



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 8, 2026 – 11:16 AM EDT

PDB ID : 14CM / pdb_000014cm
Title : Structure of liver pyruvate kinase in complex with allosteric site fragment S3
Authors : Lulla, A.; Rodriguez Rivero, A.; Grotli, M.; Hyvonen, M.
Deposited on : 2026-04-28
Resolution : 1.99 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:

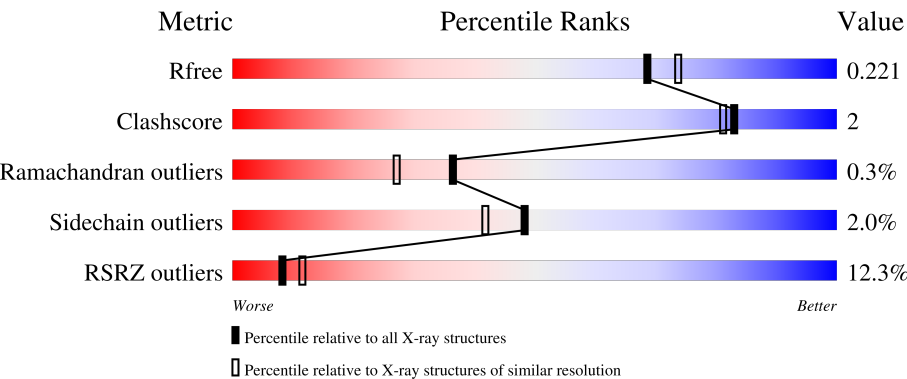
MolProbity : 4-5-2 with Phenix2.2
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.2
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.015 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.51

1 Overall quality at a glance i

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

The reported resolution of this entry is 1.99 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}	180053	1506 (1.98-1.98)
Clashscore	190562	1534 (1.98-1.98)
Ramachandran outliers	187476	1518 (1.98-1.98)
Sidechain outliers	187428	1518 (1.98-1.98)
RSRZ outliers	180081	1506 (1.98-1.98)

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	447	16% 85% 8% 6%
1	B	447	36% 89% 7% ••
1	C	447	5% 89% 5% 5%
1	D	447	2% 88% 6% • 5%
1	E	447	17% 86% 6% • 6%

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Mol	Chain	Length	Quality of chain
1	F	447	
1	G	447	
1	H	447	

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
3	OXL	A	602	-	X	-	-
3	OXL	B	602	-	X	-	-
3	OXL	C	602	-	X	-	-
3	OXL	D	602	-	X	-	-
3	OXL	E	602	-	X	-	-
3	OXL	G	602	-	X	-	-
3	OXL	H	602	-	X	-	-

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 28479 atoms, of which 120 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 Isoform L-type of Pyruvate kinase PKLR.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	420	Total	C	N	O	S	0	11	0
			3238	2033	583	602	20			
1	B	436	Total	C	N	O	S	3	8	0
			3350	2104	604	622	20			
1	C	424	Total	C	N	O	S	0	6	0
			3257	2049	584	605	19			
1	D	425	Total	C	N	O	S	0	8	0
			3261	2048	590	604	19			
1	E	420	Total	C	N	O	S	0	11	0
			3253	2046	585	603	19			
1	F	432	Total	C	N	O	S	0	8	0
			3327	2094	597	616	20			
1	G	421	Total	C	N	O	S	0	5	0
			3225	2027	581	598	19			
1	H	425	Total	C	N	O	S	0	9	0
			3277	2057	597	604	19			

There are 48 discrepancies between the modelled and reference sequences:

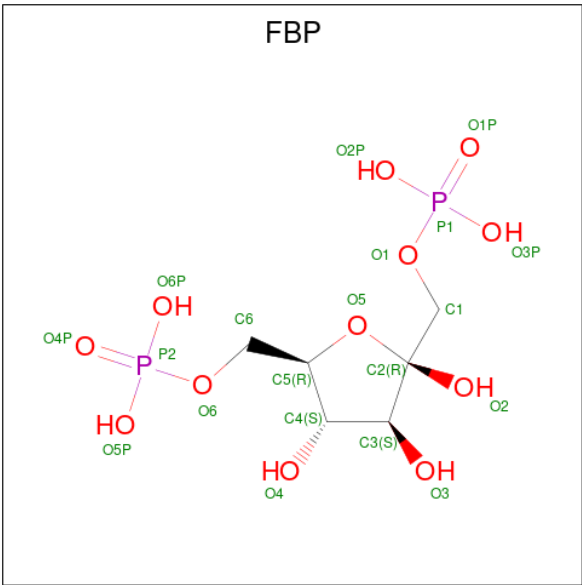
Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP P30613
A	0	SER	-	expression tag	UNP P30613
A	12	ASP	SER	conflict	UNP P30613
A	130	GLY	-	linker	UNP P30613
A	131	SER	-	linker	UNP P30613
A	132	GLY	-	linker	UNP P30613
B	-1	GLY	-	expression tag	UNP P30613
B	0	SER	-	expression tag	UNP P30613
B	12	ASP	SER	conflict	UNP P30613
B	130	GLY	-	linker	UNP P30613
B	131	SER	-	linker	UNP P30613
B	132	GLY	-	linker	UNP P30613
C	-1	GLY	-	expression tag	UNP P30613

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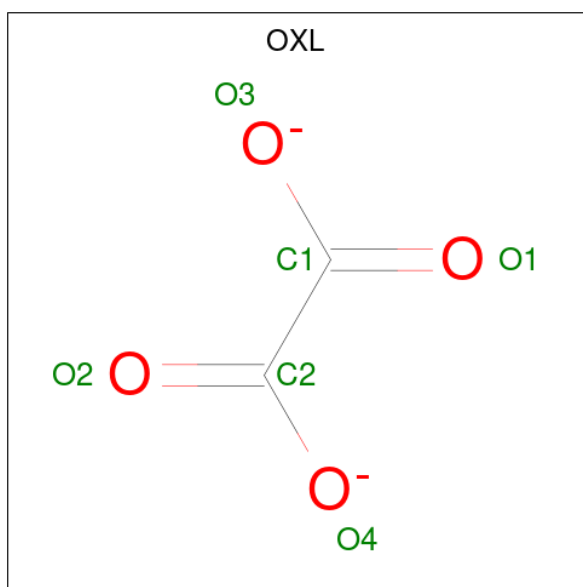
Chain	Residue	Modelled	Actual	Comment	Reference
C	0	SER	-	expression tag	UNP P30613
C	12	ASP	SER	conflict	UNP P30613
C	130	GLY	-	linker	UNP P30613
C	131	SER	-	linker	UNP P30613
C	132	GLY	-	linker	UNP P30613
D	-1	GLY	-	expression tag	UNP P30613
D	0	SER	-	expression tag	UNP P30613
D	12	ASP	SER	conflict	UNP P30613
D	130	GLY	-	linker	UNP P30613
D	131	SER	-	linker	UNP P30613
D	132	GLY	-	linker	UNP P30613
E	-1	GLY	-	expression tag	UNP P30613
E	0	SER	-	expression tag	UNP P30613
E	12	ASP	SER	conflict	UNP P30613
E	130	GLY	-	linker	UNP P30613
E	131	SER	-	linker	UNP P30613
E	132	GLY	-	linker	UNP P30613
F	-1	GLY	-	expression tag	UNP P30613
F	0	SER	-	expression tag	UNP P30613
F	12	ASP	SER	conflict	UNP P30613
F	130	GLY	-	linker	UNP P30613
F	131	SER	-	linker	UNP P30613
F	132	GLY	-	linker	UNP P30613
G	-1	GLY	-	expression tag	UNP P30613
G	0	SER	-	expression tag	UNP P30613
G	12	ASP	SER	conflict	UNP P30613
G	130	GLY	-	linker	UNP P30613
G	131	SER	-	linker	UNP P30613
G	132	GLY	-	linker	UNP P30613
H	-1	GLY	-	expression tag	UNP P30613
H	0	SER	-	expression tag	UNP P30613
H	12	ASP	SER	conflict	UNP P30613
H	130	GLY	-	linker	UNP P30613
H	131	SER	-	linker	UNP P30613
H	132	GLY	-	linker	UNP P30613

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



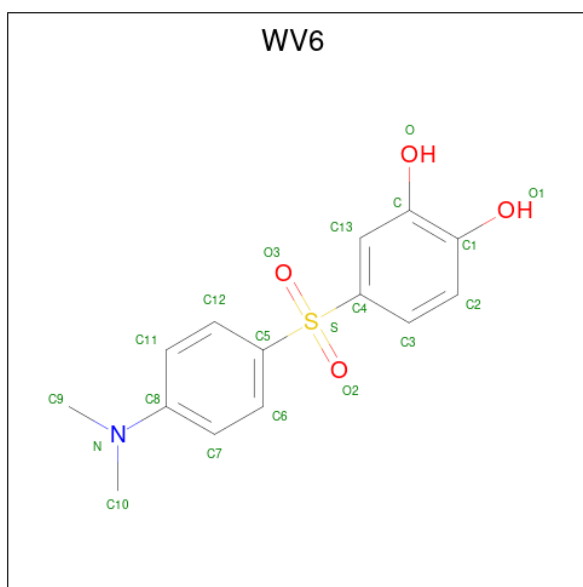
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	O	P	0	0
			20	6	12	2		
2	B	1	Total	C	O	P	0	0
			20	6	12	2		
2	C	1	Total	C	O	P	0	0
			20	6	12	2		
2	D	1	Total	C	O	P	0	0
			20	6	12	2		
2	E	1	Total	C	O	P	0	0
			20	6	12	2		
2	F	1	Total	C	O	P	0	0
			20	6	12	2		
2	G	1	Total	C	O	P	0	0
			20	6	12	2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

- Molecule 3 is OXALATE ION (CCD ID: OXL) (formula: C₂O₄).



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

- Molecule 4 is 4-[4-(dimethylamino)benzene-1-sulfonyl]benzene-1,2-diol (CCD ID: WV6) (formula: C₁₄H₁₅NO₄S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
4	A	1	Total 70	C 28	H 30	N 2	O 8	S 2	30	1
4	B	1	Total 70	C 28	H 30	N 2	O 8	S 2	30	1
4	E	1	Total 70	C 28	H 30	N 2	O 8	S 2	30	1
4	F	1	Total 70	C 28	H 30	N 2	O 8	S 2	30	1

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

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

- Molecule 6 is POTASSIUM ION (CCD ID: K) (formula: K).

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

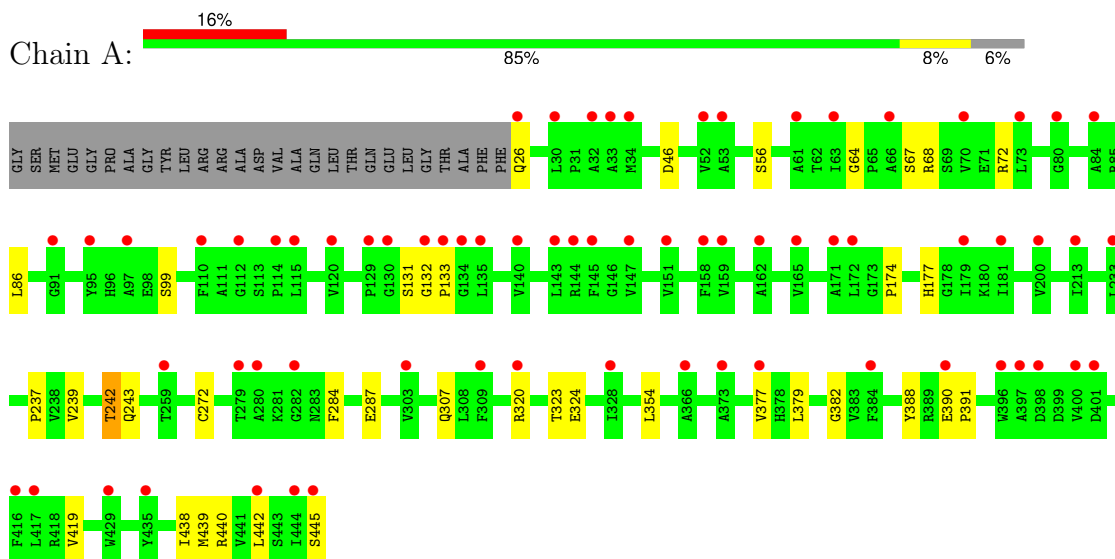
- Molecule 7 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	154	Total O 154 154	0	0
7	B	124	Total O 124 124	0	0
7	C	262	Total O 262 262	0	0
7	D	298	Total O 298 298	0	0
7	E	138	Total O 138 138	0	0
7	F	206	Total O 206 206	0	0
7	G	261	Total O 261 261	0	0
7	H	344	Total O 344 344	0	0

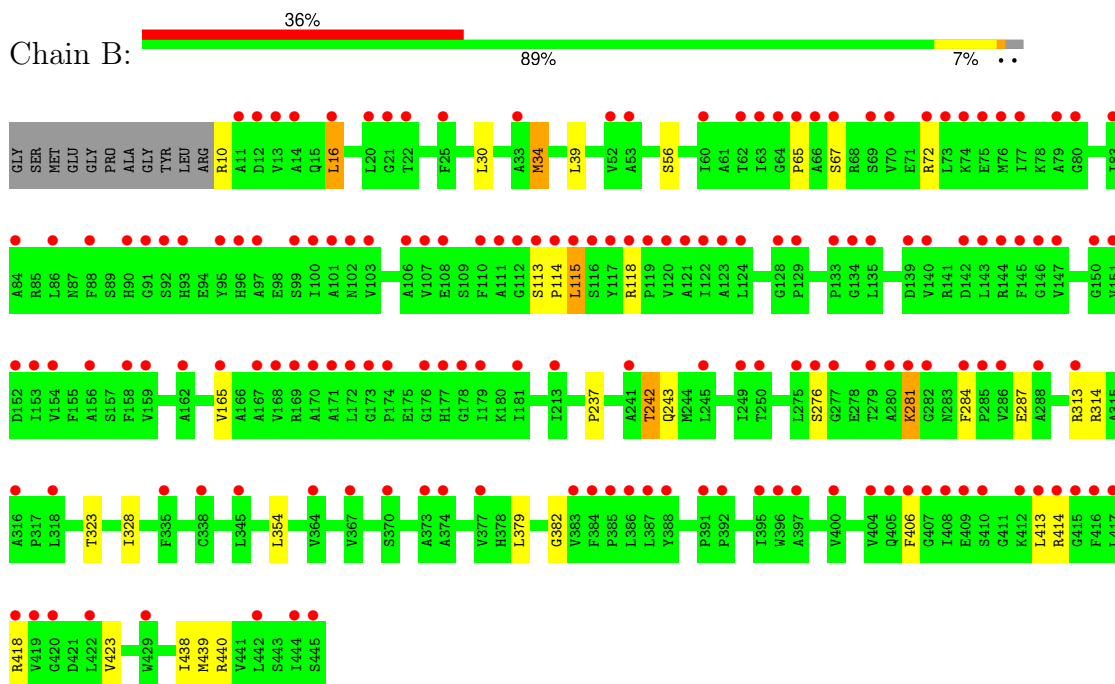
3 Residue-property plots [i](#)

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

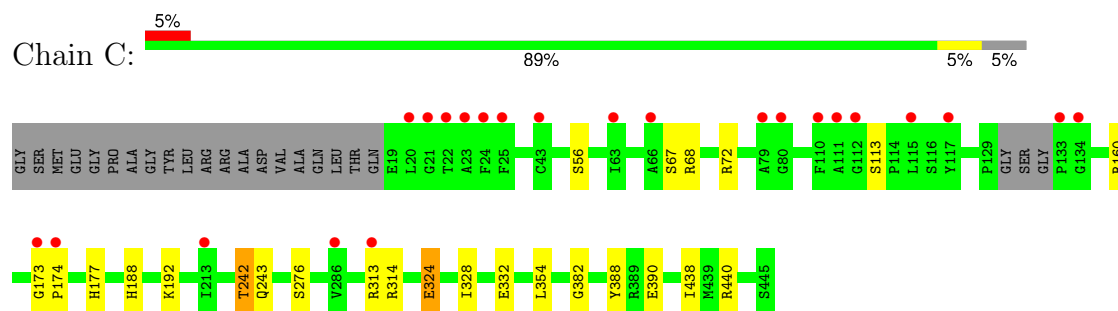
- Molecule 1: Isoform L-type of Pyruvate kinase PKLR



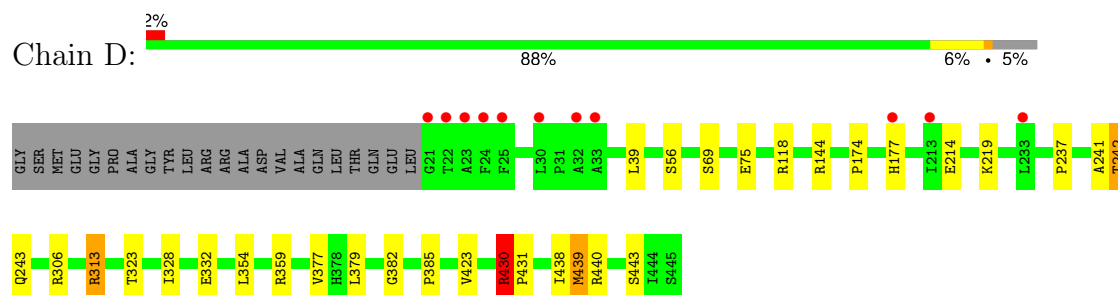
- Molecule 1: Isoform L-type of Pyruvate kinase PKLR



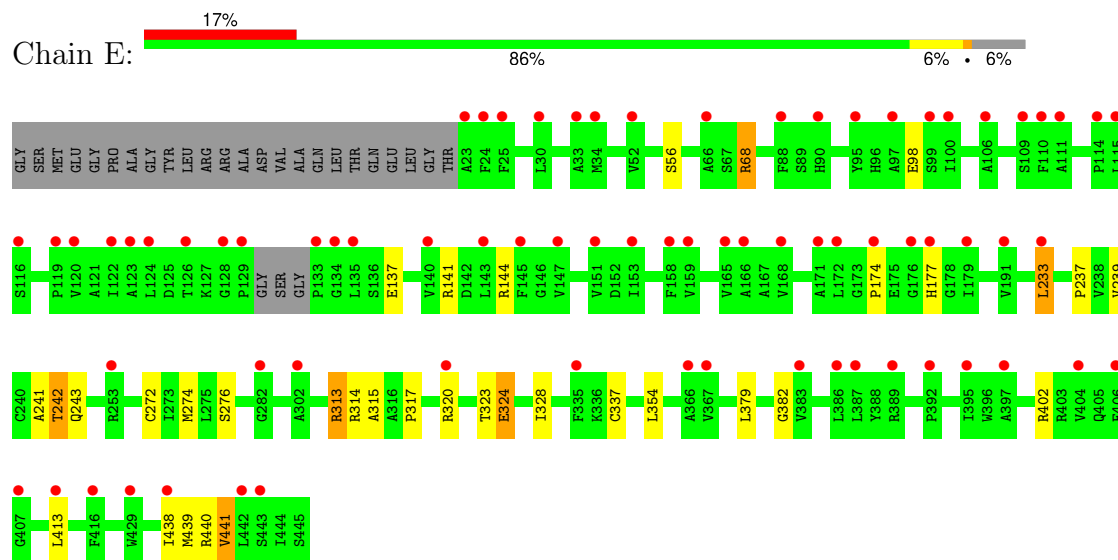
- Molecule 1: Isoform L-type of Pyruvate kinase PKLR



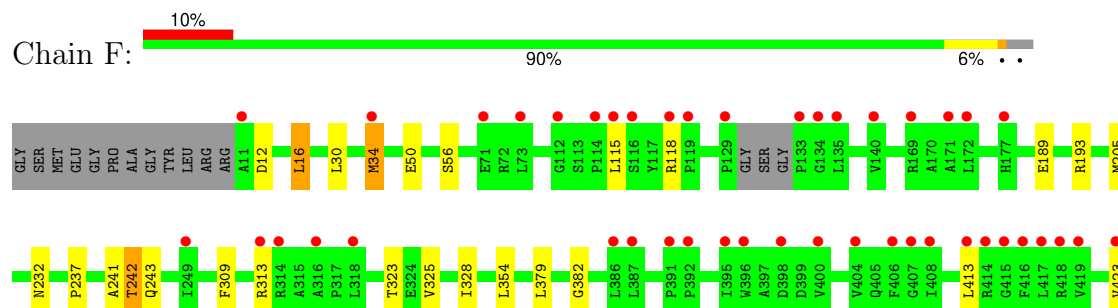
- Molecule 1: Isoform L-type of Pyruvate kinase PKLR



