



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 13, 2024 – 01:57 PM EDT

PDB ID : 1MAA
Title : MOUSE ACETYLCHOLINESTERASE CATALYTIC DOMAIN, GLYCOSYLATED PROTEIN
Authors : Bourne, Y.; Taylor, P.; Bougis, P.E.; Marchot, P.
Deposited on : 1998-11-04
Resolution : 2.90 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	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

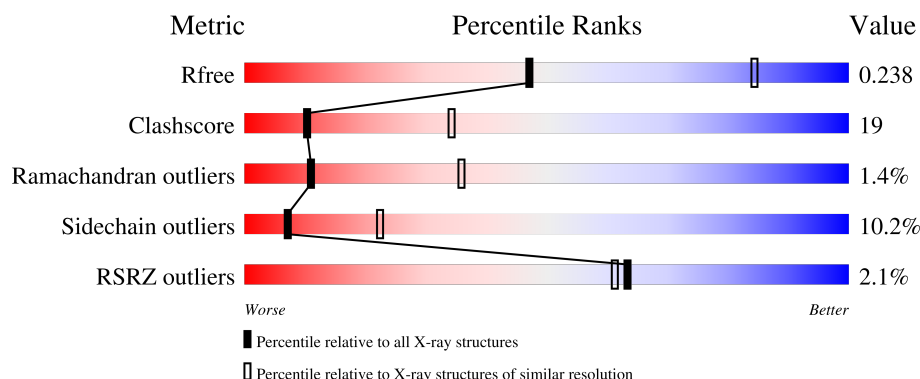
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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))
R_{free}	130704	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

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	547	<div> <div>3%</div> <div>56% 36% 6%</div> </div>
1	B	547	<div> <div>2%</div> <div>64% 28% 5%</div> </div>
1	C	547	<div> <div>2%</div> <div>62% 33%</div> </div>
1	D	547	<div> <div>2%</div> <div>59% 33% 7%</div> </div>
2	E	3	<div> <div>67% 33%</div> </div>

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
4	DME	B	996	-	-	X	-
4	DME	C	997	-	-	X	-
5	GOL	C	951	-	-	X	-
6	PO4	B	548	-	X	-	-
6	PO4	C	548	-	X	-	-
6	PO4	C	998	-	X	-	-

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 17084 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.

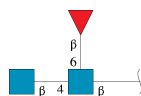
- Molecule 1 is a protein called ACETYLCHOLINESTERASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	540	Total	C	N	O	S	0	0	0
			4187	2689	727	757	14			
1	B	536	Total	C	N	O	S	0	0	0
			4169	2678	723	754	14			
1	C	540	Total	C	N	O	S	0	0	0
			4186	2688	724	760	14			
1	D	541	Total	C	N	O	S	0	0	0
			4192	2692	728	758	14			

There are 4 discrepancies between the modelled and reference sequences:

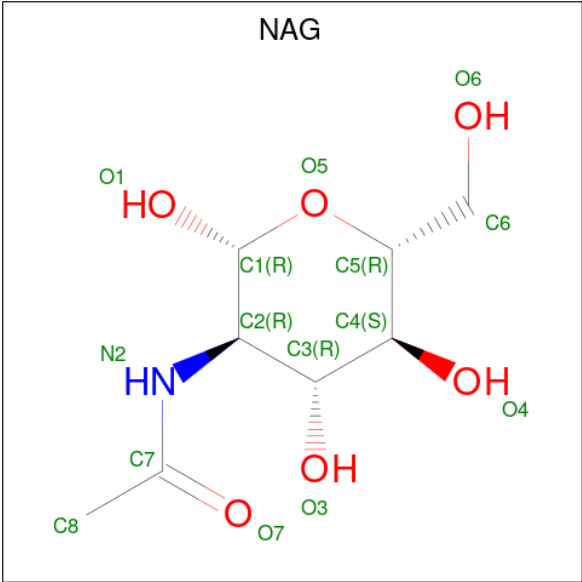
Chain	Residue	Modelled	Actual	Comment	Reference
A	495	ARG	SER	conflict	UNP P21836
B	495	ARG	SER	conflict	UNP P21836
C	495	ARG	SER	conflict	UNP P21836
D	495	ARG	SER	conflict	UNP P21836

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



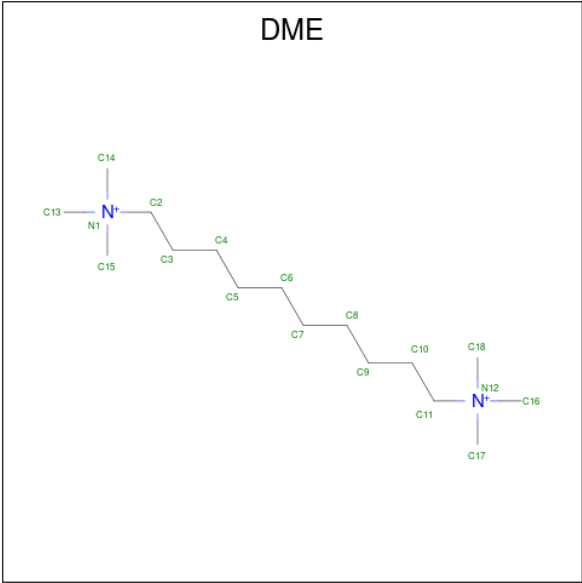
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	E	3	Total	C	N	O	0	0	0
			38	22	2	14			

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



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

- Molecule 4 is DECAMETHONIUM ION (three-letter code: DME) (formula: C₁₆H₃₈N₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	N	0	0
			18	16	2		
4	B	1	Total	C	N	0	0
			18	16	2		
4	C	1	Total	C	N	0	0
			18	16	2		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	D	1	Total	C	N	0	0
			18	16	2		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	C	1	Total	C	O	0	0
			6	3	3		
5	D	1	Total	C	O	0	0
			6	3	3		

- Molecule 6 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	B	1	Total	O	P	0	0
			5	4	1		
6	C	1	Total	O	P	0	0
			5	4	1		
6	C	1	Total	O	P	0	0
			5	4	1		

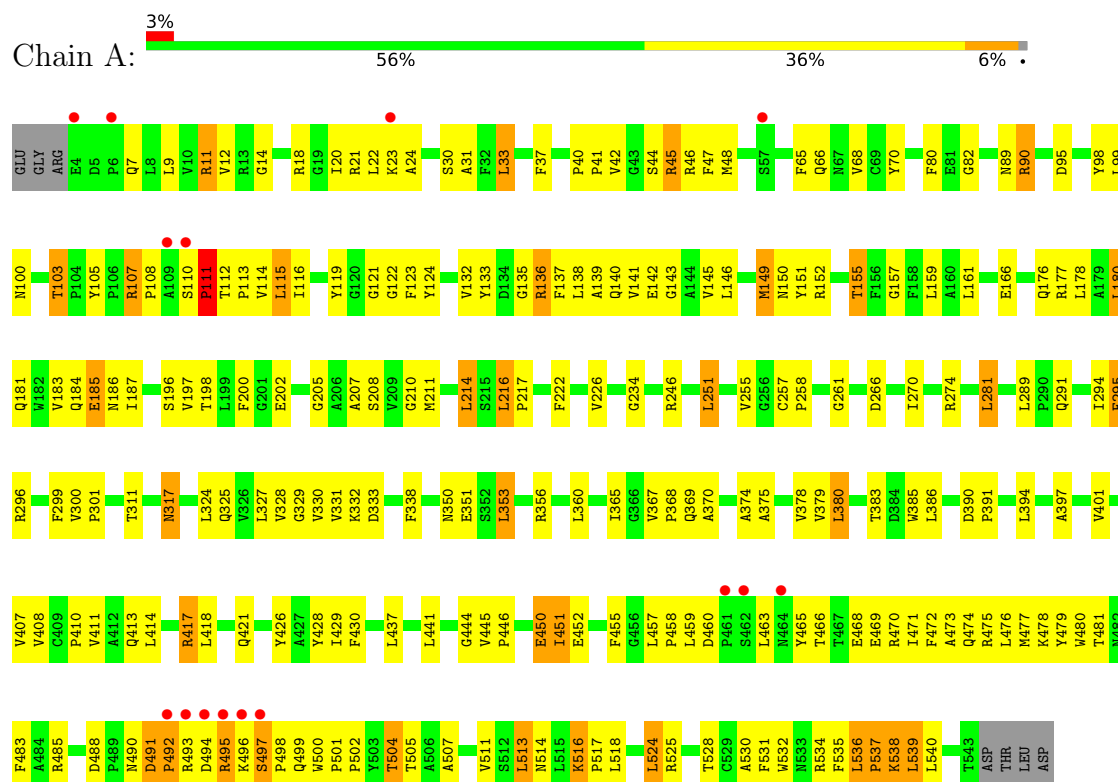
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	27	Total	O	0	0
			27	27		
7	B	49	Total	O	0	0
			49	49		
7	C	59	Total	O	0	0
			59	59		
7	D	52	Total	O	0	0
			52	52		

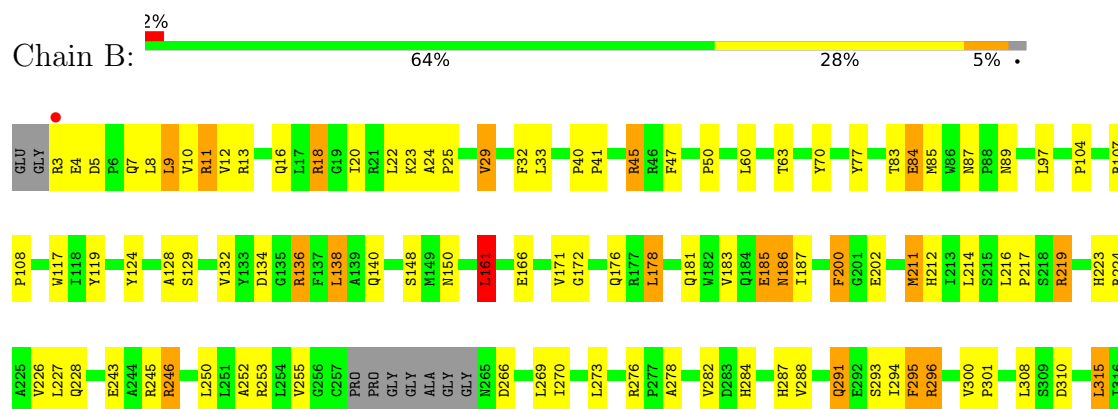
3 Residue-property plots

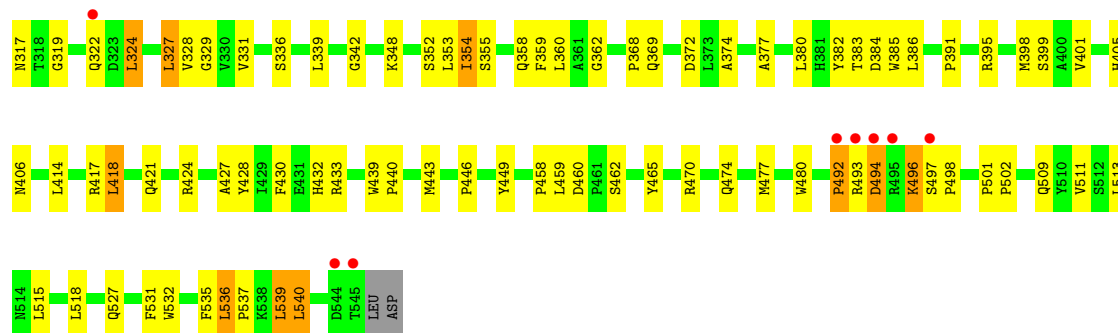
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: ACETYLCHOLINESTERASE

