



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 15, 2024 – 05:30 PM EDT

PDB ID : 4U8Y  
Title : Coupling of remote alternating-access transport mechanisms for protons and substrates in the multidrug efflux pump AcrB  
Authors : Pos, K.M.  
Deposited on : 2014-08-05  
Resolution : 2.10 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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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) : 1.13  
EDS : 2.37.1  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.37.1

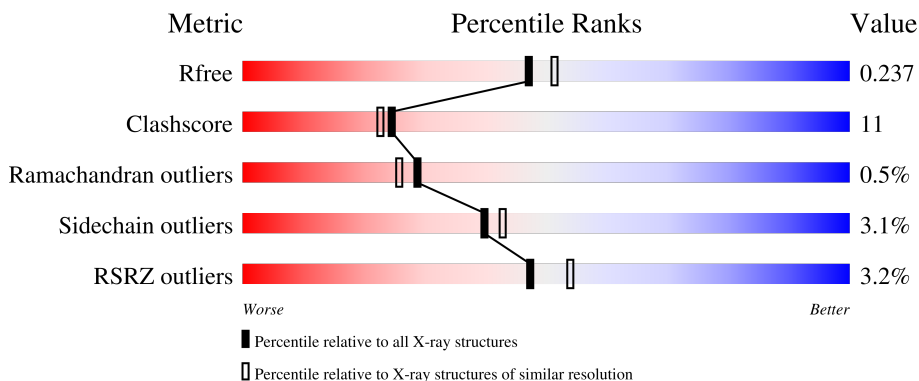
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.10 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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

Mol	Chain	Length	Quality of chain
1	A	1057	 5% (red), 75% (green), 22% (yellow), .. (orange)
1	B	1057	 2% (red), 78% (green), 18% (yellow), .. (orange)
1	C	1057	 % (red), 80% (green), 17% (yellow), .. (orange)
2	D	169	 % (red), 78% (green), 14% (yellow), 8% (grey)
2	E	169	 13% (red), 70% (green), 19% (yellow), 10% (grey)

## 2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 28268 atoms, of which 27 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 Multidrug efflux pump subunit AcrB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1044	Total 7943	C 5106	N 1316	O 1477	S 44	0	0	0
1	B	1033	Total 7849	C 5052	N 1296	O 1457	S 44	0	0	0
1	C	1033	Total 7849	C 5052	N 1296	O 1457	S 44	0	0	0

There are 27 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	408	ASN	ASP	engineered mutation	UNP P31224
A	1050	LEU	-	expression tag	UNP P31224
A	1051	GLU	-	expression tag	UNP P31224
A	1052	HIS	-	expression tag	UNP P31224
A	1053	HIS	-	expression tag	UNP P31224
A	1054	HIS	-	expression tag	UNP P31224
A	1055	HIS	-	expression tag	UNP P31224
A	1056	HIS	-	expression tag	UNP P31224
A	1057	HIS	-	expression tag	UNP P31224
B	408	ASN	ASP	engineered mutation	UNP P31224
B	1050	LEU	-	expression tag	UNP P31224
B	1051	GLU	-	expression tag	UNP P31224
B	1052	HIS	-	expression tag	UNP P31224
B	1053	HIS	-	expression tag	UNP P31224
B	1054	HIS	-	expression tag	UNP P31224
B	1055	HIS	-	expression tag	UNP P31224
B	1056	HIS	-	expression tag	UNP P31224
B	1057	HIS	-	expression tag	UNP P31224
C	408	ASN	ASP	engineered mutation	UNP P31224
C	1050	LEU	-	expression tag	UNP P31224
C	1051	GLU	-	expression tag	UNP P31224
C	1052	HIS	-	expression tag	UNP P31224
C	1053	HIS	-	expression tag	UNP P31224

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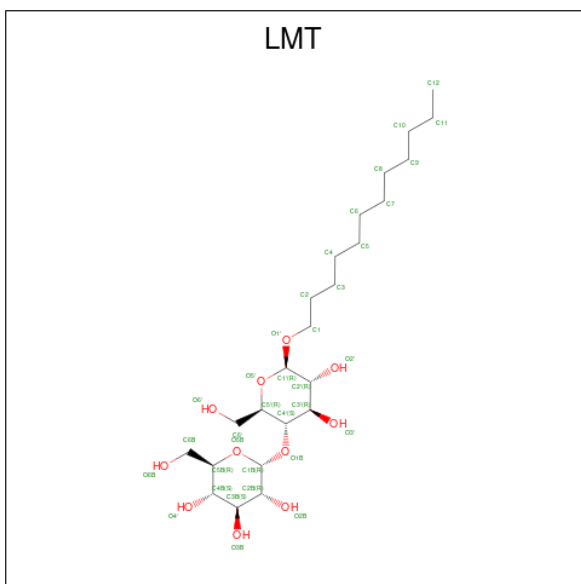
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Chain	Residue	Modelled	Actual	Comment	Reference
C	1054	HIS	-	expression tag	UNP P31224
C	1055	HIS	-	expression tag	UNP P31224
C	1056	HIS	-	expression tag	UNP P31224
C	1057	HIS	-	expression tag	UNP P31224

- Molecule 2 is a protein called DARPin.

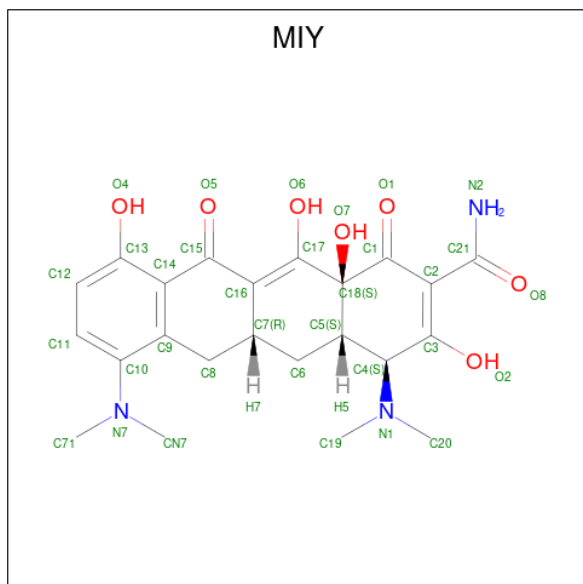
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	D	156	1177	741	206	229	1	0	0	0
2	E	152	1151	726	202	222	1	0	0	0

- Molecule 3 is DODECYL-BETA-D-MALTOSE (three-letter code: LMT) (formula:  $C_{24}H_{46}O_{11}$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
3	A	1	35	24	11	0	0
3	A	1	32	21	11	0	0
3	B	1	26	15	11	0	0
3	C	1	35	24	11	0	0

- Molecule 4 is (4S,4AS,5AR,12AS)-4,7-BIS(DIMETHYLAMINO)-3,10,12,12A-TETRAHYDROXY-1,11-DIOXO-1,4,4A,5,5A,6,11,12A-OCTAHYDROTETRACENE-2-CARBOXAMIDE (three-letter code: MIY) (formula: C<sub>23</sub>H<sub>27</sub>N<sub>3</sub>O<sub>7</sub>).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
4	B	1	60	23	27	3	7	0	0

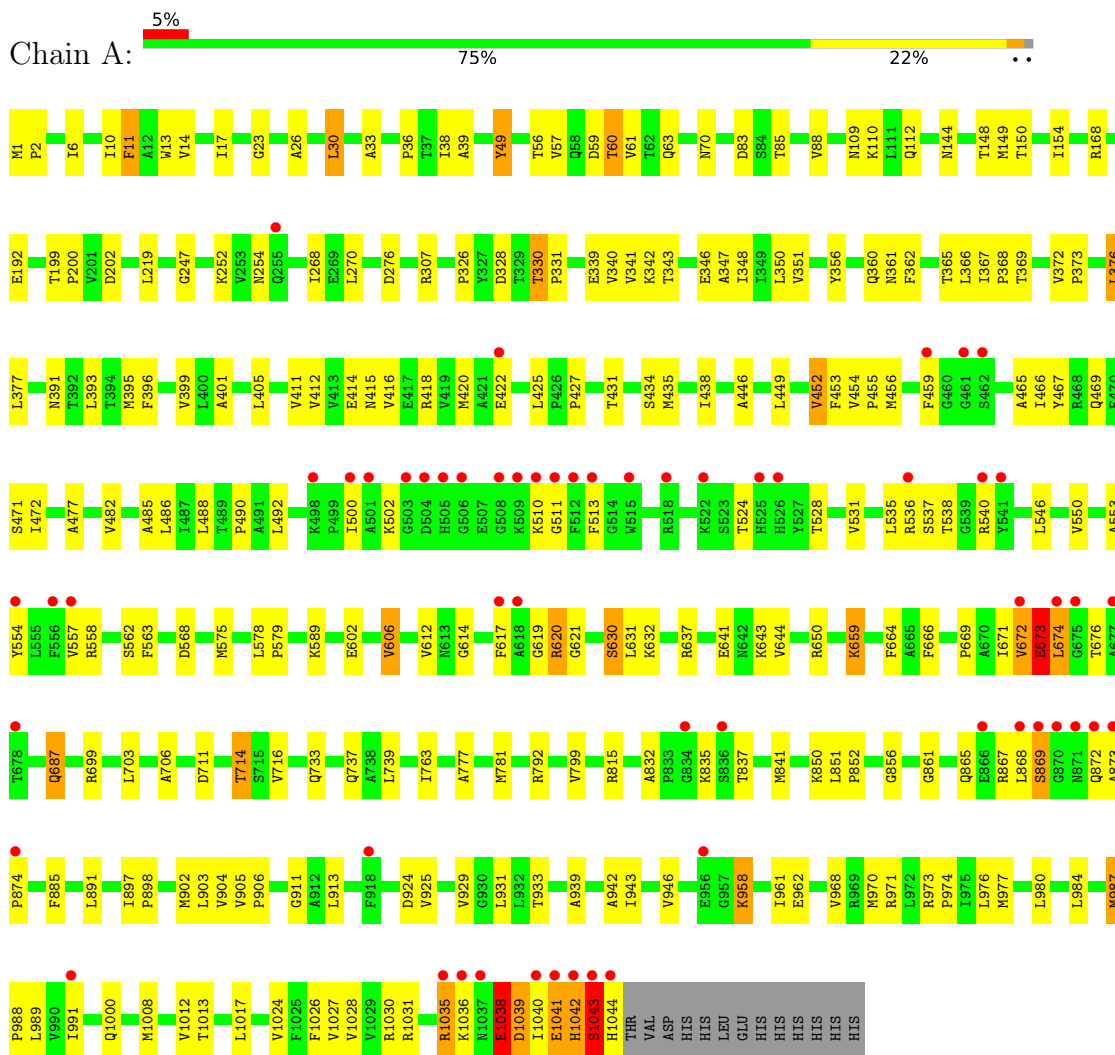
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	645	Total	O	0	0
			645	645		
5	B	566	Total	O	0	0
			566	566		
5	C	723	Total	O	0	0
			723	723		
5	D	103	Total	O	0	0
			103	103		
5	E	74	Total	O	0	0
			74	74		

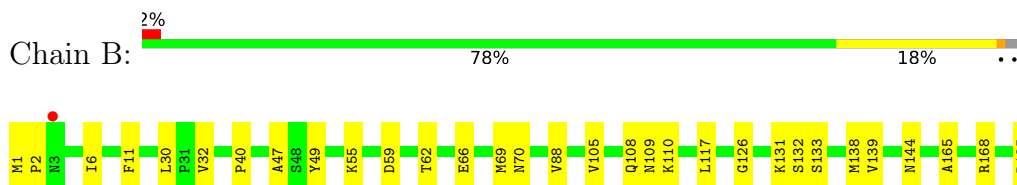
### 3 Residue-property plots [i](#)

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

- Molecule 1: Multidrug efflux pump subunit AcrB



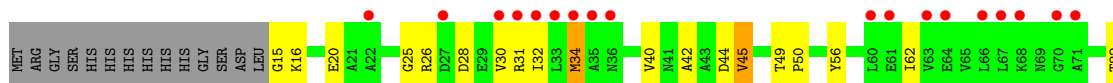
- Molecule 1: Multidrug efflux pump subunit AcrB







● Molecule 2: DARPin





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	145.88Å 161.16Å 245.29Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.80 – 2.10 48.80 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.1 (48.80-2.10) 99.2 (48.80-2.10)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.48 (at 2.10Å)	Xtrriage
Refinement program	PHENIX (phenix.refine: 1.9_1692)	Depositor
R, $R_{free}$	0.193 , 0.236 0.196 , 0.237	Depositor DCC
$R_{free}$ test set	16611 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	28.7	Xtrriage
Anisotropy	0.393	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 64.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	28268	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	41.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.91% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: LMT, MIY

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	0.39	0/8095	0.52	0/10991
1	B	0.38	0/7999	0.52	0/10863
1	C	0.43	0/7999	0.55	2/10863 (0.0%)
2	D	0.34	0/1196	0.48	0/1626
2	E	0.31	0/1170	0.46	0/1591
All	All	0.39	0/26459	0.53	2/35934 (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
1	B	0	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	867	ARG	NE-CZ-NH1	5.60	123.10	120.30
1	C	867	ARG	NE-CZ-NH2	-5.53	117.54	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	689	GLY	Peptide

## 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	7943	0	8086	208	0
1	B	7849	0	8003	168	0
1	C	7849	0	8003	166	0
2	D	1177	0	1159	14	0
2	E	1151	0	1136	29	0
3	A	67	0	83	5	0
3	B	26	0	25	5	0
3	C	35	0	46	2	0
4	B	33	27	25	0	0
5	A	645	0	0	15	0
5	B	566	0	0	18	0
5	C	723	0	0	21	0
5	D	103	0	0	3	0
5	E	74	0	0	3	0
All	All	28241	27	26566	575	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 11.

