/1/1/1
6	MDP	3	1001	3	-	6/13/36/38	0/1/1/1
6	MDP	2	1001	3	-	6/13/36/38	0/1/1/1

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	2	1001	MDP	C4-C5	4.03	1.61	1.53
6	3	1001	MDP	C1-C2	3.62	1.57	1.52
6	3	1001	MDP	O3-C7	-2.64	1.40	1.45
6	2	1001	MDP	C2-N2	2.52	1.52	1.47
6	3	1001	MDP	C11-N2	2.39	1.51	1.46
6	4	1001	MDP	C11-N2	2.16	1.50	1.46
6	1	1001	MDP	O5-C1	-2.12	1.37	1.42
6	2	1001	MDP	C9-C7	2.02	1.55	1.51

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	1	1001	MDP	C1-C2-C3	-10.02	91.39	110.10
6	2	1001	MDP	C1-C2-C3	-9.09	93.14	110.10
6	3	1001	MDP	C1-C2-N2	-6.97	96.57	112.69
6	2	1001	MDP	C1-O5-C5	-6.16	101.73	113.65
6	1	1001	MDP	C11-N2-C10	-5.56	105.32	120.80
6	4	1001	MDP	C1-C2-N2	-5.36	100.30	112.69
6	1	1001	MDP	C1-O5-C5	-5.18	103.64	113.65
6	2	1001	MDP	C1-C2-N2	-4.92	101.31	112.69
6	4	1001	MDP	C11-N2-C10	-4.73	107.62	120.80
6	2	1001	MDP	O6-C6-C5	-4.73	95.24	111.33
6	2	1001	MDP	O5-C1-C2	4.68	115.06	109.64
6	3	1001	MDP	C11-N2-C10	-4.55	108.11	120.80
6	2	1001	MDP	C6-C5-C4	3.79	122.33	113.02
6	2	1001	MDP	C11-N2-C10	-3.61	110.75	120.80
6	4	1001	MDP	C1-C2-C3	-3.54	103.49	110.10
6	3	1001	MDP	O5-C1-C2	3.42	113.59	109.64
6	1	1001	MDP	O1-C1-C2	3.21	115.87	109.11
6	1	1001	MDP	C1-C2-N2	-3.20	105.28	112.69
6	4	1001	MDP	O5-C1-C2	3.10	113.23	109.64
6	1	1001	MDP	C11-N2-C2	-3.06	113.43	119.48
6	1	1001	MDP	C6-C5-C4	2.99	120.37	113.02
6	2	1001	MDP	O5-C5-C4	-2.89	104.48	109.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	4	1001	MDP	C11-N2-C2	-2.72	114.10	119.48
6	1	1001	MDP	O5-C1-C2	-2.70	106.50	109.64
6	2	1001	MDP	C3-C4-C5	2.51	114.93	109.57
6	4	1001	MDP	O3-C7-C9	2.46	113.84	107.46
6	2	1001	MDP	O4-C4-C3	-2.37	103.86	109.94
6	4	1001	MDP	O4-C4-C3	-2.09	104.57	109.94

There are no chirality outliers.

All (20) torsion outliers are listed below:

