wwPDB X-ray Structure Validation Summary Report (i)

Oct 5, 2023 – 10:24 PM EDT

PDB ID	:	6PY9
Title	:	Crystal structure of red kidney bean purple acid phosphatase in complex with adenosine diphosphate metavanadate
Authors	:	Feder, D.; Schenk, G.; Guddat, L.W.; McGeary, R.P.; Mitic, N.; Furtado, A.; Schulz, B.L.; Henry, R.J.; Schmidt, S.
Deposited on	:	2019-07-29
Resolution	:	2.20 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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:

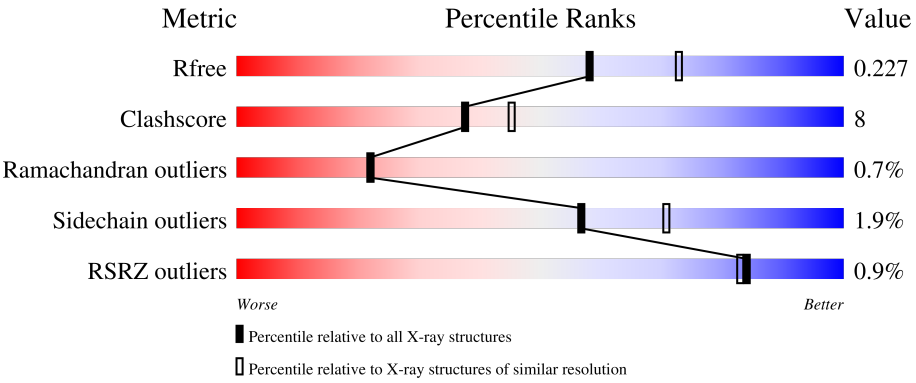
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 2.20 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	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	459	78% 14% • 8%
1	B	459	76% 15% • 7%
1	C	459	78% 13% • 8%
1	D	459	75% 16% • 8%

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Mol	Chain	Length	Quality of chain
2	E	3	33% 67%
2	F	3	33% 33% 33%
2	G	3	100%
2	H	3	33% 33% 33%

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
7	SO4	D	513	-	-	X	-
9	EDO	A	518	-	-	X	-
9	EDO	C	516	-	-	-	X

2 Entry composition (i)

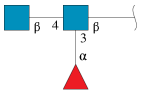
There are 15 unique types of molecules in this entry. The entry contains 16066 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Fe(3+)-Zn(2+) purple acid phosphatase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	424	Total	C	N	O	S	0	0	0
			3494	2243	607	634	10			
1	B	425	Total	C	N	O	S	0	5	0
			3532	2266	614	641	11			
1	D	423	Total	C	N	O	S	0	1	0
			3493	2245	606	632	10			
1	C	423	Total	C	N	O	S	0	2	0
			3504	2250	612	632	10			

- Molecule 2 is an oligosaccharide called alpha-L-fucopyranose-(1-3)-[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	3	Total	C	N	O	0	0	0
			38	22	2	14			
2	F	3	Total	C	N	O	0	0	0
			38	22	2	14			
2	G	3	Total	C	N	O	0	0	0
			38	22	2	14			
2	H	3	Total	C	N	O	0	0	0
			38	22	2	14			

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Zn	0	0
			1	1		

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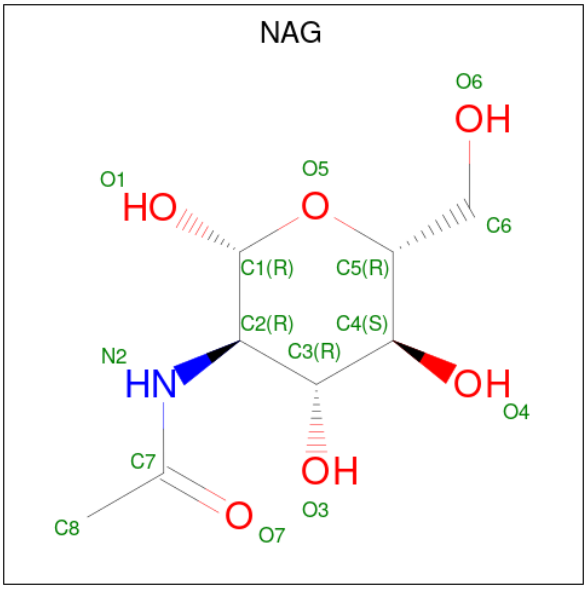
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	1	Total Zn 1 1	0	0
3	D	1	Total Zn 1 1	0	0
3	C	1	Total Zn 1 1	0	0

- Molecule 4 is FE (III) ION (three-letter code: FE) (formula: Fe).

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

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



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

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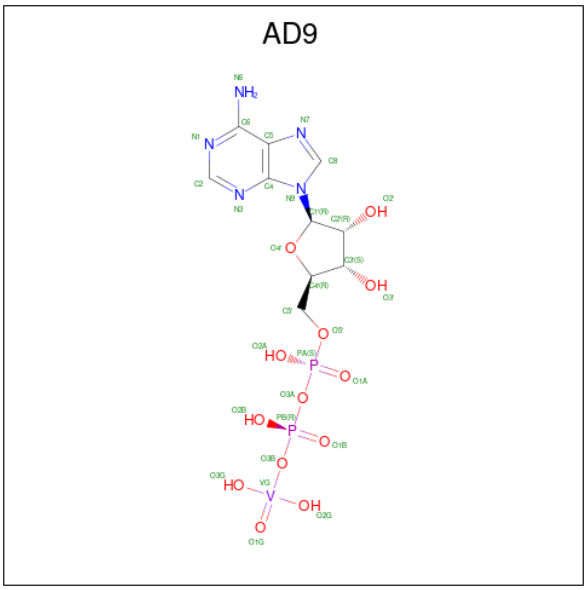
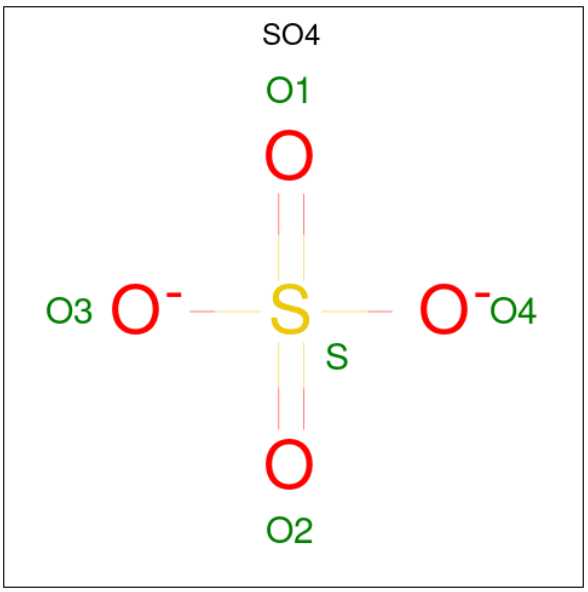
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C N O 14 8 1 5	0	0
5	B	1	Total C N O 14 8 1 5	0	0
5	B	1	Total C N O 14 8 1 5	0	0
5	B	1	Total C N O 14 8 1 5	0	0
5	D	1	Total C N O 14 8 1 5	0	0
5	D	1	Total C N O 14 8 1 5	0	0
5	D	1	Total C N O 14 8 1 5	0	0
5	C	1	Total C N O 14 8 1 5	0	0
5	C	1	Total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

- Molecule 6 is ADP METAVANADATE (three-letter code: AD9) (formula: $C_{10}H_{16}N_5O_{13}P_2V$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C N O P V 31 10 5 13 2 1	0	0
6	C	1	Total C N O P V 31 10 5 13 2 1	0	0

- Molecule 7 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

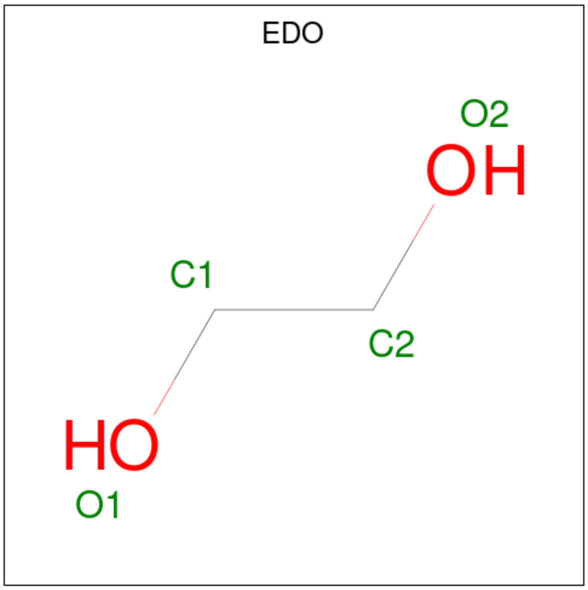


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total O S 5 4 1	0	0
7	A	1	Total O S 5 4 1	0	0
7	A	1	Total O S 5 4 1	0	0
7	B	1	Total O S 5 4 1	0	0
7	B	1	Total O S 5 4 1	0	0
7	D	1	Total O S 5 4 1	0	0
7	D	1	Total O S 5 4 1	0	0
7	D	1	Total O S 5 4 1	0	0
7	D	1	Total O S 5 4 1	0	0
7	D	1	Total O S 5 4 1	0	0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

- Molecule 8 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total Na 1 1	0	0
8	B	1	Total Na 1 1	0	0
8	D	1	Total Na 1 1	0	0

- Molecule 9 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



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

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

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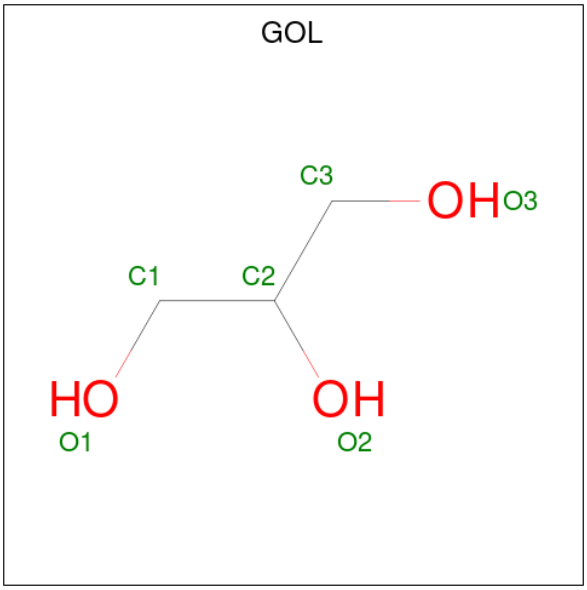
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	C	1	Total C O 4 2 2	0	0
9	C	1	Total C O 4 2 2	0	0

- Molecule 10 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	A	1	Total C O 6 3 3	0	0
10	A	1	Total C O 6 3 3	0	0
10	A	1	Total C O 6 3 3	0	0
10	A	1	Total C O 6 3 3	0	0
10	A	1	Total C O 6 3 3	0	0
10	A	1	Total C O 12 6 6	0	1
10	B	1	Total C O 6 3 3	0	0
10	B	1	Total C O 6 3 3	0	0
10	B	1	Total C O 6 3 3	0	0