All (575) 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:669:PRO:HD2	1:A:672:VAL:HG12	1.45	0.96
2:E:34:MET:HE3	2:E:40:VAL:HG12	1.48	0.95
1:B:445:ILE:HD13	1:B:940:LYS:HG3	1.51	0.93
1:C:527:TYR:CE2	1:C:968:VAL:HG13	2.07	0.89
3:B:1101:LMT:H5B	3:B:1101:LMT:H6E	1.52	0.89
1:A:672:VAL:HG23	1:A:673:GLU:H	1.38	0.87
1:B:867:ARG:HG2	1:B:868:LEU:HD12	1.57	0.86
2:E:34:MET:CE	2:E:40:VAL:HG12	2.06	0.85
1:C:423:GLU:HB3	1:C:425:LEU:HD13	1.56	0.85
1:B:414:GLU:HG3	1:B:977:MET:HE2	1.57	0.85
1:A:568:ASP:OD2	1:A:637:ARG:NH2	2.11	0.84
2:E:15:GLY:N	5:E:214:HOH:O	2.12	0.83
1:A:418:ARG:HE	1:A:970:MET:HE2	1.45	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:641:GLU:O	1:A:650:ARG:NH2	2.13	0.82
1:A:602:GLU:OE1	1:A:650:ARG:NH1	2.12	0.82
1:A:621:GLY:N	5:A:1443:HOH:O	2.12	0.81
1:C:867:ARG:HG2	1:C:867:ARG:HH11	1.45	0.81
1:C:70:ASN:O	1:C:110:LYS:NZ	2.12	0.81
1:A:276:ASP:OD2	1:A:620:ARG:NH1	2.13	0.80
1:C:447:MET:HE3	1:C:891:LEU:HD22	1.64	0.80
1:B:968:VAL:HG21	1:B:1023:PRO:HG3	1.63	0.80
1:A:1038:GLU:O	1:A:1040:ILE:N	2.15	0.80
1:B:744:ASN:O	1:B:748:THR:HG23	1.82	0.79
1:B:987:MET:HG2	1:B:1008:MET:HE1	1.63	0.79
1:B:714:THR:HG23	1:B:830:GLN:HG3	1.65	0.79
1:C:671:ILE:H	1:C:862:MET:HE1	1.46	0.78
1:A:1030:ARG:HH22	1:A:1035:ARG:HH21	1.29	0.78
1:B:428:LYS:HE2	1:B:432:ARG:HH12	1.46	0.78
1:B:1011:MET:O	1:B:1015:THR:HG23	1.82	0.78
1:A:57:VAL:CG1	1:A:88:VAL:HG22	2.15	0.77
1:B:1:MET:HB3	1:B:2:PRO:HD3	1.66	0.76
1:C:324:VAL:HG12	1:C:326:PRO:HD3	1.67	0.74
1:C:428:LYS:HE2	1:C:432:ARG:NH2	2.03	0.74
1:A:110:LYS:NZ	1:C:130:GLU:OE1	2.20	0.73
1:B:671:ILE:HG22	1:B:673:GLU:HG2	1.71	0.73
1:C:376:LEU:HD11	1:C:402:ILE:HD11	1.70	0.73
1:A:669:PRO:HD2	1:A:672:VAL:CG1	2.19	0.72
1:A:356:TYR:HA	1:A:365:THR:HG21	1.71	0.72
1:C:369:THR:O	1:C:372:VAL:HG13	1.90	0.72
1:A:449:LEU:O	1:A:452:VAL:HG13	1.90	0.71
1:C:1011:MET:HE3	1:C:1011:MET:HA	1.73	0.71
1:B:527:TYR:CE2	1:B:968:VAL:HG13	2.25	0.71
1:C:875:SER:O	1:C:879:ILE:HG22	1.91	0.71
1:B:1001:ASN:O	1:B:1005:THR:HG23	1.91	0.70
1:C:527:TYR:HE2	1:C:968:VAL:HG13	1.56	0.70
1:C:662:MET:HG2	5:C:1877:HOH:O	1.92	0.70
1:A:399:VAL:HG11	1:A:989:LEU:HD11	1.73	0.70
1:C:32:VAL:CG1	1:C:337:ILE:HD13	2.22	0.70
1:C:372:VAL:HG22	1:C:373:PRO:HD3	1.74	0.69
1:B:612:VAL:HB	1:B:626:ILE:HG22	1.74	0.69
1:C:671:ILE:N	1:C:862:MET:HE1	2.08	0.69
1:A:202:ASP:OD2	1:A:792:ARG:NH2	2.26	0.69
1:A:341:VAL:HG21	3:A:1101:LMT:H41	1.74	0.69
1:B:428:LYS:HE2	1:B:432:ARG:NH1	2.08	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:456:MET:HG2	1:B:467:TYR:HB3	1.74	0.68
1:A:401:ALA:O	1:A:405:LEU:HG	1.93	0.68
1:A:328:ASP:OD1	1:A:330:THR:HB	1.94	0.67
1:A:536:ARG:NH1	5:A:1797:HOH:O	2.26	0.67
1:B:348:ILE:HG12	1:B:372:VAL:HG11	1.75	0.67
1:A:672:VAL:HG23	1:A:673:GLU:N	2.09	0.67
1:B:1022:VAL:HG22	1:B:1023:PRO:HD3	1.77	0.67
1:C:259:ARG:NH2	5:C:1298:HOH:O	2.27	0.67
1:B:420:MET:HE1	1:B:427:PRO:HG3	1.77	0.67
1:C:47:ALA:HB3	1:C:88:VAL:HG13	1.76	0.67
1:A:367:ILE:HB	1:A:368:PRO:HD3	1.78	0.66
1:C:34:GLN:NE2	5:C:1574:HOH:O	2.19	0.66
1:C:85:THR:HG22	1:C:87:THR:HG22	1.75	0.66
1:C:423:GLU:CB	1:C:425:LEU:HD13	2.25	0.66
1:B:748:THR:HG21	5:B:1406:HOH:O	1.93	0.66
1:A:411:VAL:HG22	1:A:971:ARG:HH22	1.61	0.66
1:B:105:VAL:HA	1:B:108:GLN:HG2	1.77	0.66
1:B:372:VAL:HB	1:B:373:PRO:HD3	1.76	0.66
1:A:619:GLY:O	5:A:1828:HOH:O	2.14	0.66
1:B:428:LYS:HE2	1:B:432:ARG:HH22	1.59	0.65
1:B:873:ALA:N	1:B:874:PRO:HD2	2.11	0.65
1:A:671:ILE:HG22	1:A:673:GLU:HG2	1.79	0.65
3:B:1101:LMT:H6E	3:B:1101:LMT:C5B	2.25	0.65
1:C:151:GLN:NE2	1:C:279:ALA:O	2.29	0.65
1:C:1:MET:HB3	1:C:2:PRO:HD3	1.77	0.65
2:E:28:ASP:O	2:E:32:ILE:HG12	1.95	0.65
1:C:85:THR:CG2	1:C:87:THR:HG22	2.27	0.64
1:A:671:ILE:O	1:A:672:VAL:HG22	1.98	0.64
1:A:973:ARG:HB3	1:A:974:PRO:HD3	1.80	0.64
1:B:676:THR:OG1	1:B:679:GLY:HA3	1.98	0.64
1:C:34:GLN:O	1:C:392:THR:HB	1.98	0.64
1:B:919:ARG:HD2	1:B:1005:THR:HG21	1.79	0.63
1:B:987:MET:HA	1:B:1008:MET:HE1	1.81	0.63
1:A:202:ASP:CG	1:A:792:ARG:HH22	2.01	0.63
1:C:586:ARG:HD3	5:C:1316:HOH:O	1.99	0.63
1:A:510:LYS:N	1:A:510:LYS:HD2	2.13	0.63
1:C:950:LYS:HE2	1:C:954:ASP:OD2	1.98	0.63
1:A:427:PRO:O	1:A:431:THR:HG23	1.99	0.63
1:C:361:ASN:O	1:C:365:THR:HG22	1.98	0.63
1:B:244:GLU:OE1	5:B:1201:HOH:O	2.16	0.63
1:C:1011:MET:HA	1:C:1011:MET:CE	2.29	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:778:LYS:HE2	1:B:779:TYR:CZ	2.33	0.62
1:C:367:ILE:HB	1:C:368:PRO:HD3	1.80	0.62
1:B:987:MET:HG2	1:B:1008:MET:CE	2.29	0.62
1:C:447:MET:CE	1:C:891:LEU:HD22	2.28	0.62
1:B:456:MET:HE3	1:B:471:SER:HB2	1.82	0.62
1:B:671:ILE:O	1:B:673:GLU:N	2.32	0.62
1:A:873:ALA:HB3	1:A:874:PRO:HD3	1.82	0.62
1:A:1:MET:N	5:A:1444:HOH:O	2.32	0.62
1:A:405:LEU:HD21	1:A:477:ALA:HB1	1.82	0.61
1:A:672:VAL:CG2	1:A:673:GLU:H	2.09	0.61
1:B:420:MET:HE2	5:B:1443:HOH:O	2.00	0.61
1:A:362:PHE:CE2	1:A:366:LEU:HD11	2.36	0.61
1:A:70:ASN:O	1:A:110:LYS:HE3	2.00	0.60
1:A:563:PHE:O	1:A:924:ASP:HB2	2.00	0.60
1:B:974:PRO:HA	1:B:977:MET:CE	2.31	0.60
1:B:456:MET:CG	1:B:467:TYR:HB3	2.31	0.60
1:C:57:VAL:HG13	1:C:82:SER:HB3	1.83	0.60
1:A:414:GLU:CD	1:A:974:PRO:HG3	2.21	0.60
1:A:469:GLN:OE1	5:A:1426:HOH:O	2.16	0.60
1:A:669:PRO:CD	1:A:672:VAL:HG12	2.27	0.60
1:B:420:MET:HE1	1:B:427:PRO:CG	2.31	0.60
1:C:897:ILE:HB	1:C:898:PRO:HD3	1.83	0.60
1:B:420:MET:HE1	1:B:427:PRO:CD	2.32	0.60
1:C:736:ALA:HB1	1:C:741:VAL:HG23	1.84	0.60
1:C:971:ARG:C	1:C:974:PRO:HD2	2.21	0.60
1:B:974:PRO:HA	1:B:977:MET:HE2	1.81	0.60
1:B:559:LEU:HD12	1:B:560:PRO:HD2	1.84	0.60
1:C:40:PRO:HD2	1:C:674:LEU:HD11	1.84	0.60
1:A:987:MET:CE	1:A:987:MET:HA	2.32	0.59
1:C:1013:THR:O	1:C:1017:LEU:HB2	2.01	0.59
1:C:281:PHE:CE1	1:C:324:VAL:HG11	2.37	0.59
2:D:94:GLU:HG2	5:D:264:HOH:O	2.03	0.59
1:C:895:TRP:C	1:C:898:PRO:HD2	2.22	0.59
2:D:142:GLN:HA	2:D:147:LYS:O	2.02	0.59
1:C:904:VAL:HG13	1:C:938:SER:HB3	1.85	0.59
1:A:961:ILE:HD11	1:A:1031:ARG:HH22	1.68	0.59
2:E:25:GLY:HA2	2:E:62:ILE:HD12	1.84	0.59
1:A:39:ALA:HB2	1:A:673:GLU:HG3	1.84	0.59
1:A:942:ALA:O	1:A:946:VAL:HG13	2.02	0.59
1:C:83:ASP:OD1	1:C:85:THR:HB	2.03	0.59
1:B:225:VAL:HG13	1:C:781:MET:HG3	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:555:LEU:HD11	1:B:914:LEU:HD23	1.85	0.58
1:B:871:ASN:OD1	5:B:1696:HOH:O	2.17	0.58
1:C:788:ASP:OD2	5:C:1201:HOH:O	2.16	0.58
1:A:671:ILE:HG21	1:A:674:LEU:HD23	1.86	0.58
1:B:428:LYS:HE2	1:B:432:ARG:NH2	2.18	0.58
1:B:348:ILE:HD13	1:B:373:PRO:HG3	1.85	0.58
1:C:971:ARG:O	1:C:974:PRO:HD2	2.04	0.58
1:A:60:THR:HG22	1:A:61:VAL:HG23	1.86	0.57
1:B:131:LYS:NZ	5:B:1477:HOH:O	2.34	0.57
1:A:602:GLU:HB3	1:A:606:VAL:HG12	1.86	0.57
2:E:91:GLY:HA2	2:E:128:ILE:CD1	2.34	0.57
1:C:867:ARG:HH11	1:C:867:ARG:CG	2.17	0.57
1:B:1018:ALA:O	1:B:1022:VAL:HG13	2.03	0.57
2:E:97:GLU:O	2:E:101:LYS:HG3	2.04	0.57
1:B:865:GLN:NE2	5:B:1369:HOH:O	2.37	0.57
1:C:40:PRO:HB2	1:C:94:PHE:O	2.05	0.57
1:A:365:THR:O	1:A:368:PRO:HD2	2.04	0.57
1:A:933:THR:HG22	5:A:1808:HOH:O	2.04	0.57
1:A:961:ILE:HD11	1:A:1031:ARG:NH2	2.20	0.57
1:B:919:ARG:CD	1:B:1005:THR:HG21	2.35	0.57
1:B:778:LYS:HE2	1:B:779:TYR:OH	2.05	0.56
1:B:540:ARG:HH22	3:B:1101:LMT:H6'2	1.70	0.56
1:A:83:ASP:OD1	1:A:85:THR:HB	2.06	0.56
3:A:1102:LMT:H81	1:C:15:ILE:HG12	1.87	0.56
1:C:336:SER:O	1:C:340:VAL:HG23	2.05	0.56
1:C:372:VAL:HG22	1:C:373:PRO:CD	2.35	0.56
1:A:617:PHE:CZ	1:A:666:PHE:HZ	2.23	0.56
1:B:428:LYS:CE	1:B:432:ARG:HH22	2.18	0.56
1:A:711:ASP:O	1:A:835:LYS:HE2	2.05	0.56
1:C:808:ARG:NH1	1:C:810:GLU:OE2	2.39	0.56
2:E:45:VAL:HG22	5:E:209:HOH:O	2.06	0.56
1:C:671:ILE:HG13	1:C:862:MET:CE	2.36	0.56
1:C:376:LEU:HD11	1:C:402:ILE:CD1	2.35	0.56
2:E:28:ASP:HA	2:E:31:ARG:HH11	1.71	0.56
1:A:2:PRO:O	1:A:6:ILE:HG13	2.06	0.56
1:A:687:GLN:OE1	1:A:856:GLY:HA3	2.05	0.56
2:E:28:ASP:OD1	2:E:31:ARG:NH1	2.39	0.56
1:A:247:GLY:HA2	1:A:268:ILE:CD1	2.36	0.55
1:B:328:ASP:O	1:B:331:PRO:HD2	2.06	0.55
1:C:70:ASN:ND2	5:C:1532:HOH:O	2.38	0.55
1:C:452:VAL:HG13	1:C:884:VAL:HG21	1.87	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:947:GLU:HG3	1:C:948:PHE:N	2.21	0.55
2:D:163:GLU:O	2:D:166:GLN:HG3	2.06	0.55
1:A:671:ILE:O	1:A:672:VAL:HG13	2.06	0.55
1:B:649:MET:HG2	5:B:1544:HOH:O	2.06	0.55
1:C:115:MET:N	1:C:116:PRO:HD2	2.20	0.55
1:A:150:THR:O	1:A:154:ILE:HG13	2.06	0.55
1:B:527:TYR:HE2	1:B:968:VAL:HG13	1.71	0.55
1:B:126:GLY:HA3	1:C:116:PRO:CB	2.37	0.55
1:C:61:VAL:HG11	1:C:88:VAL:HG11	1.87	0.55
1:A:905:VAL:HB	1:A:906:PRO:HD3	1.89	0.55
1:A:1035:ARG:HG3	1:A:1036:LYS:H	1.72	0.55
1:A:420:MET:HB3	1:A:500:ILE:HB	1.89	0.55
1:A:631:LEU:HD11	1:A:644:VAL:HG22	1.88	0.55
1:A:671:ILE:HB	1:A:674:LEU:HB2	1.88	0.55
1:C:32:VAL:HG12	1:C:337:ILE:HD13	1.87	0.55
