



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 6, 2023 – 02:20 PM EDT

PDB ID : 1KYO
Title : YEAST CYTOCHROME BC1 COMPLEX WITH BOUND SUBSTRATE
CYTOCHROME C
Authors : Lange, C.; Hunte, C.
Deposited on : 2002-02-05
Resolution : 2.97 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 : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35

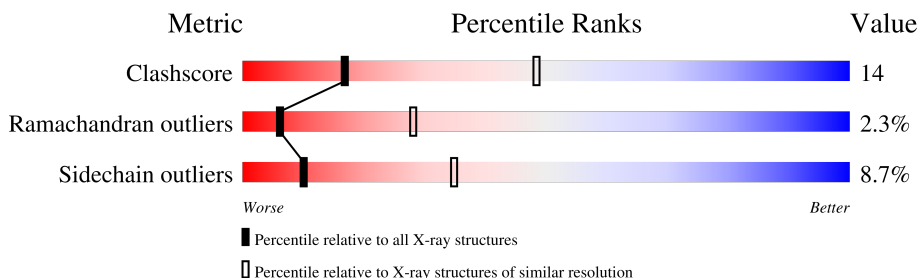
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.97 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	3103 (3.00-2.96)
Ramachandran outliers	138981	2993 (3.00-2.96)
Sidechain outliers	138945	2996 (3.00-2.96)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	430	70% 26% .
1	L	430	65% 30% 5%
2	B	352	58% 36% 6% .
2	M	352	58% 35% 7% .
3	C	385	70% 27% .
3	N	385	73% 23% .
4	D	248	79% 18% ..
4	O	248	75% 23% ..

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Mol	Chain	Length	Quality of chain	
5	E	185	69%	28%
5	P	185	75%	24%
6	F	74	70%	28%
6	Q	74	73%	24%
7	G	126	77%	21%
7	R	126	74%	23%
8	H	93	63%	30%
8	S	93	66%	27%
9	I	57	65%	26%
9	T	57	74%	16%
10	J	127	51%	38%
10	U	127	50%	43%
11	K	107	56%	36%
11	V	107	56%	39%
12	W	108	61%	31%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
14	SMA	C	505	X	-	-	-
14	SMA	N	525	X	-	-	-

2 Entry composition

There are 15 unique types of molecules in this entry. The entry contains 35643 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 UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX CORE PROTEIN I.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	430	3338	2106	575	651	6	0	0	0
1	L	430	3338	2106	575	651	6	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	SER	deletion	UNP P07256
A	152	ASP	GLU	conflict	UNP P07256
L	?	-	SER	deletion	UNP P07256
L	152	ASP	GLU	conflict	UNP P07256

- Molecule 2 is a protein called UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX CORE PROTEIN 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	352	2735	1747	453	534	1	0	0	0
2	M	352	2735	1747	453	534	1	0	0	0

- Molecule 3 is a protein called CYTOCHROME B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	385	3089	2080	484	504	21	0	0	0
3	N	385	3089	2080	484	504	21	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	270	VAL	ASP	SEE REMARK 999	UNP P00163
N	270	VAL	ASP	SEE REMARK 999	UNP P00163

- Molecule 4 is a protein called CYTOCHROME C1, HEME PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	245	Total	C	N	O	S	0	0	0
			1929	1229	332	359	9			
4	O	245	Total	C	N	O	S	0	0	0
			1929	1229	332	359	9			

- Molecule 5 is a protein called UBIQUINOL-CYTOCHROME C REDUCTASE IRON-SULFUR SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	185	Total	C	N	O	S	0	0	0
			1411	893	242	266	10			
5	P	185	Total	C	N	O	S	0	0	0
			1411	893	242	266	10			

- Molecule 6 is a protein called UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 17 KD PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
6	F	74	Total	C	N	O	S	0	0	0
			625	390	108	125	2			
6	Q	74	Total	C	N	O	S	0	0	0
			625	390	108	125	2			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	74	ASP	VAL	conflict	UNP P00127
Q	74	ASP	VAL	conflict	UNP P00127

- Molecule 7 is a protein called UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 14 KD PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
7	G	125	Total	C	N	O	S	0	0	0
			1012	648	172	190	2			
7	R	125	Total	C	N	O	S	0	0	0
			1012	648	172	190	2			

- Molecule 8 is a protein called UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX UBIQUINONE-BINDING PROTEIN QP-C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
8	H	93	Total	C	N	O	S	0	0	0
			773	510	131	130	2			
8	S	93	Total	C	N	O	S	0	0	0
			773	510	131	130	2			

- Molecule 9 is a protein called UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 7.3 KD PROTEIN.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
9	I	53	Total	C	N	O	0	0	0
			436	292	71	73			
9	T	53	Total	C	N	O	0	0	0
			436	292	71	73			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	55	LYS	ARG	conflict	UNP P22289
T	55	LYS	ARG	conflict	UNP P22289

- Molecule 10 is a protein called HEAVY CHAIN (VH) OF FV-FRAGMENT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
10	J	127	Total	C	N	O	S	0	0	0
			1015	644	167	201	3			
10	U	127	Total	C	N	O	S	0	0	0
			1015	644	167	201	3			

- Molecule 11 is a protein called LIGHT CHAIN (VL) OF FV-FRAGMENT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
11	K	107	Total	C	N	O	S	0	0	0
			842	536	141	163	2			
11	V	107	Total	C	N	O	S	0	0	0
			842	536	141	163	2			

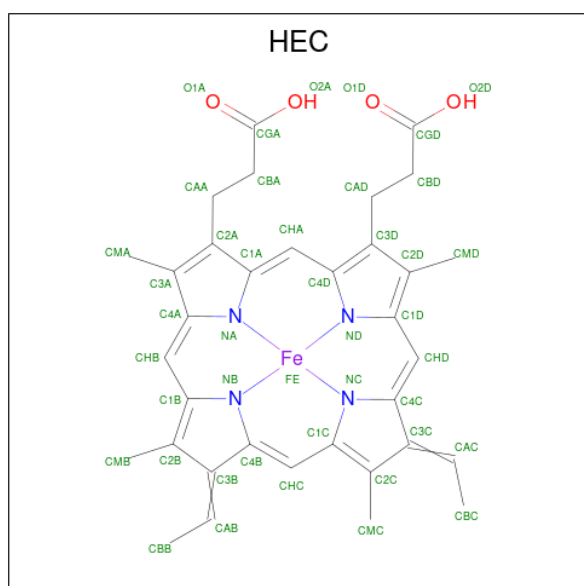
- Molecule 12 is a protein called CYTOCHROME C, ISO-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	W	108	850	537	151	157	5	0	0	0

There is a discrepancy between the modelled and reference sequences:

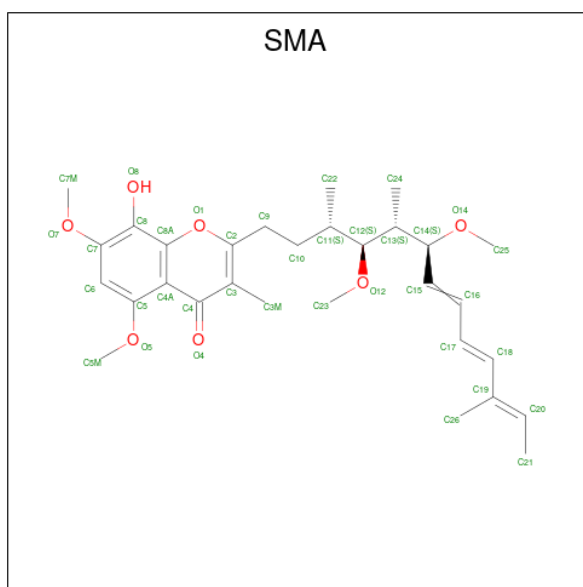
Chain	Residue	Modelled	Actual	Comment	Reference
W	77	M3L	LYS	modified residue	UNP P00044

- Molecule 13 is HEME C (three-letter code: HEC) (formula: $C_{34}H_{34}FeN_4O_4$).



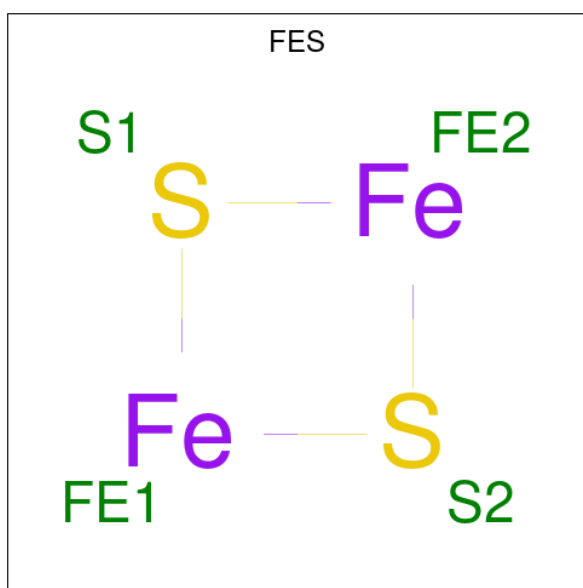
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	Fe	N	O		
13	C	1	43	34	1	4	4	0	0
13	C	1	43	34	1	4	4	0	0
13	D	1	43	34	1	4	4	0	0
13	N	1	43	34	1	4	4	0	0
13	N	1	43	34	1	4	4	0	0
13	O	1	43	34	1	4	4	0	0
13	W	1	43	34	1	4	4	0	0

- Molecule 14 is STIGMATELLIN A (three-letter code: SMA) (formula: $C_{30}H_{42}O_7$).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	
14	C	1	Total	C	O	0	0
			37	30	7		
14	N	1	Total	C	O	0	0
			37	30	7		

- Molecule 15 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe₂S₂).



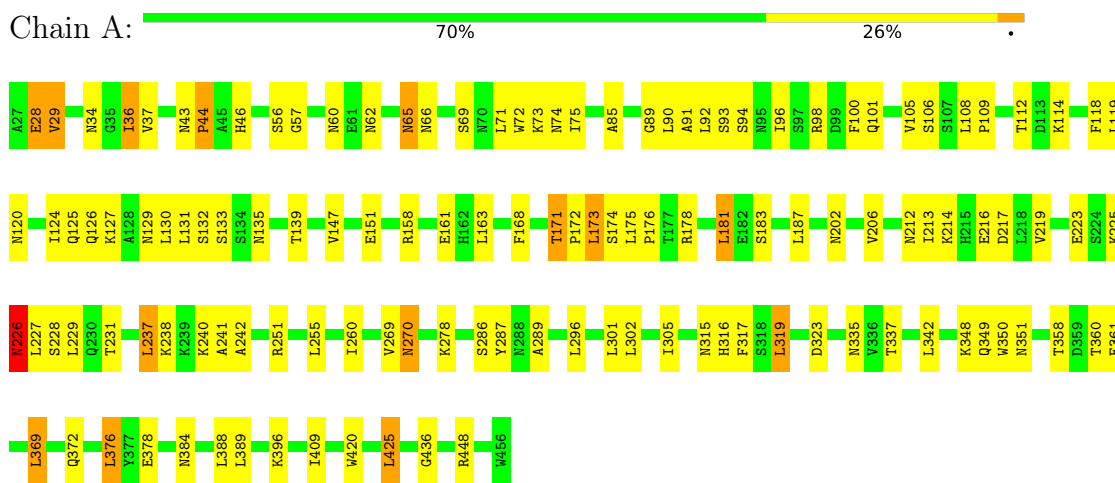
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	
15	E	1	Total	Fe	S	0	0
			4	2	2		
15	P	1	Total	Fe	S	0	0
			4	2	2		

3 Residue-property plots [i](#)

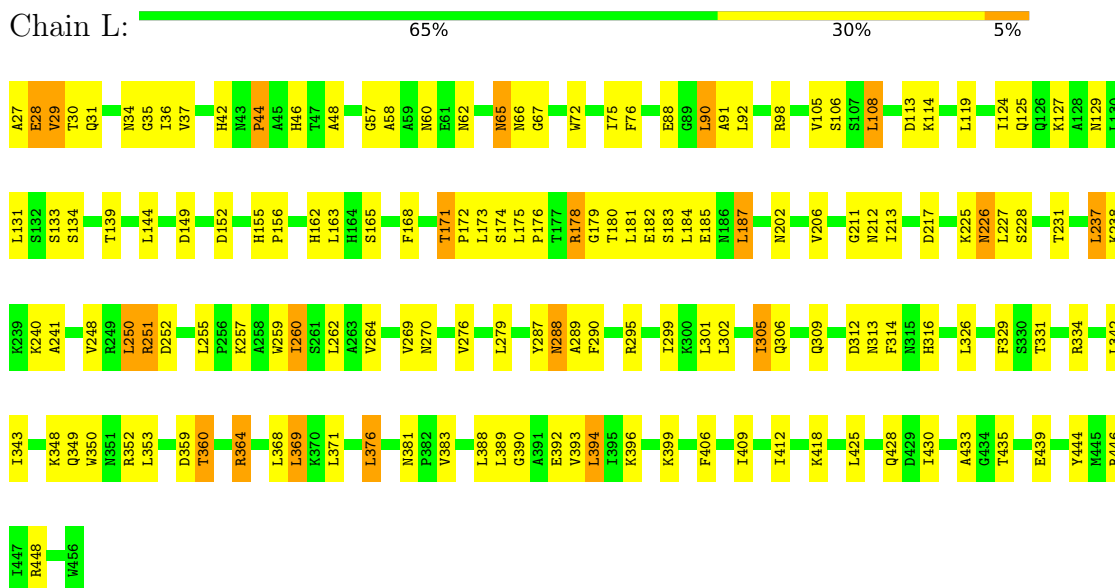
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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.

Note EDS was not executed.

- Molecule 1: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX CORE PROTEIN I

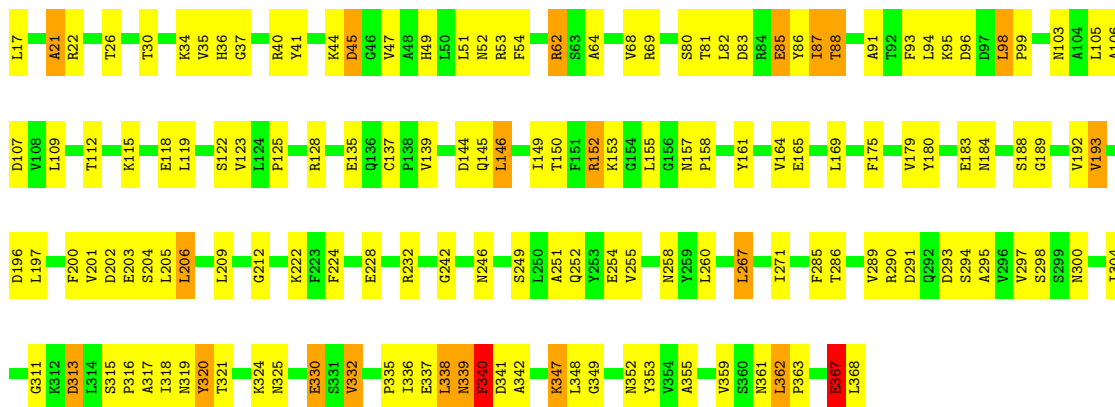


- Molecule 1: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX CORE PROTEIN I



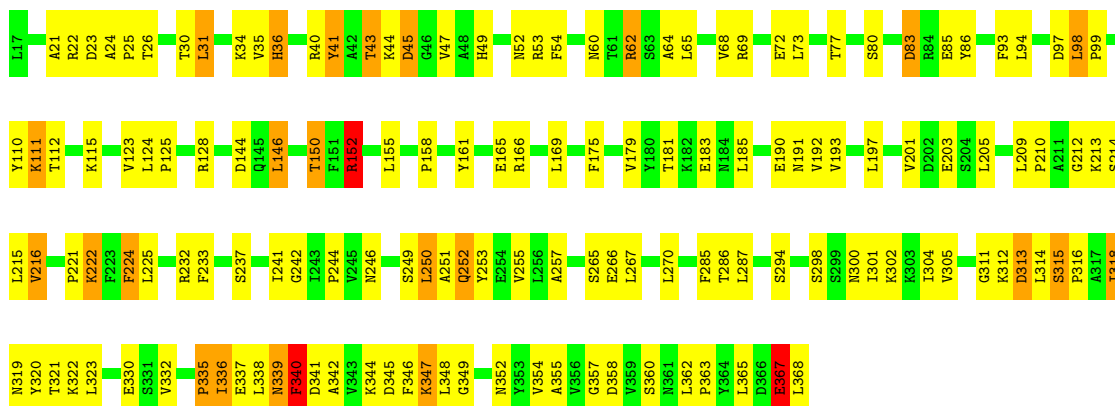
● Molecule 2: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX CORE PROTEIN
2

Chain B:  58% 36% 6%



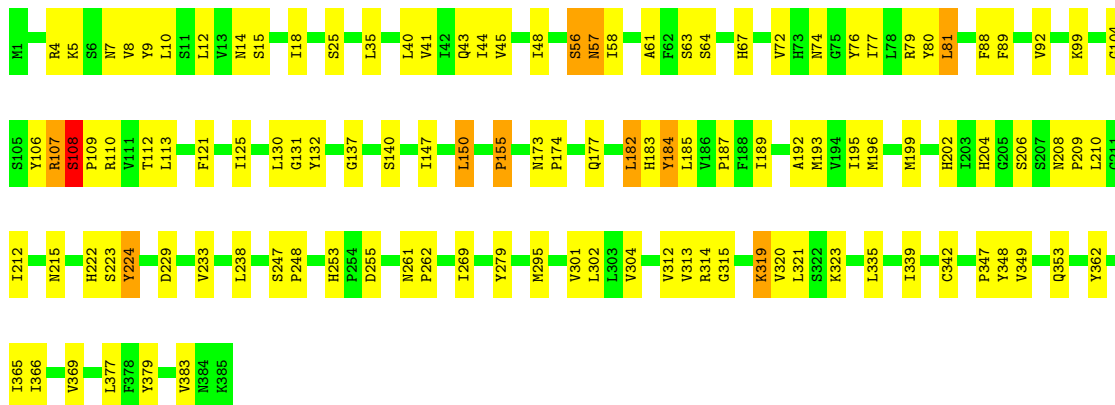
● Molecule 2: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX CORE PROTEIN
2

Chain M:  58% 35% 7%

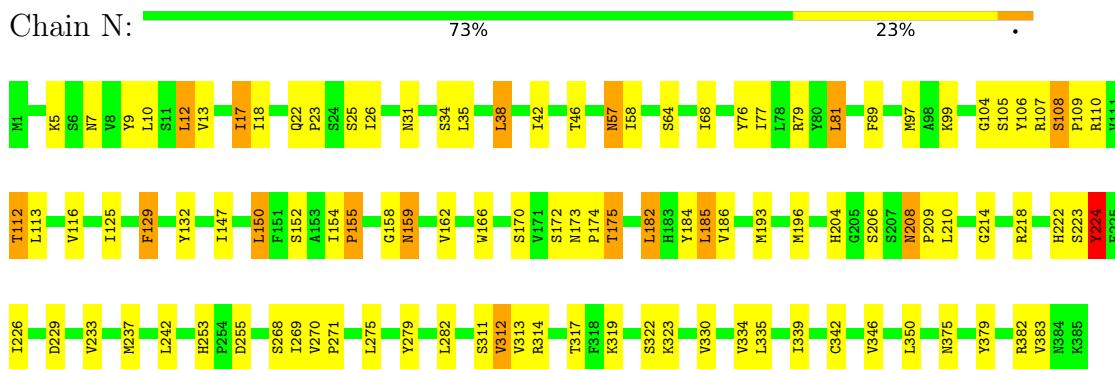


● Molecule 3: CYTOCHROME B

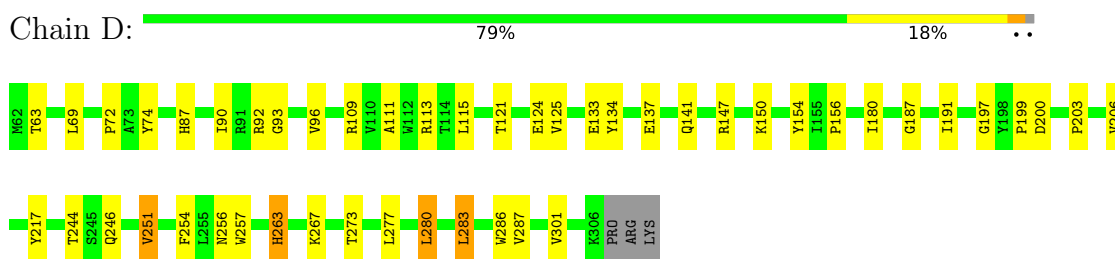
Chain C:  70% 27%



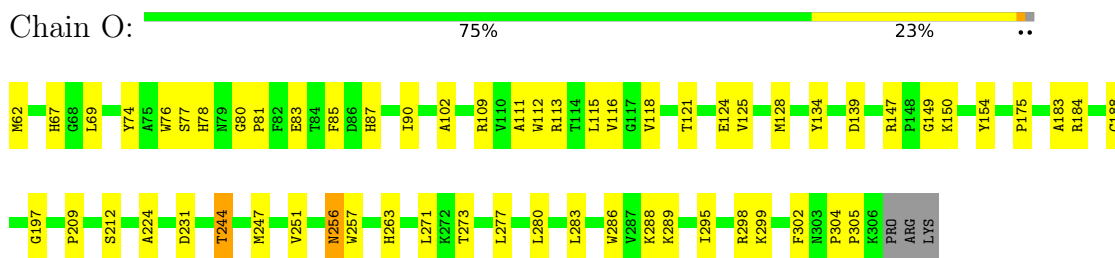
• Molecule 3: CYTOCHROME B



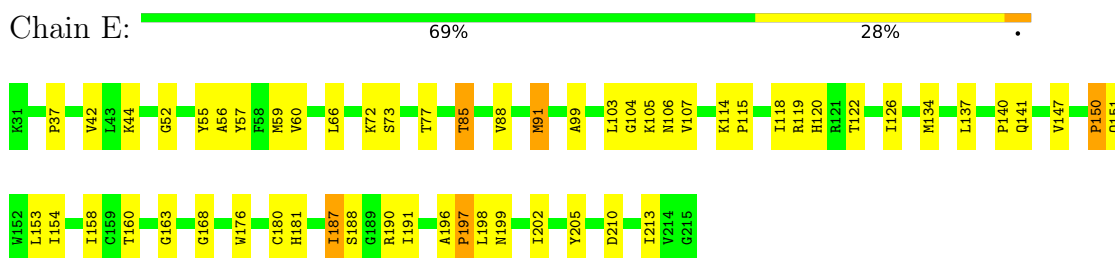
• Molecule 4: CYTOCHROME C1, HEME PROTEIN



