



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 02:41 PM UTC

PDB ID : 7CYY / pdb_00007cyy
Title : Crystal structure of Arabinose isomerase from hybrid AI8 with Adonitol
Authors : Hoang, N.K.Q.; Dhanasingh, I.; Cao, T.P.; Sung, J.Y.; Shin, S.M.; Lee, D.W.;
Lee, S.H.
Deposited on : 2020-09-05
Resolution : 2.60 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

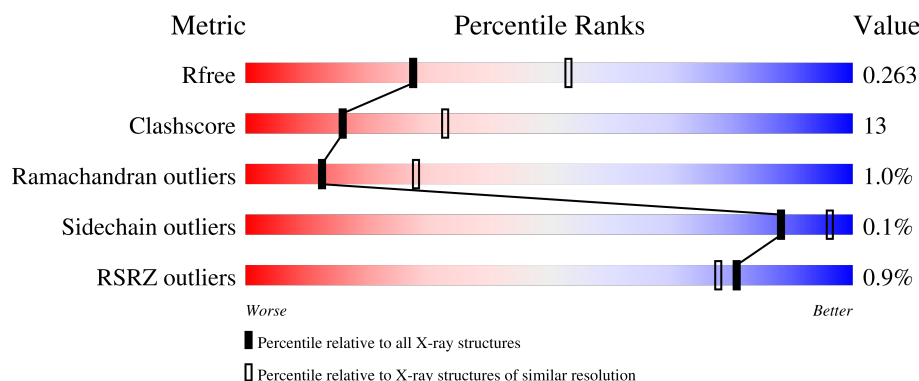
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	4008 (2.60-2.60)
Clashscore	190562	4347 (2.60-2.60)
Ramachandran outliers	187476	4277 (2.60-2.60)
Sidechain outliers	187428	4277 (2.60-2.60)
RSRZ outliers	180081	4008 (2.60-2.60)

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 $\leq 5\%$. 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	497	 76% 24%
1	B	497	 71% 28% .
1	C	497	 2% 70% 30%
1	D	497	 2% 71% 26% ..
1	E	497	 1% 68% 31% .

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Mol	Chain	Length	Quality of chain
1	F	497	2% 70% 29% ..

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 23776 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 L-arabinose isomerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	496	Total	C	N	O	S	0	0	0
			3925	2491	693	715	26			
1	B	494	Total	C	N	O	S	0	0	0
			3911	2484	691	710	26			
1	C	497	Total	C	N	O	S	0	0	0
			3932	2496	694	716	26			
1	D	490	Total	C	N	O	S	0	0	0
			3878	2460	687	706	25			
1	E	492	Total	C	N	O	S	0	0	0
			3895	2474	689	708	24			
1	F	493	Total	C	N	O	S	0	0	0
			3903	2478	690	711	24			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP Q5KYP7
B	1	MET	-	initiating methionine	UNP Q5KYP7
C	1	MET	-	initiating methionine	UNP Q5KYP7
D	1	MET	-	initiating methionine	UNP Q5KYP7
E	1	MET	-	initiating methionine	UNP Q5KYP7
F	1	MET	-	initiating methionine	UNP Q5KYP7

- Molecule 2 is (4S)-2-METHYL-2,4-PENTANEDIOL (CCD ID: MPD) (formula: C₆H₁₄O₂).

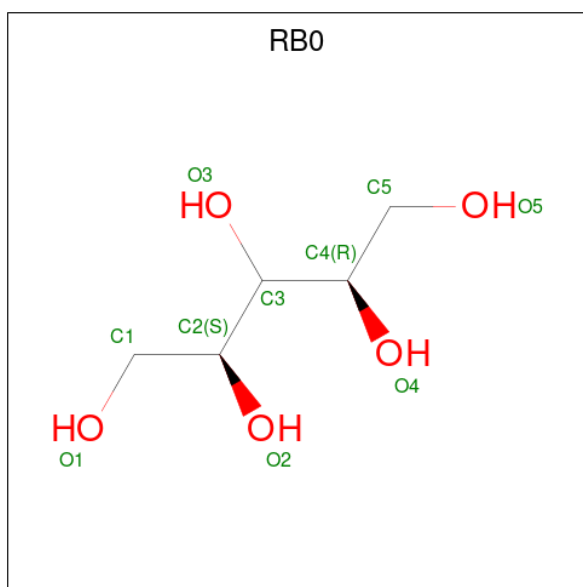


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			8	6	2		
2	C	1	Total	C	O	0	0
			8	6	2		

- Molecule 3 is MANGANESE (II) ION (CCD ID: MN) (formula: Mn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total	Mn	0	0
			2	2		
3	B	2	Total	Mn	0	0
			2	2		
3	C	1	Total	Mn	0	0
			1	1		
3	D	2	Total	Mn	0	0
			2	2		
3	E	1	Total	Mn	0	0
			1	1		
3	F	1	Total	Mn	0	0
			1	1		

- Molecule 4 is D-ribitol (CCD ID: RB0) (formula: C₅H₁₂O₅) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			10	5	5		
4	D	1	Total	C	O	0	0
			10	5	5		
4	D	1	Total	C	O	0	0
			10	5	5		
4	E	1	Total	C	O	0	0
			10	5	5		
4	F	1	Total	C	O	0	0
			10	5	5		
4	F	1	Total	C	O	0	0
			10	5	5		

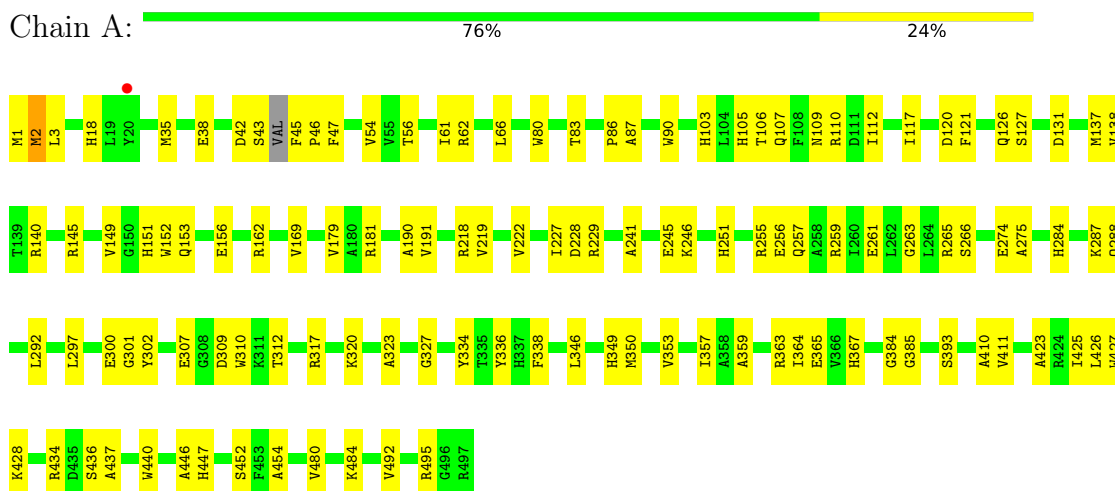
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	65	Total	O	0	0
			65	65		
5	B	52	Total	O	0	0
			52	52		
5	C	42	Total	O	0	0
			42	42		
5	D	21	Total	O	0	0
			21	21		
5	E	23	Total	O	0	0
			23	23		
5	F	44	Total	O	0	0
			44	44		

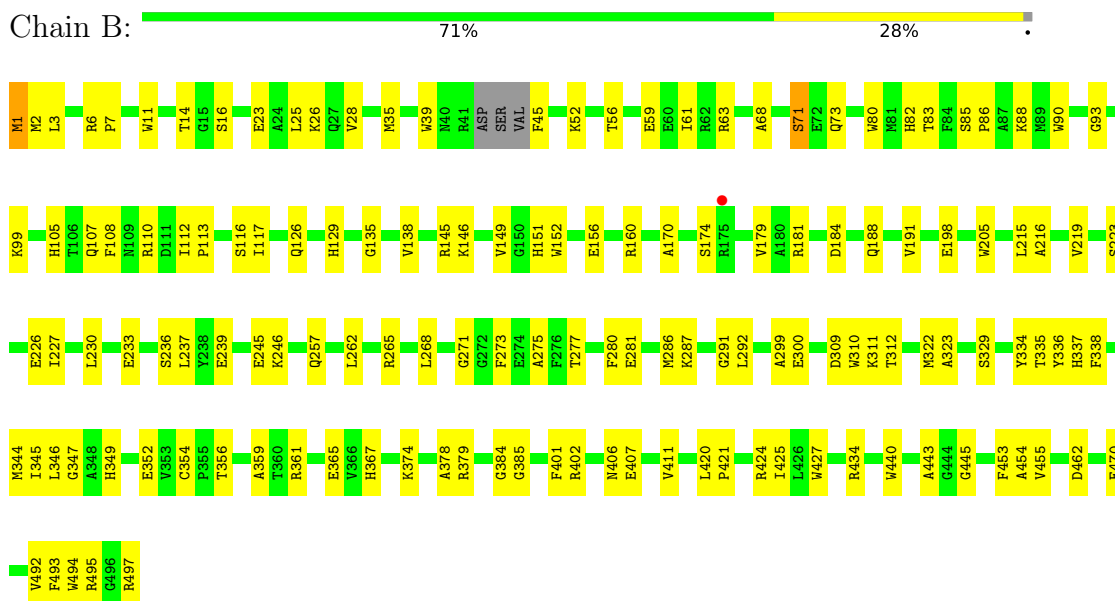
3 Residue-property plots [i](#)

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.