1:C:754:TRP:CZ2	1:C:786:ILE:HD13	2.41	0.55
1:B:636:ASP:C	1:B:638:PRO:HD3	2.28	0.54
1:C:671:ILE:HG21	1:C:674:LEU:HD22	1.90	0.54
1:B:540:ARG:HH12	3:B:1101:LMT:H6'1	1.72	0.54
1:B:867:ARG:HG2	1:B:868:LEU:CD1	2.34	0.54
1:A:659:LYS:HG3	5:A:1230:HOH:O	2.08	0.54
1:C:358:PHE:CG	1:C:977:MET:HG2	2.42	0.54
1:C:446:ALA:HB2	1:C:482:VAL:HG22	1.89	0.54
1:C:671:ILE:HG13	1:C:862:MET:HE3	1.90	0.54
1:B:574:THR:HB	1:B:627:ALA:HB3	1.90	0.54
1:C:530:SER:OG	3:C:1101:LMT:H11	2.07	0.54
1:A:350:LEU:HD13	1:A:984:LEU:O	2.08	0.54
1:C:359:LEU:O	1:C:361:ASN:N	2.33	0.54
1:C:423:GLU:HB3	1:C:425:LEU:CD1	2.34	0.54
1:B:402:ILE:O	1:B:406:VAL:HB	2.08	0.54
1:A:59:ASP:HB3	1:C:763:ILE:HD11	1.90	0.53
1:B:348:ILE:HG12	1:B:372:VAL:CG1	2.37	0.53
2:E:25:GLY:HA2	2:E:62:ILE:CD1	2.37	0.53
1:A:456:MET:CE	1:A:467:TYR:HD1	2.21	0.53
1:A:659:LYS:H	1:A:659:LYS:CD	2.22	0.53
1:A:672:VAL:C	1:A:674:LEU:H	2.12	0.53
1:A:1043:SER:O	1:A:1044:HIS:HB2	2.08	0.53
1:B:40:PRO:HG3	1:B:865:GLN:NE2	2.24	0.53
1:C:617:PHE:CD2	1:C:676:THR:HG21	2.44	0.53
1:A:348:ILE:HG12	1:A:372:VAL:HG11	1.90	0.53
1:B:459:PHE:HB2	1:B:464:GLY:HA2	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:416:VAL:HG11	1:A:431:THR:HG22	1.89	0.53
1:C:507:GLU:HG2	1:C:518:ARG:HG2	1.91	0.53
1:A:13:TRP:O	1:A:17:ILE:HG13	2.10	0.52
1:A:1013:THR:O	1:A:1017:LEU:HB2	2.08	0.52
1:B:416:VAL:O	1:B:420:MET:HG3	2.08	0.52
2:D:12:SER:O	2:D:16:LYS:HG2	2.09	0.52
1:A:510:LYS:HE3	1:A:510:LYS:HA	1.90	0.52
1:A:49:TYR:HE2	1:A:60:THR:HG21	1.75	0.52
1:A:63:GLN:CD	1:C:768:VAL:HG23	2.30	0.52
1:A:578:LEU:HB3	1:A:579:PRO:HD2	1.90	0.52
1:B:716:VAL:HG22	5:B:1431:HOH:O	2.09	0.52
2:D:46:VAL:O	2:D:77:ASP:HB2	2.10	0.52
1:A:671:ILE:CG2	1:A:673:GLU:HG2	2.39	0.52
1:A:939:ALA:O	1:A:943:ILE:HG13	2.09	0.52
1:C:355:MET:SD	1:C:368:PRO:HB2	2.49	0.52
1:A:38:ILE:C	1:A:38:ILE:HD12	2.29	0.52
1:A:739:LEU:HD13	1:A:799:VAL:HG11	1.92	0.52
1:A:1027:VAL:O	1:A:1031:ARG:HG3	2.10	0.52
1:B:409:ALA:HB3	5:B:1224:HOH:O	2.09	0.52
1:A:554:TYR:OH	1:A:558:ARG:NH1	2.43	0.51
1:B:362:PHE:CE2	1:B:366:LEU:HD22	2.45	0.51
1:B:716:VAL:HA	1:B:828:LEU:O	2.10	0.51
1:C:943:ILE:O	1:C:947:GLU:HB3	2.11	0.51
1:A:416:VAL:HG22	1:A:431:THR:HA	1.92	0.51
1:A:446:ALA:HB2	1:A:482:VAL:HG21	1.91	0.51
1:C:889:ALA:HA	1:C:894:SER:O	2.11	0.51
1:A:1038:GLU:OE2	1:A:1039:ASP:N	2.44	0.51
1:B:2:PRO:O	1:B:6:ILE:HG13	2.11	0.51
1:B:578:LEU:HD22	1:B:661:ALA:HB2	1.91	0.51
2:E:91:GLY:HA2	2:E:128:ILE:HD12	1.93	0.51
2:E:26:ARG:O	2:E:30:VAL:HG23	2.09	0.51
1:B:331:PRO:O	1:B:335:ILE:HG12	2.11	0.51
1:A:360:GLN:HG2	1:A:513:PHE:CE1	2.45	0.51
1:A:411:VAL:HG22	1:A:971:ARG:NH2	2.26	0.51
1:A:396:PHE:HZ	1:A:1000:GLN:HG2	1.76	0.50
1:B:32:VAL:HG11	1:B:337:ILE:HD11	1.93	0.50
1:A:33:ALA:O	1:A:391:ASN:HA	2.12	0.50
1:A:341:VAL:CG2	3:A:1101:LMT:H41	2.41	0.50
1:C:47:ALA:HB3	1:C:88:VAL:CG1	2.41	0.50
1:C:632:LYS:NZ	5:C:1202:HOH:O	2.25	0.50
1:A:973:ARG:O	1:A:977:MET:HG3	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:185:ARG:HD2	5:C:1250:HOH:O	2.11	0.50
2:D:56:TYR:HB2	2:D:86:LEU:HD13	1.94	0.50
1:A:568:ASP:CG	1:A:644:VAL:HG23	2.31	0.50
1:C:307:ARG:NH1	5:C:1359:HOH:O	2.31	0.50
1:C:736:ALA:O	1:C:741:VAL:HG22	2.12	0.50
2:E:42:ALA:O	2:E:50:PRO:HD3	2.12	0.50
2:E:49:THR:HB	2:E:50:PRO:HD2	1.94	0.50
1:B:247:GLY:HA2	1:B:268:ILE:CD1	2.41	0.50
1:C:537:SER:HB2	5:C:1831:HOH:O	2.11	0.50
1:C:154:ILE:O	1:C:158:VAL:HG13	2.12	0.50
1:C:510:LYS:HD3	1:C:510:LYS:N	2.27	0.50
1:A:659:LYS:HD3	1:A:659:LYS:N	2.27	0.49
1:A:925:VAL:O	1:A:929:VAL:HG22	2.12	0.49
1:B:133:SER:HB3	5:B:1687:HOH:O	2.12	0.49
1:A:1030:ARG:HA	1:A:1030:ARG:NE	2.27	0.49
1:B:1022:VAL:N	1:B:1023:PRO:HD2	2.28	0.49
1:A:714:THR:CG2	1:A:832:ALA:HA	2.43	0.49
1:B:139:VAL:O	1:B:326:PRO:HD2	2.12	0.49
1:B:414:GLU:HG3	1:B:977:MET:CE	2.36	0.49
1:B:247:GLY:HA2	1:B:268:ILE:HD12	1.94	0.49
1:C:259:ARG:NH2	1:C:259:ARG:HB2	2.28	0.49
1:C:404:LEU:HD21	1:C:937:LEU:CD2	2.43	0.49
1:A:488:LEU:O	1:A:492:LEU:HD13	2.13	0.48
1:B:492:LEU:O	1:B:496:MET:HB2	2.13	0.48
1:C:281:PHE:CZ	1:C:324:VAL:HG11	2.48	0.48
1:C:398:MET:O	1:C:402:ILE:HG12	2.13	0.48
1:C:536:ARG:NH2	3:C:1101:LMT:O3B	2.31	0.48
1:A:422:GLU:O	1:A:502:LYS:HE3	2.13	0.48
1:A:987:MET:N	1:A:988:PRO:HD2	2.27	0.48
1:C:365:THR:O	1:C:368:PRO:HD2	2.13	0.48
1:C:621:GLY:N	5:C:1272:HOH:O	2.30	0.48
2:E:82:THR:HB	2:E:83:PRO:HD2	1.95	0.48
1:B:168:ARG:NH2	5:B:1613:HOH:O	2.46	0.48
1:A:414:GLU:OE2	1:A:974:PRO:HG3	2.14	0.48
1:C:165:ALA:HB3	1:C:313:MET:CE	2.43	0.48
1:B:219:LEU:HD23	1:C:754:TRP:CZ3	2.48	0.48
1:A:1041:GLU:O	1:A:1042:HIS:HB2	2.14	0.48
1:B:522:LYS:HG3	1:B:523:SER:N	2.28	0.48
1:C:939:ALA:O	1:C:943:ILE:HG12	2.13	0.48
1:A:453:PHE:O	1:A:456:MET:HG2	2.14	0.48
1:B:55:LYS:HE3	1:B:59:ASP:OD2	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:493:CYS:O	1:B:497:LEU:HB2	2.13	0.48
1:B:875:SER:O	1:B:879:ILE:HG13	2.14	0.48
1:C:39:ALA:HB2	1:C:671:ILE:CG2	2.44	0.48
1:B:428:LYS:HE2	1:B:432:ARG:CZ	2.44	0.48
1:C:903:LEU:O	1:C:906:PRO:HD2	2.14	0.48
1:B:185:ARG:HA	1:B:185:ARG:HD3	1.68	0.48
1:B:571:VAL:HG23	1:B:668:LEU:HD11	1.96	0.48
2:D:121:ALA:HB1	2:D:161:LEU:HD21	1.96	0.48
1:A:347:ALA:O	1:A:351:VAL:HG23	2.14	0.47
1:A:393:LEU:HD13	1:A:466:ILE:HG23	1.96	0.47
1:A:851:LEU:HB3	1:A:852:PRO:HD2	1.95	0.47
1:A:632:LYS:O	1:A:637:ARG:HD3	2.14	0.47
1:B:370:ILE:O	1:B:373:PRO:HD2	2.14	0.47
1:B:485:ALA:HA	1:B:489:THR:HG23	1.95	0.47
1:B:905:VAL:HB	1:B:906:PRO:HD3	1.96	0.47
1:A:109:ASN:O	1:A:112:GLN:HG3	2.14	0.47
1:B:637:ARG:O	1:B:643:LYS:HE3	2.13	0.47
1:B:750:LEU:HB2	1:B:801:PHE:CZ	2.50	0.47
1:B:676:THR:O	1:B:677:ALA:HB3	2.15	0.47
1:A:546:LEU:O	1:A:550:VAL:HG23	2.14	0.47
1:A:589:LYS:NZ	5:A:1445:HOH:O	2.47	0.47
1:A:868:LEU:O	1:A:869:SER:HB2	2.14	0.47
2:E:34:MET:HE1	2:E:40:VAL:HG12	1.93	0.47
1:A:575:MET:HB2	1:A:617:PHE:HE2	1.79	0.47
1:A:815:ARG:HG2	5:A:1288:HOH:O	2.13	0.47
1:B:108:GLN:HG3	1:B:109:ASN:N	2.29	0.47
1:B:754:TRP:CZ2	1:B:786:ILE:HD13	2.49	0.47
1:B:836:SER:OG	1:B:839:GLU:HG3	2.14	0.47
1:A:1:MET:HB2	1:A:2:PRO:HD3	1.97	0.47
1:A:850:LYS:NZ	5:A:1201:HOH:O	2.30	0.47
1:A:987:MET:CE	1:A:1008:MET:SD	3.02	0.47
1:B:1022:VAL:N	1:B:1023:PRO:CD	2.78	0.47
1:C:195:LYS:HE3	1:C:196:PHE:CZ	2.50	0.47
1:C:428:LYS:HE2	1:C:432:ARG:HH21	1.79	0.47
1:C:526:HIS:HD2	5:C:1777:HOH:O	1.96	0.47
1:A:537:SER:O	1:A:538:THR:HB	2.15	0.47
1:C:343:THR:HG23	1:C:988:PRO:HB2	1.96	0.47
2:E:49:THR:HB	2:E:50:PRO:CD	2.45	0.47
1:B:202:ASP:OD2	1:B:792:ARG:NH2	2.48	0.47
1:C:159:ALA:HB1	1:C:181:GLN:HB2	1.97	0.47
1:C:873:ALA:HB3	1:C:874:PRO:HD3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:25:GLY:HA2	2:D:62:ILE:HD12	1.97	0.47
1:A:777:ALA:O	1:A:781:MET:HG2	2.15	0.47
2:E:16:LYS:NZ	2:E:20:GLU:OE1	2.45	0.46
2:E:108:ALA:O	2:E:116:PRO:HD3	2.15	0.46
1:A:38:ILE:HD11	1:A:671:ILE:HG21	1.96	0.46
1:C:168:ARG:HD2	5:C:1444:HOH:O	2.15	0.46
1:C:534:ILE:HG12	1:C:541:TYR:CZ	2.50	0.46
1:B:219:LEU:HD23	1:C:754:TRP:HZ3	1.80	0.46
1:A:815:ARG:NH1	5:A:1817:HOH:O	2.39	0.46
1:A:861:GLY:O	1:A:865:GLN:HG2	2.15	0.46
1:B:468:ARG:NH1	5:B:1721:HOH:O	2.48	0.46
1:C:492:LEU:HB3	1:C:496:MET:HE2	1.97	0.46
1:C:895:TRP:O	1:C:898:PRO:HD2	2.16	0.46
2:D:86:LEU:HD21	5:D:235:HOH:O	2.16	0.46
1:A:456:MET:HG3	1:A:471:SER:HB2	1.98	0.46
1:A:637:ARG:HH21	1:A:643:LYS:HA	1.81	0.46
1:B:367:ILE:HB	1:B:368:PRO:HD3	1.97	0.46
2:E:56:TYR:HB2	2:E:86:LEU:HD13	1.97	0.46
2:E:100:LEU:HD13	2:E:135:TYR:CD1	2.51	0.46
1:A:23:GLY:HA3	1:A:377:LEU:O	2.16	0.46
1:A:38:ILE:HD11	1:A:674:LEU:HD23	1.97	0.46
1:A:339:GLU:O	1:A:343:THR:HG23	2.16	0.46
1:C:147:GLY:HA2	5:C:1896:HOH:O	2.14	0.46
1:C:259:ARG:NE	5:C:1418:HOH:O	2.47	0.46
1:A:405:LEU:CD2	1:A:477:ALA:HB1	2.43	0.46
1:B:872:GLN:C	1:B:874:PRO:HD2	2.37	0.46
1:C:349:ILE:O	1:C:353:LEU:HG	2.16	0.46
1:A:1008:MET:O	1:A:1012:VAL:HG23	2.15	0.46
1:B:367:ILE:HD12	1:B:497:LEU:HD13	1.97	0.46
1:A:49:TYR:CE2	1:A:60:THR:HG21	2.51	0.45
1:A:342:LYS:HE2	1:A:346:GLU:OE1	2.17	0.45
1:B:418:ARG:HD2	1:B:970:MET:HG2	1.97	0.45
1:B:70:ASN:O	1:B:110:LYS:HE3	2.16	0.45
1:A:85:THR:O	1:A:85:THR:HG22	2.15	0.45
1:B:133:SER:HB2	1:B:292:LYS:NZ	2.31	0.45
1:C:664:PHE:CD2	1:C:717:ARG:HD2	2.52	0.45
1:C:904:VAL:HG13	1:C:938:SER:CB	2.47	0.45
1:A:252:LYS:HE3	1:A:254:ASN:OD1	2.16	0.45
1:A:454:VAL:N	1:A:455:PRO:CD	2.80	0.45
1:A:987:MET:N	1:A:987:MET:HE2	2.31	0.45
1:B:445:ILE:CD1	1:B:940:LYS:HG3	2.36	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:973:ARG:N	1:B:974:PRO:HD2	2.32	0.45
1:C:259:ARG:HB2	1:C:259:ARG:HH21	1.82	0.45
1:A:56:THR:O	1:A:60:THR:HB	2.17	0.45
1:A:57:VAL:HG12	1:A:88:VAL:HG22	1.98	0.45
1:A:903:LEU:O	1:A:906:PRO:HD2	2.17	0.45