- Molecule 1: Isoform L-type of Pyruvate kinase PKLR

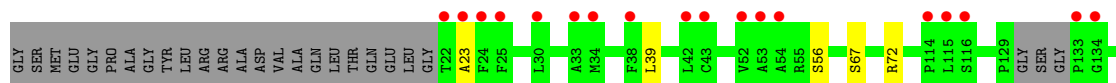
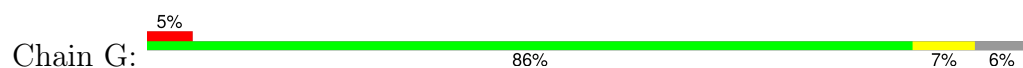


- Molecule 1: Isoform L-type of Pyruvate kinase PKLR

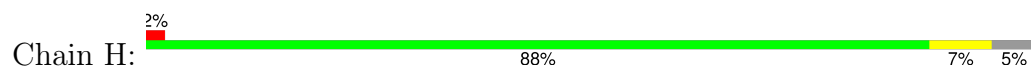




- Molecule 1: Isoform L-type of Pyruvate kinase PKLR



- Molecule 1: Isoform L-type of Pyruvate kinase PKLR



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	208.50Å 113.30Å 188.78Å 90.00° 91.56° 90.00°	Depositor
Resolution (Å)	188.71 – 1.99 188.71 – 1.99	Depositor EDS
% Data completeness (in resolution range)	66.7 (188.71-1.99) 66.7 (188.71-1.99)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.63 (at 1.98Å)	Xtriage
Refinement program	BUSTER 2.10.4	Depositor
R, R_{free}	0.204 , 0.232 0.193 , 0.221	Depositor DCC
R_{free} test set	9908 reflections (3.28%)	wwPDB-VP
Wilson B-factor (Å ²)	42.3	Xtriage
Anisotropy	0.015	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 53.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.000 for -h,-k,l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	28479	wwPDB-VP
Average B, all atoms (Å ²)	52.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 49.00 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 7.9363e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: K, FBP, OXL, WV6, 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	0.68	0/3324	1.01	1/4494 (0.0%)
1	B	0.71	2/3429 (0.1%)	1.01	0/4636
1	C	0.79	1/3329 (0.0%)	1.02	0/4500
1	D	0.81	2/3341 (0.1%)	1.04	3/4517 (0.1%)
1	E	0.67	1/3341 (0.0%)	1.00	1/4516 (0.0%)
1	F	0.74	1/3405 (0.0%)	1.03	4/4603 (0.1%)
1	G	0.84	3/3294 (0.1%)	1.04	2/4452 (0.0%)
1	H	0.83	1/3357 (0.0%)	1.04	1/4537 (0.0%)
All	All	0.76	11/26820 (0.0%)	1.02	12/36255 (0.0%)

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	H	439	MET	SD-CE	-7.50	1.60	1.79
1	G	23	ALA	CA-C	6.96	1.62	1.52
1	C	276	SER	CA-C	6.79	1.55	1.52
1	G	391	PRO	CA-C	6.68	1.55	1.51
1	D	359	ARG	CA-CB	5.75	1.56	1.52
1	D	439	MET	CA-C	5.54	1.59	1.52
1	E	276	SER	CA-C	5.47	1.55	1.52
1	G	205	MET	SD-CE	-5.45	1.66	1.79
1	F	205	MET	SD-CE	-5.20	1.66	1.79
1	B	276[A]	SER	CA-C	5.10	1.55	1.52
1	B	276[B]	SER	CA-C	5.10	1.55	1.52

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	441	VAL	N-CA-CB	5.95	118.17	111.21
1	G	175	GLU	CB-CG-CD	5.62	122.16	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	416	PHE	CA-CB-CG	5.60	119.40	113.80
1	F	241	ALA	CA-C-N	5.60	132.23	121.54
1	F	241	ALA	C-N-CA	5.60	132.23	121.54
1	F	232	ASN	CA-CB-CG	5.28	117.88	112.60
1	D	241	ALA	CA-C-N	5.25	131.57	121.54
1	D	241	ALA	C-N-CA	5.25	131.57	121.54
1	H	416	PHE	CA-CB-CG	5.20	119.00	113.80
1	A	46	ASP	CA-CB-CG	5.20	117.80	112.60
1	F	50	GLU	N-CA-C	5.13	116.29	109.93
1	D	430	ARG	CB-CG-CD	-5.09	99.60	111.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	3238	0	3313	19	0
1	B	3350	0	3417	17	0
1	C	3257	0	3316	16	0
1	D	3261	0	3321	17	0
1	E	3253	0	3317	20	0
1	F	3327	0	3399	15	0
1	G	3225	0	3278	22	0
1	H	3277	0	3342	20	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

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
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	40	30	0	1	0
4	B	40	30	0	2	0
4	E	40	30	0	2	0
4	F	40	30	0	1	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	A	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	E	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	154	0	0	1	0
7	B	124	0	0	0	0
7	C	262	0	0	1	0
7	D	298	0	0	3	0
7	E	138	0	0	0	0
7	F	206	0	0	1	0
7	G	261	0	0	0	0
7	H	344	0	0	1	0
All	All	28359	120	26783	128	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 (128) 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:A:438:ILE:HG12	1:B:440:ARG:HG2	1.73	0.71
1:A:320[B]:ARG:HG3	1:B:16:LEU:HD11	1.72	0.70
1:E:320[B]:ARG:HG3	1:F:16:LEU:HD11	1.73	0.70
1:G:440:ARG:HG2	1:H:438:ILE:HG12	1.72	0.69
4:F:603[A]:WV6:O2	7:F:701:HOH:O	2.10	0.69
1:D:430:ARG:HD2	1:D:431:PRO:O	1.93	0.69
1:B:313:ARG:HG2	1:B:328:ILE:HD11	1.75	0.68
1:A:440:ARG:HG2	1:B:438:ILE:HG12	1.75	0.68
1:A:391:PRO:O	7:A:701:HOH:O	2.12	0.67
1:H:68:ARG:HH22	1:H:98:GLU:HB2	1.58	0.67
1:H:68:ARG:NH2	1:H:95:TYR:O	2.29	0.66
1:E:440:ARG:HG2	1:F:438:ILE:HG12	1.77	0.66
1:E:438:ILE:HG12	1:F:440:ARG:HG2	1.78	0.66
1:C:324[A]:GLU:HG3	1:C:354:LEU:HD13	1.79	0.64
4:E:603[B]:WV6:O3	1:G:307:GLN:HB3	1.98	0.64
1:H:56:SER:HB2	1:H:382:GLY:HA2	1.81	0.63
1:A:67:SER:HA	1:A:72:ARG:HG2	1.81	0.63
1:G:56:SER:HB2	1:G:382:GLY:HA2	1.82	0.62
1:G:324[A]:GLU:HG3	1:G:354:LEU:HD13	1.82	0.61
1:C:440:ARG:HG2	1:D:438:ILE:HG12	1.82	0.61
1:F:313:ARG:HG3	1:F:328:ILE:HD11	1.83	0.60
1:B:56:SER:HB2	1:B:382:GLY:HA2	1.84	0.59
1:C:56:SER:HB2	1:C:382:GLY:HA2	1.85	0.59
1:D:75:GLU:HG3	7:D:968:HOH:O	2.04	0.58
1:E:313:ARG:HH11	1:E:313:ARG:HB3	1.69	0.58
1:D:56:SER:HB2	1:D:382:GLY:HA2	1.87	0.57
1:H:75:GLU:HG3	7:H:1009:HOH:O	2.04	0.57
1:C:313:ARG:HG2	1:C:328:ILE:HD11	1.86	0.57
1:F:115:LEU:HD21	1:F:413:LEU:HB3	1.87	0.57
1:B:65:PRO:HG2	1:B:281:LYS:HE3	1.88	0.55
1:F:56:SER:HB2	1:F:382:GLY:HA2	1.88	0.55
1:A:419:VAL:HG13	1:A:445:SER:HB3	1.87	0.55
1:H:309:PHE:O	1:H:313:ARG:HG2	2.07	0.55
1:G:439:MET:HE3	1:H:439:MET:HG2	1.89	0.54
1:E:56:SER:HB2	1:E:382:GLY:HA2	1.89	0.53
1:F:30:LEU:O	1:F:34:MET:HG2	2.09	0.53
1:B:39:LEU:HD13	4:B:603[B]:WV6:O1	2.09	0.53
1:F:309:PHE:CE2	1:F:313:ARG:NH1	2.69	0.52
1:B:242:THR:HG22	1:B:243:GLN:HG3	1.91	0.52
1:A:307:GLN:HB3	4:A:603[A]:WV6:O3	2.10	0.52
1:B:30:LEU:O	1:B:34:MET:HG2	2.10	0.52
1:E:313:ARG:HG2	1:E:328:ILE:HD11	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:440:ARG:HD3	7:C:774:HOH:O	2.10	0.51
1:H:56:SER:HB2	1:H:382:GLY:CA	2.41	0.51
1:E:242:THR:HG22	1:E:243:GLN:HG3	1.92	0.51
1:E:233:LEU:HD21	1:E:315:ALA:HB1	1.93	0.50
1:D:242:THR:HG22	1:D:243:GLN:HG3	1.93	0.50
1:C:56:SER:HB2	1:C:382:GLY:CA	2.42	0.49
1:D:219:LYS:NZ	7:D:703:HOH:O	2.45	0.49
1:G:242:THR:HG22	1:G:243:GLN:HG3	1.95	0.49
1:C:313:ARG:CG	1:C:328:ILE:HD11	2.42	0.49
1:A:56:SER:HB2	1:A:382:GLY:HA2	1.94	0.49
1:G:173:GLY:O	1:G:177:HIS:CE1	2.66	0.48
1:C:242:THR:HG22	1:C:243:GLN:HG3	1.96	0.48
1:G:56:SER:HB2	1:G:382:GLY:CA	2.43	0.48
1:G:438:ILE:HG12	1:H:440[A]:ARG:HG2	1.95	0.48
1:A:388:TYR:CZ	1:A:390[B]:GLU:HB2	2.48	0.48
1:G:337:CYS:HB2	1:G:422:LEU:HD12	1.96	0.48
1:F:323:THR:HG22	1:F:354:LEU:HD12	1.96	0.48
1:C:332[B]:GLU:OE2	1:D:332[B]:GLU:OE1	2.32	0.47
1:D:174:PRO:HA	1:D:177[A]:HIS:CE1	2.49	0.47
1:H:68:ARG:NH2	1:H:98:GLU:HB2	2.27	0.47
1:C:173:GLY:O	1:C:177:HIS:CE1	2.68	0.47
1:D:56:SER:HB2	1:D:382:GLY:CA	2.44	0.47
1:A:64:GLY:O	1:A:68:ARG:HG3	2.14	0.47
1:B:56:SER:HB2	1:B:382:GLY:CA	2.45	0.47
1:C:174:PRO:HD3	1:G:348:THR:HG22	1.97	0.47
1:G:313:ARG:HG2	1:G:328:ILE:HD11	1.97	0.46
1:F:56:SER:HB2	1:F:382:GLY:CA	2.45	0.46
1:E:137:GLU:O	1:E:141:ARG:HD3	2.15	0.46
1:A:242:THR:HG22	1:A:243:GLN:HG3	1.97	0.46
1:E:241:ALA:HB1	1:E:274:MET:HE2	1.98	0.46
1:H:174:PRO:HA	1:H:177[A]:HIS:CE1	2.51	0.46
1:C:67:SER:HA	1:C:72:ARG:HG2	1.98	0.46
1:G:147:VAL:CG1	1:G:175:GLU:HG2	2.46	0.46
1:B:323:THR:HG22	1:B:354:LEU:HD12	1.98	0.45
1:G:388:TYR:CZ	1:G:390:GLU:HB2	2.52	0.45
1:D:323:THR:HG22	1:D:354:LEU:HD12	1.97	0.45
1:E:324:GLU:HG2	1:E:354:LEU:HD13	1.98	0.45
1:D:313:ARG:HG2	1:D:328:ILE:HD11	1.97	0.45
1:H:321:ASP:OD2	1:H:350:ARG:NH2	2.50	0.45
1:B:114:PRO:HB3	1:B:406:PHE:CE1	2.51	0.45
1:G:337:CYS:HB3	1:H:325:VAL:HG21	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:323:THR:HG22	1:A:354:LEU:HD12	2.00	0.44
1:B:115:LEU:HD12	1:B:413:LEU:HB2	2.00	0.44
1:E:174:PRO:HA	1:E:177[A]:HIS:CE1	2.51	0.44
1:E:237:PRO:HB3	1:E:379:LEU:O	2.16	0.44
1:H:140:VAL:O	1:H:144[B]:ARG:HG3	2.18	0.44
1:G:254:PRO:HG3	1:G:291:MET:HG2	1.99	0.44
1:A:174:PRO:HA	1:A:177:HIS:CE1	2.52	0.44
1:A:68:ARG:HD2	1:A:99:SER:OG	2.18	0.44
1:H:437:ASN:OD1	1:H:438:ILE:HG13	2.18	0.43
1:C:438:ILE:HG12	1:D:440:ARG:HG3	2.00	0.43
1:D:237:PRO:HB3	1:D:379:LEU:O	2.18	0.43
1:A:284:PHE:HB3	1:A:287:GLU:HB2	2.00	0.43
1:B:284:PHE:HB3	1:B:287:GLU:HB2	2.00	0.43
1:G:325:VAL:HG21	1:H:337:CYS:HB3	2.01	0.43
1:H:323:THR:HG22	1:H:354:LEU:HD12	2.01	0.43
1:E:239:VAL:HG22	1:E:272:CYS:HB2	2.01	0.42
1:E:323:THR:HG22	1:E:354:LEU:HD12	2.00	0.42
1:B:237:PRO:HB3	1:B:379:LEU:O	2.19	0.42
4:E:603[A]:WV6:O1	1:G:39:LEU:HD13	2.19	0.42
1:E:233:LEU:HD23	1:G:39:LEU:HD21	2.02	0.42
1:G:67:SER:HA	1:G:72:ARG:HG2	2.01	0.42
1:H:425:VAL:HB	1:H:440[B]:ARG:HG2	2.01	0.42
1:A:237:PRO:HB3	1:A:379:LEU:O	2.20	0.42
1:C:188:HIS:CE1	1:C:192:LYS:HG3	2.55	0.42
1:A:239:VAL:HG22	1:A:272:CYS:HB2	2.02	0.41
1:B:115:LEU:HG	1:B:413:LEU:HB3	2.02	0.41
1:F:189:GLU:OE2	1:F:193:ARG:NH2	2.53	0.41
1:C:314:ARG:NH2	1:D:306:ARG:HH11	2.18	0.41
4:B:603[A]:WV6:O	1:D:39:LEU:HB2	2.20	0.41
1:E:56:SER:HB2	1:E:382:GLY:CA	2.49	0.41
1:C:388:TYR:CZ	1:C:390:GLU:HB2	2.54	0.41
1:D:214:GLU:HB3	7:D:838:HOH:O	2.19	0.41
1:F:237:PRO:HB3	1:F:379:LEU:O	2.21	0.41
1:A:132:GLY:N	1:A:133:PRO:HD3	2.36	0.41
1:D:377:VAL:CG2	1:D:385:PRO:HB3	2.51	0.41
1:E:317:PRO:HB3	1:F:12:ASP:HA	2.02	0.41
1:G:354:LEU:O	1:G:357:ARG:HG2	2.21	0.41
1:F:242:THR:HG22	1:F:243:GLN:HG3	2.02	0.41
1:H:239:VAL:HG22	1:H:272:CYS:HB2	2.03	0.41
1:E:337:CYS:HB3	1:F:325:VAL:HG21	2.03	0.40
1:H:237:PRO:HB3	1:H:379:LEU:O	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:56:SER:HB2	1:A:382:GLY:CA	2.51	0.40
1:B:67:SER:HA	1:B:72:ARG:HG2	2.03	0.40
1:E:68:ARG:NH2	1:E:98:GLU:HB3	2.36	0.40
1:G:188:HIS:CE1	1:G:192:LYS:HG3	2.57	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	429/447 (96%)	424 (99%)	3 (1%)	2 (0%)	24	14
1	B	442/447 (99%)	436 (99%)	5 (1%)	1 (0%)	43	35
1	C	426/447 (95%)	421 (99%)	4 (1%)	1 (0%)	43	35
1	D	431/447 (96%)	427 (99%)	3 (1%)	1 (0%)	43	35
1	E	427/447 (96%)	422 (99%)	4 (1%)	1 (0%)	43	35
1	F	436/447 (98%)	431 (99%)	4 (1%)	1 (0%)	43	35
1	G	422/447 (94%)	416 (99%)	5 (1%)	1 (0%)	43	35
1	H	432/447 (97%)	428 (99%)	3 (1%)	1 (0%)	43	35
All	All	3445/3576 (96%)	3405 (99%)	31 (1%)	9 (0%)	36	27

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	131	SER
1	B	242	THR
1	C	242	THR
1	D	242	THR
1	E	242	THR
1	F	242	THR

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Mol	Chain	Res	Type
1	G	242	THR
1	H	242	THR
1	A	242	THR

5.3.2 Protein sidechains ⓘ

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	344/352 (98%)	337 (98%)	7 (2%)	48	42
1	B	353/352 (100%)	339 (96%)	14 (4%)	28	17
1	C	343/352 (97%)	338 (98%)	5 (2%)	57	52
1	D	344/352 (98%)	335 (97%)	9 (3%)	40	32
1	E	345/352 (98%)	335 (97%)	10 (3%)	37	28
1	F	351/352 (100%)	347 (99%)	4 (1%)	65	61
1	G	339/352 (96%)	335 (99%)	4 (1%)	63	58
1	H	345/352 (98%)	340 (99%)	5 (1%)	59	54
All	All	2764/2816 (98%)	2706 (98%)	58 (2%)	48	40

All (58) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	GLN
1	A	86	LEU
1	A	324	GLU
1	A	377	VAL
1	A	439[A]	MET
1	A	439[B]	MET
1	A	442	LEU
1	B	10	ARG
1	B	16	LEU
1	B	34	MET
1	B	113	SER
1	B	115	LEU

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Mol	Chain	Res	Type
1	B	118	ARG
1	B	165	VAL
1	B	281	LYS
1	B	314	ARG
1	B	414	ARG
1	B	418	ARG
1	B	423	VAL
1	B	439[A]	MET
1	B	439[B]	MET
1	C	68	ARG
1	C	113	SER
1	C	160	ARG
1	C	324[A]	GLU
1	C	324[B]	GLU
1	D	69	SER
1	D	118	ARG
1	D	144[A]	ARG
1	D	144[B]	ARG
1	D	313	ARG
1	D	423	VAL
1	D	430	ARG
1	D	439	MET
1	D	443	SER
1	E	68	ARG
1	E	144	ARG
1	E	233	LEU
1	E	313	ARG
1	E	314	ARG
1	E	324	GLU
1	E	402	ARG
1	E	413	LEU
1	E	439	MET
1	E	441	VAL
1	F	16	LEU
1	F	34	MET
1	F	118	ARG
1	F	423	VAL
1	G	175	GLU
1	G	324[A]	GLU
1	G	324[B]	GLU
1	G	338	CYS
1	H	68	ARG

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Mol	Chain	Res	Type
1	H	69	SER
1	H	175	GLU
1	H	439	MET
1	H	443	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	27	GLN
1	C	27	GLN
1	C	177	HIS
1	D	27	GLN
1	E	27	GLN
1	F	27	GLN
1	G	177	HIS
1	H	27	GLN
1	H	90	HIS

