



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 13, 2023 – 10:36 pm BST

PDB ID : 8ACY
Title : X-ray structure of Na⁺-NQR from *Vibrio cholerae* at 3.5 Å resolution
Authors : Fritz, G.
Deposited on : 2022-07-07
Resolution : 3.50 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 : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35.1
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) : 2.35.1

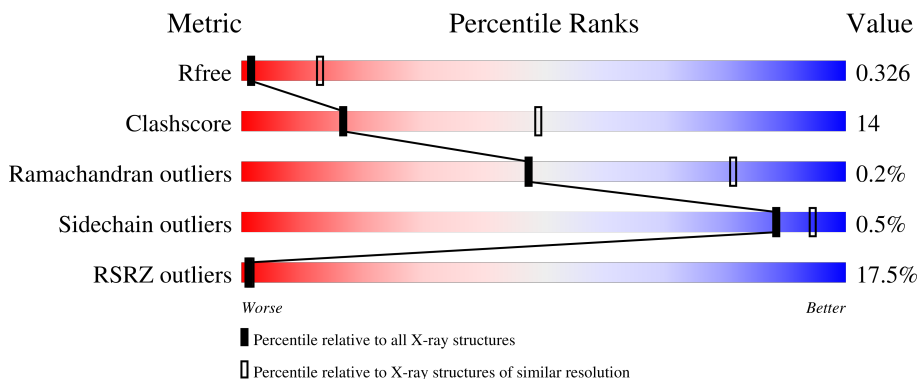
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.50 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	1659 (3.60-3.40)
Clashscore	141614	1036 (3.58-3.42)
Ramachandran outliers	138981	1005 (3.58-3.42)
Sidechain outliers	138945	1006 (3.58-3.42)
RSRZ outliers	127900	1559 (3.60-3.40)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	468	
2	B	415	
3	C	257	
4	D	210	
5	E	198	

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Mol	Chain	Length	Quality of chain
6	F	408	

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
11	FES	F	1502	-	-	X	-
7	FMN	C	1000	-	-	-	X
8	RBF	B	502	-	-	-	X
9	LMT	B	504	-	-	-	X
9	LMT	D	301	-	-	-	X

2 Entry composition [i](#)

There are 12 unique types of molecules in this entry. The entry contains 28808 atoms, of which 14464 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 Na(+)-translocating NADH-quinone reductase subunit A.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	403	6191	1946	3121	521	588	15	0	0	0

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-21	MET	-	initiating methionine	UNP A0A655PZA5
A	-20	GLY	-	expression tag	UNP A0A655PZA5
A	-19	SER	-	expression tag	UNP A0A655PZA5
A	-18	SER	-	expression tag	UNP A0A655PZA5
A	-17	HIS	-	expression tag	UNP A0A655PZA5
A	-16	HIS	-	expression tag	UNP A0A655PZA5
A	-15	HIS	-	expression tag	UNP A0A655PZA5
A	-14	HIS	-	expression tag	UNP A0A655PZA5
A	-13	HIS	-	expression tag	UNP A0A655PZA5
A	-12	HIS	-	expression tag	UNP A0A655PZA5
A	-11	SER	-	expression tag	UNP A0A655PZA5
A	-10	SER	-	expression tag	UNP A0A655PZA5
A	-9	GLY	-	expression tag	UNP A0A655PZA5
A	-8	LEU	-	expression tag	UNP A0A655PZA5
A	-7	GLU	-	expression tag	UNP A0A655PZA5
A	-6	VAL	-	expression tag	UNP A0A655PZA5
A	-5	LEU	-	expression tag	UNP A0A655PZA5
A	-4	PHE	-	expression tag	UNP A0A655PZA5
A	-3	GLN	-	expression tag	UNP A0A655PZA5
A	-2	GLY	-	expression tag	UNP A0A655PZA5
A	-1	PRO	-	expression tag	UNP A0A655PZA5
A	0	HIS	-	expression tag	UNP A0A655PZA5

- Molecule 2 is a protein called Na(+)-translocating NADH-quinone reductase subunit B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
2	B	380	5818	1924	2907	475	490	22	0	0	0

- Molecule 3 is a protein called Na(+)-translocating NADH-quinone reductase subunit C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
3	C	248	3774	1192	1892	324	362	4	0	0	0

- Molecule 4 is a protein called Na(+)-translocating NADH-quinone reductase subunit D.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
4	D	204	3208	1037	1646	247	268	10	0	0	0

- Molecule 5 is a protein called Na(+)-translocating NADH-quinone reductase subunit E.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
5	E	197	3078	1008	1574	229	257	10	0	0	0

- Molecule 6 is a protein called Na(+)-translocating NADH-quinone reductase subunit F.

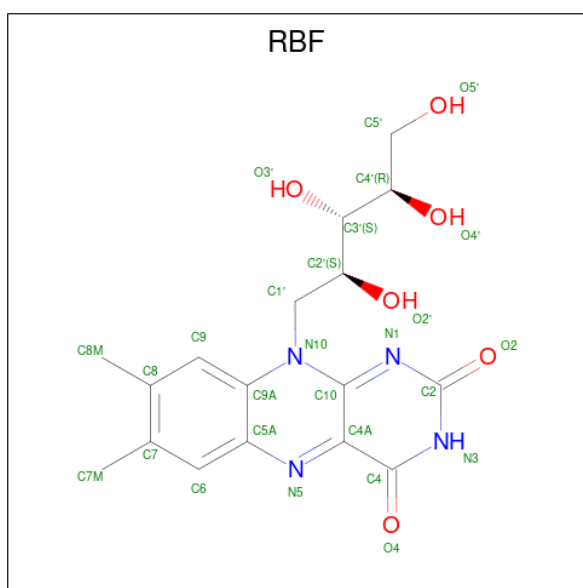
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
6	F	407	6259	2025	3098	518	594	24	0	0	0

- Molecule 7 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: C₁₇H₂₁N₄O₉P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	H	N	O			P
7	B	1	49	17	19	4	8	1	0	0
7	C	1	49	17	19	4	8	1	0	0

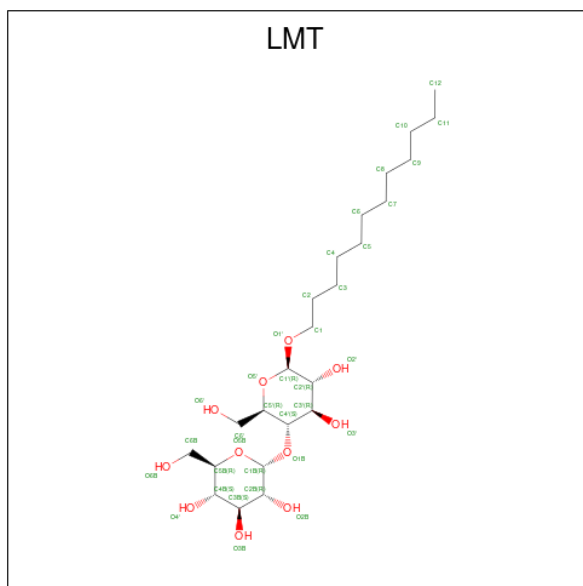
- Molecule 8 is RIBOFLAVIN (three-letter code: RBF) (formula: $C_{17}H_{20}N_4O_6$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
8	B	1	46	17	19	4	6	0	0

- Molecule 9 is DODECYL-BETA-D-MALTOSE (three-letter code: LMT) (formula:

C₂₄H₄₆O₁₁).

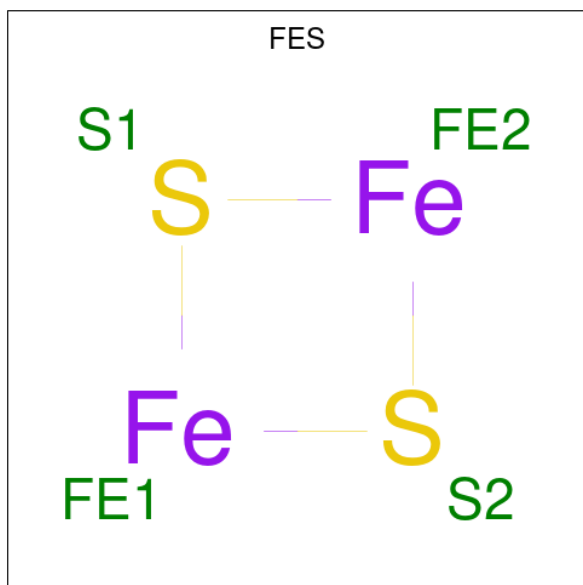


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
9	B	1	Total	C	H	O	0	0
			81	24	46	11		
9	B	1	Total	C	H	O	0	0
			81	24	46	11		
9	D	1	Total	C	H	O	0	0
			81	24	46	11		

- Molecule 10 is SODIUM ION (three-letter code: NA) (formula: Na).

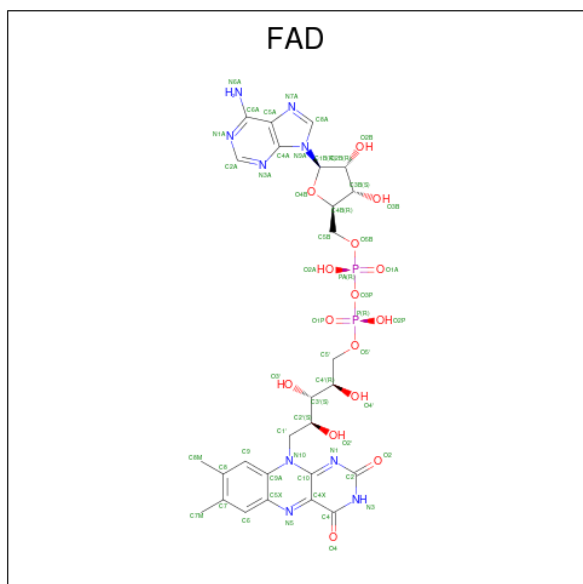
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	B	1	Total	Na	0	0
			1	1		

- Molecule 11 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe₂S₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
11	E	1	Total	Fe	S	0	0
			4	2	2		
11	F	1	Total	Fe	S	0	0
			4	2	2		

- Molecule 12 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula: $C_{27}H_{33}N_9O_{15}P_2$).

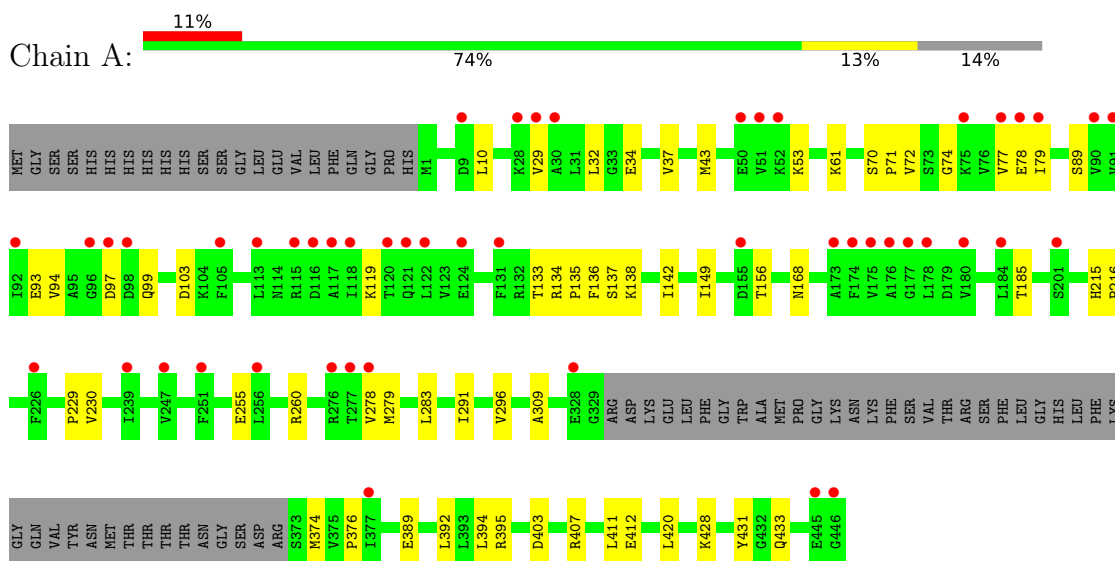


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
12	F	1	Total	C	H	N	O	P	0	0
			84	27	31	9	15	2		

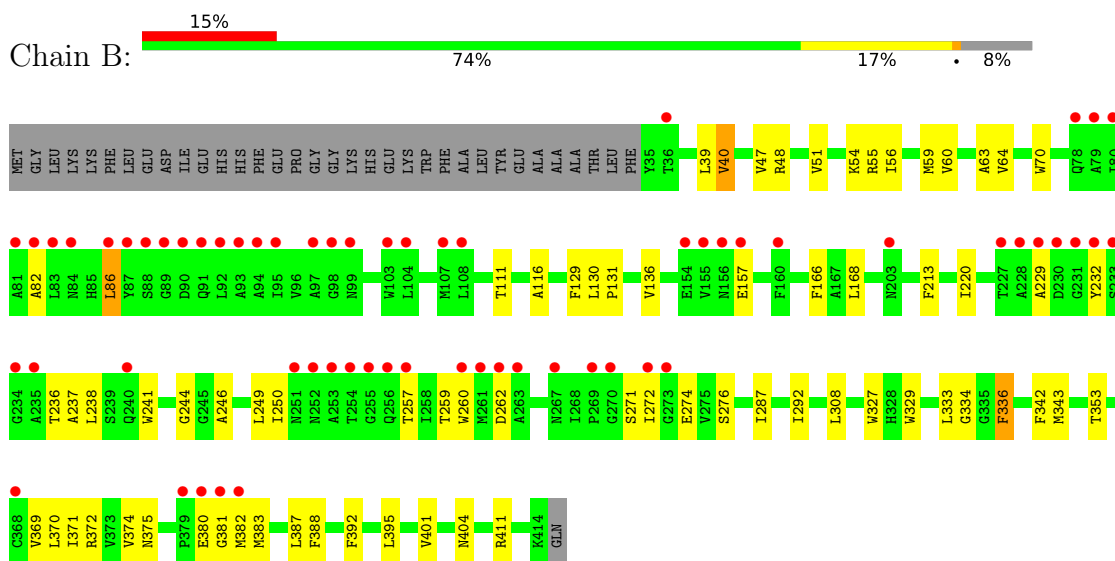
3 Residue-property plots [i](#)

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.

