Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2024 – 04:28 AM EST

PDB ID	:	2DCN
Title	:	Crystal structure of 2-keto-3-deoxygluconate kinase from Sulfolobus tokodaii complexed with 2-keto-6-phosphogluconate (alpha-furanose form)
Authors	:	Okazaki, S.; Onda, H.; Suzuki, A.; Kuramitsu, S.; Masui, R.; Yamane, T.
Deposited on	:	2006-01-10
Resolution	:	2.25 Å(reported)

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

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

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

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

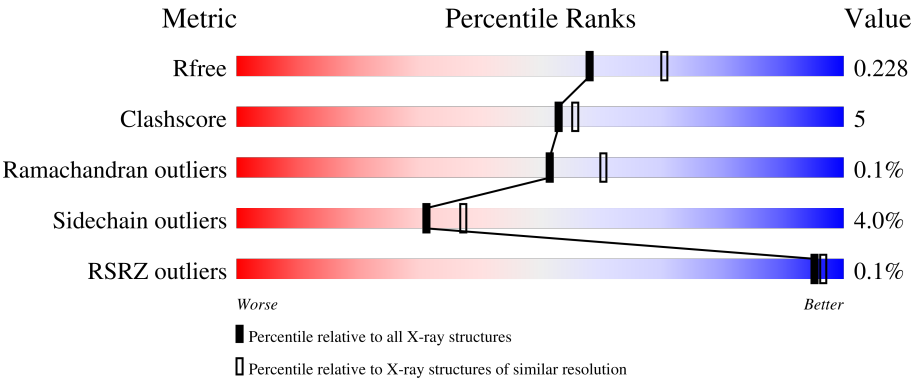
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.25 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1377 (2.26-2.26)
Clashscore	141614	1487 (2.26-2.26)
Ramachandran outliers	138981	1449 (2.26-2.26)
Sidechain outliers	138945	1450 (2.26-2.26)
RSRZ outliers	127900	1356 (2.26-2.26)

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	311	86% 10%
1	B	311	84% 14%
1	C	311	89% 9%
1	D	311	89% 8%
1	E	311	81% 17%

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Mol	Chain	Length	Quality of chain
1	F	311	86% 11%
1	G	311	% 84% 13%
1	H	311	85% 13%
1	I	311	86% 11%
1	J	311	86% 11%
1	K	311	85% 13%
1	L	311	85% 13%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	MG	G	4025	-	-	-	X

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 31709 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 hypothetical fructokinase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	308	Total	C	N	O	S	0	3	0
			2432	1561	392	472	7			
1	B	308	Total	C	N	O	S	0	2	0
			2423	1555	390	471	7			
1	C	308	Total	C	N	O	S	0	3	0
			2432	1560	391	474	7			
1	D	308	Total	C	N	O	S	0	2	0
			2423	1555	390	471	7			
1	E	308	Total	C	N	O	S	0	2	0
			2423	1555	390	471	7			
1	F	308	Total	C	N	O	S	0	5	0
			2450	1571	394	478	7			
1	G	308	Total	C	N	O	S	0	0	0
			2405	1545	388	465	7			
1	H	308	Total	C	N	O	S	0	1	0
			2414	1550	389	468	7			
1	I	308	Total	C	N	O	S	0	4	0
			2441	1566	393	475	7			
1	J	308	Total	C	N	O	S	0	4	0
			2443	1567	396	473	7			
1	K	308	Total	C	N	O	S	0	5	0
			2452	1571	396	478	7			
1	L	308	Total	C	N	O	S	0	6	0
			2456	1574	395	479	8			

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	C	3	Total Mg 3 3	0	0
2	D	4	Total Mg 4 4	0	0
2	E	3	Total Mg 3 3	0	0
2	F	2	Total Mg 2 2	0	0
2	G	6	Total Mg 6 6	0	0
2	H	3	Total Mg 3 3	0	0
2	I	3	Total Mg 3 3	0	0
2	J	4	Total Mg 4 4	0	0
2	K	3	Total Mg 3 3	0	0
2	L	4	Total Mg 4 4	0	0

- Molecule 3 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total K 1 1	0	0
3	B	1	Total K 1 1	0	0
3	C	1	Total K 1 1	0	0
3	D	1	Total K 1 1	0	0
3	E	1	Total K 1 1	0	0
3	F	1	Total K 1 1	0	0
3	G	1	Total K 1 1	0	0
3	H	1	Total K 1 1	0	0
3	I	1	Total K 1 1	0	0

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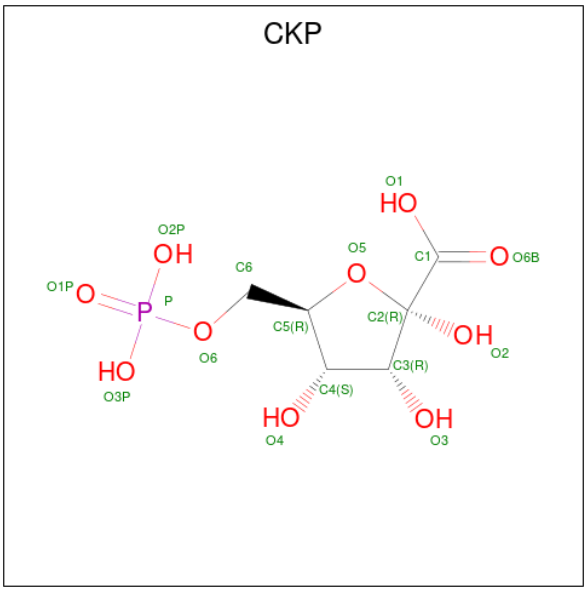
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	J	1	Total K 1 1	0	0
3	K	1	Total K 1 1	0	0
3	L	1	Total K 1 1	0	0

- Molecule 4 is 6-O-phosphono-beta-D-psicofuranosonic acid (three-letter code: CKP) (formula: $C_6H_{11}O_{10}P$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O P 17 6 10 1	0	0
4	B	1	Total C O P 17 6 10 1	0	0
4	C	1	Total C O P 17 6 10 1	0	0
4	D	1	Total C O P 17 6 10 1	0	0
4	E	1	Total C O P 17 6 10 1	0	0
4	F	1	Total C O P 17 6 10 1	0	0
4	G	1	Total C O P 17 6 10 1	0	0
4	H	1	Total C O P 17 6 10 1	0	0

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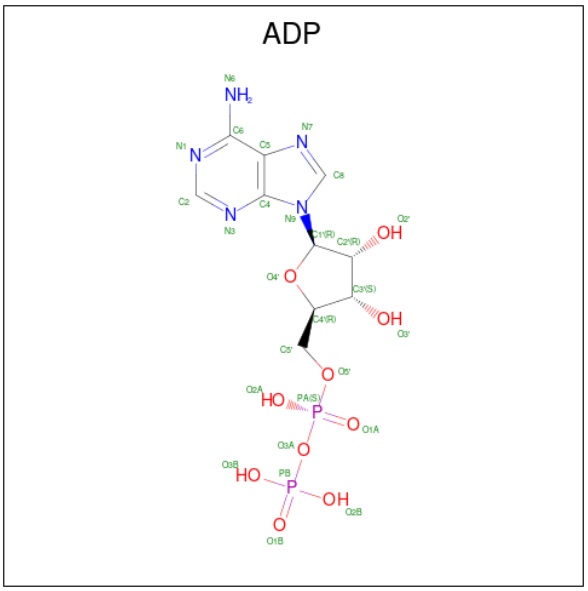
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	I	1	Total C O P 17 6 10 1	0	0
4	J	1	Total C O P 17 6 10 1	0	0
4	K	1	Total C O P 17 6 10 1	0	0
4	L	1	Total C O P 17 6 10 1	0	0

- Molecule 5 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C N O P 27 10 5 10 2	0	0
5	B	1	Total C N O P 27 10 5 10 2	0	0
5	C	1	Total C N O P 27 10 5 10 2	0	0
5	D	1	Total C N O P 27 10 5 10 2	0	0
5	E	1	Total C N O P 27 10 5 10 2	0	0
5	F	1	Total C N O P 27 10 5 10 2	0	0
5	G	1	Total C N O P 27 10 5 10 2	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	H	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
5	I	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
5	J	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
5	K	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
5	L	1	Total	C	N	O	P	0	0
			27	10	5	10	2		

- Molecule 6 is water.

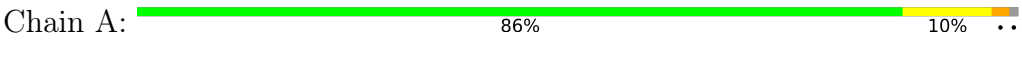
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	141	Total	O	0	0
			141	141		
6	B	158	Total	O	0	0
			158	158		
6	C	189	Total	O	0	0
			189	189		
6	D	177	Total	O	0	0
			177	177		
6	E	156	Total	O	0	0
			156	156		
6	F	163	Total	O	0	0
			163	163		
6	G	135	Total	O	0	0
			135	135		
6	H	179	Total	O	0	0
			179	179		
6	I	176	Total	O	0	0
			176	176		
6	J	169	Total	O	0	0
			169	169		
6	K	124	Total	O	0	0
			124	124		
6	L	163	Total	O	0	0
			163	163		

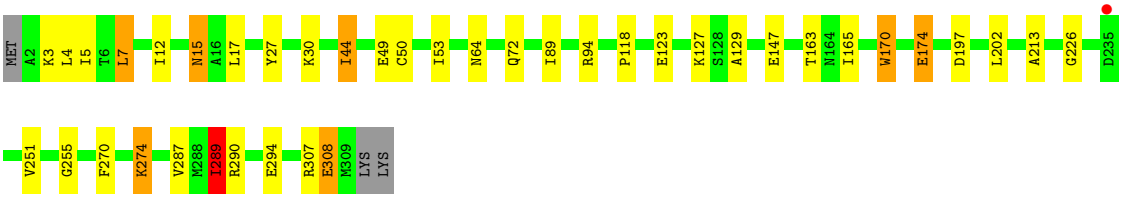
3 Residue-property plots (i)

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: hypothetical fructokinase

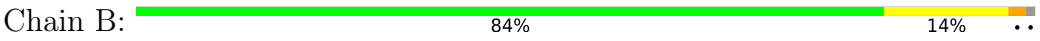
Chain A:

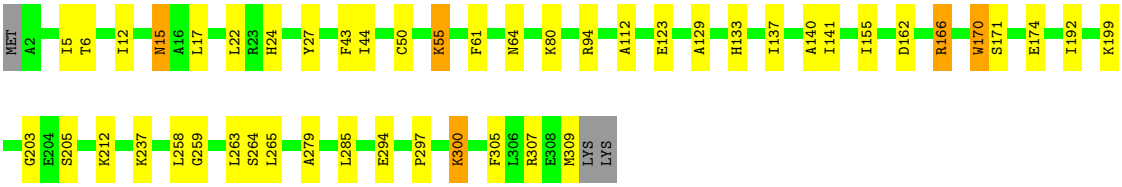




• Molecule 1: hypothetical fructokinase

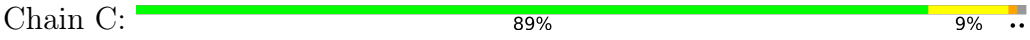
Chain B:

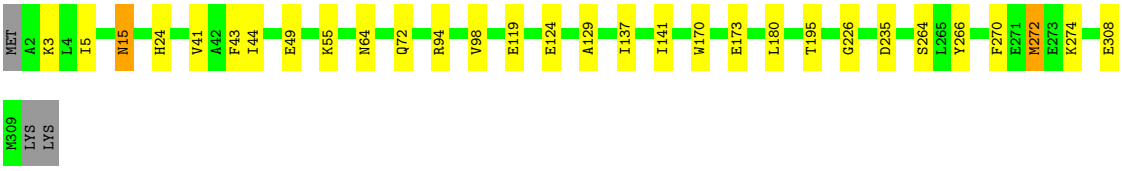




• Molecule 1: hypothetical fructokinase

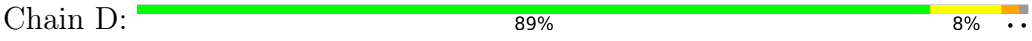
Chain C:

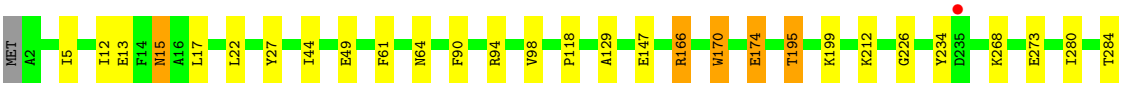


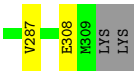


• Molecule 1: hypothetical fructokinase

Chain D:

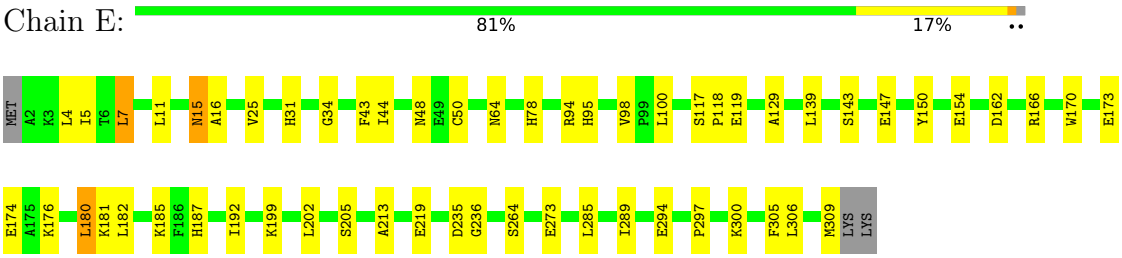






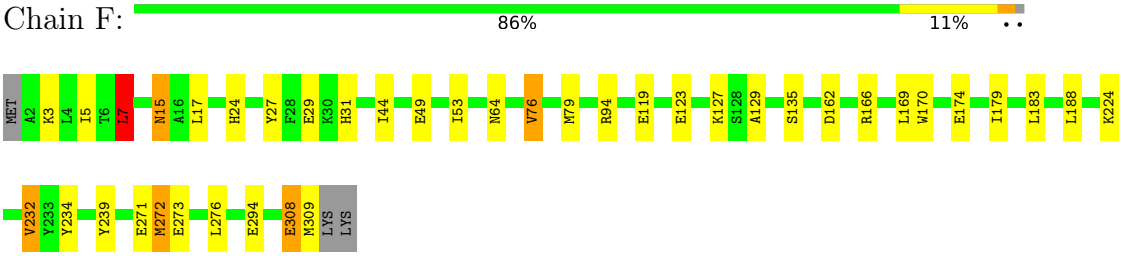
• Molecule 1: hypothetical fructokinase

Chain E:



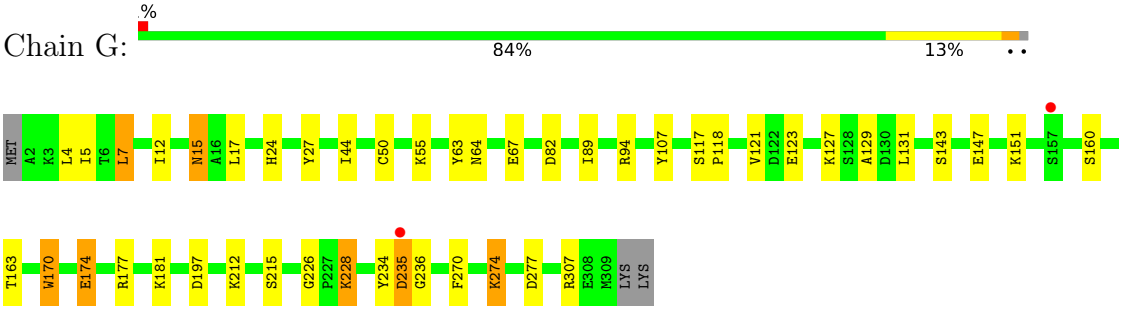
• Molecule 1: hypothetical fructokinase

Chain F:



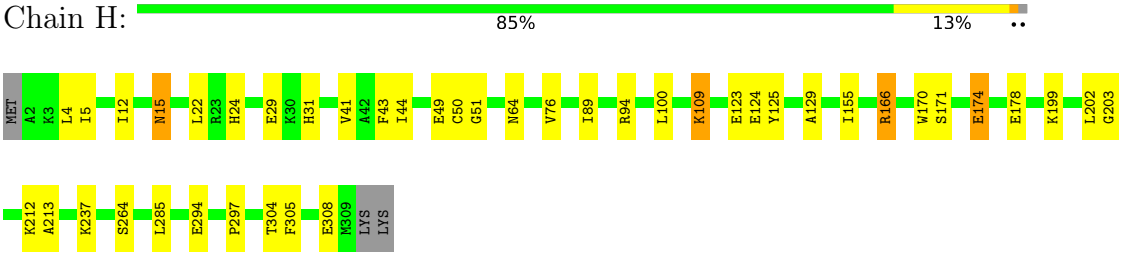
• Molecule 1: hypothetical fructokinase

Chain G:



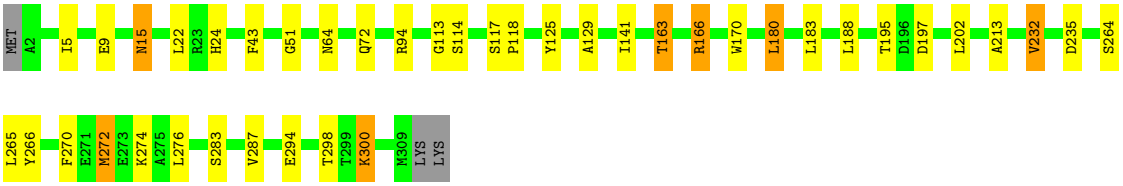
• Molecule 1: hypothetical fructokinase

Chain H:



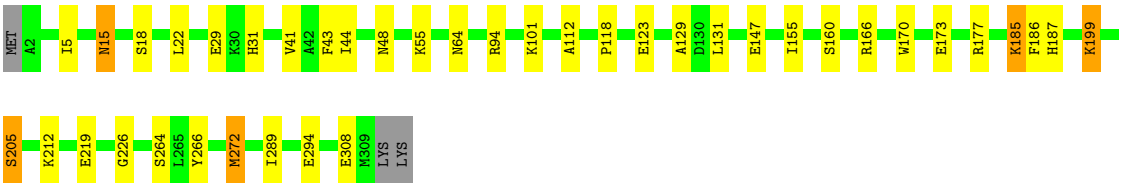
• Molecule 1: hypothetical fructokinase

Chain I:



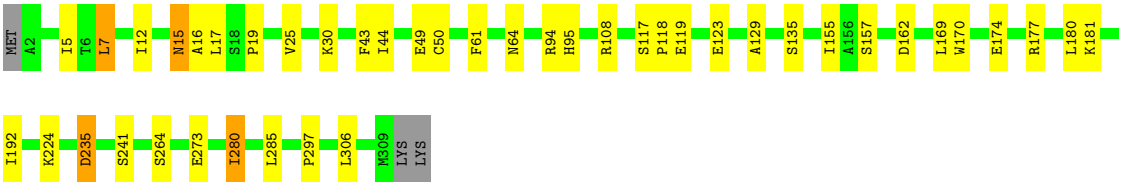
• Molecule 1: hypothetical fructokinase

Chain J:



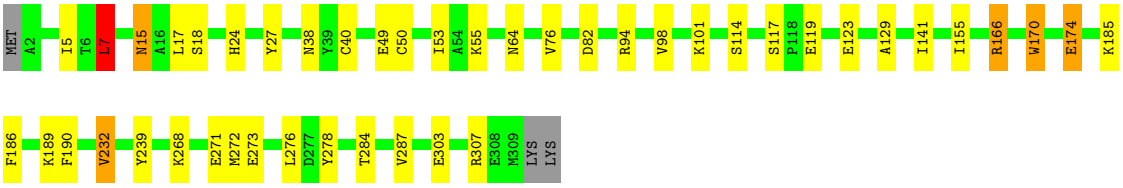
• Molecule 1: hypothetical fructokinase

Chain K:



• Molecule 1: hypothetical fructokinase

Chain L:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	84.64Å 150.23Å 154.76Å 90.00° 93.73° 90.00°	Depositor
Resolution (Å)	46.37 – 2.25 46.36 – 2.25	Depositor EDS
% Data completeness (in resolution range)	98.1 (46.37-2.25) 98.0 (46.36-2.25)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	0.06	Depositor
$< I/\sigma(I) >$ [1]	2.24 (at 2.24Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.175 , 0.228 0.175 , 0.228	Depositor DCC
R_{free} test set	9064 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	25.7	Xtriage
Anisotropy	0.071	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 40.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	31709	wwPDB-VP
Average B, all atoms (Å^2)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 49.84 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 7.0435e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: CKP, MG, K, ADP

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	0.55	0/2483	0.63	2/3352 (0.1%)
1	B	0.60	0/2474	0.65	2/3341 (0.1%)
1	C	0.57	0/2483	0.61	0/3353
1	D	0.59	0/2474	0.65	1/3341 (0.0%)
1	E	0.55	0/2474	0.65	1/3341 (0.0%)
1	F	0.57	0/2501	0.65	1/3376 (0.0%)
1	G	0.55	0/2456	0.64	1/3317 (0.0%)
1	H	0.58	0/2465	0.66	2/3329 (0.1%)
1	I	0.59	0/2492	0.65	1/3364 (0.0%)
1	J	0.58	0/2494	0.62	0/3366
1	K	0.56	0/2503	0.64	1/3379 (0.0%)
1	L	0.57	0/2507	0.66	1/3384 (0.0%)
All	All	0.57	0/29806	0.64	13/40243 (0.0%)

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	G	7	LEU	CA-CB-CG	8.54	134.95	115.30
1	E	7	LEU	CA-CB-CG	8.28	134.33	115.30
1	L	7	LEU	CA-CB-CG	8.26	134.29	115.30
1	F	7	LEU	CA-CB-CG	7.77	133.18	115.30
1	K	7	LEU	CA-CB-CG	7.64	132.87	115.30
1	H	166	ARG	NE-CZ-NH2	-7.32	116.64	120.30
1	H	166	ARG	NE-CZ-NH1	6.70	123.65	120.30
1	A	7	LEU	CA-CB-CG	6.44	130.11	115.30
1	I	166	ARG	NE-CZ-NH2	-6.39	117.10	120.30
1	B	166	ARG	NE-CZ-NH1	5.90	123.25	120.30
1	B	166	ARG	NE-CZ-NH2	-5.39	117.60	120.30
1	A	289	ILE	CG1-CB-CG2	-5.13	100.12	111.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	166	ARG	NE-CZ-NH2	-5.11	117.75	120.30

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	2432	0	2412	25	0
1	B	2423	0	2400	33	0
1	C	2432	0	2405	20	1
1	D	2423	0	2400	21	0
1	E	2423	0	2400	39	0
1	F	2450	0	2422	26	0
1	G	2405	0	2390	27	0
1	H	2414	0	2395	25	0
1	I	2441	0	2417	30	0
1	J	2443	0	2424	25	0
1	K	2452	0	2422	24	0
1	L	2456	0	2426	23	0
2	A	5	0	0	0	0
2	B	5	0	0	0	0
2	C	3	0	0	0	0
2	D	4	0	0	0	0
2	E	3	0	0	0	0
2	F	2	0	0	0	0
2	G	6	0	0	0	0
2	H	3	0	0	0	0
2	I	3	0	0	0	0
2	J	4	0	0	0	0
2	K	3	0	0	0	0
2	L	4	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
3	I	1	0	0	0	0
3	J	1	0	0	0	0
3	K	1	0	0	0	0
3	L	1	0	0	0	0
4	A	17	0	5	1	0
4	B	17	0	5	2	0
4	C	17	0	5	0	0
4	D	17	0	5	1	0
4	E	17	0	5	1	0
4	F	17	0	5	1	0
4	G	17	0	5	0	0
4	H	17	0	5	2	0
4	I	17	0	5	1	0
4	J	17	0	5	1	0
4	K	17	0	5	0	0
4	L	17	0	5	2	0
5	A	27	0	12	2	0
5	B	27	0	12	0	0
5	C	27	0	12	1	0
5	D	27	0	12	1	0
5	E	27	0	12	0	0
5	F	27	0	12	1	0
5	G	27	0	12	1	0
5	H	27	0	12	0	0
5	I	27	0	12	0	0
5	J	27	0	12	1	0
5	K	27	0	12	1	0
5	L	27	0	12	0	0
6	A	141	0	0	5	0
6	B	158	0	0	5	0
6	C	189	0	0	2	0
6	D	177	0	0	5	0
6	E	156	0	0	10	1
6	F	163	0	0	1	0
6	G	135	0	0	3	0
6	H	179	0	0	7	0
6	I	176	0	0	1	0
6	J	169	0	0	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	K	124	0	0	4	0
6	L	163	0	0	3	0
All	All	31709	0	29117	317	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