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 40 ligands modelled in this entry, 16 are monoatomic - leaving 24 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the

expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z > 2$	Counts	RMSZ	# $ Z > 2$
3	OXL	B	602	5	5,5,5	2.54	2 (40%)	6,6,6	1.45	1 (16%)
2	FBP	A	601	-	18,20,20	0.51	0	21,32,32	0.58	0
3	OXL	E	602	5	5,5,5	2.08	2 (40%)	6,6,6	2.06	2 (33%)
4	WV6	B	603[B]	-	21,21,21	0.59	1 (4%)	30,31,31	0.45	0
3	OXL	D	602	5	5,5,5	2.11	2 (40%)	6,6,6	2.74	4 (66%)
2	FBP	H	601	-	18,20,20	0.92	2 (11%)	21,32,32	0.81	1 (4%)
4	WV6	F	603[A]	-	21,21,21	0.54	0	30,31,31	0.42	0
4	WV6	A	603[B]	-	21,21,21	0.51	0	30,31,31	0.48	0
4	WV6	E	603[A]	-	21,21,21	0.53	0	30,31,31	0.42	0
2	FBP	F	601	-	18,20,20	0.50	0	21,32,32	0.64	0
2	FBP	C	601	-	18,20,20	0.59	0	21,32,32	0.50	0
3	OXL	F	602	5	5,5,5	1.93	2 (40%)	6,6,6	2.40	3 (50%)
2	FBP	B	601	-	18,20,20	0.45	0	21,32,32	0.68	0
2	FBP	D	601	-	18,20,20	0.53	0	21,32,32	0.99	1 (4%)
2	FBP	E	601	-	18,20,20	0.40	0	21,32,32	0.59	0
4	WV6	F	603[B]	-	21,21,21	0.57	0	30,31,31	0.47	0
4	WV6	E	603[B]	-	21,21,21	0.46	0	30,31,31	0.41	0
4	WV6	B	603[A]	-	21,21,21	0.51	0	30,31,31	0.41	0
3	OXL	G	602	5	5,5,5	2.42	3 (60%)	6,6,6	1.10	1 (16%)
3	OXL	H	602	5	5,5,5	1.93	2 (40%)	6,6,6	1.32	1 (16%)
2	FBP	G	601	-	18,20,20	0.45	0	21,32,32	0.62	0
3	OXL	A	602	5	5,5,5	1.98	2 (40%)	6,6,6	2.03	3 (50%)
4	WV6	A	603[A]	-	21,21,21	0.50	0	30,31,31	0.48	0
3	OXL	C	602	5	5,5,5	1.88	2 (40%)	6,6,6	2.35	3 (50%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	OXL	B	602	5	-	4/4/4/4	-
2	FBP	A	601	-	-	2/13/32/32	0/1/1/1
3	OXL	E	602	5	-	4/4/4/4	-
4	WV6	B	603[B]	-	-	0/16/16/16	0/2/2/2
3	OXL	D	602	5	-	4/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FBP	H	601	-	-	2/13/32/32	0/1/1/1
4	WV6	F	603[A]	-	-	0/16/16/16	0/2/2/2
4	WV6	A	603[B]	-	-	1/16/16/16	0/2/2/2
4	WV6	E	603[A]	-	-	2/16/16/16	0/2/2/2
2	FBP	F	601	-	-	2/13/32/32	0/1/1/1
2	FBP	C	601	-	-	2/13/32/32	0/1/1/1
3	OXL	F	602	5	-	0/4/4/4	-
2	FBP	B	601	-	-	2/13/32/32	0/1/1/1
2	FBP	D	601	-	-	2/13/32/32	0/1/1/1
2	FBP	E	601	-	-	2/13/32/32	0/1/1/1
4	WV6	F	603[B]	-	-	0/16/16/16	0/2/2/2
4	WV6	E	603[B]	-	-	2/16/16/16	0/2/2/2
4	WV6	B	603[A]	-	-	2/16/16/16	0/2/2/2
3	OXL	G	602	5	-	4/4/4/4	-
3	OXL	H	602	5	-	4/4/4/4	-
2	FBP	G	601	-	-	2/13/32/32	0/1/1/1
3	OXL	A	602	5	-	4/4/4/4	-
4	WV6	A	603[A]	-	-	1/16/16/16	0/2/2/2
3	OXL	C	602	5	-	4/4/4/4	-

All (20) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	602	OXL	O2-C2	4.67	1.34	1.22
3	G	602	OXL	O2-C2	4.22	1.33	1.22
3	A	602	OXL	O2-C2	3.76	1.31	1.22
3	C	602	OXL	O2-C2	3.41	1.31	1.22
3	E	602	OXL	O2-C2	3.32	1.30	1.22
3	F	602	OXL	O2-C2	3.27	1.30	1.22
3	D	602	OXL	O2-C2	3.24	1.30	1.22
3	D	602	OXL	O4-C2	-3.14	1.22	1.30
3	E	602	OXL	O4-C2	-3.04	1.22	1.30
3	B	602	OXL	O4-C2	-3.03	1.22	1.30
3	H	602	OXL	O2-C2	3.02	1.30	1.22
3	H	602	OXL	O4-C2	-2.94	1.22	1.30
3	F	602	OXL	O4-C2	-2.42	1.24	1.30
3	G	602	OXL	C2-C1	-2.38	1.50	1.54
3	G	602	OXL	O4-C2	-2.37	1.24	1.30
3	C	602	OXL	O4-C2	-2.24	1.24	1.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	602	OXL	O4-C2	-2.19	1.24	1.30
4	B	603[B]	WV6	C8-N	2.12	1.42	1.37
2	H	601	FBP	P1-O1	-2.11	1.53	1.60
2	H	601	FBP	P2-O6P	-2.08	1.47	1.54

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	602	OXL	O4-C2-C1	4.45	121.47	112.83
3	F	602	OXL	O4-C2-C1	4.34	121.25	112.83
3	D	602	OXL	O3-C1-C2	4.18	120.94	112.83
3	D	602	OXL	O4-C2-C1	4.02	120.62	112.83
3	A	602	OXL	O4-C2-C1	3.83	120.26	112.83
3	E	602	OXL	O4-C2-C1	3.58	119.77	112.83
2	D	601	FBP	O6-P2-O4P	3.18	115.04	106.44
3	F	602	OXL	O3-C1-C2	2.91	118.47	112.83
3	H	602	OXL	O4-C2-C1	2.82	118.30	112.83
3	E	602	OXL	O3-C1-C2	2.80	118.25	112.83
3	C	602	OXL	O2-C2-C1	-2.75	114.90	120.63
3	D	602	OXL	O1-C1-C2	-2.70	115.01	120.63
3	B	602	OXL	O3-C1-C2	2.68	118.02	112.83
2	H	601	FBP	O6-P2-O4P	2.66	113.62	106.44
3	F	602	OXL	O2-C2-C1	-2.53	115.35	120.63
3	A	602	OXL	O2-C2-C1	-2.31	115.83	120.63
3	C	602	OXL	O3-C1-C2	2.31	117.30	112.83
3	G	602	OXL	O4-C2-C1	2.15	117.00	112.83
3	A	602	OXL	O3-C1-C2	2.10	116.91	112.83
3	D	602	OXL	O2-C2-C1	-2.02	116.41	120.63

There are no chirality outliers.

All (52) torsion outliers are listed below:

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

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Mol	Chain	Res	Type	Atoms
2	B	601	FBP	O5-C5-C6-O6
2	D	601	FBP	O5-C5-C6-O6
2	E	601	FBP	O5-C5-C6-O6
2	G	601	FBP	O5-C5-C6-O6
2	H	601	FBP	O5-C5-C6-O6
2	C	601	FBP	O5-C5-C6-O6
2	F	601	FBP	O5-C5-C6-O6
4	E	603[B]	WV6	C11-C8-N-C10
4	B	603[A]	WV6	C7-C8-N-C9
3	H	602	OXL	O3-C1-C2-O4
4	E	603[B]	WV6	C7-C8-N-C10
4	B	603[A]	WV6	C11-C8-N-C9
3	A	602	OXL	O3-C1-C2-O4
3	B	602	OXL	O3-C1-C2-O4
3	C	602	OXL	O3-C1-C2-O4
3	C	602	OXL	O1-C1-C2-O2
3	E	602	OXL	O3-C1-C2-O4
3	G	602	OXL	O3-C1-C2-O4
3	A	602	OXL	O1-C1-C2-O2
3	B	602	OXL	O1-C1-C2-O2
3	D	602	OXL	O1-C1-C2-O2
3	E	602	OXL	O1-C1-C2-O2
3	G	602	OXL	O1-C1-C2-O2
3	D	602	OXL	O3-C1-C2-O4
3	H	602	OXL	O1-C1-C2-O2
3	H	602	OXL	O3-C1-C2-O2
4	E	603[A]	WV6	C7-C8-N-C9
4	E	603[A]	WV6	C11-C8-N-C9
4	A	603[B]	WV6	C7-C8-N-C9
3	A	602	OXL	O1-C1-C2-O4
3	B	602	OXL	O3-C1-C2-O2
3	C	602	OXL	O1-C1-C2-O4
3	C	602	OXL	O3-C1-C2-O2
3	E	602	OXL	O3-C1-C2-O2
3	A	602	OXL	O3-C1-C2-O2
3	B	602	OXL	O1-C1-C2-O4
3	E	602	OXL	O1-C1-C2-O4
3	G	602	OXL	O1-C1-C2-O4
3	D	602	OXL	O3-C1-C2-O2
3	G	602	OXL	O3-C1-C2-O2
3	D	602	OXL	O1-C1-C2-O4
3	H	602	OXL	O1-C1-C2-O4

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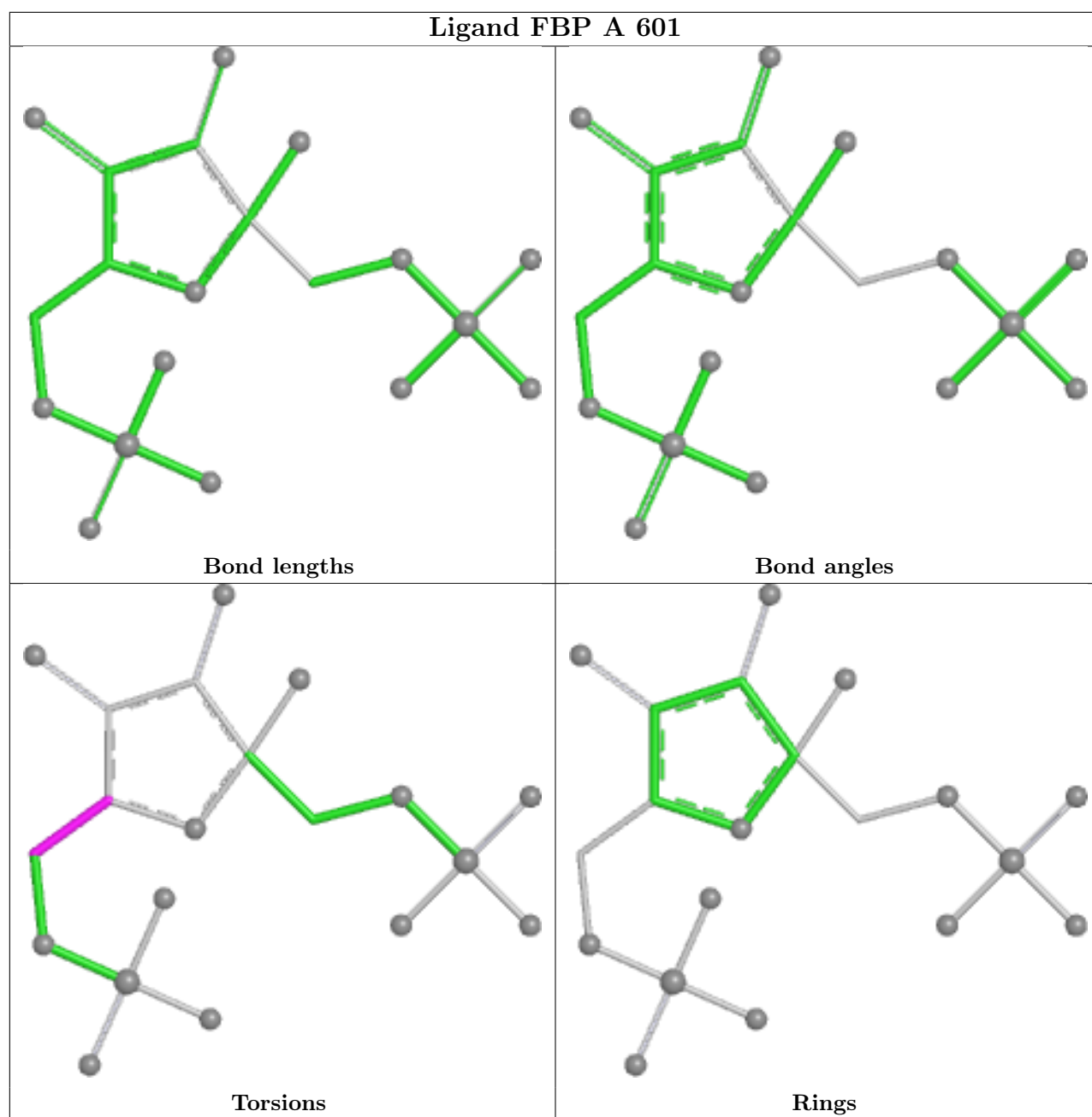
Mol	Chain	Res	Type	Atoms
4	A	603[A]	WV6	C7-C8-N-C9

There are no ring outliers.

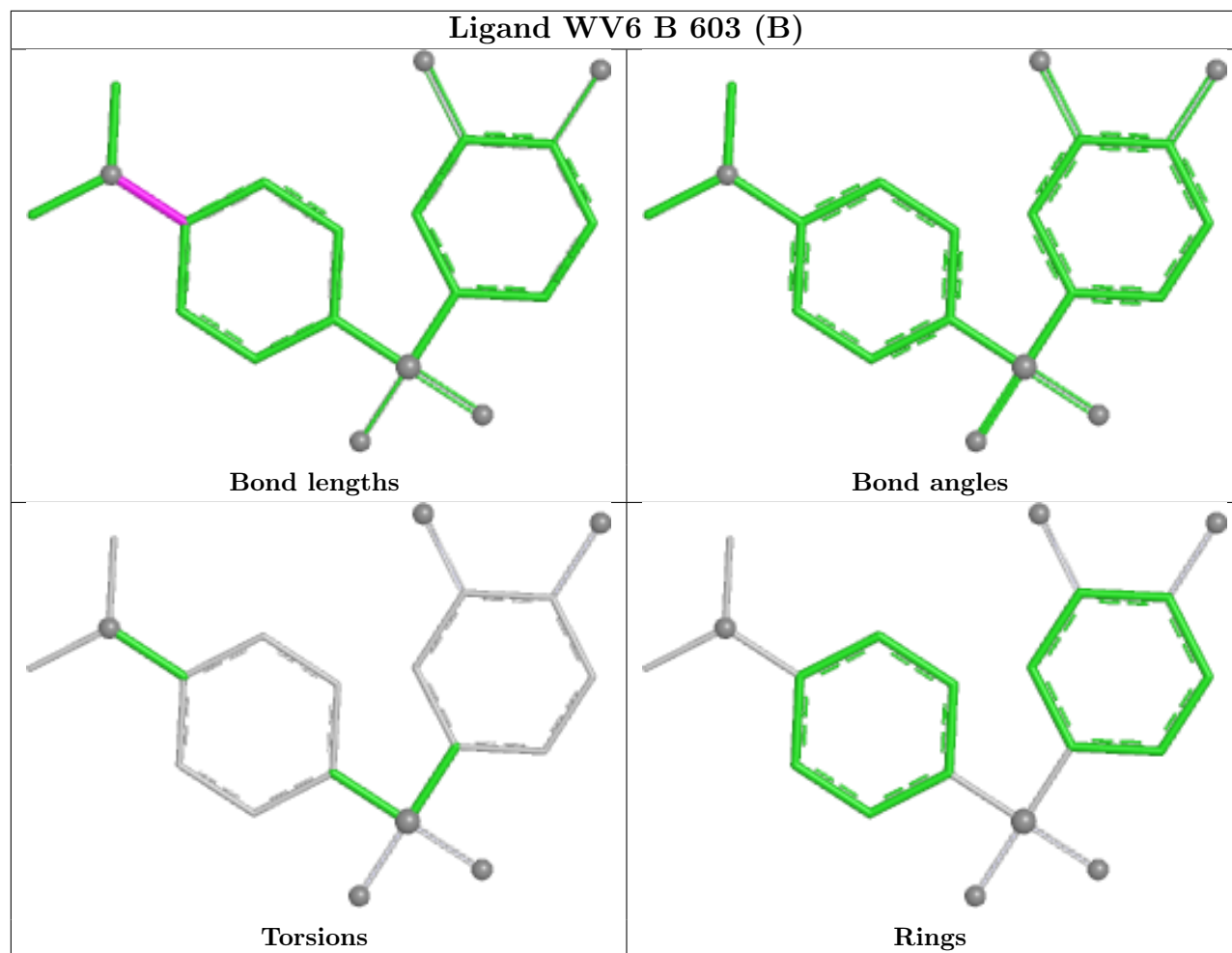
6 monomers are involved in 6 short contacts:

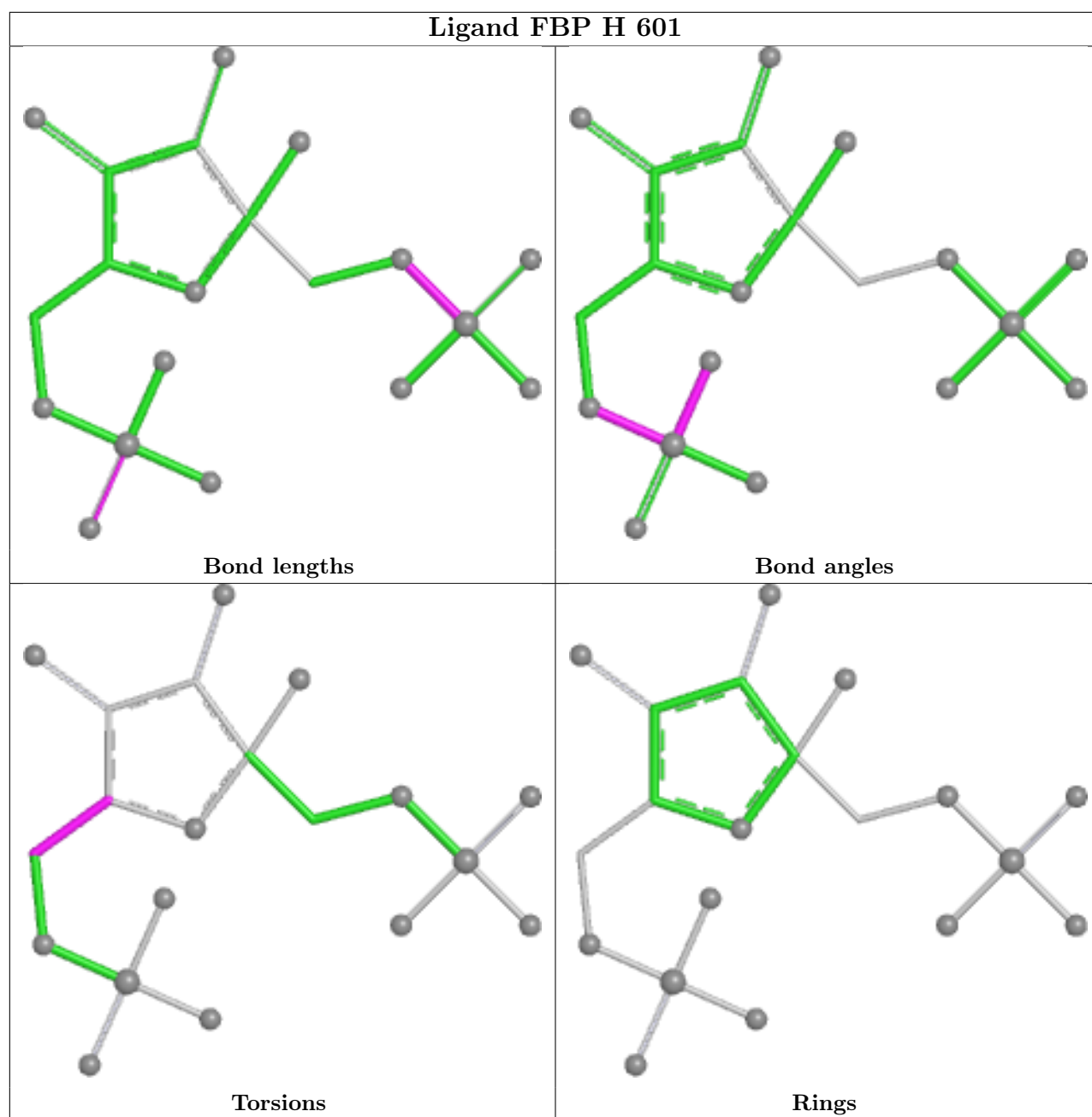
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	603[B]	WV6	1	0
4	F	603[A]	WV6	1	0
4	E	603[A]	WV6	1	0
4	E	603[B]	WV6	1	0
4	B	603[A]	WV6	1	0
4	A	603[A]	WV6	1	0