1:C:27:ILE:HD11	1:C:380:PHE:CD2	2.52	0.45
1:C:616:GLY:HA3	1:C:624:THR:CG2	2.47	0.45
1:B:361:ASN:ND2	5:B:1530:HOH:O	2.29	0.45
1:B:808:ARG:NH1	5:B:1259:HOH:O	2.47	0.45
1:C:456:MET:HG3	1:C:467:TYR:HB3	1.99	0.45
1:A:340:VAL:HG11	1:A:395:MET:HB3	1.99	0.44
1:A:361:ASN:O	1:A:365:THR:HG23	2.16	0.44
1:A:376:LEU:HD12	1:A:376:LEU:HA	1.71	0.44
1:C:404:LEU:HD21	1:C:937:LEU:HD21	1.99	0.44
1:C:631:LEU:HD11	1:C:644:VAL:HG22	1.99	0.44
2:D:25:GLY:HA2	2:D:62:ILE:CD1	2.47	0.44
2:E:82:THR:HB	2:E:83:PRO:CD	2.47	0.44
1:A:465:ALA:O	1:A:469:GLN:HG2	2.17	0.44
1:A:575:MET:HB2	1:A:617:PHE:CE2	2.53	0.44
1:A:659:LYS:CD	1:A:659:LYS:N	2.79	0.44
1:A:706:ALA:HB1	1:A:716:VAL:HG11	1.99	0.44
1:B:307:ARG:HD2	5:B:1705:HOH:O	2.18	0.44
1:A:472:ILE:HD13	1:A:472:ILE:N	2.31	0.44
1:A:958:LYS:HD2	1:A:962:GLU:OE2	2.18	0.44
1:C:85:THR:HB	1:C:87:THR:HG22	1.99	0.44
1:C:156:ASP:OD1	1:C:182:TYR:HB2	2.17	0.44
1:C:395:MET:HA	1:C:395:MET:CE	2.47	0.44
1:C:446:ALA:CB	1:C:482:VAL:HG22	2.47	0.44
1:B:1008:MET:O	1:B:1012:VAL:HG23	2.17	0.44
1:C:185:ARG:HB2	1:C:269:GLU:O	2.18	0.44
1:A:376:LEU:HD13	1:A:405:LEU:HD11	1.99	0.44
1:A:420:MET:HG2	1:A:425:LEU:O	2.18	0.44
1:A:459:PHE:CD1	1:A:872:GLN:HG3	2.52	0.44
1:B:165:ALA:HB3	1:B:313:MET:CE	2.48	0.44
1:C:151:GLN:OE1	1:C:278:ILE:HG23	2.18	0.44
1:C:1026:PHE:O	1:C:1030:ARG:HB2	2.18	0.44
1:A:376:LEU:HD13	1:A:405:LEU:CD1	2.47	0.44
1:A:536:ARG:NH2	5:A:1807:HOH:O	2.50	0.44
1:B:637:ARG:N	1:B:638:PRO:HD3	2.32	0.44
1:A:168:ARG:HG2	1:B:69:MET:O	2.17	0.44
1:A:372:VAL:HB	1:A:373:PRO:CD	2.48	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:524:THR:O	1:A:528:THR:HG23	2.18	0.44
1:A:1030:ARG:HH22	1:A:1035:ARG:NH2	2.05	0.44
1:C:1012:VAL:O	1:C:1016:VAL:HG13	2.18	0.44
1:A:1030:ARG:HA	1:A:1030:ARG:HE	1.82	0.44
3:A:1101:LMT:H91	3:A:1101:LMT:H121	1.74	0.44
1:B:555:LEU:HD11	1:B:914:LEU:CD2	2.48	0.44
1:C:509:LYS:HG2	1:C:510:LYS:HE3	2.00	0.44
1:C:568:ASP:CG	1:C:644:VAL:HG23	2.38	0.44
1:C:1008:MET:O	1:C:1012:VAL:HG23	2.18	0.44
1:B:32:VAL:CG1	1:B:337:ILE:HD11	2.48	0.43
1:B:138:MET:HE3	1:B:325:TYR:HD2	1.82	0.43
1:B:439:GLN:HG3	1:B:440:GLY:N	2.33	0.43
1:C:30:LEU:HA	1:C:31:PRO:HD3	1.82	0.43
1:C:452:VAL:HG13	1:C:884:VAL:CG2	2.48	0.43
1:C:901:VAL:O	1:C:904:VAL:HG12	2.18	0.43
1:C:919:ARG:NH2	5:C:1380:HOH:O	2.50	0.43
1:B:517:ASN:O	1:B:521:GLU:HG2	2.18	0.43
1:C:867:ARG:HG2	1:C:867:ARG:NH1	2.23	0.43
1:A:356:TYR:HA	1:A:365:THR:CG2	2.43	0.43
1:A:931:LEU:HD23	1:A:931:LEU:HA	1.78	0.43
1:B:126:GLY:HA3	1:C:116:PRO:HB3	1.99	0.43
1:B:540:ARG:NH2	3:B:1101:LMT:H6'2	2.32	0.43
1:C:453:PHE:CE2	1:C:474:ILE:HG21	2.54	0.43
1:C:670:ALA:HB3	1:C:862:MET:HE1	1.99	0.43
1:A:1038:GLU:O	1:A:1040:ILE:HG22	2.17	0.43
1:C:152:GLU:HG3	1:C:182:TYR:OH	2.18	0.43
1:C:159:ALA:CB	1:C:181:GLN:HB2	2.48	0.43
1:A:733:GLN:O	1:A:737:GLN:HG3	2.18	0.43
1:A:946:VAL:HB	1:A:1026:PHE:CD1	2.54	0.43
1:A:987:MET:N	1:A:988:PRO:CD	2.82	0.43
1:B:977:MET:HE3	1:B:977:MET:HB2	1.71	0.43
1:A:531:VAL:O	1:A:535:LEU:HG	2.19	0.43
1:A:568:ASP:CG	1:A:637:ARG:HH22	2.14	0.43
1:A:987:MET:HE2	1:A:987:MET:CA	2.48	0.43
1:A:763:ILE:HD11	1:B:59:ASP:HB3	2.00	0.43
1:A:617:PHE:CZ	1:A:666:PHE:CZ	3.05	0.43
1:B:554:TYR:O	1:B:558:ARG:HG3	2.18	0.43
1:B:699:ARG:O	1:B:703:LEU:HG	2.19	0.43
1:C:389:SER:O	1:C:394:THR:HG21	2.19	0.43
1:A:36:PRO:HG3	1:A:469:GLN:CG	2.49	0.43
1:A:851:LEU:HB3	1:A:852:PRO:CD	2.48	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:202:ASP:CG	1:B:792:ARG:HH22	2.22	0.43
1:C:463:THR:HG22	1:C:467:TYR:CE2	2.53	0.43
1:A:11:PHE:CD1	1:B:890:ALA:HB1	2.54	0.42
1:A:144:ASN:HD22	1:A:149:MET:CG	2.31	0.42
1:A:885:PHE:HB2	1:A:902:MET:SD	2.59	0.42
1:B:1:MET:HB3	1:B:2:PRO:CD	2.44	0.42
1:B:951:ASP:OD1	1:B:955:LYS:HD3	2.19	0.42
1:C:41:PRO:HG2	1:C:94:PHE:HB2	1.99	0.42
1:A:330:THR:HG22	1:A:331:PRO:N	2.33	0.42
1:A:412:VAL:HG22	1:A:438:ILE:HD11	2.01	0.42
1:B:568:ASP:CG	1:B:644:VAL:HG23	2.39	0.42
1:C:362:PHE:HA	1:C:365:THR:HG22	2.01	0.42
1:C:670:ALA:HB3	1:C:862:MET:CE	2.49	0.42
1:C:709:HIS:HD2	5:C:1853:HOH:O	2.01	0.42
1:C:580:ALA:HB1	1:C:724:THR:HG22	2.00	0.42
1:B:300:LEU:HD11	1:B:337:ILE:HD12	2.01	0.42
1:B:431:THR:O	1:B:435:MET:HG2	2.19	0.42
1:C:783:PRO:O	1:C:786:ILE:HG12	2.19	0.42
1:A:36:PRO:HG3	1:A:469:GLN:HG3	2.00	0.42
1:B:555:LEU:CD1	1:B:914:LEU:HD23	2.49	0.42
1:B:714:THR:HG23	1:B:830:GLN:CG	2.43	0.42
1:C:452:VAL:CG1	1:C:884:VAL:HG21	2.49	0.42
1:A:326:PRO:O	1:A:630:SER:HB2	2.19	0.42
1:C:32:VAL:HG12	1:C:337:ILE:CD1	2.49	0.42
1:A:10:ILE:O	1:A:14:VAL:HG23	2.19	0.42
1:C:185:ARG:HA	1:C:185:ARG:HD3	1.73	0.42
1:C:510:LYS:N	1:C:510:LYS:CD	2.82	0.42
1:A:575:MET:SD	1:A:664:PHE:CE1	3.13	0.42
1:B:364:ALA:O	1:B:368:PRO:HD3	2.19	0.42
1:C:85:THR:O	5:C:1413:HOH:O	2.22	0.42
1:C:799:VAL:HA	1:C:800:PRO:HD3	1.77	0.42
1:C:905:VAL:HB	1:C:906:PRO:HD3	2.02	0.42
1:B:105:VAL:HB	1:C:105:VAL:HG13	2.01	0.42
2:D:61:GLU:HB2	5:D:251:HOH:O	2.19	0.42
1:A:369:THR:O	1:A:373:PRO:HD2	2.20	0.42
2:E:101:LYS:HB3	2:E:101:LYS:HE2	1.84	0.42
1:A:199:THR:HB	1:A:200:PRO:HD2	2.02	0.41
1:A:891:LEU:HA	3:A:1102:LMT:H6D	2.01	0.41
1:B:862:MET:HE2	5:B:1660:HOH:O	2.20	0.41
1:B:864:TYR:O	1:B:868:LEU:HD13	2.19	0.41
2:D:91:GLY:HA2	2:D:128:ILE:HD12	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:26:ALA:O	1:A:30:LEU:HB2	2.19	0.41
1:A:431:THR:O	1:A:435:MET:HG2	2.20	0.41
1:B:767:ARG:HA	5:C:1308:HOH:O	2.20	0.41
1:C:85:THR:CB	1:C:87:THR:HG22	2.50	0.41
1:C:472:ILE:HG23	1:C:473:THR:N	2.35	0.41
2:E:30:VAL:O	2:E:34:MET:HB2	2.19	0.41
1:A:850:LYS:HB2	5:A:1640:HOH:O	2.21	0.41
1:A:911:GLY:CA	1:A:1013:THR:HG21	2.50	0.41
1:A:1024:VAL:O	1:A:1028:VAL:HG23	2.19	0.41
1:B:362:PHE:HB2	5:B:1758:HOH:O	2.20	0.41
1:B:873:ALA:N	1:B:874:PRO:CD	2.81	0.41
1:B:919:ARG:NH2	1:B:990:VAL:O	2.52	0.41
1:B:987:MET:HA	1:B:1008:MET:CE	2.48	0.41
1:B:62:THR:O	1:B:66:GLU:HG3	2.21	0.41
1:B:897:ILE:N	1:B:898:PRO:CD	2.83	0.41
1:B:983:ILE:O	1:B:987:MET:HG3	2.20	0.41
1:C:670:ALA:HA	5:C:1253:HOH:O	2.19	0.41
1:C:867:ARG:NH2	5:C:1492:HOH:O	2.50	0.41
1:A:699:ARG:O	1:A:703:LEU:HG	2.21	0.41
1:A:976:LEU:O	1:A:980:LEU:HG	2.20	0.41
1:B:631:LEU:HD11	1:B:644:VAL:HG22	2.02	0.41
1:B:892:TYR:OH	1:B:943:ILE:HA	2.20	0.41
1:C:85:THR:CG2	1:C:85:THR:O	2.69	0.41
2:D:49:THR:HB	2:D:50:PRO:HD2	2.03	0.41
1:A:144:ASN:HD22	1:A:149:MET:HB2	1.85	0.41
1:A:192:GLU:HG3	5:A:1301:HOH:O	2.19	0.41
1:A:219:LEU:HD23	1:B:754:TRP:CZ3	2.55	0.41
1:A:837:THR:O	1:A:841:MET:HG3	2.20	0.41
1:C:372:VAL:HA	1:C:405:LEU:HD11	2.02	0.41
1:C:463:THR:HG22	1:C:467:TYR:CZ	2.56	0.41
1:B:341:VAL:O	1:B:345:VAL:HG23	2.20	0.41
1:B:485:ALA:HA	1:B:489:THR:CG2	2.51	0.41
1:B:489:THR:N	1:B:490:PRO:CD	2.84	0.41
1:B:544:LEU:O	1:B:548:ILE:HG13	2.21	0.41
1:B:674:LEU:HB3	1:B:675:GLY:H	1.69	0.41
1:C:540:ARG:HE	1:C:540:ARG:HB2	1.57	0.41
2:D:92:HIS:O	2:D:96:VAL:HG23	2.20	0.41
2:E:34:MET:HE3	2:E:40:VAL:CG1	2.34	0.41
1:A:276:ASP:O	1:A:614:GLY:HA3	2.20	0.41
1:C:454:VAL:HB	1:C:455:PRO:HD3	2.02	0.41
1:A:307:ARG:NE	5:A:1503:HOH:O	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:367:ILE:HG12	1:A:492:LEU:HB3	2.02	0.41
1:A:485:ALA:O	1:A:490:PRO:HD3	2.21	0.41
1:C:898:PRO:O	1:C:902:MET:HG2	2.21	0.41
1:A:602:GLU:O	1:A:606:VAL:CG1	2.69	0.41
1:B:144:ASN:HA	1:B:320:GLY:O	2.21	0.41
1:B:901:VAL:O	1:B:904:VAL:HG22	2.21	0.41
1:B:974:PRO:HA	1:B:977:MET:HE3	2.03	0.41
1:B:987:MET:HB2	1:B:988:PRO:HD3	2.02	0.41
1:A:396:PHE:CZ	1:A:1000:GLN:HG2	2.55	0.40
1:A:672:VAL:CG2	1:A:673:GLU:N	2.75	0.40
1:B:47:ALA:HB3	1:B:88:VAL:HG13	2.03	0.40
2:E:92:HIS:O	2:E:96:VAL:HG23	2.21	0.40
1:A:415:ASN:OD1	1:A:418:ARG:NH1	2.53	0.40
1:B:837:THR:O	1:B:841:MET:HG3	2.21	0.40
2:E:44:ASP:HB2	5:E:209:HOH:O	2.21	0.40
2:E:158:ASN:CG	2:E:161:LEU:HB3	2.42	0.40
1:A:372:VAL:HB	1:A:373:PRO:HD3	2.03	0.40
1:A:913:LEU:HA	1:A:913:LEU:HD23	1.88	0.40
1:B:312:LYS:HB3	1:B:312:LYS:HE3	1.86	0.40
1:B:365:THR:O	1:B:368:PRO:HD2	2.21	0.40
1:B:862:MET:O	1:B:866:GLU:HG3	2.21	0.40
1:A:553:ALA:O	1:A:557:VAL:HG13	2.21	0.40
1:A:562:SER:O	1:A:924:ASP:HA	2.21	0.40
1:A:897:ILE:N	1:A:898:PRO:CD	2.85	0.40
1:B:420:MET:HE1	1:B:427:PRO:HD3	2.03	0.40
1:B:743:ILE:HD13	1:B:743:ILE:HA	1.82	0.40
1:C:391:ASN:H	1:C:394:THR:CG2	2.35	0.40
1:A:987:MET:CE	1:A:987:MET:CA	2.99	0.40
1:B:236:ALA:HB1	5:B:1219:HOH:O	2.22	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	1042/1057 (99%)	997 (96%)	33 (3%)	12 (1%)	13	8
1	B	1031/1057 (98%)	1000 (97%)	25 (2%)	6 (1%)	25	21
1	C	1031/1057 (98%)	1003 (97%)	28 (3%)	0	100	100
2	D	154/169 (91%)	152 (99%)	2 (1%)	0	100	100
2	E	150/169 (89%)	149 (99%)	1 (1%)	0	100	100
All	All	3408/3509 (97%)	3301 (97%)	89 (3%)	18 (0%)	29	26

