Full wwPDB X-ray Structure Validation Report (i)

Jun 24, 2025 – 05:46 pm BST

PDB ID	:	5L6V / pdb_00005l6v
Title	:	Crystal structure of E. coli ADP-glucose pyrophosphorylase (AGPase) in complex with a negative allosteric regulator adenosine monophosphate (AMP) - AGPase*AMP
Authors	:	Cifuente, J.O.; Albesa-Jove, D.; Comino, N.; Madariaga-Marcos, J.; Agirre, J.; Lopez-Fernandez, S.; Garcia-Alija, M.; Guerin, M.E.
Deposited on	:	2016-05-31
Resolution	:	2.67 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 (1)) were used in the production of this report:

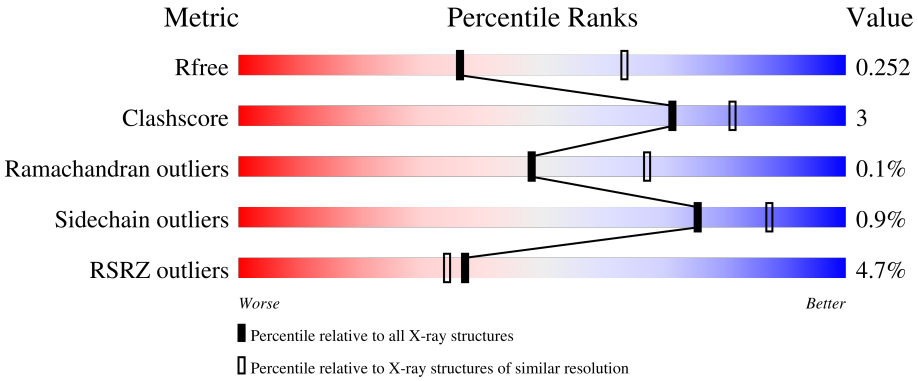
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

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 2.67 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	1003 (2.66-2.66)
Clashscore	180529	1063 (2.66-2.66)
Ramachandran outliers	177936	1052 (2.66-2.66)
Sidechain outliers	177891	1052 (2.66-2.66)
RSRZ outliers	164620	1003 (2.66-2.66)

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	431	2% 92% 6% ·
1	B	431	2% 90% 8% ·
1	C	431	3% 87% 11% ·
1	D	431	2% 87% 9% ·
1	E	431	4% 87% 9% 5%

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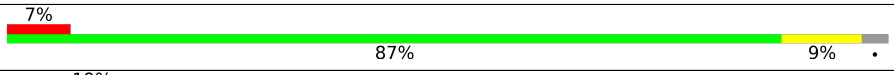
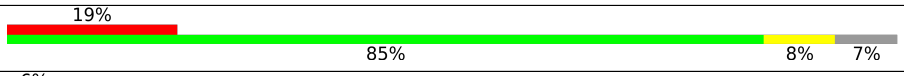
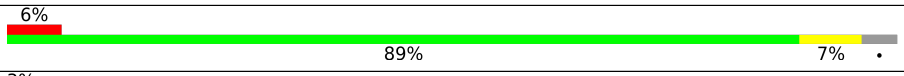
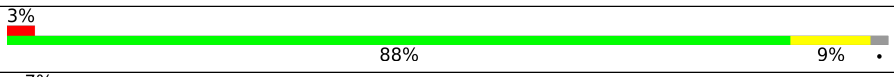
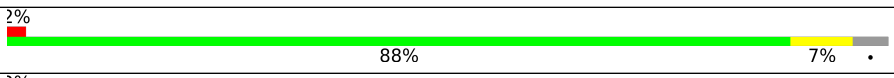
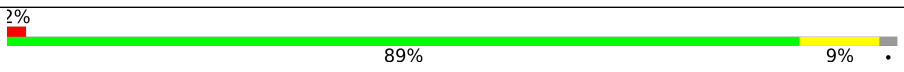
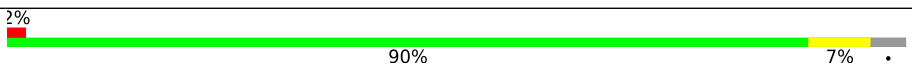
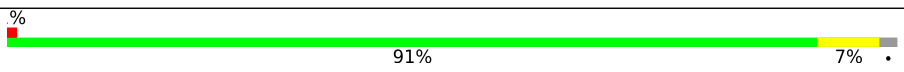
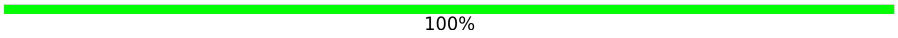
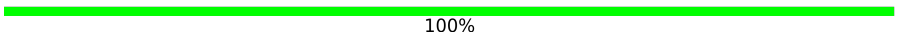
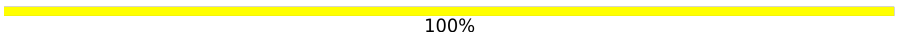
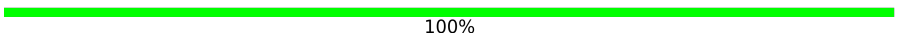
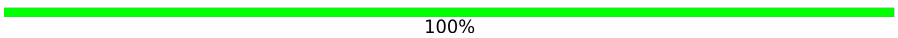
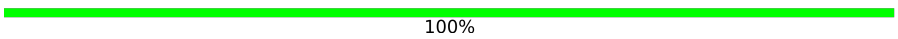
Mol	Chain	Length	Quality of chain
1	F	431	
1	G	431	
1	H	431	
1	I	431	
1	J	431	
1	K	431	
1	L	431	
1	M	431	
1	N	431	
1	O	431	
1	P	431	
2	Q	2	
2	R	2	
2	S	2	
2	T	2	
2	U	2	
2	V	2	
2	W	2	
2	X	2	

2 Entry composition (i)

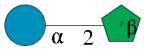
There are 5 unique types of molecules in this entry. The entry contains 53530 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Glucose-1-phosphate adenylyltransferase.

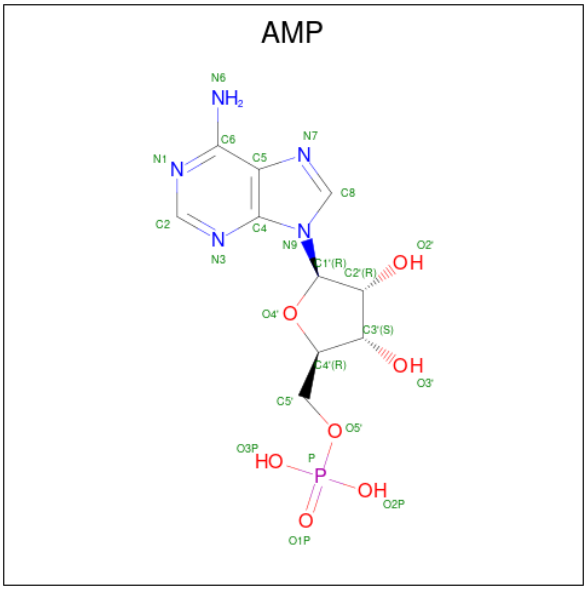
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	422	Total	C	N	O	S	0	3	0
			3325	2100	583	619	23			
1	B	421	Total	C	N	O	S	0	0	0
			3293	2081	579	611	22			
1	C	421	Total	C	N	O	S	0	2	0
			3325	2105	585	612	23			
1	D	413	Total	C	N	O	S	0	0	0
			3210	2028	563	599	20			
1	E	411	Total	C	N	O	S	0	1	0
			3202	2024	561	596	21			
1	F	411	Total	C	N	O	S	0	0	0
			3225	2035	567	602	21			
1	G	411	Total	C	N	O	S	0	0	0
			3127	1985	543	579	20			
1	H	416	Total	C	N	O	S	0	0	0
			3162	2008	545	589	20			
1	I	400	Total	C	N	O	S	0	0	0
			2984	1893	522	549	20			
1	J	412	Total	C	N	O	S	0	0	0
			3158	2002	555	581	20			
1	K	421	Total	C	N	O	S	0	0	0
			3292	2080	578	612	22			
1	L	412	Total	C	N	O	S	0	0	0
			3195	2022	561	591	21			
1	M	415	Total	C	N	O	S	0	0	0
			3250	2056	572	601	21			
1	N	422	Total	C	N	O	S	0	0	0
			3285	2079	575	609	22			
1	O	415	Total	C	N	O	S	0	0	0
			3237	2044	568	604	21			
1	P	423	Total	C	N	O	S	0	0	0
			3305	2090	578	615	22			

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



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf	Trace
2	Q	2	Total C O 23 12 11	0	0	0
2	R	2	Total C O 23 12 11	0	0	0
2	S	2	Total C O 23 12 11	0	0	0
2	T	2	Total C O 23 12 11	0	0	0
2	U	2	Total C O 23 12 11	0	0	0
2	V	2	Total C O 23 12 11	0	0	0
2	W	2	Total C O 23 12 11	0	0	0
2	X	2	Total C O 23 12 11	0	0	0

- Molecule 3 is ADENOSINE MONOPHOSPHATE (CCD ID: AMP) (formula: $C_{10}H_{14}N_5O_7P$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O P 23 10 5 7 1	0	0

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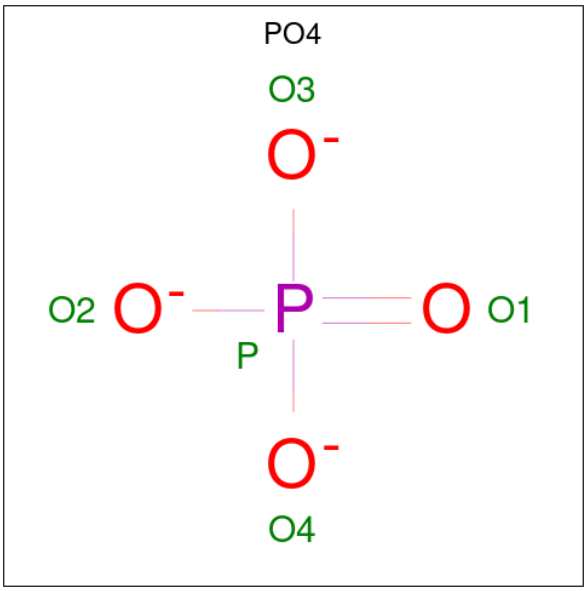
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	B	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	C	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	D	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	E	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	F	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	G	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	H	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	I	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	J	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	K	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	L	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	M	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	N	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	O	1	Total	C	N	O	P	0	0
			23	10	5	7	1		
3	P	1	Total	C	N	O	P	0	0
			23	10	5	7	1		

- Molecule 4 is PHOSPHATE ION (CCD ID: PO4) (formula: O_4P).



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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	104	Total O 104 104	0	0
5	B	85	Total O 85 85	0	0
5	C	148	Total O 148 148	0	0
5	D	97	Total O 97 97	0	0
5	E	92	Total O 92 92	0	0
5	F	101	Total O 101 101	0	0
5	G	62	Total O 62 62	0	0
5	H	42	Total O 42 42	0	0
5	I	57	Total O 57 57	0	0
5	J	74	Total O 74 74	0	0
5	K	75	Total O 75 75	0	0

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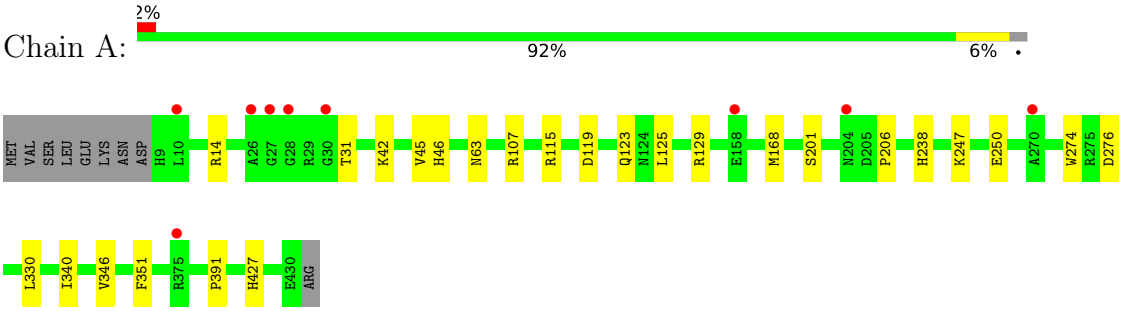
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	L	81	Total O 81 81	0	0
5	M	111	Total O 111 111	0	0
5	N	142	Total O 142 142	0	0
5	O	67	Total O 67 67	0	0
5	P	60	Total O 60 60	0	0

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.

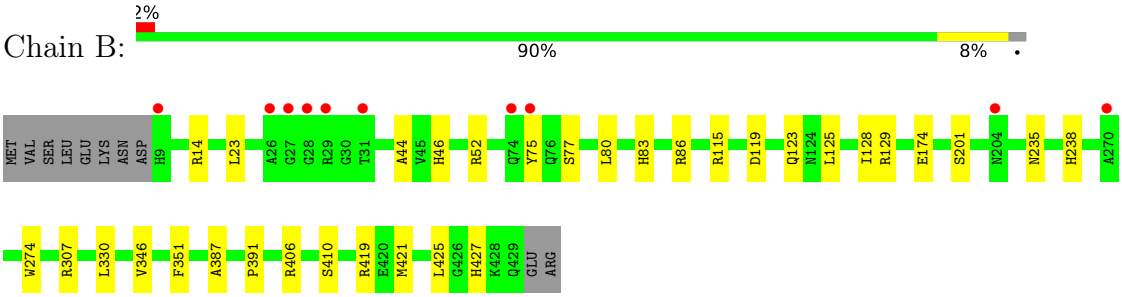
• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain A:



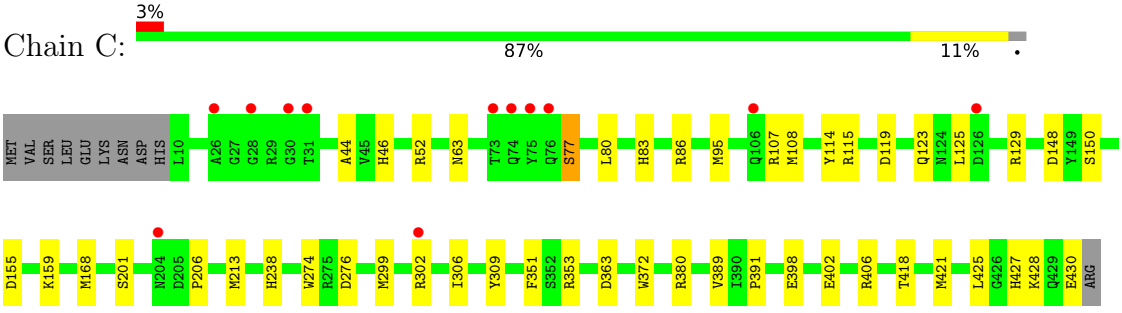
• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain B:



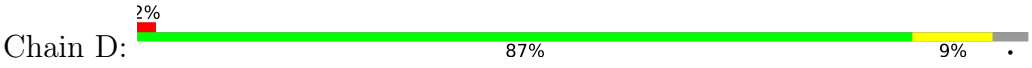
• Molecule 1: Glucose-1-phosphate adenylyltransferase

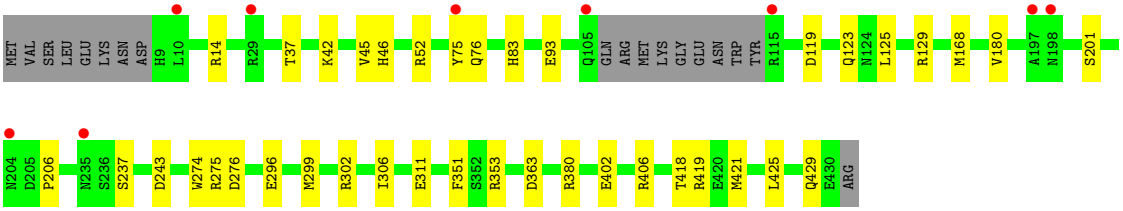
Chain C:



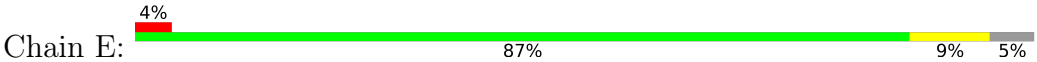
• Molecule 1: Glucose-1-phosphate adenylyltransferase

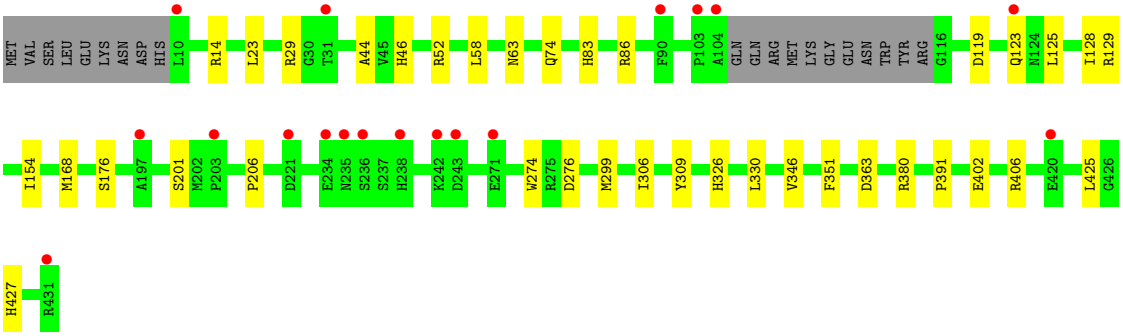
Chain D:



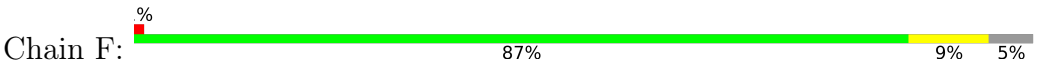


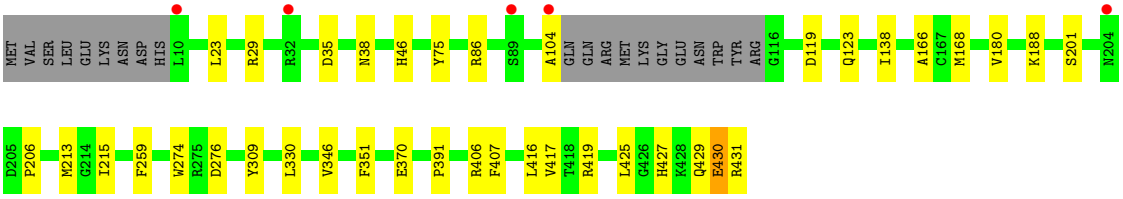
• Molecule 1: Glucose-1-phosphate adenylyltransferase



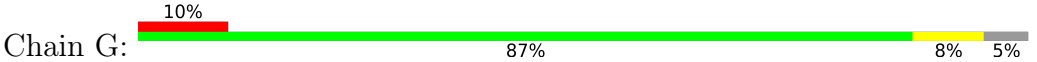


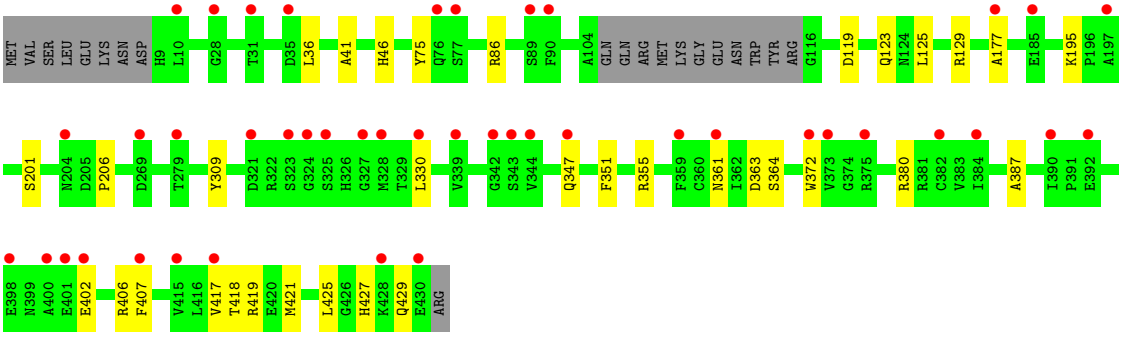
• Molecule 1: Glucose-1-phosphate adenylyltransferase



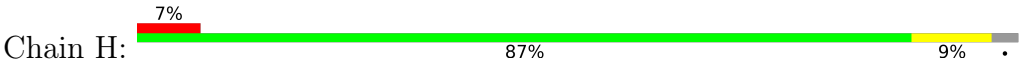


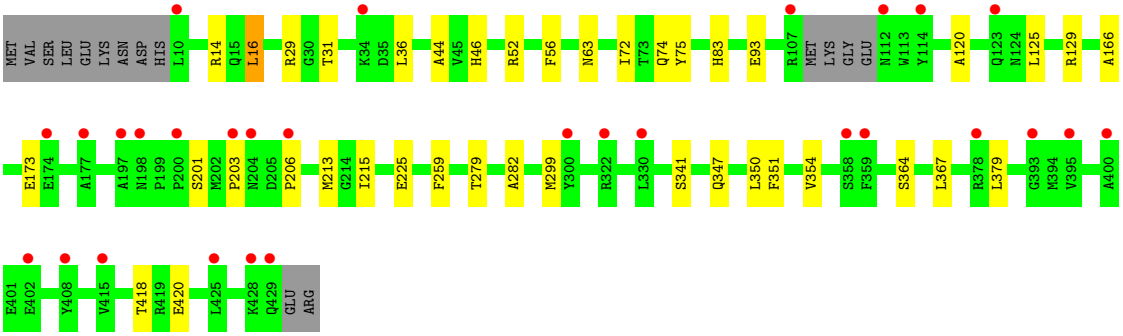
• Molecule 1: Glucose-1-phosphate adenylyltransferase





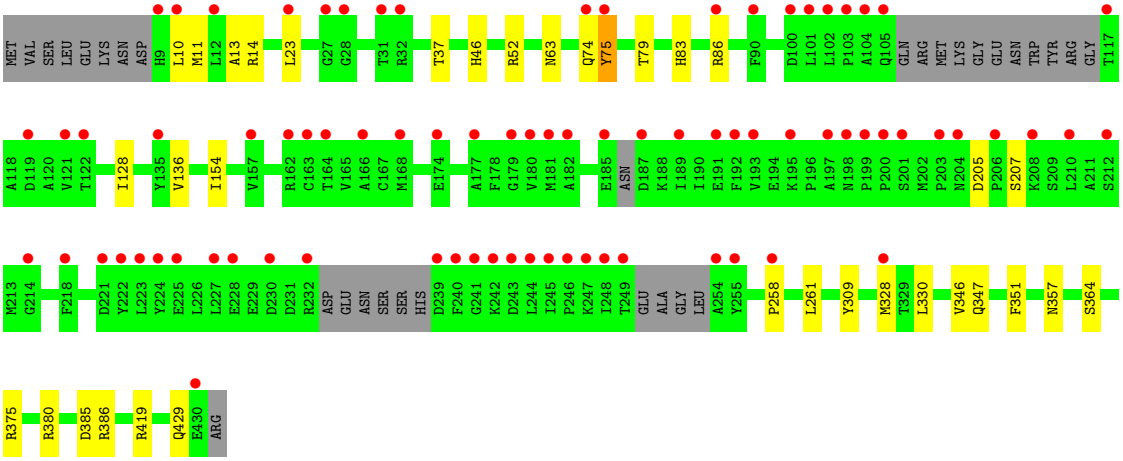
• Molecule 1: Glucose-1-phosphate adenylyltransferase





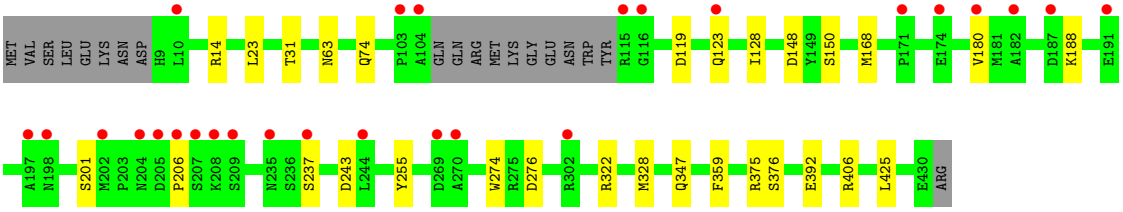
• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain I:



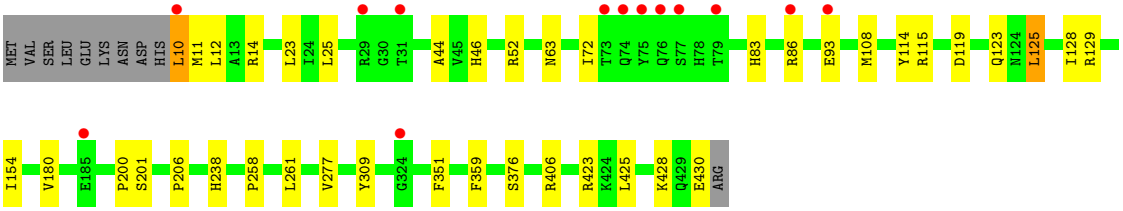
• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain J:



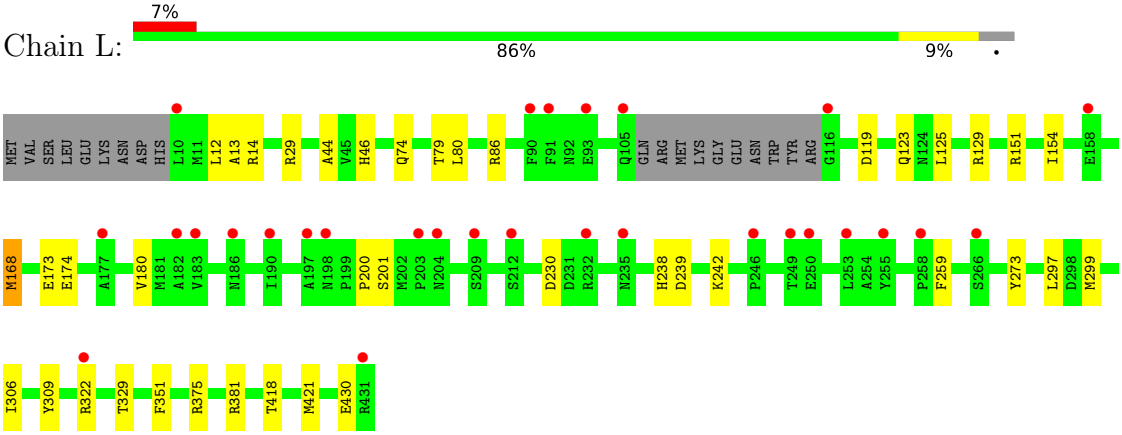
• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain K:



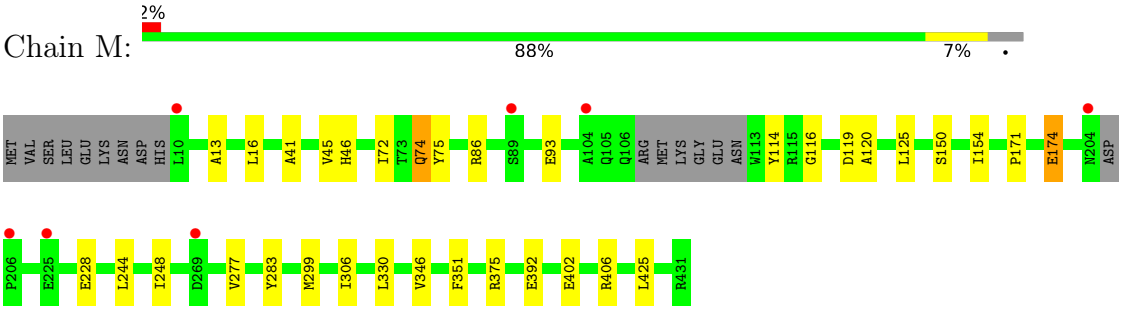
• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain L:



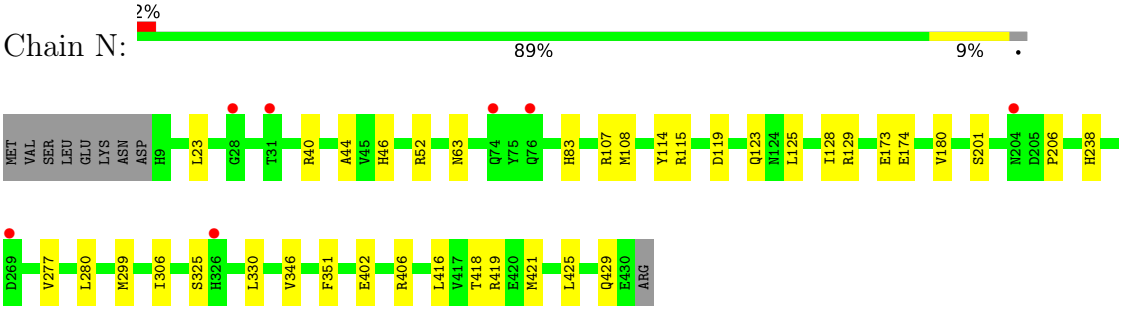
• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain M:



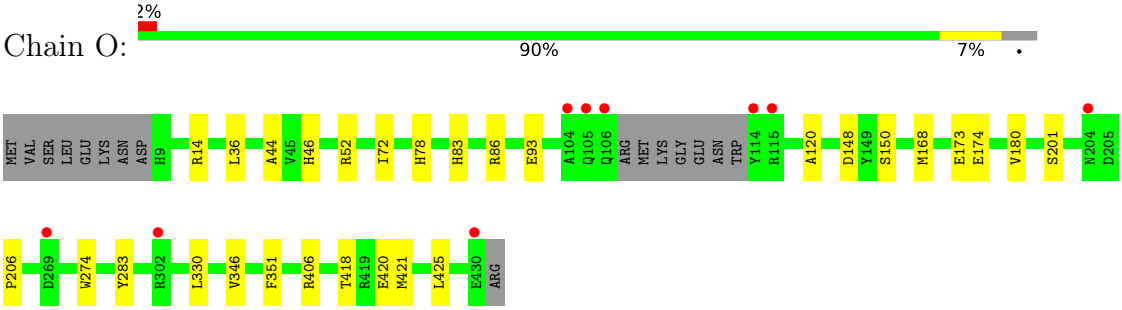
• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain N:



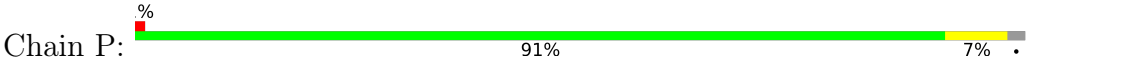
• Molecule 1: Glucose-1-phosphate adenylyltransferase

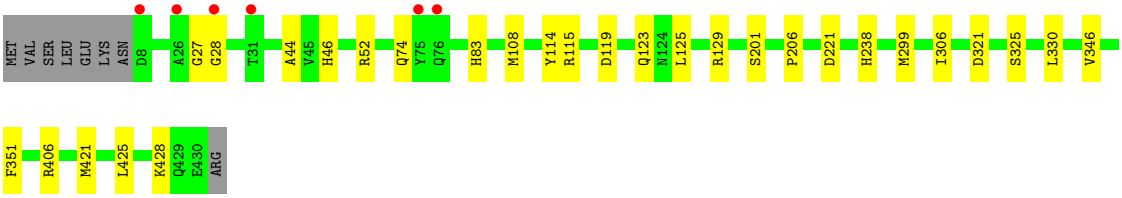
Chain O:



• Molecule 1: Glucose-1-phosphate adenylyltransferase

Chain P:





• Molecule 2: beta-D-fructofuranose-(2-1)-alpha-D-glucopyranose

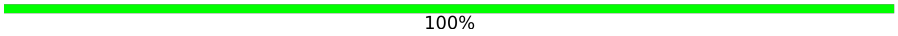
Chain Q:

• Molecule 2: beta-D-fructofuranose-(2-1)-alpha-D-glucopyranose

Chain R:

• Molecule 2: beta-D-fructofuranose-(2-1)-alpha-D-glucopyranose

Chain S:

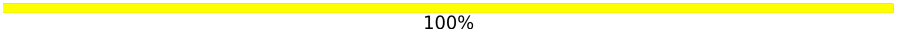


• Molecule 2: beta-D-fructofuranose-(2-1)-alpha-D-glucopyranose

Chain T:

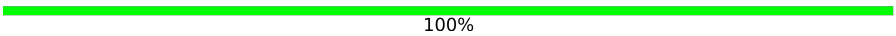
• Molecule 2: beta-D-fructofuranose-(2-1)-alpha-D-glucopyranose

Chain U:



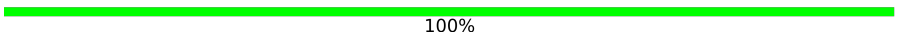
• Molecule 2: beta-D-fructofuranose-(2-1)-alpha-D-glucopyranose

Chain V:



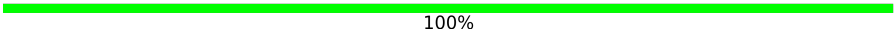
• Molecule 2: beta-D-fructofuranose-(2-1)-alpha-D-glucopyranose

Chain W:



• Molecule 2: beta-D-fructofuranose-(2-1)-alpha-D-glucopyranose

Chain X:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	166.88Å 148.19Å 180.16Å 90.00° 115.48° 90.00°	Depositor
Resolution (Å)	45.27 – 2.67 45.27 – 2.67	Depositor EDS
% Data completeness (in resolution range)	95.1 (45.27-2.67) 99.8 (45.27-2.67)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.23 (at 2.65Å)	Xtriage
Refinement program	PHENIX (dev_2219: ???)	Depositor
R, R_{free}	0.239 , 0.263 0.224 , 0.252	Depositor DCC
R_{free} test set	11276 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	30.6	Xtriage
Anisotropy	0.034	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 26.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.006 for h,-k,-h-l	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	53530	wwPDB-VP
Average B, all atoms (Å^2)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.53% 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: FRU, AMP, PO4, GLC

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	0.13	0/3396	0.35	0/4605
1	B	0.13	0/3363	0.34	0/4560
1	C	0.12	0/3404	0.34	0/4613
1	D	0.13	0/3277	0.35	0/4445
1	E	0.12	0/3269	0.34	0/4432
1	F	0.13	0/3292	0.37	2/4459 (0.0%)
1	G	0.12	0/3194	0.33	0/4341
1	H	0.14	0/3232	0.34	0/4398
1	I	0.10	0/3047	0.31	0/4148
1	J	0.15	0/3225	0.37	0/4379
1	K	0.12	0/3362	0.34	0/4556
1	L	0.14	0/3262	0.37	0/4422
1	M	0.12	0/3319	0.35	0/4497
1	N	0.13	0/3356	0.35	0/4552
1	O	0.13	0/3304	0.35	0/4480
1	P	0.12	0/3376	0.33	0/4577
All	All	0.13	0/52678	0.35	2/71464 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	430	GLU	CA-C-N	6.12	132.71	121.70
1	F	430	GLU	C-N-CA	6.12	132.71	121.70

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	3325	0	3262	16	0
1	B	3293	0	3234	21	0
1	C	3325	0	3282	39	0
1	D	3210	0	3141	33	0
1	E	3202	0	3141	19	0
1	F	3225	0	3180	27	0
1	G	3127	0	3027	19	0
1	H	3162	0	3030	23	0
1	I	2984	0	2800	22	0
1	J	3158	0	3078	15	0
1	K	3292	0	3233	24	0
1	L	3195	0	3141	23	0
1	M	3250	0	3187	21	0
1	N	3285	0	3215	21	0
1	O	3237	0	3177	17	0
1	P	3305	0	3240	17	0
2	Q	23	0	21	0	0
2	R	23	0	21	0	0
2	S	23	0	21	0	0
2	T	23	0	21	0	0
2	U	23	0	21	0	0
2	V	23	0	21	0	0
2	W	23	0	21	0	0
2	X	23	0	21	0	0
3	A	23	0	12	0	0
3	B	23	0	12	0	0
3	C	23	0	12	0	0
3	D	23	0	12	0	0
3	E	23	0	12	0	0
3	F	23	0	12	0	0
3	G	23	0	12	0	0
3	H	23	0	12	0	0
3	I	23	0	12	1	0
3	J	23	0	12	0	0
3	K	23	0	12	0	0
3	L	23	0	12	0	0
3	M	23	0	12	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	N	23	0	12	0	0
3	O	23	0	12	0	0
3	P	23	0	12	0	0
4	D	5	0	0	0	0
5	A	104	0	0	1	0
5	B	85	0	0	0	0
5	C	148	0	0	0	0
5	D	97	0	0	0	0
5	E	92	0	0	0	0
5	F	101	0	0	1	0
5	G	62	0	0	3	0
5	H	42	0	0	1	0
5	I	57	0	0	2	0
5	J	74	0	0	0	0
5	K	75	0	0	0	0
5	L	81	0	0	1	0
5	M	111	0	0	3	0
5	N	142	0	0	0	0
5	O	67	0	0	0	0
5	P	60	0	0	1	0
All	All	53530	0	50728	328	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 3.

