



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 11, 2024 – 07:05 PM EDT

PDB ID : 6N0Y
Title : Crystal structure of Anaerolinea thermophila mevalonate 5-phosphate decarboxylase complexed with (R)-MVAPP
Authors : Noel, J.P.; Thomas, S.T.; Louie, G.V.
Deposited on : 2018-11-07
Resolution : 2.20 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

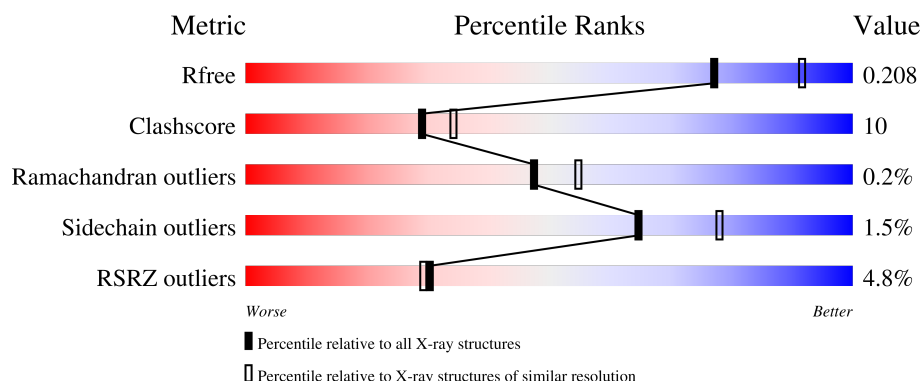
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 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	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	330	
1	B	330	
1	C	330	
1	D	330	
1	E	330	

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Mol	Chain	Length	Quality of chain
1	F	330	<div><div></div><div>6%</div><div>75%</div><div>20%</div><div>••</div></div>

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 16171 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 Diphosphomevalonate decarboxylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	325	Total	C	N	O	S	0	0	0
			2478	1566	436	465	11			
1	B	324	Total	C	N	O	S	0	0	0
			2469	1561	434	463	11			
1	C	323	Total	C	N	O	S	0	0	0
			2465	1559	433	462	11			
1	D	324	Total	C	N	O	S	0	0	0
			2474	1564	435	464	11			
1	E	321	Total	C	N	O	S	0	0	0
			2448	1549	431	458	10			
1	F	316	Total	C	N	O	S	0	0	0
			2405	1524	420	451	10			

There are 24 discrepancies between the modelled and reference sequences:

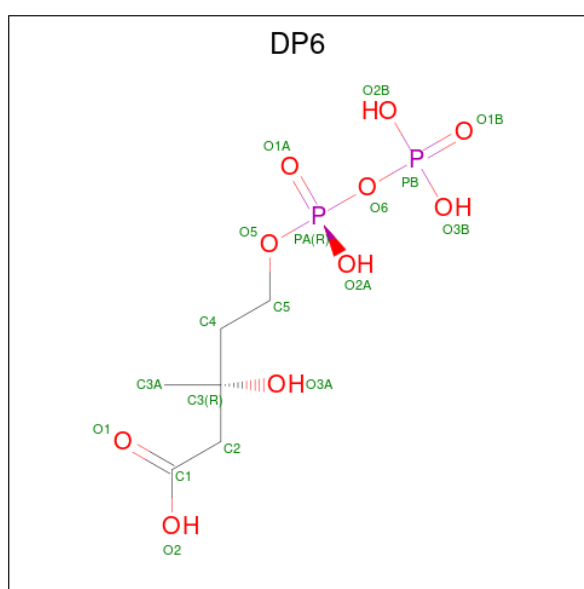
Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	GLY	-	expression tag	UNP E8N6F3
A	-2	SER	-	expression tag	UNP E8N6F3
A	-1	HIS	-	expression tag	UNP E8N6F3
A	0	GLY	-	expression tag	UNP E8N6F3
B	-3	GLY	-	expression tag	UNP E8N6F3
B	-2	SER	-	expression tag	UNP E8N6F3
B	-1	HIS	-	expression tag	UNP E8N6F3
B	0	GLY	-	expression tag	UNP E8N6F3
C	-3	GLY	-	expression tag	UNP E8N6F3
C	-2	SER	-	expression tag	UNP E8N6F3
C	-1	HIS	-	expression tag	UNP E8N6F3
C	0	GLY	-	expression tag	UNP E8N6F3
D	-3	GLY	-	expression tag	UNP E8N6F3
D	-2	SER	-	expression tag	UNP E8N6F3
D	-1	HIS	-	expression tag	UNP E8N6F3
D	0	GLY	-	expression tag	UNP E8N6F3
E	-3	GLY	-	expression tag	UNP E8N6F3

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-2	SER	-	expression tag	UNP E8N6F3
E	-1	HIS	-	expression tag	UNP E8N6F3
E	0	GLY	-	expression tag	UNP E8N6F3
F	-3	GLY	-	expression tag	UNP E8N6F3
F	-2	SER	-	expression tag	UNP E8N6F3
F	-1	HIS	-	expression tag	UNP E8N6F3
F	0	GLY	-	expression tag	UNP E8N6F3

- Molecule 2 is (3R)-3-HYDROXY-5-[[[(R)-HYDROXY(PHOSPHONOOXY)PHOSPHORYL]OXY]-3-METHYLPENTANOIC ACID (three-letter code: DP6) (formula: C₆H₁₄O₁₀P₂).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
2	A	1	Total 56	C 12	H 20	O 20	P 4	0	1
2	B	1	Total 56	C 12	H 20	O 20	P 4	0	1
2	C	1	Total 56	C 12	H 20	O 20	P 4	0	1
2	D	1	Total 56	C 12	H 20	O 20	P 4	0	1
2	E	1	Total 56	C 12	H 20	O 20	P 4	0	1
2	F	1	Total 56	C 12	H 20	O 20	P 4	0	1

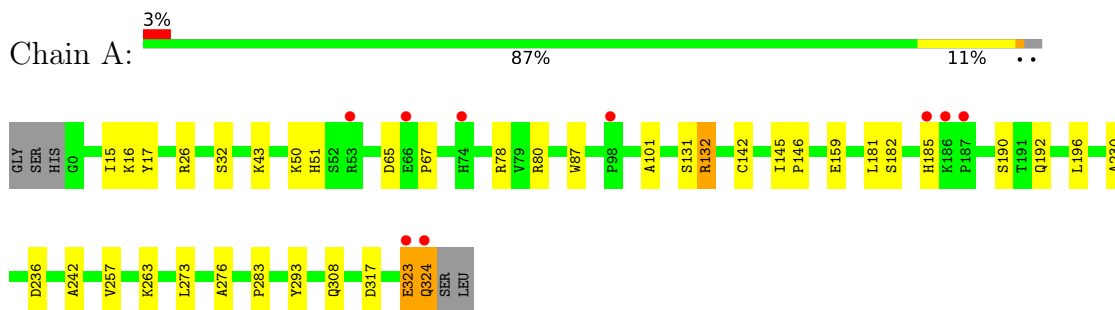
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	192	Total 192	O 192	0	0
3	B	186	Total 186	O 186	0	0
3	C	214	Total 214	O 214	0	0
3	D	203	Total 203	O 203	0	0
3	E	136	Total 136	O 136	0	0
3	F	165	Total 165	O 165	0	0

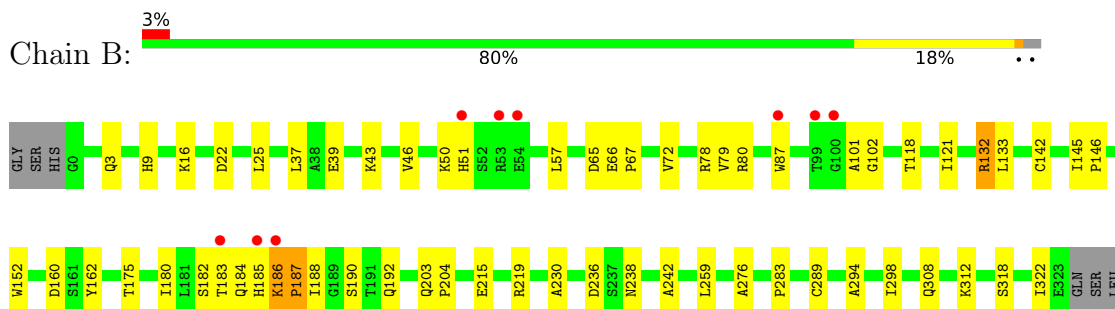
3 Residue-property plots [i](#)

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.

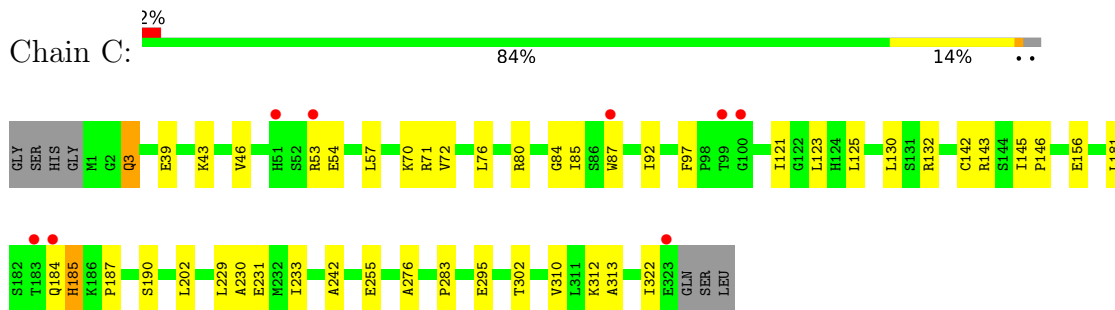
- Molecule 1: Diphosphomevalonate decarboxylase



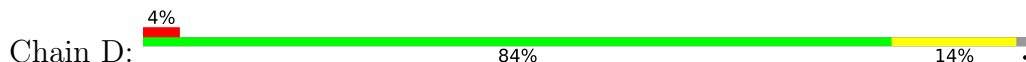
- Molecule 1: Diphosphomevalonate decarboxylase

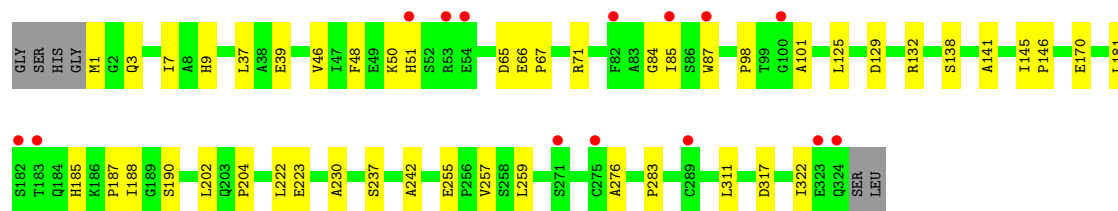


- Molecule 1: Diphosphomevalonate decarboxylase

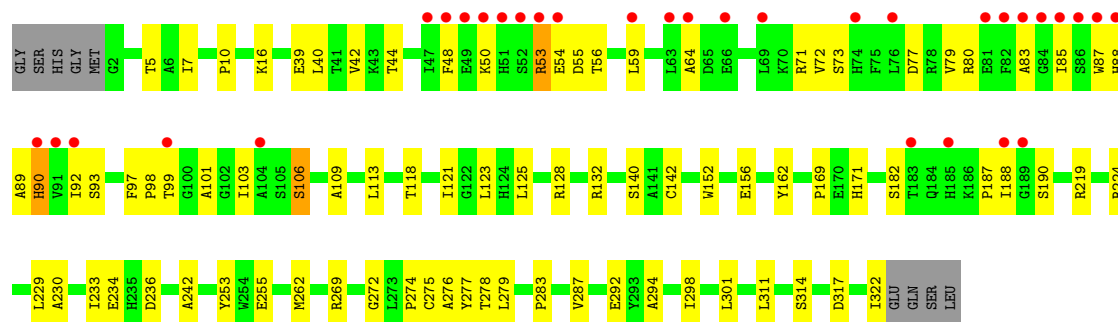


- Molecule 1: Diphosphomevalonate decarboxylase

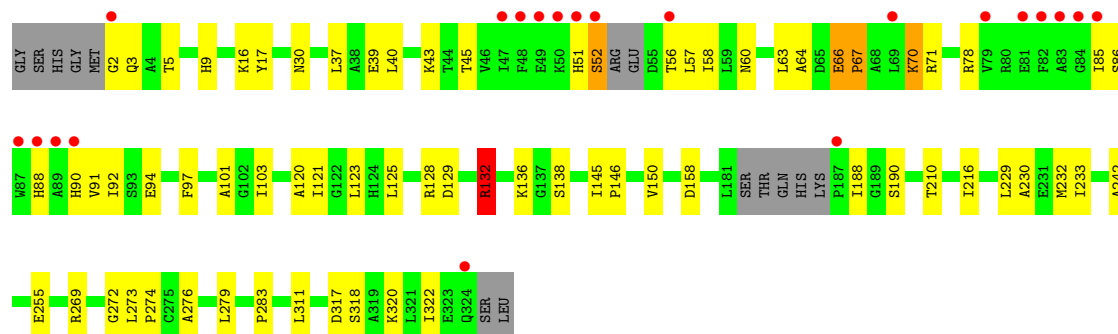
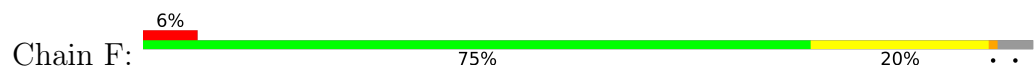




● Molecule 1: Diphosphomevalonate decarboxylase



● Molecule 1: Diphosphomevalonate decarboxylase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	80.48Å 137.50Å 106.50Å 90.00° 97.67° 90.00°	Depositor
Resolution (Å)	52.08 – 2.20 52.07 – 2.20	Depositor EDS
% Data completeness (in resolution range)	89.5 (52.08-2.20) 89.4 (52.07-2.20)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.88 (at 2.20Å)	Xtriage
Refinement program	PHENIX (1.14_3260)	Depositor
R, R_{free}	0.172 , 0.212 0.169 , 0.208	Depositor DCC
R_{free} test set	5186 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	26.3	Xtriage
Anisotropy	0.236	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 43.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	16171	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.96% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: DP6

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.55	0/2535	0.63	0/3452
1	B	0.40	0/2526	0.59	0/3440
1	C	0.49	0/2522	0.62	0/3435
1	D	0.44	0/2531	0.61	0/3447
1	E	0.42	0/2505	0.66	0/3413
1	F	0.51	0/2459	0.65	0/3348
All	All	0.47	0/15078	0.63	0/20535

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	B	0	1
1	F	0	1
All	All	0	3

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	132	ARG	Sidechain
1	B	132	ARG	Sidechain
1	F	132	ARG	Sidechain

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	2478	0	2470	31	0
1	B	2469	0	2462	53	0
1	C	2465	0	2459	41	0
1	D	2474	0	2467	31	0
1	E	2448	0	2441	61	0
1	F	2405	0	2395	76	0
2	A	36	20	20	2	0
2	B	36	20	20	1	0
2	C	36	20	20	2	0
2	D	36	20	20	1	0
2	E	36	20	20	4	0
2	F	36	20	20	3	0
3	A	192	0	0	3	0
3	B	186	0	0	2	0
3	C	214	0	0	8	0
3	D	203	0	0	3	0
3	E	136	0	0	4	0
3	F	165	0	0	3	0
All	All	16051	120	14814	287	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 10.

