



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 7, 2023 – 06:25 PM JST

PDB ID : 8IAU
Title : Crystal structure of Streptococcus pneumoniae pyruvate kinase in complex with oxalate and fructose 1,6-bisphosphate
Authors : Nakashima, R.; Taguchi, A.
Deposited on : 2023-02-09
Resolution : 2.00 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 : 2.33
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) : 2.33

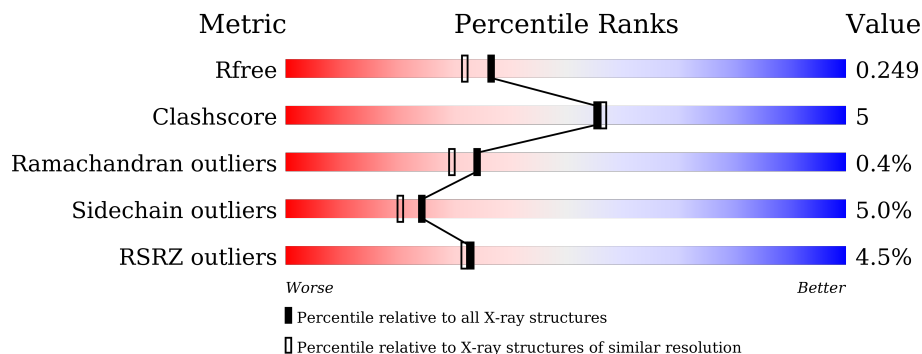
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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 $\leq 5\%$. 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	521	 86% 9% . .
1	B	521	 87% 8% . .
1	C	521	 85% 9% . .
1	D	521	 86% 10% . .
1	E	521	 79% 16% . .
1	F	521	 82% 12% . .

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Mol	Chain	Length	Quality of chain
1	G	521	<p>6% 83% 13%</p>
1	H	521	<p>5% 68% 9% 21%</p>

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
6	PEG	H	605	-	-	X	-

2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 31195 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 Pyruvate kinase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	501	3840	2399	664	760	17	0	0	0
1	B	501	3840	2399	664	760	17	0	0	0
1	C	501	3840	2399	664	760	17	0	0	0
1	D	501	3840	2399	664	760	17	0	0	0
1	E	499	3820	2388	659	757	16	0	0	0
1	F	501	3840	2399	664	760	17	0	0	0
1	G	500	3828	2393	660	758	17	0	0	0
1	H	412	3148	1967	546	618	17	0	0	0

There are 160 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	initiating methionine	UNP Q8DQ84
A	-18	GLY	-	expression tag	UNP Q8DQ84
A	-17	SER	-	expression tag	UNP Q8DQ84
A	-16	SER	-	expression tag	UNP Q8DQ84
A	-15	HIS	-	expression tag	UNP Q8DQ84
A	-14	HIS	-	expression tag	UNP Q8DQ84
A	-13	HIS	-	expression tag	UNP Q8DQ84
A	-12	HIS	-	expression tag	UNP Q8DQ84
A	-11	HIS	-	expression tag	UNP Q8DQ84
A	-10	HIS	-	expression tag	UNP Q8DQ84
A	-9	SER	-	expression tag	UNP Q8DQ84
A	-8	SER	-	expression tag	UNP Q8DQ84
A	-7	GLY	-	expression tag	UNP Q8DQ84

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	LEU	-	expression tag	UNP Q8DQ84
A	-5	VAL	-	expression tag	UNP Q8DQ84
A	-4	PRO	-	expression tag	UNP Q8DQ84
A	-3	ARG	-	expression tag	UNP Q8DQ84
A	-2	GLY	-	expression tag	UNP Q8DQ84
A	-1	SER	-	expression tag	UNP Q8DQ84
A	0	HIS	-	expression tag	UNP Q8DQ84
B	-19	MET	-	initiating methionine	UNP Q8DQ84
B	-18	GLY	-	expression tag	UNP Q8DQ84
B	-17	SER	-	expression tag	UNP Q8DQ84
B	-16	SER	-	expression tag	UNP Q8DQ84
B	-15	HIS	-	expression tag	UNP Q8DQ84
B	-14	HIS	-	expression tag	UNP Q8DQ84
B	-13	HIS	-	expression tag	UNP Q8DQ84
B	-12	HIS	-	expression tag	UNP Q8DQ84
B	-11	HIS	-	expression tag	UNP Q8DQ84
B	-10	HIS	-	expression tag	UNP Q8DQ84
B	-9	SER	-	expression tag	UNP Q8DQ84
B	-8	SER	-	expression tag	UNP Q8DQ84
B	-7	GLY	-	expression tag	UNP Q8DQ84
B	-6	LEU	-	expression tag	UNP Q8DQ84
B	-5	VAL	-	expression tag	UNP Q8DQ84
B	-4	PRO	-	expression tag	UNP Q8DQ84
B	-3	ARG	-	expression tag	UNP Q8DQ84
B	-2	GLY	-	expression tag	UNP Q8DQ84
B	-1	SER	-	expression tag	UNP Q8DQ84
B	0	HIS	-	expression tag	UNP Q8DQ84
C	-19	MET	-	initiating methionine	UNP Q8DQ84
C	-18	GLY	-	expression tag	UNP Q8DQ84
C	-17	SER	-	expression tag	UNP Q8DQ84
C	-16	SER	-	expression tag	UNP Q8DQ84
C	-15	HIS	-	expression tag	UNP Q8DQ84
C	-14	HIS	-	expression tag	UNP Q8DQ84
C	-13	HIS	-	expression tag	UNP Q8DQ84
C	-12	HIS	-	expression tag	UNP Q8DQ84
C	-11	HIS	-	expression tag	UNP Q8DQ84
C	-10	HIS	-	expression tag	UNP Q8DQ84
C	-9	SER	-	expression tag	UNP Q8DQ84
C	-8	SER	-	expression tag	UNP Q8DQ84
C	-7	GLY	-	expression tag	UNP Q8DQ84
C	-6	LEU	-	expression tag	UNP Q8DQ84
C	-5	VAL	-	expression tag	UNP Q8DQ84

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-4	PRO	-	expression tag	UNP Q8DQ84
C	-3	ARG	-	expression tag	UNP Q8DQ84
C	-2	GLY	-	expression tag	UNP Q8DQ84
C	-1	SER	-	expression tag	UNP Q8DQ84
C	0	HIS	-	expression tag	UNP Q8DQ84
D	-19	MET	-	initiating methionine	UNP Q8DQ84
D	-18	GLY	-	expression tag	UNP Q8DQ84
D	-17	SER	-	expression tag	UNP Q8DQ84
D	-16	SER	-	expression tag	UNP Q8DQ84
D	-15	HIS	-	expression tag	UNP Q8DQ84
D	-14	HIS	-	expression tag	UNP Q8DQ84
D	-13	HIS	-	expression tag	UNP Q8DQ84
D	-12	HIS	-	expression tag	UNP Q8DQ84
D	-11	HIS	-	expression tag	UNP Q8DQ84
D	-10	HIS	-	expression tag	UNP Q8DQ84
D	-9	SER	-	expression tag	UNP Q8DQ84
D	-8	SER	-	expression tag	UNP Q8DQ84
D	-7	GLY	-	expression tag	UNP Q8DQ84
D	-6	LEU	-	expression tag	UNP Q8DQ84
D	-5	VAL	-	expression tag	UNP Q8DQ84
D	-4	PRO	-	expression tag	UNP Q8DQ84
D	-3	ARG	-	expression tag	UNP Q8DQ84
D	-2	GLY	-	expression tag	UNP Q8DQ84
D	-1	SER	-	expression tag	UNP Q8DQ84
D	0	HIS	-	expression tag	UNP Q8DQ84
E	-19	MET	-	initiating methionine	UNP Q8DQ84
E	-18	GLY	-	expression tag	UNP Q8DQ84
E	-17	SER	-	expression tag	UNP Q8DQ84
E	-16	SER	-	expression tag	UNP Q8DQ84
E	-15	HIS	-	expression tag	UNP Q8DQ84
E	-14	HIS	-	expression tag	UNP Q8DQ84
E	-13	HIS	-	expression tag	UNP Q8DQ84
E	-12	HIS	-	expression tag	UNP Q8DQ84
E	-11	HIS	-	expression tag	UNP Q8DQ84
E	-10	HIS	-	expression tag	UNP Q8DQ84
E	-9	SER	-	expression tag	UNP Q8DQ84
E	-8	SER	-	expression tag	UNP Q8DQ84
E	-7	GLY	-	expression tag	UNP Q8DQ84
E	-6	LEU	-	expression tag	UNP Q8DQ84
E	-5	VAL	-	expression tag	UNP Q8DQ84
E	-4	PRO	-	expression tag	UNP Q8DQ84
E	-3	ARG	-	expression tag	UNP Q8DQ84

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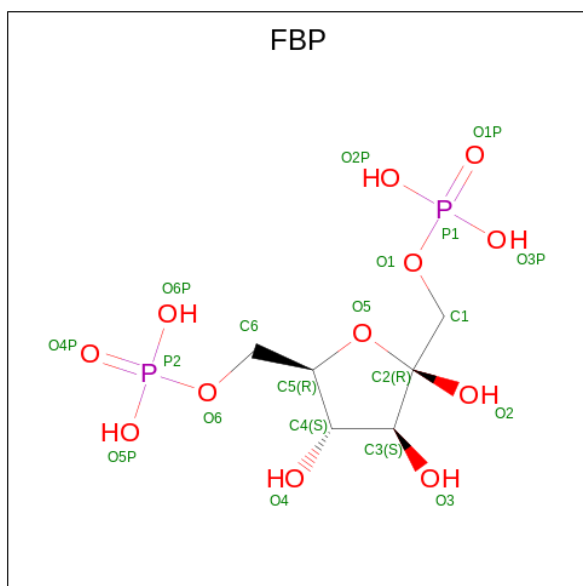
Chain	Residue	Modelled	Actual	Comment	Reference
E	-2	GLY	-	expression tag	UNP Q8DQ84
E	-1	SER	-	expression tag	UNP Q8DQ84
E	0	HIS	-	expression tag	UNP Q8DQ84
F	-19	MET	-	initiating methionine	UNP Q8DQ84
F	-18	GLY	-	expression tag	UNP Q8DQ84
F	-17	SER	-	expression tag	UNP Q8DQ84
F	-16	SER	-	expression tag	UNP Q8DQ84
F	-15	HIS	-	expression tag	UNP Q8DQ84
F	-14	HIS	-	expression tag	UNP Q8DQ84
F	-13	HIS	-	expression tag	UNP Q8DQ84
F	-12	HIS	-	expression tag	UNP Q8DQ84
F	-11	HIS	-	expression tag	UNP Q8DQ84
F	-10	HIS	-	expression tag	UNP Q8DQ84
F	-9	SER	-	expression tag	UNP Q8DQ84
F	-8	SER	-	expression tag	UNP Q8DQ84
F	-7	GLY	-	expression tag	UNP Q8DQ84
F	-6	LEU	-	expression tag	UNP Q8DQ84
F	-5	VAL	-	expression tag	UNP Q8DQ84
F	-4	PRO	-	expression tag	UNP Q8DQ84
F	-3	ARG	-	expression tag	UNP Q8DQ84
F	-2	GLY	-	expression tag	UNP Q8DQ84
F	-1	SER	-	expression tag	UNP Q8DQ84
F	0	HIS	-	expression tag	UNP Q8DQ84
G	-19	MET	-	initiating methionine	UNP Q8DQ84
G	-18	GLY	-	expression tag	UNP Q8DQ84
G	-17	SER	-	expression tag	UNP Q8DQ84
G	-16	SER	-	expression tag	UNP Q8DQ84
G	-15	HIS	-	expression tag	UNP Q8DQ84
G	-14	HIS	-	expression tag	UNP Q8DQ84
G	-13	HIS	-	expression tag	UNP Q8DQ84
G	-12	HIS	-	expression tag	UNP Q8DQ84
G	-11	HIS	-	expression tag	UNP Q8DQ84
G	-10	HIS	-	expression tag	UNP Q8DQ84
G	-9	SER	-	expression tag	UNP Q8DQ84
G	-8	SER	-	expression tag	UNP Q8DQ84
G	-7	GLY	-	expression tag	UNP Q8DQ84
G	-6	LEU	-	expression tag	UNP Q8DQ84
G	-5	VAL	-	expression tag	UNP Q8DQ84
G	-4	PRO	-	expression tag	UNP Q8DQ84
G	-3	ARG	-	expression tag	UNP Q8DQ84
G	-2	GLY	-	expression tag	UNP Q8DQ84
G	-1	SER	-	expression tag	UNP Q8DQ84

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Chain	Residue	Modelled	Actual	Comment	Reference
G	0	HIS	-	expression tag	UNP Q8DQ84
H	-19	MET	-	initiating methionine	UNP Q8DQ84
H	-18	GLY	-	expression tag	UNP Q8DQ84
H	-17	SER	-	expression tag	UNP Q8DQ84
H	-16	SER	-	expression tag	UNP Q8DQ84
H	-15	HIS	-	expression tag	UNP Q8DQ84
H	-14	HIS	-	expression tag	UNP Q8DQ84
H	-13	HIS	-	expression tag	UNP Q8DQ84
H	-12	HIS	-	expression tag	UNP Q8DQ84
H	-11	HIS	-	expression tag	UNP Q8DQ84
H	-10	HIS	-	expression tag	UNP Q8DQ84
H	-9	SER	-	expression tag	UNP Q8DQ84
H	-8	SER	-	expression tag	UNP Q8DQ84
H	-7	GLY	-	expression tag	UNP Q8DQ84
H	-6	LEU	-	expression tag	UNP Q8DQ84
H	-5	VAL	-	expression tag	UNP Q8DQ84
H	-4	PRO	-	expression tag	UNP Q8DQ84
H	-3	ARG	-	expression tag	UNP Q8DQ84
H	-2	GLY	-	expression tag	UNP Q8DQ84
H	-1	SER	-	expression tag	UNP Q8DQ84
H	0	HIS	-	expression tag	UNP Q8DQ84

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

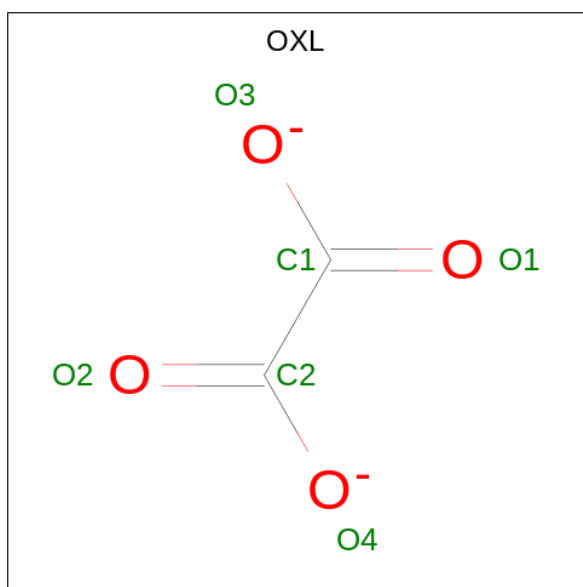


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	O	P	0	0
			20	6	12	2		
2	B	1	Total	C	O	P	0	0
			20	6	12	2		
2	C	1	Total	C	O	P	0	0
			20	6	12	2		
2	D	1	Total	C	O	P	0	0
			20	6	12	2		
2	E	1	Total	C	O	P	0	0
			20	6	12	2		
2	F	1	Total	C	O	P	0	0
			20	6	12	2		
2	G	1	Total	C	O	P	0	0
			20	6	12	2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

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 4 is OXALATE ION (three-letter code: OXL) (formula: C₂O₄).



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

- Molecule 5 is POTASSIUM ION (three-letter code: K) (formula: K).

