WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Sep 8, 2025 – 11:55 PM JST

PDB ID	:	6KOE / pdb_00006koe
Title	:	X-ray Structure of the proton-pumping cytochrome aa3-600 menaquinol oxidase from Bacillus subtilis
Authors	:	Xu, J.; Ding, Z.; Liu, B.; Li, J.; Gennis, R.B.; Zhu, J.
Deposited on	:	2019-08-09
Resolution	:	3.75 Å(reported)

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

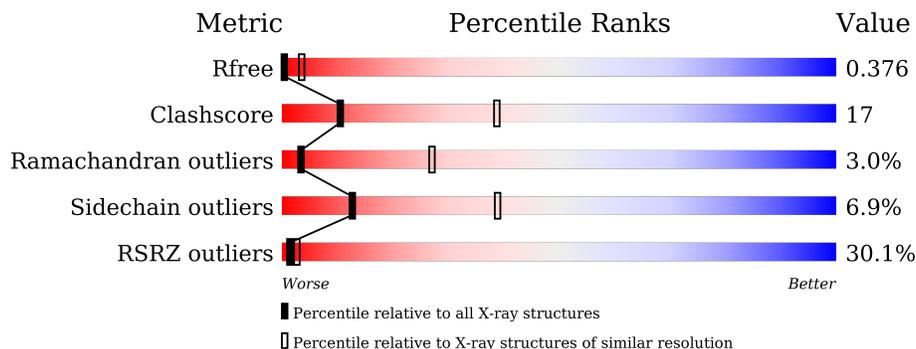|		
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

1   Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
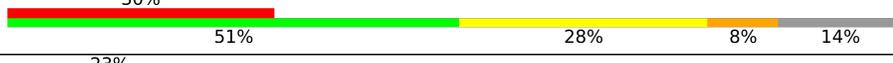*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.75 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.
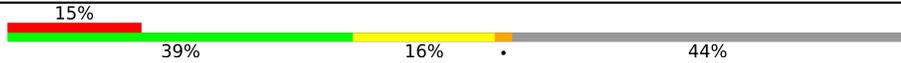
Metric	Percentile Ranks	Value
Rfree		0.376
Clashscore		17
Ramachandran outliers		3.0%
Sidechain outliers		6.9%
RSRZ outliers		30.1%

Worse   *Better*

∎ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	164625	1256 (3.92-3.60)
Clashscore	180529	1321 (3.92-3.60)
Ramachandran outliers	177936	1293 (3.92-3.60)
Sidechain outliers	177891	1288 (3.92-3.60)
RSRZ outliers	164620	1256 (3.92-3.60)

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 <=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	655	26% / 56% 33% • 7%
1	E	655	27% / 56% 33% • 7%
2	B	296	27% / 47% 33% 6% 14%
2	F	296	30% / 51% 28% 8% 14%
3	C	204	23% / 61% 24% • 13%
3	G	204	27% / 60% 24% • 13%

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Mol	Chain	Length	Quality of chain
4	D	124	15% / 39% / 16% / • / 44%
4	H	124	13% / 40% / 16% / • / 44%
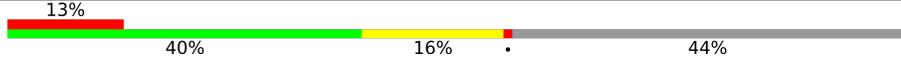
2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 17910 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 AA3-600 quinol oxidase subunit I.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	607	Total 4855	C 3270	N 752	O 792	S 41	0	0	0
1	E	607	Total 4855	C 3270	N 752	O 792	S 41	0	0	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	650	HIS	-	expression tag	UNP A0A063X8D0
A	651	HIS	-	expression tag	UNP A0A063X8D0
A	652	HIS	-	expression tag	UNP A0A063X8D0
A	653	HIS	-	expression tag	UNP A0A063X8D0
A	654	HIS	-	expression tag	UNP A0A063X8D0
A	655	HIS	-	expression tag	UNP A0A063X8D0
E	650	HIS	-	expression tag	UNP A0A063X8D0
E	651	HIS	-	expression tag	UNP A0A063X8D0
E	652	HIS	-	expression tag	UNP A0A063X8D0
E	653	HIS	-	expression tag	UNP A0A063X8D0
E	654	HIS	-	expression tag	UNP A0A063X8D0
E	655	HIS	-	expression tag	UNP A0A063X8D0

- Molecule 2 is a protein called Quinol oxidase subunit 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	256	Total 2073	C 1348	N 328	O 390	S 7	0	0	0
2	F	256	Total 2073	C 1348	N 328	O 390	S 7	0	0	0

- Molecule 3 is a protein called AA3-600 quinol oxidase subunit IIII.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	178	Total	C	N	O	S	0	0	0
			1411	953	222	231	5			
3	G	178	Total	C	N	O	S	0	0	0
			1411	953	222	231	5			

- Molecule 4 is a protein called AA3-600 quinol oxidase subunit IV.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	70	Total	C	N	O	S	0	0	0
			482	317	78	84	3			
4	H	70	Total	C	N	O	S	0	0	0
			482	317	78	84	3			

- Molecule 5 is HEME-A (CCD ID: HEA) (formula: $C_{49}H_{56}FeN_4O_6$).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	Fe	N	O	0	0
			60	49	1	4	6		
5	A	1	Total	C	Fe	N	O	0	0
			60	49	1	4	6		
5	E	1	Total	C	Fe	N	O	0	0
			60	49	1	4	6		
5	E	1	Total	C	Fe	N	O	0	0
			60	49	1	4	6		

- Molecule 6 is COPPER (II) ION (CCD ID: CU) (formula: Cu).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total Cu 1 1		0	0
6	E	1	Total Cu 1 1		0	0

- Molecule 7 is 2-HEPTYL-4-HYDROXY QUINOLINE N-OXIDE (CCD ID: HQO) (formula: $C_{16}H_{21}NO_2$).
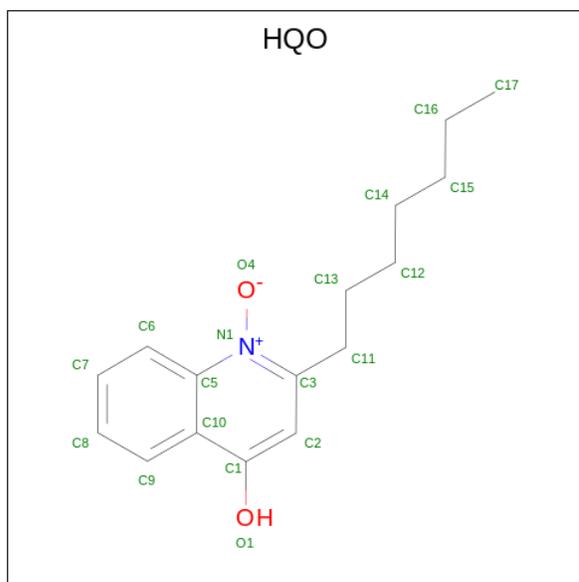
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	A	1	Total 13	C 10	N 1	O 2	0	0
7	E	1	Total 13	C 10	N 1	O 2	0	0

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: AA3-600 quinol oxidase subunit I

• Molecule 1: AA3-600 quinol oxidase subunit I

• Molecule 2: Quinol oxidase subunit 2

F288 LYS LYS SER ASP ASP GLU THR GLU GLU

• Molecule 2: Quinol oxidase subunit 2

Chain F:

30%

51% 28% 8% 14%

CYS SER ASN ALA SER VAL LEU ASP PRO LYS GLY PRO VAL ALA GLU Q16 D19 L20 I21 L22 L23 S24 I25 G26 F27 M28 L29 F30 I31 V32 G33 V34 V37 L38 F39 T40 I41 I42 L43 V44 K45 K50 GLY LYS ASP ASN GLY SER TYR ASN PRO GLU ILE HIS GLY ASN T65

F66 L67 V70 W71 I74 P75 I76 L77 I78 V79 I80 V84 P85 T86 T89 I90 Y91 S92 P97 E98 A99 T100 K101 D102 K103 E104 P105 L106 V107 V108 V109 A110 T111 S112 V113 D114 W115 K116 S120 Q124 D125 I126 E127 T128 I134 P135 R138 P139 I140 L141 F142

K143 I144 A147 D148 S149 M150 L153 W154 I155 P156 Q157 L158 G159 G160 Q161 K162 Y163 A164 M165 M168 L169 M170 D171 Q172 Y173 L174 Q175 A176 D177 K178 T181 Y182 R185 N186 A187 N188 F189 T190 G191 E192 H193 F194 Q197 E198 D208 F209 N210 V213 K214 K215 T216 Q217

ASN GLU ALA P221 K222 L223 T224 K225 E226 K227 Y228 D229 E230 L233 P234 E235 N236 V237 L240 T241 F242 S243 S244 T245 H246 V249 V250 D251 H252 G253 E257 Y258 A259 M260 E261 A262 R263 K264 R265 L266 G267 Y268 Q269 S272 P273 H274 S275 K276 T277 D278 P279 F280 E281 N282 V283

K284 K285 F288 LYS SER ASP ASP THR GLU GLU

• Molecule 3: AA3-600 quinol oxidase subunit IIII

Chain C:

23%

61% 24% • 13%

MET GLU HIS ALA GLU HIS GLY ASN SER ASN ALA PRO MET GLU TYR GLN SER GLU THR G20 R21 L22 N23 I24 L25 G26 F27 W28 I29 F30 E34 S39 T40 A43 T44 F45 N50 R51 T52 A53 G54 G55 V56 L61 F62 E63 M70 T71 F72 L73 L74 L75 I76 S77

S78 F79 T80 C81 G82 I83 A84 V85 H86 E87 M88 R89 R90 G91 S92 L93 V96 V97 I98 W99 T100 I101 I102 L105 L106 G107 G112 I115 V122 H123 E124 G125 A126 A127 L128 S129 T130 G136 V139 L140 L141 G142 T143 H144 G145 T146 T149 I150 F153 T156

G157 I158 Q161 L162 K163 G166 L167 T168 T171 S172 I175 F176 L180 Y181 W182 D186 V187 V188 W189 I190 F191 I192 F193 T194 G195 V196 Y197 LEU MET GLY LEU GLY GLY LEU

• Molecule 3: AA3-600 quinol oxidase subunit IIII

Chain G:

27%

60% 24% • 13%

MET GLU HIS ALA GLU HIS GLY ASN SER ASN ALA PRO MET GLU TYR GLN SER GLU THR G20 R21 L22 N23 I24 L25 G26 F27 W28 I29 F30 L31 G32 A33 E34 I35 V36 L37 F38 S39 T40 T44 N50 R51 T52 A53 G54 G55 V56 L57 E60 L61 V64 N65 L66 V67 M68

I69 M70 T71 F72 L73 L74 L75 F79 T80 C81 G82 I83 A84 V85 R89 R90 L93 K94 G95 V96 V97 I98 W99 T100 T103 L104 F110 E114 F118 V119 E124 G125 A126 A127 L128 S129 T130 W134 F138 V139 L140 L141 G142 T143 H144 G145 T146 H147 V148

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G151 I152 F153 W154 I155 T156 G157 I158 L159 I160 Q161 L162 G166 L167 Q170 T171 S172 I175 S179 L180 Y181 W182 D186 V187 V188 W189 I190 F191 I192 F193 T194 Y197 LEU MET GLY LEU GLY GLY LEU

• Molecule 4: AA3-600 quinol oxidase subunit IV

Chain D:

15%

39%　　　　16%　　•　　44%

X0 X10 X21 UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK F48 G49 F50 Q54 L57 Q58 L59 L60 M61 F62 M63 H64 M65 T66 E67 S68 E69 N70 G71 T72 I73 Q74 N77 T78 L79 F80

G84 A85 I86 V87 I88 V89 L90 G91 S92 I93 W94 I95 PHE ALA ALA HIS TYR HIS HIS GLY ASP HIS MET ASP GLY ASN PRO PRO GLY GLY ALA GLU HIS SER GLU HIS SER GLY HIS ASN GLU

• Molecule 4: AA3-600 quinol oxidase subunit IV

Chain H:

13%

40%　　　　16%　　•　　44%

X0 X21 UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK UNK F48 G49 F50 I53 Q54 A55 A56 L57 Q58 L59 L60 M61 F62 M63 H64 M65 T66 E67 S68 E69 N70 G71 T72 I73 N77 T78 L79 F80 G81 F82

F83 G84 A85 I88 W94 I95 PHE ALA ALA HIS TYR HIS HIS GLY ASP HIS MET ASP GLY ASN PRO PRO GLY GLY ALA GLU HIS SER GLU HIS SER GLY HIS ASN GLU

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	112.99Å 162.11Å 149.51Å 90.00° 109.02° 90.00°	Depositor
Resolution (Å)	49.25 – 3.75 49.25 – 3.75	Depositor EDS
% Data completeness (in resolution range)	99.5 (49.25-3.75) 99.1 (49.25-3.75)	Depositor EDS
R_{merge}	0.23	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.30 (at 3.77Å)	Xtriage
Refinement program	PHENIX 1.14_3235	Depositor
R, R_{free}	0.347 , 0.368 0.350 , 0.376	Depositor DCC
R_{free} test set	1996 reflections (3.82%)	wwPDB-VP
Wilson B-factor (Å²)	95.0	Xtriage
Anisotropy	0.746	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.20 , 17.8	EDS
L-test for twinning[2]	$< |L| > = 0.40, < L^2 > = 0.22$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.79	EDS
Total number of atoms	17910	wwPDB-VP
Average B, all atoms (Å²)	121.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.93% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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: CU, HQO, HEA

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	0.17	0/5022	0.39	0/6827
1	E	0.17	0/5022	0.39	0/6827
2	B	0.18	0/2122	0.43	0/2879
2	F	0.20	0/2122	0.46	0/2879
3	C	0.18	0/1452	0.40	0/1974
3	G	0.16	0/1452	0.36	0/1974
4	D	0.18	0/381	0.36	0/514
4	H	0.14	0/381	0.33	0/514
All	All	0.17	0/17954	0.40	0/24388

There are no bond length outliers.

There are no bond angle outliers.

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	4855	0	4855	188	0
1	E	4855	0	4855	180	0
2	B	2073	0	2061	85	0
2	F	2073	0	2061	73	0
3	C	1411	0	1444	48	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	G	1411	0	1444	46	0
4	D	482	0	395	16	0
4	H	482	0	395	23	0
5	A	120	0	106	16	0
5	E	120	0	106	10	0
6	A	1	0	0	0	0
6	E	1	0	0	0	0
7	A	13	0	4	4	0
7	E	13	0	5	5	0
All	All	17910	0	17731	592	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 17.

