Full wwPDB X-ray Structure Validation Report (i)

Jun 12, 2025 – 02:29 PM EDT

PDB ID	:	9NTG / pdb_00009ntg
Title	:	Helix pomatia AMP deaminase (HPAMPD) in complex with Pentostatin
Authors	:	Kaur, G.; Horton, J.R.; Cheng, X.
Deposited on	:	2025-03-18
Resolution	:	1.63 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 (i) 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 (i)) were used in the production of this report:

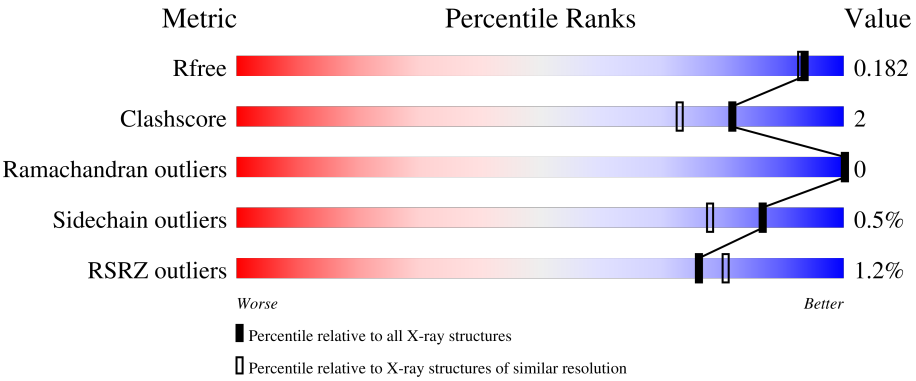
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

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 1.63 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}	164625	1015 (1.64-1.64)
Clashscore	180529	1093 (1.64-1.64)
Ramachandran outliers	177936	1077 (1.64-1.64)
Sidechain outliers	177891	1077 (1.64-1.64)
RSRZ outliers	164620	1015 (1.64-1.64)

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 <=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	541	86% 6% 8%
1	B	541	2% 89% 6%
1	C	541	88% 8%
1	D	541	87% 5% 8%
2	E	2	100%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	EDO	A	611	-	-	X	-
5	EDO	B	623	-	-	X	-

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 18921 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.

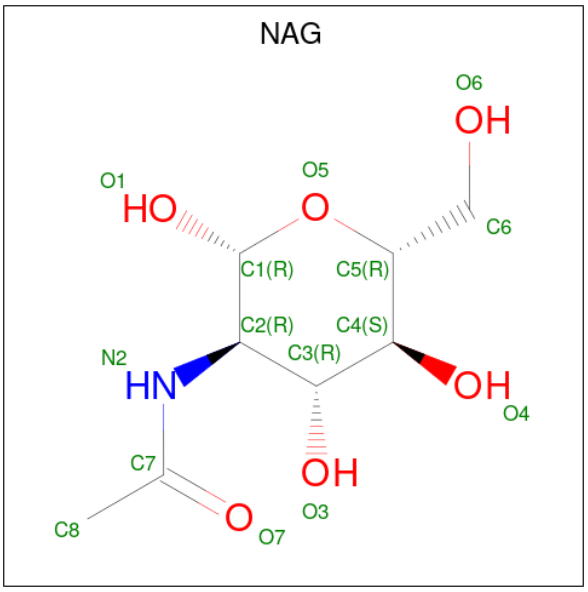
- Molecule 1 is a protein called Helix pomatia AMP deaminase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	497	Total	C	N	O	S	0	8	0
			4042	2587	690	753	12			
1	B	506	Total	C	N	O	S	0	10	0
			4122	2637	707	766	12			
1	C	496	Total	C	N	O	S	0	8	0
			4031	2580	687	752	12			
1	D	497	Total	C	N	O	S	0	5	0
			4019	2573	682	752	12			

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

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

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



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

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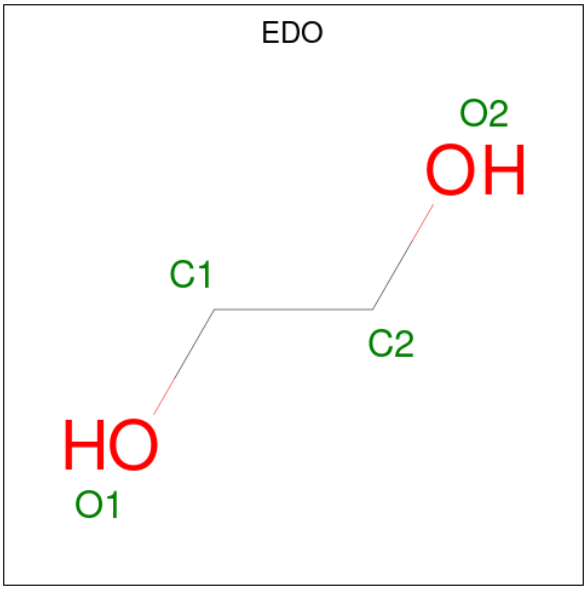
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total C N O 14 8 1 5	0	0

- Molecule 4 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total Zn 1 1	0	0
4	B	1	Total Zn 1 1	0	0
4	C	1	Total Zn 1 1	0	0
4	D	1	Total Zn 1 1	0	0

- Molecule 5 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0

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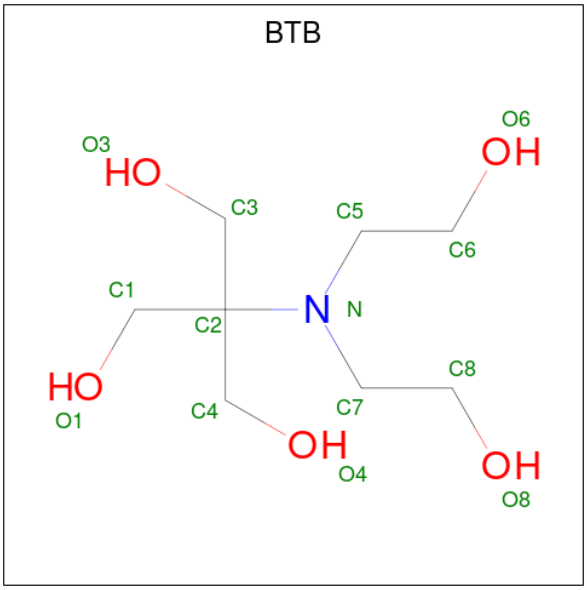
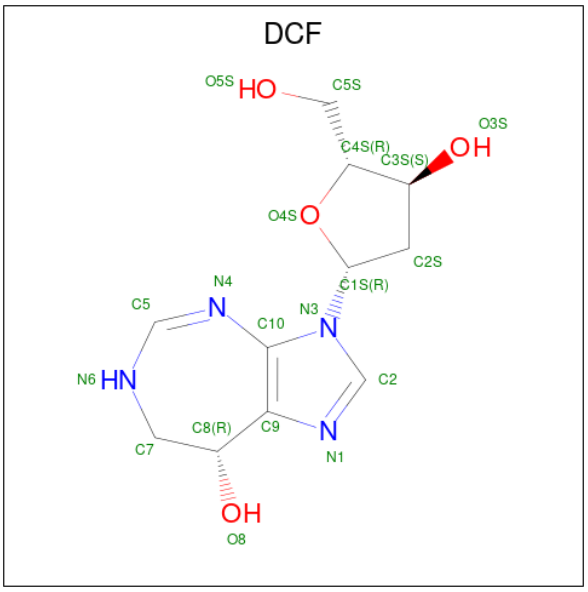
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0

- Molecule 6 is 2-[BIS-(2-HYDROXY-ETHYL)-AMINO]-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (CCD ID: BTB) (formula: $C_8H_{19}NO_5$).



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

- Molecule 7 is 2'-DEOXYCOFORMYCIN (CCD ID: DCF) (formula: $C_{11}H_{16}N_4O_4$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	A	1	Total	C	N	O	0	0
			19	11	4	4		
7	B	1	Total	C	N	O	0	0
			19	11	4	4		
7	C	1	Total	C	N	O	0	0
			19	11	4	4		
7	D	1	Total	C	N	O	0	0
			19	11	4	4		

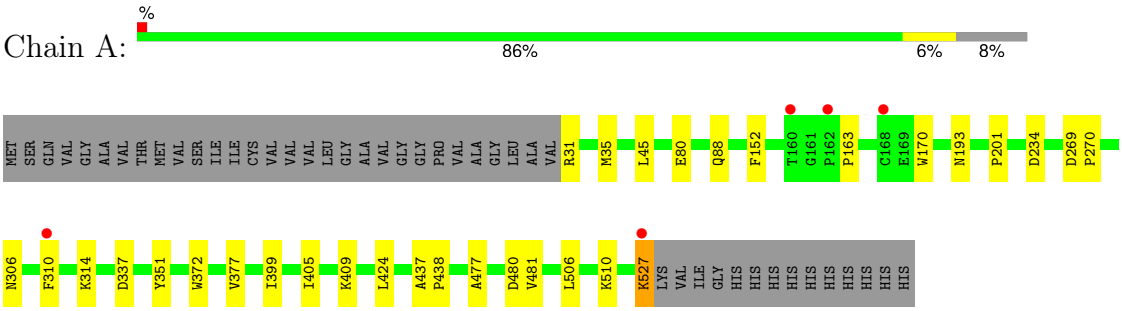
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	501	Total	O	0	0
			501	501		
8	B	588	Total	O	0	0
			588	588		
8	C	580	Total	O	0	0
			580	580		
8	D	488	Total	O	0	0
			488	488		

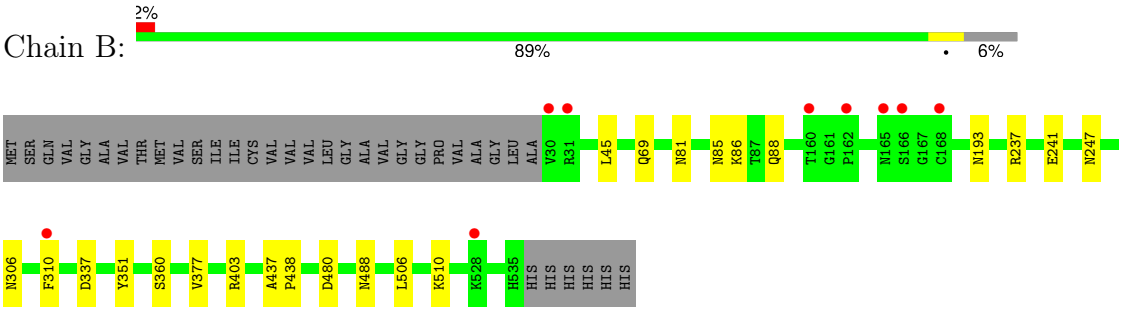
3 Residue-property plots (i)

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.

