



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 22, 2022 – 03:25 pm GMT

PDB ID : 7QDN  
Title : Structure of human liver pyruvate kinase from which the B domain has been deleted  
Authors : Lulla, A.; Hyvonen, M.  
Deposited on : 2021-11-27  
Resolution : 1.70 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](mailto: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.

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

MolProbity : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.27  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0267  
CCP4 : 7.1.010 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.27

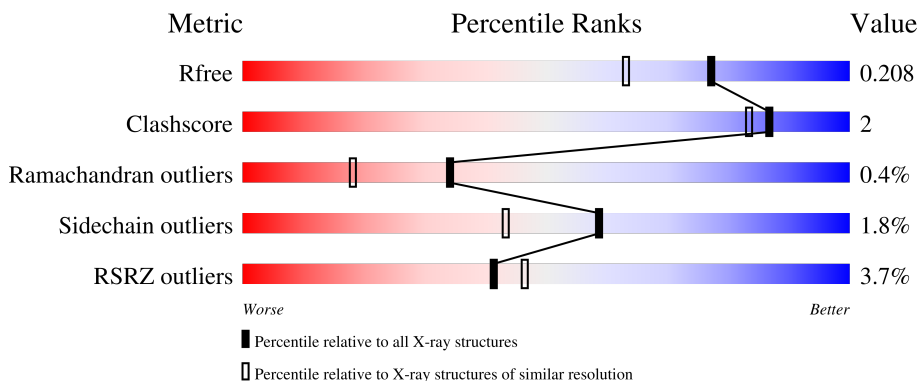
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.70 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.



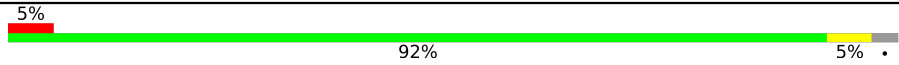

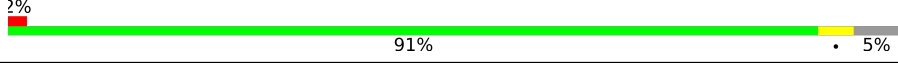
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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  $\geq 3$ , 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	447	 3% 89% 5% 5%
1	B	447	 7% 91% 6% ..
1	C	447	 4% 90% 6% .
1	D	447	 2% 91% . 5%
1	E	447	 3% 88% 6% 5%

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Mol	Chain	Length	Quality of chain
1	F	447	 5% 92% 5%
1	G	447	 % 87% 6% 6%
1	H	447	 2% 91% 5%

## 2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 28811 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 PKLR.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	423	Total 3227	C 2027	N 586	O 594	S 20	0	3	0
1	B	436	Total 3324	C 2085	N 604	O 615	S 20	0	3	0
1	C	427	Total 3242	C 2035	N 587	O 601	S 19	0	1	0
1	D	425	Total 3232	C 2029	N 587	O 597	S 19	0	2	0
1	E	423	Total 3219	C 2022	N 583	O 594	S 20	0	2	0
1	F	435	Total 3313	C 2079	N 600	O 614	S 20	0	3	0
1	G	421	Total 3219	C 2023	N 581	O 596	S 19	0	4	0
1	H	425	Total 3243	C 2035	N 591	O 598	S 19	0	3	0