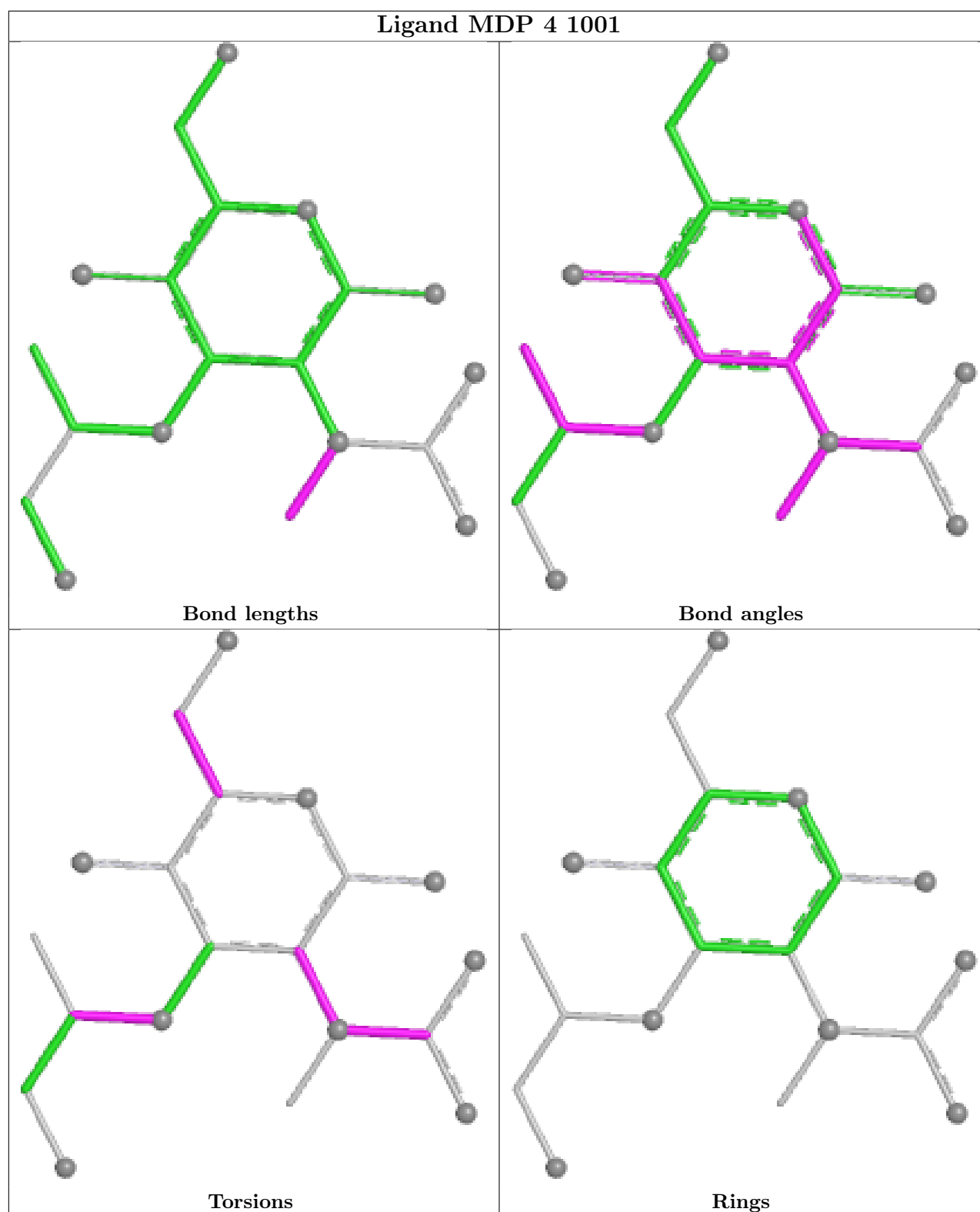
Mol	Chain	Res	Type	Atoms
6	1	1001	MDP	O10-C10-N2-C2
6	2	1001	MDP	C3-C2-N2-C11
6	2	1001	MDP	O10-C10-N2-C2
6	3	1001	MDP	C3-C2-N2-C11
6	4	1001	MDP	C3-C2-N2-C11
6	4	1001	MDP	O10-C10-N2-C2
6	3	1001	MDP	C4-C5-C6-O6
6	3	1001	MDP	O5-C5-C6-O6
6	2	1001	MDP	C1-C2-N2-C11
6	4	1001	MDP	C4-C5-C6-O6
6	2	1001	MDP	C3-C2-N2-C10
6	1	1001	MDP	C1-C2-N2-C10
6	3	1001	MDP	O10-C10-N2-C2
6	4	1001	MDP	O5-C5-C6-O6
6	2	1001	MDP	C9-C7-O3-C3
6	1	1001	MDP	C8-C7-O3-C3
6	2	1001	MDP	C8-C7-O3-C3
6	3	1001	MDP	C8-C7-O3-C3
6	3	1001	MDP	C9-C7-O3-C3
6	4	1001	MDP	C9-C7-O3-C3