All (287) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:5:THR:OG1	1:F:45:THR:HG23	1.50	1.09
1:F:67:PRO:HA	1:F:70:LYS:HE3	1.24	1.09
1:B:190:SER:OG	2:B:401[A]:DP6:O3B	1.72	1.06
1:A:132:ARG:NH1	1:A:159:GLU:O	1.94	1.00
1:C:57:LEU:HD22	1:C:72:VAL:HG21	1.43	0.99
1:F:66:GLU:CG	1:F:67:PRO:HD3	1.94	0.97
1:A:190:SER:OG	2:A:401[A]:DP6:O2B	1.82	0.95
1:F:101:ALA:HB3	1:F:103:ILE:HD11	1.50	0.92
1:F:66:GLU:HG3	1:F:67:PRO:HD3	1.52	0.89

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:101:ALA:HB1	1:B:180:ILE:HD12	1.56	0.87
1:F:67:PRO:CA	1:F:70:LYS:HE3	2.06	0.85
1:A:43:LYS:NZ	1:A:324:GLN:HE21	1.76	0.84
1:E:294:ALA:O	1:E:298:ILE:HG13	1.78	0.83
1:D:188:ILE:HD12	1:D:188:ILE:H	1.43	0.83
1:C:53:ARG:HH11	1:C:53:ARG:HG3	1.43	0.83
1:B:43:LYS:HD2	1:B:322:ILE:HD11	1.58	0.83
1:E:188:ILE:H	1:E:188:ILE:HD12	1.42	0.82
1:F:66:GLU:HG3	1:F:67:PRO:CD	2.09	0.82
1:D:98:PRO:HG2	1:D:311:LEU:HD11	1.61	0.82
1:F:188:ILE:HD12	1:F:188:ILE:H	1.45	0.81
1:C:70:LYS:HE2	3:C:619:HOH:O	1.81	0.81
1:E:5:THR:HG22	1:E:322:ILE:HD11	1.65	0.79
1:C:53:ARG:HB2	1:C:54:GLU:OE2	1.82	0.79
1:A:43:LYS:NZ	1:A:324:GLN:NE2	2.30	0.78
1:E:190:SER:OG	2:E:401[B]:DP6:O2B	2.00	0.78
1:D:190:SER:OG	2:D:401[A]:DP6:O2B	2.02	0.78
1:F:255:GLU:HG2	1:F:283:PRO:HB3	1.65	0.77
1:A:43:LYS:HZ2	1:A:324:GLN:HE21	1.32	0.75
1:D:1:MET:HB2	1:D:48:PHE:O	1.86	0.74
1:D:65:ASP:OD2	1:D:67:PRO:HD2	1.87	0.74
1:F:66:GLU:HG2	1:F:67:PRO:HD3	1.71	0.72
1:F:101:ALA:HB3	1:F:103:ILE:CD1	2.20	0.71
1:F:128:ARG:HG2	1:F:132:ARG:NH2	2.05	0.71
1:F:78:ARG:NH1	3:F:501:HOH:O	2.23	0.68
1:D:129:ASP:OD1	1:D:132:ARG:NH1	2.26	0.67
1:E:106:SER:HB2	2:E:401[B]:DP6:O1B	1.94	0.67
1:E:169:PRO:HG2	1:E:317:ASP:OD1	1.95	0.67
1:B:175:THR:HB	1:B:289:CYS:SG	2.35	0.67
1:C:185:HIS:O	1:C:187:PRO:HD3	1.94	0.66
1:F:43:LYS:HE2	1:F:322:ILE:HD11	1.78	0.66
1:C:312:LYS:NZ	3:C:509:HOH:O	2.29	0.66
1:E:50:LYS:H	1:E:50:LYS:HD2	1.61	0.65
1:F:56:THR:HB	1:F:90:HIS:ND1	2.11	0.65
1:C:57:LEU:HD22	1:C:72:VAL:CG2	2.24	0.65
1:F:317:ASP:HB3	1:F:320:LYS:HZ3	1.62	0.65
1:F:103:ILE:HD12	1:F:103:ILE:H	1.62	0.65
1:A:192:GLN:HE21	1:A:196:LEU:HG	1.62	0.64
1:C:190:SER:OG	2:C:401[A]:DP6:O1B	2.14	0.64
1:F:230:ALA:HB1	1:F:276:ALA:HB2	1.80	0.64
1:F:5:THR:OG1	1:F:45:THR:CG2	2.36	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:57:LEU:HD23	1:F:64:ALA:CB	2.27	0.63
1:F:58:ILE:CD1	1:F:63:LEU:HD12	2.27	0.63
1:F:66:GLU:O	1:F:70:LYS:HG3	1.98	0.63
1:E:219:ARG:NH1	3:E:502:HOH:O	2.28	0.63
1:B:50:LYS:HD3	1:B:50:LYS:C	2.20	0.62
1:C:84:GLY:O	1:C:85:ILE:HD13	1.99	0.62
1:A:78:ARG:HG2	1:A:78:ARG:HH11	1.64	0.62
1:E:83:ALA:O	1:E:85:ILE:HG12	2.00	0.62
1:F:123:LEU:HB3	1:F:125:LEU:HD12	1.82	0.61
1:A:43:LYS:HZ1	1:A:324:GLN:NE2	1.99	0.61
1:F:5:THR:HG23	1:F:45:THR:OG1	1.99	0.61
1:B:188:ILE:HD12	1:B:188:ILE:H	1.67	0.60
1:F:67:PRO:HA	1:F:70:LYS:CE	2.16	0.59
1:F:125:LEU:HA	3:F:550:HOH:O	2.01	0.59
1:E:5:THR:CG2	1:E:322:ILE:HD11	2.31	0.59
1:E:54:GLU:HA	1:E:88:HIS:ND1	2.17	0.59
1:F:129:ASP:OD1	1:F:132:ARG:NH2	2.24	0.59
1:B:186:LYS:HD3	1:B:187:PRO:CD	2.33	0.59
1:C:53:ARG:HG3	1:C:53:ARG:NH1	2.17	0.59
1:B:66:GLU:OE1	1:B:66:GLU:HA	2.02	0.58
1:B:43:LYS:CD	1:B:322:ILE:HD11	2.31	0.58
1:B:118:THR:O	1:B:121:ILE:HG22	2.03	0.58
1:F:123:LEU:HB3	1:F:125:LEU:CD1	2.33	0.58
1:A:65:ASP:OD1	1:A:67:PRO:HD2	2.04	0.58
1:B:182:SER:HB3	3:B:560:HOH:O	2.04	0.58
1:F:136:LYS:HE3	1:F:158:ASP:OD1	2.04	0.58
1:D:39:GLU:OE1	1:D:39:GLU:N	2.37	0.57
1:E:72:VAL:HG13	1:E:113:LEU:HD21	1.86	0.57
1:D:98:PRO:HB2	1:D:101:ALA:HB2	1.86	0.57
1:B:132:ARG:HG3	1:B:162:TYR:HB3	1.85	0.57
1:E:230:ALA:HB1	1:E:276:ALA:HB2	1.87	0.57
1:B:188:ILE:HD12	1:B:188:ILE:N	2.20	0.56
1:E:56:THR:HB	1:E:90:HIS:HA	1.87	0.56
1:B:186:LYS:HD2	1:B:186:LYS:C	2.25	0.56
1:B:230:ALA:HB1	1:B:276:ALA:HB2	1.86	0.56
1:F:103:ILE:HD12	1:F:103:ILE:N	2.21	0.56
1:A:145:ILE:HB	1:A:146:PRO:HD3	1.88	0.56
1:F:216:ILE:HD12	1:F:232:MET:CE	2.35	0.56
1:A:159:GLU:OE1	1:C:156:GLU:OE2	2.23	0.56
1:B:182:SER:HA	1:B:308:GLN:HB2	1.86	0.56
1:F:317:ASP:HB3	1:F:320:LYS:NZ	2.21	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:15:ILE:O	1:A:32:SER:HB2	2.05	0.56
1:E:121:ILE:HG23	1:E:121:ILE:O	2.05	0.56
1:A:132:ARG:HH11	1:A:159:GLU:C	1.99	0.56
1:F:58:ILE:HD13	1:F:63:LEU:HD12	1.88	0.55
1:F:66:GLU:HG3	1:F:67:PRO:N	2.19	0.55
1:D:222:LEU:HD13	1:D:222:LEU:C	2.28	0.55
1:E:5:THR:HG22	1:E:322:ILE:CD1	2.35	0.55
1:F:146:PRO:HG2	1:F:150:VAL:HG11	1.89	0.55
1:E:77:ASP:OD1	1:E:80:ARG:NH2	2.32	0.55
1:B:39:GLU:OE1	1:B:39:GLU:N	2.40	0.54
1:D:185:HIS:O	1:D:187:PRO:HD3	2.06	0.54
1:E:101:ALA:HB3	1:E:103:ILE:CD1	2.38	0.54
1:F:146:PRO:HG2	1:F:150:VAL:CG1	2.37	0.54
1:A:78:ARG:HG2	1:A:78:ARG:NH1	2.23	0.54
1:A:323:GLU:OE2	1:A:323:GLU:N	2.41	0.53
1:F:230:ALA:CB	1:F:276:ALA:HB2	2.38	0.53
1:F:101:ALA:CB	1:F:103:ILE:HD11	2.31	0.53
1:C:121:ILE:HG23	1:C:121:ILE:O	2.08	0.53
1:E:16:LYS:HE2	3:E:531:HOH:O	2.09	0.53
1:E:229:LEU:O	1:E:233:ILE:HG23	2.09	0.53
1:E:262:MET:HG2	1:E:277:TYR:CD1	2.43	0.53
1:F:17:TYR:HB3	2:F:401[B]:DP6:O1	2.09	0.53
1:F:58:ILE:HD11	1:F:63:LEU:HD12	1.89	0.53
1:F:128:ARG:HG2	1:F:132:ARG:CZ	2.39	0.52
1:E:272:GLY:O	1:E:274:PRO:HD3	2.09	0.52
1:B:80:ARG:HD3	1:B:87:TRP:O	2.09	0.52
1:C:57:LEU:CD2	1:C:72:VAL:HG21	2.28	0.52
1:A:26:ARG:HG3	3:A:506:HOH:O	2.10	0.52
1:F:90:HIS:HD2	1:F:92:ILE:HD11	1.73	0.52
1:D:50:LYS:HG3	1:D:87:TRP:CZ3	2.45	0.52
1:B:238:ASN:ND2	3:B:501:HOH:O	2.21	0.52
1:B:215:GLU:OE1	1:B:219:ARG:NH2	2.44	0.51
1:A:185:HIS:CD2	1:A:185:HIS:N	2.78	0.51
1:A:182:SER:HA	1:A:308:GLN:HB2	1.93	0.51
1:F:255:GLU:HG2	1:F:283:PRO:CB	2.36	0.51
1:E:190:SER:HG	2:E:401[B]:DP6:PB	2.32	0.51
1:D:317:ASP:HB2	3:D:628:HOH:O	2.10	0.50
1:A:230:ALA:HB1	1:A:276:ALA:HB2	1.92	0.50
1:B:22:ASP:OD2	1:B:25:LEU:HB2	2.11	0.50
1:E:287:VAL:HG21	1:E:301:LEU:HD11	1.92	0.50
1:A:263:LYS:NZ	3:A:501:HOH:O	2.21	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:145:ILE:HB	1:D:146:PRO:HD3	1.92	0.50
1:B:78:ARG:NH1	1:B:78:ARG:HG2	2.26	0.50
1:A:17:TYR:HB3	2:A:401[A]:DP6:O2	2.12	0.50
1:C:92:ILE:HD12	1:C:92:ILE:N	2.26	0.50
1:E:269:ARG:HD3	1:E:275:CYS:O	2.11	0.50
1:C:70:LYS:CE	3:C:619:HOH:O	2.52	0.49
1:D:170:GLU:OE1	3:D:501:HOH:O	2.20	0.49
1:B:16:LYS:HG2	1:B:236:ASP:OD2	2.12	0.49
1:B:185:HIS:O	1:B:187:PRO:HG3	2.12	0.49
1:C:255:GLU:HG2	1:C:283:PRO:HB3	1.94	0.49
1:E:50:LYS:HD2	1:E:50:LYS:N	2.28	0.49
1:C:145:ILE:HB	1:C:146:PRO:HD3	1.94	0.49
1:E:92:ILE:HD12	1:E:92:ILE:N	2.28	0.49
1:A:131:SER:OG	1:A:142:CYS:HB2	2.13	0.49
1:F:43:LYS:HE2	1:F:322:ILE:CD1	2.42	0.49
1:A:50:LYS:HD3	1:A:51:HIS:CE1	2.47	0.49
1:C:229:LEU:O	1:C:233:ILE:HG23	2.12	0.49
1:E:59:LEU:HG	1:E:64:ALA:HB2	1.95	0.49
1:D:84:GLY:O	1:D:85:ILE:HG13	2.13	0.48
1:E:292:GLU:HB3	3:E:503:HOH:O	2.12	0.48
1:B:182:SER:CA	1:B:308:GLN:HB2	2.44	0.48
1:F:52:SER:HB3	1:F:88:HIS:HB2	1.95	0.48
1:F:125:LEU:HD12	1:F:125:LEU:N	2.28	0.48
1:E:80:ARG:HD3	1:E:87:TRP:O	2.14	0.48
1:F:30:ASN:HB2	1:F:210:THR:HG21	1.95	0.48
1:A:242:ALA:HB1	1:E:242:ALA:HB1	1.95	0.47
1:C:181:LEU:N	1:C:181:LEU:HD23	2.27	0.47
1:D:51:HIS:N	1:D:51:HIS:CD2	2.82	0.47
1:F:121:ILE:CG2	1:F:123:LEU:HD12	2.44	0.47
1:E:5:THR:HG22	1:E:322:ILE:CG1	2.45	0.47
1:B:186:LYS:HD3	1:B:187:PRO:HD2	1.96	0.47
1:F:190:SER:HG	2:F:401[B]:DP6:PB	2.38	0.47
1:D:50:LYS:HG3	1:D:87:TRP:CH2	2.50	0.47
1:D:66:GLU:N	1:D:67:PRO:CD	2.78	0.47
1:E:83:ALA:HB2	1:E:123:LEU:HD11	1.97	0.47
1:F:90:HIS:CD2	1:F:92:ILE:HD11	2.49	0.47
1:F:125:LEU:HD12	1:F:125:LEU:H	1.80	0.47
1:F:188:ILE:H	1:F:188:ILE:CD1	2.21	0.47
1:E:7:ILE:HA	1:E:42:VAL:O	2.15	0.46
1:F:269:ARG:HA	1:F:273:LEU:O	2.15	0.46
1:B:78:ARG:CG	1:B:78:ARG:HH11	2.29	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:216:ILE:HD12	1:F:232:MET:HE2	1.97	0.46
1:B:185:HIS:HB3	1:B:186:LYS:H	1.49	0.46
1:F:317:ASP:CB	1:F:320:LYS:NZ	2.78	0.46
1:B:186:LYS:HD2	1:B:187:PRO:N	2.30	0.46
1:C:80:ARG:HD3	1:C:87:TRP:O	2.16	0.46
1:C:230:ALA:HB1	1:C:276:ALA:HB2	1.96	0.46
1:F:16:LYS:HE3	1:F:279:LEU:O	2.16	0.46
1:E:101:ALA:HB3	1:E:103:ILE:HD12	1.98	0.46
1:B:184:GLN:HG2	1:B:283:PRO:CG	2.45	0.46
1:C:184:GLN:HB2	3:C:508:HOH:O	2.15	0.46
1:E:255:GLU:HG2	1:E:283:PRO:HB3	1.98	0.46
1:F:70:LYS:HD2	1:F:71:ARG:N	2.30	0.46
1:E:10:PRO:HD2	1:E:40:LEU:O	2.16	0.46
1:F:2:GLY:HA3	1:F:120:ALA:O	2.15	0.46
1:F:9:HIS:HB3	1:F:37:LEU:O	2.16	0.46
1:F:39:GLU:N	1:F:39:GLU:OE1	2.48	0.46
1:F:40:LEU:HB3	1:F:97:PHE:CE1	2.51	0.46
1:A:181:LEU:HD13	1:A:257:VAL:HB	1.98	0.46
1:B:102:GLY:HA3	1:B:184:GLN:HE22	1.81	0.46
1:E:55:ASP:HB2	1:E:73:SER:HB2	1.98	0.46
1:E:311:LEU:N	1:E:311:LEU:HD23	2.31	0.45
1:F:57:LEU:HA	1:F:91:VAL:O	2.17	0.45
1:C:295:GLU:OE1	3:C:501:HOH:O	2.20	0.45
1:E:85:ILE:HG12	1:E:85:ILE:H	1.53	0.45
1:E:132:ARG:HG2	1:E:162:TYR:HB3	1.99	0.45
1:B:186:LYS:C	1:B:186:LYS:CD	2.84	0.45
1:C:97:PHE:CD1	1:C:97:PHE:N	2.84	0.45
1:C:123:LEU:HB3	1:C:125:LEU:CD1	2.47	0.45
1:D:255:GLU:HG2	1:D:283:PRO:HB3	1.99	0.45
1:E:79:VAL:HG13	1:E:118:THR:HG22	1.99	0.45
1:E:128:ARG:O	1:E:132:ARG:HG3	2.17	0.45
1:F:190:SER:OG	2:F:401[B]:DP6:O1B	2.35	0.45
1:B:57:LEU:HD22	1:B:72:VAL:HG21	1.98	0.45
1:E:39:GLU:N	1:E:39:GLU:OE1	2.46	0.45
1:E:140:SER:OG	2:E:401[B]:DP6:O1A	2.20	0.45
1:C:302:THR:HG23	1:C:310:VAL:CG2	2.47	0.45
1:D:98:PRO:HG2	1:D:311:LEU:CD1	2.41	0.45
1:F:58:ILE:HD13	1:F:63:LEU:HA	1.98	0.45
1:B:142:CYS:SG	1:B:152:TRP:CD2	3.09	0.44
1:B:145:ILE:O	1:B:318:SER:HB2	2.17	0.44
1:C:202:LEU:HD13	1:D:202:LEU:HD13	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:186:LYS:HA	1:B:187:PRO:HD3	1.44	0.44
1:A:16:LYS:HG2	1:A:236:ASP:OD2	2.18	0.44
1:A:181:LEU:HD12	1:A:283:PRO:HB2	1.98	0.44
1:B:79:VAL:HG22	1:B:133:LEU:HD21	1.99	0.44
1:C:97:PHE:N	1:C:97:PHE:HD1	2.15	0.44
1:E:233:ILE:HG13	1:E:234:GLU:N	2.33	0.44
1:B:203:GLN:HB3	1:B:204:PRO:HD3	2.00	0.44
1:D:7:ILE:HG23	1:D:322:ILE:HD13	1.99	0.44
1:B:3:GLN:HA	1:B:46:VAL:O	2.17	0.44
1:C:130:LEU:HD23	1:C:130:LEU:HA	1.72	0.44
1:B:230:ALA:CB	1:B:276:ALA:HB2	2.47	0.44
1:F:85:ILE:HG22	1:F:86:SER:H	1.82	0.43
1:B:145:ILE:HB	1:B:146:PRO:HD3	2.00	0.43
1:B:186:LYS:CD	1:B:187:PRO:N	2.81	0.43
1:B:242:ALA:HB1	1:F:242:ALA:HB1	2.00	0.43
1:C:43:LYS:HD2	1:C:322:ILE:HD11	2.00	0.43
1:F:272:GLY:O	1:F:274:PRO:HD3	2.19	0.43
1:F:311:LEU:N	1:F:311:LEU:HD23	2.33	0.43
1:C:132:ARG:HD3	3:C:554:HOH:O	2.18	0.43
1:E:278:THR:C	1:E:279:LEU:HD12	2.39	0.43
1:E:44:THR:HG23	1:E:93:SER:HB2	2.01	0.43
1:E:101:ALA:HB3	1:E:103:ILE:HD11	2.01	0.43
1:C:85:ILE:HB	1:C:121:ILE:HD11	2.00	0.43
1:E:121:ILE:HG22	1:E:123:LEU:HD12	2.00	0.43
1:F:66:GLU:N	1:F:67:PRO:CD	2.82	0.43
1:F:283:PRO:HD2	3:F:579:HOH:O	2.18	0.43
1:B:175:THR:CG2	1:B:312:LYS:HG3	2.49	0.43
1:C:3:GLN:HA	1:C:46:VAL:O	2.19	0.43
1:E:16:LYS:HG2	1:E:236:ASP:OD2	2.18	0.43
1:F:128:ARG:HE	1:F:128:ARG:HB2	1.72	0.43
1:A:43:LYS:HZ2	1:A:324:GLN:NE2	2.02	0.42
1:D:222:LEU:HD12	1:D:223:GLU:HG3	2.00	0.42
1:D:230:ALA:HB1	1:D:276:ALA:HB2	2.00	0.42
1:E:42:VAL:HG11	1:E:109:ALA:HA	2.02	0.42
1:E:125:LEU:N	1:E:125:LEU:HD12	2.35	0.42
1:B:22:ASP:OD2	1:B:25:LEU:N	2.37	0.42
1:B:65:ASP:OD1	1:B:67:PRO:HD2	2.19	0.42
1:C:53:ARG:NH1	1:C:53:ARG:CG	2.80	0.42
1:B:160:ASP:OD1	1:E:156:GLU:HG3	2.18	0.42
1:E:314:SER:HB2	3:E:501:HOH:O	2.19	0.42
1:F:5:THR:CG2	1:F:45:THR:OG1	2.67	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:145:ILE:O	1:F:318:SER:HB2	2.20	0.42
1:D:138:SER:O	1:D:141:ALA:HB3	2.20	0.42
1:C:70:LYS:HE3	3:C:691:HOH:O	2.20	0.42
1:A:101:ALA:HB3	3:A:560:HOH:O	2.20	0.41
1:C:39:GLU:OE1	1:C:313:ALA:HA	2.20	0.41
1:E:97:PHE:N	1:E:97:PHE:CD1	2.88	0.41
1:B:50:LYS:CD	1:B:51:HIS:CD2	3.03	0.41
1:B:188:ILE:H	1:B:188:ILE:CD1	2.33	0.41
1:C:142:CYS:SG	1:C:143:ARG:N	2.94	0.41
1:D:125:LEU:HD23	1:D:125:LEU:HA	1.78	0.41
1:E:187:PRO:HB2	1:E:253:TYR:HE1	1.84	0.41
1:B:259:LEU:HD23	1:B:259:LEU:HA	1.83	0.41
1:C:190:SER:HG	2:C:401[A]:DP6:PB	2.38	0.41
1:D:3:GLN:HA	1:D:46:VAL:O	2.20	0.41
1:C:231:GLU:OE1	3:C:504:HOH:O	2.22	0.41
1:D:9:HIS:HB3	1:D:37:LEU:O	2.20	0.41
1:E:171:HIS:O	1:E:224:ARG:HD3	2.21	0.41
1:F:60:ASN:CG	1:F:94:GLU:HA	2.41	0.41
1:A:80:ARG:HD3	1:A:87:TRP:O	2.20	0.41
1:B:294:ALA:O	1:B:298:ILE:HG13	2.21	0.41
1:C:242:ALA:HB1	1:D:242:ALA:HB1	2.03	0.41
1:E:53:ARG:HB3	1:E:54:GLU:OE2	2.21	0.41
1:F:229:LEU:O	1:F:233:ILE:HG23	2.21	0.41
1:E:142:CYS:SG	1:E:152:TRP:CD2	3.12	0.41
1:B:78:ARG:HG2	1:B:78:ARG:HH11	1.85	0.40
1:C:76:LEU:HD23	1:C:76:LEU:HA	1.87	0.40
1:E:48:PHE:CD1	1:E:89:ALA:HB2	2.56	0.40
1:F:317:ASP:CB	1:F:320:LYS:HZ1	2.34	0.40
1:A:273:LEU:HD11	1:A:293:TYR:HB3	2.03	0.40
1:D:181:LEU:HD13	1:D:257:VAL:HB	2.03	0.40
1:B:9:HIS:HB3	1:B:37:LEU:O	2.22	0.40
1:D:204:PRO:HD2	3:D:552:HOH:O	2.21	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	323/330 (98%)	319 (99%)	4 (1%)	0	100	100
1	B	322/330 (98%)	315 (98%)	6 (2%)	1 (0%)	41	46
1	C	321/330 (97%)	314 (98%)	7 (2%)	0	100	100
1	D	322/330 (98%)	316 (98%)	6 (2%)	0	100	100
1	E	319/330 (97%)	307 (96%)	9 (3%)	3 (1%)	17	16
1	F	310/330 (94%)	303 (98%)	7 (2%)	0	100	100
All	All	1917/1980 (97%)	1874 (98%)	39 (2%)	4 (0%)	47	55

