Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2026 – 03:18 AM UTC

PDB ID	:	5SVL / pdb_00005svl
Title	:	Crystal structure of the ATP-gated human P2X3 ion channel in the ATP-bound, closed (desensitized) state
Authors	:	Mansoor, S.E.; Lu, W.; Oosterheert, W.; Shekhar, M.; Tajkhorshid, E.; Gouaux, E.
Deposited on	:	2016-08-06
Resolution	:	2.90 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references ⓘ) were used in the production of this report:

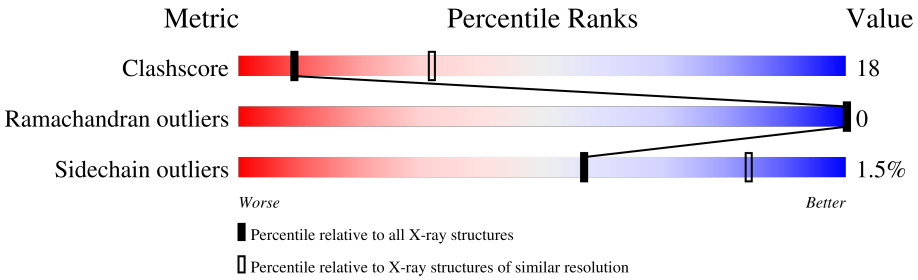
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	NOT EXECUTED
Xtriage (Phenix)	:	2.0
EDS	:	NOT EXECUTED
Buster-report	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	190562	2690 (2.90-2.90)
Ramachandran outliers	187476	2623 (2.90-2.90)
Sidechain outliers	187428	2625 (2.90-2.90)

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

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	363	60% 31% · 8%
1	B	363	55% 33% 12%
2	C	2	100%

2 Entry composition (i)

There are 9 unique types of molecules in this entry. The entry contains 5446 atoms, of which 130 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 P2X purinoceptor 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	333	Total	C	N	O	S	0	0	0
			2565	1650	426	471	18			
1	B	318	Total	C	N	O	S	0	0	0
			2443	1574	399	452	18			

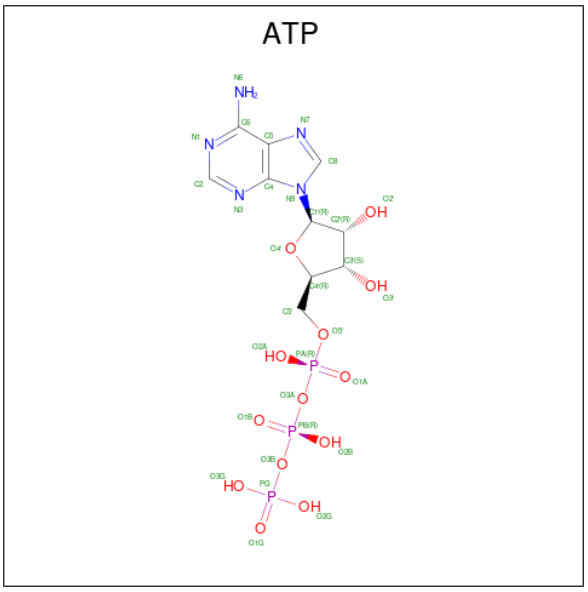
There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	2	GLY	-	expression tag	UNP P56373
A	3	SER	-	expression tag	UNP P56373
A	4	ARG	-	expression tag	UNP P56373
A	5	ALA	-	expression tag	UNP P56373
B	2	GLY	-	expression tag	UNP P56373
B	3	SER	-	expression tag	UNP P56373
B	4	ARG	-	expression tag	UNP P56373
B	5	ALA	-	expression tag	UNP P56373

- Molecule 2 is an oligosaccharide called alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose.

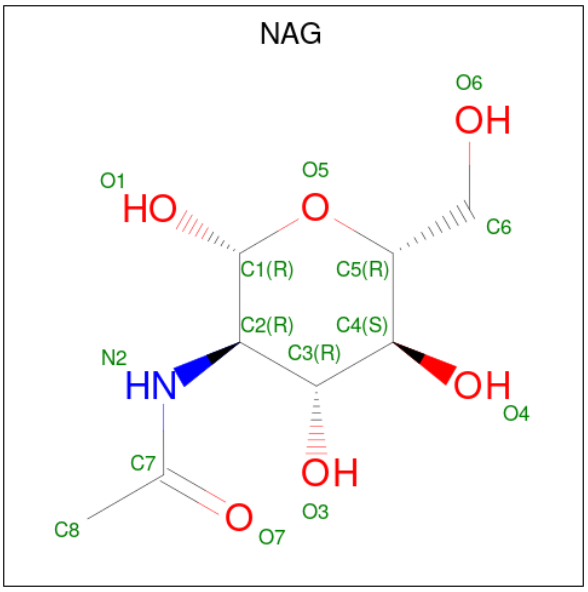
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	C	2	Total	C	H	O	0	0	0
			45	12	22	11			

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
3	A	1	Total	C	H	N	O	P	0	0
			43	10	12	5	13	3		
3	B	1	Total	C	H	N	O	P	0	0
			43	10	12	5	13	3		