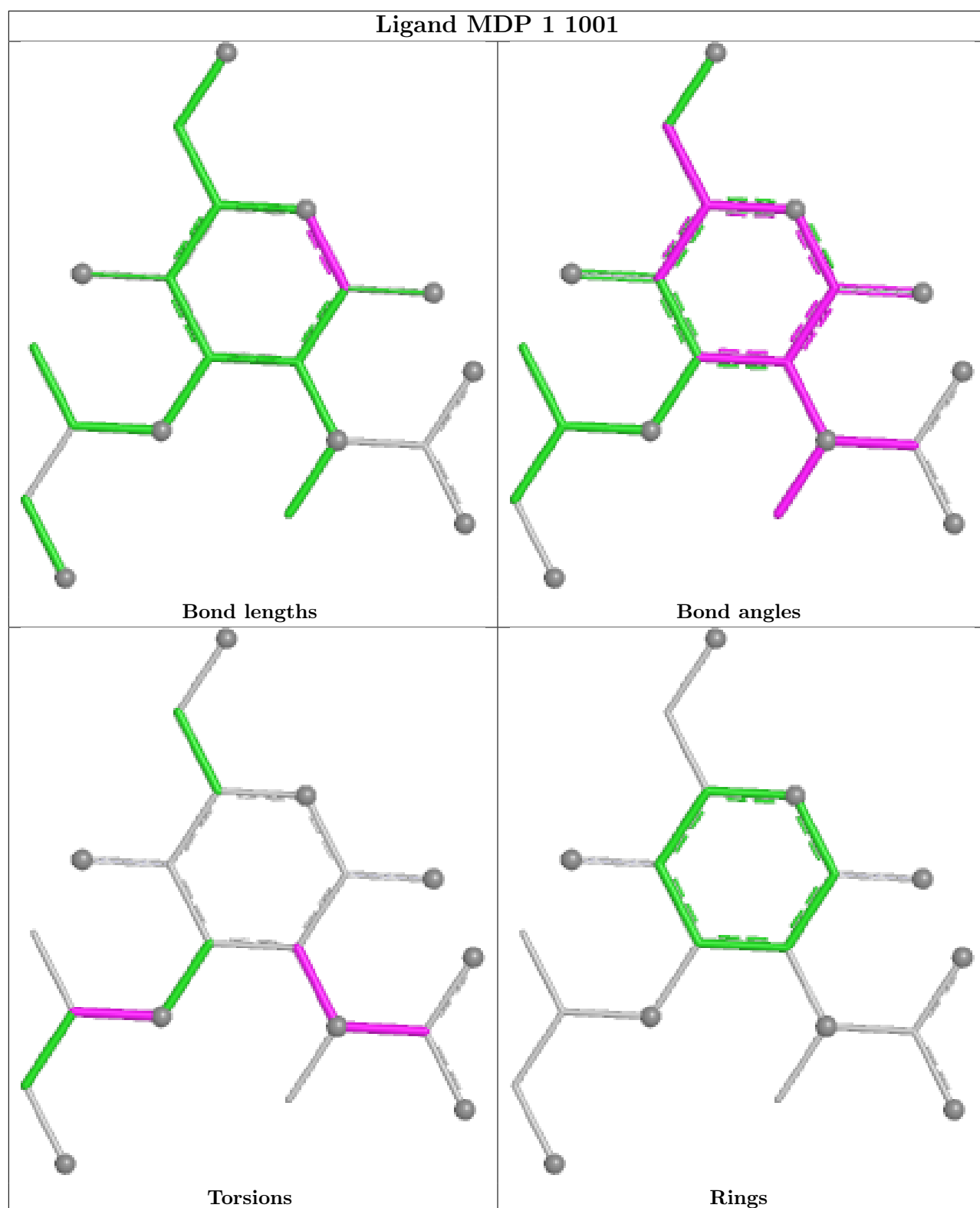
There are no ring outliers.

