



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 13, 2023 – 10:35 pm BST

PDB ID : 8ACW
Title : X-ray structure of Na⁺-NQR from *Vibrio cholerae* at 3.4 Å resolution
Authors : Fritz, G.
Deposited on : 2022-07-07
Resolution : 3.40 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

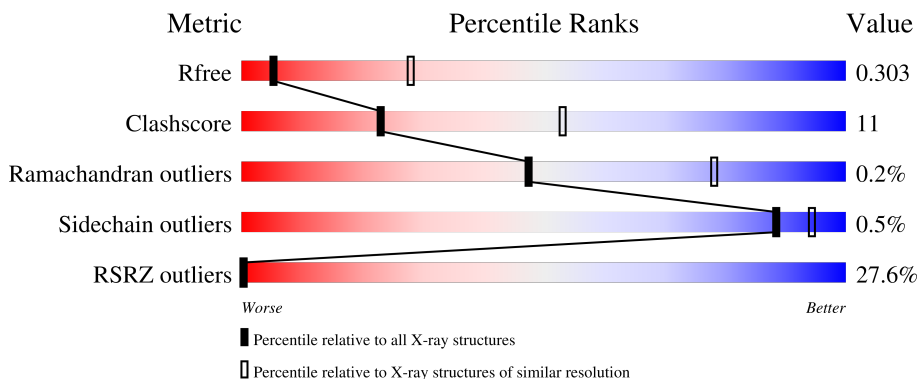
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.40 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	1026 (3.48-3.32)
Clashscore	141614	1055 (3.48-3.32)
Ramachandran outliers	138981	1038 (3.48-3.32)
Sidechain outliers	138945	1038 (3.48-3.32)
RSRZ outliers	127900	2173 (3.50-3.30)

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	LYS	D	302	-	-	-	X
12	FES	F	1502	-	-	X	-
7	FMN	C	1000	-	-	-	X
8	RBF	B	502	-	-	-	X
9	LMT	B	503	-	-	-	X
9	LMT	D	301	-	-	-	X

2 Entry composition [i](#)

There are 13 unique types of molecules in this entry. The entry contains 28730 atoms, of which 14422 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	398	6114	1922	3080	516	582	14	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	203	3188	1031	1635	245	267	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.

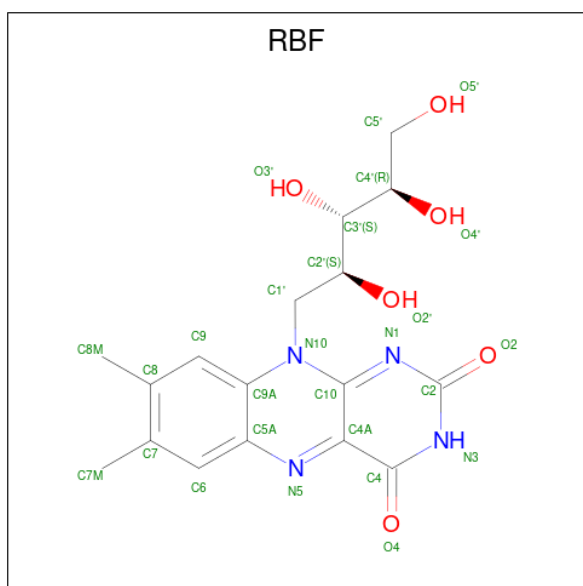
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
6	F	407	6259	2025	3098	518	594	24	0	0	0

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



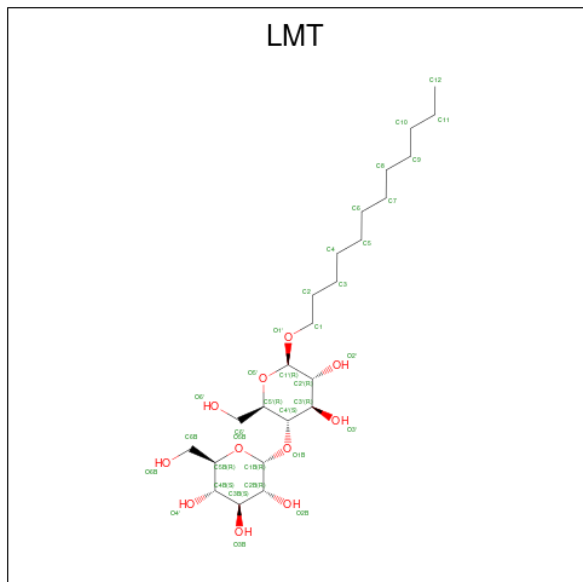
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf		
			Total	C	H	N	O			P	
7	B	1	Total	49	17	19	4	8	1	0	0
7	C	1	Total	49	17	19	4	8	1	0	0

- Molecule 8 is RIBOFLAVIN (three-letter code: RBF) (formula: $C_{17}H_{20}N_4O_6$) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 9 is DODECYL-BETA-D-MALTOSE (three-letter code: LMT) (formula: $C_{24}H_{46}O_{11}$).

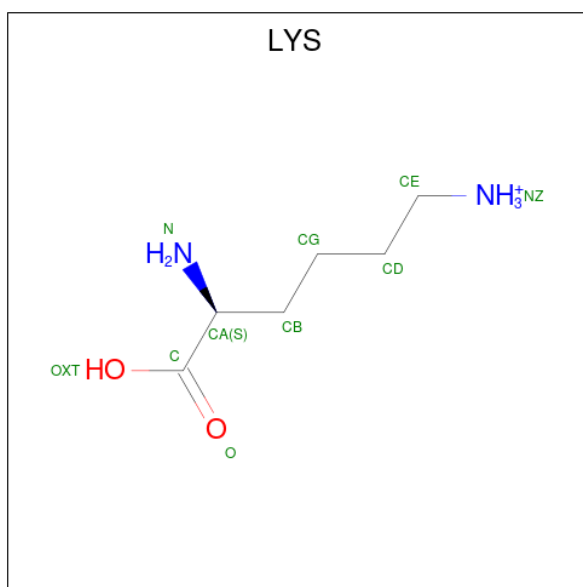


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
9	B	1	Total	C	H	O	0	0
			80	24	45	11		
9	D	1	Total	C	H	O	0	0
			81	24	46	11		
9	E	1	Total	C	H	O	0	0
			80	24	45	11		

- Molecule 10 is POTASSIUM ION (three-letter code: K) (formula: K).

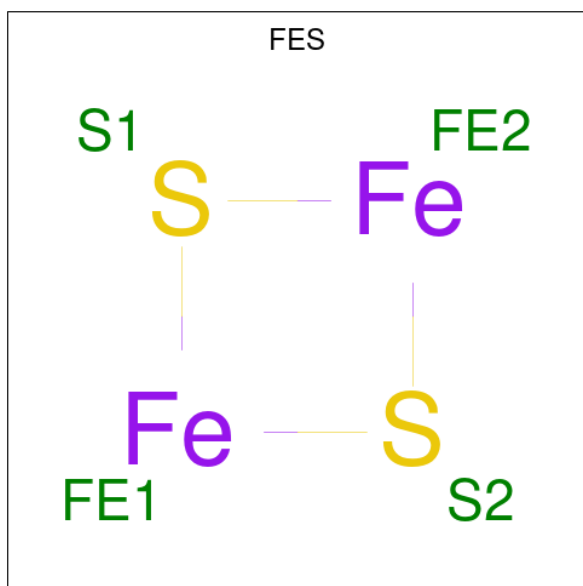
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	B	1	Total	K	0	0
			1	1		

- Molecule 11 is LYSINE (three-letter code: LYS) (formula: $C_6H_{15}N_2O_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
11	D	1	21	6	12	2	1	0	0

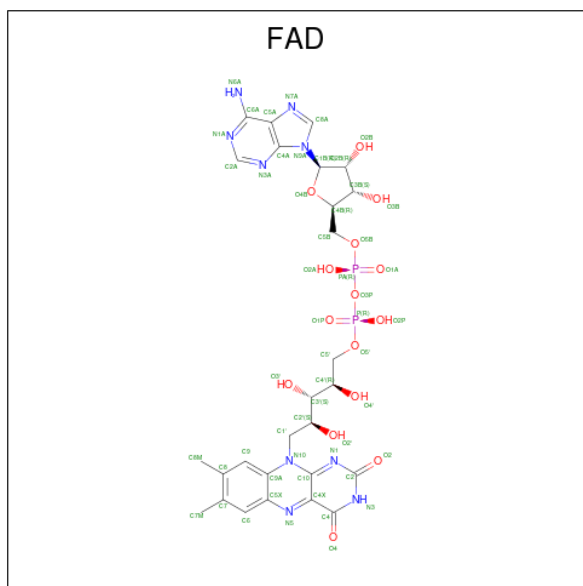
- Molecule 12 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe₂S₂).



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

- Molecule 13 is FLAVIN-ADENINE DINUCLEOTIDE (three-letter code: FAD) (formula:

$C_{27}H_{33}N_9O_{15}P_2$).

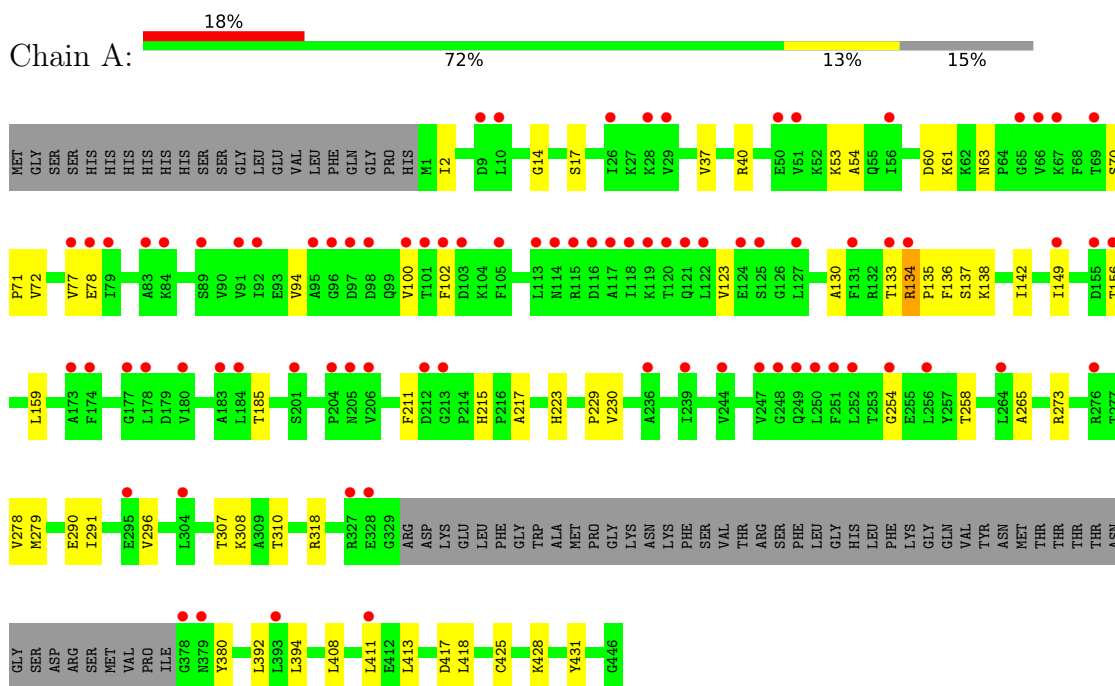


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	H	N	O			P
13	F	1	84	27	31	9	15	2	0	0

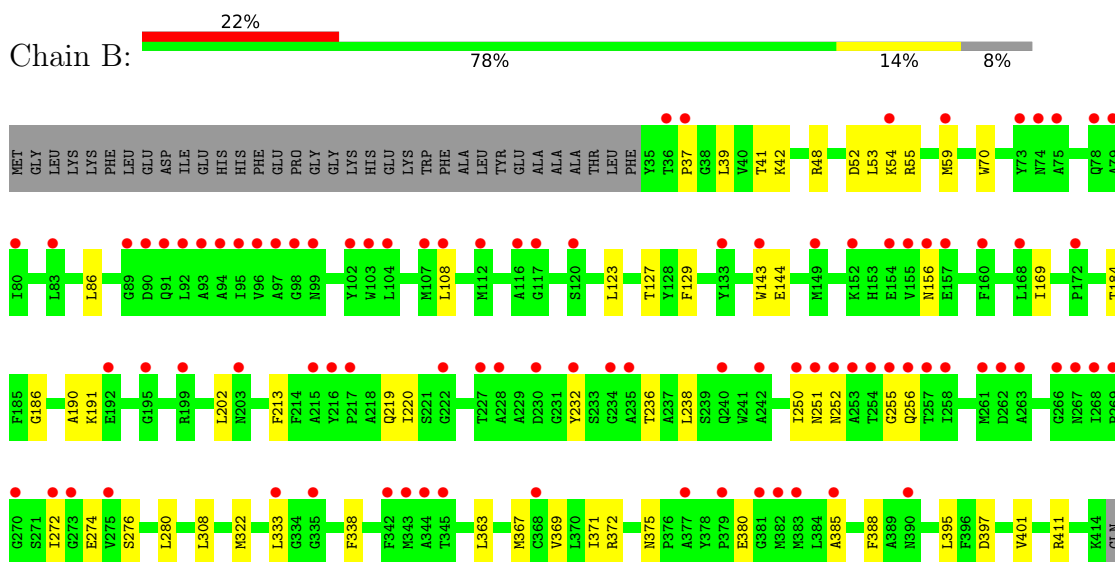
3 Residue-property plots [i](#)

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



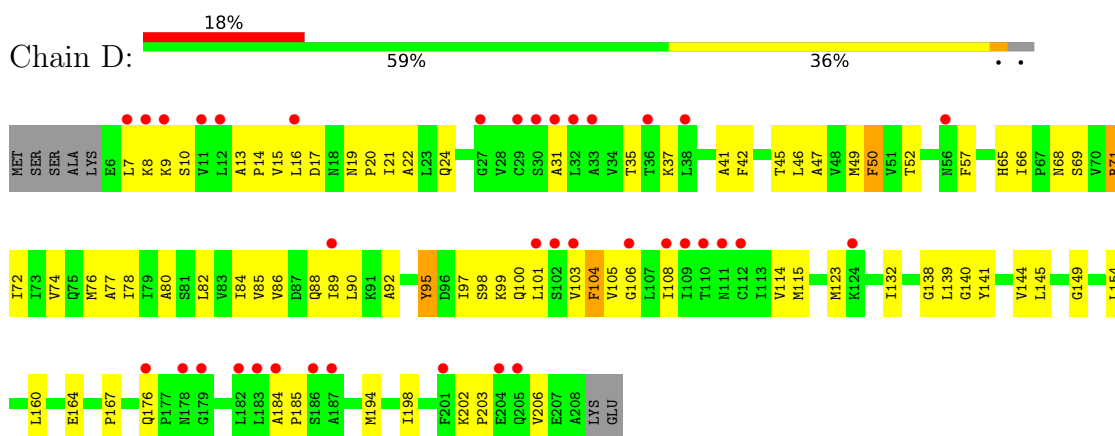
- Molecule 2: Na(+)-translocating NADH-quinone reductase subunit B



