



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 01:37 PM UTC

PDB ID : 1ETH / pdb_00001eth
Title : TRIACYLGLYCEROL LIPASE/COLIPASE COMPLEX
Authors : Hermoso, J.; Pignol, D.; Kerfelec, B.; Crenon, I.; Chapus, C.; Fontecilla-Camps, J.C.
Deposited on : 1995-09-13
Resolution : 2.80 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)
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

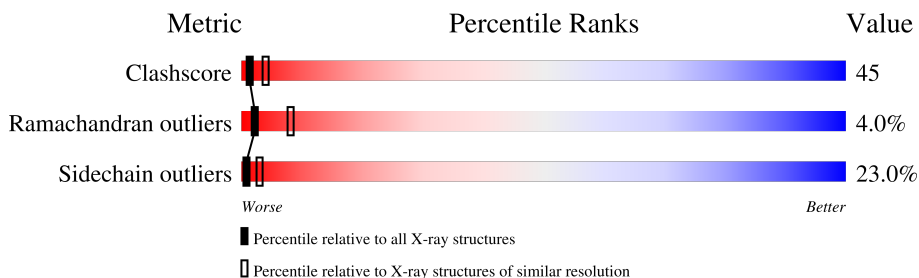
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)

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

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	448	30% (green), 50% (yellow), 17% (orange), 3% (red), 0% (grey)
1	C	448	29% (green), 50% (yellow), 18% (orange), 3% (red), 0% (grey)
2	B	95	32% (green), 45% (yellow), 14% (orange), 8% (red), 1% (grey)
2	D	95	31% (green), 47% (yellow), 13% (orange), 8% (red), 1% (grey)
3	E	5	40% (yellow), 60% (orange)
3	F	5	20% (yellow), 80% (orange)

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

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	NAG	E	1	-	-	X	-
3	NAG	E	2	-	-	X	-
3	BMA	E	4	X	-	-	-
3	BMA	E	5	X	-	-	-
3	BMA	F	4	X	-	-	-
3	BMA	F	5	X	-	-	-
6	BME	C	457	-	-	X	-

2 Entry composition i

There are 7 unique types of molecules in this entry. The entry contains 11761 atoms, of which 2850 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 TRIACYLGLYCEROL ACYL-HYDROLASE.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	448	4301	2219	788	606	670	18	0	0	0
1	C	448	4301	2219	788	606	670	18	0	0	0

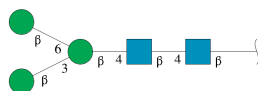
There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	ASN	deletion	UNP P00591
A	?	-	ASN	deletion	UNP P00591
C	?	-	ASN	deletion	UNP P00591
C	?	-	ASN	deletion	UNP P00591

- Molecule 2 is a protein called COLIPASE.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
2	B	87	811	400	155	116	130	10	0	0	0
2	D	87	811	400	155	116	130	10	0	0	0

- Molecule 3 is an oligosaccharide called beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	H	N	O			
3	E	5	118	34	57	2	25	0	0	0

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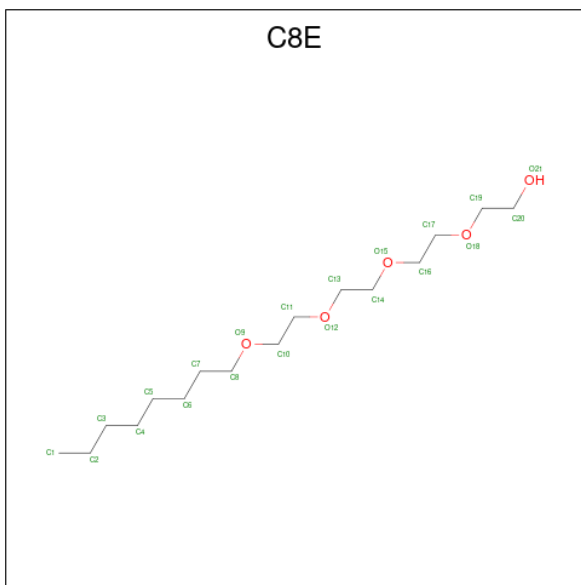
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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	H	N	O			
3	F	5	118	34	57	2	25	0	0	0

- Molecule 4 is CALCIUM ION (CCD ID: CA) (formula: Ca).