All (328) 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:I:37:THR:O	1:I:75:TYR:OH	2.00	0.79
1:M:13:ALA:HA	1:M:154:ILE:HD11	1.63	0.78
1:B:235:ASN:OD1	1:K:423:ARG:NH1	2.20	0.73
1:B:274:TRP:CZ2	1:B:274:TRP:CZ3	2.76	0.70
1:J:63:ASN:O	1:K:14:ARG:NH2	2.29	0.66
1:L:381:ARG:NH1	1:N:325:SER:HB2	2.12	0.65
1:D:52:ARG:HG3	1:D:83:HIS:CE1	2.32	0.64
1:A:63:ASN:O	1:D:14:ARG:NH2	2.31	0.64
1:H:279:THR:HG23	1:H:282:ALA:H	1.63	0.64
1:N:44:ALA:O	1:N:52:ARG:NH1	2.31	0.64
1:H:213:MET:HE3	1:H:215:ILE:HD12	1.79	0.64
1:M:330:LEU:HB3	1:M:346:VAL:HG22	1.80	0.64
1:J:14:ARG:NH2	1:K:63:ASN:O	2.31	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:168[B]:MET:HE1	1:C:274:TRP:CE3	2.33	0.63
1:D:37:THR:O	1:D:75:TYR:OH	2.15	0.63
1:L:13:ALA:HA	1:L:154:ILE:HD11	1.81	0.62
1:B:387:ALA:O	1:B:419:ARG:NH1	2.33	0.62
1:O:44:ALA:O	1:O:52:ARG:NH1	2.33	0.61
1:K:180:VAL:HG21	1:K:200:PRO:HD2	1.81	0.61
1:F:213:MET:HE3	1:F:215:ILE:HD12	1.83	0.61
1:N:115:ARG:HG2	1:N:238:HIS:HD2	1.66	0.60
1:C:302:ARG:HH22	1:D:353:ARG:HE	1.47	0.60
1:G:427:HIS:HE1	5:G:651:HOH:O	1.84	0.60
1:E:14:ARG:NH2	1:H:63:ASN:O	2.34	0.60
1:H:56:PHE:CZ	1:H:299:MET:HE1	2.36	0.60
1:O:52:ARG:HD2	1:O:83:HIS:CG	2.36	0.60
1:C:115:ARG:HG2	1:C:238:HIS:HD2	1.66	0.60
1:H:52:ARG:HD2	1:H:83:HIS:CG	2.37	0.60
1:K:115:ARG:HG2	1:K:238:HIS:HD2	1.66	0.59
1:N:63:ASN:O	1:O:14:ARG:NH2	2.35	0.59
1:B:52:ARG:HD2	1:B:83:HIS:CG	2.38	0.59
1:H:29:ARG:HD3	1:H:31:THR:HG22	1.84	0.59
1:C:52:ARG:HD2	1:C:83:HIS:CG	2.38	0.58
1:C:302:ARG:NH2	1:D:353:ARG:HE	2.01	0.58
1:I:63:ASN:O	1:L:14:ARG:NH1	2.36	0.58
1:K:428:LYS:HG2	1:K:430:GLU:H	1.68	0.58
1:L:180:VAL:HG21	1:L:200:PRO:HD2	1.85	0.58
1:C:119:ASP:O	1:C:123:GLN:HG3	2.03	0.58
1:D:119:ASP:O	1:D:123:GLN:HG3	2.04	0.58
1:A:119:ASP:O	1:A:123:GLN:HG3	2.04	0.57
1:I:330:LEU:HB3	1:I:346:VAL:HG22	1.85	0.57
1:H:418:THR:HG22	1:H:420:GLU:H	1.68	0.57
1:A:168[B]:MET:HE1	1:A:274:TRP:CZ3	2.39	0.57
1:N:119:ASP:O	1:N:123:GLN:HG3	2.05	0.57
1:F:430:GLU:HA	1:F:431:ARG:CB	2.35	0.57
1:P:44:ALA:O	1:P:52:ARG:NH1	2.37	0.56
1:P:52:ARG:HD2	1:P:83:HIS:CG	2.41	0.56
1:K:44:ALA:O	1:K:52:ARG:NH1	2.38	0.56
1:K:52:ARG:HD2	1:K:83:HIS:CG	2.41	0.56
1:N:52:ARG:HD2	1:N:83:HIS:CG	2.40	0.56
1:B:119:ASP:O	1:B:123:GLN:HG3	2.05	0.56
1:H:29:ARG:HG3	1:H:75:TYR:CZ	2.41	0.55
1:I:419:ARG:NH2	1:I:429:GLN:O	2.39	0.55
1:F:119:ASP:O	1:F:123:GLN:HG3	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:119:ASP:O	1:K:123:GLN:HG3	2.07	0.55
1:A:115:ARG:HG2	1:A:238:HIS:HD2	1.70	0.55
1:H:350:LEU:HD22	1:H:354:VAL:HG11	1.88	0.55
1:M:16:LEU:HD12	1:M:154:ILE:HD13	1.89	0.55
1:E:63:ASN:O	1:H:14:ARG:NH2	2.40	0.55
1:J:322:ARG:HH12	1:J:375:ARG:NH1	2.04	0.55
1:P:27:GLY:HA3	1:P:74:GLN:H	1.72	0.55
1:P:330:LEU:HB3	1:P:346:VAL:HG22	1.89	0.55
1:P:406:ARG:HB3	1:P:425:LEU:HD21	1.88	0.54
1:E:44:ALA:O	1:E:52:ARG:NH1	2.40	0.54
1:F:29:ARG:HG3	1:F:75:TYR:CZ	2.43	0.54
1:K:201:SER:HB2	1:K:206:PRO:HA	1.90	0.54
1:C:302:ARG:HH22	1:D:353:ARG:NE	2.04	0.54
1:B:115:ARG:HG2	1:B:238:HIS:HD2	1.73	0.54
1:H:56:PHE:HZ	1:H:299:MET:HE1	1.73	0.54
1:I:23:LEU:HD13	1:I:136:VAL:HG13	1.90	0.54
1:A:274:TRP:CH2	1:A:276:ASP:HB3	2.43	0.53
1:B:14:ARG:NH2	1:C:63:ASN:O	2.41	0.53
1:M:86:ARG:NH2	1:O:93:GLU:OE1	2.41	0.53
1:F:274:TRP:CH2	1:F:276:ASP:HB3	2.43	0.53
1:K:115:ARG:HG2	1:K:238:HIS:CD2	2.43	0.53
1:O:418:THR:HG22	1:O:420:GLU:H	1.73	0.53
1:N:201:SER:HB2	1:N:206:PRO:HA	1.90	0.53
1:D:168:MET:HE1	1:D:274:TRP:CZ3	2.44	0.53
1:E:52:ARG:HD2	1:E:83:HIS:CG	2.44	0.53
1:A:201:SER:HB2	1:A:206:PRO:HA	1.90	0.53
1:F:86:ARG:NH2	1:H:93:GLU:OE1	2.41	0.53
1:H:44:ALA:O	1:H:52:ARG:NH1	2.41	0.53
1:B:406:ARG:HB3	1:B:425:LEU:HD21	1.91	0.53
1:E:119:ASP:O	1:E:123:GLN:HG3	2.09	0.53
1:I:380:ARG:NH1	5:I:602:HOH:O	2.41	0.53
1:F:168:MET:HE1	1:F:274:TRP:CZ3	2.44	0.52
1:J:406:ARG:HB3	1:J:425:LEU:HD21	1.92	0.52
1:F:201:SER:HB2	1:F:206:PRO:HA	1.91	0.52
1:D:406:ARG:HB3	1:D:425:LEU:HD21	1.92	0.52
1:C:302:ARG:HH22	1:D:353:ARG:HH21	1.58	0.52
1:N:280:LEU:HD13	1:N:416:LEU:HD12	1.92	0.52
1:C:302:ARG:NH2	1:D:353:ARG:NE	2.57	0.52
1:N:108:MET:HE1	1:N:114:TYR:CD2	2.44	0.52
1:J:168:MET:HE1	1:J:274:TRP:CZ3	2.44	0.51
1:G:201:SER:HB2	1:G:206:PRO:HA	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:108:MET:HE1	1:C:114:TYR:CD2	2.45	0.51
1:L:119:ASP:O	1:L:123:GLN:HG3	2.11	0.51
1:P:119:ASP:O	1:P:123:GLN:HG3	2.10	0.51
1:F:419:ARG:NH2	1:F:429:GLN:O	2.44	0.51
1:E:274:TRP:CH2	1:E:276:ASP:HB3	2.46	0.50
1:C:201:SER:HB2	1:C:206:PRO:HA	1.94	0.50
1:O:168:MET:HE1	1:O:274:TRP:CZ3	2.46	0.50
1:P:201:SER:HB2	1:P:206:PRO:HA	1.92	0.50
1:C:168[B]:MET:HE2	1:C:213:MET:HG2	1.94	0.50
1:B:235:ASN:HD21	1:K:423:ARG:HD2	1.77	0.50
1:G:419:ARG:NH2	1:G:429:GLN:O	2.45	0.50
1:G:177:ALA:O	1:G:195:LYS:NZ	2.45	0.50
1:G:427:HIS:CE1	5:G:651:HOH:O	2.61	0.50
1:J:201:SER:HB2	1:J:206:PRO:HA	1.93	0.50
1:A:330:LEU:HB3	1:A:346:VAL:HG22	1.92	0.49
1:D:311:GLU:OE2	1:D:353:ARG:NH1	2.45	0.49
1:H:125:LEU:O	1:H:129:ARG:HG3	2.12	0.49
1:C:302:ARG:HH22	1:D:353:ARG:NH2	2.10	0.49
1:F:188:LYS:NZ	5:F:601:HOH:O	2.45	0.49
1:G:119:ASP:O	1:G:123:GLN:HG3	2.12	0.49
1:F:46:HIS:HB3	1:F:351:PHE:CE2	2.48	0.49
1:O:406:ARG:HB3	1:O:425:LEU:HD21	1.94	0.49
1:E:125:LEU:O	1:E:129:ARG:HG3	2.13	0.49
1:N:330:LEU:HB3	1:N:346:VAL:HG22	1.95	0.49
1:K:23:LEU:HD21	1:K:128:ILE:HD13	1.94	0.49
1:O:72:ILE:HG21	1:O:120:ALA:HB1	1.95	0.49
1:B:23:LEU:HD21	1:B:128:ILE:HD13	1.94	0.48
1:C:380:ARG:HH21	1:C:398:GLU:HG2	1.77	0.48
1:E:168:MET:HE1	1:E:274:TRP:CZ3	2.47	0.48
1:I:11:MET:SD	1:L:154:ILE:HD12	2.53	0.48
1:K:108:MET:HE1	1:K:114:TYR:CD2	2.48	0.48
1:C:46:HIS:HB3	1:C:351:PHE:CE2	2.48	0.48
1:P:108:MET:HE1	1:P:114:TYR:CD2	2.47	0.48
1:C:274:TRP:CH2	1:C:276:ASP:HB3	2.48	0.48
1:O:148:ASP:OD1	1:O:150:SER:OG	2.31	0.48
1:H:46:HIS:HB3	1:H:351:PHE:CE2	2.49	0.48
1:C:115:ARG:HG2	1:C:238:HIS:CD2	2.47	0.48
1:E:201:SER:HB2	1:E:206:PRO:HA	1.94	0.48
1:I:46:HIS:HB3	1:I:351:PHE:CE2	2.49	0.48
1:J:274:TRP:CH2	1:J:276:ASP:HB3	2.48	0.48
1:J:119:ASP:O	1:J:123:GLN:HG3	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:28:GLY:H	1:P:74:GLN:HB2	1.78	0.48
1:K:46:HIS:HB3	1:K:351:PHE:CE2	2.49	0.47
1:G:46:HIS:HB3	1:G:351:PHE:CE2	2.49	0.47
1:M:93:GLU:OE1	1:O:86:ARG:NH2	2.47	0.47
1:N:107:ARG:HD3	1:N:123:GLN:HE21	1.79	0.47
1:C:86:ARG:HB3	1:C:309:TYR:CD1	2.50	0.47
1:K:125:LEU:O	1:K:129:ARG:HG3	2.14	0.47
1:A:125:LEU:O	1:A:129:ARG:HG3	2.15	0.47
1:F:370:GLU:HB3	1:F:431:ARG:NH2	2.30	0.47
1:N:115:ARG:HG2	1:N:238:HIS:CD2	2.46	0.47
1:N:277:VAL:HG12	1:N:277:VAL:O	2.15	0.47
1:C:125:LEU:O	1:C:129:ARG:HG3	2.15	0.47
1:I:357:ASN:HB3	1:I:375:ARG:HG2	1.96	0.47
1:C:148:ASP:OD1	1:C:150:SER:OG	2.30	0.47
1:F:406:ARG:HB3	1:F:425:LEU:HD11	1.97	0.47
1:F:166:ALA:HB1	1:F:213:MET:HE2	1.97	0.47
1:E:23:LEU:HD21	1:E:128:ILE:HD13	1.98	0.46
1:N:125:LEU:O	1:N:129:ARG:HG3	2.15	0.46
1:I:375:ARG:NH2	5:I:601:HOH:O	2.38	0.46
1:B:330:LEU:HB3	1:B:346:VAL:HG22	1.96	0.46
1:P:46:HIS:HB3	1:P:351:PHE:CE2	2.50	0.46
1:L:168:MET:HG3	1:L:259:PHE:HB3	1.98	0.46
1:O:46:HIS:HB3	1:O:351:PHE:CE2	2.50	0.46
1:A:46:HIS:HB3	1:A:351:PHE:CE2	2.50	0.46
1:B:44:ALA:O	1:B:52:ARG:NH1	2.46	0.46
1:H:166:ALA:HB1	1:H:213:MET:HE2	1.98	0.46
1:K:10:LEU:HD13	1:K:12:LEU:H	1.81	0.46
1:D:418:THR:HG1	1:D:421:MET:HG3	1.80	0.46
1:K:25:LEU:HD23	1:K:72:ILE:HD12	1.96	0.46
1:B:125:LEU:O	1:B:129:ARG:HG3	2.15	0.46
1:D:421:MET:O	1:D:425:LEU:HD13	2.17	0.45
1:F:35:ASP:HB2	1:F:416:LEU:HD11	1.99	0.45
1:I:13:ALA:HA	1:I:154:ILE:HD11	1.98	0.45
1:C:353:ARG:HH22	1:D:302:ARG:NH2	2.13	0.45
1:I:258:PRO:HD2	1:I:261:LEU:HD12	1.99	0.45
1:I:23:LEU:HD21	1:I:128:ILE:HD13	1.98	0.45
1:A:115:ARG:HG2	1:A:238:HIS:CD2	2.50	0.45
1:L:125:LEU:O	1:L:129:ARG:HG3	2.16	0.45
1:L:418:THR:OG1	1:L:421:MET:HG3	2.17	0.45
1:M:299:MET:HE1	1:M:306:ILE:HG13	1.99	0.45
1:P:221:ASP:HB2	5:P:644:HOH:O	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:201:SER:HB3	1:O:206:PRO:HA	1.98	0.45
1:P:125:LEU:O	1:P:129:ARG:HG3	2.17	0.45
1:A:14:ARG:NH1	5:A:603:HOH:O	2.41	0.44
1:B:46:HIS:HB3	1:B:351:PHE:CE2	2.52	0.44
1:C:428:LYS:NZ	1:C:430:GLU:HB2	2.33	0.44
1:H:72:ILE:HG21	1:H:120:ALA:HB1	2.00	0.44
1:J:23:LEU:HD21	1:J:128:ILE:HD13	1.98	0.44
1:N:23:LEU:HD21	1:N:128:ILE:HD13	1.99	0.44
1:O:421:MET:O	1:O:425:LEU:HD13	2.17	0.44
1:B:86:ARG:NH2	1:D:93:GLU:HG2	2.32	0.44
1:M:72:ILE:HG21	1:M:120:ALA:HB1	1.99	0.44
1:N:418:THR:OG1	1:N:421:MET:HG3	2.17	0.44
1:P:28:GLY:N	1:P:74:GLN:HB2	2.32	0.44
1:P:115:ARG:HG2	1:P:238:HIS:HD2	1.81	0.44
1:G:363:ASP:O	1:G:380:ARG:HA	2.18	0.44
1:A:247:LYS:HE3	1:A:247:LYS:HB2	1.74	0.44
1:F:168:MET:HE2	1:F:213:MET:HG2	1.98	0.44
1:I:52:ARG:HD2	1:I:83:HIS:CG	2.53	0.44
1:A:42:LYS:HA	1:A:45:VAL:HG23	2.00	0.44
1:B:86:ARG:NE	1:D:93:GLU:OE2	2.51	0.44
1:G:86:ARG:HB3	1:G:309:TYR:CD1	2.52	0.44
1:D:274:TRP:CH2	1:D:276:ASP:HB3	2.53	0.44
1:E:86:ARG:HB3	1:E:309:TYR:CD1	2.53	0.44
1:K:406:ARG:HB3	1:K:425:LEU:HD11	1.99	0.44
1:M:46:HIS:HB3	1:M:351:PHE:CE2	2.53	0.44
1:E:125:LEU:HD12	1:E:125:LEU:HA	1.85	0.44
1:C:107:ARG:HD3	1:C:123:GLN:HE21	1.83	0.43
1:E:46:HIS:HB3	1:E:351:PHE:CE2	2.53	0.43
1:M:74:GLN:HE22	1:M:114:TYR:HB2	1.83	0.43
1:N:419:ARG:NH2	1:N:429:GLN:O	2.52	0.43
1:A:125:LEU:HD12	1:A:125:LEU:HA	1.87	0.43
1:I:11:MET:HE3	1:L:151:ARG:HG2	2.00	0.43
1:J:375:ARG:NH1	1:J:392:GLU:OE1	2.50	0.43
1:P:321:ASP:OD2	1:P:325:SER:HB3	2.18	0.43
1:G:387:ALA:HB3	1:G:419:ARG:HD2	1.99	0.43
1:M:244:LEU:O	1:M:248:ILE:HG13	2.19	0.43
1:M:406:ARG:HB3	1:M:425:LEU:HD11	1.99	0.43
1:O:330:LEU:HB3	1:O:346:VAL:HG22	2.00	0.43
1:F:104:ALA:HB1	1:F:123:GLN:OE1	2.17	0.43
1:C:299:MET:HE1	1:C:306:ILE:HG13	2.00	0.43
1:D:419:ARG:NH2	1:D:429:GLN:O	2.49	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:125:LEU:O	1:G:129:ARG:HG3	2.18	0.43
1:A:391:PRO:HG3	1:A:427:HIS:CG	2.54	0.43
1:D:201:SER:HB2	1:D:206:PRO:HA	1.99	0.43
5:M:708:HOH:O	1:O:78:HIS:HA	2.18	0.43
1:D:168:MET:HE1	1:D:274:TRP:CE3	2.54	0.43
1:J:237:SER:OG	1:J:243:ASP:OD1	2.31	0.43
1:M:45:VAL:HG13	5:M:699:HOH:O	2.18	0.43
1:A:107:ARG:HD3	1:A:123:GLN:HE21	1.83	0.43
1:F:166:ALA:CB	1:F:213:MET:HE2	2.49	0.43
1:I:328:MET:HE2	1:J:328:MET:HE2	2.00	0.43
1:G:355:ARG:HG3	1:G:372:TRP:CZ3	2.54	0.43
1:H:350:LEU:HD23	1:H:367:LEU:HB2	2.00	0.43
1:I:347:GLN:O	1:I:364:SER:HA	2.19	0.42
1:L:46:HIS:HB3	1:L:351:PHE:CE2	2.54	0.42
1:M:41:ALA:HB2	1:M:75:TYR:O	2.18	0.42
1:P:299:MET:HE1	1:P:306:ILE:HG13	2.00	0.42
1:C:168[A]:MET:HE3	1:C:168[A]:MET:HB2	1.80	0.42
1:D:299:MET:HE1	1:D:306:ILE:HG13	2.02	0.42
1:D:237:SER:OG	1:D:243:ASP:OD2	2.25	0.42
1:E:406:ARG:HB3	1:E:425:LEU:HD11	2.01	0.42
1:G:36:LEU:HD12	1:G:36:LEU:HA	1.93	0.42
1:H:16:LEU:HD12	1:H:16:LEU:HA	1.88	0.42
1:L:239:ASP:HB3	1:L:242:LYS:HB3	2.01	0.42
1:C:406:ARG:HB3	1:C:425:LEU:HD21	2.02	0.42
1:D:46:HIS:HB3	1:D:351:PHE:CE2	2.54	0.42
1:F:23:LEU:HB2	1:F:138:ILE:HD13	2.01	0.42
1:G:407:PHE:CG	1:G:417:VAL:HG22	2.55	0.42
1:K:86:ARG:HB3	1:K:309:TYR:CD1	2.54	0.42
1:L:322:ARG:HD2	1:L:375:ARG:HD3	2.00	0.42
1:N:46:HIS:HB3	1:N:351:PHE:CE2	2.55	0.42
1:C:44:ALA:O	1:C:52:ARG:NH1	2.51	0.42
1:E:402:GLU:O	1:E:406:ARG:HD3	2.19	0.42
1:K:93:GLU:H	1:K:93:GLU:CD	2.26	0.42
1:L:230:ASP:OD1	1:L:238:HIS:ND1	2.39	0.42
1:B:77:SER:HB3	1:B:80:LEU:HB3	2.00	0.42
1:M:116:GLY:H	1:M:119:ASP:HB3	1.85	0.42
1:O:36:LEU:HD21	1:O:283:TYR:CE2	2.55	0.42
1:C:77:SER:HB2	1:C:80:LEU:HB3	2.02	0.42
1:C:402:GLU:O	1:C:406:ARG:HD3	2.20	0.42
1:D:125:LEU:O	1:D:129:ARG:HG3	2.19	0.42
1:D:402:GLU:O	1:D:406:ARG:HD3	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:299:MET:HE1	1:E:306:ILE:HG13	2.02	0.42
1:J:188:LYS:HE2	1:J:255:TYR:CZ	2.55	0.42
1:D:418:THR:OG1	1:D:421:MET:HG3	2.20	0.41
1:E:391:PRO:HG3	1:E:427:HIS:CG	2.55	0.41
1:F:86:ARG:HB3	1:F:309:TYR:CD1	2.55	0.41
1:H:201:SER:HB2	1:H:206:PRO:HA	2.00	0.41
1:J:359:PHE:O	1:J:376:SER:HA	2.19	0.41
1:L:86:ARG:HB3	1:L:309:TYR:CD1	2.54	0.41
1:D:275:ARG:NH2	1:D:296:GLU:OE1	2.53	0.41
1:G:330:LEU:HA	5:G:630:HOH:O	2.19	0.41
1:I:86:ARG:HB3	1:I:309:TYR:CD1	2.55	0.41
1:L:273:TYR:CE2	1:L:297:LEU:HB2	2.55	0.41
1:L:418:THR:HG1	1:L:421:MET:HG3	1.85	0.41
1:M:375:ARG:HB3	1:M:392:GLU:HG3	2.02	0.41
1:C:391:PRO:HG3	1:C:427:HIS:CG	2.56	0.41
1:E:363:ASP:O	1:E:380:ARG:HA	2.20	0.41
1:L:13:ALA:CA	1:L:154:ILE:HD11	2.48	0.41
1:C:418:THR:OG1	1:C:421:MET:HG3	2.21	0.41
1:M:150:SER:O	1:M:154:ILE:HG12	2.21	0.41
1:F:35:ASP:HA	1:F:38:ASN:CG	2.46	0.41
1:M:228:GLU:HG3	5:M:618:HOH:O	2.21	0.41
1:C:302:ARG:HH22	1:D:353:ARG:CZ	2.34	0.41
1:C:406:ARG:HG2	1:C:425:LEU:HD21	2.03	0.41
1:F:407:PHE:CG	1:F:417:VAL:HG22	2.56	0.41
1:G:41:ALA:HB2	1:G:75:TYR:O	2.20	0.41
1:G:418:THR:OG1	1:G:421:MET:HG3	2.21	0.41
1:B:421:MET:O	1:B:425:LEU:HD13	2.21	0.41
1:C:155:ASP:OD2	1:C:159:LYS:NZ	2.52	0.41
1:C:372[B]:TRP:CE3	1:C:389:VAL:HG13	2.56	0.41
1:I:14:ARG:HG2	1:L:14:ARG:HA	2.02	0.41
1:J:148:ASP:OD1	1:J:150:SER:OG	2.37	0.41
1:K:359:PHE:O	1:K:376:SER:HA	2.21	0.41
1:N:299:MET:HE1	1:N:306:ILE:HG13	2.02	0.41
1:D:125:LEU:HD12	1:D:125:LEU:HA	1.89	0.41
1:F:391:PRO:HG3	1:F:427:HIS:CG	2.55	0.41
1:M:171:PRO:HB2	1:M:174:GLU:HG3	2.02	0.41
1:D:42:LYS:HA	1:D:45:VAL:HG23	2.03	0.41
1:E:330:LEU:HB3	1:E:346:VAL:HG22	2.03	0.41
1:F:330:LEU:HB3	1:F:346:VAL:HG22	2.01	0.41
1:I:205:ASP:OD1	1:I:207:SER:OG	2.38	0.41
1:I:385:ASP:OD1	1:I:386:ARG:N	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:M:125:LEU:HD12	1:M:125:LEU:HA	1.91	0.41
1:M:402:GLU:O	1:M:406:ARG:HD3	2.21	0.41
1:B:115:ARG:HG2	1:B:238:HIS:CD2	2.55	0.40
1:C:380:ARG:NH2	1:C:398:GLU:HG2	2.36	0.40
1:H:203:PRO:HD3	5:H:631:HOH:O	2.21	0.40
1:I:386:ARG:NH1	3:I:501:AMP:O2P	2.54	0.40
1:N:402:GLU:O	1:N:406:ARG:HD3	2.20	0.40
1:K:10:LEU:HD22	1:K:11:MET:H	1.86	0.40
1:M:277:VAL:HG13	1:M:283:TYR:HA	2.04	0.40
1:N:406:ARG:HB3	1:N:425:LEU:HD11	2.03	0.40
1:P:421:MET:O	1:P:425:LEU:HD13	2.22	0.40
1:C:363:ASP:O	1:C:380:ARG:HA	2.22	0.40
1:H:347:GLN:O	1:H:364:SER:HA	2.22	0.40
1:L:79:THR:HG23	5:L:657:HOH:O	2.22	0.40
1:F:168:MET:HE1	1:F:274:TRP:CE3	2.56	0.40
1:F:213:MET:HE1	1:F:259:PHE:CD1	2.55	0.40
1:G:347:GLN:O	1:G:364:SER:HA	2.21	0.40
1:K:258:PRO:HD2	1:K:261:LEU:HD12	2.03	0.40
1:L:44:ALA:HB2	1:L:80:LEU:HB2	2.04	0.40
1:L:299:MET:HE1	1:L:306:ILE:HB	2.03	0.40
1:B:307:ARG:HB2	1:C:95:MET:SD	2.62	0.40
1:B:391:PRO:HG3	1:B:427:HIS:CG	2.56	0.40
1:D:363:ASP:O	1:D:380:ARG:HA	2.22	0.40
1:F:29:ARG:NH2	1:F:38:ASN:OD1	2.54	0.40
1:G:402:GLU:O	1:G:406:ARG:HD3	2.21	0.40
1:H:213:MET:HE1	1:H:259:PHE:CD1	2.56	0.40
1:L:299:MET:HE1	1:L:306:ILE:CG1	2.52	0.40
1:O:168:MET:HE1	1:O:274:TRP:CE3	2.57	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	423/431 (98%)	414 (98%)	9 (2%)	0	100	100
1	B	419/431 (97%)	409 (98%)	9 (2%)	1 (0%)	44	61
1	C	421/431 (98%)	409 (97%)	12 (3%)	0	100	100
1	D	409/431 (95%)	401 (98%)	8 (2%)	0	100	100
1	E	408/431 (95%)	398 (98%)	9 (2%)	1 (0%)	44	61
1	F	407/431 (94%)	397 (98%)	10 (2%)	0	100	100
1	G	407/431 (94%)	397 (98%)	10 (2%)	0	100	100
1	H	412/431 (96%)	400 (97%)	11 (3%)	1 (0%)	44	61
1	I	390/431 (90%)	377 (97%)	12 (3%)	1 (0%)	37	53
1	J	408/431 (95%)	397 (97%)	10 (2%)	1 (0%)	44	61
1	K	419/431 (97%)	410 (98%)	9 (2%)	0	100	100
1	L	408/431 (95%)	396 (97%)	11 (3%)	1 (0%)	44	61
1	M	409/431 (95%)	396 (97%)	12 (3%)	1 (0%)	44	61
1	N	420/431 (97%)	410 (98%)	10 (2%)	0	100	100
1	O	411/431 (95%)	398 (97%)	13 (3%)	0	100	100
1	P	421/431 (98%)	411 (98%)	10 (2%)	0	100	100
All	All	6592/6896 (96%)	6420 (97%)	165 (2%)	7 (0%)	48	67

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	L	74	GLN
1	J	74	GLN
1	B	75	TYR
1	H	74	GLN
1	M	74	GLN
1	E	74	GLN
1	I	74	GLN

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	357/373 (96%)	354 (99%)	3 (1%)	79 89
1	B	354/373 (95%)	351 (99%)	3 (1%)	79 89
1	C	358/373 (96%)	357 (100%)	1 (0%)	91 96
1	D	343/373 (92%)	341 (99%)	2 (1%)	84 92
1	E	343/373 (92%)	338 (98%)	5 (2%)	60 77
1	F	349/373 (94%)	348 (100%)	1 (0%)	91 96
1	G	326/373 (87%)	324 (99%)	2 (1%)	84 92
1	H	328/373 (88%)	322 (98%)	6 (2%)	54 73
1	I	297/373 (80%)	294 (99%)	3 (1%)	73 85
1	J	331/373 (89%)	328 (99%)	3 (1%)	75 87
1	K	353/373 (95%)	349 (99%)	4 (1%)	70 84
1	L	341/373 (91%)	333 (98%)	8 (2%)	45 67
1	M	347/373 (93%)	346 (100%)	1 (0%)	91 96
1	N	350/373 (94%)	346 (99%)	4 (1%)	70 84
1	O	348/373 (93%)	345 (99%)	3 (1%)	75 87
1	P	354/373 (95%)	353 (100%)	1 (0%)	91 96
All	All	5479/5968 (92%)	5429 (99%)	50 (1%)	75 87

All (50) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	31	THR
1	A	250	GLU
1	A	340	ILE
1	B	174	GLU
1	B	201	SER
1	B	410	SER
1	C	77	SER
1	D	76	GLN
1	D	180	VAL
1	E	29	ARG
1	E	58	LEU
1	E	154	ILE
1	E	176	SER
1	E	326	HIS
1	F	180	VAL
1	G	361	ASN

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Mol	Chain	Res	Type
1	G	425	LEU
1	H	16	LEU
1	H	36	LEU
1	H	173	GLU
1	H	225	GLU
1	H	341	SER
1	H	379	LEU
1	I	10	LEU
1	I	75	TYR
1	I	79	THR
1	J	31	THR
1	J	180	VAL
1	J	347	GLN
1	K	10	LEU
1	K	125	LEU
1	K	154	ILE
1	K	277	VAL
1	L	12	LEU
1	L	29	ARG
1	L	168	MET
1	L	173	GLU
1	L	174	GLU
1	L	201	SER
1	L	329	THR
1	L	430	GLU
1	M	174	GLU
1	N	40	ARG
1	N	173	GLU
1	N	174	GLU
1	N	180	VAL
1	O	173	GLU
1	O	174	GLU
1	O	180	VAL
1	P	428	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	78	HIS
1	A	347	GLN
1	C	82	GLN
1	D	76	GLN

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Mol	Chain	Res	Type
1	D	347	GLN
1	E	78	HIS
1	F	347	GLN
1	H	123	GLN
1	I	78	HIS
1	I	124	ASN
1	L	265	GLN
1	M	78	HIS
1	O	78	HIS
1	O	123	GLN

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

16 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	GLC	Q	1	2	11,11,12	0.60	0	15,15,17	0.81	0
2	FRU	Q	2	2	11,12,12	0.62	0	10,18,18	0.77	0
2	GLC	R	1	2	11,11,12	0.52	0	15,15,17	0.92	1 (6%)
2	FRU	R	2	2	11,12,12	0.71	0	10,18,18	0.80	0
2	GLC	S	1	2	11,11,12	0.57	0	15,15,17	0.82	0
2	FRU	S	2	2	11,12,12	0.65	0	10,18,18	0.99	0
2	GLC	T	1	2	11,11,12	0.57	0	15,15,17	0.75	0
2	FRU	T	2	2	11,12,12	0.63	0	10,18,18	0.73	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	GLC	U	1	2	11,11,12	0.53	0	15,15,17	0.96	1 (6%)
2	FRU	U	2	2	11,12,12	0.71	0	10,18,18	1.15	1 (10%)
2	GLC	V	1	2	11,11,12	0.56	0	15,15,17	0.91	0
2	FRU	V	2	2	11,12,12	0.68	0	10,18,18	0.61	0
2	GLC	W	1	2	11,11,12	0.56	0	15,15,17	0.72	0
2	FRU	W	2	2	11,12,12	0.69	0	10,18,18	0.63	0
2	GLC	X	1	2	11,11,12	0.57	0	15,15,17	0.88	0
2	FRU	X	2	2	11,12,12	0.70	0	10,18,18	0.70	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	GLC	Q	1	2	-	0/2/19/22	0/1/1/1
2	FRU	Q	2	2	-	0/5/24/24	0/1/1/1
2	GLC	R	1	2	-	0/2/19/22	0/1/1/1
2	FRU	R	2	2	-	5/5/24/24	0/1/1/1
2	GLC	S	1	2	-	0/2/19/22	0/1/1/1
2	FRU	S	2	2	-	0/5/24/24	0/1/1/1
2	GLC	T	1	2	-	0/2/19/22	0/1/1/1
2	FRU	T	2	2	-	5/5/24/24	0/1/1/1
2	GLC	U	1	2	-	2/2/19/22	0/1/1/1
2	FRU	U	2	2	-	3/5/24/24	0/1/1/1
2	GLC	V	1	2	-	2/2/19/22	0/1/1/1
2	FRU	V	2	2	-	2/5/24/24	0/1/1/1
2	GLC	W	1	2	-	0/2/19/22	0/1/1/1
2	FRU	W	2	2	-	2/5/24/24	0/1/1/1
2	GLC	X	1	2	-	0/2/19/22	0/1/1/1
2	FRU	X	2	2	-	5/5/24/24	0/1/1/1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	U	1	GLC	C1-O5-C5	2.30	115.31	112.19
2	U	2	FRU	O2-C2-O5	2.29	113.93	109.50
2	R	1	GLC	O5-C5-C6	2.23	110.70	107.20

There are no chirality outliers.