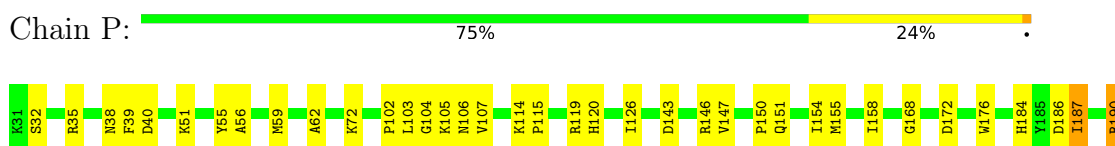
• Molecule 4: CYTOCHROME C1, HEME PROTEIN



• Molecule 5: UBIQUINOL-CYTOCHROME C REDUCTASE IRON-SULFUR SUBUNIT



• Molecule 5: UBIQUINOL-CYTOCHROME C REDUCTASE IRON-SULFUR SUBUNIT





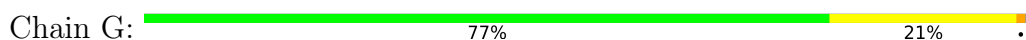
- Molecule 6: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 17 KD PROTEIN



- Molecule 6: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 17 KD PROTEIN



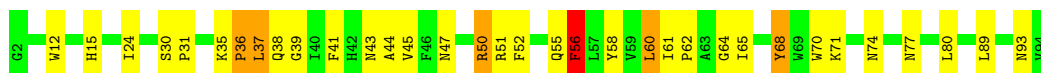
- Molecule 7: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 14 KD PROTEIN



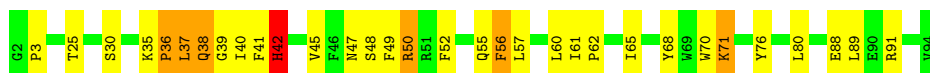
- Molecule 7: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 14 KD PROTEIN



- Molecule 8: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX UBIQUINONE-BINDING PROTEIN QP-C

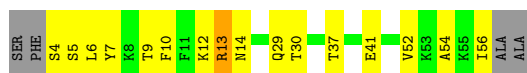


- Molecule 8: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX UBIQUINONE-BINDING PROTEIN QP-C



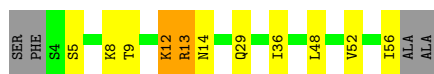
- Molecule 9: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 7.3 KD PROTEIN

Chain I:  65% 26% 7%



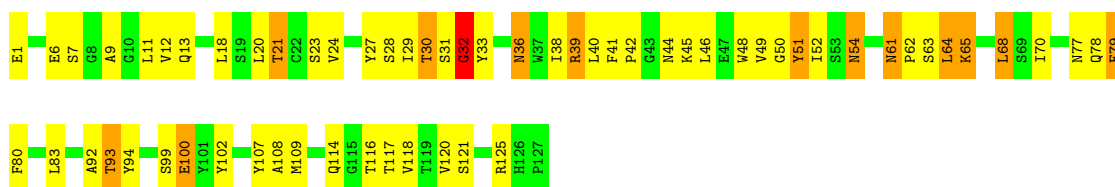
- Molecule 9: UBIQUINOL-CYTOCHROME C REDUCTASE COMPLEX 7.3 KD PROTEIN

Chain T:  74% 16% 7%



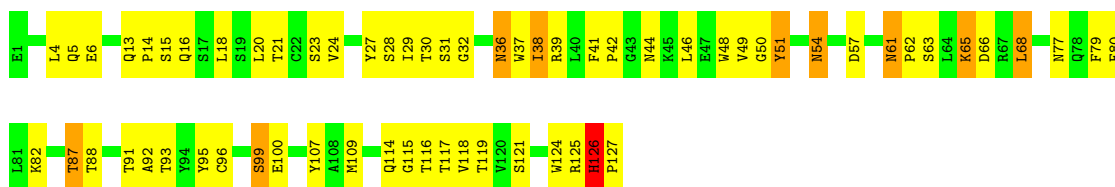
- Molecule 10: HEAVY CHAIN (VH) OF FV-FRAGMENT

Chain J:  51% 38% 10%



- Molecule 10: HEAVY CHAIN (VH) OF FV-FRAGMENT

Chain U:  50% 43% 7%



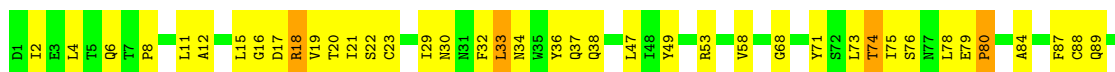
- Molecule 11: LIGHT CHAIN (VL) OF FV-FRAGMENT

Chain K:  56% 36% 7%



- Molecule 11: LIGHT CHAIN (VL) OF FV-FRAGMENT

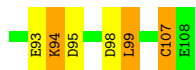
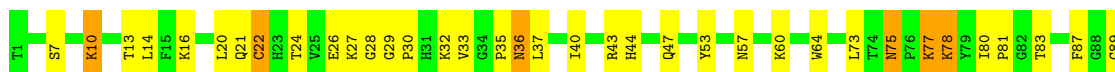
Chain V:  56% 39% 5%





- Molecule 12: CYTOCHROME C, ISO-1

Chain W: 61% 31% 8%



4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	147.22Å 165.53Å 195.89Å 90.00° 104.19° 90.00°	Depositor
Resolution (Å)	29.64 – 2.97	Depositor
% Data completeness (in resolution range)	93.7 (29.64-2.97)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	0.11	Depositor
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.229 , 0.268	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	35643	wwPDB-VP
Average B, all atoms (Å ²)	59.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SMA, FES, M3L, HEC

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.40	0/3399	0.63	0/4606
1	L	0.40	0/3399	0.63	1/4606 (0.0%)
2	B	0.37	0/2781	0.68	2/3764 (0.1%)
2	M	0.38	0/2781	0.68	1/3764 (0.0%)
3	C	0.50	0/3191	0.68	0/4353
3	N	0.49	0/3191	0.70	0/4353
4	D	0.41	0/1989	0.64	0/2710
4	O	0.41	0/1989	0.63	0/2710
5	E	0.41	0/1444	0.67	1/1957 (0.1%)
5	P	0.39	0/1444	0.67	0/1957
6	F	0.39	0/639	0.59	0/859
6	Q	0.39	0/639	0.61	0/859
7	G	0.42	0/1032	0.69	0/1397
7	R	0.43	0/1032	0.68	0/1397
8	H	0.49	0/804	0.65	0/1088
8	S	0.52	0/804	0.61	0/1088
9	I	0.43	0/449	0.55	0/605
9	T	0.44	0/449	0.56	0/605
10	J	0.38	0/1043	0.68	1/1422 (0.1%)
10	U	0.38	0/1043	0.68	1/1422 (0.1%)
11	K	0.35	0/863	0.58	0/1172
11	V	0.36	0/863	0.62	0/1172
12	W	0.52	0/856	0.68	0/1145
All	All	0.42	0/36124	0.66	7/49011 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
3	N	0	1

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	U	32	GLY	N-CA-C	8.27	133.77	113.10
10	J	32	GLY	N-CA-C	6.98	130.55	113.10
2	B	340	PHE	N-CA-C	-6.37	93.80	111.00
2	M	340	PHE	N-CA-C	-6.34	93.87	111.00
5	E	163	GLY	N-CA-C	5.42	126.66	113.10
1	L	35	GLY	N-CA-C	-5.30	99.84	113.10
2	B	87	ILE	N-CA-C	-5.08	97.30	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	N	224	TYR	Sidechain

5.2 Too-close contacts [i](#)

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	3338	0	3316	87	0
1	L	3338	0	3316	101	0
2	B	2735	0	2774	98	0
2	M	2735	0	2774	107	0
3	C	3089	0	3125	88	0
3	N	3089	0	3125	85	0
4	D	1929	0	1844	26	0
4	O	1929	0	1844	43	0
5	E	1411	0	1386	49	0
5	P	1411	0	1386	38	0
6	F	625	0	576	11	0
6	Q	625	0	576	9	0
7	G	1012	0	1026	18	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	R	1012	0	1026	21	0
8	H	773	0	736	29	0
8	S	773	0	736	29	0
9	I	436	0	435	10	0
9	T	436	0	435	12	0
10	J	1015	0	959	48	0
10	U	1015	0	959	47	0
11	K	842	0	820	40	0
11	V	842	0	820	41	0
12	W	850	0	854	28	0
13	C	86	0	64	7	0
13	D	43	0	30	1	0
13	N	86	0	64	8	0
13	O	43	0	30	4	0
13	W	43	0	30	4	0
14	C	37	0	40	4	0
14	N	37	0	40	4	0
15	E	4	0	0	1	0
15	P	4	0	0	0	0
All	All	35643	0	35146	1000	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 14.