There are 840 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	SER	ALA	conflict	UNP P30613
A	1	MET	PRO	conflict	UNP P30613
A	2	GLU	GLY	conflict	UNP P30613
A	12	ASP	SER	conflict	UNP P30613
A	?	-	GLU	deletion	UNP P30613
A	?	-	ILE	deletion	UNP P30613
A	?	-	ARG	deletion	UNP P30613
A	?	-	THR	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	ILE	deletion	UNP P30613
A	?	-	LEU	deletion	UNP P30613
A	?	-	GLN	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	GLY	deletion	UNP P30613
A	?	-	PRO	deletion	UNP P30613
A	?	-	GLU	deletion	UNP P30613
A	?	-	SER	deletion	UNP P30613
A	?	-	GLU	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	GLU	deletion	UNP P30613
A	?	-	LEU	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	LYS	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	SER	deletion	UNP P30613
A	?	-	GLN	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	LEU	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	THR	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	ASP	deletion	UNP P30613
A	?	-	PRO	deletion	UNP P30613
A	?	-	ALA	deletion	UNP P30613
A	?	-	PHE	deletion	UNP P30613
A	?	-	ARG	deletion	UNP P30613
A	?	-	THR	deletion	UNP P30613
A	?	-	ARG	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	ASN	deletion	UNP P30613
A	?	-	ALA	deletion	UNP P30613
A	?	-	ASN	deletion	UNP P30613
A	?	-	THR	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	TRP	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	ASP	deletion	UNP P30613
A	?	-	TYR	deletion	UNP P30613
A	?	-	PRO	deletion	UNP P30613
A	?	-	ASN	deletion	UNP P30613
A	?	-	ILE	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	ARG	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	PRO	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	ARG	deletion	UNP P30613
A	?	-	ILE	deletion	UNP P30613
A	?	-	TYR	deletion	UNP P30613
A	?	-	ILE	deletion	UNP P30613
A	?	-	ASP	deletion	UNP P30613
A	?	-	ASP	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	LEU	deletion	UNP P30613
A	?	-	ILE	deletion	UNP P30613
A	?	-	SER	deletion	UNP P30613
A	?	-	LEU	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	GLN	deletion	UNP P30613
A	?	-	LYS	deletion	UNP P30613
A	?	-	ILE	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	PRO	deletion	UNP P30613
A	?	-	GLU	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	LEU	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	THR	deletion	UNP P30613
A	?	-	GLN	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	GLU	deletion	UNP P30613
A	?	-	ASN	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	LEU	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	SER	deletion	UNP P30613
A	?	-	ARG	deletion	UNP P30613
A	?	-	LYS	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	VAL	deletion	UNP P30613
A	?	-	ASN	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	LEU	deletion	UNP P30613
A	?	-	PRO	deletion	UNP P30613
A	?	-	GLY	deletion	UNP P30613
A	?	-	ALA	deletion	UNP P30613
A	?	-	GLN	deletion	UNP P30613
A	130	GLY	VAL	conflict	UNP P30613
A	131	SER	ASP	conflict	UNP P30613
A	132	GLY	LEU	conflict	UNP P30613
B	0	SER	ALA	conflict	UNP P30613
B	1	MET	PRO	conflict	UNP P30613
B	2	GLU	GLY	conflict	UNP P30613
B	12	ASP	SER	conflict	UNP P30613
B	?	-	GLU	deletion	UNP P30613
B	?	-	ILE	deletion	UNP P30613
B	?	-	ARG	deletion	UNP P30613
B	?	-	THR	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	ILE	deletion	UNP P30613
B	?	-	LEU	deletion	UNP P30613
B	?	-	GLN	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	PRO	deletion	UNP P30613
B	?	-	GLU	deletion	UNP P30613
B	?	-	SER	deletion	UNP P30613
B	?	-	GLU	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	GLU	deletion	UNP P30613
B	?	-	LEU	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	LYS	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	SER	deletion	UNP P30613
B	?	-	GLN	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	LEU	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	THR	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	ASP	deletion	UNP P30613
B	?	-	PRO	deletion	UNP P30613
B	?	-	ALA	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	PHE	deletion	UNP P30613
B	?	-	ARG	deletion	UNP P30613
B	?	-	THR	deletion	UNP P30613
B	?	-	ARG	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	ASN	deletion	UNP P30613
B	?	-	ALA	deletion	UNP P30613
B	?	-	ASN	deletion	UNP P30613
B	?	-	THR	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	TRP	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	ASP	deletion	UNP P30613
B	?	-	TYR	deletion	UNP P30613
B	?	-	PRO	deletion	UNP P30613
B	?	-	ASN	deletion	UNP P30613
B	?	-	ILE	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	ARG	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	PRO	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	ARG	deletion	UNP P30613
B	?	-	ILE	deletion	UNP P30613
B	?	-	TYR	deletion	UNP P30613
B	?	-	ILE	deletion	UNP P30613
B	?	-	ASP	deletion	UNP P30613
B	?	-	ASP	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	LEU	deletion	UNP P30613
B	?	-	ILE	deletion	UNP P30613
B	?	-	SER	deletion	UNP P30613
B	?	-	LEU	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	GLN	deletion	UNP P30613
B	?	-	LYS	deletion	UNP P30613
B	?	-	ILE	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	PRO	deletion	UNP P30613
B	?	-	GLU	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	LEU	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	THR	deletion	UNP P30613
B	?	-	GLN	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	GLU	deletion	UNP P30613
B	?	-	ASN	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	LEU	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	SER	deletion	UNP P30613
B	?	-	ARG	deletion	UNP P30613
B	?	-	LYS	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	VAL	deletion	UNP P30613
B	?	-	ASN	deletion	UNP P30613
B	?	-	LEU	deletion	UNP P30613
B	?	-	PRO	deletion	UNP P30613
B	?	-	GLY	deletion	UNP P30613
B	?	-	ALA	deletion	UNP P30613
B	?	-	GLN	deletion	UNP P30613
B	130	GLY	VAL	conflict	UNP P30613
B	131	SER	ASP	conflict	UNP P30613
B	132	GLY	LEU	conflict	UNP P30613
C	0	SER	ALA	conflict	UNP P30613
C	1	MET	PRO	conflict	UNP P30613
C	2	GLU	GLY	conflict	UNP P30613
C	12	ASP	SER	conflict	UNP P30613
C	?	-	GLU	deletion	UNP P30613
C	?	-	ILE	deletion	UNP P30613
C	?	-	ARG	deletion	UNP P30613
C	?	-	THR	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	ILE	deletion	UNP P30613
C	?	-	LEU	deletion	UNP P30613
C	?	-	GLN	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
C	?	-	GLY	deletion	UNP P30613
C	?	-	PRO	deletion	UNP P30613
C	?	-	GLU	deletion	UNP P30613
C	?	-	SER	deletion	UNP P30613
C	?	-	GLU	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	GLU	deletion	UNP P30613
C	?	-	LEU	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	LYS	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	SER	deletion	UNP P30613
C	?	-	GLN	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	LEU	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	THR	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	ASP	deletion	UNP P30613
C	?	-	PRO	deletion	UNP P30613
C	?	-	ALA	deletion	UNP P30613
C	?	-	PHE	deletion	UNP P30613
C	?	-	ARG	deletion	UNP P30613
C	?	-	THR	deletion	UNP P30613
C	?	-	ARG	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	ASN	deletion	UNP P30613
C	?	-	ALA	deletion	UNP P30613
C	?	-	ASN	deletion	UNP P30613
C	?	-	THR	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	TRP	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	ASP	deletion	UNP P30613
C	?	-	TYR	deletion	UNP P30613
C	?	-	PRO	deletion	UNP P30613
C	?	-	ASN	deletion	UNP P30613
C	?	-	ILE	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	ARG	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
C	?	-	PRO	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	ARG	deletion	UNP P30613
C	?	-	ILE	deletion	UNP P30613
C	?	-	TYR	deletion	UNP P30613
C	?	-	ILE	deletion	UNP P30613
C	?	-	ASP	deletion	UNP P30613
C	?	-	ASP	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	LEU	deletion	UNP P30613
C	?	-	ILE	deletion	UNP P30613
C	?	-	SER	deletion	UNP P30613
C	?	-	LEU	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	GLN	deletion	UNP P30613
C	?	-	LYS	deletion	UNP P30613
C	?	-	ILE	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	PRO	deletion	UNP P30613
C	?	-	GLU	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	LEU	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	THR	deletion	UNP P30613
C	?	-	GLN	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	GLU	deletion	UNP P30613
C	?	-	ASN	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	LEU	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	SER	deletion	UNP P30613
C	?	-	ARG	deletion	UNP P30613
C	?	-	LYS	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	VAL	deletion	UNP P30613
C	?	-	ASN	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
C	?	-	LEU	deletion	UNP P30613
C	?	-	PRO	deletion	UNP P30613
C	?	-	GLY	deletion	UNP P30613
C	?	-	ALA	deletion	UNP P30613
C	?	-	GLN	deletion	UNP P30613
C	130	GLY	VAL	conflict	UNP P30613
C	131	SER	ASP	conflict	UNP P30613
C	132	GLY	LEU	conflict	UNP P30613
D	0	SER	ALA	conflict	UNP P30613
D	1	MET	PRO	conflict	UNP P30613
D	2	GLU	GLY	conflict	UNP P30613
D	12	ASP	SER	conflict	UNP P30613
D	?	-	GLU	deletion	UNP P30613
D	?	-	ILE	deletion	UNP P30613
D	?	-	ARG	deletion	UNP P30613
D	?	-	THR	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	ILE	deletion	UNP P30613
D	?	-	LEU	deletion	UNP P30613
D	?	-	GLN	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	PRO	deletion	UNP P30613
D	?	-	GLU	deletion	UNP P30613
D	?	-	SER	deletion	UNP P30613
D	?	-	GLU	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	GLU	deletion	UNP P30613
D	?	-	LEU	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	LYS	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	SER	deletion	UNP P30613
D	?	-	GLN	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	LEU	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	THR	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	ASP	deletion	UNP P30613
D	?	-	PRO	deletion	UNP P30613
D	?	-	ALA	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
D	?	-	PHE	deletion	UNP P30613
D	?	-	ARG	deletion	UNP P30613
D	?	-	THR	deletion	UNP P30613
D	?	-	ARG	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	ASN	deletion	UNP P30613
D	?	-	ALA	deletion	UNP P30613
D	?	-	ASN	deletion	UNP P30613
D	?	-	THR	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	TRP	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	ASP	deletion	UNP P30613
D	?	-	TYR	deletion	UNP P30613
D	?	-	PRO	deletion	UNP P30613
D	?	-	ASN	deletion	UNP P30613
D	?	-	ILE	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	ARG	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	PRO	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	ARG	deletion	UNP P30613
D	?	-	ILE	deletion	UNP P30613
D	?	-	TYR	deletion	UNP P30613
D	?	-	ILE	deletion	UNP P30613
D	?	-	ASP	deletion	UNP P30613
D	?	-	ASP	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	LEU	deletion	UNP P30613
D	?	-	ILE	deletion	UNP P30613
D	?	-	SER	deletion	UNP P30613
D	?	-	LEU	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	GLN	deletion	UNP P30613
D	?	-	LYS	deletion	UNP P30613
D	?	-	ILE	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
D	?	-	PRO	deletion	UNP P30613
D	?	-	GLU	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	LEU	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	THR	deletion	UNP P30613
D	?	-	GLN	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	GLU	deletion	UNP P30613
D	?	-	ASN	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	LEU	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	SER	deletion	UNP P30613
D	?	-	ARG	deletion	UNP P30613
D	?	-	LYS	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	VAL	deletion	UNP P30613
D	?	-	ASN	deletion	UNP P30613
D	?	-	LEU	deletion	UNP P30613
D	?	-	PRO	deletion	UNP P30613
D	?	-	GLY	deletion	UNP P30613
D	?	-	ALA	deletion	UNP P30613
D	?	-	GLN	deletion	UNP P30613
D	130	GLY	VAL	conflict	UNP P30613
D	131	SER	ASP	conflict	UNP P30613
D	132	GLY	LEU	conflict	UNP P30613
E	0	SER	ALA	conflict	UNP P30613
E	1	MET	PRO	conflict	UNP P30613
E	2	GLU	GLY	conflict	UNP P30613
E	12	ASP	SER	conflict	UNP P30613
E	?	-	GLU	deletion	UNP P30613
E	?	-	ILE	deletion	UNP P30613
E	?	-	ARG	deletion	UNP P30613
E	?	-	THR	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	ILE	deletion	UNP P30613
E	?	-	LEU	deletion	UNP P30613
E	?	-	GLN	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
E	?	-	GLY	deletion	UNP P30613
E	?	-	PRO	deletion	UNP P30613
E	?	-	GLU	deletion	UNP P30613
E	?	-	SER	deletion	UNP P30613
E	?	-	GLU	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	GLU	deletion	UNP P30613
E	?	-	LEU	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	LYS	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	SER	deletion	UNP P30613
E	?	-	GLN	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	LEU	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	THR	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	ASP	deletion	UNP P30613
E	?	-	PRO	deletion	UNP P30613
E	?	-	ALA	deletion	UNP P30613
E	?	-	PHE	deletion	UNP P30613
E	?	-	ARG	deletion	UNP P30613
E	?	-	THR	deletion	UNP P30613
E	?	-	ARG	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	ASN	deletion	UNP P30613
E	?	-	ALA	deletion	UNP P30613
E	?	-	ASN	deletion	UNP P30613
E	?	-	THR	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	TRP	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	ASP	deletion	UNP P30613
E	?	-	TYR	deletion	UNP P30613
E	?	-	PRO	deletion	UNP P30613
E	?	-	ASN	deletion	UNP P30613
E	?	-	ILE	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	ARG	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
E	?	-	PRO	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	ARG	deletion	UNP P30613
E	?	-	ILE	deletion	UNP P30613
E	?	-	TYR	deletion	UNP P30613
E	?	-	ILE	deletion	UNP P30613
E	?	-	ASP	deletion	UNP P30613
E	?	-	ASP	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	LEU	deletion	UNP P30613
E	?	-	ILE	deletion	UNP P30613
E	?	-	SER	deletion	UNP P30613
E	?	-	LEU	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	GLN	deletion	UNP P30613
E	?	-	LYS	deletion	UNP P30613
E	?	-	ILE	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	PRO	deletion	UNP P30613
E	?	-	GLU	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	LEU	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	THR	deletion	UNP P30613
E	?	-	GLN	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	GLU	deletion	UNP P30613
E	?	-	ASN	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	LEU	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	SER	deletion	UNP P30613
E	?	-	ARG	deletion	UNP P30613
E	?	-	LYS	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	VAL	deletion	UNP P30613
E	?	-	ASN	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
E	?	-	LEU	deletion	UNP P30613
E	?	-	PRO	deletion	UNP P30613
E	?	-	GLY	deletion	UNP P30613
E	?	-	ALA	deletion	UNP P30613
E	?	-	GLN	deletion	UNP P30613
E	130	GLY	VAL	conflict	UNP P30613
E	131	SER	ASP	conflict	UNP P30613
E	132	GLY	LEU	conflict	UNP P30613
F	0	SER	ALA	conflict	UNP P30613
F	1	MET	PRO	conflict	UNP P30613
F	2	GLU	GLY	conflict	UNP P30613
F	12	ASP	SER	conflict	UNP P30613
F	?	-	GLU	deletion	UNP P30613
F	?	-	ILE	deletion	UNP P30613
F	?	-	ARG	deletion	UNP P30613
F	?	-	THR	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	ILE	deletion	UNP P30613
F	?	-	LEU	deletion	UNP P30613
F	?	-	GLN	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	PRO	deletion	UNP P30613
F	?	-	GLU	deletion	UNP P30613
F	?	-	SER	deletion	UNP P30613
F	?	-	GLU	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	GLU	deletion	UNP P30613
F	?	-	LEU	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	LYS	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	SER	deletion	UNP P30613
F	?	-	GLN	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	LEU	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	THR	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	ASP	deletion	UNP P30613
F	?	-	PRO	deletion	UNP P30613
F	?	-	ALA	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
F	?	-	PHE	deletion	UNP P30613
F	?	-	ARG	deletion	UNP P30613
F	?	-	THR	deletion	UNP P30613
F	?	-	ARG	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	ASN	deletion	UNP P30613
F	?	-	ALA	deletion	UNP P30613
F	?	-	ASN	deletion	UNP P30613
F	?	-	THR	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	TRP	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	ASP	deletion	UNP P30613
F	?	-	TYR	deletion	UNP P30613
F	?	-	PRO	deletion	UNP P30613
F	?	-	ASN	deletion	UNP P30613
F	?	-	ILE	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	ARG	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	PRO	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	ARG	deletion	UNP P30613
F	?	-	ILE	deletion	UNP P30613
F	?	-	TYR	deletion	UNP P30613
F	?	-	ILE	deletion	UNP P30613
F	?	-	ASP	deletion	UNP P30613
F	?	-	ASP	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	LEU	deletion	UNP P30613
F	?	-	ILE	deletion	UNP P30613
F	?	-	SER	deletion	UNP P30613
F	?	-	LEU	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	GLN	deletion	UNP P30613
F	?	-	LYS	deletion	UNP P30613
F	?	-	ILE	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
F	?	-	PRO	deletion	UNP P30613
F	?	-	GLU	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	LEU	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	THR	deletion	UNP P30613
F	?	-	GLN	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	GLU	deletion	UNP P30613
F	?	-	ASN	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	LEU	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	SER	deletion	UNP P30613
F	?	-	ARG	deletion	UNP P30613
F	?	-	LYS	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	VAL	deletion	UNP P30613
F	?	-	ASN	deletion	UNP P30613
F	?	-	LEU	deletion	UNP P30613
F	?	-	PRO	deletion	UNP P30613
F	?	-	GLY	deletion	UNP P30613
F	?	-	ALA	deletion	UNP P30613
F	?	-	GLN	deletion	UNP P30613
F	130	GLY	VAL	conflict	UNP P30613
F	131	SER	ASP	conflict	UNP P30613
F	132	GLY	LEU	conflict	UNP P30613
G	0	SER	ALA	conflict	UNP P30613
G	1	MET	PRO	conflict	UNP P30613
G	2	GLU	GLY	conflict	UNP P30613
G	12	ASP	SER	conflict	UNP P30613
G	?	-	GLU	deletion	UNP P30613
G	?	-	ILE	deletion	UNP P30613
G	?	-	ARG	deletion	UNP P30613
G	?	-	THR	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	ILE	deletion	UNP P30613
G	?	-	LEU	deletion	UNP P30613
G	?	-	GLN	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
G	?	-	GLY	deletion	UNP P30613
G	?	-	PRO	deletion	UNP P30613
G	?	-	GLU	deletion	UNP P30613
G	?	-	SER	deletion	UNP P30613
G	?	-	GLU	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	GLU	deletion	UNP P30613
G	?	-	LEU	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	LYS	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	SER	deletion	UNP P30613
G	?	-	GLN	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	LEU	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	THR	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	ASP	deletion	UNP P30613
G	?	-	PRO	deletion	UNP P30613
G	?	-	ALA	deletion	UNP P30613
G	?	-	PHE	deletion	UNP P30613
G	?	-	ARG	deletion	UNP P30613
G	?	-	THR	deletion	UNP P30613
G	?	-	ARG	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	ASN	deletion	UNP P30613
G	?	-	ALA	deletion	UNP P30613
G	?	-	ASN	deletion	UNP P30613
G	?	-	THR	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	TRP	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	ASP	deletion	UNP P30613
G	?	-	TYR	deletion	UNP P30613
G	?	-	PRO	deletion	UNP P30613
G	?	-	ASN	deletion	UNP P30613
G	?	-	ILE	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	ARG	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
G	?	-	PRO	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	ARG	deletion	UNP P30613
G	?	-	ILE	deletion	UNP P30613
G	?	-	TYR	deletion	UNP P30613
G	?	-	ILE	deletion	UNP P30613
G	?	-	ASP	deletion	UNP P30613
G	?	-	ASP	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	LEU	deletion	UNP P30613
G	?	-	ILE	deletion	UNP P30613
G	?	-	SER	deletion	UNP P30613
G	?	-	LEU	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	GLN	deletion	UNP P30613
G	?	-	LYS	deletion	UNP P30613
G	?	-	ILE	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	PRO	deletion	UNP P30613
G	?	-	GLU	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	LEU	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	THR	deletion	UNP P30613
G	?	-	GLN	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	GLU	deletion	UNP P30613
G	?	-	ASN	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	LEU	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	SER	deletion	UNP P30613
G	?	-	ARG	deletion	UNP P30613
G	?	-	LYS	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	VAL	deletion	UNP P30613
G	?	-	ASN	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
G	?	-	LEU	deletion	UNP P30613
G	?	-	PRO	deletion	UNP P30613
G	?	-	GLY	deletion	UNP P30613
G	?	-	ALA	deletion	UNP P30613
G	?	-	GLN	deletion	UNP P30613
G	130	GLY	VAL	conflict	UNP P30613
G	131	SER	ASP	conflict	UNP P30613
G	132	GLY	LEU	conflict	UNP P30613
H	0	SER	ALA	conflict	UNP P30613
H	1	MET	PRO	conflict	UNP P30613
H	2	GLU	GLY	conflict	UNP P30613
H	12	ASP	SER	conflict	UNP P30613
H	?	-	GLU	deletion	UNP P30613
H	?	-	ILE	deletion	UNP P30613
H	?	-	ARG	deletion	UNP P30613
H	?	-	THR	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	ILE	deletion	UNP P30613
H	?	-	LEU	deletion	UNP P30613
H	?	-	GLN	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	PRO	deletion	UNP P30613
H	?	-	GLU	deletion	UNP P30613
H	?	-	SER	deletion	UNP P30613
H	?	-	GLU	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	GLU	deletion	UNP P30613
H	?	-	LEU	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	LYS	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	SER	deletion	UNP P30613
H	?	-	GLN	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	LEU	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	THR	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	ASP	deletion	UNP P30613
H	?	-	PRO	deletion	UNP P30613
H	?	-	ALA	deletion	UNP P30613

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Chain	Residue	Modelled	Actual	Comment	Reference
H	?	-	PHE	deletion	UNP P30613
H	?	-	ARG	deletion	UNP P30613
H	?	-	THR	deletion	UNP P30613
H	?	-	ARG	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	ASN	deletion	UNP P30613
H	?	-	ALA	deletion	UNP P30613
H	?	-	ASN	deletion	UNP P30613
H	?	-	THR	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	TRP	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	ASP	deletion	UNP P30613
H	?	-	TYR	deletion	UNP P30613
H	?	-	PRO	deletion	UNP P30613
H	?	-	ASN	deletion	UNP P30613
H	?	-	ILE	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	ARG	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	PRO	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	ARG	deletion	UNP P30613
H	?	-	ILE	deletion	UNP P30613
H	?	-	TYR	deletion	UNP P30613
H	?	-	ILE	deletion	UNP P30613
H	?	-	ASP	deletion	UNP P30613
H	?	-	ASP	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	LEU	deletion	UNP P30613
H	?	-	ILE	deletion	UNP P30613
H	?	-	SER	deletion	UNP P30613
H	?	-	LEU	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	GLN	deletion	UNP P30613
H	?	-	LYS	deletion	UNP P30613
H	?	-	ILE	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613

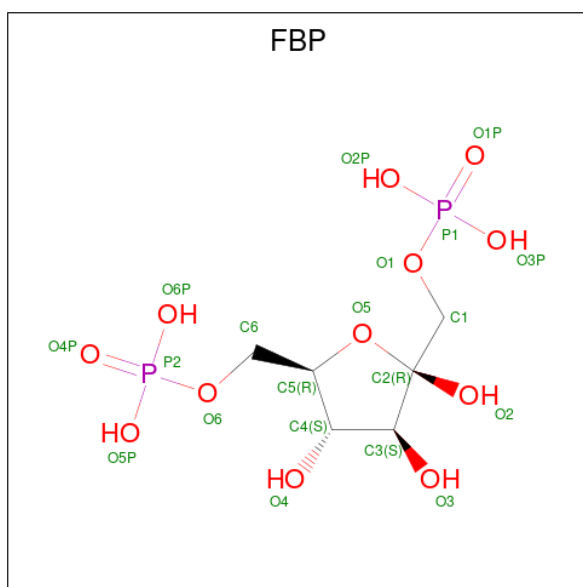
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Chain	Residue	Modelled	Actual	Comment	Reference
H	?	-	PRO	deletion	UNP P30613
H	?	-	GLU	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	LEU	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	THR	deletion	UNP P30613
H	?	-	GLN	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	GLU	deletion	UNP P30613
H	?	-	ASN	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	LEU	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	SER	deletion	UNP P30613
H	?	-	ARG	deletion	UNP P30613
H	?	-	LYS	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	VAL	deletion	UNP P30613
H	?	-	ASN	deletion	UNP P30613
H	?	-	LEU	deletion	UNP P30613
H	?	-	PRO	deletion	UNP P30613
H	?	-	GLY	deletion	UNP P30613
H	?	-	ALA	deletion	UNP P30613
H	?	-	GLN	deletion	UNP P30613
H	130	GLY	VAL	conflict	UNP P30613
H	131	SER	ASP	conflict	UNP P30613
H	132	GLY	LEU	conflict	UNP P30613

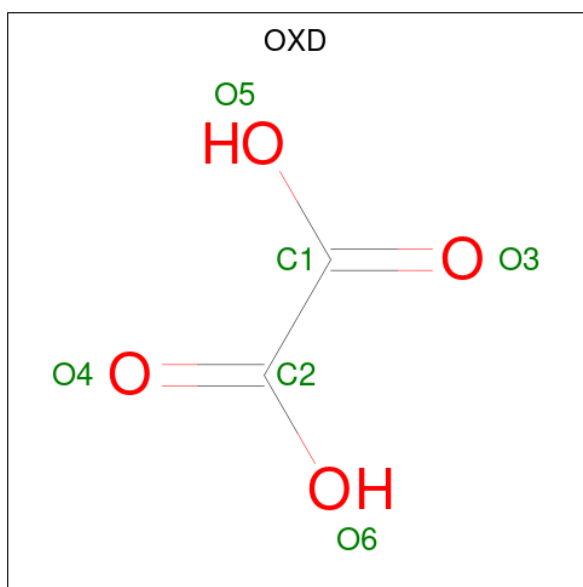
- Molecule 2 is 1,6-di-O-phosphono-beta-D-fructofuranose (three-letter code: FBP) (formula:  $C_6H_{14}O_{12}P_2$ ).