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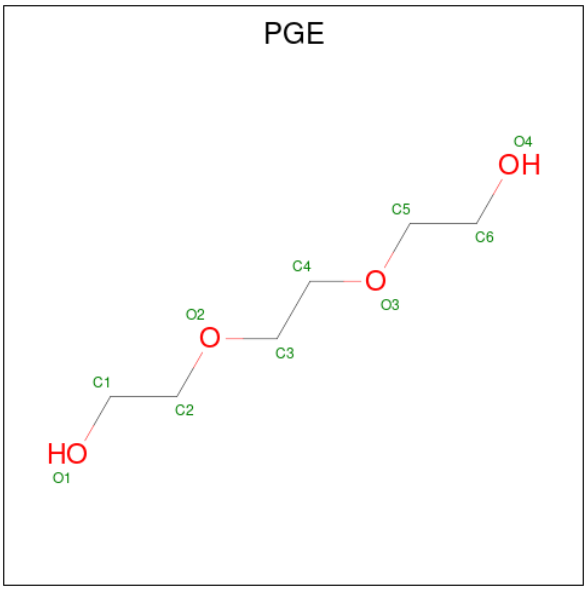
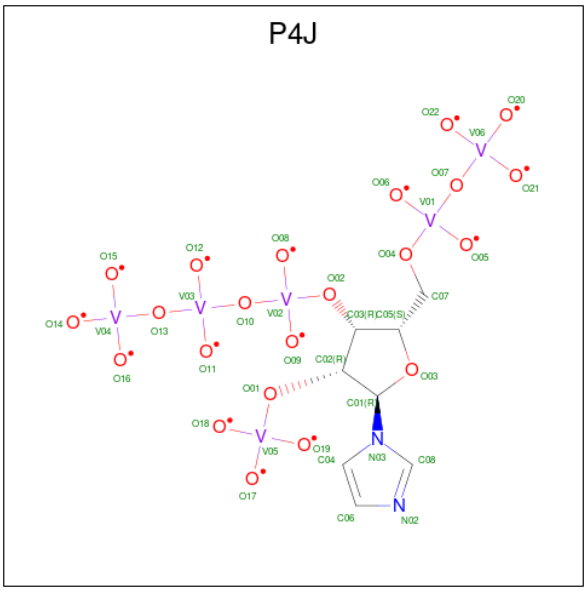
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	B	1	Total C O 6 3 3	0	0
10	D	1	Total C O 6 3 3	0	0
10	C	1	Total C O 6 3 3	0	0
10	C	1	Total C O 6 3 3	0	0

- Molecule 11 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	A	1	Total C O 10 6 4	0	0
11	A	1	Total C O 7 4 3	0	0
11	B	1	Total C O 7 4 3	0	0
11	C	1	Total C O 7 4 3	0	0

- Molecule 12 is [(2 {R},3 {R},4 {R},5 {S})-2-(5-azanylimidazol-1-yl)-4-[[bis(oxidanyl)-[tris(oxidanyl)vanadiooxy]vanadio]oxy-bis(oxidanyl)vanadio]oxy-5-[[bis(oxidanyl)-[tris(oxidanyl)vanadiooxy]vanadio]oxymethyl]oxolan-3-yl]oxy-tris(oxidanyl)vanadium (three-letter code: P4J) (formula: $C_8H_9N_2O_{22}V_6$).

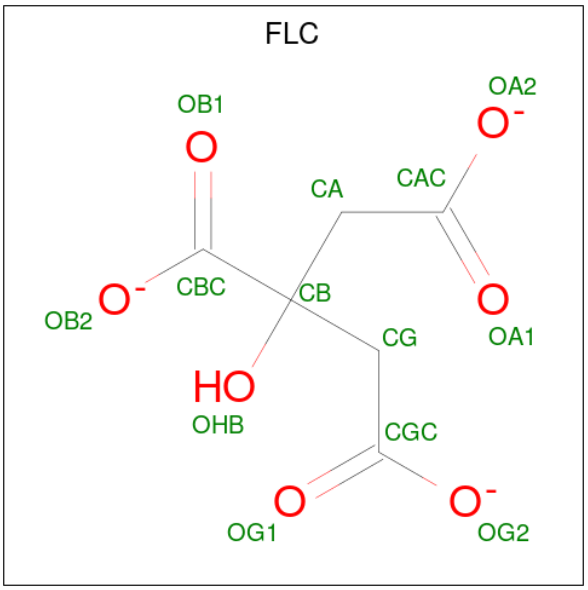


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
12	B	1	Total	C	N	O	V	0	0
			38	8	2	22	6		

- Molecule 13 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
13	B	1	Total	Cl	0	0
			1	1		

- Molecule 14 is CITRATE ANION (three-letter code: FLC) (formula: $C_6H_5O_7$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
14	C	1	Total C O 13 6 7	0	0
14	C	1	Total C O 13 6 7	0	0

- Molecule 15 is water.

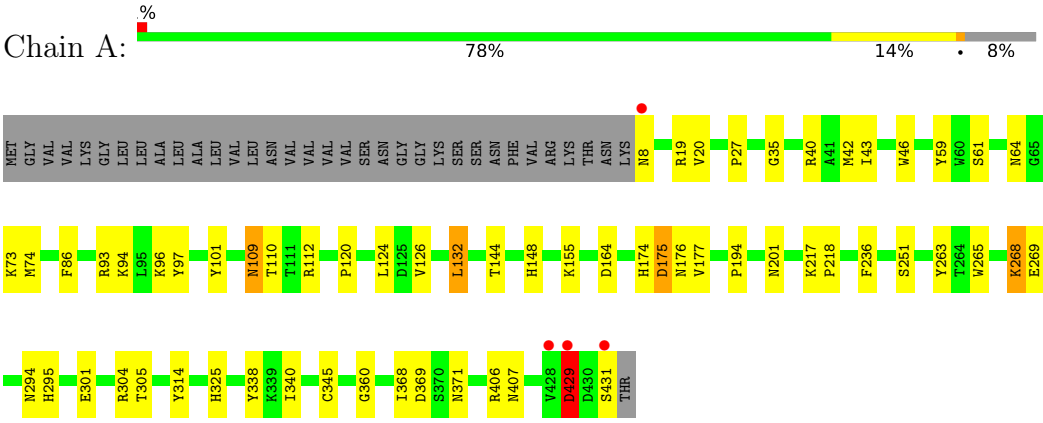
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
15	A	334	Total O 334 334	0	0
15	B	301	Total O 301 301	0	0
15	D	334	Total O 334 334	0	0
15	C	332	Total O 332 332	0	0

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.

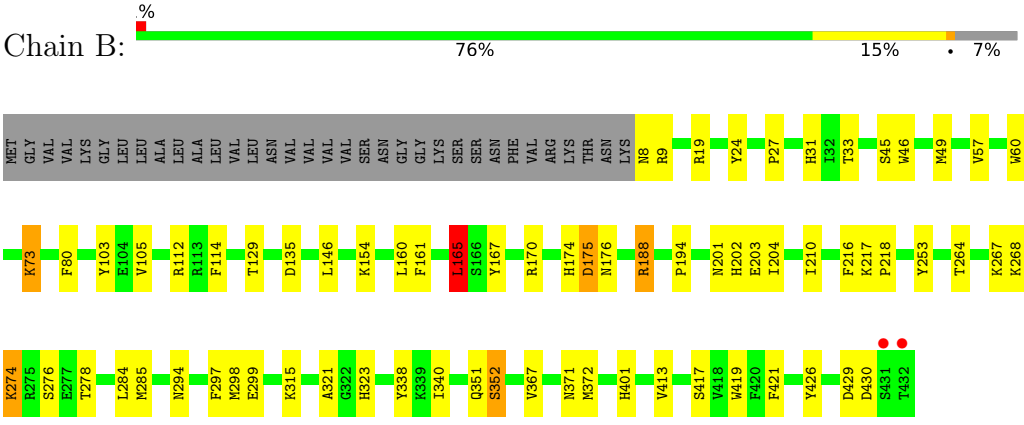
• Molecule 1: Fe(3+)-Zn(2+) purple acid phosphatase

Chain A:



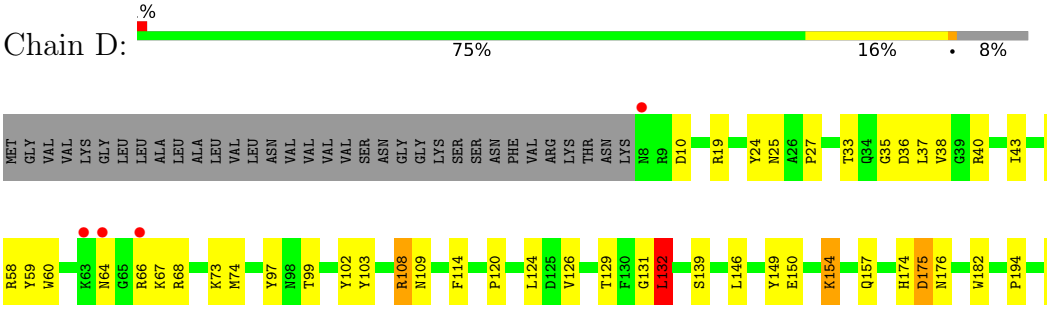
• Molecule 1: Fe(3+)-Zn(2+) purple acid phosphatase

Chain B:



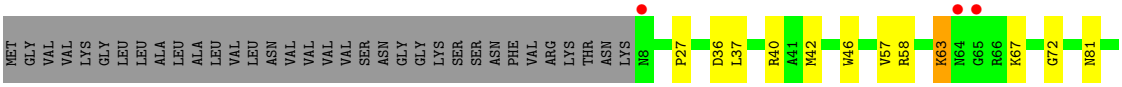
• Molecule 1: Fe(3+)-Zn(2+) purple acid phosphatase

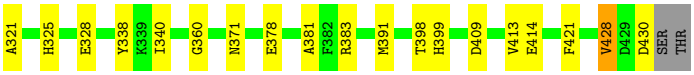
Chain D:



• Molecule 1: Fe(3+)-Zn(2+) purple acid phosphatase

Chain C:



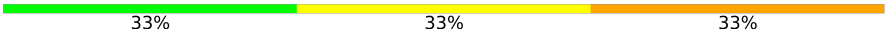


• Molecule 2: alpha-L-fucopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain E:

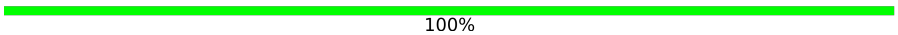
• Molecule 2: alpha-L-fucopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:



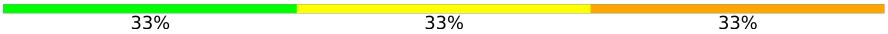
• Molecule 2: alpha-L-fucopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain G:



• Molecule 2: alpha-L-fucopyranose-(1-3)-[2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α, β, γ	126.05Å 126.05Å 295.15Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	19.90 – 2.20 19.90 – 2.20	Depositor EDS
% Data completeness (in resolution range)	81.1 (19.90-2.20) 81.1 (19.90-2.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.03 (at 2.19Å)	Xtriage
Refinement program	PHENIX 1.13_2998	Depositor
R, R_{free}	0.162 , 0.227 0.163 , 0.227	Depositor DCC
R_{free} test set	5649 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	28.2	Xtriage
Anisotropy	0.095	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 62.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.034 for -h,-k,l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	16066	wwPDB-VP
Average B, all atoms (Å^2)	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.90% 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: AD9, FUC, CL, FE, NAG, SO4, ZN, NA, FLC, EDO, P4J, PGE, GOL

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	0.42	0/3613	0.58	1/4913 (0.0%)
1	B	0.42	0/3661	0.56	1/4978 (0.0%)
1	C	0.42	0/3629	0.57	1/4933 (0.0%)
1	D	0.42	0/3615	0.56	1/4916 (0.0%)
All	All	0.42	0/14518	0.57	4/19740 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	132	LEU	CA-CB-CG	-7.32	98.46	115.30
1	B	165	LEU	CA-CB-CG	6.21	129.59	115.30
1	A	132	LEU	CA-CB-CG	-5.91	101.70	115.30
1	C	132	LEU	CA-CB-CG	-5.58	102.48	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3494	0	3309	53	0
1	B	3532	0	3347	49	0
1	C	3504	0	3329	50	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	3493	0	3314	56	0
2	E	38	0	34	0	0
2	F	38	0	34	1	0
2	G	38	0	34	0	0
2	H	38	0	34	1	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	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	42	0	39	0	0
5	B	42	0	39	1	0
5	C	28	0	26	0	0
5	D	42	0	39	2	0
6	A	31	0	14	7	0
6	C	31	0	14	1	0
7	A	15	0	0	0	0
7	B	10	0	0	0	0
7	C	5	0	0	1	0
7	D	25	0	0	4	0
8	A	1	0	0	0	0
8	B	1	0	0	0	0
8	D	1	0	0	0	0
9	A	36	0	54	9	0
9	B	28	0	42	1	0
9	C	48	0	71	9	0
9	D	16	0	24	5	0
10	A	42	0	56	7	0
10	B	24	0	32	2	0
10	C	12	0	16	1	0
10	D	6	0	8	2	0
11	A	17	0	23	2	0
11	B	7	0	9	0	0
11	C	7	0	9	0	0
12	B	38	0	0	7	0
13	B	1	0	0	0	0
14	C	26	0	10	3	0
15	A	334	0	0	5	1
15	B	301	0	0	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
15	C	332	0	0	9	1
15	D	334	0	0	10	1
All	All	16066	0	13960	221	2

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 8.