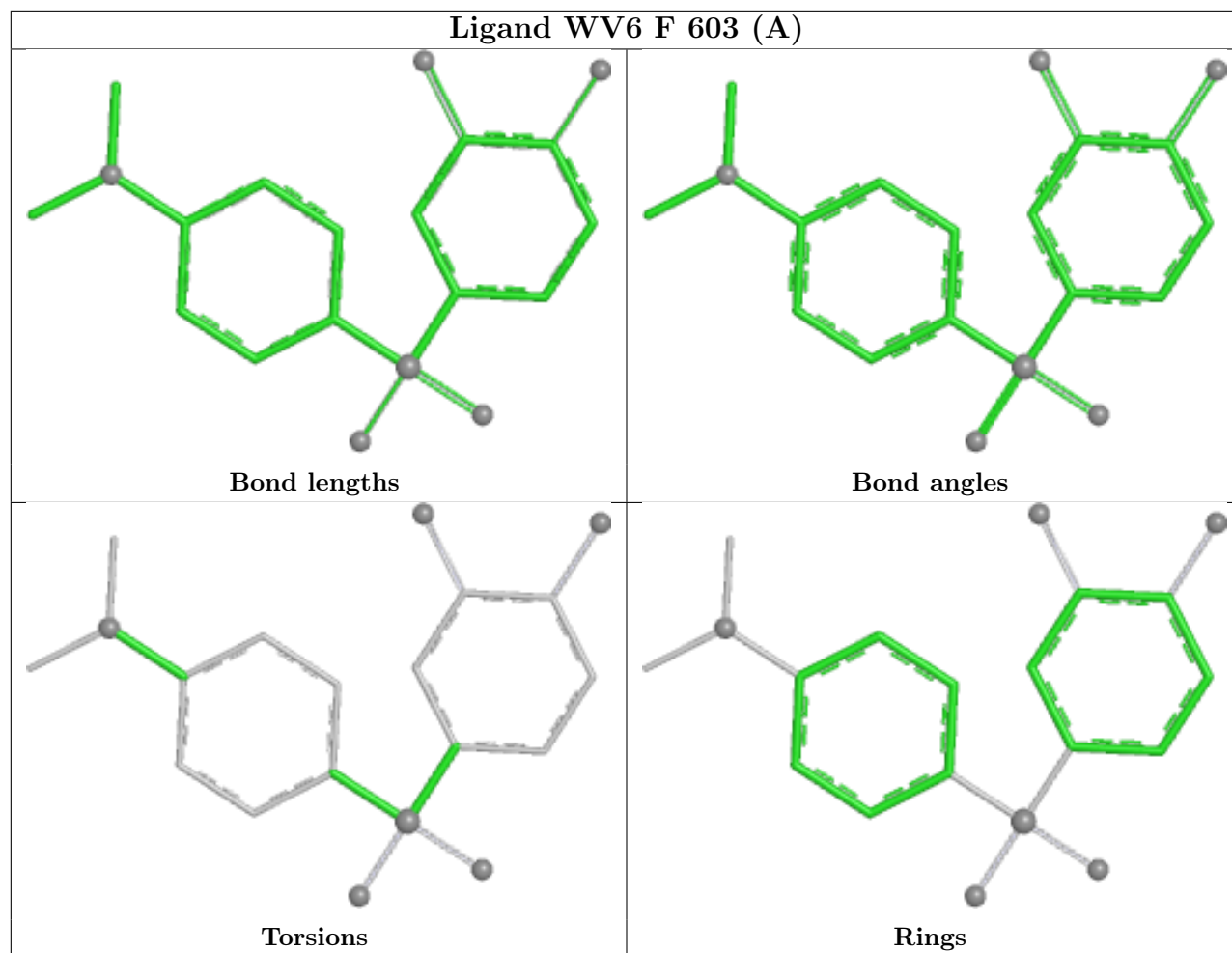
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

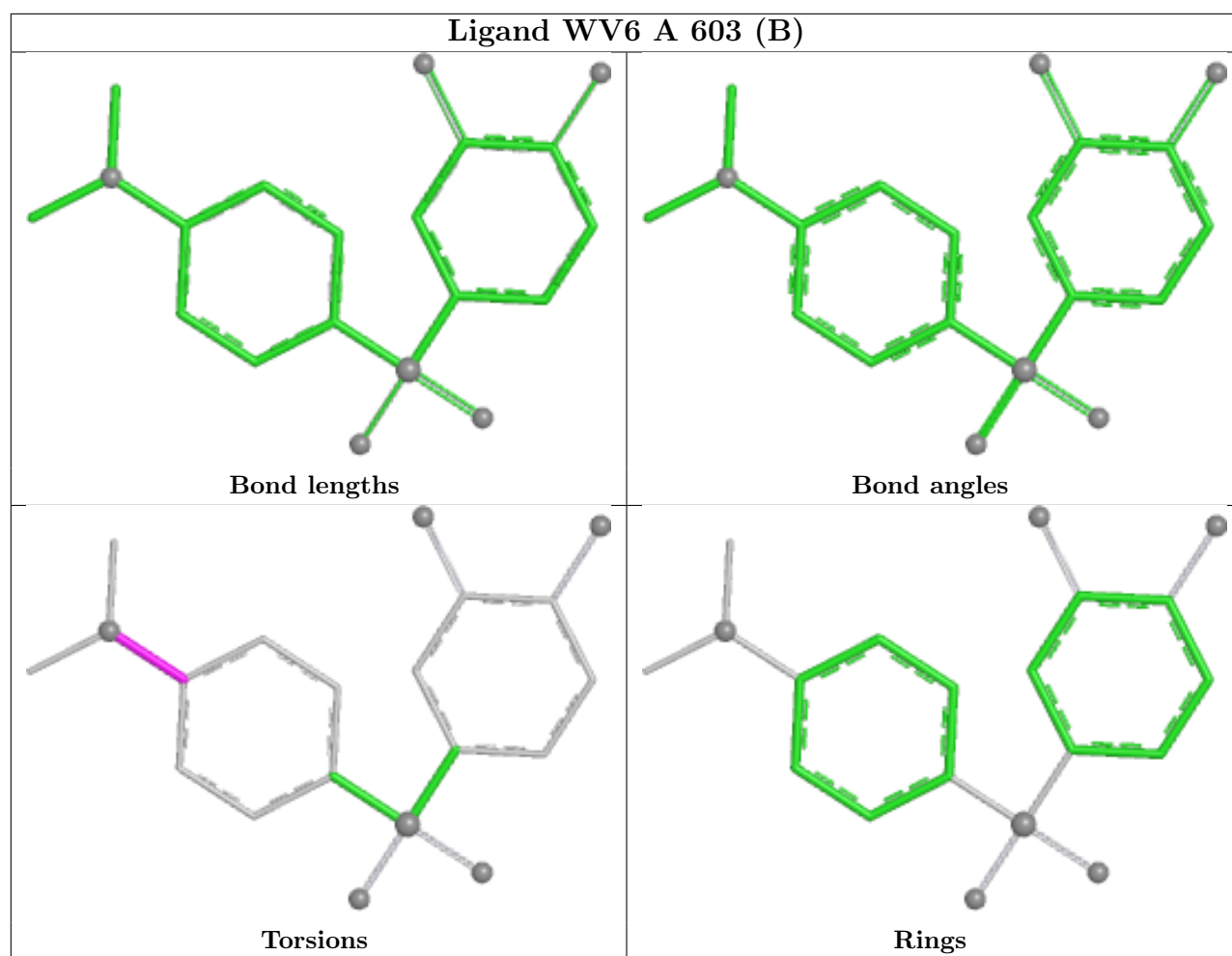


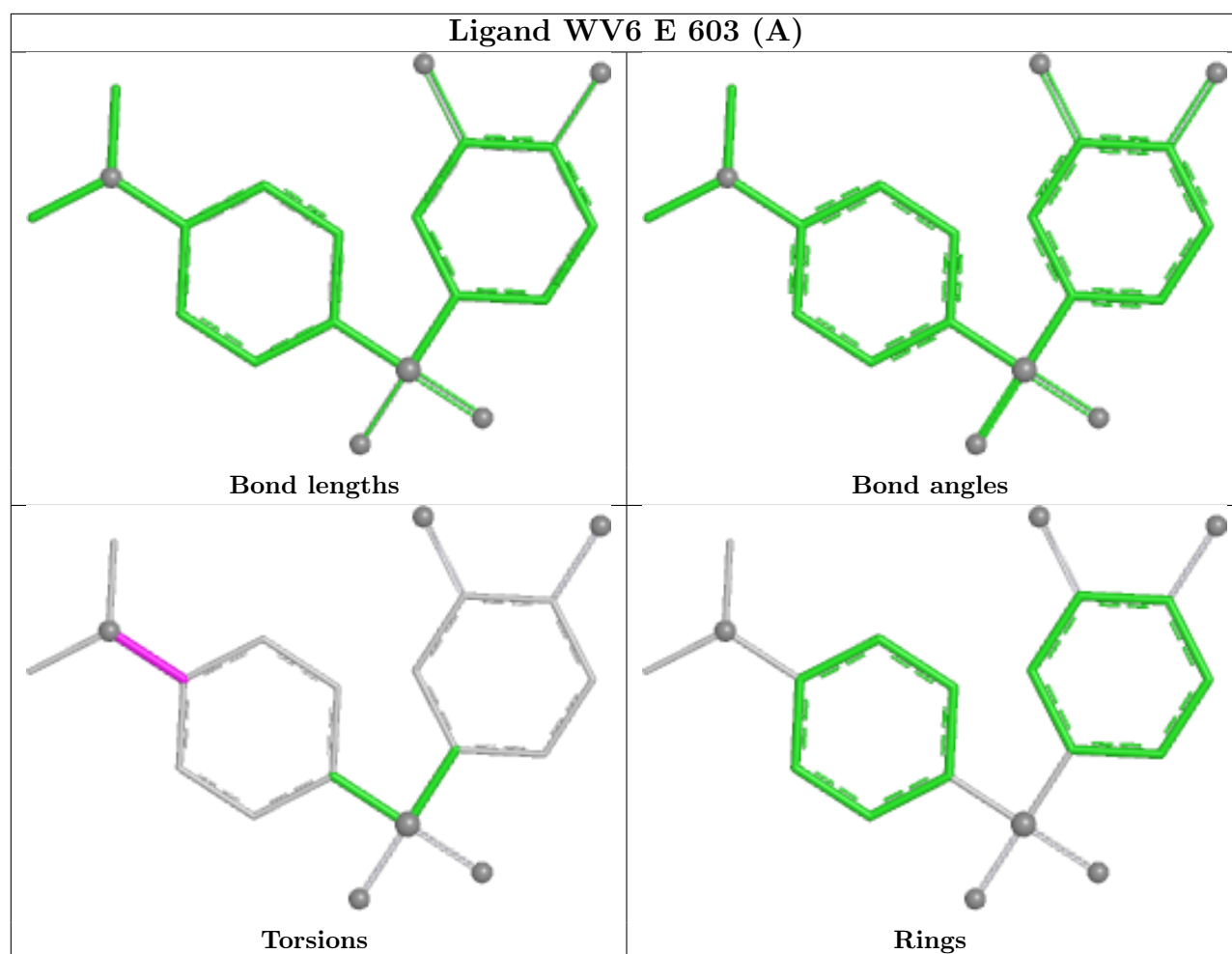
Ligand WV6 B 603 (B)