All (592) 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:170:MET:HG2	1:A:260:PHE:HB2	1.51	0.92
1:E:170:MET:HG2	1:E:260:PHE:HB2	1.56	0.88
1:E:108:ILE:HG21	1:E:190:LEU:HD22	1.61	0.83
1:A:349:MET:HE1	1:A:395:VAL:HG23	1.60	0.81
1:A:187:LEU:HD21	1:A:249:LEU:HG	1.63	0.81
1:A:134:PHE:HZ	3:C:26:GLY:HA3	1.42	0.81
2:B:261:GLU:O	2:B:265:ARG:NH2	2.13	0.80
1:E:39:LYS:HE3	1:E:43:LEU:HB2	1.67	0.77
1:A:39:LYS:HE3	1:A:43:LEU:HB2	1.65	0.77
1:E:349:MET:HE1	1:E:395:VAL:HG23	1.65	0.77
1:A:79:ARG:HH22	1:A:495:SER:HB3	1.50	0.77
1:E:409:THR:HA	1:E:476:PRO:HA	1.68	0.76
1:E:326:VAL:O	1:E:329:HIS:ND1	2.18	0.75
2:F:284:LYS:HD3	2:F:285:LYS:H	1.52	0.75
2:F:116:LYS:HD3	2:F:237:VAL:HG11	1.67	0.74
1:E:273:ASN:HA	1:E:331:PHE:HZ	1.52	0.74
1:E:409:THR:O	1:E:411:PHE:N	2.20	0.74
1:A:108:ILE:HG21	1:A:190:LEU:HD22	1.70	0.74
1:E:54:LYS:NZ	1:E:545:PRO:O	2.20	0.74
2:F:229:ASP:OD2	2:F:265:ARG:NH1	2.20	0.74
1:E:94:HIS:HD2	7:E:1004:HQO:HC9	1.51	0.73
1:A:409:THR:O	1:A:411:PHE:N	2.21	0.73
2:B:229:ASP:OD2	2:B:265:ARG:NH1	2.21	0.73
1:E:82:LEU:O	1:E:492:ASN:ND2	2.22	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:607:TRP:CD1	1:E:612:VAL:H	2.07	0.72
1:A:54:LYS:NZ	1:A:545:PRO:O	2.21	0.72
2:F:102:ASP:OD2	2:F:102:ASP:N	2.21	0.71
1:A:123:VAL:HG21	1:A:228:THR:HG21	1.71	0.71
1:A:467:GLN:HA	1:A:470:LEU:HB2	1.71	0.70
2:B:76:ILE:HA	2:B:79:VAL:HG22	1.73	0.70
4:D:50:PHE:O	4:D:54:GLN:NE2	2.24	0.70
3:C:122:VAL:HA	3:C:126:ALA:HB2	1.72	0.70
3:C:85:VAL:HA	3:C:89:ARG:HB2	1.74	0.70
1:A:53:HIS:HD2	1:A:131:ASP:HA	1.55	0.70
1:A:326:VAL:HG22	1:A:329:HIS:HD2	1.57	0.69
1:E:187:LEU:HD21	1:E:249:LEU:HG	1.72	0.69
1:E:230:ILE:HG13	1:E:316:ILE:HG23	1.72	0.69
2:B:221:PRO:O	2:B:243:SER:OG	2.09	0.69
1:E:298:ILE:HD12	1:E:377:MET:HE1	1.75	0.69
1:E:97:GLU:HB2	7:E:1004:HQO:HC8	1.76	0.68
2:B:175:GLN:NE2	2:B:176:ALA:O	2.26	0.68
2:B:230:GLU:O	2:B:284:LYS:NZ	2.23	0.68
1:A:246:LEU:O	1:A:250:SER:N	2.20	0.68
1:E:56:LEU:HD21	1:E:139:ASN:HA	1.74	0.68
1:A:134:PHE:CZ	3:C:26:GLY:HA3	2.27	0.68
1:E:467:GLN:HA	1:E:470:LEU:HB2	1.75	0.68
1:A:286:VAL:O	1:A:424:THR:OG1	2.11	0.68
2:F:37:VAL:HG13	2:F:41:ILE:HD12	1.76	0.68
1:E:470:LEU:HD11	1:E:492:ASN:HA	1.74	0.68
1:E:408:ASN:HB3	1:E:477:ARG:HG2	1.76	0.68
1:A:584:SER:HG	1:A:633:TYR:HH	1.42	0.67
1:A:322:LEU:HB3	1:A:351:ILE:HD12	1.75	0.67
2:F:75:PRO:HB2	1:E:353:ILE:HD12	1.76	0.67
1:E:378:LEU:HD23	1:E:381:LEU:HD12	1.78	0.66
1:A:376:PRO:HG3	1:A:433:ILE:HG22	1.78	0.66
2:F:261:GLU:O	2:F:265:ARG:NH2	2.29	0.66
1:A:337:SER:O	1:A:339:SER:N	2.29	0.66
3:C:186:ASP:HA	3:C:189:TRP:HB2	1.77	0.66
1:A:20:GLN:O	1:A:24:ALA:N	2.25	0.66
1:A:94:HIS:NE2	7:A:1004:HQO:O1	2.28	0.66
3:C:75:LEU:HD11	3:C:182:TRP:HE1	1.60	0.65
1:E:106:MET:O	1:E:108:ILE:N	2.28	0.65
1:A:599:ALA:HB2	1:A:617:GLY:HA3	1.77	0.65
1:E:242:LEU:HB2	1:E:278:TRP:CG	2.32	0.65
1:A:106:MET:O	1:A:108:ILE:N	2.30	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:175:GLN:NE2	2:F:176:ALA:O	2.30	0.65
2:F:178:LYS:O	2:F:182:TYR:OH	2.13	0.64
1:E:286:VAL:O	1:E:424:THR:OG1	2.14	0.64
1:A:53:HIS:CD2	1:A:131:ASP:HA	2.33	0.64
1:A:97:GLU:HB2	7:A:1004:HQO:HC8	1.79	0.64
3:C:22:LEU:HD23	3:C:22:LEU:H	1.61	0.64
1:E:539:THR:HG21	1:E:544:PRO:HG3	1.80	0.64
1:E:53:HIS:HD2	1:E:131:ASP:HA	1.63	0.64
1:A:173:ALA:O	1:A:253:ARG:NH1	2.31	0.64
1:A:334:MET:HA	2:B:163:TYR:HB2	1.79	0.64
2:B:233:LEU:HD13	2:B:284:LYS:HZ3	1.63	0.64
2:F:148:ASP:OD2	2:F:263:ARG:NH2	2.30	0.63
1:A:409:THR:HA	1:A:476:PRO:HA	1.79	0.63
1:A:123:VAL:HG13	1:A:225:THR:HG23	1.79	0.63
1:E:57:GLY:HA3	1:E:121:VAL:HG23	1.80	0.62
1:E:220:ARG:HB3	1:E:558:GLN:HG3	1.81	0.62
2:B:114:ASP:HB3	2:B:234:PRO:HB3	1.80	0.62
1:A:378:LEU:HD23	1:A:381:LEU:HD12	1.81	0.62
2:B:278:ASP:O	2:B:280:PHE:N	2.32	0.62
2:B:155:ILE:HA	2:B:184:GLY:HA2	1.82	0.62
1:E:554:GLU:HB3	1:E:556:LYS:HE3	1.82	0.62
1:E:123:VAL:HG13	1:E:225:THR:HG23	1.82	0.62
1:E:420:LEU:HD13	5:E:1002:HEA:HBC2	1.82	0.62
1:E:414:SER:OG	1:E:464:PHE:O	2.18	0.61
1:A:425:VAL:HG21	5:A:1001:HEA:HMC3	1.83	0.61
4:D:71:GLY:O	4:D:73:ILE:N	2.33	0.61
1:E:322:LEU:HB3	1:E:351:ILE:HD12	1.82	0.61
1:E:371:ILE:HD11	1:E:377:MET:HE2	1.82	0.61
2:B:142:PHE:HB3	2:B:144:ILE:HD11	1.83	0.61
3:C:43:ALA:HB2	4:D:88:ILE:HG22	1.81	0.61
3:G:79:PHE:HE2	3:G:179:SER:HA	1.66	0.60
2:F:224:THR:O	2:F:226:GLU:N	2.31	0.60
2:F:267:GLY:HA3	2:F:281:GLU:HG3	1.83	0.60
2:B:151:ALA:O	2:B:164:ALA:N	2.23	0.60
1:E:326:VAL:HG22	1:E:329:HIS:HD1	1.66	0.60
1:E:133:ALA:HA	1:E:211:MET:HE1	1.82	0.60
1:A:353:ILE:HD12	2:B:75:PRO:HB2	1.82	0.60
2:B:224:THR:O	2:B:226:GLU:N	2.35	0.60
1:E:359:ILE:HA	1:E:362:TRP:CE3	2.37	0.60
1:A:177:MET:HG2	1:A:179:PRO:HD2	1.83	0.60
1:E:373:PHE:CD1	1:E:381:LEU:HD11	2.36	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:54:LYS:HZ1	1:E:544:PRO:HB2	1.67	0.59
2:F:228:TYR:HD2	2:F:249:TYR:HD2	1.48	0.59
1:E:445:ASN:HB3	1:E:448:ILE:HD11	1.82	0.59
1:A:110:MET:O	1:A:114:PHE:HB2	2.02	0.59
3:C:188:VAL:O	3:C:192:ILE:N	2.35	0.59
2:F:165:MET:HE1	1:E:269:MET:HB3	1.84	0.59
1:E:315:SER:OG	1:E:354:PRO:O	2.19	0.59
3:G:96:VAL:HB	3:G:162:LEU:HD11	1.84	0.59
1:E:53:HIS:CD2	1:E:131:ASP:HA	2.37	0.59
1:A:92:SER:O	1:A:96:ASN:ND2	2.36	0.58
1:A:212:ARG:HH12	1:A:218:LEU:HD12	1.68	0.58
1:E:96:ASN:N	1:E:96:ASN:HD22	2.01	0.58
3:G:186:ASP:HA	3:G:189:TRP:HB2	1.83	0.58
2:B:112:SER:H	2:B:146:SER:HA	1.68	0.58
1:E:377:MET:O	1:E:381:LEU:N	2.29	0.58
1:E:54:LYS:NZ	1:E:544:PRO:HB2	2.19	0.58
1:E:426:PHE:O	1:E:430:ALA:N	2.30	0.58
1:E:416:PHE:CZ	5:E:1001:HEA:HHD	2.38	0.58
2:B:99:ALA:HB1	2:B:139:PRO:HG3	1.86	0.58
2:F:221:PRO:O	2:F:243:SER:OG	2.12	0.58
3:G:156:THR:HA	3:G:159:LEU:HB2	1.86	0.58
1:A:116:ILE:HG13	1:A:232:MET:HE1	1.85	0.58
1:E:242:LEU:HB2	1:E:278:TRP:CD1	2.38	0.58
1:A:346:ILE:HD11	2:B:87:VAL:HG21	1.86	0.58
1:A:476:PRO:HG3	2:B:154:TRP:HZ3	1.68	0.58
1:A:554:GLU:HB3	1:A:556:LYS:HE3	1.86	0.57
1:E:140:LEU:HB3	1:E:589:PRO:HB3	1.85	0.57
1:A:49:THR:OG1	1:A:586:SER:O	2.20	0.57
2:F:154:TRP:HZ3	1:E:476:PRO:HG3	1.69	0.57
2:F:190:THR:HG21	1:E:99:PHE:CE1	2.39	0.57
1:A:184:ASN:HB3	1:A:604:VAL:HG22	1.87	0.57
2:B:97:PRO:O	2:B:99:ALA:N	2.37	0.57
2:F:230:GLU:O	2:F:284:LYS:NZ	2.38	0.57
1:E:94:HIS:CD2	7:E:1004:HQO:HC9	2.37	0.57
1:E:599:ALA:HB2	1:E:617:GLY:HA3	1.86	0.57
2:B:109:TYR:HA	2:B:143:LYS:HB2	1.86	0.57
2:F:268:TYR:CD1	2:F:279:PRO:HD2	2.39	0.57
2:F:268:TYR:HD1	2:F:279:PRO:HD2	1.69	0.57
1:E:337:SER:O	1:E:339:SER:N	2.36	0.57
3:C:141:LEU:HA	3:C:144:HIS:HB3	1.85	0.57
2:B:269:GLN:NE2	2:F:281:GLU:OE2	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:272:SER:OG	2:F:273:PRO:HD3	2.04	0.57
2:F:190:THR:HB	1:E:478:ARG:HB3	1.86	0.56
1:E:174:SER:HA	1:E:253:ARG:HH11	1.69	0.56
4:H:71:GLY:O	4:H:73:ILE:N	2.38	0.56
1:A:420:LEU:O	1:A:424:THR:N	2.35	0.56
3:G:175:ILE:O	3:G:179:SER:OG	2.21	0.56
1:E:49:THR:OG1	1:E:586:SER:O	2.23	0.56
1:E:602:GLY:HA3	1:E:613:VAL:HG23	1.87	0.56
1:E:607:TRP:HE1	1:E:612:VAL:HB	1.70	0.56
1:A:301:PHE:HE1	1:A:531:VAL:H	1.54	0.56
1:E:607:TRP:HD1	1:E:611:GLY:HA2	1.71	0.56
3:C:93:LEU:HD23	3:C:93:LEU:H	1.71	0.56
1:A:470:LEU:HD11	1:A:492:ASN:HA	1.88	0.56
1:E:47:TRP:O	1:E:49:THR:N	2.39	0.56
3:G:93:LEU:HD23	3:G:93:LEU:H	1.71	0.55
1:E:115:LEU:HG	1:E:289:PRO:HB2	1.88	0.55
3:C:73:LEU:HD12	3:C:76:ILE:HD11	1.87	0.55
3:C:153:PHE:HA	3:C:156:THR:HG22	1.88	0.55
2:F:97:PRO:O	2:F:99:ALA:N	2.38	0.55
1:A:284:TYR:HA	1:A:287:ILE:HG22	1.88	0.55
1:A:79:ARG:NH2	1:A:467:GLN:OE1	2.35	0.55
1:A:107:ILE:HA	1:A:111:ALA:HB3	1.88	0.55
1:A:367:TYR:C	1:A:369:GLY:H	2.13	0.55
4:D:90:LEU:O	4:D:94:TRP:HB2	2.06	0.55
1:A:67:MET:HB3	1:A:105:ILE:HG23	1.88	0.55
2:B:84:VAL:H	2:B:85:PRO:HD2	1.71	0.55
2:F:84:VAL:H	2:F:85:PRO:HD2	1.70	0.55
1:A:136:TYR:OH	1:A:588:ARG:NH1	2.38	0.55
2:F:163:TYR:CZ	2:F:189:PHE:HZ	2.24	0.55
1:A:242:LEU:HB2	1:A:278:TRP:CD1	2.41	0.55
3:G:40:THR:HG23	1:E:274:LEU:HD22	1.88	0.55
2:F:76:ILE:HA	2:F:79:VAL:HG22	1.88	0.55
1:A:274:LEU:HD22	3:C:40:THR:HG23	1.89	0.55
2:B:223:LEU:N	2:B:244:SER:HB3	2.21	0.55
1:E:54:LYS:NZ	1:E:548:ASN:HB3	2.22	0.55
1:A:607:TRP:CD1	1:A:612:VAL:H	2.25	0.55
1:E:588:ARG:HE	1:E:624:LEU:HB3	1.70	0.55
4:H:70:ASN:OD1	1:E:210:LYS:NZ	2.40	0.54
1:A:120:ASN:HA	1:A:204:PHE:CZ	2.42	0.54
1:E:94:HIS:NE2	7:E:1004:HQO:O1	2.39	0.54
1:E:296:GLU:O	1:E:300:SER:N	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:111:THR:HG21	2:B:252:HIS:CD2	2.42	0.54
3:G:194:THR:HG21	4:H:54:GLN:HG3	1.89	0.54
1:E:48:ILE:HA	1:E:143:TRP:HZ2	1.72	0.54
1:A:412:LEU:HD11	5:A:1002:HEA:HHA	1.88	0.54
2:B:233:LEU:HD11	2:B:266:LEU:HD12	1.89	0.54
2:B:268:TYR:HD1	2:B:279:PRO:HD2	1.72	0.54
2:F:154:TRP:CZ3	1:E:476:PRO:HG3	2.43	0.54
1:A:204:PHE:HB2	1:A:232:MET:HG3	1.90	0.54
1:A:96:ASN:HA	1:A:99:PHE:CD1	2.42	0.54
1:E:21:VAL:HB	1:E:157:VAL:HG21	1.89	0.54
1:E:267:MET:HB2	1:E:270:LEU:HB2	1.90	0.54
2:F:43:LEU:HB2	1:E:367:TYR:CZ	2.43	0.54
2:F:185:ARG:HD3	1:E:476:PRO:HG2	1.88	0.54
1:E:437:PRO:HG3	1:E:443:LYS:HB3	1.89	0.54
1:A:476:PRO:HG3	2:B:154:TRP:CZ3	2.43	0.54
2:F:278:ASP:O	2:F:280:PHE:N	2.41	0.54
3:G:162:LEU:HD23	3:G:166:GLY:HA2	1.90	0.53
2:F:190:THR:OG1	1:E:96:ASN:OD1	2.15	0.53
2:F:272:SER:HB3	1:E:179:PRO:HB3	1.91	0.53
2:B:250:VAL:C	2:B:252:HIS:H	2.17	0.53
3:G:85:VAL:HG21	4:H:0:UNK:N	2.23	0.53
1:A:240:PRO:O	1:A:244:VAL:HG22	2.09	0.53
2:B:106:LEU:HD22	2:B:138:ARG:HH21	1.72	0.53
1:E:428:CYS:O	1:E:432:PHE:HB2	2.08	0.53
1:A:72:GLY:HA2	5:A:1001:HEA:H14	1.90	0.53
1:E:81:GLN:NE2	1:E:480:TYR:O	2.37	0.53
1:A:47:TRP:O	1:A:49:THR:N	2.42	0.52
1:A:376:PRO:HB3	1:A:434:PHE:HB2	1.90	0.52
1:A:54:LYS:NZ	1:A:544:PRO:HB2	2.24	0.52
1:A:259:PHE:HE1	3:C:136:GLY:HA2	1.73	0.52
1:A:57:GLY:HA3	1:A:121:VAL:HG23	1.91	0.52
1:A:120:ASN:HA	1:A:204:PHE:HZ	1.75	0.52
1:A:273:ASN:HA	1:A:331:PHE:HZ	1.75	0.52
2:F:124:GLN:O	2:F:126:ILE:N	2.43	0.52
1:A:446:GLU:O	1:A:450:LYS:HD3	2.09	0.52
2:B:136:VAL:HA	2:B:176:ALA:HB3	1.91	0.52
2:B:223:LEU:H	2:B:244:SER:HB3	1.74	0.52
1:E:280:HIS:CG	1:E:329:HIS:HE1	2.28	0.52
1:E:184:ASN:HB3	1:E:604:VAL:HG22	1.90	0.52
1:A:298:ILE:HD12	1:A:377:MET:HE1	1.92	0.52
1:A:106:MET:HA	1:A:110:MET:HB3	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:121:VAL:HG13	1:E:438:LYS:HZ3	1.75	0.52
1:E:362:TRP:O	1:E:366:MET:HB2	2.09	0.52
1:A:69:PHE:CE1	5:A:1001:HEA:H202	2.44	0.52
2:F:276:LYS:HD2	2:F:278:ASP:H	1.74	0.52
1:E:96:ASN:HD22	1:E:96:ASN:H	1.56	0.52
1:E:294:PHE:HZ	1:E:426:PHE:HB3	1.75	0.52
3:C:39:SER:HB2	4:D:85:ALA:HA	1.92	0.51
2:B:144:ILE:HD12	2:B:153:LEU:HD21	1.92	0.51
4:D:84:GLY:O	4:D:88:ILE:N	2.32	0.51
1:E:509:LEU:O	1:E:513:ILE:HG13	2.10	0.51
1:A:96:ASN:OD1	2:B:190:THR:OG1	2.22	0.51
1:A:107:ILE:O	1:A:112:MET:HB2	2.10	0.51
1:A:277:ILE:HD13	4:D:88:ILE:HG12	1.93	0.51
1:A:304:LYS:HG2	1:A:305:GLN:H	1.74	0.51
2:B:157:GLN:HG3	2:B:182:TYR:HA	1.91	0.51
1:E:238:ALA:HB2	1:E:324:PHE:CZ	2.45	0.51
1:A:82:LEU:O	1:A:492:ASN:ND2	2.44	0.51
3:C:192:ILE:O	3:C:196:VAL:HG22	2.09	0.51
3:G:153:PHE:HA	3:G:156:THR:HG22	1.93	0.51
2:F:250:VAL:C	2:F:252:HIS:H	2.19	0.51
1:A:54:LYS:NZ	1:A:548:ASN:HB3	2.26	0.51
3:C:144:HIS:CE1	3:C:189:TRP:CE2	2.98	0.51
1:E:239:PHE:H	1:E:240:PRO:HD2	1.76	0.51
1:A:187:LEU:HD11	1:A:249:LEU:HD23	1.93	0.51
1:A:301:PHE:HD2	1:A:377:MET:HG2	1.76	0.51
1:E:79:ARG:NH2	1:E:467:GLN:OE1	2.29	0.51
2:B:163:TYR:CZ	2:B:189:PHE:HZ	2.29	0.51
1:E:235:ILE:HG12	1:E:285:ILE:HD13	1.92	0.51
1:A:414:SER:OG	1:A:464:PHE:O	2.17	0.50
2:B:43:LEU:O	2:B:45:LYS:N	2.40	0.50
3:C:188:VAL:HA	3:C:191:PHE:HB2	1.93	0.50
3:G:28:TRP:CZ2	4:H:66:THR:HG22	2.47	0.50
1:A:408:ASN:HB3	1:A:477:ARG:HG2	1.92	0.50
2:B:127:GLU:CD	2:B:246:HIS:HD2	2.20	0.50
3:G:24:ILE:O	3:G:28:TRP:HB2	2.11	0.50
4:H:57:LEU:HD22	4:H:58:GLN:NE2	2.27	0.50
1:E:240:PRO:O	1:E:244:VAL:HG22	2.12	0.50
1:A:506:PHE:CG	5:A:1001:HEA:H162	2.46	0.50
3:G:167:LEU:HB3	3:G:172:SER:HB2	1.94	0.50
2:F:154:TRP:HA	2:F:161:GLN:HB3	1.94	0.50
1:E:223:MET:HE3	1:E:312:MET:HG2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:588:ARG:NE	1:E:624:LEU:HB3	2.26	0.50
1:A:530:GLY:HA3	1:A:537:TRP:HZ3	1.76	0.50
3:C:161:GLN:O	3:C:166:GLY:N	2.44	0.50
1:E:160:GLY:O	1:E:182:GLY:HA2	2.11	0.50
3:C:75:LEU:HD11	3:C:182:TRP:NE1	2.24	0.50
3:G:85:VAL:HG21	4:H:0:UNK:H	1.77	0.50
1:A:56:LEU:HD21	1:A:139:ASN:HA	1.94	0.50
1:A:301:PHE:HB2	1:A:377:MET:SD	2.52	0.50
2:F:217:GLN:OE1	2:F:217:GLN:N	2.43	0.50
1:A:194:GLY:HA2	1:A:239:PHE:CE1	2.47	0.49
1:E:235:ILE:O	1:E:239:PHE:HB2	2.12	0.49
4:H:94:TRP:NE1	1:E:340:VAL:HG12	2.26	0.49
1:E:156:PHE:HE1	7:E:1004:HQO:C5	2.24	0.49
3:G:61:LEU:HD12	3:G:64:VAL:H	1.78	0.49
1:A:539:THR:HG21	1:A:544:PRO:HG3	1.94	0.49
2:B:135:PRO:HG2	2:B:138:ARG:HD2	1.93	0.49
3:C:194:THR:HG21	4:D:54:GLN:HG3	1.93	0.49
1:E:187:LEU:HD23	1:E:250:SER:HA	1.94	0.49
1:A:96:ASN:H	1:A:96:ASN:HD22	1.61	0.49
1:E:141:SER:OG	1:E:200:THR:OG1	2.26	0.49
3:G:28:TRP:HZ2	4:H:66:THR:HG22	1.78	0.49
2:F:89:THR:HA	2:F:92:SER:HB3	1.94	0.49
1:E:420:LEU:HD13	5:E:1002:HEA:CBC	2.43	0.49
2:B:79:VAL:O	2:B:83:SER:N	2.41	0.49
1:A:420:LEU:HD13	5:A:1002:HEA:HBC2	1.94	0.49
2:B:250:VAL:O	2:B:252:HIS:N	2.43	0.49
3:G:22:LEU:O	3:G:26:GLY:N	2.28	0.48
1:E:607:TRP:HD1	1:E:612:VAL:H	1.56	0.48
2:F:101:LYS:HE3	2:F:102:ASP:OD2	2.13	0.48
1:E:177:MET:HG2	1:E:179:PRO:HD2	1.94	0.48
1:A:254:LEU:HD21	1:A:603:LEU:HB3	1.94	0.48
