



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 01:53 AM UTC

PDB ID : 3L4D / pdb_00003l4d
Title : Crystal structure of sterol 14-alpha demethylase (CYP51) from Leishmania infantum in complex with fluconazole
Authors : Lepesheva, G.I.; Hargrove, T.Y.; Wawrzak, Z.; Waterman, M.R.
Deposited on : 2009-12-19
Resolution : 2.75 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	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

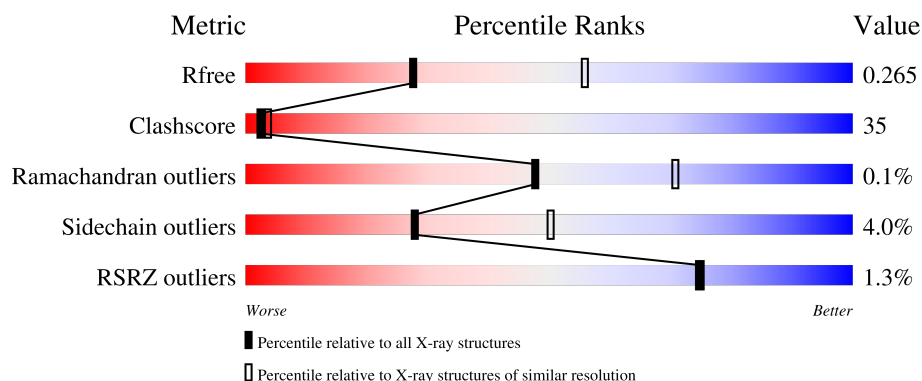
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.75 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1009 (2.76-2.76)
Clashscore	190562	1044 (2.76-2.76)
Ramachandran outliers	187476	1024 (2.76-2.76)
Sidechain outliers	187428	1024 (2.76-2.76)
RSRZ outliers	180081	1009 (2.76-2.76)

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	453	0% 54% 41% ..
1	B	453	2% 56% 39% ..
1	C	453	48% 47% ..
1	D	453	2% 50% 45% ..

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
3	TPF	B	490	-	-	X	-

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 14534 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.

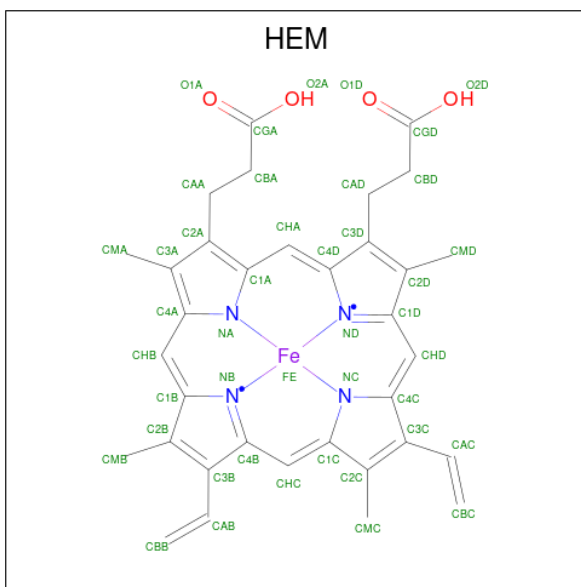
- Molecule 1 is a protein called Sterol 14-alpha demethylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	448	Total	C	N	O	S	0	0	0
			3553	2270	619	635	29			
1	B	449	Total	C	N	O	S	0	0	0
			3562	2276	621	636	29			
1	C	447	Total	C	N	O	S	0	0	0
			3545	2266	617	633	29			
1	D	445	Total	C	N	O	S	0	0	0
			3529	2257	615	628	29			

There are 16 discrepancies between the modelled and reference sequences:

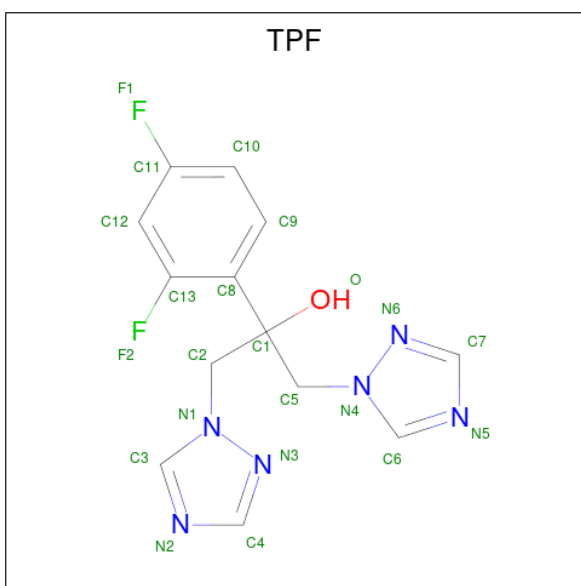
Chain	Residue	Modelled	Actual	Comment	Reference
A	28	LYS	-	expression tag	UNP A2TEF2
A	29	GLY	-	expression tag	UNP A2TEF2
A	30	LYS	-	expression tag	UNP A2TEF2
A	31	LEU	-	expression tag	UNP A2TEF2
B	28	LYS	-	expression tag	UNP A2TEF2
B	29	GLY	-	expression tag	UNP A2TEF2
B	30	LYS	-	expression tag	UNP A2TEF2
B	31	LEU	-	expression tag	UNP A2TEF2
C	28	LYS	-	expression tag	UNP A2TEF2
C	29	GLY	-	expression tag	UNP A2TEF2
C	30	LYS	-	expression tag	UNP A2TEF2
C	31	LEU	-	expression tag	UNP A2TEF2
D	28	LYS	-	expression tag	UNP A2TEF2
D	29	GLY	-	expression tag	UNP A2TEF2
D	30	LYS	-	expression tag	UNP A2TEF2
D	31	LEU	-	expression tag	UNP A2TEF2

- Molecule 2 is PROTOPORPHYRIN IX CONTAINING FE (CCD ID: HEM) (formula: $C_{34}H_{32}FeN_4O_4$).



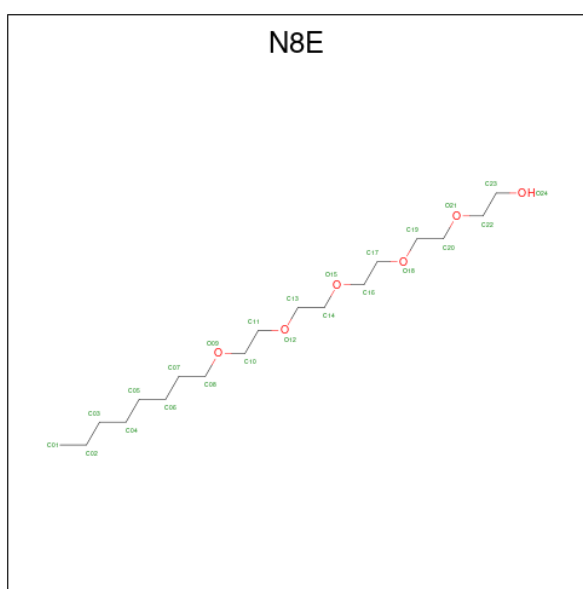
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	B	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	C	1	Total 43	C 34	Fe 1	N 4	O 4	0	0
2	D	1	Total 43	C 34	Fe 1	N 4	O 4	0	0

- Molecule 3 is 2-(2,4-DIFLUOROPHENYL)-1,3-DI(1H-1,2,4-TRIAZOL-1-YL)PROPAN-2-OL (CCD ID: TPF) (formula: $C_{13}H_{12}F_2N_6O$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	F	N	O	0	0
			22	13	2	6	1		
3	B	1	Total	C	F	N	O	0	0
			22	13	2	6	1		
3	C	1	Total	C	F	N	O	0	0
			22	13	2	6	1		
3	D	1	Total	C	F	N	O	0	0
			22	13	2	6	1		

- Molecule 4 is 3,6,9,12,15-PENTAOXATRICOSAN-1-OL (CCD ID: N8E) (formula: $C_{18}H_{38}O_6$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	C	1	Total	C	O	0	0
			24	18	6		

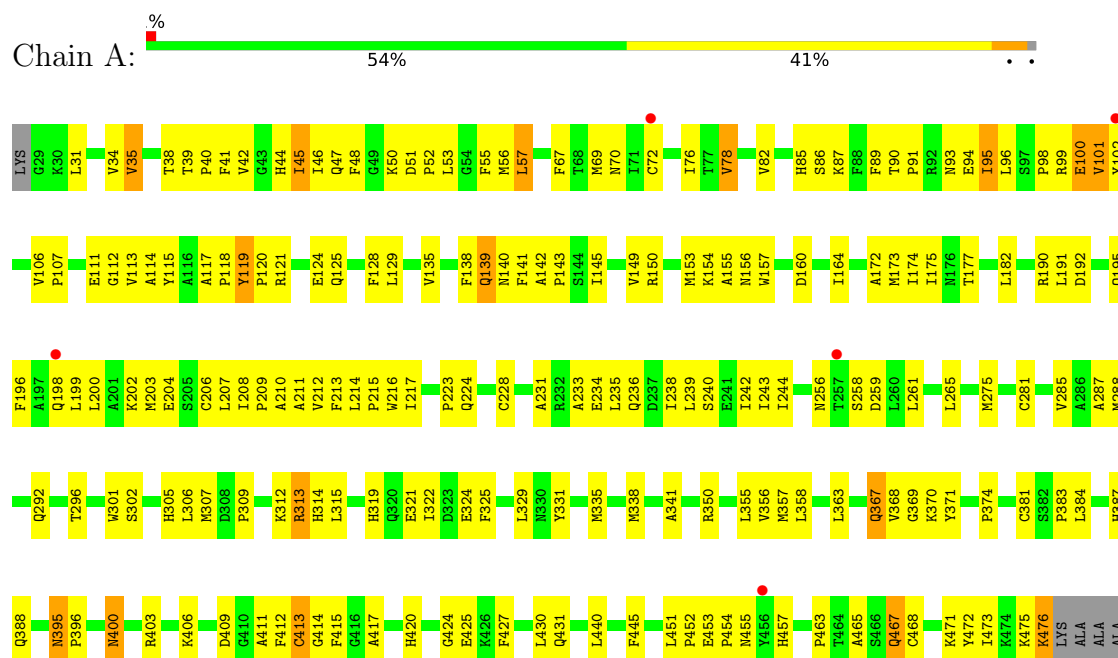
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	16	Total	O	0	0
			16	16		
5	B	11	Total	O	0	0
			11	11		
5	C	16	Total	O	0	0
			16	16		
5	D	18	Total	O	0	0
			18	18		

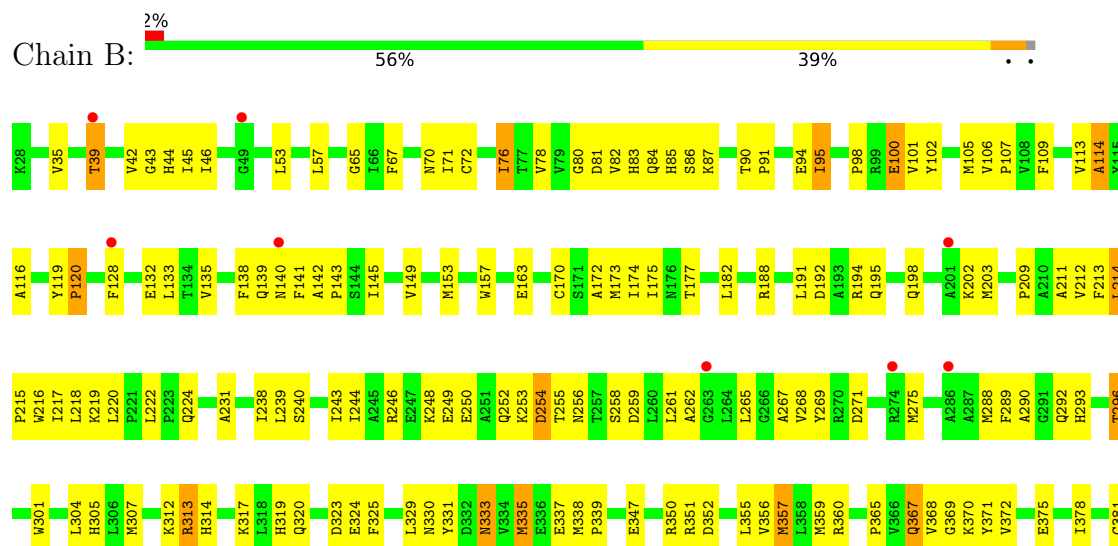
3 Residue-property plots [i](#)

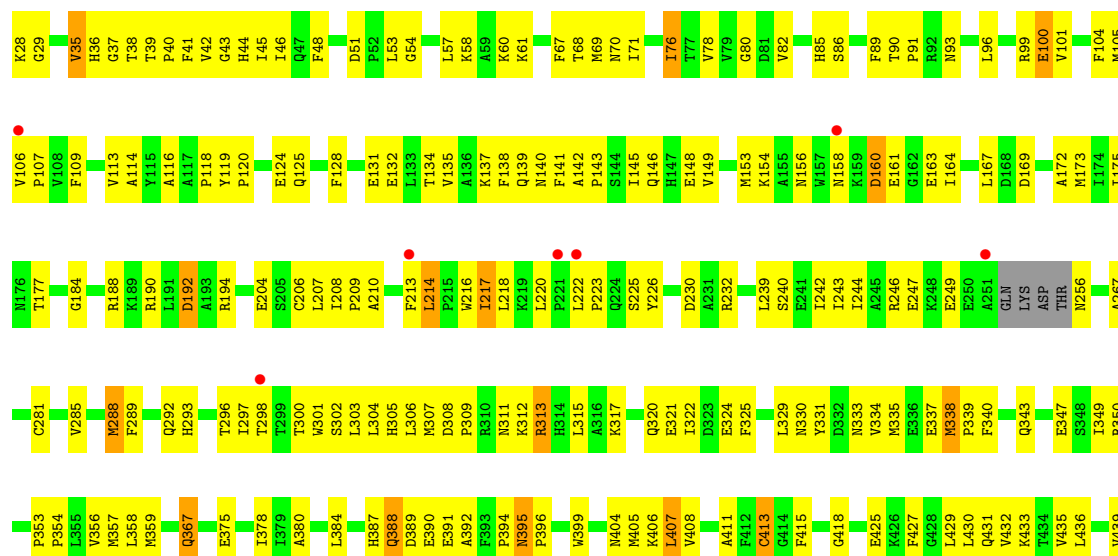
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Sterol 14-alpha demethylase



• Molecule 1: Sterol 14-alpha demethylase







4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	84.89Å 118.51Å 100.96Å 90.00° 104.82° 90.00°	Depositor
Resolution (Å)	48.80 – 2.75 48.80 – 2.75	Depositor EDS
% Data completeness (in resolution range)	97.5 (48.80-2.75) 97.7 (48.80-2.75)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.84 (at 2.73Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.219 , 0.267 0.216 , 0.265	Depositor DCC
R_{free} test set	2495 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å ²)	90.4	Xtriage
Anisotropy	0.408	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 76.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	14534	wwPDB-VP
Average B, all atoms (Å ²)	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.33% 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: TPF, HEM, N8E

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	0.55	0/3636	0.80	9/4917 (0.2%)
1	B	0.37	0/3645	0.76	4/4928 (0.1%)
1	C	0.46	1/3627 (0.0%)	0.76	7/4903 (0.1%)
1	D	0.41	0/3611	0.75	3/4881 (0.1%)
All	All	0.45	1/14519 (0.0%)	0.77	23/19629 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	82	VAL	CA-CB	-5.73	1.46	1.54

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	139	GLN	N-CA-C	7.25	120.24	111.40
1	A	95	ILE	N-CA-C	6.36	116.51	110.53
1	D	114	ALA	CB-CA-C	-6.05	109.61	116.63
1	A	395	ASN	CA-C-N	5.97	125.59	119.56
1	A	395	ASN	C-N-CA	5.97	125.59	119.56
1	A	467	GLN	N-CA-C	-5.97	105.86	113.02
1	C	395	ASN	CA-C-N	5.94	125.64	119.05
1	C	395	ASN	C-N-CA	5.94	125.64	119.05
1	C	114	ALA	CB-CA-C	-5.87	109.79	116.54
1	A	95	ILE	CB-CA-C	-5.49	104.83	112.02
1	B	114	ALA	CB-CA-C	-5.48	110.27	116.63
1	D	395	ASN	CA-C-N	5.48	125.13	119.05
1	D	395	ASN	C-N-CA	5.48	125.13	119.05
1	A	211	ALA	N-CA-C	-5.45	105.73	112.38
1	B	395	ASN	CA-C-N	5.36	124.70	118.85
1	B	395	ASN	C-N-CA	5.36	124.70	118.85

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	120	PRO	N-CA-C	-5.19	106.32	113.53
1	C	353	PRO	CA-C-N	5.17	124.78	119.05
1	C	353	PRO	C-N-CA	5.17	124.78	119.05
1	A	400	ASN	CA-C-N	5.06	124.72	119.56
1	A	400	ASN	C-N-CA	5.06	124.72	119.56
1	C	39	THR	CA-C-N	5.06	126.16	119.84
1	C	39	THR	C-N-CA	5.06	126.16	119.84

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	3553	0	3579	247	0
1	B	3562	0	3592	213	0
1	C	3545	0	3572	290	0
1	D	3529	0	3559	274	0
2	A	43	0	30	6	0
2	B	43	0	30	4	0
2	C	43	0	30	8	0
2	D	43	0	30	8	0
3	A	22	0	12	6	0
3	B	22	0	12	7	0
3	C	22	0	12	6	0
3	D	22	0	12	5	0
4	C	24	0	38	8	0
5	A	16	0	0	0	0
5	B	11	0	0	0	0
5	C	16	0	0	1	0
5	D	18	0	0	2	0
All	All	14534	0	14508	1010	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 35.

All (1010) close contacts within the same asymmetric unit are listed below, sorted by their clash

magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:213:PHE:C	1:D:214:LEU:HD22	1.48	1.36
1:C:252:GLN:NE2	1:C:254:ASP:HB3	1.48	1.29
1:A:209:PRO:O	1:A:212:VAL:HG23	1.35	1.25
1:D:407:LEU:O	1:D:407:LEU:HD12	1.38	1.18
1:B:292:GLN:O	1:B:296:THR:HG22	1.43	1.17
1:D:288:MET:HE2	1:D:288:MET:HA	1.17	1.16
1:B:335:MET:HE2	1:B:335:MET:HA	1.28	1.15
1:A:48:PHE:CD1	1:A:69:MET:HE1	1.80	1.15
1:A:292:GLN:O	1:A:296:THR:HG23	1.48	1.14
1:D:388:GLN:HE21	1:D:388:GLN:CA	1.61	1.13
1:C:292:GLN:O	1:C:296:THR:HG23	1.50	1.12
1:D:367:GLN:HE21	1:D:367:GLN:N	1.49	1.11
1:B:330:ASN:N	1:B:333:ASN:HD21	1.47	1.10
1:C:128:PHE:CD1	1:C:275:MET:HE3	1.86	1.09
1:D:388:GLN:HE21	1:D:388:GLN:N	1.51	1.09
1:C:128:PHE:HD1	1:C:275:MET:HE3	0.99	1.08
1:D:334:VAL:HA	1:D:338:MET:SD	1.94	1.07
1:A:206:CYS:HB3	1:A:228:CYS:SG	1.95	1.07
1:D:407:LEU:HD12	1:D:407:LEU:C	1.78	1.07
1:A:128:PHE:HD1	1:A:275:MET:HE3	1.21	1.05
1:D:387:HIS:C	1:D:388:GLN:HE21	1.66	1.03
1:B:330:ASN:H	1:B:333:ASN:ND2	1.57	1.02
1:C:44:HIS:HD2	1:C:70:ASN:H	1.03	1.01
2:C:481:HEM:HBC2	2:C:481:HEM:HHD	1.43	1.01
1:C:48:PHE:CD1	1:C:69:MET:HE1	1.96	1.00
1:D:45:ILE:HG23	1:D:46:ILE:HD12	1.39	1.00
1:C:239:LEU:O	1:C:243:ILE:HG13	1.60	0.99
1:D:321:GLU:OE1	1:D:340:PHE:HB3	1.62	0.99
1:A:119:TYR:CD1	1:A:120:PRO:N	2.30	0.99
1:C:309:PRO:O	1:C:312:LYS:HG3	1.61	0.98
1:C:451:LEU:HD12	1:C:452:PRO:HD2	1.45	0.98
1:D:214:LEU:HD22	1:D:214:LEU:N	1.70	0.97
1:A:451:LEU:HD12	1:A:452:PRO:HD2	1.44	0.96
1:D:446:GLU:O	1:D:470:VAL:HG13	1.66	0.95
1:B:188:ARG:HA	1:B:191:LEU:O	1.66	0.95
1:A:309:PRO:O	1:A:312:LYS:HG3	1.66	0.94
1:D:214:LEU:N	1:D:214:LEU:CD2	2.30	0.94
1:C:142:ALA:HB3	1:C:143:PRO:HD3	1.46	0.94
1:D:61:LYS:HA	1:D:61:LYS:HE2	1.49	0.94
1:D:388:GLN:HE21	1:D:388:GLN:HA	1.28	0.94
1:D:415:PHE:HE2	2:D:481:HEM:HBB2	1.33	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:72:CYS:SG	1:C:219:LYS:NZ	2.41	0.94
1:B:455:ASN:C	1:B:455:ASN:HD22	1.76	0.94
1:D:213:PHE:C	1:D:214:LEU:CD2	2.40	0.93
1:C:252:GLN:NE2	1:C:254:ASP:CB	2.30	0.93
1:C:252:GLN:HE21	1:C:254:ASP:HB3	1.27	0.93
1:A:120:PRO:HD2	1:A:121:ARG:H	1.34	0.93
3:B:490:TPF:F2	3:B:490:TPF:HC52	1.59	0.93
1:C:41:PHE:HB3	4:C:1:N8E:H232	1.50	0.92
1:D:312:LYS:HB2	1:D:313:ARG:NH2	1.84	0.92
1:D:334:VAL:HA	1:D:338:MET:CG	1.99	0.92
1:A:118:PRO:C	1:A:120:PRO:HD2	1.95	0.92
1:C:244:ILE:HD13	1:C:244:ILE:H	1.36	0.91
1:B:35:VAL:HG23	1:B:44:HIS:CE1	2.04	0.91
1:D:367:GLN:HE21	1:D:367:GLN:H	1.15	0.90
1:D:388:GLN:HA	1:D:388:GLN:NE2	1.85	0.90
1:D:387:HIS:C	1:D:388:GLN:NE2	2.30	0.90
1:B:44:HIS:HD2	1:B:70:ASN:H	1.16	0.90
1:A:41:PHE:HD2	1:C:42:VAL:HG21	1.37	0.90
1:B:367:GLN:HE21	1:B:367:GLN:N	1.69	0.90
1:A:44:HIS:HD2	1:A:70:ASN:H	1.10	0.89
1:A:41:PHE:CD2	1:C:42:VAL:CG2	2.54	0.89
1:D:288:MET:HA	1:D:288:MET:CE	2.00	0.89
1:B:325:PHE:CE2	1:B:333:ASN:HB2	2.07	0.89
1:C:252:GLN:CD	1:C:254:ASP:H	1.80	0.89
1:D:99:ARG:HH22	1:D:118:PRO:HA	1.37	0.89
1:A:128:PHE:CD1	1:A:275:MET:HE3	2.07	0.89
1:D:214:LEU:O	1:D:217:ILE:HG23	1.72	0.89
1:A:138:PHE:CD1	1:A:430:LEU:HD22	2.07	0.88
1:C:288:MET:HE2	1:C:288:MET:HA	1.52	0.88
1:A:142:ALA:HB3	1:A:143:PRO:HD3	1.53	0.88
1:A:138:PHE:CD1	1:A:430:LEU:CD2	2.58	0.87
4:C:1:N8E:H052	4:C:1:N8E:H012	1.57	0.86
1:D:334:VAL:HA	1:D:338:MET:HG3	1.57	0.86
1:C:42:VAL:HG11	1:C:46:ILE:HD13	1.58	0.86
1:D:292:GLN:O	1:D:296:THR:HG22	1.75	0.86
1:C:128:PHE:HD1	1:C:275:MET:CE	1.89	0.85
1:A:119:TYR:N	1:A:120:PRO:CD	2.40	0.85
1:A:101:VAL:HG12	1:A:102:TYR:CD1	2.11	0.85
1:B:335:MET:HA	1:B:335:MET:CE	2.07	0.84
1:C:240:SER:O	1:C:244:ILE:CD1	2.25	0.84
1:B:292:GLN:O	1:B:296:THR:CG2	2.25	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:453:GLU:HG3	1:C:454:PRO:HD2	1.58	0.84
1:C:135:VAL:HA	1:C:138:PHE:CD2	2.13	0.83
1:C:44:HIS:CD2	1:C:70:ASN:H	1.92	0.83
1:C:42:VAL:HG13	1:C:45:ILE:HG22	1.61	0.83
1:C:69:MET:HE2	1:C:71:ILE:HD11	1.61	0.82
1:A:120:PRO:CD	1:A:121:ARG:H	1.92	0.82
1:B:105:MET:HE2	1:B:109:PHE:CZ	2.15	0.82
1:C:32:PRO:HA	1:C:371:TYR:CD2	2.15	0.82
1:D:28:LYS:C	1:D:28:LYS:HD3	2.05	0.82
1:A:119:TYR:CD1	1:A:119:TYR:C	2.58	0.81
1:C:476:LYS:NZ	1:C:476:LYS:HB3	1.95	0.81
1:A:55:PHE:CE2	1:A:69:MET:HE3	2.14	0.81
1:B:455:ASN:ND2	1:B:457:HIS:H	1.77	0.81
1:A:42:VAL:HG21	1:C:40:PRO:CB	2.09	0.81
1:A:42:VAL:CG2	1:C:40:PRO:HB2	2.09	0.81
1:B:330:ASN:HD22	1:B:331:TYR:H	1.28	0.81
3:C:490:TPF:F2	3:C:490:TPF:HC52	1.70	0.81
1:D:138:PHE:HD2	1:D:430:LEU:HD22	1.45	0.81
1:D:76:ILE:HD11	1:D:357:MET:HE1	1.61	0.81
1:D:388:GLN:N	1:D:388:GLN:NE2	2.29	0.81
1:B:101:VAL:HG12	1:B:102:TYR:CD1	2.16	0.81
1:B:44:HIS:CD2	1:B:70:ASN:H	1.98	0.80
1:A:119:TYR:N	1:A:120:PRO:HD3	1.94	0.80
1:A:452:PRO:HA	1:A:467:GLN:OE1	1.81	0.80
1:C:200:LEU:O	1:C:204:GLU:HG3	1.80	0.80
1:C:42:VAL:HG13	1:C:45:ILE:CG2	2.12	0.80
1:C:240:SER:O	1:C:244:ILE:HD11	1.80	0.80
4:C:1:N8E:H172	1:D:220:LEU:HD22	1.63	0.80
1:A:41:PHE:HD2	1:C:42:VAL:CG2	1.92	0.80
1:A:155:ALA:C	1:A:156:ASN:HD22	1.89	0.80
1:C:89:PHE:CG	1:C:417:ALA:HB3	2.16	0.79
1:C:101:VAL:CG1	1:C:359:MET:HE3	2.12	0.79
1:A:118:PRO:C	1:A:120:PRO:CD	2.55	0.79
1:A:139:GLN:OE1	1:A:140:ASN:N	2.15	0.79
1:A:39:THR:HB	1:A:40:PRO:HD2	1.66	0.78
1:D:135:VAL:HA	1:D:138:PHE:CD1	2.17	0.78
1:C:254:ASP:O	1:C:255:THR:HB	1.82	0.78
1:D:214:LEU:O	1:D:217:ILE:CG2	2.31	0.78
3:D:490:TPF:F2	3:D:490:TPF:HC52	1.71	0.78
1:B:101:VAL:HG12	1:B:102:TYR:HD1	1.47	0.78
1:D:293:HIS:HA	1:D:296:THR:CG2	2.14	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:48:PHE:CD1	1:A:69:MET:CE	2.64	0.78
1:A:191:LEU:HD21	1:A:196:PHE:HD2	1.46	0.78
1:B:182:LEU:HD12	1:B:288:MET:HE1	1.65	0.78
1:B:182:LEU:O	1:B:259:ASP:HB2	1.84	0.78
1:B:250:GLU:O	1:B:253:LYS:CG	2.32	0.78
1:A:41:PHE:CD2	1:C:42:VAL:HG21	2.16	0.77
1:A:42:VAL:CG1	1:A:45:ILE:HG23	2.15	0.77
1:B:350:ARG:HD2	1:B:350:ARG:O	1.84	0.77
1:D:61:LYS:HE2	1:D:61:LYS:CA	2.15	0.77
1:B:330:ASN:H	1:B:333:ASN:HD21	0.80	0.77
1:C:254:ASP:O	1:C:255:THR:CB	2.33	0.77
1:A:203:MET:O	1:A:228:CYS:SG	2.43	0.77
2:D:481:HEM:HMC1	2:D:481:HEM:HBC2	1.67	0.76
1:B:330:ASN:HB3	1:B:333:ASN:OD1	1.85	0.76
1:C:42:VAL:CG1	1:C:45:ILE:HG22	2.15	0.76
1:A:182:LEU:O	1:A:259:ASP:HB2	1.86	0.76
1:D:334:VAL:HG13	1:D:338:MET:SD	2.26	0.76
1:C:204:GLU:OE1	1:C:293:HIS:CE1	2.39	0.76
1:A:42:VAL:HG11	1:A:46:ILE:HD13	1.68	0.76
1:A:203:MET:HE1	1:A:285:VAL:HG13	1.66	0.76
1:B:95:ILE:HD12	1:B:95:ILE:N	2.01	0.75
1:D:350:ARG:HD2	1:D:350:ARG:O	1.85	0.75
1:D:367:GLN:N	1:D:367:GLN:NE2	2.31	0.75
1:B:367:GLN:HE21	1:B:367:GLN:H	1.34	0.75
1:D:148:GLU:HB2	1:D:177:THR:HG22	1.65	0.75
1:B:288:MET:HA	1:B:288:MET:HE2	1.66	0.75
1:A:203:MET:HE1	1:A:285:VAL:CG1	2.16	0.75
1:D:69:MET:HB2	1:D:76:ILE:HG23	1.67	0.75
1:C:179:CYS:O	1:C:183:PHE:HB2	1.86	0.75
1:A:199:LEU:HD13	1:A:235:LEU:HB2	1.67	0.75
3:A:490:TPF:HC6	3:A:490:TPF:O	1.86	0.74
3:C:490:TPF:HC6	3:C:490:TPF:O	1.87	0.74
1:C:292:GLN:O	1:C:296:THR:CG2	2.33	0.74
1:D:142:ALA:HB3	1:D:143:PRO:HD3	1.69	0.74
1:A:139:GLN:OE1	1:A:139:GLN:C	2.30	0.74
1:C:81:ASP:OD1	1:C:81:ASP:C	2.30	0.74
1:D:407:LEU:C	1:D:407:LEU:CD1	2.55	0.74
1:A:138:PHE:CE1	1:A:430:LEU:CD2	2.71	0.74
1:B:455:ASN:HD21	1:B:457:HIS:HB2	1.53	0.74
1:D:208:ILE:HG21	1:D:217:ILE:HD11	1.70	0.73
1:C:95:ILE:N	1:C:95:ILE:HD12	2.02	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:1:N8E:H013	1:D:45:ILE:CD1	2.18	0.73
1:D:288:MET:HE2	1:D:288:MET:CA	2.09	0.73
1:A:288:MET:HE2	1:A:288:MET:HA	1.69	0.73
1:A:42:VAL:HG21	1:C:40:PRO:HB2	1.68	0.73
1:A:476:LYS:C	1:A:476:LYS:HD3	2.13	0.73
1:A:119:TYR:HD1	1:A:120:PRO:N	1.87	0.73
1:A:471:LYS:HE2	1:A:473:ILE:HD11	1.70	0.73
1:C:308:ASP:OD2	1:C:310:ARG:NH2	2.21	0.72
3:A:490:TPF:F2	3:A:490:TPF:HC52	1.79	0.72
1:B:192:ASP:OD2	1:B:195:GLN:HG3	1.89	0.72
2:D:481:HEM:HBC2	2:D:481:HEM:CMC	2.19	0.72
1:C:135:VAL:HA	1:C:138:PHE:CE2	2.24	0.72
1:C:128:PHE:O	1:C:132:GLU:HG2	1.89	0.72
1:D:213:PHE:O	1:D:214:LEU:HD22	1.88	0.71
1:A:118:PRO:O	1:A:120:PRO:HD2	1.89	0.71
1:A:453:GLU:HG3	1:A:454:PRO:HD2	1.72	0.71
1:A:475:LYS:O	1:A:476:LYS:CB	2.39	0.71
1:C:475:LYS:O	1:C:476:LYS:O	2.09	0.71
1:A:350:ARG:HD2	1:A:350:ARG:O	1.91	0.71
1:A:42:VAL:HG13	1:A:45:ILE:HG23	1.71	0.71
1:D:67:PHE:CZ	1:D:78:VAL:HG21	2.25	0.70
1:A:206:CYS:HA	1:A:224:GLN:HB3	1.72	0.70
1:C:387:HIS:HE1	1:C:413:CYS:H	1.39	0.70
1:D:350:ARG:HA	1:D:387:HIS:CD2	2.26	0.70
1:A:72:CYS:SG	1:A:214:LEU:HD11	2.31	0.70
1:B:250:GLU:O	1:B:253:LYS:HG3	1.90	0.70
1:B:424:GLY:HA3	2:B:481:HEM:C3C	2.26	0.70
1:B:455:ASN:C	1:B:455:ASN:ND2	2.46	0.70
1:A:234:GLU:OE2	1:B:469:ARG:NH1	2.24	0.70
1:A:206:CYS:CB	1:A:228:CYS:SG	2.77	0.70
1:B:35:VAL:CG2	1:B:44:HIS:CE1	2.74	0.70
1:C:455:ASN:ND2	1:C:457:HIS:HD2	1.90	0.70
1:C:76:ILE:HD11	1:C:357:MET:HE1	1.73	0.70
1:C:455:ASN:HD21	1:C:457:HIS:HD2	1.38	0.70
1:C:246:ARG:O	1:C:250:GLU:HB2	1.92	0.70
1:C:99:ARG:HD2	1:C:115:TYR:O	1.90	0.70
1:A:451:LEU:HD12	1:A:452:PRO:CD	2.21	0.70
1:B:214:LEU:O	1:B:217:ILE:HG22	1.92	0.69
1:D:392:ALA:HB2	1:D:408:VAL:HG21	1.73	0.69
1:A:292:GLN:O	1:A:296:THR:CG2	2.35	0.69
1:C:48:PHE:CD1	1:C:69:MET:CE	2.72	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:455:ASN:HD21	1:C:457:HIS:CD2	2.10	0.69
1:A:206:CYS:O	1:A:208:ILE:HG13	1.92	0.69
1:C:155:ALA:C	1:C:156:ASN:HD22	2.01	0.69
1:A:213:PHE:C	1:A:214:LEU:HD12	2.18	0.69
1:D:154:LYS:C	5:D:482:HOH:O	2.34	0.69
1:A:50:LYS:HD3	1:A:50:LYS:C	2.18	0.68
3:A:490:TPF:O	3:A:490:TPF:C6	2.40	0.68
1:B:330:ASN:ND2	1:B:331:TYR:H	1.90	0.68
1:B:258:SER:HB3	1:B:262:ALA:HB3	1.74	0.68
1:A:235:LEU:CD2	1:A:285:VAL:HG22	2.23	0.68
1:B:317:LYS:NZ	1:B:402:GLU:OE2	2.22	0.68
1:C:190:ARG:NH2	1:C:241:GLU:OE1	2.26	0.68
1:B:338:MET:HE1	1:B:437:ALA:HB2	1.74	0.68
1:A:82:VAL:HG22	1:A:411:ALA:HA	1.75	0.68
1:C:475:LYS:O	1:C:476:LYS:C	2.35	0.68
1:A:138:PHE:CE1	1:A:430:LEU:HD22	2.29	0.68
1:B:142:ALA:HB3	1:B:143:PRO:HD3	1.74	0.68
3:C:490:TPF:O	3:C:490:TPF:C6	2.39	0.68
1:D:138:PHE:CD2	1:D:430:LEU:HD22	2.27	0.68
1:A:190:ARG:HA	1:B:163:GLU:OE2	1.93	0.68
1:D:154:LYS:O	1:D:154:LYS:HG2	1.94	0.68
1:A:370:LYS:HE3	1:A:371:TYR:CZ	2.29	0.68
1:A:101:VAL:HG12	1:A:102:TYR:HD1	1.58	0.67
1:A:42:VAL:HG13	1:A:45:ILE:CG2	2.24	0.67
1:D:444:ASP:HB2	1:D:473:ILE:HB	1.75	0.67
1:D:415:PHE:CE2	2:D:481:HEM:HBB2	2.23	0.67
1:C:350:ARG:HD2	1:C:350:ARG:O	1.93	0.67
1:D:39:THR:HB	1:D:40:PRO:HD2	1.77	0.67
1:A:44:HIS:CD2	1:A:70:ASN:H	2.03	0.67
1:C:101:VAL:HG11	1:C:359:MET:HB2	1.75	0.67
1:B:455:ASN:HD22	1:B:457:HIS:H	1.43	0.66
1:A:40:PRO:HG3	1:C:39:THR:HB	1.78	0.66
1:D:407:LEU:O	1:D:407:LEU:CD1	2.30	0.66
1:A:424:GLY:HA3	2:A:481:HEM:C3C	2.30	0.66
1:B:84:GLN:OE1	1:B:87:LYS:HE2	1.96	0.66
1:C:253:LYS:HG3	1:C:253:LYS:O	1.94	0.66
1:A:39:THR:CB	1:A:40:PRO:HD2	2.25	0.66
1:B:314:HIS:CE1	1:B:401:PRO:HD2	2.30	0.66
1:B:216:TRP:CZ3	1:C:216:TRP:HB3	2.30	0.66
1:A:238:ILE:HD11	1:B:469:ARG:CD	2.26	0.66
1:C:206:CYS:HB2	1:C:228:CYS:HB2	1.78	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:350:ARG:HD2	1:B:350:ARG:C	2.20	0.66
1:A:139:GLN:C	1:A:139:GLN:CD	2.65	0.66
1:B:250:GLU:O	1:B:253:LYS:HG2	1.95	0.66
1:C:41:PHE:CB	4:C:1:N8E:H232	2.23	0.66
1:A:138:PHE:CE1	1:A:430:LEU:HD23	2.31	0.65
1:B:119:TYR:HB2	1:B:120:PRO:HD3	1.75	0.65
1:C:400:ASN:O	1:C:403:ARG:HG2	1.96	0.65
1:C:252:GLN:OE1	1:C:253:LYS:N	2.30	0.65
1:C:42:VAL:CG1	1:C:46:ILE:HD13	2.25	0.65
1:D:28:LYS:HD3	1:D:29:GLY:N	2.12	0.65
1:B:254:ASP:N	1:B:254:ASP:OD1	2.30	0.65
1:B:453:GLU:HG3	1:B:454:PRO:HD2	1.79	0.65
1:A:128:PHE:HD1	1:A:275:MET:CE	2.04	0.64
1:A:42:VAL:HG21	1:C:40:PRO:HB3	1.77	0.64
1:C:252:GLN:CD	1:C:254:ASP:N	2.54	0.64
1:C:121:ARG:O	1:C:125:GLN:HG3	1.98	0.64
1:A:39:THR:OG1	1:A:42:VAL:HB	1.98	0.64
1:D:51:ASP:OD2	1:D:54:GLY:HA3	1.96	0.64
1:C:331:TYR:CE1	1:C:335:MET:HG3	2.32	0.64
1:B:135:VAL:HA	1:B:138:PHE:CD2	2.32	0.64
1:D:442:ASP:O	1:D:475:LYS:HG2	1.98	0.64
1:C:223:PRO:HA	1:C:226:TYR:HD2	1.61	0.64
1:D:334:VAL:CA	1:D:338:MET:HG3	2.28	0.64
1:B:304:LEU:HD13	1:B:452:PRO:HG2	1.79	0.63
1:C:309:PRO:O	1:C:312:LYS:CG	2.40	0.63
1:A:415:PHE:CE2	1:A:425:GLU:HG3	2.34	0.63
1:D:472:TYR:O	1:D:472:TYR:CD1	2.52	0.63
1:C:206:CYS:CB	1:C:228:CYS:HB2	2.29	0.63
1:B:76:ILE:HD11	1:B:357:MET:HE1	1.81	0.63
1:B:135:VAL:HB	1:B:331:TYR:OH	1.98	0.63
1:D:473:ILE:N	1:D:473:ILE:HD12	2.13	0.63
1:C:81:ASP:OD1	1:C:83:HIS:N	2.30	0.63
1:A:42:VAL:HG23	1:C:40:PRO:HB2	1.79	0.63
3:B:490:TPF:HC6	3:B:490:TPF:O	1.99	0.63
1:C:476:LYS:HB3	1:C:476:LYS:HZ2	1.63	0.63
4:C:1:N8E:H013	1:D:45:ILE:HD11	1.81	0.63
1:C:95:ILE:HG21	1:C:366:VAL:CG1	2.29	0.63
1:D:358:LEU:HD22	2:D:481:HEM:CGA	2.28	0.63
1:A:135:VAL:HA	1:A:138:PHE:CD2	2.33	0.62
1:C:141:PHE:O	1:C:145:ILE:HG13	1.98	0.62
1:C:145:ILE:O	1:C:149:VAL:HG23	1.98	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:387:HIS:O	1:D:388:GLN:NE2	2.30	0.62
1:D:395:ASN:N	1:D:396:PRO:HD3	2.14	0.62
1:B:330:ASN:HD22	1:B:331:TYR:N	1.95	0.62
1:D:223:PRO:HA	1:D:226:TYR:HD2	1.65	0.62
1:A:384:LEU:O	1:A:388:GLN:HG2	1.99	0.62
1:D:106:VAL:N	1:D:107:PRO:CD	2.62	0.62
1:A:89:PHE:CG	1:A:417:ALA:HB3	2.35	0.62
1:B:105:MET:CE	1:B:109:PHE:CZ	2.83	0.62
1:A:111:GLU:CD	1:D:40:PRO:O	2.43	0.62
1:A:94:GLU:O	1:A:363:LEU:HD12	2.00	0.62
1:D:137:LYS:C	1:D:139:GLN:OE1	2.43	0.62
1:D:330:ASN:C	1:D:330:ASN:OD1	2.43	0.62
1:B:42:VAL:HB	1:B:45:ILE:CG2	2.29	0.62
1:A:82:VAL:CG2	1:A:411:ALA:HA	2.30	0.62
1:A:177:THR:OG1	1:A:431:GLN:NE2	2.33	0.62
1:B:331:TYR:CE1	1:B:335:MET:HG3	2.35	0.62
1:D:304:LEU:HD13	1:D:452:PRO:HG2	1.82	0.62
1:D:128:PHE:CD2	1:D:267:ALA:HB1	2.35	0.61
1:A:406:LYS:HD2	1:A:409:ASP:OD2	2.00	0.61
1:C:254:ASP:C	1:C:255:THR:HG22	2.25	0.61
2:C:481:HEM:HBC2	2:C:481:HEM:CHD	2.21	0.61
1:D:39:THR:OG1	1:D:42:VAL:HG12	2.01	0.61
1:D:41:PHE:O	1:D:41:PHE:CD1	2.54	0.61
1:D:307:MET:HE2	1:D:445:PHE:CB	2.31	0.61
1:C:51:ASP:OD1	1:C:54:GLY:HA3	2.00	0.61
1:C:331:TYR:CZ	1:C:335:MET:HG3	2.35	0.61
1:C:31:LEU:HD22	1:C:374:PRO:HD3	1.83	0.61
1:B:177:THR:OG1	1:B:431:GLN:NE2	2.33	0.61
1:C:93:ASN:HA	1:C:96:LEU:O	2.00	0.61
1:C:111:GLU:O	1:C:278:HIS:HE1	1.84	0.61
1:A:238:ILE:HD11	1:B:469:ARG:NE	2.15	0.60
1:D:100:GLU:H	1:D:100:GLU:CD	2.09	0.60
1:D:204:GLU:OE1	1:D:293:HIS:NE2	2.32	0.60
3:D:490:TPF:HC6	3:D:490:TPF:O	2.00	0.60
1:A:209:PRO:O	1:A:212:VAL:CG2	2.30	0.60
1:A:355:LEU:HD11	3:A:490:TPF:N4	2.15	0.60
1:B:76:ILE:CD1	1:B:357:MET:HE1	2.31	0.60
1:D:339:PRO:O	1:D:343:GLN:HG3	2.01	0.60
1:C:207:LEU:HD13	1:C:459:MET:SD	2.41	0.60
1:A:206:CYS:O	1:A:207:LEU:C	2.44	0.60
1:B:45:ILE:HG23	1:B:46:ILE:HD12	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:350:ARG:HD2	1:D:350:ARG:C	2.25	0.60
1:D:134:THR:C	1:D:138:PHE:HE1	2.09	0.60
1:C:31:LEU:CD2	1:C:374:PRO:HD3	2.32	0.60
1:D:76:ILE:CD1	1:D:357:MET:HE1	2.32	0.60
1:A:35:VAL:O	1:A:44:HIS:CE1	2.55	0.59
1:A:472:TYR:C	1:A:473:ILE:HD12	2.27	0.59
1:C:297:ILE:CD1	1:C:460:VAL:HG12	2.32	0.59
1:D:453:GLU:HG3	1:D:454:PRO:HD2	1.83	0.59
1:A:287:ALA:HB1	2:A:481:HEM:HBC1	1.84	0.59
