



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 5, 2026 – 02:40 PM EDT

PDB ID : 1Q90 / pdb_00001q90
Title : Structure of the cytochrome b6f (plastohydroquinone : plastocyanin oxidoreductase) from Chlamydomonas reinhardtii
Authors : Stroebel, D.; Choquet, Y.; Popot, J.-L.; Picot, D.
Deposited on : 2003-08-22
Resolution : 3.10 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

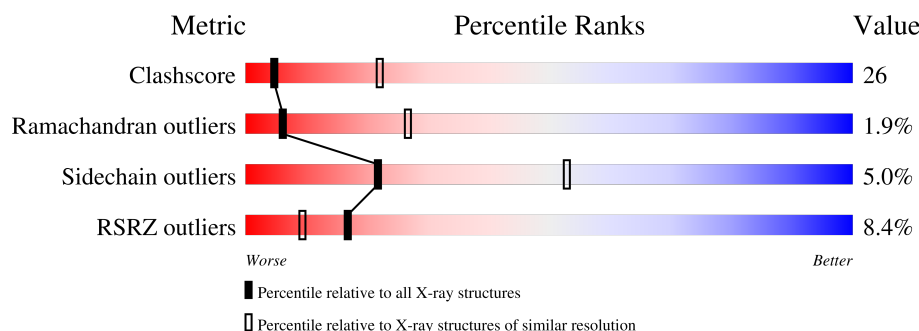
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.10 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	190562	1539 (3.10-3.10)
Ramachandran outliers	187476	1467 (3.10-3.10)
Sidechain outliers	187428	1467 (3.10-3.10)
RSRZ outliers	180081	1456 (3.10-3.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	292	4% 57% 39% .
2	B	215	2% 54% 41% ..
3	C	127	36% 41% 49% 9% .
4	D	159	4% 43% 47% 8% .
5	R	49	6% 57% 16% 6% 20%
6	G	37	5% 65% 16% 19%

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Mol	Chain	Length	Quality of chain
7	L	32	
8	M	39	
9	N	31	

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
10	HEC	A	900	X	-	-	-
10	HEC	B	901	X	-	-	-
10	HEC	B	902	X	-	-	-
10	HEC	B	903	X	-	-	-
14	CLA	D	910	X	-	-	-

2 Entry composition

There are 18 unique types of molecules in this entry. The entry contains 7778 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Apocytochrome f.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	292	Total	C	N	O	S	0	0	0
			2266	1457	387	417	5			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	287	HIS	-	expression tag	UNP P23577
A	288	HIS	-	expression tag	UNP P23577
A	289	HIS	-	expression tag	UNP P23577
A	290	HIS	-	expression tag	UNP P23577
A	291	HIS	-	expression tag	UNP P23577
A	292	HIS	-	expression tag	UNP P23577

- Molecule 2 is a protein called Cytochrome b6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	212	Total	C	N	O	S	0	0	0
			1681	1117	270	281	13			

- Molecule 3 is a protein called Cytochrome B6-F complex iron-sulfur subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	126	Total	C	N	O	S	0	0	0
			955	606	163	181	5			

- Molecule 4 is a protein called Cytochrome b6-f complex subunit 4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	156	Total	C	N	O	S	0	0	0
			1201	807	185	204	5			

- Molecule 5 is a protein called Cytochrome B6-F complex iron-sulfur subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	R	39	Total	C	N	O	S	0	0	0
			283	184	46	51	2			

- Molecule 6 is a protein called Cytochrome b6f complex subunit petG.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	G	30	Total	C	N	O	S	0	0	0
			224	154	31	37	2			

- Molecule 7 is a protein called Cytochrome b6f complex subunit petL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	L	32	Total	C	N	O	S	0	0	0
			242	168	34	39	1			

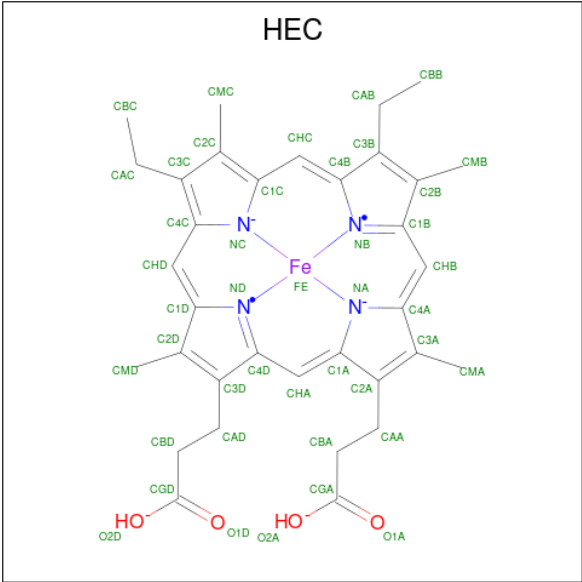
- Molecule 8 is a protein called Cytochrome b6f complex subunit PETM.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	M	34	Total	C	N	O	S	0	0	0
			247	162	37	46	2			

- Molecule 9 is a protein called Cytochrome b6f complex subunit PETN.

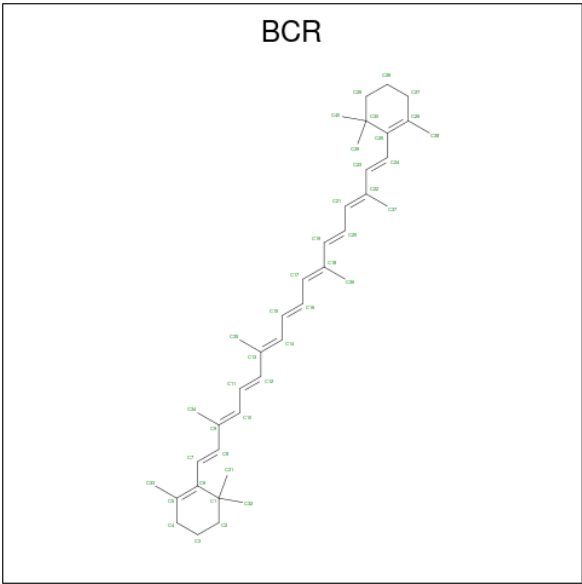
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
9	N	31	Total	C	N	O	S	0	0	0
			231	152	37	40	2			

- Molecule 10 is HEME C (CCD ID: HEC) (formula: C₃₄H₃₆FeN₄O₄).



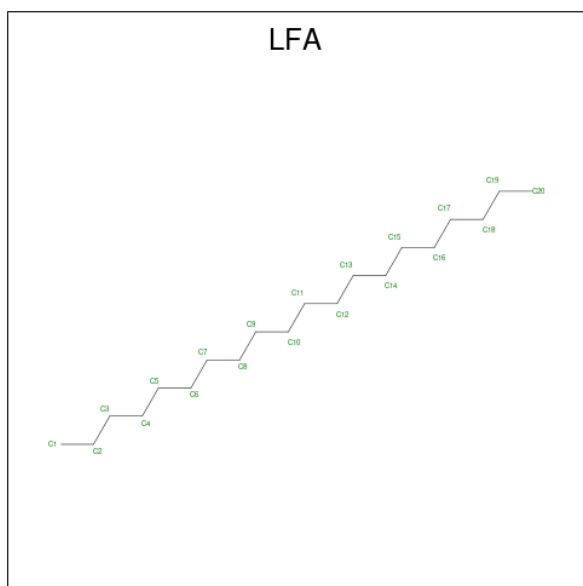
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
10	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
10	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
10	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
10	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0

- Molecule 11 is BETA-CAROTENE (CCD ID: BCR) (formula: $C_{40}H_{56}$).



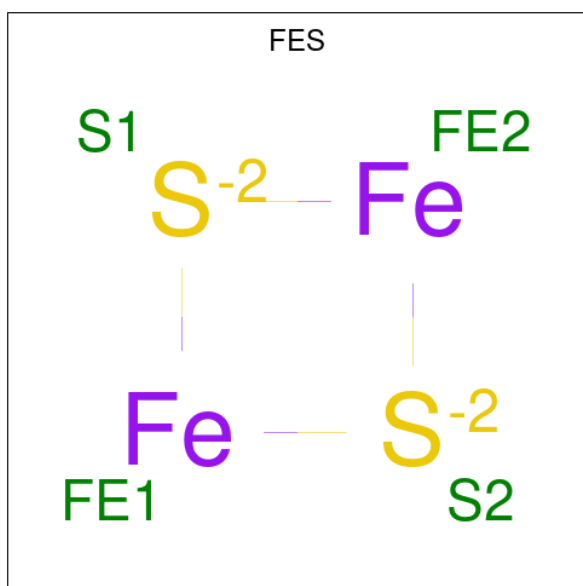
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
11	B	1	Total C 27 27	0	0

- Molecule 12 is EICOSANE (CCD ID: LFA) (formula: $C_{20}H_{42}$).



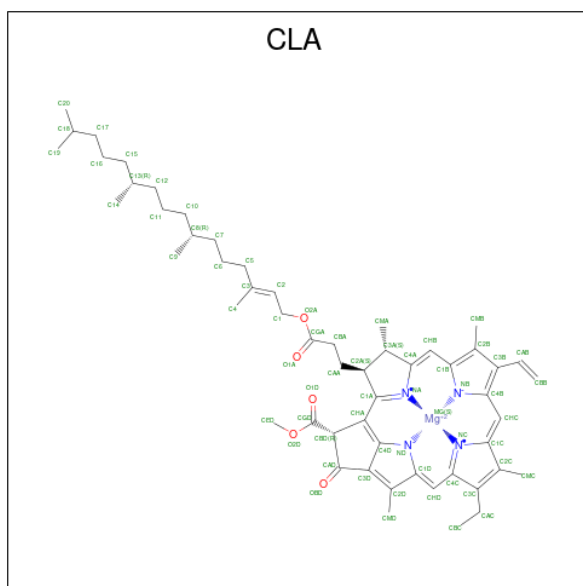
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
12	B	1	Total C 20 20	0	0

- Molecule 13 is FE2/S2 (INORGANIC) CLUSTER (CCD ID: FES) (formula: Fe_2S_2).



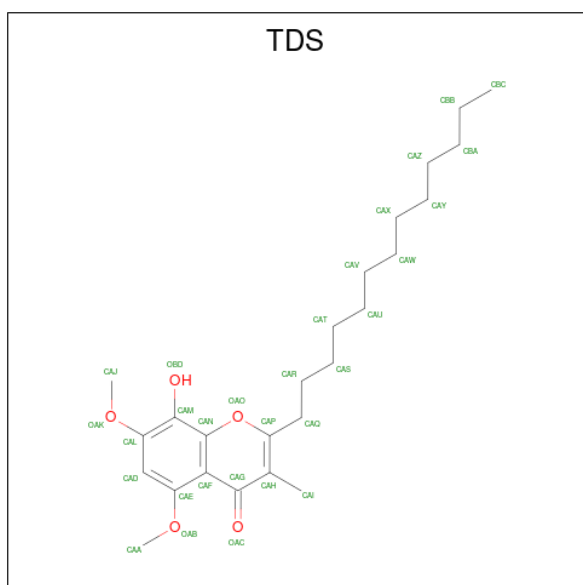
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
13	C	1	Total	Fe	S	0	0
			4	2	2		

- Molecule 14 is CHLOROPHYLL A (CCD ID: CLA) (formula: $C_{55}H_{72}MgN_4O_5$).



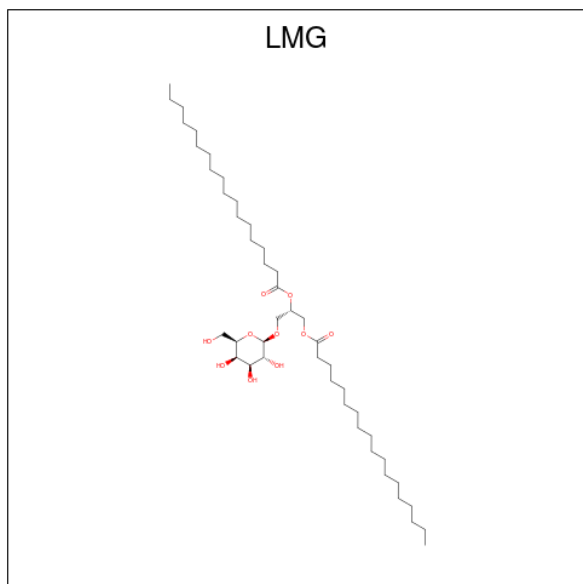
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
14	D	1	Total	C	Mg	N	O	0	0
			65	55	1	4	5		

- Molecule 15 is 8-HYDROXY-5,7-DIMETHOXY-3-METHYL-2-TRIDECYL-4H-CHROME N-4-ONE (CCD ID: TDS) (formula: $C_{25}H_{38}O_5$).



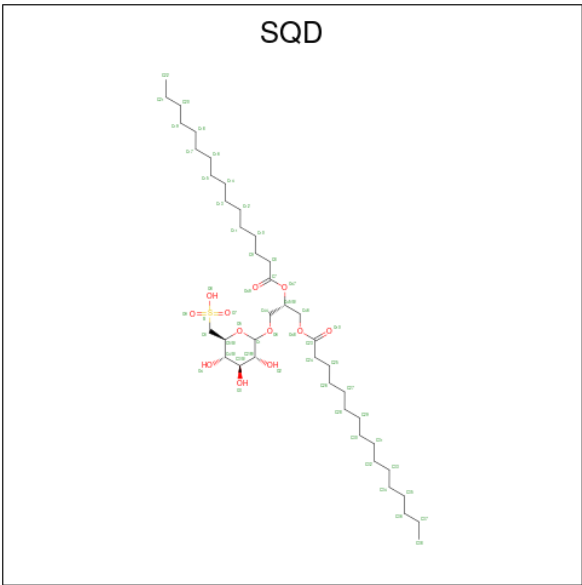
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
15	D	1	Total	C	O	0	0
			30	25	5		

- Molecule 16 is 1,2-DISTEAROYL-MONOGALACTOSYL-DIGLYCERIDE (CCD ID: LMG) (formula: $C_{45}H_{86}O_{10}$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
16	D	1	Total	C	O	0	0
			53	43	10		
16	L	1	Total	C	O	0	0
			42	32	10		

- Molecule 17 is 1,2-DI-O-ACYL-3-O-[6-DEOXY-6-SULFO-ALPHA-D-GLUCOPYRANOSYL]-SN-GLYCEROL (CCD ID: SQD) (formula: $C_{41}H_{78}O_{12}S$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
17	R	1	Total	C	O	S	0	0
			33	20	12	1		

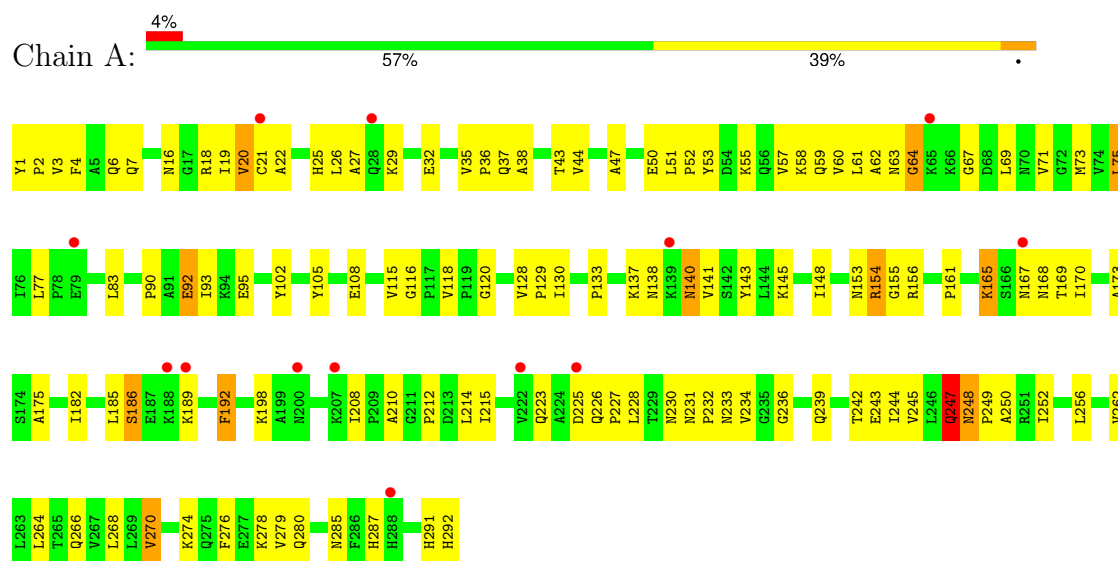
- Molecule 18 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
18	B	2	Total	O	0	0
			2	2		