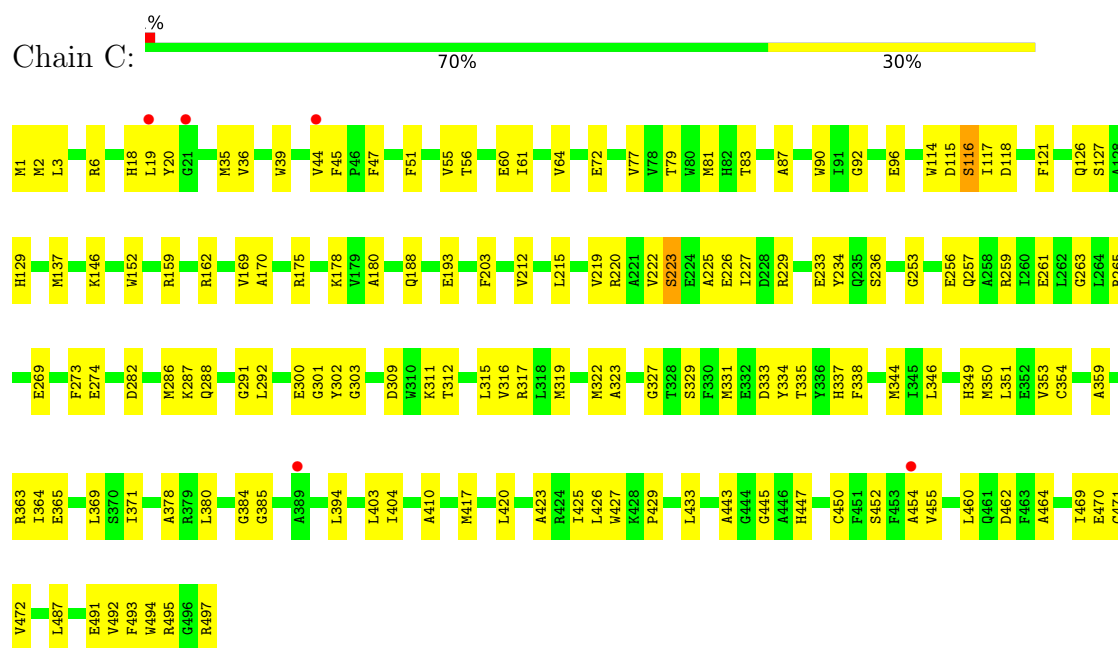
- Molecule 1: L-arabinose isomerase



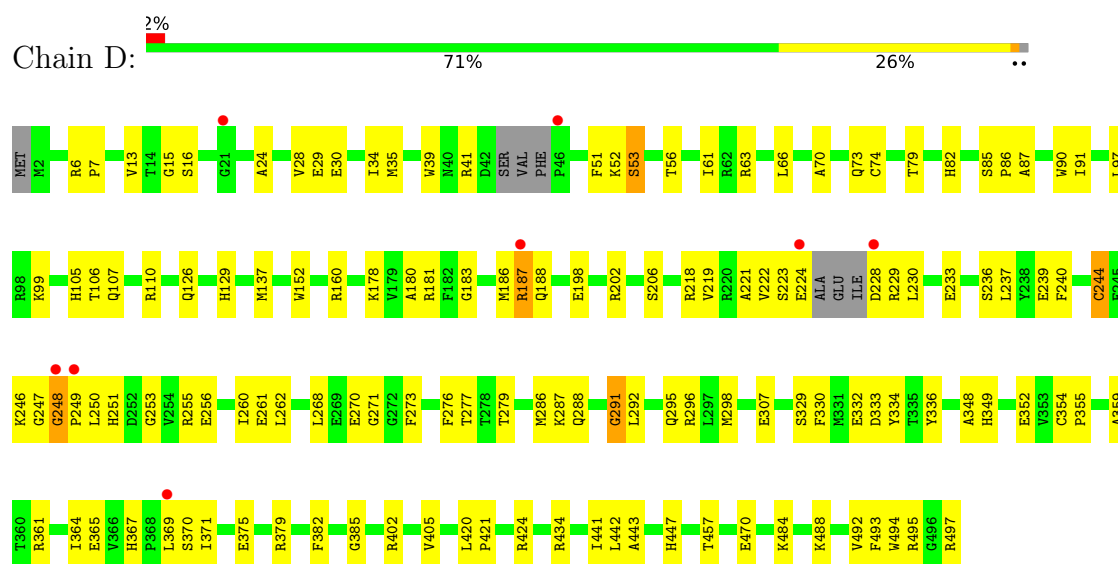
- Molecule 1: L-arabinose isomerase



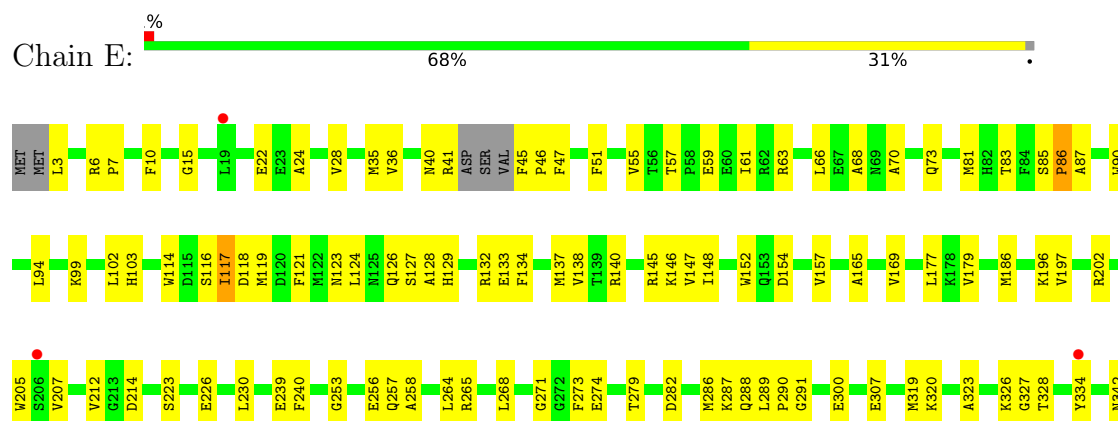
- Molecule 1: L-arabinose isomerase

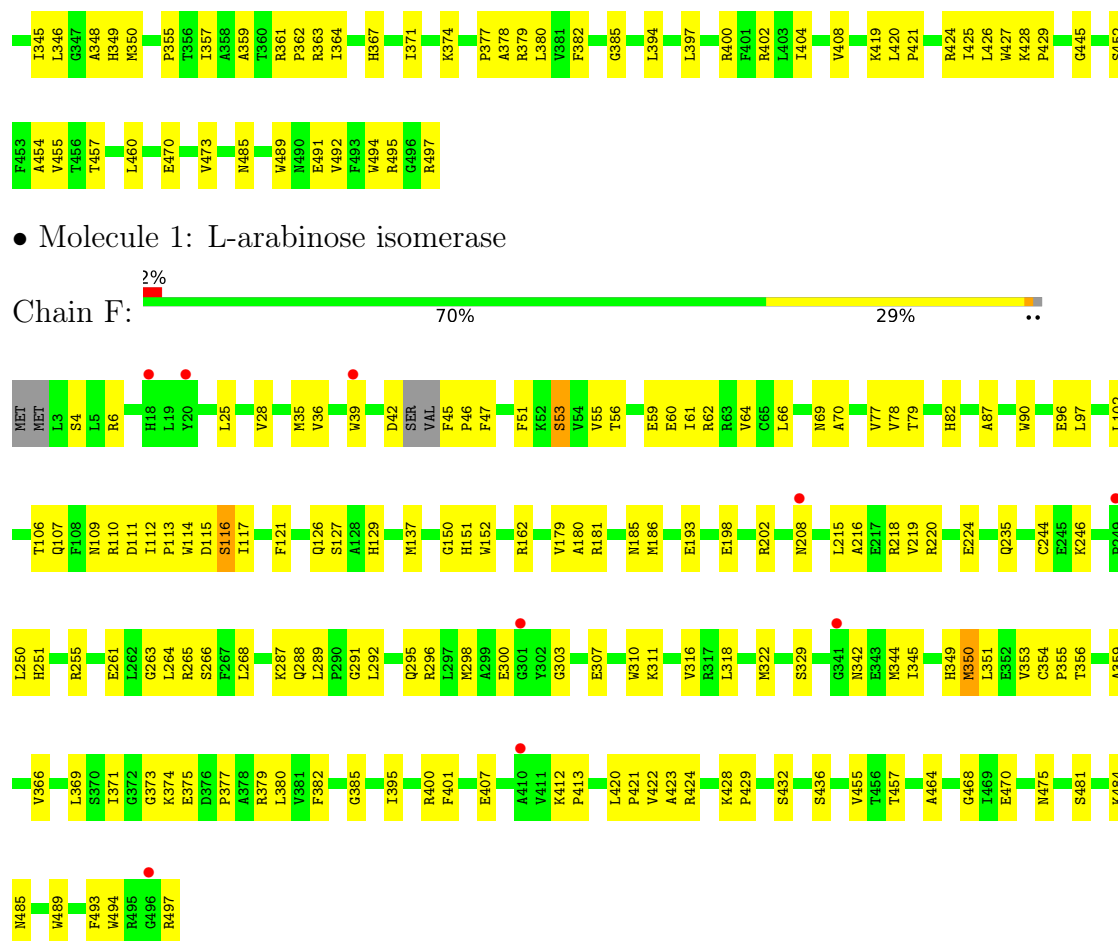


• Molecule 1: L-arabinose isomerase



• Molecule 1: L-arabinose isomerase





4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	205.58Å 82.12Å 192.73Å 90.00° 117.93° 90.00°	Depositor
Resolution (Å)	48.18 – 2.60 48.18 – 2.60	Depositor EDS
% Data completeness (in resolution range)	98.2 (48.18-2.60) 99.0 (48.18-2.60)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.73 (at 2.58Å)	Xtriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.186 , 0.261 0.189 , 0.263	Depositor DCC
R_{free} test set	4500 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å ²)	48.1	Xtriage
Anisotropy	0.067	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 25.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	23776	wwPDB-VP
Average B, all atoms (Å ²)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.16% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MN, MPD, RB0

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	0.43	0/4023	0.62	0/5440
1	B	0.39	0/4009	0.60	0/5421
1	C	0.40	0/4031	0.60	0/5453
1	D	0.41	0/3974	0.64	1/5372 (0.0%)
1	E	0.39	0/3993	0.58	0/5401
1	F	0.37	0/4001	0.58	0/5412
All	All	0.40	0/24031	0.60	1/32499 (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	F	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	187	ARG	NE-CZ-NH1	-6.42	115.08	121.50

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	F	53	SER	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	3925	0	3815	92	1
1	B	3911	0	3806	113	1
1	C	3932	0	3825	114	0
1	D	3878	0	3766	119	0
1	E	3895	0	3785	118	0
1	F	3903	0	3789	102	1
2	A	8	0	14	3	0
2	C	8	0	14	5	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	1	0	0	0	0
3	D	2	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
4	B	10	0	11	0	0
4	D	20	0	20	1	0
4	E	10	0	12	2	0
4	F	20	0	23	0	0
5	A	65	0	0	1	0
5	B	52	0	0	1	0
5	C	42	0	0	3	0
5	D	21	0	0	3	0
5	E	23	0	0	2	0
5	F	44	0	0	1	0
All	All	23776	0	22880	612	2

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 13.

All (612) 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:C:319:MET:HE3	1:C:450:CYS:SG	1.64	1.35
1:D:187:ARG:NH1	5:D:601:HOH:O	1.64	1.25
1:C:492:VAL:HG12	1:C:495:ARG:NH2	1.72	1.05