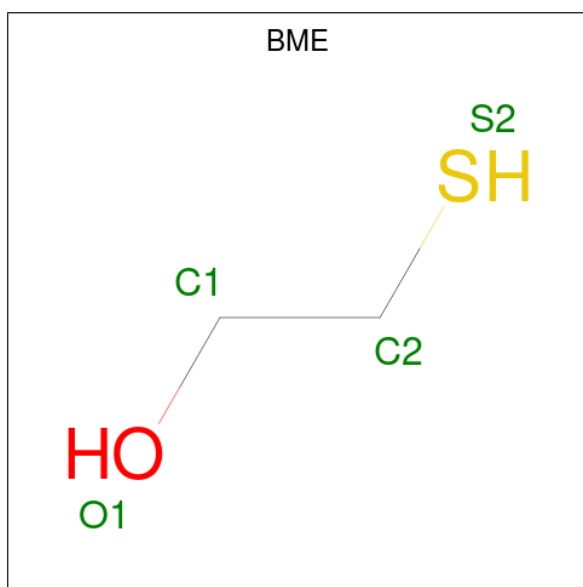
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Ca	0	0
			1	1		
4	C	1	Total	Ca	0	0
			1	1		

- Molecule 5 is (HYDROXYETHYLOXY)TRI(ETHYLOXY)OCTANE (CCD ID: C8E) (formula: C₁₆H₃₄O₅).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	H	O	0	0
			55	16	34	5		
5	A	1	Total	C	H	O	0	0
			55	16	34	5		
5	C	1	Total	C	H	O	0	0
			55	16	34	5		
5	C	1	Total	C	H	O	0	0
			55	16	34	5		

- Molecule 6 is BETA-MERCAPTOETHANOL (CCD ID: BME) (formula: C₂H₆OS).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total	C	O	S	0	0
			4	2	1	1		
6	C	1	Total	C	O	S	0	0
			4	2	1	1		

- Molecule 7 is water.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	A	128	Total	H	O	0	0
			384	256	128		
7	B	31	Total	H	O	0	0
			93	62	31		
7	C	166	Total	H	O	0	0
			498	332	166		
7	D	32	Total	H	O	0	0
			96	64	32		