All (1000) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:49:HIS:HD2	2:B:161:TYR:H	1.08	0.97
2:M:49:HIS:HD2	2:M:161:TYR:H	1.13	0.96
7:R:31:GLN:HE21	7:R:31:GLN:HA	1.31	0.96
1:L:62:ASN:H	1:L:65:ASN:HD21	1.13	0.95
1:A:62:ASN:HB2	1:A:65:ASN:HD21	1.31	0.95
3:N:58:ILE:H	3:N:173:ASN:ND2	1.64	0.95
1:L:62:ASN:H	1:L:65:ASN:ND2	1.65	0.94
3:N:7:ASN:HD22	3:N:10:LEU:H	0.99	0.93
11:V:36:TYR:HE2	11:V:89:GLN:HG2	1.32	0.93
2:B:98:LEU:HD11	2:B:192:VAL:HG13	1.49	0.92
2:B:83:ASP:HB2	2:B:86:TYR:H	1.35	0.92
6:F:77:GLN:H	6:F:77:GLN:NE2	1.67	0.91
2:M:98:LEU:HD11	2:M:192:VAL:HG13	1.53	0.91
2:B:347:LYS:H	2:B:347:LYS:HD3	1.37	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:77:GLN:H	6:F:77:GLN:HE21	0.97	0.89
2:B:49:HIS:CD2	2:B:161:TYR:H	1.89	0.89
10:U:29:ILE:H	10:U:77:ASN:HD21	1.21	0.88
11:K:36:TYR:HE2	11:K:89:GLN:HG2	1.40	0.87
1:A:62:ASN:HB2	1:A:65:ASN:ND2	1.91	0.85
1:L:57:GLY:H	1:L:60:ASN:HD22	1.24	0.85
6:F:77:GLN:HE21	6:F:77:GLN:N	1.75	0.84
2:M:49:HIS:CD2	2:M:161:TYR:H	1.96	0.84
2:M:300:ASN:O	2:M:304:ILE:HG12	1.78	0.83
5:P:172:ASP:H	5:P:184:HIS:HD2	1.24	0.82
1:L:237:LEU:H	1:L:237:LEU:HD23	1.43	0.82
5:E:187:ILE:HD12	5:E:187:ILE:H	1.45	0.81
2:M:110:TYR:HD2	2:M:205:LEU:HD23	1.46	0.81
5:P:72:LYS:NZ	9:T:29:GLN:HE22	1.77	0.81
10:U:54:ASN:H	10:U:54:ASN:HD22	1.27	0.81
3:N:7:ASN:ND2	3:N:10:LEU:H	1.79	0.80
1:A:120:ASN:HD21	1:A:124:ILE:HD12	1.46	0.80
8:H:35:LYS:HE2	8:H:36:PRO:HD2	1.64	0.80
3:C:253:HIS:HD2	3:C:255:ASP:H	1.30	0.79
10:J:61:ASN:HD22	10:J:63:SER:H	1.28	0.79
10:J:54:ASN:HD22	10:J:54:ASN:H	1.27	0.79
2:B:267:LEU:HD22	2:B:304:ILE:HD13	1.64	0.78
8:H:80:LEU:HB3	8:H:89:LEU:HD23	1.64	0.78
1:A:65:ASN:HA	1:A:187:LEU:HD11	1.65	0.77
8:H:41:PHE:HA	8:H:45:VAL:HB	1.65	0.77
3:N:159:ASN:HD22	3:N:159:ASN:H	1.33	0.77
1:L:57:GLY:H	1:L:60:ASN:ND2	1.81	0.77
10:U:6:GLU:H	10:U:114:GLN:HE21	1.33	0.77
4:O:62:MET:HB3	4:O:67:HIS:CE1	2.20	0.77
3:N:108:SER:CB	3:N:109:PRO:HD3	2.15	0.76
3:C:4:ARG:HE	3:C:14:ASN:ND2	1.84	0.76
5:E:191:ILE:HD13	5:E:196:ALA:HB3	1.67	0.76
3:C:125:ILE:HG22	14:C:505:SMA:H37	1.67	0.75
1:L:295:ARG:HD2	1:L:306:GLN:OE1	1.85	0.75
10:U:36:ASN:HD21	10:U:99:SER:HB3	1.52	0.75
4:D:197:GLY:O	4:D:199:PRO:HD3	1.86	0.75
2:M:60:ASN:HD22	2:M:111:LYS:HB2	1.52	0.75
3:N:13:VAL:HG13	3:N:17:ILE:HD12	1.67	0.75
11:V:36:TYR:CE2	11:V:89:GLN:HG2	2.21	0.74
1:L:316:HIS:HE1	1:L:350:TRP:HE1	1.36	0.74
5:P:172:ASP:H	5:P:184:HIS:CD2	2.05	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:96:VAL:HB	4:D:251:VAL:HG13	1.69	0.73
4:O:111:ALA:HA	4:O:154:TYR:HA	1.68	0.73
2:B:318:ILE:HA	2:B:321:THR:HG22	1.70	0.73
1:L:260:ILE:HD11	1:L:343:ILE:HD11	1.71	0.73
3:C:56:SER:HB2	3:C:177:GLN:HG2	1.71	0.73
11:V:6:GLN:HG2	11:V:23:CYS:SG	2.29	0.72
1:A:126:GLN:HG2	1:A:129:ASN:HB2	1.69	0.72
11:K:47:LEU:HA	11:K:58:VAL:HG11	1.72	0.72
3:C:7:ASN:ND2	3:C:10:LEU:H	1.86	0.72
3:N:253:HIS:HD2	3:N:255:ASP:H	1.35	0.72
4:O:271:LEU:HD23	9:T:36:ILE:HG23	1.72	0.72
5:E:115:PRO:HD2	5:E:158:ILE:HD11	1.71	0.71
5:P:72:LYS:HZ2	9:T:29:GLN:HE22	1.36	0.71
2:B:150:THR:HG22	2:B:352:ASN:ND2	2.05	0.71
10:U:100:GLU:O	10:U:107:TYR:HA	1.91	0.71
10:U:41:PHE:HD2	10:U:92:ALA:HB2	1.56	0.71
5:E:72:LYS:NZ	9:I:29:GLN:HE21	1.89	0.71
1:A:72:TRP:CE3	1:A:75:ILE:HD11	2.26	0.71
1:A:316:HIS:HE1	1:A:350:TRP:HE1	1.38	0.71
4:O:289:LYS:NZ	8:S:40:ILE:HD11	2.06	0.71
11:V:34:ASN:HD22	11:V:49:TYR:HA	1.55	0.70
3:N:7:ASN:ND2	3:N:9:TYR:H	1.89	0.70
1:A:62:ASN:CB	1:A:65:ASN:HD21	2.04	0.70
5:E:44:LYS:NZ	5:E:52:GLY:H	1.89	0.70
5:P:103:LEU:HA	5:P:120:HIS:ND1	2.07	0.70
2:B:115:LYS:HB2	2:B:118:GLU:HG3	1.72	0.70
3:C:335:LEU:O	3:C:339:ILE:HG12	1.92	0.70
3:N:208:ASN:HD22	3:N:210:LEU:H	1.40	0.70
6:Q:77:GLN:H	6:Q:77:GLN:HE21	1.40	0.70
3:N:107:ARG:HD3	3:N:314:ARG:HG3	1.73	0.70
2:M:347:LYS:HG2	2:M:348:LEU:H	1.57	0.69
10:J:99:SER:HB3	10:J:109:MET:HG2	1.74	0.69
1:A:369:LEU:HD13	1:A:409:ILE:HD13	1.75	0.69
11:K:34:ASN:HD22	11:K:49:TYR:HA	1.57	0.69
2:B:197:LEU:O	2:B:201:VAL:HG23	1.93	0.69
2:M:183:GLU:HB2	2:M:212:GLY:O	1.94	0.68
2:M:62:ARG:HH21	2:M:62:ARG:HB2	1.58	0.68
10:U:61:ASN:HD22	10:U:63:SER:H	1.41	0.68
3:C:108:SER:OG	3:C:109:PRO:HD2	1.93	0.68
11:K:2:ILE:HD12	11:K:2:ILE:H	1.58	0.68
2:B:318:ILE:HD13	2:B:341:ASP:H	1.58	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:N:108:SER:HB3	3:N:109:PRO:HD3	1.75	0.67
2:B:34:LYS:HG3	2:B:88:THR:HG23	1.76	0.67
4:O:147:ARG:HH21	4:O:150:LYS:HE3	1.57	0.67
3:C:301:VAL:O	3:C:304:VAL:HG12	1.93	0.67
10:J:107:TYR:H	11:K:91:HIS:CD2	2.12	0.67
13:N:521:HEC:HMB1	13:N:521:HEC:HBB3	1.77	0.67
5:E:134:MET:HG2	10:J:31:SER:HB3	1.77	0.67
4:O:125:VAL:HA	4:O:128:MET:HE3	1.77	0.67
2:B:337:GLU:O	2:B:339:ASN:N	2.28	0.67
8:S:38:GLN:O	8:S:40:ILE:HD12	1.95	0.67
7:G:123:ILE:O	1:L:360:THR:HG21	1.95	0.66
2:B:340:PHE:O	2:B:341:ASP:HB2	1.95	0.66
10:J:41:PHE:HD1	10:J:45:LYS:HG3	1.60	0.66
2:M:40:ARG:HD3	2:M:155:LEU:HG	1.77	0.66
3:N:108:SER:OG	3:N:109:PRO:HD3	1.96	0.66
10:U:54:ASN:HD22	10:U:54:ASN:N	1.94	0.66
3:C:173:ASN:HB3	3:C:174:PRO:HD3	1.78	0.66
7:R:31:GLN:HA	7:R:31:GLN:NE2	2.07	0.66
1:L:376:LEU:HD22	1:L:388:LEU:HD11	1.78	0.66
2:B:62:ARG:CB	2:B:62:ARG:HH21	2.09	0.66
1:A:348:LYS:HD3	1:A:351:ASN:OD1	1.95	0.66
3:C:279:TYR:CE1	14:C:505:SMA:H5	2.30	0.65
3:N:17:ILE:HG22	3:N:226:ILE:HD11	1.78	0.65
3:C:253:HIS:CD2	3:C:255:ASP:H	2.14	0.65
1:L:108:LEU:HD22	2:M:323:LEU:HD23	1.78	0.65
3:N:58:ILE:H	3:N:173:ASN:HD22	1.45	0.65
3:C:7:ASN:HD22	3:C:10:LEU:H	1.43	0.65
3:N:7:ASN:HD22	3:N:10:LEU:N	1.83	0.65
11:V:2:ILE:HD12	11:V:2:ILE:H	1.62	0.65
6:Q:77:GLN:H	6:Q:77:GLN:NE2	1.93	0.65
11:K:37:GLN:HB2	11:K:47:LEU:HD11	1.78	0.64
2:M:69:ARG:O	2:M:73:LEU:HD23	1.97	0.64
3:N:104:GLY:HA2	3:N:106:TYR:CE2	2.31	0.64
3:C:58:ILE:H	3:C:173:ASN:ND2	1.95	0.64
10:U:29:ILE:H	10:U:77:ASN:ND2	1.93	0.64
11:V:32:PHE:HB2	11:V:92:ILE:HG22	1.78	0.64
4:D:203:PRO:HG2	4:D:206:VAL:HG21	1.79	0.64
1:A:147:VAL:HG22	1:A:178:ARG:HB3	1.79	0.64
10:J:29:ILE:H	10:J:77:ASN:HD21	1.46	0.64
3:N:147:ILE:O	3:N:150:LEU:HB2	1.98	0.64
3:N:311:SER:CB	3:N:319:LYS:HZ1	2.10	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:V:74:THR:HG22	11:V:75:ILE:H	1.63	0.64
2:B:44:LYS:O	2:B:47:VAL:HG23	1.98	0.63
1:L:228:SER:HB3	1:L:231:THR:HB	1.81	0.63
2:M:347:LYS:HD3	2:M:347:LYS:H	1.62	0.63
3:N:25:SER:OG	7:R:79:HIS:HD2	1.82	0.63
10:U:29:ILE:HG12	10:U:77:ASN:ND2	2.13	0.63
2:M:365:LEU:HD12	2:M:368:LEU:HD12	1.80	0.63
3:N:147:ILE:HA	3:N:150:LEU:HD22	1.80	0.63
10:J:24:VAL:HG21	10:J:29:ILE:HD11	1.81	0.63
5:P:32:SER:HB3	5:P:35:ARG:HG3	1.81	0.63
3:C:108:SER:CB	3:C:109:PRO:HD2	2.28	0.63
1:A:296:LEU:O	2:B:69:ARG:NH2	2.31	0.62
3:N:379:TYR:CE1	3:N:383:VAL:HG21	2.33	0.62
8:S:61:ILE:HB	8:S:62:PRO:HD3	1.81	0.62
2:B:49:HIS:HD2	2:B:161:TYR:N	1.91	0.62
1:A:66:ASN:ND2	1:A:175:LEU:HD12	2.13	0.62
2:M:347:LYS:HG2	2:M:348:LEU:N	2.13	0.62
2:M:355:ALA:HB1	2:M:362:LEU:HD23	1.82	0.62
7:R:80:GLN:O	7:R:84:THR:HG23	1.98	0.62
2:M:337:GLU:O	2:M:339:ASN:N	2.33	0.62
2:M:340:PHE:O	2:M:341:ASP:HB2	2.00	0.62
3:C:104:GLY:HA2	3:C:106:TYR:CE2	2.35	0.62
5:E:181:HIS:HB2	15:E:504:FES:S1	2.40	0.61
1:L:67:GLY:HA3	1:L:184:LEU:HD11	1.82	0.61
1:L:67:GLY:HA3	1:L:184:LEU:CD1	2.29	0.61
9:T:12:LYS:O	9:T:13:ARG:HG3	2.01	0.61
3:C:208:ASN:HD22	3:C:210:LEU:H	1.46	0.61
7:R:87:LEU:HG	8:S:50:ARG:HH11	1.65	0.61
11:K:29:ILE:HA	11:K:92:ILE:HG21	1.81	0.61
1:L:62:ASN:N	1:L:65:ASN:HD21	1.92	0.61
10:U:28:SER:HB3	10:U:30:THR:HG22	1.82	0.61
5:P:106:ASN:ND2	5:P:119:ARG:HH21	1.99	0.61
11:V:38:GLN:O	11:V:84:ALA:HB1	2.01	0.61
11:K:36:TYR:CE2	11:K:89:GLN:HG2	2.30	0.61
2:M:340:PHE:C	2:M:342:ALA:H	2.02	0.61
10:U:93:THR:HG22	10:U:117:THR:HG23	1.82	0.61
1:L:288:ASN:C	1:L:288:ASN:HD22	2.03	0.60
2:B:164:VAL:HG21	2:M:232:ARG:NH1	2.16	0.60
12:W:13:THR:HA	12:W:16:LYS:HE2	1.83	0.60
1:A:316:HIS:CE1	1:A:350:TRP:HE1	2.19	0.60
3:C:132:TYR:HA	13:C:501:HEC:HAA2	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:W:29:GLY:HA2	12:W:36:ASN:OD1	2.01	0.60
2:M:257:ALA:HB2	2:M:285:PHE:HE1	1.66	0.60
5:E:107:VAL:CG1	5:E:118:ILE:HB	2.31	0.60
1:L:288:ASN:ND2	1:L:290:PHE:H	2.00	0.60
2:M:44:LYS:O	2:M:47:VAL:HG23	2.02	0.60
11:K:17:ASP:HB2	11:K:18:ARG:HH22	1.66	0.60
3:N:275:LEU:HD13	14:N:525:SMA:H14	1.83	0.60
11:V:75:ILE:HG22	11:V:76:SER:N	2.16	0.60
2:B:45:ASP:HB2	2:B:165:GLU:HG2	1.84	0.60
3:N:58:ILE:H	3:N:173:ASN:HD21	1.49	0.60
3:N:64:SER:O	3:N:68:ILE:HG13	2.02	0.60
3:N:166:TRP:HA	3:N:175:THR:HG23	1.84	0.60
8:S:40:ILE:HD12	8:S:40:ILE:H	1.66	0.60
6:F:91:GLY:O	6:F:95:VAL:HG13	2.01	0.59
10:U:91:THR:HG23	10:U:119:THR:HA	1.84	0.59
12:W:13:THR:HG22	12:W:16:LYS:HE2	1.83	0.59
3:C:347:PRO:HG3	8:H:77:ASN:HB2	1.84	0.59
1:L:264:VAL:HG12	1:L:430:ILE:HG22	1.83	0.59
2:M:312:LYS:O	2:M:313:ASP:HB2	2.02	0.59
4:O:147:ARG:NH2	4:O:150:LYS:HE3	2.16	0.59
6:F:78:LEU:HD13	6:F:142:LEU:HD22	1.84	0.59
2:B:152:ARG:HH21	2:B:152:ARG:HG3	1.67	0.59
8:H:61:ILE:O	8:H:65:ILE:HG13	2.03	0.59
1:L:227:LEU:HG	1:L:228:SER:H	1.67	0.59
1:L:287:TYR:HB3	1:L:314:PHE:CE2	2.38	0.59
10:J:49:VAL:HG13	10:J:64:LEU:HD12	1.85	0.59
10:U:16:GLN:HE21	10:U:16:GLN:HA	1.68	0.59
1:A:168:PHE:O	1:A:174:SER:HB3	2.03	0.58
1:A:214:LYS:HB2	1:A:217:ASP:HB2	1.84	0.58
1:A:227:LEU:HG	1:A:228:SER:H	1.68	0.58
11:K:17:ASP:O	11:K:78:LEU:HD13	2.03	0.58
11:V:17:ASP:HB2	11:V:18:ARG:NH2	2.18	0.58
1:A:75:ILE:HG23	1:A:139:THR:HG21	1.85	0.58
8:S:80:LEU:HB3	8:S:89:LEU:HD23	1.84	0.58
5:E:99:ALA:HB2	5:E:210:ASP:HB3	1.85	0.58
5:E:187:ILE:HD12	5:E:187:ILE:N	2.17	0.58
11:K:55:HIS:O	11:K:58:VAL:HG22	2.04	0.58
2:M:62:ARG:HH21	2:M:62:ARG:CB	2.15	0.58
5:P:102:PRO:HB2	5:P:105:LYS:HG2	1.85	0.58
1:A:171:THR:HG23	1:A:172:PRO:HD2	1.85	0.58
11:K:63:SER:HB2	11:K:74:THR:HB	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:171:THR:HG23	1:L:172:PRO:HD2	1.85	0.58
3:N:208:ASN:HD22	3:N:210:LEU:N	2.00	0.58
2:M:155:LEU:N	2:M:155:LEU:HD12	2.19	0.58
12:W:57:ASN:HD21	13:W:526:HEC:HAA2	1.67	0.58
8:H:52:PHE:O	8:H:56:PHE:HB3	2.03	0.58
10:J:61:ASN:ND2	10:J:63:SER:H	1.99	0.58
4:O:286:TRP:CE3	5:P:59:MET:HG3	2.38	0.58
1:A:237:LEU:HD23	1:A:237:LEU:H	1.68	0.58
2:B:137:CYS:SG	2:B:139:VAL:HG22	2.44	0.58
3:C:7:ASN:HD22	3:C:10:LEU:N	2.02	0.57
1:L:250:LEU:HD23	8:S:25:THR:HG23	1.86	0.57
10:U:29:ILE:N	10:U:77:ASN:HD21	1.98	0.57
2:B:105:LEU:O	2:B:109:LEU:HD12	2.04	0.57
1:L:36:ILE:HG12	1:L:202:ASN:OD1	2.05	0.57
1:L:316:HIS:CE1	1:L:350:TRP:HE1	2.20	0.57
12:W:35:PRO:HG3	12:W:53:TYR:CE1	2.40	0.57
2:B:146:LEU:HD23	2:B:286:THR:HG22	1.86	0.57
2:M:252:GLN:O	2:M:255:VAL:HG22	2.03	0.57
12:W:27:LYS:HD2	12:W:28:GLY:N	2.20	0.57
1:A:37:VAL:HG13	1:A:206:VAL:HG22	1.87	0.57
1:A:65:ASN:N	1:A:65:ASN:HD22	2.01	0.57
1:A:216:GLU:HA	1:A:219:VAL:HG12	1.86	0.57
7:G:77:ARG:HD3	7:G:88:LEU:HD11	1.85	0.57
7:R:29:ALA:O	7:R:33:ILE:HG13	2.05	0.57
1:A:183:SER:O	1:A:187:LEU:HD13	2.05	0.57
5:E:106:ASN:ND2	5:E:119:ARG:HB2	2.20	0.57
4:O:121:THR:OG1	4:O:124:GLU:HG3	2.05	0.57
5:P:154:ILE:HB	5:P:205:TYR:CE1	2.40	0.57
8:S:41:PHE:H	8:S:45:VAL:HB	1.69	0.57
12:W:27:LYS:HD2	12:W:28:GLY:H	1.69	0.57
3:C:4:ARG:NE	3:C:14:ASN:ND2	2.53	0.56
3:C:109:PRO:HB2	3:C:204:HIS:CE1	2.40	0.56
5:E:197:PRO:O	5:E:198:LEU:HD23	2.05	0.56
11:K:29:ILE:HG22	11:K:92:ILE:HD12	1.87	0.56
1:L:91:ALA:HB3	1:L:106:SER:HB2	1.86	0.56
1:L:390:GLY:O	1:L:394:LEU:HB2	2.05	0.56
7:R:43:LEU:HD21	7:R:78:ALA:HB2	1.87	0.56
2:B:367:GLU:O	2:B:368:LEU:HB2	2.04	0.56
10:J:38:ILE:HD12	10:J:46:LEU:HD22	1.87	0.56
1:L:48:ALA:HA	1:L:211:GLY:HA3	1.87	0.56
3:N:335:LEU:O	3:N:339:ILE:HG12	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:R:77:ARG:HD3	7:R:88:LEU:HD11	1.87	0.56
2:B:37:GLY:HA3	2:B:179:VAL:HG11	1.87	0.56
10:J:39:ARG:NH2	10:J:41:PHE:HZ	2.03	0.56
2:M:255:VAL:HG12	2:M:321:THR:HG21	1.87	0.56
2:M:347:LYS:HD3	2:M:347:LYS:N	2.20	0.56
4:O:118:VAL:HG11	4:O:257:TRP:CE2	2.40	0.56
12:W:24:THR:HG23	12:W:32:LYS:HE2	1.88	0.56
8:H:61:ILE:HB	8:H:62:PRO:HD3	1.86	0.56
5:E:147:VAL:HG21	5:E:150:PRO:HA	1.87	0.56
10:J:62:PRO:O	10:J:65:LYS:HG2	2.06	0.56
3:N:132:TYR:HA	13:N:521:HEC:HAA2	1.87	0.56
3:N:208:ASN:HB2	3:N:209:PRO:HD2	1.86	0.56
7:G:80:GLN:O	7:G:84:THR:HG23	2.06	0.56
1:L:381:ASN:OD1	1:L:383:VAL:HG22	2.05	0.56
6:Q:91:GLY:O	6:Q:95:VAL:HG13	2.06	0.56
10:J:6:GLU:H	10:J:114:GLN:HE21	1.52	0.56
1:L:37:VAL:HG13	1:L:206:VAL:HG22	1.87	0.56
1:A:72:TRP:CH2	1:A:131:LEU:HD21	2.41	0.55
1:A:301:LEU:HB2	1:A:349:GLN:HG3	1.88	0.55
1:L:29:VAL:HG11	1:L:399:LYS:HB3	1.87	0.55
5:E:72:LYS:HZ2	9:I:29:GLN:HE21	1.53	0.55
5:P:187:ILE:HD12	5:P:187:ILE:H	1.71	0.55
11:K:74:THR:HG22	11:K:75:ILE:N	2.21	0.55
5:P:72:LYS:HZ1	9:T:29:GLN:HE22	1.54	0.55
3:C:58:ILE:H	3:C:173:ASN:HD22	1.52	0.55
1:A:36:ILE:HG22	1:A:37:VAL:H	1.70	0.55
1:L:75:ILE:HG22	1:L:139:THR:HG21	1.89	0.55
4:O:295:ILE:O	4:O:298:ARG:HB2	2.05	0.55
5:P:168:GLY:HA2	5:P:176:TRP:CD1	2.40	0.55
3:C:77:ILE:O	3:C:81:LEU:HB2	2.06	0.55
1:L:183:SER:O	1:L:187:LEU:HD13	2.07	0.55
13:O:523:HEC:HMC1	13:O:523:HEC:HBC3	1.87	0.55
5:E:190:ARG:HA	5:E:199:ASN:HB3	1.88	0.55
10:J:36:ASN:H	10:J:36:ASN:HD22	1.55	0.55
2:M:335:PRO:HG2	2:M:336:ILE:HG13	1.88	0.55
10:J:48:TRP:CZ2	10:J:50:GLY:HA2	2.41	0.55
1:L:75:ILE:HG13	1:L:76:PHE:N	2.21	0.55
2:B:150:THR:HG22	2:B:352:ASN:HD22	1.69	0.54
3:C:15:SER:O	3:C:202:HIS:HE1	1.90	0.54
5:E:107:VAL:HG12	5:E:118:ILE:HB	1.90	0.54
5:E:122:THR:O	5:E:126:ILE:HG13	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:P:155:MET:HA	5:P:203:PRO:HD2	1.88	0.54
6:Q:111:GLN:HB3	6:Q:112:PRO:HD2	1.89	0.54
8:S:48:SER:C	8:S:50:ARG:H	2.10	0.54
1:A:287:TYR:CD2	1:A:302:LEU:HD21	2.43	0.54
2:B:271:ILE:HG22	2:B:289:VAL:HG22	1.89	0.54
11:V:75:ILE:HG22	11:V:76:SER:H	1.71	0.54
10:U:13:GLN:HA	10:U:121:SER:O	2.07	0.54
2:B:40:ARG:HH11	2:B:85:GLU:HG3	1.73	0.54
4:D:121:THR:OG1	4:D:124:GLU:HG3	2.07	0.54
2:B:146:LEU:O	2:B:150:THR:HG23	2.07	0.54
2:B:202:ASP:O	2:B:203:GLU:HG2	2.08	0.54
11:V:34:ASN:ND2	11:V:49:TYR:HA	2.22	0.54
3:C:108:SER:OG	3:C:314:ARG:NH2	2.41	0.54
1:A:98:ARG:HD3	1:A:173:LEU:HD12	1.89	0.54
3:C:253:HIS:HD2	3:C:255:ASP:N	2.01	0.54
1:A:228:SER:HB3	1:A:231:THR:HB	1.90	0.54
1:L:42:HIS:HB3	1:L:213:ILE:O	2.08	0.54
1:L:162:HIS:HA	1:L:165:SER:HB3	1.90	0.54
8:S:76:TYR:O	8:S:80:LEU:HG	2.08	0.54
5:E:56:ALA:O	5:E:60:VAL:HG23	2.07	0.53
10:J:18:LEU:HD11	10:J:118:VAL:HG11	1.89	0.53
11:K:107:LYS:HE3	11:K:107:LYS:HA	1.89	0.53
10:U:6:GLU:N	10:U:114:GLN:HE21	2.05	0.53
1:A:57:GLY:H	1:A:60:ASN:HD22	1.56	0.53
1:A:147:VAL:HG12	1:A:181:LEU:HD23	1.90	0.53
2:B:36:HIS:HB3	2:B:41:TYR:CE1	2.43	0.53
3:C:187:PRO:HG3	13:C:501:HEC:HBB3	1.90	0.53
1:L:72:TRP:CZ3	1:L:75:ILE:HD11	2.43	0.53
2:B:246:ASN:HD22	2:B:249:SER:HB2	1.73	0.53
10:J:28:SER:HB2	10:J:31:SER:OG	2.08	0.53
11:K:27:GLN:HG2	11:K:28:ASP:H	1.73	0.53
3:N:223:SER:O	3:N:224:TYR:CG	2.62	0.53
2:M:246:ASN:HD22	2:M:249:SER:HB3	1.73	0.53
3:N:108:SER:CB	3:N:109:PRO:CD	2.86	0.53
1:A:37:VAL:CG1	1:A:206:VAL:HG22	2.39	0.53
2:B:313:ASP:C	2:B:315:SER:H	2.12	0.53
2:M:52:ASN:ND2	2:M:80:SER:OG	2.41	0.53
3:N:323:LYS:HE3	8:S:55:GLN:HE22	1.73	0.53
2:M:237:SER:HA	2:M:357:GLY:HA3	1.90	0.53
2:B:51:LEU:HD11	2:B:180:TYR:HE1	1.74	0.53
1:L:44:PRO:HA	1:L:212:ASN:HB2	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:76:TYR:CE1	3:C:77:ILE:HG13	2.43	0.53
3:N:109:PRO:HB2	3:N:204:HIS:CE1	2.44	0.53
11:V:47:LEU:HA	11:V:58:VAL:HG11	1.90	0.53
10:J:33:TYR:N	10:J:33:TYR:CD2	2.77	0.53
1:L:31:GLN:HE22	1:L:393:VAL:HB	1.74	0.53
3:C:193:MET:HA	3:C:193:MET:CE	2.39	0.52
2:M:205:LEU:HD12	2:M:205:LEU:N	2.23	0.52
13:N:521:HEC:HBC3	13:N:521:HEC:HHD	1.90	0.52
5:P:186:ASP:OD2	5:P:190:ARG:NH2	2.42	0.52
7:G:120:LEU:HD13	2:M:69:ARG:HG3	1.90	0.52
2:M:146:LEU:HD23	2:M:286:THR:HG22	1.92	0.52
3:N:268:SER:O	3:N:270:VAL:HG23	2.09	0.52
12:W:7:SER:OG	12:W:10:LYS:HB2	2.10	0.52
1:A:65:ASN:HD22	1:A:65:ASN:H	1.56	0.52
7:G:63:LEU:HD13	7:G:103:LEU:CD1	2.40	0.52
2:M:250:LEU:HD23	2:M:251:ALA:H	1.75	0.52
8:S:35:LYS:O	8:S:37:LEU:N	2.42	0.52
10:U:61:ASN:ND2	10:U:63:SER:H	2.07	0.52
4:D:180:ILE:HG12	13:D:503:HEC:HMA3	1.90	0.52
5:E:57:TYR:HB3	9:I:7:TYR:OH	2.09	0.52
4:O:289:LYS:HZ3	8:S:40:ILE:HD11	1.73	0.52
2:B:339:ASN:HA	2:B:342:ALA:HB3	1.90	0.52
3:C:4:ARG:HE	3:C:14:ASN:HD21	1.53	0.52
2:M:41:TYR:O	2:M:175:PHE:HE1	1.93	0.52
3:N:77:ILE:O	3:N:81:LEU:HB2	2.09	0.52
1:L:178:ARG:HG2	1:L:178:ARG:HH21	1.75	0.52
1:A:75:ILE:CG2	1:A:139:THR:HG21	2.40	0.52
10:U:54:ASN:H	10:U:54:ASN:ND2	2.03	0.52
8:H:12:TRP:NE1	8:S:3:PRO:HB3	2.25	0.52
4:O:224:ALA:HB3	13:O:523:HEC:HBD2	1.92	0.52
1:A:66:ASN:HD21	1:A:176:PRO:HD2	1.75	0.52
3:C:193:MET:HE2	3:C:196:MET:SD	2.49	0.52
2:M:34:LYS:HB3	2:M:86:TYR:CD1	2.45	0.52
1:A:151:GLU:HA	1:A:158:ARG:HD2	1.92	0.52
2:B:317:ALA:O	2:B:320:TYR:HB3	2.10	0.52
1:L:178:ARG:H	1:L:178:ARG:HD2	1.74	0.52
1:L:349:GLN:HE22	1:L:352:ARG:HH21	1.57	0.52
3:N:105:SER:CB	13:N:522:HEC:HBD2	2.40	0.52
7:R:98:GLU:O	7:R:100:VAL:HG23	2.09	0.52
11:V:17:ASP:O	11:V:78:LEU:HD13	2.10	0.52
11:K:103:LYS:HG3	11:K:104:LEU:N	2.25	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:N:110:ARG:O	3:N:113:LEU:HB3	2.10	0.51
11:V:15:LEU:HD12	11:V:15:LEU:H	1.75	0.51
8:H:50:ARG:HE	8:H:51:ARG:HH21	1.58	0.51
11:K:74:THR:HG22	11:K:75:ILE:H	1.74	0.51
2:M:315:SER:HB3	2:M:344:LYS:HB2	1.91	0.51
4:O:289:LYS:HZ2	8:S:40:ILE:HD11	1.72	0.51
12:W:33:VAL:O	13:W:526:HEC:HMD3	2.09	0.51
10:J:40:LEU:HB3	10:J:93:THR:HG23	1.90	0.51
2:M:318:ILE:O	2:M:319:ASN:HB2	2.09	0.51
3:N:105:SER:HB3	13:N:522:HEC:HBD2	1.91	0.51
1:L:163:LEU:HD12	1:L:326:LEU:HD13	1.93	0.51
10:U:4:LEU:HG	10:U:24:VAL:HG22	1.93	0.51
3:C:208:ASN:HB2	3:C:209:PRO:HD2	1.91	0.51
7:G:18:SER:HB3	7:G:21:LEU:HD23	1.93	0.51
3:N:193:MET:HE2	3:N:193:MET:HA	1.93	0.51
10:J:36:ASN:N	10:J:36:ASN:ND2	2.59	0.51
1:L:252:ASP:HB3	1:L:255:LEU:HD12	1.91	0.51
2:M:35:VAL:HG12	2:M:179:VAL:HG12	1.91	0.51
2:B:205:LEU:HD12	2:B:205:LEU:H	1.76	0.51
3:C:104:GLY:O	3:C:107:ARG:HG3	2.11	0.51
3:C:189:ILE:O	3:C:192:ALA:HB3	2.11	0.51
11:K:15:LEU:N	11:K:15:LEU:HD12	2.25	0.51
3:N:253:HIS:CD2	3:N:255:ASP:HB2	2.45	0.51
2:M:225:LEU:HD21	2:M:244:PRO:HD2	1.93	0.51
3:N:152:SER:HB3	3:N:162:VAL:HG21	1.92	0.51
4:O:289:LYS:HB2	8:S:37:LEU:HD13	1.93	0.51
10:U:28:SER:HB2	10:U:31:SER:OG	2.11	0.51
3:C:193:MET:HA	3:C:193:MET:HE2	1.92	0.51
2:M:155:LEU:HD12	2:M:155:LEU:H	1.76	0.51
5:P:172:ASP:N	5:P:184:HIS:HD2	2.03	0.51
7:R:19:PRO:O	7:R:23:LYS:HG3	2.11	0.51
3:C:195:ILE:O	3:C:199:MET:HG3	2.11	0.51
1:L:250:LEU:O	1:L:435:THR:HA	2.10	0.51
1:L:444:TYR:CE2	8:S:30:SER:HB2	2.46	0.51
6:Q:117:LEU:O	6:Q:118:GLU:HG3	2.10	0.51
1:A:36:ILE:HG23	1:A:202:ASN:OD1	2.12	0.50
2:B:139:VAL:HG13	2:B:290:ARG:HD2	1.93	0.50
1:L:301:LEU:HB2	1:L:349:GLN:HG3	1.92	0.50
3:N:125:ILE:CG2	14:N:525:SMA:H37	2.42	0.50
4:O:273:THR:HG22	4:O:277:LEU:HD12	1.92	0.50
5:P:51:LYS:HE2	5:P:55:TYR:HE2	1.75	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:255:LEU:HD12	1:A:436:GLY:HA2	1.93	0.50
9:I:5:SER:O	9:I:9:THR:HG23	2.12	0.50
3:C:44:ILE:HA	13:C:501:HEC:HMC2	1.92	0.50
3:N:125:ILE:HG22	14:N:525:SMA:H37	1.94	0.50
2:B:52:ASN:HD21	2:B:80:SER:C	2.15	0.50
5:E:72:LYS:HZ3	9:I:29:GLN:HE21	1.58	0.50
11:K:19:VAL:HG22	11:K:20:THR:N	2.27	0.50
2:M:146:LEU:HD13	2:M:354:VAL:CG2	2.42	0.50
4:O:134:TYR:CE2	4:O:149:GLY:HA3	2.47	0.50
11:V:11:LEU:HG	11:V:12:ALA:H	1.77	0.50
11:V:12:ALA:HB1	11:V:105:GLU:O	2.11	0.50
2:B:300:ASN:O	2:B:304:ILE:HG12	2.12	0.50
8:S:41:PHE:O	8:S:42:HIS:HB2	2.10	0.50
11:V:29:ILE:HD11	11:V:71:TYR:CE1	2.47	0.50
11:K:4:LEU:CD2	11:K:88:CYS:SG	3.00	0.50
2:M:65:LEU:O	2:M:69:ARG:HG2	2.12	0.50
3:N:182:LEU:O	3:N:186:VAL:HG23	2.12	0.50
2:B:103:ASN:O	2:B:107:ASP:HB2	2.12	0.50
7:R:40:LYS:HD3	7:R:93:TRP:CH2	2.47	0.50
1:A:65:ASN:ND2	1:A:65:ASN:H	2.09	0.49
3:C:315:GLY:O	3:C:319:LYS:HD2	2.11	0.49
13:C:501:HEC:HBC3	13:C:501:HEC:HHD	1.93	0.49
2:B:255:VAL:HA	2:B:321:THR:OG1	2.12	0.49
4:D:280:LEU:HD11	5:E:66:LEU:HB2	1.92	0.49
2:B:21:ALA:HA	2:B:189:GLY:O	2.12	0.49
2:B:62:ARG:HH21	2:B:62:ARG:HB3	1.76	0.49
4:D:286:TRP:CE3	5:E:59:MET:HG3	2.46	0.49
2:M:98:LEU:N	2:M:99:PRO:HD2	2.27	0.49
1:A:65:ASN:ND2	1:A:65:ASN:N	2.60	0.49
1:A:378:GLU:OE1	2:B:26:THR:HB	2.12	0.49
3:C:8:VAL:HG13	3:C:9:TYR:N	2.27	0.49
2:M:83:ASP:HB2	2:M:86:TYR:H	1.77	0.49
2:M:152:ARG:HG3	2:M:152:ARG:HH21	1.77	0.49
5:P:106:ASN:HD21	5:P:119:ARG:HD2	1.77	0.49
1:A:112:THR:HB	1:A:213:ILE:HG21	1.93	0.49
7:G:53:ASN:HB2	7:G:54:PRO:HD2	1.93	0.49
1:L:65:ASN:HA	1:L:187:LEU:HD11	1.94	0.49
2:M:36:HIS:HB3	2:M:41:TYR:CE1	2.48	0.49
1:A:120:ASN:ND2	1:A:124:ILE:HD12	2.21	0.49
3:N:129:PHE:CD1	3:N:147:ILE:HD12	2.48	0.49
11:V:29:ILE:HA	11:V:92:ILE:HG21	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:376:LEU:HD22	1:A:388:LEU:HD11	1.94	0.49
5:E:44:LYS:HB2	8:H:35:LYS:HE3	1.94	0.49
10:J:42:PRO:C	10:J:44:ASN:H	2.15	0.49
2:M:146:LEU:O	2:M:150:THR:HG23	2.12	0.49
2:M:205:LEU:HD12	2:M:205:LEU:H	1.78	0.49
12:W:94:LYS:HG3	12:W:95:ASP:N	2.27	0.49
10:U:37:TRP:CZ3	10:U:96:CYS:HB3	2.47	0.49
2:B:193:VAL:HG23	2:B:196:ASP:HB2	1.94	0.49
11:K:61:ARG:HB2	11:K:76:SER:HB3	1.94	0.49
9:T:48:LEU:O	9:T:52:VAL:HG23	2.13	0.49
11:V:17:ASP:HB2	11:V:18:ARG:HH22	1.76	0.49
1:A:85:ALA:HB2	1:A:118:PHE:CE1	2.47	0.48
1:A:129:ASN:C	1:A:131:LEU:H	2.16	0.48
3:C:80:TYR:CE1	3:C:248:PRO:HB2	2.47	0.48
3:C:108:SER:CB	3:C:109:PRO:CD	2.91	0.48
10:J:23:SER:HA	10:J:78:GLN:HB3	1.94	0.48
3:N:7:ASN:ND2	3:N:9:TYR:N	2.57	0.48
2:B:252:GLN:O	2:B:255:VAL:HG22	2.12	0.48
4:D:203:PRO:HG2	4:D:206:VAL:CG2	2.41	0.48
10:J:49:VAL:CG1	10:J:68:LEU:HD23	2.44	0.48
10:J:54:ASN:H	10:J:54:ASN:ND2	2.03	0.48
8:H:44:ALA:HA	8:H:47:ASN:HB3	1.94	0.48
11:K:4:LEU:HD22	11:K:88:CYS:SG	2.53	0.48
1:L:312:ASP:OD1	1:L:334:ARG:HD3	2.13	0.48
3:N:172:SER:OG	3:N:174:PRO:HD2	2.14	0.48
3:N:214:GLY:O	3:N:218:ARG:HD3	2.13	0.48
8:S:56:PHE:CE2	8:S:57:LEU:HG	2.48	0.48
11:V:6:GLN:OE1	11:V:87:PHE:HA	2.12	0.48
1:A:92:LEU:HD21	1:A:118:PHE:CE2	2.48	0.48
3:C:362:TYR:HA	3:C:366:ILE:HB	1.95	0.48
7:G:29:ALA:O	7:G:33:ILE:HG13	2.12	0.48
9:I:12:LYS:O	9:I:13:ARG:HG3	2.13	0.48
2:M:22:ARG:HB3	2:M:191:ASN:H	1.79	0.48
10:U:87:THR:HG22	10:U:88:THR:H	1.79	0.48
2:B:145:GLN:O	2:B:149:ILE:HG12	2.13	0.48
3:C:320:VAL:HG13	8:H:58:TYR:HE2	1.78	0.48
10:J:24:VAL:CG2	10:J:29:ILE:HD11	2.43	0.48
1:L:287:TYR:HE2	1:L:295:ARG:HG2	1.79	0.48
2:M:45:ASP:HB2	2:M:165:GLU:HG2	1.96	0.48
3:N:22:GLN:O	3:N:218:ARG:HD2	2.13	0.48
3:C:18:ILE:HA	3:C:222:HIS:HB2	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:V:19:VAL:HG22	11:V:20:THR:N	2.29	0.48
4:D:286:TRP:CZ3	5:E:59:MET:HG3	2.48	0.48