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:493:PHE:O	1:B:497:ARG:NH1	1.95	0.99
1:C:319:MET:CE	1:C:450:CYS:HB3	1.92	0.99
1:A:228:ASP:OD1	1:A:255:ARG:NH2	2.01	0.94
1:C:319:MET:CE	1:C:450:CYS:SG	2.57	0.91
1:C:492:VAL:HG12	1:C:495:ARG:CZ	2.00	0.91
1:C:319:MET:HE3	1:C:450:CYS:CB	2.01	0.90
1:D:224:GLU:HB3	1:D:228:ASP:HB2	1.55	0.89
1:B:354:CYS:HG	1:B:356:THR:HG1	1.20	0.89
1:F:412:LYS:HD3	1:F:413:PRO:HD2	1.56	0.87
1:E:334:TYR:CE2	1:E:349:HIS:HA	2.12	0.85
1:F:261:GLU:OE2	1:F:296:ARG:NH1	2.11	0.83
1:C:319:MET:CE	1:C:450:CYS:CB	2.57	0.83
1:D:334:TYR:HE2	1:D:349:HIS:HA	1.45	0.82
1:B:334:TYR:HE2	1:B:349:HIS:HA	1.43	0.81
1:A:138:VAL:HG11	1:A:145:ARG:HD3	1.64	0.80
1:A:334:TYR:HE2	1:A:349:HIS:HA	1.46	0.80
1:F:420:LEU:HD23	1:F:424:ARG:HG2	1.64	0.79
1:F:354:CYS:HG	1:F:356:THR:HG1	1.29	0.79
1:F:288:GLN:HG2	1:F:375:GLU:HB2	1.63	0.79
1:E:334:TYR:HE2	1:E:349:HIS:HA	1.46	0.78
1:B:181:ARG:NH2	1:B:184:ASP:OD1	2.16	0.77
1:D:233:GLU:HA	1:D:236:SER:HB3	1.67	0.77
1:E:334:TYR:CE2	1:E:348:ALA:O	2.37	0.77
1:B:105:HIS:HB3	1:B:149:VAL:HG22	1.67	0.77
1:E:138:VAL:HG11	1:E:145:ARG:HD3	1.67	0.76
1:E:146:LYS:NZ	5:E:601:HOH:O	2.18	0.76
1:C:363:ARG:NH2	1:C:365:GLU:OE2	2.18	0.76
1:A:411:VAL:HG11	1:A:428:LYS:HD2	1.66	0.75
1:E:41:ARG:HD3	1:E:41:ARG:H	1.52	0.74
1:F:235:GLN:OE1	1:F:246:LYS:NZ	2.16	0.74
1:B:88:LYS:NZ	1:D:187:ARG:NH2	2.36	0.73
1:E:492:VAL:HG13	1:E:495:ARG:NH2	2.03	0.73
1:D:244:CYS:O	1:D:251:HIS:ND1	2.21	0.73
1:C:1:MET:SD	5:C:642:HOH:O	2.47	0.72
1:F:329:SER:HB2	1:F:354:CYS:HB3	1.71	0.72
1:D:365:GLU:OE1	1:D:367:HIS:NE2	2.23	0.72
1:E:334:TYR:HE2	1:E:348:ALA:O	1.72	0.72
1:B:497:ARG:HH22	1:D:495:ARG:HH12	1.35	0.72
1:B:329:SER:HB2	1:B:354:CYS:HB3	1.72	0.71
1:D:63:ARG:HH12	1:E:70:ALA:HB1	1.54	0.71
1:A:43:SER:HG	1:A:45:PHE:N	1.89	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:265:ARG:NH2	1:C:300:GLU:OE2	2.23	0.71
1:F:246:LYS:H	1:F:246:LYS:HD2	1.56	0.70
1:C:492:VAL:CG1	1:C:495:ARG:NH2	2.54	0.70
1:B:334:TYR:CE2	1:B:349:HIS:HA	2.25	0.70
1:E:81:MET:O	1:E:127:SER:HB3	1.92	0.69
1:C:39:TRP:HB3	2:C:501:MPD:H31	1.74	0.69
4:E:501:RB0:O1	4:E:501:RB0:O3	2.07	0.69
1:E:6:ARG:NH2	1:E:73:GLN:HB3	2.07	0.69
1:E:326:LYS:HE2	1:E:454:ALA:HB2	1.74	0.69
1:B:146:LYS:NZ	1:B:462:ASP:OD2	2.24	0.69
1:D:249:PRO:HB2	1:D:250:LEU:HG	1.73	0.69
1:A:359:ALA:HB2	1:A:385:GLY:HA2	1.75	0.69
1:B:223:SER:HG	1:B:226:GLU:H	1.37	0.69
1:C:334:TYR:HE2	1:C:349:HIS:HA	1.58	0.68
1:C:115:ASP:O	1:C:116:SER:HB3	1.93	0.68
1:F:137:MET:HE3	1:F:137:MET:HA	1.76	0.68
1:C:193:GLU:O	1:C:311:LYS:NZ	2.27	0.68
1:E:239:GLU:HG3	1:E:363:ARG:HB3	1.76	0.68
1:F:265:ARG:NH1	1:F:300:GLU:OE1	2.27	0.68
1:B:346:LEU:HD11	1:B:424:ARG:HB2	1.75	0.67
1:C:126:GLN:HB2	1:C:129:HIS:NE2	2.09	0.67
1:F:235:GLN:CD	1:F:246:LYS:HZ3	2.00	0.67
1:F:292:LEU:HD12	1:F:380:LEU:HG	1.77	0.67
1:C:226:GLU:HG2	1:C:229:ARG:HD2	1.78	0.66
1:B:257:GLN:HG3	1:B:378:ALA:HB3	1.79	0.65
1:F:224:GLU:OE2	1:F:255:ARG:NH2	2.29	0.65
1:C:492:VAL:HG11	1:F:493:PHE:HA	1.77	0.65
1:B:83:THR:HA	1:B:126:GLN:HB2	1.78	0.65
1:B:88:LYS:HZ3	1:D:187:ARG:NH2	1.93	0.65
1:E:357:ILE:HD12	1:E:425:ILE:HD12	1.76	0.65
1:A:156:GLU:OE1	1:B:434:ARG:NH1	2.29	0.65
1:F:193:GLU:O	1:F:311:LYS:NZ	2.30	0.65
1:B:88:LYS:NZ	1:D:187:ARG:HH21	1.96	0.64
1:E:334:TYR:CE2	1:E:348:ALA:C	2.75	0.64
1:C:2:MET:HB3	1:C:300:GLU:HG2	1.79	0.64
1:C:253:GLY:HA2	1:C:288:GLN:HE22	1.63	0.64
1:C:229:ARG:HH11	1:C:229:ARG:HG3	1.62	0.64
1:A:365:GLU:OE1	1:A:367:HIS:NE2	2.25	0.63
1:B:3:LEU:N	1:B:300:GLU:O	2.29	0.63
1:F:35:MET:HG2	1:F:152:TRP:CD2	2.33	0.63
1:B:245:GLU:HG2	1:B:246:LYS:H	1.63	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:350:MET:HE2	1:C:369:LEU:HD21	1.81	0.63
1:B:191:VAL:O	1:B:311:LYS:NZ	2.28	0.63
1:C:44:VAL:HB	2:C:501:MPD:O4	1.99	0.63
1:A:265:ARG:HH22	1:A:300:GLU:CD	2.07	0.62
1:A:190:ALA:CB	1:D:137:MET:HE2	2.30	0.62
1:A:190:ALA:HB2	1:D:137:MET:HE2	1.81	0.62
1:D:261:GLU:OE2	1:D:296:ARG:NH1	2.31	0.62
1:A:492:VAL:HG11	1:D:493:PHE:HA	1.79	0.62
1:C:146:LYS:NZ	1:C:462:ASP:OD2	2.27	0.62
1:C:219:VAL:HG12	1:C:263:GLY:HA3	1.81	0.62
1:D:219:VAL:HG11	1:D:260:ILE:HA	1.80	0.62
1:D:334:TYR:OH	5:D:602:HOH:O	2.12	0.62
1:E:361:ARG:HD3	1:E:362:PRO:HD3	1.81	0.62
1:E:419:LYS:C	1:E:419:LYS:HD2	2.25	0.62
1:F:6:ARG:NH2	5:F:602:HOH:O	2.31	0.62
1:B:113:PRO:HB2	1:B:116:SER:HB3	1.80	0.62
1:B:309:ASP:OD2	1:B:312:THR:OG1	2.16	0.62
1:B:497:ARG:HH22	1:D:495:ARG:NH1	1.97	0.62
1:D:126:GLN:HB2	1:D:129:HIS:CE1	2.34	0.62
1:F:292:LEU:HB2	1:F:379:ARG:HA	1.81	0.62
1:D:352:GLU:OE2	1:D:352:GLU:N	2.30	0.61
1:A:334:TYR:CE2	1:A:349:HIS:HA	2.31	0.61
1:C:87:ALA:HB1	1:C:137:MET:HB2	1.82	0.61
1:C:118:ASP:O	1:C:121:PHE:N	2.33	0.61
1:E:59:GLU:OE2	1:E:63:ARG:HD3	2.01	0.60
1:C:323:ALA:HB1	1:C:454:ALA:HB3	1.83	0.60
1:C:337:HIS:CE1	1:F:111:ASP:HB3	2.36	0.60
1:C:159:ARG:HG2	1:C:162:ARG:HH12	1.65	0.60
1:F:39:TRP:HB3	1:F:45:PHE:HE1	1.67	0.60
1:F:36:VAL:HG21	1:F:51:PHE:HB2	1.84	0.60
1:D:233:GLU:O	1:D:237:LEU:HG	2.02	0.59
1:D:329:SER:HB2	1:D:354:CYS:HB3	1.84	0.59
1:C:331:MET:HE3	1:C:331:MET:HA	1.83	0.59
1:B:129:HIS:HB2	1:D:447:HIS:HB2	1.84	0.59
1:C:329:SER:HB2	1:C:354:CYS:HB3	1.83	0.59
1:B:493:PHE:HA	1:D:492:VAL:HG21	1.84	0.59
1:E:145:ARG:NH1	5:E:603:HOH:O	2.35	0.59
1:E:6:ARG:CZ	1:E:73:GLN:HB3	2.32	0.59
1:E:128:ALA:O	1:E:132:ARG:HD2	2.02	0.59
1:A:384:GLY:HA3	1:A:425:ILE:HD12	1.84	0.58
1:B:323:ALA:HB1	1:B:454:ALA:HB3	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:365:GLU:OE1	1:B:367:HIS:NE2	2.29	0.58
1:E:265:ARG:NH2	1:E:300:GLU:OE1	2.36	0.58
1:B:492:VAL:HG13	1:B:495:ARG:HH22	1.68	0.58
1:F:126:GLN:HB2	1:F:129:HIS:CE1	2.38	0.58
1:B:323:ALA:HB2	1:B:455:VAL:HG23	1.85	0.58
1:F:55:VAL:HB	1:F:61:ILE:HG13	1.85	0.58
1:B:265:ARG:NH1	1:B:300:GLU:OE1	2.37	0.58
1:B:88:LYS:HZ1	1:D:187:ARG:HH21	1.51	0.57
1:C:178:LYS:NZ	5:C:605:HOH:O	2.31	0.57
1:B:359:ALA:HB2	1:B:385:GLY:HA2	1.86	0.57
1:F:344:MET:HG2	1:F:428:LYS:HG3	1.86	0.57
1:A:261:GLU:OE2	1:A:265:ARG:NH1	2.37	0.57
1:C:311:LYS:HD2	1:C:394:LEU:HD23	1.86	0.57
1:B:361:ARG:NH1	1:B:361:ARG:HB3	2.19	0.56
1:F:39:TRP:HB3	1:F:45:PHE:CE1	2.39	0.56
1:C:319:MET:HE2	1:C:450:CYS:HB3	1.86	0.56
1:D:187:ARG:NE	1:D:188:GLN:H	2.03	0.56
1:B:361:ARG:HB3	1:B:361:ARG:HH11	1.69	0.56
1:F:350:MET:O	1:F:351:LEU:HD23	2.06	0.56
1:F:69:ASN:ND2	1:F:96:GLU:O	2.38	0.56
1:B:170:ALA:HB2	1:B:322:MET:HG3	1.87	0.56
1:F:45:PHE:N	1:F:46:PRO:HD3	2.21	0.56
1:A:1:MET:O	1:A:2:MET:HB2	2.05	0.56
1:E:6:ARG:HD3	1:E:7:PRO:HD2	1.88	0.56
1:E:359:ALA:HB2	1:E:385:GLY:HA2	1.87	0.56
1:C:315:LEU:HG	1:C:319:MET:HE2	1.87	0.56
1:D:224:GLU:CB	1:D:228:ASP:HB2	2.31	0.56
1:E:355:PRO:HG3	1:E:380:LEU:HD12	1.88	0.56
1:F:115:ASP:O	1:F:116:SER:HB2	2.05	0.56
1:A:106:THR:OG1	1:A:107:GLN:N	2.35	0.55
1:B:6:ARG:HG3	1:B:7:PRO:HD2	1.87	0.55
1:E:379:ARG:NH1	1:E:421:PRO:O	2.39	0.55
1:F:295:GLN:OE1	1:F:380:LEU:N	2.37	0.55
1:A:46:PRO:HG2	1:A:47:PHE:CE2	2.42	0.55
1:D:470:GLU:HB2	1:D:494:TRP:CD1	2.41	0.55
1:A:18:HIS:CE1	1:A:56:THR:HG21	2.41	0.55
1:F:420:LEU:HD12	1:F:421:PRO:HD2	1.89	0.55
1:B:16:SER:O	1:B:56:THR:HA	2.06	0.54
1:C:61:ILE:HG21	1:C:90:TRP:HA	1.90	0.54
1:E:334:TYR:CD2	1:E:348:ALA:O	2.60	0.54
1:B:2:MET:HE1	1:B:299:ALA:O	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:88:LYS:HZ1	1:D:187:ARG:NH2	2.04	0.54
1:D:369:LEU:HD23	1:D:371:ILE:O	2.07	0.54
1:F:215:LEU:O	1:F:219:VAL:HG23	2.07	0.54
1:A:480:VAL:O	1:A:484:LYS:HG3	2.08	0.54
1:E:114:TRP:O	1:E:117:ILE:HG22	2.08	0.54
1:E:320:LYS:HE2	1:E:328:THR:O	2.08	0.54
1:A:447:HIS:HB2	1:D:129:HIS:HB2	1.88	0.54
1:E:47:PHE:CE2	1:E:169:VAL:HG21	2.43	0.54
1:E:87:ALA:HB1	1:E:137:MET:HB2	1.90	0.54
1:E:103:HIS:HB3	1:E:147:VAL:HG22	1.90	0.54
1:E:205:TRP:HH2	1:E:394:LEU:HD22	1.72	0.54
1:F:303:GLY:HA2	1:F:316:VAL:HG12	1.89	0.54
1:D:379:ARG:NH1	1:D:421:PRO:O	2.34	0.54
1:E:253:GLY:HA2	1:E:288:GLN:HE22	1.73	0.54
1:E:420:LEU:HD23	1:E:424:ARG:HD2	1.88	0.54
1:F:219:VAL:HG22	1:F:263:GLY:HA3	1.89	0.54
1:E:319:MET:HE3	1:E:455:VAL:HG11	1.88	0.54
1:E:320:LYS:HG2	1:E:328:THR:HB	1.90	0.54
1:F:87:ALA:HB1	1:F:137:MET:HB2	1.90	0.54
1:A:495:ARG:NH1	1:D:497:ARG:HH22	2.06	0.54
1:D:28:VAL:HG13	1:D:82:HIS:CD2	2.42	0.54
1:A:112:ILE:HG13	1:B:337:HIS:HB2	1.89	0.53
1:D:35:MET:HG2	1:D:152:TRP:CD2	2.44	0.53
1:B:174:SER:OG	1:B:205:TRP:NE1	2.39	0.53
1:C:447:HIS:HB2	1:F:129:HIS:HB2	1.90	0.53
1:E:223:SER:OG	1:E:226:GLU:HG2	2.08	0.53
1:E:256:GLU:CD	1:E:287:LYS:HD2	2.33	0.53
1:E:492:VAL:HG13	1:E:495:ARG:HH21	1.69	0.53
1:D:253:GLY:HA2	1:D:288:GLN:HE22	1.73	0.53
1:D:287:LYS:NZ	1:D:375:GLU:OE2	2.30	0.53
1:E:102:LEU:HD11	1:E:148:ILE:HD12	1.90	0.53
1:D:186:MET:HG2	1:D:187:ARG:N	2.22	0.53
1:F:353:VAL:HB	1:F:423:ALA:HB3	1.90	0.53
1:D:292:LEU:HB2	1:D:379:ARG:HA	1.90	0.53
1:A:80:TRP:NE1	1:A:127:SER:OG	2.41	0.53
1:A:222:VAL:O	1:A:259:ARG:NH2	2.42	0.53
1:D:91:ILE:HD11	1:D:137:MET:HE3	1.91	0.53
1:B:129:HIS:HB2	1:D:447:HIS:CB	2.38	0.53
1:B:149:VAL:O	1:D:434:ARG:HG3	2.09	0.53