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	187	PRO
1	E	99	THR
1	E	182	SER
1	E	53	ARG

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	264/268 (98%)	261 (99%)	3 (1%)	73	85
1	B	263/268 (98%)	260 (99%)	3 (1%)	73	85
1	C	263/268 (98%)	260 (99%)	3 (1%)	73	85
1	D	264/268 (98%)	261 (99%)	3 (1%)	73	85
1	E	261/268 (97%)	257 (98%)	4 (2%)	65	78
1	F	256/268 (96%)	248 (97%)	8 (3%)	40	51
All	All	1571/1608 (98%)	1547 (98%)	24 (2%)	65	78

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	317	ASP
1	A	323	GLU
1	A	324	GLN
1	B	183	THR
1	B	186	LYS
1	B	192	GLN
1	C	3	GLN
1	C	71	ARG
1	C	185	HIS
1	D	71	ARG
1	D	237	SER
1	D	259	LEU
1	E	71	ARG
1	E	90	HIS
1	E	98	PRO
1	E	106	SER
1	F	3	GLN
1	F	51	HIS
1	F	52	SER
1	F	66	GLU
1	F	67	PRO
1	F	70	LYS
1	F	132	ARG
1	F	138	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	185	HIS
1	A	192	GLN
1	A	324	GLN
1	B	51	HIS
1	B	184	GLN
1	E	184	GLN
1	F	192	GLN

5.3.3 RNA ⓘ

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](#)

12 ligands are modelled in this entry.

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	DP6	B	401[A]	-	14,17,17	1.26	2 (14%)	17,26,26	0.88	1 (5%)
2	DP6	C	401[A]	-	14,17,17	1.19	2 (14%)	17,26,26	1.03	1 (5%)
2	DP6	D	401[B]	-	14,17,17	1.26	2 (14%)	17,26,26	0.92	0
2	DP6	F	401[A]	-	14,17,17	1.15	2 (14%)	17,26,26	0.98	0
2	DP6	E	401[A]	-	14,17,17	1.24	2 (14%)	17,26,26	1.11	1 (5%)
2	DP6	A	401[A]	-	14,17,17	1.26	2 (14%)	17,26,26	0.77	0
2	DP6	B	401[B]	-	14,17,17	1.24	2 (14%)	17,26,26	0.96	0
2	DP6	C	401[B]	-	14,17,17	1.17	1 (7%)	17,26,26	1.23	2 (11%)
2	DP6	D	401[A]	-	14,17,17	1.28	2 (14%)	17,26,26	0.83	0
2	DP6	F	401[B]	-	14,17,17	1.24	2 (14%)	17,26,26	0.88	0
2	DP6	E	401[B]	-	14,17,17	1.26	2 (14%)	17,26,26	1.09	1 (5%)
2	DP6	A	401[B]	-	14,17,17	1.26	2 (14%)	17,26,26	0.96	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	DP6	B	401[A]	-	-	6/19/19/19	-
2	DP6	C	401[A]	-	-	5/19/19/19	-
2	DP6	D	401[B]	-	-	3/19/19/19	-
2	DP6	F	401[A]	-	-	7/19/19/19	-
2	DP6	E	401[A]	-	-	6/19/19/19	-
2	DP6	A	401[A]	-	-	4/19/19/19	-
2	DP6	B	401[B]	-	-	5/19/19/19	-
2	DP6	C	401[B]	-	-	5/19/19/19	-
2	DP6	D	401[A]	-	-	3/19/19/19	-
2	DP6	F	401[B]	-	-	3/19/19/19	-
2	DP6	E	401[B]	-	-	6/19/19/19	-
2	DP6	A	401[B]	-	-	4/19/19/19	-

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	401[A]	DP6	C2-C3	-3.18	1.51	1.54
2	E	401[B]	DP6	C2-C3	-3.16	1.51	1.54
2	C	401[A]	DP6	C2-C3	-3.09	1.51	1.54
2	A	401[B]	DP6	C2-C3	-3.07	1.51	1.54
2	C	401[B]	DP6	C2-C3	-3.05	1.51	1.54
2	D	401[A]	DP6	C2-C3	-3.04	1.51	1.54
2	A	401[A]	DP6	C2-C3	-2.85	1.51	1.54
2	F	401[B]	DP6	C2-C3	-2.84	1.51	1.54
2	D	401[B]	DP6	C2-C3	-2.79	1.51	1.54
2	B	401[A]	DP6	C2-C3	-2.76	1.51	1.54
2	B	401[B]	DP6	C2-C3	-2.70	1.51	1.54
2	F	401[A]	DP6	C2-C3	-2.51	1.52	1.54
2	D	401[A]	DP6	O3A-C3	-2.45	1.40	1.44
2	B	401[B]	DP6	O3A-C3	-2.41	1.41	1.44
2	B	401[A]	DP6	O3A-C3	-2.40	1.41	1.44
2	D	401[B]	DP6	O3A-C3	-2.37	1.41	1.44
2	E	401[B]	DP6	O3A-C3	-2.36	1.41	1.44
2	F	401[B]	DP6	O3A-C3	-2.32	1.41	1.44
2	A	401[A]	DP6	O3A-C3	-2.31	1.41	1.44
2	E	401[A]	DP6	O3A-C3	-2.25	1.41	1.44
2	F	401[A]	DP6	O3A-C3	-2.24	1.41	1.44
2	A	401[B]	DP6	O3A-C3	-2.21	1.41	1.44
2	C	401[A]	DP6	O3A-C3	-2.09	1.41	1.44

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	401[B]	DP6	O2-C1-C2	2.49	122.35	114.35
2	E	401[A]	DP6	O2-C1-C2	2.20	121.43	114.35
2	E	401[B]	DP6	O2-C1-C2	2.18	121.36	114.35
2	C	401[A]	DP6	O2-C1-C2	2.06	120.98	114.35
2	B	401[A]	DP6	O3B-PB-O6	2.05	111.52	104.64
2	C	401[B]	DP6	O1-C1-C2	-2.05	116.97	122.94

There are no chirality outliers.