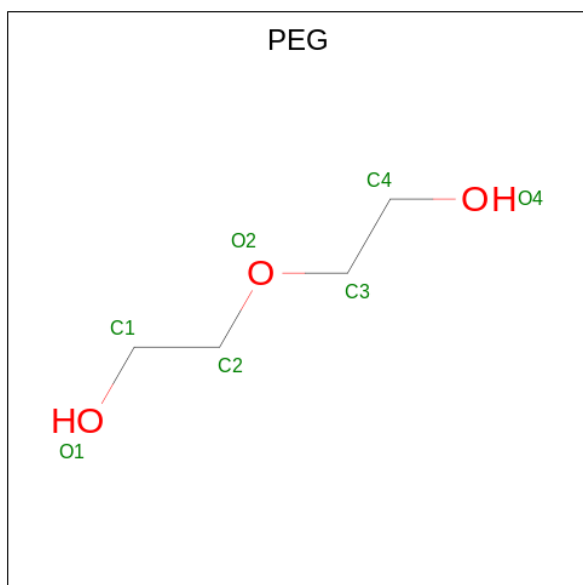
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total K 1 1	0	0
5	B	1	Total K 1 1	0	0
5	C	1	Total K 1 1	0	0
5	D	1	Total K 1 1	0	0
5	F	1	Total K 1 1	0	0

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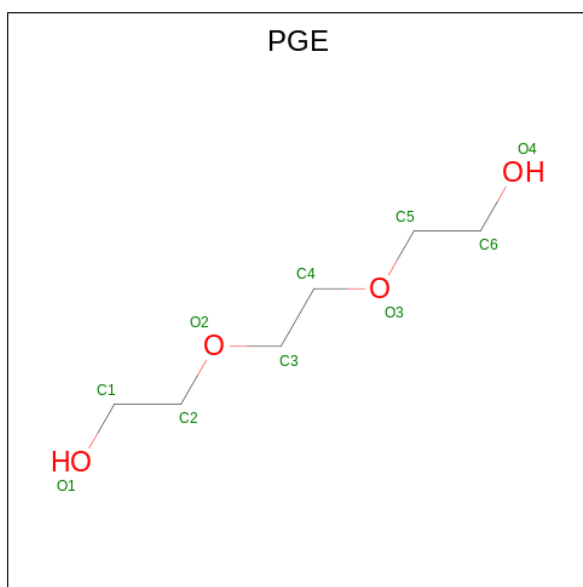
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	G	1	Total K 1 1	0	0
5	H	1	Total K 1 1	0	0

- Molecule 6 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



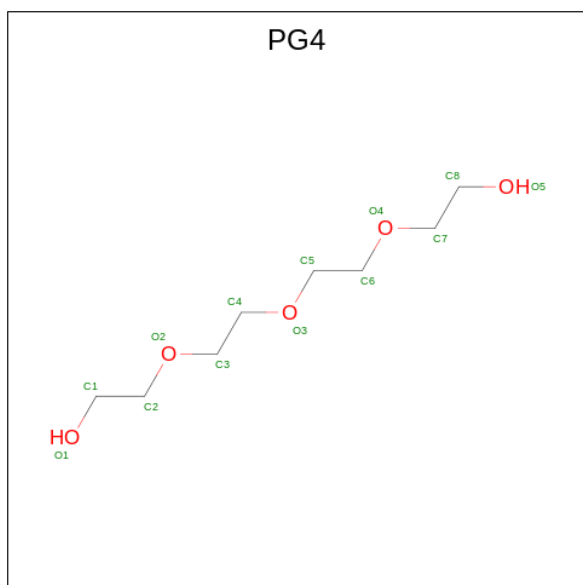
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C O 7 4 3	0	0
6	H	1	Total C O 7 4 3	0	0

- Molecule 7 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	B	1	Total C O 10 6 4	0	0
7	C	1	Total C O 10 6 4	0	0
7	D	1	Total C O 10 6 4	0	0
7	G	1	Total C O 10 6 4	0	0

- Molecule 8 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	F	1	Total	C	O	0	0
			13	8	5		

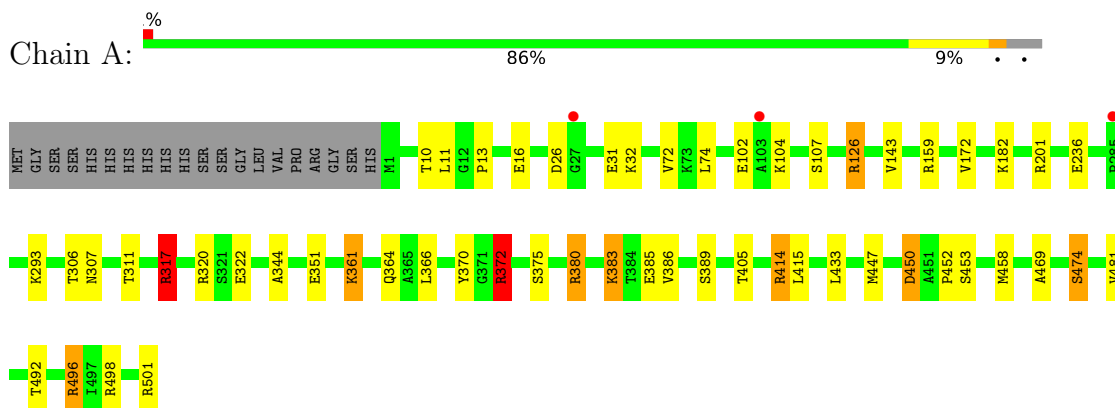
- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	169	Total	O	0	0
			169	169		
9	B	139	Total	O	0	0
			139	139		
9	C	103	Total	O	0	0
			103	103		
9	D	147	Total	O	0	0
			147	147		
9	E	56	Total	O	0	0
			56	56		
9	F	101	Total	O	0	0
			101	101		
9	G	129	Total	O	0	0
			129	129		
9	H	72	Total	O	0	0
			72	72		

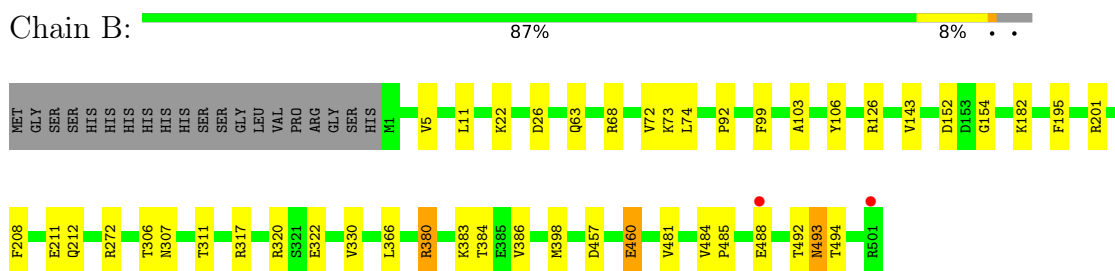
3 Residue-property plots [i](#)

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.

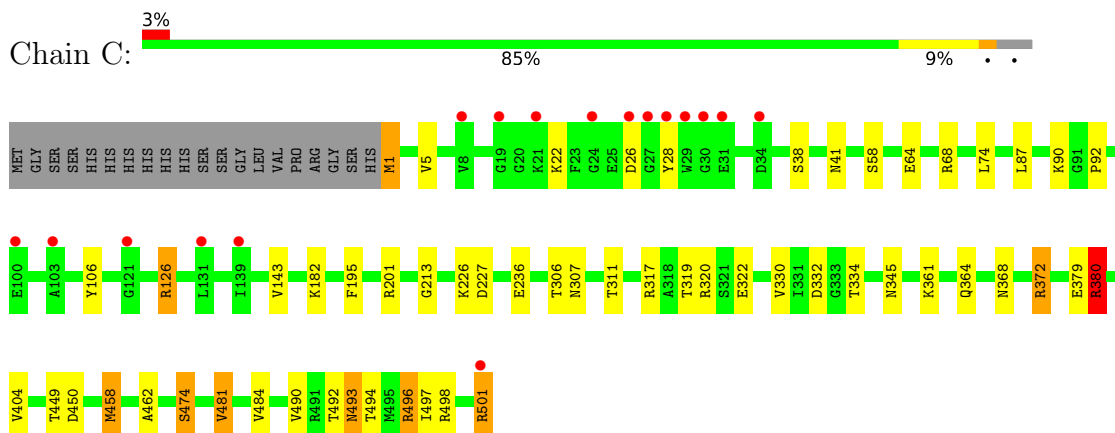
- Molecule 1: Pyruvate kinase



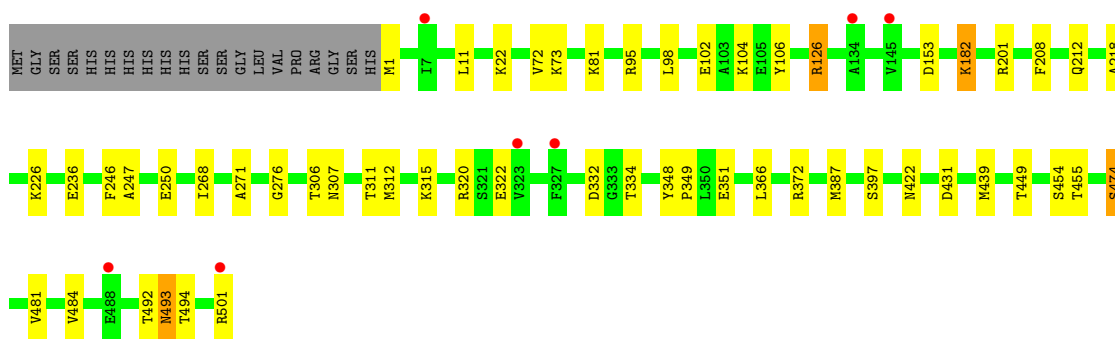
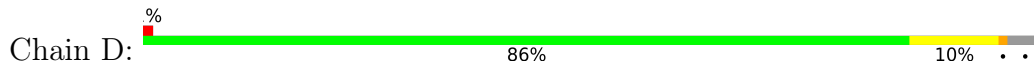
- Molecule 1: Pyruvate kinase



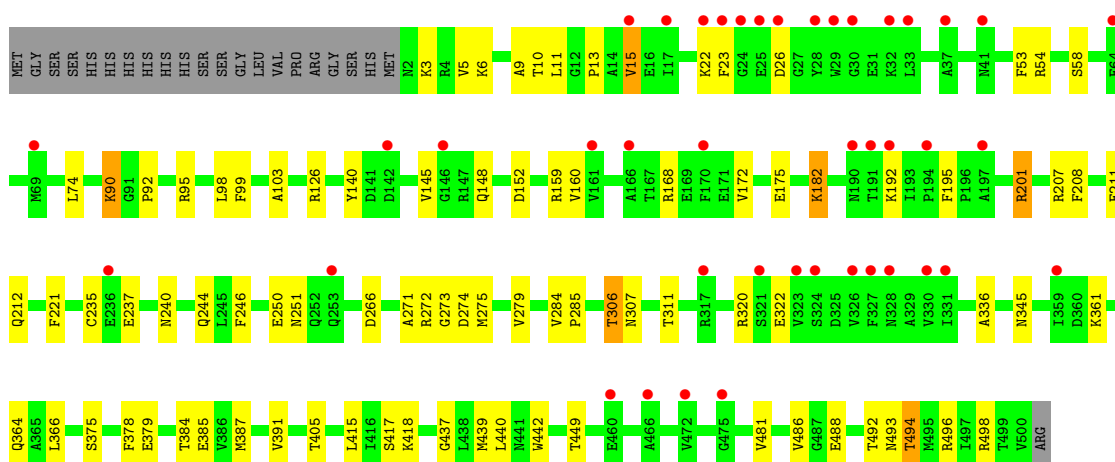
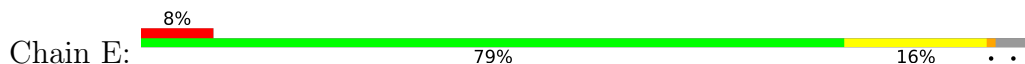
- Molecule 1: Pyruvate kinase



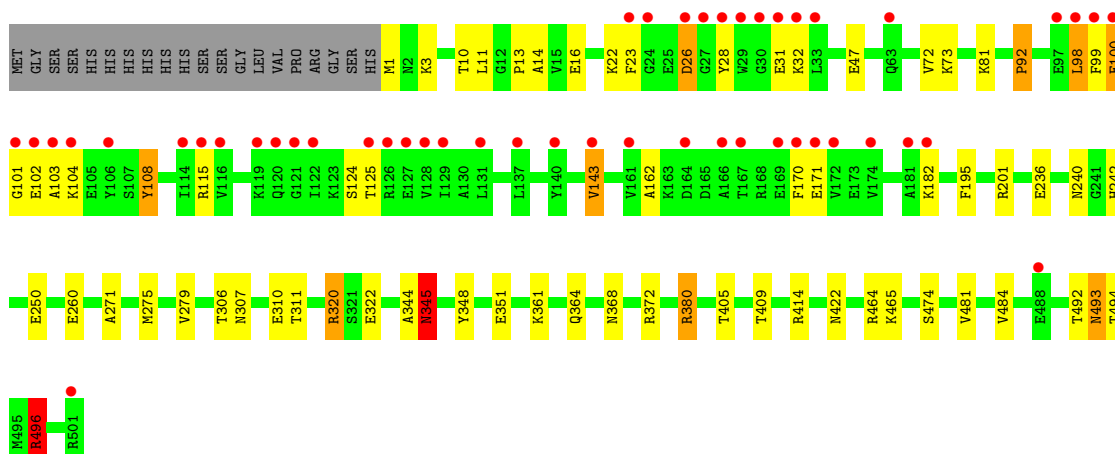
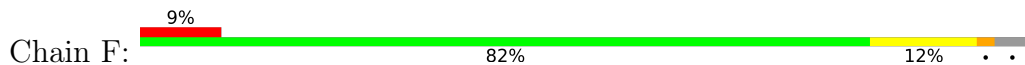
Molecule 1: Pyruvate kinase



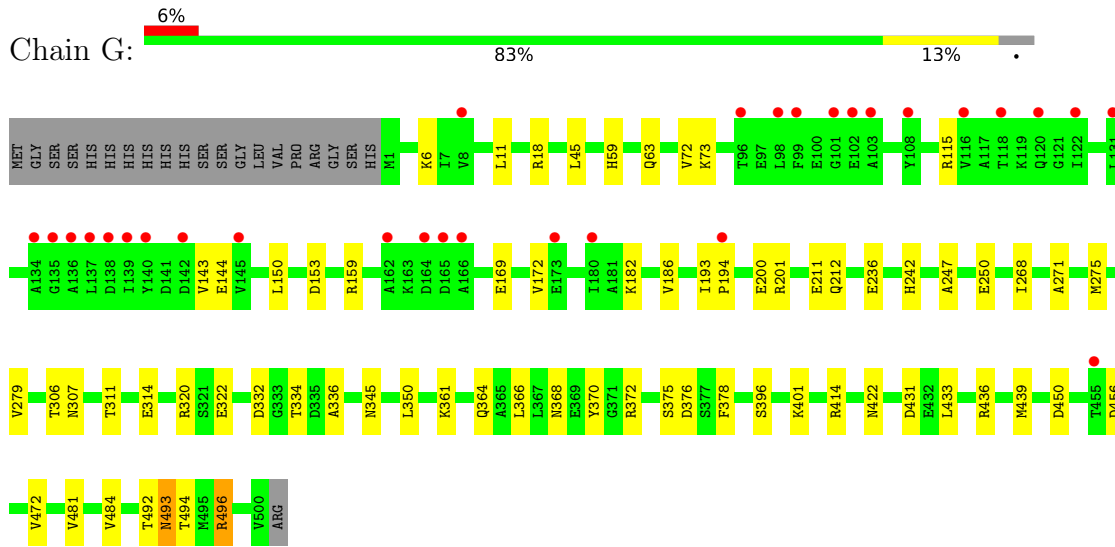
Molecule 1: Pyruvate kinase



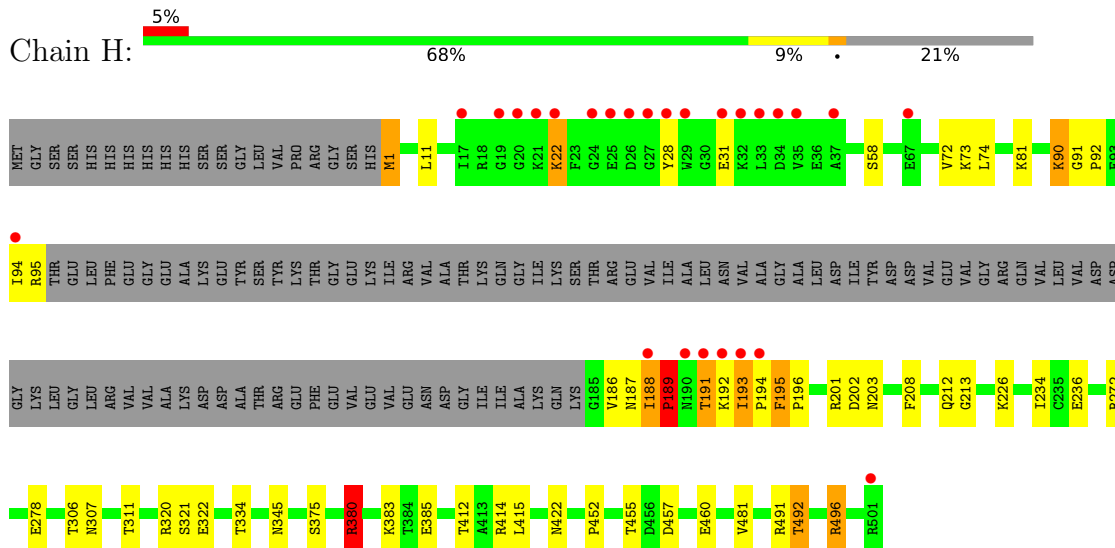
Molecule 1: Pyruvate kinase



● Molecule 1: Pyruvate kinase



● Molecule 1: Pyruvate kinase



4 Data and refinement statistics i

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	73.44Å 114.66Å 140.71Å 88.95° 88.12° 76.52°	Depositor
Resolution (Å)	49.38 – 2.00 49.37 – 2.00	Depositor EDS
% Data completeness (in resolution range)	97.0 (49.38-2.00) 97.0 (49.37-2.00)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.51 (at 2.00Å)	Xtrriage
Refinement program	REFMAC 5	Depositor
R, R_{free}	0.200 , 0.246 0.206 , 0.249	Depositor DCC
R_{free} test set	14695 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	39.9	Xtrriage
Anisotropy	0.226	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 44.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.059 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	31195	wwPDB-VP
Average B, all atoms (Å ²)	50.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.01% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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: PGE, OXL, FBP, PEG, PG4, K, MG

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	0.85	1/3885 (0.0%)	0.98	5/5238 (0.1%)
1	B	0.83	1/3885 (0.0%)	0.97	4/5238 (0.1%)
1	C	0.81	0/3885	0.94	4/5238 (0.1%)
1	D	0.82	2/3885 (0.1%)	0.93	0/5238
1	E	0.78	0/3865	0.90	0/5214
1	F	0.78	0/3885	0.94	4/5238 (0.1%)
1	G	0.80	0/3873	0.92	2/5224 (0.0%)
1	H	0.80	0/3187	1.00	11/4298 (0.3%)
All	All	0.81	4/30350 (0.0%)	0.94	30/40926 (0.1%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	351	GLU	CD-OE2	5.96	1.32	1.25
1	A	351	GLU	CD-OE2	5.72	1.31	1.25
1	D	439	MET	CG-SD	-5.68	1.66	1.81
1	B	380	ARG	CD-NE	-5.07	1.37	1.46