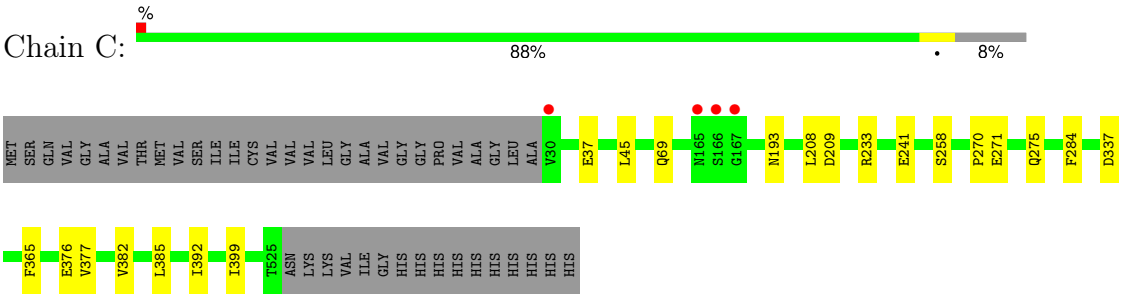
• Molecule 1: Helix pomatia AMP deaminase



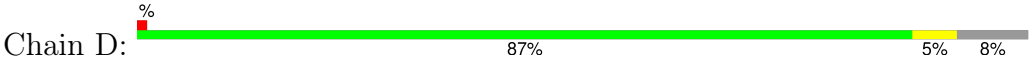
• Molecule 1: Helix pomatia AMP deaminase

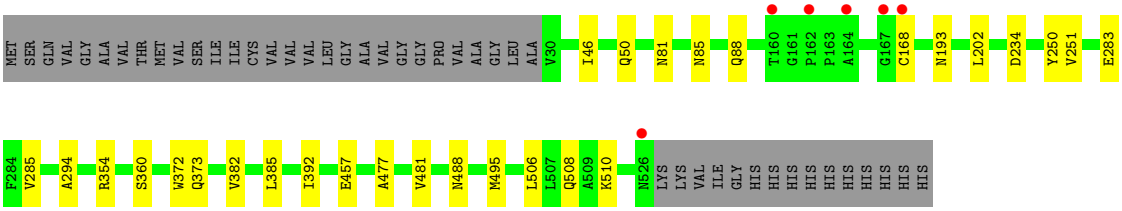


• Molecule 1: Helix pomatia AMP deaminase



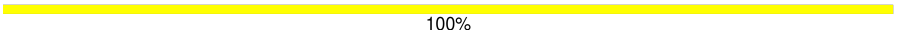
• Molecule 1: Helix pomatia AMP deaminase





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

Chain E:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	76.13Å 81.98Å 212.02Å 90.00° 92.27° 90.00°	Depositor
Resolution (Å)	20.00 – 1.63 20.00 – 1.63	Depositor EDS
% Data completeness (in resolution range)	96.7 (20.00-1.63) 90.0 (20.00-1.63)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.05 (at 1.63Å)	Xtriage
Refinement program	PHENIX 1.21.2_5419	Depositor
R, R_{free}	0.156 , 0.182 0.156 , 0.182	Depositor DCC
R_{free} test set	16243 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	15.0	Xtriage
Anisotropy	0.432	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 44.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.014 for h,-k,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	18921	wwPDB-VP
Average B, all atoms (Å^2)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.45% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: DCF, NAG, ZN, EDO, BTB

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	0.35	0/4163	0.55	0/5651
1	B	0.37	0/4253	0.56	0/5774
1	C	0.36	0/4152	0.55	0/5639
1	D	0.33	0/4131	0.52	0/5613
All	All	0.36	0/16699	0.55	0/22677

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	C	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	365	PHE	Peptide

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	4042	0	4019	25	0
1	B	4122	0	4093	16	0
1	C	4031	0	4002	16	0
1	D	4019	0	3980	22	0
2	E	28	0	25	0	0
3	A	56	0	52	1	0
3	B	56	0	52	0	0
3	C	42	0	39	0	0
3	D	56	0	52	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	A	40	0	60	9	0
5	B	72	0	108	11	0
5	C	48	0	72	1	0
5	D	44	0	66	8	0
6	A	14	0	19	0	0
6	B	14	0	19	0	0
7	A	19	0	15	0	0
7	B	19	0	15	0	0
7	C	19	0	15	0	0
7	D	19	0	15	0	0
8	A	501	0	0	8	0
8	B	588	0	0	6	0
8	C	580	0	0	3	0
8	D	488	0	0	4	0
All	All	18921	0	16718	80	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 2.

All (80) 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)
5:B:623:EDO:H21	1:C:208:LEU:HD23	1.64	0.78
1:A:80:GLU:OE2	8:A:701:HOH:O	2.01	0.77
1:C:376:GLU:OE1	8:C:1901:HOH:O	2.01	0.77
1:B:69:GLN:NE2	8:B:703:HOH:O	2.14	0.75
5:B:623:EDO:H11	8:C:1907:HOH:O	1.88	0.74
1:C:233:ARG:HH22	5:C:612:EDO:H11	1.55	0.72
1:B:360:SER:HB3	5:B:619:EDO:H21	1.70	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:247[B]:ASN:OD1	8:B:702:HOH:O	2.08	0.71
1:D:360:SER:HB3	5:D:607:EDO:H21	1.73	0.70
1:C:258:SER:HB3	1:C:270:PRO:HG3	1.76	0.68
1:D:488:ASN:HD21	5:D:615:EDO:H12	1.59	0.68
1:A:372:TRP:HE3	5:A:615:EDO:H12	1.59	0.67
1:A:506:LEU:HG	1:A:510:LYS:HE2	1.83	0.60
1:D:234:ASP:OD1	5:D:614:EDO:H22	2.03	0.58
1:A:88:GLN:HG2	8:A:1071:HOH:O	2.03	0.57
5:A:611:EDO:H12	8:A:735:HOH:O	2.04	0.57
1:A:409[B]:LYS:NZ	8:A:702:HOH:O	2.18	0.56
1:B:506:LEU:HG	1:B:510:LYS:HE2	1.87	0.55
1:B:480:ASP:OD1	8:B:704:HOH:O	2.18	0.55
1:D:202:LEU:HA	5:D:616:EDO:H12	1.88	0.55
1:A:399:ILE:HA	1:A:405:ILE:HD11	1.89	0.54
1:A:405:ILE:HG22	1:A:409[A]:LYS:HE2	1.90	0.53
1:D:283[A]:GLU:OE1	8:D:702:HOH:O	2.17	0.53
1:B:306:ASN:ND2	8:B:708:HOH:O	2.40	0.53
1:D:506:LEU:HG	1:D:510:LYS:HE2	1.92	0.52
8:A:1090:HOH:O	1:D:88:GLN:HG2	2.09	0.52
1:B:403:ARG:HB3	1:C:45:LEU:HD11	1.92	0.52
1:A:527:LYS:NZ	8:A:707:HOH:O	2.42	0.51
1:B:86:LYS:C	5:B:623:EDO:H12	2.36	0.51
5:B:623:EDO:H12	1:C:209:ASP:HB3	1.94	0.50
1:B:488:ASN:OD1	5:B:606:EDO:H12	2.12	0.49
5:B:623:EDO:O1	8:B:701:HOH:O	2.04	0.49
1:D:81:ASN:O	1:D:85:ASN:HB2	2.13	0.49
1:C:69:GLN:OE1	8:C:1902:HOH:O	2.20	0.48
1:D:251:VAL:O	1:D:294:ALA:HA	2.14	0.48
1:D:477:ALA:HB1	1:D:481:VAL:HG21	1.96	0.48
1:A:306:ASN:N	5:A:611:EDO:H11	2.28	0.48
5:B:623:EDO:H22	1:C:209:ASP:N	2.29	0.48
1:A:306:ASN:H	5:A:611:EDO:H11	1.80	0.47
1:D:46:ILE:HG21	5:D:612:EDO:H11	1.95	0.47
5:B:623:EDO:C1	1:C:209:ASP:HB3	2.44	0.47
1:C:241:GLU:HG2	1:C:284:PHE:HE1	1.79	0.47
5:B:623:EDO:H21	1:C:208:LEU:CD2	2.41	0.47
1:A:31:ARG:N	8:A:711:HOH:O	2.48	0.47
1:D:508:GLN:OE1	5:D:613:EDO:O2	2.29	0.47
1:A:269:ASP:HB2	1:A:270:PRO:HD2	1.98	0.46
1:D:46:ILE:O	1:D:50[A]:GLN:HG3	2.16	0.46
5:B:619:EDO:H22	8:B:991:HOH:O	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:477:ALA:HB1	1:A:481:VAL:HG21	1.99	0.44
1:A:310:PHE:HE1	1:A:351:TYR:CD2	2.36	0.44
1:A:35:MET:HE2	1:D:354:ARG:HH22	1.83	0.44
1:B:337:ASP:OD1	1:B:377:VAL:HG11	2.17	0.44
5:A:607:EDO:C2	1:D:373:GLN:H	2.31	0.43
1:B:310:PHE:HE1	1:B:351:TYR:CD2	2.36	0.43
1:A:480:ASP:OD1	1:A:480:ASP:N	2.52	0.43
1:D:488:ASN:HD21	5:D:615:EDO:C1	2.30	0.43
1:A:201:PRO:HG2	1:A:424:LEU:HD22	2.00	0.43
1:D:285[A]:VAL:HG13	8:D:966:HOH:O	2.17	0.43
1:C:385:LEU:HD21	1:C:392:ILE:HD11	2.01	0.43
1:A:337:ASP:OD1	1:A:377:VAL:HG11	2.19	0.42
1:A:152:PHE:CE1	3:A:603:NAG:H82	2.54	0.42
1:C:271:GLU:HG2	1:C:275[B]:GLN:OE1	2.19	0.42
1:A:314:LYS:HD3	1:A:351:TYR:CE1	2.55	0.42
5:A:607:EDO:H21	1:D:372:TRP:HE3	1.84	0.42
1:B:45:LEU:HD23	1:C:382:VAL:HG13	2.01	0.42
1:B:437:ALA:HB3	1:B:438:PRO:HD3	2.01	0.42
5:D:607:EDO:H22	8:D:797:HOH:O	2.18	0.42
1:D:457:GLU:OE1	8:D:703:HOH:O	2.22	0.42
1:D:250:TYR:CD1	1:D:495:MET:HE2	2.55	0.42
1:D:385:LEU:CD2	1:D:392:ILE:HD11	2.50	0.41
1:A:45:LEU:HD12	1:D:382:VAL:HG22	2.02	0.41
1:A:163:PRO:HB2	1:A:170:TRP:CD1	2.55	0.41
1:A:437:ALA:HB3	1:A:438:PRO:HD3	2.02	0.41
1:B:438:PRO:HB3	1:C:399:ILE:HG13	2.01	0.41
1:A:234:ASP:OD1	5:A:613:EDO:H22	2.21	0.41
5:A:611:EDO:H22	8:A:1113:HOH:O	2.20	0.41
1:A:372:TRP:CE3	5:A:615:EDO:H12	2.48	0.41
1:B:237:ARG:NH2	1:B:241[B]:GLU:OE2	2.49	0.41
1:B:81:ASN:O	1:B:85:ASN:HB2	2.21	0.40
1:C:337:ASP:OD1	1:C:377:VAL:HG11	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

