Full wwPDB X-ray Structure Validation Report (i)

Aug 3, 2025 – 08:13 AM EDT

PDB ID	:	9O3B / pdb_00009o3b
Title	:	PKM2 bound to MCTI-566
Authors	:	Stuckey, J.A.
Deposited on	:	2025-04-07
Resolution	:	2.42 Å(reported)

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

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

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

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

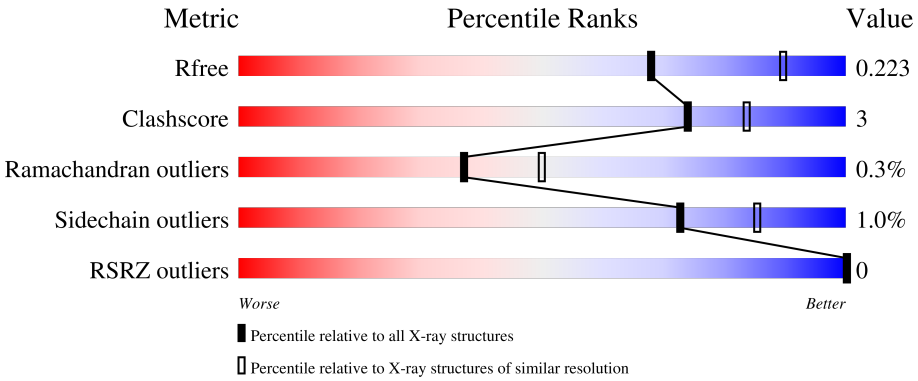
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.42 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	5670 (2.44-2.40)
Clashscore	180529	6299 (2.44-2.40)
Ramachandran outliers	177936	6232 (2.44-2.40)
Sidechain outliers	177891	6233 (2.44-2.40)
RSRZ outliers	164620	5670 (2.44-2.40)

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	550	85% 9% 6%
1	B	550	85% 7% 8%
1	C	550	86% 9% 5%
1	D	550	84% 7% 9%
1	E	550	84% 8% 8%

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Mol	Chain	Length	Quality of chain
1	F	550	84% 10% 5%
1	G	550	84% 7% 9%
1	H	550	83% 12% 5%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
7	PO4	C	605	-	-	X	-
7	PO4	H	605	-	-	X	-

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 32262 atoms, of which 297 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 Pyruvate kinase PKM.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	519	Total	C	N	O	S	0	0	0
			3877	2445	680	727	25			
1	B	505	Total	C	N	O	S	0	1	0
			3738	2349	669	696	24			
1	C	521	Total	C	N	O	S	0	0	0
			3887	2457	680	725	25			
1	D	502	Total	C	N	O	S	0	0	0
			3703	2329	656	694	24			
1	E	504	Total	C	N	O	S	0	1	0
			3744	2351	672	697	24			
1	F	520	Total	C	N	O	S	0	0	0
			3878	2446	681	726	25			
1	G	503	Total	C	N	O	S	0	0	0
			3708	2337	656	691	24			
1	H	521	Total	C	H	N	O	S	121	0	0
			3999	2450	121	680	723	25			

There are 152 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-18	MET	-	initiating methionine	UNP P14618
A	-17	GLY	-	expression tag	UNP P14618
A	-16	SER	-	expression tag	UNP P14618
A	-15	SER	-	expression tag	UNP P14618
A	-14	HIS	-	expression tag	UNP P14618
A	-13	HIS	-	expression tag	UNP P14618
A	-12	HIS	-	expression tag	UNP P14618
A	-11	HIS	-	expression tag	UNP P14618
A	-10	HIS	-	expression tag	UNP P14618
A	-9	HIS	-	expression tag	UNP P14618
A	-8	SER	-	expression tag	UNP P14618
A	-7	SER	-	expression tag	UNP P14618
A	-6	GLY	-	expression tag	UNP P14618

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	LEU	-	expression tag	UNP P14618
A	-4	VAL	-	expression tag	UNP P14618
A	-3	PRO	-	expression tag	UNP P14618
A	-2	ARG	-	expression tag	UNP P14618
A	-1	GLY	-	expression tag	UNP P14618
A	0	SER	-	expression tag	UNP P14618
B	-18	MET	-	initiating methionine	UNP P14618
B	-17	GLY	-	expression tag	UNP P14618
B	-16	SER	-	expression tag	UNP P14618
B	-15	SER	-	expression tag	UNP P14618
B	-14	HIS	-	expression tag	UNP P14618
B	-13	HIS	-	expression tag	UNP P14618
B	-12	HIS	-	expression tag	UNP P14618
B	-11	HIS	-	expression tag	UNP P14618
B	-10	HIS	-	expression tag	UNP P14618
B	-9	HIS	-	expression tag	UNP P14618
B	-8	SER	-	expression tag	UNP P14618
B	-7	SER	-	expression tag	UNP P14618
B	-6	GLY	-	expression tag	UNP P14618
B	-5	LEU	-	expression tag	UNP P14618
B	-4	VAL	-	expression tag	UNP P14618
B	-3	PRO	-	expression tag	UNP P14618
B	-2	ARG	-	expression tag	UNP P14618
B	-1	GLY	-	expression tag	UNP P14618
B	0	SER	-	expression tag	UNP P14618
C	-18	MET	-	initiating methionine	UNP P14618
C	-17	GLY	-	expression tag	UNP P14618
C	-16	SER	-	expression tag	UNP P14618
C	-15	SER	-	expression tag	UNP P14618
C	-14	HIS	-	expression tag	UNP P14618
C	-13	HIS	-	expression tag	UNP P14618
C	-12	HIS	-	expression tag	UNP P14618
C	-11	HIS	-	expression tag	UNP P14618
C	-10	HIS	-	expression tag	UNP P14618
C	-9	HIS	-	expression tag	UNP P14618
C	-8	SER	-	expression tag	UNP P14618
C	-7	SER	-	expression tag	UNP P14618
C	-6	GLY	-	expression tag	UNP P14618
C	-5	LEU	-	expression tag	UNP P14618
C	-4	VAL	-	expression tag	UNP P14618
C	-3	PRO	-	expression tag	UNP P14618
C	-2	ARG	-	expression tag	UNP P14618

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-1	GLY	-	expression tag	UNP P14618
C	0	SER	-	expression tag	UNP P14618
D	-18	MET	-	initiating methionine	UNP P14618
D	-17	GLY	-	expression tag	UNP P14618
D	-16	SER	-	expression tag	UNP P14618
D	-15	SER	-	expression tag	UNP P14618
D	-14	HIS	-	expression tag	UNP P14618
D	-13	HIS	-	expression tag	UNP P14618
D	-12	HIS	-	expression tag	UNP P14618
D	-11	HIS	-	expression tag	UNP P14618
D	-10	HIS	-	expression tag	UNP P14618
D	-9	HIS	-	expression tag	UNP P14618
D	-8	SER	-	expression tag	UNP P14618
D	-7	SER	-	expression tag	UNP P14618
D	-6	GLY	-	expression tag	UNP P14618
D	-5	LEU	-	expression tag	UNP P14618
D	-4	VAL	-	expression tag	UNP P14618
D	-3	PRO	-	expression tag	UNP P14618
D	-2	ARG	-	expression tag	UNP P14618
D	-1	GLY	-	expression tag	UNP P14618
D	0	SER	-	expression tag	UNP P14618
E	-18	MET	-	initiating methionine	UNP P14618
E	-17	GLY	-	expression tag	UNP P14618
E	-16	SER	-	expression tag	UNP P14618
E	-15	SER	-	expression tag	UNP P14618
E	-14	HIS	-	expression tag	UNP P14618
E	-13	HIS	-	expression tag	UNP P14618
E	-12	HIS	-	expression tag	UNP P14618
E	-11	HIS	-	expression tag	UNP P14618
E	-10	HIS	-	expression tag	UNP P14618
E	-9	HIS	-	expression tag	UNP P14618
E	-8	SER	-	expression tag	UNP P14618
E	-7	SER	-	expression tag	UNP P14618
E	-6	GLY	-	expression tag	UNP P14618
E	-5	LEU	-	expression tag	UNP P14618
E	-4	VAL	-	expression tag	UNP P14618
E	-3	PRO	-	expression tag	UNP P14618
E	-2	ARG	-	expression tag	UNP P14618
E	-1	GLY	-	expression tag	UNP P14618
E	0	SER	-	expression tag	UNP P14618
F	-18	MET	-	initiating methionine	UNP P14618
F	-17	GLY	-	expression tag	UNP P14618

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Chain	Residue	Modelled	Actual	Comment	Reference
F	-16	SER	-	expression tag	UNP P14618
F	-15	SER	-	expression tag	UNP P14618
F	-14	HIS	-	expression tag	UNP P14618
F	-13	HIS	-	expression tag	UNP P14618
F	-12	HIS	-	expression tag	UNP P14618
F	-11	HIS	-	expression tag	UNP P14618
F	-10	HIS	-	expression tag	UNP P14618
F	-9	HIS	-	expression tag	UNP P14618
F	-8	SER	-	expression tag	UNP P14618
F	-7	SER	-	expression tag	UNP P14618
F	-6	GLY	-	expression tag	UNP P14618
F	-5	LEU	-	expression tag	UNP P14618
F	-4	VAL	-	expression tag	UNP P14618
F	-3	PRO	-	expression tag	UNP P14618
F	-2	ARG	-	expression tag	UNP P14618
F	-1	GLY	-	expression tag	UNP P14618
F	0	SER	-	expression tag	UNP P14618
G	-18	MET	-	initiating methionine	UNP P14618
G	-17	GLY	-	expression tag	UNP P14618
G	-16	SER	-	expression tag	UNP P14618
G	-15	SER	-	expression tag	UNP P14618
G	-14	HIS	-	expression tag	UNP P14618
G	-13	HIS	-	expression tag	UNP P14618
G	-12	HIS	-	expression tag	UNP P14618
G	-11	HIS	-	expression tag	UNP P14618
G	-10	HIS	-	expression tag	UNP P14618
G	-9	HIS	-	expression tag	UNP P14618
G	-8	SER	-	expression tag	UNP P14618
G	-7	SER	-	expression tag	UNP P14618
G	-6	GLY	-	expression tag	UNP P14618
G	-5	LEU	-	expression tag	UNP P14618
G	-4	VAL	-	expression tag	UNP P14618
G	-3	PRO	-	expression tag	UNP P14618
G	-2	ARG	-	expression tag	UNP P14618
G	-1	GLY	-	expression tag	UNP P14618
G	0	SER	-	expression tag	UNP P14618
H	-18	MET	-	initiating methionine	UNP P14618
H	-17	GLY	-	expression tag	UNP P14618
H	-16	SER	-	expression tag	UNP P14618
H	-15	SER	-	expression tag	UNP P14618
H	-14	HIS	-	expression tag	UNP P14618
H	-13	HIS	-	expression tag	UNP P14618

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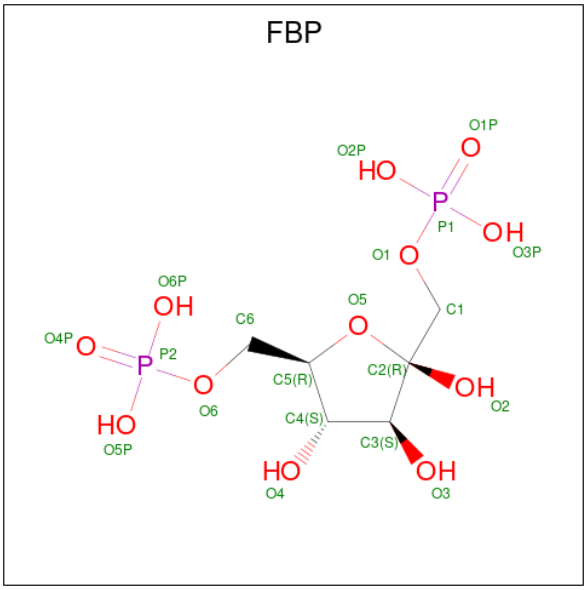
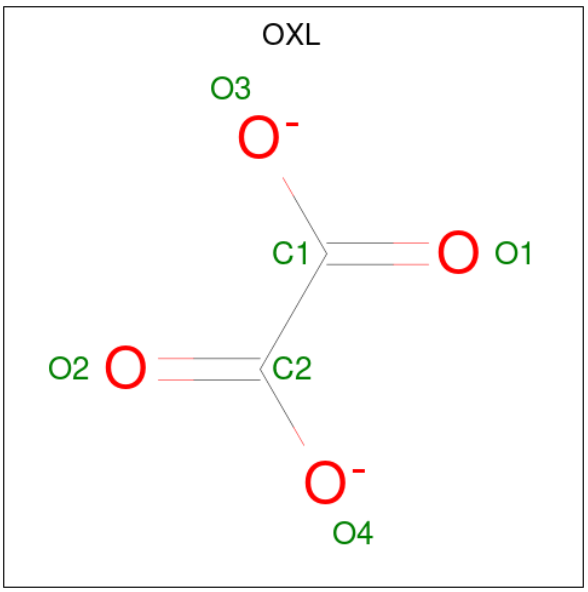
Chain	Residue	Modelled	Actual	Comment	Reference
H	-12	HIS	-	expression tag	UNP P14618
H	-11	HIS	-	expression tag	UNP P14618
H	-10	HIS	-	expression tag	UNP P14618
H	-9	HIS	-	expression tag	UNP P14618
H	-8	SER	-	expression tag	UNP P14618
H	-7	SER	-	expression tag	UNP P14618
H	-6	GLY	-	expression tag	UNP P14618
H	-5	LEU	-	expression tag	UNP P14618
H	-4	VAL	-	expression tag	UNP P14618
H	-3	PRO	-	expression tag	UNP P14618
H	-2	ARG	-	expression tag	UNP P14618
H	-1	GLY	-	expression tag	UNP P14618
H	0	SER	-	expression tag	UNP P14618

- Molecule 2 is 1,6-di-O-phosphono-beta-D-fructofuranose (CCD ID: FBP) (formula: $C_6H_{14}O_{12}P_2$).



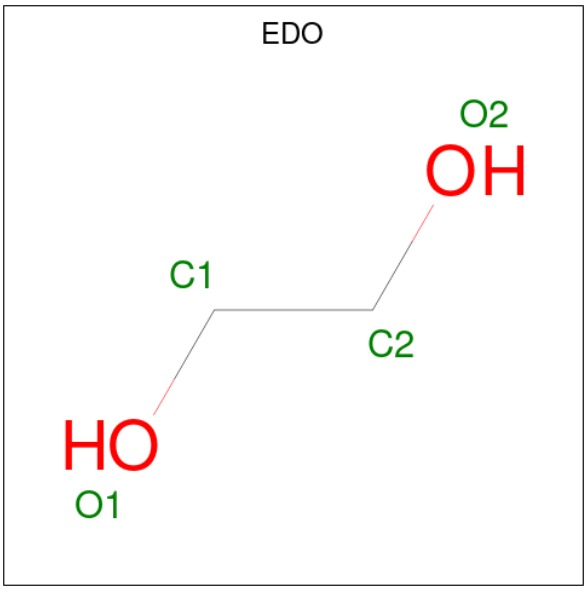
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	O	P	0	0
			20	6	12	2		
2	B	1	Total	C	O	P	0	0
			20	6	12	2		
2	E	1	Total	C	O	P	0	0
			20	6	12	2		
2	F	1	Total	C	O	P	0	0
			20	6	12	2		

- Molecule 3 is OXALATE ION (CCD ID: OXL) (formula: C_2O_4).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 6 2 4	0	0
3	C	1	Total C O 6 2 4	0	0
3	F	1	Total C O 6 2 4	0	0
3	H	1	Total C O 6 2 4	0	0

- Molecule 4 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: $C_2H_6O_2$).