All (317) 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:E:150:TYR:O	1:E:154:GLU:HG3	1.61	1.00
1:D:5:ILE:HD12	1:D:129:ALA:HB2	1.51	0.92
1:A:44:ILE:HG21	6:A:5129:HOH:O	1.74	0.87
1:I:15:ASN:HD21	1:I:94:ARG:HD3	1.41	0.84
1:A:307:ARG:NH2	6:A:5125:HOH:O	2.11	0.83
1:B:15:ASN:HD21	1:B:94:ARG:HD3	1.43	0.82
1:I:232:VAL:CG2	1:I:276:LEU:HD22	2.10	0.81
1:B:265:LEU:HD12	6:B:5151:HOH:O	1.83	0.79
1:I:163:THR:HG23	1:I:197:ASP:OD2	1.84	0.77
1:D:195:THR:HG23	6:D:5040:HOH:O	1.85	0.77
1:B:307:ARG:NH2	6:B:5160:HOH:O	2.16	0.76
1:D:147:GLU:HG2	6:D:5109:HOH:O	1.86	0.75
1:D:118:PRO:HG3	1:D:147:GLU:HB3	1.68	0.75
1:H:15:ASN:HD21	1:H:94:ARG:HD3	1.52	0.75
1:I:232:VAL:HG22	1:I:276:LEU:HD22	1.66	0.75
1:G:15:ASN:HD21	1:G:94:ARG:HD3	1.52	0.75
1:L:15:ASN:HD21	1:L:94:ARG:HD3	1.52	0.74
1:E:235:ASP:CG	1:E:236:GLY:H	1.90	0.74
1:E:44:ILE:HD13	1:E:48:ASN:O	1.88	0.73
1:I:5:ILE:HD12	1:I:129:ALA:HB2	1.71	0.72
1:H:109:LYS:HD3	6:H:5072:HOH:O	1.89	0.72
1:F:5:ILE:HD12	1:F:129:ALA:HB2	1.71	0.71
1:C:15:ASN:HD21	1:C:94:ARG:HD3	1.56	0.71
1:E:15:ASN:HD21	1:E:94:ARG:HD3	1.55	0.71
1:C:72:GLN:CD	6:C:5176:HOH:O	2.29	0.70
1:G:270:PHE:CD1	1:G:274:LYS:HD2	2.26	0.69
1:J:101:LYS:NZ	6:J:5178:HOH:O	2.25	0.69
1:E:174:GLU:HG3	6:E:5101:HOH:O	1.91	0.69
1:G:163:THR:HG21	1:G:197:ASP:HB3	1.74	0.68
1:C:5:ILE:HD12	1:C:129:ALA:HB2	1.76	0.68
1:A:15:ASN:HD21	1:A:94:ARG:HD3	1.59	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:15:ASN:HD21	1:J:94:ARG:HD3	1.60	0.67
1:F:7:LEU:HD13	1:F:53:ILE:HB	1.78	0.66
1:F:232:VAL:HG22	1:F:276:LEU:HD22	1.76	0.66
1:G:307:ARG:NH2	6:G:5105:HOH:O	2.28	0.66
1:G:163:THR:HG22	1:G:197:ASP:OD2	1.96	0.66
1:K:224:LYS:HE3	5:K:3011:ADP:O1B	1.96	0.65
1:I:166:ARG:HD2	4:I:2009:CKP:O1	1.95	0.65
1:B:166:ARG:HD2	4:B:2002:CKP:O1	1.96	0.65
1:C:308:GLU:HG3	1:E:98:VAL:HG21	1.76	0.65
1:E:119:GLU:HB2	6:E:5065:HOH:O	1.96	0.65
1:C:3:LYS:HG3	1:C:49:GLU:HG3	1.78	0.65
1:F:15:ASN:HD21	1:F:94:ARG:HD3	1.60	0.65
1:D:15:ASN:HD21	1:D:94:ARG:HD3	1.61	0.64
1:L:101:LYS:NZ	6:L:5064:HOH:O	2.30	0.64
1:K:174:GLU:OE1	1:K:177[A]:ARG:NH1	2.31	0.64
1:J:5:ILE:HD12	1:J:129:ALA:HB2	1.80	0.63
1:B:5:ILE:HD12	1:B:129:ALA:HB2	1.79	0.63
1:L:189:LYS:HD3	1:L:190:PHE:CE1	2.34	0.62
1:L:40:CYS:HG	1:L:50[B]:CYS:HG	1.46	0.62
1:E:34:GLY:HA2	6:E:5146:HOH:O	1.99	0.61
1:B:171:SER:OG	1:B:174[A]:GLU:HG2	2.00	0.61
1:D:13:GLU:HB2	1:D:90:PHE:CE1	2.36	0.61
1:E:235:ASP:CG	1:E:236:GLY:N	2.53	0.61
1:K:5:ILE:HD12	1:K:129:ALA:HB2	1.81	0.61
1:G:5:ILE:HD12	1:G:129:ALA:HB2	1.82	0.60
1:F:17:LEU:HD12	1:F:27:TYR:HB3	1.83	0.60
1:A:7:LEU:HD13	1:A:53:ILE:HB	1.82	0.60
1:E:166:ARG:HD2	4:E:2005:CKP:O1	2.01	0.60
1:A:270:PHE:CD1	1:A:274:LYS:HD2	2.37	0.60
1:J:272:MET:HE2	1:J:272:MET:HA	1.84	0.60
1:K:15:ASN:HD21	1:K:94:ARG:HD3	1.67	0.60
1:D:98:VAL:HG21	1:F:308:GLU:HG3	1.84	0.59
1:K:12:ILE:HG13	1:K:61:PHE:HB3	1.84	0.59
1:I:232:VAL:HG23	1:I:276:LEU:HD22	1.84	0.59
1:C:270:PHE:CE1	1:C:274:LYS:HE2	2.37	0.59
1:K:117:SER:HB2	1:K:118:PRO:HD2	1.85	0.59
1:D:5:ILE:CD1	1:D:129:ALA:HB2	2.30	0.58
1:H:41:VAL:O	1:H:44:ILE:HG22	2.03	0.58
1:E:187:HIS:HD2	6:E:5139:HOH:O	1.87	0.58
1:F:232:VAL:CG2	1:F:276:LEU:HD22	2.33	0.58
1:I:163:THR:CG2	1:I:197:ASP:OD2	2.50	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:166:ARG:NH2	6:F:5160:HOH:O	2.37	0.58
1:H:308:GLU:HG3	1:L:98:VAL:HG21	1.86	0.58
1:H:178:GLU:HG3	6:H:5140:HOH:O	2.03	0.57
1:A:44:ILE:CG2	6:A:5129:HOH:O	2.41	0.56
1:A:170:TRP:HB2	1:A:174:GLU:HG2	1.87	0.56
1:A:163:THR:HG21	1:A:197:ASP:HB3	1.86	0.56
1:K:44:ILE:HG13	1:K:50:CYS:SG	2.46	0.56
1:L:5:ILE:HD12	1:L:129:ALA:HB2	1.85	0.56
6:A:5020:HOH:O	1:C:24:HIS:HE1	1.89	0.56
1:H:166:ARG:HD2	4:H:2008:CKP:O1	2.06	0.56
1:L:239:TYR:CG	1:L:273:GLU:HG3	2.41	0.56
1:E:31:HIS:HD2	1:E:294:GLU:OE1	1.88	0.56
1:D:234:TYR:OH	1:D:273[A]:GLU:OE1	2.22	0.55
1:K:273:GLU:CD	1:K:273:GLU:H	2.10	0.55
1:B:44:ILE:HG23	1:B:50:CYS:SG	2.47	0.55
1:C:272:MET:HE2	1:C:272:MET:HA	1.88	0.55
1:I:272:MET:HE2	1:I:272:MET:HA	1.89	0.55
1:G:212:LYS:O	1:G:215:SER:HB3	2.06	0.55
1:K:235:ASP:CG	1:K:235:ASP:O	2.45	0.55
1:B:300:LYS:HD2	6:B:5047:HOH:O	2.06	0.54
1:B:199:LYS:HE2	1:B:205:SER:CB	2.36	0.54
1:J:123:GLU:HA	1:J:155:ILE:HD13	1.88	0.54
1:G:12:ILE:HB	1:G:89:ILE:HG22	1.89	0.54
6:G:5051:HOH:O	1:I:24:HIS:HE1	1.89	0.54
1:D:166:ARG:NH2	6:D:5177:HOH:O	2.39	0.54
1:H:285:LEU:HD12	1:H:297:PRO:HG3	1.88	0.54
1:A:5:ILE:HD12	1:A:129:ALA:HB2	1.89	0.54
1:C:137:ILE:O	1:C:141:ILE:HG23	2.08	0.54
1:I:235:ASP:O	1:I:235:ASP:CG	2.45	0.54
1:C:5:ILE:CD1	1:C:129:ALA:HB2	2.37	0.54
1:H:304:THR:O	1:H:308:GLU:HG2	2.08	0.54
1:A:308:GLU:HG3	1:C:98:VAL:HG21	1.89	0.53
1:F:234:TYR:OH	1:F:273:GLU:OE1	2.18	0.53
1:G:270:PHE:CE1	1:G:274:LYS:HD2	2.43	0.53
1:I:117:SER:HB2	1:I:118:PRO:HD2	1.88	0.53
1:G:123:GLU:OE2	1:G:127:LYS:HE3	2.07	0.53
1:I:15:ASN:HD21	1:I:94:ARG:CD	2.18	0.53
1:E:44:ILE:HG12	1:E:50:CYS:SG	2.48	0.53
1:F:183:LEU:CD2	1:F:188:LEU:HD11	2.39	0.53
1:J:272:MET:HA	1:J:272:MET:CE	2.39	0.53
1:A:163:THR:HG22	1:A:165:ILE:HG13	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:285:LEU:HD12	1:B:297:PRO:HG3	1.90	0.53
1:F:166:ARG:HD2	4:F:2006:CKP:O1	2.08	0.53
1:G:117:SER:HB2	1:G:118:PRO:HD2	1.89	0.53
1:L:232:VAL:HG22	1:L:276:LEU:HD22	1.91	0.52
1:J:5:ILE:CD1	1:J:129:ALA:HB2	2.40	0.52
1:A:44:ILE:HD13	1:A:72:GLN:O	2.09	0.51
1:J:41:VAL:O	1:J:44:ILE:HG22	2.10	0.51
1:G:177:ARG:O	1:G:181:LYS:HB2	2.10	0.51
1:B:258:LEU:C	1:B:258:LEU:HD23	2.30	0.51
1:G:226:GLY:O	5:G:3007:ADP:H3'	2.10	0.51
1:K:16:ALA:HB1	1:K:25:VAL:HG11	1.90	0.51
1:A:289:ILE:HG12	1:A:290:ARG:O	2.11	0.51
1:B:199:LYS:HE2	1:B:205:SER:HB2	1.92	0.51
1:C:266:TYR:HD2	1:C:272:MET:HE1	1.76	0.51
1:H:202:LEU:HD13	1:H:213:ALA:HB3	1.93	0.51
1:B:12:ILE:HG13	1:B:61:PHE:HB3	1.93	0.50
1:B:259:GLY:O	1:B:263:LEU:HG	2.11	0.50
1:D:13:GLU:HB2	1:D:90:PHE:CZ	2.47	0.50
1:I:298:THR:OG1	1:I:300:LYS:HG2	2.10	0.50
1:G:63:TYR:O	1:G:67:GLU:HG3	2.12	0.50
1:H:171:SER:OG	1:H:174:GLU:CG	2.60	0.50
1:I:266:TYR:HD2	1:I:272:MET:HE1	1.77	0.50
1:E:117:SER:HB2	1:E:118:PRO:HD2	1.94	0.50
1:E:305:PHE:O	1:E:309:MET:HB2	2.11	0.49
1:F:224:LYS:HB3	5:F:3006:ADP:O1A	2.12	0.49
1:J:187:HIS:HE1	1:J:219:GLU:HG3	1.76	0.49
1:B:43:PHE:HA	1:B:264:SER:HB2	1.93	0.49
1:H:29:GLU:OE1	1:H:31:HIS:HE1	1.96	0.49
1:I:114:SER:HA	1:I:141:ILE:HD12	1.92	0.49
1:E:139:LEU:HD11	1:E:182:LEU:HD22	1.94	0.49
1:J:29:GLU:OE1	1:J:31:HIS:HE1	1.96	0.49
1:H:49:GLU:HG3	6:H:5073:HOH:O	2.11	0.49
1:J:166:ARG:NH2	6:J:5094:HOH:O	2.46	0.49
1:B:305:PHE:O	1:B:309:MET:HB2	2.13	0.49
1:L:7:LEU:HD13	1:L:53:ILE:HB	1.95	0.49
1:I:270:PHE:CD1	1:I:274:LYS:HE3	2.48	0.48
1:F:135:SER:HA	1:F:162:ASP:O	2.13	0.48
1:A:123[A]:GLU:OE2	1:A:127:LYS:HE2	2.12	0.48
1:G:89:ILE:HG13	1:G:107:TYR:HB2	1.95	0.48
1:J:266:TYR:HD2	1:J:272:MET:HE1	1.79	0.48
1:D:118:PRO:CG	1:D:147:GLU:HB3	2.42	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:24:HIS:HD2	6:J:5069:HOH:O	1.95	0.48
1:I:265:LEU:O	1:I:270:PHE:HB2	2.13	0.48
1:G:24:HIS:HE1	6:H:5015:HOH:O	1.97	0.48
1:C:235:ASP:CG	1:C:235:ASP:O	2.51	0.48
1:E:143:SER:O	1:E:147[A]:GLU:HG3	2.13	0.48
1:E:187:HIS:CE1	1:E:219:GLU:HG3	2.49	0.48
1:I:43:PHE:HA	1:I:264:SER:HB2	1.96	0.48
1:I:274:LYS:HD2	6:I:5053:HOH:O	2.14	0.48
1:I:183:LEU:HD22	1:I:188:LEU:HD11	1.96	0.47
1:A:4:LEU:O	1:A:50:CYS:HA	2.13	0.47
1:K:49[B]:GLU:HG2	6:K:5115:HOH:O	2.13	0.47
1:B:123:GLU:HA	1:B:155:ILE:HD13	1.96	0.47
1:B:170:TRP:HB2	1:B:174[A]:GLU:HG3	1.96	0.47
1:H:43:PHE:HA	1:H:264:SER:HB2	1.97	0.47
6:J:5138:HOH:O	1:K:17:LEU:HD13	2.14	0.47
1:E:173:GLU:HG2	6:E:5034:HOH:O	2.14	0.47
1:G:4:LEU:O	1:G:50:CYS:HA	2.14	0.47
1:I:51:GLY:HA3	1:I:125:TYR:OH	2.14	0.47
1:D:17:LEU:HD12	1:D:27:TYR:HB3	1.95	0.47
1:F:272:MET:HA	1:F:272:MET:HE2	1.97	0.47
1:J:131:LEU:HD11	1:J:160:SER:HB2	1.96	0.47
1:B:24:HIS:HE1	6:D:5015:HOH:O	1.97	0.46
1:C:226:GLY:O	5:C:3003:ADP:H3'	2.15	0.46
1:E:199:LYS:HD3	1:E:205:SER:HB2	1.97	0.46
1:G:228:LYS:HE3	1:G:228:LYS:H	1.80	0.46
1:H:123:GLU:HA	1:H:155:ILE:HD13	1.97	0.46
1:K:19:PRO:HB3	1:K:95:HIS:HB2	1.96	0.46
1:K:135:SER:HA	1:K:162:ASP:O	2.16	0.46
1:E:5:ILE:HD12	1:E:129:ALA:HB2	1.98	0.46
1:L:55:LYS:HD3	1:L:82:ASP:HB2	1.98	0.46
1:E:43:PHE:HA	1:E:264:SER:HB2	1.98	0.46
1:I:9:GLU:HG3	1:I:113:GLY:HA3	1.97	0.46
1:E:273:GLU:CD	1:E:273:GLU:H	2.19	0.46
1:L:278:TYR:OH	1:L:303:GLU:HG2	2.16	0.45
1:D:284:THR:O	1:D:287:VAL:HG22	2.17	0.45
1:E:78:HIS:HD2	6:E:5140:HOH:O	1.98	0.45
1:H:5:ILE:HD12	1:H:129:ALA:HB2	1.98	0.45
1:E:187:HIS:HE1	1:E:219:GLU:OE1	2.00	0.45
1:G:121:VAL:HB	1:G:151:LYS:HD3	1.99	0.45
1:E:285:LEU:HD12	1:E:297:PRO:HG3	1.98	0.45
1:E:300:LYS:HB3	1:E:300:LYS:NZ	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:241:SER:HB3	1:K:280:ILE:HD13	1.99	0.45
1:B:279:ALA:HB2	6:B:5151:HOH:O	2.16	0.45
1:L:271[A]:GLU:HG2	1:L:273:GLU:H	1.82	0.45
1:K:174:GLU:HG3	6:K:5079:HOH:O	2.17	0.45
1:L:123:GLU:HA	1:L:155:ILE:HD13	1.97	0.45
1:I:272:MET:HA	1:I:272:MET:CE	2.47	0.44
1:B:137:ILE:O	1:B:141:ILE:HG23	2.17	0.44
1:F:31:HIS:HD2	1:F:294:GLU:OE1	2.00	0.44
1:G:143:SER:O	1:G:147:GLU:HG2	2.17	0.44
1:B:199:LYS:O	1:B:203:GLY:HA2	2.17	0.44
1:H:199:LYS:O	1:H:203:GLY:HA2	2.17	0.44
6:K:5021:HOH:O	1:L:24:HIS:HE1	1.99	0.44
1:H:12:ILE:HB	1:H:89:ILE:HG22	1.99	0.44
1:F:3:LYS:HG3	1:F:49:GLU:HG3	1.98	0.44
1:F:271[A]:GLU:OE2	1:F:273:GLU:HB2	2.17	0.44
1:J:185:LYS:HD3	1:J:186:PHE:CZ	2.52	0.44
1:D:12:ILE:HG13	1:D:61:PHE:HB3	1.98	0.44
1:J:29:GLU:OE1	1:J:31:HIS:CE1	2.71	0.44
1:A:202:LEU:HD13	1:A:213:ALA:HB3	2.00	0.44
1:F:239:TYR:CG	1:F:273:GLU:HG3	2.53	0.44
1:F:272:MET:HA	1:F:272:MET:CE	2.48	0.44
1:K:285:LEU:HD12	1:K:297:PRO:HG3	1.99	0.44
1:B:17:LEU:HD12	1:B:27:TYR:HB3	2.00	0.43
1:E:166:ARG:NH2	6:E:5153:HOH:O	2.50	0.43
1:J:173[B]:GLU:OE1	1:J:177[B]:ARG:NH1	2.37	0.43
1:L:284:THR:O	1:L:287:VAL:HG22	2.18	0.43
1:D:166:ARG:HD2	4:D:2004:CKP:O1	2.19	0.43
1:F:179:ILE:O	1:F:183:LEU:HG	2.19	0.43
1:L:166:ARG:HD3	4:L:2012:CKP:O1	2.16	0.43
1:A:226:GLY:O	5:A:3001:ADP:H3'	2.19	0.43
1:E:187:HIS:CD2	6:E:5139:HOH:O	2.64	0.43
1:F:76:VAL:HG22	1:F:79:MET:SD	2.59	0.43
1:J:31:HIS:HD2	1:J:294:GLU:OE1	2.01	0.43
1:J:199:LYS:HD3	1:J:205:SER:HB2	2.00	0.43
1:A:30:LYS:HE2	1:A:30:LYS:HB3	1.87	0.43
1:A:255:GLY:HA3	5:A:3001:ADP:O2B	2.18	0.43
1:B:294:GLU:H	1:B:294:GLU:HG2	1.58	0.43
1:F:123[B]:GLU:O	1:F:127:LYS:HG3	2.18	0.43
1:H:51:GLY:HA3	1:H:125:TYR:OH	2.18	0.43
1:J:55:LYS:HG3	1:J:112:ALA:O	2.18	0.43
4:L:2012:CKP:H3	6:L:5023:HOH:O	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:199:LYS:HE2	1:B:205:SER:HB3	2.01	0.43
1:E:16:ALA:HB1	1:E:25:VAL:HG11	1.99	0.43
1:I:270:PHE:CG	1:I:274:LYS:HE3	2.54	0.43
1:K:174:GLU:HA	1:K:177[A]:ARG:HD3	2.00	0.43
1:H:4:LEU:O	1:H:50:CYS:HA	2.19	0.42
1:J:166:ARG:HD2	4:J:2010:CKP:O1	2.20	0.42
1:L:114:SER:HA	1:L:141:ILE:HD12	2.01	0.42
1:A:3:LYS:HA	1:A:49:GLU:O	2.19	0.42
1:B:162:ASP:HA	1:B:192:ILE:O	2.19	0.42
1:G:55:LYS:HD3	1:G:82:ASP:HB2	2.00	0.42
6:G:5028:HOH:O	1:H:24:HIS:HE1	2.01	0.42
1:A:17:LEU:HD12	1:A:27:TYR:HB3	2.00	0.42
1:E:95:HIS:HD2	1:E:100:LEU:H	1.66	0.42
1:E:305:PHE:CD1	1:E:305:PHE:C	2.93	0.42
1:A:12:ILE:HB	1:A:89:ILE:HG22	2.01	0.42
1:A:118:PRO:HG3	1:A:147[A]:GLU:HB3	2.01	0.42
1:B:6:THR:HA	1:B:133:HIS:O	2.19	0.42
6:E:5023:HOH:O	1:F:24:HIS:HE1	2.01	0.42
1:L:185:LYS:HD2	1:L:186:PHE:CZ	2.54	0.42
1:G:170:TRP:HB2	1:G:174:GLU:HG2	2.02	0.42
1:H:171:SER:OG	1:H:174:GLU:HG2	2.19	0.42
1:K:43:PHE:HA	1:K:264:SER:HB2	2.01	0.42
1:D:226:GLY:O	5:D:3004:ADP:H3'	2.20	0.42
1:J:226:GLY:O	5:J:3010:ADP:H3'	2.20	0.42
1:J:118:PRO:HG3	1:J:147[B]:GLU:HB3	2.00	0.42
1:B:140:ALA:HB2	1:B:170:TRP:CD2	2.55	0.42
1:C:15:ASN:HD21	1:C:94:ARG:CD	2.30	0.42
4:H:2008:CKP:H3	6:H:5027:HOH:O	2.20	0.42
1:D:147:GLU:CG	6:D:5109:HOH:O	2.59	0.41
1:F:29:GLU:OE1	1:F:31:HIS:HE1	2.03	0.41
1:G:234:TYR:O	1:G:235:ASP:C	2.58	0.41
1:J:43:PHE:HA	1:J:264:SER:HB2	2.01	0.41
1:C:41:VAL:HA	1:C:44:ILE:HG22	2.01	0.41
1:D:98:VAL:CG2	1:F:308:GLU:HG3	2.49	0.41
1:D:170:TRP:HE3	1:D:174:GLU:OE1	2.03	0.41
1:G:15:ASN:HD21	1:G:94:ARG:CD	2.25	0.41
1:G:17:LEU:HD12	1:G:27:TYR:HB3	2.02	0.41
4:A:2001:CKP:H3	6:A:5035:HOH:O	2.21	0.41
1:E:95:HIS:CD2	1:E:100:LEU:H	2.37	0.41
1:E:202:LEU:HD13	1:E:213:ALA:HB3	2.02	0.41
1:I:180:LEU:HD12	1:I:180:LEU:HA	1.94	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:123:GLU:HA	1:K:155:ILE:HD13	2.01	0.41
1:L:38:ASN:HB3	6:L:5040:HOH:O	2.20	0.41
1:B:305:PHE:O	1:B:309:MET:CB	2.68	0.41
1:E:162:ASP:HA	1:E:192:ILE:O	2.21	0.41
1:L:17:LEU:HD12	1:L:27:TYR:HB3	2.02	0.41
1:H:237:LYS:HE2	6:H:5133:HOH:O	2.19	0.41
1:E:4:LEU:O	1:E:50:CYS:HA	2.20	0.41
1:I:283:SER:O	1:I:287:VAL:HG13	2.20	0.41
1:J:173[A]:GLU:CD	1:J:173[A]:GLU:H	2.24	0.41
1:E:11:LEU:HG	6:E:5146:HOH:O	2.19	0.41
1:I:202:LEU:HD13	1:I:213:ALA:HB3	2.03	0.41
1:L:170:TRP:HB2	1:L:174:GLU:HG2	2.02	0.41
1:K:177[A]:ARG:HG3	6:K:5084:HOH:O	2.20	0.41
1:A:123[A]:GLU:OE2	1:A:127:LYS:CE	2.68	0.41
1:B:55:LYS:HD3	1:B:80:LYS:HB2	2.02	0.41
4:B:2002:CKP:H3	6:B:5033:HOH:O	2.21	0.41
1:C:43:PHE:HA	1:C:264:SER:HB2	2.03	0.41
1:C:72:GLN:NE2	6:C:5176:HOH:O	2.53	0.41
1:F:166:ARG:HB2	1:F:169:LEU:HG	2.03	0.41
1:G:131:LEU:HD21	1:G:160:SER:HB2	2.03	0.41
1:H:29:GLU:OE1	1:H:31:HIS:CE1	2.74	0.41
1:H:305:PHE:CD1	1:H:305:PHE:C	2.94	0.41
1:I:266:TYR:HD2	1:I:272:MET:CE	2.34	0.41
1:L:117:SER:OG	1:L:119[A]:GLU:HG2	2.21	0.41
1:B:55:LYS:HG2	1:B:112:ALA:O	2.20	0.41
1:K:108:ARG:HD3	1:K:169:LEU:HD21	2.03	0.41
1:K:162:ASP:HA	1:K:192:ILE:O	2.21	0.41
1:C:119[B]:GLU:CD	1:C:119[B]:GLU:H	2.23	0.40
1:E:176:LYS:O	1:E:180:LEU:HB2	2.21	0.40
1:D:268:LYS:HA	1:D:268:LYS:HD2	1.84	0.40
1:J:44:ILE:HD12	1:J:48:ASN:O	2.21	0.40
1:B:15:ASN:HD21	1:B:94:ARG:CD	2.23	0.40
1:B:43:PHE:CD1	1:B:264:SER:HB2	2.57	0.40
1:G:274:LYS:HA	1:G:277:ASP:HB2	2.03	0.40
1:L:117:SER:OG	1:L:119[B]:GLU:HG2	2.22	0.40
1:C:180:LEU:HD23	1:C:180:LEU:HA	1.92	0.40
1:E:150:TYR:OH	1:E:181:LYS:HG2	2.21	0.40
1:H:100:LEU:HD23	6:H:5050:HOH:O	2.20	0.40
1:A:251:VAL:HA	1:A:287:VAL:HG12	2.04	0.40
1:K:30:LYS:HE2	1:K:30:LYS:HB3	1.88	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the sym-

metry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:173[A]:GLU:OE2	6:E:5094:HOH:O[2_645]	2.17	0.03