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	380	ARG	NE-CZ-NH2	14.84	127.72	120.30
1	C	380	ARG	NE-CZ-NH1	-11.71	114.45	120.30
1	B	380	ARG	NE-CZ-NH2	11.65	126.12	120.30
1	F	380	ARG	NE-CZ-NH2	10.68	125.64	120.30
1	H	380	ARG	NE-CZ-NH2	10.55	125.58	120.30
1	H	189	PRO	CA-N-CD	-10.34	97.03	111.50
1	H	194	PRO	CA-N-CD	-10.15	97.29	111.50
1	F	380	ARG	NE-CZ-NH1	-9.93	115.34	120.30
1	B	380	ARG	NE-CZ-NH1	-8.95	115.83	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	380	ARG	NE-CZ-NH1	-8.77	115.92	120.30
1	H	196	PRO	CA-N-CD	-8.67	99.36	111.50
1	A	372	ARG	NE-CZ-NH1	7.86	124.23	120.30
1	H	188	ILE	C-N-CD	7.64	144.45	128.40
1	H	193	ILE	C-N-CD	7.51	144.18	128.40
1	H	195	PHE	C-N-CD	7.45	144.04	128.40
1	G	496	ARG	NE-CZ-NH1	-6.38	117.11	120.30
1	A	496	ARG	NE-CZ-NH1	-6.08	117.26	120.30
1	F	496	ARG	NE-CZ-NH2	5.98	123.29	120.30
1	C	372	ARG	NE-CZ-NH1	-5.82	117.39	120.30
1	C	380	ARG	CD-NE-CZ	5.71	131.59	123.60
1	H	196	PRO	N-CA-CB	5.60	110.02	103.30
1	F	464	ARG	NE-CZ-NH2	-5.53	117.54	120.30
1	A	414	ARG	NE-CZ-NH1	-5.43	117.58	120.30
1	A	414	ARG	NE-CZ-NH2	5.39	123.00	120.30
1	G	414	ARG	CG-CD-NE	-5.28	100.71	111.80
1	A	317	ARG	NE-CZ-NH2	5.23	122.92	120.30
1	B	272	ARG	NE-CZ-NH2	-5.20	117.70	120.30
1	B	380	ARG	CD-NE-CZ	5.12	130.76	123.60
1	H	452	PRO	CA-N-CD	-5.08	104.39	111.50
1	H	414	ARG	CG-CD-NE	-5.06	101.17	111.80

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	3840	0	3887	36	0
1	B	3840	0	3887	29	0
1	C	3840	0	3887	34	0
1	D	3840	0	3887	29	0
1	E	3820	0	3863	54	0
1	F	3840	0	3887	60	0
1	G	3828	0	3874	45	0
1	H	3148	0	3185	42	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	20	0	10	0	0
2	B	20	0	10	1	0
2	C	20	0	10	0	0
2	D	20	0	10	0	0
2	E	20	0	10	0	0
2	F	20	0	10	1	0
2	G	20	0	10	0	0
2	H	20	0	10	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
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
4	A	6	0	0	0	0
4	B	6	0	0	0	0
4	C	6	0	0	0	0
4	D	6	0	0	0	0
4	F	6	0	0	0	0
4	G	6	0	0	0	0
4	H	6	0	0	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	F	1	0	0	0	0
5	G	1	0	0	0	0
5	H	1	0	0	0	0
6	A	7	0	10	1	0
6	H	7	0	10	5	0
7	B	10	0	14	3	0
7	C	10	0	14	1	0
7	D	10	0	14	1	0
7	G	10	0	14	5	0
8	F	13	0	18	5	0
9	A	169	0	0	2	0
9	B	139	0	0	0	0
9	C	103	0	0	4	0
9	D	147	0	0	0	0
9	E	56	0	0	1	0
9	F	101	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
9	G	129	0	0	3	0
9	H	72	0	0	4	0
All	All	31195	0	30531	308	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 5.

All (308) 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:F:73:LYS:HE3	8:F:605:PG4:H22	1.32	1.11
1:G:368:ASN:HD21	1:G:422:ASN:ND2	1.51	1.06
1:F:99:PHE:HE2	1:F:125:THR:O	1.48	0.97
1:B:73:LYS:HE3	7:B:605:PGE:H52	1.51	0.93
1:A:311:THR:HG23	1:A:322:GLU:OE1	1.73	0.88
1:A:372:ARG:HG2	1:A:372:ARG:HH11	1.39	0.88
1:C:481:VAL:HG13	1:C:492:THR:CG2	2.06	0.84
1:F:481:VAL:CG1	1:F:492:THR:HG21	2.08	0.84
1:H:422:ASN:HB2	9:H:766:HOH:O	1.77	0.82
1:B:481:VAL:CG1	1:B:492:THR:HG21	2.12	0.79
1:A:320:ARG:H	1:D:307:ASN:HD22	1.31	0.79
1:G:368:ASN:ND2	1:G:422:ASN:ND2	2.31	0.79
1:F:73:LYS:CE	8:F:605:PG4:H22	2.12	0.78
1:G:436:ARG:HH12	7:G:605:PGE:H1	1.46	0.78
1:G:481:VAL:HG13	1:G:492:THR:CG2	2.15	0.76
1:E:493:ASN:OD1	1:E:494:THR:HG22	1.86	0.76
1:F:481:VAL:CG1	1:F:492:THR:CG2	2.63	0.76
1:B:307:ASN:HD22	1:C:320:ARG:H	1.34	0.75
1:E:307:ASN:HD22	1:H:320:ARG:H	1.34	0.75
1:F:73:LYS:HE3	8:F:605:PG4:C2	2.14	0.75
1:F:307:ASN:HD22	1:G:320:ARG:H	1.35	0.74
1:C:481:VAL:HG13	1:C:492:THR:HG21	1.69	0.73
1:G:484:VAL:H	1:G:493:ASN:HD21	1.36	0.73
1:A:307:ASN:HD22	1:D:320:ARG:H	1.37	0.72
1:D:73:LYS:HE3	7:D:605:PGE:H32	1.72	0.72
1:F:320:ARG:H	1:G:307:ASN:HD22	1.37	0.72
1:E:320:ARG:H	1:H:307:ASN:HD22	1.35	0.71
1:C:311:THR:HG23	1:C:322:GLU:OE1	1.91	0.70
1:H:92:PRO:HB3	1:H:195:PHE:CG	2.27	0.70
1:F:22:LYS:O	1:F:28:TYR:CD2	2.44	0.69
1:G:73:LYS:HE3	7:G:605:PGE:H4	1.75	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:368:ASN:HD21	1:G:422:ASN:HD21	1.42	0.68
1:C:58:SER:HA	1:C:90:LYS:HG3	1.75	0.68
1:B:481:VAL:HG13	1:B:492:THR:CG2	2.23	0.68
1:F:13:PRO:HB2	1:F:23:PHE:HB2	1.76	0.67
1:H:412:THR:OG1	1:H:492:THR:CG2	2.42	0.67
1:B:320:ARG:H	1:C:307:ASN:HD22	1.43	0.67
1:B:481:VAL:CG1	1:B:492:THR:CG2	2.73	0.66
1:G:311:THR:HG23	1:G:322:GLU:OE1	1.96	0.66
1:F:481:VAL:HG13	1:F:492:THR:CG2	2.25	0.65
1:H:188:ILE:HG22	1:H:191:THR:OG1	1.97	0.65
1:A:372:ARG:HH11	1:A:372:ARG:CG	2.09	0.65
1:A:481:VAL:HG13	1:A:492:THR:CG2	2.27	0.64
1:B:484:VAL:H	1:B:493:ASN:HD21	1.44	0.64
1:E:481:VAL:HG13	1:E:492:THR:CG2	2.27	0.64
1:D:481:VAL:CG1	1:D:492:THR:CG2	2.76	0.64
1:F:73:LYS:CE	8:F:605:PG4:C2	2.73	0.63
1:E:311:THR:HG23	1:E:322:GLU:OE1	1.98	0.63
1:H:457:ASP:OD1	1:H:460:GLU:HG2	1.98	0.63
1:A:385:GLU:HG3	1:A:415:LEU:HD22	1.80	0.62
1:A:447:MET:HE1	1:A:469:ALA:HB2	1.81	0.62
1:B:11:LEU:HD11	1:B:72:VAL:CG2	2.30	0.62
1:A:361:LYS:O	1:A:364:GLN:HG2	1.99	0.62
1:B:92:PRO:HB3	1:B:195:PHE:CG	2.35	0.62
1:H:189:PRO:HD2	1:H:189:PRO:O	2.00	0.62
1:F:11:LEU:HD11	1:F:72:VAL:CG2	2.30	0.61
1:F:99:PHE:CE2	1:F:125:THR:O	2.40	0.61
1:F:368:ASN:ND2	1:F:422:ASN:OD1	2.28	0.61
1:F:493:ASN:HD22	1:F:494:THR:N	1.99	0.61
1:C:481:VAL:CG1	1:C:492:THR:HG21	2.31	0.60
1:B:73:LYS:HE3	7:B:605:PGE:C5	2.27	0.60
1:C:496:ARG:HD2	9:C:790:HOH:O	1.99	0.60
1:F:14:ALA:HB2	1:F:345:ASN:HA	1.83	0.60
1:G:481:VAL:HG13	1:G:492:THR:HG21	1.84	0.59
1:E:13:PRO:HB2	1:E:23:PHE:CD1	2.37	0.59
1:G:73:LYS:HE3	7:G:605:PGE:C4	2.31	0.59
1:H:208:PHE:O	1:H:212:GLN:HG2	2.02	0.59
1:E:244:GLN:NE2	1:E:437:GLY:O	2.35	0.59
1:E:208:PHE:O	1:E:212:GLN:HG2	2.03	0.59
1:H:412:THR:OG1	1:H:492:THR:HG21	2.03	0.59
1:F:250:GLU:HG2	1:F:271:ALA:HB3	1.85	0.59
1:C:64:GLU:OE2	1:C:68:ARG:NH2	2.36	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:18:ARG:NH2	9:G:702:HOH:O	2.36	0.58
1:A:383:LYS:HA	1:A:386:VAL:HG13	1.84	0.58
1:D:481:VAL:HG13	1:D:492:THR:CG2	2.32	0.58
1:H:58:SER:HA	1:H:90:LYS:HG3	1.85	0.58
1:C:1:MET:CE	1:C:364:GLN:HE21	2.15	0.58
1:D:481:VAL:HG13	1:D:492:THR:HG23	1.84	0.58
1:E:221:PHE:HD1	1:E:251:ASN:HD22	1.50	0.58
1:D:481:VAL:CG1	1:D:492:THR:HG23	2.33	0.58
1:A:447:MET:CE	1:A:469:ALA:HB2	2.34	0.57
1:F:98:LEU:N	1:F:98:LEU:HD23	2.18	0.57
1:H:192:LYS:O	1:H:193:ILE:C	2.42	0.57
1:D:484:VAL:H	1:D:493:ASN:HD21	1.52	0.57
1:E:235:CYS:O	1:E:240:ASN:N	2.35	0.57
1:E:90:LYS:HE2	1:E:201:ARG:NH1	2.19	0.57
1:A:11:LEU:HD11	1:A:72:VAL:HG22	1.87	0.57
1:A:481:VAL:CG1	1:A:492:THR:CG2	2.83	0.56
1:E:11:LEU:HD22	1:E:15:VAL:HG21	1.86	0.56
1:F:99:PHE:HE2	1:F:125:THR:C	2.08	0.56
1:H:193:ILE:CG2	1:H:195:PHE:CE2	2.89	0.56
1:F:10:THR:HG22	1:F:344:ALA:HB2	1.87	0.56
1:E:385:GLU:HG3	1:E:415:LEU:HD22	1.86	0.56
1:F:100:GLU:OE1	1:F:125:THR:HG22	2.06	0.56
1:G:368:ASN:ND2	1:G:422:ASN:HD21	1.98	0.56
1:C:497:ILE:HD12	1:D:387:MET:HE2	1.87	0.55
1:C:458:MET:CE	1:C:484:VAL:HG22	2.36	0.55
1:A:450:ASP:HB2	1:G:63:GLN:OE1	2.06	0.55
1:H:457:ASP:HB3	1:H:460:GLU:HB2	1.89	0.55
1:G:59:HIS:HD2	9:G:807:HOH:O	1.88	0.55
1:H:383:LYS:HB3	1:H:491:ARG:CD	2.37	0.54
1:C:481:VAL:HG13	1:C:492:THR:HG23	1.87	0.54
1:A:481:VAL:CG1	1:A:492:THR:HG21	2.38	0.54
1:B:99:PHE:HB2	1:B:103:ALA:O	2.08	0.54
1:E:493:ASN:OD1	1:E:494:THR:CG2	2.54	0.54
1:F:484:VAL:H	1:F:493:ASN:HD21	1.56	0.54
1:D:11:LEU:HD11	1:D:72:VAL:CG2	2.38	0.53
1:E:148:GLN:HE21	1:E:175:GLU:CD	2.11	0.53
1:F:13:PRO:HA	1:F:16:GLU:HB2	1.91	0.53
1:H:92:PRO:HB3	1:H:195:PHE:CD1	2.42	0.53
1:E:250:GLU:HG3	1:E:271:ALA:HB3	1.90	0.53
1:A:414:ARG:NH2	9:A:703:HOH:O	2.39	0.53
1:E:92:PRO:HB3	1:E:195:PHE:CG	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:481:VAL:HG12	1:F:492:THR:CG2	2.38	0.53
1:D:250:GLU:HG2	1:D:271:ALA:HB3	1.91	0.53
1:F:493:ASN:HD22	1:F:493:ASN:C	2.12	0.53
1:C:106:TYR:CD1	1:C:126:ARG:HG3	2.44	0.52
1:G:159:ARG:O	1:G:172:VAL:HA	2.09	0.52
1:H:412:THR:HG21	1:H:492:THR:HG21	1.90	0.52
1:H:193:ILE:HG21	1:H:195:PHE:CE2	2.44	0.52
1:H:311:THR:HG23	1:H:322:GLU:OE1	2.09	0.52
1:E:481:VAL:CG1	1:E:492:THR:HG21	2.39	0.52
1:G:401:LYS:HG2	1:G:472:VAL:HG12	1.92	0.52
1:D:208:PHE:O	1:D:212:GLN:HG2	2.10	0.52
1:G:481:VAL:HG13	1:G:492:THR:HG23	1.91	0.52
1:F:348:TYR:HB3	1:F:351:GLU:HB2	1.91	0.52
1:G:332:ASP:OD1	1:G:372:ARG:NE	2.40	0.52
1:D:311:THR:HG23	1:D:322:GLU:OE1	2.10	0.51
1:D:332:ASP:OD1	1:D:372:ARG:NE	2.40	0.51
1:E:417:SER:OG	1:E:442:TRP:O	2.27	0.51
1:A:317:ARG:NH1	1:D:276:GLY:O	2.43	0.51
1:H:11:LEU:HD11	1:H:72:VAL:CG2	2.40	0.51
1:G:481:VAL:CG1	1:G:492:THR:HG21	2.41	0.51
1:C:1:MET:HE2	1:C:364:GLN:HE21	1.75	0.51
1:D:104:LYS:HD3	1:D:182:LYS:HE3	1.93	0.50
1:H:385:GLU:HG3	1:H:415:LEU:HD22	1.93	0.50
1:G:484:VAL:H	1:G:493:ASN:ND2	2.08	0.50
1:G:250:GLU:HG2	1:G:271:ALA:HB3	1.93	0.50
1:B:493:ASN:C	1:B:493:ASN:HD22	2.14	0.50
1:F:26:ASP:OD2	1:F:26:ASP:N	2.38	0.50
1:F:162:ALA:HB3	1:F:171:GLU:HB2	1.94	0.50
1:C:484:VAL:H	1:C:493:ASN:HD21	1.59	0.50
1:D:493:ASN:C	1:D:493:ASN:HD22	2.15	0.50
1:C:87:LEU:C	1:C:87:LEU:HD23	2.31	0.49
1:C:498:ARG:HD3	9:C:790:HOH:O	2.11	0.49
1:E:140:TYR:CE2	1:E:168:ARG:HA	2.47	0.49
1:F:92:PRO:HB3	1:F:195:PHE:CG	2.48	0.49
1:A:474:SER:OG	1:A:501:ARG:OXT	2.30	0.49
1:C:92:PRO:HB3	1:C:195:PHE:CG	2.47	0.49
1:B:154:GLY:O	1:C:317:ARG:HD2	2.13	0.49
1:D:481:VAL:CG1	1:D:492:THR:HG21	2.42	0.49
1:E:10:THR:OG1	1:E:54:ARG:NH1	2.41	0.49
1:B:493:ASN:HD22	1:B:494:THR:N	2.10	0.48
1:F:99:PHE:HB3	1:F:103:ALA:HB3	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:73:LYS:HE3	6:H:605:PEG:C4	2.43	0.48
1:C:474:SER:OG	1:C:501:ARG:OXT	2.31	0.48
1:G:436:ARG:HH12	7:G:605:PGE:C1	2.21	0.48
1:A:481:VAL:HG13	1:A:492:THR:HG23	1.95	0.48
1:G:275:MET:O	1:G:279:VAL:HG22	2.14	0.48
1:H:187:ASN:ND2	1:H:278:GLU:OE1	2.47	0.48
1:B:11:LEU:CD1	1:B:72:VAL:CG2	2.92	0.47
1:H:73:LYS:HE3	6:H:605:PEG:H42	1.96	0.47
1:G:375:SER:HA	1:G:378:PHE:CE2	2.49	0.47
1:C:1:MET:HE3	9:C:791:HOH:O	2.13	0.47
1:C:493:ASN:HD22	1:C:494:THR:N	2.12	0.47
1:H:213:GLY:C	6:H:605:PEG:H21	2.34	0.47
1:F:11:LEU:CD1	1:F:72:VAL:CG2	2.92	0.47
1:F:481:VAL:HG12	1:F:492:THR:HG21	1.90	0.47
1:E:481:VAL:HG13	1:E:492:THR:HG23	1.97	0.46
1:F:275:MET:O	1:F:279:VAL:HG22	2.15	0.46
1:G:242:HIS:CE1	1:G:433:LEU:HD22	2.50	0.46
1:H:375:SER:O	1:H:380:ARG:NH1	2.46	0.46
1:C:380:ARG:HD3	1:D:397:SER:OG	2.14	0.46
1:G:247:ALA:HB3	1:G:268:ILE:HD13	1.97	0.46
1:F:99:PHE:HD2	1:F:124:SER:O	1.98	0.46
1:G:150:LEU:O	1:G:186:VAL:HA	2.16	0.46
1:E:284:VAL:HB	1:E:285:PRO:HD3	1.98	0.46
1:C:311:THR:HG21	1:C:319:THR:HG23	1.97	0.46
1:H:1:MET:HB2	9:H:757:HOH:O	2.15	0.46
1:E:384:THR:HG22	1:E:415:LEU:HD12	1.98	0.46
1:A:372:ARG:NH2	1:D:372:ARG:NH2	2.64	0.46
1:E:244:GLN:HA	1:E:266:ASP:OD2	2.16	0.46
1:F:409:THR:OG1	2:F:601:FBP:O3P	2.21	0.46
1:H:203:ASN:ND2	1:H:234:ILE:HD11	2.30	0.46
1:B:481:VAL:HG12	1:B:492:THR:HG21	1.95	0.46
1:F:98:LEU:HD23	1:F:98:LEU:H	1.80	0.46
1:F:496:ARG:NH1	9:F:705:HOH:O	2.48	0.46
1:B:106:TYR:CG	1:B:126:ARG:HG3	2.51	0.45
1:E:221:PHE:HD1	1:E:251:ASN:ND2	2.14	0.45
1:H:213:GLY:HA3	6:H:605:PEG:H22	1.98	0.45
1:F:73:LYS:HE2	8:F:605:PG4:C2	2.46	0.45
1:D:247:ALA:HB3	1:D:268:ILE:HD13	1.98	0.45
1:E:6:LYS:O	1:E:336:ALA:HA	2.15	0.45
1:F:143:VAL:HG13	1:F:170:PHE:CZ	2.51	0.45
1:F:372:ARG:HH11	1:G:372:ARG:NH2	2.14	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:59:HIS:CD2	9:G:807:HOH:O	2.66	0.45
1:H:412:THR:CG2	1:H:492:THR:HG21	2.47	0.45
1:C:493:ASN:HD22	1:C:493:ASN:C	2.19	0.45
1:F:108:TYR:N	1:F:108:TYR:CD2	2.84	0.45
1:E:246:PHE:CE2	1:E:440:LEU:HD12	2.51	0.45
1:E:481:VAL:CG1	1:E:492:THR:CG2	2.92	0.45
1:A:159:ARG:O	1:A:172:VAL:HA	2.16	0.45
1:E:58:SER:HA	1:E:90:LYS:HB2	1.99	0.44
1:B:73:LYS:CE	7:B:605:PGE:H52	2.34	0.44
1:F:250:GLU:CG	1:F:271:ALA:HB3	2.47	0.44
1:G:484:VAL:CG2	1:H:496:ARG:NH2	2.80	0.44
1:D:106:TYR:CD1	1:D:126:ARG:HG3	2.53	0.44
1:E:207:ARG:O	1:E:211:GLU:HG3	2.17	0.44
1:E:246:PHE:HE2	1:E:440:LEU:CD1	2.30	0.44
1:A:11:LEU:HD11	1:A:72:VAL:CG2	2.47	0.44
1:C:332:ASP:OD1	1:C:372:ARG:NE	2.51	0.44
1:B:311:THR:HG23	1:B:322:GLU:OE1	2.18	0.44
1:G:6:LYS:O	1:G:336:ALA:HA	2.18	0.44
1:A:372:ARG:CG	1:A:372:ARG:NH1	2.75	0.44
1:A:380:ARG:NH2	1:A:389:SER:OG	2.46	0.44
1:E:375:SER:HA	1:E:378:PHE:CE2	2.51	0.44
1:A:383:LYS:HG2	9:A:830:HOH:O	2.17	0.43
1:F:100:GLU:HG2	1:F:101:GLY:N	2.33	0.43
1:F:414:ARG:NH2	9:F:706:HOH:O	2.49	0.43
1:D:493:ASN:HD22	1:D:494:THR:N	2.16	0.43
1:F:372:ARG:NH1	1:G:372:ARG:NH2	2.66	0.43
1:F:493:ASN:C	1:F:493:ASN:ND2	2.71	0.43
1:A:11:LEU:CD1	1:A:72:VAL:CG2	2.96	0.43
1:D:484:VAL:H	1:D:493:ASN:ND2	2.15	0.43
1:E:3:LYS:HG2	1:E:5:VAL:O	2.19	0.43
1:E:246:PHE:HE2	1:E:440:LEU:HD12	1.83	0.43
1:E:250:GLU:OE1	1:E:274:ASP:OD1	2.36	0.43
1:E:415:LEU:HD23	1:E:415:LEU:HA	1.91	0.43
1:E:92:PRO:HB3	1:E:195:PHE:CD1	2.54	0.43
1:A:107:SER:O	1:A:126:ARG:NH1	2.51	0.43
1:C:311:THR:HG21	1:C:319:THR:CG2	2.49	0.43
1:H:94:ILE:HG22	1:H:186:VAL:HB	2.01	0.43
1:H:412:THR:OG1	1:H:492:THR:HG23	2.16	0.43
1:D:312:MET:HA	1:D:315:LYS:O	2.19	0.43
1:F:3:LYS:HE3	1:F:3:LYS:HB3	1.80	0.43
1:G:211:GLU:HG2	1:G:212:GLN:HE21	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:99:PHE:CD2	1:F:124:SER:O	2.72	0.43
1:C:213:GLY:CA	7:C:605:PGE:H52	2.49	0.42
1:H:492:THR:HG23	9:H:738:HOH:O	2.18	0.42
1:E:272:ARG:CB	1:H:320:ARG:HG2	2.49	0.42
1:G:361:LYS:O	1:G:364:GLN:HG2	2.19	0.42
1:B:493:ASN:C	1:B:493:ASN:ND2	2.73	0.42
1:E:148:GLN:NE2	1:E:175:GLU:OE2	2.51	0.42
1:F:115:ARG:HA	1:F:170:PHE:O	2.20	0.42
1:G:73:LYS:CE	7:G:605:PGE:H4	2.47	0.42
1:E:250:GLU:CG	1:E:271:ALA:HB3	2.49	0.42
1:E:275:MET:O	1:E:279:VAL:HG22	2.19	0.42
1:F:311:THR:HG23	1:F:322:GLU:OE1	2.20	0.42
1:G:332:ASP:OD1	1:G:372:ARG:NH1	2.49	0.42
1:D:474:SER:OG	1:D:501:ARG:OXT	2.37	0.42
1:F:372:ARG:NH1	1:G:370:TYR:O	2.51	0.42
1:G:115:ARG:NH1	1:G:169:GLU:OE2	2.53	0.42
1:H:22:LYS:O	1:H:28:TYR:CD2	2.73	0.42
1:B:208:PHE:O	1:B:212:GLN:HG2	2.20	0.42
1:C:404:VAL:HG11	1:C:462:ALA:HB1	2.01	0.42
1:D:348:TYR:N	1:D:349:PRO:CD	2.83	0.42
1:F:465:LYS:HA	1:F:465:LYS:HD2	1.91	0.42
1:H:11:LEU:CD1	1:H:72:VAL:CG2	2.97	0.42
1:G:45:LEU:HD22	1:G:350:LEU:HA	2.02	0.42
1:A:102:GLU:O	1:A:104:LYS:HE3	2.20	0.42
1:A:375:SER:O	1:A:380:ARG:NH1	2.53	0.42
1:B:5:VAL:HG21	1:B:330:VAL:HG13	2.01	0.42
1:E:99:PHE:HB2	1:E:103:ALA:O	2.20	0.42
1:G:144:GLU:OE2	1:G:144:GLU:N	2.52	0.42
1:E:387:MET:O	1:E:391:VAL:HG23	2.19	0.41
1:E:273:GLY:CA	1:E:306:THR:HG21	2.50	0.41
1:E:481:VAL:HG13	1:E:492:THR:HG21	1.99	0.41
1:C:368:ASN:HB2	9:C:754:HOH:O	2.19	0.41
1:E:361:LYS:O	1:E:364:GLN:HG2	2.19	0.41
1:F:240:ASN:HA	1:F:242:HIS:CE1	2.55	0.41
1:G:484:VAL:HG22	1:G:494:THR:OG1	2.19	0.41
1:B:383:LYS:HA	1:B:386:VAL:HG13	2.02	0.41
1:B:485:PRO:HD2	1:B:488:GLU:CG	2.50	0.41
1:C:5:VAL:HG21	1:C:330:VAL:HG22	2.03	0.41
1:F:310:GLU:OE1	1:F:310:GLU:HA	2.20	0.41
1:A:372:ARG:HG2	1:A:372:ARG:NH1	2.14	0.41
1:A:433:LEU:HD21	6:A:605:PEG:H41	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:493:ASN:C	1:C:493:ASN:ND2	2.74	0.41
1:H:383:LYS:HB3	1:H:491:ARG:HD3	2.02	0.41
1:A:10:THR:HG22	1:A:344:ALA:HB2	2.01	0.41
1:A:366:LEU:HD23	1:A:370:TYR:CE2	2.56	0.41
1:C:38:SER:O	1:C:41:ASN:HB2	2.20	0.41
1:E:98:LEU:HA	1:E:182:LYS:HB2	2.02	0.41
1:H:91:GLY:HA2	1:H:202:ASP:OD2	2.21	0.41
1:E:320:ARG:HD3	1:H:272:ARG:C	2.41	0.41
1:F:361:LYS:O	1:F:364:GLN:HG2	2.20	0.41
1:B:485:PRO:HD2	1:B:488:GLU:HG2	2.02	0.41
1:E:159:ARG:O	1:E:172:VAL:HA	2.20	0.41
1:F:99:PHE:CE2	1:F:125:THR:C	2.91	0.41
1:G:193:ILE:HA	1:G:194:PRO:HD3	1.91	0.41
1:F:11:LEU:HD11	1:F:72:VAL:HG22	2.01	0.41
1:F:345:ASN:HD22	1:F:345:ASN:C	2.22	0.41
1:A:13:PRO:HA	1:A:16:GLU:HB2	2.03	0.40
1:D:218:ALA:HA	1:D:246:PHE:O	2.21	0.40
1:E:145:VAL:HA	1:E:160:VAL:HG12	2.03	0.40
1:E:272:ARG:HB3	1:H:320:ARG:CG	2.51	0.40
1:H:193:ILE:HG22	1:H:195:PHE:CE2	2.56	0.40
1:B:384:THR:OG1	2:B:601:FBP:O5P	2.27	0.40
6:H:605:PEG:H11	9:H:768:HOH:O	2.21	0.40
1:D:98:LEU:HD23	1:D:182:LYS:HG3	2.03	0.40
1:G:11:LEU:HD11	1:G:72:VAL:CG2	2.52	0.40
1:A:452:PRO:HG2	1:A:458:MET:CE	2.52	0.40
1:B:11:LEU:HD11	1:B:72:VAL:HG21	2.02	0.40
1:E:418:LYS:NZ	9:E:703:HOH:O	2.54	0.40
1:A:386:VAL:HG11	1:B:398:MET:SD	2.62	0.40
1:B:457:ASP:HB3	1:B:460:GLU:HB2	2.03	0.40
1:E:9:ALA:O	1:E:53:PHE:HA	2.21	0.40
1:F:368:ASN:HD22	1:F:368:ASN:HA	1.65	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	499/521 (96%)	484 (97%)	14 (3%)	1 (0%)	47	44
1	B	499/521 (96%)	488 (98%)	9 (2%)	2 (0%)	34	30
1	C	499/521 (96%)	482 (97%)	15 (3%)	2 (0%)	34	30
1	D	499/521 (96%)	484 (97%)	14 (3%)	1 (0%)	47	44
1	E	497/521 (95%)	462 (93%)	32 (6%)	3 (1%)	25	19
1	F	499/521 (96%)	468 (94%)	28 (6%)	3 (1%)	25	19
1	G	498/521 (96%)	485 (97%)	12 (2%)	1 (0%)	47	44
1	H	408/521 (78%)	392 (96%)	13 (3%)	3 (1%)	22	16
All	All	3898/4168 (94%)	3745 (96%)	137 (4%)	16 (0%)	34	30

