



Full wwPDB EM Validation Report ⓘ

Aug 6, 2026 – 10:22 AM JST

PDB ID : 7VZ1 / pdb_00007vz1
EMDB ID : EMD-32218
Title : Matrix arm of deactive state CI from Q1-NADH dataset
Authors : Gu, J.; Yang, M.
Deposited on : 2021-11-15
Resolution : 2.50 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp>

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:

EMDB validation analysis : 0.0.1.dev133
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.50

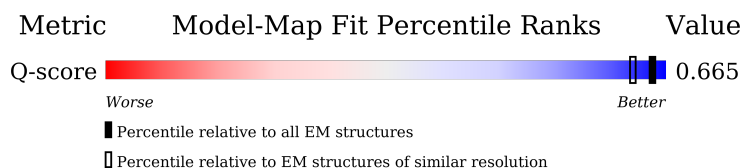
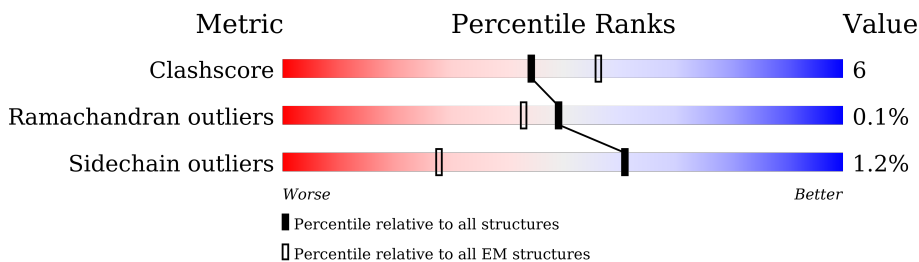
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.50 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.



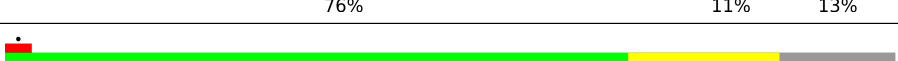
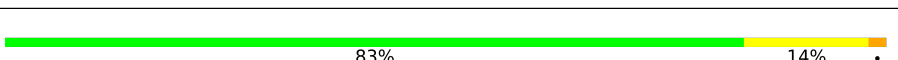
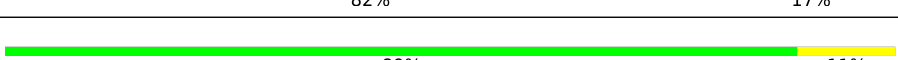
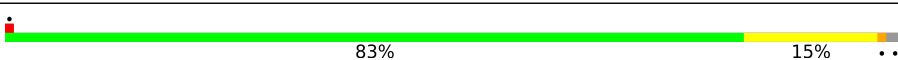
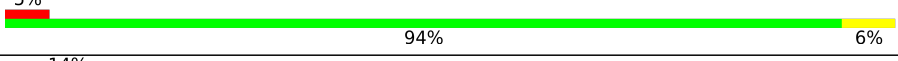
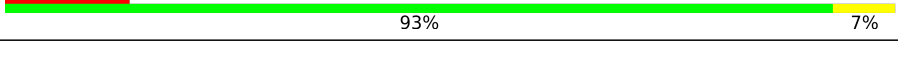
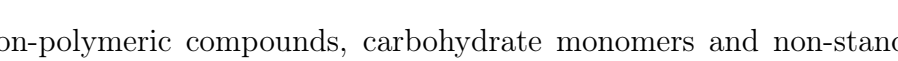
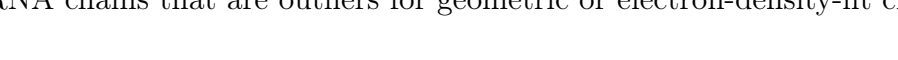
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	7115 (2.00 - 3.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	431	
2	B	176	
3	C	156	
4	E	115	

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Mol	Chain	Length	Quality of chain
5	F	86	
6	G	88	
7	H	112	
8	I	112	
9	J	341	
10	K	42	
11	L	125	
12	M	690	
13	N	144	
14	O	217	
15	P	208	
16	Q	385	
17	T	96	
18	W	29	

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
19	SF4	A	501	-	-	X	-
19	SF4	C	301	-	-	X	-

2 Entry composition [i](#)

There are 30 unique types of molecules in this entry. The entry contains 28737 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	431	Total	C	N	O	S	0	0
			3318	2095	591	612	20		

- Molecule 2 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	176	Total	C	N	O	S	0	0
			1408	885	243	267	13		

- Molecule 3 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	156	Total	C	N	O	S	0	0
			1248	794	227	213	14		

- Molecule 4 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	115	Total	C	N	O	S	0	0
			971	619	179	168	5		

- Molecule 5 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	F	86	Total	C	N	O	S	0	0
			691	434	129	126	2		

- Molecule 6 is a protein called Acyl carrier protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	G	88	Total	C	N	O	S	0	0
			693	447	102	139	5		

- Molecule 7 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	112	Total	C	N	O	S	0	0
			910	588	154	165	3		

- Molecule 8 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	97	Total	C	N	O	S	0	0
			780	491	147	139	3		

- Molecule 9 is a protein called NADH:ubiquinone oxidoreductase subunit A9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	297	Total	C	N	O	S	0	0
			2351	1508	419	416	8		

- Molecule 10 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	K	42	Total	C	N	O	S	0	0
			355	219	67	68	1		

- Molecule 11 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	125	Total	C	N	O	S	0	0
			1016	642	181	190	3		

- Molecule 12 is a protein called NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	690	Total	C	N	O	S	0	0
			5296	3320	923	1014	39		

- Molecule 13 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	N	144	Total	C	N	O	S	0	0
			1204	770	218	212	4		

- Molecule 14 is a protein called NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	O	217	Total	C	N	O	S	0	0
			1671	1065	281	315	10		

- Molecule 15 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	208	Total	C	N	O	S	0	0
			1738	1124	298	314	2		

- Molecule 16 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Q	379	Total	C	N	O	S	0	0
			3044	1945	522	554	23		

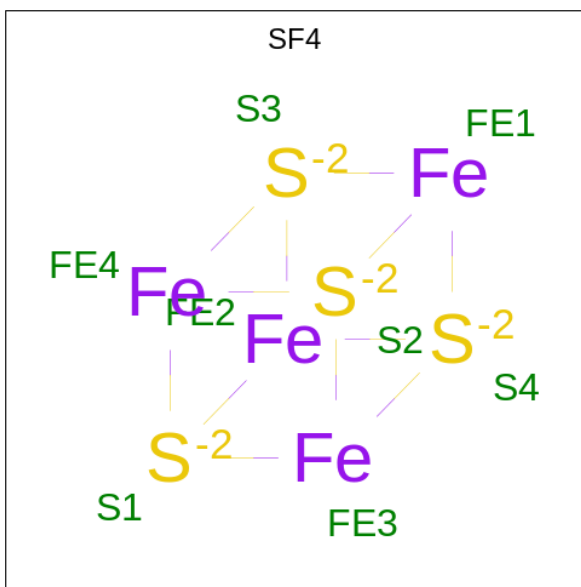
- Molecule 17 is a protein called NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	T	96	Total	C	N	O	S	0	0
			741	452	140	146	3		

- Molecule 18 is a protein called NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13.

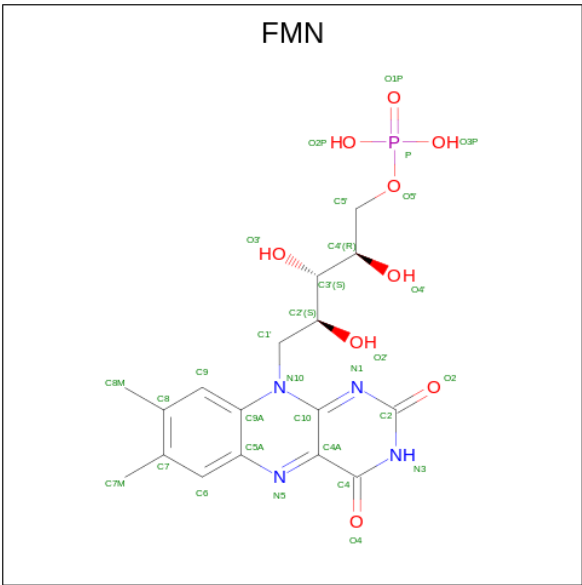
Mol	Chain	Residues	Atoms					AltConf	Trace
18	W	29	Total	C	N	O	S	0	0
			224	141	43	39	1		

- Molecule 19 is IRON/SULFUR CLUSTER (CCD ID: SF4) (formula: Fe₄S₄) (labeled as "Ligand of Interest" by depositor).



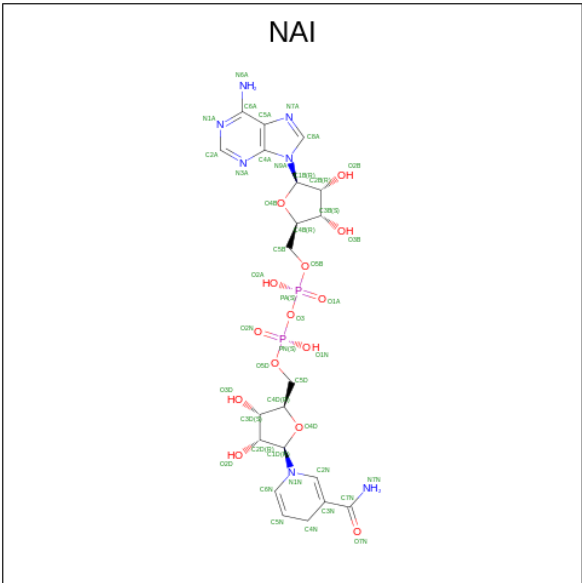
Mol	Chain	Residues	Atoms			AltConf
19	A	1	Total	Fe	S	0
			8	4	4	
19	B	1	Total	Fe	S	0
			8	4	4	
19	B	1	Total	Fe	S	0
			8	4	4	
19	C	1	Total	Fe	S	0
			8	4	4	
19	M	1	Total	Fe	S	0
			8	4	4	
19	M	1	Total	Fe	S	0
			8	4	4	

- Molecule 20 is FLAVIN MONONUCLEOTIDE (CCD ID: FMN) (formula: C₁₇H₂₁N₄O₉P) (labeled as "Ligand of Interest" by depositor).



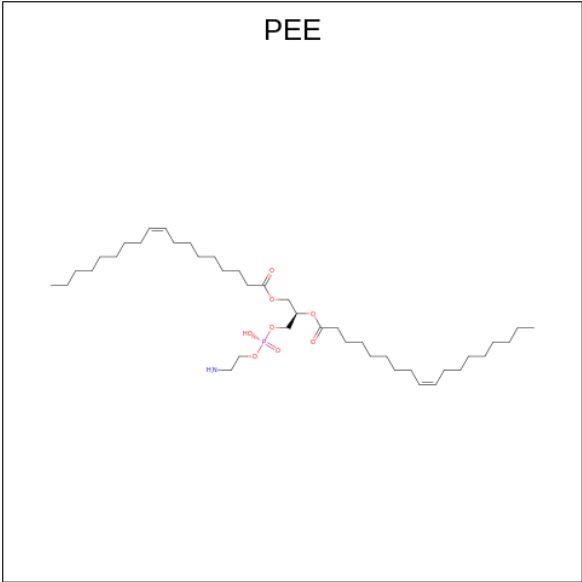
Mol	Chain	Residues	Atoms					AltConf
20	A	1	Total	C	N	O	P	0
			31	17	4	9	1	

- Molecule 21 is 1,4-DIHYDRONICOTINAMIDE ADENINE DINUCLEOTIDE (CCD ID: NAI) (formula: $C_{21}H_{29}N_7O_{14}P_2$) (labeled as "Ligand of Interest" by depositor).



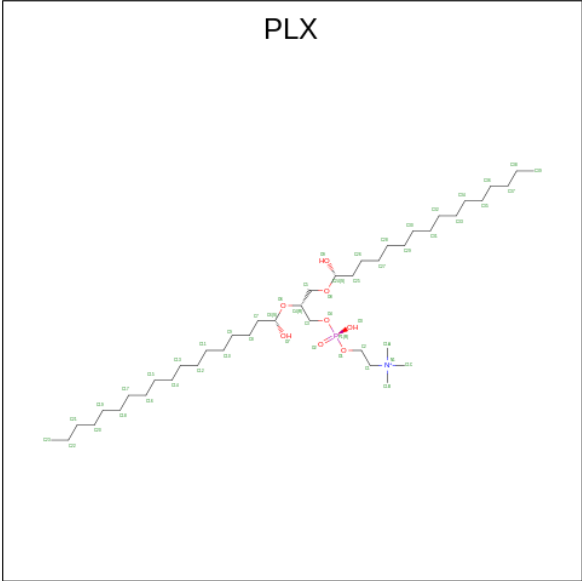
Mol	Chain	Residues	Atoms					AltConf
21	A	1	Total	C	N	O	P	0
			44	21	7	14	2	

- Molecule 22 is 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine (CCD ID: PEE) (formula: $C_{41}H_{78}NO_8P$) (labeled as "Ligand of Interest" by depositor).



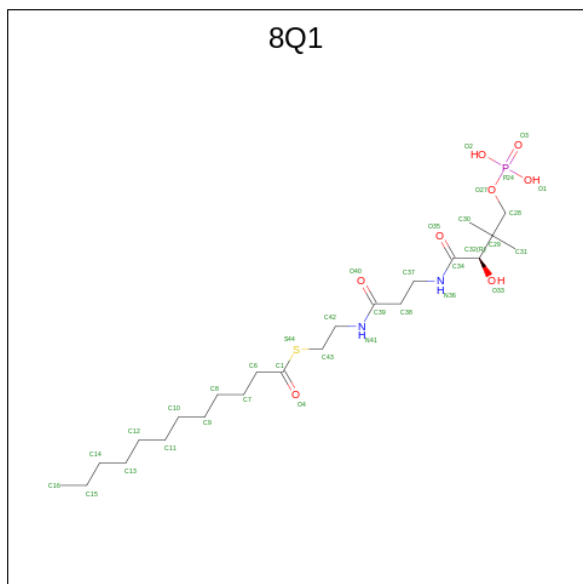
Mol	Chain	Residues	Atoms					AltConf
22	C	1	Total	C	N	O	P	0
			47	37	1	8	1	

- Molecule 23 is (9R,11S)-9-([[(1S)-1-HYDROXYHEXADECYL]OXY}METHYL)-2,2-DIMETHYL-5,7,10-TRIOXA-2LAMBDA 5 -AZA-6LAMBDA 5 -PHOSPHAOCTACOSANE-6,6,11-TRIOL (CCD ID: PLX) (formula: C₄₂H₈₉NO₈P) (labeled as "Ligand of Interest" by depositor).



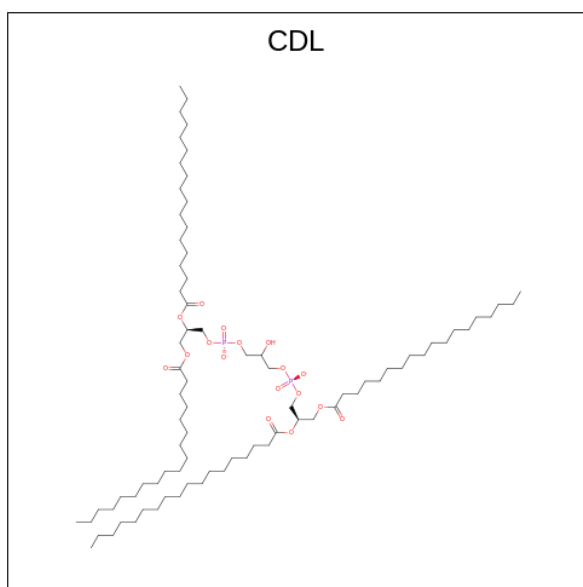
Mol	Chain	Residues	Atoms					AltConf
23	C	1	Total	C	N	O	P	0
			52	42	1	8	1	

- Molecule 24 is S-[2-({N-[(2R)-2-hydroxy-3,3-dimethyl-4-(phosphonooxy)butanoyl]-beta-alanyl}amino)ethyl] dodecanethioate (CCD ID: 8Q1) (formula: $C_{23}H_{45}N_2O_8PS$) (labeled as "Ligand of Interest" by depositor).



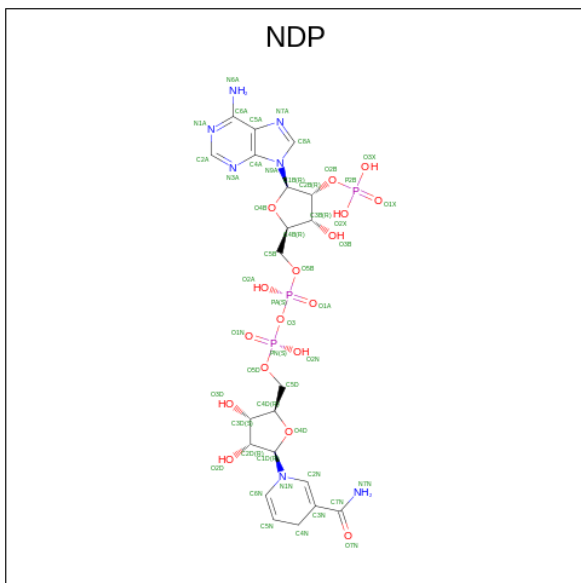
Mol	Chain	Residues	Atoms						AltConf
24	G	1	Total	C	N	O	P	S	0
			35	23	2	8	1	1	

- Molecule 25 is CARDIOLIPIN (CCD ID: CDL) (formula: $C_{81}H_{156}O_{17}P_2$) (labeled as "Ligand of Interest" by depositor).



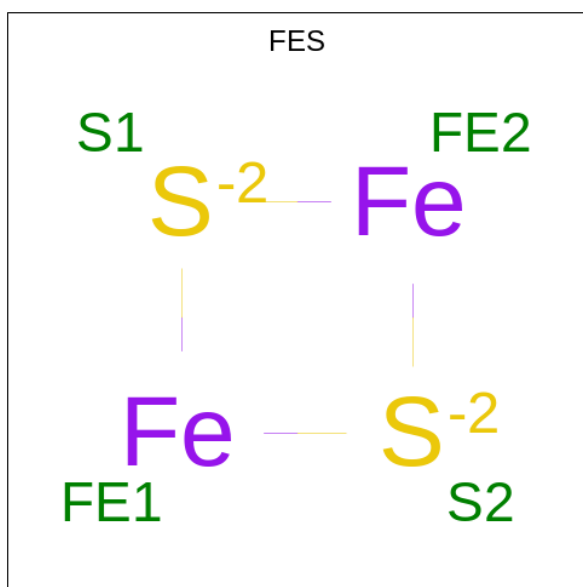
Mol	Chain	Residues	Atoms				AltConf
25	I	1	Total	C	O	P	0
			51	32	17	2	

- Molecule 26 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (CCD ID: NDP) (formula: $\text{C}_{21}\text{H}_{30}\text{N}_7\text{O}_{17}\text{P}_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
26	J	1	Total 48	C 21	N 7	O 17	P 3	0

- Molecule 27 is FE2/S2 (INORGANIC) CLUSTER (CCD ID: FES) (formula: Fe_2S_2) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
27	M	1	Total	Fe	S	0
			4	2	2	
27	O	1	Total	Fe	S	0
			4	2	2	

- Molecule 28 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
28	M	1	Total	Mg	0
			1	1	

- Molecule 29 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
29	T	1	Total	Zn	0
			1	1	

- Molecule 30 is water.