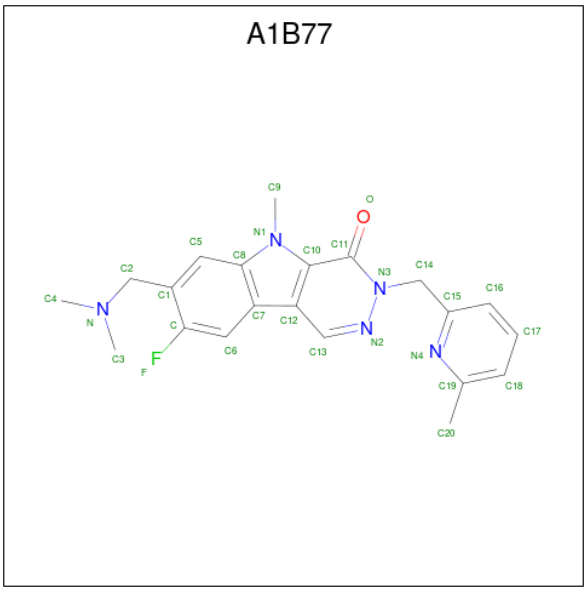


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	G	1	Total C O 4 2 2	0	0
4	H	1	Total C O 4 2 2	0	0

- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

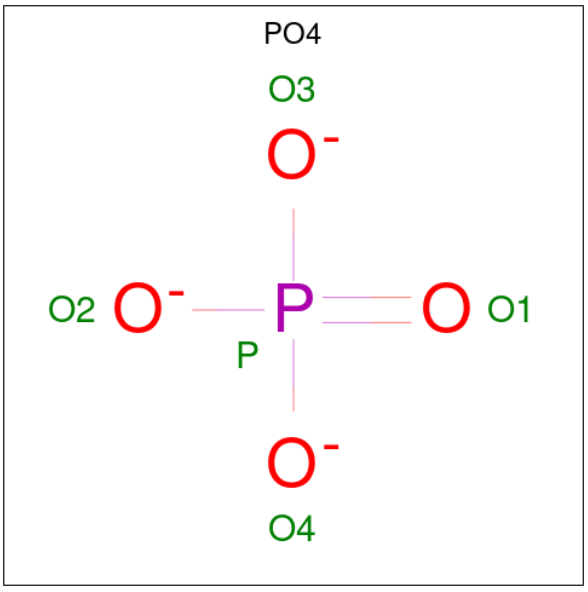
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total Mg 1 1	0	0
5	B	1	Total Mg 1 1	0	0
5	C	1	Total Mg 1 1	0	0
5	D	1	Total Mg 1 1	0	0
5	E	1	Total Mg 1 1	0	0
5	F	1	Total Mg 1 1	0	0
5	G	1	Total Mg 1 1	0	0
5	H	1	Total Mg 1 1	0	0

- Molecule 6 is 7-[(dimethylamino)methyl]-8-fluoro-5-methyl-3-[(6-methylpyridin-2-yl)methyl]-3,5-dihydro-4H-pyridazino[4,5-b]indol-4-one (CCD ID: A1B77) (formula: $C_{21}H_{22}FN_5O$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
6	B	1	Total	C	F	H	N	O	44	1
			100	42	2	44	10	2		
6	C	1	Total	C	F	H	N	O	44	1
			100	42	2	44	10	2		
6	F	1	Total	C	F	H	N	O	44	1
			100	42	2	44	10	2		
6	H	1	Total	C	F	H	N	O	44	1
			100	42	2	44	10	2		

- Molecule 7 is PHOSPHATE ION (CCD ID: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	C	1	Total O P 5 4 1	0	0
7	D	1	Total O P 5 4 1	0	0
7	G	1	Total O P 5 4 1	0	0
7	H	1	Total O P 5 4 1	0	0

- Molecule 8 is water.

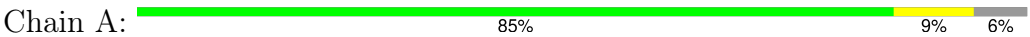
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	167	Total O 167 167	0	0
8	B	182	Total O 182 182	0	0
8	C	117	Total O 117 117	0	0
8	D	127	Total O 127 127	0	0
8	E	168	Total O 168 168	0	0
8	F	165	Total O 165 165	0	0
8	G	128	Total O 128 128	0	0
8	H	118	Total O 118 118	0	0

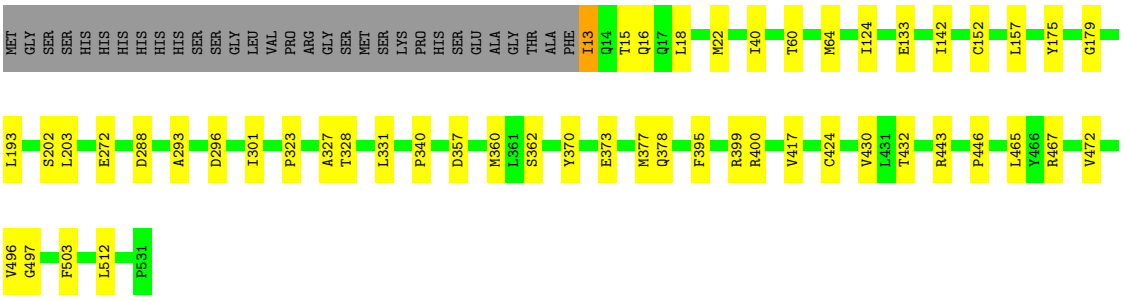
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Pyruvate kinase PKM

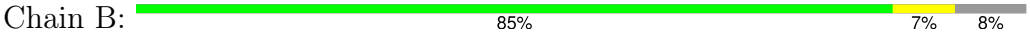
Chain A:

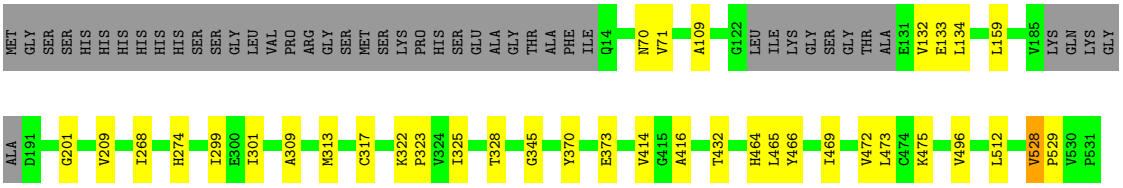




• Molecule 1: Pyruvate kinase PKM

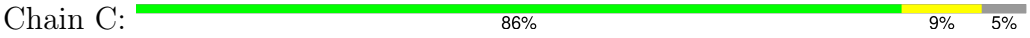
Chain B:





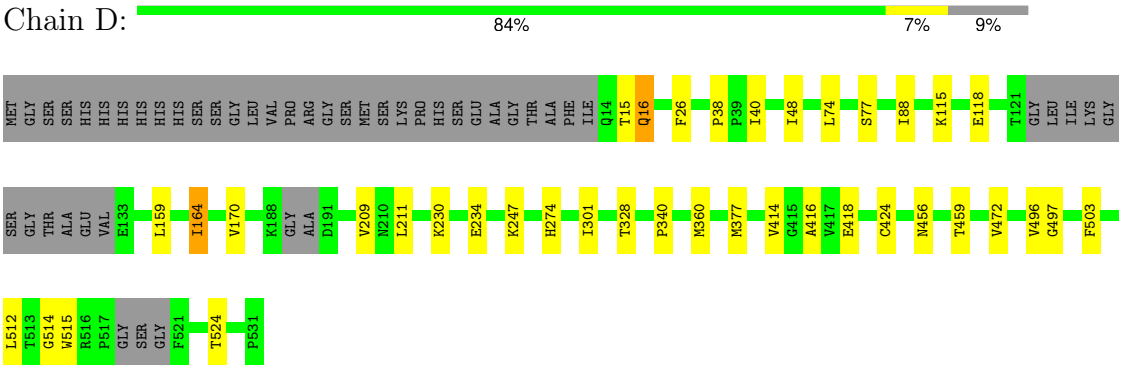
• Molecule 1: Pyruvate kinase PKM

Chain C:



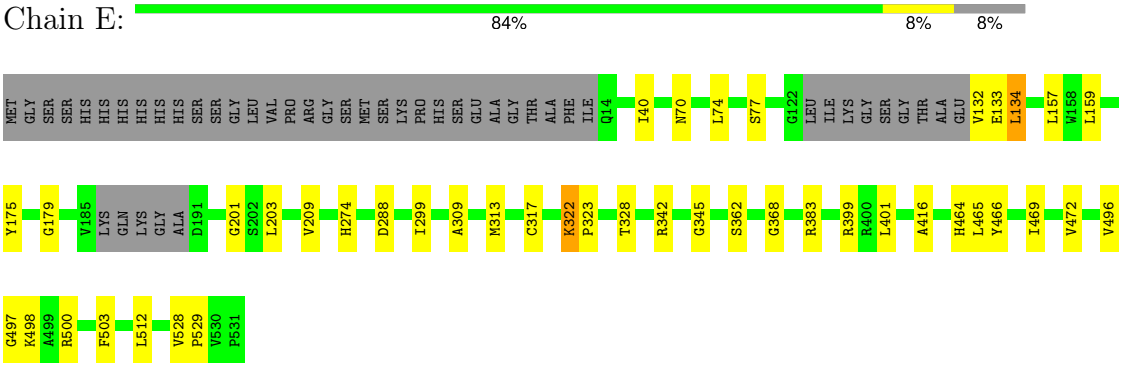
• Molecule 1: Pyruvate kinase PKM

Chain D:



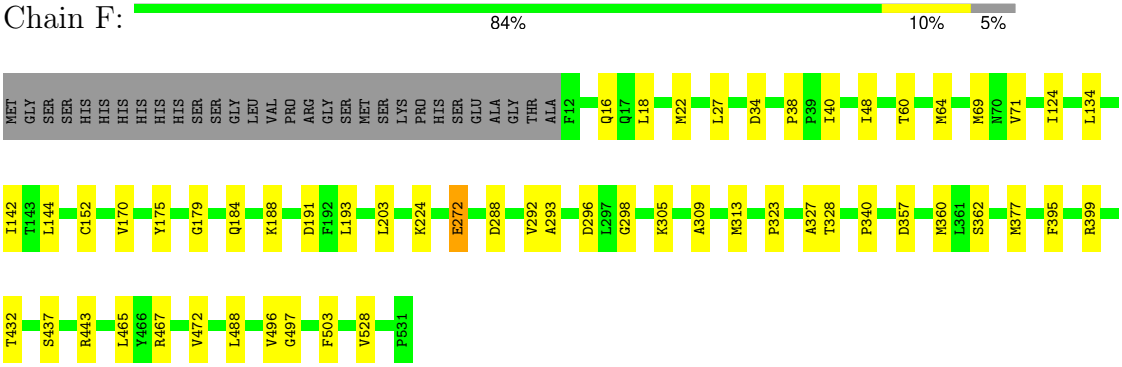
• Molecule 1: Pyruvate kinase PKM

Chain E:



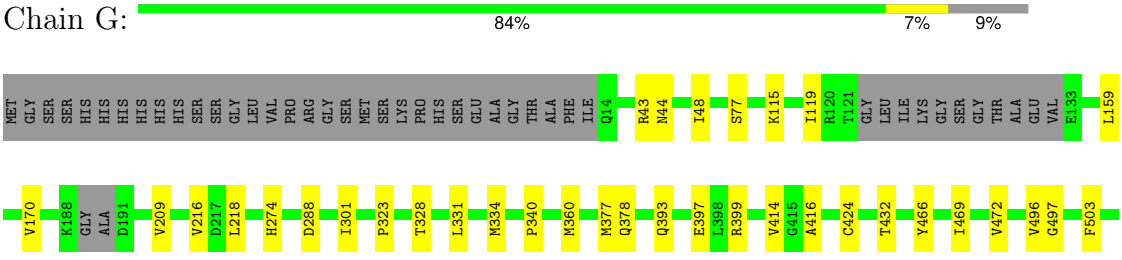
• Molecule 1: Pyruvate kinase PKM

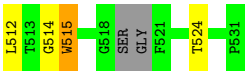
Chain F:



• Molecule 1: Pyruvate kinase PKM

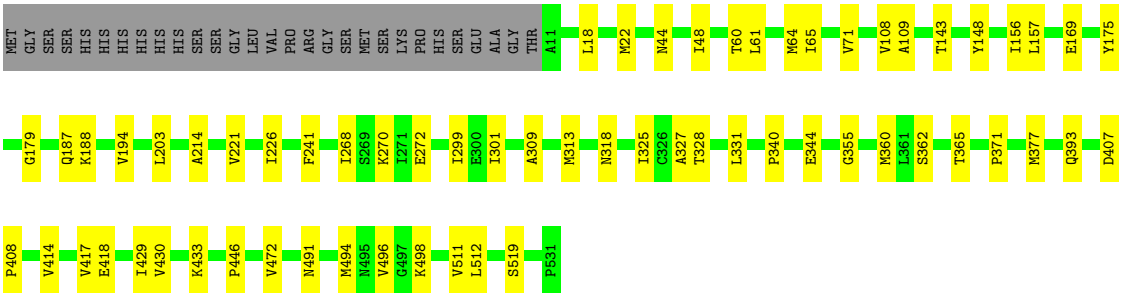
Chain G:





• Molecule 1: Pyruvate kinase PKM

Chain H:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	80.81Å 93.86Å 153.66Å 89.73° 89.68° 75.79°	Depositor
Resolution (Å)	45.49 – 2.42 45.49 – 2.42	Depositor EDS
% Data completeness (in resolution range)	92.9 (45.49-2.42) 91.6 (45.49-2.42)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.32 (at 2.42Å)	Xtriage
Refinement program	BUSTER 2.10.4 (8-JUN-2022)	Depositor
R, R_{free}	0.186 , 0.226 0.180 , 0.223	Depositor DCC
R_{free} test set	7818 reflections (4.66%)	wwPDB-VP
Wilson B-factor (Å^2)	36.0	Xtriage
Anisotropy	0.057	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 35.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.429 for -h,-k,l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	32262	wwPDB-VP
Average B, all atoms (Å^2)	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.13% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: A1B77, MG, FBP, PO4, EDO, OXL

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	0.71	2/3941 (0.1%)	1.03	2/5341 (0.0%)
1	B	0.71	0/3801	1.05	3/5152 (0.1%)
1	C	0.67	0/3952	1.05	8/5356 (0.1%)
1	D	0.67	0/3762	1.02	1/5104 (0.0%)
1	E	0.72	1/3807 (0.0%)	1.06	4/5158 (0.1%)
1	F	0.72	1/3942 (0.0%)	1.03	2/5343 (0.0%)
1	G	0.67	0/3769	1.03	3/5114 (0.1%)
1	H	0.68	1/3942 (0.0%)	1.05	7/5343 (0.1%)
All	All	0.69	5/30916 (0.0%)	1.04	30/41911 (0.1%)

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	362	SER	CA-C	5.56	1.55	1.52
1	F	362	SER	CA-C	5.48	1.55	1.52
1	H	362	SER	CA-C	5.41	1.55	1.52
1	A	301	ILE	CA-C	5.12	1.56	1.52
1	E	362	SER	CA-C	5.11	1.55	1.52

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	43	ARG	CA-C-N	6.88	129.49	120.28
1	C	43	ARG	C-N-CA	6.88	129.49	120.28
1	G	43	ARG	CA-C-N	6.39	129.37	120.29
1	G	43	ARG	C-N-CA	6.39	129.37	120.29
1	E	299	ILE	N-CA-C	-6.36	105.54	111.45
1	C	44	ASN	N-CA-C	6.33	118.18	111.28
1	H	148	TYR	CA-C-N	5.90	128.47	120.38
1	H	148	TYR	C-N-CA	5.90	128.47	120.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	299	ILE	N-CA-C	-5.76	106.09	111.45
1	F	38	PRO	N-CA-C	5.68	116.66	110.58
1	A	424	CYS	CA-C-N	5.64	128.85	120.90
1	A	424	CYS	C-N-CA	5.64	128.85	120.90
1	C	148	TYR	CA-C-N	5.63	128.10	120.38
1	C	148	TYR	C-N-CA	5.63	128.10	120.38
1	E	345	GLY	CA-C-N	5.58	127.75	120.28
1	E	345	GLY	C-N-CA	5.58	127.75	120.28
1	H	327	ALA	CA-C-N	5.55	132.14	121.54
1	H	327	ALA	C-N-CA	5.55	132.14	121.54
1	H	299	ILE	N-CA-C	-5.48	107.09	111.81
1	H	44	ASN	N-CA-C	5.45	117.30	111.36
1	E	368	GLY	N-CA-C	5.38	118.25	112.33
1	G	44	ASN	N-CA-C	5.36	117.20	111.36
1	D	26	PHE	CA-CB-CG	-5.34	108.46	113.80
1	B	345	GLY	CA-C-N	5.31	127.83	120.29
1	B	345	GLY	C-N-CA	5.31	127.83	120.29
1	C	299	ILE	N-CA-C	-5.30	107.25	111.81
1	C	327	ALA	CA-C-N	5.20	131.47	121.54
1	C	327	ALA	C-N-CA	5.20	131.47	121.54
1	F	34	ASP	CA-CB-CG	5.19	117.79	112.60
1	H	214	ALA	N-CA-C	5.19	116.98	110.24