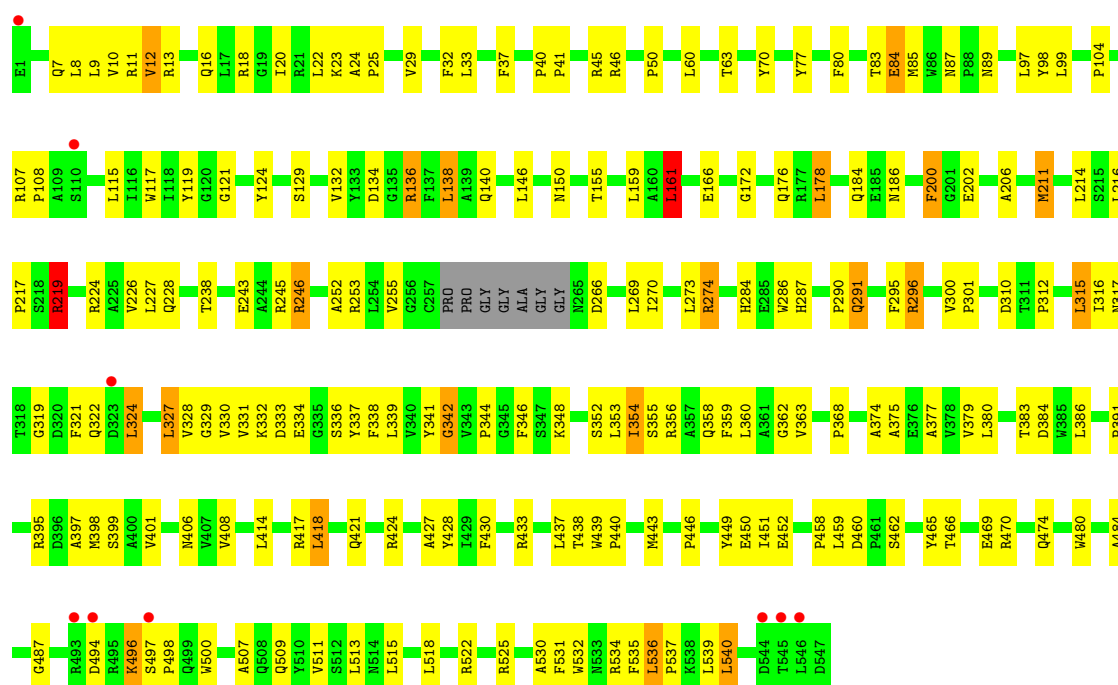


• Molecule 1: ACETYLCHOLINESTERASE

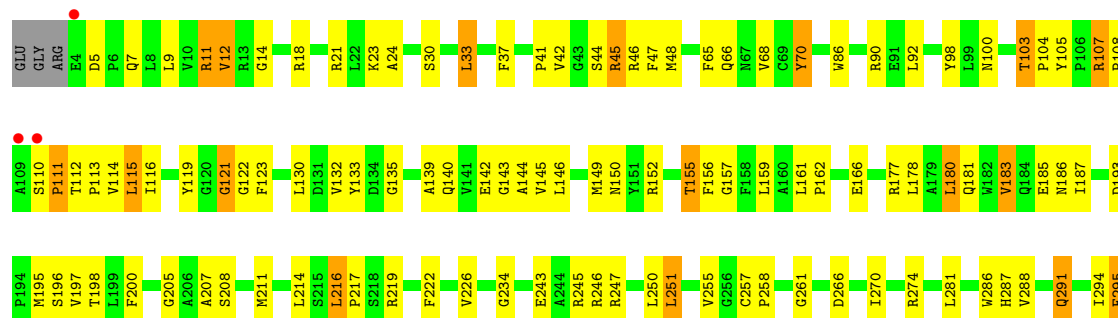


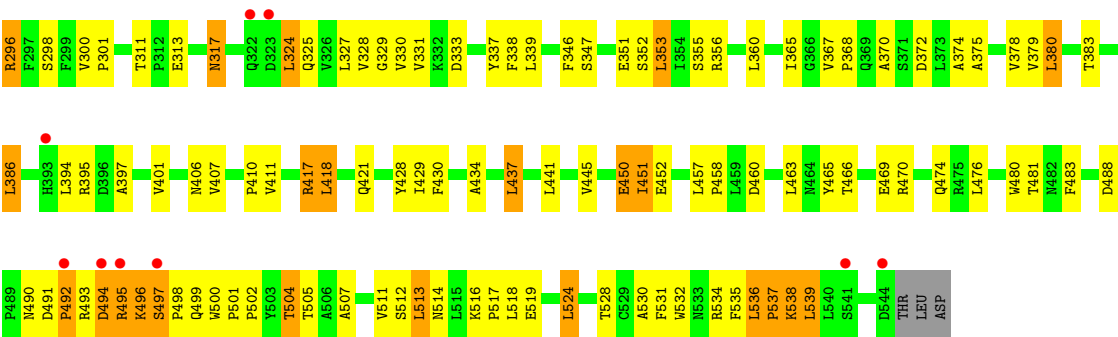


• Molecule 1: ACETYLCHOLINESTERASE



• Molecule 1: ACETYLCHOLINESTERASE





● Molecule 2: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[beta-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	136.55Å 173.13Å 224.25Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.90 15.00 – 2.80	Depositor EDS
% Data completeness (in resolution range)	92.0 (20.00-2.90) 90.3 (15.00-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.10	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.31 (at 2.81Å)	Xtriage
Refinement program	X-PLOR 3.8	Depositor
R, R_{free}	0.200 , 0.248 0.195 , 0.238	Depositor DCC
R_{free} test set	2378 reflections (2.03%)	wwPDB-VP
Wilson B-factor (Å ²)	50.5	Xtriage
Anisotropy	0.590	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 60.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	17084	wwPDB-VP
Average B, all atoms (Å ²)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.47% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: PO4, FUL, GOL, NAG, DME

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	0.54	0/4313	0.81	3/5898 (0.1%)
1	B	0.58	0/4292	0.82	5/5868 (0.1%)
1	C	0.58	0/4309	0.84	5/5892 (0.1%)
1	D	0.51	0/4318	0.80	1/5905 (0.0%)
All	All	0.55	0/17232	0.82	14/23563 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	1
1	D	0	1
All	All	0	3

There are no bond length outliers.

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	60	LEU	CA-CB-CG	6.45	130.13	115.30
1	D	18	ARG	NE-CZ-NH2	-6.31	117.14	120.30
1	A	18	ARG	NE-CZ-NH2	-6.28	117.16	120.30
1	C	219	ARG	NE-CZ-NH1	5.99	123.30	120.30
1	B	18	ARG	NE-CZ-NH2	-5.68	117.46	120.30
1	C	274	ARG	NE-CZ-NH2	-5.61	117.49	120.30
1	C	161	LEU	N-CA-C	-5.46	96.27	111.00
1	C	60	LEU	CA-CB-CG	5.38	127.68	115.30
1	B	161	LEU	N-CA-C	-5.24	96.84	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	90	ARG	NE-CZ-NH2	-5.21	117.69	120.30
1	B	186	ASN	N-CA-C	5.20	125.04	111.00
1	B	18	ARG	NE-CZ-NH1	5.10	122.85	120.30
1	A	491	ASP	C-N-CD	-5.09	109.40	120.60
1	C	246	ARG	NE-CZ-NH1	-5.07	117.77	120.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	70	TYR	Sidechain
1	C	98	TYR	Sidechain
1	D	70	TYR	Sidechain

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	4187	0	4068	159	0
1	B	4169	0	4048	139	0
1	C	4186	0	4053	154	0
1	D	4192	0	4070	168	0
2	E	38	0	34	2	0
3	A	14	0	13	1	0
4	A	18	0	38	1	0
4	B	18	0	38	13	0
4	C	18	0	38	19	0
4	D	18	0	38	7	0
5	A	6	0	8	1	0
5	B	6	0	8	2	0
5	C	6	0	8	7	0
5	D	6	0	8	1	0
6	B	5	0	0	0	0
6	C	10	0	0	0	0
7	A	27	0	0	2	0
7	B	49	0	0	1	0
7	C	59	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	D	52	0	0	4	0
All	All	17084	0	16470	625	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 19.