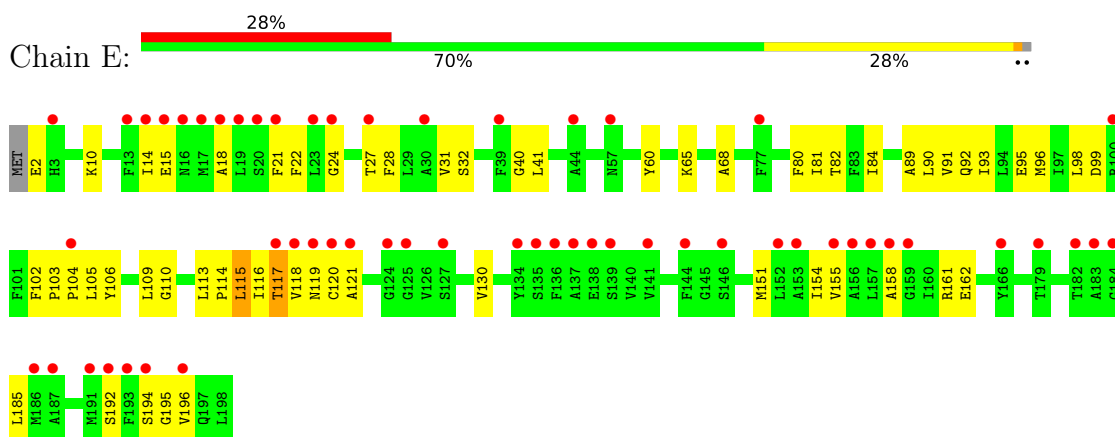
- Molecule 3: Na(+)-translocating NADH-quinone reductase subunit C



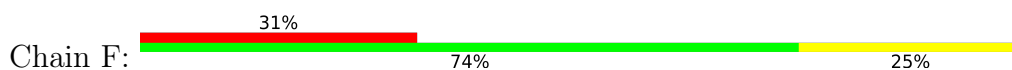
- Molecule 4: Na(+)-translocating NADH-quinone reductase subunit D

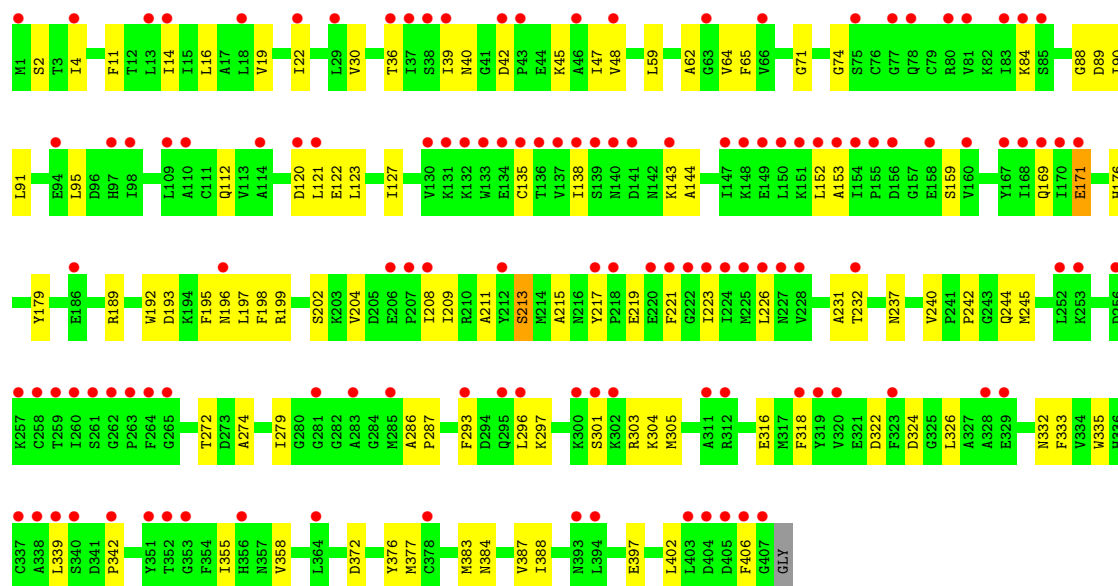


- Molecule 5: Na(+)-translocating NADH-quinone reductase subunit E



- 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	93.72Å 142.94Å 103.39Å 90.00° 109.93° 90.00°	Depositor
Resolution (Å)	48.60 – 3.40 48.60 – 3.40	Depositor EDS
% Data completeness (in resolution range)	99.4 (48.60-3.40) 99.4 (48.60-3.40)	Depositor EDS
R_{merge}	0.27	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.04 (at 3.40Å)	Xtrriage
Refinement program	PHENIX 1.20.1-4487	Depositor
R, R_{free}	0.270 , 0.306 0.269 , 0.303	Depositor DCC
R_{free} test set	1788 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å ²)	157.3	Xtrriage
Anisotropy	0.066	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 131.8	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	28730	wwPDB-VP
Average B, all atoms (Å ²)	217.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.76% 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: FES, FMN, RBF, K, FAD, LMT

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	0.31	0/3087	0.66	1/4185 (0.0%)
2	B	0.30	0/2998	0.58	0/4083
3	C	0.34	0/1914	0.71	1/2583 (0.0%)
4	D	0.36	0/1585	0.90	8/2153 (0.4%)
5	E	0.38	0/1537	0.85	2/2084 (0.1%)
6	F	0.34	0/3239	0.69	1/4384 (0.0%)
All	All	0.33	0/14360	0.71	13/19472 (0.1%)

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	50	PHE	CB-CG-CD2	-7.29	115.70	120.80
4	D	50	PHE	CB-CG-CD1	6.85	125.59	120.80
4	D	95	TYR	CB-CG-CD1	6.20	124.72	121.00
5	E	115	LEU	CB-CG-CD1	6.04	121.27	111.00
4	D	57	PHE	CB-CG-CD1	-5.88	116.69	120.80
3	C	145	LEU	CB-CG-CD2	5.81	120.88	111.00
4	D	95	TYR	CB-CG-CD2	-5.72	117.57	121.00
4	D	82	LEU	CB-CG-CD2	-5.53	101.59	111.00
4	D	104	PHE	CB-CG-CD2	-5.52	116.94	120.80
4	D	57	PHE	CB-CG-CD2	5.37	124.56	120.80
1	A	134	ARG	N-CA-C	5.29	125.30	111.00
5	E	115	LEU	CB-CG-CD2	-5.25	102.08	111.00
6	F	195	PHE	CB-CG-CD1	-5.24	117.13	120.80

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3034	3080	3082	45	0
2	B	2911	2907	2907	43	0
3	C	1882	1892	1892	73	0
4	D	1553	1635	1635	66	0
5	E	1504	1574	1574	68	0
6	F	3161	3098	3098	83	0
7	B	30	19	19	3	0
7	C	30	19	19	4	0
8	B	27	19	20	0	0
9	B	35	45	44	2	0
9	D	35	46	46	0	0
9	E	35	45	44	1	0
10	B	1	0	0	0	0
11	D	9	12	12	0	0
12	E	4	0	0	0	0
12	F	4	0	0	2	0
13	F	53	31	31	3	0
All	All	14308	14422	14423	328	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 11.