1:C:81:MET:O	1:C:127:SER:HB3	2.07	0.53
1:C:334:TYR:CE2	1:C:349:HIS:HA	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:420:LEU:HB3	1:D:424:ARG:NH2	2.24	0.52
1:B:286:MET:O	1:B:374:LYS:HD2	2.09	0.52
1:F:318:LEU:O	1:F:322:MET:HG3	2.09	0.52
1:A:256:GLU:OE2	1:A:259:ARG:HD3	2.10	0.52
1:B:233:GLU:O	1:B:236:SER:OG	2.21	0.52
1:C:359:ALA:HB2	1:C:385:GLY:HA2	1.92	0.52
1:D:186:MET:HG2	1:D:187:ARG:H	1.73	0.52
1:E:350:MET:HE3	4:E:501:RB0:H1	1.92	0.52
1:E:470:GLU:HB2	1:E:494:TRP:CD1	2.44	0.52
1:E:186:MET:HB2	1:E:307:GLU:HB3	1.92	0.52
1:A:346:LEU:HA	1:A:426:LEU:HD23	1.92	0.52
1:B:239:GLU:HG3	1:B:361:ARG:HH12	1.75	0.52
1:F:289:LEU:HD23	1:F:351:LEU:HG	1.91	0.52
1:E:457:THR:HG21	1:E:473:VAL:HG11	1.92	0.52
1:C:92:GLY:O	1:C:96:GLU:HG2	2.09	0.52
1:E:400:ARG:HD2	1:E:494:TRP:HB3	1.92	0.52
1:B:352:GLU:OE1	1:B:352:GLU:N	2.37	0.51
1:D:187:ARG:HE	1:D:188:GLN:H	1.59	0.51
1:E:257:GLN:HG3	1:E:378:ALA:HB3	1.92	0.51
1:A:107:GLN:NE2	1:A:109:ASN:O	2.39	0.51
1:E:212:VAL:HG21	1:E:282:ASP:O	2.10	0.51
1:A:245:GLU:O	1:A:251:HIS:HB2	2.10	0.51
1:A:323:ALA:HB1	1:A:454:ALA:HB3	1.93	0.51
1:C:219:VAL:HA	1:C:222:VAL:HG23	1.93	0.51
1:C:404:ILE:HD13	1:C:445:GLY:HA2	1.93	0.51
1:D:87:ALA:HB1	1:D:137:MET:HB2	1.93	0.51
1:D:334:TYR:CE2	1:D:349:HIS:HA	2.35	0.51
1:C:256:GLU:HG2	1:C:287:LYS:HB2	1.93	0.51
1:F:287:LYS:O	1:F:374:LYS:HB3	2.11	0.51
1:A:191:VAL:HG21	1:A:446:ALA:HA	1.92	0.51
1:A:219:VAL:HG22	1:A:263:GLY:HA3	1.92	0.51
1:F:494:TRP:HA	1:F:497:ARG:HG3	1.93	0.51
1:D:137:MET:HE1	1:E:197:VAL:HG13	1.92	0.51
1:B:68:ALA:O	1:B:99:LYS:HE3	2.11	0.50
1:C:472:VAL:HG11	1:C:487:LEU:HD23	1.91	0.50
1:D:91:ILE:HD11	1:D:137:MET:CE	2.41	0.50
1:C:35:MET:HA	1:C:152:TRP:CZ3	2.46	0.50
1:D:230:LEU:HD22	1:D:262:LEU:HG	1.91	0.50
1:B:2:MET:HE3	1:B:300:GLU:C	2.36	0.50
1:C:83:THR:HA	1:C:126:GLN:HG3	1.91	0.50
1:D:405:VAL:HG11	1:D:457:THR:HG22	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:256:GLU:HB3	1:A:288:GLN:NE2	2.26	0.50
1:A:357:ILE:O	1:A:384:GLY:HA2	2.10	0.50
1:C:19:LEU:HD23	1:C:20:TYR:H	1.77	0.50
1:C:303:GLY:HA2	1:C:316:VAL:HG12	1.93	0.50
1:E:323:ALA:HB1	1:E:454:ALA:HB3	1.92	0.50
1:B:2:MET:CE	1:B:299:ALA:O	2.60	0.50
1:A:241:ALA:HB2	1:A:363:ARG:HD2	1.94	0.50
1:A:434:ARG:HH21	1:D:160:ARG:HH11	1.60	0.50
1:E:491:GLU:O	1:E:495:ARG:HG3	2.11	0.50
1:B:216:ALA:O	1:B:219:VAL:HG22	2.12	0.50
1:F:311:LYS:HE3	1:F:395:ILE:HA	1.93	0.50
1:A:309:ASP:OD2	1:A:312:THR:OG1	2.19	0.49
1:A:447:HIS:CB	1:D:129:HIS:HB2	2.43	0.49
1:C:229:ARG:HG3	1:C:229:ARG:NH1	2.24	0.49
1:C:301:GLY:O	1:C:317:ARG:NH2	2.44	0.49
1:E:3:LEU:HD21	1:E:274:GLU:HG2	1.93	0.49
1:A:47:PHE:CE2	1:A:169:VAL:HG21	2.47	0.49
1:A:110:ARG:O	1:B:338:PHE:HB2	2.12	0.49
1:F:181:ARG:N	1:F:208:ASN:O	2.34	0.49
1:C:491:GLU:O	1:C:495:ARG:HG3	2.12	0.49
1:D:61:ILE:HG21	1:D:90:TRP:HA	1.94	0.49
1:A:3:LEU:HD23	1:A:317:ARG:CZ	2.43	0.49
1:B:492:VAL:HG13	1:B:495:ARG:NH2	2.27	0.49
1:E:47:PHE:CD2	1:E:169:VAL:HG21	2.48	0.49
1:A:336:TYR:HE2	1:D:105:HIS:CE1	2.31	0.49
1:A:495:ARG:HH12	1:D:497:ARG:HH12	1.58	0.49
1:B:420:LEU:HD12	1:B:421:PRO:HD2	1.93	0.49
1:B:492:VAL:HG12	1:D:492:VAL:HG11	1.95	0.49
1:E:345:ILE:HD12	1:E:427:TRP:NE1	2.28	0.49
1:E:116:SER:O	1:E:118:ASP:N	2.45	0.49
1:C:309:ASP:OD2	1:C:312:THR:OG1	2.25	0.49
1:E:10:PHE:CE2	1:E:165:ALA:HB1	2.48	0.49
1:E:334:TYR:HE2	1:E:348:ALA:C	2.18	0.49
1:B:268:LEU:HA	1:B:273:PHE:HD2	1.78	0.49
1:C:6:ARG:HH21	1:C:72:GLU:HG3	1.78	0.49
1:D:359:ALA:HB2	1:D:385:GLY:HA2	1.94	0.49
1:E:350:MET:HE1	1:E:371:ILE:HG21	1.94	0.49
1:B:402:ARG:NH1	1:B:443:ALA:O	2.45	0.49
1:C:261:GLU:OE2	1:C:265:ARG:NH2	2.34	0.49
1:D:6:ARG:NH2	1:D:73:GLN:HG3	2.27	0.49
1:C:223:SER:HB2	1:C:226:GLU:HB2	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:6:ARG:HH11	1:D:6:ARG:HG2	1.78	0.48
1:F:359:ALA:HB2	1:F:385:GLY:HA2	1.95	0.48
1:A:265:ARG:NH2	1:A:300:GLU:OE1	2.46	0.48
1:D:198:GLU:HB2	1:E:140:ARG:NH2	2.28	0.48
1:E:119:MET:O	1:E:123:ASN:N	2.40	0.48
1:E:265:ARG:HH21	1:E:300:GLU:CD	2.20	0.48
1:F:179:VAL:O	1:F:208:ASN:HB2	2.13	0.48
1:A:105:HIS:CE1	1:B:336:TYR:HE2	2.31	0.48
1:D:24:ALA:O	1:D:28:VAL:HG23	2.14	0.48
1:B:14:THR:HA	1:B:80:TRP:O	2.14	0.48
1:C:327:GLY:O	1:C:452:SER:HA	2.13	0.48
1:B:354:CYS:SG	1:B:356:THR:OG1	2.43	0.48
1:D:178:LYS:HG2	1:D:206:SER:HB3	1.94	0.48
1:F:61:ILE:HG21	1:F:90:TRP:HA	1.95	0.48
1:A:307:GLU:OE2	4:D:501:RB0:H4	2.13	0.48
1:B:1:MET:HB2	1:B:2:MET:H	1.51	0.48
1:B:61:ILE:HG22	1:B:93:GLY:HA3	1.95	0.48
1:F:25:LEU:HD11	1:F:56:THR:HG21	1.96	0.48
1:F:198:GLU:HG3	1:F:401:PHE:HE2	1.79	0.48
1:F:470:GLU:HB2	1:F:494:TRP:CD1	2.48	0.48
1:D:223:SER:O	1:D:229:ARG:NH1	2.47	0.48
1:B:39:TRP:CD1	1:B:45:PHE:CZ	3.02	0.47
1:F:60:GLU:O	1:F:64:VAL:HG13	2.13	0.47
1:F:329:SER:CB	1:F:354:CYS:HB3	2.42	0.47
1:A:245:GLU:CD	1:A:245:GLU:H	2.23	0.47
2:A:501:MPD:H12	2:A:501:MPD:H4	1.65	0.47
1:D:291:GLY:O	1:D:295:GLN:HG3	2.14	0.47
1:D:420:LEU:HD23	1:D:424:ARG:CZ	2.45	0.47
1:E:61:ILE:HG21	1:E:90:TRP:HA	1.95	0.47
1:F:355:PRO:HA	1:F:382:PHE:CZ	2.50	0.47
1:F:432:SER:O	1:F:436:SER:HB3	2.15	0.47
1:C:47:PHE:CZ	1:C:169:VAL:HG11	2.50	0.47
1:E:334:TYR:CE2	1:E:349:HIS:CA	2.92	0.47
1:F:400:ARG:HD2	1:F:494:TRP:HB3	1.96	0.47
1:F:481:SER:HA	1:F:484:LYS:HE3	1.95	0.47
1:D:30:GLU:O	1:D:34:ILE:HG13	2.15	0.47
1:E:41:ARG:HD3	1:E:41:ARG:N	2.25	0.47
1:F:235:GLN:CD	1:F:246:LYS:NZ	2.70	0.47
1:B:107:GLN:O	1:B:151:HIS:HD2	1.97	0.47
1:C:492:VAL:HA	1:C:495:ARG:NE	2.29	0.47
1:D:442:LEU:HD13	1:D:484:LYS:HG2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:154:ASP:OD2	1:E:157:VAL:HG23	2.15	0.47
1:F:112:ILE:O	1:F:114:TRP:N	2.47	0.47
1:A:284:HIS:NE2	1:E:214:ASP:OD1	2.35	0.47
1:B:11:TRP:CD2	1:B:52:LYS:HD3	2.50	0.47
1:E:83:THR:HG22	1:E:124:LEU:O	2.14	0.47
1:B:344:MET:SD	1:B:411:VAL:HG21	2.55	0.47
1:B:470:GLU:HB2	1:B:494:TRP:CD1	2.49	0.47
1:E:68:ALA:O	1:E:99:LYS:HE3	2.15	0.47
1:B:61:ILE:HG21	1:B:90:TRP:HA	1.96	0.47
1:C:335:THR:HG22	1:C:346:LEU:HB3	1.97	0.47
1:E:126:GLN:HB3	1:E:129:HIS:NE2	2.29	0.47
1:F:35:MET:HA	1:F:152:TRP:CZ3	2.50	0.47
1:F:485:ASN:HB3	1:F:489:TRP:CZ2	2.50	0.47
1:B:287:LYS:O	1:B:374:LYS:HB3	2.15	0.47
1:C:234:TYR:CE2	1:C:292:LEU:HD21	2.50	0.47
1:D:484:LYS:O	1:D:488:LYS:HD2	2.15	0.47
1:E:41:ARG:C	1:E:41:ARG:HH11	2.23	0.47
1:A:87:ALA:HB1	1:A:137:MET:HB2	1.96	0.46
1:A:86:PRO:HB2	1:B:188:GLN:HB2	1.98	0.46
1:E:326:LYS:HE2	1:E:454:ALA:CB	2.44	0.46
1:B:181:ARG:HG2	1:B:277:THR:OG1	2.16	0.46
1:C:188:GLN:HE21	1:C:188:GLN:HB2	1.56	0.46
1:E:404:ILE:HD12	1:E:445:GLY:HA2	1.96	0.46
1:F:288:GLN:CD	1:F:377:PRO:HA	2.41	0.46
1:A:227:ILE:HD11	1:A:259:ARG:HB3	1.97	0.46
1:C:170:ALA:HB2	1:C:322:MET:HG3	1.98	0.46
1:F:186:MET:HB2	1:F:307:GLU:HB3	1.97	0.46
1:F:351:LEU:HD21	1:F:369:LEU:HD22	1.97	0.46
1:A:179:VAL:HG22	1:A:275:ALA:HB3	1.97	0.46
1:B:271:GLY:HA3	1:B:273:PHE:CE2	2.50	0.46
1:C:265:ARG:O	1:C:269:GLU:HG3	2.16	0.46
1:C:429:PRO:HG2	1:C:433:LEU:HA	1.97	0.46
1:B:112:ILE:HG23	1:B:117:ILE:HD12	1.97	0.46
1:C:60:GLU:O	1:C:64:VAL:HG23	2.15	0.46
1:D:256:GLU:HG3	1:D:287:LYS:HE3	1.98	0.46
1:E:15:GLY:HA3	1:E:90:TRP:HZ2	1.79	0.46
1:E:55:VAL:HB	1:E:61:ILE:HG13	1.97	0.46
1:F:354:CYS:SG	1:F:356:THR:OG1	2.55	0.46
1:B:138:VAL:HG11	1:B:145:ARG:HD2	1.97	0.46
1:C:175:ARG:NH2	5:C:611:HOH:O	2.48	0.46
1:C:233:GLU:HA	1:C:236:SER:HB3	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:291:GLY:O	1:F:295:GLN:HG3	2.16	0.46
1:B:215:LEU:O	1:B:219:VAL:HG13	2.15	0.46
1:B:406:ASN:HD22	1:B:407:GLU:N	2.14	0.46
1:C:253:GLY:HA2	1:C:288:GLN:NE2	2.30	0.46
1:D:16:SER:C	1:D:56:THR:HG22	2.41	0.46
1:D:271:GLY:HA3	1:D:273:PHE:CE2	2.50	0.46
1:F:298:MET:HB3	1:F:354:CYS:HB2	1.97	0.46
1:A:138:VAL:CG1	1:A:145:ARG:HD3	2.41	0.46
1:A:327:GLY:O	1:A:452:SER:HA	2.16	0.46
1:C:56:THR:HG22	1:C:60:GLU:OE1	2.16	0.46
1:E:279:THR:HG23	1:E:282:ASP:HB3	1.98	0.46
1:E:355:PRO:HA	1:E:382:PHE:CZ	2.51	0.46
1:A:62:ARG:CZ	1:A:66:LEU:HD11	2.46	0.45
1:B:135:GLY:HA3	1:D:441:ILE:HG23	1.98	0.45
1:D:52:LYS:O	1:D:53:SER:OG	2.31	0.45
1:B:329:SER:CB	1:B:354:CYS:HB3	2.43	0.45
1:B:347:GLY:HA3	1:B:427:TRP:CZ3	2.52	0.45
1:C:203:PHE:CZ	1:C:469:ILE:HD13	2.51	0.45
1:C:417:MET:HB3	1:C:420:LEU:HB2	1.98	0.45
1:C:420:LEU:HD23	1:C:420:LEU:HA	1.84	0.45
1:D:66:LEU:HD13	1:E:70:ALA:HA	1.98	0.45
1:E:85:SER:O	1:E:86:PRO:C	2.59	0.45
1:F:46:PRO:HD2	1:F:47:PHE:CD2	2.51	0.45
1:E:230:LEU:HD23	1:E:258:ALA:HB1	1.99	0.45
1:E:24:ALA:O	1:E:28:VAL:HG23	2.17	0.45
1:F:322:MET:HB2	1:F:455:VAL:HG22	1.98	0.45
1:A:105:HIS:HB3	1:A:149:VAL:HG22	1.97	0.45
1:A:109:ASN:ND2	1:A:121:PHE:HZ	2.15	0.45
1:B:28:VAL:HG22	1:B:82:HIS:CD2	2.52	0.45
1:B:59:GLU:H	1:B:59:GLU:CD	2.23	0.45
1:D:240:PHE:CZ	1:D:364:ILE:HD12	2.51	0.45
1:E:334:TYR:CD2	1:E:348:ALA:C	2.95	0.45
1:F:28:VAL:HG22	1:F:82:HIS:CG	2.52	0.45
1:F:420:LEU:CD2	1:F:424:ARG:HG2	2.42	0.45
1:A:45:PHE:HB2	2:A:501:MPD:H51	1.99	0.45
1:C:227:ILE:HD11	1:C:259:ARG:HE	1.81	0.45
1:D:268:LEU:HD21	1:D:276:PHE:HB3	1.99	0.45