All (625) 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:D:428:TYR:HB2	1:D:513:LEU:HD23	1.33	1.10
1:A:261:GLY:HA3	4:C:997:DME:H152	1.29	1.09
1:B:219:ARG:HG3	1:B:219:ARG:HH11	1.23	0.99
1:A:428:TYR:HB2	1:A:513:LEU:HD23	1.44	0.98
1:B:84:GLU:HA	1:B:87:ASN:HD22	1.31	0.96
1:A:261:GLY:HA3	4:C:997:DME:C15	1.95	0.95
1:D:45:ARG:HG3	1:D:45:ARG:HH11	1.31	0.95
1:D:429:ILE:HD11	1:D:524:LEU:HD21	1.45	0.95
1:C:84:GLU:HA	1:C:87:ASN:HD22	1.34	0.93
1:A:429:ILE:HD11	1:A:524:LEU:HD21	1.53	0.91
1:C:219:ARG:HH11	1:C:219:ARG:HG2	1.37	0.89
1:B:498:PRO:HB2	1:B:518:LEU:HB2	1.55	0.88
1:D:329:GLY:HA3	1:D:428:TYR:CZ	2.08	0.88
1:D:329:GLY:HA3	1:D:428:TYR:CE2	2.10	0.87
1:D:11:ARG:HH11	1:D:11:ARG:HB2	1.41	0.85
1:A:45:ARG:HG3	1:A:45:ARG:HH11	1.40	0.85
1:C:341:TYR:CD2	4:C:997:DME:H22	2.11	0.84
1:D:107:ARG:HG3	1:D:107:ARG:HH11	1.42	0.84
1:B:219:ARG:HG3	1:B:219:ARG:NH1	1.91	0.83
1:B:319:GLY:H	1:B:421:GLN:HE22	1.25	0.83
1:D:534:ARG:HG3	1:D:534:ARG:HH11	1.44	0.83
1:A:30:SER:HB2	1:A:103:THR:HG22	1.60	0.81
1:A:107:ARG:HH11	1:A:107:ARG:HG3	1.43	0.80
1:B:161:LEU:HD22	1:B:270:ILE:HD11	1.62	0.80
1:A:329:GLY:HA3	1:A:428:TYR:CE2	2.16	0.80
1:A:24:ALA:HB3	1:A:140:GLN:HG3	1.62	0.80
1:C:286:TRP:CH2	4:C:997:DME:C15	2.65	0.80
1:C:286:TRP:CH2	4:C:997:DME:H151	2.16	0.79
1:C:498:PRO:HB2	1:C:518:LEU:HB2	1.63	0.79
1:A:226:VAL:HG11	1:A:480:TRP:HE1	1.48	0.79
1:B:41:PRO:HD3	1:B:97:LEU:HD12	1.66	0.78
1:C:286:TRP:CZ2	4:C:997:DME:H151	2.18	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:266:ASP:O	1:D:270:ILE:HG12	1.85	0.77
1:A:534:ARG:HG3	1:A:534:ARG:HH11	1.49	0.77
1:B:124:TYR:OH	4:B:996:DME:H82	1.84	0.77
1:B:353:LEU:HB3	1:B:391:PRO:HB2	1.68	0.76
1:B:136:ARG:HH11	1:B:136:ARG:HG2	1.50	0.75
1:C:161:LEU:HD22	1:C:270:ILE:HD11	1.68	0.74
7:A:1009:HOH:O	1:B:527:GLN:HG3	1.88	0.74
1:C:219:ARG:HG2	1:C:219:ARG:NH1	2.02	0.73
1:B:291:GLN:HE21	1:B:368:PRO:HB2	1.53	0.73
1:B:319:GLY:H	1:B:421:GLN:NE2	1.86	0.72
1:D:528:THR:O	1:D:531:PHE:HB3	1.88	0.72
1:C:329:GLY:HA3	1:C:428:TYR:CE2	2.25	0.72
1:A:329:GLY:HA3	1:A:428:TYR:CZ	2.25	0.71
1:C:104:PRO:HD2	1:C:108:PRO:HD3	1.71	0.71
1:C:7:GLN:NE2	1:C:107:ARG:H	1.88	0.71
1:D:45:ARG:HG3	1:D:45:ARG:NH1	1.98	0.71
1:D:367:VAL:HG12	1:D:370:ALA:HB2	1.73	0.71
1:D:460:ASP:HB3	1:D:463:LEU:HD12	1.72	0.71
1:D:535:PHE:O	1:D:538:LYS:HG2	1.90	0.70
1:A:528:THR:O	1:A:531:PHE:HB3	1.92	0.70
1:A:45:ARG:HG3	1:A:45:ARG:NH1	2.05	0.70
1:C:362:GLY:HA3	1:C:398:MET:HE3	1.73	0.70
1:D:161:LEU:HD22	1:D:270:ILE:HD11	1.74	0.70
1:D:65:PHE:HB2	1:D:90:ARG:HH11	1.55	0.69
1:A:180:LEU:O	1:A:183:VAL:HG12	1.92	0.69
1:C:291:GLN:HE21	1:C:368:PRO:HB2	1.58	0.69
1:C:338:PHE:HE2	4:C:997:DME:H71	1.56	0.69
1:A:535:PHE:O	1:A:538:LYS:HG2	1.92	0.69
1:D:428:TYR:CB	1:D:513:LEU:HD23	2.18	0.69
1:D:30:SER:HB2	1:D:103:THR:HG22	1.73	0.69
1:B:362:GLY:HA3	1:B:398:MET:HE3	1.75	0.68
4:B:996:DME:H153	1:D:261:GLY:HA2	1.76	0.67
1:A:116:ILE:HD11	1:A:183:VAL:HG11	1.75	0.67
1:C:319:GLY:H	1:C:421:GLN:HE22	1.42	0.67
1:D:337:TYR:HE2	4:D:999:DME:H71	1.60	0.67
1:C:310:ASP:HB3	1:C:315:LEU:HD13	1.77	0.66
1:D:347:SER:HB2	2:E:1:NAG:H62	1.76	0.66
1:D:24:ALA:HB3	1:D:140:GLN:HG3	1.77	0.66
1:D:44:SER:HA	1:D:274:ARG:HD2	1.78	0.66
1:D:250:LEU:HD23	1:D:288:VAL:HG12	1.78	0.66
1:A:261:GLY:CA	4:C:997:DME:H152	2.17	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:534:ARG:HG3	1:D:534:ARG:NH1	2.11	0.66
1:B:104:PRO:HD2	1:B:108:PRO:HD3	1.76	0.66
1:A:397:ALA:O	1:A:401:VAL:HG23	1.96	0.66
1:C:286:TRP:CH2	4:C:997:DME:H153	2.31	0.65
1:A:266:ASP:O	1:A:270:ILE:HG12	1.97	0.65
1:B:459:LEU:HD23	1:B:470:ARG:HG2	1.79	0.65
1:C:226:VAL:HG13	1:C:327:LEU:HB3	1.79	0.65
1:A:44:SER:HA	1:A:274:ARG:HD2	1.79	0.65
1:A:365:ILE:O	1:A:368:PRO:HD3	1.96	0.65
1:D:245:ARG:HD2	7:D:1000:HOH:O	1.97	0.64
1:C:440:PRO:HG2	1:C:443:MET:HG3	1.78	0.64
1:D:452:GLU:OE2	5:D:952:GOL:O1	2.12	0.64
1:A:294:ILE:HG12	1:A:365:ILE:HG22	1.79	0.64
1:A:460:ASP:HB3	1:A:463:LEU:HD12	1.80	0.64
1:A:497:SER:CB	1:A:498:PRO:HD3	2.27	0.64
1:B:310:ASP:HB3	1:B:315:LEU:HD13	1.79	0.64
1:B:329:GLY:HA3	1:B:428:TYR:CZ	2.32	0.64
1:B:252:ALA:HA	1:B:273:LEU:HD21	1.80	0.63
1:C:117:TRP:HB2	1:C:200:PHE:CE1	2.33	0.63
1:B:294:ILE:HA	4:B:996:DME:C3	2.28	0.63
1:C:494:ASP:C	1:C:496:LYS:H	2.00	0.63
1:A:450:GLU:HG2	1:A:451:ILE:N	2.12	0.63
1:D:417:ARG:HG3	1:D:417:ARG:HH11	1.62	0.63
1:A:458:PRO:HA	1:A:465:TYR:CD2	2.32	0.63
1:B:136:ARG:HH11	1:B:136:ARG:CG	2.12	0.63
1:A:452:GLU:OE2	5:A:954:GOL:O1	2.17	0.62
1:C:219:ARG:NH2	1:C:324:LEU:HG	2.13	0.62
1:A:114:VAL:HG23	1:A:197:VAL:HA	1.80	0.62
1:B:226:VAL:HG13	1:B:327:LEU:HB3	1.80	0.62
1:B:317:ASN:ND2	1:B:417:ARG:HE	1.97	0.62
1:B:348:LYS:HA	1:B:440:PRO:HG3	1.81	0.62
1:A:11:ARG:HH11	1:A:11:ARG:HB2	1.65	0.62
1:A:207:ALA:O	1:A:211:MET:HG2	1.99	0.62
1:A:534:ARG:HG3	1:A:534:ARG:NH1	2.14	0.62
1:D:497:SER:CB	1:D:498:PRO:HD3	2.30	0.62
1:D:450:GLU:HG2	1:D:451:ILE:N	2.14	0.62
1:B:77:TYR:CD2	1:B:348:LYS:HD3	2.35	0.61
1:D:498:PRO:HB2	1:D:518:LEU:HB2	1.80	0.61
1:B:494:ASP:C	1:B:496:LYS:H	2.03	0.61
1:D:12:VAL:HG12	1:D:14:GLY:H	1.65	0.61
1:B:446:PRO:HG2	1:B:449:TYR:CD2	2.35	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:329:GLY:HA3	1:C:428:TYR:CZ	2.36	0.61
1:B:352:SER:O	1:B:395:ARG:HG3	2.01	0.60
1:A:155:THR:HG22	1:A:159:LEU:HD12	1.83	0.60
1:B:458:PRO:HA	1:B:465:TYR:CD2	2.36	0.60
1:B:50:PRO:HB2	1:B:178:LEU:HD12	1.83	0.60
1:B:117:TRP:HB2	1:B:200:PHE:CE1	2.37	0.60
4:D:999:DME:H92	4:D:999:DME:H182	1.83	0.60
1:B:317:ASN:HD22	1:B:417:ARG:HH21	1.49	0.60
1:D:470:ARG:O	1:D:474:GLN:HG3	2.01	0.60
1:D:300:VAL:HB	1:D:301:PRO:HD2	1.84	0.60
1:D:356:ARG:HA	1:D:394:LEU:HD13	1.84	0.60
1:A:197:VAL:HB	1:A:222:PHE:HA	1.84	0.59
1:A:37:PHE:HD1	1:A:178:LEU:HD12	1.66	0.59
1:C:224:ARG:HG3	1:C:224:ARG:HH11	1.67	0.59
1:C:337:TYR:CE1	4:C:997:DME:H61	2.36	0.59
1:A:113:PRO:HA	1:A:196:SER:OG	2.02	0.59
1:A:532:TRP:O	1:A:537:PRO:HD3	2.02	0.59
1:A:473:ALA:O	1:A:477:MET:HG3	2.02	0.59
1:B:211:MET:HG3	1:B:308:LEU:HD21	1.84	0.59
1:B:293:SER:O	4:B:996:DME:H132	2.01	0.59
1:D:113:PRO:HA	1:D:196:SER:OG	2.03	0.59
1:C:20:ILE:HB	1:C:63:THR:HG22	1.83	0.59
1:D:114:VAL:HG11	1:D:187:ILE:HG12	1.85	0.59
1:A:135:GLY:HA3	1:A:146:LEU:HD22	1.83	0.59
1:C:319:GLY:H	1:C:421:GLN:NE2	2.00	0.59
1:D:287:HIS:HB3	7:D:1034:HOH:O	2.02	0.59
1:C:77:TYR:CD2	1:C:348:LYS:HD3	2.37	0.59
1:D:374:ALA:HA	1:D:539:LEU:HD13	1.85	0.59
1:C:266:ASP:O	1:C:270:ILE:HG12	2.02	0.59
1:D:162:PRO:HG2	7:D:1000:HOH:O	2.03	0.59
1:B:470:ARG:O	1:B:474:GLN:HG3	2.03	0.59
1:B:339:LEU:HD11	1:B:399:SER:HA	1.86	0.58
1:C:337:TYR:HE1	4:C:997:DME:H61	1.67	0.58
1:D:45:ARG:HH11	1:D:45:ARG:CG	2.12	0.58
1:D:504:THR:OG1	1:D:507:ALA:HB3	2.03	0.58
1:B:328:VAL:O	1:B:427:ALA:HA	2.03	0.58
1:A:12:VAL:HG12	1:A:14:GLY:H	1.67	0.58
1:C:85:MET:CE	5:C:951:GOL:HO1	2.16	0.58
1:A:470:ARG:O	1:A:474:GLN:HG3	2.03	0.58
1:C:353:LEU:HB3	1:C:391:PRO:HB2	1.85	0.58
1:C:332:LYS:HG2	1:C:333:ASP:OD1	2.04	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:498:PRO:CB	1:B:518:LEU:HB2	2.31	0.58
1:C:134:ASP:OD1	1:C:136:ARG:HB3	2.03	0.58
1:A:66:GLN:HG3	1:A:98:TYR:CG	2.38	0.57
1:C:341:TYR:CD2	4:C:997:DME:C2	2.84	0.57
1:D:197:VAL:HB	1:D:222:PHE:HA	1.86	0.57
1:B:354:ILE:HB	1:B:358:GLN:OE1	2.04	0.57
1:C:216:LEU:HB3	1:C:217:PRO:HD3	1.86	0.57
1:C:338:PHE:CE2	4:C:997:DME:H71	2.38	0.57
1:A:374:ALA:HA	1:A:539:LEU:HD13	1.86	0.57
1:B:227:LEU:HB2	1:B:328:VAL:HG12	1.85	0.57
1:B:84:GLU:HA	1:B:87:ASN:ND2	2.11	0.57
1:C:355:SER:OG	1:C:358:GLN:HG3	2.05	0.57
1:A:114:VAL:HG12	1:A:145:VAL:HB	1.87	0.57
1:C:414:LEU:HG	1:C:418:LEU:HD22	1.85	0.57
1:D:114:VAL:HG23	1:D:197:VAL:HA	1.87	0.57
1:C:437:LEU:HA	5:C:951:GOL:H32	1.87	0.57
1:D:365:ILE:O	1:D:368:PRO:HD3	2.05	0.57
1:B:24:ALA:HB3	1:B:140:GLN:HG3	1.87	0.57
1:D:226:VAL:HG11	1:D:480:TRP:HE1	1.70	0.57
1:D:155:THR:HG22	1:D:159:LEU:HB2	1.86	0.56
1:C:300:VAL:HB	1:C:301:PRO:CD	2.35	0.56
1:D:532:TRP:O	1:D:537:PRO:HD3	2.05	0.56
1:A:181:GLN:O	1:A:185:GLU:HG2	2.04	0.56
1:B:176:GLN:OE1	1:B:212:HIS:HE1	1.88	0.56
1:B:211:MET:HE2	1:B:301:PRO:HG2	1.88	0.56
1:B:293:SER:O	4:B:996:DME:C13	2.53	0.56
1:A:375:ALA:O	1:A:379:VAL:HG23	2.06	0.56
1:A:119:TYR:CE1	1:A:151:TYR:CE1	2.94	0.56
1:C:202:GLU:HA	1:C:228:GLN:O	2.06	0.56
1:C:328:VAL:O	1:C:427:ALA:HA	2.06	0.56
1:C:460:ASP:OD1	1:C:462:SER:HB3	2.05	0.56
1:D:114:VAL:HG12	1:D:145:VAL:HB	1.88	0.56
1:C:535:PHE:CE2	1:C:539:LEU:HD12	2.40	0.56
1:A:65:PHE:HE1	1:A:100:ASN:ND2	2.04	0.55
1:A:417:ARG:HH11	1:A:417:ARG:HG3	1.71	0.55
1:C:41:PRO:HD3	1:C:97:LEU:HD12	1.87	0.55
1:A:139:ALA:O	1:A:143:GLY:HA2	2.06	0.55
1:B:266:ASP:O	1:B:270:ILE:HG12	2.06	0.55
1:C:252:ALA:HA	1:C:273:LEU:HD21	1.88	0.55
1:A:498:PRO:HB2	1:A:518:LEU:HB2	1.88	0.55
1:A:511:VAL:HB	1:A:518:LEU:HD22	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:433:ARG:NH2	1:B:439:TRP:O	2.33	0.55
1:C:498:PRO:CB	1:C:518:LEU:HB2	2.32	0.55
1:D:65:PHE:HB2	1:D:90:ARG:NH1	2.21	0.55
1:B:300:VAL:HB	1:B:301:PRO:CD	2.36	0.55
4:B:996:DME:H41	4:B:996:DME:H142	1.87	0.55
1:A:119:TYR:HE2	1:A:150:ASN:HA	1.72	0.55
1:A:132:VAL:HG23	1:A:133:TYR:CD1	2.42	0.55
1:C:252:ALA:CB	1:C:269:LEU:HD21	2.37	0.55
1:A:516:LYS:HE3	1:A:516:LYS:HA	1.89	0.55
1:B:161:LEU:HD21	1:B:269:LEU:HD13	1.89	0.55
1:D:207:ALA:O	1:D:211:MET:HG2	2.07	0.54
1:C:211:MET:HE2	1:C:301:PRO:HG2	1.89	0.54
1:C:458:PRO:HA	1:C:465:TYR:CD2	2.43	0.54