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	H	N	O	0	0
			28	8	14	1	5		

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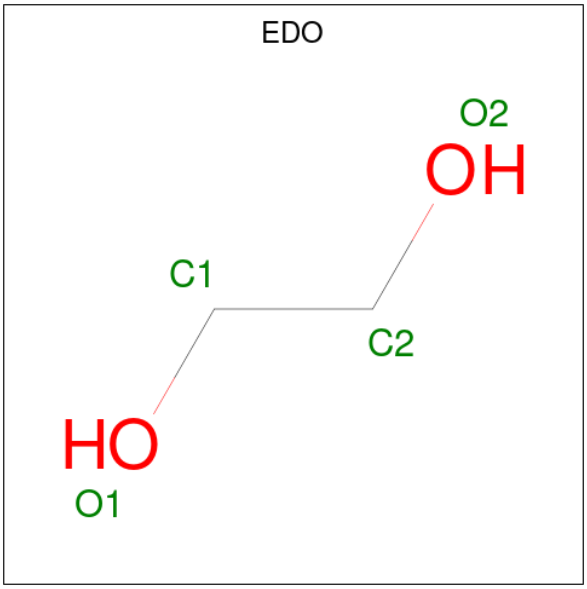
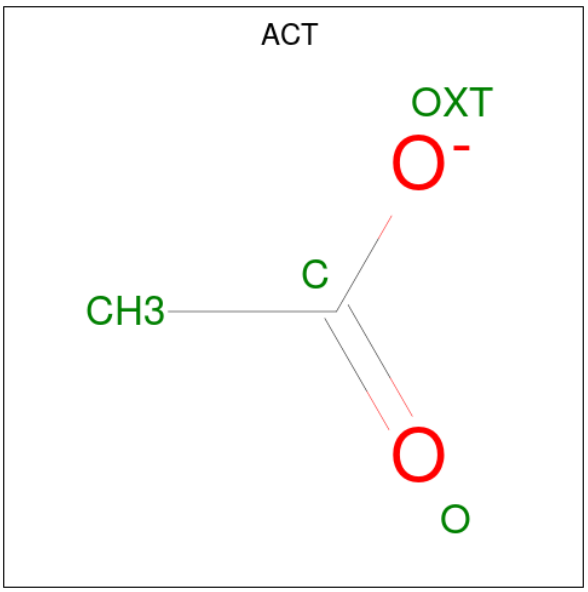
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	H	N	O	0	0
			28	8	14	1	5		
4	A	1	Total	C	H	N	O	0	0
			28	8	14	1	5		
4	B	1	Total	C	H	N	O	0	0
			28	8	14	1	5		
4	B	1	Total	C	H	N	O	0	0
			28	8	14	1	5		
4	B	1	Total	C	H	N	O	0	0
			28	8	14	1	5		

- 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	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		
5	A	1	Total	C	O	0	0
			4	2	2		
5	B	1	Total	C	O	0	0
			4	2	2		
5	B	1	Total	C	O	0	0
			4	2	2		

- Molecule 6 is ACETATE ION (CCD ID: ACT) (formula: $C_2H_3O_2$).

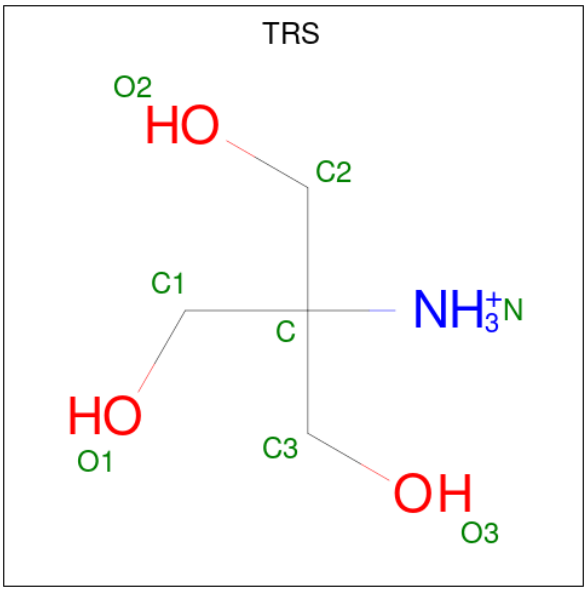


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C O 4 2 2	0	0
6	A	1	Total C O 4 2 2	0	0
6	B	1	Total C O 4 2 2	0	0

- Molecule 7 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	2	Total Na 2 2	0	0
7	B	1	Total Na 1 1	0	0

- Molecule 8 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (CCD ID: TRS) (formula: $C_4H_{12}NO_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total C N O 8 4 1 3	0	0

- Molecule 9 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	48	Total O 48 48	0	0
9	B	44	Total O 44 44	0	0

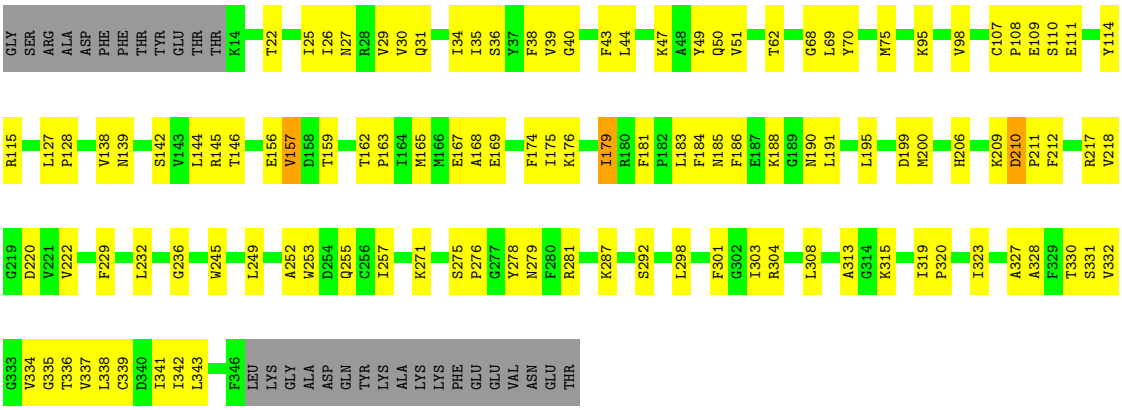
3 Residue-property plots (i)

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. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

Note EDS was not executed.