1:E:346:LEU:HA	1:E:426:LEU:HD23	1.98	0.45
1:A:338:PHE:HB2	1:D:110:ARG:O	2.16	0.45
1:B:156:GLU:O	1:B:160:ARG:HG3	2.17	0.45
1:B:292:LEU:HB2	1:B:379:ARG:HA	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:202:ARG:HH12	1:D:497:ARG:C	2.25	0.45
1:F:350:MET:O	1:F:422:VAL:HG11	2.16	0.45
1:A:43:SER:HA	1:A:45:PHE:N	2.32	0.45
1:E:57:THR:HG22	1:E:59:GLU:H	1.81	0.45
1:A:190:ALA:CB	1:D:87:ALA:HB3	2.46	0.45
1:B:198:GLU:HG3	1:B:401:PHE:HE2	1.80	0.45
1:B:311:LYS:HE3	5:B:610:HOH:O	2.16	0.45
1:E:102:LEU:CD1	1:E:148:ILE:HD12	2.47	0.45
1:F:485:ASN:HB3	1:F:489:TRP:CH2	2.52	0.45
1:C:403:LEU:HD21	1:C:460:LEU:HB3	1.99	0.44
1:B:237:LEU:O	1:B:361:ARG:NH2	2.50	0.44
1:C:323:ALA:HB2	1:C:455:VAL:HG23	1.99	0.44
1:D:183:GLY:HA3	1:D:279:THR:HG22	1.98	0.44
1:E:196:LYS:HD3	1:E:207:VAL:HG12	1.99	0.44
1:E:240:PHE:CZ	1:E:364:ILE:HD12	2.52	0.44
1:E:286:MET:HE3	1:E:286:MET:HB3	1.84	0.44
1:B:230:LEU:HD22	1:B:262:LEU:HG	1.99	0.44
1:C:353:VAL:HB	1:C:423:ALA:HB3	1.99	0.44
1:F:412:LYS:HA	1:F:412:LYS:HE3	1.99	0.44
1:A:227:ILE:CD1	1:A:259:ARG:HB3	2.47	0.44
1:D:355:PRO:HA	1:D:382:PHE:CZ	2.53	0.44
1:F:97:LEU:HD12	1:F:97:LEU:HA	1.80	0.44
1:D:186:MET:HB2	1:D:307:GLU:HB3	2.00	0.44
1:E:286:MET:O	1:E:374:LYS:HD2	2.17	0.44
1:A:61:ILE:HG21	1:A:90:TRP:HA	1.99	0.44
1:A:218:ARG:NH1	1:A:266:SER:OG	2.43	0.44
1:B:25:LEU:HD21	1:B:56:THR:HG21	1.99	0.44
1:B:35:MET:HG2	1:B:152:TRP:CD2	2.53	0.44
1:B:170:ALA:CB	1:B:322:MET:HG3	2.46	0.44
1:B:425:ILE:HD11	1:B:453:PHE:HZ	1.83	0.44
1:C:364:ILE:HG12	1:C:380:LEU:CD2	2.48	0.44
1:D:332:GLU:HB3	1:D:348:ALA:O	2.17	0.44
1:E:397:LEU:HD11	1:E:402:ARG:CZ	2.47	0.44
1:F:117:ILE:HG23	1:F:117:ILE:O	2.17	0.44
1:E:22:GLU:H	1:E:22:GLU:HG3	1.63	0.44
1:F:109:ASN:ND2	1:F:121:PHE:HZ	2.16	0.44
1:F:244:CYS:O	1:F:251:HIS:ND1	2.36	0.44
1:E:41:ARG:HH21	1:E:45:PHE:N	2.16	0.44
1:A:447:HIS:HB2	1:D:129:HIS:CB	2.48	0.44
1:E:121:PHE:CD1	1:E:121:PHE:C	2.95	0.44
1:E:202:ARG:NH1	1:E:497:ARG:O	2.34	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:77:VAL:HG12	1:F:79:THR:HG23	1.99	0.44
1:A:256:GLU:HG2	1:A:287:LYS:HB2	2.00	0.43
1:B:85:SER:O	1:B:86:PRO:C	2.61	0.43
1:C:45:PHE:CD1	2:C:501:MPD:O4	2.70	0.43
1:C:215:LEU:O	1:C:219:VAL:HG13	2.17	0.43
1:E:36:VAL:HG21	1:E:51:PHE:HB2	1.98	0.43
1:E:408:VAL:HG12	1:E:429:PRO:HA	2.00	0.43
1:F:181:ARG:NH1	1:F:185:ASN:OD1	2.42	0.43
1:F:216:ALA:O	1:F:220:ARG:HG3	2.18	0.43
1:F:218:ARG:HD2	1:F:266:SER:OG	2.18	0.43
1:B:492:VAL:CG1	1:D:492:VAL:HG11	2.48	0.43
1:E:327:GLY:O	1:E:452:SER:HA	2.18	0.43
1:F:407:GLU:HG3	1:F:457:THR:CG2	2.49	0.43
1:C:126:GLN:HB2	1:C:129:HIS:CE1	2.52	0.43
1:C:493:PHE:O	1:C:497:ARG:HD2	2.18	0.43
1:F:78:VAL:HG13	1:F:102:LEU:HG	1.99	0.43
1:A:126:GLN:O	1:A:127:SER:C	2.61	0.43
1:A:353:VAL:HB	1:A:423:ALA:HB3	2.01	0.43
1:C:203:PHE:HZ	1:C:469:ILE:HD13	1.83	0.43
1:E:94:LEU:HD11	1:E:134:PHE:CE1	2.54	0.43
1:F:110:ARG:HA	1:F:151:HIS:CD2	2.53	0.43
1:D:219:VAL:C	1:D:221:ALA:H	2.27	0.43
1:E:419:LYS:HD2	1:E:419:LYS:O	2.19	0.43
1:A:190:ALA:HB2	1:D:87:ALA:HB3	2.01	0.43
1:A:257:GLN:HG2	1:A:288:GLN:OE1	2.18	0.43
1:A:495:ARG:HH11	1:D:497:ARG:HH22	1.66	0.43
1:C:3:LEU:HD13	1:C:302:TYR:CE1	2.53	0.43
1:D:29:GLU:HG3	1:D:51:PHE:CZ	2.54	0.43
1:D:74:CYS:O	1:D:99:LYS:NZ	2.43	0.43
1:E:239:GLU:O	1:E:363:ARG:HA	2.19	0.43
1:C:274:GLU:O	1:C:317:ARG:HD3	2.18	0.43
1:C:333:ASP:O	1:F:129:HIS:HB3	2.18	0.43
1:C:364:ILE:HG12	1:C:380:LEU:HD23	2.01	0.43
1:D:13:VAL:O	1:D:79:THR:HA	2.18	0.43
1:A:162:ARG:HG3	2:A:501:MPD:H12	2.00	0.43
1:D:181:ARG:HG2	1:D:277:THR:OG1	2.18	0.43
1:A:1:MET:HB3	1:A:2:MET:H	1.47	0.43
1:D:218:ARG:NH2	1:D:270:GLU:OE2	2.52	0.43
1:F:181:ARG:HD3	1:F:310:TRP:HB3	2.01	0.43
1:F:264:LEU:O	1:F:268:LEU:HG	2.19	0.43
1:D:224:GLU:H	1:D:224:GLU:CD	2.27	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:66:LEU:HD23	1:E:66:LEU:HA	1.69	0.42
1:F:42:ASP:OD2	1:F:162:ARG:NH2	2.52	0.42
1:B:23:GLU:HA	1:B:26:LYS:HD2	2.00	0.42
1:D:15:GLY:HA3	1:D:90:TRP:HZ2	1.82	0.42
1:D:246:LYS:O	1:D:248:GLY:N	2.52	0.42
1:A:436:SER:OG	1:A:437:ALA:N	2.51	0.42
1:C:223:SER:C	1:C:225:ALA:N	2.75	0.42
1:C:44:VAL:HG12	1:C:45:PHE:HB3	2.01	0.42
1:D:218:ARG:HG3	1:D:218:ARG:HH11	1.84	0.42
1:E:35:MET:HG2	1:E:152:TRP:CD2	2.54	0.42
1:E:87:ALA:HB2	1:E:133:GLU:HG3	2.00	0.42
1:E:420:LEU:HD12	1:E:421:PRO:HD2	2.02	0.42
1:B:88:LYS:HE2	1:D:188:GLN:HA	2.02	0.42
1:E:118:ASP:OD1	1:E:119:MET:N	2.53	0.42
1:B:239:GLU:HG3	1:B:361:ARG:NH1	2.34	0.42
1:C:464:ALA:CB	1:C:471:CYS:HB2	2.50	0.42
1:E:345:ILE:HD12	1:E:427:TRP:HE1	1.85	0.42
1:F:59:GLU:CD	1:F:59:GLU:H	2.28	0.42
1:B:280:PHE:CE1	1:B:281:GLU:HG3	2.54	0.42
1:C:286:MET:HE3	1:C:286:MET:HB3	1.98	0.42
1:F:180:ALA:HA	1:F:208:ASN:O	2.19	0.42
1:A:181:ARG:HD3	1:A:310:TRP:HB3	2.01	0.42
1:B:108:PHE:O	1:B:151:HIS:NE2	2.46	0.42
1:C:384:GLY:HA3	1:C:425:ILE:HB	2.02	0.42
1:E:45:PHE:HA	1:E:46:PRO:HD3	1.84	0.42
1:E:367:HIS:O	1:E:377:PRO:HD2	2.20	0.42
1:A:105:HIS:NE2	1:B:336:TYR:HE2	2.18	0.42
1:B:110:ARG:HB2	1:B:151:HIS:CE1	2.54	0.42
1:B:223:SER:O	1:B:227:ILE:HG13	2.18	0.42
1:D:187:ARG:HA	1:D:187:ARG:HD2	1.15	0.42
1:E:289:LEU:HD12	1:E:290:PRO:HD2	2.01	0.42
1:A:246:LYS:HA	1:A:246:LYS:HD2	1.86	0.42
1:C:19:LEU:HD23	1:C:20:TYR:N	2.35	0.42
1:C:344:MET:SD	1:C:426:LEU:HD13	2.60	0.42
1:A:410:ALA:HA	1:A:427:TRP:HA	2.02	0.41
1:B:365:GLU:O	1:B:378:ALA:HA	2.20	0.41
1:C:39:TRP:HZ2	1:C:152:TRP:HB2	1.84	0.41
1:D:260:ILE:HG12	1:D:286:MET:HE1	2.01	0.41
1:A:1:MET:O	1:A:300:GLU:HA	2.20	0.41
1:B:71:SER:OG	1:B:73:GLN:OE1	2.37	0.41
1:C:44:VAL:HG21	2:C:501:MPD:H12	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:114:TRP:CD1	1:C:114:TRP:H	2.37	0.41
1:A:3:LEU:HD21	1:A:274:GLU:HG2	2.02	0.41
1:B:179:VAL:HA	1:B:275:ALA:O	2.20	0.41
1:B:384:GLY:N	1:B:424:ARG:O	2.51	0.41
1:C:223:SER:CB	1:C:226:GLU:HB2	2.49	0.41
1:D:70:ALA:HA	1:E:66:LEU:HD13	2.01	0.41
1:B:310:TRP:CD1	1:B:310:TRP:H	2.38	0.41
1:B:440:TRP:NE1	1:B:445:GLY:HA3	2.35	0.41
1:C:256:GLU:HB3	1:C:288:GLN:NE2	2.35	0.41
1:D:106:THR:OG1	1:D:107:GLN:N	2.48	0.41
1:E:126:GLN:HB3	1:E:129:HIS:CE1	2.56	0.41
1:E:177:LEU:CD1	1:E:274:GLU:HB2	2.51	0.41
1:F:250:LEU:HD13	1:F:366:VAL:HB	2.03	0.41
1:A:3:LEU:HD13	1:A:302:TYR:CE1	2.56	0.41
1:A:117:ILE:HG13	1:A:121:PHE:CD1	2.56	0.41
1:A:83:THR:HA	1:A:126:GLN:HB2	2.03	0.41
1:C:220:ARG:CZ	1:C:220:ARG:HA	2.51	0.41
1:D:239:GLU:HG3	1:D:361:ARG:HG2	2.02	0.41
1:F:62:ARG:O	1:F:66:LEU:HG	2.20	0.41
1:F:345:ILE:HD11	1:F:429:PRO:HG3	2.02	0.41
1:A:107:GLN:OE1	1:B:336:TYR:HB2	2.21	0.41
1:A:151:HIS:CE1	1:A:153:GLN:HB2	2.55	0.41
1:C:55:VAL:HG11	1:C:64:VAL:HG21	2.03	0.41
1:C:226:GLU:HG2	1:C:229:ARG:CD	2.49	0.41
1:D:39:TRP:CZ2	1:D:152:TRP:HB2	2.55	0.41
1:D:230:LEU:HD12	1:D:230:LEU:HA	1.88	0.41
1:E:179:VAL:HB	1:E:207:VAL:HG22	2.02	0.41
1:E:485:ASN:HB3	1:E:489:TRP:CH2	2.54	0.41
1:F:106:THR:OG1	1:F:107:GLN:N	2.52	0.41
1:A:35:MET:HG2	1:A:152:TRP:CD2	2.56	0.41
1:D:402:ARG:NH1	1:D:443:ALA:O	2.53	0.41
1:E:460:LEU:HD23	1:E:460:LEU:HA	1.87	0.41
1:F:464:ALA:O	1:F:468:GLY:N	2.53	0.41
1:B:45:PHE:CD1	1:B:45:PHE:N	2.89	0.41
1:C:36:VAL:HG21	1:C:51:PHE:HB2	2.03	0.41
1:C:338:PHE:CE1	1:F:150:GLY:HA2	2.56	0.41
1:C:404:ILE:HG12	1:C:443:ALA:HB1	2.02	0.41
1:C:470:GLU:HB2	1:C:494:TRP:CD1	2.56	0.41
1:D:298:MET:HB3	1:D:354:CYS:HB2	2.03	0.41
1:E:264:LEU:O	1:E:268:LEU:HG	2.20	0.41
1:F:113:PRO:HB2	1:F:116:SER:HB3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:140:ARG:NE	5:A:601:HOH:O	2.24	0.41
1:A:393:SER:HB2	1:A:440:TRP:CZ2	2.56	0.41
1:B:335:THR:HG22	1:B:346:LEU:HB3	2.02	0.41
1:C:257:GLN:HG3	1:C:378:ALA:HB3	2.03	0.41
1:C:350:MET:HE1	1:C:371:ILE:HB	2.03	0.41
1:A:297:LEU:O	1:A:302:TYR:HB2	2.20	0.40
1:B:3:LEU:HA	1:B:3:LEU:HD12	1.84	0.40
1:C:203:PHE:CZ	1:C:394:LEU:HD11	2.55	0.40
1:D:97:LEU:HD12	1:D:97:LEU:HA	1.92	0.40
1:D:222:VAL:HB	1:D:224:GLU:CD	2.46	0.40
1:A:301:GLY:HA2	1:A:320:LYS:HD3	2.03	0.40
1:C:410:ALA:HA	1:C:427:TRP:HA	2.02	0.40
1:D:41:ARG:NH2	1:F:342:ASN:OD1	2.53	0.40
1:D:85:SER:O	1:D:86:PRO:C	2.63	0.40
1:E:334:TYR:CZ	1:E:349:HIS:HA	2.53	0.40
1:A:292:LEU:HD11	1:A:364:ILE:HD13	2.03	0.40
1:B:336:TYR:CE1	1:B:345:ILE:HG12	2.56	0.40
1:C:212:VAL:HG21	1:C:282:ASP:O	2.22	0.40
1:D:228:ASP:OD1	1:D:255:ARG:NH1	2.53	0.40
1:F:202:ARG:NH1	1:F:497:ARG:O	2.55	0.40
1:C:180:ALA:HB2	1:C:273:PHE:CD1	2.57	0.40
1:D:180:ALA:O	1:D:276:PHE:HA	2.22	0.40
1:E:342:ASN:HA	1:E:428:LYS:NZ	2.36	0.40
1:A:103:HIS:HE2	1:A:131:ASP:CG	2.29	0.40
1:B:105:HIS:NE2	1:D:336:TYR:HE2	2.20	0.40
1:C:77:VAL:HG12	1:C:79:THR:HG23	2.03	0.40
2:C:501:MPD:O4	2:C:501:MPD:O2	2.38	0.40
1:D:7:PRO:HG3	5:D:621:HOH:O	2.20	0.40
1:D:183:GLY:HA3	1:D:279:THR:CG2	2.52	0.40
1:D:329:SER:OG	1:D:330:PHE:O	2.35	0.40
1:E:271:GLY:HA3	1:E:273:PHE:CE2	2.57	0.40
1:F:45:PHE:N	1:F:46:PRO:CD	2.84	0.40
1:F:349:HIS:O	1:F:350:MET:C	2.64	0.40
1:F:371:ILE:C	1:F:373:GLY:H	2.29	0.40
1:F:407:GLU:OE1	1:F:475:ASN:HB2	2.21	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:63:ARG:NH1	1:F:70:ALA:O[1_565]	2.05	0.15