All (57) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401[A]	DP6	C3A-C3-C4-C5
2	A	401[A]	DP6	C2-C3-C4-C5
2	A	401[B]	DP6	C3A-C3-C4-C5
2	B	401[A]	DP6	PA-O6-PB-O3B
2	B	401[A]	DP6	C2-C3-C4-C5
2	B	401[B]	DP6	C5-O5-PA-O1A
2	B	401[B]	DP6	C5-O5-PA-O2A
2	B	401[B]	DP6	C2-C3-C4-C5
2	C	401[A]	DP6	C3A-C3-C4-C5
2	D	401[A]	DP6	C5-O5-PA-O6
2	D	401[B]	DP6	C5-O5-PA-O2A
2	E	401[B]	DP6	C3A-C3-C4-C5
2	E	401[B]	DP6	C2-C3-C4-C5
2	F	401[A]	DP6	C5-O5-PA-O6
2	F	401[A]	DP6	C2-C3-C4-C5
2	F	401[B]	DP6	C5-O5-PA-O1A
2	F	401[B]	DP6	C3A-C3-C4-C5
2	F	401[B]	DP6	C2-C3-C4-C5
2	B	401[B]	DP6	C3A-C3-C4-C5
2	E	401[A]	DP6	C3A-C3-C4-C5
2	F	401[A]	DP6	C3A-C3-C4-C5
2	C	401[B]	DP6	C1-C2-C3-C4
2	A	401[B]	DP6	C2-C3-C4-C5
2	C	401[A]	DP6	C2-C3-C4-C5
2	E	401[A]	DP6	C2-C3-C4-C5
2	F	401[A]	DP6	PA-O6-PB-O1B
2	B	401[A]	DP6	PB-O6-PA-O5
2	B	401[A]	DP6	PA-O6-PB-O2B
2	A	401[B]	DP6	O3A-C3-C4-C5
2	B	401[B]	DP6	C5-O5-PA-O6
2	C	401[A]	DP6	O3A-C3-C4-C5
2	D	401[B]	DP6	C5-O5-PA-O6

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Mol	Chain	Res	Type	Atoms
2	D	401[A]	DP6	C5-O5-PA-O2A
2	D	401[B]	DP6	C5-O5-PA-O1A
2	F	401[A]	DP6	C5-O5-PA-O2A
2	C	401[B]	DP6	C2-C3-C4-C5
2	B	401[A]	DP6	C3A-C3-C4-C5
2	C	401[B]	DP6	O2-C1-C2-C3
2	C	401[B]	DP6	O1-C1-C2-C3
2	E	401[A]	DP6	C1-C2-C3-C4
2	A	401[A]	DP6	PB-O6-PA-O1A
2	E	401[A]	DP6	O2-C1-C2-C3
2	F	401[A]	DP6	O2-C1-C2-C3
2	E	401[B]	DP6	C1-C2-C3-C4
2	E	401[A]	DP6	O1-C1-C2-C3
2	A	401[A]	DP6	O3A-C3-C4-C5
2	A	401[B]	DP6	C5-O5-PA-O6
2	E	401[A]	DP6	O3A-C3-C4-C5
2	E	401[B]	DP6	O3A-C3-C4-C5
2	F	401[A]	DP6	O1-C1-C2-C3
2	C	401[B]	DP6	C1-C2-C3-O3A
2	C	401[A]	DP6	C5-O5-PA-O1A
2	D	401[A]	DP6	C5-O5-PA-O1A
2	B	401[A]	DP6	PA-O6-PB-O1B
2	E	401[B]	DP6	O1-C1-C2-C3
2	E	401[B]	DP6	O2-C1-C2-C3
2	C	401[A]	DP6	O1-C1-C2-C3

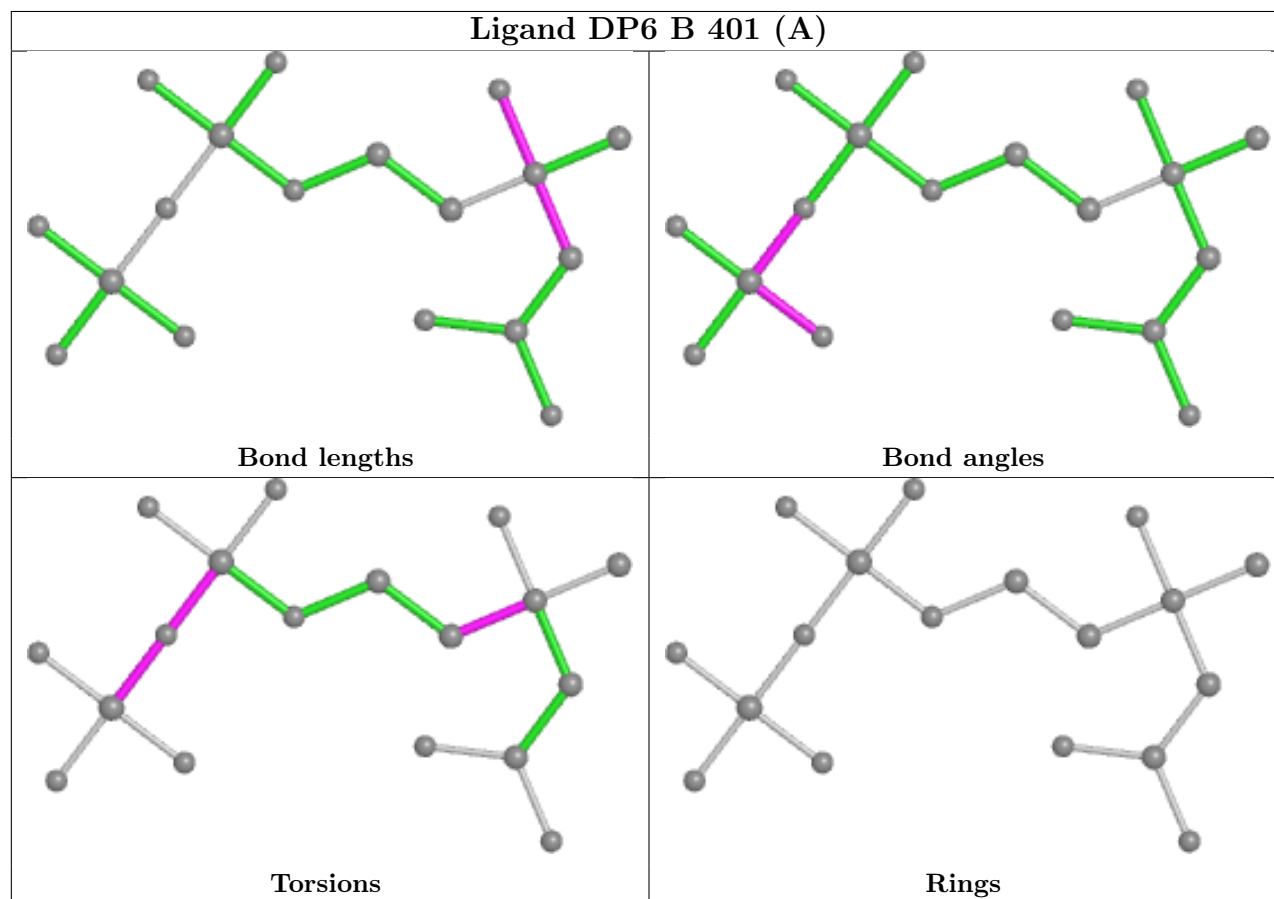
There are no ring outliers.

6 monomers are involved in 13 short contacts:

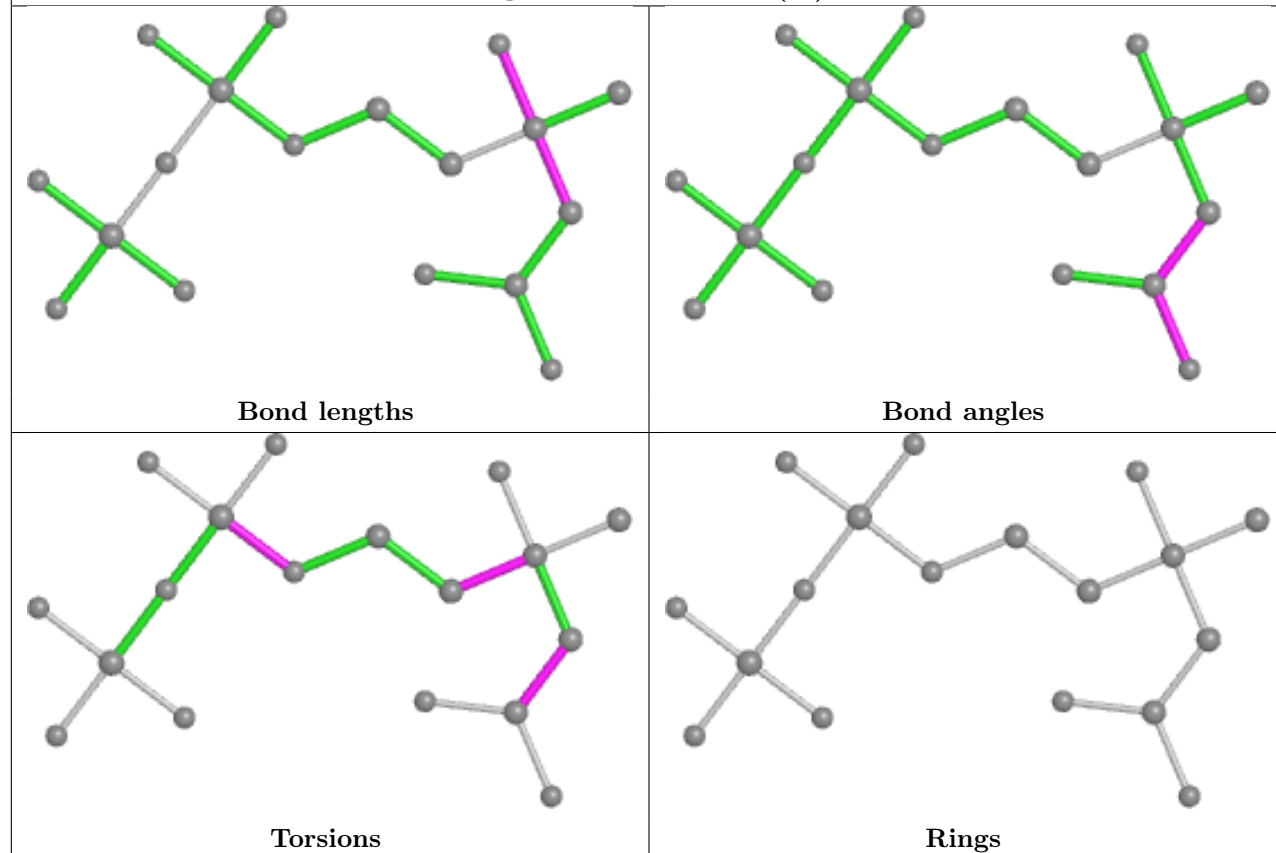
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	401[A]	DP6	1	0
2	C	401[A]	DP6	2	0
2	A	401[A]	DP6	2	0
2	D	401[A]	DP6	1	0
2	F	401[B]	DP6	3	0
2	E	401[B]	DP6	4	0

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.

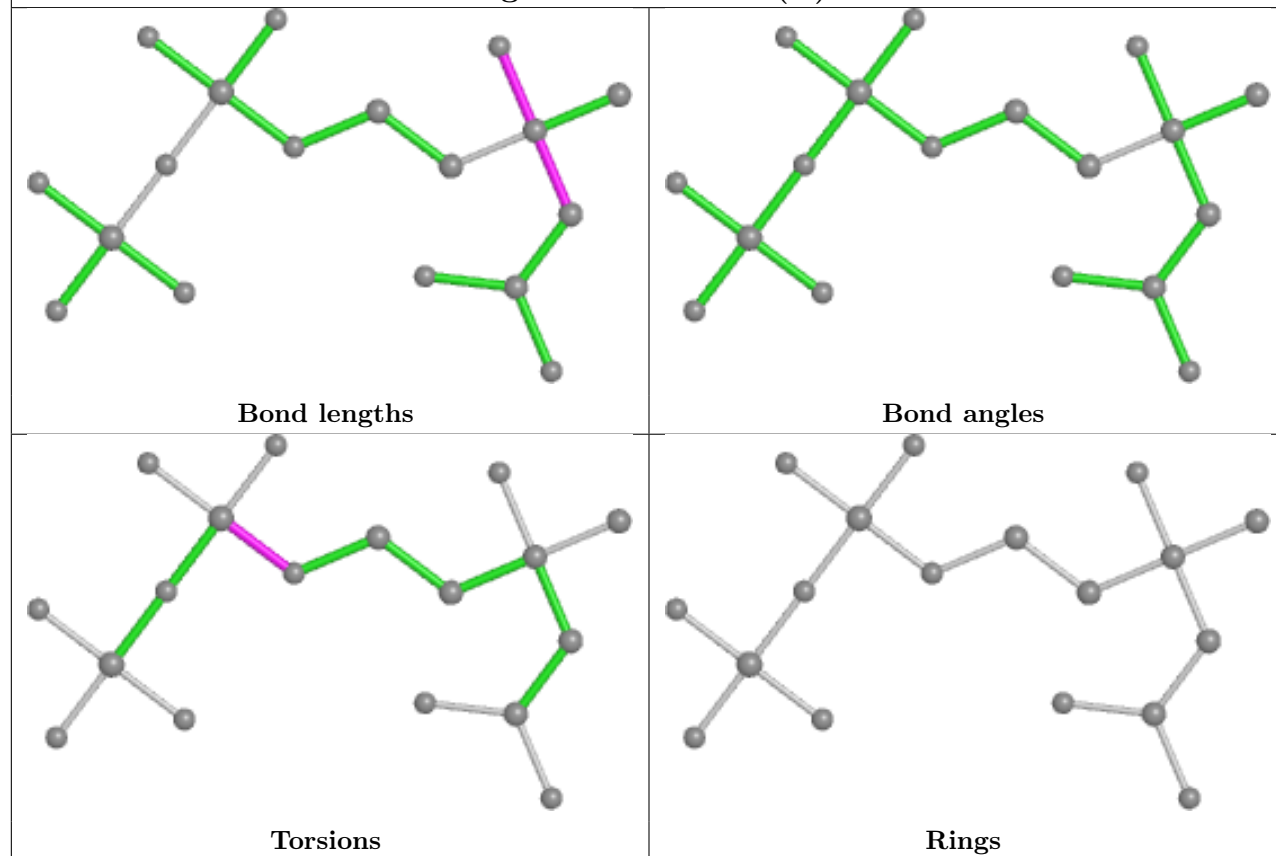
Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD 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.