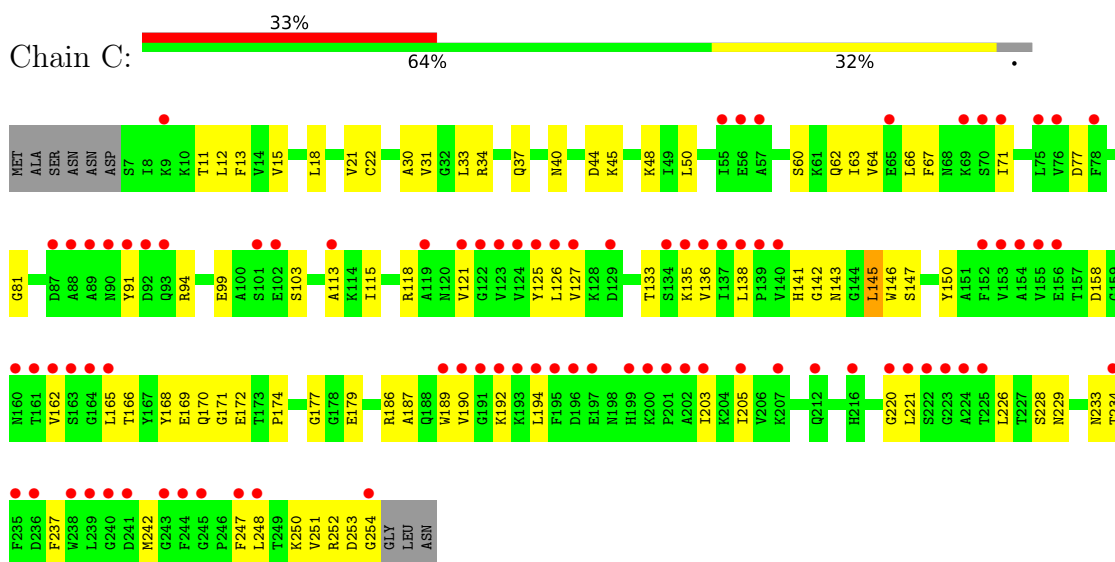
- Molecule 1: Na(+)-translocating NADH-quinone reductase subunit A



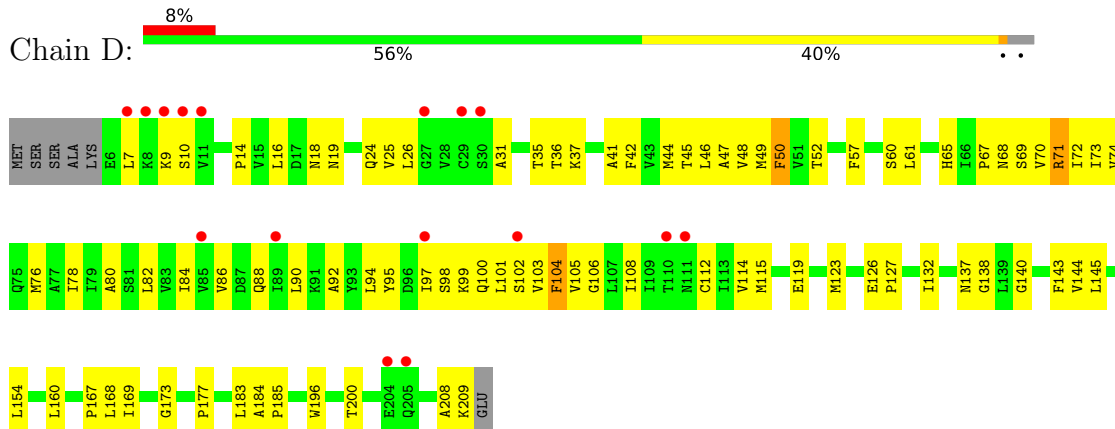
- Molecule 2: Na(+)-translocating NADH-quinone reductase subunit B



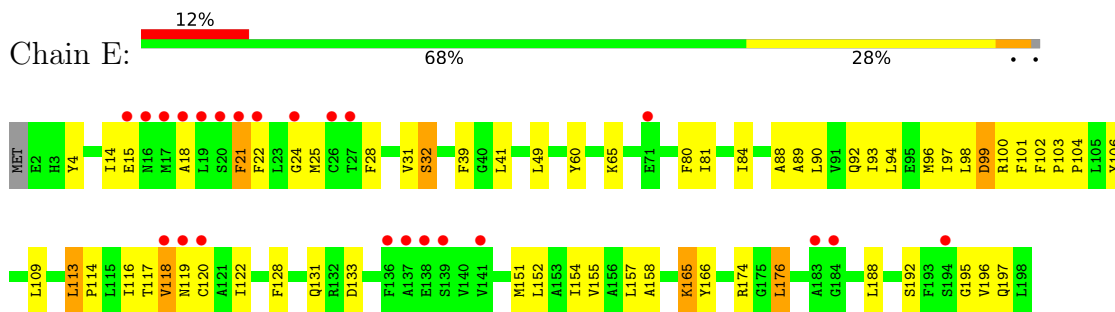
- Molecule 3: Na(+)-translocating NADH-quinone reductase subunit C



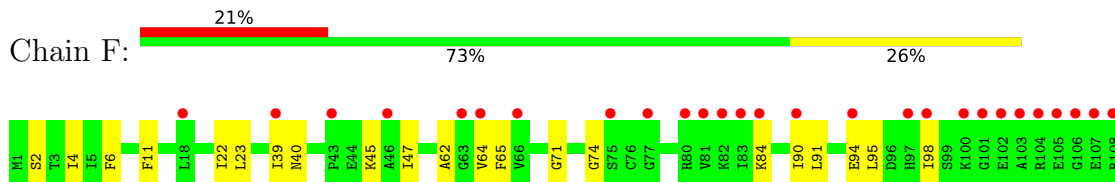
- Molecule 4: Na(+)-translocating NADH-quinone reductase subunit D

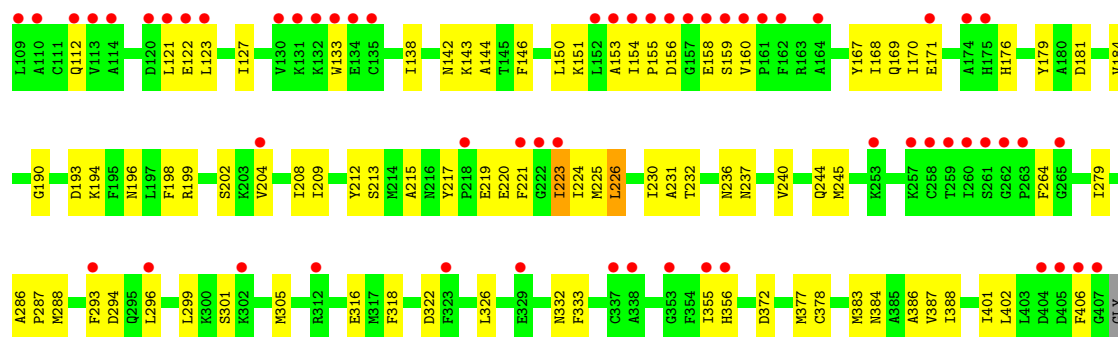


- Molecule 5: Na(+)-translocating NADH-quinone reductase subunit E



- Molecule 6: Na(+)-translocating NADH-quinone reductase subunit F





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	95.27Å 143.32Å 104.37Å 90.00° 110.98° 90.00°	Depositor
Resolution (Å)	48.73 – 3.50 48.73 – 3.50	Depositor EDS
% Data completeness (in resolution range)	99.5 (48.73-3.50) 99.6 (48.73-3.50)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.08 (at 3.48Å)	Xtrriage
Refinement program	PHENIX 1.20.1-4487	Depositor
R, R_{free}	0.266 , 0.290 0.264 , 0.326	Depositor DCC
R_{free} test set	1647 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	165.3	Xtrriage
Anisotropy	0.124	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 113.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.89	EDS
Total number of atoms	28808	wwPDB-VP
Average B, all atoms (Å ²)	193.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.45% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: FMN, NA, LMT, FAD, RBF, FES

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	0.32	0/3124	0.67	0/4236
2	B	0.33	0/2998	0.69	6/4083 (0.1%)
3	C	0.36	0/1914	0.76	4/2583 (0.2%)
4	D	0.37	0/1594	0.90	6/2164 (0.3%)
5	E	0.42	0/1537	0.94	8/2084 (0.4%)
6	F	0.36	0/3239	0.71	3/4384 (0.1%)
All	All	0.35	0/14406	0.76	27/19534 (0.1%)

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
4	D	0	1
5	E	0	1
All	All	0	2

There are no bond length outliers.

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	113	LEU	CB-CG-CD1	-6.92	99.24	111.00
3	C	145	LEU	CB-CG-CD2	6.67	122.34	111.00
2	B	388	PHE	CB-CG-CD1	-6.50	116.25	120.80
6	F	223	ILE	CG1-CB-CG2	-6.48	97.15	111.40
5	E	21	PHE	CB-CG-CD2	-6.27	116.41	120.80
2	B	388	PHE	CB-CG-CD2	6.27	125.19	120.80
2	B	336	PHE	CB-CG-CD2	-6.08	116.54	120.80
5	E	21	PHE	CB-CG-CD1	6.02	125.02	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	50	PHE	CB-CG-CD1	-5.97	116.62	120.80
4	D	82	LEU	CB-CG-CD2	-5.93	100.92	111.00
5	E	4	TYR	CB-CG-CD1	-5.87	117.48	121.00
3	C	67	PHE	CB-CG-CD2	-5.82	116.73	120.80
4	D	57	PHE	CB-CG-CD1	-5.79	116.75	120.80
4	D	50	PHE	CB-CG-CD2	5.64	124.75	120.80
2	B	336	PHE	CB-CG-CD1	5.61	124.72	120.80
5	E	165	LYS	CD-CE-NZ	5.58	124.52	111.70
6	F	226	LEU	CA-CB-CG	5.50	127.96	115.30
4	D	57	PHE	CB-CG-CD2	5.36	124.55	120.80
5	E	4	TYR	CB-CG-CD2	5.35	124.21	121.00
4	D	104	PHE	CB-CG-CD2	-5.35	117.06	120.80
5	E	39	PHE	CB-CG-CD2	-5.34	117.06	120.80
6	F	236	ASN	CB-CA-C	-5.23	99.93	110.40
3	C	13	PHE	CB-CG-CD2	-5.22	117.14	120.80
3	C	67	PHE	CB-CG-CD1	5.21	124.45	120.80
2	B	86	LEU	CB-CG-CD2	5.20	119.83	111.00
5	E	176	LEU	CB-CG-CD1	5.19	119.83	111.00
2	B	244	GLY	N-CA-C	-5.14	100.26	113.10

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	D	208	ALA	Peptide
5	E	32	SER	Mainchain

5.2 Too-close contacts [\(i\)](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3070	3121	3123	43	2
2	B	2911	2907	2907	63	0
3	C	1882	1892	1892	70	0
4	D	1562	1646	1648	88	0
5	E	1504	1574	1574	98	0
6	F	3161	3098	3098	91	2

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	B	30	19	19	4	0
7	C	30	19	19	2	0
8	B	27	19	20	4	0
9	B	70	92	84	8	0
9	D	35	46	43	1	0
10	B	1	0	0	0	0
11	E	4	0	0	0	0
11	F	4	0	0	2	0
12	F	53	31	31	3	0
All	All	14344	14464	14458	406	2

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 14.