3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Apocytochrome f

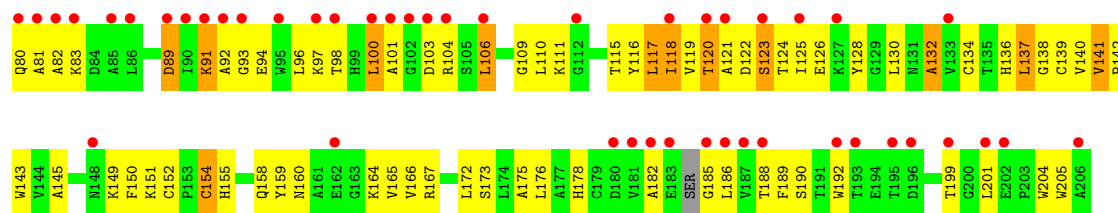


• Molecule 2: Cytochrome b6

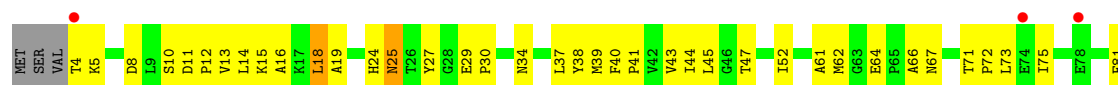
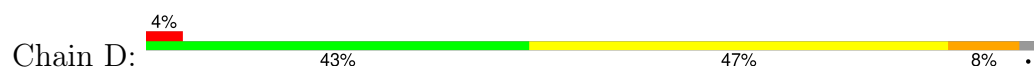


• Molecule 3: Cytochrome B6-F complex iron-sulfur subunit





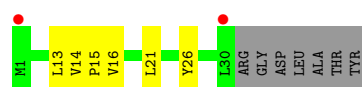
• Molecule 4: Cytochrome b6-f complex subunit 4



• Molecule 5: Cytochrome B6-F complex iron-sulfur subunit



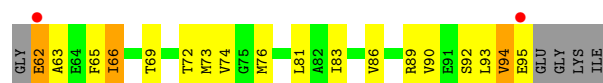
• Molecule 6: Cytochrome b6f complex subunit petG



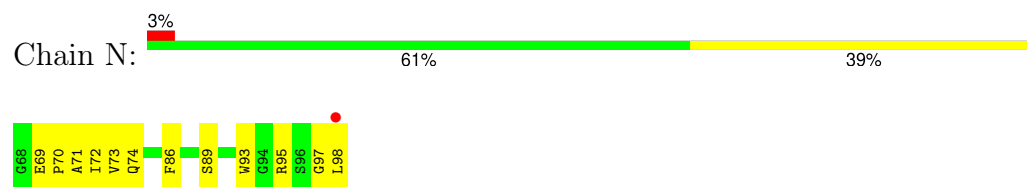
• Molecule 7: Cytochrome b6f complex subunit petL



• Molecule 8: Cytochrome b6f complex subunit PETM



- Molecule 9: Cytochrome b6f complex subunit PETN



4 Data and refinement statistics

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	102.45Å 171.21Å 351.01Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	34.42 – 3.10 34.42 – 3.10	Depositor EDS
% Data completeness (in resolution range)	99.5 (34.42-3.10) 94.4 (34.42-3.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.29 (at 2.95Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.222 , 0.261 0.213 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	62.5	Xtriage
Anisotropy	0.418	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 88.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	7778	wwPDB-VP
Average B, all atoms (Å ²)	69.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.58% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: FES, CLA, SQD, TDS, LFA, LMG, BCR, HEC

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.44	0/2318	0.96	6/3148 (0.2%)
2	B	0.53	0/1732	1.03	8/2360 (0.3%)
3	C	0.34	0/979	0.87	5/1333 (0.4%)
4	D	0.47	0/1238	1.00	4/1698 (0.2%)
5	R	0.53	0/289	1.21	1/393 (0.3%)
6	G	0.48	0/228	0.83	0/313
7	L	0.46	0/244	0.81	0/329
8	M	0.54	0/248	0.94	1/335 (0.3%)
9	N	0.60	0/237	0.94	0/321
All	All	0.47	0/7513	0.97	25/10230 (0.2%)

There are no bond length outliers.

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	R	71	PRO	CA-N-CD	-14.27	92.03	112.00
1	A	189	LYS	N-CA-C	-9.12	104.23	114.62
2	B	213	GLY	CA-C-N	7.96	127.89	119.85
2	B	213	GLY	C-N-CA	7.96	127.89	119.85
2	B	5	TYR	N-CA-C	-7.04	102.82	111.33
4	D	64	GLU	N-CA-C	-6.59	100.02	110.10
2	B	107	THR	N-CA-C	-6.50	104.53	114.16
2	B	32	ILE	N-CA-C	-6.49	103.49	113.16
3	C	138	GLY	N-CA-C	6.43	123.53	114.85
2	B	39	ILE	N-CA-C	-6.37	104.30	110.42
4	D	120	PHE	N-CA-C	6.34	119.79	110.59
3	C	141	VAL	N-CA-C	6.24	113.99	108.63
1	A	278	LYS	N-CA-C	-5.88	104.56	110.97
1	A	26	LEU	N-CA-C	5.68	120.05	113.18
3	C	132	ALA	N-CA-C	5.45	119.02	112.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	91	VAL	CA-C-N	5.41	126.60	119.84
4	D	91	VAL	C-N-CA	5.41	126.60	119.84
8	M	63	ALA	N-CA-C	-5.37	105.83	112.38
1	A	247	GLN	N-CA-C	5.36	118.45	110.52
1	A	120	GLY	N-CA-C	-5.22	108.93	114.67
1	A	20	VAL	N-CA-C	5.21	117.57	111.05
2	B	158	ILE	CB-CA-C	-5.20	106.10	110.94
2	B	175	VAL	N-CA-C	5.08	115.65	107.98
3	C	154	CYS	N-CA-C	5.03	117.54	111.40
3	C	106	LEU	N-CA-C	5.02	117.01	110.53

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2266	0	2301	108	0
2	B	1681	0	1692	110	0
3	C	955	0	922	67	0
4	D	1201	0	1256	95	0
5	R	283	0	291	12	0
6	G	224	0	248	9	0
7	L	242	0	286	11	0
8	M	247	0	263	19	0
9	N	231	0	230	21	0
10	A	43	0	30	6	0
10	B	129	0	95	6	0
11	B	27	0	35	3	0
12	B	20	0	42	2	0
13	C	4	0	0	1	0
14	D	65	0	72	5	0
15	D	30	0	38	1	0
16	D	53	0	79	3	0
16	L	42	0	54	4	0
17	R	33	0	29	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
18	B	2	0	0	0	0
All	All	7778	0	7963	404	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 26.