of similar resolution.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	503/541 (93%)	487 (97%)	16 (3%)	0	100	100
1	B	514/541 (95%)	496 (96%)	18 (4%)	0	100	100
1	C	502/541 (93%)	487 (97%)	15 (3%)	0	100	100
1	D	500/541 (92%)	484 (97%)	16 (3%)	0	100	100
All	All	2019/2164 (93%)	1954 (97%)	65 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	448/474 (94%)	446 (100%)	2 (0%)	89	83
1	B	458/474 (97%)	456 (100%)	2 (0%)	89	83
1	C	447/474 (94%)	445 (100%)	2 (0%)	89	83
1	D	445/474 (94%)	443 (100%)	2 (0%)	89	83
All	All	1798/1896 (95%)	1790 (100%)	8 (0%)	86	83

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	193	ASN
1	A	527	LYS
1	B	88	GLN
1	B	193	ASN
1	C	37	GLU
1	C	193	ASN
1	D	168	CYS
1	D	193	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	249	GLN
1	A	373	GLN
1	A	443	ASN
1	A	484	GLN
1	B	249	GLN
1	B	306	ASN
1	B	484	GLN
1	B	534	HIS
1	C	69	GLN
1	C	249	GLN
1	C	373	GLN
1	C	484	GLN
1	C	508	GLN
1	C	512	ASN
1	D	101	GLN
1	D	188	HIS
1	D	249	GLN
1	D	306	ASN
1	D	484	GLN
1	D	488	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

2 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	0.69	0	17,19,21	1.04	1 (5%)
2	NAG	E	2	2	14,14,15	0.67	0	17,19,21	1.01	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	E	1	2,1	-	2/6/23/26	0/1/1/1
2	NAG	E	2	2	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	E	1	NAG	O5-C1-C2	-2.67	107.16	111.29
2	E	2	NAG	O5-C1-C2	-2.45	107.50	111.29

There are no chirality outliers.

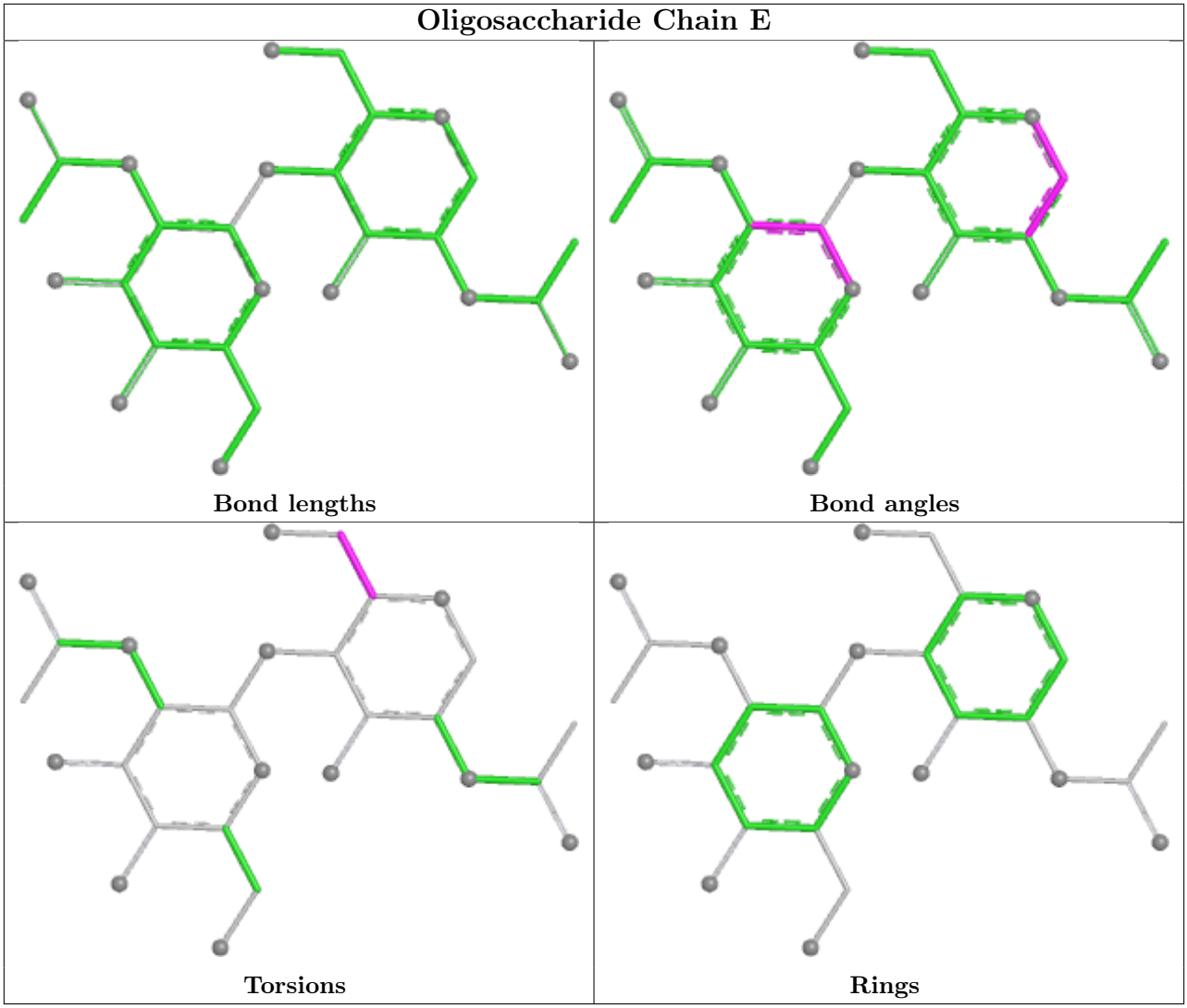
All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	E	1	NAG	O5-C5-C6-O6
2	E	1	NAG	C4-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