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	3877	0	3853	26	0
1	B	3738	0	3660	17	0
1	C	3887	0	3876	25	0
1	D	3703	0	3599	18	0
1	E	3744	0	3678	22	0
1	F	3878	0	3851	29	0
1	G	3708	0	3599	19	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	H	3878	121	3867	30	0
2	A	20	0	10	1	0
2	B	20	0	10	1	0
2	E	20	0	10	0	0
2	F	20	0	10	2	0
3	A	6	0	0	0	0
3	C	6	0	0	0	0
3	F	6	0	0	0	0
3	H	6	0	0	0	0
4	A	4	0	6	0	0
4	B	4	0	6	0	0
4	C	4	0	6	0	0
4	E	4	0	6	0	0
4	G	4	0	6	0	0
4	H	4	0	6	0	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	D	1	0	0	0	0
5	E	1	0	0	0	0
5	F	1	0	0	0	0
5	G	1	0	0	0	0
5	H	1	0	0	0	0
6	B	56	44	0	0	0
6	C	56	44	0	0	0
6	F	56	44	0	0	0
6	H	56	44	0	1	0
7	C	5	0	0	3	0
7	D	5	0	0	0	0
7	G	5	0	0	1	0
7	H	5	0	0	2	0
8	A	167	0	0	0	0
8	B	182	0	0	0	0
8	C	117	0	0	0	0
8	D	127	0	0	0	0
8	E	168	0	0	2	0
8	F	165	0	0	1	0
8	G	128	0	0	0	0
8	H	118	0	0	0	0
All	All	31965	297	30059	180	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (180) 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:D:472:VAL:HG11	1:D:496:VAL:HG11	1.72	0.71
1:G:514:GLY:O	1:G:515:TRP:HB3	1.90	0.71
1:H:187:GLN:HB2	1:H:194:VAL:HB	1.73	0.70
1:C:71:VAL:HG22	1:C:109:ALA:HB3	1.73	0.70
1:B:466:TYR:HB2	1:B:469:ILE:HD12	1.74	0.68
1:E:472:VAL:HG11	1:E:496:VAL:HG11	1.75	0.68
1:B:472:VAL:HG11	1:B:496:VAL:HG11	1.75	0.67
1:C:60:THR:O	1:C:64:MET:HG2	1.94	0.67
1:E:309:ALA:O	1:E:313:MET:HG3	1.97	0.64
1:F:175:TYR:HB3	1:F:179:GLY:HA2	1.79	0.64
1:D:514:GLY:O	1:D:515:TRP:HB3	1.96	0.63
1:G:515:TRP:HB2	1:G:524:THR:OG1	1.99	0.62
1:D:48:ILE:HB	1:D:360:MET:HG3	1.80	0.62
1:G:472:VAL:HG11	1:G:496:VAL:HG11	1.80	0.62
1:F:432:THR:HA	2:F:602:FBP:H61	1.81	0.61
1:D:515:TRP:HB2	1:D:524:THR:OG1	1.99	0.61
1:A:175:TYR:HB3	1:A:179:GLY:HA2	1.83	0.60
1:E:159:LEU:HD22	1:E:209:VAL:HG21	1.82	0.60
1:A:432:THR:HA	2:A:601:FBP:H61	1.84	0.60
1:H:472:VAL:HG11	1:H:496:VAL:HG11	1.84	0.59
1:H:175:TYR:HB3	1:H:179:GLY:HA2	1.85	0.59
1:A:142:ILE:HB	1:A:193:LEU:HB2	1.85	0.59
1:C:175:TYR:HB3	1:C:179:GLY:HA2	1.84	0.59
1:B:159:LEU:HD22	1:B:209:VAL:HG21	1.85	0.58
1:C:472:VAL:HG11	1:C:496:VAL:HG11	1.85	0.58
1:H:169:GLU:HA	1:H:188:LYS:HE2	1.85	0.58
1:F:472:VAL:HG11	1:F:496:VAL:HG11	1.85	0.58
1:H:519:SER:HB2	7:H:605:PO4:O1	2.03	0.58
1:H:71:VAL:HG22	1:H:109:ALA:HB3	1.84	0.57
1:D:274:HIS:CE1	1:D:301:ILE:HG22	2.40	0.57
1:C:123:LEU:HA	1:C:205:SER:HB3	1.86	0.57
1:A:472:VAL:HG11	1:A:496:VAL:HG11	1.85	0.57
1:H:519:SER:HB2	7:H:605:PO4:P	2.45	0.56
1:E:133:GLU:O	1:E:201:GLY:O	2.24	0.56
1:G:159:LEU:HD22	1:G:209:VAL:HG21	1.87	0.56
1:H:157:LEU:HD13	1:H:203:LEU:HD21	1.87	0.56
1:B:309:ALA:O	1:B:313:MET:HG3	2.06	0.55
1:D:16:GLN:HG3	1:D:40:ILE:HG23	1.88	0.55
1:E:323:PRO:HB3	1:E:465:LEU:O	2.06	0.55
1:F:305:LYS:NZ	8:F:702:HOH:O	2.39	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:274:HIS:HE1	8:E:850:HOH:O	1.90	0.54
1:C:18:LEU:O	1:C:22:MET:HG2	2.06	0.54
1:C:433:LYS:HB2	1:C:519:SER:HB3	1.89	0.53
1:F:60:THR:O	1:F:64:MET:HG2	2.09	0.53
1:B:133:GLU:O	1:B:201:GLY:O	2.26	0.53
1:F:134:LEU:HD11	1:F:203:LEU:HD22	1.91	0.52
1:H:61:LEU:HA	1:H:64:MET:HG3	1.92	0.52
1:B:71:VAL:HG22	1:B:109:ALA:HB3	1.91	0.52
1:B:416:ALA:HB2	1:B:512:LEU:HD21	1.91	0.52
1:A:13:ILE:HG23	1:A:15:THR:H	1.75	0.52
1:A:157:LEU:HD13	1:A:203:LEU:HD21	1.92	0.52
1:D:416:ALA:HB2	1:D:512:LEU:HD21	1.92	0.51
1:C:48:ILE:HG12	1:C:71:VAL:HB	1.92	0.51
1:F:16:GLN:HG2	1:F:40:ILE:HG23	1.92	0.51
1:G:77:SER:HA	1:G:115:LYS:HG3	1.92	0.51
1:H:331:LEU:HD23	1:H:344:GLU:HB3	1.93	0.51
1:C:519:SER:HB2	7:C:605:PO4:P	2.52	0.50
1:E:528:VAL:HG22	1:E:529:PRO:HD2	1.93	0.50
1:A:340:PRO:HG3	1:A:377:MET:HG2	1.93	0.50
1:H:18:LEU:O	1:H:22:MET:HG2	2.11	0.50
1:B:274:HIS:CD2	1:B:301:ILE:HG22	2.47	0.50
1:G:466:TYR:HB2	1:G:469:ILE:HD12	1.94	0.50
1:H:309:ALA:O	1:H:313:MET:HG3	2.12	0.49
1:H:365:THR:HA	1:H:371:PRO:HB3	1.94	0.49
1:C:92:ARG:NH2	1:C:235:GLN:O	2.45	0.49
1:E:466:TYR:HB2	1:E:469:ILE:HD12	1.94	0.49
1:D:340:PRO:HG3	1:D:377:MET:HG2	1.94	0.49
1:H:393:GLN:HB3	6:H:602[B]:A1B77:F	2.03	0.49
1:H:221:VAL:HG12	1:H:226:ILE:HG13	1.94	0.49
1:H:430:VAL:HG22	1:H:512:LEU:HD12	1.95	0.49
1:A:497:GLY:HA3	1:A:503:PHE:CZ	2.48	0.48
1:A:288:ASP:O	1:A:323:PRO:HD2	2.13	0.48
1:A:18:LEU:O	1:A:22:MET:HG2	2.14	0.48
1:C:143:THR:HB	1:C:156:ILE:HD11	1.96	0.48
1:F:327:ALA:HB1	1:F:360:MET:HE2	1.96	0.48
1:G:416:ALA:HB2	1:G:512:LEU:HD21	1.95	0.48
1:D:456:ASN:HB3	1:D:459:THR:HB	1.95	0.48
1:B:323:PRO:HB3	1:B:465:LEU:O	2.13	0.48
1:D:15:THR:HG22	1:D:38:PRO:HG2	1.96	0.48
1:A:272:GLU:HG2	1:A:293:ALA:HB3	1.96	0.48
1:C:340:PRO:HG3	1:C:377:MET:HG2	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:432:THR:OG1	7:G:603:PO4:O1	2.28	0.47
1:G:48:ILE:HB	1:G:360:MET:HG3	1.95	0.47
1:A:60:THR:O	1:A:64:MET:HG2	2.14	0.47
1:B:370:TYR:HB3	1:B:373:GLU:HB2	1.96	0.47
1:C:88:ILE:CG2	1:C:92:ARG:HE	2.27	0.47
1:H:494:MET:O	1:H:498:LYS:HB2	2.13	0.47
1:F:18:LEU:O	1:F:22:MET:HG2	2.15	0.47
1:H:48:ILE:HG12	1:H:71:VAL:HB	1.96	0.47
1:C:65:ILE:HG12	1:C:108:VAL:HG21	1.96	0.47
1:G:274:HIS:CE1	1:G:301:ILE:HG22	2.50	0.47
1:H:340:PRO:HG3	1:H:377:MET:HG2	1.97	0.47
1:A:13:ILE:HG22	1:A:18:LEU:HD12	1.96	0.46
1:F:124:ILE:HD13	1:F:152:CYS:HB2	1.97	0.46
1:A:323:PRO:HB3	1:A:465:LEU:O	2.16	0.46
1:F:323:PRO:HB3	1:F:465:LEU:O	2.15	0.46
1:C:519:SER:HB2	7:C:605:PO4:O3	2.15	0.46
1:F:142:ILE:HB	1:F:193:LEU:HB2	1.96	0.46
1:E:342:ARG:HE	1:F:298:GLY:HA3	1.80	0.46
1:G:288:ASP:O	1:G:323:PRO:HD2	2.16	0.46
1:F:437:SER:OG	2:F:602:FBP:O4P	2.31	0.46
1:B:473:LEU:HG	1:B:475:LYS:HD3	1.98	0.46
1:H:48:ILE:HB	1:H:360:MET:HG3	1.98	0.46
1:B:268:ILE:HG21	1:B:325:ILE:HD12	1.97	0.46
1:A:395:PHE:CE2	1:A:399:ARG:HD2	2.51	0.46
1:E:401:LEU:HD12	1:F:27:LEU:HD23	1.97	0.46
1:F:272:GLU:HB3	1:F:296:ASP:HB2	1.98	0.45
1:F:497:GLY:HA3	1:F:503:PHE:CZ	2.51	0.45
1:C:61:LEU:HA	1:C:64:MET:HG3	1.99	0.45
1:H:60:THR:O	1:H:64:MET:HG2	2.17	0.45
1:E:416:ALA:HB2	1:E:512:LEU:HD21	1.98	0.45
1:A:400:ARG:NE	1:C:392:LEU:HD11	2.32	0.45
1:E:175:TYR:HB3	1:E:179:GLY:HA2	1.98	0.45
1:A:327:ALA:HB1	1:A:360:MET:HE2	1.99	0.45
1:C:357:ASP:HA	1:C:467:ARG:HB2	1.99	0.45
1:E:132:VAL:HG23	1:E:203:LEU:HB3	1.97	0.45
1:D:77:SER:HA	1:D:115:LYS:HG3	1.98	0.45
1:F:170:VAL:HG23	1:F:188:LYS:HE2	1.99	0.45
1:C:331:LEU:HD23	1:C:344:GLU:HB3	1.99	0.44
1:B:317:CYS:HB3	1:B:322:LYS:O	2.17	0.44
1:C:241:PHE:HB3	1:C:270:LYS:HD2	1.99	0.44
1:D:230:LYS:O	1:D:234:GLU:HG3	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:48:ILE:HG12	1:F:71:VAL:HB	1.99	0.44
1:F:340:PRO:HG3	1:F:377:MET:HG2	1.98	0.44
1:D:159:LEU:HD22	1:D:209:VAL:HG21	1.99	0.44
1:F:144:LEU:HD12	1:F:191:ASP:HA	2.00	0.44
1:A:417:VAL:HG13	1:A:446:PRO:HB3	1.99	0.44
1:C:271:ILE:HD11	1:C:283:ILE:HG21	1.99	0.44
1:F:292:VAL:HG13	1:F:313:MET:HE3	2.00	0.44
1:G:340:PRO:HG3	1:G:377:MET:HG2	1.98	0.44
1:E:157:LEU:HD13	1:E:203:LEU:HD21	2.00	0.43
1:H:241:PHE:HB3	1:H:270:LYS:HD2	2.00	0.43
1:F:272:GLU:HG2	1:F:293:ALA:HB3	1.99	0.43
1:D:115:LYS:NZ	1:D:118:GLU:CD	2.77	0.43
1:A:370:TYR:HB3	1:A:373:GLU:HB2	1.99	0.43
1:G:331:LEU:HD11	1:G:378:GLN:HG3	2.00	0.43
1:H:143:THR:HB	1:H:156:ILE:HD11	2.00	0.43
1:E:288:ASP:O	1:E:323:PRO:HD2	2.17	0.43
1:E:399:ARG:NH2	1:G:399:ARG:CD	2.82	0.43
1:G:393:GLN:O	1:G:397:GLU:HG3	2.18	0.43
1:E:134:LEU:HD11	1:E:203:LEU:HD22	2.01	0.43
1:A:16:GLN:HG2	1:A:40:ILE:HG23	2.01	0.43
1:H:407:ASP:HA	1:H:408:PRO:HD2	1.96	0.43
1:F:357:ASP:HA	1:F:467:ARG:HB2	2.01	0.43
1:G:334:MET:HE2	1:G:334:MET:HB3	1.92	0.43
1:B:432:THR:OG1	2:B:602:FBP:O4P	2.29	0.43
1:B:528:VAL:HG22	1:B:529:PRO:HD2	2.01	0.42
1:E:497:GLY:HA3	1:E:503:PHE:CZ	2.54	0.42
1:D:74:LEU:HD11	1:D:88:ILE:HG13	2.01	0.42
1:D:497:GLY:HA3	1:D:503:PHE:CZ	2.54	0.42
1:B:414:VAL:HG13	1:D:418:GLU:HG3	2.00	0.42
1:H:318:ASN:HD21	1:H:355:GLY:HA3	1.85	0.42
1:A:272:GLU:HB3	1:A:296:ASP:HB2	2.01	0.42
1:E:40:ILE:O	1:E:383:ARG:HD2	2.19	0.42
1:F:309:ALA:O	1:F:313:MET:HG3	2.19	0.42
1:F:395:PHE:CE2	1:F:399:ARG:HD2	2.55	0.42
1:F:399:ARG:HE	1:H:418:GLU:CD	2.27	0.41
1:A:430:VAL:HG22	1:A:512:LEU:HB2	2.01	0.41
1:A:124:ILE:HD13	1:A:152:CYS:HB2	2.01	0.41
1:B:70:ASN:HB3	1:B:464:HIS:CG	2.56	0.41
1:C:497:GLY:HA3	1:C:503:PHE:CZ	2.55	0.41
1:H:65:ILE:HG12	1:H:108:VAL:HG21	2.01	0.41
1:C:466:TYR:HB2	1:C:469:ILE:HD12	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:429:ILE:HB	1:H:511:VAL:HG22	2.01	0.41
1:E:70:ASN:HB3	1:E:464:HIS:CG	2.56	0.41
1:D:164:ILE:HD12	1:D:211:LEU:HD11	2.03	0.41
1:H:268:ILE:HG21	1:H:325:ILE:HD12	2.03	0.41
1:A:331:LEU:HD11	1:A:378:GLN:HG3	2.03	0.41
1:F:64:MET:HB2	1:F:69:MET:HE2	2.02	0.41
1:C:168:VAL:O	1:C:188:LYS:HE2	2.21	0.40
1:G:119:ILE:HB	1:G:209:VAL:HB	2.03	0.40
1:A:357:ASP:HA	1:A:467:ARG:HB2	2.03	0.40
1:E:274:HIS:HD2	8:E:789:HOH:O	2.05	0.40
1:F:288:ASP:O	1:F:323:PRO:HD2	2.21	0.40
1:H:417:VAL:HG13	1:H:446:PRO:HB3	2.03	0.40
1:E:317:CYS:HB3	1:E:322:LYS:O	2.20	0.40
1:A:133:GLU:HA	1:A:202:SER:HA	2.03	0.40
1:C:519:SER:HB2	7:C:605:PO4:O1	2.21	0.40
1:G:216:VAL:HG11	1:G:218:LEU:HD12	2.04	0.40
1:G:497:GLY:HA3	1:G:503:PHE:CZ	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	517/550 (94%)	506 (98%)	10 (2%)	1 (0%)	44	58
1	B	500/550 (91%)	487 (97%)	10 (2%)	3 (1%)	22	31
1	C	519/550 (94%)	508 (98%)	10 (2%)	1 (0%)	44	58
1	D	494/550 (90%)	478 (97%)	15 (3%)	1 (0%)	44	58
1	E	499/550 (91%)	489 (98%)	8 (2%)	2 (0%)	30	42
1	F	518/550 (94%)	501 (97%)	16 (3%)	1 (0%)	44	58
1	G	495/550 (90%)	480 (97%)	13 (3%)	2 (0%)	30	42

