



Full wwPDB EM Validation Report ⓘ

Mar 13, 2026 – 09:58 AM UTC

PDB ID : 8UGF / pdb_00008ugf
EMDB ID : EMD-42223
Title : In-situ complex III, state III
Authors : Zheng, W.; Zhang, K.; Zhu, J.
Deposited on : 2023-10-05
Resolution : 3.60 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:

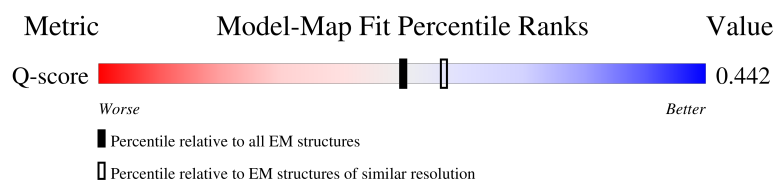
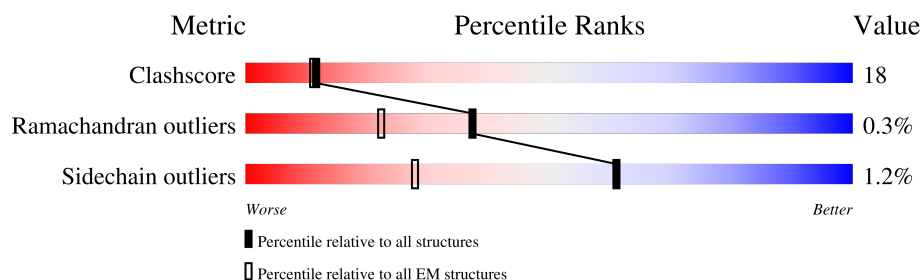
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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) : 2.49

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 3.60 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.



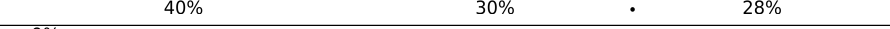
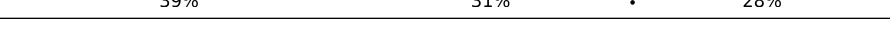
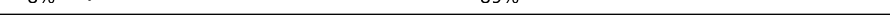
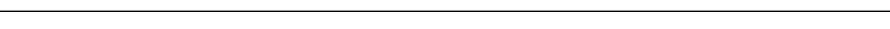
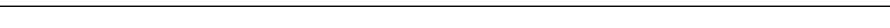
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	12797 (3.10 - 4.10)

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	3A	480	
1	3N	480	
2	3B	453	
2	3O	453	

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Mol	Chain	Length	Quality of chain
3	3C	379	
3	3P	379	
4	3D	325	
4	3Q	325	
5	3E	274	
5	3I	274	
5	3R	274	
5	3V	274	
6	3F	111	
6	3S	111	
7	3G	82	
7	3T	82	
8	3H	91	
8	3U	91	
9	3J	64	
9	3W	64	
10	3X	56	
10	3Y	56	

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
16	FES	3E	301	-	-	X	-

2 Entry composition

There are 17 unique types of molecules in this entry. The entry contains 33551 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 Cytochrome b-c1 complex subunit 1, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	3A	440	Total	C	N	O	S	0	0
			3411	2131	599	662	19		
1	3N	445	Total	C	N	O	S	1	0
			3424	2162	606	637	19		

- Molecule 2 is a protein called Cytochrome b-c1 complex subunit 2, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	3B	418	Total	C	N	O	S	0	0
			3138	1965	555	610	8		
2	3O	417	Total	C	N	O	S	0	0
			3124	1960	554	602	8		

- Molecule 3 is a protein called Cytochrome b.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	3C	379	Total	C	N	O	S	0	0
			3025	2031	471	502	21		
3	3P	379	Total	C	N	O	S	0	0
			3024	2031	471	501	21		

- Molecule 4 is a protein called Cytochrome c1, heme protein, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	3D	237	Total	C	N	O	S	0	0
			1888	1205	325	342	16		
4	3Q	239	Total	C	N	O	S	0	0
			1904	1215	327	346	16		

- Molecule 5 is a protein called Cytochrome b-c1 complex subunit Rieske, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	3E	196	Total	C	N	O	S	0	0
			1518	955	265	291	7		
5	3I	47	Total	C	N	O	S	0	0
			337	210	62	64	1		
5	3R	196	Total	C	N	O	S	0	0
			1518	955	265	291	7		
5	3V	31	Total	C	N	O	S	0	0
			223	137	45	40	1		

- Molecule 6 is a protein called Cytochrome b-c1 complex subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	3F	98	Total	C	N	O	S	0	0
			868	557	152	157	2		
6	3S	98	Total	C	N	O	S	0	0
			868	557	152	157	2		

- Molecule 7 is a protein called Cytochrome b-c1 complex subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	3G	74	Total	C	N	O	S	0	0
			628	411	116	99	2		
7	3T	74	Total	C	N	O	S	0	0
			628	411	116	99	2		

- Molecule 8 is a protein called Cytochrome b-c1 complex subunit 6, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	3H	65	Total	C	N	O	S	0	0
			533	325	97	106	5		
8	3U	65	Total	C	N	O	S	0	0
			533	325	97	106	5		

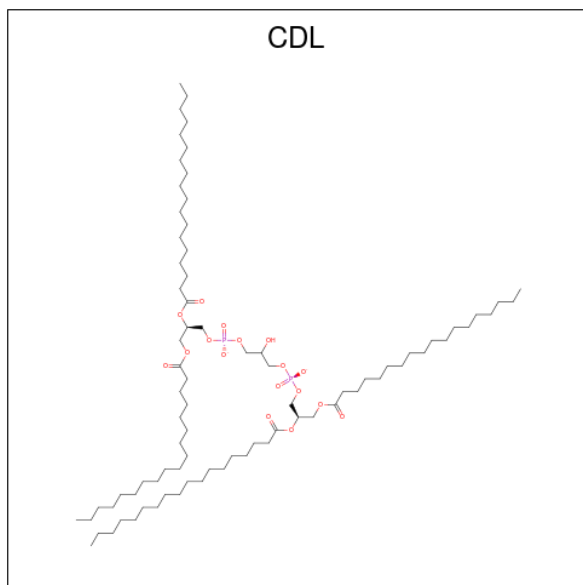
- Molecule 9 is a protein called Ubiquinol-cytochrome c reductase complex 7.2 kDa protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	3J	56	Total	C	N	O	0	0
			464	305	82	77		
9	3W	56	Total	C	N	O	0	0
			464	305	82	77		

- Molecule 10 is a protein called Cytochrome b-c1 complex subunit 10.

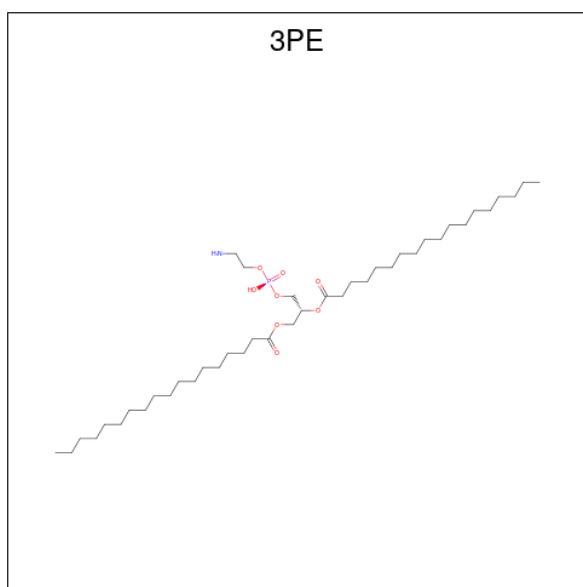
Mol	Chain	Residues	Atoms					AltConf	Trace
10	3X	52	Total	C	N	O	S	0	0
			429	286	75	66	2		
10	3Y	51	Total	C	N	O	S	0	0
			421	281	74	65	1		

- Molecule 11 is CARDIOLIPIN (CCD ID: CDL) (formula: $C_{81}H_{156}O_{17}P_2$).



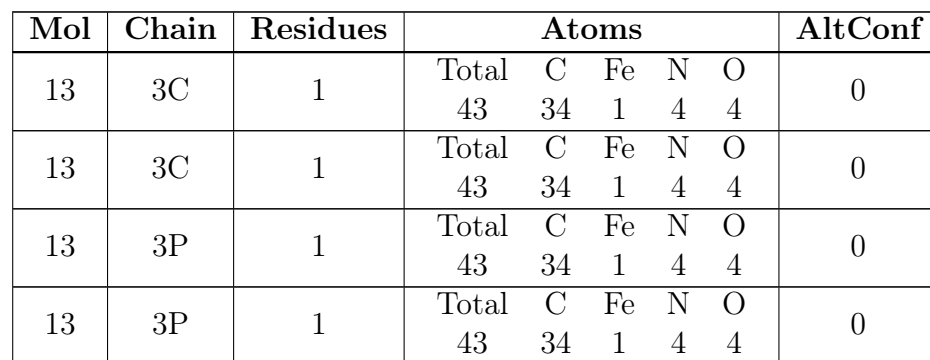
Mol	Chain	Residues	Atoms				AltConf
11	3A	1	Total	C	O	P	0
			58	39	17	2	
11	3C	1	Total	C	O	P	0
			52	33	17	2	
11	3G	1	Total	C	O	P	0
			56	37	17	2	
11	3N	1	Total	C	O	P	0
			43	24	17	2	
11	3T	1	Total	C	O	P	0
			57	38	17	2	
11	3T	1	Total	C	O	P	0
			56	37	17	2	

- Molecule 12 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (CCD ID: 3PE) (formula: $C_{41}H_{82}NO_8P$).



Mol	Chain	Residues	Atoms					AltConf
12	3A	1	Total	C	N	O	P	0
			27	17	1	8	1	
12	3A	1	Total	C	N	O	P	0
			32	22	1	8	1	
12	3C	1	Total	C	N	O	P	0
			35	25	1	8	1	
12	3C	1	Total	C	N	O	P	0
			34	24	1	8	1	
12	3E	1	Total	C	N	O	P	0
			33	23	1	8	1	
12	3G	1	Total	C	N	O	P	0
			29	19	1	8	1	
12	3N	1	Total	C	N	O	P	0
			33	23	1	8	1	
12	3N	1	Total	C	N	O	P	0
			25	15	1	8	1	
12	3P	1	Total	C	N	O	P	0
			33	23	1	8	1	
12	3R	1	Total	C	N	O	P	0
			47	37	1	8	1	
12	3Y	1	Total	C	N	O	P	0
			30	20	1	8	1	

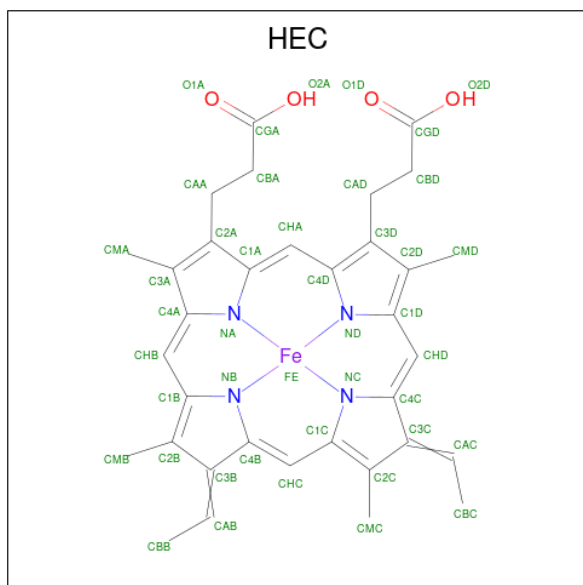
- Molecule 13 is PROTOPORPHYRIN IX CONTAINING FE (CCD ID: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



- U10
-
- Chemical structure of U10, a long-chain polyunsaturated fatty acid derivative. The structure shows a long hydrocarbon chain with multiple double bonds, terminating in a functional group consisting of a cyclohexadiene ring with two methoxy groups and two carbonyl groups.

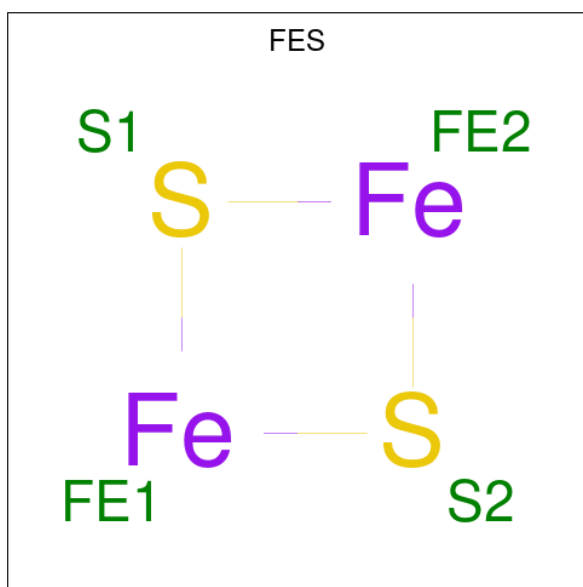
Mol	Chain	Residues	Atoms			AltConf
14	3C	1	Total	C	O	0
			28	24	4	
14	3C	1	Total	C	O	0
			23	19	4	
14	3P	1	Total	C	O	0
			32	28	4	
14	3P	1	Total	C	O	0
			32	28	4	

- Molecule 15 is HEME C (CCD ID: HEC) (formula: $C_{34}H_{34}FeN_4O_4$).



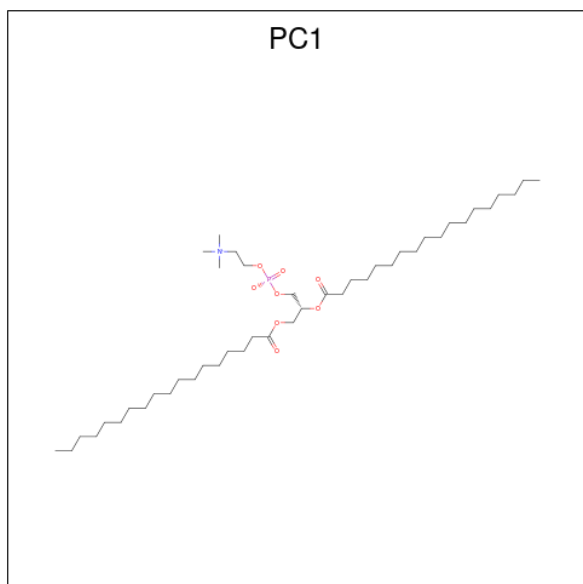
Mol	Chain	Residues	Atoms					AltConf
15	3D	1	Total	C	Fe	N	O	0
			42	34	1	4	3	
15	3Q	1	Total	C	Fe	N	O	0
			43	34	1	4	4	

- Molecule 16 is FE2/S2 (INORGANIC) CLUSTER (CCD ID: FES) (formula: Fe_2S_2).



Mol	Chain	Residues	Atoms			AltConf
16	3E	1	Total	Fe	S	0
			4	2	2	
16	3R	1	Total	Fe	S	0
			4	2	2	

- Molecule 17 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: PC1) (formula: C₄₄H₈₈NO₈P).



Mol	Chain	Residues	Atoms					AltConf
17	3E	1	Total	C	N	O	P	0
			47	37	1	8	1	

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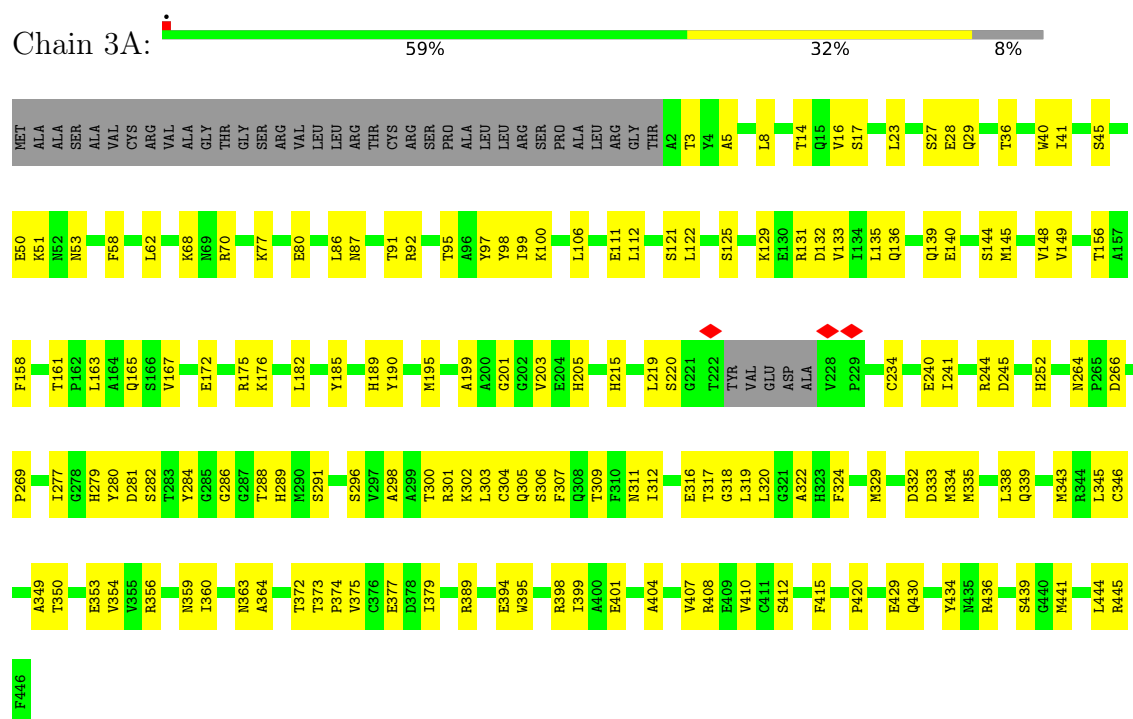
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Mol	Chain	Residues	Atoms					AltConf
17	3R	1	Total	C	N	O	P	0
			45	35	1	8	1	
17	3X	1	Total	C	N	O	P	0
			29	19	1	8	1	

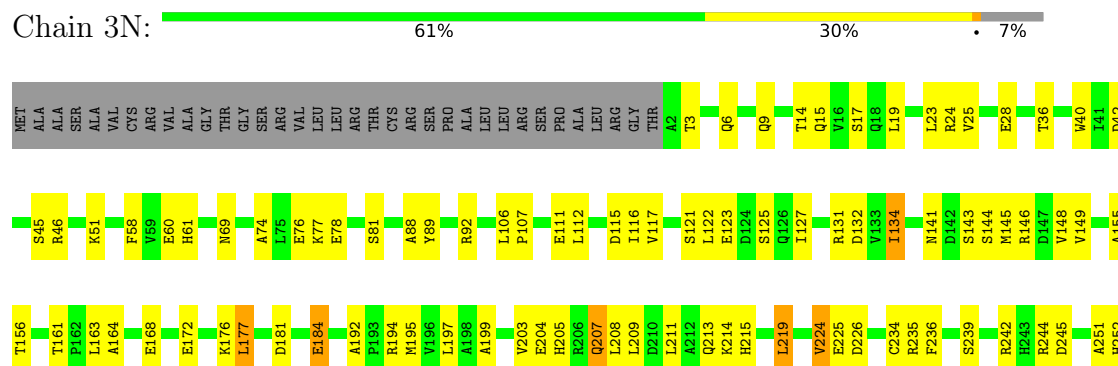
3 Residue-property plots

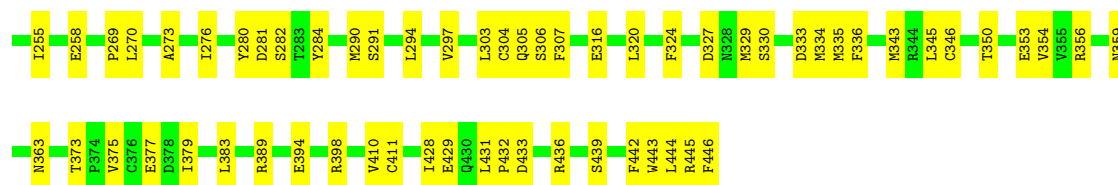
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Cytochrome b-c1 complex subunit 1, mitochondrial



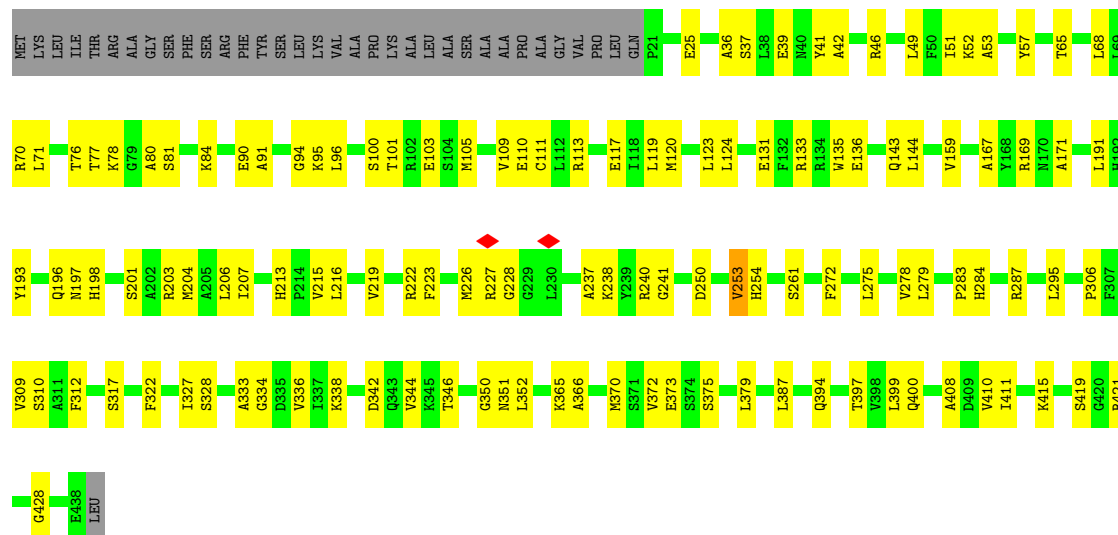
- Molecule 1: Cytochrome b-c1 complex subunit 1, mitochondrial





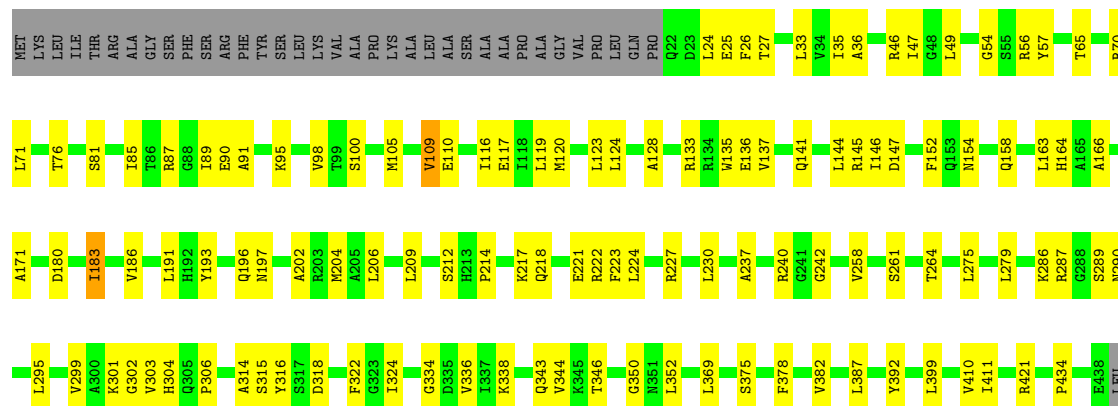
- Molecule 2: Cytochrome b-c1 complex subunit 2, mitochondrial

Chain 3B: 65% 27% 8%



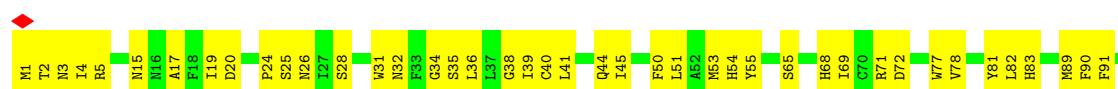
- Molecule 2: Cytochrome b-c1 complex subunit 2, mitochondrial

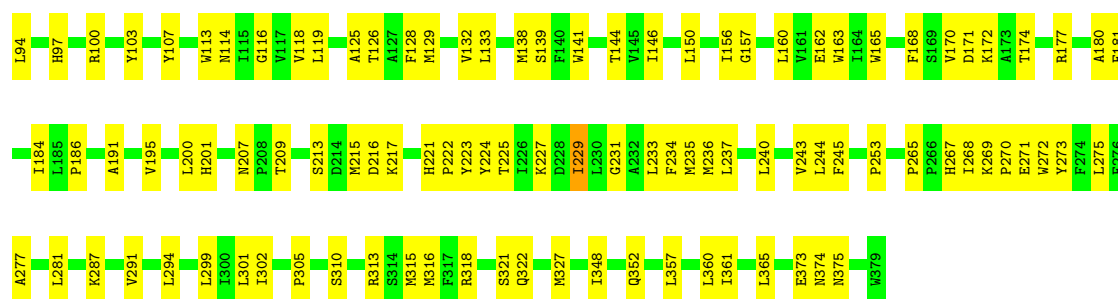
Chain 3O: 66% 25% 8%



- Molecule 3: Cytochrome b

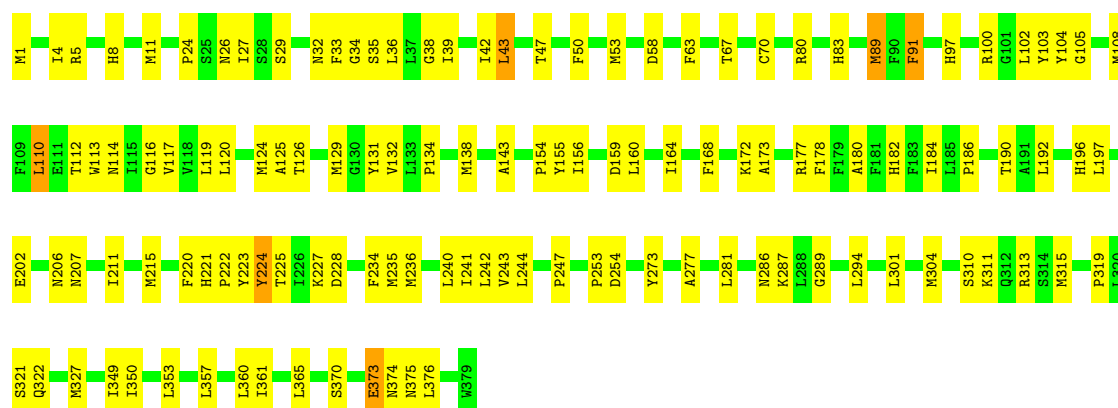
Chain 3C: 62% 37%





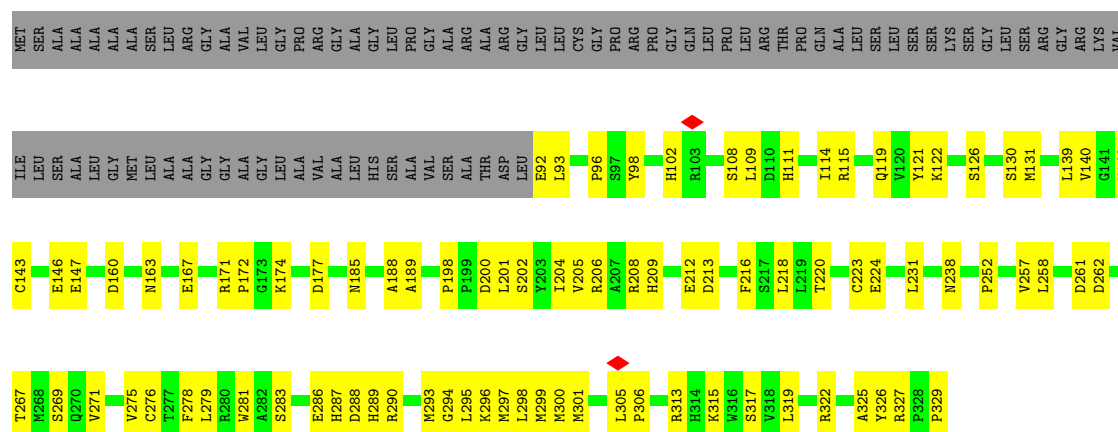
• Molecule 3: Cytochrome b

Chain 3P: 67% 31% .



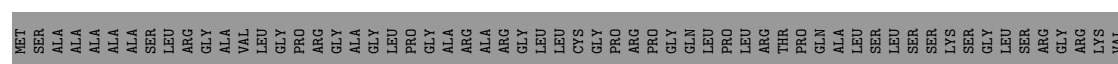
• Molecule 4: Cytochrome c1, heme protein, mitochondrial

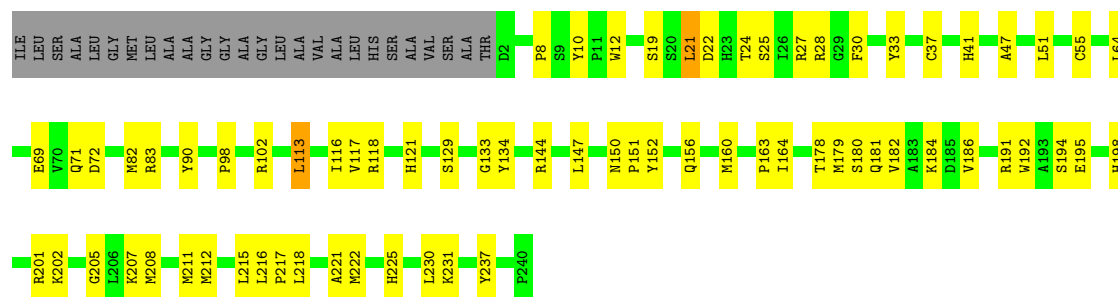
Chain 3D: 46% 27% 27%



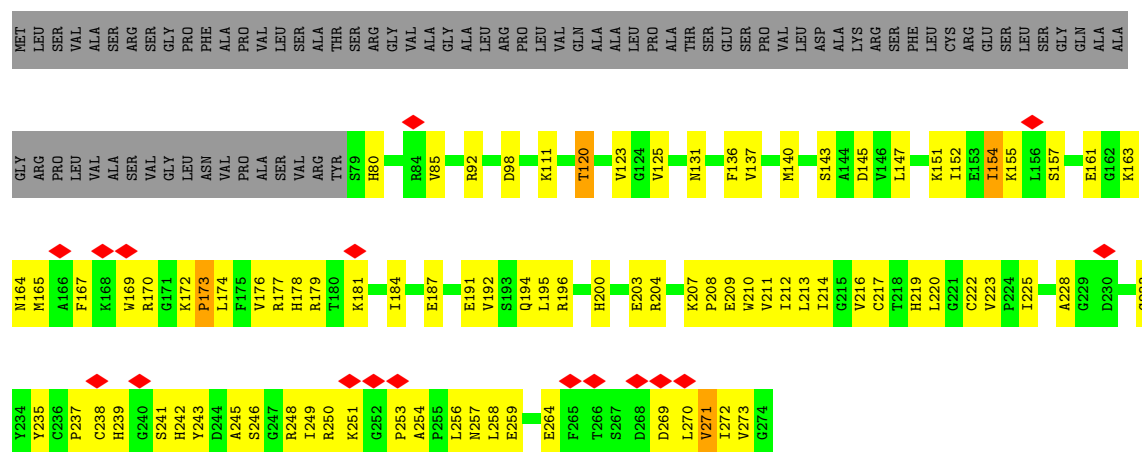
• Molecule 4: Cytochrome c1, heme protein, mitochondrial

Chain 3Q: 51% 22% 26%

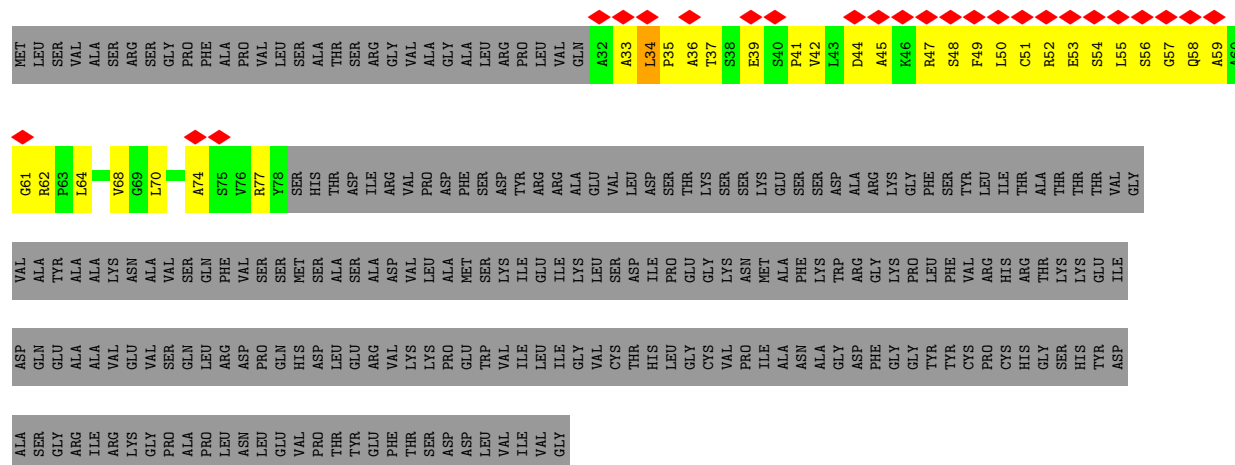




• Molecule 5: Cytochrome b-c1 complex subunit Rieske, mitochondrial

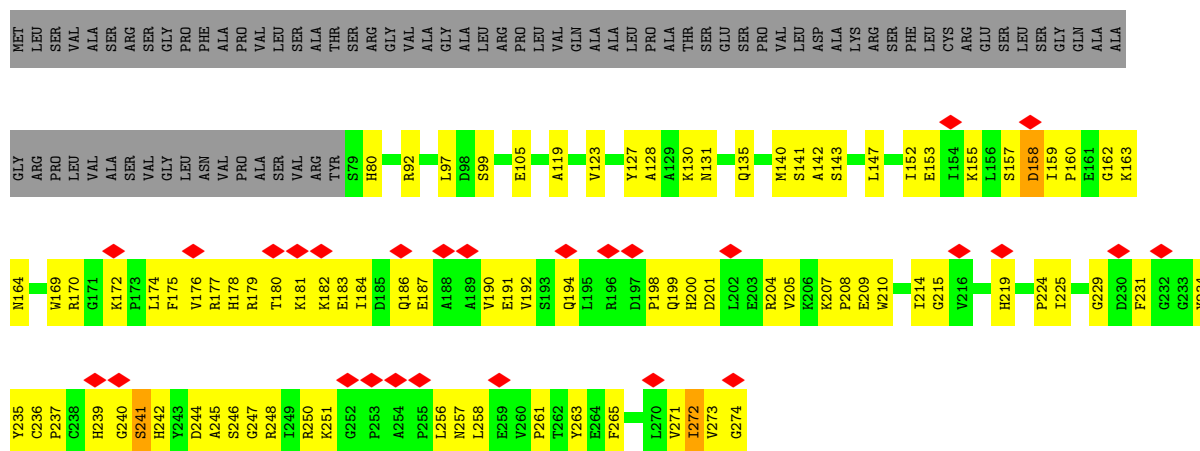


• Molecule 5: Cytochrome b-c1 complex subunit Rieske, mitochondrial



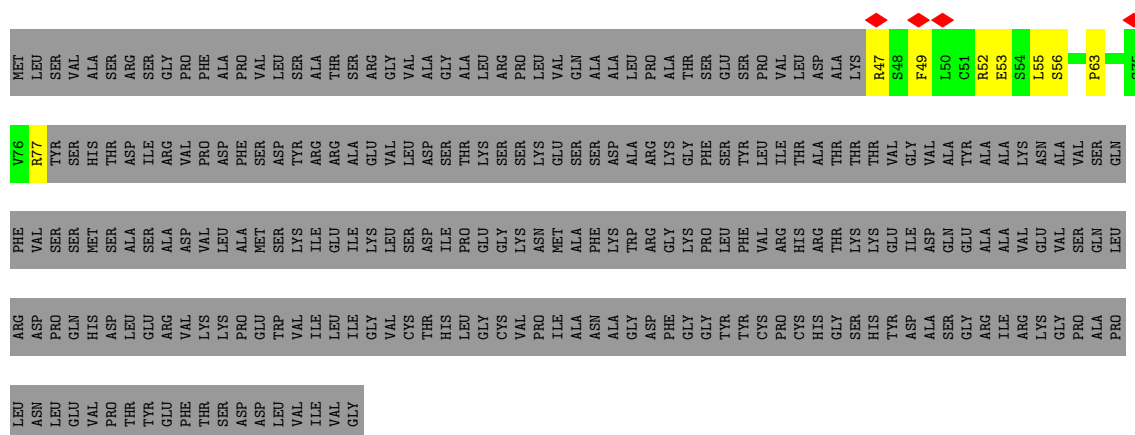
• Molecule 5: Cytochrome b-c1 complex subunit Rieske, mitochondrial





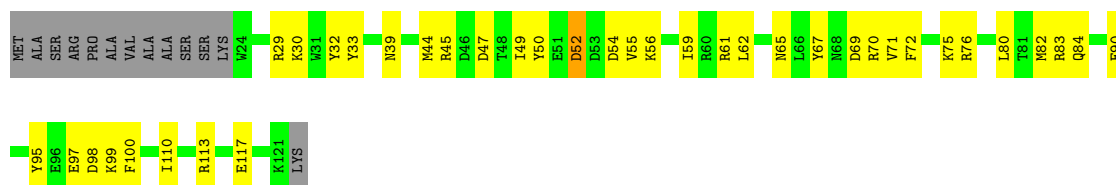
• Molecule 5: Cytochrome b-c1 complex subunit Rieske, mitochondrial

Chain 3V: 8% 89%



• Molecule 6: Cytochrome b-c1 complex subunit 7

Chain 3F: 54% 33% 12%



• Molecule 6: Cytochrome b-c1 complex subunit 7

Chain 3S: 54% 33% 12%



- Molecule 7: Cytochrome b-c1 complex subunit 8

Chain 3G:  51% 39% 10%



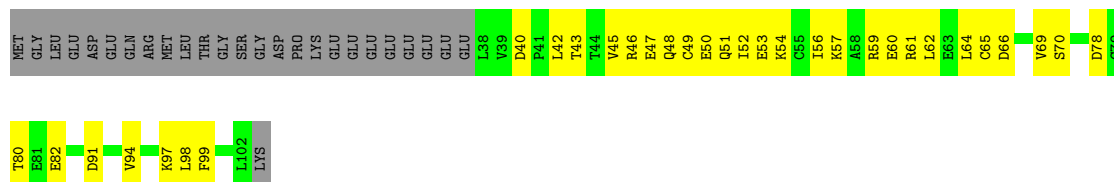
- Molecule 7: Cytochrome b-c1 complex subunit 8

