



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 06:22 PM UTC

PDB ID : 1IZO / pdb_00001izo
Title : Cytochrome P450 BS beta Complexed with Fatty Acid
Authors : Lee, D.S.; Yamada, A.; Sugimoto, H.; Matsunaga, I.; Ogura, H.; Ichihara, K.;
Adachi, S.; Park, S.Y.; Shiro, Y.; RIKEN Structural Genomics/Proteomics
Initiative (RSGI)
Deposited on : 2002-10-10
Resolution : 2.10 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	:	9.0.010 (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

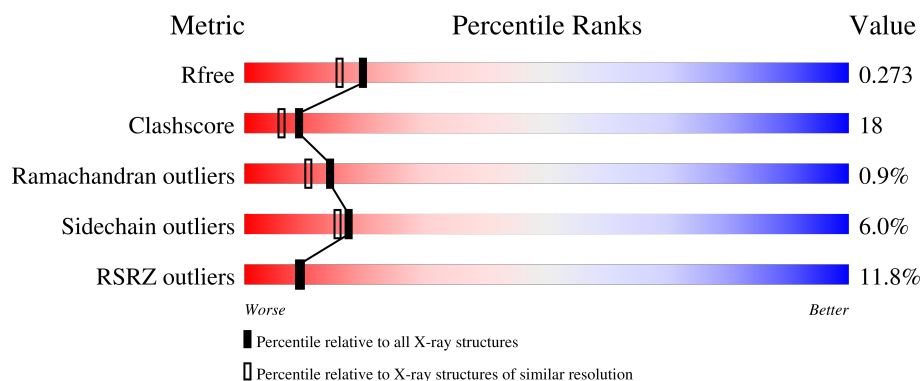
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 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))
R_{free}	180053	6658 (2.10-2.10)
Clashscore	190562	7164 (2.10-2.10)
Ramachandran outliers	187476	7099 (2.10-2.10)
Sidechain outliers	187428	7100 (2.10-2.10)
RSRZ outliers	180081	6662 (2.10-2.10)

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	417	% 68% 26% ..
1	B	417	18% 54% 38% 6% .
1	C	417	16% 60% 35% ..

2 Entry composition [i](#)

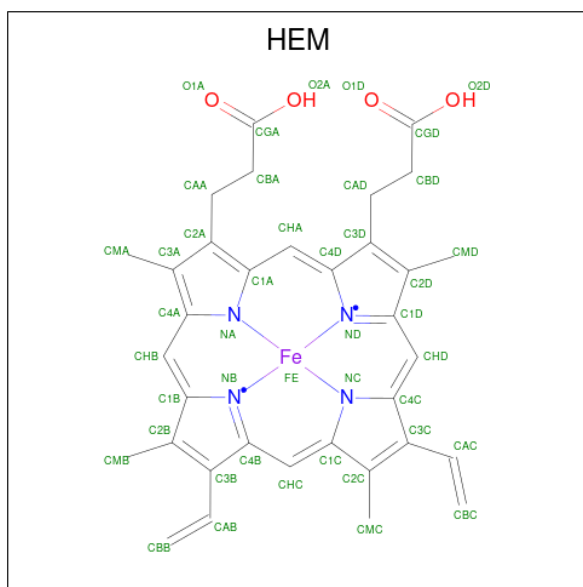
There are 4 unique types of molecules in this entry. The entry contains 10495 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Cytochrome P450 152A1.

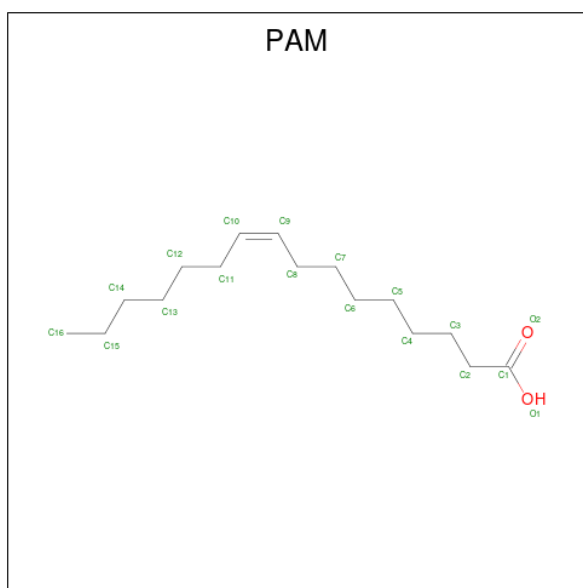
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	411	Total	C	N	O	S	0	0	0
			3339	2125	594	601	19			
1	B	411	Total	C	N	O	S	0	0	0
			3339	2125	594	601	19			
1	C	411	Total	C	N	O	S	0	0	0
			3339	2125	594	601	19			

- 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	C	Fe	N	O	0	0
			43	34	1	4	4		
2	B	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		
2	C	1	Total	C	Fe	N	O	0	0
			43	34	1	4	4		

- Molecule 3 is PALMITOLEIC ACID (CCD ID: PAM) (formula: $C_{16}H_{30}O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			18	16	2		
3	B	1	Total	C	O	0	0
			18	16	2		
3	C	1	Total	C	O	0	0
			18	16	2		

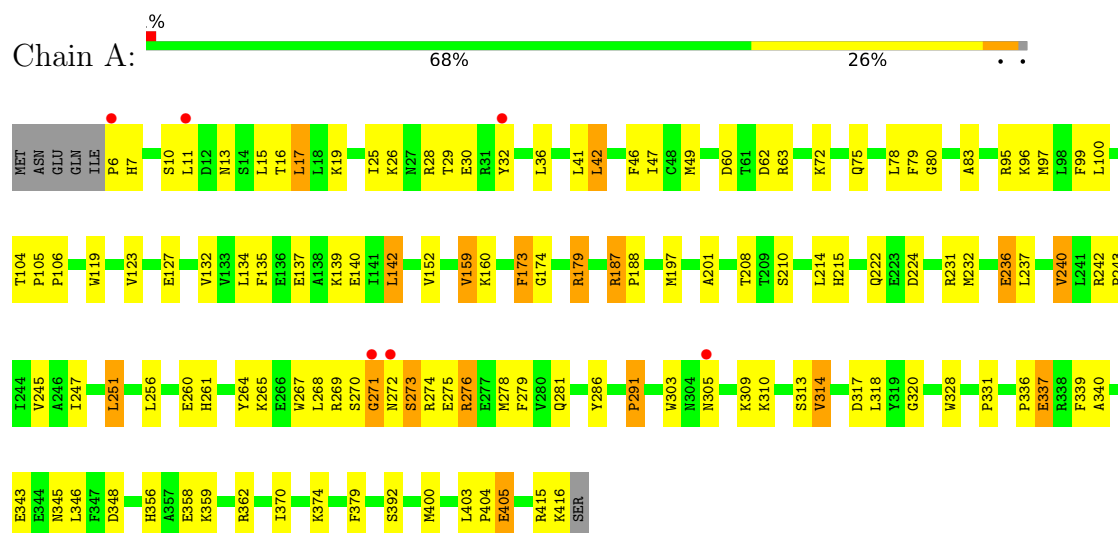
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	153	Total	O	0	0
			153	153		
4	B	84	Total	O	0	0
			84	84		
4	C	58	Total	O	0	0
			58	58		

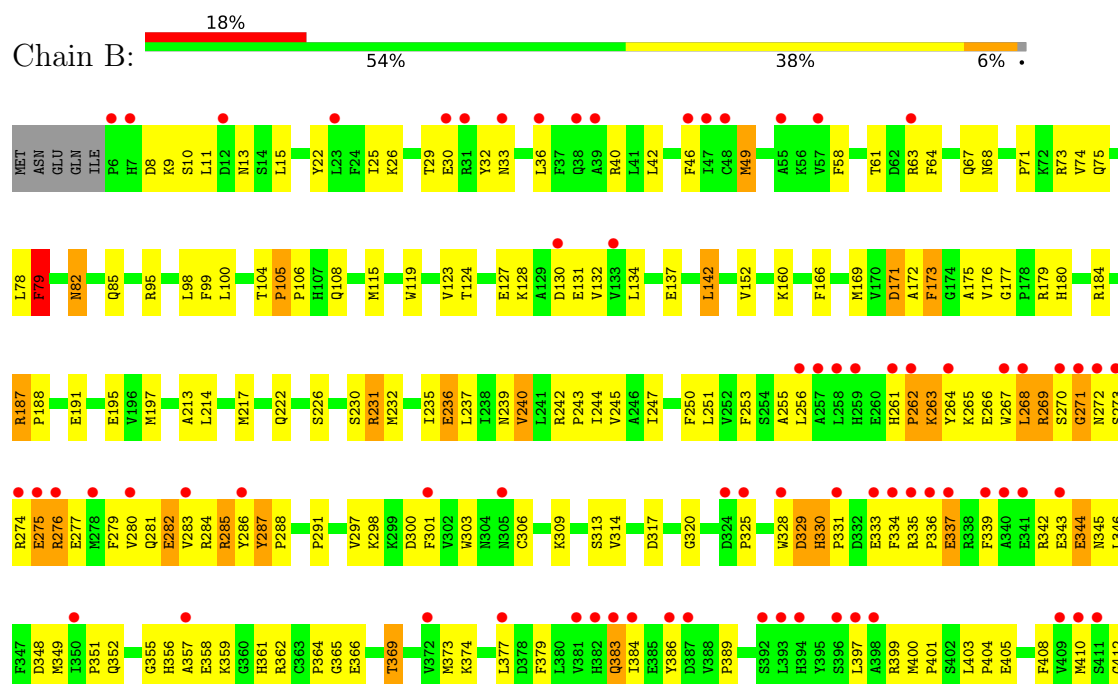
3 Residue-property plots

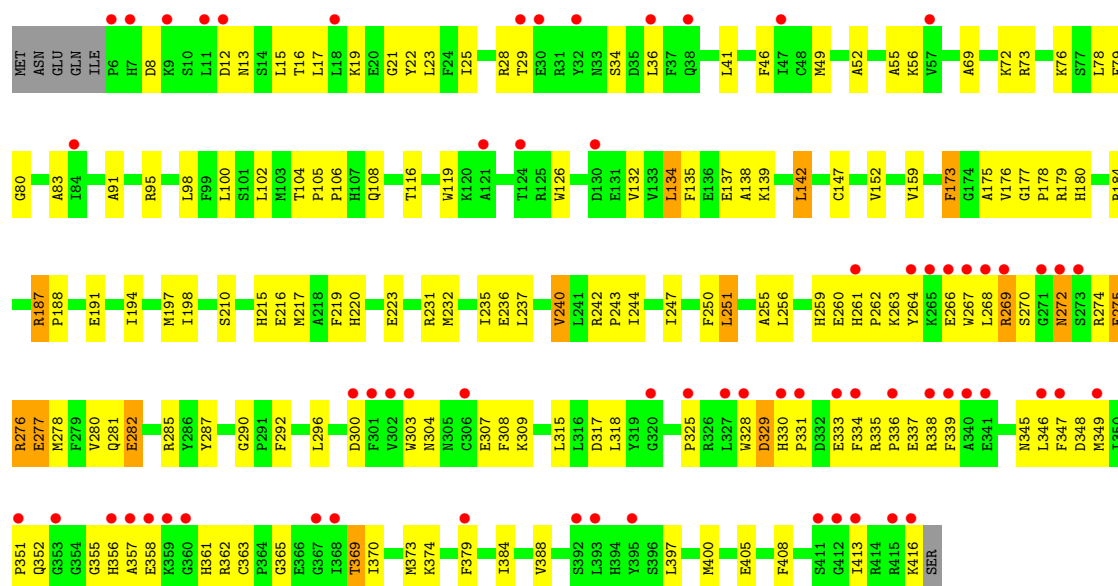
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Cytochrome P450 152A1



• Molecule 1: Cytochrome P450 152A1





4 Data and refinement statistics

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α , β , γ	155.79Å 155.79Å 111.90Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 2.10 20.00 – 2.10	Depositor EDS
% Data completeness (in resolution range)	95.8 (20.00-2.10) 95.7 (20.00-2.10)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	0.33	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.37 (at 2.10Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.246 , 0.280 0.239 , 0.273	Depositor DCC
R_{free} test set	4432 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	38.7	Xtriage
Anisotropy	0.042	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 48.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.022 for -h,-k,l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	10495	wwPDB-VP
Average B, all atoms (Å ²)	52.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.63% 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: PAM, HEM

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	0.59	0/3422	1.01	18/4614 (0.4%)
1	B	0.51	0/3422	1.00	20/4614 (0.4%)
1	C	0.41	0/3422	0.98	18/4614 (0.4%)
All	All	0.51	0/10266	1.00	56/13842 (0.4%)

There are no bond length outliers.