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	309/311 (99%)	301 (97%)	8 (3%)	0	100	100
1	B	308/311 (99%)	305 (99%)	3 (1%)	0	100	100
1	C	309/311 (99%)	304 (98%)	5 (2%)	0	100	100
1	D	308/311 (99%)	302 (98%)	6 (2%)	0	100	100
1	E	308/311 (99%)	301 (98%)	7 (2%)	0	100	100
1	F	311/311 (100%)	307 (99%)	4 (1%)	0	100	100
1	G	306/311 (98%)	296 (97%)	8 (3%)	2 (1%)	22	21
1	H	307/311 (99%)	303 (99%)	4 (1%)	0	100	100
1	I	310/311 (100%)	306 (99%)	4 (1%)	0	100	100
1	J	310/311 (100%)	303 (98%)	7 (2%)	0	100	100
1	K	311/311 (100%)	307 (99%)	4 (1%)	0	100	100
1	L	312/311 (100%)	309 (99%)	3 (1%)	0	100	100
All	All	3709/3732 (99%)	3644 (98%)	63 (2%)	2 (0%)	51	60

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	G	235	ASP
1	G	236	GLY

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	260/260 (100%)	251 (96%)	9 (4%)	36	43
1	B	259/260 (100%)	251 (97%)	8 (3%)	40	49
1	C	260/260 (100%)	253 (97%)	7 (3%)	44	54
1	D	259/260 (100%)	247 (95%)	12 (5%)	27	30
1	E	259/260 (100%)	251 (97%)	8 (3%)	40	49
1	F	262/260 (101%)	249 (95%)	13 (5%)	24	26
1	G	257/260 (99%)	249 (97%)	8 (3%)	40	49
1	H	258/260 (99%)	247 (96%)	11 (4%)	29	33
1	I	261/260 (100%)	249 (95%)	12 (5%)	27	30
1	J	261/260 (100%)	249 (95%)	12 (5%)	27	30
1	K	262/260 (101%)	251 (96%)	11 (4%)	30	34
1	L	263/260 (101%)	250 (95%)	13 (5%)	25	27
All	All	3121/3120 (100%)	2997 (96%)	124 (4%)	31	37

All (124) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	15	ASN
1	A	44	ILE
1	A	64	ASN
1	A	170	TRP
1	A	174	GLU
1	A	274	LYS
1	A	289	ILE
1	A	294	GLU
1	A	308	GLU
1	B	15	ASN
1	B	22	LEU
1	B	55	LYS
1	B	64	ASN
1	B	170	TRP

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Mol	Chain	Res	Type
1	B	212	LYS
1	B	237	LYS
1	B	300	LYS
1	C	15	ASN
1	C	55	LYS
1	C	64	ASN
1	C	124	GLU
1	C	170	TRP
1	C	195	THR
1	C	272	MET
1	D	15	ASN
1	D	22	LEU
1	D	44	ILE
1	D	49	GLU
1	D	64	ASN
1	D	170	TRP
1	D	174	GLU
1	D	195	THR
1	D	199	LYS
1	D	212	LYS
1	D	280	ILE
1	D	308	GLU
1	E	7	LEU
1	E	15	ASN
1	E	64	ASN
1	E	170	TRP
1	E	180	LEU
1	E	185	LYS
1	E	289	ILE
1	E	306	LEU
1	F	7	LEU
1	F	15	ASN
1	F	44	ILE
1	F	64	ASN
1	F	76	VAL
1	F	119[A]	GLU
1	F	119[B]	GLU
1	F	170	TRP
1	F	174	GLU
1	F	232	VAL
1	F	272	MET
1	F	308	GLU

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Mol	Chain	Res	Type
1	F	309	MET
1	G	7	LEU
1	G	15	ASN
1	G	44	ILE
1	G	64	ASN
1	G	170	TRP
1	G	174	GLU
1	G	228	LYS
1	G	274	LYS
1	H	15	ASN
1	H	22	LEU
1	H	64	ASN
1	H	76	VAL
1	H	109	LYS
1	H	124[A]	GLU
1	H	124[B]	GLU
1	H	170	TRP
1	H	174	GLU
1	H	212	LYS
1	H	294	GLU
1	I	15	ASN
1	I	22	LEU
1	I	64	ASN
1	I	72	GLN
1	I	163	THR
1	I	170	TRP
1	I	180	LEU
1	I	195	THR
1	I	232	VAL
1	I	272	MET
1	I	294	GLU
1	I	300	LYS
1	J	15	ASN
1	J	18	SER
1	J	22	LEU
1	J	64	ASN
1	J	170	TRP
1	J	185	LYS
1	J	199	LYS
1	J	205	SER
1	J	212	LYS
1	J	272	MET

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Mol	Chain	Res	Type
1	J	289	ILE
1	J	308	GLU
1	K	7	LEU
1	K	15	ASN
1	K	64	ASN
1	K	119	GLU
1	K	157	SER
1	K	170	TRP
1	K	180	LEU
1	K	181	LYS
1	K	235	ASP
1	K	280	ILE
1	K	306	LEU
1	L	7	LEU
1	L	15	ASN
1	L	18	SER
1	L	49	GLU
1	L	64	ASN
1	L	76	VAL
1	L	166	ARG
1	L	170	TRP
1	L	174	GLU
1	L	232	VAL
1	L	268	LYS
1	L	272	MET
1	L	307	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (55) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	15	ASN
1	A	24	HIS
1	A	72	GLN
1	A	158	ASN
1	A	187	HIS
1	B	15	ASN
1	B	24	HIS
1	B	72	GLN
1	B	95	HIS
1	C	15	ASN
1	C	24	HIS
1	C	72	GLN

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Mol	Chain	Res	Type
1	C	95	HIS
1	D	15	ASN
1	D	24	HIS
1	D	72	GLN
1	D	95	HIS
1	D	187	HIS
1	E	15	ASN
1	E	24	HIS
1	E	31	HIS
1	E	95	HIS
1	E	187	HIS
1	F	15	ASN
1	F	24	HIS
1	F	31	HIS
1	F	95	HIS
1	F	245	GLN
1	G	15	ASN
1	G	24	HIS
1	G	72	GLN
1	G	95	HIS
1	G	187	HIS
1	H	15	ASN
1	H	24	HIS
1	H	31	HIS
1	H	95	HIS
1	I	15	ASN
1	I	24	HIS
1	I	72	GLN
1	I	95	HIS
1	J	15	ASN
1	J	24	HIS
1	J	31	HIS
1	J	95	HIS
1	J	158	ASN
1	J	187	HIS
1	K	15	ASN
1	K	24	HIS
1	K	72	GLN
1	K	95	HIS
1	K	187	HIS
1	L	15	ASN
1	L	24	HIS

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Mol	Chain	Res	Type
1	L	95	HIS

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

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 81 ligands modelled in this entry, 57 are monoatomic - leaving 24 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	ADP	G	3007	2	24,29,29	0.95	1 (4%)	29,45,45	1.37	4 (13%)
4	CKP	F	2006	2	17,17,17	1.10	1 (5%)	22,27,27	2.00	7 (31%)
5	ADP	D	3004	2	24,29,29	0.98	3 (12%)	29,45,45	1.41	3 (10%)
5	ADP	C	3003	2	24,29,29	1.01	1 (4%)	29,45,45	1.23	3 (10%)
4	CKP	J	2010	2	17,17,17	1.23	2 (11%)	22,27,27	2.00	6 (27%)
4	CKP	I	2009	2	17,17,17	1.13	2 (11%)	22,27,27	2.00	7 (31%)
4	CKP	E	2005	2	17,17,17	1.45	2 (11%)	22,27,27	1.75	4 (18%)
5	ADP	K	3011	2	24,29,29	0.96	1 (4%)	29,45,45	1.29	4 (13%)
4	CKP	A	2001	2	17,17,17	0.99	1 (5%)	22,27,27	1.94	5 (22%)
4	CKP	H	2008	2	17,17,17	1.16	2 (11%)	22,27,27	2.28	6 (27%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	ADP	H	3008	2	24,29,29	1.00	2 (8%)	29,45,45	1.39	2 (6%)
4	CKP	G	2007	2	17,17,17	1.10	2 (11%)	22,27,27	1.89	6 (27%)
5	ADP	A	3001	2	24,29,29	1.05	1 (4%)	29,45,45	1.28	4 (13%)
4	CKP	C	2003	2	17,17,17	1.18	2 (11%)	22,27,27	1.93	9 (40%)
4	CKP	L	2012	2	17,17,17	1.21	2 (11%)	22,27,27	1.94	7 (31%)
4	CKP	B	2002	2	17,17,17	1.26	2 (11%)	22,27,27	1.89	4 (18%)
5	ADP	B	3002	2	24,29,29	0.94	1 (4%)	29,45,45	1.42	4 (13%)
5	ADP	J	3010	2	24,29,29	0.98	3 (12%)	29,45,45	1.39	3 (10%)
5	ADP	L	3012	2	24,29,29	0.98	1 (4%)	29,45,45	1.31	4 (13%)
5	ADP	I	3009	2	24,29,29	1.02	1 (4%)	29,45,45	1.33	4 (13%)
4	CKP	K	2011	2	17,17,17	1.37	2 (11%)	22,27,27	1.68	4 (18%)
4	CKP	D	2004	2	17,17,17	1.35	2 (11%)	22,27,27	1.83	6 (27%)
5	ADP	E	3005	2	24,29,29	1.05	3 (12%)	29,45,45	1.25	3 (10%)
5	ADP	F	3006	2	24,29,29	1.02	1 (4%)	29,45,45	1.29	3 (10%)

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
5	ADP	G	3007	2	-	0/12/32/32	0/3/3/3
4	CKP	F	2006	2	-	2/12/31/31	0/1/1/1
5	ADP	D	3004	2	-	0/12/32/32	0/3/3/3
5	ADP	C	3003	2	-	0/12/32/32	0/3/3/3
4	CKP	J	2010	2	-	2/12/31/31	0/1/1/1
4	CKP	I	2009	2	-	1/12/31/31	0/1/1/1
4	CKP	E	2005	2	-	3/12/31/31	0/1/1/1
5	ADP	K	3011	2	-	0/12/32/32	0/3/3/3
4	CKP	A	2001	2	-	3/12/31/31	0/1/1/1
4	CKP	H	2008	2	-	3/12/31/31	0/1/1/1
5	ADP	H	3008	2	-	0/12/32/32	0/3/3/3
4	CKP	G	2007	2	-	1/12/31/31	0/1/1/1
5	ADP	A	3001	2	-	0/12/32/32	0/3/3/3
4	CKP	C	2003	2	-	3/12/31/31	0/1/1/1
4	CKP	L	2012	2	-	2/12/31/31	0/1/1/1
4	CKP	B	2002	2	-	1/12/31/31	0/1/1/1
5	ADP	B	3002	2	-	0/12/32/32	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	ADP	J	3010	2	-	0/12/32/32	0/3/3/3
5	ADP	L	3012	2	-	0/12/32/32	0/3/3/3
5	ADP	I	3009	2	-	0/12/32/32	0/3/3/3
4	CKP	K	2011	2	-	4/12/31/31	0/1/1/1
4	CKP	D	2004	2	-	1/12/31/31	0/1/1/1
5	ADP	E	3005	2	-	0/12/32/32	0/3/3/3
5	ADP	F	3006	2	-	0/12/32/32	0/3/3/3

All (41) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	E	2005	CKP	C2-C1	-4.07	1.50	1.54
4	K	2011	CKP	C2-C1	-4.02	1.50	1.54
4	D	2004	CKP	C2-C1	-3.60	1.51	1.54
4	F	2006	CKP	O2-C2	3.44	1.45	1.39
4	L	2012	CKP	O2-C2	3.33	1.45	1.39
4	E	2005	CKP	O2-C2	3.31	1.45	1.39
4	J	2010	CKP	C2-C1	-3.30	1.51	1.54
4	B	2002	CKP	C2-C1	-3.22	1.51	1.54
4	B	2002	CKP	O2-C2	3.21	1.44	1.39
4	C	2003	CKP	O2-C2	3.19	1.44	1.39
4	D	2004	CKP	O2-C2	3.15	1.44	1.39
4	G	2007	CKP	O2-C2	3.08	1.44	1.39
4	H	2008	CKP	O2-C2	3.05	1.44	1.39
4	K	2011	CKP	O2-C2	3.03	1.44	1.39
4	I	2009	CKP	O2-C2	3.02	1.44	1.39
5	F	3006	ADP	C5-C4	2.99	1.48	1.40
4	C	2003	CKP	C2-C1	-2.92	1.51	1.54
5	G	3007	ADP	C5-C4	2.89	1.48	1.40
5	L	3012	ADP	C5-C4	2.84	1.48	1.40
5	H	3008	ADP	C2-N3	2.71	1.36	1.32
4	H	2008	CKP	C2-C1	-2.68	1.51	1.54
4	I	2009	CKP	C2-C1	-2.67	1.51	1.54
4	J	2010	CKP	O2-C2	2.63	1.43	1.39
5	C	3003	ADP	C5-C4	2.62	1.47	1.40
4	A	2001	CKP	O2-C2	2.60	1.43	1.39
4	L	2012	CKP	C2-C1	-2.55	1.51	1.54
5	A	3001	ADP	C5-C4	2.52	1.47	1.40
5	B	3002	ADP	C5-C4	2.52	1.47	1.40
5	K	3011	ADP	C5-C4	2.49	1.47	1.40
5	E	3005	ADP	C5-C4	2.44	1.47	1.40
5	I	3009	ADP	C5-C4	2.41	1.47	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	H	3008	ADP	C5-C4	2.24	1.46	1.40
5	D	3004	ADP	C2-N3	2.21	1.35	1.32
5	J	3010	ADP	C5-C4	2.21	1.46	1.40
5	E	3005	ADP	C2-N3	2.19	1.35	1.32
5	D	3004	ADP	C5-C4	2.19	1.46	1.40
5	J	3010	ADP	C2-N3	2.16	1.35	1.32
5	D	3004	ADP	O4'-C1'	2.14	1.44	1.41
4	G	2007	CKP	C2-C1	-2.14	1.52	1.54
5	J	3010	ADP	O4'-C1'	2.09	1.44	1.41
5	E	3005	ADP	O4'-C1'	2.08	1.44	1.41

All (112) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	H	2008	CKP	O5-C2-C3	-7.54	94.67	105.77
4	F	2006	CKP	O5-C2-C3	-6.08	96.82	105.77
4	I	2009	CKP	O5-C2-C3	-5.71	97.36	105.77
4	J	2010	CKP	O5-C2-C3	-5.53	97.63	105.77
4	B	2002	CKP	O5-C2-C3	-5.48	97.70	105.77
4	D	2004	CKP	O5-C2-C3	-5.34	97.91	105.77
4	A	2001	CKP	O6B-C1-C2	-4.79	116.83	122.98
4	G	2007	CKP	O5-C2-C3	-4.72	98.81	105.77
4	E	2005	CKP	O5-C2-C3	-4.57	99.04	105.77
4	L	2012	CKP	O6B-C1-C2	-4.38	117.37	122.98
4	A	2001	CKP	O5-C2-C3	-4.37	99.34	105.77
4	G	2007	CKP	O6B-C1-C2	-4.32	117.44	122.98
4	C	2003	CKP	O5-C2-C3	-4.17	99.63	105.77
5	B	3002	ADP	N3-C2-N1	-4.15	122.19	128.68
4	H	2008	CKP	O6B-C1-C2	-4.13	117.69	122.98
5	H	3008	ADP	N3-C2-N1	-4.12	122.23	128.68
4	K	2011	CKP	O6B-C1-C2	-4.12	117.70	122.98
4	K	2011	CKP	O5-C2-C3	-4.06	99.79	105.77
4	I	2009	CKP	O6B-C1-C2	-4.06	117.78	122.98
4	B	2002	CKP	O6B-C1-C2	-3.95	117.92	122.98
5	I	3009	ADP	N3-C2-N1	-3.77	122.78	128.68
4	E	2005	CKP	O6B-C1-C2	-3.74	118.19	122.98
4	L	2012	CKP	O5-C2-C3	-3.64	100.40	105.77
5	D	3004	ADP	C4-C5-N7	-3.62	105.62	109.40
5	D	3004	ADP	PA-O3A-PB	-3.62	120.40	132.83
5	C	3003	ADP	N3-C2-N1	-3.61	123.03	128.68
4	C	2003	CKP	O6B-C1-C2	-3.57	118.40	122.98
5	F	3006	ADP	N3-C2-N1	-3.57	123.09	128.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	L	3012	ADP	N3-C2-N1	-3.46	123.26	128.68
5	G	3007	ADP	N3-C2-N1	-3.45	123.28	128.68
5	J	3010	ADP	PA-O3A-PB	-3.32	121.44	132.83
5	D	3004	ADP	N3-C2-N1	-3.31	123.50	128.68
5	J	3010	ADP	N3-C2-N1	-3.29	123.53	128.68
5	J	3010	ADP	C4-C5-N7	-3.22	106.04	109.40
5	A	3001	ADP	N3-C2-N1	-3.19	123.69	128.68
5	K	3011	ADP	N3-C2-N1	-3.19	123.70	128.68
5	H	3008	ADP	PA-O3A-PB	-3.18	121.92	132.83
4	J	2010	CKP	O3-C3-C4	3.15	124.21	113.32
4	J	2010	CKP	O6B-C1-C2	-3.13	118.96	122.98
4	F	2006	CKP	C6-C5-C4	-3.03	103.82	115.18
5	E	3005	ADP	PA-O3A-PB	-2.99	122.56	132.83
4	L	2012	CKP	C6-C5-C4	-2.99	103.98	115.18
5	B	3002	ADP	PA-O3A-PB	-2.94	122.74	132.83
5	G	3007	ADP	C3'-C2'-C1'	2.93	105.39	100.98
5	E	3005	ADP	N3-C2-N1	-2.86	124.21	128.68
4	H	2008	CKP	O5-C5-C6	2.85	115.72	109.45
4	A	2001	CKP	O3P-P-O6	-2.82	99.24	106.73
4	L	2012	CKP	O2-C2-C3	2.78	120.66	109.51
4	G	2007	CKP	C6-C5-C4	-2.70	105.07	115.18
4	C	2003	CKP	O4-C4-C3	2.70	120.23	112.15
4	J	2010	CKP	O2-C2-C3	2.66	120.18	109.51
4	C	2003	CKP	O2-C2-C3	2.66	120.16	109.51
4	C	2003	CKP	O3-C3-C2	2.64	117.85	111.61
4	E	2005	CKP	O2P-P-O3P	2.64	117.73	107.64
4	I	2009	CKP	O3-C3-C4	2.61	122.33	113.32
4	L	2012	CKP	O2P-P-O3P	2.58	117.49	107.64
4	F	2006	CKP	O2-C2-C3	2.56	119.79	109.51
4	L	2012	CKP	O5-C5-C6	2.54	115.04	109.45
4	B	2002	CKP	O2P-P-O3P	2.53	117.30	107.64
4	D	2004	CKP	O2-C2-C3	2.52	119.63	109.51
4	D	2004	CKP	O6B-C1-C2	-2.52	119.75	122.98
4	A	2001	CKP	C6-C5-C4	-2.52	105.73	115.18
4	F	2006	CKP	O3-C3-C2	2.51	117.53	111.61
5	K	3011	ADP	C4-C5-N7	-2.50	106.80	109.40
5	G	3007	ADP	C2-N1-C6	2.47	122.98	118.75
4	C	2003	CKP	O3-C3-C4	2.46	121.81	113.32
5	C	3003	ADP	C2-N1-C6	2.44	122.93	118.75
4	I	2009	CKP	O2-C2-C3	2.44	119.29	109.51
5	G	3007	ADP	PA-O3A-PB	-2.43	124.47	132.83
4	F	2006	CKP	O3-C3-C4	2.42	121.68	113.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	3001	ADP	C3'-C2'-C1'	2.41	104.61	100.98
5	B	3002	ADP	C2-N1-C6	2.41	122.88	118.75
5	I	3009	ADP	PA-O3A-PB	-2.40	124.59	132.83
4	E	2005	CKP	C2-O5-C5	-2.39	103.19	107.15
5	I	3009	ADP	C4-C5-N7	-2.39	106.91	109.40
5	F	3006	ADP	C3'-C2'-C1'	2.36	104.53	100.98
5	E	3005	ADP	C4-C5-N7	-2.33	106.97	109.40
4	K	2011	CKP	O2P-P-O3P	2.33	116.53	107.64
5	F	3006	ADP	C2-N1-C6	2.31	122.71	118.75
4	G	2007	CKP	O3P-P-O6	-2.31	100.59	106.73
4	J	2010	CKP	O3-C3-C2	2.31	117.05	111.61
4	I	2009	CKP	O3-C3-C2	2.30	117.04	111.61
5	L	3012	ADP	C4-C5-N7	-2.30	107.01	109.40
4	F	2006	CKP	O2P-P-O3P	2.29	116.40	107.64
5	L	3012	ADP	PA-O3A-PB	-2.29	124.98	132.83
4	K	2011	CKP	C2-O5-C5	-2.28	103.37	107.15
4	B	2002	CKP	C6-C5-C4	-2.28	106.63	115.18
4	H	2008	CKP	O3-C3-C2	2.26	116.94	111.61
4	C	2003	CKP	C6-C5-C4	-2.26	106.73	115.18
5	I	3009	ADP	C2-N1-C6	2.25	122.60	118.75
4	I	2009	CKP	O2P-P-O3P	2.24	116.19	107.64
4	H	2008	CKP	O2-C2-C3	2.23	118.44	109.51
4	G	2007	CKP	O2P-P-O3P	2.22	116.13	107.64
4	F	2006	CKP	O6B-C1-C2	-2.21	120.15	122.98
4	D	2004	CKP	O3-C3-C4	2.19	120.89	113.32
5	A	3001	ADP	C4-C5-N7	-2.19	107.11	109.40
4	J	2010	CKP	O2P-P-O3P	2.19	116.01	107.64
5	K	3011	ADP	PA-O3A-PB	-2.19	125.32	132.83
4	D	2004	CKP	O3-C3-C2	2.18	116.76	111.61
5	L	3012	ADP	C2-N1-C6	2.15	122.43	118.75
4	D	2004	CKP	C6-C5-C4	-2.12	107.23	115.18
5	C	3003	ADP	C4-C5-N7	-2.11	107.20	109.40
4	A	2001	CKP	O2P-P-O3P	2.09	115.62	107.64
4	H	2008	CKP	O2P-P-O3P	2.08	115.60	107.64
4	I	2009	CKP	O4-C4-C3	2.07	118.35	112.15
5	K	3011	ADP	C3'-C2'-C1'	2.06	104.08	100.98
5	B	3002	ADP	C4-C5-N7	-2.06	107.25	109.40
4	C	2003	CKP	O2P-P-O3P	2.05	115.48	107.64
4	G	2007	CKP	O3-C3-C2	2.04	116.43	111.61
4	L	2012	CKP	O3-C3-C2	2.02	116.37	111.61
4	C	2003	CKP	C2-O5-C5	2.01	110.48	107.15
5	A	3001	ADP	O3B-PB-O1B	2.00	118.52	110.68

There are no chirality outliers.