1:A:607:TRP:HE1	1:A:612:VAL:HB	1.77	0.48
2:F:223:LEU:HD22	2:F:225:LYS:H	1.78	0.48
1:E:606:GLU:HB3	1:E:607:TRP:CE3	2.48	0.48
1:A:191:GLN:OE1	1:A:246:LEU:HB2	2.14	0.48
2:F:100:THR:OG1	2:F:101:LYS:N	2.45	0.48
1:E:280:HIS:HA	1:E:283:VAL:HB	1.95	0.48
1:A:95:TYR:HA	1:A:98:ILE:HB	1.94	0.48
1:E:301:PHE:HD2	1:E:377:MET:HG2	1.78	0.48
3:C:51:ARG:O	3:C:52:THR:OG1	2.29	0.48
2:B:223:LEU:HD11	2:B:249:TYR:CE2	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:26:GLY:HA3	1:E:134:PHE:HZ	1.77	0.48
1:A:72:GLY:HA3	5:A:1001:HEA:H161	1.96	0.48
1:A:476:PRO:HG2	2:B:185:ARG:HD3	1.96	0.48
2:B:140:ILE:O	2:B:173:TYR:HA	2.14	0.48
2:B:245:THR:HG22	2:B:247:LEU:H	1.78	0.48
3:G:39:SER:HB2	4:H:85:ALA:HA	1.95	0.48
2:F:223:LEU:N	2:F:244:SER:HB3	2.29	0.48
3:G:75:LEU:HD11	3:G:182:TRP:NE1	2.29	0.47
2:F:135:PRO:HG2	2:F:138:ARG:HD2	1.96	0.47
1:E:460:PHE:HA	1:E:502:MET:SD	2.53	0.47
1:E:539:THR:OG1	1:E:541:SER:O	2.31	0.47
1:A:116:ILE:O	1:A:120:ASN:N	2.34	0.47
1:A:509:LEU:O	1:A:513:ILE:HG13	2.15	0.47
3:G:161:GLN:OE1	3:G:162:LEU:HG	2.13	0.47
2:F:67:LEU:O	2:F:70:VAL:HG12	2.13	0.47
1:E:212:ARG:HH12	1:E:218:LEU:HD12	1.79	0.47
2:B:98:GLU:O	2:B:175:GLN:HB2	2.14	0.47
4:H:68:SER:O	4:H:70:ASN:N	2.47	0.47
1:A:96:ASN:HD22	1:A:96:ASN:N	2.13	0.47
1:A:368:LYS:H	2:B:47:ARG:NH1	2.12	0.47
1:A:432:PHE:HB3	1:A:433:ILE:HD12	1.97	0.47
2:B:217:GLN:OE1	2:B:217:GLN:N	2.44	0.47
1:A:76:LEU:HD22	1:A:500:PHE:HA	1.97	0.47
4:D:71:GLY:HA2	4:D:74:GLN:HB2	1.96	0.47
1:A:63:SER:O	1:A:67:MET:HG2	2.14	0.47
1:A:218:LEU:HA	1:A:221:MET:HE3	1.97	0.47
1:E:32:PHE:HA	1:E:36:TYR:HB2	1.96	0.47
1:A:68:LEU:HD22	5:A:1001:HEA:H262	1.97	0.47
1:A:136:TYR:OH	1:A:588:ARG:HD3	2.14	0.47
1:A:353:ILE:HB	1:A:354:PRO:HD3	1.96	0.47
2:B:210:ASN:O	2:B:213:VAL:HG12	2.15	0.47
2:B:272:SER:OG	2:B:273:PRO:HD3	2.13	0.47
3:C:86:HIS:HE1	3:C:96:VAL:HA	1.80	0.47
2:F:43:LEU:O	2:F:45:LYS:N	2.44	0.47
1:E:166:TRP:H	5:E:1001:HEA:CGD	2.28	0.47
1:A:68:LEU:O	1:A:72:GLY:N	2.48	0.47
1:A:187:LEU:HD23	1:A:250:SER:HA	1.97	0.47
1:A:412:LEU:CD1	5:A:1002:HEA:HHA	2.45	0.47
1:A:418:TYR:HA	1:A:460:PHE:HZ	1.80	0.47
3:C:187:VAL:HG13	4:D:58:GLN:HG3	1.97	0.47
2:F:190:THR:HG21	1:E:99:PHE:HE1	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:239:PHE:H	1:E:240:PRO:CD	2.28	0.47
1:E:607:TRP:CD1	1:E:611:GLY:HA2	2.49	0.47
1:A:349:MET:HE3	1:A:398:ALA:HB3	1.96	0.47
3:G:85:VAL:HA	3:G:89:ARG:HB2	1.97	0.47
1:E:204:PHE:HB2	1:E:232:MET:HG3	1.97	0.47
1:A:178:SER:HB2	2:B:270:ALA:O	2.15	0.46
2:B:43:LEU:HD13	2:B:47:ARG:CZ	2.45	0.46
1:E:92:SER:O	1:E:96:ASN:ND2	2.49	0.46
1:E:275:PHE:O	1:E:279:GLY:N	2.48	0.46
1:E:412:LEU:CD1	5:E:1002:HEA:HHA	2.45	0.46
1:A:206:VAL:HG21	3:C:26:GLY:HA2	1.97	0.46
2:B:80:ILE:HA	2:B:83:SER:HB3	1.98	0.46
2:F:148:ASP:N	2:F:148:ASP:OD1	2.48	0.46
3:C:75:LEU:HD21	3:C:182:TRP:HE1	1.81	0.46
3:G:187:VAL:HG13	4:H:58:GLN:HB3	1.97	0.46
1:E:444:LEU:HG	1:E:512:ASN:HB3	1.96	0.46
1:A:223:MET:HE3	1:A:312:MET:HG2	1.97	0.46
4:D:86:ILE:O	4:D:90:LEU:HB3	2.14	0.46
1:A:178:SER:OG	1:A:179:PRO:HD3	2.16	0.46
2:F:101:LYS:HE2	2:F:103:LYS:HG2	1.96	0.46
1:E:282:GLU:HA	1:E:285:ILE:HD12	1.96	0.46
2:F:240:LEU:HD12	2:F:242:PHE:HE1	1.80	0.46
1:E:353:ILE:HB	1:E:354:PRO:HD3	1.98	0.46
1:E:412:LEU:HD11	5:E:1002:HEA:HAD2	1.96	0.46
3:G:188:VAL:HA	3:G:191:PHE:HB2	1.98	0.46
1:E:416:PHE:CE2	5:E:1001:HEA:HHD	2.50	0.46
1:A:96:ASN:HA	1:A:99:PHE:HD1	1.80	0.46
1:A:396:MET:O	1:A:406:TYR:OH	2.29	0.46
2:B:191:GLY:O	2:B:193:HIS:N	2.49	0.46
3:G:21:ARG:HA	3:G:21:ARG:HD3	1.66	0.46
1:E:283:VAL:HG13	5:E:1002:HEA:C3C	2.46	0.46
2:B:80:ILE:HD12	2:B:83:SER:HB3	1.96	0.46
2:B:114:ASP:O	2:B:116:LYS:N	2.47	0.46
3:C:73:LEU:HD11	4:D:57:LEU:HD21	1.98	0.46
1:E:385:PRO:O	1:E:389:ILE:HG13	2.16	0.46
1:E:45:SER:O	1:E:585:ASN:ND2	2.49	0.45
1:E:367:TYR:C	1:E:369:GLY:H	2.23	0.45
1:E:432:PHE:HB3	1:E:433:ILE:HD12	1.98	0.45
1:A:127:ILE:HG13	1:A:129:ALA:H	1.81	0.45
1:A:137:LEU:HD11	3:C:27:PHE:CZ	2.50	0.45
1:A:213:THR:OG1	1:A:552:LEU:HB2	2.15	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:426:PHE:O	1:A:430:ALA:N	2.40	0.45
3:C:55:GLY:C	2:F:225:LYS:HE3	2.41	0.45
3:C:188:VAL:HG23	3:C:189:TRP:HE3	1.80	0.45
1:E:349:MET:HE3	1:E:398:ALA:HB3	1.96	0.45
1:A:21:VAL:HB	1:A:157:VAL:HG21	1.98	0.45
1:A:144:THR:HB	1:A:196:GLY:HA3	1.97	0.45
1:A:183:GLU:HB3	1:A:253:ARG:CZ	2.46	0.45
1:A:393:THR:HG21	1:A:468:TYR:CZ	2.51	0.45
2:B:114:ASP:C	2:B:116:LYS:H	2.24	0.45
2:F:250:VAL:HG21	2:F:258:TYR:CD1	2.52	0.45
1:E:106:MET:HB3	1:E:107:ILE:HD12	1.99	0.45
1:E:486:ASP:HB3	1:E:488:TRP:CE2	2.51	0.45
2:B:112:SER:O	2:B:146:SER:OG	2.34	0.45
2:B:125:ASP:C	2:B:126:ILE:HG13	2.42	0.45
2:F:120:SER:HA	2:F:127:GLU:HA	1.99	0.45
1:E:418:TYR:HA	1:E:460:PHE:HZ	1.81	0.45
3:C:24:ILE:O	3:C:28:TRP:HB2	2.16	0.45
2:F:113:VAL:HA	2:F:147:ALA:HB3	1.97	0.45
1:E:96:ASN:HA	1:E:99:PHE:CD1	2.51	0.45
1:E:326:VAL:HG22	1:E:329:HIS:ND1	2.29	0.45
1:E:446:GLU:O	1:E:450:LYS:HD3	2.17	0.45
1:E:620:LEU:O	1:E:624:LEU:HG	2.17	0.45
1:A:24:ALA:O	1:A:28:ILE:HG12	2.17	0.45
1:A:154:ILE:C	1:A:156:PHE:H	2.24	0.45
1:A:210:LYS:NZ	4:D:70:ASN:OD1	2.49	0.45
1:A:344:PHE:O	1:A:348:THR:OG1	2.21	0.45
3:C:73:LEU:HD23	4:D:10:UNK:HA	1.99	0.45
1:E:319:ILE:HG23	1:E:354:PRO:HB2	1.98	0.45
1:E:539:THR:HG21	1:E:544:PRO:CG	2.46	0.45
2:F:228:TYR:HD2	2:F:249:TYR:CD2	2.33	0.45
1:E:178:SER:OG	1:E:179:PRO:HD3	2.17	0.45
1:A:60:TYR:HB3	1:A:113:PRO:O	2.17	0.44
1:A:97:GLU:HA	1:A:162:PRO:O	2.17	0.44
1:A:466:PRO:O	1:A:470:LEU:N	2.40	0.44
2:B:224:THR:O	2:B:224:THR:OG1	2.31	0.44
1:E:134:PHE:O	1:E:203:ASN:ND2	2.47	0.44
1:A:212:ARG:NH1	1:A:218:LEU:HD12	2.32	0.44
3:C:83:ILE:HD13	3:C:176:PHE:HD1	1.82	0.44
4:H:59:LEU:O	4:H:63:MET:HB2	2.16	0.44
1:A:179:PRO:HG3	2:B:272:SER:HB3	1.98	0.44
1:A:283:VAL:HG13	5:A:1002:HEA:C3C	2.47	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:420:LEU:HD23	5:A:1001:HEA:HAC	1.99	0.44
1:A:534:THR:O	1:A:561:PHE:HB2	2.17	0.44
1:E:82:LEU:HD21	1:E:480:TYR:HA	1.99	0.44
1:E:90:LEU:HD13	1:E:98:ILE:HD12	1.98	0.44
3:C:141:LEU:HD21	3:C:192:ILE:HG21	2.00	0.44
3:C:191:PHE:HA	3:C:194:THR:HG22	1.99	0.44
4:D:67:GLU:HA	4:D:68:SER:HA	1.74	0.44
2:B:37:VAL:HG13	2:B:41:ILE:HD12	1.98	0.44
2:B:117:TRP:HB3	2:B:119:PHE:CE2	2.53	0.44
2:F:71:TRP:O	2:F:75:PRO:HD3	2.18	0.44
1:A:303:ARG:NH2	1:A:531:VAL:HG21	2.33	0.44
1:A:551:VAL:HG22	1:A:572:TYR:HD1	1.82	0.44
3:C:86:HIS:CE1	3:C:96:VAL:HA	2.52	0.44
1:E:61:ILE:HG13	1:E:62:ILE:N	2.33	0.44
1:A:234:ILE:HB	1:A:285:ILE:HG12	2.00	0.44
3:G:72:PHE:HA	3:G:75:LEU:HB3	1.99	0.44
1:A:335:GLY:HA3	2:B:162:LYS:HE3	1.99	0.44
1:A:588:ARG:HE	1:A:624:LEU:HB3	1.82	0.44
1:E:208:ILE:HD13	1:E:229:LEU:HB2	1.98	0.44
4:H:88:ILE:HG12	1:E:277:ILE:HD13	1.99	0.44
1:E:606:GLU:HB3	1:E:607:TRP:HE3	1.83	0.44
1:A:106:MET:HB3	1:A:107:ILE:HD12	1.99	0.43
1:A:194:GLY:O	1:A:198:LEU:HB2	2.18	0.43
3:G:96:VAL:HB	3:G:162:LEU:CD1	2.48	0.43
2:F:125:ASP:HB3	2:F:244:SER:HA	2.00	0.43
2:F:210:ASN:N	2:F:210:ASN:HD22	2.15	0.43
1:A:259:PHE:CE1	3:C:136:GLY:HA2	2.52	0.43
2:B:140:ILE:HD12	2:B:142:PHE:CZ	2.53	0.43
4:D:77:ASN:HA	4:D:80:PHE:CE1	2.53	0.43
3:G:187:VAL:HA	4:H:58:GLN:OE1	2.17	0.43
1:A:140:LEU:O	1:A:144:THR:OG1	2.25	0.43
2:B:182:TYR:HB2	2:B:201:VAL:HG23	2.00	0.43
1:E:191:GLN:OE1	1:E:246:LEU:HB2	2.18	0.43
2:F:115:TRP:CZ2	2:F:236:ASN:HA	2.53	0.43
1:E:96:ASN:HA	1:E:99:PHE:HD1	1.84	0.43
1:E:376:PRO:HB3	1:E:434:PHE:HB2	2.01	0.43
1:A:156:PHE:HE1	7:A:1004:HQO:N1	2.16	0.43
1:A:326:VAL:HG22	1:A:329:HIS:CD2	2.46	0.43
1:A:607:TRP:HD1	1:A:611:GLY:HA2	1.82	0.43
2:B:113:VAL:HA	2:B:147:ALA:HB3	2.01	0.43
1:E:187:LEU:HD11	1:E:249:LEU:HD23	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:235:ILE:CG1	1:E:285:ILE:HD13	2.49	0.43
1:E:374:THR:O	1:E:378:LEU:HG	2.18	0.43
2:B:124:GLN:O	2:B:126:ILE:N	2.52	0.43
3:C:158:ILE:HD12	3:C:175:ILE:HA	2.00	0.43
4:H:67:GLU:HA	4:H:68:SER:HA	1.73	0.43
2:F:111:THR:HG21	2:F:252:HIS:CD2	2.54	0.43
1:A:73:VAL:O	1:A:77:MET:HG2	2.19	0.43
1:A:140:LEU:HD22	1:A:592:MET:SD	2.59	0.43
1:A:280:HIS:HA	1:A:283:VAL:HB	2.00	0.43
1:A:313:VAL:O	1:A:316:ILE:HG22	2.19	0.43
3:G:144:HIS:CE1	3:G:189:TRP:CD2	3.06	0.43
4:H:57:LEU:O	4:H:61:MET:HB2	2.18	0.43
1:A:244:VAL:HA	1:A:247:ALA:HB3	2.00	0.42
1:A:248:LEU:HD22	1:A:259:PHE:CZ	2.54	0.42
1:A:257:ALA:HB2	3:C:128:LEU:HD13	2.00	0.42
1:A:588:ARG:NE	1:A:624:LEU:HB3	2.34	0.42
2:F:142:PHE:HB3	2:F:144:ILE:HD11	2.01	0.42
2:F:144:ILE:HD12	2:F:153:LEU:HD21	2.00	0.42
1:A:19:ALA:O	1:A:23:ILE:HG13	2.18	0.42
3:G:25:LEU:HD12	1:E:206:VAL:HG13	2.01	0.42
1:E:473:GLN:HB3	1:E:488:TRP:CE2	2.53	0.42
1:A:258:HIS:CD2	3:C:129:SER:HA	2.55	0.42
2:B:175:GLN:HE21	2:B:176:ALA:H	1.67	0.42
4:H:57:LEU:HD22	4:H:58:GLN:HE22	1.84	0.42
1:E:238:ALA:HB2	1:E:324:PHE:CE2	2.54	0.42
1:E:304:LYS:HG2	1:E:305:GLN:H	1.83	0.42
1:A:140:LEU:HD11	1:A:199:MET:SD	2.59	0.42
1:A:305:GLN:O	1:A:307:PHE:N	2.53	0.42
3:G:29:ILE:HA	4:H:77:ASN:OD1	2.18	0.42
1:E:416:PHE:HZ	5:E:1001:HEA:HHD	1.82	0.42
1:A:106:MET:HG2	5:A:1001:HEA:C2C	2.49	0.42
1:A:412:LEU:HD13	5:A:1002:HEA:HBA1	2.01	0.42
2:B:97:PRO:HB2	2:B:98:GLU:H	1.57	0.42
2:F:233:LEU:HD13	2:F:284:LYS:HZ3	1.83	0.42
1:E:412:LEU:HD11	5:E:1002:HEA:HHA	2.01	0.42
1:A:231:THR:HG21	1:A:289:PRO:HG3	2.02	0.42
3:C:188:VAL:HG23	3:C:189:TRP:CE3	2.55	0.42
1:A:110:MET:C	1:A:113:PRO:HD2	2.45	0.42
1:A:404:TYR:O	2:B:161:GLN:HG2	2.20	0.42
2:B:128:THR:HG22	2:B:129:VAL:H	1.85	0.42
2:B:152:SER:OG	2:B:187:ALA:HB2	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:154:TRP:HA	2:B:161:GLN:HB3	2.01	0.42
1:E:118:LEU:HD11	1:E:431:GLY:O	2.19	0.42
1:A:416:PHE:CZ	5:A:1001:HEA:HHD	2.55	0.42
3:G:26:GLY:HA3	1:E:134:PHE:CZ	2.55	0.42
1:E:144:THR:O	1:E:192:ILE:HG22	2.20	0.42
1:A:221:MET:N	1:A:222:PRO:HA	2.35	0.42
1:A:299:SER:O	1:A:533:ARG:HD3	2.20	0.42
1:E:123:VAL:HG21	1:E:228:THR:HG21	2.01	0.42
3:G:80:THR:HG23	4:H:65:MET:HE1	2.02	0.42
2:B:221:PRO:O	2:B:222:LYS:HG2	2.20	0.41
2:B:228:TYR:HD2	2:B:249:TYR:HD2	1.68	0.41
1:E:195:ILE:HD13	1:E:195:ILE:HA	1.91	0.41
1:E:344:PHE:O	1:E:348:THR:OG1	2.27	0.41
3:G:66:LEU:O	3:G:70:MET:HB2	2.20	0.41
3:G:155:ILE:O	3:G:159:LEU:HD23	2.20	0.41
2:F:191:GLY:O	2:F:193:HIS:N	2.53	0.41
1:A:188:LEU:O	1:A:192:ILE:HG13	2.20	0.41
1:A:204:PHE:CB	1:A:232:MET:HG3	2.50	0.41
2:B:101:LYS:HB2	2:B:101:LYS:HE3	1.88	0.41
1:E:465:PHE:HA	1:E:468:TYR:CD2	2.55	0.41
1:E:465:PHE:N	1:E:466:PRO:HD2	2.35	0.41
1:E:490:THR:HG23	1:E:491:LEU:HD22	2.01	0.41
2:B:233:LEU:HB2	2:B:284:LYS:NZ	2.35	0.41
2:F:74:ILE:N	2:F:75:PRO:CD	2.84	0.41
1:A:156:PHE:HE1	7:A:1004:HQO:C3	2.34	0.41
2:B:200:ASP:OD1	2:B:200:ASP:N	2.54	0.41
3:C:167:LEU:HD13	3:C:171:THR:HG22	2.01	0.41
1:A:231:THR:HG23	1:A:285:ILE:HG23	2.03	0.41
1:A:392:VAL:HB	2:B:29:LEU:HB3	2.03	0.41
1:A:416:PHE:HZ	5:A:1001:HEA:HHD	1.86	0.41
3:C:83:ILE:HA	3:C:86:HIS:HB3	2.02	0.41
3:G:27:PHE:O	3:G:31:LEU:HG	2.20	0.41
1:A:466:PRO:HG3	1:A:494:ILE:HG22	2.02	0.41
2:B:27:PHE:HA	2:B:30:PHE:HB2	2.02	0.41
3:C:45:PHE:CE2	3:C:196:VAL:HG12	2.56	0.41
3:G:61:LEU:HD12	3:G:64:VAL:HG23	2.03	0.41
1:E:97:GLU:HA	1:E:162:PRO:O	2.20	0.41
1:E:116:ILE:O	1:E:120:ASN:N	2.38	0.41
1:E:574:GLU:HG3	1:E:577:PHE:CE2	2.56	0.41
1:A:115:LEU:HD12	1:A:115:LEU:HA	1.80	0.41
1:A:310:LYS:HE2	2:B:65:THR:HG23	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:318:ALA:HB3	1:A:354:PRO:HB3	2.03	0.41
3:C:141:LEU:CA	3:C:144:HIS:HB3	2.50	0.41
3:G:79:PHE:CE2	3:G:179:SER:HA	2.50	0.41
3:G:161:GLN:CD	3:G:162:LEU:HG	2.46	0.41
3:G:180:LEU:HD11	4:H:65:MET:HB2	2.01	0.41
2:F:250:VAL:O	2:F:252:HIS:N	2.45	0.41
2:F:276:LYS:HB3	2:F:277:THR:H	1.72	0.41
1:E:170:MET:N	1:E:171:PRO:HD2	2.36	0.41
1:E:298:ILE:HG21	1:E:362:TRP:CD1	2.56	0.41
1:A:305:GLN:O	1:A:365:THR:HG23	2.21	0.41
3:G:104:LEU:HD11	3:G:152:ILE:HG23	2.02	0.41
3:G:155:ILE:O	3:G:158:ILE:HG12	2.21	0.41
2:F:149:SER:HB3	1:E:176:ASP:OD2	2.21	0.41
1:E:313:VAL:O	1:E:316:ILE:HG22	2.21	0.41
1:A:79:ARG:NH2	1:A:495:SER:HB3	2.28	0.40
1:A:170:MET:N	1:A:171:PRO:HD2	2.36	0.40
1:A:334:MET:HB3	2:B:163:TYR:CD2	2.56	0.40
1:A:506:PHE:CD1	5:A:1001:HEA:H261	2.55	0.40
3:C:139:VAL:C	3:C:142:GLY:H	2.29	0.40
3:G:180:LEU:HD11	4:H:65:MET:HG3	2.03	0.40
4:H:68:SER:OG	4:H:69:GLU:N	2.54	0.40
2:B:100:THR:HG23	2:B:101:LYS:H	1.87	0.40
2:F:163:TYR:HB2	1:E:334:MET:HA	2.04	0.40
1:E:190:LEU:HB2	1:E:246:LEU:HD11	2.04	0.40
1:A:202:ILE:HD13	3:C:30:PHE:HB2	2.03	0.40
1:A:465:PHE:N	1:A:466:PRO:HD2	2.36	0.40
3:G:68:MET:HB3	3:G:110:PHE:CE1	2.57	0.40
3:G:85:VAL:HG13	3:G:89:ARG:HD2	2.02	0.40
2:F:74:ILE:O	2:F:78:ILE:HG12	2.21	0.40
2:F:228:TYR:CD2	2:F:249:TYR:HD2	2.34	0.40
1:E:82:LEU:HD11	1:E:95:TYR:OH	2.20	0.40
2:F:106:LEU:HD23	2:F:140:ILE:HG22	2.04	0.40
2:B:278:ASP:O	2:B:279:PRO:C	2.64	0.40
2:F:80:ILE:HD12	2:F:80:ILE:HA	1.95	0.40
1:E:306:LEU:HD23	1:E:365:THR:HG21	2.03	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	603/655 (92%)	509 (84%)	76 (13%)	18 (3%)	3	27
1	E	603/655 (92%)	510 (85%)	77 (13%)	16 (3%)	4	29
2	B	250/296 (84%)	188 (75%)	49 (20%)	13 (5%)	1	18
2	F	250/296 (84%)	189 (76%)	48 (19%)	13 (5%)	1	18
3	C	176/204 (86%)	154 (88%)	21 (12%)	1 (1%)	22	55
3	G	176/204 (86%)	157 (89%)	19 (11%)	0	100	100
4	D	46/124 (37%)	37 (80%)	7 (15%)	2 (4%)	2	20
4	H	46/124 (37%)	37 (80%)	7 (15%)	2 (4%)	2	20
All	All	2150/2558 (84%)	1781 (83%)	304 (14%)	65 (3%)	3	27