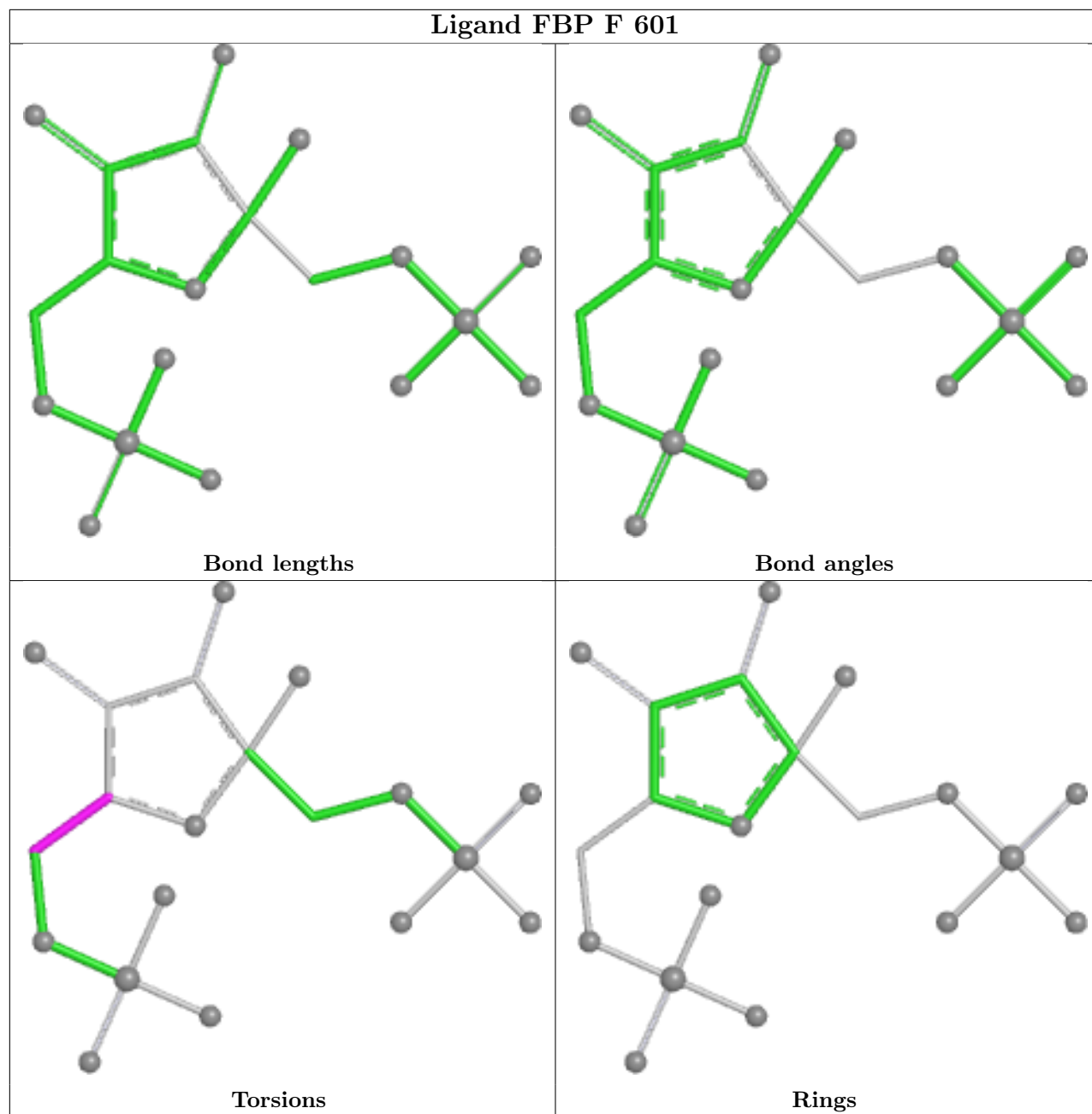


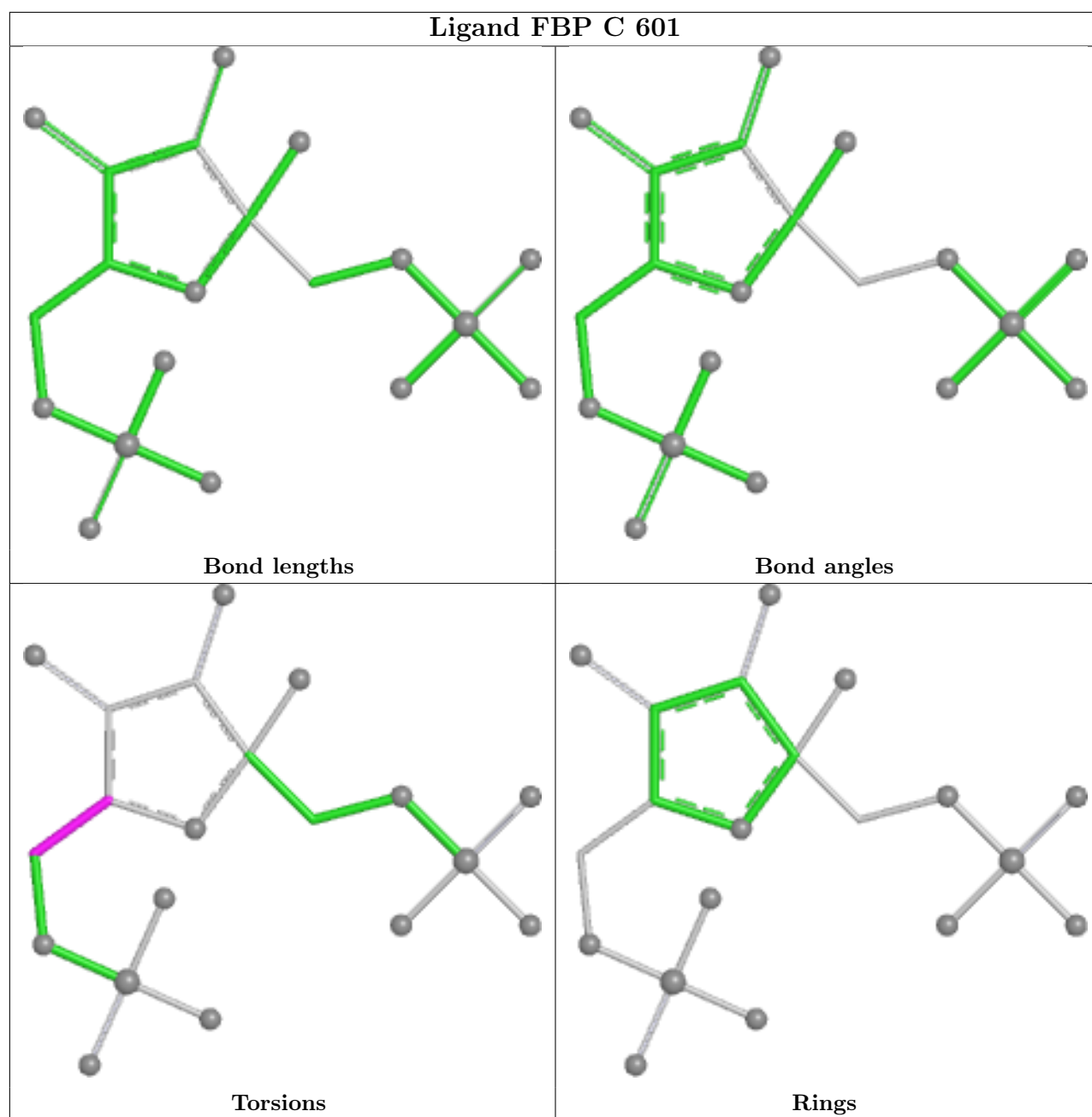




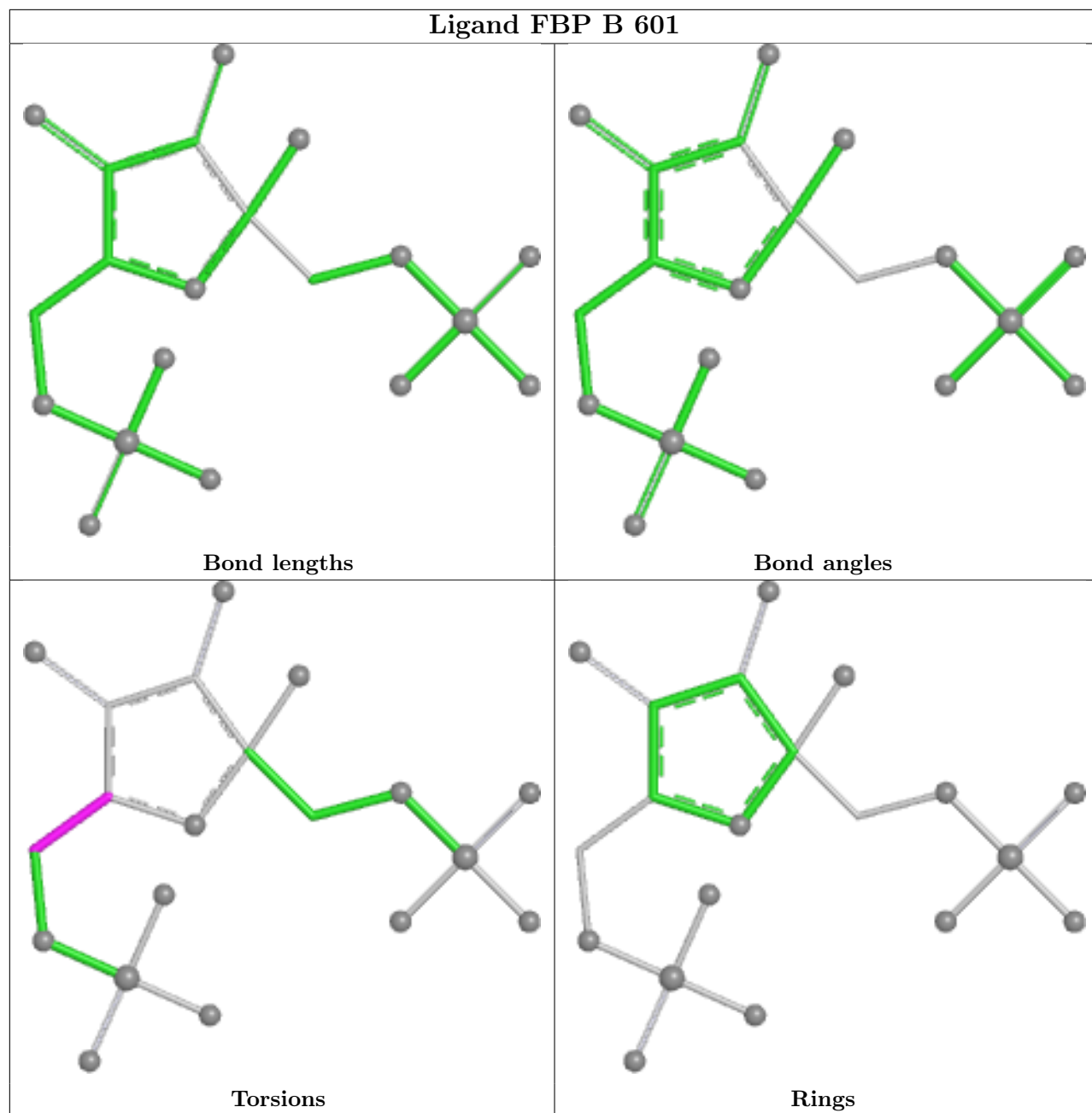


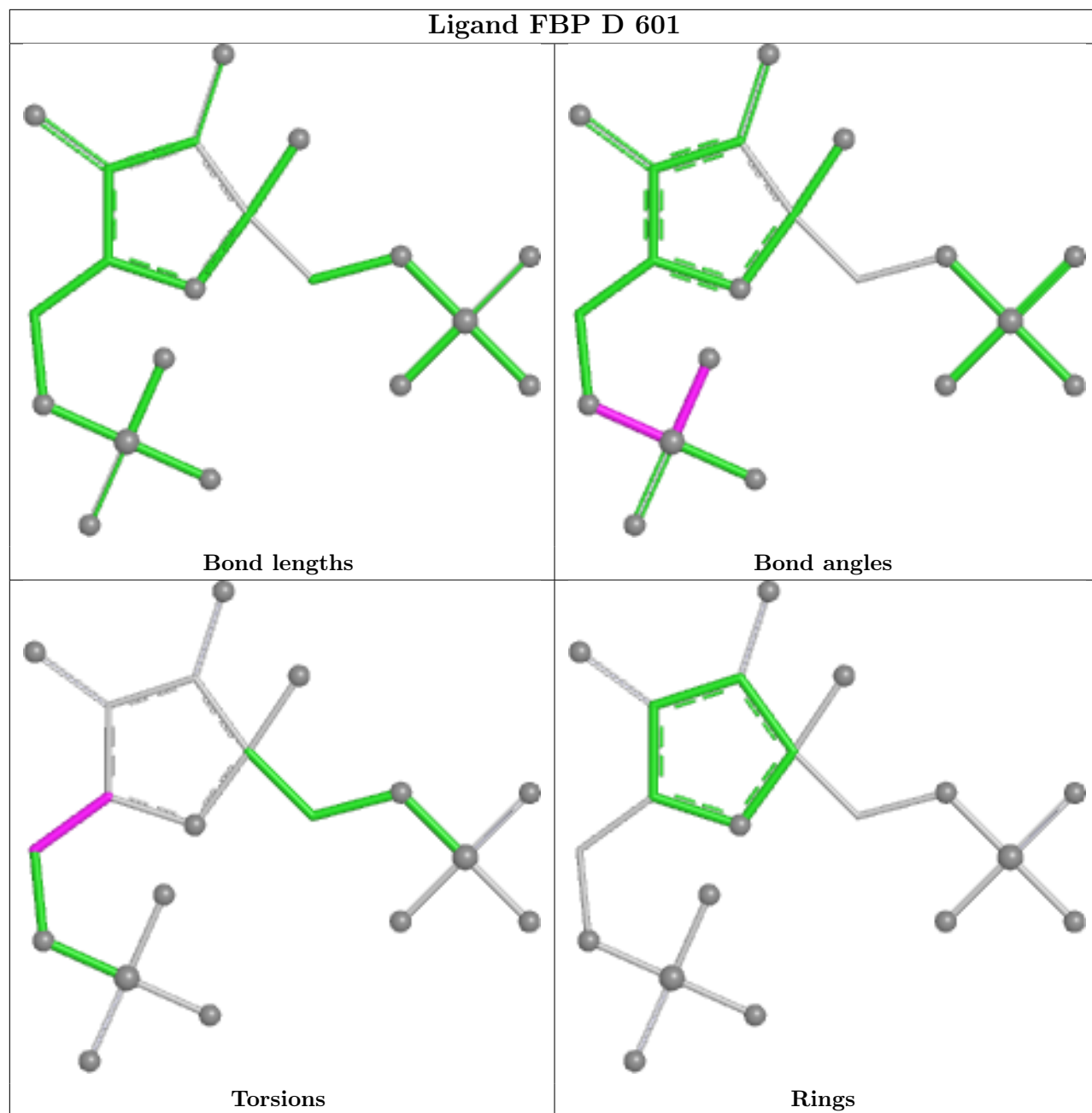
Ligand FBP F 601



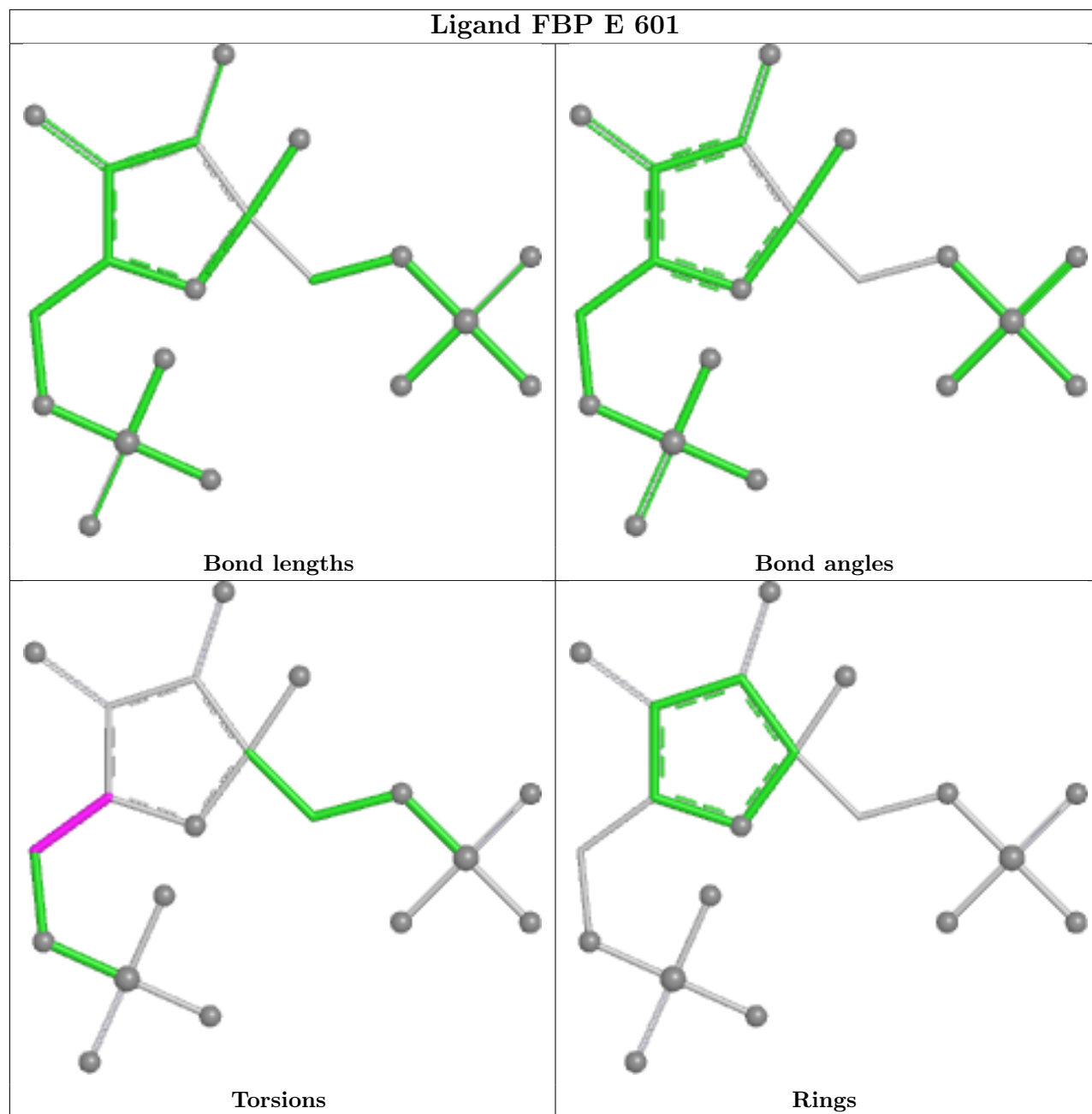


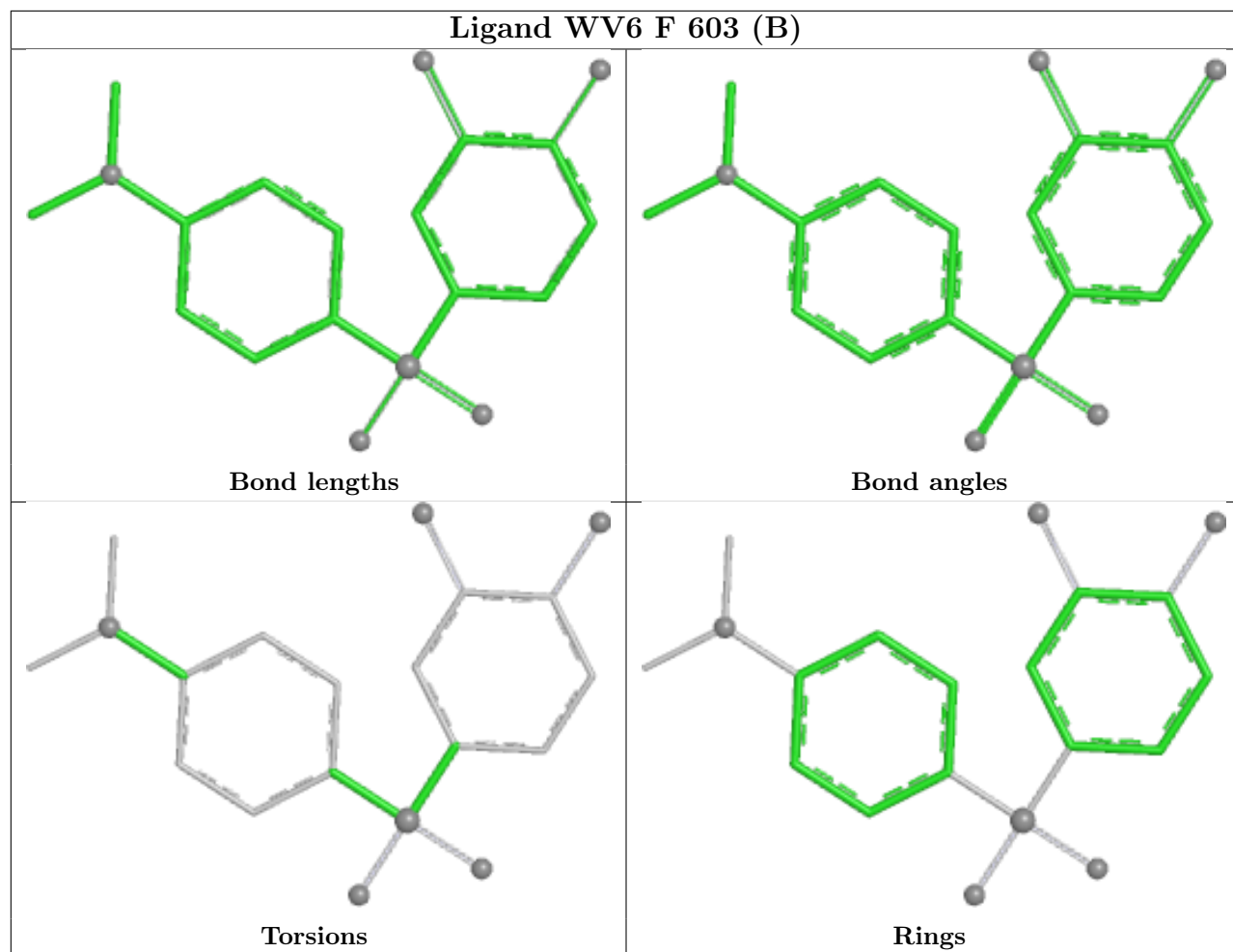
Ligand FBP B 601

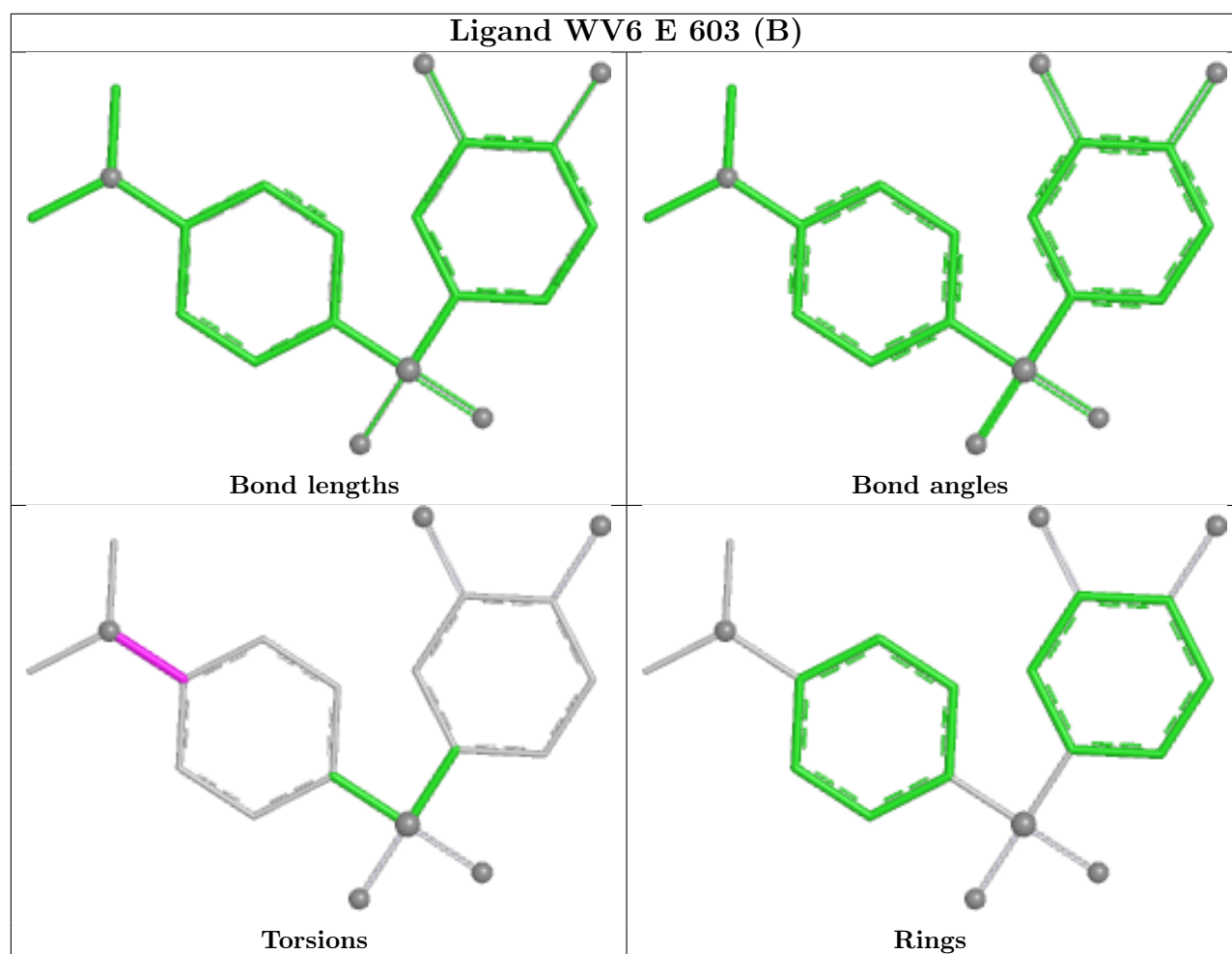


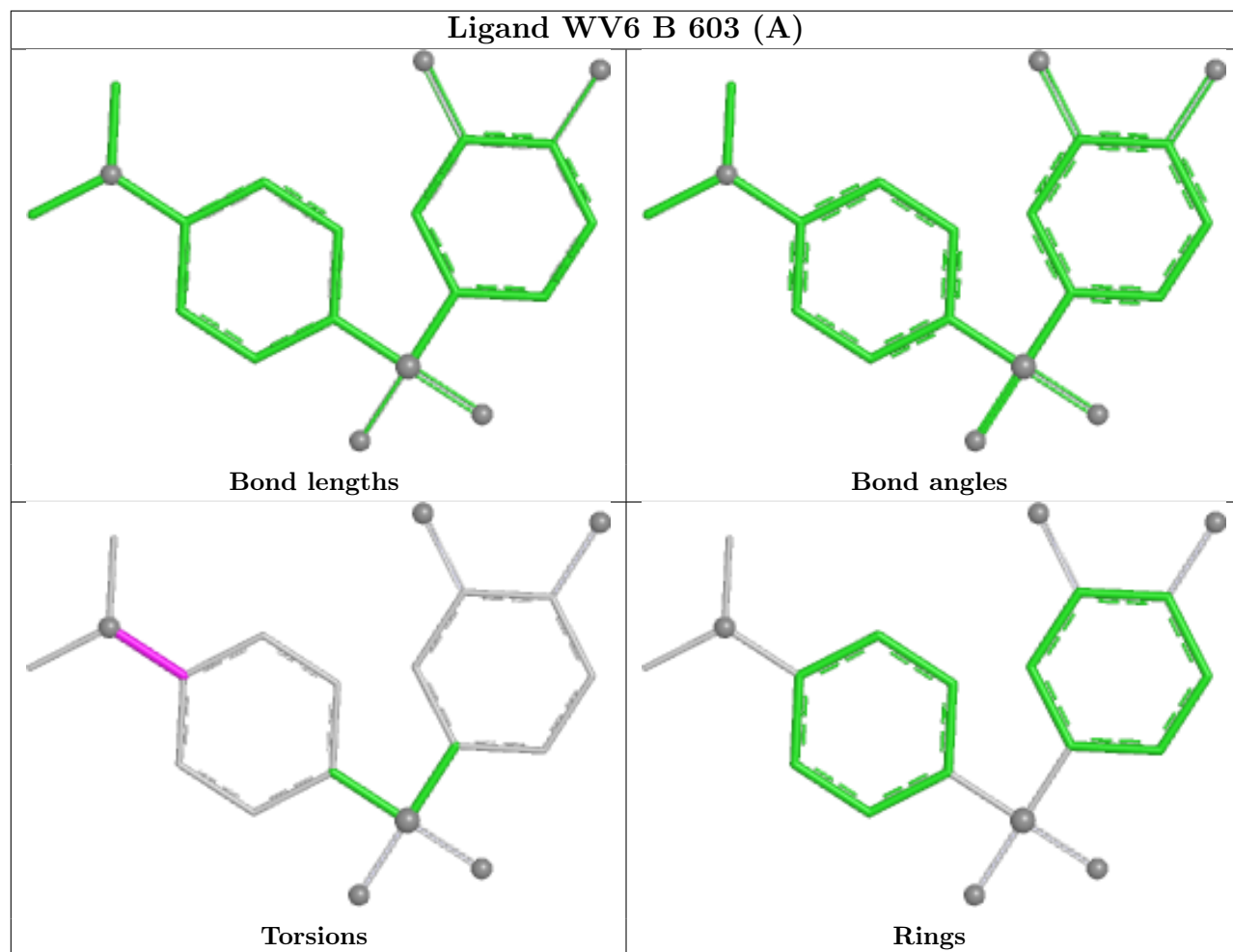


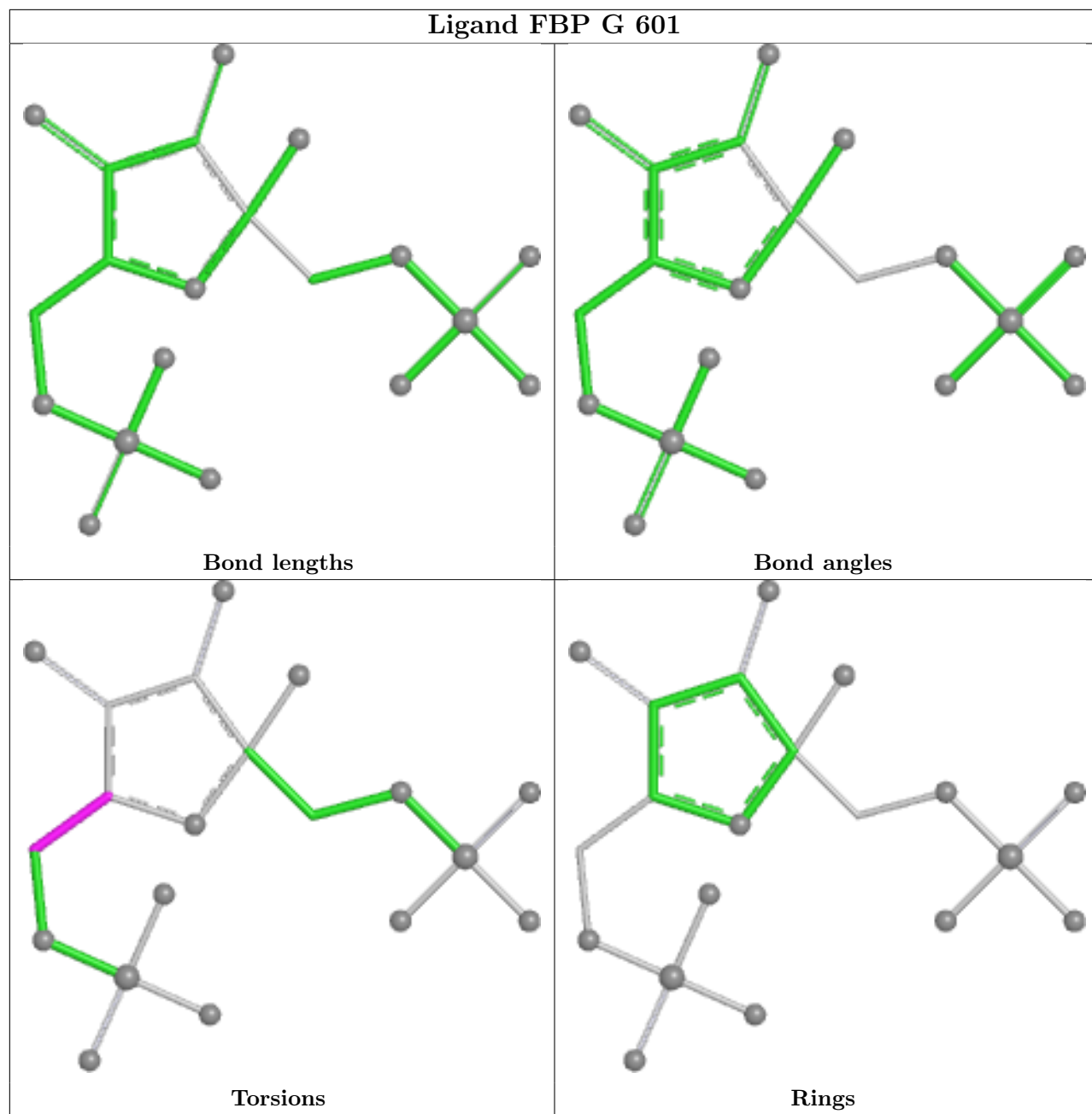
Ligand FBP E 601

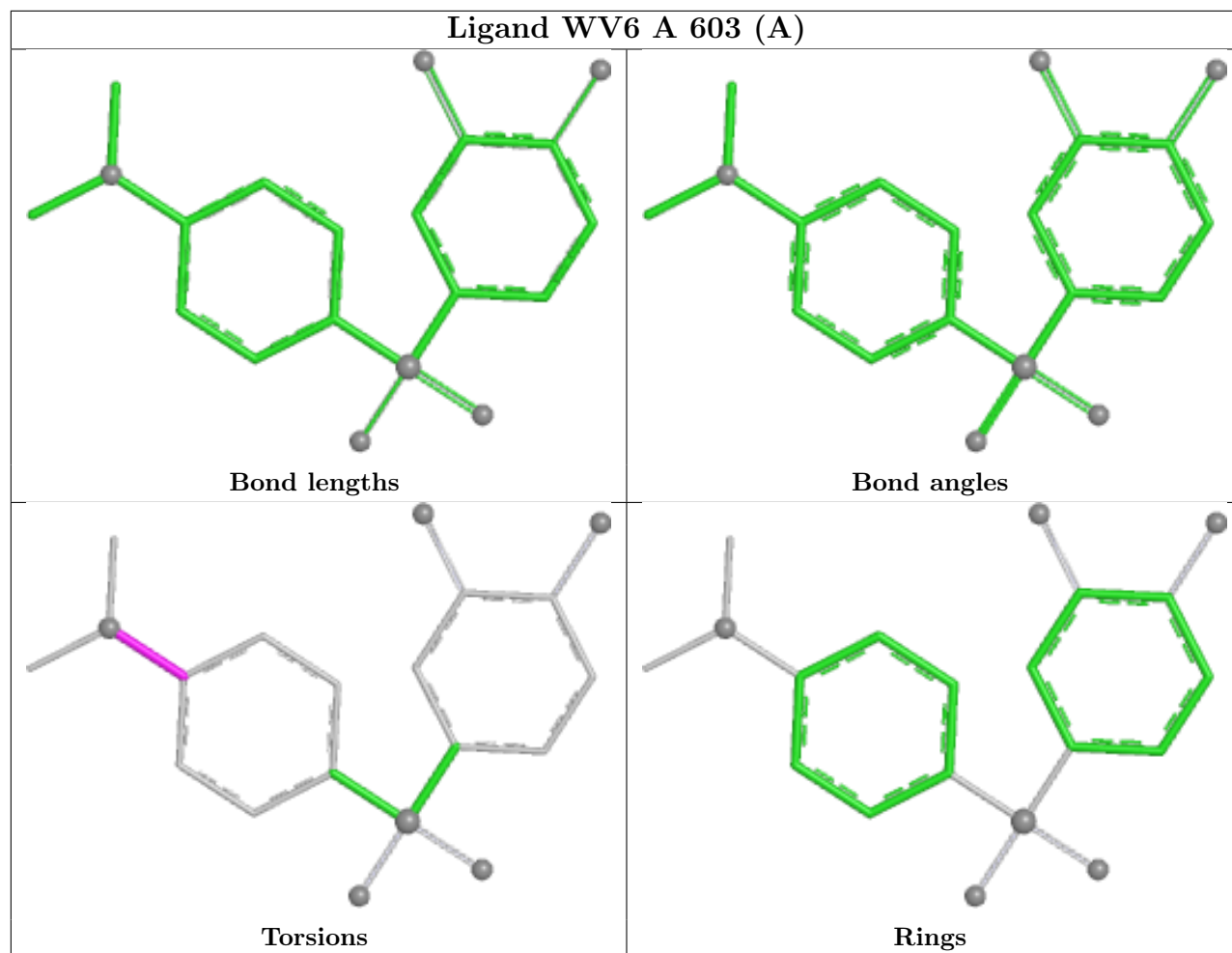












5.7 Other polymers [i](#)

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	420/447 (93%)	1.17	70 (16%) 4 5	32, 59, 88, 109	11 (2%)
1	B	436/447 (97%)	1.73	160 (36%) 1 1	28, 61, 98, 114	8 (1%)
1	C	424/447 (94%)	0.53	23 (5%) 31 40	22, 45, 70, 122	6 (1%)
1	D	425/447 (95%)	0.17	11 (2%) 57 67	18, 38, 63, 116	8 (1%)
1	E	420/447 (93%)	1.21	74 (17%) 4 4	32, 60, 90, 104	11 (2%)
1	F	432/447 (96%)	0.77	46 (10%) 11 15	27, 49, 78, 96	8 (1%)
1	G	421/447 (94%)	0.34	23 (5%) 30 39	25, 41, 63, 96	6 (1%)
1	H	425/447 (95%)	-0.00	10 (2%) 59 69	17, 35, 59, 110	9 (2%)
All	All	3403/3576 (95%)	0.74	417 (12%) 8 11	17, 49, 86, 122	67 (1%)

All (417) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	413	LEU	7.7
1	E	177[A]	HIS	6.8
1	B	115	LEU	6.4
1	F	133	PRO	5.9
1	G	173	GLY	5.7
1	C	20	LEU	5.7
1	E	133	PRO	5.5
1	F	115	LEU	5.2
1	E	129	PRO	4.9
1	D	25	PHE	4.8
1	B	386	LEU	4.8
1	B	110	PHE	4.8
1	G	25	PHE	4.8
1	A	140	VAL	4.8
1	B	151	VAL	4.7
1	E	25	PHE	4.7

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Mol	Chain	Res	Type	RSRZ
1	D	24	PHE	4.7
1	B	103	VAL	4.7
1	B	107	VAL	4.7
1	B	417	LEU	4.6
1	B	429	TRP	4.6
1	C	25	PHE	4.6
1	B	419	VAL	4.5
1	B	408	ILE	4.5
1	G	23	ALA	4.5
1	B	77	ILE	4.4
1	B	444	ILE	4.4
1	B	143	LEU	4.4
1	B	172	LEU	4.4
1	B	280	ALA	4.3
1	B	135	LEU	4.3
1	B	406	PHE	4.3
1	G	133	PRO	4.1
1	C	173	GLY	4.1
1	B	284	PHE	4.1
1	H	25	PHE	4.1
1	B	106	ALA	4.0
1	B	67	SER	4.0
1	H	21	GLY	4.0
1	B	120	VAL	4.0
1	A	280	ALA	4.0
1	B	70	VAL	4.0
1	B	100	ILE	4.0
1	F	169[A]	ARG	3.9
1	A	52	VAL	3.9
1	B	83	ILE	3.9
1	B	404	VAL	3.9
1	B	169[A]	ARG	3.9
1	B	387	LEU	3.9
1	A	133	PRO	3.9
1	E	24	PHE	3.9
1	B	113	SER	3.8
1	B	86	LEU	3.8
1	B	154	VAL	3.8
1	A	135	LEU	3.8
1	B	407	GLY	3.8
1	A	384	PHE	3.8
1	C	134	GLY	3.7

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Mol	Chain	Res	Type	RSRZ
1	G	174	PRO	3.7
1	E	33	ALA	3.7
1	A	429	TRP	3.7
1	B	392	PRO	3.7
1	C	133	PRO	3.7
1	B	250	THR	3.7
1	A	377	VAL	3.7
1	C	174	PRO	3.7
1	B	73	LEU	3.7
1	C	117	TYR	3.7
1	E	140	VAL	3.6
1	G	24	PHE	3.6
1	A	30	LEU	3.6
1	E	115	LEU	3.6
1	F	418	ARG	3.6
1	E	134	GLY	3.6
1	B	286	VAL	3.6
1	E	416	PHE	3.6
1	B	124	LEU	3.6
1	B	445	SER	3.5
1	B	140	VAL	3.5
1	A	416	PHE	3.5
1	B	102	ASN	3.5
1	A	397	ALA	3.5
1	B	66	ALA	3.5
1	B	179	ILE	3.5
1	C	23	ALA	3.5
1	E	135	LEU	3.5
1	A	143	LEU	3.5
1	B	76[A]	MET	3.4
1	F	134	GLY	3.4
1	D	23	ALA	3.4
1	F	413	LEU	3.4
1	A	445	SER	3.4
1	C	22	THR	3.4
1	B	13	VAL	3.4
1	C	24	PHE	3.4
1	E	114	PRO	3.4
1	B	117	TYR	3.3
1	B	170	ALA	3.3
1	B	410	SER	3.3
1	A	63	ILE	3.3

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Mol	Chain	Res	Type	RSRZ
1	B	416	PHE	3.3
1	B	64	GLY	3.3
1	E	282	GLY	3.3
1	E	443[A]	SER	3.3
1	B	153	ILE	3.3
1	E	111	ALA	3.3
1	B	95	TYR	3.2
1	E	302	ALA	3.2
1	E	120	VAL	3.2
1	B	397	ALA	3.2
1	E	171	ALA	3.2
1	A	151	VAL	3.2
1	G	22	THR	3.2
1	D	21	GLY	3.2
1	E	179	ILE	3.2
1	B	388	TYR	3.2
1	B	168	VAL	3.2
1	F	135	LEU	3.2
1	B	79	ALA	3.1