8:H:35:LYS:O	8:H:37:LEU:N	2.47	0.48
2:M:43:THR:HG22	2:M:175:PHE:HD1	1.78	0.48
12:W:16:LYS:O	12:W:20:LEU:HB3	2.14	0.48
2:B:119:LEU:HA	2:B:123:VAL:HB	1.94	0.48
2:B:347:LYS:H	2:B:347:LYS:CD	2.19	0.48
2:M:30:THR:HG23	2:M:190:GLU:HB3	1.96	0.48
8:S:88:GLU:O	8:S:91:ARG:HB3	2.13	0.48
3:C:7:ASN:ND2	3:C:9:TYR:N	2.61	0.47
3:N:229:ASP:O	3:N:233:VAL:HG23	2.14	0.47
2:B:242:GLY:HA2	2:B:285:PHE:O	2.14	0.47
9:I:6:LEU:O	9:I:10:PHE:HD2	1.97	0.47
10:J:11:LEU:HD13	10:J:125:ARG:HD2	1.96	0.47
10:J:27:TYR:HE2	10:J:32:GLY:N	2.13	0.47
2:M:225:LEU:HD21	2:M:244:PRO:CD	2.44	0.47
3:N:342:CYS:SG	8:S:70:TRP:HH2	2.36	0.47
10:U:18:LEU:HD11	10:U:118:VAL:HG11	1.95	0.47
11:V:37:GLN:HB2	11:V:47:LEU:HD11	1.95	0.47
2:B:175:PHE:CE2	2:B:179:VAL:HG21	2.49	0.47
4:D:280:LEU:HD11	5:E:66:LEU:CB	2.43	0.47
10:U:4:LEU:N	10:U:4:LEU:HD12	2.30	0.47
5:E:91:MET:O	5:E:91:MET:HG3	2.14	0.47
8:H:58:TYR:O	8:H:62:PRO:HG2	2.14	0.47
1:L:58:ALA:HB3	1:L:98:ARG:HA	1.97	0.47
1:A:72:TRP:CZ3	1:A:75:ILE:HD11	2.49	0.47
2:B:183:GLU:HB2	2:B:212:GLY:O	2.15	0.47
11:K:75:ILE:HG22	11:K:76:SER:N	2.30	0.47
2:M:146:LEU:HD13	2:M:354:VAL:HG22	1.95	0.47
2:M:298:SER:OG	2:M:363:PRO:HD3	2.14	0.47
2:B:106:ALA:HB2	2:B:206:LEU:HD22	1.97	0.47
4:D:69:LEU:HD12	4:D:217:TYR:CE2	2.49	0.47
5:E:187:ILE:H	5:E:187:ILE:CD1	2.13	0.47
1:L:133:SER:O	1:L:134:SER:HB2	2.15	0.47
2:M:305:VAL:HG11	2:M:368:LEU:HB3	1.95	0.47
2:B:94:LEU:O	2:B:96:ASP:N	2.48	0.47
2:B:109:LEU:HD23	2:B:180:TYR:CD2	2.50	0.47
2:B:135:GLU:O	2:B:135:GLU:HG2	2.15	0.47
3:C:64:SER:O	3:C:67:HIS:HB3	2.15	0.47
3:C:121:PHE:CZ	3:C:125:ILE:HD11	2.50	0.47
4:D:246:GLN:HA	6:F:146:LEU:HD22	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:188:SER:HB3	5:E:190:ARG:HG3	1.96	0.47
11:K:21:ILE:HG22	11:K:22:SER:N	2.29	0.47
1:L:171:THR:HG23	1:L:241:ALA:HA	1.97	0.47
2:M:315:SER:HB3	2:M:344:LYS:CB	2.45	0.47
4:O:76:TRP:CE2	4:O:188:CYS:HB3	2.50	0.47
5:P:120:HIS:HD2	5:P:151:GLN:HG2	1.80	0.47
7:R:95:LYS:HB2	7:R:98:GLU:HG3	1.97	0.47
3:C:88:PHE:O	3:C:92:VAL:HG23	2.15	0.47
1:L:66:ASN:HD22	1:L:180:THR:HG23	1.80	0.47
4:O:134:TYR:HE2	4:O:149:GLY:HA3	1.80	0.47
10:U:21:THR:HG22	10:U:80:PHE:CD2	2.49	0.47
12:W:22:CYS:O	12:W:32:LYS:HB2	2.15	0.47
2:M:24:ALA:HB1	2:M:25:PRO:HD2	1.97	0.47
7:R:98:GLU:O	7:R:100:VAL:N	2.45	0.47
8:S:38:GLN:CD	8:S:39:GLY:H	2.19	0.47
3:C:80:TYR:CD1	3:C:248:PRO:HB2	2.50	0.46
4:D:93:GLY:HA3	4:D:254:PHE:HB2	1.97	0.46
11:K:29:ILE:CA	11:K:92:ILE:HG21	2.46	0.46
10:U:38:ILE:HD11	10:U:46:LEU:HD22	1.97	0.46
11:V:88:CYS:O	11:V:98:PHE:HA	2.15	0.46
2:B:251:ALA:HB1	2:B:339:ASN:HB3	1.97	0.46
9:I:54:ALA:C	9:I:56:ILE:H	2.19	0.46
3:N:110:ARG:HH11	3:N:314:ARG:NH2	2.14	0.46
12:W:40:ILE:O	12:W:64:TRP:HB2	2.15	0.46
2:B:62:ARG:HH21	2:B:62:ARG:CG	2.27	0.46
5:E:191:ILE:HG22	5:E:199:ASN:OD1	2.14	0.46
11:K:46:LEU:HD23	11:K:55:HIS:CD2	2.51	0.46
1:L:144:LEU:HD21	1:L:185:GLU:HB3	1.97	0.46
1:L:260:ILE:CD1	1:L:343:ILE:HD11	2.42	0.46
5:P:187:ILE:HD12	5:P:187:ILE:N	2.31	0.46
3:C:56:SER:HB2	3:C:177:GLN:HA	1.96	0.46
4:D:87:HIS:HA	4:D:90:ILE:HD12	1.98	0.46
1:L:129:ASN:O	1:L:131:LEU:N	2.46	0.46
7:R:90:ARG:HG2	7:R:93:TRP:CZ2	2.51	0.46
2:B:202:ASP:C	2:B:204:SER:H	2.19	0.46
10:J:20:LEU:HD22	10:J:116:THR:HG21	1.97	0.46
10:J:99:SER:HB3	10:J:109:MET:CG	2.44	0.46
1:L:66:ASN:HD21	1:L:176:PRO:HG2	1.80	0.46
1:L:369:LEU:HD13	1:L:409:ILE:HD13	1.97	0.46
10:U:49:VAL:CG1	10:U:68:LEU:HD23	2.46	0.46
3:C:212:ILE:CD1	7:G:75:ILE:HG23	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:35:VAL:CG1	2:M:179:VAL:HG12	2.46	0.46
1:A:270:ASN:OD1	1:A:396:LYS:HD2	2.16	0.46
2:B:91:ALA:O	2:B:93:PHE:HD2	1.98	0.46
3:C:41:VAL:O	3:C:45:VAL:HG23	2.16	0.46
2:M:313:ASP:O	2:M:314:LEU:HB2	2.15	0.46
5:P:38:ASN:HD21	5:P:40:ASP:CG	2.19	0.46
5:P:115:PRO:HD2	5:P:158:ILE:HD11	1.96	0.46
3:C:7:ASN:ND2	3:C:9:TYR:H	2.13	0.46
4:O:286:TRP:CZ3	5:P:56:ALA:HA	2.50	0.46
2:B:355:ALA:HB1	2:B:362:LEU:HD23	1.97	0.46
3:C:131:GLY:HA3	3:C:183:HIS:CE1	2.51	0.46
5:E:85:THR:O	5:E:88:VAL:HG22	2.16	0.46
1:L:62:ASN:N	1:L:65:ASN:ND2	2.47	0.46
1:L:371:LEU:HD21	2:M:77:THR:HG23	1.98	0.46
2:M:31:LEU:HB2	2:M:93:PHE:HE2	1.81	0.46
3:N:31:ASN:ND2	3:N:229:ASP:HA	2.30	0.46
3:N:107:ARG:HB3	3:N:108:SER:H	1.54	0.46
8:S:76:TYR:CE2	8:S:80:LEU:HD11	2.51	0.46
1:A:337:THR:HG22	8:H:15:HIS:HD2	1.81	0.46
2:B:339:ASN:HA	2:B:342:ALA:CB	2.46	0.46
6:F:111:GLN:HB3	6:F:112:PRO:HD2	1.96	0.46
1:L:287:TYR:CE1	1:L:305:ILE:HD11	2.51	0.46
1:L:288:ASN:C	1:L:288:ASN:ND2	2.69	0.46
2:M:197:LEU:O	2:M:201:VAL:HG23	2.15	0.46
2:M:233:PHE:HB3	2:M:357:GLY:HA2	1.97	0.46
5:P:146:ARG:O	5:P:202:ILE:HD13	2.16	0.46
5:P:187:ILE:H	5:P:187:ILE:CD1	2.27	0.46
1:A:69:SER:HB3	1:A:96:ILE:HD12	1.97	0.45
5:E:154:ILE:HD12	5:E:205:TYR:CE2	2.51	0.45
11:K:2:ILE:HD12	11:K:2:ILE:N	2.29	0.45
2:M:83:ASP:CB	2:M:86:TYR:H	2.29	0.45
3:N:312:VAL:HG21	7:R:5:PHE:CE1	2.51	0.45
3:N:375:ASN:HB3	7:R:8:ILE:CD1	2.47	0.45
13:N:521:HEC:HMB1	13:N:521:HEC:CBB	2.45	0.45
2:B:315:SER:N	2:B:316:PRO:HD3	2.32	0.45
6:F:106:LYS:HA	6:F:109:GLN:HE21	1.81	0.45
10:J:79:PHE:H	10:J:79:PHE:HD2	1.63	0.45
3:N:42:ILE:O	3:N:46:THR:HG23	2.16	0.45
5:P:126:ILE:HG21	5:P:150:PRO:HB2	1.98	0.45
11:V:6:GLN:HB2	11:V:100:ALA:HB3	1.97	0.45
2:B:98:LEU:N	2:B:99:PRO:HD2	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:228:GLU:HA	2:B:353:TYR:O	2.17	0.45
1:L:168:PHE:O	1:L:174:SER:HB3	2.16	0.45
1:L:237:LEU:H	1:L:237:LEU:CD2	2.22	0.45
2:M:34:LYS:HB3	2:M:86:TYR:HD1	1.81	0.45
10:U:95:TYR:CE1	10:U:115:GLY:HA3	2.51	0.45
2:B:200:PHE:O	2:B:204:SER:HB3	2.16	0.45
2:B:258:ASN:ND2	2:B:324:LYS:HB3	2.32	0.45
1:L:248:VAL:O	1:L:433:ALA:HA	2.16	0.45
3:N:76:TYR:CE1	3:N:77:ILE:HG13	2.51	0.45
9:T:5:SER:O	9:T:9:THR:HG23	2.17	0.45
10:U:51:TYR:C	10:U:51:TYR:CD2	2.89	0.45
2:B:36:HIS:HB2	2:B:184:ASN:OD1	2.16	0.45
4:D:72:PRO:HG2	4:D:74:TYR:CE2	2.51	0.45
2:M:315:SER:N	2:M:316:PRO:HD3	2.31	0.45
3:N:57:ASN:HA	3:N:173:ASN:HD21	1.82	0.45
9:T:52:VAL:O	9:T:56:ILE:HG12	2.16	0.45
1:A:171:THR:CG2	1:A:241:ALA:HA	2.46	0.45
3:C:74:ASN:OD1	5:E:77:THR:HG23	2.17	0.45
3:C:222:HIS:CD2	3:C:223:SER:H	2.34	0.45
4:D:121:THR:O	4:D:125:VAL:HG23	2.17	0.45
4:D:187:GLY:O	4:D:191:ILE:HG12	2.17	0.45
2:M:318:ILE:CG2	2:M:319:ASN:HD22	2.29	0.45
3:N:159:ASN:HD22	3:N:159:ASN:N	2.06	0.45
7:R:63:LEU:HA	7:R:64:PRO:HD2	1.77	0.45
1:A:89:GLY:HA3	2:B:319:ASN:O	2.17	0.45
2:B:40:ARG:HG3	2:B:155:LEU:HG	1.98	0.45
5:E:44:LYS:CB	8:H:35:LYS:HE3	2.47	0.45
4:O:302:PHE:HB2	7:R:73:TYR:CD1	2.51	0.45
4:O:304:PRO:HA	4:O:305:PRO:HD2	1.81	0.45
10:J:54:ASN:HD22	10:J:54:ASN:N	2.05	0.45
10:J:70:ILE:HG23	10:J:80:PHE:O	2.16	0.45
1:L:302:LEU:O	1:L:306:GLN:HG3	2.16	0.45
3:N:125:ILE:HG22	14:N:525:SMA:H40	1.97	0.45
5:P:104:GLY:O	5:P:105:LYS:HD2	2.16	0.45
10:U:41:PHE:CD2	10:U:92:ALA:HB2	2.44	0.45
1:A:225:LYS:H	1:A:225:LYS:HD2	1.82	0.45
3:C:107:ARG:HB2	3:C:108:SER:H	1.64	0.45
3:C:208:ASN:HD22	3:C:210:LEU:N	2.14	0.45
1:L:348:LYS:HE2	1:L:348:LYS:HA	1.98	0.45
13:W:526:HEC:HMC1	13:W:526:HEC:HBC3	1.97	0.45
3:C:223:SER:O	3:C:224:TYR:CG	2.70	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:283:LEU:O	4:D:287:VAL:HG23	2.17	0.45
1:A:57:GLY:H	1:A:60:ASN:ND2	2.15	0.44
1:A:91:ALA:HB3	1:A:106:SER:HB2	1.99	0.44
3:C:212:ILE:HD12	7:G:75:ILE:HG23	1.99	0.44
6:F:123:CYS:HA	6:F:126:GLU:OE1	2.17	0.44
1:L:257:LYS:HB2	1:L:259:TRP:CH2	2.51	0.44
1:L:353:LEU:O	1:L:418:LYS:HA	2.16	0.44
6:Q:108:GLN:HA	6:Q:111:GLN:HG3	1.98	0.44
3:C:130:LEU:HD13	3:C:182:LEU:HB3	1.98	0.44
5:E:180:CYS:SG	3:N:269:ILE:HD13	2.58	0.44
2:M:252:GLN:HG3	2:M:253:TYR:N	2.31	0.44
5:P:120:HIS:CD2	5:P:151:GLN:HG2	2.51	0.44
6:Q:78:LEU:HD13	6:Q:142:LEU:HD22	1.98	0.44
9:T:8:LYS:O	9:T:12:LYS:HG2	2.17	0.44
10:U:14:PRO:O	10:U:15:SER:HB3	2.17	0.44
2:B:35:VAL:CG1	2:B:179:VAL:HG12	2.47	0.44
2:B:293:ASP:OD2	2:B:295:ALA:HB3	2.17	0.44
3:C:137:GLY:O	3:C:140:SER:HB2	2.18	0.44
3:C:269:ILE:HG23	3:C:269:ILE:O	2.18	0.44
4:D:115:LEU:HD12	4:D:257:TRP:CH2	2.52	0.44
1:L:31:GLN:NE2	1:L:393:VAL:HB	2.32	0.44
1:A:130:LEU:C	1:A:132:SER:H	2.20	0.44
2:B:188:SER:OG	2:B:332:VAL:HG21	2.17	0.44
3:C:147:ILE:O	3:C:150:LEU:HB2	2.17	0.44
4:D:111:ALA:HA	4:D:154:TYR:HA	2.00	0.44
5:P:190:ARG:HH21	5:P:190:ARG:HB2	1.83	0.44
2:B:35:VAL:HG12	2:B:179:VAL:HG12	2.00	0.44
10:J:51:TYR:C	10:J:51:TYR:CD2	2.90	0.44
2:M:340:PHE:O	2:M:341:ASP:CB	2.66	0.44
3:N:242:LEU:HD23	3:N:242:LEU:HA	1.85	0.44
3:C:323:LYS:HD3	8:H:55:GLN:HE22	1.82	0.44
4:O:74:TYR:CE1	6:Q:139:ALA:HA	2.53	0.44
10:U:68:LEU:HA	10:U:82:LYS:O	2.17	0.44
11:V:2:ILE:HD12	11:V:2:ILE:N	2.30	0.44
12:W:95:ASP:O	12:W:99:LEU:HB2	2.18	0.44
1:A:92:LEU:HD23	1:A:105:VAL:HG22	2.00	0.44
1:A:129:ASN:O	1:A:130:LEU:HB2	2.18	0.44
1:A:286:SER:HA	1:A:315:ASN:HA	1.99	0.44
2:B:69:ARG:HG2	2:B:69:ARG:HH21	1.83	0.44
2:B:232:ARG:NH1	2:M:158:PRO:HG2	2.33	0.44
3:C:58:ILE:HB	3:C:173:ASN:HA	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:250:LEU:HD23	2:M:251:ALA:N	2.32	0.44
4:O:87:HIS:HA	4:O:90:ILE:HD12	2.00	0.44
7:R:123:ILE:O	7:R:123:ILE:HG13	2.18	0.44
10:U:54:ASN:N	10:U:54:ASN:ND2	2.60	0.44
12:W:43:ARG:HD2	12:W:47:GLN:HB2	1.99	0.44
2:M:242:GLY:HA2	2:M:285:PHE:O	2.18	0.44
3:N:97:MET:HG2	13:N:522:HEC:HBC2	1.99	0.44
12:W:44:HIS:O	12:W:47:GLN:HG2	2.17	0.44
1:A:127:LYS:HD2	1:A:127:LYS:HA	1.76	0.44
2:B:367:GLU:H	2:B:367:GLU:HG2	1.42	0.44
3:C:57:ASN:HA	3:C:173:ASN:HD21	1.82	0.44
3:C:320:VAL:HG13	8:H:58:TYR:CE2	2.52	0.44
5:E:106:ASN:HD22	5:E:119:ARG:HB2	1.82	0.44
5:E:134:MET:CG	10:J:31:SER:HB3	2.47	0.44
2:M:146:LEU:HD23	2:M:286:THR:CG2	2.47	0.44
3:N:330:VAL:O	3:N:334:VAL:HG23	2.17	0.44
13:N:522:HEC:HMB1	13:N:522:HEC:HBB2	2.00	0.44
7:G:86:HIS:HE1	8:H:47:ASN:HD21	1.65	0.43
4:O:271:LEU:HD23	9:T:36:ILE:CG2	2.46	0.43
10:U:49:VAL:HG12	10:U:68:LEU:HD23	2.00	0.43
11:V:15:LEU:HD12	11:V:15:LEU:N	2.33	0.43
12:W:29:GLY:N	12:W:30:PRO:CD	2.81	0.43
2:B:157:ASN:HA	2:B:158:PRO:HD3	1.90	0.43
3:C:72:VAL:HA	5:E:85:THR:HG22	1.99	0.43
3:C:229:ASP:O	3:C:233:VAL:HG23	2.17	0.43
5:E:137:LEU:HD13	5:E:190:ARG:HD3	2.00	0.43
7:G:86:HIS:HE1	8:H:47:ASN:ND2	2.17	0.43
3:C:295:MET:CE	14:C:505:SMA:H33	2.48	0.43
3:C:348:TYR:OH	8:H:74:ASN:OD1	2.36	0.43
1:A:85:ALA:HB1	1:A:90:LEU:HB2	2.01	0.43
1:A:133:SER:C	1:A:135:ASN:H	2.22	0.43
1:A:237:LEU:HD23	1:A:237:LEU:N	2.33	0.43
2:B:175:PHE:CZ	2:B:179:VAL:HG21	2.53	0.43
3:C:110:ARG:O	3:C:113:LEU:HB3	2.18	0.43
1:L:127:LYS:HD2	1:L:127:LYS:HA	1.85	0.43
2:M:205:LEU:O	2:M:209:LEU:HG	2.18	0.43
4:O:78:HIS:HB3	4:O:85:PHE:HA	2.01	0.43
5:P:103:LEU:O	5:P:120:HIS:O	2.36	0.43
12:W:33:VAL:HG12	13:W:526:HEC:HMD3	1.99	0.43
1:A:90:LEU:HD23	1:A:105:VAL:HG11	2.00	0.43
1:A:109:PRO:HB3	1:A:212:ASN:HD21	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:263:HIS:CE1	4:D:267:LYS:HE3	2.53	0.43
7:G:15:ILE:HG23	7:G:21:LEU:HB3	2.00	0.43
2:M:65:LEU:HD11	2:M:69:ARG:NH2	2.34	0.43
2:M:222:LYS:HB3	2:M:224:PHE:CE1	2.53	0.43
2:M:265:SER:OG	2:M:267:LEU:HD12	2.19	0.43
3:N:17:ILE:HG22	3:N:17:ILE:O	2.18	0.43
4:D:273:THR:HG22	4:D:277:LEU:HD12	2.00	0.43
9:I:52:VAL:O	9:I:56:ILE:HG12	2.19	0.43
11:K:79:GLU:HA	11:K:80:PRO:HA	1.68	0.43
2:M:93:PHE:HD1	2:M:94:LEU:O	2.01	0.43
2:M:181:THR:HB	2:M:212:GLY:H	1.84	0.43
3:N:38:LEU:CD1	3:N:233:VAL:HG13	2.49	0.43
4:O:288:LYS:HD3	4:O:288:LYS:C	2.39	0.43
13:O:523:HEC:HBA2	13:O:523:HEC:HHA	2.00	0.43
5:P:191:ILE:HD13	5:P:196:ALA:HB3	2.00	0.43
3:C:48:ILE:HD13	3:N:185:LEU:HG	2.00	0.43
7:G:17:LYS:O	7:G:19:PRO:HD3	2.19	0.43
8:H:30:SER:HA	8:H:31:PRO:HD3	1.91	0.43
10:J:7:SER:OG	10:J:21:THR:HG23	2.19	0.43
10:J:94:TYR:N	10:J:94:TYR:CD1	2.86	0.43
10:J:100:GLU:O	10:J:107:TYR:HA	2.18	0.43
1:L:168:PHE:O	1:L:171:THR:HB	2.18	0.43
5:E:168:GLY:HA2	5:E:176:TRP:CD1	2.53	0.43
1:L:67:GLY:CA	1:L:179:GLY:HA3	2.48	0.43
1:L:257:LYS:HB2	1:L:259:TRP:CZ2	2.54	0.43
2:M:270:LEU:HA	2:M:300:ASN:HD22	1.84	0.43
4:O:80:GLY:HA2	4:O:81:PRO:HD2	1.81	0.43
10:U:126:HIS:HA	10:U:127:PRO:HD2	1.90	0.43
1:A:171:THR:HG23	1:A:241:ALA:HA	2.00	0.43
2:B:298:SER:OG	2:B:363:PRO:HD3	2.18	0.43
3:C:43:GLN:CB	13:C:501:HEC:HAB	2.49	0.43
3:C:184:TYR:CE1	13:C:501:HEC:HBC1	2.54	0.43
11:K:34:ASN:ND2	11:K:49:TYR:HA	2.30	0.43
2:M:320:TYR:C	2:M:322:LYS:N	2.71	0.43
3:N:271:PRO:HG2	3:N:279:TYR:CG	2.54	0.43
4:O:115:LEU:N	4:O:115:LEU:HD22	2.34	0.43
1:A:226:ASN:HB3	1:A:227:LEU:H	1.47	0.43
2:M:346:PHE:CE1	2:M:347:LYS:O	2.72	0.43
3:N:154:ILE:HA	3:N:155:PRO:HD2	1.77	0.43
4:O:188:CYS:SG	4:O:256:ASN:OD1	2.76	0.43
10:U:28:SER:O	10:U:31:SER:HB2	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:89:GLY:HA2	2:B:320:TYR:HB2	2.01	0.42
2:B:64:ALA:O	2:B:68:VAL:HG23	2.18	0.42
3:C:43:GLN:HB3	13:C:501:HEC:HAB	2.01	0.42
3:C:125:ILE:CG2	14:C:505:SMA:H37	2.44	0.42
3:C:222:HIS:CG	3:C:223:SER:N	2.87	0.42
3:C:365:ILE:O	3:C:369:VAL:HG23	2.19	0.42
5:E:104:GLY:O	5:E:105:LYS:HD2	2.18	0.42
10:J:12:VAL:O	10:J:120:VAL:HA	2.19	0.42
1:A:56:SER:O	1:A:101:GLN:HG2	2.19	0.42
2:B:206:LEU:O	2:B:209:LEU:HB2	2.19	0.42
1:L:349:GLN:NE2	1:L:352:ARG:HD3	2.35	0.42
2:M:53:ARG:HB3	2:M:123:VAL:HG13	2.00	0.42
2:M:340:PHE:C	2:M:342:ALA:N	2.71	0.42
10:U:42:PRO:C	10:U:44:ASN:H	2.21	0.42
11:V:74:THR:HG22	11:V:75:ILE:N	2.33	0.42
11:V:94:PHE:HE1	11:V:96:TRP:CZ2	2.37	0.42
2:B:260:LEU:O	2:B:271:ILE:HD11	2.18	0.42
10:J:6:GLU:H	10:J:114:GLN:NE2	2.15	0.42
1:L:181:LEU:HD23	1:L:181:LEU:O	2.19	0.42
3:N:166:TRP:CE3	3:N:170:SER:HA	2.53	0.42
3:N:193:MET:CE	3:N:196:MET:SD	3.07	0.42
12:W:13:THR:HG22	12:W:16:LYS:CE	2.46	0.42
2:B:122:SER:C	2:B:125:PRO:HD2	2.39	0.42
5:E:57:TYR:N	5:E:57:TYR:CD1	2.86	0.42
1:L:27:ALA:O	1:L:28:GLU:HB2	2.19	0.42
1:L:225:LYS:HD2	1:L:225:LYS:H	1.84	0.42
2:M:43:THR:HG22	2:M:175:PHE:CD1	2.54	0.42
2:M:320:TYR:C	2:M:322:LYS:H	2.23	0.42
4:O:116:VAL:HG22	4:O:125:VAL:HG21	2.02	0.42
4:O:283:LEU:HD21	5:P:62:ALA:HB3	2.02	0.42
10:U:4:LEU:HA	10:U:23:SER:O	2.19	0.42
10:U:13:GLN:O	10:U:16:GLN:HB2	2.19	0.42
8:H:39:GLY:O	8:H:44:ALA:HB3	2.20	0.42
10:J:30:THR:O	10:J:54:ASN:HB2	2.20	0.42
3:N:23:PRO:HB2	3:N:26:ILE:HG23	2.02	0.42
10:U:20:LEU:HD21	10:U:116:THR:HG21	2.00	0.42
11:V:8:PRO:HG3	11:V:11:LEU:HD22	2.02	0.42
12:W:75:ASN:CG	12:W:78:LYS:HB3	2.39	0.42
2:B:153:LYS:NZ	2:B:153:LYS:HB3	2.34	0.42
5:E:197:PRO:HG2	5:E:198:LEU:HG	2.01	0.42
11:K:24:ARG:HA	11:K:69:THR:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:238:LYS:HB2	1:L:238:LYS:HE3	1.75	0.42
6:Q:81:LEU:HB3	6:Q:138:THR:HG22	2.02	0.42
10:U:61:ASN:HD22	10:U:61:ASN:C	2.23	0.42
1:A:302:LEU:HA	1:A:302:LEU:HD23	1.80	0.42
2:B:338:LEU:C	2:B:340:PHE:H	2.22	0.42
5:E:106:ASN:HD21	5:E:119:ARG:HD2	1.84	0.42
1:L:269:VAL:O	1:L:270:ASN:CB	2.68	0.42
1:L:364:ARG:NH2	2:M:72:GLU:OE1	2.53	0.42
3:C:25:SER:OG	7:G:79:HIS:CD2	2.73	0.42
4:D:133:GLU:HA	4:D:147:ARG:O	2.20	0.42
8:H:64:GLY:O	8:H:68:TYR:HB2	2.20	0.42
10:J:13:GLN:HA	10:J:121:SER:O	2.20	0.42
11:K:38:GLN:HB3	11:K:85:THR:HB	2.02	0.42
1:L:295:ARG:HB3	1:L:306:GLN:HE22	1.84	0.42
2:M:40:ARG:HD3	2:M:155:LEU:CG	2.47	0.42
2:M:209:LEU:HA	2:M:210:PRO:HD3	1.92	0.42
4:O:302:PHE:HB2	7:R:73:TYR:CE1	2.55	0.42
11:V:33:LEU:HD13	11:V:71:TYR:CD1	2.55	0.42
12:W:16:LYS:HA	12:W:20:LEU:HB2	2.01	0.42
12:W:60:LYS:HD2	12:W:60:LYS:HA	1.78	0.42
5:E:150:PRO:HD3	10:J:102:TYR:CG	2.55	0.42
3:N:38:LEU:HD11	3:N:233:VAL:HG13	2.02	0.42
4:O:299:LYS:HD2	5:P:39:PHE:CE2	2.54	0.42
5:P:55:TYR:O	5:P:59:MET:HG2	2.19	0.42
5:P:143:ASP:O	5:P:147:VAL:HG22	2.19	0.42
10:U:62:PRO:O	10:U:65:LYS:HG2	2.19	0.42
1:A:57:GLY:N	1:A:60:ASN:HD22	2.17	0.42
1:A:420:TRP:CZ3	1:A:425:LEU:HD22	2.55	0.42
5:E:120:HIS:CD2	5:E:151:GLN:HG2	2.55	0.42
1:L:262:LEU:C	1:L:262:LEU:HD23	2.40	0.42
1:L:288:ASN:HD22	1:L:289:ALA:N	2.18	0.42
2:M:214:SER:OG	2:M:216:VAL:HG23	2.20	0.42
4:O:247:MET:HB2	4:O:247:MET:HE3	1.97	0.42
12:W:37:LEU:O	12:W:107:CYS:HB2	2.20	0.42
1:A:89:GLY:CA	2:B:319:ASN:O	2.68	0.41
1:A:358:THR:OG1	1:A:361:GLU:HG3	2.20	0.41
3:C:379:TYR:CE1	3:C:383:VAL:HG21	2.54	0.41
5:E:160:THR:OG1	5:E:197:PRO:HD2	2.20	0.41
11:K:18:ARG:HD2	11:K:18:ARG:O	2.20	0.41
3:N:18:ILE:HA	3:N:222:HIS:HB2	2.02	0.41
3:N:159:ASN:H	3:N:159:ASN:ND2	2.07	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:P:103:LEU:HA	5:P:120:HIS:CE1	2.55	0.41
10:U:51:TYR:C	10:U:51:TYR:HD2	2.22	0.41
3:C:342:CYS:SG	8:H:70:TRP:HH2	2.43	0.41
2:M:68:VAL:O	2:M:72:GLU:HG3	2.20	0.41
3:N:12:LEU:HD23	3:N:12:LEU:HA	1.67	0.41
4:O:209:PRO:O	4:O:212:SER:HB2	2.20	0.41
9:T:14:ASN:HD22	9:T:14:ASN:HA	1.68	0.41
1:A:171:THR:HG21	1:A:242:ALA:H	1.85	0.41
7:G:31:GLN:HA	7:G:31:GLN:NE2	2.34	0.41
10:J:65:LYS:HB2	10:J:65:LYS:HE3	1.87	0.41
3:N:108:SER:OG	3:N:109:PRO:CD	2.67	0.41
7:R:83:LEU:C	7:R:83:LEU:HD12	2.41	0.41
11:V:32:PHE:CD2	11:V:92:ILE:HG22	2.56	0.41
12:W:87:PHE:CE1	12:W:89:GLY:HA2	2.56	0.41
10:J:93:THR:HB	10:J:117:THR:HG23	2.02	0.41
1:L:250:LEU:HD23	8:S:25:THR:CG2	2.50	0.41
1:L:392:GLU:O	1:L:396:LYS:HG2	2.20	0.41
2:M:26:THR:OG1	2:M:191:ASN:ND2	2.52	0.41
3:N:319:LYS:HB2	3:N:322:SER:HB2	2.02	0.41
11:V:4:LEU:CD2	11:V:88:CYS:SG	3.09	0.41
7:G:86:HIS:CE1	8:H:47:ASN:ND2	2.89	0.41
4:O:283:LEU:HD12	4:O:283:LEU:HA	1.90	0.41
8:S:48:SER:O	8:S:50:ARG:N	2.53	0.41
1:A:34:ASN:HD21	1:A:223:GLU:CD	2.24	0.41
2:B:109:LEU:HD23	2:B:180:TYR:HD2	1.86	0.41
3:C:347:PRO:HG3	8:H:77:ASN:CB	2.49	0.41
3:N:112:THR:O	3:N:116:VAL:HG23	2.21	0.41
3:N:226:ILE:HD13	3:N:226:ILE:HA	1.92	0.41
8:S:35:LYS:HA	8:S:36:PRO:HD2	1.77	0.41
11:V:4:LEU:HD22	11:V:88:CYS:SG	2.61	0.41
2:B:291:ASP:HB3	2:B:297:VAL:HG22	2.02	0.41
4:D:134:TYR:OH	4:D:156:PRO:HD3	2.20	0.41
2:M:294:SER:HB3	2:M:358:ASP:HB3	2.02	0.41
4:O:231:ASP:OD2	4:O:244:THR:HG22	2.20	0.41
10:U:48:TRP:CZ2	10:U:50:GLY:HA2	2.56	0.41
1:A:28:GLU:HB3	1:A:29:VAL:H	1.55	0.41
1:A:100:PHE:CD1	1:A:101:GLN:N	2.89	0.41
1:A:129:ASN:O	1:A:131:LEU:N	2.45	0.41
2:B:91:ALA:O	2:B:93:PHE:CD2	2.74	0.41
6:F:101:CYS:O	6:F:105:VAL:HG23	2.21	0.41
11:K:21:ILE:HG22	11:K:22:SER:H	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:36:ILE:HG22	1:L:37:VAL:H	1.86	0.41
1:L:92:LEU:HD23	1:L:105:VAL:HG22	2.02	0.41
1:L:155:HIS:N	1:L:156:PRO:HD2	2.36	0.41
2:M:64:ALA:O	2:M:68:VAL:HG23	2.21	0.41
11:V:79:GLU:HA	11:V:80:PRO:HA	1.73	0.41
12:W:77:M3L:HM12	12:W:83:THR:O	2.20	0.41
12:W:94:LYS:HD2	12:W:98:ASP:OD2	2.20	0.41
1:A:43:ASN:HA	1:A:44:PRO:HD2	1.90	0.41
1:A:73:LYS:HG3	1:A:94:SER:HB3	2.01	0.41
2:B:82:LEU:HD12	2:B:87:ILE:HG12	2.03	0.41
4:D:92:ARG:O	4:D:96:VAL:HG23	2.21	0.41
5:E:44:LYS:HZ2	5:E:52:GLY:H	1.66	0.41
7:G:53:ASN:ND2	7:G:56:MET:H	2.19	0.41
8:H:24:ILE:HD12	8:H:24:ILE:H	1.85	0.41
10:J:41:PHE:CD2	10:J:92:ALA:HB2	2.56	0.41
11:K:2:ILE:HG23	11:K:26:SER:OG	2.21	0.41
11:K:14:SER:HB3	11:K:15:LEU:H	1.74	0.41
1:L:88:GLU:HB3	1:L:90:LEU:HD22	2.02	0.41
1:L:251:ARG:NH1	1:L:439:GLU:HB2	2.36	0.41
1:L:287:TYR:CE2	1:L:295:ARG:HG2	2.56	0.41
1:L:299:ILE:HB	1:L:302:LEU:HD12	2.03	0.41
1:L:381:ASN:CG	1:L:383:VAL:HG22	2.41	0.41
2:M:146:LEU:HD12	2:M:146:LEU:HA	1.85	0.41
2:M:301:ILE:HG23	2:M:302:LYS:N	2.36	0.41
2:M:367:GLU:H	2:M:367:GLU:HG2	1.49	0.41
4:O:85:PHE:CE1	4:O:257:TRP:HA	2.56	0.41
12:W:73:LEU:HD13	12:W:99:LEU:HD12	2.03	0.41
1:A:317:PHE:HB2	1:A:319:LEU:HD13	2.03	0.41
2:B:83:ASP:HB2	2:B:86:TYR:N	2.18	0.41
2:B:315:SER:HB2	2:B:318:ILE:HG13	2.03	0.41
2:B:362:LEU:HD12	2:B:362:LEU:HA	1.92	0.41
3:C:253:HIS:CD2	3:C:255:ASP:HB2	2.56	0.41
5:E:118:ILE:HA	5:E:153:LEU:O	2.21	0.41
1:L:237:LEU:C	1:L:238:LYS:HG3	2.42	0.41
2:M:165:GLU:O	2:M:165:GLU:HG3	2.19	0.41
10:J:68:LEU:HB3	10:J:83:LEU:HD13	2.02	0.40
11:K:4:LEU:HD23	11:K:88:CYS:SG	2.61	0.40
1:L:368:LEU:HD23	1:L:368:LEU:HA	1.89	0.40
1:L:428:GLN:HE22	9:T:13:ARG:CZ	2.33	0.40
2:M:124:LEU:HB2	2:M:125:PRO:HD3	2.03	0.40
2:M:241:ILE:HA	2:M:352:ASN:O	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:40:LEU:HD12	3:C:40:LEU:HA	1.82	0.40
3:C:261:ASN:HA	3:C:262:PRO:HD3	1.85	0.40
6:F:81:LEU:O	6:F:85:PHE:HD1	2.05	0.40
8:H:56:PHE:O	8:H:60:LEU:HB2	2.21	0.40
9:I:37:THR:O	9:I:41:GLU:HG3	2.20	0.40
1:L:276:VAL:HA	1:L:412:ILE:HD13	2.04	0.40
3:N:159:ASN:N	3:N:159:ASN:ND2	2.69	0.40
4:O:175:PRO:HG3	13:O:523:HEC:HAA1	2.03	0.40
8:S:71:LYS:HB3	8:S:71:LYS:HE3	1.91	0.40
11:V:75:ILE:CG2	11:V:76:SER:H	2.33	0.40
11:V:89:GLN:HB3	11:V:98:PHE:CD1	2.56	0.40
1:A:91:ALA:O	1:A:105:VAL:HA	2.21	0.40
1:A:120:ASN:O	1:A:124:ILE:HB	2.21	0.40
1:A:129:ASN:C	1:A:131:LEU:N	2.74	0.40
4:D:147:ARG:NH2	4:D:150:LYS:HE3	2.37	0.40
5:E:140:PRO:O	5:E:141:GLN:HG3	2.21	0.40
10:J:52:ILE:O	10:J:52:ILE:HG23	2.21	0.40
11:K:17:ASP:HB2	11:K:18:ARG:NH2	2.33	0.40
1:L:75:ILE:CG2	1:L:139:THR:HG21	2.51	0.40
1:L:406:PHE:N	1:L:406:PHE:CD1	2.90	0.40
3:N:233:VAL:O	3:N:237:MET:HG3	2.22	0.40
3:N:253:HIS:CD2	3:N:255:ASP:H	2.25	0.40
4:O:112:TRP:O	4:O:115:LEU:HD23	2.21	0.40
8:S:61:ILE:O	8:S:65:ILE:HG13	2.22	0.40
11:V:4:LEU:HD12	11:V:4:LEU:N	2.36	0.40
11:K:29:ILE:HD11	11:K:71:TYR:CE1	2.56	0.40
2:M:35:VAL:HG13	2:M:185:LEU:HB3	2.03	0.40
2:M:115:LYS:HD2	2:M:115:LYS:HA	1.77	0.40
3:N:58:ILE:HB	3:N:173:ASN:HD22	1.87	0.40
4:O:183:ALA:O	4:O:184:ARG:HD3	2.21	0.40
4:O:286:TRP:CD2	8:S:37:LEU:HD12	2.56	0.40
10:U:99:SER:HA	10:U:109:MET:HA	2.02	0.40
11:V:75:ILE:CG2	11:V:76:SER:N	2.82	0.40
2:B:152:ARG:HG3	2:B:152:ARG:NH2	2.36	0.40
3:C:349:VAL:O	3:C:353:GLN:HG3	2.21	0.40
11:K:38:GLN:O	11:K:84:ALA:HB1	2.21	0.40
1:L:288:ASN:HD22	1:L:290:PHE:H	1.69	0.40
2:M:21:ALA:HB1	2:M:192:VAL:O	2.21	0.40
5:P:126:ILE:CG2	5:P:150:PRO:HB2	2.50	0.40
5:P:212:VAL:HG22	5:P:213:ILE:N	2.37	0.40
10:U:49:VAL:HG12	10:U:68:LEU:CD2	2.51	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:V:21:ILE:HG22	11:V:22:SER:N	2.37	0.40
11:V:29:ILE:HG22	11:V:92:ILE:HD12	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	428/430 (100%)	374 (87%)	47 (11%)	7 (2%)	9	38
1	L	428/430 (100%)	384 (90%)	37 (9%)	7 (2%)	9	38
2	B	350/352 (99%)	286 (82%)	47 (13%)	17 (5%)	2	11
2	M	350/352 (99%)	283 (81%)	48 (14%)	19 (5%)	2	9
3	C	383/385 (100%)	357 (93%)	21 (6%)	5 (1%)	12	43
3	N	383/385 (100%)	354 (92%)	24 (6%)	5 (1%)	12	43
4	D	243/248 (98%)	222 (91%)	20 (8%)	1 (0%)	34	70
4	O	243/248 (98%)	225 (93%)	14 (6%)	4 (2%)	9	38
5	E	183/185 (99%)	161 (88%)	19 (10%)	3 (2%)	9	38
5	P	183/185 (99%)	163 (89%)	20 (11%)	0	100	100
6	F	72/74 (97%)	65 (90%)	7 (10%)	0	100	100
6	Q	72/74 (97%)	62 (86%)	10 (14%)	0	100	100
7	G	123/126 (98%)	113 (92%)	8 (6%)	2 (2%)	9	38
7	R	123/126 (98%)	120 (98%)	2 (2%)	1 (1%)	19	55
8	H	91/93 (98%)	79 (87%)	8 (9%)	4 (4%)	2	13
8	S	91/93 (98%)	73 (80%)	13 (14%)	5 (6%)	2	9
9	I	51/57 (90%)	45 (88%)	6 (12%)	0	100	100
9	T	51/57 (90%)	45 (88%)	5 (10%)	1 (2%)	7	32