All (65) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	178	SER
1	A	222	PRO
1	A	239	PHE
1	A	548	ASN
2	B	98	GLU
2	B	279	PRO
2	F	97	PRO
2	F	98	GLU
2	F	125	ASP
1	E	178	SER
1	E	222	PRO
1	E	239	PHE
1	E	548	ASN
1	A	306	LEU
1	A	338	ALA
1	A	555	VAL
2	B	97	PRO

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W O R L D W I D E
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PROTEIN DATA BANK

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Mol	Chain	Res	Type
2	B	125	ASP
2	B	192	GLU
4	H	69	GLU
2	F	192	GLU
2	F	279	PRO
1	E	48	ILE
1	E	306	LEU
1	E	555	VAL
1	A	48	ILE
1	A	410	TYR
1	A	570	GLU
1	A	583	PRO
2	B	100	THR
2	B	273	PRO
2	F	273	PRO
2	F	281	GLU
2	F	283	VAL
1	E	221	MET
1	E	338	ALA
1	E	410	TYR
1	E	570	GLU
1	E	583	PRO
1	A	95	TYR
1	A	221	MET
1	A	474	GLY
2	B	84	VAL
2	B	242	PHE
3	C	124	GLU
4	D	69	GLU
4	H	72	THR
2	F	240	LEU
2	F	242	PHE
1	E	95	TYR
1	E	216	MET
1	A	130	ARG
1	A	216	MET
2	B	281	GLU
2	B	283	VAL
4	D	72	THR
2	F	84	VAL
2	F	100	THR
1	E	474	GLY

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Mol	Chain	Res	Type
2	B	177	ASP
2	B	278	ASP
2	F	278	ASP
1	A	326	VAL
1	A	385	PRO
1	E	385	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	512/558 (92%)	486 (95%)	26 (5%)	20	47
1	E	512/558 (92%)	482 (94%)	30 (6%)	16	43
2	B	230/263 (88%)	213 (93%)	17 (7%)	11	36
2	F	230/263 (88%)	203 (88%)	27 (12%)	4	21
3	C	151/171 (88%)	141 (93%)	10 (7%)	14	40
3	G	151/171 (88%)	137 (91%)	14 (9%)	7	29
4	D	38/59 (64%)	35 (92%)	3 (8%)	10	35
4	H	38/59 (64%)	36 (95%)	2 (5%)	19	46
All	All	1862/2102 (89%)	1733 (93%)	129 (7%)	13	39

All (129) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	79	ARG
1	A	93	ASN
1	A	96	ASN
1	A	97	GLU
1	A	105	ILE
1	A	114	PHE
1	A	115	LEU
1	A	120	ASN
1	A	145	PHE

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Mol	Chain	Res	Type
1	A	151	LEU
1	A	172	LEU
1	A	187	LEU
1	A	208	ILE
1	A	216	MET
1	A	251	PHE
1	A	260	PHE
1	A	273	ASN
1	A	283	VAL
1	A	288	LEU
1	A	349	MET
1	A	363	LEU
1	A	395	VAL
1	A	416	PHE
1	A	500	PHE
1	A	552	LEU
1	A	581	HIS
2	B	20	LEU
2	B	29	LEU
2	B	39	PHE
2	B	103	LYS
2	B	115	TRP
2	B	128	THR
2	B	153	LEU
2	B	165	MET
2	B	175	GLN
2	B	188	ASN
2	B	213	VAL
2	B	224	THR
2	B	237	VAL
2	B	252	HIS
2	B	272	SER
2	B	277	THR
2	B	284	LYS
3	C	25	LEU
3	C	56	VAL
3	C	61	LEU
3	C	75	LEU
3	C	85	VAL
3	C	97	VAL
3	C	128	LEU
3	C	144	HIS

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Mol	Chain	Res	Type
3	C	161	GLN
3	C	192	ILE
4	D	69	GLU
4	D	79	LEU
4	D	80	PHE
3	G	22	LEU
3	G	25	LEU
3	G	56	VAL
3	G	60	GLU
3	G	61	LEU
3	G	75	LEU
3	G	83	ILE
3	G	85	VAL
3	G	97	VAL
3	G	128	LEU
3	G	159	LEU
3	G	160	ILE
3	G	161	GLN
3	G	192	ILE
4	H	69	GLU
4	H	79	LEU
2	F	22	LEU
2	F	25	ILE
2	F	28	MET
2	F	29	LEU
2	F	39	PHE
2	F	100	THR
2	F	102	ASP
2	F	115	TRP
2	F	128	THR
2	F	153	LEU
2	F	165	MET
2	F	175	GLN
2	F	181	THR
2	F	188	ASN
2	F	208	ASP
2	F	210	ASN
2	F	213	VAL
2	F	215	LYS
2	F	223	LEU
2	F	224	THR
2	F	237	VAL

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Mol	Chain	Res	Type
2	F	246	HIS
2	F	252	HIS
2	F	272	SER
2	F	277	THR
2	F	283	VAL
2	F	284	LYS
1	E	79	ARG
1	E	93	ASN
1	E	96	ASN
1	E	97	GLU
1	E	104	THR
1	E	105	ILE
1	E	115	LEU
1	E	145	PHE
1	E	151	LEU
1	E	166	TRP
1	E	172	LEU
1	E	187	LEU
1	E	208	ILE
1	E	216	MET
1	E	239	PHE
1	E	260	PHE
1	E	273	ASN
1	E	283	VAL
1	E	316	ILE
1	E	340	VAL
1	E	349	MET
1	E	351	ILE
1	E	363	LEU
1	E	395	VAL
1	E	415	HIS
1	E	416	PHE
1	E	500	PHE
1	E	552	LEU
1	E	565	LYS
1	E	581	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	87	ASN
1	A	139	ASN

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Mol	Chain	Res	Type
1	A	184	ASN
1	A	329	HIS
1	A	473	GLN
2	B	175	GLN
2	B	246	HIS
2	B	252	HIS
4	H	58	GLN
2	F	188	ASN
2	F	210	ASN
1	E	184	ASN
1	E	415	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 8 ligands modelled in this entry, 2 are monoatomic - leaving 6 for Mogul analysis.