All (406) 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)
5:E:98:LEU:HD12	5:E:113:LEU:HD11	1.12	1.07
5:E:98:LEU:HD12	5:E:113:LEU:CD1	1.93	0.98
6:F:388:ILE:HD13	6:F:401:ILE:HD13	1.47	0.97
5:E:28:PHE:O	5:E:32:SER:OG	1.80	0.96
5:E:98:LEU:CD1	5:E:113:LEU:HD11	1.99	0.93
6:F:213:SER:O	6:F:226:LEU:HD12	1.71	0.89
5:E:98:LEU:O	5:E:102:PHE:N	2.09	0.85
5:E:117:THR:O	5:E:118:VAL:HG22	1.80	0.82
5:E:98:LEU:CD1	5:E:113:LEU:CD1	2.58	0.80
3:C:118:ARG:NH1	3:C:242:MET:O	2.14	0.80
3:C:252:ARG:O	3:C:252:ARG:NH1	2.13	0.80
1:A:433:GLN:OE1	2:B:40:VAL:HG13	1.81	0.79
6:F:244:GLN:NE2	12:F:1501:FAD:O1A	2.16	0.79
4:D:72:ILE:HG22	5:E:88:ALA:HB1	1.64	0.79
3:C:162:VAL:HG12	3:C:192:LYS:O	1.83	0.78
5:E:41:LEU:HD11	5:E:116:ILE:HD11	1.65	0.78
6:F:355:ILE:HD11	6:F:383:MET:SD	2.25	0.76
6:F:138:ILE:HD11	6:F:153:ALA:HB2	1.68	0.76
4:D:69:SER:O	5:E:92:GLN:NE2	2.19	0.75
5:E:103:PRO:HD2	5:E:104:PRO:HD2	1.67	0.75
5:E:99:ASP:O	5:E:100:ARG:NH2	2.20	0.74
4:D:61:LEU:HD23	4:D:127:PRO:HG2	1.69	0.74
3:C:145:LEU:HD22	3:C:146:TRP:NE1	2.03	0.74
5:E:113:LEU:HB3	5:E:114:PRO:HD3	1.68	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:34:GLU:HB2	2:B:39:LEU:HD13	1.70	0.74
4:D:26:LEU:HD22	4:D:112:CYS:HB3	1.68	0.74
9:B:503:LMT:O5B	9:B:503:LMT:O3'	2.06	0.73
4:D:90:LEU:HD12	4:D:101:LEU:HD11	1.67	0.73
1:A:134:ARG:HG3	1:A:230:VAL:HG21	1.70	0.73
3:C:145:LEU:HD23	5:E:128:PHE:HE1	1.54	0.72
5:E:98:LEU:O	5:E:100:ARG:N	2.23	0.72
1:A:392:LEU:HD13	2:B:401:VAL:HG21	1.73	0.71
5:E:114:PRO:O	5:E:117:THR:HG22	1.91	0.70
4:D:72:ILE:HG12	4:D:115:MET:HE1	1.74	0.69
5:E:102:PHE:HB2	5:E:106:TYR:HB2	1.72	0.69
1:A:72:VAL:HG21	1:A:94:VAL:HG22	1.74	0.69
3:C:33:LEU:HB3	4:D:92:ALA:HB2	1.74	0.69
5:E:28:PHE:HA	5:E:154:ILE:HD13	1.75	0.69
4:D:16:LEU:HD21	4:D:143:PHE:CE2	2.28	0.69
4:D:90:LEU:O	4:D:98:SER:OG	2.11	0.68
1:A:374:MET:HG3	1:A:395:ARG:HD3	1.76	0.67
3:C:145:LEU:HD12	3:C:226:LEU:HB2	1.75	0.67
2:B:292:ILE:HG22	8:B:502:RBF:HC71	1.76	0.67
4:D:72:ILE:HB	5:E:92:GLN:OE1	1.94	0.67
6:F:90:ILE:HG21	6:F:95:LEU:HD21	1.77	0.66
5:E:119:ASN:HB3	5:E:122:ILE:HG12	1.77	0.66
6:F:168:ILE:HD13	6:F:224:ILE:HG21	1.78	0.66
4:D:80:ALA:HB3	5:E:81:ILE:HD12	1.77	0.66
6:F:232:THR:O	12:F:1501:FAD:O3B	2.14	0.65
6:F:194:LYS:HA	6:F:194:LYS:HE3	1.77	0.65
4:D:72:ILE:HG21	5:E:117:THR:HG21	1.78	0.65
4:D:61:LEU:HD23	4:D:127:PRO:CG	2.25	0.65
5:E:98:LEU:O	5:E:101:PHE:N	2.30	0.64
3:C:127:VAL:HB	3:C:135:LYS:HG3	1.79	0.64
6:F:159:SER:HB3	6:F:221:PHE:HB2	1.79	0.64
5:E:24:GLY:HA2	5:E:119:ASN:OD1	1.96	0.64
6:F:90:ILE:HD11	6:F:94:GLU:HB3	1.79	0.64
3:C:250:LYS:O	3:C:253:ASP:OD1	2.15	0.64
2:B:213:PHE:HA	2:B:220:ILE:HG21	1.80	0.63
3:C:253:ASP:OD1	3:C:254:GLY:N	2.31	0.63
6:F:219:GLU:O	6:F:221:PHE:HD1	1.81	0.63
1:A:133:THR:O	1:A:137:SER:N	2.31	0.63
3:C:145:LEU:HD22	3:C:146:TRP:CE2	2.33	0.63
6:F:40:ASN:N	6:F:121:LEU:O	2.29	0.62
1:A:133:THR:O	1:A:137:SER:HA	1.99	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:274:GLU:OE1	7:B:501:FMN:O3'	2.17	0.62
5:E:118:VAL:HG23	5:E:118:VAL:O	1.97	0.62
6:F:160:VAL:HG21	6:F:224:ILE:HD11	1.82	0.61
3:C:141:HIS:HB3	3:C:150:TYR:CD2	2.35	0.61
6:F:212:TYR:HB3	6:F:226:LEU:HD11	1.82	0.61
1:A:392:LEU:CD1	2:B:401:VAL:HG21	2.30	0.61
4:D:72:ILE:CG2	5:E:117:THR:HG21	2.30	0.61
5:E:98:LEU:C	5:E:102:PHE:HB3	2.21	0.61
5:E:99:ASP:HA	5:E:102:PHE:HB3	1.83	0.60
4:D:10:SER:OG	4:D:132:ILE:HG21	2.01	0.60
1:A:283:LEU:HD12	1:A:309:ALA:CB	2.32	0.60
6:F:40:ASN:HA	6:F:122:GLU:HA	1.83	0.60
2:B:375:ASN:ND2	5:E:192:SER:O	2.34	0.60
6:F:212:TYR:CB	6:F:226:LEU:HD21	2.32	0.60
1:A:433:GLN:CD	2:B:40:VAL:HG13	2.23	0.60
5:E:103:PRO:CD	5:E:104:PRO:HD2	2.32	0.60
1:A:374:MET:CG	1:A:395:ARG:HD3	2.32	0.60
2:B:236:THR:HG21	7:B:501:FMN:C5'	2.33	0.59
6:F:160:VAL:CG2	6:F:224:ILE:HD11	2.33	0.59
3:C:179:GLU:HB2	3:C:221:LEU:HD12	1.85	0.58
2:B:308:LEU:HD23	2:B:369:VAL:HB	1.85	0.58
6:F:384:ASN:O	6:F:388:ILE:HG22	2.03	0.58
4:D:169:ILE:HG13	4:D:173:GLY:O	2.04	0.58
2:B:272:ILE:O	2:B:272:ILE:HG23	2.03	0.58
3:C:145:LEU:HD12	3:C:226:LEU:HD12	1.86	0.57
3:C:170:GLN:OE1	3:C:172:GLU:N	2.37	0.57
2:B:395:LEU:HD21	9:B:503:LMT:H41	1.87	0.57
3:C:145:LEU:HD23	5:E:128:PHE:CE1	2.38	0.57
6:F:293:PHE:CE1	6:F:326:LEU:HD11	2.40	0.57
1:A:43:MET:CE	1:A:79:ILE:HD13	2.35	0.56
1:A:134:ARG:CG	1:A:230:VAL:HG21	2.35	0.56
2:B:237:ALA:HB1	2:B:249:LEU:HD21	1.88	0.56
2:B:129:PHE:HB2	2:B:272:ILE:HD13	1.88	0.56
3:C:145:LEU:CD1	3:C:226:LEU:HD12	2.36	0.56
4:D:41:ALA:O	4:D:45:THR:HG23	2.05	0.56
2:B:238:LEU:HB2	7:B:501:FMN:O1P	2.07	0.55
6:F:156:ASP:OD1	6:F:158:GLU:N	2.36	0.55
5:E:14:ILE:CG1	5:E:196:VAL:HG11	2.36	0.55
5:E:14:ILE:HG12	5:E:196:VAL:HG11	1.88	0.55
6:F:196:ASN:HB2	6:F:199:ARG:CZ	2.36	0.55
6:F:223:ILE:O	6:F:223:ILE:HG13	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:126:LEU:HD23	3:C:136:VAL:HG13	1.89	0.55
4:D:126:GLU:OE1	4:D:126:GLU:HA	2.07	0.55
5:E:93:ILE:O	5:E:97:ILE:HG13	2.07	0.55
3:C:99:GLU:O	3:C:103:SER:OG	2.22	0.54
3:C:113:ALA:HA	3:C:233:ASN:HB3	1.89	0.54
5:E:31:VAL:HG21	5:E:41:LEU:HD22	1.89	0.54
2:B:327:TRP:CD1	9:B:504:LMT:H12	2.42	0.54
3:C:205:ILE:HG21	3:C:228:SER:HB2	1.88	0.54
6:F:159:SER:HB3	6:F:221:PHE:CB	2.38	0.54
4:D:168:LEU:HD22	4:D:177:PRO:HG3	1.90	0.54
3:C:44:ASP:OD2	4:D:99:LYS:NZ	2.40	0.54
4:D:97:ILE:O	4:D:100:GLN:HB2	2.07	0.54
5:E:117:THR:O	5:E:118:VAL:CG2	2.55	0.54
1:A:133:THR:O	1:A:137:SER:CA	2.56	0.54
3:C:165:LEU:HD22	3:C:189:TRP:CD2	2.42	0.54
1:A:37:VAL:HG12	1:A:138:LYS:HE3	1.90	0.54
6:F:64:VAL:HG21	6:F:123:LEU:HD12	1.89	0.54
6:F:179:TYR:OH	6:F:231:ALA:O	2.26	0.54
9:B:504:LMT:O2B	9:B:504:LMT:H5B	2.08	0.54
5:E:90:LEU:O	5:E:93:ILE:HG12	2.08	0.53
6:F:90:ILE:CG2	6:F:95:LEU:HD21	2.39	0.53
1:A:97:ASP:OD1	1:A:97:ASP:O	2.26	0.53
6:F:71:GLY:O	11:F:1502:FES:S2	2.67	0.53
2:B:246:ALA:O	2:B:249:LEU:HB2	2.07	0.53
5:E:32:SER:O	5:E:158:ALA:HA	2.09	0.53
1:A:10:LEU:CD2	2:B:47:VAL:HG21	2.39	0.53
1:A:291:ILE:HG21	1:A:296:VAL:HG21	1.90	0.53
3:C:113:ALA:HB2	3:C:237:PHE:HB3	1.91	0.53
6:F:133:TRP:HB3	6:F:154:ILE:CD1	2.39	0.53
4:D:47:ALA:HB1	4:D:108:ILE:HD13	1.89	0.53
4:D:168:LEU:CD2	4:D:177:PRO:HG3	2.39	0.53
2:B:241:TRP:CH2	2:B:246:ALA:HB2	2.44	0.53
4:D:74:VAL:O	4:D:78:ILE:HG12	2.09	0.53
4:D:168:LEU:O	4:D:173:GLY:N	2.42	0.52
2:B:329:TRP:O	2:B:333:LEU:HG	2.08	0.52
6:F:170:ILE:O	6:F:209:ILE:HD12	2.09	0.52
5:E:151:MET:HA	5:E:154:ILE:HG22	1.92	0.52
6:F:217:TYR:CE2	6:F:219:GLU:HB2	2.44	0.52
3:C:71:ILE:HG23	3:C:125:TYR:HB3	1.90	0.52
5:E:60:TYR:O	5:E:65:LYS:N	2.43	0.52
5:E:89:ALA:HA	6:F:22:ILE:HD11	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:220:GLU:HB3	6:F:223:ILE:HD11	1.92	0.52
1:A:216:PRO:HG3	1:A:420:LEU:HD12	1.91	0.52
6:F:47:ILE:HD12	6:F:62:ALA:HB2	1.91	0.52
2:B:168:LEU:O	2:B:272:ILE:O	2.28	0.52
3:C:18:LEU:HD11	4:D:78:ILE:HD11	1.92	0.52
6:F:169:GLN:HB3	6:F:209:ILE:HD11	1.91	0.52
4:D:72:ILE:HG12	4:D:115:MET:CE	2.40	0.52
2:B:260:TRP:HA	2:B:329:TRP:CH2	2.45	0.52
1:A:135:PRO:O	1:A:136:PHE:CD1	2.64	0.51
3:C:143:ASN:OD1	5:E:131:GLN:NE2	2.41	0.51
1:A:149:ILE:HD12	1:A:185:THR:HB	1.90	0.51
2:B:370:LEU:O	2:B:374:VAL:HG22	2.11	0.51
2:B:371:ILE:HD11	5:E:192:SER:HB2	1.93	0.51
3:C:145:LEU:HD22	3:C:146:TRP:CD1	2.45	0.51
1:A:135:PRO:HA	1:A:411:LEU:O	2.11	0.51
6:F:212:TYR:CB	6:F:226:LEU:HD11	2.41	0.51
3:C:33:LEU:O	3:C:37:GLN:HG3	2.11	0.51
2:B:54:LYS:HD3	2:B:157:GLU:HG2	1.93	0.51
4:D:72:ILE:HG22	5:E:88:ALA:CB	2.38	0.51
5:E:99:ASP:CA	5:E:102:PHE:HB3	2.40	0.51
6:F:286:ALA:HB3	6:F:287:PRO:CD	2.41	0.51
1:A:32:LEU:HD23	1:A:89:SER:HB3	1.93	0.50
3:C:150:TYR:HB3	3:C:168:TYR:CZ	2.46	0.50
6:F:74:GLY:HA2	11:F:1502:FES:S1	2.52	0.50
1:A:428:LYS:NZ	2:B:51:VAL:O	2.38	0.50
4:D:42:PHE:CE1	4:D:46:LEU:HD11	2.45	0.50
4:D:60:SER:HB2	4:D:127:PRO:HG3	1.94	0.50
5:E:102:PHE:HD2	5:E:106:TYR:HB3	1.75	0.50
4:D:80:ALA:HB3	5:E:81:ILE:CD1	2.42	0.50
4:D:73:ILE:HD13	5:E:88:ALA:HB3	1.94	0.50
4:D:184:ALA:HB3	5:E:22:PHE:CZ	2.46	0.50
6:F:168:ILE:CD1	6:F:224:ILE:HG21	2.42	0.50
1:A:428:LYS:HD2	2:B:48:ARG:HD2	1.93	0.49
3:C:30:ALA:O	3:C:34:ARG:HB2	2.12	0.49
1:A:283:LEU:HD12	1:A:309:ALA:HB2	1.94	0.49
3:C:77:ASP:O	3:C:81:GLY:N	2.41	0.49
6:F:196:ASN:CB	6:F:199:ARG:CZ	2.90	0.49
6:F:221:PHE:N	6:F:221:PHE:CD1	2.80	0.49
4:D:95:TYR:HE1	4:D:99:LYS:HZ3	1.60	0.49
5:E:102:PHE:CD1	5:E:103:PRO:HD3	2.47	0.49
2:B:64:VAL:HG12	2:B:342:PHE:CD2	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:96:MET:O	5:E:99:ASP:HB2	2.12	0.49
3:C:31:VAL:HB	6:F:4:ILE:HD11	1.94	0.49
6:F:215:ALA:HB2	6:F:286:ALA:HB1	1.94	0.49
6:F:39:ILE:HB	6:F:45:LYS:HB3	1.95	0.49
6:F:402:LEU:N	6:F:402:LEU:HD12	2.28	0.49
4:D:18:ASN:OD1	4:D:24:GLN:HG3	2.12	0.49
5:E:100:ARG:HA	5:E:100:ARG:NE	2.28	0.49
6:F:65:PHE:O	6:F:127:ILE:HG23	2.12	0.48
9:B:503:LMT:H22	5:E:155:VAL:HG11	1.94	0.48
6:F:156:ASP:OD1	6:F:156:ASP:C	2.50	0.48
4:D:25:VAL:CG2	5:E:176:LEU:HD13	2.44	0.48
2:B:392:PHE:CE1	5:E:152:LEU:HD21	2.49	0.48
3:C:45:LYS:HD3	3:C:45:LYS:N	2.29	0.48
2:B:56:ILE:HG23	2:B:292:ILE:HG12	1.96	0.48
3:C:126:LEU:HB3	3:C:133:THR:HG22	1.94	0.48