4 monomers are involved in 11 short contacts:

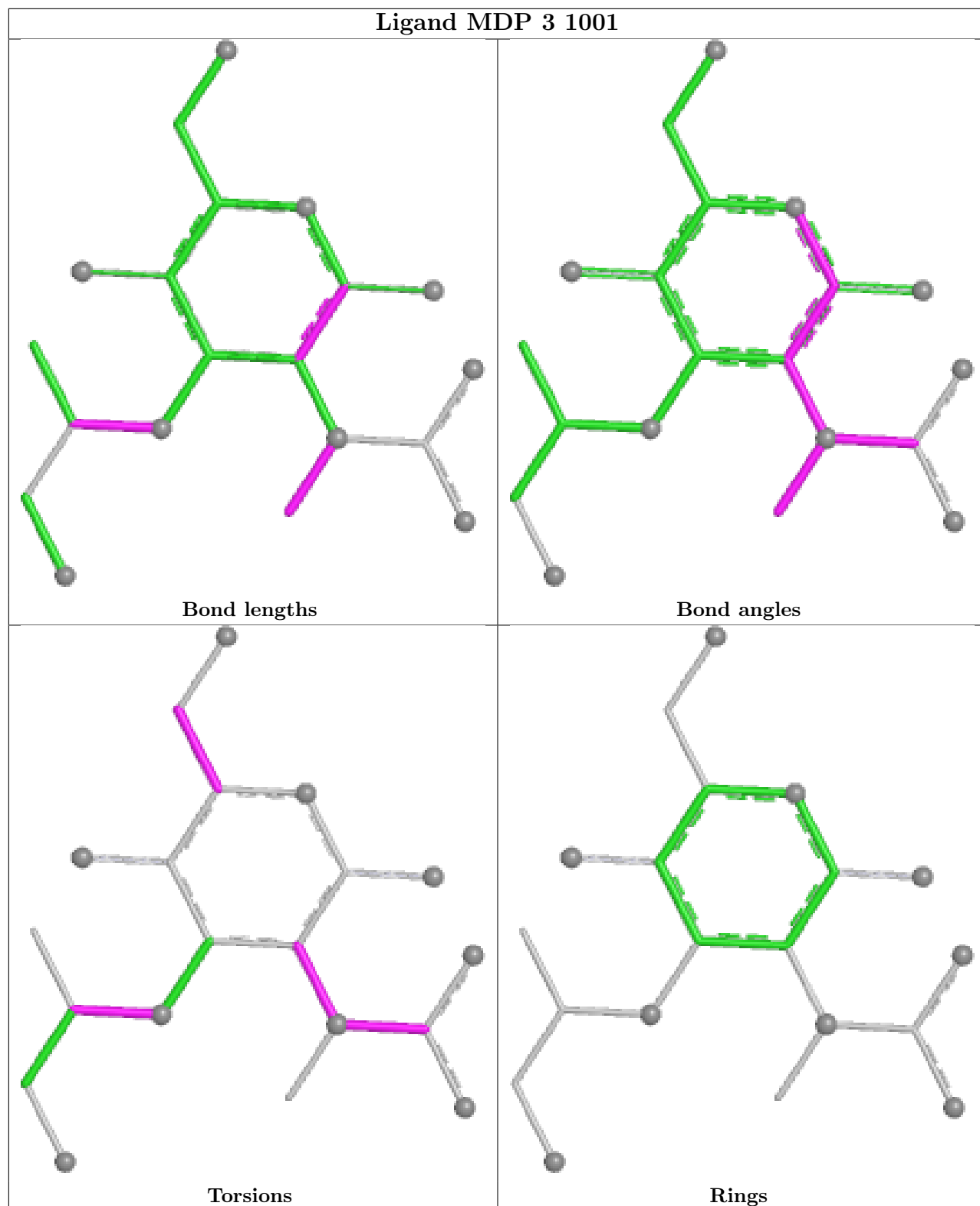
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	4	1001	MDP	4	0
6	1	1001	MDP	1	0
6	3	1001	MDP	2	0
6	2	1001	MDP	4	0