All (404) 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)
2:B:31:ASN:HA	9:N:98:LEU:HD22	1.24	1.18
3:C:178:HIS:HB2	3:C:190:SER:HB2	1.34	1.10
2:B:50:THR:HG23	2:B:86:HIS:HD1	1.07	1.07
1:A:59:GLN:HE22	1:A:156:ARG:HG3	1.27	1.00
2:B:142:GLN:NE2	4:D:67:ASN:H	1.63	0.96
2:B:50:THR:CG2	2:B:86:HIS:HD1	1.82	0.93
4:D:118:ASN:ND2	4:D:120:PHE:H	1.67	0.93
3:C:92:ALA:H	3:C:185:GLY:HA2	1.33	0.92
3:C:158:GLN:HB2	3:C:167:ARG:HB3	1.49	0.92
2:B:61:THR:HA	2:B:177:GLN:HE22	1.36	0.91
1:A:247:GLN:HE21	1:A:248:ASN:H	1.20	0.89
1:A:116:GLY:HA2	1:A:118:VAL:HG13	1.55	0.88
1:A:248:ASN:C	1:A:248:ASN:HD22	1.83	0.86
2:B:47:GLN:NE2	2:B:89:SER:HB3	1.91	0.86
2:B:50:THR:HG23	2:B:86:HIS:ND1	1.90	0.85
1:A:92:GLU:CD	1:A:92:GLU:H	1.83	0.85
4:D:118:ASN:HD22	4:D:119:LYS:N	1.77	0.82
2:B:152:THR:HG23	2:B:170:ARG:HE	1.43	0.81
4:D:117:ILE:HD12	4:D:118:ASN:H	1.47	0.80
4:D:117:ILE:HD12	4:D:118:ASN:N	1.97	0.79
2:B:31:ASN:HA	9:N:98:LEU:CD2	2.09	0.77
1:A:247:GLN:HE21	1:A:248:ASN:N	1.84	0.76
3:C:143:TRP:HE1	3:C:145:ALA:HB2	1.50	0.76
2:B:214:PRO:O	2:B:215:LEU:HB2	1.86	0.75
1:A:59:GLN:OE1	1:A:69:LEU:HG	1.87	0.75
2:B:32:ILE:N	9:N:98:LEU:HD13	2.01	0.75
2:B:119:VAL:HG13	4:D:109:ILE:HD11	1.69	0.75
2:B:120:THR:HG21	2:B:205:MET:HE1	1.67	0.75
1:A:73:MET:HG3	1:A:115:VAL:HG12	1.69	0.74
1:A:280:GLN:HE22	4:D:34:ASN:HD21	1.36	0.74
2:B:215:LEU:CD1	4:D:122:ASN:HD22	2.01	0.73
4:D:106:ALA:O	4:D:109:ILE:HG22	1.89	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:106:LEU:H	3:C:106:LEU:HD12	1.54	0.73
5:R:45:MET:HE2	5:R:45:MET:HA	1.71	0.73
1:A:90:PRO:HD2	1:A:93:ILE:HD12	1.71	0.73
4:D:118:ASN:HD22	4:D:118:ASN:C	1.95	0.73
1:A:247:GLN:NE2	1:A:248:ASN:H	1.89	0.71
8:M:92:SER:O	8:M:95:GLU:HB3	1.91	0.70
2:B:31:ASN:CA	9:N:98:LEU:HD22	2.14	0.70
8:M:72:THR:HG22	8:M:76:MET:HE2	1.74	0.70
1:A:3:VAL:O	1:A:7:GLN:HG3	1.90	0.69
3:C:182:ALA:O	3:C:186:LEU:HD12	1.93	0.69
4:D:81:PHE:HE2	14:D:910:CLA:H52	1.57	0.69
3:C:134:CYS:HB2	3:C:141:VAL:HG23	1.74	0.69
4:D:4:THR:HG22	4:D:5:LYS:H	1.56	0.69
2:B:47:GLN:HE21	2:B:89:SER:HB3	1.56	0.68
3:C:92:ALA:N	3:C:185:GLY:HA2	2.09	0.68
1:A:143:TYR:CE2	1:A:248:ASN:HB2	2.28	0.68
4:D:137:THR:HA	16:D:953:LMG:H242	1.76	0.68
1:A:60:VAL:HG12	1:A:167:ASN:ND2	2.10	0.68
2:B:152:THR:CG2	2:B:170:ARG:HE	2.07	0.68
1:A:59:GLN:HE22	1:A:156:ARG:CG	2.05	0.67
2:B:113:PRO:HB2	2:B:209:GLN:HE22	1.59	0.67
2:B:124:MET:CE	2:B:199:MET:HG3	2.23	0.67
2:B:215:LEU:HD12	4:D:122:ASN:HD22	1.59	0.67
7:L:21:ILE:O	7:L:25:LEU:HB2	1.94	0.67
2:B:215:LEU:HG	4:D:125:ARG:HH12	1.60	0.66
1:A:27:ALA:HB3	1:A:236:GLY:HA2	1.76	0.66
1:A:53:TYR:HB3	1:A:154:ARG:HD2	1.77	0.66
1:A:27:ALA:HB2	1:A:233:ASN:ND2	2.10	0.66
2:B:154:VAL:HB	2:B:155:PRO:HD3	1.77	0.65
3:C:118:ILE:HD12	3:C:118:ILE:H	1.61	0.65
4:D:30:PRO:HG2	4:D:34:ASN:ND2	2.12	0.64
2:B:81:LEU:O	2:B:85:ILE:HG13	1.97	0.64
7:L:4:ILE:HD13	7:L:4:ILE:O	1.96	0.64
3:C:143:TRP:NE1	3:C:145:ALA:HB2	2.13	0.64
2:B:113:PRO:HB2	2:B:209:GLN:NE2	2.13	0.64
1:A:266:GLN:O	1:A:270:VAL:HG12	1.98	0.63
2:B:124:MET:HB3	10:B:901:HEC:HBB3	1.79	0.63
3:C:104:ARG:HD2	3:C:143:TRP:CE2	2.34	0.63
5:R:44:ILE:CG2	7:L:31:LEU:HD21	2.28	0.63
1:A:27:ALA:HB2	1:A:233:ASN:HD21	1.63	0.63
1:A:71:VAL:HG12	1:A:154:ARG:HB3	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:M:73:MET:HA	8:M:76:MET:HE3	1.80	0.62
1:A:71:VAL:HG12	1:A:154:ARG:CB	2.29	0.62
4:D:104:VAL:HB	4:D:105:PRO:CD	2.30	0.62
4:D:39:MET:HE2	9:N:95:ARG:HG3	1.81	0.62
3:C:104:ARG:HD2	3:C:143:TRP:CD2	2.35	0.61
3:C:103:ASP:HB3	3:C:119:VAL:CG2	2.30	0.61
4:D:85:PHE:HD2	4:D:147:SER:HB2	1.66	0.60
4:D:4:THR:HG22	4:D:5:LYS:N	2.15	0.60
4:D:95:LEU:HG	4:D:99:LEU:CD2	2.31	0.60
2:B:36:ILE:HG22	2:B:100:HIS:HB2	1.84	0.60
3:C:172:LEU:HD13	3:C:204:TRP:CG	2.36	0.60
4:D:95:LEU:HG	4:D:99:LEU:HD23	1.84	0.60
9:N:72:ILE:HG23	9:N:73:VAL:N	2.17	0.60
4:D:128:ILE:O	4:D:132:LEU:HD23	2.01	0.59
2:B:215:LEU:CG	4:D:125:ARG:HH12	2.15	0.59
3:C:141:VAL:HG22	3:C:152:CYS:HB2	1.83	0.59
1:A:36:PRO:O	1:A:244:ILE:HD12	2.02	0.59
3:C:83:LYS:HA	3:C:89:ASP:HA	1.85	0.59
1:A:143:TYR:CD2	1:A:248:ASN:HB2	2.37	0.59
1:A:248:ASN:C	1:A:248:ASN:ND2	2.53	0.59
8:M:89:ARG:HH21	8:M:93:LEU:HD21	1.68	0.59
1:A:60:VAL:HG12	1:A:167:ASN:HD22	1.66	0.59
2:B:120:THR:CG2	2:B:205:MET:HE1	2.32	0.59
1:A:2:PRO:HA	10:A:900:HEC:HBB2	1.84	0.59
2:B:151:VAL:HG13	15:D:920:TDS:HAT1	1.84	0.58
3:C:116:TYR:OH	3:C:142:PRO:HA	2.03	0.58
4:D:12:PRO:HA	4:D:15:LYS:HE3	1.85	0.58
4:D:158:GLY:O	4:D:159:LEU:HD23	2.04	0.58
2:B:150:ILE:HD11	3:C:139:CYS:SG	2.43	0.58
16:L:951:LMG:H112	8:M:69:THR:HG23	1.85	0.58
4:D:150:PRO:HD2	4:D:153:ILE:HD11	1.85	0.57
2:B:11:ARG:O	2:B:12:LEU:HD23	2.04	0.57
2:B:154:VAL:HA	3:C:137:LEU:HD11	1.85	0.57
4:D:4:THR:HA	4:D:29:GLU:OE2	2.03	0.57
1:A:92:GLU:O	1:A:95:GLU:HB2	2.05	0.57
4:D:108:LEU:C	4:D:110:THR:H	2.12	0.57
3:C:93:GLY:O	3:C:97:LYS:HG3	2.05	0.57
3:C:110:LEU:O	3:C:111:LYS:HB2	2.04	0.57
1:A:145:LYS:HD2	4:D:61:ALA:HB2	1.85	0.57
3:C:109:GLY:HA3	3:C:115:THR:OG1	2.05	0.57
1:A:285:ASN:OD1	1:A:287:HIS:HB2	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:D:953:LMG:H292	8:M:66:ILE:HD11	1.87	0.57
2:B:15:GLN:OE1	2:B:15:GLN:HA	2.05	0.56
2:B:102:PHE:HE1	6:G:14:VAL:HG13	1.70	0.56
2:B:47:GLN:HE21	2:B:89:SER:CB	2.17	0.56
2:B:124:MET:HE1	2:B:199:MET:HG3	1.86	0.56
3:C:136:HIS:NE2	3:C:137:LEU:HD22	2.20	0.56
2:B:120:THR:HG21	2:B:205:MET:CE	2.35	0.56
3:C:92:ALA:H	3:C:185:GLY:CA	2.13	0.55
2:B:31:ASN:C	9:N:98:LEU:HD13	2.30	0.55
3:C:100:LEU:O	3:C:119:VAL:HG11	2.06	0.55
4:D:108:LEU:O	4:D:111:VAL:HG23	2.07	0.55
2:B:103:ARG:HA	6:G:21:LEU:HD11	1.88	0.55
4:D:93:ASN:HB2	4:D:96:LEU:HB3	1.87	0.55
4:D:16:ALA:O	4:D:19:ALA:HB3	2.07	0.55
2:B:32:ILE:CA	9:N:98:LEU:HD13	2.36	0.54
2:B:152:THR:HG23	2:B:170:ARG:NE	2.17	0.54
3:C:120:THR:HG22	3:C:121:ALA:N	2.23	0.54
2:B:124:MET:HE3	2:B:199:MET:HG3	1.89	0.54
2:B:142:GLN:HE21	4:D:66:ALA:HA	1.73	0.54
6:G:13:LEU:HA	6:G:16:VAL:HG12	1.88	0.54
1:A:2:PRO:HG3	10:A:900:HEC:CMB	2.37	0.54
2:B:70:GLN:HB2	4:D:62:MET:HE2	1.89	0.54
1:A:63:ASN:OD1	1:A:64:GLY:N	2.39	0.54
1:A:291:HIS:O	1:A:292:HIS:HB2	2.08	0.53
2:B:211:ILE:HG23	2:B:212:SER:O	2.07	0.53
3:C:118:ILE:HD12	3:C:118:ILE:N	2.22	0.53
4:D:91:VAL:HG11	4:D:96:LEU:HD12	1.90	0.53
4:D:118:ASN:ND2	4:D:118:ASN:C	2.63	0.53
8:M:93:LEU:C	8:M:95:GLU:H	2.14	0.53
9:N:95:ARG:HE	9:N:98:LEU:HD11	1.72	0.53
1:A:16:ASN:HD22	4:D:73:LEU:HD21	1.73	0.53
2:B:5:TYR:OH	2:B:15:GLN:HG2	2.08	0.53
3:C:82:ALA:HB2	3:C:189:PHE:CD2	2.43	0.53
5:R:40:ASN:O	5:R:44:ILE:HG12	2.09	0.53
2:B:47:GLN:NE2	2:B:89:SER:CB	2.70	0.53
3:C:173:SER:O	3:C:204:TRP:HZ2	1.91	0.53
3:C:199:THR:C	3:C:201:LEU:H	2.17	0.53
2:B:72:ILE:HA	2:B:76:VAL:CG2	2.39	0.53
3:C:106:LEU:HD12	3:C:106:LEU:N	2.22	0.53
1:A:61:LEU:HD11	1:A:67:GLY:HA3	1.90	0.53
2:B:214:PRO:HD2	4:D:24:HIS:CE1	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:192:PHE:CD1	1:A:192:PHE:N	2.76	0.53
4:D:100:LEU:O	4:D:103:ALA:HB3	2.09	0.53
1:A:248:ASN:HD22	1:A:249:PRO:N	2.07	0.52
3:C:172:LEU:HD13	3:C:204:TRP:CD2	2.43	0.52
1:A:59:GLN:NE2	1:A:156:ARG:HG3	2.09	0.52
1:A:268:LEU:HD13	5:R:48:ILE:HG22	1.90	0.52
2:B:104:VAL:HG11	10:B:901:HEC:HMD1	1.91	0.52
1:A:248:ASN:ND2	1:A:250:ALA:H	2.08	0.52
3:C:143:TRP:HB2	3:C:150:PHE:CE1	2.45	0.52
4:D:124:TYR:HE1	6:G:26:TYR:CA	2.23	0.52
1:A:44:VAL:HA	1:A:130:ILE:O	2.09	0.52
1:A:153:ASN:CG	1:A:154:ARG:N	2.66	0.52
2:B:215:LEU:HD13	4:D:122:ASN:HD22	1.74	0.52
4:D:11:ASP:OD1	4:D:13:VAL:N	2.43	0.52
2:B:42:THR:O	2:B:46:VAL:HG23	2.09	0.52
3:C:101:ALA:HA	3:C:119:VAL:CG1	2.40	0.51
1:A:32:GLU:HB2	1:A:50:GLU:HB2	1.92	0.51
3:C:103:ASP:O	3:C:118:ILE:HA	2.10	0.51
8:M:93:LEU:C	8:M:95:GLU:N	2.67	0.51
4:D:85:PHE:CD2	4:D:147:SER:HB2	2.44	0.51
8:M:86:VAL:O	8:M:90:VAL:HG23	2.11	0.51
7:L:24:GLY:O	7:L:28:VAL:HB	2.08	0.51
4:D:118:ASN:HD21	4:D:120:PHE:HD1	1.57	0.51
3:C:122:ASP:O	3:C:123:SER:C	2.52	0.51
3:C:192:TRP:HB3	3:C:205:TRP:HE1	1.75	0.51
1:A:51:LEU:N	1:A:51:LEU:HD12	2.26	0.50
2:B:130:SER:HA	14:D:910:CLA:H143	1.92	0.50
4:D:75:ILE:HG23	4:D:75:ILE:O	2.12	0.50
5:R:55:LEU:HB2	5:R:56:PRO:CD	2.42	0.50
2:B:44:PHE:O	2:B:48:VAL:HG23	2.12	0.50
4:D:110:THR:HG22	4:D:114:ILE:HG12	1.93	0.50
2:B:149:LYS:O	2:B:152:THR:HG22	2.12	0.50
3:C:126:GLU:HG3	3:C:128:TYR:H	1.77	0.50
1:A:182:ILE:HG21	1:A:214:LEU:HD13	1.92	0.49
5:R:45:MET:HA	5:R:45:MET:CE	2.40	0.49
1:A:21:CYS:O	1:A:25:HIS:HB2	2.13	0.49
1:A:223:GLN:O	1:A:226:GLN:HB2	2.12	0.49
2:B:72:ILE:HA	2:B:76:VAL:HG23	1.92	0.49
3:C:155:HIS:HB2	13:C:210:FES:S1	2.52	0.49
8:M:90:VAL:O	8:M:94:VAL:HG23	2.12	0.49
8:M:94:VAL:HG12	8:M:94:VAL:O	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:142:GLN:NE2	4:D:67:ASN:N	2.46	0.49
14:D:910:CLA:HHC	14:D:910:CLA:HBB1	1.93	0.49
1:A:37:GLN:HB2	16:L:951:LMG:HC4	1.94	0.49
2:B:103:ARG:NH1	10:B:901:HEC:O1A	2.46	0.49
1:A:108:GLU:OE2	1:A:108:GLU:N	2.45	0.49
2:B:142:GLN:HE21	4:D:67:ASN:H	1.57	0.49
4:D:137:THR:HA	16:D:953:LMG:C24	2.43	0.49
2:B:215:LEU:CD1	4:D:125:ARG:HH12	2.26	0.48
4:D:107:GLY:O	4:D:110:THR:HB	2.12	0.48
4:D:124:TYR:CE1	6:G:26:TYR:HA	2.48	0.48
1:A:274:LYS:HE3	9:N:93:TRP:NE1	2.29	0.48