1	B	395	ILE	3.1
1	A	172	LEU	3.1
1	B	415	GLY	3.1
1	A	401	ASP	3.1
1	E	123	ALA	3.1
1	B	116	SER	3.1
1	A	134	GLY	3.1
1	F	172	LEU	3.1
1	B	90	HIS	3.1
1	B	63	ILE	3.1
1	F	386	LEU	3.1
1	E	151	VAL	3.1
1	E	110	PHE	3.1
1	A	115	LEU	3.0
1	B	377	VAL	3.0
1	B	400	VAL	3.0
1	B	173	GLY	3.0
1	B	121	ALA	3.0
1	E	23	ALA	3.0
1	B	281	LYS	3.0
1	B	122	ILE	3.0
1	H	24	PHE	3.0
1	D	22	THR	3.0

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Mol	Chain	Res	Type	RSRZ
1	E	397	ALA	3.0
1	A	165	VAL	3.0
1	B	147	VAL	3.0
1	B	178	GLY	3.0
1	C	21	GLY	3.0
1	B	249	ILE	3.0
1	G	213	ILE	3.0
1	B	367	VAL	2.9
1	B	65	PRO	2.9
1	E	392	PRO	2.9
1	G	38	PHE	2.9
1	C	66	ALA	2.9
1	B	118	ARG	2.9
1	F	313	ARG	2.9
1	E	52	VAL	2.9
1	E	404	VAL	2.9
1	F	140	VAL	2.9
1	B	181	ILE	2.9
1	F	114	PRO	2.9
1	B	123	ALA	2.9
1	A	73	LEU	2.9
1	B	16	LEU	2.9
1	B	422	LEU	2.9
1	D	30	LEU	2.9
1	E	387	LEU	2.9
1	F	395	ILE	2.9
1	B	165	VAL	2.8
1	B	174	PRO	2.8
1	F	414	ARG	2.8
1	F	11	ALA	2.8
1	C	43	CYS	2.8
1	B	396	TRP	2.8
1	E	429	TRP	2.8
1	F	442[A]	LEU	2.8
1	B	21	GLY	2.8
1	B	112	GLY	2.8
1	B	52	VAL	2.8
1	B	159	VAL	2.8
1	H	133	PRO	2.8
1	B	11	ALA	2.8
1	B	288	ALA	2.8
1	E	158	PHE	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	442[A]	LEU	2.8
1	G	42	LEU	2.8
1	B	74	LYS	2.8
1	E	159	VAL	2.8
1	A	33	ALA	2.8
1	G	33	ALA	2.8
1	G	265	ALA	2.8
1	B	145	PHE	2.8
1	G	134	GLY	2.8
1	D	177[A]	HIS	2.8
1	E	34	MET	2.8
1	F	429	TRP	2.8
1	G	52	VAL	2.8
1	B	72	ARG	2.7
1	D	213	ILE	2.7
1	B	114	PRO	2.7
1	B	119	PRO	2.7
1	B	99	SER	2.7
1	A	70	VAL	2.7
1	B	383	VAL	2.7
1	E	168	VAL	2.7
1	A	390[A]	GLU	2.7
1	B	150	GLY	2.7
1	E	407	GLY	2.7
1	F	406	PHE	2.7
1	A	279	THR	2.7
1	B	62	THR	2.7
1	B	213	ILE	2.7
1	C	63	ILE	2.7
1	F	408	ILE	2.7
1	B	88	PHE	2.7
1	B	142	ASP	2.7
1	A	26	GLN	2.7
1	B	418	ARG	2.7
1	E	320[A]	ARG	2.7
1	B	92	SER	2.7
1	B	345	LEU	2.7
1	E	442	LEU	2.7
1	A	328	ILE	2.7
1	A	373	ALA	2.6
1	B	146	GLY	2.6
1	C	111	ALA	2.6

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Mol	Chain	Res	Type	RSRZ
1	F	112	GLY	2.6
1	H	22	THR	2.6
1	E	124	LEU	2.6
1	G	115	LEU	2.6
1	E	165	VAL	2.6
1	B	374	ALA	2.6
1	A	396	TRP	2.6
1	B	384	PHE	2.6
1	B	275	LEU	2.6
1	E	172	LEU	2.6
1	A	444	ILE	2.6
1	E	153	ILE	2.6
1	E	147	VAL	2.6
1	F	316	ALA	2.6
1	B	96	HIS	2.6
1	B	385	PRO	2.6
1	F	416	PHE	2.6
1	E	30	LEU	2.6
1	H	418	ARG	2.6
1	E	395	ILE	2.6
1	B	176	GLY	2.6
1	A	120	VAL	2.6
1	E	97	ALA	2.6
1	E	106	ALA	2.6
1	E	166	ALA	2.6
1	B	335	PHE	2.5
1	B	128	GLY	2.5
1	A	61	ALA	2.5
1	B	101	ALA	2.5
1	F	116	SER	2.5
1	A	159	VAL	2.5
1	A	259	THR	2.5
1	A	110	PHE	2.5
1	B	245	LEU	2.5
1	B	177	HIS	2.5
1	A	32	ALA	2.5
1	B	285	PRO	2.5
1	B	412	LYS	2.5
1	A	233[A]	LEU	2.5
1	C	112	GLY	2.5
1	F	387	LEU	2.5
1	G	116	SER	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	75[A]	GLU	2.5
1	B	33	ALA	2.5
1	B	167	ALA	2.5
1	H	23	ALA	2.5
1	F	400	VAL	2.5
1	B	129	PRO	2.5
1	A	320[A]	ARG	2.4
1	B	60	ILE	2.4
1	E	100	ILE	2.4
1	A	53	ALA	2.4
1	B	162	ALA	2.4
1	F	398	ASP	2.4
1	F	129	PRO	2.4
1	F	419	VAL	2.4
1	H	177[A]	HIS	2.4
1	E	406	PHE	2.4
1	C	313	ARG	2.4
1	A	114	PRO	2.4
1	A	129	PRO	2.4
1	B	391	PRO	2.4
1	B	409	GLU	2.4
1	B	405	GLN	2.4
1	A	282	GLY	2.4
1	B	277	GLY	2.4
1	B	282	GLY	2.4
1	A	417	LEU	2.4
1	B	22	THR	2.4
1	E	438	ILE	2.4
1	B	84	ALA	2.4
1	B	373	ALA	2.4
1	F	171	ALA	2.4
1	F	392	PRO	2.4
1	A	132	GLY	2.4
1	B	364	VAL	2.4
1	B	313	ARG	2.3
1	C	115	LEU	2.3
1	H	144[A]	ARG	2.3
1	E	126	THR	2.3
1	A	66	ALA	2.3
1	A	162	ALA	2.3
1	B	171	ALA	2.3
1	E	122	ILE	2.3