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



5.6 Ligand geometry

Of 76 ligands modelled in this entry, 4 are monoatomic - leaving 72 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	$\#\|Z\| > 2$
3	NAG	A	603	1	14,14,15	0.56	0	17,19,21	1.19	1 (5%)
5	EDO	A	610	-	3,3,3	0.22	0	2,2,2	0.58	0
5	EDO	A	606	-	3,3,3	0.28	0	2,2,2	0.20	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	NAG	A	601	1	14,14,15	0.81	0	17,19,21	1.02	2 (11%)
3	NAG	D	601	1	14,14,15	0.78	0	17,19,21	1.00	1 (5%)
5	EDO	A	607	-	3,3,3	0.26	0	2,2,2	0.30	0
5	EDO	C	609	-	3,3,3	0.23	0	2,2,2	0.33	0
3	NAG	C	603	1	14,14,15	0.80	0	17,19,21	1.09	1 (5%)
5	EDO	D	611	-	3,3,3	0.22	0	2,2,2	0.36	0
7	DCF	C	617	4	13,21,21	1.36	2 (15%)	14,30,30	0.62	0
5	EDO	C	605	-	3,3,3	0.28	0	2,2,2	0.24	0
5	EDO	D	616	-	3,3,3	0.32	0	2,2,2	0.34	0
3	NAG	D	604	1	14,14,15	0.74	0	17,19,21	1.05	0
3	NAG	B	601	1	14,14,15	0.72	0	17,19,21	1.75	1 (5%)
3	NAG	B	603	1	14,14,15	0.54	0	17,19,21	1.39	3 (17%)
5	EDO	C	615	-	3,3,3	0.22	0	2,2,2	0.30	0
5	EDO	B	610	-	3,3,3	0.24	0	2,2,2	0.34	0
5	EDO	C	611	-	3,3,3	0.23	0	2,2,2	0.33	0
5	EDO	B	607	-	3,3,3	0.23	0	2,2,2	0.71	0
5	EDO	C	616	-	3,3,3	0.23	0	2,2,2	0.34	0
5	EDO	A	615	-	3,3,3	0.34	0	2,2,2	0.18	0
5	EDO	C	608	-	3,3,3	0.25	0	2,2,2	0.29	0
5	EDO	C	606	-	3,3,3	0.24	0	2,2,2	0.68	0
5	EDO	D	608	-	3,3,3	0.23	0	2,2,2	0.29	0
5	EDO	B	609	-	3,3,3	0.28	0	2,2,2	0.20	0
5	EDO	B	622	-	3,3,3	0.26	0	2,2,2	0.28	0
5	EDO	B	619	-	3,3,3	0.27	0	2,2,2	0.21	0
5	EDO	B	615	-	3,3,3	0.27	0	2,2,2	0.23	0
5	EDO	C	612	-	3,3,3	0.17	0	2,2,2	0.13	0
3	NAG	D	603	1	14,14,15	0.78	0	17,19,21	1.19	1 (5%)
5	EDO	A	611	-	3,3,3	0.25	0	2,2,2	0.13	0
5	EDO	B	616	-	3,3,3	0.22	0	2,2,2	0.43	0
5	EDO	A	608	-	3,3,3	0.24	0	2,2,2	0.52	0
5	EDO	A	612	-	3,3,3	0.28	0	2,2,2	0.37	0
3	NAG	D	602	1	14,14,15	0.72	0	17,19,21	1.27	3 (17%)
5	EDO	A	616	-	3,3,3	0.29	0	2,2,2	0.09	0
5	EDO	B	608	-	3,3,3	0.23	0	2,2,2	0.27	0
5	EDO	B	617	-	3,3,3	0.22	0	2,2,2	0.53	0
5	EDO	B	618	-	3,3,3	0.23	0	2,2,2	0.45	0
5	EDO	B	621	-	3,3,3	0.26	0	2,2,2	0.26	0
5	EDO	A	613	-	3,3,3	0.17	0	2,2,2	0.52	0
6	BTB	A	609	-	13,13,13	1.05	1 (7%)	7,16,16	1.14	0
7	DCF	B	625	4	13,21,21	1.22	1 (7%)	14,30,30	0.81	1 (7%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	BTB	B	614	-	13,13,13	0.97	1 (7%)	7,16,16	1.14	0
3	NAG	C	601	1	14,14,15	0.74	0	17,19,21	0.80	0
5	EDO	D	615	-	3,3,3	0.32	0	2,2,2	0.47	0
5	EDO	B	620	-	3,3,3	0.25	0	2,2,2	0.29	0
5	EDO	D	610	-	3,3,3	0.25	0	2,2,2	0.34	0
3	NAG	C	602	1	14,14,15	0.77	0	17,19,21	1.08	2 (11%)
5	EDO	B	612	-	3,3,3	0.24	0	2,2,2	0.23	0
5	EDO	B	624	-	3,3,3	0.26	0	2,2,2	0.50	0
5	EDO	C	614	-	3,3,3	0.28	0	2,2,2	0.19	0
5	EDO	B	613	-	3,3,3	0.25	0	2,2,2	0.26	0
5	EDO	B	606	-	3,3,3	0.26	0	2,2,2	0.68	0
5	EDO	D	613	-	3,3,3	0.25	0	2,2,2	0.43	0
7	DCF	A	617	4	13,21,21	1.21	2 (15%)	14,30,30	0.69	1 (7%)
7	DCF	D	617	4	13,21,21	1.23	1 (7%)	14,30,30	0.80	1 (7%)
5	EDO	A	614	-	3,3,3	0.30	0	2,2,2	0.33	0
5	EDO	C	607	-	3,3,3	0.24	0	2,2,2	0.35	0
5	EDO	D	612	-	3,3,3	0.24	0	2,2,2	0.31	0
5	EDO	D	606	-	3,3,3	0.25	0	2,2,2	0.48	0
5	EDO	D	607	-	3,3,3	0.26	0	2,2,2	0.19	0
3	NAG	A	602	1	14,14,15	0.75	0	17,19,21	1.21	1 (5%)
3	NAG	B	604	1	14,14,15	0.74	0	17,19,21	1.04	1 (5%)
3	NAG	A	604	1	14,14,15	0.72	0	17,19,21	1.04	1 (5%)
5	EDO	D	609	-	3,3,3	0.26	0	2,2,2	0.46	0
5	EDO	D	614	-	3,3,3	0.26	0	2,2,2	0.25	0
5	EDO	B	623	-	3,3,3	0.30	0	2,2,2	0.57	0
3	NAG	B	602	1	14,14,15	0.72	0	17,19,21	0.98	1 (5%)
5	EDO	B	611	-	3,3,3	0.27	0	2,2,2	0.19	0
5	EDO	C	610	-	3,3,3	0.23	0	2,2,2	0.17	0
5	EDO	C	613	-	3,3,3	0.27	0	2,2,2	0.45	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	A	603	1	-	0/6/23/26	0/1/1/1
5	EDO	A	610	-	-	0/1/1/1	-
5	EDO	A	606	-	-	0/1/1/1	-
3	NAG	A	601	1	-	0/6/23/26	0/1/1/1
3	NAG	D	601	1	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	EDO	A	607	-	-	1/1/1/1	-
5	EDO	C	609	-	-	0/1/1/1	-
3	NAG	C	603	1	-	0/6/23/26	0/1/1/1
5	EDO	D	611	-	-	0/1/1/1	-
7	DCF	C	617	4	-	0/2/29/29	0/2/3/3
5	EDO	C	605	-	-	0/1/1/1	-
5	EDO	D	616	-	-	1/1/1/1	-
3	NAG	D	604	1	-	0/6/23/26	0/1/1/1
3	NAG	B	601	1	-	2/6/23/26	0/1/1/1
3	NAG	B	603	1	-	0/6/23/26	0/1/1/1
5	EDO	C	615	-	-	0/1/1/1	-
5	EDO	B	610	-	-	0/1/1/1	-
5	EDO	C	611	-	-	0/1/1/1	-
5	EDO	B	607	-	-	0/1/1/1	-
5	EDO	C	616	-	-	1/1/1/1	-
5	EDO	A	615	-	-	1/1/1/1	-
5	EDO	C	608	-	-	1/1/1/1	-
5	EDO	C	606	-	-	0/1/1/1	-
5	EDO	D	608	-	-	1/1/1/1	-
5	EDO	B	609	-	-	0/1/1/1	-
5	EDO	B	622	-	-	0/1/1/1	-
5	EDO	B	619	-	-	1/1/1/1	-
5	EDO	B	615	-	-	0/1/1/1	-
5	EDO	C	612	-	-	1/1/1/1	-
3	NAG	D	603	1	-	0/6/23/26	0/1/1/1
5	EDO	A	611	-	-	0/1/1/1	-
5	EDO	B	616	-	-	1/1/1/1	-
5	EDO	A	608	-	-	0/1/1/1	-
5	EDO	A	612	-	-	0/1/1/1	-
3	NAG	D	602	1	-	0/6/23/26	0/1/1/1
5	EDO	A	616	-	-	0/1/1/1	-
5	EDO	B	608	-	-	0/1/1/1	-
5	EDO	B	617	-	-	1/1/1/1	-
5	EDO	B	618	-	-	0/1/1/1	-
5	EDO	B	621	-	-	1/1/1/1	-
5	EDO	A	613	-	-	0/1/1/1	-
6	BTB	A	609	-	-	1/21/21/21	-
7	DCF	B	625	4	-	1/2/29/29	0/2/3/3
6	BTB	B	614	-	-	1/21/21/21	-
3	NAG	C	601	1	-	1/6/23/26	0/1/1/1
5	EDO	D	615	-	-	1/1/1/1	-
5	EDO	B	620	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	EDO	D	610	-	-	0/1/1/1	-
3	NAG	C	602	1	-	0/6/23/26	0/1/1/1
5	EDO	B	612	-	-	0/1/1/1	-
5	EDO	B	624	-	-	1/1/1/1	-
5	EDO	C	614	-	-	1/1/1/1	-
5	EDO	B	613	-	-	1/1/1/1	-
5	EDO	B	606	-	-	0/1/1/1	-
5	EDO	D	613	-	-	1/1/1/1	-
7	DCF	A	617	4	-	0/2/29/29	0/2/3/3
7	DCF	D	617	4	-	0/2/29/29	0/2/3/3
5	EDO	A	614	-	-	1/1/1/1	-
5	EDO	C	607	-	-	0/1/1/1	-
5	EDO	D	612	-	-	1/1/1/1	-
5	EDO	D	606	-	-	0/1/1/1	-
5	EDO	D	607	-	-	0/1/1/1	-
3	NAG	A	602	1	-	1/6/23/26	0/1/1/1
3	NAG	B	604	1	-	0/6/23/26	0/1/1/1
3	NAG	A	604	1	-	0/6/23/26	0/1/1/1
5	EDO	D	609	-	-	0/1/1/1	-
5	EDO	D	614	-	-	1/1/1/1	-
5	EDO	B	623	-	-	1/1/1/1	-
3	NAG	B	602	1	-	0/6/23/26	0/1/1/1
5	EDO	B	611	-	-	0/1/1/1	-
5	EDO	C	610	-	-	0/1/1/1	-
5	EDO	C	613	-	-	1/1/1/1	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	C	617	DCF	C10-N4	-3.86	1.37	1.41
7	D	617	DCF	C10-N4	-3.75	1.37	1.41
7	B	625	DCF	C10-N4	-3.51	1.37	1.41
7	A	617	DCF	C10-N4	-3.46	1.37	1.41
6	A	609	BTB	C3-C2	2.67	1.56	1.53
7	C	617	DCF	C2-N1	-2.56	1.30	1.34
6	B	614	BTB	C3-C2	2.14	1.55	1.53
7	A	617	DCF	C2-N1	-2.10	1.31	1.34