Chain 3T:  55% 35% 10%

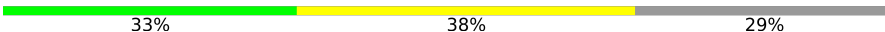


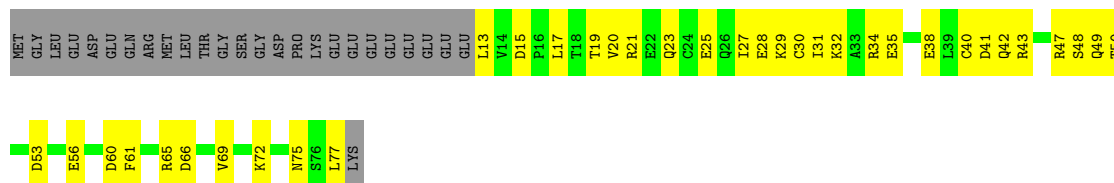
- Molecule 8: Cytochrome b-c1 complex subunit 6, mitochondrial

Chain 3H:  36% 35% 29%



- Molecule 8: Cytochrome b-c1 complex subunit 6, mitochondrial

Chain 3U:  33% 38% 29%



- Molecule 9: Ubiquinol-cytochrome c reductase complex 7.2 kDa protein

Chain 3J:  56% 31% 12%

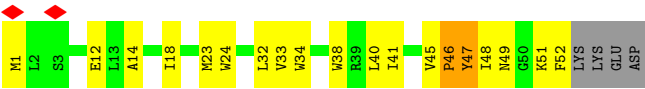


- Molecule 9: Ubiquinol-cytochrome c reductase complex 7.2 kDa protein

Chain 3W:  66% 22% 12%



- Molecule 10: Cytochrome b-c1 complex subunit 10



● Molecule 10: Cytochrome b-c1 complex subunit 10



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	60000	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)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.763	Depositor
Minimum map value	-0.290	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.027	Depositor
Recommended contour level	0.12	Depositor
Map size (Å)	425.6, 425.6, 425.6	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.33, 1.33, 1.33	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, U10, HEC, HEM, 3PE, PC1, FES

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	3A	0.20	0/3481	0.37	0/4722
1	3N	0.20	0/3496	0.37	0/4723
2	3B	0.20	0/3190	0.35	0/4317
2	3O	0.18	0/3175	0.32	0/4292
3	3C	0.24	0/3123	0.39	0/4269
3	3P	0.22	0/3122	0.38	0/4269
4	3D	0.21	0/1946	0.42	0/2641
4	3Q	0.20	0/1962	0.36	0/2663
5	3E	0.40	2/1551 (0.1%)	0.61	3/2098 (0.1%)
5	3I	0.87	2/342 (0.6%)	1.74	4/465 (0.9%)
5	3R	0.43	2/1551 (0.1%)	0.92	6/2098 (0.3%)
5	3V	0.20	0/225	0.47	0/303
6	3F	0.21	0/888	0.45	0/1193
6	3S	0.20	0/888	0.36	0/1193
7	3G	0.21	0/648	0.42	0/874
7	3T	0.21	0/649	0.52	0/878
8	3H	0.23	0/539	0.56	0/724
8	3U	0.21	0/539	0.54	0/724
9	3J	0.22	0/476	0.45	0/641
9	3W	0.22	0/476	0.46	1/641 (0.2%)
10	3X	0.21	0/445	0.56	1/608 (0.2%)
10	3Y	0.21	0/437	0.54	0/598
All	All	0.25	6/33149 (0.0%)	0.48	15/44934 (0.0%)

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	3R	198	PRO	CG-CD	-11.64	1.11	1.50
5	3I	41	PRO	CG-CD	-10.41	1.15	1.50
5	3E	173	PRO	CG-CD	-10.23	1.16	1.50
5	3I	41	PRO	CB-CG	-8.94	1.04	1.49

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	3R	198	PRO	CB-CG	-7.38	1.12	1.49
5	3E	173	PRO	N-CD	6.08	1.56	1.47

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	3I	41	PRO	CB-CG-CD	23.05	179.87	106.10
5	3R	198	PRO	CB-CG-CD	21.68	175.49	106.10
5	3R	198	PRO	N-CD-CG	-20.16	72.96	103.20
5	3I	41	PRO	N-CD-CG	-18.36	75.66	103.20
5	3I	41	PRO	CA-CB-CG	-15.94	74.21	104.50
5	3R	198	PRO	CA-CB-CG	-15.87	74.36	104.50
5	3E	173	PRO	CA-N-CD	-12.17	94.96	112.00
5	3E	173	PRO	N-CD-CG	-11.17	86.44	103.20
5	3I	41	PRO	CA-N-CD	-6.63	102.72	112.00
5	3E	173	PRO	CA-CB-CG	-6.57	92.02	104.50
5	3R	198	PRO	CA-N-CD	-5.77	103.92	112.00
9	3W	44	GLU	CA-CB-CG	5.45	125.00	114.10
5	3R	272	ILE	CA-C-N	-5.41	117.67	122.97
5	3R	272	ILE	C-N-CA	-5.41	117.67	122.97
10	3X	1	MET	CB-CG-SD	5.12	128.04	112.70

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	3A	3411	0	3309	120	0
1	3N	3424	0	3350	121	0
2	3B	3138	0	3116	93	0
2	3O	3124	0	3108	84	0
3	3C	3025	0	3090	137	0
3	3P	3024	0	3090	108	0
4	3D	1888	0	1834	81	0
4	3Q	1904	0	1848	64	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	3E	1518	0	1498	91	0
5	3I	337	0	347	33	0
5	3R	1518	0	1500	89	0
5	3V	223	0	233	12	0
6	3F	868	0	857	37	0
6	3S	868	0	857	31	0
7	3G	628	0	634	30	0
7	3T	628	0	632	32	0
8	3H	533	0	513	26	0
8	3U	533	0	513	32	0
9	3J	464	0	467	24	0
9	3W	464	0	467	15	0
10	3X	429	0	430	16	0
10	3Y	421	0	418	12	0
11	3A	58	0	60	4	0
11	3C	52	0	48	5	0
11	3G	56	0	56	7	0
11	3N	43	0	30	5	0
11	3T	113	0	114	17	0
12	3A	59	0	66	9	0
12	3C	69	0	86	7	0
12	3E	33	0	40	6	0
12	3G	29	0	32	2	0
12	3N	58	0	62	15	0
12	3P	33	0	40	0	0
12	3R	47	0	71	8	0
12	3Y	30	0	34	4	0
13	3C	86	0	60	10	0
13	3P	86	0	60	7	0
14	3C	51	0	54	10	0
14	3P	64	0	78	12	0
15	3D	42	0	32	1	0
15	3Q	43	0	32	3	0
16	3E	4	0	0	4	0
16	3R	4	0	0	1	0
17	3E	47	0	68	7	0
17	3R	45	0	64	5	0
17	3X	29	0	32	4	0
All	All	33551	0	33330	1182	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 18.