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:38:GLU:OE2	1:A:229:ARG:NH1[2_555]	2.18	0.02

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	492/497 (99%)	472 (96%)	15 (3%)	5 (1%)	12	28
1	B	490/497 (99%)	473 (96%)	15 (3%)	2 (0%)	30	51
1	C	495/497 (100%)	468 (94%)	21 (4%)	6 (1%)	10	23
1	D	484/497 (97%)	448 (93%)	30 (6%)	6 (1%)	10	23
1	E	488/497 (98%)	467 (96%)	17 (4%)	4 (1%)	16	34
1	F	489/497 (98%)	459 (94%)	25 (5%)	5 (1%)	12	28
All	All	2938/2982 (98%)	2787 (95%)	123 (4%)	28 (1%)	12	28

All (28) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	120	ASP
1	C	116	SER
1	D	244	CYS
1	E	117	ILE
1	A	2	MET
1	C	18	HIS
1	C	223	SER
1	D	247	GLY
1	D	291	GLY
1	F	116	SER
1	A	42	ASP
1	A	350	MET
1	B	71	SER
1	E	40	ASN

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Mol	Chain	Res	Type
1	F	127	SER
1	D	53	SER
1	F	350	MET
1	C	351	LEU
1	E	86	PRO
1	F	53	SER
1	B	291	GLY
1	C	117	ILE
1	D	370	SER
1	F	4	SER
1	A	54	VAL
1	C	291	GLY
1	E	291	GLY
1	D	248	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	407/408 (100%)	407 (100%)	0	100	100
1	B	405/408 (99%)	404 (100%)	1 (0%)	87	95
1	C	408/408 (100%)	408 (100%)	0	100	100
1	D	402/408 (98%)	401 (100%)	1 (0%)	87	95
1	E	403/408 (99%)	403 (100%)	0	100	100
1	F	404/408 (99%)	404 (100%)	0	100	100
All	All	2429/2448 (99%)	2427 (100%)	2 (0%)	88	96

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	1	MET
1	D	333	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	125	ASN
1	B	17	GLN
1	B	18	HIS
1	B	103	HIS
1	B	188	GLN
1	B	342	ASN
1	B	406	ASN
1	C	27	GLN
1	C	125	ASN
1	C	188	GLN
1	C	284	HIS
1	C	490	ASN
1	D	73	GLN
1	D	208	ASN
1	E	73	GLN
1	E	477	HIS
1	F	73	GLN
1	F	208	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 17 ligands modelled in this entry, 9 are monoatomic - leaving 8 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$
4	RB0	B	501	3	9,9,9	0.81	0	11,11,11	0.92	0
4	RB0	D	501	3	9,9,9	0.92	0	11,11,11	1.54	1 (9%)
2	MPD	A	501	-	7,7,7	0.36	0	9,10,10	0.34	0
4	RB0	E	501	3	9,9,9	0.78	0	11,11,11	1.29	1 (9%)
4	RB0	F	502	3	9,9,9	0.70	0	11,11,11	1.32	2 (18%)
4	RB0	F	501	3	9,9,9	0.72	0	11,11,11	2.34	5 (45%)
4	RB0	D	502	3	9,9,9	0.82	0	11,11,11	1.35	2 (18%)
2	MPD	C	501	-	7,7,7	0.36	0	9,10,10	0.32	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	RB0	B	501	3	-	12/12/12/12	-
4	RB0	D	501	3	-	9/12/12/12	-
2	MPD	A	501	-	-	1/5/5/5	-
4	RB0	E	501	3	-	6/12/12/12	-
4	RB0	F	502	3	-	8/12/12/12	-
4	RB0	F	501	3	-	4/12/12/12	-
4	RB0	D	502	3	-	6/12/12/12	-
2	MPD	C	501	-	-	0/5/5/5	-

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	F	501	RB0	C4-C3-C2	-5.27	104.80	113.57
4	D	502	RB0	C5-C4-C3	-2.90	106.26	112.17
4	F	501	RB0	O3-C3-C2	2.80	115.28	108.93
4	F	502	RB0	C4-C3-C2	-2.63	109.19	113.57
4	D	501	RB0	O1-C1-C2	-2.59	105.72	111.16
4	E	501	RB0	O4-C4-C3	2.58	115.30	109.25
4	F	502	RB0	O3-C3-C4	2.54	114.69	108.93
4	F	501	RB0	C5-C4-C3	-2.48	107.11	112.17

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	F	501	RB0	O5-C5-C4	-2.26	106.41	111.16
4	F	501	RB0	O1-C1-C2	2.26	115.89	111.16
4	D	502	RB0	C4-C3-C2	-2.08	110.12	113.57

There are no chirality outliers.

All (46) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	501	RB0	C1-C2-C3-O3
4	B	501	RB0	C1-C2-C3-C4
4	B	501	RB0	O2-C2-C3-O3
4	B	501	RB0	O2-C2-C3-C4
4	B	501	RB0	C3-C4-C5-O5
4	B	501	RB0	O4-C4-C5-O5
4	D	501	RB0	O1-C1-C2-O2
4	D	501	RB0	C2-C3-C4-O4
4	D	501	RB0	O3-C3-C4-O4
4	D	502	RB0	C1-C2-C3-O3
4	D	502	RB0	C1-C2-C3-C4
4	E	501	RB0	C2-C3-C4-O4
4	E	501	RB0	C2-C3-C4-C5
4	E	501	RB0	O3-C3-C4-O4
4	E	501	RB0	O3-C3-C4-C5
4	F	501	RB0	C1-C2-C3-O3
4	F	501	RB0	C1-C2-C3-C4
4	F	501	RB0	O2-C2-C3-O3
4	F	501	RB0	O2-C2-C3-C4
4	F	502	RB0	C2-C3-C4-O4
4	F	502	RB0	O3-C3-C4-O4
4	F	502	RB0	O3-C3-C4-C5
4	D	501	RB0	O1-C1-C2-C3
4	D	501	RB0	O3-C3-C4-C5
4	D	501	RB0	C2-C3-C4-C5
4	F	502	RB0	C2-C3-C4-C5
4	D	502	RB0	O2-C2-C3-C4
4	D	501	RB0	C3-C4-C5-O5
4	F	502	RB0	C1-C2-C3-O3
4	D	502	RB0	O2-C2-C3-O3
4	E	501	RB0	C3-C4-C5-O5
4	B	501	RB0	O1-C1-C2-O2
4	D	501	RB0	O4-C4-C5-O5
4	B	501	RB0	O3-C3-C4-O4

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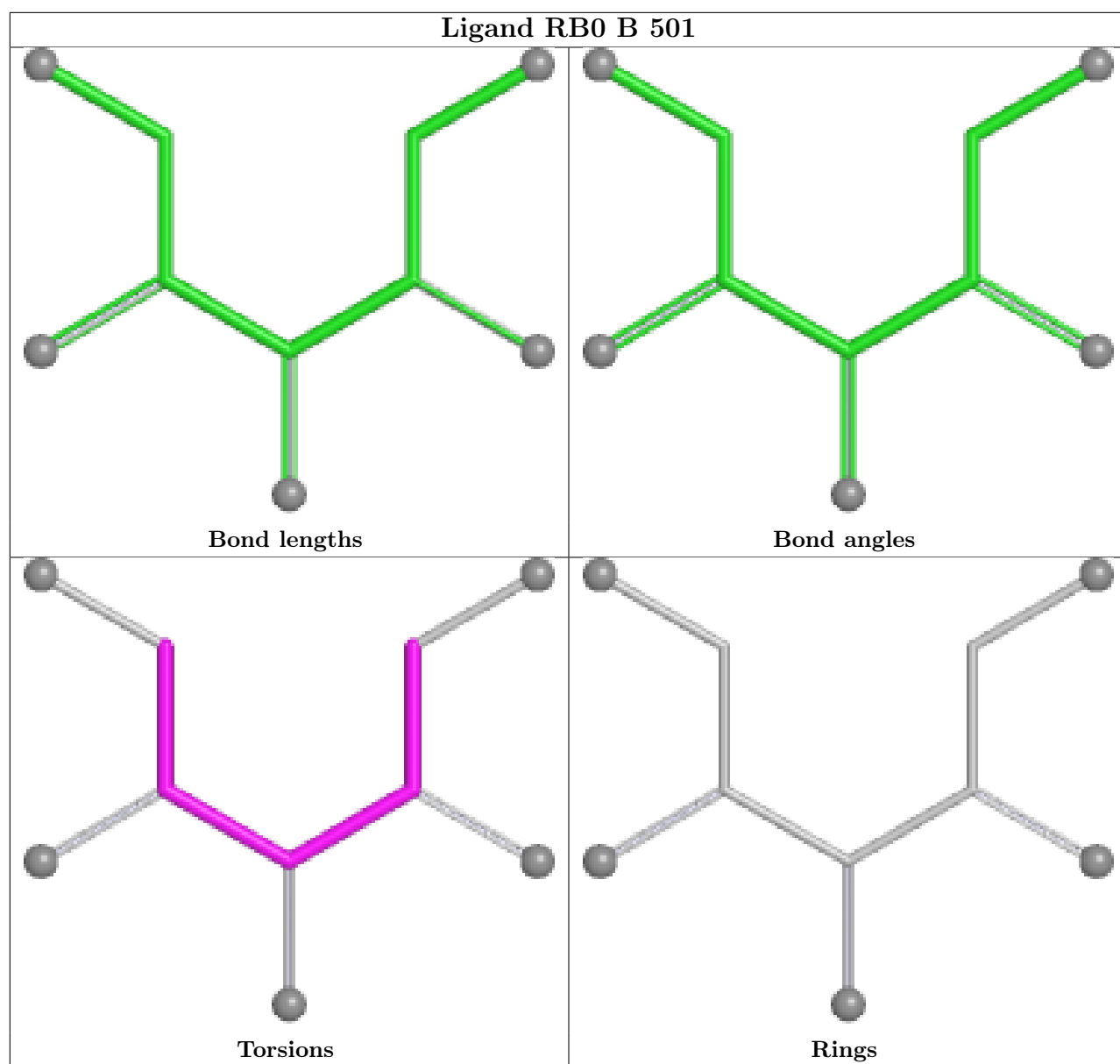
Mol	Chain	Res	Type	Atoms
4	F	502	RB0	O2-C2-C3-O3
4	D	502	RB0	O1-C1-C2-O2
4	B	501	RB0	C2-C3-C4-C5
4	B	501	RB0	C2-C3-C4-O4
4	B	501	RB0	O3-C3-C4-C5
4	F	502	RB0	C1-C2-C3-C4
4	E	501	RB0	O4-C4-C5-O5
4	F	502	RB0	O2-C2-C3-C4
4	B	501	RB0	O1-C1-C2-C3
4	D	501	RB0	C1-C2-C3-O3
4	D	502	RB0	O1-C1-C2-C3
2	A	501	MPD	C2-C3-C4-O4

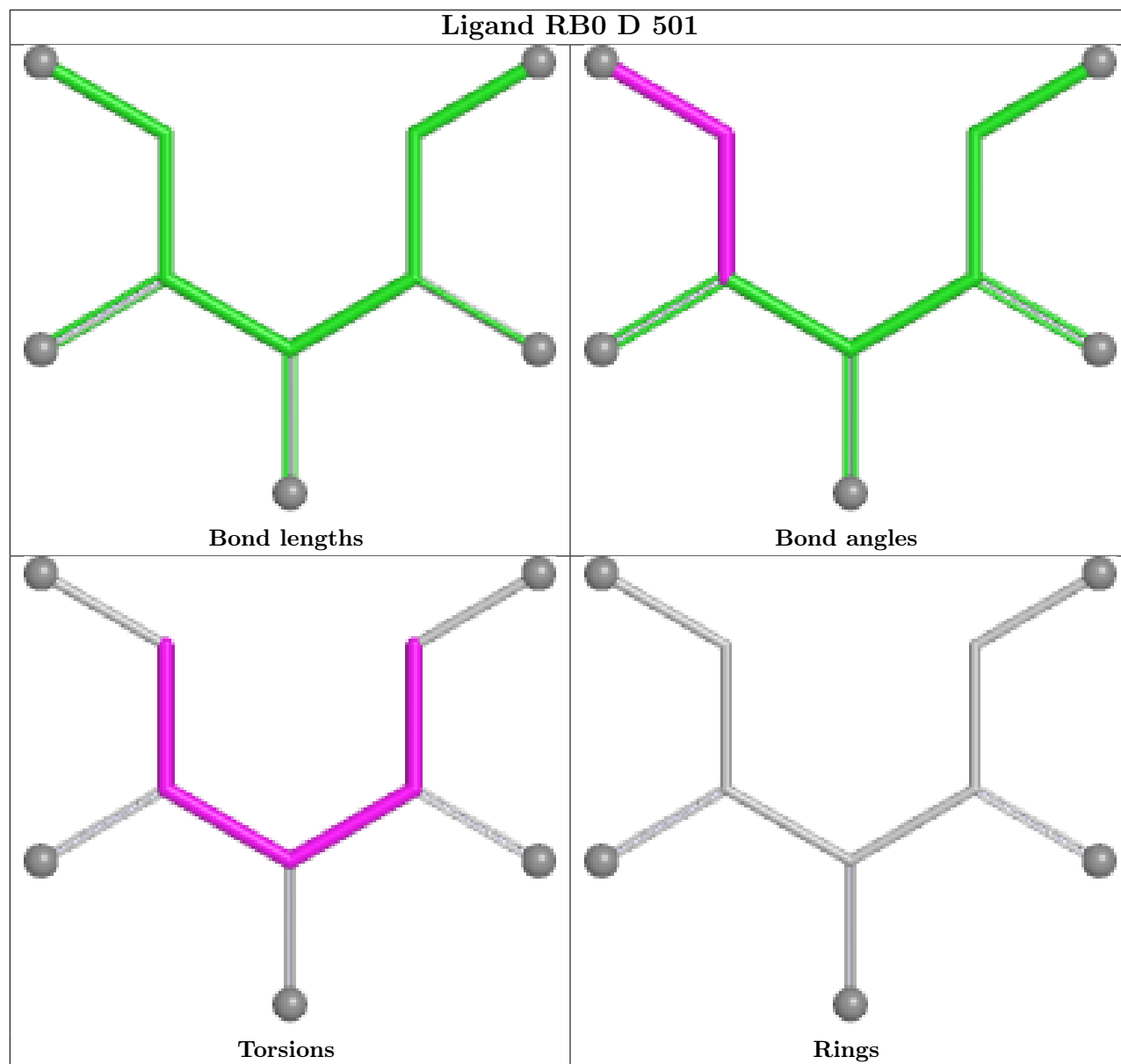
There are no ring outliers.