The worst 5 of 221 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:383:ARG:HE	14:C:525:FLC:HG1	1.32	0.92
1:D:267:LYS:O	15:D:601:HOH:O	1.91	0.88
1:A:42:MET:SD	15:A:916:HOH:O	2.35	0.85
1:A:201:ASN:HD22	10:A:526:GOL:H12	1.41	0.84
1:C:414:GLU:H	9:C:520:EDO:H11	1.46	0.80

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:A:772:HOH:O	15:A:852:HOH:O[5_554]	2.12	0.08
15:D:860:HOH:O	15:C:916:HOH:O[5_564]	2.16	0.04

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	422/459 (92%)	398 (94%)	20 (5%)	4 (1%)	17	16
1	B	428/459 (93%)	408 (95%)	17 (4%)	3 (1%)	22	22
1	C	423/459 (92%)	404 (96%)	16 (4%)	3 (1%)	22	22

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	D	422/459 (92%)	397 (94%)	24 (6%)	1 (0%)	47 55
All	All	1695/1836 (92%)	1607 (95%)	77 (4%)	11 (1%)	22 26

5 of 11 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	64	ASN
1	A	109	ASN
1	A	175	ASP
1	A	429	ASP
1	B	63	LYS

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	373/402 (93%)	365 (98%)	8 (2%)	53 67
1	B	379/402 (94%)	369 (97%)	10 (3%)	46 58
1	C	374/402 (93%)	372 (100%)	2 (0%)	88 94
1	D	373/402 (93%)	364 (98%)	9 (2%)	49 62
All	All	1499/1608 (93%)	1470 (98%)	29 (2%)	57 71

5 of 29 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	352	SER
1	C	176	ASN
1	B	417	SER
1	D	318	VAL
1	B	413	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	295	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

12 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	0.26	0	17,19,21	0.76	1 (5%)
2	FUC	E	2	2	10,10,11	0.50	0	14,14,16	1.02	1 (7%)
2	NAG	E	3	2	14,14,15	0.48	0	17,19,21	0.43	0
2	NAG	F	1	2,1	14,14,15	0.33	0	17,19,21	0.42	0
2	FUC	F	2	2	10,10,11	0.78	0	14,14,16	1.31	3 (21%)
2	NAG	F	3	2	14,14,15	0.36	0	17,19,21	0.46	0
2	NAG	G	1	2,1	14,14,15	0.55	0	17,19,21	0.48	0
2	FUC	G	2	2	10,10,11	0.78	0	14,14,16	0.91	0
2	NAG	G	3	2	14,14,15	0.45	0	17,19,21	0.41	0
2	NAG	H	1	2,1	14,14,15	0.75	1 (7%)	17,19,21	0.63	0
2	FUC	H	2	2	10,10,11	0.82	0	14,14,16	1.13	2 (14%)
2	NAG	H	3	2	14,14,15	0.23	0	17,19,21	0.41	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	FUC	E	2	2	-	-	0/1/1/1
2	NAG	E	3	2	-	1/6/23/26	0/1/1/1
2	NAG	F	1	2,1	-	0/6/23/26	0/1/1/1
2	FUC	F	2	2	-	-	0/1/1/1
2	NAG	F	3	2	-	2/6/23/26	0/1/1/1
2	NAG	G	1	2,1	-	0/6/23/26	0/1/1/1
2	FUC	G	2	2	-	-	0/1/1/1
2	NAG	G	3	2	-	0/6/23/26	0/1/1/1
2	NAG	H	1	2,1	-	0/6/23/26	0/1/1/1
2	FUC	H	2	2	-	-	0/1/1/1
2	NAG	H	3	2	-	2/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	H	1	NAG	O5-C1	-2.71	1.39	1.43

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	H	2	FUC	C1-O5-C5	3.04	119.67	112.78
2	F	2	FUC	C1-O5-C5	2.56	118.57	112.78
2	F	2	FUC	C1-C2-C3	-2.43	106.68	109.67
2	E	1	NAG	C1-O5-C5	2.25	115.24	112.19
2	F	2	FUC	O5-C5-C4	2.21	113.49	109.52

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	F	3	NAG	O5-C5-C6-O6
2	F	3	NAG	C4-C5-C6-O6
2	H	3	NAG	C4-C5-C6-O6
2	H	3	NAG	O5-C5-C6-O6
2	E	3	NAG	C4-C5-C6-O6

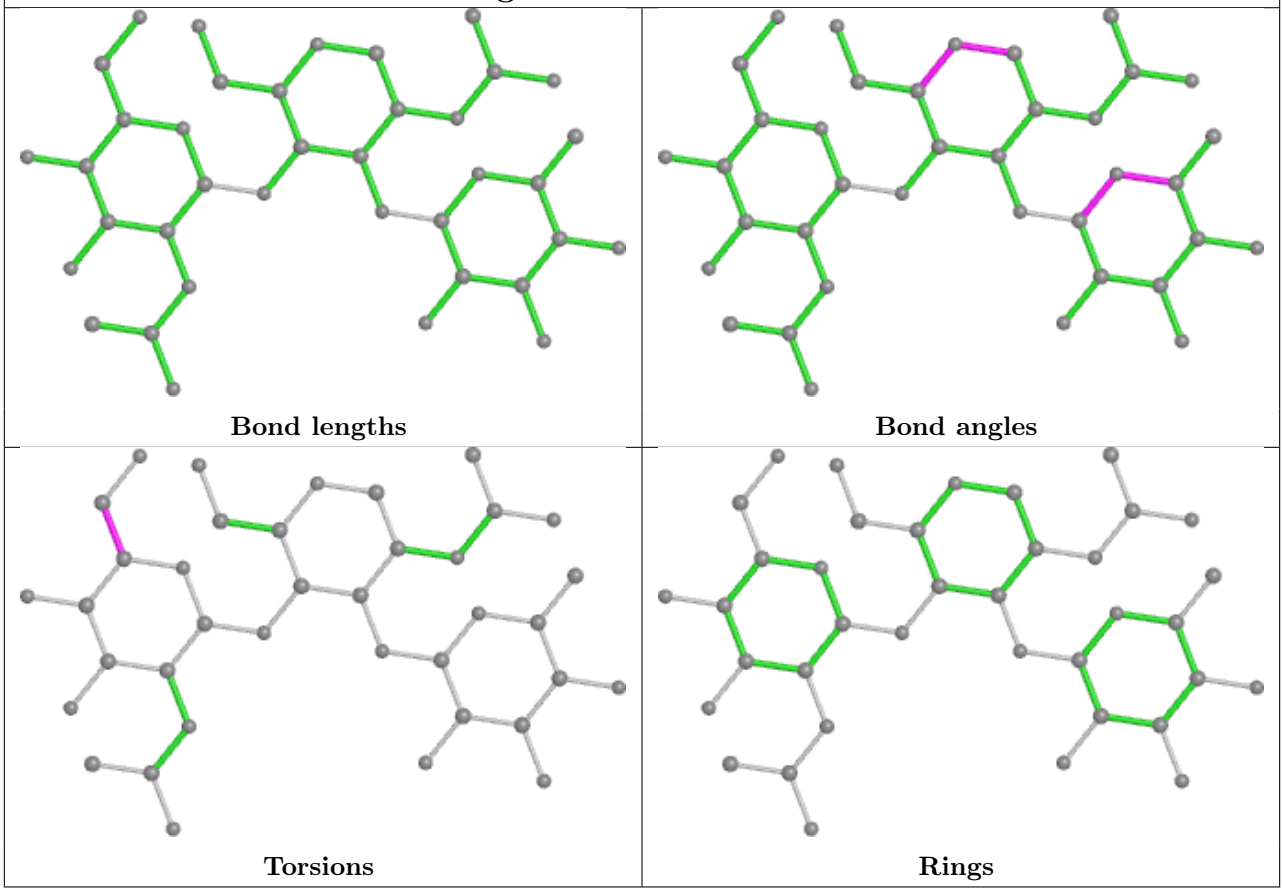
There are no ring outliers.

3 monomers are involved in 2 short contacts:

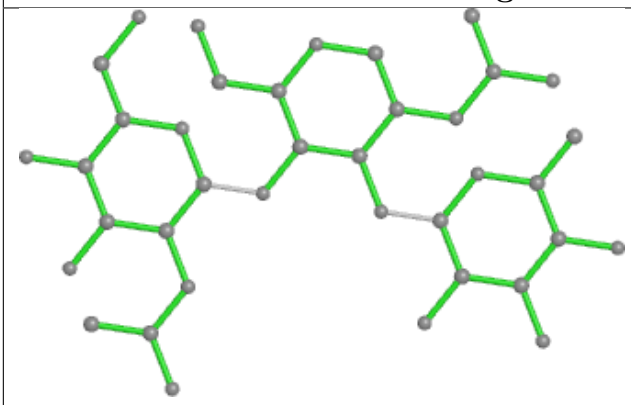
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	1	NAG	1	0
2	F	2	FUC	1	0
2	H	1	NAG	1	0