1:B:11:ARG:HG3	1:B:16:GLN:HG2	1.89	0.54
1:D:329:GLY:O	1:D:330:VAL:HG23	2.07	0.54
1:D:397:ALA:O	1:D:401:VAL:HG23	2.07	0.54
1:D:458:PRO:HA	1:D:465:TYR:CD2	2.42	0.54
1:C:452:GLU:CD	5:C:951:GOL:H11	2.28	0.54
1:D:132:VAL:HG23	1:D:133:TYR:CD1	2.42	0.54
1:C:459:LEU:HD23	1:C:470:ARG:HG2	1.88	0.54
1:D:112:THR:HG23	1:D:113:PRO:HD2	1.90	0.54
1:D:116:ILE:HD11	1:D:183:VAL:HG11	1.90	0.54
1:D:155:THR:HG22	1:D:159:LEU:HD12	1.89	0.54
1:C:317:ASN:ND2	1:C:417:ARG:HE	2.05	0.54
1:D:123:PHE:HB2	1:D:300:VAL:HG12	1.88	0.54
1:B:329:GLY:HA3	1:B:428:TYR:CE2	2.43	0.54
1:C:224:ARG:HG3	1:C:224:ARG:NH1	2.22	0.54
1:C:84:GLU:HA	1:C:87:ASN:ND2	2.15	0.53
1:D:300:VAL:HB	1:D:301:PRO:CD	2.38	0.53
1:A:112:THR:HG23	1:A:113:PRO:HD2	1.90	0.53
1:A:123:PHE:HB2	1:A:300:VAL:HG12	1.91	0.53
1:C:77:TYR:CE2	1:C:348:LYS:HD3	2.44	0.53
1:D:107:ARG:HG3	1:D:107:ARG:NH1	2.18	0.53
1:D:66:GLN:HG3	1:D:98:TYR:CG	2.44	0.53
1:A:45:ARG:HH11	1:A:45:ARG:CG	2.15	0.53
1:A:205:GLY:O	1:A:208:SER:HB2	2.08	0.53
1:C:184:GLN:HA	1:C:184:GLN:HE21	1.73	0.53
1:C:433:ARG:NH2	1:C:439:TRP:O	2.37	0.53
1:A:141:VAL:HG21	1:A:459:LEU:CD2	2.39	0.53
1:D:200:PHE:HB2	1:D:226:VAL:HB	1.91	0.53
1:B:202:GLU:HA	1:B:228:GLN:O	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:251:LEU:O	1:D:251:LEU:HG	2.07	0.52
1:A:468:GLU:HA	1:A:471:ILE:HD12	1.89	0.52
1:D:119:TYR:HE2	1:D:150:ASN:HA	1.73	0.52
1:A:475:ARG:O	1:A:478:LYS:HB2	2.09	0.52
1:B:8:LEU:O	1:B:18:ARG:HA	2.08	0.52
1:A:152:ARG:O	1:A:157:GLY:HA3	2.10	0.52
1:A:488:ASP:OD1	1:A:490:ASN:HB2	2.10	0.52
1:A:504:THR:OG1	1:A:507:ALA:HB3	2.10	0.52
1:C:341:TYR:CE2	4:C:997:DME:H22	2.45	0.52
1:B:414:LEU:HG	1:B:418:LEU:HD22	1.92	0.52
1:C:85:MET:CE	5:C:951:GOL:O1	2.58	0.52
1:A:444:GLY:O	1:A:446:PRO:HD3	2.10	0.52
1:C:348:LYS:HA	1:C:440:PRO:HG3	1.91	0.52
1:A:331:VAL:HB	1:A:445:VAL:HG12	1.91	0.51
1:A:407:VAL:O	1:A:411:VAL:HG23	2.10	0.51
1:C:172:GLY:O	1:C:176:GLN:HG3	2.10	0.51
1:D:115:LEU:HD12	1:D:198:THR:HB	1.92	0.51
1:D:251:LEU:HD21	1:D:281:LEU:HD12	1.92	0.51
1:B:291:GLN:NE2	1:B:368:PRO:HB2	2.22	0.51
4:B:996:DME:C15	1:D:261:GLY:HA2	2.39	0.51
1:C:536:LEU:HD13	1:C:540:LEU:CD2	2.40	0.51
1:A:80:PHE:CE2	1:A:82:GLY:HA3	2.46	0.51
1:B:252:ALA:CB	1:B:269:LEU:HD21	2.40	0.51
1:C:452:GLU:OE2	5:C:951:GOL:H11	2.09	0.51
1:D:243:GLU:O	1:D:247:ARG:HG3	2.10	0.51
1:B:7:GLN:NE2	1:B:107:ARG:H	2.08	0.51
1:B:20:ILE:HB	1:B:63:THR:HG22	1.93	0.51
1:B:531:PHE:CZ	1:B:536:LEU:HG	2.45	0.51
1:C:227:LEU:HB2	1:C:328:VAL:HG12	1.93	0.51
1:A:107:ARG:HH11	1:A:107:ARG:CG	2.20	0.51
1:C:80:PHE:CE1	1:C:438:THR:HB	2.46	0.51
1:D:488:ASP:OD1	1:D:490:ASN:HB2	2.11	0.51
1:D:375:ALA:O	1:D:379:VAL:HG23	2.11	0.51
1:B:460:ASP:OD1	1:B:462:SER:HB3	2.11	0.51
1:D:139:ALA:O	1:D:143:GLY:HA2	2.10	0.51
1:D:356:ARG:HH12	1:D:383:THR:HG23	1.76	0.51
1:D:511:VAL:HB	1:D:518:LEU:HD22	1.92	0.51
1:A:356:ARG:HH12	1:A:383:THR:HG23	1.75	0.51
1:B:536:LEU:HD13	1:B:540:LEU:CD2	2.41	0.51
1:A:89:ASN:O	1:A:90:ARG:HD3	2.11	0.50
1:C:136:ARG:HB3	1:C:136:ARG:HH11	1.75	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:452:GLU:OE1	5:C:951:GOL:H11	2.10	0.50
1:D:110:SER:HB2	1:D:111:PRO:HD2	1.93	0.50
4:D:999:DME:H173	4:D:999:DME:C9	2.41	0.50
1:A:328:VAL:HG12	1:A:329:GLY:N	2.26	0.50
1:D:294:ILE:HG12	1:D:365:ILE:HG22	1.94	0.50
1:A:68:VAL:HG23	1:A:90:ARG:HB2	1.94	0.50
1:B:310:ASP:HB3	1:B:315:LEU:CD1	2.40	0.50
1:C:466:THR:OG1	1:C:469:GLU:HG3	2.11	0.50
1:D:205:GLY:O	1:D:208:SER:HB2	2.11	0.50
1:A:7:GLN:CB	1:A:105:TYR:HE1	2.25	0.50
1:A:41:PRO:HA	1:A:45:ARG:HB3	1.93	0.50
1:A:466:THR:OG1	1:A:469:GLU:HG3	2.10	0.50
1:C:89:ASN:OD1	1:C:129:SER:HB2	2.12	0.50
1:D:135:GLY:HA3	1:D:146:LEU:HD22	1.93	0.50
1:A:21:ARG:HH21	1:A:23:LYS:NZ	2.10	0.50
1:B:535:PHE:CE2	1:B:539:LEU:HD12	2.47	0.50
1:A:367:VAL:HG12	1:A:370:ALA:HB2	1.94	0.49
1:A:251:LEU:HD21	1:A:281:LEU:HD12	1.94	0.49
1:C:166:GLU:H	1:C:166:GLU:CD	2.15	0.49
1:C:339:LEU:HD11	1:C:399:SER:HA	1.94	0.49
1:D:166:GLU:HB2	1:D:274:ARG:HH12	1.77	0.49
1:B:161:LEU:HD22	1:B:270:ILE:CD1	2.39	0.49
1:C:12:VAL:HG22	1:C:186:ASN:HB3	1.94	0.49
1:C:536:LEU:N	1:C:537:PRO:HD2	2.27	0.49
1:A:407:VAL:O	1:A:410:PRO:HD2	2.12	0.49
1:C:352:SER:O	1:C:395:ARG:HG3	2.13	0.49
1:B:124:TYR:OH	4:B:996:DME:C8	2.57	0.49
1:B:250:LEU:HD23	1:B:288:VAL:HG12	1.95	0.49
1:B:355:SER:OG	1:B:358:GLN:HG3	2.12	0.49
1:D:11:ARG:HH11	1:D:11:ARG:CB	2.20	0.49
1:D:466:THR:OG1	1:D:469:GLU:HG3	2.12	0.49
1:B:216:LEU:HB3	1:B:217:PRO:HD3	1.94	0.49
1:B:331:VAL:HG12	1:B:430:PHE:HB3	1.95	0.49
1:D:327:LEU:HD23	1:D:328:VAL:N	2.27	0.49
1:A:22:LEU:HD13	1:A:31:ALA:HB3	1.95	0.49
1:B:89:ASN:OD1	1:B:129:SER:HB2	2.13	0.49
1:C:219:ARG:HH21	1:C:324:LEU:HG	1.77	0.49
1:A:122:GLY:O	1:A:123:PHE:HB2	2.13	0.49
1:C:32:PHE:N	1:C:32:PHE:CD1	2.80	0.49
1:B:293:SER:O	4:B:996:DME:H22	2.13	0.49
1:C:446:PRO:HG2	1:C:449:TYR:CD1	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:535:PHE:CB	1:D:380:LEU:HD12	2.42	0.49
1:D:33:LEU:HD12	1:D:100:ASN:HB3	1.95	0.49
1:D:313:GLU:HB2	7:D:1046:HOH:O	2.12	0.49
1:A:327:LEU:HD23	1:A:328:VAL:N	2.28	0.48
1:B:255:VAL:HG12	1:B:284:HIS:ND1	2.27	0.48
1:D:352:SER:O	1:D:395:ARG:HG3	2.13	0.48
1:A:42:VAL:O	1:A:45:ARG:HB2	2.13	0.48
1:B:246:ARG:HG3	1:B:246:ARG:HH11	1.78	0.48
1:C:80:PHE:O	1:C:84:GLU:HG2	2.13	0.48
1:C:354:ILE:HB	1:C:358:GLN:OE1	2.13	0.48
1:C:470:ARG:O	1:C:474:GLN:HG3	2.13	0.48
1:D:86:TRP:CZ3	4:D:999:DME:H161	2.48	0.48
1:C:37:PHE:CD1	1:C:99:LEU:HD23	2.49	0.48
1:D:530:ALA:O	1:D:534:ARG:HB2	2.13	0.48
1:B:294:ILE:HA	4:B:996:DME:H31	1.94	0.48
1:A:493:ARG:O	1:A:495:ARG:N	2.47	0.48
1:C:211:MET:CE	1:C:301:PRO:HG2	2.44	0.48
1:C:375:ALA:O	1:C:379:VAL:HG23	2.13	0.48
4:C:997:DME:C14	4:C:997:DME:H42	2.43	0.48
1:B:440:PRO:HG2	1:B:443:MET:HG3	1.96	0.48
1:B:536:LEU:N	1:B:537:PRO:HD2	2.28	0.48
1:C:219:ARG:HH11	1:C:219:ARG:CG	2.18	0.48
1:D:494:ASP:O	1:D:496:LYS:N	2.40	0.48
1:A:107:ARG:HG3	1:A:107:ARG:NH1	2.20	0.48
1:C:269:LEU:HD23	1:C:269:LEU:O	2.13	0.48
1:D:142:GLU:CB	1:D:481:THR:HG21	2.44	0.48
1:C:184:GLN:HA	1:C:184:GLN:NE2	2.29	0.47
1:C:255:VAL:HG12	1:C:284:HIS:ND1	2.28	0.47
1:A:110:SER:HB2	1:A:111:PRO:HD2	1.96	0.47
1:A:200:PHE:HB2	1:A:226:VAL:HB	1.95	0.47
1:B:47:PHE:O	1:B:171:VAL:HG11	2.14	0.47
1:C:243:GLU:HA	1:C:243:GLU:OE1	2.14	0.47
1:C:374:ALA:O	1:C:377:ALA:HB3	2.13	0.47
1:A:329:GLY:HA3	1:A:428:TYR:CD2	2.49	0.47
1:B:172:GLY:O	1:B:176:GLN:HG3	2.15	0.47
1:B:329:GLY:HA3	1:B:428:TYR:CE1	2.49	0.47
1:A:300:VAL:HB	1:A:301:PRO:HD2	1.95	0.47
1:A:317:ASN:HB2	1:A:417:ARG:NH1	2.29	0.47
1:D:347:SER:HB2	2:E:1:NAG:C6	2.43	0.47
1:B:362:GLY:HA3	1:B:398:MET:CE	2.43	0.47
1:C:296:ARG:NH2	1:C:406:ASN:OD1	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:300:VAL:HB	1:C:301:PRO:HD2	1.96	0.47
1:C:331:VAL:HG22	1:C:334:GLU:OE2	2.15	0.47
1:D:37:PHE:HD1	1:D:178:LEU:HD12	1.79	0.47
1:D:328:VAL:CG1	1:D:411:VAL:HG13	2.44	0.47
1:A:142:GLU:CB	1:A:481:THR:HG21	2.44	0.47
1:B:119:TYR:HE2	1:B:150:ASN:HA	1.79	0.47
1:C:8:LEU:O	1:C:18:ARG:HA	2.14	0.47
1:C:511:VAL:HB	1:C:518:LEU:HD22	1.95	0.47
1:A:210:GLY:O	1:A:214:LEU:HD22	2.14	0.47
1:D:516:LYS:HE2	1:D:516:LYS:HA	1.96	0.47
1:A:138:LEU:HD11	1:A:455:PHE:HA	1.97	0.47
1:B:536:LEU:HD13	1:B:540:LEU:HD23	1.97	0.47
1:C:119:TYR:HE2	1:C:150:ASN:HA	1.80	0.47
1:C:531:PHE:CZ	1:C:536:LEU:HG	2.49	0.47
1:D:418:LEU:HD12	1:D:418:LEU:HA	1.69	0.47
1:B:29:VAL:CG2	1:B:140:GLN:HB2	2.45	0.47
1:C:346:PHE:HA	1:C:352:SER:OG	2.15	0.47
1:D:70:TYR:HB3	1:D:156:PHE:CE2	2.50	0.47
1:D:317:ASN:HB2	1:D:417:ARG:NH1	2.30	0.47
1:D:374:ALA:O	1:D:378:VAL:HG23	2.15	0.47
1:A:331:VAL:HG12	1:A:430:PHE:HB3	1.97	0.46
1:A:374:ALA:O	1:A:378:VAL:HG23	2.15	0.46
1:D:45:ARG:O	1:D:48:MET:HB2	2.14	0.46
1:D:339:LEU:HD13	1:D:346:PHE:CE2	2.50	0.46
1:B:296:ARG:NH2	1:B:406:ASN:OD1	2.47	0.46
1:C:29:VAL:CG2	1:C:140:GLN:HB2	2.45	0.46
1:A:451:ILE:H	1:A:451:ILE:HG12	1.49	0.46
1:B:128:ALA:HB1	7:B:1021:HOH:O	2.15	0.46
1:C:245:ARG:NH2	1:C:266:ASP:OD2	2.49	0.46
1:D:121:GLY:HA2	4:D:999:DME:H101	1.97	0.46
1:B:432:HIS:CE1	1:B:515:LEU:HD11	2.51	0.46
1:C:138:LEU:HD23	1:C:146:LEU:CD1	2.46	0.46
1:C:161:LEU:HD21	1:C:269:LEU:HD13	1.98	0.46
1:C:331:VAL:HG12	1:C:430:PHE:HB3	1.98	0.46
1:D:181:GLN:O	1:D:185:GLU:HG2	2.15	0.46
1:A:37:PHE:CD1	1:A:178:LEU:HD12	2.48	0.46
1:D:429:ILE:CD1	1:D:524:LEU:HD21	2.33	0.46
1:A:114:VAL:HG11	1:A:187:ILE:HG12	1.98	0.46
1:B:278:ALA:O	1:B:282:VAL:HG23	2.16	0.46
1:B:317:ASN:ND2	1:B:417:ARG:HH21	2.12	0.46
1:B:369:GLN:HE22	1:B:405:HIS:CE1	2.34	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:300:VAL:HB	1:A:301:PRO:CD	2.46	0.46
1:C:24:ALA:HB3	1:C:140:GLN:HG3	1.97	0.46
1:C:362:GLY:HA3	1:C:398:MET:CE	2.43	0.46
1:C:530:ALA:O	1:C:534:ARG:HB2	2.16	0.46
1:D:329:GLY:HA3	1:D:428:TYR:CD2	2.50	0.46
1:A:115:LEU:HD12	1:A:198:THR:HB	1.98	0.45
1:C:329:GLY:HA3	1:C:428:TYR:CD2	2.50	0.45
1:D:331:VAL:HG12	1:D:430:PHE:HB3	1.98	0.45
1:B:4:GLU:HG2	1:B:9:LEU:HB2	1.97	0.45
1:B:161:LEU:CD2	1:B:270:ILE:HD11	2.39	0.45
1:B:243:GLU:OE1	1:B:243:GLU:HA	2.16	0.45
1:B:295:PHE:H	4:B:996:DME:H31	1.80	0.45
1:A:33:LEU:CD1	1:A:33:LEU:N	2.79	0.45
1:A:457:LEU:N	1:A:458:PRO:CD	2.80	0.45
1:B:128:ALA:HB1	1:B:148:SER:OG	2.16	0.45
1:B:532:TRP:O	1:B:537:PRO:HD3	2.16	0.45
1:C:161:LEU:HD22	1:C:270:ILE:CD1	2.44	0.45
1:D:329:GLY:HA3	1:D:428:TYR:CE1	2.48	0.45
1:A:408:VAL:O	1:A:411:VAL:HB	2.17	0.45