All (56) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	270	SER	N-CA-C	-19.01	92.95	114.62
1	B	272	ASN	N-CA-C	10.25	122.33	107.88
1	A	79	PHE	N-CA-C	9.03	122.80	111.69
1	A	78	LEU	N-CA-C	8.87	120.72	111.14
1	C	79	PHE	N-CA-C	8.47	120.44	111.03
1	A	80	GLY	N-CA-C	-8.27	101.10	112.18
1	B	271	GLY	N-CA-C	8.18	132.56	113.18
1	C	78	LEU	N-CA-C	8.00	119.69	110.97
1	A	273	SER	N-CA-C	-7.59	102.66	112.23
1	B	79	PHE	N-CA-C	7.39	122.48	113.17
1	B	330	HIS	CA-C-N	6.71	126.50	119.05
1	B	330	HIS	C-N-CA	6.71	126.50	119.05
1	A	286	TYR	N-CA-C	6.36	119.52	111.69
1	A	261	HIS	CA-C-N	6.33	127.76	119.84
1	A	261	HIS	C-N-CA	6.33	127.76	119.84
1	C	8	ASP	N-CA-C	-6.31	101.60	110.50
1	C	269	ARG	N-CA-C	6.10	118.33	110.65
1	A	240	VAL	N-CA-C	-6.03	106.38	111.56
1	A	265	LYS	N-CA-C	-5.99	104.67	111.14
1	C	173	PHE	N-CA-C	5.96	117.78	111.28
1	A	270	SER	N-CA-C	-5.95	106.00	113.20

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	271	GLY	N-CA-C	5.81	120.83	112.81
1	A	187	ARG	CA-C-N	-5.75	113.10	119.19
1	A	187	ARG	C-N-CA	-5.75	113.10	119.19
1	B	383	GLN	N-CA-C	5.71	118.72	111.69
1	B	213	ALA	N-CA-C	5.64	117.88	111.11
1	A	415	ARG	N-CA-C	-5.50	102.75	110.50
1	C	240	VAL	CB-CA-C	-5.49	107.05	111.71
1	B	287	TYR	CA-C-N	5.45	128.47	120.46
1	B	287	TYR	C-N-CA	5.45	128.47	120.46
1	A	405	GLU	N-CA-C	5.43	122.38	110.80
1	B	262	PRO	N-CA-C	5.42	123.64	112.47
1	C	80	GLY	N-CA-C	-5.41	100.36	113.18
1	C	363	CYS	CA-C-N	5.38	125.08	119.64
1	C	363	CYS	C-N-CA	5.38	125.08	119.64
1	A	60	ASP	N-CA-C	-5.37	101.42	109.15
1	A	62	ASP	N-CA-C	-5.36	105.88	112.90
1	B	286	TYR	N-CA-C	5.36	118.28	111.69
1	B	261	HIS	CA-C-N	5.34	126.52	119.84
1	B	261	HIS	C-N-CA	5.34	126.52	119.84
1	C	405	GLU	N-CA-C	5.34	120.18	111.37
1	C	384	ILE	N-CA-C	5.32	115.84	108.23
1	A	7	HIS	N-CA-C	5.28	117.64	107.44
1	B	82	ASN	N-CA-C	5.25	118.97	112.24
1	B	384	ILE	N-CA-C	5.20	115.17	108.82
1	B	78	LEU	N-CA-C	5.17	121.82	110.80
1	C	287	TYR	CA-C-N	5.15	124.91	119.76
1	C	287	TYR	C-N-CA	5.15	124.91	119.76
1	B	105	PRO	N-CA-C	5.14	116.97	110.70
1	C	388	VAL	CA-C-N	5.13	125.85	120.11
1	C	388	VAL	C-N-CA	5.13	125.85	120.11
1	B	263	LYS	N-CA-C	5.07	121.61	110.80
1	B	297	VAL	N-CA-C	-5.03	103.02	109.30
1	B	240	VAL	N-CA-C	-5.02	107.25	111.56
1	C	261	HIS	CA-C-N	5.01	125.28	119.47
1	C	261	HIS	C-N-CA	5.01	125.28	119.47

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	3339	0	3290	101	0
1	B	3339	0	3290	148	0
1	C	3339	0	3290	124	0
2	A	43	0	30	3	0
2	B	43	0	30	7	0
2	C	43	0	30	5	0
3	A	18	0	29	0	0
3	B	18	0	29	0	0
3	C	18	0	29	2	0
4	A	153	0	0	3	0
4	B	84	0	0	5	0
4	C	58	0	0	4	0
All	All	10495	0	10047	373	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 18.

All (373) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:36:LEU:HD23	1:A:49:MET:HB3	1.29	1.15
1:B:250:PHE:HB3	1:B:373:MET:HE3	1.33	1.11
1:A:6:PRO:HB3	1:A:32:TYR:HD2	1.38	0.89
1:C:36:LEU:HD23	1:C:49:MET:HB3	1.54	0.89
1:C:21:GLY:HA2	1:C:400:MET:HE2	1.57	0.85
1:C:307:GLU:OE2	1:C:309:LYS:HE2	1.78	0.83
1:C:275:GLU:HA	1:C:278:MET:HE3	1.60	0.83
1:B:79:PHE:HB3	1:B:85:GLN:NE2	1.93	0.83
1:C:268:LEU:HD12	1:C:276:ARG:HG2	1.57	0.83
1:A:36:LEU:CD2	1:A:49:MET:HB3	2.08	0.83
1:C:328:TRP:O	1:C:331:PRO:HD3	1.84	0.77
1:B:349:MET:HG2	1:B:351:PRO:HD3	1.67	0.77
1:C:274:ARG:HG2	1:C:278:MET:HE2	1.68	0.74
1:A:291:PRO:CG	1:A:400:MET:HE3	2.18	0.74
1:A:6:PRO:HB3	1:A:32:TYR:CD2	2.23	0.74