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 OXALIC ACID (three-letter code: OXD) (formula: C<sub>2</sub>H<sub>2</sub>O<sub>4</sub>).



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

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total Mg 1 1	0	0
4	B	1	Total Mg 1 1	0	0
4	C	1	Total Mg 1 1	0	0
4	D	1	Total Mg 1 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	E	1	Total 1	Mg 1	0	0
4	F	1	Total 1	Mg 1	0	0
4	G	1	Total 1	Mg 1	0	0
4	H	1	Total 1	Mg 1	0	0

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

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

- Molecule 6 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	B	1	Total 1	Na 1	0	0
6	C	1	Total 1	Na 1	0	0
6	D	1	Total 1	Na 1	0	0
6	F	1	Total 1	Na 1	0	0
6	G	1	Total 1	Na 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	H	1	Total	Na	0	0
			1	1		

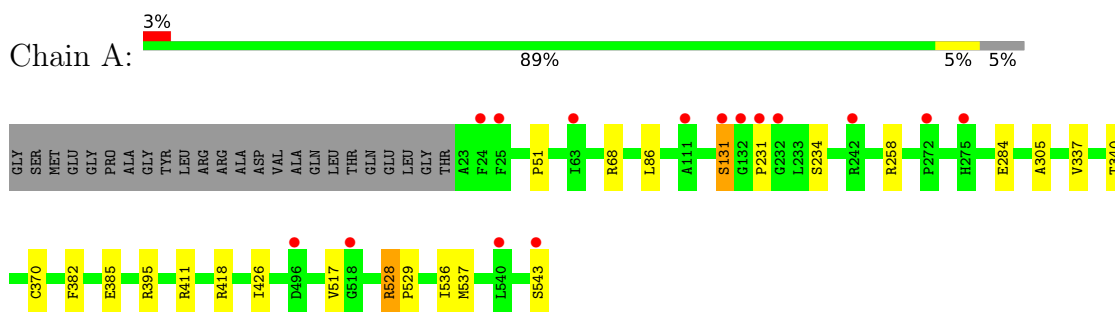
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	258	Total	O	0	0
			258	258		
7	B	235	Total	O	0	0
			235	235		
7	C	370	Total	O	0	0
			370	370		
7	D	383	Total	O	0	0
			383	383		
7	E	246	Total	O	0	0
			246	246		
7	F	283	Total	O	0	0
			283	283		
7	G	368	Total	O	0	0
			368	368		
7	H	419	Total	O	0	0
			419	419		

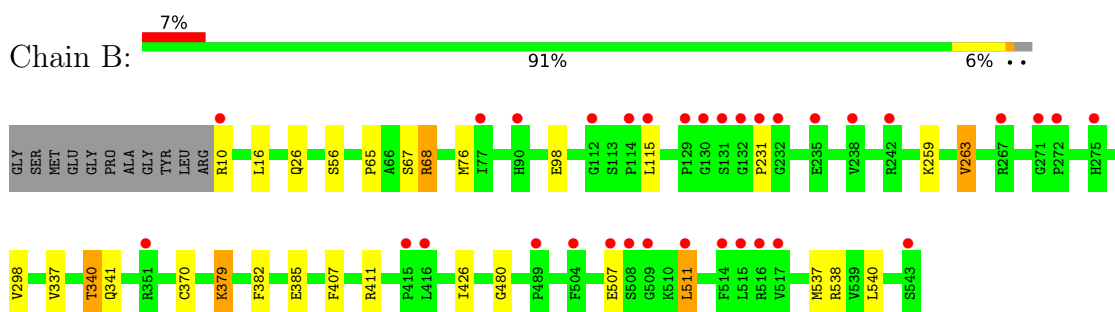
### 3 Residue-property plots [i](#)

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.

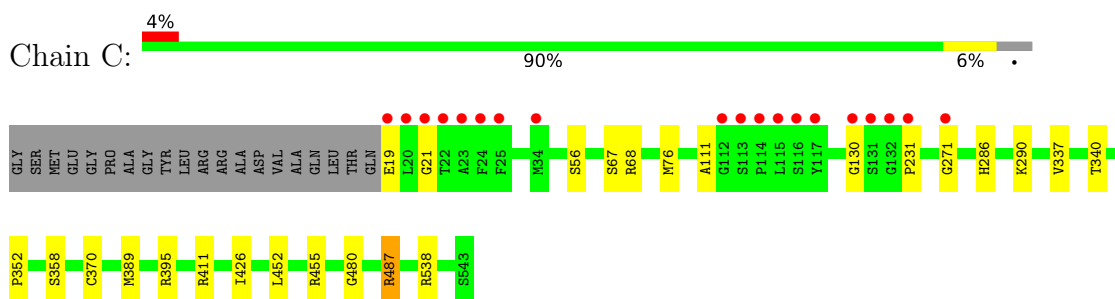
- Molecule 1: Pyruvate kinase PKLR



- Molecule 1: Pyruvate kinase PKLR

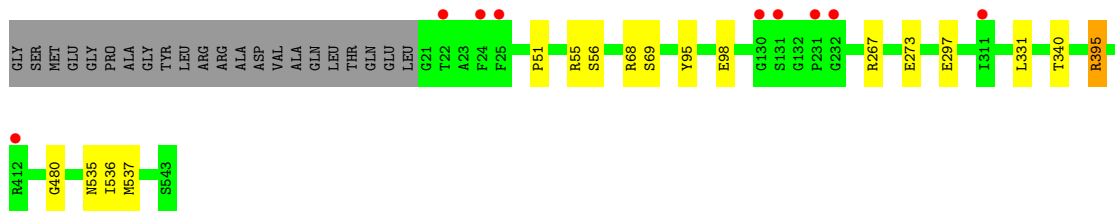


- Molecule 1: Pyruvate kinase PKLR

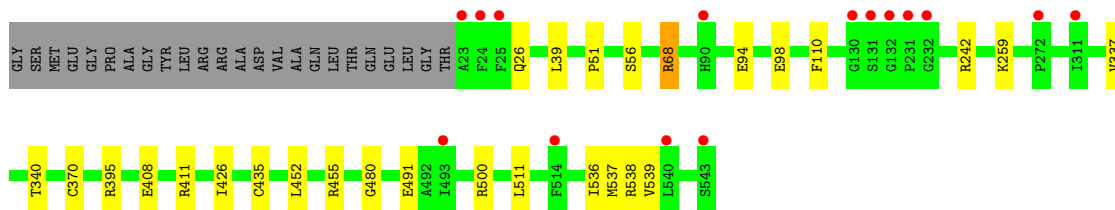
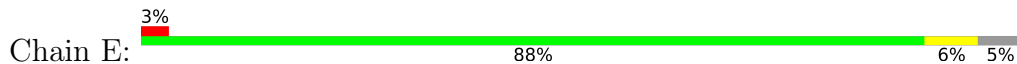


- Molecule 1: Pyruvate kinase PKLR

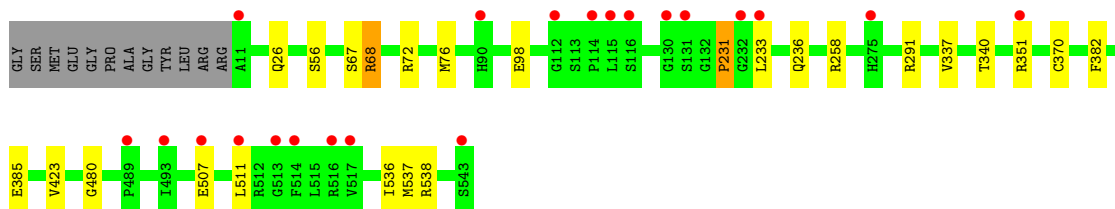




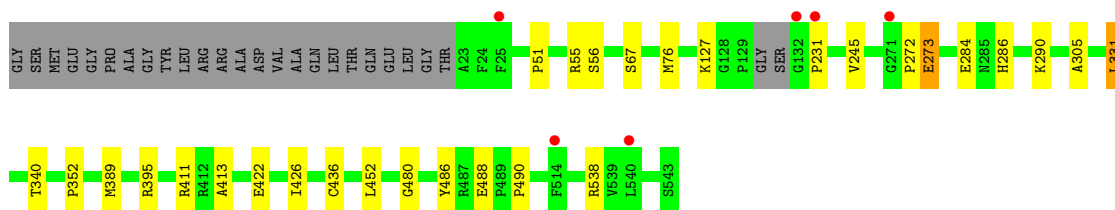
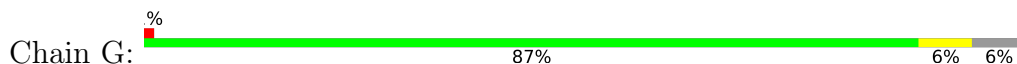
● Molecule 1: Pyruvate kinase PKLR



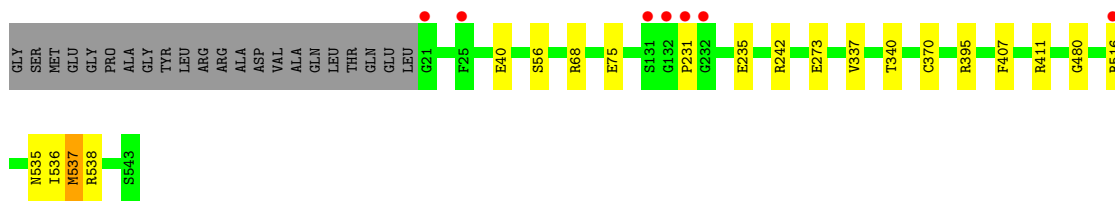
● Molecule 1: Pyruvate kinase PKLR



● Molecule 1: Pyruvate kinase PKLR



● Molecule 1: Pyruvate kinase PKLR



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	207.45Å 112.69Å 188.33Å 90.00° 91.36° 90.00°	Depositor
Resolution (Å)	103.69 – 1.70 103.69 – 1.70	Depositor EDS
% Data completeness (in resolution range)	92.6 (103.69-1.70) 92.7 (103.69-1.70)	Depositor EDS
$R_{merge}$	0.10	Depositor
$R_{sym}$	0.10	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.44 (at 1.70Å)	Xtrriage
Refinement program	BUSTER 2.10.4	Depositor
R, $R_{free}$	0.205 , 0.217 0.197 , 0.208	Depositor DCC
$R_{free}$ test set	22295 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	32.5	Xtrriage
Anisotropy	0.091	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	(Not available) , (Not available)	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.000 for -h,-k,l	Xtrriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	28811	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	41.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 36.87 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 4.6746e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: NA, FBP, MG, K, OXD

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	0.39	0/3291	0.55	0/4449
1	B	0.37	0/3388	0.54	0/4581
1	C	0.42	0/3300	0.55	0/4463
1	D	0.44	0/3294	0.56	0/4455
1	E	0.36	0/3280	0.54	0/4435
1	F	0.38	0/3377	0.54	0/4567
1	G	0.42	0/3285	0.55	0/4441
1	H	0.44	0/3305	0.55	0/4469
All	All	0.40	0/26520	0.55	0/35860

There are no bond length outliers.

There are no bond angle outliers.

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	3227	0	3286	9	0
1	B	3324	0	3383	20	0
1	C	3242	0	3290	18	0
1	D	3232	0	3280	12	0
1	E	3219	0	3273	16	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	3313	0	3369	16	0
1	G	3219	0	3271	19	0
1	H	3243	0	3292	12	0
2	A	20	0	10	0	0
2	B	20	0	10	0	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	0	0
2	G	20	0	10	0	0
2	H	20	0	10	0	0
3	A	6	0	0	0	0
3	B	6	0	0	0	0
3	C	6	0	0	0	0
3	D	6	0	0	0	0
3	E	6	0	0	0	0
3	F	6	0	0	0	0
3	G	6	0	0	0	0
3	H	6	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
4	G	1	0	0	0	0
4	H	1	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	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	1	0	0	0	0
6	C	1	0	0	0	0
6	D	1	0	0	0	0
6	F	1	0	0	0	0
6	G	1	0	0	0	0
6	H	1	0	0	0	0
7	A	258	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	B	235	0	0	3	0
7	C	370	0	0	9	0
7	D	383	0	0	3	0
7	E	246	0	0	4	0
7	F	283	0	0	3	0
7	G	368	0	0	2	0
7	H	419	0	0	5	0
All	All	28811	0	26524	113	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 2.