All (26) torsion outliers are listed below:

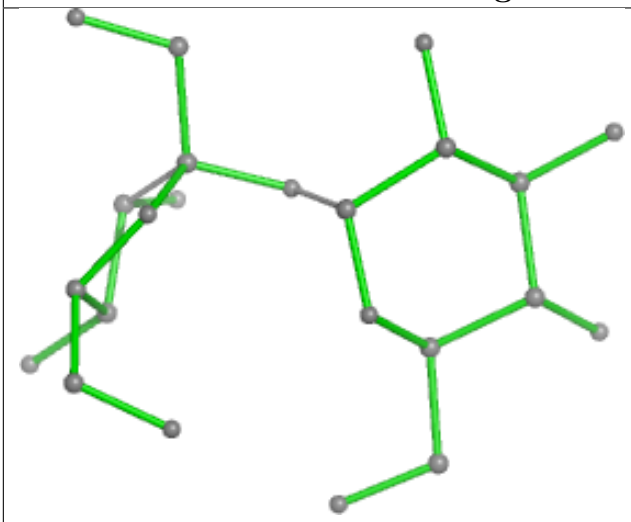
Mol	Chain	Res	Type	Atoms
2	T	2	FRU	O1-C1-C2-O2
2	T	2	FRU	O1-C1-C2-O5
2	X	2	FRU	O1-C1-C2-C3
2	X	2	FRU	O1-C1-C2-O2
2	X	2	FRU	O1-C1-C2-O5
2	W	2	FRU	O5-C5-C6-O6
2	R	2	FRU	O5-C5-C6-O6
2	V	2	FRU	C4-C5-C6-O6
2	W	2	FRU	C4-C5-C6-O6
2	V	1	GLC	O5-C5-C6-O6
2	U	1	GLC	O5-C5-C6-O6
2	X	2	FRU	C4-C5-C6-O6
2	U	2	FRU	C4-C5-C6-O6
2	U	1	GLC	C4-C5-C6-O6
2	V	1	GLC	C4-C5-C6-O6
2	V	2	FRU	O5-C5-C6-O6
2	T	2	FRU	C4-C5-C6-O6
2	X	2	FRU	O5-C5-C6-O6
2	U	2	FRU	O5-C5-C6-O6
2	T	2	FRU	O5-C5-C6-O6
2	R	2	FRU	O1-C1-C2-C3
2	T	2	FRU	O1-C1-C2-C3
2	R	2	FRU	O1-C1-C2-O5
2	R	2	FRU	C4-C5-C6-O6
2	R	2	FRU	O1-C1-C2-O2
2	U	2	FRU	O1-C1-C2-C3

There are no ring outliers.

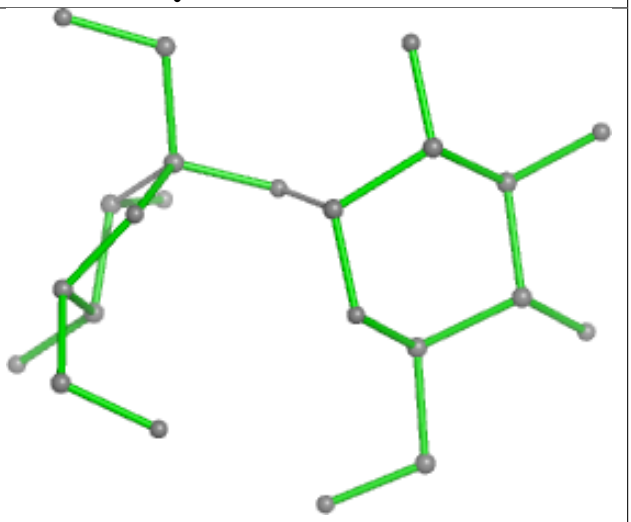
No monomer is involved in short contacts.