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	672	VAL
1	A	867	ARG
1	A	1038	GLU
1	A	1039	ASP
1	A	1043	SER
1	B	659	LYS
1	B	672	VAL
1	B	674	LEU
1	A	511	GLY
1	A	620	ARG
1	A	673	GLU
1	A	676	THR
1	A	958	LYS
1	A	1041	GLU
1	B	677	ALA
1	A	1042	HIS
1	B	995	ALA
1	B	675	GLY

### 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	850/863 (98%)	822 (97%)	28 (3%)	38	40

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	839/863 (97%)	812 (97%)	27 (3%)	39	41
1	C	839/863 (97%)	815 (97%)	24 (3%)	42	46
2	D	120/132 (91%)	117 (98%)	3 (2%)	47	52
2	E	117/132 (89%)	114 (97%)	3 (3%)	46	50
All	All	2765/2853 (97%)	2680 (97%)	85 (3%)	40	43

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	11	PHE
1	A	30	LEU
1	A	49	TYR
1	A	60	THR
1	A	148	THR
1	A	270	LEU
1	A	330	THR
1	A	376	LEU
1	A	434	SER
1	A	452	VAL
1	A	486	LEU
1	A	540	ARG
1	A	606	VAL
1	A	612	VAL
1	A	630	SER
1	A	659	LYS
1	A	673	GLU
1	A	674	LEU
1	A	687	GLN
1	A	714	THR
1	A	869	SER
1	A	904	VAL
1	A	968	VAL
1	A	987	MET
1	A	991	ILE
1	A	1035	ARG
1	A	1038	GLU
1	A	1043	SER
1	B	11	PHE
1	B	30	LEU
1	B	49	TYR
1	B	117	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	B	132	SER
1	B	255	GLN
1	B	261	LEU
1	B	314	GLU
1	B	324	VAL
1	B	406	VAL
1	B	497	LEU
1	B	546	LEU
1	B	573	MET
1	B	610	PHE
1	B	633	ASP
1	B	673	GLU
1	B	714	THR
1	B	716	VAL
1	B	748	THR
1	B	801	PHE
1	B	808	ARG
1	B	867	ARG
1	B	937	LEU
1	B	968	VAL
1	B	980	LEU
1	B	1022	VAL
1	B	1030	ARG
1	C	11	PHE
1	C	49	TYR
1	C	87	THR
1	C	88	VAL
1	C	95	GLU
1	C	96	SER
1	C	392	THR
1	C	394	THR
1	C	448	VAL
1	C	452	VAL
1	C	482	VAL
1	C	507	GLU
1	C	510	LYS
1	C	575	MET
1	C	674	LEU
1	C	676	THR
1	C	742	SER
1	C	743	ILE
1	C	867	ARG