3:C:50:LEU:HD12	3:C:63:ILE:HG23	1.95	0.47
4:D:19:ASN:OD1	4:D:144:VAL:HG21	2.14	0.47
5:E:99:ASP:N	5:E:102:PHE:HB3	2.29	0.47
2:B:383:MET:O	2:B:387:LEU:HG	2.14	0.47
4:D:31:ALA:O	4:D:35:THR:OG1	2.20	0.47
1:A:278:VAL:HG22	1:A:279:MET:N	2.29	0.47
2:B:343:MET:HA	8:B:502:RBF:O4	2.15	0.47
2:B:54:LYS:CD	2:B:157:GLU:HG2	2.43	0.47
2:B:86:LEU:HD11	2:B:232:TYR:HD1	1.79	0.47
4:D:154:LEU:HB2	4:D:160:LEU:HD21	1.97	0.47
4:D:169:ILE:HA	4:D:173:GLY:O	2.15	0.47
6:F:94:GLU:O	6:F:98:ILE:HD12	2.14	0.47
4:D:14:PRO:HB2	4:D:137:ASN:HA	1.97	0.47
4:D:90:LEU:HD23	4:D:94:LEU:HB2	1.96	0.47
4:D:119:GLU:O	4:D:123:MET:HB2	2.15	0.47
1:A:43:MET:HE1	1:A:79:ILE:HD13	1.96	0.47
5:E:98:LEU:C	5:E:100:ARG:N	2.69	0.47
6:F:133:TRP:CG	6:F:154:ILE:HD11	2.50	0.47
6:F:144:ALA:HB1	6:F:316:GLU:HA	1.96	0.47
4:D:44:MET:HE2	4:D:104:PHE:CE2	2.50	0.46
6:F:196:ASN:CG	6:F:199:ARG:NH2	2.69	0.46
5:E:90:LEU:HA	5:E:93:ILE:HG12	1.97	0.46
4:D:196:TRP:O	4:D:200:THR:HG22	2.16	0.46
4:D:72:ILE:N	5:E:92:GLN:OE1	2.45	0.46
5:E:102:PHE:O	5:E:106:TYR:N	2.43	0.46
6:F:91:LEU:HD13	6:F:112:GLN:HG3	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:168:LEU:HD22	4:D:177:PRO:CG	2.45	0.46
5:E:117:THR:C	5:E:118:VAL:HG13	2.36	0.46
6:F:143:LYS:HB3	6:F:318:PHE:CG	2.50	0.46
1:A:403:ASP:O	1:A:407:ARG:HG3	2.16	0.46
2:B:241:TRP:CZ2	2:B:246:ALA:HB2	2.50	0.46
5:E:32:SER:OG	5:E:157:LEU:HD23	2.16	0.46
6:F:64:VAL:HG21	6:F:123:LEU:CD1	2.45	0.46
4:D:25:VAL:O	4:D:26:LEU:HD23	2.15	0.46
3:C:21:VAL:HG23	3:C:22:CYS:N	2.31	0.45
4:D:115:MET:SD	5:E:118:VAL:HG11	2.56	0.45
3:C:171:GLY:O	4:D:103:VAL:CG1	2.64	0.45
5:E:41:LEU:HD13	5:E:109:LEU:HD21	1.99	0.45
3:C:91:TYR:OH	3:C:121:VAL:O	2.28	0.45
4:D:50:PHE:CE1	4:D:86:VAL:HG21	2.51	0.45
5:E:118:VAL:O	5:E:118:VAL:CG2	2.64	0.45
1:A:77:VAL:HG23	1:A:78:GLU:HG2	1.99	0.45
1:A:61:LYS:NZ	6:F:372:ASP:OD1	2.49	0.45
2:B:375:ASN:OD1	5:E:195:GLY:HA3	2.16	0.45
4:D:14:PRO:O	4:D:140:GLY:HA3	2.16	0.45
5:E:31:VAL:HG11	5:E:109:LEU:CD2	2.46	0.45
6:F:84:LYS:HE3	6:F:122:GLU:HB2	1.98	0.45
2:B:63:ALA:HB2	2:B:287:ILE:HG23	1.98	0.45
5:E:24:GLY:CA	5:E:119:ASN:OD1	2.65	0.45
5:E:98:LEU:C	5:E:100:ARG:H	2.20	0.45
1:A:389:GLU:OE1	2:B:353:THR:HG22	2.17	0.45
3:C:40:ASN:HD22	4:D:95:TYR:HB2	1.82	0.45
3:C:138:LEU:HD11	3:C:248:LEU:HD21	1.99	0.45
5:E:116:ILE:O	5:E:119:ASN:HB2	2.17	0.44
2:B:334:GLY:HA3	2:B:380:GLU:OE1	2.17	0.44
6:F:190:GLY:HA2	6:F:193:ASP:OD2	2.18	0.44
6:F:237:ASN:OD1	6:F:240:VAL:HG23	2.18	0.44
6:F:377:MET:SD	6:F:387:VAL:HG11	2.57	0.44
3:C:44:ASP:OD2	4:D:99:LYS:HE3	2.17	0.44
6:F:2:SER:O	6:F:6:PHE:CD2	2.70	0.44
2:B:238:LEU:HD12	7:B:501:FMN:O1P	2.17	0.44
4:D:25:VAL:HG22	5:E:176:LEU:HD13	2.00	0.44
2:B:82:ALA:HB3	2:B:229:ALA:HB2	1.98	0.44
4:D:184:ALA:N	4:D:185:PRO:CD	2.80	0.44
5:E:99:ASP:HA	5:E:102:PHE:CD1	2.53	0.44
5:E:102:PHE:N	5:E:103:PRO:CD	2.81	0.44
2:B:130:LEU:HB2	2:B:131:PRO:HD3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:250:ILE:CD1	2:B:257:THR:HG22	2.48	0.44
9:B:504:LMT:O3'	9:B:504:LMT:O5B	2.35	0.44
4:D:52:THR:HG22	4:D:114:VAL:HG22	2.00	0.44
3:C:150:TYR:HB2	3:C:169:GLU:HB3	1.99	0.44
3:C:44:ASP:OD2	4:D:99:LYS:CE	2.66	0.43
4:D:31:ALA:O	4:D:35:THR:CG2	2.65	0.43
6:F:167:TYR:N	6:F:264:PHE:O	2.47	0.43
6:F:279:ILE:CG2	6:F:355:ILE:HD12	2.48	0.43
6:F:286:ALA:HB3	6:F:287:PRO:HD3	2.00	0.43
3:C:172:GLU:HB2	3:C:177:GLY:C	2.39	0.43
7:C:1000:FMN:H9	7:C:1000:FMN:H1'1	1.76	0.43
7:C:1000:FMN:HM81	5:E:22:PHE:HB2	2.00	0.43
4:D:90:LEU:C	4:D:98:SER:OG	2.56	0.43
4:D:167:PRO:HB2	4:D:173:GLY:HA3	2.00	0.43
6:F:142:ASN:ND2	6:F:184:VAL:HG13	2.33	0.43
1:A:53:LYS:O	1:A:70:SER:O	2.36	0.43
1:A:374:MET:O	1:A:376:PRO:HD3	2.18	0.43
3:C:174:PRO:HG2	4:D:104:PHE:CE1	2.53	0.43
6:F:179:TYR:HB3	6:F:198:PHE:HA	2.00	0.43
6:F:305:MET:HB3	6:F:333:PHE:HD1	1.84	0.43
2:B:60:VAL:HG21	8:B:502:RBF:HC82	1.99	0.43
4:D:31:ALA:O	4:D:35:THR:HG23	2.18	0.43
4:D:68:ASN:HA	4:D:71:ARG:HG2	1.99	0.43
1:A:99:GLN:OE1	1:A:255:GLU:HB3	2.19	0.43
2:B:86:LEU:CD1	2:B:232:TYR:HB2	2.48	0.43
3:C:60:SER:O	3:C:64:VAL:HG23	2.18	0.43
4:D:49:MET:HG3	4:D:138:GLY:HA3	2.01	0.43
5:E:49:LEU:HG	5:E:122:ILE:HD12	2.01	0.43
3:C:150:TYR:HB3	3:C:168:TYR:CE2	2.54	0.43
2:B:70:TRP:CD1	2:B:276:SER:HB2	2.54	0.43
4:D:52:THR:CG2	4:D:114:VAL:HG22	2.48	0.43
1:A:156:THR:OG1	1:A:215:HIS:O	2.28	0.43
9:B:504:LMT:O2B	9:B:504:LMT:H4'	2.17	0.43
6:F:301:SER:O	6:F:332:ASN:ND2	2.51	0.43
2:B:380:GLU:CG	2:B:381:GLY:N	2.82	0.43
5:E:84:ILE:HD12	5:E:84:ILE:HA	1.87	0.43
3:C:174:PRO:CG	4:D:102:SER:HB3	2.49	0.43
4:D:184:ALA:CB	5:E:22:PHE:CE2	3.01	0.43
4:D:209:LYS:HG2	5:E:174:ARG:CZ	2.49	0.43
6:F:204:VAL:HG22	6:F:244:GLN:HB2	2.01	0.43
6:F:240:VAL:CG1	12:F:1501:FAD:N3A	2.82	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:B:503:LMT:O3'	9:B:503:LMT:C1B	2.65	0.42
3:C:12:LEU:HD11	6:F:23:LEU:CD1	2.48	0.42
2:B:259:THR:HG23	2:B:262:ASP:H	1.83	0.42
6:F:215:ALA:HB2	6:F:286:ALA:CB	2.49	0.42
1:A:394:LEU:HD22	1:A:431:TYR:CD1	2.53	0.42
4:D:76:MET:HE1	4:D:115:MET:HB2	2.02	0.42
6:F:45:LYS:HB3	6:F:45:LYS:HE3	1.83	0.42
3:C:44:ASP:O	3:C:48:LYS:HG2	2.18	0.42
4:D:72:ILE:CB	5:E:92:GLN:OE1	2.65	0.42
3:C:147:SER:HA	5:E:131:GLN:OE1	2.19	0.42
3:C:229:ASN:ND2	5:E:197:GLN:NE2	2.68	0.42
4:D:65:HIS:O	4:D:67:PRO:HD3	2.20	0.42
5:E:93:ILE:HA	5:E:96:MET:CE	2.49	0.42
3:C:11:THR:O	3:C:15:VAL:HG22	2.20	0.42
3:C:165:LEU:HD22	3:C:189:TRP:CE2	2.54	0.42
6:F:208:ILE:HD12	6:F:245:MET:HB2	2.02	0.42
1:A:119:LYS:NZ	1:A:142:ILE:O	2.48	0.42
2:B:292:ILE:CG2	8:B:502:RBF:HC71	2.47	0.42
2:B:336:PHE:HA	2:B:382:MET:CE	2.50	0.42
3:C:247:PHE:CE2	3:C:251:VAL:HG21	2.55	0.42
2:B:136:VAL:HG21	2:B:166:PHE:HD2	1.85	0.41
3:C:62:GLN:O	3:C:66:LEU:HD23	2.20	0.41
3:C:71:ILE:CG2	3:C:125:TYR:HB3	2.50	0.41
4:D:67:PRO:HB2	4:D:70:VAL:HG22	2.02	0.41
6:F:4:ILE:HD12	6:F:4:ILE:H	1.85	0.41
6:F:294:ASP:OD1	6:F:299:LEU:HD23	2.20	0.41
1:A:29:VAL:CG1	1:A:71:PRO:HG2	2.50	0.41
2:B:111:THR:HG23	2:B:116:ALA:HB2	2.02	0.41
3:C:94:ARG:NE	3:C:150:TYR:CE2	2.89	0.41
4:D:7:LEU:HD23	4:D:9:LYS:HE2	2.02	0.41
9:D:301:LMT:O1B	9:D:301:LMT:O6'	2.36	0.41
6:F:217:TYR:CE1	6:F:220:GLU:CG	3.03	0.41
1:A:134:ARG:HD2	1:A:412:GLU:O	2.20	0.41
4:D:97:ILE:HA	4:D:100:GLN:HG3	2.02	0.41
4:D:105:VAL:HG23	4:D:106:GLY:H	1.86	0.41
2:B:404:ASN:O	2:B:404:ASN:ND2	2.53	0.41
4:D:84:ILE:O	4:D:88:GLN:HG2	2.20	0.41
4:D:98:SER:H	4:D:98:SER:HG	1.62	0.41
6:F:288:MET:HG2	6:F:378:CYS:SG	2.61	0.41
6:F:356:HIS:CD2	6:F:386:ALA:HB1	2.55	0.41
2:B:86:LEU:HD11	2:B:232:TYR:HB2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:392:PHE:CE1	5:E:152:LEU:CD2	3.04	0.41
3:C:205:ILE:HG23	3:C:220:GLY:HA2	2.03	0.41
4:D:31:ALA:HA	4:D:145:LEU:CD1	2.51	0.41
5:E:14:ILE:HG12	5:E:196:VAL:CG1	2.50	0.41
6:F:151:LYS:HE3	6:F:225:MET:CG	2.50	0.41
1:A:229:PRO:O	2:B:411:ARG:NH2	2.53	0.41
3:C:171:GLY:O	4:D:103:VAL:HG11	2.21	0.41
4:D:48:VAL:O	4:D:52:THR:HG23	2.20	0.41
6:F:159:SER:HB3	6:F:221:PHE:CA	2.50	0.41
6:F:176:HIS:ND1	6:F:202:SER:O	2.52	0.41
2:B:86:LEU:HD11	2:B:232:TYR:CD1	2.55	0.41
2:B:271:SER:CB	2:B:274:GLU:OE1	2.68	0.41
4:D:72:ILE:HG23	4:D:115:MET:CE	2.51	0.41
4:D:105:VAL:HG23	5:E:80:PHE:HE2	1.85	0.41
5:E:81:ILE:HG12	6:F:11:PHE:CE2	2.56	0.41
6:F:217:TYR:CE1	6:F:293:PHE:CD2	3.08	0.41
3:C:166:THR:HA	3:C:186:ARG:HD2	2.03	0.41
5:E:98:LEU:CD1	5:E:113:LEU:HD12	2.49	0.41
5:E:165:LYS:HG3	5:E:166:TYR:N	2.35	0.41
6:F:213:SER:HB2	6:F:406:PHE:CZ	2.55	0.41
1:A:74:GLY:HA3	1:A:93:GLU:O	2.20	0.41
2:B:333:LEU:O	2:B:372:ARG:NH2	2.51	0.41
6:F:154:ILE:HD12	6:F:155:PRO:HD2	2.02	0.41
6:F:217:TYR:CE1	6:F:293:PHE:HD2	2.38	0.41
6:F:217:TYR:CE1	6:F:220:GLU:HG2	2.55	0.41
6:F:296:LEU:HD12	6:F:326:LEU:HD13	2.02	0.41
3:C:142:GLY:HA3	3:C:234:THR:OG1	2.21	0.41
3:C:253:ASP:OD1	3:C:253:ASP:C	2.60	0.41
5:E:102:PHE:HB2	5:E:106:TYR:CD2	2.56	0.41
2:B:55:ARG:O	2:B:59:MET:HG2	2.21	0.40
5:E:15:GLU:HB3	5:E:21:PHE:CE1	2.56	0.40
5:E:18:ALA:O	5:E:22:PHE:HA	2.21	0.40
5:E:93:ILE:HG13	5:E:94:LEU:N	2.36	0.40
5:E:154:ILE:HG23	5:E:155:VAL:N	2.37	0.40
6:F:212:TYR:HB3	6:F:226:LEU:HD21	2.00	0.40
3:C:115:ILE:O	3:C:115:ILE:HG13	2.21	0.40
6:F:146:PHE:HB3	6:F:230:ILE:HG22	2.02	0.40
6:F:150:LEU:O	6:F:225:MET:HA	2.21	0.40
2:B:271:SER:HB2	2:B:274:GLU:OE1	2.21	0.40
2:B:274:GLU:OE2	2:B:334:GLY:C	2.60	0.40
3:C:141:HIS:CB	3:C:150:TYR:CD2	3.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:187:ALA:O	3:C:190:VAL:HG22	2.22	0.40
3:C:194:LEU:HA	3:C:203:ILE:HG12	2.03	0.40
5:E:24:GLY:H	5:E:120:CYS:HB2	1.87	0.40
5:E:117:THR:O	5:E:118:VAL:CB	2.69	0.40
3:C:205:ILE:N	3:C:205:ILE:HD12	2.37	0.40
4:D:36:THR:HG23	4:D:37:LYS:HG3	2.03	0.40
4:D:60:SER:HB2	4:D:127:PRO:CG	2.52	0.40
5:E:25:MET:HE2	5:E:25:MET:HA	2.03	0.40
5:E:102:PHE:HB2	5:E:106:TYR:HD2	1.86	0.40
3:C:174:PRO:HG3	4:D:102:SER:CB	2.52	0.40
4:D:42:PHE:CZ	4:D:46:LEU:HD11	2.57	0.40
4:D:183:LEU:HB2	4:D:185:PRO:HD2	2.03	0.40
5:E:188:LEU:HD12	5:E:188:LEU:HA	1.95	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:168:ASN:O	6:F:199:ARG:NH1[2_444]	1.90	0.30
1:A:168:ASN:O	6:F:199:ARG:HH11[2_444]	1.49	0.11