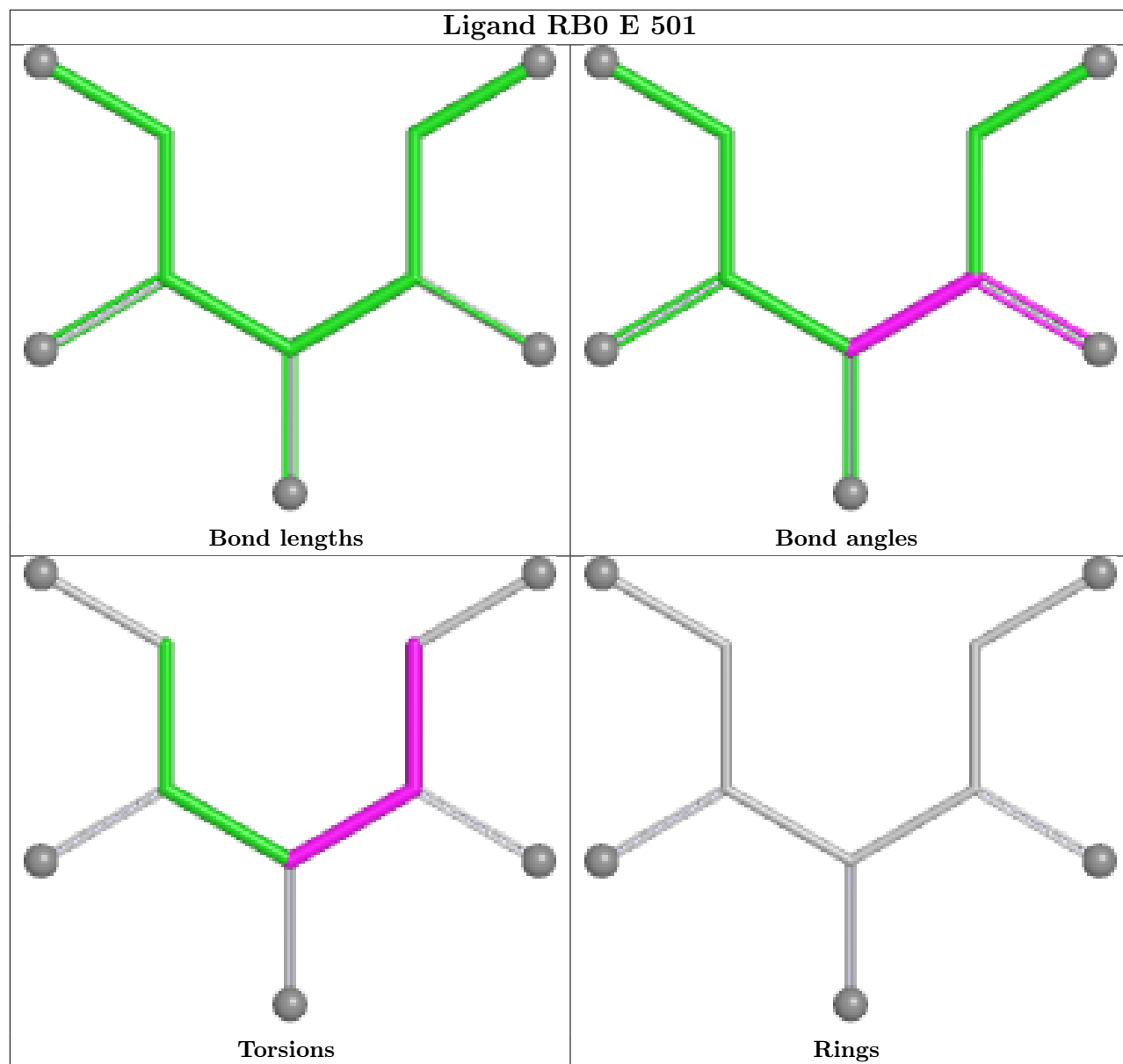
4 monomers are involved in 11 short contacts:

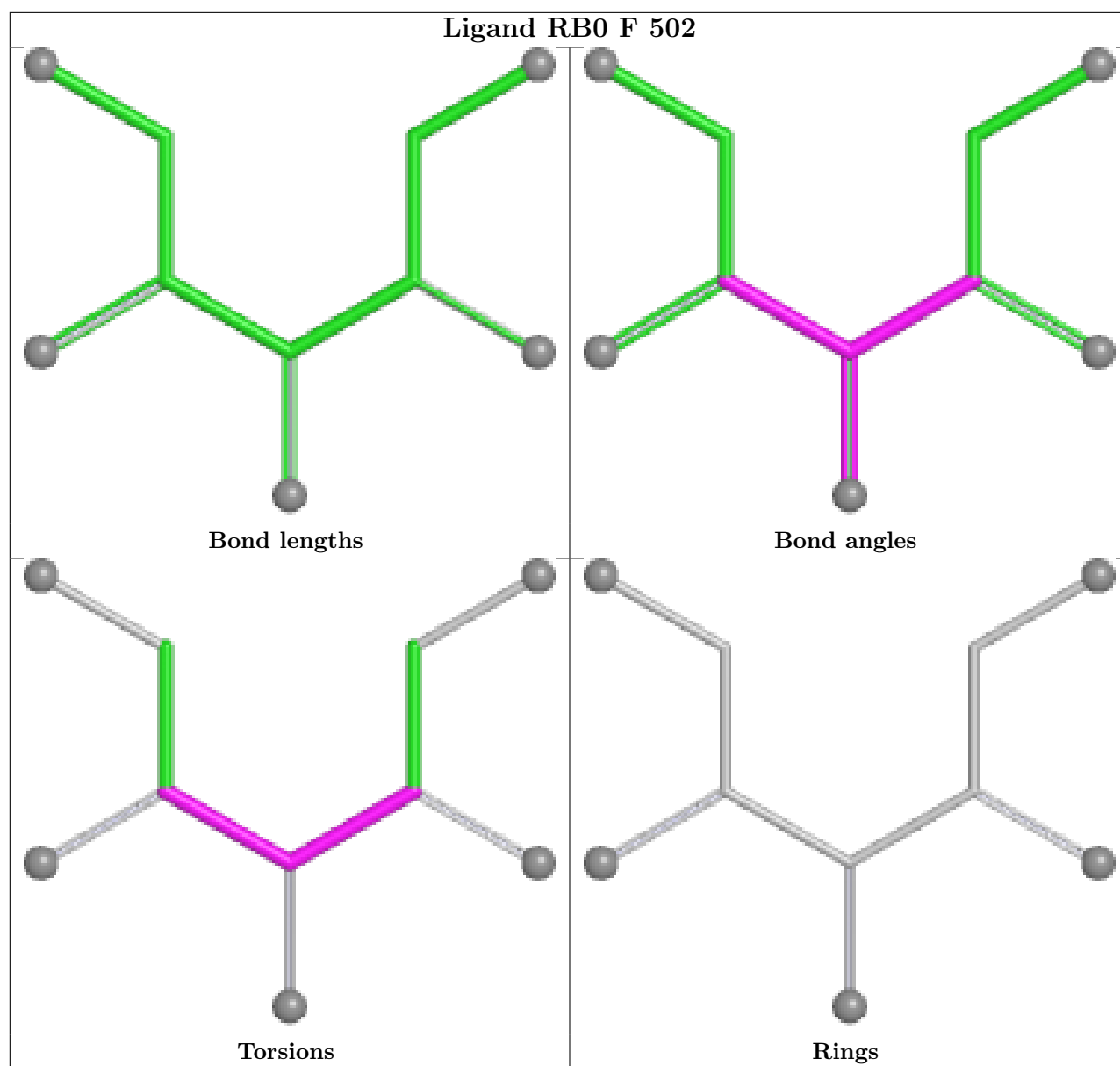
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	D	501	RB0	1	0
2	A	501	MPD	3	0
4	E	501	RB0	2	0
2	C	501	MPD	5	0

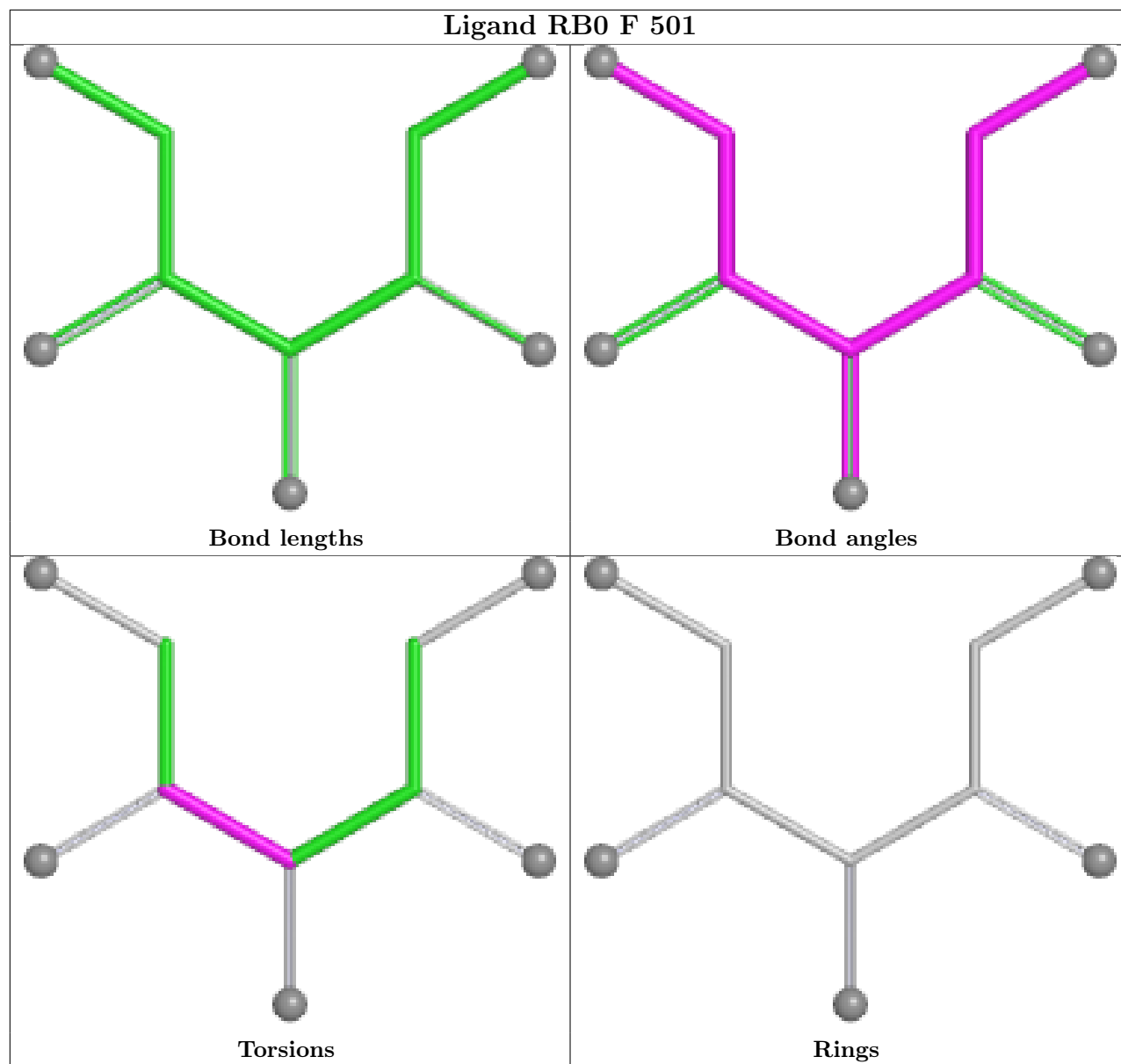
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

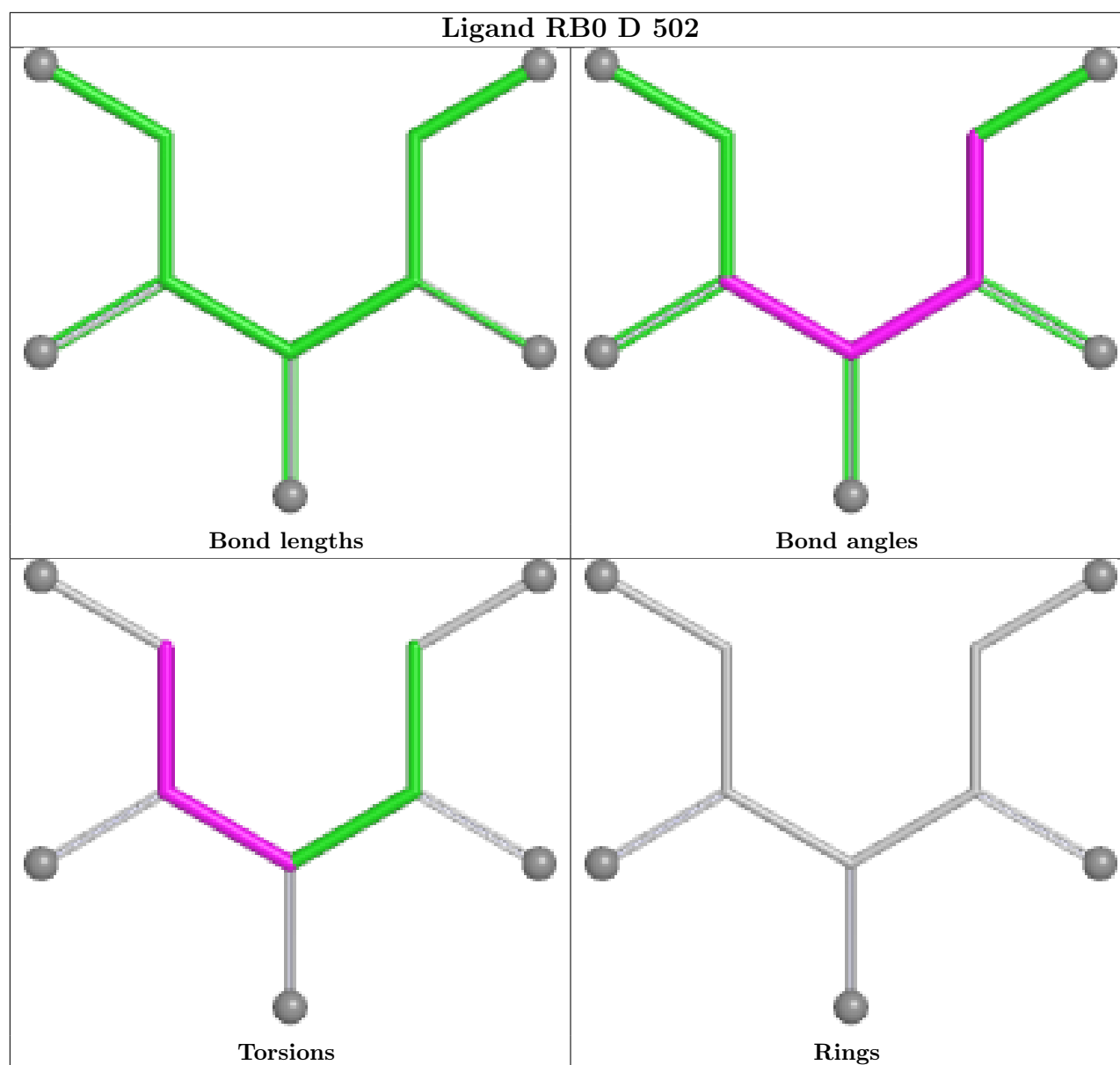












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	496/497 (99%)	-0.30	1 (0%) 91 90	28, 42, 63, 88	0
1	B	494/497 (99%)	-0.06	1 (0%) 91 90	32, 49, 72, 97	0
1	C	497/497 (100%)	-0.07	5 (1%) 79 76	32, 48, 73, 91	0
1	D	490/497 (98%)	0.02	8 (1%) 70 66	30, 49, 84, 120	0
1	E	492/497 (98%)	-0.14	3 (0%) 85 83	32, 49, 71, 93	0
1	F	493/497 (99%)	0.09	9 (1%) 67 63	33, 52, 77, 104	0
All	All	2962/2982 (99%)	-0.08	27 (0%) 81 78	28, 48, 75, 120	0