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Mol	Chain	Res	Type
1	C	947	GLU
1	C	948	PHE
1	C	972	LEU
1	C	993	THR
1	C	1011	MET
2	D	45	VAL
2	D	61	GLU
2	D	139	VAL
2	E	34	MET
2	E	45	VAL
2	E	159	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	68	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](#)

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

5 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	LMT	B	1101	-	27,27,36	0.46	0	37,38,47	1.01	3 (8%)
3	LMT	A	1101	-	36,36,36	0.40	0	47,47,47	0.93	2 (4%)
3	LMT	A	1102	-	33,33,36	0.39	0	44,44,47	1.33	6 (13%)
4	MIY	B	1102	-	35,36,36	1.74	9 (25%)	41,58,58	2.73	18 (43%)
3	LMT	C	1101	-	36,36,36	0.43	0	47,47,47	0.92	1 (2%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	LMT	B	1101	-	-	3/12/52/61	0/2/2/2
3	LMT	A	1101	-	-	11/21/61/61	0/2/2/2
3	LMT	A	1102	-	-	8/18/58/61	0/2/2/2
4	MIY	B	1102	-	-	0/12/70/70	0/4/4/4
3	LMT	C	1101	-	-	7/21/61/61	0/2/2/2

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	1102	MIY	C11-C10	3.38	1.45	1.39
4	B	1102	MIY	C7-C16	-3.29	1.48	1.51
4	B	1102	MIY	O7-C18	2.85	1.46	1.42
4	B	1102	MIY	C18-C17	2.84	1.54	1.52
4	B	1102	MIY	C21-N2	2.84	1.40	1.33
4	B	1102	MIY	C14-C13	-2.70	1.37	1.41
4	B	1102	MIY	O4-C13	2.44	1.41	1.36
4	B	1102	MIY	C18-C1	-2.35	1.52	1.55
4	B	1102	MIY	C2-C21	2.04	1.51	1.47

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	1102	MIY	C11-C12-C13	-6.93	113.38	120.50
4	B	1102	MIY	C1-C18-C17	6.76	117.80	109.88
4	B	1102	MIY	C15-C16-C17	5.81	123.39	118.80
4	B	1102	MIY	C12-C13-C14	5.34	127.03	120.17
4	B	1102	MIY	O5-C15-C14	-4.04	114.35	121.99
4	B	1102	MIY	O6-C17-C16	-3.70	118.83	123.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1102	LMT	C3B-C4B-C5B	3.56	116.58	110.24
4	B	1102	MIY	O7-C18-C17	-3.53	104.50	110.14
4	B	1102	MIY	C11-C10-N7	-3.47	116.69	121.59
4	B	1102	MIY	C18-C17-C16	3.33	126.45	123.06
3	A	1102	LMT	O5B-C5B-C4B	3.21	115.53	109.69
4	B	1102	MIY	C9-C10-N7	3.04	122.62	118.91
4	B	1102	MIY	O2-C3-C2	-2.99	117.71	122.96
3	C	1101	LMT	C4B-C3B-C2B	-2.98	105.62	110.82
3	A	1102	LMT	C1B-O1B-C4'	-2.90	110.79	117.96
4	B	1102	MIY	C18-C1-C2	2.85	120.28	115.75
3	A	1102	LMT	C1'-O5'-C5'	2.81	119.21	113.69
3	A	1102	LMT	O1'-C1'-C2'	2.52	112.23	108.30
3	B	1101	LMT	C4B-C3B-C2B	-2.52	106.43	110.82
4	B	1102	MIY	C71-N7-CN7	2.49	124.16	116.12
3	B	1101	LMT	C1B-O1B-C4'	-2.48	111.83	117.96
3	B	1101	LMT	O5B-C5B-C4B	2.47	114.17	109.69
4	B	1102	MIY	O8-C21-N2	-2.46	117.14	122.88
4	B	1102	MIY	O4-C13-C12	-2.33	113.00	119.33
4	B	1102	MIY	CN7-N7-C10	2.33	122.40	115.17
3	A	1101	LMT	O1B-C4'-C3'	2.24	113.25	107.28
3	A	1102	LMT	C1B-O5B-C5B	2.22	118.04	113.69
4	B	1102	MIY	C14-C15-C16	2.17	122.23	118.53
4	B	1102	MIY	C19-N1-C4	2.15	119.14	114.09
3	A	1101	LMT	C1B-O1B-C4'	-2.14	112.68	117.96

There are no chirality outliers.

All (29) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1101	LMT	C2'-C1'-O1'-C1
3	A	1101	LMT	O5'-C1'-O1'-C1
3	A	1102	LMT	C2'-C1'-O1'-C1
3	A	1102	LMT	O5'-C1'-O1'-C1
3	B	1101	LMT	C2'-C1'-O1'-C1
3	B	1101	LMT	O5'-C1'-O1'-C1
3	A	1102	LMT	O5B-C1B-O1B-C4'
3	A	1102	LMT	O5'-C5'-C6'-O6'
3	A	1102	LMT	C4'-C5'-C6'-O6'
3	C	1101	LMT	O5'-C1'-O1'-C1
3	A	1101	LMT	O1'-C1-C2-C3
3	C	1101	LMT	C2'-C1'-O1'-C1
3	A	1102	LMT	C2-C1-O1'-C1'

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Mol	Chain	Res	Type	Atoms
3	C	1101	LMT	C2-C3-C4-C5
3	A	1101	LMT	C11-C10-C9-C8
3	A	1102	LMT	O5B-C5B-C6B-O6B
3	B	1101	LMT	O1'-C1-C2-C3
3	A	1101	LMT	C2-C3-C4-C5
3	A	1101	LMT	C7-C8-C9-C10
3	A	1102	LMT	C2-C3-C4-C5
3	C	1101	LMT	O1'-C1-C2-C3
3	A	1101	LMT	C6-C7-C8-C9
3	C	1101	LMT	C3-C4-C5-C6
3	A	1101	LMT	C3-C4-C5-C6
3	C	1101	LMT	C1-C2-C3-C4
3	A	1101	LMT	O5B-C5B-C6B-O6B
3	A	1101	LMT	C1-C2-C3-C4
3	C	1101	LMT	C9-C10-C11-C12
3	A	1101	LMT	C9-C10-C11-C12

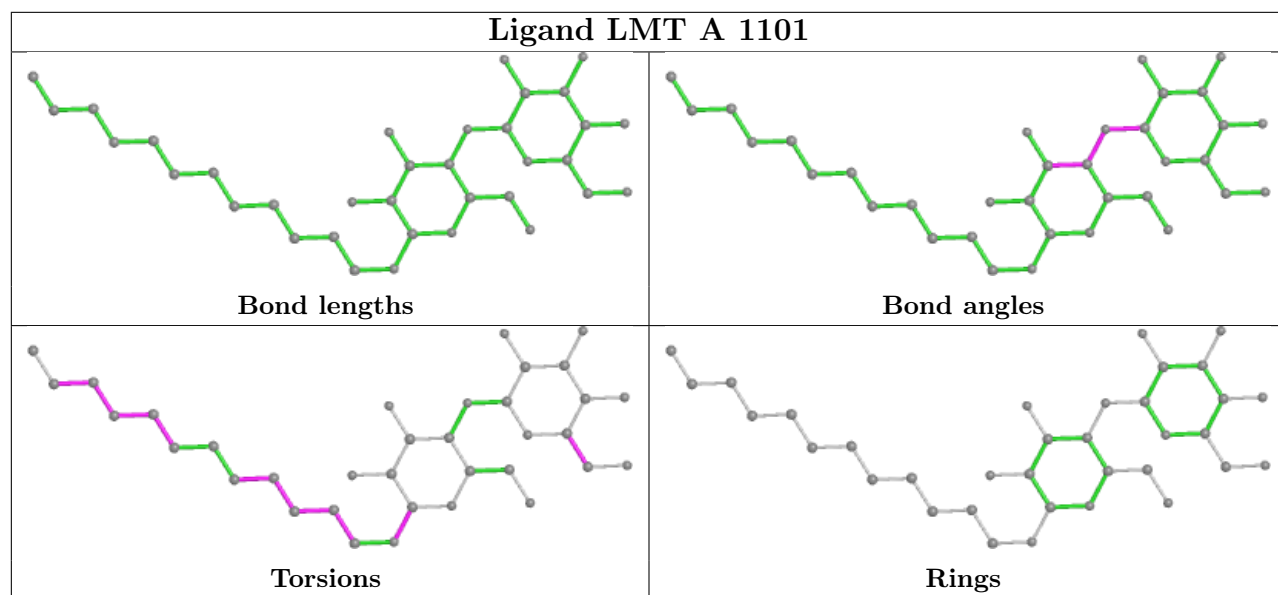
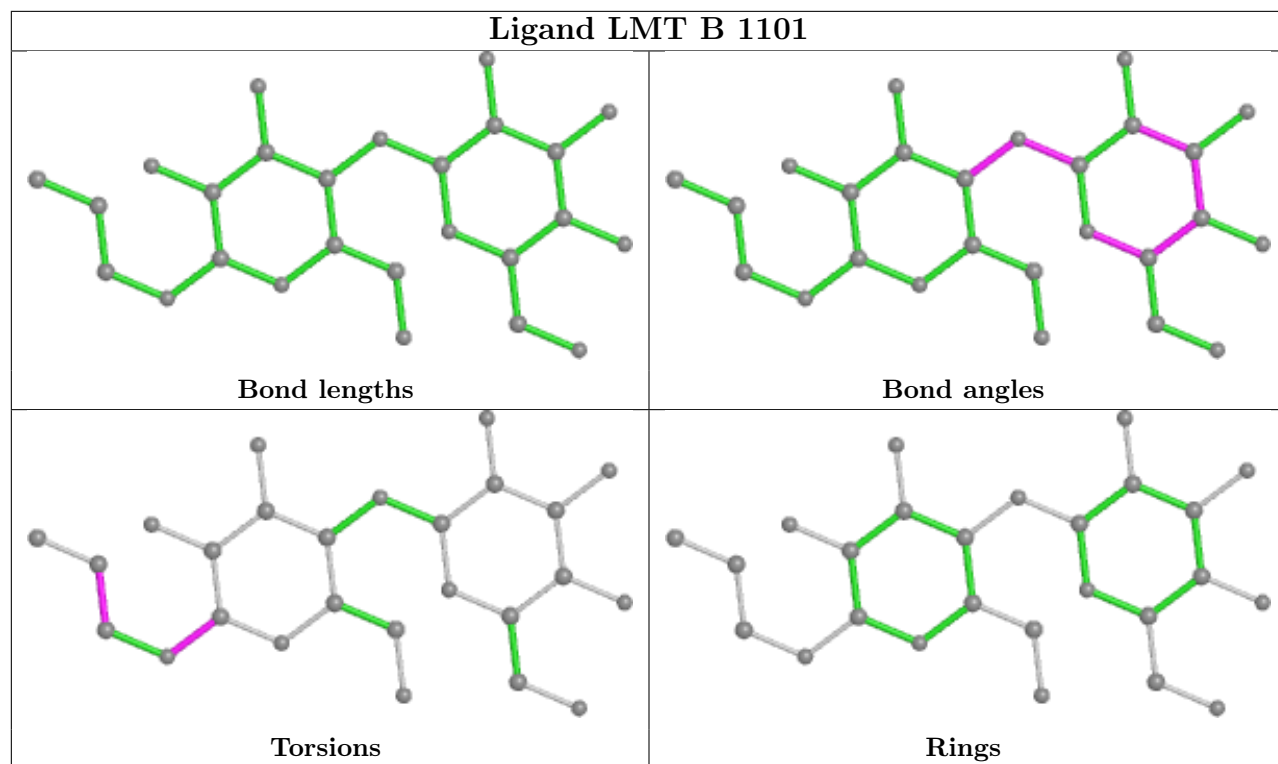
There are no ring outliers.