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	H	519/550 (94%)	504 (97%)	14 (3%)	1 (0%)	44 58
All	All	4061/4400 (92%)	3953 (97%)	96 (2%)	12 (0%)	37 50

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	G	515	TRP
1	B	134	LEU
1	E	134	LEU
1	B	328	THR
1	D	328	THR
1	E	328	THR
1	F	328	THR
1	H	328	THR
1	A	328	THR
1	C	328	THR
1	G	328	THR
1	B	132	VAL

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	397/452 (88%)	395 (100%)	2 (0%)	86 94
1	B	373/452 (82%)	372 (100%)	1 (0%)	91 96
1	C	398/452 (88%)	394 (99%)	4 (1%)	73 85
1	D	368/452 (81%)	362 (98%)	6 (2%)	58 75
1	E	376/452 (83%)	371 (99%)	5 (1%)	65 80
1	F	396/452 (88%)	390 (98%)	6 (2%)	60 77
1	G	367/452 (81%)	364 (99%)	3 (1%)	79 89
1	H	396/452 (88%)	391 (99%)	5 (1%)	65 80
All	All	3071/3616 (85%)	3039 (99%)	32 (1%)	73 85

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	13	ILE
1	A	443	ARG
1	B	528	VAL
1	C	59	GLU
1	C	163	ASN
1	C	414	VAL
1	C	491	ASN
1	D	16	GLN
1	D	164	ILE
1	D	170	VAL
1	D	247	LYS
1	D	414	VAL
1	D	424	CYS
1	E	74	LEU
1	E	77	SER
1	E	322	LYS
1	E	498	LYS
1	E	500	ARG
1	F	184	GLN
1	F	224	LYS
1	F	272	GLU
1	F	443	ARG
1	F	488	LEU
1	F	528	VAL
1	G	170	VAL
1	G	414	VAL
1	G	424	CYS
1	H	272	GLU
1	H	301	ILE
1	H	414	VAL
1	H	433	LYS
1	H	491	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (30) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	440	GLN
1	A	458	GLN
1	A	491	ASN
1	B	44	ASN
1	B	210	ASN

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Mol	Chain	Res	Type
1	B	252	HIS
1	B	491	ASN
1	C	78	HIS
1	C	146	ASN
1	C	391	HIS
1	C	458	GLN
1	D	14	GLN
1	D	19	HIS
1	D	78	HIS
1	D	210	ASN
1	E	210	ASN
1	E	235	GLN
1	E	274	HIS
1	F	44	ASN
1	F	252	HIS
1	F	458	GLN
1	F	491	ASN
1	G	75	ASN
1	G	252	HIS
1	H	44	ASN
1	H	146	ASN
1	H	235	GLN
1	H	318	ASN
1	H	440	GLN
1	H	458	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 34 ligands modelled in this entry, 8 are monoatomic - leaving 26 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	$\#\|Z\| > 2$
6	A1B77	H	602[B]	-	27,31,31	0.68	0	33,46,46	0.74	1 (3%)
7	PO4	C	605	-	4,4,4	0.10	0	6,6,6	0.31	0
7	PO4	D	602	-	4,4,4	0.18	0	6,6,6	0.23	0
6	A1B77	C	602[A]	-	27,31,31	0.67	0	33,46,46	0.75	1 (3%)
7	PO4	H	605	-	4,4,4	0.47	0	6,6,6	0.35	0
2	FBP	B	602	-	18,20,20	0.60	0	21,32,32	1.07	0
2	FBP	A	601	-	18,20,20	0.80	1 (5%)	21,32,32	1.14	1 (4%)
3	OXL	A	602	5	5,5,5	1.70	2 (40%)	6,6,6	1.70	1 (16%)
6	A1B77	C	602[B]	-	27,31,31	0.70	0	33,46,46	0.77	1 (3%)
7	PO4	G	603	-	4,4,4	0.09	0	6,6,6	0.33	0
4	EDO	E	602	-	3,3,3	0.07	0	2,2,2	0.53	0
6	A1B77	B	601[A]	-	27,31,31	0.68	0	33,46,46	0.76	1 (3%)
4	EDO	C	603	-	3,3,3	0.23	0	2,2,2	0.30	0
4	EDO	B	603	-	3,3,3	0.16	0	2,2,2	0.35	0
6	A1B77	F	601[A]	-	27,31,31	0.69	0	33,46,46	0.74	1 (3%)
6	A1B77	B	601[B]	-	27,31,31	0.70	0	33,46,46	0.75	1 (3%)
4	EDO	H	603	-	3,3,3	0.37	0	2,2,2	0.18	0
2	FBP	F	602	-	18,20,20	0.78	1 (5%)	21,32,32	1.12	0
4	EDO	G	601	-	3,3,3	0.12	0	2,2,2	0.38	0
3	OXL	C	601	5	5,5,5	1.72	2 (40%)	6,6,6	1.68	2 (33%)
6	A1B77	H	602[A]	-	27,31,31	0.71	0	33,46,46	0.75	1 (3%)
4	EDO	A	603	-	3,3,3	0.23	0	2,2,2	0.36	0
6	A1B77	F	601[B]	-	27,31,31	0.68	0	33,46,46	0.74	1 (3%)
2	FBP	E	601	-	18,20,20	0.66	0	21,32,32	1.11	1 (4%)
3	OXL	F	603	5	5,5,5	1.76	2 (40%)	6,6,6	1.69	2 (33%)
3	OXL	H	601	5	5,5,5	1.71	2 (40%)	6,6,6	1.69	2 (33%)

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
6	A1B77	H	602[B]	-	-	3/8/8/8	0/4/4/4
6	A1B77	C	602[A]	-	-	2/8/8/8	0/4/4/4
2	FBP	B	602	-	-	3/13/32/32	0/1/1/1
2	FBP	A	601	-	-	6/13/32/32	0/1/1/1
3	OXL	A	602	5	-	0/4/4/4	-
6	A1B77	C	602[B]	-	-	1/8/8/8	0/4/4/4
4	EDO	E	602	-	-	0/1/1/1	-
6	A1B77	B	601[A]	-	-	1/8/8/8	0/4/4/4
4	EDO	C	603	-	-	0/1/1/1	-
4	EDO	B	603	-	-	0/1/1/1	-
6	A1B77	F	601[A]	-	-	1/8/8/8	0/4/4/4
6	A1B77	B	601[B]	-	-	1/8/8/8	0/4/4/4
4	EDO	H	603	-	-	1/1/1/1	-
2	FBP	F	602	-	-	7/13/32/32	0/1/1/1
4	EDO	G	601	-	-	0/1/1/1	-
3	OXL	C	601	5	-	0/4/4/4	-
6	A1B77	H	602[A]	-	-	1/8/8/8	0/4/4/4
4	EDO	A	603	-	-	0/1/1/1	-
6	A1B77	F	601[B]	-	-	0/8/8/8	0/4/4/4
2	FBP	E	601	-	-	2/13/32/32	0/1/1/1
3	OXL	F	603	5	-	0/4/4/4	-
3	OXL	H	601	5	-	0/4/4/4	-

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	603	OXL	O3-C1	-2.92	1.22	1.30
3	A	602	OXL	O3-C1	-2.89	1.22	1.30
3	C	601	OXL	O4-C2	-2.76	1.23	1.30
3	H	601	OXL	O4-C2	-2.74	1.23	1.30
3	F	603	OXL	O4-C2	-2.49	1.23	1.30
3	H	601	OXL	O3-C1	-2.41	1.24	1.30
3	C	601	OXL	O3-C1	-2.39	1.24	1.30
3	A	602	OXL	O4-C2	-2.34	1.24	1.30
2	A	601	FBP	O2-C2	2.32	1.44	1.40
2	F	602	FBP	O2-C2	2.32	1.44	1.40

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	H	602[B]	A1B77	C9-N1-C10	3.00	127.78	124.49
6	B	601[B]	A1B77	C9-N1-C10	2.98	127.75	124.49
6	F	601[A]	A1B77	C9-N1-C10	2.96	127.74	124.49
6	C	602[B]	A1B77	C9-N1-C10	2.96	127.73	124.49
6	C	602[A]	A1B77	C9-N1-C10	2.94	127.72	124.49
6	B	601[A]	A1B77	C9-N1-C10	2.93	127.70	124.49
6	H	602[A]	A1B77	C9-N1-C10	2.90	127.67	124.49
6	F	601[B]	A1B77	C9-N1-C10	2.86	127.62	124.49
2	E	601	FBP	O3P-P1-O2P	2.47	117.07	107.80
3	A	602	OXL	O3-C1-C2	2.34	117.38	112.83
3	F	603	OXL	O4-C2-C1	2.21	117.11	112.83
3	H	601	OXL	O4-C2-C1	2.14	116.98	112.83
3	F	603	OXL	O3-C1-C2	2.08	116.86	112.83
2	A	601	FBP	O3P-P1-O2P	2.07	115.58	107.80
3	C	601	OXL	O4-C2-C1	2.07	116.84	112.83
3	H	601	OXL	O3-C1-C2	2.04	116.79	112.83
3	C	601	OXL	O3-C1-C2	2.04	116.79	112.83

There are no chirality outliers.

All (29) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	601	FBP	O1-C1-C2-O2
2	A	601	FBP	O1-C1-C2-C3
2	A	601	FBP	O1-C1-C2-O5
2	F	602	FBP	C1-O1-P1-O2P
2	F	602	FBP	C1-O1-P1-O3P
2	F	602	FBP	O1-C1-C2-O2
2	F	602	FBP	O1-C1-C2-C3
2	F	602	FBP	O1-C1-C2-O5
2	B	602	FBP	C4-C5-C6-O6
2	E	601	FBP	C4-C5-C6-O6
2	A	601	FBP	C4-C5-C6-O6
6	C	602[A]	A1B77	C1-C2-N-C4
6	H	602[A]	A1B77	C1-C2-N-C4
2	F	602	FBP	C4-C5-C6-O6
6	H	602[B]	A1B77	C1-C2-N-C4
2	B	602	FBP	O5-C5-C6-O6
2	E	601	FBP	O5-C5-C6-O6
6	C	602[B]	A1B77	C1-C2-N-C4
4	H	603	EDO	O1-C1-C2-O2
2	A	601	FBP	C1-O1-P1-O1P
2	F	602	FBP	C1-O1-P1-O1P

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Mol	Chain	Res	Type	Atoms
6	B	601[B]	A1B77	C1-C2-N-C4
6	B	601[A]	A1B77	C1-C2-N-C4
2	A	601	FBP	O5-C5-C6-O6
6	H	602[B]	A1B77	N3-C14-C15-C16
6	F	601[A]	A1B77	C1-C2-N-C4
2	B	602	FBP	C1-O1-P1-O2P
6	C	602[A]	A1B77	N3-C14-C15-C16
6	H	602[B]	A1B77	N3-C14-C15-N4

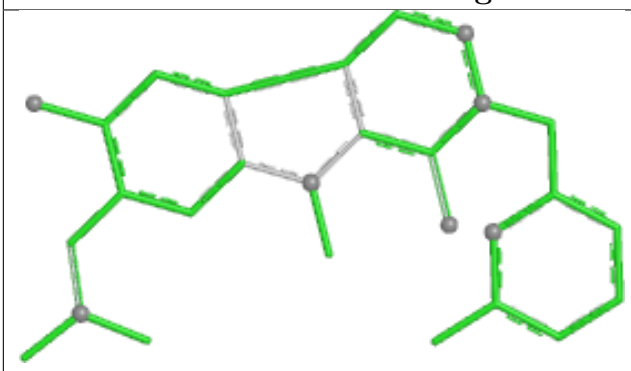
There are no ring outliers.

7 monomers are involved in 11 short contacts:

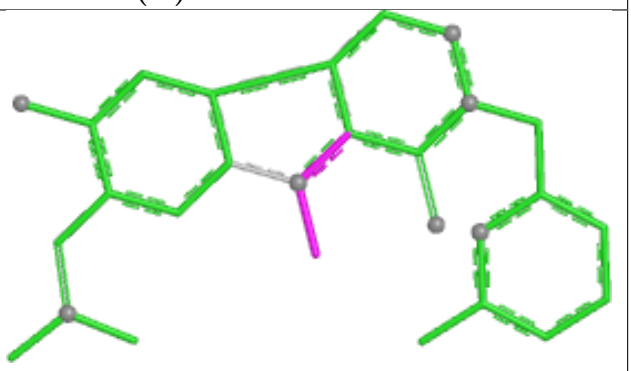
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	H	602[B]	A1B77	1	0
7	C	605	PO4	3	0
7	H	605	PO4	2	0
2	B	602	FBP	1	0
2	A	601	FBP	1	0
7	G	603	PO4	1	0
2	F	602	FBP	2	0

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.

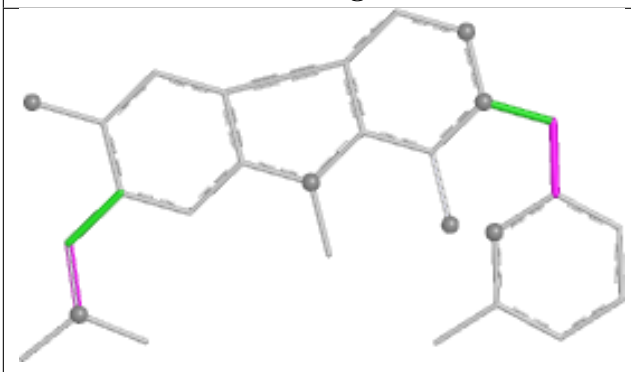
Ligand A1B77 H 602 (B)



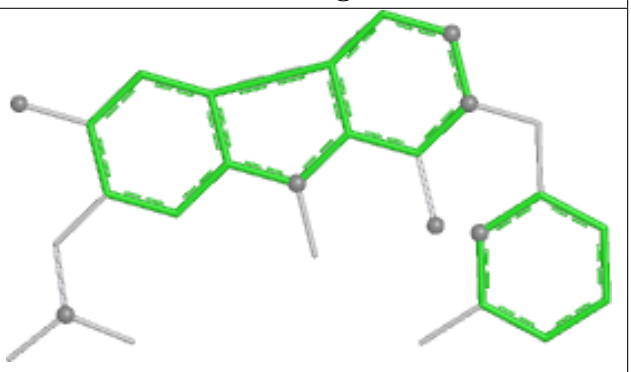
Bond lengths



Bond angles

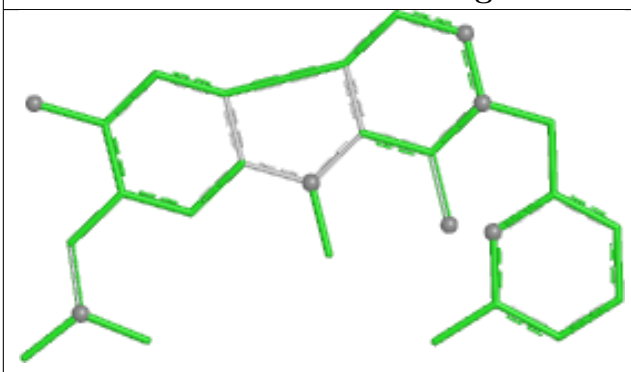


Torsions

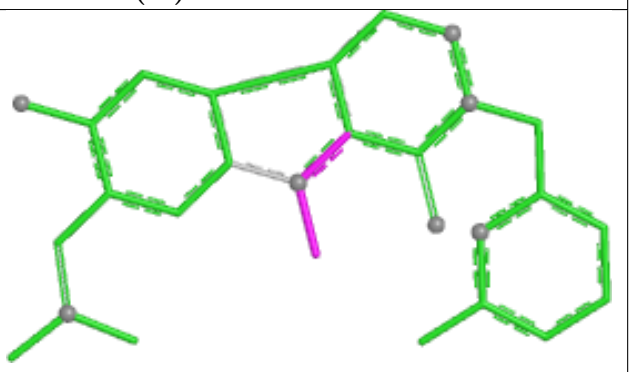


Rings

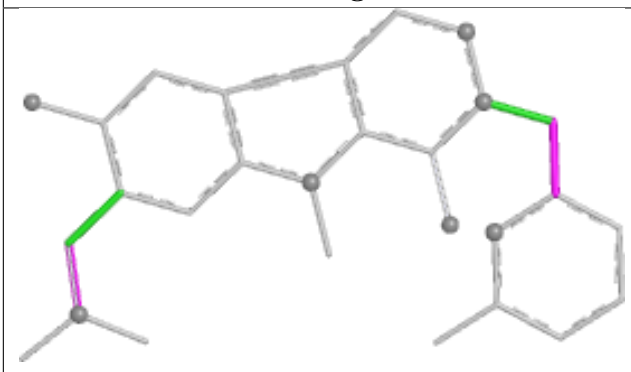
Ligand A1B77 C 602 (A)