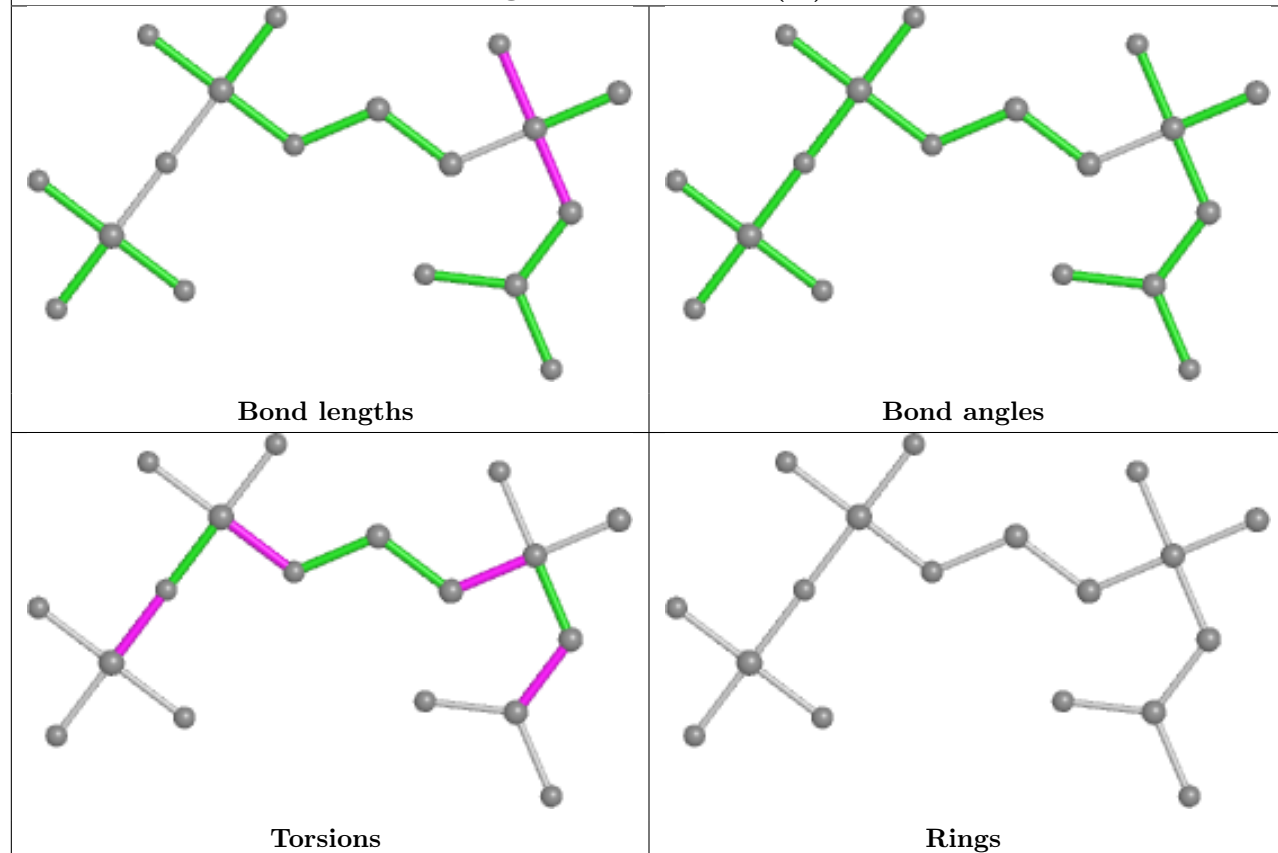
Ligand DP6 C 401 (A)



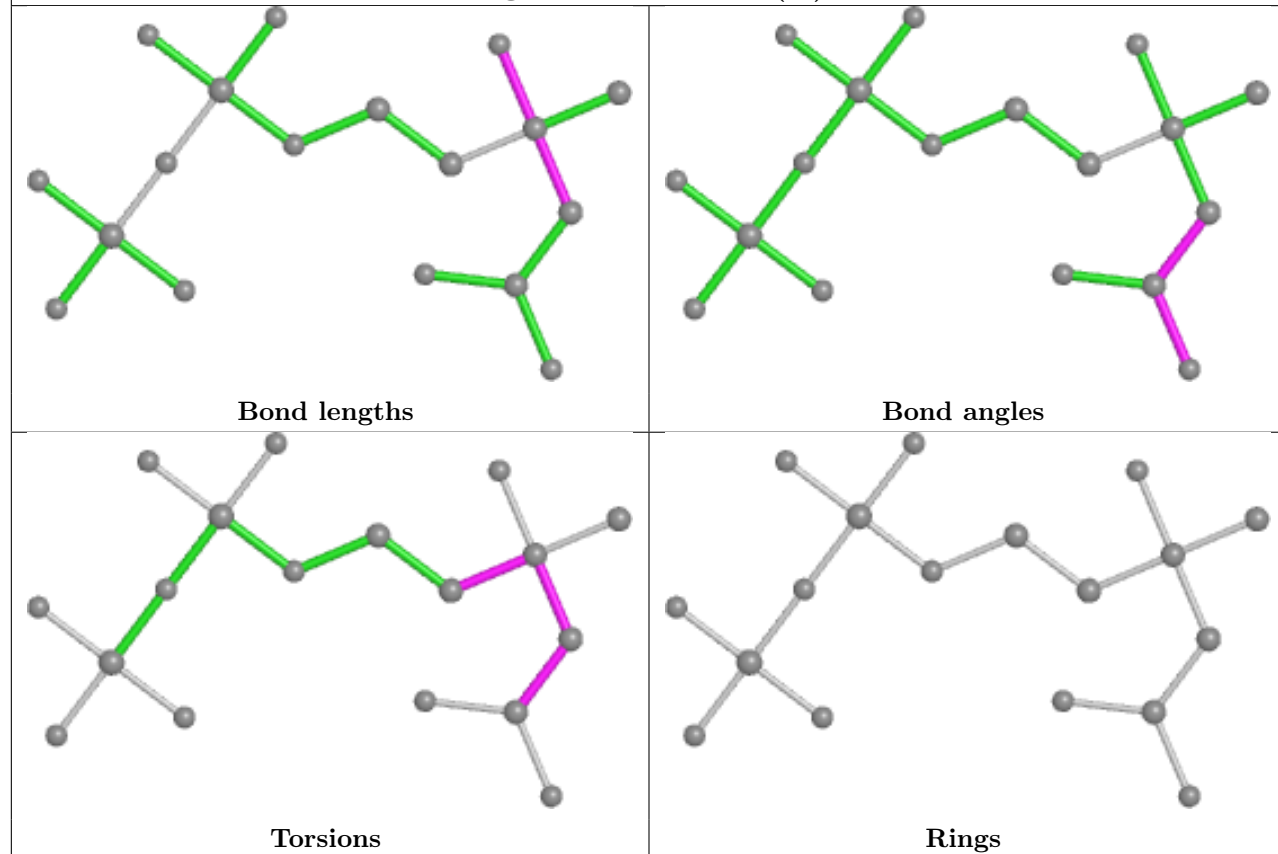
Ligand DP6 D 401 (B)



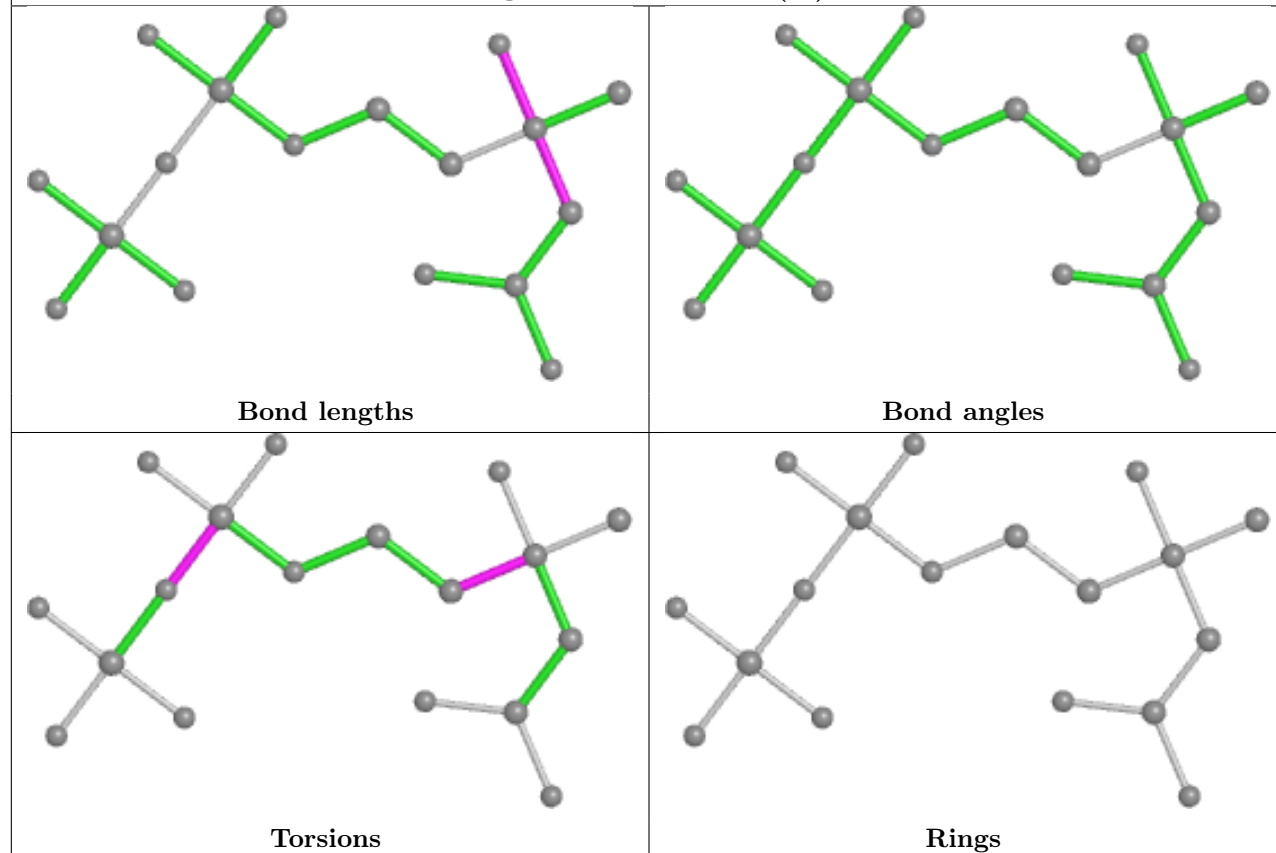
Ligand DP6 F 401 (A)



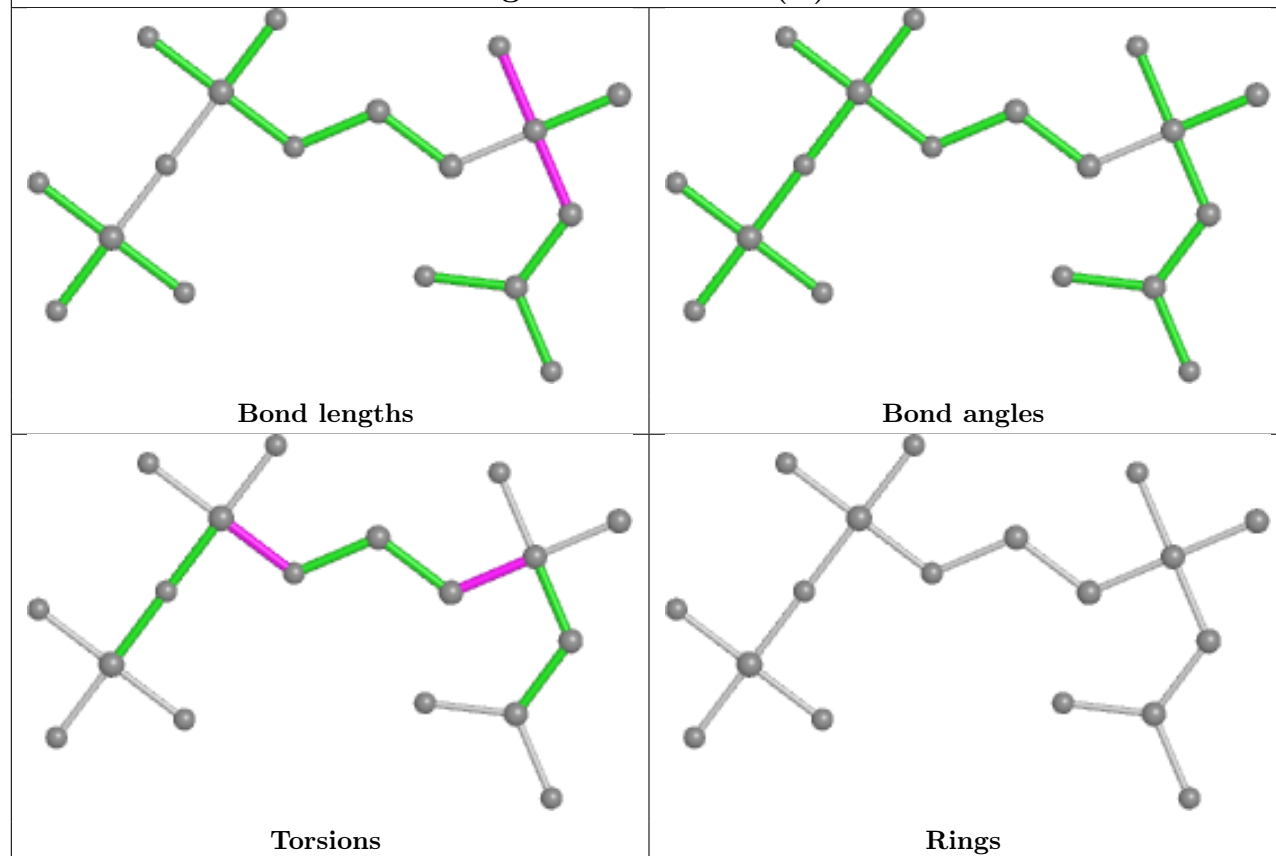
Ligand DP6 E 401 (A)



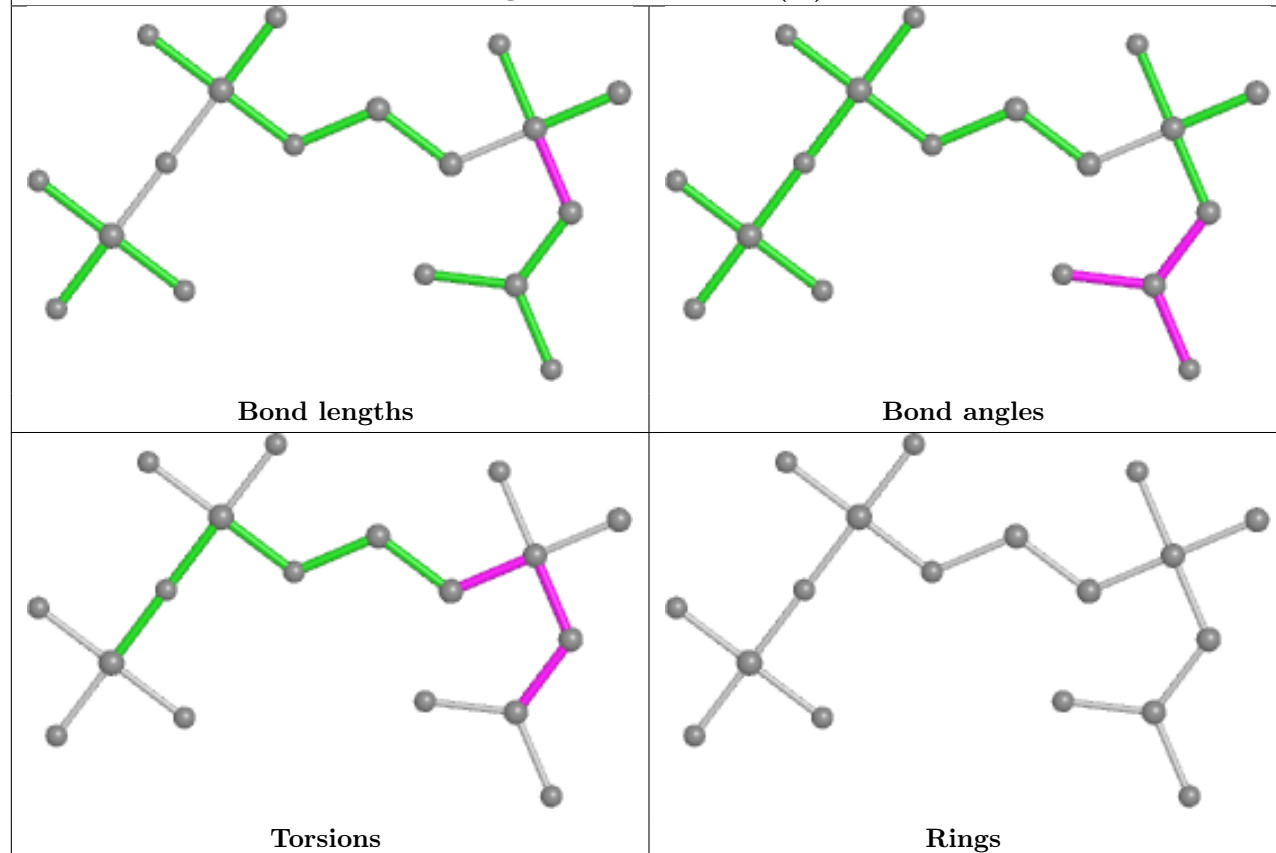
Ligand DP6 A 401 (A)