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	601	NAG	C1-C2-N2	-5.32	102.04	110.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	602	NAG	C1-O5-C5	3.53	116.92	112.19
3	D	603	NAG	C1-O5-C5	3.39	116.72	112.19
3	A	603	NAG	C1-O5-C5	3.34	116.66	112.19
3	B	603	NAG	C1-O5-C5	2.99	116.19	112.19
3	C	603	NAG	C1-O5-C5	2.86	116.02	112.19
3	D	602	NAG	C1-O5-C5	2.86	116.02	112.19
3	C	602	NAG	C1-O5-C5	2.79	115.92	112.19
3	B	604	NAG	C1-O5-C5	2.71	115.82	112.19
3	B	602	NAG	C1-O5-C5	2.69	115.79	112.19
3	D	602	NAG	O5-C1-C2	-2.67	107.16	111.29
7	B	625	DCF	O8-C8-C9	2.67	115.86	110.44
3	A	604	NAG	C2-N2-C7	2.62	126.42	122.90
3	B	603	NAG	C3-C4-C5	-2.59	105.53	110.23
3	D	602	NAG	C1-C2-N2	2.58	114.50	110.43
7	D	617	DCF	O8-C8-C9	2.41	115.33	110.44
3	A	601	NAG	O4-C4-C3	-2.40	104.71	110.38
3	B	603	NAG	O5-C1-C2	-2.38	107.60	111.29
3	D	601	NAG	C4-C3-C2	-2.34	107.59	111.02
3	A	601	NAG	C1-O5-C5	-2.15	109.30	112.19
7	A	617	DCF	O8-C8-C9	2.09	114.69	110.44
3	C	602	NAG	C1-C2-N2	2.02	113.62	110.43

There are no chirality outliers.

All (29) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	613	EDO	O1-C1-C2-O2
5	B	616	EDO	O1-C1-C2-O2
5	D	608	EDO	O1-C1-C2-O2
5	A	615	EDO	O1-C1-C2-O2
5	B	620	EDO	O1-C1-C2-O2
5	B	621	EDO	O1-C1-C2-O2
5	B	624	EDO	O1-C1-C2-O2
5	D	612	EDO	O1-C1-C2-O2
5	D	615	EDO	O1-C1-C2-O2
7	B	625	DCF	C3S-C4S-C5S-O5S
6	A	609	BTB	O1-C1-C2-C3
5	A	607	EDO	O1-C1-C2-O2
6	B	614	BTB	C8-C7-N-C5
3	B	601	NAG	C4-C5-C6-O6
5	C	613	EDO	O1-C1-C2-O2
3	B	601	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	B	619	EDO	O1-C1-C2-O2
5	C	614	EDO	O1-C1-C2-O2
5	C	616	EDO	O1-C1-C2-O2
3	C	601	NAG	C1-C2-N2-C7
5	B	623	EDO	O1-C1-C2-O2
5	C	608	EDO	O1-C1-C2-O2
5	C	612	EDO	O1-C1-C2-O2
5	D	613	EDO	O1-C1-C2-O2
3	A	602	NAG	O5-C5-C6-O6
5	D	614	EDO	O1-C1-C2-O2
5	D	616	EDO	O1-C1-C2-O2
5	B	617	EDO	O1-C1-C2-O2
5	A	614	EDO	O1-C1-C2-O2

There are no ring outliers.

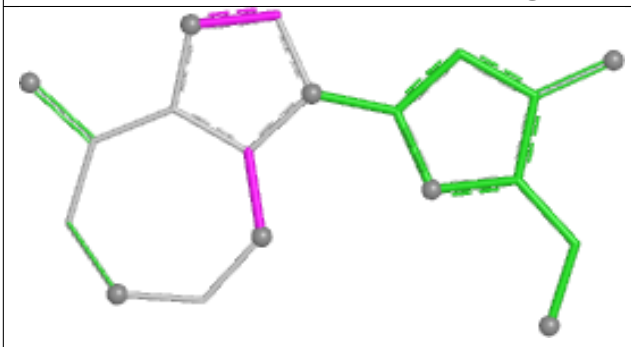
15 monomers are involved in 30 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	603	NAG	1	0
5	A	607	EDO	2	0
5	D	616	EDO	1	0
5	A	615	EDO	2	0
5	B	619	EDO	2	0
5	C	612	EDO	1	0
5	A	611	EDO	4	0
5	A	613	EDO	1	0
5	D	615	EDO	2	0
5	B	606	EDO	1	0
5	D	613	EDO	1	0
5	D	612	EDO	1	0
5	D	607	EDO	2	0
5	D	614	EDO	1	0
5	B	623	EDO	8	0

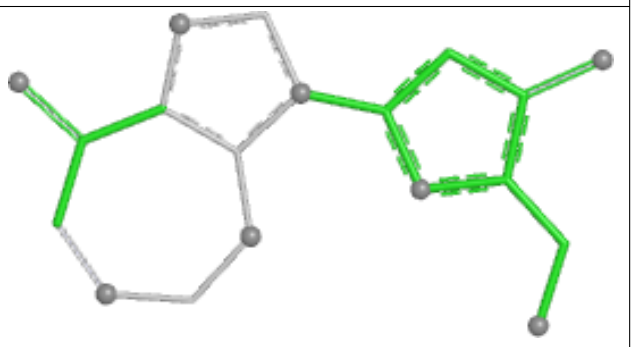
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 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.