All (26) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	2001	CKP	C6-O6-P-O3P
4	A	2001	CKP	C6-O6-P-O1P
4	C	2003	CKP	C6-O6-P-O1P
4	E	2005	CKP	C6-O6-P-O3P
4	E	2005	CKP	C6-O6-P-O1P
4	E	2005	CKP	C6-O6-P-O2P
4	H	2008	CKP	C6-O6-P-O3P
4	H	2008	CKP	C4-C5-C6-O6
4	H	2008	CKP	O5-C5-C6-O6
4	K	2011	CKP	C6-O6-P-O3P
4	K	2011	CKP	C6-O6-P-O1P
4	K	2011	CKP	C6-O6-P-O2P
4	F	2006	CKP	C4-C5-C6-O6
4	L	2012	CKP	C4-C5-C6-O6
4	F	2006	CKP	O5-C5-C6-O6
4	J	2010	CKP	C4-C5-C6-O6
4	J	2010	CKP	O5-C5-C6-O6
4	L	2012	CKP	O5-C5-C6-O6
4	C	2003	CKP	C6-O6-P-O3P
4	B	2002	CKP	C6-O6-P-O1P
4	D	2004	CKP	C6-O6-P-O1P
4	G	2007	CKP	C6-O6-P-O1P
4	I	2009	CKP	C6-O6-P-O1P
4	A	2001	CKP	C6-O6-P-O2P
4	C	2003	CKP	C6-O6-P-O2P
4	K	2011	CKP	C4-C5-C6-O6

There are no ring outliers.

16 monomers are involved in 20 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	G	3007	ADP	1	0
4	F	2006	CKP	1	0
5	D	3004	ADP	1	0
5	C	3003	ADP	1	0
4	J	2010	CKP	1	0
4	I	2009	CKP	1	0
4	E	2005	CKP	1	0
5	K	3011	ADP	1	0
4	A	2001	CKP	1	0

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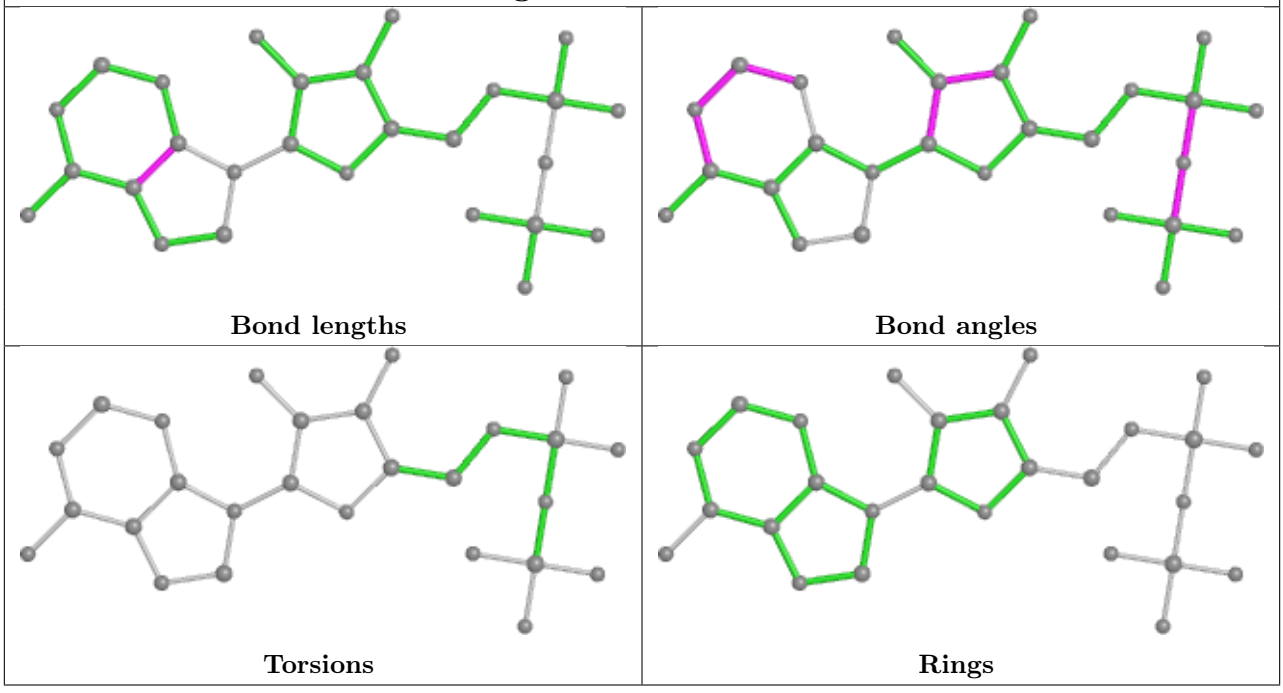
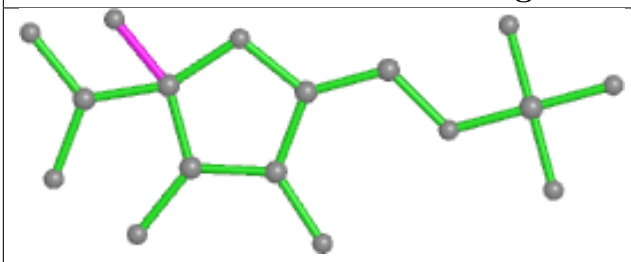
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	H	2008	CKP	2	0
5	A	3001	ADP	2	0
4	L	2012	CKP	2	0
4	B	2002	CKP	2	0
5	J	3010	ADP	1	0
4	D	2004	CKP	1	0
5	F	3006	ADP	1	0

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.

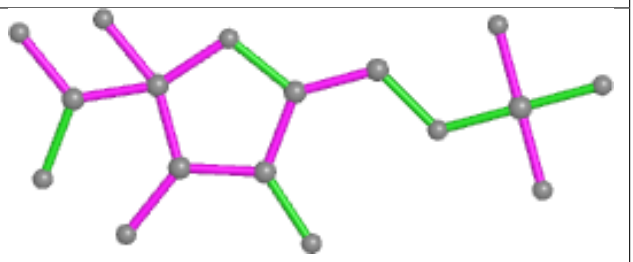
Ligand ADP G 3007



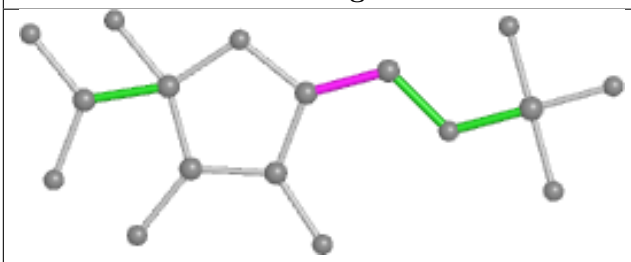
Ligand CKP F 2006



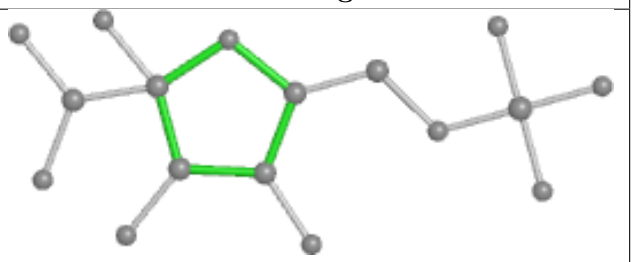
Bond lengths



Bond angles

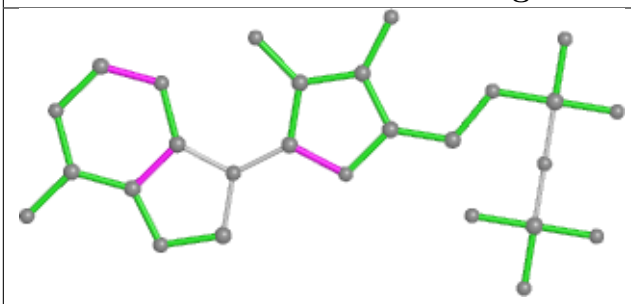


Torsions

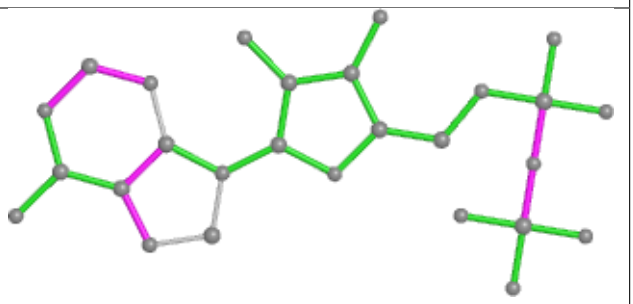


Rings

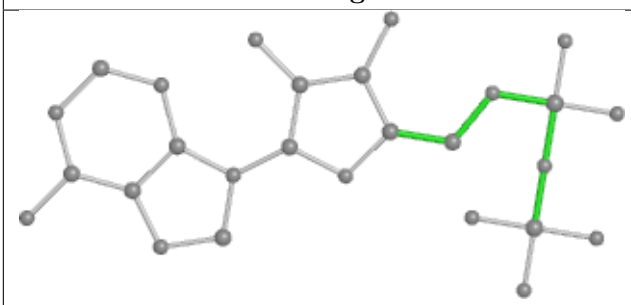
Ligand ADP D 3004



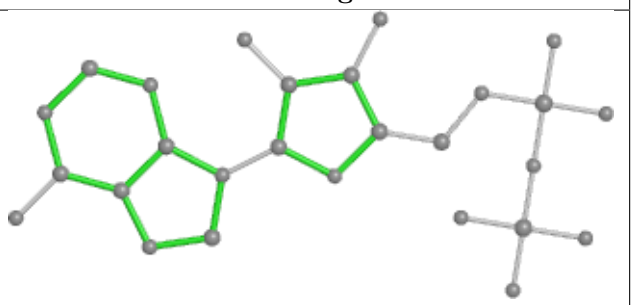
Bond lengths



Bond angles

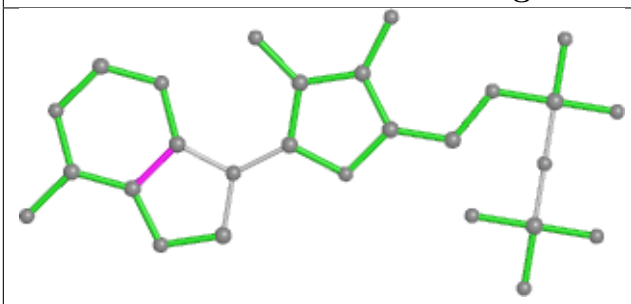


Torsions

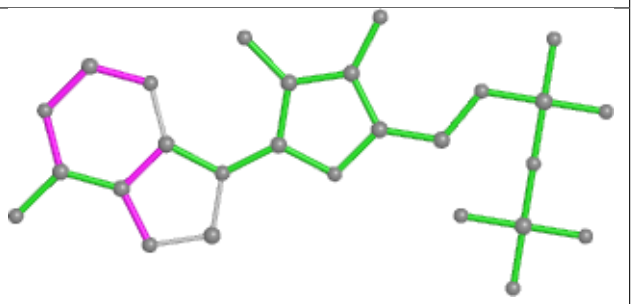


Rings

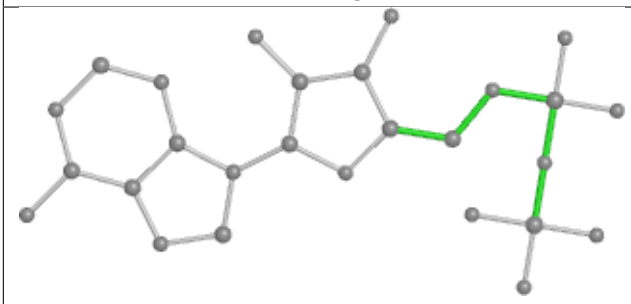
Ligand ADP C 3003



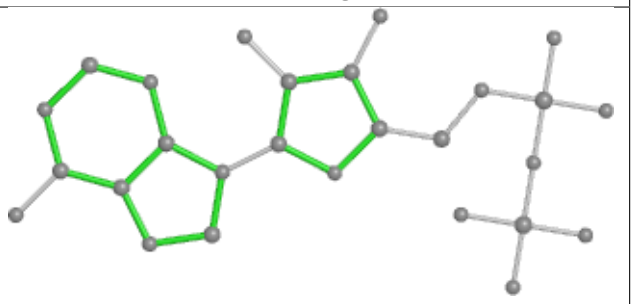
Bond lengths



Bond angles

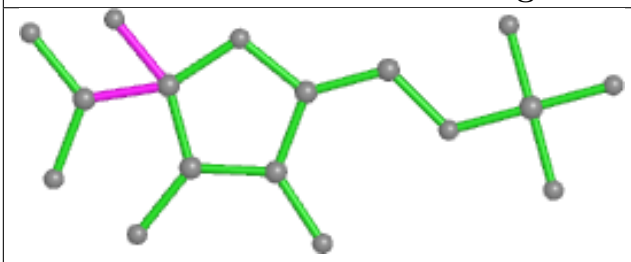


Torsions



Rings

Ligand CKP J 2010



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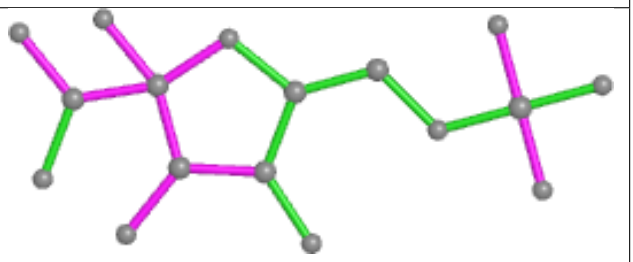
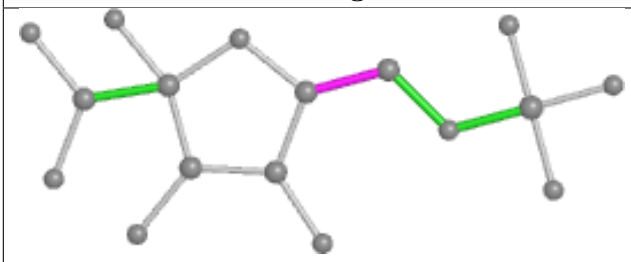


Bond angles



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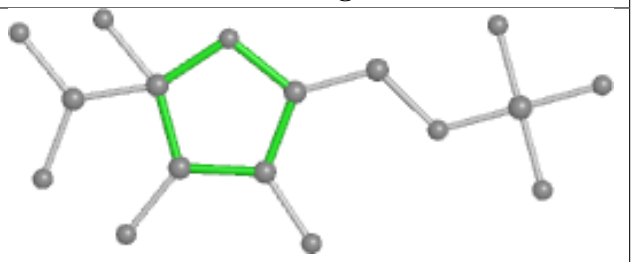
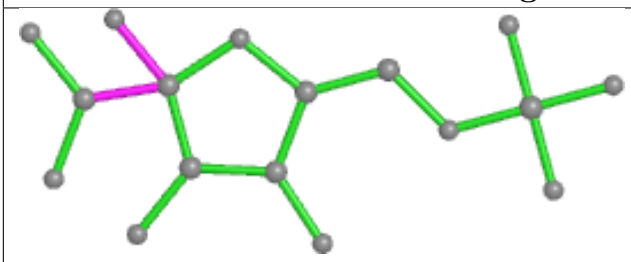


Rings

Ligand CKP I 2009



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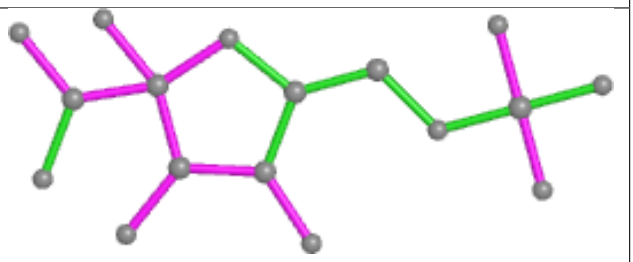
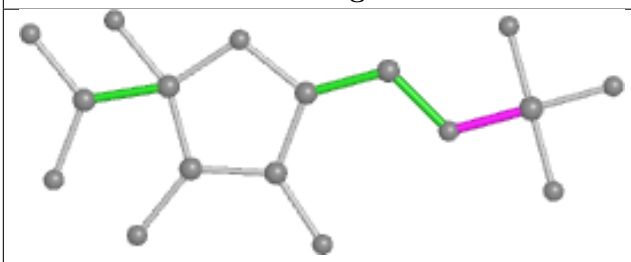


Bond angles



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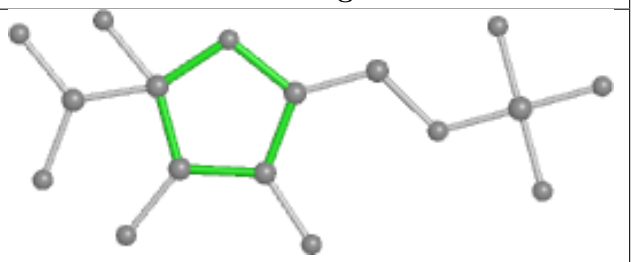
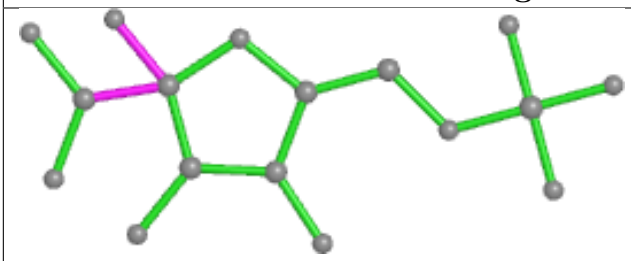


Rings

Ligand CKP E 2005



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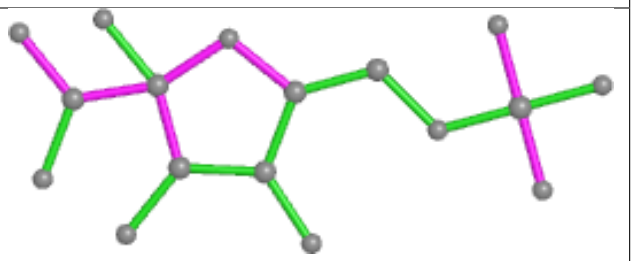
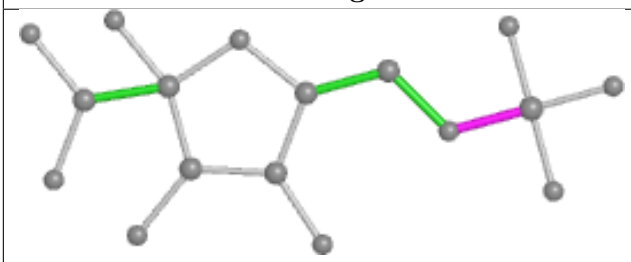
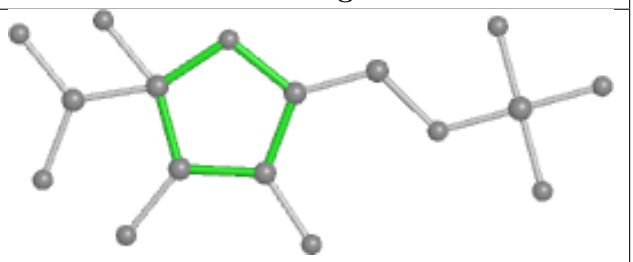


Bond angles

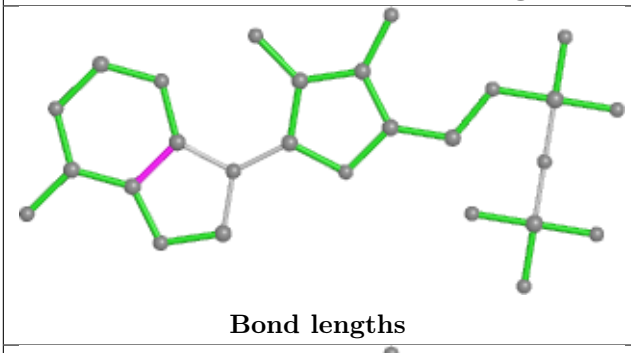


Torsions



Rings

Ligand ADP K 3011



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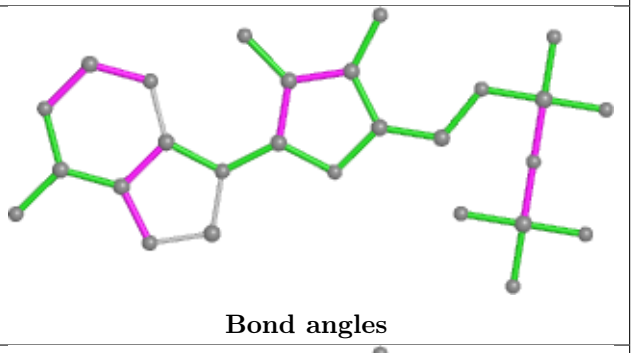
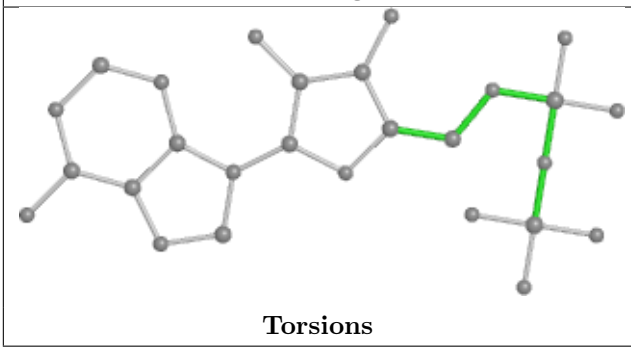


Bond angles



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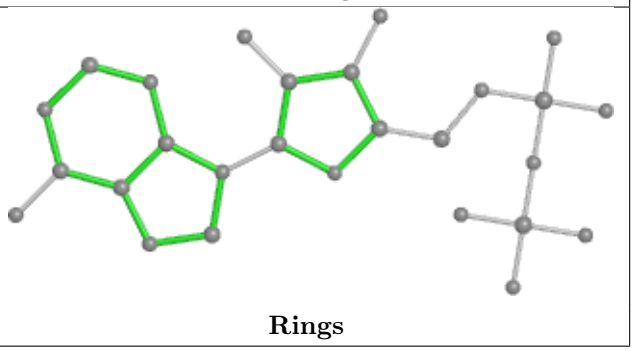
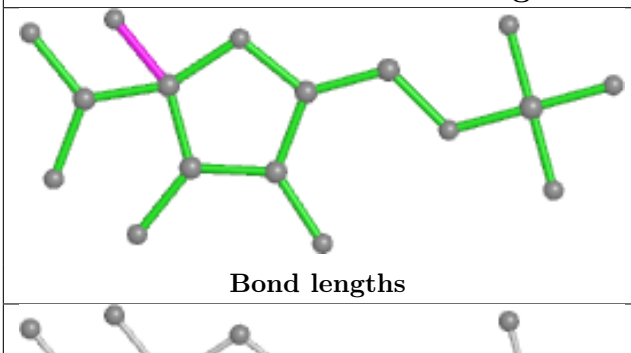