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	J	125/127 (98%)	110 (88%)	11 (9%)	4 (3%)	4	20
10	U	125/127 (98%)	107 (86%)	15 (12%)	3 (2%)	6	27
11	K	105/107 (98%)	85 (81%)	14 (13%)	6 (6%)	1	9
11	V	105/107 (98%)	83 (79%)	17 (16%)	5 (5%)	2	12
12	W	105/108 (97%)	89 (85%)	14 (13%)	2 (2%)	8	33
All	All	4413/4476 (99%)	3885 (88%)	427 (10%)	101 (2%)	6	28

All (101) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	226	ASN
2	B	95	LYS
2	B	152	ARG
2	B	335	PRO
2	B	336	ILE
3	C	108	SER
4	D	263	HIS
8	H	93	ASN
11	K	80	PRO
1	L	34	ASN
1	L	226	ASN
2	M	203	GLU
2	M	222	LYS
2	M	311	GLY
2	M	313	ASP
2	M	338	LEU
3	N	108	SER
3	N	346	VAL
4	O	263	HIS
8	S	36	PRO
8	S	52	PHE
1	A	29	VAL
2	B	45	ASP
2	B	320	TYR
2	B	338	LEU
3	C	215	ASN
7	G	96	ALA
8	H	37	LEU
10	J	32	GLY
10	J	65	LYS