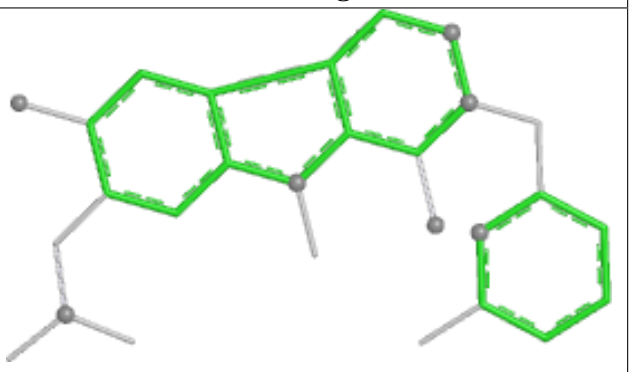
Bond lengths



Bond angles

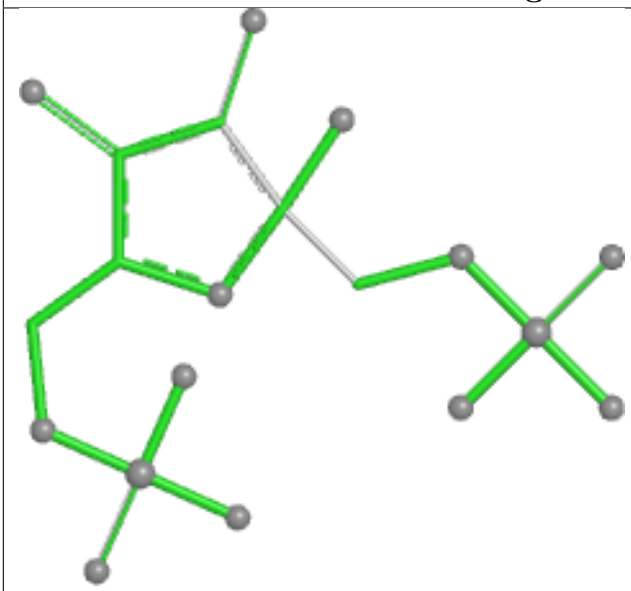


Torsions

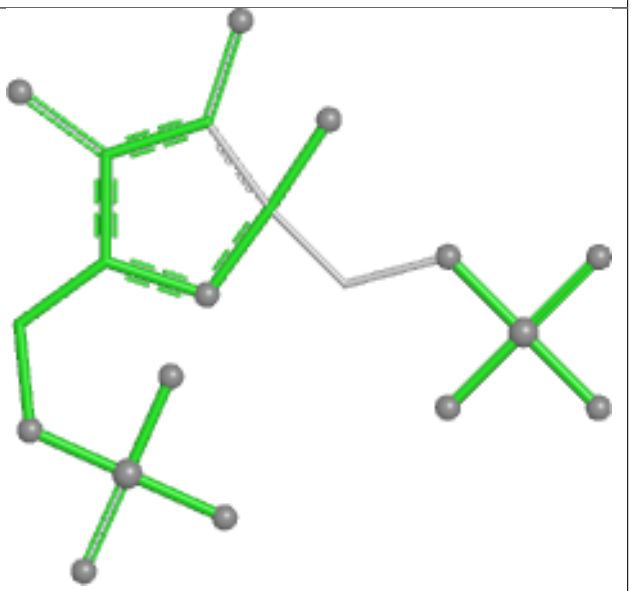


Rings

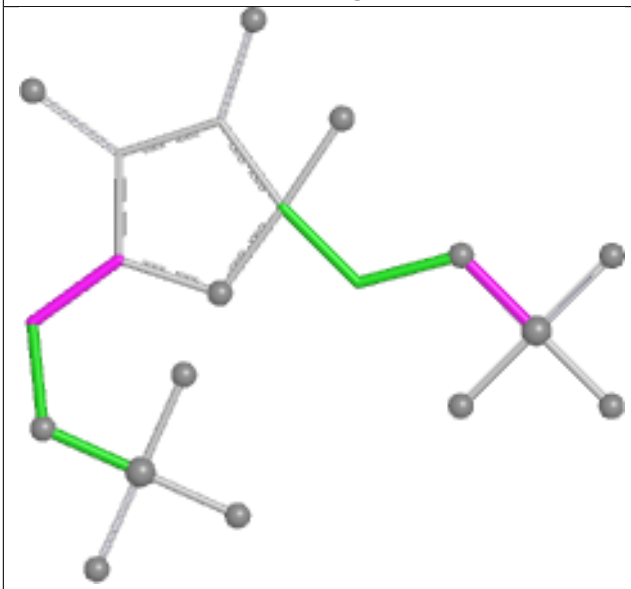
Ligand FBP B 602



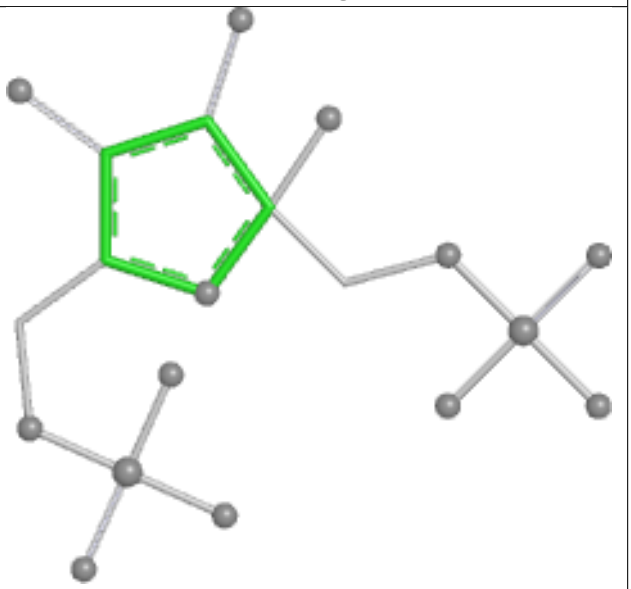
Bond lengths



Bond angles

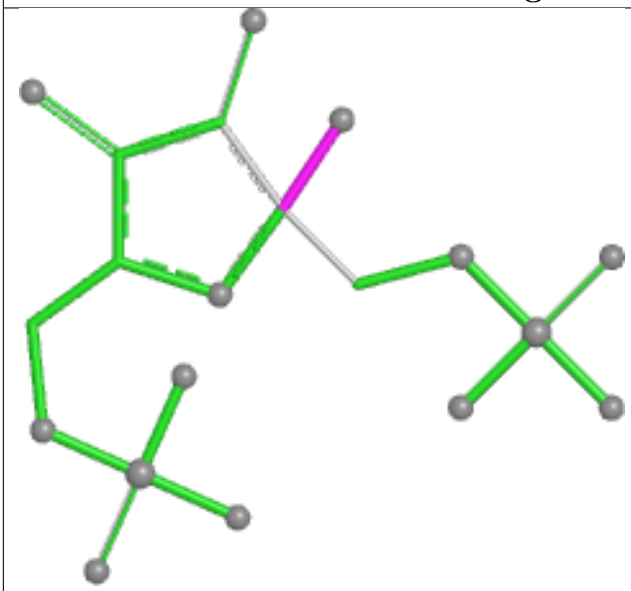


Torsions

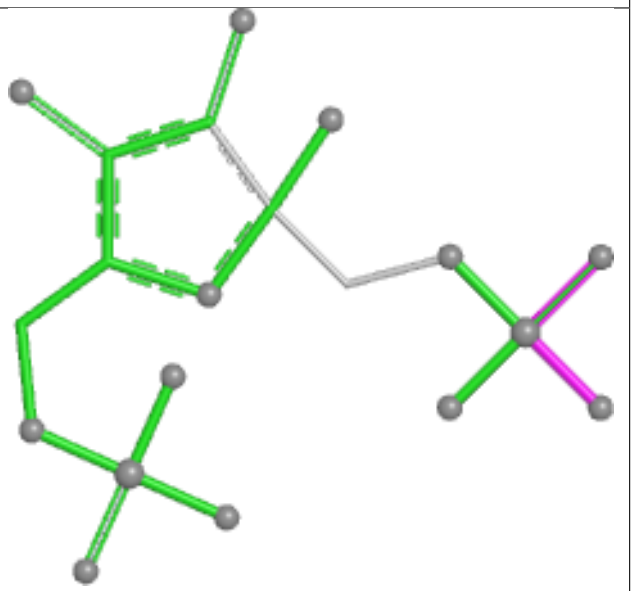


Rings

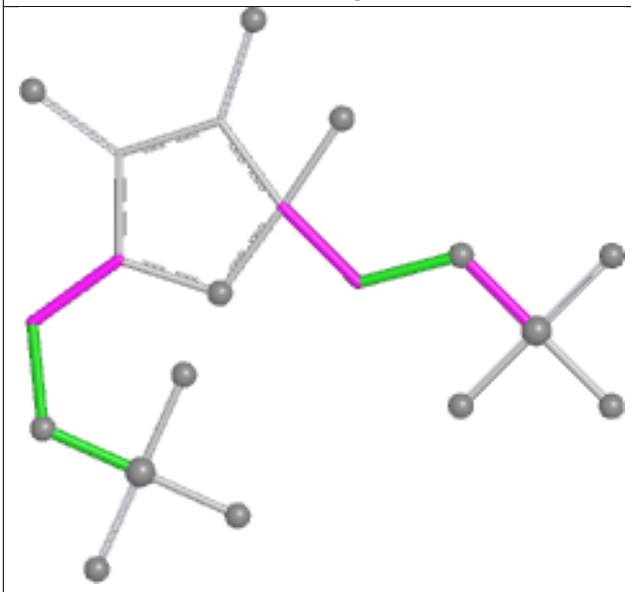
Ligand FBP A 601



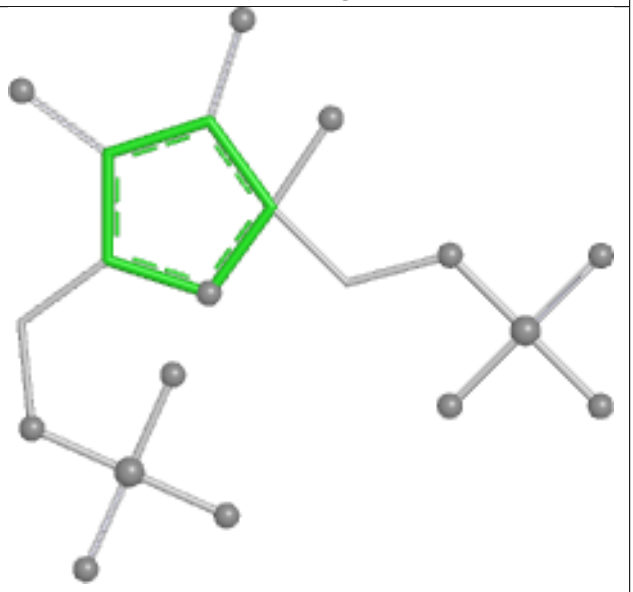
Bond lengths



Bond angles

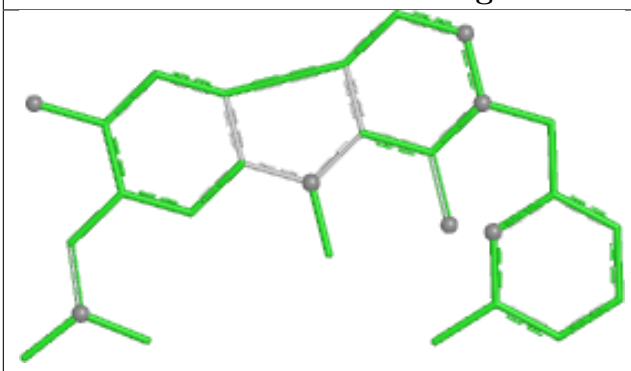


Torsions

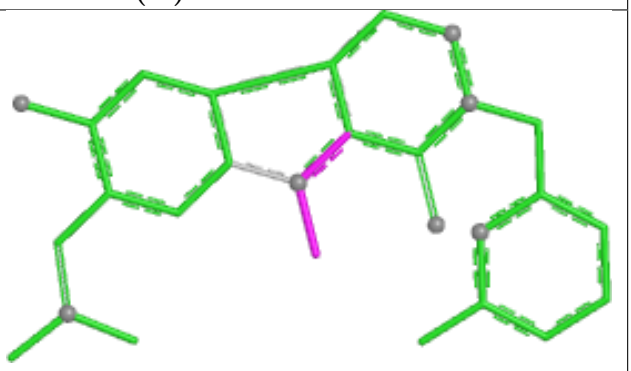


Rings

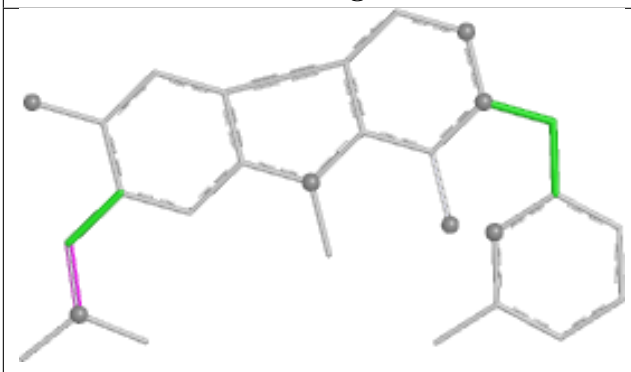
Ligand A1B77 C 602 (B)