Rings

Ligand CKP A 2001



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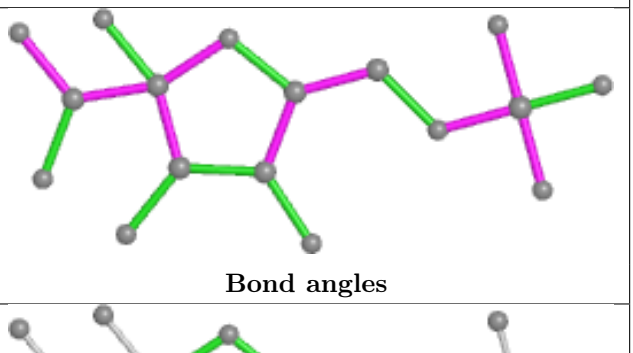
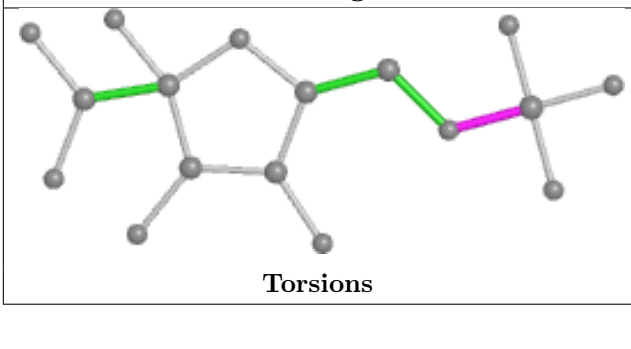


Bond angles



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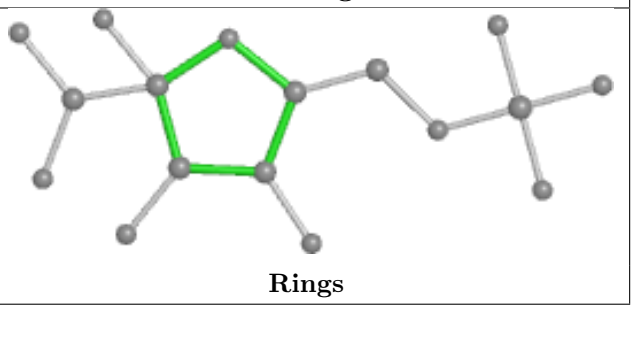
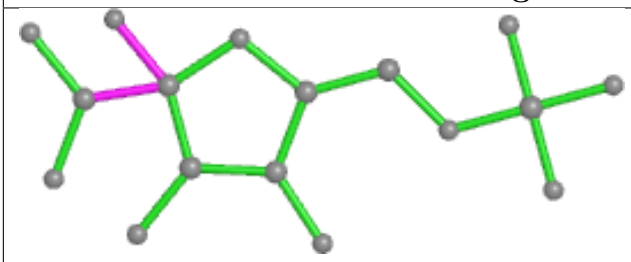


Rings

Ligand CKP H 2008



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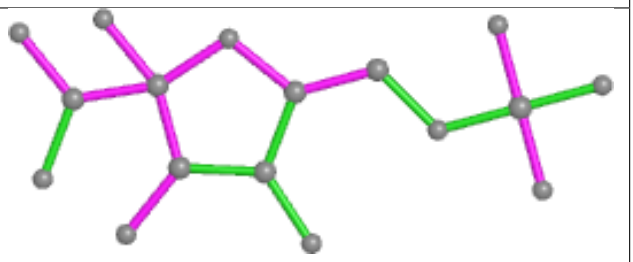
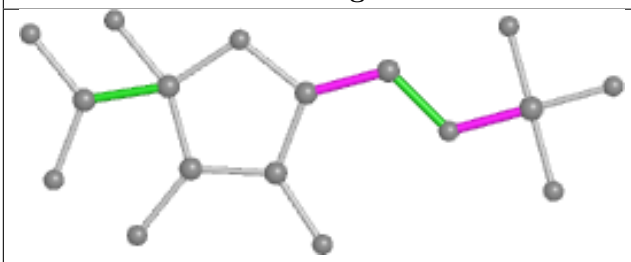


Bond angles



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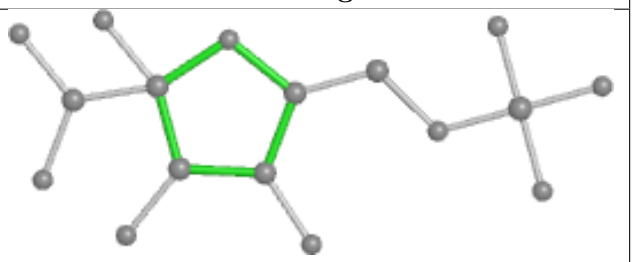
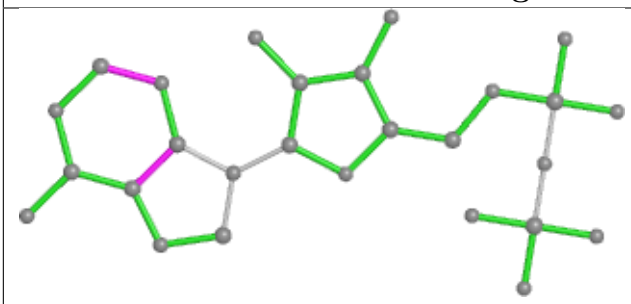


Rings

Ligand ADP H 3008



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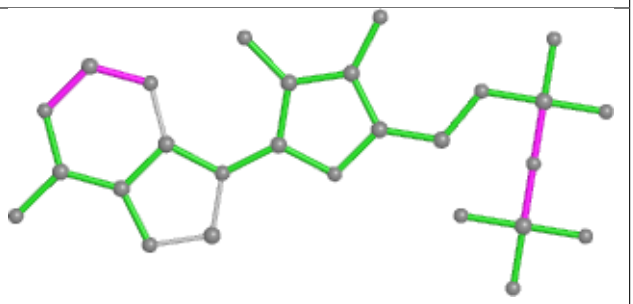
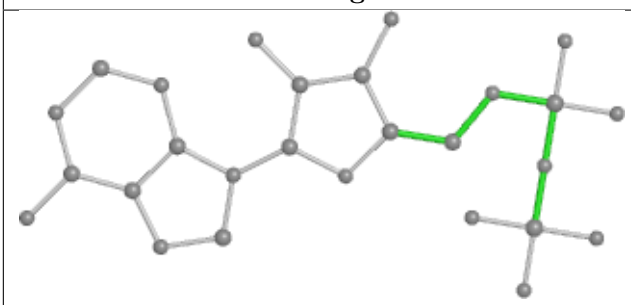


Bond angles



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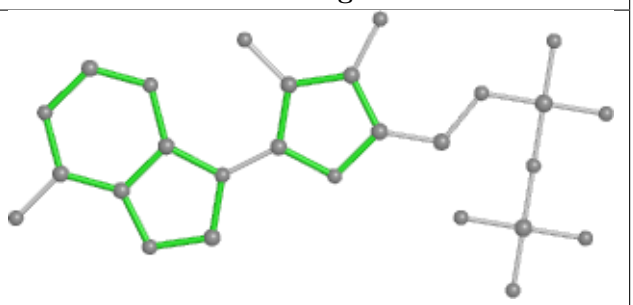
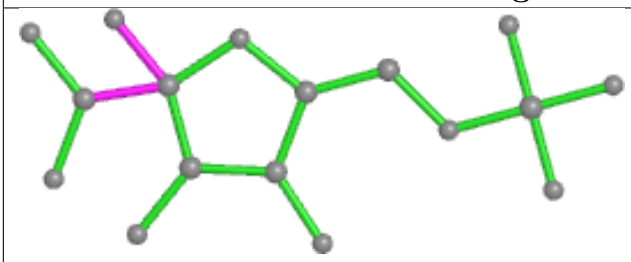


Rings

Ligand CKP G 2007



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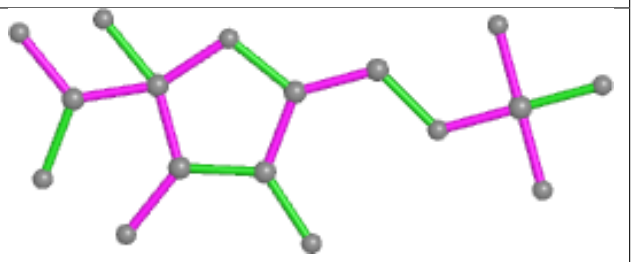
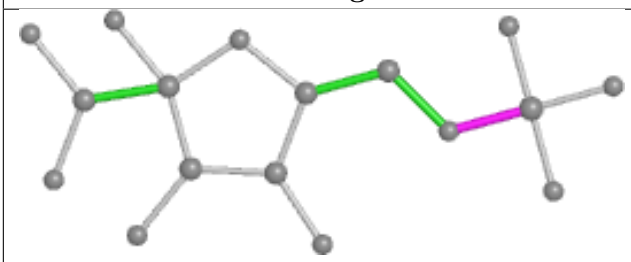


Bond angles



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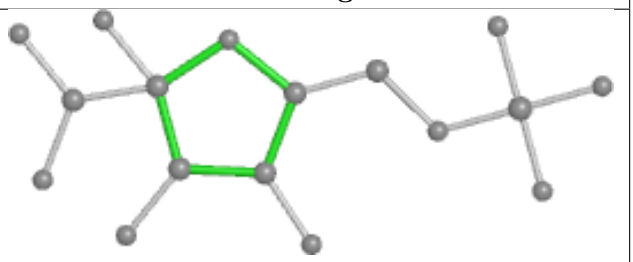
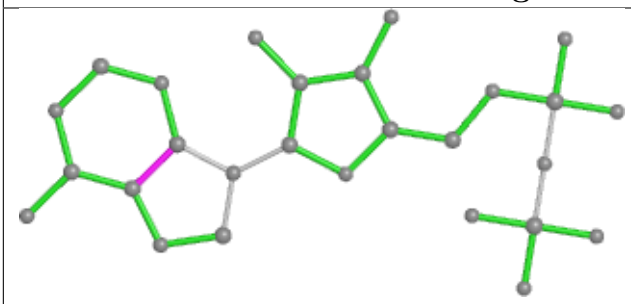


Rings

Ligand ADP A 3001



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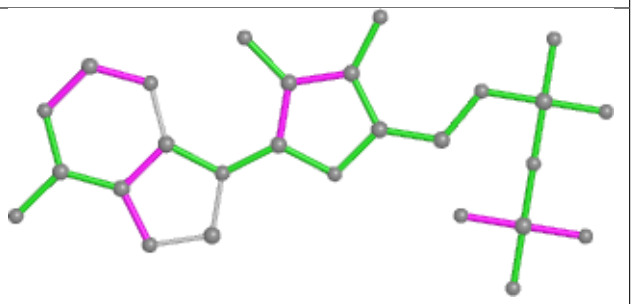
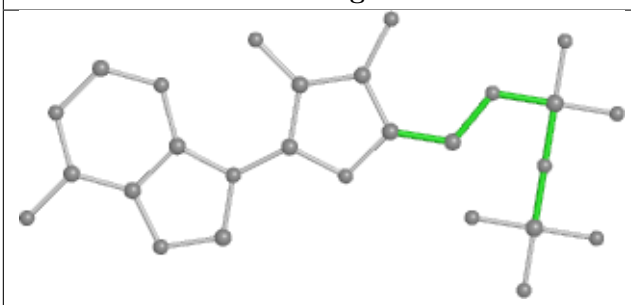
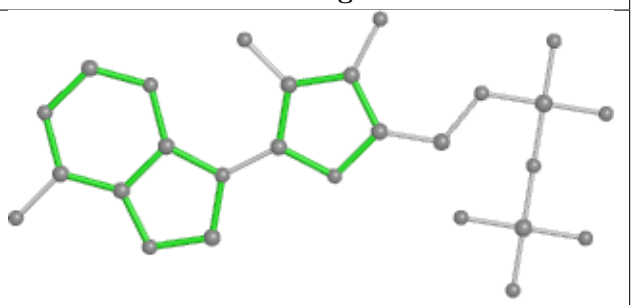


Bond angles

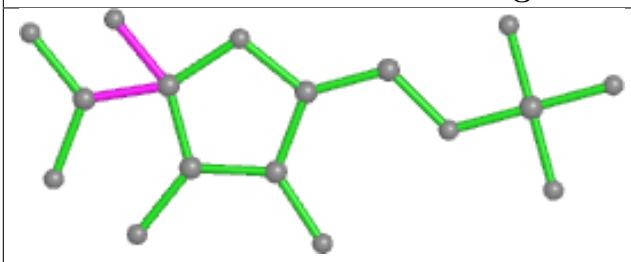


Torsions



Rings

Ligand CKP C 2003



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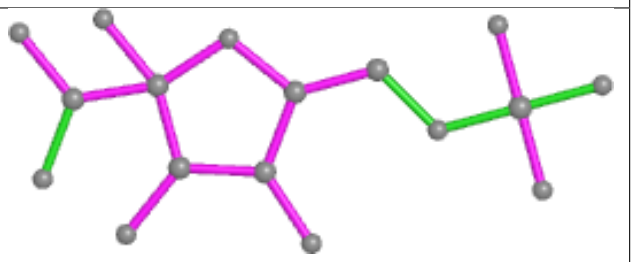
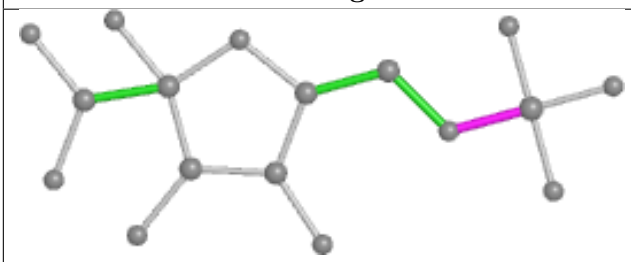
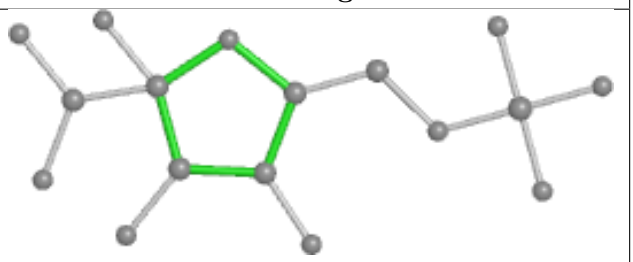


Bond angles

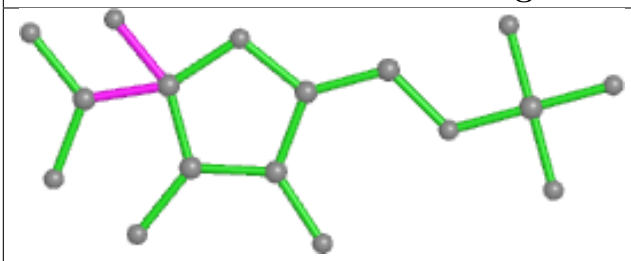


Torsions



Rings

Ligand CKP L 2012



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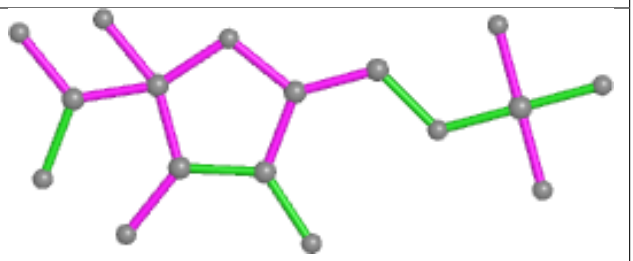
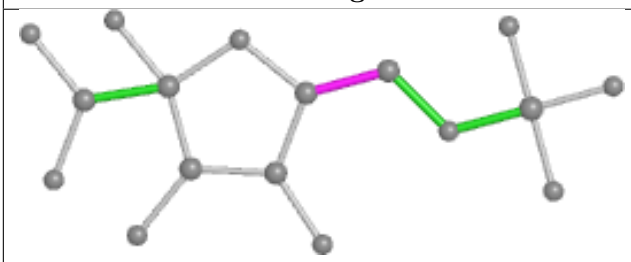


Bond angles



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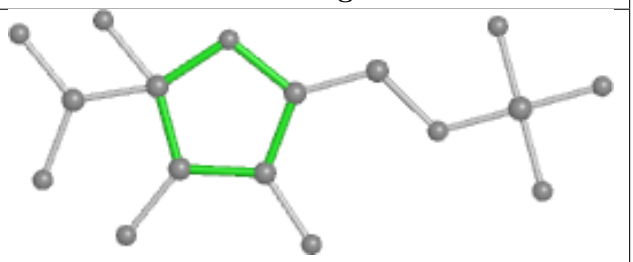
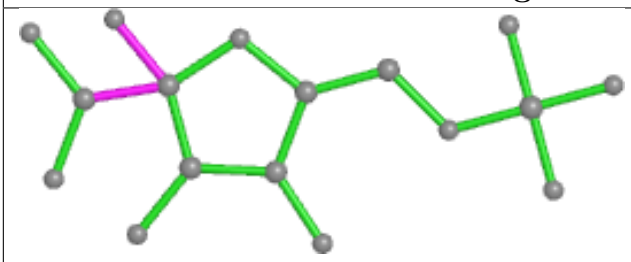


Rings

Ligand CKP B 2002



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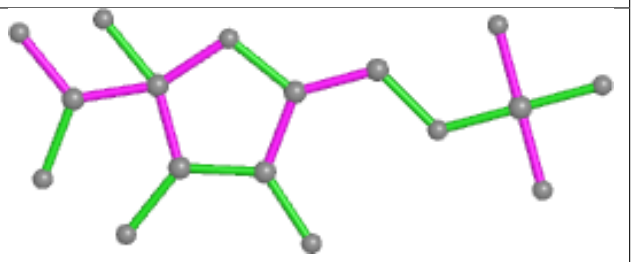
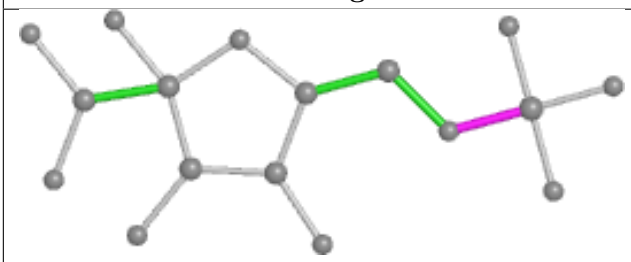


Bond angles



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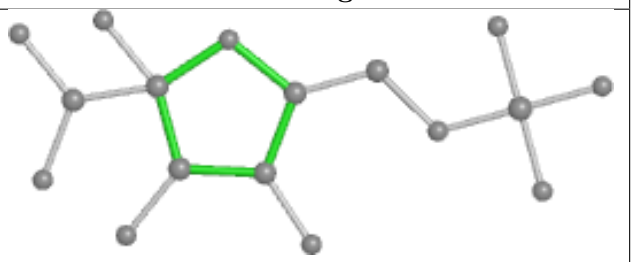
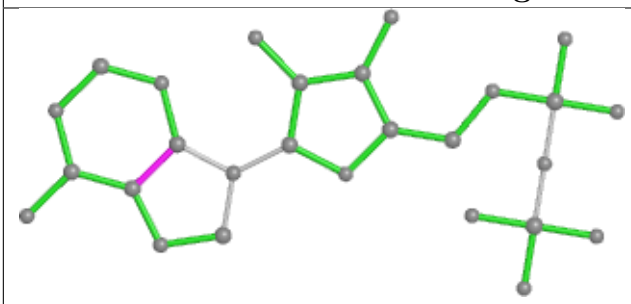


Rings

Ligand ADP B 3002



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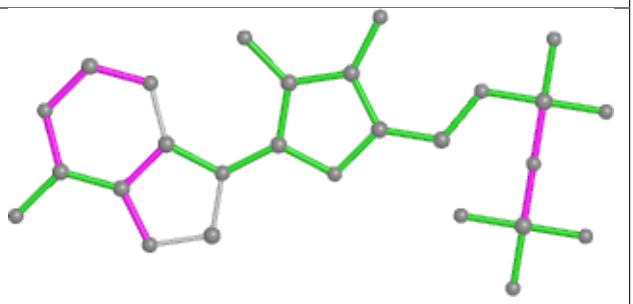
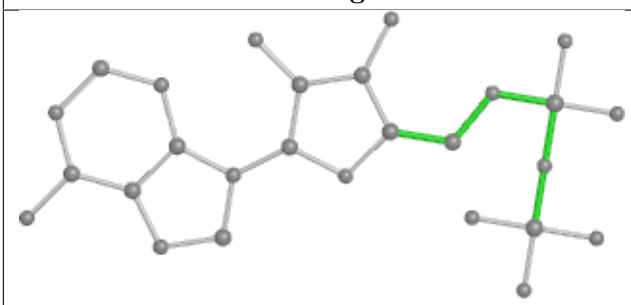
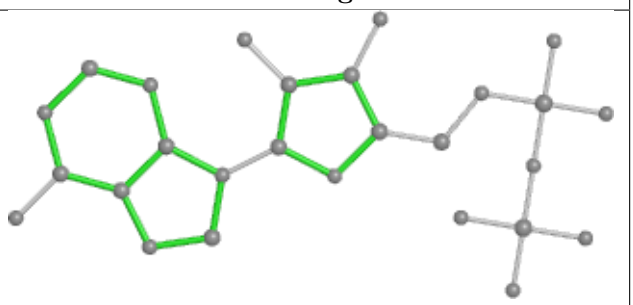


Bond angles

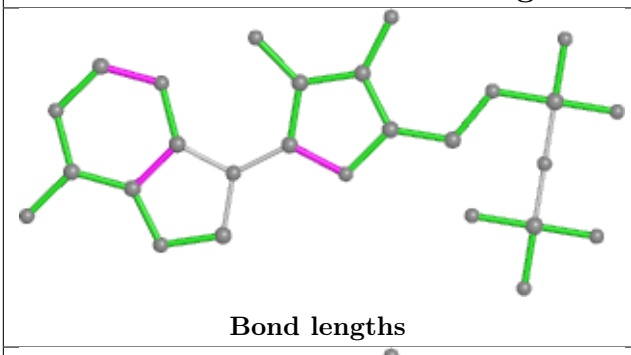


Torsions

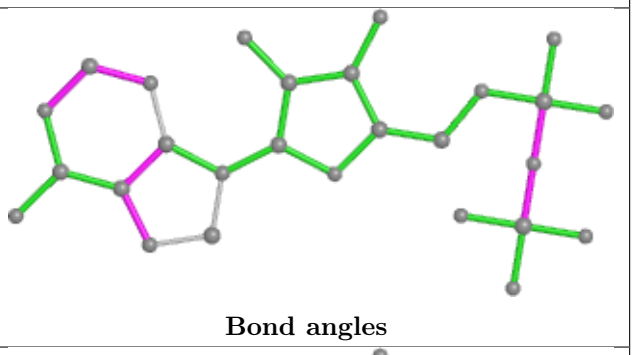


Rings

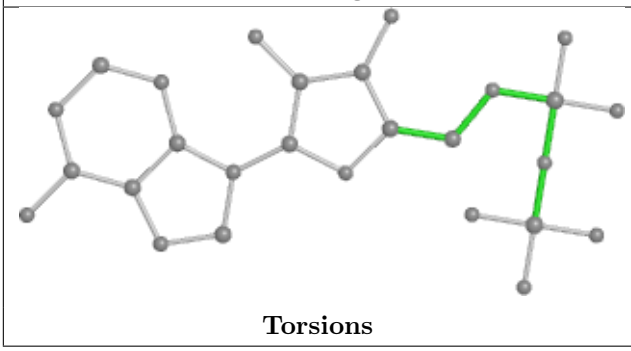
Ligand ADP J 3010



Bond lengths



Bond angles



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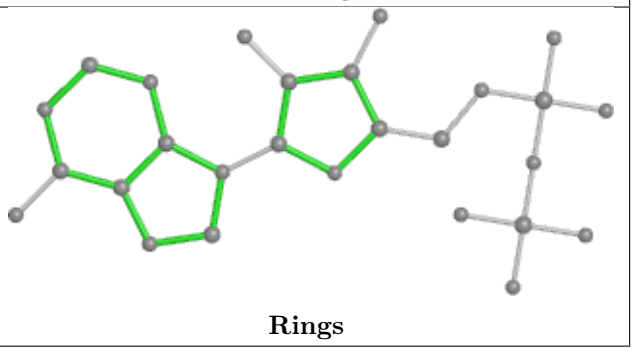
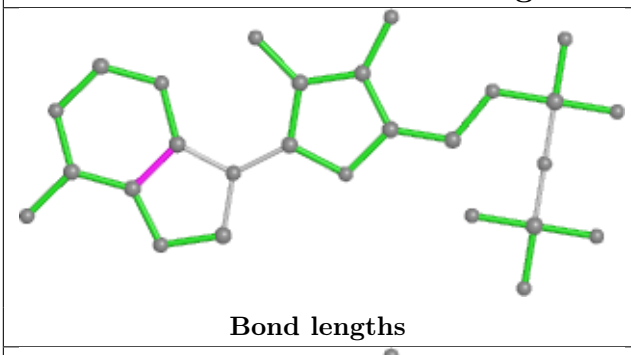