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	#$|Z| > 2$
5	HEA	A	1002	-	57,67,67	2.12	18 (31%)	61,103,103	2.58	26 (42%)
7	HQO	E	1004	-	14,14,20	3.20	3 (21%)	13,20,26	1.49	1 (7%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
5	HEA	E	1001	1	57,67,67	2.29	19 (33%)	61,103,103	2.22	21 (34%)
7	HQO	A	1004	-	14,14,20	3.23	3 (21%)	13,20,26	1.43	1 (7%)
5	HEA	A	1001	1	57,67,67	2.26	19 (33%)	61,103,103	2.29	23 (37%)
5	HEA	E	1002	1	57,67,67	2.16	17 (29%)	61,103,103	2.58	26 (42%)

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
5	HEA	A	1002	-	-	7/32/76/76	-
7	HQO	E	1004	-	-	-	0/2/2/2
5	HEA	E	1001	1	-	7/32/76/76	-
7	HQO	A	1004	-	-	-	0/2/2/2
5	HEA	A	1001	1	-	7/32/76/76	-
5	HEA	E	1002	1	-	7/32/76/76	-

All (79) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	A	1004	HQO	O4-N1	-10.62	1.24	1.38
7	E	1004	HQO	O4-N1	-10.52	1.24	1.38
5	E	1001	HEA	C3A-C2A	6.56	1.49	1.40
5	A	1001	HEA	C3A-C2A	6.18	1.49	1.40
5	E	1001	HEA	C3B-C2B	5.82	1.47	1.34
5	A	1001	HEA	C3B-C2B	5.72	1.47	1.34
5	E	1002	HEA	C3B-C2B	5.65	1.47	1.34
5	E	1002	HEA	C3A-C2A	5.58	1.48	1.40
5	A	1002	HEA	C3B-C2B	5.53	1.47	1.34
5	A	1001	HEA	C3C-C2C	5.42	1.47	1.40
5	E	1001	HEA	C3C-C2C	5.38	1.47	1.40
5	A	1001	HEA	C3D-C2D	5.33	1.48	1.36
5	A	1002	HEA	C3A-C2A	5.30	1.47	1.40
5	E	1001	HEA	C3D-C2D	5.27	1.47	1.36
5	A	1001	HEA	CHD-C1D	5.24	1.48	1.35
5	E	1002	HEA	C3C-C2C	5.15	1.47	1.40
5	A	1002	HEA	C3C-C2C	5.11	1.47	1.40
5	E	1001	HEA	CHD-C1D	5.11	1.48	1.35
5	E	1002	HEA	C3D-C2D	5.07	1.47	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1001	HEA	CHC-C4B	5.05	1.47	1.35
5	E	1001	HEA	CHC-C4B	5.00	1.47	1.35
5	A	1002	HEA	C3D-C2D	4.94	1.47	1.36
5	E	1002	HEA	CHD-C1D	4.91	1.47	1.35
5	A	1002	HEA	CHC-C4B	4.90	1.47	1.35
5	A	1002	HEA	CHD-C1D	4.79	1.47	1.35
5	E	1002	HEA	CHC-C4B	4.71	1.47	1.35
5	E	1001	HEA	C2A-C1A	3.60	1.50	1.42
7	E	1004	HQO	C10-C5	3.50	1.48	1.42
7	A	1004	HQO	C10-C5	3.46	1.48	1.42
5	A	1001	HEA	C2A-C1A	3.44	1.50	1.42
5	E	1002	HEA	FE-NB	3.26	2.13	1.96
7	E	1004	HQO	C1-C10	3.25	1.48	1.42
7	A	1004	HQO	C1-C10	3.24	1.48	1.42
5	A	1002	HEA	FE-NB	3.17	2.12	1.96
5	A	1002	HEA	C2A-C1A	3.11	1.49	1.42
5	E	1002	HEA	FE-ND	3.07	2.12	1.96
5	A	1002	HEA	FE-ND	3.04	2.11	1.96
5	E	1002	HEA	C2A-C1A	3.02	1.49	1.42
5	A	1002	HEA	C4B-C3B	2.92	1.49	1.44
5	E	1001	HEA	FE-ND	2.91	2.11	1.96
5	A	1001	HEA	C1D-ND	-2.88	1.35	1.40
5	E	1001	HEA	C4B-C3B	2.84	1.49	1.44
5	E	1001	HEA	C1D-ND	-2.84	1.35	1.40
5	A	1001	HEA	C4B-C3B	2.83	1.49	1.44
5	A	1001	HEA	FE-NB	2.82	2.10	1.96
5	E	1002	HEA	C4B-C3B	2.82	1.49	1.44
5	A	1001	HEA	C4B-NB	-2.80	1.35	1.40
5	A	1001	HEA	FE-ND	2.77	2.10	1.96
5	E	1001	HEA	FE-NB	2.74	2.10	1.96
5	E	1001	HEA	C4B-NB	-2.69	1.35	1.40
5	A	1002	HEA	C1D-ND	-2.62	1.35	1.40
5	E	1001	HEA	C4D-C3D	2.61	1.49	1.45
5	A	1001	HEA	C4C-CHD	2.58	1.48	1.41
5	E	1002	HEA	C1B-C2B	2.56	1.49	1.44
5	E	1002	HEA	C4B-NB	-2.55	1.35	1.40
5	E	1002	HEA	C1D-ND	-2.55	1.35	1.40
5	A	1001	HEA	CHB-C1B	2.47	1.48	1.41
5	A	1001	HEA	C1B-C2B	2.45	1.49	1.44
5	A	1001	HEA	C1C-CHC	2.45	1.47	1.41
5	E	1001	HEA	CHB-C1B	2.43	1.48	1.41
5	E	1001	HEA	C1D-C2D	2.43	1.49	1.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1002	HEA	C4B-NB	-2.43	1.36	1.40
5	E	1001	HEA	C4C-CHD	2.41	1.47	1.41
5	E	1002	HEA	C1D-C2D	2.40	1.49	1.44
5	A	1002	HEA	C1B-C2B	2.38	1.49	1.44
5	A	1001	HEA	C1D-C2D	2.37	1.49	1.44
5	E	1001	HEA	C1C-CHC	2.36	1.47	1.41
5	E	1002	HEA	C4C-CHD	2.35	1.47	1.41
5	A	1002	HEA	C1C-CHC	2.33	1.47	1.41
5	A	1002	HEA	C1D-C2D	2.31	1.49	1.44
5	E	1002	HEA	C4D-C3D	2.28	1.49	1.45
5	A	1001	HEA	CHA-C4D	2.23	1.47	1.41
5	E	1001	HEA	C1B-C2B	2.23	1.48	1.44
5	A	1001	HEA	C4D-C3D	2.23	1.48	1.45
5	A	1002	HEA	C4C-CHD	2.21	1.47	1.41
5	E	1002	HEA	C1C-CHC	2.20	1.47	1.41
5	E	1001	HEA	CHA-C4D	2.17	1.47	1.41
5	A	1002	HEA	C4D-C3D	2.08	1.48	1.45
5	A	1002	HEA	CHB-C1B	2.07	1.47	1.41

All (98) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	1002	HEA	C3D-C4D-ND	7.11	117.24	110.36
5	A	1002	HEA	C3D-C4D-ND	6.85	116.99	110.36
5	E	1002	HEA	C2B-C1B-NB	6.18	117.28	109.88
5	A	1002	HEA	C2B-C1B-NB	6.00	117.07	109.88
5	E	1001	HEA	CHA-C4D-ND	-5.86	118.06	124.43
5	E	1001	HEA	C3D-C4D-ND	5.85	116.03	110.36
5	E	1002	HEA	C3B-C4B-NB	5.79	116.70	109.84
5	A	1001	HEA	C3D-C4D-ND	5.49	115.67	110.36
5	A	1002	HEA	C2D-C1D-ND	5.29	116.11	109.84
5	A	1002	HEA	C3B-C4B-NB	5.22	116.02	109.84
5	A	1001	HEA	CHA-C4D-ND	-5.16	118.82	124.43
5	E	1002	HEA	C2D-C1D-ND	5.04	115.81	109.84
5	E	1001	HEA	C3B-C4B-NB	4.74	115.45	109.84
5	A	1001	HEA	C3B-C4B-NB	4.68	115.38	109.84
5	E	1001	HEA	C2D-C1D-ND	4.41	115.07	109.84
5	A	1001	HEA	C2B-C1B-NB	4.35	115.10	109.88
5	A	1002	HEA	C3C-C4C-NC	4.27	114.72	109.21
5	A	1002	HEA	C1D-C2D-C3D	-4.23	102.51	106.96
5	E	1002	HEA	C1B-C2B-C3B	-4.18	101.80	106.80
5	A	1001	HEA	C2D-C1D-ND	4.10	114.70	109.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	1002	HEA	C1B-C2B-C3B	-4.08	101.92	106.80
5	E	1001	HEA	C2B-C1B-NB	4.07	114.76	109.88
5	A	1001	HEA	C4D-CHA-C1A	-3.96	117.33	122.56
5	E	1002	HEA	C3C-C4C-NC	3.95	114.31	109.21
5	E	1002	HEA	CMC-C2C-C3C	3.91	132.00	124.68
5	E	1002	HEA	CHA-C4D-ND	-3.87	120.23	124.43
5	E	1002	HEA	CHB-C1B-NB	-3.82	120.28	124.43
5	A	1001	HEA	CMC-C2C-C3C	3.78	131.76	124.68
5	E	1001	HEA	C3C-C4C-NC	3.75	114.06	109.21
5	E	1002	HEA	C1D-C2D-C3D	-3.68	103.08	106.96
5	E	1002	HEA	C4D-C3D-C2D	-3.67	101.55	106.90
7	E	1004	HQO	O1-C1-C10	3.67	120.89	116.31
5	A	1002	HEA	CMC-C2C-C3C	3.66	131.52	124.68
5	A	1002	HEA	CHA-C4D-ND	-3.62	120.50	124.43
5	A	1002	HEA	C13-C12-C11	-3.61	108.92	114.35
7	A	1004	HQO	O1-C1-C10	3.60	120.80	116.31
5	A	1001	HEA	C1D-C2D-C3D	-3.59	103.18	106.96
5	E	1001	HEA	C4D-C3D-C2D	-3.50	101.80	106.90
5	A	1001	HEA	C3C-C4C-NC	3.50	113.73	109.21
5	A	1002	HEA	C26-C15-C16	3.49	121.13	115.27
5	A	1001	HEA	CHB-C1B-NB	-3.46	120.67	124.43
5	A	1002	HEA	C13-C14-C15	-3.45	119.36	127.66
5	E	1001	HEA	C1D-C2D-C3D	-3.45	103.33	106.96
5	E	1001	HEA	CMC-C2C-C3C	3.43	131.10	124.68
5	E	1002	HEA	C13-C14-C15	-3.32	119.66	127.66
5	A	1002	HEA	C4D-C3D-C2D	-3.30	102.08	106.90
5	A	1001	HEA	C4D-C3D-C2D	-3.26	102.15	106.90
5	E	1002	HEA	C4B-NB-C1B	-3.26	101.71	105.07
5	E	1001	HEA	C4B-C3B-C2B	-3.24	101.88	107.41
5	A	1002	HEA	CHB-C1B-NB	-3.23	120.92	124.43
5	E	1002	HEA	C26-C15-C16	3.22	120.69	115.27
5	A	1001	HEA	C1B-C2B-C3B	-3.16	103.03	106.80
5	A	1002	HEA	C27-C19-C20	3.15	120.56	115.27
5	E	1001	HEA	CAD-C3D-C4D	3.13	130.12	124.66
5	A	1001	HEA	C26-C15-C16	3.12	120.53	115.27
5	E	1001	HEA	C4D-CHA-C1A	-3.06	118.53	122.56
5	A	1001	HEA	C4B-C3B-C2B	-2.93	102.41	107.41
5	A	1001	HEA	C17-C18-C19	-2.88	120.73	127.66
5	E	1002	HEA	C4B-C3B-C2B	-2.87	102.51	107.41
5	E	1002	HEA	C17-C18-C19	-2.87	120.76	127.66
5	A	1002	HEA	C17-C18-C19	-2.86	120.77	127.66
5	E	1001	HEA	CHB-C1B-NB	-2.86	121.33	124.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	1002	HEA	C4B-NB-C1B	-2.84	102.14	105.07
5	E	1002	HEA	CMB-C2B-C1B	2.82	129.33	125.04
5	A	1002	HEA	CMB-C2B-C1B	2.78	129.28	125.04
5	E	1002	HEA	CBA-CAA-C2A	-2.77	107.93	112.60
5	A	1001	HEA	CMB-C2B-C1B	2.74	129.21	125.04
5	E	1001	HEA	C26-C15-C16	2.71	119.83	115.27
5	E	1002	HEA	C1D-ND-C4D	-2.68	102.31	105.07
5	A	1002	HEA	C25-C23-C24	2.68	120.52	114.60
5	A	1002	HEA	C1D-ND-C4D	-2.68	102.31	105.07
5	A	1002	HEA	C4B-C3B-C2B	-2.67	102.85	107.41
5	E	1001	HEA	C1B-C2B-C3B	-2.67	103.61	106.80
5	E	1001	HEA	C27-C19-C20	2.57	119.60	115.27
5	A	1001	HEA	C27-C19-C20	2.56	119.58	115.27
5	A	1001	HEA	C25-C23-C24	2.49	120.09	114.60
5	E	1002	HEA	CAD-C3D-C4D	2.47	128.97	124.66
5	E	1002	HEA	C25-C23-C24	2.46	120.03	114.60
5	A	1001	HEA	C13-C14-C15	-2.43	121.81	127.66
5	E	1001	HEA	CMD-C2D-C1D	2.43	128.74	125.04
5	A	1001	HEA	CAD-C3D-C4D	2.43	128.90	124.66
5	A	1002	HEA	CMD-C2D-C1D	2.38	128.67	125.04
5	E	1002	HEA	C27-C19-C20	2.38	119.28	115.27
5	A	1001	HEA	CHC-C4B-NB	-2.36	121.47	124.38
5	A	1001	HEA	CMD-C2D-C1D	2.36	128.63	125.04
5	E	1002	HEA	CMD-C2D-C1D	2.29	128.53	125.04
5	E	1002	HEA	C13-C12-C11	-2.28	110.93	114.35
5	E	1001	HEA	C17-C18-C19	-2.27	122.20	127.66
5	E	1001	HEA	CHC-C4B-NB	-2.16	121.71	124.38
5	A	1002	HEA	CHD-C1D-C2D	-2.15	120.78	126.72
5	E	1001	HEA	CMB-C2B-C1B	2.13	128.29	125.04
5	A	1002	HEA	CAD-CBD-CGD	-2.12	109.03	113.60
5	A	1002	HEA	C21-C22-C23	-2.10	120.56	127.75
5	A	1001	HEA	C13-C12-C11	-2.09	111.21	114.35
5	E	1002	HEA	C21-C22-C23	-2.09	120.62	127.75
5	E	1002	HEA	CHD-C1D-C2D	-2.07	121.00	126.72
5	E	1001	HEA	C25-C23-C24	2.06	119.16	114.60
5	A	1002	HEA	CAD-C3D-C4D	2.03	128.20	124.66

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1001	HEA	C3B-C11-C12-C13

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Mol	Chain	Res	Type	Atoms
5	E	1001	HEA	C3B-C11-C12-C13
5	A	1001	HEA	C15-C16-C17-C18
5	E	1001	HEA	C15-C16-C17-C18
5	A	1001	HEA	O11-C11-C12-C13
5	E	1001	HEA	O11-C11-C12-C13
5	A	1001	HEA	C26-C15-C16-C17
5	E	1001	HEA	C26-C15-C16-C17
5	A	1001	HEA	C14-C15-C16-C17
5	E	1001	HEA	C14-C15-C16-C17
5	E	1002	HEA	C2D-C3D-CAD-CBD
5	A	1002	HEA	C4D-C3D-CAD-CBD
5	E	1002	HEA	C4D-C3D-CAD-CBD
5	A	1002	HEA	C2D-C3D-CAD-CBD
5	E	1002	HEA	CAD-CBD-CGD-O1D
5	A	1002	HEA	CAD-CBD-CGD-O1D
5	A	1002	HEA	CAD-CBD-CGD-O2D
5	A	1002	HEA	C26-C15-C16-C17
5	E	1002	HEA	CAD-CBD-CGD-O2D
5	E	1002	HEA	CAA-CBA-CGA-O2A
5	A	1002	HEA	CAA-CBA-CGA-O2A
5	E	1001	HEA	CAD-CBD-CGD-O2D
5	A	1001	HEA	CAD-CBD-CGD-O2D
5	E	1002	HEA	CAA-CBA-CGA-O1A
5	E	1002	HEA	C26-C15-C16-C17
5	A	1002	HEA	CAA-CBA-CGA-O1A
5	E	1001	HEA	CAD-CBD-CGD-O1D
5	A	1001	HEA	CAD-CBD-CGD-O1D