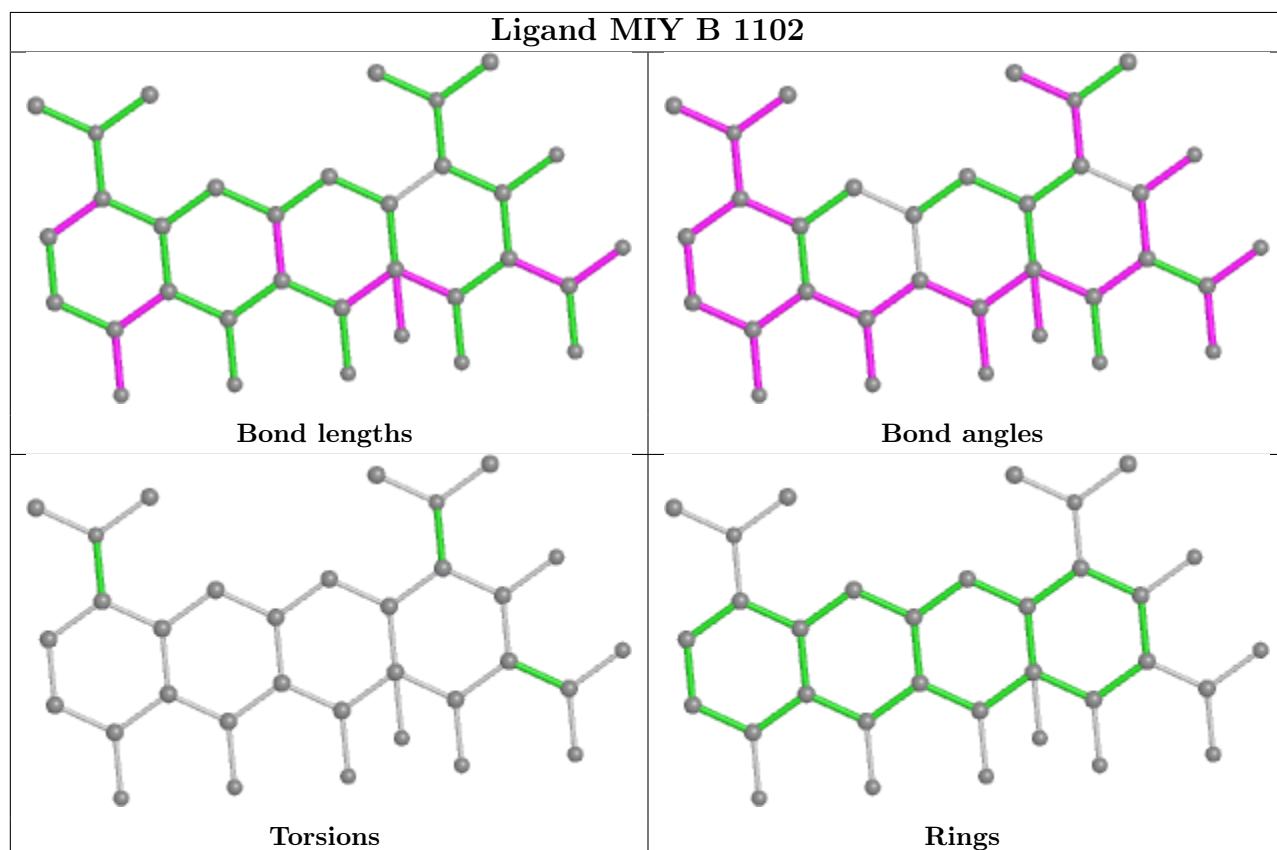
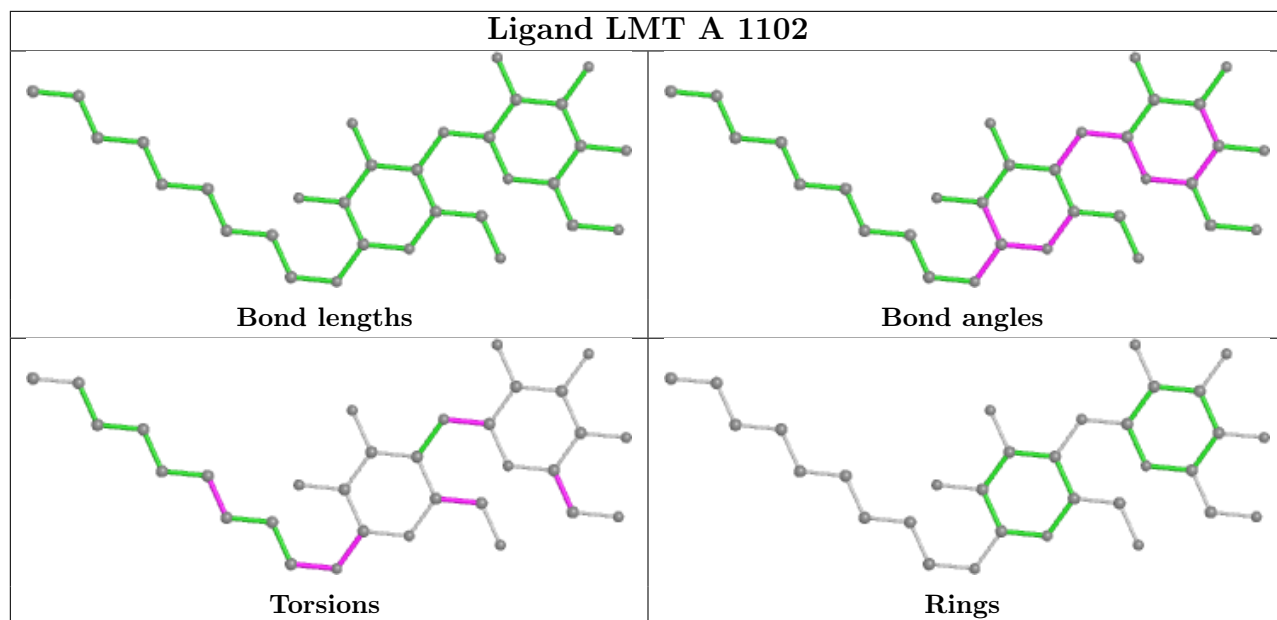
4 monomers are involved in 12 short contacts:

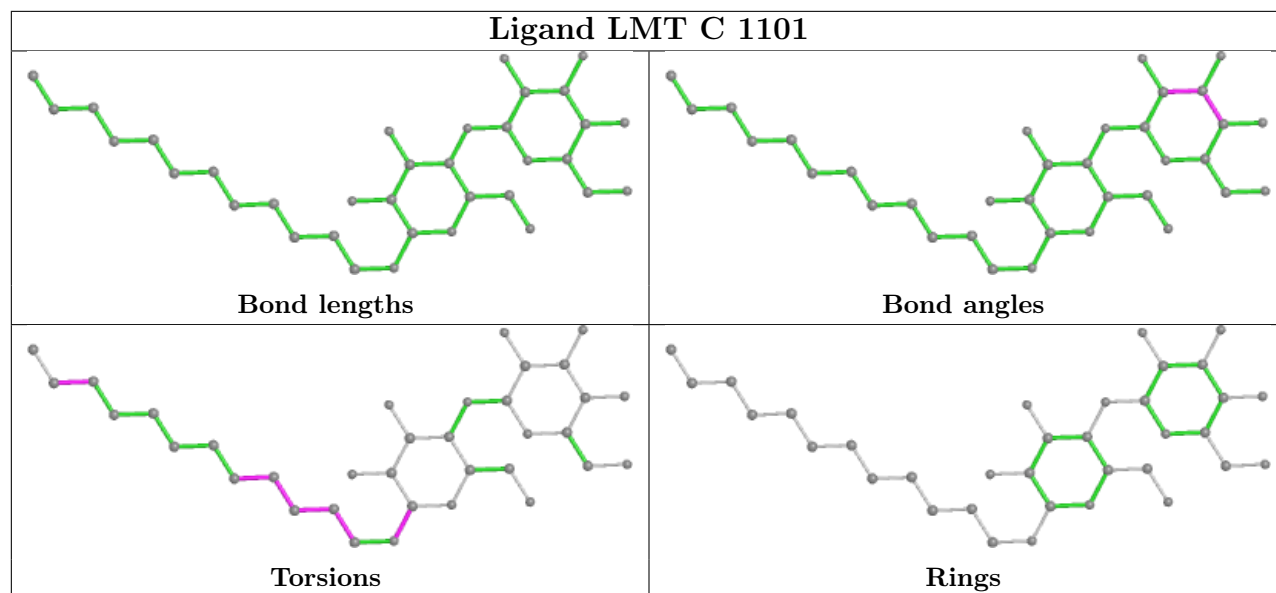
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	1101	LMT	5	0
3	A	1101	LMT	3	0
3	A	1102	LMT	2	0
3	C	1101	LMT	2	0

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









## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	1044/1057 (98%)	-0.08	57 (5%) 25 31	15, 40, 88, 156	0
1	B	1033/1057 (97%)	-0.26	23 (2%) 62 66	16, 39, 67, 139	0
1	C	1033/1057 (97%)	-0.40	7 (0%) 87 89	16, 31, 58, 95	0
2	D	156/169 (92%)	-0.38	2 (1%) 77 80	27, 38, 62, 109	0
2	E	152/169 (89%)	0.54	22 (14%) 2 3	27, 46, 77, 98	0
All	All	3418/3509 (97%)	-0.22	111 (3%) 47 54	15, 37, 74, 156	0

All (111) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	D	11	GLY	10.3
1	A	870	GLY	7.3
1	B	674	LEU	6.4
2	E	35	ALA	5.5
2	E	33	LEU	5.4
1	A	1037	ASN	5.4
1	A	459	PHE	5.3
1	A	1042	HIS	5.3
1	A	1041	GLU	5.2
1	B	677	ALA	5.0
1	A	675	GLY	5.0
1	A	674	LEU	4.9
1	A	512	PHE	4.9
1	A	871	ASN	4.9
2	E	31	ARG	4.9
1	A	869	SER	4.8
1	A	498	LYS	4.7
1	A	515	TRP	4.7
1	A	678	THR	4.6
1	B	868	LEU	4.5

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Mol	Chain	Res	Type	RSRZ
1	A	866	GLU	4.5
1	A	510	LYS	4.5
1	B	678	THR	4.2
1	A	1044	HIS	4.1
1	A	1040	ILE	4.1
2	E	68	LYS	4.0
2	E	34	MET	3.8
2	E	66	LEU	3.7
2	E	32	ILE	3.6
1	A	918	PHE	3.6
1	C	362	PHE	3.6
1	B	362	PHE	3.5
2	E	97	GLU	3.5
1	A	509	LYS	3.5
1	A	506	GLY	3.4
1	B	867	ARG	3.4
1	A	677	ALA	3.4
1	A	1043	SER	3.3
1	A	868	LEU	3.3
1	A	873	ALA	3.3
1	A	462	SER	3.2
1	B	511	GLY	3.2
1	A	1035	ARG	3.2
1	A	505	HIS	3.2
2	D	12	SER	3.1
2	E	30	VAL	3.1
1	A	501	ALA	3.1
1	A	503	GLY	3.1
2	E	63	VAL	3.1
1	A	513	PHE	3.0
1	A	500	ILE	2.9
1	B	512	PHE	2.9
1	A	872	GLN	2.9
1	A	672	VAL	2.8
1	A	508	GLY	2.8
1	A	511	GLY	2.8
1	A	556	PHE	2.8
1	A	518	ARG	2.8
1	B	257	GLY	2.7
1	A	526	HIS	2.7
1	C	498	LYS	2.7
1	A	461	GLY	2.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	510	LYS	2.6
1	A	540	ARG	2.6
1	A	554	TYR	2.6
1	A	617	PHE	2.6
1	C	1032	ARG	2.5
2	E	101	LYS	2.5
2	E	99	LEU	2.5
2	E	36	ASN	2.5
1	A	956	GLU	2.5
1	A	991	ILE	2.5
2	E	67	LEU	2.5
1	B	672	VAL	2.5
2	E	70	GLY	2.4
1	B	513	PHE	2.4
1	B	255	GLN	2.4
1	C	255	GLN	2.4
1	B	635	ALA	2.4
1	A	874	PRO	2.4
1	A	836	SER	2.4
1	A	834	GLY	2.4
1	C	508	GLY	2.4
1	A	1036	LYS	2.4
2	E	27	ASP	2.4
1	B	676	THR	2.4
1	A	536	ARG	2.3
1	A	618	ALA	2.3
1	C	1033	PHE	2.3
1	A	557	VAL	2.3
1	B	3	ASN	2.3
1	A	525	HIS	2.3
2	E	64	GLU	2.3
1	B	542	LEU	2.2
2	E	22	ALA	2.2
2	E	60	LEU	2.2
1	A	541	TYR	2.2
1	A	255	GLN	2.2
1	B	633	ASP	2.2
1	A	522	LYS	2.2
1	B	515	TRP	2.2
1	A	422	GLU	2.1
2	E	61	GLU	2.1
2	E	71	ALA	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	601	LYS	2.0
1	A	504	ASP	2.0
1	B	337	ILE	2.0
1	B	558	ARG	2.0
2	E	146	GLY	2.0
1	C	510	LYS	2.0
1	B	653	ARG	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