Mol	Chain	Residues	Atoms		AltConf
30	A	48	Total	O	0
			48	48	
30	B	82	Total	O	0
			82	82	

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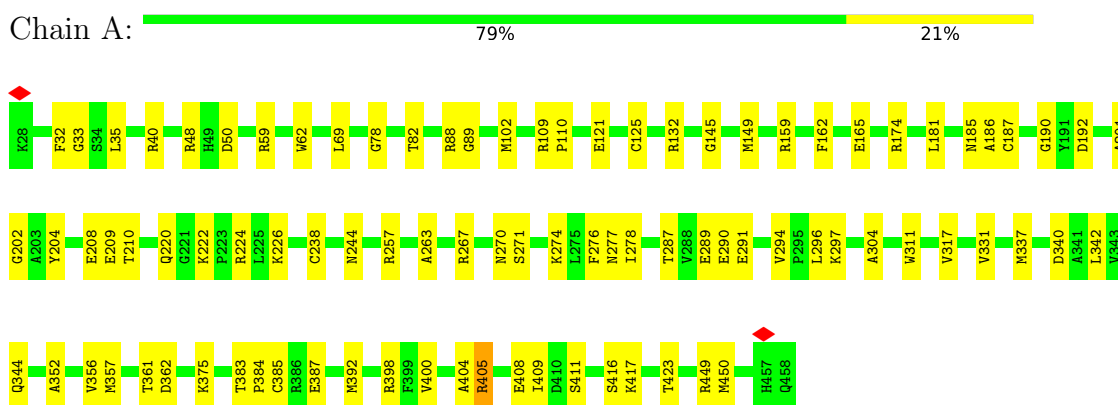
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Mol	Chain	Residues	Atoms		AltConf
30	C	58	Total 58	O 58	0
30	E	6	Total 6	O 6	0
30	F	1	Total 1	O 1	0
30	H	8	Total 8	O 8	0
30	I	15	Total 15	O 15	0
30	J	7	Total 7	O 7	0
30	K	6	Total 6	O 6	0
30	L	25	Total 25	O 25	0
30	M	188	Total 188	O 188	0
30	N	5	Total 5	O 5	0
30	O	15	Total 15	O 15	0
30	P	61	Total 61	O 61	0
30	Q	177	Total 177	O 177	0
30	T	8	Total 8	O 8	0
30	W	2	Total 2	O 2	0

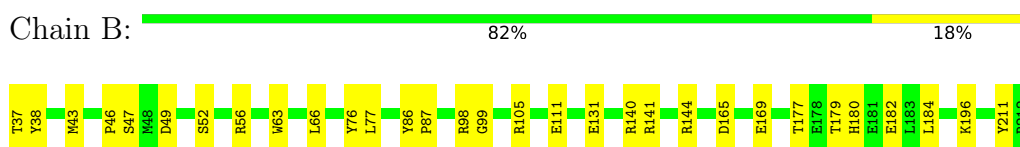
3 Residue-property plots

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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

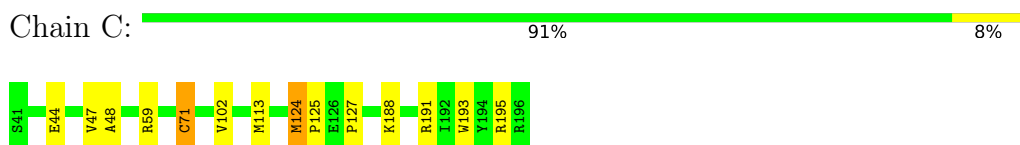
- Molecule 1: NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial



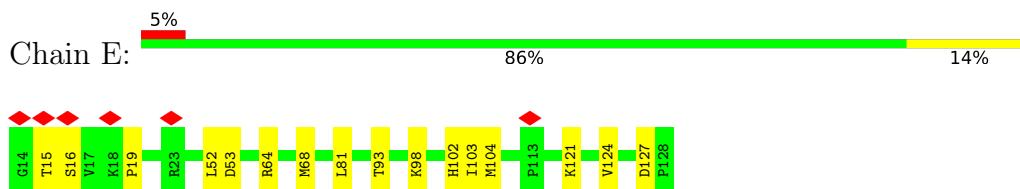
- Molecule 2: NADH dehydrogenase [ubiquinone] iron-sulfur protein 8, mitochondrial



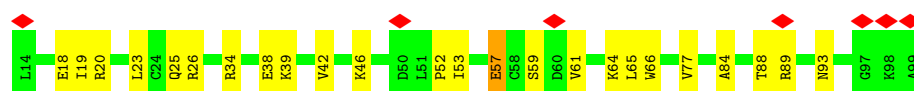
- Molecule 3: NADH dehydrogenase [ubiquinone] iron-sulfur protein 7, mitochondrial



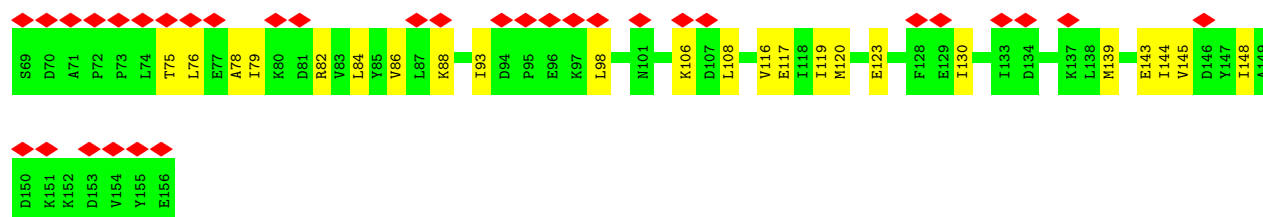
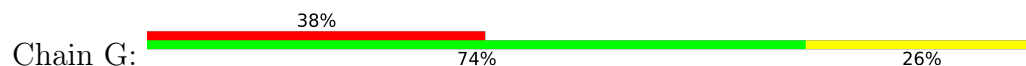
- Molecule 4: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6



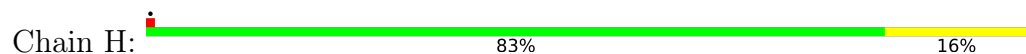
- Molecule 5: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2



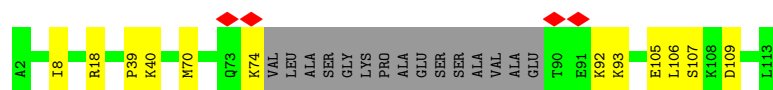
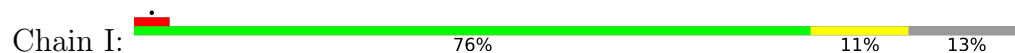
- Molecule 6: Acyl carrier protein



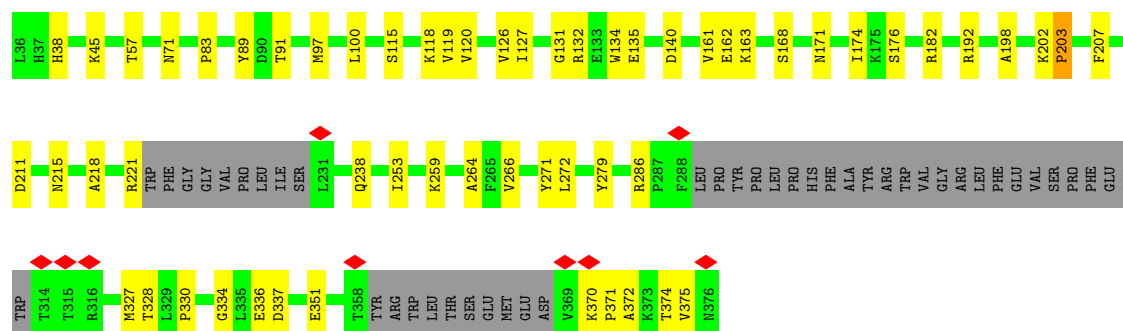
- Molecule 7: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5



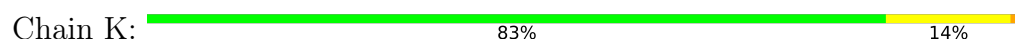
- Molecule 8: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7



- Molecule 9: NADH:ubiquinone oxidoreductase subunit A9

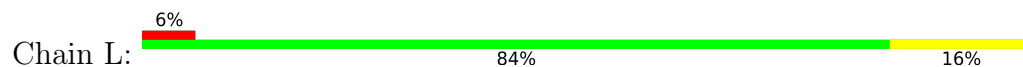


- Molecule 10: NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial

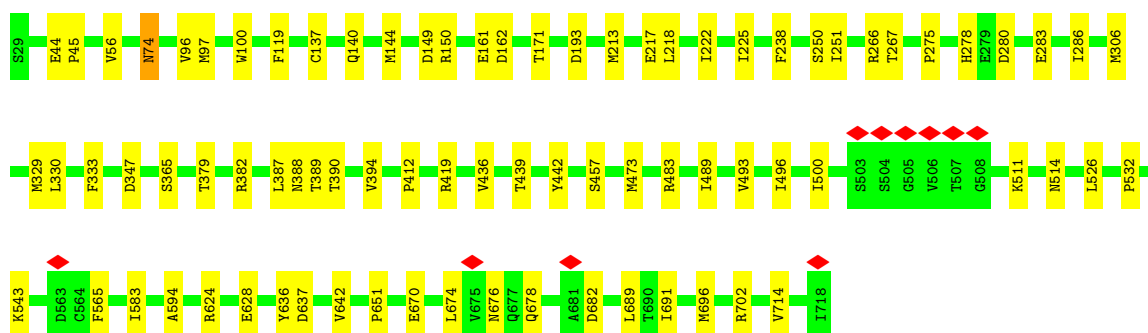
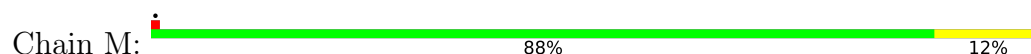




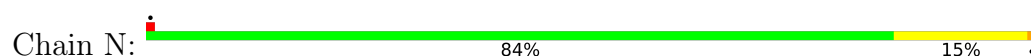
- Molecule 11: NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial



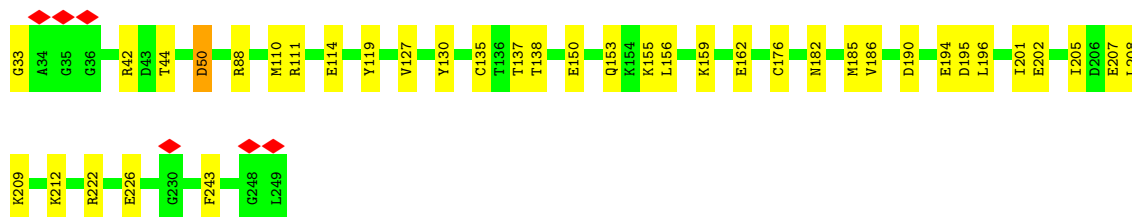
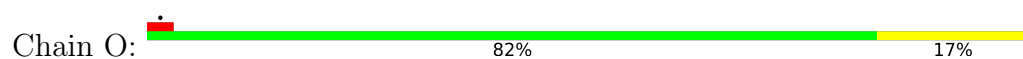
- Molecule 12: NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial



- Molecule 13: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12



- Molecule 14: NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial

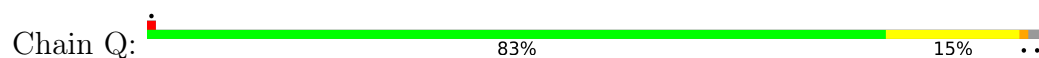


- Molecule 15: NADH dehydrogenase [ubiquinone] iron-sulfur protein 3, mitochondrial

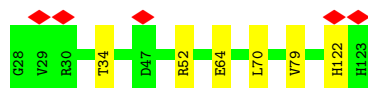




- Molecule 16: NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial



- Molecule 17: NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial



- Molecule 18: NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	209056	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1300	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.116	Depositor
Minimum map value	-0.058	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.0119	Depositor
Map size (Å)	263.496, 263.496, 263.496	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.54895, 0.54895, 0.54895	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CDL, MG, NAI, NDP, 2MR, FES, SF4, ZN, FMN, 8Q1, PEE, PLX

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	0.19	0/3393	0.45	2/4584 (0.0%)
2	B	0.17	0/1439	0.39	0/1947
3	C	0.17	0/1279	0.45	2/1730 (0.1%)
4	E	0.17	0/995	0.38	0/1340
5	F	0.17	0/702	0.41	0/945
6	G	0.12	0/705	0.34	0/956
7	H	0.16	0/929	0.34	0/1258
8	I	0.17	0/798	0.44	0/1079
9	J	0.19	0/2403	0.38	0/3246
10	K	0.14	0/365	0.34	0/493
11	L	0.16	0/1039	0.36	0/1403
12	M	0.17	0/5384	0.38	0/7295
13	N	0.16	0/1245	0.39	0/1694
14	O	0.17	0/1711	0.40	0/2328
15	P	0.17	0/1789	0.40	0/2436
16	Q	0.20	0/3101	0.41	0/4189
17	T	0.14	0/755	0.32	0/1018
18	W	0.15	0/230	0.33	0/309
All	All	0.17	0/28262	0.40	4/38250 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	405	ARG	CA-C-N	6.76	126.55	119.05
1	A	405	ARG	C-N-CA	6.76	126.55	119.05
3	C	124	MET	CA-C-N	5.24	125.65	119.99
3	C	124	MET	C-N-CA	5.24	125.65	119.99

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3318	0	3280	66	0
2	B	1408	0	1359	32	0
3	C	1248	0	1254	13	0
4	E	971	0	975	12	0
5	F	691	0	704	16	0
6	G	693	0	671	13	0
7	H	910	0	950	15	0
8	I	780	0	808	23	0
9	J	2351	0	2380	40	0
10	K	355	0	329	5	0
11	L	1016	0	1016	15	0
12	M	5296	0	5326	54	0
13	N	1204	0	1162	21	0
14	O	1671	0	1673	27	0
15	P	1738	0	1693	17	0
16	Q	3044	0	3018	41	0
17	T	741	0	702	3	0
18	W	224	0	230	2	0
19	A	8	0	0	2	0
19	B	16	0	0	0	0
19	C	8	0	0	3	0
19	M	16	0	0	0	0
20	A	31	0	19	2	0
21	A	44	0	27	6	0
22	C	47	0	71	1	0
23	C	52	0	88	5	0
24	G	35	0	0	0	0
25	I	51	0	46	1	0
26	J	48	0	25	4	0
27	M	4	0	0	0	0
27	O	4	0	0	0	0
28	M	1	0	0	0	0
29	T	1	0	0	0	0
30	A	48	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
30	B	82	0	0	0	0
30	C	58	0	0	0	0
30	E	6	0	0	0	0
30	F	1	0	0	0	0
30	H	8	0	0	0	0
30	I	15	0	0	0	0
30	J	7	0	0	1	0
30	K	6	0	0	0	0
30	L	25	0	0	0	0
30	M	188	0	0	2	0
30	N	5	0	0	0	0
30	O	15	0	0	0	0
30	P	61	0	0	0	0
30	Q	177	0	0	3	0
30	T	8	0	0	0	0
30	W	2	0	0	0	0
All	All	28737	0	27806	359	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 6.