There are no ring outliers.
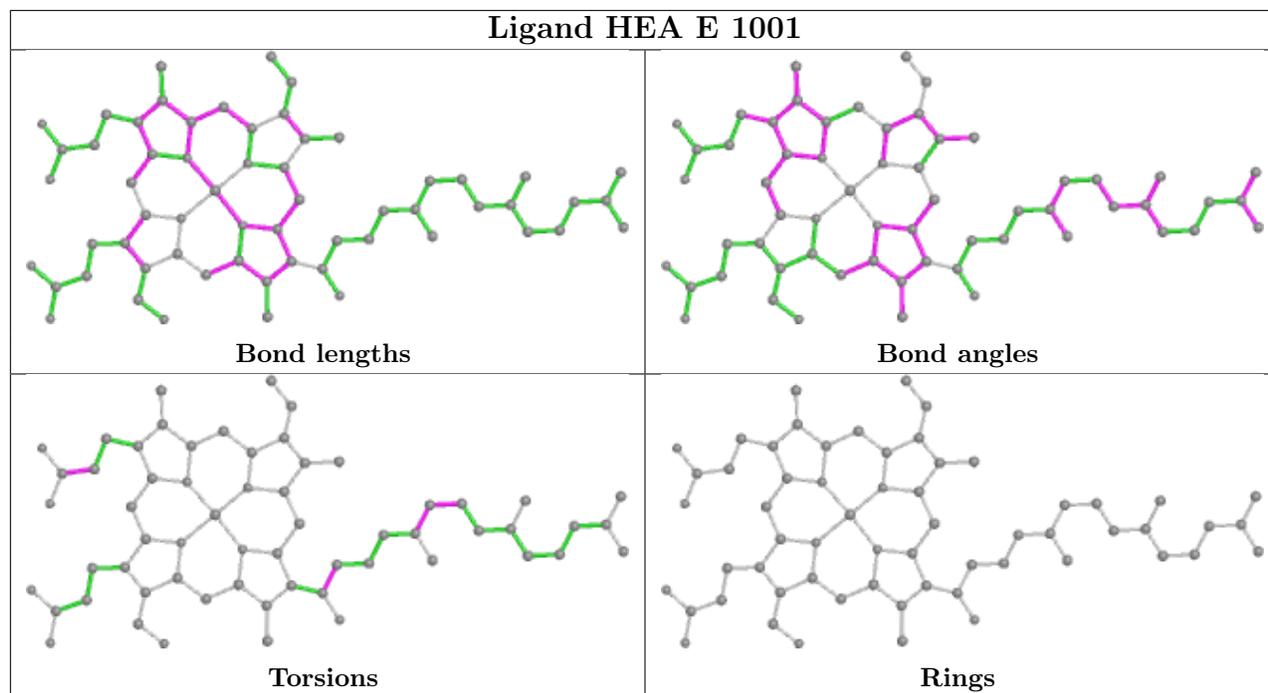
6 monomers are involved in 35 short contacts:

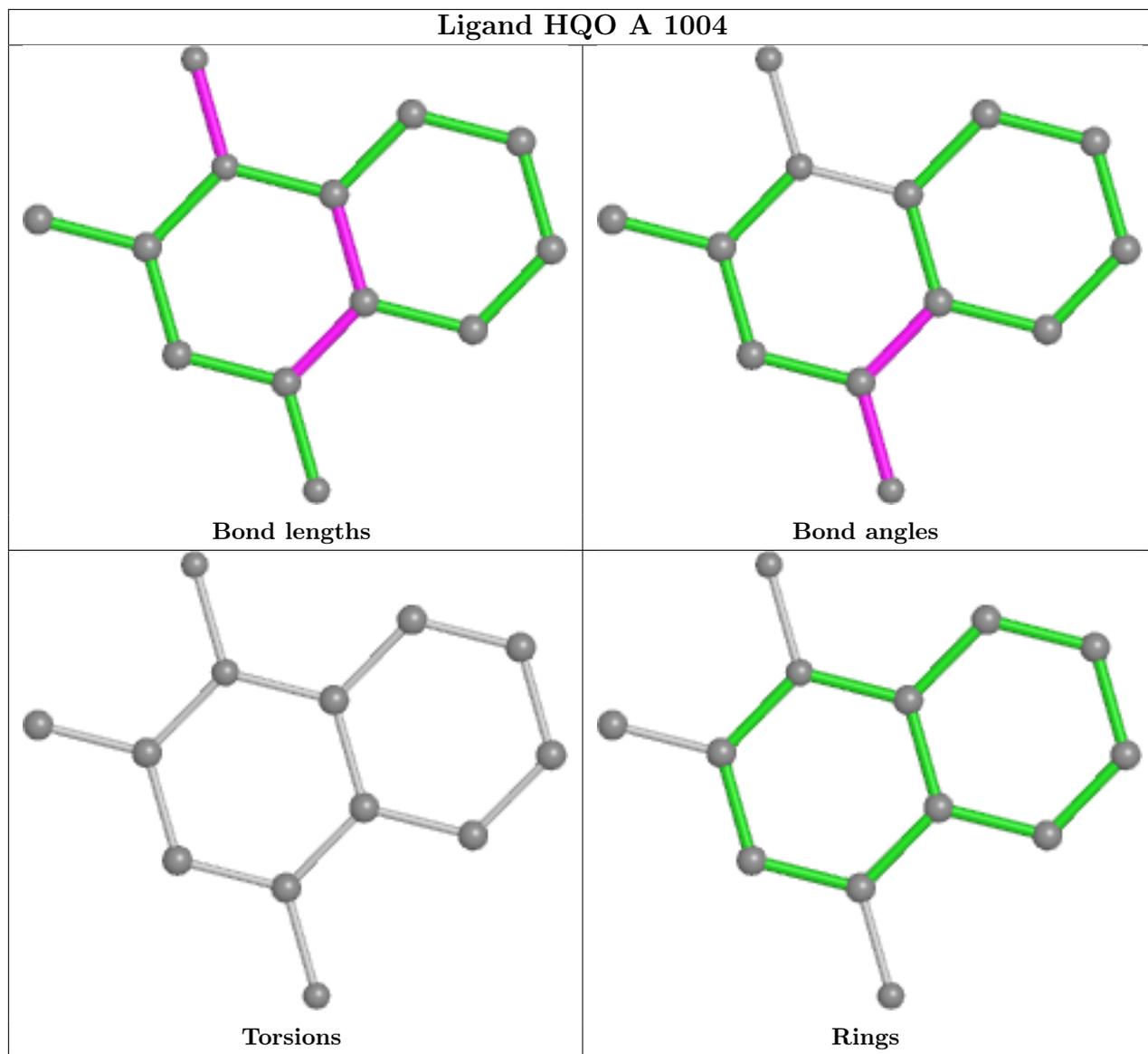| Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1002	HEA	5	0
7	E	1004	HQO	5	0
5	E	1001	HEA	4	0
7	A	1004	HQO	4	0
5	A	1001	HEA	11	0
5	E	1002	HEA	6	0

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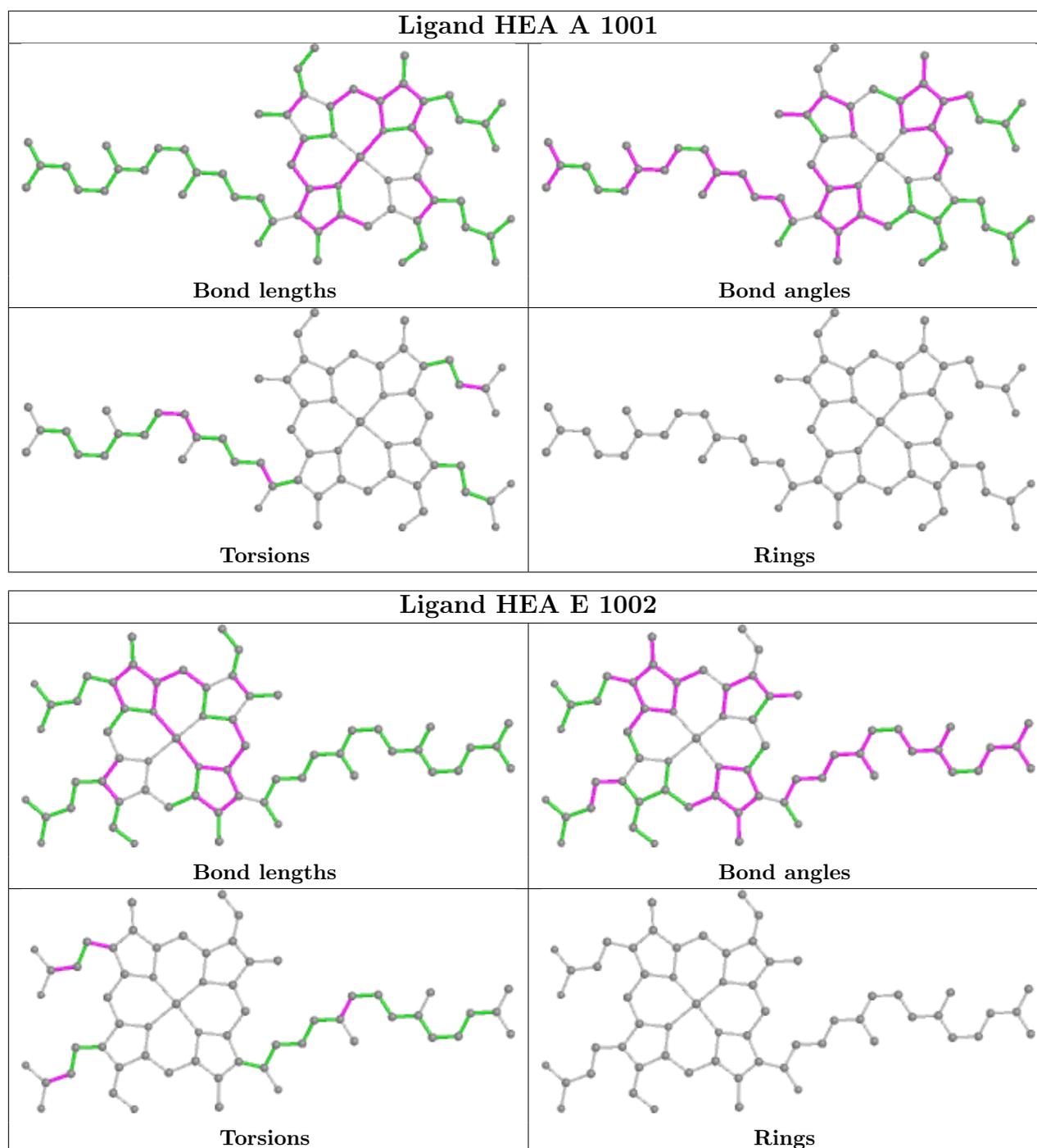
also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted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

Ligand HEA A 1002

Bond lengths

Bond angles

Torsions

Rings

Full wwPDB X-ray Structure Validation Report

Ligand HQO E 1004

Bond lengths

Bond angles

Torsions

Rings

Ligand HEA E 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand HQO A 1004

Bond lengths

Bond angles

Torsions

Rings

Ligand HEA A 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand HEA E 1002

Bond lengths

Bond angles

Torsions

Rings
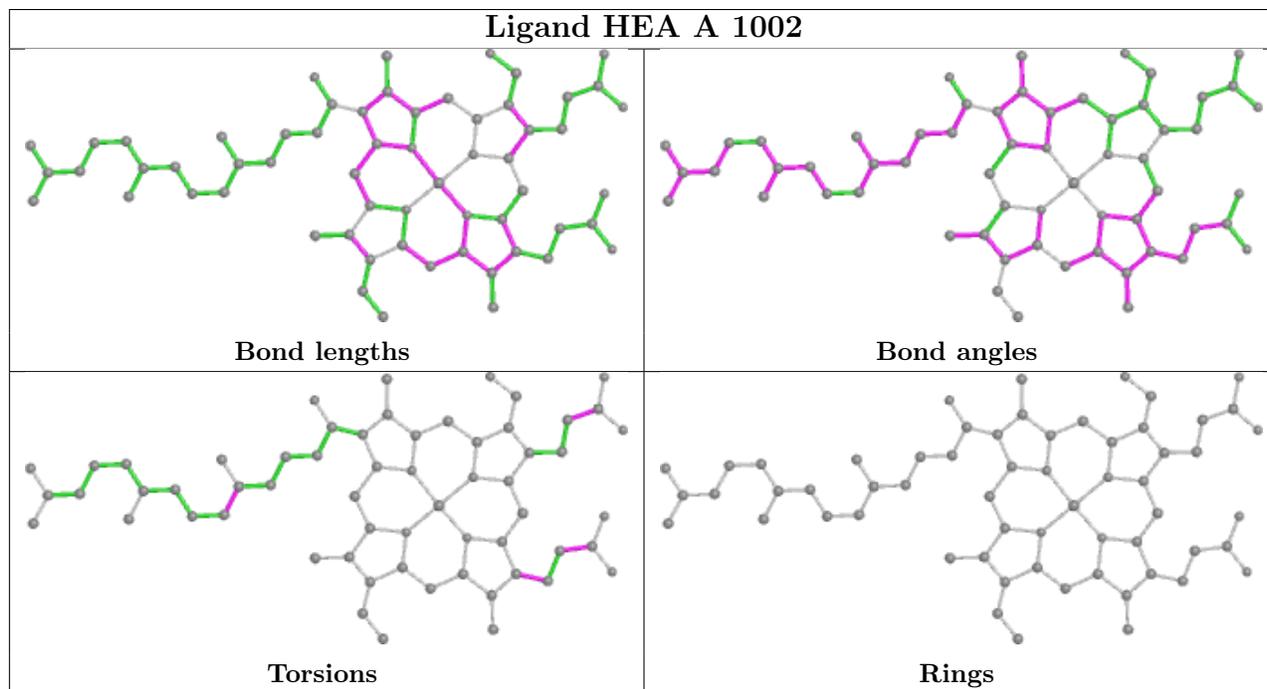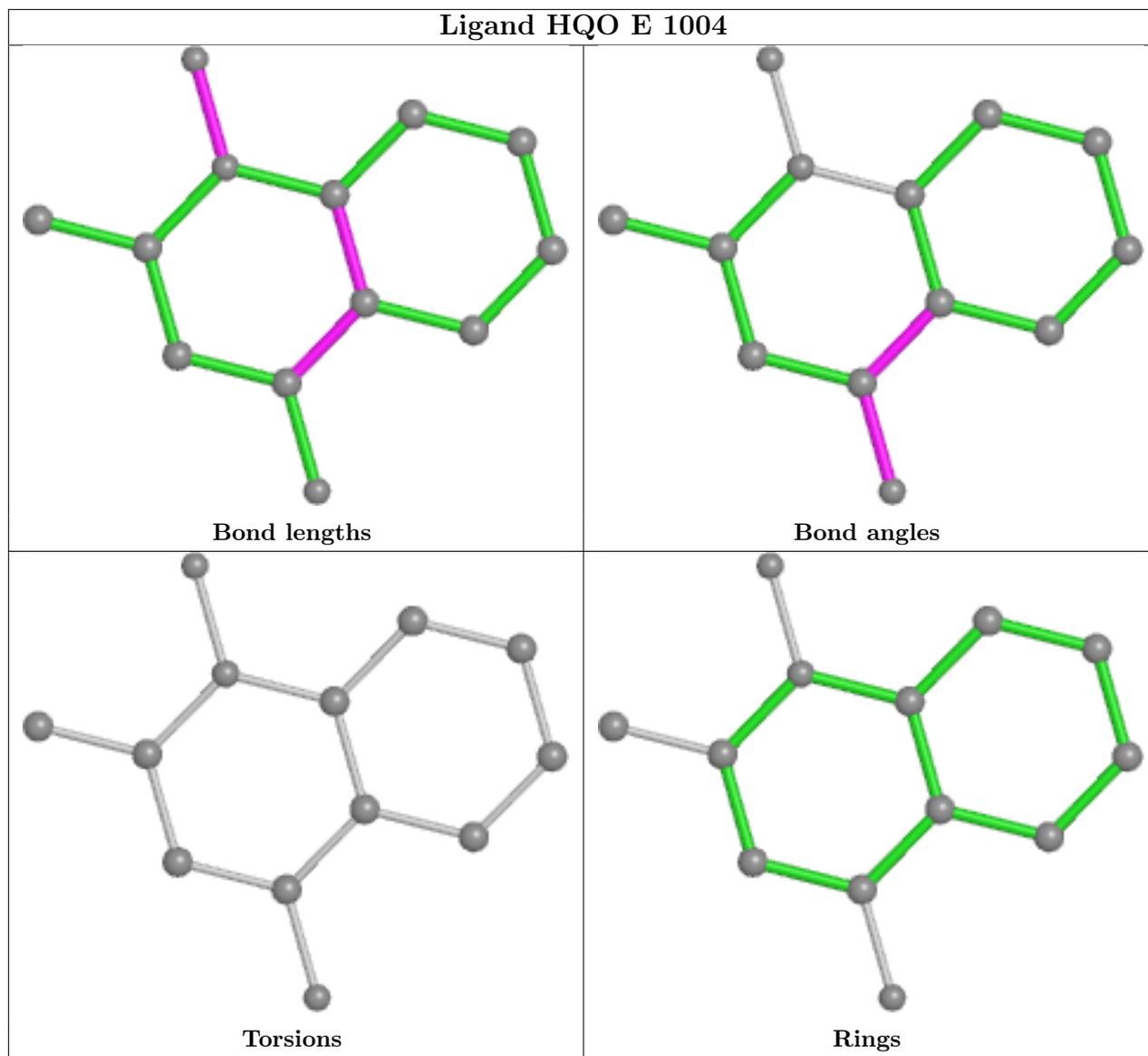
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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(Å²)	Q<0.9
1	A	607/655 (92%)	1.61	172 (28%)	1	3	68, 108, 149, 180	0
1	E	607/655 (92%)	1.61	176 (28%)	1	3	66, 111, 155, 191	0
2	B	256/296 (86%)	1.68	80 (31%)	1	2	90, 139, 195, 223	0
2	F	256/296 (86%)	1.72	90 (35%)	1	2	79, 134, 197, 235	0
3	C	178/204 (87%)	1.46	47 (26%)	2	3	79, 115, 191, 235	0
3	G	178/204 (87%)	1.68	55 (30%)	1	2	72, 124, 187, 200	0
4	D	48/124 (38%)	2.53	19 (39%)	1	1	81, 115, 158, 166	0
4	H	48/124 (38%)	1.90	16 (33%)	1	2	72, 109, 152, 160	0
All	All	2178/2558 (85%)	1.65	655 (30%)	1	3	66, 117, 179, 235	0