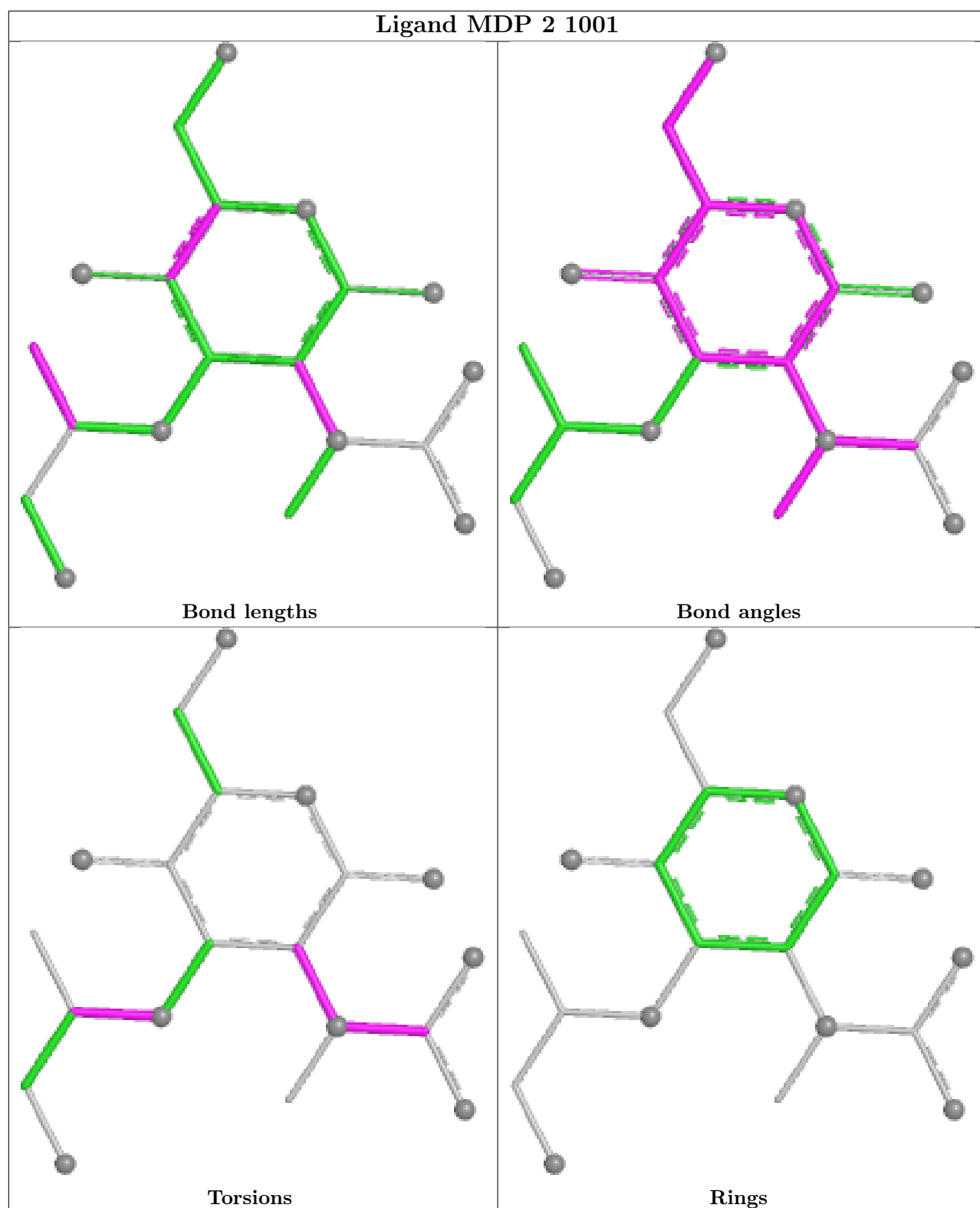
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