1:C:306:LEU:HD13	1:C:440:LEU:HD11	1.84	0.59
1:A:42:VAL:CG1	1:A:45:ILE:CG2	2.81	0.59
1:B:290:ALA:HB1	3:B:490:TPF:C7	2.33	0.59
1:C:452:PRO:HA	1:C:467:GLN:OE1	2.02	0.59
1:D:101:VAL:HG11	1:D:359:MET:HB2	1.85	0.59
1:A:39:THR:HB	1:A:40:PRO:CD	2.32	0.59
1:B:170:CYS:O	1:B:174:ILE:HG12	2.03	0.59
1:B:470:VAL:CG1	1:B:471:LYS:N	2.66	0.59
1:C:51:ASP:CG	1:C:54:GLY:H	2.10	0.59
1:C:422:CYS:HB2	2:C:481:HEM:NA	2.17	0.59
1:D:141:PHE:O	1:D:145:ILE:HG13	2.02	0.58
1:D:53:LEU:O	1:D:57:LEU:HB2	2.03	0.58
1:A:120:PRO:CD	1:A:121:ARG:N	2.59	0.58
1:A:145:ILE:O	1:A:149:VAL:HG23	2.04	0.58
1:B:182:LEU:CD1	1:B:288:MET:HE1	2.31	0.58
1:D:321:GLU:OE1	1:D:340:PHE:CB	2.47	0.58
1:C:142:ALA:HB3	1:C:143:PRO:CD	2.27	0.58
1:D:334:VAL:CA	1:D:338:MET:SD	2.81	0.58
1:A:150:ARG:HA	1:A:153:MET:HE2	1.86	0.58
1:B:333:ASN:O	1:B:338:MET:HG3	2.04	0.58
1:B:350:ARG:HA	1:B:387:HIS:CD2	2.39	0.58
1:C:291:GLY:O	1:C:295:SER:HB2	2.04	0.58
1:D:313:ARG:H	1:D:313:ARG:NE	2.02	0.58
1:A:40:PRO:HG3	1:C:39:THR:CB	2.34	0.58
1:C:82:VAL:O	1:C:82:VAL:HG13	2.02	0.58
1:A:475:LYS:O	1:A:476:LYS:HB3	2.04	0.58
1:B:319:HIS:O	1:B:323:ASP:CG	2.46	0.58
3:B:490:TPF:O	3:B:490:TPF:C6	2.51	0.58
1:D:392:ALA:HB2	1:D:408:VAL:CG2	2.33	0.58
1:C:51:ASP:OD2	1:C:52:PRO:HD2	2.03	0.57
1:D:149:VAL:O	1:D:153:MET:HG3	2.04	0.57
1:D:300:THR:O	1:D:304:LEU:HG	2.03	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:98:PRO:HG3	1:A:420:HIS:CE1	2.39	0.57
1:B:95:ILE:N	1:B:95:ILE:CD1	2.65	0.57
1:C:112:GLY:HA2	1:C:116:ALA:O	2.04	0.57
1:C:254:ASP:O	1:C:255:THR:HG22	2.03	0.57
1:C:350:ARG:HD2	1:C:350:ARG:C	2.29	0.57
1:B:214:LEU:O	1:B:217:ILE:CG2	2.52	0.57
1:D:214:LEU:HB3	1:D:217:ILE:HG22	1.85	0.57
1:C:387:HIS:CE1	1:C:413:CYS:H	2.21	0.57
1:D:472:TYR:CD1	1:D:472:TYR:C	2.82	0.57
1:A:86:SER:O	1:A:90:THR:HB	2.02	0.57
1:B:76:ILE:HA	1:B:378:ILE:O	2.04	0.57
1:C:325:PHE:HB3	1:C:329:LEU:HD21	1.86	0.57
1:C:422:CYS:HB2	2:C:481:HEM:C4A	2.40	0.57
1:B:347:GLU:OE1	1:B:403:ARG:HD2	2.05	0.57
1:D:93:ASN:HA	1:D:96:LEU:O	2.05	0.57
3:D:490:TPF:O	3:D:490:TPF:C6	2.53	0.57
1:C:240:SER:O	1:C:244:ILE:HD13	2.02	0.57
1:C:370:LYS:HE2	1:C:371:TYR:CZ	2.40	0.57
1:C:32:PRO:HA	1:C:371:TYR:CE2	2.40	0.57
1:C:50:LYS:HD3	1:C:50:LYS:C	2.30	0.57
1:A:173:MET:O	1:A:177:THR:HG23	2.05	0.57
1:A:350:ARG:HA	1:A:387:HIS:CD2	2.40	0.56
1:C:95:ILE:HD12	1:C:95:ILE:H	1.70	0.56
1:C:244:ILE:HD13	1:C:244:ILE:N	2.15	0.56
1:B:330:ASN:ND2	1:B:331:TYR:N	2.52	0.56
1:C:33:PRO:HD3	1:C:371:TYR:CE2	2.40	0.56
1:C:314:HIS:CE1	1:C:401:PRO:HD2	2.40	0.56
1:A:45:ILE:HG12	1:A:46:ILE:N	2.17	0.56
1:B:213:PHE:C	1:B:214:LEU:HD12	2.31	0.56
1:C:48:PHE:CE1	1:C:69:MET:HE1	2.40	0.56
1:D:36:HIS:CD2	1:D:37:GLY:H	2.23	0.56
1:B:71:ILE:HG21	1:B:213:PHE:CD1	2.41	0.56
1:D:45:ILE:CG2	1:D:46:ILE:HD12	2.26	0.56
1:D:239:LEU:O	1:D:243:ILE:HG13	2.05	0.56
1:C:82:VAL:HG11	1:C:408:VAL:HG11	1.88	0.56
1:C:252:GLN:OE1	1:C:254:ASP:N	2.30	0.56
1:C:254:ASP:O	1:C:255:THR:CG2	2.53	0.56
1:C:446:GLU:O	1:C:470:VAL:HG13	2.04	0.56
1:D:104:PHE:HA	1:D:218:LEU:HD11	1.86	0.56
1:A:42:VAL:CG1	1:A:46:ILE:HD13	2.35	0.56
1:A:76:ILE:HG23	1:A:76:ILE:O	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:45:ILE:HG23	1:C:46:ILE:N	2.20	0.56
1:A:281:CYS:O	1:A:285:VAL:HG23	2.04	0.56
1:D:35:VAL:HG12	1:D:68:THR:O	2.06	0.56
1:A:120:PRO:O	1:A:124:GLU:HG3	2.06	0.56
1:B:42:VAL:HB	1:B:45:ILE:HG22	1.88	0.56
1:B:106:VAL:N	1:B:107:PRO:CD	2.69	0.56
1:A:350:ARG:O	1:A:387:HIS:HB3	2.06	0.56
1:C:195:GLN:NE2	1:D:163:GLU:O	2.37	0.56
1:A:101:VAL:CG1	1:A:102:TYR:CD1	2.87	0.55
1:D:61:LYS:CA	1:D:61:LYS:CE	2.82	0.55
1:D:387:HIS:HE1	1:D:413:CYS:H	1.52	0.55
1:B:252:GLN:OE1	1:B:252:GLN:HA	2.07	0.55
1:B:356:VAL:HG21	1:B:461:VAL:HG21	1.87	0.55
1:C:82:VAL:HG12	1:C:83:HIS:N	2.21	0.55
1:C:395:ASN:N	1:C:396:PRO:HD3	2.21	0.55
1:D:169:ASP:O	1:D:173:MET:HG3	2.06	0.55
1:D:281:CYS:O	1:D:285:VAL:HG23	2.06	0.55
1:D:293:HIS:O	1:D:296:THR:HG23	2.06	0.55
1:B:240:SER:O	1:B:244:ILE:HG12	2.07	0.55
1:C:384:LEU:O	1:C:388:GLN:HG2	2.06	0.55
1:D:44:HIS:HD2	1:D:70:ASN:H	1.54	0.55
1:A:120:PRO:HD2	1:A:121:ARG:N	2.13	0.55
1:A:350:ARG:HD2	1:A:350:ARG:C	2.32	0.55
1:B:213:PHE:O	1:B:214:LEU:HD12	2.07	0.55
1:B:325:PHE:CE2	1:B:333:ASN:CB	2.85	0.55
1:C:67:PHE:CZ	1:C:78:VAL:HG21	2.42	0.55
2:C:481:HEM:HAD1	3:C:490:TPF:H10	1.88	0.55
1:D:190:ARG:HD2	1:D:190:ARG:O	2.05	0.55
1:A:455:ASN:C	1:A:455:ASN:HD22	2.15	0.55
1:C:175:ILE:HG12	1:C:197:ALA:HB2	1.88	0.55
1:C:206:CYS:SG	1:C:225:SER:HA	2.47	0.55
1:C:243:ILE:O	1:C:246:ARG:HB2	2.06	0.55
1:C:415:PHE:CE2	1:C:425:GLU:HG3	2.42	0.55
1:B:67:PHE:CZ	1:B:78:VAL:HG21	2.41	0.55
1:C:476:LYS:HB3	1:C:476:LYS:HZ3	1.71	0.55
1:D:204:GLU:OE1	1:D:289:PHE:CD1	2.59	0.55
1:A:358:LEU:HD22	2:A:481:HEM:HBA2	1.89	0.55
1:B:355:LEU:HD11	3:B:490:TPF:N4	2.21	0.55
1:D:138:PHE:HE2	1:D:427:PHE:HA	1.72	0.55
1:D:305:HIS:C	1:D:311:ASN:HD22	2.15	0.55
1:D:406:LYS:O	1:D:407:LEU:C	2.48	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:252:GLN:NE2	1:C:254:ASP:CA	2.69	0.55
1:D:139:GLN:O	1:D:140:ASN:CG	2.49	0.55
1:D:192:ASP:C	1:D:192:ASP:OD1	2.50	0.55
1:C:355:LEU:HD11	3:C:490:TPF:N4	2.21	0.54
1:D:443:TYR:OH	1:D:474:LYS:NZ	2.40	0.54
1:B:138:PHE:CD1	1:B:141:PHE:CD2	2.95	0.54
1:C:101:VAL:HG13	1:C:359:MET:HE3	1.86	0.54
1:C:106:VAL:N	1:C:107:PRO:CD	2.69	0.54
1:C:206:CYS:O	1:C:208:ILE:HG13	2.07	0.54
1:C:475:LYS:HE3	1:C:475:LYS:HA	1.89	0.54
1:D:455:ASN:ND2	1:D:457:HIS:H	2.04	0.54
1:D:45:ILE:HG23	1:D:46:ILE:CD1	2.25	0.54
1:D:135:VAL:CA	1:D:138:PHE:CD1	2.89	0.54
4:C:1:N8E:H052	4:C:1:N8E:C01	2.35	0.54
1:D:146:GLN:HE22	1:D:329:LEU:HG	1.73	0.54
1:C:196:PHE:CZ	1:C:288:MET:HG3	2.43	0.54
1:D:42:VAL:HG22	1:D:45:ILE:CG2	2.38	0.54
1:D:82:VAL:HG21	1:D:411:ALA:HB1	1.89	0.54
1:D:303:LEU:O	1:D:307:MET:HG2	2.07	0.54
1:C:95:ILE:CG2	1:C:366:VAL:CG1	2.85	0.54
1:D:331:TYR:CE1	1:D:335:MET:HG3	2.42	0.54
1:A:41:PHE:CD2	1:C:42:VAL:HG22	2.42	0.54
1:A:48:PHE:CE1	1:A:69:MET:HE1	2.40	0.54
1:C:420:HIS:HA	2:C:481:HEM:O2D	2.08	0.54
1:D:160:ASP:OD2	1:D:160:ASP:N	2.40	0.54
1:A:139:GLN:OE1	1:A:140:ASN:CB	2.56	0.54
1:C:271:ASP:OD1	1:C:271:ASP:C	2.49	0.54
1:D:38:THR:HB	1:D:44:HIS:NE2	2.23	0.54
1:D:139:GLN:H	1:D:139:GLN:CD	2.13	0.54
1:D:350:ARG:C	1:D:350:ARG:CD	2.81	0.54
1:A:465:ALA:O	1:A:468:CYS:HB2	2.07	0.54
1:B:459:MET:HE2	3:B:490:TPF:HC3	1.90	0.54
1:C:109:PHE:O	1:C:232:ARG:NH2	2.40	0.54
1:B:470:VAL:HG12	1:B:471:LYS:N	2.22	0.53
1:C:168:ASP:CG	1:D:194:ARG:NH2	2.66	0.53
1:D:213:PHE:HB2	1:D:214:LEU:CD2	2.38	0.53
1:A:149:VAL:O	1:A:153:MET:HG3	2.08	0.53
1:A:331:TYR:CE1	1:A:335:MET:HG3	2.43	0.53
1:A:338:MET:HE2	1:A:341:ALA:CB	2.38	0.53
1:C:35:VAL:HG12	1:C:68:THR:O	2.08	0.53
1:D:135:VAL:HA	1:D:138:PHE:CE1	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:209:PRO:O	1:B:212:VAL:HG23	2.09	0.53
1:B:387:HIS:HE1	1:B:413:CYS:H	1.55	0.53
1:B:395:ASN:OD1	1:B:398:GLU:OE1	2.26	0.53
1:D:240:SER:O	1:D:244:ILE:HG13	2.07	0.53
1:D:293:HIS:HA	1:D:296:THR:HG22	1.88	0.53
1:A:455:ASN:C	1:A:455:ASN:ND2	2.66	0.53
1:C:223:PRO:HA	1:C:226:TYR:CD2	2.43	0.53
1:A:39:THR:CB	1:A:40:PRO:CD	2.86	0.53
1:A:302:SER:O	1:A:306:LEU:HG	2.07	0.53
1:A:322:ILE:HA	1:A:325:PHE:HD1	1.72	0.53
1:B:330:ASN:O	1:B:333:ASN:ND2	2.41	0.53
1:D:288:MET:CE	1:D:288:MET:CA	2.79	0.53
1:A:101:VAL:O	1:A:101:VAL:HG13	2.09	0.53
1:C:69:MET:HB2	1:C:76:ILE:HG23	1.89	0.53
1:D:243:ILE:O	1:D:247:GLU:HG3	2.09	0.53
1:A:387:HIS:HE1	1:A:413:CYS:H	1.56	0.53
1:C:168:ASP:CG	1:D:194:ARG:HH21	2.17	0.53
1:C:289:PHE:C	1:C:289:PHE:CD2	2.87	0.53
1:C:325:PHE:HB3	1:C:329:LEU:CD2	2.39	0.53
1:D:312:LYS:H	1:D:313:ARG:HH21	1.57	0.53
1:B:87:LYS:HD3	1:B:368:VAL:HA	1.91	0.53
1:D:134:THR:C	1:D:138:PHE:CE1	2.87	0.53
1:A:138:PHE:CE1	1:A:427:PHE:HD1	2.27	0.52
1:D:173:MET:O	1:D:177:THR:HG23	2.09	0.52
1:B:213:PHE:C	1:B:215:PRO:HD3	2.35	0.52
1:A:239:LEU:O	1:A:243:ILE:HG13	2.09	0.52
1:B:216:TRP:CG	1:C:215:PRO:HG2	2.45	0.52
1:C:244:ILE:H	1:C:244:ILE:CD1	2.04	0.52
1:C:383:PRO:O	1:C:387:HIS:CG	2.62	0.52
1:A:321:GLU:OE2	1:A:338:MET:HA	2.08	0.52
1:D:128:PHE:CE2	1:D:267:ALA:HB1	2.44	0.52
1:A:31:LEU:HD22	1:A:374:PRO:HD3	1.91	0.52
1:A:113:VAL:O	1:A:114:ALA:C	2.50	0.52
1:B:65:GLY:O	1:B:80:GLY:N	2.42	0.52
1:B:331:TYR:O	1:B:335:MET:HG2	2.10	0.52
1:B:400:ASN:O	1:B:403:ARG:HG2	2.10	0.52
1:C:119:TYR:N	1:C:120:PRO:HD2	2.24	0.52
1:C:301:TRP:NE1	1:C:463:PRO:HD3	2.24	0.52
1:D:350:ARG:O	1:D:387:HIS:CD2	2.62	0.52
1:A:322:ILE:HA	1:A:325:PHE:CD1	2.45	0.52
1:C:101:VAL:HG12	1:C:101:VAL:O	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:156:ASN:HD22	1:A:156:ASN:N	2.03	0.52
1:A:200:LEU:O	1:A:204:GLU:HG2	2.10	0.52
1:A:224:GLN:HE22	1:B:224:GLN:HG2	1.74	0.52
1:A:309:PRO:O	1:A:312:LYS:CG	2.49	0.52
1:B:172:ALA:O	1:B:175:ILE:HG22	2.09	0.52
2:D:481:HEM:HMC1	2:D:481:HEM:CBC	2.37	0.52
1:D:43:GLY:HA3	1:D:70:ASN:O	2.10	0.52
1:B:128:PHE:HD1	1:B:275:MET:HE3	1.75	0.52
1:C:213:PHE:C	1:C:214:LEU:HD12	2.35	0.52
1:C:297:ILE:HD12	1:C:460:VAL:HG12	1.92	0.52
1:D:308:ASP:OD1	1:D:309:PRO:HD2	2.09	0.52
1:B:53:LEU:HD13	1:B:384:LEU:HG	1.91	0.51
1:B:82:VAL:HG22	1:B:411:ALA:HA	1.90	0.51
1:D:125:GLN:HA	1:D:128:PHE:CD1	2.46	0.51
1:A:415:PHE:CD2	1:A:425:GLU:HG3	2.45	0.51
1:C:39:THR:OG1	1:C:42:VAL:HB	2.10	0.51
1:A:224:GLN:NE2	1:B:224:GLN:HG2	2.24	0.51
1:D:38:THR:HB	1:D:44:HIS:CE1	2.46	0.51
1:D:298:THR:HG21	1:D:349:ILE:HD11	1.92	0.51
1:B:135:VAL:HA	1:B:138:PHE:CE2	2.46	0.51
1:B:424:GLY:HA3	2:B:481:HEM:C2C	2.45	0.51
1:D:322:ILE:HA	1:D:325:PHE:HD1	1.75	0.51
1:A:451:LEU:CD1	1:A:452:PRO:HD2	2.30	0.51
1:C:435:VAL:O	1:C:439:VAL:HG23	2.10	0.51
1:B:128:PHE:CD2	1:B:267:ALA:HB1	2.45	0.51
1:D:69:MET:HE2	1:D:71:ILE:HD11	1.91	0.51
1:D:297:ILE:HD13	1:D:461:VAL:O	2.11	0.51
1:D:470:VAL:HG12	1:D:471:LYS:N	2.26	0.51
1:D:334:VAL:HG12	1:D:433:LYS:HE2	1.92	0.51
1:A:288:MET:HE2	1:A:288:MET:CA	2.39	0.51
1:D:158:ASN:HB3	5:D:482:HOH:O	2.10	0.51
1:A:101:VAL:CG1	1:A:102:TYR:HD1	2.24	0.51
1:B:472:TYR:CD1	1:B:472:TYR:C	2.89	0.51
1:B:149:VAL:O	1:B:153:MET:HG3	2.11	0.50
1:B:192:ASP:OD1	1:B:194:ARG:HB2	2.09	0.50
1:B:333:ASN:HA	1:B:337:GLU:HB2	1.93	0.50
1:C:202:LYS:HZ3	1:C:202:LYS:HB3	1.77	0.50
1:B:312:LYS:HB2	1:B:313:ARG:NH2	2.26	0.50
1:B:367:GLN:N	1:B:367:GLN:NE2	2.49	0.50
3:C:490:TPF:F2	3:C:490:TPF:C5	2.46	0.50
4:C:1:N8E:H013	1:D:45:ILE:HD13	1.90	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:76:ILE:HD11	1:A:357:MET:HE1	1.91	0.50
1:A:288:MET:HA	1:A:288:MET:CE	2.41	0.50
1:B:39:THR:OG1	1:B:43:GLY:O	2.28	0.50
1:D:459:MET:HE2	3:D:490:TPF:HC3	1.93	0.50
1:A:93:ASN:HA	1:A:96:LEU:O	2.11	0.50
1:B:254:ASP:O	1:B:256:ASN:OD1	2.30	0.50
1:B:331:TYR:CE1	1:B:335:MET:CG	2.95	0.50
1:D:82:VAL:CG2	1:D:411:ALA:HA	2.42	0.50
1:A:154:LYS:O	1:A:154:LYS:CG	2.60	0.50
1:C:182:LEU:HD12	1:C:288:MET:HE1	1.93	0.50
1:C:313:ARG:NE	1:C:313:ARG:H	2.10	0.50
1:B:173:MET:O	1:B:177:THR:HG23	2.11	0.50
1:C:54:GLY:O	1:C:58:LYS:HG3	2.11	0.50
1:C:86:SER:O	1:C:90:THR:HB	2.12	0.50
1:D:293:HIS:HA	1:D:296:THR:HG21	1.94	0.50
1:A:99:ARG:HG3	1:A:115:TYR:O	2.12	0.50
1:A:119:TYR:CD1	1:A:120:PRO:CA	2.95	0.50
1:A:142:ALA:HB3	1:A:143:PRO:CD	2.36	0.50
1:D:246:ARG:HA	1:D:249:GLU:HG2	1.94	0.50
1:C:156:ASN:HD22	1:C:156:ASN:N	2.06	0.50
1:C:156:ASN:O	1:C:157:TRP:HD1	1.94	0.50
1:A:39:THR:CB	1:C:40:PRO:HG2	2.42	0.49
1:A:53:LEU:HG	1:A:57:LEU:HD22	1.94	0.49
1:A:368:VAL:O	1:A:369:GLY:C	2.55	0.49
1:B:90:THR:HB	1:B:91:PRO:HD3	1.94	0.49
1:C:125:GLN:HG2	1:C:275:MET:HE2	1.94	0.49
1:D:139:GLN:O	1:D:140:ASN:OD1	2.30	0.49
1:D:167:LEU:HD13	1:D:300:THR:HG21	1.94	0.49
1:A:135:VAL:HB	1:A:331:TYR:OH	2.12	0.49
1:A:174:ILE:CB	1:A:296:THR:HG22	2.41	0.49
1:B:202:LYS:HB3	1:B:231:ALA:HB2	1.93	0.49
1:C:254:ASP:O	1:C:254:ASP:OD2	2.30	0.49
1:D:404:ASN:HD22	1:D:405:MET:H	1.60	0.49
1:A:82:VAL:HG23	1:A:85:HIS:CE1	2.47	0.49
1:A:203:MET:HE1	1:A:285:VAL:HG11	1.91	0.49
1:A:206:CYS:O	1:A:208:ILE:CG1	2.60	0.49
1:C:237:ASP:O	1:C:241:GLU:HG3	2.13	0.49
1:A:306:LEU:HD13	1:A:440:LEU:HD11	1.95	0.49
1:C:470:VAL:HG12	1:C:471:LYS:N	2.27	0.49
1:A:39:THR:OG1	1:C:40:PRO:HG2	2.11	0.49
1:A:235:LEU:CD2	1:A:285:VAL:CG2	2.90	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:370:LYS:HE3	1:B:371:TYR:CZ	2.47	0.49
1:D:140:ASN:OD1	1:D:140:ASN:O	2.30	0.49
1:A:50:LYS:HD3	1:A:50:LYS:O	2.13	0.49
1:A:192:ASP:OD1	1:A:195:GLN:HG2	2.12	0.49
1:A:307:MET:HE2	1:A:445:PHE:CB	2.43	0.49
3:B:490:TPF:F2	3:B:490:TPF:C5	2.40	0.49
1:C:209:PRO:O	1:C:212:VAL:HG23	2.12	0.49
1:A:42:VAL:CG2	1:C:40:PRO:CB	2.78	0.49
1:A:307:MET:HE2	1:A:445:PHE:HB2	1.95	0.49
1:B:416:GLY:N	2:B:481:HEM:HMA3	2.27	0.49
1:A:121:ARG:O	1:A:125:GLN:HG3	2.13	0.49
1:B:254:ASP:O	1:B:255:THR:C	2.56	0.49
1:C:246:ARG:HA	1:C:249:GLU:HG2	1.95	0.49
1:C:288:MET:HE2	1:C:288:MET:CA	2.35	0.49
1:A:42:VAL:O	1:A:45:ILE:HG22	2.13	0.48
1:A:51:ASP:OD1	1:A:51:ASP:C	2.56	0.48
1:A:135:VAL:HA	1:A:138:PHE:CE2	2.47	0.48
2:C:481:HEM:HHH	2:C:481:HEM:CBH	2.30	0.48
1:D:220:LEU:HB2	1:D:222:LEU:CD1	2.42	0.48
1:A:53:LEU:CD1	1:A:57:LEU:HD22	2.43	0.48
1:D:184:GLY:O	1:D:188:ARG:HG3	2.13	0.48
1:B:84:GLN:NE2	1:B:369:GLY:HA2	2.29	0.48
1:B:105:MET:CE	1:B:109:PHE:HZ	2.26	0.48
1:D:125:GLN:HA	1:D:128:PHE:HD1	1.78	0.48
1:A:157:TRP:NE1	1:A:164:ILE:HD13	2.28	0.48
1:A:213:PHE:C	1:A:215:PRO:HD3	2.39	0.48
1:C:95:ILE:HG21	1:C:366:VAL:HG12	1.96	0.48
1:D:106:VAL:N	1:D:107:PRO:HD2	2.29	0.48
1:D:145:ILE:O	1:D:149:VAL:HG23	2.13	0.48
1:D:214:LEU:CB	1:D:217:ILE:HG22	2.42	0.48
1:B:325:PHE:HB3	1:B:329:LEU:CD2	2.43	0.48
1:B:350:ARG:C	1:B:350:ARG:CD	2.85	0.48
1:C:81:ASP:OD2	1:C:84:GLN:HG2	2.13	0.48
1:D:214:LEU:HB2	1:D:217:ILE:CG2	2.43	0.48
1:C:113:VAL:O	1:C:114:ALA:C	2.54	0.48
1:C:200:LEU:HB3	1:C:204:GLU:OE2	2.13	0.48
1:D:82:VAL:HG22	1:D:411:ALA:HA	1.95	0.48
1:A:45:ILE:O	1:A:46:ILE:C	2.57	0.48
1:C:422:CYS:HA	2:C:481:HEM:CHA	2.44	0.48
1:A:94:GLU:O	1:A:363:LEU:HB2	2.14	0.48
1:A:202:LYS:HB3	1:A:231:ALA:HB2	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:350:ARG:C	1:A:350:ARG:CD	2.87	0.48
1:B:216:TRP:CB	1:C:215:PRO:HG2	2.43	0.48
1:B:381:CYS:O	1:B:383:PRO:HD3	2.12	0.48
1:D:293:HIS:CA	1:D:296:THR:HG22	2.44	0.48
1:A:42:VAL:CG2	1:C:41:PHE:HD2	2.27	0.48
1:A:106:VAL:N	1:A:107:PRO:CD	2.76	0.48
1:A:331:TYR:O	1:A:335:MET:HG2	2.14	0.48
1:B:261:LEU:O	1:B:265:LEU:HG	2.13	0.48
1:C:319:HIS:HA	1:C:322:ILE:HG12	1.95	0.48
1:D:220:LEU:HB2	1:D:222:LEU:HD13	1.96	0.48
1:D:404:ASN:HD22	1:D:405:MET:N	2.12	0.48
3:A:490:TPF:F2	3:A:490:TPF:C5	2.50	0.48
1:B:406:LYS:O	1:B:406:LYS:CG	2.60	0.48
1:D:146:GLN:NE2	1:D:329:LEU:HG	2.29	0.48
1:B:138:PHE:HD1	1:B:141:PHE:CD2	2.31	0.47
1:B:203:MET:HG3	1:B:231:ALA:HB3	1.95	0.47
1:C:202:LYS:HB3	1:C:202:LYS:NZ	2.29	0.47
1:D:204:GLU:OE1	1:D:289:PHE:CE1	2.67	0.47
1:A:240:SER:O	1:A:244:ILE:HG13	2.14	0.47
1:A:101:VAL:C	1:A:102:TYR:HD1	2.22	0.47
1:A:324:GLU:O	1:A:324:GLU:HG3	2.15	0.47