All (1182) 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)
9:3J:53:TRP:O	9:3J:57:LYS:HE3	1.42	1.19
9:3J:53:TRP:CE2	9:3J:57:LYS:HG2	1.91	1.05
5:3E:217:CYS:HB3	16:3E:301:FES:S1	1.99	1.02
14:3P:503:U10:H4M3	14:3P:503:U10:H3M3	1.46	0.96
14:3C:503:U10:H4M2	14:3C:503:U10:H3M2	1.49	0.92
5:3E:217:CYS:CB	16:3E:301:FES:S1	2.57	0.89
5:3E:167:PHE:HB2	5:3E:174:LEU:HB3	1.57	0.85
9:3J:53:TRP:O	9:3J:57:LYS:CE	2.24	0.85
2:3B:226:MET:HG3	2:3B:227:ARG:H	1.44	0.82
3:3C:146:ILE:HG13	14:3C:504:U10:H4M2	1.60	0.82
5:3E:219:HIS:CE1	5:3E:239:HIS:ND1	2.48	0.82
2:3B:397:THR:HA	2:3B:400:GLN:HE22	1.45	0.80
3:3P:310:SER:HA	3:3P:374:ASN:HD21	1.47	0.80
9:3J:53:TRP:NE1	9:3J:57:LYS:HG2	1.93	0.79
8:3H:50:GLU:OE1	8:3H:51:GLN:NE2	2.16	0.79
3:3C:53:MET:SD	5:3E:140:MET:HE1	2.23	0.78
5:3E:219:HIS:ND1	5:3E:239:HIS:ND1	2.31	0.78
5:3E:239:HIS:HD2	5:3E:253:PRO:HD2	1.47	0.78
5:3I:47:ARG:O	5:3I:49:PHE:CE2	2.36	0.78
5:3R:181:LYS:HD2	5:3R:184:ILE:HD12	1.65	0.77
11:3G:102:CDL:H532	11:3G:102:CDL:H722	1.66	0.77
3:3C:17:ALA:HA	3:3C:201:HIS:HE1	1.50	0.77
1:3A:131:ARG:HD3	1:3A:175:ARG:HA	1.68	0.76
11:3G:102:CDL:HA31	11:3G:102:CDL:HB22	1.68	0.76
2:3O:124:LEU:HD22	2:3O:224:LEU:HD21	1.68	0.75
3:3P:221:HIS:O	3:3P:225:THR:OG1	2.04	0.75
5:3E:196:ARG:HB2	5:3E:251:LYS:HA	1.67	0.75
3:3P:126:THR:HG21	13:3P:501:HEM:HBB2	1.67	0.74
5:3E:151:LYS:HD2	5:3E:152:ILE:HG13	1.68	0.74
3:3P:8:HIS:HB3	3:3P:11:MET:HB2	1.69	0.74
2:3B:46:ARG:HE	2:3B:110:GLU:HB2	1.51	0.74
1:3A:372:THR:N	2:3B:373:GLU:OE2	2.20	0.74
5:3R:164:ASN:HB2	5:3R:177:ARG:HD2	1.68	0.74
1:3A:304:CYS:HB2	1:3A:334:MET:HE1	1.69	0.74
3:3C:281:LEU:HB2	3:3C:294:LEU:HD21	1.69	0.73
1:3A:279:HIS:CG	5:3I:35:PRO:HB3	2.24	0.73
10:3Y:39:ARG:HH21	10:3Y:52:PHE:HB2	1.52	0.73
5:3E:155:LYS:HB2	5:3E:271:VAL:HG13	1.70	0.73
3:3P:119:LEU:HD11	3:3P:192:LEU:HB3	1.69	0.73
2:3B:124:LEU:HB3	2:3B:223:PHE:HD2	1.52	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3N:184:GLU:OE2	1:3N:184:GLU:N	2.22	0.72
1:3A:286:GLY:H	5:3I:70:LEU:HD23	1.53	0.72
9:3J:11:TYR:HA	9:3J:15:PHE:HB2	1.71	0.72
3:3P:120:LEU:O	3:3P:124:MET:HG3	1.89	0.72
3:3C:35:SER:HB3	14:3C:503:U10:H1M1	1.70	0.72
2:3B:124:LEU:HB3	2:3B:223:PHE:CD2	2.24	0.72
1:3N:60:GLU:OE1	2:3O:287:ARG:NH2	2.22	0.71
6:3S:32:MET:O	6:3S:34:ASP:N	2.23	0.71
5:3E:200:HIS:HB3	5:3E:203:GLU:HG2	1.72	0.71
12:3A:503:3PE:N	3:3C:3:ASN:OD1	2.24	0.71
3:3C:221:HIS:O	3:3C:225:THR:OG1	2.06	0.71
2:3B:36:ALA:HB3	2:3B:207:ILE:HG13	1.73	0.71
3:3C:229:ILE:HG23	17:3E:303:PC1:H3A1	1.73	0.71
4:3D:223:CYS:SG	4:3D:224:GLU:N	2.64	0.71
6:3F:90:GLU:OE1	6:3F:90:GLU:N	2.22	0.71
1:3A:339:GLN:O	1:3A:343:MET:HG2	1.91	0.70
5:3E:164:ASN:ND2	5:3E:164:ASN:O	2.23	0.70
2:3B:350:GLY:HA2	2:3B:411:ILE:HD11	1.73	0.70
1:3N:335:MET:HE3	1:3N:335:MET:HA	1.72	0.70
3:3C:38:GLY:HA3	14:3C:503:U10:H13	1.73	0.70
10:3X:38:TRP:HA	17:3X:101:PC1:H32	1.73	0.70
1:3N:14:THR:HG21	1:3N:389:ARG:HB3	1.71	0.70
9:3W:10:TYR:HA	9:3W:14:PHE:HB2	1.74	0.70
2:3O:334:GLY:HA2	2:3O:434:PRO:HD3	1.74	0.70
3:3P:224:TYR:O	3:3P:228:ASP:N	2.20	0.70
4:3Q:41:HIS:HE1	15:3Q:501:HEC:NA	1.87	0.69
2:3B:101:THR:HG23	2:3B:103:GLU:H	1.58	0.69
2:3B:95:LYS:O	2:3B:109:VAL:HA	1.93	0.69
1:3A:445:ARG:HD3	12:3A:503:3PE:H231	1.75	0.69
5:3R:177:ARG:HG2	5:3R:179:ARG:HG3	1.75	0.69
3:3C:25:SER:OG	3:3C:216:ASP:OD2	2.10	0.68
5:3I:47:ARG:O	5:3I:49:PHE:CD2	2.45	0.68
3:3P:155:TYR:OH	12:3Y:101:3PE:N	2.24	0.68
10:3X:33:VAL:HG23	10:3X:38:TRP:HB3	1.75	0.68
4:3Q:69:GLU:HB3	4:3Q:82:MET:HE2	1.75	0.68
10:3X:14:ALA:O	10:3X:18:ILE:HG12	1.93	0.68
9:3J:17:ARG:HB2	9:3J:20:THR:HG23	1.75	0.68
4:3Q:8:PRO:HG3	8:3U:66:ASP:HB3	1.76	0.68
2:3O:76:THR:HG23	2:3O:81:SER:HA	1.75	0.67
5:3E:178:HIS:ND1	5:3E:209:GLU:O	2.25	0.67
4:3D:296:LYS:NZ	12:3E:302:3PE:O12	2.28	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3N:141:ASN:ND2	1:3N:168:GLU:OE2	2.27	0.67
9:3W:18:SER:HB2	10:3X:23:MET:SD	2.35	0.67
2:3O:128:ALA:HA	2:3O:227:ARG:HH22	1.58	0.67
1:3A:364:ALA:HB2	5:3I:33:ALA:HB3	1.77	0.67
5:3R:199:GLN:O	5:3R:248:ARG:NH1	2.28	0.66
4:3D:317:SER:O	7:3G:25:GLN:NE2	2.28	0.66
4:3Q:118:ARG:NH1	4:3Q:195:GLU:OE1	2.27	0.66
5:3R:169:TRP:HD1	5:3R:174:LEU:HD23	1.60	0.66
3:3P:70:CYS:SG	3:3P:80:ARG:NH1	2.68	0.66
1:3A:106:LEU:HD22	1:3A:203:VAL:HG12	1.76	0.66
4:3D:163:ASN:HD21	4:3D:167:GLU:HB2	1.61	0.66
1:3N:235:ARG:HE	5:3R:92:ARG:HH22	1.43	0.66
12:3N:501:3PE:H352	3:3P:5:ARG:HG3	1.78	0.66
3:3C:82:LEU:HD12	3:3C:243:VAL:HG21	1.77	0.66
6:3S:43:VAL:O	6:3S:47:ILE:HD12	1.95	0.66
7:3G:5:GLU:OE1	7:3G:8:HIS:NE2	2.28	0.66
3:3C:34:GLY:HA3	13:3C:502:HEM:HBA2	1.78	0.66
2:3O:46:ARG:HG3	2:3O:110:GLU:HB3	1.76	0.66
4:3D:171:ARG:NH2	4:3D:177:ASP:OD2	2.30	0.65
17:3R:303:PC1:H152	9:3W:17:THR:HG22	1.78	0.65
5:3E:225:ILE:HD13	5:3E:228:ALA:H	1.59	0.65
5:3R:162:GLY:N	5:3R:178:HIS:O	2.30	0.65
2:3B:39:GLU:OE2	2:3B:113:ARG:NH2	2.29	0.65
3:3C:233:LEU:HD21	4:3D:305:LEU:HD12	1.77	0.65
1:3N:291:SER:N	2:3O:90:GLU:OE1	2.29	0.65
6:3S:34:ASP:HA	6:3S:37:ILE:HD13	1.77	0.65
10:3Y:14:ALA:O	10:3Y:18:ILE:HG12	1.96	0.65
2:3B:287:ARG:HG2	5:3I:53:GLU:HB3	1.78	0.65
3:3P:50:PHE:HA	3:3P:53:MET:HG3	1.78	0.65
1:3N:19:LEU:HD23	1:3N:19:LEU:H	1.62	0.65
2:3B:37:SER:HB3	2:3B:216:LEU:HD12	1.78	0.64
3:3C:114:ASN:HD22	3:3C:302:ILE:HD11	1.62	0.64
3:3C:116:GLY:HA2	3:3C:119:LEU:HD12	1.79	0.64
1:3N:433:ASP:OD2	3:3P:223:TYR:OH	2.14	0.64
1:3N:444:LEU:HD13	12:3N:503:3PE:H122	1.78	0.64
5:3R:153:GLU:HG2	5:3R:169:TRP:HB3	1.80	0.64
5:3R:219:HIS:O	5:3R:219:HIS:ND1	2.30	0.64
8:3U:42:GLN:OE1	8:3U:42:GLN:N	2.29	0.64
1:3A:301:ARG:HD2	1:3A:303:LEU:HD23	1.80	0.64
8:3U:31:ILE:O	8:3U:35:GLU:HG2	1.98	0.64
1:3N:106:LEU:HD22	1:3N:203:VAL:HG12	1.80	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3P:234:PHE:HZ	11:3T:101:CDL:H562	1.63	0.64
5:3R:175:PHE:CE2	5:3R:215:GLY:HA2	2.34	0.63
5:3R:170:ARG:O	5:3R:172:LYS:NZ	2.29	0.63
8:3U:19:THR:O	8:3U:23:GLN:NE2	2.32	0.63
3:3P:223:TYR:O	3:3P:225:THR:N	2.31	0.63
3:3P:102:LEU:HD21	3:3P:304:MET:HG3	1.81	0.63
3:3C:373:GLU:OE2	6:3F:32:TYR:OH	2.16	0.63
5:3R:159:ILE:HD12	5:3R:160:PRO:HD2	1.80	0.63
1:3A:311:ASN:OD1	1:3A:320:LEU:HD12	1.98	0.63
5:3E:167:PHE:HB3	5:3E:169:TRP:CD1	2.33	0.63
8:3H:49:CYS:O	8:3H:52:ILE:HG22	1.99	0.62
11:3N:502:CDL:OB4	12:3N:503:3PE:N	2.31	0.62
2:3B:400:GLN:OE1	2:3B:400:GLN:N	2.31	0.62
3:3C:119:LEU:HD22	13:3C:502:HEM:HBB2	1.80	0.62
7:3T:37:VAL:HG21	11:3T:101:CDL:H311	1.81	0.62
6:3F:59:ILE:HA	6:3F:62:LEU:HD12	1.81	0.62
5:3R:153:GLU:OE1	5:3R:273:VAL:HG13	2.00	0.62
7:3T:40:ARG:NH1	11:3T:101:CDL:OA3	2.33	0.62
2:3B:117:GLU:HA	2:3B:120:MET:HE2	1.80	0.62
3:3P:370:SER:O	3:3P:374:ASN:ND2	2.32	0.62
1:3A:444:LEU:HD11	12:3A:502:3PE:H12	1.81	0.62
3:3C:237:LEU:HD13	4:3D:301:MET:HG2	1.81	0.62
1:3A:176:LYS:HE3	1:3A:176:LYS:HA	1.82	0.61
3:3P:33:PHE:HA	3:3P:36:LEU:HB2	1.80	0.61
5:3E:237:PRO:HB2	4:3Q:144:ARG:HD3	1.82	0.61
1:3N:107:PRO:HA	1:3N:211:LEU:HD11	1.82	0.61
3:3P:1:MET:HE3	3:3P:1:MET:HA	1.82	0.61
4:3D:111:HIS:HD2	9:3J:52:LEU:HA	1.65	0.61
3:3P:34:GLY:HA3	13:3P:502:HEM:HBA2	1.81	0.61
6:3F:76:ARG:O	6:3F:80:LEU:HD22	1.99	0.61
1:3N:280:TYR:HB3	1:3N:307:PHE:CE1	2.36	0.61
5:3R:153:GLU:OE1	5:3R:274:GLY:N	2.31	0.61
4:3D:313:ARG:HG3	7:3G:28:PHE:HE1	1.66	0.61
9:3J:20:THR:HG22	10:3Y:23:MET:HE1	1.82	0.61
1:3N:143:SER:O	5:3V:47:ARG:NH1	2.34	0.61
1:3N:270:LEU:HD13	1:3N:320:LEU:HD22	1.81	0.61
3:3P:47:THR:OG1	3:3P:83:HIS:ND1	2.32	0.61
12:3A:503:3PE:H122	3:3C:4:ILE:HG12	1.82	0.60
2:3O:209:LEU:HD11	2:3O:378:PHE:HD2	1.65	0.60
3:3P:53:MET:HE1	5:3R:140:MET:HG3	1.83	0.60
1:3A:28:GLU:OE1	1:3A:389:ARG:NH1	2.33	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3A:298:ALA:HB1	1:3A:304:CYS:HB3	1.81	0.60
1:3N:235:ARG:HH21	5:3R:92:ARG:HH12	1.49	0.60
2:3O:240:ARG:O	2:3O:421:ARG:NH1	2.34	0.60
12:3N:503:3PE:H11	17:3R:303:PC1:H11	1.82	0.60
2:3O:133:ARG:HB2	2:3O:136:GLU:HG3	1.83	0.60
8:3U:60:ASP:OD1	8:3U:61:PHE:N	2.34	0.60
5:3E:219:HIS:CG	5:3E:219:HIS:O	2.55	0.60
3:3P:24:PRO:O	3:3P:224:TYR:OH	2.15	0.60
3:3P:104:TYR:O	3:3P:206:ASN:ND2	2.34	0.60
3:3P:322:GLN:OE1	7:3T:47:ARG:NH2	2.34	0.60
8:3U:38:GLU:HA	8:3U:41:ASP:OD2	2.02	0.60
2:3O:35:ILE:HD13	2:3O:206:LEU:HB3	1.84	0.60
1:3N:42:ASP:HB3	1:3N:194:ARG:HB3	1.84	0.60
5:3E:173:PRO:HD2	5:3E:173:PRO:O	2.01	0.60
2:3B:222:ARG:HG2	2:3B:223:PHE:CD1	2.36	0.59
3:3C:116:GLY:C	13:3C:502:HEM:HBC2	2.27	0.59
2:3O:304:HIS:HA	5:3V:52:ARG:HH22	1.66	0.59
11:3A:501:CDL:H141	11:3A:501:CDL:H542	1.84	0.59
3:3C:125:ALA:HB2	14:3C:504:U10:H13	1.83	0.59
1:3N:350:THR:HA	10:3X:12:GLU:OE1	2.03	0.59
4:3Q:21:LEU:H	4:3Q:21:LEU:HD12	1.67	0.59
1:3N:244:ARG:NH2	1:3N:429:GLU:OE1	2.36	0.59
10:3Y:8:PRO:O	10:3Y:11:ARG:HG2	2.01	0.59
1:3A:301:ARG:HH21	3:3C:2:THR:HG22	1.68	0.59
3:3C:51:LEU:HD13	13:3C:501:HEM:HBD1	1.85	0.59
8:3H:45:VAL:HG12	8:3H:94:VAL:HG22	1.85	0.59
1:3N:276:ILE:HG21	1:3N:345:LEU:HD21	1.84	0.59
2:3O:145:ARG:HD2	2:3O:146:ILE:HD12	1.84	0.59
3:3P:361:ILE:HA	3:3P:365:LEU:HB2	1.85	0.59
4:3Q:82:MET:HE3	4:3Q:83:ARG:N	2.17	0.59
4:3D:171:ARG:NH1	4:3D:172:PRO:O	2.35	0.59
3:3P:236:MET:HB3	4:3Q:212:MET:HE1	1.84	0.59
1:3N:24:ARG:NH2	1:3N:383:LEU:O	2.36	0.58
3:3C:5:ARG:NH1	3:3C:20:ASP:OD2	2.35	0.58
5:3E:131:ASN:ND2	12:3E:302:3PE:O11	2.31	0.58
5:3E:173:PRO:HD3	5:3E:216:VAL:HG13	1.85	0.58
3:3P:126:THR:HG23	3:3P:182:HIS:CD2	2.37	0.58
3:3C:207:ASN:ND2	3:3C:209:THR:OG1	2.36	0.58
5:3V:53:GLU:O	5:3V:56:SER:OG	2.18	0.58
12:3A:502:3PE:H351	17:3E:303:PC1:H341	1.85	0.58
6:3F:30:LYS:HD2	6:3F:95:TYR:HD2	1.67	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:3F:33:TYR:OH	6:3F:98:ASP:OD2	2.20	0.58
6:3F:80:LEU:O	6:3F:84:GLN:N	2.37	0.58
1:3N:209:LEU:HG	1:3N:213:GLN:HE21	1.68	0.58
4:3Q:211:MET:HE1	5:3R:127:TYR:CE2	2.38	0.58
3:3C:227:LYS:HE3	11:3G:102:CDL:HB61	1.84	0.58
4:3D:185:ASN:OD1	4:3D:188:ALA:N	2.34	0.58
5:3E:194:GLN:NE2	5:3E:250:ARG:HH11	2.01	0.58
3:3C:103:TYR:OH	3:3C:322:GLN:NE2	2.35	0.58
4:3D:300:MET:HG2	12:3E:302:3PE:H331	1.86	0.58
5:3E:264:GLU:N	5:3E:272:ILE:O	2.36	0.58
6:3F:45:ARG:HE	6:3F:100:PHE:HE2	1.50	0.58
1:3N:235:ARG:HE	5:3R:92:ARG:NH2	2.01	0.58
10:3X:45:VAL:O	10:3X:49:ASN:ND2	2.36	0.58
2:3O:299:VAL:HG11	2:3O:336:VAL:HG13	1.85	0.58
3:3P:38:GLY:HA3	14:3P:503:U10:H122	1.84	0.58
5:3E:172:LYS:HD2	5:3E:214:ILE:HD13	1.86	0.58
1:3N:304:CYS:HB3	1:3N:334:MET:HE1	1.84	0.58
4:3Q:47:ALA:HA	4:3Q:90:TYR:HA	1.85	0.58
5:3R:160:PRO:HG2	5:3R:163:LYS:HD3	1.84	0.58
2:3B:41:TYR:HA	2:3B:113:ARG:HH22	1.69	0.58
3:3C:172:LYS:H	3:3C:172:LYS:HD3	1.69	0.58
3:3C:269:LYS:HB2	3:3C:275:LEU:HD21	1.85	0.58
6:3F:33:TYR:HE1	6:3F:39:ASN:HB3	1.68	0.58
3:3P:132:VAL:HG11	3:3P:178:PHE:HD2	1.69	0.58
2:3B:394:GLN:O	2:3B:397:THR:OG1	2.20	0.57
12:3N:501:3PE:O12	12:3N:501:3PE:N	2.31	0.57
8:3H:78:ASP:HB3	8:3H:80:THR:HG23	1.85	0.57
6:3S:82:LYS:HB2	6:3S:85:GLU:HG2	1.87	0.57
1:3A:439:SER:O	12:3A:502:3PE:N	2.37	0.57
11:3C:505:CDL:OB7	7:3G:42:ARG:NH2	2.37	0.57
2:3O:54:GLY:H	2:3O:57:TYR:HD2	1.52	0.57
8:3U:48:SER:OG	8:3U:49:GLN:OE1	2.22	0.57
2:3B:94:GLY:HA3	2:3B:119:LEU:HD21	1.87	0.57
4:3Q:152:TYR:OH	8:3U:66:ASP:OD2	2.22	0.57
3:3C:245:PHE:O	4:3D:290:ARG:NH2	2.38	0.57
1:3N:225:GLU:HG3	1:3N:226:ASP:H	1.68	0.57
1:3A:70:ARG:HH21	1:3A:112:LEU:HD12	1.69	0.57
3:3C:71:ARG:NH2	4:3D:202:SER:OG	2.38	0.57
4:3D:325:ALA:HB3	7:3G:16:ILE:HB	1.85	0.57
5:3E:239:HIS:CD2	5:3E:253:PRO:HD2	2.36	0.57
1:3N:281:ASP:OD1	1:3N:282:SER:N	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3P:281:LEU:HB2	3:3P:294:LEU:HD12	1.86	0.57
8:3U:29:LYS:HA	8:3U:29:LYS:HE3	1.85	0.57
1:3A:86:LEU:HD13	1:3A:99:ILE:HB	1.87	0.57
6:3F:69:ASP:OD1	6:3F:70:ARG:N	2.37	0.57
6:3F:30:LYS:HD2	6:3F:95:TYR:CD2	2.40	0.57
8:3H:60:GLU:O	8:3H:64:LEU:HG	2.05	0.57
4:3Q:82:MET:HE3	4:3Q:83:ARG:H	1.70	0.56
1:3A:156:THR:HB	1:3A:241:ILE:HG13	1.86	0.56
1:3N:359:ASN:O	1:3N:363:ASN:ND2	2.39	0.56
5:3R:182:LYS:O	5:3R:182:LYS:NZ	2.35	0.56
5:3R:205:VAL:HG22	5:3R:207:LYS:H	1.70	0.56
11:3T:102:CDL:HA4	11:3T:102:CDL:H522	1.88	0.56
1:3A:420:PRO:O	1:3A:434:TYR:OH	2.20	0.56
3:3C:17:ALA:HA	3:3C:201:HIS:CE1	2.37	0.56
2:3O:46:ARG:NH1	2:3O:375:SER:OG	2.27	0.56
4:3D:262:ASP:OD1	4:3D:262:ASP:N	2.39	0.56
3:3P:129:MET:HE2	14:3P:504:U10:H151	1.88	0.56
5:3R:235:TYR:HA	5:3R:242:HIS:HB3	1.88	0.56
2:3B:241:GLY:O	2:3B:421:ARG:NH2	2.38	0.56
4:3D:98:TYR:HB3	8:3H:99:PHE:CE2	2.40	0.56
4:3D:174:LYS:N	4:3D:177:ASP:OD1	2.38	0.56
5:3I:62:ARG:HB2	5:3I:77:ARG:HH22	1.69	0.56
3:3C:237:LEU:HD22	4:3D:305:LEU:HD21	1.87	0.56
1:3N:131:ARG:HH12	1:3N:177:LEU:H	1.53	0.56
3:3C:97:HIS:NE2	13:3C:502:HEM:O1A	2.32	0.56
3:3C:201:HIS:CD2	14:3C:503:U10:H4M1	2.41	0.56
5:3E:249:ILE:HG23	5:3E:257:ASN:HA	1.88	0.56
8:3U:29:LYS:NZ	8:3U:32:LYS:HD2	2.21	0.56
2:3B:226:MET:HG3	2:3B:227:ARG:N	2.19	0.56
4:3D:114:ILE:HD12	4:3D:278:PHE:HA	1.88	0.56
1:3N:307:PHE:HA	1:3N:324:PHE:HA	1.88	0.56
2:3O:116:ILE:HG22	2:3O:120:MET:HE2	1.87	0.56
2:3O:117:GLU:HA	2:3O:120:MET:HE3	1.88	0.56
7:3T:46:LEU:HD12	7:3T:47:ARG:HG3	1.88	0.56
4:3D:271:VAL:O	4:3D:275:VAL:HG12	2.06	0.55
3:3P:186:PRO:HG2	13:3P:501:HEM:HMC3	1.89	0.55
2:3B:222:ARG:HG2	2:3B:223:PHE:CE1	2.42	0.55
2:3B:346:THR:O	2:3B:351:ASN:ND2	2.26	0.55
4:3D:300:MET:HE2	4:3D:300:MET:HA	1.88	0.55
5:3E:167:PHE:HD2	5:3E:174:LEU:HD12	1.71	0.55
12:3N:503:3PE:H32	3:3P:221:HIS:HE1	1.71	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3O:369:LEU:HD11	2:3O:399:LEU:HD11	1.87	0.55
5:3R:192:VAL:HG11	5:3R:200:HIS:CD2	2.41	0.55
9:3J:23:LEU:O	9:3J:27:VAL:HG12	2.06	0.55
2:3B:70:ARG:HD3	2:3B:100:SER:HB3	1.87	0.55
5:3E:163:LYS:NZ	5:3E:165:MET:SD	2.80	0.55
17:3E:303:PC1:H11	17:3E:303:PC1:H111	1.88	0.55
7:3G:28:PHE:HE2	12:3G:101:3PE:H351	1.71	0.55
8:3H:57:LYS:HA	8:3H:60:GLU:HG2	1.88	0.55
1:3N:327:ASP:OD1	1:3N:330:SER:OG	2.25	0.55
10:3X:32:LEU:HD21	17:3X:101:PC1:H342	1.88	0.55
1:3N:40:TRP:NE1	1:3N:89:TYR:OH	2.37	0.55
3:3P:182:HIS:HE1	13:3P:501:HEM:NA	2.05	0.55
1:3A:282:SER:O	2:3B:143:GLN:NE2	2.40	0.55
1:3N:242:ARG:HB3	1:3N:428:ILE:HD11	1.87	0.55
12:3N:503:3PE:H332	17:3R:303:PC1:H351	1.89	0.55
4:3Q:118:ARG:HB2	4:3Q:194:SER:OG	2.07	0.55
11:3C:505:CDL:H722	7:3G:43:THR:OG1	2.05	0.55
1:3A:281:ASP:H	1:3A:284:TYR:HD2	1.54	0.55
1:3A:322:ALA:HB3	1:3A:338:LEU:HD21	1.88	0.55
1:3N:436:ARG:HD3	3:3P:222:PRO:HD3	1.89	0.55
2:3O:350:GLY:HA2	2:3O:411:ILE:HD12	1.87	0.55
3:3C:31:TRP:NE1	13:3C:502:HEM:O2D	2.34	0.55
1:3N:46:ARG:NH2	1:3N:316:GLU:OE2	2.39	0.55
7:3T:40:ARG:HH21	11:3T:102:CDL:HB21	1.72	0.55
7:3T:56:TYR:O	7:3T:60:THR:HG22	2.07	0.55
1:3A:324:PHE:CD1	1:3A:334:MET:HG2	2.41	0.54
5:3E:192:VAL:HA	5:3E:195:LEU:HD12	1.87	0.54
1:3N:77:LYS:O	1:3N:81:SER:OG	2.20	0.54
10:3X:46:PRO:O	10:3X:48:ILE:N	2.40	0.54
2:3B:65:THR:HG23	2:3B:191:LEU:HD23	1.89	0.54
3:3C:361:ILE:HA	3:3C:365:LEU:HB2	1.89	0.54
3:3P:24:PRO:HB2	3:3P:27:ILE:HG12	1.89	0.54
4:3Q:195:GLU:OE2	4:3Q:201:ARG:NE	2.40	0.54
5:3R:199:GLN:OE1	5:3R:204:ARG:NE	2.23	0.54
1:3A:132:ASP:OD1	1:3A:133:VAL:N	2.41	0.54
8:3H:53:GLU:HA	8:3H:56:ILE:HB	1.89	0.54
4:3Q:24:THR:OG1	4:3Q:28:ARG:NH1	2.35	0.54
7:3T:27:PRO:O	7:3T:28:HIS:ND1	2.41	0.54
10:3Y:33:VAL:HG23	10:3Y:38:TRP:HB3	1.89	0.54
1:3A:288:THR:O	1:3A:289:HIS:ND1	2.41	0.54
2:3B:196:GLN:HA	2:3B:226:MET:HE2	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3C:40:CYS:O	3:3C:44:GLN:N	2.33	0.54
4:3D:317:SER:HB2	7:3G:25:GLN:HE21	1.73	0.54
1:3N:446:PHE:O	9:3W:18:SER:OG	2.20	0.54
4:3D:109:LEU:HD11	4:3D:287:HIS:HB3	1.89	0.54
7:3G:61:TYR:O	7:3G:65:THR:HG23	2.08	0.54
1:3N:25:VAL:HG12	1:3N:197:LEU:HB3	1.90	0.54
1:3A:14:THR:OG1	1:3A:389:ARG:NH1	2.38	0.54
3:3P:373:GLU:HB3	6:3S:20:TYR:CZ	2.43	0.54
3:3C:186:PRO:HG2	13:3C:501:HEM:HMC1	1.90	0.54
5:3E:179:ARG:HG2	5:3E:184:ILE:HG13	1.89	0.54
2:3O:302:GLY:O	2:3O:304:HIS:ND1	2.41	0.54
1:3A:172:GLU:HA	1:3A:175:ARG:HH21	1.72	0.53
3:3C:316:MET:HG3	12:3C:506:3PE:H112	1.90	0.53
5:3E:239:HIS:HE2	5:3E:254:ALA:HB2	1.73	0.53
3:3C:348:ILE:O	3:3C:352:GLN:HG2	2.07	0.53
5:3E:219:HIS:ND1	5:3E:239:HIS:CE1	2.75	0.53
8:3U:41:ASP:OD1	8:3U:42:GLN:N	2.41	0.53
2:3B:253:VAL:HG21	2:3B:333:ALA:HB2	1.90	0.53
3:3C:26:ASN:HD21	3:3C:207:ASN:HB2	1.73	0.53
4:3D:293:MET:HE2	12:3E:302:3PE:H12	1.90	0.53
8:3H:42:LEU:O	8:3H:46:ARG:HG3	2.08	0.53
11:3T:101:CDL:H132	11:3T:102:CDL:H111	1.91	0.53
1:3A:58:PHE:HB3	1:3A:182:LEU:HD11	1.91	0.53
3:3C:129:MET:HE1	3:3C:181:PHE:HB3	1.89	0.53
12:3C:507:3PE:O22	12:3C:507:3PE:N	2.41	0.53
1:3N:445:ARG:NH1	11:3N:502:CDL:OB2	2.41	0.53
12:3R:302:3PE:H3B1	17:3R:303:PC1:H3D2	1.90	0.53
1:3A:445:ARG:NH2	12:3A:503:3PE:O14	2.42	0.53
5:3E:194:GLN:HE22	5:3E:250:ARG:HD2	1.72	0.53
2:3O:352:LEU:HB3	2:3O:411:ILE:HD11	1.89	0.53
1:3A:100:LYS:HE2	1:3A:373:THR:OG1	2.09	0.53
1:3A:354:VAL:HG21	1:3A:404:ALA:HA	1.91	0.53
3:3P:103:TYR:O	3:3P:315:MET:HG3	2.08	0.53
4:3Q:98:PRO:O	4:3Q:102:ARG:HG3	2.09	0.53
7:3T:3:GLU:N	7:3T:3:GLU:OE1	2.39	0.53
3:3C:97:HIS:CE1	3:3C:100:ARG:HH22	2.26	0.53
12:3C:507:3PE:N	12:3C:507:3PE:O14	2.39	0.53
4:3D:267:THR:O	4:3D:271:VAL:HG12	2.08	0.53
6:3F:45:ARG:HG2	6:3F:45:ARG:HH11	1.73	0.53
7:3T:68:LYS:HE3	7:3T:68:LYS:HA	1.90	0.53
2:3O:141:GLN:HE22	2:3O:186:VAL:HB	1.74	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3P:116:GLY:C	13:3P:502:HEM:HBC2	2.33	0.53
5:3R:191:GLU:HB2	5:3R:194:GLN:HE22	1.73	0.53
5:3R:239:HIS:HB3	16:3R:301:FES:S1	2.49	0.53
5:3I:68:VAL:HG23	5:3I:74:ALA:HB2	1.91	0.53
1:3A:23:LEU:HD21	1:3A:219:LEU:HD23	1.90	0.52
1:3A:324:PHE:HE2	1:3A:335:MET:HE2	1.74	0.52
1:3N:156:THR:OG1	1:3N:239:SER:OG	2.23	0.52
1:3N:269:PRO:HB2	1:3N:410:VAL:HG11	1.90	0.52
2:3O:27:THR:HG21	2:3O:217:LYS:HZ2	1.74	0.52
1:3A:317:THR:OG1	1:3A:318:GLY:N	2.42	0.52
3:3C:234:PHE:HB3	11:3G:102:CDL:H772	1.90	0.52
1:3N:148:VAL:HG12	5:3R:80:HIS:CD2	2.44	0.52
2:3O:217:LYS:O	2:3O:221:GLU:HG3	2.08	0.52
9:3W:18:SER:HB3	10:3X:24:TRP:CE2	2.44	0.52
4:3D:306:PRO:HB3	12:3G:101:3PE:H361	1.92	0.52
1:3N:3:THR:N	1:3N:6:GLN:OE1	2.40	0.52
2:3O:303:VAL:O	5:3V:52:ARG:NH2	2.42	0.52
7:3T:44:CYS:SG	11:3T:102:CDL:HB32	2.50	0.52
2:3B:120:MET:SD	2:3B:219:VAL:HG11	2.49	0.52
3:3C:15:ASN:HA	3:3C:19:ILE:HB	1.92	0.52
6:3F:113:ARG:O	6:3F:117:GLU:HG2	2.08	0.52
1:3N:235:ARG:HH21	5:3R:92:ARG:NH1	2.07	0.52
4:3Q:134:TYR:OH	4:3Q:160:MET:HB3	2.09	0.52
6:3S:22:ASN:O	6:3S:28:LYS:NZ	2.43	0.52
3:3P:110:LEU:O	3:3P:114:ASN:ND2	2.42	0.52
5:3R:204:ARG:NH1	5:3R:246:SER:O	2.43	0.52
2:3B:71:LEU:HD12	5:3I:68:VAL:HG11	1.90	0.52
2:3B:171:ALA:HB3	2:3B:237:ALA:HB2	1.92	0.52
3:3P:375:ASN:O	6:3S:17:ARG:NH1	2.37	0.52
5:3R:105:GLU:OE1	5:3R:105:GLU:N	2.43	0.52
12:3Y:101:3PE:H371	12:3Y:101:3PE:O32	2.10	0.52
1:3A:356:ARG:HG3	2:3B:91:ALA:HA	1.92	0.52
3:3C:310:SER:HA	3:3C:374:ASN:HD21	1.75	0.52
4:3D:140:VAL:HG22	4:3D:146:GLU:HA	1.91	0.52
3:3P:190:THR:HG21	14:3P:503:U10:H252	1.92	0.52
10:3Y:39:ARG:NH2	10:3Y:52:PHE:HB2	2.22	0.52
2:3B:109:VAL:HG21	2:3B:123:LEU:HB2	1.92	0.52
1:3N:146:ARG:C	1:3N:146:ARG:HD2	2.35	0.52
2:3O:303:VAL:HG21	2:3O:336:VAL:HG22	1.91	0.52
1:3N:58:PHE:HE2	1:3N:127:ILE:HG23	1.74	0.52
4:3Q:211:MET:HE1	5:3R:127:TYR:CD2	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3B:71:LEU:HD22	2:3B:144:LEU:HD23	1.92	0.51
1:3N:226:ASP:OD1	1:3N:226:ASP:N	2.42	0.51
2:3O:212:SER:OG	2:3O:214:PRO:HD2	2.09	0.51
3:3P:244:LEU:HD13	4:3Q:205:GLY:HA2	1.91	0.51
6:3S:67:ASP:HA	6:3S:70:MET:HE2	1.92	0.51
1:3A:245:ASP:OD1	7:3G:13:ARG:NH1	2.43	0.51
3:3C:40:CYS:HB2	3:3C:90:PHE:HD2	1.75	0.51
3:3C:316:MET:HG3	12:3C:506:3PE:C11	2.40	0.51
4:3D:115:ARG:HB2	4:3D:143:CYS:HB2	1.91	0.51
1:3N:224:VAL:HG22	1:3N:225:GLU:H	1.75	0.51
3:3P:35:SER:OG	14:3P:503:U10:O5	2.26	0.51
5:3R:155:LYS:NZ	5:3R:158:ASP:OD2	2.44	0.51
11:3A:501:CDL:H712	11:3A:501:CDL:H541	1.90	0.51
12:3A:502:3PE:H2	17:3E:303:PC1:H31	1.92	0.51
2:3B:52:LYS:HE3	2:3B:203:ARG:HG2	1.92	0.51
3:3C:44:GLN:HB3	13:3C:501:HEM:HAB	1.92	0.51
3:3C:156:ILE:HG21	17:3X:101:PC1:H322	1.91	0.51
5:3E:152:ILE:HB	5:3E:272:ILE:HG23	1.91	0.51
1:3N:25:VAL:HG21	1:3N:209:LEU:HD13	1.91	0.51
1:3N:235:ARG:HH11	5:3R:99:SER:HA	1.76	0.51
10:3Y:9:ARG:HA	10:3Y:12:GLU:OE1	2.09	0.51
1:3A:349:ALA:H	1:3A:408:ARG:HH11	1.56	0.51
5:3I:55:LEU:O	5:3I:56:SER:C	2.53	0.51
3:3P:63:PHE:O	3:3P:67:THR:HG23	2.09	0.51
7:3T:29:TYR:CE1	11:3T:101:CDL:HA61	2.45	0.51
4:3D:289:HIS:O	4:3D:293:MET:HG3	2.11	0.51
1:3N:209:LEU:HG	1:3N:213:GLN:NE2	2.26	0.51
12:3N:501:3PE:H332	11:3N:502:CDL:HA21	1.92	0.51
2:3O:163:LEU:HD21	2:3O:258:VAL:HG21	1.92	0.51
5:3R:141:SER:OG	5:3R:142:ALA:N	2.42	0.51
2:3B:133:ARG:HD2	2:3B:135:TRP:CZ2	2.46	0.51
3:3C:50:PHE:CE2	5:3E:136:PHE:HB3	2.45	0.51
1:3N:36:THR:HG21	1:3N:373:THR:HA	1.92	0.51
1:3N:204:GLU:HG3	1:3N:207[A]:GLN:H	1.76	0.51
4:3D:218:LEU:O	4:3D:238:ASN:ND2	2.42	0.51
5:3E:204:ARG:NH2	5:3E:246:SER:O	2.29	0.51
3:3P:132:VAL:HG22	3:3P:143:ALA:HB2	1.92	0.51
3:3P:159:ASP:OD1	3:3P:160:LEU:N	2.44	0.51
5:3R:214:ILE:HD11	5:3R:261:PRO:HB3	1.92	0.51
5:3R:263:TYR:HB3	5:3R:273:VAL:HA	1.93	0.51
1:3A:145:MET:HB3	1:3A:252:HIS:CE1	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3P:211:ILE:HG21	6:3S:62:ILE:HD13	1.93	0.51
5:3R:152:ILE:O	5:3R:152:ILE:HG13	2.10	0.51
6:3S:98:ILE:O	6:3S:102:LYS:HG2	2.11	0.51
1:3N:316:GLU:OE1	1:3N:316:GLU:N	2.40	0.51
2:3O:109:VAL:HG12	2:3O:123:LEU:HD13	1.92	0.51
1:3A:97:TYR:OH	1:3A:190:TYR:OH	2.15	0.51
1:3A:360:ILE:HG23	5:3I:33:ALA:HB2	1.93	0.51
1:3N:111:GLU:HA	1:3N:215:HIS:HD2	1.76	0.51
4:3Q:8:PRO:HG2	4:3Q:10:TYR:HE1	1.75	0.51
4:3Q:178:THR:HG22	8:3U:13:LEU:HD21	1.92	0.51
5:3R:179:ARG:HH22	5:3R:208:PRO:HB3	1.76	0.51
2:3B:328:SER:HB2	2:3B:336:VAL:HG21	1.93	0.50
4:3D:257:VAL:HG13	4:3D:258:LEU:HG	1.91	0.50
2:3O:324:ILE:HD11	2:3O:344:VAL:HG21	1.94	0.50
2:3B:167:ALA:O	2:3B:240:ARG:N	2.42	0.50
3:3C:171:ASP:OD1	3:3C:172:LYS:HD3	2.12	0.50
4:3D:297:MET:HA	12:3E:302:3PE:H321	1.93	0.50
9:3J:5:THR:N	9:3J:9:ARG:HH21	2.09	0.50
5:3R:179:ARG:HD2	5:3R:245:ALA:HB1	1.94	0.50
12:3C:507:3PE:H2B2	5:3R:130:LYS:HA	1.92	0.50
4:3D:92:GLU:OE2	4:3D:92:GLU:N	2.45	0.50
2:3B:51:ILE:HG12	2:3B:204:MET:HG2	1.94	0.50
3:3C:44:GLN:OE1	3:3C:44:GLN:HA	2.11	0.50
3:3C:165:TRP:O	3:3C:174:THR:OG1	2.20	0.50
2:3O:137:VAL:O	2:3O:141:GLN:HG2	2.11	0.50
3:3P:215:MET:HE1	6:3S:63:LYS:N	2.25	0.50
7:3T:71:ARG:NE	8:3U:56:GLU:OE2	2.33	0.50
1:3A:140:GLU:HA	5:3I:48:SER:HB2	1.92	0.50
4:3D:108:SER:HB2	4:3D:288:ASP:OD1	2.11	0.50
1:3N:375:VAL:O	1:3N:379:ILE:HG13	2.10	0.50
2:3O:301:LYS:HG3	2:3O:301:LYS:O	2.11	0.50
4:3Q:186:VAL:HG21	15:3Q:501:HEC:HBB3	1.92	0.50
1:3A:429:GLU:OE2	7:3G:7:GLY:N	2.44	0.50
4:3D:98:TYR:HB3	8:3H:99:PHE:HE2	1.76	0.50
5:3I:53:GLU:O	5:3I:56:SER:HB3	2.12	0.50
2:3O:275:LEU:HD13	2:3O:410:VAL:HG13	1.93	0.50
3:3C:200:LEU:HD23	14:3C:503:U10:H4M3	1.92	0.50
9:3J:33:GLU:OE2	10:3Y:34:TRP:NE1	2.44	0.50
9:3J:50:GLY:H	9:3J:55:HIS:CE1	2.29	0.50
1:3N:192:ALA:HB2	1:3N:219:LEU:HB3	1.94	0.50
6:3S:31:LEU:HD11	6:3S:65:ALA:HB2	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:3U:27:ILE:HG22	8:3U:30:CYS:HB2	1.92	0.50
2:3O:287:ARG:HA	5:3V:53:GLU:CD	2.37	0.50
4:3Q:24:THR:HG1	4:3Q:28:ARG:HH12	1.56	0.50
4:3Q:217:PRO:O	4:3Q:221:ALA:N	2.33	0.50
2:3B:76:THR:HG21	2:3B:133:ARG:NH2	2.27	0.50
5:3E:214:ILE:HB	5:3E:259:GLU:HB3	1.93	0.50
3:3P:277:ALA:HB3	14:3P:504:U10:H3M1	1.93	0.50
1:3A:401:GLU:OE1	1:3A:401:GLU:N	2.40	0.49
2:3B:49:LEU:HD13	2:3B:206:LEU:HD13	1.94	0.49
5:3E:167:PHE:HB3	5:3E:169:TRP:NE1	2.27	0.49
8:3H:66:ASP:O	8:3H:70:SER:OG	2.22	0.49
1:3N:58:PHE:CE2	1:3N:127:ILE:HG23	2.47	0.49
2:3O:306:PRO:HA	5:3V:52:ARG:HG3	1.93	0.49
1:3A:145:MET:HG2	1:3A:252:HIS:CD2	2.47	0.49
1:3A:296:SER:O	1:3A:300:THR:OG1	2.27	0.49
2:3B:308:ASP:OD1	2:3B:327:ILE:HB	2.12	0.49
3:3C:267:HIS:NE2	3:3C:269:LYS:HD3	2.26	0.49
4:3D:160:ASP:OD2	4:3D:171:ARG:NE	2.44	0.49
9:3J:53:TRP:CE2	9:3J:57:LYS:CG	2.81	0.49
3:3P:197:LEU:HD21	13:3P:502:HEM:HMA3	1.94	0.49
5:3R:184:ILE:HD11	5:3R:209:GLU:HG3	1.95	0.49
3:3C:81:TYR:OH	4:3D:206:ARG:NH1	2.46	0.49
7:3G:19:SER:OG	7:3G:20:LEU:N	2.42	0.49
4:3Q:181:GLN:HG2	8:3U:77:LEU:HD22	1.93	0.49
3:3C:78:VAL:O	3:3C:82:LEU:HB2	2.12	0.49
3:3C:231:GLY:HA2	11:3G:102:CDL:H721	1.93	0.49
3:3C:272:TRP:HA	3:3C:275:LEU:HD12	1.93	0.49
2:3O:193:TYR:O	2:3O:197:ASN:ND2	2.30	0.49
2:3B:76:THR:HG23	2:3B:81:SER:HA	1.95	0.49
2:3B:159:VAL:HG21	2:3B:254:HIS:HB2	1.93	0.49
4:3Q:207:LYS:NZ	12:3R:302:3PE:O12	2.27	0.49
5:3R:236:CYS:H	5:3R:242:HIS:HA	1.77	0.49
6:3S:16:ILE:HD12	6:3S:16:ILE:H	1.77	0.49
1:3N:304:CYS:SG	1:3N:305:GLN:N	2.86	0.49
1:3A:3:THR:O	1:3A:5:ALA:N	2.42	0.49
1:3A:269:PRO:HB2	1:3A:410:VAL:HG11	1.95	0.49
2:3B:52:LYS:HG3	2:3B:387:LEU:HD22	1.94	0.49
1:3N:149:VAL:HG21	1:3N:252:HIS:HB3	1.95	0.49
1:3A:185:TYR:CE2	1:3A:189:HIS:HD2	2.30	0.49
3:3C:240:LEU:O	3:3C:244:LEU:HB2	2.11	0.49
3:3C:360:LEU:HG	3:3C:365:LEU:HD23	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:3C:505:CDL:H712	11:3C:505:CDL:HB61	1.37	0.49
5:3E:137:VAL:O	5:3E:140:MET:HB2	2.12	0.49
1:3N:204:GLU:HG3	1:3N:207[B]:GLN:H	1.76	0.49
2:3O:46:ARG:NE	2:3O:110:GLU:OE1	2.40	0.49
5:3R:119:ALA:HB2	9:3W:20:PHE:HE1	1.78	0.49
5:3R:153:GLU:OE2	5:3R:170:ARG:NE	2.46	0.49
3:3C:55:TYR:OH	3:3C:133:LEU:O	2.25	0.49
4:3D:205:VAL:HG13	4:3D:212:GLU:HG3	1.94	0.49
2:3O:202:ALA:HB3	2:3O:230:LEU:HA	1.95	0.49
3:3P:39:ILE:O	3:3P:43:LEU:HD22	2.13	0.49
3:3P:50:PHE:O	3:3P:53:MET:HB2	2.13	0.49
3:3P:119:LEU:CD1	3:3P:192:LEU:HB3	2.40	0.49
7:3T:67:GLU:OE1	7:3T:68:LYS:HD2	2.13	0.49
1:3A:394:GLU:O	1:3A:398:ARG:HG3	2.13	0.49
2:3B:261:SER:HB3	2:3B:272:PHE:CD2	2.47	0.49
3:3C:128:PHE:CD1	14:3C:504:U10:H4M1	2.48	0.49
1:3A:332:ASP:OD1	1:3A:333:ASP:N	2.46	0.48
2:3B:77:THR:OG1	2:3B:80:ALA:O	2.30	0.48
3:3C:215:MET:HB2	7:3G:12:MET:HE2	1.95	0.48
5:3E:219:HIS:NE2	5:3E:239:HIS:HB3	2.29	0.48
8:3H:52:ILE:HD12	8:3H:53:GLU:H	1.78	0.48
1:3A:359:ASN:O	1:3A:363:ASN:ND2	2.46	0.48
5:3R:204:ARG:NH1	5:3R:257:ASN:OD1	2.45	0.48
10:3X:51:LYS:HD2	10:3X:52:PHE:CE1	2.48	0.48
10:3Y:38:TRP:CD2	12:3Y:101:3PE:H221	2.48	0.48
5:3E:155:LYS:HE3	5:3E:273:VAL:HG22	1.94	0.48
1:3N:343:MET:HG3	1:3N:443:TRP:CD1	2.48	0.48
3:3P:224:TYR:HA	3:3P:227:LYS:HB3	1.96	0.48
5:3R:187:GLU:HA	5:3R:190:VAL:HG23	1.95	0.48
5:3R:258:LEU:HD12	5:3R:258:LEU:H	1.77	0.48
8:3U:20:VAL:HG12	8:3U:69:VAL:HG22	1.95	0.48
1:3N:444:LEU:HB3	11:3N:502:CDL:H712	1.95	0.48
2:3O:33:LEU:HD11	2:3O:224:LEU:HB3	1.95	0.48
3:3P:50:PHE:HA	3:3P:53:MET:CG	2.42	0.48
3:3P:236:MET:HG2	12:3R:302:3PE:H3A2	1.95	0.48
7:3T:40:ARG:NE	11:3T:102:CDL:OB4	2.47	0.48
1:3A:277:ILE:HD11	1:3A:345:LEU:HD11	1.95	0.48
3:3C:168:PHE:O	5:3R:172:LYS:NZ	2.42	0.48
4:3D:119:GLN:NE2	4:3D:261:ASP:OD2	2.43	0.48
3:3C:141:TRP:CD1	3:3C:265:PRO:HD3	2.49	0.48
4:3Q:207:LYS:HB3	9:3W:35:PHE:HE2	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3A:306:SER:HB3	5:3I:39:GLU:HG2	1.95	0.48
1:3A:264:ASN:O	1:3A:266:ASP:N	2.47	0.48
6:3F:39:ASN:N	6:3F:39:ASN:OD1	2.47	0.48
1:3N:172:GLU:HG3	1:3N:176:LYS:NZ	2.29	0.48
2:3O:47:ILE:HG22	2:3O:123:LEU:HD22	1.95	0.48
5:3R:157:SER:O	5:3R:159:ILE:N	2.47	0.48
11:3T:102:CDL:H351	11:3T:102:CDL:H311	1.96	0.48
5:3R:92:ARG:HB2	5:3R:97:LEU:HD13	1.95	0.48
7:3G:38:ASN:O	7:3G:42:ARG:HG3	2.13	0.47
1:3N:350:THR:O	1:3N:353:GLU:HG2	2.13	0.47
4:3Q:179:MET:N	8:3U:15:ASP:OD2	2.47	0.47
1:3A:70:ARG:HH21	1:3A:112:LEU:HA	1.79	0.47
1:3A:70:ARG:HH22	1:3A:111:GLU:HG2	1.78	0.47
5:3E:181:LYS:HA	5:3E:184:ILE:HD12	1.96	0.47
7:3T:18:LEU:HB3	7:3T:23:GLN:NE2	2.29	0.47
1:3A:339:GLN:NE2	1:3A:441:MET:SD	2.87	0.47
4:3D:295:LEU:O	4:3D:299:MET:HE3	2.14	0.47
4:3D:326:TYR:HB2	6:3F:72:PHE:CE1	2.48	0.47
5:3E:155:LYS:HD3	5:3E:155:LYS:HA	1.64	0.47
5:3E:207:LYS:CG	5:3E:210:TRP:HE3	2.27	0.47
6:3F:45:ARG:HG2	6:3F:45:ARG:NH1	2.28	0.47
1:3N:144:SER:HA	5:3V:47:ARG:CZ	2.44	0.47
7:3T:33:GLY:HA3	11:3T:101:CDL:HA62	1.96	0.47
8:3U:17:LEU:HD13	8:3U:21:ARG:HD3	1.96	0.47
3:3C:126:THR:HG21	13:3C:501:HEM:HBB2	1.96	0.47
1:3N:74:ALA:O	1:3N:78:GLU:HG2	2.14	0.47
1:3N:294:LEU:HD12	1:3N:307:PHE:CE2	2.49	0.47
3:3C:26:ASN:ND2	3:3C:207:ASN:HB2	2.29	0.47
3:3C:32:ASN:O	3:3C:36:LEU:HG	2.14	0.47
4:3Q:12:TRP:CZ3	4:3Q:184:LYS:HG2	2.50	0.47
1:3A:50:GLU:OE2	1:3A:51:LYS:HG3	2.15	0.47
1:3A:298:ALA:O	1:3A:302:LYS:N	2.44	0.47
3:3C:65:SER:O	3:3C:69:ILE:HG13	2.15	0.47
3:3C:313:ARG:HB3	6:3F:50:TYR:HB2	1.95	0.47
5:3E:196:ARG:O	5:3E:196:ARG:NH1	2.38	0.47
3:3P:244:LEU:HD23	4:3Q:201:ARG:HG3	1.96	0.47
4:3Q:222:MET:O	4:3Q:225:HIS:HB3	2.14	0.47
1:3A:62:LEU:HD23	1:3A:122:LEU:HA	1.97	0.47
1:3A:172:GLU:O	1:3A:176:LYS:HG2	2.15	0.47
2:3B:372:VAL:HG12	2:3B:372:VAL:O	2.14	0.47
3:3C:191:ALA:O	3:3C:195:VAL:HG23	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:3D:269:SER:HB3	8:3H:42:LEU:HB2	1.97	0.47
5:3E:181:LYS:HB2	5:3E:181:LYS:HE2	1.59	0.47
9:3J:43:ILE:O	9:3J:47:ILE:HG23	2.15	0.47
9:3J:47:ILE:HG13	9:3J:48:ASN:ND2	2.29	0.47
1:3N:273:ALA:O	1:3N:276:ILE:HB	2.15	0.47
2:3O:81:SER:O	2:3O:85:ILE:HG13	2.14	0.47
2:3O:120:MET:O	2:3O:124:LEU:HG	2.15	0.47
3:3P:39:ILE:HA	3:3P:42:ILE:HD12	1.97	0.47
8:3U:72:LYS:HA	8:3U:75:ASN:HD21	1.79	0.47
3:3C:253:PRO:HG2	4:3D:209:HIS:CD2	2.50	0.47
13:3C:501:HEM:O1D	13:3C:501:HEM:HHA	2.15	0.47
1:3N:19:LEU:HD21	1:3N:23:LEU:HD23	1.96	0.47
1:3N:76:GLU:OE2	2:3O:290:ASN:N	2.47	0.47
3:3P:373:GLU:HA	3:3P:376:LEU:HB2	1.97	0.47
3:3C:40:CYS:HB2	3:3C:90:PHE:CD2	2.50	0.47
12:3C:507:3PE:H261	12:3C:507:3PE:H222	1.97	0.47
4:3D:298:LEU:HA	4:3D:298:LEU:HD23	1.74	0.47
5:3I:64:LEU:HD12	5:3I:64:LEU:HA	1.77	0.47
2:3O:217:LYS:HB2	2:3O:217:LYS:HE2	1.67	0.47
3:3P:105:GLY:O	3:3P:313:ARG:NE	2.48	0.47
7:3T:60:THR:OG1	7:3T:64:GLN:NE2	2.48	0.47
1:3A:144:SER:HA	5:3I:47:ARG:HD2	1.95	0.47
5:3E:125:VAL:HG11	17:3E:303:PC1:H371	1.96	0.47
7:3G:20:LEU:HD21	7:3G:24:GLU:HB2	1.97	0.47
2:3O:89:ILE:HG12	2:3O:119:LEU:HD23	1.97	0.47
4:3Q:33:TYR:HA	4:3Q:37:CYS:HB2	1.97	0.47
5:3R:164:ASN:HA	5:3R:177:ARG:HA	1.96	0.47
1:3A:53:ASN:HB2	1:3A:165:GLN:HE21	1.80	0.46
2:3B:42:ALA:O	2:3B:113:ARG:NH1	2.48	0.46
2:3B:295:LEU:HD13	2:3B:309:VAL:HG22	1.97	0.46
3:3C:172:LYS:HD3	3:3C:172:LYS:N	2.29	0.46
5:3E:120:THR:HA	5:3E:123:VAL:HG12	1.97	0.46
3:3C:35:SER:O	3:3C:39:ILE:HG12	2.15	0.46
3:3C:68:HIS:NE2	5:3E:145:ASP:OD2	2.48	0.46
3:3C:234:PHE:CE2	11:3G:102:CDL:H542	2.51	0.46
3:3C:315:MET:HE1	3:3C:321:SER:O	2.15	0.46
8:3H:56:ILE:HD13	8:3H:59:ARG:HH21	1.81	0.46
1:3A:163:LEU:HD13	1:3A:234:CYS:SG	2.56	0.46
4:3D:206:ARG:HB2	4:3D:283:SER:OG	2.15	0.46
5:3I:44:ASP:OD1	5:3I:45:ALA:N	2.47	0.46
2:3O:95:LYS:O	2:3O:109:VAL:HA	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:3Q:22:ASP:HB3	4:3Q:25:SER:HB3	1.96	0.46
4:3Q:218:LEU:O	4:3Q:222:MET:N	2.47	0.46
5:3R:201:ASP:HB3	5:3R:246:SER:HB2	1.98	0.46
2:3B:111:CYS:HB3	2:3B:119:LEU:HD22	1.97	0.46
1:3N:199:ALA:HB1	1:3N:203:VAL:HG11	1.96	0.46
4:3D:111:HIS:ND1	4:3D:142:VAL:O	2.48	0.46
5:3E:125:VAL:HG21	17:3E:303:PC1:H362	1.97	0.46
5:3E:177:ARG:HG2	5:3E:211:VAL:HG13	1.96	0.46
1:3N:123:GLU:OE2	1:3N:125:SER:HB3	2.15	0.46
3:3P:241:ILE:HG13	4:3Q:208:MET:HE1	1.98	0.46
5:3R:224:PRO:HB2	5:3R:234:TYR:HD2	1.81	0.46
8:3U:27:ILE:HG23	8:3U:30:CYS:H	1.81	0.46
11:3A:501:CDL:H151	11:3A:501:CDL:H312	1.98	0.46
3:3C:107:TYR:HB2	3:3C:305:PRO:HG3	1.97	0.46
3:3C:375:ASN:O	6:3F:29:ARG:NH2	2.49	0.46
4:3D:297:MET:HE3	4:3D:297:MET:HB3	1.85	0.46
5:3E:217:CYS:HB2	16:3E:301:FES:S1	2.42	0.46
2:3O:70:ARG:O	2:3O:98:VAL:HG21	2.15	0.46
3:3P:202:GLU:OE2	3:3P:202:GLU:HA	2.15	0.46
3:3C:277:ALA:HB1	3:3C:294:LEU:HD13	1.98	0.46
5:3E:194:GLN:HE21	5:3E:250:ARG:HH11	1.64	0.46
6:3F:33:TYR:CE1	6:3F:39:ASN:HB3	2.49	0.46
2:3O:180:ASP:HA	2:3O:183:ILE:HG13	1.98	0.46
5:3V:77:ARG:HD2	5:3V:77:ARG:C	2.41	0.46
7:3T:61:TRP:HA	7:3T:64:GLN:OE1	2.15	0.46
11:3A:501:CDL:H331	11:3A:501:CDL:H372	1.98	0.46
4:3D:261:ASP:OD1	4:3D:261:ASP:N	2.48	0.46
7:3G:6:PHE:HA	7:3G:9:LEU:HD21	1.97	0.46
8:3H:91:ASP:OD1	8:3H:91:ASP:C	2.58	0.46
5:3I:62:ARG:HB2	5:3I:77:ARG:NH2	2.31	0.46
3:3P:29:SER:HB3	11:3T:101:CDL:HB62	1.98	0.46
3:3P:138:MET:HE2	3:3P:254:ASP:HB2	1.98	0.46
4:3Q:72:ASP:HB2	4:3Q:83:ARG:HG2	1.98	0.46
5:3R:256:LEU:HD23	5:3R:256:LEU:HA	1.80	0.46
1:3A:41:ILE:N	1:3A:95:THR:O	2.49	0.46
1:3A:301:ARG:NH2	3:3C:1:MET:O	2.44	0.46
5:3E:187:GLU:OE1	5:3E:248:ARG:NH1	2.46	0.46
5:3E:248:ARG:HA	5:3E:257:ASN:HB3	1.99	0.46
8:3H:57:LYS:HA	8:3H:57:LYS:HE2	1.96	0.46
5:3R:131:ASN:HD21	12:3R:302:3PE:H112	1.81	0.46
5:3R:152:ILE:HB	5:3R:272:ILE:HD12	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3A:135:LEU:O	1:3A:139:GLN:HG3	2.16	0.45
2:3B:334:GLY:O	2:3B:338:LYS:HG2	2.15	0.45
2:3B:408:ALA:O	2:3B:411:ILE:HG22	2.16	0.45
3:3C:170:VAL:HG13	3:3C:174:THR:HG21	1.98	0.45
5:3E:98:ASP:OD1	5:3E:98:ASP:N	2.50	0.45
7:3G:39:VAL:HG22	7:3G:42:ARG:NH2	2.31	0.45
2:3O:100:SER:HB2	2:3O:105:MET:HG3	1.98	0.45
1:3A:316:GLU:HG2	1:3A:317:THR:HG22	1.97	0.45
5:3E:241:SER:HB3	5:3E:249:ILE:HB	1.98	0.45
7:3G:75:ASN:HB2	7:3G:82:PRO:HD2	1.96	0.45
8:3H:54:LYS:H	8:3H:54:LYS:HD2	1.81	0.45
8:3U:53:ASP:OD1	8:3U:53:ASP:N	2.48	0.45
4:3D:216:PHE:HB2	4:3D:276:CYS:SG	2.56	0.45
5:3E:243:TYR:CZ	5:3E:258:LEU:HG	2.52	0.45
5:3E:256:LEU:HD12	5:3E:256:LEU:HA	1.86	0.45
3:3P:207:ASN:ND2	3:3P:211:ILE:O	2.39	0.45
4:3Q:30:PHE:CZ	4:3Q:64:LEU:HD21	2.51	0.45
8:3U:29:LYS:HZ1	8:3U:32:LYS:HD2	1.82	0.45
1:3A:125:SER:O	1:3A:129:LYS:HE3	2.16	0.45
2:3B:253:VAL:HG12	2:3B:428:GLY:HA3	1.96	0.45
4:3D:327:ARG:HD2	4:3D:327:ARG:HA	1.71	0.45
5:3E:170:ARG:NH1	3:3P:168:PHE:HB3	2.31	0.45
1:3N:204:GLU:OE2	1:3N:205:HIS:N	2.49	0.45
12:3R:302:3PE:O12	12:3R:302:3PE:H32	2.17	0.45
1:3A:329:MET:HE1	7:3G:8:HIS:CD2	2.52	0.45
3:3C:113:TRP:NE1	3:3C:301:LEU:O	2.37	0.45
1:3N:334:MET:HB2	1:3N:334:MET:HE2	1.83	0.45
1:3N:444:LEU:HA	9:3W:17:THR:HG21	1.99	0.45
3:3P:32:ASN:HD22	11:3T:101:CDL:H721	1.82	0.45
3:3P:242:LEU:HD23	3:3P:242:LEU:HA	1.77	0.45
5:3R:159:ILE:HG23	5:3R:210:TRP:HZ3	1.80	0.45
2:3B:342:ASP:O	2:3B:346:THR:HG23	2.16	0.45
3:3C:128:PHE:O	3:3C:132:VAL:HG23	2.16	0.45
4:3D:130:SER:O	4:3D:200:ASP:HA	2.17	0.45
5:3E:92:ARG:HA	7:3G:25:GLN:HA	1.99	0.45
1:3N:429:GLU:OE2	7:3T:7:LEU:HB2	2.17	0.45
2:3O:214:PRO:O	2:3O:218:GLN:HG2	2.17	0.45
3:3P:349:ILE:O	3:3P:353:LEU:HD12	2.16	0.45
5:3R:247:GLY:O	5:3R:257:ASN:HB2	2.15	0.45
2:3B:375:SER:O	2:3B:379:LEU:HB2	2.16	0.45
3:3C:114:ASN:HD22	3:3C:302:ILE:CD1	2.27	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3C:327:MET:HA	7:3G:53:PRO:HB3	1.99	0.45
8:3H:98:LEU:HD23	8:3H:98:LEU:HA	1.82	0.45
5:3R:153:GLU:OE1	5:3R:153:GLU:N	2.49	0.45
6:3S:31:LEU:HD23	6:3S:36:THR:HG22	1.99	0.45
8:3U:31:ILE:HD13	8:3U:34:ARG:HH22	1.82	0.45
1:3A:111:GLU:HB2	1:3A:215:HIS:CE1	2.52	0.45
1:3A:436:ARG:HH11	3:3C:222:PRO:HD3	1.81	0.45
3:3C:215:MET:SD	3:3C:215:MET:N	2.78	0.45
2:3O:218:GLN:O	2:3O:222:ARG:HB2	2.16	0.45
2:3O:287:ARG:HA	5:3V:53:GLU:OE1	2.17	0.45
3:3P:26:ASN:HA	6:3S:70:MET:HB2	1.98	0.45
3:3P:58:ASP:OD2	3:3P:172:LYS:HE3	2.16	0.45
5:3R:131:ASN:O	5:3R:135:GLN:HG2	2.16	0.45
3:3C:163:TRP:O	3:3C:177:ARG:NH1	2.49	0.45
4:3D:201:LEU:HA	4:3D:204:ILE:HG12	1.98	0.45
1:3A:291:SER:N	2:3B:90:GLU:OE2	2.37	0.45
2:3B:25:GLU:HB3	2:3B:213:HIS:ND1	2.32	0.45
4:3D:96:PRO:O	4:3D:213:ASP:HB3	2.16	0.45
4:3D:122:LYS:O	4:3D:126:SER:OG	2.31	0.45
5:3E:157:SER:H	5:3E:269:ASP:HA	1.81	0.45
9:3J:47:ILE:HG13	9:3J:48:ASN:N	2.32	0.45
14:3P:504:U10:O5	14:3P:504:U10:H4M2	2.17	0.45
4:3Q:21:LEU:HD22	4:3Q:192:TRP:HB2	1.99	0.45
5:3R:155:LYS:HG3	5:3R:271:VAL:HG13	1.98	0.45
9:3W:18:SER:HB3	10:3X:24:TRP:NE1	2.31	0.45
9:3W:29:LEU:HD22	10:3X:34:TRP:CD1	2.52	0.45
1:3A:80:GLU:HG2	2:3B:284:HIS:HB2	1.99	0.44
1:3A:373:THR:HB	1:3A:374:PRO:HD3	1.98	0.44
2:3B:254:HIS:CD2	2:3B:327:ILE:HG12	2.51	0.44
4:3D:139:LEU:HD23	4:3D:139:LEU:HA	1.80	0.44
6:3F:52:ASP:O	6:3F:56:LYS:NZ	2.50	0.44
7:3G:74:LYS:NZ	8:3H:82:GLU:OE2	2.49	0.44
2:3O:196:GLN:HA	2:3O:227:ARG:HD2	1.98	0.44
3:3P:287:LYS:HB2	3:3P:287:LYS:HE2	1.77	0.44
1:3A:29:GLN:HA	1:3A:201:GLY:O	2.17	0.44
1:3A:158:PHE:O	1:3A:161:THR:OG1	2.34	0.44
1:3A:280:TYR:HB3	1:3A:307:PHE:CE1	2.52	0.44
3:3C:223:TYR:CZ	4:3D:319:LEU:HD11	2.52	0.44
2:3O:343:GLN:O	2:3O:346:THR:OG1	2.23	0.44
3:3P:319:PRO:HD2	6:3S:20:TYR:CE1	2.52	0.44
4:3Q:129:SER:O	4:3Q:133:GLY:N	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3A:364:ALA:HB2	5:3I:33:ALA:CB	2.47	0.44
1:3A:407:VAL:HA	1:3A:410:VAL:HG12	2.00	0.44
2:3B:78:LYS:HE3	2:3B:78:LYS:HB2	1.71	0.44
3:3C:41:LEU:O	3:3C:45:ILE:N	2.41	0.44
8:3H:57:LYS:O	8:3H:61:ARG:HG3	2.17	0.44
2:3O:87:ARG:HD3	2:3O:87:ARG:HA	1.76	0.44
2:3O:314:ALA:HA	5:3V:63:PRO:HD3	1.98	0.44
4:3Q:8:PRO:HG2	4:3Q:10:TYR:CE1	2.52	0.44
2:3B:84:LYS:HG3	6:3S:103:GLU:OE2	2.17	0.44
2:3B:133:ARG:HB2	2:3B:136:GLU:HG3	1.98	0.44
3:3C:236:MET:HG2	12:3E:302:3PE:H382	1.97	0.44
5:3E:242:HIS:O	5:3E:250:ARG:N	2.51	0.44
1:3N:17:SER:OG	1:3N:205:HIS:NE2	2.37	0.44
1:3N:161:THR:HG21	1:3N:234:CYS:HA	1.99	0.44
4:3Q:41:HIS:HB3	4:3Q:113:LEU:HD21	1.98	0.44
5:3R:263:TYR:HA	5:3R:273:VAL:O	2.17	0.44
1:3A:332:ASP:OD2	1:3A:430:GLN:NE2	2.50	0.44
12:3A:502:3PE:H2	12:3A:502:3PE:H221	1.64	0.44
2:3B:366:ALA:O	2:3B:370:MET:HB2	2.17	0.44
3:3C:5:ARG:NH1	3:3C:15:ASN:OD1	2.48	0.44
3:3C:244:LEU:HD23	4:3D:294:GLY:HA2	1.99	0.44
9:3J:52:LEU:HD12	9:3J:55:HIS:HE1	1.82	0.44
1:3N:76:GLU:CD	2:3O:289:SER:H	2.24	0.44
2:3O:338:LYS:HE3	2:3O:338:LYS:HB2	1.75	0.44
14:3P:504:U10:H72	14:3P:504:U10:H1M1	1.74	0.44
7:3T:50:PRO:HA	7:3T:53:VAL:HG12	1.99	0.44
3:3C:50:PHE:CE2	5:3E:140:MET:HE3	2.53	0.44
3:3C:233:LEU:HG	4:3D:301:MET:HE3	1.99	0.44
6:3F:67:TYR:O	6:3F:71:VAL:HG22	2.17	0.44
1:3N:333:ASP:O	1:3N:336:PHE:HB3	2.16	0.44
3:3P:360:LEU:HG	3:3P:365:LEU:HG	1.99	0.44
7:3T:49:ALA:N	7:3T:50:PRO:HD2	2.33	0.44
1:3A:324:PHE:CE2	1:3A:335:MET:HE2	2.52	0.44
1:3A:379:ILE:HG12	1:3A:389:ARG:HD3	1.97	0.44
2:3B:96:LEU:O	5:3I:70:LEU:N	2.50	0.44
2:3B:415:LYS:O	2:3B:419:SER:OG	2.29	0.44
11:3C:505:CDL:H121	11:3C:505:CDL:H511	1.99	0.44
12:3C:507:3PE:H231	12:3C:507:3PE:H332	2.00	0.44
1:3N:245:ASP:OD1	7:3T:11:ARG:HG2	2.17	0.44
5:3R:174:LEU:HD13	5:3R:214:ILE:HD13	2.00	0.44
5:3R:199:GLN:HB3	5:3R:204:ARG:HH21	1.81	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3B:117:GLU:OE1	2:3B:117:GLU:N	2.49	0.44
4:3D:231:LEU:HD23	4:3D:231:LEU:HA	1.79	0.44
4:3D:329:PRO:HD3	7:3G:14:HIS:CD2	2.53	0.44
7:3G:20:LEU:HD23	7:3G:21:SER:N	2.32	0.44
11:3G:102:CDL:H111	11:3G:102:CDL:HA4	1.62	0.44
1:3N:439:SER:OG	12:3N:503:3PE:H112	2.18	0.44
4:3Q:208:MET:O	4:3Q:212:MET:HB2	2.18	0.44
3:3C:138:MET:HE1	3:3C:267:HIS:O	2.18	0.44
6:3F:44:MET:HE1	6:3F:99:LYS:HB2	2.00	0.44
5:3I:34:LEU:HD22	5:3I:34:LEU:H	1.82	0.44
1:3N:15:GLN:OE1	1:3N:15:GLN:N	2.51	0.44
1:3N:24:ARG:HH21	1:3N:383:LEU:HB3	1.82	0.44
2:3O:56:ARG:HH12	2:3O:318:ASP:CG	2.26	0.44
4:3Q:41:HIS:HE1	15:3Q:501:HEC:C1A	2.29	0.44
5:3R:240:GLY:O	5:3R:242:HIS:N	2.51	0.44
3:3C:213:SER:OG	3:3C:217:LYS:NZ	2.51	0.43
1:3N:145:MET:HE2	1:3N:252:HIS:CD2	2.52	0.43
5:3R:183:GLU:O	5:3R:186:GLN:HG2	2.18	0.43
5:3R:224:PRO:HA	5:3R:237:PRO:HD3	2.00	0.43
5:3R:231:PHE:O	5:3R:250:ARG:NH1	2.50	0.43
6:3S:95:LYS:HE2	6:3S:95:LYS:HB2	1.71	0.43
8:3U:21:ARG:HG3	8:3U:65:ARG:HD2	2.00	0.43
1:3A:77:LYS:HE3	1:3A:77:LYS:HB2	1.67	0.43
5:3E:209:GLU:OE1	5:3E:209:GLU:N	2.43	0.43
8:3H:40:ASP:OD2	8:3H:43:THR:N	2.50	0.43
5:3R:240:GLY:HA2	5:3R:242:HIS:CE1	2.53	0.43
10:3X:40:LEU:HD23	10:3X:41:ILE:CD1	2.48	0.43
3:3C:54:HIS:O	3:3C:65:SER:OG	2.36	0.43
4:3D:319:LEU:HA	4:3D:322:ARG:HD3	2.00	0.43
6:3F:50:TYR:CD1	6:3F:50:TYR:C	2.96	0.43
6:3F:69:ASP:OD1	6:3F:69:ASP:C	2.61	0.43
1:3N:303:LEU:HD22	1:3N:330:SER:HB3	2.00	0.43
2:3O:166:ALA:O	2:3O:242:GLY:N	2.48	0.43
3:3P:132:VAL:HG11	3:3P:178:PHE:CD2	2.51	0.43
3:3P:160:LEU:HD12	3:3P:160:LEU:HA	1.82	0.43
1:3A:241:ILE:HD11	5:3E:85:VAL:HG22	2.00	0.43
2:3B:68:LEU:HD13	2:3B:144:LEU:HD11	1.99	0.43
2:3B:100:SER:HB2	2:3B:105:MET:HG2	2.00	0.43
2:3B:306:PRO:HA	5:3I:52:ARG:HB2	2.01	0.43
3:3P:220:PHE:HE2	14:3P:503:U10:H3M2	1.83	0.43
9:3W:33:ARG:HD2	9:3W:33:ARG:HA	1.81	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3A:145:MET:H	5:3I:47:ARG:NH1	2.16	0.43
2:3B:279:LEU:HD11	2:3B:344:VAL:HG22	2.00	0.43
3:3C:24:PRO:O	3:3C:224:TYR:OH	2.25	0.43
1:3N:131:ARG:HH22	1:3N:177:LEU:C	2.26	0.43
3:3P:125:ALA:O	3:3P:129:MET:HG3	2.19	0.43
4:3Q:51:LEU:HD12	4:3Q:51:LEU:HA	1.81	0.43
3:3C:89:MET:HE2	3:3C:89:MET:HB2	1.78	0.43
5:3E:143:SER:O	5:3E:147:LEU:HG	2.18	0.43
6:3F:54:ASP:OD1	6:3F:55:VAL:N	2.52	0.43
7:3G:57:PHE:CD1	7:3G:57:PHE:C	2.97	0.43
1:3N:255:ILE:HG21	1:3N:335:MET:HE1	1.99	0.43
10:3X:40:LEU:HD23	10:3X:41:ILE:HD12	2.01	0.43
2:3B:365:LYS:HG2	2:3B:399:LEU:HD22	2.00	0.43
7:3G:70:LYS:HE3	7:3G:70:LYS:HB2	1.85	0.43
12:3N:503:3PE:H2	12:3N:503:3PE:H221	1.39	0.43
2:3O:223:PHE:C	2:3O:223:PHE:CD1	2.96	0.43
2:3O:279:LEU:HB3	2:3O:295:LEU:HG	2.00	0.43
6:3S:45:GLU:OE1	6:3S:48:ARG:NH2	2.51	0.43
7:3T:68:LYS:HA	7:3T:71:ARG:HG2	1.99	0.43
3:3C:141:TRP:O	3:3C:144:THR:OG1	2.34	0.43
4:3D:300:MET:HE3	9:3J:36:PHE:CE2	2.54	0.43
9:3J:52:LEU:HD12	9:3J:52:LEU:H	1.82	0.43
1:3N:45:SER:HB3	1:3N:92:ARG:HG2	2.00	0.43
2:3O:27:THR:HG21	2:3O:217:LYS:NZ	2.34	0.43
3:3P:32:ASN:ND2	11:3T:101:CDL:H721	2.34	0.43
3:3P:350:ILE:HD11	7:3T:61:TRP:HZ3	1.83	0.43
7:3T:53:VAL:O	7:3T:57:LEU:HG	2.18	0.43
11:3T:102:CDL:HB62	11:3T:102:CDL:H712	1.22	0.43
8:3U:35:GLU:HA	8:3U:38:GLU:OE2	2.18	0.43
1:3A:17:SER:OG	1:3A:205:HIS:NE2	2.45	0.43
2:3B:193:TYR:O	2:3B:197:ASN:ND2	2.39	0.43
3:3C:302:ILE:HD12	3:3C:302:ILE:HA	1.81	0.43
3:3C:360:LEU:HG	3:3C:365:LEU:CD2	2.48	0.43
4:3D:108:SER:N	9:3J:48:ASN:OD1	2.51	0.43
5:3E:187:GLU:HG2	5:3E:245:ALA:HB3	2.00	0.43
6:3F:65:ASN:OD1	6:3F:65:ASN:N	2.52	0.43
1:3N:280:TYR:HA	1:3N:284:TYR:CE2	2.54	0.43
4:3Q:27:ARG:HB2	4:3Q:55:CYS:HB2	2.01	0.43
5:3E:235:TYR:HD1	5:3E:242:HIS:HB3	1.84	0.43
8:3H:40:ASP:OD2	8:3H:42:LEU:HB3	2.18	0.43
1:3N:306:SER:O	1:3N:306:SER:OG	2.32	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3N:428:ILE:HD13	1:3N:431:LEU:HD23	2.00	0.43
2:3O:261:SER:HB3	2:3O:322:PHE:HB2	2.01	0.43
6:3S:82:LYS:HD3	6:3S:82:LYS:N	2.34	0.43
9:3W:37:GLN:OE1	10:3X:47:TYR:OH	2.29	0.43
1:3A:244:ARG:CZ	1:3A:429:GLU:HB2	2.49	0.42
1:3A:375:VAL:O	1:3A:379:ILE:HG13	2.18	0.42
14:3C:503:U10:H172	14:3C:503:U10:H151	1.62	0.42
5:3E:219:HIS:O	5:3E:220:LEU:HB2	2.19	0.42
5:3E:222:CYS:HB3	5:3E:238:CYS:HB3	1.85	0.42
6:3F:97:GLU:OE1	6:3F:97:GLU:HA	2.19	0.42
7:3G:40:LEU:HD13	7:3G:40:LEU:HA	1.92	0.42
1:3N:346:CYS:SG	1:3N:411:CYS:HB3	2.59	0.42
2:3O:171:ALA:HB3	2:3O:237:ALA:HB2	2.00	0.42
2:3O:387:LEU:HD23	2:3O:387:LEU:HA	1.77	0.42
3:3P:286:ASN:OD1	3:3P:289:GLY:N	2.43	0.42
3:3P:357:LEU:HD12	3:3P:361:ILE:HG13	2.01	0.42
6:3S:53:ASN:OD1	6:3S:54:LEU:N	2.51	0.42
7:3T:18:LEU:HA	7:3T:18:LEU:HD12	1.81	0.42
8:3U:21:ARG:O	8:3U:25:GLU:HG3	2.18	0.42
10:3Y:39:ARG:HG2	10:3Y:39:ARG:HH11	1.84	0.42
5:3E:207:LYS:HD3	5:3E:207:LYS:HA	1.91	0.42
6:3F:84:GLN:HG2	6:3F:84:GLN:O	2.19	0.42
1:3N:235:ARG:NH1	5:3R:99:SER:HA	2.34	0.42
1:3N:350:THR:O	1:3N:354:VAL:HG23	2.19	0.42
2:3O:49:LEU:HD11	2:3O:204:MET:HE2	2.00	0.42
5:3R:190:VAL:HG22	5:3R:250:ARG:NH1	2.34	0.42
6:3S:41:ASP:OD1	6:3S:41:ASP:N	2.48	0.42
3:3C:315:MET:HE1	3:3C:321:SER:C	2.44	0.42
1:3N:15:GLN:CD	1:3N:15:GLN:H	2.27	0.42
1:3N:329:MET:HE1	7:3T:6:HIS:CE1	2.55	0.42
2:3O:71:LEU:HD22	2:3O:144:LEU:HD23	2.01	0.42
2:3O:152:PHE:CD1	2:3O:158:GLN:HG2	2.54	0.42
4:3Q:151:PRO:HA	4:3Q:156:GLN:HG3	2.01	0.42
4:3Q:163:PRO:HG2	4:3Q:164:ILE:HG12	2.01	0.42
5:3R:169:TRP:HB2	5:3R:170:ARG:HH21	1.85	0.42
6:3S:18:LYS:O	6:3S:22:ASN:ND2	2.39	0.42
7:3T:50:PRO:O	7:3T:54:VAL:HG13	2.19	0.42
7:3T:61:TRP:CZ2	7:3T:65:GLU:HG3	2.54	0.42
8:3U:19:THR:HG22	8:3U:23:GLN:HE21	1.83	0.42
9:3W:57:HIS:CD2	9:3W:57:HIS:H	2.38	0.42
10:3X:23:MET:HE2	10:3X:23:MET:HB2	1.94	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3A:149:VAL:HG21	1:3A:252:HIS:HB2	2.01	0.42
2:3B:275:LEU:HD13	2:3B:410:VAL:HG12	2.01	0.42
3:3C:28:SER:HB2	11:3C:505:CDL:HA21	2.00	0.42
3:3C:94:LEU:HD23	3:3C:94:LEU:HA	1.81	0.42
5:3E:208:PRO:HG2	5:3E:209:GLU:OE1	2.19	0.42
5:3I:51:CYS:HB2	5:3I:54:SER:HB3	2.00	0.42
1:3N:69:ASN:HB2	1:3N:115:ASP:OD2	2.20	0.42
3:3P:160:LEU:O	3:3P:164:ILE:HG12	2.20	0.42
3:3P:253:PRO:HD2	4:3Q:121:HIS:NE2	2.34	0.42
5:3R:209:GLU:H	5:3R:209:GLU:CD	2.28	0.42
12:3R:302:3PE:H2B1	12:3R:302:3PE:H271	2.01	0.42
1:3A:281:ASP:HA	1:3A:306:SER:HA	2.01	0.42
2:3B:327:ILE:HD13	5:3I:58:GLN:HB2	2.02	0.42
3:3C:77:TRP:CE2	3:3C:78:VAL:HG23	2.54	0.42
5:3E:207:LYS:HG2	5:3E:210:TRP:HE3	1.84	0.42
6:3F:82:MET:HG3	6:3F:83:ARG:N	2.33	0.42
1:3N:40:TRP:CZ2	1:3N:377:GLU:HA	2.55	0.42
12:3N:501:3PE:O32	11:3N:502:CDL:H512	2.19	0.42
4:3Q:237:TYR:HB2	6:3S:60:PHE:CE1	2.54	0.42
7:3T:67:GLU:CD	7:3T:68:LYS:HD2	2.44	0.42
8:3U:28:GLU:HA	8:3U:31:ILE:HB	2.01	0.42
2:3B:283:PRO:HD3	5:3I:57:GLY:HA2	2.02	0.42
2:3B:310:SER:HB3	5:3I:59:ALA:HB3	2.01	0.42
4:3D:171:ARG:HH12	4:3D:174:LYS:H	1.67	0.42
1:3N:163:LEU:HD23	1:3N:163:LEU:HA	1.80	0.42
12:3N:501:3PE:H12	3:3P:4:ILE:HG13	2.01	0.42
3:3P:97:HIS:CE1	3:3P:100:ARG:HH22	2.37	0.42
3:3P:117:VAL:N	13:3P:502:HEM:HBC2	2.34	0.42
3:3P:235:MET:SD	3:3P:236:MET:HE2	2.59	0.42
4:3Q:178:THR:O	4:3Q:182:VAL:HG23	2.20	0.42
5:3R:178:HIS:ND1	5:3R:209:GLU:O	2.34	0.42
5:3R:242:HIS:ND1	5:3R:251:LYS:HB2	2.35	0.42
6:3S:33:ARG:NH2	6:3S:91:GLU:OE2	2.53	0.42
1:3A:5:ALA:HA	1:3A:8:LEU:HD12	2.01	0.42
1:3A:324:PHE:CG	1:3A:334:MET:HG2	2.55	0.42
1:3A:346:CYS:SG	1:3A:412:SER:HA	2.59	0.42
1:3N:394:GLU:O	1:3N:398:ARG:HG3	2.19	0.42
1:3N:442:PHE:CE2	12:3N:503:3PE:H111	2.54	0.42
14:3P:503:U10:H1M1	14:3P:503:U10:H72	1.81	0.42
5:3R:194:GLN:CD	5:3R:194:GLN:H	2.28	0.42
1:3A:136:GLN:HB3	5:3I:50:LEU:HD12	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:3D:102:HIS:HB3	4:3D:109:LEU:HA	2.02	0.42
5:3E:161:GLU:HA	5:3E:178:HIS:HB3	2.01	0.42
2:3O:264:THR:HG22	2:3O:316:TYR:O	2.20	0.42
4:3Q:212:MET:O	4:3Q:216:LEU:HB2	2.20	0.42
5:3R:225:ILE:HD12	5:3R:229:GLY:HA2	2.02	0.42
5:3V:49:PHE:HB3	5:3V:55:LEU:HD22	2.02	0.42
1:3A:29:GLN:HB2	1:3A:203:VAL:O	2.19	0.42
2:3B:261:SER:OG	2:3B:322:PHE:N	2.53	0.42
2:3B:312:PHE:HA	5:3I:61:GLY:HA2	2.02	0.42
3:3C:234:PHE:O	3:3C:237:LEU:HB3	2.20	0.42
5:3E:223:VAL:HG11	4:3Q:147:LEU:HD21	2.02	0.42
7:3G:52:PRO:HA	7:3G:55:VAL:HG22	2.01	0.42
8:3H:53:GLU:OE2	8:3H:54:LYS:NZ	2.48	0.42
1:3N:88:ALA:O	2:3O:286:LYS:NZ	2.43	0.42
3:3P:243:VAL:O	3:3P:247:PRO:HG3	2.20	0.42
3:3C:114:ASN:O	3:3C:118:VAL:HG23	2.20	0.42
3:3C:162:GLU:OE1	3:3C:162:GLU:N	2.37	0.42
3:3C:299:LEU:O	3:3C:302:ILE:HG22	2.19	0.42
12:3N:503:3PE:H32	3:3P:221:HIS:CE1	2.53	0.42
3:3C:318:ARG:HB3	3:3C:321:SER:HB2	2.02	0.41
4:3D:93:LEU:H	4:3D:93:LEU:HD23	1.85	0.41
4:3D:322:ARG:H	4:3D:322:ARG:HG3	1.71	0.41
5:3E:167:PHE:HB3	5:3E:169:TRP:HE1	1.85	0.41
1:3N:211:LEU:HA	1:3N:211:LEU:HD23	1.80	0.41
1:3N:356:ARG:HG3	2:3O:91:ALA:HA	2.02	0.41
2:3O:116:ILE:O	2:3O:117:GLU:C	2.63	0.41
3:3P:131:TYR:O	3:3P:134:PRO:HD2	2.20	0.41
4:3Q:198:HIS:NE2	4:3Q:202:LYS:HE2	2.35	0.41
5:3R:159:ILE:HD11	5:3R:163:LYS:HB2	2.02	0.41
5:3R:224:PRO:HB2	5:3R:234:TYR:HB3	2.02	0.41
1:3A:395:TRP:O	1:3A:399:ILE:HD12	2.20	0.41
2:3B:133:ARG:NH2	6:3S:96:GLU:OE2	2.53	0.41
2:3B:397:THR:HA	2:3B:400:GLN:NE2	2.23	0.41
4:3D:252:PRO:CB	15:3D:501:HEC:HHC	2.50	0.41
5:3E:155:LYS:N	5:3E:270:LEU:O	2.52	0.41
8:3H:65:CYS:O	8:3H:69:VAL:HG22	2.20	0.41
5:3R:205:VAL:HA	5:3R:263:TYR:OH	2.20	0.41
1:3A:175:ARG:HE	1:3A:175:ARG:HB2	1.58	0.41
2:3B:131:GLU:OE1	2:3B:133:ARG:NH1	2.53	0.41
2:3B:278:VAL:HG11	2:3B:352:LEU:HD11	2.03	0.41
4:3D:96:PRO:HG2	4:3D:98:TYR:CE2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:3D:204:ILE:HG22	4:3D:208:ARG:HG2	2.03	0.41
6:3F:110:ILE:HD13	6:3F:110:ILE:HA	1.92	0.41
8:3H:48:GLN:HE22	8:3H:97:LYS:HE2	1.85	0.41
1:3N:336:PHE:HZ	12:3N:501:3PE:H111	1.85	0.41
2:3O:24:LEU:HD23	2:3O:392:TYR:CD2	2.54	0.41
2:3O:378:PHE:O	2:3O:382:VAL:HG23	2.20	0.41
3:3P:89:MET:HB3	3:3P:89:MET:HE3	1.62	0.41
3:3P:91:PHE:CD2	3:3P:273:TYR:CG	3.08	0.41
5:3R:205:VAL:HG21	5:3R:210:TRP:O	2.19	0.41
1:3A:91:THR:OG1	1:3A:92:ARG:N	2.52	0.41
1:3A:360:ILE:HG23	5:3I:33:ALA:CB	2.50	0.41
2:3B:241:GLY:HA3	2:3B:421:ARG:NH1	2.35	0.41
9:3J:9:ARG:H	9:3J:9:ARG:HG2	1.61	0.41
1:3N:149:VAL:HG21	1:3N:252:HIS:CB	2.50	0.41
3:3P:154:PRO:O	3:3P:156:ILE:N	2.51	0.41
3:3P:313:ARG:HB2	6:3S:38:TYR:CD1	2.56	0.41
4:3Q:211:MET:HG2	4:3Q:215:LEU:HD12	2.01	0.41
17:3R:303:PC1:O14	17:3R:303:PC1:H121	2.20	0.41
1:3A:301:ARG:NH2	3:3C:2:THR:HG22	2.33	0.41
2:3B:53:ALA:O	2:3B:105:MET:HE2	2.21	0.41
2:3B:57:TYR:HB3	2:3B:198:HIS:CE1	2.56	0.41
2:3B:103:GLU:CD	2:3B:317:SER:H	2.28	0.41
3:3C:68:HIS:HD2	3:3C:72:ASP:HB2	1.86	0.41
4:3D:216:PHE:O	4:3D:220:THR:HG23	2.21	0.41
1:3N:155:ALA:HA	1:3N:164:ALA:HB1	2.03	0.41
1:3N:297:VAL:HG22	3:3P:1:MET:HE1	2.03	0.41
3:3P:108:MET:HB2	3:3P:313:ARG:NH2	2.35	0.41
3:3P:321:SER:OG	3:3P:373:GLU:OE2	2.38	0.41
5:3R:119:ALA:O	5:3R:123:VAL:HG12	2.20	0.41
8:3U:40:CYS:HA	8:3U:43:ARG:HH21	1.85	0.41
1:3A:312:ILE:O	1:3A:319:LEU:N	2.47	0.41
1:3A:436:ARG:NH2	3:3C:20:ASP:OD1	2.41	0.41
2:3B:215:VAL:O	2:3B:219:VAL:HG12	2.20	0.41
3:3C:313:ARG:HB3	6:3F:50:TYR:CG	2.55	0.41
4:3D:111:HIS:CD2	9:3J:52:LEU:HA	2.50	0.41
4:3D:189:ALA:HB1	4:3D:198:PRO:HD2	2.03	0.41
4:3D:201:LEU:HB3	4:3D:279:LEU:HD11	2.03	0.41
5:3E:155:LYS:HD2	5:3E:167:PHE:CD2	2.56	0.41
5:3E:270:LEU:O	5:3E:271:VAL:C	2.63	0.41
6:3F:49:ILE:HG21	6:3F:55:VAL:HG21	2.02	0.41
1:3N:51:LYS:HB3	1:3N:51:LYS:HE2	1.89	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3N:436:ARG:HD2	1:3N:436:ARG:HA	1.76	0.41
2:3O:164:HIS:NE2	2:3O:316:TYR:OH	2.53	0.41
3:3P:112:THR:HB	3:3P:196:HIS:HE1	1.86	0.41
3:3P:287:LYS:H	3:3P:287:LYS:HD3	1.85	0.41
4:3Q:19:SER:HA	9:3W:47:ASN:OD1	2.21	0.41
4:3Q:231:LYS:NZ	11:3T:101:CDL:O1	2.53	0.41
5:3R:242:HIS:O	5:3R:250:ARG:HB3	2.19	0.41
1:3A:86:LEU:HD12	1:3A:87:ASN:H	1.86	0.41
2:3B:169:ARG:HB3	2:3B:238:LYS:HB2	2.03	0.41
3:3C:287:LYS:O	3:3C:291:VAL:HG23	2.21	0.41
4:3D:121:TYR:OH	4:3D:131:MET:HB3	2.20	0.41
9:3J:14:LEU:HD12	9:3J:15:PHE:CD1	2.56	0.41
1:3N:61:HIS:CG	1:3N:134:ILE:HD11	2.56	0.41
2:3O:24:LEU:HD12	2:3O:25:GLU:H	1.84	0.41
5:3R:241:SER:N	5:3R:251:LYS:O	2.53	0.41
7:3T:40:ARG:HB3	11:3T:102:CDL:HB31	2.02	0.41
10:3Y:38:TRP:CG	12:3Y:101:3PE:H221	2.55	0.41
1:3A:40:TRP:CZ2	1:3A:377:GLU:HA	2.55	0.41
1:3A:277:ILE:HB	1:3A:309:THR:HG21	2.02	0.41
3:3C:114:ASN:ND2	3:3C:302:ILE:HD11	2.34	0.41
3:3C:270:PRO:HD2	3:3C:275:LEU:HD23	2.03	0.41
5:3E:222:CYS:N	16:3E:301:FES:S2	2.94	0.41
5:3E:241:SER:H	5:3E:251:LYS:C	2.23	0.41
6:3F:44:MET:HB2	6:3F:47:ASP:OD2	2.20	0.41
1:3N:214:LYS:HD3	1:3N:214:LYS:N	2.36	0.41
3:3P:211:ILE:HG12	6:3S:35:ASP:O	2.21	0.41
14:3P:503:U10:H3M3	14:3P:503:U10:C4M	2.33	0.41
4:3Q:180:SER:HB2	8:3U:77:LEU:HD11	2.02	0.41
6:3S:87:LYS:H	6:3S:87:LYS:HG2	1.73	0.41
8:3U:17:LEU:HD11	8:3U:21:ARG:NH1	2.36	0.41
1:3A:36:THR:O	1:3A:199:ALA:HA	2.20	0.41
1:3A:87:ASN:HB3	1:3A:98:TYR:CE1	2.56	0.41
1:3A:240:GLU:CD	7:3G:19:SER:HB3	2.46	0.41
1:3A:353:GLU:H	1:3A:353:GLU:HG2	1.69	0.41
2:3B:250:ASP:OD1	2:3B:428:GLY:HA2	2.21	0.41
3:3C:51:LEU:HD12	3:3C:83:HIS:CD2	2.56	0.41
3:3C:180:ALA:O	3:3C:184:ILE:HG22	2.20	0.41
3:3C:235:MET:HE2	3:3C:235:MET:HB3	1.93	0.41
3:3C:236:MET:HB2	3:3C:236:MET:HE2	1.82	0.41
5:3E:154:ILE:HG23	5:3E:270:LEU:HG	2.03	0.41
5:3E:173:PRO:HD3	5:3E:216:VAL:CG1	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:3E:174:LEU:HD22	5:3E:213:LEU:O	2.21	0.41
5:3E:177:ARG:NH1	5:3E:233:GLY:HA3	2.36	0.41
5:3E:191:GLU:HG3	5:3E:194:GLN:H	1.86	0.41
5:3I:35:PRO:O	5:3I:36:ALA:C	2.63	0.41
5:3I:62:ARG:HA	5:3I:62:ARG:HD2	1.92	0.41
1:3N:236:PHE:CG	1:3N:258:GLU:HB2	2.56	0.41
1:3N:239:SER:HB2	7:3T:17:SER:O	2.20	0.41
1:3N:290:MET:HE2	1:3N:290:MET:HB3	1.79	0.41
2:3O:47:ILE:HD13	2:3O:116:ILE:HG21	2.03	0.41
3:3P:173:ALA:HB1	3:3P:177:ARG:NH1	2.36	0.41
3:3P:327:MET:HE3	3:3P:327:MET:HB2	1.90	0.41
4:3Q:117:VAL:HG12	4:3Q:191:ARG:HH21	1.84	0.41
5:3R:128:ALA:HB1	12:3R:302:3PE:H392	2.03	0.41
5:3R:244:ASP:CB	5:3R:248:ARG:HG2	2.51	0.41
6:3S:96:GLU:HA	6:3S:99:ARG:NH1	2.35	0.41
9:3W:9:LEU:HD22	9:3W:13:LEU:HD11	2.02	0.41
1:3A:27:SER:HA	1:3A:199:ALA:O	2.21	0.41
1:3A:320:LEU:HD21	1:3A:415:PHE:CZ	2.56	0.41
3:3C:77:TRP:CD1	4:3D:286:GLU:HG3	2.55	0.41
5:3E:111:LYS:HZ2	5:3E:111:LYS:HG3	1.69	0.41
6:3F:54:ASP:OD1	6:3F:54:ASP:C	2.64	0.41
8:3H:43:THR:HG22	8:3H:47:GLU:OE1	2.20	0.41
9:3J:31:PHE:HE1	10:3Y:48:ILE:HD11	1.86	0.41
1:3N:431:LEU:HD12	1:3N:432:PRO:HD2	2.03	0.41
2:3O:71:LEU:HD11	2:3O:147:ASP:OD2	2.21	0.41
4:3Q:216:LEU:HD23	4:3Q:216:LEU:HA	1.80	0.41
5:3R:265:PHE:HB2	5:3R:271:VAL:HA	2.02	0.41
1:3A:280:TYR:HA	1:3A:284:TYR:CE2	2.56	0.40
1:3A:305:GLN:NE2	5:3I:42:VAL:HG12	2.36	0.40
2:3B:95:LYS:HE3	2:3B:95:LYS:HB3	1.80	0.40
2:3B:109:VAL:HG11	2:3B:119:LEU:HB3	2.02	0.40
2:3B:201:SER:HB2	2:3B:228:GLY:HA2	2.03	0.40
3:3C:357:LEU:HD23	3:3C:361:ILE:HG13	2.01	0.40
4:3D:315:LYS:HD3	4:3D:315:LYS:HA	1.96	0.40
7:3G:15:VAL:O	7:3G:16:ILE:HD13	2.21	0.40
3:3P:113:TRP:NE1	3:3P:301:LEU:O	2.32	0.40
4:3Q:113:LEU:HD12	4:3Q:116:ILE:HG21	2.01	0.40
4:3Q:208:MET:HA	12:3R:302:3PE:H341	2.03	0.40
5:3R:160:PRO:O	5:3R:178:HIS:HB3	2.21	0.40
8:3U:47:ARG:HB3	8:3U:50:THR:HB	2.02	0.40
1:3A:68:LYS:HE3	1:3A:121:SER:HA	2.01	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3A:219:LEU:HG	1:3A:220:SER:H	1.86	0.40
3:3C:132:VAL:HA	3:3C:139:SER:OG	2.21	0.40
4:3D:142:VAL:HG11	4:3D:281:TRP:CE2	2.56	0.40
5:3E:125:VAL:HG21	17:3E:303:PC1:C36	2.51	0.40
6:3F:30:LYS:HA	6:3F:30:LYS:HE2	2.02	0.40
2:3O:65:THR:HG23	2:3O:191:LEU:HD23	2.02	0.40
3:3P:180:ALA:O	3:3P:184:ILE:HG22	2.22	0.40
5:3R:143:SER:O	5:3R:147:LEU:HG	2.21	0.40
1:3A:148:VAL:HG22	5:3E:80:HIS:CG	2.55	0.40
3:3C:150:LEU:HD23	3:3C:150:LEU:HA	1.84	0.40
3:3C:216:ASP:OD1	6:3F:75:LYS:NZ	2.53	0.40
4:3D:146:GLU:HG2	4:3D:147:GLU:N	2.36	0.40
5:3E:176:VAL:HB	5:3E:212:ILE:HG23	2.02	0.40
5:3E:239:HIS:HE2	5:3E:241:SER:HB2	1.86	0.40
6:3F:61:ARG:HD3	2:3O:135:TRP:CE2	2.56	0.40
2:3O:264:THR:HB	2:3O:315:SER:HB2	2.03	0.40
4:3Q:134:TYR:HE1	4:3Q:150:ASN:HD22	1.68	0.40
17:3X:101:PC1:H232	17:3X:101:PC1:O32	2.21	0.40
1:3A:45:SER:OG	1:3A:167:VAL:HA	2.21	0.40
3:3C:91:PHE:CD2	3:3C:273:TYR:CG	3.10	0.40
1:3N:208:LEU:HD12	1:3N:208:LEU:HA	1.91	0.40
3:3P:223:TYR:CZ	4:3Q:230:LEU:HD23	2.56	0.40
6:3S:80:TRP:O	6:3S:82:LYS:HD3	2.22	0.40
3:3C:50:PHE:HA	3:3C:53:MET:SD	2.62	0.40
3:3C:157:GLY:HA2	3:3C:160:LEU:HD12	2.04	0.40
3:3C:234:PHE:CE1	3:3C:237:LEU:HD23	2.56	0.40
14:3C:504:U10:O2	14:3C:504:U10:C3M	2.70	0.40
4:3D:286:GLU:O	4:3D:290:ARG:HB2	2.22	0.40
1:3N:122:LEU:HD23	1:3N:122:LEU:HA	1.93	0.40
1:3N:224:VAL:HG13	1:3N:225:GLU:N	2.36	0.40
1:3N:251:ALA:HB1	1:3N:428:ILE:HG22	2.03	0.40
2:3O:26:PHE:CE1	2:3O:36:ALA:HB2	2.56	0.40
3:3P:240:LEU:HB3	4:3Q:208:MET:HG3	2.03	0.40
14:3P:504:U10:O5	14:3P:504:U10:C4M	2.70	0.40
5:3V:77:ARG:HD2	5:3V:77:ARG:O	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	3A	436/480 (91%)	408 (94%)	27 (6%)	1 (0%)	43	72
1	3N	444/480 (92%)	409 (92%)	34 (8%)	1 (0%)	43	72
2	3B	414/453 (91%)	393 (95%)	21 (5%)	0	100	100
2	3O	413/453 (91%)	384 (93%)	29 (7%)	0	100	100
3	3C	377/379 (100%)	356 (94%)	21 (6%)	0	100	100
3	3P	377/379 (100%)	358 (95%)	17 (4%)	2 (0%)	24	57
4	3D	235/325 (72%)	217 (92%)	18 (8%)	0	100	100
4	3Q	237/325 (73%)	221 (93%)	16 (7%)	0	100	100
5	3E	194/274 (71%)	170 (88%)	22 (11%)	2 (1%)	12	45
5	3I	45/274 (16%)	36 (80%)	9 (20%)	0	100	100
5	3R	194/274 (71%)	166 (86%)	26 (13%)	2 (1%)	12	45
5	3V	29/274 (11%)	28 (97%)	1 (3%)	0	100	100
6	3F	96/111 (86%)	95 (99%)	1 (1%)	0	100	100
6	3S	96/111 (86%)	95 (99%)	0	1 (1%)	12	45
7	3G	70/82 (85%)	69 (99%)	1 (1%)	0	100	100
7	3T	72/82 (88%)	68 (94%)	4 (6%)	0	100	100
8	3H	63/91 (69%)	60 (95%)	3 (5%)	0	100	100
8	3U	63/91 (69%)	59 (94%)	4 (6%)	0	100	100
9	3J	54/64 (84%)	50 (93%)	4 (7%)	0	100	100
9	3W	54/64 (84%)	53 (98%)	1 (2%)	0	100	100
10	3X	50/56 (89%)	44 (88%)	4 (8%)	2 (4%)	2	20
10	3Y	49/56 (88%)	43 (88%)	6 (12%)	0	100	100
All	All	4062/5178 (78%)	3782 (93%)	269 (7%)	11 (0%)	37	65