Ligand MDP 3 1001





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	180/181 (99%)	-0.87	0 100 100	11, 16, 29, 48	0
1	C	180/181 (99%)	-0.69	0 100 100	13, 24, 44, 61	0
1	E	180/181 (99%)	-0.68	0 100 100	12, 21, 40, 61	0
1	G	180/181 (99%)	-0.80	0 100 100	12, 19, 36, 48	0
2	B	47/52 (90%)	-0.87	0 100 100	11, 17, 27, 34	0
2	D	47/52 (90%)	-0.77	0 100 100	13, 22, 39, 49	0
2	F	47/52 (90%)	-0.73	0 100 100	11, 22, 33, 42	0
2	H	47/52 (90%)	-0.84	0 100 100	11, 18, 30, 33	0
3	1	0/2	-	-	-	-
3	2	0/2	-	-	-	-
3	3	0/2	-	-	-	-
3	4	0/2	-	-	-	-
All	All	908/940 (96%)	-0.77	0 100 100	11, 20, 37, 61	0

There are no RSRZ outliers to report.

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	DAL	2	951	5/6	0.73	0.13	15,20,25,33	0
3	ZGL	4	952	10/10	0.79	0.10	31,37,45,48	0
3	ZGL	1	952	10/10	0.81	0.12	22,28,44,46	0
3	DAL	3	951	5/6	0.81	0.08	29,31,35,37	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	ZGL	3	952	10/10	0.89	0.10	38,41,54,55	0
3	DAL	4	951	5/6	0.91	0.06	24,25,26,29	0
3	DAL	1	951	5/6	0.93	0.04	15,16,18,20	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

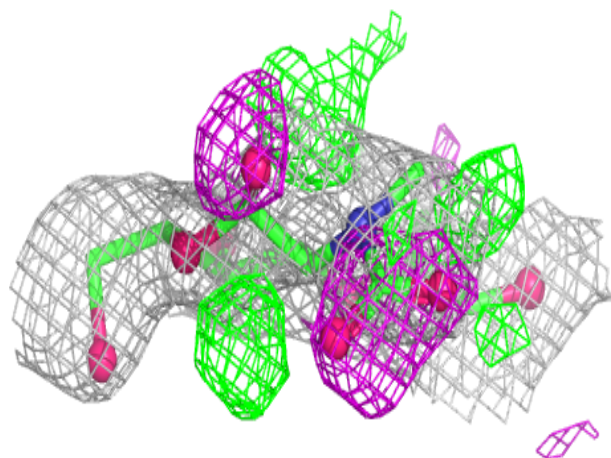
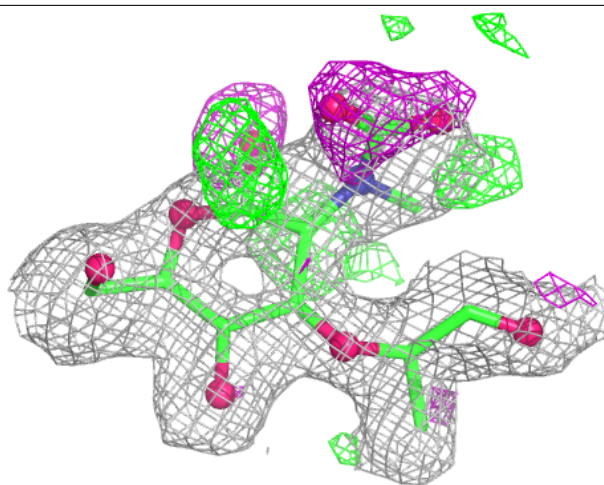
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	CA	E	201	1/1	0.31	0.15	42,42,42,42	0
4	CA	C	201	1/1	0.34	0.14	47,47,47,47	0
4	CA	A	201	1/1	0.66	0.23	29,29,29,29	0
6	MDP	2	1001	20/21	0.77	0.15	15,23,33,35	0
4	CA	G	201	1/1	0.86	0.12	41,41,41,41	0
5	MN	A	202	1/1	0.90	0.21	18,18,18,18	0
6	MDP	3	1001	20/21	0.91	0.07	27,30,36,36	0
5	MN	E	202	1/1	0.92	0.04	33,33,33,33	0
6	MDP	1	1001	20/21	0.92	0.06	14,18,24,27	0
6	MDP	4	1001	20/21	0.92	0.07	22,25,32,32	0
5	MN	C	202	1/1	0.94	0.04	32,32,32,32	0
5	MN	G	202	1/1	0.94	0.04	25,25,25,25	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