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Mol	Chain	Res	Type
1	L	28	GLU
2	M	36	HIS
2	M	45	ASP
2	M	335	PRO
2	M	336	ILE
2	M	340	PHE
2	M	367	GLU
3	N	158	GLY
3	N	224	TYR
4	O	139	ASP
4	O	197	GLY
10	U	65	LYS
11	V	68	GLY
1	A	28	GLU
1	A	44	PRO
1	A	238	LYS
2	B	22	ARG
2	B	330	GLU
2	B	367	GLU
3	C	61	ALA
3	C	155	PRO
5	E	103	LEU
8	H	36	PRO
10	J	9	ALA
10	J	108	ALA
11	K	16	GLY
11	K	81	GLU
1	L	44	PRO
2	M	23	ASP
2	M	152	ARG
2	M	315	SER
4	O	102	ALA
8	S	42	HIS
9	T	12	LYS
11	V	30	ASN
12	W	22	CYS
2	B	222	LYS
2	B	224	PHE
2	B	349	GLY
7	G	99	ASP
11	K	78	LEU
11	K	91	HIS

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Mol	Chain	Res	Type
2	M	224	PHE
8	S	37	LEU
10	U	27	TYR
10	U	126	HIS
11	V	80	PRO
1	A	289	ALA
2	B	313	ASP
1	L	309	GLN
2	M	97	ASP
3	N	155	PRO
7	R	99	ASP
8	S	49	PHE
11	V	73	LEU
2	B	21	ALA
2	B	311	GLY
3	C	224	TYR
8	H	56	PHE
1	L	29	VAL
2	M	221	PRO
11	V	16	GLY
5	E	150	PRO
11	K	68	GLY
2	M	332	VAL
1	A	36	ILE
5	E	37	PRO
12	W	81	PRO
2	M	349	GLY
2	B	332	VAL
1	L	124	ILE

5.3.2 Protein sidechains [i](#)

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	369/369 (100%)	333 (90%)	36 (10%)	8 29
1	L	369/369 (100%)	328 (89%)	41 (11%)	6 23

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	301/301 (100%)	272 (90%)	29 (10%)	8	30
2	M	301/301 (100%)	269 (89%)	32 (11%)	6	25
3	C	338/338 (100%)	311 (92%)	27 (8%)	12	38
3	N	338/338 (100%)	311 (92%)	27 (8%)	12	38
4	D	202/206 (98%)	190 (94%)	12 (6%)	19	52
4	O	202/206 (98%)	193 (96%)	9 (4%)	27	62
5	E	151/151 (100%)	141 (93%)	10 (7%)	16	47
5	P	151/151 (100%)	145 (96%)	6 (4%)	31	66
6	F	67/67 (100%)	60 (90%)	7 (10%)	7	26
6	Q	67/67 (100%)	58 (87%)	9 (13%)	4	16
7	G	109/110 (99%)	104 (95%)	5 (5%)	27	61
7	R	109/110 (99%)	101 (93%)	8 (7%)	14	42
8	H	77/77 (100%)	70 (91%)	7 (9%)	9	32
8	S	77/77 (100%)	69 (90%)	8 (10%)	7	26
9	I	45/47 (96%)	41 (91%)	4 (9%)	9	33
9	T	45/47 (96%)	44 (98%)	1 (2%)	52	80
10	J	112/112 (100%)	99 (88%)	13 (12%)	5	21
10	U	112/112 (100%)	96 (86%)	16 (14%)	3	14
11	K	93/93 (100%)	87 (94%)	6 (6%)	17	48
11	V	93/93 (100%)	87 (94%)	6 (6%)	17	48
12	W	88/88 (100%)	76 (86%)	12 (14%)	3	15
All	All	3816/3830 (100%)	3485 (91%)	331 (9%)	10	35

All (331) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	46	HIS
1	A	65	ASN
1	A	71	LEU
1	A	74	ASN
1	A	93	SER
1	A	108	LEU
1	A	114	LYS
1	A	119	LEU
1	A	125	GLN

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Mol	Chain	Res	Type
1	A	161	GLU
1	A	163	LEU
1	A	171	THR
1	A	173	LEU
1	A	181	LEU
1	A	226	ASN
1	A	229	LEU
1	A	237	LEU
1	A	240	LYS
1	A	251	ARG
1	A	260	ILE
1	A	269	VAL
1	A	270	ASN
1	A	278	LYS
1	A	305	ILE
1	A	319	LEU
1	A	323	ASP
1	A	335	ASN
1	A	342	LEU
1	A	360	THR
1	A	369	LEU
1	A	372	GLN
1	A	376	LEU
1	A	384	ASN
1	A	389	LEU
1	A	425	LEU
1	A	448	ARG
2	B	17	LEU
2	B	30	THR
2	B	53	ARG
2	B	54	PHE
2	B	62	ARG
2	B	81	THR
2	B	85	GLU
2	B	88	THR
2	B	98	LEU
2	B	112	THR
2	B	128	ARG
2	B	144	ASP
2	B	146	LEU
2	B	169	LEU
2	B	193	VAL

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Mol	Chain	Res	Type
2	B	206	LEU
2	B	254	GLU
2	B	267	LEU
2	B	294	SER
2	B	325	ASN
2	B	330	GLU
2	B	339	ASN
2	B	340	PHE
2	B	347	LYS
2	B	348	LEU
2	B	359	VAL
2	B	361	ASN
2	B	362	LEU
2	B	367	GLU
3	C	5	LYS
3	C	12	LEU
3	C	35	LEU
3	C	56	SER
3	C	57	ASN
3	C	63	SER
3	C	79	ARG
3	C	81	LEU
3	C	89	PHE
3	C	99	LYS
3	C	107	ARG
3	C	108	SER
3	C	112	THR
3	C	150	LEU
3	C	155	PRO
3	C	182	LEU
3	C	184	TYR
3	C	185	LEU
3	C	206	SER
3	C	238	LEU
3	C	247	SER
3	C	302	LEU
3	C	312	VAL
3	C	313	VAL
3	C	319	LYS
3	C	321	LEU
3	C	377	LEU
4	D	63	THR

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Mol	Chain	Res	Type
4	D	109	ARG
4	D	113	ARG
4	D	137	GLU
4	D	141	GLN
4	D	200	ASP
4	D	244	THR
4	D	251	VAL
4	D	256	ASN
4	D	280	LEU
4	D	283	LEU
4	D	301	VAL
5	E	42	VAL
5	E	55	TYR
5	E	73	SER
5	E	85	THR
5	E	91	MET
5	E	114	LYS
5	E	187	ILE
5	E	197	PRO
5	E	202	ILE
5	E	213	ILE
6	F	77	GLN
6	F	80	ASP
6	F	84	HIS
6	F	94	LEU
6	F	99	GLU
6	F	119	HIS
6	F	130	LEU
7	G	16	LEU
7	G	51	GLU
7	G	77	ARG
7	G	83	LEU
7	G	127	LYS
8	H	38	GLN
8	H	43	ASN
8	H	50	ARG
8	H	56	PHE
8	H	60	LEU
8	H	68	TYR
8	H	71	LYS
9	I	4	SER
9	I	13	ARG

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Mol	Chain	Res	Type
9	I	14	ASN
9	I	30	THR
10	J	1	GLU
10	J	21	THR
10	J	30	THR
10	J	36	ASN
10	J	39	ARG
10	J	51	TYR
10	J	54	ASN
10	J	61	ASN
10	J	64	LEU
10	J	68	LEU
10	J	79	PHE
10	J	93	THR
10	J	100	GLU
11	K	15	LEU
11	K	18	ARG
11	K	33	LEU
11	K	81	GLU
11	K	92	ILE
11	K	107	LYS
1	L	30	THR
1	L	46	HIS
1	L	65	ASN
1	L	90	LEU
1	L	108	LEU
1	L	113	ASP
1	L	114	LYS
1	L	119	LEU
1	L	125	GLN
1	L	149	ASP
1	L	152	ASP
1	L	171	THR
1	L	173	LEU
1	L	175	LEU
1	L	178	ARG
1	L	182	GLU
1	L	187	LEU
1	L	217	ASP
1	L	226	ASN
1	L	237	LEU
1	L	240	LYS

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Mol	Chain	Res	Type
1	L	250	LEU
1	L	251	ARG
1	L	260	ILE
1	L	279	LEU
1	L	288	ASN
1	L	305	ILE
1	L	313	ASN
1	L	329	PHE
1	L	331	THR
1	L	342	LEU
1	L	359	ASP
1	L	360	THR
1	L	364	ARG
1	L	369	LEU
1	L	376	LEU
1	L	389	LEU
1	L	394	LEU
1	L	425	LEU
1	L	446	ARG
1	L	448	ARG
2	M	31	LEU
2	M	41	TYR
2	M	43	THR
2	M	54	PHE
2	M	62	ARG
2	M	83	ASP
2	M	85	GLU
2	M	98	LEU
2	M	111	LYS
2	M	112	THR
2	M	128	ARG
2	M	144	ASP
2	M	146	LEU
2	M	150	THR
2	M	152	ARG
2	M	166	ARG
2	M	169	LEU
2	M	193	VAL
2	M	213	LYS
2	M	215	LEU
2	M	216	VAL
2	M	250	LEU

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Mol	Chain	Res	Type
2	M	252	GLN
2	M	266	GLU
2	M	287	LEU
2	M	318	ILE
2	M	330	GLU
2	M	339	ASN
2	M	345	ASP
2	M	347	LYS
2	M	360	SER
2	M	367	GLU
3	N	5	LYS
3	N	12	LEU
3	N	17	ILE
3	N	34	SER
3	N	35	LEU
3	N	38	LEU
3	N	57	ASN
3	N	79	ARG
3	N	81	LEU
3	N	89	PHE
3	N	99	LYS
3	N	112	THR
3	N	129	PHE
3	N	150	LEU
3	N	159	ASN
3	N	175	THR
3	N	182	LEU
3	N	184	TYR
3	N	185	LEU
3	N	206	SER
3	N	208	ASN
3	N	282	LEU
3	N	312	VAL
3	N	313	VAL
3	N	317	THR
3	N	350	LEU
3	N	382	ARG
4	O	69	LEU
4	O	77	SER
4	O	83	GLU
4	O	109	ARG
4	O	113	ARG

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Mol	Chain	Res	Type
4	O	244	THR
4	O	251	VAL
4	O	256	ASN
4	O	280	LEU
5	P	107	VAL
5	P	114	LYS
5	P	187	ILE
5	P	190	ARG
5	P	208	ASP
5	P	211	LYS
6	Q	74	ASP
6	Q	77	GLN
6	Q	80	ASP
6	Q	86	LYS
6	Q	94	LEU
6	Q	116	ASP
6	Q	118	GLU
6	Q	119	HIS
6	Q	130	LEU
7	R	16	LEU
7	R	31	GLN
7	R	41	LEU
7	R	66	ASP
7	R	77	ARG
7	R	81	THR
7	R	83	LEU
7	R	97	GLN
8	S	38	GLN
8	S	42	HIS
8	S	47	ASN
8	S	50	ARG
8	S	56	PHE
8	S	60	LEU
8	S	68	TYR
8	S	71	LYS
9	T	13	ARG
10	U	5	GLN
10	U	36	ASN
10	U	38	ILE
10	U	39	ARG
10	U	51	TYR
10	U	54	ASN

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Mol	Chain	Res	Type
10	U	57	ASP
10	U	61	ASN
10	U	66	ASP
10	U	68	LEU
10	U	79	PHE
10	U	87	THR
10	U	99	SER
10	U	124	TRP
10	U	125	ARG
10	U	126	HIS
11	V	18	ARG
11	V	33	LEU
11	V	53	ARG
11	V	74	THR
11	V	92	ILE
11	V	107	LYS
12	W	10	LYS
12	W	14	LEU
12	W	21	GLN
12	W	26	GLU
12	W	36	ASN
12	W	75	ASN
12	W	78	LYS
12	W	80	ILE
12	W	93	GLU
12	W	94	LYS
12	W	99	LEU
12	W	107	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (139) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	43	ASN
1	A	60	ASN
1	A	65	ASN
1	A	66	ASN
1	A	120	ASN
1	A	121	GLN
1	A	126	GLN
1	A	155	HIS
1	A	199	HIS
1	A	282	GLN

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Mol	Chain	Res	Type
1	A	288	ASN
1	A	304	ASN
1	A	309	GLN
1	A	316	HIS
1	A	335	ASN
1	A	344	HIS
1	A	387	ASN
1	A	437	GLN
2	B	49	HIS
2	B	52	ASN
2	B	191	ASN
2	B	246	ASN
2	B	252	GLN
2	B	258	ASN
2	B	325	ASN
3	C	7	ASN
3	C	14	ASN
3	C	22	GLN
3	C	43	GLN
3	C	173	ASN
3	C	202	HIS
3	C	204	HIS
3	C	208	ASN
3	C	222	HIS
3	C	253	HIS
3	C	332	ASN
4	D	78	HIS
4	D	213	ASN
4	D	303	ASN
5	E	38	ASN
5	E	106	ASN
6	F	77	GLN
6	F	109	GLN
7	G	30	ASN
7	G	31	GLN
7	G	53	ASN
7	G	79	HIS
7	G	86	HIS
8	H	15	HIS
8	H	42	HIS
8	H	77	ASN
9	I	14	ASN