All (27) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	248	GLY	3.7
1	C	44	VAL	3.4
1	F	410	ALA	3.2
1	F	301	GLY	3.0
1	E	206	SER	2.9
1	F	208	ASN	2.9
1	F	496	GLY	2.9
1	D	46	PRO	2.7
1	B	175	ARG	2.6
1	D	21	GLY	2.6
1	D	249	PRO	2.6
1	E	334	TYR	2.5
1	D	187	ARG	2.5
1	E	19	LEU	2.4
1	D	369	LEU	2.3
1	F	18	HIS	2.3
1	C	454	ALA	2.3
1	F	39	TRP	2.3
1	D	224	GLU	2.2

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Mol	Chain	Res	Type	RSRZ
1	F	20	TYR	2.2
1	F	249	PRO	2.2
1	A	20	TYR	2.1
1	C	389	ALA	2.1
1	F	341	GLY	2.1
1	D	228	ASP	2.1
1	C	19	LEU	2.0
1	C	21	GLY	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	MPD	C	501	8/8	0.68	0.20	63,75,82,84	0
2	MPD	A	501	8/8	0.70	0.20	63,77,81,82	0
4	RB0	F	501	10/10	0.79	0.13	57,61,70,74	0
4	RB0	D	501	10/10	0.85	0.12	50,62,73,73	0
4	RB0	F	502	10/10	0.85	0.12	64,67,79,85	0
4	RB0	E	501	10/10	0.87	0.11	55,56,66,67	0
4	RB0	D	502	10/10	0.88	0.09	61,66,69,73	0
4	RB0	B	501	10/10	0.88	0.12	54,60,74,74	0
3	MN	A	502	1/1	0.98	0.07	56,56,56,56	0
3	MN	B	503	1/1	0.98	0.04	55,55,55,55	0
3	MN	D	504	1/1	0.98	0.04	59,59,59,59	0
3	MN	D	503	1/1	0.99	0.04	60,60,60,60	0
3	MN	E	502	1/1	0.99	0.03	50,50,50,50	0
3	MN	F	503	1/1	0.99	0.04	56,56,56,56	0
3	MN	A	503	1/1	1.00	0.02	45,45,45,45	0

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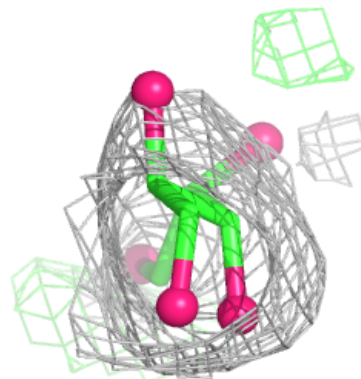
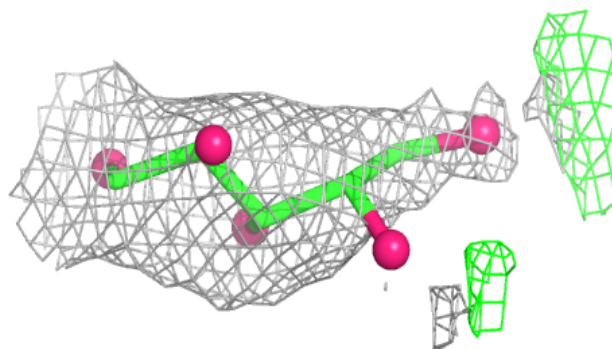
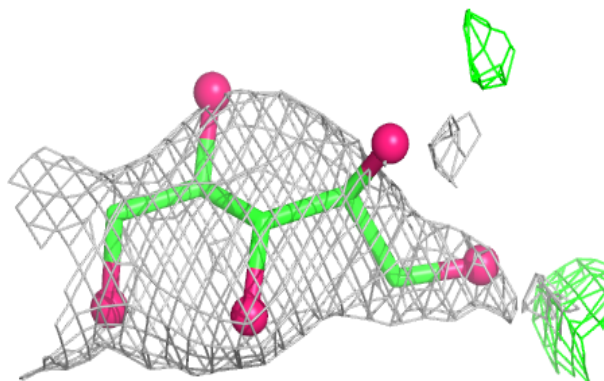
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	MN	C	502	1/1	1.00	0.02	54,54,54,54	0
3	MN	B	502	1/1	1.00	0.02	52,52,52,52	0

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.

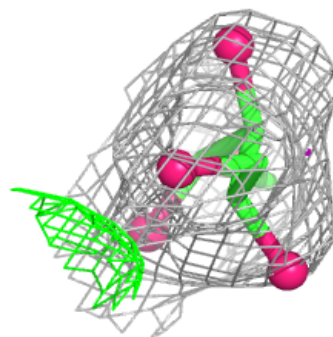
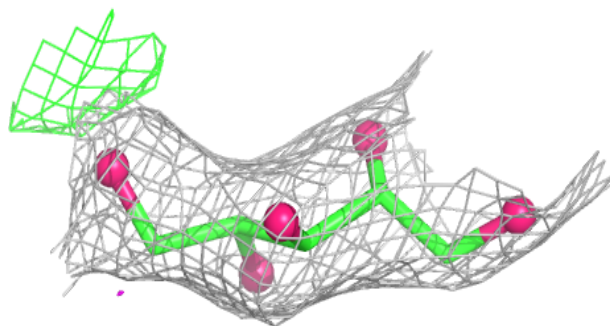
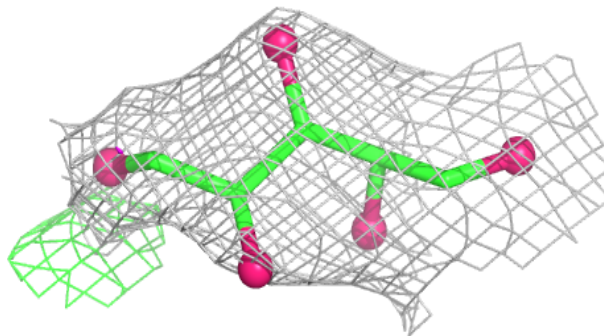
Electron density around RB0 F 501:

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

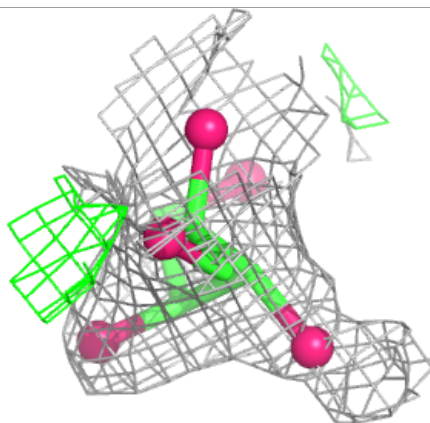
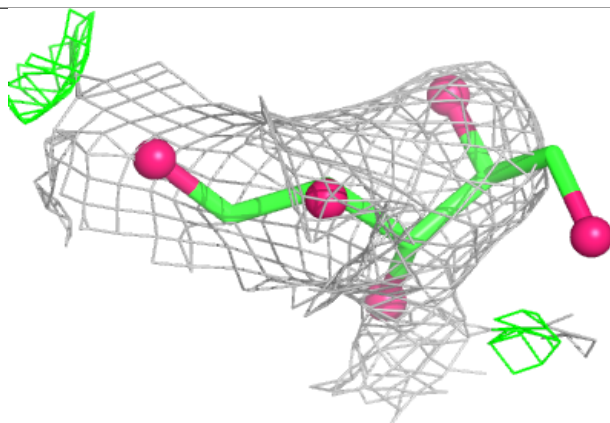
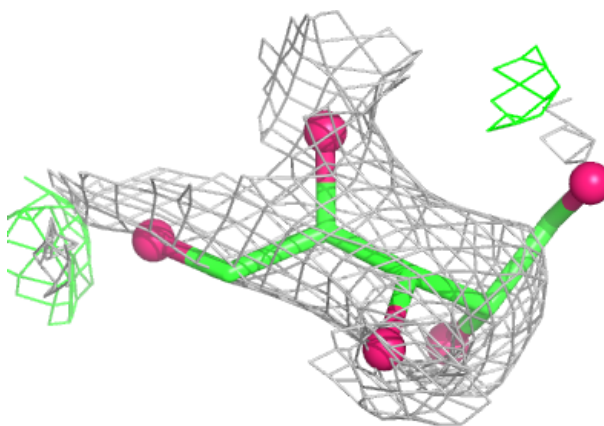


Electron density around RB0 D 501:

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

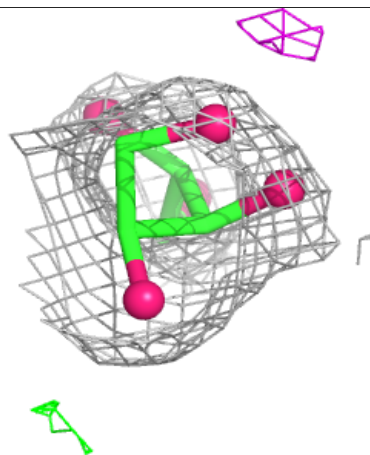
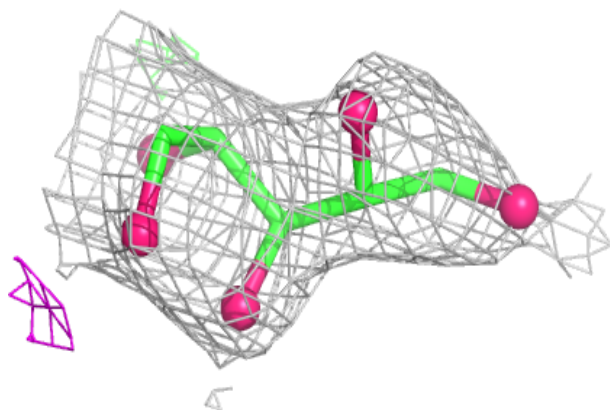
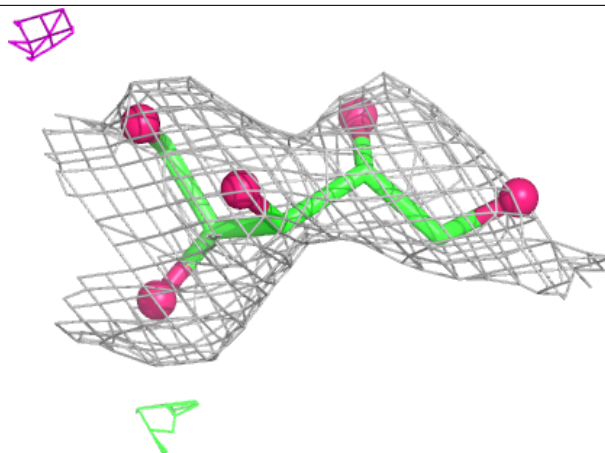
**Electron density around RB0 F 502:**

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



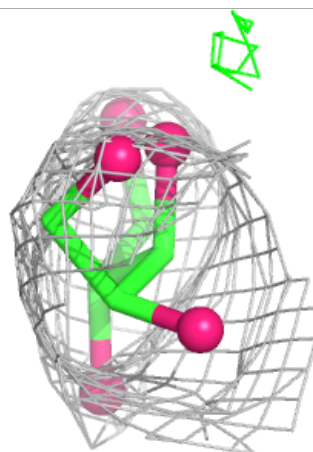
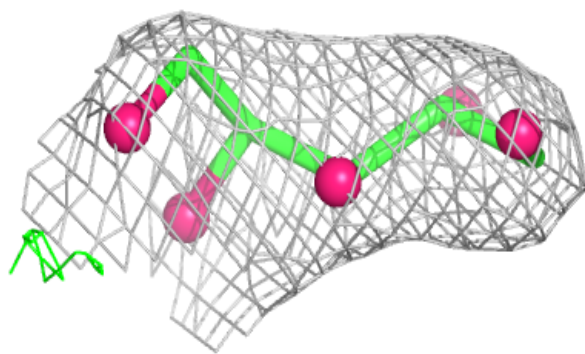
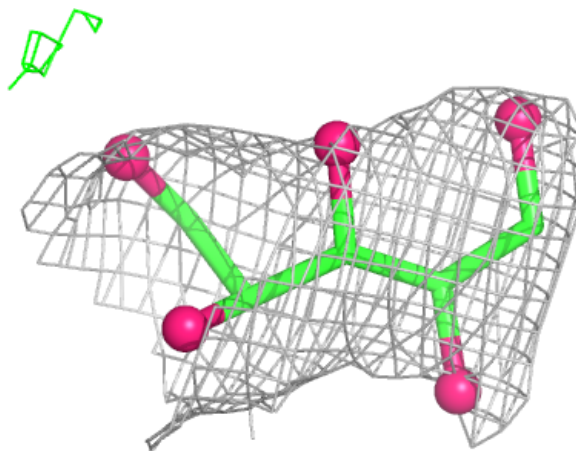
Electron density around RB0 E 501:

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



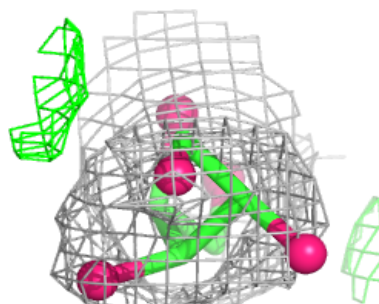
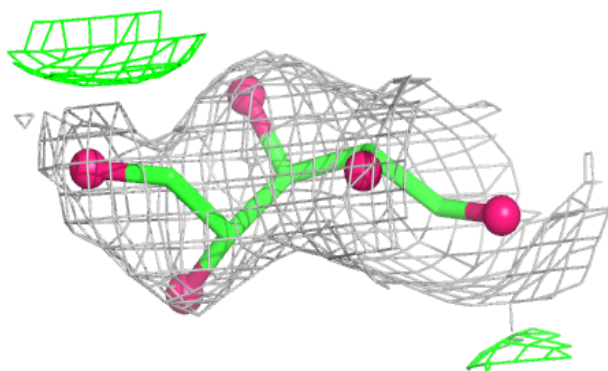
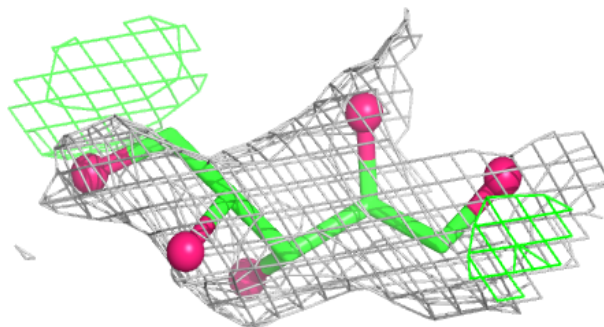
Electron density around RB0 D 502:

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



Electron density around RB0 B 501:

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



6.5 Other polymers [i](#)

There are no such residues in this entry.