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

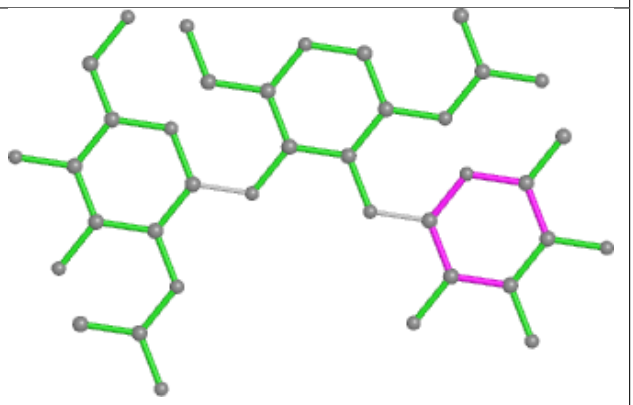
Oligosaccharide Chain E



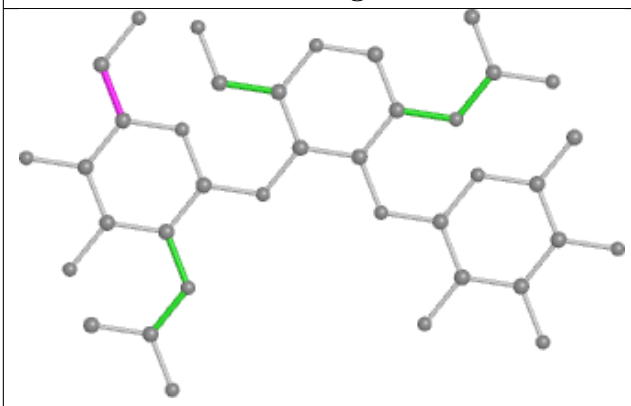
Oligosaccharide Chain F



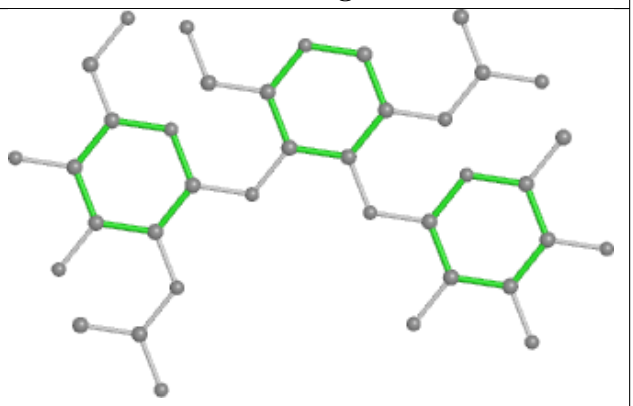
Bond lengths



Bond angles

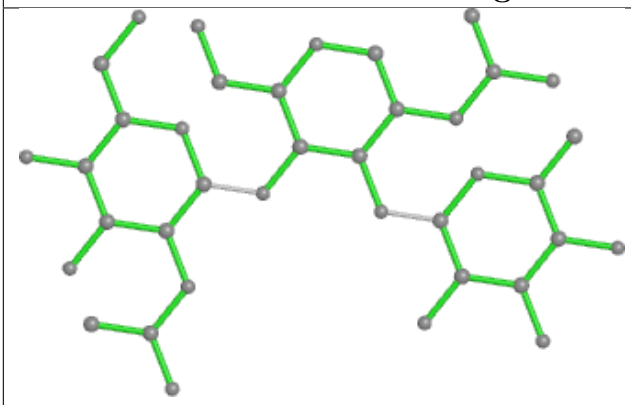


Torsions

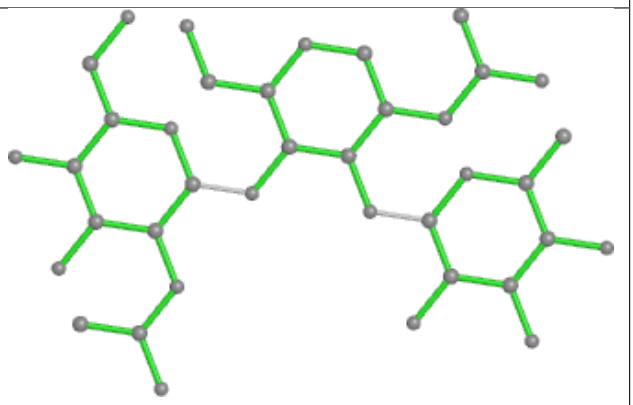


Rings

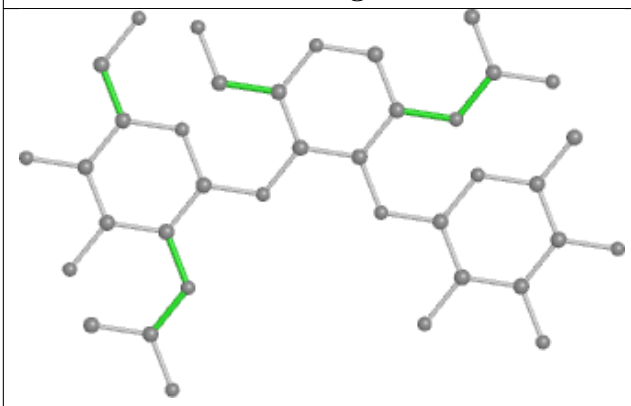
Oligosaccharide Chain G



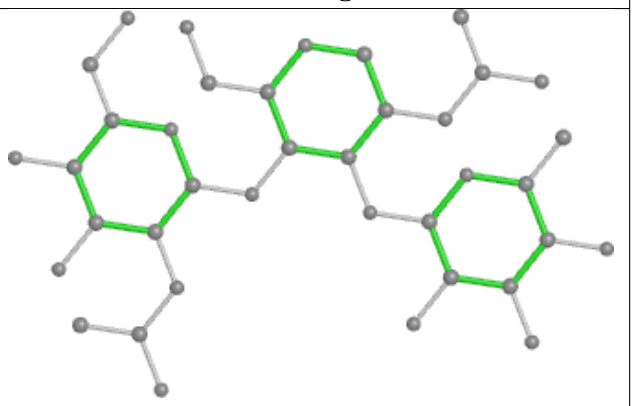
Bond lengths



Bond angles

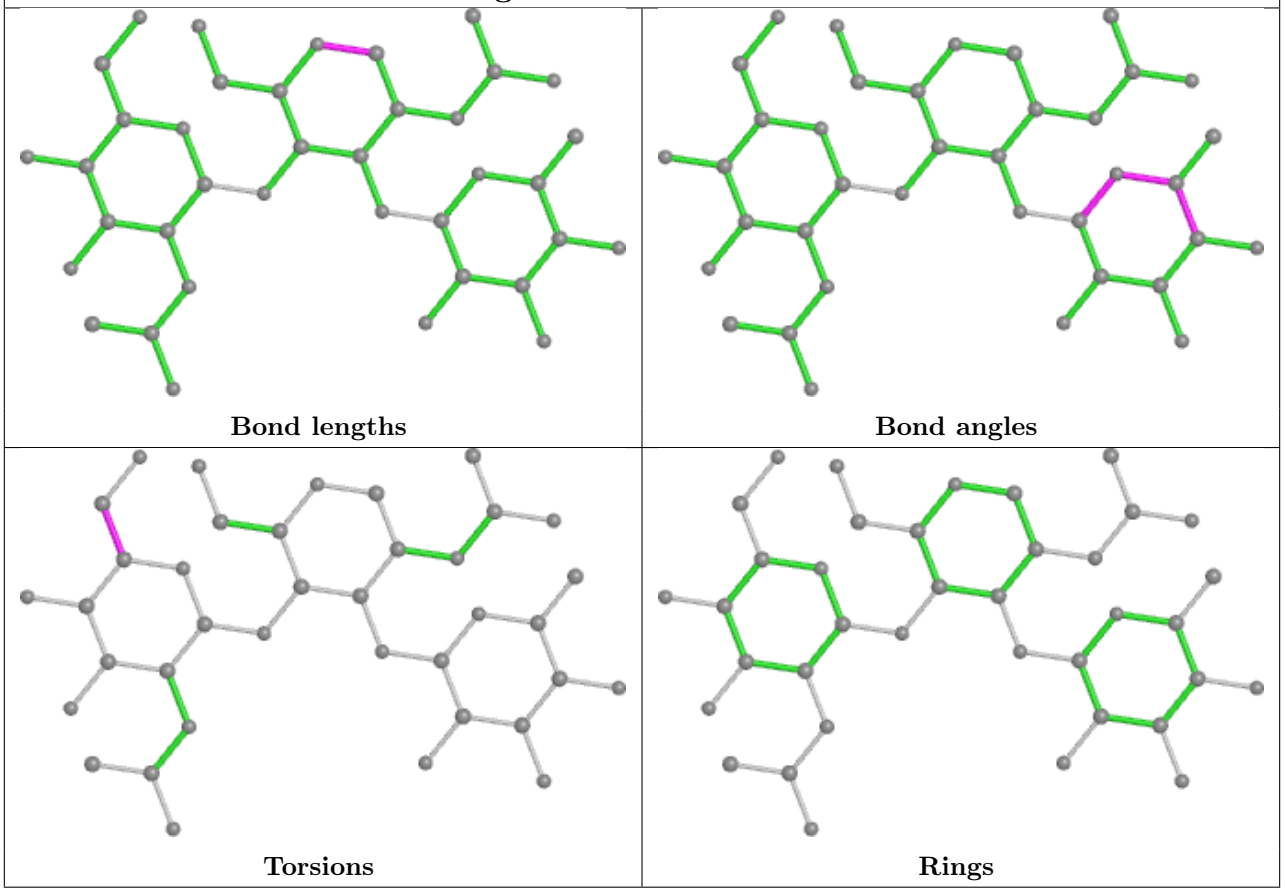


Torsions



Rings

Oligosaccharide Chain H



5.6 Ligand geometry (i)

Of 89 ligands modelled in this entry, 12 are monoatomic - leaving 77 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	$\#\|Z\| > 2$
9	EDO	C	510	-	3,3,3	0.40	0	2,2,2	0.24	0
9	EDO	B	514	-	3,3,3	0.57	0	2,2,2	0.16	0
9	EDO	D	515	-	3,3,3	0.43	0	2,2,2	0.32	0
9	EDO	B	517	-	3,3,3	0.51	0	2,2,2	0.37	0
10	GOL	A	528[B]	-	5,5,5	0.98	0	5,5,5	0.91	0
10	GOL	B	520	-	5,5,5	0.99	0	5,5,5	0.83	0
5	NAG	C	503	1	14,14,15	0.78	1 (7%)	17,19,21	0.46	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
7	SO4	A	511	-	4,4,4	0.13	0	6,6,6	0.24	0
9	EDO	C	516	-	3,3,3	0.46	0	2,2,2	0.40	0
5	NAG	A	504	1	14,14,15	0.91	1 (7%)	17,19,21	0.68	1 (5%)
10	GOL	A	525	-	5,5,5	0.85	0	5,5,5	1.08	0
10	GOL	A	526	-	5,5,5	1.04	0	5,5,5	0.83	0
11	PGE	A	529	-	9,9,9	0.31	0	8,8,8	0.60	0
7	SO4	D	513	-	4,4,4	0.17	0	6,6,6	0.15	0
7	SO4	C	509	-	4,4,4	0.19	0	6,6,6	0.23	0
9	EDO	B	518	-	3,3,3	0.49	0	2,2,2	0.28	0
10	GOL	B	523	-	5,5,5	0.78	0	5,5,5	1.11	1 (20%)
9	EDO	D	516	-	3,3,3	0.47	0	2,2,2	0.28	0
9	EDO	C	512	-	3,3,3	0.41	0	2,2,2	0.48	0
9	EDO	A	518	-	3,3,3	0.34	0	2,2,2	0.76	0
14	FLC	C	525	-	12,12,12	1.10	1 (8%)	17,17,17	1.87	5 (29%)
9	EDO	A	517	-	3,3,3	0.52	0	2,2,2	0.23	0
5	NAG	D	508	1	14,14,15	0.92	1 (7%)	17,19,21	0.88	1 (5%)
5	NAG	B	504	1	14,14,15	0.40	0	17,19,21	0.47	0
9	EDO	A	519	-	3,3,3	0.44	0	2,2,2	0.40	0
9	EDO	C	518	-	3,3,3	0.49	0	2,2,2	0.33	0
7	SO4	B	511	-	4,4,4	0.14	0	6,6,6	0.28	0
9	EDO	A	516	-	3,3,3	0.53	0	2,2,2	0.23	0
7	SO4	D	512	-	4,4,4	0.14	0	6,6,6	0.16	0
7	SO4	D	509	-	4,4,4	0.16	0	6,6,6	0.26	0
7	SO4	D	511	-	4,4,4	0.16	0	6,6,6	0.13	0
14	FLC	C	524	-	12,12,12	1.06	0	17,17,17	1.61	4 (23%)
9	EDO	C	511	-	3,3,3	0.52	0	2,2,2	0.30	0
9	EDO	B	516	-	3,3,3	0.41	0	2,2,2	0.57	0
9	EDO	D	518	-	3,3,3	0.54	0	2,2,2	0.21	0
9	EDO	D	517	-	3,3,3	0.45	0	2,2,2	0.40	0
10	GOL	B	522	-	5,5,5	0.71	0	5,5,5	1.04	0
10	GOL	A	524	-	5,5,5	0.86	0	5,5,5	0.97	0
9	EDO	C	513	-	3,3,3	0.36	0	2,2,2	0.61	0
10	GOL	A	527	-	5,5,5	0.72	0	5,5,5	1.00	0
9	EDO	A	520	-	3,3,3	0.49	0	2,2,2	0.33	0
5	NAG	B	503	1	14,14,15	0.51	0	17,19,21	0.66	1 (5%)
9	EDO	B	513	-	3,3,3	0.44	0	2,2,2	0.67	0
11	PGE	A	530	-	6,6,9	0.28	0	5,5,8	0.38	0
7	SO4	A	510	-	4,4,4	0.09	0	6,6,6	0.22	0
9	EDO	C	519	-	3,3,3	0.46	0	2,2,2	0.43	0
9	EDO	A	521	-	3,3,3	0.43	0	2,2,2	0.51	0
10	GOL	C	522	-	5,5,5	0.95	0	5,5,5	1.04	0
9	EDO	C	517	-	3,3,3	0.44	0	2,2,2	0.42	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
11	PGE	C	526	-	6,6,9	0.32	0	5,5,8	0.38	0
6	AD9	C	508	15	24,33,33	1.42	2 (8%)	26,52,52	1.37	4 (15%)
9	EDO	C	515	-	3,3,3	0.45	0	2,2,2	0.46	0
9	EDO	B	519	-	3,3,3	0.50	0	2,2,2	0.36	0
7	SO4	D	510	-	4,4,4	0.13	0	6,6,6	0.32	0
5	NAG	A	503	1	14,14,15	0.37	0	17,19,21	0.53	0
10	GOL	C	523	-	5,5,5	0.77	0	5,5,5	1.02	0
10	GOL	A	523	-	5,5,5	0.92	0	5,5,5	1.00	0
5	NAG	B	505	1	14,14,15	0.29	0	17,19,21	0.84	1 (5%)
10	GOL	A	528[A]	-	5,5,5	0.98	0	5,5,5	0.90	0
9	EDO	B	515	-	3,3,3	0.39	0	2,2,2	0.74	0
10	GOL	D	519	-	5,5,5	0.94	0	5,5,5	0.95	0
12	P4J	B	509	3,4,8	14,39,39	3.94	7 (50%)	12,63,63	1.91	3 (25%)
9	EDO	A	514	-	3,3,3	0.50	0	2,2,2	0.32	0
11	PGE	B	524	-	6,6,9	0.30	0	5,5,8	0.31	0
10	GOL	B	521	-	5,5,5	0.96	0	5,5,5	0.99	0
9	EDO	A	515	-	3,3,3	0.45	0	2,2,2	0.45	0
9	EDO	A	522	-	3,3,3	0.48	0	2,2,2	0.33	0
5	NAG	C	507	1	14,14,15	0.35	0	17,19,21	0.71	0
5	NAG	D	503	1	14,14,15	0.35	0	17,19,21	0.56	0
9	EDO	C	521	-	3,3,3	0.48	0	2,2,2	0.29	0
6	AD9	A	509	15,4	24,33,33	1.51	3 (12%)	26,52,52	1.56	5 (19%)
7	SO4	B	510	-	4,4,4	0.15	0	6,6,6	0.09	0
7	SO4	A	512	-	4,4,4	0.13	0	6,6,6	0.17	0
9	EDO	C	514	-	3,3,3	0.55	0	2,2,2	0.28	0
5	NAG	D	507	1	14,14,15	0.33	0	17,19,21	0.73	1 (5%)
5	NAG	A	508	-	14,14,15	0.43	0	17,19,21	1.71	2 (11%)
9	EDO	C	520	-	3,3,3	0.49	0	2,2,2	0.35	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
10	GOL	A	523	-	-	2/4/4/4	-
9	EDO	C	510	-	-	0/1/1/1	-
5	NAG	B	505	1	-	0/6/23/26	0/1/1/1
9	EDO	C	512	-	-	0/1/1/1	-
9	EDO	B	514	-	-	0/1/1/1	-
9	EDO	C	513	-	-	0/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
9	EDO	B	515	-	-	1/1/1/1	-
10	GOL	A	524	-	-	2/4/4/4	-
10	GOL	A	527	-	-	4/4/4/4	-
9	EDO	A	520	-	-	1/1/1/1	-
5	NAG	B	503	1	-	2/6/23/26	0/1/1/1
9	EDO	B	513	-	-	1/1/1/1	-
9	EDO	B	517	-	-	1/1/1/1	-
9	EDO	D	515	-	-	0/1/1/1	-
9	EDO	A	518	-	-	1/1/1/1	-
10	GOL	D	519	-	-	0/4/4/4	-
14	FLC	C	525	-	-	1/16/16/16	-
9	EDO	A	517	-	-	1/1/1/1	-
10	GOL	A	528[B]	-	-	0/4/4/4	-
10	GOL	B	520	-	-	2/4/4/4	-
5	NAG	D	508	1	-	0/6/23/26	0/1/1/1
5	NAG	B	504	1	-	0/6/23/26	0/1/1/1
5	NAG	C	503	1	-	2/6/23/26	0/1/1/1
9	EDO	A	519	-	-	1/1/1/1	-
12	P4J	B	509	3,4,8	-	2/2/54/54	0/2/2/2
9	EDO	C	518	-	-	1/1/1/1	-
9	EDO	A	514	-	-	1/1/1/1	-
9	EDO	C	516	-	-	0/1/1/1	-
11	PGE	A	530	-	-	2/4/4/7	-
10	GOL	B	521	-	-	2/4/4/4	-
9	EDO	A	515	-	-	0/1/1/1	-
11	PGE	B	524	-	-	2/4/4/7	-
5	NAG	A	504	1	-	1/6/23/26	0/1/1/1
9	EDO	C	519	-	-	1/1/1/1	-
9	EDO	A	516	-	-	0/1/1/1	-
10	GOL	A	525	-	-	0/4/4/4	-
9	EDO	A	522	-	-	0/1/1/1	-
5	NAG	C	507	1	-	0/6/23/26	0/1/1/1
9	EDO	A	521	-	-	1/1/1/1	-
10	GOL	A	526	-	-	2/4/4/4	-
5	NAG	D	503	1	-	1/6/23/26	0/1/1/1
14	FLC	C	524	-	-	6/16/16/16	-
9	EDO	C	521	-	-	0/1/1/1	-
10	GOL	C	522	-	-	0/4/4/4	-
11	PGE	A	529	-	-	4/7/7/7	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	AD9	A	509	15,4	-	5/12/38/38	0/3/3/3
9	EDO	C	517	-	-	0/1/1/1	-
9	EDO	C	511	-	-	0/1/1/1	-
11	PGE	C	526	-	-	2/4/4/7	-
9	EDO	C	514	-	-	0/1/1/1	-
9	EDO	B	516	-	-	0/1/1/1	-
6	AD9	C	508	15	-	5/12/38/38	0/3/3/3
9	EDO	C	515	-	-	0/1/1/1	-
9	EDO	B	518	-	-	0/1/1/1	-
9	EDO	B	519	-	-	0/1/1/1	-
9	EDO	D	518	-	-	1/1/1/1	-
10	GOL	B	523	-	-	1/4/4/4	-
5	NAG	D	507	1	-	0/6/23/26	0/1/1/1
9	EDO	D	516	-	-	1/1/1/1	-
9	EDO	D	517	-	-	1/1/1/1	-
10	GOL	A	528[A]	-	-	2/4/4/4	-
10	GOL	B	522	-	-	2/4/4/4	-
5	NAG	A	508	-	-	4/6/23/26	0/1/1/1
5	NAG	A	503	1	-	0/6/23/26	0/1/1/1
9	EDO	C	520	-	-	1/1/1/1	-
10	GOL	C	523	-	-	3/4/4/4	-