All (359) 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)
26:J:401:NDP:O4D	26:J:401:NDP:C4D	1.68	1.15
21:A:503:NAI:C1B	21:A:503:NAI:O4B	1.63	1.12
2:B:37:THR:CG2	8:I:107:SER:HA	2.00	0.92
19:C:301:SF4:S4	16:Q:223:HIS:NE2	2.50	0.85
5:F:19:ILE:HD11	5:F:53:ILE:HG23	1.59	0.83
1:A:121:GLU:HB2	21:A:503:NAI:H42N	1.60	0.82
2:B:37:THR:HG21	8:I:107:SER:HA	1.64	0.79
13:N:120:THR:HG22	13:N:122:GLN:H	1.49	0.78
2:B:37:THR:CG2	8:I:107:SER:CA	2.61	0.77
1:A:102:MET:HG2	1:A:149:MET:HB2	1.66	0.76
2:B:37:THR:HG23	8:I:107:SER:H	1.51	0.76
19:C:301:SF4:S4	16:Q:223:HIS:CD2	2.80	0.75
2:B:131:GLU:HB2	2:B:144:ARG:HB3	1.69	0.74
12:M:149:ASP:HB2	16:Q:361:ALA:HB3	1.69	0.73
11:L:109:ASN:ND2	11:L:111:LEU:O	2.21	0.72
1:A:277:ASN:ND2	1:A:287:THR:OG1	2.23	0.72
2:B:165:ASP:OD1	16:Q:368:ARG:NH2	2.23	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:177:THR:HG22	2:B:179:THR:H	1.52	0.72
1:A:33:GLY:HA2	1:A:294:VAL:HG12	1.72	0.71
1:A:50:ASP:O	1:A:59:ARG:NH2	2.23	0.71
2:B:37:THR:HG23	8:I:107:SER:CA	2.21	0.71
16:Q:149:GLN:NE2	16:Q:309:ASP:OD2	2.24	0.70
9:J:174:ILE:HD12	9:J:174:ILE:H	1.56	0.70
1:A:296:LEU:HD21	1:A:317:VAL:HG11	1.74	0.70
2:B:37:THR:HG23	8:I:107:SER:N	2.05	0.70
3:C:59:ARG:NH1	23:C:303:PLX:O3	2.25	0.69
7:H:94:MET:HE3	7:H:99:PRO:HG2	1.73	0.69
16:Q:302:LEU:HB2	16:Q:401:GLU:HB2	1.73	0.69
5:F:89:ARG:O	5:F:93:ASN:ND2	2.26	0.68
7:H:22:GLU:OE1	7:H:22:GLU:N	2.26	0.68
1:A:392:MET:CE	1:A:416:SER:HB3	2.24	0.67
2:B:37:THR:HG23	8:I:107:SER:HA	1.77	0.67
8:I:40:LYS:HB3	18:W:7:LYS:H	1.59	0.67
11:L:74:THR:HG22	11:L:104:ARG:HH22	1.60	0.67
6:G:79:ILE:HG22	6:G:145:VAL:HG22	1.76	0.66
5:F:18:GLU:HB2	5:F:52:PRO:HG2	1.78	0.66
13:N:69:ASN:ND2	13:N:112:ASN:OD1	2.28	0.66
12:M:419:ARG:NH1	12:M:439:THR:O	2.29	0.66
5:F:42:VAL:HG11	12:M:670:GLU:HG2	1.78	0.65
1:A:40:ARG:NH1	1:A:289:GLU:O	2.30	0.65
9:J:192:ARG:NH1	9:J:198:ALA:O	2.30	0.64
6:G:88:LYS:HD3	6:G:98:LEU:HD21	1.78	0.64
10:K:98:MET:HG3	10:K:99:PRO:HD2	1.80	0.63
1:A:89:GLY:O	21:A:503:NAI:H2N	1.99	0.63
9:J:271:TYR:CE1	9:J:374:THR:HG22	2.34	0.63
6:G:82:ARG:O	6:G:86:VAL:HG23	1.99	0.63
6:G:116:VAL:HG12	6:G:120:MET:HE2	1.80	0.62
9:J:370:LYS:N	9:J:371:PRO:HD3	2.15	0.62
14:O:182:ASN:HB3	14:O:194:GLU:HB3	1.81	0.61
12:M:624:ARG:NH2	12:M:637:ASP:OD1	2.32	0.61
12:M:222:ILE:HA	12:M:225:ILE:HG12	1.83	0.60
9:J:168:SER:O	9:J:203:PRO:HD2	2.01	0.60
9:J:271:TYR:CD1	9:J:374:THR:HG22	2.36	0.60
16:Q:147:ASN:ND2	30:Q:509:HOH:O	2.29	0.60
15:P:44:ARG:HB3	15:P:45:PRO:HD3	1.82	0.60
9:J:83:PRO:HG3	9:J:119:VAL:HG11	1.84	0.60
12:M:388:ASN:HB3	12:M:511:LYS:HE2	1.84	0.60
11:L:90:GLY:HA3	15:P:238:PRO:HB2	1.82	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:278:ILE:HG21	1:A:304:ALA:HB2	1.84	0.59
2:B:37:THR:HG22	8:I:107:SER:HB2	1.84	0.59
6:G:117:GLU:HA	6:G:120:MET:HE3	1.83	0.59
12:M:306:MET:HE1	13:N:139:PRO:HG3	1.85	0.59
5:F:20:ARG:HB2	5:F:66:TRP:HB2	1.85	0.59
6:G:123:GLU:OE1	6:G:130:ILE:N	2.31	0.58
16:Q:168:GLN:HG2	16:Q:309:ASP:OD1	2.03	0.58
1:A:278:ILE:HG21	1:A:304:ALA:CB	2.34	0.58
9:J:168:SER:O	9:J:203:PRO:CD	2.52	0.58
9:J:211:ASP:OD1	9:J:215:ASN:ND2	2.36	0.58
2:B:63:TRP:HB3	2:B:66:LEU:HD12	1.86	0.58
8:I:18:ARG:HH12	16:Q:256:ASP:HB3	1.68	0.58
16:Q:104:GLU:HG2	16:Q:443:MET:HG3	1.86	0.57
4:E:104:MET:HE2	4:E:104:MET:HA	1.86	0.57
25:I:201:CDL:H512	25:I:201:CDL:H722	1.85	0.57
9:J:71:ASN:ND2	30:J:501:HOH:O	2.36	0.57
13:N:106:ARG:HB2	13:N:109:ILE:HG13	1.85	0.57
16:Q:93:GLY:N	30:Q:514:HOH:O	2.38	0.57
3:C:48:ALA:HA	3:C:191:ARG:HD2	1.87	0.57
1:A:244:ASN:ND2	20:A:502:FMN:O2	2.32	0.56
7:H:38:ILE:O	7:H:45:ARG:NH1	2.33	0.56
16:Q:150:ALA:HB2	16:Q:400:ILE:HG12	1.86	0.56
5:F:46:LYS:HE2	12:M:674:LEU:HD21	1.86	0.56
5:F:84:ALA:O	5:F:88:THR:OG1	2.22	0.56
14:O:150:GLU:HA	14:O:153:GLN:HG3	1.87	0.56
6:G:75:THR:HG23	6:G:78:ALA:H	1.69	0.56
1:A:210:THR:HB	1:A:224:ARG:HG2	1.88	0.56
2:B:177:THR:HG21	2:B:182:GLU:HB2	1.86	0.56
12:M:217:GLU:HG2	12:M:218:LEU:HG	1.87	0.56
14:O:207:GLU:HG2	14:O:212:LYS:HE3	1.88	0.56
16:Q:346:GLN:O	16:Q:350:LYS:HG3	2.06	0.56
9:J:218:ALA:O	9:J:221:ARG:NH1	2.38	0.56
15:P:44:ARG:HB3	15:P:45:PRO:CD	2.36	0.56
9:J:127:ILE:HD11	9:J:253:ILE:HD11	1.87	0.56
1:A:405:ARG:HD3	1:A:408:GLU:OE2	2.06	0.56
16:Q:332:CYS:O	16:Q:336:GLU:HG3	2.04	0.56
5:F:23:LEU:HD12	5:F:34:ARG:HG2	1.87	0.55
12:M:44:GLU:HG2	12:M:45:PRO:HD2	1.88	0.55
4:E:53:ASP:OD2	9:J:351:GLU:HB2	2.06	0.55
16:Q:404:LYS:HE2	16:Q:457:VAL:HG23	1.89	0.55
1:A:278:ILE:HD12	1:A:278:ILE:N	2.21	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:M:44:GLU:CG	12:M:45:PRO:HD2	2.36	0.55
1:A:400:VAL:O	1:A:449:ARG:HD3	2.07	0.55
2:B:49:ASP:OD1	2:B:52:SER:HB2	2.06	0.55
6:G:84:LEU:O	6:G:88:LYS:HG2	2.07	0.55
12:M:676:ASN:O	12:M:678:GLN:NE2	2.40	0.55
15:P:125:ARG:NH2	15:P:201:ASP:OD1	2.40	0.54
9:J:135:GLU:HG3	9:J:140:ASP:HA	1.89	0.54
1:A:357:MET:HB3	1:A:361:THR:HG21	1.90	0.54
19:C:301:SF4:S2	16:Q:138:ARG:HG2	2.48	0.54
1:A:78:GLY:O	1:A:82:THR:HG23	2.08	0.54
12:M:436:VAL:O	12:M:442:TYR:OH	2.25	0.53
9:J:163:LYS:NZ	9:J:253:ILE:O	2.41	0.53
1:A:174:ARG:HA	10:K:93:LEU:HD21	1.89	0.53
15:P:59:SER:O	15:P:63:GLN:HG3	2.08	0.52
1:A:48:ARG:NH2	14:O:226:GLU:OE2	2.39	0.52
4:E:52:LEU:HD22	4:E:104:MET:HE3	1.90	0.52
7:H:76:GLN:O	7:H:79:GLU:HG2	2.08	0.52
9:J:238:GLN:HG2	9:J:266:VAL:HB	1.91	0.52
1:A:132:ARG:HB3	1:A:165:GLU:HG3	1.91	0.52
2:B:46:PRO:HB2	2:B:56:ARG:NH1	2.24	0.52
1:A:375:LYS:NZ	14:O:33:GLY:O	2.43	0.52
7:H:55:LYS:O	7:H:59:VAL:HG13	2.09	0.52
8:I:93:LYS:NZ	8:I:93:LYS:HB3	2.25	0.52
15:P:132:LEU:HB2	15:P:141:ILE:HG22	1.92	0.52
16:Q:196:ALA:C	16:Q:197:MET:HG3	2.35	0.51
2:B:140:ARG:HG3	12:M:238:PHE:CG	2.45	0.51
12:M:275:PRO:HB3	12:M:286:ILE:HG23	1.92	0.51
3:C:188:LYS:HE2	3:C:191:ARG:HH21	1.76	0.51
9:J:221:ARG:HD2	9:J:286:ARG:HE	1.75	0.51
1:A:162:PHE:HB3	1:A:165:GLU:HB2	1.91	0.51
3:C:113:MET:HE1	16:Q:86:PRO:HB3	1.93	0.51
2:B:211:TYR:CZ	8:I:39:PRO:HG3	2.46	0.51
3:C:71:CYS:HB3	16:Q:141:TYR:HB2	1.92	0.50
3:C:191:ARG:HB3	3:C:195:ARG:HH21	1.76	0.50
7:H:23:ARG:NH2	7:H:85:GLU:OE1	2.45	0.50
1:A:185:ASN:OD1	1:A:190:GLY:N	2.39	0.50
14:O:195:ASP:OD2	14:O:222:ARG:NH2	2.44	0.50
13:N:101:LYS:HG3	13:N:101:LYS:O	2.11	0.50
1:A:337:MET:HE2	1:A:342:LEU:HD11	1.92	0.50
1:A:145:GLY:O	1:A:149:MET:HG2	2.12	0.49
1:A:192:ASP:HB3	10:K:98:MET:HE3	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:220:GLN:NE2	30:A:602:HOH:O	2.30	0.49
7:H:113:LYS:NZ	15:P:247:GLN:OE1	2.44	0.49
9:J:203:PRO:HG2	26:J:401:NDP:C6N	2.42	0.49
23:C:303:PLX:H31	13:N:75:TRP:CD2	2.47	0.49
23:C:303:PLX:H31	13:N:75:TRP:CE3	2.48	0.49
16:Q:182:ASN:OD1	16:Q:404:LYS:NZ	2.44	0.49
13:N:85:GLU:OE2	13:N:85:GLU:N	2.28	0.49
1:A:362:ASP:OD1	1:A:449:ARG:NH2	2.40	0.49
12:M:137:CYS:HB3	12:M:140:GLN:HB2	1.94	0.49
2:B:49:ASP:OD1	2:B:52:SER:CB	2.61	0.49
3:C:71:CYS:HB3	16:Q:141:TYR:CB	2.43	0.49
9:J:162:GLU:OE1	9:J:259:LYS:NZ	2.46	0.49
11:L:174:THR:HG23	14:O:111:ARG:HD2	1.95	0.49
12:M:278:HIS:CE1	12:M:280:ASP:HB2	2.47	0.49
1:A:159:ARG:NH2	14:O:176:CYS:O	2.36	0.49
8:I:70:MET:HG3	15:P:66:ALA:HB1	1.94	0.48
12:M:636:TYR:CD1	12:M:642:VAL:HG22	2.47	0.48
15:P:117:VAL:HB	15:P:127:GLU:HG2	1.95	0.48
13:N:42:ASP:HB2	13:N:48:TYR:HE1	1.79	0.48
15:P:147:THR:HB	15:P:153:ILE:HD11	1.95	0.48
1:A:417:LYS:HA	1:A:417:LYS:HE2	1.95	0.48
9:J:171:ASN:HA	9:J:327:MET:HE2	1.95	0.48
12:M:691:ILE:HG23	12:M:714:VAL:HG21	1.96	0.48
12:M:193:ASP:OD1	14:O:111:ARG:NH2	2.46	0.48
1:A:270:ASN:ND2	1:A:340:ASP:OD2	2.32	0.48
13:N:32:ASP:OD2	13:N:58:ARG:NH2	2.47	0.48
1:A:204:TYR:OH	21:A:503:NAI:H5N	2.13	0.48
12:M:389:THR:O	12:M:390:THR:OG1	2.30	0.48
12:M:526:LEU:HD21	12:M:532:PRO:HB3	1.96	0.48
13:N:21:ARG:HG3	13:N:21:ARG:HH11	1.79	0.48
14:O:159:LYS:HB2	14:O:162:GLU:OE2	2.13	0.48
15:P:235:LEU:HD12	16:Q:418:ARG:HE	1.79	0.48
4:E:15:THR:OG1	11:L:55:VAL:O	2.31	0.48
12:M:144:MET:HG3	16:Q:383:LYS:HG3	1.96	0.48
1:A:257:ARG:HH12	14:O:243:PHE:HD2	1.62	0.47
4:E:127:ASP:OD2	9:J:45:LYS:NZ	2.34	0.47
23:C:303:PLX:H21	23:C:303:PLX:H1C3	1.57	0.47
4:E:98:LYS:HB3	4:E:102:HIS:HB2	1.96	0.47
9:J:57:THR:HG21	9:J:120:VAL:HG12	1.96	0.47
13:N:85:GLU:H	13:N:85:GLU:CD	2.20	0.47
1:A:62:TRP:CD2	1:A:181:LEU:HD13	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:37:THR:CG2	8:I:107:SER:CB	2.92	0.47
5:F:25:GLN:NE2	5:F:57:GLU:OE2	2.39	0.47
1:A:185:ASN:O	1:A:187:CYS:N	2.46	0.47
1:A:201:ALA:O	14:O:119:TYR:HB3	2.15	0.47
2:B:43:MET:HE3	2:B:43:MET:HA	1.97	0.47
7:H:23:ARG:HG2	7:H:23:ARG:HH11	1.80	0.47
7:H:114:TRP:CD2	7:H:115:PRO:HA	2.49	0.47
15:P:68:ILE:HG22	15:P:69:LEU:HG	1.97	0.47
9:J:202:LYS:O	9:J:264:ALA:HA	2.15	0.47
11:L:70:GLU:O	11:L:74:THR:HB	2.15	0.47
12:M:347:ASP:CB	12:M:594:ALA:HB1	2.45	0.47
16:Q:293:LEU:HD22	16:Q:298:ILE:HD12	1.96	0.47
1:A:88:ARG:HG3	1:A:274:LYS:HE2	1.97	0.47
1:A:185:ASN:C	1:A:187:CYS:H	2.22	0.47
1:A:398:ARG:NH1	1:A:408:GLU:OE1	2.35	0.47
16:Q:199:PRO:HB3	16:Q:258:LEU:HD23	1.97	0.47
12:M:162:ASP:OD1	30:M:901:HOH:O	2.21	0.47
14:O:137:THR:HG22	14:O:138:THR:H	1.80	0.47
6:G:139:MET:N	6:G:143:GLU:OE2	2.29	0.46
12:M:496:ILE:O	12:M:500:ILE:HG12	2.15	0.46
9:J:115:SER:HA	9:J:118:LYS:HG2	1.96	0.46
12:M:250:SER:OG	12:M:251:ILE:N	2.48	0.46
7:H:40:LYS:HB3	7:H:40:LYS:HE3	1.74	0.46
14:O:201:ILE:HD12	14:O:201:ILE:HA	1.81	0.46
2:B:98:ARG:HB3	2:B:169:GLU:CD	2.40	0.46
1:A:408:GLU:O	1:A:411:SER:HB3	2.14	0.46
13:N:4:VAL:O	13:N:8:ARG:HG2	2.16	0.46
12:M:696:MET:SD	12:M:702:ARG:HA	2.55	0.46
16:Q:95:LEU:HB2	16:Q:458:PHE:CZ	2.51	0.46
2:B:111:GLU:O	2:B:141:ARG:NH1	2.49	0.46
7:H:55:LYS:HE3	15:P:104:THR:HG21	1.96	0.46
12:M:74:ASN:ND2	30:M:910:HOH:O	2.35	0.46
21:A:503:NAI:H6N	21:A:503:NAI:H2D	1.72	0.46
13:N:8:ARG:HG3	13:N:8:ARG:HH11	1.81	0.46
2:B:86:TYR:CD1	2:B:87:PRO:HA	2.50	0.46
12:M:266:ARG:HG2	12:M:267:THR:HG23	1.97	0.46
13:N:107:LYS:HE2	17:T:70:LEU:HD22	1.97	0.45
16:Q:238:LEU:HD23	16:Q:238:LEU:HA	1.76	0.45
2:B:38:TYR:CE2	8:I:106:LEU:HD13	2.50	0.45
12:M:394:VAL:HG22	12:M:473:MET:HE1	1.98	0.45
1:A:109:ARG:HG2	11:L:166:TRP:CD1	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:392:MET:HE1	1:A:416:SER:HB3	1.97	0.45
2:B:105:ARG:HD2	13:N:108:TYR:CG	2.51	0.45
1:A:202:GLY:N	30:A:611:HOH:O	2.49	0.45
2:B:37:THR:HA	8:I:105:GLU:O	2.17	0.45
2:B:180:HIS:CE1	9:J:100:LEU:HD11	2.52	0.45
2:B:184:LEU:HB3	11:L:112:MET:HE2	1.99	0.45
9:J:71:ASN:HA	9:J:97:MET:HG2	1.99	0.45
1:A:290:GLU:HG3	1:A:291:GLU:N	2.32	0.45
1:A:32:PHE:CZ	1:A:267:ARG:HG2	2.51	0.45
1:A:297:LYS:HD2	1:A:311:TRP:CE2	2.51	0.45
9:J:203:PRO:HG2	26:J:401:NDP:C5N	2.47	0.45
9:J:279:TYR:HB2	9:J:372:ALA:HB2	1.99	0.45
14:O:186:VAL:HG22	14:O:196:LEU:HD11	1.97	0.45
1:A:383:THR:HG23	1:A:384:PRO:HD3	1.97	0.45
14:O:50:ASP:N	14:O:50:ASP:OD1	2.50	0.45
1:A:48:ARG:HH21	14:O:226:GLU:CD	2.24	0.44
1:A:208:GLU:OE1	1:A:210:THR:OG1	2.34	0.44
1:A:384:PRO:HB2	1:A:423:THR:HG22	1.98	0.44
3:C:124:MET:HA	3:C:125:PRO:HD3	1.71	0.44
2:B:99:GLY:N	2:B:169:GLU:HG2	2.32	0.44
3:C:71:CYS:HB3	16:Q:141:TYR:CG	2.53	0.44
4:E:16:SER:HB3	11:L:52:LEU:HG	1.99	0.44
11:L:67:VAL:HB	11:L:72:ILE:HD11	1.99	0.44
12:M:150:ARG:NH2	16:Q:359:ASP:OD1	2.49	0.44
8:I:74:LYS:HD2	8:I:74:LYS:HA	1.69	0.44
1:A:222:LYS:O	11:L:175:LYS:NZ	2.38	0.44
6:G:106:LYS:HE2	6:G:106:LYS:HB3	1.87	0.44
12:M:333:PHE:CE1	12:M:543:LYS:HE2	2.52	0.44
3:C:188:LYS:HE2	3:C:191:ARG:NH2	2.33	0.44
1:A:110:PRO:O	1:A:238:CYS:HB3	2.18	0.44
1:A:209:GLU:OE2	1:A:226:LYS:NZ	2.41	0.44
9:J:207:PHE:CD1	9:J:207:PHE:O	2.71	0.44
6:G:93:ILE:HD13	6:G:108:LEU:HD13	1.99	0.44
12:M:387:LEU:HD12	12:M:514:ASN:HB3	1.99	0.44
16:Q:100:GLU:OE1	16:Q:108:LYS:HD3	2.18	0.44
5:F:25:GLN:OE1	5:F:26:ARG:NH1	2.52	0.43
5:F:38:GLU:OE2	5:F:39:LYS:HD3	2.18	0.43
8:I:107:SER:C	8:I:109:ASP:H	2.27	0.43
13:N:68:MET:HG2	13:N:69:ASN:H	1.82	0.43
9:J:168:SER:O	9:J:203:PRO:HD3	2.18	0.43
1:A:33:GLY:CA	1:A:294:VAL:HG12	2.44	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:276:PHE:CD1	1:A:352:ALA:HB1	2.53	0.43
12:M:144:MET:HE3	12:M:144:MET:HB3	1.82	0.43
4:E:64:ARG:O	4:E:68:MET:HG2	2.18	0.43
15:P:209:GLU:HG2	15:P:224:VAL:HA	2.00	0.43
16:Q:259:GLU:OE2	18:W:23:ARG:NH2	2.48	0.43
1:A:387:GLU:HG2	12:M:119:PHE:O	2.19	0.43
5:F:57:GLU:O	12:M:651:PRO:HG2	2.18	0.43
12:M:689:LEU:HD23	12:M:689:LEU:HA	1.84	0.43
14:O:156:LEU:HD21	14:O:205:ILE:HG21	2.00	0.43
1:A:385:CYS:HB2	19:A:501:SF4:S4	2.59	0.43
20:A:502:FMN:N5	21:A:503:NAI:H4N	2.34	0.43
1:A:385:CYS:HB3	19:A:501:SF4:S2	2.59	0.43
14:O:110:MET:O	14:O:114:GLU:HG3	2.18	0.43
14:O:222:ARG:HD3	14:O:226:GLU:O	2.19	0.43
23:C:303:PLX:H281	23:C:303:PLX:H311	1.71	0.43
12:M:97:MET:HG3	12:M:100:TRP:CZ2	2.52	0.43
12:M:483:ARG:NH2	12:M:682:ASP:HB3	2.33	0.43
16:Q:80:LEU:HD23	16:Q:80:LEU:H	1.84	0.43
1:A:48:ARG:HD2	10:K:70:ASN:O	2.19	0.42
2:B:37:THR:HG22	8:I:107:SER:CB	2.49	0.42
14:O:88:ARG:NH2	14:O:190:ASP:OD2	2.52	0.42
15:P:201:ASP:OD1	15:P:201:ASP:N	2.37	0.42
16:Q:139:LEU:HD13	16:Q:424:ILE:HG21	2.02	0.42
1:A:35:LEU:HD23	1:A:40:ARG:NH1	2.34	0.42
10:K:73:TYR:CZ	10:K:75:ASN:HB3	2.54	0.42
12:M:149:ASP:OD1	12:M:150:ARG:HG2	2.18	0.42
12:M:44:GLU:HG2	12:M:45:PRO:CD	2.49	0.42
7:H:99:PRO:O	15:P:70:PRO:HD2	2.19	0.42
12:M:330:LEU:HD12	12:M:330:LEU:HA	1.82	0.42
16:Q:387:GLU:OE2	16:Q:390:GLN:NE2	2.52	0.42
1:A:102:MET:O	1:A:102:MET:HG3	2.20	0.42
13:N:117:VAL:O	13:N:120:THR:HB	2.20	0.42
16:Q:450:ILE:O	16:Q:453:THR:HG22	2.20	0.42
8:I:70:MET:HG3	15:P:66:ALA:CB	2.48	0.42
12:M:161:GLU:OE2	14:O:42:ARG:NH1	2.51	0.42
17:T:122:HIS:O	17:T:122:HIS:ND1	2.52	0.42
5:F:64:LYS:NZ	5:F:64:LYS:HB2	2.34	0.42
4:E:81:LEU:HD12	4:E:81:LEU:HA	1.84	0.42
7:H:45:ARG:O	7:H:49:GLU:HB2	2.19	0.42
16:Q:179:ARG:NH1	30:Q:526:HOH:O	2.46	0.42
9:J:336:GLU:CD	9:J:336:GLU:H	2.28	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:O:185:MET:HE2	14:O:185:MET:HB2	1.80	0.42
9:J:328:THR:HG22	9:J:330:PRO:HD3	2.01	0.41
4:E:121:LYS:HA	4:E:124:VAL:HG22	2.02	0.41
7:H:24:LEU:HD23	7:H:24:LEU:HA	1.83	0.41
12:M:44:GLU:CG	12:M:45:PRO:CD	2.98	0.41
12:M:379:THR:HG21	12:M:526:LEU:HD22	2.02	0.41
17:T:34:THR:HG21	17:T:52:ARG:CZ	2.51	0.41
3:C:44:GLU:HA	3:C:47:VAL:HG22	2.02	0.41
13:N:8:ARG:HG3	13:N:8:ARG:NH1	2.35	0.41
13:N:101:LYS:HE2	13:N:101:LYS:HB2	1.80	0.41
14:O:135:CYS:SG	14:O:176:CYS:HA	2.61	0.41
4:E:19:PRO:HA	11:L:53:ILE:HD11	2.01	0.41
9:J:334:GLY:N	9:J:337:ASP:OD1	2.44	0.41
16:Q:437:LYS:HB2	16:Q:437:LYS:HE3	1.81	0.41
1:A:263:ALA:HA	1:A:271:SER:HB3	2.01	0.41
5:F:65:LEU:HB3	5:F:77:VAL:HG22	2.03	0.41
12:M:306:MET:HB2	12:M:583:ILE:HB	2.03	0.41
12:M:489:ILE:O	12:M:493:VAL:HG23	2.21	0.41
16:Q:184:ILE:HD11	16:Q:251:PHE:CZ	2.56	0.41
12:M:97:MET:HG3	12:M:100:TRP:CE2	2.56	0.41
12:M:213:MET:HE2	12:M:213:MET:HB3	1.85	0.41
14:O:130:TYR:CE1	14:O:208:LEU:HD22	2.55	0.41
6:G:144:ILE:O	6:G:148:ILE:HG12	2.21	0.41
12:M:329:MET:HE2	12:M:565:PHE:HB2	2.02	0.41
16:Q:144:MET:HE3	16:Q:222:MET:HB2	2.03	0.41
5:F:59:SER:O	5:F:61:VAL:HG23	2.20	0.41
7:H:26:ILE:O	7:H:29:THR:HG22	2.21	0.41
9:J:126:VAL:HG23	9:J:161:VAL:HG11	2.03	0.41
9:J:131:GLY:O	26:J:401:NDP:H51A	2.20	0.41
9:J:132:ARG:HD2	9:J:134:TRP:CE2	2.55	0.41
9:J:174:ILE:O	9:J:182:ARG:HG3	2.21	0.41
11:L:151:LYS:HE2	12:M:278:HIS:CD2	2.56	0.41
12:M:483:ARG:HH22	12:M:682:ASP:HB3	1.86	0.41
14:O:209:LYS:HB2	14:O:209:LYS:HE2	1.91	0.41
16:Q:341:LEU:HD23	16:Q:341:LEU:HA	1.92	0.41
2:B:47:SER:HB2	2:B:52:SER:OG	2.21	0.41
3:C:127:PRO:HA	9:J:89:TYR:OH	2.21	0.41
5:F:18:GLU:CB	5:F:52:PRO:HG2	2.48	0.41
11:L:77:VAL:HG23	11:L:145:PHE:HB3	2.03	0.41
3:C:193:TRP:CE2	22:C:302:PEE:H13	2.56	0.40
12:M:217:GLU:HG3	12:M:412:PRO:HB3	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:404:ALA:HB3	1:A:450:MET:HE2	2.03	0.40
1:A:408:GLU:O	1:A:409:ILE:C	2.64	0.40
6:G:119:ILE:O	6:G:123:GLU:HG3	2.21	0.40
8:I:8:ILE:HD13	8:I:8:ILE:HA	1.87	0.40
11:L:101:PHE:CE1	11:L:124:LEU:HD23	2.56	0.40
14:O:155:LYS:HD2	14:O:202:GLU:HG2	2.03	0.40
16:Q:204:PHE:HA	16:Q:207:ARG:HB2	2.03	0.40
1:A:40:ARG:HB3	1:A:289:GLU:OE1	2.21	0.40
9:J:83:PRO:HG3	9:J:119:VAL:CG1	2.50	0.40
9:J:176:SER:O	9:J:182:ARG:NH2	2.54	0.40
2:B:196:LYS:HD2	13:N:110:TRP:CZ3	2.57	0.40
4:E:93:THR:HG23	4:E:103:ILE:HD11	2.04	0.40
8:I:70:MET:O	8:I:70:MET:SD	2.80	0.40
8:I:92:LYS:HD2	8:I:92:LYS:HA	1.94	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 PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	429/431 (100%)	417 (97%)	11 (3%)	1 (0%)	43	63
2	B	174/176 (99%)	172 (99%)	2 (1%)	0	100	100
3	C	154/156 (99%)	148 (96%)	6 (4%)	0	100	100
4	E	113/115 (98%)	110 (97%)	3 (3%)	0	100	100
5	F	84/86 (98%)	82 (98%)	2 (2%)	0	100	100
6	G	86/88 (98%)	82 (95%)	4 (5%)	0	100	100
7	H	110/112 (98%)	104 (94%)	6 (6%)	0	100	100
8	I	93/112 (83%)	82 (88%)	11 (12%)	0	100	100
9	J	289/341 (85%)	277 (96%)	10 (4%)	2 (1%)	18	34