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

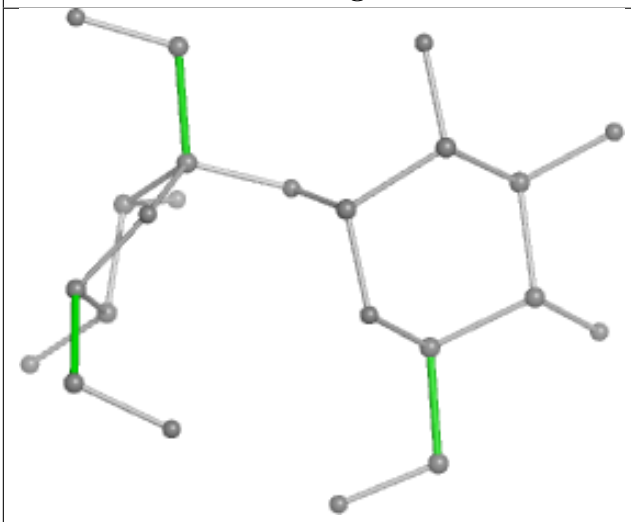
Oligosaccharide Chain Q



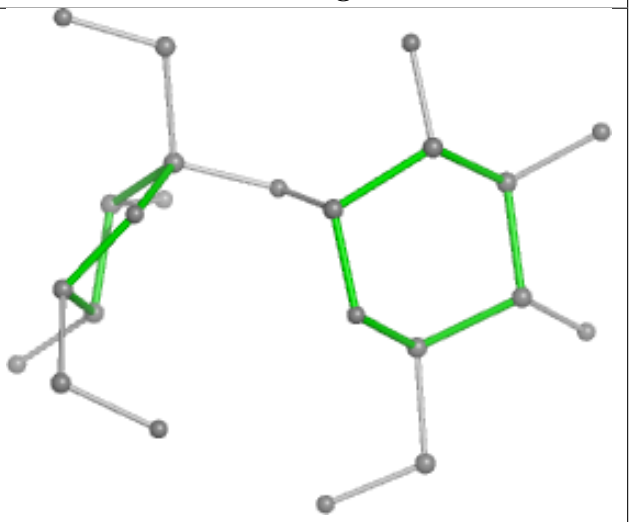
Bond lengths



Bond angles

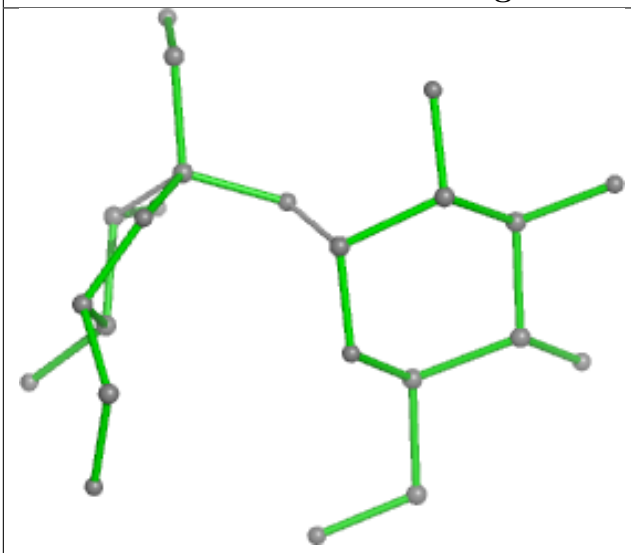


Torsions

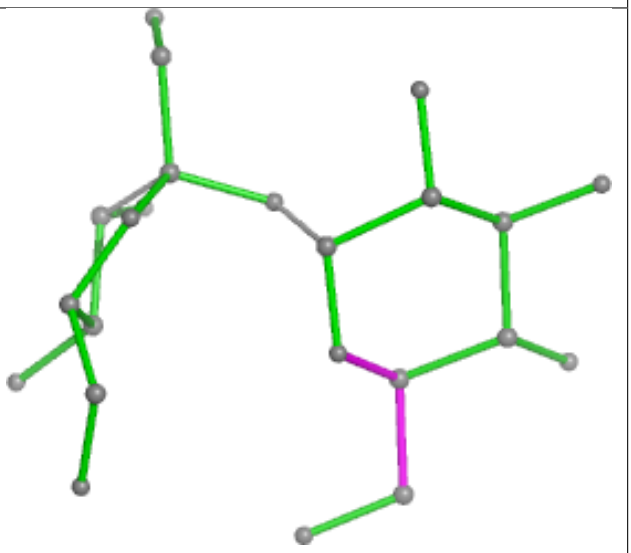


Rings

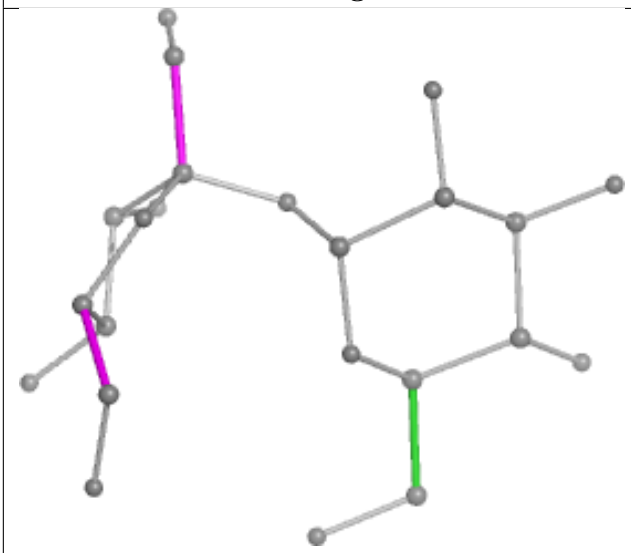
Oligosaccharide Chain R



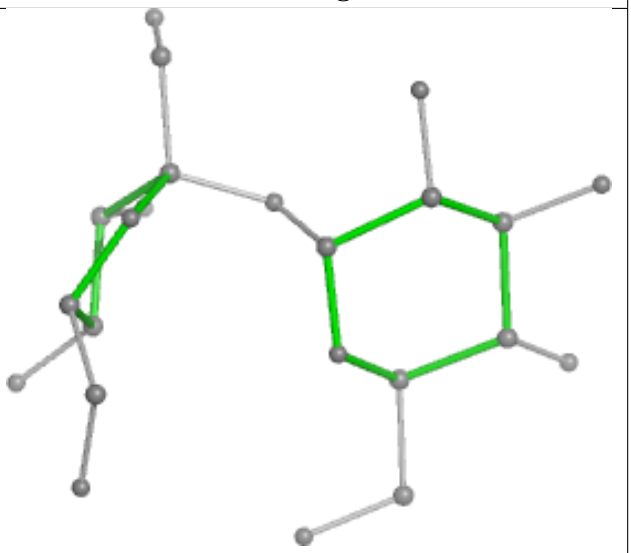
Bond lengths



Bond angles

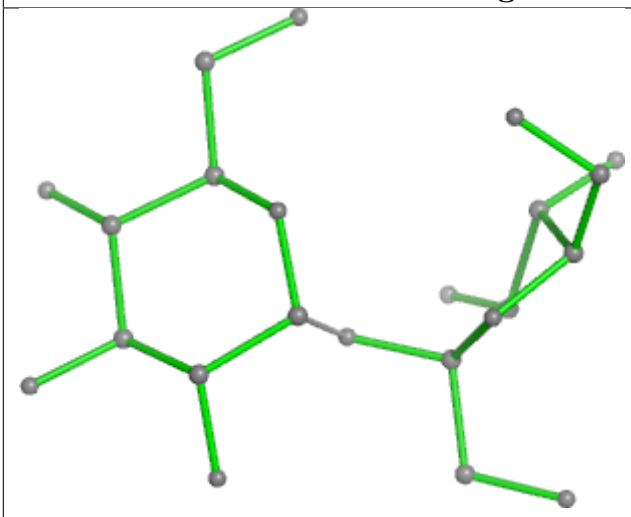


Torsions

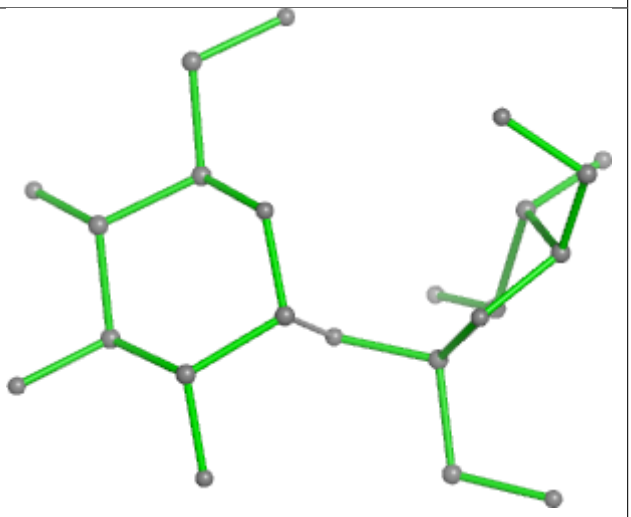


Rings

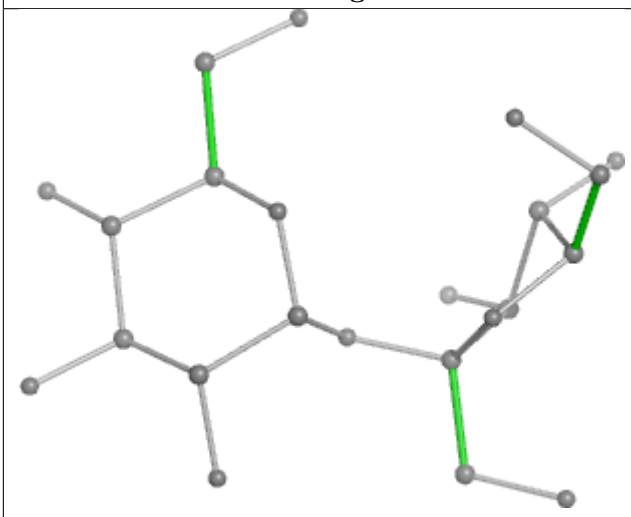
Oligosaccharide Chain S



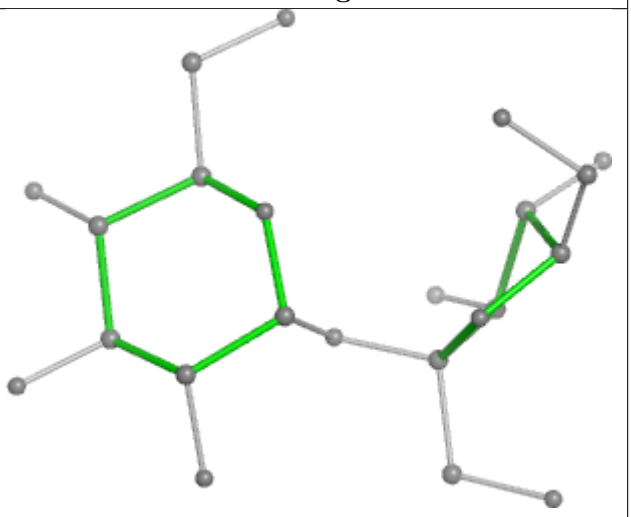
Bond lengths



Bond angles

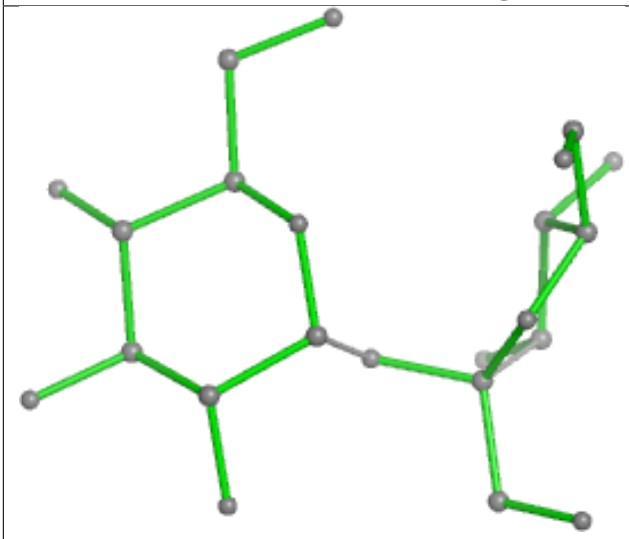


Torsions

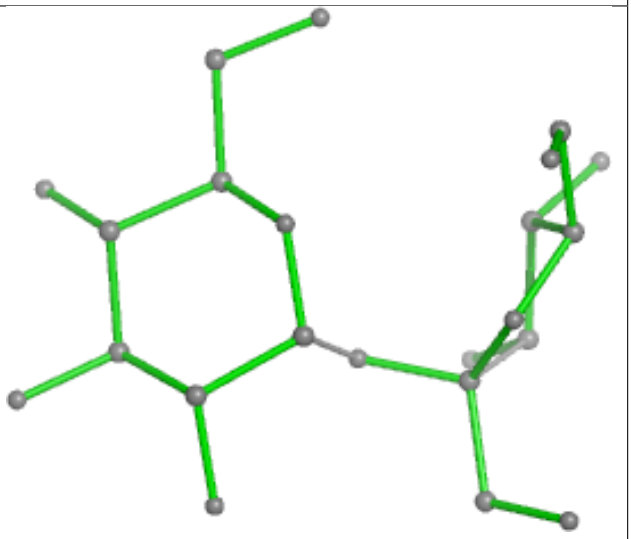


Rings

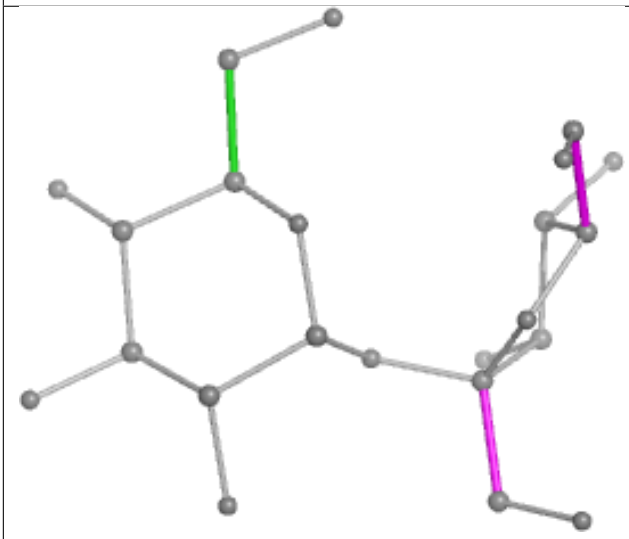
Oligosaccharide Chain T



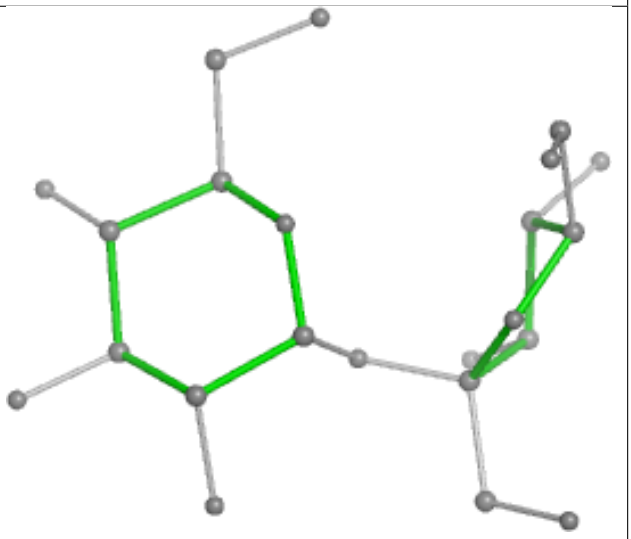
Bond lengths



Bond angles

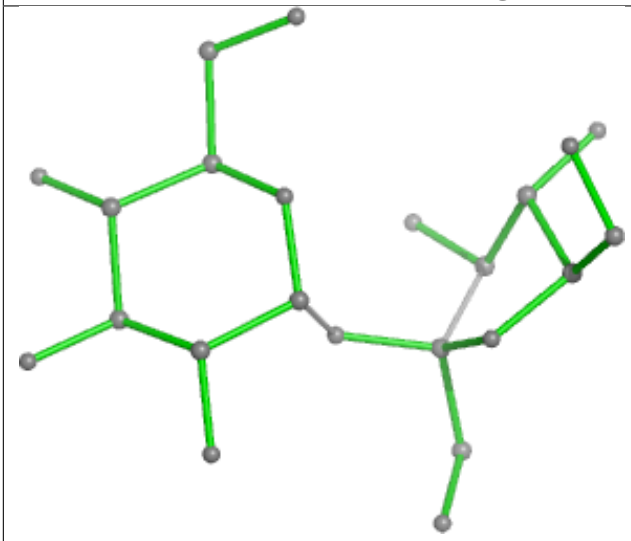


Torsions

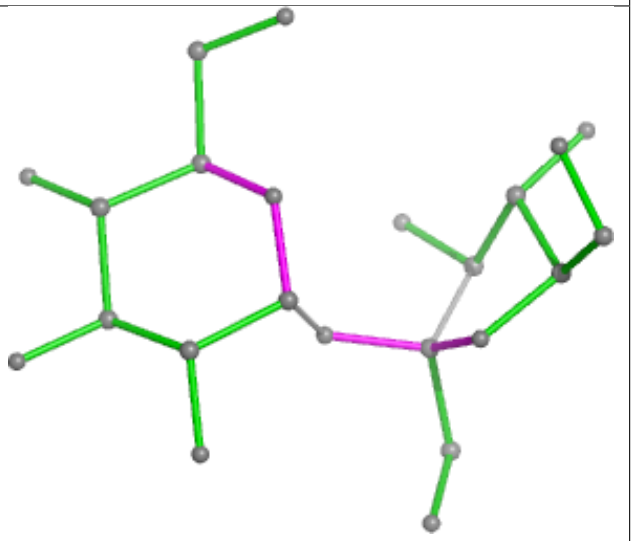


Rings

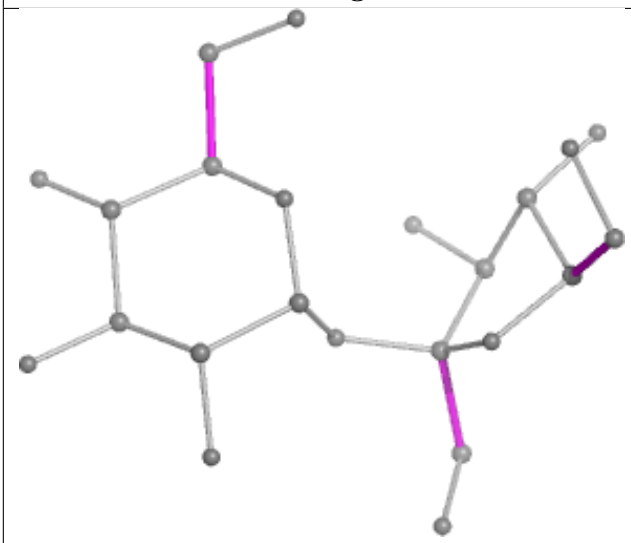
Oligosaccharide Chain U



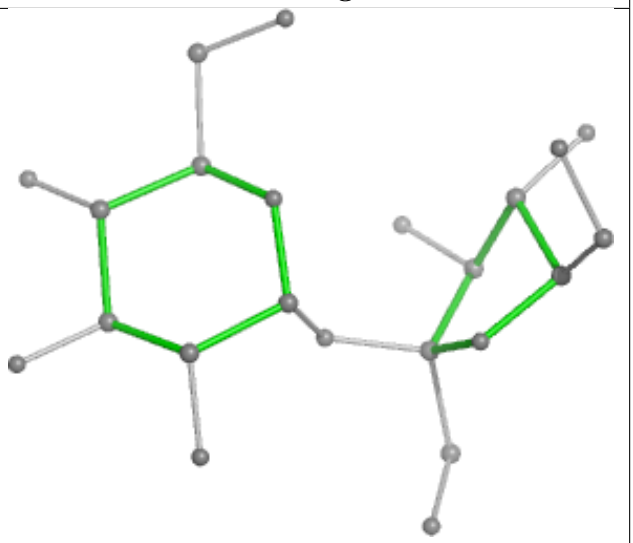
Bond lengths



Bond angles

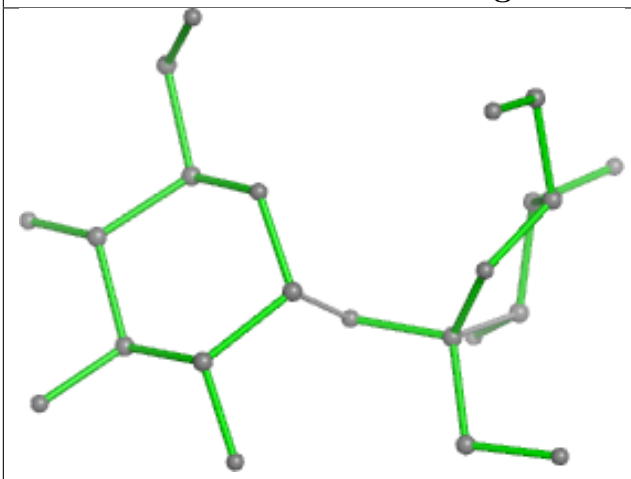


Torsions

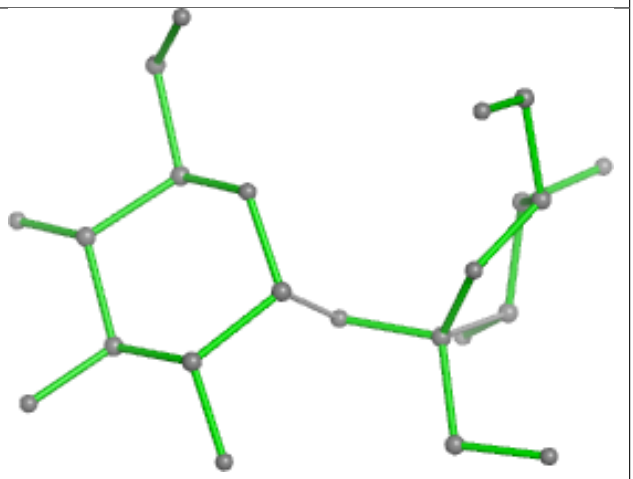


Rings

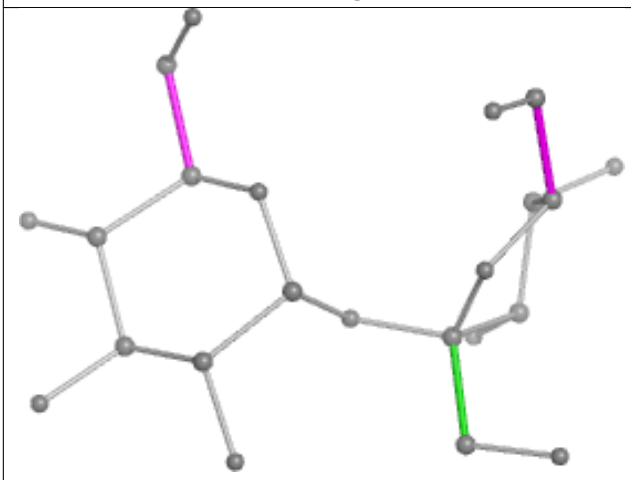
Oligosaccharide Chain V



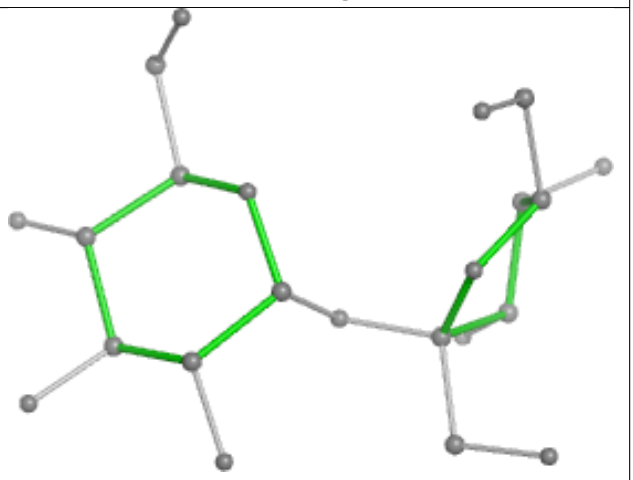
Bond lengths



Bond angles

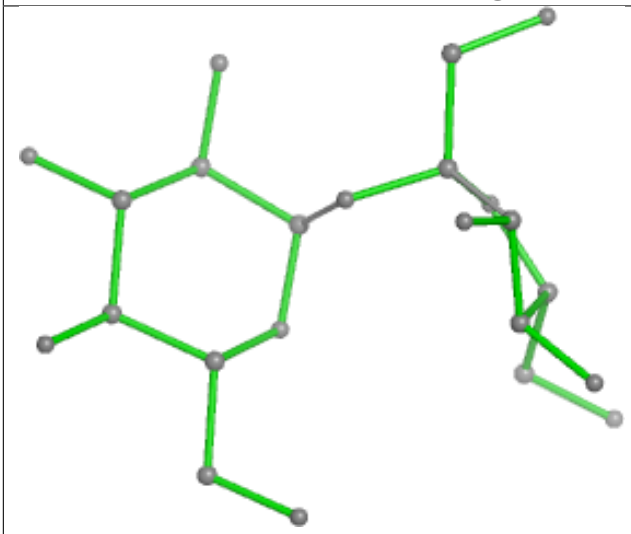


Torsions

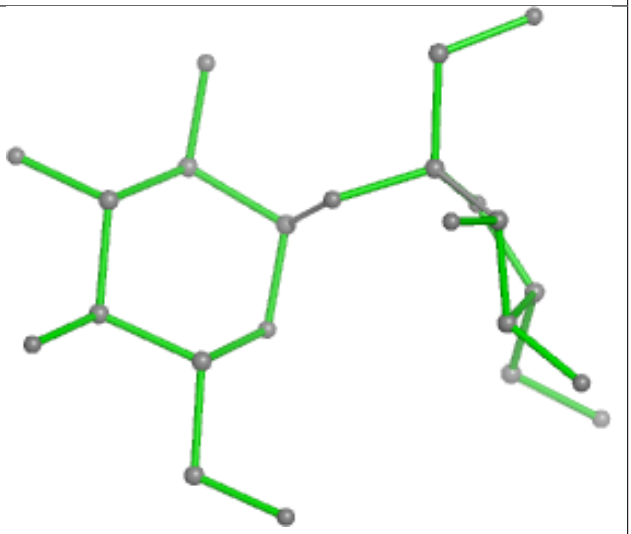


Rings

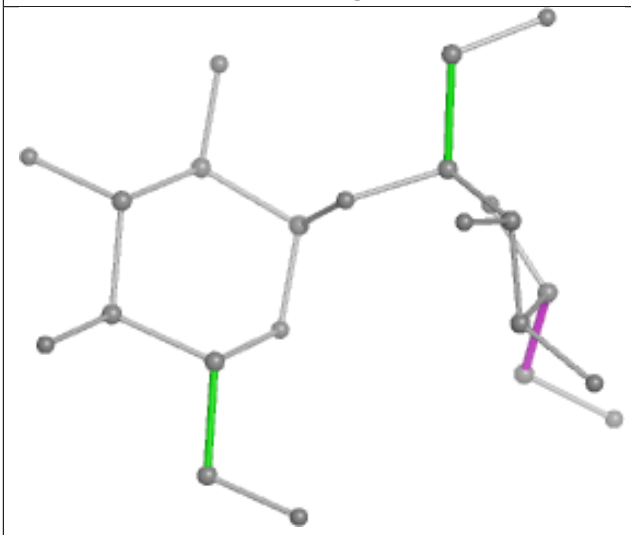
Oligosaccharide Chain W



Bond lengths



Bond angles



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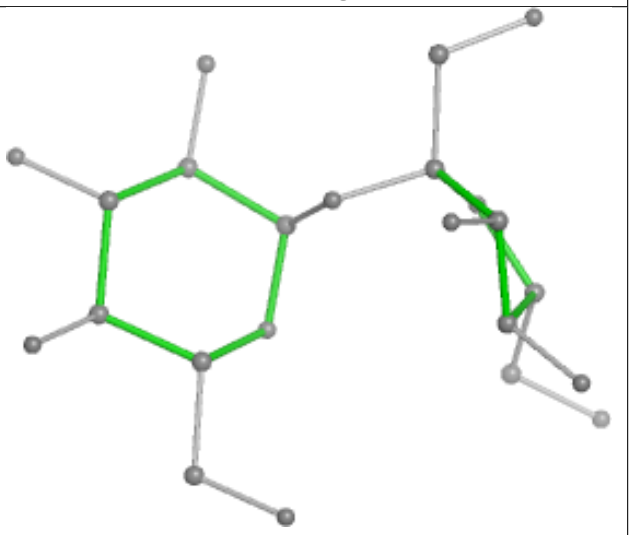
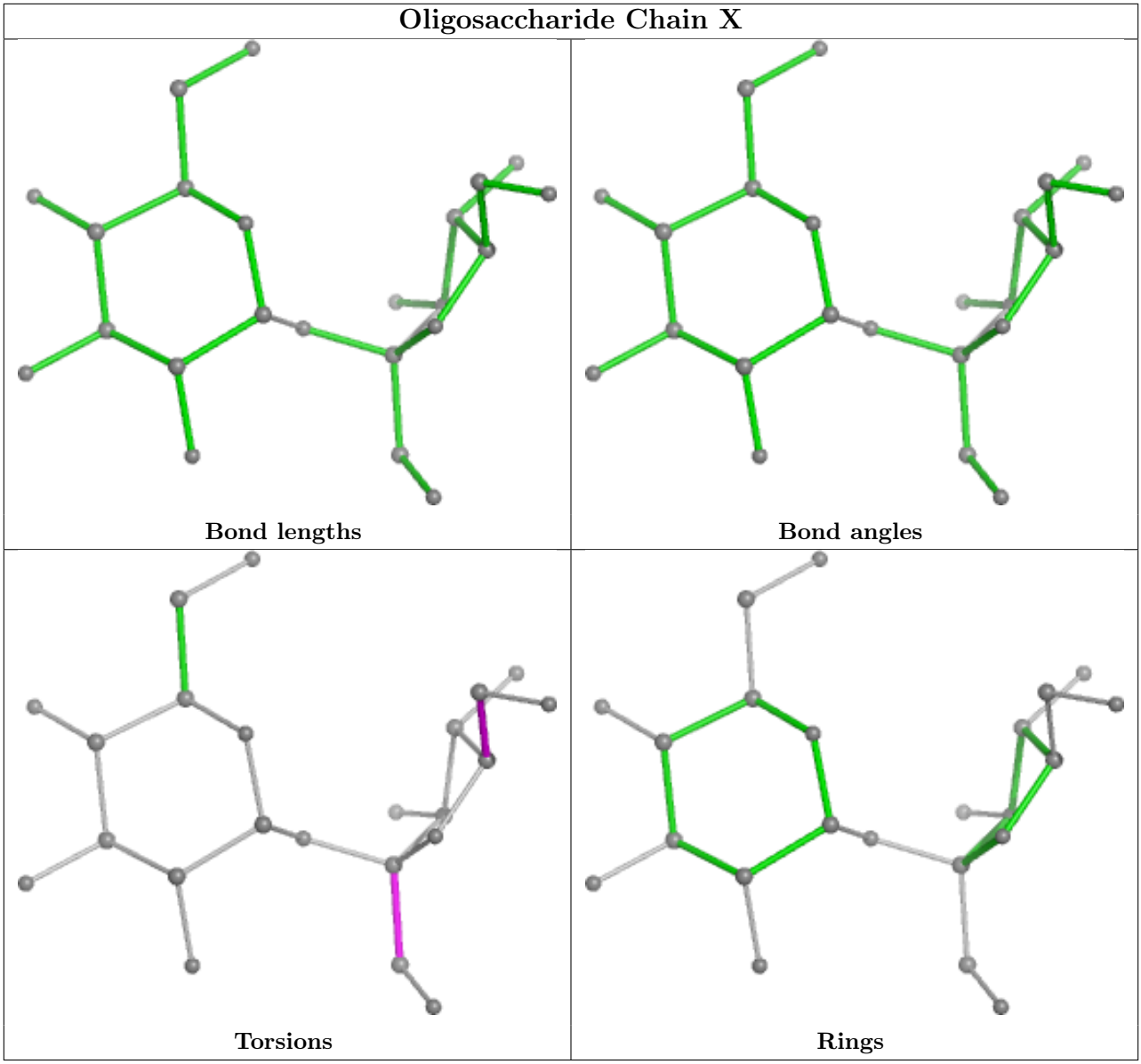


Rings



5.6 Ligand geometry (i)

17 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	AMP	B	501	-	22,25,25	0.75	0	25,38,38	0.95	2 (8%)
3	AMP	C	501	-	22,25,25	0.77	1 (4%)	25,38,38	0.93	2 (8%)
3	AMP	G	501	-	22,25,25	0.66	0	25,38,38	0.87	2 (8%)
3	AMP	K	501	-	22,25,25	0.68	0	25,38,38	0.89	2 (8%)
3	AMP	N	501	-	22,25,25	0.79	1 (4%)	25,38,38	0.96	2 (8%)
3	AMP	A	501	-	22,25,25	0.58	0	25,38,38	0.87	2 (8%)
3	AMP	F	501	-	22,25,25	0.68	0	25,38,38	0.89	2 (8%)
3	AMP	H	501	-	22,25,25	0.66	0	25,38,38	0.89	2 (8%)
3	AMP	I	501	-	22,25,25	0.72	0	25,38,38	0.91	2 (8%)
3	AMP	J	501	-	22,25,25	0.74	1 (4%)	25,38,38	0.90	2 (8%)
3	AMP	O	501	-	22,25,25	0.70	0	25,38,38	0.95	2 (8%)
3	AMP	E	501	-	22,25,25	0.75	0	25,38,38	0.92	2 (8%)
3	AMP	D	501	-	22,25,25	0.70	0	25,38,38	0.90	2 (8%)
3	AMP	M	501	-	22,25,25	0.71	0	25,38,38	0.88	2 (8%)
3	AMP	L	501	-	22,25,25	0.76	1 (4%)	25,38,38	0.91	2 (8%)
4	PO4	D	502	-	4,4,4	0.88	0	6,6,6	0.42	0
3	AMP	P	501	-	22,25,25	0.79	1 (4%)	25,38,38	0.94	2 (8%)

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	AMP	B	501	-	-	5/6/26/26	0/3/3/3
3	AMP	C	501	-	-	5/6/26/26	0/3/3/3
3	AMP	G	501	-	-	5/6/26/26	0/3/3/3
3	AMP	K	501	-	-	3/6/26/26	0/3/3/3
3	AMP	N	501	-	-	0/6/26/26	0/3/3/3
3	AMP	A	501	-	-	2/6/26/26	0/3/3/3
3	AMP	F	501	-	-	0/6/26/26	0/3/3/3
3	AMP	H	501	-	-	5/6/26/26	0/3/3/3
3	AMP	I	501	-	-	5/6/26/26	0/3/3/3
3	AMP	J	501	-	-	3/6/26/26	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	AMP	O	501	-	-	5/6/26/26	0/3/3/3
3	AMP	E	501	-	-	5/6/26/26	0/3/3/3
3	AMP	D	501	-	-	3/6/26/26	0/3/3/3
3	AMP	M	501	-	-	3/6/26/26	0/3/3/3
3	AMP	L	501	-	-	0/6/26/26	0/3/3/3
3	AMP	P	501	-	-	5/6/26/26	0/3/3/3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	N	501	AMP	P-O2P	-2.28	1.46	1.54
3	P	501	AMP	P-O2P	-2.27	1.46	1.54
3	L	501	AMP	P-O2P	-2.14	1.46	1.54
3	C	501	AMP	P-O2P	-2.12	1.46	1.54
3	J	501	AMP	P-O2P	-2.02	1.47	1.54

All (32) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	O	501	AMP	P-O5'-C5'	3.00	126.56	118.30
3	B	501	AMP	P-O5'-C5'	2.96	126.46	118.30
3	N	501	AMP	P-O5'-C5'	2.92	126.33	118.30
3	F	501	AMP	P-O5'-C5'	2.91	126.32	118.30
3	K	501	AMP	P-O5'-C5'	2.82	126.07	118.30
3	H	501	AMP	P-O5'-C5'	2.82	126.06	118.30
3	D	501	AMP	P-O5'-C5'	2.81	126.04	118.30
3	A	501	AMP	P-O5'-C5'	2.80	126.02	118.30
3	C	501	AMP	P-O5'-C5'	2.79	125.99	118.30
3	M	501	AMP	P-O5'-C5'	2.78	125.95	118.30
3	E	501	AMP	P-O5'-C5'	2.75	125.86	118.30
3	L	501	AMP	P-O5'-C5'	2.75	125.86	118.30
3	P	501	AMP	P-O5'-C5'	2.69	125.70	118.30
3	I	501	AMP	P-O5'-C5'	2.65	125.59	118.30
3	G	501	AMP	P-O5'-C5'	2.55	125.32	118.30
3	M	501	AMP	C5-C6-N6	2.34	123.91	120.35
3	H	501	AMP	C5-C6-N6	2.34	123.91	120.35
3	J	501	AMP	P-O5'-C5'	2.33	124.72	118.30
3	C	501	AMP	C5-C6-N6	2.32	123.88	120.35
3	P	501	AMP	C5-C6-N6	2.32	123.88	120.35
3	F	501	AMP	C5-C6-N6	2.32	123.88	120.35
3	N	501	AMP	C5-C6-N6	2.32	123.88	120.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	D	501	AMP	C5-C6-N6	2.31	123.87	120.35
3	B	501	AMP	C5-C6-N6	2.31	123.86	120.35
3	L	501	AMP	C5-C6-N6	2.31	123.86	120.35
3	A	501	AMP	C5-C6-N6	2.30	123.85	120.35
3	E	501	AMP	C5-C6-N6	2.30	123.85	120.35
3	K	501	AMP	C5-C6-N6	2.30	123.85	120.35
3	O	501	AMP	C5-C6-N6	2.30	123.85	120.35
3	I	501	AMP	C5-C6-N6	2.28	123.82	120.35
3	J	501	AMP	C5-C6-N6	2.28	123.82	120.35
3	G	501	AMP	C5-C6-N6	2.27	123.81	120.35

There are no chirality outliers.

All (54) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	501	AMP	C5'-O5'-P-O2P
3	B	501	AMP	C5'-O5'-P-O3P
3	C	501	AMP	C5'-O5'-P-O1P
3	C	501	AMP	C5'-O5'-P-O2P
3	C	501	AMP	C5'-O5'-P-O3P
3	D	501	AMP	C5'-O5'-P-O1P
3	D	501	AMP	C5'-O5'-P-O2P
3	D	501	AMP	C5'-O5'-P-O3P
3	E	501	AMP	C5'-O5'-P-O1P
3	E	501	AMP	C5'-O5'-P-O2P
3	E	501	AMP	C5'-O5'-P-O3P
3	G	501	AMP	C5'-O5'-P-O1P
3	G	501	AMP	C5'-O5'-P-O2P
3	G	501	AMP	C5'-O5'-P-O3P
3	H	501	AMP	C5'-O5'-P-O1P
3	H	501	AMP	C5'-O5'-P-O2P
3	H	501	AMP	C5'-O5'-P-O3P
3	I	501	AMP	C5'-O5'-P-O2P
3	I	501	AMP	C5'-O5'-P-O3P
3	J	501	AMP	C5'-O5'-P-O1P
3	J	501	AMP	C5'-O5'-P-O2P
3	K	501	AMP	C5'-O5'-P-O2P
3	K	501	AMP	C5'-O5'-P-O3P
3	M	501	AMP	C5'-O5'-P-O1P
3	M	501	AMP	C5'-O5'-P-O2P
3	O	501	AMP	C5'-O5'-P-O2P
3	O	501	AMP	C5'-O5'-P-O3P

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Mol	Chain	Res	Type	Atoms
3	P	501	AMP	C5'-O5'-P-O1P
3	P	501	AMP	C5'-O5'-P-O2P
3	P	501	AMP	C5'-O5'-P-O3P
3	B	501	AMP	O4'-C4'-C5'-O5'
3	E	501	AMP	O4'-C4'-C5'-O5'
3	G	501	AMP	O4'-C4'-C5'-O5'
3	B	501	AMP	C3'-C4'-C5'-O5'
3	E	501	AMP	C3'-C4'-C5'-O5'
3	G	501	AMP	C3'-C4'-C5'-O5'
3	I	501	AMP	O4'-C4'-C5'-O5'
3	I	501	AMP	C3'-C4'-C5'-O5'
3	A	501	AMP	O4'-C4'-C5'-O5'
3	B	501	AMP	C5'-O5'-P-O1P
3	I	501	AMP	C5'-O5'-P-O1P
3	O	501	AMP	C5'-O5'-P-O1P
3	C	501	AMP	O4'-C4'-C5'-O5'
3	H	501	AMP	O4'-C4'-C5'-O5'
3	A	501	AMP	C3'-C4'-C5'-O5'
3	O	501	AMP	O4'-C4'-C5'-O5'
3	C	501	AMP	C3'-C4'-C5'-O5'
3	H	501	AMP	C3'-C4'-C5'-O5'
3	P	501	AMP	O4'-C4'-C5'-O5'
3	J	501	AMP	C5'-O5'-P-O3P
3	M	501	AMP	C5'-O5'-P-O3P
3	K	501	AMP	C5'-O5'-P-O1P
3	O	501	AMP	C3'-C4'-C5'-O5'
3	P	501	AMP	C3'-C4'-C5'-O5'

There are no ring outliers.

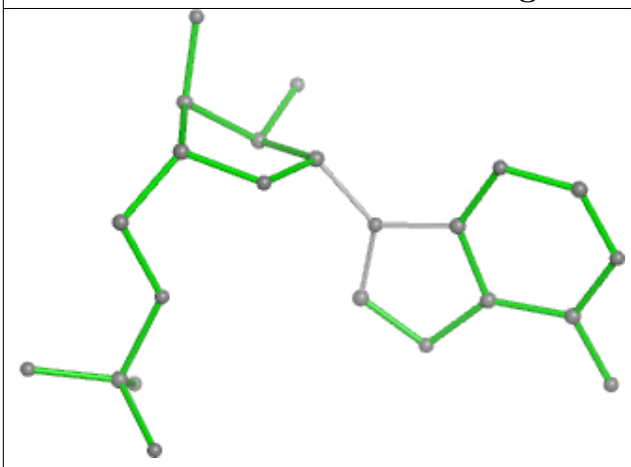
1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	I	501	AMP	1	0

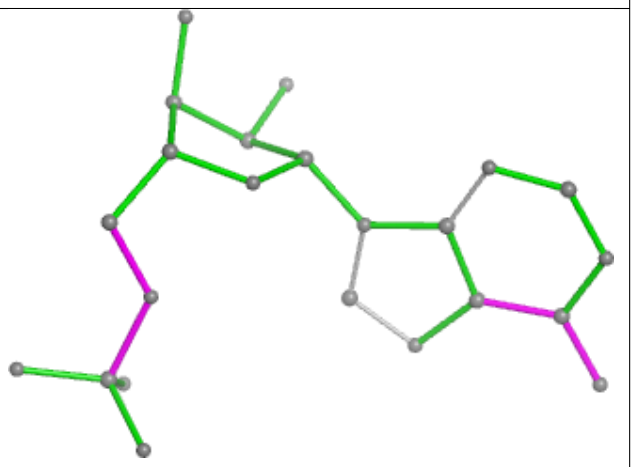
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

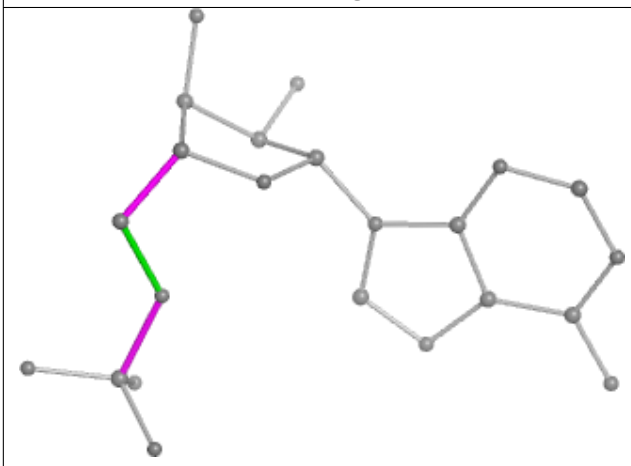
Ligand AMP B 501



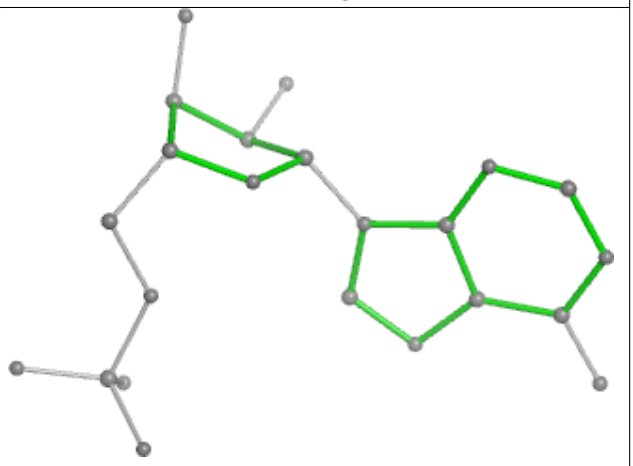
Bond lengths



Bond angles

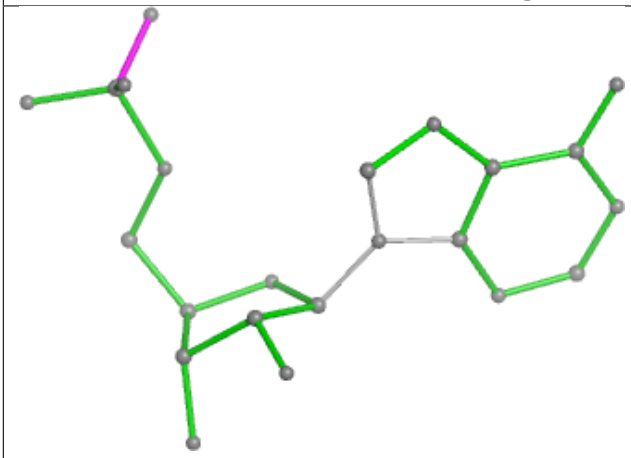


Torsions

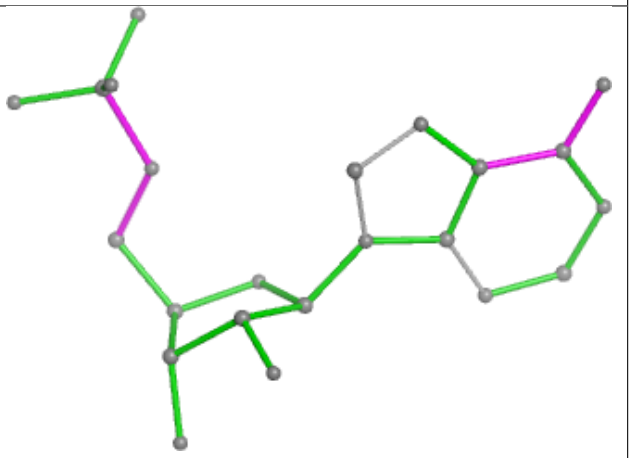


Rings

Ligand AMP C 501



Bond lengths



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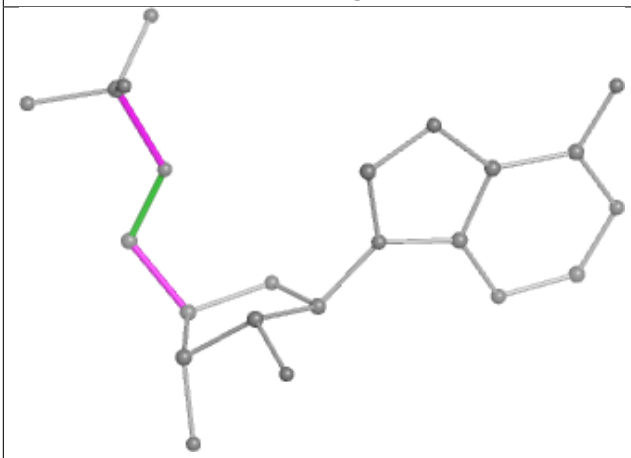

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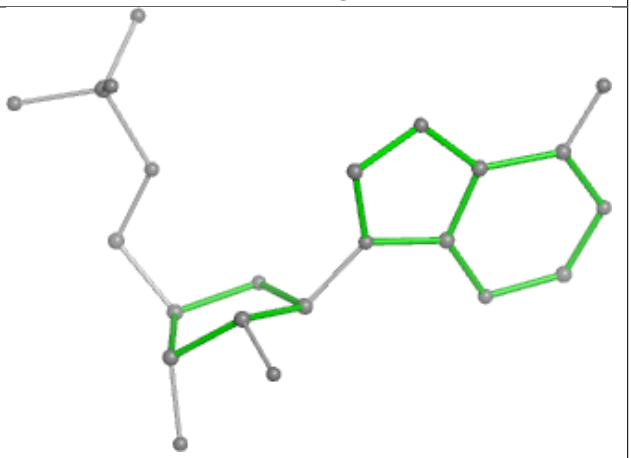
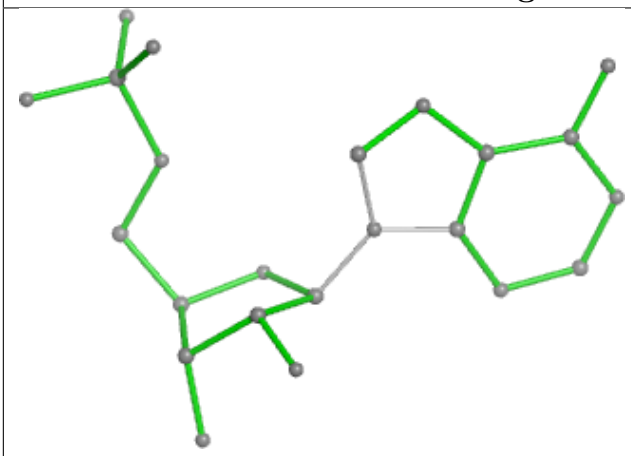
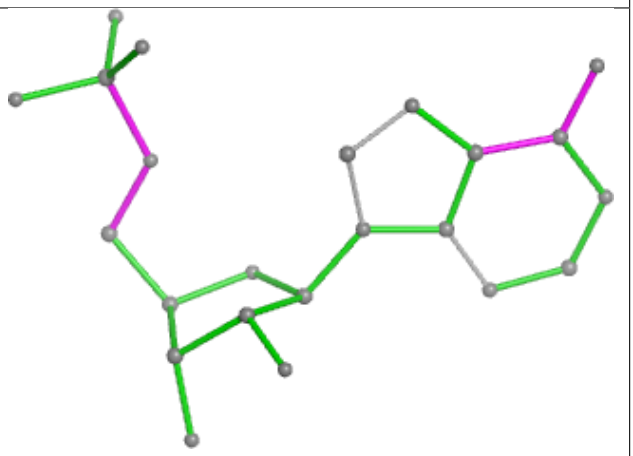


Rings

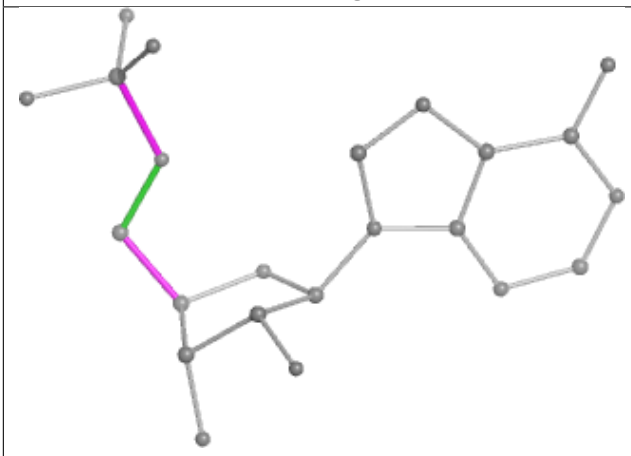
Ligand AMP G 501



Bond lengths



Bond angles



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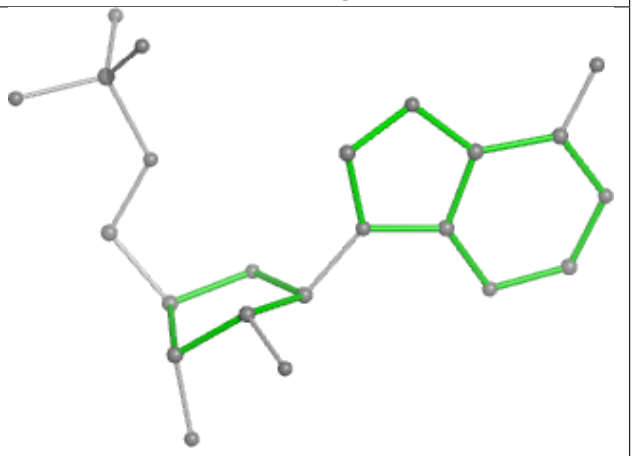
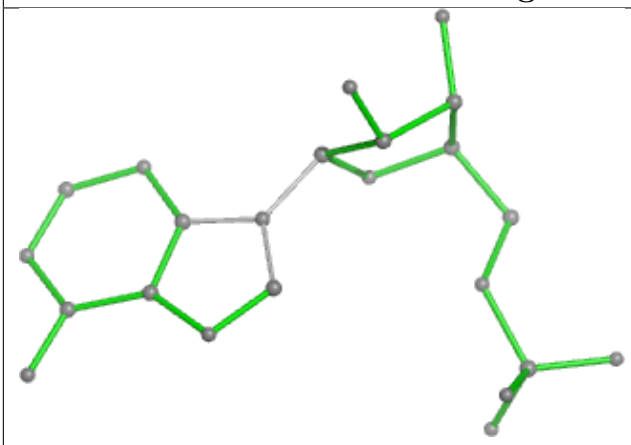


Rings

Ligand AMP K 501



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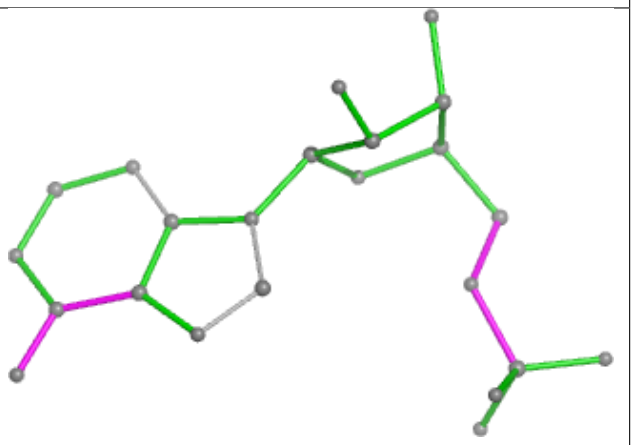
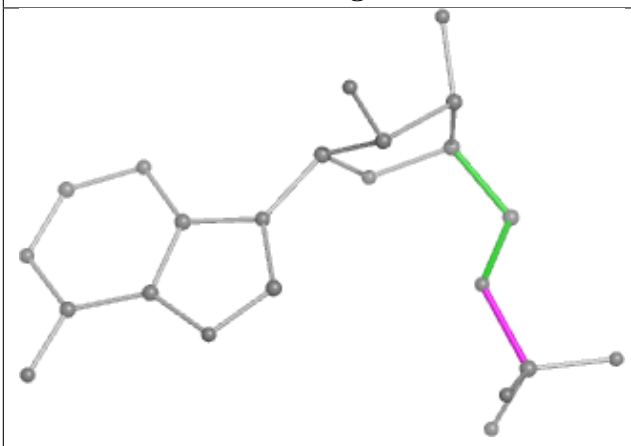


Bond angles



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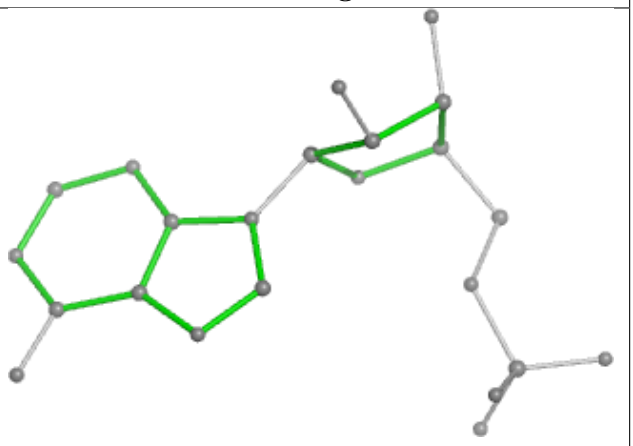
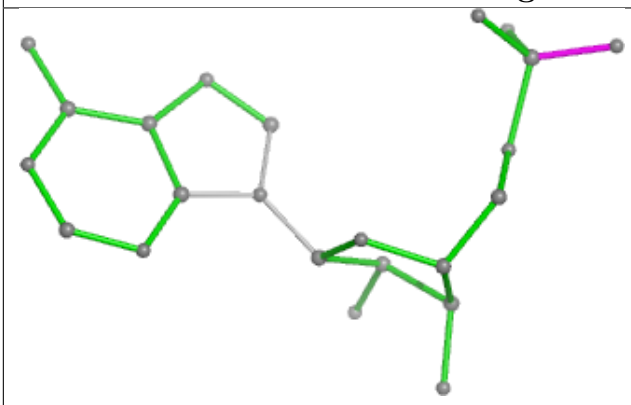


Rings

Ligand AMP N 501



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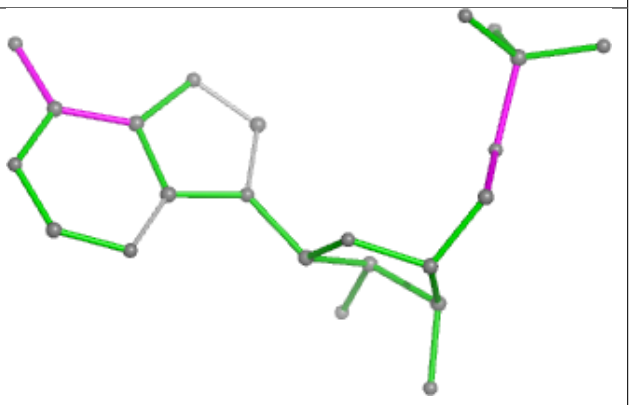