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Mol	Chain	Res	Type	RSRZ
1	G	53	ALA	2.3
1	G	54	ALA	2.3
1	B	133	PRO	2.3
1	B	420	GLY	2.3
1	A	147	VAL	2.3
1	E	191	VAL	2.3
1	A	398	ASP	2.3
1	G	43	CYS	2.3
1	E	143	LEU	2.3
1	G	30	LEU	2.3
1	A	158	PHE	2.3
1	C	110	PHE	2.3
1	E	145	PHE	2.3
1	B	93	HIS	2.3
1	B	97	ALA	2.3
1	F	391	PRO	2.3
1	B	91	GLY	2.3
1	E	99	SER	2.3
1	E	109	SER	2.3
1	A	303	VAL	2.3
1	B	316	ALA	2.3
1	C	79	ALA	2.3
1	G	114	PRO	2.3
1	A	112	GLY	2.3
1	A	213	ILE	2.3
1	F	118	ARG	2.3
1	F	404	VAL	2.3
1	F	177	HIS	2.3
1	E	386	LEU	2.3
1	B	414	ARG	2.2
1	A	80	GLY	2.2
1	B	156	ALA	2.2
1	F	34	MET	2.2
1	E	253	ARG	2.2
1	B	20	LEU	2.2
1	E	233	LEU	2.2
1	F	318	LEU	2.2
1	A	171	ALA	2.2
1	B	14	ALA	2.2
1	D	32	ALA	2.2
1	G	416	PHE	2.2
1	F	249	ILE	2.2

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Mol	Chain	Res	Type	RSRZ
1	E	389	ARG	2.2
1	E	367	VAL	2.2
1	A	130	GLY	2.2
1	E	176	GLY	2.2
1	A	97	ALA	2.2
1	A	366	ALA	2.2
1	A	181	ILE	2.2
1	A	400	VAL	2.2
1	B	338	CYS	2.2
1	B	370	SER	2.2
1	E	413	LEU	2.2
1	B	53	ALA	2.2
1	B	111	ALA	2.2
1	E	366	ALA	2.2
1	E	88	PHE	2.1
1	A	435	TYR	2.1
1	E	95	TYR	2.1
1	F	396	TRP	2.1
1	E	383	VAL	2.1
1	E	116	SER	2.1
1	F	407	GLY	2.1
1	F	73	LEU	2.1
1	B	241	ALA	2.1
1	D	33	ALA	2.1
1	A	145	PHE	2.1
1	C	80	GLY	2.1
1	F	415	GLY	2.1
1	A	179	ILE	2.1
1	C	213	ILE	2.1
1	A	144	ARG	2.1
1	B	69	SER	2.1
1	B	276[A]	SER	2.1
1	F	314	ARG	2.1
1	B	108	GLU	2.1
1	F	71	GLU	2.1
1	B	80	GLY	2.1
1	E	90	HIS	2.1
1	H	52	VAL	2.1
1	A	442	LEU	2.1
1	F	417	LEU	2.1
1	E	66	ALA	2.1
1	B	12	ASP	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	309	PHE	2.0
1	E	335	PHE	2.0
1	A	95	TYR	2.0
1	B	279	THR	2.0
1	G	34	MET	2.0
1	A	91	GLY	2.0
1	B	134	GLY	2.0
1	E	128	GLY	2.0
1	C	286	VAL	2.0
1	E	119	PRO	2.0
1	E	174	PRO	2.0
1	F	119	PRO	2.0
1	B	318	LEU	2.0
1	D	233	LEU	2.0
1	A	84	ALA	2.0
1	B	139	ASP	2.0
1	B	152	ASP	2.0
1	A	34	MET	2.0
1	B	25	PHE	2.0
1	B	158	PHE	2.0
1	A	200	VAL	2.0
1	B	144	ARG	2.0
1	F	423	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

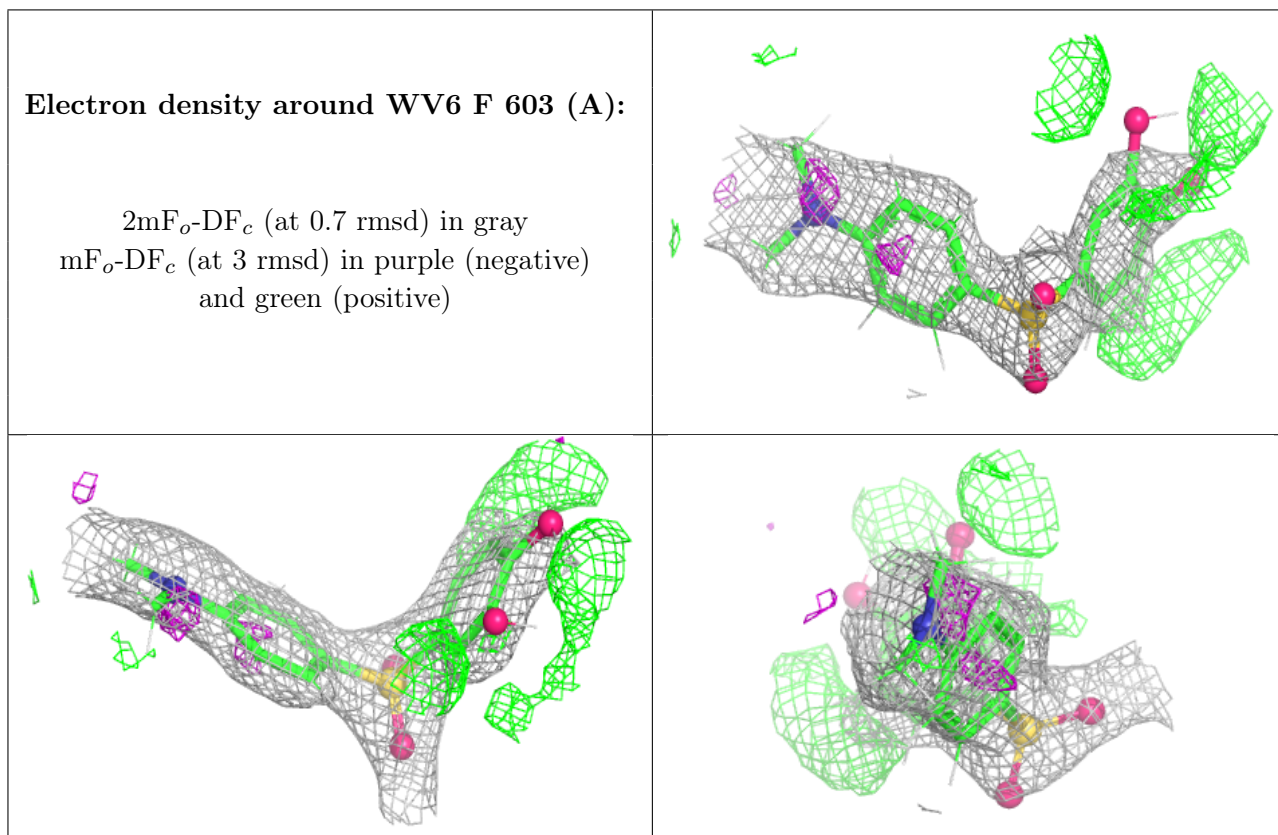
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q < 0.9' lists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

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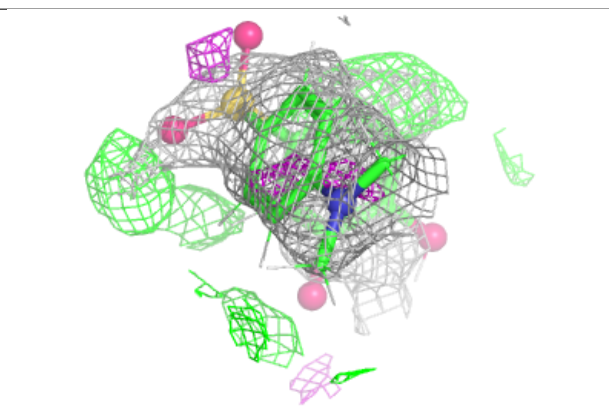
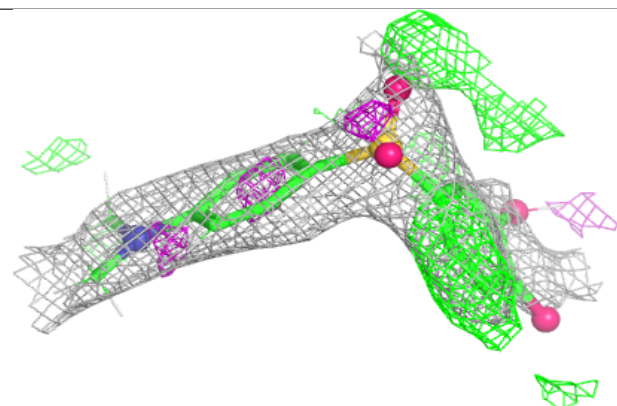
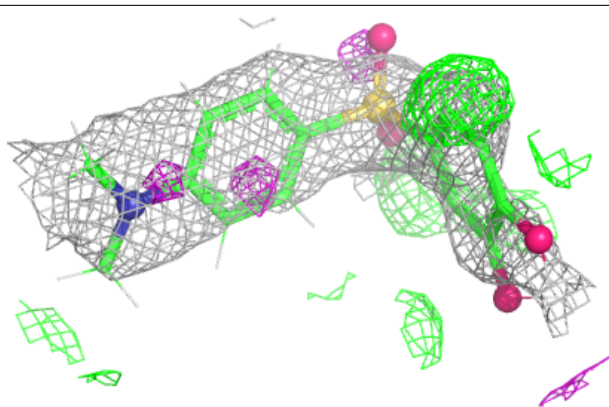
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	WV6	F	603[A]	20/20	0.81	0.23	44,45,47,47	35
4	WV6	F	603[B]	20/20	0.81	0.23	48,50,50,50	35
6	K	E	605	1/1	0.81	0.34	104,104,104,104	0
4	WV6	A	603[B]	20/20	0.83	0.27	49,51,52,52	35
4	WV6	A	603[A]	20/20	0.83	0.27	60,62,63,63	35
3	OXL	E	602	6/6	0.85	0.13	78,78,78,79	0
4	WV6	E	603[B]	20/20	0.86	0.24	53,56,57,57	35
4	WV6	E	603[A]	20/20	0.86	0.24	57,57,58,58	35
4	WV6	B	603[B]	20/20	0.88	0.21	49,52,53,53	35
6	K	B	605	1/1	0.88	0.13	79,79,79,79	0
4	WV6	B	603[A]	20/20	0.88	0.21	48,50,50,50	35
5	MG	E	604	1/1	0.91	0.10	65,65,65,65	0
6	K	A	605	1/1	0.91	0.17	104,104,104,104	0
3	OXL	A	602	6/6	0.91	0.10	64,64,65,66	0
5	MG	A	604	1/1	0.91	0.11	68,68,68,68	0
2	FBP	B	601	20/20	0.92	0.10	59,60,64,65	0
2	FBP	E	601	20/20	0.93	0.09	57,58,59,60	0
3	OXL	B	602	6/6	0.93	0.08	51,52,52,53	0
2	FBP	F	601	20/20	0.93	0.09	49,55,60,60	0
5	MG	B	604	1/1	0.93	0.09	73,73,73,73	0
6	K	C	604	1/1	0.94	0.18	67,67,67,67	0
3	OXL	G	602	6/6	0.94	0.08	45,46,47,47	0
3	OXL	C	602	6/6	0.95	0.07	55,56,56,57	0
6	K	F	605	1/1	0.95	0.08	92,92,92,92	0
6	K	G	604	1/1	0.95	0.21	71,71,71,71	0
3	OXL	F	602	6/6	0.96	0.06	50,51,53,53	0
3	OXL	D	602	6/6	0.96	0.06	40,42,42,43	0
3	OXL	H	602	6/6	0.96	0.07	40,40,41,41	0
2	FBP	A	601	20/20	0.96	0.07	52,54,55,55	0
5	MG	D	603	1/1	0.98	0.04	39,39,39,39	0
6	K	D	604	1/1	0.98	0.09	55,55,55,55	0
2	FBP	C	601	20/20	0.98	0.05	32,33,36,36	0
2	FBP	D	601	20/20	0.98	0.05	29,31,34,34	0
2	FBP	G	601	20/20	0.98	0.05	30,32,35,36	0
5	MG	F	604	1/1	0.99	0.02	42,42,42,42	0
5	MG	G	603	1/1	0.99	0.03	37,37,37,37	0
5	MG	H	603	1/1	0.99	0.06	40,40,40,40	0
2	FBP	H	601	20/20	0.99	0.04	25,27,31,31	0
5	MG	C	603	1/1	0.99	0.02	49,49,49,49	0
6	K	H	604	1/1	0.99	0.16	55,55,55,55	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.

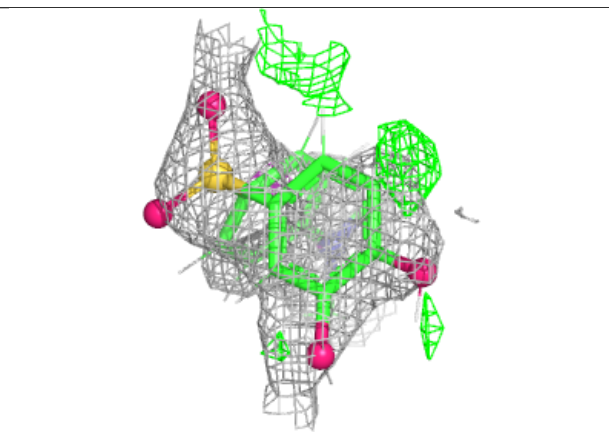
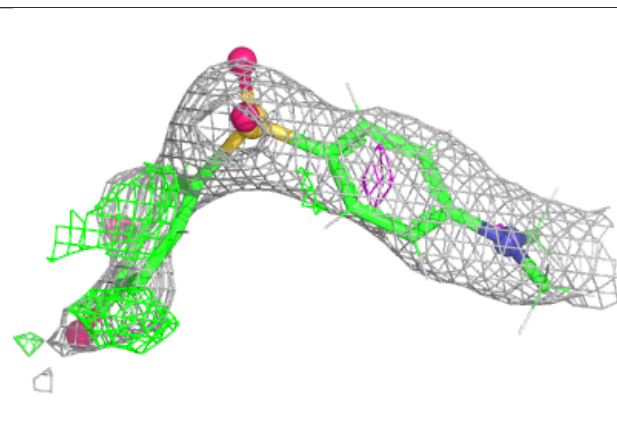
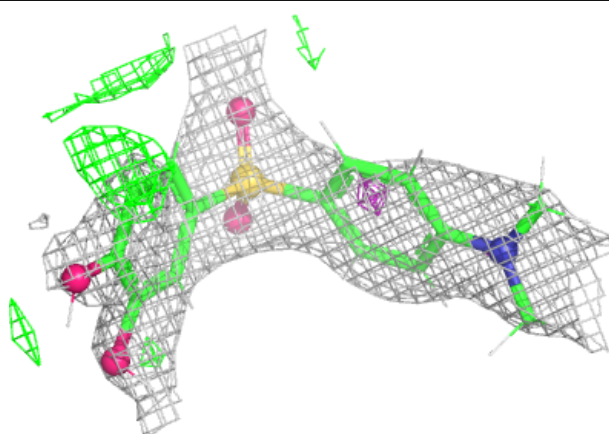


Electron density around WV6 F 603 (B):

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

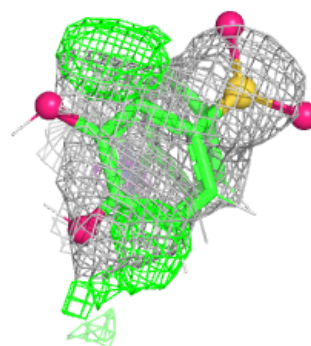
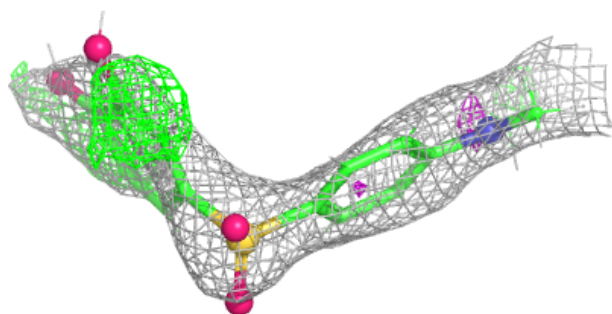
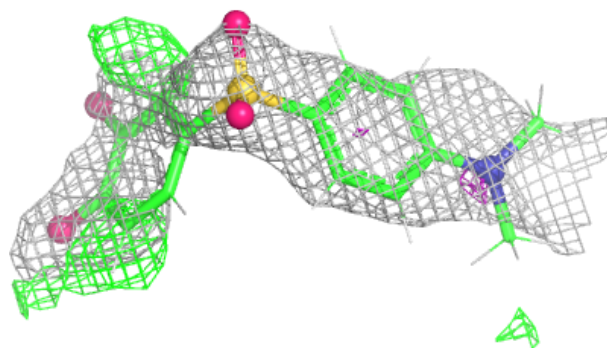
**Electron density around WV6 A 603 (B):**

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

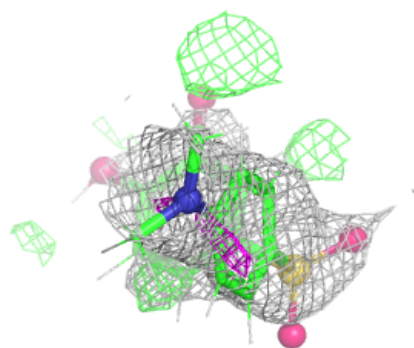
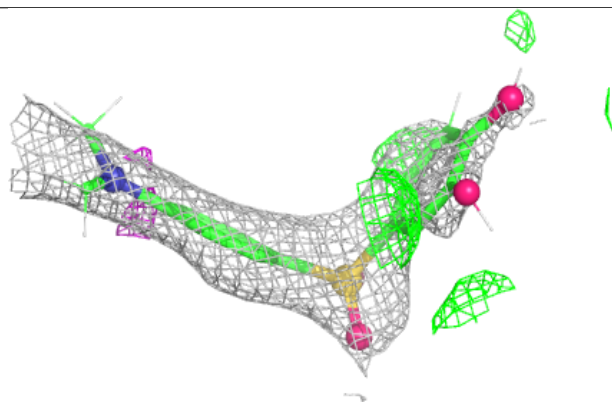
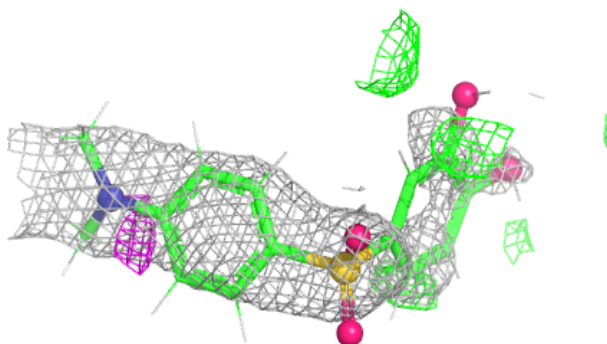


Electron density around WV6 A 603 (A):

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

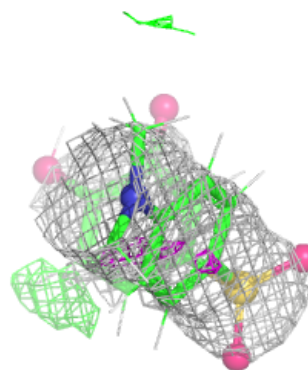
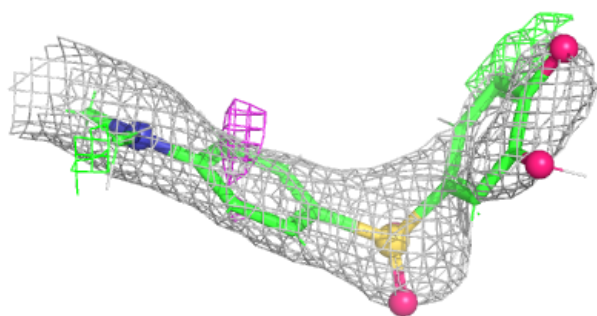
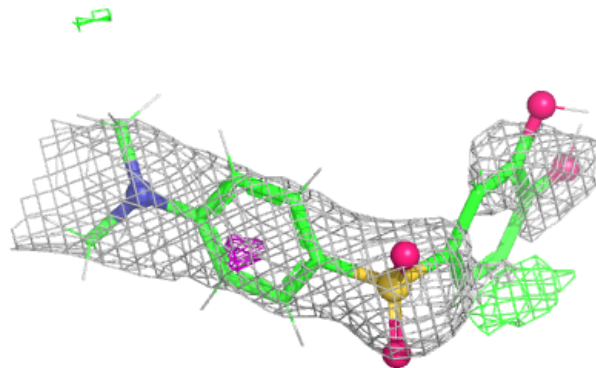
**Electron density around WV6 E 603 (B):**

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and green (positive)