The worst 5 of 16 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	B	509	P4J	O03-C01	-9.63	1.27	1.41
12	B	509	P4J	O03-C05	7.93	1.62	1.45
6	A	509	AD9	O4'-C1'	4.63	1.47	1.41
12	B	509	P4J	C03-C05	-4.62	1.40	1.52
6	C	508	AD9	O4'-C1'	4.42	1.47	1.41

The worst 5 of 29 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	508	NAG	C1-O5-C5	6.23	120.63	112.19
14	C	525	FLC	OB1-CBC-CB	-4.44	115.97	122.25
6	A	509	AD9	O3B-PB-O1B	-4.27	95.02	110.99
6	C	508	AD9	O3B-PB-O1B	-3.99	96.05	110.99
12	B	509	P4J	O02-C03-C02	3.97	120.48	110.88

There are no chirality outliers.

5 of 76 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	509	AD9	C5'-O5'-PA-O3A
10	A	523	GOL	O1-C1-C2-C3
10	A	526	GOL	O1-C1-C2-C3
10	A	527	GOL	C1-C2-C3-O3
10	A	528[A]	GOL	O1-C1-C2-C3

There are no ring outliers.

35 monomers are involved in 62 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	C	510	EDO	2	0
9	D	515	EDO	2	0
10	B	520	GOL	1	0
10	A	525	GOL	1	0
10	A	526	GOL	2	0
11	A	529	PGE	1	0
7	D	513	SO4	2	0
7	C	509	SO4	1	0
9	D	516	EDO	3	0
9	C	512	EDO	1	0
9	A	518	EDO	5	0
14	C	525	FLC	2	0
9	A	519	EDO	2	0
9	C	518	EDO	1	0
7	D	509	SO4	1	0
7	D	511	SO4	1	0
14	C	524	FLC	1	0
10	B	522	GOL	1	0
10	A	524	GOL	1	0
9	C	513	EDO	2	0
10	A	527	GOL	1	0
5	B	503	NAG	1	0
11	A	530	PGE	1	0
9	C	519	EDO	1	0
9	A	521	EDO	2	0
6	C	508	AD9	1	0
9	C	515	EDO	1	0
9	B	519	EDO	1	0
10	C	523	GOL	1	0
10	A	523	GOL	2	0
10	D	519	GOL	2	0

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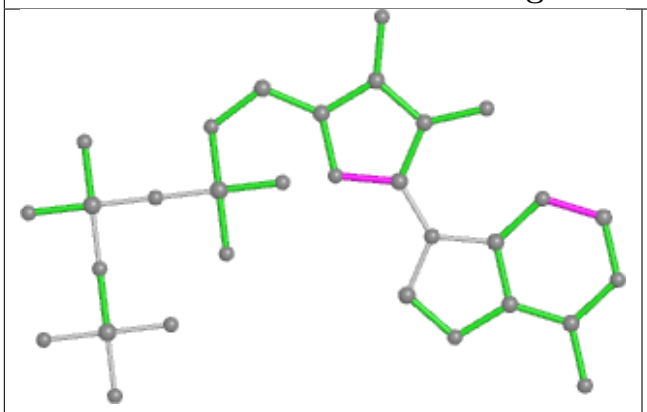
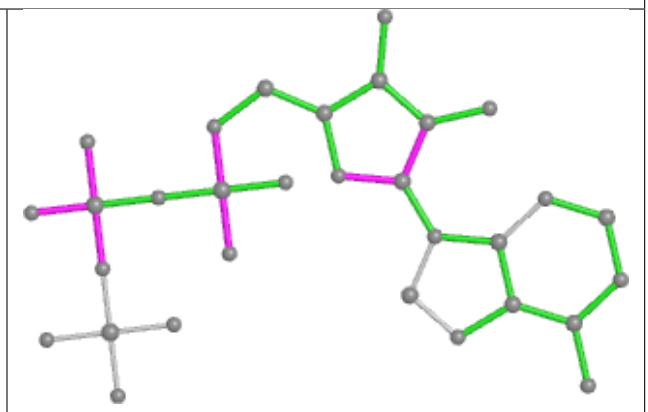
Mol	Chain	Res	Type	Clashes	Symm-Clashes
12	B	509	P4J	7	0
6	A	509	AD9	7	0
5	D	507	NAG	2	0
9	C	520	EDO	1	0

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 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.