1:B:94:GLU:OE1	1:B:94:GLU:N	2.42	0.47
1:A:455:ASN:ND2	1:A:457:HIS:H	2.13	0.47
1:B:258:SER:HB3	1:B:262:ALA:CB	2.42	0.47
1:C:106:VAL:HG22	1:C:116:ALA:HB2	1.95	0.47
1:C:297:ILE:HD13	1:C:461:VAL:O	2.14	0.47
1:D:356:VAL:HG12	1:D:357:MET:HG2	1.96	0.47
1:D:432:VAL:O	1:D:436:LEU:HG	2.15	0.47
1:B:215:PRO:C	1:B:217:ILE:N	2.69	0.47
1:C:78:VAL:HA	1:C:380:ALA:O	2.15	0.47
1:C:106:VAL:HB	1:C:107:PRO:HD3	1.96	0.47
1:C:350:ARG:C	1:C:350:ARG:CD	2.88	0.47
1:A:50:LYS:C	1:A:50:LYS:CD	2.88	0.47
1:A:475:LYS:O	1:A:476:LYS:HB2	2.15	0.47
1:B:213:PHE:C	1:B:214:LEU:CD1	2.88	0.47
1:C:103:SER:C	1:C:105:MET:H	2.22	0.47
1:C:288:MET:HA	1:C:288:MET:CE	2.35	0.47
1:D:317:LYS:O	1:D:320:GLN:HB2	2.15	0.47
1:A:313:ARG:HG2	1:A:314:HIS:N	2.30	0.47
1:A:412:PHE:C	1:A:412:PHE:CD2	2.92	0.47
1:B:271:ASP:C	1:B:271:ASP:OD1	2.57	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:325:PHE:HE2	1:B:333:ASN:CB	2.26	0.47
1:C:42:VAL:CG1	1:C:45:ILE:CG2	2.84	0.47
1:C:101:VAL:C	1:C:102:TYR:HD1	2.23	0.47
1:C:105:MET:C	1:C:107:PRO:HD2	2.39	0.47
1:D:172:ALA:O	1:D:175:ILE:HG22	2.14	0.47
1:D:347:GLU:HA	1:D:405:MET:HE1	1.96	0.47
1:D:389:ASP:O	1:D:390:GLU:C	2.57	0.47
1:A:135:VAL:HA	1:A:138:PHE:HD2	1.76	0.47
1:B:42:VAL:O	1:B:45:ILE:HG22	2.15	0.47
1:B:141:PHE:O	1:B:145:ILE:HG13	2.15	0.47
1:C:190:ARG:HH22	1:C:241:GLU:CD	2.22	0.47
1:C:253:LYS:O	1:C:253:LYS:CG	2.63	0.47
1:A:356:VAL:HG22	1:A:384:LEU:HD22	1.96	0.47
1:B:128:PHE:O	1:B:132:GLU:HG2	2.15	0.47
1:B:170:CYS:HA	1:B:173:MET:HE3	1.97	0.47
1:B:254:ASP:O	1:B:256:ASN:CG	2.58	0.47
1:B:395:ASN:N	1:B:396:PRO:HD3	2.29	0.47
1:C:95:ILE:N	1:C:95:ILE:CD1	2.73	0.47
1:C:103:SER:C	1:C:105:MET:N	2.72	0.47
1:C:195:GLN:HE22	1:D:164:ILE:HA	1.80	0.47
1:D:222:LEU:O	1:D:226:TYR:CD2	2.68	0.47
1:B:317:LYS:HA	1:B:320:GLN:HE21	1.79	0.47
1:D:36:HIS:CD2	1:D:37:GLY:N	2.83	0.47
1:D:119:TYR:N	1:D:120:PRO:HD2	2.31	0.47
1:D:350:ARG:O	1:D:387:HIS:HD2	1.98	0.47
1:D:367:GLN:H	1:D:367:GLN:NE2	1.98	0.47
1:B:53:LEU:HD11	1:B:388:GLN:HG3	1.98	0.46
1:B:98:PRO:HG3	1:B:420:HIS:CE1	2.50	0.46
1:C:36:HIS:HD2	1:C:63:TYR:OH	1.97	0.46
1:C:101:VAL:HG11	1:C:359:MET:CB	2.44	0.46
1:B:113:VAL:CG1	1:B:114:ALA:N	2.75	0.46
1:B:191:LEU:HD13	1:B:238:ILE:HD13	1.96	0.46
1:B:217:ILE:HG23	1:B:218:LEU:N	2.29	0.46
1:C:206:CYS:HA	1:C:224:GLN:HB3	1.98	0.46
1:D:301:TRP:O	1:D:302:SER:C	2.58	0.46
1:D:324:GLU:O	1:D:324:GLU:HG3	2.15	0.46
1:D:333:ASN:O	1:D:338:MET:CG	2.63	0.46
1:A:87:LYS:HD3	1:A:367:GLN:O	2.15	0.46
1:A:195:GLN:O	1:A:198:GLN:HB2	2.15	0.46
1:A:356:VAL:CG2	1:A:384:LEU:HD22	2.45	0.46
1:B:435:VAL:O	1:B:439:VAL:HG23	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:44:HIS:HD2	1:C:70:ASN:N	1.89	0.46
1:D:89:PHE:O	1:D:418:GLY:HA3	2.16	0.46
1:D:435:VAL:O	1:D:439:VAL:HG23	2.15	0.46
1:A:370:LYS:HE3	1:A:371:TYR:OH	2.15	0.46
1:B:100:GLU:H	1:B:100:GLU:CD	2.22	0.46
1:C:204:GLU:OE1	1:C:293:HIS:NE2	2.48	0.46
1:C:252:GLN:NE2	1:C:254:ASP:H	2.11	0.46
1:D:210:ALA:O	1:D:214:LEU:HD23	2.16	0.46
1:A:40:PRO:CG	1:C:39:THR:HB	2.45	0.46
1:C:50:LYS:HD3	1:C:50:LYS:O	2.16	0.46
1:B:239:LEU:O	1:B:243:ILE:HG13	2.16	0.46
1:A:98:PRO:HG3	1:A:420:HIS:NE2	2.31	0.46
1:A:315:LEU:HD11	1:A:319:HIS:CE1	2.51	0.46
1:B:106:VAL:HG22	1:B:116:ALA:HB2	1.98	0.46
1:C:84:GLN:OE1	1:C:87:LYS:HG3	2.16	0.46
1:B:133:LEU:HD13	2:B:481:HEM:HAC	1.98	0.45
1:C:240:SER:C	1:C:244:ILE:HD11	2.41	0.45
1:A:112:GLY:O	1:A:117:ALA:HB2	2.16	0.45
1:A:174:ILE:HB	1:A:296:THR:HG22	1.99	0.45
1:B:246:ARG:HA	1:B:249:GLU:HG2	1.98	0.45
1:C:103:SER:O	1:C:106:VAL:HG23	2.15	0.45
1:C:156:ASN:C	1:C:157:TRP:CD1	2.94	0.45
1:C:204:GLU:OE1	1:C:293:HIS:HE1	1.97	0.45
1:D:105:MET:C	1:D:107:PRO:HD2	2.41	0.45
1:B:335:MET:CE	1:B:335:MET:CA	2.90	0.45
1:C:170:CYS:O	1:C:174:ILE:HG12	2.17	0.45
1:D:161:GLU:HB2	1:D:471:LYS:HE3	1.99	0.45
1:D:293:HIS:CA	1:D:296:THR:CG2	2.92	0.45
1:A:100:GLU:CD	1:A:100:GLU:H	2.24	0.45
1:B:119:TYR:N	1:B:120:PRO:CD	2.79	0.45
1:C:321:GLU:OE2	1:C:338:MET:HA	2.17	0.45
1:C:322:ILE:HA	1:C:325:PHE:HD1	1.82	0.45
1:C:455:ASN:ND2	1:C:457:HIS:CD2	2.75	0.45
1:D:138:PHE:CE2	1:D:427:PHE:HA	2.52	0.45
1:B:307:MET:HE2	1:B:445:PHE:CB	2.47	0.45
1:C:84:GLN:OE1	1:C:87:LYS:HE3	2.17	0.45
1:C:224:GLN:OE1	1:C:224:GLN:N	2.41	0.45
1:D:39:THR:OG1	1:D:43:GLY:N	2.50	0.45
1:B:211:ALA:HA	1:B:217:ILE:HG21	1.98	0.45
1:C:53:LEU:CD1	1:C:57:LEU:HD13	2.47	0.45
1:C:101:VAL:CG1	1:C:101:VAL:O	2.65	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:236:GLN:HE22	1:C:278:HIS:HA	1.82	0.45
1:C:470:VAL:CG1	1:C:471:LYS:N	2.79	0.45
1:D:470:VAL:CG1	1:D:471:LYS:N	2.79	0.45
1:B:87:LYS:CD	1:B:368:VAL:HA	2.47	0.45
1:B:188:ARG:CA	1:B:191:LEU:O	2.52	0.45
1:B:216:TRP:HB3	1:C:215:PRO:HG2	1.99	0.45
1:D:39:THR:OG1	1:D:42:VAL:CG1	2.64	0.45
1:D:46:ILE:HD12	1:D:46:ILE:N	2.32	0.45
1:D:76:ILE:HA	1:D:378:ILE:O	2.17	0.45
1:A:301:TRP:O	1:A:305:HIS:CD2	2.70	0.45
1:C:196:PHE:C	1:C:198:GLN:N	2.74	0.45
1:A:325:PHE:HB3	1:A:329:LEU:HD21	1.98	0.45
1:B:289:PHE:CD2	1:B:289:PHE:C	2.94	0.45
1:A:78:VAL:O	1:A:78:VAL:CG2	2.63	0.44
1:A:139:GLN:OE1	1:A:140:ASN:CG	2.59	0.44
1:B:248:LYS:C	1:B:250:GLU:H	2.24	0.44
1:C:95:ILE:CG2	1:C:366:VAL:HG13	2.46	0.44
1:C:141:PHE:HB2	5:C:484:HOH:O	2.17	0.44
1:A:34:VAL:O	1:A:35:VAL:C	2.61	0.44
1:A:129:LEU:HD21	1:A:287:ALA:HB2	1.99	0.44
1:B:45:ILE:HG23	1:B:46:ILE:N	2.33	0.44
1:D:324:GLU:HA	1:D:324:GLU:OE1	2.16	0.44
1:D:470:VAL:HG12	1:D:471:LYS:O	2.17	0.44
1:A:301:TRP:NE1	1:A:463:PRO:HD3	2.33	0.44
1:B:182:LEU:CD1	1:B:288:MET:CE	2.95	0.44
1:B:384:LEU:O	1:B:388:GLN:HG2	2.16	0.44
1:C:82:VAL:CG1	1:C:408:VAL:HG11	2.48	0.44
1:C:192:ASP:OD1	1:C:192:ASP:C	2.59	0.44
1:D:389:ASP:O	1:D:391:GLU:N	2.51	0.44
1:D:429:LEU:O	1:D:433:LYS:HD3	2.18	0.44
1:A:210:ALA:C	1:A:212:VAL:N	2.71	0.44
1:B:288:MET:HA	1:B:288:MET:CE	2.44	0.44
1:C:163:GLU:OE2	1:C:469:ARG:NH2	2.51	0.44
1:C:377:ASP:OD1	1:C:378:ILE:N	2.51	0.44
1:D:305:HIS:HB3	1:D:399:TRP:CE3	2.53	0.44
1:A:42:VAL:HG12	1:A:45:ILE:HG23	1.97	0.44
1:A:357:MET:HE3	1:A:357:MET:HB3	1.86	0.44
1:C:321:GLU:OE1	1:C:340:PHE:HB3	2.17	0.44
1:D:120:PRO:O	1:D:124:GLU:HG3	2.18	0.44
1:D:140:ASN:OD1	1:D:140:ASN:C	2.61	0.44
1:A:191:LEU:HD21	1:A:196:PHE:CD2	2.37	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:192:ASP:OD1	1:A:192:ASP:C	2.61	0.44
1:B:350:ARG:O	1:B:387:HIS:CD2	2.70	0.44
1:C:94:GLU:O	1:C:363:LEU:HB2	2.18	0.44
1:C:98:PRO:HG3	1:C:420:HIS:CE1	2.52	0.44
1:C:312:LYS:H	1:C:313:ARG:HH21	1.64	0.44
1:C:453:GLU:CG	1:C:454:PRO:HD2	2.36	0.44
1:A:256:ASN:OD1	1:A:256:ASN:N	2.50	0.44
1:B:81:ASP:OD1	1:B:83:HIS:HB2	2.17	0.44
1:C:103:SER:O	1:C:105:MET:N	2.51	0.44
1:C:254:ASP:O	1:C:254:ASP:CG	2.61	0.44
1:C:383:PRO:O	1:C:387:HIS:CD2	2.70	0.44
1:D:214:LEU:CB	1:D:217:ILE:CG2	2.95	0.44
1:C:313:ARG:HG2	1:C:314:HIS:N	2.32	0.44
1:D:82:VAL:HG21	1:D:411:ALA:CB	2.48	0.44
1:C:247:GLU:O	1:C:250:GLU:HB3	2.17	0.44
1:C:406:LYS:O	1:C:407:LEU:C	2.60	0.44
1:D:90:THR:N	1:D:91:PRO:CD	2.81	0.44
1:D:242:ILE:HD13	1:D:242:ILE:HA	1.92	0.44
1:A:216:TRP:HB3	1:D:216:TRP:CH2	2.53	0.43
1:A:238:ILE:O	1:A:242:ILE:HG12	2.17	0.43
1:B:455:ASN:HD22	1:B:456:TYR:N	2.11	0.43
1:C:194:ARG:CD	1:D:156:ASN:OD1	2.66	0.43
1:D:78:VAL:HA	1:D:380:ALA:O	2.18	0.43
1:A:113:VAL:HG12	1:A:114:ALA:N	2.33	0.43
1:A:138:PHE:HD1	1:A:430:LEU:CD2	2.24	0.43
1:B:42:VAL:HB	1:B:45:ILE:HG21	1.99	0.43
1:B:351:ARG:NH1	1:B:352:ASP:OD1	2.49	0.43
1:D:256:ASN:OD1	1:D:256:ASN:N	2.51	0.43
1:D:307:MET:CE	1:D:445:PHE:HB3	2.48	0.43
1:B:215:PRO:O	1:B:217:ILE:N	2.51	0.43
1:C:224:GLN:O	1:C:227:ARG:HB2	2.18	0.43
1:D:41:PHE:CD1	1:D:41:PHE:C	2.96	0.43
1:D:42:VAL:HG22	1:D:45:ILE:HG22	2.00	0.43
1:D:306:LEU:O	1:D:315:LEU:HD22	2.18	0.43
1:D:353:PRO:HA	1:D:354:PRO:HD3	1.91	0.43
1:A:414:GLY:O	2:A:481:HEM:HMA1	2.18	0.43
1:C:142:ALA:CB	1:C:143:PRO:CD	2.94	0.43
1:D:109:PHE:O	1:D:232:ARG:NH2	2.50	0.43
1:B:301:TRP:O	1:B:305:HIS:CD2	2.71	0.43
1:C:50:LYS:C	1:C:50:LYS:CD	2.92	0.43
1:D:390:GLU:O	1:D:394:PRO:HG3	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:375:GLU:OE2	1:C:119:TYR:CE2	2.71	0.43
1:C:51:ASP:OD1	1:C:54:GLY:CA	2.66	0.43
1:C:214:LEU:O	1:C:217:ILE:HG13	2.19	0.43
1:C:365:PRO:HA	1:C:373:VAL:O	2.19	0.43
1:D:301:TRP:O	1:D:304:LEU:N	2.52	0.43
1:D:358:LEU:HD22	2:D:481:HEM:HBA2	1.99	0.43
1:D:453:GLU:CG	1:D:454:PRO:HD2	2.48	0.43
1:A:67:PHE:CZ	1:A:78:VAL:HG21	2.53	0.43
1:A:154:LYS:O	1:A:154:LYS:HG2	2.18	0.43
1:A:424:GLY:HA3	2:A:481:HEM:C2C	2.53	0.43
1:C:304:LEU:HB3	1:C:451:LEU:HD11	2.01	0.43
1:C:330:ASN:OD1	1:C:330:ASN:C	2.61	0.43
1:D:139:GLN:OE1	1:D:139:GLN:N	2.30	0.43
1:D:353:PRO:CG	1:D:384:LEU:HA	2.49	0.43
1:A:40:PRO:HG3	1:C:39:THR:CG2	2.49	0.43
1:C:177:THR:OG1	1:C:431:GLN:NE2	2.52	0.43
1:C:475:LYS:HE3	1:C:475:LYS:CA	2.49	0.43
1:D:292:GLN:O	1:D:296:THR:CG2	2.59	0.43
1:C:325:PHE:CB	1:C:329:LEU:HD21	2.49	0.43
1:D:54:GLY:O	1:D:58:LYS:HG3	2.19	0.43
1:A:223:PRO:HG2	1:A:224:GLN:OE1	2.19	0.43
1:B:86:SER:O	1:B:90:THR:HB	2.19	0.43
1:C:182:LEU:O	1:C:259:ASP:HB2	2.19	0.43
1:C:362:VAL:HG12	1:C:375:GLU:HA	2.00	0.43
1:D:334:VAL:CG1	1:D:338:MET:SD	3.04	0.43
1:D:353:PRO:HG3	1:D:384:LEU:HA	2.00	0.43
1:A:140:ASN:C	1:A:143:PRO:HD2	2.44	0.42
1:B:325:PHE:HB3	1:B:329:LEU:HD21	2.01	0.42
1:B:453:GLU:CG	1:B:454:PRO:HD2	2.46	0.42
1:C:224:GLN:H	1:C:224:GLN:CD	2.25	0.42
1:B:288:MET:HE2	1:B:288:MET:CA	2.45	0.42
1:B:307:MET:HE2	1:B:445:PHE:HB2	2.01	0.42
1:D:455:ASN:ND2	1:D:455:ASN:C	2.74	0.42
1:A:476:LYS:HD3	1:A:476:LYS:O	2.19	0.42
1:D:60:LYS:HE3	1:D:80:GLY:O	2.19	0.42
1:D:307:MET:HE2	1:D:445:PHE:HB2	1.99	0.42
2:A:481:HEM:NC	3:A:490:TPF:HC7	2.35	0.42
1:B:101:VAL:HG12	1:B:102:TYR:CE1	2.51	0.42
1:B:304:LEU:CD1	1:B:452:PRO:HG2	2.47	0.42
1:D:42:VAL:HG22	1:D:45:ILE:HG21	2.01	0.42
1:B:217:ILE:CG2	1:B:218:LEU:N	2.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:446:GLU:O	1:B:470:VAL:HG13	2.20	0.42
1:D:38:THR:HA	1:D:44:HIS:CE1	2.55	0.42
1:D:337:GLU:C	1:D:339:PRO:HD3	2.44	0.42
1:B:138:PHE:O	1:B:139:GLN:C	2.63	0.42
1:B:220:LEU:O	1:B:222:LEU:N	2.52	0.42
1:C:194:ARG:HD2	1:D:156:ASN:OD1	2.20	0.42
1:C:252:GLN:NE2	1:C:254:ASP:N	2.67	0.42
3:D:490:TPF:F2	3:D:490:TPF:C5	2.48	0.42
1:B:65:GLY:O	1:B:80:GLY:CA	2.67	0.42
1:B:142:ALA:N	1:B:143:PRO:CD	2.82	0.42
1:D:82:VAL:HA	1:D:85:HIS:CD2	2.54	0.42
1:A:138:PHE:HE1	1:A:430:LEU:HD23	1.81	0.42
1:A:415:PHE:CZ	1:A:425:GLU:HG3	2.54	0.42
1:B:330:ASN:N	1:B:333:ASN:ND2	2.32	0.42
1:B:442:ASP:O	1:B:475:LYS:HB2	2.20	0.42
1:C:160:ASP:OD2	1:C:160:ASP:N	2.53	0.42
1:D:325:PHE:HB3	1:D:329:LEU:HD21	2.02	0.42
1:A:233:ALA:O	1:A:236:GLN:HB3	2.20	0.42
1:B:293:HIS:O	1:B:296:THR:HG23	2.20	0.42
1:C:120:PRO:O	1:C:124:GLU:HG3	2.20	0.42
1:C:166:ILE:HG23	1:C:167:LEU:N	2.35	0.42
1:D:67:PHE:CZ	1:D:78:VAL:CG2	3.00	0.42
1:D:128:PHE:O	1:D:132:GLU:HG2	2.19	0.42
1:D:356:VAL:HG13	1:D:384:LEU:CD2	2.49	0.42
1:D:389:ASP:C	1:D:391:GLU:N	2.77	0.42
1:B:268:VAL:HG12	1:B:269:TYR:O	2.20	0.42
1:C:101:VAL:HG11	1:C:359:MET:HE3	1.95	0.42
1:C:124:GLU:OE2	1:C:269:TYR:HD2	2.03	0.42
1:D:61:LYS:HB3	1:D:61:LYS:NZ	2.35	0.42
1:D:82:VAL:CG2	1:D:411:ALA:CB	2.98	0.42
1:D:86:SER:O	1:D:90:THR:HB	2.20	0.42
1:B:82:VAL:HA	1:B:85:HIS:CD2	2.54	0.41
1:B:324:GLU:HA	1:B:324:GLU:OE1	2.19	0.41
1:C:334:VAL:HA	1:C:338:MET:SD	2.60	0.41
1:D:48:PHE:CD1	1:D:69:MET:HE1	2.55	0.41
1:D:90:THR:HB	1:D:91:PRO:HD3	2.01	0.41
1:D:293:HIS:O	1:D:296:THR:CG2	2.67	0.41
1:B:406:LYS:C	1:B:408:VAL:N	2.77	0.41
1:C:387:HIS:CE1	1:C:412:PHE:HA	2.55	0.41
1:D:206:CYS:SG	1:D:225:SER:HA	2.60	0.41
1:D:358:LEU:HD22	2:D:481:HEM:CBA	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:89:PHE:CD2	1:C:417:ALA:HB3	2.55	0.41
1:C:452:PRO:CA	1:C:467:GLN:OE1	2.67	0.41
1:D:101:VAL:HG11	1:D:359:MET:CB	2.50	0.41
1:D:113:VAL:H	1:D:116:ALA:HB3	1.85	0.41
1:A:46:ILE:HG22	1:A:47:GLN:N	2.35	0.41
1:A:120:PRO:CG	1:A:121:ARG:H	2.33	0.41
1:C:67:PHE:CE2	1:C:78:VAL:CG2	3.03	0.41
1:D:331:TYR:CZ	1:D:335:MET:HG3	2.55	0.41
1:A:172:ALA:O	1:A:175:ILE:HG22	2.21	0.41
1:A:261:LEU:O	1:A:265:LEU:HG	2.20	0.41
1:A:400:ASN:O	1:A:403:ARG:HG2	2.20	0.41
1:B:140:ASN:C	1:B:143:PRO:HD2	2.45	0.41
1:D:312:LYS:N	1:D:313:ARG:HH21	2.17	0.41
1:D:415:PHE:CE2	1:D:425:GLU:HG3	2.55	0.41
1:A:142:ALA:CB	1:A:143:PRO:HD3	2.36	0.41
1:A:160:ASP:OD2	1:A:160:ASP:N	2.52	0.41
1:C:246:ARG:O	1:C:250:GLU:N	2.54	0.41
1:D:217:ILE:HD13	1:D:217:ILE:HG21	1.78	0.41
1:B:157:TRP:HB3	1:B:472:TYR:CZ	2.56	0.41
1:C:418:GLY:O	1:C:421:LYS:HG2	2.21	0.41
1:C:457:HIS:CE1	1:D:230:ASP:OD2	2.73	0.41
1:B:145:ILE:O	1:B:149:VAL:HG23	2.21	0.41
1:D:311:ASN:O	1:D:312:LYS:C	2.64	0.41
1:D:375:GLU:OE1	1:D:375:GLU:N	2.37	0.41
1:A:52:PRO:O	1:A:56:MET:HG3	2.21	0.41
1:B:95:ILE:CD1	1:B:95:ILE:H	2.34	0.41
1:B:215:PRO:O	1:B:216:TRP:C	2.64	0.41
1:C:112:GLY:C	1:C:117:ALA:HB2	2.45	0.41
1:C:149:VAL:O	1:C:153:MET:HE2	2.20	0.41
1:C:308:ASP:OD1	1:C:309:PRO:N	2.54	0.41
1:D:207:LEU:O	1:D:209:PRO:HD3	2.21	0.41
1:D:334:VAL:HG22	1:D:338:MET:SD	2.61	0.41
1:D:350:ARG:HA	1:D:387:HIS:HD2	1.80	0.41
1:D:473:ILE:N	1:D:473:ILE:CD1	2.83	0.41
1:A:235:LEU:HD21	1:A:285:VAL:HG22	2.00	0.41
1:A:395:ASN:N	1:A:396:PRO:HD3	2.36	0.41
1:B:45:ILE:HG23	1:B:46:ILE:CD1	2.50	0.41
1:C:175:ILE:HD12	1:C:175:ILE:HA	1.92	0.41
1:C:415:PHE:CZ	1:C:425:GLU:HG3	2.56	0.41
1:D:431:GLN:O	1:D:432:VAL:C	2.63	0.41
1:A:40:PRO:HG2	1:A:41:PHE:H	1.86	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:138:PHE:CD1	1:A:141:PHE:CD2	3.10	0.40
1:A:174:ILE:HG13	1:A:296:THR:HG22	2.03	0.40
1:B:357:MET:HE3	1:B:357:MET:HB3	1.83	0.40
1:D:298:THR:HG23	1:D:349:ILE:HG13	2.03	0.40
1:D:333:ASN:O	1:D:338:MET:HG2	2.20	0.40
1:B:359:MET:C	1:B:360:ARG:HG2	2.46	0.40
1:C:76:ILE:HA	1:C:378:ILE:O	2.21	0.40
1:C:139:GLN:HA	1:C:139:GLN:OE1	2.22	0.40
1:D:216:TRP:C	1:D:218:LEU:N	2.78	0.40
1:B:356:VAL:CG2	1:B:461:VAL:HG21	2.49	0.40
1:C:453:GLU:HG3	1:C:454:PRO:CD	2.42	0.40
1:A:90:THR:N	1:A:91:PRO:CD	2.85	0.40
1:A:453:GLU:CG	1:A:454:PRO:HD2	2.48	0.40
1:B:219:LYS:HE2	1:C:73:GLY:O	2.21	0.40
1:B:406:LYS:O	1:B:407:LEU:C	2.63	0.40
1:C:412:PHE:CD2	1:C:412:PHE:C	2.99	0.40
1:D:214:LEU:HB2	1:D:217:ILE:HG21	2.04	0.40
1:D:404:ASN:OD1	1:D:406:LYS:HG2	2.21	0.40
1:A:381:CYS:O	1:A:383:PRO:HD3	2.22	0.40
1:B:81:ASP:C	1:B:83:HIS:H	2.28	0.40
1:B:214:LEU:CD1	1:B:214:LEU:N	2.84	0.40
1:B:365:PRO:HD3	1:B:375:GLU:OE1	2.22	0.40
1:C:45:ILE:HG23	1:C:46:ILE:CD1	2.52	0.40
1:C:157:TRP:NE1	1:C:164:ILE:HD13	2.37	0.40
1:C:427:PHE:O	1:C:430:LEU:HB3	2.22	0.40
1:D:131:GLU:O	1:D:137:LYS:HE3	2.22	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 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	446/453 (98%)	428 (96%)	18 (4%)	0	100	100
1	B	447/453 (99%)	422 (94%)	24 (5%)	1 (0%)	43	64
1	C	443/453 (98%)	419 (95%)	24 (5%)	0	100	100
1	D	441/453 (97%)	420 (95%)	21 (5%)	0	100	100
All	All	1777/1812 (98%)	1689 (95%)	87 (5%)	1 (0%)	48	71