Rings

Ligand ADP L 3012



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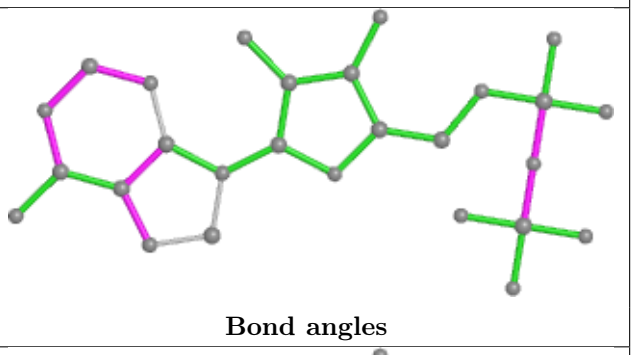
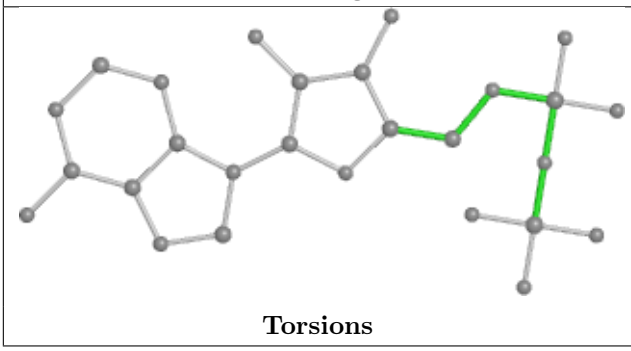
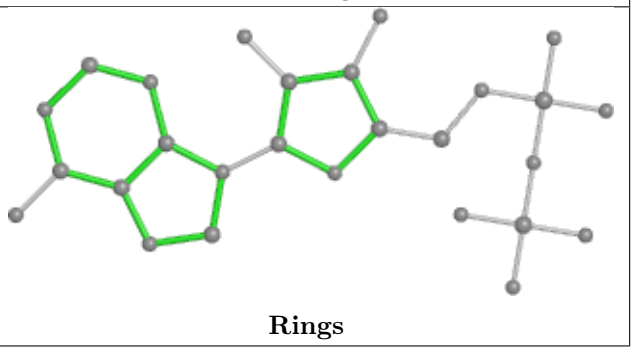


Bond angles

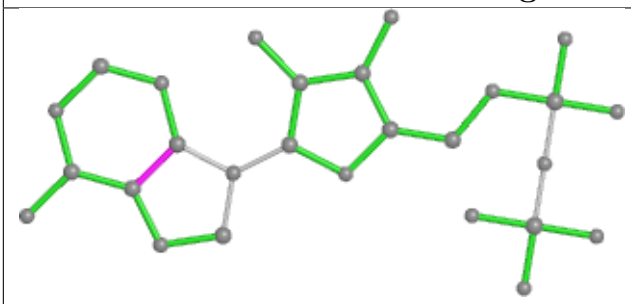


Torsions

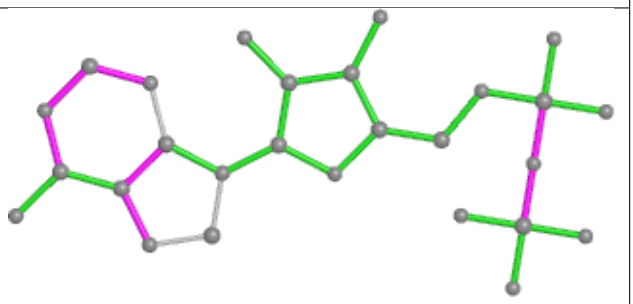


Rings

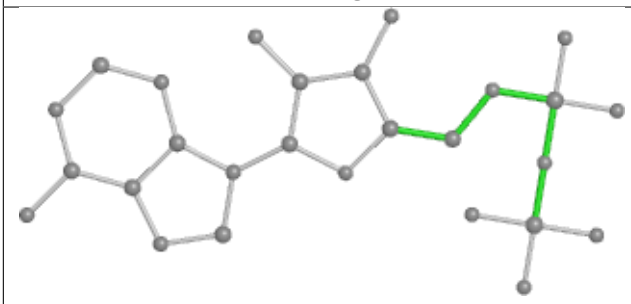
Ligand ADP I 3009



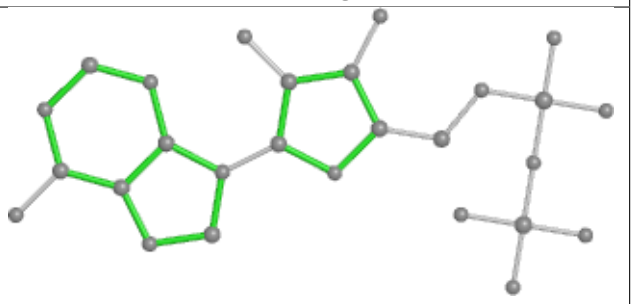
Bond lengths



Bond angles

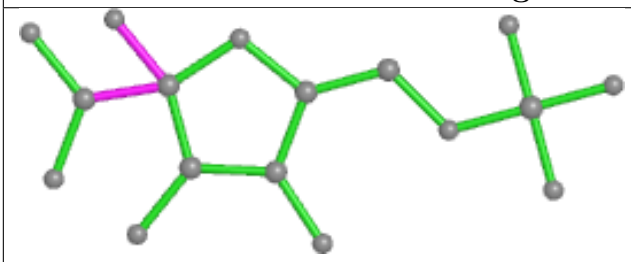


Torsions

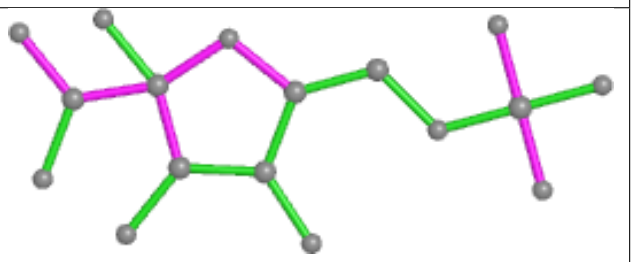


Rings

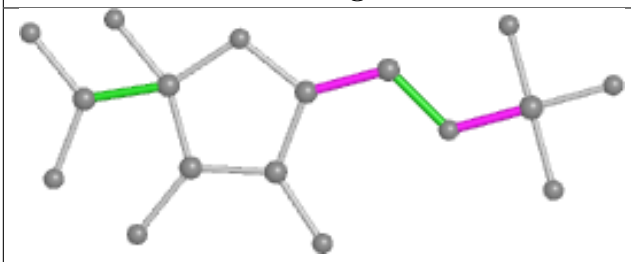
Ligand CKP K 2011



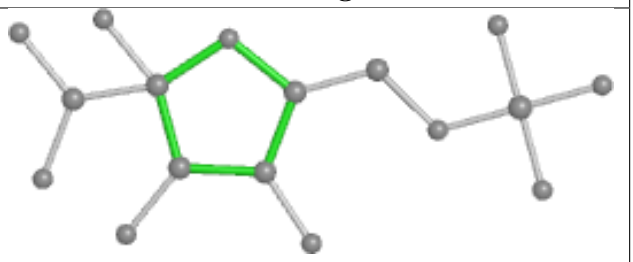
Bond lengths



Bond angles

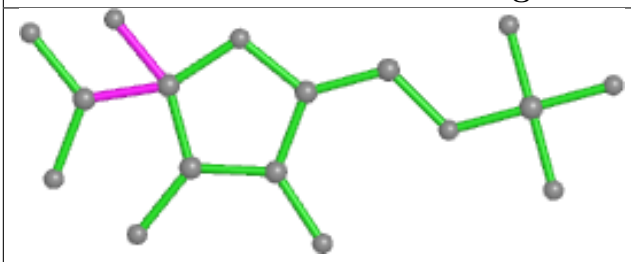


Torsions

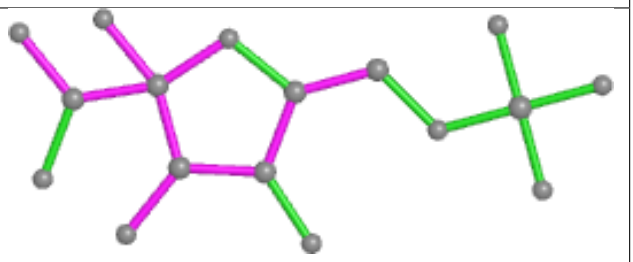


Rings

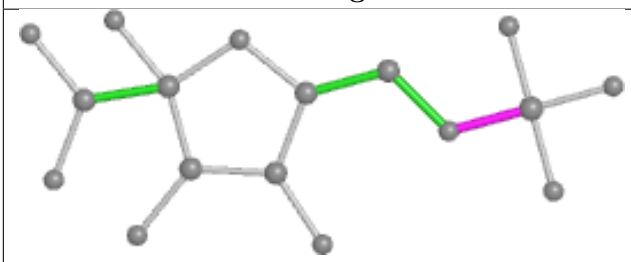
Ligand CKP D 2004



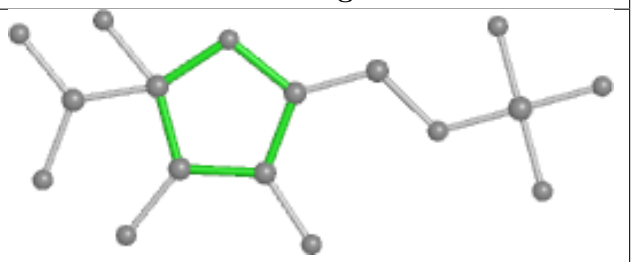
Bond lengths



Bond angles

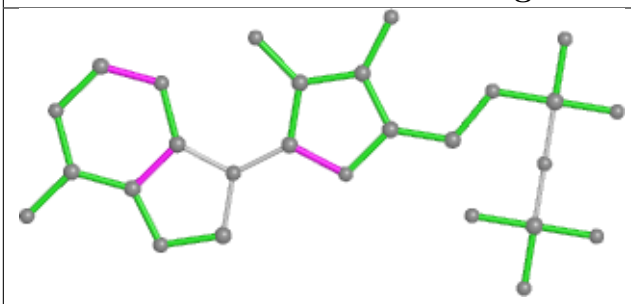


Torsions

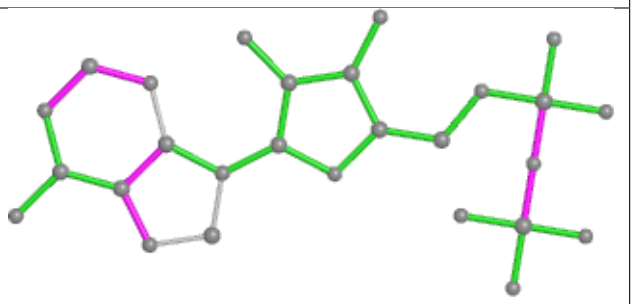


Rings

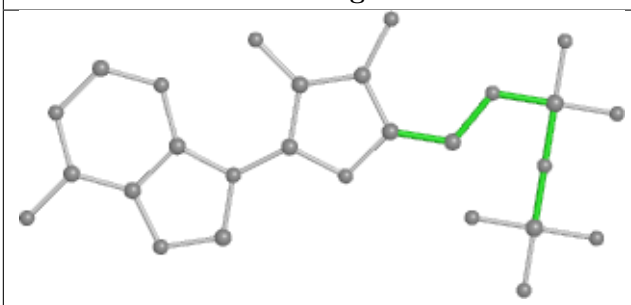
Ligand ADP E 3005



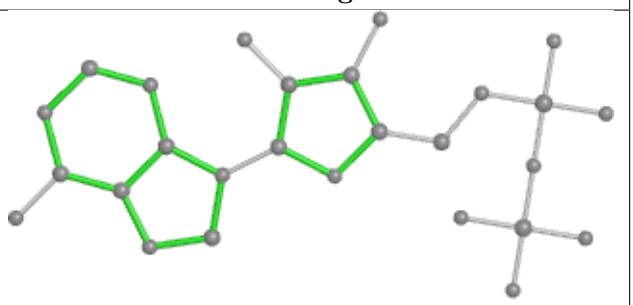
Bond lengths



Bond angles

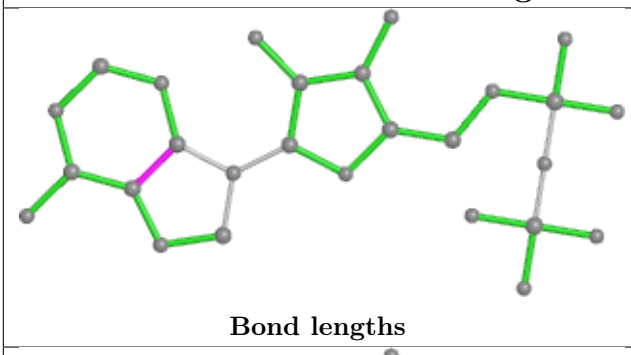


Torsions

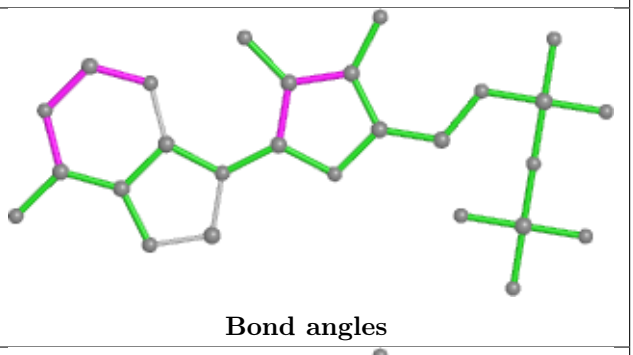


Rings

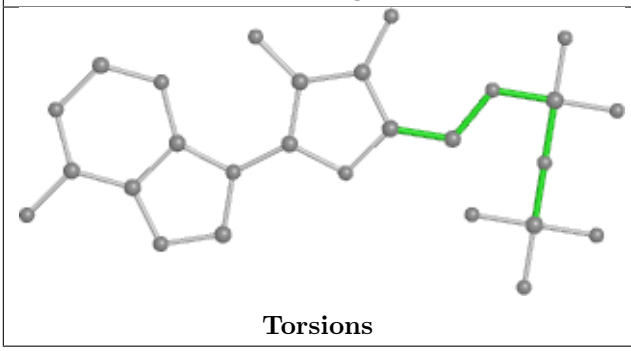
Ligand ADP F 3006



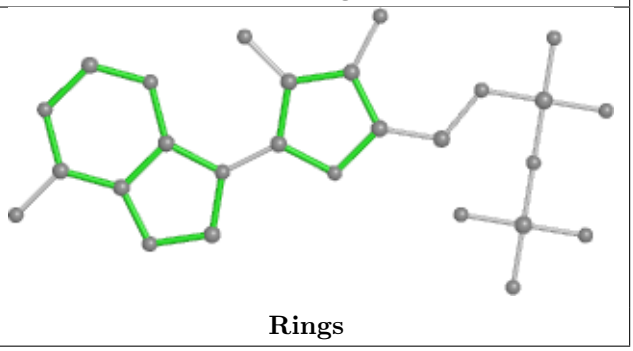
Bond lengths



Bond angles



Torsions



Rings

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	308/311 (99%)	-0.40	1 (0%) 94 94	17, 25, 47, 53	0
1	B	308/311 (99%)	-0.69	0 100 100	14, 22, 36, 43	0
1	C	308/311 (99%)	-0.69	0 100 100	14, 22, 32, 49	0
1	D	308/311 (99%)	-0.60	1 (0%) 94 94	15, 22, 35, 46	0
1	E	308/311 (99%)	-0.56	0 100 100	15, 25, 45, 52	0
1	F	308/311 (99%)	-0.53	0 100 100	16, 24, 36, 48	0
1	G	308/311 (99%)	-0.49	2 (0%) 89 89	16, 26, 44, 49	0
1	H	308/311 (99%)	-0.69	0 100 100	15, 23, 35, 42	0
1	I	308/311 (99%)	-0.63	0 100 100	14, 22, 33, 48	0
1	J	308/311 (99%)	-0.55	0 100 100	14, 22, 39, 46	0
1	K	308/311 (99%)	-0.58	0 100 100	16, 25, 44, 54	0
1	L	308/311 (99%)	-0.47	0 100 100	15, 24, 36, 45	0
All	All	3696/3732 (99%)	-0.57	4 (0%) 95 96	14, 23, 39, 54	0

All (4) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	157	SER	3.3
1	A	235	ASP	2.2
1	G	235	ASP	2.1
1	D	235	ASP	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	MG	A	4004	1/1	0.66	0.24	40,40,40,40	1
2	MG	G	4025	1/1	0.72	0.46	41,41,41,41	1
2	MG	G	4026	1/1	0.72	0.28	34,34,34,34	1
2	MG	J	4037	1/1	0.76	0.34	31,31,31,31	1
2	MG	B	4009[B]	1/1	0.83	0.47	18,18,18,18	1
2	MG	B	4009[A]	1/1	0.83	0.47	30,30,30,30	1
2	MG	B	4007	1/1	0.85	0.11	33,33,33,33	0
2	MG	L	4041	1/1	0.85	0.83	34,34,34,34	1
2	MG	L	4044	1/1	0.85	0.42	45,45,45,45	1
2	MG	A	4003	1/1	0.86	0.42	37,37,37,37	1
2	MG	C	4012	1/1	0.87	0.28	42,42,42,42	0
2	MG	D	4015	1/1	0.87	0.43	47,47,47,47	1
2	MG	H	4030	1/1	0.87	0.13	38,38,38,38	0
2	MG	G	4023	1/1	0.88	0.21	30,30,30,30	0
2	MG	K	4040	1/1	0.88	0.55	37,37,37,37	1
2	MG	H	4027	1/1	0.89	0.62	39,39,39,39	1
2	MG	A	4002	1/1	0.89	0.17	33,33,33,33	0
2	MG	J	4036	1/1	0.90	0.63	44,44,44,44	1
2	MG	J	4035	1/1	0.91	0.16	34,34,34,34	0
2	MG	D	4016	1/1	0.91	0.21	40,40,40,40	0
2	MG	L	4043	1/1	0.92	0.21	30,30,30,30	0
2	MG	G	4028	1/1	0.92	0.30	41,41,41,41	1
4	CKP	B	2002	17/17	0.92	0.11	18,23,36,38	0
2	MG	A	4005	1/1	0.93	0.43	29,29,29,29	1
2	MG	E	4018	1/1	0.94	0.17	40,40,40,40	0
2	MG	E	4019	1/1	0.94	0.38	44,44,44,44	1
4	CKP	C	2003	17/17	0.94	0.11	17,19,27,27	0
4	CKP	H	2008	17/17	0.94	0.12	22,25,36,38	0
4	CKP	L	2012	17/17	0.94	0.10	22,25,32,33	0
2	MG	G	4024	1/1	0.95	0.26	36,36,36,36	1
2	MG	K	4039	1/1	0.95	0.17	28,28,28,28	0
4	CKP	D	2004	17/17	0.95	0.10	18,23,33,35	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	CKP	E	2005	17/17	0.95	0.10	22,25,38,39	0
4	CKP	F	2006	17/17	0.95	0.11	17,22,32,34	0
4	CKP	G	2007	17/17	0.95	0.10	21,27,33,34	0
2	MG	D	4014	1/1	0.95	0.06	26,26,26,26	0
4	CKP	I	2009	17/17	0.95	0.11	15,19,30,30	0
4	CKP	J	2010	17/17	0.95	0.10	20,23,35,35	0
4	CKP	K	2011	17/17	0.95	0.10	21,25,38,38	0
4	CKP	A	2001	17/17	0.95	0.11	21,23,34,36	0
2	MG	I	4033	1/1	0.96	0.45	43,43,43,43	1
2	MG	F	4021	1/1	0.96	0.17	25,25,25,25	0
2	MG	B	4006	1/1	0.96	0.09	13,13,13,13	0
5	ADP	A	3001	27/27	0.96	0.09	20,24,38,40	0
5	ADP	D	3004	27/27	0.96	0.08	19,22,32,36	0
5	ADP	E	3005	27/27	0.96	0.09	20,26,35,38	0
5	ADP	J	3010	27/27	0.96	0.09	21,23,34,36	0
2	MG	I	4032	1/1	0.97	0.11	26,26,26,26	0
5	ADP	F	3006	27/27	0.97	0.09	19,21,26,32	0
5	ADP	G	3007	27/27	0.97	0.08	22,26,35,36	0
2	MG	B	4008	1/1	0.97	0.51	31,31,31,31	1
5	ADP	K	3011	27/27	0.97	0.09	19,21,30,35	0
2	MG	C	4011	1/1	0.98	0.07	22,22,22,22	0
2	MG	G	4022	1/1	0.98	0.11	10,10,10,10	0
3	K	C	5003	1/1	0.98	0.07	22,22,22,22	0
2	MG	K	4038	1/1	0.98	0.10	13,13,13,13	0
5	ADP	H	3008	27/27	0.98	0.08	19,21,30,35	0
5	ADP	I	3009	27/27	0.98	0.09	18,21,26,30	0
5	ADP	B	3002	27/27	0.98	0.08	20,22,30,35	0
5	ADP	C	3003	27/27	0.98	0.07	17,19,27,29	0
5	ADP	L	3012	27/27	0.98	0.08	18,20,29,33	0
2	MG	C	4010	1/1	0.99	0.07	7,7,7,7	0
3	K	D	5004	1/1	0.99	0.06	20,20,20,20	0
3	K	E	5005	1/1	0.99	0.06	23,23,23,23	0
3	K	F	5006	1/1	0.99	0.07	24,24,24,24	0
3	K	G	5007	1/1	0.99	0.07	26,26,26,26	0
3	K	I	5009	1/1	0.99	0.04	21,21,21,21	0
3	K	J	5010	1/1	0.99	0.09	20,20,20,20	0
3	K	L	5012	1/1	0.99	0.08	22,22,22,22	0
2	MG	I	4031	1/1	0.99	0.10	10,10,10,10	0
2	MG	F	4020	1/1	0.99	0.11	11,11,11,11	0
2	MG	D	4013	1/1	0.99	0.08	10,10,10,10	0
2	MG	J	4034	1/1	0.99	0.11	12,12,12,12	0
2	MG	L	4042	1/1	0.99	0.09	8,8,8,8	0