All (113) 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:297:GLU:HG3	7:D:1007:HOH:O	1.53	1.07
1:H:75:GLU:HG3	7:H:1050:HOH:O	1.57	1.04
1:D:273:GLU:HB2	7:D:719:HOH:O	1.58	1.01
1:C:111:ALA:HB1	7:C:919:HOH:O	1.71	0.89
1:B:231:PRO:HG2	7:B:778:HOH:O	1.77	0.84
1:D:267:ARG:HD2	7:D:1020:HOH:O	1.79	0.82
1:E:39:LEU:HD21	1:G:331:LEU:HD23	1.62	0.82
1:H:516:ARG:HB2	7:H:925:HOH:O	1.81	0.80
1:G:538:ARG:HG2	1:H:536:ILE:HG12	1.62	0.80
1:E:536:ILE:HG12	1:F:538:ARG:HG2	1.65	0.79
1:C:538:ARG:HD3	7:C:765:HOH:O	1.81	0.78
1:A:536:ILE:HG12	1:B:538:ARG:HG2	1.67	0.77
1:C:538:ARG:HG2	1:D:536:ILE:HG12	1.68	0.75
1:B:411:ARG:HG2	1:B:426:ILE:HD11	1.67	0.75
1:C:111:ALA:CB	7:C:919:HOH:O	2.33	0.74
1:F:26:GLN:NE2	7:F:701:HOH:O	2.21	0.73
1:C:411:ARG:HG3	1:C:426:ILE:HD11	1.69	0.73
1:C:21:GLY:HA3	7:C:707:HOH:O	1.88	0.72
1:H:516:ARG:CB	7:H:925:HOH:O	2.40	0.70
1:D:68:ARG:NH2	1:D:98:GLU:HB2	2.09	0.68
1:E:538:ARG:HG2	1:F:536:ILE:HG12	1.75	0.68
1:A:528:ARG:HD2	1:A:529:PRO:O	1.93	0.67
1:C:21:GLY:CA	7:C:707:HOH:O	2.42	0.66
1:F:236:GLN:HG3	7:F:838:HOH:O	1.94	0.66
1:D:68:ARG:HH22	1:D:98:GLU:HB2	1.62	0.64
1:G:331:LEU:HD21	1:G:413:ALA:CB	2.28	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:422[A]:GLU:HG3	1:G:452:LEU:HD13	1.82	0.61
1:B:26:GLN:HG3	7:B:751:HOH:O	2.01	0.60
1:C:21:GLY:C	7:C:707:HOH:O	2.40	0.60
1:B:263:VAL:HG21	1:B:298:VAL:HG23	1.84	0.59
1:E:411:ARG:HG3	1:E:426:ILE:HD11	1.85	0.59
1:E:26:GLN:C	7:E:720:HOH:O	2.42	0.57
1:G:331:LEU:HD21	1:G:413:ALA:HB1	1.86	0.57
1:B:10:ARG:O	1:B:10:ARG:HG2	2.03	0.56
1:G:272:PRO:HD2	1:G:273:GLU:OE1	2.06	0.56
1:E:26:GLN:CB	7:E:720:HOH:O	2.53	0.55
1:G:56:SER:HB2	1:G:480:GLY:HA2	1.88	0.55
1:D:56:SER:HB2	1:D:480:GLY:HA2	1.89	0.55
1:B:407:PHE:CZ	1:B:411:ARG:HD2	2.43	0.54
1:B:507:GLU:O	1:B:511:LEU:HD22	2.08	0.54
1:G:55:ARG:HB2	1:G:395:ARG:HG3	1.89	0.53
1:E:39:LEU:CD2	1:G:331:LEU:HD23	2.34	0.52
1:H:56:SER:HB2	1:H:480:GLY:HA2	1.90	0.52
1:A:418[A]:ARG:HG3	1:B:16:LEU:HD11	1.92	0.52
1:E:452:LEU:O	1:E:455:ARG:HG2	2.11	0.51
1:B:65:PRO:HG2	1:B:379:LYS:HG2	1.94	0.50
1:D:68:ARG:HD2	1:D:95:TYR:OH	2.11	0.50
1:B:26:GLN:CG	7:B:751:HOH:O	2.56	0.49
1:F:231:PRO:C	7:F:709:HOH:O	2.50	0.49
1:A:517:VAL:HG13	1:A:543:SER:HB3	1.95	0.49
1:B:56:SER:HB2	1:B:480:GLY:HA2	1.95	0.49
1:C:56:SER:HB2	1:C:480:GLY:HA2	1.95	0.49
1:H:235:GLU:HG2	7:H:1047:HOH:O	2.13	0.49
1:E:56:SER:HB2	1:E:480:GLY:HA2	1.94	0.48
1:F:507:GLU:O	1:F:511:LEU:HG	2.13	0.48
1:H:407:PHE:O	1:H:411:ARG:HG3	2.14	0.48
1:A:284:GLU:HG2	1:A:305:ALA:HB3	1.95	0.48
1:D:56:SER:HB2	1:D:480:GLY:CA	2.44	0.48
1:F:511:LEU:HD23	1:F:511:LEU:N	2.28	0.48
1:G:127:LYS:NZ	7:G:706:HOH:O	2.47	0.48
1:F:68:ARG:NH2	1:F:98:GLU:HB3	2.30	0.47
1:H:56:SER:HB2	1:H:480:GLY:CA	2.44	0.47
1:B:382:PHE:HB3	1:B:385:GLU:HB2	1.98	0.46
1:G:486:TYR:CZ	1:G:488:GLU:HB2	2.51	0.46
1:B:67:SER:HB2	1:B:76[B]:MET:SD	2.55	0.46
1:E:68:ARG:NH2	1:E:98:GLU:HB3	2.31	0.46
1:H:40:GLU:HB2	7:H:978:HOH:O	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:231:PRO:O	1:F:258:ARG:NH2	2.50	0.45
1:H:535:ASN:OD1	1:H:536:ILE:HG13	2.15	0.45
1:D:55:ARG:HB2	1:D:395:ARG:HG3	1.99	0.45
1:F:67:SER:HB2	1:F:76[B]:MET:SD	2.56	0.45
1:G:56:SER:HB2	1:G:480:GLY:CA	2.46	0.45
1:B:56:SER:HB2	1:B:480:GLY:CA	2.48	0.44
1:G:245:VAL:CG1	1:G:273:GLU:HG2	2.48	0.44
1:C:271:GLY:HA3	7:C:837:HOH:O	2.17	0.44
1:D:535:ASN:OD1	1:D:536:ILE:HG13	2.18	0.44
1:E:110:PHE:HB3	7:E:726:HOH:O	2.18	0.43
1:G:490:PRO:HB3	7:G:1021:HOH:O	2.17	0.43
1:B:68:ARG:NH2	1:B:98:GLU:HB3	2.33	0.43
1:B:538:ARG:NH1	1:B:540:LEU:HD11	2.34	0.43
1:F:56:SER:HB2	1:F:480:GLY:HA2	2.00	0.43
1:C:67:SER:HB2	1:C:76[B]:MET:SD	2.59	0.43
1:E:491:GLU:OE2	1:E:500:ARG:HD2	2.18	0.43
1:F:382:PHE:HB3	1:F:385:GLU:HB2	2.00	0.43
1:C:271:GLY:HA2	7:C:717:HOH:O	2.19	0.43
1:C:286:HIS:CE1	1:C:290:LYS:HG3	2.54	0.43
1:E:94:GLU:HB2	7:E:884:HOH:O	2.17	0.43
1:C:56:SER:HB2	1:C:480:GLY:CA	2.49	0.43
1:A:68:ARG:NH1	7:A:702:HOH:O	2.51	0.42
1:G:284:GLU:HG2	1:G:305:ALA:HB3	2.02	0.42
1:A:411:ARG:HG3	1:A:426:ILE:HD11	2.02	0.42
1:G:352:PRO:HG3	1:G:389:MET:HG2	2.01	0.42
1:C:337:VAL:HG22	1:C:370:CYS:HB2	2.02	0.42
1:G:411:ARG:HG3	1:G:426:ILE:HD11	2.01	0.42
1:D:68:ARG:NH2	1:D:95:TYR:O	2.53	0.42
1:E:337:VAL:HG22	1:E:370:CYS:HB2	2.01	0.42
1:B:340:THR:HG22	1:B:341:GLN:HG3	2.02	0.42
1:B:507:GLU:O	1:B:511:LEU:CD2	2.67	0.41
1:B:337:VAL:HG22	1:B:370:CYS:HB2	2.01	0.41
1:C:452:LEU:O	1:C:455:ARG:HG2	2.20	0.41
1:F:337:VAL:HG22	1:F:370:CYS:HB2	2.02	0.41
1:F:56:SER:HB2	1:F:480:GLY:CA	2.50	0.41
1:H:337:VAL:HG22	1:H:370:CYS:HB2	2.03	0.41
1:A:382:PHE:HB3	1:A:385:GLU:HB2	2.02	0.41
1:E:56:SER:HB2	1:E:480:GLY:CA	2.50	0.41
1:H:537:MET:O	1:H:537:MET:HG3	2.19	0.41
1:E:435:CYS:HB3	1:F:423:VAL:HG21	2.03	0.41
1:G:67:SER:HB2	1:G:76[B]:MET:SD	2.60	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:286:HIS:CE1	1:G:290:LYS:HG3	2.56	0.41
1:C:352:PRO:HG3	1:C:389:MET:HG2	2.03	0.41
1:C:487:ARG:CD	7:C:758:HOH:O	2.68	0.41
1:F:233:LEU:HD12	1:F:233:LEU:HA	1.88	0.40
1:A:337:VAL:HG22	1:A:370:CYS:HB2	2.02	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	424/447 (95%)	417 (98%)	4 (1%)	3 (1%)	22	8
1	B	437/447 (98%)	430 (98%)	6 (1%)	1 (0%)	47	30
1	C	426/447 (95%)	416 (98%)	7 (2%)	3 (1%)	22	8
1	D	425/447 (95%)	422 (99%)	2 (0%)	1 (0%)	47	30
1	E	423/447 (95%)	417 (99%)	5 (1%)	1 (0%)	47	30
1	F	436/447 (98%)	430 (99%)	4 (1%)	2 (0%)	29	13
1	G	421/447 (94%)	413 (98%)	6 (1%)	2 (0%)	29	13
1	H	426/447 (95%)	421 (99%)	3 (1%)	2 (0%)	29	13
All	All	3418/3576 (96%)	3366 (98%)	37 (1%)	15 (0%)	34	18

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	231	PRO
1	F	231	PRO
1	G	231	PRO
1	A	131	SER
1	C	130	GLY

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Mol	Chain	Res	Type
1	C	231	PRO
1	H	231	PRO
1	A	340	THR
1	B	340	THR
1	C	340	THR
1	D	340	THR
1	E	340	THR
1	F	340	THR
1	G	340	THR
1	H	340	THR

### 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	338/352 (96%)	329 (97%)	9 (3%)	44 26
1	B	348/352 (99%)	340 (98%)	8 (2%)	50 33
1	C	339/352 (96%)	334 (98%)	5 (2%)	65 51
1	D	338/352 (96%)	333 (98%)	5 (2%)	65 51
1	E	337/352 (96%)	327 (97%)	10 (3%)	41 22
1	F	347/352 (99%)	341 (98%)	6 (2%)	60 46
1	G	338/352 (96%)	334 (99%)	4 (1%)	71 59
1	H	339/352 (96%)	333 (98%)	6 (2%)	59 43
All	All	2724/2816 (97%)	2671 (98%)	53 (2%)	59 41

All (53) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	51	PRO
1	A	86	LEU
1	A	131	SER
1	A	234	SER
1	A	258	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	395	ARG
1	A	528	ARG
1	A	537[A]	MET
1	A	537[B]	MET
1	B	68	ARG
1	B	115	LEU
1	B	259	LYS
1	B	263	VAL
1	B	379	LYS
1	B	511	LEU
1	B	537[A]	MET
1	B	537[B]	MET
1	C	19	GLU
1	C	68	ARG
1	C	358	SER
1	C	395	ARG
1	C	487	ARG
1	D	51	PRO
1	D	69	SER
1	D	331	LEU
1	D	395	ARG
1	D	537	MET
1	E	51	PRO
1	E	68	ARG
1	E	242	ARG
1	E	259	LYS
1	E	395	ARG
1	E	408	GLU
1	E	511	LEU
1	E	537[A]	MET
1	E	537[B]	MET
1	E	539	VAL
1	F	68	ARG
1	F	72	ARG
1	F	291	ARG
1	F	351	ARG
1	F	537[A]	MET
1	F	537[B]	MET
1	G	51	PRO
1	G	273	GLU
1	G	331	LEU
1	G	436	CYS

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Mol	Chain	Res	Type
1	H	68	ARG
1	H	242	ARG
1	H	273	GLU
1	H	395	ARG
1	H	537	MET
1	H	538	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	275	HIS
1	G	275	HIS
1	G	470	GLN

### 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 38 ligands modelled in this entry, 22 are monoatomic - leaving 16 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	F	601	-	18,20,20	0.45	0	23,32,32	0.58	0
2	FBP	B	601	-	18,20,20	0.73	0	23,32,32	0.84	1 (4%)
2	FBP	C	601	-	18,20,20	0.50	0	23,32,32	0.69	0
3	OXD	A	602	4	0,5,5	-	-	0,6,6	-	-
2	FBP	E	601	-	18,20,20	0.61	0	23,32,32	0.69	0
2	FBP	D	601	-	18,20,20	0.43	0	23,32,32	0.77	1 (4%)
2	FBP	H	601	-	18,20,20	0.74	0	23,32,32	0.84	1 (4%)
3	OXD	D	602	4	0,5,5	-	-	0,6,6	-	-
3	OXD	E	602	4	0,5,5	-	-	0,6,6	-	-
2	FBP	G	601	-	18,20,20	0.55	0	23,32,32	0.68	0
3	OXD	C	602	4	0,5,5	-	-	0,6,6	-	-
3	OXD	F	602	4	0,5,5	-	-	0,6,6	-	-
3	OXD	B	602	4	0,5,5	-	-	0,6,6	-	-
3	OXD	G	602	4	0,5,5	-	-	0,6,6	-	-
3	OXD	H	602	4	0,5,5	-	-	0,6,6	-	-
2	FBP	A	601	-	18,20,20	0.60	0	23,32,32	0.75	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	F	601	-	-	2/13/32/32	0/1/1/1
2	FBP	B	601	-	-	2/13/32/32	0/1/1/1
2	FBP	C	601	-	-	2/13/32/32	0/1/1/1
3	OXD	A	602	4	-	0/0/4/4	-
2	FBP	E	601	-	-	2/13/32/32	0/1/1/1
2	FBP	D	601	-	-	2/13/32/32	0/1/1/1
2	FBP	H	601	-	-	2/13/32/32	0/1/1/1
3	OXD	D	602	4	-	0/0/4/4	-
3	OXD	E	602	4	-	0/0/4/4	-
2	FBP	G	601	-	-	2/13/32/32	0/1/1/1
3	OXD	C	602	4	-	0/0/4/4	-
3	OXD	F	602	4	-	0/0/4/4	-
3	OXD	B	602	4	-	0/0/4/4	-
3	OXD	G	602	4	-	0/0/4/4	-
3	OXD	H	602	4	-	0/0/4/4	-
2	FBP	A	601	-	-	2/13/32/32	0/1/1/1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
2	D	601	FBP	O5P-P2-O6	2.37	113.04	106.73
2	H	601	FBP	O5P-P2-O6	2.06	112.23	106.73
2	B	601	FBP	O3P-P1-O2P	2.03	115.38	107.64

There are no chirality outliers.