3:C:96:LEU:HD11	3:C:124:THR:HA	1.96	0.48
4:D:81:PHE:CE2	14:D:910:CLA:H52	2.43	0.48
3:C:81:ALA:HA	3:C:188:THR:HG22	1.95	0.48
2:B:61:THR:HA	2:B:177:GLN:NE2	2.17	0.48
3:C:160:ASN:HD21	3:C:164:LYS:HB3	1.79	0.48
1:A:16:ASN:HD22	4:D:73:LEU:CD2	2.27	0.48
2:B:7:TRP:CZ2	2:B:11:ARG:NH1	2.81	0.48
2:B:124:MET:HE2	10:B:901:HEC:CBB	2.43	0.48
3:C:175:ALA:HA	3:C:205:TRP:CE3	2.48	0.48
7:L:1:MET:O	7:L:2:LEU:C	2.57	0.48
1:A:2:PRO:HG3	10:A:900:HEC:HMB1	1.95	0.48
1:A:226:GLN:CG	1:A:227:PRO:HD2	2.44	0.48
2:B:112:ARG:HA	2:B:115:GLU:OE2	2.14	0.48
11:B:904:BCR:H15C	8:M:81:LEU:HD11	1.96	0.47
1:A:208:ILE:HD12	1:A:214:LEU:HD21	1.96	0.47
2:B:103:ARG:HA	6:G:21:LEU:CD1	2.44	0.47
1:A:53:TYR:CZ	1:A:55:LYS:HG2	2.49	0.47
2:B:62:VAL:HG13	2:B:140:TRP:NE1	2.29	0.47
2:B:113:PRO:HA	2:B:115:GLU:OE2	2.14	0.47
8:M:89:ARG:NH2	8:M:93:LEU:HD21	2.29	0.47
1:A:145:LYS:HD3	1:A:243:GLU:CD	2.40	0.47
7:L:1:MET:O	7:L:4:ILE:HG22	2.15	0.47
1:A:210:ALA:C	1:A:212:PRO:HD2	2.39	0.47
1:A:18:ARG:HB2	4:D:73:LEU:HD11	1.96	0.47
1:A:102:TYR:CZ	1:A:128:VAL:HG22	2.50	0.47
2:B:47:GLN:HA	2:B:50:THR:HG22	1.97	0.47
8:M:92:SER:O	8:M:95:GLU:CB	2.61	0.47
10:B:903:HEC:HBC2	4:D:44:ILE:HD11	1.97	0.46
4:D:8:ASP:C	4:D:10:SER:H	2.23	0.46
1:A:133:PRO:CG	1:A:141:VAL:HG11	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:170:ILE:HD11	1:A:231:ASN:HB2	1.98	0.46
2:B:47:GLN:HE22	2:B:89:SER:HB3	1.75	0.46
4:D:96:LEU:C	4:D:96:LEU:HD13	2.40	0.46
1:A:1:TYR:O	1:A:4:PHE:HB2	2.15	0.46
2:B:54:MET:CE	2:B:83:ARG:HB2	2.46	0.46
1:A:83:LEU:HD12	1:A:129:PRO:O	2.15	0.46
1:A:262:VAL:HG13	4:D:45:LEU:HB3	1.97	0.46
3:C:151:LYS:HG2	3:C:158:GLN:HG2	1.97	0.46
9:N:69:GLU:OE1	9:N:69:GLU:N	2.42	0.46
2:B:82:ILE:HG13	5:R:67:PHE:CD1	2.50	0.46
1:A:83:LEU:HD22	1:A:102:TYR:HB2	1.97	0.46
1:A:20:VAL:C	1:A:22:ALA:N	2.70	0.46
1:A:52:PRO:O	1:A:154:ARG:NH1	2.48	0.46
2:B:142:GLN:HE21	2:B:142:GLN:HA	1.80	0.46
2:B:150:ILE:HD11	3:C:154:CYS:SG	2.56	0.46
6:G:14:VAL:HB	6:G:15:PRO:CD	2.46	0.46
3:C:103:ASP:H	3:C:119:VAL:HB	1.81	0.46
8:M:62:GLU:O	8:M:65:PHE:HB3	2.16	0.46
1:A:185:LEU:O	1:A:186:SER:C	2.59	0.46
3:C:125:ILE:HD12	3:C:125:ILE:N	2.31	0.46
2:B:114:ARG:CZ	2:B:212:SER:HA	2.46	0.46
1:A:16:ASN:ND2	4:D:73:LEU:HD21	2.32	0.45
1:A:57:VAL:HG12	1:A:58:LYS:N	2.31	0.45
3:C:141:VAL:CG1	3:C:150:PHE:HB3	2.46	0.45
8:M:93:LEU:O	8:M:95:GLU:N	2.49	0.45
5:R:38:ASP:O	5:R:39:MET:C	2.59	0.45
1:A:60:VAL:CG1	1:A:167:ASN:HD22	2.27	0.45
1:A:279:VAL:HG21	5:R:42:ARG:HD3	1.98	0.45
4:D:14:LEU:CD1	4:D:18:LEU:HD13	2.47	0.45
1:A:170:ILE:HG12	1:A:230:ASN:O	2.16	0.45
2:B:123:ILE:HD13	2:B:198:PHE:CE2	2.52	0.45
2:B:200:LEU:HD22	2:B:204:LEU:HG	1.99	0.45
4:D:40:PHE:HB2	4:D:41:PRO:HD3	1.99	0.45
9:N:72:ILE:CG2	9:N:73:VAL:N	2.79	0.45
1:A:226:GLN:HG3	1:A:227:PRO:HD2	1.99	0.45
2:B:96:MET:SD	16:L:951:LMG:H232	2.56	0.45
2:B:189:PHE:C	2:B:192:PRO:HD2	2.42	0.45
1:A:77:LEU:HD23	1:A:148:ILE:HG23	1.99	0.45
2:B:142:GLN:NE2	2:B:142:GLN:HA	2.32	0.45
3:C:91:LYS:HB2	3:C:94:GLU:HB2	1.99	0.45
7:L:26:LEU:O	7:L:30:LYS:HA	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:29:HIS:CG	2:B:214:PRO:HA	2.52	0.45
3:C:164:LYS:O	3:C:166:VAL:HG23	2.17	0.45
7:L:29:VAL:O	7:L:29:VAL:HG12	2.17	0.45
2:B:69:VAL:HG21	2:B:139:PRO:HB3	1.99	0.45
4:D:82:TYR:HB2	4:D:83:PRO:HD3	1.99	0.45
4:D:84:VAL:HG11	4:D:101:MET:SD	2.57	0.45
1:A:156:ARG:HH12	1:A:167:ASN:ND2	2.15	0.44
1:A:29:LYS:HG3	1:A:236:GLY:HA3	1.99	0.44
1:A:274:LYS:HE3	9:N:93:TRP:CE2	2.52	0.44
1:A:6:GLN:HE21	1:A:105:TYR:HA	1.82	0.44
2:B:81:LEU:CD2	12:B:960:LFA:H121	2.48	0.44
2:B:148:VAL:O	2:B:152:THR:HG22	2.17	0.44
12:B:960:LFA:H101	4:D:52:ILE:HD13	1.99	0.44
8:M:89:ARG:O	8:M:92:SER:HB3	2.18	0.44
6:G:13:LEU:HA	6:G:16:VAL:CG1	2.47	0.44
1:A:92:GLU:CD	1:A:92:GLU:N	2.62	0.44
1:A:232:PRO:O	1:A:234:VAL:HG13	2.18	0.44
3:C:141:VAL:HG22	3:C:152:CYS:CB	2.46	0.44
4:D:108:LEU:C	4:D:110:THR:N	2.76	0.44
5:R:39:MET:O	5:R:42:ARG:HB2	2.17	0.44
4:D:38:TYR:O	4:D:41:PRO:HD2	2.18	0.44
11:B:904:BCR:HC41	4:D:43:VAL:HG13	2.00	0.43
2:B:102:PHE:CE1	6:G:14:VAL:HG13	2.53	0.43
2:B:15:GLN:O	2:B:16:ALA:C	2.62	0.43
1:A:247:GLN:HE21	1:A:247:GLN:CA	2.30	0.43
2:B:97:MET:SD	2:B:125:ALA:HA	2.58	0.43
2:B:124:MET:HE2	10:B:901:HEC:HBB2	2.00	0.43
9:N:71:ALA:O	9:N:72:ILE:C	2.61	0.43
3:C:130:LEU:HD23	3:C:176:LEU:HD23	2.00	0.43
1:A:133:PRO:HG2	1:A:141:VAL:HG11	2.00	0.43
1:A:287:HIS:ND1	1:A:292:HIS:CD2	2.87	0.43
4:D:104:VAL:HG11	14:D:910:CLA:H42	2.01	0.43
4:D:118:ASN:ND2	4:D:120:PHE:CD1	2.82	0.43
1:A:210:ALA:O	1:A:212:PRO:HD2	2.19	0.43
2:B:108:GLY:C	2:B:110:PHE:H	2.27	0.42
3:C:119:VAL:HA	3:C:124:THR:O	2.19	0.42
3:C:149:LYS:HB2	3:C:159:TYR:O	2.19	0.42
1:A:19:ILE:N	1:A:239:GLN:OE1	2.35	0.42
1:A:50:GLU:C	1:A:51:LEU:HD12	2.44	0.42
2:B:118:TRP:HZ2	4:D:108:LEU:HD22	1.83	0.42
2:B:178:ALA:O	2:B:182:ARG:HG3	2.18	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:25:ASN:N	4:D:25:ASN:HD22	2.17	0.42
4:D:87:ILE:O	4:D:90:VAL:HG12	2.19	0.42
4:D:118:ASN:HD22	4:D:120:PHE:H	1.58	0.42
1:A:173:ALA:C	1:A:175:ALA:H	2.26	0.42
2:B:152:THR:CG2	2:B:170:ARG:NE	2.79	0.42
4:D:104:VAL:CB	4:D:105:PRO:CD	2.97	0.42
2:B:118:TRP:CZ2	4:D:108:LEU:HD22	2.55	0.42
2:B:152:THR:HG23	2:B:170:ARG:HH21	1.85	0.42
7:L:3:THR:HG22	9:N:74:GLN:NE2	2.34	0.42
1:A:155:GLY:C	10:A:900:HEC:HBA1	2.44	0.42
2:B:32:ILE:HD11	11:B:904:BCR:H333	2.00	0.42
2:B:54:MET:HE3	2:B:83:ARG:HB2	2.02	0.42
2:B:215:LEU:HD12	4:D:125:ARG:NH1	2.34	0.42
3:C:91:LYS:HD2	3:C:91:LYS:N	2.35	0.42
3:C:134:CYS:HB2	3:C:141:VAL:CG2	2.48	0.42
9:N:97:GLY:O	9:N:98:LEU:HB2	2.20	0.42
1:A:256:LEU:HD23	1:A:256:LEU:HA	1.89	0.42
2:B:153:GLY:O	2:B:154:VAL:C	2.63	0.42
2:B:211:ILE:HG13	2:B:212:SER:N	2.35	0.42
9:N:69:GLU:N	9:N:69:GLU:CD	2.77	0.42
1:A:4:PHE:CD1	1:A:161:PRO:HG2	2.55	0.42
1:A:35:VAL:HG12	1:A:47:ALA:HA	2.02	0.42
1:A:215:ILE:HG13	1:A:228:LEU:O	2.20	0.42
2:B:138:LEU:HA	2:B:138:LEU:HD23	1.81	0.42
3:C:117:LEU:HD13	3:C:189:PHE:HZ	1.84	0.42
3:C:141:VAL:HG12	3:C:150:PHE:HB3	2.01	0.42
4:D:104:VAL:O	4:D:105:PRO:C	2.62	0.42
1:A:38:ALA:HB2	1:A:245:VAL:HB	2.02	0.41
2:B:195:THR:O	2:B:199:MET:HB2	2.19	0.41
3:C:80:GLN:O	3:C:188:THR:HB	2.19	0.41
4:D:113:PHE:C	4:D:115:GLU:H	2.28	0.41
7:L:11:LEU:HD13	8:M:83:ILE:HD11	2.02	0.41
2:B:14:ILE:O	2:B:15:GLN:C	2.63	0.41
4:D:150:PRO:O	4:D:151:ILE:C	2.62	0.41
1:A:138:ASN:OD1	1:A:138:ASN:C	2.63	0.41
3:C:132:ALA:HB1	3:C:140:VAL:HG13	2.02	0.41
1:A:62:ALA:HA	1:A:156:ARG:NH2	2.35	0.41
2:B:146:TRP:HH2	3:C:140:VAL:HG23	1.85	0.41
3:C:103:ASP:HB3	3:C:119:VAL:HG23	2.01	0.41
3:C:136:HIS:HE1	3:C:155:HIS:CG	2.37	0.41
4:D:24:HIS:HA	4:D:27:TYR:CE2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:71:THR:O	4:D:72:PRO:C	2.63	0.41
9:N:86:PHE:O	9:N:89:SER:HB2	2.19	0.41
1:A:43:THR:HG22	1:A:44:VAL:N	2.36	0.41
1:A:75:LEU:HD21	1:A:148:ILE:CG2	2.51	0.41
1:A:148:ILE:HB	1:A:242:THR:HG23	2.02	0.41
1:A:173:ALA:C	1:A:175:ALA:N	2.79	0.41
1:A:276:PHE:HE1	5:R:42:ARG:NH1	2.17	0.41
4:D:11:ASP:OD1	4:D:13:VAL:HG23	2.21	0.41
9:N:97:GLY:O	9:N:98:LEU:CB	2.68	0.41
1:A:215:ILE:HD11	1:A:227:PRO:O	2.21	0.41
2:B:43:CYS:O	2:B:47:GLN:HG2	2.21	0.41
2:B:124:MET:HE3	2:B:199:MET:CG	2.50	0.41
2:B:134:THR:HG22	2:B:183:PHE:CD2	2.56	0.41
3:C:165:VAL:O	3:C:165:VAL:HG13	2.21	0.41
4:D:126:ARG:N	4:D:127:PRO:HD3	2.36	0.41
4:D:135:LEU:O	4:D:139:VAL:HG23	2.21	0.41
3:C:106:LEU:H	3:C:106:LEU:CD1	2.30	0.41
4:D:25:ASN:H	4:D:25:ASN:ND2	2.18	0.41
4:D:37:LEU:HD11	17:R:950:SQD:H261	2.03	0.41
8:M:73:MET:O	8:M:74:VAL:C	2.63	0.41
1:A:61:LEU:O	1:A:167:ASN:ND2	2.54	0.41
1:A:223:GLN:O	1:A:226:GLN:CB	2.68	0.41
2:B:111:LYS:O	2:B:113:PRO:O	2.38	0.41
2:B:114:ARG:O	2:B:117:THR:HB	2.21	0.41
2:B:128:THR:O	2:B:131:PHE:HB2	2.21	0.41
3:C:178:HIS:CB	3:C:190:SER:HB2	2.25	0.41
4:D:25:ASN:HD22	4:D:25:ASN:C	2.28	0.41
4:D:90:VAL:HG21	4:D:155:LEU:HG	2.02	0.41
4:D:91:VAL:CG1	4:D:96:LEU:HD12	2.51	0.41
9:N:69:GLU:HB3	9:N:70:PRO:HD2	2.02	0.41
1:A:20:VAL:C	1:A:22:ALA:H	2.27	0.41
2:B:113:PRO:HB2	2:B:114:ARG:H	1.68	0.41
1:A:161:PRO:HG3	10:A:900:HEC:HBC2	2.01	0.40
10:A:900:HEC:HMB3	10:A:900:HEC:HBB3	2.02	0.40
2:B:99:LEU:O	2:B:102:PHE:HB2	2.21	0.40
4:D:4:THR:CG2	4:D:5:LYS:N	2.83	0.40
4:D:47:THR:HG23	16:L:951:LMG:C25	2.50	0.40
1:A:165:LYS:HB3	1:A:169:THR:HG21	2.04	0.40
4:D:89:ARG:NH2	4:D:151:ILE:HG12	2.35	0.40
4:D:98:VAL:O	4:D:101:MET:HB3	2.21	0.40
5:R:45:MET:HE2	5:R:48:ILE:HB	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:L:32:ILE:O	7:L:32:ILE:HG22	2.20	0.40
1:A:252:ILE:HD13	9:N:73:VAL:HA	2.02	0.40
3:C:91:LYS:O	3:C:92:ALA:C	2.65	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	290/292 (99%)	263 (91%)	21 (7%)	6 (2%)	5	25
2	B	210/215 (98%)	179 (85%)	29 (14%)	2 (1%)	12	41
3	C	122/127 (96%)	96 (79%)	22 (18%)	4 (3%)	3	17
4	D	154/159 (97%)	134 (87%)	15 (10%)	5 (3%)	3	18
5	R	37/49 (76%)	32 (86%)	5 (14%)	0	100	100
6	G	28/37 (76%)	24 (86%)	4 (14%)	0	100	100
7	L	30/32 (94%)	25 (83%)	5 (17%)	0	100	100
8	M	32/39 (82%)	31 (97%)	0	1 (3%)	3	18
9	N	29/31 (94%)	27 (93%)	2 (7%)	0	100	100
All	All	932/981 (95%)	811 (87%)	103 (11%)	18 (2%)	6	27