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	399/468 (85%)	393 (98%)	6 (2%)	0	100 100
2	B	378/415 (91%)	370 (98%)	7 (2%)	1 (0%)	41 75
3	C	246/257 (96%)	245 (100%)	1 (0%)	0	100 100
4	D	202/210 (96%)	198 (98%)	4 (2%)	0	100 100
5	E	195/198 (98%)	187 (96%)	6 (3%)	2 (1%)	15 54

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	F	405/408 (99%)	399 (98%)	6 (2%)	0	100	100
All	All	1825/1956 (93%)	1792 (98%)	30 (2%)	3 (0%)	47	81

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	E	99	ASP
5	E	118	VAL
2	B	40	VAL

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	339/395 (86%)	337 (99%)	2 (1%)	86	94
2	B	292/320 (91%)	292 (100%)	0	100	100
3	C	198/205 (97%)	197 (100%)	1 (0%)	88	94
4	D	171/176 (97%)	170 (99%)	1 (1%)	86	94
5	E	164/165 (99%)	163 (99%)	1 (1%)	86	94
6	F	337/337 (100%)	334 (99%)	3 (1%)	78	90
All	All	1501/1598 (94%)	1493 (100%)	8 (0%)	88	94

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	103	ASP
1	A	260	ARG
3	C	158	ASP
4	D	71	ARG
5	E	133	ASP
6	F	171	GLU
6	F	181	ASP
6	F	322	ASP

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

Mol	Chain	Res	Type
3	C	229	ASN
5	E	197	GLN
6	F	356	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 1 is monoatomic - leaving 9 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
7	FMN	B	501	2	29,32,33	1.18	2 (6%)	40,47,50	1.60	8 (20%)
9	LMT	B	503	-	36,36,36	1.20	5 (13%)	47,47,47	1.11	3 (6%)
8	RBF	B	502	-	29,29,29	0.60	0	41,43,43	0.72	2 (4%)
11	FES	E	1001	4,5	0,4,4	-	-	-	-	-
7	FMN	C	1000	3	29,32,33	1.17	2 (6%)	40,47,50	1.49	10 (25%)
9	LMT	B	504	-	36,36,36	1.26	5 (13%)	47,47,47	1.20	2 (4%)
12	FAD	F	1501	-	53,58,58	0.48	0	68,89,89	0.53	1 (1%)
11	FES	F	1502	6	0,4,4	-	-	-	-	-

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
9	LMT	D	301	-	36,36,36	1.24	5 (13%)	47,47,47	1.02	1 (2%)

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
7	FMN	B	501	2	-	1/15/17/18	0/3/3/3
9	LMT	B	503	-	-	6/21/61/61	0/2/2/2
8	RBF	B	502	-	-	2/14/14/14	0/3/3/3
11	FES	E	1001	4,5	-	-	0/1/1/1
7	FMN	C	1000	3	-	0/15/17/18	0/3/3/3
9	LMT	B	504	-	-	11/21/61/61	0/2/2/2
12	FAD	F	1501	-	-	5/30/50/50	0/6/6/6
11	FES	F	1502	6	-	-	0/1/1/1
9	LMT	D	301	-	-	9/21/61/61	0/2/2/2

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	B	501	FMN	C4A-N5	4.00	1.38	1.30
7	C	1000	FMN	C4A-N5	3.78	1.38	1.30
9	D	301	LMT	O3'-C3'	-3.26	1.35	1.43
9	D	301	LMT	O2'-C2'	-3.22	1.35	1.43
9	B	504	LMT	O2'-C2'	-3.14	1.35	1.43
9	B	503	LMT	O3'-C3'	-3.08	1.35	1.43
9	B	504	LMT	O3'-C3'	-3.03	1.35	1.43
9	B	503	LMT	O3B-C3B	-2.90	1.36	1.43
9	B	504	LMT	O2B-C2B	-2.82	1.36	1.43
7	C	1000	FMN	C10-N1	2.75	1.38	1.33
7	B	501	FMN	C10-N1	2.63	1.38	1.33
9	B	504	LMT	O3B-C3B	-2.54	1.37	1.43
9	B	503	LMT	O2'-C2'	-2.40	1.37	1.43
9	D	301	LMT	O3B-C3B	-2.34	1.37	1.43
9	B	504	LMT	O5'-C5'	-2.32	1.38	1.44
9	D	301	LMT	O2B-C2B	-2.32	1.37	1.43
9	B	503	LMT	O2B-C2B	-2.28	1.37	1.43
9	D	301	LMT	O4'-C4B	-2.27	1.37	1.43
9	B	503	LMT	O4'-C4B	-2.10	1.38	1.43

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	B	504	LMT	O5'-C1'-O1'	-4.45	99.45	109.97
7	B	501	FMN	C4'-C3'-C2'	-3.87	105.32	113.36
7	C	1000	FMN	C4-N3-C2	-3.54	119.11	125.64
7	B	501	FMN	C4-N3-C2	-3.44	119.29	125.64
9	B	503	LMT	C3'-C4'-C5'	-3.38	103.17	110.93
9	D	301	LMT	C1'-O5'-C5'	-3.06	107.68	113.69
7	C	1000	FMN	C4A-C10-N1	-3.01	117.75	124.73
7	B	501	FMN	C4A-C4-N3	2.87	120.47	113.19
7	B	501	FMN	O4-C4-C4A	-2.83	119.09	126.60
9	B	504	LMT	O5B-C5B-C4B	2.81	114.81	109.69
7	C	1000	FMN	C4A-C4-N3	2.80	120.31	113.19
7	B	501	FMN	C4A-C10-N10	2.73	120.47	116.48
7	C	1000	FMN	O4-C4-C4A	-2.65	119.56	126.60
7	B	501	FMN	C10-C4A-N5	-2.62	119.30	124.86
7	C	1000	FMN	C4-C4A-C10	2.53	121.04	116.79
7	C	1000	FMN	C4A-C10-N10	2.49	120.12	116.48
7	B	501	FMN	C4A-C10-N1	-2.47	119.00	124.73
7	C	1000	FMN	C5A-C9A-N10	2.35	120.38	117.95
9	B	503	LMT	O5'-C1'-O1'	-2.30	104.52	109.97
7	C	1000	FMN	C9A-C5A-N5	-2.27	119.97	122.43
7	C	1000	FMN	C10-C4A-N5	-2.27	120.05	124.86
12	F	1501	FAD	C5A-C6A-N6A	2.27	123.80	120.35
7	C	1000	FMN	C10-N1-C2	2.24	121.38	116.90
9	B	503	LMT	O5B-C5B-C4B	2.23	113.75	109.69
7	B	501	FMN	C10-N1-C2	2.20	121.29	116.90
8	B	502	RBF	C4-N3-C2	-2.01	121.93	125.64
8	B	502	RBF	C4A-C4-N3	2.01	118.29	113.19

There are no chirality outliers.

All (34) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	B	503	LMT	C2'-C1'-O1'-C1
9	B	503	LMT	O5'-C1'-O1'-C1
9	B	504	LMT	C2B-C1B-O1B-C4'
12	F	1501	FAD	N10-C1'-C2'-O2'
9	B	503	LMT	C3'-C4'-O1B-C1B
9	D	301	LMT	C4'-C5'-C6'-O6'
8	B	502	RBF	C3'-C4'-C5'-O5'
9	D	301	LMT	O5'-C5'-C6'-O6'
9	B	504	LMT	C7-C8-C9-C10

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Mol	Chain	Res	Type	Atoms
9	B	504	LMT	O5B-C5B-C6B-O6B
12	F	1501	FAD	O4B-C4B-C5B-O5B
9	B	504	LMT	C4B-C5B-C6B-O6B
9	B	503	LMT	O5B-C1B-O1B-C4'
8	B	502	RBF	O4'-C4'-C5'-O5'
9	B	503	LMT	O5B-C5B-C6B-O6B
9	D	301	LMT	C6-C7-C8-C9
9	D	301	LMT	O5B-C5B-C6B-O6B
9	B	504	LMT	C3-C4-C5-C6
9	B	504	LMT	C5'-C4'-O1B-C1B
12	F	1501	FAD	C3B-C4B-C5B-O5B
9	B	504	LMT	C11-C10-C9-C8
12	F	1501	FAD	C5'-O5'-P-O3P
9	B	504	LMT	C3'-C4'-O1B-C1B
9	B	504	LMT	O1'-C1-C2-C3
12	F	1501	FAD	N10-C1'-C2'-C3'
7	B	501	FMN	C4'-C5'-O5'-P
9	D	301	LMT	C5'-C4'-O1B-C1B
9	D	301	LMT	C7-C8-C9-C10
9	D	301	LMT	C3-C4-C5-C6
9	B	503	LMT	C6-C7-C8-C9
9	D	301	LMT	C9-C10-C11-C12
9	D	301	LMT	C11-C10-C9-C8
9	B	504	LMT	C5-C6-C7-C8
9	B	504	LMT	C2-C1-O1'-C1'

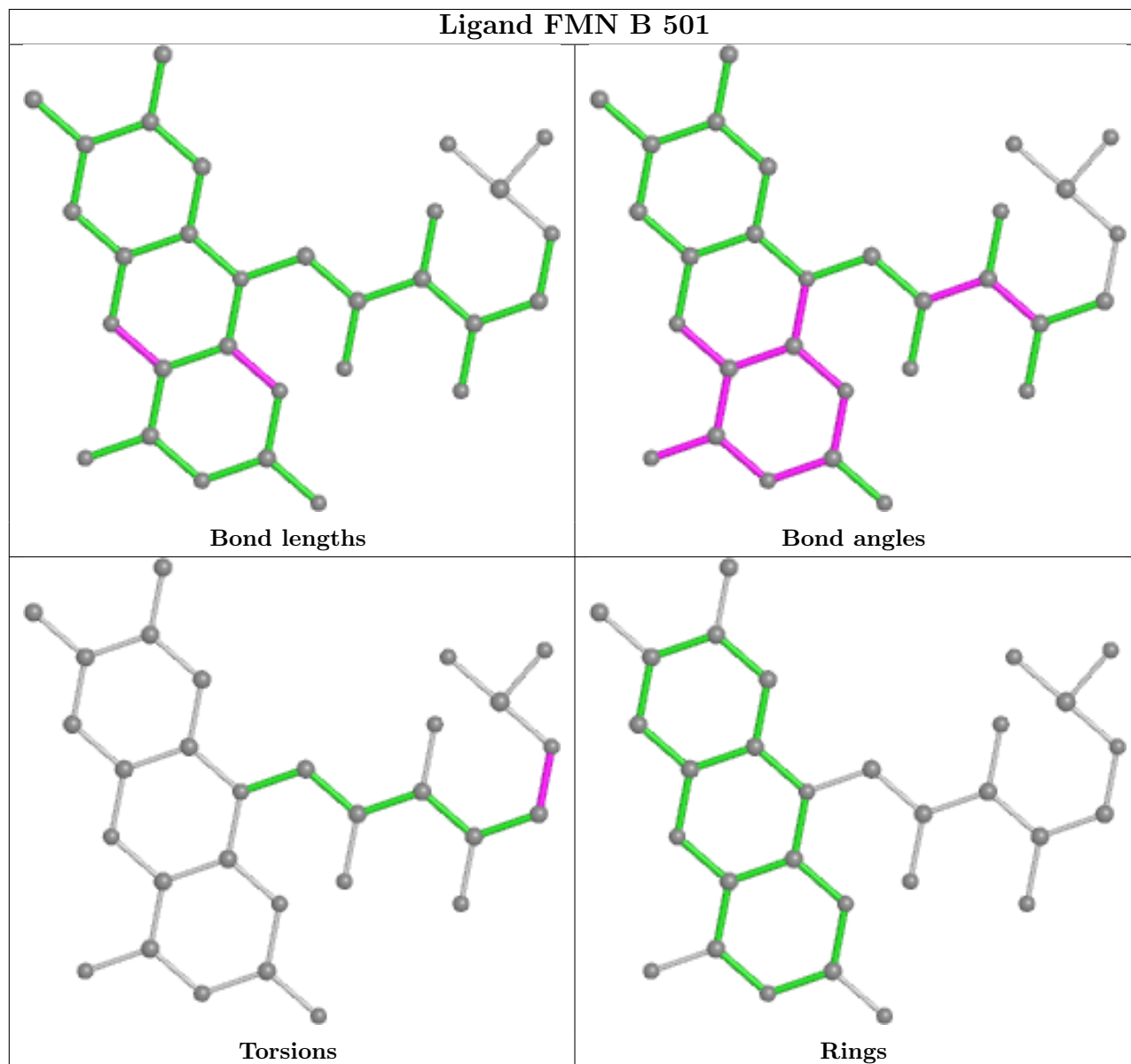
There are no ring outliers.