All (328) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:310:THR:OG1	2:B:42:LYS:NZ	1.97	0.97
3:C:172:GLU:OE1	3:C:227:THR:OG1	1.85	0.95
2:B:236:THR:HG21	7:B:501:FMN:H5'2	1.65	0.78
3:C:118:ARG:NH1	3:C:242:MET:O	2.17	0.77
4:D:72:ILE:HG21	5:E:117:THR:HG21	1.66	0.77
3:C:145:LEU:HD12	3:C:226:LEU:HB2	1.66	0.74
4:D:7:LEU:HD23	4:D:8:LYS:N	2.03	0.73
1:A:310:THR:HG1	2:B:42:LYS:NZ	1.85	0.73
5:E:31:VAL:HG21	5:E:41:LEU:HD22	1.72	0.71
6:F:355:ILE:HD11	6:F:383:MET:SD	2.31	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:395:LEU:HD21	5:E:155:VAL:HG12	1.71	0.71
4:D:7:LEU:HD22	4:D:9:LYS:HG2	1.73	0.70
4:D:52:THR:HG22	4:D:114:VAL:HA	1.74	0.70
1:A:134:ARG:HG3	1:A:230:VAL:HG21	1.75	0.69
1:A:156:THR:OG1	1:A:215:HIS:O	2.04	0.68
2:B:274:GLU:OE2	7:B:501:FMN:O3'	2.11	0.68
6:F:192:TRP:HA	6:F:197:LEU:HD12	1.76	0.68
6:F:40:ASN:HA	6:F:122:GLU:HA	1.76	0.68
3:C:33:LEU:HB3	4:D:92:ALA:HB2	1.76	0.68
4:D:90:LEU:O	4:D:98:SER:OG	2.11	0.67
3:C:145:LEU:CD1	3:C:226:LEU:HD12	2.23	0.67
1:A:72:VAL:HG21	1:A:94:VAL:HG22	1.75	0.67
3:C:162:VAL:HG12	3:C:192:LYS:O	1.94	0.67
4:D:10:SER:OG	4:D:132:ILE:HG21	1.95	0.67
3:C:179:GLU:HB2	3:C:221:LEU:HD12	1.76	0.66
3:C:18:LEU:HD13	4:D:74:VAL:HG13	1.77	0.65
6:F:39:ILE:HD12	6:F:121:LEU:HD12	1.78	0.65
4:D:68:ASN:OD1	4:D:71:ARG:NE	2.30	0.65
1:A:273:ARG:NH2	1:A:290:GLU:OE2	2.30	0.65
1:A:229:PRO:O	2:B:411:ARG:NH2	2.31	0.64
6:F:208:ILE:HD13	6:F:244:GLN:HG3	1.79	0.63
6:F:40:ASN:N	6:F:121:LEU:O	2.29	0.62
6:F:213:SER:O	6:F:226:LEU:HD12	1.99	0.62
1:A:135:PRO:O	1:A:136:PHE:CD1	2.53	0.62
5:E:103:PRO:HD2	5:E:104:PRO:HD2	1.80	0.62
6:F:47:ILE:HD12	6:F:62:ALA:HB2	1.82	0.62
6:F:169:GLN:HB3	6:F:209:ILE:HD11	1.82	0.62
5:E:90:LEU:HA	5:E:93:ILE:HG12	1.82	0.61
1:A:133:THR:O	1:A:137:SER:HA	2.01	0.60
6:F:2:SER:O	6:F:4:ILE:HD12	2.02	0.60
2:B:333:LEU:O	2:B:372:ARG:NH2	2.32	0.60
3:C:129:ASP:OD1	3:C:130:GLY:N	2.33	0.60
6:F:232:THR:O	13:F:1501:FAD:O3B	2.18	0.60
3:C:18:LEU:HD11	4:D:78:ILE:HD11	1.83	0.59
5:E:89:ALA:HA	6:F:22:ILE:HD11	1.84	0.59
1:A:408:LEU:HD21	2:B:401:VAL:CG1	2.33	0.58
5:E:117:THR:HG23	5:E:118:VAL:HG23	1.85	0.58
6:F:279:ILE:HG23	6:F:355:ILE:HD12	1.86	0.58
3:C:205:ILE:HG21	3:C:228:SER:HB2	1.85	0.58
5:E:81:ILE:HG23	6:F:11:PHE:HE2	1.69	0.58
3:C:145:LEU:HD21	5:E:21:PHE:HE2	1.69	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:17:ASP:OD1	4:D:202:LYS:HE2	2.04	0.57
4:D:80:ALA:HB3	5:E:81:ILE:HD12	1.87	0.57
5:E:28:PHE:HA	5:E:154:ILE:HD13	1.86	0.57
5:E:60:TYR:O	5:E:65:LYS:N	2.38	0.56
6:F:208:ILE:CD1	6:F:244:GLN:HG3	2.35	0.56
3:C:179:GLU:OE2	4:D:37:LYS:HE3	2.05	0.56
3:C:145:LEU:HD22	3:C:146:TRP:CE2	2.41	0.56
4:D:203:PRO:O	4:D:206:VAL:HG12	2.05	0.56
6:F:138:ILE:HD11	6:F:153:ALA:HB2	1.87	0.56
6:F:293:PHE:CE1	6:F:326:LEU:HD11	2.40	0.56
3:C:44:ASP:OD2	4:D:99:LYS:NZ	2.35	0.56
2:B:129:PHE:HB2	2:B:272:ILE:HD13	1.88	0.55
3:C:113:ALA:HA	3:C:233:ASN:HB3	1.87	0.55
6:F:179:TYR:OH	6:F:231:ALA:O	2.25	0.55
9:B:503:LMT:O2B	9:B:503:LMT:H4'	2.07	0.55
3:C:43:LEU:HD11	3:C:60:SER:HA	1.87	0.55
3:C:207:LYS:HZ3	5:E:194:SER:HB3	1.72	0.55
3:C:20:LEU:O	3:C:24:ILE:HD13	2.07	0.55
2:B:375:ASN:OD1	5:E:195:GLY:HA3	2.07	0.54
3:C:145:LEU:HD12	3:C:226:LEU:HD12	1.88	0.54
4:D:21:ILE:HD11	4:D:141:TYR:CD1	2.42	0.54
1:A:133:THR:O	1:A:137:SER:N	2.40	0.54
3:C:26:VAL:HG13	4:D:84:ILE:HG21	1.90	0.54
6:F:144:ALA:HB1	6:F:316:GLU:HA	1.90	0.54
3:C:165:LEU:HD22	3:C:189:TRP:CD2	2.42	0.54
1:A:380:TYR:HH	1:A:425:CYS:HG	1.56	0.54
5:E:65:LYS:HB3	5:E:68:ALA:HB2	1.90	0.54
5:E:96:MET:HE3	6:F:30:VAL:CG2	2.37	0.54
3:C:44:ASP:OD2	4:D:99:LYS:CE	2.56	0.53
6:F:90:ILE:HG21	6:F:95:LEU:HD21	1.89	0.53
3:C:11:THR:O	3:C:15:VAL:HG22	2.09	0.53
3:C:30:ALA:O	3:C:34:ARG:HB2	2.09	0.53
3:C:31:VAL:HG11	6:F:4:ILE:HD11	1.91	0.53
4:D:7:LEU:HD23	4:D:8:LYS:H	1.73	0.53
5:E:98:LEU:O	5:E:102:PHE:CA	2.56	0.53
1:A:291:ILE:HG21	1:A:296:VAL:HG21	1.90	0.53
4:D:66:ILE:HG22	4:D:123:MET:HE1	1.91	0.53
5:E:91:VAL:HG21	5:E:117:THR:N	2.24	0.52
5:E:119:ASN:OD1	5:E:121:ALA:N	2.42	0.52
4:D:144:VAL:HA	4:D:194:MET:HE1	1.91	0.52
3:C:171:GLY:O	4:D:103:VAL:CG1	2.58	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:97:ILE:O	4:D:100:GLN:HB2	2.09	0.52
3:C:146:TRP:HE1	7:C:1000:FMN:C4A	2.23	0.52
6:F:384:ASN:O	6:F:388:ILE:HG13	2.09	0.52
5:E:98:LEU:O	5:E:102:PHE:N	2.41	0.52
4:D:154:LEU:HB2	4:D:160:LEU:HD21	1.91	0.52
4:D:13:ALA:HB3	4:D:14:PRO:HD3	1.90	0.52
2:B:213:PHE:HA	2:B:220:ILE:HG21	1.92	0.52
4:D:66:ILE:HG21	4:D:123:MET:SD	2.50	0.52
2:B:372:ARG:NH2	2:B:380:GLU:OE1	2.39	0.51
2:B:52:ASP:OD1	2:B:54:LYS:N	2.43	0.51
3:C:126:LEU:HD23	3:C:136:VAL:HG13	1.92	0.51
5:E:113:LEU:O	5:E:116:ILE:HG12	2.10	0.51
5:E:14:ILE:HG12	5:E:196:VAL:HG11	1.90	0.51
3:C:141:HIS:HB3	3:C:150:TYR:CD2	2.45	0.51
4:D:69:SER:O	5:E:92:GLN:OE1	2.28	0.51
3:C:33:LEU:O	3:C:37:GLN:HG3	2.10	0.51
2:B:371:ILE:HD11	5:E:192:SER:HB3	1.92	0.51
3:C:205:ILE:HG23	3:C:220:GLY:HA2	1.93	0.51
6:F:192:TRP:HA	6:F:197:LEU:CD1	2.41	0.51
5:E:119:ASN:OD1	5:E:121:ALA:HB3	2.11	0.51
6:F:189:ARG:NH1	6:F:193:ASP:OD2	2.44	0.51
6:F:39:ILE:CD1	6:F:121:LEU:HD12	2.41	0.51
6:F:204:VAL:HG22	6:F:244:GLN:HB2	1.92	0.51
6:F:217:TYR:CE2	6:F:219:GLU:HB2	2.44	0.51
4:D:14:PRO:O	4:D:140:GLY:HA3	2.11	0.50
6:F:217:TYR:CZ	6:F:297:LYS:HE3	2.46	0.50
1:A:307:THR:CG2	2:B:39:LEU:HD11	2.41	0.50
5:E:40:GLY:HA3	5:E:105:LEU:HD11	1.93	0.50
1:A:134:ARG:O	1:A:134:ARG:HD3	2.11	0.50
1:A:307:THR:HG21	2:B:39:LEU:HD11	1.94	0.50
6:F:279:ILE:CG2	6:F:355:ILE:HD12	2.40	0.50
3:C:113:ALA:HB2	3:C:237:PHE:HB3	1.93	0.50
5:E:32:SER:O	5:E:161:ARG:HD3	2.11	0.50
5:E:113:LEU:HB3	5:E:114:PRO:HD3	1.94	0.50
6:F:274:ALA:O	6:F:303:ARG:NH2	2.40	0.49
3:C:100:ALA:HA	3:C:117:ARG:HH22	1.76	0.49
1:A:392:LEU:HD13	2:B:401:VAL:HG21	1.94	0.49
6:F:74:GLY:HA2	12:F:1502:FES:S1	2.53	0.49
6:F:196:ASN:CB	6:F:199:ARG:CZ	2.90	0.49
4:D:50:PHE:HE2	4:D:86:VAL:HG21	1.77	0.49
2:B:397:ASP:O	2:B:401:VAL:HG23	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:301:SER:O	6:F:332:ASN:ND2	2.45	0.49
4:D:41:ALA:O	4:D:45:THR:HG23	2.12	0.49
3:C:44:ASP:OD2	4:D:99:LYS:HE3	2.13	0.49
2:B:375:ASN:ND2	5:E:192:SER:O	2.46	0.49
5:E:96:MET:HE3	6:F:30:VAL:HG21	1.95	0.49
6:F:179:TYR:HB3	6:F:198:PHE:HA	1.95	0.49
6:F:324:ASP:HA	6:F:335:TRP:HE1	1.77	0.49
1:A:133:THR:O	1:A:137:SER:CA	2.61	0.49
5:E:151:MET:HA	5:E:154:ILE:HG22	1.95	0.49
1:A:40:ARG:HD2	6:F:397:GLU:OE2	2.13	0.48
2:B:86:LEU:HD11	2:B:232:TYR:HA	1.96	0.48
4:D:49:MET:HG3	4:D:138:GLY:HA3	1.94	0.48
4:D:20:PRO:HA	4:D:24:GLN:HG3	1.94	0.48
5:E:93:ILE:HA	5:E:96:MET:HG2	1.95	0.48
2:B:251:ASN:O	2:B:255:GLY:N	2.43	0.48
4:D:42:PHE:CE2	4:D:46:LEU:HD11	2.48	0.48
1:A:14:GLY:O	1:A:265:ALA:HB1	2.12	0.48
2:B:53:LEU:HD21	2:B:156:ASN:HD21	1.79	0.48
3:C:45:LYS:HD3	3:C:45:LYS:N	2.28	0.48
6:F:59:LEU:HD21	6:F:121:LEU:CD1	2.43	0.48
6:F:71:GLY:O	12:F:1502:FES:S2	2.72	0.48
1:A:135:PRO:HA	1:A:411:LEU:O	2.13	0.48
5:E:102:PHE:CE1	6:F:88:GLY:HA3	2.49	0.48
5:E:103:PRO:CD	5:E:104:PRO:HD2	2.44	0.48
3:C:77:ASP:O	3:C:81:GLY:N	2.44	0.48
3:C:207:LYS:NZ	5:E:194:SER:HB3	2.29	0.48
6:F:208:ILE:HD12	6:F:245:MET:HB2	1.96	0.48
5:E:10:LYS:O	5:E:15:GLU:N	2.36	0.48
4:D:90:LEU:HD12	4:D:101:LEU:HD11	1.97	0.47
1:A:217:ALA:O	1:A:223:HIS:NE2	2.45	0.47
5:E:102:PHE:HE1	6:F:88:GLY:HA3	1.78	0.47
1:A:37:VAL:HG12	1:A:138:LYS:HE3	1.96	0.47
1:A:53:LYS:O	1:A:70:SER:O	2.31	0.47
6:F:196:ASN:HB2	6:F:199:ARG:CZ	2.44	0.47
1:A:394:LEU:HD22	1:A:431:TYR:CD1	2.49	0.47
4:D:74:VAL:O	4:D:78:ILE:HG12	2.13	0.47
4:D:84:ILE:O	4:D:88:GLN:HG2	2.13	0.47
5:E:82:THR:HG23	6:F:14:ILE:HG21	1.97	0.47
1:A:77:VAL:HG23	1:A:78:GLU:HG2	1.97	0.47
1:A:413:LEU:HD13	1:A:418:LEU:HD21	1.96	0.47
3:C:187:ALA:O	3:C:190:VAL:HG22	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:47:ALA:HB1	4:D:108:ILE:HD13	1.96	0.47
6:F:339:LEU:HB2	6:F:342:PRO:HG3	1.96	0.47
2:B:70:TRP:CD1	2:B:276:SER:HB2	2.49	0.47
9:B:503:LMT:O5B	9:B:503:LMT:O3'	2.32	0.47
3:C:38:LYS:NZ	3:C:38:LYS:HB2	2.30	0.47
5:E:95:GLU:HG2	5:E:106:TYR:CE2	2.50	0.47
2:B:169:ILE:HG22	7:B:501:FMN:HM83	1.96	0.46
5:E:14:ILE:HG12	5:E:196:VAL:CG1	2.44	0.46
6:F:286:ALA:HB3	6:F:287:PRO:CD	2.45	0.46
4:D:16:LEU:CD2	4:D:198:ILE:HG12	2.45	0.46
6:F:305:MET:O	6:F:333:PHE:HA	2.14	0.46
6:F:211:ALA:HB3	13:F:1501:FAD:C8	2.45	0.46
3:C:44:ASP:O	3:C:48:LYS:HG2	2.15	0.46
4:D:15:VAL:HA	4:D:140:GLY:CA	2.46	0.46
4:D:50:PHE:CE2	4:D:86:VAL:HG21	2.51	0.46
1:A:54:ALA:HB3	1:A:100:VAL:HB	1.98	0.46
4:D:164:GLU:OE2	4:D:167:PRO:HA	2.15	0.46
3:C:33:LEU:HD11	4:D:89:ILE:HD13	1.98	0.46
5:E:96:MET:O	5:E:99:ASP:HB2	2.16	0.46
3:C:16:ILE:CG1	6:F:16:LEU:HD21	2.46	0.46
3:C:105:LYS:HD3	3:C:117:ARG:HD2	1.96	0.46
5:E:40:GLY:C	5:E:105:LEU:HD11	2.36	0.46
1:A:134:ARG:CG	1:A:230:VAL:HG21	2.43	0.46
4:D:105:VAL:HG23	5:E:80:PHE:CE2	2.51	0.46
5:E:103:PRO:HB3	6:F:89:ASP:HB3	1.97	0.46
3:C:8:ILE:O	3:C:12:LEU:HD13	2.16	0.46
6:F:296:LEU:HD12	6:F:326:LEU:HD13	1.98	0.46
1:A:134:ARG:NH1	1:A:417:ASP:OD2	2.48	0.46
3:C:146:TRP:NE1	7:C:1000:FMN:C4A	2.78	0.46
6:F:272:THR:O	6:F:303:ARG:NH1	2.49	0.45
6:F:39:ILE:HB	6:F:45:LYS:HB3	1.98	0.45
6:F:176:HIS:ND1	6:F:202:SER:O	2.49	0.45
3:C:145:LEU:HB2	3:C:226:LEU:HB2	1.98	0.45
4:D:68:ASN:OD1	4:D:71:ARG:CZ	2.65	0.45
6:F:59:LEU:HD21	6:F:121:LEU:HD12	1.98	0.45
3:C:20:LEU:O	3:C:24:ILE:CD1	2.64	0.45
3:C:53:ALA:HB2	3:C:137:ILE:HD11	1.99	0.45
2:B:37:PRO:HB2	2:B:41:THR:OG1	2.17	0.45
3:C:150:TYR:HB3	3:C:168:TYR:CZ	2.52	0.45
6:F:376:TYR:CE1	6:F:402:LEU:HD13	2.51	0.45
2:B:143:TRP:NE1	2:B:184:THR:HG23	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:165:LEU:HD22	3:C:189:TRP:CE2	2.52	0.45
5:E:31:VAL:HG11	5:E:109:LEU:HD23	1.98	0.45
2:B:219:GLN:OE1	4:D:176:GLN:NE2	2.37	0.45
4:D:19:ASN:HB3	4:D:22:ALA:HB3	1.98	0.45
2:B:202:LEU:HD22	5:E:185:LEU:HB3	1.99	0.45
4:D:66:ILE:CG2	4:D:123:MET:HE1	2.47	0.45
6:F:16:LEU:HA	6:F:19:VAL:HG22	1.99	0.45
2:B:238:LEU:HD11	2:B:372:ARG:CZ	2.47	0.45
4:D:105:VAL:HG23	4:D:106:GLY:N	2.32	0.45
4:D:184:ALA:HB3	5:E:22:PHE:CZ	2.52	0.45
7:C:1000:FMN:H9	7:C:1000:FMN:H1'1	1.71	0.44
6:F:355:ILE:HA	6:F:358:VAL:HB	1.99	0.44
3:C:149:MET:SD	3:C:227:THR:HG23	2.56	0.44
1:A:102:PHE:N	1:A:254:GLY:O	2.44	0.44
1:A:258:THR:HG22	1:A:279:MET:SD	2.57	0.44
5:E:98:LEU:O	5:E:102:PHE:HB3	2.18	0.44
5:E:116:ILE:C	5:E:117:THR:O	2.54	0.44
6:F:84:LYS:HB2	6:F:120:ASP:HB3	2.00	0.44
2:B:232:TYR:OH	2:B:252:ASN:HB2	2.17	0.44
6:F:91:LEU:HD13	6:F:112:GLN:HG3	2.00	0.44
6:F:138:ILE:HD12	6:F:223:ILE:HG22	1.99	0.44
5:E:93:ILE:HA	5:E:96:MET:CG	2.47	0.44
6:F:213:SER:HB2	6:F:406:PHE:CZ	2.52	0.44
5:E:90:LEU:O	5:E:93:ILE:HG13	2.18	0.44
6:F:215:ALA:HB2	6:F:286:ALA:HB1	1.99	0.44
6:F:237:ASN:OD1	6:F:240:VAL:HG23	2.17	0.44
3:C:31:VAL:CG1	6:F:4:ILE:HD11	2.48	0.44
5:E:80:PHE:N	5:E:80:PHE:CD1	2.85	0.44
6:F:138:ILE:CD1	6:F:223:ILE:HG22	2.48	0.44
3:C:151:ALA:HA	3:C:167:TYR:HA	1.99	0.43
6:F:65:PHE:O	6:F:127:ILE:HG23	2.19	0.43
6:F:143:LYS:HB3	6:F:318:PHE:CG	2.53	0.43
6:F:242:PRO:O	13:F:1501:FAD:H8A	2.19	0.43
6:F:304:LYS:HG3	6:F:305:MET:N	2.34	0.43
4:D:31:ALA:HA	4:D:145:LEU:HD11	2.01	0.43
5:E:27:THR:O	5:E:31:VAL:HG22	2.19	0.43
4:D:184:ALA:N	4:D:185:PRO:CD	2.81	0.43
3:C:21:VAL:HG23	3:C:22:CYS:N	2.34	0.43
4:D:95:TYR:HE1	4:D:99:LYS:HE2	1.84	0.43
1:A:61:LYS:NZ	6:F:372:ASP:OD1	2.51	0.43
1:A:428:LYS:HD2	2:B:48:ARG:HD2	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:50:LEU:HD12	3:C:63:ILE:HG23	2.00	0.43
3:C:166:THR:HA	3:C:186:ARG:HD2	2.01	0.43
5:E:60:TYR:CZ	5:E:130:VAL:HG13	2.54	0.43
6:F:305:MET:HB3	6:F:333:PHE:HD1	1.84	0.43
5:E:102:PHE:N	5:E:103:PRO:CD	2.82	0.43
5:E:158:ALA:O	5:E:162:GLU:HG3	2.19	0.43
1:A:278:VAL:HG22	1:A:279:MET:N	2.33	0.43
2:B:108:LEU:HD12	2:B:123:LEU:HD11	2.01	0.43
5:E:24:GLY:H	5:E:120:CYS:HB2	1.83	0.43
6:F:135:CYS:CB	6:F:152:LEU:HB3	2.49	0.43
1:A:123:VAL:HG21	1:A:142:ILE:HD12	2.00	0.42
2:B:144:GLU:OE2	2:B:191:LYS:NZ	2.42	0.42
4:D:72:ILE:HG12	4:D:115:MET:CE	2.49	0.42
6:F:64:VAL:HG21	6:F:123:LEU:HD12	2.01	0.42
3:C:126:LEU:HB3	3:C:133:THR:HG22	2.01	0.42
6:F:377:MET:SD	6:F:387:VAL:HG11	2.59	0.42
1:A:2:ILE:O	1:A:211:PHE:HA	2.20	0.42
4:D:77:ALA:HA	5:E:81:ILE:HD11	2.01	0.42
2:B:280:LEU:HD21	2:B:338:PHE:HD2	1.85	0.42
4:D:80:ALA:HB3	5:E:81:ILE:CD1	2.49	0.42
1:A:308:LYS:HE3	2:B:42:LYS:HE2	2.01	0.42
3:C:25:ILE:HG22	4:D:85:VAL:HG21	2.02	0.42
5:E:2:GLU:N	5:E:2:GLU:OE1	2.53	0.42
3:C:10:LYS:O	3:C:14:VAL:HG12	2.20	0.42
4:D:49:MET:SD	4:D:139:LEU:HG	2.59	0.42
1:A:149:ILE:HD12	1:A:185:THR:HB	2.00	0.42
2:B:363:LEU:HD11	2:B:388:PHE:HE2	1.85	0.42
5:E:84:ILE:HD12	5:E:84:ILE:HA	1.89	0.42
2:B:123:LEU:O	2:B:127:THR:HG23	2.19	0.42
3:C:173:THR:N	7:C:1000:FMN:O4	2.49	0.42
4:D:35:THR:O	4:D:149:GLY:HA2	2.20	0.42
5:E:91:VAL:HG21	5:E:117:THR:H	1.85	0.42
6:F:171:GLU:HB3	6:F:209:ILE:HD13	2.02	0.42
3:C:91:TYR:OH	3:C:121:VAL:O	2.20	0.41
3:C:33:LEU:HD13	4:D:89:ILE:HA	2.02	0.41
3:C:144:GLY:HA3	3:C:172:GLU:OE2	2.21	0.41
4:D:141:TYR:CE2	4:D:145:LEU:HD22	2.56	0.41
4:D:15:VAL:HA	4:D:140:GLY:HA2	2.02	0.41
5:E:40:GLY:CA	5:E:105:LEU:HD11	2.49	0.41
5:E:80:PHE:N	5:E:80:PHE:HD1	2.18	0.41
1:A:17:SER:H	1:A:273:ARG:HA	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:55:ARG:O	2:B:59:MET:HG2	2.20	0.41
2:B:250:ILE:HG23	2:B:256:GLN:O	2.20	0.41
3:C:105:LYS:HA	3:C:117:ARG:HE	1.85	0.41
3:C:152:PHE:CE2	3:C:168:TYR:CD2	3.09	0.41
3:C:221:LEU:N	3:C:221:LEU:HD22	2.35	0.41
2:B:186:GLY:O	2:B:190:ALA:HB3	2.20	0.41
2:B:308:LEU:HD23	2:B:369:VAL:HB	2.02	0.41
6:F:402:LEU:N	6:F:402:LEU:HD12	2.36	0.41
1:A:159:LEU:HB3	1:A:265:ALA:HB3	2.03	0.41
2:B:367:MET:HB3	2:B:385:ALA:HB1	2.03	0.41
3:C:35:ASP:O	3:C:39:GLU:HG2	2.21	0.41
3:C:174:PRO:HG2	4:D:104:PHE:CE1	2.55	0.41
3:C:230:GLY:O	3:C:234:THR:N	2.50	0.41
6:F:217:TYR:CG	6:F:293:PHE:HB3	2.55	0.41
3:C:189:TRP:CE2	3:C:218:VAL:HG11	2.56	0.41
4:D:184:ALA:CB	5:E:22:PHE:CE2	3.03	0.41
5:E:103:PRO:HA	6:F:89:ASP:OD2	2.21	0.41
6:F:159:SER:OG	6:F:221:PHE:HA	2.20	0.41
1:A:130:ALA:HB2	1:A:318:ARG:NH2	2.36	0.40
4:D:68:ASN:O	4:D:71:ARG:HG2	2.21	0.40
5:E:18:ALA:O	5:E:22:PHE:HA	2.22	0.40
9:E:201:LMT:H121	9:E:201:LMT:H91	1.95	0.40
6:F:40:ASN:HB3	6:F:42:ASP:OD2	2.21	0.40
1:A:71:PRO:O	1:A:258:THR:HG21	2.21	0.40
2:B:322:MET:HE2	2:B:372:ARG:O	2.21	0.40
3:C:43:LEU:HD22	3:C:60:SER:OG	2.20	0.40
3:C:189:TRP:CZ3	3:C:203:ILE:HG21	2.56	0.40
6:F:36:THR:HG23	6:F:48:VAL:HG22	2.02	0.40
4:D:76:MET:SD	5:E:118:VAL:HG22	2.62	0.40
1:A:60:ASP:OD2	1:A:63:ASN:HB2	2.21	0.40
1:A:123:VAL:CG2	1:A:142:ILE:HD12	2.51	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	394/468 (84%)	388 (98%)	6 (2%)	0	100	100
2	B	378/415 (91%)	371 (98%)	7 (2%)	0	100	100
3	C	246/257 (96%)	244 (99%)	2 (1%)	0	100	100
4	D	201/210 (96%)	196 (98%)	5 (2%)	0	100	100
5	E	195/198 (98%)	186 (95%)	6 (3%)	3 (2%)	10	36
6	F	405/408 (99%)	400 (99%)	5 (1%)	0	100	100
All	All	1819/1956 (93%)	1785 (98%)	31 (2%)	3 (0%)	47	78