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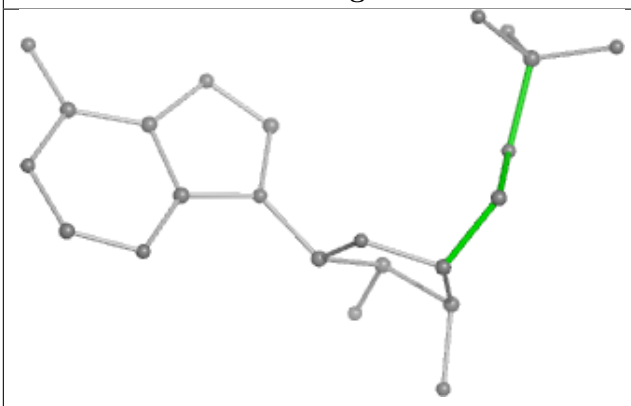

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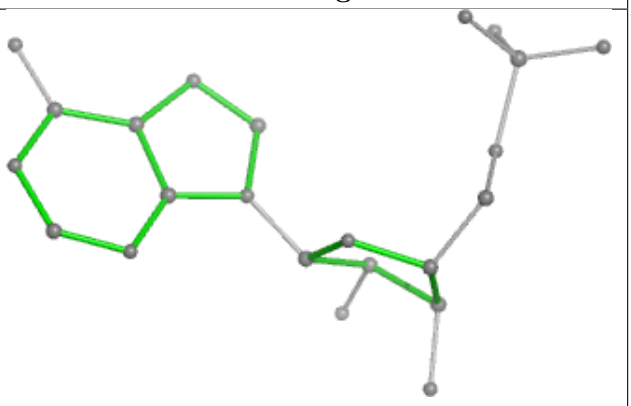

Rings

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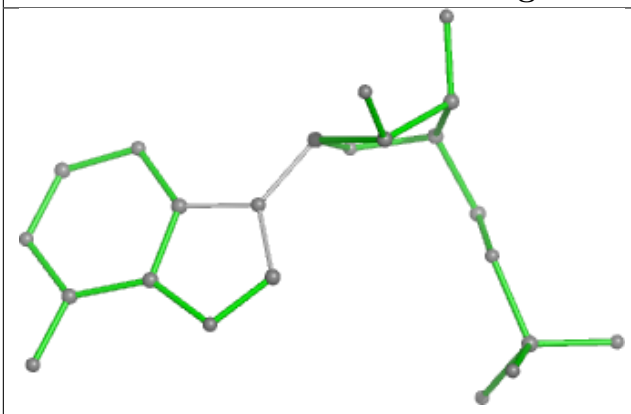

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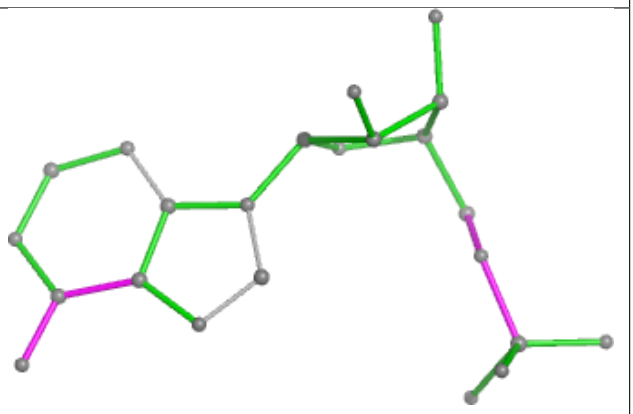

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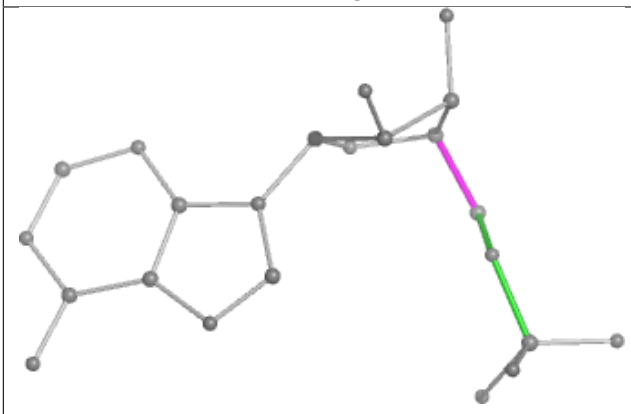

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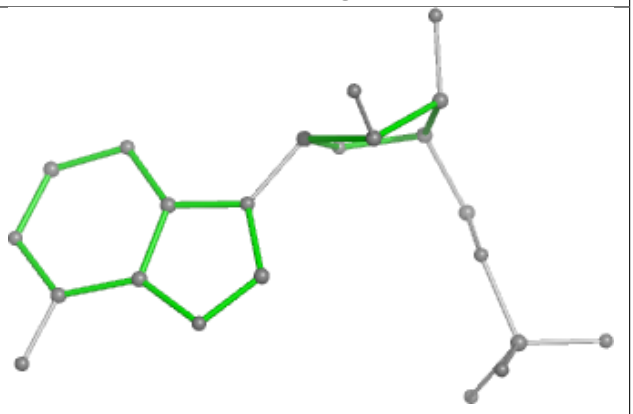
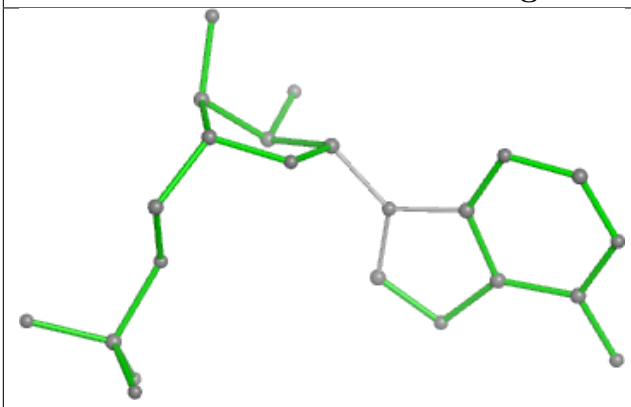
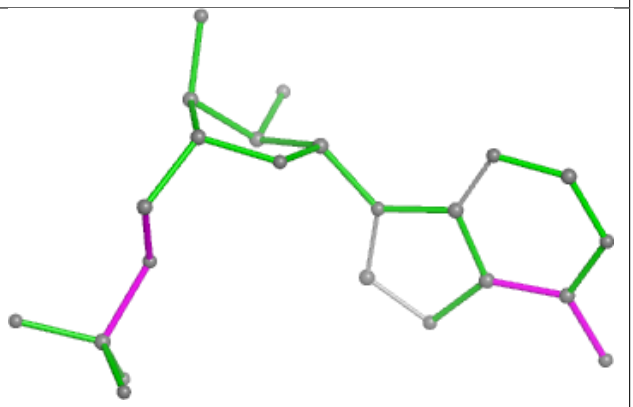


Rings

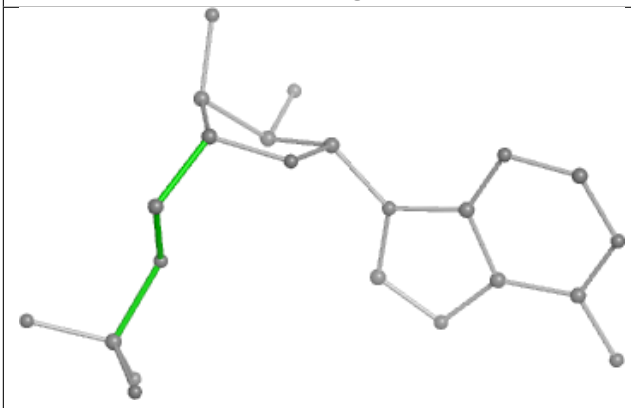
Ligand AMP F 501



Bond lengths



Bond angles



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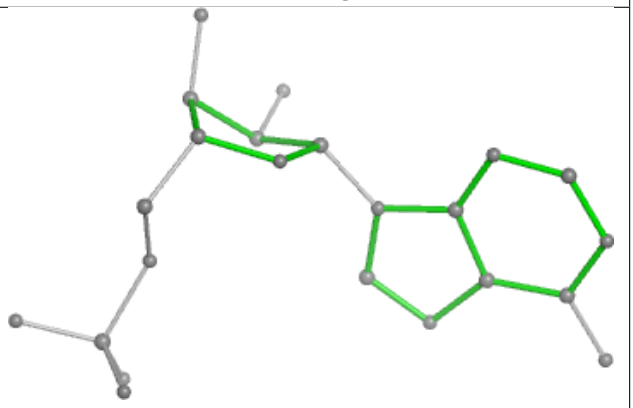
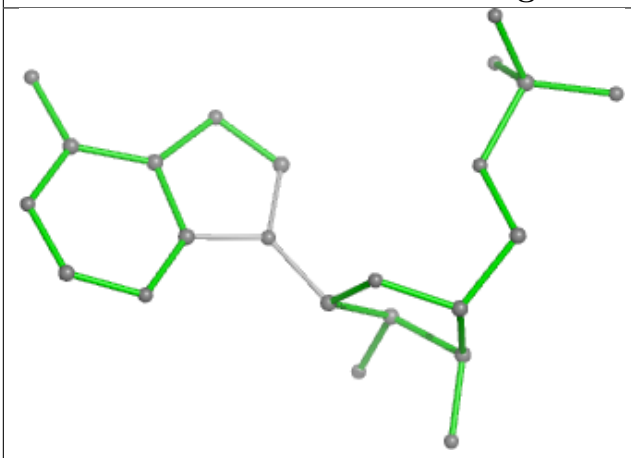
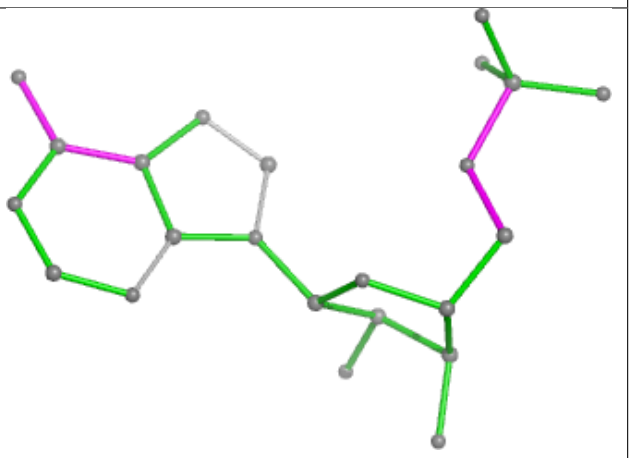


Rings

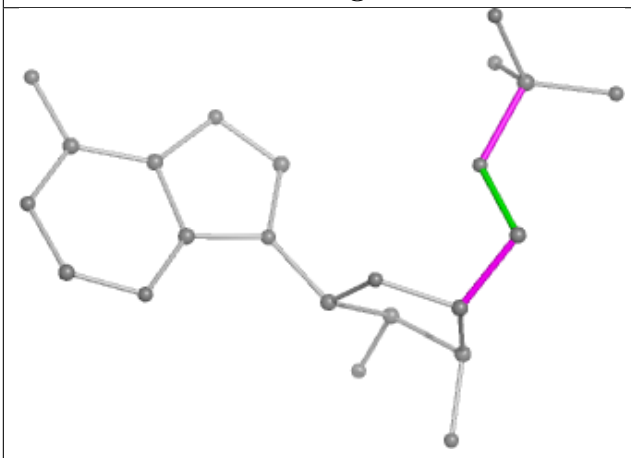
Ligand AMP H 501



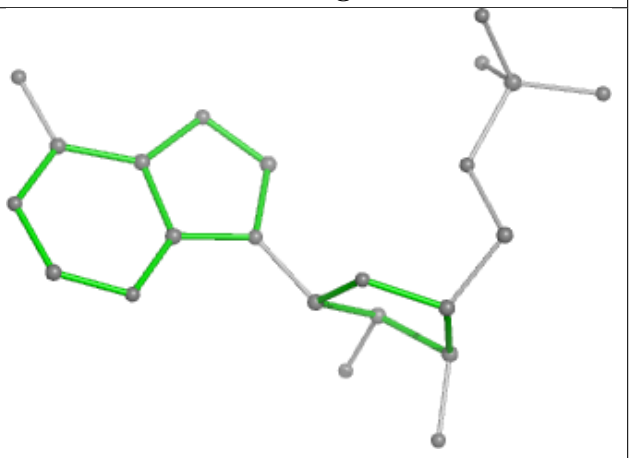
Bond lengths



Bond angles

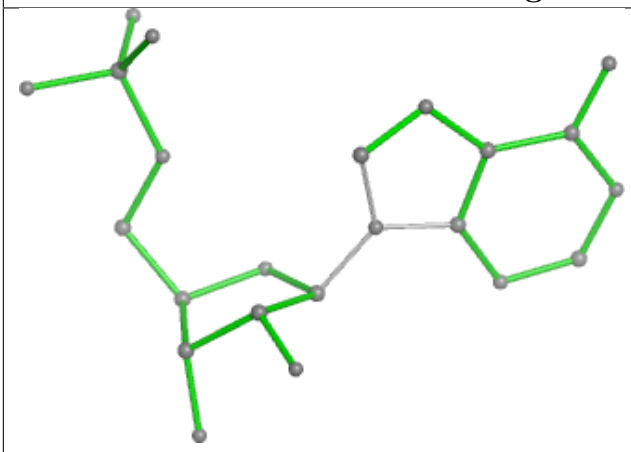


Torsions

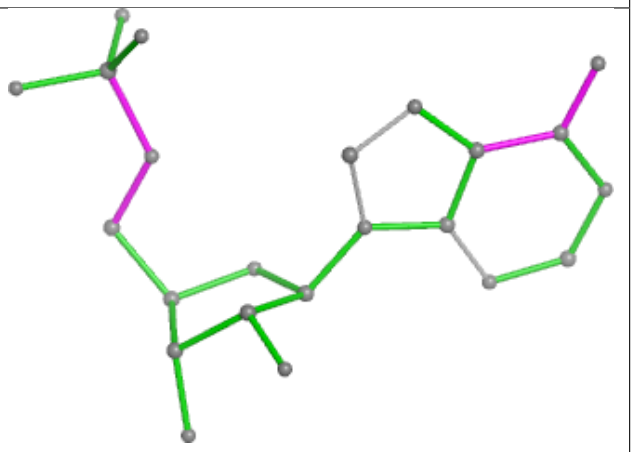


Rings

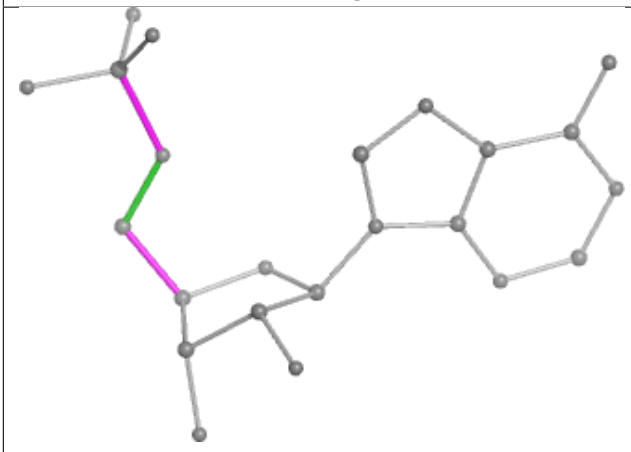
Ligand AMP I 501



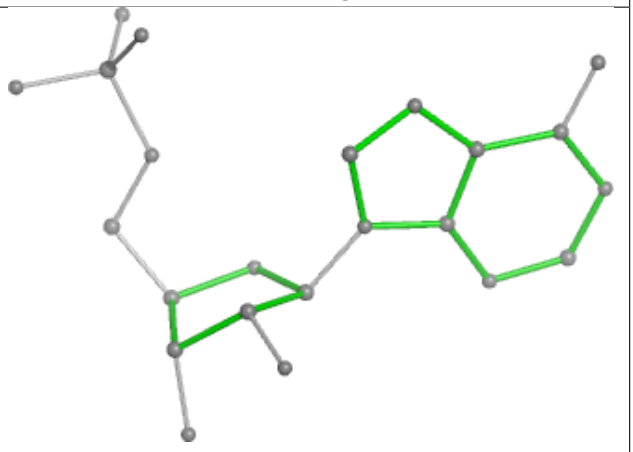
Bond lengths



Bond angles

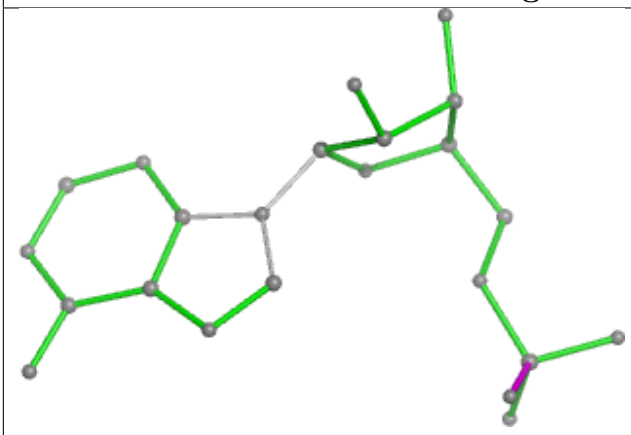


Torsions

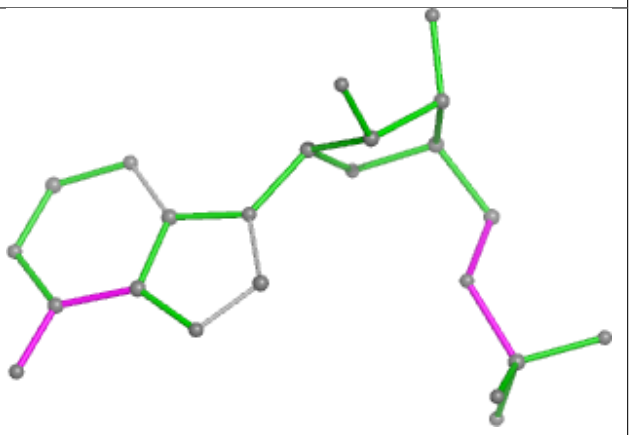


Rings

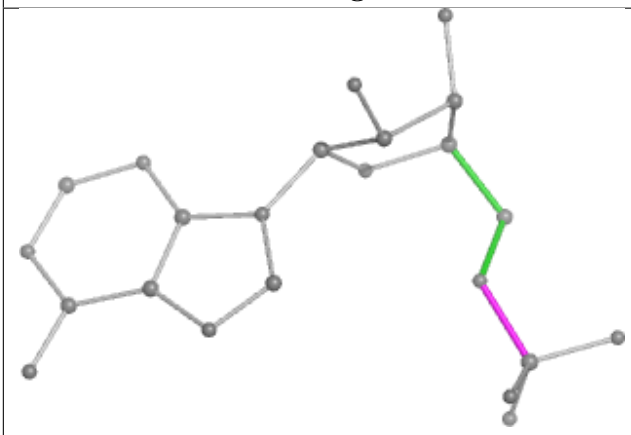
Ligand AMP J 501



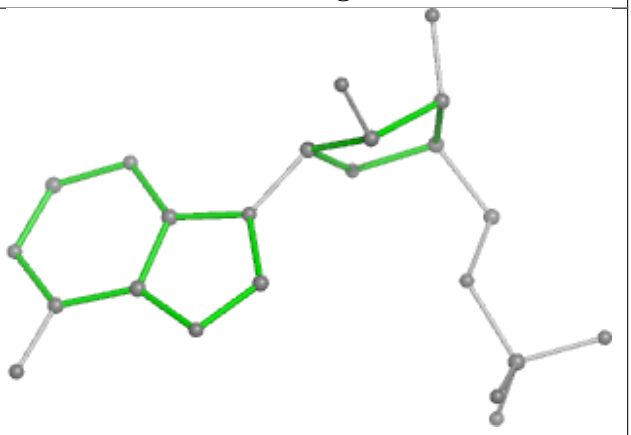
Bond lengths



Bond angles

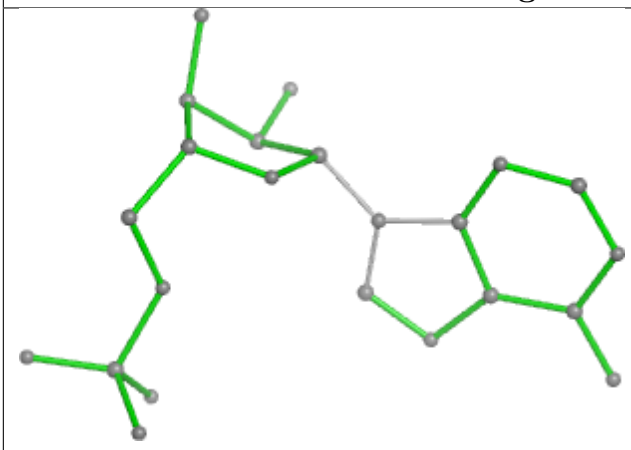


Torsions

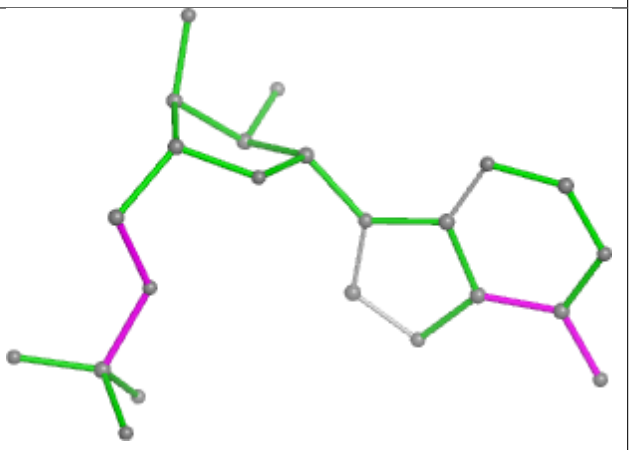


Rings

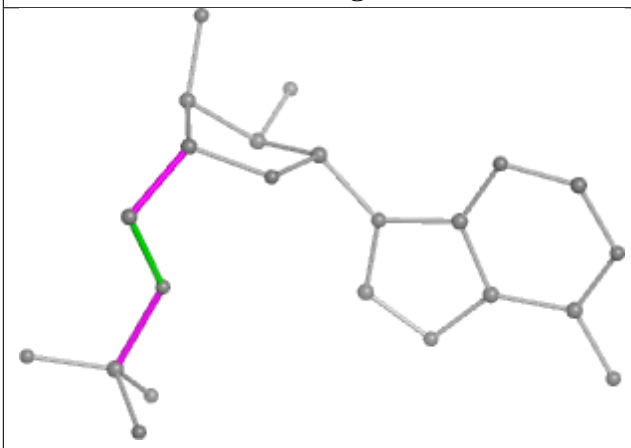
Ligand AMP O 501



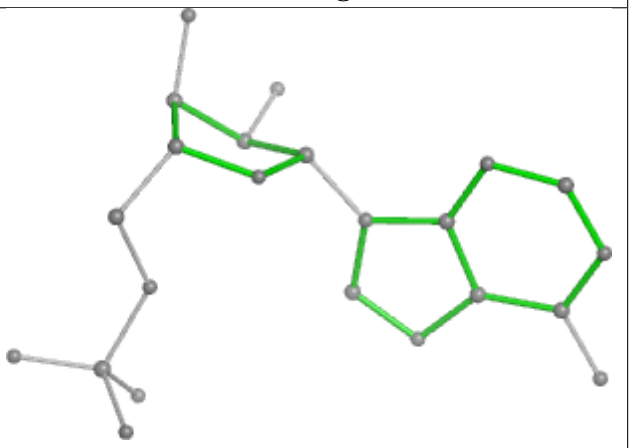
Bond lengths



Bond angles

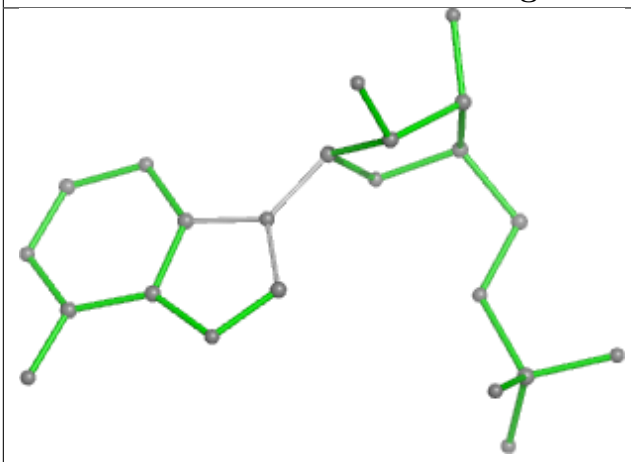


Torsions

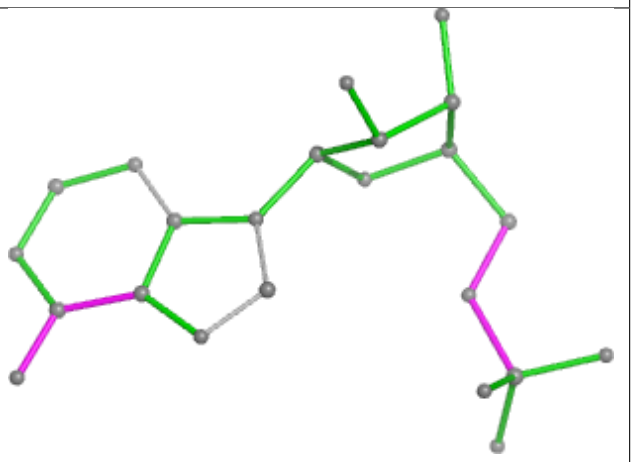


Rings

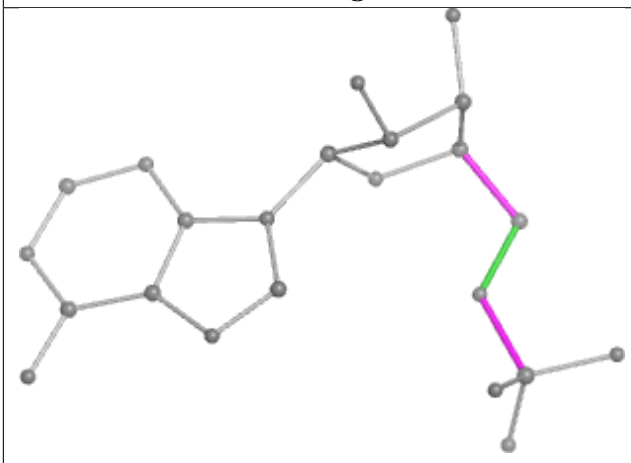
Ligand AMP E 501



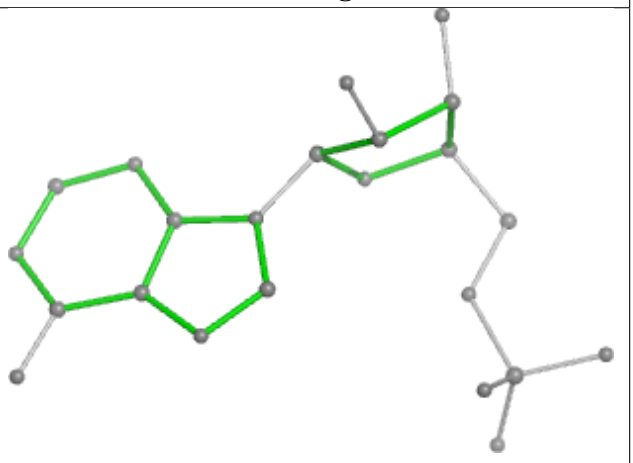
Bond lengths



Bond angles

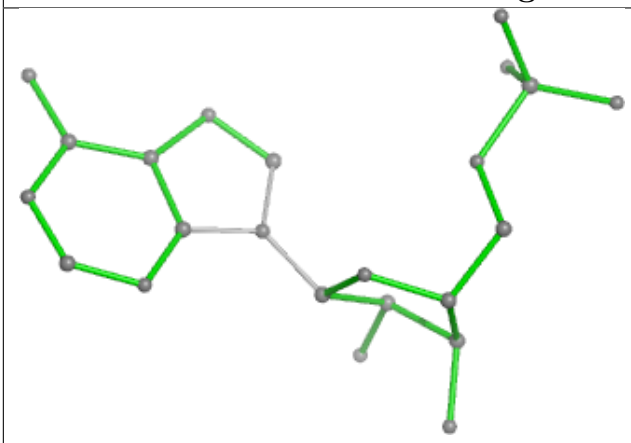


Torsions

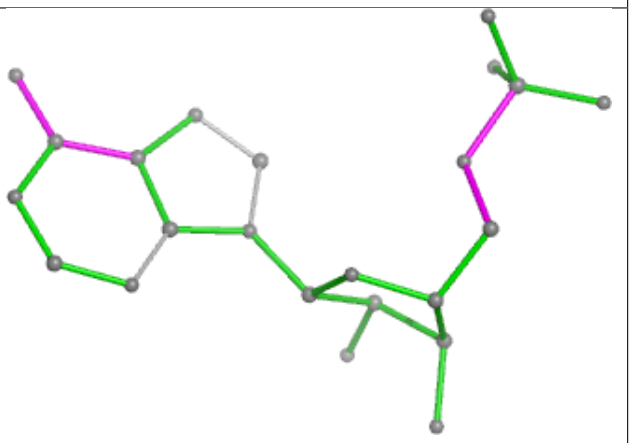


Rings

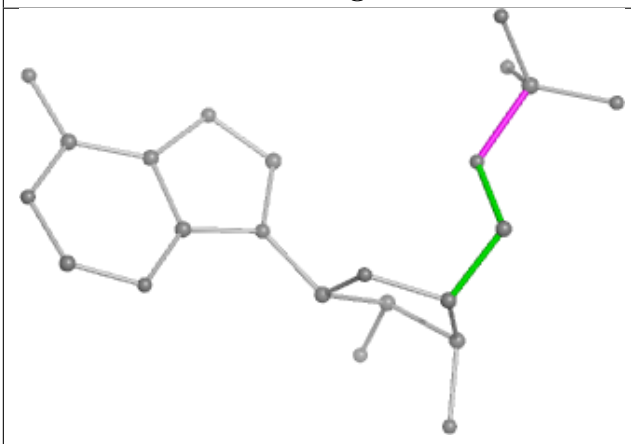
Ligand AMP D 501



Bond lengths



Bond angles



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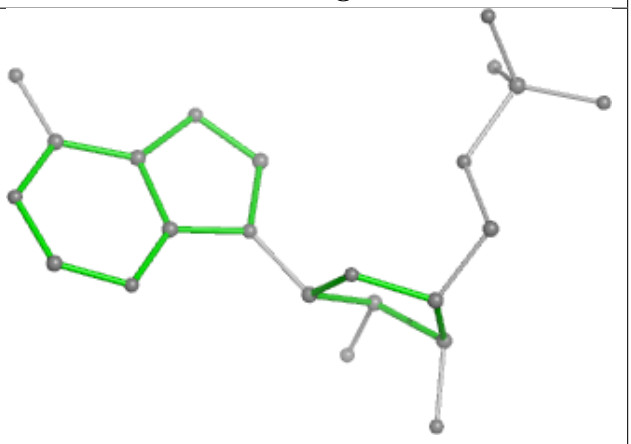
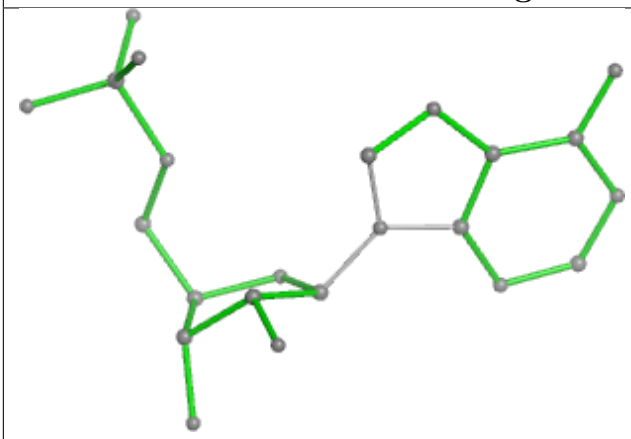
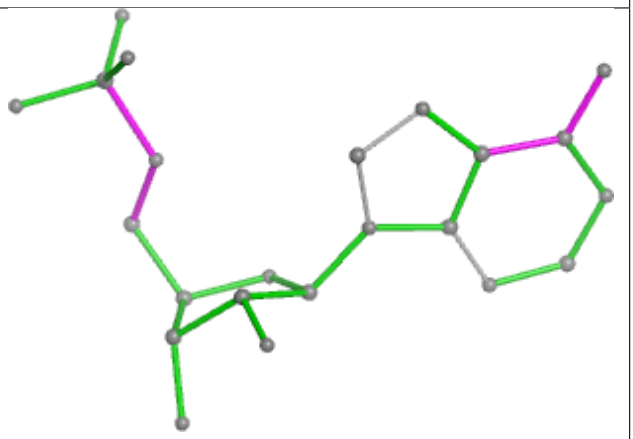