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	89	ASP
1	A	140	ASN
1	A	165	LYS
1	A	198	LYS
3	C	100	LEU

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Mol	Chain	Res	Type
4	D	104	VAL
1	A	186	SER
2	B	113	PRO
3	C	120	THR
4	D	109	ILE
4	D	114	ILE
1	A	137	LYS
2	B	154	VAL
3	C	123	SER
1	A	64	GLY
4	D	92	PRO
8	M	94	VAL
4	D	151	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 X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	246/246 (100%)	235 (96%)	11 (4%)	24	56
2	B	179/182 (98%)	172 (96%)	7 (4%)	28	60
3	C	99/100 (99%)	94 (95%)	5 (5%)	21	52
4	D	131/134 (98%)	125 (95%)	6 (5%)	24	55
5	R	30/32 (94%)	27 (90%)	3 (10%)	7	29
6	G	25/30 (83%)	25 (100%)	0	100	100
7	L	27/27 (100%)	22 (82%)	5 (18%)	1	8
8	M	26/29 (90%)	24 (92%)	2 (8%)	12	38
9	N	24/24 (100%)	24 (100%)	0	100	100
All	All	787/804 (98%)	748 (95%)	39 (5%)	22	53

All (39) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	75	LEU

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Mol	Chain	Res	Type
1	A	92	GLU
1	A	140	ASN
1	A	154	ARG
1	A	168	ASN
1	A	192	PHE
1	A	225	ASP
1	A	247	GLN
1	A	248	ASN
1	A	264	LEU
1	A	270	VAL
2	B	22	THR
2	B	87	ARG
2	B	103	ARG
2	B	107	THR
2	B	161	VAL
2	B	193	LEU
2	B	200	LEU
3	C	91	LYS
3	C	98	THR
3	C	117	LEU
3	C	118	ILE
3	C	137	LEU
4	D	18	LEU
4	D	25	ASN
4	D	90	VAL
4	D	108	LEU
4	D	117	ILE
4	D	118	ASN
5	R	38	ASP
5	R	45	MET
5	R	71	PRO
7	L	2	LEU
7	L	3	THR
7	L	4	ILE
7	L	11	LEU
7	L	25	LEU
8	M	62	GLU
8	M	66	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	23	ASN
1	A	28	GLN
1	A	70	ASN
1	A	168	ASN
1	A	247	GLN
1	A	248	ASN
1	A	292	HIS
2	B	31	ASN
2	B	47	GLN
2	B	142	GLN
2	B	209	GLN
3	C	80	GLN
3	C	148	ASN
4	D	25	ASN
4	D	34	ASN
4	D	118	ASN
5	R	43	ASN
9	N	74	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](#)

12 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
12	LFA	B	960	-	19,19,19	0.49	0	18,18,18	0.63	0
14	CLA	D	910	-	69,73,73	1.43	10 (14%)	82,113,113	1.85	10 (12%)
16	LMG	L	951	-	42,42,55	1.38	6 (14%)	50,50,63	1.50	5 (10%)
10	HEC	B	902	2	50,50,50	1.57	6 (12%)	68,82,82	1.34	3 (4%)
11	BCR	B	904	-	27,27,41	1.52	4 (14%)	34,35,56	1.98	11 (32%)
17	SQD	R	950	-	31,33,54	2.09	9 (29%)	41,44,65	2.87	10 (24%)
10	HEC	A	900	1	50,50,50	1.32	6 (12%)	68,82,82	1.25	8 (11%)
16	LMG	D	953	-	53,53,55	1.40	8 (15%)	61,61,63	1.44	6 (9%)
15	TDS	D	920	-	31,31,31	2.68	13 (41%)	37,40,40	2.07	12 (32%)
10	HEC	B	901	2	50,50,50	1.61	7 (14%)	68,82,82	1.26	4 (5%)
10	HEC	B	903	2,18	50,50,50	1.38	7 (14%)	68,82,82	1.20	7 (10%)
13	FES	C	210	3	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	LFA	B	960	-	-	11/17/17/17	-
14	CLA	D	910	-	1/1/15/20	6/39/115/115	-
16	LMG	L	951	-	-	8/37/57/70	0/1/1/1
10	HEC	B	902	2	1/1/3/7	8/14/54/54	-
11	BCR	B	904	-	-	2/21/38/63	0/1/1/2
17	SQD	R	950	-	-	10/28/48/69	0/1/1/1
10	HEC	A	900	1	1/1/3/7	6/14/54/54	-
16	LMG	D	953	-	-	9/48/68/70	0/1/1/1
15	TDS	D	920	-	-	7/17/17/17	0/2/2/2
10	HEC	B	901	2	1/1/3/7	5/14/54/54	-
10	HEC	B	903	2,18	1/1/3/7	7/14/54/54	-
13	FES	C	210	3	-	-	0/1/1/1

All (76) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
17	R	950	SQD	C4-C3	6.68	1.69	1.52
15	D	920	TDS	CAH-CAP	5.35	1.44	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	D	920	TDS	OA0-CAP	4.89	1.42	1.36
15	D	920	TDS	CAD-CAL	4.81	1.47	1.38
11	B	904	BCR	C1-C6	4.78	1.59	1.53
10	B	901	HEC	CBB-CAB	-4.68	1.31	1.51
15	D	920	TDS	CAD-CAE	4.56	1.46	1.38
15	D	920	TDS	OAB-CAE	4.40	1.44	1.37
15	D	920	TDS	CAF-CAE	4.38	1.48	1.40
14	D	910	CLA	O2D-CGD	4.37	1.44	1.33
17	R	950	SQD	O7-S	4.24	1.57	1.45
15	D	920	TDS	OAK-CAL	4.21	1.44	1.37
16	L	951	LMG	O1-C7	-4.20	1.36	1.43
10	B	902	HEC	CBB-CAB	-4.20	1.33	1.51
14	D	910	CLA	MG-NA	4.18	2.16	2.06
10	B	901	HEC	FE-NC	4.09	2.08	1.95
10	B	902	HEC	CBC-CAC	-4.04	1.34	1.51
15	D	920	TDS	CAM-CAN	4.03	1.46	1.39
10	B	901	HEC	FE-NB	4.01	2.07	1.94
16	L	951	LMG	O7-C8	-3.89	1.37	1.46
10	B	901	HEC	CBC-CAC	-3.88	1.35	1.51
15	D	920	TDS	CAQ-CAP	3.88	1.59	1.49
16	D	953	LMG	O8-C28	3.80	1.44	1.33
16	D	953	LMG	C4-C5	3.75	1.61	1.53
10	B	902	HEC	FE-NB	3.58	2.05	1.94
15	D	920	TDS	OA0-CAN	3.45	1.43	1.38
10	B	902	HEC	FE-NC	3.37	2.06	1.95
11	B	904	BCR	C2-C1	3.36	1.61	1.54
14	D	910	CLA	CMC-C2C	3.36	1.57	1.50
10	B	903	HEC	CMD-C2D	3.26	1.57	1.50
16	D	953	LMG	O6-C1	3.24	1.50	1.41
10	A	900	HEC	CMD-C2D	3.24	1.57	1.50
17	R	950	SQD	O47-C7	3.22	1.43	1.34
16	D	953	LMG	O7-C10	3.11	1.43	1.34
14	D	910	CLA	MG-NC	3.08	2.13	2.06
10	B	902	HEC	FE-NA	3.07	2.05	1.95
15	D	920	TDS	CAL-CAM	3.00	1.44	1.40
16	L	951	LMG	O8-C28	3.00	1.42	1.33
14	D	910	CLA	C2-C3	2.95	1.39	1.33
17	R	950	SQD	O6-C44	-2.94	1.38	1.43
17	R	950	SQD	O48-C23	2.93	1.41	1.33
14	D	910	CLA	MG-NB	2.89	2.11	2.05
16	D	953	LMG	C3-C2	2.88	1.59	1.52
11	B	904	BCR	C5-C6	2.87	1.39	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
17	R	950	SQD	O5-C5	2.84	1.51	1.44
10	B	903	HEC	FE-ND	2.82	2.03	1.94
10	B	902	HEC	FE-ND	2.75	2.03	1.94
14	D	910	CLA	O2A-CGA	2.75	1.41	1.33
16	D	953	LMG	O6-C5	2.73	1.51	1.44
10	B	903	HEC	FE-NC	2.67	2.04	1.95
16	L	951	LMG	O6-C1	2.67	1.48	1.41
10	B	903	HEC	C4B-C3B	2.62	1.49	1.45
10	A	900	HEC	C1C-NC	-2.62	1.34	1.39
10	B	901	HEC	CBA-CGA	2.58	1.56	1.50
10	A	900	HEC	C1D-C2D	2.53	1.49	1.44
17	R	950	SQD	C1-C2	2.49	1.59	1.52
14	D	910	CLA	O1D-CGD	2.48	1.27	1.21
16	L	951	LMG	C4-C3	2.47	1.58	1.52
10	A	900	HEC	C4D-C3D	2.44	1.49	1.45
10	B	903	HEC	C4D-C3D	2.41	1.49	1.45
16	L	951	LMG	O7-C10	2.36	1.40	1.34
17	R	950	SQD	O3-C3	2.32	1.48	1.43
10	B	903	HEC	C1C-NC	-2.30	1.35	1.39
17	R	950	SQD	O8-S	2.28	1.55	1.47
16	D	953	LMG	C9-C8	2.20	1.57	1.50
10	B	903	HEC	C1D-C2D	2.18	1.48	1.44
10	B	901	HEC	C4B-NB	-2.18	1.36	1.40
16	D	953	LMG	C4-C3	2.15	1.57	1.52
10	B	901	HEC	FE-ND	2.14	2.01	1.94
14	D	910	CLA	C5-C3	2.10	1.55	1.51
10	A	900	HEC	FE-NC	2.10	2.02	1.95
14	D	910	CLA	CMD-C2D	2.09	1.55	1.50
15	D	920	TDS	CAF-CAN	2.05	1.45	1.40
11	B	904	BCR	C21-C20	-2.03	1.41	1.49
15	D	920	TDS	CAF-CAG	2.02	1.51	1.46
10	A	900	HEC	FE-ND	2.01	2.01	1.94