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	189	PRO
1	E	237	GLU
1	F	306	THR
1	G	306	THR
1	A	306	THR
1	B	306	THR
1	D	306	THR
1	E	306	THR
1	H	306	THR
1	C	306	THR
1	F	345	ASN
1	H	31	GLU
1	B	152	ASP
1	E	152	ASP
1	C	28	TYR
1	F	92	PRO

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	411/428 (96%)	390 (95%)	21 (5%)	24	19
1	B	411/428 (96%)	397 (97%)	14 (3%)	37	36
1	C	411/428 (96%)	386 (94%)	25 (6%)	18	14
1	D	411/428 (96%)	391 (95%)	20 (5%)	25	21
1	E	409/428 (96%)	388 (95%)	21 (5%)	24	19
1	F	411/428 (96%)	388 (94%)	23 (6%)	21	17
1	G	410/428 (96%)	392 (96%)	18 (4%)	28	25
1	H	338/428 (79%)	320 (95%)	18 (5%)	22	18
All	All	3212/3424 (94%)	3052 (95%)	160 (5%)	24	20

All (160) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	ASP
1	A	31	GLU
1	A	32	LYS
1	A	74	LEU
1	A	126	ARG
1	A	143	VAL
1	A	182	LYS
1	A	201	ARG
1	A	236	GLU
1	A	293	LYS
1	A	317	ARG
1	A	361	LYS
1	A	372	ARG
1	A	380	ARG
1	A	383	LYS
1	A	405	THR
1	A	450	ASP
1	A	453	SER
1	A	474	SER
1	A	496	ARG
1	A	498	ARG
1	B	22	LYS
1	B	26	ASP
1	B	63	GLN
1	B	68	ARG
1	B	74	LEU
1	B	143	VAL

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Mol	Chain	Res	Type
1	B	182	LYS
1	B	201	ARG
1	B	211	GLU
1	B	317	ARG
1	B	366	LEU
1	B	380	ARG
1	B	460	GLU
1	B	493	ASN
1	C	1	MET
1	C	22	LYS
1	C	26	ASP
1	C	74	LEU
1	C	126	ARG
1	C	143	VAL
1	C	182	LYS
1	C	201	ARG
1	C	226	LYS
1	C	227	ASP
1	C	236	GLU
1	C	334	THR
1	C	345	ASN
1	C	361	LYS
1	C	379	GLU
1	C	380	ARG
1	C	449	THR
1	C	450	ASP
1	C	458	MET
1	C	474	SER
1	C	481	VAL
1	C	490	VAL
1	C	493	ASN
1	C	496	ARG
1	C	501	ARG
1	D	1	MET
1	D	22	LYS
1	D	81	LYS
1	D	95	ARG
1	D	102	GLU
1	D	126	ARG
1	D	153	ASP
1	D	182	LYS
1	D	201	ARG

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Mol	Chain	Res	Type
1	D	226	LYS
1	D	236	GLU
1	D	334	THR
1	D	366	LEU
1	D	422	ASN
1	D	431	ASP
1	D	449	THR
1	D	454	SER
1	D	455	THR
1	D	474	SER
1	D	493	ASN
1	E	15	VAL
1	E	22	LYS
1	E	26	ASP
1	E	74	LEU
1	E	90	LYS
1	E	95	ARG
1	E	126	ARG
1	E	182	LYS
1	E	192	LYS
1	E	201	ARG
1	E	345	ASN
1	E	366	LEU
1	E	379	GLU
1	E	405	THR
1	E	439	MET
1	E	449	THR
1	E	486	VAL
1	E	488	GLU
1	E	494	THR
1	E	496	ARG
1	E	498	ARG
1	F	1	MET
1	F	26	ASP
1	F	31	GLU
1	F	32	LYS
1	F	47	GLU
1	F	81	LYS
1	F	98	LEU
1	F	100	GLU
1	F	102	GLU
1	F	104	LYS

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Mol	Chain	Res	Type
1	F	108	TYR
1	F	143	VAL
1	F	182	LYS
1	F	201	ARG
1	F	236	GLU
1	F	260	GLU
1	F	320	ARG
1	F	345	ASN
1	F	380	ARG
1	F	405	THR
1	F	474	SER
1	F	493	ASN
1	F	496	ARG
1	G	143	VAL
1	G	153	ASP
1	G	182	LYS
1	G	200	GLU
1	G	201	ARG
1	G	236	GLU
1	G	314	GLU
1	G	334	THR
1	G	345	ASN
1	G	366	LEU
1	G	376	ASP
1	G	396	SER
1	G	431	ASP
1	G	439	MET
1	G	450	ASP
1	G	456	ASP
1	G	493	ASN
1	G	496	ARG
1	H	1	MET
1	H	22	LYS
1	H	74	LEU
1	H	81	LYS
1	H	90	LYS
1	H	95	ARG
1	H	191	THR
1	H	201	ARG
1	H	226	LYS
1	H	236	GLU
1	H	321	SER