Rings

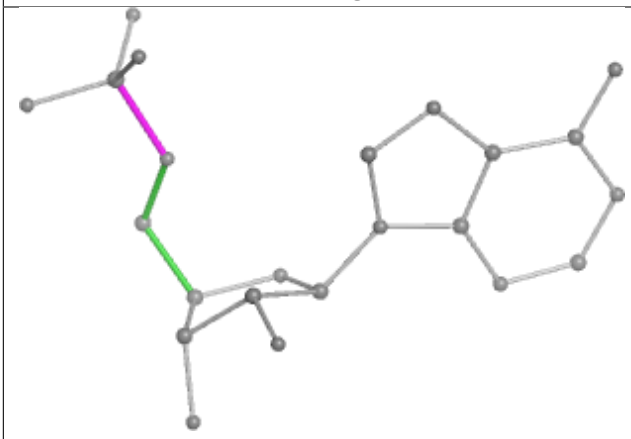
Ligand AMP M 501



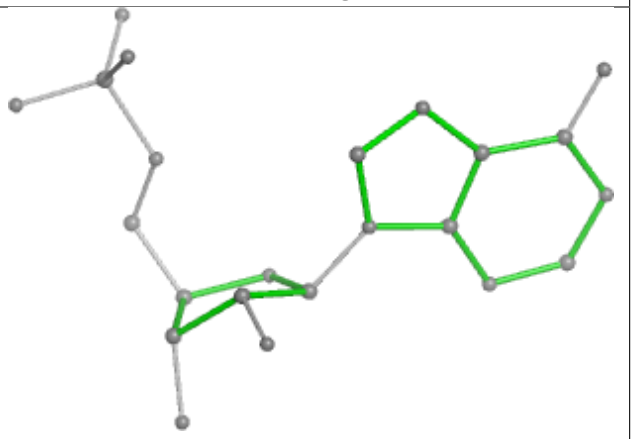
Bond lengths



Bond angles

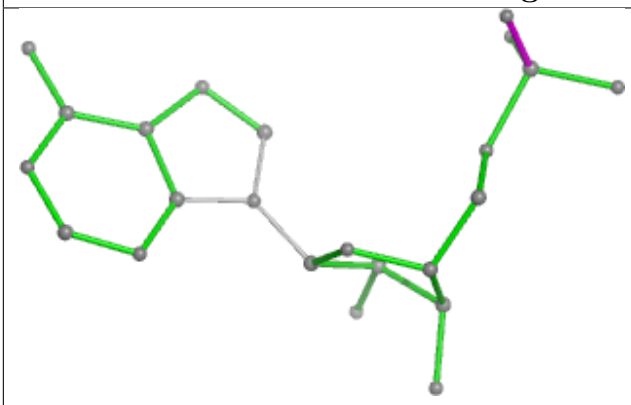


Torsions

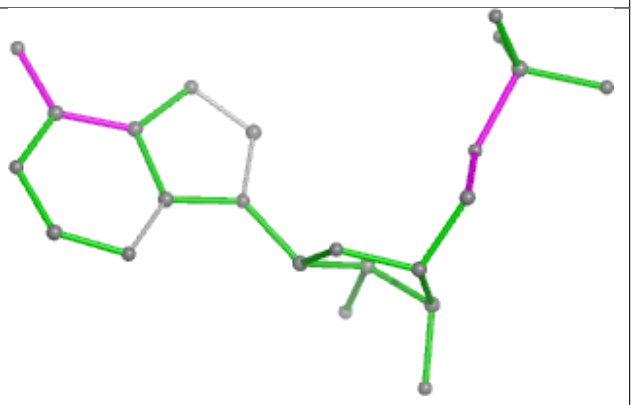


Rings

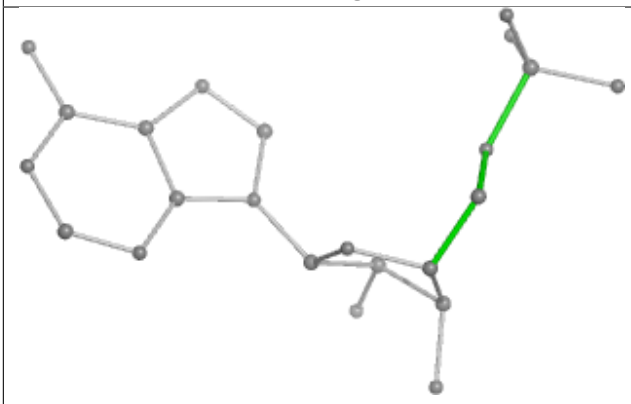
Ligand AMP L 501



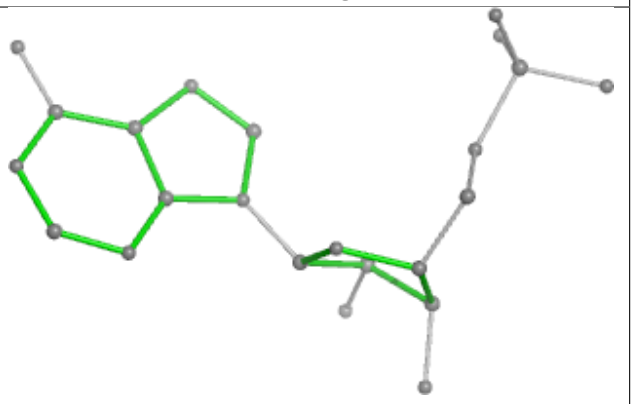
Bond lengths



Bond angles

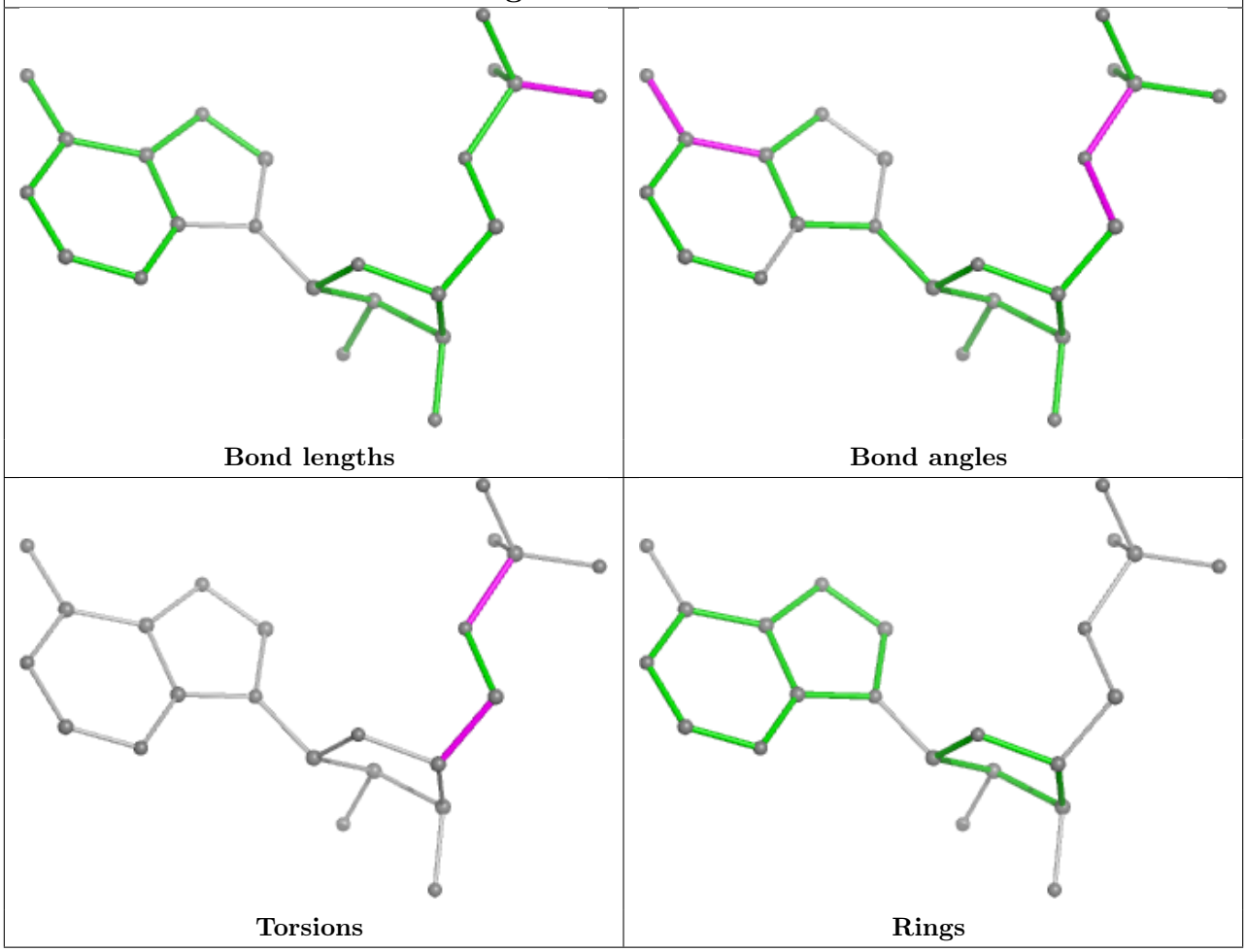


Torsions



Rings

Ligand AMP P 501



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	422/431 (97%)	-0.11	9 (2%) 63 61	11, 25, 40, 53	3 (0%)
1	B	421/431 (97%)	0.09	10 (2%) 59 58	20, 30, 47, 62	0
1	C	421/431 (97%)	-0.16	12 (2%) 54 52	12, 22, 36, 63	2 (0%)
1	D	413/431 (95%)	0.16	9 (2%) 62 60	15, 30, 56, 65	0
1	E	411/431 (95%)	0.21	18 (4%) 39 36	16, 33, 56, 71	1 (0%)
1	F	411/431 (95%)	0.01	5 (1%) 76 73	16, 28, 48, 61	0
1	G	411/431 (95%)	0.73	44 (10%) 12 12	23, 42, 65, 76	0
1	H	416/431 (96%)	0.81	29 (6%) 24 22	28, 48, 67, 73	0
1	I	400/431 (92%)	1.05	80 (20%) 3 3	23, 45, 77, 85	0
1	J	412/431 (95%)	0.48	27 (6%) 26 24	25, 37, 61, 76	0
1	K	421/431 (97%)	0.28	13 (3%) 51 49	20, 34, 48, 60	0
1	L	412/431 (95%)	0.51	29 (7%) 24 22	19, 36, 62, 76	0
1	M	415/431 (96%)	-0.05	7 (1%) 69 67	14, 26, 44, 55	0
1	N	422/431 (97%)	-0.04	7 (1%) 69 67	15, 25, 45, 64	0
1	O	415/431 (96%)	0.06	9 (2%) 62 60	16, 29, 50, 63	0
1	P	423/431 (98%)	-0.17	6 (1%) 73 71	14, 23, 38, 59	0
All	All	6646/6896 (96%)	0.24	314 (4%) 37 34	11, 31, 60, 85	6 (0%)

All (314) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	J	104	ALA	6.9
1	J	116	GLY	6.6
1	C	74	GLN	6.4
1	I	249	THR	5.8
1	L	10	LEU	4.9

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Mol	Chain	Res	Type	RSRZ
1	K	75	TYR	4.9
1	G	343	SER	4.9
1	C	73	THR	4.8
1	I	187	ASP	4.6
1	H	112	ASN	4.5
1	N	204	ASN	4.5
1	J	115	ARG	4.4
1	K	74	GLN	4.3
1	H	10	LEU	4.3
1	J	204	ASN	4.2
1	F	104	ALA	4.1
1	B	29	ARG	4.1
1	O	115	ARG	4.1
1	I	254	ALA	4.1
1	I	162	ARG	4.1
1	I	105	GLN	4.1
1	C	75	TYR	4.0
1	B	75	TYR	3.9
1	K	93	GLU	3.8
1	J	205	ASP	3.8
1	I	204	ASN	3.7
1	J	235	ASN	3.7
1	I	185	GLU	3.7
1	A	10	LEU	3.6
1	M	10	LEU	3.6
1	I	201	SER	3.6
1	I	10	LEU	3.6
1	I	255	TYR	3.6
1	J	197	ALA	3.6
1	N	269	ASP	3.6
1	I	182	ALA	3.5
1	E	103	PRO	3.5
1	B	28	GLY	3.5
1	N	74	GLN	3.5
1	B	204	ASN	3.5
1	I	232	ARG	3.4
1	I	203	PRO	3.4
1	J	103	PRO	3.4
1	E	10	LEU	3.4
1	E	431	ARG	3.4
1	L	182	ALA	3.4
1	I	28	GLY	3.4

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Mol	Chain	Res	Type	RSRZ
1	L	183	VAL	3.3
1	F	204	ASN	3.3
1	I	198	ASN	3.3
1	H	429	GLN	3.3
1	G	402	GLU	3.2
1	I	75	TYR	3.2
1	I	230	ASP	3.2
1	I	245	ILE	3.2
1	I	103	PRO	3.2
1	O	106	GLN	3.2
1	H	322	ARG	3.2
1	M	204	ASN	3.2
1	I	9	HIS	3.2
1	K	10	LEU	3.2
1	I	200	PRO	3.1
1	I	191	GLU	3.1
1	L	204	ASN	3.1
1	B	74	GLN	3.1
1	C	76	GLN	3.1
1	I	104	ALA	3.1
1	I	168	MET	3.1
1	I	208	LYS	3.1
1	I	221	ASP	3.1
1	P	8	ASP	3.1
1	L	235	ASN	3.1
1	O	105	GLN	3.1
1	A	204	ASN	3.0
1	I	197	ALA	3.0
1	I	101	LEU	3.0
1	J	198	ASN	3.0
1	J	237	SER	3.0
1	L	190	ILE	3.0
1	E	221	ASP	3.0
1	I	117	THR	3.0
1	L	431	ARG	3.0
1	D	204	ASN	3.0
1	I	100	ASP	3.0
1	H	415	VAL	3.0
1	A	158	GLU	2.9
1	I	174	GLU	2.9
1	O	114	TYR	2.9
1	I	163	CYS	2.9

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Mol	Chain	Res	Type	RSRZ
1	L	90	PHE	2.9
1	H	402	GLU	2.9
1	I	119	ASP	2.9
1	P	76	GLN	2.9
1	G	77	SER	2.9
1	I	222	TYR	2.9
1	I	228	GLU	2.9
1	A	27	GLY	2.9
1	E	31	THR	2.8
1	G	197	ALA	2.8
1	P	75	TYR	2.8
1	H	393	GLY	2.8
1	L	255	TYR	2.8
1	G	269	ASP	2.8
1	O	204	ASN	2.8
1	B	9	HIS	2.8
1	E	234	GLU	2.8
1	E	104	ALA	2.8
1	G	328	MET	2.8
1	O	269	ASP	2.8
1	H	198	ASN	2.8
1	G	185	GLU	2.8
1	G	89	SER	2.8
1	O	104	ALA	2.8
1	G	407	PHE	2.8
1	N	76	GLN	2.7
1	P	28	GLY	2.7
1	L	322	ARG	2.7
1	L	198	ASN	2.7
1	D	105	GLN	2.7
1	H	206	PRO	2.7
1	C	28	GLY	2.7
1	L	250	GLU	2.7
1	H	177	ALA	2.6
1	I	206	PRO	2.6
1	I	246	PRO	2.6
1	I	32	ARG	2.6
1	G	324	GLY	2.6
1	L	116	GLY	2.6
1	G	392	GLU	2.6
1	G	398	GLU	2.6
1	G	430	GLU	2.6

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Mol	Chain	Res	Type	RSRZ
1	H	114	TYR	2.6
1	H	34	LYS	2.6
1	G	375	ARG	2.6
1	I	179	GLY	2.6
1	G	323	SER	2.6
1	I	247	LYS	2.6
1	J	123	GLN	2.6
1	J	171	PRO	2.6
1	I	240	PHE	2.6
1	A	28	GLY	2.6
1	J	174	GLU	2.6
1	A	26	ALA	2.6
1	C	26	ALA	2.6
1	D	115	ARG	2.6
1	G	90	PHE	2.6
1	I	195	LYS	2.5
1	L	93	GLU	2.5
1	I	135	TYR	2.5
1	A	270	ALA	2.5
1	M	104	ALA	2.5
1	N	326	HIS	2.5
1	I	189	ILE	2.5
1	C	106	GLN	2.5
1	I	192	PHE	2.5
1	C	30	GLY	2.5
1	I	328	MET	2.5
1	E	236	SER	2.5
1	I	227	LEU	2.5
1	I	248	ILE	2.5
1	A	30	GLY	2.5
1	L	249	THR	2.5
1	I	244	LEU	2.5
1	D	29	ARG	2.5
1	L	232	ARG	2.5
1	G	400	ALA	2.5
1	L	177	ALA	2.5
1	L	253	LEU	2.4
1	K	29	ARG	2.4
1	G	373	VAL	2.4
1	G	35	ASP	2.4
1	I	225	GLU	2.4
1	F	10	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
1	I	121	VAL	2.4
1	J	182	ALA	2.4
1	D	235	ASN	2.4
1	O	430	GLU	2.4
1	I	223	LEU	2.4
1	G	359	PHE	2.4
1	H	408	TYR	2.4
1	B	27	GLY	2.4
1	L	186	ASN	2.4
1	E	420[A]	GLU	2.4
1	H	378	ARG	2.4
1	G	344	VAL	2.4
1	G	347	GLN	2.4
1	I	212	SER	2.4
1	B	270	ALA	2.4
1	H	197	ALA	2.4
1	K	73	THR	2.3
1	N	31	THR	2.3
1	I	258	PRO	2.3
1	E	238	HIS	2.3
1	G	339	VAL	2.3
1	K	77	SER	2.3
1	K	324	GLY	2.3
1	D	75	TYR	2.3
1	G	204	ASN	2.3
1	G	361	ASN	2.3
1	G	31	THR	2.3
1	I	164	THR	2.3
1	P	31	THR	2.3
1	G	417	VAL	2.3
1	I	74	GLN	2.3
1	M	89	SER	2.3
1	G	330	LEU	2.3
1	I	224	TYR	2.3
1	H	204	ASN	2.3
1	E	203	PRO	2.3
1	L	203	PRO	2.3
1	I	193	VAL	2.3
1	I	177	ALA	2.3
1	I	12	LEU	2.3
1	C	302	ARG	2.3
1	E	243	ASP	2.3

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Mol	Chain	Res	Type	RSRZ
1	I	31	THR	2.3
1	I	122	THR	2.3
1	H	123	GLN	2.3
1	I	157	VAL	2.3
1	I	218	PHE	2.3
1	B	26	ALA	2.3
1	I	214	GLY	2.3
1	B	31	THR	2.2
1	K	79	THR	2.2
1	E	123	GLN	2.2
1	H	359	PHE	2.2
1	L	91	PHE	2.2
1	I	166	ALA	2.2
1	P	26	ALA	2.2
1	H	428	LYS	2.2
1	I	86	ARG	2.2
1	K	86	ARG	2.2
1	H	174	GLU	2.2
1	L	197	ALA	2.2
1	G	10	LEU	2.2
1	G	372	TRP	2.2
1	G	28	GLY	2.2
1	I	241	GLY	2.2
1	J	207	SER	2.2
1	H	107	ARG	2.2
1	O	302	ARG	2.2
1	L	246	PRO	2.2
1	G	321	ASP	2.2
1	H	300	TYR	2.2
1	G	76	GLN	2.2
1	J	202	MET	2.2
1	J	10	LEU	2.2
1	A	375	ARG	2.2
1	I	27	GLY	2.2
1	J	206	PRO	2.1
1	L	158	GLU	2.1
1	C	204	ASN	2.1
1	D	198	ASN	2.1
1	C	126	ASP	2.1
1	I	239	ASP	2.1
1	J	269	ASP	2.1
1	M	269	ASP	2.1

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Mol	Chain	Res	Type	RSRZ
1	G	415	VAL	2.1
1	H	395	VAL	2.1
1	I	90	PHE	2.1
1	J	180	VAL	2.1
1	G	382	CYS	2.1
1	J	302	ARG	2.1
1	L	258	PRO	2.1
1	F	89	SER	2.1
1	L	209	SER	2.1
1	G	390	ILE	2.1
1	I	181	MET	2.1
1	I	243	ASP	2.1
1	J	187	ASP	2.1
1	K	76	GLN	2.1
1	D	10	LEU	2.1
1	I	102	LEU	2.1
1	G	327	GLY	2.1
1	H	203	PRO	2.1
1	M	206	PRO	2.1
1	L	266	SER	2.1
1	G	384	ILE	2.1
1	E	235	ASN	2.1
1	G	177	ALA	2.1
1	I	242	LYS	2.1
1	G	325	SER	2.1
1	J	209	SER	2.1
1	I	23	LEU	2.1
1	F	32	ARG	2.1
1	E	197	ALA	2.1
1	G	342	GLY	2.1
1	H	200	PRO	2.0
1	I	199	PRO	2.0
1	I	430	GLU	2.0
1	J	191	GLU	2.0
1	K	185	GLU	2.0
1	E	242	LYS	2.0
1	J	208	LYS	2.0
1	K	31	THR	2.0
1	E	90	PHE	2.0
1	H	358	SER	2.0
1	I	180	VAL	2.0
1	L	105	GLN	2.0

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Mol	Chain	Res	Type	RSRZ
1	L	212	SER	2.0
1	H	425	LEU	2.0
1	N	28	GLY	2.0
1	E	271	GLU	2.0
1	G	401	GLU	2.0
1	G	428	LYS	2.0
1	M	225	GLU	2.0
1	C	31	THR	2.0
1	G	279	THR	2.0
1	H	330	LEU	2.0
1	I	210	LEU	2.0
1	J	244	LEU	2.0
1	D	197	ALA	2.0
1	H	400	ALA	2.0
1	J	270	ALA	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	FRU	U	2	12/12	0.62	0.17	69,69,69,69	0
2	FRU	R	2	12/12	0.70	0.16	44,58,61,70	0
2	GLC	U	1	11/12	0.73	0.14	69,69,69,69	0
2	FRU	T	2	12/12	0.73	0.16	60,70,77,85	0
2	FRU	S	2	12/12	0.77	0.15	51,64,73,76	0
2	GLC	V	1	11/12	0.77	0.15	37,52,56,56	0
2	GLC	T	1	11/12	0.80	0.13	46,50,55,57	0
2	FRU	V	2	12/12	0.82	0.13	61,63,66,67	0
2	FRU	W	2	12/12	0.83	0.12	37,47,54,54	0
2	FRU	X	2	12/12	0.85	0.11	34,37,40,41	0
2	GLC	R	1	11/12	0.88	0.10	40,47,51,52	0
2	FRU	Q	2	12/12	0.89	0.10	27,30,34,34	0
2	GLC	X	1	11/12	0.90	0.10	25,30,34,34	0

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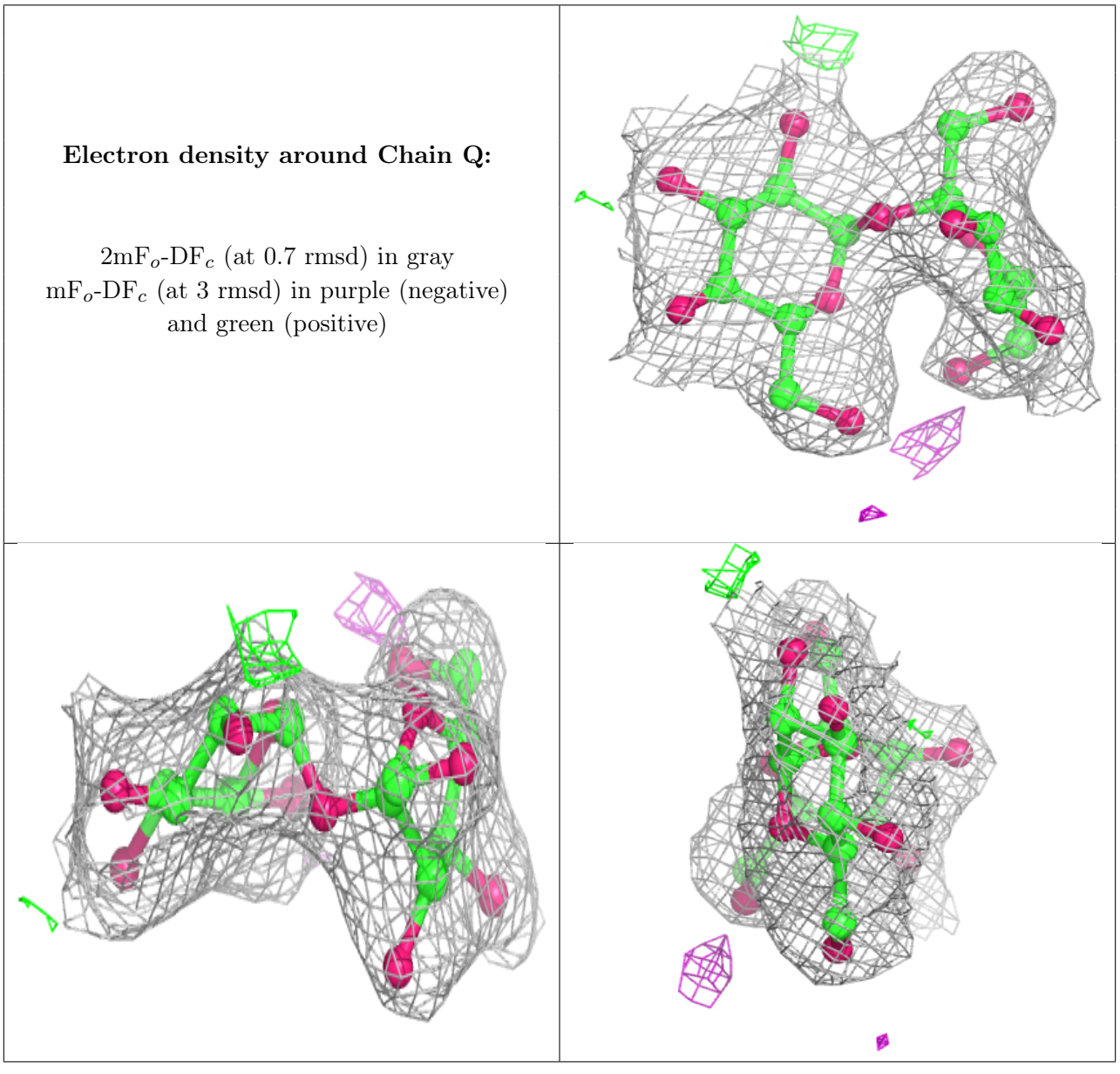
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	GLC	W	1	11/12	0.90	0.09	28,41,46,48	0
2	GLC	S	1	11/12	0.92	0.09	36,42,47,52	0
2	GLC	Q	1	11/12	0.94	0.09	22,25,27,27	0

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.

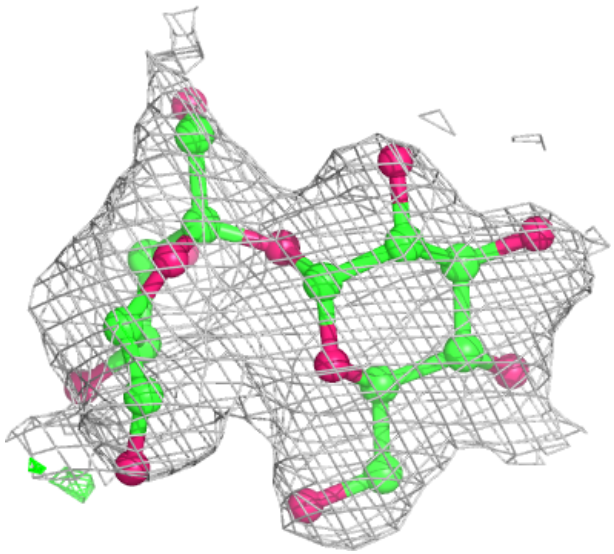
Electron density around Chain Q:

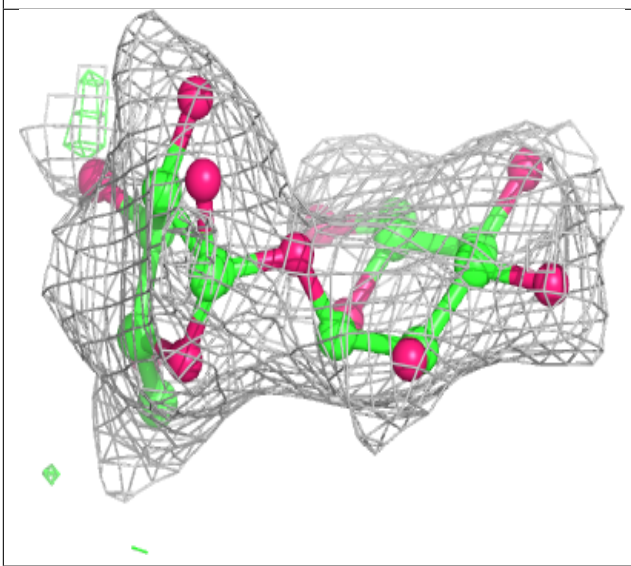
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

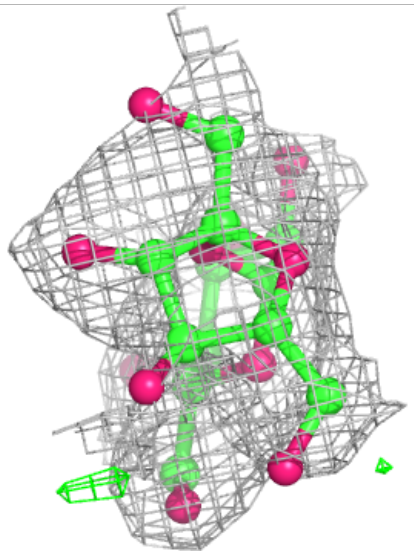


Electron density around Chain R:

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

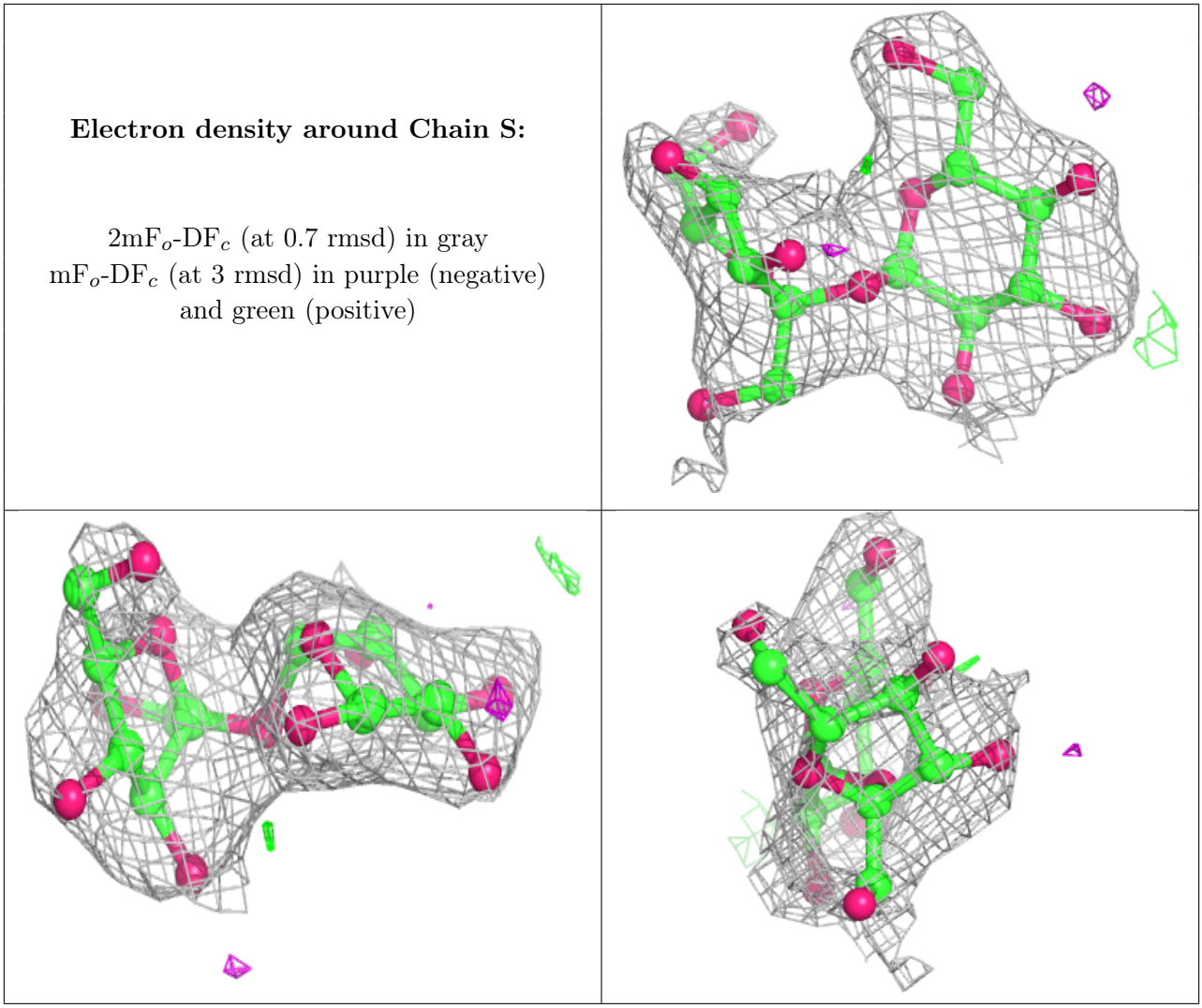






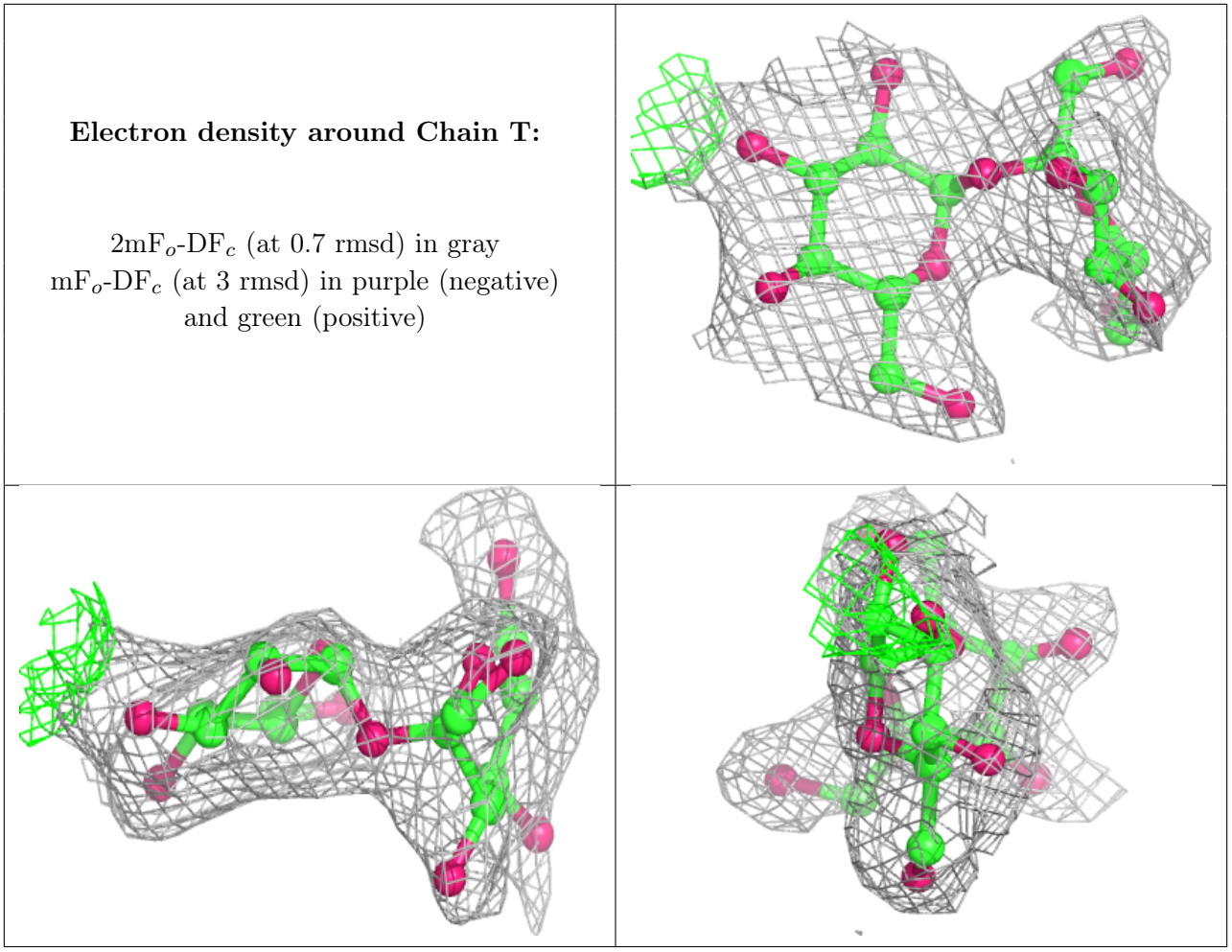
Electron density around Chain S:

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



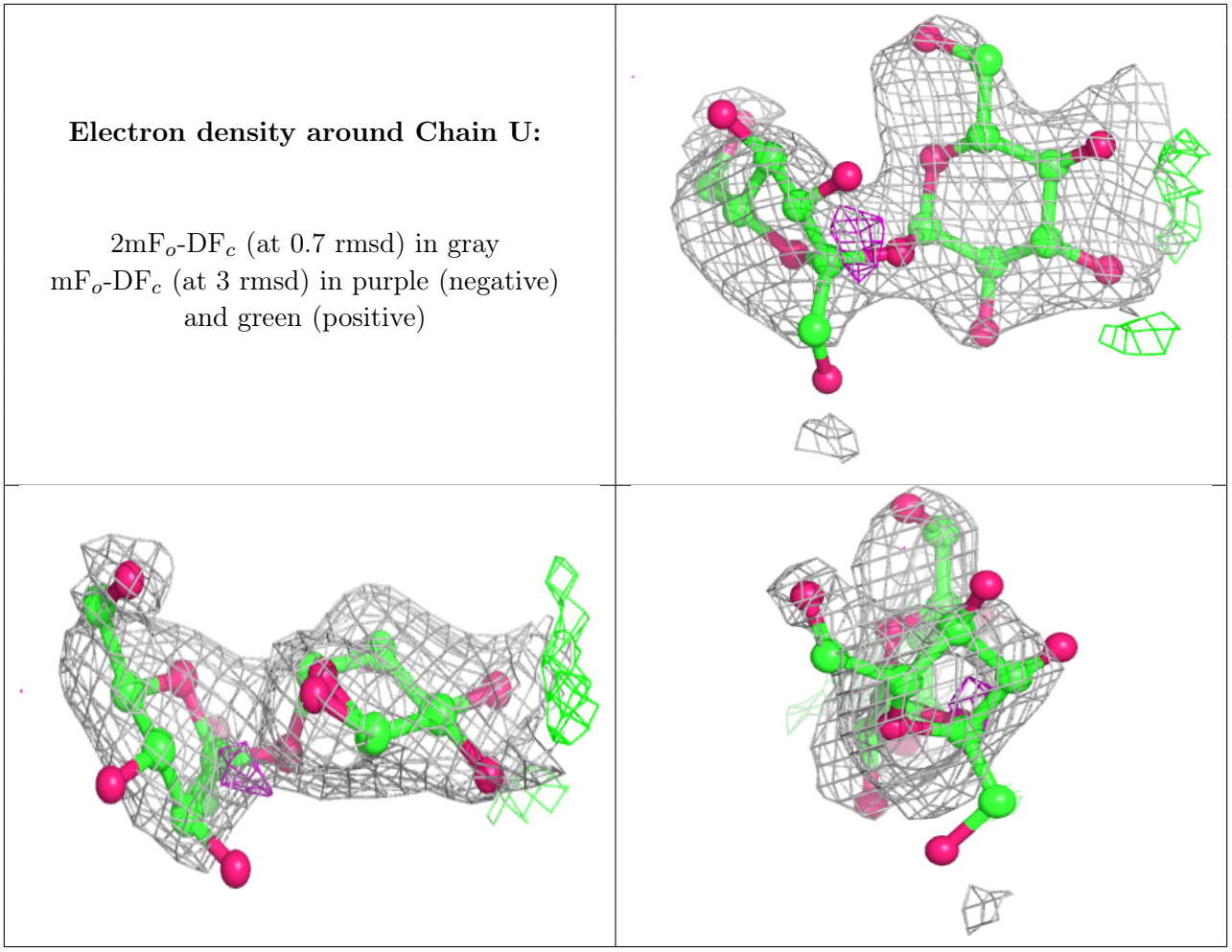
Electron density around Chain T:

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



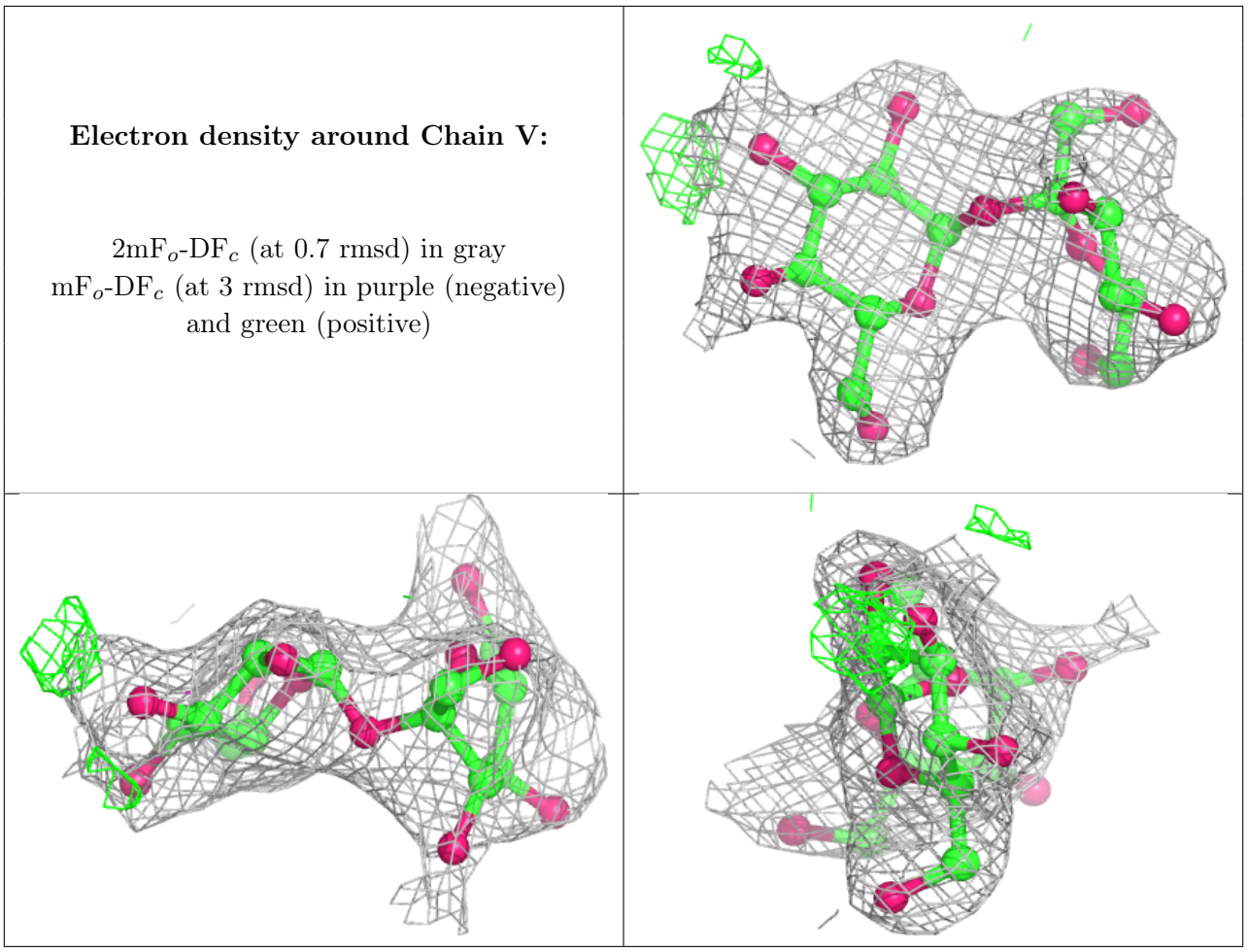
Electron density around Chain U:

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



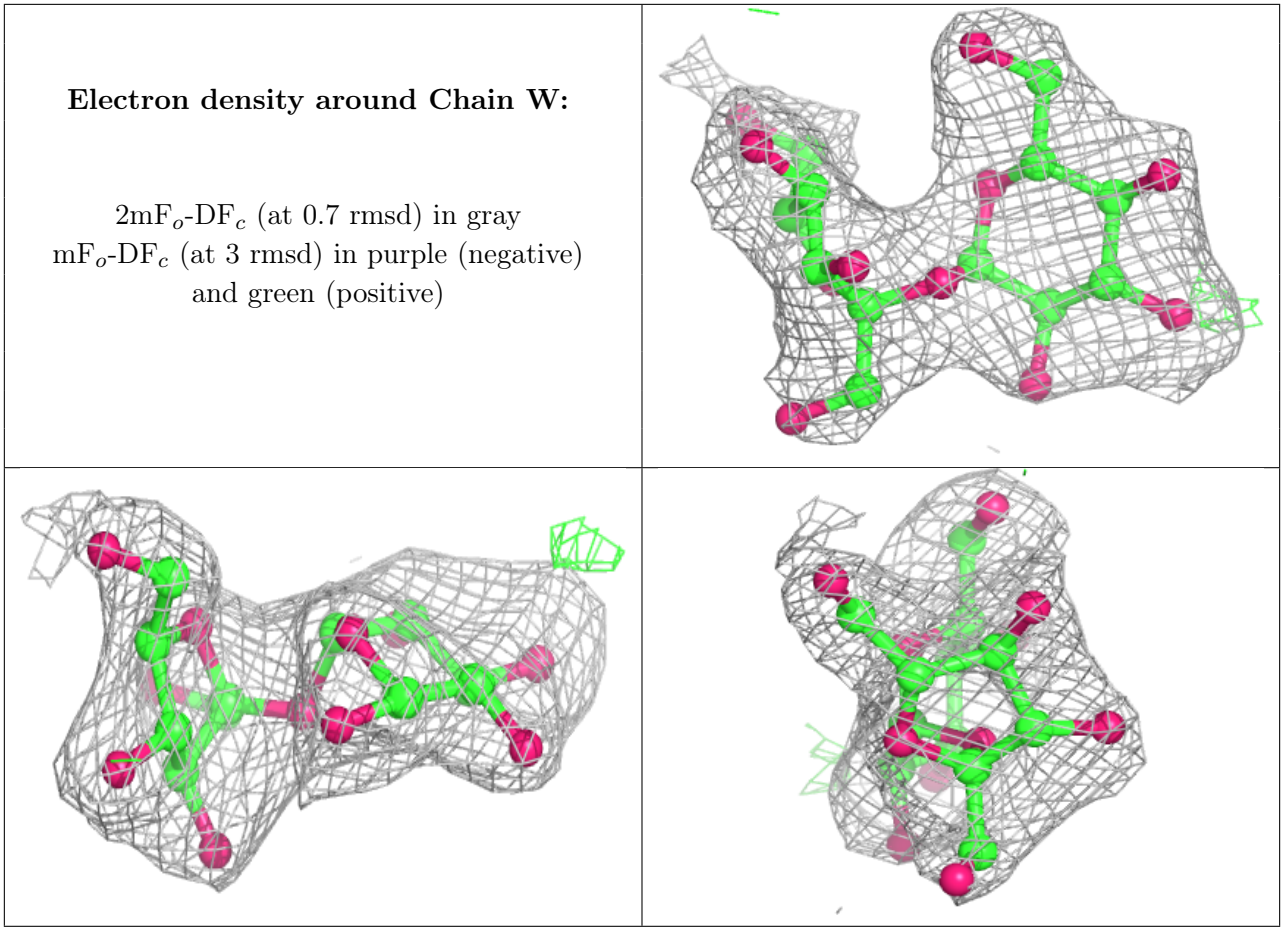
Electron density around Chain V:

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



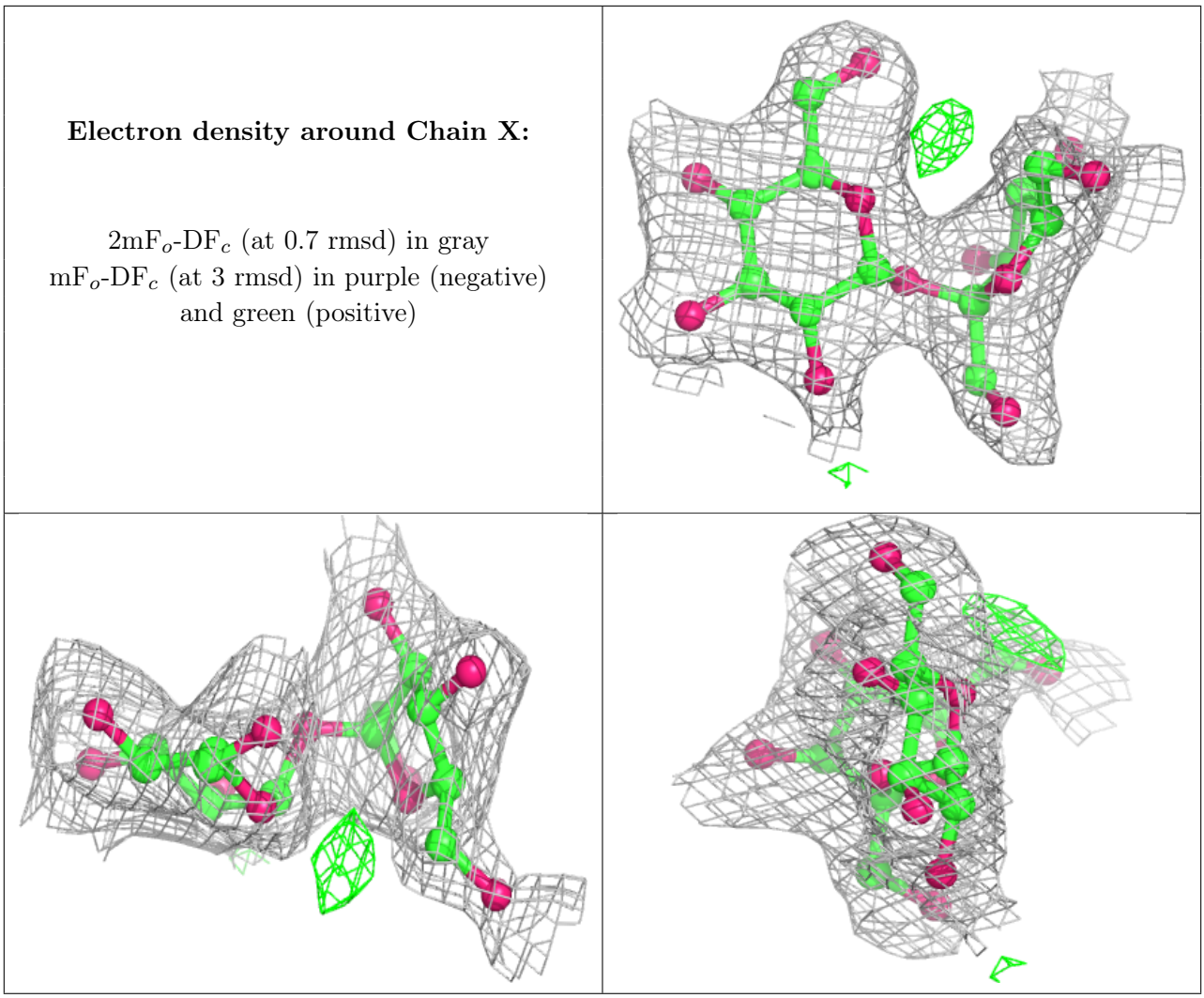
Electron density around Chain W:

$2mF_o$-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 X:

$2mF_o$-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
4	PO4	D	502	5/5	0.84	0.15	55,56,57,58	0
3	AMP	H	501	23/23	0.91	0.11	40,51,53,54	0
3	AMP	B	501	23/23	0.93	0.09	28,35,36,36	0
3	AMP	K	501	23/23	0.93	0.10	25,41,47,48	0
3	AMP	G	501	23/23	0.93	0.09	34,40,44,46	0
3	AMP	E	501	23/23	0.94	0.08	22,32,34,37	0
3	AMP	O	501	23/23	0.94	0.08	22,24,26,28	0
3	AMP	I	501	23/23	0.94	0.08	33,38,41,43	0
3	AMP	A	501	23/23	0.95	0.07	20,26,30,33	0

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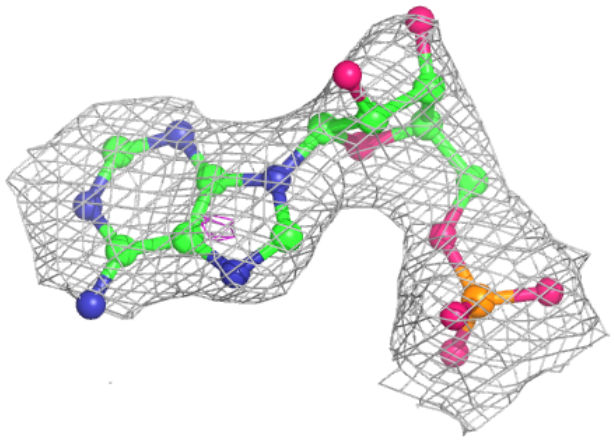
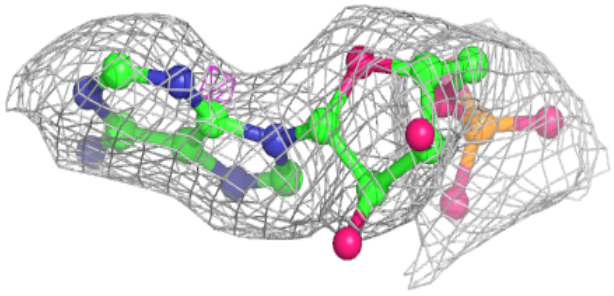
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	AMP	P	501	23/23	0.95	0.08	23,24,25,25	0
3	AMP	L	501	23/23	0.95	0.08	24,25,26,26	0
3	AMP	C	501	23/23	0.96	0.07	18,20,21,21	0
3	AMP	M	501	23/23	0.96	0.07	21,23,24,25	0
3	AMP	N	501	23/23	0.96	0.07	21,21,22,22	0
3	AMP	F	501	23/23	0.96	0.07	24,29,30,30	0
3	AMP	J	501	23/23	0.96	0.07	28,32,34,35	0
3	AMP	D	501	23/23	0.96	0.07	26,33,34,36	0

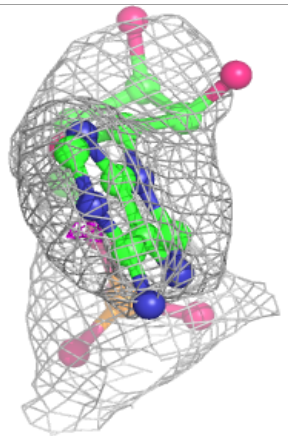
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around AMP H 501:

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

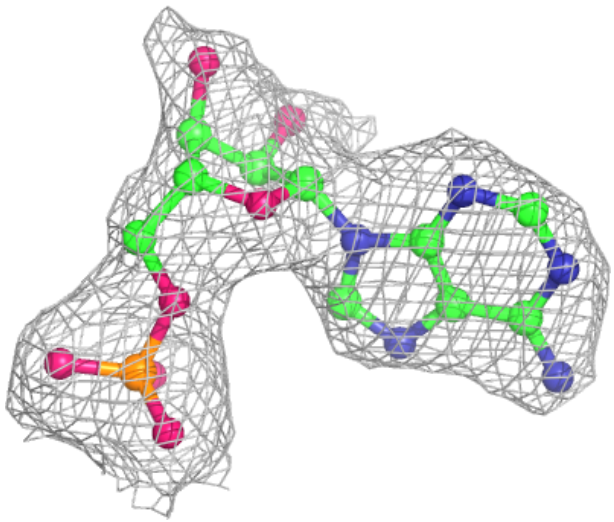


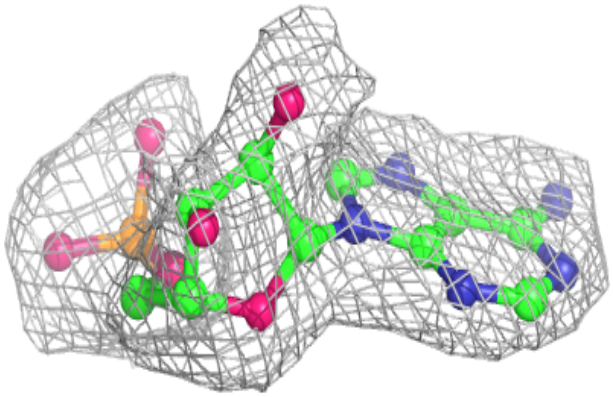




Electron density around AMP B 501:

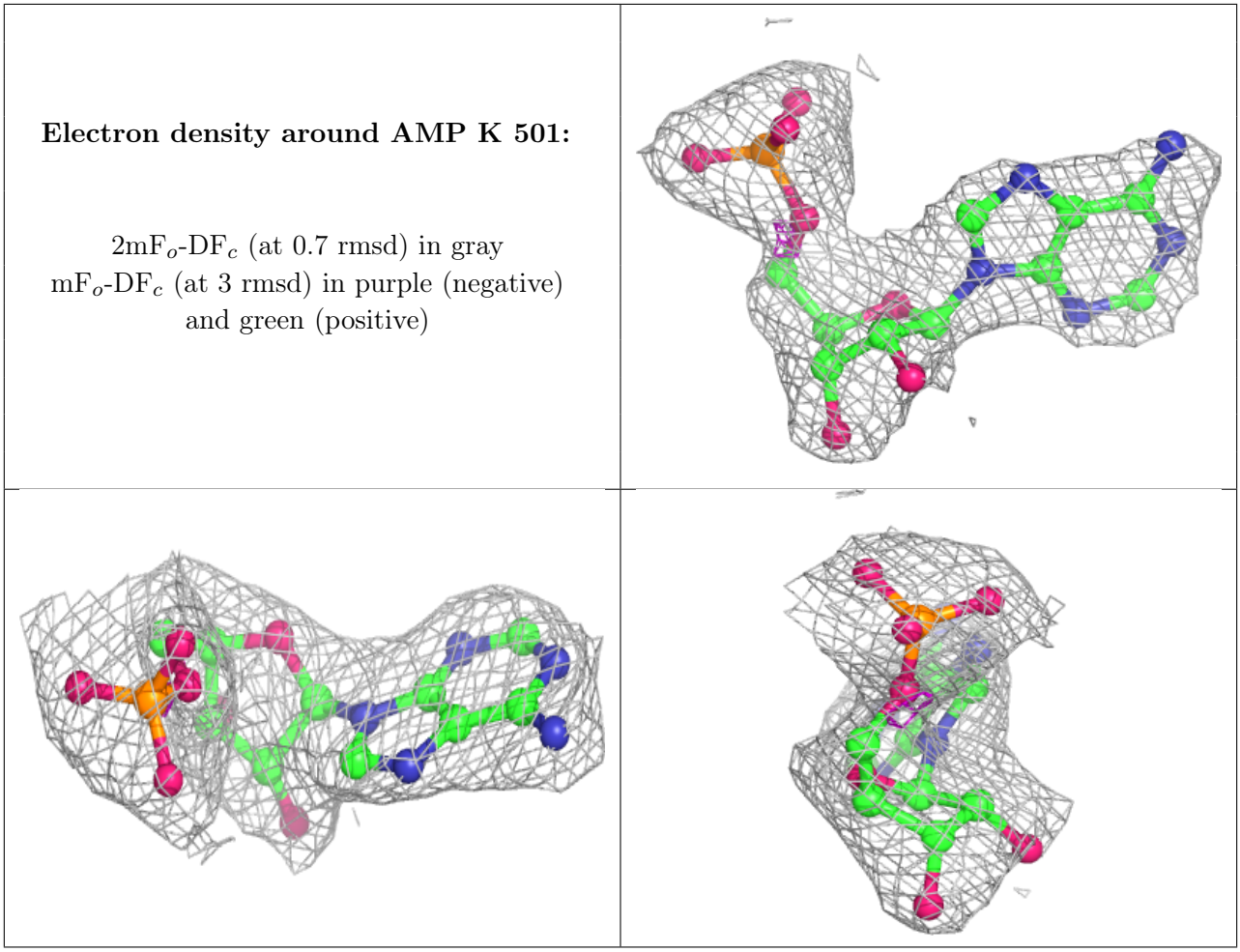
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)





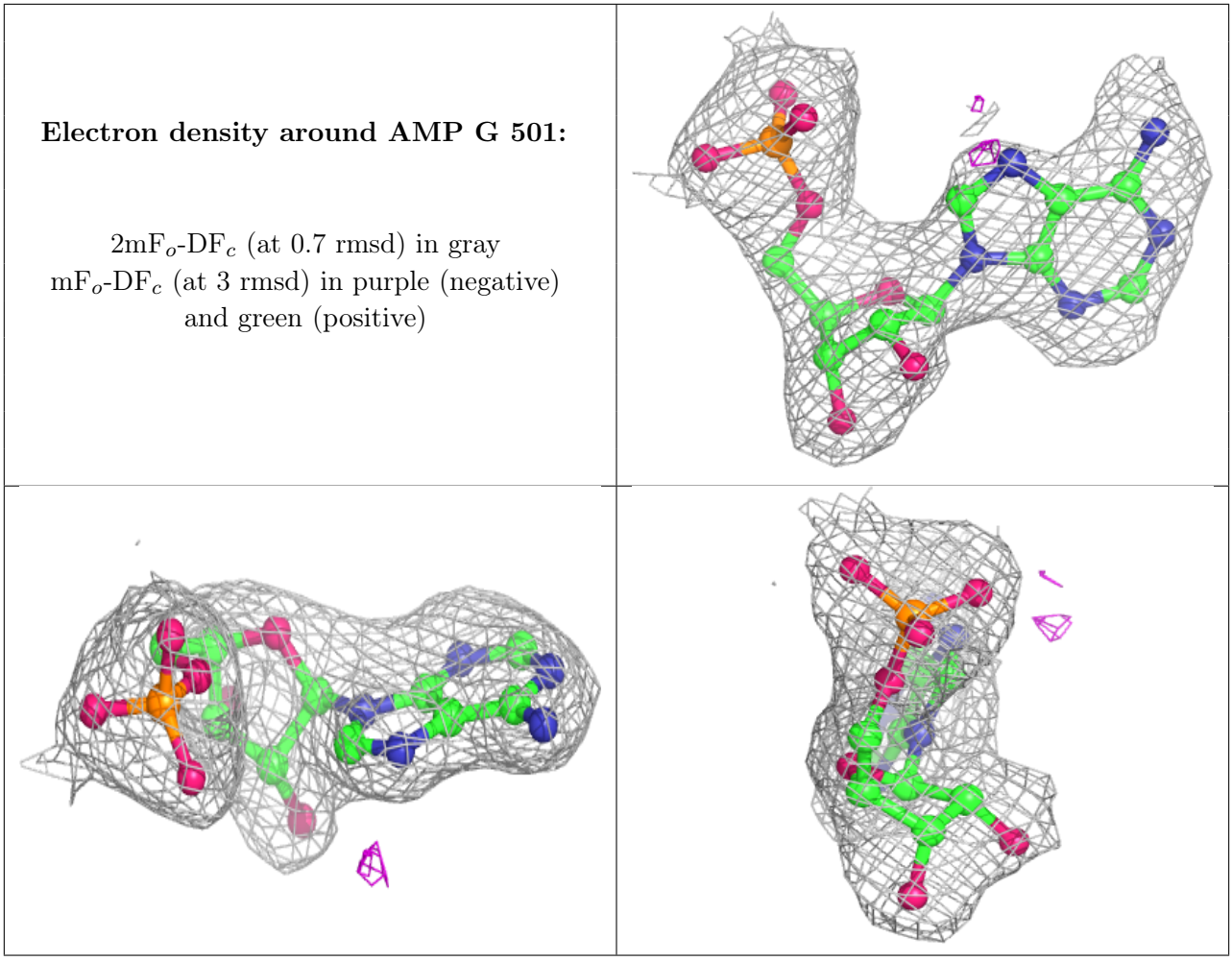
Electron density around AMP K 501:

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



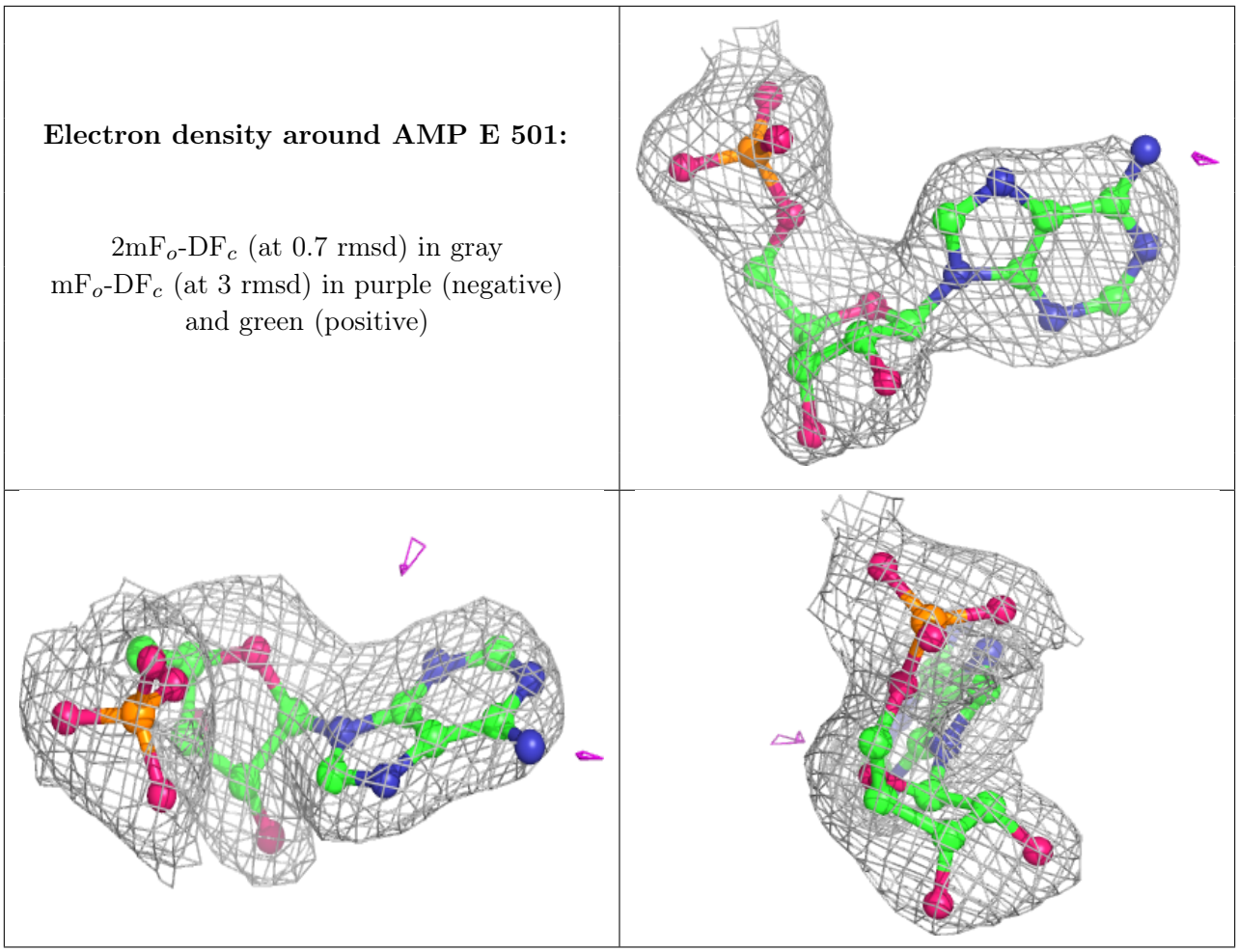
Electron density around AMP G 501:

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



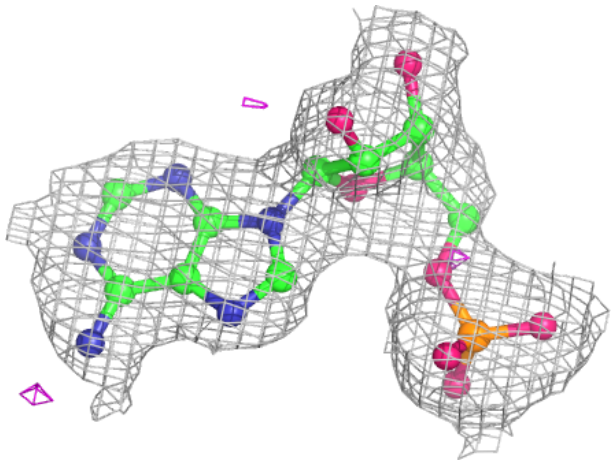
Electron density around AMP E 501:

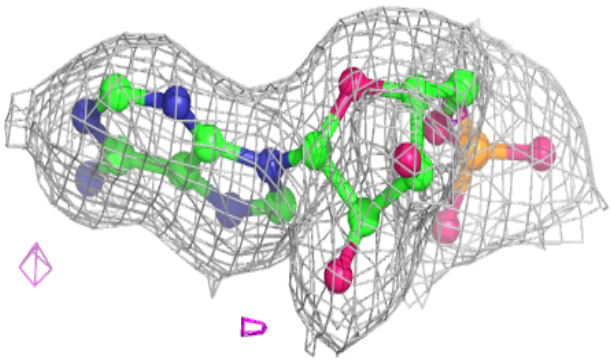
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

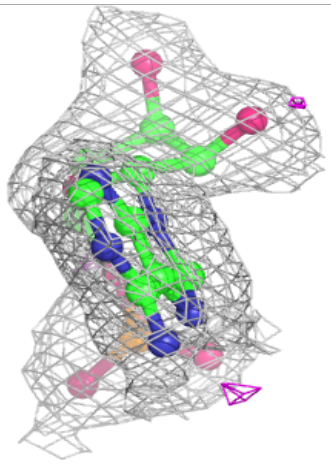


Electron density around AMP O 501:

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

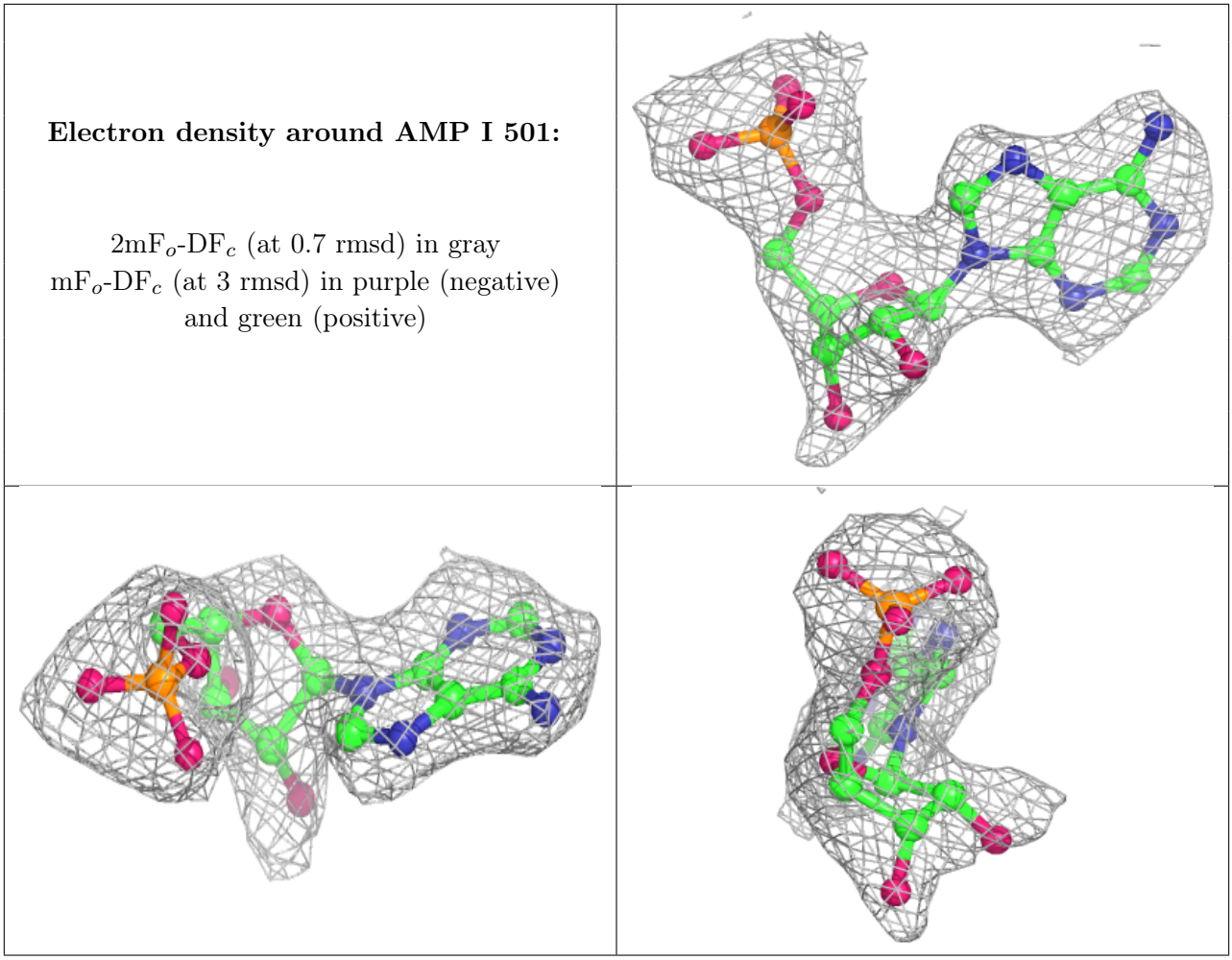






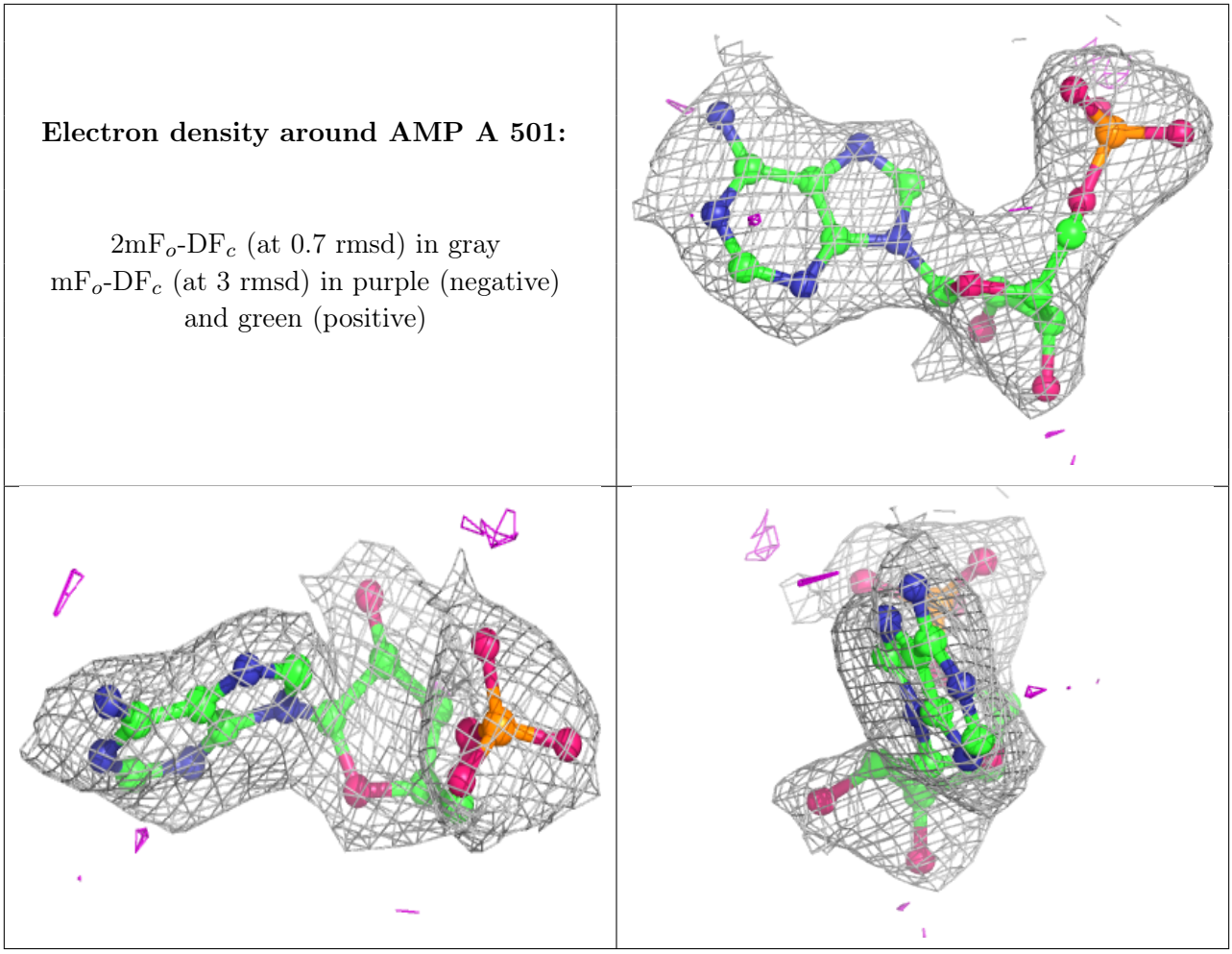
Electron density around AMP I 501:

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



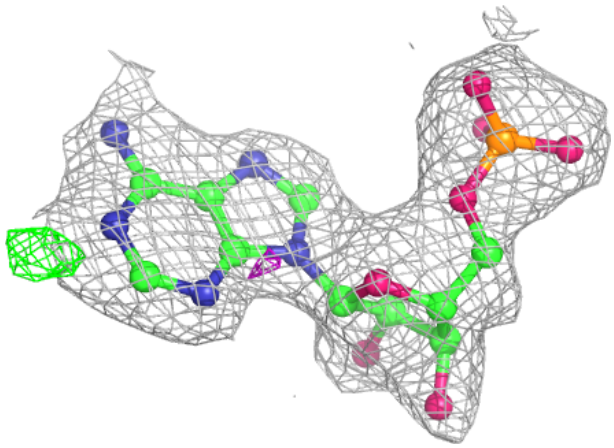
Electron density around AMP A 501:

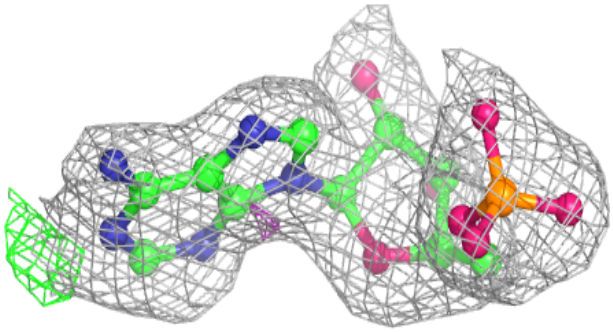
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

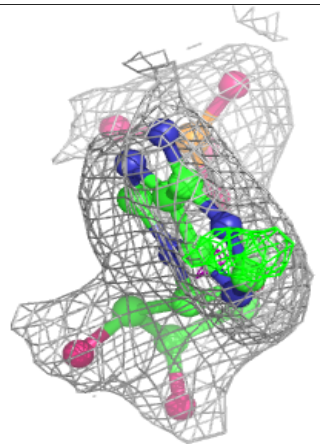


Electron density around AMP P 501:

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

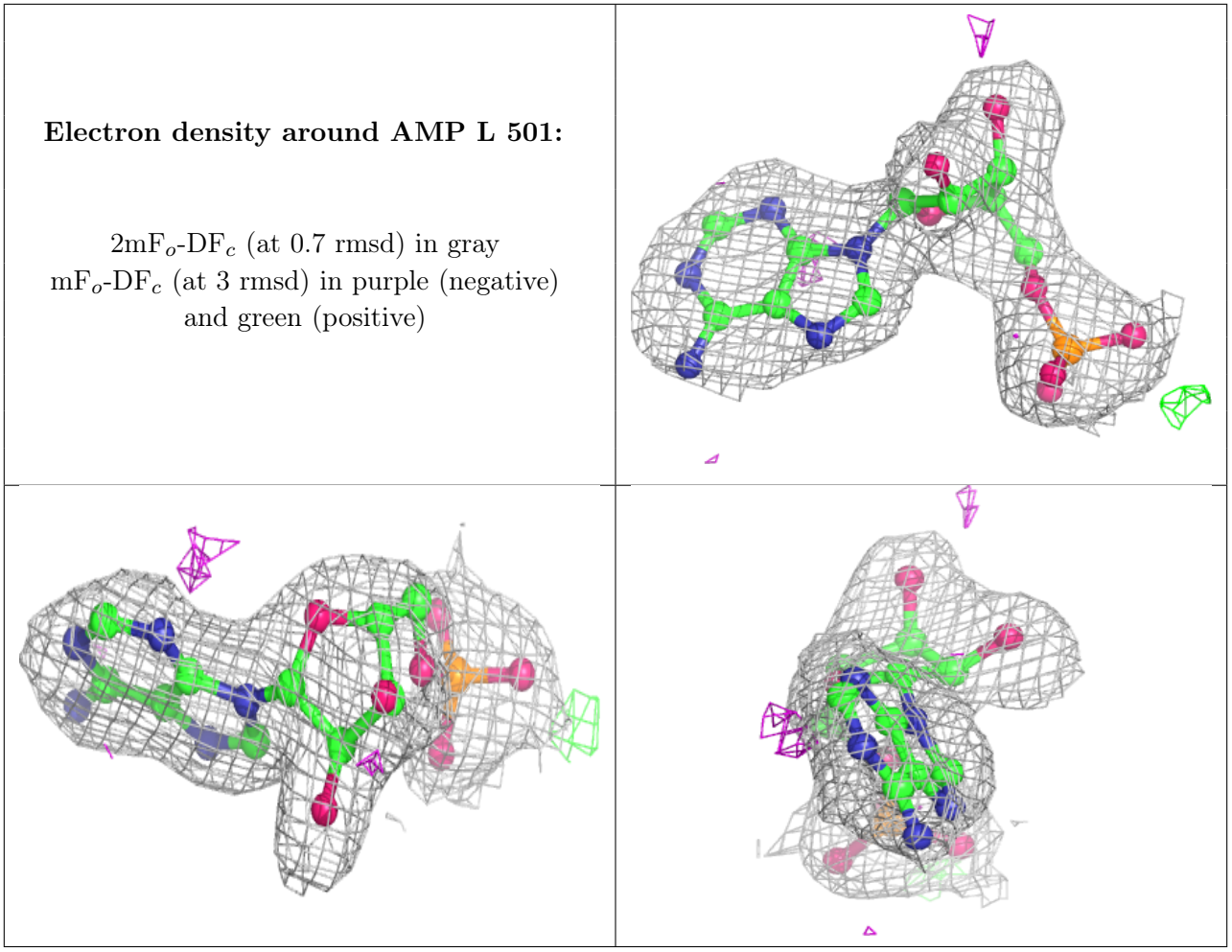






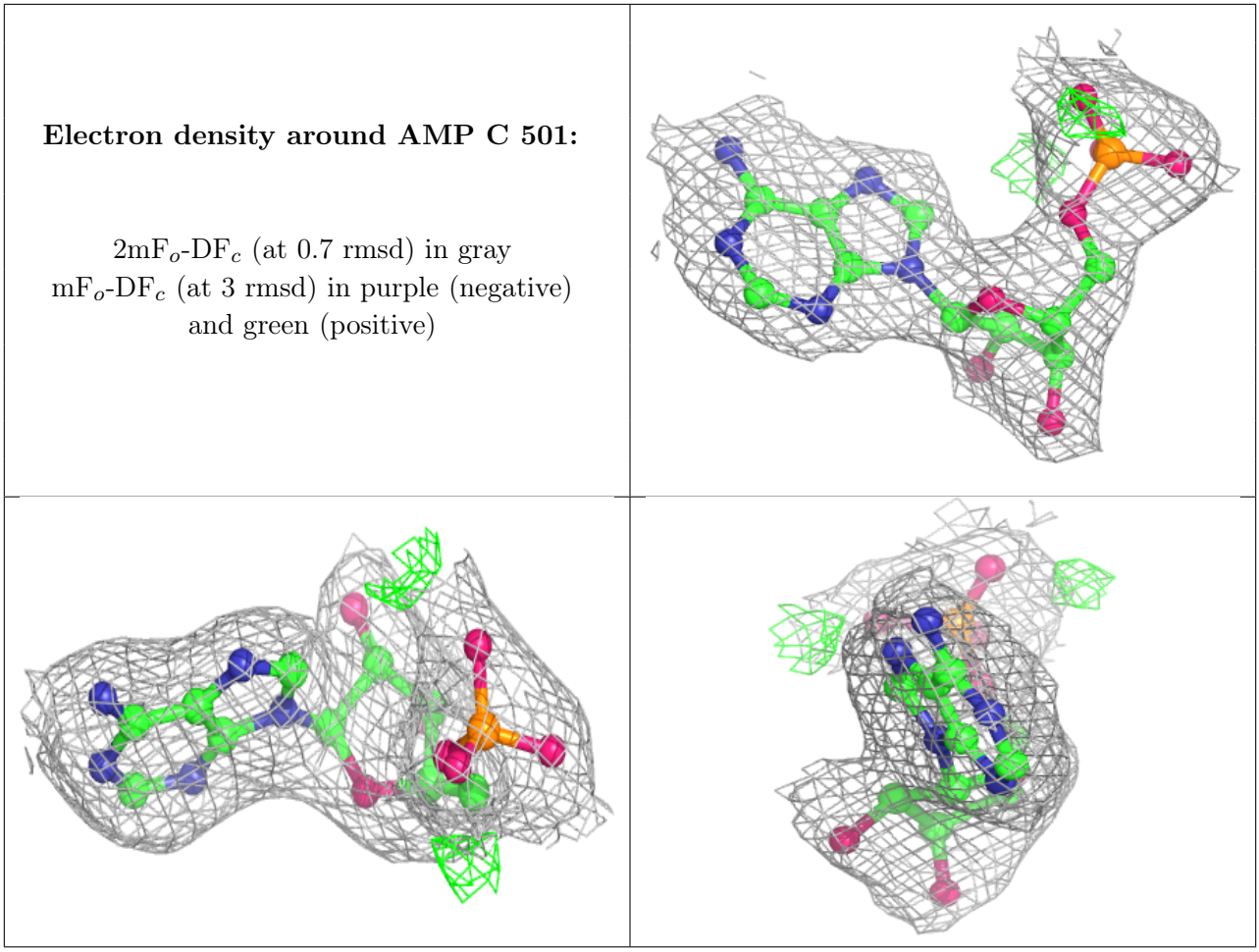
Electron density around AMP L 501:

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



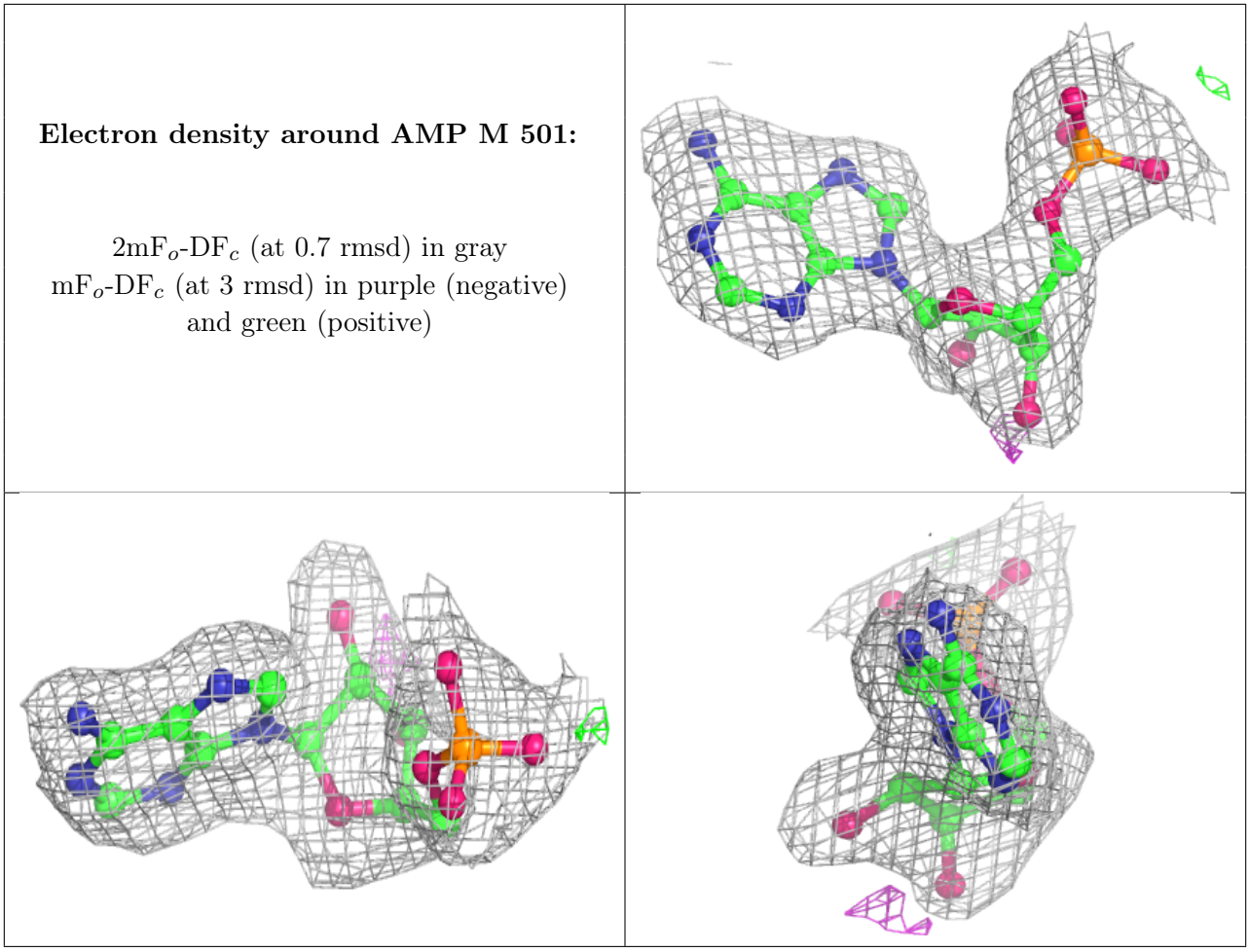
Electron density around AMP C 501:

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



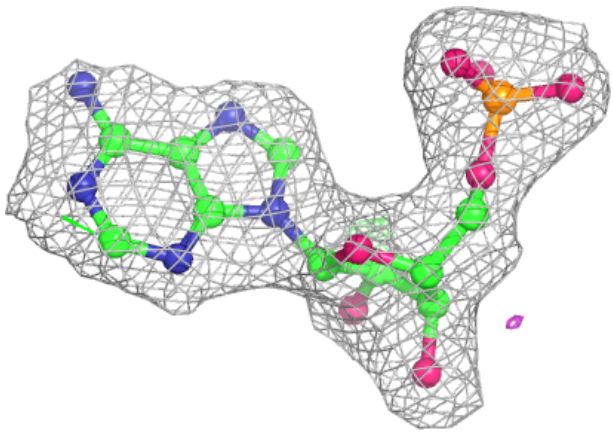
Electron density around AMP M 501:

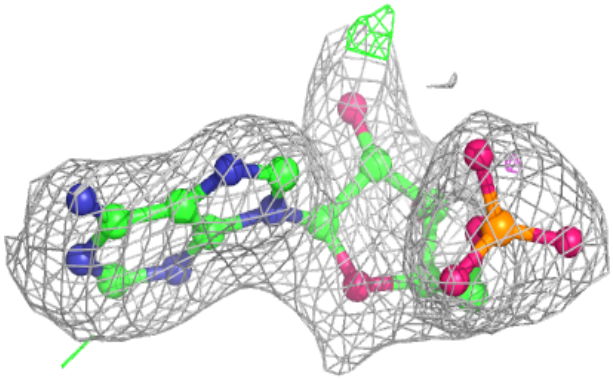
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

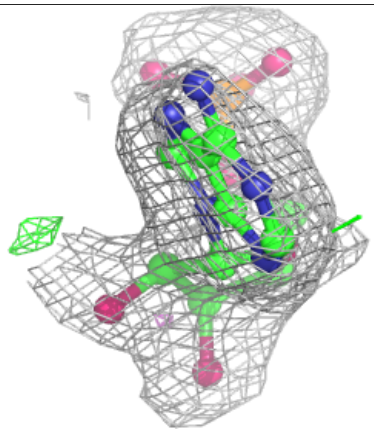


Electron density around AMP N 501:

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

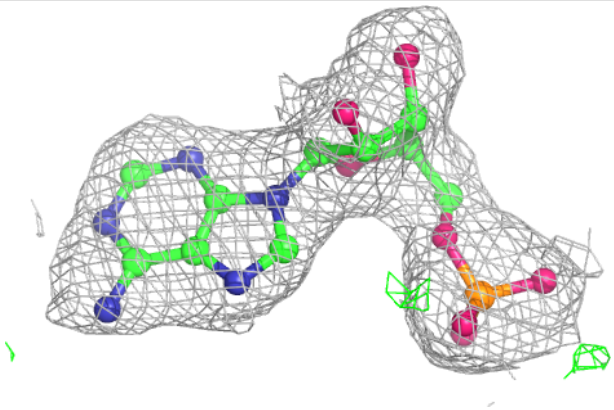


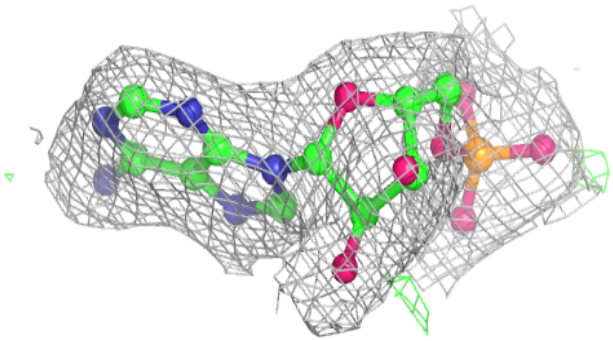


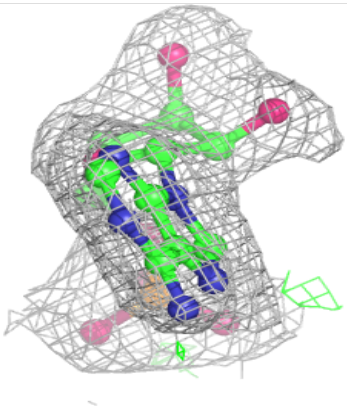


Electron density around AMP F 501:

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

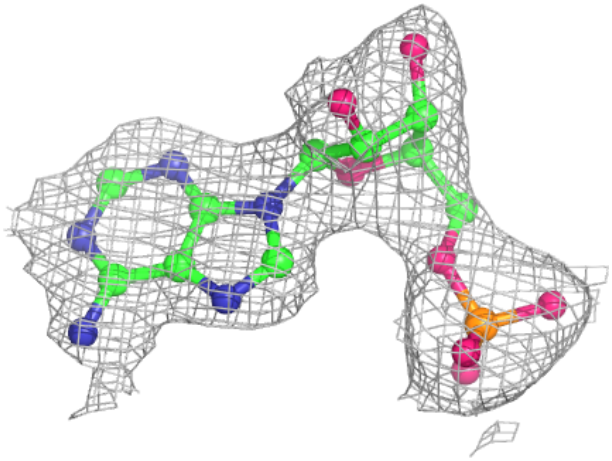


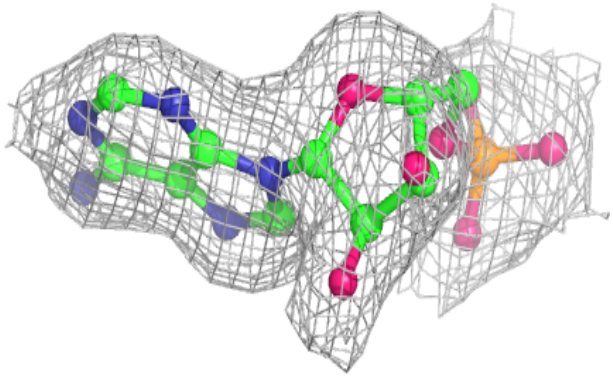


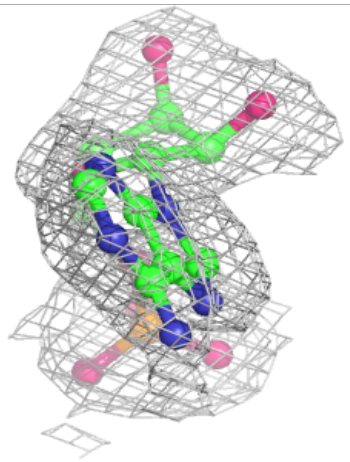


Electron density around AMP J 501:

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

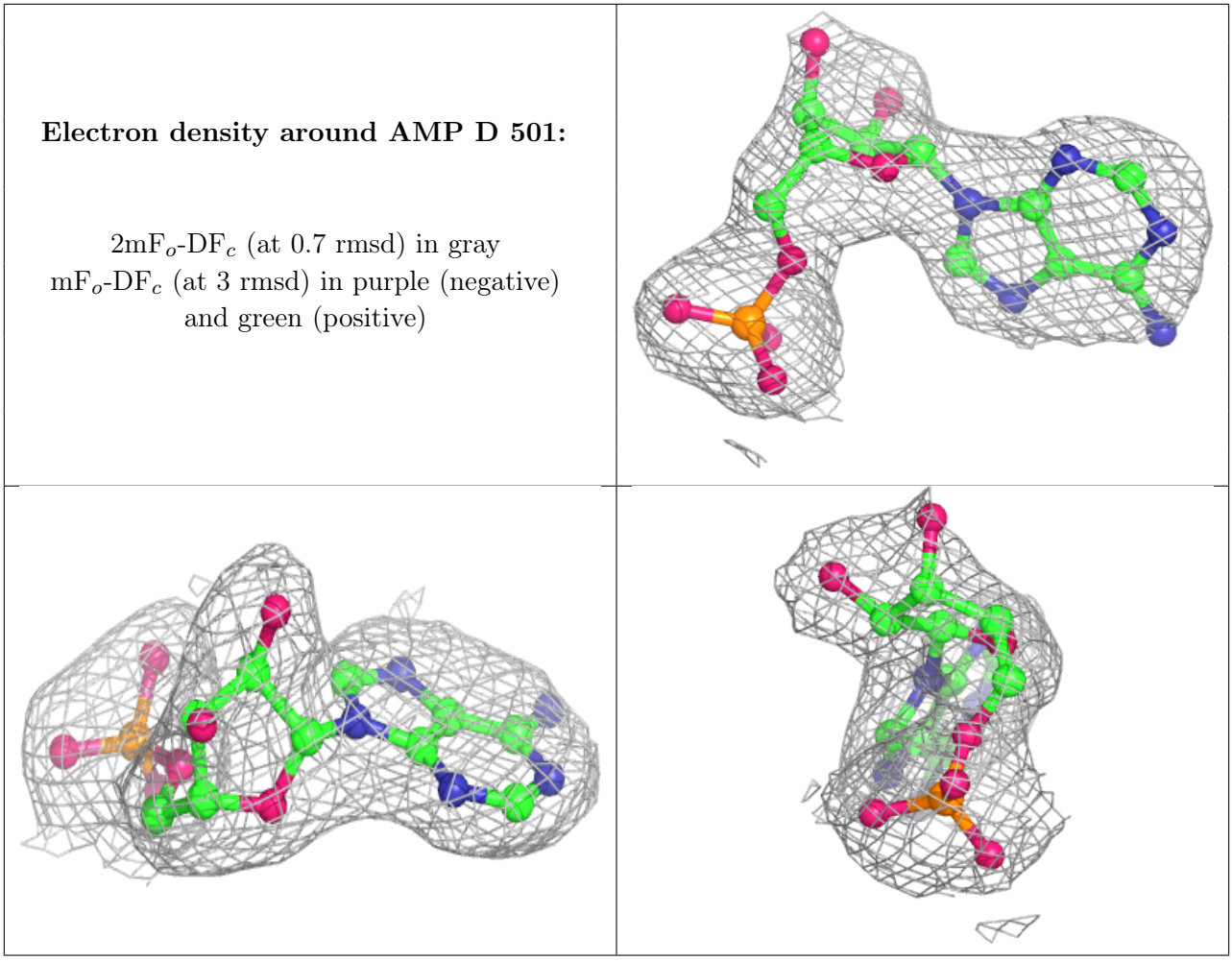






Electron density around AMP D 501:

$2mF_o$-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.