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	339	PRO

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	386/388 (100%)	371 (96%)	15 (4%)	28	51
1	B	387/388 (100%)	370 (96%)	17 (4%)	25	47
1	C	385/388 (99%)	370 (96%)	15 (4%)	28	51
1	D	383/388 (99%)	369 (96%)	14 (4%)	30	54
All	All	1541/1552 (99%)	1480 (96%)	61 (4%)	28	50

All (61) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	35	VAL
1	A	38	THR
1	A	45	ILE
1	A	57	LEU
1	A	78	VAL
1	A	95	ILE
1	A	100	GLU
1	A	101	VAL
1	A	119	TYR
1	A	217	ILE

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Mol	Chain	Res	Type
1	A	258	SER
1	A	313	ARG
1	A	367	GLN
1	A	413	CYS
1	A	476	LYS
1	B	39	THR
1	B	57	LEU
1	B	76	ILE
1	B	95	ILE
1	B	100	GLU
1	B	198	GLN
1	B	214	LEU
1	B	254	ASP
1	B	296	THR
1	B	313	ARG
1	B	333	ASN
1	B	335	MET
1	B	357	MET
1	B	367	GLN
1	B	372	VAL
1	B	406	LYS
1	B	455	ASN
1	C	35	VAL
1	C	57	LEU
1	C	76	ILE
1	C	78	VAL
1	C	81	ASP
1	C	82	VAL
1	C	95	ILE
1	C	100	GLU
1	C	156	ASN
1	C	244	ILE
1	C	296	THR
1	C	313	ARG
1	C	372	VAL
1	C	458	THR
1	C	476	LYS
1	D	35	VAL
1	D	76	ILE
1	D	100	GLU
1	D	160	ASP
1	D	192	ASP

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Mol	Chain	Res	Type
1	D	214	LEU
1	D	217	ILE
1	D	288	MET
1	D	313	ARG
1	D	338	MET
1	D	367	GLN
1	D	388	GLN
1	D	407	LEU
1	D	413	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (53) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	44	HIS
1	A	74	ASN
1	A	83	HIS
1	A	147	HIS
1	A	156	ASN
1	A	198	GLN
1	A	278	HIS
1	A	367	GLN
1	A	387	HIS
1	A	395	ASN
1	A	431	GLN
1	A	455	ASN
1	A	457	HIS
1	B	44	HIS
1	B	139	GLN
1	B	278	HIS
1	B	305	HIS
1	B	314	HIS
1	B	320	GLN
1	B	328	GLN
1	B	330	ASN
1	B	333	ASN
1	B	367	GLN
1	B	387	HIS
1	B	431	GLN
1	B	455	ASN
1	C	36	HIS
1	C	44	HIS
1	C	74	ASN

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Mol	Chain	Res	Type
1	C	156	ASN
1	C	278	HIS
1	C	293	HIS
1	C	314	HIS
1	C	320	GLN
1	C	343	GLN
1	C	387	HIS
1	C	431	GLN
1	C	455	ASN
1	C	457	HIS
1	D	36	HIS
1	D	44	HIS
1	D	74	ASN
1	D	198	GLN
1	D	256	ASN
1	D	278	HIS
1	D	319	HIS
1	D	320	GLN
1	D	328	GLN
1	D	333	ASN
1	D	367	GLN
1	D	387	HIS
1	D	388	GLN
1	D	455	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

9 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$
4	N8E	C	1	-	23,23,23	0.42	0	22,22,22	0.40	0
2	HEM	B	481	1,3	50,50,50	1.85	10 (20%)	67,82,82	1.32	3 (4%)
3	TPF	C	490	2	24,24,24	2.34	7 (29%)	34,34,34	3.05	16 (47%)
2	HEM	A	481	1,3	50,50,50	1.90	10 (20%)	67,82,82	1.37	4 (5%)
2	HEM	C	481	1,3	50,50,50	1.84	10 (20%)	67,82,82	1.35	5 (7%)
3	TPF	D	490	2	24,24,24	2.35	7 (29%)	34,34,34	3.15	15 (44%)
2	HEM	D	481	1,3	50,50,50	1.80	8 (16%)	67,82,82	1.29	5 (7%)
3	TPF	B	490	2	24,24,24	2.37	7 (29%)	34,34,34	3.08	13 (38%)
3	TPF	A	490	2	24,24,24	2.38	7 (29%)	34,34,34	3.02	15 (44%)

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
4	N8E	C	1	-	-	8/21/21/21	-
2	HEM	B	481	1,3	-	5/14/54/54	-
3	TPF	C	490	2	-	6/16/16/16	0/3/3/3
2	HEM	A	481	1,3	-	5/14/54/54	-
2	HEM	C	481	1,3	-	5/14/54/54	-
3	TPF	D	490	2	-	6/16/16/16	0/3/3/3
2	HEM	D	481	1,3	-	2/14/54/54	-
3	TPF	B	490	2	-	9/16/16/16	0/3/3/3
3	TPF	A	490	2	-	6/16/16/16	0/3/3/3