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:285:ARG:HB2	1:C:349:MET:SD	2.29	0.73
1:C:73:ARG:NH2	1:C:175:ALA:O	2.21	0.73
1:B:265:LYS:HE2	1:B:269:ARG:HH21	1.54	0.73
1:C:187:ARG:HB2	1:C:188:PRO:HD3	1.70	0.73
1:C:36:LEU:CD2	1:C:49:MET:HB3	2.19	0.72
1:C:349:MET:HG2	1:C:351:PRO:HD3	1.70	0.72
1:B:279:PHE:O	1:B:283:VAL:HG23	1.89	0.72
1:C:282:GLU:OE1	1:C:282:GLU:HA	1.87	0.71
1:B:282:GLU:HG2	1:B:336:PRO:HA	1.74	0.70
1:B:333:GLU:OE1	1:B:335:ARG:NH2	2.22	0.70
1:A:264:TYR:O	1:A:268:LEU:HD23	1.91	0.70
1:A:210:SER:HA	1:A:215:HIS:CD2	2.26	0.70
1:B:236:GLU:HA	1:B:236:GLU:OE1	1.92	0.69
1:A:63:ARG:HH11	1:A:63:ARG:HG3	1.56	0.69
1:C:142:LEU:HG	1:C:244:ILE:O	1.93	0.69
1:B:36:LEU:HD11	1:B:303:TRP:CZ3	2.28	0.69
1:A:41:LEU:HB3	1:A:42:LEU:HD22	1.75	0.68
1:B:231:ARG:O	1:B:235:ILE:HG13	1.93	0.68
1:B:285:ARG:NH2	1:B:331:PRO:O	2.25	0.68
1:B:166:PHE:HA	1:B:169:MET:HE3	1.75	0.68
1:A:274:ARG:HG2	1:A:278:MET:HE2	1.77	0.67
1:B:250:PHE:HB3	1:B:373:MET:CE	2.19	0.67
1:B:73:ARG:NH2	1:B:175:ALA:O	2.27	0.66
1:A:140:GLU:OE2	1:A:160:LYS:HG3	1.95	0.66
1:C:231:ARG:O	1:C:235:ILE:HG13	1.96	0.66
1:B:345:ASN:HB3	1:B:348:ASP:OD1	1.95	0.66
1:C:17:LEU:C	1:C:17:LEU:HD23	2.21	0.66
1:A:317:ASP:OD2	1:A:320:GLY:HA3	1.96	0.65
1:A:291:PRO:HG2	1:A:400:MET:HE3	1.78	0.65
1:B:328:TRP:O	1:B:331:PRO:HG3	1.97	0.65
1:C:277:GLU:O	1:C:281:GLN:HG2	1.97	0.65
1:B:280:VAL:HG21	1:B:374:LYS:CG	2.27	0.64
1:C:280:VAL:HG21	1:C:374:LYS:HG2	1.79	0.64
1:B:179:ARG:NH2	1:B:400:MET:O	2.31	0.63
1:A:42:LEU:HD22	1:A:42:LEU:N	2.14	0.63
1:A:179:ARG:NH2	1:A:400:MET:O	2.31	0.63
1:A:268:LEU:HD12	1:A:276:ARG:HG2	1.80	0.63
1:A:273:SER:HA	1:A:276:ARG:NH1	2.12	0.63
1:B:64:PHE:CE1	1:B:314:VAL:HG21	2.34	0.63
1:C:282:GLU:HB3	1:C:334:PHE:CE1	2.33	0.62
1:A:99:PHE:CZ	1:A:236:GLU:HG3	2.34	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:187:ARG:CB	1:C:188:PRO:HD3	2.28	0.62
1:B:255:ALA:HB1	1:B:408:PHE:CE2	2.34	0.62
1:C:36:LEU:HD11	1:C:303:TRP:CZ3	2.35	0.62
1:B:280:VAL:HG21	1:B:374:LYS:HG3	1.79	0.61
1:C:119:TRP:HB3	1:C:379:PHE:CD1	2.35	0.61
1:A:75:GLN:HG3	4:A:707:HOH:O	1.98	0.61
1:B:265:LYS:HE2	1:B:269:ARG:NH2	2.15	0.61
1:C:23:LEU:HD11	1:C:397:LEU:HD13	1.81	0.61
1:B:399:ARG:HG2	1:B:401:PRO:O	2.01	0.61
1:C:236:GLU:OE1	1:C:236:GLU:HA	2.00	0.60
1:A:275:GLU:HA	1:A:278:MET:HE3	1.82	0.60
1:B:369:THR:O	1:B:373:MET:HG3	2.01	0.60
1:C:242:ARG:HB3	1:C:243:PRO:HD3	1.81	0.60
1:B:285:ARG:HB2	1:B:349:MET:SD	2.41	0.60
1:C:91:ALA:HA	1:C:223:GLU:OE2	2.00	0.60
1:C:370:ILE:O	1:C:374:LYS:HG3	2.01	0.60
1:A:6:PRO:CB	1:A:32:TYR:HD2	2.11	0.60
1:B:268:LEU:CD1	1:B:275:GLU:HB2	2.33	0.59
1:C:98:LEU:HD22	1:C:220:HIS:CG	2.36	0.59
1:A:214:LEU:HD13	1:A:214:LEU:C	2.27	0.59
1:B:187:ARG:CB	1:B:188:PRO:HD3	2.33	0.59
1:B:415:ARG:NH1	4:B:1628:HOH:O	2.35	0.58
1:A:6:PRO:CB	1:A:32:TYR:CD2	2.85	0.58
1:B:232:MET:HE2	1:B:236:GLU:OE2	2.04	0.58
1:C:256:LEU:O	1:C:260:GLU:HG3	2.03	0.58
1:A:152:VAL:HG13	1:A:197:MET:SD	2.43	0.58
1:C:282:GLU:HG2	1:C:336:PRO:HA	1.85	0.58
1:A:100:LEU:HD13	1:A:358:GLU:HG2	1.86	0.58
1:B:352:GLN:HE22	1:B:369:THR:HG21	1.69	0.58
1:B:61:THR:O	1:B:298:LYS:HE2	2.04	0.57
1:A:370:ILE:HG22	1:A:374:LYS:HE2	1.87	0.57
1:A:274:ARG:HG2	1:A:278:MET:CE	2.34	0.57
1:C:264:TYR:O	1:C:268:LEU:HD23	2.05	0.57
1:C:365:GLY:O	1:C:369:THR:HG22	2.03	0.57
1:A:328:TRP:O	1:A:331:PRO:HD3	2.05	0.57
1:B:268:LEU:C	1:B:270:SER:H	2.11	0.57
1:C:345:ASN:HB3	1:C:348:ASP:OD1	2.05	0.57
1:B:100:LEU:HD13	1:B:358:GLU:HG2	1.87	0.57
1:B:282:GLU:HA	1:B:282:GLU:OE1	2.04	0.57
1:B:386:TYR:CD2	1:B:410:MET:HE3	2.38	0.57
1:C:300:ASP:OD2	1:C:309:LYS:HD3	2.05	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:361:HIS:HE1	4:C:2636:HOH:O	1.87	0.56
1:A:123:VAL:O	1:A:127:GLU:HG3	2.05	0.56
1:C:21:GLY:HA2	1:C:400:MET:CE	2.34	0.56
1:A:17:LEU:HD23	1:A:17:LEU:C	2.31	0.55
1:A:41:LEU:HB3	1:A:42:LEU:CD2	2.36	0.55
1:C:83:ALA:HA	1:C:232:MET:HE1	1.88	0.55
1:B:180:HIS:NE2	1:B:184:ARG:NH1	2.54	0.55
1:A:15:LEU:O	1:A:19:LYS:HG3	2.07	0.55
1:A:160:LYS:HD3	4:A:634:HOH:O	2.07	0.55
1:B:240:VAL:HA	2:B:501:HEM:HBC2	1.88	0.55
1:B:282:GLU:CG	1:B:336:PRO:HA	2.36	0.55
1:C:100:LEU:HD13	1:C:358:GLU:HG2	1.88	0.55
1:B:63:ARG:HG3	1:B:63:ARG:HH11	1.72	0.55
1:B:187:ARG:HB2	1:B:188:PRO:HD3	1.89	0.55
1:C:72:LYS:HD3	4:C:2615:HOH:O	2.06	0.54
1:B:344:GLU:OE2	1:B:346:LEU:HD21	2.08	0.54
1:C:256:LEU:O	1:C:256:LEU:HD13	2.08	0.54
1:B:247:ILE:HA	2:B:501:HEM:HBB1	1.89	0.54
1:B:175:ALA:HB2	1:B:179:ARG:CZ	2.38	0.54
1:B:99:PHE:CZ	1:B:236:GLU:HG3	2.43	0.54
1:B:242:ARG:HB3	1:B:243:PRO:HD3	1.89	0.53
1:C:361:HIS:HD2	2:C:501:HEM:O2D	1.91	0.53
1:A:242:ARG:HB3	1:A:243:PRO:HD3	1.90	0.53
1:B:195:GLU:HG3	1:B:230:SER:HB3	1.90	0.53
1:C:134:LEU:HD12	1:C:408:PHE:CD2	2.43	0.53
1:C:255:ALA:HB1	1:C:408:PHE:CE2	2.43	0.53
1:A:187:ARG:HB3	1:A:188:PRO:HD3	1.91	0.53
1:C:281:GLN:HB3	1:C:339:PHE:CE2	2.44	0.53
1:C:116:THR:HG23	4:C:2641:HOH:O	2.09	0.53
1:B:100:LEU:CD1	1:B:358:GLU:HG2	2.39	0.52
1:C:126:TRP:CE3	1:C:413:ILE:HD13	2.43	0.52
1:A:281:GLN:HA	1:A:281:GLN:OE1	2.08	0.52
1:A:173:PHE:CD1	1:A:173:PHE:C	2.88	0.52
1:B:26:LYS:O	1:B:30:GLU:HG3	2.09	0.52
1:C:104:THR:OG1	1:C:106:PRO:HD2	2.08	0.52
1:B:152:VAL:HG13	1:B:197:MET:SD	2.49	0.52
1:B:264:TYR:CE1	1:B:336:PRO:HG2	2.44	0.52
1:A:26:LYS:O	1:A:30:GLU:HG3	2.10	0.52
1:C:369:THR:O	1:C:373:MET:HG3	2.10	0.52
1:A:247:ILE:HA	2:A:501:HEM:HBB1	1.92	0.52
1:A:345:ASN:HB3	1:A:348:ASP:OD1	2.09	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:173:PHE:CD1	1:B:173:PHE:C	2.88	0.52
1:B:104:THR:OG1	1:B:106:PRO:HD2	2.10	0.51
1:A:16:THR:HG21	1:A:28:ARG:NH2	2.24	0.51
1:B:357:ALA:HA	1:B:362:ARG:HB3	1.93	0.51
1:C:173:PHE:CD1	1:C:173:PHE:C	2.88	0.51
1:A:63:ARG:HG3	1:A:63:ARG:NH1	2.24	0.51
1:A:240:VAL:O	1:A:243:PRO:HD2	2.11	0.51
1:C:104:THR:C	1:C:108:GLN:HE21	2.18	0.51
1:B:268:LEU:HD13	1:B:275:GLU:HB2	1.92	0.50
1:C:132:VAL:CG1	1:C:137:GLU:HG3	2.41	0.50
1:C:250:PHE:HB3	1:C:373:MET:HE3	1.92	0.50
1:A:269:ARG:NH2	1:A:416:LYS:HZ2	2.09	0.50
1:C:95:ARG:NH1	1:C:232:MET:HE2	2.26	0.50
1:B:46:PHE:HA	1:B:313:SER:O	2.12	0.50
1:C:346:LEU:HD11	1:C:356:HIS:CE1	2.46	0.50
1:A:135:PHE:CE2	1:A:139:LYS:HD2	2.47	0.50
1:C:280:VAL:HG21	1:C:374:LYS:CG	2.42	0.50
1:B:46:PHE:CE1	1:B:313:SER:HB3	2.46	0.50
1:B:266:GLU:HG2	4:B:1671:HOH:O	2.12	0.49
1:C:52:ALA:O	1:C:55:ALA:HB3	2.12	0.49
1:A:46:PHE:CE1	1:A:313:SER:HB3	2.47	0.49
1:A:343:GLU:OE1	1:A:343:GLU:HA	2.13	0.49
1:B:239:ASN:O	1:B:243:PRO:HG2	2.12	0.49
1:A:119:TRP:HB3	1:A:379:PHE:CD1	2.47	0.49
1:B:71:PRO:HB2	1:B:73:ARG:HG2	1.93	0.49
1:B:63:ARG:HD3	1:B:301:PHE:CE2	2.47	0.49
1:B:32:TYR:O	1:B:33:ASN:C	2.55	0.49
1:B:280:VAL:HG21	1:B:374:LYS:HG2	1.94	0.49
1:B:300:ASP:OD2	1:B:309:LYS:HD3	2.12	0.49
1:B:373:MET:O	4:B:1613:HOH:O	2.19	0.49
1:C:300:ASP:HA	1:C:308:PHE:O	2.13	0.49
1:A:28:ARG:HG3	1:A:28:ARG:HH11	1.77	0.48
1:C:281:GLN:HA	1:C:281:GLN:OE1	2.12	0.48
1:B:415:ARG:HG2	1:B:416:LYS:H	1.78	0.48
1:A:269:ARG:NH2	1:A:416:LYS:NZ	2.61	0.48
1:B:240:VAL:HG13	2:B:501:HEM:HBC1	1.95	0.48
1:B:115:MET:O	1:B:119:TRP:CD1	2.66	0.48
1:B:355:GLY:O	1:B:362:ARG:HD2	2.14	0.48
1:C:132:VAL:HG13	1:C:137:GLU:HG3	1.96	0.48
1:C:361:HIS:O	2:C:501:HEM:HBA2	2.13	0.48
1:A:28:ARG:HG3	1:A:28:ARG:NH1	2.29	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:180:HIS:NE2	1:C:184:ARG:NH1	2.60	0.48
1:C:256:LEU:HD13	1:C:256:LEU:C	2.37	0.48
1:B:123:VAL:O	1:B:127:GLU:HG3	2.14	0.48
1:C:25:ILE:HG21	1:C:317:ASP:HB2	1.95	0.48
1:C:232:MET:HE3	1:C:236:GLU:HG2	1.95	0.48
1:B:264:TYR:O	1:B:267:TRP:HB3	2.14	0.48
1:C:138:ALA:O	1:C:142:LEU:HB2	2.14	0.48
1:C:255:ALA:HB1	1:C:408:PHE:CZ	2.49	0.48
1:B:124:THR:HG22	1:B:128:LYS:NZ	2.29	0.47
1:A:240:VAL:C	1:A:243:PRO:HD2	2.39	0.47
1:A:264:TYR:OH	1:A:337:GLU:OE2	2.29	0.47
1:A:72:LYS:CE	1:A:75:GLN:HE22	2.26	0.47
1:B:276:ARG:HH11	1:B:276:ARG:HB2	1.79	0.47
1:B:412:GLY:O	1:B:414:ARG:HG3	2.14	0.47
1:A:370:ILE:O	1:A:374:LYS:HG3	2.14	0.47
1:A:236:GLU:OE1	1:A:236:GLU:HA	2.13	0.47
1:C:329:ASP:O	1:C:330:HIS:C	2.58	0.47