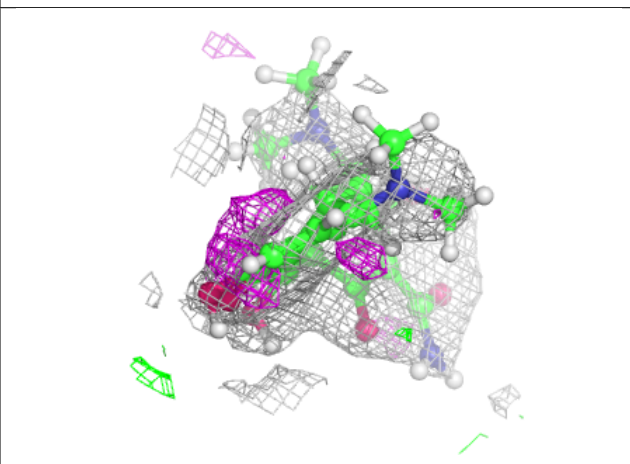
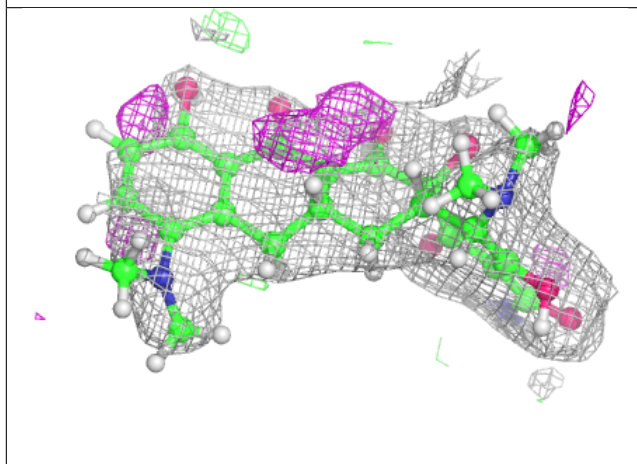
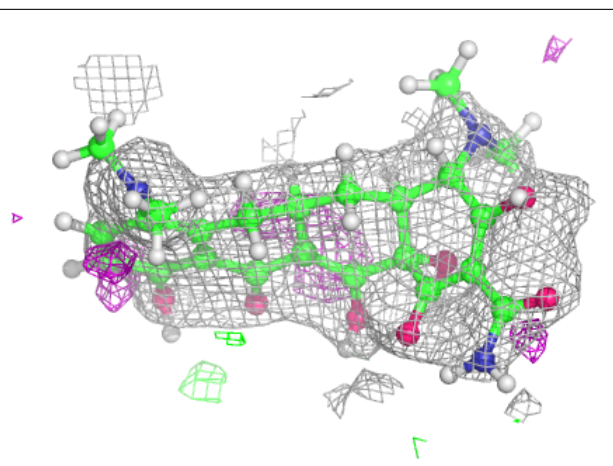
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	MIY	B	1102	33/33	0.89	0.14	48,65,83,92	0
3	LMT	B	1101	26/35	0.90	0.10	54,60,77,89	0
3	LMT	A	1101	35/35	0.91	0.15	45,60,82,83	0
3	LMT	A	1102	32/35	0.91	0.14	42,66,95,97	0
3	LMT	C	1101	35/35	0.95	0.10	48,55,70,80	0

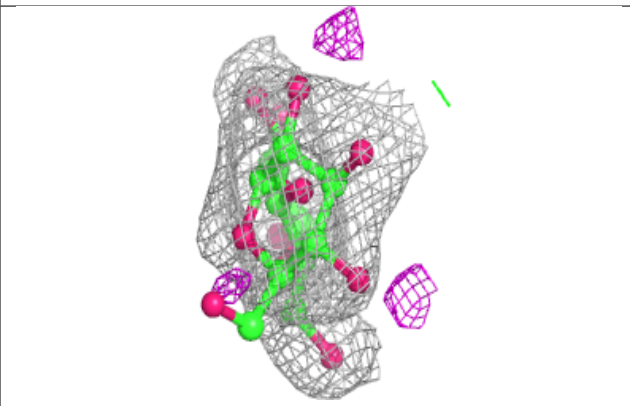
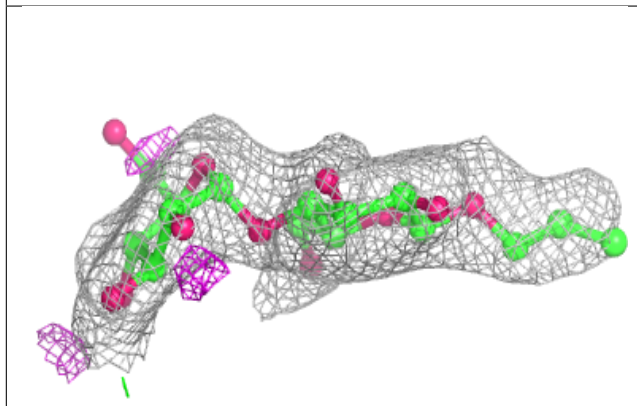
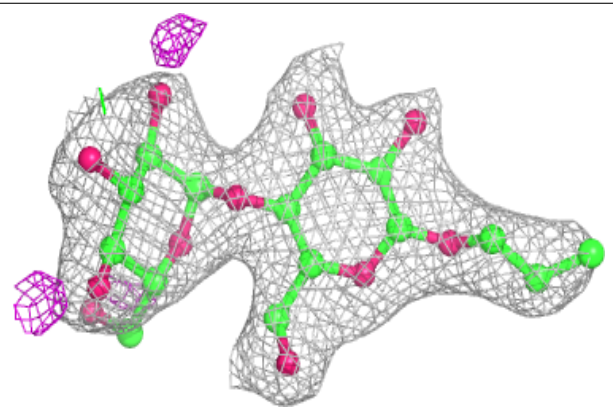
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

**Electron density around MIY B 1102:**

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

**Electron density around LMT B 1101:**

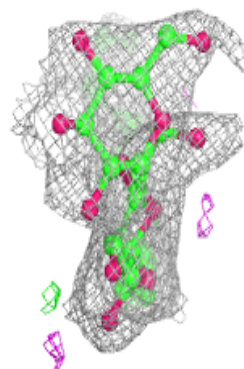
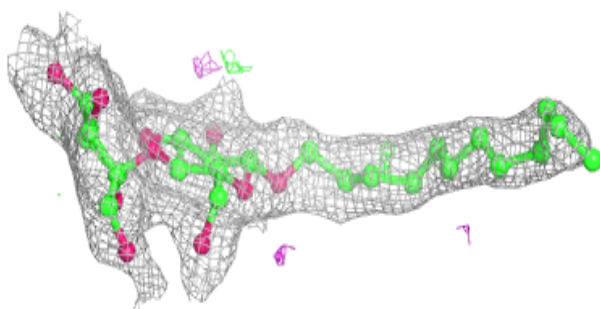
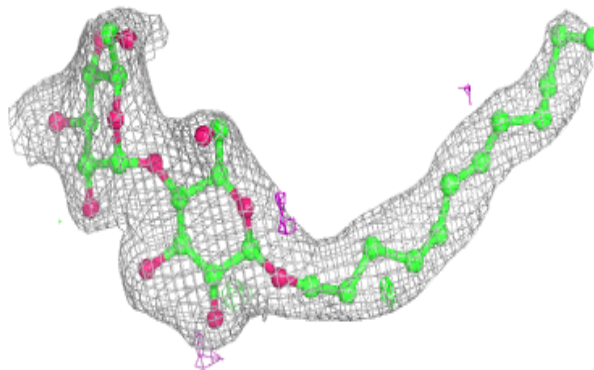
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



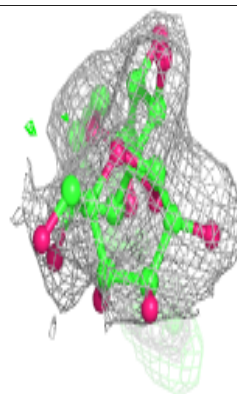
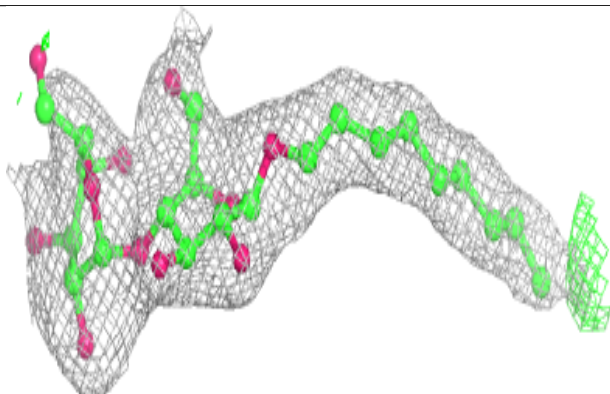
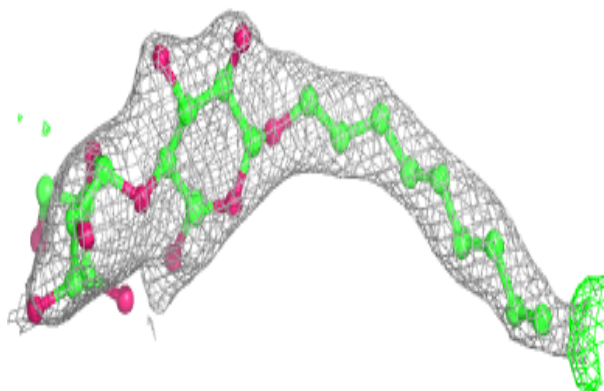


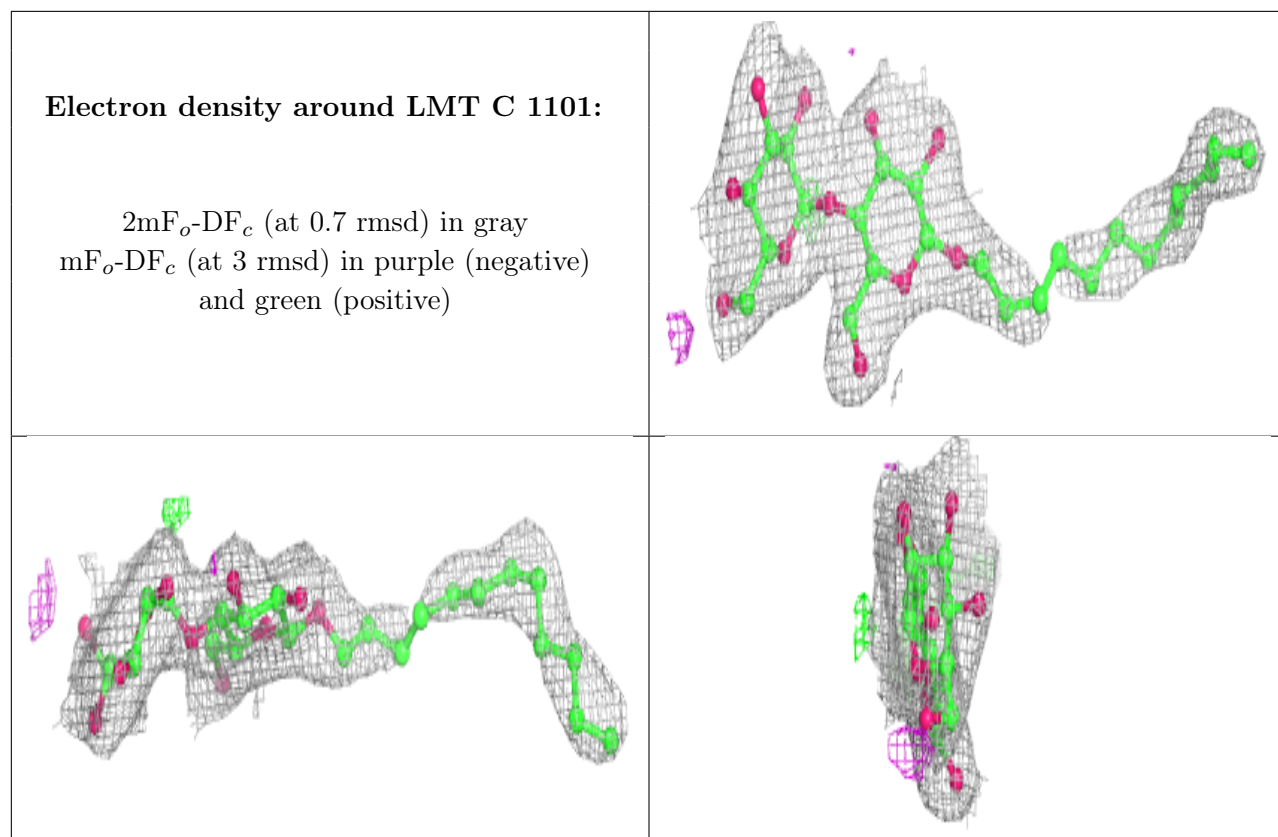
**Electron density around LMT A 1101:**

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

**Electron density around LMT A 1102:**

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





## 6.5 Other polymers [i](#)

There are no such residues in this entry.