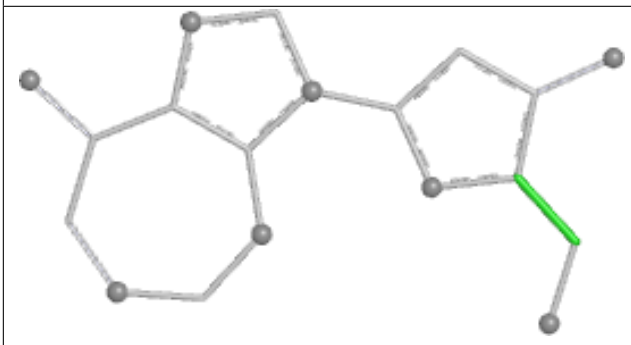
Ligand DCF C 617



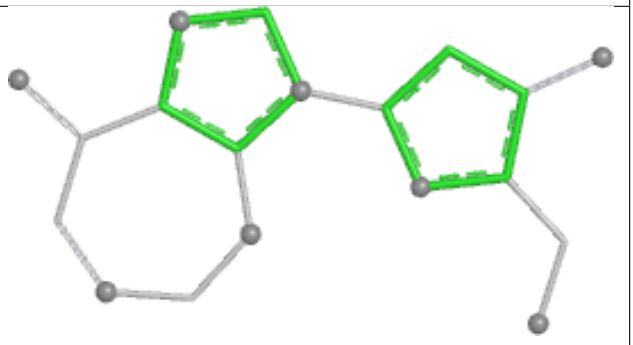
Bond lengths



Bond angles

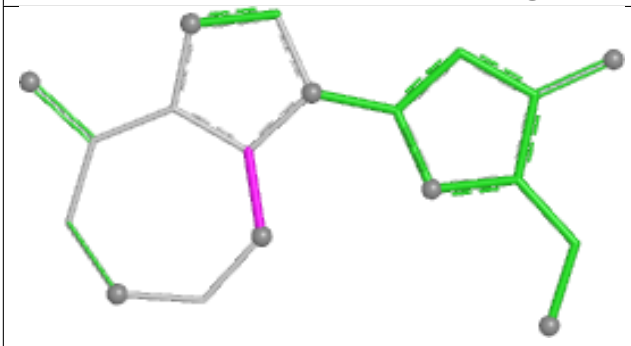


Torsions

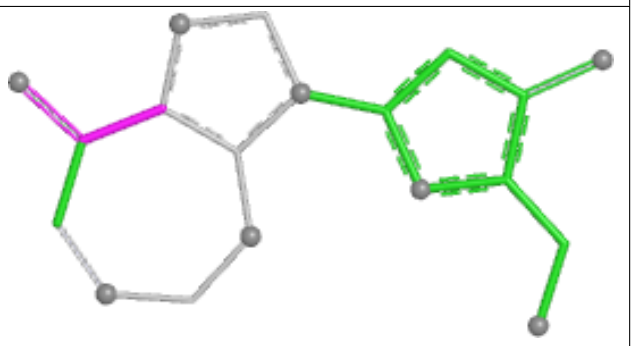


Rings

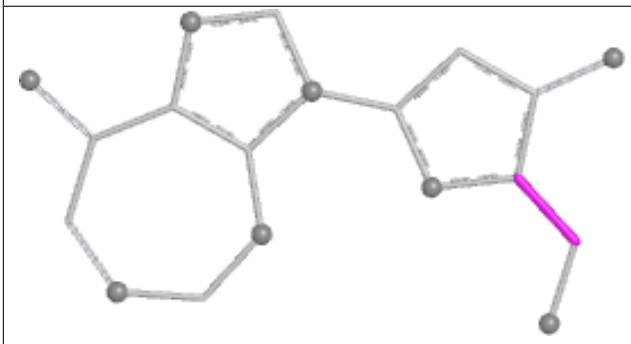
Ligand DCF B 625



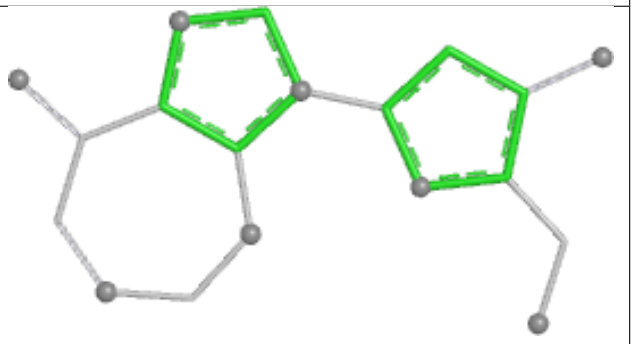
Bond lengths



Bond angles

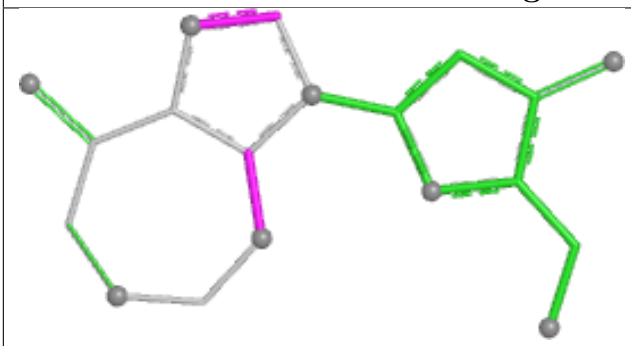


Torsions

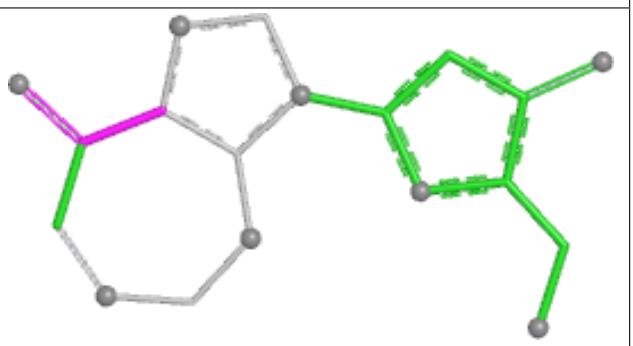


Rings

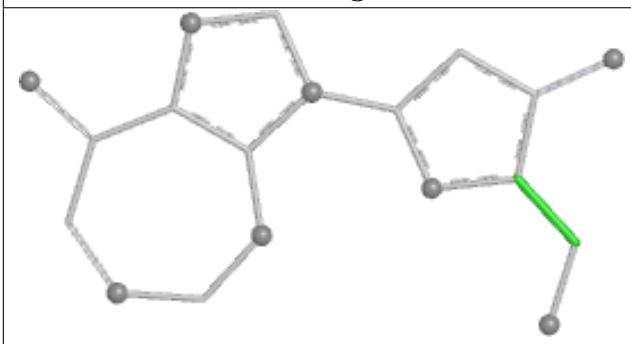
Ligand DCF A 617



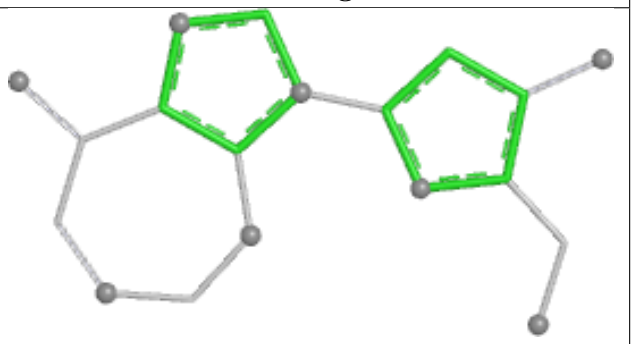
Bond lengths



Bond angles

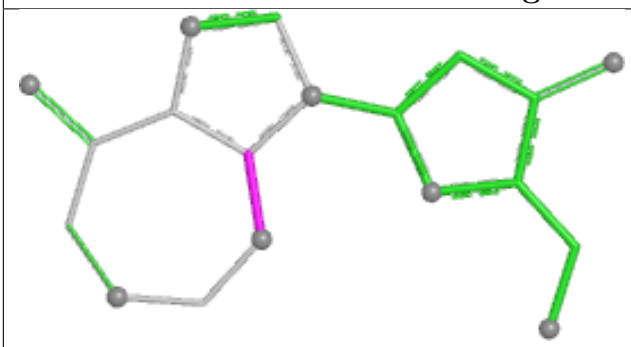


Torsions

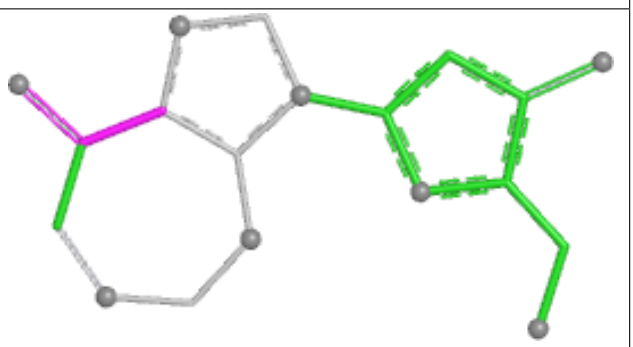


Rings

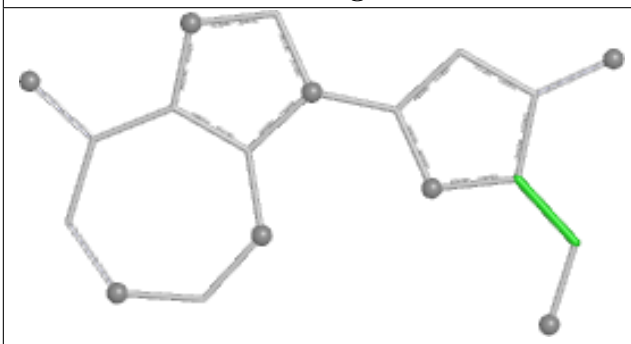
Ligand DCF D 617



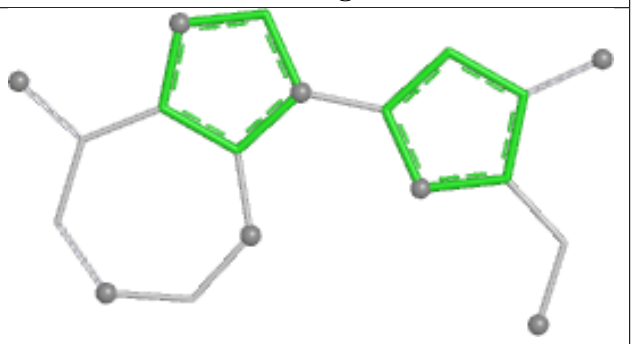
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

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, 95^{th} 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	497/541 (91%)	-0.59	5 (1%)	79	83	11, 19, 38, 68	8 (1%)
1	B	506/541 (93%)	-0.63	9 (1%)	67	72	11, 18, 34, 70	10 (1%)
1	C	496/541 (91%)	-0.67	4 (0%)	82	85	9, 18, 32, 65	8 (1%)
1	D	497/541 (91%)	-0.54	6 (1%)	76	80	12, 21, 38, 77	5 (1%)
All	All	1996/2164 (92%)	-0.61	24 (1%)	76	80	9, 19, 36, 77	31 (1%)

All (24) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	30	VAL	6.3
1	D	160	THR	3.3
1	C	166	SER	3.0
1	C	30	VAL	2.9
1	A	310	PHE	2.8
1	B	310	PHE	2.7
1	C	167	GLY	2.7
1	A	527	LYS	2.5
1	A	160	THR	2.5
1	D	164	ALA	2.4
1	D	168	CYS	2.4
1	D	526	ASN	2.4
1	B	160	THR	2.3
1	A	168	CYS	2.3
1	D	162	PRO	2.3
1	B	166	SER	2.3
1	B	162	PRO	2.2
1	B	528	LYS	2.2
1	C	165	ASN	2.2
1	A	162	PRO	2.2
1	B	165	ASN	2.2

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Mol	Chain	Res	Type	RSRZ
1	D	167	GLY	2.2
1	B	31	ARG	2.1
1	B	168	CYS	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)