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Mol	Chain	Res	Type
1	H	334	THR
1	H	345	ASN
1	H	380	ARG
1	H	455	THR
1	H	481	VAL
1	H	492	THR
1	H	496	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (31) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	253	GLN
1	A	307	ASN
1	A	368	ASN
1	B	307	ASN
1	B	493	ASN
1	C	240	ASN
1	C	307	ASN
1	C	364	GLN
1	C	493	ASN
1	D	253	GLN
1	D	307	ASN
1	D	345	ASN
1	D	493	ASN
1	E	148	GLN
1	E	307	ASN
1	E	368	ASN
1	E	381	ASN
1	F	240	ASN
1	F	242	HIS
1	F	307	ASN
1	F	493	ASN
1	G	183	GLN
1	G	212	GLN
1	G	240	ASN
1	G	307	ASN
1	G	345	ASN
1	G	422	ASN
1	G	493	ASN
1	H	190	ASN
1	H	307	ASN
1	H	381	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 36 ligands modelled in this entry, 14 are monoatomic - leaving 22 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
2	FBP	C	601	-	18,20,20	0.90	0	23,32,32	1.38	2 (8%)
4	OXL	G	603	3	5,5,5	1.53	0	6,6,6	1.10	0
2	FBP	F	601	-	18,20,20	0.90	0	23,32,32	1.38	3 (13%)
6	PEG	H	605	-	6,6,6	0.52	0	5,5,5	0.29	0
4	OXL	D	603	3	5,5,5	1.85	1 (20%)	6,6,6	0.58	0
2	FBP	A	601	-	18,20,20	0.80	0	23,32,32	1.54	5 (21%)
4	OXL	B	603	3	5,5,5	1.15	0	6,6,6	1.43	1 (16%)
8	PG4	F	605	-	12,12,12	0.33	0	11,11,11	0.38	0
4	OXL	A	603	3	5,5,5	1.79	2 (40%)	6,6,6	1.26	0
7	PGE	D	605	-	9,9,9	0.47	0	8,8,8	0.26	0
7	PGE	G	605	-	9,9,9	0.34	0	8,8,8	0.45	0
2	FBP	H	601	-	18,20,20	0.82	0	23,32,32	1.67	5 (21%)
7	PGE	B	605	-	9,9,9	0.25	0	8,8,8	0.35	0
4	OXL	F	603	3	5,5,5	1.41	0	6,6,6	1.16	0
6	PEG	A	605	-	6,6,6	0.27	0	5,5,5	0.25	0
2	FBP	G	601	-	18,20,20	0.82	1 (5%)	23,32,32	1.28	3 (13%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	OXL	H	603	3	5,5,5	1.35	1 (20%)	6,6,6	1.46	0
2	FBP	D	601	-	18,20,20	1.10	1 (5%)	23,32,32	1.07	1 (4%)
2	FBP	B	601	-	18,20,20	0.96	1 (5%)	23,32,32	1.38	3 (13%)
2	FBP	E	601	-	18,20,20	0.93	1 (5%)	23,32,32	1.35	2 (8%)
4	OXL	C	603	3	5,5,5	1.45	1 (20%)	6,6,6	0.96	0
7	PGE	C	605	-	9,9,9	0.40	0	8,8,8	0.35	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FBP	C	601	-	-	5/13/32/32	0/1/1/1
4	OXL	G	603	3	-	0/4/4/4	-
2	FBP	F	601	-	-	4/13/32/32	0/1/1/1
6	PEG	H	605	-	-	3/4/4/4	-
4	OXL	D	603	3	-	1/4/4/4	-
2	FBP	A	601	-	-	5/13/32/32	0/1/1/1
4	OXL	B	603	3	-	0/4/4/4	-
8	PG4	F	605	-	-	5/10/10/10	-
4	OXL	A	603	3	-	0/4/4/4	-
7	PGE	D	605	-	-	4/7/7/7	-
7	PGE	G	605	-	-	4/7/7/7	-
2	FBP	H	601	-	-	5/13/32/32	0/1/1/1
7	PGE	B	605	-	-	5/7/7/7	-
4	OXL	F	603	3	-	4/4/4/4	-
6	PEG	A	605	-	-	3/4/4/4	-
2	FBP	G	601	-	-	5/13/32/32	0/1/1/1
4	OXL	H	603	3	-	1/4/4/4	-
2	FBP	D	601	-	-	6/13/32/32	0/1/1/1
2	FBP	B	601	-	-	3/13/32/32	0/1/1/1
2	FBP	E	601	-	-	3/13/32/32	0/1/1/1
4	OXL	C	603	3	-	2/4/4/4	-
7	PGE	C	605	-	-	6/7/7/7	-

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	601	FBP	O2-C2	2.78	1.45	1.40
4	C	603	OXL	O4-C2	-2.65	1.22	1.30
4	D	603	OXL	O4-C2	-2.60	1.23	1.30
4	A	603	OXL	C2-C1	2.55	1.61	1.54
2	B	601	FBP	P1-O3P	-2.52	1.45	1.54
4	A	603	OXL	O3-C1	-2.33	1.23	1.30
4	H	603	OXL	O3-C1	-2.27	1.24	1.30
2	E	601	FBP	P1-O3P	-2.21	1.46	1.54
2	G	601	FBP	O2-C2	2.19	1.44	1.40

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	601	FBP	O2P-P1-O1	-4.01	96.06	106.73
2	B	601	FBP	O5P-P2-O6	-3.97	96.17	106.73
2	H	601	FBP	O5P-P2-O6	-3.96	96.19	106.73
2	A	601	FBP	O6-P2-O4P	-3.44	96.82	106.47
2	E	601	FBP	O6P-P2-O5P	3.42	120.70	107.64
2	H	601	FBP	O5P-P2-O4P	3.42	124.06	110.68
2	F	601	FBP	O3P-P1-O2P	3.20	119.88	107.64
2	H	601	FBP	O3P-P1-O1	-3.14	98.36	106.73
2	A	601	FBP	O2-C2-O5	-2.92	103.86	109.50
2	A	601	FBP	O3P-P1-O2P	2.86	118.57	107.64
2	H	601	FBP	O3P-P1-O1P	2.83	121.77	110.68
2	C	601	FBP	O6P-P2-O6	-2.82	99.23	106.73
2	E	601	FBP	O6-P2-O4P	-2.70	98.90	106.47
2	F	601	FBP	O2-C2-O5	-2.39	104.89	109.50
2	A	601	FBP	O6P-P2-O4P	2.34	119.82	110.68
2	D	601	FBP	O3P-P1-O2P	2.33	116.55	107.64
2	H	601	FBP	O3-C3-C4	-2.29	105.42	113.32
2	G	601	FBP	O5P-P2-O6	2.23	112.66	106.73
2	G	601	FBP	O6P-P2-O6	-2.21	100.85	106.73
2	F	601	FBP	O4-C4-C3	-2.15	105.71	112.15
2	B	601	FBP	P2-O6-C6	2.09	124.06	118.30
2	A	601	FBP	O2P-P1-O1	-2.07	101.22	106.73
2	B	601	FBP	O6P-P2-O5P	2.07	115.55	107.64
2	G	601	FBP	O2P-P1-O1	2.05	112.17	106.73
4	B	603	OXL	O3-C1-C2	2.00	119.11	113.16

There are no chirality outliers.

All (74) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	601	FBP	C1-O1-P1-O2P
2	A	601	FBP	O1-C1-C2-C3
2	A	601	FBP	O1-C1-C2-O5
2	B	601	FBP	O1-C1-C2-C3
2	B	601	FBP	O1-C1-C2-O5
2	C	601	FBP	O1-C1-C2-C3
2	D	601	FBP	C1-O1-P1-O1P
2	D	601	FBP	C1-O1-P1-O2P
2	D	601	FBP	O1-C1-C2-C3
2	D	601	FBP	O1-C1-C2-O5
2	E	601	FBP	O1-C1-C2-O2
2	E	601	FBP	O1-C1-C2-C3
2	E	601	FBP	O1-C1-C2-O5
2	F	601	FBP	C1-O1-P1-O2P
2	F	601	FBP	O1-C1-C2-O2
2	F	601	FBP	O1-C1-C2-C3
2	F	601	FBP	O1-C1-C2-O5
2	G	601	FBP	C1-O1-P1-O1P
2	G	601	FBP	O1-C1-C2-C3
2	G	601	FBP	O1-C1-C2-O5
2	H	601	FBP	C1-O1-P1-O2P
2	H	601	FBP	O1-C1-C2-C3
2	H	601	FBP	O1-C1-C2-O5
7	B	605	PGE	O1-C1-C2-O2
7	B	605	PGE	O2-C3-C4-O3
8	F	605	PG4	O3-C5-C6-O4
7	G	605	PGE	O2-C3-C4-O3
7	D	605	PGE	O2-C3-C4-O3
7	B	605	PGE	O3-C5-C6-O4
7	C	605	PGE	O1-C1-C2-O2
7	C	605	PGE	O2-C3-C4-O3
6	A	605	PEG	O1-C1-C2-O2
8	F	605	PG4	O2-C3-C4-O3
7	D	605	PGE	O1-C1-C2-O2
7	D	605	PGE	C4-C3-O2-C2
4	F	603	OXL	O1-C1-C2-O2
7	C	605	PGE	C1-C2-O2-C3
4	F	603	OXL	O3-C1-C2-O2
6	H	605	PEG	O1-C1-C2-O2
7	G	605	PGE	O3-C5-C6-O4
2	H	601	FBP	C1-O1-P1-O1P
8	F	605	PG4	C5-C6-O4-C7
6	A	605	PEG	C4-C3-O2-C2

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Mol	Chain	Res	Type	Atoms
4	F	603	OXL	O3-C1-C2-O4
7	C	605	PGE	C6-C5-O3-C4
7	C	605	PGE	C4-C3-O2-C2
6	H	605	PEG	C1-C2-O2-C3
6	H	605	PEG	C4-C3-O2-C2
7	B	605	PGE	C4-C3-O2-C2
7	D	605	PGE	C6-C5-O3-C4
7	G	605	PGE	C3-C4-O3-C5
8	F	605	PG4	C4-C3-O2-C2
2	A	601	FBP	O1-C1-C2-O2
2	B	601	FBP	O1-C1-C2-O2
2	C	601	FBP	O1-C1-C2-O2
2	D	601	FBP	O1-C1-C2-O2
2	G	601	FBP	O1-C1-C2-O2
2	H	601	FBP	O1-C1-C2-O2
4	F	603	OXL	O1-C1-C2-O4
7	B	605	PGE	C3-C4-O3-C5
7	C	605	PGE	C3-C4-O3-C5
2	C	601	FBP	C1-O1-P1-O1P
8	F	605	PG4	C3-C4-O3-C5
4	C	603	OXL	O3-C1-C2-O4
7	G	605	PGE	C1-C2-O2-C3
2	A	601	FBP	C1-O1-P1-O3P
2	C	601	FBP	C1-O1-P1-O3P
2	D	601	FBP	C1-O1-P1-O3P
2	G	601	FBP	C1-O1-P1-O2P
6	A	605	PEG	O2-C3-C4-O4
2	C	601	FBP	O1-C1-C2-O5
4	C	603	OXL	O1-C1-C2-O2
4	D	603	OXL	O3-C1-C2-O4
4	H	603	OXL	O3-C1-C2-O4

There are no ring outliers.

9 monomers are involved in 23 short contacts:

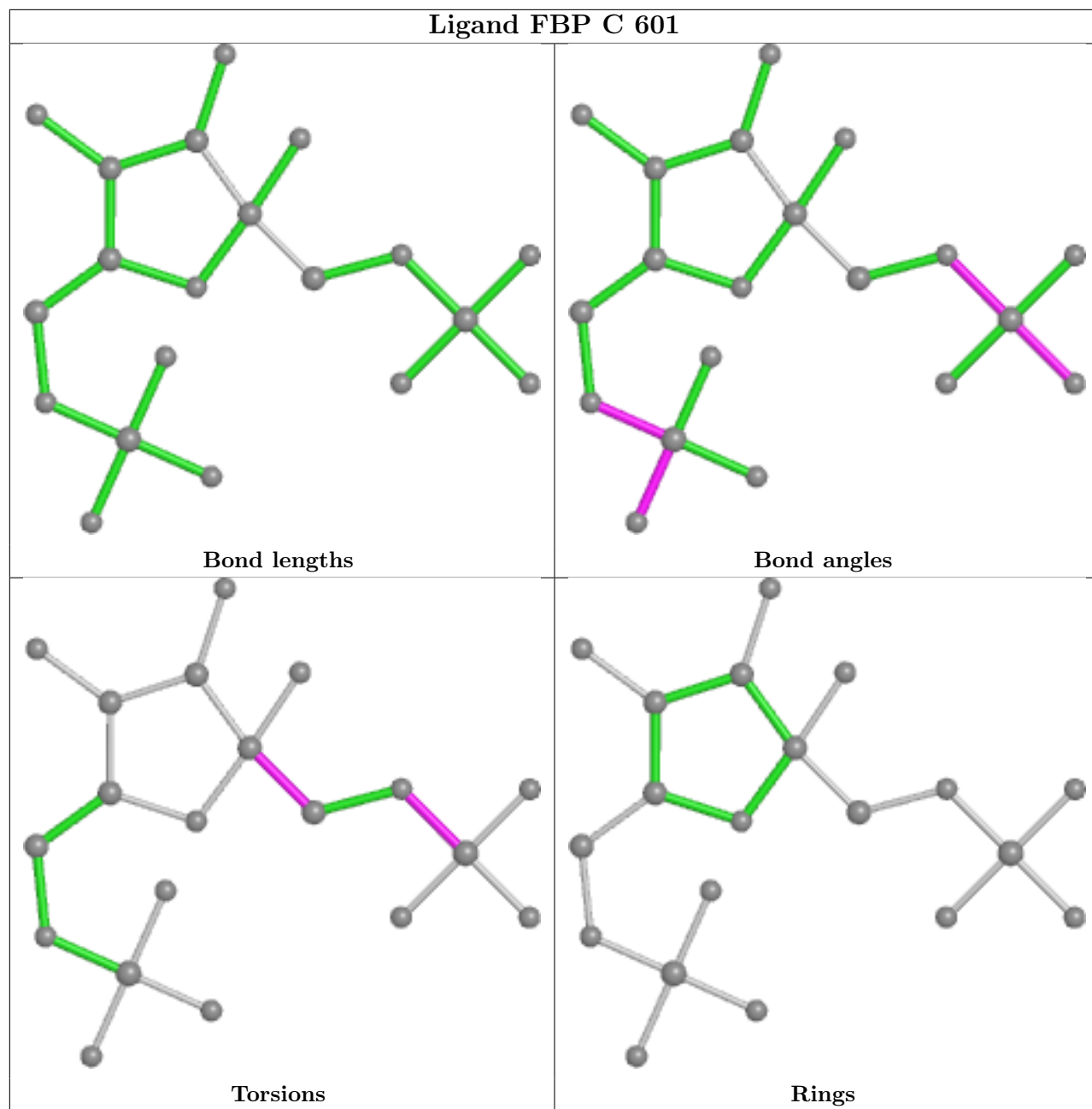
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	601	FBP	1	0
6	H	605	PEG	5	0
8	F	605	PG4	5	0
7	D	605	PGE	1	0
7	G	605	PGE	5	0
7	B	605	PGE	3	0