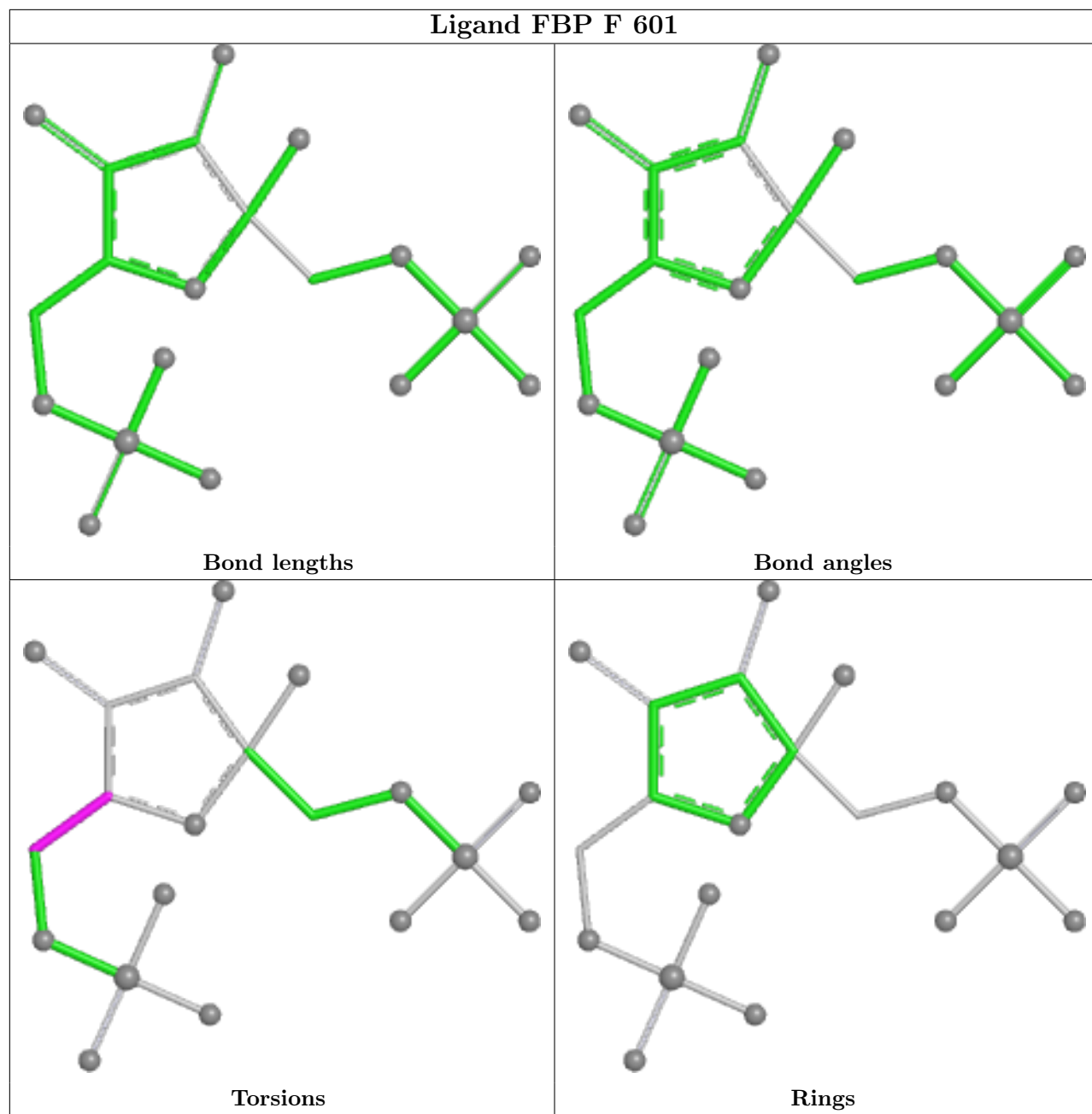
All (16) torsion outliers are listed below:

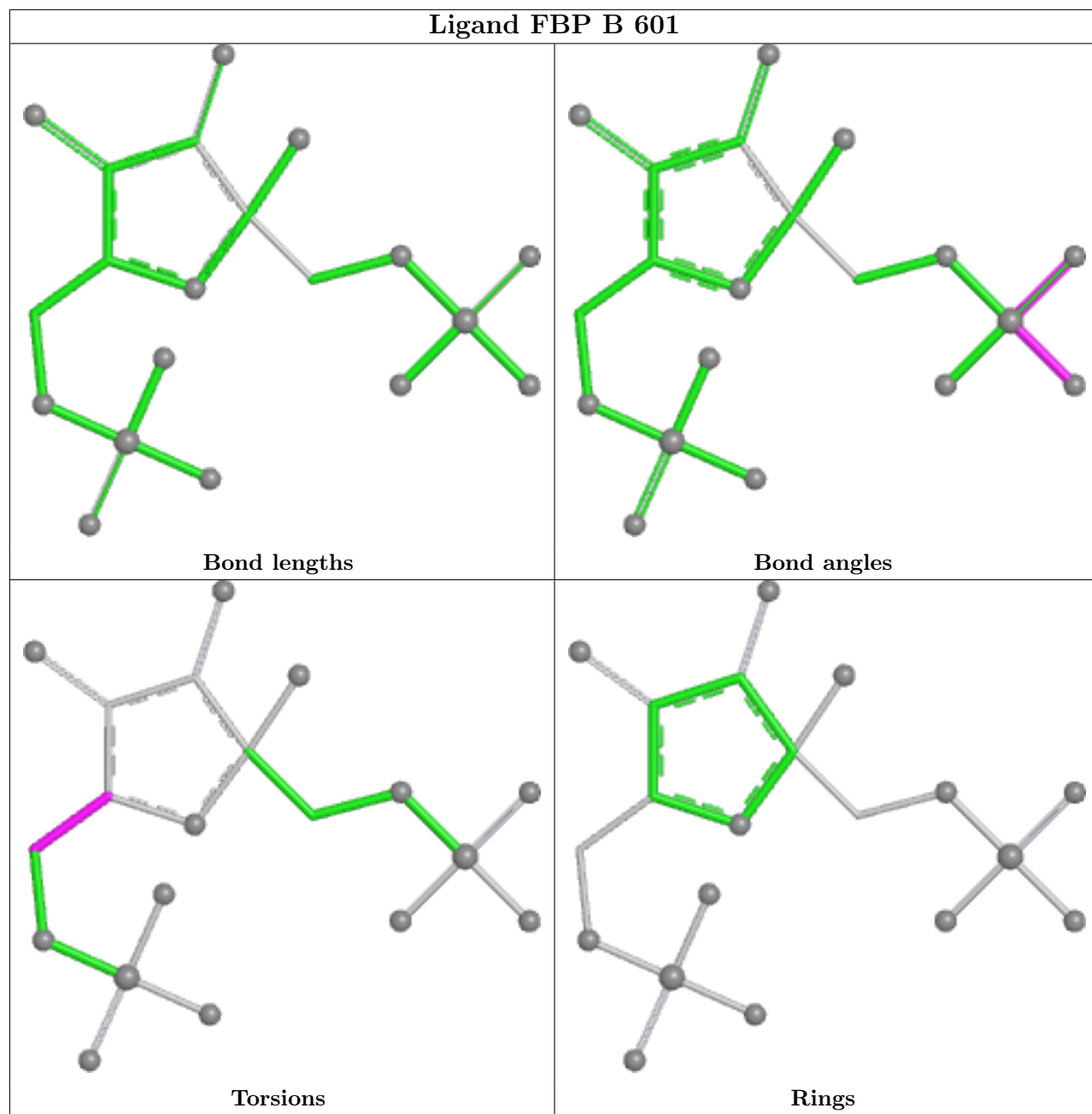
Mol	Chain	Res	Type	Atoms
2	A	601	FBP	C4-C5-C6-O6
2	E	601	FBP	C4-C5-C6-O6
2	B	601	FBP	C4-C5-C6-O6
2	C	601	FBP	C4-C5-C6-O6
2	D	601	FBP	C4-C5-C6-O6
2	F	601	FBP	C4-C5-C6-O6
2	G	601	FBP	C4-C5-C6-O6
2	H	601	FBP	C4-C5-C6-O6
2	A	601	FBP	O5-C5-C6-O6
2	B	601	FBP	O5-C5-C6-O6
2	C	601	FBP	O5-C5-C6-O6
2	D	601	FBP	O5-C5-C6-O6
2	E	601	FBP	O5-C5-C6-O6
2	F	601	FBP	O5-C5-C6-O6
2	G	601	FBP	O5-C5-C6-O6
2	H	601	FBP	O5-C5-C6-O6

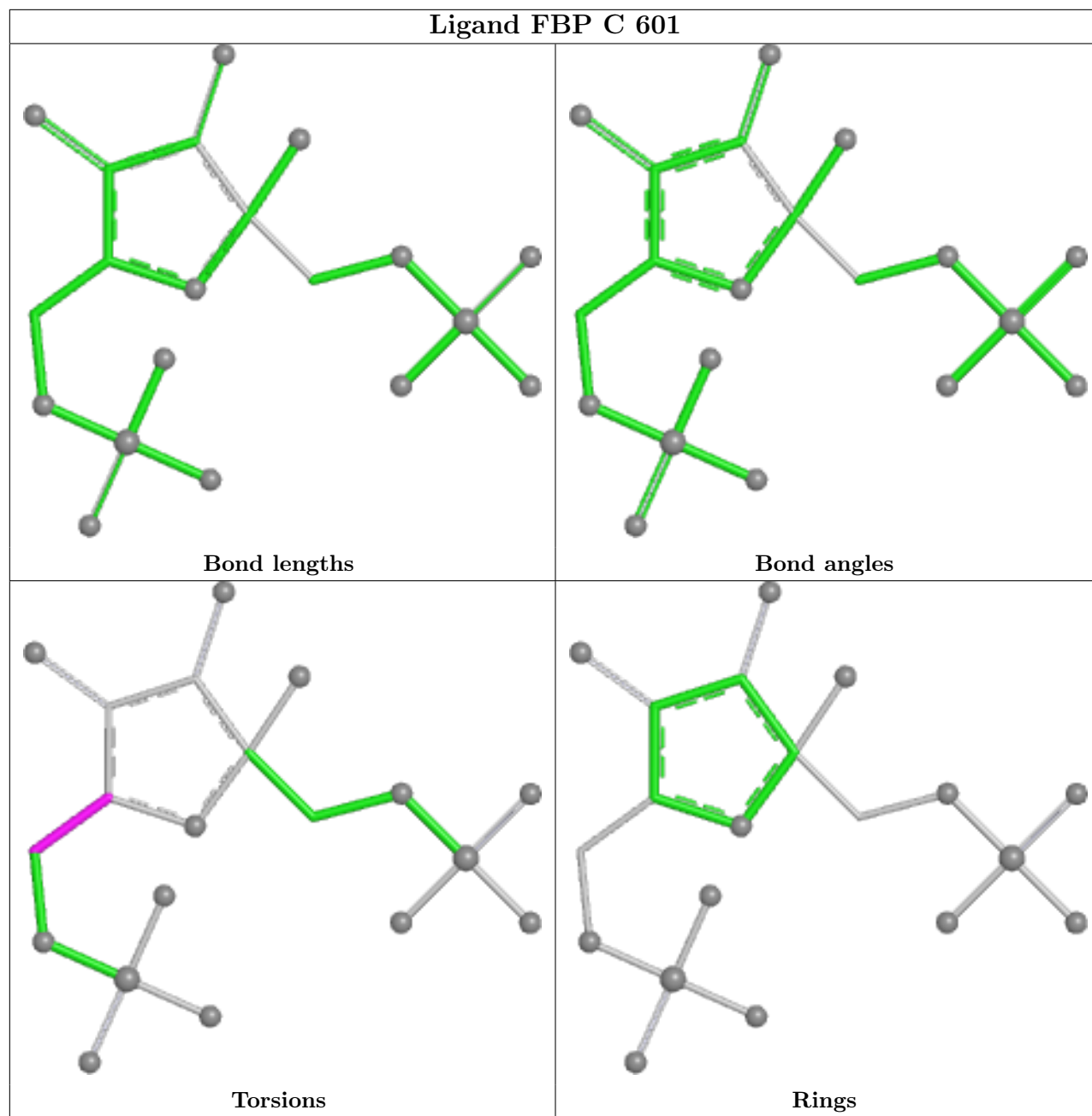
There are no ring outliers.