1:C:85:MET:SD	5:C:951:GOL:O1	2.73	0.45
1:C:494:ASP:C	1:C:496:LYS:N	2.67	0.45
1:D:21:ARG:HH21	1:D:23:LYS:NZ	2.14	0.45
1:C:50:PRO:HB2	1:C:178:LEU:HD12	1.97	0.45
1:A:530:ALA:O	1:A:534:ARG:HB2	2.17	0.45
1:B:10:VAL:HG22	1:B:107:ARG:NH1	2.32	0.45
1:C:29:VAL:HG21	1:C:140:GLN:HB2	1.99	0.45
1:D:42:VAL:O	1:D:45:ARG:HB2	2.16	0.45
1:A:33:LEU:N	1:A:33:LEU:HD13	2.32	0.45
1:A:136:ARG:HG2	1:A:137:PHE:N	2.32	0.45
1:B:219:ARG:NH2	1:B:324:LEU:HG	2.32	0.45
1:A:66:GLN:HG3	1:A:98:TYR:CD2	2.52	0.44
1:A:112:THR:HG21	1:A:143:GLY:O	2.17	0.44
1:A:501:PRO:HA	1:A:502:PRO:HD3	1.92	0.44
1:C:40:PRO:HA	1:C:41:PRO:HD2	1.74	0.44
1:C:515:LEU:HD23	1:C:515:LEU:HA	1.81	0.44
1:B:29:VAL:HG21	1:B:140:GLN:HB2	1.99	0.44
1:C:536:LEU:HD23	1:C:536:LEU:HA	1.79	0.44
1:D:112:THR:HG21	1:D:143:GLY:O	2.17	0.44
1:D:180:LEU:O	1:D:183:VAL:HG12	2.16	0.44
1:C:252:ALA:HB2	1:C:269:LEU:HD21	2.00	0.44
1:A:45:ARG:O	1:A:48:MET:HB2	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:77:TYR:CE2	1:B:348:LYS:HD3	2.51	0.44
4:C:997:DME:H182	4:C:997:DME:H102	1.62	0.44
1:D:417:ARG:HH11	1:D:417:ARG:CG	2.30	0.44
1:B:459:LEU:HD21	1:B:474:GLN:HG2	1.98	0.44
1:C:380:LEU:HD22	1:D:535:PHE:CB	2.47	0.44
1:A:166:GLU:HB2	1:A:274:ARG:HH12	1.82	0.44
1:A:497:SER:CB	1:A:498:PRO:CD	2.94	0.44
1:B:300:VAL:HB	1:B:301:PRO:HD2	2.00	0.44
1:C:11:ARG:NH1	1:C:11:ARG:HG3	2.32	0.44
1:C:224:ARG:HD3	1:C:487:GLY:HA2	1.99	0.44
1:C:507:ALA:HA	1:C:522:ARG:HH21	1.82	0.44
1:D:356:ARG:HG2	1:D:360:LEU:CD2	2.48	0.44
1:D:512:SER:HB3	1:D:519:GLU:HB3	2.00	0.44
1:C:7:GLN:HE22	1:C:107:ARG:H	1.65	0.44
1:D:155:THR:HG22	1:D:159:LEU:CD1	2.48	0.44
1:D:372:ASP:O	1:D:375:ALA:HB3	2.18	0.44
1:D:104:PRO:HG2	1:D:108:PRO:HD3	2.00	0.44
1:D:152:ARG:O	1:D:157:GLY:HA3	2.18	0.44
1:D:177:ARG:CZ	1:D:217:PRO:HB2	2.48	0.44
1:A:216:LEU:HD12	1:A:216:LEU:HA	1.80	0.43
1:A:491:ASP:HA	1:A:492:PRO:HD2	1.56	0.43
1:C:206:ALA:O	1:C:227:LEU:HD23	2.18	0.43
1:D:41:PRO:HA	1:D:45:ARG:HB3	1.99	0.43
1:D:291:GLN:HE21	1:D:291:GLN:HB2	1.60	0.43
1:A:124:TYR:CD1	1:A:124:TYR:C	2.91	0.43
1:B:4:GLU:HG3	1:B:5:ASP:N	2.34	0.43
1:B:287:HIS:CD2	1:B:287:HIS:N	2.86	0.43
1:D:524:LEU:HA	1:D:524:LEU:HD23	1.73	0.43
1:A:226:VAL:HG11	1:A:480:TRP:NE1	2.25	0.43
1:B:40:PRO:HA	1:B:41:PRO:HD2	1.80	0.43
1:B:211:MET:CE	1:B:301:PRO:HG2	2.49	0.43
1:B:382:TYR:CD2	1:B:401:VAL:HG22	2.53	0.43
1:D:11:ARG:HB2	1:D:11:ARG:NH1	2.21	0.43
1:C:466:THR:HG23	1:C:469:GLU:OE1	2.18	0.43
1:D:311:THR:HG22	1:D:313:GLU:H	1.82	0.43
1:A:356:ARG:O	1:A:360:LEU:HD22	2.19	0.43
1:A:407:VAL:C	1:A:410:PRO:HD2	2.38	0.43
1:A:426:TYR:HD2	1:A:500:TRP:CD1	2.36	0.43
1:D:112:THR:HG21	1:D:144:ALA:HA	2.00	0.43
1:C:9:LEU:HD11	1:C:16:GLN:NE2	2.33	0.43
1:D:367:VAL:CG1	1:D:370:ALA:HB2	2.45	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:32:PHE:CD1	1:B:32:PHE:N	2.86	0.43
1:B:183:VAL:HG13	1:B:187:ILE:HB	2.01	0.43
1:D:86:TRP:CE3	4:D:999:DME:H161	2.54	0.43
1:D:518:LEU:HA	1:D:518:LEU:HD23	1.79	0.43
1:A:202:GLU:O	1:A:205:GLY:N	2.52	0.43
1:A:295:PHE:CE2	1:A:338:PHE:CZ	3.07	0.43
1:B:359:PHE:O	1:B:398:MET:HE1	2.19	0.43
1:C:246:ARG:HH11	1:C:246:ARG:HD3	1.61	0.43
1:D:328:VAL:HG11	1:D:411:VAL:HG13	1.99	0.43
1:D:407:VAL:O	1:D:411:VAL:HG23	2.19	0.43
1:A:356:ARG:HA	1:A:394:LEU:HD13	2.00	0.43
1:A:472:PHE:CE1	1:A:476:LEU:HD11	2.54	0.43
1:B:223:HIS:CD2	1:B:223:HIS:N	2.87	0.43
1:C:321:PHE:CD2	1:C:418:LEU:HD12	2.54	0.43
1:A:12:VAL:HG13	1:A:186:ASN:OD1	2.19	0.43
1:D:12:VAL:HG13	1:D:186:ASN:OD1	2.19	0.43
1:D:250:LEU:HD23	1:D:288:VAL:HA	2.00	0.43
1:A:540:LEU:HD23	1:A:540:LEU:HA	1.78	0.42
1:C:532:TRP:O	1:C:537:PRO:HD3	2.18	0.42
1:D:33:LEU:N	1:D:33:LEU:HD13	2.34	0.42
1:D:351:GLU:HB2	1:D:353:LEU:HD22	2.01	0.42
1:D:386:LEU:HD23	1:D:386:LEU:HA	1.94	0.42
1:D:493:ARG:O	1:D:495:ARG:N	2.52	0.42
1:A:177:ARG:CZ	1:A:217:PRO:HB2	2.49	0.42
1:C:226:VAL:HA	1:C:327:LEU:O	2.19	0.42
1:C:450:GLU:HG2	1:C:451:ILE:N	2.35	0.42
1:A:40:PRO:HG3	1:A:95:ASP:OD1	2.19	0.42
1:A:418:LEU:HD12	1:A:418:LEU:HA	1.83	0.42
1:B:134:ASP:OD1	1:B:136:ARG:NH1	2.53	0.42
1:C:327:LEU:HD21	1:C:500:TRP:CH2	2.55	0.42
1:D:46:ARG:HB3	1:D:274:ARG:HG2	2.00	0.42
1:D:193:ASP:OD1	1:D:195:MET:HB2	2.19	0.42
1:D:331:VAL:HB	1:D:445:VAL:HG12	2.01	0.42
1:B:138:LEU:HD13	1:B:477:MET:HG2	2.00	0.42
1:C:121:GLY:CA	4:C:997:DME:H91	2.49	0.42
1:C:291:GLN:NE2	1:C:368:PRO:HB2	2.31	0.42
1:C:397:ALA:O	1:C:401:VAL:HG23	2.19	0.42
1:D:46:ARG:HD3	1:D:47:PHE:CZ	2.54	0.42
1:A:476:LEU:HA	1:A:479:TYR:HD2	1.85	0.42
1:B:166:GLU:CD	1:B:166:GLU:H	2.21	0.42
1:B:185:GLU:HB2	1:B:186:ASN:H	1.66	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:224:ARG:HG3	1:B:224:ARG:HH11	1.85	0.42
1:C:312:PRO:O	1:C:316:ILE:HG12	2.20	0.42
1:D:286:TRP:CZ2	4:D:999:DME:H142	2.55	0.42
1:D:495:ARG:O	1:D:496:LYS:C	2.58	0.42
1:B:383:THR:HG22	1:B:384:ASP:N	2.34	0.42
1:C:80:PHE:HE1	1:C:438:THR:HB	1.84	0.42
1:D:107:ARG:NH1	1:D:107:ARG:CG	2.82	0.42
1:D:132:VAL:HA	1:D:457:LEU:HD21	2.02	0.42
1:A:380:LEU:HA	1:A:385:TRP:HZ2	1.84	0.42
1:B:224:ARG:HG3	1:B:224:ARG:NH1	2.35	0.42
1:C:359:PHE:O	1:C:363:VAL:HG23	2.20	0.42
1:C:540:LEU:HD13	1:C:540:LEU:HA	1.78	0.42
1:D:130:LEU:HD23	1:D:130:LEU:HA	1.92	0.42
1:D:296:ARG:NH2	1:D:406:ASN:OD1	2.53	0.42
1:A:46:ARG:HD3	1:A:47:PHE:CZ	2.54	0.42
1:B:535:PHE:HE2	1:B:539:LEU:HD12	1.83	0.42
1:D:434:ALA:O	1:D:437:LEU:HB2	2.19	0.42
1:B:374:ALA:O	1:B:377:ALA:HB3	2.20	0.42
1:B:494:ASP:C	1:B:496:LYS:N	2.71	0.42
1:D:476:LEU:HD21	1:D:513:LEU:HD12	2.02	0.42
1:D:491:ASP:HA	1:D:492:PRO:HD2	1.58	0.42
1:A:524:LEU:HA	1:A:524:LEU:HD23	1.82	0.42
1:B:536:LEU:HD23	1:B:536:LEU:HA	1.87	0.42
1:C:124:TYR:OH	4:C:997:DME:H42	2.19	0.42
1:D:122:GLY:O	1:D:123:PHE:HB2	2.20	0.42
1:D:325:GLN:O	1:D:483:PHE:HZ	2.03	0.42
1:D:501:PRO:HA	1:D:502:PRO:HD3	1.90	0.42
1:A:328:VAL:CG1	1:A:411:VAL:HG13	2.50	0.41
1:A:414:LEU:O	1:A:418:LEU:HB2	2.20	0.41
1:C:10:VAL:HG22	1:C:107:ARG:NH1	2.35	0.41
1:D:250:LEU:CD2	1:D:288:VAL:HG12	2.49	0.41
1:D:324:LEU:HD23	1:D:325:GLN:H	1.85	0.41
1:D:457:LEU:N	1:D:458:PRO:CD	2.83	0.41
1:D:538:LYS:HE3	1:D:538:LYS:HB3	1.94	0.41
1:A:330:VAL:CG1	1:A:331:VAL:N	2.83	0.41
1:C:342:GLY:O	1:C:344:PRO:HD3	2.21	0.41
1:D:295:PHE:CE2	1:D:338:PHE:CZ	3.07	0.41
1:A:516:LYS:HE3	1:A:516:LYS:CA	2.50	0.41
1:B:243:GLU:OE1	1:B:246:ARG:NH1	2.53	0.41
1:C:155:THR:HG22	1:C:159:LEU:HD12	2.02	0.41
1:D:119:TYR:CE2	1:D:150:ASN:HA	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:113:PRO:HA	1:A:196:SER:HG	1.85	0.41
1:A:289:LEU:HD23	1:A:289:LEU:HA	1.89	0.41
1:A:351:GLU:HB2	1:A:353:LEU:HD22	2.02	0.41
1:A:390:ASP:HA	1:A:391:PRO:HD2	1.80	0.41
1:B:294:ILE:HA	4:B:996:DME:H22	2.03	0.41
1:B:418:LEU:HD12	1:B:418:LEU:HA	1.91	0.41
1:A:20:ILE:HG12	1:A:21:ARG:N	2.35	0.41
1:A:536:LEU:HB3	1:A:537:PRO:HD3	2.03	0.41
1:B:85:MET:SD	5:B:953:GOL:O1	2.72	0.41
1:B:85:MET:CE	5:B:953:GOL:HO1	2.33	0.41
1:C:383:THR:HG22	1:C:384:ASP:N	2.35	0.41
1:A:149:MET:HE2	1:A:176:GLN:HA	2.02	0.41
1:A:350:ASN:ND2	3:A:709:NAG:C7	2.83	0.41
1:B:41:PRO:HA	1:B:45:ARG:HB3	2.03	0.41
1:D:70:TYR:CD1	1:D:92:LEU:HB3	2.55	0.41
1:D:142:GLU:HG3	1:D:481:THR:HG21	2.03	0.41
1:D:534:ARG:NH1	1:D:534:ARG:CG	2.80	0.41
1:D:536:LEU:HB3	1:D:537:PRO:HD3	2.02	0.41
1:B:255:VAL:HG21	1:B:276:ARG:HG3	2.02	0.41
1:B:518:LEU:HD23	1:B:518:LEU:HA	1.94	0.41
1:C:287:HIS:CD2	1:C:287:HIS:N	2.89	0.41
1:C:356:ARG:NH2	1:C:383:THR:CG2	2.84	0.41
1:A:159:LEU:HA	1:A:299:PHE:CD1	2.56	0.41
1:A:413:GLN:O	1:A:417:ARG:HB2	2.20	0.41
1:A:513:LEU:HD13	1:A:513:LEU:HA	1.87	0.41
1:B:13:ARG:NE	1:B:185:GLU:HB3	2.35	0.41
1:C:243:GLU:OE1	1:C:246:ARG:NH1	2.54	0.41
1:A:257:CYS:HA	1:A:258:PRO:HA	1.80	0.41
1:B:511:VAL:HB	1:B:518:LEU:HD22	2.02	0.41
1:C:46:ARG:HB3	1:C:274:ARG:HG2	2.02	0.41
1:C:115:LEU:HD21	1:C:484:ALA:HB2	2.02	0.41
1:D:216:LEU:HA	1:D:219:ARG:HG2	2.03	0.41
1:D:257:CYS:HA	1:D:258:PRO:HA	1.73	0.41
1:D:407:VAL:O	1:D:410:PRO:HD2	2.21	0.41
1:A:325:GLN:O	1:A:483:PHE:HZ	2.04	0.41
1:D:500:TRP:HA	1:D:501:PRO:HD2	1.89	0.41
1:A:155:THR:HG22	1:A:159:LEU:CD1	2.51	0.40
1:A:187:ILE:HD12	1:A:187:ILE:HA	1.94	0.40
4:A:998:DME:H102	4:A:998:DME:H173	1.86	0.40
1:B:41:PRO:CD	1:B:97:LEU:HD12	2.43	0.40
1:D:68:VAL:HG23	1:D:90:ARG:HB2	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:469:GLU:O	1:A:472:PHE:HB3	2.21	0.40
1:B:380:LEU:HA	1:B:385:TRP:HZ2	1.87	0.40
1:A:107:ARG:HG2	1:A:108:PRO:HD2	2.03	0.40
1:C:290:PRO:HA	7:C:1010:HOH:O	2.20	0.40
1:C:330:VAL:HG21	1:C:408:VAL:HG22	2.04	0.40
1:A:99:LEU:HA	1:A:149:MET:HA	2.03	0.40
1:A:161:LEU:HD22	1:A:270:ILE:HD11	2.04	0.40
1:A:208:SER:O	1:A:211:MET:N	2.55	0.40
1:B:124:TYR:HH	4:B:996:DME:H82	1.82	0.40
1:B:245:ARG:NH2	1:B:266:ASP:OD2	2.55	0.40
1:B:317:ASN:ND2	1:B:417:ARG:NE	2.67	0.40
1:C:80:PHE:CZ	1:C:438:THR:O	2.74	0.40
4:C:997:DME:H72	4:C:997:DME:H101	1.54	0.40
1:A:369:GLN:HB3	7:A:1000:HOH:O	2.21	0.40
1:B:181:GLN:O	1:B:185:GLU:HG3	2.22	0.40
1:B:492:PRO:HB2	1:B:493:ARG:H	1.78	0.40
1:B:501:PRO:HA	1:B:502:PRO:HD3	1.78	0.40
1:C:317:ASN:HD22	1:C:417:ARG:HH21	1.70	0.40
1:D:7:GLN:CB	1:D:105:TYR:HE1	2.33	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	538/547 (98%)	482 (90%)	45 (8%)	11 (2%)	7	27
1	B	532/547 (97%)	493 (93%)	33 (6%)	6 (1%)	14	42
1	C	536/547 (98%)	497 (93%)	36 (7%)	3 (1%)	25	58
1	D	539/547 (98%)	486 (90%)	43 (8%)	10 (2%)	8	28
All	All	2145/2188 (98%)	1958 (91%)	157 (7%)	30 (1%)	11	36