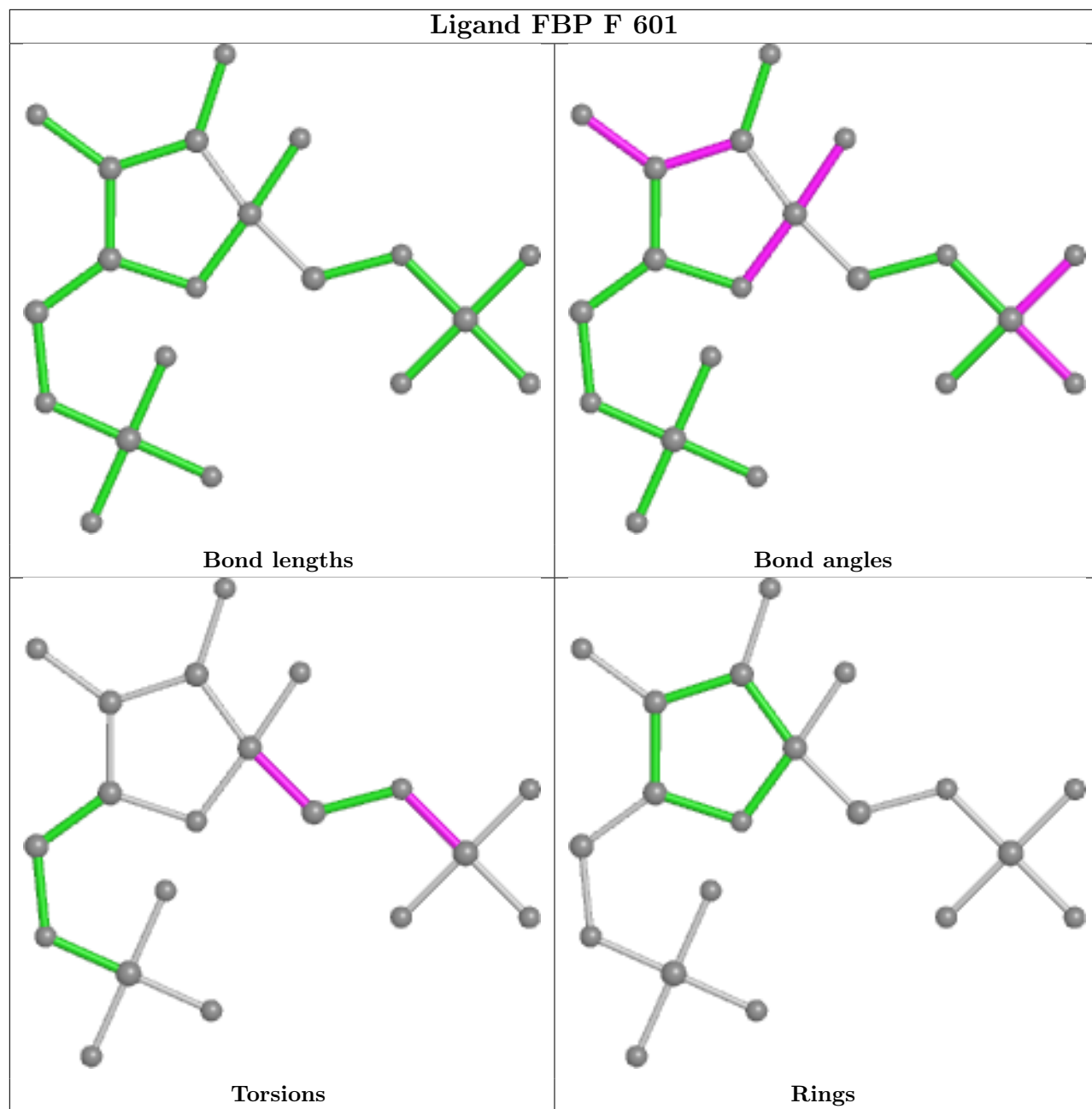
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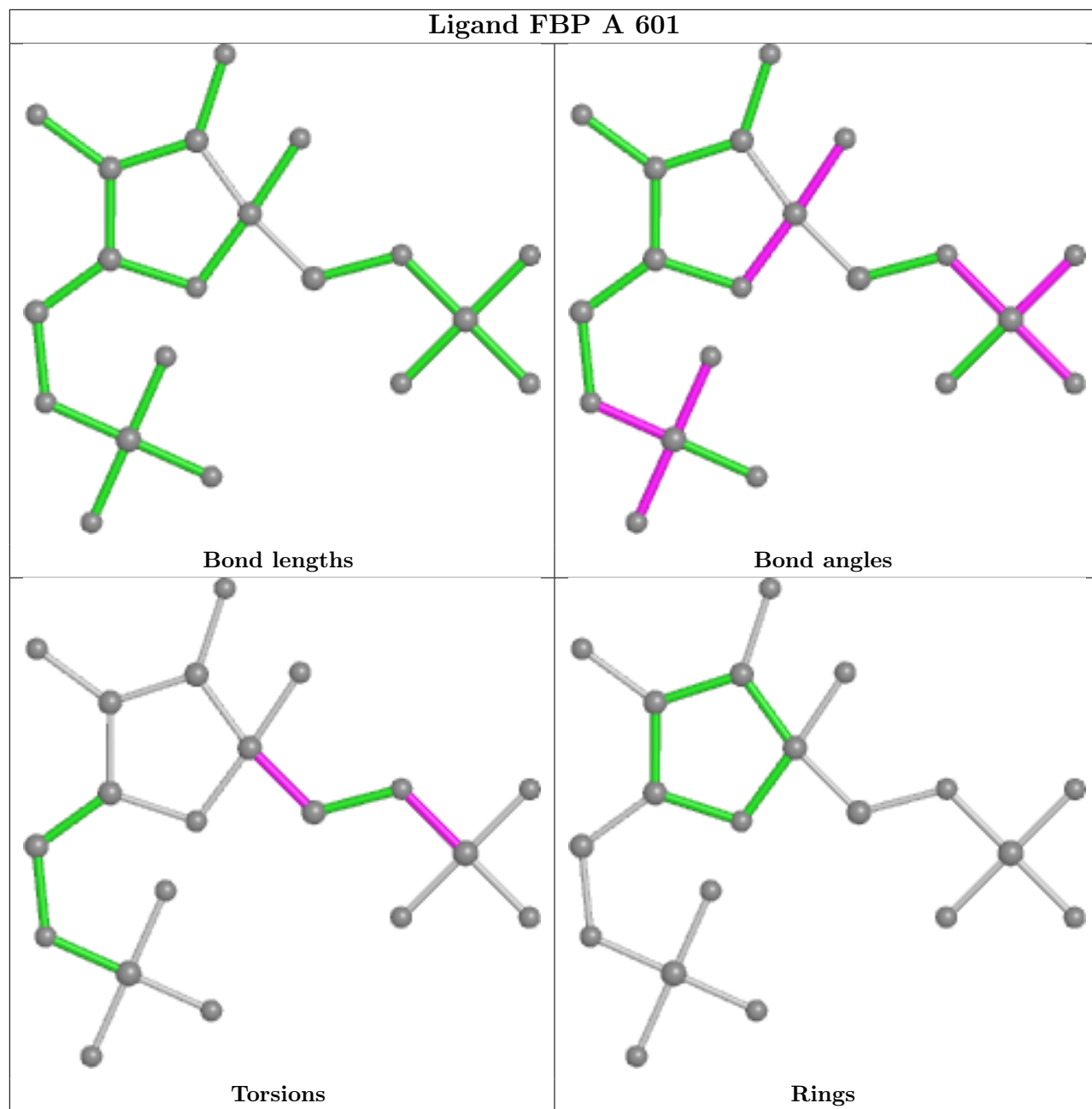
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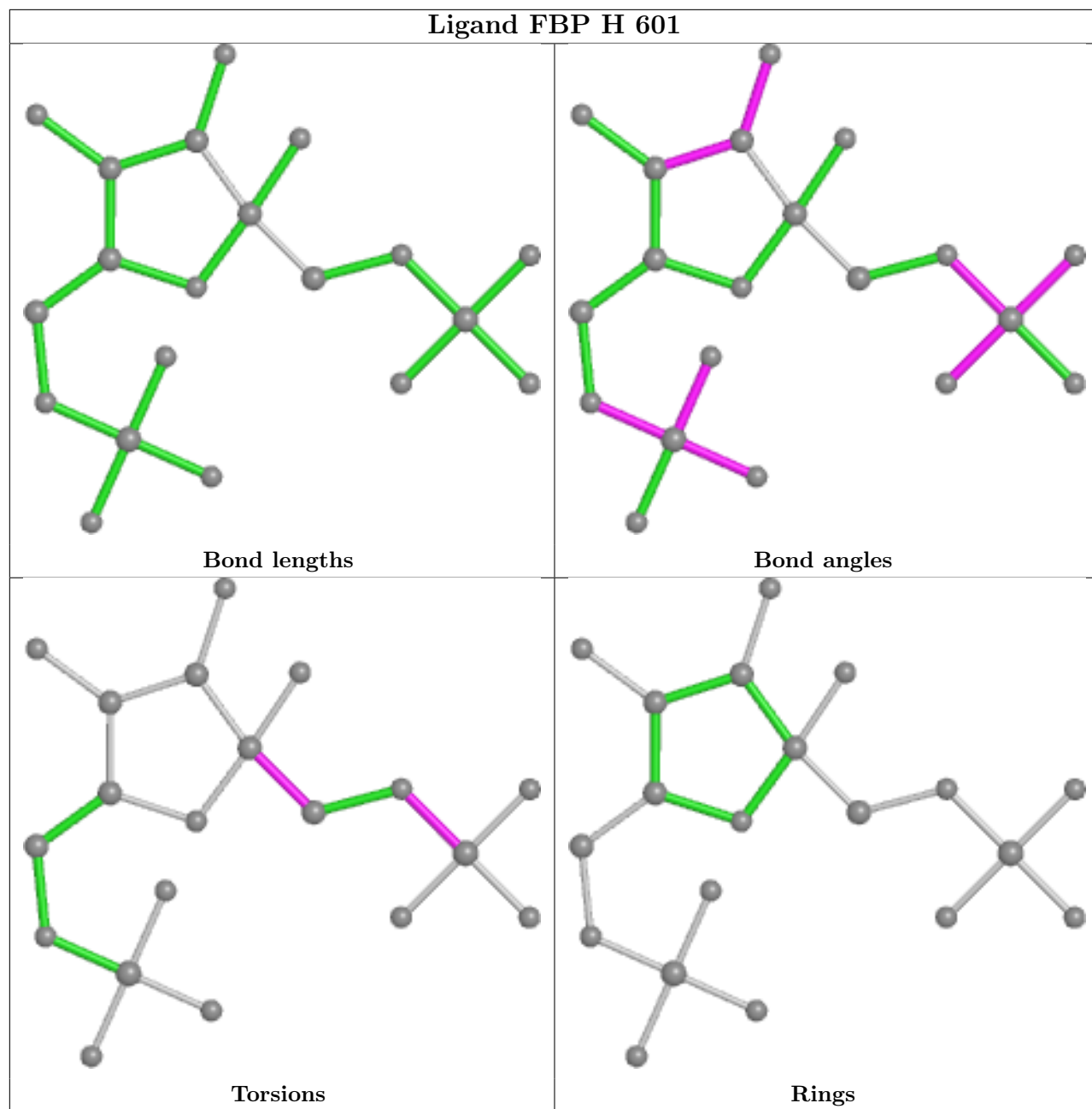
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	605	PEG	1	0
2	B	601	FBP	1	0
7	C	605	PGE	1	0

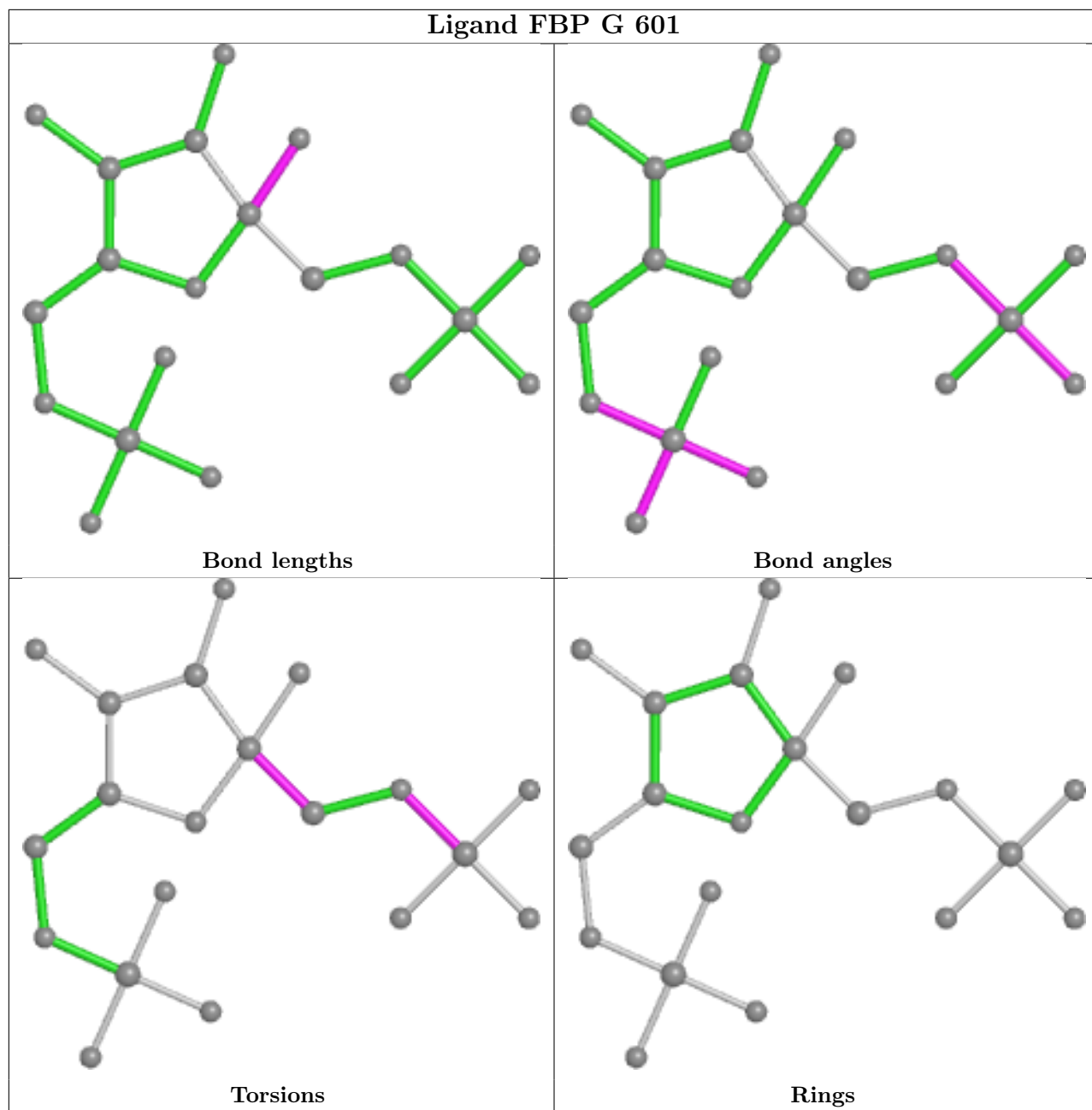
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