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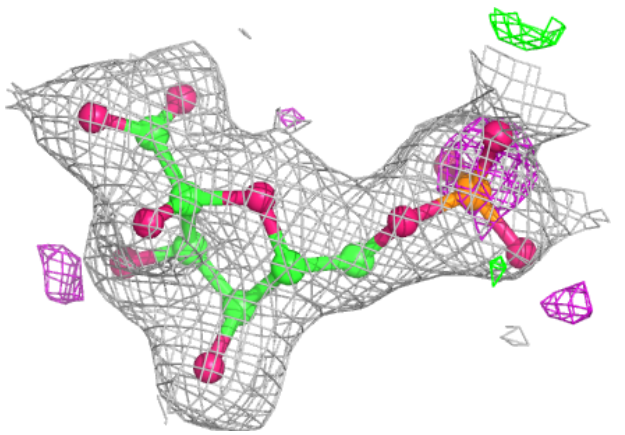
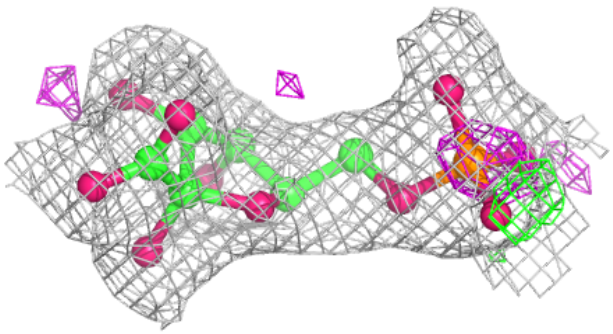
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	MG	E	4017	1/1	0.99	0.15	13,13,13,13	0
2	MG	A	4001	1/1	0.99	0.08	11,11,11,11	0
3	K	B	5002	1/1	0.99	0.04	19,19,19,19	0
2	MG	H	4029	1/1	1.00	0.09	12,12,12,12	0
3	K	A	5001	1/1	1.00	0.10	21,21,21,21	0
3	K	K	5011	1/1	1.00	0.06	23,23,23,23	0
3	K	H	5008	1/1	1.00	0.06	23,23,23,23	0

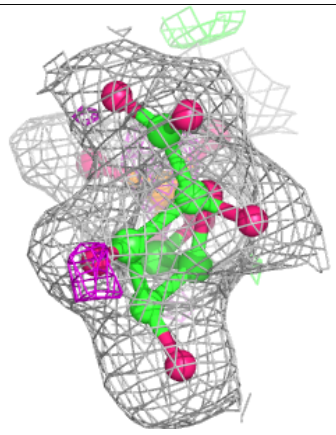
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around CKP B 2002:

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

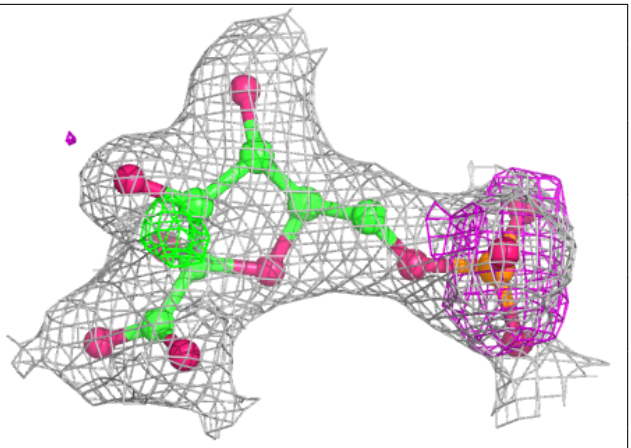


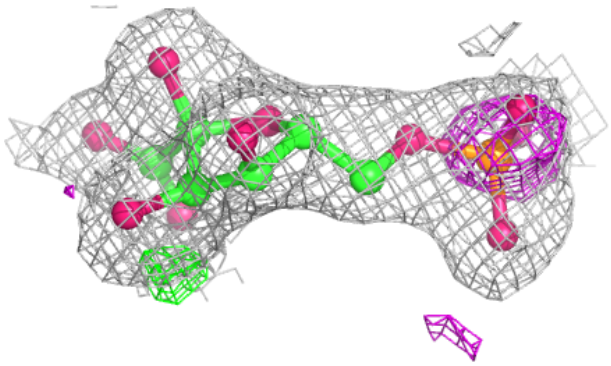


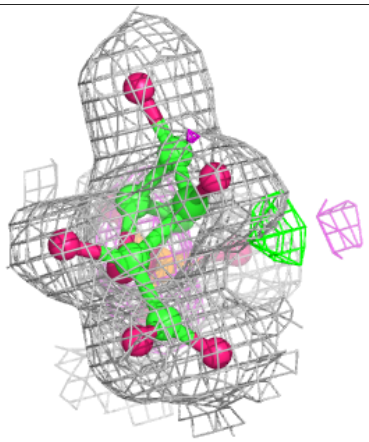


Electron density around CKP C 2003:

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

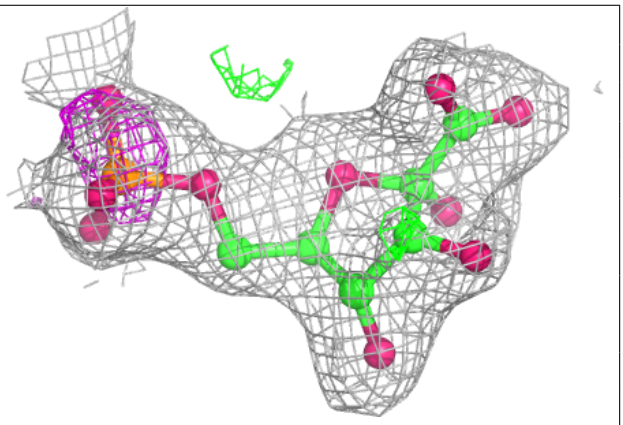


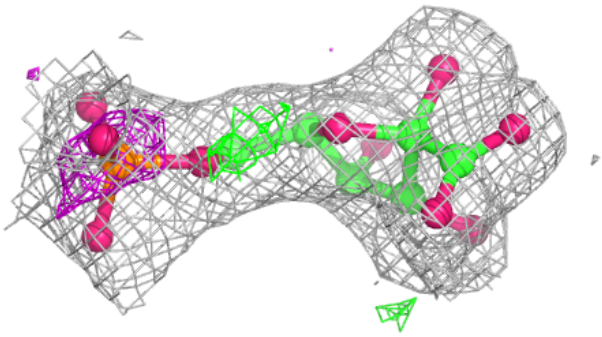


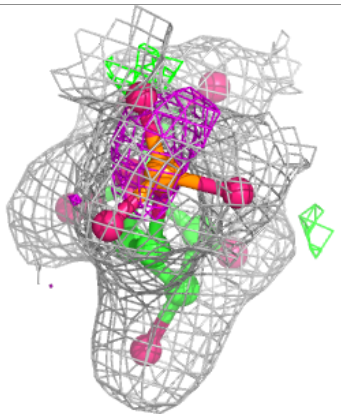


Electron density around CKP H 2008:

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

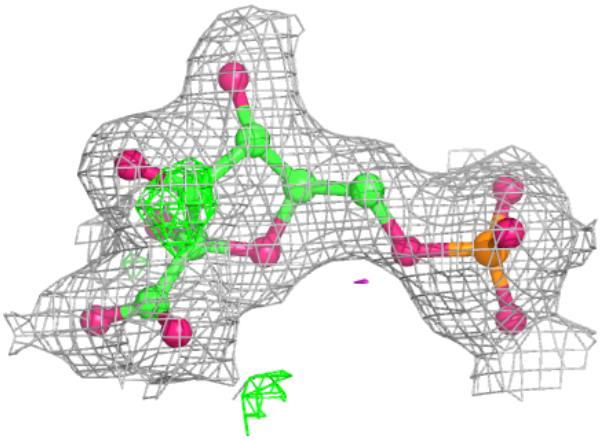


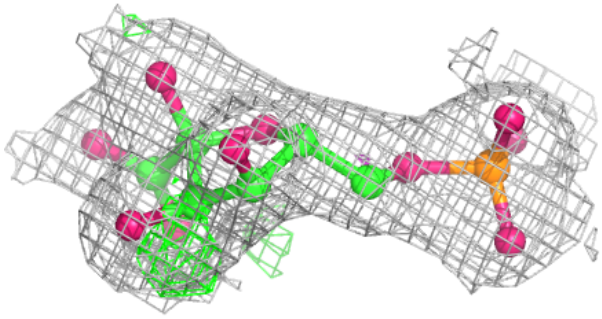


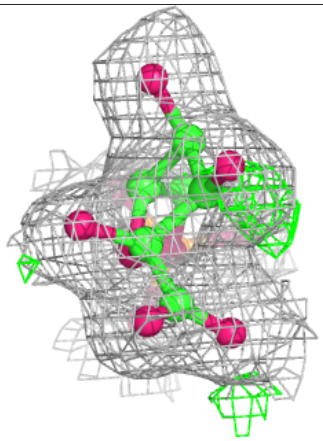


Electron density around CKP L 2012:

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

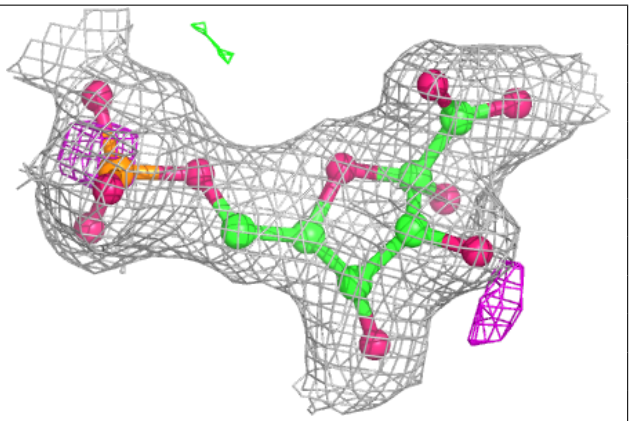


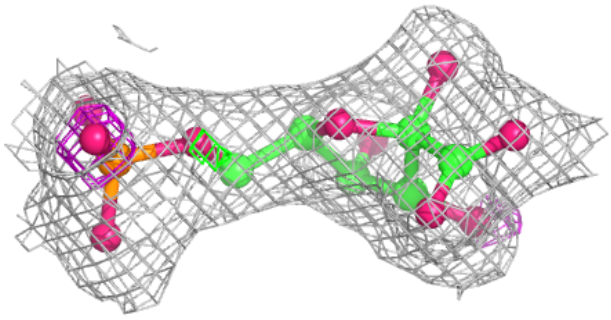




Electron density around CKP D 2004:

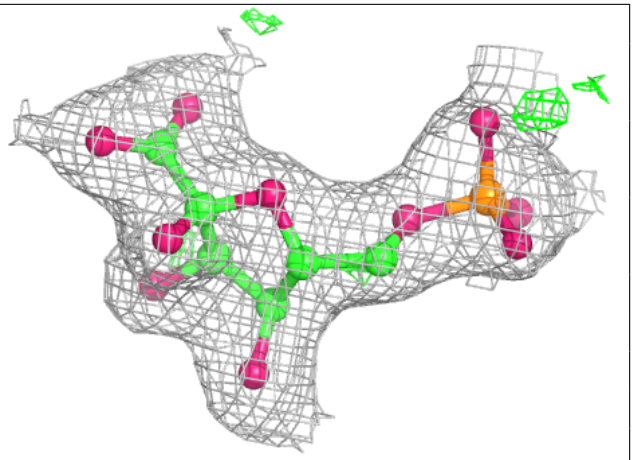
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

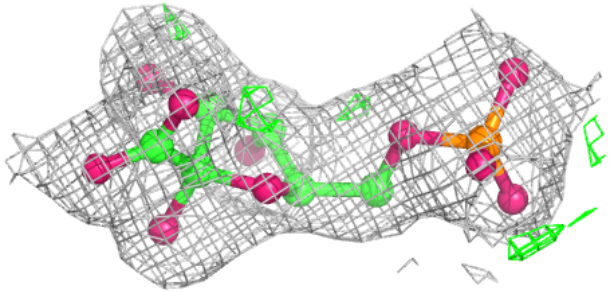


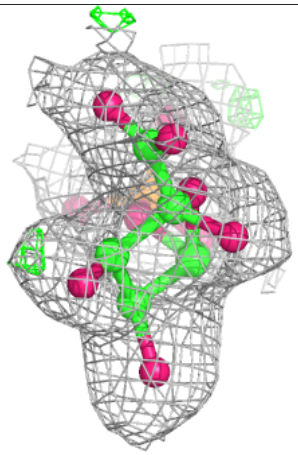


Electron density around CKP E 2005:

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

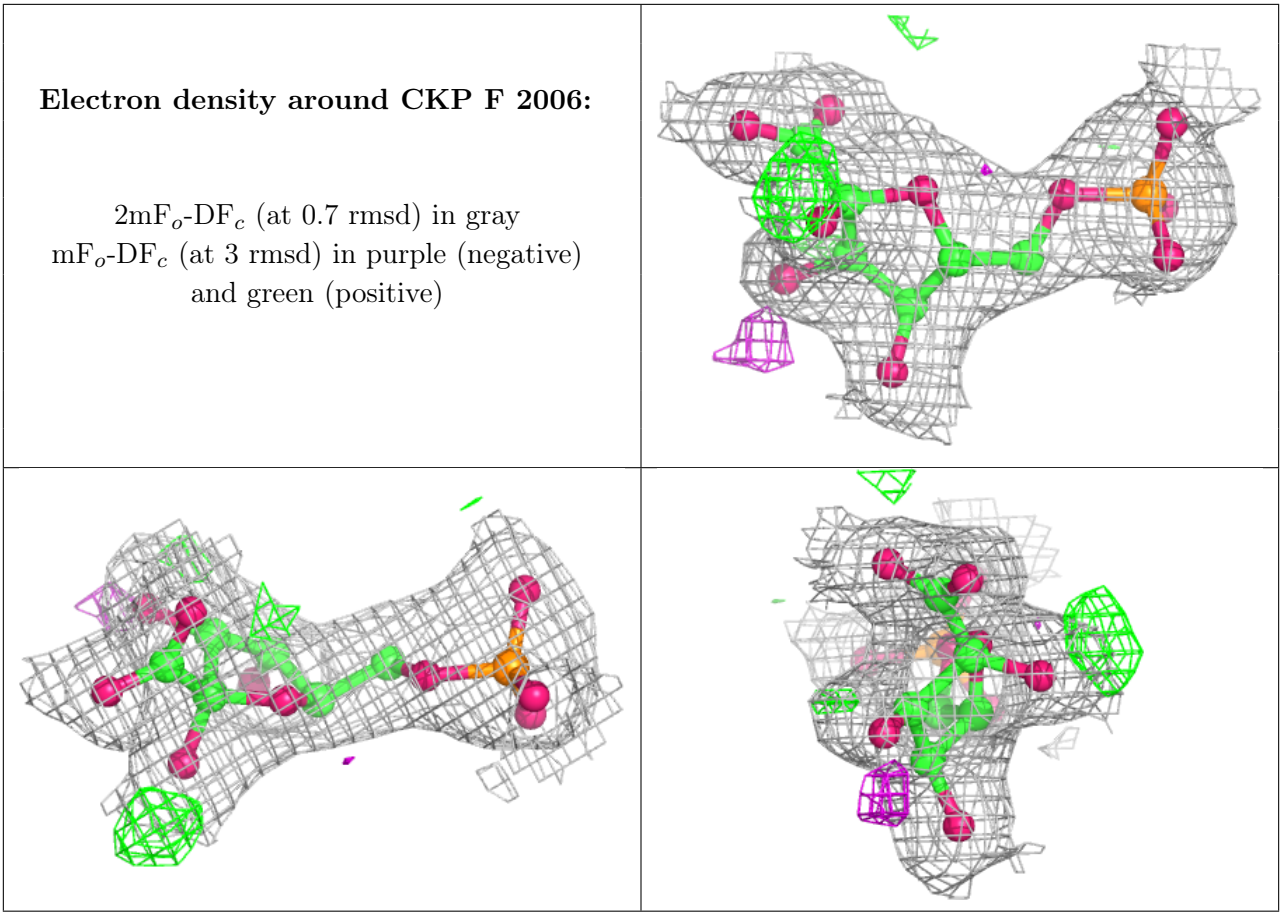






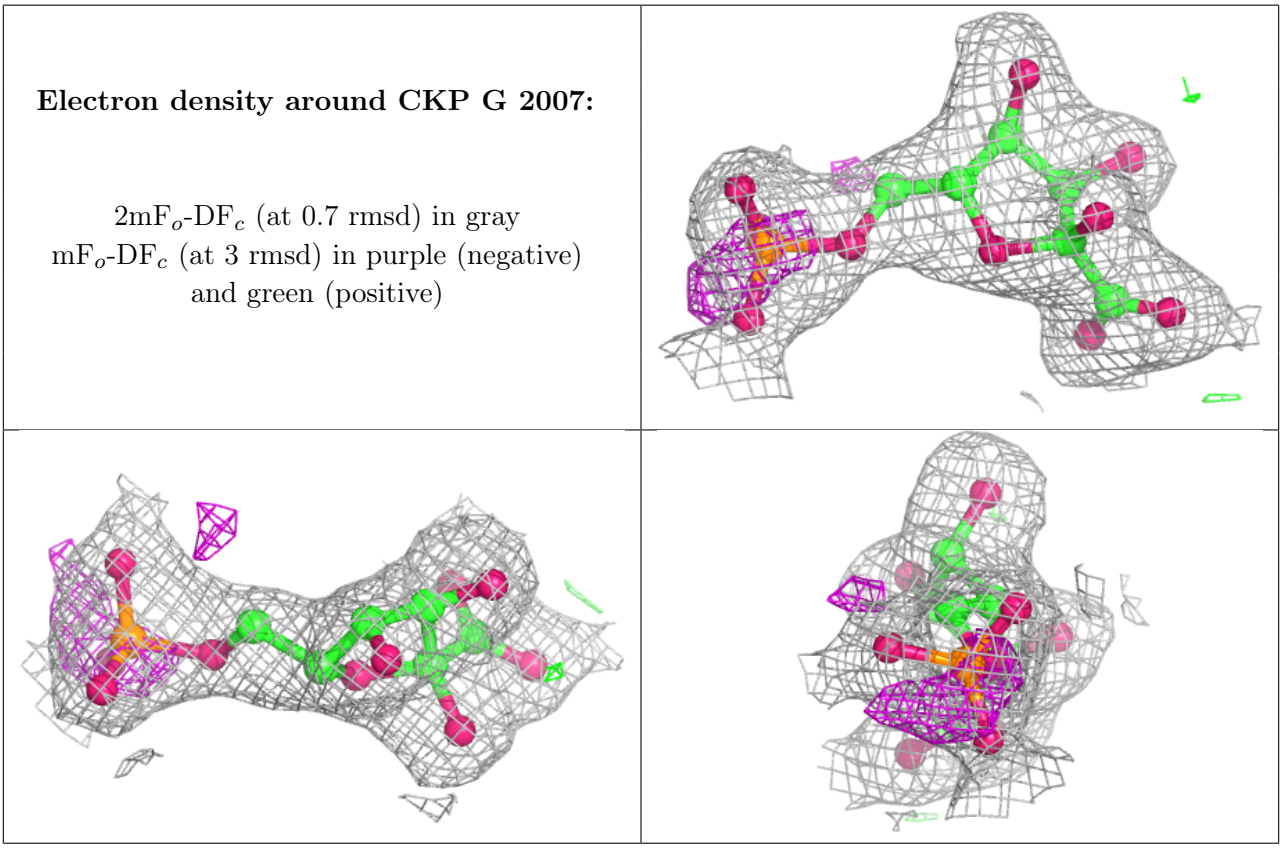
Electron density around CKP F 2006:

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



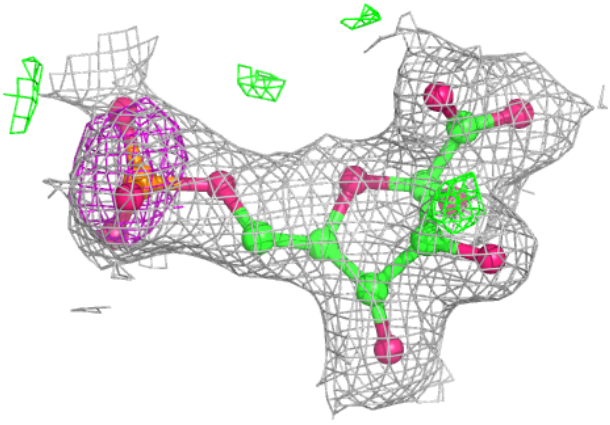
Electron density around CKP G 2007:

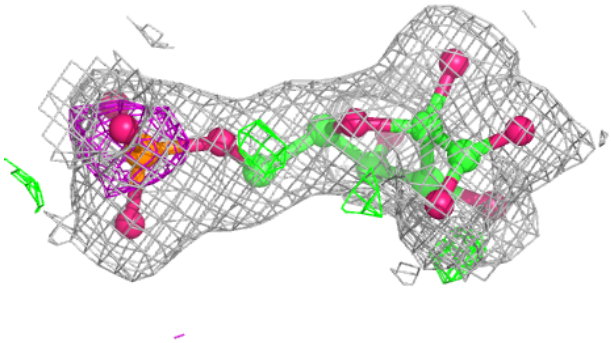
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

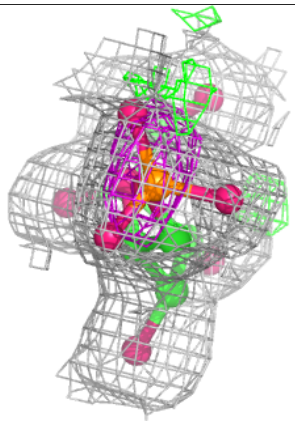


Electron density around CKP I 2009:

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

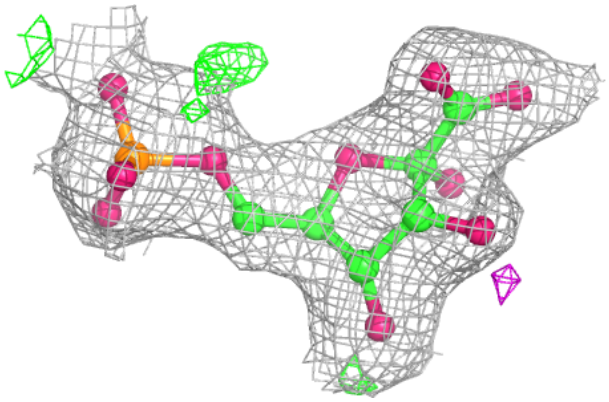


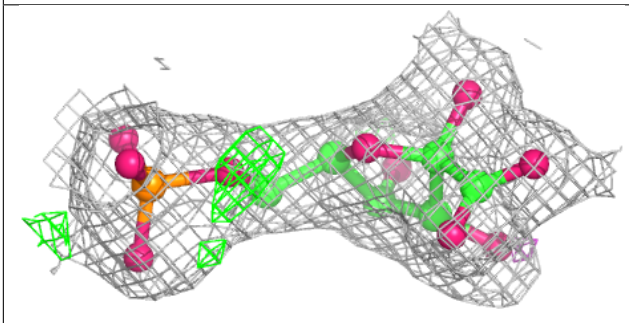


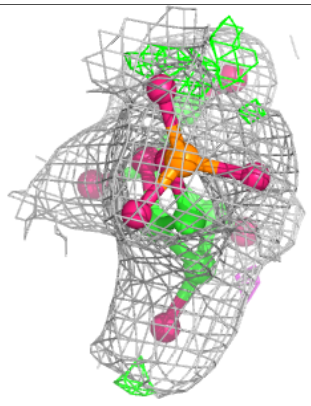


Electron density around CKP J 2010:

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

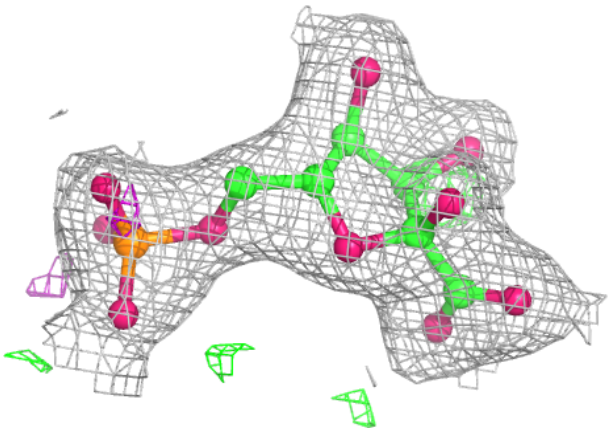


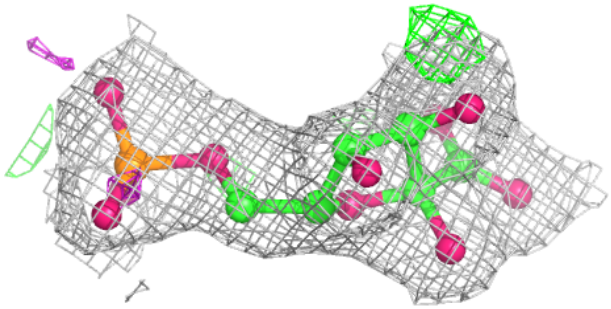


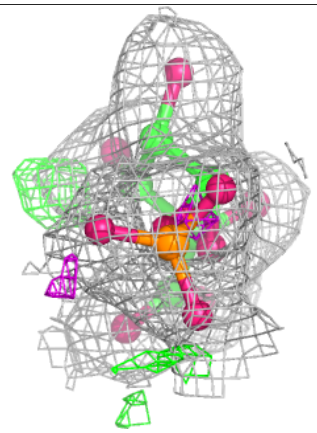


Electron density around CKP K 2011:

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

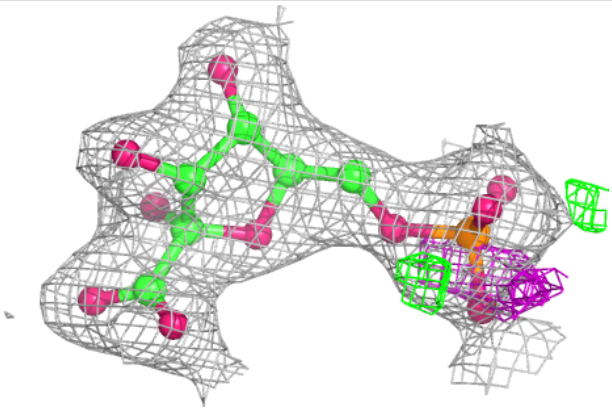


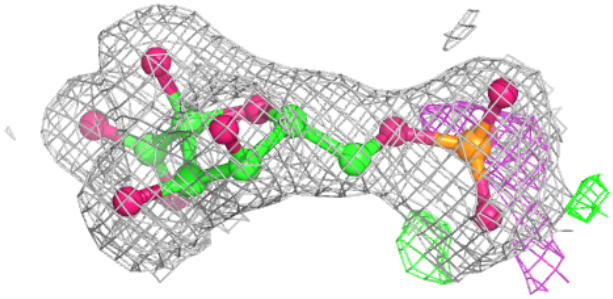


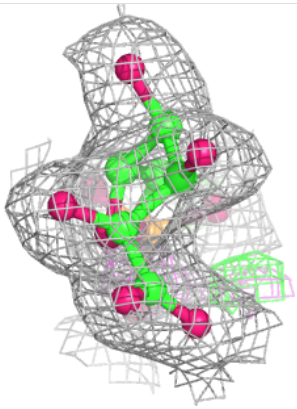


Electron density around CKP A 2001:

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

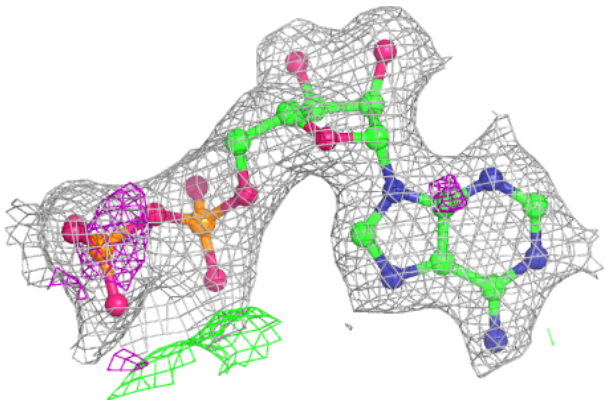


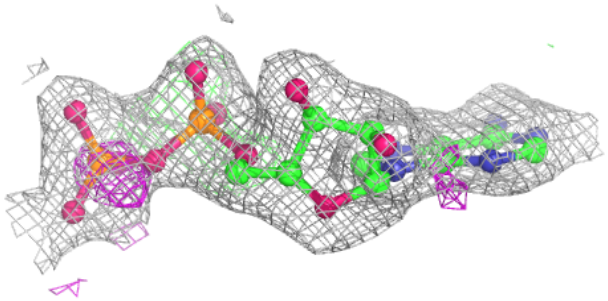


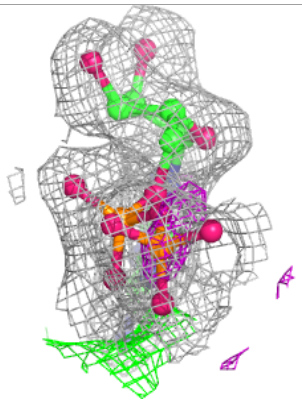


Electron density around ADP A 3001:

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

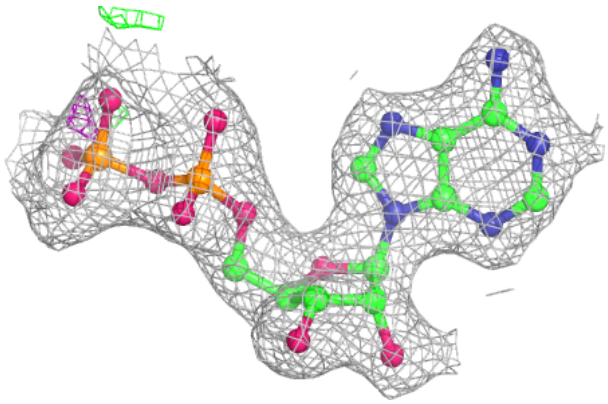


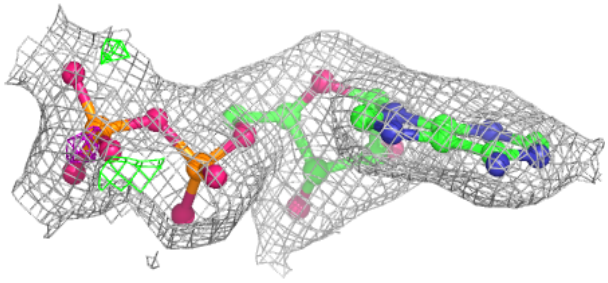


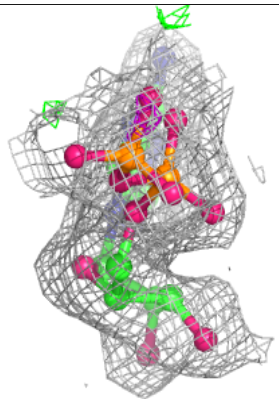


Electron density around ADP D 3004:

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

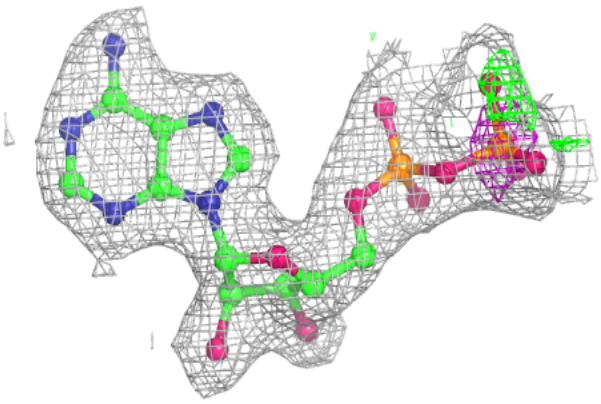


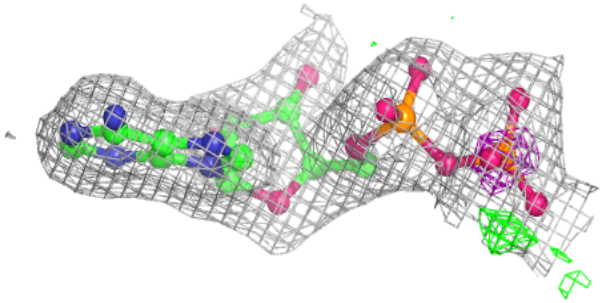


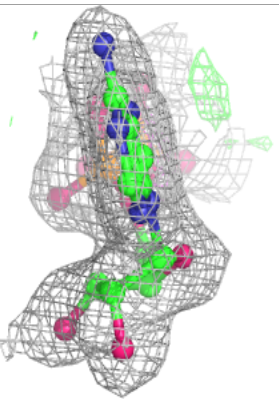


Electron density around ADP E 3005:

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

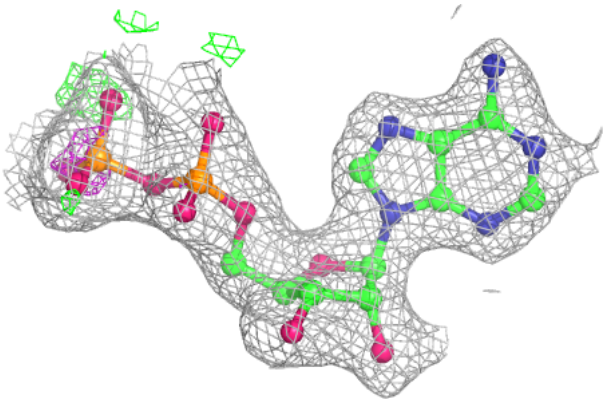


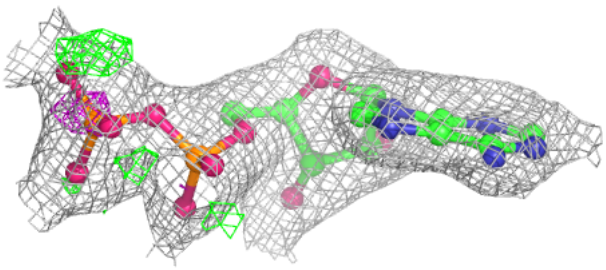


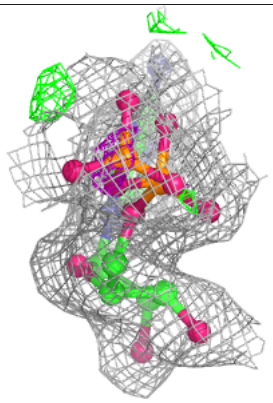


Electron density around ADP J 3010:

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

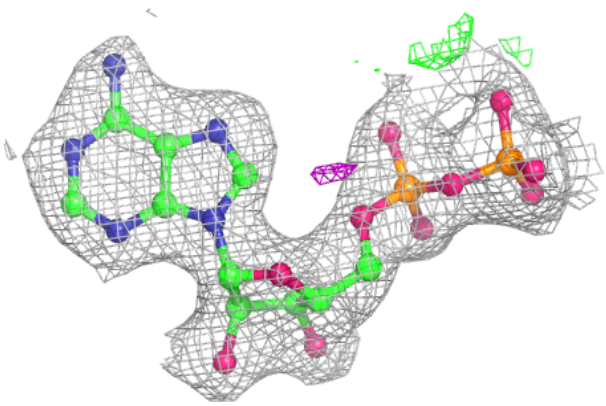


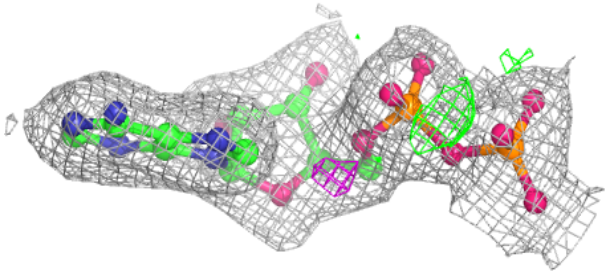


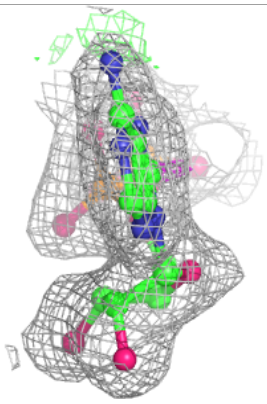


Electron density around ADP F 3006:

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

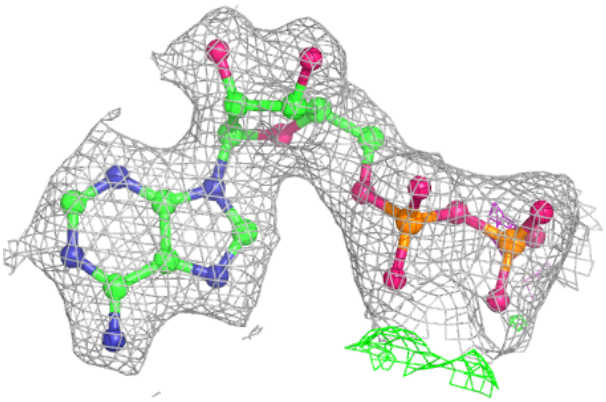


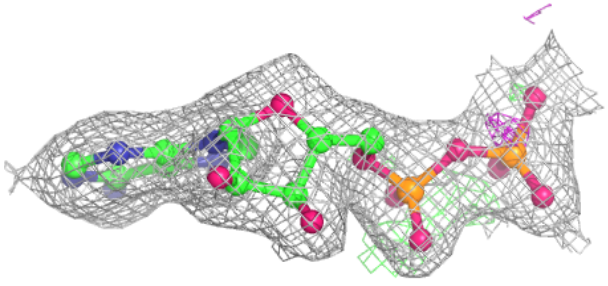


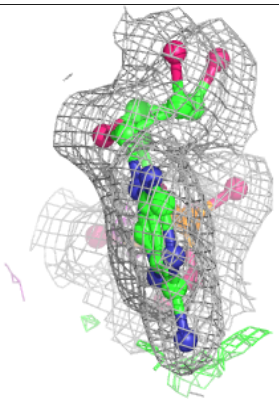


Electron density around ADP G 3007:

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

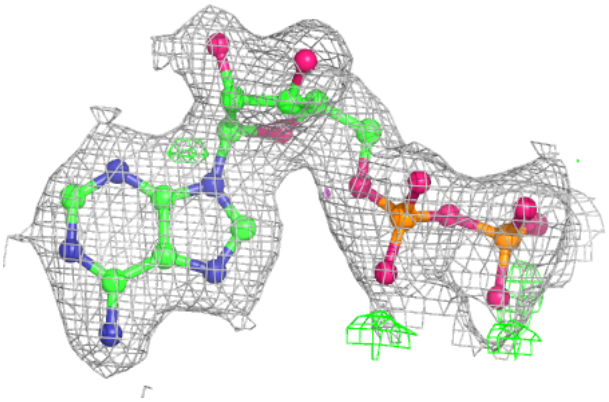


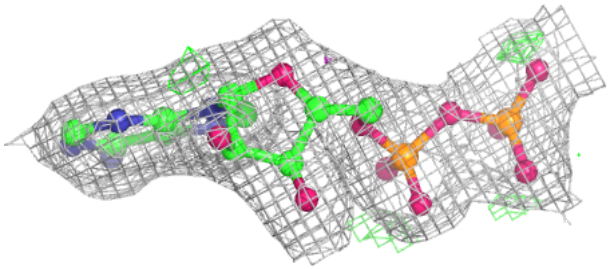


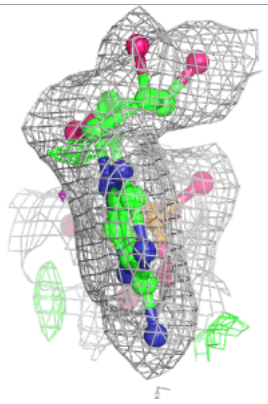


Electron density around ADP K 3011:

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

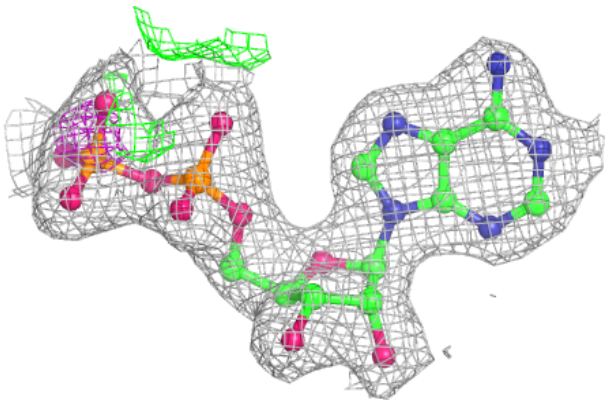


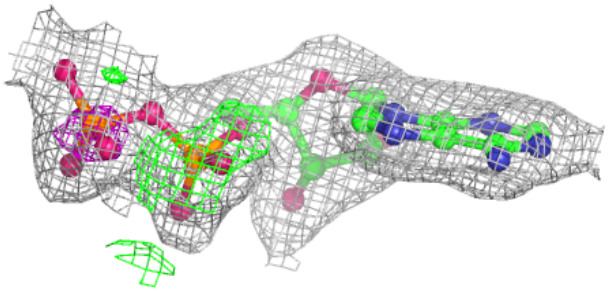


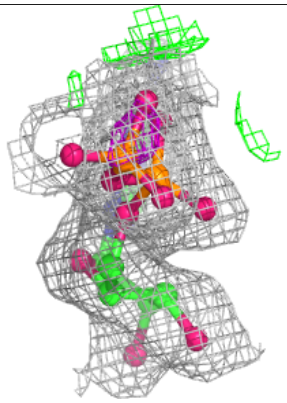


Electron density around ADP H 3008:

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

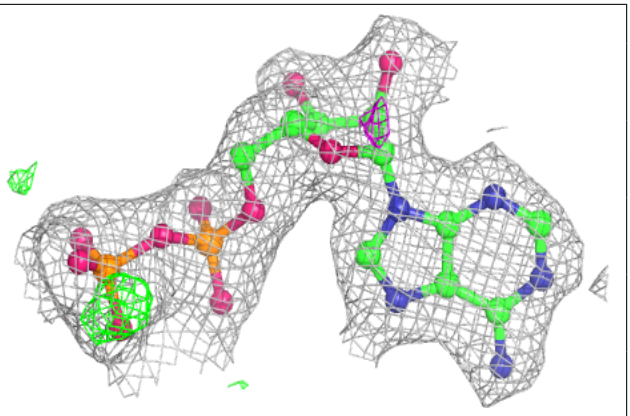


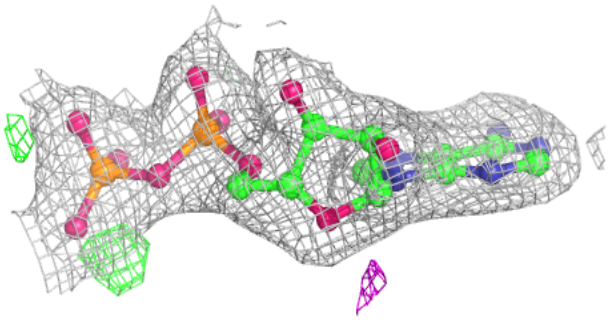


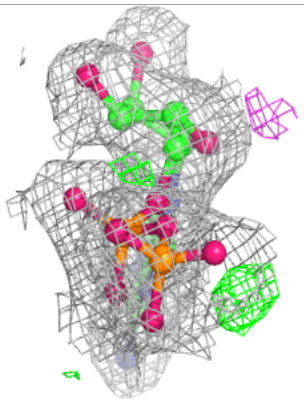


Electron density around ADP I 3009:

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

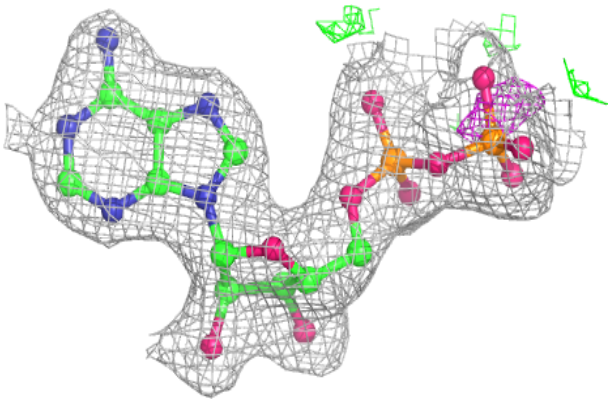


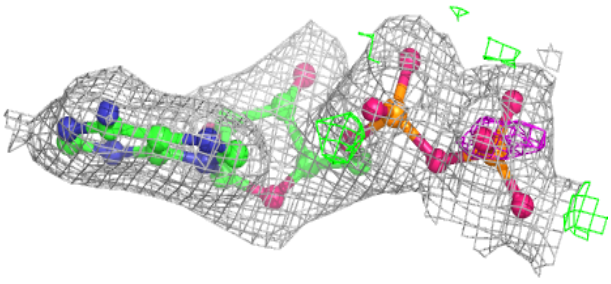


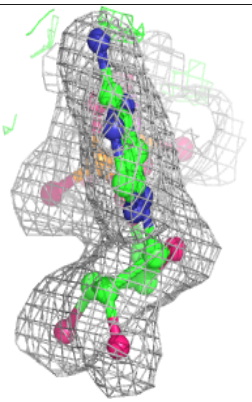


Electron density around ADP B 3002:

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

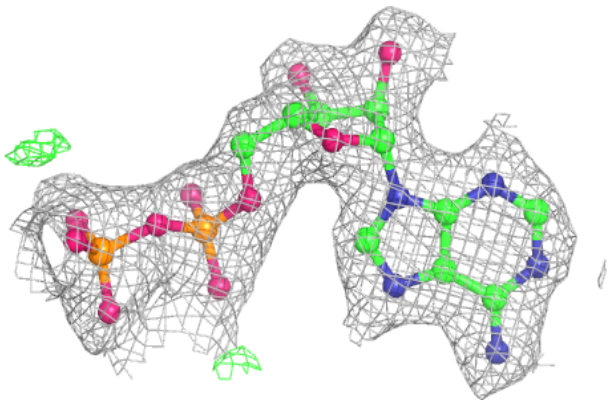


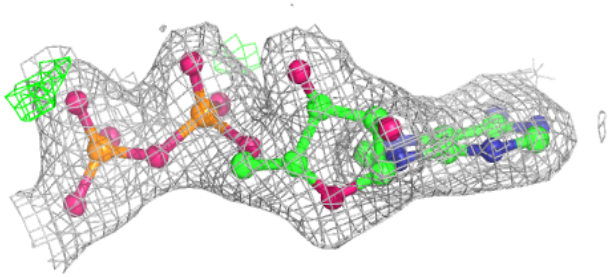


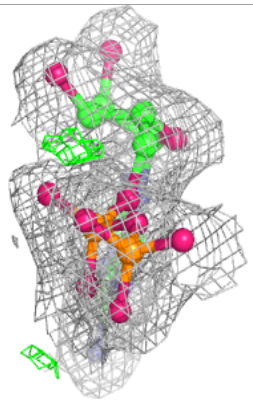


Electron density around ADP C 3003:

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

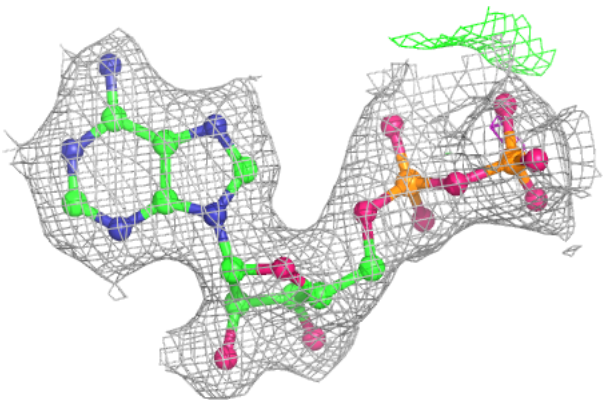


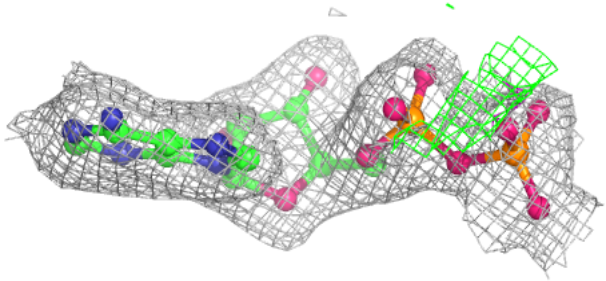


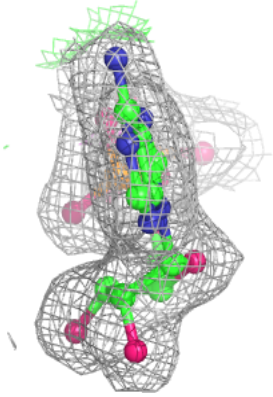


Electron density around ADP L 3012:

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







6.5 Other polymers (i)

There are no such residues in this entry.