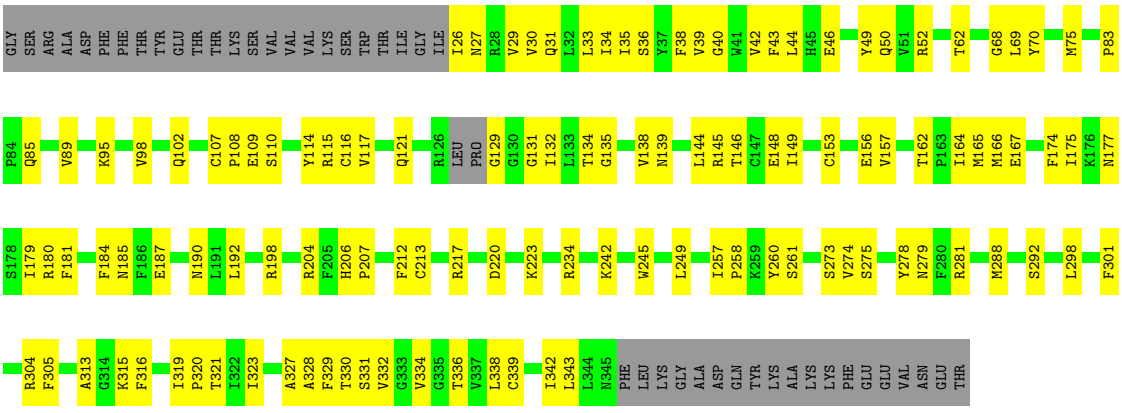
• Molecule 1: P2X purinoceptor 3

Chain A:



• Molecule 1: P2X purinoceptor 3

Chain B:



• Molecule 2: alpha-D-glucopyranose-(1-4)-alpha-D-glucopyranose

Chain C:


CLC2
CLC1

4 Data and refinement statistics (i)

EDS was not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 3	Depositor
Cell constants a, b, c, α, β, γ	172.14Å 172.14Å 172.14Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	76.98 – 2.90	Depositor
% Data completeness (in resolution range)	85.5 (76.98-2.90)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.58 (at 2.91Å)	Xtriage
Refinement program	PHENIX dev_1634	Depositor
R, R_{free}	0.205 , 0.240	Depositor
Wilson B-factor (Å^2)	81.9	Xtriage
Anisotropy	0.000	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.037 for l,-k,h	Xtriage
Total number of atoms	5446	wwPDB-VP
Average B, all atoms (Å^2)	89.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.26% 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: EDO, NA, TRS, GLC, ACT, ATP, NAG

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	0.43	0/2621	0.97	6/3558 (0.2%)
1	B	0.42	0/2497	0.94	8/3392 (0.2%)
All	All	0.43	0/5118	0.96	14/6950 (0.2%)

There are no bond length outliers.

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	210	ASP	CA-C-N	8.47	128.20	119.56
1	A	210	ASP	C-N-CA	8.47	128.20	119.56
1	A	157	VAL	N-CA-C	8.10	117.95	106.53
1	A	162	THR	CA-C-N	6.68	126.86	120.31
1	A	162	THR	C-N-CA	6.68	126.86	120.31
1	B	162	THR	CA-C-N	-6.43	114.01	120.31
1	B	162	THR	C-N-CA	-6.43	114.01	120.31
1	A	236	GLY	N-CA-C	-6.26	104.79	112.68
1	B	274	VAL	N-CA-C	5.87	116.65	110.72
1	B	213	CYS	CA-C-N	5.86	125.48	119.56
1	B	213	CYS	C-N-CA	5.86	125.48	119.56
1	B	42	VAL	N-CA-C	5.53	115.72	110.53
1	B	135	GLY	N-CA-C	-5.48	108.09	115.21
1	B	131	GLY	N-CA-C	5.36	119.76	111.08

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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	2565	0	2526	94	1
1	B	2443	0	2387	92	1
2	C	23	22	21	0	0
3	A	31	12	12	2	0
3	B	31	12	12	2	0
4	A	42	42	39	2	0
4	B	42	42	39	2	0
5	A	16	0	24	6	0
5	B	8	0	12	3	0
6	A	8	0	6	0	0
6	B	4	0	3	0	0
7	A	2	0	0	0	0
7	B	1	0	0	0	0
8	A	8	0	12	0	0
9	A	48	0	0	4	0
9	B	44	0	0	3	0
All	All	5316	130	5093	188	1

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 18.