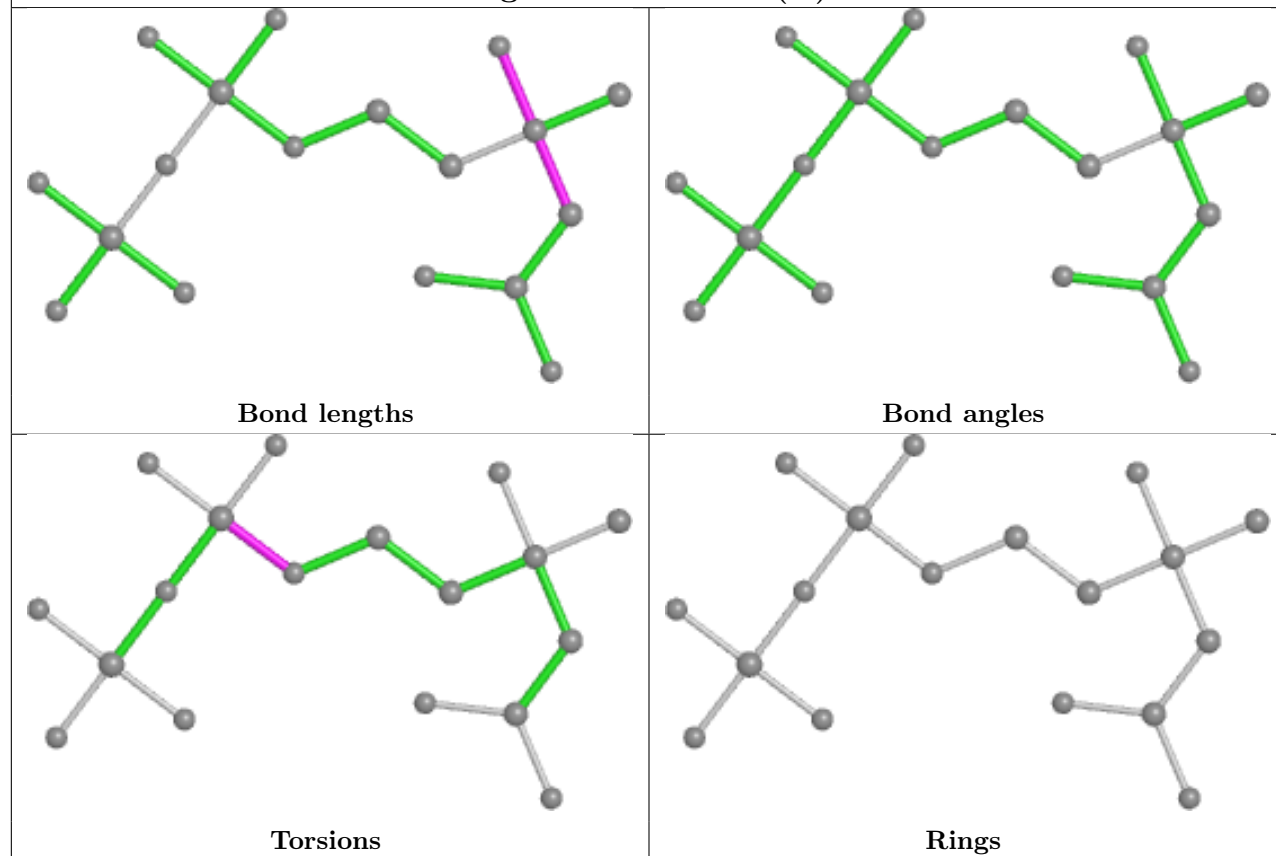
Ligand DP6 B 401 (B)



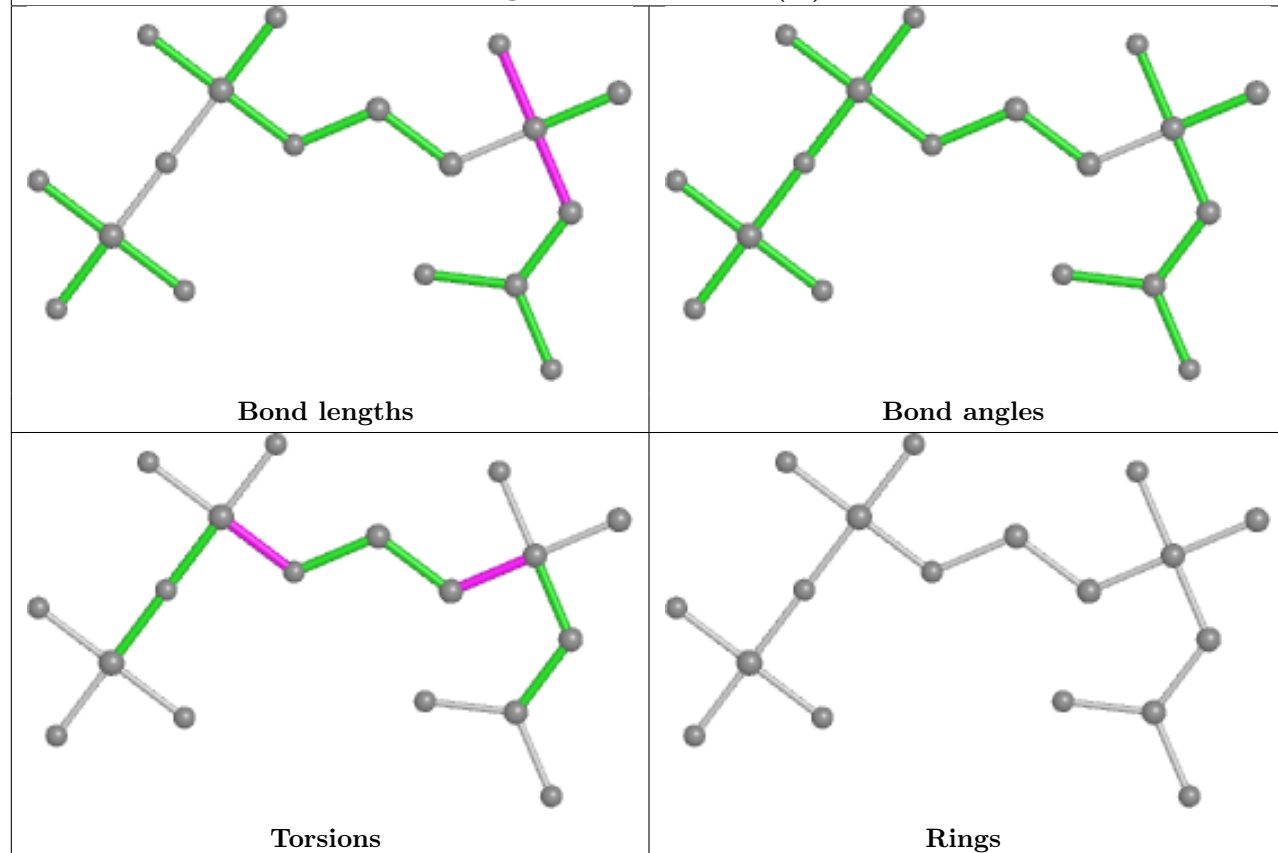
Ligand DP6 C 401 (B)



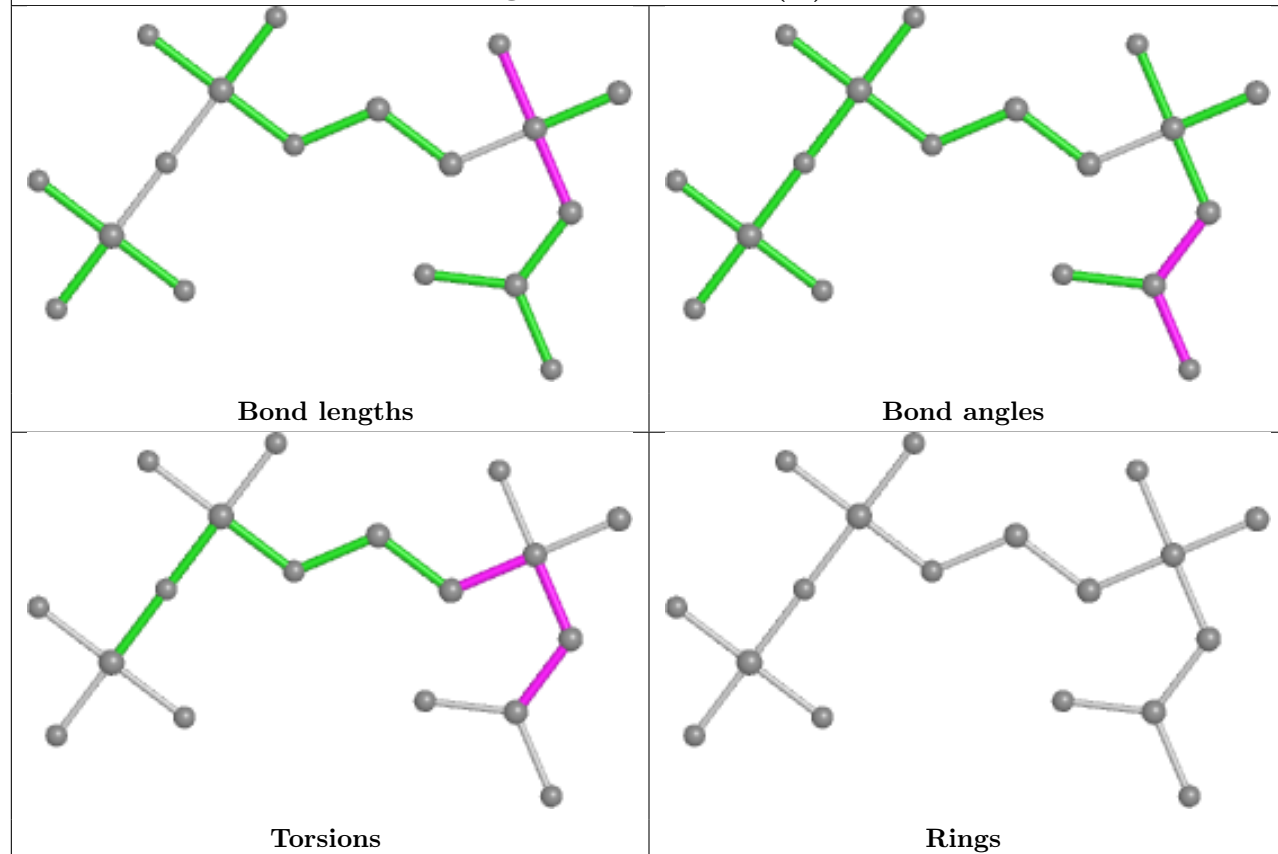
Ligand DP6 D 401 (A)

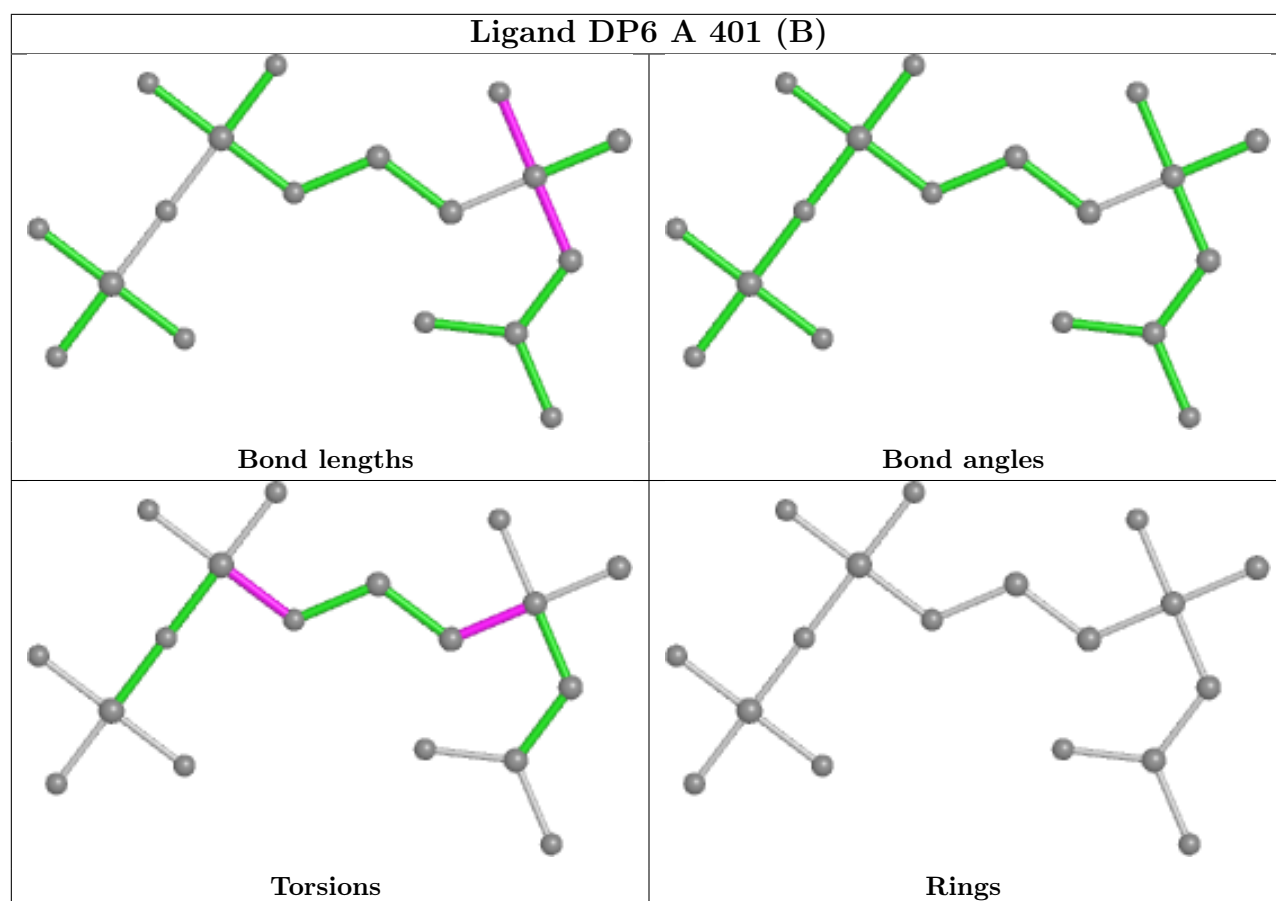


Ligand DP6 F 401 (B)



Ligand DP6 E 401 (B)