All (76) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
14	D	910	CLA	C4A-NA-C1A	12.30	112.29	106.68
17	R	950	SQD	O5-C1-O6	8.65	130.49	110.04
15	D	920	TDS	CAR-CAQ-CAP	7.63	128.97	113.08
17	R	950	SQD	O6-C1-C2	7.49	119.65	108.27
17	R	950	SQD	O7-S-C6	7.22	117.53	106.76
16	L	951	LMG	C30-C29-C28	6.52	137.60	113.69

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	B	902	HEC	CBB-CAB-C3B	6.41	129.79	112.42
16	D	953	LMG	C30-C29-C28	6.20	136.41	113.69
17	R	950	SQD	O8-S-C6	-6.08	94.23	105.97
17	R	950	SQD	C25-C24-C23	6.01	135.70	113.69
10	B	902	HEC	CBC-CAC-C3C	5.80	128.15	112.42
10	B	901	HEC	CBB-CAB-C3B	5.64	127.71	112.42
11	B	904	BCR	C33-C5-C6	5.63	130.62	124.48
10	B	901	HEC	CBC-CAC-C3C	5.17	126.43	112.42
16	D	953	LMG	C7-O1-C1	4.08	122.54	113.80
14	D	910	CLA	O2D-CGD-CBD	3.79	117.86	111.23
16	L	951	LMG	C12-C11-C10	-3.78	99.83	113.69
14	D	910	CLA	O2A-CGA-CBA	3.74	123.24	111.83
11	B	904	BCR	C2-C1-C6	3.68	115.79	110.44
17	R	950	SQD	O48-C23-C24	3.60	122.82	111.83
10	A	900	HEC	C1D-C2D-C3D	3.53	110.70	106.98
10	A	900	HEC	C2D-C1D-ND	-3.44	105.88	109.84
17	R	950	SQD	O3-C3-C2	-3.40	102.37	110.38
11	B	904	BCR	C33-C5-C4	-3.40	106.36	113.60
10	B	903	HEC	C1D-C2D-C3D	3.36	110.52	106.98
16	D	953	LMG	O8-C28-C29	3.33	122.00	111.83
11	B	904	BCR	C8-C7-C6	3.27	135.74	127.00
15	D	920	TDS	OAO-CAP-CAH	-3.18	119.02	121.81
11	B	904	BCR	C1-C6-C5	-3.17	118.31	122.64
10	B	903	HEC	C2D-C1D-ND	-3.07	106.31	109.84
14	D	910	CLA	C1-C2-C3	3.07	131.22	126.20
10	B	901	HEC	CAA-CBA-CGA	3.04	121.72	113.67
16	D	953	LMG	O7-C10-C11	2.93	117.81	111.48
10	B	903	HEC	CMD-C2D-C1D	-2.92	120.47	125.03
17	R	950	SQD	O5-C5-C4	2.89	114.91	109.70
16	L	951	LMG	O8-C28-C29	2.87	120.58	111.83
17	R	950	SQD	C44-O6-C1	2.85	119.91	113.80
15	D	920	TDS	CAY-CAZ-CBA	2.84	128.70	114.37
10	A	900	HEC	CMD-C2D-C1D	-2.83	120.61	125.03
14	D	910	CLA	C3B-C4B-NB	-2.78	108.05	110.53
15	D	920	TDS	OAC-CAG-CAH	-2.72	116.87	120.45
10	B	903	HEC	CBA-CAA-C2A	-2.67	105.15	112.53
11	B	904	BCR	C32-C1-C6	2.64	114.38	110.24
10	B	903	HEC	CAC-C3C-C2C	2.59	130.98	126.89
17	R	950	SQD	O4-C4-C5	2.58	115.69	109.32
15	D	920	TDS	CAV-CAW-CAX	2.56	127.31	114.37
15	D	920	TDS	CAJ-OAK-CAL	2.52	121.20	117.51
10	A	900	HEC	C1D-ND-C4D	2.48	108.15	105.21

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
14	D	910	CLA	O2A-CGA-O1A	-2.44	117.53	123.63
10	A	900	HEC	CAB-C3B-C4B	-2.42	121.64	124.79
15	D	920	TDS	CAD-CAL-CAM	-2.39	118.32	120.59
15	D	920	TDS	CAW-CAX-CAY	2.37	126.37	114.37
14	D	910	CLA	C4D-CHA-C1A	2.34	124.04	121.24
15	D	920	TDS	CBC-CBB-CBA	2.34	129.16	113.36
10	A	900	HEC	CAD-C3D-C4D	2.31	128.72	124.70
11	B	904	BCR	C16-C17-C18	2.28	130.48	127.28
16	L	951	LMG	C21-C20-C19	-2.28	102.86	114.37
10	A	900	HEC	C2A-C1A-NA	2.26	112.50	110.32
10	B	903	HEC	C1D-ND-C4D	2.25	107.87	105.21
11	B	904	BCR	C36-C18-C19	2.24	121.51	118.09
16	D	953	LMG	C12-C11-C10	-2.23	105.54	113.69
10	A	900	HEC	CHA-C4D-ND	2.21	126.80	124.42
10	B	901	HEC	C1D-ND-C4D	2.19	107.80	105.21
11	B	904	BCR	C1-C6-C7	2.18	121.57	115.65
11	B	904	BCR	C11-C10-C9	2.15	130.29	127.28
15	D	920	TDS	CAD-CAE-CAF	-2.13	118.07	121.79
14	D	910	CLA	C2A-C1A-CHA	2.13	127.56	123.87
15	D	920	TDS	CAA-OAB-CAE	2.12	120.63	117.51
15	D	920	TDS	CAI-CAH-CAP	2.10	126.39	123.28
10	B	903	HEC	CAD-C3D-C4D	2.10	128.35	124.70
14	D	910	CLA	O1D-CGD-CBD	-2.05	120.47	124.52
11	B	904	BCR	C7-C8-C9	2.05	129.27	126.23
10	B	902	HEC	C1D-ND-C4D	2.05	107.63	105.21
14	D	910	CLA	CED-O2D-CGD	2.05	120.56	115.92
16	L	951	LMG	C14-C13-C12	-2.04	104.05	114.37
16	D	953	LMG	C14-C13-C12	-2.01	104.18	114.37

All (5) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
10	A	900	HEC	NA
10	B	903	HEC	NA
10	B	901	HEC	NA
10	B	902	HEC	NA
14	D	910	CLA	C8

All (79) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	B	901	HEC	C2A-CAA-CBA-CGA

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Mol	Chain	Res	Type	Atoms
10	B	902	HEC	C2C-C3C-CAC-CBC
15	D	920	TDS	OAO-CAP-CAQ-CAR
15	D	920	TDS	CAH-CAP-CAQ-CAR
17	R	950	SQD	O5-C1-O6-C44
17	R	950	SQD	C5-C6-S-O7
17	R	950	SQD	C5-C6-S-O8
17	R	950	SQD	C5-C6-S-O9
14	D	910	CLA	O1A-CGA-O2A-C1
10	B	902	HEC	C4C-C3C-CAC-CBC
10	B	902	HEC	C4B-C3B-CAB-CBB
10	B	902	HEC	C2B-C3B-CAB-CBB
14	D	910	CLA	CBA-CGA-O2A-C1
14	D	910	CLA	C3-C5-C6-C7
10	A	900	HEC	C2B-C3B-CAB-CBB
10	B	902	HEC	C3D-CAD-CBD-CGD
16	L	951	LMG	C4-C5-C6-O5
16	L	951	LMG	O6-C5-C6-O5
10	B	901	HEC	C2C-C3C-CAC-CBC
17	R	950	SQD	C24-C23-O48-C46
10	A	900	HEC	C4B-C3B-CAB-CBB
17	R	950	SQD	O10-C23-O48-C46
16	L	951	LMG	O6-C1-O1-C7
12	B	960	LFA	C5-C6-C7-C8
12	B	960	LFA	C9-C10-C11-C12
16	D	953	LMG	C21-C22-C23-C24
16	D	953	LMG	C31-C32-C33-C34
15	D	920	TDS	CAP-CAQ-CAR-CAS
12	B	960	LFA	C12-C13-C14-C15
16	D	953	LMG	C16-C17-C18-C19
17	R	950	SQD	C24-C25-C26-C27
12	B	960	LFA	C15-C16-C17-C18
17	R	950	SQD	C25-C26-C27-C28
10	A	900	HEC	C2C-C3C-CAC-CBC
12	B	960	LFA	C16-C17-C18-C19
16	D	953	LMG	C40-C41-C42-C43
16	D	953	LMG	O6-C5-C6-O5
16	D	953	LMG	C15-C16-C17-C18
10	B	901	HEC	C4C-C3C-CAC-CBC
12	B	960	LFA	C10-C11-C12-C13
15	D	920	TDS	CAX-CAY-CAZ-CBA
10	A	900	HEC	C4C-C3C-CAC-CBC
15	D	920	TDS	CAS-CAT-CAU-CAV

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Mol	Chain	Res	Type	Atoms
10	B	903	HEC	C3D-CAD-CBD-CGD
10	B	902	HEC	C2A-CAA-CBA-CGA
10	B	903	HEC	C2B-C3B-CAB-CBB
16	D	953	LMG	C35-C36-C37-C38
16	L	951	LMG	C31-C32-C33-C34
12	B	960	LFA	C4-C5-C6-C7
12	B	960	LFA	C17-C18-C19-C20
14	D	910	CLA	O2A-C1-C2-C3
15	D	920	TDS	CAR-CAS-CAT-CAU
12	B	960	LFA	C11-C12-C13-C14
12	B	960	LFA	C13-C14-C15-C16
14	D	910	CLA	C11-C12-C13-C15
16	L	951	LMG	C29-C30-C31-C32
16	L	951	LMG	C7-C8-C9-O8
16	L	951	LMG	C15-C16-C17-C18
10	B	903	HEC	C4B-C3B-CAB-CBB
11	B	904	BCR	C11-C10-C9-C34
10	B	901	HEC	CAA-CBA-CGA-O2A
10	B	901	HEC	CAA-CBA-CGA-O1A
10	B	903	HEC	C2C-C3C-CAC-CBC
16	D	953	LMG	C41-C42-C43-C44
11	B	904	BCR	C11-C10-C9-C8
10	B	902	HEC	CAD-CBD-CGD-O2D
16	L	951	LMG	O7-C8-C9-O8
10	B	902	HEC	CAD-CBD-CGD-O1D
12	B	960	LFA	C7-C8-C9-C10
10	B	903	HEC	C4C-C3C-CAC-CBC
10	A	900	HEC	CAD-CBD-CGD-O1D
10	A	900	HEC	CAD-CBD-CGD-O2D
10	B	903	HEC	CAA-CBA-CGA-O2A
14	D	910	CLA	C11-C12-C13-C14
10	B	903	HEC	CAA-CBA-CGA-O1A
16	D	953	LMG	O7-C8-C9-O8
17	R	950	SQD	O6-C44-C45-O47
15	D	920	TDS	CAW-CAX-CAY-CAZ
17	R	950	SQD	C27-C28-C29-C30

There are no ring outliers.

11 monomers are involved in 32 short contacts:

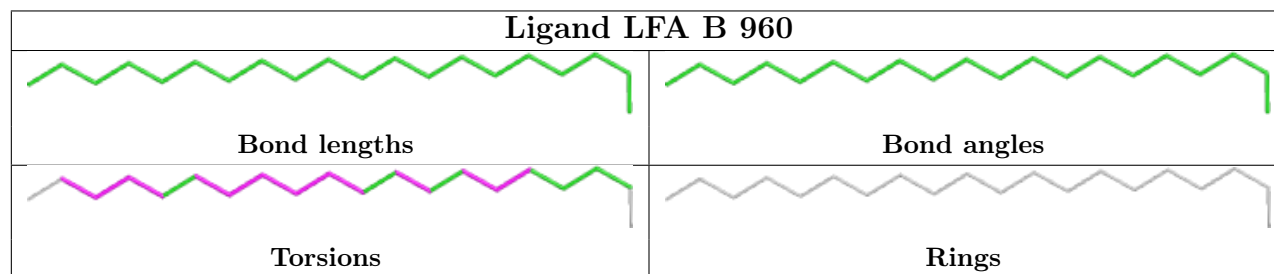
Mol	Chain	Res	Type	Clashes	Symm-Clashes
12	B	960	LFA	2	0

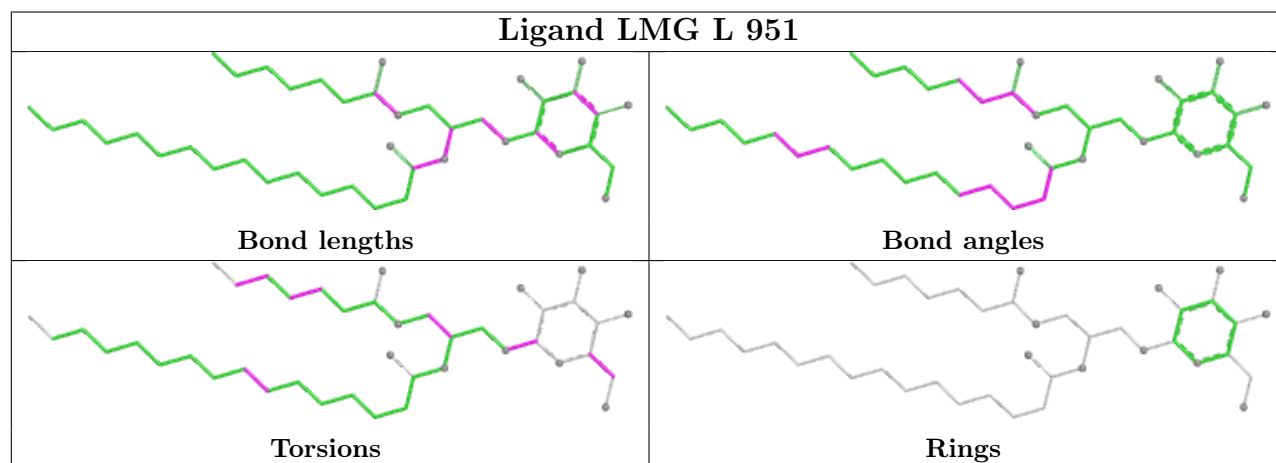
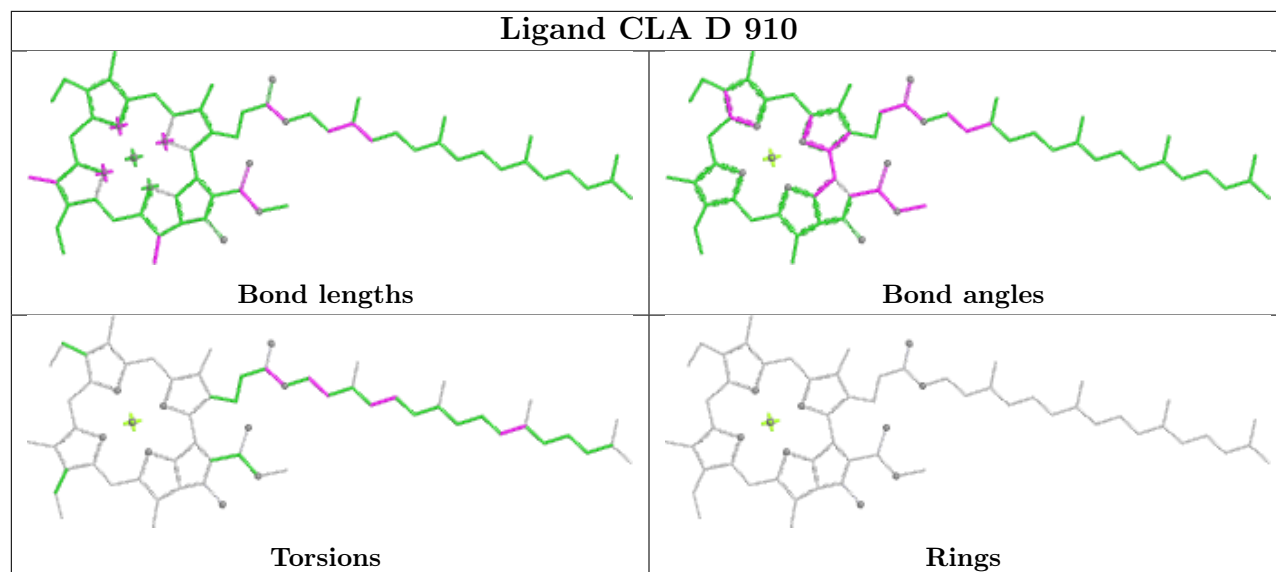
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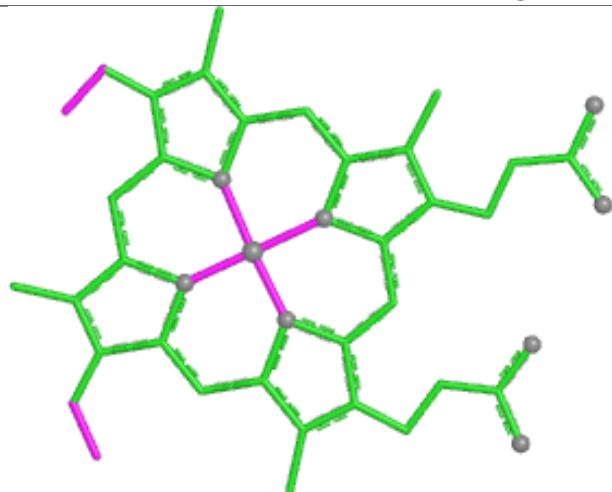
Mol	Chain	Res	Type	Clashes	Symm-Clashes
14	D	910	CLA	5	0
16	L	951	LMG	4	0
11	B	904	BCR	3	0
17	R	950	SQD	1	0
10	A	900	HEC	6	0
16	D	953	LMG	3	0
15	D	920	TDS	1	0
10	B	901	HEC	5	0
10	B	903	HEC	1	0
13	C	210	FES	1	0