All (655) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	274	HIS	13.8
1	E	405	GLN	12.4
1	E	333	THR	12.3
1	A	440	PHE	12.0
1	A	437	PRO	11.8
1	A	441	GLY	11.3
4	D	63	MET	11.3
2	B	92	SER	10.8
3	G	144	HIS	10.5
1	A	86	ASN	9.6
2	B	97	PRO	9.4
4	H	72	THR	9.2
1	E	516	SER	8.9
3	G	126	ALA	8.9
1	A	541	SER	8.7
1	E	407	HIS	8.7

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Mol	Chain	Res	Type	RSRZ
1	A	178	SER	8.2
3	G	53	ALA	8.1
4	D	60	LEU	7.9
4	D	69	GLU	7.8
2	F	106	LEU	7.5
3	C	102	ILE	7.5
4	D	59	LEU	7.4
2	B	95	LYS	7.2
1	E	406	TYR	7.2
2	B	73	VAL	7.2
2	B	190	THR	7.1
1	A	540	SER	7.1
1	A	436	TYR	7.1
1	A	439	MET	7.1
1	E	580	ILE	7.0
2	F	27	PHE	7.0
1	A	542	ALA	6.9
1	A	314	GLY	6.9
4	H	69	GLU	6.8
1	A	438	LYS	6.8
2	F	169	LEU	6.7
2	F	277	THR	6.7
1	A	432	PHE	6.6
2	F	107	VAL	6.6
1	A	543	ILE	6.6
1	E	334	MET	6.6
3	G	140	LEU	6.5
3	G	34	GLU	6.4
3	C	78	SER	6.2
1	E	618	VAL	6.1
2	B	191	GLY	6.1
1	A	357	VAL	6.1
2	B	188	ASN	6.1
1	E	404	TYR	6.1
1	A	320	SER	6.0
2	F	163	TYR	6.0
1	A	408	ASN	5.9
1	E	408	ASN	5.8
3	C	97	VAL	5.8
2	F	30	PHE	5.8
2	B	236	ASN	5.8
2	F	23	LEU	5.7

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Mol	Chain	Res	Type	RSRZ
3	G	124	GLU	5.7
2	F	156	PRO	5.7
1	E	63	SER	5.7
1	E	27	THR	5.6
4	D	80	PHE	5.6
1	A	355	THR	5.6
2	F	19	ASP	5.6
3	G	143	THR	5.6
1	E	441	GLY	5.6
1	E	66	ILE	5.6
1	E	468	TYR	5.5
1	E	370	ARG	5.5
4	D	74	GLN	5.5
1	A	175	ASN	5.5
2	B	275	SER	5.5
1	A	52	ASP	5.4
1	E	164	ALA	5.4
1	A	163	ASN	5.4
1	A	478	ARG	5.4
1	E	619	LEU	5.4
1	A	317	ILE	5.4
1	A	358	LYS	5.3
1	E	191	GLN	5.3
1	E	568	LYS	5.3
1	A	55	LYS	5.2
1	A	458	ILE	5.2
1	E	69	PHE	5.2
4	H	70	ASN	5.2
1	E	211	MET	5.1
2	F	143	LYS	5.1
1	A	383	PHE	5.1
1	A	416	PHE	5.1
4	H	63	MET	5.1
3	G	89	ARG	5.1
4	D	77	ASN	5.1
1	A	179	PRO	5.0
3	C	74	LEU	5.0
1	A	384	ILE	5.0
2	B	98	GLU	4.9
1	E	305	GLN	4.9
2	B	187	ALA	4.9
2	B	271	VAL	4.9

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Mol	Chain	Res	Type	RSRZ
1	E	172	LEU	4.9
3	G	52	THR	4.9
2	B	41	ILE	4.8
3	G	181	TYR	4.8
4	H	80	PHE	4.8
1	E	247	ALA	4.8
1	A	172	LEU	4.8
2	B	270	ALA	4.7
3	G	39	SER	4.7
2	B	17	GLN	4.7
2	B	34	VAL	4.6
1	E	615	LEU	4.6
2	B	277	THR	4.6
3	G	55	GLY	4.6
1	E	392	VAL	4.6
1	A	579	LYS	4.6
1	A	58	ILE	4.6
1	A	405	GLN	4.6
1	A	430	ALA	4.6
1	E	514	TYR	4.6
4	D	78	THR	4.6
1	E	29	ALA	4.5
1	A	469	PHE	4.5
1	E	332	PHE	4.5
1	A	388	VAL	4.5
1	E	244	VAL	4.5
1	E	269	MET	4.5
4	H	71	GLY	4.4
2	F	159	GLY	4.4
3	G	94	LYS	4.4
3	C	106	LEU	4.4
1	E	622	MET	4.4
1	E	248	LEU	4.4
2	B	16	GLN	4.4
1	A	619	LEU	4.3
3	C	81	CYS	4.3
2	B	165	MET	4.3
2	F	168	MET	4.3
2	F	253	GLY	4.3
3	C	61	LEU	4.3
1	A	88	SER	4.3
1	E	584	SER	4.3

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Mol	Chain	Res	Type	RSRZ
1	A	137	LEU	4.3
1	A	407	HIS	4.3
3	C	28	TRP	4.2
3	G	146	THR	4.2
2	F	158	LEU	4.2
1	E	95	TYR	4.2
3	C	180	LEU	4.2
2	B	276	LYS	4.2
3	C	181	TYR	4.2
1	E	210	LYS	4.2
3	C	62	PHE	4.2
1	E	583	PRO	4.1
3	G	90	ARG	4.1
1	E	510	CYS	4.1
1	A	61	ILE	4.1
3	G	35	ILE	4.1
1	E	105	ILE	4.1
1	A	47	TRP	4.1
3	G	54	GLY	4.1
1	E	212	ARG	4.1
1	E	412	LEU	4.1
3	C	80	THR	4.1
1	A	14	PRO	4.1
1	A	386	ASN	4.0
1	E	630	ASP	4.0
1	A	359	ILE	4.0
1	A	275	PHE	4.0
1	A	381	LEU	4.0
2	F	109	TYR	4.0
2	B	50	LYS	4.0
1	A	96	ASN	4.0
1	A	362	TRP	4.0
2	B	36	PHE	4.0
3	C	149	THR	4.0
3	G	32	GLY	4.0
1	E	631	ASN	4.0
2	B	259	ALA	4.0
4	D	90	LEU	4.0
2	B	154	TRP	3.9
2	F	141	LEU	3.9
1	A	92	SER	3.9
2	F	275	SER	3.9

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Mol	Chain	Res	Type	RSRZ
3	C	71	THR	3.9
2	F	161	GLN	3.9
1	A	480	TYR	3.9
1	A	318	ALA	3.9
1	E	33	VAL	3.9
1	A	356	GLY	3.9
1	A	507	LEU	3.9
1	A	321	VAL	3.8
2	F	190	THR	3.8
1	A	454	TRP	3.8
2	B	152	SER	3.8
1	A	385	PRO	3.8
1	E	314	GLY	3.8
1	A	578	LYS	3.8
1	A	167	THR	3.8
1	E	478	ARG	3.7
1	E	507	LEU	3.7
2	B	235	GLU	3.7
1	A	166	TRP	3.7
1	E	566	GLU	3.7
2	B	166	ALA	3.7
1	E	504	VAL	3.7
2	B	279	PRO	3.6
2	F	115	TRP	3.6
2	F	20	LEU	3.6
2	F	78	ILE	3.6
1	E	67	MET	3.6
4	D	88	ILE	3.6
1	A	618	VAL	3.6
1	A	15	LEU	3.6
1	E	633	TYR	3.6
2	F	165	MET	3.6
1	E	166	TRP	3.6
3	G	114	GLU	3.6
2	F	108	VAL	3.5
1	A	269	MET	3.5
1	A	486	ASP	3.5
2	B	195	ALA	3.5
2	F	44	VAL	3.5
3	G	125	GLY	3.5
1	A	225	THR	3.5
1	A	91	ASP	3.5

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Mol	Chain	Res	Type	RSRZ
3	C	105	LEU	3.5
3	G	189	TRP	3.5
1	A	622	MET	3.5
4	H	67	GLU	3.5
3	G	147	HIS	3.5
1	A	510	CYS	3.5
2	B	96	ALA	3.5
2	B	285	LYS	3.5
4	D	95	ILE	3.5
2	F	149	SER	3.4
3	C	63	GLU	3.4
2	B	131	TYR	3.4
3	G	36	VAL	3.4
1	E	161	SER	3.4
1	A	435	TRP	3.4
1	E	178	SER	3.4
1	A	296	GLU	3.4
3	G	171	THR	3.4
1	E	34	LEU	3.4
1	E	530	GLY	3.4
2	B	192	GLU	3.4
1	A	164	ALA	3.4
1	A	380	ALA	3.4
1	E	472	LEU	3.4
1	A	546	HIS	3.4
2	F	274	HIS	3.4
2	F	250	VAL	3.4
4	H	79	LEU	3.4
2	F	142	PHE	3.3
1	A	138	ASN	3.3
2	F	150	MET	3.3
1	E	194	GLY	3.3
1	A	476	PRO	3.3
1	E	62	ILE	3.3
2	B	257	GLU	3.3
1	E	35	THR	3.3
2	F	237	VAL	3.3
1	E	331	PHE	3.3
2	F	269	GLN	3.3
1	E	411	PHE	3.3
1	A	477	ARG	3.3
4	D	72	THR	3.3

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Mol	Chain	Res	Type	RSRZ
1	A	583	PRO	3.3
3	G	134	TRP	3.3
1	E	263	GLU	3.3
1	A	174	SER	3.2
1	E	582	MET	3.2
1	A	276	TRP	3.2
1	A	387	PHE	3.2
1	A	474	GLY	3.2
1	E	423	GLY	3.2
4	H	81	GLY	3.2
1	E	240	PRO	3.2
1	E	268	PRO	3.2
2	F	259	ALA	3.2
3	G	127	ALA	3.2
1	E	103	GLY	3.2
1	E	567	GLU	3.2
1	A	238	ALA	3.2
2	B	273	PRO	3.2
3	G	138	PHE	3.2
1	E	107	ILE	3.2
1	E	235	ILE	3.2
2	B	225	LYS	3.2
2	B	234	PRO	3.2
1	A	379	TRP	3.2
4	D	92	SER	3.2
2	F	236	ASN	3.2
3	G	145	GLY	3.2
3	G	172	SER	3.1
1	A	62	ILE	3.1
2	F	34	VAL	3.1
1	A	264	ALA	3.1
1	A	409	THR	3.1
2	B	266	LEU	3.1
1	E	196	GLY	3.1
1	E	70	ARG	3.1
1	E	570	GLU	3.1
2	F	189	PHE	3.1
4	D	70	ASN	3.1
2	F	193	HIS	3.1
1	E	352	SER	3.1
3	C	172	SER	3.1
1	A	139	ASN	3.1

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Mol	Chain	Res	Type	RSRZ
2	B	186	ASN	3.1
1	E	393	THR	3.1
1	E	486	ASP	3.1
2	F	172	GLN	3.1
2	F	251	ASP	3.1
3	C	77	SER	3.0
1	A	93	ASN	3.0
3	C	98	ILE	3.0
1	E	442	HIS	3.0
1	E	90	LEU	3.0
2	F	154	TRP	3.0
3	G	57	LEU	3.0
1	E	174	SER	3.0
1	A	85	PRO	3.0
1	A	434	PHE	3.0
1	A	136	TYR	3.0
1	A	580	ILE	3.0
1	E	479	ILE	3.0
1	E	92	SER	3.0
1	E	372	SER	3.0
2	B	150	MET	3.0
2	B	156	PRO	3.0
1	E	440	PHE	3.0
1	A	442	HIS	3.0
3	C	146	THR	3.0
1	A	327	TRP	3.0
1	A	176	ASP	3.0
2	F	28	MET	3.0
2	B	178	LYS	3.0
2	F	153	LEU	3.0
3	C	70	MET	3.0
2	B	93	LEU	2.9
2	F	272	SER	2.9
1	A	57	GLY	2.9
3	G	50	ASN	2.9
3	G	40	THR	2.9
2	F	22	LEU	2.9
1	E	128	GLY	2.9
2	F	160	GLY	2.9
1	E	421	ILE	2.9
2	B	31	ILE	2.9
3	C	153	PHE	2.9

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Mol	Chain	Res	Type	RSRZ
1	E	626	SER	2.9
2	B	162	LYS	2.9
1	E	609	TRP	2.9
1	E	157	VAL	2.9
2	B	70	VAL	2.9
1	A	177	MET	2.9
3	G	142	GLY	2.9
1	A	453	PHE	2.9
2	B	37	VAL	2.9
3	C	171	THR	2.9
2	F	257	GLU	2.9
1	A	173	ALA	2.9
3	G	82	GLY	2.9
1	E	15	LEU	2.9
1	E	255	PHE	2.9
1	E	296	GLU	2.9
1	E	544	PRO	2.8
2	F	134	ILE	2.8
4	D	61	MET	2.8
1	E	416	PHE	2.8
1	E	64	ALA	2.8
3	G	151	GLY	2.8
1	E	480	TYR	2.8
2	F	252	HIS	2.8
1	E	106	MET	2.8
2	F	192	GLU	2.8
4	H	53	ILE	2.8
2	F	258	TYR	2.8
1	E	209	LEU	2.8
3	C	53	ALA	2.8
1	E	293	ILE	2.8
2	F	260	MET	2.8
1	A	535	LEU	2.8
1	E	32	PHE	2.8
1	E	169	TYR	2.7
1	A	298	ILE	2.7
1	E	537	TRP	2.7
2	B	42	ILE	2.7
2	F	194	PHE	2.7
1	E	175	ASN	2.7
3	G	118	PHE	2.7
1	E	104	THR	2.7

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Mol	Chain	Res	Type	RSRZ
1	E	481	THR	2.7
3	C	34	GLU	2.7
3	C	100	THR	2.7
1	A	382	ALA	2.7
1	E	65	VAL	2.7
1	E	96	ASN	2.7
2	F	186	ASN	2.7
2	F	282	ASN	2.7
1	E	616	ILE	2.7
2	F	31	ILE	2.7
3	C	73	LEU	2.7
1	E	465	PHE	2.7
2	F	285	LYS	2.7
1	E	476	PRO	2.7
1	E	586	SER	2.7
2	B	262	ALA	2.7
2	F	16	GLN	2.7
2	F	197	GLN	2.7
1	E	56	LEU	2.7
1	E	485	ASN	2.7
2	F	233	LEU	2.7
1	E	224	PHE	2.7
3	G	21	ARG	2.7
1	A	555	VAL	2.7
3	G	148	VAL	2.7
1	E	264	ALA	2.7
3	G	130	THR	2.7
1	A	616	ILE	2.7
2	F	140	ILE	2.7
3	C	27	PHE	2.7
1	E	262	LEU	2.6
2	F	144	ILE	2.6
1	E	477	ARG	2.6
1	A	428	CYS	2.6
1	E	613	VAL	2.6
3	C	96	VAL	2.6
3	G	119	VAL	2.6
1	A	473	GLN	2.6
3	G	44	THR	2.6
3	G	100	THR	2.6
1	A	342	SER	2.6
1	A	277	ILE	2.6