All (188) 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:A:75:MET:HB2	1:A:165:MET:HE1	1.33	1.05
1:B:115:ARG:HA	1:B:146:THR:HG22	1.45	0.97
1:A:31:GLN:HG2	1:A:336:THR:HG22	1.47	0.96
1:B:27:ASN:HB2	1:B:343:LEU:CD1	1.97	0.94
1:B:31:GLN:HG2	1:B:336:THR:HG22	1.49	0.94
1:B:75:MET:HB2	1:B:165:MET:HE1	1.56	0.88
1:A:319:ILE:HB	1:A:320:PRO:HD3	1.55	0.87
1:A:279:ASN:H	5:A:409:EDO:H22	1.38	0.84
1:B:319:ILE:HB	1:B:320:PRO:HD3	1.61	0.83
1:B:156:GLU:OE2	1:B:281:ARG:NH1	2.16	0.80
1:B:180:ARG:NH2	1:B:185:ASN:HA	1.97	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:184:PHE:HD2	1:A:249:LEU:HD12	1.51	0.76
1:A:75:MET:CB	1:A:165:MET:HE1	2.14	0.75
1:A:184:PHE:CD2	1:A:249:LEU:HD12	2.23	0.73
1:A:51:VAL:HG13	1:A:320:PRO:HG2	1.69	0.73
1:A:115:ARG:HA	1:A:146:THR:HG22	1.71	0.73
1:B:212:PHE:HZ	1:B:257:ILE:HD12	1.54	0.73
1:B:212:PHE:HE1	1:B:257:ILE:HB	1.56	0.70
1:B:177:ASN:HB3	1:B:190:ASN:HB2	1.74	0.70
1:B:190:ASN:OD1	1:B:260:TYR:OH	2.10	0.69
1:A:95:LYS:HB3	1:A:301:PHE:HB2	1.73	0.69
1:B:339:CYS:O	1:B:343:LEU:HG	1.93	0.68
1:B:184:PHE:HD2	1:B:249:LEU:HD12	1.60	0.67
1:A:156:GLU:OE2	1:A:281:ARG:NH1	2.28	0.67
1:A:175:ILE:O	1:A:190:ASN:ND2	2.26	0.65
1:A:142:SER:O	5:A:408:EDO:H22	1.97	0.64
1:B:95:LYS:HB3	1:B:301:PHE:HB2	1.78	0.64
1:A:206:HIS:HB3	1:A:209:LYS:HB2	1.80	0.63
1:B:114:TYR:HH	1:B:129:GLY:N	1.97	0.63
1:A:271:LYS:HE3	9:A:525:HOH:O	1.98	0.63
4:A:402:NAG:H62	1:B:273:SER:HB2	1.81	0.63
1:A:31:GLN:O	1:A:35:ILE:HG12	1.99	0.62
1:B:27:ASN:HB2	1:B:343:LEU:HD12	1.80	0.62
1:B:109:GLU:HG2	1:B:114:TYR:CD1	2.35	0.62
1:A:281:ARG:NH2	3:A:401:ATP:O3G	2.33	0.62
1:B:192:LEU:HD11	1:B:212:PHE:CD1	2.35	0.61
1:B:330:THR:O	1:B:334:VAL:HG23	2.00	0.61
1:A:51:VAL:CG1	1:A:320:PRO:HG2	2.30	0.61
1:A:109:GLU:HG2	1:A:114:TYR:CG	2.35	0.61
1:A:304:ARG:NH2	9:A:502:HOH:O	2.33	0.61
1:A:188:LYS:HE3	1:A:253:TRP:CH2	2.36	0.60
1:B:27:ASN:HB2	1:B:343:LEU:HD13	1.83	0.60
1:B:212:PHE:CE1	1:B:257:ILE:HB	2.37	0.60
1:B:279:ASN:H	5:B:406:EDO:H11	1.67	0.60
1:A:232:LEU:HD23	1:A:303:ILE:HD13	1.82	0.60
1:A:275:SER:HB2	3:A:401:ATP:H5'1	1.84	0.60
4:B:403:NAG:O7	4:B:403:NAG:O3	2.16	0.60
1:A:330:THR:O	1:A:334:VAL:HG23	2.02	0.60
1:A:278:TYR:HA	5:A:409:EDO:H21	1.84	0.59
1:B:328:ALA:O	1:B:332:VAL:HG22	2.02	0.59
1:B:327:ALA:O	1:B:330:THR:HG22	2.04	0.58
1:B:184:PHE:CD2	1:B:249:LEU:HD12	2.38	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:212:PHE:CZ	1:B:257:ILE:HD12	2.39	0.57
1:A:252:ALA:HB3	1:A:255:GLN:HG2	1.86	0.57
1:B:180:ARG:NH1	1:B:187:GLU:HG3	2.19	0.57
1:B:180:ARG:HH22	1:B:185:ASN:HA	1.69	0.57
1:B:164:ILE:HD11	1:B:166:MET:SD	2.44	0.57
1:A:139:ASN:ND2	5:A:408:EDO:H21	2.20	0.57
1:A:338:LEU:O	1:A:342:ILE:HG13	2.05	0.57
1:A:68:GLY:HA3	1:A:165:MET:HE2	1.86	0.56