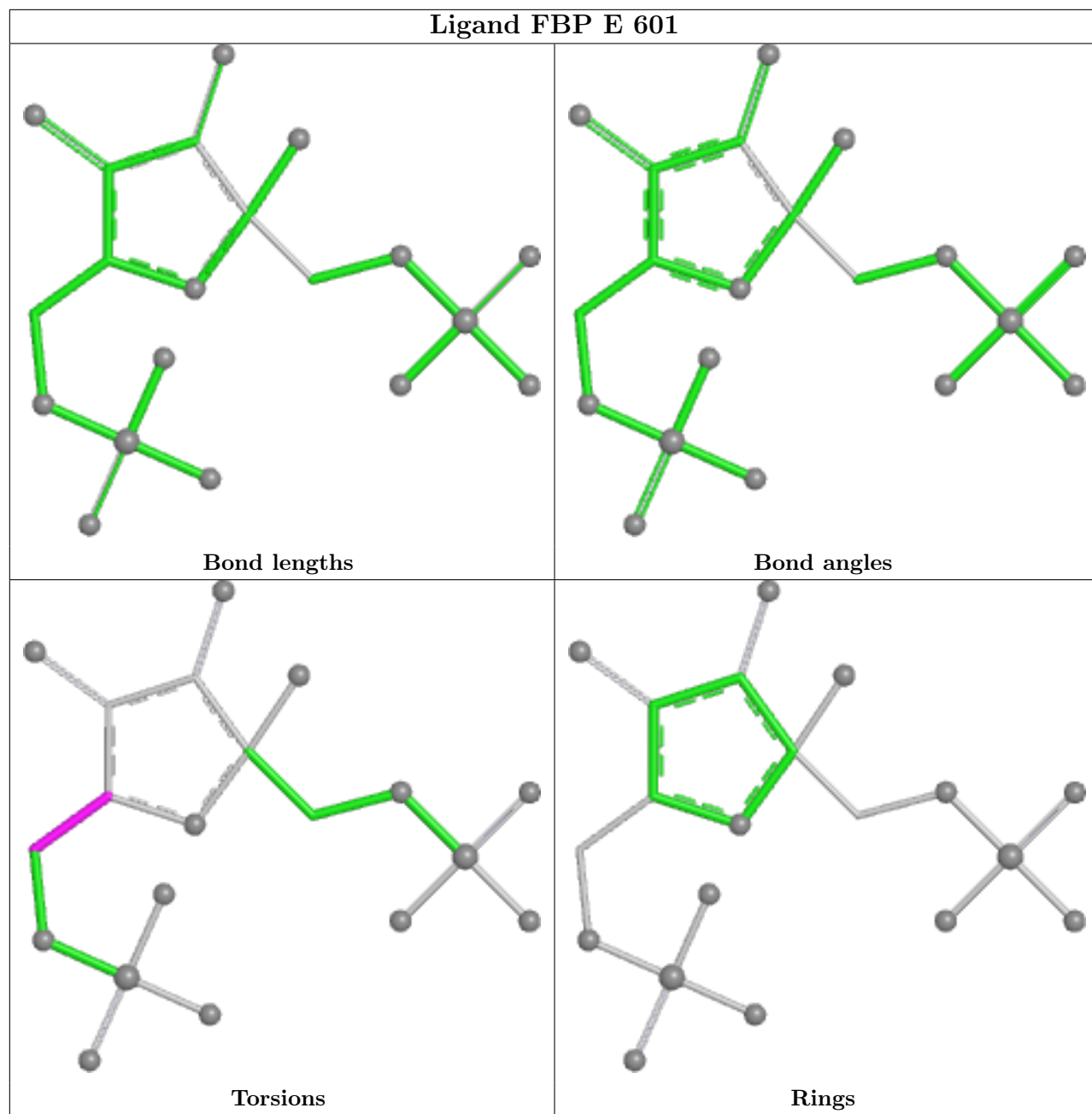
No monomer is involved in short contacts.

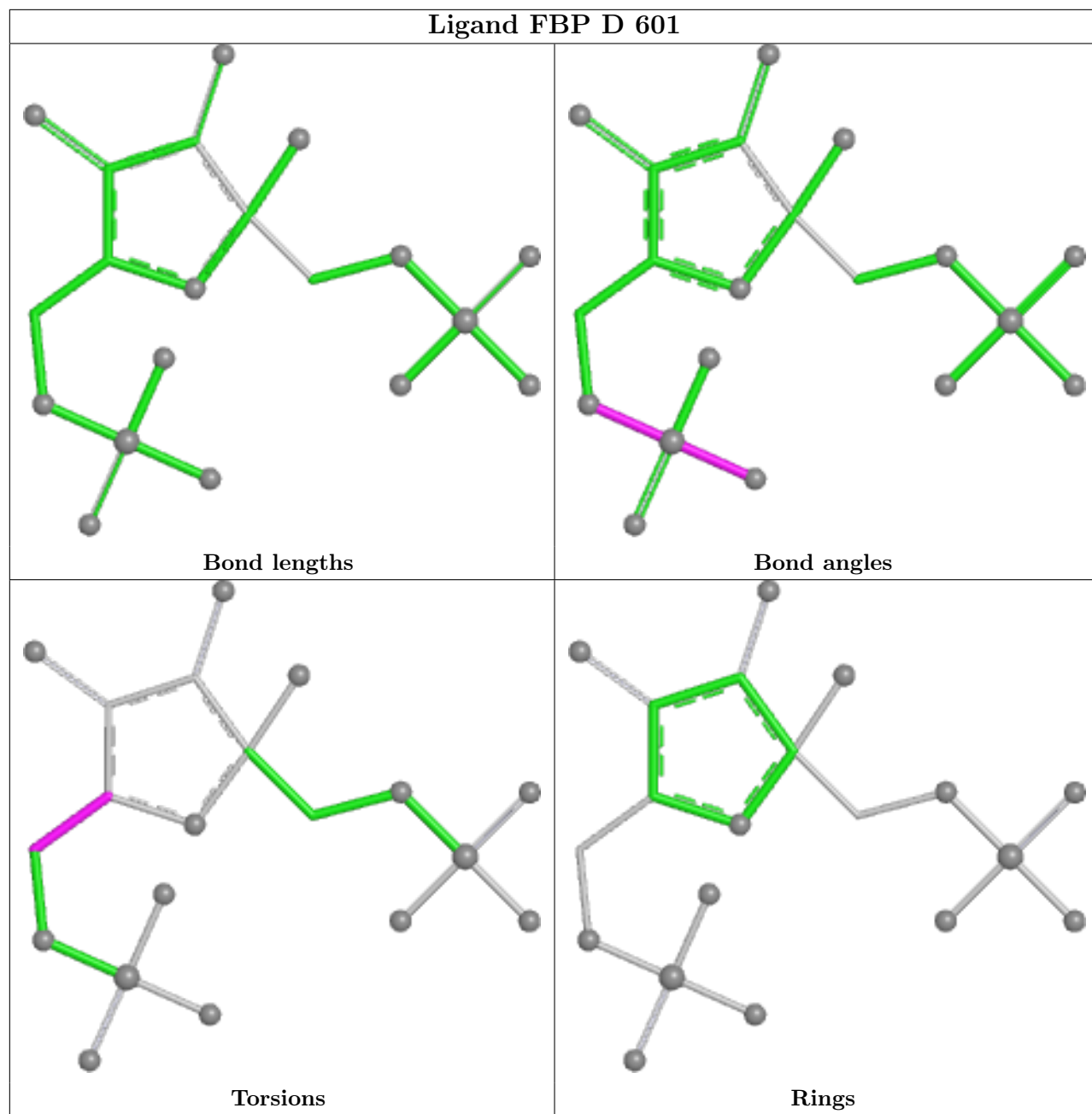
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