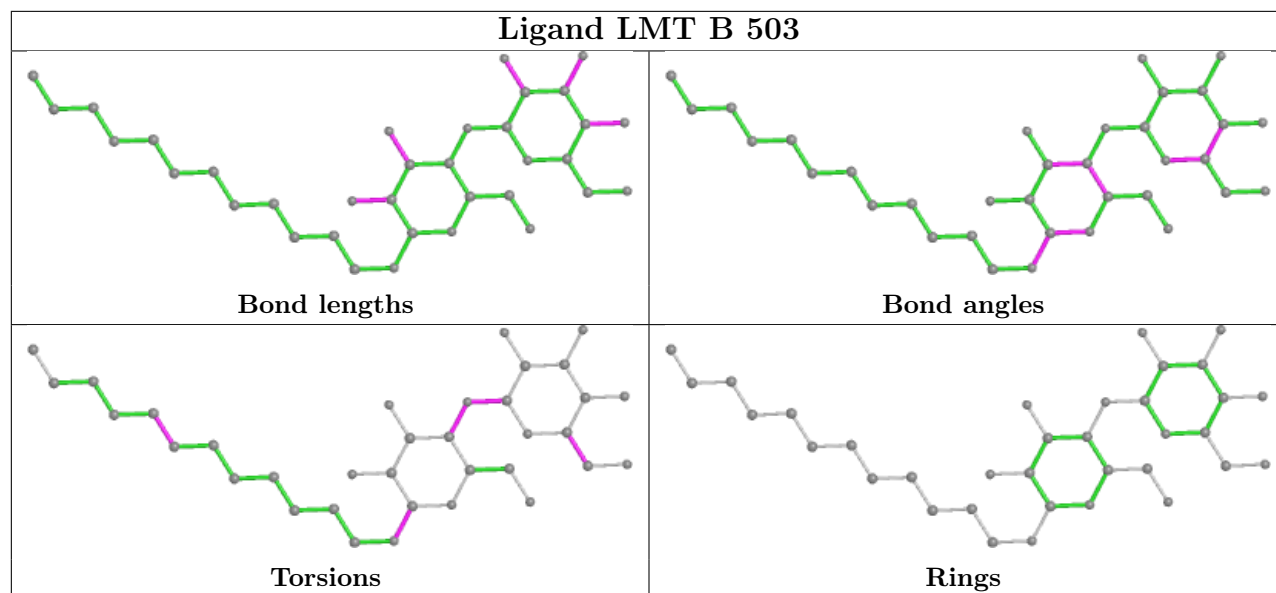
8 monomers are involved in 24 short contacts:

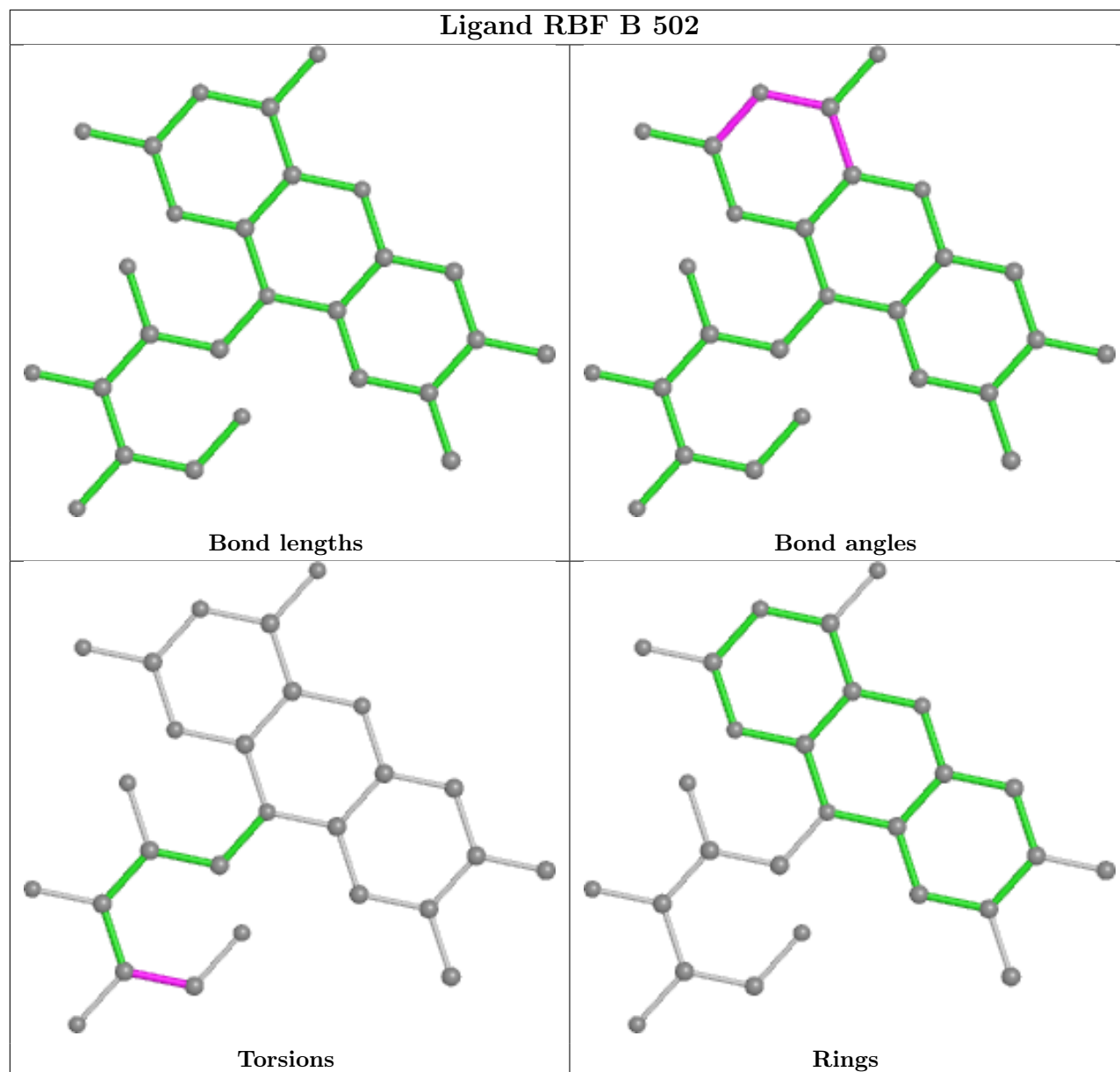
Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	B	501	FMN	4	0
9	B	503	LMT	4	0
8	B	502	RBF	4	0
7	C	1000	FMN	2	0
9	B	504	LMT	4	0
12	F	1501	FAD	3	0
11	F	1502	FES	2	0
9	D	301	LMT	1	0

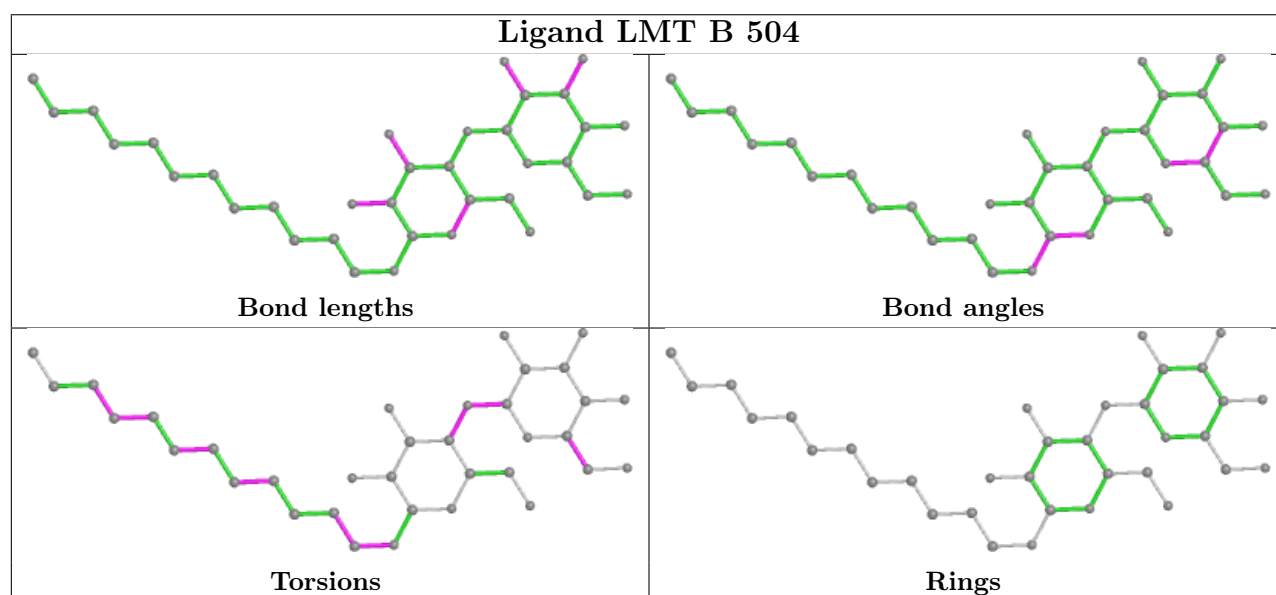
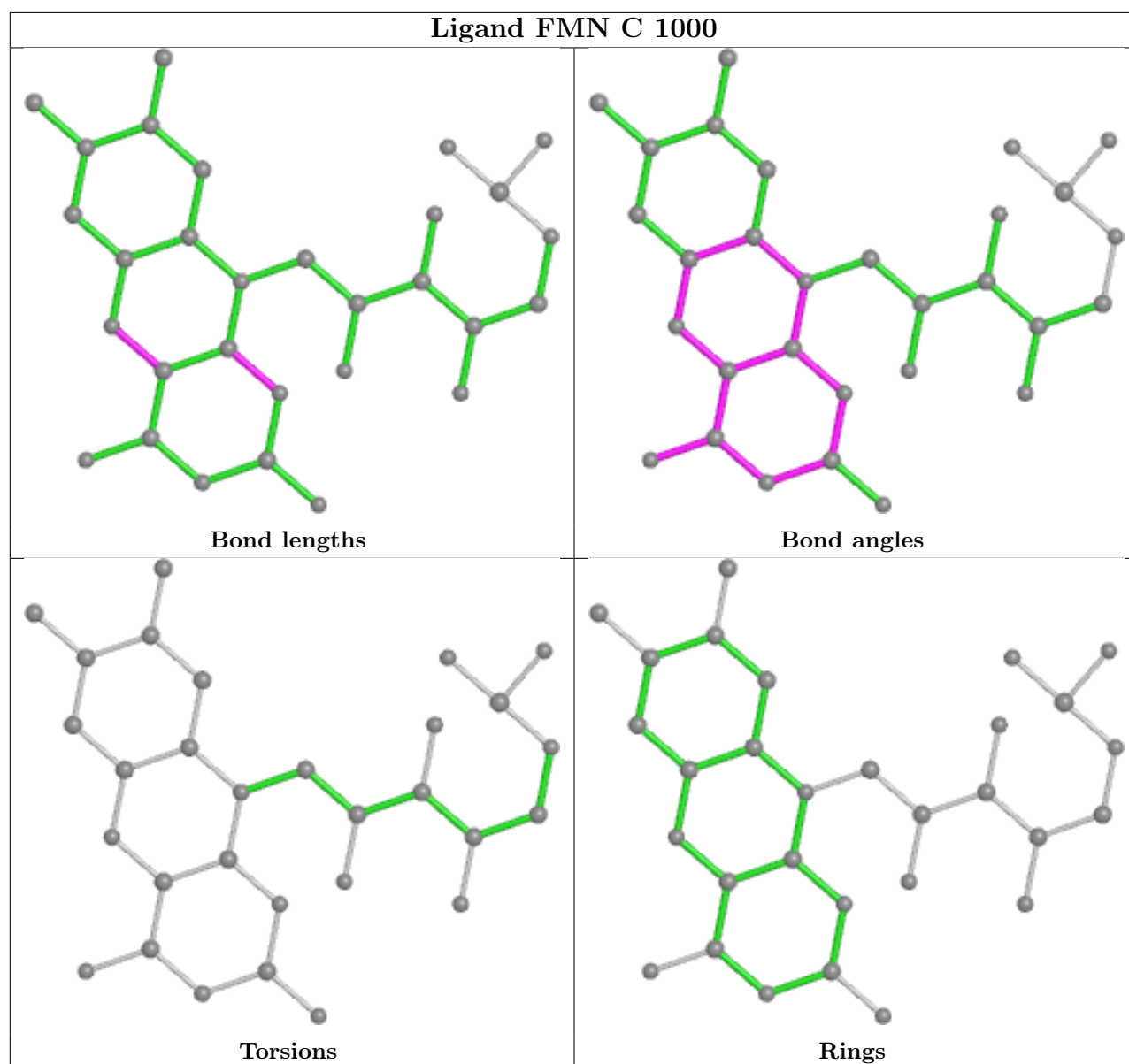
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

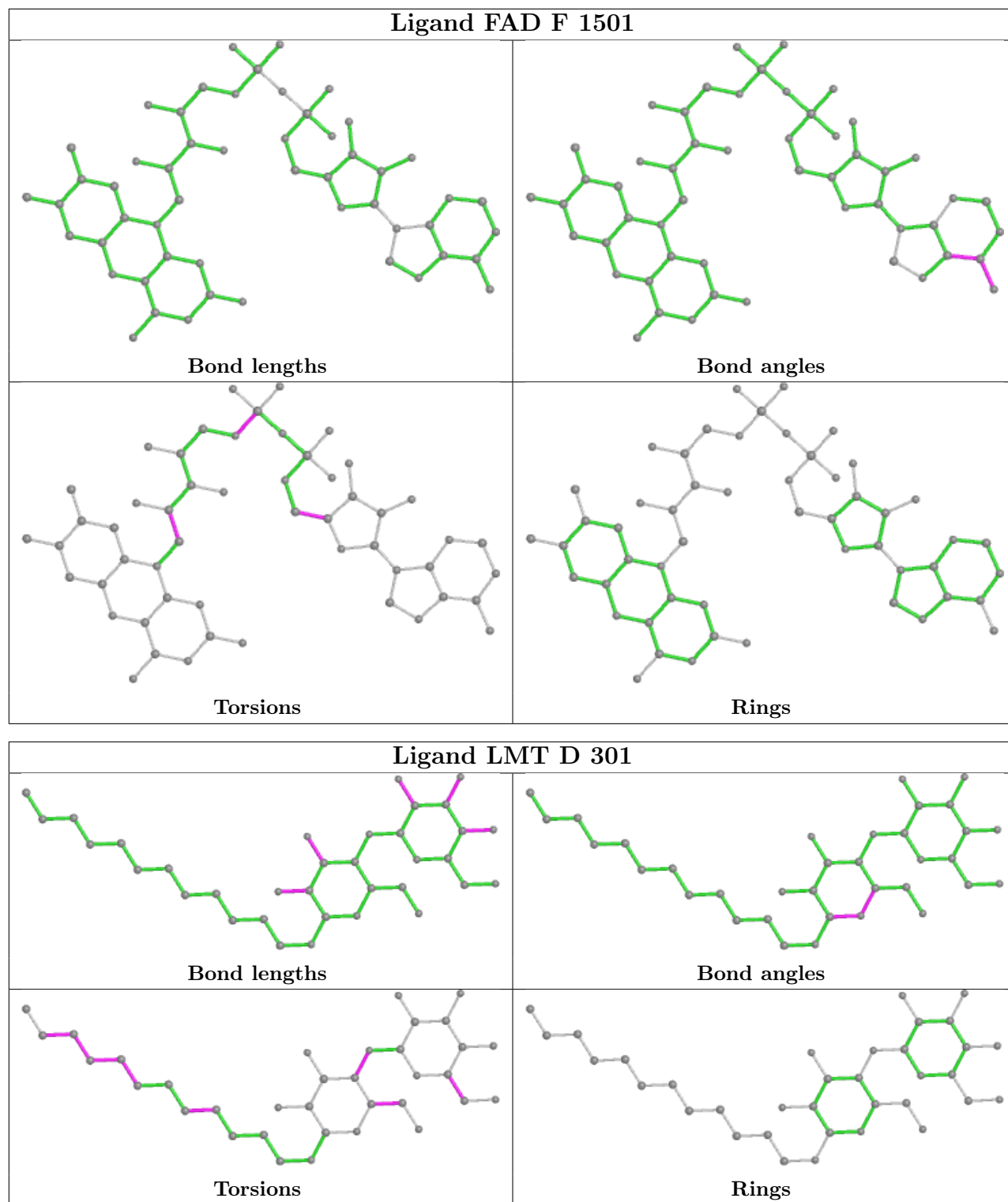
also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.