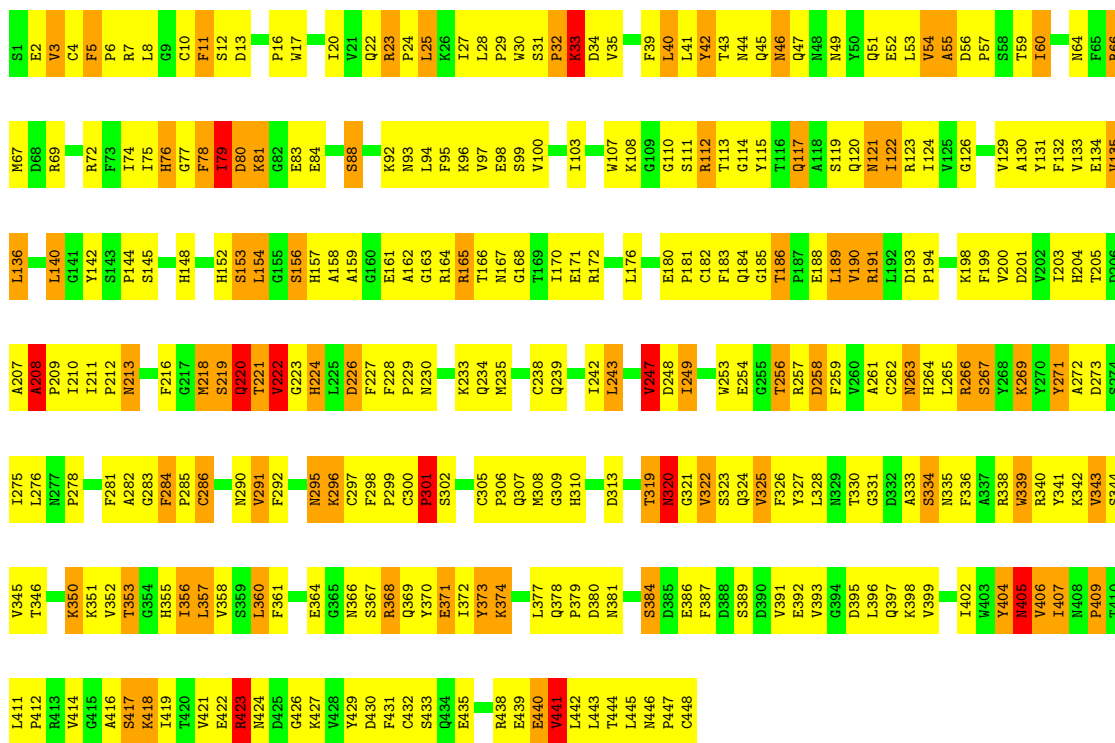
3 Residue-property plots

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

Note EDS was not executed.

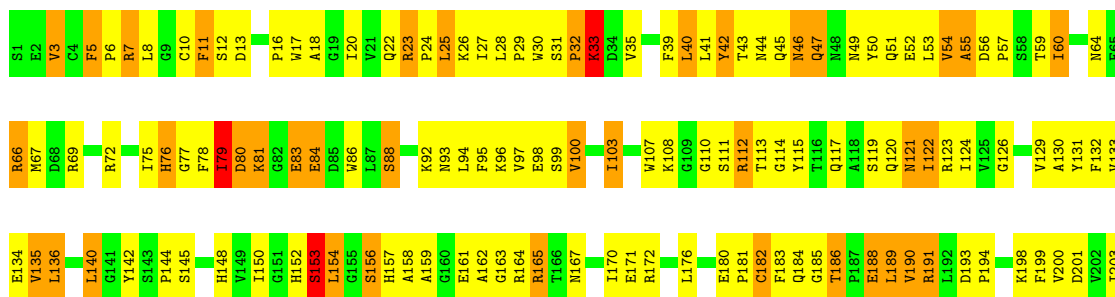
- Molecule 1: TRIACYLGLYCEROL ACYL-HYDROLASE

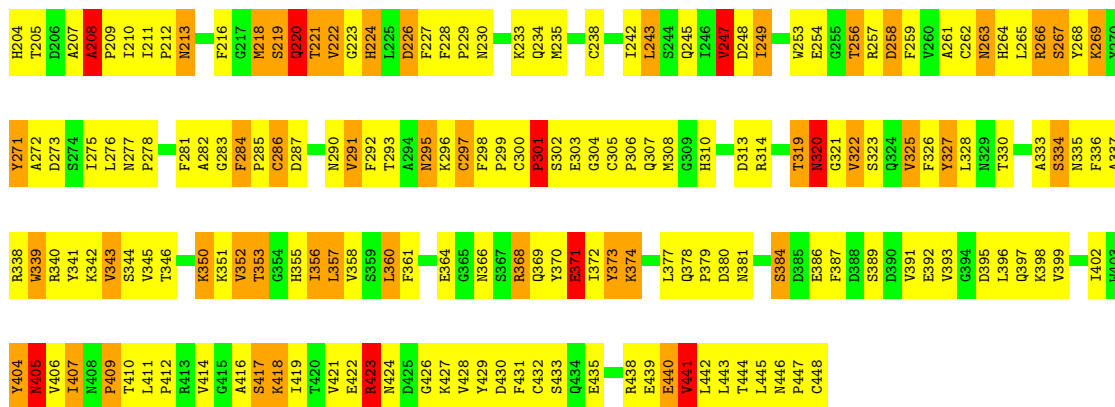
Chain A: 



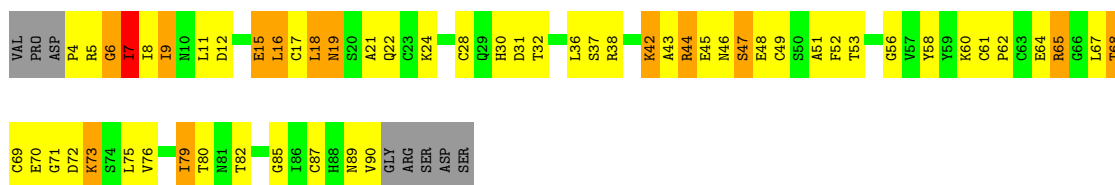
- Molecule 1: TRIACYLGLYCEROL ACYL-HYDROLASE