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	K	40/42 (95%)	40 (100%)	0	0	100	100
11	L	123/125 (98%)	121 (98%)	2 (2%)	0	100	100
12	M	688/690 (100%)	672 (98%)	15 (2%)	1 (0%)	48	68
13	N	142/144 (99%)	139 (98%)	3 (2%)	0	100	100
14	O	215/217 (99%)	207 (96%)	8 (4%)	0	100	100
15	P	206/208 (99%)	195 (95%)	11 (5%)	0	100	100
16	Q	374/385 (97%)	361 (96%)	13 (4%)	0	100	100
17	T	94/96 (98%)	91 (97%)	3 (3%)	0	100	100
18	W	27/29 (93%)	25 (93%)	2 (7%)	0	100	100
All	All	3441/3553 (97%)	3325 (97%)	112 (3%)	4 (0%)	49	68

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
9	J	203	PRO
12	M	283	GLU
9	J	38	HIS
1	A	186	ALA

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	345/345 (100%)	340 (99%)	5 (1%)	59	81
2	B	150/151 (99%)	148 (99%)	2 (1%)	61	82
3	C	132/132 (100%)	130 (98%)	2 (2%)	57	80
4	E	107/107 (100%)	107 (100%)	0	100	100
5	F	76/76 (100%)	75 (99%)	1 (1%)	61	82
6	G	76/81 (94%)	75 (99%)	1 (1%)	61	82
7	H	99/99 (100%)	98 (99%)	1 (1%)	68	86

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	I	87/97 (90%)	87 (100%)	0	100	100
9	J	253/295 (86%)	250 (99%)	3 (1%)	63	83
10	K	41/41 (100%)	39 (95%)	2 (5%)	22	45
11	L	113/113 (100%)	113 (100%)	0	100	100
12	M	580/580 (100%)	572 (99%)	8 (1%)	59	81
13	N	130/130 (100%)	128 (98%)	2 (2%)	57	80
14	O	183/183 (100%)	180 (98%)	3 (2%)	55	79
15	P	190/190 (100%)	190 (100%)	0	100	100
16	Q	327/331 (99%)	324 (99%)	3 (1%)	70	87
17	T	79/79 (100%)	77 (98%)	2 (2%)	42	69
18	W	24/24 (100%)	24 (100%)	0	100	100
All	All	2992/3054 (98%)	2957 (99%)	35 (1%)	61	83

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	69	LEU
1	A	125	CYS
1	A	331	VAL
1	A	344	GLN
1	A	356	VAL
2	B	76	TYR
2	B	77	LEU
3	C	71	CYS
3	C	102	VAL
5	F	57	GLU
6	G	76	LEU
7	H	94	MET
9	J	91	THR
9	J	272	LEU
9	J	375	VAL
10	K	83	THR
10	K	98	MET
12	M	56	VAL
12	M	74	ASN
12	M	96	VAL
12	M	171	THR
12	M	365	SER

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Mol	Chain	Res	Type
12	M	382	ARG
12	M	457	SER
12	M	628	GLU
13	N	37	THR
13	N	120	THR
14	O	44	THR
14	O	50	ASP
14	O	127	VAL
16	Q	217	VAL
16	Q	222	MET
16	Q	437	LYS
17	T	64	GLU
17	T	79	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (31) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	277	ASN
1	A	436	GLN
2	B	85	ASN
4	E	70	ASN
4	E	99	GLN
5	F	48	ASN
5	F	80	ASN
7	H	76	GLN
7	H	83	GLN
9	J	79	GLN
9	J	93	HIS
9	J	122	HIS
9	J	251	ASN
12	M	278	HIS
12	M	425	ASN
12	M	540	ASN
13	N	69	ASN
13	N	112	ASN
14	O	41	HIS
14	O	69	ASN
14	O	74	HIS
14	O	106	GLN
14	O	131	HIS
14	O	133	GLN
15	P	77	GLN

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Mol	Chain	Res	Type
15	P	124	ASN
15	P	196	HIS
16	Q	234	GLN
16	Q	431	HIS
16	Q	454	GLN
17	T	123	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

1 non-standard protein/DNA/RNA residue is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
16	2MR	Q	118	16	10,12,13	2.00	1 (10%)	5,13,15	6.21	3 (60%)

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
16	2MR	Q	118	16	-	3/10/13/15	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
16	Q	118	2MR	CZ-NE	5.61	1.46	1.34

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	Q	118	2MR	NE-CZ-NH2	12.62	131.05	119.48
16	Q	118	2MR	CD-NE-CZ	4.65	132.12	123.41
16	Q	118	2MR	CQ2-NH2-CZ	3.10	130.72	123.86

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
16	Q	118	2MR	NE-CD-CG-CB
16	Q	118	2MR	CA-CB-CG-CD
16	Q	118	2MR	CG-CD-NE-CZ

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 17 ligands modelled in this entry, 2 are monoatomic - leaving 15 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	$\# Z > 2$
27	FES	M	803	12	0,4,4	-	-	-		
23	PLX	C	303	-	51,51,51	1.15	4 (7%)	55,59,59	0.62	1 (1%)
26	NDP	J	401	-	49,52,52	4.38	23 (46%)	66,80,80	2.16	13 (19%)
21	NAI	A	503	-	45,48,48	3.90	19 (42%)	60,73,73	1.79	12 (20%)
19	SF4	A	501	1	0,12,12	-	-	-		
27	FES	O	301	14	0,4,4	-	-	-		
19	SF4	C	301	3,16	0,12,12	-	-	-		
22	PEE	C	302	-	46,46,50	1.21	5 (10%)	49,51,55	0.94	2 (4%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
19	SF4	M	802	12	0,12,12	-	-	-		
19	SF4	B	301	2	0,12,12	-	-	-		
19	SF4	M	801	12	0,12,12	-	-	-		
24	8Q1	G	201	-	31,34,34	1.71	6 (19%)	40,43,43	1.64	6 (15%)
25	CDL	I	201	-	50,50,99	1.40	8 (16%)	56,62,111	1.17	4 (7%)
20	FMN	A	502	-	33,33,33	1.10	2 (6%)	48,50,50	1.26	8 (16%)
19	SF4	B	302	2	0,12,12	-	-	-		

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
27	FES	M	803	12	-	-	0/1/1/1
23	PLX	C	303	-	-	29/55/55/55	-
26	NDP	J	401	-	-	10/34/77/77	0/4/5/5
21	NAI	A	503	-	-	9/29/72/72	0/5/5/5
19	SF4	A	501	1	-	-	0/6/5/5
27	FES	O	301	14	-	-	0/1/1/1
19	SF4	C	301	3,16	-	-	0/6/5/5
22	PEE	C	302	-	-	22/50/50/54	-
19	SF4	M	802	12	-	-	0/6/5/5
19	SF4	B	301	2	-	-	0/6/5/5
24	8Q1	G	201	-	-	12/41/41/41	-
19	SF4	M	801	12	-	-	0/6/5/5
25	CDL	I	201	-	-	40/61/61/110	-
20	FMN	A	502	-	-	11/18/18/18	0/3/3/3
19	SF4	B	302	2	-	-	0/6/5/5

All (67) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	J	401	NDP	C3B-C2B	-12.96	1.24	1.52
26	J	401	NDP	C6N-C5N	12.35	1.55	1.33
26	J	401	NDP	O4D-C4D	10.69	1.68	1.45
21	A	503	NAI	C3D-C4D	-10.25	1.26	1.53
26	J	401	NDP	C3D-C4D	-9.84	1.27	1.53
21	A	503	NAI	O4B-C1B	9.16	1.63	1.42
21	A	503	NAI	O4B-C4B	-8.18	1.26	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	J	401	NDP	O4B-C4B	-7.93	1.27	1.45
21	A	503	NAI	C2D-C1D	-7.58	1.29	1.53
26	J	401	NDP	C2N-C3N	7.38	1.55	1.34
21	A	503	NAI	C2B-C1B	-7.16	1.30	1.53
21	A	503	NAI	O4D-C4D	6.92	1.60	1.45
21	A	503	NAI	C2D-C3D	5.92	1.69	1.53
26	J	401	NDP	C6A-N6A	5.79	1.48	1.34
21	A	503	NAI	C7N-N7N	5.76	1.48	1.33
26	J	401	NDP	P2B-O2B	5.46	1.69	1.59
24	G	201	8Q1	C34-N36	5.45	1.45	1.33
21	A	503	NAI	O4D-C1D	5.40	1.54	1.42
26	J	401	NDP	C3B-C4B	5.30	1.66	1.53
24	G	201	8Q1	C39-N41	5.25	1.45	1.33
21	A	503	NAI	C6A-N6A	5.13	1.47	1.34
21	A	503	NAI	C4N-C3N	-5.11	1.39	1.49
26	J	401	NDP	O4D-C1D	-4.96	1.30	1.42
26	J	401	NDP	C6N-N1N	4.84	1.49	1.37
21	A	503	NAI	O2B-C2B	4.55	1.53	1.43
26	J	401	NDP	O4B-C1B	4.52	1.52	1.42
26	J	401	NDP	C1B-N9A	-4.43	1.33	1.46
26	J	401	NDP	O2D-C2D	-4.21	1.33	1.43
26	J	401	NDP	C7N-N7N	4.10	1.44	1.33
21	A	503	NAI	C6N-C5N	3.98	1.40	1.33
22	C	302	PEE	C18-C19	3.73	1.53	1.31
20	A	502	FMN	C4A-N5	3.69	1.37	1.30
22	C	302	PEE	C39-C38	3.66	1.53	1.31
21	A	503	NAI	C7N-C3N	3.62	1.56	1.48
25	I	201	CDL	OA8-CA7	3.44	1.43	1.33
21	A	503	NAI	C4N-C5N	-3.29	1.40	1.48
26	J	401	NDP	C8A-N9A	-3.14	1.31	1.37
26	J	401	NDP	O3D-C3D	3.03	1.50	1.43
26	J	401	NDP	C5A-N7A	-3.02	1.33	1.39
26	J	401	NDP	C7N-C3N	3.01	1.55	1.48
25	I	201	CDL	OB8-CB7	3.01	1.42	1.33
25	I	201	CDL	OB6-CB5	2.99	1.42	1.34
25	I	201	CDL	OA6-CA5	2.93	1.42	1.34
23	C	303	PLX	O6-C4	-2.89	1.40	1.44
21	A	503	NAI	C8A-N9A	-2.59	1.32	1.37
24	G	201	8Q1	O40-C39	-2.54	1.18	1.23
22	C	302	PEE	O2-C2	-2.51	1.40	1.46
22	C	302	PEE	O3-C30	2.50	1.40	1.33
21	A	503	NAI	O3B-C3B	-2.50	1.37	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
24	G	201	8Q1	C1-S44	2.39	1.81	1.76
20	A	502	FMN	C10-N1	2.38	1.38	1.33
25	I	201	CDL	OA6-CA4	-2.38	1.40	1.46
24	G	201	8Q1	O35-C34	-2.37	1.18	1.23
21	A	503	NAI	PN-O5D	2.35	1.68	1.59
21	A	503	NAI	C5B-C4B	2.34	1.58	1.51
26	J	401	NDP	O2B-C2B	2.33	1.52	1.44
26	J	401	NDP	C2D-C3D	2.27	1.59	1.53
24	G	201	8Q1	C6-C1	2.25	1.53	1.50
23	C	303	PLX	C7-C6	2.25	1.55	1.50
22	C	302	PEE	O2-C10	2.23	1.40	1.34
26	J	401	NDP	O7N-C7N	-2.16	1.19	1.24
25	I	201	CDL	PB2-OB5	2.12	1.67	1.59
25	I	201	CDL	OB6-CB4	-2.11	1.41	1.46
25	I	201	CDL	PB2-OB2	2.11	1.67	1.59
23	C	303	PLX	P1-O4	2.09	1.67	1.59
26	J	401	NDP	PA-O5B	2.07	1.67	1.59
23	C	303	PLX	C25-C24	2.03	1.55	1.50

All (46) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	J	401	NDP	C3N-C2N-N1N	-7.98	111.72	123.10
26	J	401	NDP	C1D-N1N-C2N	-6.79	109.81	121.11
24	G	201	8Q1	C6-C1-S44	6.56	121.09	113.46
26	J	401	NDP	C5A-C4A-N3A	-5.82	119.16	126.75
21	A	503	NAI	C5A-C4A-N3A	-5.80	119.19	126.75
26	J	401	NDP	C1D-N1N-C6N	-4.95	110.17	120.83
21	A	503	NAI	N3A-C2A-N1A	-4.32	121.84	128.60
21	A	503	NAI	N3A-C4A-N9A	4.14	133.91	127.08
26	J	401	NDP	N3A-C2A-N1A	-4.03	122.29	128.60
25	I	201	CDL	OB6-CB5-C51	4.02	120.16	111.50
26	J	401	NDP	N3A-C4A-N9A	4.01	133.69	127.08
25	I	201	CDL	OA6-CA5-C11	3.98	120.08	111.50
21	A	503	NAI	C2A-N3A-C4A	3.88	120.91	111.75
21	A	503	NAI	C5A-N7A-C8A	3.76	108.86	103.51
26	J	401	NDP	C2A-N3A-C4A	3.76	120.63	111.75
24	G	201	8Q1	O4-C1-C6	-3.74	119.58	123.99
22	C	302	PEE	O2-C10-C11	3.63	119.33	111.50
21	A	503	NAI	N9A-C8A-N7A	-3.52	109.10	113.91
26	J	401	NDP	C5A-N7A-C8A	3.40	108.34	103.51
26	J	401	NDP	N9A-C8A-N7A	-3.25	109.47	113.91

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
20	A	502	FMN	C4-N3-C2	-3.23	119.67	125.64
21	A	503	NAI	C4A-C5A-N7A	-3.23	106.69	110.62
21	A	503	NAI	C3D-C2D-C1D	3.20	107.52	101.43
26	J	401	NDP	C4A-C5A-N7A	-3.10	106.84	110.62
25	I	201	CDL	OB8-CB7-C71	2.81	120.71	111.91
24	G	201	8Q1	C38-C39-N41	2.79	121.12	116.42
20	A	502	FMN	C4A-C4-N3	2.77	120.22	113.19
25	I	201	CDL	OA8-CA7-C31	2.73	120.48	111.91
21	A	503	NAI	C2D-C3D-C4D	2.71	107.90	102.64
20	A	502	FMN	O4-C4-C4A	-2.67	119.52	126.60
21	A	503	NAI	C4D-O4D-C1D	-2.67	103.59	109.47
22	C	302	PEE	O3-C30-C31	2.61	120.09	111.91
24	G	201	8Q1	O4-C1-S44	-2.53	119.33	122.61
21	A	503	NAI	C4A-N9A-C8A	2.52	108.46	105.73
21	A	503	NAI	PN-O3-PA	-2.47	124.36	132.83
26	J	401	NDP	C2B-C3B-C4B	2.46	107.34	101.99
20	A	502	FMN	C4A-C10-N1	-2.42	119.11	124.73
24	G	201	8Q1	C37-C38-C39	2.36	116.29	112.36
20	A	502	FMN	C4A-C10-N10	2.35	119.92	116.48
26	J	401	NDP	C4A-N9A-C8A	2.28	108.20	105.73
24	G	201	8Q1	C43-S44-C1	2.23	108.81	101.87
26	J	401	NDP	PN-O3-PA	-2.17	125.37	132.83
23	C	303	PLX	C1A-N1-C1	2.17	118.78	109.92
20	A	502	FMN	C10-C4A-N5	-2.13	120.33	124.86
20	A	502	FMN	C9A-C5A-N5	-2.12	120.12	122.43
20	A	502	FMN	C5A-C9A-N10	2.07	120.10	117.95

There are no chirality outliers.