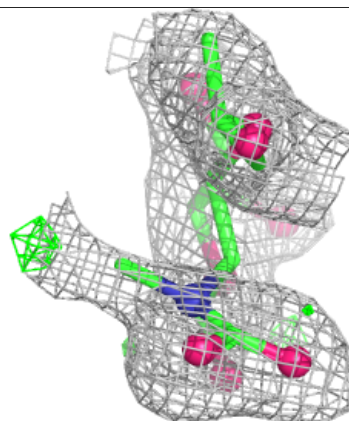
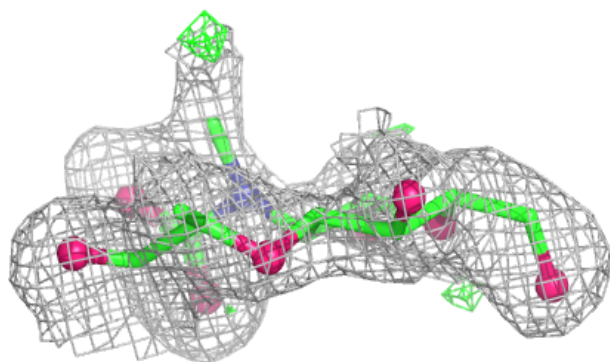
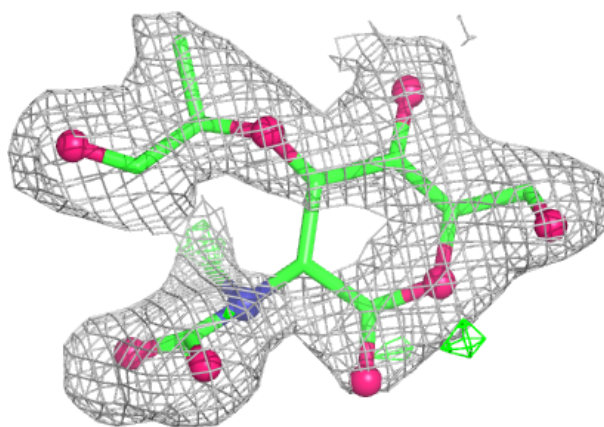
Electron density around MDP 2 1001:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



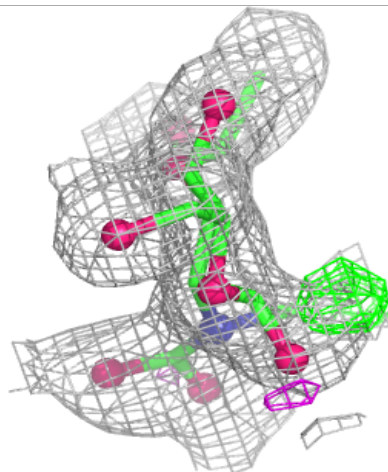
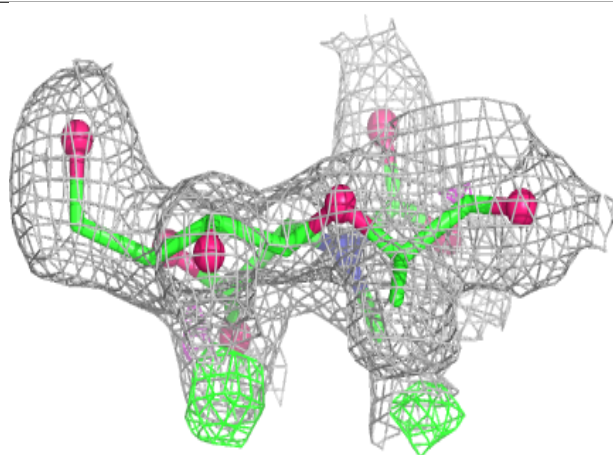
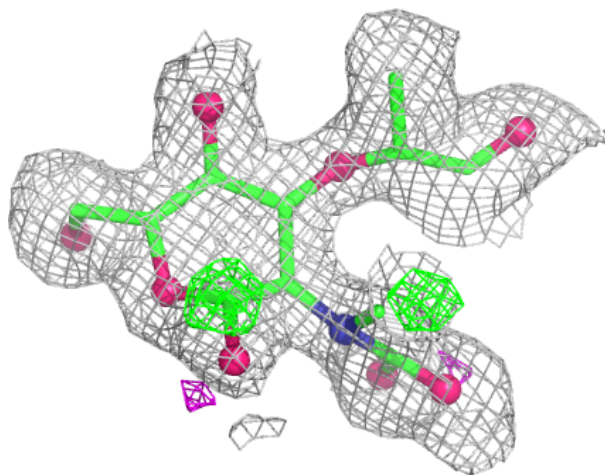
Electron density around MDP 3 1001:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