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	E	117	THR
5	E	115	LEU
5	E	110	GLY

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	334/395 (85%)	334 (100%)	0	100	100
2	B	292/320 (91%)	292 (100%)	0	100	100
3	C	198/205 (97%)	196 (99%)	2 (1%)	76	88
4	D	170/176 (97%)	168 (99%)	2 (1%)	71	85
5	E	164/165 (99%)	164 (100%)	0	100	100
6	F	337/337 (100%)	334 (99%)	3 (1%)	78	90
All	All	1495/1598 (94%)	1488 (100%)	7 (0%)	88	94

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	C	38	LYS
3	C	158	ASP
4	D	65	HIS
4	D	71	ARG
6	F	171	GLU
6	F	213	SER
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	116	GLN
5	E	57	ASN
5	E	92	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 11 ligands modelled in this entry, 1 is monoatomic - leaving 10 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
11	LYS	D	302	-	7,8,9	0.48	0	3,8,10	0.35	0
9	LMT	E	201	-	36,36,36	1.18	3 (8%)	47,47,47	1.00	3 (6%)
12	FES	E	202	5,4	0,4,4	-	-	-	-	-
12	FES	F	1502	6	0,4,4	-	-	-	-	-
8	RBF	B	502	-	29,29,29	0.57	0	41,43,43	0.70	1 (2%)
9	LMT	D	301	-	36,36,36	1.10	5 (13%)	47,47,47	1.07	4 (8%)
7	FMN	B	501	2	29,32,33	1.15	2 (6%)	40,47,50	1.39	9 (22%)
9	LMT	B	503	-	36,36,36	1.21	4 (11%)	47,47,47	1.13	3 (6%)
7	FMN	C	1000	3	29,32,33	1.14	2 (6%)	40,47,50	1.33	8 (20%)
13	FAD	F	1501	-	53,58,58	0.49	0	68,89,89	0.53	2 (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. ^{1,2} means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	LYS	D	302	-	-	1/6/7/9	-
9	LMT	E	201	-	-	10/21/61/61	0/2/2/2
12	FES	E	202	5,4	-	-	0/1/1/1
12	FES	F	1502	6	-	-	0/1/1/1
8	RBF	B	502	-	-	0/14/14/14	0/3/3/3
9	LMT	D	301	-	-	11/21/61/61	0/2/2/2
7	FMN	B	501	2	-	6/15/17/18	0/3/3/3
9	LMT	B	503	-	-	12/21/61/61	0/2/2/2
7	FMN	C	1000	3	-	0/15/17/18	0/3/3/3
13	FAD	F	1501	-	-	7/30/50/50	0/6/6/6

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	C	1000	FMN	C4A-N5	3.89	1.38	1.30
7	B	501	FMN	C4A-N5	3.78	1.38	1.30
9	E	201	LMT	O3'-C3'	-3.05	1.35	1.43
9	B	503	LMT	O3'-C3'	-2.80	1.36	1.43
9	E	201	LMT	O2'-C2'	-2.67	1.36	1.43
7	B	501	FMN	C10-N1	2.66	1.38	1.33
7	C	1000	FMN	C10-N1	2.61	1.38	1.33
9	B	503	LMT	O2B-C2B	-2.49	1.37	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	B	503	LMT	O2'-C2'	-2.49	1.37	1.43
9	D	301	LMT	O3B-C3B	-2.34	1.37	1.43
9	D	301	LMT	O3'-C3'	-2.29	1.37	1.43
9	B	503	LMT	O3B-C3B	-2.28	1.37	1.43
9	D	301	LMT	O2B-C2B	-2.18	1.37	1.43
9	E	201	LMT	O2B-C2B	-2.13	1.38	1.43
9	D	301	LMT	O2'-C2'	-2.09	1.38	1.43
9	D	301	LMT	O4'-C4B	-2.05	1.38	1.43

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	B	501	FMN	C4-N3-C2	-3.29	119.56	125.64
7	B	501	FMN	C9A-C5A-N5	-3.12	119.04	122.43
7	C	1000	FMN	C5A-C9A-N10	3.11	121.17	117.95
9	B	503	LMT	O5B-C5B-C4B	2.89	114.94	109.69
9	E	201	LMT	O5B-C5B-C4B	2.86	114.89	109.69
9	B	503	LMT	C3'-C4'-C5'	-2.86	104.38	110.93
9	E	201	LMT	C3'-C4'-C5'	-2.82	104.47	110.93
7	C	1000	FMN	C9A-C5A-N5	-2.78	119.41	122.43
9	D	301	LMT	O1'-C1'-C2'	2.78	112.64	108.30
7	B	501	FMN	C4A-C4-N3	2.69	120.01	113.19
7	C	1000	FMN	C4-N3-C2	-2.64	120.76	125.64
7	C	1000	FMN	C4A-C4-N3	2.46	119.44	113.19
9	D	301	LMT	C1'-O5'-C5'	-2.46	108.86	113.69
7	B	501	FMN	O4-C4-C4A	-2.42	120.18	126.60
7	B	501	FMN	C10-C4A-N5	-2.38	119.80	124.86
7	C	1000	FMN	C4A-C10-N10	2.37	119.94	116.48
7	B	501	FMN	C4A-C10-N1	-2.34	119.31	124.73
9	E	201	LMT	C1'-O5'-C5'	-2.31	109.15	113.69
9	B	503	LMT	C1'-O5'-C5'	-2.28	109.22	113.69
13	F	1501	FAD	C5A-C6A-N6A	2.24	123.75	120.35
7	B	501	FMN	C5A-C9A-N10	2.18	120.20	117.95
7	C	1000	FMN	O4-C4-C4A	-2.18	120.83	126.60
7	C	1000	FMN	C4A-C10-N1	-2.10	119.86	124.73
13	F	1501	FAD	P-O3P-PA	-2.09	125.65	132.83
9	D	301	LMT	C3'-C4'-C5'	-2.09	106.14	110.93
7	B	501	FMN	C4A-C10-N10	2.07	119.50	116.48
8	B	502	RBF	C4-N3-C2	-2.06	121.84	125.64
7	B	501	FMN	C4-C4A-C10	2.06	120.25	116.79
7	C	1000	FMN	C10-C4A-N5	-2.04	120.53	124.86
9	D	301	LMT	C3B-C4B-C5B	-2.00	106.67	110.24

There are no chirality outliers.