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	3A	350	THR
5	3E	271	VAL
3	3P	224	TYR
5	3R	158	ASP
6	3S	33	ARG
10	3X	47	TYR
3	3P	110	LEU
5	3R	241	SER
1	3N	224	VAL
10	3X	46	PRO
5	3E	154	ILE

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	3A	367/397 (92%)	365 (100%)	2 (0%)	81	80
1	3N	372/397 (94%)	357 (96%)	15 (4%)	28	54
2	3B	328/355 (92%)	327 (100%)	1 (0%)	86	83
2	3O	327/355 (92%)	324 (99%)	3 (1%)	70	76
3	3C	332/332 (100%)	329 (99%)	3 (1%)	70	76
3	3P	332/332 (100%)	327 (98%)	5 (2%)	57	70
4	3D	202/258 (78%)	202 (100%)	0	100	100
4	3Q	204/258 (79%)	201 (98%)	3 (2%)	57	70
5	3E	166/225 (74%)	165 (99%)	1 (1%)	78	79
5	3I	36/225 (16%)	34 (94%)	2 (6%)	19	47
5	3R	166/225 (74%)	164 (99%)	2 (1%)	63	73
5	3V	24/225 (11%)	24 (100%)	0	100	100
6	3F	90/99 (91%)	89 (99%)	1 (1%)	65	74
6	3S	90/99 (91%)	90 (100%)	0	100	100
7	3G	67/73 (92%)	66 (98%)	1 (2%)	57	70
7	3T	67/73 (92%)	67 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	3H	62/85 (73%)	61 (98%)	1 (2%)	55	69
8	3U	62/85 (73%)	62 (100%)	0	100	100
9	3J	46/52 (88%)	46 (100%)	0	100	100
9	3W	46/52 (88%)	46 (100%)	0	100	100
10	3X	42/46 (91%)	42 (100%)	0	100	100
10	3Y	41/46 (89%)	40 (98%)	1 (2%)	43	63
All	All	3469/4294 (81%)	3428 (99%)	41 (1%)	61	73

All (41) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	3A	16	VAL
1	3A	195	MET
2	3B	253	VAL
3	3C	229	ILE
3	3C	268	ILE
3	3C	271	GLU
5	3E	120	THR
6	3F	52	ASP
7	3G	69	GLU
8	3H	62	LEU
5	3I	34	LEU
5	3I	37	THR
1	3N	9	GLN
1	3N	28	GLU
1	3N	112	LEU
1	3N	116	ILE
1	3N	117	VAL
1	3N	121	SER
1	3N	132	ASP
1	3N	134	ILE
1	3N	177	LEU
1	3N	181	ASP
1	3N	184	GLU
1	3N	195	MET
1	3N	207[A]	GLN
1	3N	207[B]	GLN
1	3N	219	LEU
2	3O	109	VAL
2	3O	154	ASN

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Mol	Chain	Res	Type
2	3O	183	ILE
3	3P	43	LEU
3	3P	89	MET
3	3P	91	PHE
3	3P	311	LYS
3	3P	373	GLU
4	3Q	21	LEU
4	3Q	71	GLN
4	3Q	113	LEU
5	3R	176	VAL
5	3R	180	THR
10	3Y	40	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
1	3A	21	ASN
1	3A	94	HIS
1	3A	252	HIS
1	3A	271	GLN
1	3A	305	GLN
2	3B	153	GLN
2	3B	162	ASN
2	3B	174	ASN
2	3B	297	GLN
3	3C	137	GLN
3	3C	201	HIS
4	3D	193	ASN
4	3D	245	GLN
5	3E	80	HIS
5	3E	194	GLN
5	3E	199	GLN
7	3G	75	ASN
8	3H	100	ASN
1	3N	126	GLN
1	3N	271	GLN
1	3N	359	ASN
2	3O	125	ASN
2	3O	141	GLN
2	3O	276	GLN
2	3O	394	GLN
3	3P	15	ASN

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Mol	Chain	Res	Type
3	3P	26	ASN
3	3P	352	GLN
3	3P	374	ASN
4	3Q	71	GLN
4	3Q	106	ASN
4	3Q	121	HIS
4	3Q	166	ASN
5	3R	131	ASN
5	3R	135	GLN
5	3R	242	HIS
8	3U	23	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