All (133) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
20	A	502	FMN	N10-C1'-C2'-O2'
20	A	502	FMN	N10-C1'-C2'-C3'
20	A	502	FMN	C1'-C2'-C3'-O3'
20	A	502	FMN	C1'-C2'-C3'-C4'
20	A	502	FMN	O2'-C2'-C3'-O3'
20	A	502	FMN	C3'-C4'-C5'-O5'
20	A	502	FMN	C5'-O5'-P-O1P
20	A	502	FMN	C5'-O5'-P-O2P
22	C	302	PEE	C1-O3P-P-O1P
22	C	302	PEE	C4-O4P-P-O1P
23	C	303	PLX	O7-C6-C7-C8

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Mol	Chain	Res	Type	Atoms
23	C	303	PLX	O4-C3-C4-O6
23	C	303	PLX	C3-O4-P1-O1
23	C	303	PLX	C3-O4-P1-O2
23	C	303	PLX	C3-O4-P1-O3
23	C	303	PLX	N1-C1-C2-O1
24	G	201	8Q1	C1-C6-C7-C8
24	G	201	8Q1	N41-C42-C43-S44
24	G	201	8Q1	C28-O27-P24-O2
24	G	201	8Q1	C28-O27-P24-O1
25	I	201	CDL	O1-C1-CA2-OA2
25	I	201	CDL	CB2-C1-CA2-OA2
25	I	201	CDL	CA2-OA2-PA1-OA4
25	I	201	CDL	CB2-OB2-PB2-OB3
25	I	201	CDL	CB2-OB2-PB2-OB4
25	I	201	CDL	CB2-OB2-PB2-OB5
26	J	401	NDP	C5B-O5B-PA-O1A
26	J	401	NDP	C2N-C3N-C7N-N7N
25	I	201	CDL	O1-C1-CB2-OB2
23	C	303	PLX	C28-C29-C30-C31
26	J	401	NDP	O4B-C4B-C5B-O5B
20	A	502	FMN	O2'-C2'-C3'-C4'
26	J	401	NDP	C2D-C1D-N1N-C6N
21	A	503	NAI	C3B-C4B-C5B-O5B
25	I	201	CDL	C51-CB5-OB6-CB4
25	I	201	CDL	CA2-OA2-PA1-OA5
25	I	201	CDL	CA3-OA5-PA1-OA2
25	I	201	CDL	OB7-CB5-OB6-CB4
23	C	303	PLX	O6-C6-C7-C8
22	C	302	PEE	C11-C10-O2-C2
24	G	201	8Q1	C6-C7-C8-C9
22	C	302	PEE	O4-C10-O2-C2
22	C	302	PEE	C13-C14-C15-C16
23	C	303	PLX	C9-C10-C11-C12
22	C	302	PEE	C42-C43-C44-C45
25	I	201	CDL	CB7-C71-C72-C73
23	C	303	PLX	C17-C18-C19-C20
25	I	201	CDL	CA7-C31-C32-C33
23	C	303	PLX	C11-C12-C13-C14
23	C	303	PLX	C33-C34-C35-C36
25	I	201	CDL	C11-C12-C13-C14
23	C	303	PLX	C31-C32-C33-C34
23	C	303	PLX	C25-C26-C27-C28

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Mol	Chain	Res	Type	Atoms
24	G	201	8Q1	C7-C8-C9-C10
23	C	303	PLX	C30-C31-C32-C33
21	A	503	NAI	O4B-C4B-C5B-O5B
23	C	303	PLX	C16-C17-C18-C19
22	C	302	PEE	C1-O3P-P-O4P
25	I	201	CDL	C31-CA7-OA8-CA6
24	G	201	8Q1	C11-C12-C13-C14
22	C	302	PEE	C1-C2-C3-O3
23	C	303	PLX	C13-C14-C15-C16
22	C	302	PEE	C39-C40-C41-C42
24	G	201	8Q1	O27-C28-C29-C31
24	G	201	8Q1	C11-C10-C9-C8
24	G	201	8Q1	C28-O27-P24-O3
23	C	303	PLX	C11-C10-C9-C8
25	I	201	CDL	OA5-CA3-CA4-OA6
25	I	201	CDL	OA9-CA7-OA8-CA6
22	C	302	PEE	C11-C12-C13-C14
26	J	401	NDP	PN-O3-PA-O1A
21	A	503	NAI	C3D-C4D-C5D-O5D
23	C	303	PLX	O4-C3-C4-C5
25	I	201	CDL	OB5-CB3-CB4-CB6
23	C	303	PLX	C7-C8-C9-C10
25	I	201	CDL	C12-C13-C14-C15
25	I	201	CDL	CA3-CA4-CA6-OA8
22	C	302	PEE	C15-C16-C17-C18
25	I	201	CDL	OA6-CA4-CA6-OA8
25	I	201	CDL	CA2-C1-CB2-OB2
23	C	303	PLX	C14-C15-C16-C17
21	A	503	NAI	C2D-C1D-N1N-C2N
21	A	503	NAI	PN-O3-PA-O5B
24	G	201	8Q1	O27-C28-C29-C30
23	C	303	PLX	C18-C19-C20-C21
26	J	401	NDP	C5B-O5B-PA-O3
26	J	401	NDP	C2B-O2B-P2B-O3X
25	I	201	CDL	C72-C73-C74-C75
22	C	302	PEE	C17-C18-C19-C20
23	C	303	PLX	C2-O1-P1-O4
22	C	302	PEE	C1-O3P-P-O2P
23	C	303	PLX	C2-O1-P1-O3
25	I	201	CDL	CA3-OA5-PA1-OA3
25	I	201	CDL	CA3-OA5-PA1-OA4
25	I	201	CDL	CB3-OB5-PB2-OB4

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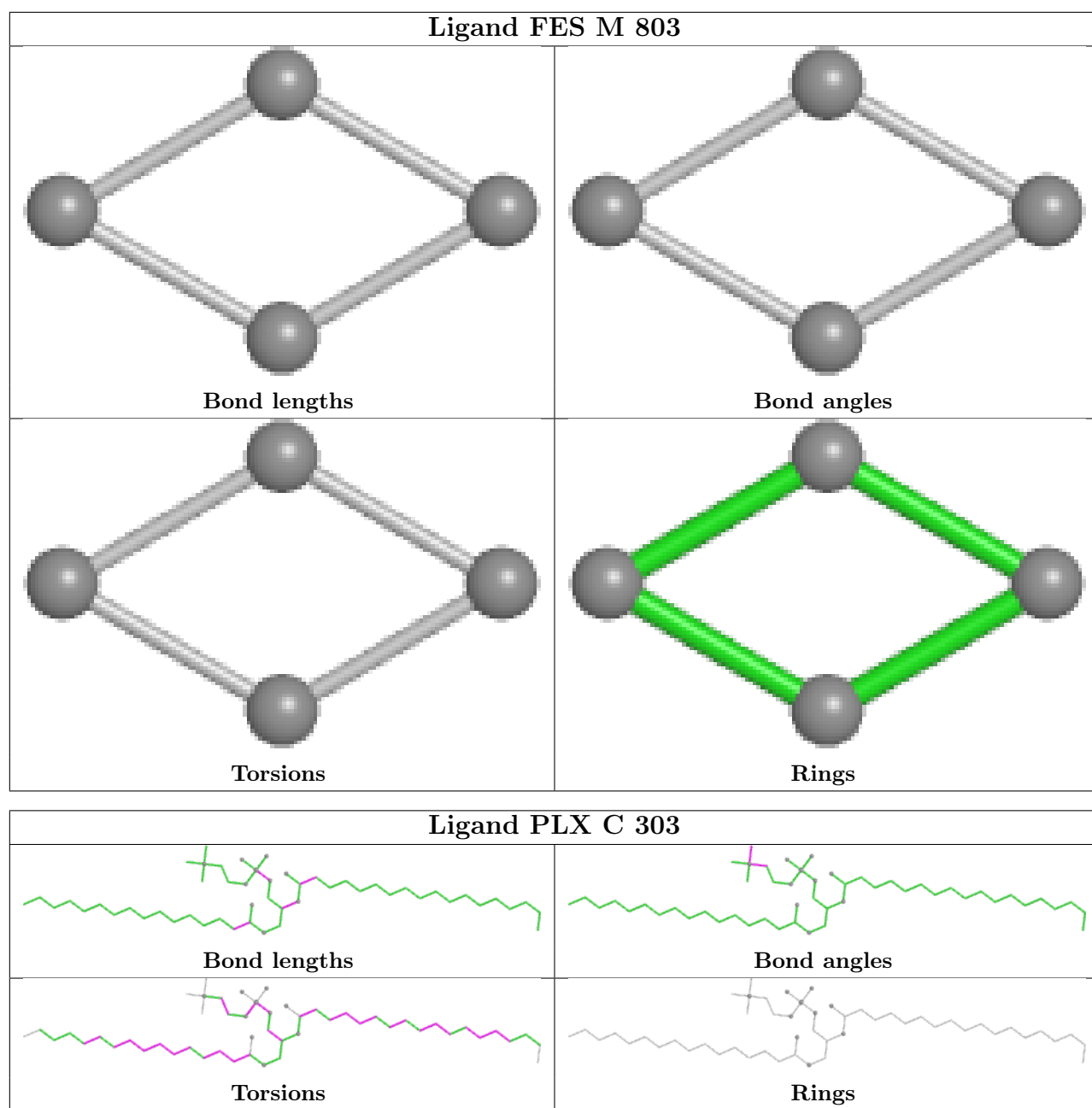
Mol	Chain	Res	Type	Atoms
25	I	201	CDL	C51-C52-C53-C54
25	I	201	CDL	C71-CB7-OB8-CB6
22	C	302	PEE	C33-C34-C35-C36
25	I	201	CDL	OB5-CB3-CB4-OB6
22	C	302	PEE	C44-C45-C46-C47
25	I	201	CDL	C31-C32-C33-C34
20	A	502	FMN	O4'-C4'-C5'-O5'
26	J	401	NDP	O4D-C1D-N1N-C6N
26	J	401	NDP	C2N-C3N-C7N-O7N
23	C	303	PLX	C29-C30-C31-C32
25	I	201	CDL	OB9-CB7-OB8-CB6
21	A	503	NAI	O4D-C1D-N1N-C2N
21	A	503	NAI	C2D-C1D-N1N-C6N
25	I	201	CDL	CB3-CB4-OB6-CB5
25	I	201	CDL	OA5-CA3-CA4-CA6
24	G	201	8Q1	C12-C13-C14-C15
22	C	302	PEE	O2-C2-C3-O3
22	C	302	PEE	C32-C33-C34-C35
23	C	303	PLX	C24-C25-C26-C27
22	C	302	PEE	C18-C19-C20-C21
23	C	303	PLX	O8-C24-C25-C26
25	I	201	CDL	CB6-CB4-OB6-CB5
21	A	503	NAI	O4D-C1D-N1N-C6N
22	C	302	PEE	C38-C39-C40-C41
23	C	303	PLX	C27-C28-C29-C30
21	A	503	NAI	O4D-C4D-C5D-O5D
26	J	401	NDP	O4D-C4D-C5D-O5D
20	A	502	FMN	C5'-O5'-P-O3P
22	C	302	PEE	O3-C30-C31-C32
25	I	201	CDL	C72-C71-CB7-OB8
23	C	303	PLX	O9-C24-C25-C26
25	I	201	CDL	C12-C11-CA5-OA6
25	I	201	CDL	C52-C51-CB5-OB6
22	C	302	PEE	O5-C30-C31-C32
25	I	201	CDL	C12-C11-CA5-OA7
25	I	201	CDL	C72-C71-CB7-OB9
22	C	302	PEE	O5-C30-O3-C3
25	I	201	CDL	C52-C51-CB5-OB7

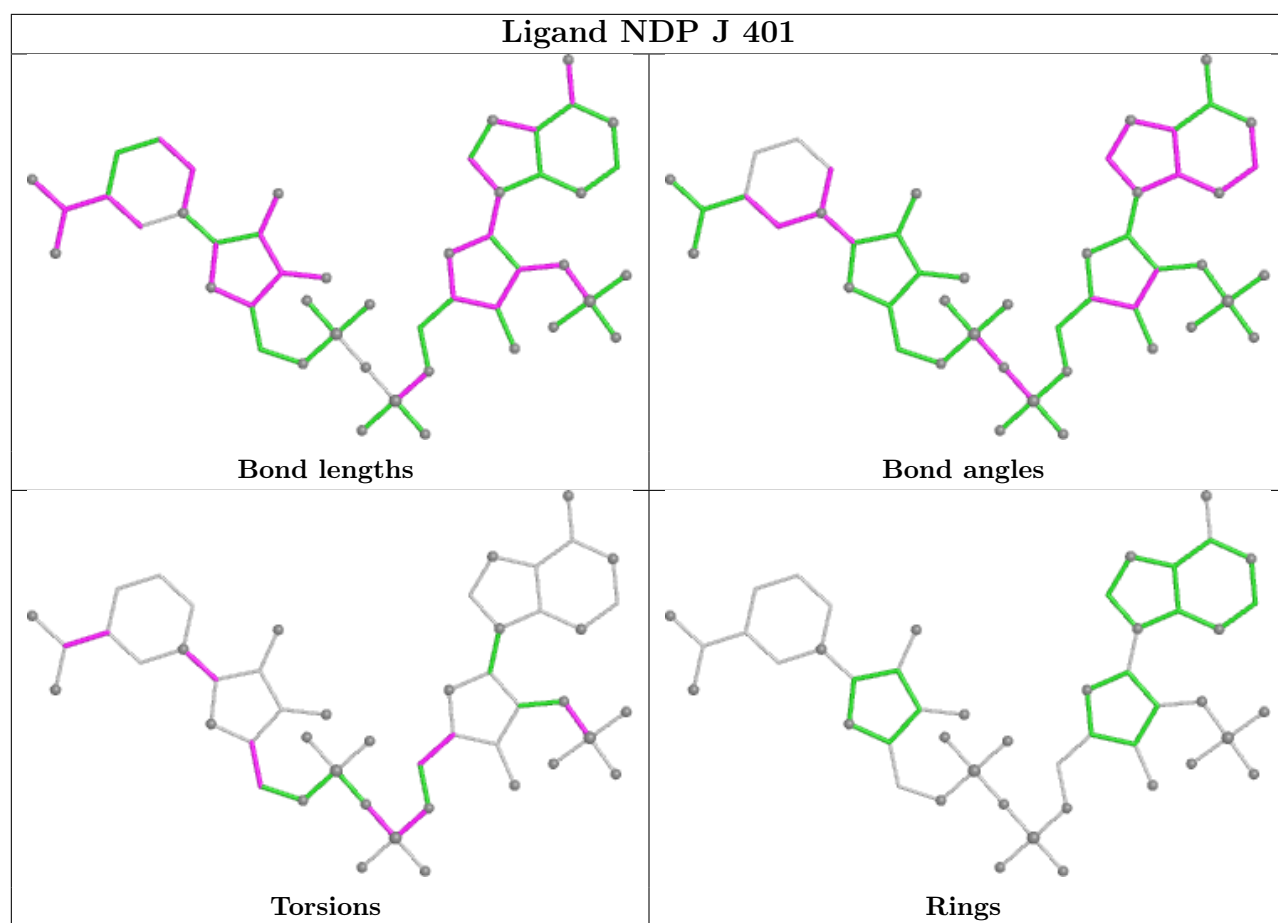
There are no ring outliers.

8 monomers are involved in 23 short contacts:

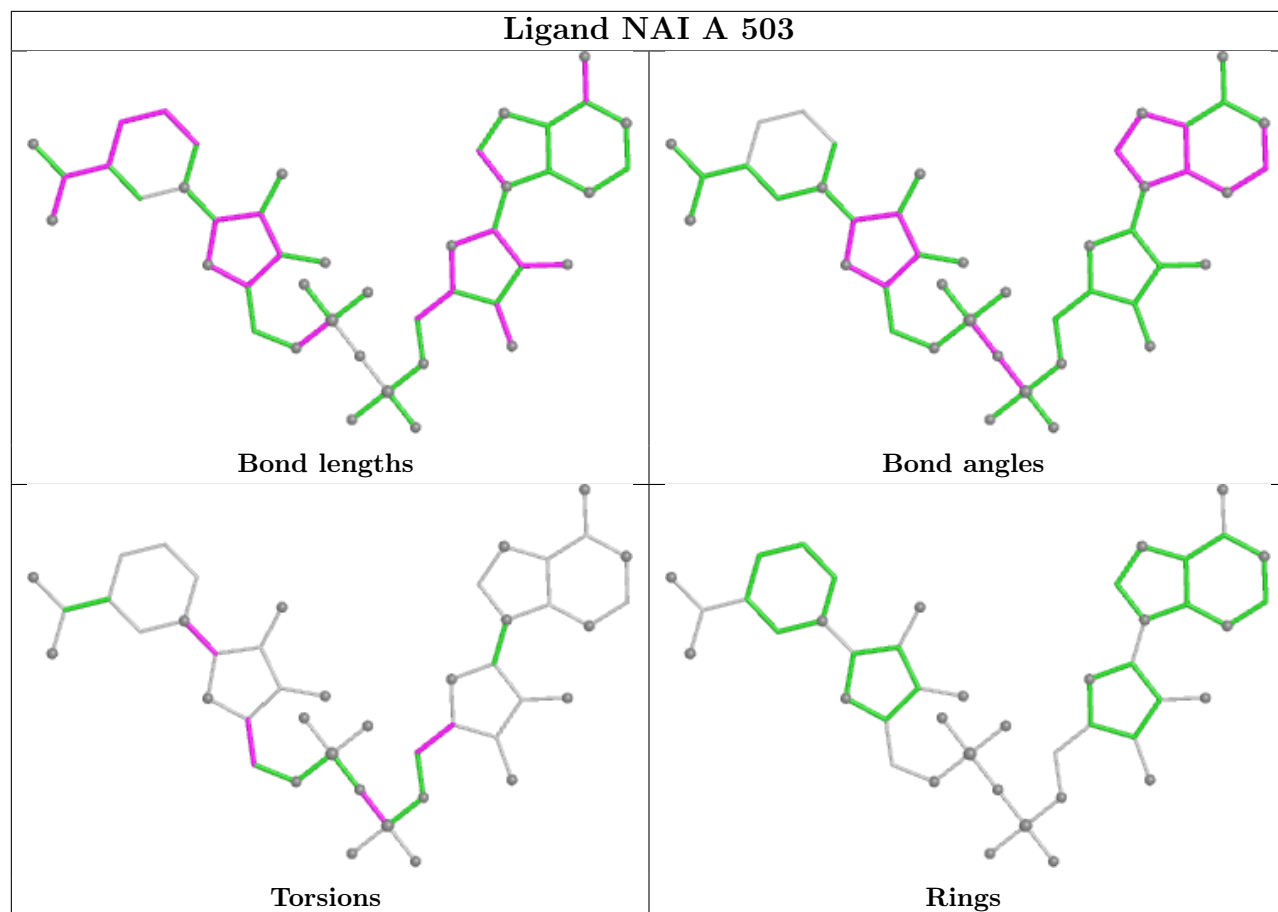
Mol	Chain	Res	Type	Clashes	Symm-Clashes
23	C	303	PLX	5	0
26	J	401	NDP	4	0
21	A	503	NAI	6	0
19	A	501	SF4	2	0
19	C	301	SF4	3	0
22	C	302	PEE	1	0
25	I	201	CDL	1	0
20	A	502	FMN	2	0