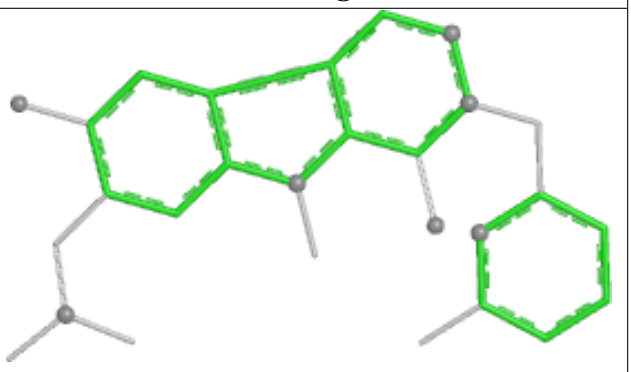
Bond lengths



Bond angles

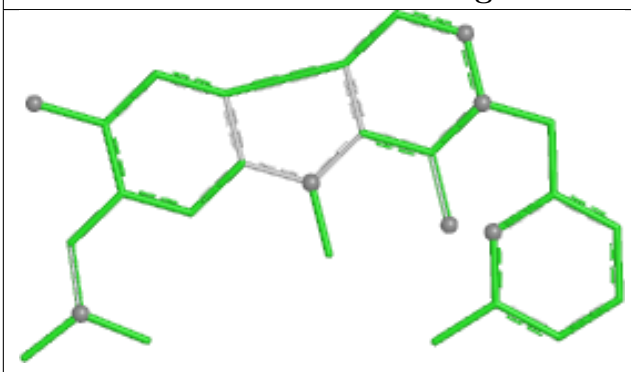


Torsions

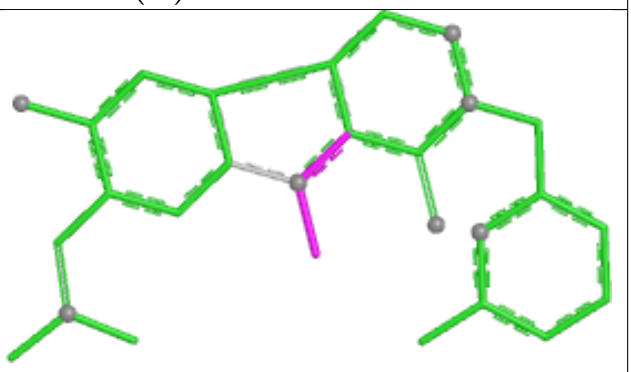


Rings

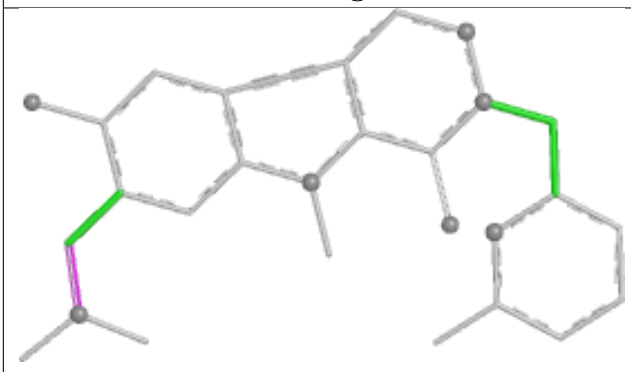
Ligand A1B77 B 601 (A)



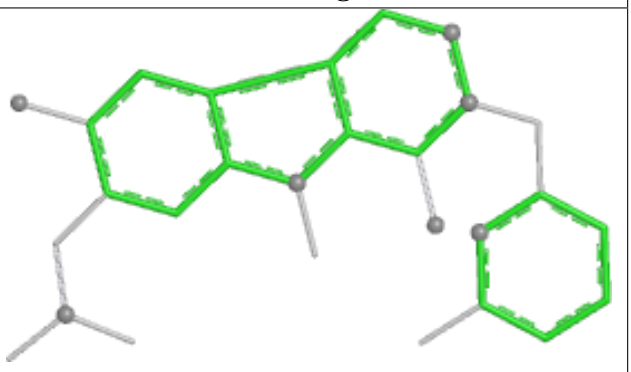
Bond lengths



Bond angles

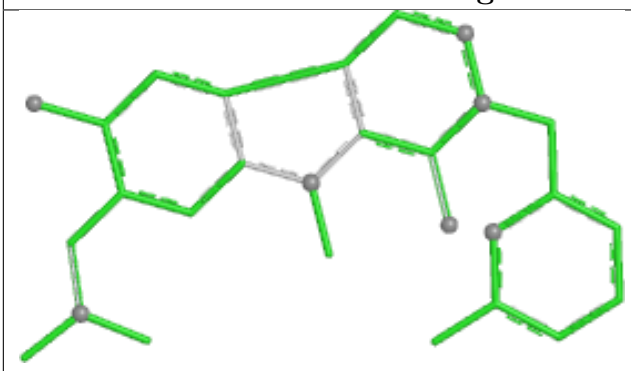


Torsions

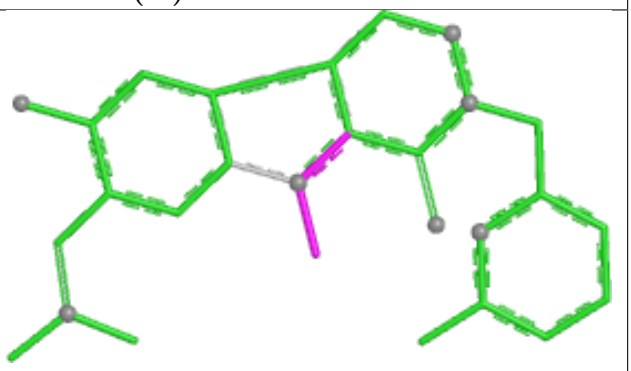


Rings

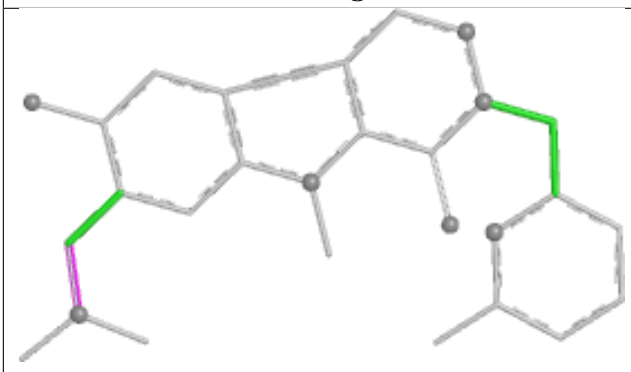
Ligand A1B77 F 601 (A)



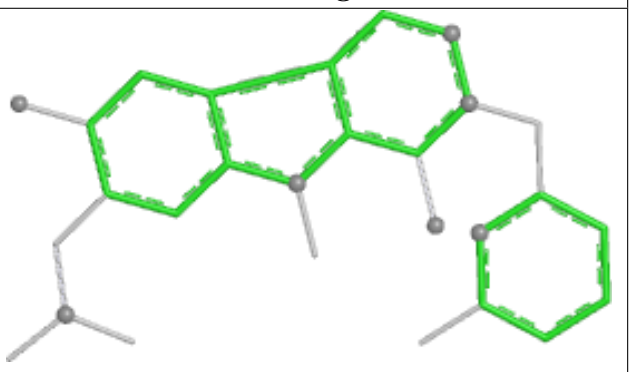
Bond lengths



Bond angles

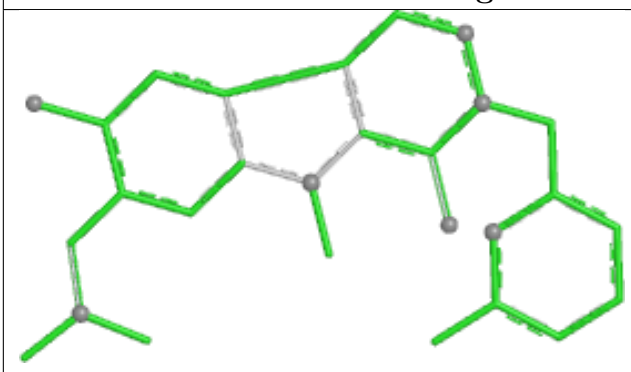


Torsions

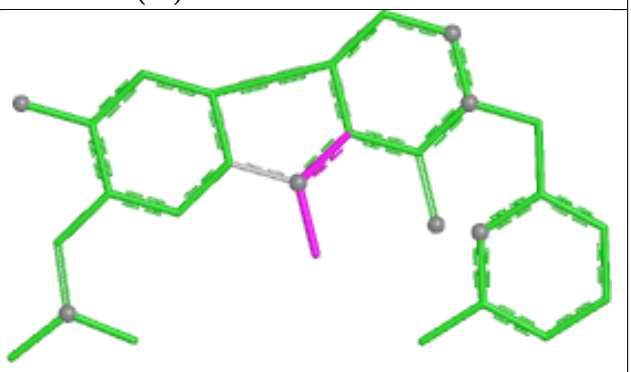


Rings

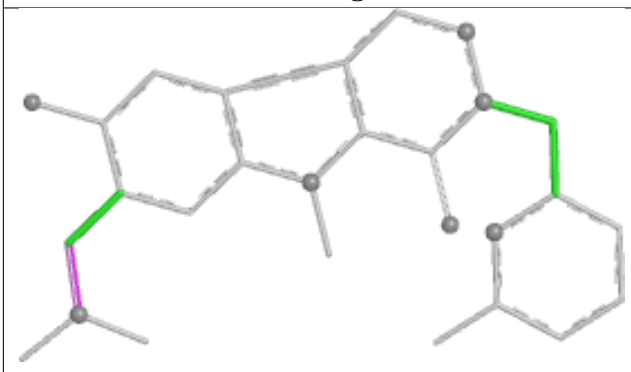
Ligand A1B77 B 601 (B)



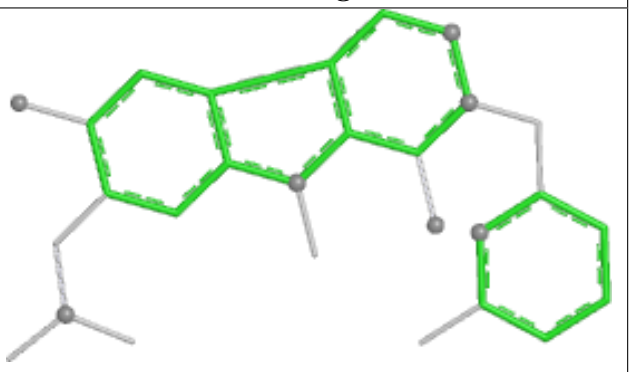
Bond lengths



Bond angles

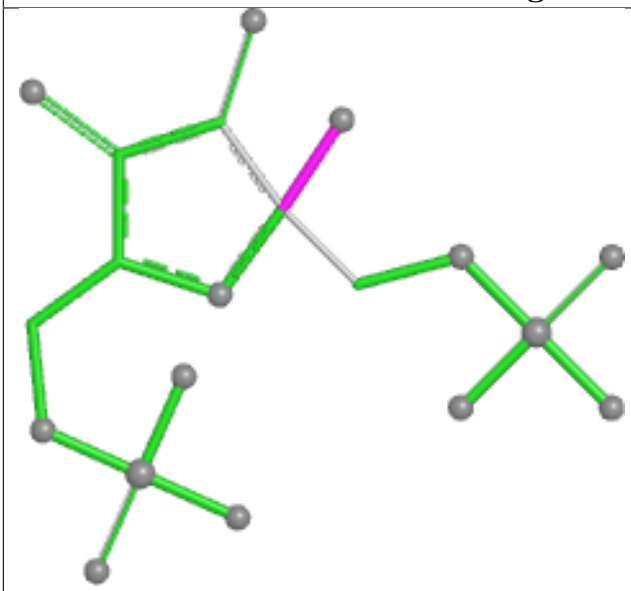


Torsions

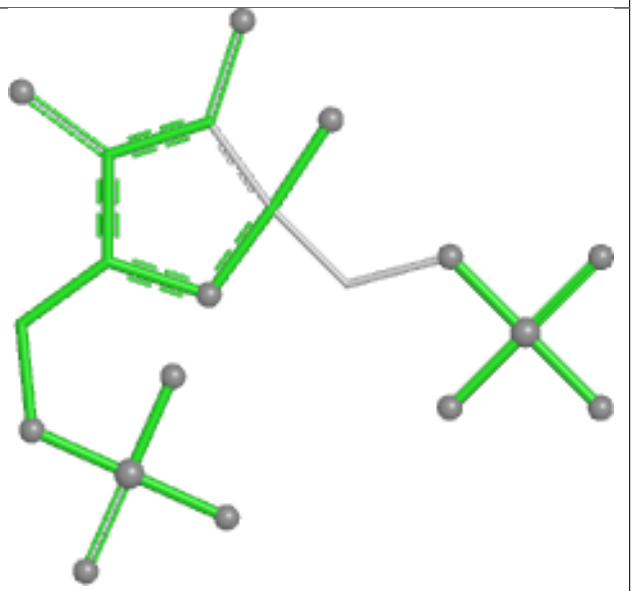


Rings

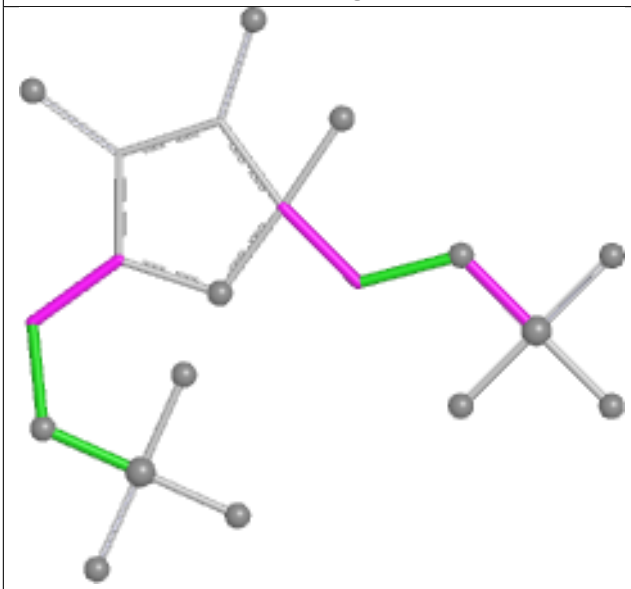
Ligand FBP F 602



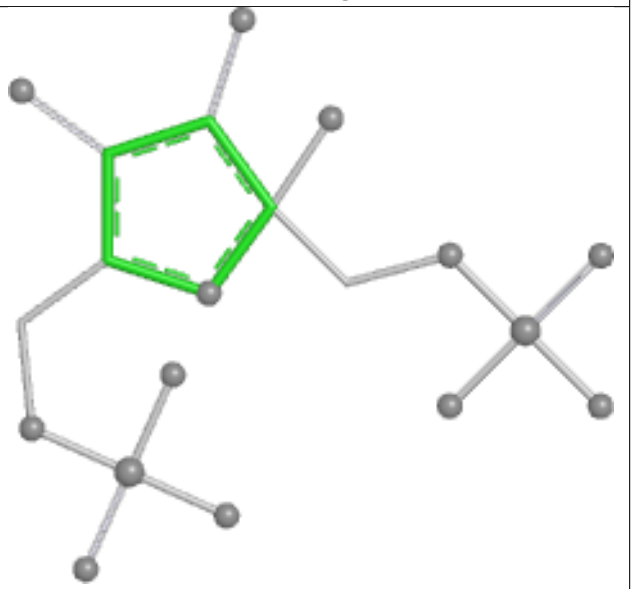
Bond lengths



Bond angles

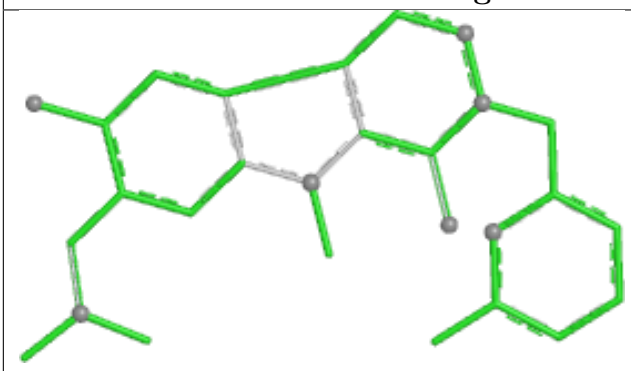


Torsions

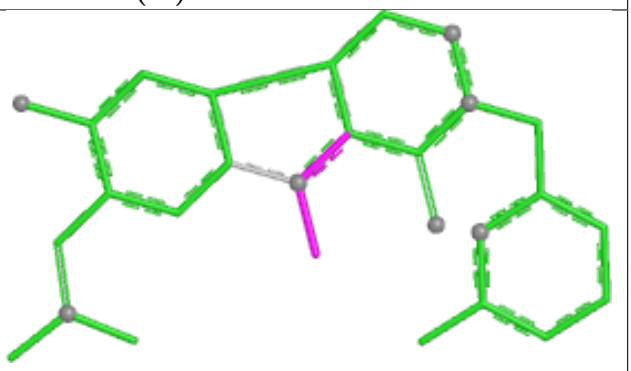


Rings

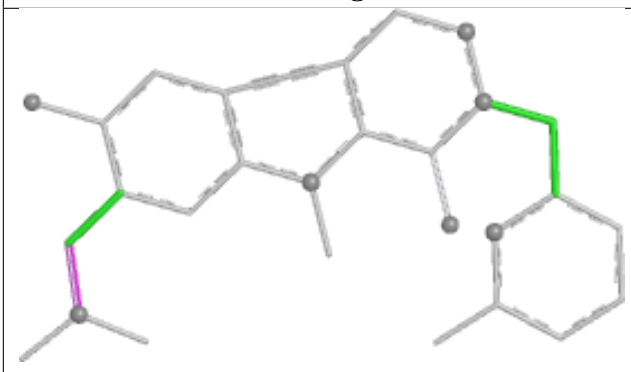
Ligand A1B77 H 602 (A)