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

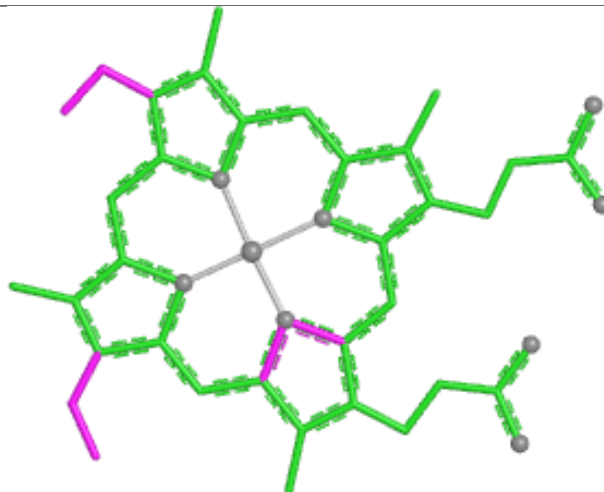




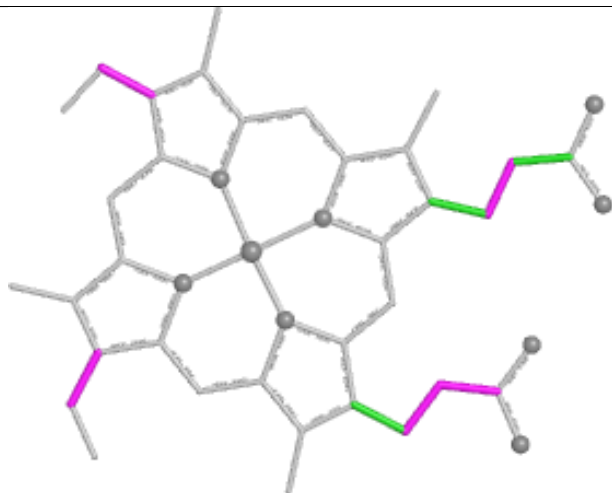
Ligand HEC B 902



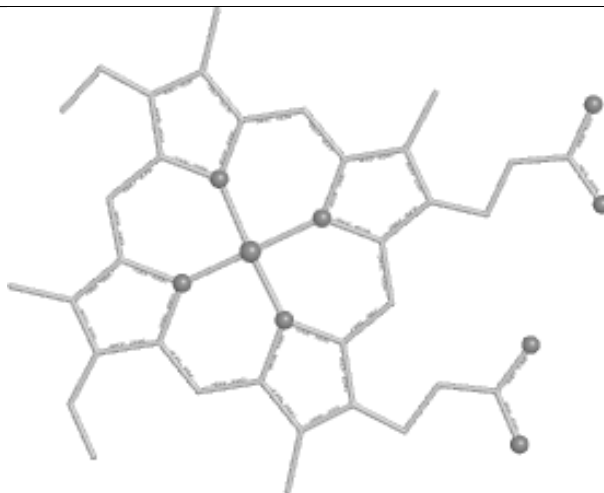
Bond lengths



Bond angles

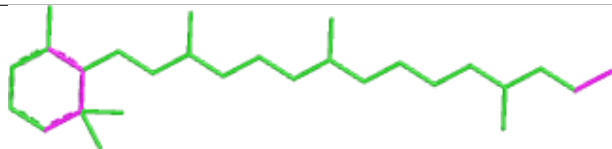


Torsions

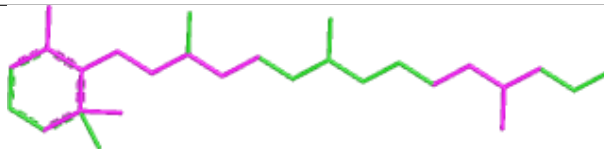


Rings

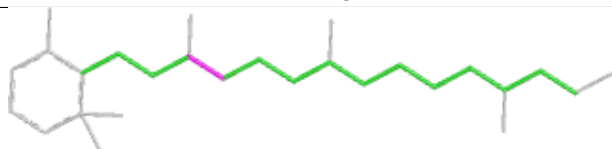
Ligand BCR B 904



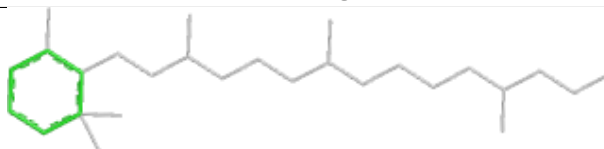
Bond lengths



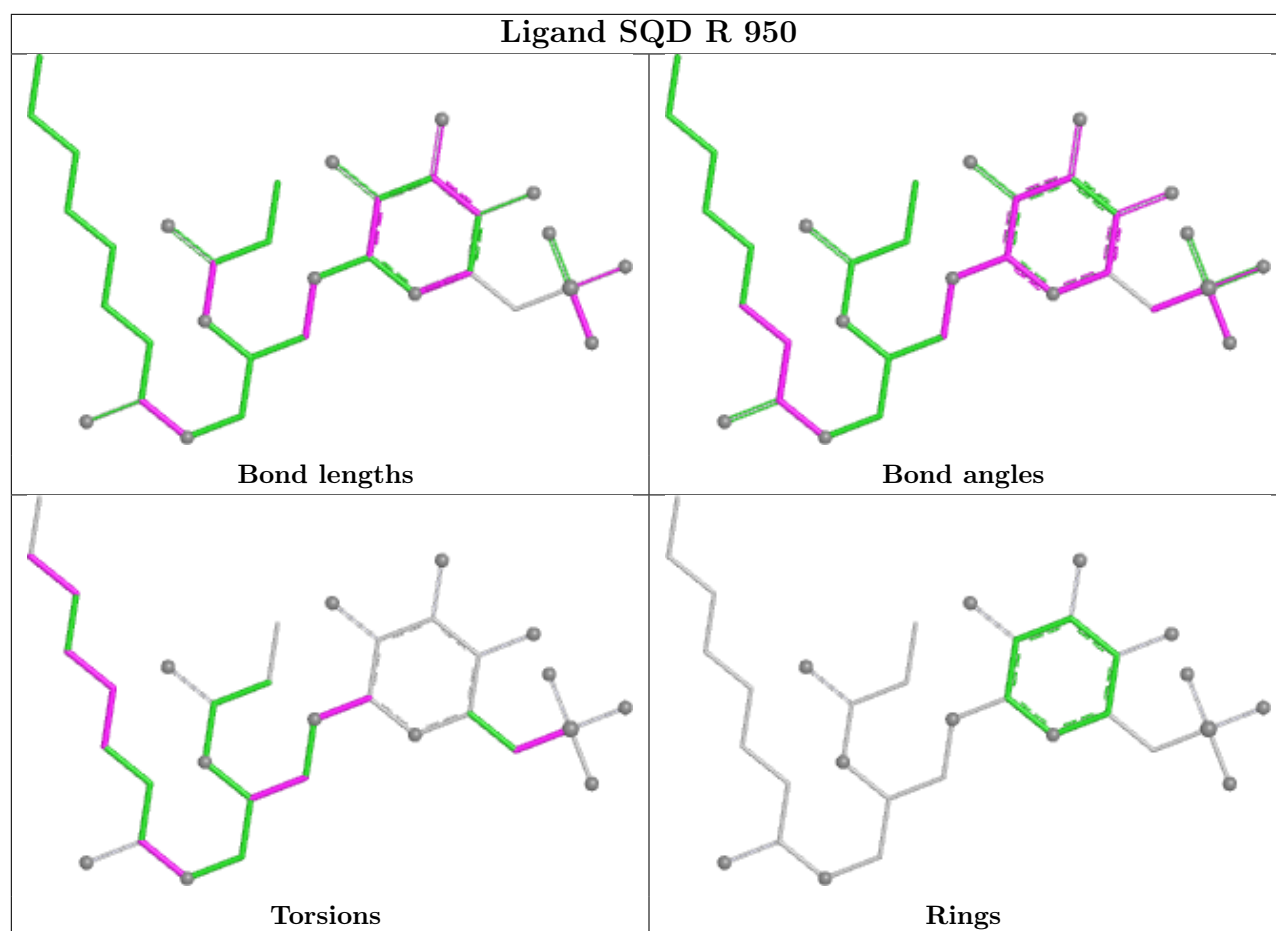
Bond angles



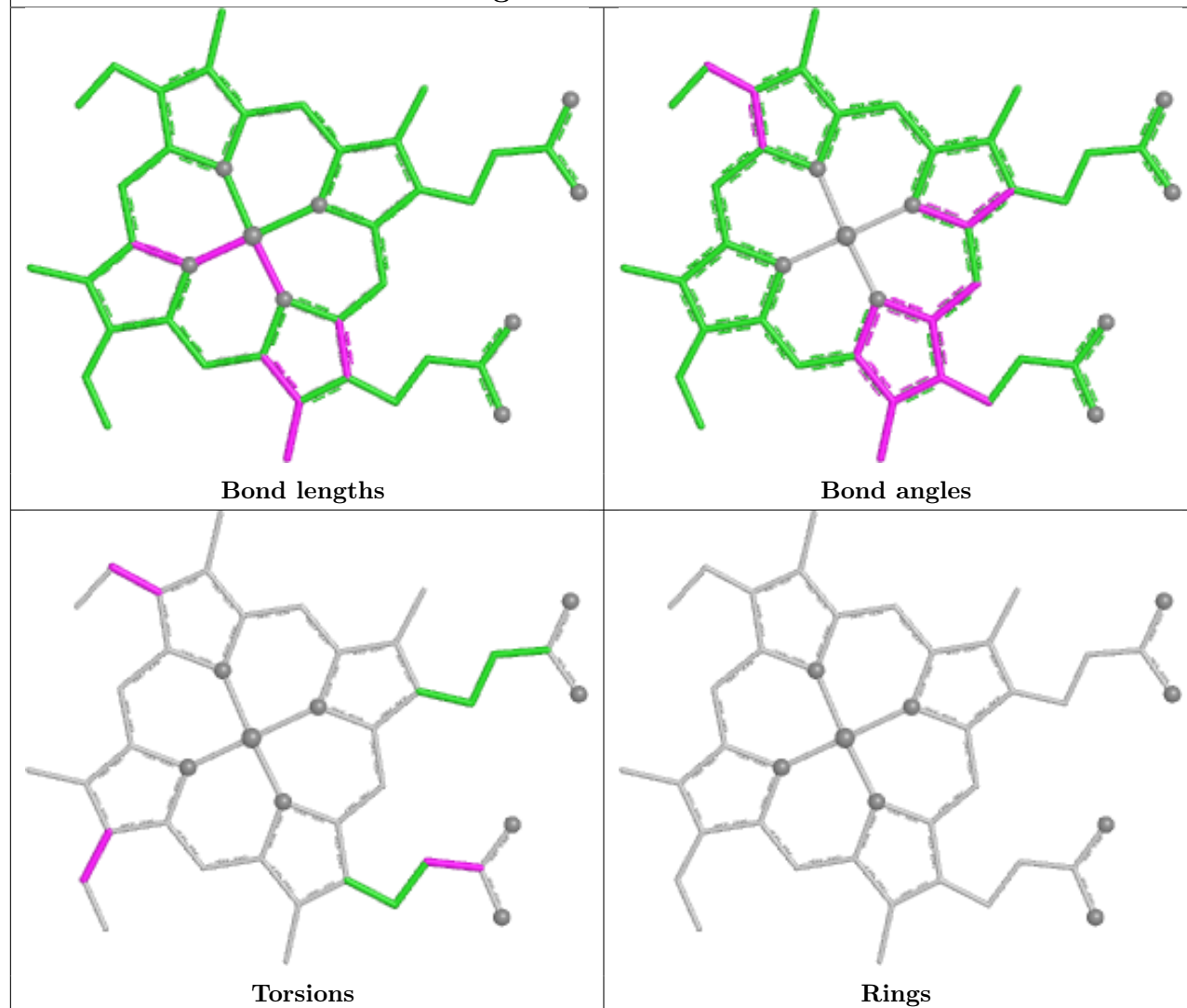
Torsions



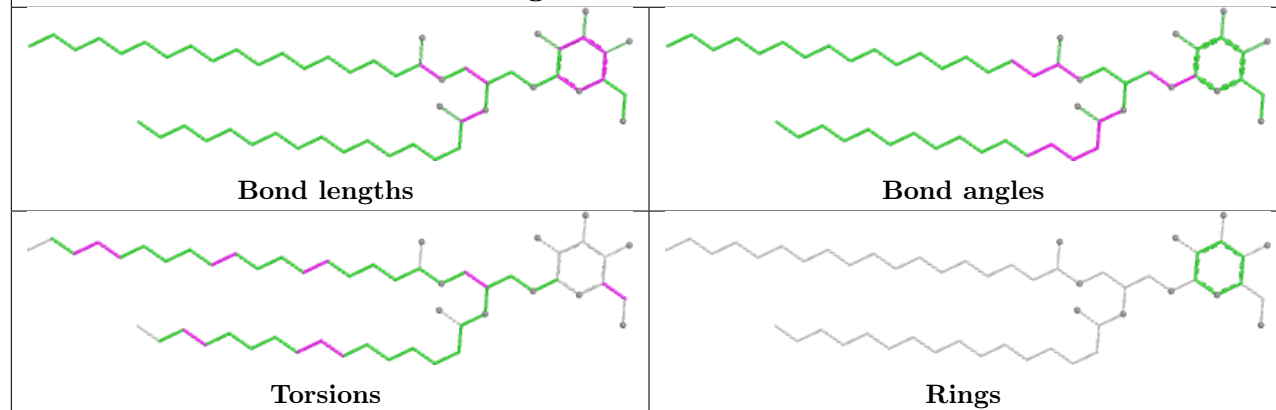
Rings



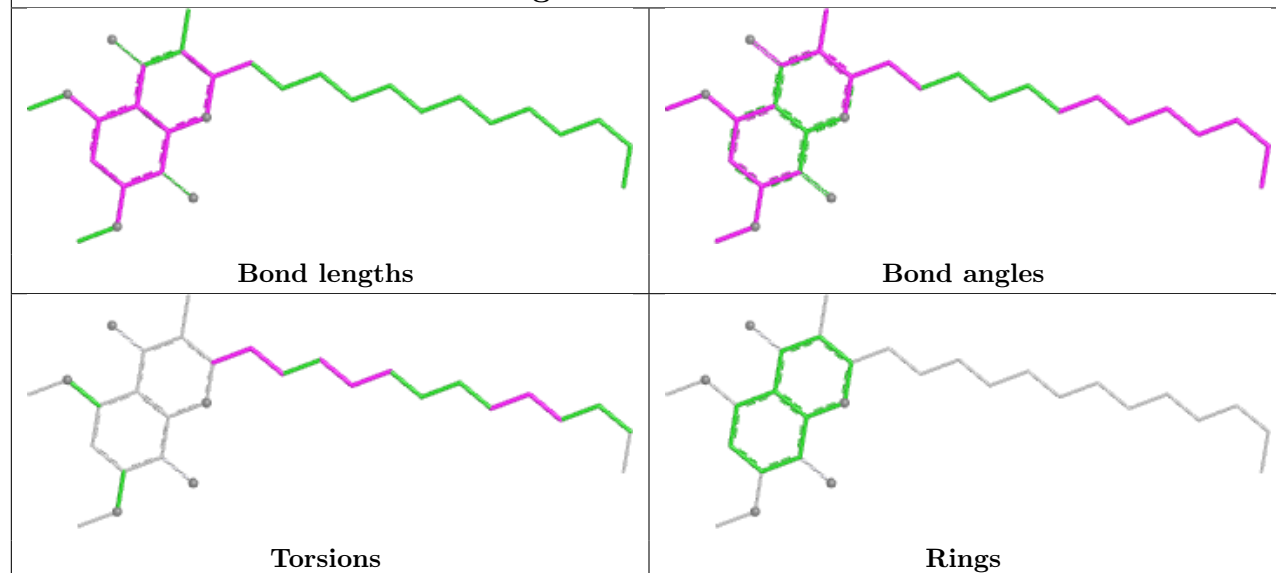
Ligand HEC A 900



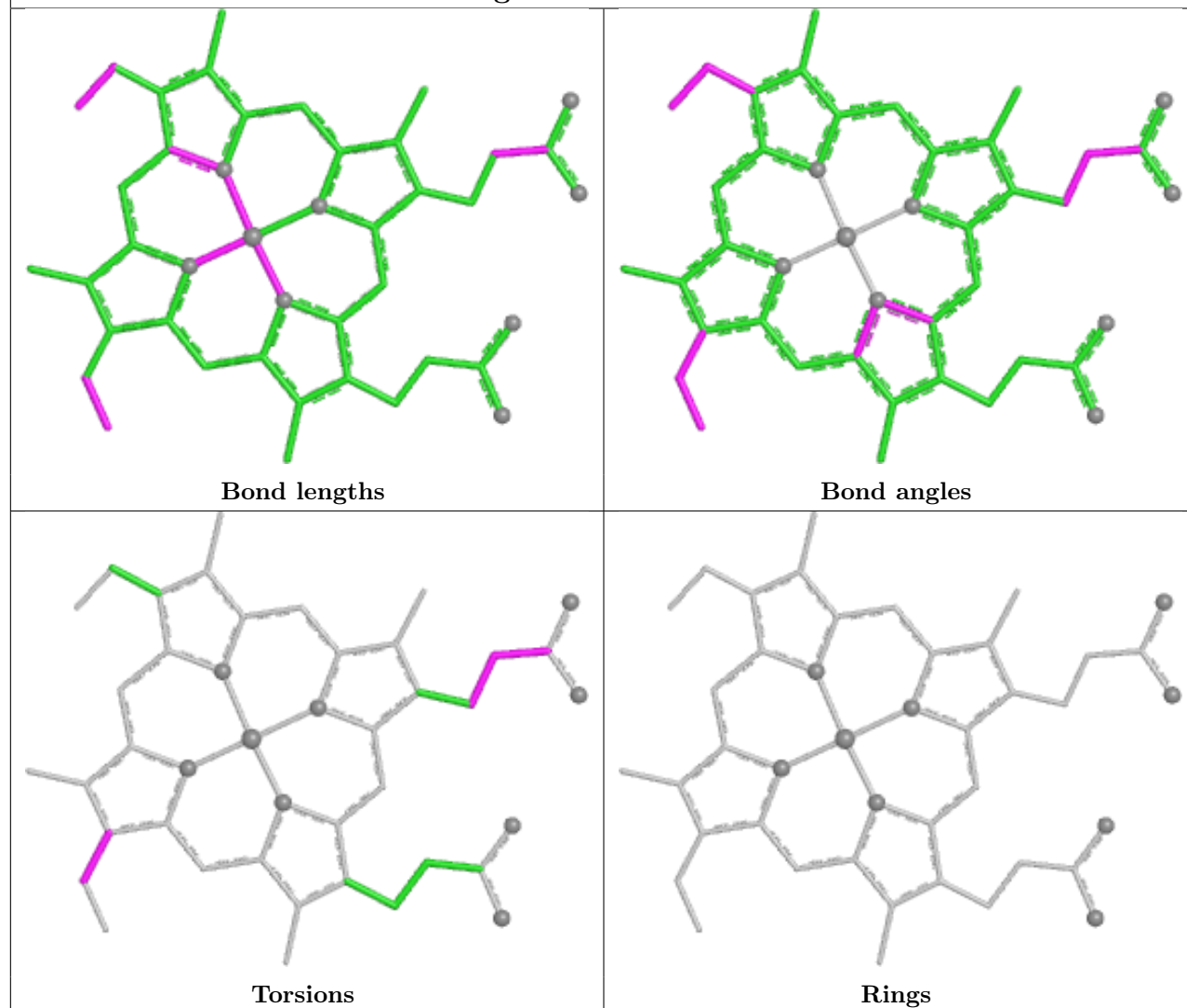
Ligand LMG D 953

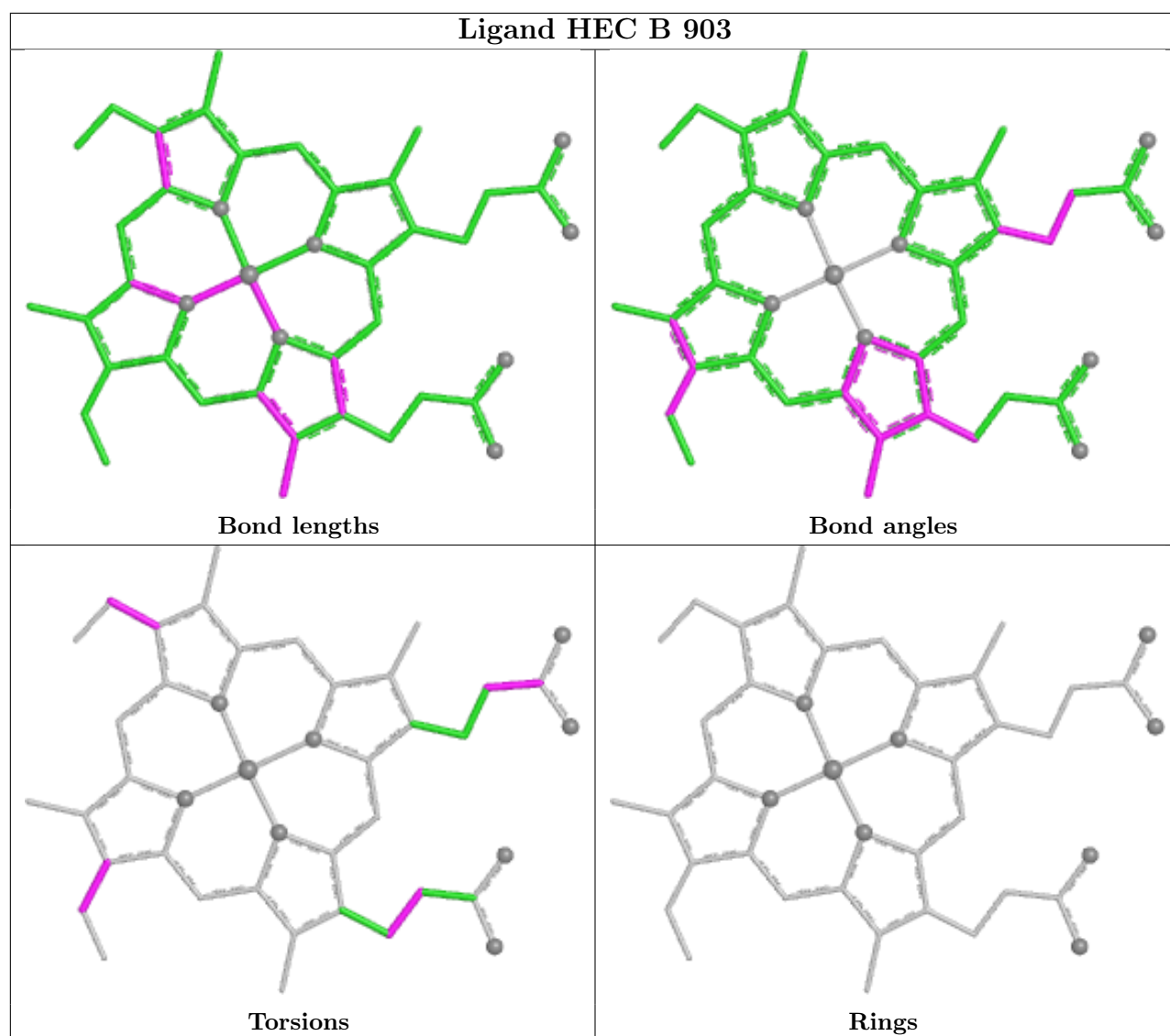


Ligand TDS D 920



Ligand HEC B 901





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	292/292 (100%)	0.23	13 (4%) 38 20	37, 66, 102, 131	3 (1%)
2	B	212/215 (98%)	-0.31	5 (2%) 59 38	29, 47, 76, 114	0
3	C	126/127 (99%)	1.71	46 (36%) 1 0	70, 121, 159, 180	0
4	D	156/159 (98%)	0.05	6 (3%) 44 25	37, 62, 96, 131	0
5	R	39/49 (79%)	-0.11	3 (7%) 19 10	37, 51, 135, 159	0
6	G	30/37 (81%)	-0.11	2 (6%) 24 13	41, 54, 77, 97	0
7	L	32/32 (100%)	0.06	2 (6%) 26 14	46, 65, 86, 126	0
8	M	34/39 (87%)	-0.11	2 (5%) 28 15	41, 57, 83, 130	0
9	N	31/31 (100%)	-0.24	1 (3%) 50 30	36, 50, 68, 91	0
All	All	952/981 (97%)	0.22	80 (8%) 17 9	29, 62, 135, 180	3 (0%)

All (80) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	186	LEU	6.1
8	M	95	GLU	5.6
3	C	93	GLY	5.4
3	C	123	SER	5.0
4	D	4	THR	4.7
3	C	195	THR	4.6
3	C	201	LEU	4.5
3	C	92	ALA	4.3
3	C	182	ALA	4.3
3	C	81	ALA	4.0
3	C	181	VAL	4.0
1	A	21	CYS	3.9
6	G	1	MET	3.8
6	G	30	LEU	3.7
3	C	100	LEU	3.6

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Mol	Chain	Res	Type	RSRZ
4	D	74	GLU	3.6
3	C	125	ILE	3.5
3	C	82	ALA	3.4
3	C	86	LEU	3.4
5	R	34	SER	3.3
7	L	30	LYS	3.3
3	C	80	GLN	3.3
2	B	5	TYR	3.2
3	C	121	ALA	3.2
3	C	127	LYS	3.2
3	C	183	GLU	3.1
3	C	187	VAL	3.1
3	C	98	THR	3.0
4	D	119	LYS	2.9
3	C	148	ASN	2.9
3	C	206	ALA	2.9
3	C	202	GLU	2.9
3	C	192	TRP	2.8
5	R	33	SER	2.7
3	C	180	ASP	2.7
3	C	102	GLY	2.7
4	D	93	ASN	2.7
3	C	162	GLU	2.7
3	C	83	LYS	2.7
1	A	28	GLN	2.6
1	A	139	LYS	2.6
2	B	6	ASP	2.6
3	C	193	THR	2.6
1	A	167	ASN	2.5
3	C	95	TRP	2.5
3	C	199	THR	2.5
1	A	207	LYS	2.5
5	R	71	PRO	2.5
4	D	78	GLU	2.4
8	M	62	GLU	2.4
2	B	156	ASP	2.4
4	D	92	PRO	2.4
3	C	196	ASP	2.4
1	A	189	LYS	2.4
9	N	98	LEU	2.4
3	C	112	GLY	2.3
3	C	89	ASP	2.3

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Mol	Chain	Res	Type	RSRZ
3	C	118	ILE	2.3
3	C	85	ALA	2.3
1	A	79	GLU	2.2
3	C	103	ASP	2.2
7	L	28	VAL	2.2
3	C	101	ALA	2.2
1	A	188	LYS	2.2
3	C	188	THR	2.2
3	C	90	ILE	2.2
1	A	225	ASP	2.2
1	A	222	VAL	2.1
3	C	185	GLY	2.1
2	B	215	LEU	2.1
2	B	10	GLU	2.1
3	C	104	ARG	2.1
1	A	200	ASN	2.1
3	C	133	VAL	2.1
3	C	120	THR	2.1
1	A	65	LYS	2.1
3	C	91	LYS	2.1
3	C	97	LYS	2.0
3	C	106	LEU	2.0
1	A	288	HIS	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

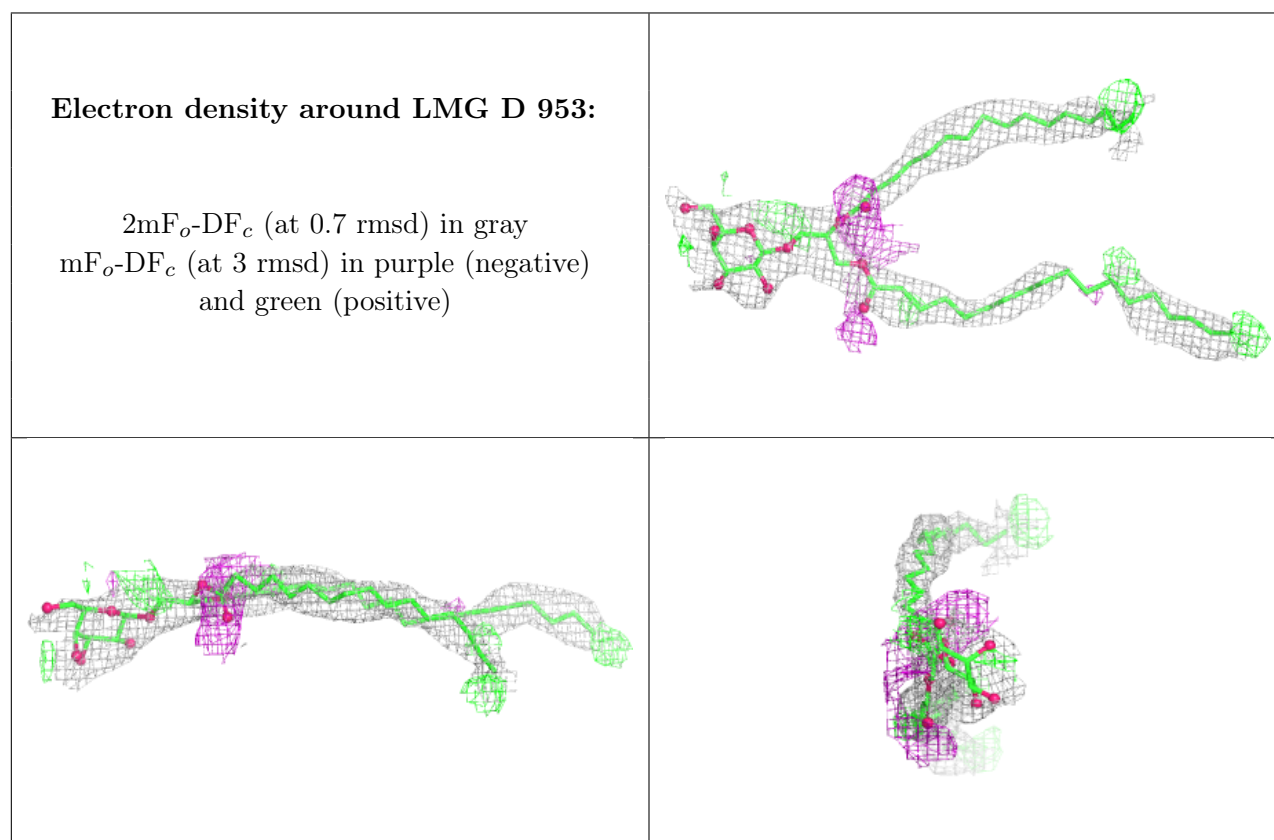
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q < 0.9' lists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

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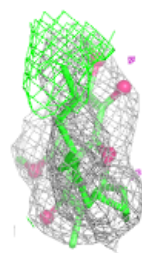
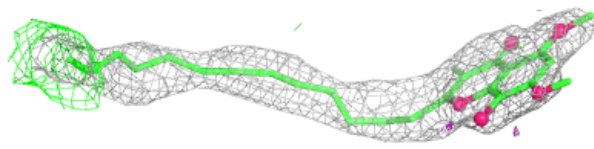
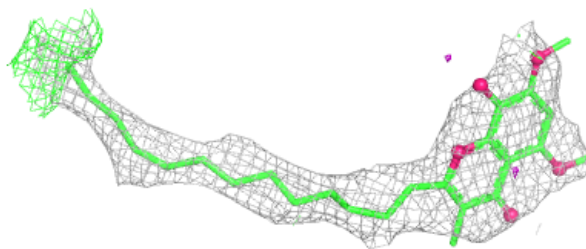
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
16	LMG	D	953	53/55	0.84	0.27	88,88,107,107	0
15	TDS	D	920	30/30	0.86	0.21	87,89,89,89	0
14	CLA	D	910	65/65	0.90	0.17	63,70,92,94	0
16	LMG	L	951	42/55	0.91	0.21	78,85,85,85	0
11	BCR	B	904	27/40	0.93	0.16	49,49,64,64	0
12	LFA	B	960	20/20	0.93	0.18	59,59,59,59	0
17	SQD	R	950	33/54	0.93	0.14	62,62,111,111	0
10	HEC	B	903	43/43	0.97	0.10	53,53,53,53	0
10	HEC	A	900	43/43	0.97	0.11	63,67,77,80	0
10	HEC	B	901	43/43	0.98	0.07	30,37,45,50	0
13	FES	C	210	4/4	0.99	0.14	62,62,63,65	0
10	HEC	B	902	43/43	0.99	0.07	35,43,48,50	0