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Mol	Chain	Res	Type
9	I	29	GLN
10	J	36	ASN
10	J	54	ASN
10	J	59	ASN
10	J	61	ASN
10	J	77	ASN
10	J	78	GLN
10	J	114	GLN
11	K	34	ASN
11	K	89	GLN
11	K	90	HIS
11	K	91	HIS
1	L	60	ASN
1	L	65	ASN
1	L	66	ASN
1	L	95	ASN
1	L	101	GLN
1	L	120	ASN
1	L	155	HIS
1	L	170	ASN
1	L	199	HIS
1	L	204	ASN
1	L	288	ASN
1	L	313	ASN
1	L	316	HIS
1	L	335	ASN
1	L	349	GLN
1	L	384	ASN
1	L	387	ASN
1	L	428	GLN
2	M	49	HIS
2	M	52	ASN
2	M	55	ASN
2	M	60	ASN
2	M	170	GLN
2	M	191	ASN
2	M	246	ASN
2	M	252	GLN
2	M	258	ASN
2	M	319	ASN
2	M	328	GLN
2	M	339	ASN

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Mol	Chain	Res	Type
2	M	361	ASN
3	N	7	ASN
3	N	14	ASN
3	N	22	GLN
3	N	31	ASN
3	N	43	GLN
3	N	159	ASN
3	N	173	ASN
3	N	202	HIS
3	N	208	ASN
3	N	222	HIS
3	N	253	HIS
3	N	332	ASN
4	O	67	HIS
4	O	78	HIS
4	O	79	ASN
4	O	127	ASN
4	O	169	ASN
4	O	256	ASN
5	P	38	ASN
5	P	97	ASN
5	P	106	ASN
5	P	184	HIS
6	Q	77	GLN
7	R	31	GLN
7	R	34	ASN
7	R	79	HIS
8	S	15	HIS
9	T	14	ASN
9	T	29	GLN
10	U	16	GLN
10	U	36	ASN
10	U	54	ASN
10	U	59	ASN
10	U	61	ASN
10	U	77	ASN
10	U	78	GLN
10	U	114	GLN
11	V	31	ASN
11	V	34	ASN
11	V	91	HIS
12	W	57	ASN

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Mol	Chain	Res	Type
12	W	61	ASN
12	W	67	ASN
12	W	75	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
12	M3L	W	77	12	10,11,12	0.61	0	9,14,16	1.23	1 (11%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
12	M3L	W	77	12	-	1/9/10/12	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
12	W	77	M3L	CM3-NZ-CM2	-2.86	101.61	108.97

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
12	W	77	M3L	CA-CB-CG-CD

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
12	W	77	M3L	1	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

11 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
13	HEC	C	502	3	32,50,50	1.59	2 (6%)	24,82,82	1.49	5 (20%)
13	HEC	N	522	3	32,50,50	1.43	3 (9%)	24,82,82	1.84	5 (20%)
15	FES	P	524	5	0,4,4	-	-	-		
14	SMA	C	505	-	38,38,38	1.54	6 (15%)	48,52,52	2.18	11 (22%)
15	FES	E	504	5	0,4,4	-	-	-		
14	SMA	N	525	-	38,38,38	1.57	7 (18%)	48,52,52	2.25	11 (22%)
13	HEC	C	501	3	32,50,50	1.73	3 (9%)	24,82,82	1.34	3 (12%)
13	HEC	D	503	4	32,50,50	1.62	4 (12%)	24,82,82	1.19	2 (8%)
13	HEC	O	523	4	32,50,50	1.87	4 (12%)	24,82,82	1.09	2 (8%)
13	HEC	W	526	12	32,50,50	1.55	3 (9%)	24,82,82	1.51	6 (25%)
13	HEC	N	521	3	32,50,50	1.76	4 (12%)	24,82,82	1.68	4 (16%)

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
13	HEC	C	502	3	-	4/10/54/54	-
13	HEC	N	522	3	-	4/10/54/54	-
15	FES	P	524	5	-	-	0/1/1/1
14	SMA	C	505	-	2/2/5/10	22/34/34/34	0/2/2/2
15	FES	E	504	5	-	-	0/1/1/1
14	SMA	N	525	-	2/2/5/10	18/34/34/34	0/2/2/2
13	HEC	C	501	3	-	5/10/54/54	-
13	HEC	D	503	4	-	5/10/54/54	-
13	HEC	O	523	4	-	2/10/54/54	-
13	HEC	W	526	12	-	2/10/54/54	-
13	HEC	N	521	3	-	5/10/54/54	-

All (36) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	O	523	HEC	C2B-C3B	-6.05	1.34	1.40
13	C	501	HEC	C2B-C3B	-6.05	1.34	1.40
13	O	523	HEC	C3C-C2C	-5.92	1.34	1.40
13	N	521	HEC	C3C-C2C	-5.76	1.34	1.40
13	C	502	HEC	C3C-C2C	-5.50	1.35	1.40
13	N	521	HEC	C2B-C3B	-5.37	1.35	1.40
13	C	501	HEC	C3C-C2C	-5.27	1.35	1.40
13	D	503	HEC	C2B-C3B	-5.27	1.35	1.40
13	W	526	HEC	C3C-C2C	-4.87	1.35	1.40
13	D	503	HEC	C3C-C2C	-4.84	1.35	1.40
13	C	502	HEC	C2B-C3B	-4.78	1.35	1.40
13	W	526	HEC	C2B-C3B	-4.59	1.36	1.40
13	N	522	HEC	C2B-C3B	-4.19	1.36	1.40
14	C	505	SMA	C20-C19	4.05	1.36	1.33
14	N	525	SMA	C20-C19	4.03	1.36	1.33
13	N	522	HEC	C3C-C2C	-3.97	1.36	1.40
14	N	525	SMA	O1-C2	3.74	1.40	1.36
13	O	523	HEC	CAA-C2A	-3.67	1.45	1.52
14	N	525	SMA	C13-C12	3.38	1.62	1.54
14	C	505	SMA	C13-C12	3.33	1.62	1.54
14	C	505	SMA	C4A-C5	3.15	1.46	1.40
14	C	505	SMA	O1-C2	3.15	1.40	1.36
14	N	525	SMA	C4A-C8A	3.12	1.47	1.40
14	C	505	SMA	C4A-C8A	3.09	1.47	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
14	N	525	SMA	C4A-C5	2.50	1.45	1.40
13	D	503	HEC	CAD-C3D	2.47	1.55	1.52
13	D	503	HEC	CAA-C2A	-2.38	1.48	1.52
13	C	501	HEC	CMC-C2C	2.29	1.57	1.51
14	N	525	SMA	O1-C8A	2.25	1.41	1.38
14	N	525	SMA	O7-C7	2.24	1.40	1.37
13	N	521	HEC	CBC-CAC	-2.23	1.41	1.49
14	C	505	SMA	O7-C7	2.20	1.40	1.37
13	O	523	HEC	CAD-C3D	2.19	1.55	1.52
13	N	521	HEC	CMC-C2C	2.01	1.56	1.51
13	N	522	HEC	CMC-C2C	2.00	1.56	1.51
13	W	526	HEC	CAD-C3D	-2.00	1.49	1.52

All (49) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
14	N	525	SMA	C26-C19-C18	-6.63	107.62	118.08
14	C	505	SMA	C26-C19-C18	-6.39	108.02	118.08
14	N	525	SMA	O14-C14-C15	5.59	129.06	111.05
14	C	505	SMA	O14-C14-C13	5.49	119.46	107.98
14	C	505	SMA	O14-C14-C15	5.38	128.38	111.05
14	N	525	SMA	O14-C14-C13	5.28	119.00	107.98
13	N	521	HEC	CMC-C2C-C3C	-5.23	119.67	125.82
14	N	525	SMA	C9-C2-C3	-4.80	120.04	127.07
13	N	522	HEC	CMB-C2B-C3B	4.67	131.31	125.82
14	C	505	SMA	C9-C2-C3	-4.64	120.28	127.07
14	N	525	SMA	O7-C7-C8	4.19	118.77	114.54
14	C	505	SMA	O12-C12-C13	4.03	113.91	107.97
13	N	522	HEC	CMB-C2B-C1B	-3.92	122.44	128.46
14	N	525	SMA	O1-C8A-C8	3.86	122.54	116.42
13	N	522	HEC	CMC-C2C-C3C	3.64	130.10	125.82
13	N	521	HEC	CMC-C2C-C1C	3.53	133.89	128.46
14	N	525	SMA	O12-C12-C13	3.51	113.15	107.97
14	C	505	SMA	O1-C8A-C8	3.49	121.94	116.42
13	N	522	HEC	CMC-C2C-C1C	-3.39	123.26	128.46
14	C	505	SMA	O7-C7-C8	3.28	117.85	114.54
14	C	505	SMA	O1-C2-C9	3.24	117.45	110.58
14	N	525	SMA	O1-C2-C9	3.11	117.17	110.58
13	C	501	HEC	CMA-C3A-C2A	3.03	130.66	124.94
14	N	525	SMA	O7-C7-C6	-3.02	118.93	124.12
13	C	502	HEC	CMB-C2B-C3B	2.81	129.13	125.82
13	W	526	HEC	CMD-C2D-C1D	-2.75	124.23	128.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	C	501	HEC	CBA-CAA-C2A	-2.75	107.97	112.60
13	C	502	HEC	CMB-C2B-C1B	-2.73	124.27	128.46
13	D	503	HEC	CMA-C3A-C2A	2.73	130.09	124.94
13	O	523	HEC	CBD-CAD-C3D	2.68	117.20	112.62
13	W	526	HEC	CMC-C2C-C1C	-2.63	124.42	128.46
13	N	521	HEC	CMA-C3A-C2A	2.58	129.80	124.94
13	W	526	HEC	CMC-C2C-C3C	2.57	128.84	125.82
14	C	505	SMA	O7-C7-C6	-2.52	119.79	124.12
14	N	525	SMA	C18-C19-C20	2.51	126.74	118.80
13	C	502	HEC	CMD-C2D-C1D	-2.46	124.69	128.46
13	C	501	HEC	CBD-CAD-C3D	2.40	116.71	112.62
13	N	522	HEC	CMA-C3A-C2A	2.35	129.37	124.94
13	C	502	HEC	CBA-CAA-C2A	-2.29	108.75	112.60
14	C	505	SMA	C18-C19-C20	2.27	125.99	118.80
13	O	523	HEC	CBA-CAA-C2A	-2.23	108.85	112.60
13	W	526	HEC	CBD-CAD-C3D	-2.22	108.82	112.62
13	C	502	HEC	CAA-C2A-C3A	-2.20	120.93	127.25
14	C	505	SMA	C11-C12-C13	-2.17	108.51	114.29
13	W	526	HEC	CMB-C2B-C1B	-2.14	125.17	128.46
13	N	521	HEC	O1A-CGA-CBA	-2.13	116.24	123.08
13	W	526	HEC	CMB-C2B-C3B	2.08	128.27	125.82
14	N	525	SMA	C11-C12-C13	-2.03	108.87	114.29
13	D	503	HEC	CBD-CAD-C3D	2.02	116.07	112.62

All (4) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
14	C	505	SMA	C12
14	C	505	SMA	C14
14	N	525	SMA	C12
14	N	525	SMA	C14

All (67) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
13	N	521	HEC	C2A-CAA-CBA-CGA
14	C	505	SMA	C11-C12-C13-C24
14	C	505	SMA	O12-C12-C13-C24
14	C	505	SMA	C13-C14-O14-C25
14	C	505	SMA	C14-C15-C16-C17
14	C	505	SMA	C16-C17-C18-C19
14	N	525	SMA	C11-C12-C13-C24

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Mol	Chain	Res	Type	Atoms
14	N	525	SMA	O12-C12-C13-C14
14	N	525	SMA	O12-C12-C13-C24
14	N	525	SMA	C12-C13-C14-C15
14	N	525	SMA	C24-C13-C14-C15
14	N	525	SMA	O14-C14-C15-C16
14	N	525	SMA	C13-C14-O14-C25
14	N	525	SMA	C14-C15-C16-C17
14	N	525	SMA	C16-C17-C18-C19
14	C	505	SMA	C9-C10-C11-C22
14	C	505	SMA	C15-C16-C17-C18
14	N	525	SMA	C15-C16-C17-C18
14	C	505	SMA	C6-C5-O5-C5M
13	C	501	HEC	C2A-CAA-CBA-CGA
14	C	505	SMA	C4A-C5-O5-C5M
14	C	505	SMA	O12-C12-C13-C14
14	N	525	SMA	C17-C18-C19-C26
14	N	525	SMA	C17-C18-C19-C20
14	C	505	SMA	C24-C13-C14-O14
14	C	505	SMA	C12-C13-C14-C15
14	C	505	SMA	C17-C18-C19-C26
14	C	505	SMA	C9-C10-C11-C12
14	C	505	SMA	C22-C11-C12-O12
14	N	525	SMA	C22-C11-C12-O12
14	C	505	SMA	C17-C18-C19-C20
14	N	525	SMA	C11-C12-C13-C14
14	C	505	SMA	C24-C13-C14-C15
14	N	525	SMA	C24-C13-C14-O14
14	C	505	SMA	O14-C14-C15-C16
13	D	503	HEC	C4D-C3D-CAD-CBD
13	C	502	HEC	CAA-CBA-CGA-O1A
13	D	503	HEC	CAD-CBD-CGD-O1D
13	C	501	HEC	CAD-CBD-CGD-O1D
13	C	502	HEC	CAA-CBA-CGA-O2A
13	D	503	HEC	CAD-CBD-CGD-O2D
13	N	522	HEC	CAA-CBA-CGA-O1A
13	O	523	HEC	CAA-CBA-CGA-O2A
13	C	502	HEC	CAD-CBD-CGD-O1D
13	C	502	HEC	CAD-CBD-CGD-O2D
13	N	522	HEC	CAA-CBA-CGA-O2A
13	O	523	HEC	CAA-CBA-CGA-O1A
14	C	505	SMA	C11-C12-C13-C14
13	W	526	HEC	CAA-CBA-CGA-O2A

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Mol	Chain	Res	Type	Atoms
13	C	501	HEC	CAD-CBD-CGD-O2D
14	N	525	SMA	C9-C10-C11-C22
13	D	503	HEC	CAA-CBA-CGA-O2A
13	N	521	HEC	CAA-CBA-CGA-O1A
13	N	521	HEC	CAD-CBD-CGD-O2D
13	N	521	HEC	CAA-CBA-CGA-O2A
13	N	522	HEC	CAD-CBD-CGD-O2D
13	C	501	HEC	CAA-CBA-CGA-O2A
13	D	503	HEC	CAA-CBA-CGA-O1A
13	W	526	HEC	CAA-CBA-CGA-O1A
13	C	501	HEC	CAA-CBA-CGA-O1A
13	N	522	HEC	CAD-CBD-CGD-O1D
13	N	521	HEC	CAD-CBD-CGD-O1D
14	C	505	SMA	C12-C13-C14-O14
14	C	505	SMA	C10-C11-C12-O12
14	N	525	SMA	C10-C11-C12-O12
14	N	525	SMA	O1-C2-C9-C10
14	C	505	SMA	C3-C2-C9-C10

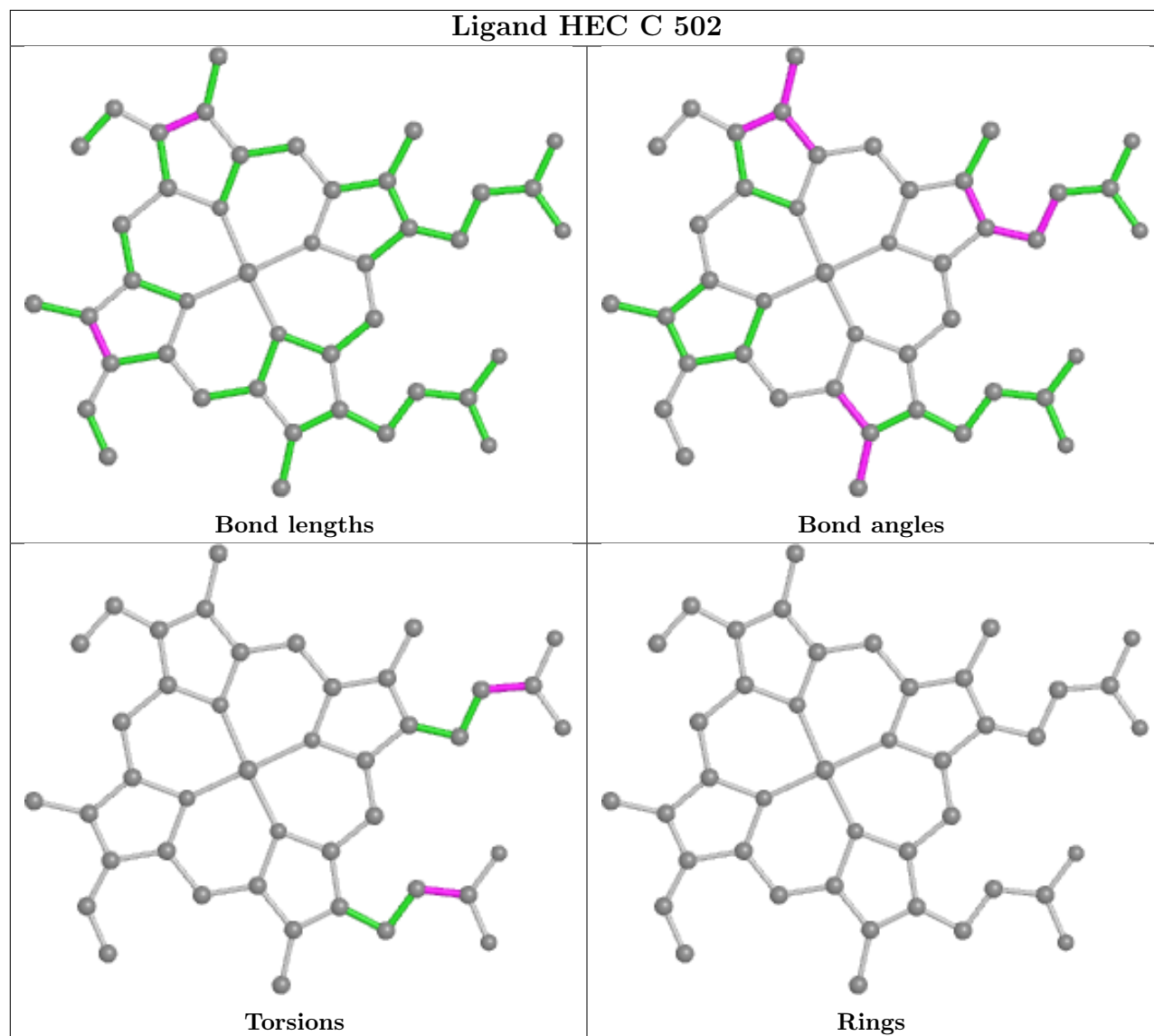
There are no ring outliers.

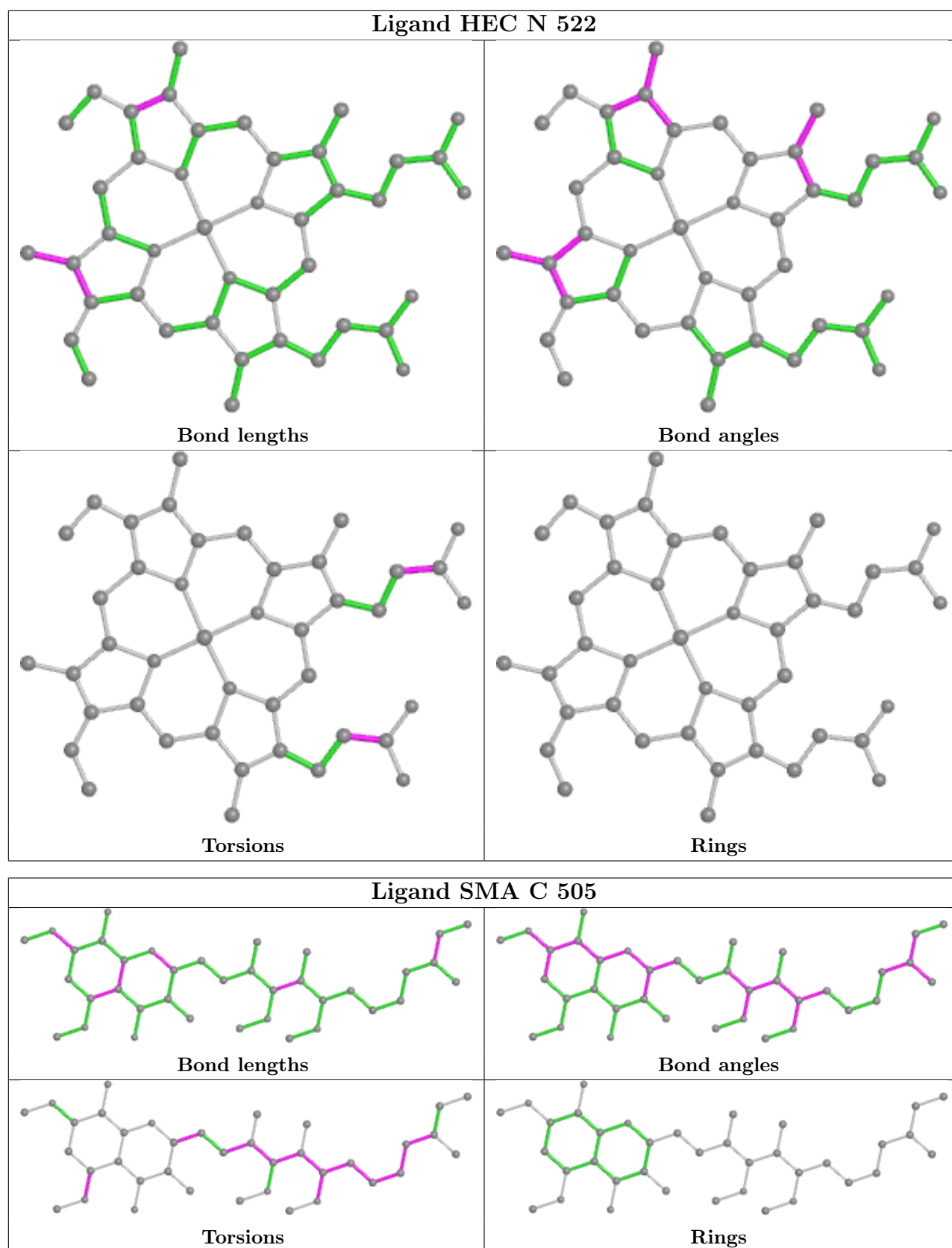
9 monomers are involved in 33 short contacts:

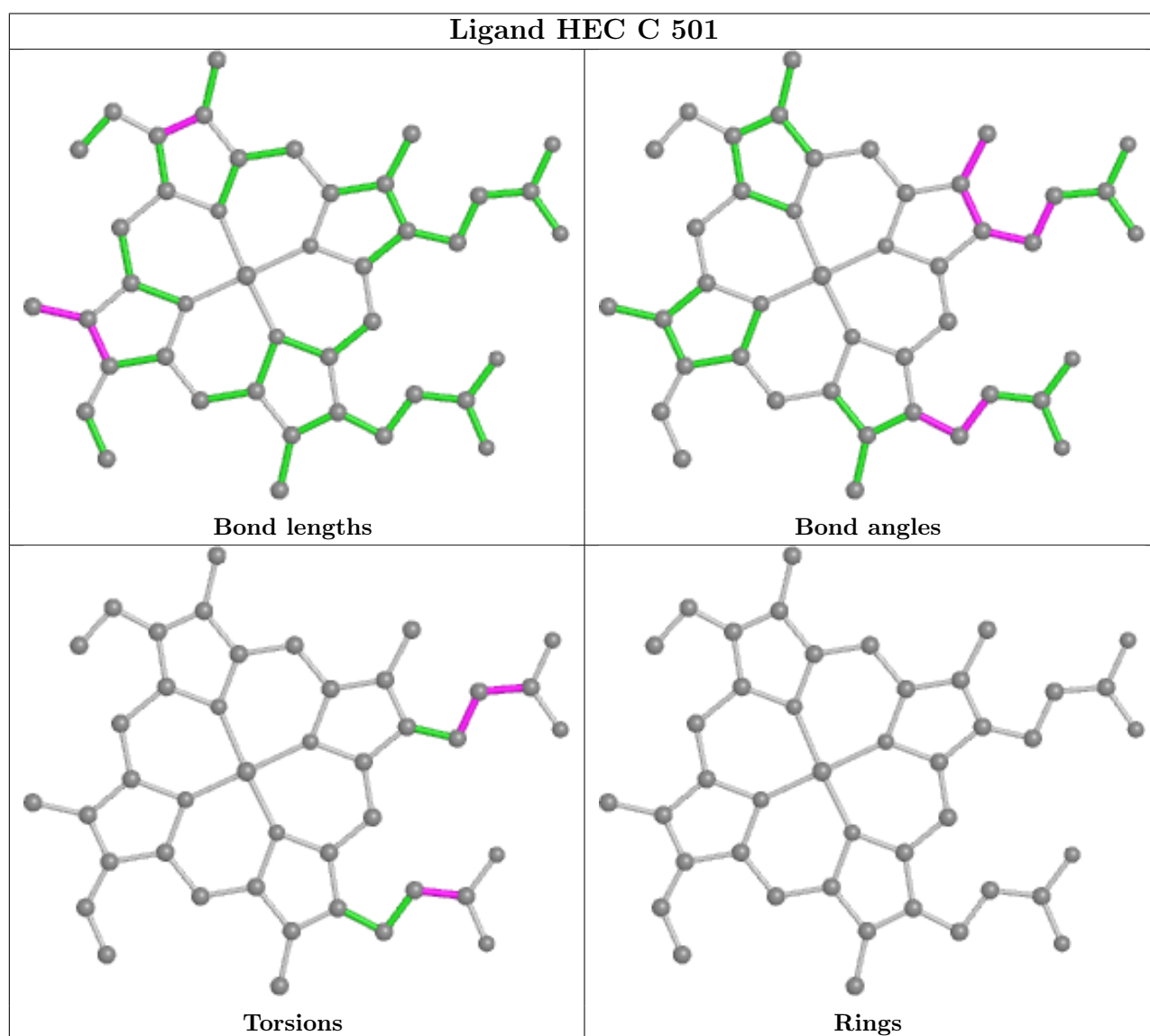
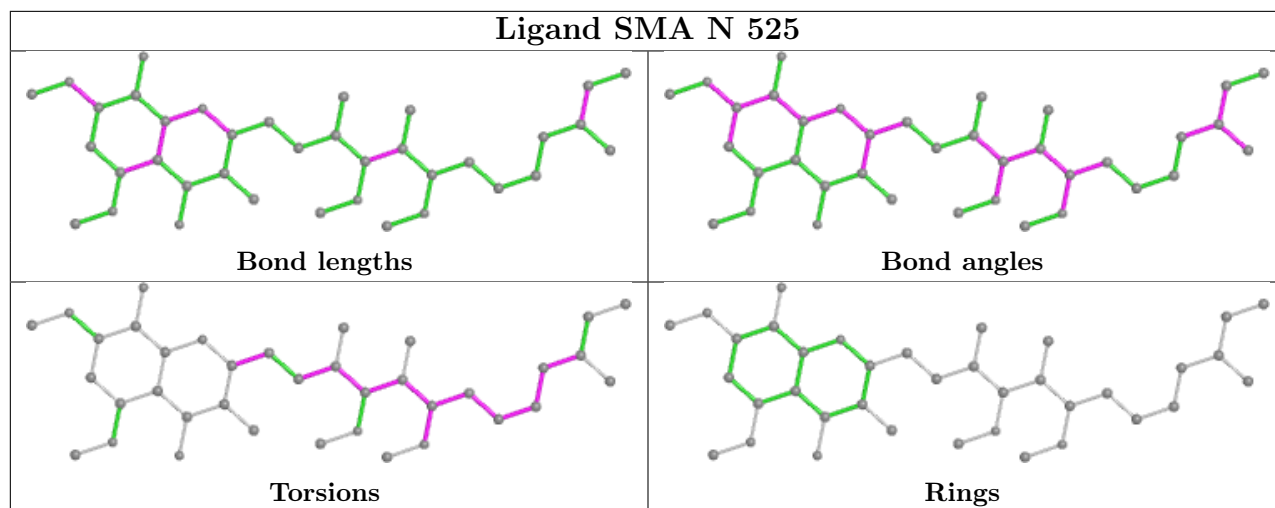
Mol	Chain	Res	Type	Clashes	Symm-Clashes
13	N	522	HEC	4	0
14	C	505	SMA	4	0
15	E	504	FES	1	0
14	N	525	SMA	4	0
13	C	501	HEC	7	0
13	D	503	HEC	1	0
13	O	523	HEC	4	0
13	W	526	HEC	4	0
13	N	521	HEC	4	0

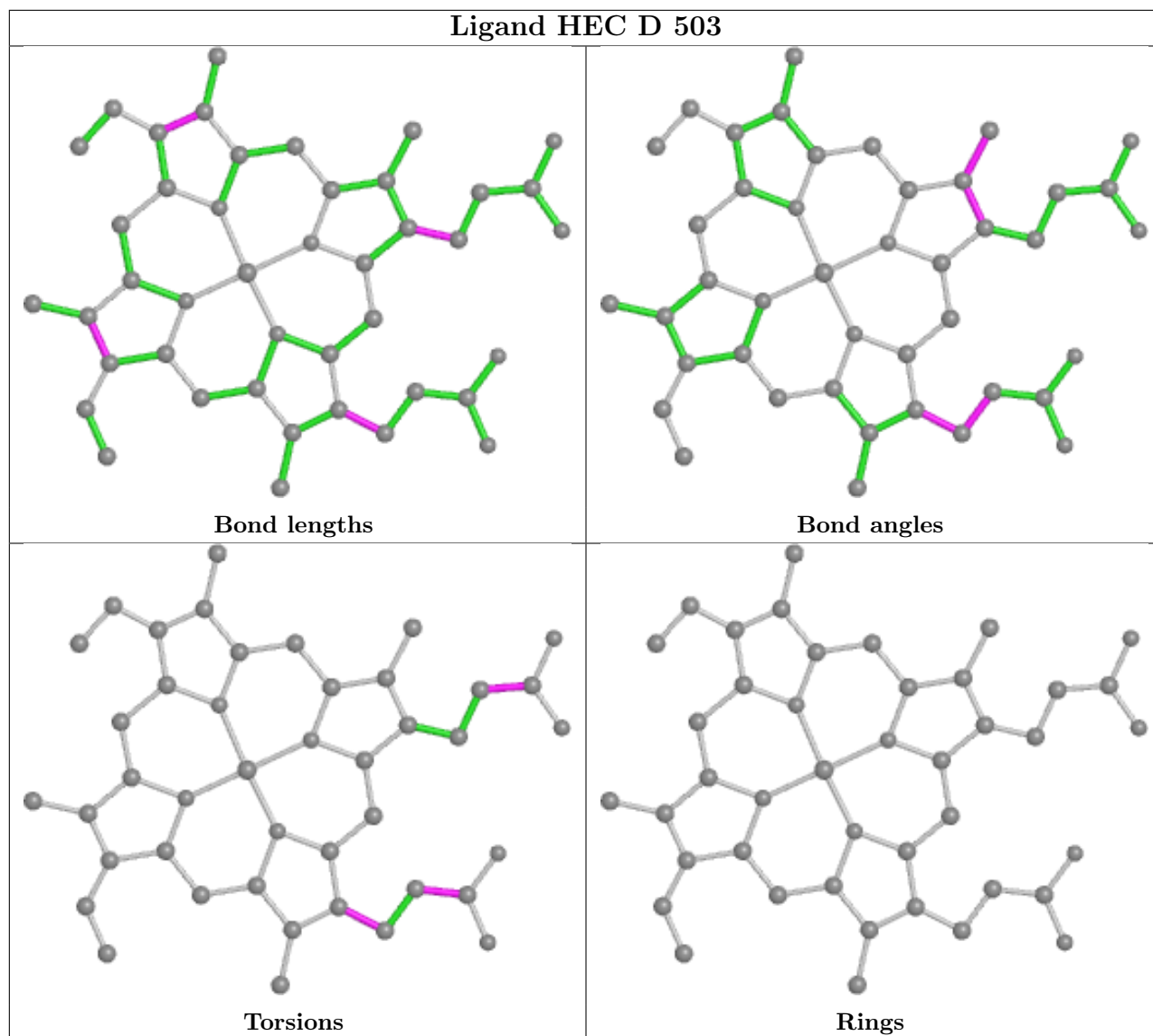
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and

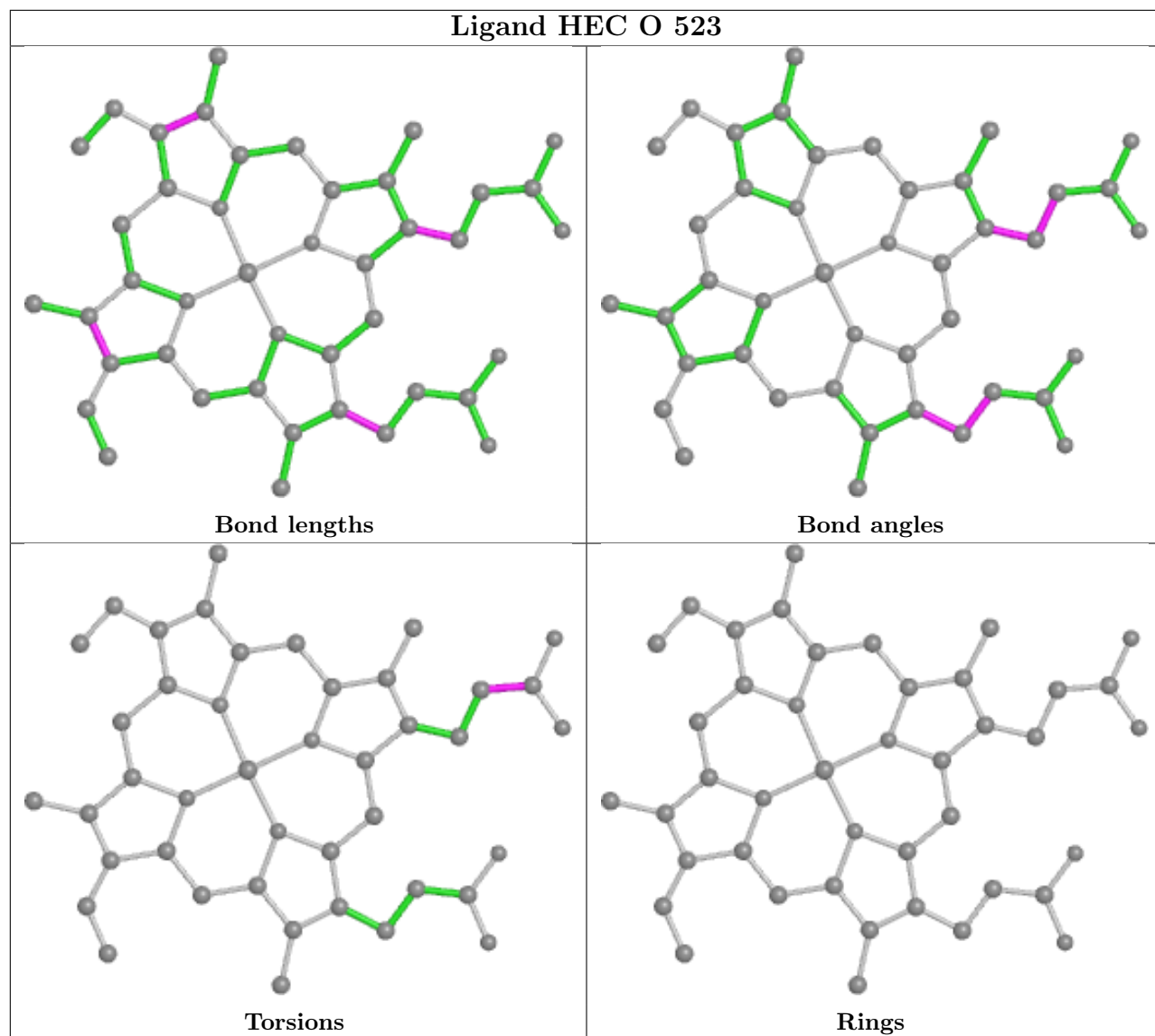
any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

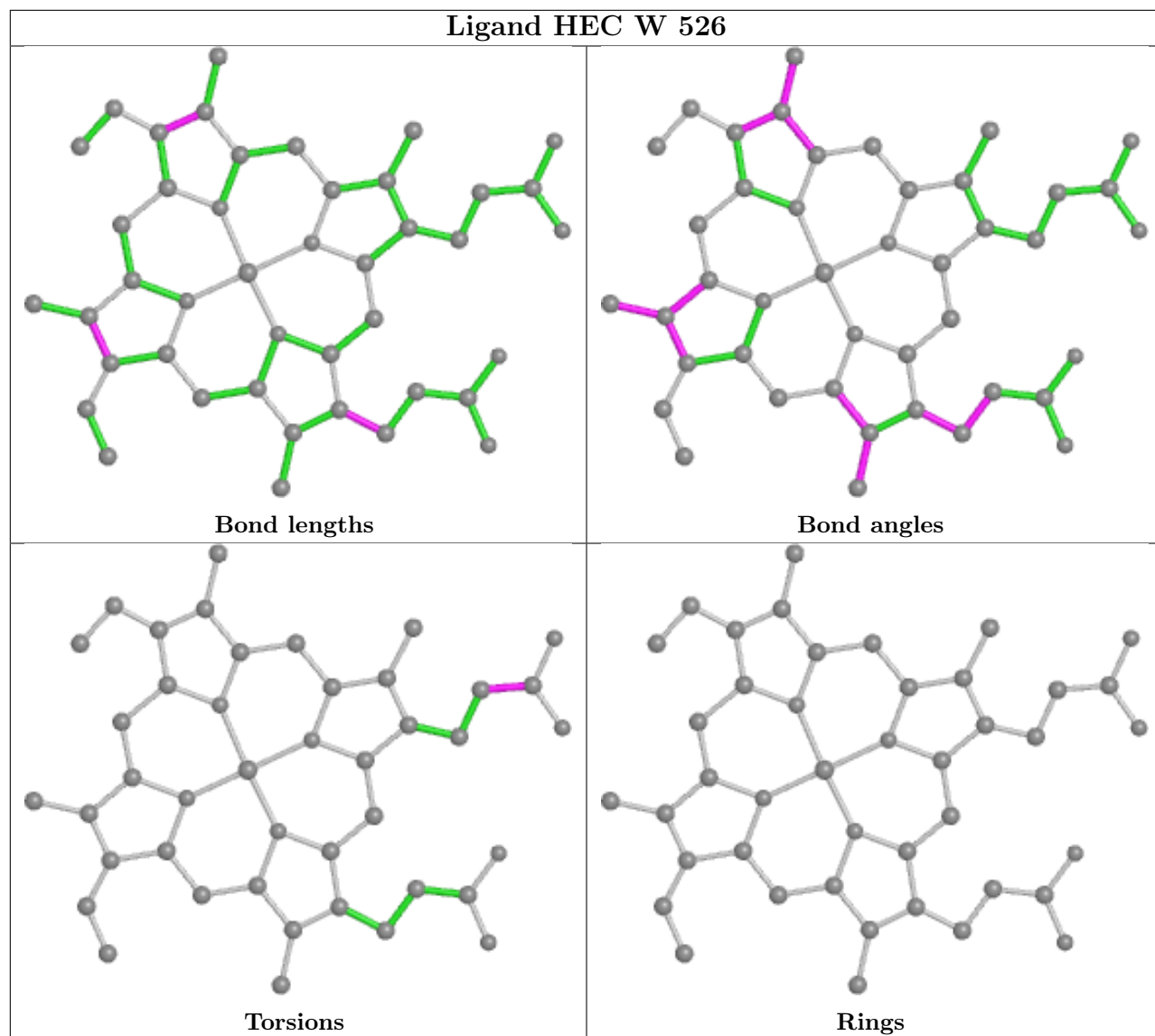


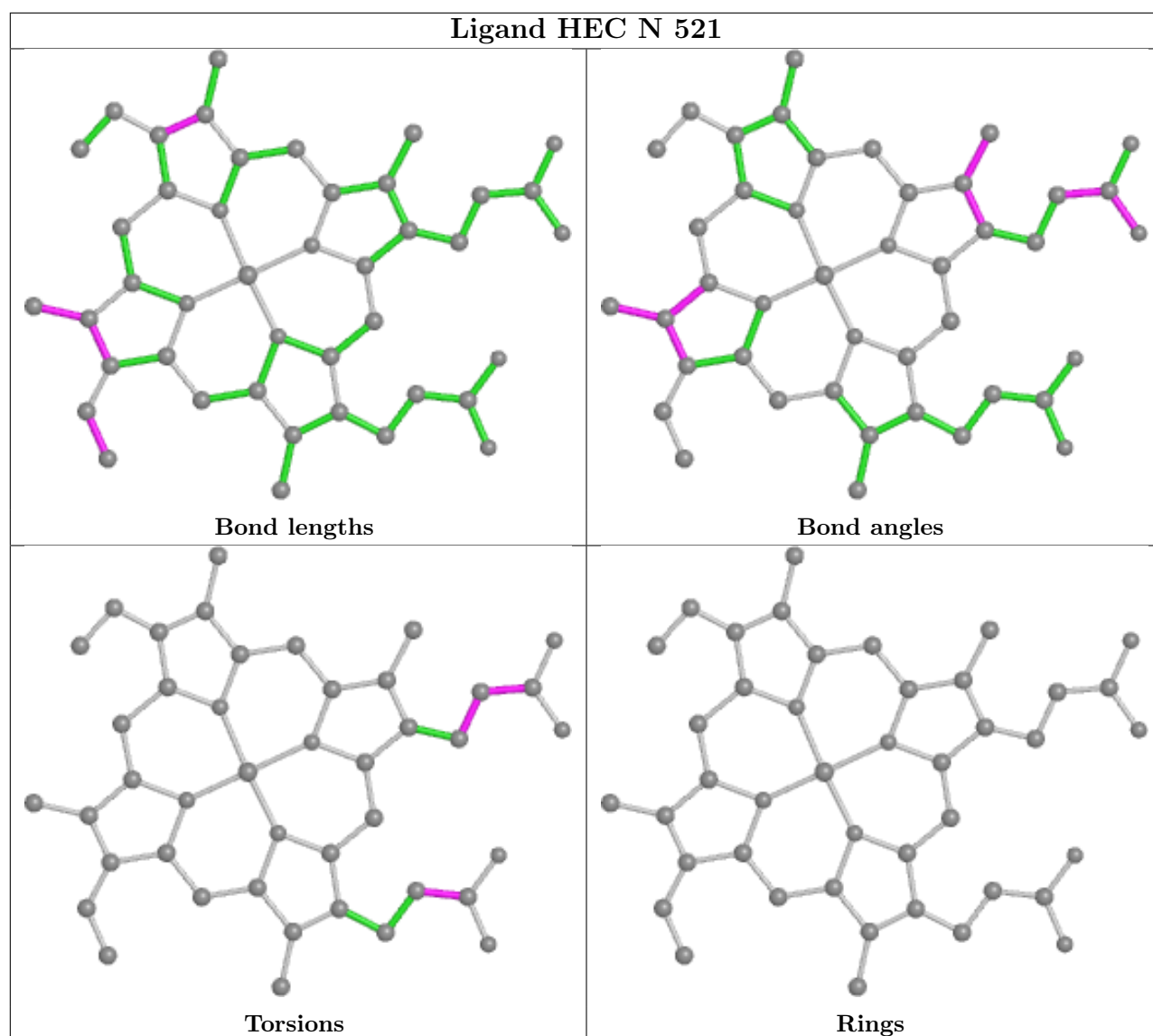












5.7 Other polymers [\(i\)](#)

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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.