1:A:232:MET:HE2	1:A:236:GLU:OE2	2.14	0.47
1:B:58:PHE:HE1	1:B:314:VAL:HG23	1.79	0.47
1:B:187:ARG:O	1:B:191:GLU:HG3	2.14	0.47
1:C:105:PRO:N	1:C:106:PRO:CD	2.78	0.47
1:B:334:PHE:CE2	1:B:336:PRO:HD3	2.50	0.47
1:B:356:HIS:HB2	1:B:359:LYS:HB2	1.96	0.47
1:C:325:PRO:HA	1:C:328:TRP:O	2.15	0.47
1:B:282:GLU:OE1	1:B:339:PHE:HE1	1.98	0.47
1:A:140:GLU:HG2	1:A:159:VAL:HG12	1.97	0.46
1:B:361:HIS:HA	2:B:501:HEM:O1D	2.16	0.46
1:A:356:HIS:CD2	1:A:359:LYS:HD2	2.50	0.46
1:C:267:TRP:HE3	1:C:268:LEU:HD22	1.81	0.46
1:B:365:GLY:O	1:B:369:THR:CG2	2.63	0.46
1:A:346:LEU:HD11	1:A:356:HIS:CE1	2.50	0.46
1:B:342:ARG:HG3	1:B:343:GLU:H	1.81	0.46
1:C:266:GLU:HA	1:C:269:ARG:HB3	1.97	0.46
1:A:276:ARG:HH11	1:A:276:ARG:HB2	1.80	0.46
1:A:291:PRO:HG3	1:A:400:MET:HE3	1.95	0.46
1:C:330:HIS:N	1:C:331:PRO:CD	2.79	0.46
1:C:357:ALA:HA	1:C:362:ARG:HB3	1.98	0.46
1:C:76:LYS:O	1:C:187:ARG:HG3	2.16	0.46
1:C:356:HIS:HA	4:C:2647:HOH:O	2.15	0.46
1:A:132:VAL:HG13	1:A:137:GLU:HG3	1.98	0.46
1:A:403:LEU:O	1:A:404:PRO:C	2.57	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:8:ASP:C	1:B:10:SER:H	2.24	0.46
1:B:171:ASP:OD2	1:B:399:ARG:NH2	2.49	0.46
1:B:317:ASP:OD2	1:B:320:GLY:HA3	2.15	0.46
1:A:83:ALA:CB	1:A:232:MET:HE1	2.46	0.45
1:B:130:ASP:OD1	1:B:131:GLU:HG3	2.17	0.45
1:C:194:ILE:O	1:C:197:MET:HB2	2.15	0.45
1:B:267:TRP:CZ2	1:B:275:GLU:HA	2.51	0.45
1:C:176:VAL:HG12	1:C:177:GLY:N	2.31	0.45
1:C:338:ARG:HG3	1:C:339:PHE:CD1	2.51	0.45
1:B:75:GLN:HG3	4:B:1650:HOH:O	2.16	0.45
1:C:259:HIS:O	1:C:262:PRO:HD3	2.17	0.45
1:C:272:ASN:HD22	1:C:272:ASN:HA	1.64	0.45
1:B:104:THR:C	1:B:108:GLN:HE21	2.24	0.45
1:B:253:PHE:CE1	1:B:404:PRO:HD3	2.51	0.45
1:B:379:PHE:HA	1:B:383:GLN:HG2	1.99	0.45
1:C:352:GLN:HE22	1:C:369:THR:HG21	1.82	0.45
1:A:28:ARG:O	1:A:32:TYR:HD1	2.00	0.45
1:B:240:VAL:C	1:B:243:PRO:HD2	2.42	0.45
1:A:243:PRO:HB2	2:A:501:HEM:C3C	2.51	0.45
1:C:285:ARG:NH2	1:C:331:PRO:O	2.50	0.45
1:A:269:ARG:CZ	1:A:416:LYS:HZ1	2.29	0.45
1:B:46:PHE:CZ	1:B:313:SER:HB3	2.51	0.45
1:B:63:ARG:HD3	1:B:301:PHE:CD2	2.52	0.45
1:B:142:LEU:HB3	1:B:245:VAL:HA	1.99	0.45
1:C:16:THR:HG21	1:C:28:ARG:NH2	2.32	0.45
1:B:329:ASP:O	1:B:330:HIS:C	2.60	0.45
1:C:292:PHE:HE1	3:C:2601:PAM:H132	1.82	0.45
1:C:264:TYR:CE2	1:C:336:PRO:HD2	2.52	0.44
1:B:342:ARG:HG3	1:B:343:GLU:N	2.32	0.44
1:C:247:ILE:HG22	1:C:251:LEU:HD13	2.00	0.44
1:A:264:TYR:O	1:A:268:LEU:CD2	2.64	0.44
1:A:279:PHE:HA	1:A:336:PRO:HB3	1.98	0.44
1:A:201:ALA:HB1	1:A:208:THR:HG21	1.99	0.44
1:B:276:ARG:CD	1:B:377:LEU:HD12	2.48	0.44
1:B:36:LEU:CD2	1:B:49:MET:HB3	2.48	0.44
1:B:267:TRP:CE2	1:B:275:GLU:HB3	2.53	0.44
1:B:279:PHE:HA	1:B:336:PRO:HB3	1.98	0.44
1:A:256:LEU:HD13	1:A:256:LEU:C	2.43	0.44
1:B:273:SER:O	1:B:274:ARG:C	2.60	0.44
1:C:335:ARG:O	1:C:338:ARG:HG2	2.17	0.44
1:A:256:LEU:HD13	1:A:260:GLU:HG3	2.00	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:152:VAL:HG13	1:C:197:MET:SD	2.58	0.44
1:A:36:LEU:HD11	1:A:303:TRP:CZ3	2.53	0.43
1:A:96:LYS:NZ	1:A:362:ARG:O	2.48	0.43
1:A:173:PHE:CD1	1:A:174:GLY:N	2.86	0.43
1:A:274:ARG:CG	1:A:278:MET:HE2	2.45	0.43
1:B:36:LEU:HD23	1:B:49:MET:HB3	1.98	0.43
1:C:187:ARG:CB	1:C:188:PRO:CD	2.95	0.43
1:C:355:GLY:O	1:C:362:ARG:HD2	2.19	0.43
1:A:97:MET:HE2	1:A:100:LEU:HD12	2.00	0.43
1:A:309:LYS:O	1:A:310:LYS:C	2.61	0.43
1:B:160:LYS:HB3	4:B:1630:HOH:O	2.18	0.43
1:B:364:PRO:HD2	2:B:501:HEM:C2D	2.53	0.43
1:C:46:PHE:CE1	1:C:315:LEU:HG	2.53	0.43
1:A:47:ILE:O	1:A:314:VAL:HA	2.18	0.43
1:A:281:GLN:HB3	1:A:339:PHE:CZ	2.53	0.43
1:B:13:ASN:HB2	1:B:40:ARG:O	2.19	0.43
1:B:172:ALA:HB1	1:B:180:HIS:HA	2.01	0.43
1:C:22:TYR:CE1	1:C:400:MET:HG2	2.52	0.43
1:B:22:TYR:CE1	1:B:400:MET:HG2	2.52	0.43
1:C:328:TRP:HZ2	1:C:349:MET:HB2	1.84	0.43
1:A:251:LEU:HD12	1:A:251:LEU:HA	1.83	0.43
1:B:105:PRO:HB2	1:B:106:PRO:HD3	1.99	0.43
1:B:268:LEU:C	1:B:270:SER:N	2.76	0.43
1:C:333:GLU:OE1	1:C:335:ARG:NH2	2.52	0.43
1:B:328:TRP:HZ2	1:B:349:MET:HB2	1.83	0.43
1:C:135:PHE:CE2	1:C:139:LYS:HD2	2.54	0.43
1:B:9:LYS:O	1:B:10:SER:C	2.62	0.43
1:C:240:VAL:O	1:C:243:PRO:HD2	2.18	0.43
1:C:104:THR:HB	1:C:105:PRO:CD	2.49	0.43
1:C:361:HIS:HA	2:C:501:HEM:O1D	2.19	0.43
1:B:268:LEU:O	1:B:270:SER:N	2.48	0.42
1:C:102:LEU:HD21	1:C:216:GLU:HG3	2.00	0.42
1:C:210:SER:HA	1:C:215:HIS:CD2	2.54	0.42
1:B:95:ARG:O	1:B:98:LEU:HB3	2.19	0.42
1:B:264:TYR:HD1	1:B:267:TRP:CE3	2.38	0.42
1:B:365:GLY:O	1:B:369:THR:HG22	2.19	0.42
1:A:222:GLN:HB2	1:A:224:ASP:OD1	2.19	0.42
1:A:243:PRO:HB2	2:A:501:HEM:C2C	2.55	0.42
1:B:67:GLN:HG2	1:B:68:ASN:ND2	2.34	0.42
1:B:276:ARG:HH11	1:B:276:ARG:CB	2.32	0.42
1:B:176:VAL:HG12	1:B:177:GLY:N	2.34	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:240:VAL:HA	2:B:501:HEM:CBC	2.49	0.42
1:B:277:GLU:O	1:B:281:GLN:HG2	2.20	0.42
1:B:325:PRO:HA	1:B:331:PRO:HG3	2.01	0.42
1:B:25:ILE:HG21	1:B:317:ASP:HB2	2.02	0.42
1:B:403:LEU:HD12	1:B:404:PRO:HD2	2.01	0.42
1:C:15:LEU:O	1:C:19:LYS:HG3	2.20	0.42
1:B:282:GLU:HB3	1:B:334:PHE:CE1	2.54	0.42
1:B:377:LEU:HD13	1:B:377:LEU:C	2.45	0.42
1:C:243:PRO:HB2	2:C:501:HEM:C3C	2.54	0.42
1:C:264:TYR:HA	1:C:267:TRP:CB	2.49	0.42
1:C:269:ARG:CZ	1:C:416:LYS:HZ1	2.33	0.42
1:C:69:ALA:HA	1:C:296:LEU:HG	2.02	0.42
1:A:95:ARG:NH1	1:A:232:MET:HE2	2.35	0.42
1:C:175:ALA:HB2	1:C:179:ARG:CZ	2.50	0.42
1:A:105:PRO:N	1:A:106:PRO:CD	2.83	0.41
1:A:142:LEU:HB3	1:A:245:VAL:HA	2.02	0.41
1:B:276:ARG:HD3	1:B:377:LEU:HD12	2.01	0.41
1:B:284:ARG:HH12	1:B:366:GLU:HG3	1.85	0.41
1:B:413:ILE:H	1:B:413:ILE:HG13	1.68	0.41
1:C:13:ASN:HB3	1:C:41:LEU:CD2	2.50	0.41
1:C:29:THR:HB	1:C:34:SER:O	2.21	0.41
1:C:303:TRP:O	1:C:304:ASN:C	2.63	0.41
1:A:36:LEU:HD21	1:A:303:TRP:HZ3	1.85	0.41
1:A:42:LEU:N	1:A:42:LEU:CD2	2.83	0.41
1:A:269:ARG:HH21	1:A:416:LYS:HZ2	1.65	0.41
1:B:240:VAL:O	1:B:244:ILE:HG13	2.21	0.41
1:B:386:TYR:CG	1:B:410:MET:HE3	2.55	0.41
1:C:191:GLU:OE1	1:C:231:ARG:NH1	2.52	0.41
1:A:99:PHE:CE2	1:A:236:GLU:HG3	2.55	0.41
1:A:132:VAL:CG1	1:A:137:GLU:HG3	2.49	0.41
1:A:264:TYR:HA	1:A:267:TRP:HB3	2.02	0.41
1:B:132:VAL:CG1	1:B:137:GLU:HG3	2.50	0.41
1:C:147:CYS:HB3	1:C:152:VAL:HB	2.02	0.41
1:A:25:ILE:O	1:A:29:THR:HG23	2.20	0.41
1:A:46:PHE:HA	1:A:313:SER:O	2.19	0.41
1:B:255:ALA:HB1	1:B:408:PHE:CZ	2.55	0.41
1:B:280:VAL:O	1:B:283:VAL:N	2.54	0.41
1:A:374:LYS:NZ	4:A:729:HOH:O	2.46	0.41
1:A:392:SER:OG	1:A:405:GLU:OE1	2.38	0.41
1:B:25:ILE:O	1:B:29:THR:HG23	2.20	0.41
1:B:79:PHE:CB	1:B:85:GLN:NE2	2.75	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:119:TRP:HB3	1:B:379:PHE:CD1	2.56	0.41
1:B:222:GLN:HG3	1:B:226:SER:O	2.20	0.41
1:C:240:VAL:C	1:C:243:PRO:HD2	2.46	0.41
1:B:287:TYR:HA	1:B:288:PRO:HD3	1.80	0.41
1:B:267:TRP:CH2	1:B:275:GLU:HA	2.55	0.41
1:B:284:ARG:NH1	1:B:366:GLU:HG3	2.36	0.41
1:A:256:LEU:HD11	1:A:260:GLU:OE1	2.21	0.41
1:B:74:VAL:HG12	1:B:79:PHE:CE1	2.56	0.41
1:C:22:TYR:C	1:C:23:LEU:HD12	2.46	0.41
1:C:36:LEU:HD11	1:C:303:TRP:CE3	2.55	0.41
1:C:197:MET:O	1:C:198:ILE:C	2.64	0.41
1:C:247:ILE:HA	2:C:501:HEM:HBB1	2.03	0.41
1:B:335:ARG:C	1:B:337:GLU:H	2.29	0.41
1:B:276:ARG:O	1:B:280:VAL:HG23	2.21	0.40
1:B:397:LEU:HD22	1:B:397:LEU:N	2.36	0.40
1:C:215:HIS:O	1:C:219:PHE:HD2	2.04	0.40
1:B:187:ARG:CB	1:B:188:PRO:CD	2.99	0.40
1:B:303:TRP:O	1:B:306:CYS:HB3	2.21	0.40
1:C:56:LYS:HG2	1:C:347:PHE:CD2	2.55	0.40
1:C:290:GLY:HA2	3:C:2601:PAM:H62	2.03	0.40
1:B:364:PRO:HD2	2:B:501:HEM:C1D	2.56	0.40
1:C:17:LEU:C	1:C:17:LEU:CD2	2.92	0.40
1:C:134:LEU:HB2	1:C:408:PHE:HB3	2.03	0.40
1:C:177:GLY:HA3	1:C:178:PRO:HD2	1.97	0.40
1:A:104:THR:CB	1:A:106:PRO:HD2	2.52	0.40
1:A:267:TRP:HE3	1:A:268:LEU:HD22	1.86	0.40
1:B:282:GLU:OE1	1:B:285:ARG:HD3	2.21	0.40
1:C:268:LEU:CD1	1:C:276:ARG:HG2	2.41	0.40
1:A:269:ARG:C	1:A:271:GLY:H	2.28	0.40
1:C:264:TYR:HA	1:C:267:TRP:HB2	2.01	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	409/417 (98%)	393 (96%)	13 (3%)	3 (1%)	18	15
1	B	409/417 (98%)	376 (92%)	26 (6%)	7 (2%)	7	3
1	C	409/417 (98%)	377 (92%)	31 (8%)	1 (0%)	43	44
All	All	1227/1251 (98%)	1146 (93%)	70 (6%)	11 (1%)	14	10