1:B:175:ILE:O	1:B:190:ASN:ND2	2.37	0.56
1:B:204:ARG:NH1	9:B:502:HOH:O	2.34	0.56
1:B:217:ARG:HD3	1:B:220:ASP:OD1	2.05	0.56
1:B:242:LYS:HB2	1:B:261:SER:HB3	1.87	0.55
1:A:339:CYS:O	1:A:343:LEU:HG	2.05	0.55
1:A:327:ALA:O	1:A:330:THR:HG22	2.07	0.54
1:B:26:ILE:HD12	1:B:26:ILE:C	2.33	0.54
1:A:68:GLY:C	1:A:165:MET:HE2	2.32	0.54
1:A:69:LEU:N	1:A:167:GLU:OE1	2.38	0.54
1:A:110:SER:HB2	1:A:157:VAL:HG12	1.89	0.54
1:B:31:GLN:HG2	1:B:336:THR:CG2	2.33	0.54
1:A:319:ILE:O	1:A:323:ILE:HG12	2.08	0.53
1:B:69:LEU:N	1:B:167:GLU:OE2	2.30	0.53
1:A:34:ILE:HD13	1:A:335:GLY:HA3	1.91	0.53
1:B:50:GLN:HG3	1:B:315:LYS:C	2.33	0.53
1:A:26:ILE:C	1:A:26:ILE:HD12	2.34	0.53
1:B:144:LEU:HD12	1:B:145:ARG:N	2.23	0.53
1:A:139:ASN:HA	1:A:145:ARG:HG3	1.91	0.53
1:A:157:VAL:HG22	9:A:529:HOH:O	2.08	0.53
1:A:185:ASN:O	1:A:185:ASN:ND2	2.42	0.53
1:A:169:GLU:HG2	1:A:217:ARG:NH2	2.25	0.52
1:B:281:ARG:NH2	3:B:401:ATP:O3G	2.43	0.52
1:A:328:ALA:O	1:A:332:VAL:HG22	2.08	0.52
1:A:31:GLN:HG2	1:A:336:THR:CG2	2.31	0.51
1:A:195:LEU:HD12	1:A:199:ASP:CB	2.40	0.51
1:B:138:VAL:HG12	1:B:139:ASN:N	2.25	0.51
1:B:29:VAL:O	1:B:33:LEU:HD13	2.10	0.51
1:B:338:LEU:O	1:B:342:ILE:HG13	2.11	0.51
1:A:68:GLY:CA	1:A:165:MET:HE2	2.41	0.51
1:A:138:VAL:HG12	1:A:139:ASN:N	2.25	0.51
1:B:329:PHE:HA	1:B:332:VAL:CG2	2.41	0.50
1:B:134:THR:OG1	1:B:148:GLU:HB3	2.12	0.50
1:B:180:ARG:HH11	1:B:187:GLU:CG	2.24	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:38:PHE:CE1	1:A:331:SER:HB3	2.47	0.50
1:B:206:HIS:CG	1:B:207:PRO:HD2	2.47	0.50
1:B:329:PHE:HA	1:B:332:VAL:HG22	1.92	0.50
1:B:70:TYR:HB2	1:B:165:MET:HE3	1.93	0.50
1:A:217:ARG:HD3	1:A:220:ASP:OD1	2.13	0.49
1:A:176:LYS:HA	1:A:191:LEU:HD11	1.95	0.49
1:B:319:ILE:O	1:B:323:ILE:HG12	2.14	0.48
1:B:83:PRO:HB2	1:B:85:GLN:OE1	2.13	0.48
1:B:107:CYS:HB2	1:B:108:PRO:HD2	1.94	0.48
1:B:36:SER:O	1:B:40:GLY:N	2.46	0.48
1:B:134:THR:HG1	1:B:148:GLU:HB3	1.78	0.48
1:B:39:VAL:O	1:B:44:LEU:HG	2.14	0.48
1:B:181:PHE:CZ	1:B:313:ALA:HB2	2.49	0.47
1:A:139:ASN:OD1	1:A:145:ARG:HD2	2.14	0.47
1:B:144:LEU:HD12	1:B:145:ARG:H	1.80	0.47
1:B:275:SER:HB2	3:B:401:ATP:H5'1	1.96	0.47
1:B:138:VAL:HG23	1:B:148:GLU:HB2	1.97	0.47
1:B:180:ARG:HH11	1:B:187:GLU:HG3	1.79	0.47
1:B:245:TRP:CH2	1:B:258:PRO:HD3	2.49	0.47
1:B:288:MET:HE3	5:B:405:EDO:H22	1.97	0.47
1:A:25:ILE:O	1:A:29:VAL:HG23	2.14	0.47
1:B:89:VAL:HA	1:B:305:PHE:O	2.15	0.47
1:B:304:ARG:NH2	9:B:501:HOH:O	2.20	0.47
1:A:127:LEU:HB3	1:A:128:PRO:HD2	1.98	0.46
1:A:184:PHE:HD2	1:A:249:LEU:CD1	2.25	0.46
1:A:195:LEU:HD12	1:A:199:ASP:HB2	1.97	0.46
1:A:212:PHE:HZ	1:A:257:ILE:HG22	1.80	0.46
1:B:180:ARG:HH22	1:B:185:ASN:CG	2.24	0.46
1:B:68:GLY:HA3	1:B:165:MET:HE2	1.97	0.46
1:B:177:ASN:H	1:B:190:ASN:HB3	1.80	0.46
1:A:26:ILE:HD12	1:A:27:ASN:N	2.30	0.46