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

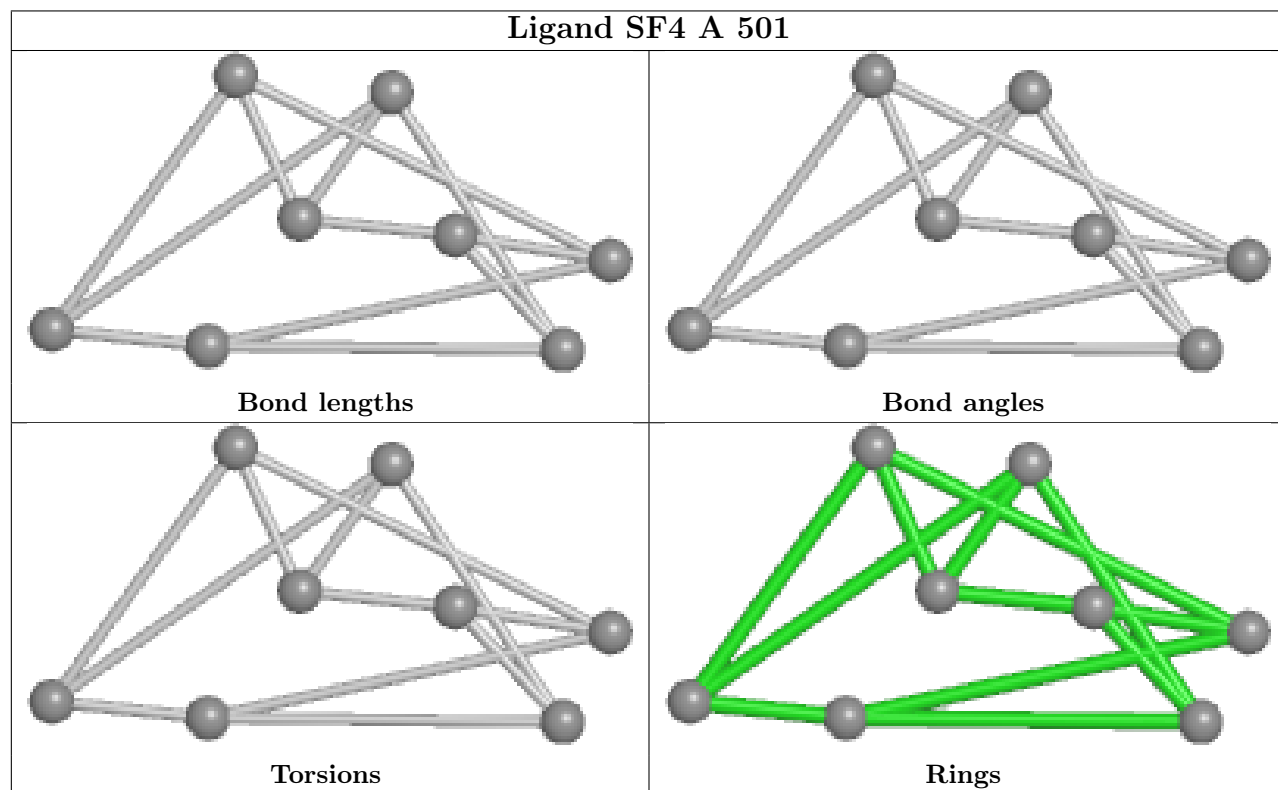


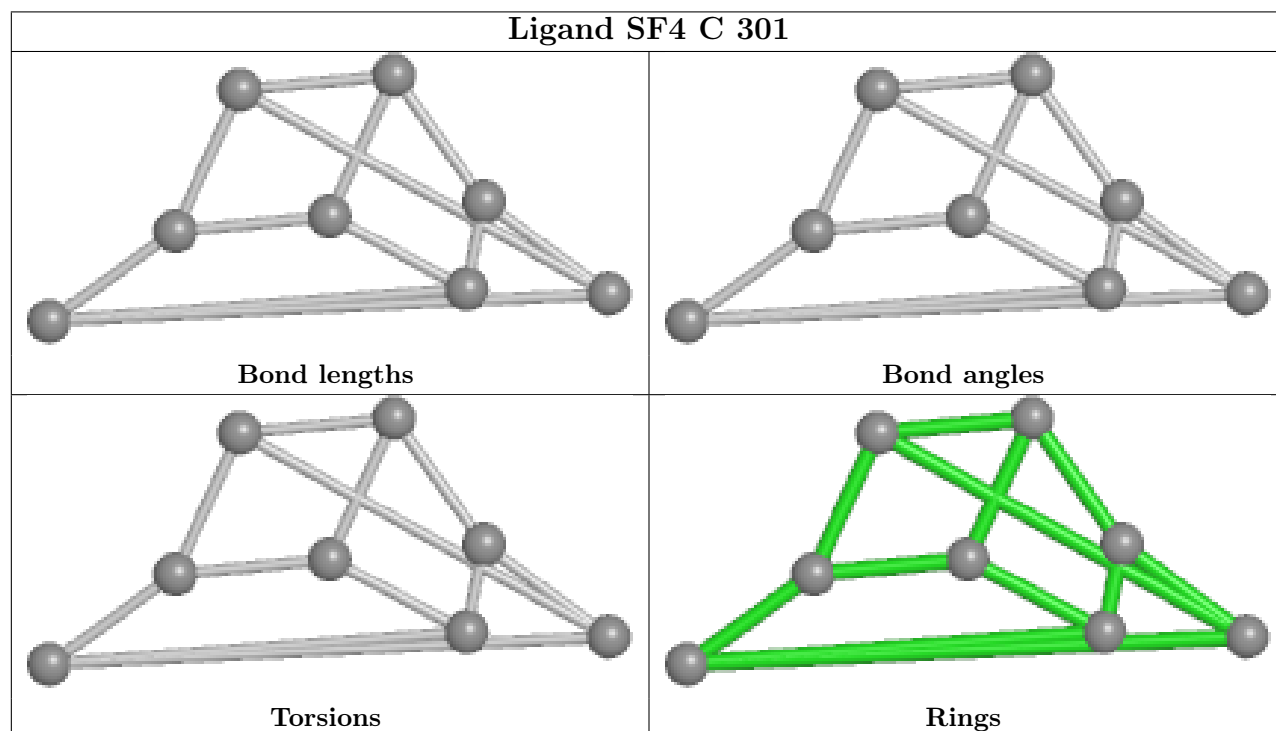
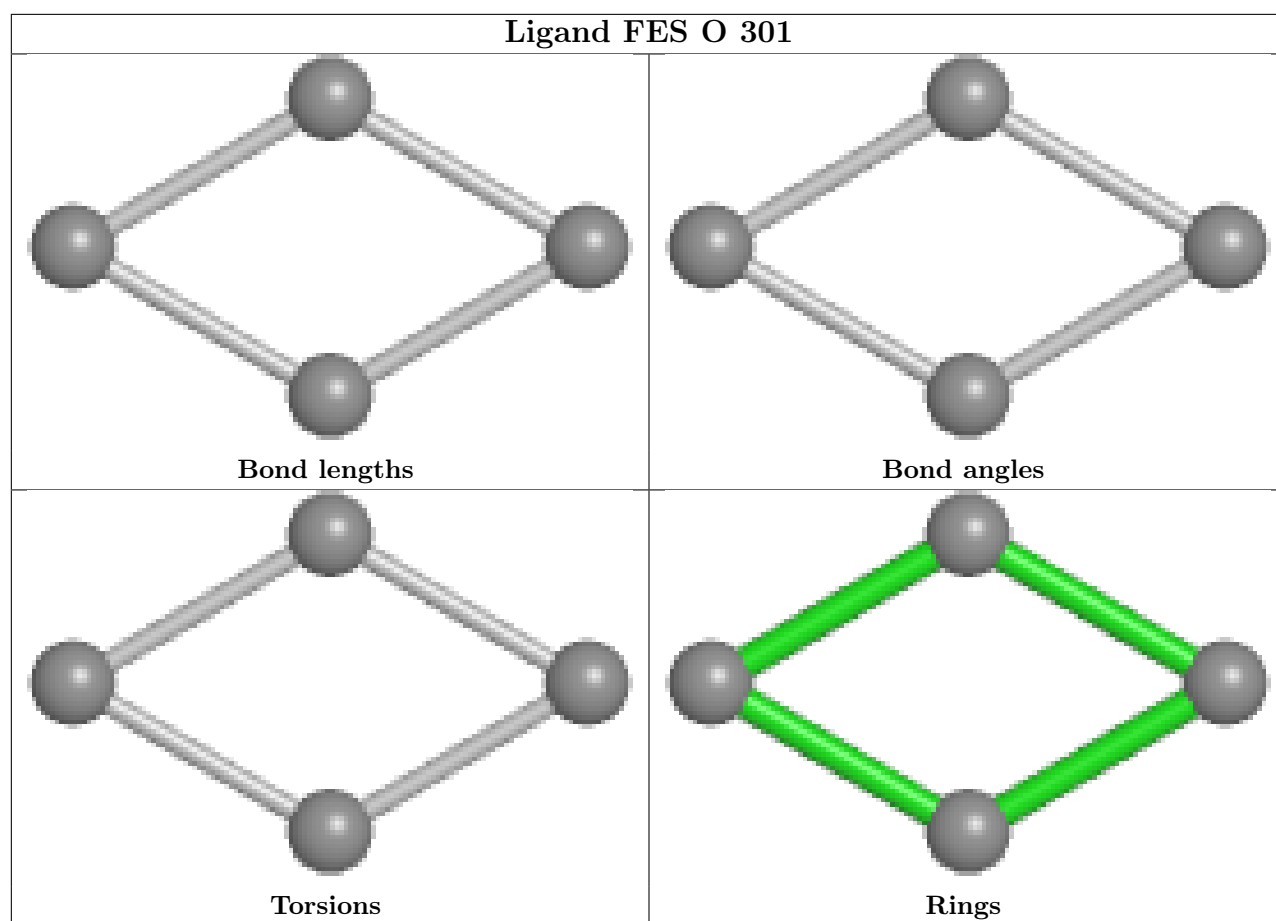


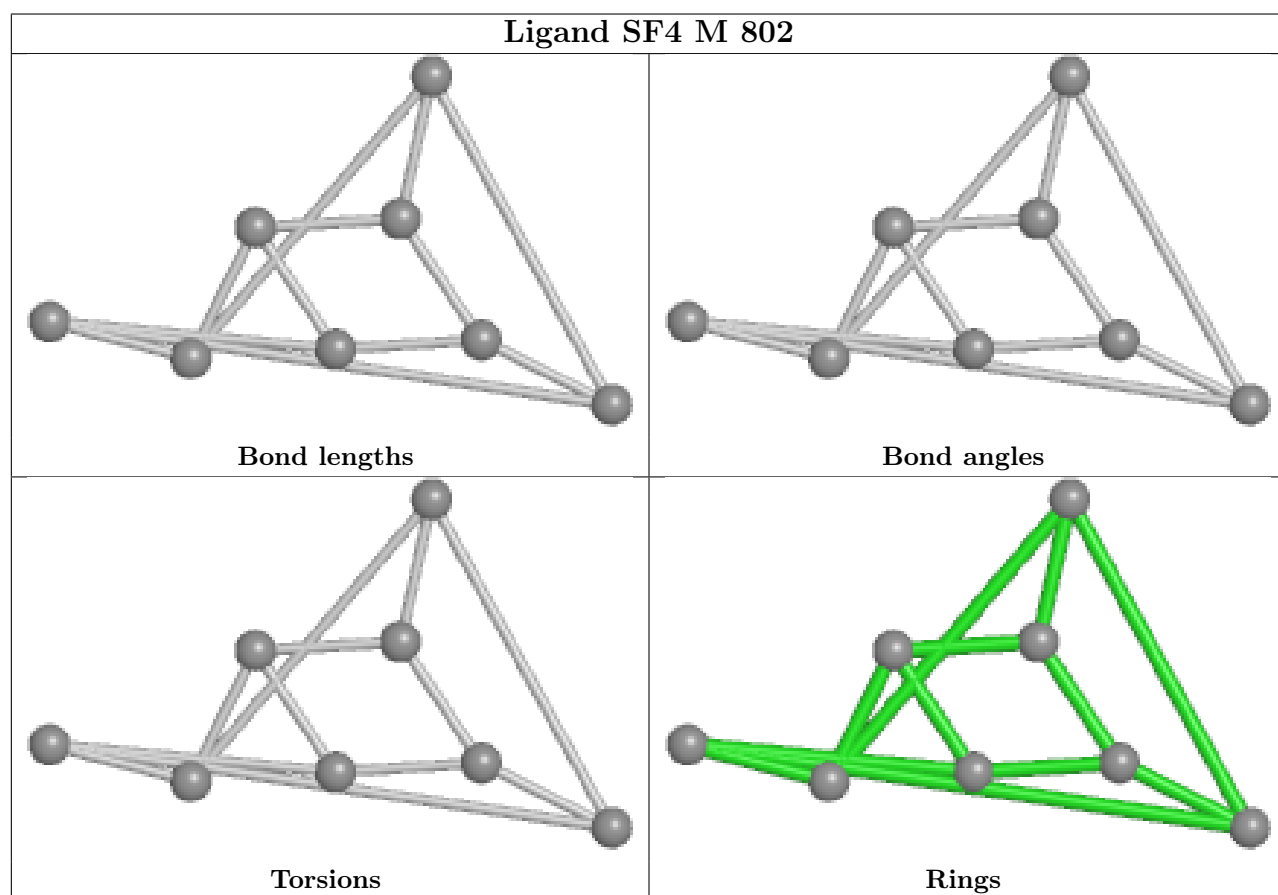
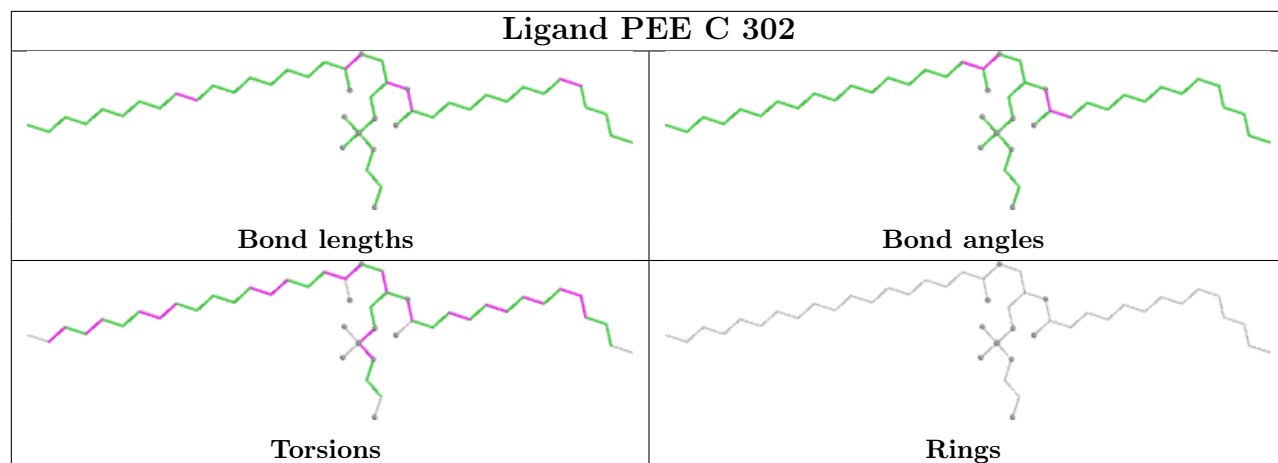
Ligand NAI A 503

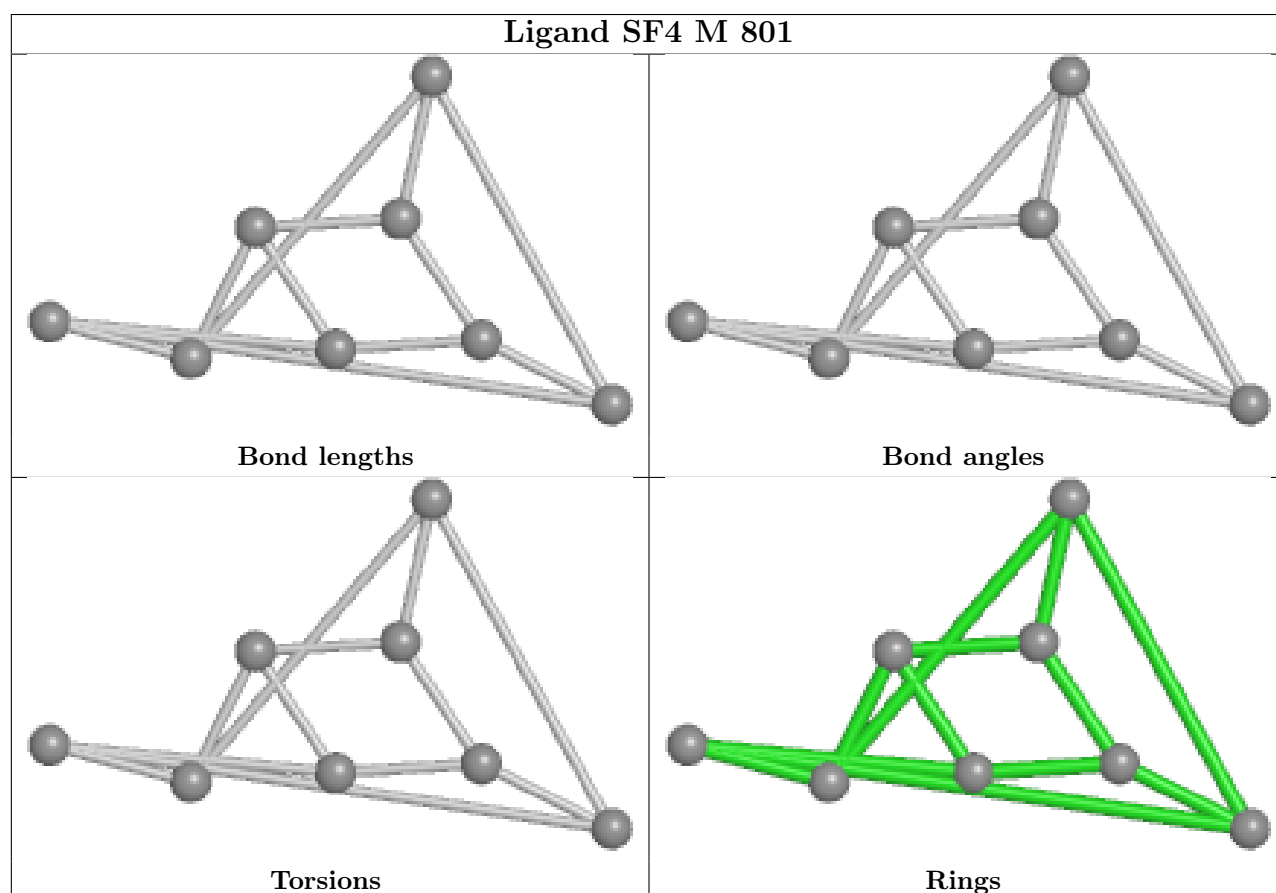
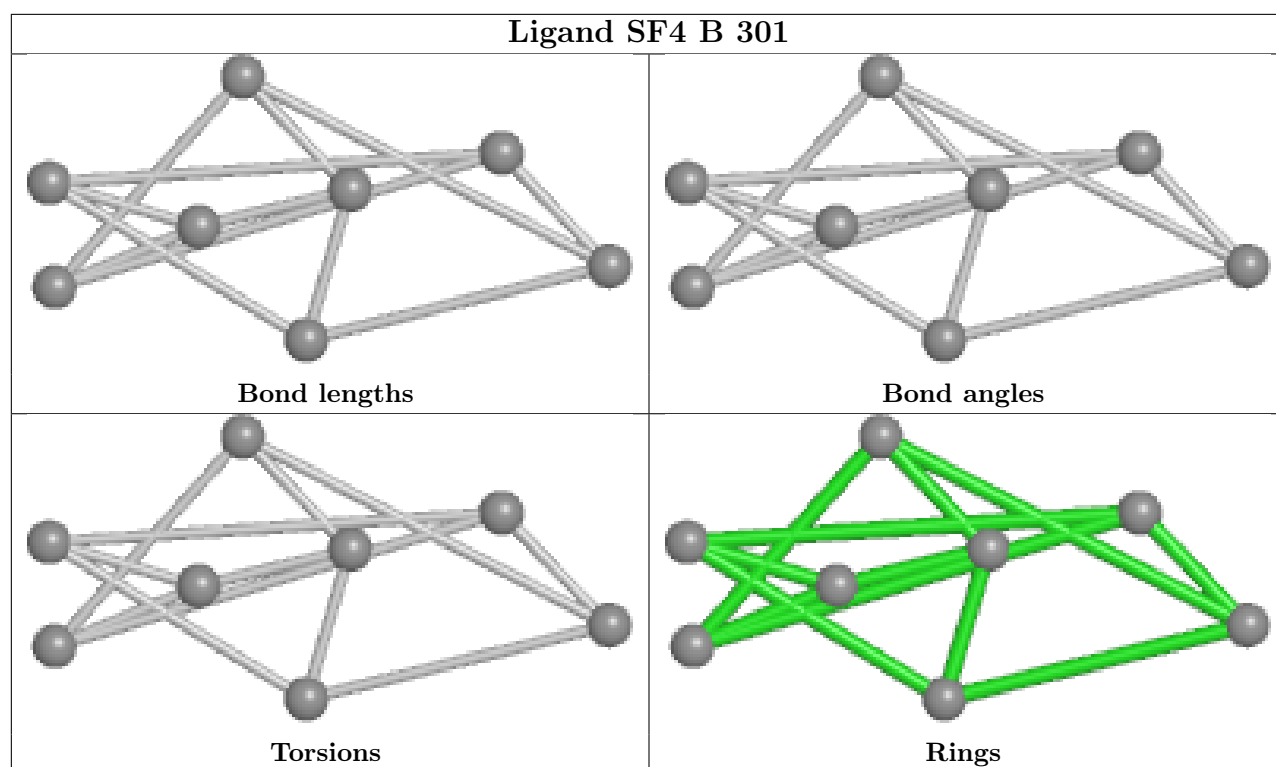