All (47) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	B	501	FMN	C2'-C3'-C4'-O4'
7	B	501	FMN	O3'-C3'-C4'-O4'
7	B	501	FMN	C3'-C4'-C5'-O5'
7	B	501	FMN	O4'-C4'-C5'-O5'
9	B	503	LMT	C2'-C1'-O1'-C1
9	B	503	LMT	O5'-C1'-O1'-C1
9	D	301	LMT	C2'-C1'-O1'-C1
9	D	301	LMT	O5'-C1'-O1'-C1
9	E	201	LMT	C2'-C1'-O1'-C1
9	E	201	LMT	O5'-C1'-O1'-C1
13	F	1501	FAD	N10-C1'-C2'-O2'
13	F	1501	FAD	C5'-O5'-P-O3P
9	E	201	LMT	O5B-C1B-O1B-C4'
9	B	503	LMT	C2B-C1B-O1B-C4'
9	D	301	LMT	C4'-C5'-C6'-O6'
13	F	1501	FAD	O4B-C4B-C5B-O5B
9	D	301	LMT	O5'-C5'-C6'-O6'
7	B	501	FMN	O3'-C3'-C4'-C5'
7	B	501	FMN	C2'-C3'-C4'-C5'
9	D	301	LMT	C11-C10-C9-C8
9	B	503	LMT	C5-C6-C7-C8
9	B	503	LMT	C6-C7-C8-C9
9	D	301	LMT	C1-C2-C3-C4
9	D	301	LMT	C6-C7-C8-C9
9	E	201	LMT	C11-C10-C9-C8
9	E	201	LMT	C5'-C4'-O1B-C1B
9	D	301	LMT	C9-C10-C11-C12
9	B	503	LMT	C5'-C4'-O1B-C1B
9	E	201	LMT	C5-C6-C7-C8
13	F	1501	FAD	C3B-C4B-C5B-O5B
9	B	503	LMT	C9-C10-C11-C12
9	E	201	LMT	C3'-C4'-O1B-C1B
9	E	201	LMT	O1'-C1-C2-C3
13	F	1501	FAD	N10-C1'-C2'-C3'
9	B	503	LMT	C3'-C4'-O1B-C1B
9	E	201	LMT	C3-C4-C5-C6
9	D	301	LMT	O1'-C1-C2-C3
9	D	301	LMT	C7-C8-C9-C10
9	D	301	LMT	C3-C4-C5-C6
11	D	302	LYS	CE-CD-CG-CB

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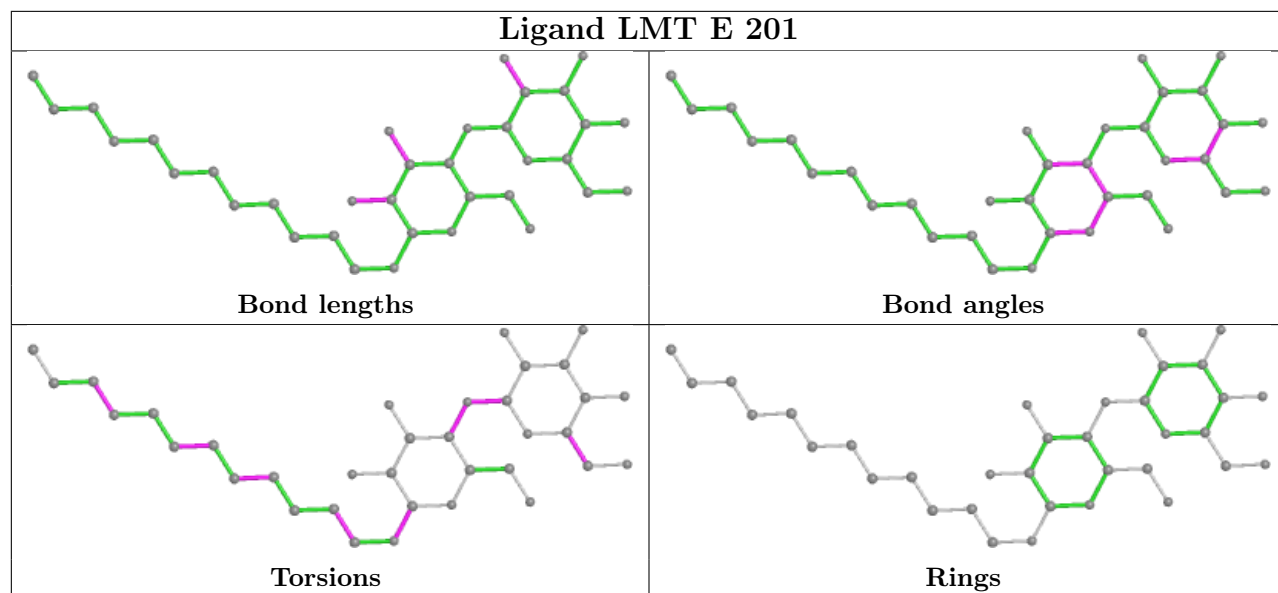
Mol	Chain	Res	Type	Atoms
9	B	503	LMT	O5B-C1B-O1B-C4'
9	B	503	LMT	C1-C2-C3-C4
13	F	1501	FAD	C5'-O5'-P-O1P
13	F	1501	FAD	C5'-O5'-P-O2P
9	E	201	LMT	C4B-C5B-C6B-O6B
9	B	503	LMT	C2-C1-O1'-C1'
9	B	503	LMT	C11-C10-C9-C8

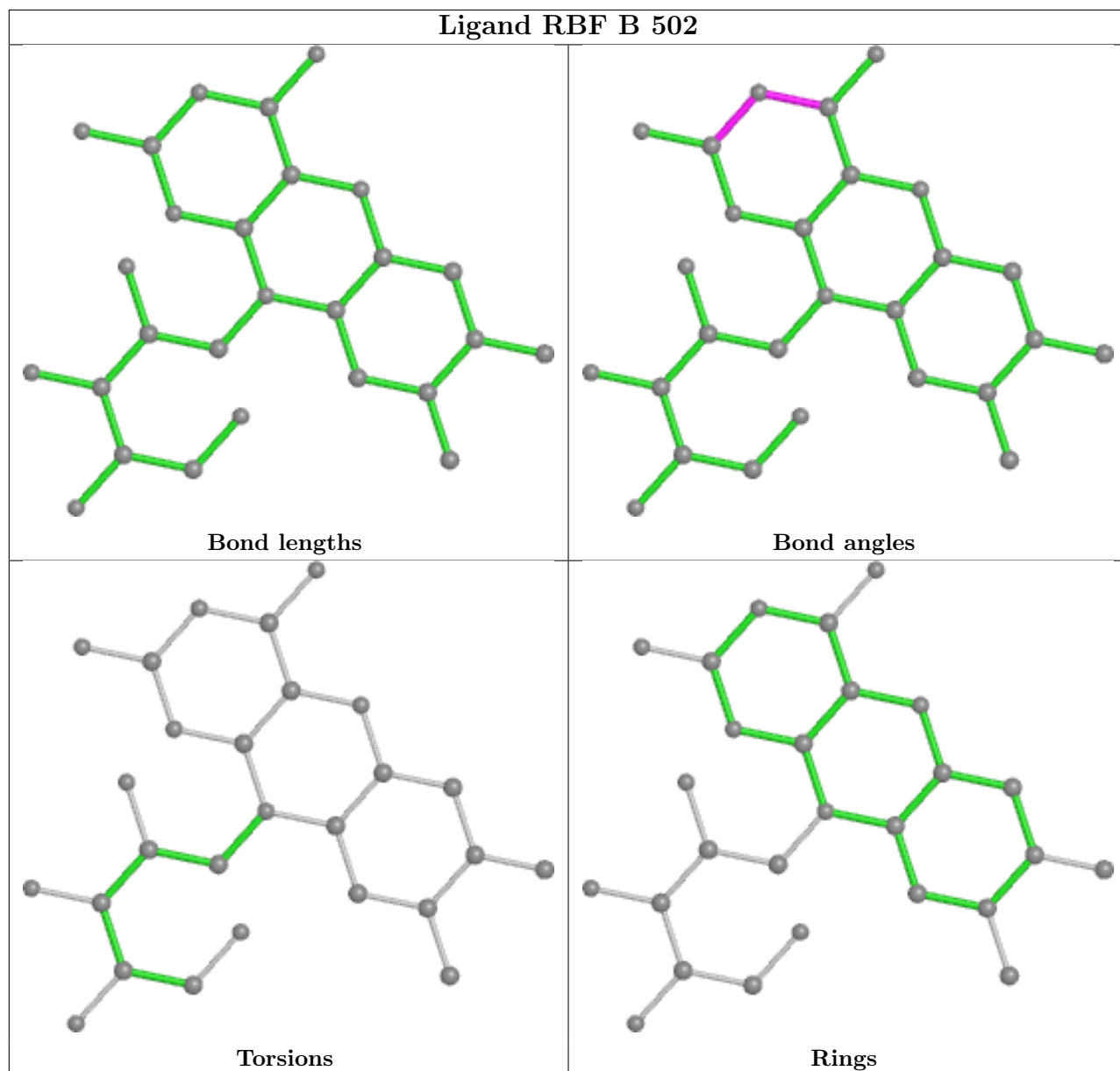
There are no ring outliers.

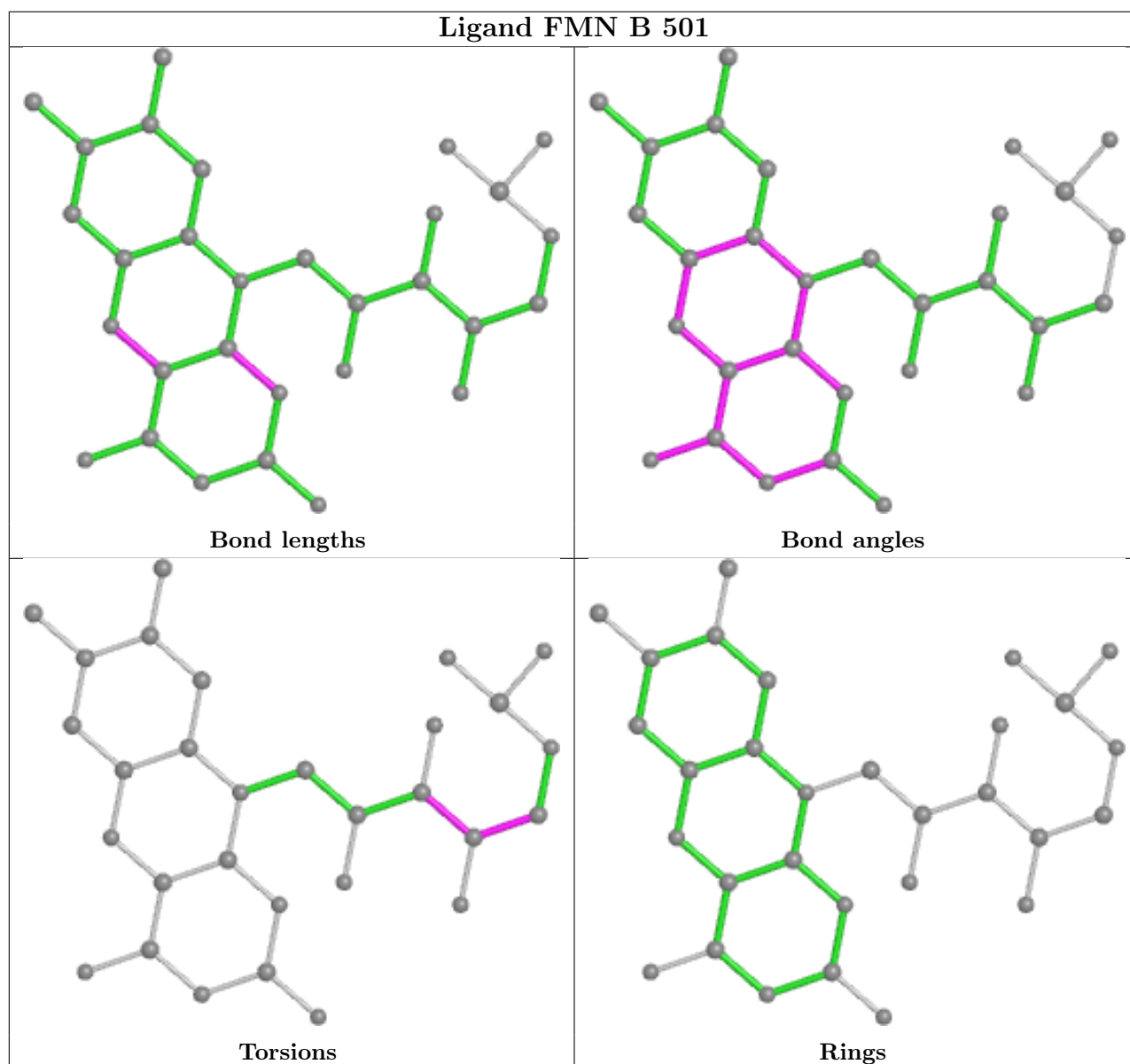
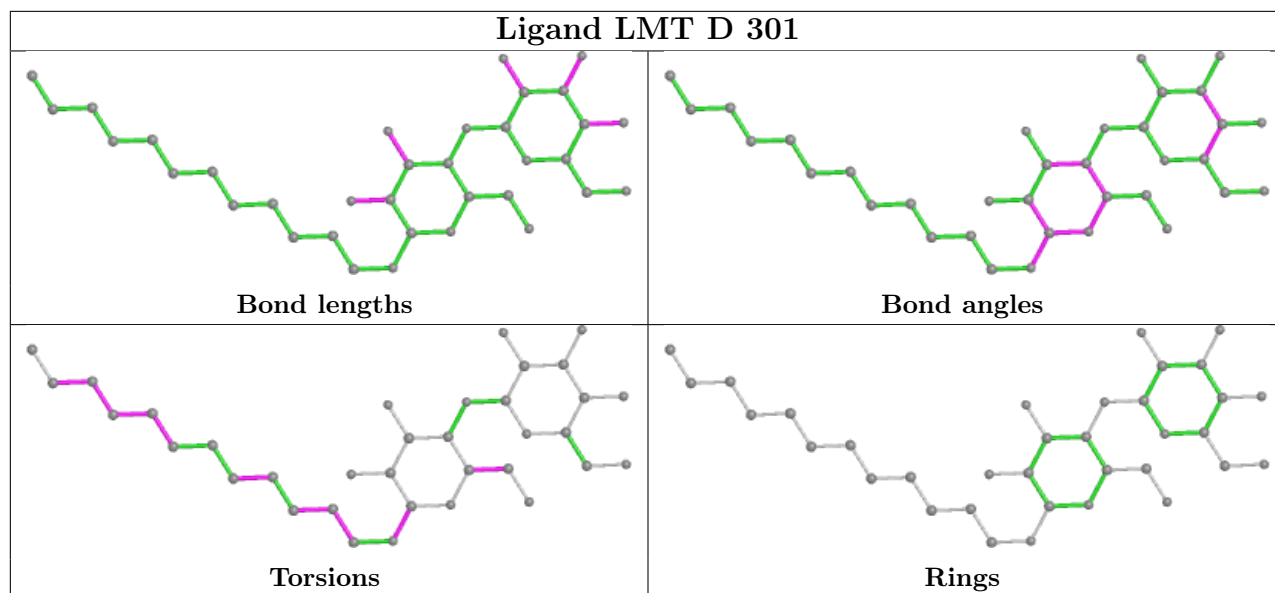
6 monomers are involved in 15 short contacts:

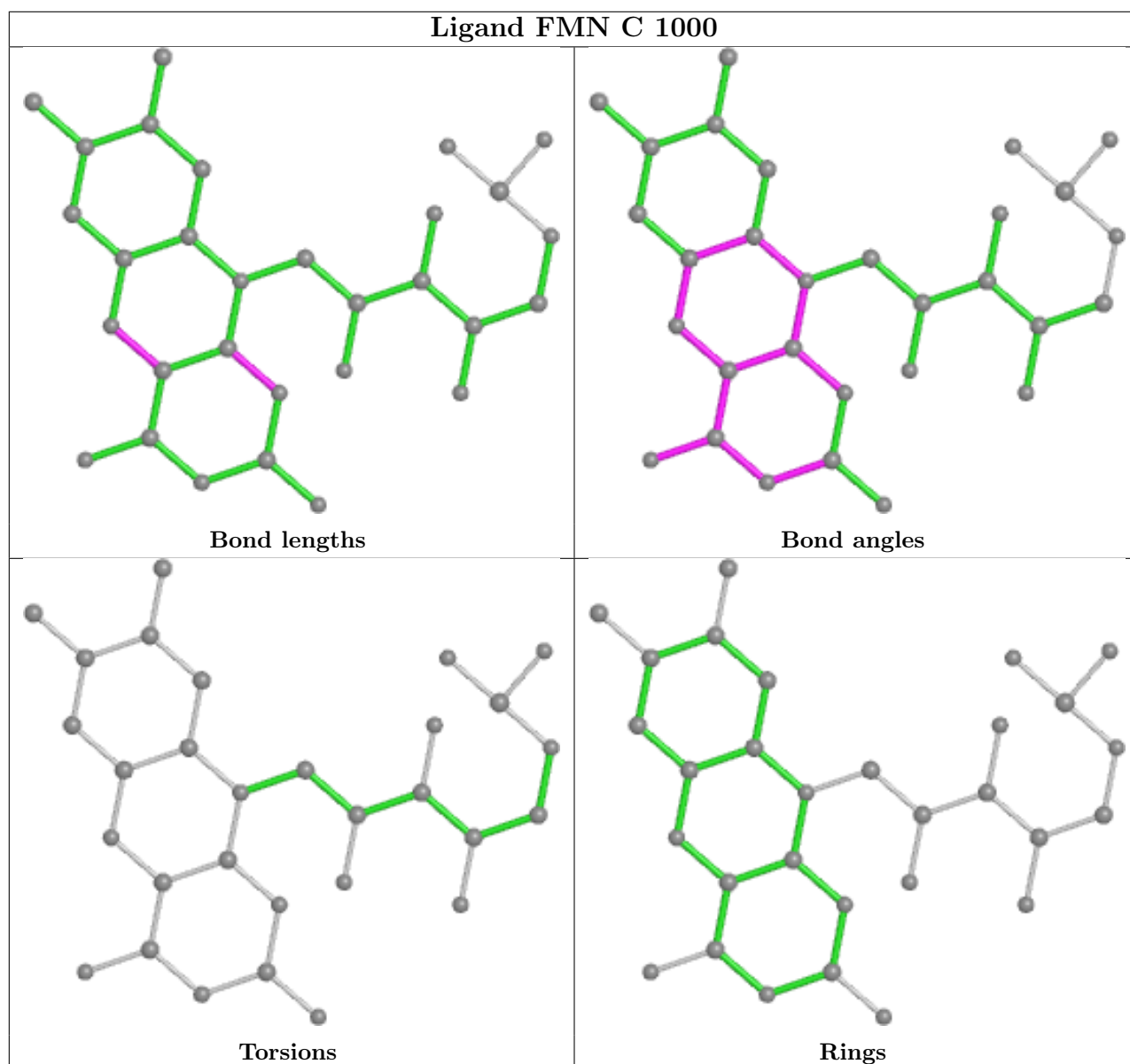
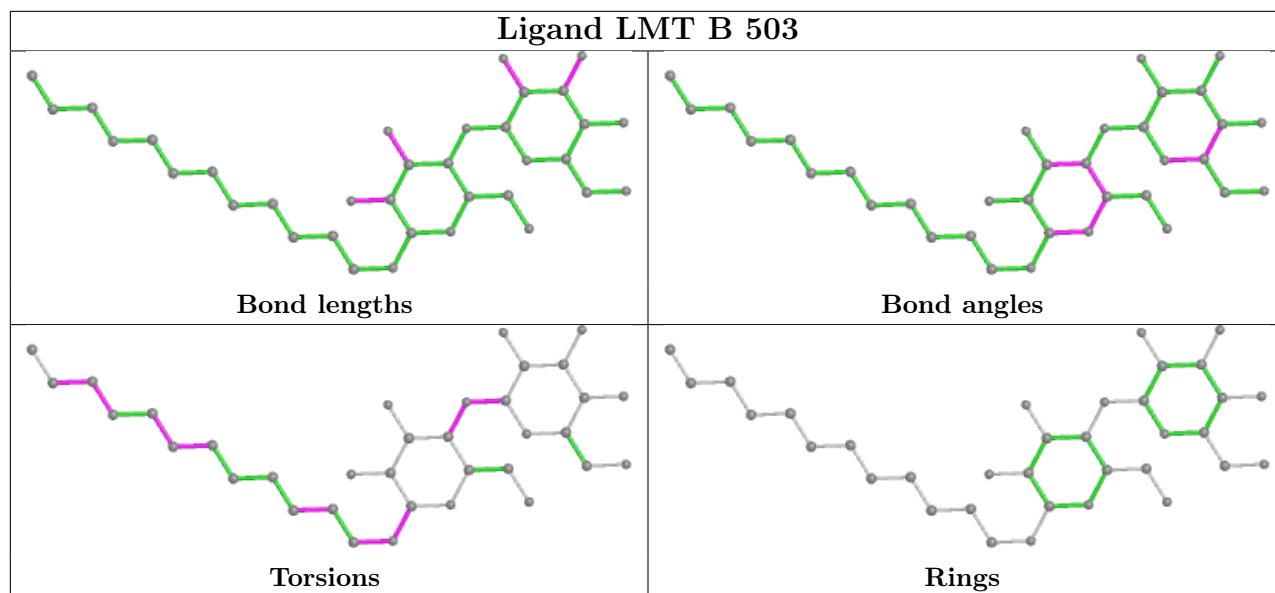
Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	E	201	LMT	1	0
12	F	1502	FES	2	0
7	B	501	FMN	3	0
9	B	503	LMT	2	0
7	C	1000	FMN	4	0
13	F	1501	FAD	3	0

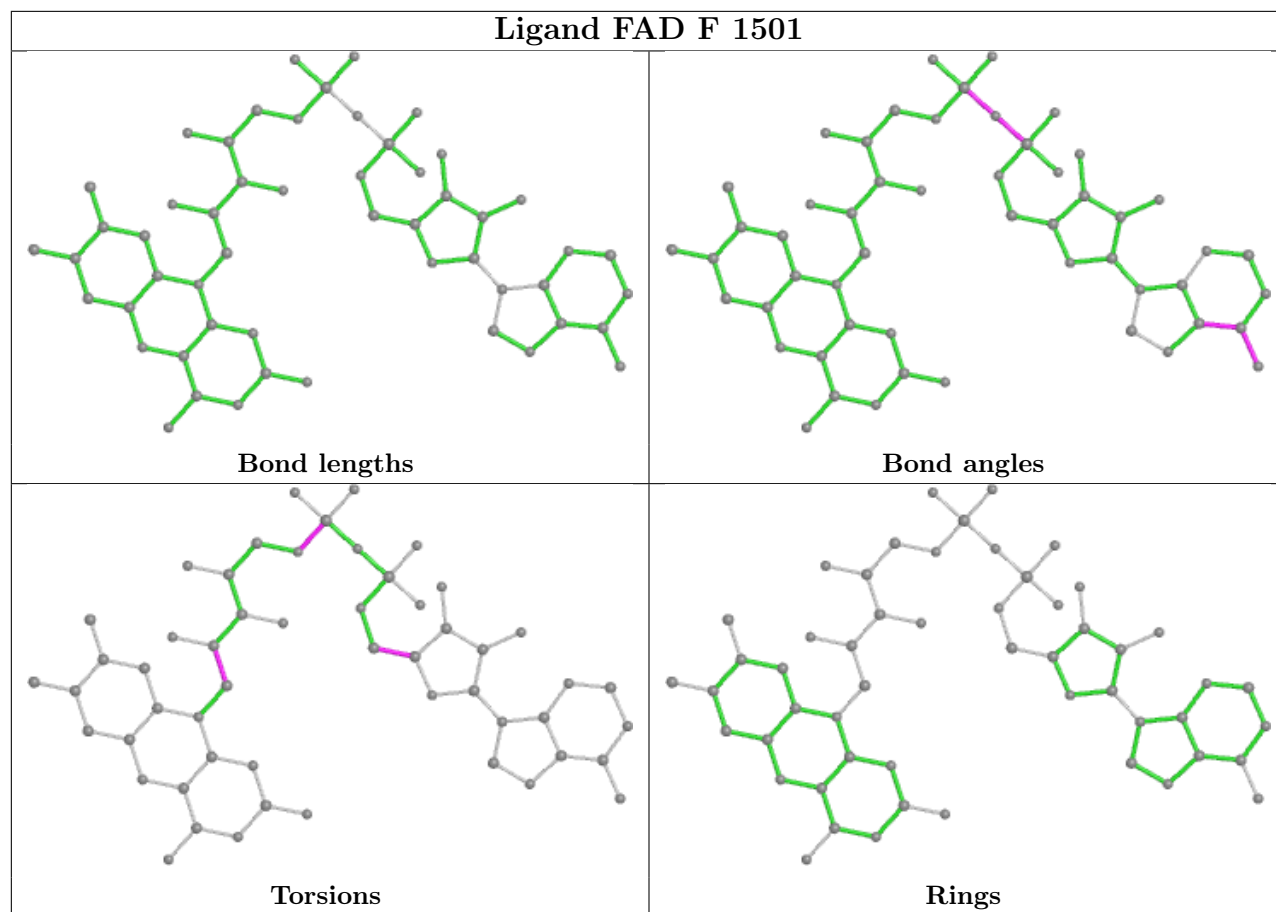
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.











5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	398/468 (85%)	1.09	82 (20%) 1 1	120, 166, 217, 276	0
2	B	380/415 (91%)	1.37	92 (24%) 0 0	108, 170, 253, 387	0
3	C	248/257 (96%)	2.85	111 (44%) 0 0	181, 243, 312, 387	0
4	D	203/210 (96%)	0.91	37 (18%) 1 1	122, 184, 247, 366	0
5	E	197/198 (99%)	1.41	56 (28%) 0 0	122, 186, 248, 316	0
6	F	407/408 (99%)	1.79	128 (31%) 0 0	131, 228, 291, 358	0
All	All	1833/1956 (93%)	1.56	506 (27%) 0 0	108, 191, 281, 387	0

All (506) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	91	TYR	18.2
3	C	244	PHE	17.4
6	F	223	ILE	17.2
3	C	122	GLY	16.8
6	F	261	SER	16.4
6	F	405	ASP	14.6
3	C	137	ILE	14.0
6	F	262	GLY	13.6
6	F	155	PRO	13.3
3	C	139	PRO	12.6
6	F	407	GLY	12.5
6	F	133	TRP	12.3
3	C	163	SER	12.2
6	F	258	CYS	11.6
3	C	125	TYR	11.6
6	F	135	CYS	11.4
3	C	162	VAL	11.3
3	C	238	TRP	11.1
3	C	123	VAL	10.9

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Mol	Chain	Res	Type	RSRZ
2	B	108	LEU	10.8
3	C	140	VAL	10.7
3	C	89	ALA	10.5
3	C	121	VAL	10.3
3	C	138	LEU	10.2
6	F	406	PHE	9.8
3	C	70	SER	9.7
3	C	190	VAL	9.6
3	C	90	ASN	9.5
3	C	164	GLY	9.4
3	C	76	VAL	9.4
2	B	94	ALA	9.3
3	C	195	PHE	9.2
2	B	267	ASN	9.2
3	C	69	LYS	9.1
3	C	92	ASP	9.0
3	C	152	PHE	8.9
3	C	222	SER	8.9
6	F	154	ILE	8.9
3	C	153	VAL	8.5
3	C	124	VAL	8.5
2	B	228	ALA	8.4
3	C	240	GLY	7.9
3	C	93	GLN	7.7
2	B	98	GLY	7.7
2	B	254	THR	7.6
6	F	160	VAL	7.6
3	C	191	GLY	7.5
6	F	141	ASP	7.4
2	B	272	ILE	7.4
6	F	404	ASP	7.3
3	C	126	LEU	7.3
3	C	248	LEU	7.2
6	F	225	MET	7.2
2	B	97	ALA	7.2
2	B	36	THR	7.1
3	C	208	GLY	7.0
3	C	127	VAL	6.9
6	F	156	ASP	6.9
3	C	201	PRO	6.8
3	C	239	LEU	6.8
2	B	252	ASN	6.8

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Mol	Chain	Res	Type	RSRZ
6	F	150	LEU	6.8
6	F	109	LEU	6.8
2	B	156	ASN	6.7
3	C	223	GLY	6.6
6	F	43	PRO	6.6
3	C	194	LEU	6.6
2	B	253	ALA	6.6
2	B	93	ALA	6.6
6	F	283	ALA	6.6
6	F	224	ILE	6.5
1	A	83	ALA	6.5
1	A	295	GLU	6.5
3	C	101	SER	6.5
6	F	132	LYS	6.5
3	C	75	LEU	6.5
6	F	136	THR	6.4
3	C	154	ALA	6.4
1	A	256	LEU	6.4
6	F	137	VAL	6.4
3	C	241	ASP	6.3
6	F	353	GLY	6.3
6	F	263	PRO	6.2
2	B	251	ASN	6.1
6	F	260	ILE	6.1
6	F	131	LYS	6.1
3	C	243	GLY	6.0
2	B	255	GLY	6.0
6	F	84	LYS	6.0
6	F	77	GLY	6.0
6	F	120	ASP	5.9
5	E	134	TYR	5.9
2	B	92	LEU	5.9
3	C	88	ALA	5.8
3	C	192	LYS	5.8
3	C	247	PHE	5.8
6	F	153	ALA	5.7
6	F	302	LYS	5.7
1	A	95	ALA	5.7
6	F	170	ILE	5.7
1	A	328	GLU	5.7
2	B	90	ASP	5.6
3	C	254	GLY	5.6

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Mol	Chain	Res	Type	RSRZ
6	F	158	GLU	5.5
1	A	251	PHE	5.5
2	B	78	GLN	5.5
3	C	71	ILE	5.4
3	C	221	LEU	5.4
5	E	137	ALA	5.3
3	C	209	GLY	5.3
3	C	212	GLN	5.3
3	C	165	LEU	5.2
3	C	102	GLU	5.2
3	C	155	VAL	5.2
6	F	139	SER	5.2
2	B	117	GLY	5.1
1	A	102	PHE	5.1
3	C	220	GLY	5.1
5	E	138	GLU	5.1
3	C	56	GLU	5.1
6	F	253	LYS	5.0
2	B	107	MET	5.0
3	C	196	ASP	5.0
3	C	160	ASN	5.0
6	F	85	SER	5.0
2	B	273	GLY	5.0
3	C	141	HIS	5.0
2	B	270	GLY	5.0
2	B	37	PRO	4.9
1	A	121	GLN	4.9
2	B	268	ILE	4.9
1	A	118	ILE	4.9
3	C	78	PHE	4.9
2	B	235	ALA	4.9
1	A	378	GLY	4.9
2	B	95	ILE	4.8
6	F	259	THR	4.8
6	F	130	VAL	4.8
3	C	142	GLY	4.8
3	C	67	PHE	4.7
6	F	257	LYS	4.7
5	E	136	PHE	4.7
6	F	83	ILE	4.6
6	F	256	ASP	4.6
2	B	91	GLN	4.6