Chain C: 

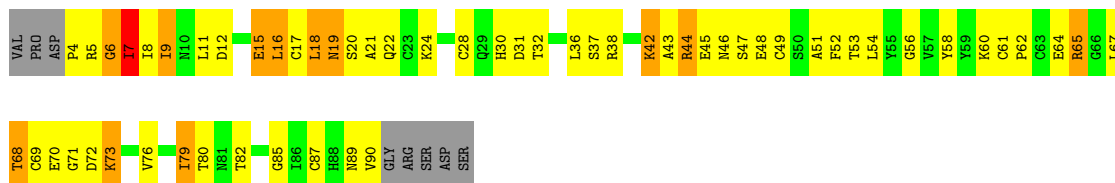
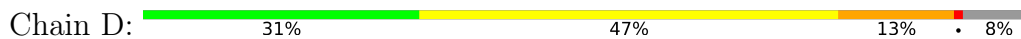




- Molecule 2: COLIPASE



- Molecule 2: COLIPASE



- Molecule 3: beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



4 Data and refinement statistics

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

Property	Value	Source
Space group	F 2 3	Depositor
Cell constants a, b, c, α , β , γ	289.10Å 289.10Å 289.10Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	6.00 – 2.80	Depositor
% Data completeness (in resolution range)	(Not available) (6.00-2.80)	Depositor
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR 3.1	Depositor
R, R_{free}	0.210 , 0.290	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	11761	wwPDB-VP
Average B, all atoms (Å ²)	21.0	wwPDB-VP

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: C8E, NAG, CA, BMA, BME

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	0.67	0/3602	0.97	8/4892 (0.2%)
1	C	0.67	0/3602	0.99	7/4892 (0.1%)
2	B	0.70	0/664	1.03	0/894
2	D	0.71	0/664	1.03	0/894
All	All	0.68	0/8532	0.99	15/11572 (0.1%)

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	A	0	17
1	C	0	18
All	All	0	35

There are no bond length outliers.

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	33	LYS	N-CA-C	-6.44	105.05	114.39
1	C	33	LYS	N-CA-C	-6.18	105.43	114.39
1	A	404	TYR	N-CA-C	6.08	117.79	108.42
1	C	404	TYR	N-CA-C	6.00	117.65	108.42
1	C	54	VAL	N-CA-C	-5.68	100.89	108.96
1	A	54	VAL	N-CA-C	-5.66	100.93	108.96
1	C	441	VAL	N-CA-C	5.65	116.61	108.48
1	C	5	PHE	CA-C-N	5.63	126.88	119.84
1	C	5	PHE	C-N-CA	5.63	126.88	119.84
1	A	153	SER	CB-CA-C	-5.54	110.17	116.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	153	SER	CB-CA-C	-5.31	110.43	116.54
1	A	222	VAL	N-CA-C	-5.11	98.71	109.34
1	A	5	PHE	CA-C-N	5.10	126.22	119.84
1	A	5	PHE	C-N-CA	5.10	126.22	119.84
1	A	441	VAL	N-CA-C	5.04	115.73	108.48

There are no chirality outliers.

All (35) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	11	PHE	Sidechain
1	A	115	TYR	Sidechain
1	A	2	GLU	Mainchain
1	A	208	ALA	Mainchain,Peptide
1	A	263	ASN	Mainchain
1	A	271	TYR	Sidechain
1	A	284	PHE	Sidechain
1	A	297	CYS	Mainchain
1	A	327	TYR	Mainchain
1	A	333	ALA	Peptide
1	A	334	SER	Peptide
1	A	339	TRP	Mainchain
1	A	373	TYR	Sidechain
1	A	405	ASN	Peptide
1	A	42	TYR	Sidechain
1	A	423	ARG	Sidechain
1	C	11	PHE	Sidechain
1	C	115	TYR	Sidechain
1	C	208	ALA	Mainchain,Peptide
1	C	263	ASN	Mainchain
1	C	271	TYR	Sidechain
1	C	284	PHE	Sidechain
1	C	297	CYS	Mainchain
1	C	327	TYR	Mainchain
1	C	333	ALA	Peptide
1	C	334	SER	Peptide
1	C	339	TRP	Mainchain
1	C	373	TYR	Sidechain
1	C	405	ASN	Peptide
1	C	42	TYR	Sidechain
1	C	423	ARG	Sidechain
1	C	428	VAL	Mainchain