All (30) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	492	PRO
1	A	494	ASP
1	A	497	SER
1	B	496	LYS
1	B	497	SER
1	C	496	LYS
1	D	494	ASP
1	D	495	ARG
1	D	497	SER
1	A	111	PRO
1	A	184	GLN
1	A	495	ARG
1	B	492	PRO
1	B	494	ASP
1	C	497	SER
1	D	111	PRO
1	D	234	GLY
1	D	492	PRO
1	A	234	GLY
1	A	517	PRO
1	B	185	GLU
1	D	517	PRO
1	A	185	GLU
1	A	496	LYS
1	C	342	GLY
1	A	121	GLY
1	D	121	GLY
1	D	496	LYS
1	B	342	GLY
1	D	5	ASP

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.

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	436/447 (98%)	388 (89%)	48 (11%)	6	19
1	B	435/447 (97%)	391 (90%)	44 (10%)	7	23
1	C	435/447 (97%)	395 (91%)	40 (9%)	9	27
1	D	436/447 (98%)	391 (90%)	45 (10%)	7	22
All	All	1742/1788 (97%)	1565 (90%)	177 (10%)	7	22

All (177) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	LEU
1	A	11	ARG
1	A	33	LEU
1	A	45	ARG
1	A	103	THR
1	A	107	ARG
1	A	111	PRO
1	A	115	LEU
1	A	136	ARG
1	A	149	MET
1	A	155	THR
1	A	180	LEU
1	A	214	LEU
1	A	216	LEU
1	A	246	ARG
1	A	251	LEU
1	A	255	VAL
1	A	281	LEU
1	A	291	GLN
1	A	295	PHE
1	A	296	ARG
1	A	311	THR
1	A	317	ASN
1	A	324	LEU
1	A	332	LYS
1	A	333	ASP
1	A	353	LEU
1	A	380	LEU
1	A	386	LEU
1	A	417	ARG

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Mol	Chain	Res	Type
1	A	421	GLN
1	A	437	LEU
1	A	441	LEU
1	A	450	GLU
1	A	451	ILE
1	A	485	ARG
1	A	499	GLN
1	A	504	THR
1	A	505	THR
1	A	513	LEU
1	A	514	ASN
1	A	516	LYS
1	A	524	LEU
1	A	525	ARG
1	A	536	LEU
1	A	537	PRO
1	A	538	LYS
1	A	539	LEU
1	B	3	ARG
1	B	9	LEU
1	B	11	ARG
1	B	12	VAL
1	B	22	LEU
1	B	23	LYS
1	B	25	PRO
1	B	29	VAL
1	B	33	LEU
1	B	45	ARG
1	B	70	TYR
1	B	83	THR
1	B	84	GLU
1	B	132	VAL
1	B	136	ARG
1	B	138	LEU
1	B	161	LEU
1	B	178	LEU
1	B	200	PHE
1	B	211	MET
1	B	214	LEU
1	B	219	ARG
1	B	246	ARG
1	B	253	ARG

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Mol	Chain	Res	Type
1	B	291	GLN
1	B	295	PHE
1	B	296	ARG
1	B	315	LEU
1	B	322	GLN
1	B	324	LEU
1	B	327	LEU
1	B	336	SER
1	B	354	ILE
1	B	360	LEU
1	B	372	ASP
1	B	386	LEU
1	B	418	LEU
1	B	424	ARG
1	B	480	TRP
1	B	509	GLN
1	B	513	LEU
1	B	536	LEU
1	B	539	LEU
1	B	540	LEU
1	C	12	VAL
1	C	13	ARG
1	C	22	LEU
1	C	23	LYS
1	C	25	PRO
1	C	33	LEU
1	C	45	ARG
1	C	70	TYR
1	C	83	THR
1	C	84	GLU
1	C	132	VAL
1	C	136	ARG
1	C	138	LEU
1	C	161	LEU
1	C	178	LEU
1	C	200	PHE
1	C	211	MET
1	C	214	LEU
1	C	219	ARG
1	C	238	THR
1	C	253	ARG
1	C	291	GLN

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Mol	Chain	Res	Type
1	C	295	PHE
1	C	296	ARG
1	C	315	LEU
1	C	322	GLN
1	C	324	LEU
1	C	327	LEU
1	C	336	SER
1	C	354	ILE
1	C	360	LEU
1	C	386	LEU
1	C	418	LEU
1	C	424	ARG
1	C	480	TRP
1	C	509	GLN
1	C	513	LEU
1	C	525	ARG
1	C	536	LEU
1	C	540	LEU
1	D	9	LEU
1	D	11	ARG
1	D	12	VAL
1	D	33	LEU
1	D	45	ARG
1	D	103	THR
1	D	107	ARG
1	D	115	LEU
1	D	149	MET
1	D	155	THR
1	D	180	LEU
1	D	183	VAL
1	D	214	LEU
1	D	216	LEU
1	D	246	ARG
1	D	251	LEU
1	D	255	VAL
1	D	291	GLN
1	D	295	PHE
1	D	296	ARG
1	D	298	SER
1	D	317	ASN
1	D	324	LEU
1	D	333	ASP

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Mol	Chain	Res	Type
1	D	353	LEU
1	D	355	SER
1	D	380	LEU
1	D	386	LEU
1	D	417	ARG
1	D	418	LEU
1	D	421	GLN
1	D	437	LEU
1	D	441	LEU
1	D	450	GLU
1	D	451	ILE
1	D	499	GLN
1	D	504	THR
1	D	505	THR
1	D	513	LEU
1	D	514	ASN
1	D	524	LEU
1	D	536	LEU
1	D	537	PRO
1	D	538	LYS
1	D	539	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	16	GLN
1	A	66	GLN
1	A	212	HIS
1	A	228	GLN
1	A	291	GLN
1	A	317	ASN
1	A	482	ASN
1	A	499	GLN
1	A	514	ASN
1	B	7	GLN
1	B	212	HIS
1	B	223	HIS
1	B	291	GLN
1	B	317	ASN
1	B	405	HIS
1	B	421	GLN
1	B	509	GLN

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Mol	Chain	Res	Type
1	C	7	GLN
1	C	16	GLN
1	C	184	GLN
1	C	287	HIS
1	C	291	GLN
1	C	317	ASN
1	C	325	GLN
1	C	421	GLN
1	C	474	GLN
1	C	509	GLN
1	D	16	GLN
1	D	228	GLN
1	D	291	GLN
1	D	317	ASN
1	D	482	ASN
1	D	499	GLN
1	D	514	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

3 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	0.72	0	17,19,21	0.64	0
2	NAG	E	2	2	14,14,15	0.57	0	17,19,21	0.49	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	FUL	E	3	2	10,10,11	0.62	0	14,14,16	0.78	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
2	NAG	E	1	2,1	-	0/6/23/26	0/1/1/1
2	NAG	E	2	2	-	3/6/23/26	0/1/1/1
2	FUL	E	3	2	-	-	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (3) torsion outliers are listed below:

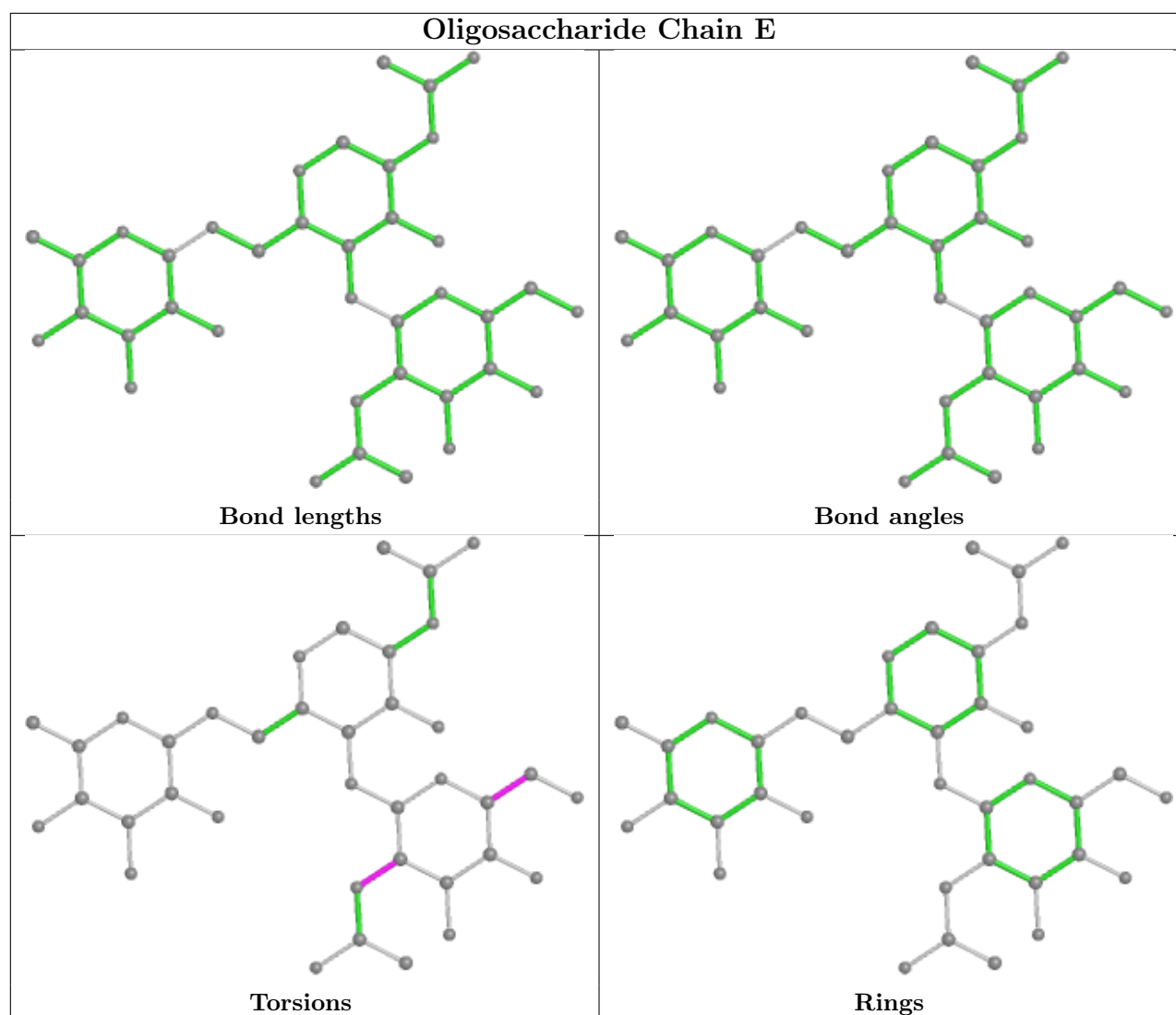
Mol	Chain	Res	Type	Atoms
2	E	2	NAG	C3-C2-N2-C7
2	E	2	NAG	O5-C5-C6-O6
2	E	2	NAG	C1-C2-N2-C7

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	1	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](#)

12 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	DME	C	997	-	17,17,17	0.65	0	22,22,22	0.71	0
5	GOL	B	953	-	5,5,5	0.83	0	5,5,5	0.56	0
6	PO4	C	998	-	4,4,4	4.81	4 (100%)	6,6,6	1.13	1 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	PO4	B	548	-	4,4,4	4.02	4 (100%)	6,6,6	0.59	0
3	NAG	A	709	1	14,14,15	0.95	0	17,19,21	0.76	0
4	DME	D	999	-	17,17,17	0.60	0	22,22,22	0.86	2 (9%)
4	DME	B	996	-	17,17,17	0.76	0	22,22,22	0.87	2 (9%)
5	GOL	D	952	-	5,5,5	0.71	0	5,5,5	0.62	0
5	GOL	C	951	-	5,5,5	0.71	0	5,5,5	0.46	0
4	DME	A	998	-	17,17,17	0.54	0	22,22,22	0.75	1 (4%)
6	PO4	C	548	-	4,4,4	3.74	4 (100%)	6,6,6	1.15	0
5	GOL	A	954	-	5,5,5	0.63	0	5,5,5	0.58	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	DME	C	997	-	-	10/15/15/15	-
5	GOL	B	953	-	-	0/4/4/4	-
3	NAG	A	709	1	-	2/6/23/26	0/1/1/1
4	DME	D	999	-	-	5/15/15/15	-
4	DME	B	996	-	-	8/15/15/15	-
5	GOL	D	952	-	-	0/4/4/4	-
5	GOL	C	951	-	-	2/4/4/4	-
4	DME	A	998	-	-	3/15/15/15	-
5	GOL	A	954	-	-	1/4/4/4	-

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	C	998	PO4	P-O1	7.13	1.67	1.50
6	C	548	PO4	P-O1	5.68	1.64	1.50
6	B	548	PO4	P-O1	5.59	1.64	1.50
6	C	998	PO4	P-O2	4.09	1.66	1.54
6	C	998	PO4	P-O3	3.74	1.65	1.54
6	B	548	PO4	P-O3	3.55	1.65	1.54
6	C	998	PO4	P-O4	3.32	1.64	1.54
6	B	548	PO4	P-O4	3.22	1.64	1.54
6	B	548	PO4	P-O2	3.21	1.64	1.54
6	C	548	PO4	P-O2	2.99	1.63	1.54
6	C	548	PO4	P-O4	2.83	1.63	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	C	548	PO4	P-O3	2.61	1.62	1.54

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	999	DME	C11-C10-C9	2.41	120.41	110.67
4	B	996	DME	C2-C3-C4	2.38	120.32	110.67
4	D	999	DME	C2-C3-C4	2.28	119.91	110.67
4	B	996	DME	C11-C10-C9	2.11	119.21	110.67
6	C	998	PO4	O3-P-O2	2.09	114.67	107.97
4	A	998	DME	C2-C3-C4	2.05	118.97	110.67

There are no chirality outliers.