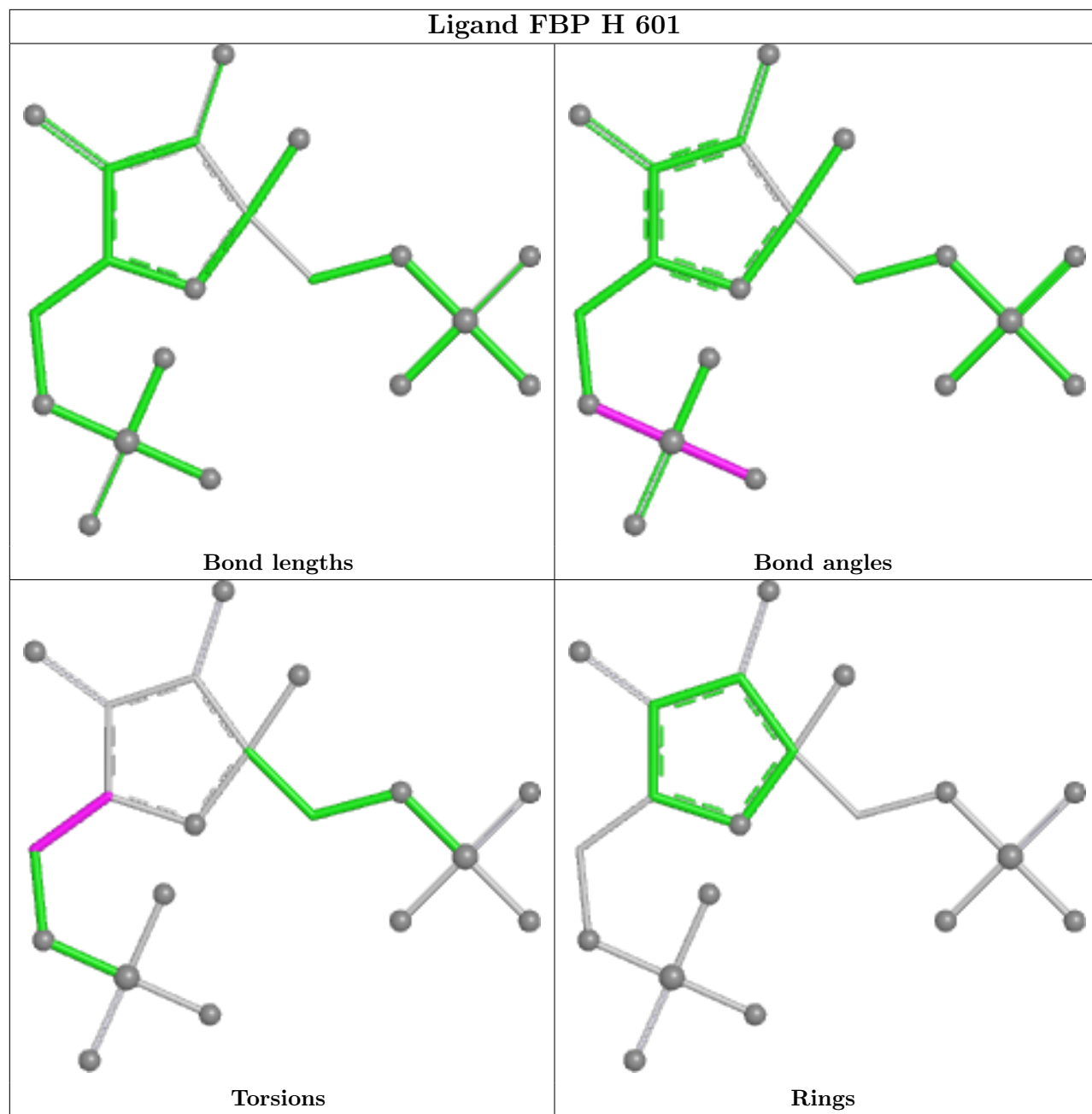




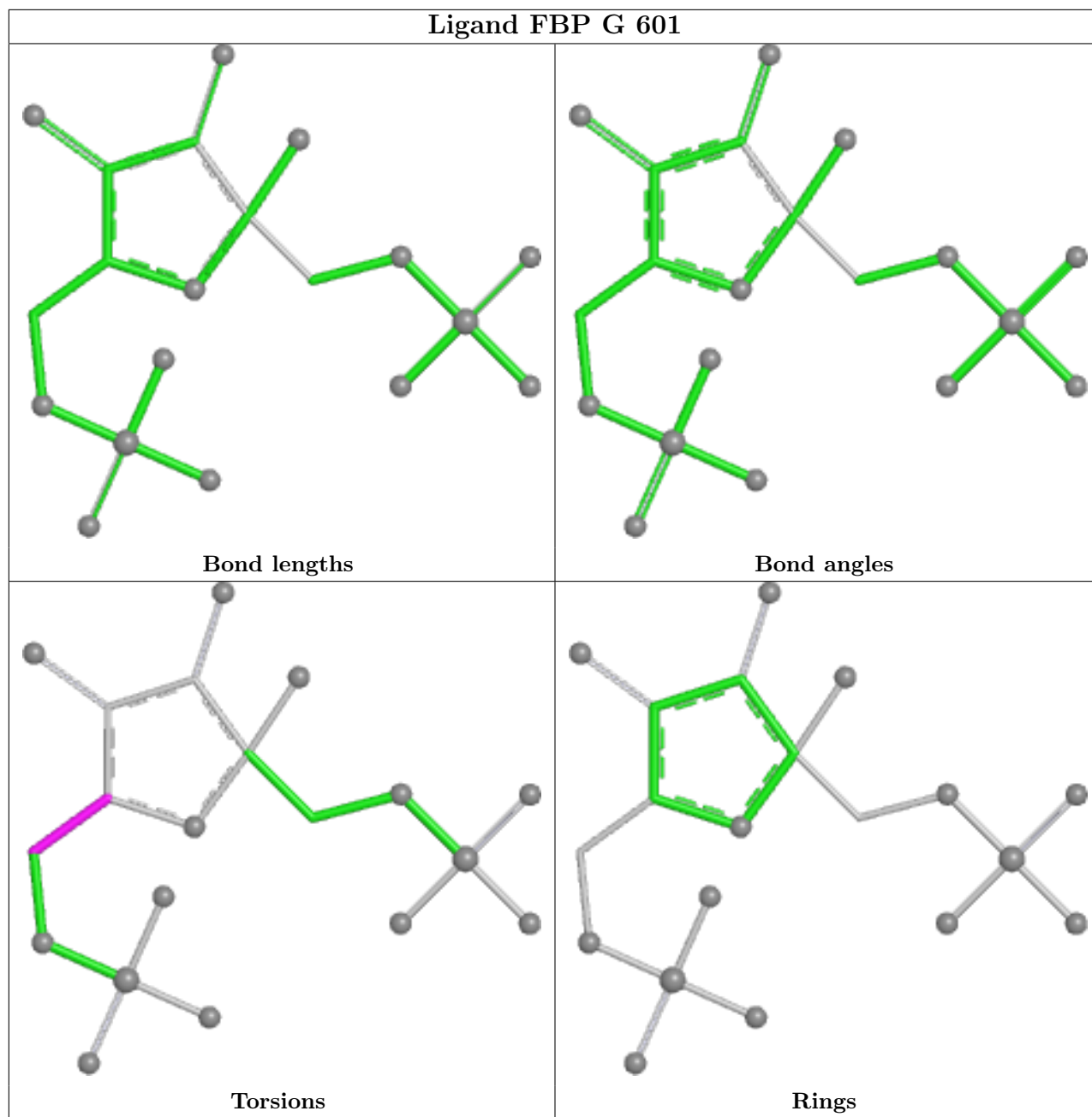


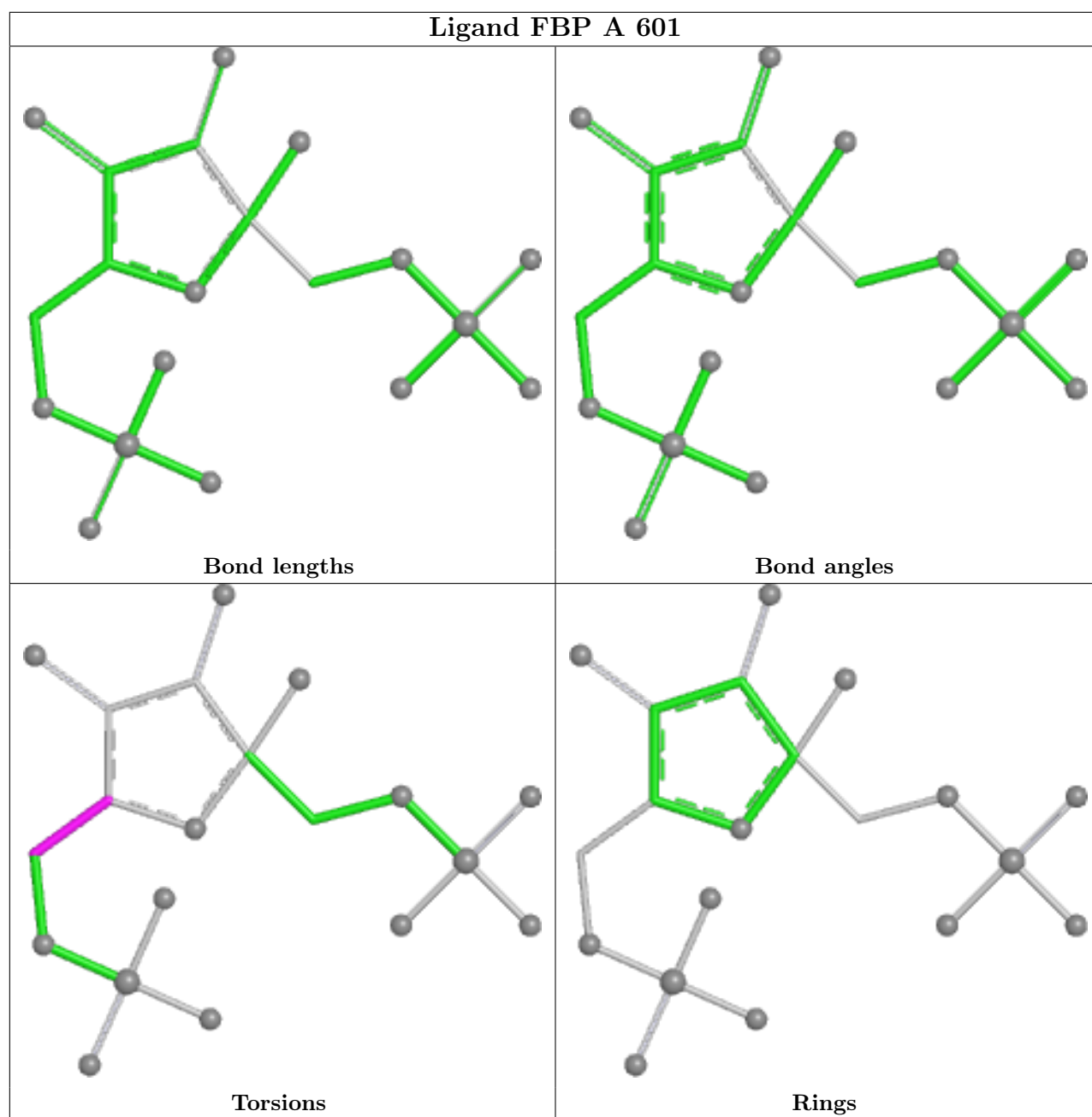












## 5.7 Other polymers [i](#)

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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	423/447 (94%)	0.20	15 (3%) 44 49	29, 42, 68, 88	0
1	B	436/447 (97%)	0.42	33 (7%) 13 16	26, 42, 75, 92	0
1	C	427/447 (95%)	0.10	19 (4%) 34 38	24, 34, 58, 81	0
1	D	425/447 (95%)	0.05	9 (2%) 63 67	23, 31, 52, 80	0
1	E	423/447 (94%)	0.14	15 (3%) 44 49	30, 45, 69, 91	0
1	F	435/447 (97%)	0.27	21 (4%) 30 34	26, 41, 71, 85	0
1	G	421/447 (94%)	-0.02	6 (1%) 75 79	24, 33, 51, 75	1 (0%)
1	H	425/447 (95%)	0.03	7 (1%) 72 76	24, 30, 52, 79	0
All	All	3415/3576 (95%)	0.15	125 (3%) 41 46	23, 37, 66, 92	1 (0%)

All (125) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	115	LEU	8.4
1	C	22	THR	8.4
1	C	231	PRO	7.0
1	E	231	PRO	6.9
1	B	543	SER	6.7
1	A	25	PHE	6.6
1	C	130	GLY	6.6
1	A	543	SER	6.4
1	E	131	SER	6.1
1	F	131	SER	5.9
1	A	231	PRO	5.8
1	G	271	GLY	5.7
1	B	517	VAL	5.7
1	C	112	GLY	5.2
1	F	511	LEU	5.2
1	A	132	GLY	5.2

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	C	131	SER	5.1
1	B	231	PRO	5.1
1	B	511	LEU	5.0
1	B	10	ARG	4.9
1	A	24	PHE	4.8
1	C	271	GLY	4.7
1	D	232	GLY	4.7
1	F	516	ARG	4.7
1	E	25	PHE	4.6
1	H	232	GLY	4.3
1	C	21	GLY	4.3
1	B	131	SER	4.3
1	B	132	GLY	4.2
1	D	131	SER	4.2
1	B	232	GLY	4.1
1	F	130	GLY	4.1
1	B	514	PHE	4.1
1	C	115	LEU	4.0
1	F	116	SER	3.9
1	H	231	PRO	3.8
1	F	517	VAL	3.8
1	C	116	SER	3.8
1	A	131	SER	3.7
1	H	131	SER	3.7
1	B	112	GLY	3.6
1	A	232	GLY	3.6
1	D	231	PRO	3.4
1	H	21	GLY	3.3
1	F	493	ILE	3.3
1	C	25	PHE	3.2
1	E	540	LEU	3.2
1	C	114	PRO	3.2
1	F	233	LEU	3.2
1	B	516	ARG	3.2
1	B	114	PRO	3.2
1	F	232	GLY	3.1
1	C	20	LEU	3.1
1	E	24	PHE	3.0
1	C	19	GLU	3.0
1	E	90	HIS	3.0
1	E	132	GLY	3.0
1	C	132	GLY	3.0

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	25	PHE	3.0
1	G	25	PHE	3.0
1	E	130	GLY	3.0
1	F	543	SER	3.0
1	F	514	PHE	2.9
1	H	516	ARG	2.9
1	F	114	PRO	2.9
1	B	275	HIS	2.9
1	F	489	PRO	2.9
1	B	271	GLY	2.8
1	A	63	ILE	2.8
1	F	351	ARG	2.8
1	D	130	GLY	2.8
1	B	507	GLU	2.7
1	F	275	HIS	2.7
1	B	489	PRO	2.7
1	F	90	HIS	2.7
1	G	231	PRO	2.7
1	D	412	ARG	2.6
1	B	90	HIS	2.6
1	F	507	GLU	2.6
1	G	514	PHE	2.6
1	B	242	ARG	2.6
1	A	272	PRO	2.6
1	H	25	PHE	2.5
1	A	518	GLY	2.5
1	F	513	GLY	2.5
1	D	22	THR	2.5
1	H	132	GLY	2.5
1	A	242	ARG	2.4
1	D	24	PHE	2.4
1	B	515	LEU	2.4
1	A	496	ASP	2.4
1	B	238	VAL	2.4
1	B	115	LEU	2.4
1	E	272	PRO	2.4
1	C	23	ALA	2.4
1	F	11	ALA	2.4
1	E	232	GLY	2.4
1	A	540	LEU	2.3
1	B	504	PHE	2.3
1	E	543	SER	2.3

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Mol	Chain	Res	Type	RSRZ
1	C	34	MET	2.3
1	B	130	GLY	2.3
1	B	267[A]	ARG	2.3
1	D	311	ILE	2.3
1	B	235	GLU	2.3
1	B	509	GLY	2.3
1	C	113	SER	2.2
1	G	132	GLY	2.2
1	E	514	PHE	2.2
1	E	311	ILE	2.2
1	B	351	ARG	2.2
1	G	540	LEU	2.2
1	A	275	HIS	2.2
1	B	508	SER	2.2
1	E	23	ALA	2.1
1	C	24	PHE	2.1
1	A	111	ALA	2.1
1	B	272	PRO	2.1
1	F	112	GLY	2.1
1	B	416	LEU	2.1
1	B	415	PRO	2.0
1	C	117	TYR	2.0
1	B	77	ILE	2.0
1	E	493	ILE	2.0
1	B	129	PRO	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](#)

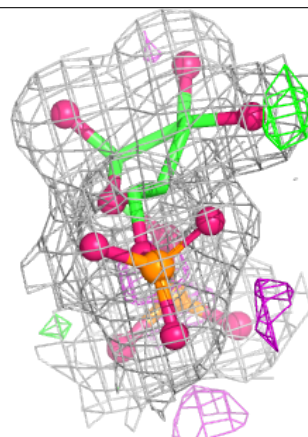
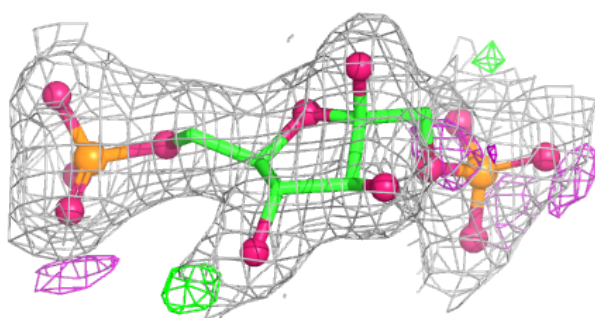
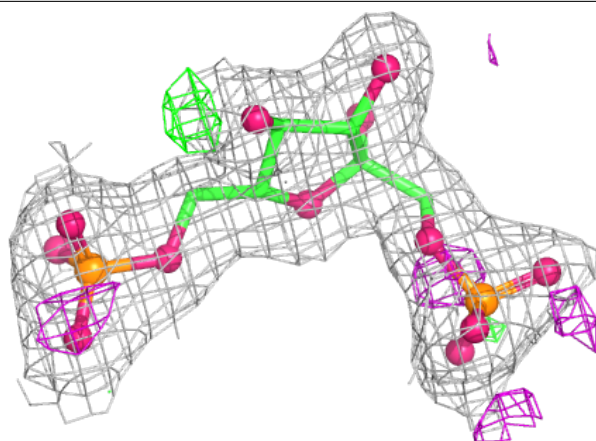
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
6	NA	B	605	1/1	0.80	0.12	40,40,40,40	0
5	K	B	604	1/1	0.81	0.08	52,52,52,52	0
5	K	E	604	1/1	0.87	0.14	62,62,62,62	0
3	OXD	B	602	6/6	0.89	0.10	39,40,41,41	0
4	MG	B	603	1/1	0.92	0.06	42,42,42,42	0
3	OXD	E	602	6/6	0.92	0.11	48,49,49,49	0
6	NA	H	605	1/1	0.92	0.12	39,39,39,39	0
3	OXD	A	602	6/6	0.94	0.12	48,49,49,50	0
3	OXD	F	602	6/6	0.94	0.11	40,41,42,43	0
3	OXD	H	602	6/6	0.94	0.07	32,33,33,35	0
3	OXD	C	602	6/6	0.94	0.10	35,36,37,38	0
3	OXD	D	602	6/6	0.95	0.11	31,32,33,33	0
3	OXD	G	602	6/6	0.96	0.08	32,33,34,35	0
5	K	F	604	1/1	0.96	0.04	52,52,52,52	0
5	K	A	604	1/1	0.96	0.08	54,54,54,54	0
6	NA	D	605	1/1	0.96	0.10	38,38,38,38	0
6	NA	F	605	1/1	0.96	0.14	39,39,39,39	0
2	FBP	B	601	20/20	0.96	0.09	40,42,45,45	0
2	FBP	F	601	20/20	0.97	0.09	37,41,44,44	0
6	NA	C	605	1/1	0.97	0.09	37,37,37,37	0
2	FBP	E	601	20/20	0.97	0.09	38,39,44,44	0
4	MG	E	603	1/1	0.97	0.04	47,47,47,47	0
6	NA	G	605	1/1	0.97	0.15	36,36,36,36	0
4	MG	F	603	1/1	0.97	0.05	39,39,39,39	0
4	MG	C	603	1/1	0.98	0.05	34,34,34,34	0
2	FBP	G	601	20/20	0.98	0.09	26,27,29,31	0
4	MG	A	603	1/1	0.98	0.04	48,48,48,48	0
5	K	G	604	1/1	0.98	0.05	40,40,40,40	0
2	FBP	A	601	20/20	0.98	0.08	34,35,36,36	0
2	FBP	D	601	20/20	0.99	0.11	25,27,29,31	0
4	MG	G	603	1/1	0.99	0.06	31,31,31,31	0
5	K	H	604	1/1	0.99	0.09	36,36,36,36	0
4	MG	H	603	1/1	0.99	0.07	33,33,33,33	0
2	FBP	C	601	20/20	0.99	0.11	26,28,30,31	0
4	MG	D	603	1/1	0.99	0.05	30,30,30,30	0
5	K	C	604	1/1	0.99	0.05	39,39,39,39	0
5	K	D	604	1/1	0.99	0.09	33,33,33,33	0
2	FBP	H	601	20/20	0.99	0.10	24,26,28,30	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 B 601:**