1:A:39:VAL:O	1:A:44:LEU:HG	2.16	0.46
1:A:109:GLU:HG2	1:A:114:TYR:CD1	2.50	0.46
1:A:337:VAL:O	1:A:341:ILE:HG12	2.15	0.46
1:B:31:GLN:O	1:B:35:ILE:HG12	2.16	0.46
1:B:68:GLY:C	1:B:165:MET:HE2	2.41	0.46
1:B:38:PHE:CZ	1:B:331:SER:HB3	2.50	0.46
1:A:181:PHE:CE2	1:A:313:ALA:HB2	2.50	0.46
1:A:70:TYR:OH	1:A:163:PRO:O	2.31	0.45
1:B:117:VAL:HG12	1:B:121:GLN:OE1	2.16	0.45
1:A:188:LYS:HG3	1:A:253:TRP:CZ2	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:176:LYS:HA	1:A:191:LEU:CD1	2.46	0.45
1:A:278:TYR:HA	5:A:409:EDO:C2	2.46	0.45
1:A:144:LEU:HD12	1:A:145:ARG:N	2.32	0.45
1:A:179:ILE:HG21	1:A:245:TRP:CD1	2.52	0.45
1:B:75:MET:CB	1:B:165:MET:HE1	2.37	0.45
1:B:223:LYS:HE3	9:B:509:HOH:O	2.16	0.45
1:A:30:VAL:O	1:A:34:ILE:HG13	2.16	0.45
1:B:49:TYR:HB2	1:B:321:THR:OG1	2.17	0.45
4:A:402:NAG:C6	1:B:273:SER:HB2	2.47	0.44
1:B:278:TYR:HA	5:B:406:EDO:H11	1.99	0.44
1:B:102:GLN:HA	1:B:153:CYS:O	2.17	0.44
1:B:109:GLU:HG2	1:B:114:TYR:CG	2.52	0.44
1:A:62:THR:HA	1:A:174:PHE:O	2.18	0.43
1:B:185:ASN:O	1:B:185:ASN:ND2	2.51	0.43
1:A:75:MET:HG3	1:A:165:MET:CE	2.49	0.43
1:A:287:LYS:NZ	9:A:505:HOH:O	2.51	0.43
1:B:46:GLU:O	1:B:52:ARG:NH1	2.51	0.43
1:A:110:SER:CB	1:A:157:VAL:HG12	2.48	0.43
1:A:212:PHE:CZ	1:A:257:ILE:HG22	2.53	0.43
1:B:116:CYS:N	1:B:146:THR:HA	2.33	0.43
1:B:316:PHE:C	1:B:316:PHE:CD1	2.96	0.43
1:A:319:ILE:HB	1:A:320:PRO:CD	2.39	0.43
1:A:183:LEU:HD23	1:A:184:PHE:CE1	2.54	0.43
1:B:110:SER:OG	1:B:157:VAL:HG22	2.19	0.43
1:A:157:VAL:O	1:A:157:VAL:HG23	2.19	0.43
1:A:47:LYS:HA	1:A:49:TYR:CE1	2.54	0.43
1:A:210:ASP:N	1:A:211:PRO:HD3	2.33	0.43
1:A:43:PHE:CD2	1:A:44:LEU:HD23	2.54	0.43
1:B:30:VAL:O	1:B:34:ILE:HG12	2.19	0.43
1:A:218:VAL:O	1:A:222:VAL:HG23	2.18	0.42
1:B:50:GLN:HG3	1:B:315:LYS:O	2.18	0.42
1:A:43:PHE:HD2	1:A:44:LEU:CD2	2.32	0.42
1:A:139:ASN:HD21	5:A:408:EDO:C1	2.30	0.42
1:B:62:THR:HA	1:B:174:PHE:O	2.19	0.42
1:A:98:VAL:HG22	1:A:298:LEU:HD23	2.01	0.42
1:A:168:ALA:HB3	1:A:229:PHE:HZ	1.85	0.42
1:B:26:ILE:HD12	1:B:27:ASN:N	2.35	0.42
1:A:186:PHE:CE2	1:A:253:TRP:CD1	3.07	0.42
1:A:275:SER:HA	1:A:276:PRO:HD3	1.90	0.42
1:A:22:THR:O	1:A:25:ILE:HG22	2.20	0.41
1:A:50:GLN:HG3	1:A:315:LYS:C	2.44	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:39:VAL:O	1:B:39:VAL:HG12	2.21	0.41
4:B:403:NAG:HO3	4:B:403:NAG:C7	2.25	0.41
1:A:36:SER:O	1:A:40:GLY:N	2.54	0.41
1:A:39:VAL:O	1:A:39:VAL:HG12	2.20	0.41
1:A:70:TYR:HB2	1:A:165:MET:HE3	2.03	0.41
1:A:144:LEU:HD12	1:A:145:ARG:H	1.86	0.41
1:B:38:PHE:CE1	1:B:331:SER:HB3	2.56	0.41
1:B:98:VAL:HG22	1:B:298:LEU:HD23	2.03	0.41
1:B:43:PHE:CD2	1:B:44:LEU:HD23	2.56	0.40
1:A:188:LYS:HE3	1:A:253:TRP:CZ3	2.57	0.40
1:B:132:ILE:O	1:B:149:ILE:HA	2.21	0.40
1:A:107:CYS:HB2	1:A:108:PRO:HD2	2.02	0.40
1:A:75:MET:HG3	1:A:165:MET:HE1	2.02	0.40