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	263	LYS
1	B	269	ARG
1	A	340	ALA
1	B	291	PRO
1	B	344	GLU
1	A	291	PRO
1	B	262	PRO
1	B	271	GLY
1	A	159	VAL
1	C	159	VAL
1	B	389	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	352/358 (98%)	333 (95%)	19 (5%)	20	18
1	B	352/358 (98%)	325 (92%)	27 (8%)	12	9
1	C	352/358 (98%)	335 (95%)	17 (5%)	23	23
All	All	1056/1074 (98%)	993 (94%)	63 (6%)	17	15

All (63) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	10	SER
1	A	11	LEU
1	A	13	ASN
1	A	17	LEU
1	A	42	LEU
1	A	134	LEU
1	A	142	LEU
1	A	173	PHE
1	A	179	ARG
1	A	231	ARG
1	A	236	GLU
1	A	237	LEU
1	A	251	LEU
1	A	272	ASN
1	A	276	ARG
1	A	305	ASN
1	A	314	VAL
1	A	318	LEU
1	A	337	GLU
1	B	11	LEU
1	B	15	LEU
1	B	42	LEU
1	B	49	MET
1	B	79	PHE
1	B	82	ASN
1	B	134	LEU
1	B	142	LEU
1	B	171	ASP
1	B	173	PHE
1	B	187	ARG
1	B	214	LEU
1	B	217	MET
1	B	231	ARG
1	B	236	GLU
1	B	237	LEU
1	B	251	LEU
1	B	256	LEU
1	B	268	LEU
1	B	275	GLU
1	B	276	ARG
1	B	282	GLU
1	B	285	ARG
1	B	329	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	337	GLU
1	B	369	THR
1	B	405	GLU
1	C	12	ASP
1	C	134	LEU
1	C	142	LEU
1	C	187	ARG
1	C	217	MET
1	C	237	LEU
1	C	251	LEU
1	C	263	LYS
1	C	272	ASN
1	C	275	GLU
1	C	276	ARG
1	C	277	GLU
1	C	282	GLU
1	C	318	LEU
1	C	329	ASP
1	C	337	GLU
1	C	369	THR

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

Mol	Chain	Res	Type
1	A	13	ASN
1	A	227	GLN
1	A	272	ASN
1	A	304	ASN
1	A	305	ASN
1	A	356	HIS
1	A	383	GLN
1	B	13	ASN
1	B	45	ASN
1	B	68	ASN
1	B	92	HIS
1	B	108	GLN
1	B	259	HIS
1	B	304	ASN
1	B	305	ASN
1	B	356	HIS
1	C	13	ASN
1	C	27	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	68	ASN
1	C	82	ASN
1	C	108	GLN
1	C	215	HIS
1	C	261	HIS
1	C	272	ASN
1	C	304	ASN
1	C	305	ASN
1	C	352	GLN
1	C	356	HIS
1	C	361	HIS
1	C	383	GLN
1	C	394	HIS

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](#)

6 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	$\# Z > 2$
3	PAM	C	2601	-	17,17,17	1.74	5 (29%)	17,17,17	1.02	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	HEM	B	501	4,1	50,50,50	2.75	14 (28%)	67,82,82	1.49	12 (17%)
3	PAM	B	1601	-	17,17,17	1.75	5 (29%)	17,17,17	1.07	1 (5%)
2	HEM	C	501	1	50,50,50	2.38	10 (20%)	67,82,82	1.47	11 (16%)
3	PAM	A	601	-	17,17,17	1.77	5 (29%)	17,17,17	1.00	1 (5%)
2	HEM	A	501	4,1	50,50,50	2.58	20 (40%)	67,82,82	1.58	14 (20%)

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
3	PAM	C	2601	-	-	7/15/15/15	-
2	HEM	B	501	4,1	-	5/14/54/54	-
3	PAM	B	1601	-	-	6/15/15/15	-
2	HEM	C	501	1	-	6/14/54/54	-
3	PAM	A	601	-	-	8/15/15/15	-
2	HEM	A	501	4,1	-	6/14/54/54	-

All (59) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	501	HEM	FE-NA	8.73	2.24	1.95
2	C	501	HEM	CHC-C1C	8.42	1.54	1.38
2	B	501	HEM	CHC-C1C	7.69	1.53	1.38
2	A	501	HEM	CHC-C1C	7.57	1.53	1.38
2	A	501	HEM	FE-NC	7.35	2.19	1.95
2	B	501	HEM	CHD-C1D	6.69	1.54	1.39
2	C	501	HEM	CHD-C1D	6.65	1.54	1.39
2	A	501	HEM	CHD-C1D	6.54	1.54	1.39
2	B	501	HEM	FE-NC	6.13	2.15	1.95
2	B	501	HEM	CHB-C4A	6.00	1.52	1.39
2	C	501	HEM	FE-NC	5.93	2.14	1.95
2	C	501	HEM	CHB-C4A	5.79	1.52	1.39
2	A	501	HEM	CHB-C4A	5.15	1.51	1.39
2	A	501	HEM	FE-NA	5.15	2.12	1.95
2	B	501	HEM	FE-NB	5.11	2.10	1.94
3	A	601	PAM	C10-C9	3.82	1.53	1.31
3	B	1601	PAM	C10-C9	3.58	1.52	1.31
2	A	501	HEM	C1C-NC	-3.44	1.33	1.39

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	2601	PAM	C10-C9	3.44	1.51	1.31
2	A	501	HEM	C1A-NA	-3.40	1.33	1.39
2	C	501	HEM	FE-NA	3.37	2.06	1.95
3	C	2601	PAM	C7-C8	-3.29	1.38	1.52
3	B	1601	PAM	C7-C8	-3.18	1.38	1.52
3	A	601	PAM	C12-C11	-3.05	1.39	1.52
3	B	1601	PAM	C12-C11	-3.04	1.39	1.52
2	B	501	HEM	CHA-C4D	2.92	1.44	1.38
3	C	2601	PAM	C12-C11	-2.89	1.40	1.52
2	A	501	HEM	CBD-CGD	2.85	1.57	1.50
2	B	501	HEM	CMB-C2B	2.83	1.56	1.50
2	A	501	HEM	C4B-NB	2.72	1.44	1.38
2	A	501	HEM	C4A-NA	-2.68	1.34	1.39
2	A	501	HEM	CBB-CAB	2.67	1.43	1.30
3	A	601	PAM	C7-C8	-2.67	1.41	1.52
2	C	501	HEM	CHD-C4C	2.62	1.43	1.38
2	C	501	HEM	CMC-C2C	2.60	1.56	1.50
2	B	501	HEM	CHD-C4C	2.56	1.43	1.38
2	A	501	HEM	C4D-ND	2.55	1.44	1.40
2	A	501	HEM	CBA-CGA	2.51	1.56	1.50
3	C	2601	PAM	C5-C4	-2.46	1.39	1.51
2	B	501	HEM	C1C-NC	-2.43	1.35	1.39
3	B	1601	PAM	C5-C4	-2.43	1.39	1.51
2	C	501	HEM	CBA-CGA	2.38	1.56	1.50
2	A	501	HEM	CAC-C3C	-2.36	1.41	1.47
2	C	501	HEM	CBB-CAB	2.36	1.41	1.30
2	B	501	HEM	CBB-CAB	2.36	1.41	1.30
2	A	501	HEM	CHA-C4D	2.35	1.43	1.38
3	A	601	PAM	C5-C4	-2.34	1.40	1.51
2	C	501	HEM	CMB-C2B	2.28	1.55	1.50
2	B	501	HEM	CBA-CGA	2.27	1.55	1.50
2	B	501	HEM	C4B-NB	2.19	1.43	1.38
2	A	501	HEM	CMC-C2C	2.14	1.55	1.50
2	A	501	HEM	CMB-C2B	2.13	1.55	1.50
3	A	601	PAM	C6-C5	-2.11	1.41	1.51
3	B	1601	PAM	C6-C5	-2.08	1.41	1.51
2	B	501	HEM	CAC-C3C	-2.08	1.41	1.47
2	A	501	HEM	C2A-C3A	-2.07	1.33	1.38
2	A	501	HEM	C1A-C2A	2.07	1.48	1.44
3	C	2601	PAM	C6-C5	-2.06	1.41	1.51
2	A	501	HEM	O2D-CGD	-2.03	1.24	1.30

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	HEM	CHA-C4D-ND	4.84	130.35	124.37
2	B	501	HEM	CHA-C4D-ND	4.20	129.57	124.37
2	C	501	HEM	CHA-C4D-ND	4.06	129.39	124.37
2	A	501	HEM	CHC-C4B-NB	3.95	128.67	124.42
2	A	501	HEM	C4C-CHD-C1D	-3.80	117.94	126.02
2	B	501	HEM	CHC-C1C-NC	3.50	128.27	124.45
2	B	501	HEM	CHC-C4B-NB	3.49	128.18	124.42
2	B	501	HEM	C4C-CHD-C1D	-3.29	119.04	126.02
2	C	501	HEM	CHD-C1D-ND	3.23	127.90	124.42
2	A	501	HEM	CHA-C4D-C3D	-3.23	119.27	125.23
2	C	501	HEM	C4C-CHD-C1D	-3.22	119.18	126.02
2	A	501	HEM	CHD-C1D-ND	3.10	127.76	124.42
2	C	501	HEM	CHA-C4D-C3D	-3.03	119.63	125.23
2	B	501	HEM	CHD-C1D-ND	3.03	127.69	124.42
2	A	501	HEM	C4C-C3C-C2C	-2.98	104.23	106.81
2	C	501	HEM	CHC-C1C-NC	2.94	127.65	124.45
2	A	501	HEM	CHC-C1C-NC	2.86	127.57	124.45
2	C	501	HEM	C1A-CHA-C4D	-2.85	119.56	126.25
2	C	501	HEM	C1C-CHC-C4B	-2.84	119.99	126.02
2	C	501	HEM	CHC-C4B-NB	2.81	127.44	124.42
2	B	501	HEM	CHA-C4D-C3D	-2.66	120.33	125.23
2	B	501	HEM	C3B-C4B-NB	2.57	111.32	109.47
2	A	501	HEM	C3B-C4B-NB	2.52	111.28	109.47
2	A	501	HEM	CHC-C4B-C3B	-2.52	120.05	125.07
2	B	501	HEM	CHC-C1C-C2C	-2.41	120.48	125.49
3	B	1601	PAM	C7-C8-C9	2.39	126.00	112.60
2	B	501	HEM	CHC-C4B-C3B	-2.29	120.50	125.07
2	B	501	HEM	CAC-C3C-C4C	2.28	130.27	124.82
2	A	501	HEM	CHC-C1C-C2C	-2.28	120.75	125.49
2	B	501	HEM	C4C-C3C-C2C	-2.27	104.85	106.81
2	B	501	HEM	C1A-CHA-C4D	-2.22	121.02	126.25
2	C	501	HEM	CHC-C1C-C2C	-2.20	120.91	125.49
2	A	501	HEM	CHD-C1D-C2D	-2.13	121.67	125.03
2	C	501	HEM	O2D-CGD-CBD	2.12	120.70	114.00
2	A	501	HEM	C1D-C2D-C3D	2.10	109.19	106.98
3	A	601	PAM	C7-C8-C9	2.06	124.12	112.60
2	A	501	HEM	O2D-CGD-CBD	2.05	120.48	114.00
3	C	2601	PAM	C7-C8-C9	2.03	123.97	112.60
2	C	501	HEM	C3B-C4B-NB	2.02	110.92	109.47
2	A	501	HEM	C1A-CHA-C4D	-2.00	121.53	126.25

There are no chirality outliers.