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Mol	Chain	Res	Type	RSRZ
5	E	120	CYS	4.6
3	C	207	LYS	4.5
6	F	221	PHE	4.5
6	F	222	GLY	4.5
4	D	7	LEU	4.5
5	E	20	SER	4.5
6	F	227	ASN	4.5
4	D	33	ALA	4.5
1	A	96	GLY	4.5
1	A	98	ASP	4.5
1	A	91	VAL	4.5
5	E	100	ARG	4.4
2	B	256	GLN	4.4
1	A	115	ARG	4.4
1	A	101	THR	4.4
6	F	39	ILE	4.4
6	F	134	GLU	4.4
6	F	338	ALA	4.4
6	F	97	HIS	4.4
3	C	245	GLY	4.3
6	F	169	GLN	4.3
5	E	18	ALA	4.3
1	A	119	LYS	4.3
4	D	8	LYS	4.3
3	C	174	PRO	4.3
4	D	29	CYS	4.3
3	C	166	THR	4.3
1	A	29	VAL	4.2
6	F	352	THR	4.2
3	C	224	ALA	4.2
6	F	208	ILE	4.2
1	A	379	ASN	4.2
1	A	250	LEU	4.2
1	A	173	ALA	4.1
4	D	30	SER	4.1
6	F	318	PHE	4.1
5	E	16	ASN	4.1
3	C	136	VAL	4.1
3	C	225	THR	4.1
6	F	212	TYR	4.1
1	A	100	VAL	4.1
3	C	54	GLY	4.1

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Mol	Chain	Res	Type	RSRZ
6	F	228	VAL	4.1
4	D	110	THR	4.1
6	F	78	GLN	4.0
3	C	113	ALA	4.0
3	C	203	ILE	4.0
6	F	264	PHE	4.0
1	A	205	ASN	4.0
6	F	149	GLU	4.0
6	F	48	VAL	3.9
2	B	269	PRO	3.9
6	F	296	LEU	3.9
1	A	67	LYS	3.9
6	F	66	VAL	3.9
1	A	249	GLN	3.9
4	D	36	THR	3.9
3	C	151	ALA	3.9
3	C	199	HIS	3.9
6	F	226	LEU	3.9
2	B	262	ASP	3.9
6	F	38	SER	3.8
6	F	121	LEU	3.8
4	D	102	SER	3.8
6	F	46	ALA	3.8
3	C	87	ASP	3.8
2	B	83	LEU	3.8
6	F	1	MET	3.8
6	F	140	ASN	3.8
1	A	122	LEU	3.8
1	A	78	GLU	3.8
6	F	394	LEU	3.8
6	F	171	GLU	3.7
5	E	156	ALA	3.7
2	B	222	GLY	3.7
5	E	17	MET	3.7
6	F	393	ASN	3.7
1	A	92	ILE	3.7
3	C	66	LEU	3.6
2	B	381	GLY	3.6
2	B	155	VAL	3.6
2	B	275	VAL	3.6
6	F	152	LEU	3.6
2	B	250	ILE	3.6

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Mol	Chain	Res	Type	RSRZ
5	E	191	MET	3.6
2	B	89	GLY	3.5
4	D	201	PHE	3.5
4	D	204	GLU	3.5
3	C	119	ALA	3.5
3	C	176	LEU	3.5
2	B	99	ASN	3.4
3	C	252	ARG	3.4
6	F	167	TYR	3.4
3	C	178	GLY	3.4
5	E	184	GLY	3.4
4	D	11	VAL	3.4
2	B	257	THR	3.4
5	E	139	SER	3.4
6	F	319	TYR	3.4
5	E	186	MET	3.4
6	F	311	ALA	3.4
1	A	124	GLU	3.4
6	F	403	LEU	3.3
3	C	135	LYS	3.3
6	F	207	PRO	3.3
2	B	74	ASN	3.3
2	B	227	THR	3.3
3	C	23	SER	3.3
2	B	103	TRP	3.3
4	D	179	GLY	3.3
3	C	175	GLY	3.3
5	E	14	ILE	3.2
5	E	183	ALA	3.2
5	E	187	ALA	3.2
6	F	323	PHE	3.2
6	F	378	CYS	3.2
2	B	157	GLU	3.2
2	B	79	ALA	3.2
2	B	261	MET	3.2
2	B	116	ALA	3.2
5	E	144	PHE	3.2
2	B	195	GLY	3.2
3	C	161	THR	3.2
6	F	18	LEU	3.1
4	D	111	ASN	3.1
2	B	382	MET	3.1

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Mol	Chain	Res	Type	RSRZ
5	E	119	ASN	3.1
3	C	193	LYS	3.1
3	C	52	VAL	3.1
2	B	368	CYS	3.1
4	D	182	LEU	3.1
6	F	356	HIS	3.1
1	A	117	ALA	3.1
1	A	84	LYS	3.1
5	E	193	PHE	3.1
3	C	213	GLY	3.0
4	D	184	ALA	3.0
1	A	125	SER	3.0
6	F	29	LEU	3.0
2	B	102	TYR	3.0
2	B	96	VAL	3.0
5	E	124	GLY	3.0
1	A	51	VAL	3.0
1	A	79	ILE	3.0
4	D	106	GLY	3.0
1	A	206	VAL	2.9
6	F	217	TYR	2.9
1	A	113	LEU	2.9
1	A	264	LEU	2.9
4	D	103	VAL	2.9
2	B	216	TYR	2.9
1	A	97	ASP	2.9
5	E	57	ASN	2.9
6	F	342	PRO	2.9
6	F	36	THR	2.9
6	F	329	GLU	2.9
5	E	141	VAL	2.9
2	B	230	ASP	2.9
2	B	192	GLU	2.9
6	F	281	GLY	2.9
5	E	157	LEU	2.9
2	B	379	PRO	2.9
6	F	98	ILE	2.8
5	E	135	SER	2.8
5	E	118	VAL	2.8
6	F	337	CYS	2.8
1	A	134	ARG	2.8
2	B	152	LYS	2.8

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Mol	Chain	Res	Type	RSRZ
2	B	240	GLN	2.8
1	A	77	VAL	2.8
6	F	340	SER	2.8
2	B	133	TYR	2.8
4	D	183	LEU	2.8
6	F	364	LEU	2.8
5	E	196	VAL	2.8
1	A	9	ASP	2.8
1	A	133	THR	2.8
4	D	9	LYS	2.8
1	A	65	GLY	2.8
5	E	3	HIS	2.8
2	B	73	TYR	2.7
3	C	235	PHE	2.7
5	E	19	LEU	2.7
5	E	77	PHE	2.7
4	D	109	ILE	2.7
1	A	120	THR	2.7
3	C	58	LYS	2.7
3	C	219	ASP	2.7
1	A	56	ILE	2.7
1	A	239	ILE	2.7
4	D	176	GLN	2.7
6	F	94	GLU	2.7
5	E	146	SER	2.7
1	A	116	ASP	2.7
6	F	220	GLU	2.7
6	F	300	LYS	2.7
5	E	155	VAL	2.7
4	D	186	SER	2.7
6	F	206	GLU	2.7
5	E	117	THR	2.7
3	C	51	GLN	2.7
2	B	160	PHE	2.7
5	E	13	PHE	2.7
5	E	159	GLY	2.7
3	C	22	CYS	2.6
2	B	154	GLU	2.6
1	A	127	LEU	2.6
6	F	147	ILE	2.6
3	C	173	THR	2.6
5	E	24	GLY	2.6

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Mol	Chain	Res	Type	RSRZ
6	F	22	ILE	2.6
6	F	168	ILE	2.6
2	B	377	ALA	2.6
6	F	37	ILE	2.6
5	E	182	THR	2.6
1	A	89	SER	2.6
5	E	153	ALA	2.6
1	A	149	ILE	2.6
1	A	180	VAL	2.6
6	F	81	VAL	2.6
3	C	202	ALA	2.6
5	E	192	SER	2.6
1	A	244	VAL	2.5
1	A	10	LEU	2.5
1	A	178	LEU	2.5
1	A	252	LEU	2.5
2	B	383	MET	2.5
6	F	138	ILE	2.5
5	E	104	PRO	2.5
1	A	156	THR	2.5
2	B	112	MET	2.5
3	C	55	ILE	2.5
5	E	166	TYR	2.5
2	B	120	SER	2.5
2	B	149	MET	2.5
5	E	27	THR	2.4
1	A	204	PRO	2.4
6	F	312	ARG	2.4
6	F	218	PRO	2.4
5	E	194	SER	2.4
2	B	75	ALA	2.4
3	C	228	SER	2.4
2	B	266	GLY	2.4
1	A	236	ALA	2.4
6	F	80	ARG	2.4
4	D	16	LEU	2.4
1	A	247	VAL	2.4
2	B	217	PRO	2.4
1	A	212	ASP	2.4
6	F	13	LEU	2.4
1	A	131	PHE	2.4
6	F	293	PHE	2.3

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Mol	Chain	Res	Type	RSRZ
2	B	54	LYS	2.3
4	D	124	LYS	2.3
1	A	105	PHE	2.3
2	B	232	TYR	2.3
6	F	114	ALA	2.3
2	B	335	GLY	2.3
3	C	177	GLY	2.3
6	F	285	MET	2.3
1	A	50	GLU	2.3
2	B	385	ALA	2.3
1	A	248	GLY	2.3
6	F	148	LYS	2.3
4	D	12	LEU	2.3
2	B	344	ALA	2.3
3	C	234	THR	2.3
1	A	184	LEU	2.3
4	D	38	LEU	2.3
4	D	101	LEU	2.3
1	A	213	GLY	2.3
6	F	151	LYS	2.3
3	C	94	ARG	2.3
4	D	205	GLN	2.3
5	E	39	PHE	2.3
5	E	44	ALA	2.3
6	F	143	LYS	2.3
2	B	390	ASN	2.3
6	F	232	THR	2.3
6	F	14	ILE	2.3
5	E	30	ALA	2.3
6	F	301	SER	2.3
6	F	328	ALA	2.3
2	B	104	LEU	2.2
4	D	32	LEU	2.2
1	A	254	GLY	2.2
2	B	333	LEU	2.2
1	A	103	ASP	2.2
4	D	112	CYS	2.2
5	E	21	PHE	2.2
4	D	187	ALA	2.2
6	F	4	ILE	2.2
1	A	155	ASP	2.2
4	D	56	ASN	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	183	ALA	2.2
6	F	186	GLU	2.2
4	D	108	ILE	2.2
1	A	177	GLY	2.2
6	F	42	ASP	2.2
5	E	121	ALA	2.2
2	B	345	THR	2.2
3	C	133	THR	2.2
1	A	327	ARG	2.2
3	C	200	LYS	2.2
4	D	31	ALA	2.2
5	E	158	ALA	2.2
3	C	73	PRO	2.2
2	B	258	ILE	2.2
4	D	27	GLY	2.2
1	A	28	LYS	2.2
2	B	343	MET	2.2
2	B	215	ALA	2.2
3	C	112	LYS	2.2
3	C	236	ASP	2.2
6	F	110	ALA	2.2
2	B	80	ILE	2.2
1	A	276	ARG	2.2
3	C	53	ALA	2.1
6	F	63	GLY	2.1
2	B	168	LEU	2.1
5	E	179	THR	2.1
1	A	201	SER	2.1
3	C	83	PHE	2.1
3	C	150	TYR	2.1
6	F	196	ASN	2.1
1	A	66	VAL	2.1
6	F	252	LEU	2.1
2	B	242	ALA	2.1
1	A	114	ASN	2.1
6	F	295	GLN	2.1
3	C	27	SER	2.1
1	A	26	ILE	2.1
2	B	143	TRP	2.1
6	F	320	VAL	2.1
1	A	304	LEU	2.1
5	E	127	SER	2.1

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Mol	Chain	Res	Type	RSRZ
2	B	199	ARG	2.1
5	E	125	GLY	2.1
5	E	23	LEU	2.1
1	A	174	PHE	2.1
2	B	234	GLY	2.1
6	F	75	SER	2.1
2	B	59	MET	2.1
1	A	69	THR	2.1
3	C	97	ALA	2.1
3	C	246	PRO	2.1
3	C	11	THR	2.0
2	B	342	PHE	2.0
6	F	265	GLY	2.0
3	C	15	VAL	2.0
1	A	411	LEU	2.0
4	D	89	ILE	2.0
6	F	339	LEU	2.0
4	D	178	ASN	2.0
1	A	393	LEU	2.0
2	B	263	ALA	2.0
2	B	172	PRO	2.0
2	B	203	ASN	2.0
5	E	15	GLU	2.0
5	E	152	LEU	2.0
6	F	351	TYR	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](#)

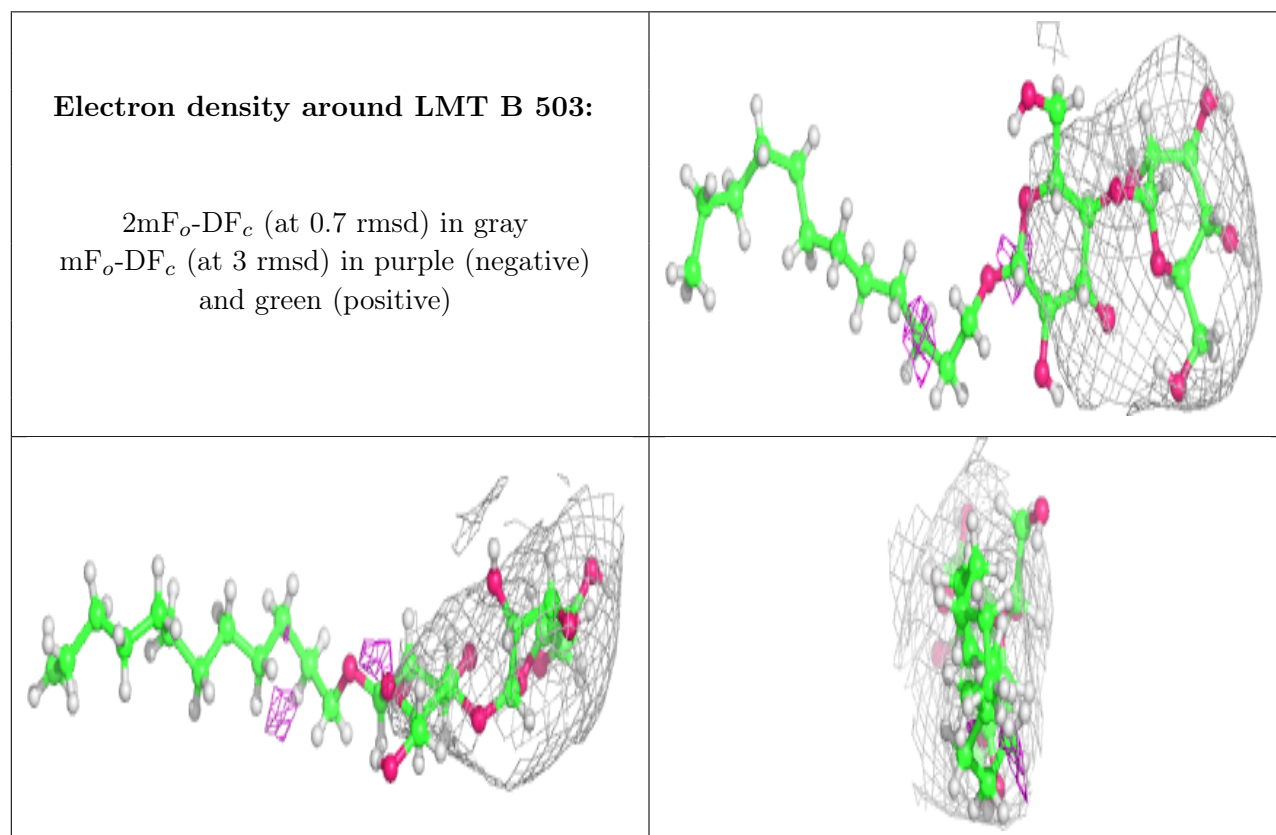
There are no monosaccharides in this entry.