32 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
12	3PE	3G	101	-	28,28,50	0.34	0	31,33,55	0.42	0
15	HEC	3Q	501	4	46,50,50	2.58	26 (56%)	58,82,82	2.04	18 (31%)
12	3PE	3R	302	-	46,46,50	0.28	0	49,51,55	0.42	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
11	CDL	3C	505	-	51,51,99	0.36	0	57,63,111	0.45	0
12	3PE	3C	506	-	34,34,50	0.32	0	37,39,55	0.45	0
12	3PE	3E	302	-	32,32,50	0.34	0	35,37,55	0.45	0
11	CDL	3T	101	-	56,56,99	0.35	0	62,68,111	0.42	0
12	3PE	3N	503	-	24,24,50	0.38	0	27,29,55	0.60	0
17	PC1	3X	101	-	28,28,53	0.37	0	34,36,61	0.40	0
11	CDL	3G	102	-	55,55,99	0.35	0	61,67,111	0.60	1 (1%)
12	3PE	3A	502	-	26,26,50	0.36	0	29,31,55	0.71	1 (3%)
13	HEM	3P	502	3	50,50,50	1.60	9 (18%)	67,82,82	1.61	12 (17%)
14	U10	3P	503	-	32,32,63	0.86	3 (9%)	40,41,79	1.31	5 (12%)
17	PC1	3E	303	-	46,46,53	0.29	0	52,54,61	0.29	0
11	CDL	3N	502	-	42,42,99	0.39	0	48,54,111	0.57	1 (2%)
17	PC1	3R	303	-	44,44,53	0.30	0	50,52,61	0.33	0
13	HEM	3C	502	3	50,50,50	1.60	9 (18%)	67,82,82	1.65	12 (17%)
16	FES	3R	301	5	0,4,4	-	-	-	-	-
14	U10	3C	503	-	28,28,63	0.95	2 (7%)	36,37,79	1.12	6 (16%)
15	HEC	3D	501	4	44,49,50	2.71	25 (56%)	56,80,82	1.89	14 (25%)
12	3PE	3A	503	-	31,31,50	0.33	0	34,36,55	0.50	0
13	HEM	3P	501	3	50,50,50	1.61	9 (18%)	67,82,82	1.67	11 (16%)
14	U10	3P	504	-	32,32,63	0.76	1 (3%)	40,41,79	1.01	5 (12%)
13	HEM	3C	501	3	50,50,50	1.60	9 (18%)	67,82,82	1.70	12 (17%)
12	3PE	3P	505	-	32,32,50	0.33	0	35,37,55	0.38	0
12	3PE	3Y	101	-	29,29,50	0.35	0	32,34,55	0.42	0
11	CDL	3T	102	-	55,55,99	0.36	0	61,67,111	0.52	1 (1%)
14	U10	3C	504	-	23,23,63	0.93	2 (8%)	30,31,79	1.21	5 (16%)
12	3PE	3C	507	-	33,33,50	0.33	0	36,38,55	0.40	0
12	3PE	3N	501	-	31,31,50	0.34	0	34,36,55	0.40	0
11	CDL	3A	501	-	57,57,99	0.35	0	63,69,111	0.52	0
16	FES	3E	301	5	0,4,4	-	-	-	-	-

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
12	3PE	3G	101	-	-	6/32/32/54	-
15	HEC	3Q	501	4	-	3/14/54/54	-
12	3PE	3R	302	-	-	12/50/50/54	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	CDL	3C	505	-	-	11/62/62/110	-
12	3PE	3C	506	-	-	5/38/38/54	-
12	3PE	3E	302	-	-	2/36/36/54	-
11	CDL	3T	101	-	-	16/67/67/110	-
12	3PE	3N	503	-	-	7/28/28/54	-
17	PC1	3X	101	-	-	9/32/32/57	-
11	CDL	3G	102	-	-	14/66/66/110	-
12	3PE	3A	502	-	-	2/30/30/54	-
13	HEM	3P	502	3	-	8/14/54/54	-
14	U10	3P	503	-	-	6/26/50/87	0/1/1/1
17	PC1	3E	303	-	-	5/50/50/57	-
11	CDL	3N	502	-	-	14/53/53/110	-
17	PC1	3R	303	-	-	8/48/48/57	-
13	HEM	3C	502	3	-	6/14/54/54	-
16	FES	3R	301	5	-	-	0/1/1/1
14	U10	3C	503	-	-	4/21/45/87	0/1/1/1
15	HEC	3D	501	4	-	2/13/53/54	-
12	3PE	3A	503	-	-	7/35/35/54	-
13	HEM	3P	501	3	-	5/14/54/54	-
14	U10	3P	504	-	-	8/26/50/87	0/1/1/1
13	HEM	3C	501	3	-	5/14/54/54	-
12	3PE	3P	505	-	-	5/36/36/54	-
12	3PE	3Y	101	-	-	8/33/33/54	-
11	CDL	3T	102	-	-	17/66/66/110	-
14	U10	3C	504	-	-	3/15/39/87	0/1/1/1
12	3PE	3C	507	-	-	12/37/37/54	-
12	3PE	3N	501	-	-	7/35/35/54	-
11	CDL	3A	501	-	-	10/68/68/110	-
16	FES	3E	301	5	-	-	0/1/1/1

All (95) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	3D	501	HEC	C2A-C3A	5.10	1.47	1.36
13	3P	501	HEM	FE-NB	5.05	2.10	1.94
13	3C	501	HEM	FE-NB	5.04	2.10	1.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	3D	501	HEC	CHD-C4C	5.01	1.48	1.38
13	3C	502	HEM	FE-NB	5.00	2.10	1.94
15	3D	501	HEC	CHA-C1A	4.98	1.48	1.38
15	3Q	501	HEC	C2A-C3A	4.96	1.47	1.36
13	3P	502	HEM	FE-NB	4.93	2.10	1.94
15	3D	501	HEC	CHB-C4A	4.86	1.47	1.38
15	3Q	501	HEC	CHB-C4A	4.82	1.47	1.38
15	3Q	501	HEC	CHA-C1A	4.76	1.47	1.38
15	3D	501	HEC	CHC-C4B	4.70	1.47	1.38
15	3Q	501	HEC	CHC-C4B	4.58	1.47	1.38
15	3Q	501	HEC	CHD-C4C	4.52	1.47	1.38
15	3D	501	HEC	CAC-C3C	4.38	1.49	1.35
15	3D	501	HEC	CAB-C3B	4.33	1.49	1.35
15	3Q	501	HEC	CAB-C3B	4.29	1.48	1.35
15	3Q	501	HEC	CAC-C3C	4.27	1.48	1.35
13	3C	501	HEM	FE-NC	4.10	2.08	1.95
13	3C	502	HEM	FE-NC	4.04	2.08	1.95
13	3P	502	HEM	FE-NC	4.04	2.08	1.95
13	3P	501	HEM	FE-NC	4.00	2.08	1.95
15	3D	501	HEC	CHD-C1D	3.93	1.48	1.39
15	3D	501	HEC	CHA-C4D	3.79	1.47	1.39
15	3Q	501	HEC	CHB-C1B	3.75	1.47	1.39
15	3Q	501	HEC	CHA-C4D	3.69	1.47	1.39
15	3D	501	HEC	CHB-C1B	3.66	1.47	1.39
15	3Q	501	HEC	CHD-C1D	3.57	1.47	1.39
13	3P	502	HEM	C1B-NB	-3.56	1.34	1.40
13	3P	501	HEM	C1B-NB	-3.55	1.34	1.40
13	3C	502	HEM	C1B-NB	-3.53	1.34	1.40
13	3P	502	HEM	C4D-ND	-3.50	1.34	1.40
15	3Q	501	HEC	CHC-C1C	3.47	1.47	1.39
15	3D	501	HEC	CHC-C1C	3.44	1.47	1.39
13	3C	501	HEM	C4D-ND	-3.42	1.34	1.40
15	3D	501	HEC	C3D-C2D	3.41	1.47	1.38
13	3C	501	HEM	C1B-NB	-3.41	1.34	1.40
13	3P	501	HEM	C4D-ND	-3.40	1.34	1.40
13	3C	502	HEM	C4D-ND	-3.38	1.34	1.40
15	3Q	501	HEC	C3D-C2D	3.10	1.47	1.38
14	3C	503	U10	C3-C2	-2.86	1.40	1.48
15	3D	501	HEC	C4A-NA	-2.79	1.34	1.39
15	3D	501	HEC	C1D-ND	-2.73	1.34	1.39
13	3C	502	HEM	FE-ND	-2.72	1.86	1.94
15	3D	501	HEC	C4C-NC	-2.72	1.34	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	3P	502	HEM	FE-ND	-2.69	1.86	1.94
15	3D	501	HEC	C4B-NB	-2.69	1.34	1.39
13	3P	501	HEM	FE-ND	-2.68	1.86	1.94
14	3P	504	U10	C3-C2	-2.67	1.41	1.48
14	3C	504	U10	C4-C5	-2.66	1.41	1.48
13	3C	501	HEM	FE-ND	-2.61	1.86	1.94
15	3Q	501	HEC	C4B-NB	-2.60	1.34	1.39
15	3Q	501	HEC	C4C-NC	-2.58	1.34	1.39
13	3P	501	HEM	C1C-C2C	-2.57	1.40	1.45
13	3P	502	HEM	C1C-C2C	-2.57	1.40	1.45
13	3C	501	HEM	C1C-C2C	-2.55	1.40	1.45
15	3Q	501	HEC	C1B-C2B	2.55	1.49	1.43
14	3P	503	U10	C3-C2	-2.53	1.41	1.48
15	3D	501	HEC	C1B-C2B	2.53	1.49	1.43
15	3Q	501	HEC	C1D-ND	-2.51	1.34	1.39
14	3C	503	U10	C4-C5	-2.50	1.41	1.48
13	3C	502	HEM	C1C-C2C	-2.49	1.40	1.45
15	3Q	501	HEC	C4A-NA	-2.47	1.35	1.39
15	3Q	501	HEC	C1C-C2C	2.45	1.48	1.43
13	3C	502	HEM	C1D-ND	-2.45	1.34	1.38
15	3D	501	HEC	C1B-NB	-2.45	1.35	1.39
15	3Q	501	HEC	C4D-ND	-2.43	1.35	1.39
15	3D	501	HEC	C1A-NA	-2.41	1.35	1.39
15	3D	501	HEC	C1C-NC	-2.41	1.35	1.39
13	3P	502	HEM	C1D-ND	-2.39	1.34	1.38
15	3D	501	HEC	C4D-ND	-2.38	1.35	1.39
14	3P	503	U10	C4-C5	-2.36	1.42	1.48
15	3D	501	HEC	C1C-C2C	2.35	1.48	1.43
13	3C	501	HEM	C1D-ND	-2.31	1.34	1.38
15	3Q	501	HEC	C1C-NC	-2.30	1.35	1.39
15	3Q	501	HEC	C1A-NA	-2.29	1.35	1.39
13	3P	501	HEM	C3C-C4C	-2.28	1.42	1.46
13	3P	501	HEM	C1D-ND	-2.27	1.34	1.38
13	3C	502	HEM	C4B-NB	-2.25	1.34	1.38
15	3Q	501	HEC	C1D-C2D	2.24	1.48	1.43
15	3Q	501	HEC	C1B-NB	-2.24	1.35	1.39
13	3P	502	HEM	C3C-C4C	-2.23	1.42	1.46
13	3C	501	HEM	C3C-C4C	-2.22	1.42	1.46
13	3C	502	HEM	C3C-C4C	-2.22	1.42	1.46
13	3P	502	HEM	C4B-NB	-2.22	1.34	1.38
15	3D	501	HEC	C1D-C2D	2.22	1.48	1.43
14	3P	503	U10	C4-C3	2.20	1.44	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	3C	501	HEM	C4B-NB	-2.19	1.34	1.38
15	3Q	501	HEC	C4D-C3D	2.12	1.48	1.44
13	3P	501	HEM	C4B-NB	-2.11	1.34	1.38
15	3D	501	HEC	C3C-C2C	2.07	1.48	1.41
15	3D	501	HEC	C4D-C3D	2.03	1.48	1.44
15	3Q	501	HEC	C1A-C2A	2.03	1.48	1.45
15	3Q	501	HEC	C3B-C2B	2.02	1.48	1.41
14	3C	504	U10	C4-C3	2.01	1.43	1.36

All (104) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	3C	501	HEM	CHC-C4B-NB	5.56	130.40	124.42
13	3P	501	HEM	CHC-C4B-NB	5.48	130.32	124.42
15	3Q	501	HEC	C2A-C1A-NA	5.38	115.52	110.32
13	3C	502	HEM	CHC-C4B-NB	5.27	130.09	124.42
13	3P	502	HEM	CHC-C4B-NB	5.03	129.83	124.42
13	3C	501	HEM	CHD-C1D-ND	4.65	129.43	124.42
13	3P	501	HEM	CHD-C1D-ND	4.65	129.43	124.42
15	3Q	501	HEC	C3D-C4D-ND	4.64	115.30	110.15
15	3D	501	HEC	C2A-C1A-NA	4.60	114.76	110.32
13	3C	502	HEM	CHD-C1D-ND	4.25	128.99	124.42
15	3D	501	HEC	C3D-C4D-ND	4.24	114.86	110.15
15	3Q	501	HEC	C2C-C1C-NC	3.96	116.49	110.14
13	3P	502	HEM	CHD-C1D-ND	3.81	128.52	124.42
15	3D	501	HEC	C2C-C1C-NC	3.76	116.17	110.14
15	3Q	501	HEC	C2B-C1B-NB	3.68	116.04	110.14
13	3C	501	HEM	CHA-C4D-ND	3.65	128.88	124.37
15	3Q	501	HEC	C1A-C2A-C3A	-3.59	102.38	107.11
15	3D	501	HEC	C2B-C1B-NB	3.57	115.87	110.14
13	3C	502	HEM	C1B-NB-C4B	3.52	109.37	105.21
15	3D	501	HEC	C1A-C2A-C3A	-3.49	102.51	107.11
13	3P	502	HEM	C1B-NB-C4B	3.49	109.33	105.21
13	3C	502	HEM	CHA-C4D-ND	3.48	128.68	124.37
15	3Q	501	HEC	C1D-C2D-C3D	-3.48	102.83	106.82
13	3C	501	HEM	CHB-C1B-NB	3.45	128.63	124.37
13	3P	502	HEM	CHA-C4D-ND	3.42	128.60	124.37
13	3P	501	HEM	CHA-C4D-ND	3.37	128.54	124.37
13	3P	501	HEM	CHB-C1B-NB	3.37	128.53	124.37
14	3P	503	U10	O4-C4-C3	3.35	136.32	123.64
14	3P	503	U10	O3-C3-C4	3.35	136.31	123.64
14	3P	503	U10	O4-C4-C5	-3.30	105.50	116.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	3Q	501	HEC	C2D-C1D-ND	3.29	115.42	110.14
13	3C	501	HEM	C1B-NB-C4B	3.27	109.08	105.21
13	3P	501	HEM	C1B-NB-C4B	3.17	108.96	105.21
13	3P	502	HEM	CHB-C1B-NB	3.10	128.20	124.37
14	3P	503	U10	O3-C3-C2	-3.09	106.20	116.64
15	3D	501	HEC	C1D-C2D-C3D	-3.07	103.30	106.82
13	3C	502	HEM	CHB-C1B-NB	3.07	128.16	124.37
15	3Q	501	HEC	C3A-C4A-NA	3.01	115.20	109.64
11	3G	102	CDL	OA6-CA5-C11	2.94	117.83	111.48
15	3D	501	HEC	C4D-C3D-C2D	-2.92	102.35	106.87
13	3P	502	HEM	C3B-C4B-NB	-2.85	107.42	109.47
13	3C	502	HEM	C3B-C4B-NB	-2.85	107.42	109.47
13	3P	501	HEM	CHD-C4C-NC	2.83	127.54	124.45
14	3C	503	U10	O3-C3-C4	2.83	134.36	123.64
13	3C	501	HEM	CHD-C1D-C2D	-2.82	120.57	125.03
15	3D	501	HEC	C3A-C4A-NA	2.79	114.80	109.64
13	3P	501	HEM	CHD-C1D-C2D	-2.78	120.64	125.03
15	3D	501	HEC	C2D-C1D-ND	2.77	114.58	110.14
15	3Q	501	HEC	C4D-C3D-C2D	-2.75	102.61	106.87
13	3C	501	HEM	CHD-C4C-NC	2.75	127.44	124.45
13	3P	502	HEM	C4C-CHD-C1D	-2.74	120.20	126.02
12	3A	502	3PE	O21-C21-C22	2.73	117.39	111.48
14	3C	504	U10	O3-C3-C2	2.73	125.84	116.64
15	3Q	501	HEC	C4A-C3A-C2A	-2.69	102.98	106.97
15	3D	501	HEC	C4A-C3A-C2A	-2.63	103.08	106.97
14	3C	504	U10	O4-C4-C5	-2.57	107.97	116.64
13	3C	502	HEM	C4A-CHB-C1B	-2.57	120.21	126.25
13	3C	502	HEM	C4C-CHD-C1D	-2.56	120.58	126.02
13	3C	501	HEM	C3B-C4B-NB	-2.55	107.64	109.47
14	3P	504	U10	C7-C6-C1	-2.53	120.55	124.89
15	3D	501	HEC	CMC-C2C-C3C	2.52	132.47	126.55
13	3P	502	HEM	C4A-CHB-C1B	-2.51	120.35	126.25
15	3Q	501	HEC	CMB-C2B-C3B	2.50	132.43	126.55
14	3C	504	U10	C4-C3-C2	-2.49	116.11	120.69
13	3P	501	HEM	C3B-C4B-NB	-2.49	107.68	109.47
15	3Q	501	HEC	CAD-CBD-CGD	-2.49	107.06	113.67
13	3C	502	HEM	CHD-C1D-C2D	-2.49	121.10	125.03
14	3C	503	U10	C4-C3-C2	-2.45	116.19	120.69
11	3T	102	CDL	OA6-CA5-C11	2.39	116.65	111.48
14	3P	504	U10	O3-C3-C2	-2.39	108.58	116.64
14	3C	503	U10	O4-C4-C3	2.38	132.66	123.64
14	3C	503	U10	O3-C3-C2	-2.38	108.62	116.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
15	3D	501	HEC	CMB-C2B-C3B	2.37	132.13	126.55
14	3P	503	U10	C7-C6-C1	-2.34	120.88	124.89
13	3C	502	HEM	C1A-CHA-C4D	-2.32	120.80	126.25
15	3Q	501	HEC	CAD-C3D-C4D	2.31	129.44	124.94
13	3C	502	HEM	CHD-C4C-NC	2.28	126.94	124.45
14	3P	504	U10	C3-C4-C5	-2.28	116.50	120.69
15	3Q	501	HEC	CMC-C2C-C3C	2.24	131.82	126.55
14	3P	504	U10	O4-C4-C5	2.24	124.18	116.64
15	3Q	501	HEC	CHC-C1C-C2C	-2.22	120.98	127.43
13	3C	501	HEM	CHA-C4D-C3D	-2.22	121.13	125.23
14	3P	504	U10	O3-C3-C4	2.22	132.04	123.64
14	3C	504	U10	C7-C6-C1	-2.20	121.12	124.89
13	3P	502	HEM	C1A-CHA-C4D	-2.19	121.10	126.25
13	3P	502	HEM	CHD-C1D-C2D	-2.18	121.59	125.03
13	3P	502	HEM	CHD-C4C-NC	2.18	126.82	124.45
13	3C	502	HEM	C4D-ND-C1D	2.15	107.75	105.21
14	3C	503	U10	O4-C4-C5	-2.15	109.39	116.64
13	3P	502	HEM	C4D-ND-C1D	2.15	107.75	105.21
13	3P	501	HEM	C1A-CHA-C4D	-2.13	121.23	126.25
13	3C	501	HEM	C1A-CHA-C4D	-2.12	121.27	126.25
14	3C	503	U10	C7-C6-C1	-2.11	121.27	124.89
13	3P	501	HEM	CHA-C4D-C3D	-2.09	121.38	125.23
13	3C	501	HEM	C4C-CHD-C1D	-2.08	121.59	126.02
14	3C	504	U10	O4-C4-C3	2.07	131.49	123.64
15	3Q	501	HEC	CHD-C1D-C2D	-2.07	121.42	127.43
13	3C	501	HEM	CHA-C1A-NA	2.06	127.59	123.86
15	3D	501	HEC	CHA-C1A-NA	-2.05	122.22	124.45
15	3Q	501	HEC	CAA-CBA-CGA	-2.04	108.25	113.67
15	3D	501	HEC	CHD-C4C-NC	-2.04	122.24	124.45
13	3P	501	HEM	C4C-CHD-C1D	-2.02	121.72	126.02
11	3N	502	CDL	OB6-CB4-CB3	2.01	115.56	108.34
15	3Q	501	HEC	CHB-C1B-C2B	-2.00	121.61	127.43

There are no chirality outliers.

All (227) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	3A	501	CDL	C1-CA2-OA2-PA1
11	3A	501	CDL	C1-CB2-OB2-PB2
11	3C	505	CDL	CA3-OA5-PA1-OA2
11	3C	505	CDL	CA3-OA5-PA1-OA3
11	3C	505	CDL	CB2-OB2-PB2-OB3

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Mol	Chain	Res	Type	Atoms
11	3C	505	CDL	OB9-CB7-OB8-CB6
11	3C	505	CDL	C71-CB7-OB8-CB6
11	3G	102	CDL	CA3-OA5-PA1-OA2
11	3G	102	CDL	CA3-OA5-PA1-OA3
11	3G	102	CDL	CA4-CA3-OA5-PA1
11	3G	102	CDL	OA7-CA5-OA6-CA4
11	3G	102	CDL	C11-CA5-OA6-CA4
11	3G	102	CDL	C1-CB2-OB2-PB2
11	3G	102	CDL	CB4-CB3-OB5-PB2
11	3N	502	CDL	C1-CA2-OA2-PA1
11	3N	502	CDL	CA2-OA2-PA1-OA4
11	3N	502	CDL	CA2-OA2-PA1-OA5
11	3N	502	CDL	CB2-OB2-PB2-OB3
11	3N	502	CDL	CB2-OB2-PB2-OB4
11	3N	502	CDL	CB2-OB2-PB2-OB5
11	3N	502	CDL	CB3-OB5-PB2-OB3
11	3T	101	CDL	CA2-OA2-PA1-OA4
11	3T	101	CDL	CA2-OA2-PA1-OA5
11	3T	101	CDL	CB3-OB5-PB2-OB3
11	3T	101	CDL	OB9-CB7-OB8-CB6
11	3T	101	CDL	C71-CB7-OB8-CB6
11	3T	102	CDL	C1-CA2-OA2-PA1
11	3T	102	CDL	CA2-OA2-PA1-OA3
11	3T	102	CDL	CA2-OA2-PA1-OA5
11	3T	102	CDL	CB3-OB5-PB2-OB2
11	3T	102	CDL	CB3-OB5-PB2-OB3
11	3T	102	CDL	OB9-CB7-OB8-CB6
11	3T	102	CDL	C71-CB7-OB8-CB6
12	3A	502	3PE	O22-C21-O21-C2
12	3A	502	3PE	C22-C21-O21-C2
12	3A	503	3PE	C2-C1-O11-P
12	3A	503	3PE	O22-C21-O21-C2
12	3A	503	3PE	C22-C21-O21-C2
12	3C	506	3PE	C11-O13-P-O14
12	3C	507	3PE	C1-O11-P-O14
12	3C	507	3PE	C2-C1-O11-P
12	3C	507	3PE	O21-C2-C3-O31
12	3G	101	3PE	O32-C31-O31-C3
12	3G	101	3PE	C32-C31-O31-C3
12	3N	503	3PE	O22-C21-O21-C2
12	3N	503	3PE	C22-C21-O21-C2
12	3R	302	3PE	C1-O11-P-O12

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Mol	Chain	Res	Type	Atoms
12	3R	302	3PE	C11-O13-P-O14
12	3Y	101	3PE	C2-C1-O11-P
12	3Y	101	3PE	O32-C31-O31-C3
12	3Y	101	3PE	C32-C31-O31-C3
13	3C	501	HEM	C2B-C3B-CAB-CBB
13	3C	501	HEM	C4B-C3B-CAB-CBB
13	3C	502	HEM	C2B-C3B-CAB-CBB
13	3C	502	HEM	C4B-C3B-CAB-CBB
13	3C	502	HEM	C2C-C3C-CAC-CBC
13	3P	501	HEM	C2B-C3B-CAB-CBB
13	3P	501	HEM	C4B-C3B-CAB-CBB
13	3P	502	HEM	C2B-C3B-CAB-CBB
13	3P	502	HEM	C2C-C3C-CAC-CBC
17	3R	303	PC1	C1-O11-P-O12
17	3R	303	PC1	C2-C1-O11-P
17	3X	101	PC1	C1-O11-P-O12
17	3X	101	PC1	C1-O11-P-O14
17	3X	101	PC1	C1-O11-P-O13
11	3T	101	CDL	CB4-CB3-OB5-PB2
14	3C	503	U10	C15-C14-C16-C17
14	3C	503	U10	C13-C14-C16-C17
14	3C	504	U10	C4-C3-O3-C3M
14	3P	504	U10	C3-C4-O4-C4M
11	3C	505	CDL	CB4-CB3-OB5-PB2
17	3X	101	PC1	C21-C22-C23-C24
11	3T	101	CDL	CA4-CA3-OA5-PA1
12	3P	505	3PE	C31-C32-C33-C34
12	3N	503	3PE	C21-C22-C23-C24
12	3R	302	3PE	C3A-C3B-C3C-C3D
12	3N	501	3PE	C21-C22-C23-C24
12	3Y	101	3PE	C1-C2-C3-O31
12	3A	503	3PE	C32-C33-C34-C35
11	3T	101	CDL	CA7-C31-C32-C33
12	3R	302	3PE	C35-C36-C37-C38
13	3C	501	HEM	C3D-CAD-CBD-CGD
14	3P	504	U10	C6-C7-C8-C9
11	3T	102	CDL	C33-C34-C35-C36
13	3C	502	HEM	C4C-C3C-CAC-CBC
13	3P	502	HEM	C4B-C3B-CAB-CBB
13	3P	502	HEM	C4C-C3C-CAC-CBC
11	3T	101	CDL	OA6-CA4-CA6-OA8
12	3Y	101	3PE	O21-C2-C3-O31

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Mol	Chain	Res	Type	Atoms
11	3T	102	CDL	OA5-CA3-CA4-CA6
11	3G	102	CDL	C53-C54-C55-C56
12	3C	507	3PE	C1-C2-C3-O31
12	3E	302	3PE	C1-C2-C3-O31
11	3G	102	CDL	C51-C52-C53-C54
14	3C	504	U10	C2-C3-O3-C3M
17	3E	303	PC1	C35-C36-C37-C38
12	3R	302	3PE	C21-C22-C23-C24
17	3R	303	PC1	C34-C35-C36-C37
17	3X	101	PC1	O21-C21-C22-C23
11	3G	102	CDL	C71-C72-C73-C74
17	3E	303	PC1	C25-C26-C27-C28
11	3T	101	CDL	C1-CB2-OB2-PB2
11	3T	102	CDL	CA4-CA3-OA5-PA1
12	3N	501	3PE	C2-C1-O11-P
12	3G	101	3PE	O21-C21-C22-C23
12	3A	503	3PE	O11-C1-C2-C3
12	3C	507	3PE	O11-C1-C2-C3
12	3N	501	3PE	O21-C21-C22-C23
11	3G	102	CDL	CB5-C51-C52-C53
11	3C	505	CDL	C73-C74-C75-C76
11	3G	102	CDL	CA3-CA4-CA6-OA8
17	3R	303	PC1	C1-C2-C3-O31
11	3N	502	CDL	CA5-C11-C12-C13
11	3T	102	CDL	OA5-CA3-CA4-OA6
12	3A	503	3PE	O11-C1-C2-O21
11	3N	502	CDL	C52-C51-CB5-OB6
12	3R	302	3PE	C2-C1-O11-P
11	3T	102	CDL	C31-C32-C33-C34
11	3A	501	CDL	C32-C31-CA7-OA8
11	3T	102	CDL	C12-C11-CA5-OA6
15	3Q	501	HEC	C3D-CAD-CBD-CGD
14	3P	504	U10	C1-C6-C7-C8
13	3C	501	HEM	C2C-C3C-CAC-CBC
11	3T	101	CDL	CA3-CA4-CA6-OA8
12	3P	505	3PE	C1-C2-C3-O31
12	3N	501	3PE	C27-C28-C29-C2A
12	3C	507	3PE	C12-C11-O13-P
12	3G	101	3PE	C12-C11-O13-P
12	3R	302	3PE	C12-C11-O13-P
12	3Y	101	3PE	C12-C11-O13-P
14	3P	504	U10	C5-C6-C7-C8

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Mol	Chain	Res	Type	Atoms
17	3R	303	PC1	C12-C11-O13-P
17	3X	101	PC1	C12-C11-O13-P
11	3A	501	CDL	OB6-CB4-CB6-OB8
11	3G	102	CDL	OA6-CA4-CA6-OA8
12	3N	503	3PE	O21-C2-C3-O31
12	3C	507	3PE	O21-C21-C22-C23
17	3X	101	PC1	O13-C11-C12-N
12	3Y	101	3PE	C32-C33-C34-C35
14	3P	503	U10	C12-C11-C9-C10
17	3E	303	PC1	C22-C23-C24-C25
17	3R	303	PC1	O21-C2-C3-O31
12	3C	506	3PE	C25-C26-C27-C28
12	3N	503	3PE	C1-C2-C3-O31
11	3C	505	CDL	CA2-OA2-PA1-OA3
11	3C	505	CDL	CB2-OB2-PB2-OB5
11	3T	101	CDL	CA3-OA5-PA1-OA2
11	3T	101	CDL	CA3-OA5-PA1-OA3
11	3T	101	CDL	CA3-OA5-PA1-OA4
11	3T	102	CDL	CB2-OB2-PB2-OB3
12	3A	503	3PE	C1-O11-P-O14
12	3C	506	3PE	C1-O11-P-O13
12	3C	507	3PE	C11-O13-P-O14
12	3E	302	3PE	C1-O11-P-O14
12	3N	501	3PE	C11-O13-P-O14
12	3P	505	3PE	C11-O13-P-O14
12	3R	302	3PE	C1-O11-P-O13
12	3R	302	3PE	C1-O11-P-O14
17	3R	303	PC1	C1-O11-P-O14
17	3R	303	PC1	C1-O11-P-O13
11	3T	101	CDL	CB5-C51-C52-C53
11	3A	501	CDL	C34-C35-C36-C37
11	3C	505	CDL	CA4-CA3-OA5-PA1
11	3N	502	CDL	C1-CB2-OB2-PB2
11	3T	102	CDL	CB4-CB3-OB5-PB2
17	3X	101	PC1	C2-C1-O11-P
17	3E	303	PC1	C26-C27-C28-C29
14	3P	503	U10	C12-C11-C9-C8
14	3P	503	U10	C21-C22-C23-C24
14	3P	504	U10	C14-C16-C17-C18
12	3N	501	3PE	O22-C21-C22-C23
17	3E	303	PC1	C33-C34-C35-C36
14	3P	504	U10	C2-C3-O3-C3M

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Mol	Chain	Res	Type	Atoms
14	3P	504	U10	C5-C4-O4-C4M
12	3R	302	3PE	C28-C29-C2A-C2B
12	3C	506	3PE	C1-C2-O21-C21
13	3P	501	HEM	CAD-CBD-CGD-O1D
13	3P	502	HEM	CAD-CBD-CGD-O1D
12	3C	507	3PE	C23-C24-C25-C26
11	3A	501	CDL	CB4-CB3-OB5-PB2
13	3C	502	HEM	CAA-CBA-CGA-O1A
15	3Q	501	HEC	CAD-CBD-CGD-O1D
11	3N	502	CDL	OA6-CA4-CA6-OA8
12	3G	101	3PE	O21-C2-C3-O31
13	3P	502	HEM	CAA-CBA-CGA-O1A
11	3T	101	CDL	CA5-C11-C12-C13
14	3P	503	U10	C20-C19-C21-C22
13	3P	502	HEM	CAD-CBD-CGD-O2D
15	3D	501	HEC	CAA-CBA-CGA-O2A
13	3C	502	HEM	CAA-CBA-CGA-O2A
13	3P	501	HEM	CAD-CBD-CGD-O2D
15	3Q	501	HEC	CAD-CBD-CGD-O2D
13	3P	502	HEM	CAA-CBA-CGA-O2A
12	3C	507	3PE	O11-C1-C2-O21
11	3T	102	CDL	C12-C13-C14-C15
12	3G	101	3PE	O22-C21-C22-C23
12	3C	506	3PE	C23-C24-C25-C26
12	3R	302	3PE	C27-C28-C29-C2A
15	3D	501	HEC	CAA-CBA-CGA-O1A
11	3A	501	CDL	CB3-CB4-CB6-OB8
13	3C	501	HEM	C4C-C3C-CAC-CBC
17	3X	101	PC1	O22-C21-C22-C23
12	3C	507	3PE	C22-C23-C24-C25
12	3N	501	3PE	C12-C11-O13-P
14	3P	504	U10	C11-C12-C13-C14
11	3A	501	CDL	C32-C31-CA7-OA9
14	3C	504	U10	C5-C4-O4-C4M
11	3T	102	CDL	C12-C11-CA5-OA7
11	3N	502	CDL	CA4-CA6-OA8-CA7
12	3N	503	3PE	O31-C31-C32-C33
11	3N	502	CDL	CB3-CB4-OB6-CB5
11	3N	502	CDL	CB6-CB4-OB6-CB5
14	3P	503	U10	C6-C7-C8-C9
11	3A	501	CDL	CA4-CA3-OA5-PA1
12	3C	507	3PE	O22-C21-C22-C23

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Mol	Chain	Res	Type	Atoms
11	3C	505	CDL	OB6-CB4-CB6-OB8
12	3P	505	3PE	O21-C2-C3-O31
11	3G	102	CDL	C72-C73-C74-C75
12	3P	505	3PE	C24-C25-C26-C27
11	3A	501	CDL	C52-C51-CB5-OB6
13	3P	501	HEM	C2C-C3C-CAC-CBC
12	3Y	101	3PE	O31-C31-C32-C33
14	3C	503	U10	C2-C3-O3-C3M
14	3C	503	U10	C5-C4-O4-C4M
14	3P	503	U10	C2-C3-O3-C3M
12	3R	302	3PE	O31-C31-C32-C33
12	3N	503	3PE	O32-C31-C32-C33

There are no ring outliers.

31 monomers are involved in 145 short contacts:

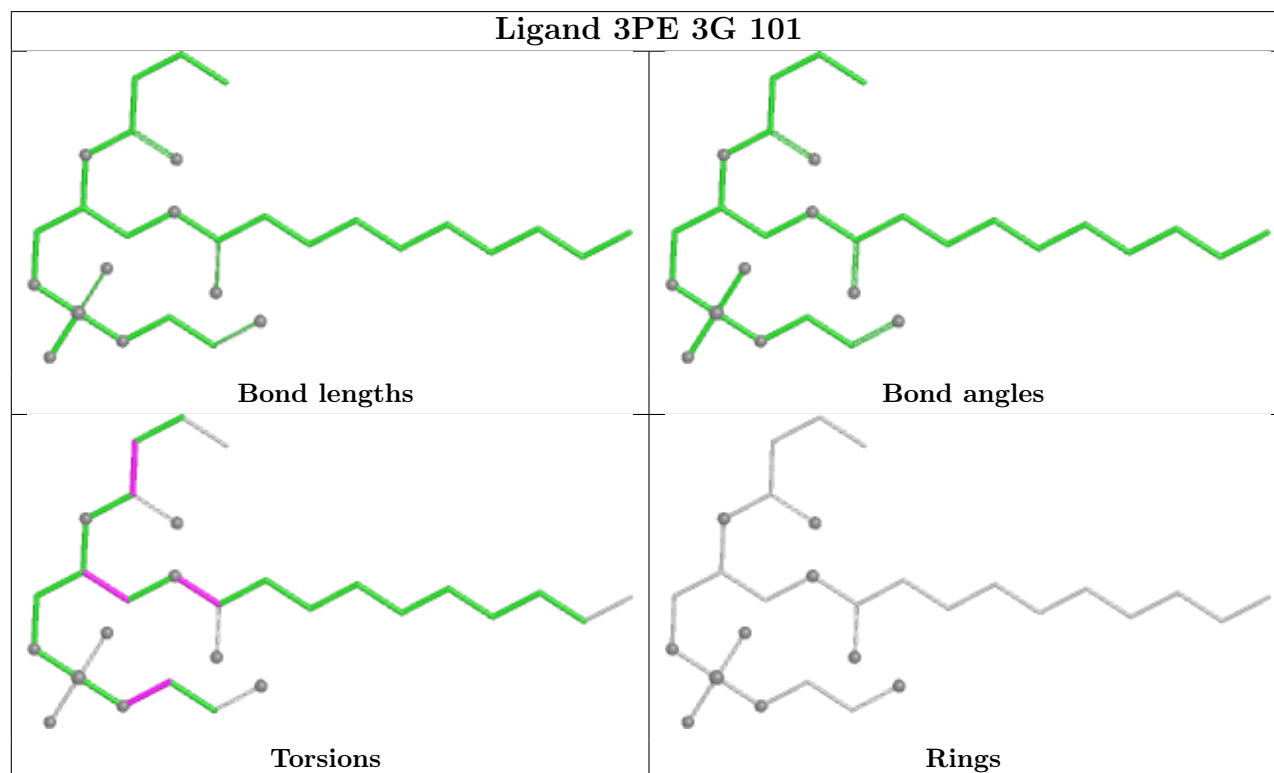
Mol	Chain	Res	Type	Clashes	Symm-Clashes
12	3G	101	3PE	2	0
15	3Q	501	HEC	3	0
12	3R	302	3PE	8	0
11	3C	505	CDL	5	0
12	3C	506	3PE	2	0
12	3E	302	3PE	6	0
11	3T	101	CDL	10	0
12	3N	503	3PE	9	0
17	3X	101	PC1	4	0
11	3G	102	CDL	7	0
12	3A	502	3PE	5	0
13	3P	502	HEM	4	0
14	3P	503	U10	7	0
17	3E	303	PC1	7	0
11	3N	502	CDL	5	0
17	3R	303	PC1	5	0
13	3C	502	HEM	5	0
16	3R	301	FES	1	0
14	3C	503	U10	6	0
15	3D	501	HEC	1	0
12	3A	503	3PE	4	0
13	3P	501	HEM	3	0
14	3P	504	U10	5	0
13	3C	501	HEM	5	0
12	3Y	101	3PE	4	0

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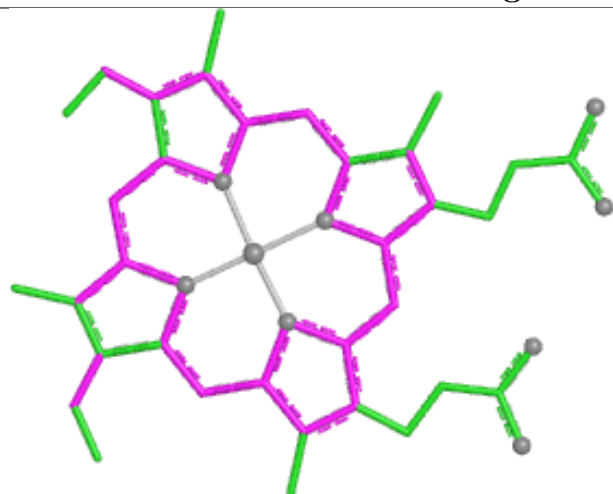
Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
11	3T	102	CDL	8	0
14	3C	504	U10	4	0
12	3C	507	3PE	5	0
12	3N	501	3PE	6	0
11	3A	501	CDL	4	0
16	3E	301	FES	4	0

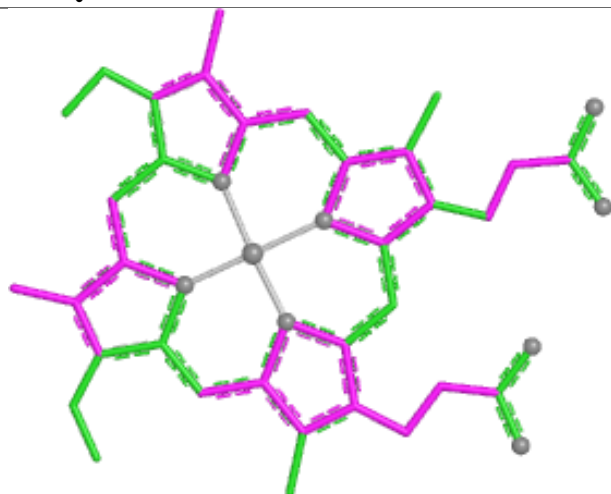
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