5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

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	403/468 (86%)	0.60	50 (12%) 4 5	129, 156, 190, 258	0
2	B	380/415 (91%)	0.80	62 (16%) 1 2	122, 163, 208, 245	0
3	C	248/257 (96%)	1.79	85 (34%) 0 0	163, 201, 233, 258	0
4	D	204/210 (97%)	0.39	16 (7%) 13 13	124, 161, 199, 226	0
5	E	197/198 (99%)	0.65	23 (11%) 4 5	115, 150, 199, 221	0
6	F	407/408 (99%)	1.04	86 (21%) 1 1	145, 201, 259, 292	0
All	All	1839/1956 (94%)	0.88	322 (17%) 1 1	115, 171, 232, 292	0

All (322) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	244	PHE	12.4
3	C	137	ILE	10.3
3	C	91	TYR	10.1
3	C	122	GLY	9.3
2	B	227	THR	8.9
2	B	228	ALA	8.5
3	C	125	TYR	8.2
6	F	133	TRP	8.2
6	F	132	LYS	8.2
6	F	407	GLY	7.7
6	F	131	LYS	7.7
6	F	262	GLY	7.5
3	C	162	VAL	7.4
3	C	163	SER	7.3
3	C	153	VAL	7.2
3	C	76	VAL	7.2
3	C	154	ALA	7.2
3	C	155	VAL	7.1
3	C	202	ALA	7.0

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Mol	Chain	Res	Type	RSRZ
6	F	258	CYS	6.8
3	C	140	VAL	6.8
6	F	155	PRO	6.8
6	F	105	GLU	6.7
3	C	139	PRO	6.7
3	C	195	PHE	6.6
2	B	156	ASN	6.6
3	C	138	LEU	6.6
3	C	238	TRP	6.6
6	F	121	LEU	6.5
6	F	261	SER	6.5
6	F	260	ILE	6.4
3	C	75	LEU	6.4
6	F	130	VAL	6.3
3	C	164	GLY	6.2
6	F	405	ASP	6.0
3	C	239	LEU	5.7
6	F	160	VAL	5.7
3	C	136	VAL	5.7
2	B	234	GLY	5.6
3	C	203	ILE	5.6
3	C	124	VAL	5.6
2	B	232	TYR	5.5
2	B	253	ALA	5.5
6	F	135	CYS	5.5
2	B	83	LEU	5.5
3	C	223	GLY	5.4
2	B	155	VAL	5.4
6	F	107	GLU	5.3
6	F	43	PRO	5.3
6	F	104	ARG	5.2
6	F	123	LEU	5.2
6	F	406	PHE	5.2
6	F	158	GLU	5.2
2	B	230	ASP	5.1
3	C	161	THR	5.1
3	C	222	SER	5.1
2	B	229	ALA	5.1
3	C	69	LYS	5.1
3	C	129	ASP	5.0
3	C	101	SER	5.0
6	F	175	HIS	5.0

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Mol	Chain	Res	Type	RSRZ
2	B	254	THR	5.0
6	F	257	LYS	5.0
2	B	108	LEU	4.9
3	C	191	GLY	4.8
3	C	123	VAL	4.8
1	A	446	GLY	4.8
6	F	161	PRO	4.8
2	B	92	LEU	4.8
3	C	121	VAL	4.7
3	C	190	VAL	4.7
6	F	134	GLU	4.7
6	F	154	ILE	4.7
3	C	240	GLY	4.6
1	A	118	ILE	4.6
3	C	196	ASP	4.6
3	C	165	LEU	4.6
6	F	152	LEU	4.5
2	B	36	THR	4.5
2	B	80	ILE	4.5
3	C	70	SER	4.5
3	C	189	TRP	4.5
5	E	20	SER	4.4
1	A	173	ALA	4.4
3	C	152	PHE	4.4
1	A	96	GLY	4.4
3	C	194	LEU	4.4
3	C	88	ALA	4.4
2	B	95	ILE	4.4
3	C	207	LYS	4.4
6	F	94	GLU	4.3
4	D	9	LYS	4.3
2	B	94	ALA	4.3
3	C	135	LYS	4.3
2	B	91	GLN	4.3
5	E	138	GLU	4.3
3	C	127	VAL	4.3
6	F	263	PRO	4.3
2	B	252	ASN	4.2
6	F	222	GLY	4.2
6	F	114	ALA	4.2
2	B	261	MET	4.2
6	F	103	ALA	4.2

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Mol	Chain	Res	Type	RSRZ
6	F	159	SER	4.2
2	B	90	ASP	4.1
6	F	80	ARG	4.1
3	C	93	GLN	4.1
3	C	248	LEU	4.1
1	A	29	VAL	4.1
6	F	221	PHE	4.1
2	B	98	GLY	4.1
6	F	171	GLU	4.1
3	C	89	ALA	4.0
6	F	223	ILE	4.0
1	A	445	GLU	3.9
3	C	247	PHE	3.9
6	F	156	ASP	3.9
6	F	64	VAL	3.9
3	C	78	PHE	3.9
3	C	216	HIS	3.9
3	C	192	LYS	3.9
3	C	254	GLY	3.9
6	F	157	GLY	3.8
3	C	160	ASN	3.8
2	B	79	ALA	3.8
3	C	241	ASP	3.8
3	C	90	ASN	3.8
6	F	204	VAL	3.8
2	B	269	PRO	3.8
1	A	75	LYS	3.8
6	F	83	ILE	3.8
4	D	10	SER	3.7
3	C	102	GLU	3.7
6	F	84	LYS	3.7
2	B	381	GLY	3.6
1	A	91	VAL	3.6
6	F	109	LEU	3.6
2	B	89	GLY	3.6
6	F	329	GLU	3.6
6	F	153	ALA	3.5
3	C	201	PRO	3.5
6	F	259	THR	3.5
5	E	21	PHE	3.5
2	B	93	ALA	3.5
6	F	102	GLU	3.4

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Mol	Chain	Res	Type	RSRZ
1	A	121	GLN	3.4
3	C	220	GLY	3.4
2	B	255	GLY	3.4
1	A	77	VAL	3.4
4	D	30	SER	3.4
3	C	199	HIS	3.3
4	D	110	THR	3.3
6	F	106	GLY	3.3
6	F	122	GLU	3.3
6	F	82	LYS	3.3
2	B	84	ASN	3.3
2	B	251	ASN	3.3
3	C	87	ASP	3.3
1	A	98	ASP	3.2
3	C	57	ALA	3.2
6	F	98	ILE	3.2
2	B	379	PRO	3.2
5	E	16	ASN	3.2
6	F	253	LYS	3.2
2	B	272	ILE	3.2
2	B	267	ASN	3.2
1	A	117	ALA	3.2
1	A	124	GLU	3.2
5	E	141	VAL	3.1
6	F	77	GLY	3.1
6	F	323	PHE	3.1
5	E	24	GLY	3.1
6	F	90	ILE	3.1
2	B	154	GLU	3.1
4	D	7	LEU	3.1
6	F	97	HIS	3.1
6	F	110	ALA	3.1
6	F	218	PRO	3.1
3	C	234	THR	3.1
1	A	113	LEU	3.1
3	C	71	ILE	3.1
3	C	235	PHE	3.1
1	A	256	LEU	3.1
3	C	134	SER	3.1
3	C	221	LEU	3.1
6	F	100	LYS	3.1
1	A	251	PHE	3.1

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Mol	Chain	Res	Type	RSRZ
2	B	103	TRP	3.0
6	F	120	ASP	3.0
1	A	30	ALA	3.0
6	F	293	PHE	3.0
2	B	87	TYR	3.0
1	A	97	ASP	3.0
5	E	19	LEU	3.0
1	A	201	SER	3.0
5	E	18	ALA	3.0
2	B	78	GLN	3.0
3	C	193	LYS	3.0
6	F	404	ASP	3.0
5	E	136	PHE	3.0
1	A	115	ARG	2.9
5	E	194	SER	2.9
2	B	203	ASN	2.9
6	F	39	ILE	2.9
2	B	257	THR	2.9
6	F	66	VAL	2.9
6	F	356	HIS	2.9
2	B	82	ALA	2.8
6	F	353	GLY	2.8
2	B	97	ALA	2.8
6	F	312	ARG	2.8
2	B	107	MET	2.8
6	F	81	VAL	2.8
1	A	180	VAL	2.8
4	D	11	VAL	2.8
3	C	245	GLY	2.8
1	A	178	LEU	2.8
2	B	81	ALA	2.8
4	D	27	GLY	2.8
3	C	205	ILE	2.8
3	C	126	LEU	2.8
4	D	8	LYS	2.7
3	C	156	GLU	2.7
5	E	17	MET	2.7
1	A	105	PHE	2.7
4	D	85	VAL	2.7
1	A	155	ASP	2.7
4	D	97	ILE	2.7
6	F	101	GLY	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	276	ARG	2.7
2	B	270	GLY	2.7
1	A	247	VAL	2.7
2	B	157	GLU	2.7
3	C	92	ASP	2.7
6	F	337	CYS	2.7
3	C	55	ILE	2.7
6	F	265	GLY	2.6
1	A	50	GLU	2.6
1	A	184	LEU	2.6
4	D	111	ASN	2.6
1	A	277	THR	2.6
1	A	92	ILE	2.6
1	A	278	VAL	2.6
2	B	231	GLY	2.6
6	F	174	ALA	2.6
5	E	184	GLY	2.6
2	B	380	GLU	2.6
1	A	28	LYS	2.6
4	D	29	CYS	2.6
2	B	382	MET	2.6
1	A	78	GLU	2.5
1	A	176	ALA	2.5
2	B	273	GLY	2.5
6	F	338	ALA	2.5
3	C	243	GLY	2.5
2	B	368	CYS	2.5
2	B	235	ALA	2.5
1	A	175	VAL	2.5
2	B	256	GLN	2.5
3	C	65	GLU	2.4
6	F	63	GLY	2.4
1	A	122	LEU	2.4
5	E	119	ASN	2.4
6	F	75	SER	2.4
3	C	56	GLU	2.4
2	B	99	ASN	2.4
2	B	104	LEU	2.4
1	A	328	GLU	2.4
5	E	27	THR	2.4
6	F	355	ILE	2.4
1	A	79	ILE	2.3

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Mol	Chain	Res	Type	RSRZ
3	C	9	LYS	2.4
2	B	263	ALA	2.3
3	C	119	ALA	2.3
2	B	88	SER	2.3
6	F	162	PHE	2.3
1	A	52	LYS	2.3
3	C	225	THR	2.3
5	E	26	CYS	2.3
6	F	296	LEU	2.3
4	D	205	GLN	2.3
2	B	86	LEU	2.3
3	C	224	ALA	2.3
2	B	160	PHE	2.3
6	F	164	ALA	2.3
2	B	260	TRP	2.3
2	B	240	GLN	2.3
3	C	197	GLU	2.2
5	E	22	PHE	2.2
1	A	9	ASP	2.2
1	A	239	ILE	2.2
1	A	131	PHE	2.2
6	F	108	ARG	2.2
5	E	183	ALA	2.2
3	C	200	LYS	2.2
5	E	137	ALA	2.2
2	B	233	SER	2.2
4	D	89	ILE	2.2
3	C	113	ALA	2.2
5	E	120	CYS	2.2
6	F	46	ALA	2.2
1	A	90	VAL	2.1
1	A	116	ASP	2.1
4	D	102	SER	2.1
5	E	139	SER	2.1
5	E	15	GLU	2.1
1	A	120	THR	2.1
1	A	177	GLY	2.1
5	E	71	GLU	2.1
3	C	212	GLN	2.0
6	F	112	GLN	2.0
1	A	226	PHE	2.0
6	F	302	LYS	2.0

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Mol	Chain	Res	Type	RSRZ
1	A	51	VAL	2.0
6	F	113	VAL	2.0
1	A	377	ILE	2.0
2	B	262	ASP	2.0
3	C	236	ASP	2.0
5	E	118	VAL	2.0
1	A	174	PHE	2.0
6	F	18	LEU	2.0
4	D	204	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.

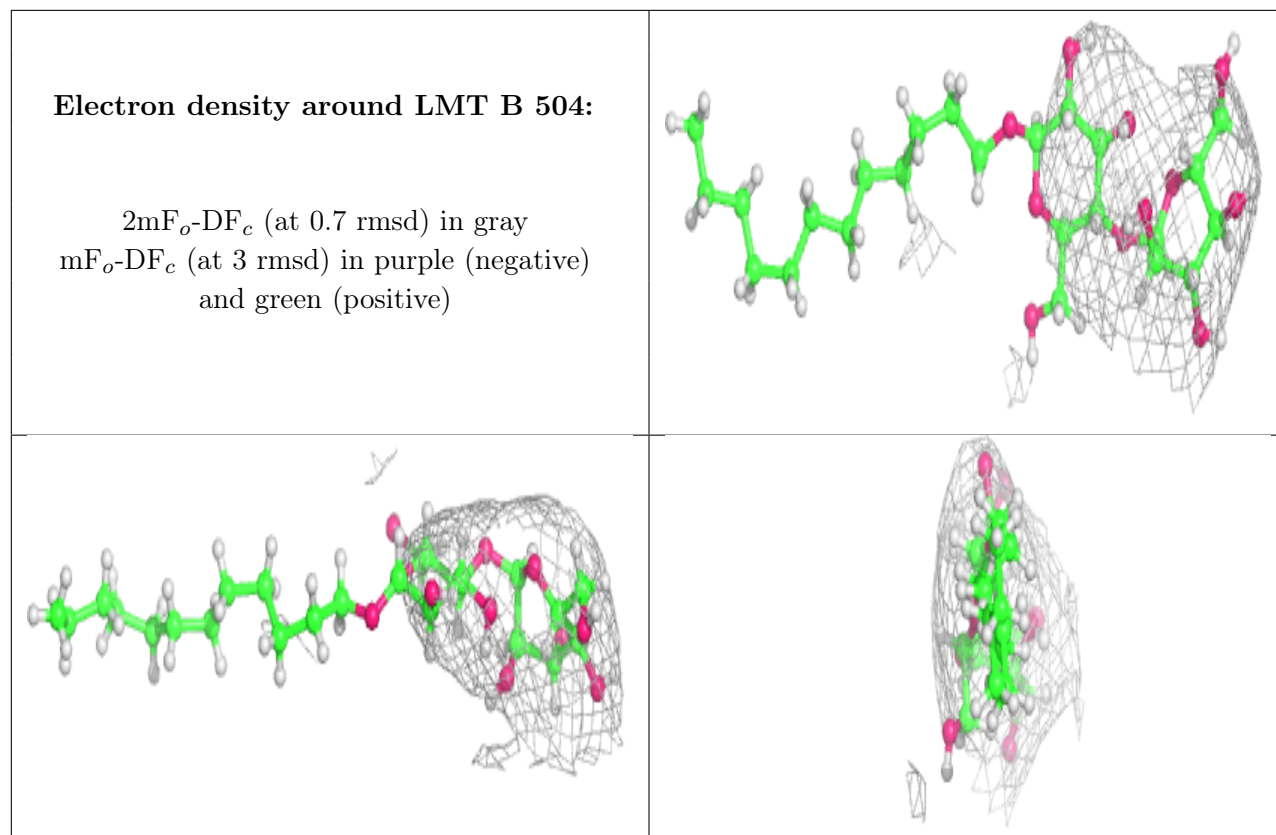
6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
9	LMT	B	504	35/35	0.64	0.56	149,185,216,236	0
8	RBF	B	502	27/27	0.68	0.74	159,191,246,264	0
7	FMN	C	1000	30/31	0.72	0.64	160,182,213,220	0
9	LMT	D	301	35/35	0.77	0.41	165,205,238,246	0
7	FMN	B	501	30/31	0.81	0.46	145,170,204,209	0
9	LMT	B	503	35/35	0.84	0.48	130,169,236,250	0
12	FAD	F	1501	53/53	0.85	0.25	196,220,264,284	0
11	FES	F	1502	4/4	0.89	0.10	260,274,274,275	0
10	NA	B	505	1/1	0.95	0.83	138,138,138,138	0
11	FES	E	1001	4/4	0.98	0.47	143,144,146,147	0