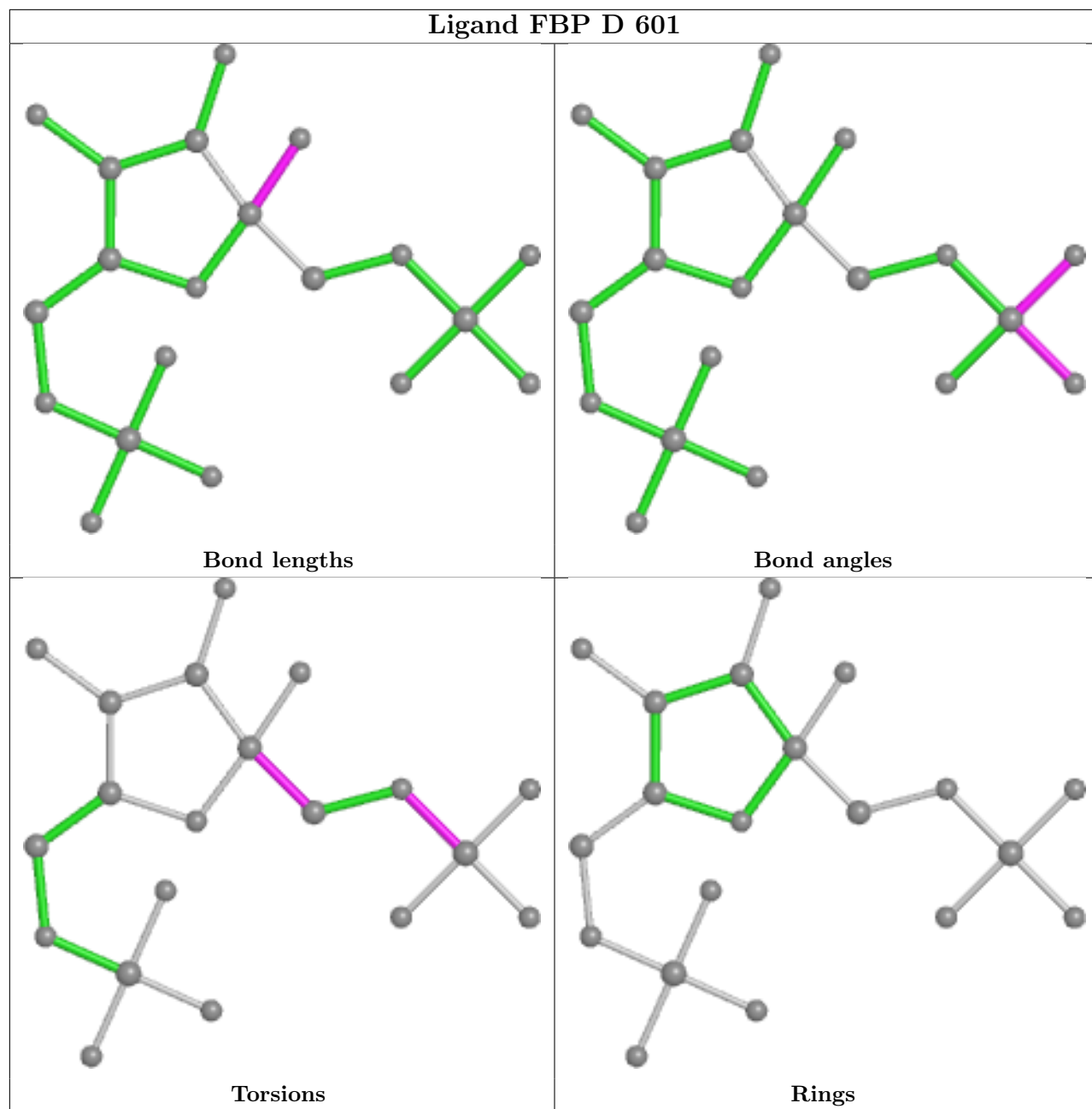


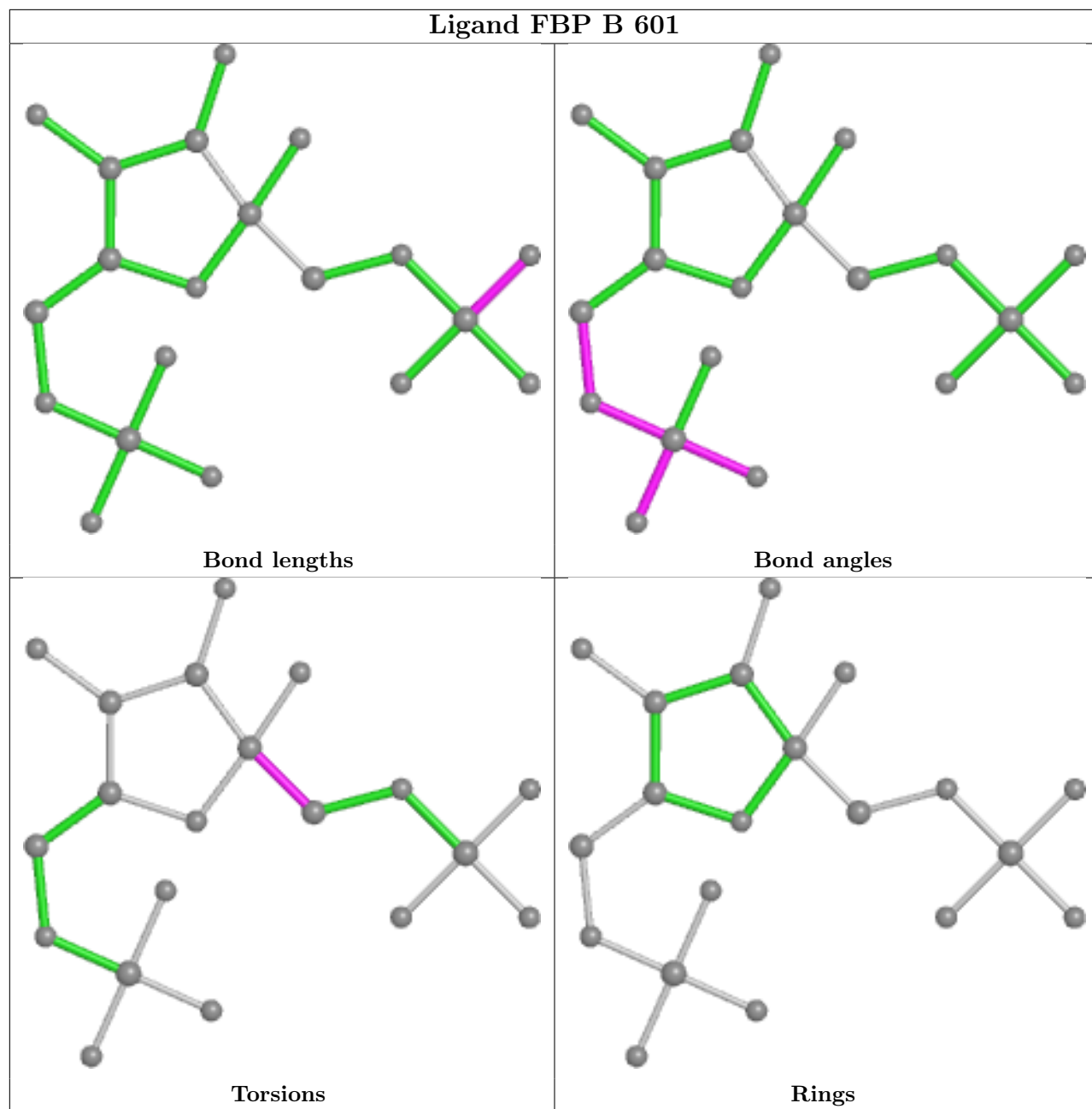


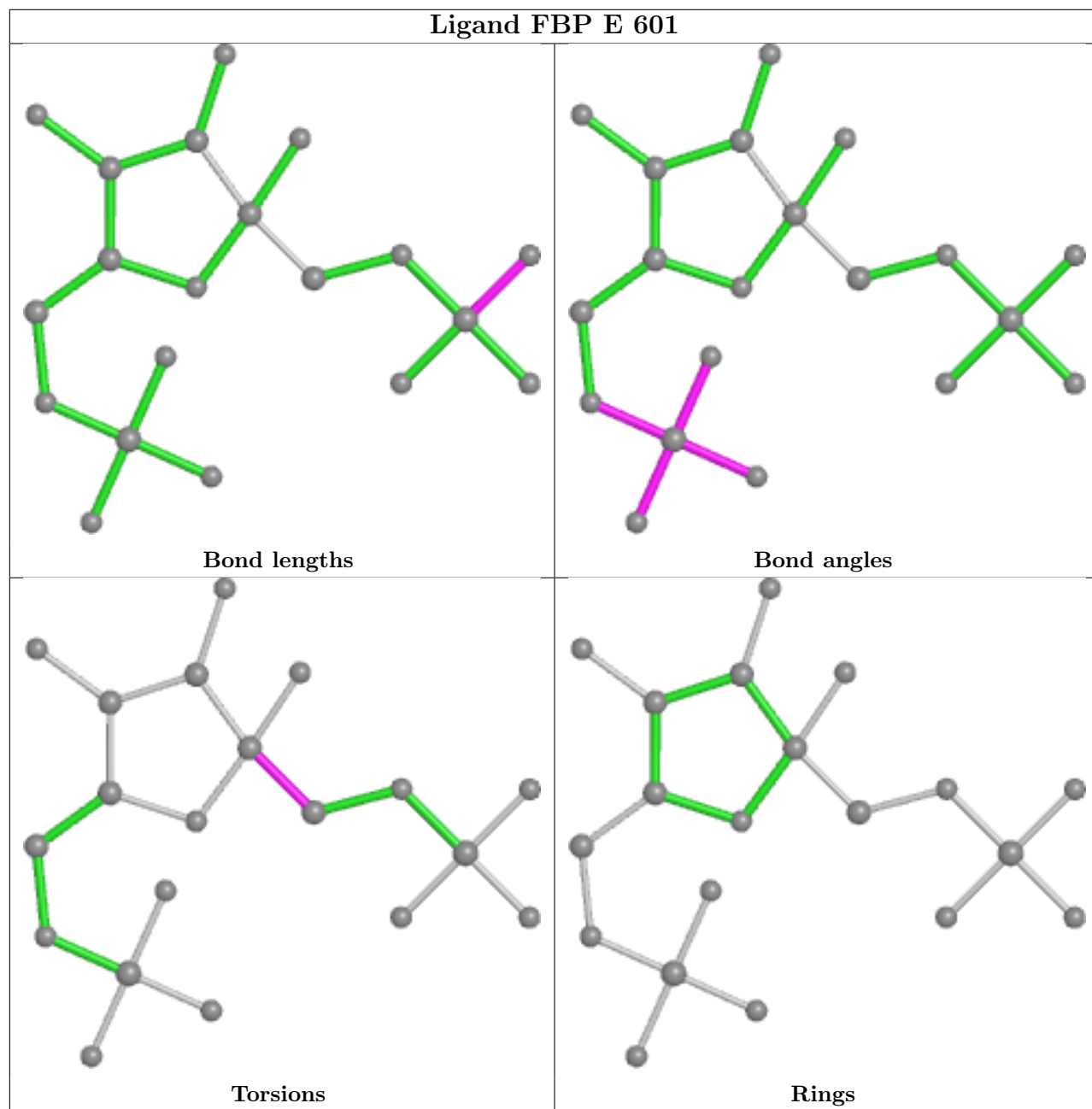












5.7 Other polymers [i](#)

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, 95th 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	501/521 (96%)	-0.02	3 (0%) 89 88	23, 38, 63, 89	0
1	B	501/521 (96%)	-0.21	2 (0%) 92 92	27, 41, 63, 95	0
1	C	501/521 (96%)	0.12	17 (3%) 45 44	28, 47, 77, 107	0
1	D	501/521 (96%)	0.05	7 (1%) 75 74	23, 41, 66, 97	0
1	E	499/521 (95%)	0.55	42 (8%) 11 10	33, 61, 87, 105	0
1	F	501/521 (96%)	0.45	49 (9%) 7 7	28, 48, 94, 132	0
1	G	500/521 (95%)	0.23	30 (6%) 21 20	28, 46, 80, 103	0
1	H	412/521 (79%)	0.19	26 (6%) 20 19	30, 51, 88, 112	0
All	All	3916/4168 (93%)	0.17	176 (4%) 33 32	23, 46, 81, 132	0

All (176) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	24	GLY	6.7
1	F	23	PHE	5.9
1	F	167	THR	5.8
1	H	188	ILE	5.7
1	F	121	GLY	5.7
1	F	103	ALA	5.4
1	F	24	GLY	5.3
1	F	27	GLY	5.2
1	F	26	ASP	5.1
1	H	26	ASP	5.1
1	H	27	GLY	5.1
1	F	102	GLU	5.1
1	F	32	LYS	5.0
1	F	170	PHE	4.8
1	F	106	TYR	4.7
1	F	166	ALA	4.7

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Mol	Chain	Res	Type	RSRZ
1	D	488	GLU	4.6
1	C	30	GLY	4.6
1	E	33	LEU	4.4
1	G	165	ASP	4.4
1	G	137	LEU	4.4
1	F	172	VAL	4.4
1	F	129	ILE	4.4
1	E	26	ASP	4.3
1	F	28	TYR	4.3
1	H	21	LYS	4.2
1	C	21	LYS	4.2
1	H	190	ASN	4.1
1	E	24	GLY	4.0
1	F	98	LEU	3.9
1	F	119	LYS	3.9
1	H	29	TRP	3.9
1	F	126	ARG	3.7
1	E	194	PRO	3.7
1	F	99	PHE	3.7
1	H	32	LYS	3.7
1	H	25	GLU	3.7
1	F	128	VAL	3.7
1	F	174	VAL	3.6
1	E	317	ARG	3.6
1	G	164	ASP	3.6
1	H	193	ILE	3.6
1	H	191	THR	3.6
1	B	501	ARG	3.5
1	E	23	PHE	3.5
1	E	28	TYR	3.5
1	E	192	LYS	3.5
1	G	101	GLY	3.5
1	F	131	LEU	3.4
1	F	114	ILE	3.4
1	F	101	GLY	3.4
1	G	98	LEU	3.4
1	C	24	GLY	3.4
1	G	102	GLU	3.4
1	E	475	GLY	3.4
1	F	31	GLU	3.3
1	F	181	ALA	3.2
1	F	488	GLU	3.2

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Mol	Chain	Res	Type	RSRZ
1	C	27	GLY	3.2
1	H	22	LYS	3.2
1	C	34	ASP	3.2
1	H	194	PRO	3.2
1	G	96	THR	3.2
1	E	32	LYS	3.1
1	F	137	LEU	3.1
1	H	192	LYS	3.1
1	E	41	ASN	3.1
1	H	67	GLU	3.1
1	G	135	GLY	3.1
1	E	330	VAL	3.1
1	F	29	TRP	3.1
1	G	108	TYR	3.1
1	G	180	ILE	3.1
1	C	121	GLY	3.0
1	C	100	GLU	3.0
1	G	134	ALA	3.0
1	E	30	GLY	2.9
1	F	182	LYS	2.9
1	E	323	VAL	2.9
1	E	472	VAL	2.9
1	G	162	ALA	2.9
1	H	33	LEU	2.9
1	H	34	ASP	2.9
1	F	33	LEU	2.9
1	E	64	GLU	2.8
1	F	104	LYS	2.8
1	F	100	GLU	2.8
1	H	31	GLU	2.8
1	D	145	VAL	2.7
1	E	170	PHE	2.7
1	G	131	LEU	2.7
1	F	122	ILE	2.7
1	C	501	ARG	2.7
1	A	27	GLY	2.7
1	H	37	ALA	2.7
1	E	142	ASP	2.7
1	E	29	TRP	2.7
1	E	166	ALA	2.7
1	D	323	VAL	2.6
1	E	327	PHE	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	488	GLU	2.6
1	F	169	GLU	2.6
1	E	15	VAL	2.6
1	G	8	VAL	2.6
1	C	103	ALA	2.6
1	G	99	PHE	2.6
1	C	19	GLY	2.6
1	D	501	ARG	2.6
1	G	138	ASP	2.6
1	H	17	ILE	2.6
1	F	30	GLY	2.6
1	G	166	ALA	2.6
1	D	134	ALA	2.5
1	G	103	ALA	2.5
1	G	173	GLU	2.5
1	H	20	GLY	2.5
1	E	191	THR	2.5
1	C	29	TRP	2.5
1	G	145	VAL	2.5
1	F	125	THR	2.5
1	E	161	VAL	2.5
1	G	142	ASP	2.4
1	F	63	GLN	2.4
1	E	25	GLU	2.4
1	E	466	ALA	2.4
1	E	326	VAL	2.4
1	F	161	VAL	2.4
1	C	26	ASP	2.4
1	F	164	ASP	2.3
1	G	139	ILE	2.3
1	E	328	ASN	2.3
1	E	197	ALA	2.3
1	G	120	GLN	2.3
1	F	97	GLU	2.3
1	F	127	GLU	2.3
1	E	331	ILE	2.3
1	E	146	GLY	2.3
1	F	501	ARG	2.3
1	H	19	GLY	2.3
1	E	359	ILE	2.3
1	F	143	VAL	2.2
1	F	115	ARG	2.2

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Mol	Chain	Res	Type	RSRZ
1	D	7	ILE	2.2
1	H	94	ILE	2.2
1	C	28	TYR	2.2
1	G	116	VAL	2.2
1	E	253	GLN	2.2
1	E	324	SER	2.2
1	G	136	ALA	2.2
1	C	31	GLU	2.2
1	G	140	TYR	2.2
1	E	190	ASN	2.2
1	F	171	GLU	2.2
1	E	22	LYS	2.2
1	H	501	ARG	2.2
1	G	122	ILE	2.1
1	F	140	TYR	2.1
1	G	455	THR	2.1
1	C	139	ILE	2.1
1	C	131	LEU	2.1
1	F	120	GLN	2.1
1	E	460	GLU	2.1
1	E	69	MET	2.1
1	E	37	ALA	2.1
1	F	116	VAL	2.1
1	G	118	THR	2.1
1	E	321	SER	2.1
1	G	194	PRO	2.1
1	D	327	PHE	2.1
1	E	17	ILE	2.0
1	C	8	VAL	2.0
1	A	285	PRO	2.0
1	H	28	TYR	2.0
1	E	236	GLU	2.0
1	A	103	ALA	2.0
1	H	35	VAL	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [\(i\)](#)

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

6.3 Carbohydrates [i](#)

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, 95th 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.

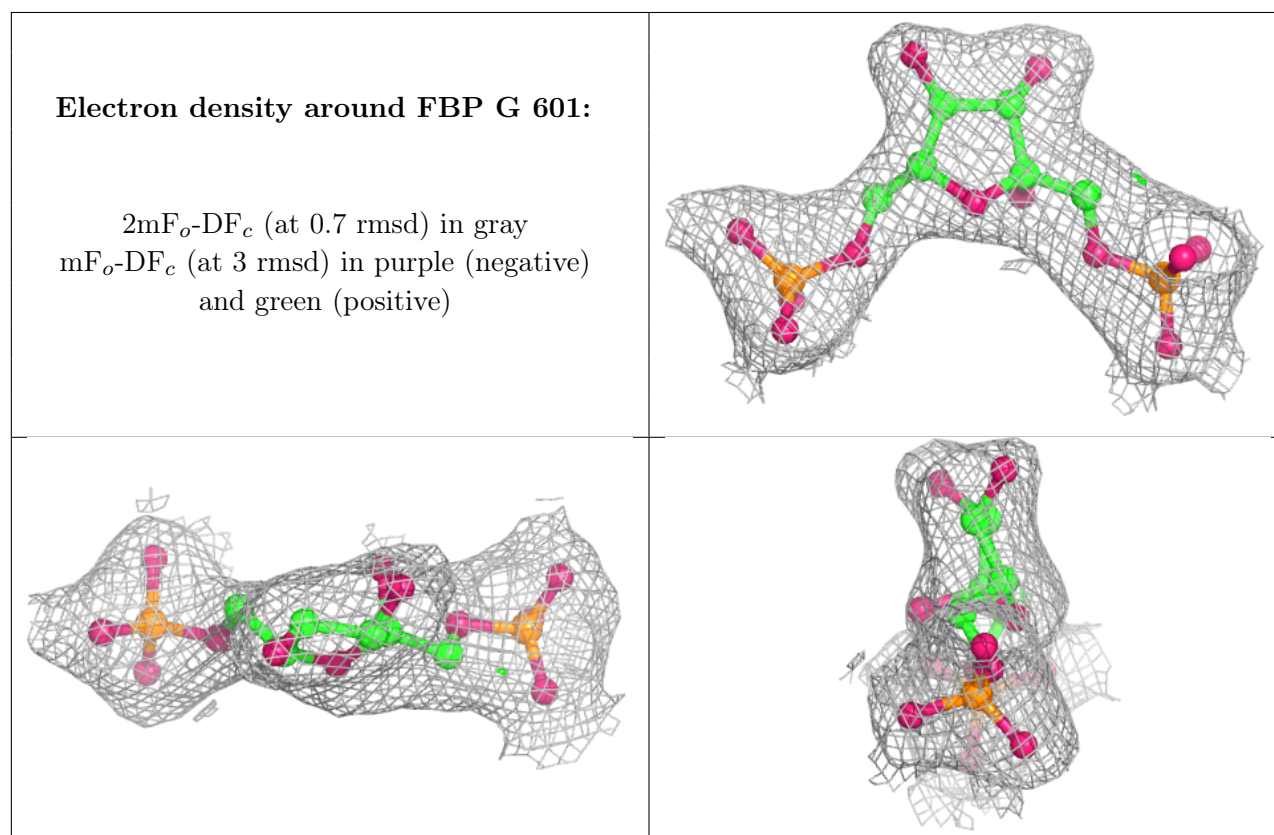
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
7	PGE	D	605	10/10	0.79	0.20	49,59,61,62	0
8	PG4	F	605	13/13	0.83	0.14	46,54,61,62	0
7	PGE	G	605	10/10	0.87	0.17	53,56,60,62	0
7	PGE	C	605	10/10	0.88	0.14	49,57,65,67	0
7	PGE	B	605	10/10	0.88	0.11	42,50,53,55	0
6	PEG	A	605	7/7	0.90	0.11	43,48,54,58	0
4	OXL	H	603	6/6	0.90	0.11	57,69,73,74	0
4	OXL	G	603	6/6	0.91	0.08	38,49,60,61	0
5	K	H	604	1/1	0.91	0.14	74,74,74,74	0
4	OXL	F	603	6/6	0.93	0.13	42,56,66,66	0
5	K	C	604	1/1	0.93	0.08	71,71,71,71	0
4	OXL	A	603	6/6	0.93	0.12	38,45,55,60	0
6	PEG	H	605	7/7	0.94	0.07	44,50,56,63	0
4	OXL	C	603	6/6	0.94	0.08	42,45,54,57	0
3	MG	C	602	1/1	0.95	0.09	58,58,58,58	0
5	K	G	604	1/1	0.95	0.04	60,60,60,60	0
3	MG	D	602	1/1	0.95	0.04	40,40,40,40	0
3	MG	G	602	1/1	0.95	0.06	50,50,50,50	0
2	FBP	G	601	20/20	0.95	0.11	43,50,59,65	0
4	OXL	B	603	6/6	0.96	0.07	37,44,47,49	0
2	FBP	H	601	20/20	0.96	0.10	37,48,53,55	0
5	K	F	604	1/1	0.96	0.05	64,64,64,64	0
4	OXL	D	603	6/6	0.96	0.06	39,40,51,55	0
3	MG	H	602	1/1	0.96	0.08	58,58,58,58	0
3	MG	A	602	1/1	0.96	0.04	38,38,38,38	0
2	FBP	A	601	20/20	0.97	0.09	32,42,49,49	0
5	K	D	604	1/1	0.97	0.06	65,65,65,65	0
2	FBP	C	601	20/20	0.97	0.08	42,54,59,60	0
2	FBP	D	601	20/20	0.97	0.11	39,50,60,62	0
3	MG	B	602	1/1	0.97	0.05	39,39,39,39	0
2	FBP	E	601	20/20	0.97	0.09	37,52,58,67	0
2	FBP	B	601	20/20	0.98	0.08	34,41,45,50	0