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

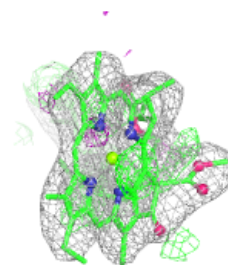
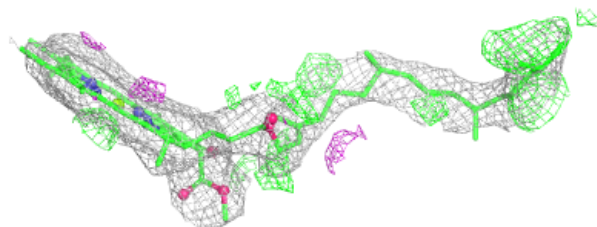
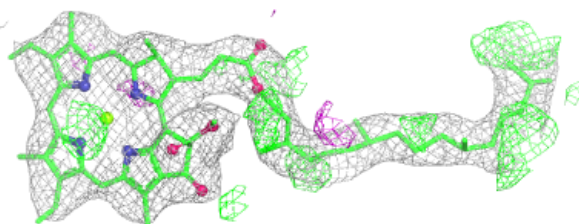


Electron density around TDS D 920:

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

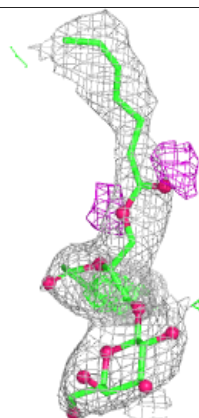
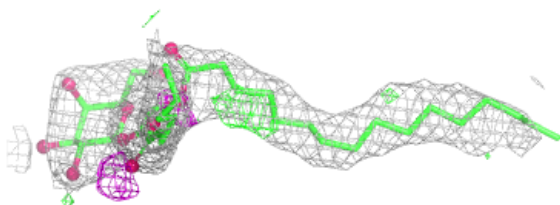
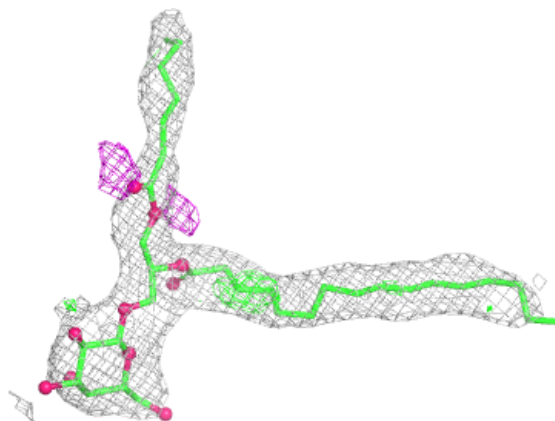
**Electron density around CLA D 910:**

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

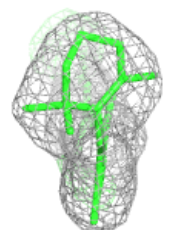
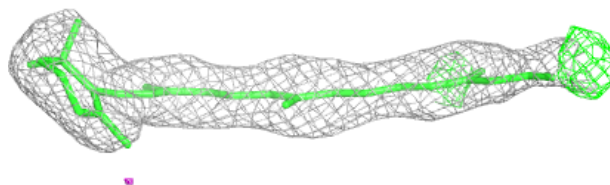
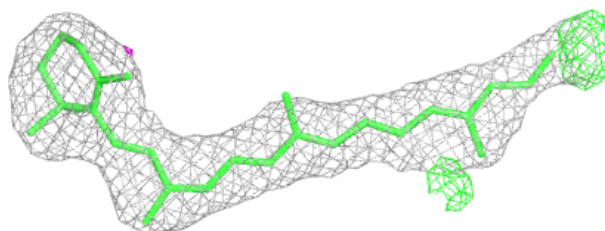


Electron density around LMG L 951:

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

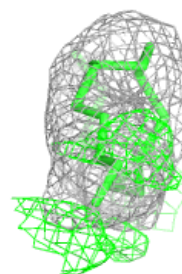
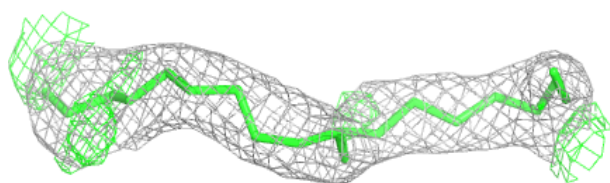
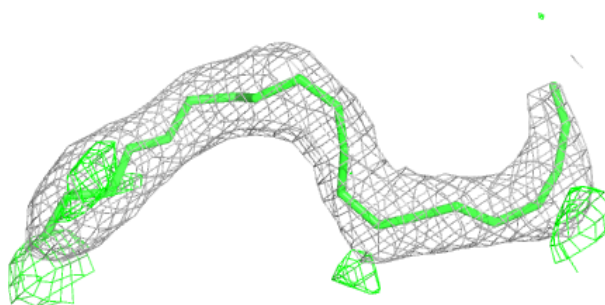
**Electron density around BCR B 904:**

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

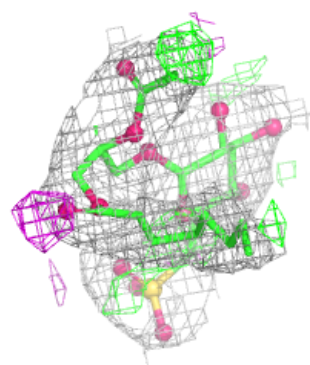
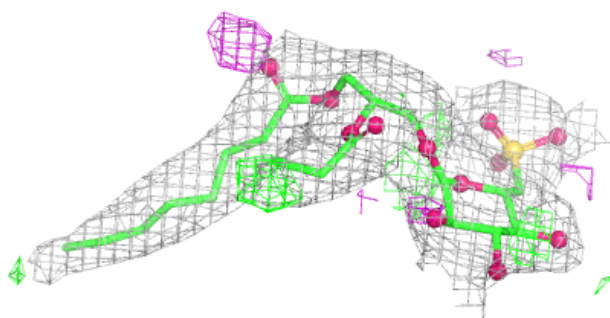
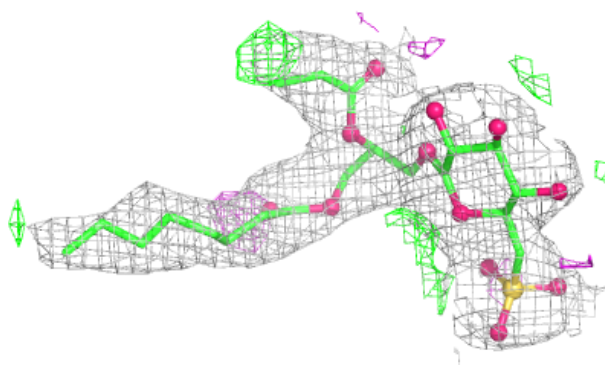


Electron density around LFA B 960:

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

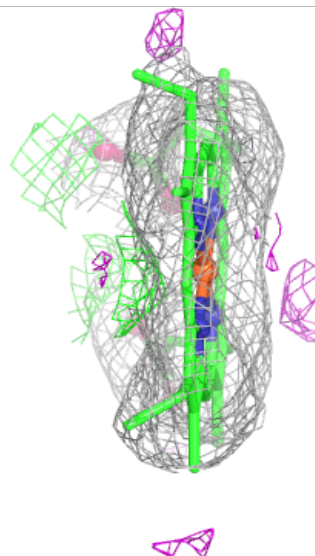
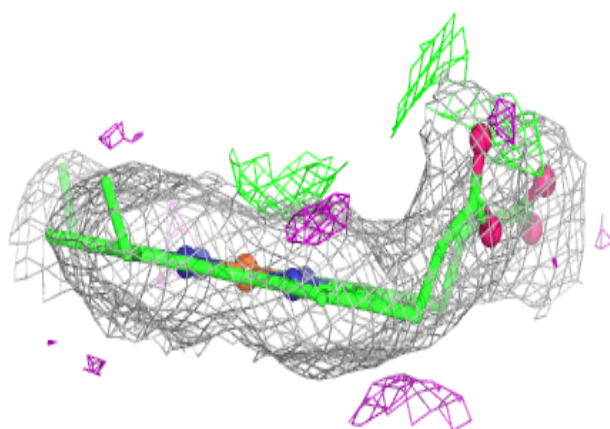
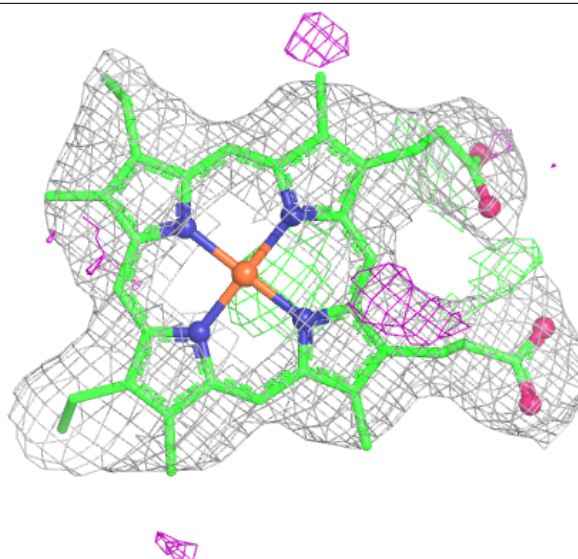
**Electron density around SQD R 950:**

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



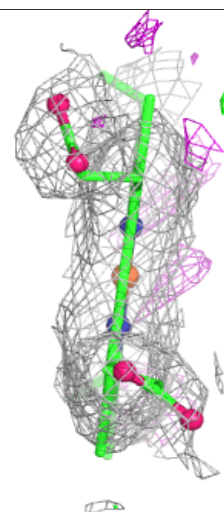
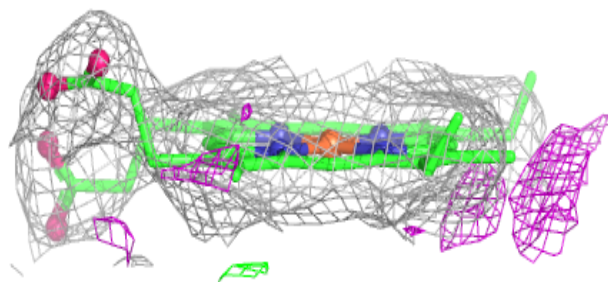
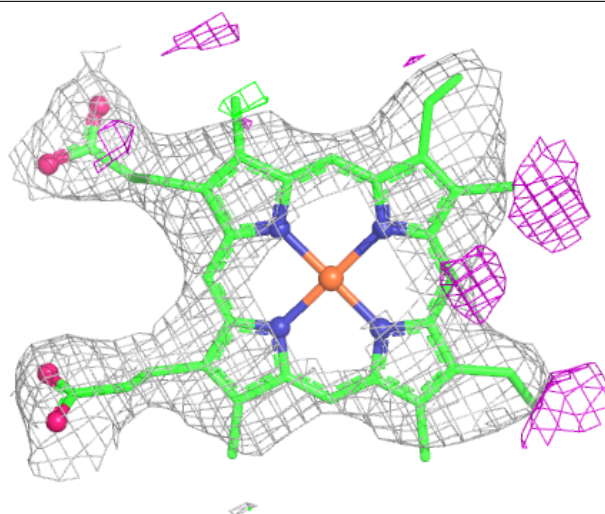
Electron density around HEC B 903:

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



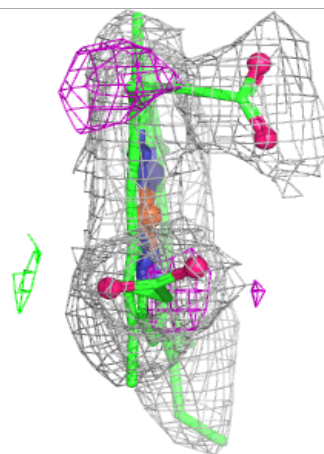
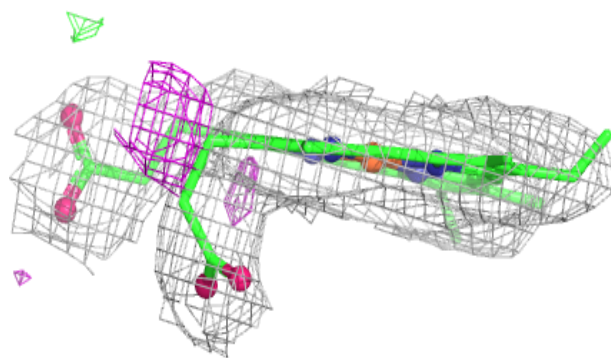
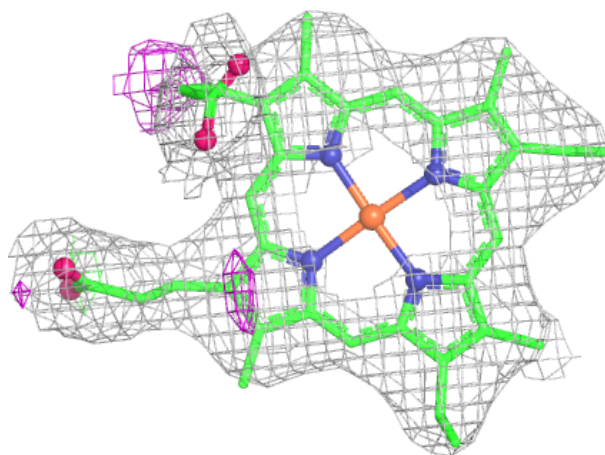
Electron density around HEC A 900:

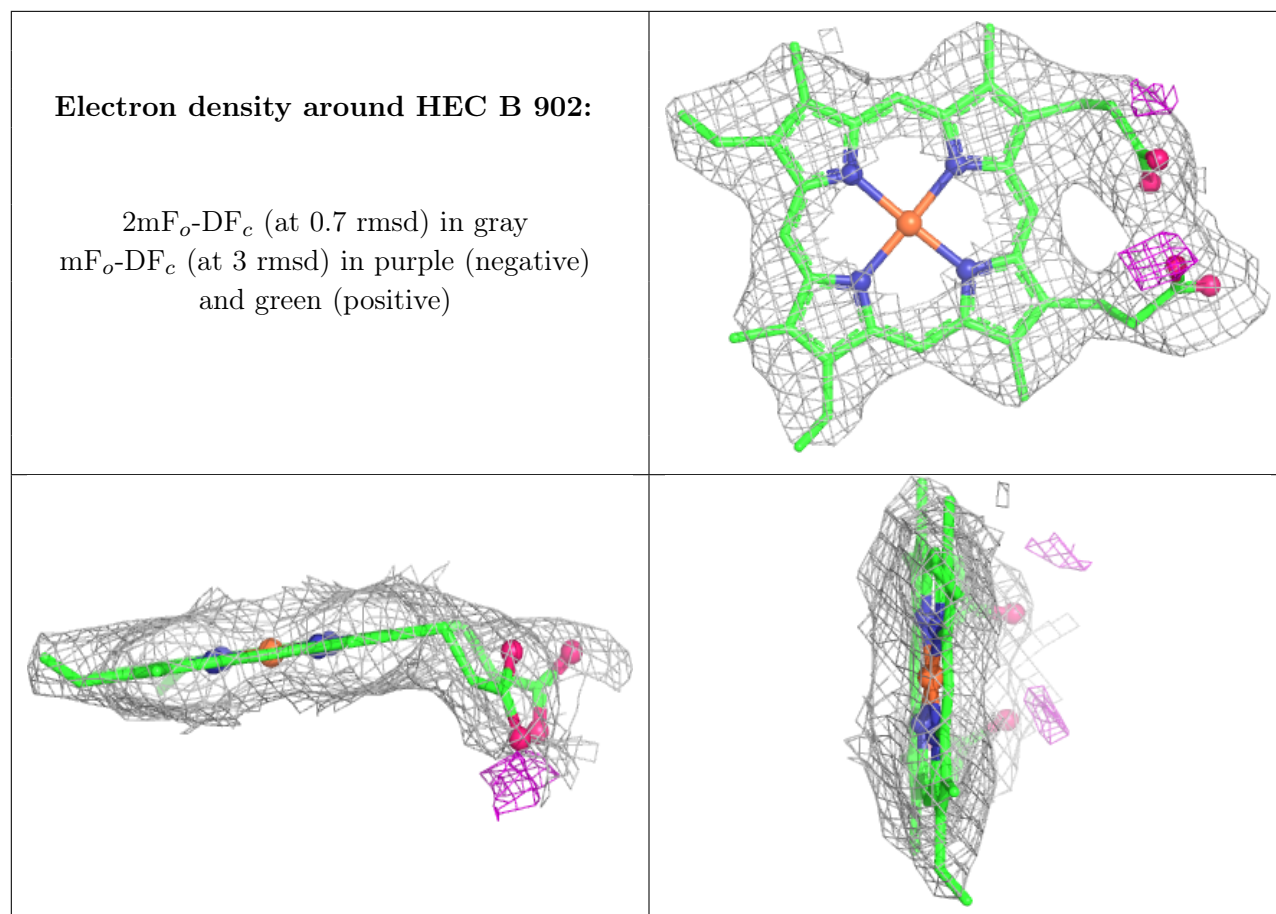
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around HEC B 901:

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





6.5 Other polymers [i](#)

There are no such residues in this entry.