All (66) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	481	HEM	C3D-C2D	7.93	1.53	1.36
2	D	481	HEM	C3D-C2D	7.91	1.53	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	481	HEM	C3D-C2D	7.88	1.53	1.36
2	C	481	HEM	C3D-C2D	7.73	1.53	1.36
3	A	490	TPF	C6-N4	6.94	1.46	1.33
3	B	490	TPF	C6-N4	6.92	1.46	1.33
3	C	490	TPF	C6-N4	6.76	1.46	1.33
3	D	490	TPF	C6-N4	6.75	1.46	1.33
3	C	490	TPF	C3-N1	6.34	1.45	1.33
3	A	490	TPF	C3-N1	6.29	1.45	1.33
3	D	490	TPF	C3-N1	6.27	1.45	1.33
3	B	490	TPF	C3-N1	6.22	1.45	1.33
2	A	481	HEM	FE-ND	5.12	2.10	1.94
2	B	481	HEM	FE-ND	4.65	2.09	1.94
2	D	481	HEM	FE-ND	4.27	2.08	1.94
2	C	481	HEM	FE-ND	4.26	2.08	1.94
2	A	481	HEM	FE-NB	4.22	2.07	1.94
2	C	481	HEM	FE-NC	3.59	2.07	1.95
2	B	481	HEM	FE-NC	3.30	2.06	1.95
2	B	481	HEM	FE-NB	3.30	2.05	1.94
2	C	481	HEM	FE-NB	3.29	2.05	1.94
3	A	490	TPF	N1-N3	2.94	1.41	1.36
3	C	490	TPF	N1-N3	2.91	1.41	1.36
2	D	481	HEM	FE-NB	2.88	2.03	1.94
2	D	481	HEM	FE-NA	2.88	2.04	1.95
2	C	481	HEM	CAC-C3C	2.85	1.55	1.47
3	B	490	TPF	N4-N6	2.84	1.41	1.36
3	B	490	TPF	N1-N3	2.84	1.41	1.36
3	D	490	TPF	N1-N3	2.83	1.41	1.36
3	C	490	TPF	N4-N6	2.82	1.41	1.36
2	C	481	HEM	CAB-C3B	2.81	1.54	1.47
2	C	481	HEM	FE-NA	2.81	2.04	1.95
2	D	481	HEM	CAC-C3C	2.80	1.54	1.47
2	B	481	HEM	FE-NA	2.78	2.04	1.95
2	B	481	HEM	CAB-C3B	2.78	1.54	1.47
3	D	490	TPF	N4-N6	2.76	1.41	1.36
2	D	481	HEM	CAB-C3B	2.75	1.54	1.47
2	A	481	HEM	FE-NC	2.74	2.04	1.95
3	D	490	TPF	C1-C8	-2.74	1.50	1.53
2	B	481	HEM	CAC-C3C	2.73	1.54	1.47
2	A	481	HEM	FE-NA	2.73	2.04	1.95
2	A	481	HEM	CAB-C3B	2.72	1.54	1.47
3	A	490	TPF	C7-N6	2.69	1.36	1.32
3	A	490	TPF	N4-N6	2.68	1.41	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	481	HEM	FE-NC	2.68	2.04	1.95
2	A	481	HEM	CAC-C3C	2.63	1.54	1.47
3	B	490	TPF	C1-C8	-2.58	1.50	1.53
3	B	490	TPF	C7-N6	2.54	1.36	1.32
3	C	490	TPF	C7-N6	2.47	1.36	1.32
3	A	490	TPF	C1-C8	-2.45	1.50	1.53
3	D	490	TPF	C7-N6	2.35	1.36	1.32
2	A	481	HEM	CMB-C2B	2.27	1.55	1.50
3	A	490	TPF	C4-N3	2.19	1.36	1.32
3	C	490	TPF	C1-C8	-2.18	1.50	1.53
2	C	481	HEM	CMA-C3A	2.15	1.55	1.50
2	A	481	HEM	CMA-C3A	2.15	1.55	1.50
3	D	490	TPF	C4-N3	2.12	1.35	1.32
3	C	490	TPF	C4-N3	2.11	1.35	1.32
2	B	481	HEM	CMA-C3A	2.09	1.55	1.50
2	D	481	HEM	CMB-C2B	2.09	1.55	1.50
2	B	481	HEM	CMB-C2B	2.08	1.55	1.50
2	C	481	HEM	CMB-C2B	2.08	1.55	1.50
3	B	490	TPF	C4-N3	2.08	1.35	1.32
2	C	481	HEM	CMC-C2C	2.07	1.55	1.50
2	B	481	HEM	CMC-C2C	2.05	1.55	1.50
2	A	481	HEM	CMC-C2C	2.01	1.54	1.50

All (76) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	490	TPF	C2-N1-C3	-8.92	111.37	128.82
3	C	490	TPF	C2-N1-C3	-8.41	112.36	128.82
3	D	490	TPF	C2-N1-C3	-7.94	113.28	128.82
3	A	490	TPF	C2-N1-C3	-7.81	113.53	128.82
3	A	490	TPF	C5-N4-N6	-7.51	110.32	121.25
3	D	490	TPF	C5-N4-N6	-7.47	110.39	121.25
3	B	490	TPF	C5-N4-N6	-6.58	111.68	121.25
3	B	490	TPF	C2-N1-N3	-6.51	111.79	121.25
3	C	490	TPF	C5-N4-N6	-6.47	111.84	121.25
3	C	490	TPF	C5-N4-C6	-6.43	116.24	128.82
3	C	490	TPF	C2-N1-N3	-6.29	112.10	121.25
3	D	490	TPF	C5-N4-C6	-6.24	116.61	128.82
3	A	490	TPF	C5-N4-C6	-6.22	116.66	128.82
3	D	490	TPF	C2-N1-N3	-5.98	112.56	121.25
3	B	490	TPF	C5-N4-C6	-5.70	117.67	128.82
3	A	490	TPF	C2-N1-N3	-5.69	112.98	121.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	481	HEM	C4D-ND-C1D	5.52	111.75	105.21
2	B	481	HEM	C4D-ND-C1D	5.46	111.67	105.21
2	C	481	HEM	C4D-ND-C1D	5.38	111.58	105.21
2	D	481	HEM	C4D-ND-C1D	5.28	111.45	105.21
3	D	490	TPF	C1-C2-N1	-5.26	105.23	112.34
3	A	490	TPF	C1-C2-N1	-4.79	105.86	112.34
3	C	490	TPF	C1-C2-N1	-4.73	105.94	112.34
3	B	490	TPF	C1-C8-C13	-4.66	118.70	122.83
3	D	490	TPF	C1-C8-C13	-4.63	118.73	122.83
3	C	490	TPF	C1-C8-C13	-4.09	119.21	122.83
3	A	490	TPF	C12-C13-C8	-3.36	120.22	123.88
3	D	490	TPF	C12-C13-C8	-3.35	120.24	123.88
3	B	490	TPF	C12-C13-C8	-3.28	120.31	123.88
3	A	490	TPF	C1-C8-C13	-3.26	119.94	122.83
3	C	490	TPF	C12-C13-C8	-3.12	120.48	123.88
3	B	490	TPF	C1-C2-N1	-3.07	108.18	112.34
3	B	490	TPF	C6-N4-N6	-2.94	105.34	109.39
3	C	490	TPF	C13-C12-C11	2.92	119.78	116.67
3	D	490	TPF	C9-C8-C13	2.91	120.37	116.28
3	B	490	TPF	C9-C8-C13	2.86	120.31	116.28
3	D	490	TPF	C6-N4-N6	-2.79	105.55	109.39
3	A	490	TPF	C9-C8-C13	2.78	120.20	116.28
3	B	490	TPF	C13-C12-C11	2.77	119.62	116.67
3	D	490	TPF	C13-C12-C11	2.76	119.61	116.67
3	A	490	TPF	C13-C12-C11	2.74	119.58	116.67
3	B	490	TPF	C3-N2-C4	2.72	110.19	102.85
3	C	490	TPF	C3-N2-C4	2.71	110.17	102.85
3	D	490	TPF	C1-C5-N4	2.66	115.94	112.34
3	A	490	TPF	C3-N2-C4	2.65	110.01	102.85
3	D	490	TPF	C3-N2-C4	2.64	109.99	102.85
2	C	481	HEM	C3B-C4B-NB	-2.58	107.61	109.47
3	C	490	TPF	C9-C8-C13	2.53	119.84	116.28
3	C	490	TPF	C10-C11-C12	-2.47	119.97	123.23
3	A	490	TPF	C6-N4-N6	-2.45	106.00	109.39
2	C	481	HEM	C1B-NB-C4B	2.41	108.06	105.21
2	B	481	HEM	C1B-NB-C4B	2.40	108.05	105.21
3	B	490	TPF	C10-C11-C12	-2.38	120.09	123.23
2	A	481	HEM	C1B-NB-C4B	2.37	108.02	105.21
2	A	481	HEM	C2A-C1A-NA	-2.37	107.52	110.15
3	C	490	TPF	C6-N4-N6	-2.36	106.14	109.39
2	D	481	HEM	C1B-NB-C4B	2.34	107.98	105.21
3	D	490	TPF	C10-C11-C12	-2.33	120.15	123.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	490	TPF	C10-C11-C12	-2.33	120.16	123.23
2	C	481	HEM	CAD-CBD-CGD	-2.32	107.52	113.67
2	B	481	HEM	C3B-C4B-NB	-2.32	107.81	109.47
2	A	481	HEM	CAD-C3D-C4D	2.24	128.61	124.70
3	A	490	TPF	C5-C1-C8	-2.24	105.17	110.83
3	D	490	TPF	C5-C1-C8	-2.22	105.22	110.83
3	C	490	TPF	N1-C3-N2	-2.19	105.88	110.42
3	B	490	TPF	N1-C3-N2	-2.17	105.93	110.42
3	C	490	TPF	C6-N5-C7	2.16	108.70	102.85
2	D	481	HEM	C3B-C2B-C1B	2.16	108.03	106.41
3	D	490	TPF	N1-C3-N2	-2.15	105.97	110.42
2	C	481	HEM	C3B-C2B-C1B	2.15	108.03	106.41
3	A	490	TPF	C3-N1-N3	-2.14	106.44	109.39
2	D	481	HEM	CAD-CBD-CGD	-2.09	108.13	113.67
3	C	490	TPF	C5-C1-C8	-2.09	105.56	110.83
3	A	490	TPF	N1-C3-N2	-2.07	106.14	110.42
2	D	481	HEM	C3B-C4B-NB	-2.04	108.01	109.47
3	C	490	TPF	C3-N1-N3	-2.00	106.63	109.39

There are no chirality outliers.

All (52) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	481	HEM	C2C-C3C-CAC-CBC
2	C	481	HEM	C2B-C3B-CAB-CBB
2	D	481	HEM	C2B-C3B-CAB-CBB
2	D	481	HEM	C4B-C3B-CAB-CBB
3	A	490	TPF	O-C1-C5-N4
3	A	490	TPF	C2-C1-C5-N4
3	A	490	TPF	C8-C1-C5-N4
3	A	490	TPF	C1-C2-N1-C3
3	B	490	TPF	O-C1-C5-N4
3	B	490	TPF	C8-C1-C5-N4
3	B	490	TPF	C1-C2-N1-C3
3	C	490	TPF	O-C1-C5-N4
3	C	490	TPF	C2-C1-C5-N4
3	C	490	TPF	C8-C1-C5-N4
3	D	490	TPF	O-C1-C5-N4
3	D	490	TPF	C8-C1-C5-N4
3	D	490	TPF	C1-C2-N1-C3
3	B	490	TPF	C2-C1-C5-N4
3	D	490	TPF	C2-C1-C5-N4

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Mol	Chain	Res	Type	Atoms
4	C	1	N8E	C11-C10-O09-C08
4	C	1	N8E	O15-C16-C17-O18
4	C	1	N8E	C04-C05-C06-C07
3	A	490	TPF	C1-C5-N4-N6
3	C	490	TPF	C1-C5-N4-N6
3	D	490	TPF	C1-C5-N4-C6
4	C	1	N8E	C23-C22-O21-C20
3	B	490	TPF	C1-C5-N4-N6
3	D	490	TPF	C1-C5-N4-N6
3	A	490	TPF	C1-C5-N4-C6
3	B	490	TPF	C1-C5-N4-C6
2	B	481	HEM	C2C-C3C-CAC-CBC
3	C	490	TPF	C1-C5-N4-C6
2	B	481	HEM	C2B-C3B-CAB-CBB
2	A	481	HEM	C4C-C3C-CAC-CBC
2	C	481	HEM	C4B-C3B-CAB-CBB
2	C	481	HEM	C4C-C3C-CAC-CBC
4	C	1	N8E	O12-C13-C14-O15
3	C	490	TPF	C1-C2-N1-C3
4	C	1	N8E	O21-C22-C23-O24
2	B	481	HEM	C4C-C3C-CAC-CBC
3	B	490	TPF	C2-C1-C8-C13
2	C	481	HEM	CAA-CBA-CGA-O1A
3	B	490	TPF	O-C1-C8-C13
3	B	490	TPF	C5-C1-C8-C13
2	C	481	HEM	CAA-CBA-CGA-O2A
2	A	481	HEM	CAD-CBD-CGD-O2D
2	A	481	HEM	C2B-C3B-CAB-CBB
2	A	481	HEM	CAD-CBD-CGD-O1D
2	B	481	HEM	C4B-C3B-CAB-CBB
4	C	1	N8E	C02-C03-C04-C05
4	C	1	N8E	O09-C10-C11-O12
2	B	481	HEM	CAD-CBD-CGD-O2D

There are no ring outliers.

9 monomers are involved in 56 short contacts:

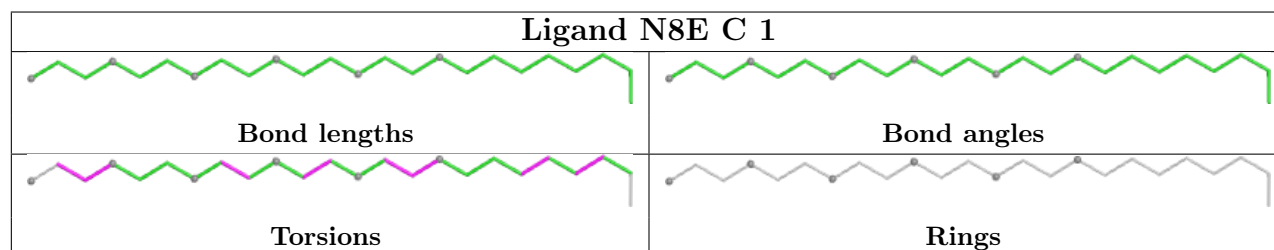
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	1	N8E	8	0
2	B	481	HEM	4	0
3	C	490	TPF	6	0
2	A	481	HEM	6	0

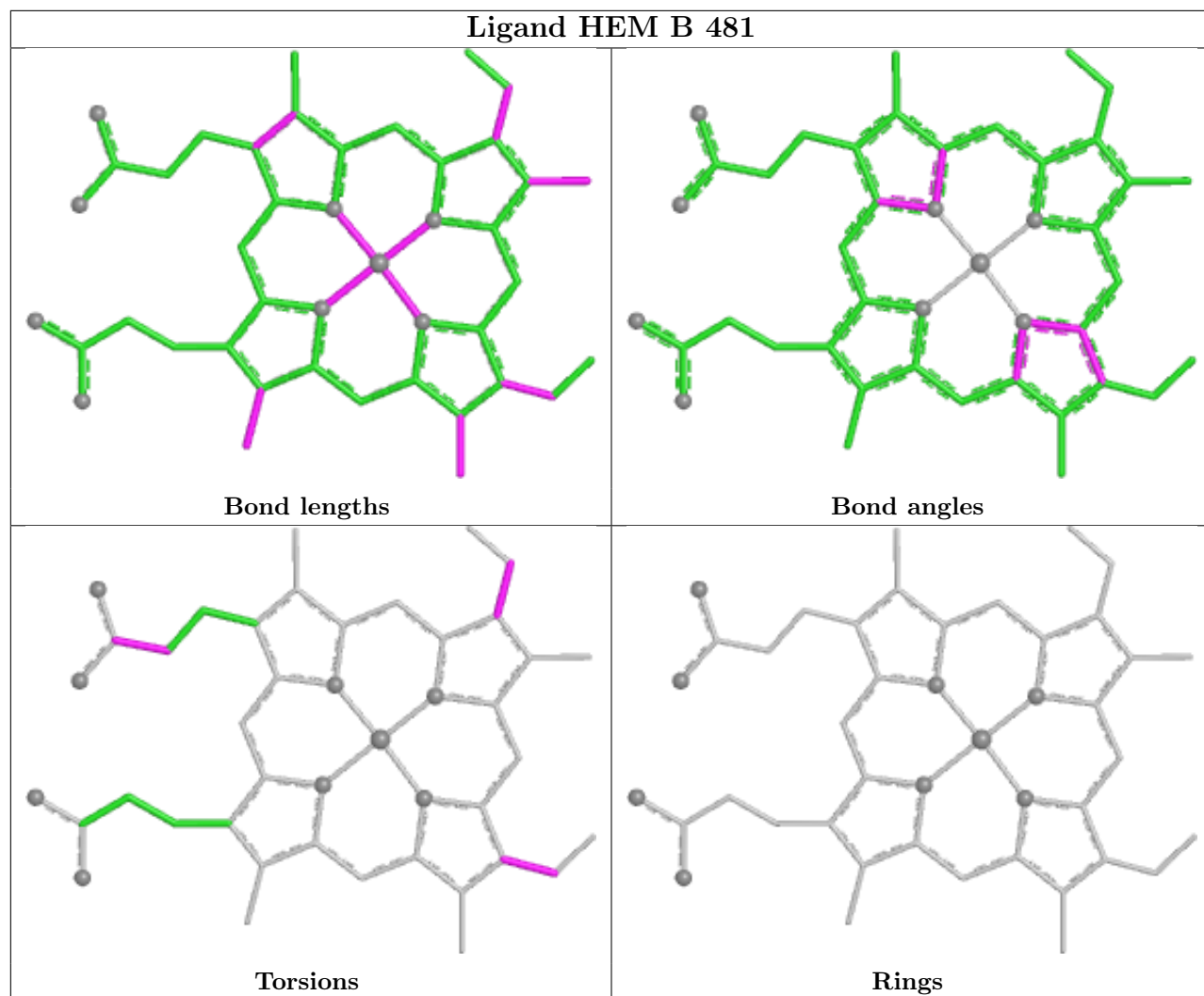
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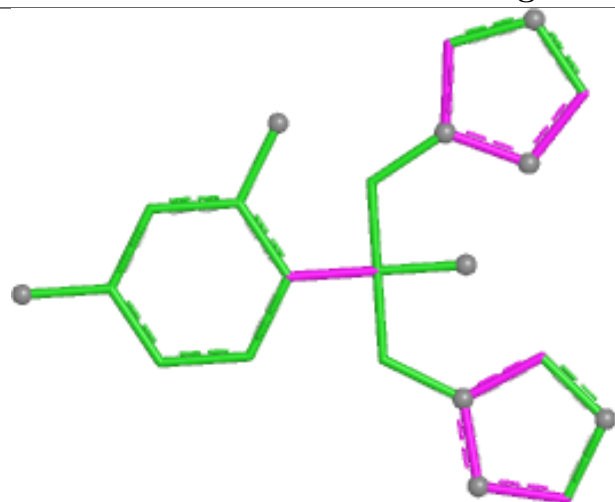
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	481	HEM	8	0
3	D	490	TPF	5	0
2	D	481	HEM	8	0
3	B	490	TPF	7	0
3	A	490	TPF	6	0

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.