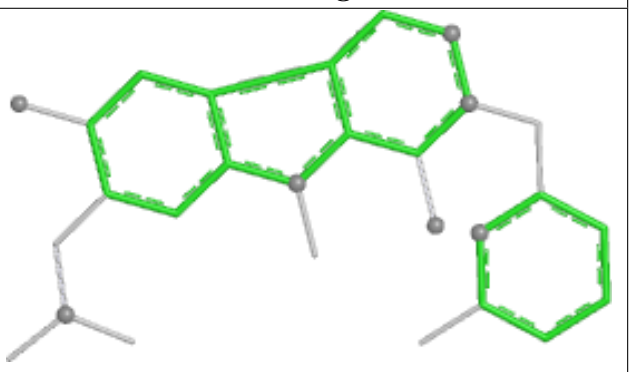
Bond lengths



Bond angles

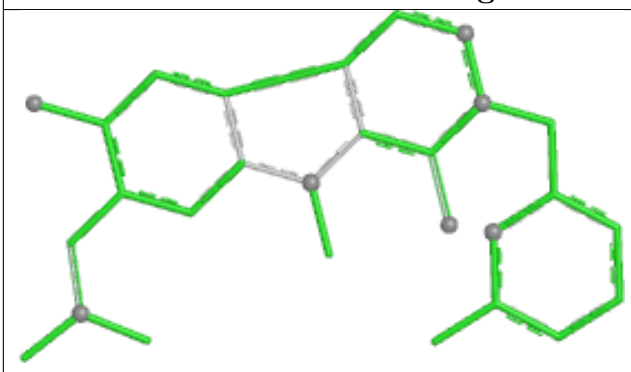


Torsions

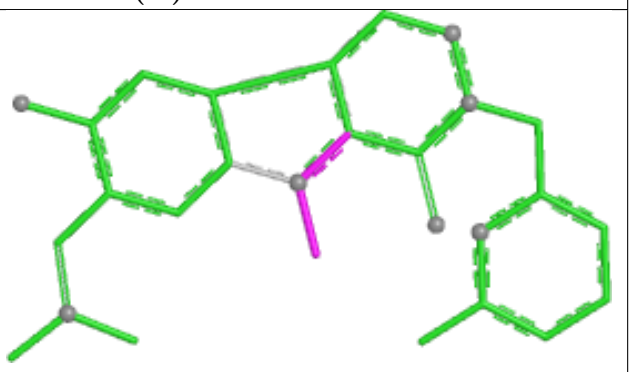


Rings

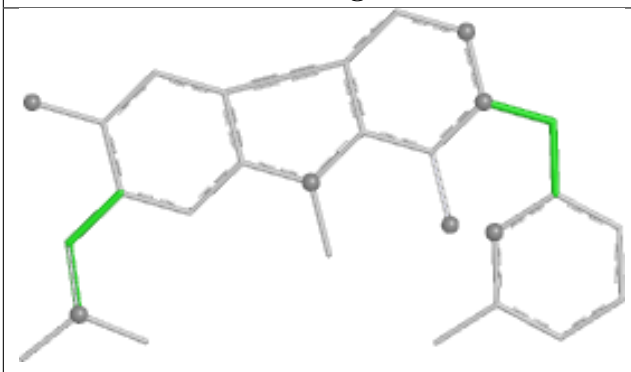
Ligand A1B77 F 601 (B)



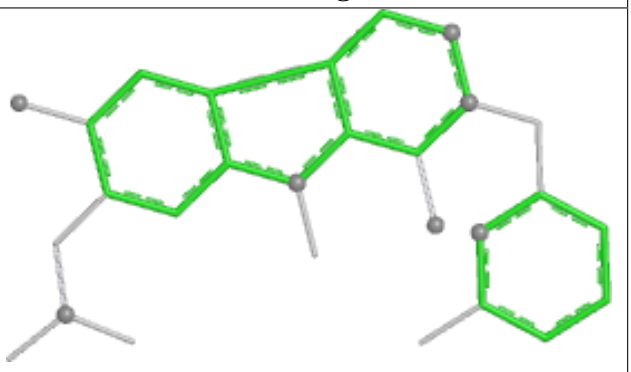
Bond lengths



Bond angles

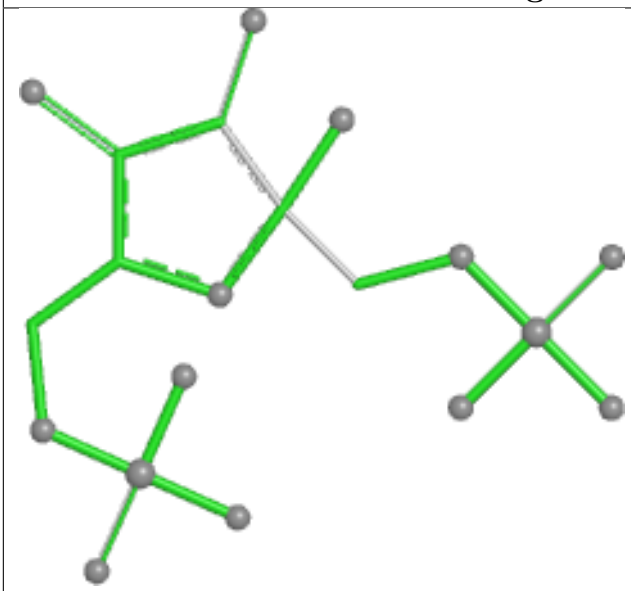


Torsions

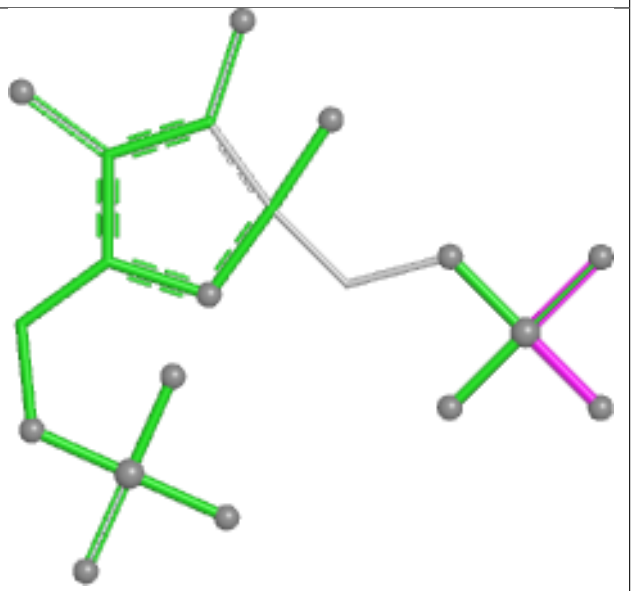


Rings

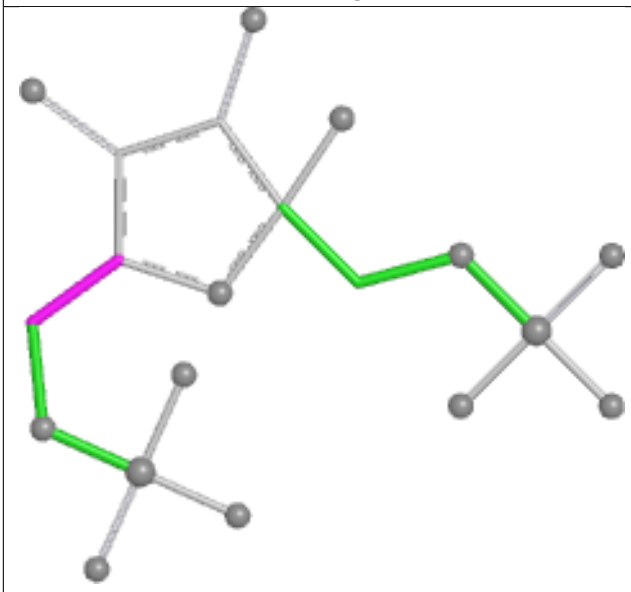
Ligand FBP E 601



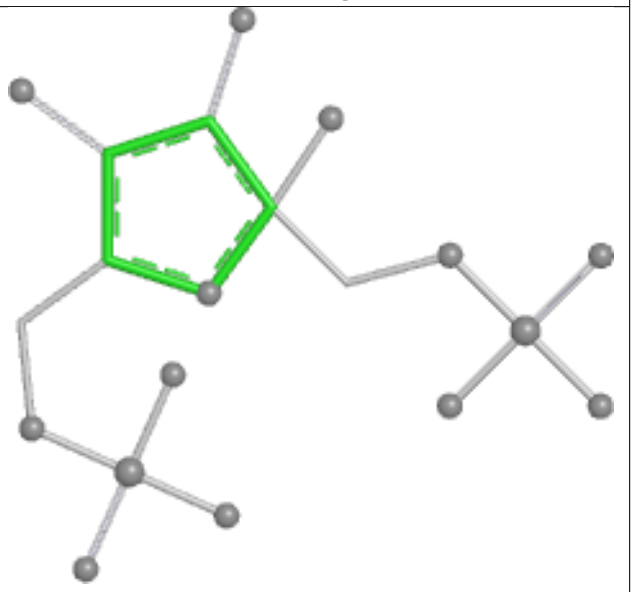
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	519/550 (94%)	-1.30	0	100	100	20, 39, 123, 146	0
1	B	505/550 (91%)	-1.41	0	100	100	15, 40, 93, 119	1 (0%)
1	C	521/550 (94%)	-1.40	0	100	100	24, 49, 73, 90	0
1	D	502/550 (91%)	-1.28	0	100	100	23, 48, 107, 134	0
1	E	504/550 (91%)	-1.37	0	100	100	15, 40, 97, 120	1 (0%)
1	F	520/550 (94%)	-1.31	0	100	100	20, 39, 125, 148	0
1	G	503/550 (91%)	-1.28	0	100	100	24, 47, 110, 128	0
1	H	521/550 (94%)	-1.41	0	100	100	16, 49, 71, 87	0
All	All	4095/4400 (93%)	-1.35	0	100	100	15, 44, 106, 148	2 (0%)

There are no RSRZ outliers to report.

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

There are no oligosaccharides in this entry.

6.4 Ligands

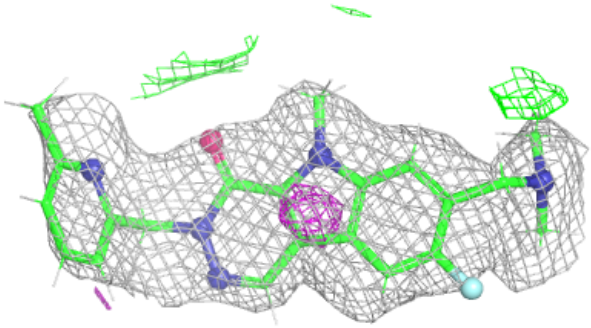
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

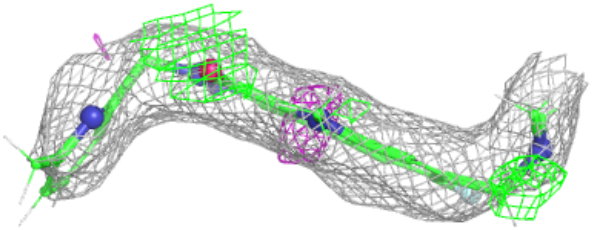
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	EDO	A	603	4/4	0.98	0.06	53,53,53,53	0
4	EDO	C	603	4/4	0.98	0.09	68,68,68,68	0
5	MG	B	604	1/1	0.98	0.07	65,65,65,65	0
5	MG	G	602	1/1	0.98	0.05	61,61,61,61	0
6	A1B77	B	601[A]	28/28	0.98	0.05	25,27,29,29	50
6	A1B77	B	601[B]	28/28	0.98	0.05	24,27,30,30	50
3	OXL	H	601	6/6	0.99	0.04	56,56,56,56	0
2	FBP	A	601	20/20	0.99	0.04	53,66,74,74	0
4	EDO	B	603	4/4	0.99	0.03	41,41,41,41	0
2	FBP	E	601	20/20	0.99	0.03	27,31,36,36	0
4	EDO	E	602	4/4	0.99	0.04	40,41,41,41	0
4	EDO	G	601	4/4	0.99	0.04	48,48,48,48	0
4	EDO	H	603	4/4	0.99	0.05	55,55,55,55	0
5	MG	A	604	1/1	0.99	0.03	38,38,38,38	0
2	FBP	F	602	20/20	0.99	0.04	60,72,79,79	0
5	MG	C	604	1/1	0.99	0.02	47,47,47,47	0
5	MG	D	601	1/1	0.99	0.06	61,61,61,61	0
5	MG	E	603	1/1	0.99	0.07	54,54,54,54	0
5	MG	F	604	1/1	0.99	0.03	40,40,40,40	0
3	OXL	A	602	6/6	0.99	0.03	43,44,45,45	0
5	MG	H	604	1/1	0.99	0.02	49,49,49,49	0
3	OXL	C	601	6/6	0.99	0.03	53,54,54,54	0
3	OXL	F	603	6/6	0.99	0.03	43,44,45,46	0
6	A1B77	C	602[A]	28/28	0.99	0.05	28,30,33,33	50
6	A1B77	C	602[B]	28/28	0.99	0.05	28,30,32,32	50
6	A1B77	F	601[A]	28/28	0.99	0.04	20,22,25,25	50
6	A1B77	F	601[B]	28/28	0.99	0.04	41,42,43,43	50
6	A1B77	H	602[A]	28/28	0.99	0.04	28,30,33,33	50
6	A1B77	H	602[B]	28/28	0.99	0.04	33,36,38,38	50
7	PO4	D	602	5/5	0.99	0.03	62,62,62,63	0
7	PO4	G	603	5/5	0.99	0.03	60,60,61,61	0
2	FBP	B	602	20/20	1.00	0.03	28,32,37,38	0
7	PO4	C	605	5/5	1.00	0.02	51,51,52,52	0
7	PO4	H	605	5/5	1.00	0.03	45,45,46,46	0

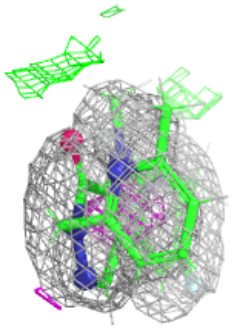
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around A1B77 B 601 (A):

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

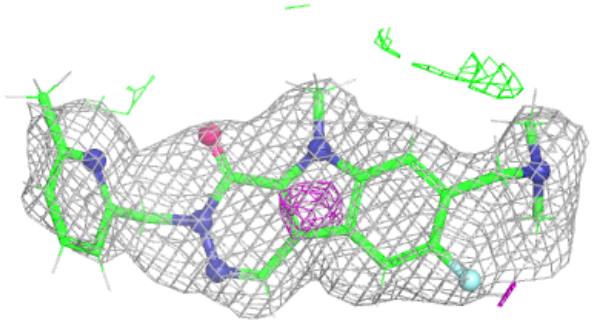


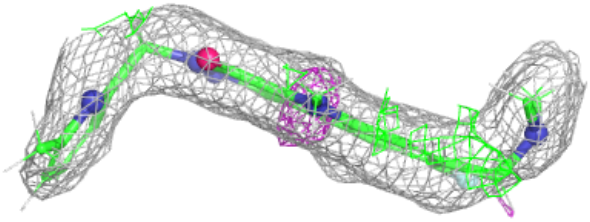


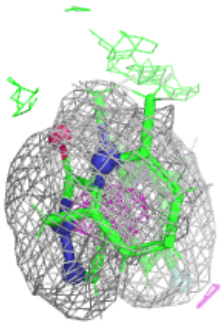


Electron density around A1B77 B 601 (B):