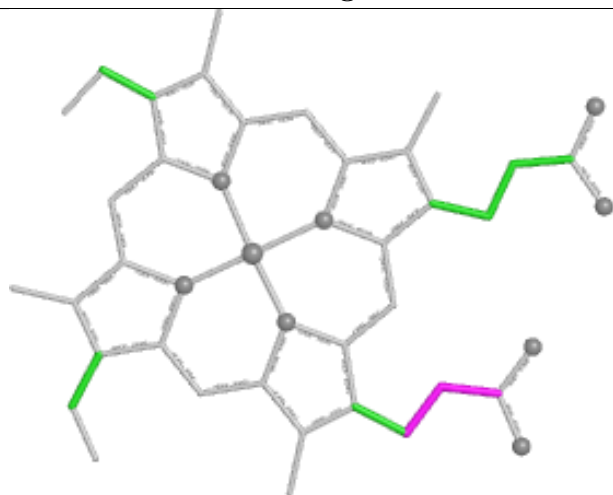
Ligand HEC 3Q 501



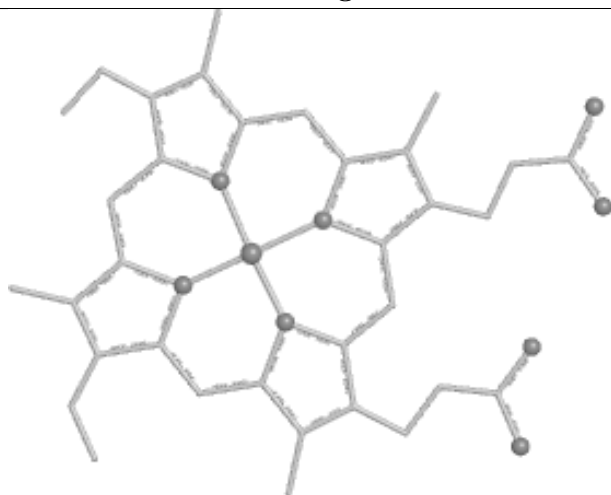
Bond lengths



Bond angles

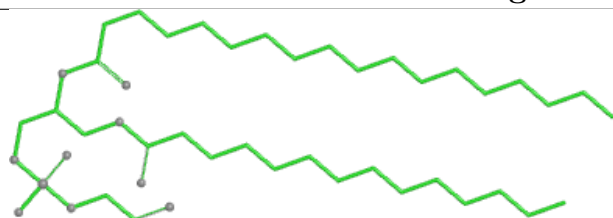


Torsions

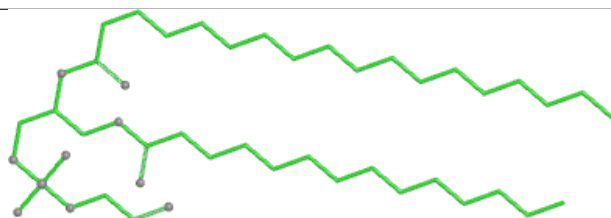


Rings

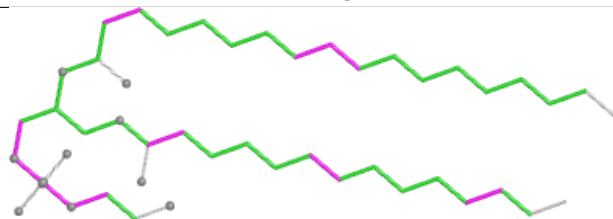
Ligand 3PE 3R 302



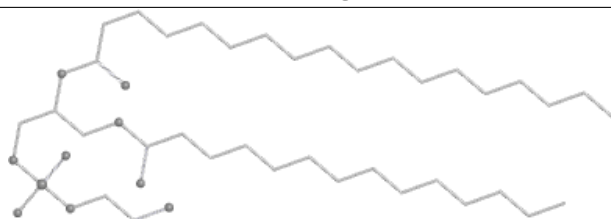
Bond lengths



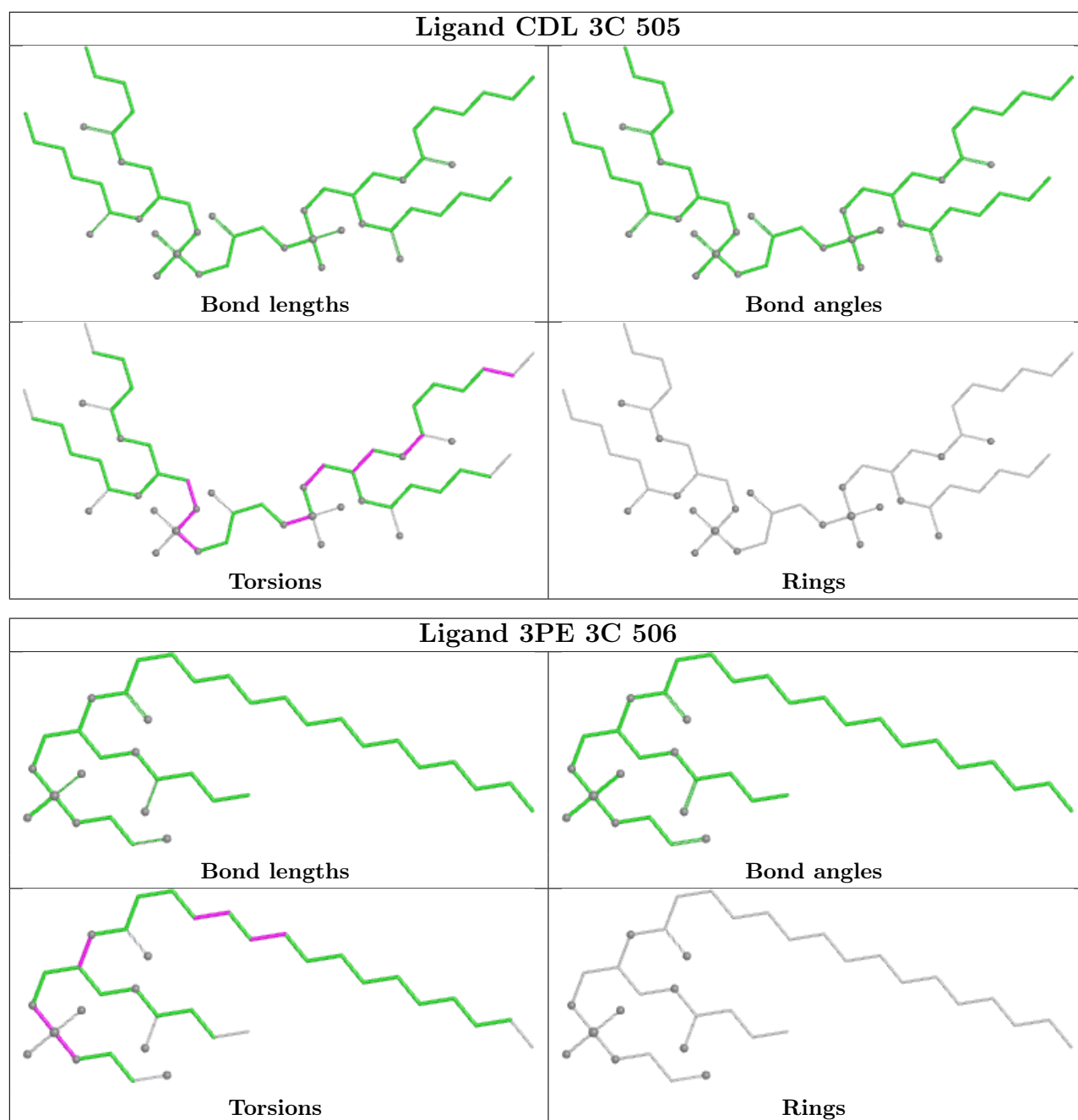
Bond angles

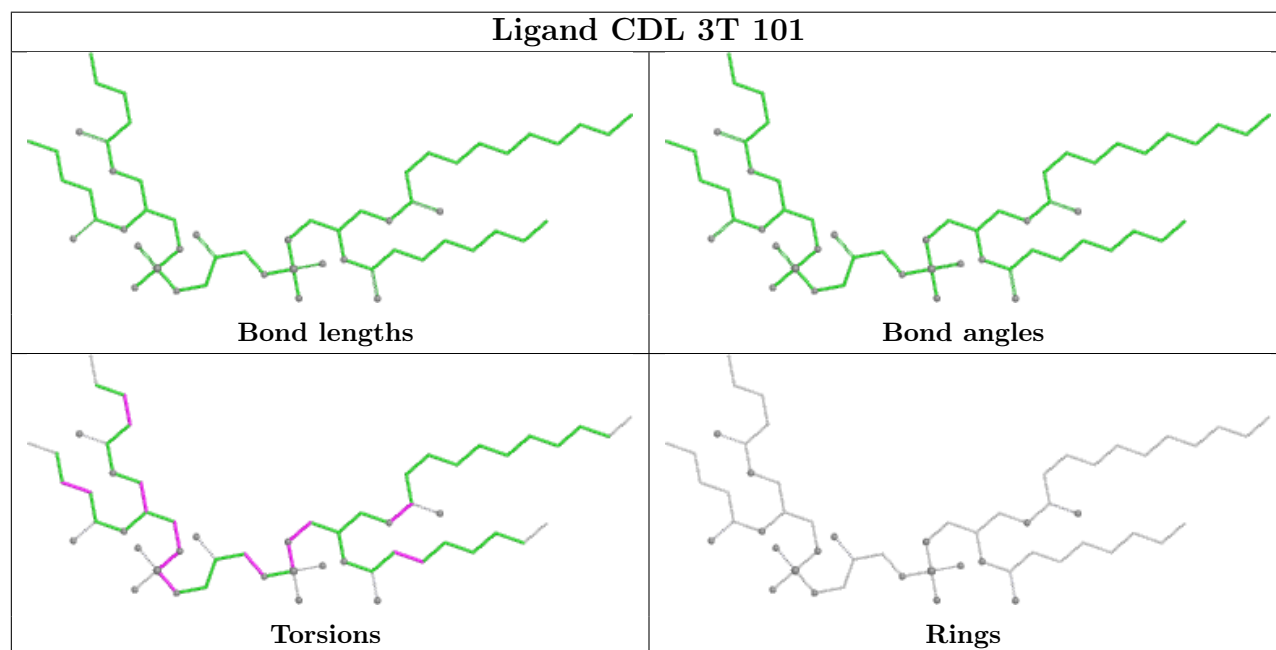
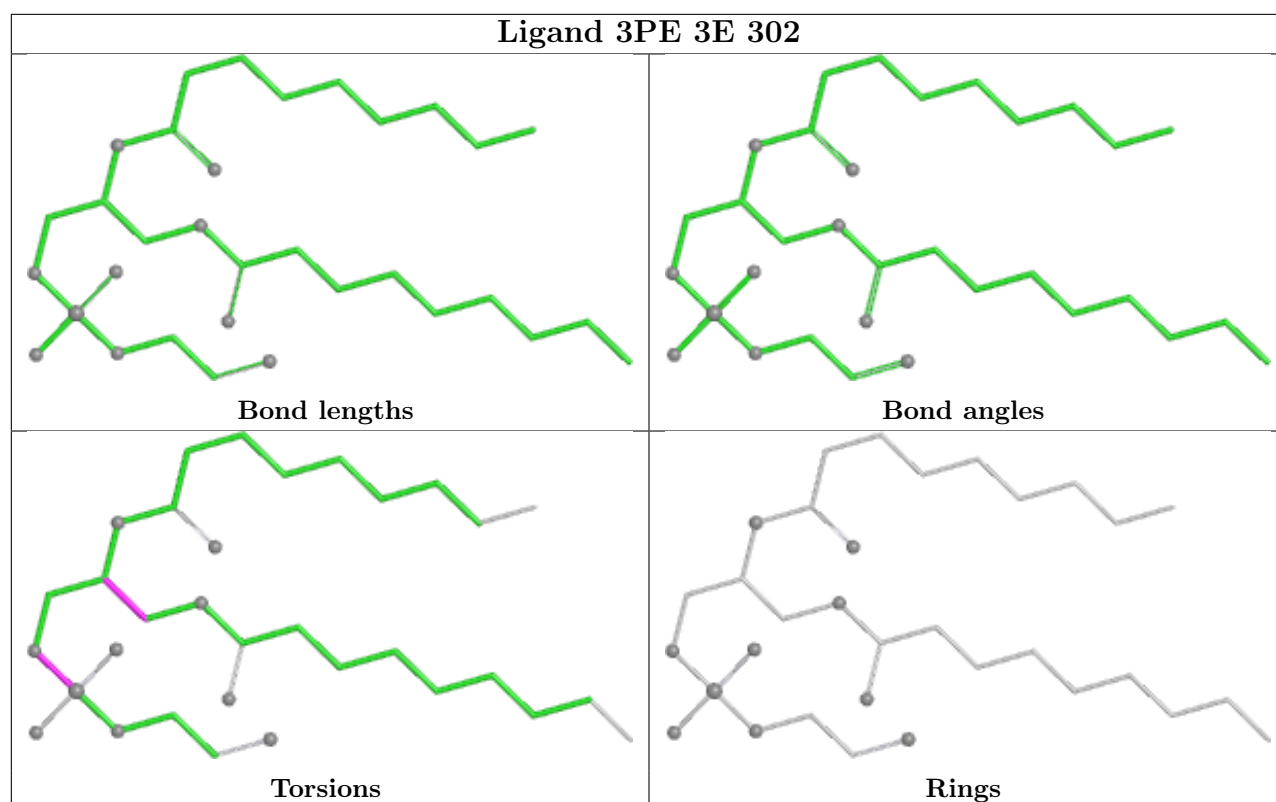


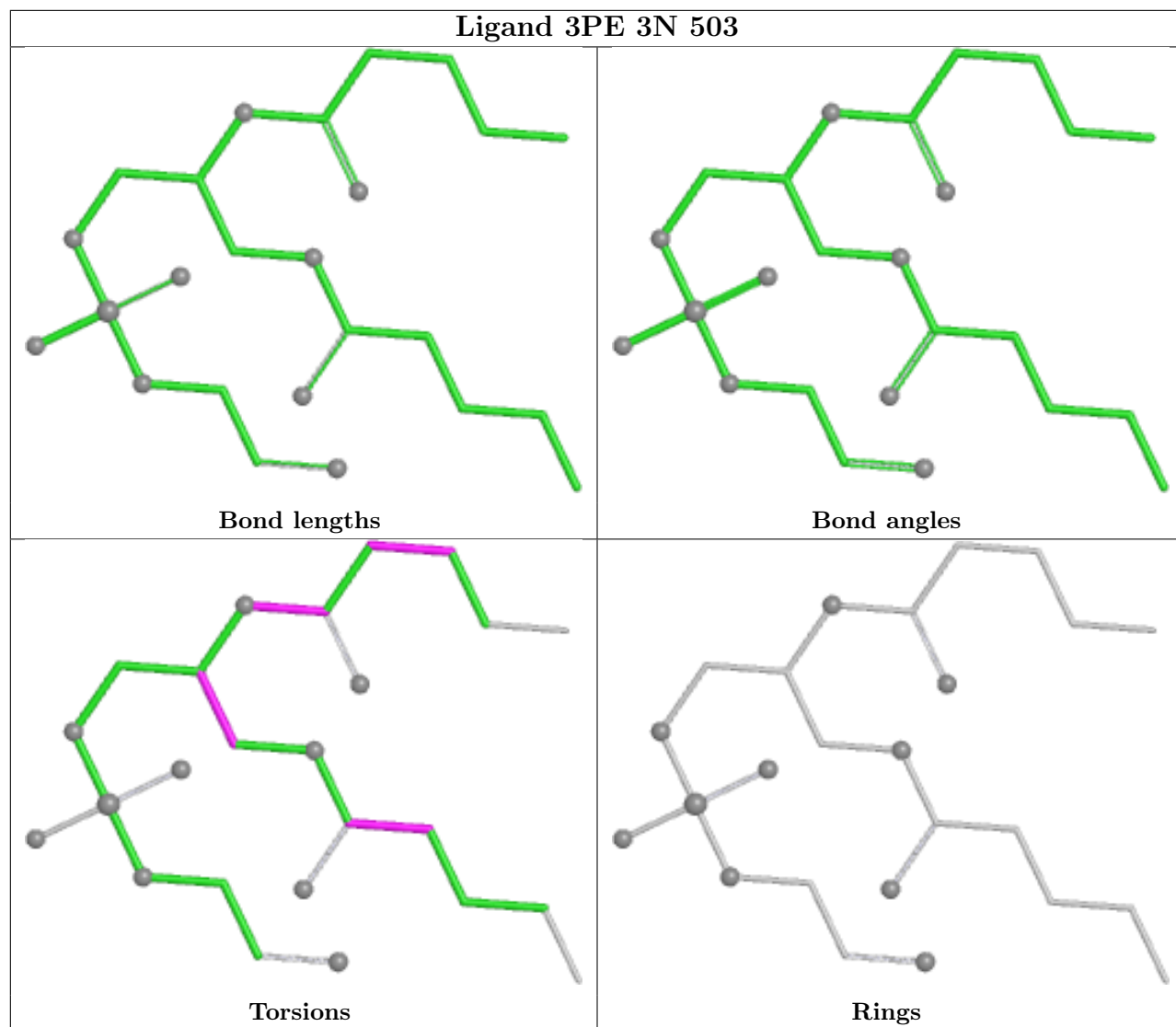
Torsions

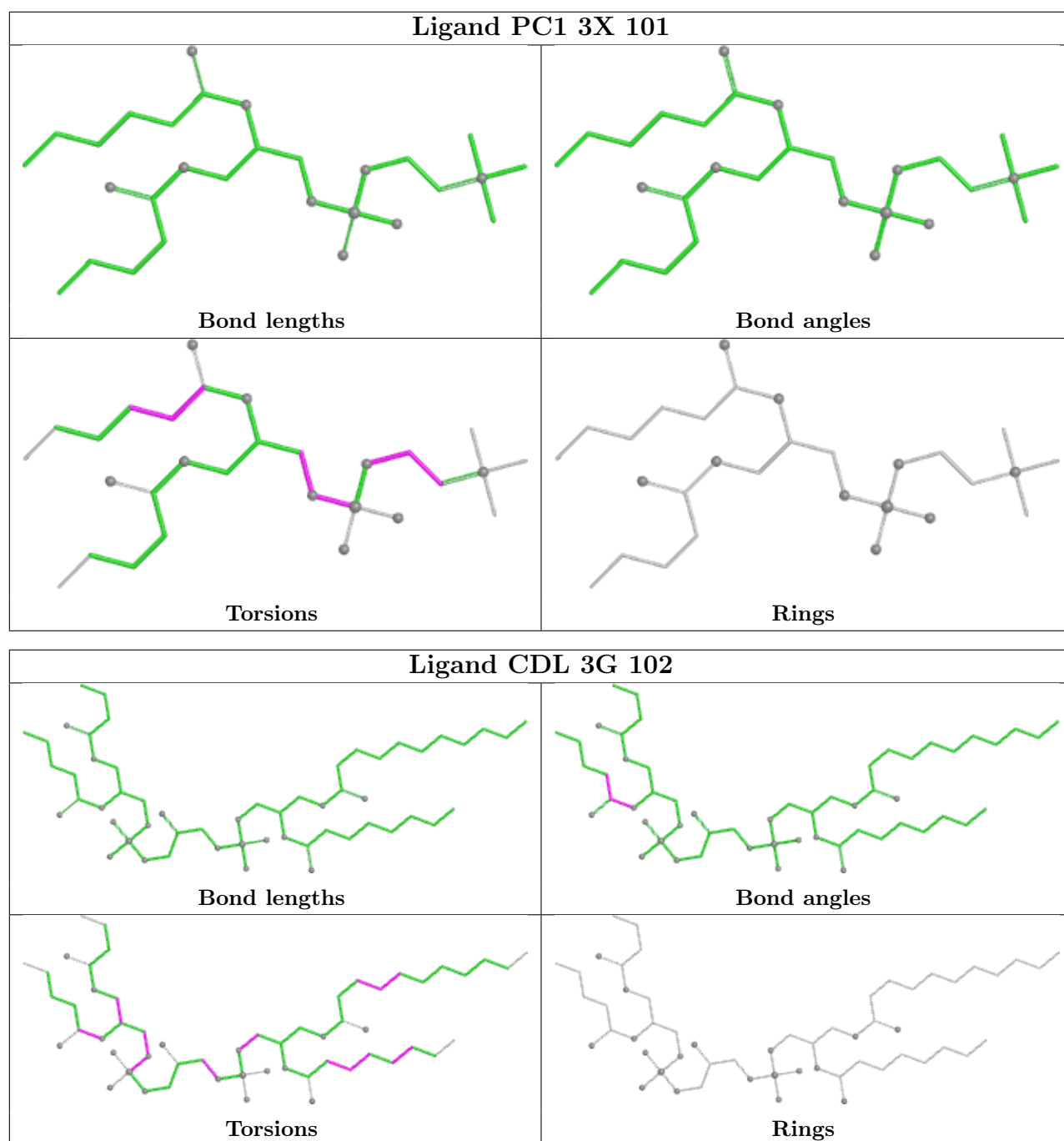


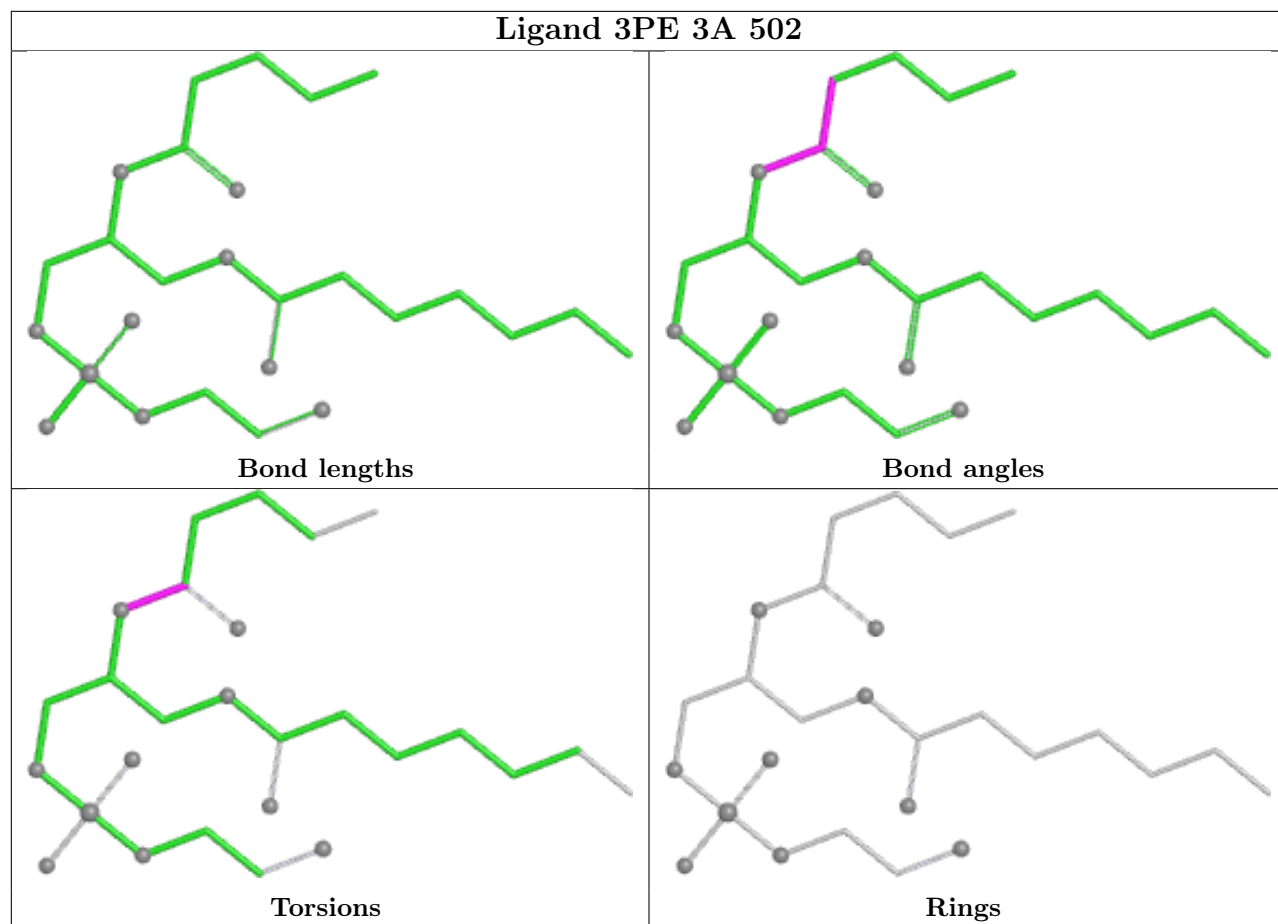
Rings



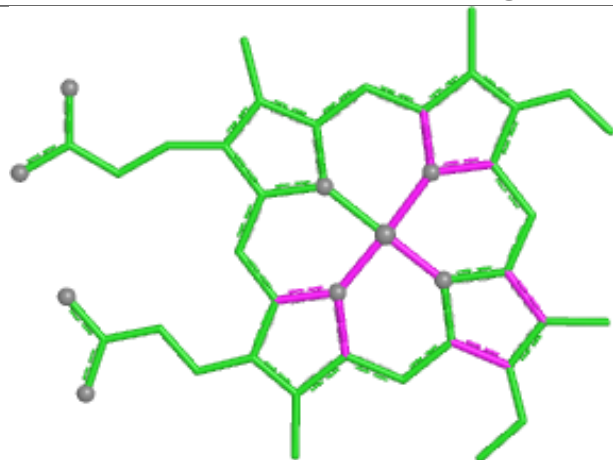




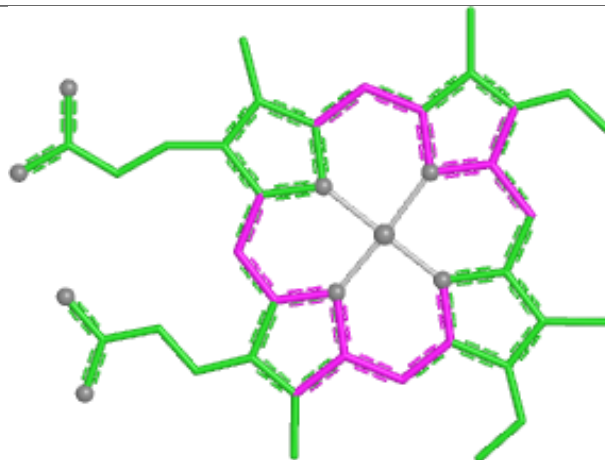




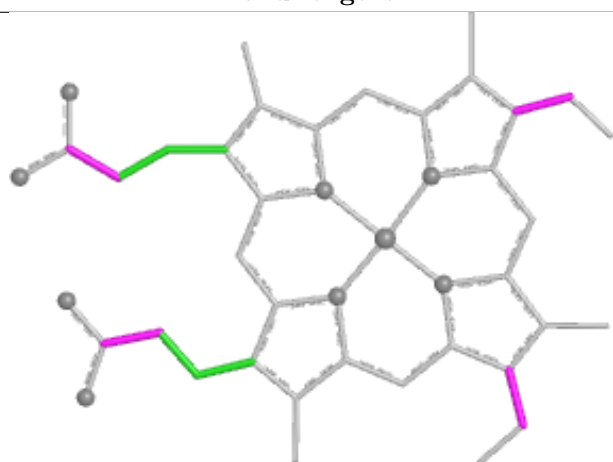
Ligand HEM 3P 502



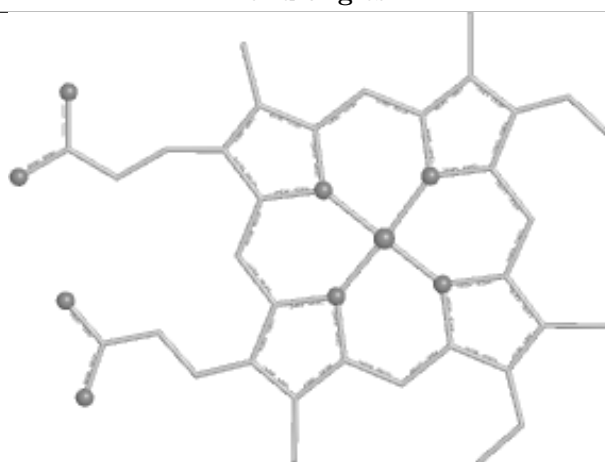
Bond lengths



Bond angles

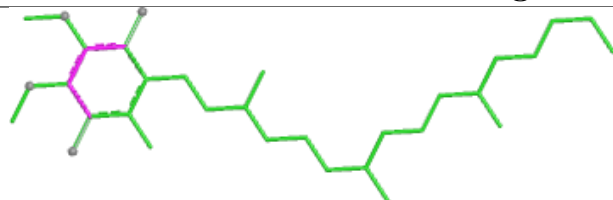


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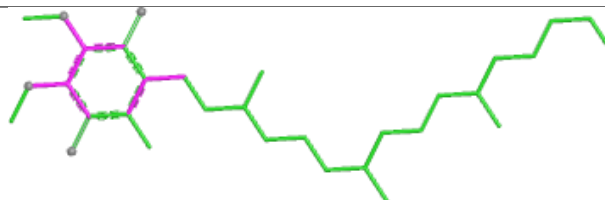