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Mol	Chain	Res	Type	Group
1	C	50	TYR	Sidechain

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3513	788	3370	313	0
1	C	3513	788	3370	329	0
2	B	656	155	631	58	0
2	D	656	155	631	59	0
3	E	61	57	51	12	0
3	F	61	57	51	9	0
4	A	1	0	0	0	0
4	C	1	0	0	0	0
5	A	42	68	50	1	0
5	C	42	68	49	1	0
6	A	4	0	6	2	0
6	C	4	0	6	5	0
7	A	128	256	0	20	0
7	B	31	62	0	5	0
7	C	166	332	0	30	0
7	D	32	64	0	7	0
All	All	8911	2850	8215	761	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 45.

All (761) 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:182:CYS:SG	6:C:457:BME:S2	2.35	1.13
1:A:182:CYS:SG	6:A:457:BME:S2	2.39	1.05
1:C:108:LYS:HB2	1:C:112:ARG:HH12	1.23	1.00
1:A:108:LYS:HB2	1:A:112:ARG:HH12	1.25	1.00
1:C:356:ILE:HD11	1:C:373:TYR:HB3	1.43	0.99
1:A:356:ILE:HD11	1:A:373:TYR:HB3	1.45	0.95

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:4:PRO:HB2	2:D:16:LEU:HG	1.51	0.92
1:C:423:ARG:HD2	1:C:429:TYR:HE1	1.36	0.91
1:A:423:ARG:HD2	1:A:429:TYR:HE1	1.36	0.90
1:C:221:THR:O	1:C:222:VAL:HG23	1.72	0.90
3:E:1:NAG:H5	3:E:2:NAG:H2	1.54	0.90
2:B:4:PRO:HB2	2:B:16:LEU:HG	1.55	0.88
1:A:166:THR:HG22	7:A:556:HOH:O	1.74	0.88
1:A:221:THR:O	1:A:222:VAL:HG23	1.75	0.87
1:A:404:TYR:HD1	1:A:405:ASN:HB2	1.41	0.85
2:B:4:PRO:HB3	2:B:36:LEU:HD23	1.59	0.84
1:C:27:ILE:HG13	1:C:120:GLN:HG2	1.59	0.84
1:C:404:TYR:HD1	1:C:405:ASN:HB2	1.40	0.84
1:C:421:VAL:HB	7:C:577:HOH:O	1.76	0.84
1:C:108:LYS:HB2	1:C:112:ARG:NH1	1.92	0.83
1:A:164:ARG:NH1	3:E:4:BMA:O5	2.12	0.83
1:C:24:PRO:HG2	1:C:25:LEU:HD23	1.60	0.82
1:C:67:MET:HB3	7:C:611:HOH:O	1.79	0.82
1:C:208:ALA:HB2	1:C:233:LYS:HE2	1.61	0.82
1:A:24:PRO:HG2	1:A:25:LEU:HD23	1.60	0.81
1:C:55:ALA:HB1	1:C:135:VAL:HG11	1.62	0.81
1:A:108:LYS:HB2	1:A:112:ARG:NH1	1.96	0.81
2:D:4:PRO:HB3	2:D:36:LEU:HD23	1.64	0.80
1:C:182:CYS:HB3	6:C:457:BME:S2	2.22	0.79
1:C:167:ASN:OD1	3:F:1:NAG:O5	1.82	0.79
1:A:262:CYS:SG	1:A:266:ARG:NH1	2.57	0.78
2:D:8:ILE:HG23	2:D:11:LEU:HD21	1.65	0.78
1:C:103:ILE:HG12	7:C:562:HOH:O	1.82	0.77