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

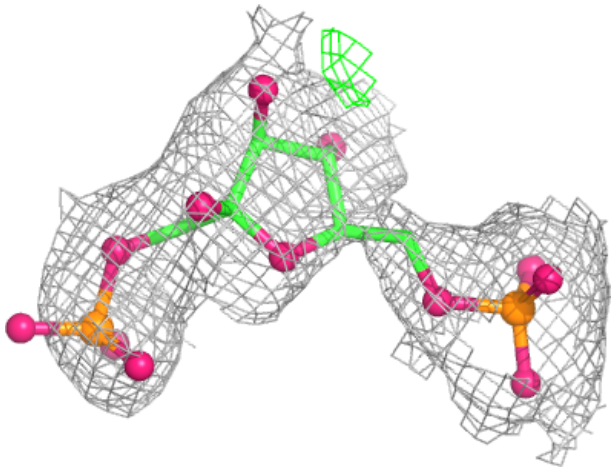


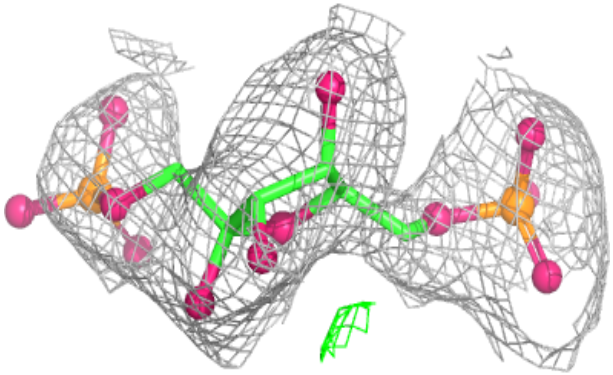


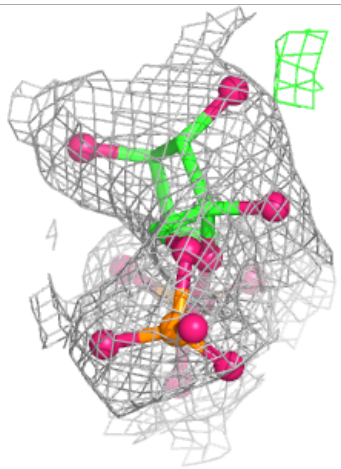


Electron density around FBP A 601:

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

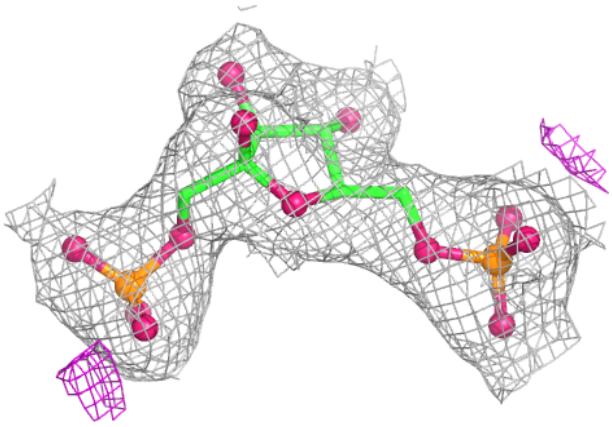


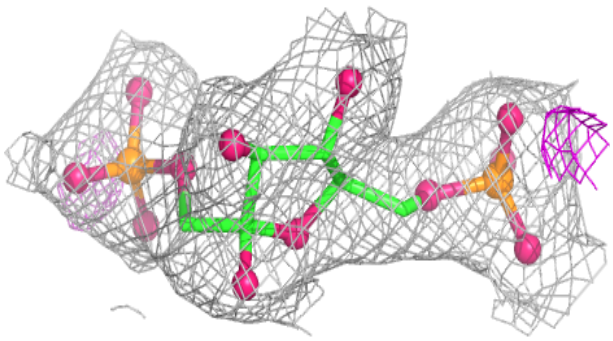


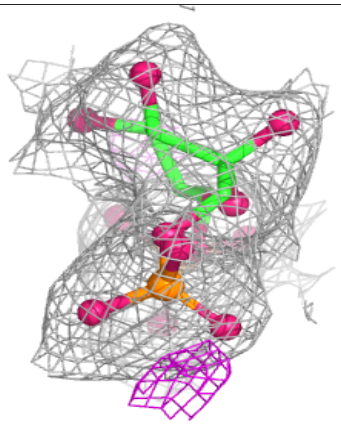


Electron density around FBP E 601:

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

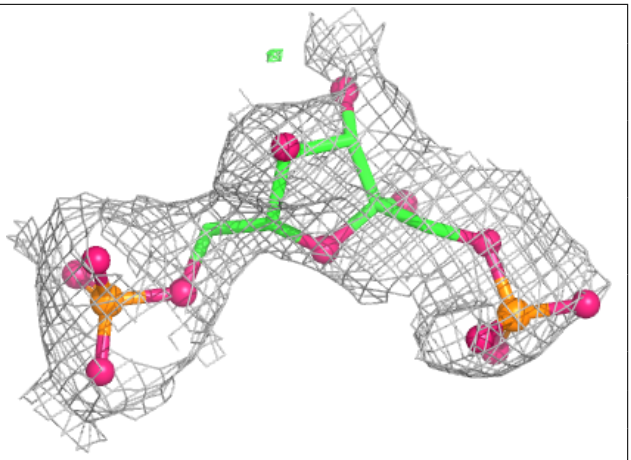


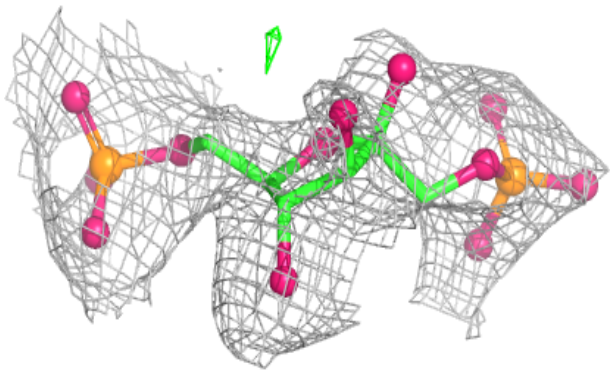


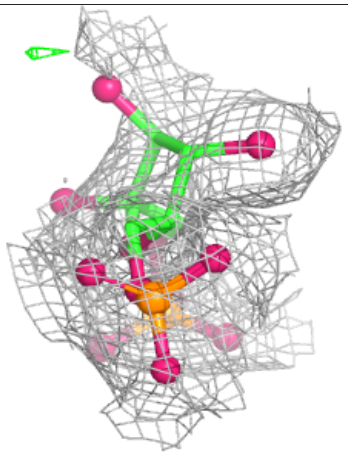


Electron density around FBP F 602:

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

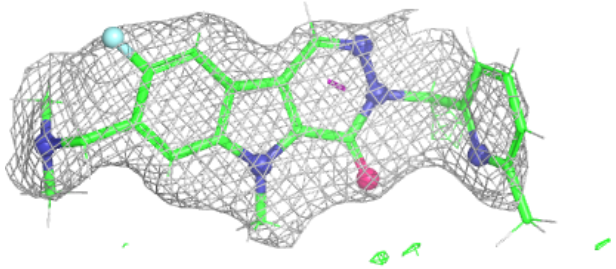


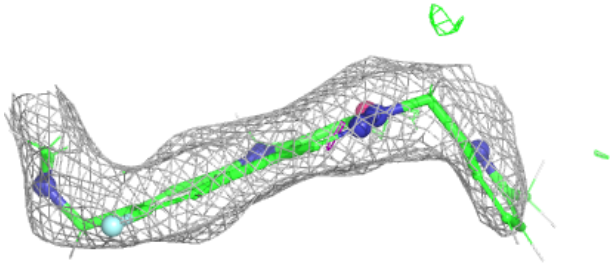


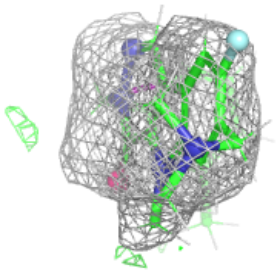


Electron density around A1B77 C 602 (A):

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

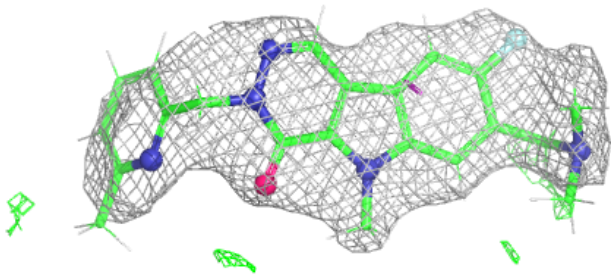


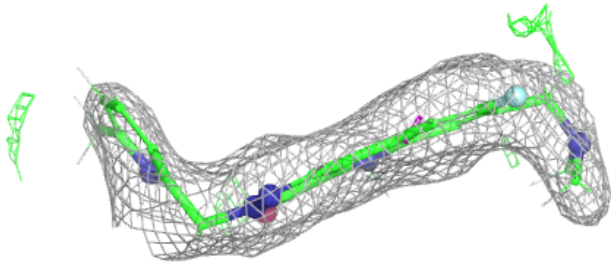


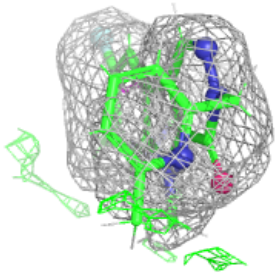


Electron density around A1B77 C 602 (B):

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

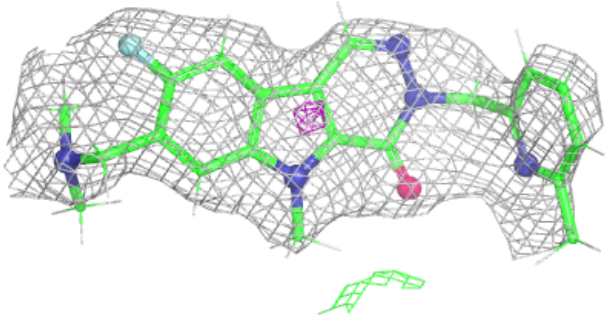


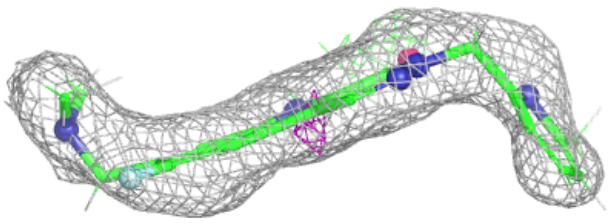


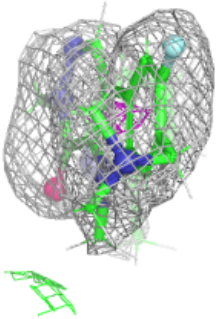


Electron density around A1B77 F 601 (A):

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

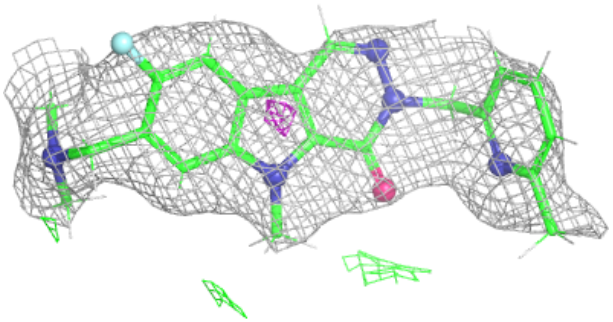


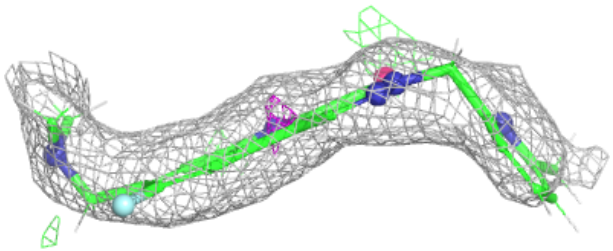


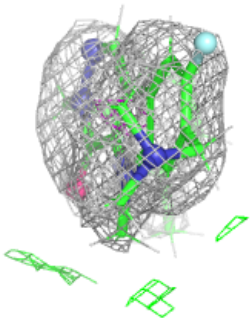


Electron density around A1B77 F 601 (B):

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

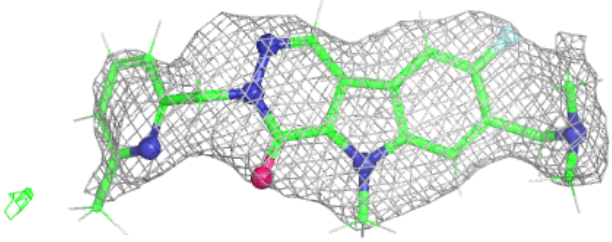


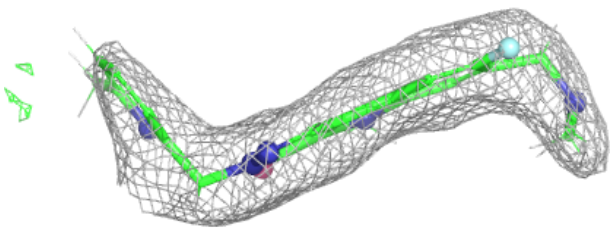


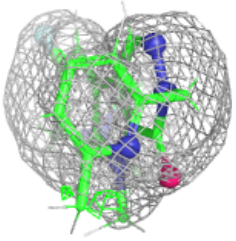


Electron density around A1B77 H 602 (A):

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

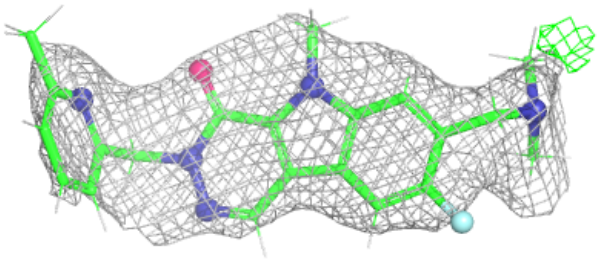


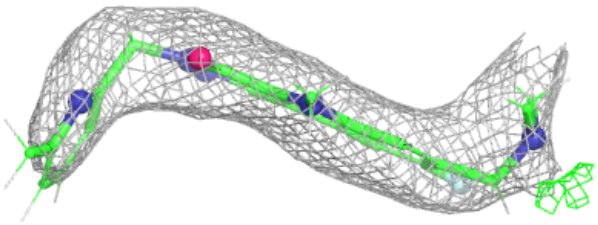


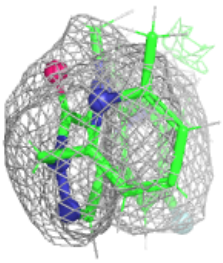


Electron density around A1B77 H 602 (B):

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

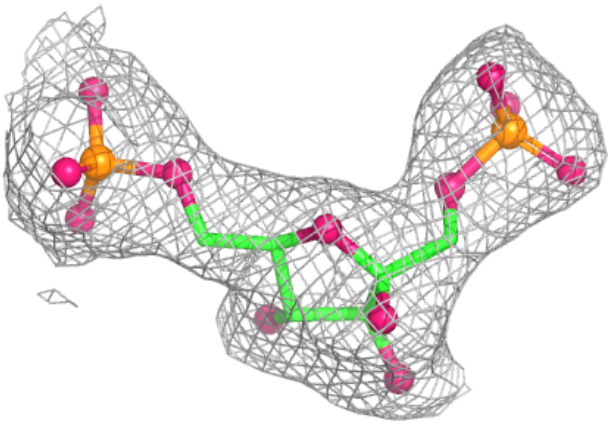


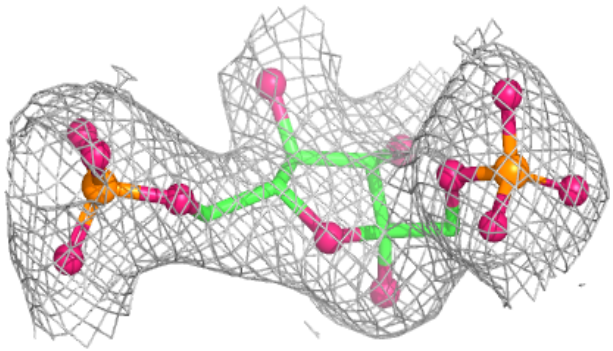


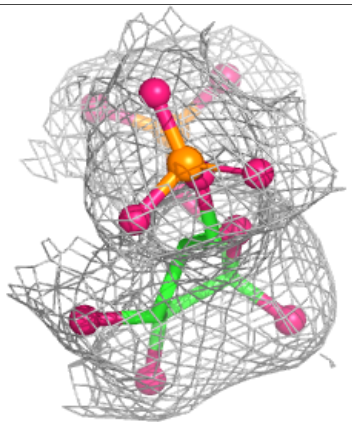


Electron density around FBP B 602:

$2mF_o$-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.