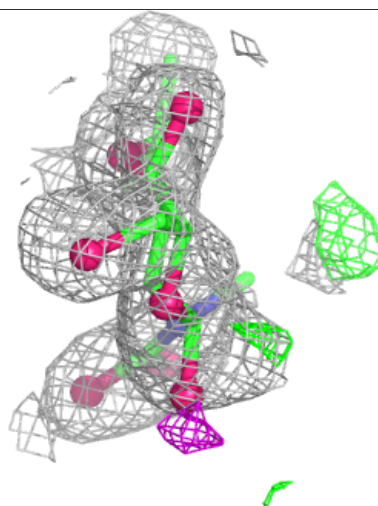
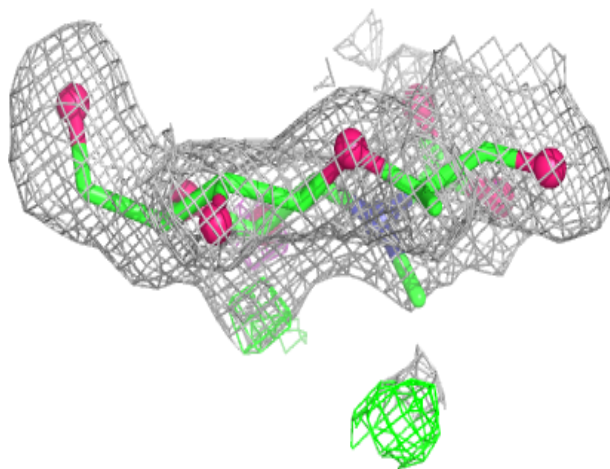
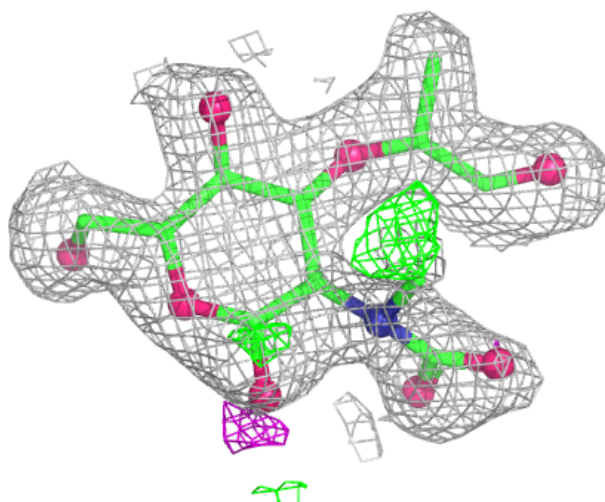
Electron density around MDP 1 1001:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around MDP 4 1001:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



6.5 Other polymers [i](#)

There are no such residues in this entry.