All (1) 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)
1:A:200:MET:O	1:B:198:ARG:NH2[6_566]	2.15	0.05

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	331/363 (91%)	326 (98%)	5 (2%)	0	100	100
1	B	314/363 (86%)	310 (99%)	4 (1%)	0	100	100
All	All	645/726 (89%)	636 (99%)	9 (1%)	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	280/318 (88%)	275 (98%)	5 (2%)	51 80
1	B	267/318 (84%)	264 (99%)	3 (1%)	65 88
All	All	547/636 (86%)	539 (98%)	8 (2%)	57 84

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

Mol	Chain	Res	Type
1	A	111	GLU
1	A	159	THR
1	A	179	ILE
1	A	292	SER
1	A	308	LEU
1	B	179	ILE
1	B	234	ARG
1	B	292	SER

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	139	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

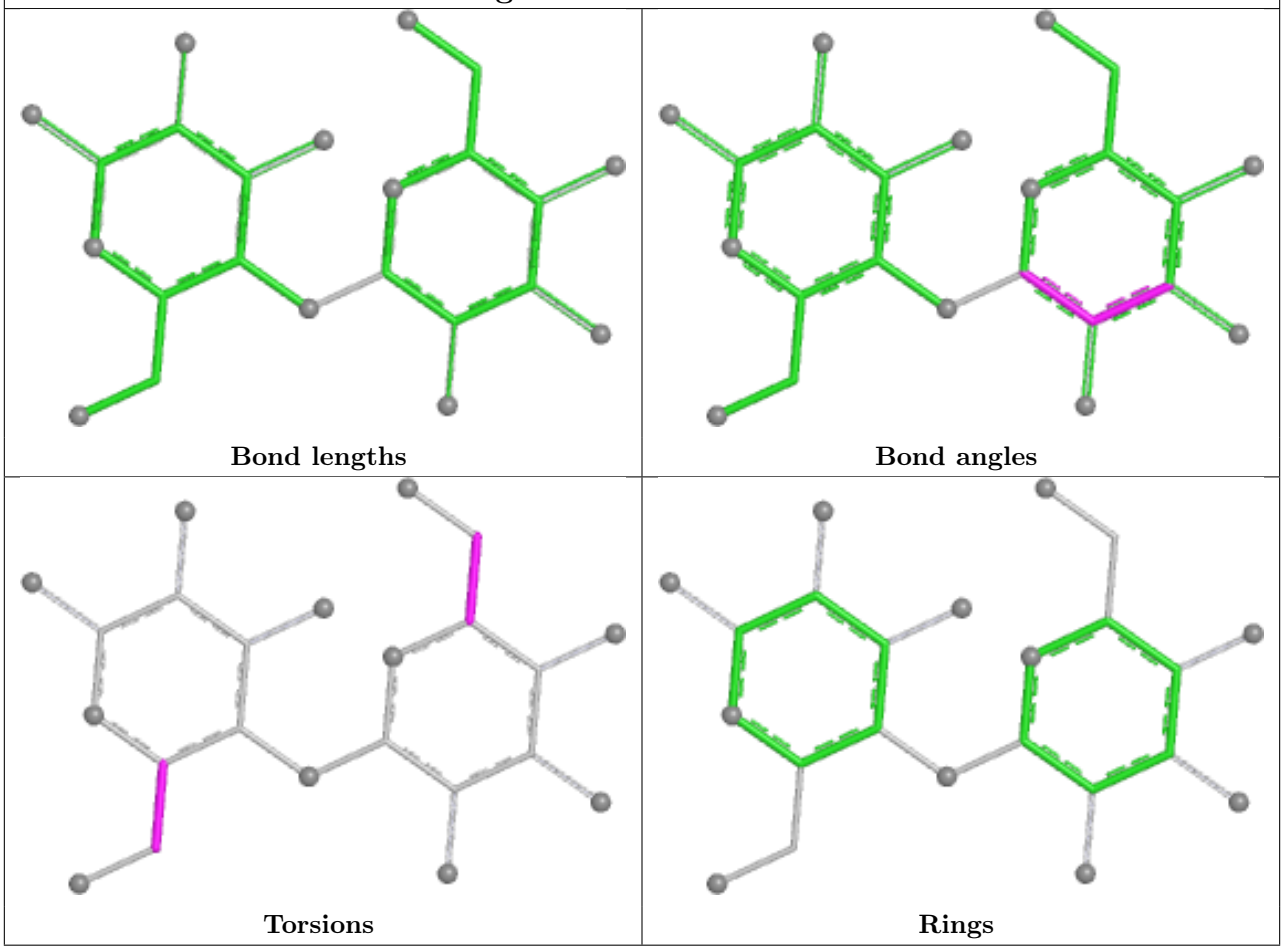
Mogul was not executed - this section is therefore empty.

5.5 Carbohydrates (i)

Mogul was not executed - this section is therefore empty.

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 C



5.6 Ligand geometry (i)

Mogul was not executed - this section is therefore empty.

5.7 Other polymers (i)

Mogul was not executed - this section is therefore empty.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

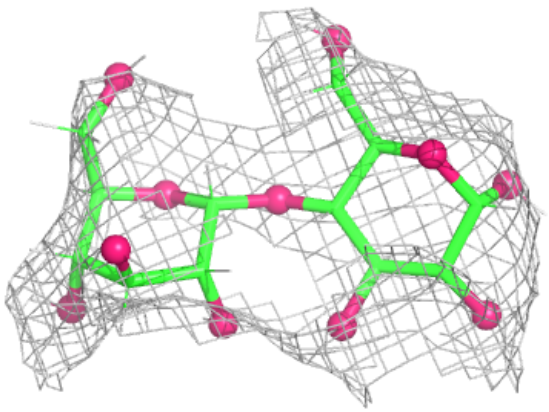
6.3 Carbohydrates

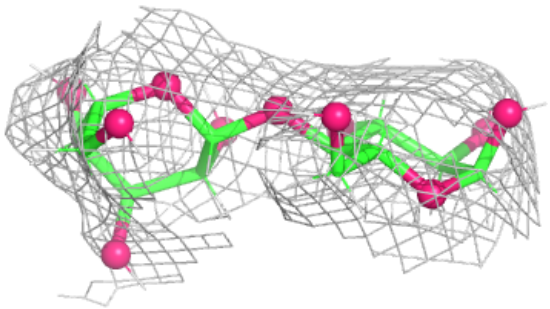
EDS was not executed - this section is therefore empty.