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	325/330 (98%)	0.05	9 (2%) 53 51	16, 27, 51, 85	0
1	B	324/330 (98%)	0.08	9 (2%) 53 51	17, 30, 52, 86	0
1	C	323/330 (97%)	0.06	8 (2%) 57 55	16, 25, 51, 85	0
1	D	324/330 (98%)	0.02	14 (4%) 35 33	15, 27, 58, 79	0
1	E	321/330 (97%)	0.41	32 (9%) 7 6	17, 34, 67, 98	0
1	F	316/330 (95%)	0.25	21 (6%) 18 17	17, 32, 68, 99	0
All	All	1933/1980 (97%)	0.14	93 (4%) 30 29	15, 29, 61, 99	0

All (93) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	51	HIS	7.0
1	F	87	TRP	6.5
1	F	82	PHE	6.4
1	F	51	HIS	6.1
1	E	53	ARG	5.8
1	E	85	ILE	5.1
1	A	323	GLU	4.6
1	F	52	SER	4.4
1	B	186	LYS	4.4
1	E	54	GLU	4.3
1	F	83	ALA	4.3
1	F	89	ALA	4.2
1	E	82	PHE	4.1
1	E	87	TRP	4.0
1	E	84	GLY	4.0
1	E	69	LEU	3.9
1	B	51	HIS	3.8
1	C	87	TRP	3.8
1	B	185	HIS	3.7

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Mol	Chain	Res	Type	RSRZ
1	F	90	HIS	3.7
1	E	86	SER	3.6
1	A	186	LYS	3.6
1	F	47	ILE	3.5
1	C	183	THR	3.4
1	E	104	ALA	3.4
1	F	49	GLU	3.4
1	E	83	ALA	3.4
1	E	91	VAL	3.3
1	E	52	SER	3.3
1	A	53	ARG	3.3
1	E	185	HIS	3.3
1	C	99	THR	3.2
1	E	90	HIS	3.2
1	E	63	LEU	3.2
1	E	92	ILE	3.2
1	F	79	VAL	3.2
1	D	324	GLN	3.1
1	C	53	ARG	3.1
1	B	87	TRP	3.1
1	F	324	GLN	3.0
1	D	53	ARG	3.0
1	C	51	HIS	3.0
1	E	48	PHE	2.9
1	A	185	HIS	2.9
1	B	53	ARG	2.9
1	A	66	GLU	2.8
1	F	81	GLU	2.8
1	F	88	HIS	2.7
1	D	100	GLY	2.7
1	D	275	CYS	2.7
1	F	50	LYS	2.7
1	F	84	GLY	2.7
1	A	74	HIS	2.6
1	E	81	GLU	2.6
1	D	82	PHE	2.6
1	D	85	ILE	2.6
1	E	99	THR	2.6
1	D	87	TRP	2.5
1	C	100	GLY	2.5
1	F	2	GLY	2.5
1	D	183	THR	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	324	GLN	2.4
1	B	54	GLU	2.4
1	E	49	GLU	2.4
1	A	187	PRO	2.4
1	A	98	PRO	2.4
1	F	48	PHE	2.4
1	E	188	ILE	2.3
1	D	51	HIS	2.3
1	D	323	GLU	2.3
1	D	182	SER	2.3
1	B	100	GLY	2.2
1	F	187	PRO	2.2
1	E	183	THR	2.2
1	B	99	THR	2.2
1	E	50	LYS	2.2
1	E	59	LEU	2.2
1	D	271	SER	2.2
1	C	184	GLN	2.2
1	B	183	THR	2.2
1	F	56	THR	2.2
1	F	69	LEU	2.2
1	D	289	CYS	2.1
1	E	74	HIS	2.1
1	E	76	LEU	2.1
1	F	85	ILE	2.1
1	C	323	GLU	2.0
1	E	64	ALA	2.0
1	E	189	GLY	2.0
1	D	54	GLU	2.0
1	E	88	HIS	2.0
1	E	47	ILE	2.0
1	E	66	GLU	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

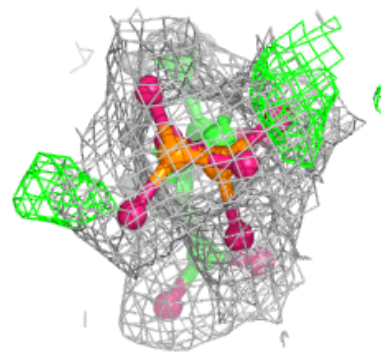
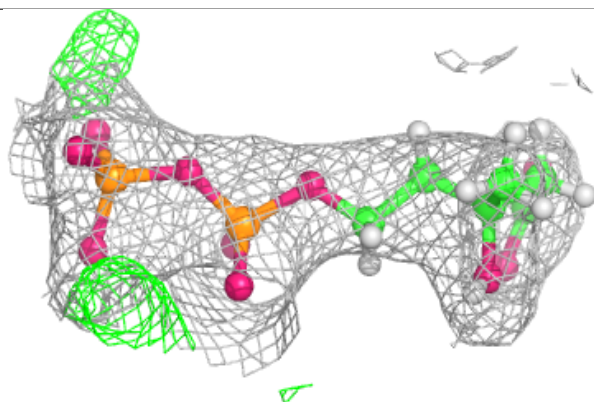
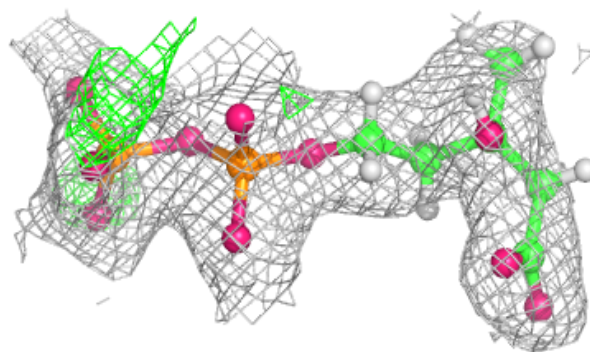
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	DP6	F	401[A]	18/18	0.94	0.16	27,32,37,38	28
2	DP6	F	401[B]	18/18	0.94	0.16	27,33,37,38	28
2	DP6	B	401[A]	18/18	0.96	0.15	23,29,32,34	28
2	DP6	B	401[B]	18/18	0.96	0.15	23,29,32,32	28
2	DP6	D	401[A]	18/18	0.96	0.15	21,26,29,30	28
2	DP6	D	401[B]	18/18	0.96	0.15	21,25,27,29	28
2	DP6	A	401[A]	18/18	0.96	0.14	22,26,32,33	28
2	DP6	A	401[B]	18/18	0.96	0.14	21,26,31,32	28
2	DP6	E	401[A]	18/18	0.97	0.14	28,33,38,40	28
2	DP6	E	401[B]	18/18	0.97	0.14	28,35,40,42	28
2	DP6	C	401[A]	18/18	0.97	0.16	22,27,30,31	28
2	DP6	C	401[B]	18/18	0.97	0.16	21,27,30,31	28

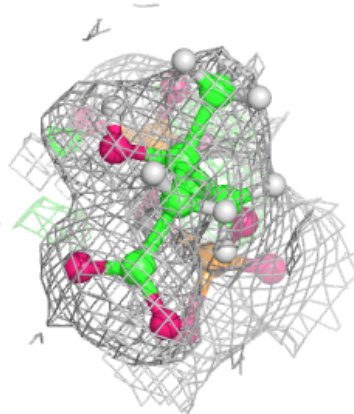
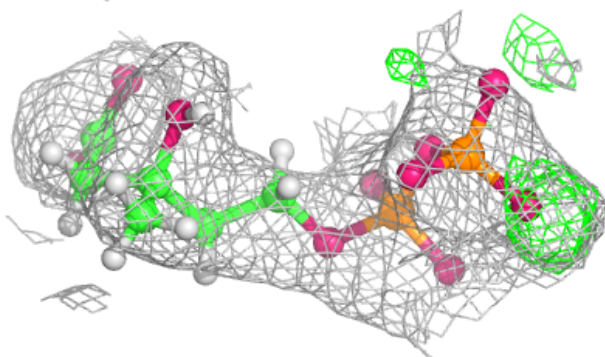
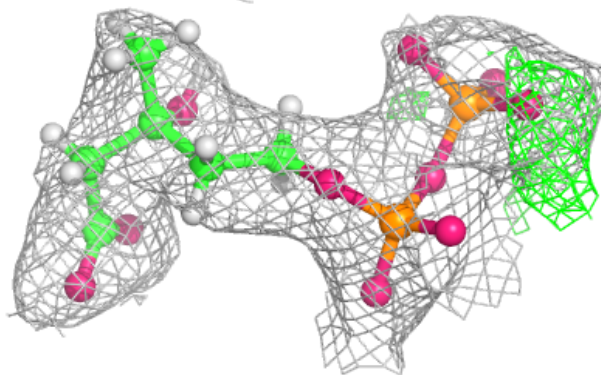
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around DP6 F 401 (A):

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

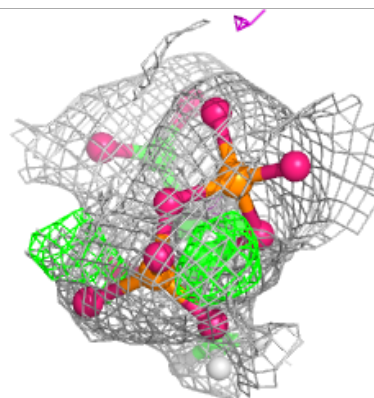
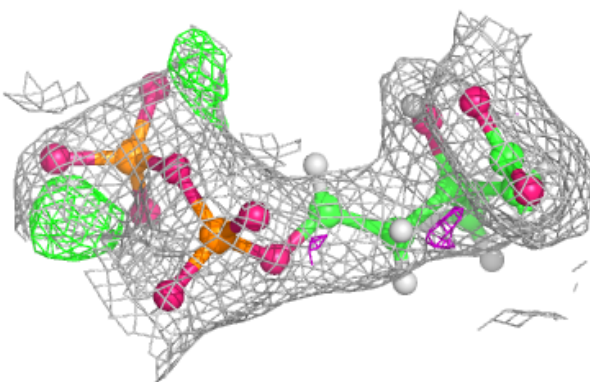
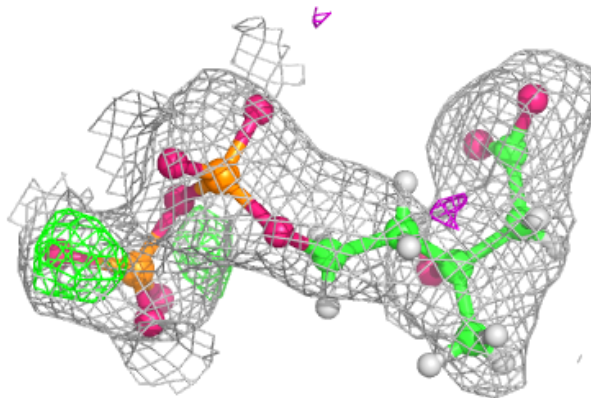
**Electron density around DP6 F 401 (B):**

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



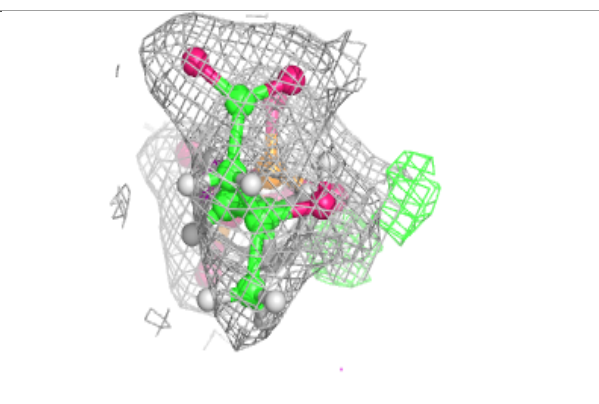
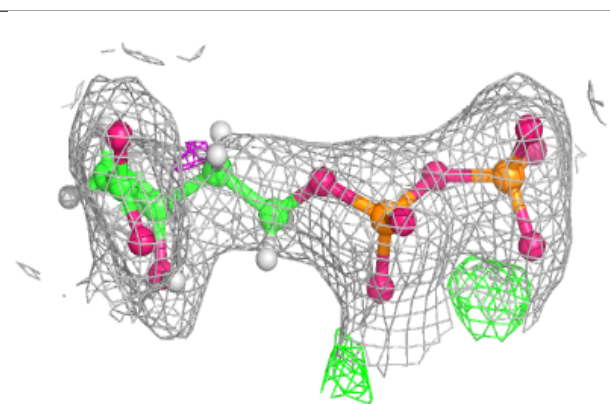
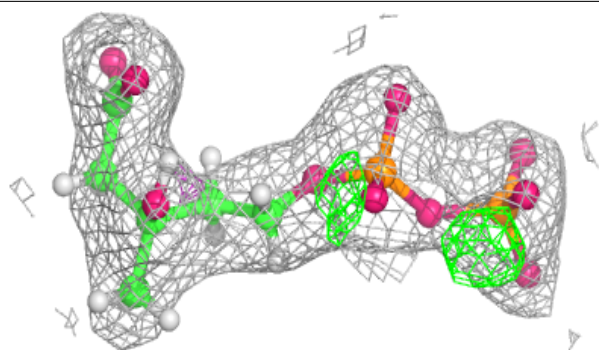
Electron density around DP6 B 401 (A):

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

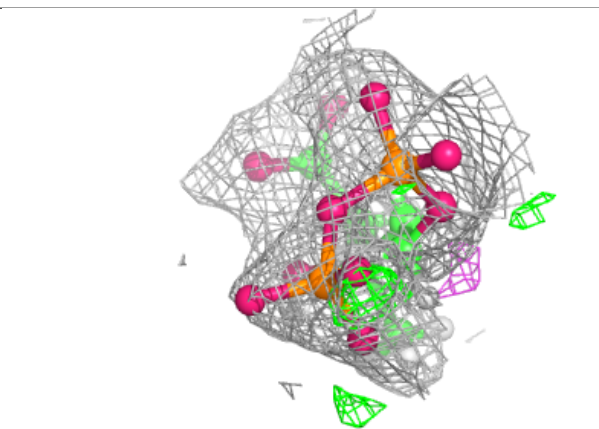
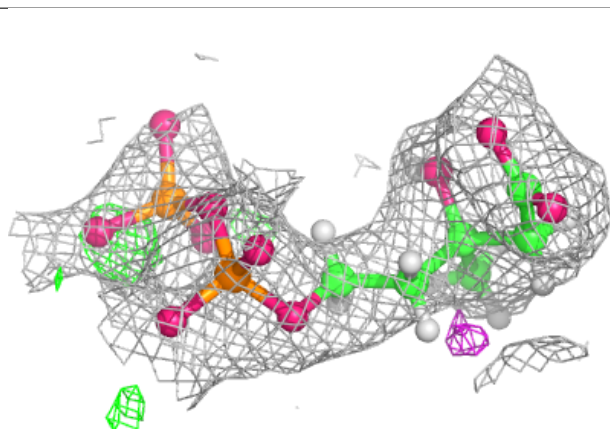
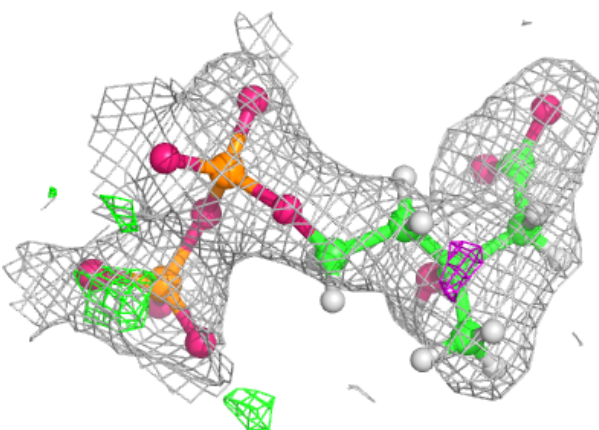