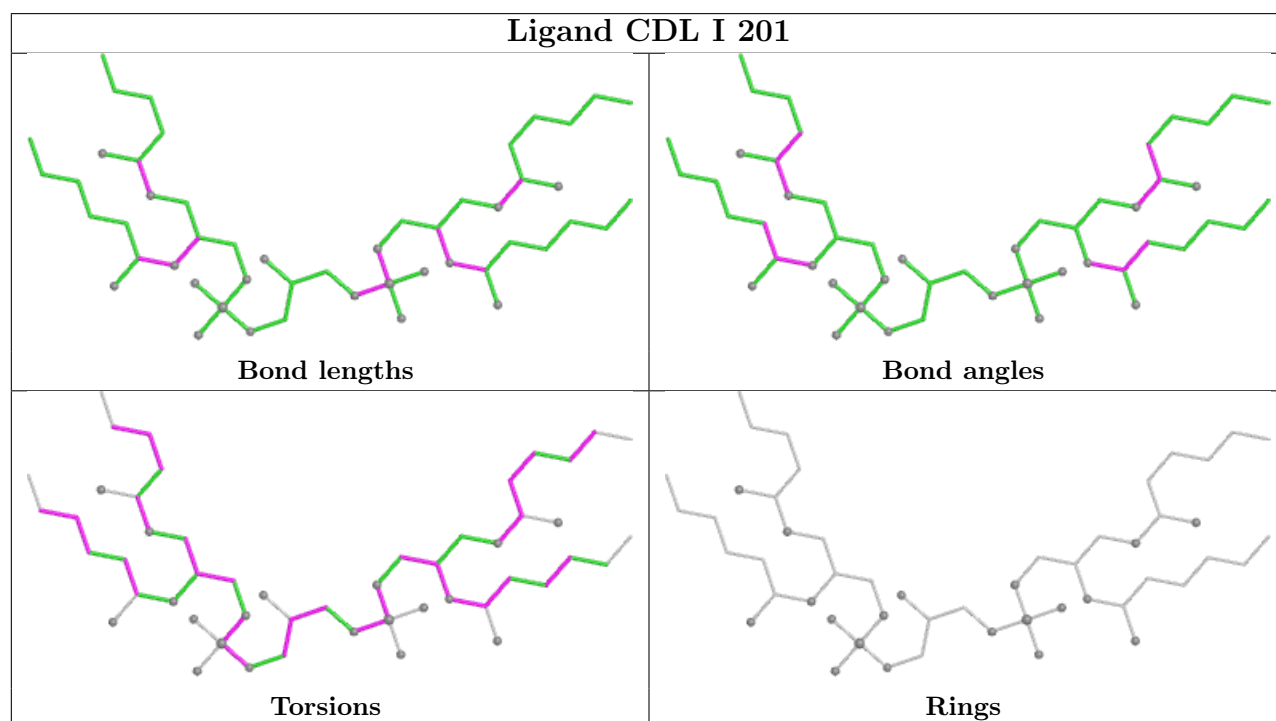
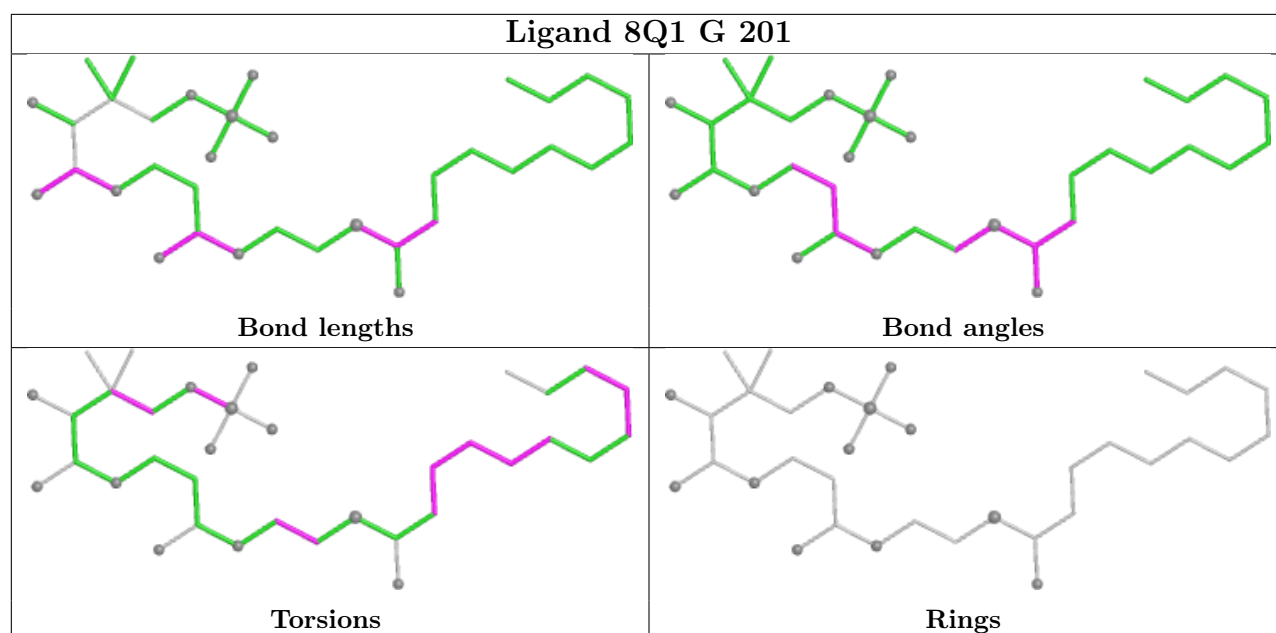
Ligand SF4 A 501

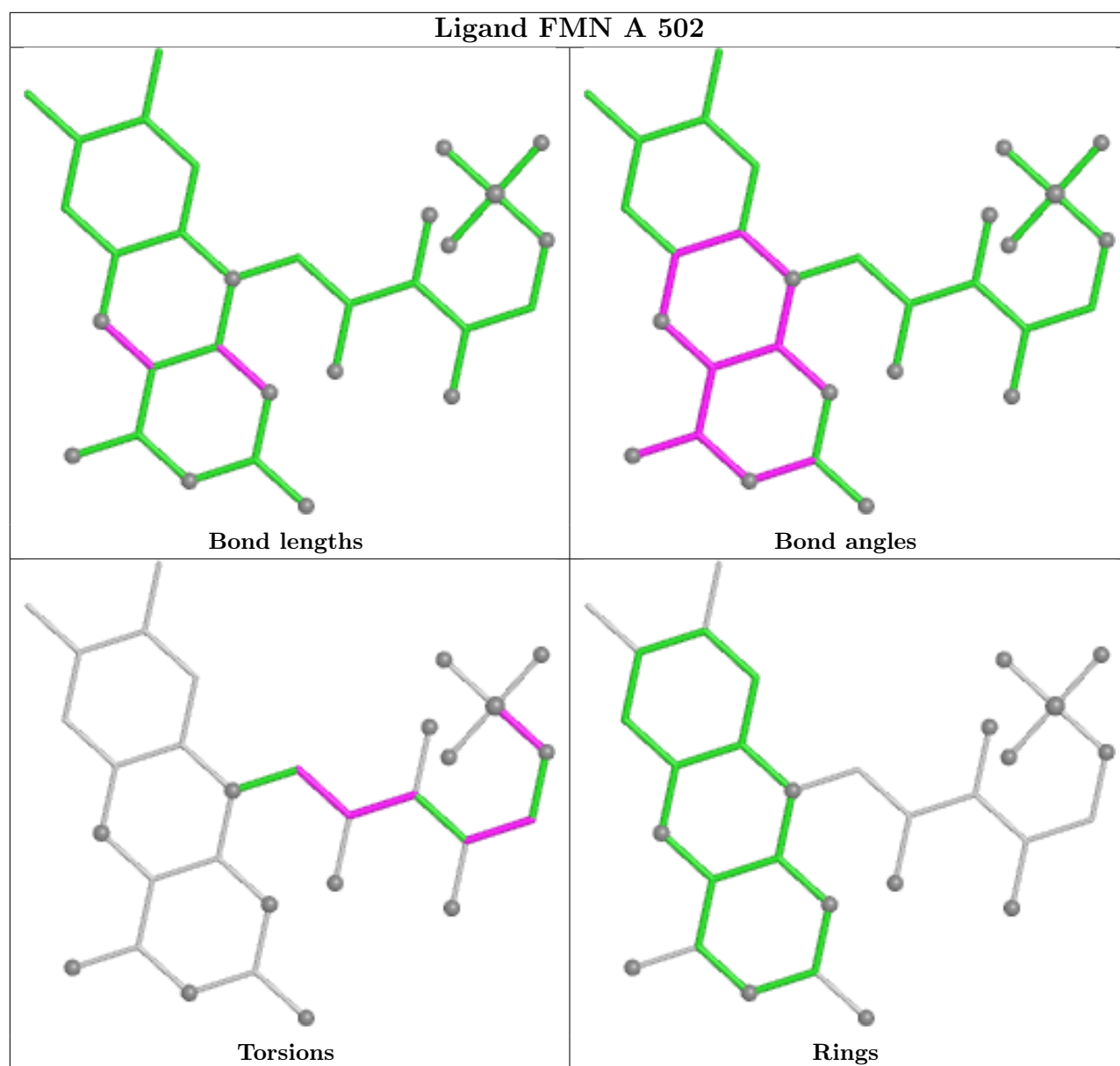


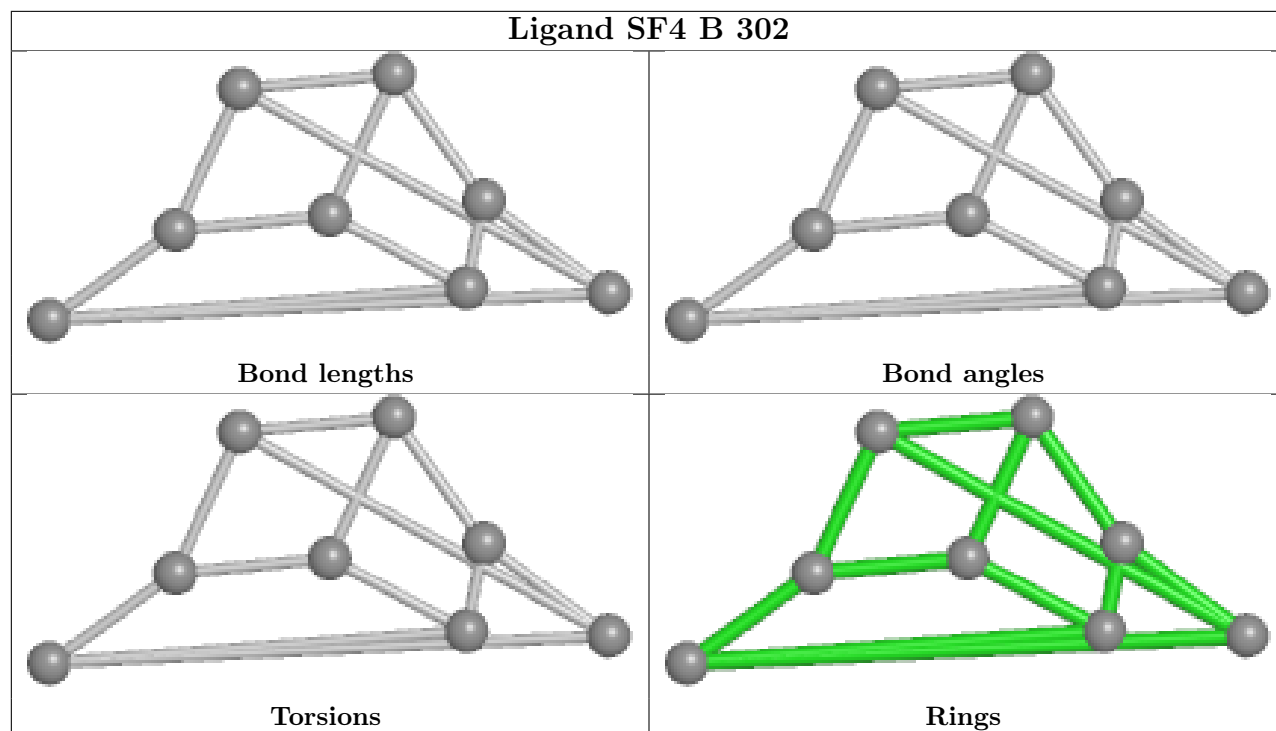












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

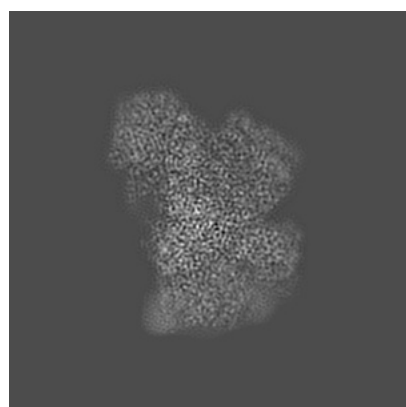
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-32218. These allow visual inspection of the internal detail of the map and identification of artifacts.

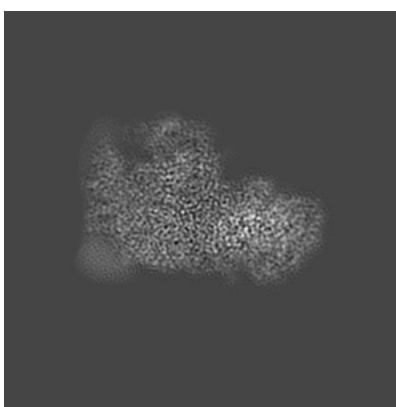
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

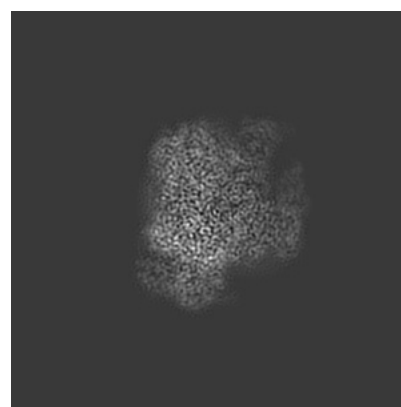
6.1.1 Primary map



X



Y

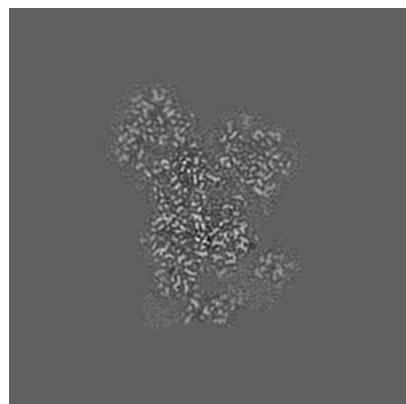


Z

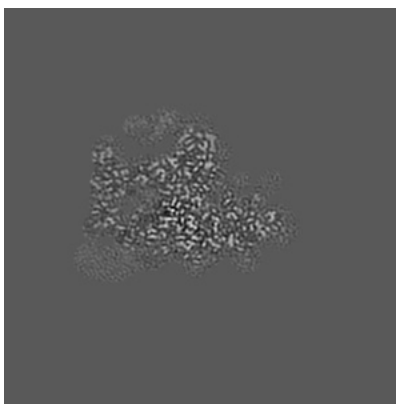
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

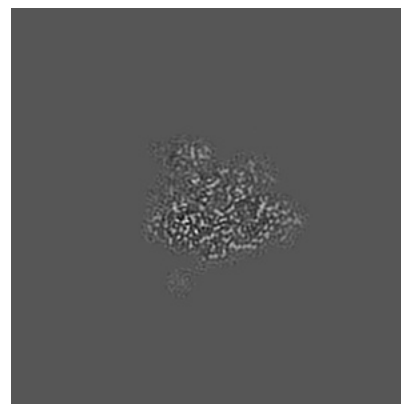
6.2.1 Primary map



X Index: 240



Y Index: 240

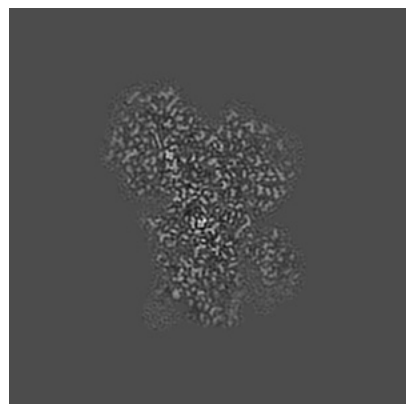


Z Index: 240

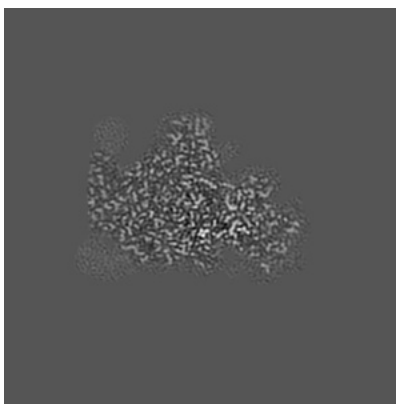
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

6.3.1 Primary map



X Index: 224



Y Index: 223

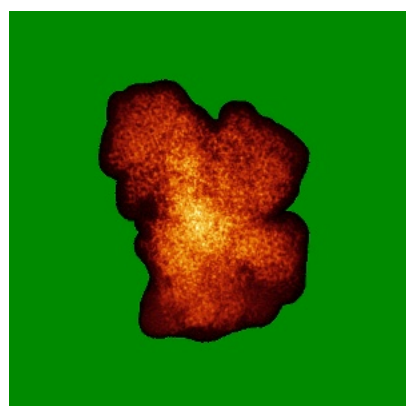


Z Index: 206

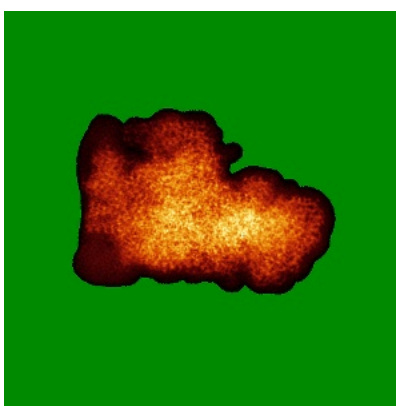
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

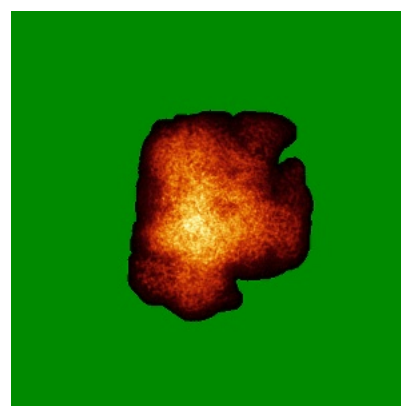
6.4.1 Primary map



X



Y

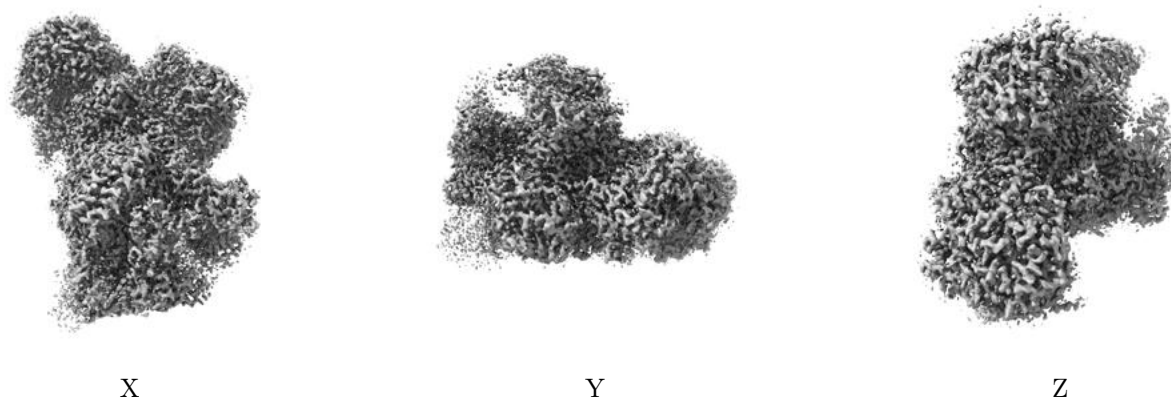


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0119. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