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Mol	Chain	Res	Type	RSRZ
1	E	31	ILE	2.6
4	H	95	ILE	2.6
2	B	161	GLN	2.6
2	B	261	GLU	2.6
2	F	157	GLN	2.6
3	G	197	TYR	2.6
1	A	311	ALA	2.6
2	B	46	TYR	2.6
1	E	93	ASN	2.6
1	A	368	LYS	2.6
1	E	30	ILE	2.6
2	F	276	LYS	2.6
1	E	625	ARG	2.6
2	B	33	GLY	2.6
2	B	167	GLY	2.6
1	A	282	GLU	2.6
1	E	222	PRO	2.6
1	A	481	THR	2.6
1	E	482	TYR	2.6
1	A	392	VAL	2.6
1	E	403	ASP	2.6
3	C	101	ILE	2.6
1	A	268	PRO	2.5
1	A	354	PRO	2.5
1	E	419	VAL	2.5
2	B	201	VAL	2.5
1	E	22	SER	2.5
2	F	268	TYR	2.5
1	E	420	LEU	2.5
3	C	127	ALA	2.5
2	B	18	SER	2.5
1	E	115	LEU	2.5
1	A	235	ILE	2.5
3	C	115	ILE	2.5
1	A	87	ASN	2.5
1	A	169	TYR	2.5
1	E	289	PRO	2.5
1	E	321	VAL	2.5
2	B	260	MET	2.5
1	A	609	TRP	2.5
3	C	112	GLY	2.5
1	A	352	SER	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	491	LEU	2.5
3	G	96	VAL	2.5
1	A	48	ILE	2.5
1	E	28	ILE	2.5
4	D	66	THR	2.5
2	F	264	LYS	2.5
1	A	322	LEU	2.5
2	B	19	ASP	2.5
2	F	273	PRO	2.5
2	B	282	ASN	2.5
1	A	294	PHE	2.4
1	A	350	ALA	2.4
4	H	57	LEU	2.4
1	E	61	ILE	2.4
1	E	53	HIS	2.4
1	E	163	ASN	2.4
2	B	252	HIS	2.4
1	A	237	PHE	2.4
2	B	197	GLN	2.4
1	E	243	THR	2.4
3	G	93	LEU	2.4
1	A	205	MET	2.4
1	E	110	MET	2.4
1	E	415	HIS	2.4
1	E	350	ALA	2.4
4	H	55	ALA	2.4
1	E	213	THR	2.4
1	E	325	LEU	2.4
1	A	606	GLU	2.4
1	A	24	ALA	2.4
1	E	102	HIS	2.4
2	F	100	THR	2.4
1	A	132	VAL	2.4
2	B	20	LEU	2.4
2	B	23	LEU	2.4
2	F	174	LEU	2.4
3	G	37	LEU	2.4
1	A	484	PRO	2.4
1	E	281	PRO	2.4
1	A	63	SER	2.4
1	A	323	SER	2.4
2	B	269	GLN	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	313	VAL	2.3
2	F	86	THR	2.3
3	C	143	THR	2.3
1	E	276	TRP	2.3
3	C	92	SER	2.3
3	G	139	VAL	2.3
1	A	54	LYS	2.3
1	E	182	GLY	2.3
2	B	258	TYR	2.3
1	A	240	PRO	2.3
1	A	281	PRO	2.3
1	E	237	PHE	2.3
2	B	39	PHE	2.3
4	H	83	PHE	2.3
1	E	303	ARG	2.3
2	F	263	ARG	2.3
3	G	182	TRP	2.3
2	B	256	ALA	2.3
1	E	223	MET	2.3
1	A	75	GLY	2.3
2	B	265	ARG	2.3
1	A	42	TRP	2.3
1	A	353	ILE	2.3
2	B	213	VAL	2.3
2	F	32	VAL	2.3
2	B	38	LEU	2.3
1	A	121	VAL	2.3
2	F	164	ALA	2.3
1	A	433	ILE	2.2
2	F	171	ASP	2.2
1	A	208	ILE	2.2
2	F	234	PRO	2.2
4	D	89	VAL	2.2
1	A	449	GLY	2.2
1	A	558	GLN	2.2
3	C	107	GLY	2.2
2	F	162	LYS	2.2
2	F	187	ALA	2.2
3	C	168	THR	2.2
1	A	537	TRP	2.2
1	E	461	ASN	2.2
1	E	376	PRO	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	325	LEU	2.2
1	E	381	LEU	2.2
1	A	126	GLN	2.2
1	E	298	ILE	2.2
3	C	52	THR	2.2
1	A	461	ASN	2.2
1	E	273	ASN	2.2
2	F	105	PRO	2.2
3	G	56	VAL	2.2
1	E	515	TYR	2.2
3	C	88	MET	2.2
1	A	553	PRO	2.2
3	G	103	THR	2.2
1	A	306	LEU	2.2
2	B	48	ASP	2.2
3	G	74	LEU	2.2
1	A	263	GLU	2.2
1	A	560	ALA	2.2
2	B	76	ILE	2.2
2	F	110	ALA	2.2
2	B	32	VAL	2.2
1	A	512	ASN	2.2
1	A	505	GLY	2.1
1	A	447	ARG	2.1
2	F	283	VAL	2.1
1	A	557	SER	2.1
2	B	94	GLU	2.1
1	E	369	GLY	2.1
1	E	116	ILE	2.1
1	E	277	ILE	2.1
3	G	170	GLN	2.1
4	D	58	GLN	2.1
1	A	171	PRO	2.1
2	F	198	GLU	2.1
2	F	278	ASP	2.1
1	E	587	GLY	2.1
2	F	26	GLY	2.1
3	G	24	ILE	2.1
1	E	434	PHE	2.1
1	E	500	PHE	2.1
1	E	546	HIS	2.1
2	B	157	GLN	2.1

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Mol	Chain	Res	Type	RSRZ
3	C	163	LYS	2.1
3	G	99	TRP	2.1
1	E	130	ARG	2.1
1	E	238	ALA	2.1
1	E	402	ALA	2.1
4	H	50	PHE	2.1
1	A	443	LYS	2.1
1	A	222	PRO	2.1
3	C	189	TRP	2.1
2	F	90	ILE	2.1
3	C	150	ILE	2.1
1	A	482	TYR	2.1
3	C	82	GLY	2.1
4	H	68	SER	2.1
1	A	249	LEU	2.1
1	E	131	ASP	2.1
2	F	40	THR	2.1
1	E	18	GLY	2.1
1	A	262	LEU	2.1
1	A	307	PHE	2.1
1	E	611	GLY	2.1
3	C	125	GLY	2.1
1	A	378	LEU	2.1
1	E	565	LYS	2.1
1	E	531	VAL	2.1
2	F	24	SER	2.1
2	B	49	ARG	2.0
2	F	185	ARG	2.0
1	E	195	ILE	2.0
1	E	317	ILE	2.0
2	F	25	ILE	2.0
3	C	130	THR	2.0
1	A	412	LEU	2.0
1	E	272	ALA	2.0
2	F	249	TYR	2.0
3	C	50	ASN	2.0
4	D	64	HIS	2.0
1	A	334	MET	2.0
3	C	90	ARG	2.0
3	G	27	PHE	2.0
2	B	65	THR	2.0
1	E	80	ALA	2.0

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Mol	Chain	Res	Type	RSRZ
1	E	388	VAL	2.0
2	F	188	ASN	2.0
1	A	366	MET	2.0
2	B	246	HIS	2.0
1	A	455	ILE	2.0
2	B	45	LYS	2.0
1	A	291	PHE	2.0
1	A	488	TRP	2.0
1	E	620	LEU	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 ⓘ

There are no oligosaccharides in this entry.

6.4 Ligands ⓘ

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(Å²)	Q<0.9
7	HQO	A	1004	13/19	0.76	0.15	95,102,107,110	0
7	HQO	E	1004	13/19	0.87	0.15	102,107,111,114	0
5	HEA	A	1002	60/60	0.89	0.31	96,118,163,168	0
5	HEA	E	1002	60/60	0.90	0.27	92,117,141,142	0
5	HEA	A	1001	60/60	0.90	0.25	91,112,132,134	0
5	HEA	E	1001	60/60	0.90	0.27	88,109,131,135	0
6	CU	E	1003	1/1	0.92	0.12	104,104,104,104	0
6	CU	A	1003	1/1	0.93	0.11	109,109,109,109	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.
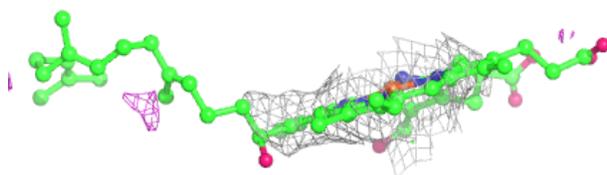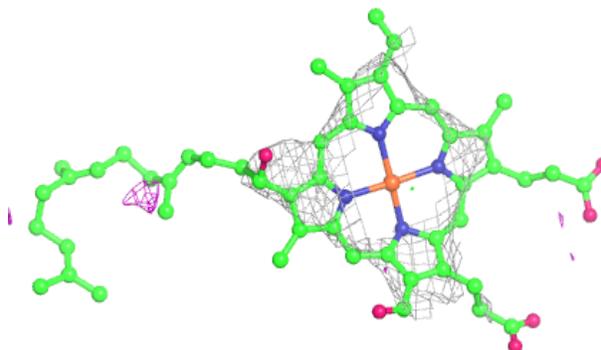
Electron density around HQO A 1004:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
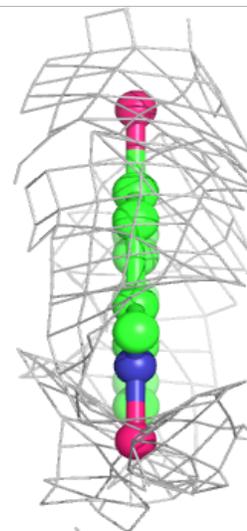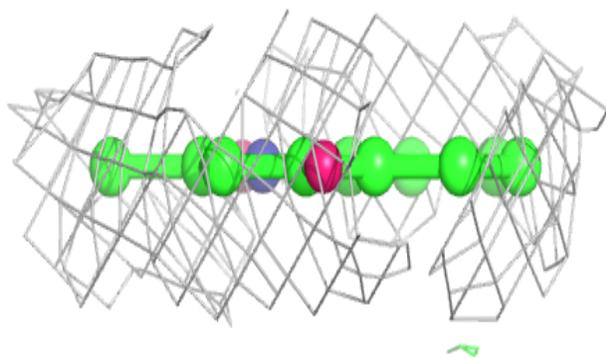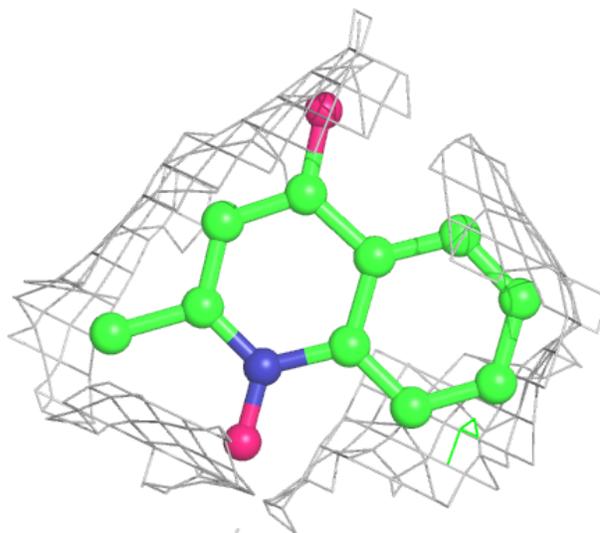
Electron density around HQO E 1004:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
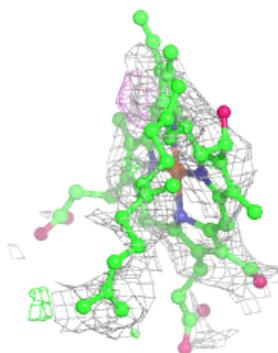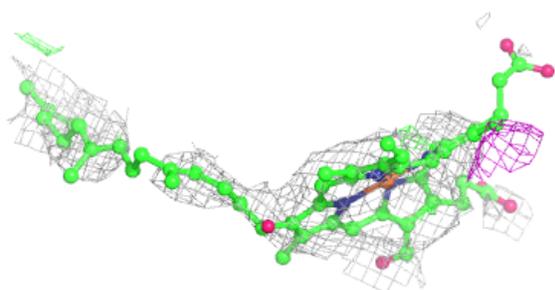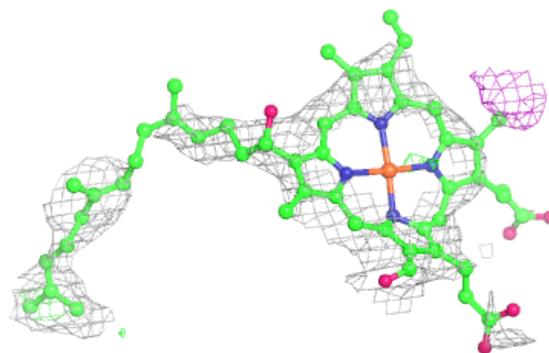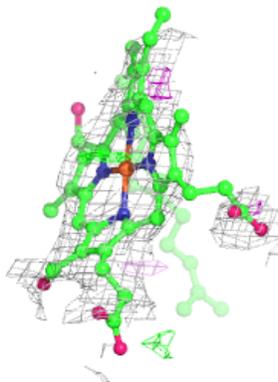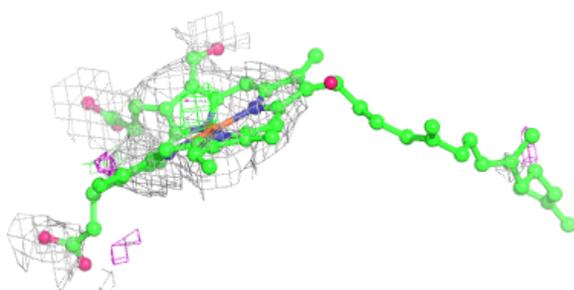and green (positive)
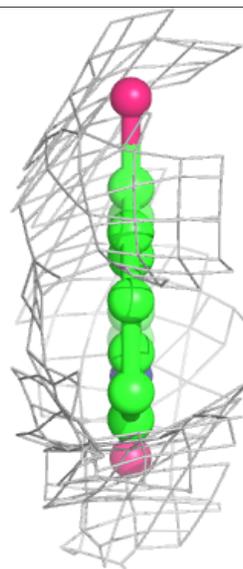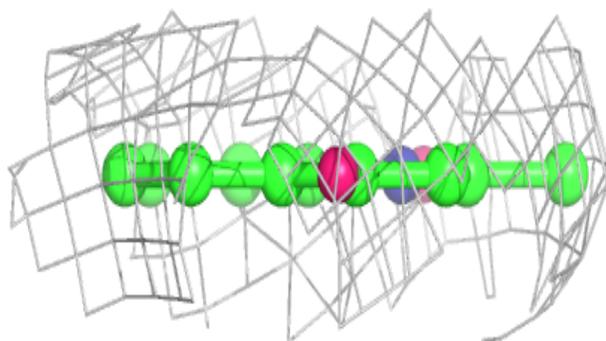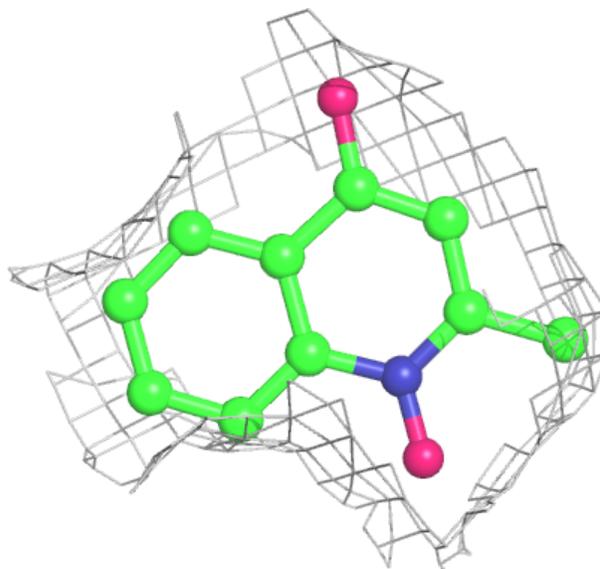
Electron density around HEA A 1002:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
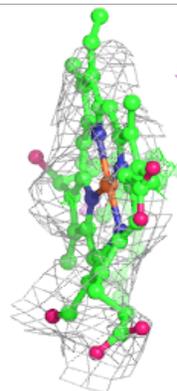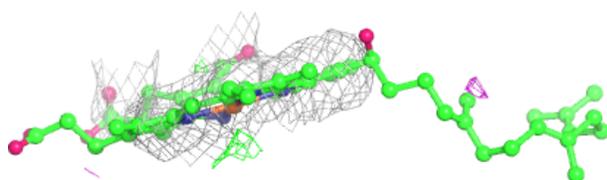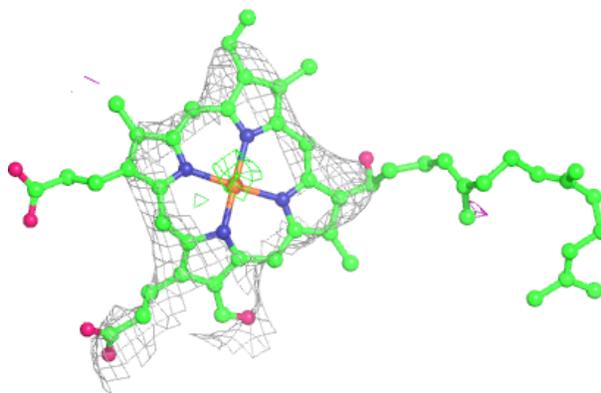
Electron density around HEA E 1002:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
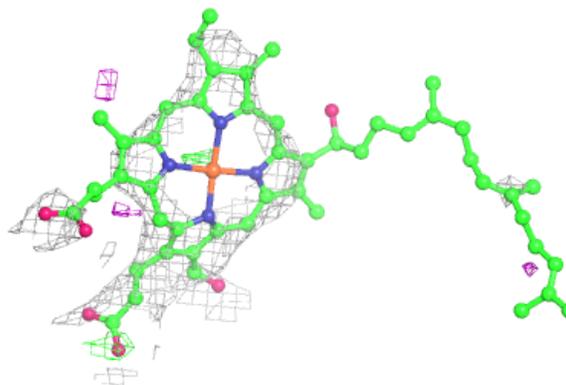mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
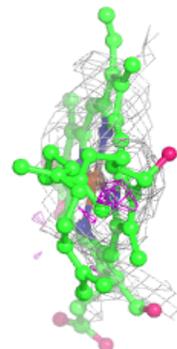
Electron density around HEA A 1001:

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

Electron density around HEA E 1001:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.