Electron density around DP6 B 401 (B):

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

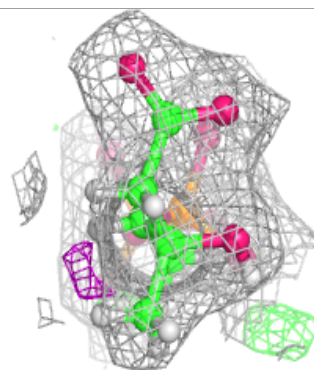
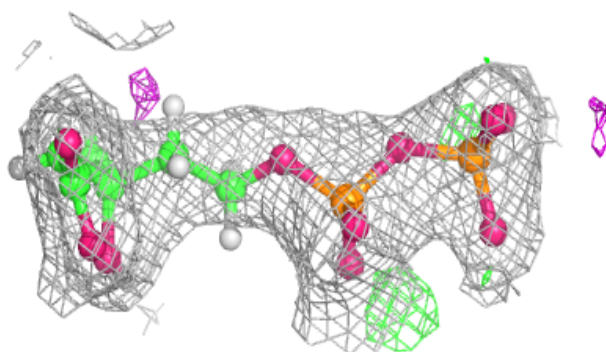
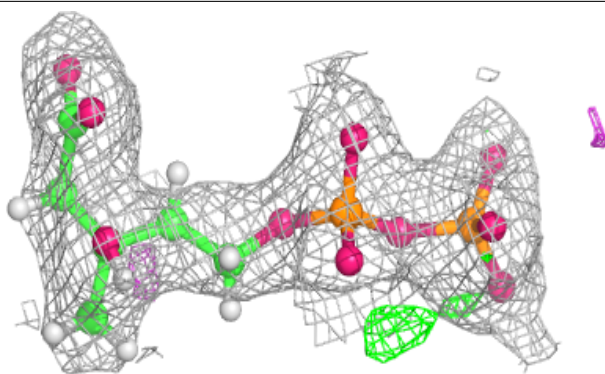
**Electron density around DP6 D 401 (A):**

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

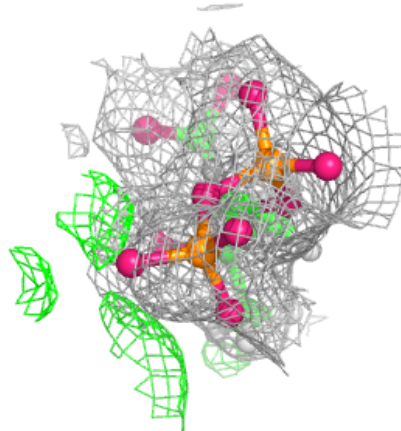
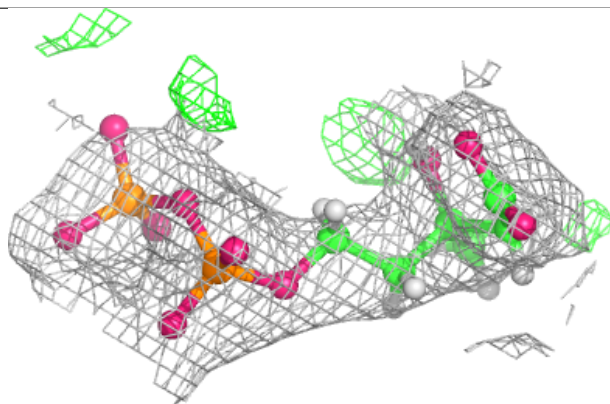
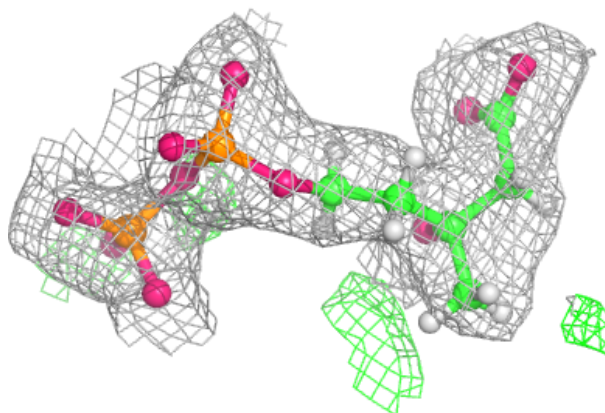


Electron density around DP6 D 401 (B):

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

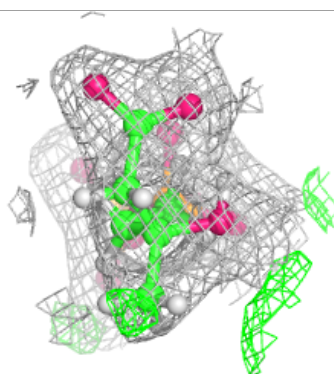
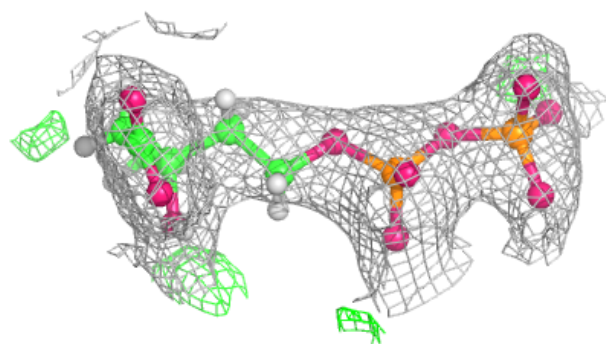
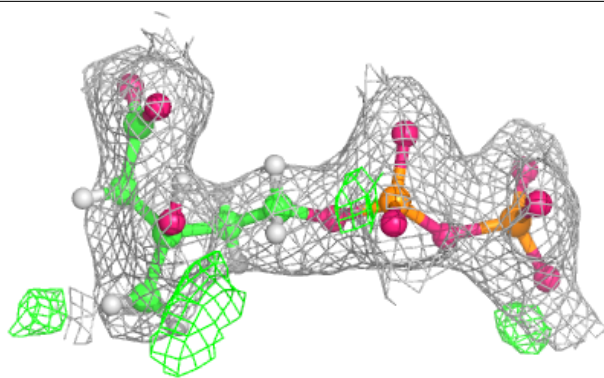
**Electron density around DP6 A 401 (A):**

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

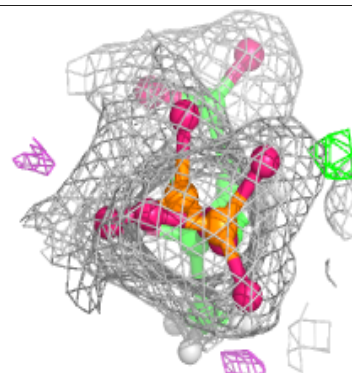
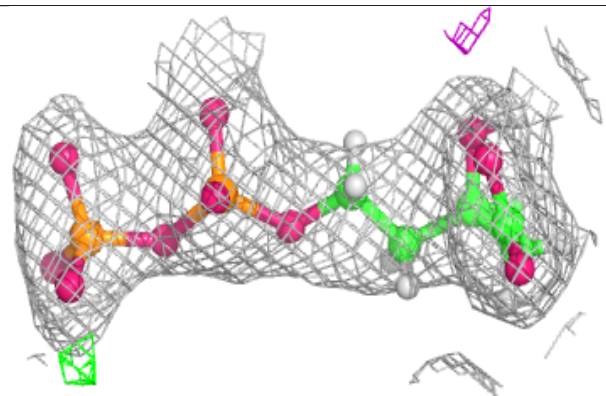
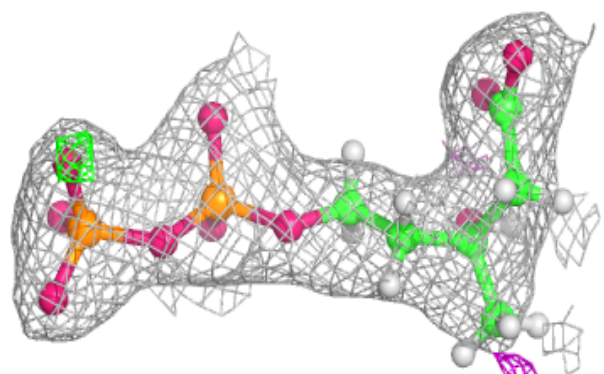


Electron density around DP6 A 401 (B):

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

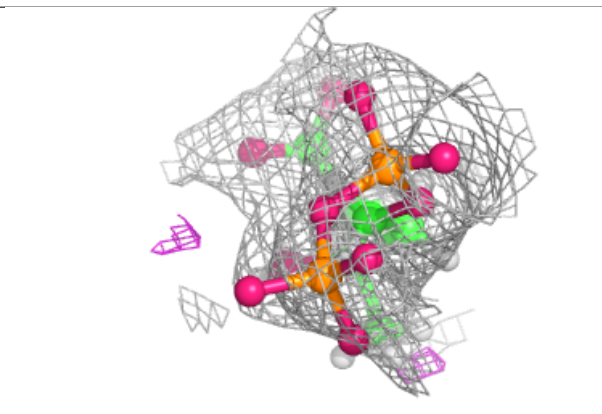
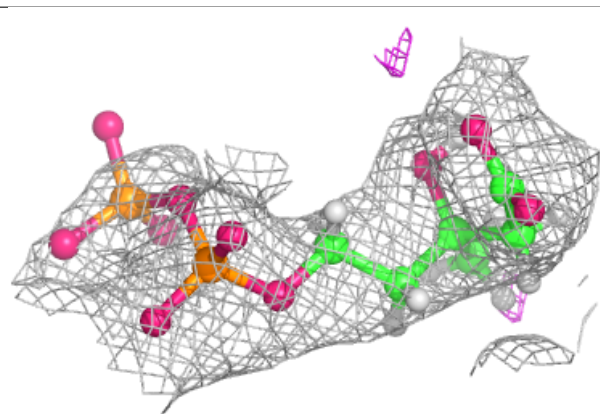
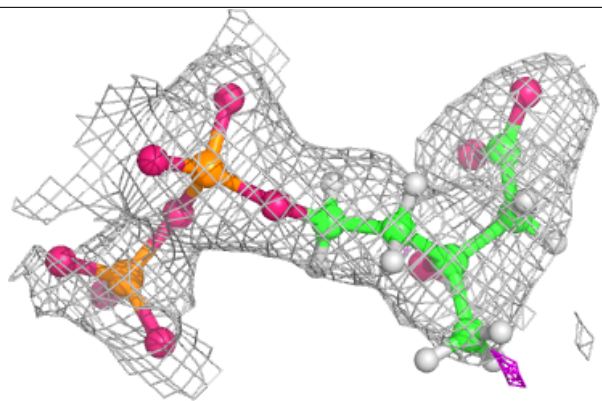
**Electron density around DP6 E 401 (A):**

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

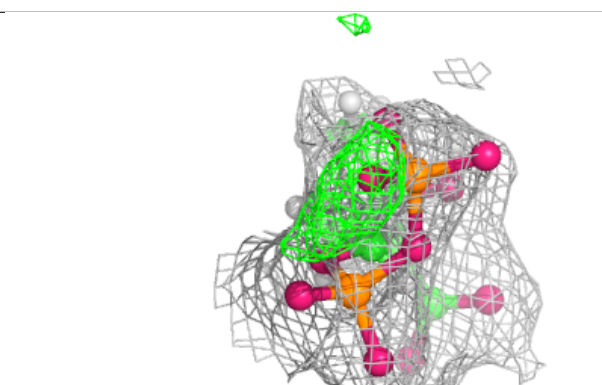
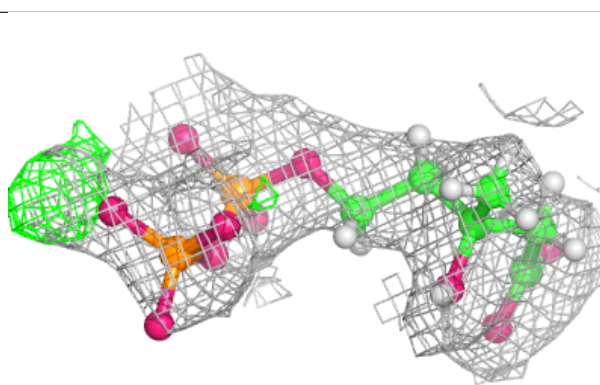
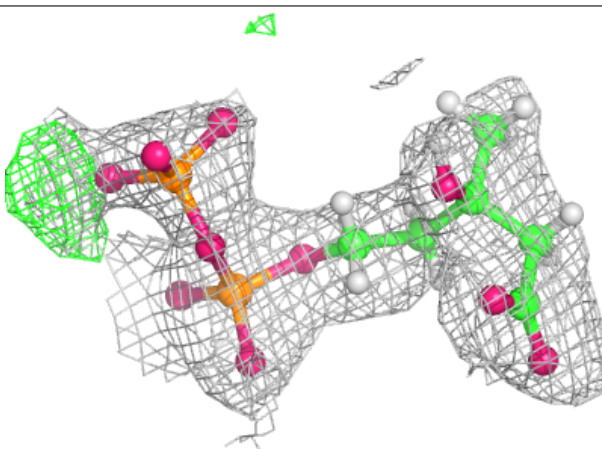


Electron density around DP6 E 401 (B):

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

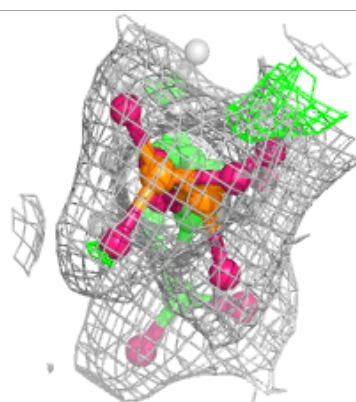
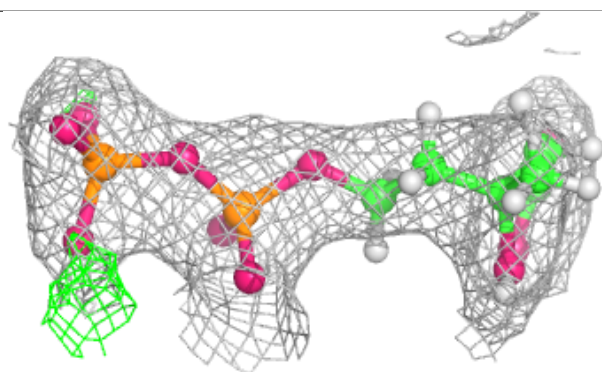
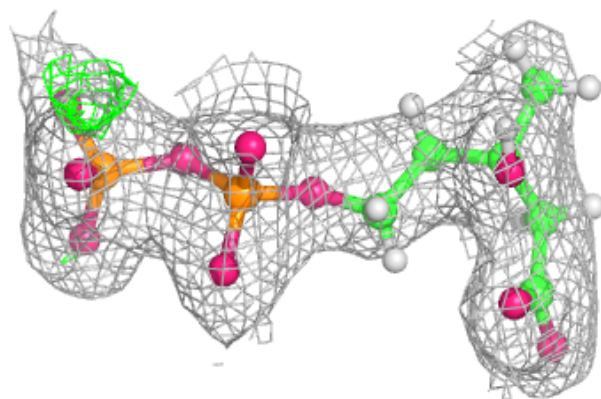
**Electron density around DP6 C 401 (A):**

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



Electron density around DP6 C 401 (B):

$2mF_o-DF_c$ (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.