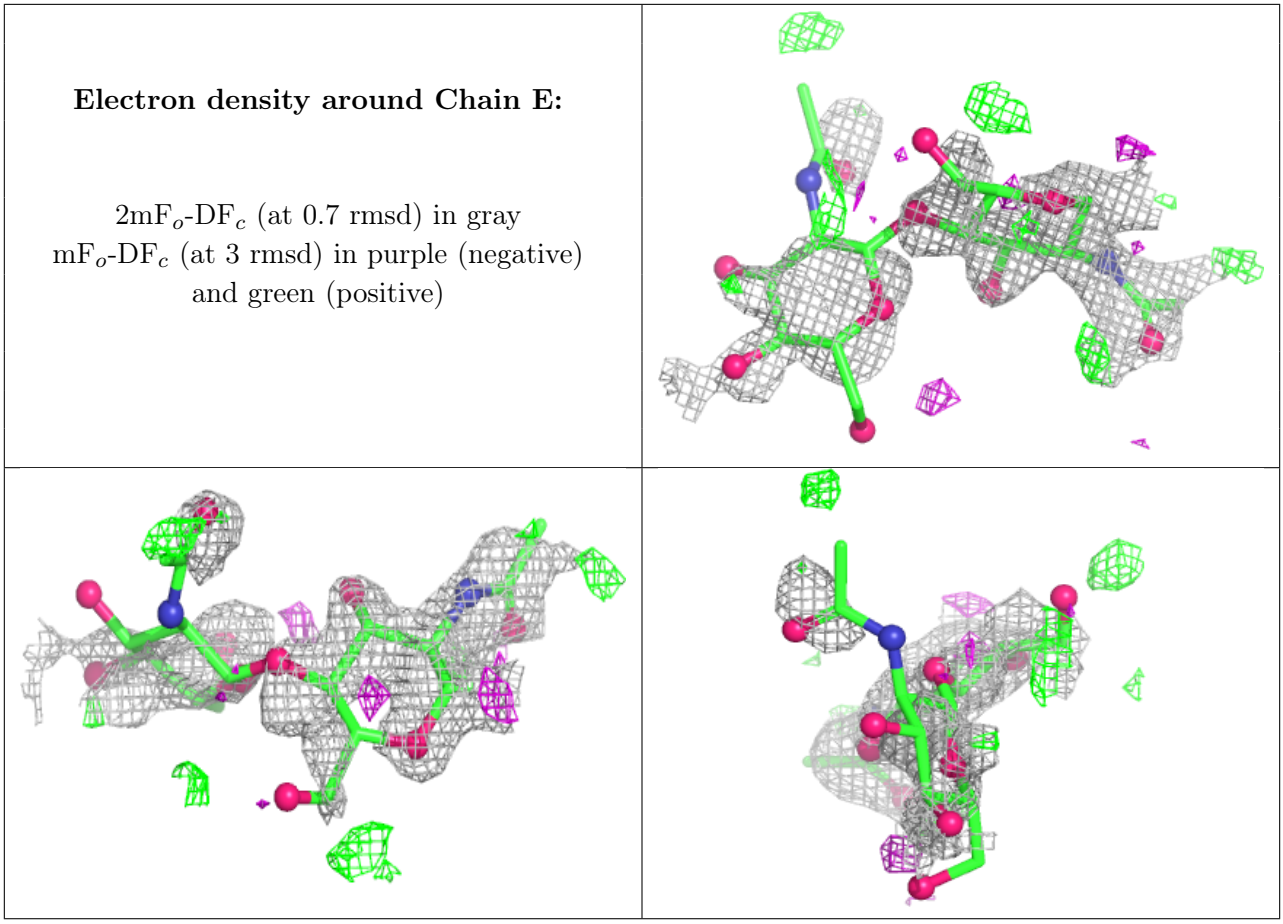
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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	0.36	0.17	75,91,96,104	0
2	NAG	E	1	14/15	0.63	0.15	52,67,80,89	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.

Electron density around Chain E:

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



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, 95^{th} 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
5	EDO	B	621	4/4	0.66	0.19	45,46,48,52	0
5	EDO	C	614	4/4	0.74	0.18	40,45,61,62	0
5	EDO	C	611	4/4	0.75	0.14	37,45,45,57	0
5	EDO	D	614	4/4	0.75	0.18	37,41,48,50	0
5	EDO	D	615	4/4	0.75	0.18	31,34,43,45	0
5	EDO	C	616	4/4	0.78	0.16	41,41,47,63	0
5	EDO	D	607	4/4	0.78	0.18	39,51,52,54	0
5	EDO	B	612	4/4	0.78	0.18	49,56,57,69	0
3	NAG	B	601	14/15	0.78	0.14	26,40,52,55	0
5	EDO	D	613	4/4	0.82	0.15	44,46,47,57	0
3	NAG	A	604	14/15	0.82	0.12	27,48,58,59	0
3	NAG	B	604	14/15	0.82	0.12	26,48,59,63	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	EDO	B	611	4/4	0.83	0.13	42,42,44,47	0
5	EDO	A	606	4/4	0.83	0.15	37,39,40,45	0
5	EDO	C	612	4/4	0.83	0.17	27,30,53,56	0
5	EDO	C	609	4/4	0.84	0.14	35,37,52,53	0
3	NAG	A	602	14/15	0.84	0.12	28,42,61,74	0
3	NAG	C	602	14/15	0.84	0.13	22,39,61,75	0
5	EDO	B	624	4/4	0.85	0.16	26,29,46,46	0
5	EDO	A	607	4/4	0.85	0.15	29,33,34,38	0
5	EDO	B	618	4/4	0.85	0.17	36,41,43,44	0
5	EDO	B	619	4/4	0.85	0.14	43,45,45,52	0
3	NAG	D	604	14/15	0.85	0.11	32,48,58,62	0
5	EDO	A	613	4/4	0.86	0.19	35,37,41,50	0
5	EDO	D	608	4/4	0.86	0.12	38,42,45,47	0
3	NAG	D	602	14/15	0.86	0.12	23,40,61,81	0
3	NAG	B	602	14/15	0.86	0.12	26,40,55,66	0
5	EDO	A	611	4/4	0.86	0.20	37,39,42,44	0
5	EDO	C	608	4/4	0.87	0.13	41,42,43,44	0
5	EDO	B	620	4/4	0.87	0.11	28,40,42,46	0
5	EDO	D	612	4/4	0.87	0.10	38,48,48,50	0
5	EDO	A	615	4/4	0.88	0.14	24,28,35,36	0
3	NAG	C	601	14/15	0.88	0.11	27,36,43,43	0
5	EDO	C	615	4/4	0.89	0.13	35,39,42,55	0
5	EDO	B	616	4/4	0.89	0.12	26,26,32,46	0
6	BTB	A	609	14/14	0.89	0.11	27,35,42,43	0
5	EDO	B	613	4/4	0.90	0.13	37,43,47,48	0
3	NAG	A	601	14/15	0.90	0.09	28,34,46,49	0
5	EDO	B	623	4/4	0.90	0.24	18,22,40,44	0
5	EDO	C	610	4/4	0.91	0.11	25,32,35,39	0
5	EDO	C	613	4/4	0.91	0.12	28,38,38,39	0
5	EDO	B	610	4/4	0.91	0.12	29,34,41,43	0
5	EDO	D	611	4/4	0.92	0.11	31,36,39,45	0
5	EDO	C	606	4/4	0.92	0.12	23,25,26,33	0
5	EDO	D	616	4/4	0.92	0.13	26,31,35,39	0
3	NAG	D	603	14/15	0.92	0.09	24,30,37,38	0
3	NAG	D	601	14/15	0.93	0.09	29,33,42,45	0
5	EDO	B	617	4/4	0.93	0.14	24,29,31,34	0
5	EDO	B	606	4/4	0.93	0.12	20,24,25,43	0
6	BTB	B	614	14/14	0.93	0.09	23,31,38,39	0
5	EDO	B	615	4/4	0.94	0.12	32,34,35,36	0
5	EDO	A	614	4/4	0.94	0.13	26,28,32,33	0
5	EDO	B	622	4/4	0.94	0.11	24,28,32,37	0
5	EDO	A	612	4/4	0.94	0.10	21,26,38,39	0

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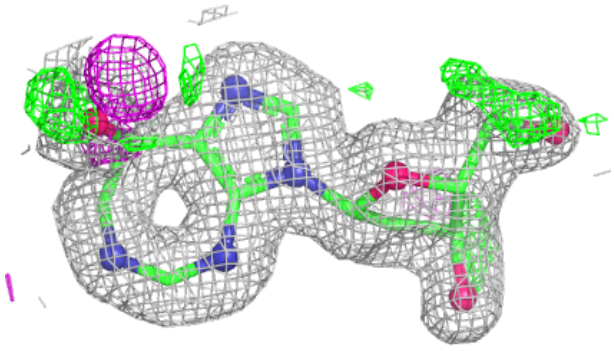
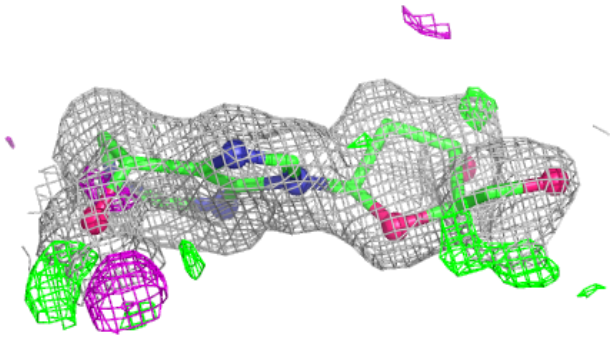
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	EDO	A	610	4/4	0.94	0.09	24,25,28,33	0
5	EDO	D	609	4/4	0.94	0.10	30,30,31,32	0
5	EDO	B	607	4/4	0.94	0.10	24,24,25,30	0
5	EDO	D	610	4/4	0.95	0.11	28,30,31,36	0
7	DCF	A	617	19/19	0.95	0.07	15,18,28,43	0
3	NAG	A	603	14/15	0.96	0.05	17,22,26,26	0
3	NAG	C	603	14/15	0.96	0.06	18,23,27,28	0
5	EDO	A	616	4/4	0.96	0.08	28,30,30,30	0
5	EDO	C	605	4/4	0.96	0.08	23,24,25,30	0
5	EDO	D	606	4/4	0.96	0.06	23,27,28,32	0
3	NAG	B	603	14/15	0.96	0.05	17,20,25,25	0
7	DCF	B	625	19/19	0.96	0.06	14,17,27,47	0
7	DCF	D	617	19/19	0.96	0.06	16,21,29,37	0
7	DCF	C	617	19/19	0.97	0.06	14,17,30,40	0
5	EDO	A	608	4/4	0.97	0.07	21,27,28,29	0
5	EDO	C	607	4/4	0.98	0.05	17,24,26,28	0
5	EDO	B	608	4/4	0.98	0.05	19,23,24,27	0
5	EDO	B	609	4/4	0.98	0.07	26,26,30,34	0
4	ZN	B	605	1/1	1.00	0.09	11,11,11,11	0
4	ZN	C	604	1/1	1.00	0.09	11,11,11,11	0
4	ZN	D	605	1/1	1.00	0.09	14,14,14,14	0
4	ZN	A	605	1/1	1.00	0.07	13,13,13,13	0