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.

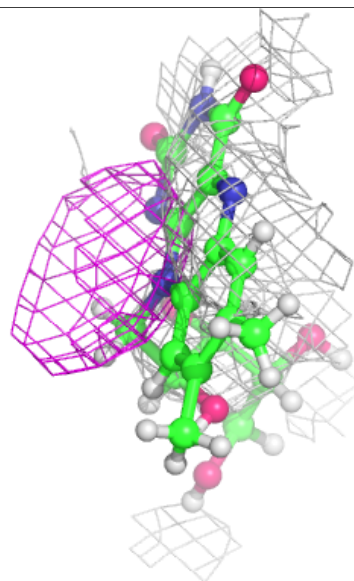
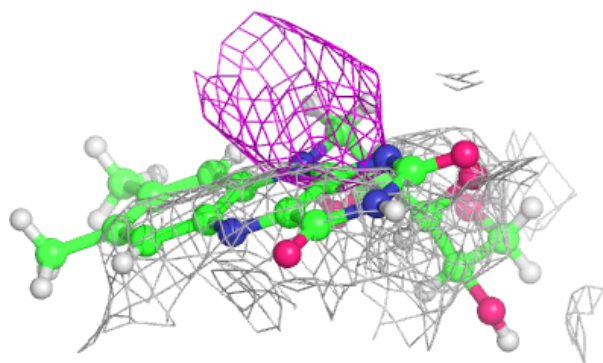
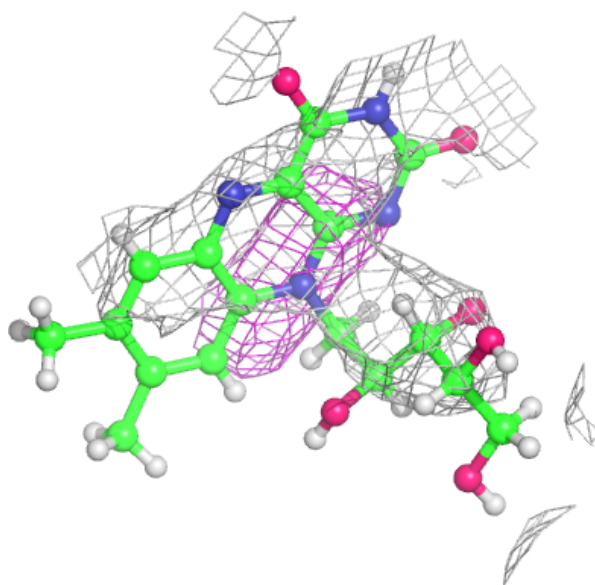
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
11	LYS	D	302	9/10	0.21	0.69	176,253,302,314	0
9	LMT	B	503	35/35	0.55	0.66	119,194,235,263	0
8	RBF	B	502	27/27	0.71	0.58	142,180,238,246	0
7	FMN	C	1000	30/31	0.77	0.48	150,188,244,266	0
7	FMN	B	501	30/31	0.77	0.38	138,177,225,243	0
9	LMT	D	301	35/35	0.79	0.45	148,223,265,279	0
13	FAD	F	1501	53/53	0.79	0.28	163,244,303,314	0
12	FES	F	1502	4/4	0.85	0.09	308,329,350,371	0
9	LMT	E	201	35/35	0.86	0.55	126,187,257,269	0
12	FES	E	202	4/4	0.89	0.46	123,163,173,376	0
10	K	B	504	1/1	0.98	0.48	155,155,155,155	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.



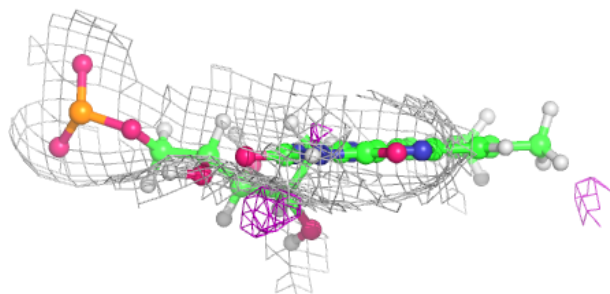
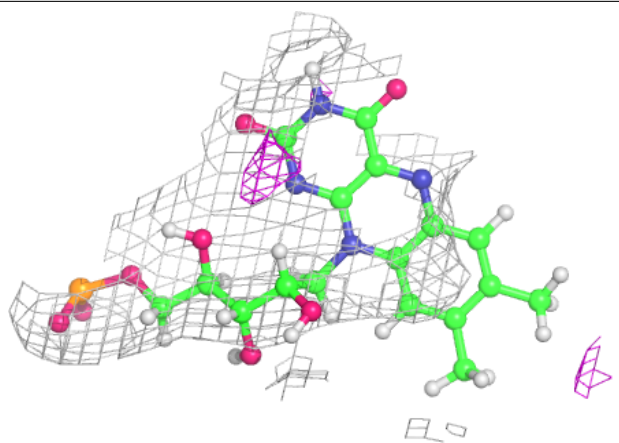
Electron density around RBF B 502:

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

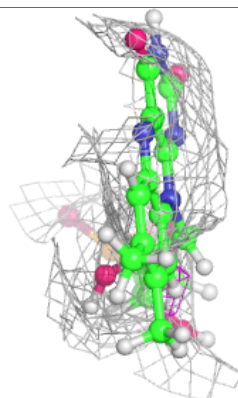
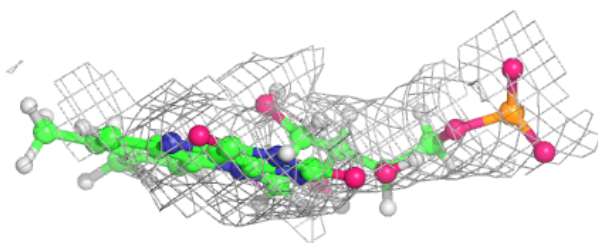
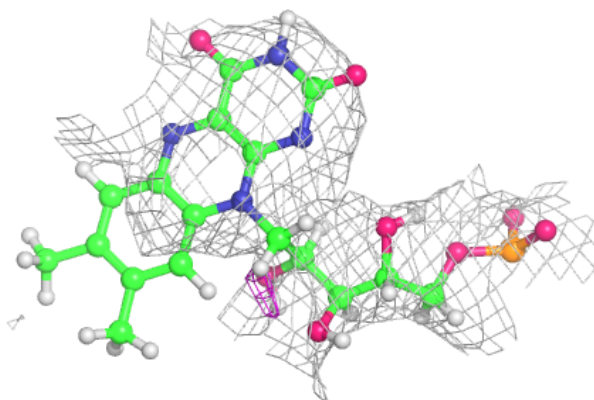


Electron density around FMN C 1000:

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

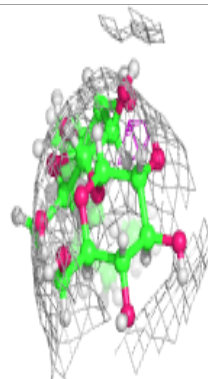
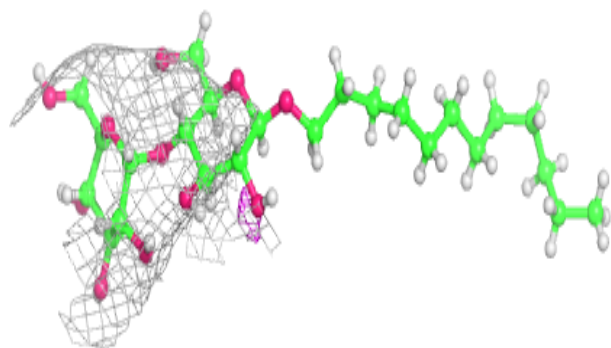
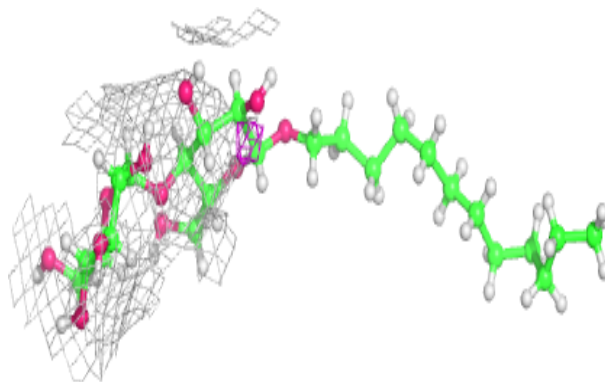
**Electron density around FMN B 501:**

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

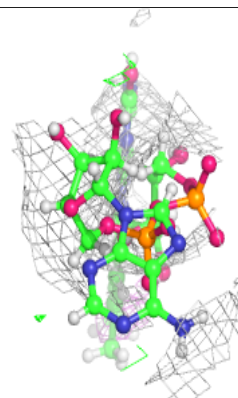
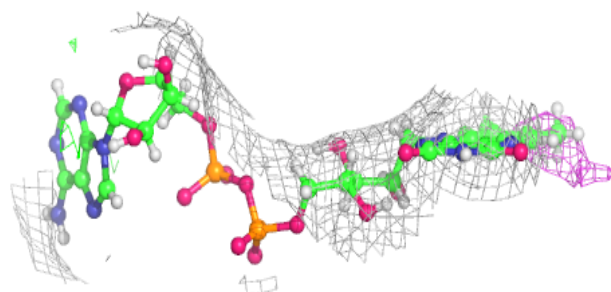
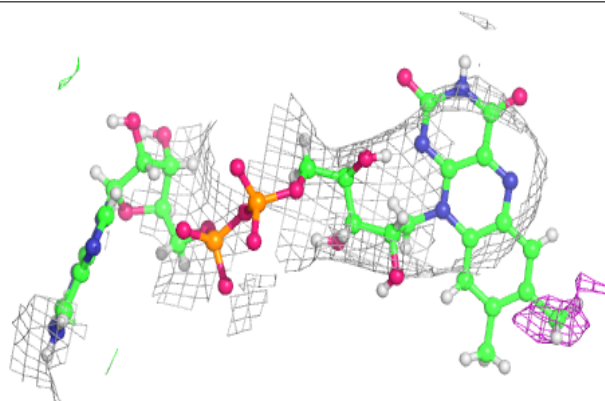


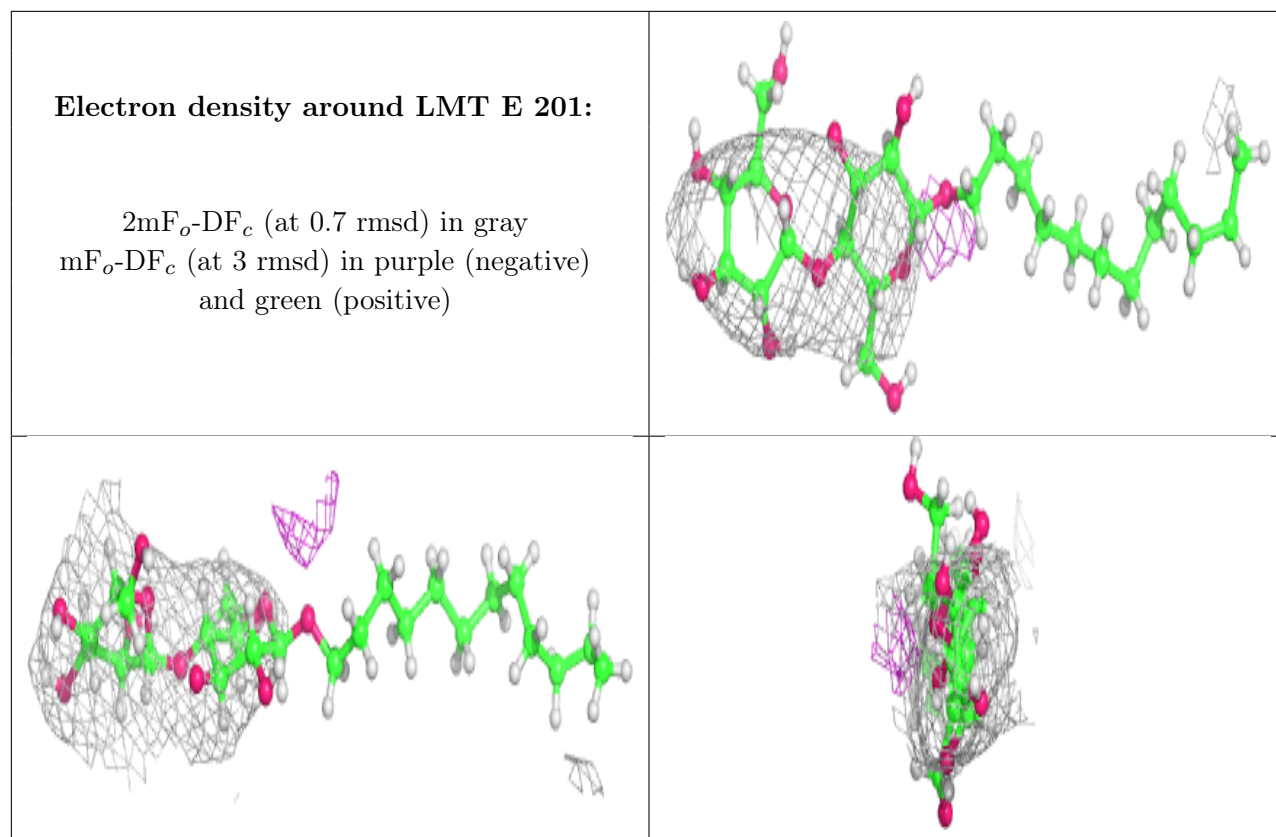
Electron density around LMT D 301:

$2mF_o-DF_c$ (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.