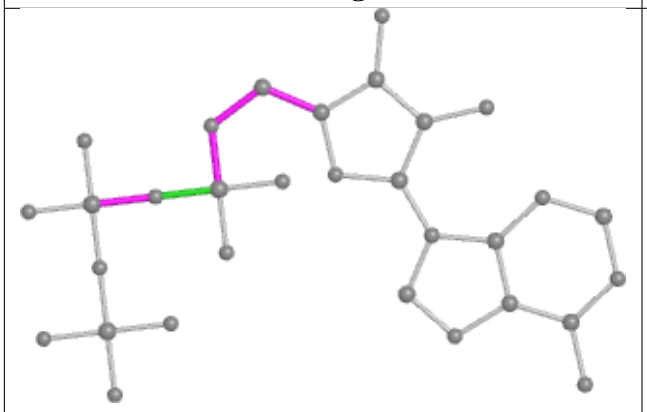
Ligand AD9 C 508



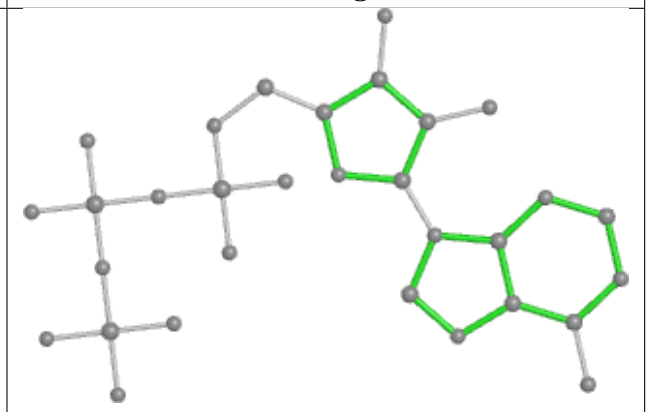
Bond lengths



Bond angles

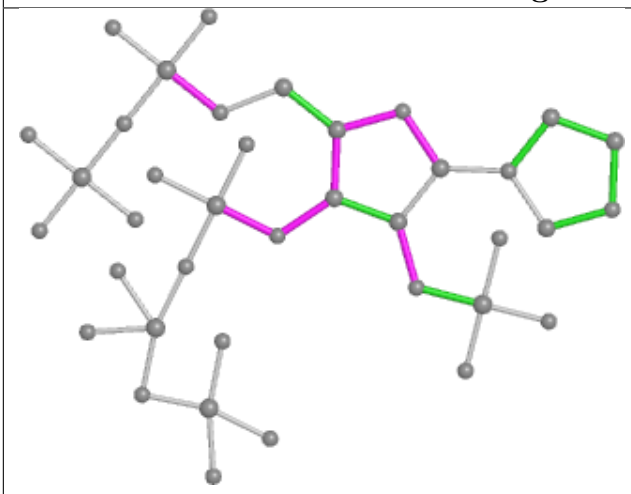


Torsions

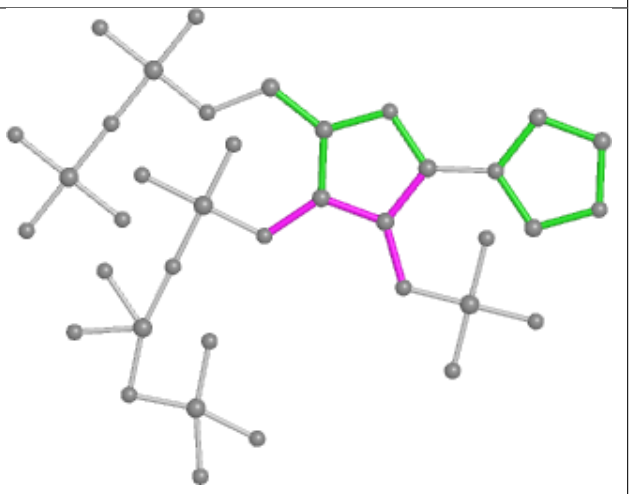


Rings

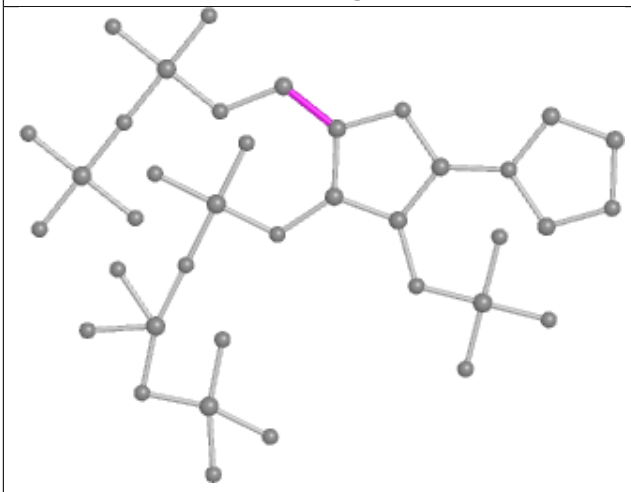
Ligand P4J B 509



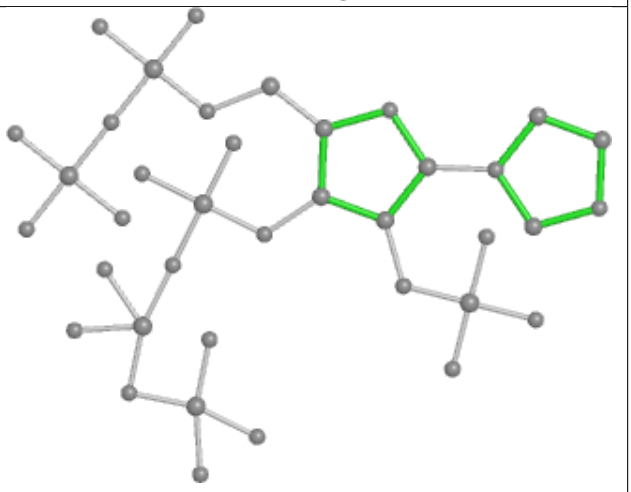
Bond lengths



Bond angles

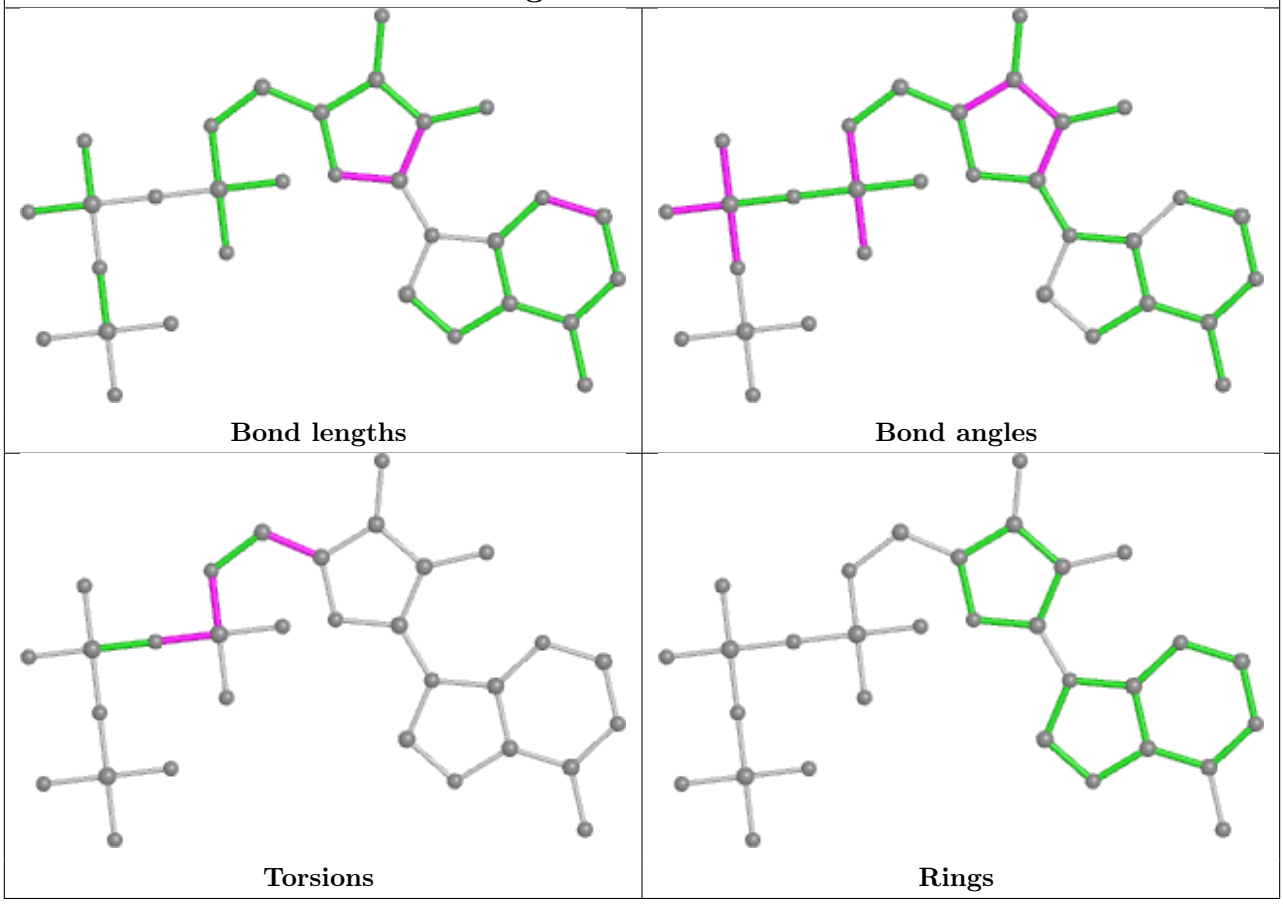


Torsions



Rings

Ligand AD9 A 509



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, 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	424/459 (92%)	-0.86	4 (0%)	84	83	17, 25, 38, 70	0
1	B	425/459 (92%)	-0.68	4 (0%)	84	83	19, 30, 44, 70	0
1	C	423/459 (92%)	-0.79	3 (0%)	87	86	17, 26, 42, 73	0
1	D	423/459 (92%)	-0.75	4 (0%)	84	83	17, 26, 41, 64	0
All	All	1695/1836 (92%)	-0.77	15 (0%)	84	83	17, 27, 42, 73	0

The worst 5 of 15 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	432	THR	4.1
1	A	431	SER	3.8
1	C	64	ASN	3.7
1	B	64	ASN	3.3
1	A	8	ASN	3.2

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

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

6.3 Carbohydrates

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	FUC	H	2	10/11	0.87	0.20	35,43,47,48	10
2	NAG	H	3	14/15	0.88	0.28	30,41,50,54	14

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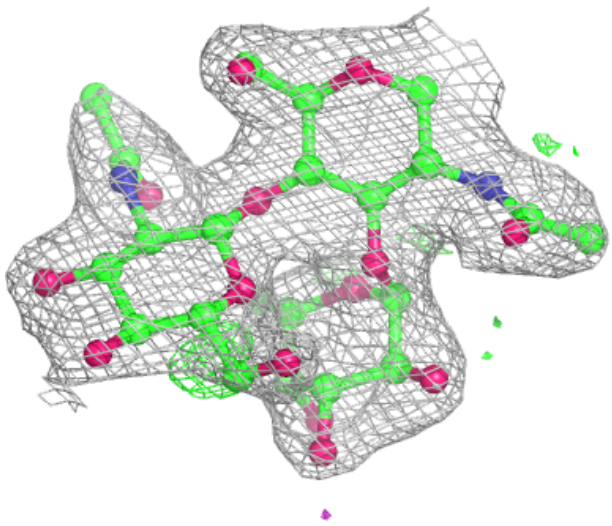
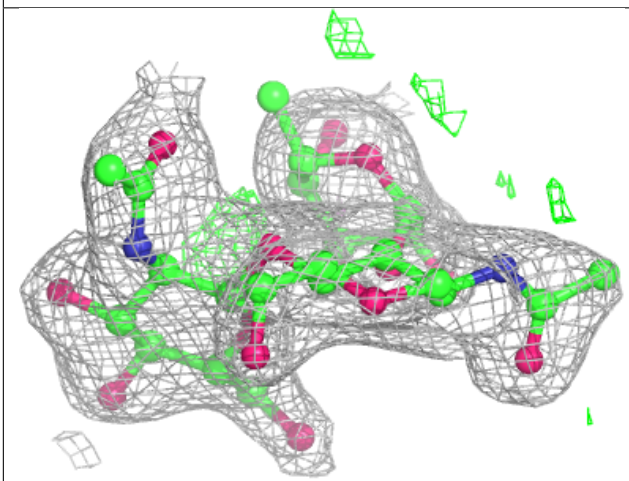
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	FUC	G	2	10/11	0.92	0.24	42,49,52,65	10
2	NAG	G	3	14/15	0.94	0.25	28,40,51,54	14
2	FUC	F	2	10/11	0.94	0.18	36,46,54,58	0
2	FUC	E	2	10/11	0.94	0.27	42,47,52,52	10
2	NAG	E	3	14/15	0.95	0.22	31,45,50,54	14
2	NAG	F	3	14/15	0.95	0.20	39,44,52,57	0
2	NAG	E	1	14/15	0.96	0.13	30,36,45,46	0
2	NAG	H	1	14/15	0.97	0.10	25,35,42,44	0
2	NAG	F	1	14/15	0.97	0.10	34,39,44,46	0
2	NAG	G	1	14/15	0.97	0.09	28,36,45,45	0

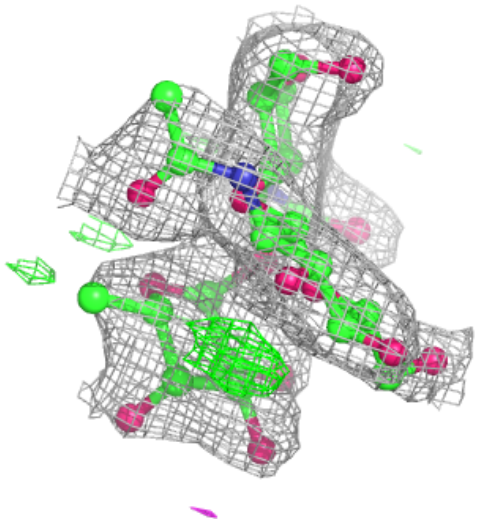
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

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)