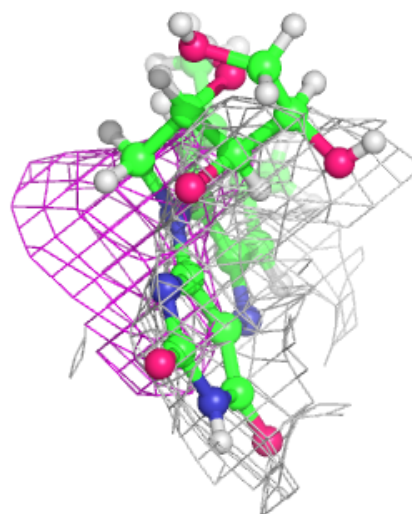
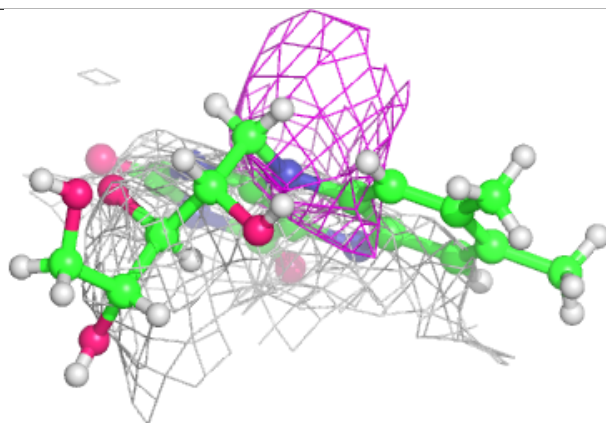
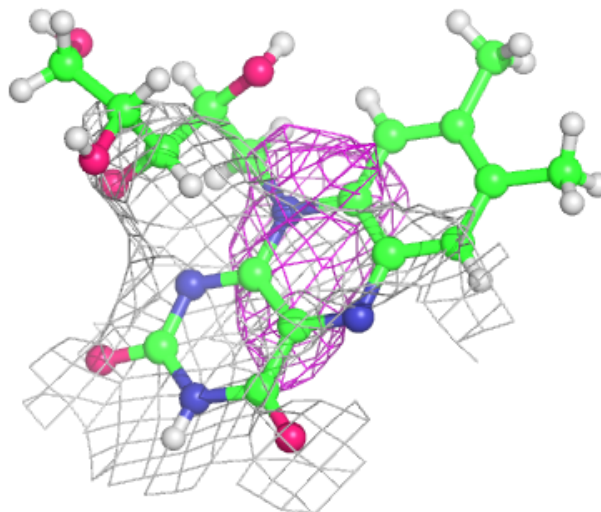
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different

orientation to approximate a three-dimensional view.



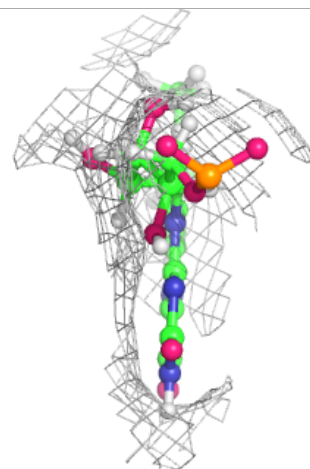
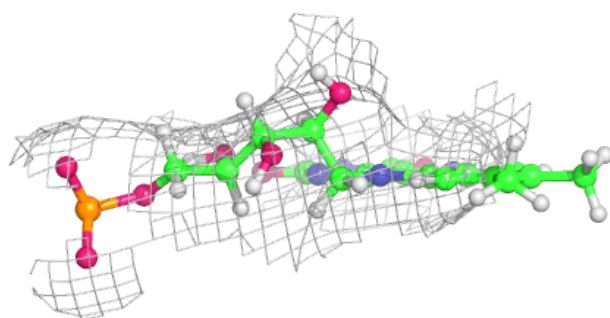
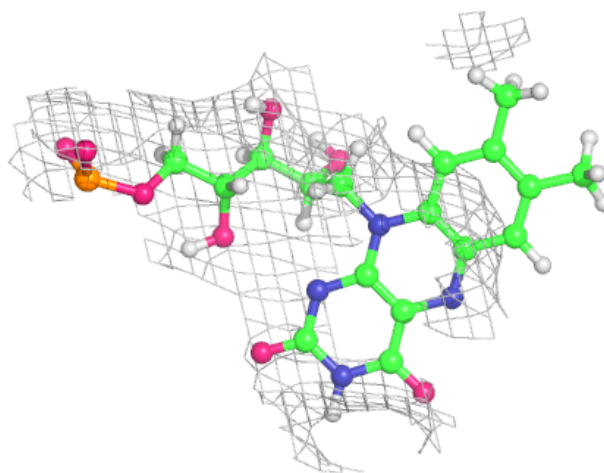
Electron density around RBF B 502:

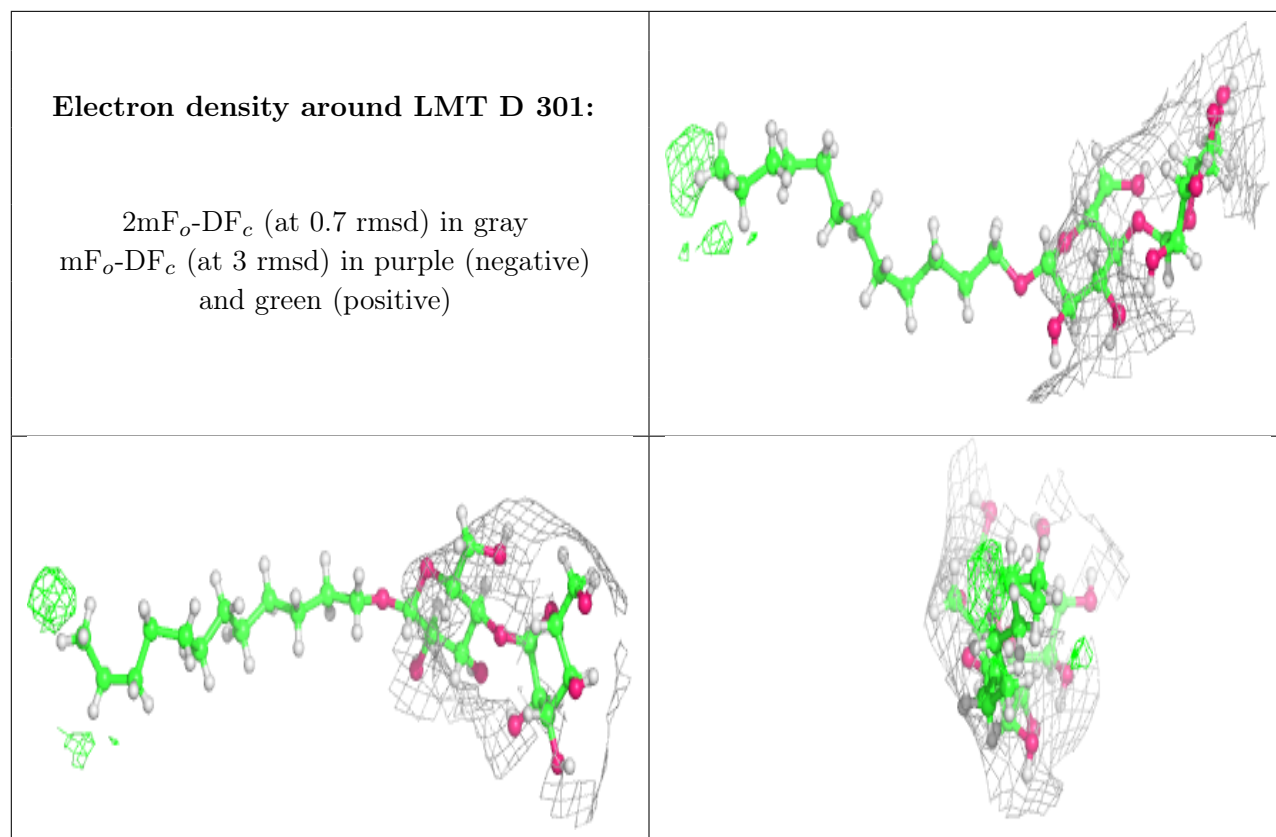
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around FMN C 1000:

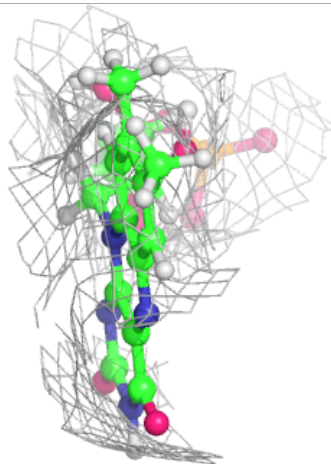
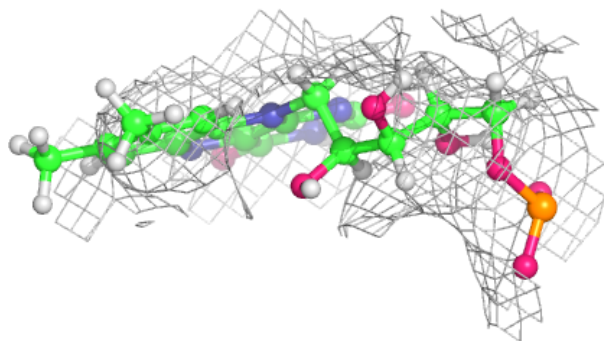
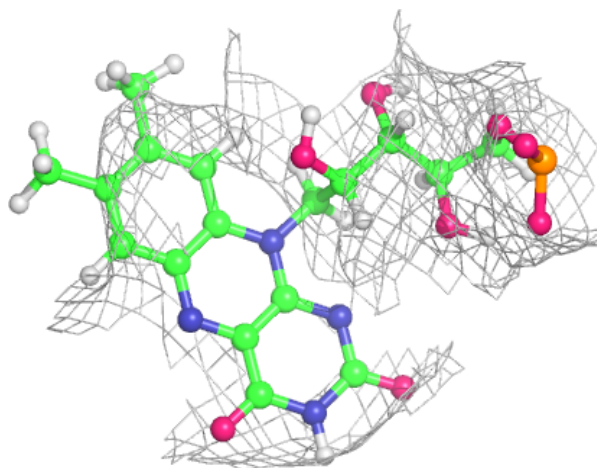
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





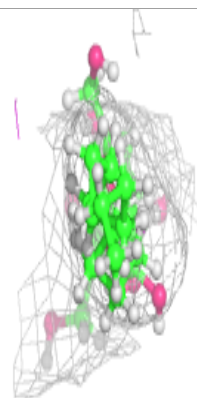
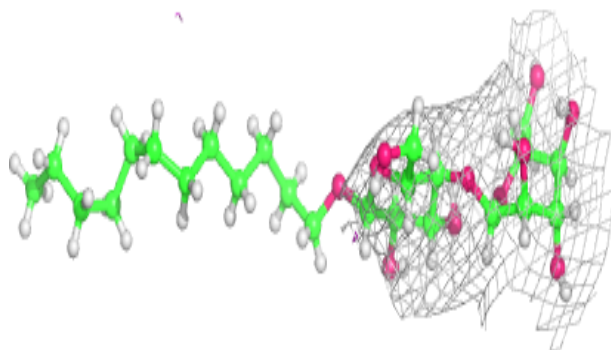
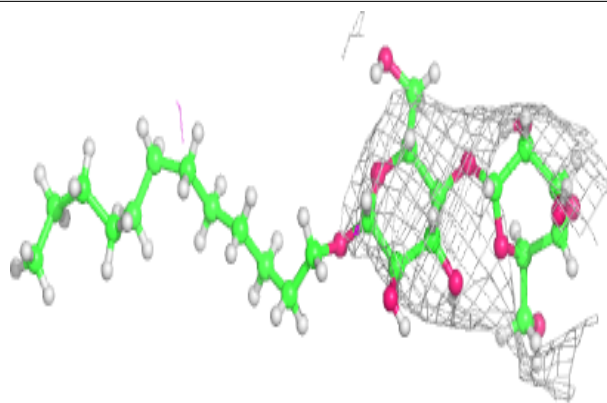
Electron density around FMN B 501:

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

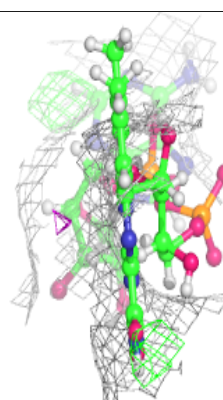
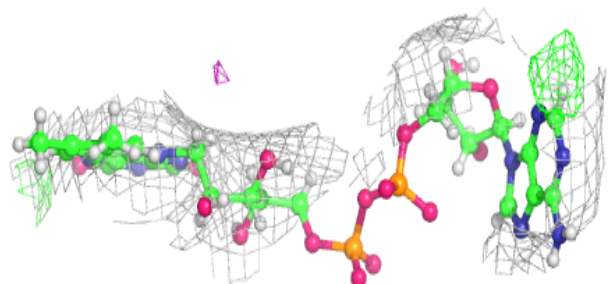
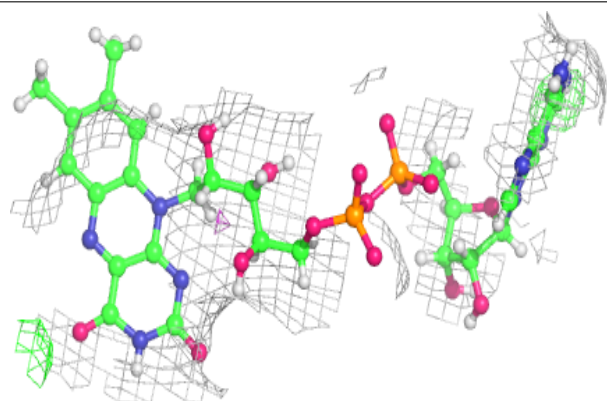


Electron density around LMT B 503:

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

**Electron density around FAD F 1501:**

$2mF_o-DF_c$ (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.