All (31) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	C	951	GOL	C1-C2-C3-O3
4	D	999	DME	C9-C10-C11-N12
4	B	996	DME	C3-C2-N1-C15
3	A	709	NAG	O5-C5-C6-O6
4	B	996	DME	C3-C2-N1-C13
4	B	996	DME	N1-C2-C3-C4
3	A	709	NAG	C4-C5-C6-O6
4	B	996	DME	C3-C2-N1-C14
4	C	997	DME	N1-C2-C3-C4
5	C	951	GOL	O2-C2-C3-O3
4	D	999	DME	N1-C2-C3-C4
4	A	998	DME	C9-C10-C11-N12
4	C	997	DME	C9-C10-C11-N12
5	A	954	GOL	C1-C2-C3-O3
4	D	999	DME	C4-C5-C6-C7
4	C	997	DME	C6-C7-C8-C9
4	D	999	DME	C6-C7-C8-C9
4	C	997	DME	C7-C8-C9-C10
4	B	996	DME	C7-C8-C9-C10
4	C	997	DME	C5-C6-C7-C8
4	C	997	DME	C10-C11-N12-C18
4	C	997	DME	C10-C11-N12-C17
4	C	997	DME	C10-C11-N12-C16
4	D	999	DME	C7-C8-C9-C10
4	A	998	DME	C7-C8-C9-C10
4	A	998	DME	C5-C6-C7-C8

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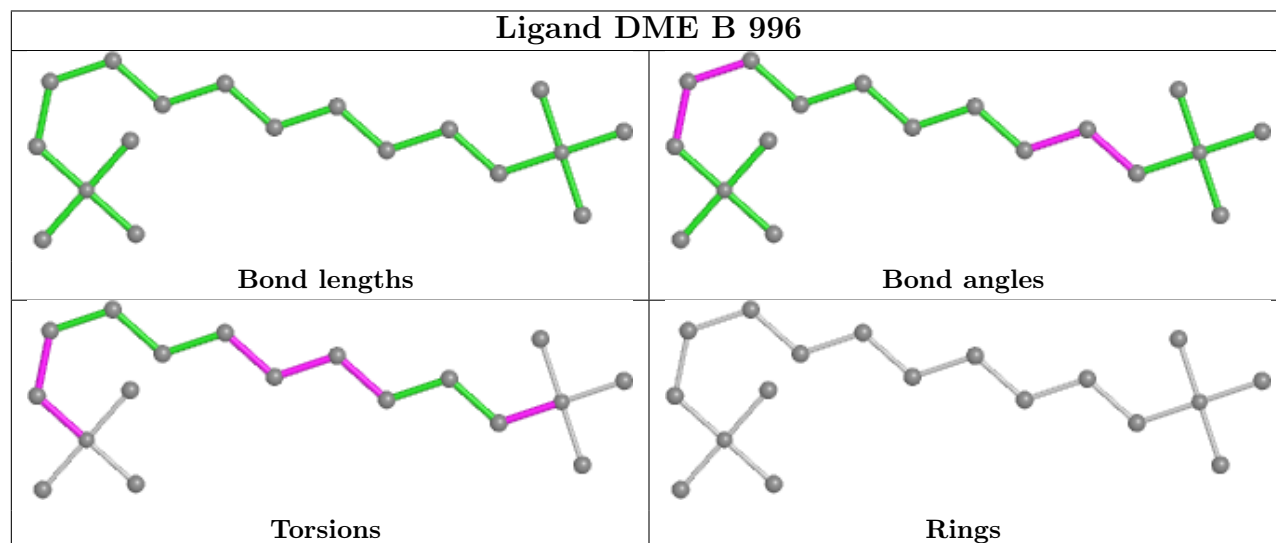
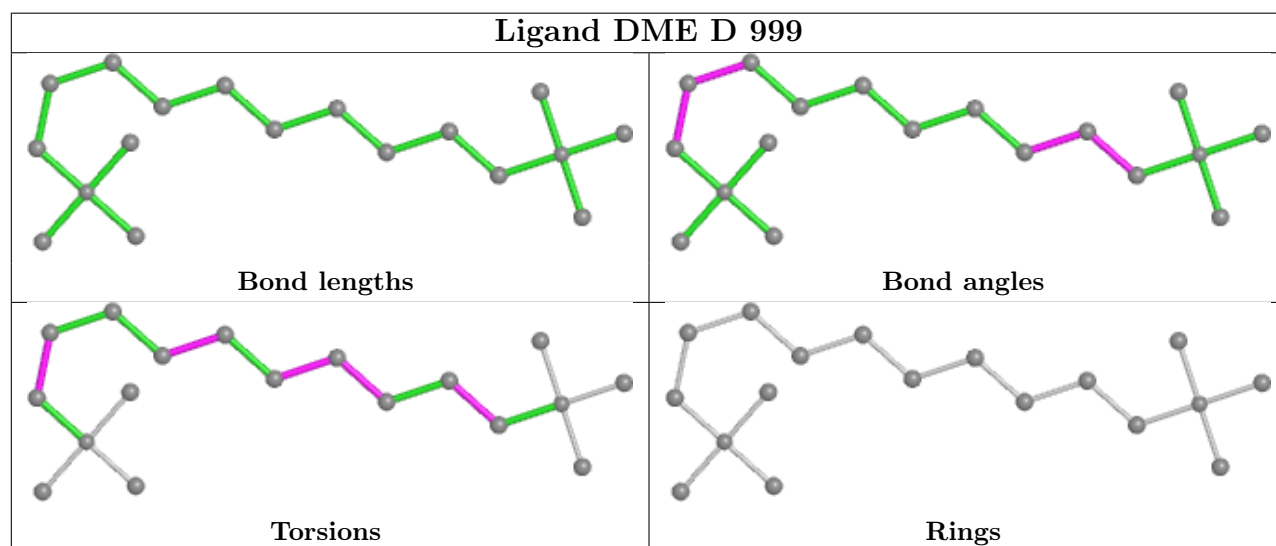
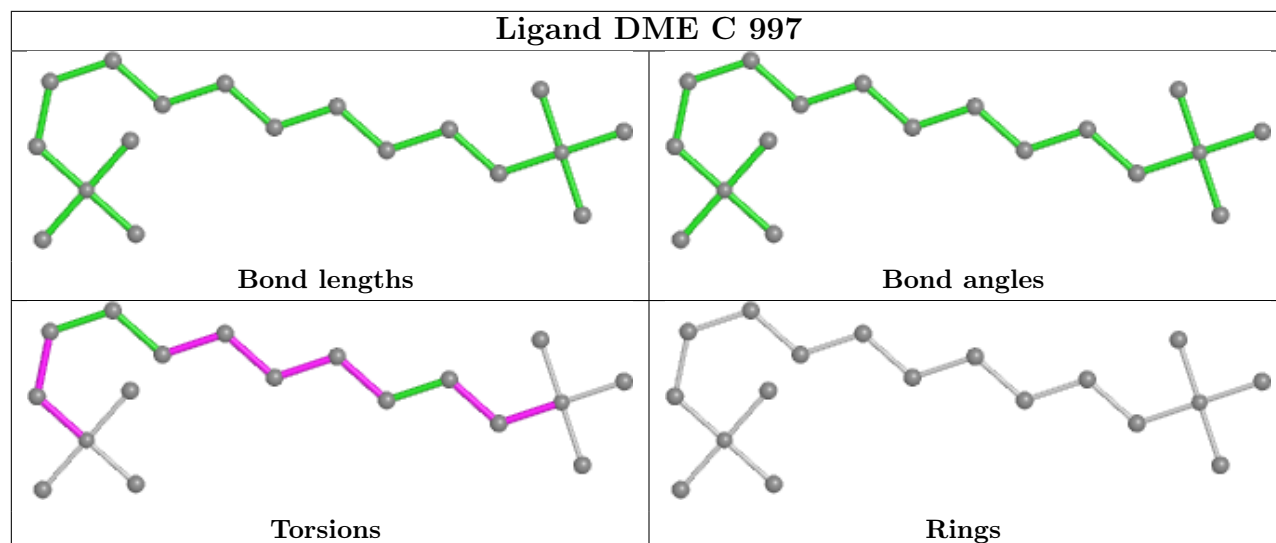
Mol	Chain	Res	Type	Atoms
4	B	996	DME	C5-C6-C7-C8
4	C	997	DME	C4-C5-C6-C7
4	B	996	DME	C6-C7-C8-C9
4	B	996	DME	C10-C11-N12-C17
4	C	997	DME	C3-C2-N1-C14

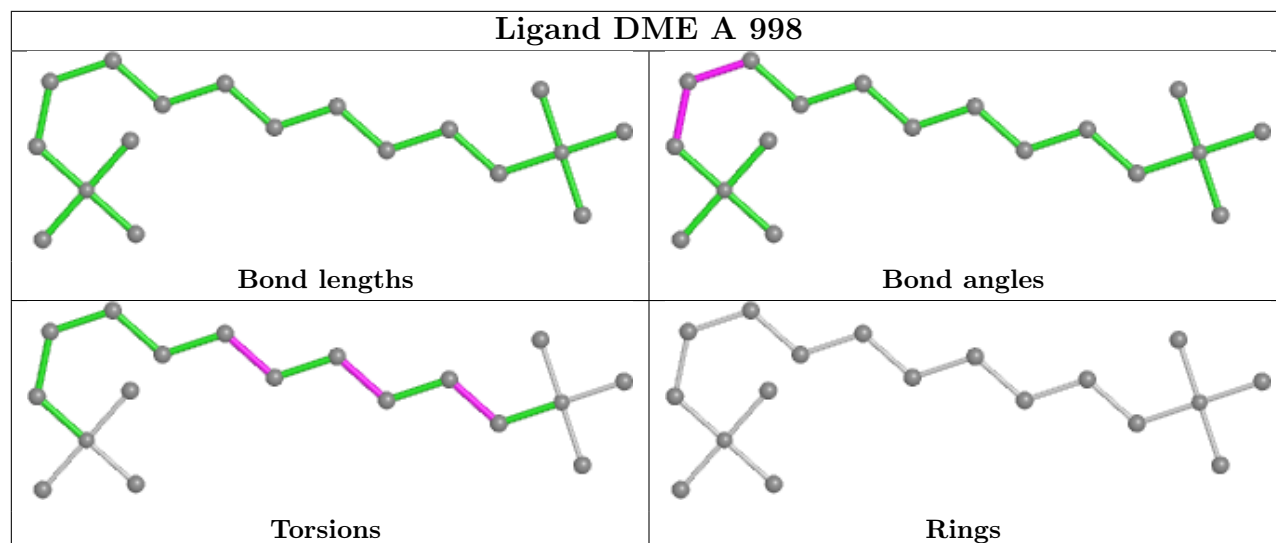
There are no ring outliers.

9 monomers are involved in 52 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	997	DME	19	0
5	B	953	GOL	2	0
3	A	709	NAG	1	0
4	D	999	DME	7	0
4	B	996	DME	13	0
5	D	952	GOL	1	0
5	C	951	GOL	7	0
4	A	998	DME	1	0
5	A	954	GOL	1	0

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





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

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	540/547 (98%)	-0.48	15 (2%) 53 49	20, 50, 79, 80	0
1	B	536/547 (97%)	-0.82	9 (1%) 70 69	13, 35, 61, 80	0
1	C	540/547 (98%)	-0.83	9 (1%) 70 69	11, 34, 64, 80	0
1	D	541/547 (98%)	-0.63	12 (2%) 62 59	16, 44, 79, 80	0
All	All	2157/2188 (98%)	-0.69	45 (2%) 63 61	11, 40, 75, 80	0

All (45) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	546	LEU	5.7
1	C	545	THR	5.4
1	B	545	THR	5.0
1	A	497	SER	4.9
1	B	494	ASP	4.6
1	A	4	GLU	4.3
1	B	493	ARG	4.2
1	C	497	SER	3.9
1	D	544	ASP	3.8
1	D	4	GLU	3.6
1	B	497	SER	3.6
1	A	493	ARG	3.4
1	A	110	SER	3.4
1	D	497	SER	3.4
1	C	494	ASP	3.3
1	A	494	ASP	3.3
1	D	495	ARG	3.2
1	D	492	PRO	3.1
1	A	6	PRO	3.1
1	D	494	ASP	3.0
1	A	495	ARG	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	544	ASP	2.9
1	C	544	ASP	2.8
1	A	492	PRO	2.8
1	B	3	ARG	2.8
1	C	1	GLU	2.8
1	C	110	SER	2.6
1	C	323	ASP	2.6
1	A	462	SER	2.6
1	D	323	ASP	2.5
1	C	493	ARG	2.5
1	A	496	LYS	2.5
1	B	322	GLN	2.4
1	D	110	SER	2.4
1	A	109	ALA	2.3
1	D	109	ALA	2.2
1	D	322	GLN	2.2
1	A	464	ASN	2.2
1	A	57	SER	2.2
1	D	541	SER	2.2
1	A	23	LYS	2.1
1	B	492	PRO	2.1
1	B	495	ARG	2.1
1	D	393	HIS	2.0
1	A	461	PRO	2.0