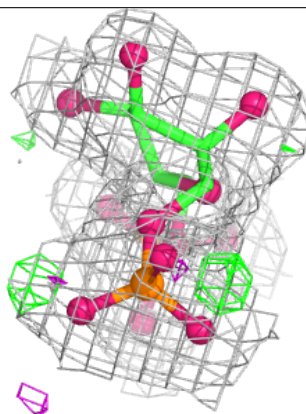
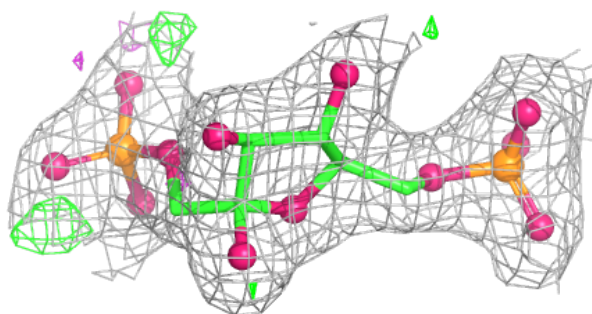
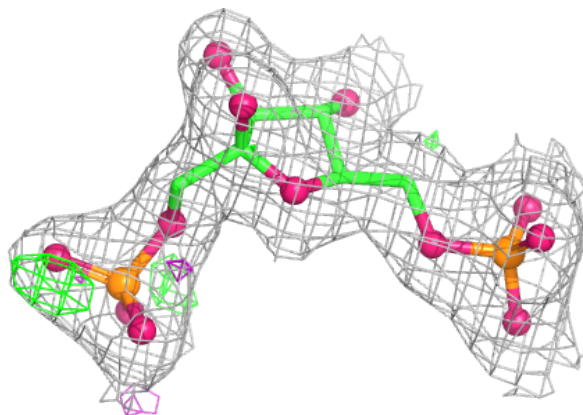
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



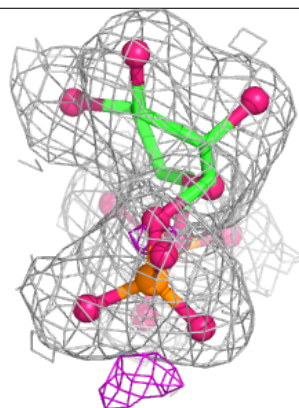
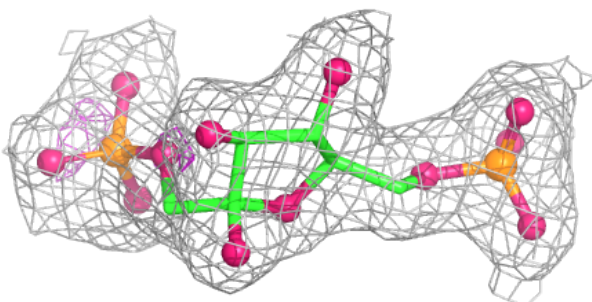
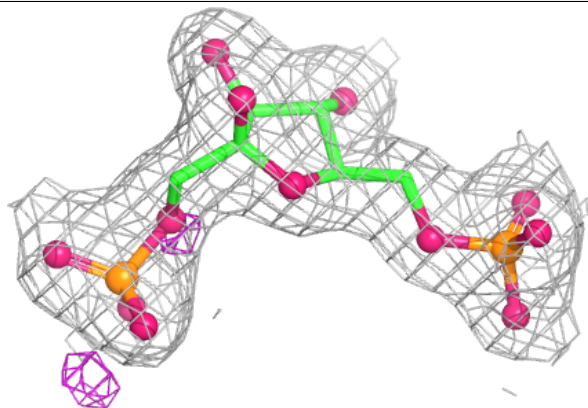


**Electron density around FBP F 601:**

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

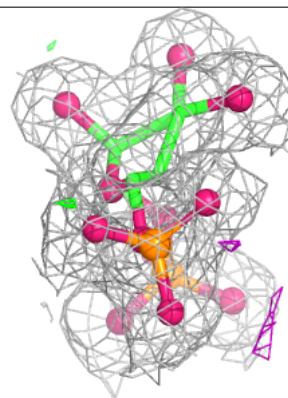
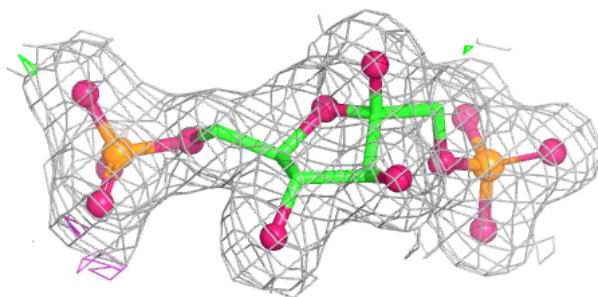
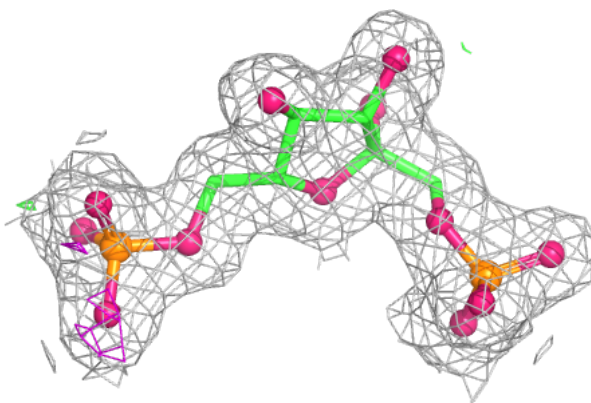
**Electron density around FBP E 601:**

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

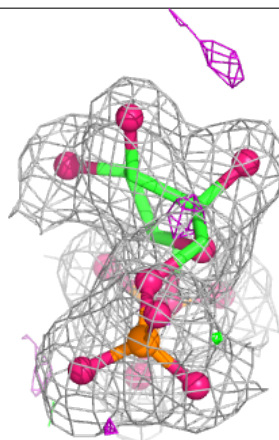
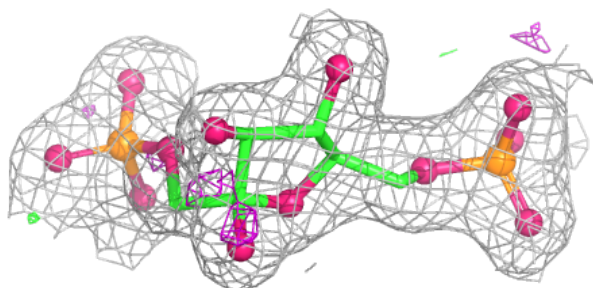
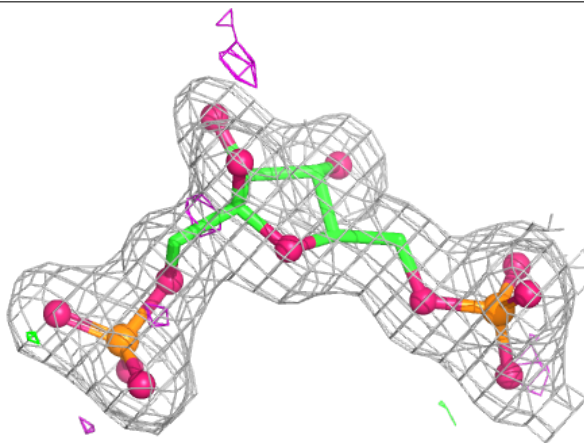


**Electron density around FBP G 601:**

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

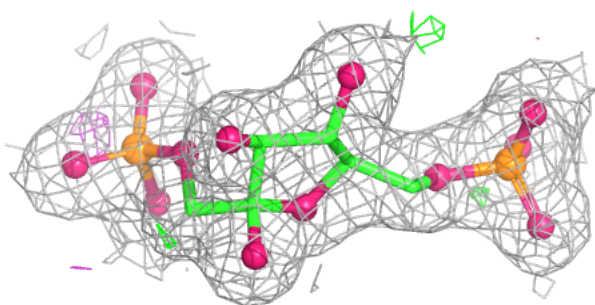
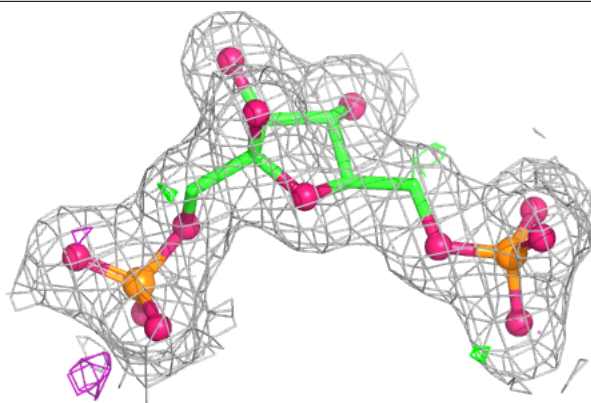
**Electron density around FBP A 601:**

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

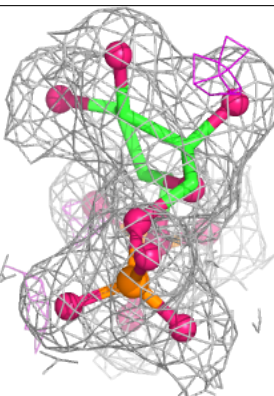
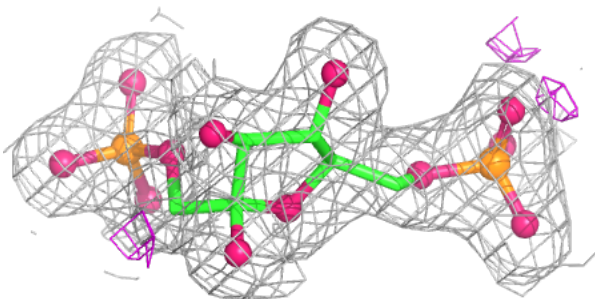
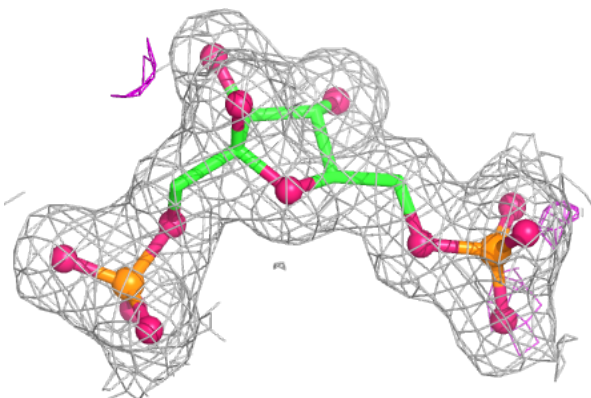


**Electron density around FBP D 601:**

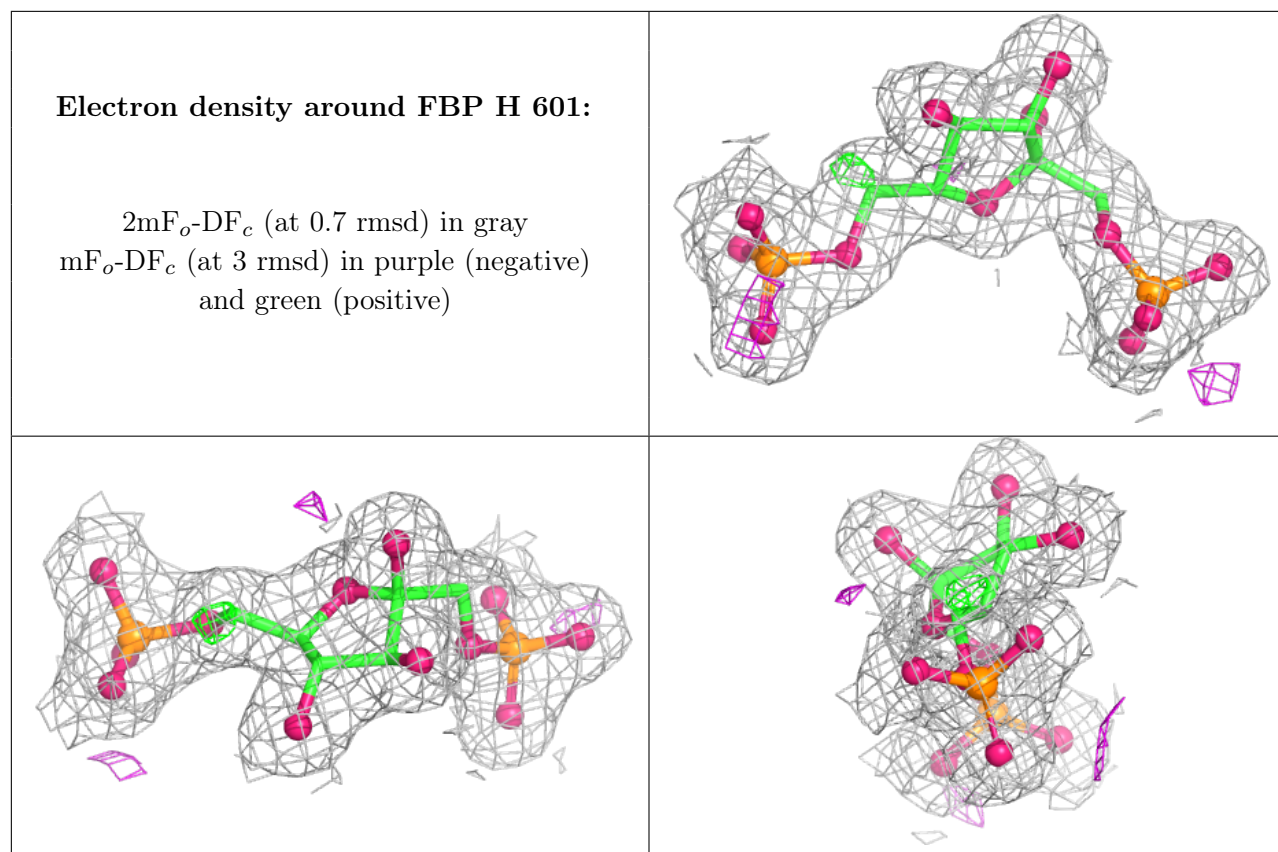
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

**Electron density around FBP 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)







## 6.5 Other polymers [i](#)

There are no such residues in this entry.