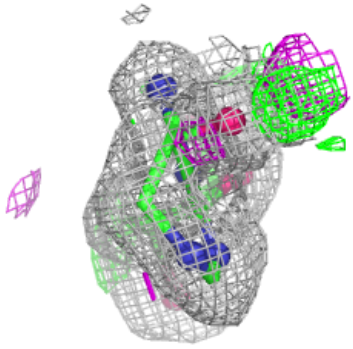
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around DCF A 617:

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

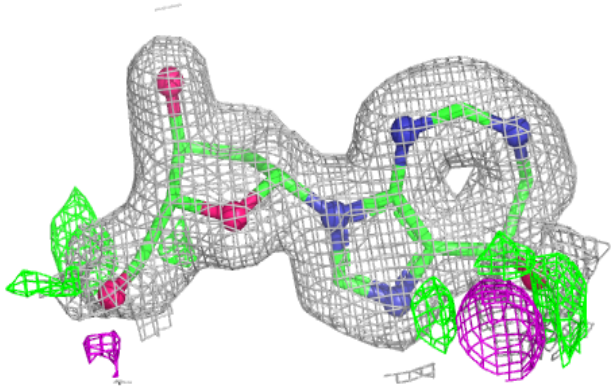


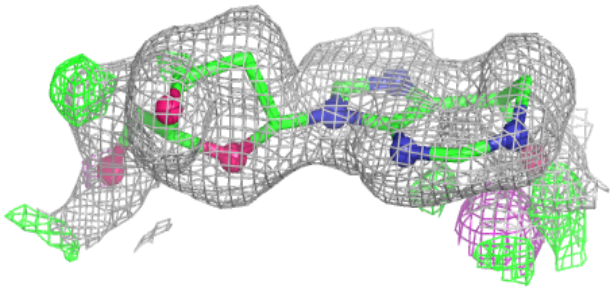


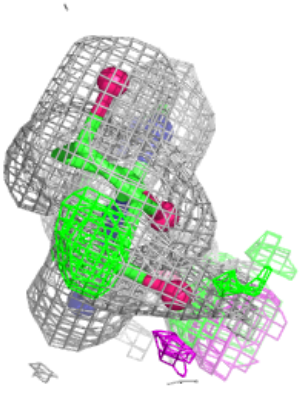


Electron density around DCF B 625:

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

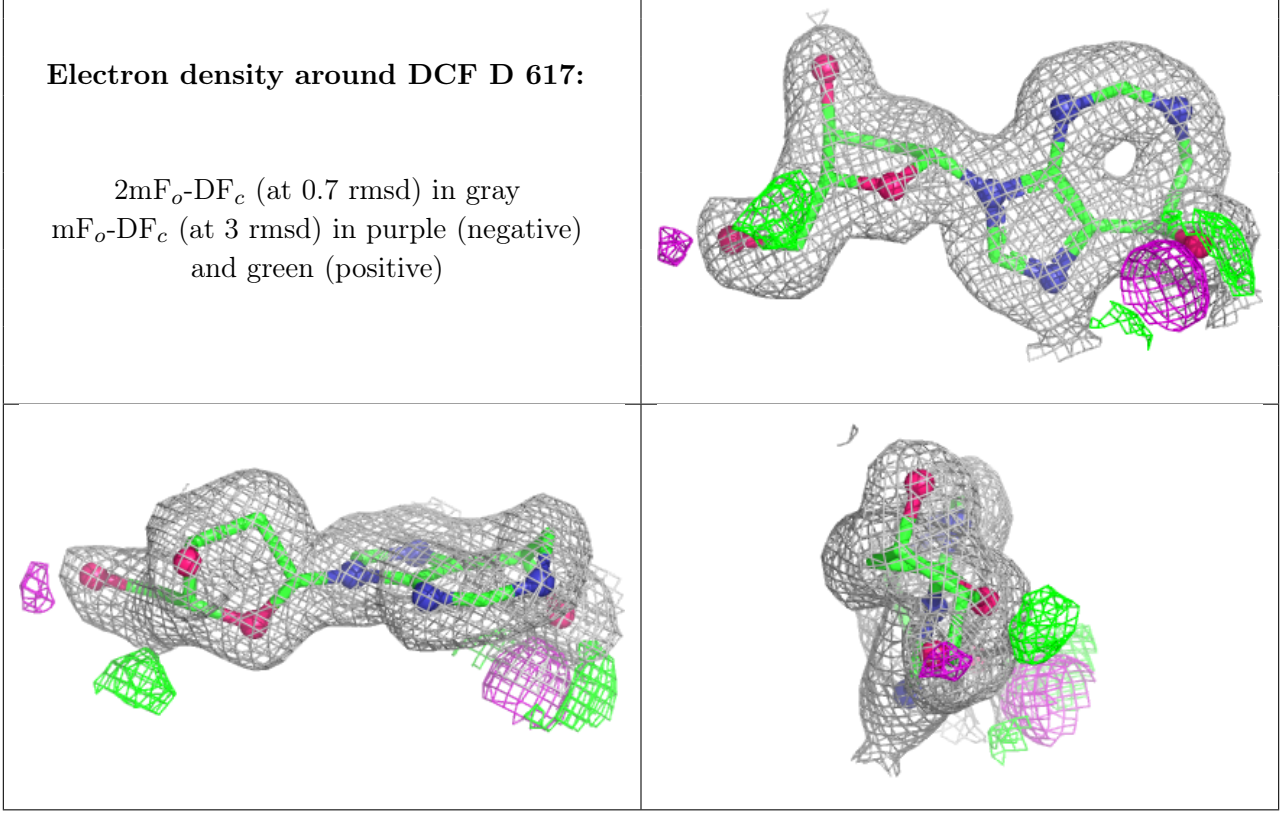






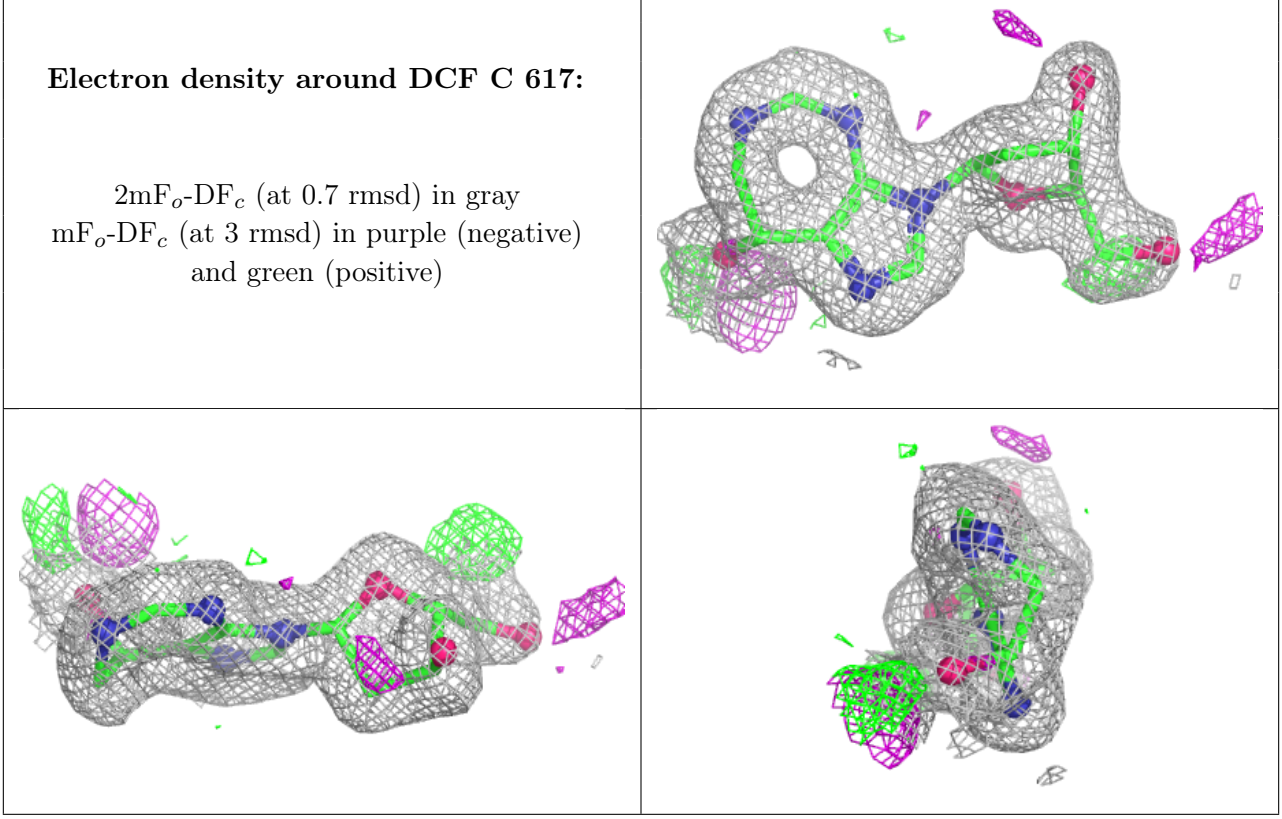
Electron density around DCF D 617:

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



Electron density around DCF C 617:

$2mF_o$-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.