Rings

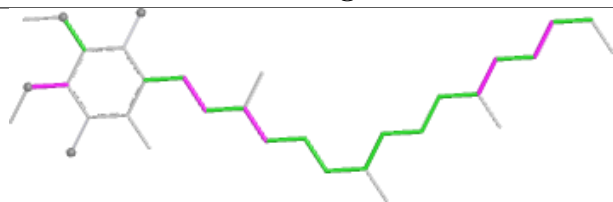
Ligand U10 3P 503



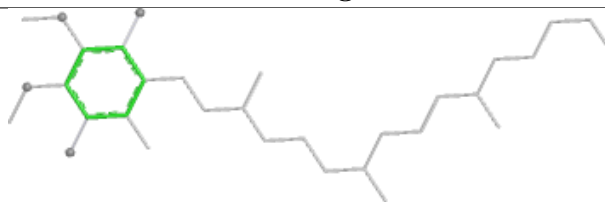
Bond lengths



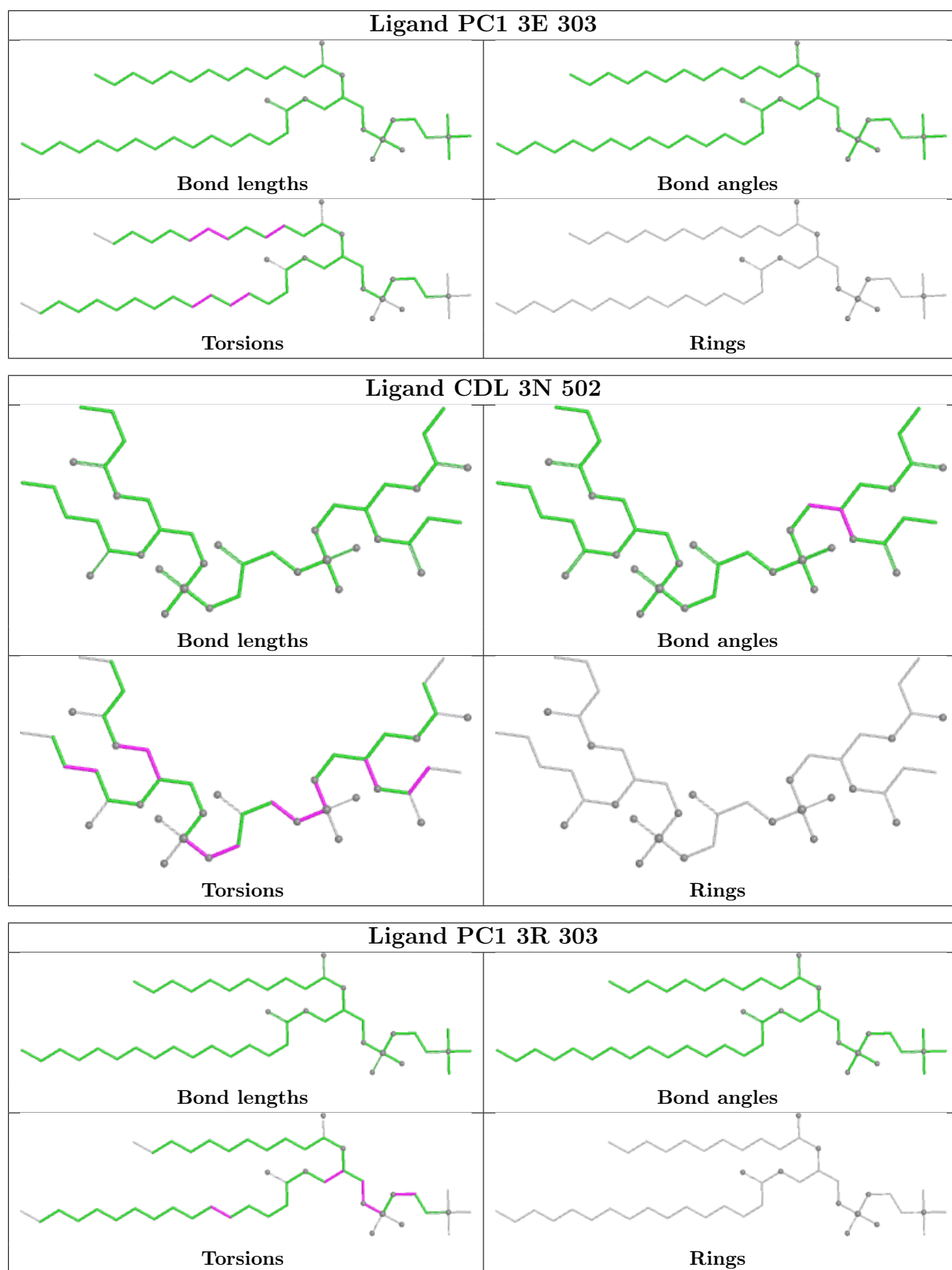
Bond angles



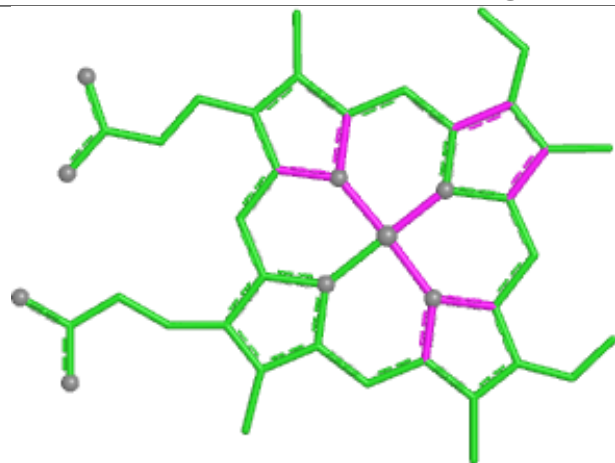
Torsions



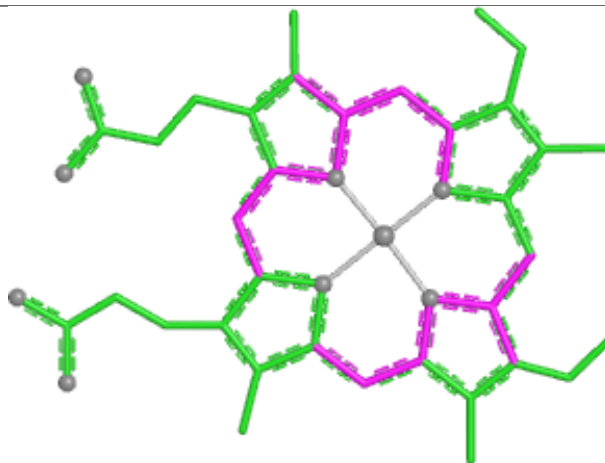
Rings



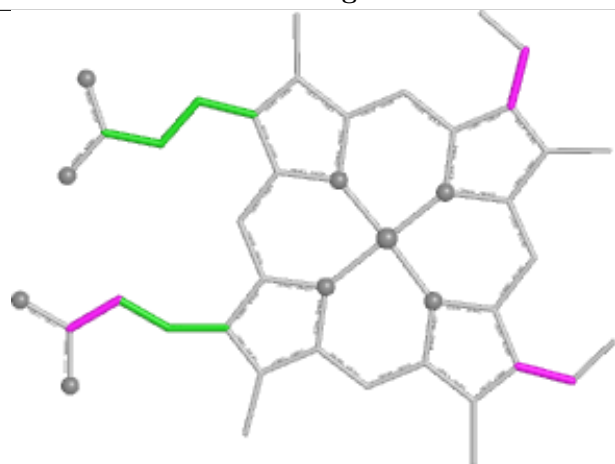
Ligand HEM 3C 502



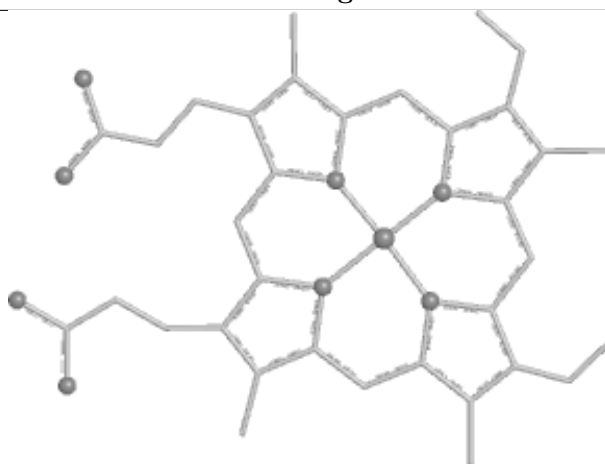
Bond lengths



Bond angles

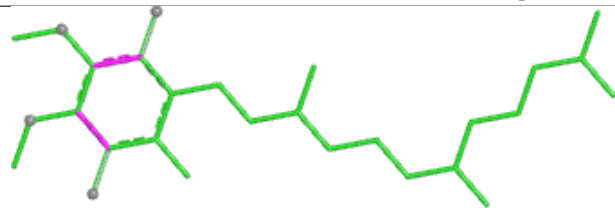


Torsions

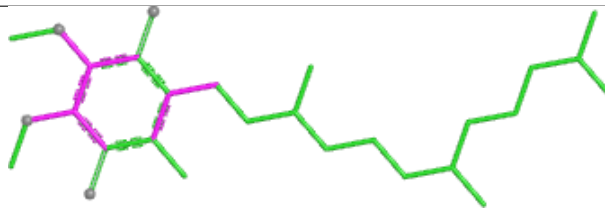


Rings

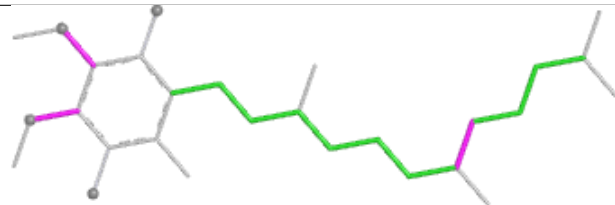
Ligand U10 3C 503



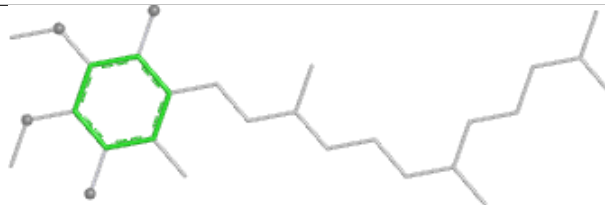
Bond lengths



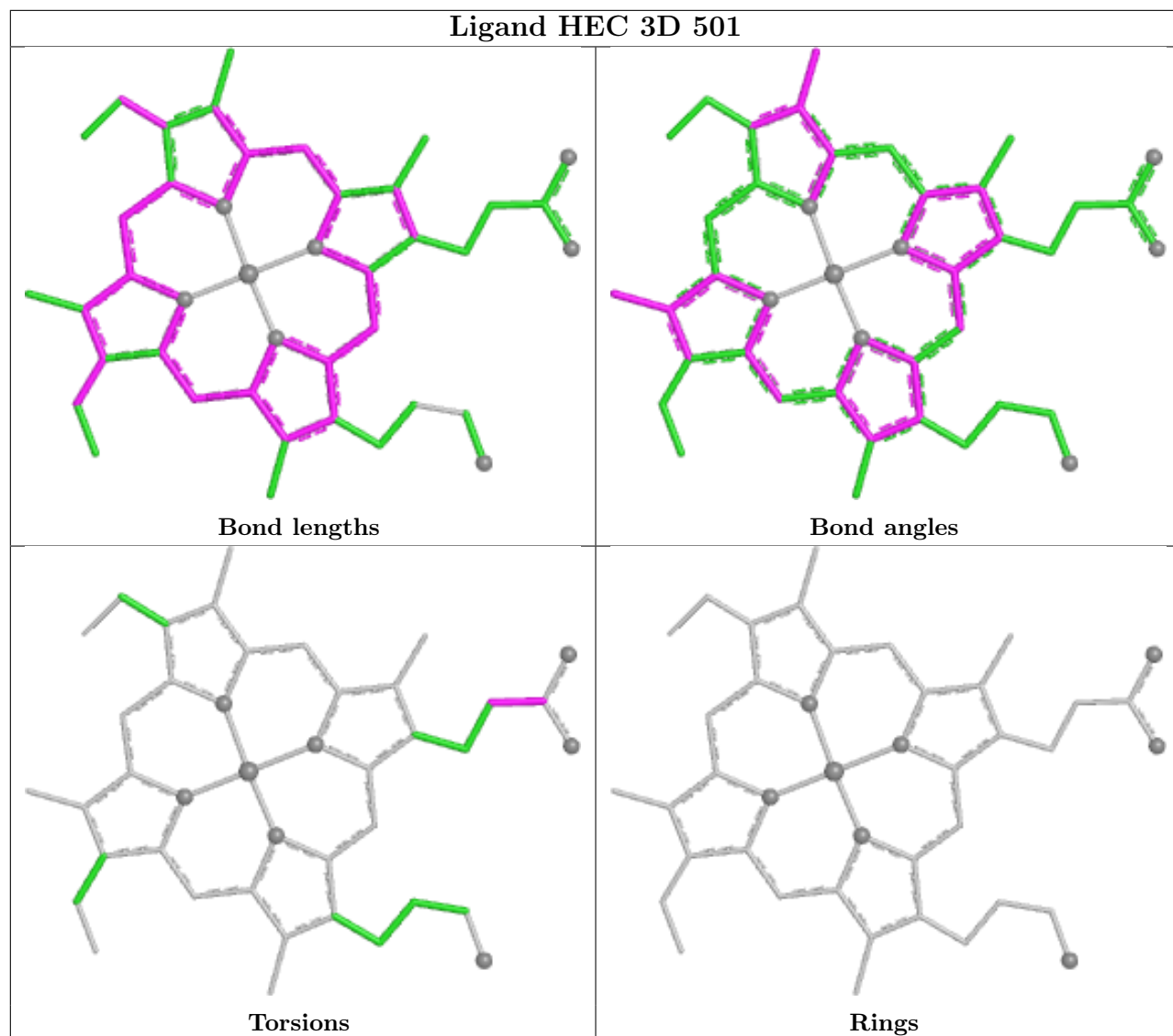
Bond angles

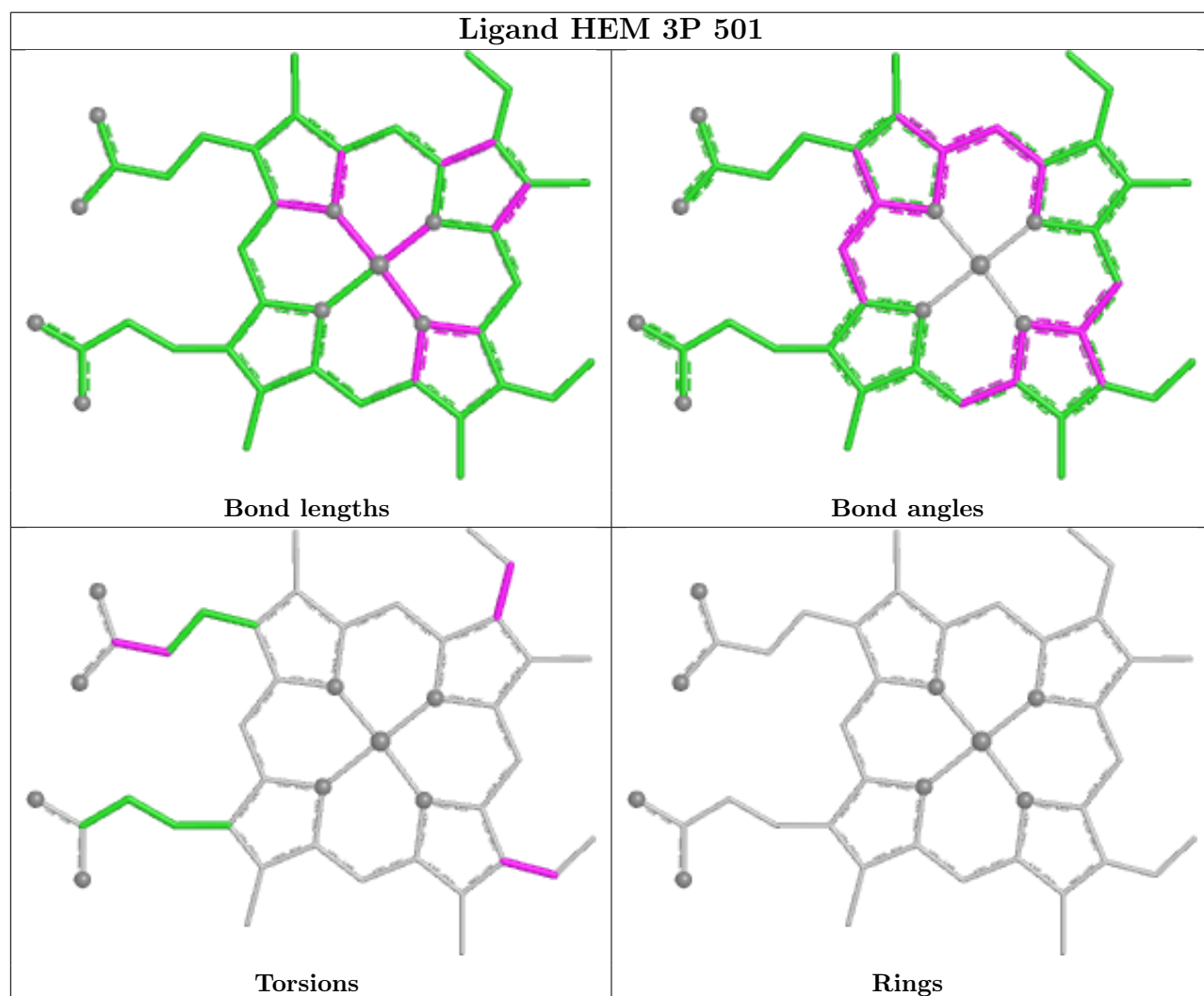
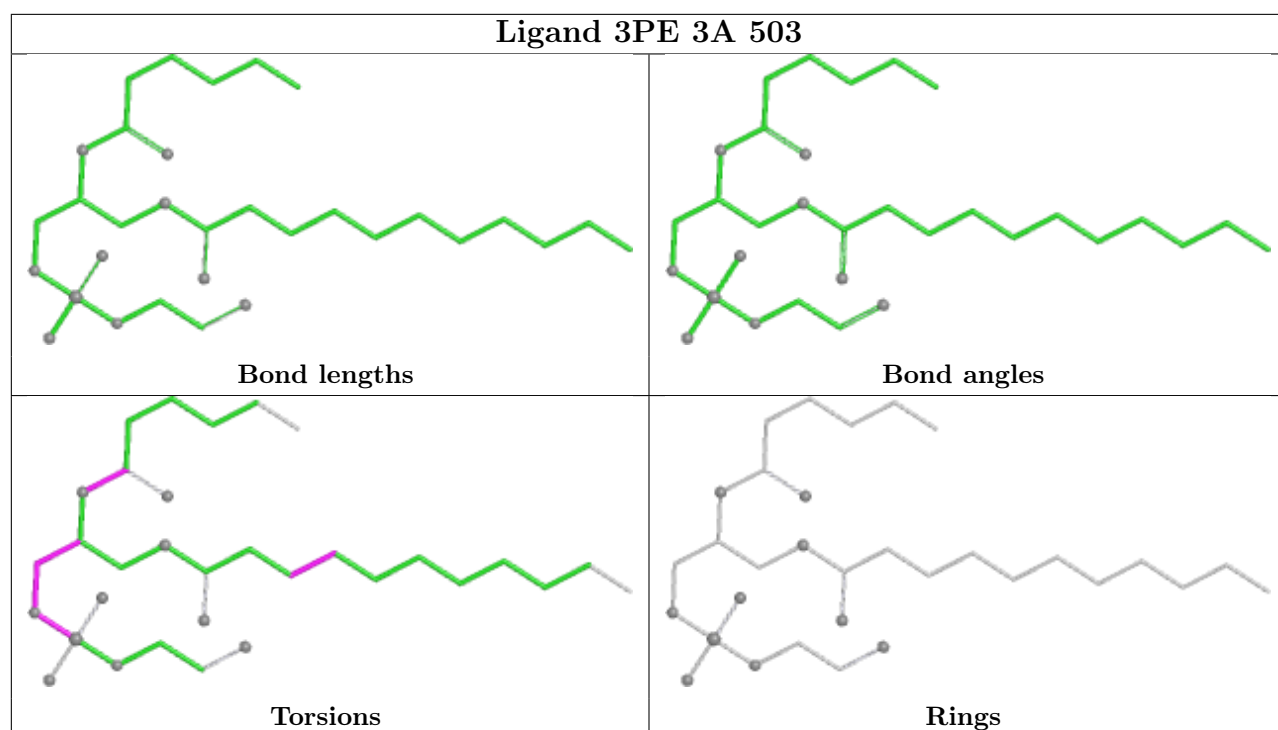


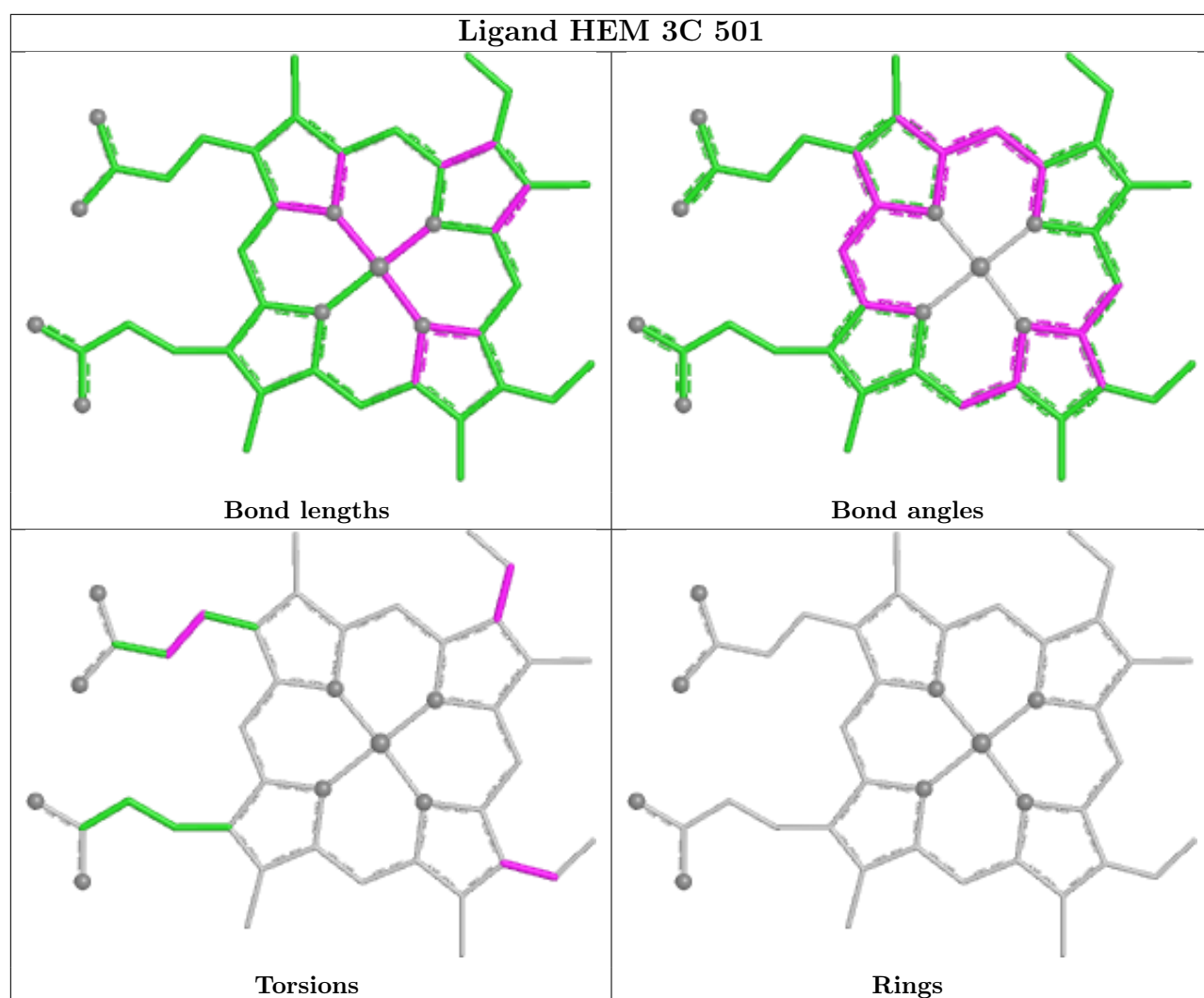
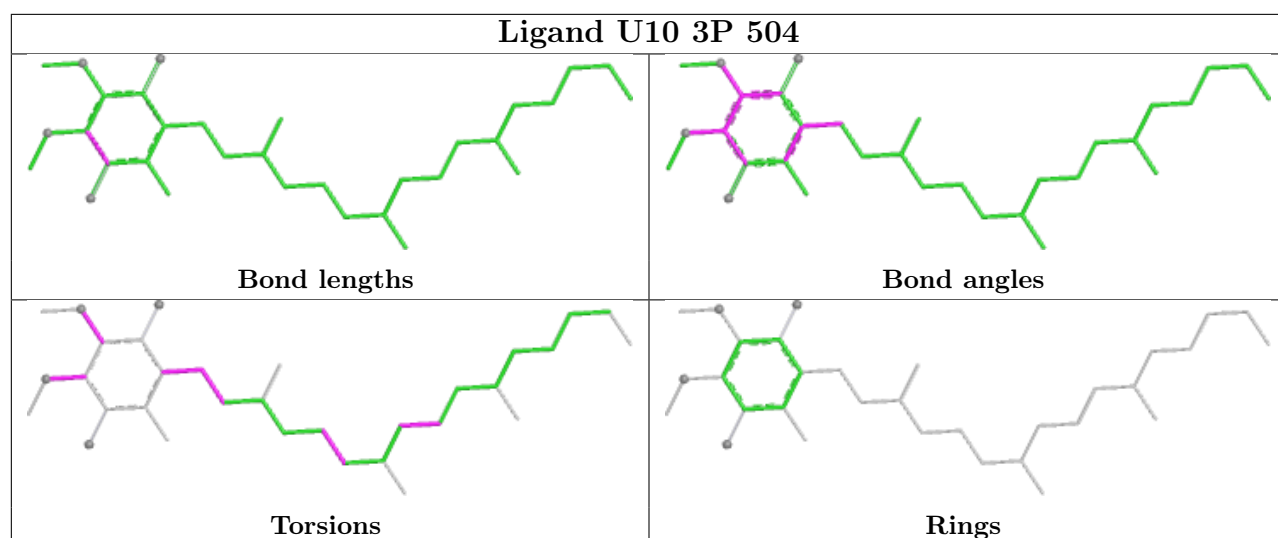
Torsions

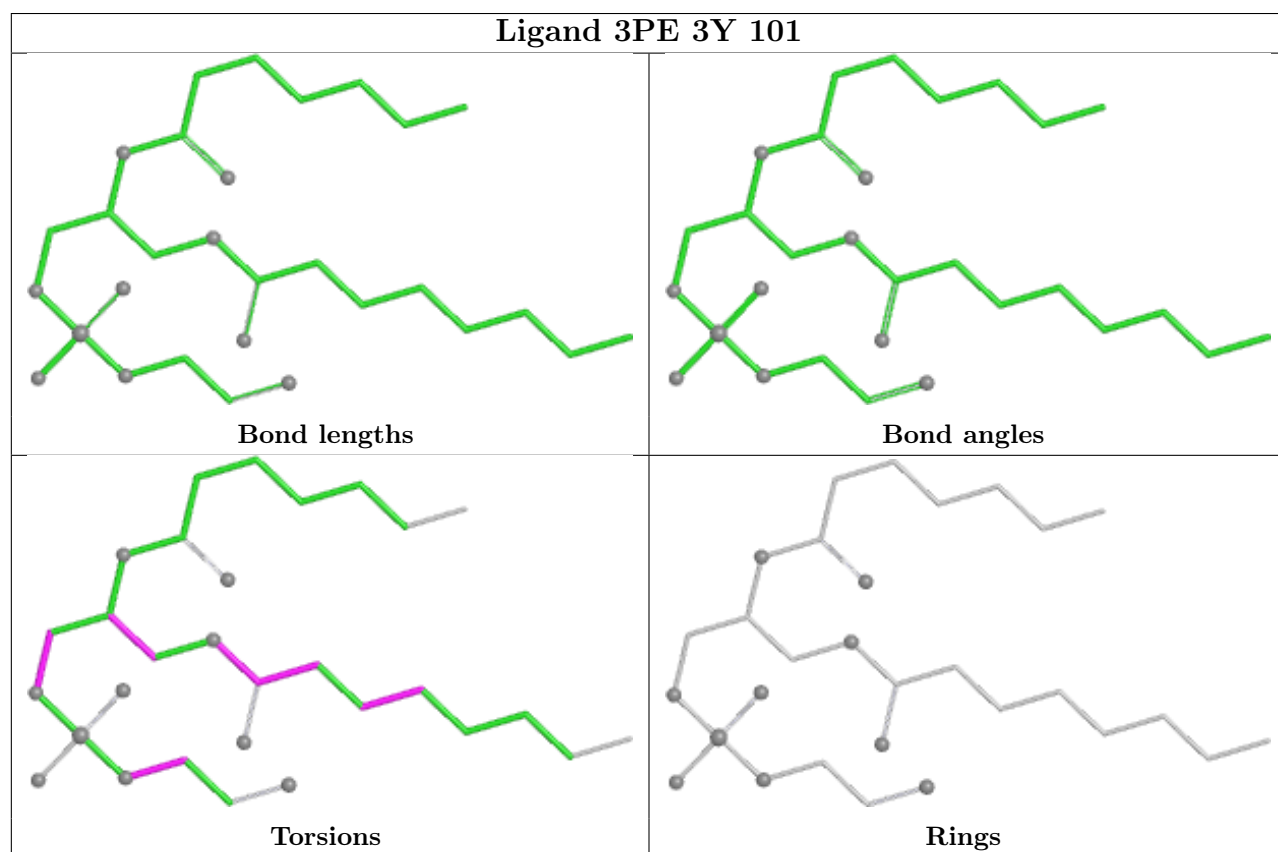
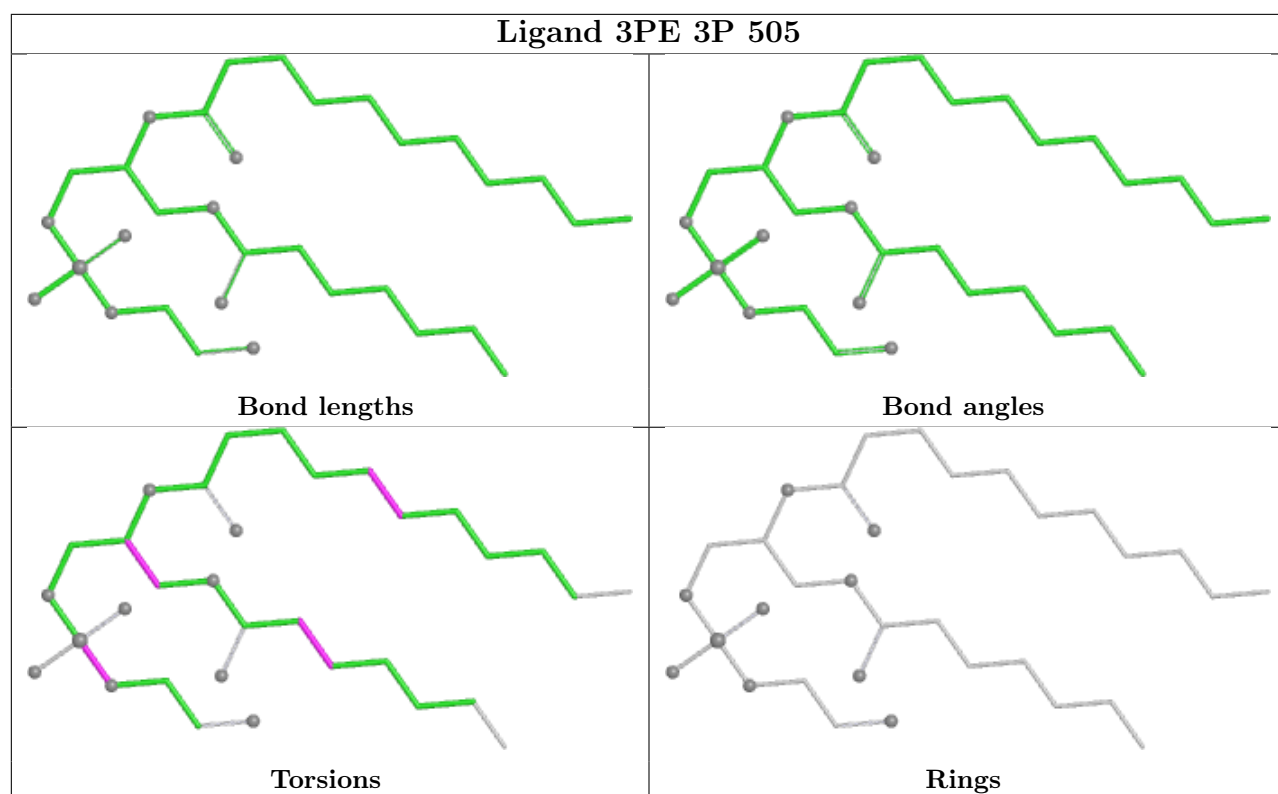


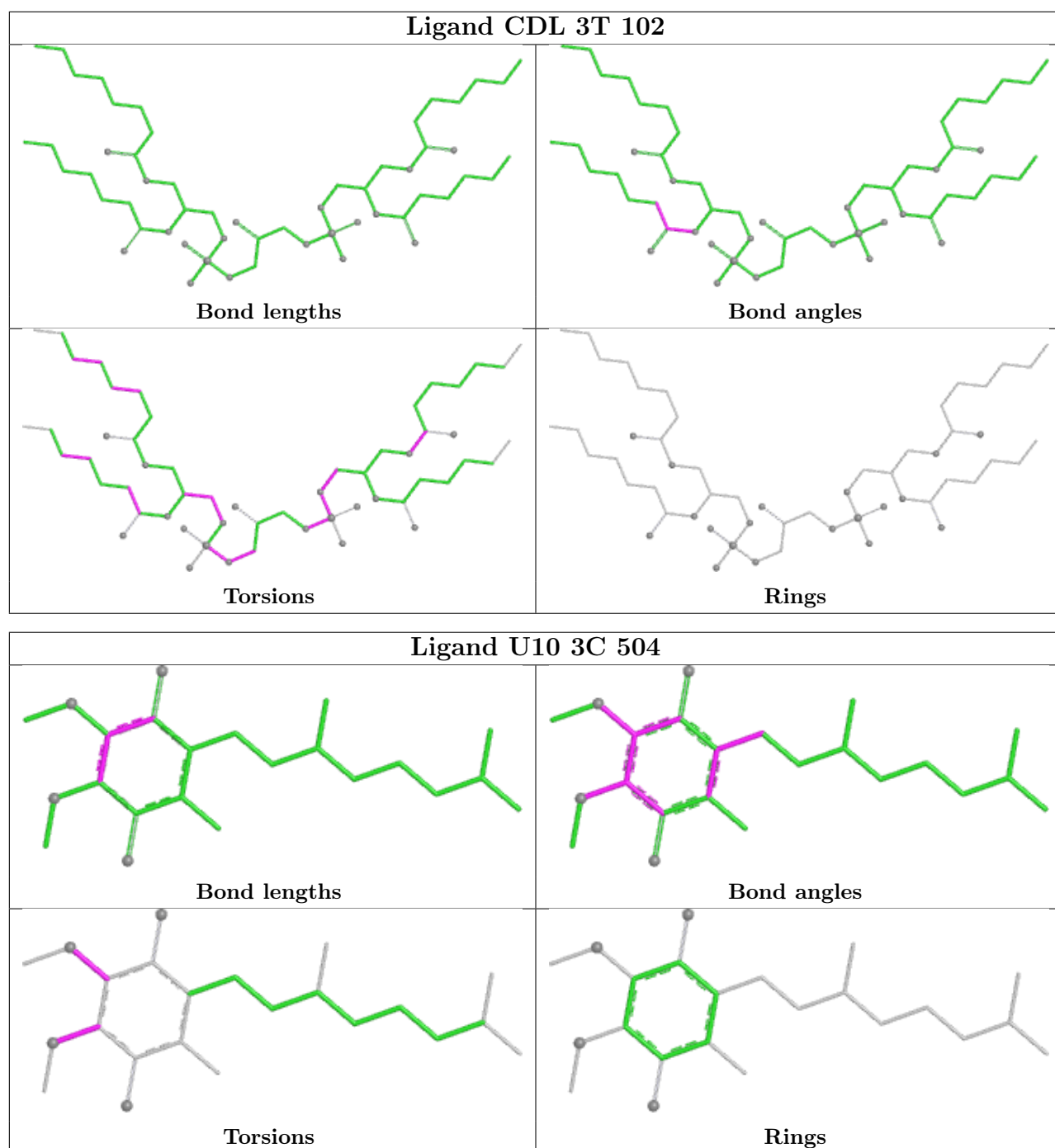
Rings

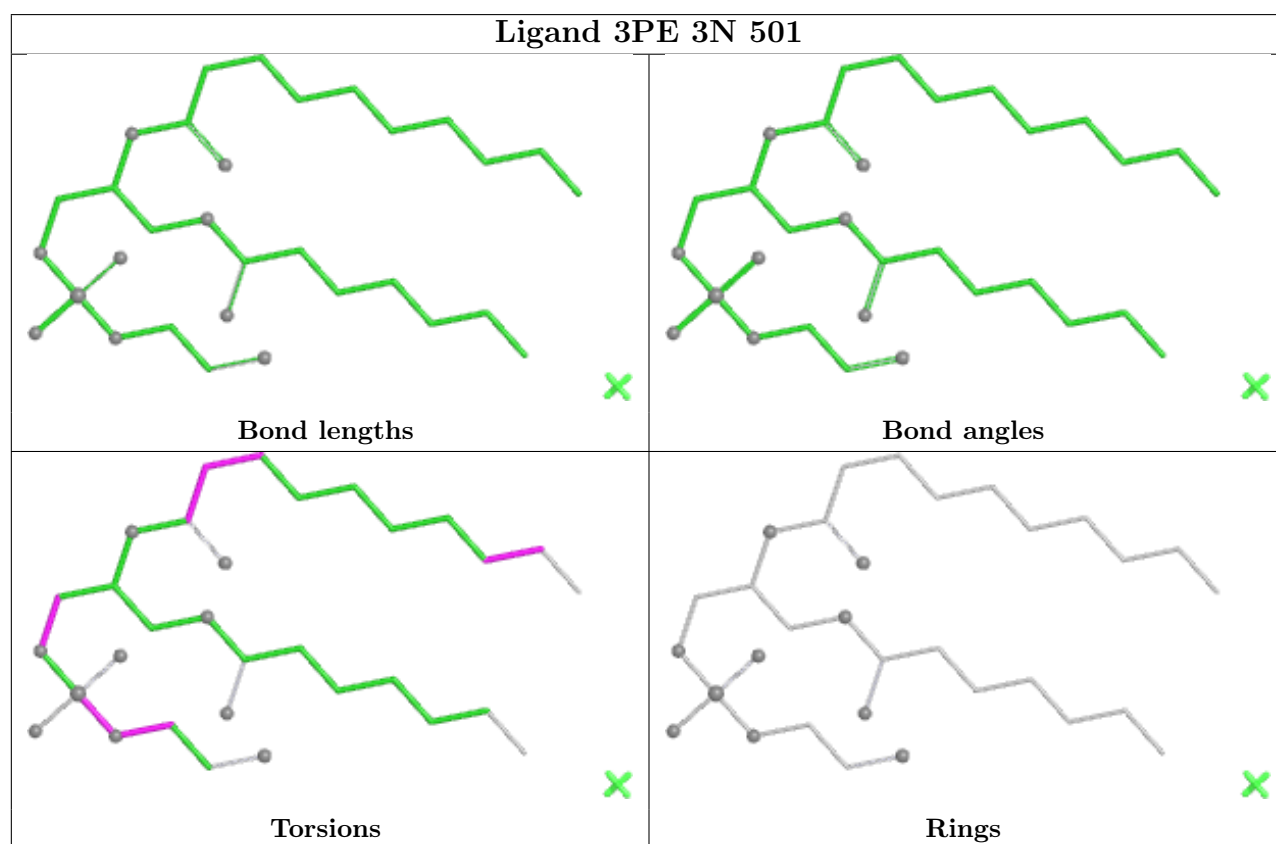
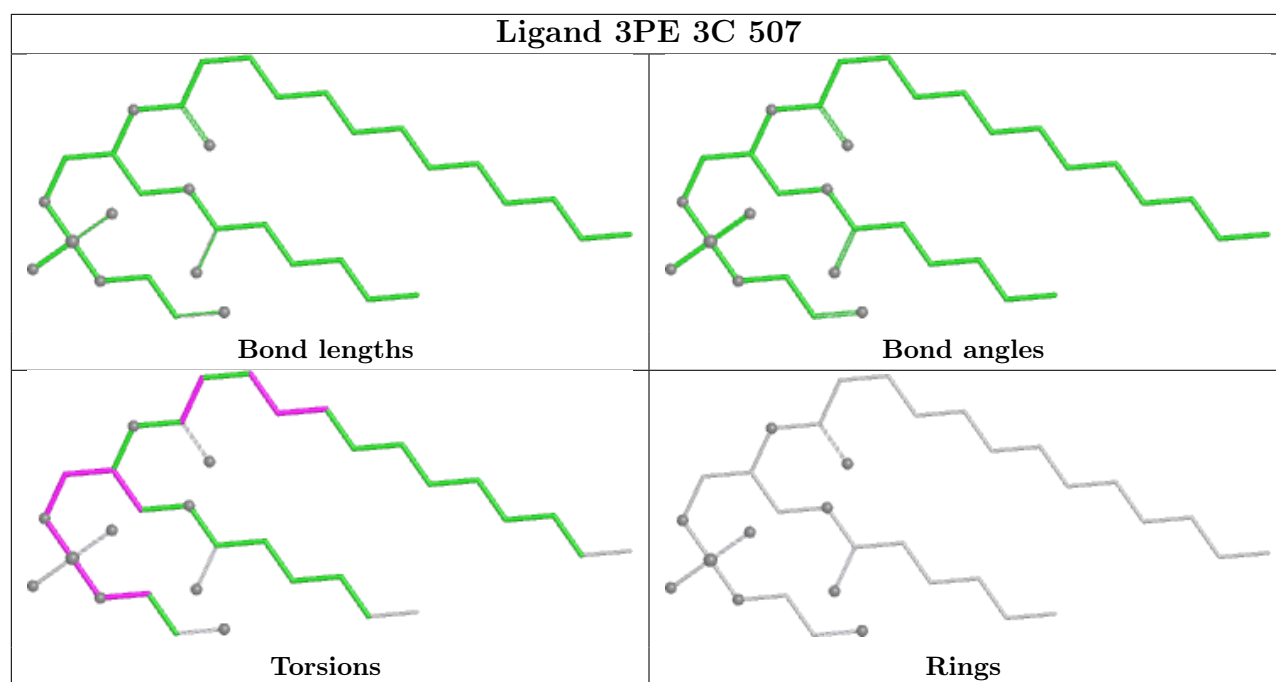


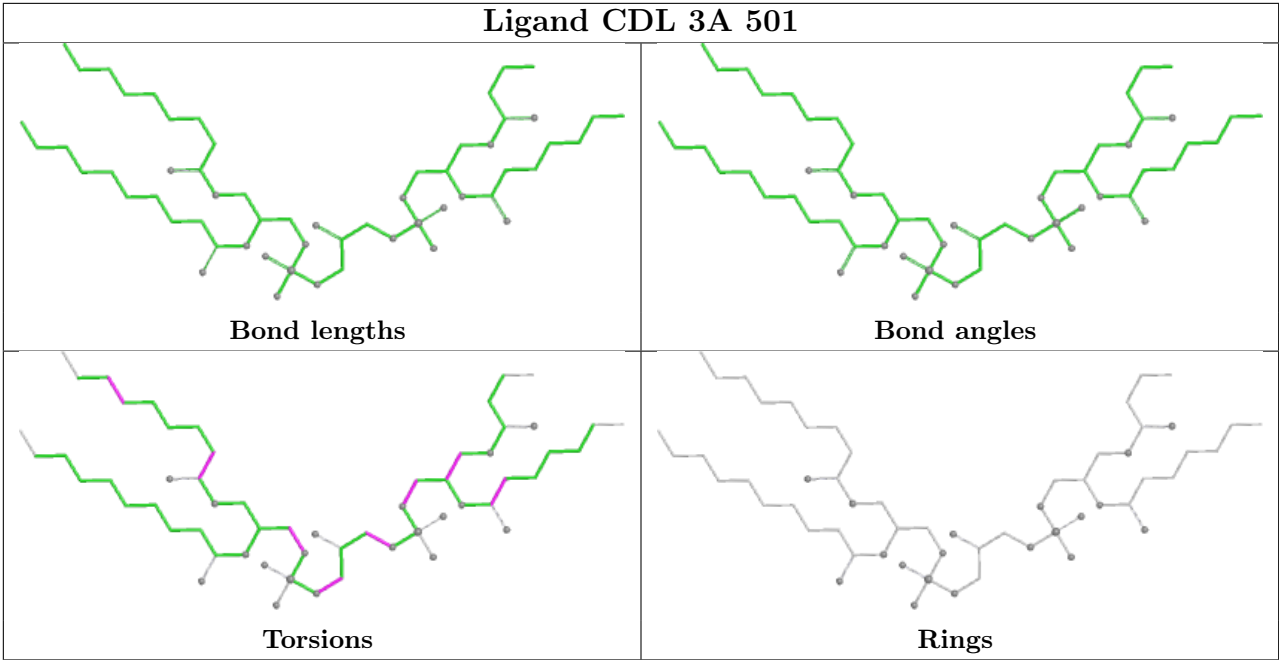












5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
7	3G	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	3G	75:ASN	C	82:PRO	N	4.66

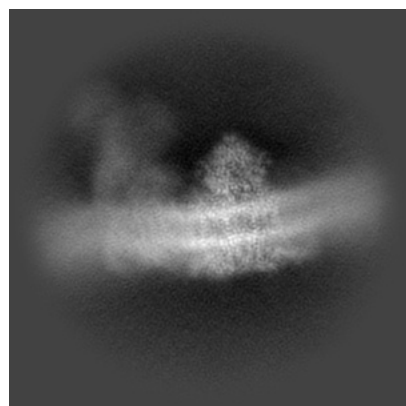
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-42223. These allow visual inspection of the internal detail of the map and identification of artifacts.