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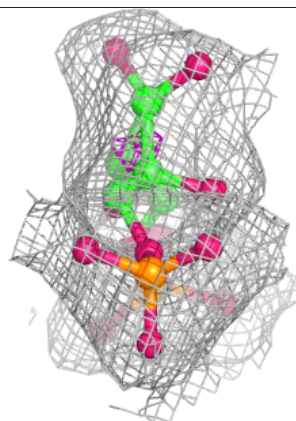
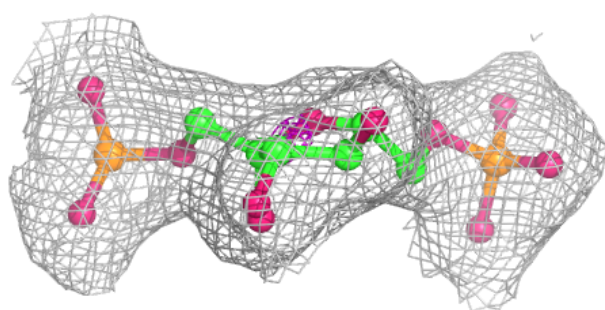
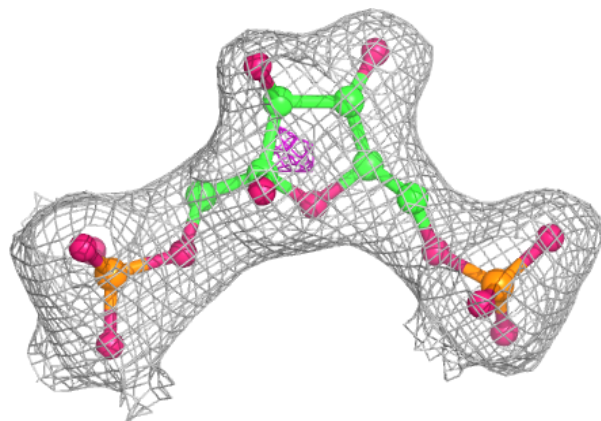
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	FBP	F	601	20/20	0.98	0.08	41,51,57,58	0
3	MG	F	602	1/1	0.98	0.04	51,51,51,51	0
5	K	A	604	1/1	0.98	0.05	50,50,50,50	0
5	K	B	604	1/1	0.99	0.05	46,46,46,46	0

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.



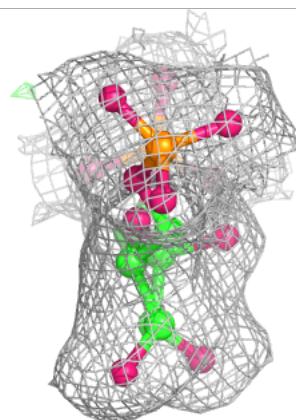
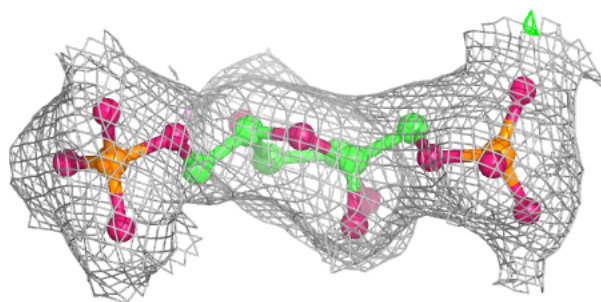
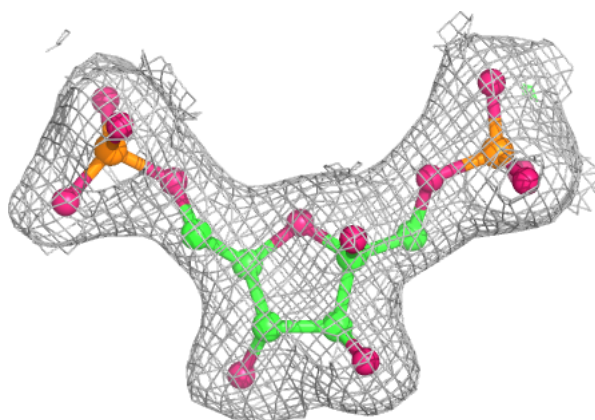
Electron density around FBP H 601:

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



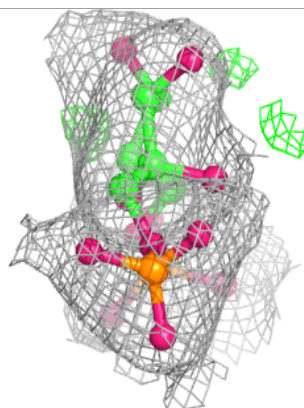
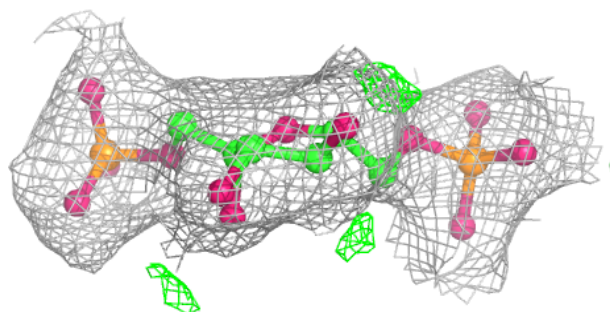
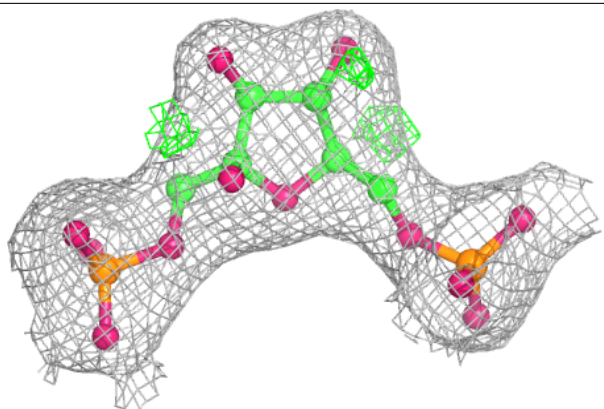
Electron density around FBP A 601:

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

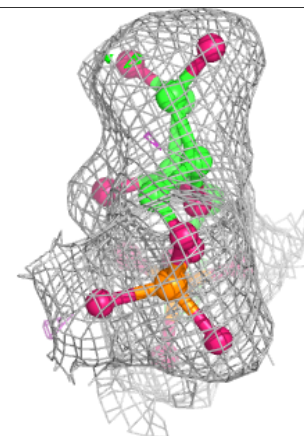
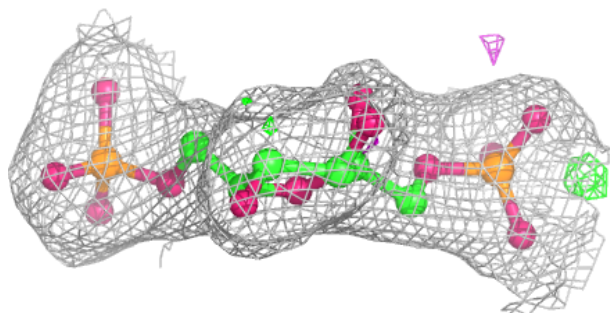
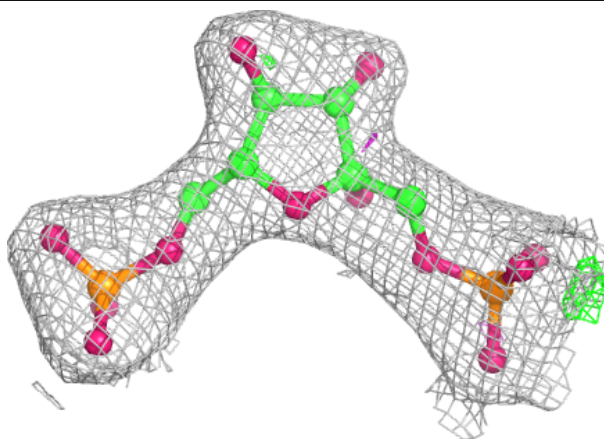


Electron density around FBP C 601:

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

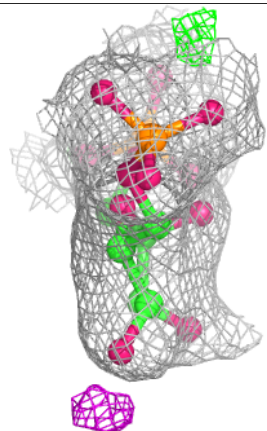
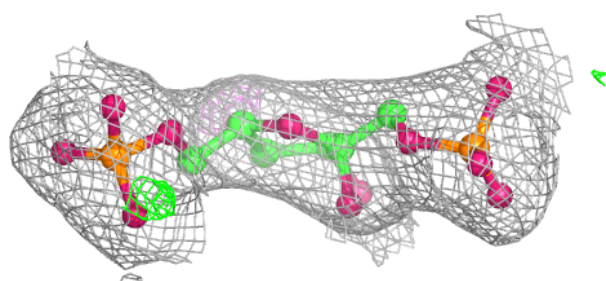
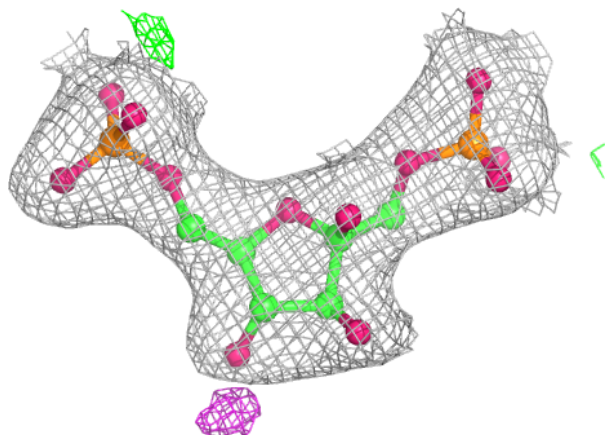
**Electron density around FBP D 601:**

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

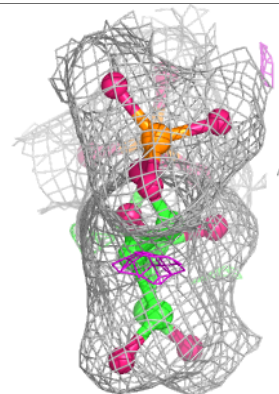
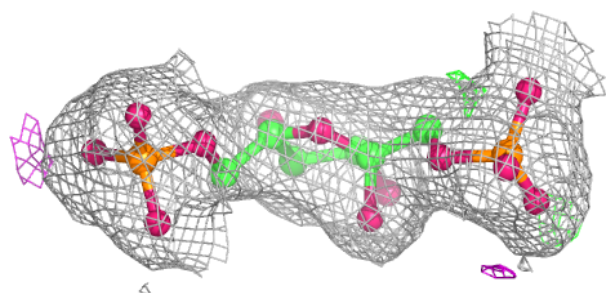
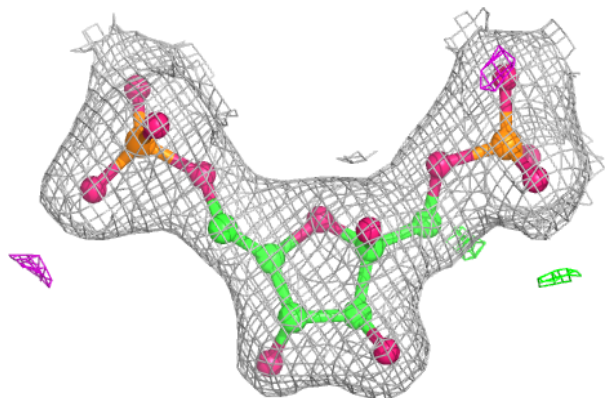


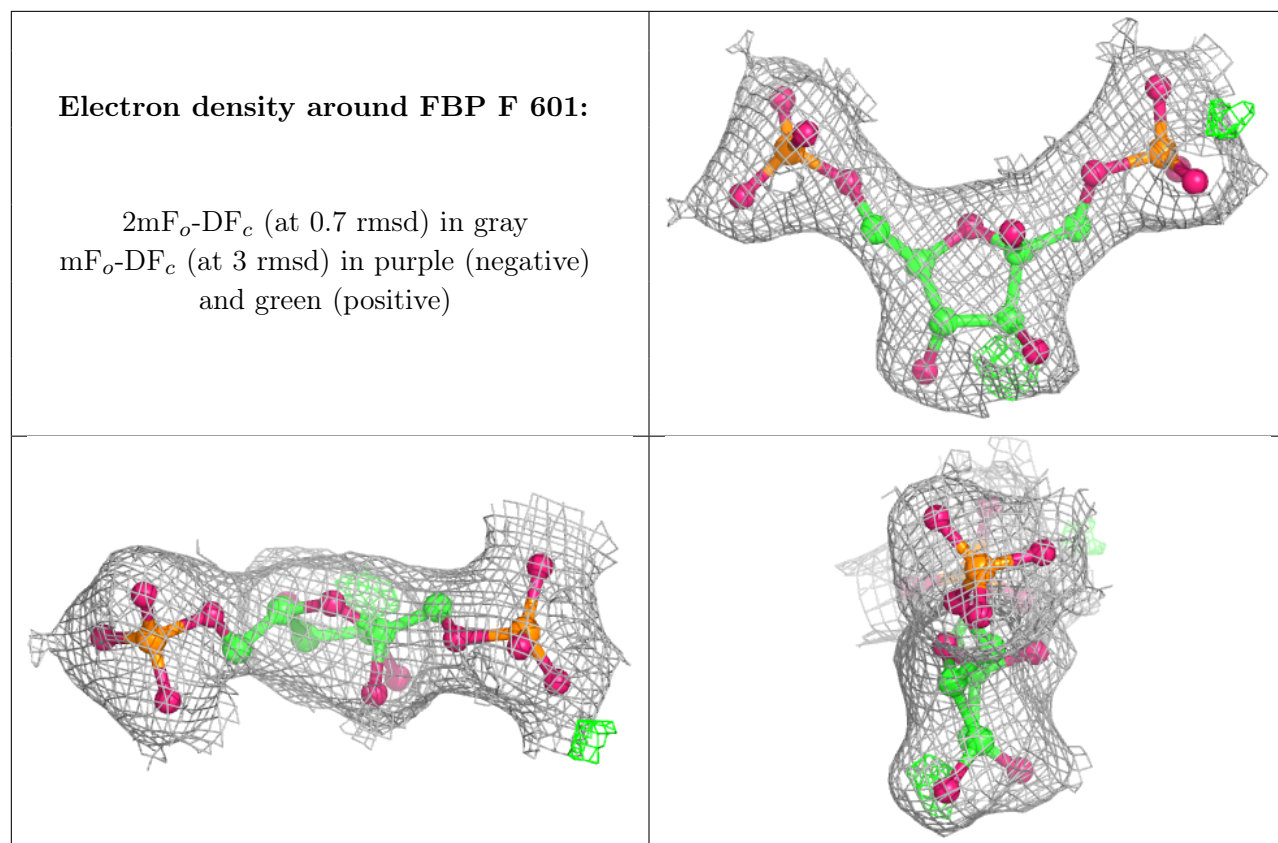
Electron density around FBP E 601:

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

**Electron density around FBP B 601:**

$2mF_o-DF_c$ (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.