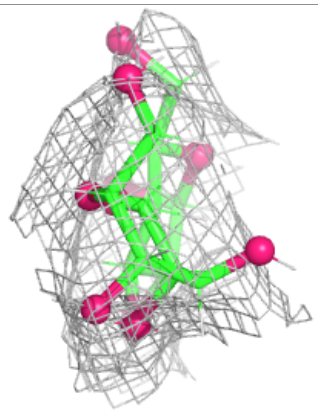
The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around Chain C:

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







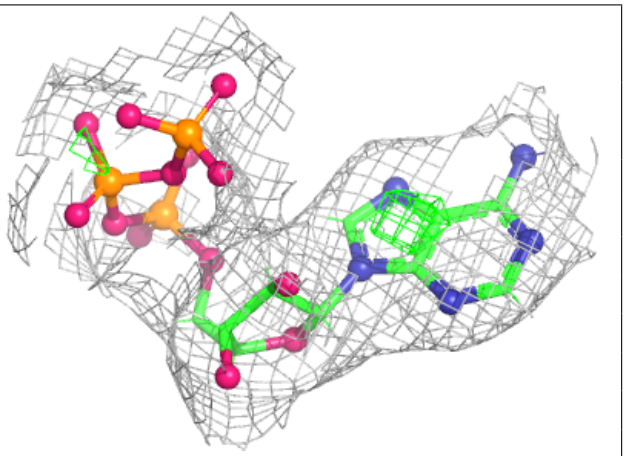
6.4 Ligands

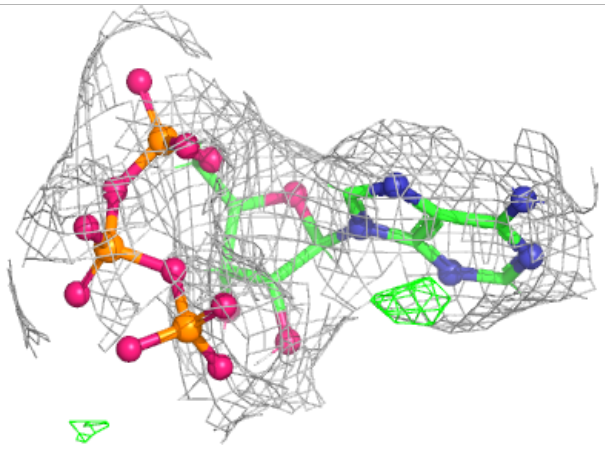
EDS was not executed - this section is therefore empty.

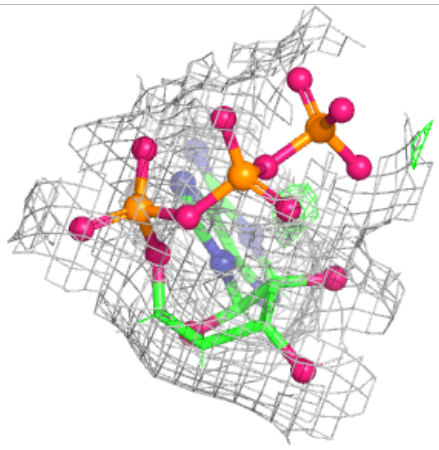
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around ATP A 401:

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

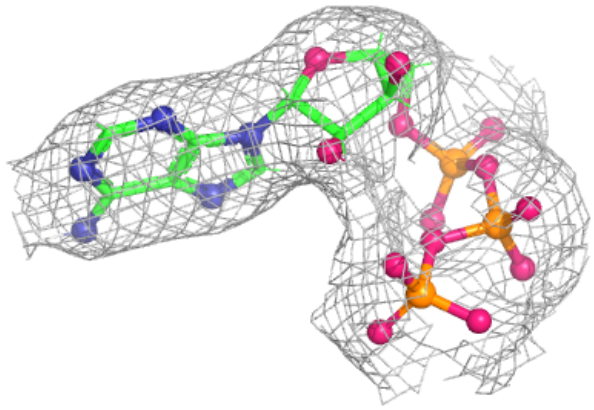


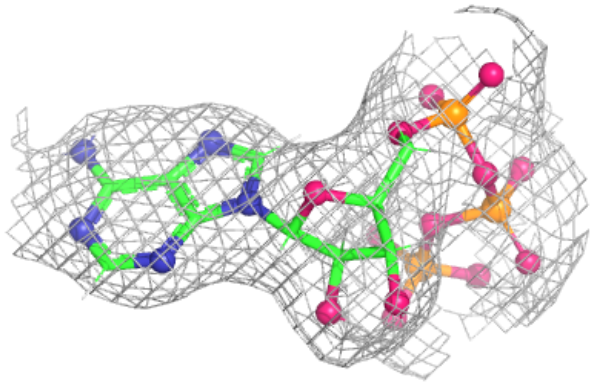


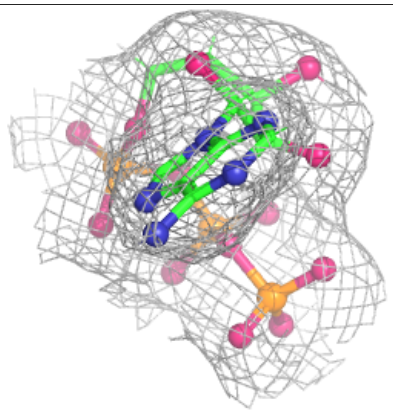


Electron density around ATP B 401:

$2mF_o$-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)

EDS was not executed - this section is therefore empty.