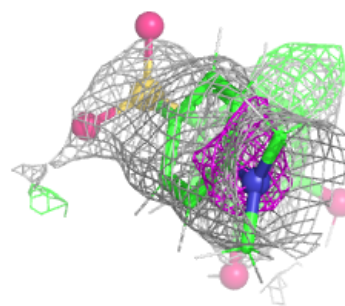
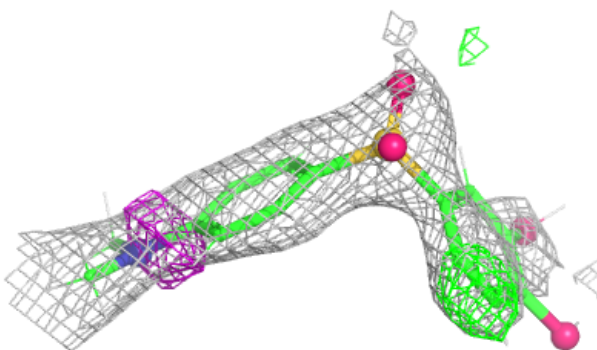
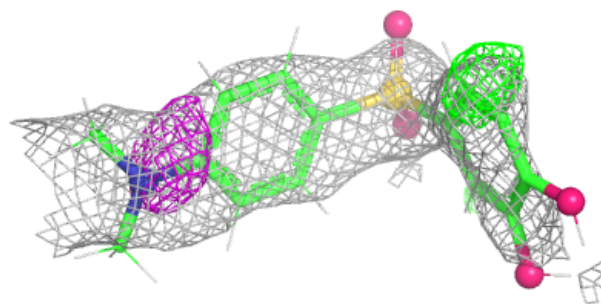


Electron density around WV6 E 603 (A):

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

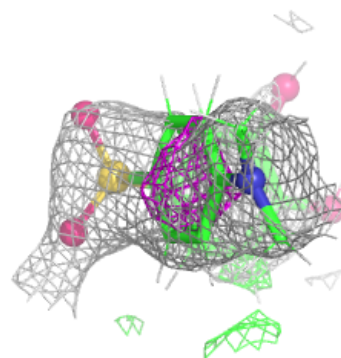
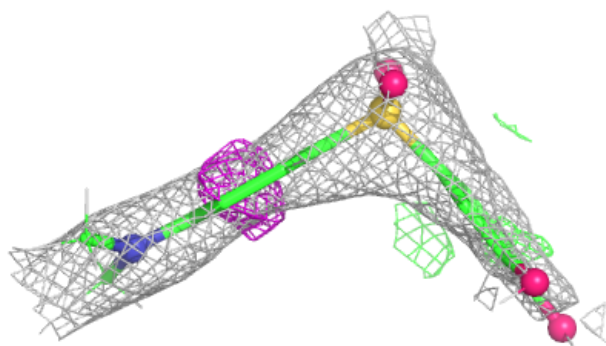
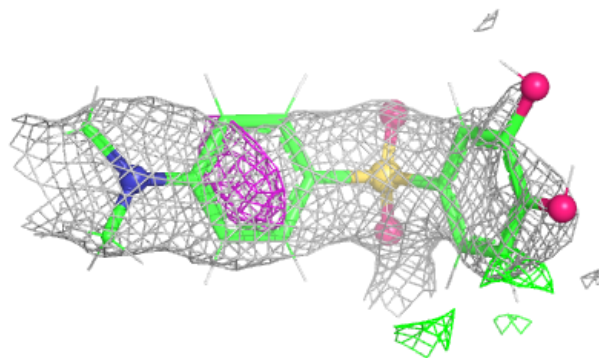
**Electron density around WV6 B 603 (B):**

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and green (positive)



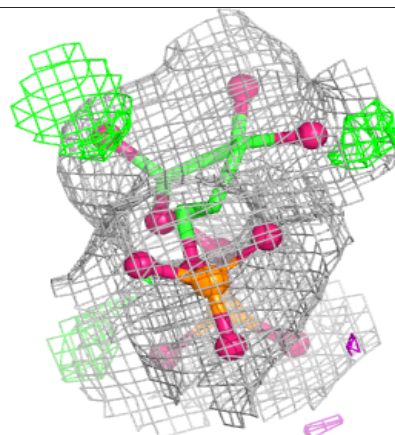
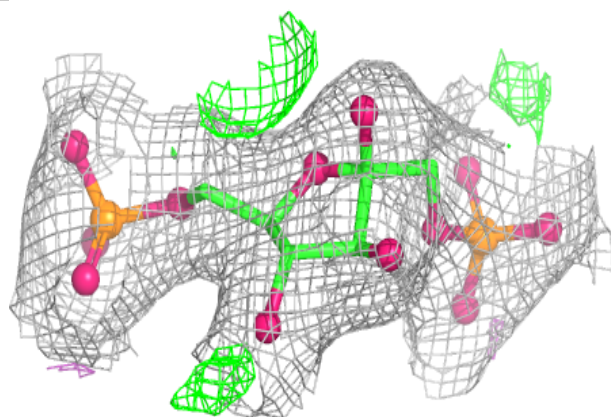
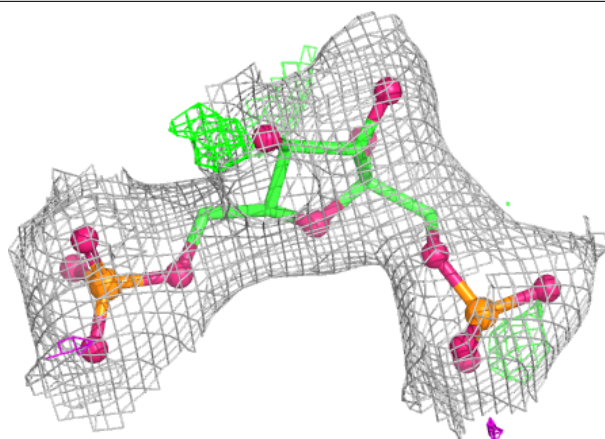
Electron density around WV6 B 603 (A):

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



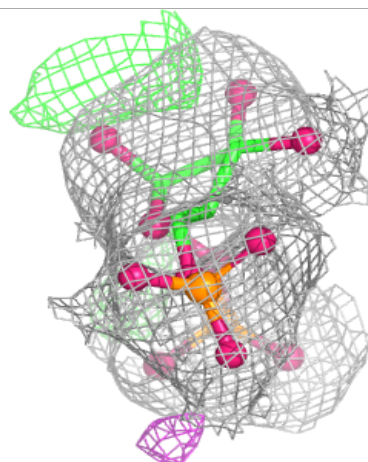
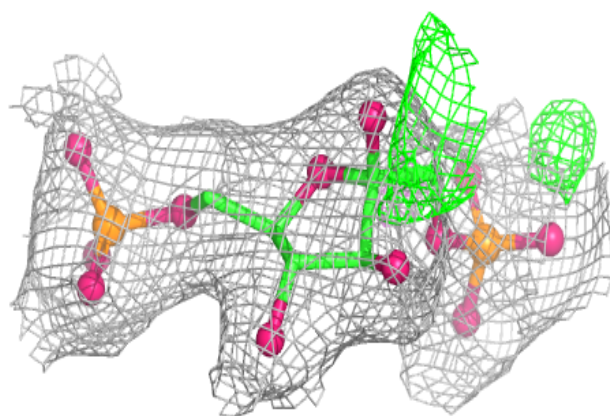
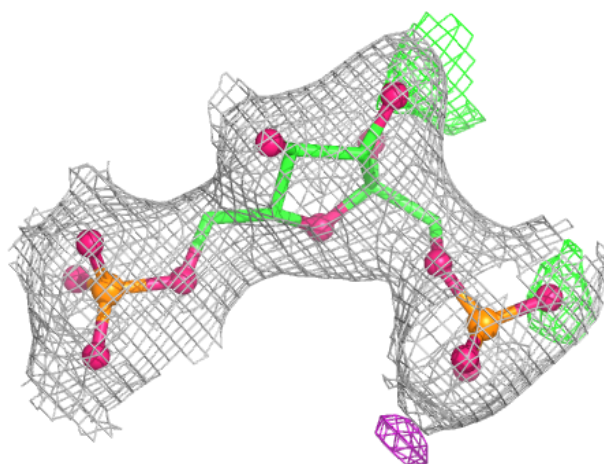
Electron density around FBP B 601:

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and green (positive)



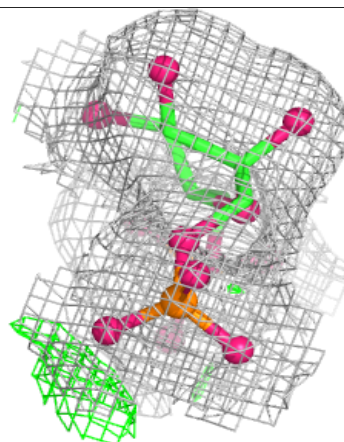
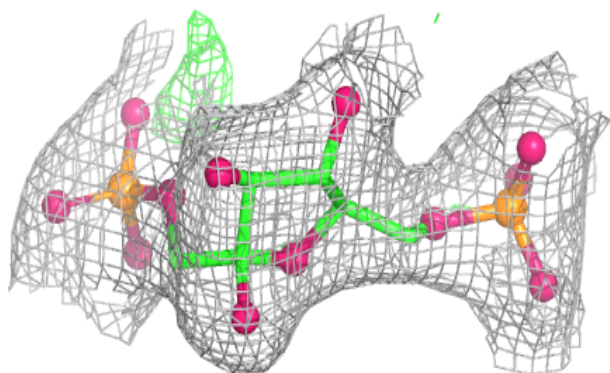
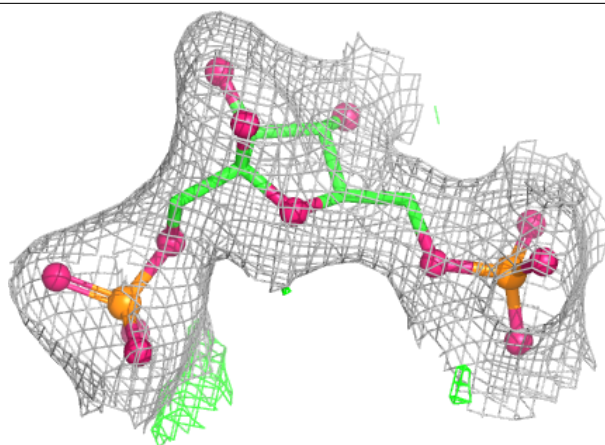
Electron density around FBP E 601:

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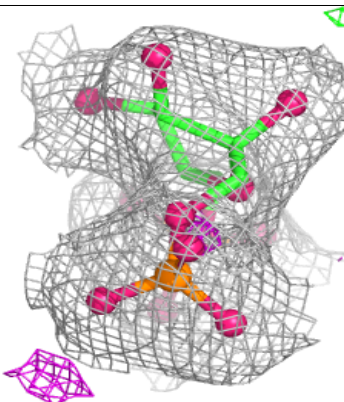
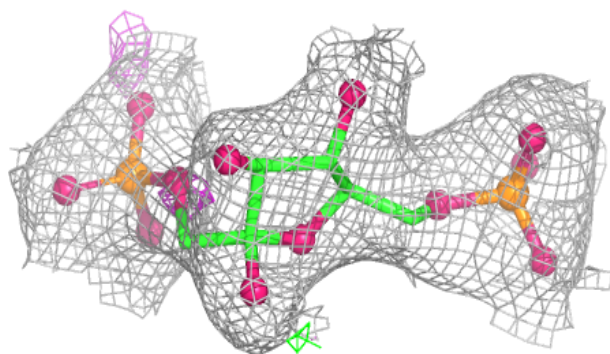
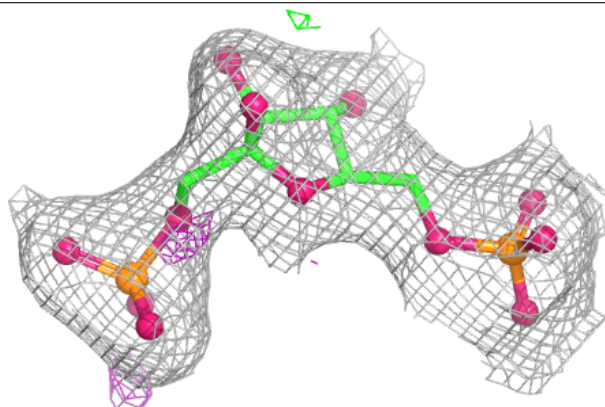


Electron density around FBP F 601:

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and green (positive)

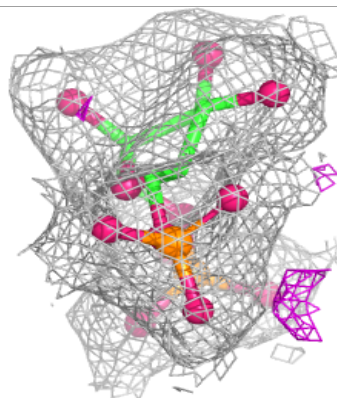
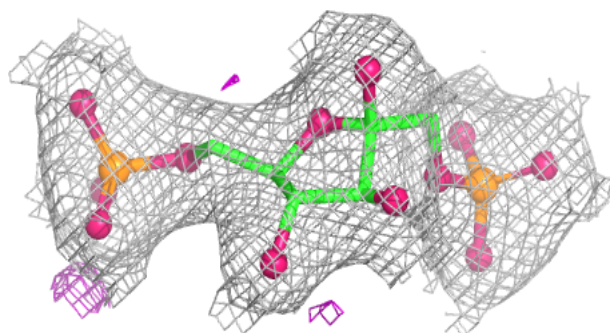
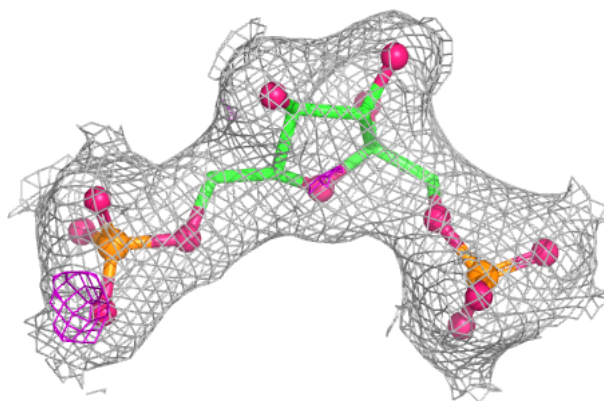
**Electron density around FBP A 601:**

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and green (positive)

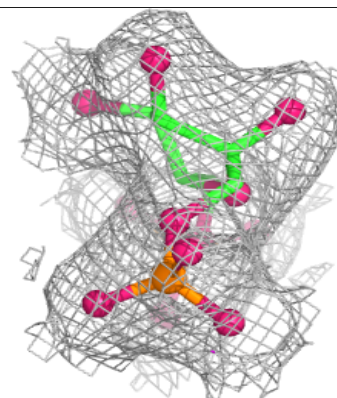
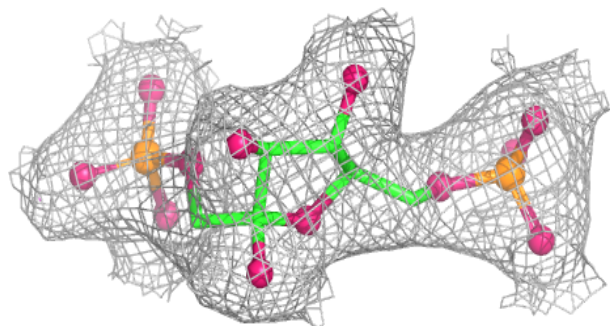
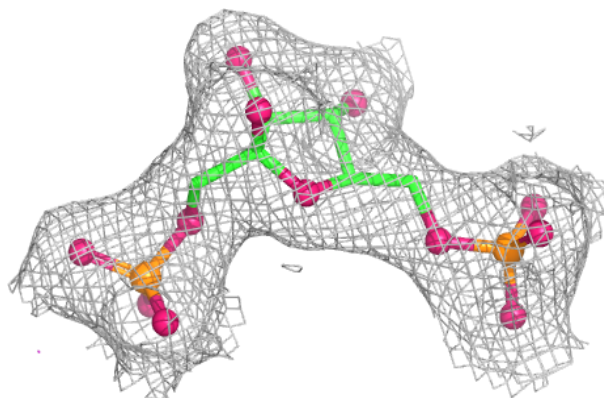


Electron density around FBP C 601:

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

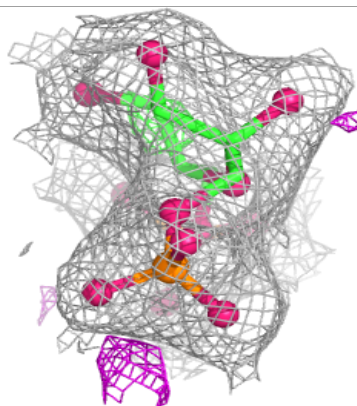
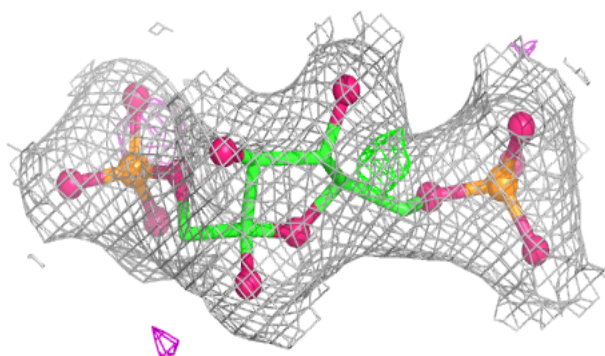
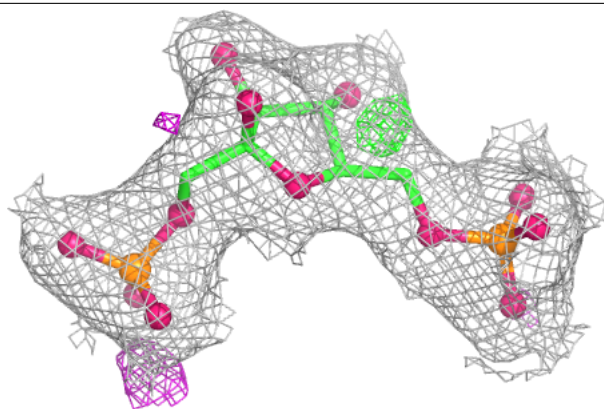
**Electron density around FBP D 601:**

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

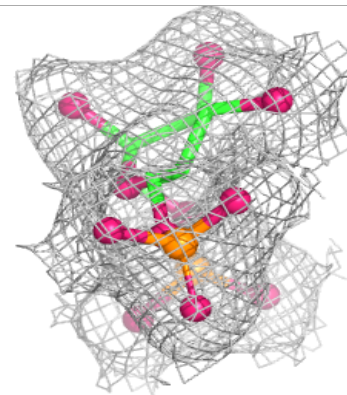
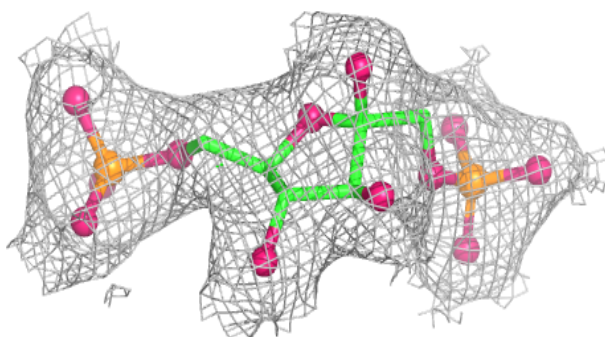
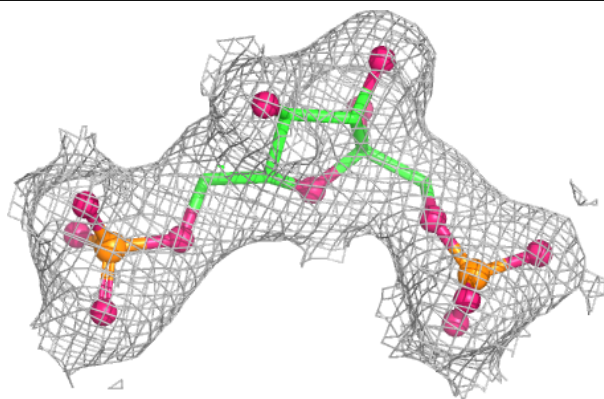


Electron density around FBP G 601:

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

**Electron density around FBP 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)



6.5 Other polymers [i](#)

There are no such residues in this entry.