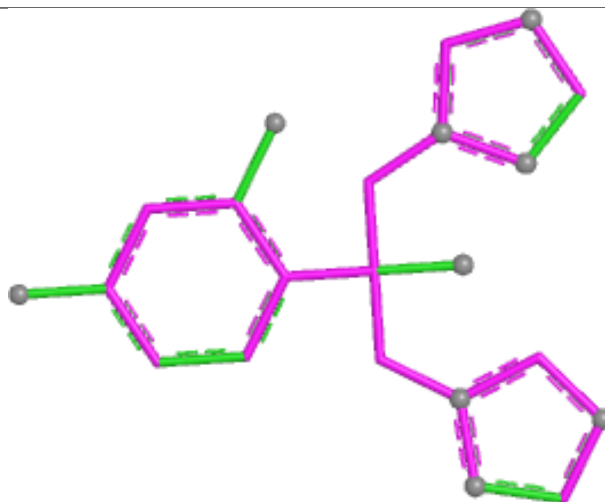




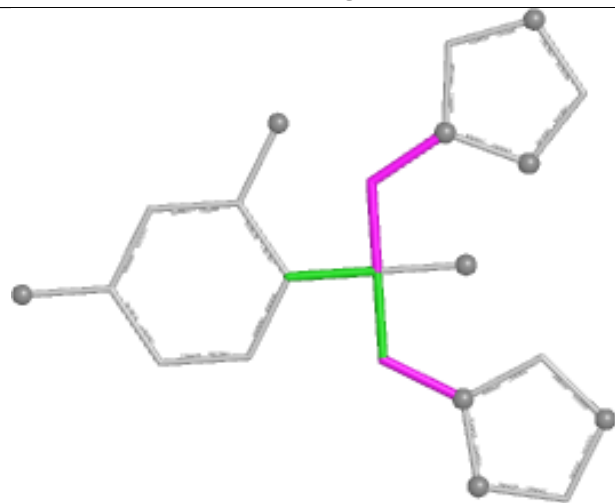
Ligand TPF C 490



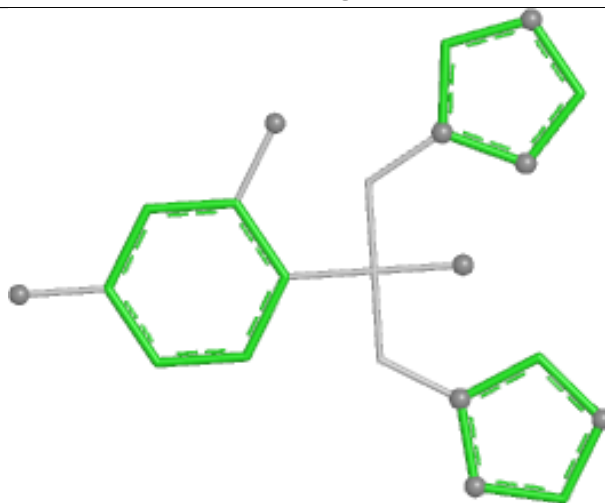
Bond lengths



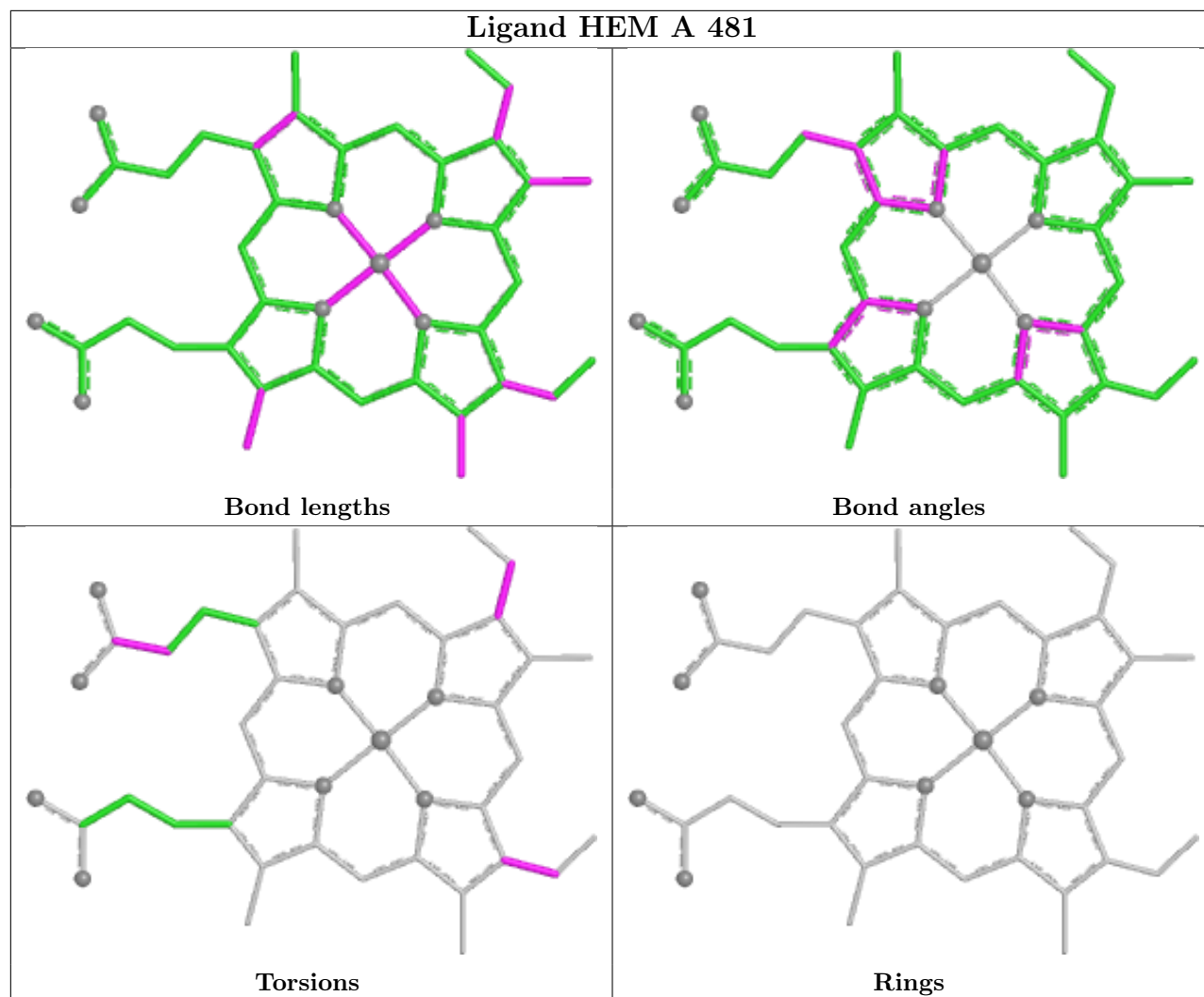
Bond angles

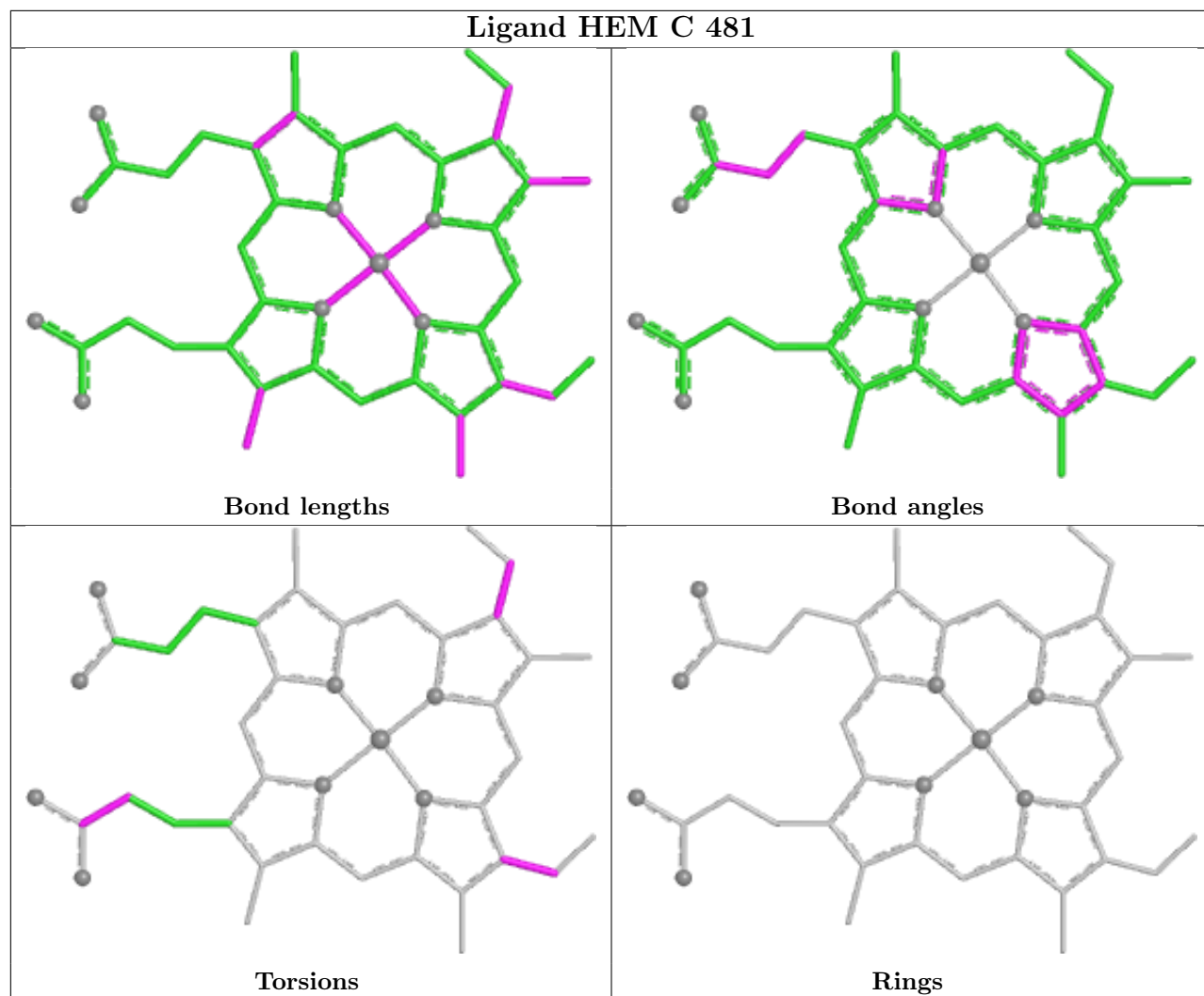


Torsions

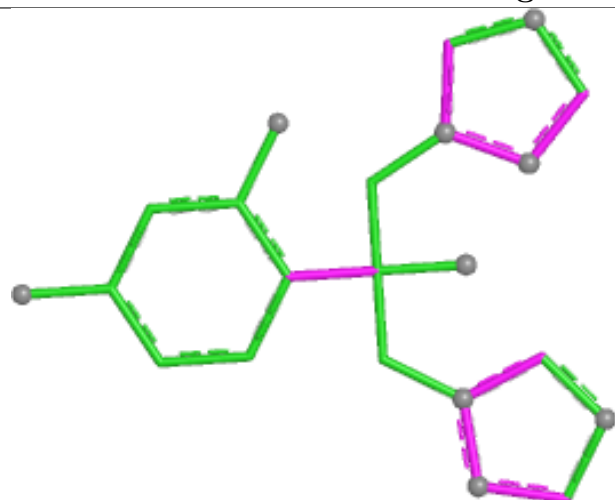


Rings

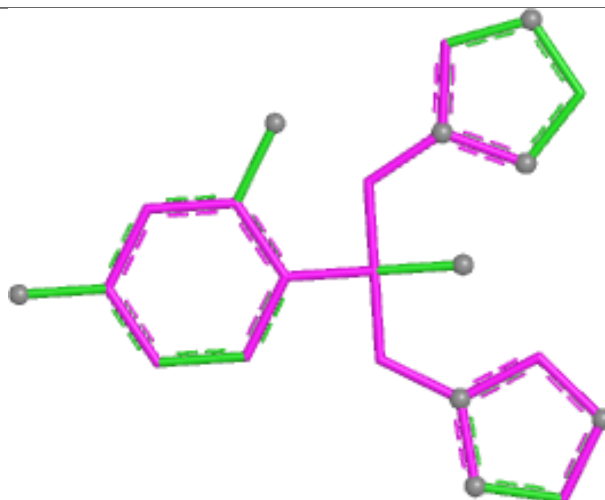




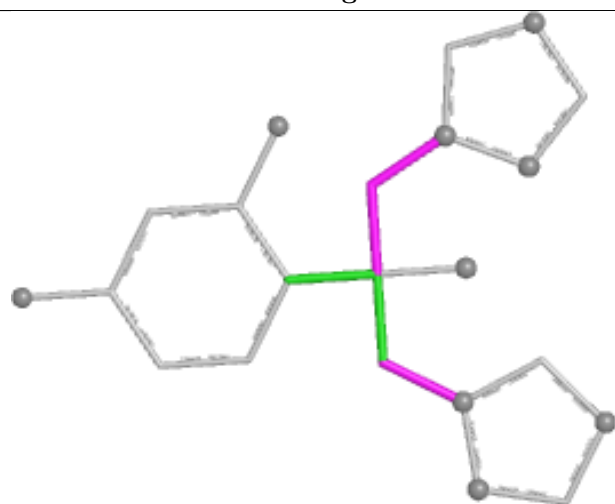
Ligand TPF D 490



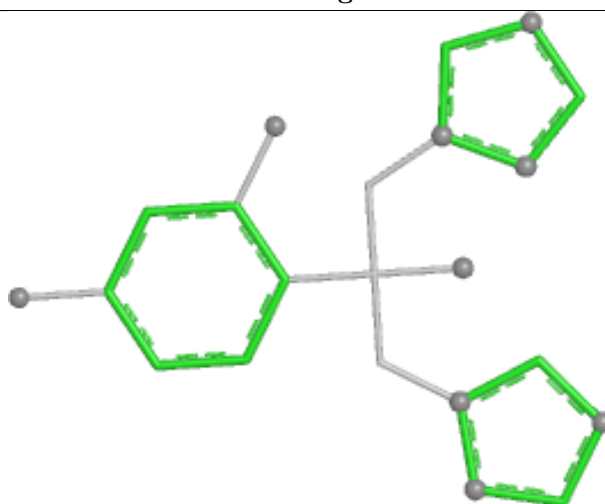
Bond lengths



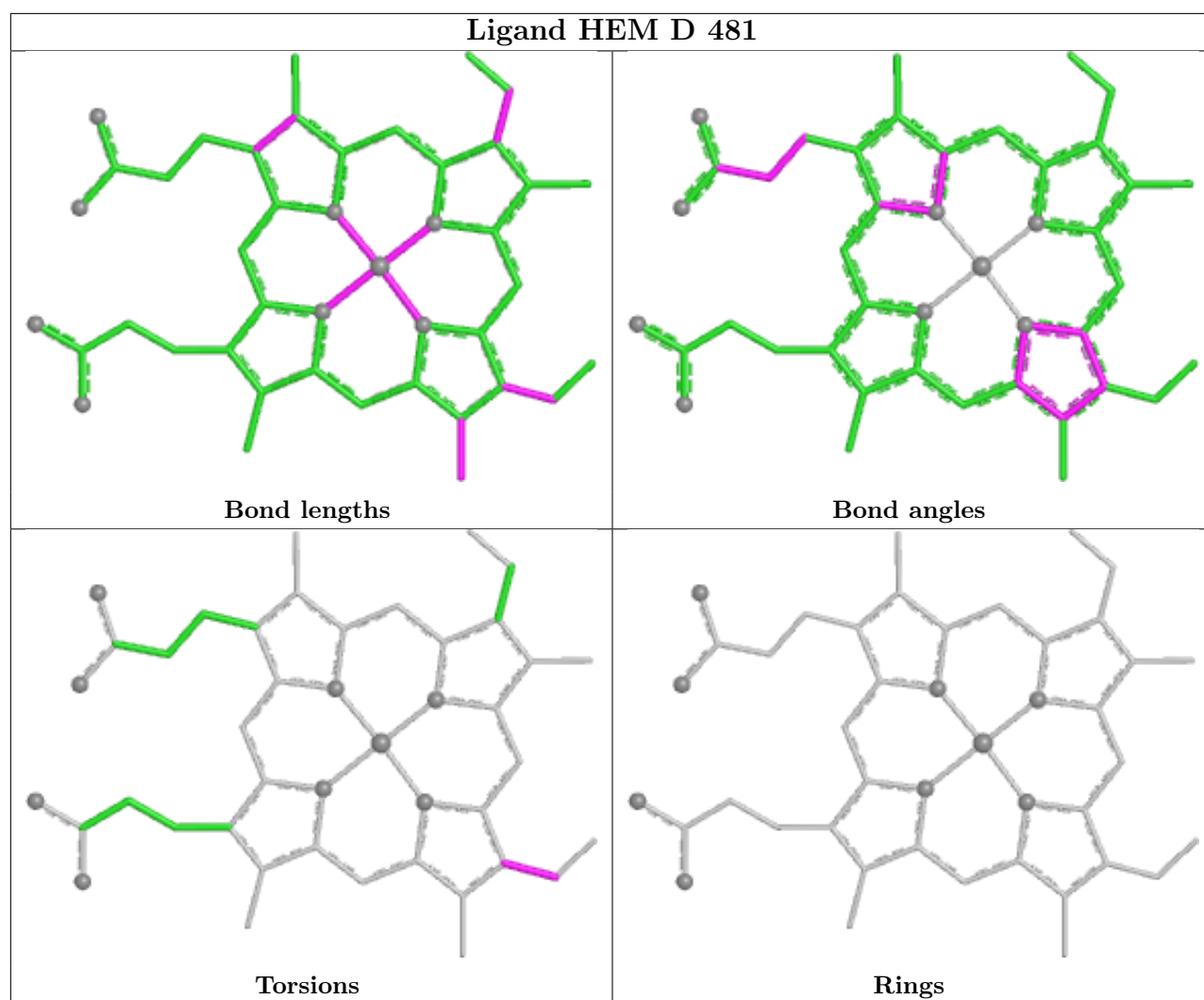
Bond angles



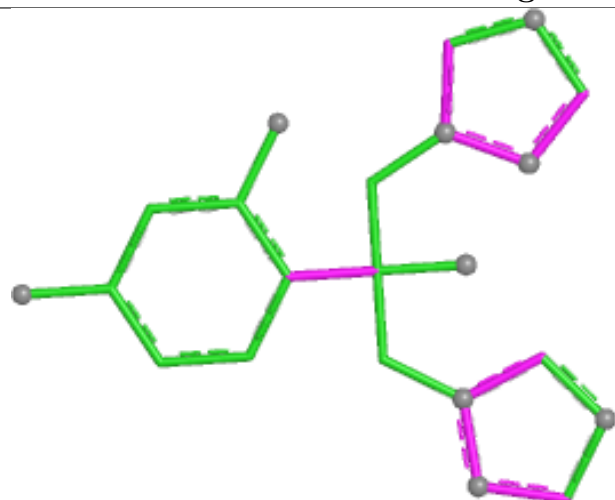
Torsions



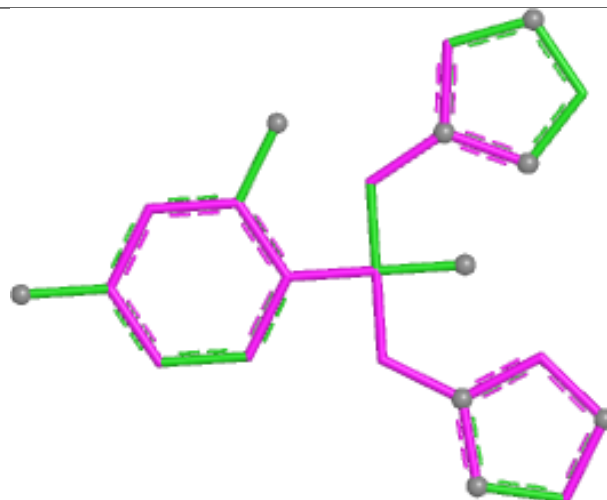
Rings



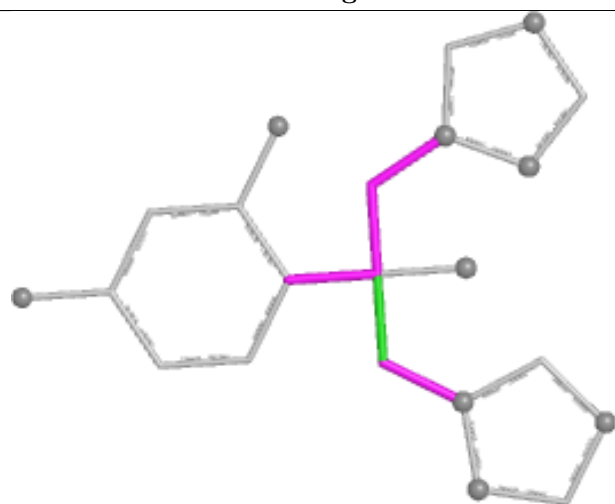
Ligand TPF B 490



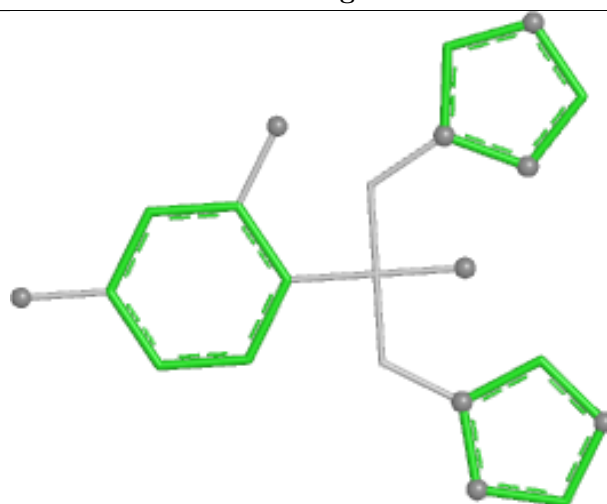
Bond lengths



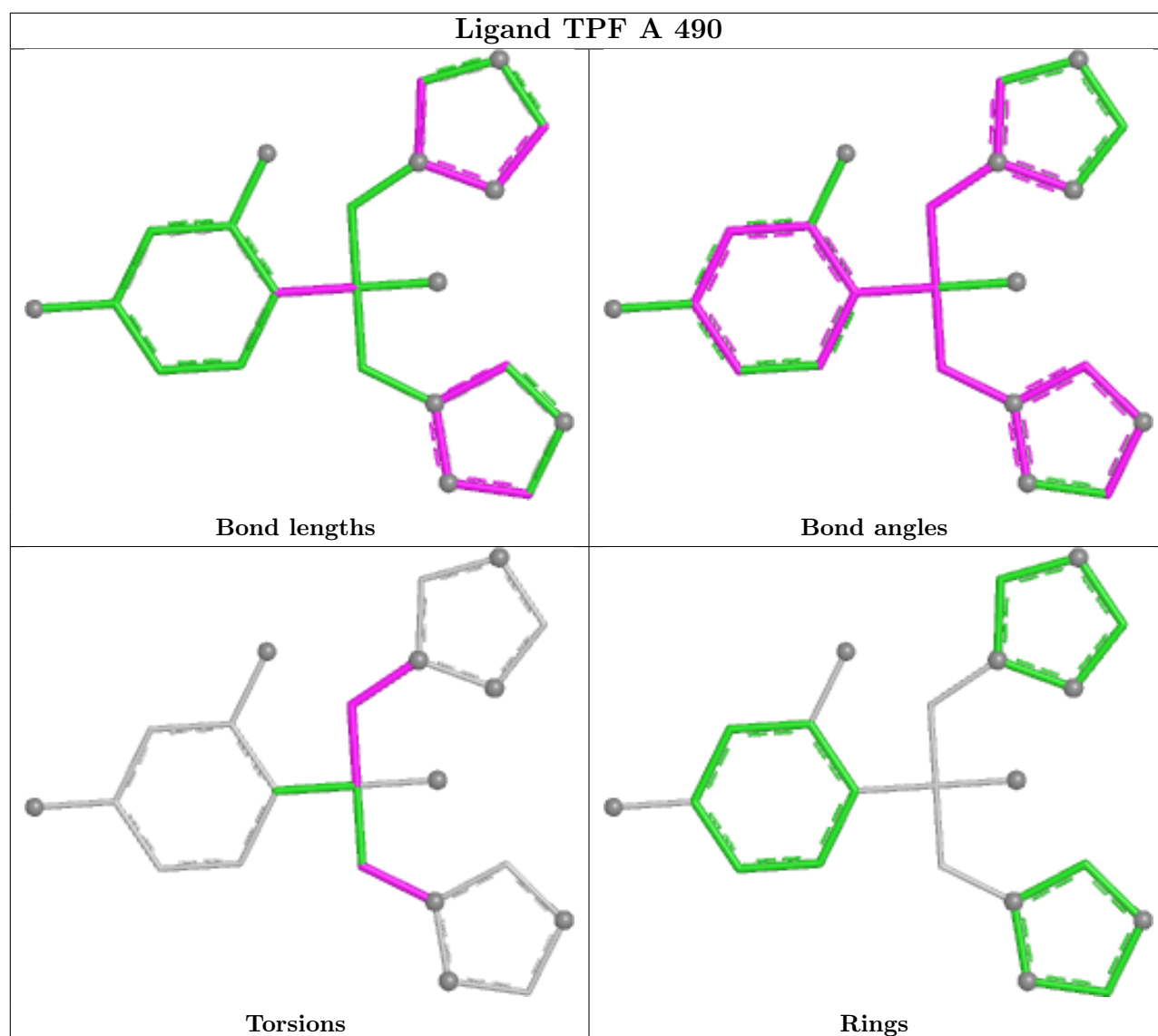
Bond angles



Torsions



Rings



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	448/453 (98%)	-0.17	5 (1%) 78 77	37, 55, 77, 97	0
1	B	449/453 (99%)	0.11	9 (2%) 65 63	33, 57, 75, 97	0
1	C	447/453 (98%)	-0.02	2 (0%) 88 89	33, 57, 76, 88	0
1	D	445/453 (98%)	0.18	8 (1%) 67 65	22, 54, 75, 98	0
All	All	1789/1812 (98%)	0.02	24 (1%) 75 75	22, 56, 76, 98	0