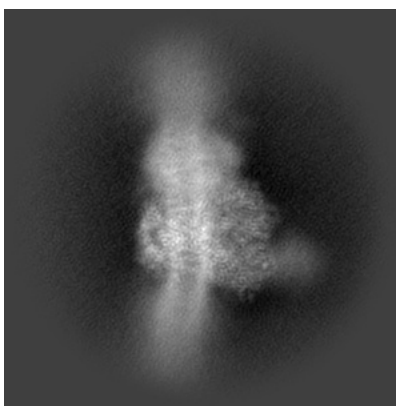
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

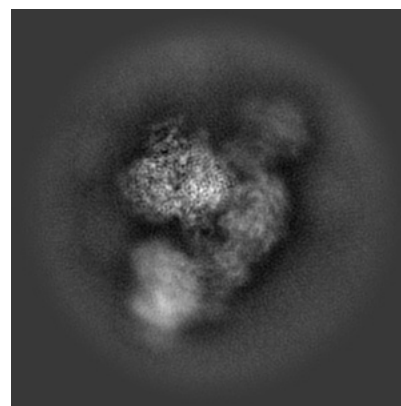
6.1.1 Primary map



X

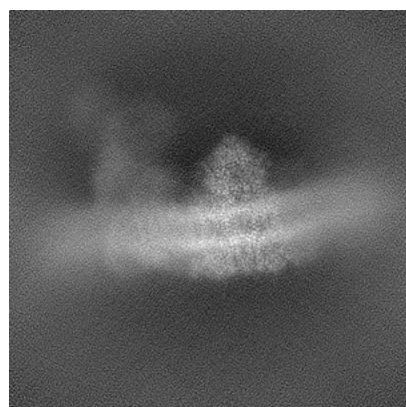


Y

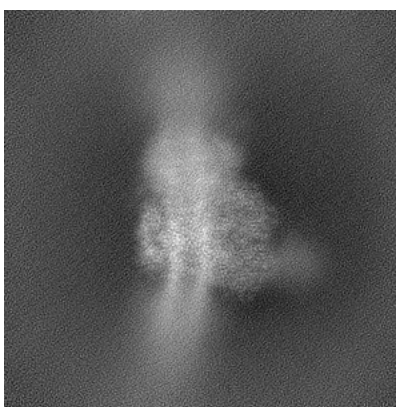


Z

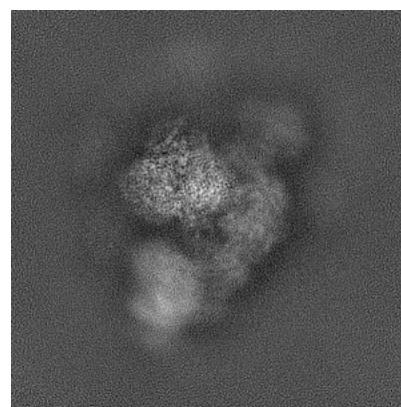
6.1.2 Raw map



X



Y

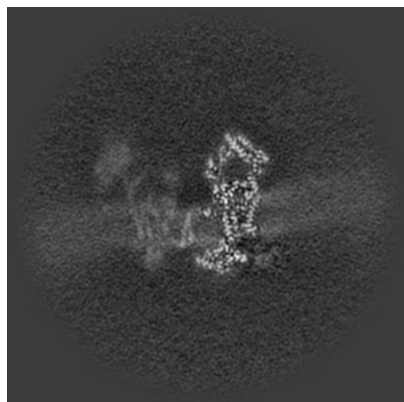


Z

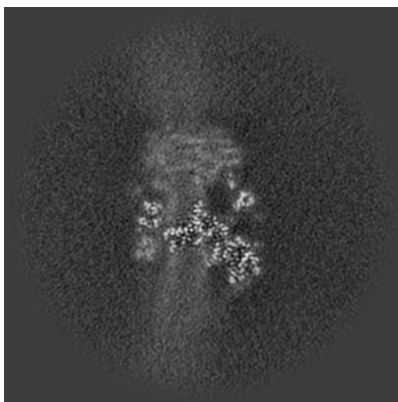
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

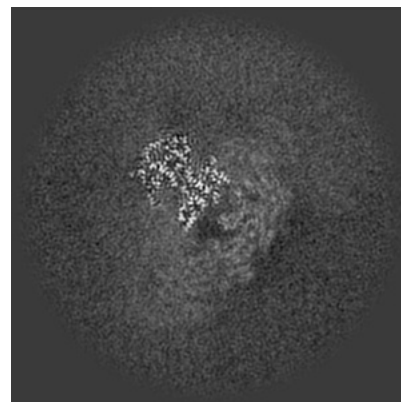
6.2.1 Primary map



X Index: 160

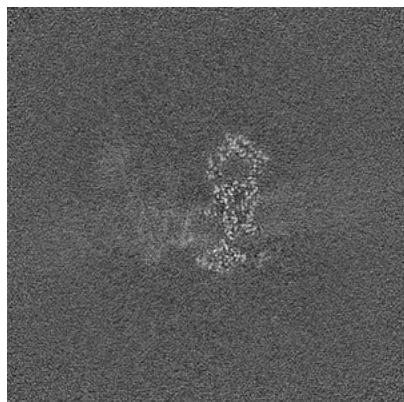


Y Index: 160

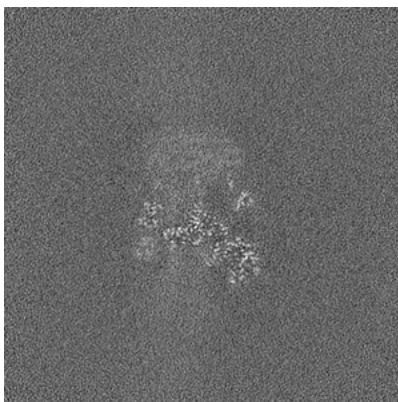


Z Index: 160

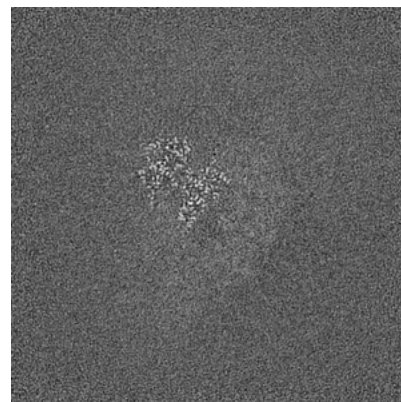
6.2.2 Raw map



X Index: 160



Y Index: 160

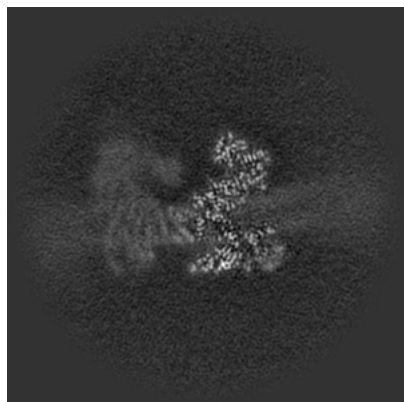


Z Index: 160

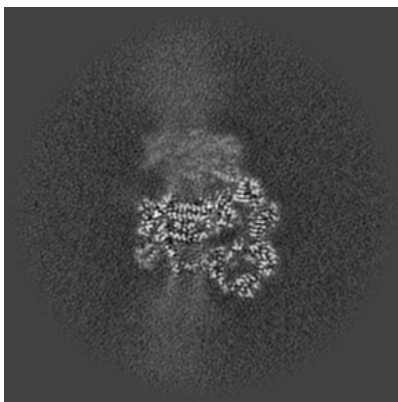
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

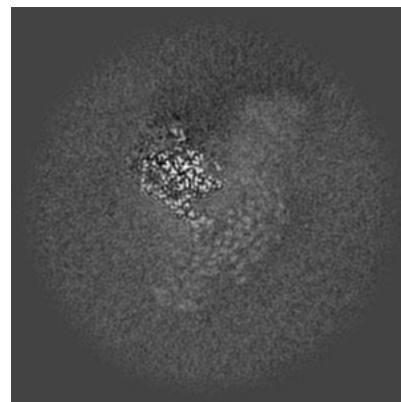
6.3.1 Primary map



X Index: 147

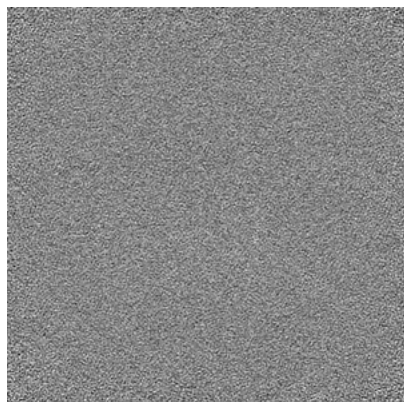


Y Index: 175

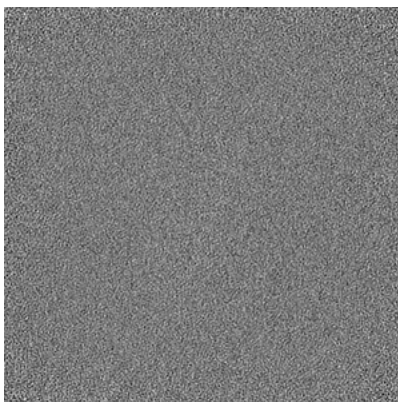


Z Index: 136

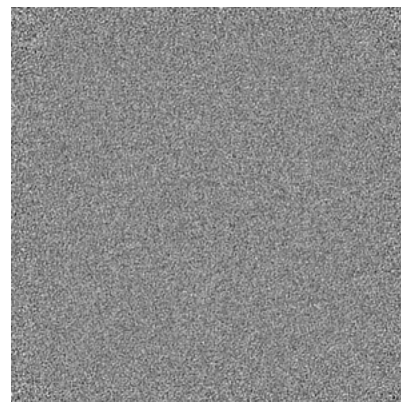
6.3.2 Raw map



X Index: 0



Y Index: 0

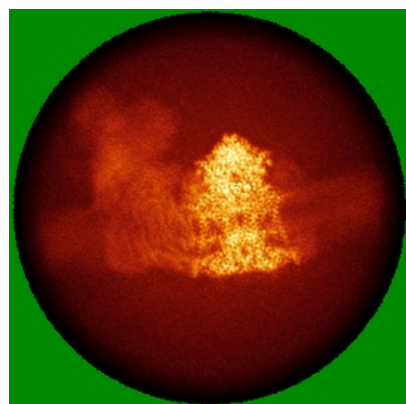


Z Index: 0

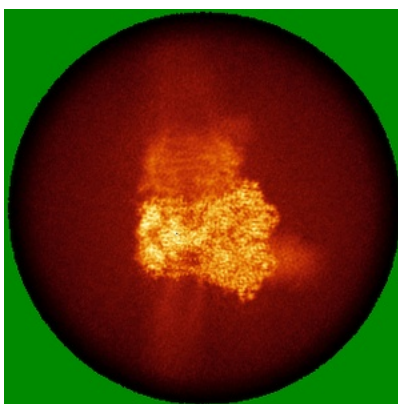
The images above show the largest variance slices of the map in three orthogonal directions.

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

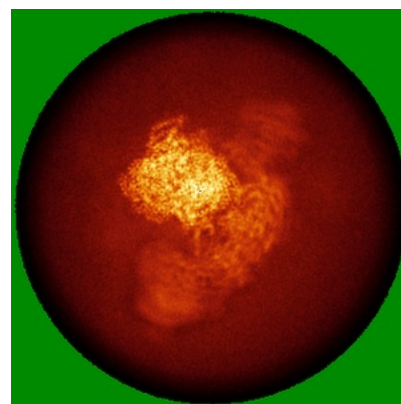
6.4.1 Primary map



X

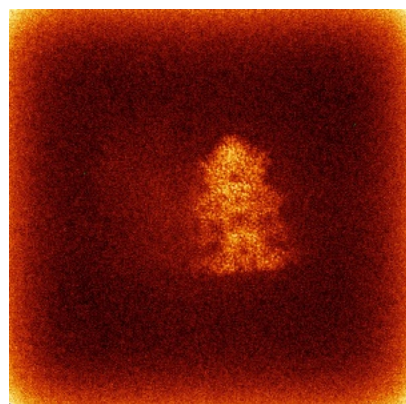


Y

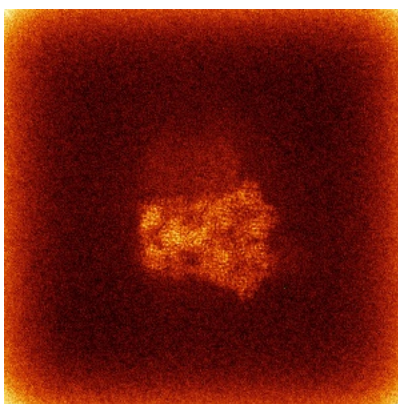


Z

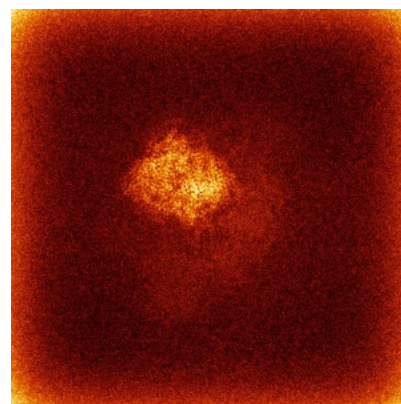
6.4.2 Raw map



X



Y

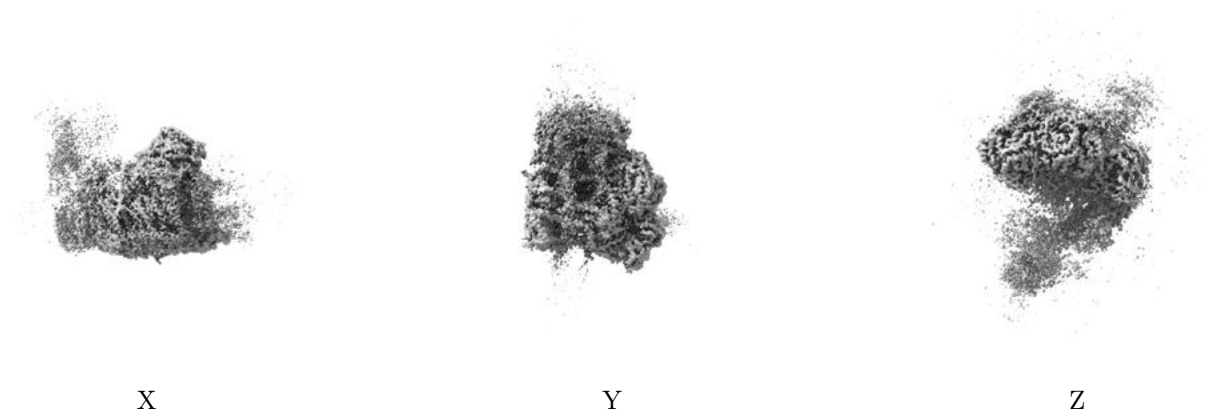


Z

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.

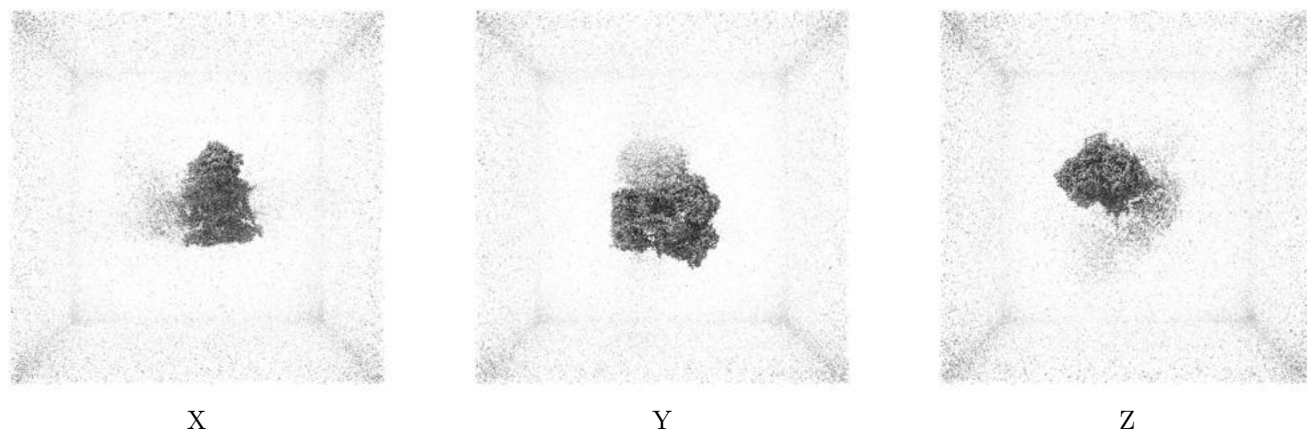
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.12. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

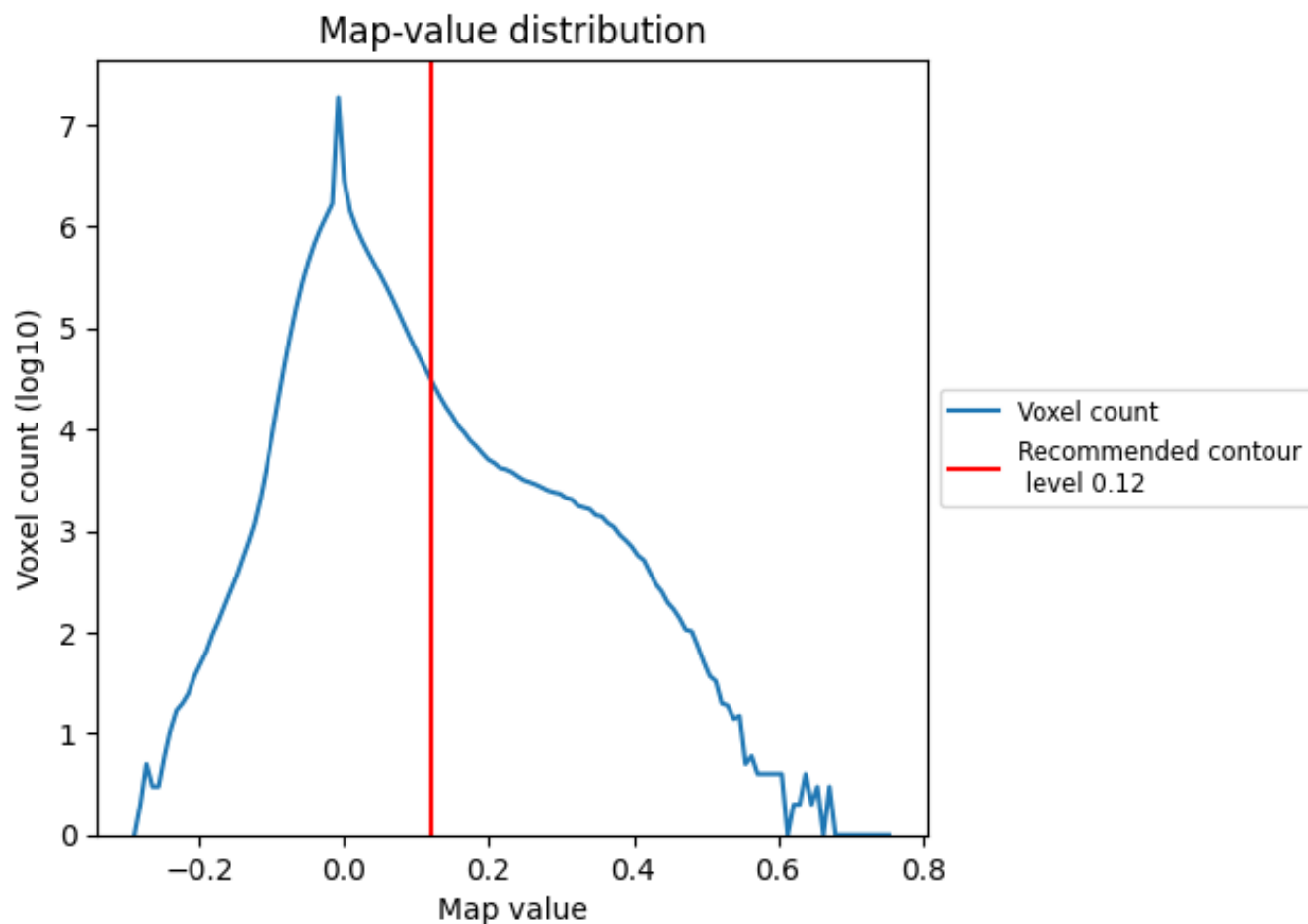
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

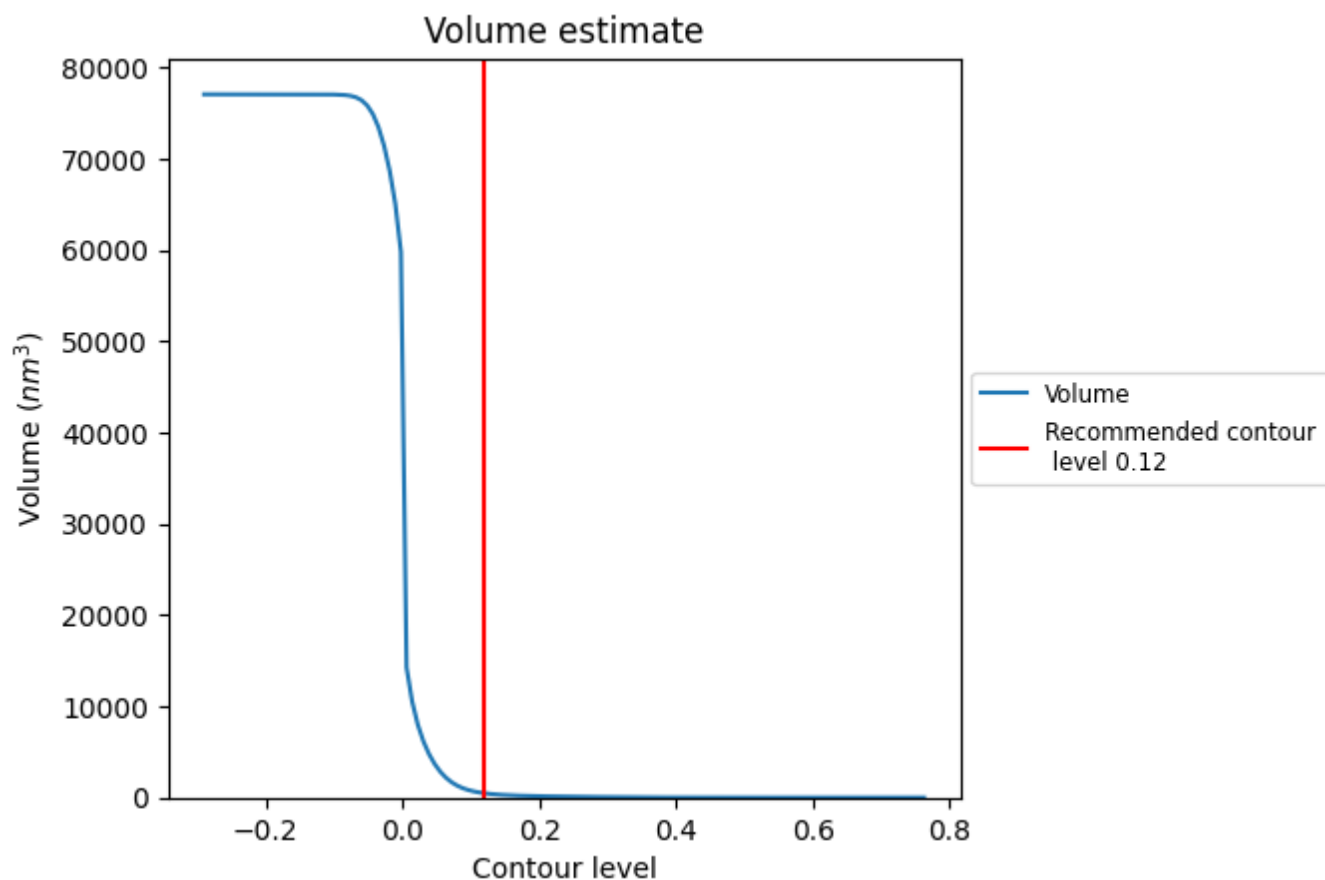
This section contains the results of statistical analysis of the map.

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.

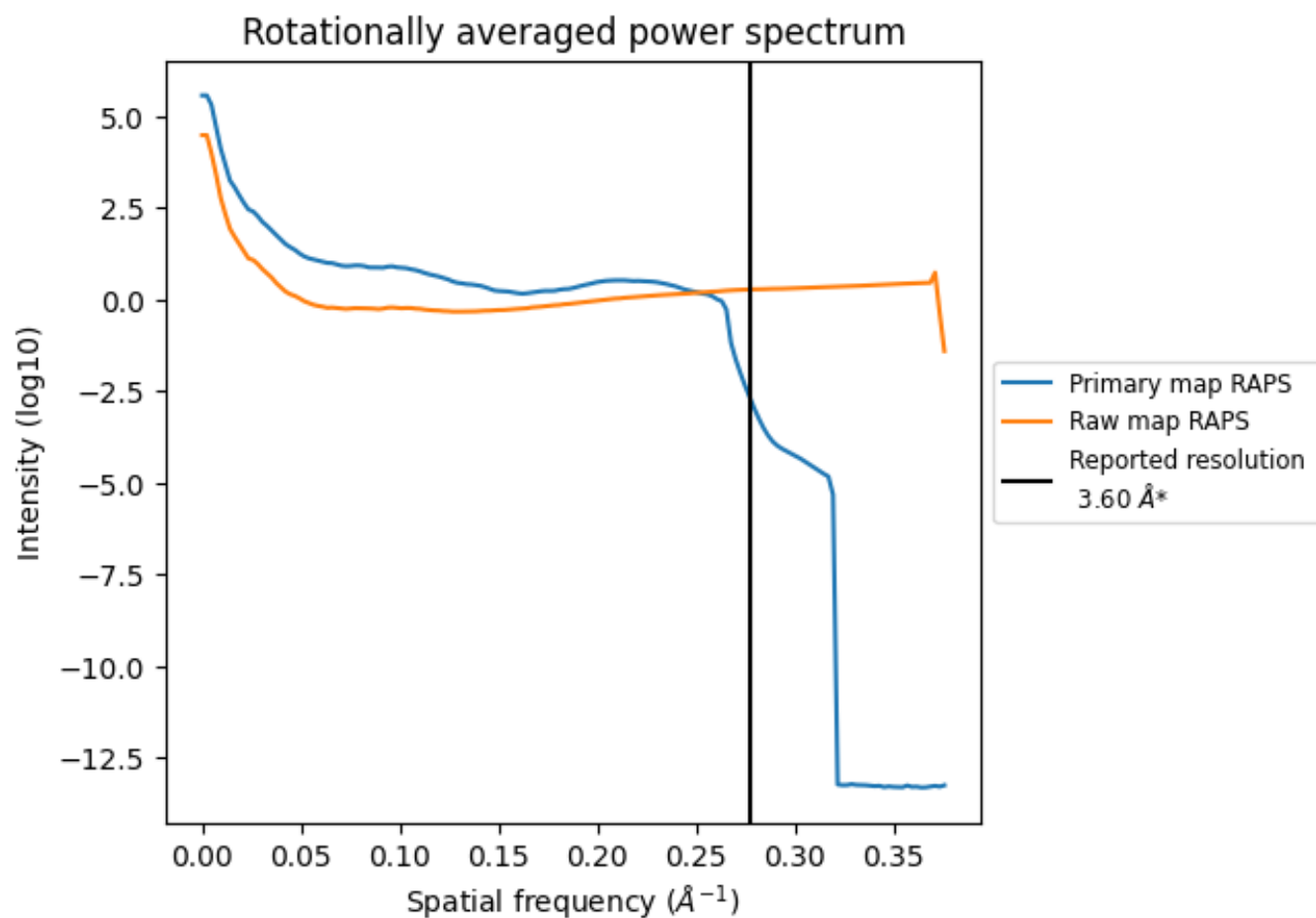
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 472 nm³; this corresponds to an approximate mass of 426 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 ⓘ

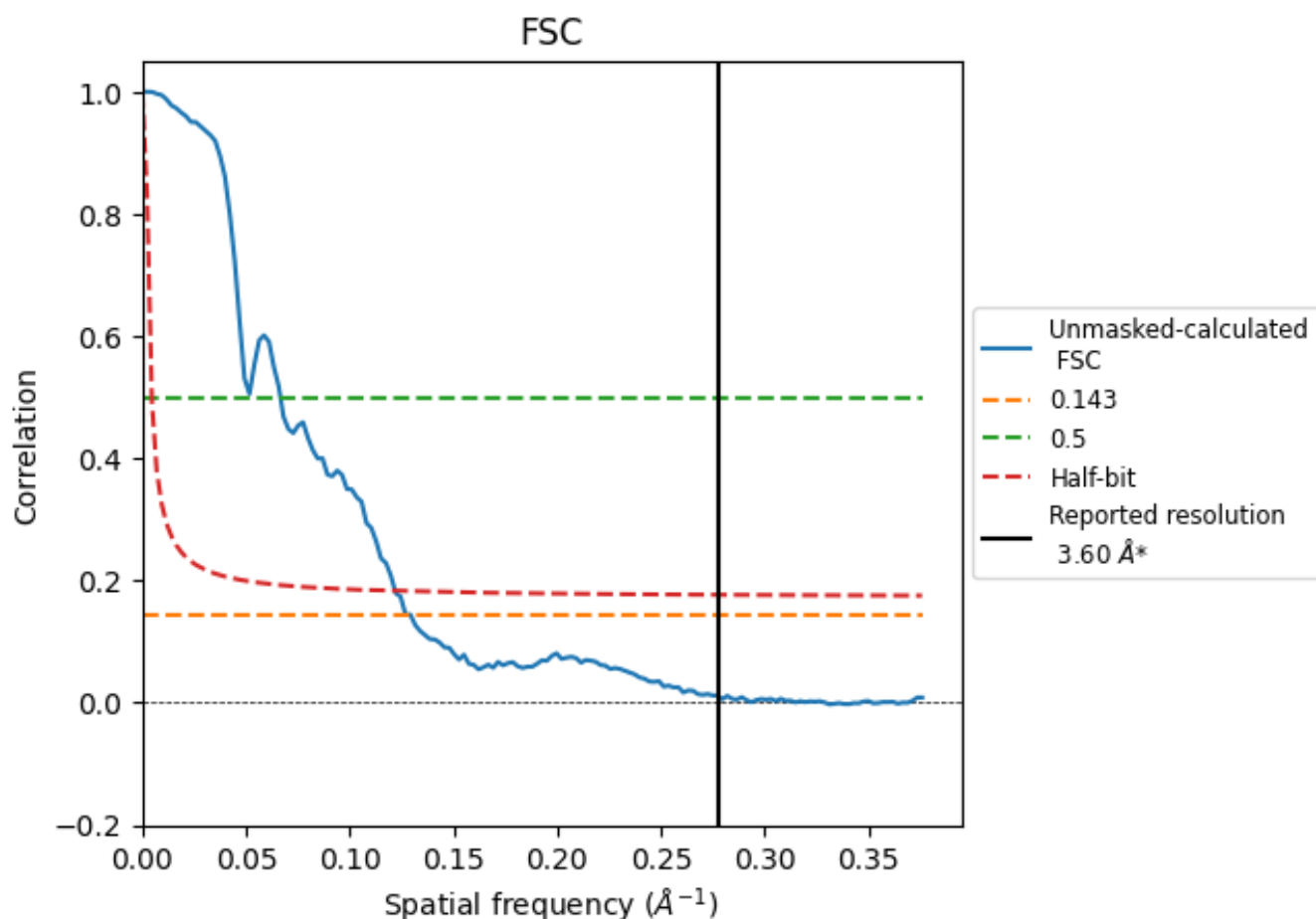


*Reported resolution corresponds to spatial frequency of 0.278 $\text{\AA}^{-1}$

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.278 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

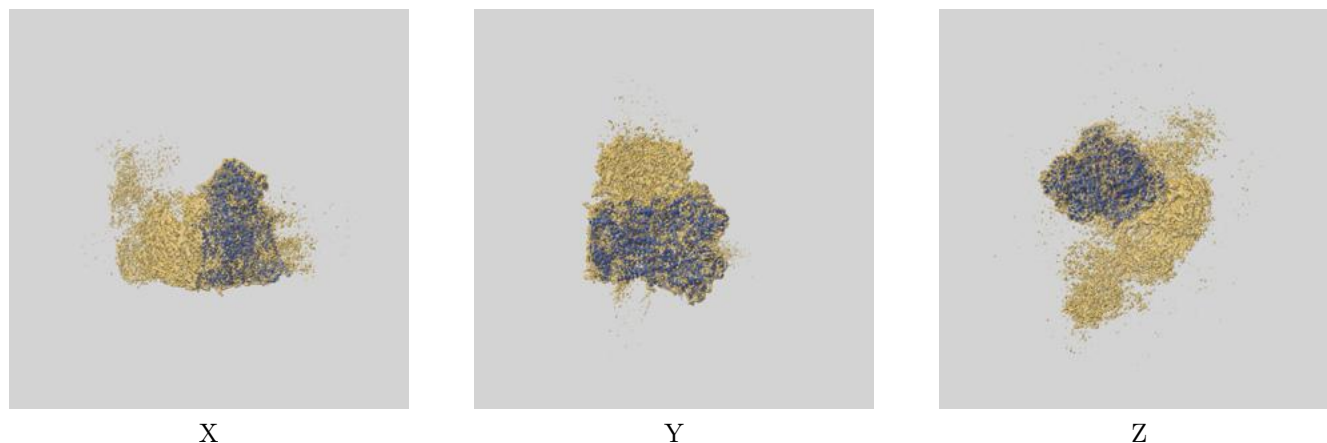
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	7.73	15.02	8.20

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 7.73 differs from the reported value 3.6 by more than 10 %

9 Map-model fit [i](#)

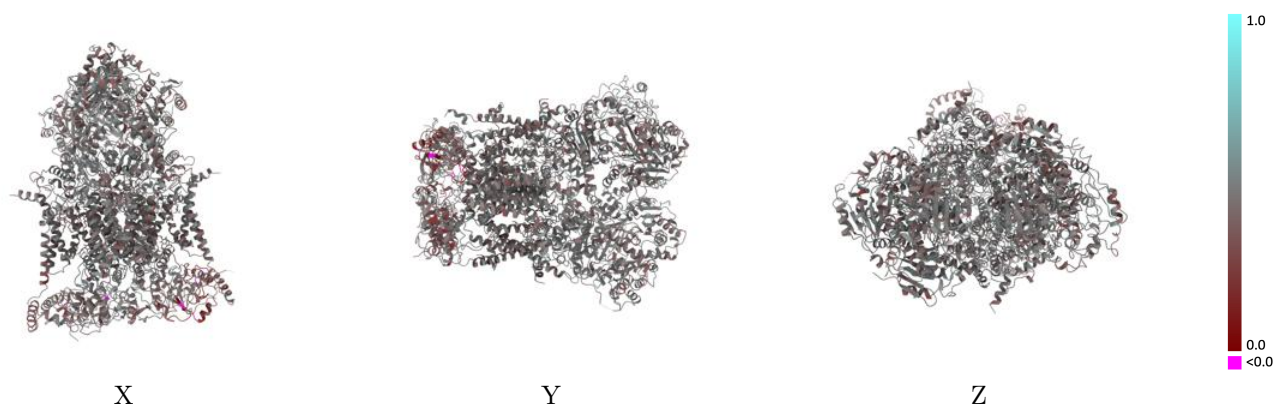
This section contains information regarding the fit between EMDB map EMD-42223 and PDB model 8UGF. Per-residue inclusion information can be found in section [3](#) on page [12](#).

9.1 Map-model overlay [i](#)



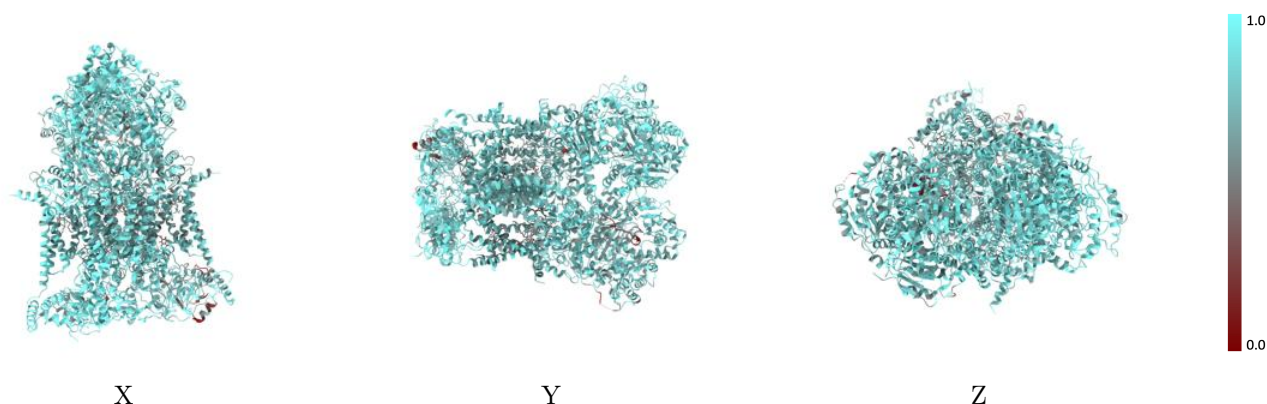
The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



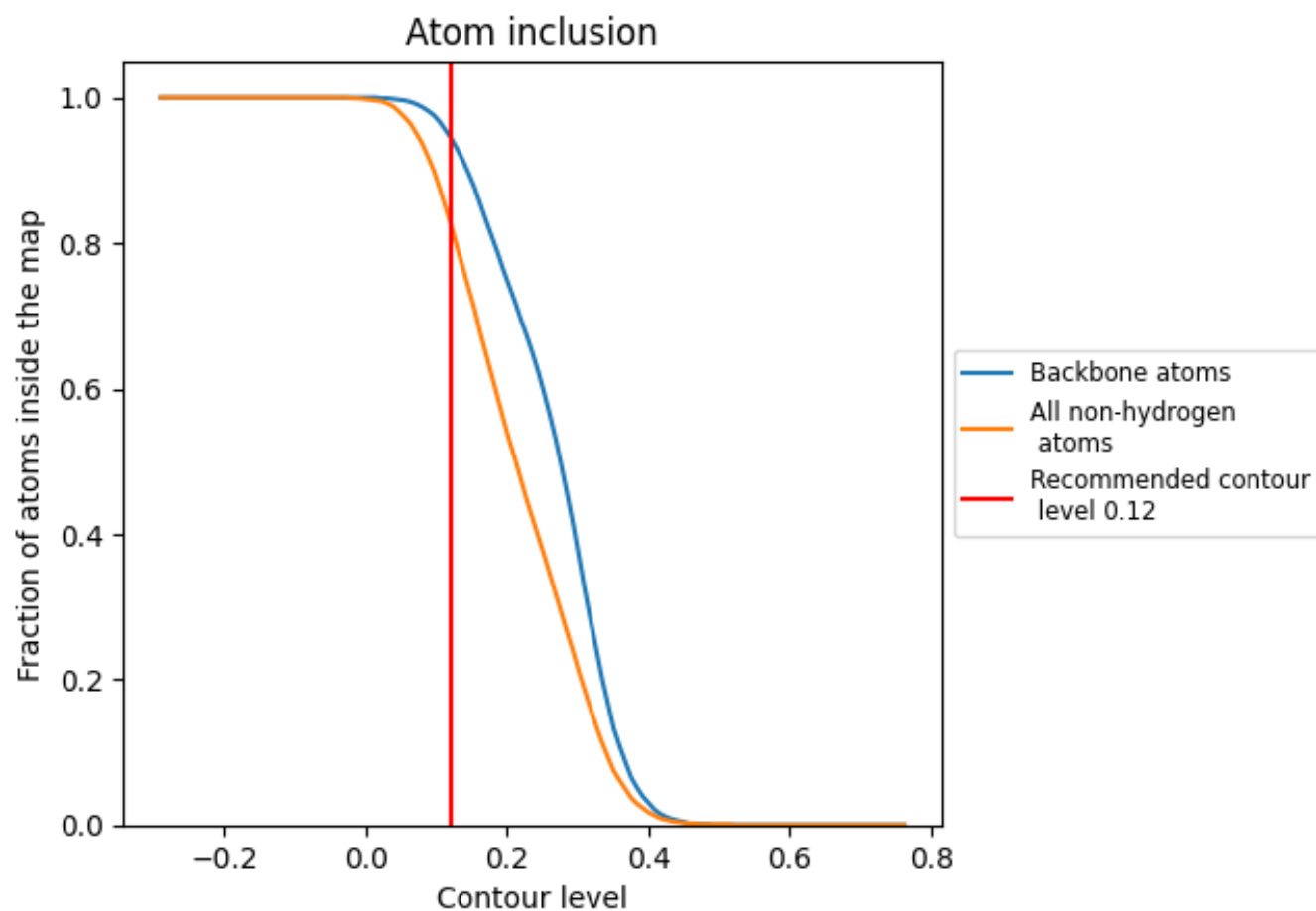
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.12).

9.4 Atom inclusion [i](#)



At the recommended contour level, 95% of all backbone atoms, 83% 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 (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8280	 0.4420
3A	 0.7940	 0.4550
3B	 0.8290	 0.4570
3C	 0.8040	 0.4520
3D	 0.8730	 0.4550
3E	 0.7130	 0.3690
3F	 0.8250	 0.4540
3G	 0.7800	 0.4530
3H	 0.8450	 0.3860
3I	 0.3960	 0.3580
3J	 0.8100	 0.4310
3N	 0.8850	 0.4570
3O	 0.8720	 0.4540
3P	 0.8630	 0.4580
3Q	 0.9160	 0.4610
3R	 0.7040	 0.3430
3S	 0.8720	 0.4600
3T	 0.8650	 0.4460
3U	 0.9020	 0.4190
3V	 0.6840	 0.4260
3W	 0.8980	 0.4620
3X	 0.8070	 0.4310
3Y	 0.7470	 0.4410