All (38) torsion outliers are listed below:

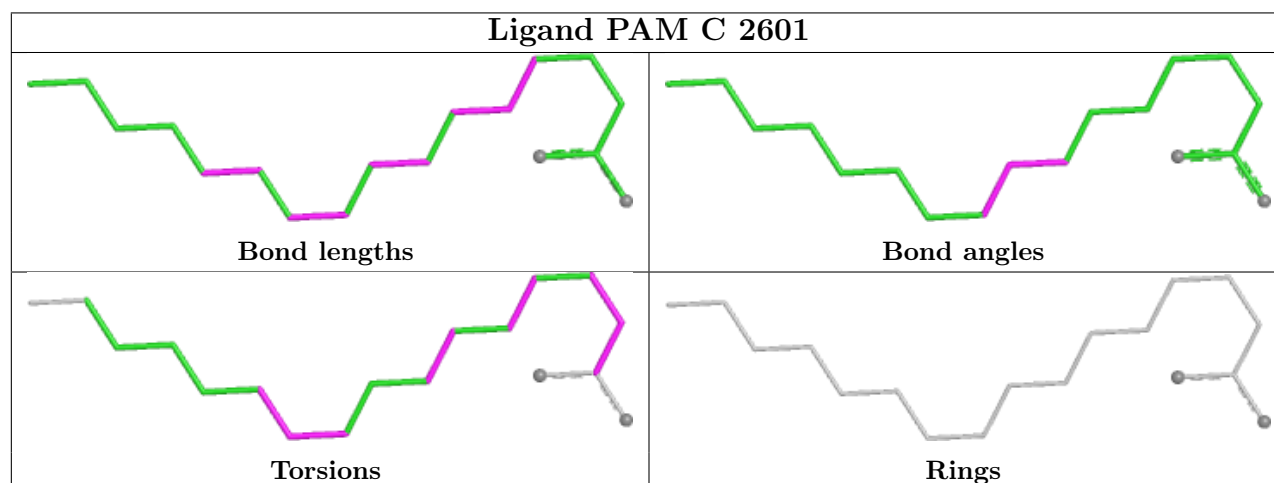
Mol	Chain	Res	Type	Atoms
2	B	501	HEM	C2B-C3B-CAB-CBB
2	C	501	HEM	C2B-C3B-CAB-CBB
3	B	1601	PAM	C11-C10-C9-C8
3	C	2601	PAM	C11-C10-C9-C8
3	A	601	PAM	C11-C10-C9-C8
3	B	1601	PAM	C1-C2-C3-C4
3	A	601	PAM	C1-C2-C3-C4
3	B	1601	PAM	C3-C4-C5-C6
2	A	501	HEM	C2B-C3B-CAB-CBB
2	A	501	HEM	C2C-C3C-CAC-CBC
2	C	501	HEM	C2C-C3C-CAC-CBC
2	B	501	HEM	C4B-C3B-CAB-CBB
2	C	501	HEM	C4C-C3C-CAC-CBC
3	A	601	PAM	C3-C4-C5-C6
3	C	2601	PAM	C1-C2-C3-C4
3	C	2601	PAM	C3-C4-C5-C6
3	A	601	PAM	C10-C11-C12-C13
2	C	501	HEM	C4B-C3B-CAB-CBB
3	A	601	PAM	C5-C6-C7-C8
3	C	2601	PAM	C5-C6-C7-C8
2	A	501	HEM	C4B-C3B-CAB-CBB
2	A	501	HEM	C4C-C3C-CAC-CBC
3	A	601	PAM	O1-C1-C2-C3
3	A	601	PAM	C9-C10-C11-C12
3	A	601	PAM	O2-C1-C2-C3
3	C	2601	PAM	O2-C1-C2-C3
3	C	2601	PAM	O1-C1-C2-C3
2	A	501	HEM	CAD-CBD-CGD-O2D
2	B	501	HEM	CAD-CBD-CGD-O2D
2	C	501	HEM	CAD-CBD-CGD-O2D
2	B	501	HEM	CAD-CBD-CGD-O1D
2	C	501	HEM	CAD-CBD-CGD-O1D
2	A	501	HEM	CAD-CBD-CGD-O1D
3	B	1601	PAM	O1-C1-C2-C3
3	B	1601	PAM	C9-C10-C11-C12
3	C	2601	PAM	C9-C10-C11-C12
3	B	1601	PAM	O2-C1-C2-C3
2	B	501	HEM	CAA-CBA-CGA-O2A

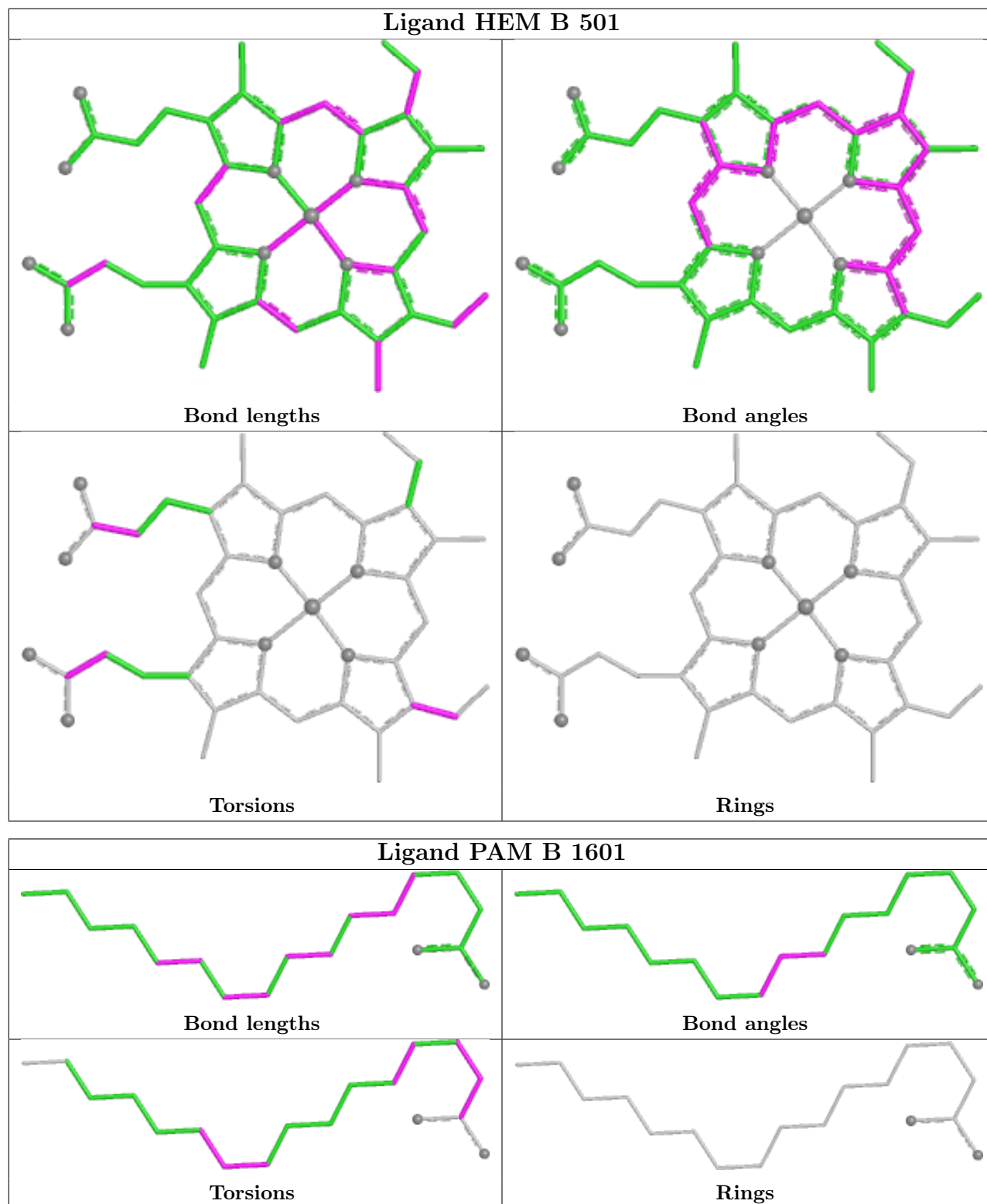
There are no ring outliers.

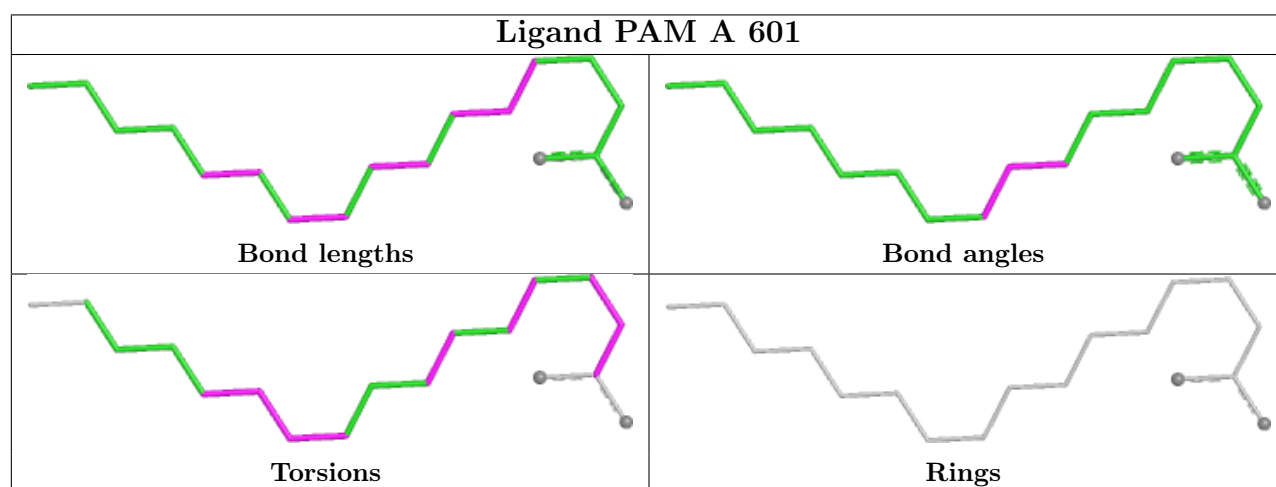
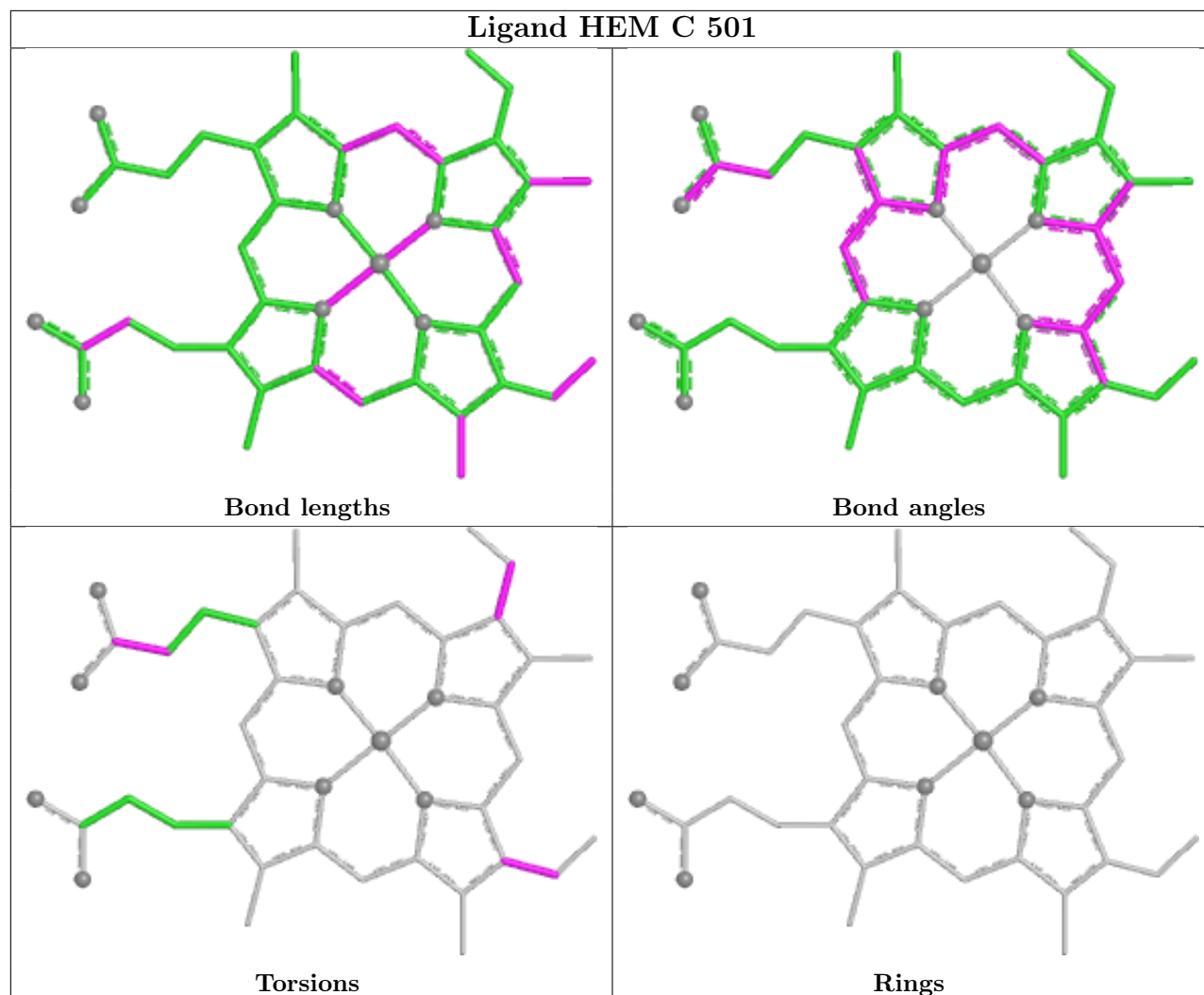
4 monomers are involved in 17 short contacts:

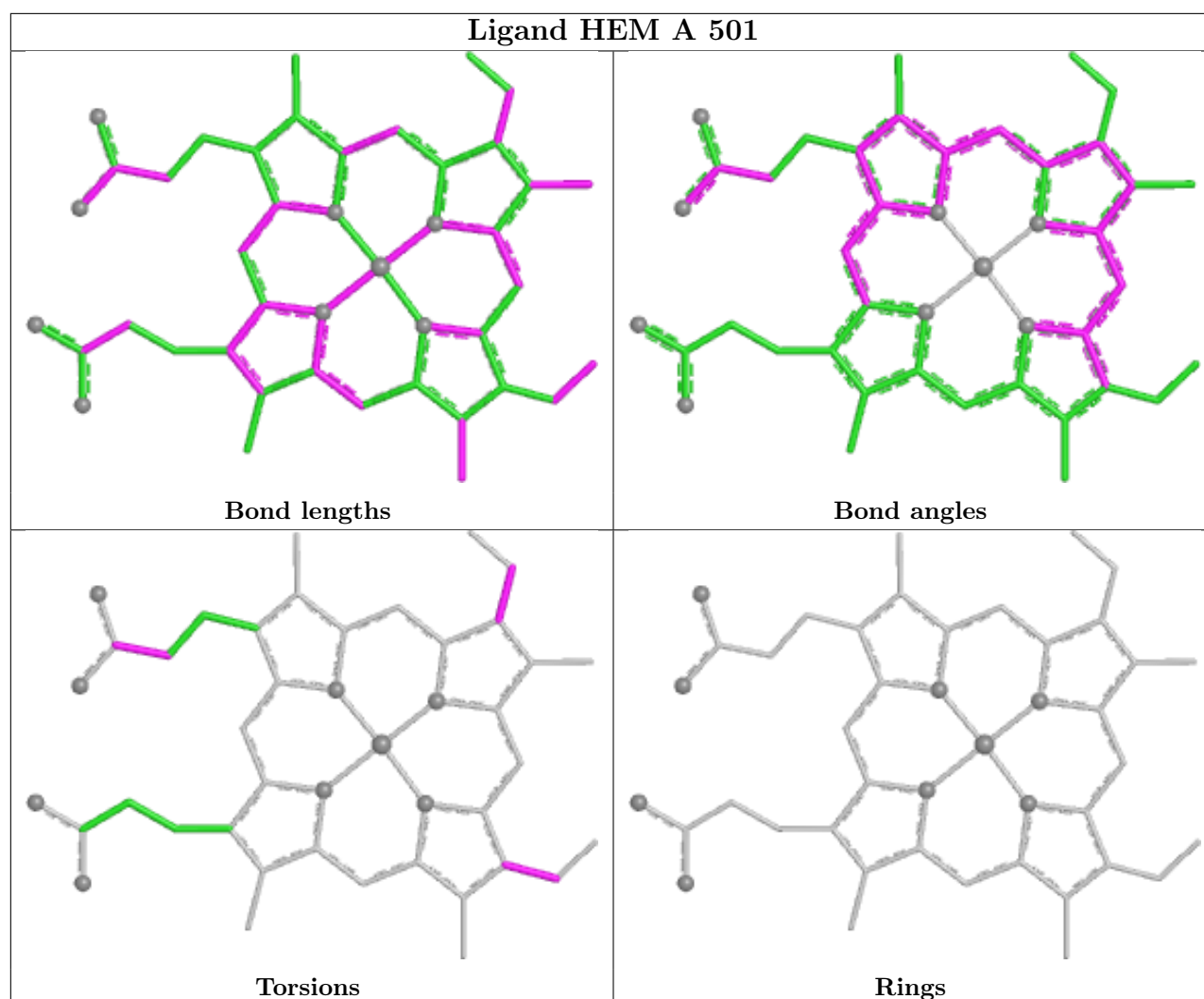
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	2601	PAM	2	0
2	B	501	HEM	7	0
2	C	501	HEM	5	0
2	A	501	HEM	3	0

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









5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	411/417 (98%)	-0.10	6 (1%) 72 74	20, 36, 57, 85	0
1	B	411/417 (98%)	0.98	73 (17%) 4 4	27, 50, 80, 107	0
1	C	411/417 (98%)	1.02	66 (16%) 4 5	36, 62, 91, 107	0
All	All	1233/1251 (98%)	0.63	145 (11%) 9 9	20, 49, 85, 107	0

All (145) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	340	ALA	5.6
1	C	267	TRP	5.5
1	B	261	HIS	5.0
1	B	262	PRO	4.9
1	B	305	ASN	4.4
1	C	339	PHE	4.2
1	C	36	LEU	4.2
1	C	357	ALA	4.2
1	B	392	SER	3.9
1	C	325	PRO	3.9
1	C	11	LEU	3.9
1	C	359	LYS	3.7
1	C	271	GLY	3.7
1	B	331	PRO	3.5
1	B	270	SER	3.5
1	B	339	PHE	3.5
1	B	393	LEU	3.5
1	B	30	GLU	3.5
1	B	276	ARG	3.5
1	B	341	GLU	3.4
1	B	272	ASN	3.4
1	B	337	GLU	3.4
1	C	6	PRO	3.4

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	341	GLU	3.3
1	B	382	HIS	3.3
1	B	268	LEU	3.3
1	B	267	TRP	3.3
1	C	303	TRP	3.2
1	B	381	VAL	3.2
1	C	264	TYR	3.2
1	C	306	CYS	3.2
1	B	280	VAL	3.1
1	B	256	LEU	3.1
1	C	331	PRO	3.1
1	C	416	LYS	3.1
1	C	351	PRO	3.0
1	B	398	ALA	3.0
1	C	268	LEU	3.0
1	B	384	ILE	3.0
1	B	410	MET	2.9
1	A	11	LEU	2.9
1	C	327	LEU	2.9
1	C	349	MET	2.8
1	B	36	LEU	2.8
1	B	336	PRO	2.8
1	C	330	HIS	2.8
1	B	409	VAL	2.8
1	C	130	ASP	2.8
1	B	334	PHE	2.8
1	C	320	GLY	2.7
1	C	360	GLY	2.7
1	A	272	ASN	2.7
1	B	33	ASN	2.7
1	B	275	GLU	2.7
1	B	333	GLU	2.7
1	C	413	ILE	2.7
1	B	63	ARG	2.7
1	B	6	PRO	2.7
1	C	336	PRO	2.7
1	B	386	TYR	2.7
1	C	412	GLY	2.7
1	C	38	GLN	2.6
1	B	397	LEU	2.6
1	C	124	THR	2.6
1	C	393	LEU	2.6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	415	ARG	2.6
1	C	358	GLU	2.6
1	C	7	HIS	2.6
1	B	328	TRP	2.6
1	B	264	TYR	2.6
1	B	413	ILE	2.6
1	C	266	GLU	2.6
1	B	271	GLY	2.6
1	B	259	HIS	2.5
1	C	265	LYS	2.5
1	C	346	LEU	2.5
1	C	269	ARG	2.5
1	C	272	ASN	2.5
1	C	340	ALA	2.5
1	C	411	SER	2.5
1	B	258	LEU	2.5
1	B	283	VAL	2.4
1	C	32	TYR	2.4
1	C	9	LYS	2.4
1	B	12	ASP	2.4
1	B	57	VAL	2.4
1	B	133	VAL	2.4
1	C	121	ALA	2.4
1	A	271	GLY	2.4
1	C	347	PHE	2.4
1	B	325	PRO	2.4
1	B	23	LEU	2.3
1	C	12	ASP	2.3
1	C	273	SER	2.3
1	C	368	ILE	2.3
1	B	39	ALA	2.3
1	B	324	ASP	2.3
1	B	274	ARG	2.3
1	C	338	ARG	2.3
1	B	46	PHE	2.3
1	B	301	PHE	2.3
1	B	273	SER	2.3
1	C	47	ILE	2.3
1	B	31	ARG	2.2
1	A	32	TYR	2.2
1	B	286	TYR	2.2
1	C	395	TYR	2.2

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	301	PHE	2.2
1	C	334	PHE	2.2
1	C	18	LEU	2.2
1	B	7	HIS	2.2
1	B	396	SER	2.2
1	B	335	ARG	2.2
1	B	350	ILE	2.2
1	B	55	ALA	2.2
1	B	257	ALA	2.2
1	C	328	TRP	2.2
1	C	29	THR	2.2
1	B	47	ILE	2.1
1	C	333	GLU	2.1
1	B	394	HIS	2.1
1	B	377	LEU	2.1
1	B	343	GLU	2.1
1	C	30	GLU	2.1
1	C	300	ASP	2.1
1	A	6	PRO	2.1
1	C	356	HIS	2.1
1	B	48	CYS	2.1
1	A	305	ASN	2.1
1	B	387	ASP	2.1
1	B	38	GLN	2.1
1	C	261	HIS	2.1
1	C	302	VAL	2.1
1	B	411	SER	2.1
1	C	379	PHE	2.1
1	B	357	ALA	2.1
1	B	278	MET	2.0
1	B	130	ASP	2.0
1	C	84	ILE	2.0
1	B	372	VAL	2.0
1	C	57	VAL	2.0
1	C	392	SER	2.0
1	B	383	GLN	2.0
1	C	353	GLY	2.0
1	C	367	GLY	2.0

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

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](#)