All (24) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	206	CYS	4.2
1	D	221	PRO	3.9
1	D	158	ASN	3.3
1	D	222	LEU	3.0
1	B	140	ASN	2.9
1	D	251	ALA	2.8
1	B	460	VAL	2.7
1	C	30	LYS	2.6
1	D	298	THR	2.5
1	A	456	TYR	2.5
1	A	198	GLN	2.5
1	D	106	VAL	2.5
1	A	72	CYS	2.4
1	A	257	THR	2.4
1	B	263	GLY	2.4
1	A	102	TYR	2.3
1	B	274	ARG	2.3
1	B	49	GLY	2.3
1	B	39	THR	2.3
1	B	128	PHE	2.3
1	D	448	LEU	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	286	ALA	2.1
1	D	213	PHE	2.1
1	B	201	ALA	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](#)

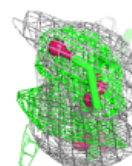
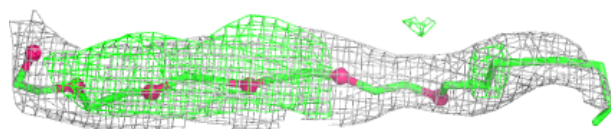
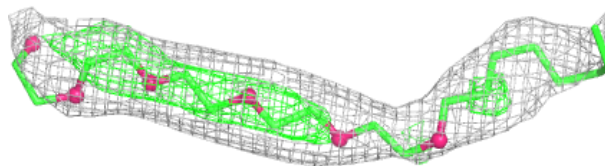
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	N8E	C	1	24/24	0.84	0.18	59,70,75,76	0
3	TPF	D	490	22/22	0.89	0.10	53,56,68,69	0
3	TPF	A	490	22/22	0.90	0.11	29,56,73,75	0
3	TPF	B	490	22/22	0.92	0.09	30,62,76,77	0
2	HEM	A	481	43/43	0.93	0.10	26,51,58,63	0
3	TPF	C	490	22/22	0.93	0.07	32,52,63,66	0
2	HEM	C	481	43/43	0.95	0.09	42,53,68,85	0
2	HEM	B	481	43/43	0.96	0.09	38,56,61,66	0
2	HEM	D	481	43/43	0.97	0.10	51,59,64,64	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.

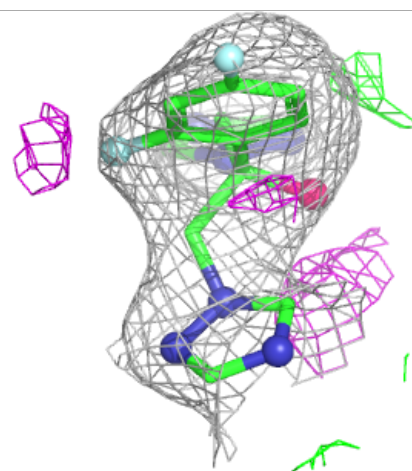
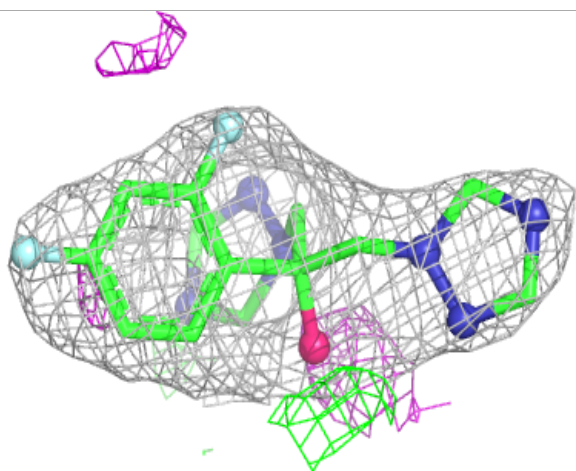
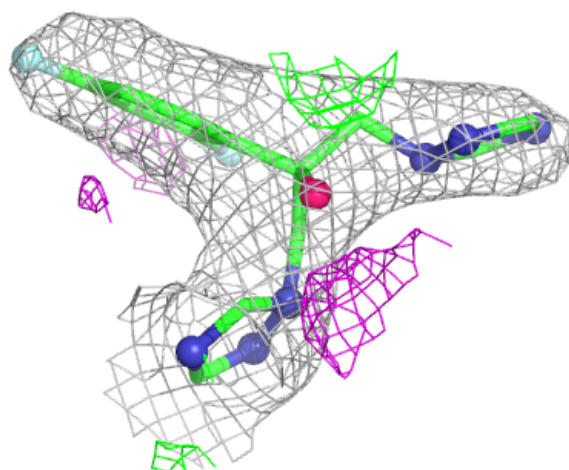
Electron density around N8E C 1:

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



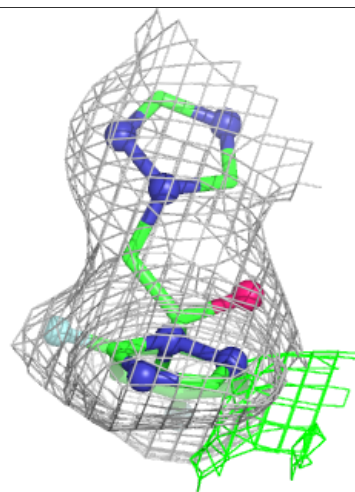
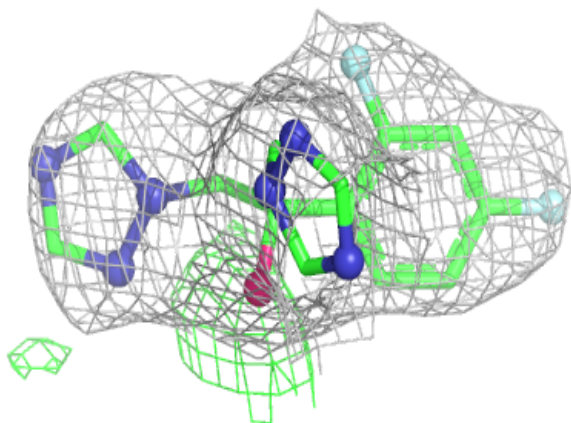
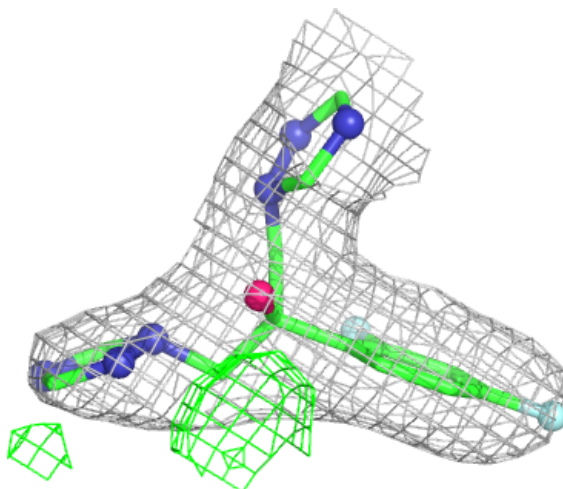
Electron density around TPF D 490:

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



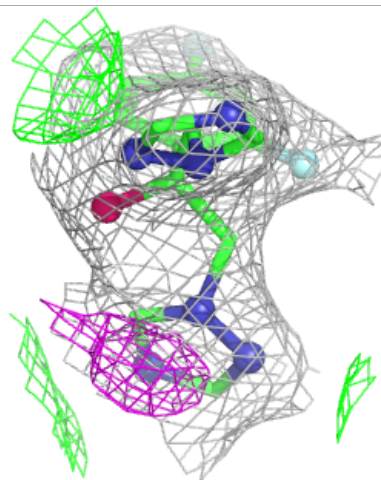
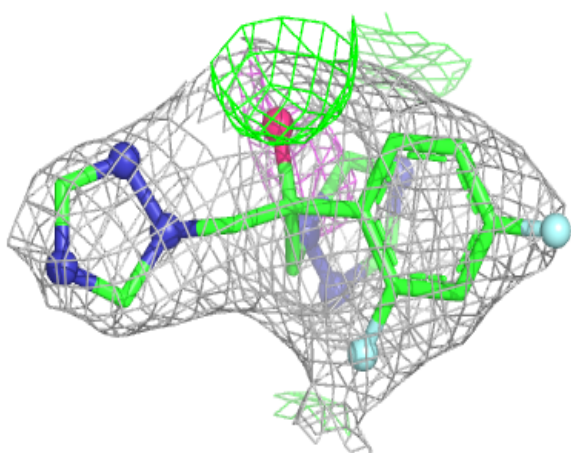
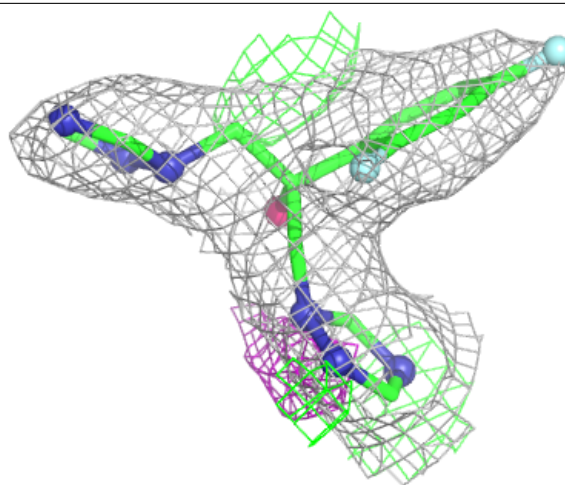
Electron density around TPF A 490:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



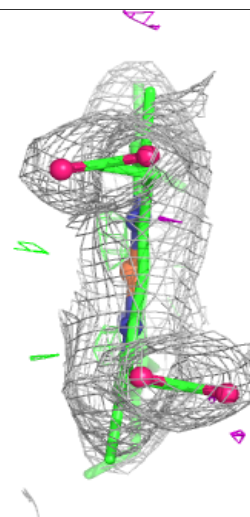
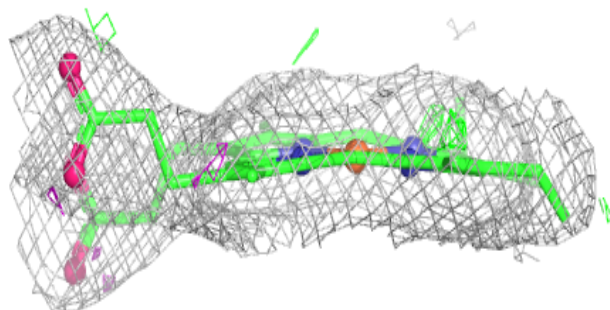
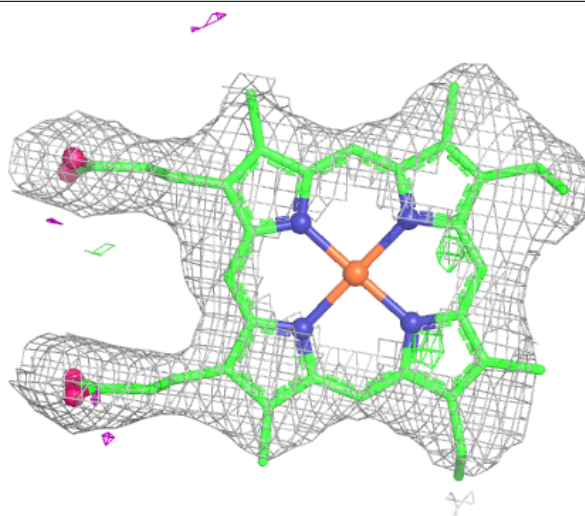
Electron density around TPF B 490:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



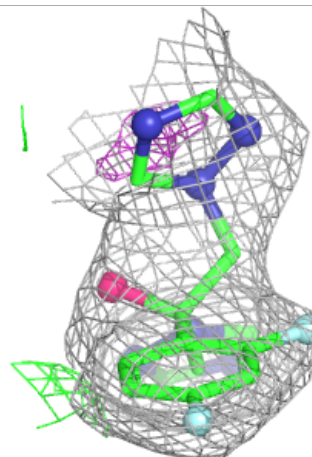
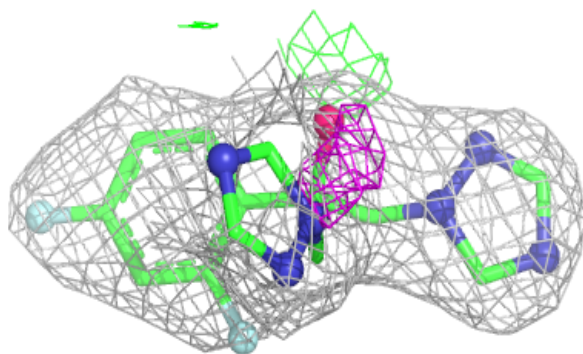
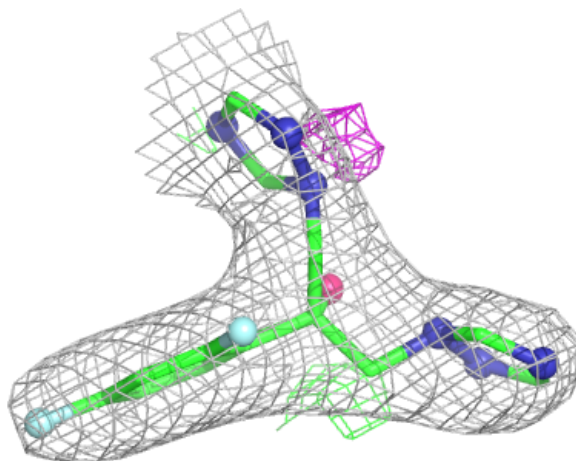
Electron density around HEM A 481:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



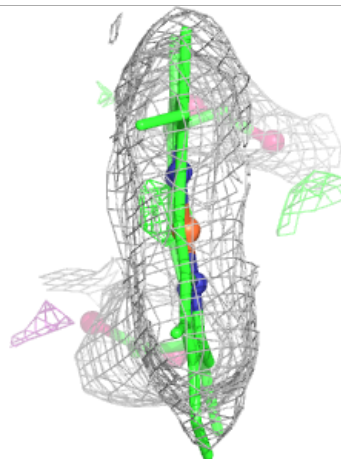
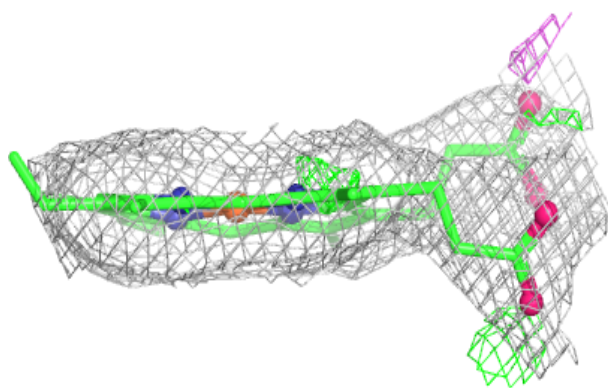
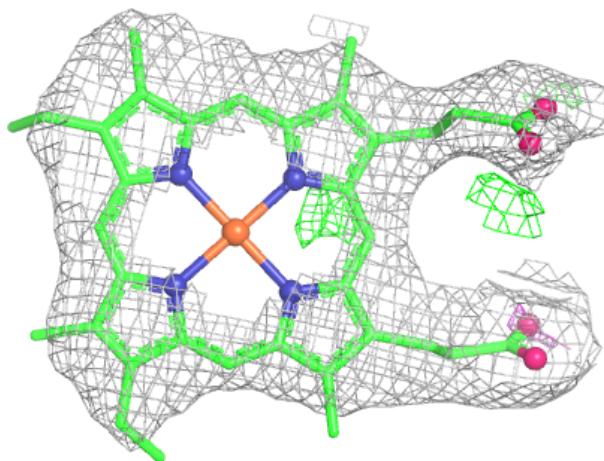
Electron density around TPF C 490:

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



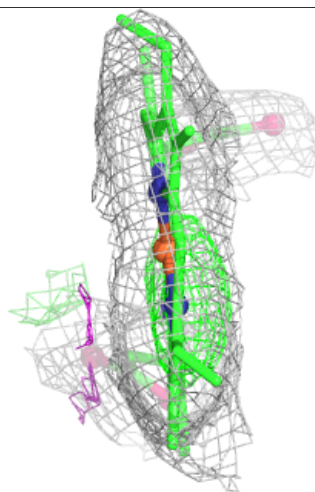
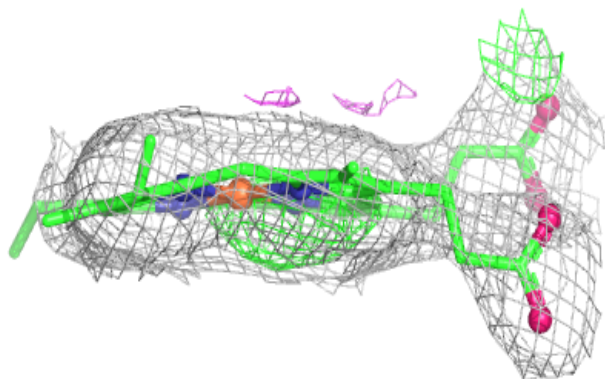
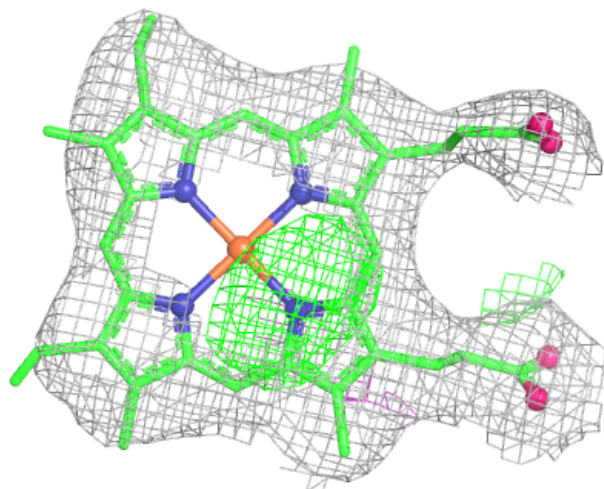
Electron density around HEM C 481:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



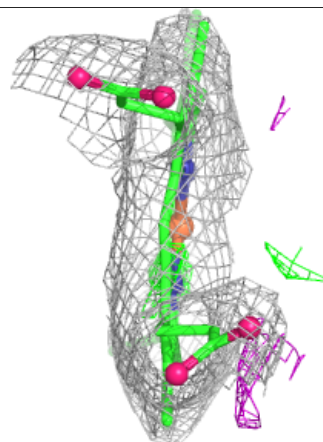
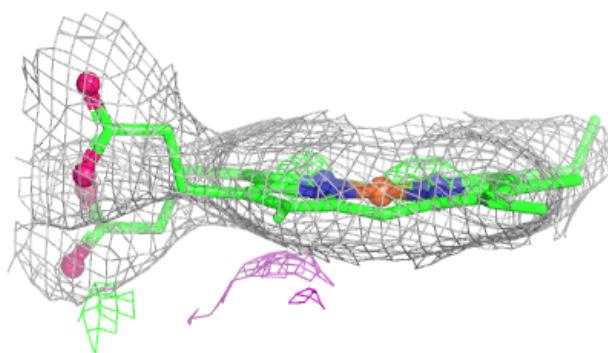
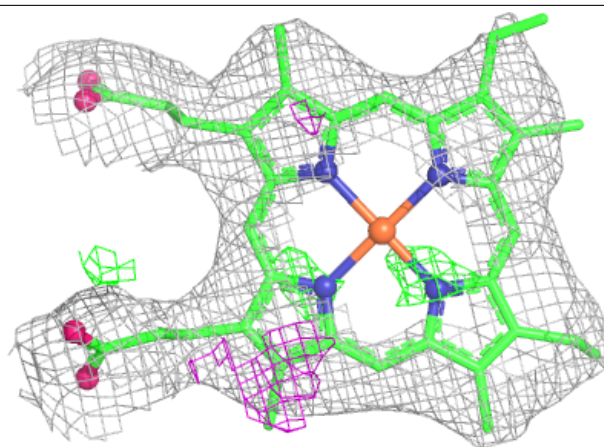
Electron density around HEM B 481:

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



Electron density around HEM D 481:

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



6.5 Other polymers ⓘ

There are no such residues in this entry.