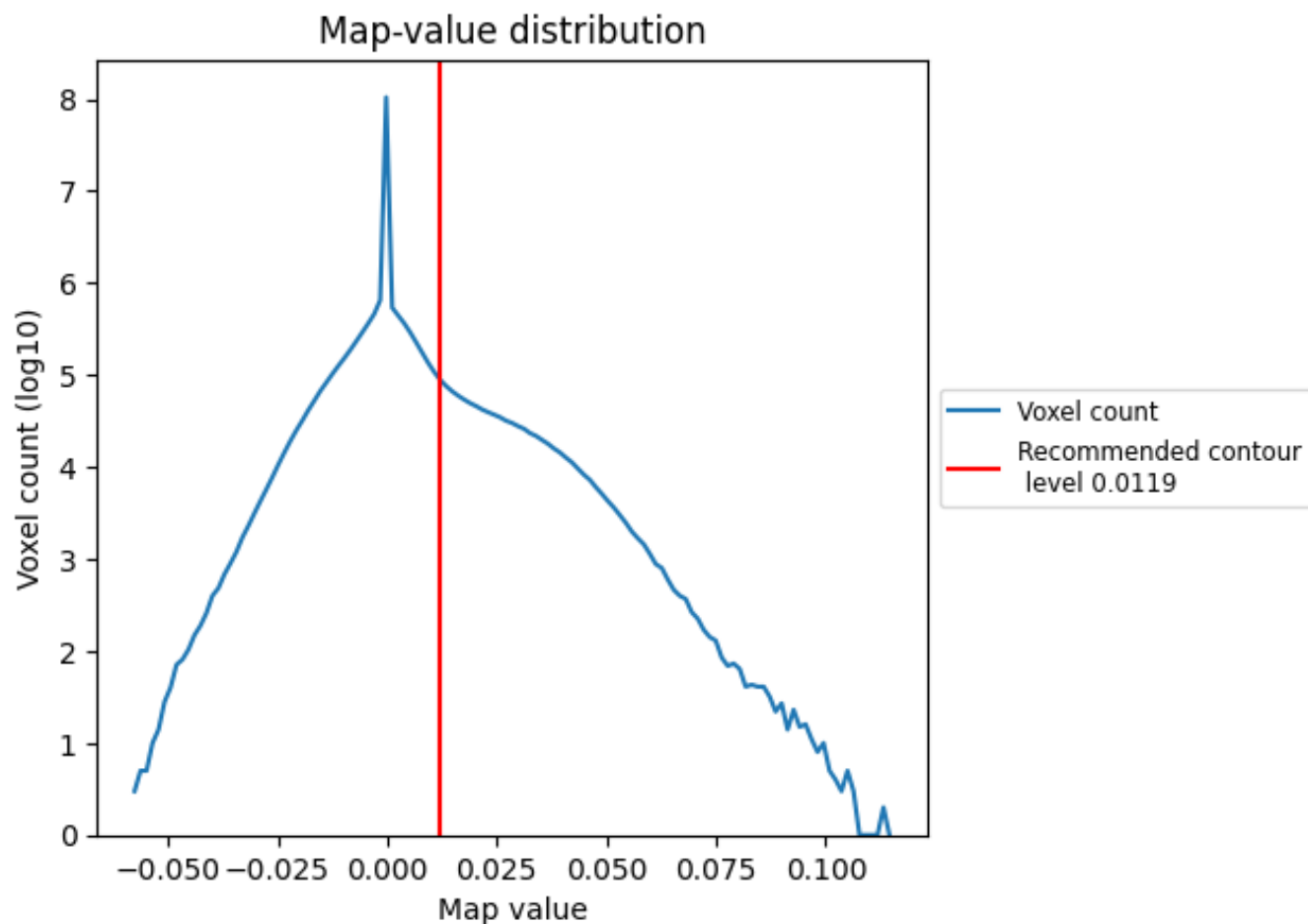
6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

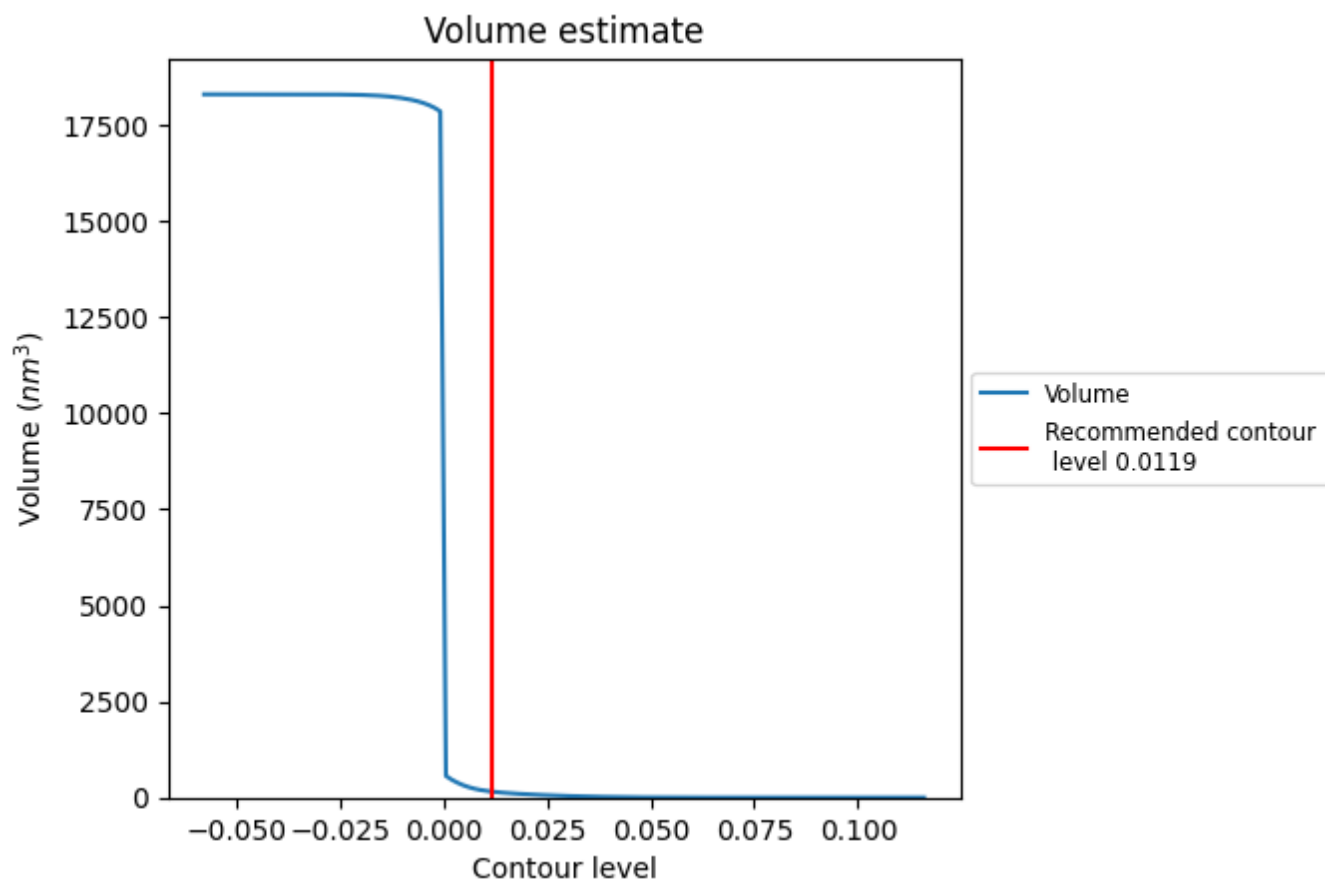
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

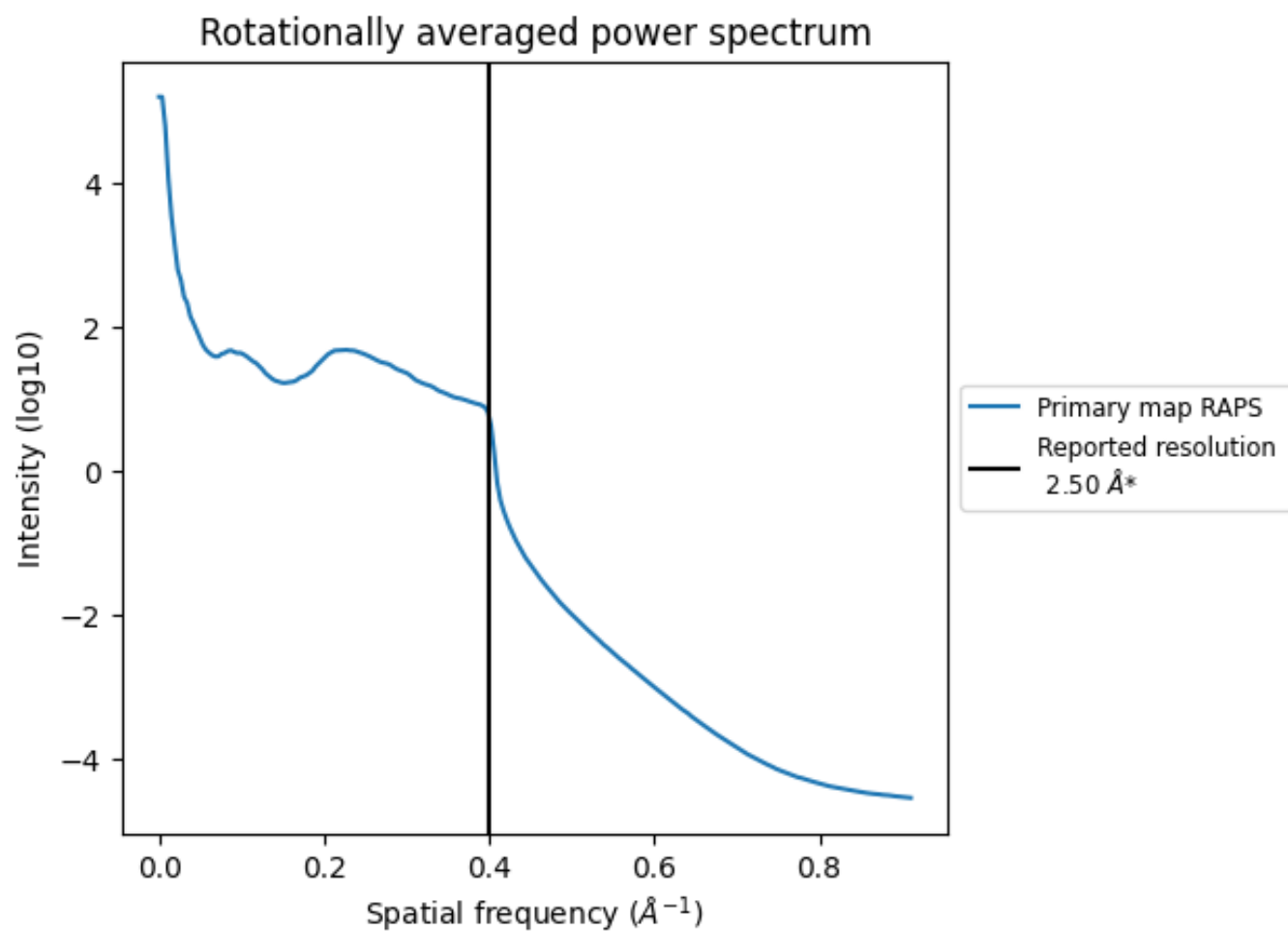
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 153 nm^3 ; this corresponds to an approximate mass of 138 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ



*Reported resolution corresponds to spatial frequency of 0.400 Å⁻¹

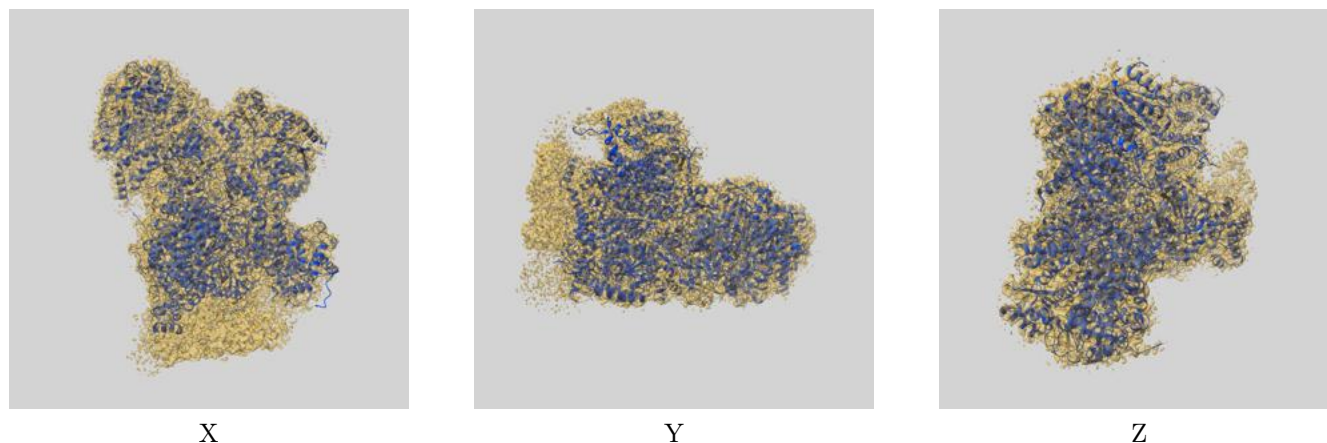
8 Fourier-Shell correlation ⓘ

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

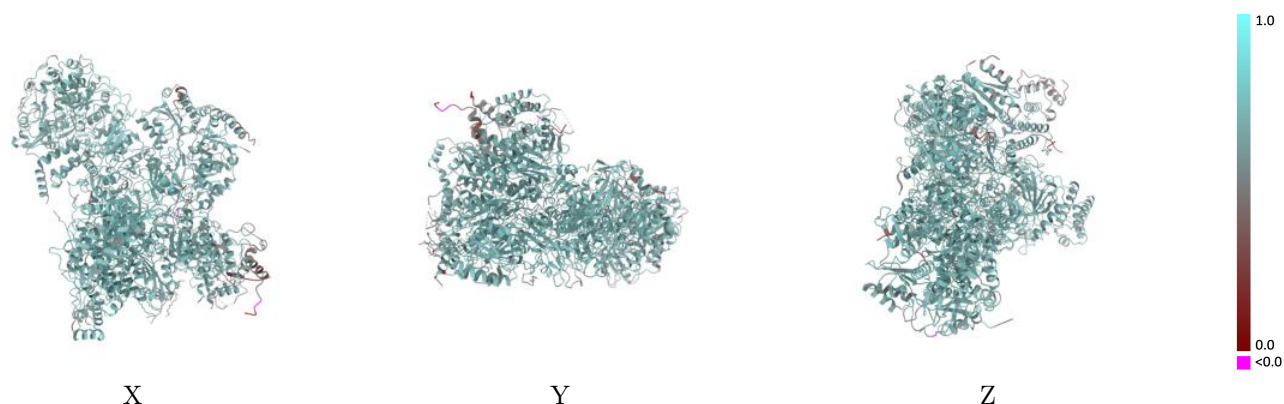
This section contains information regarding the fit between EMDB map EMD-32218 and PDB model 7VZ1. Per-residue inclusion information can be found in section [3](#) on page [14](#).

9.1 Map-model overlay [i](#)



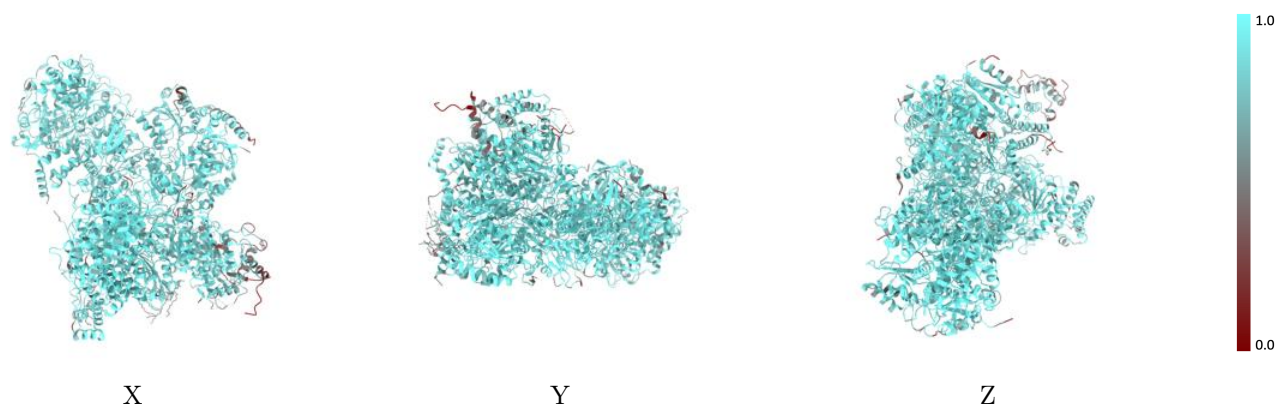
The images above show the 3D surface view of the map at the recommended contour level 0.0119 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



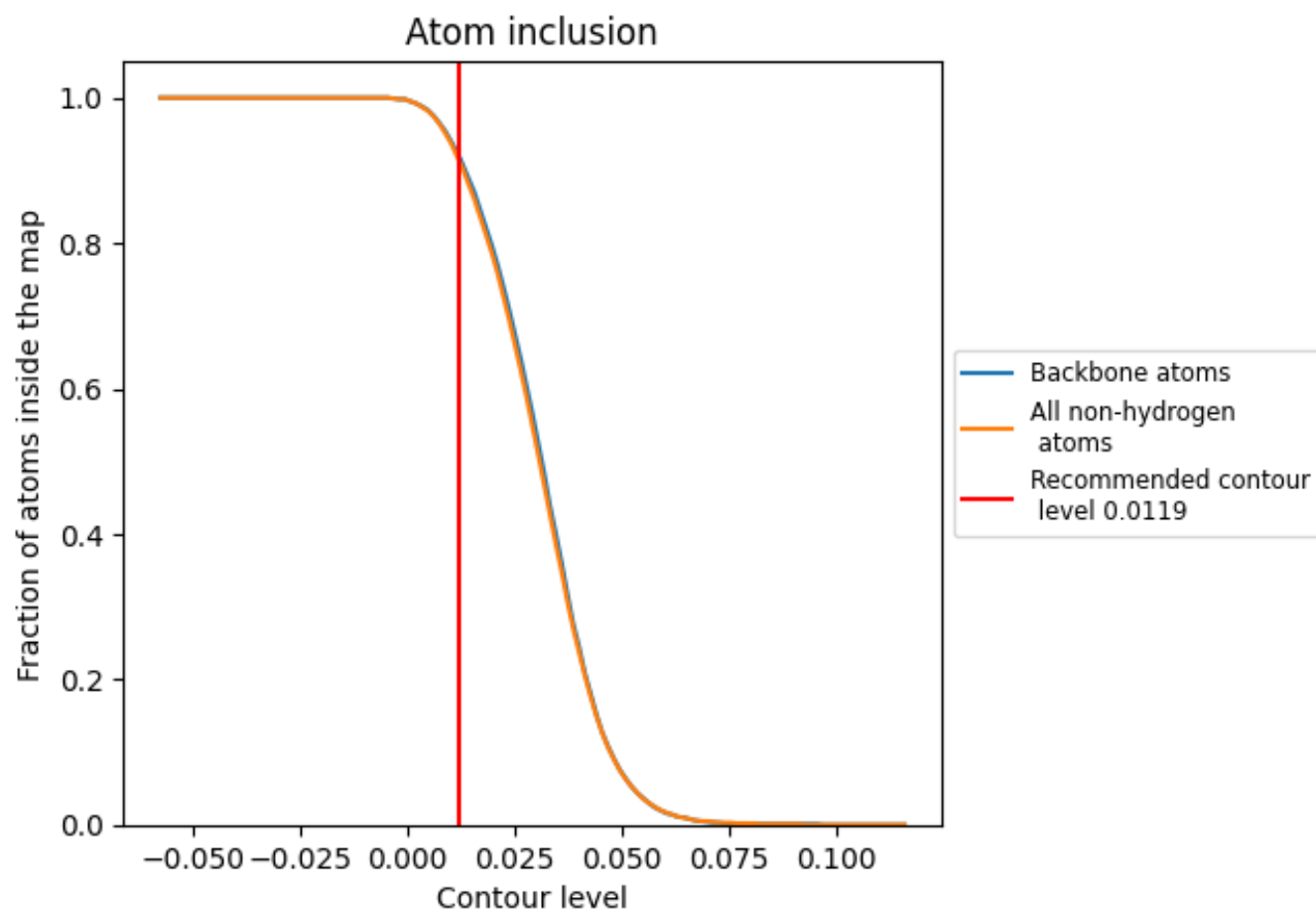
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0119).

9.4 Atom inclusion [i](#)



At the recommended contour level, 92% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.0119) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9150	 0.6650
A	 0.9380	 0.6620
B	 0.9730	 0.7030
C	 0.9200	 0.6760
E	 0.8860	 0.6520
F	 0.8110	 0.6050
G	 0.5710	 0.4760
H	 0.8800	 0.6410
I	 0.8700	 0.6460
J	 0.8900	 0.6510
K	 0.9100	 0.6430
L	 0.9150	 0.6780
M	 0.9390	 0.6800
N	 0.9300	 0.6730
O	 0.8910	 0.6420
P	 0.9700	 0.6980
Q	 0.9710	 0.7000
T	 0.9020	 0.6600
W	 0.8330	 0.6250