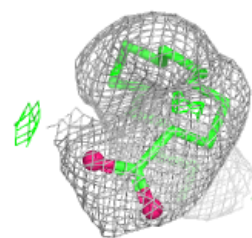
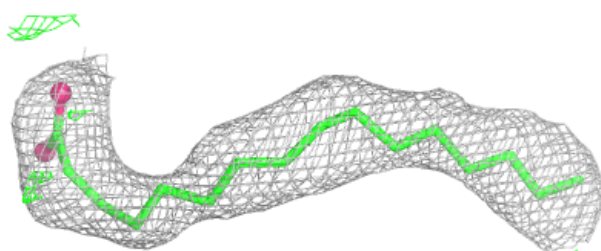
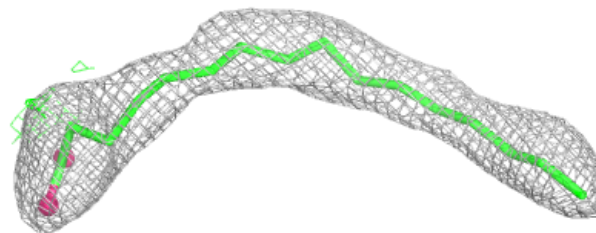
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	PAM	C	2601	18/18	0.80	0.14	68,72,74,74	0
3	PAM	B	1601	18/18	0.85	0.12	56,64,70,71	0
3	PAM	A	601	18/18	0.87	0.11	30,52,61,66	0
2	HEM	C	501	43/43	0.94	0.10	28,41,51,53	0
2	HEM	B	501	43/43	0.95	0.10	26,39,49,51	0
2	HEM	A	501	43/43	0.97	0.07	15,25,28,34	0

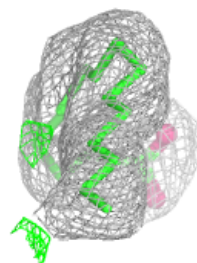
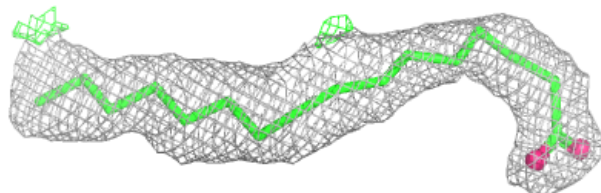
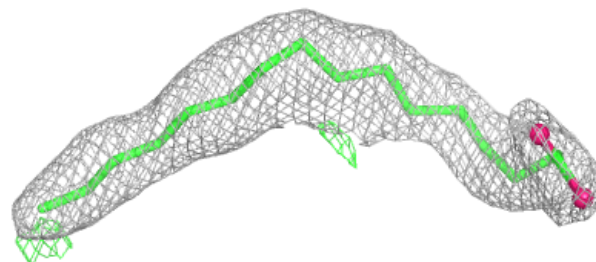
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around PAM C 2601:

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

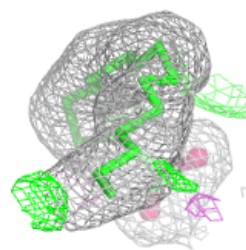
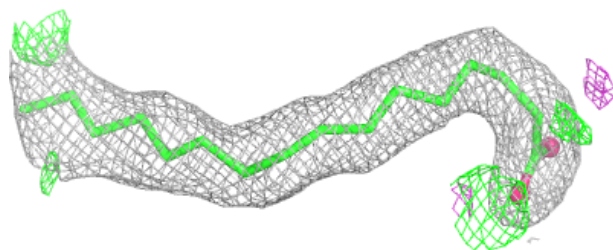
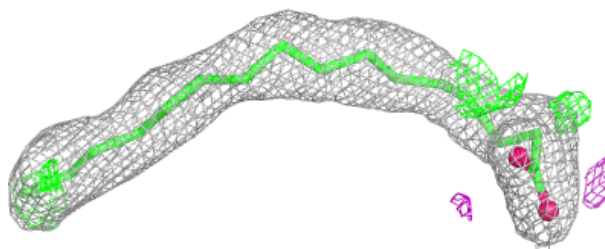
**Electron density around PAM B 1601:**

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



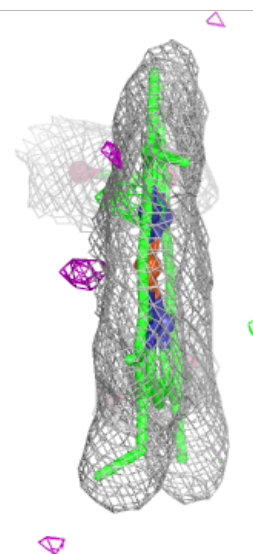
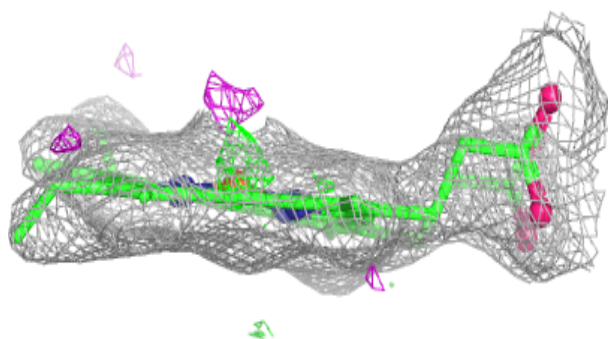
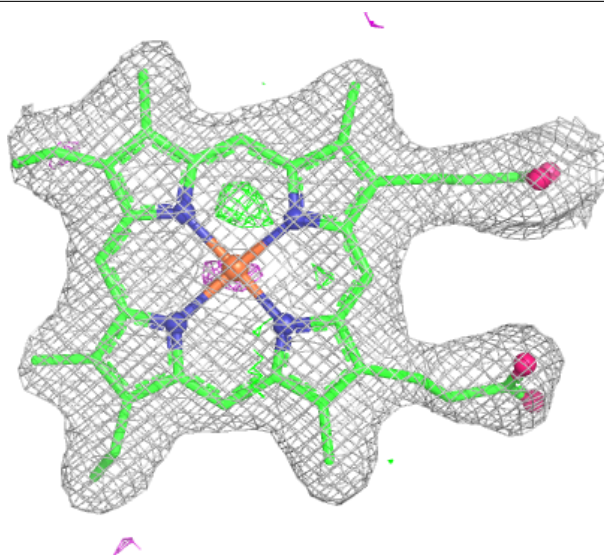
Electron density around PAM A 601:

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



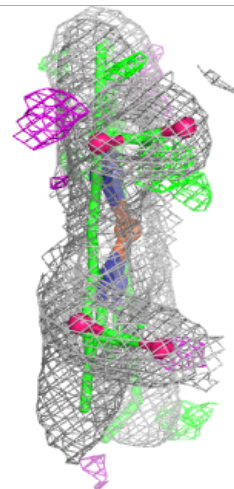
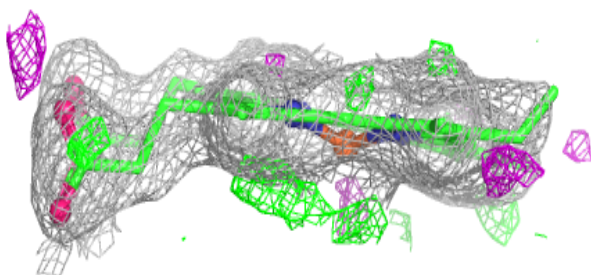
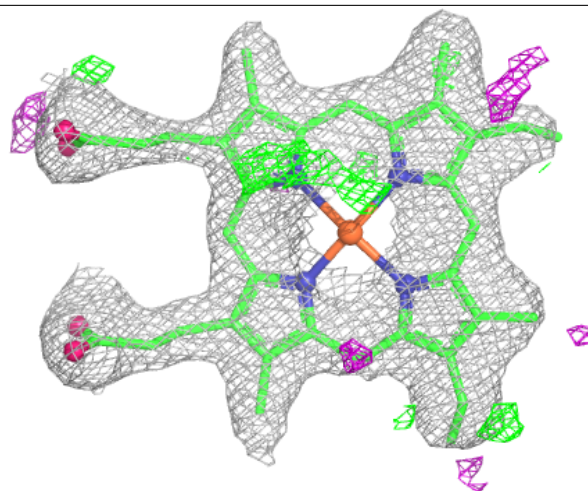
Electron density around HEM C 501:

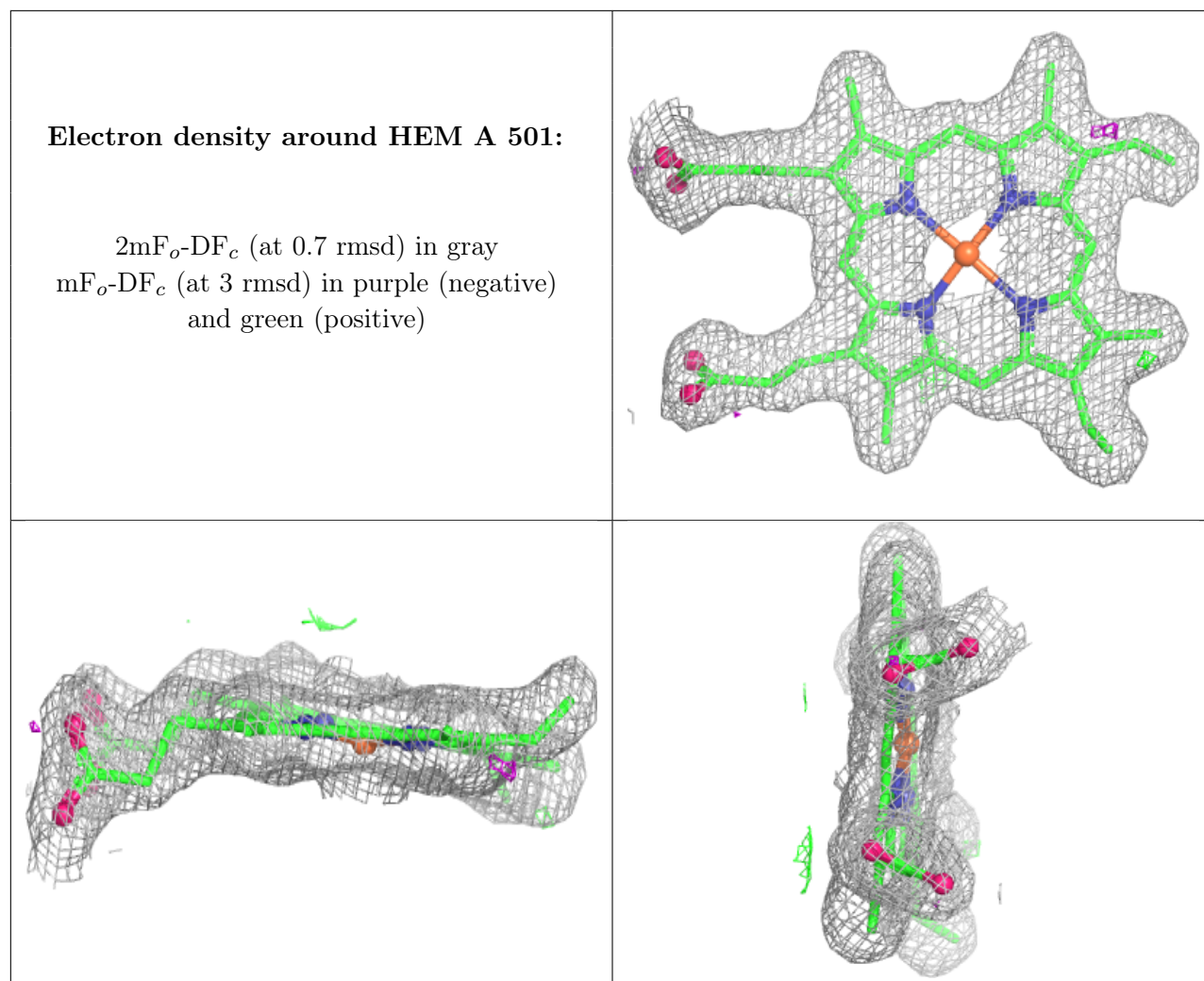
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around HEM B 501:

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





6.5 Other polymers [i](#)

There are no such residues in this entry.