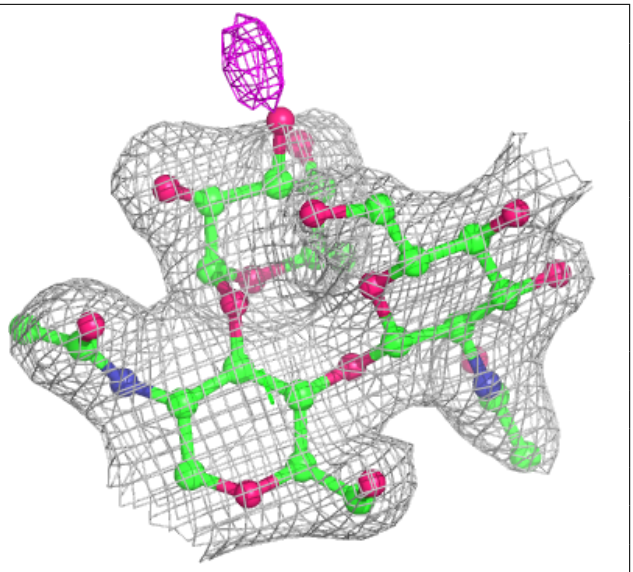


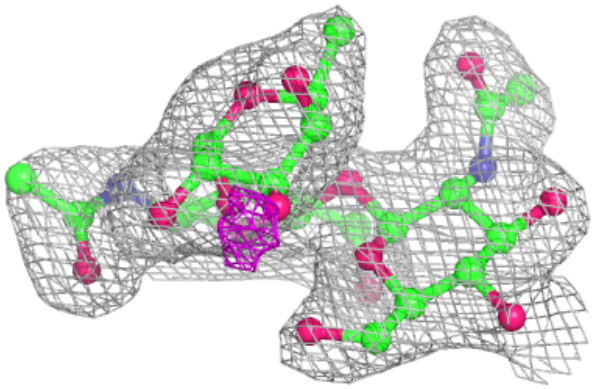


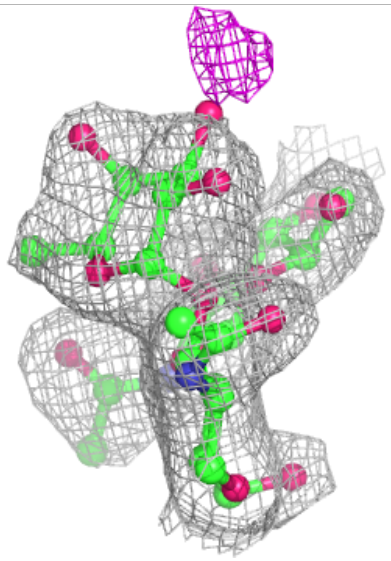


Electron density around Chain F:

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

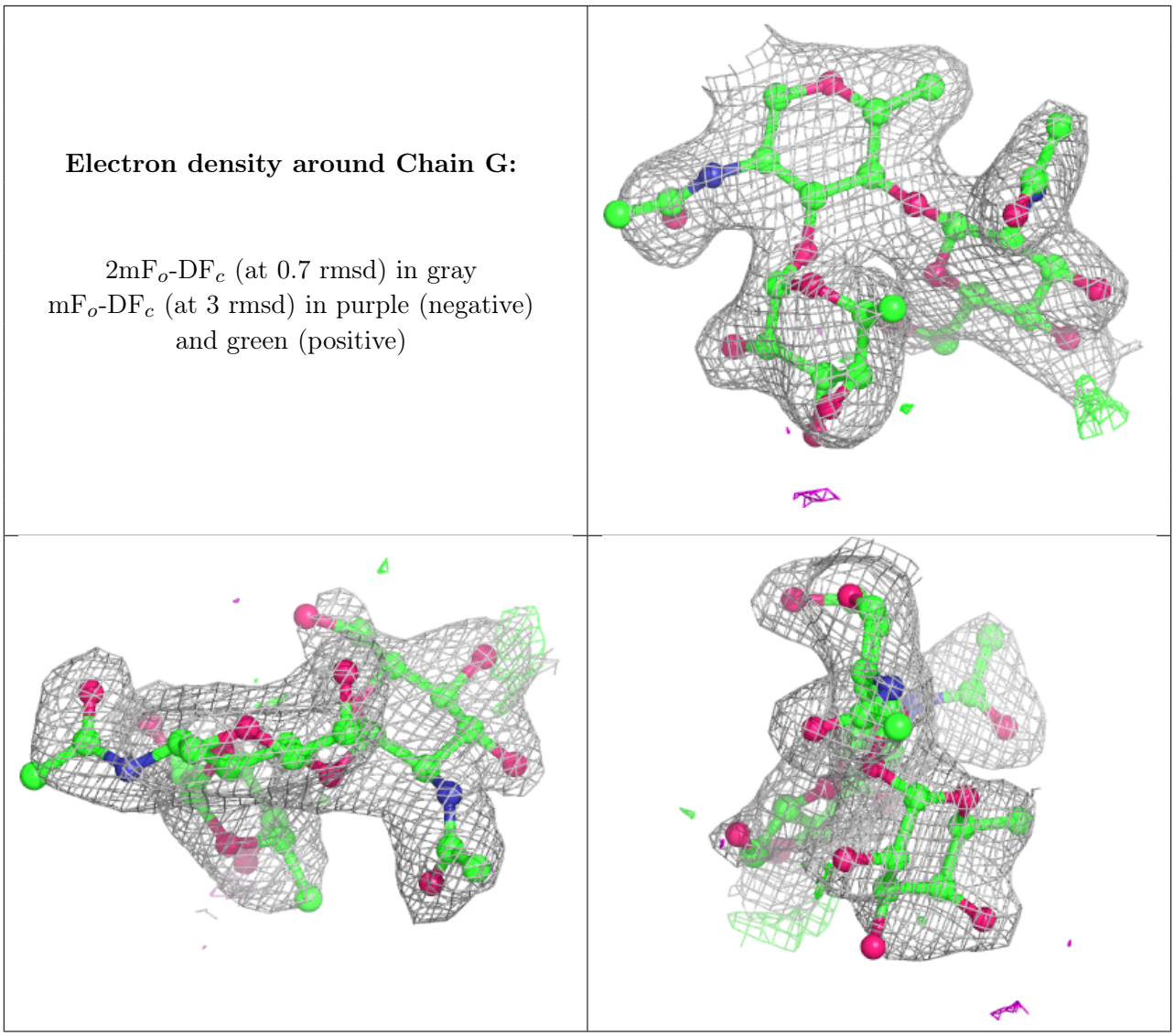






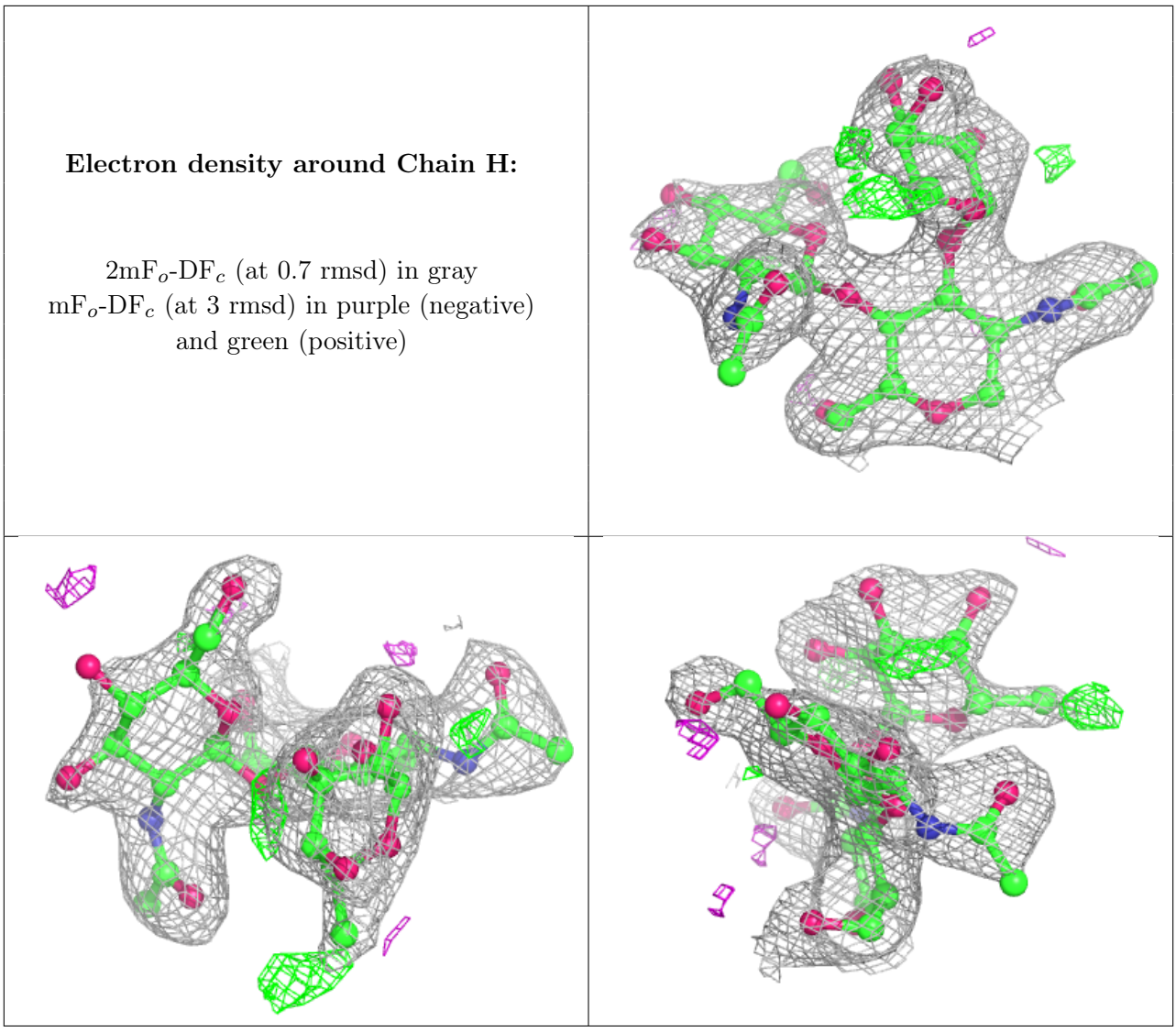
Electron density around Chain G:

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



Electron density around Chain H:

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



6.4 Ligands (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
11	PGE	A	530	7/10	0.71	0.38	45,49,51,59	7
9	EDO	C	516	4/4	0.78	0.65	59,60,67,68	4
9	EDO	C	514	4/4	0.79	0.27	41,44,49,50	4
10	GOL	B	521	6/6	0.82	0.39	61,64,69,70	6
14	FLC	C	524	13/13	0.82	0.25	38,47,53,71	13
10	GOL	C	522	6/6	0.83	0.14	51,51,54,61	0
9	EDO	A	520	4/4	0.83	0.25	40,42,45,49	4

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	NAG	A	508	14/15	0.83	0.24	48,62,69,75	0
6	AD9	A	509	31/31	0.85	0.29	28,43,48,49	31
6	AD9	C	508	31/31	0.85	0.29	35,55,62,63	31
12	P4J	B	509	38/38	0.85	0.27	24,44,55,70	38
10	GOL	B	523	6/6	0.85	0.15	46,50,51,53	6
5	NAG	D	507	14/15	0.86	0.29	37,45,52,53	14
9	EDO	B	518	4/4	0.86	0.25	46,49,50,59	4
9	EDO	C	511	4/4	0.87	0.21	37,39,49,55	4
10	GOL	D	519	6/6	0.87	0.25	58,64,67,68	6
14	FLC	C	525	13/13	0.87	0.25	27,39,43,46	13
5	NAG	B	503	14/15	0.88	0.22	43,55,66,67	14
11	PGE	A	529	10/10	0.88	0.24	28,30,40,41	10
9	EDO	A	516	4/4	0.88	0.17	29,44,47,48	0
8	NA	B	512	1/1	0.89	0.24	66,66,66,66	0
9	EDO	B	517	4/4	0.89	0.35	58,58,61,61	0
9	EDO	C	520	4/4	0.89	0.27	25,42,48,55	4
10	GOL	C	523	6/6	0.90	0.15	39,47,51,52	0
9	EDO	C	512	4/4	0.91	0.21	41,42,48,57	0
5	NAG	B	504	14/15	0.91	0.17	36,41,48,53	14
9	EDO	C	521	4/4	0.92	0.31	52,52,54,59	0
11	PGE	C	526	7/10	0.92	0.19	34,38,45,46	7
10	GOL	A	523	6/6	0.92	0.16	32,41,45,51	0
9	EDO	D	515	4/4	0.92	0.18	27,36,46,47	0
9	EDO	A	514	4/4	0.92	0.17	35,39,42,42	4
10	GOL	A	526	6/6	0.93	0.17	31,32,35,44	6
9	EDO	C	517	4/4	0.93	0.29	41,47,48,68	0
5	NAG	C	503	14/15	0.93	0.16	36,40,49,49	14
9	EDO	A	521	4/4	0.93	0.30	30,34,47,52	4
5	NAG	A	504	14/15	0.93	0.15	36,41,50,57	0
10	GOL	A	524	6/6	0.93	0.18	39,45,48,52	0
9	EDO	D	517	4/4	0.94	0.15	30,32,35,36	4
9	EDO	B	516	4/4	0.94	0.11	38,41,44,49	0
9	EDO	A	519	4/4	0.94	0.14	25,30,32,45	4
5	NAG	D	503	14/15	0.94	0.14	27,34,43,43	0
9	EDO	B	519	4/4	0.94	0.29	49,55,61,68	0
10	GOL	A	527	6/6	0.94	0.13	24,36,40,49	6
5	NAG	B	505	14/15	0.94	0.17	33,36,49,56	0
10	GOL	B	522	6/6	0.94	0.12	29,34,35,37	6
9	EDO	C	519	4/4	0.94	0.17	44,48,52,56	0
9	EDO	C	510	4/4	0.95	0.11	28,33,37,40	4
9	EDO	C	518	4/4	0.95	0.39	34,37,44,62	0
9	EDO	A	518	4/4	0.95	0.12	29,34,40,42	0