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

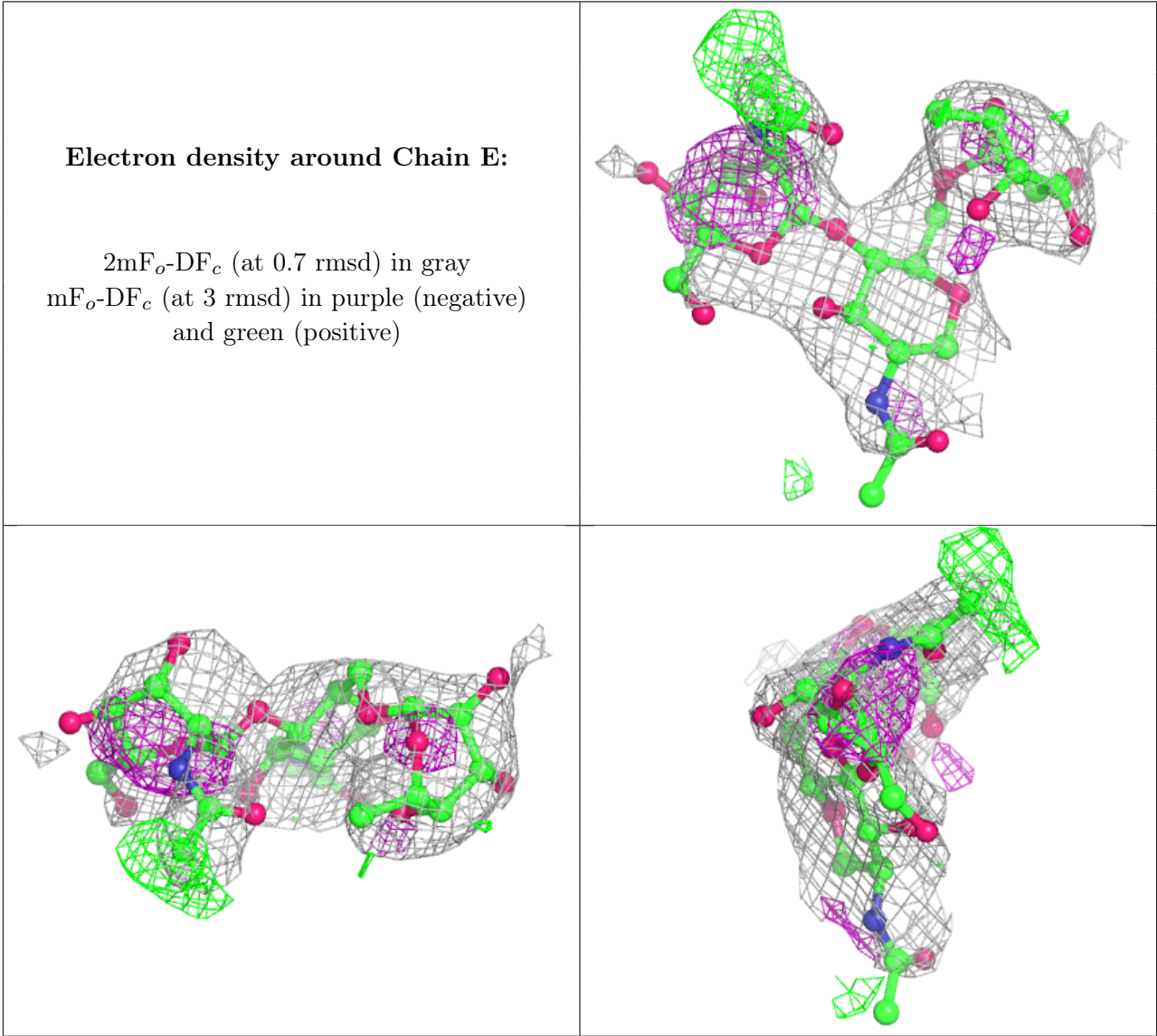
There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [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(Å ²)	Q<0.9
2	NAG	E	2	14/15	0.80	0.49	80,80,80,80	0
2	NAG	E	1	14/15	0.88	0.25	80,80,80,80	0
2	FUL	E	3	10/11	0.89	0.43	80,80,80,80	0

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.



6.4 Ligands ⓘ

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.

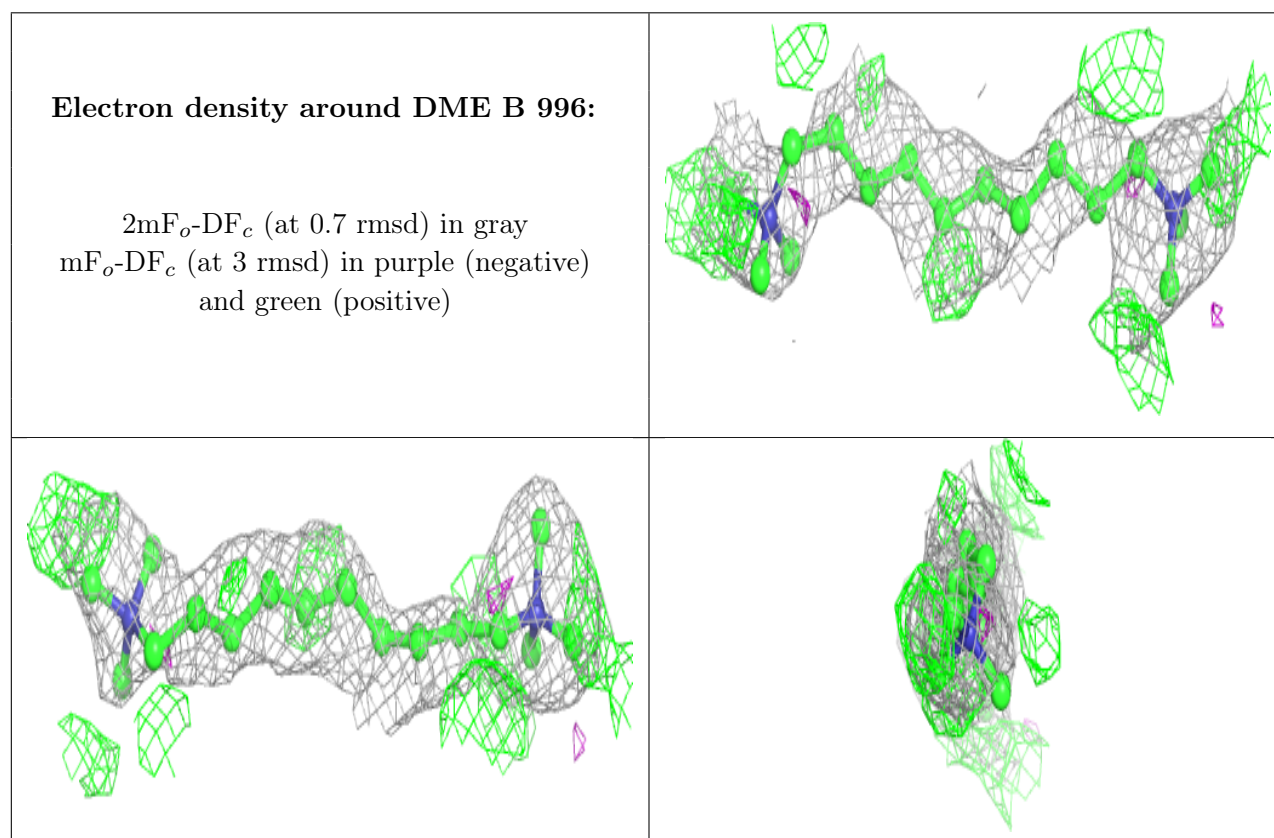
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	NAG	A	709	14/15	0.75	0.34	75,80,80,80	0
4	DME	B	996	18/18	0.81	0.30	44,65,80,80	0
4	DME	C	997	18/18	0.82	0.34	53,77,80,80	0
4	DME	A	998	18/18	0.85	0.31	70,79,80,80	0

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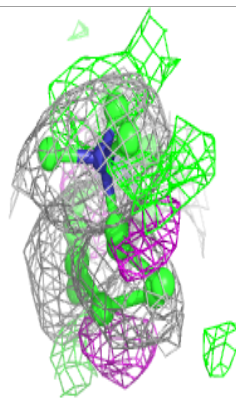
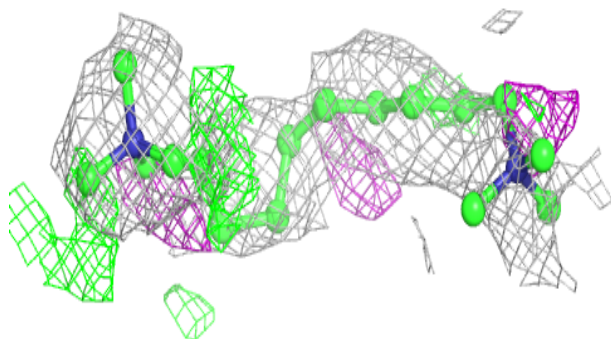
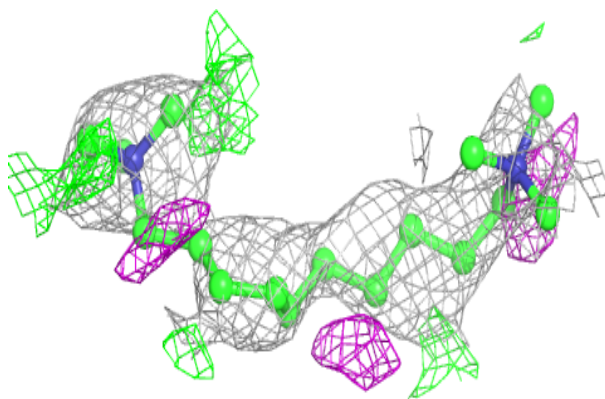
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	DME	D	999	18/18	0.85	0.28	40,68,80,80	0
5	GOL	A	954	6/6	0.86	0.25	66,74,75,76	0
5	GOL	D	952	6/6	0.90	0.23	48,54,55,61	0
6	PO4	C	548	5/5	0.90	0.34	80,80,80,80	0
6	PO4	C	998	5/5	0.90	0.50	80,80,80,80	0
6	PO4	B	548	5/5	0.93	0.34	80,80,80,80	0
5	GOL	B	953	6/6	0.94	0.17	33,36,48,53	0
5	GOL	C	951	6/6	0.96	0.11	31,36,38,42	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.

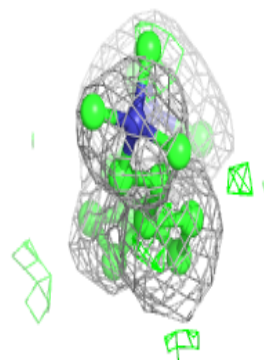
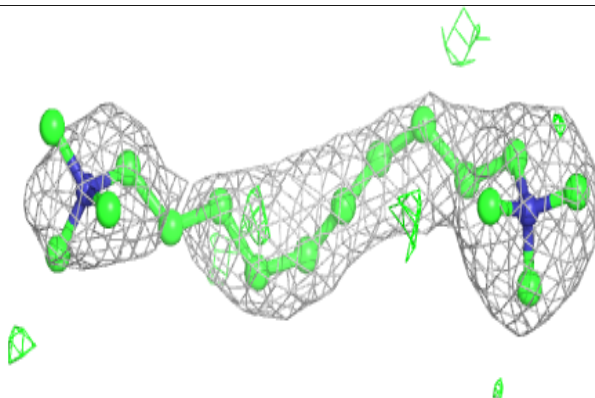
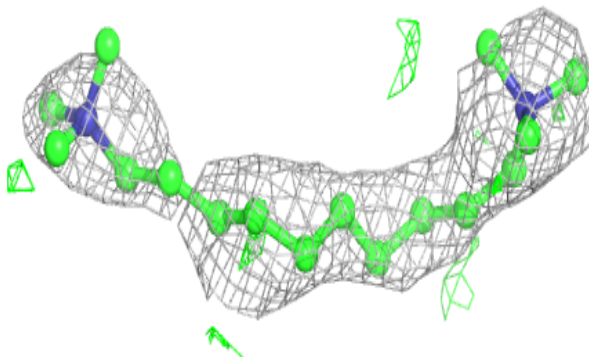


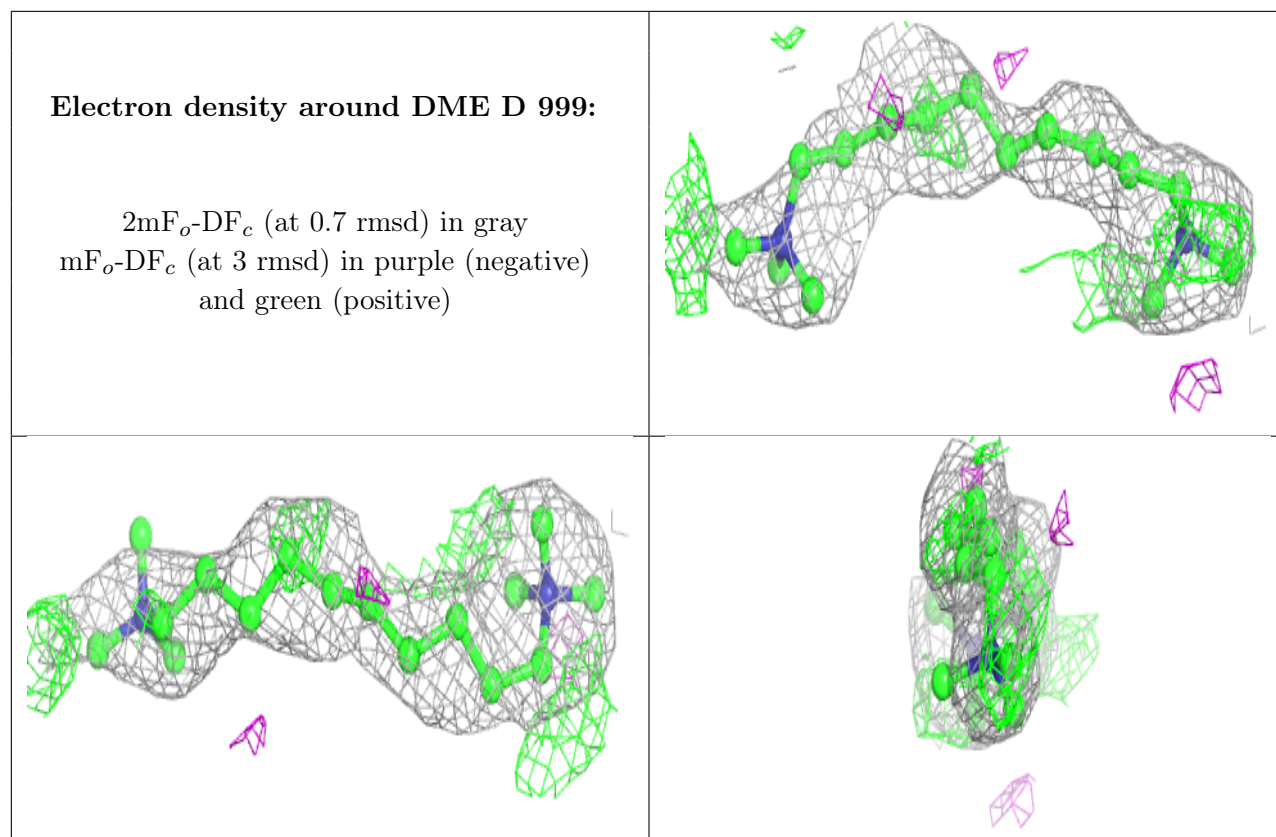
Electron density around DME C 997:

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

**Electron density around DME A 998:**

$2mF_o-DF_c$ (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.