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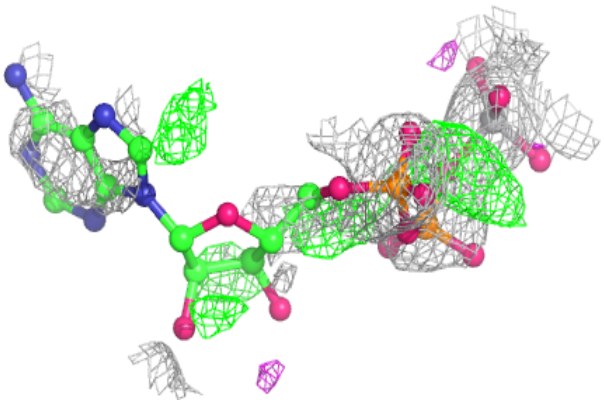
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
10	GOL	A	528[A]	6/6	0.95	0.17	32,34,37,38	6
10	GOL	A	528[B]	6/6	0.95	0.17	30,34,38,38	6
10	GOL	B	520	6/6	0.95	0.17	45,49,56,59	0
9	EDO	D	516	4/4	0.95	0.22	31,32,38,54	0
9	EDO	B	514	4/4	0.95	0.09	38,39,45,47	0
9	EDO	D	518	4/4	0.95	0.12	36,39,45,45	0
9	EDO	A	522	4/4	0.96	0.23	57,57,59,62	0
9	EDO	A	517	4/4	0.96	0.19	30,42,52,53	0
9	EDO	C	515	4/4	0.96	0.11	36,37,39,41	0
11	PGE	B	524	7/10	0.96	0.14	47,54,59,61	1
7	SO4	D	511	5/5	0.96	0.22	48,59,61,63	5
5	NAG	D	508	14/15	0.96	0.15	35,45,52,55	0
7	SO4	B	510	5/5	0.96	0.20	40,45,53,55	5
7	SO4	D	510	5/5	0.96	0.11	28,36,53,63	5
5	NAG	C	507	14/15	0.97	0.11	29,33,41,43	0
5	NAG	A	503	14/15	0.97	0.10	29,35,44,44	0
9	EDO	A	515	4/4	0.97	0.08	22,25,31,44	0
9	EDO	C	513	4/4	0.97	0.10	22,22,25,45	0
7	SO4	D	512	5/5	0.97	0.16	35,36,46,47	5
9	EDO	B	513	4/4	0.97	0.18	39,42,47,49	0
7	SO4	D	513	5/5	0.97	0.19	43,43,49,51	5
7	SO4	C	509	5/5	0.97	0.28	40,40,43,49	5
7	SO4	A	511	5/5	0.98	0.21	36,40,50,52	5
9	EDO	B	515	4/4	0.98	0.17	35,40,42,47	0
10	GOL	A	525	6/6	0.98	0.08	23,25,28,30	0
7	SO4	B	511	5/5	0.99	0.09	37,38,45,49	5
8	NA	A	513	1/1	0.99	0.05	17,17,17,17	0
7	SO4	D	509	5/5	0.99	0.12	22,24,29,33	5
7	SO4	A	510	5/5	0.99	0.06	31,33,35,41	0
4	FE	D	502	1/1	0.99	0.03	36,36,36,36	1
7	SO4	A	512	5/5	0.99	0.09	27,37,42,45	5
4	FE	B	502	1/1	0.99	0.04	27,27,27,27	1
3	ZN	D	501	1/1	1.00	0.01	25,25,25,25	1
3	ZN	C	501	1/1	1.00	0.03	30,30,30,30	0
8	NA	D	514	1/1	1.00	0.07	15,15,15,15	0
4	FE	A	502	1/1	1.00	0.02	26,26,26,26	1
3	ZN	A	501	1/1	1.00	0.03	27,27,27,27	1
13	CL	B	525	1/1	1.00	0.03	21,21,21,21	1
3	ZN	B	501	1/1	1.00	0.03	29,29,29,29	0
4	FE	C	502	1/1	1.00	0.03	25,25,25,25	1

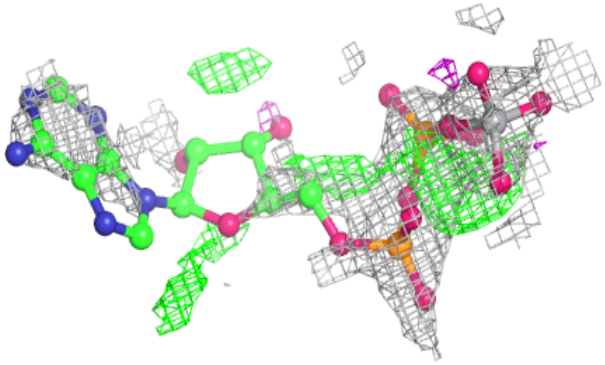
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers

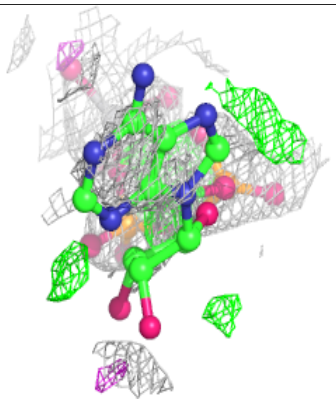
as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around AD9 A 509:

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

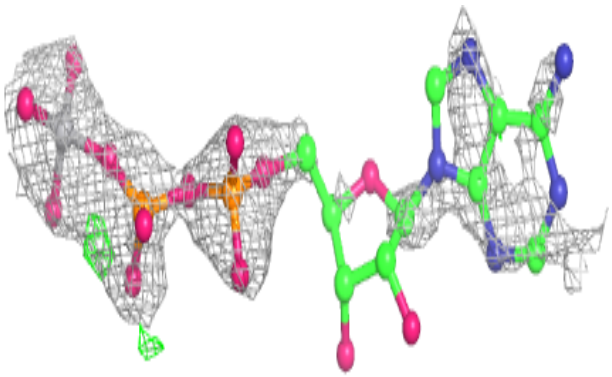


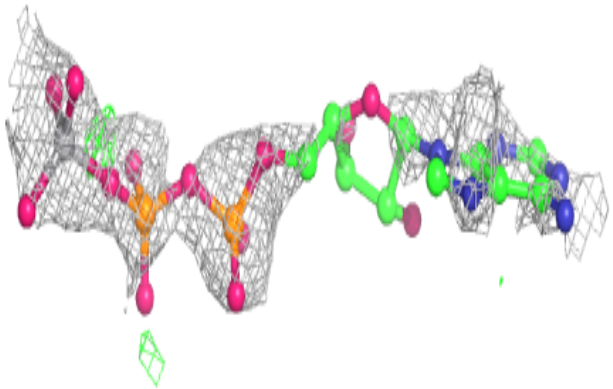


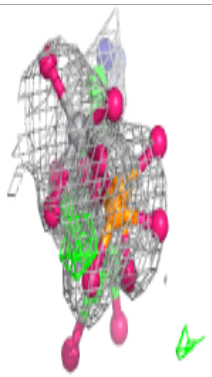


Electron density around AD9 C 508:

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

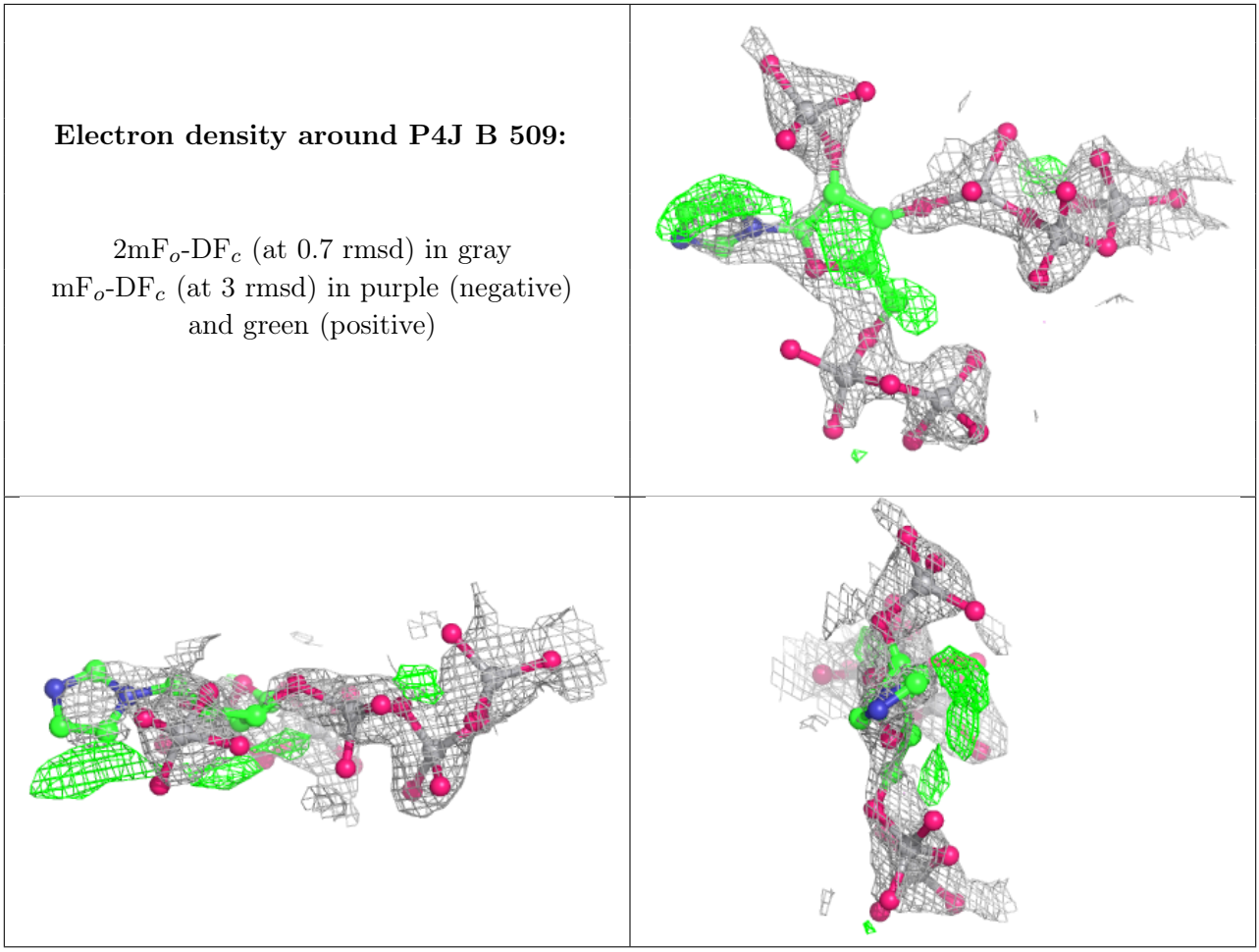






Electron density around P4J B 509:

$2mF_o$-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

There are no such residues in this entry.