1:C:281:PHE:O	1:C:328:LEU:HD13	1.83	0.77
1:A:27:ILE:HG13	1:A:120:GLN:HG2	1.64	0.77
1:C:404:TYR:CD1	1:C:405:ASN:HB2	2.20	0.77
1:A:55:ALA:HB1	1:A:135:VAL:HG11	1.65	0.77
1:C:229:PRO:HB3	1:C:308:MET:HE1	1.64	0.77
1:A:45:GLN:HE22	1:A:69:ARG:HH22	1.31	0.76
1:A:208:ALA:HB2	1:A:233:LYS:HE2	1.66	0.76
1:C:182:CYS:CB	6:C:457:BME:S2	2.73	0.76
1:C:266:ARG:HG2	1:C:266:ARG:HH11	1.51	0.76
1:C:295:ASN:OD1	1:C:386:GLU:HG2	1.86	0.76
1:A:229:PRO:HB3	1:A:308:MET:HE1	1.65	0.75
1:A:122:ILE:HG22	1:A:158:ALA:HB2	1.67	0.75
1:A:216:PHE:HB2	1:A:264:HIS:ND1	2.00	0.75
2:B:8:ILE:HG23	2:B:11:LEU:HD21	1.69	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:353:THR:O	1:A:406:VAL:HB	1.87	0.74
1:A:404:TYR:CD1	1:A:405:ASN:HB2	2.21	0.74
2:B:65:ARG:HG3	2:B:65:ARG:HH11	1.53	0.74
1:C:334:SER:HA	1:C:336:PHE:CE1	2.21	0.74
1:A:281:PHE:O	1:A:328:LEU:HD13	1.88	0.74
1:A:295:ASN:OD1	1:A:386:GLU:HG2	1.87	0.74
1:C:182:CYS:CB	6:C:457:BME:HS2	2.01	0.74
1:C:45:GLN:HE22	1:C:69:ARG:HH22	1.33	0.74
1:C:216:PHE:HB2	1:C:264:HIS:ND1	2.03	0.73
1:C:287:ASP:HB3	3:E:2:NAG:O3	1.88	0.73
2:D:38:ARG:HD3	7:D:97:HOH:O	1.89	0.73
1:A:334:SER:HA	1:A:336:PHE:CE1	2.22	0.73
1:C:123:ARG:HA	1:C:161:GLU:HG3	1.70	0.73
1:A:438:ARG:O	1:A:441:VAL:HG23	1.90	0.72
1:C:130:ALA:HB2	1:C:162:ALA:HA	1.71	0.72
1:A:123:ARG:HA	1:A:161:GLU:HG3	1.71	0.72
1:A:266:ARG:HG2	1:A:266:ARG:HH11	1.53	0.72
1:C:26:LYS:HE2	7:C:614:HOH:O	1.91	0.71
1:C:353:THR:O	1:C:406:VAL:HB	1.90	0.71
2:D:9:ILE:HD13	2:D:22:GLN:HA	1.72	0.71
3:E:1:NAG:H5	3:E:2:NAG:C2	2.21	0.71
1:C:122:ILE:HG22	1:C:158:ALA:HB2	1.73	0.71
1:C:229:PRO:CB	1:C:308:MET:HE1	2.21	0.70
1:A:94:LEU:HD13	7:A:576:HOH:O	1.91	0.70
1:A:273:ASP:OD2	1:A:336:PHE:HD1	1.74	0.70
1:C:407:ILE:HG22	1:C:412:PRO:HD2	1.74	0.70
2:D:65:ARG:HH11	2:D:65:ARG:HG3	1.55	0.69
1:A:276:LEU:O	1:A:278:PRO:HD3	1.91	0.69
1:C:438:ARG:O	1:C:441:VAL:HG23	1.93	0.69
2:D:43:ALA:HA	7:D:110:HOH:O	1.93	0.69
1:A:407:ILE:HG22	1:A:412:PRO:HD2	1.75	0.69
2:D:17:CYS:O	2:D:37:SER:HB2	1.93	0.69
1:C:364:GLU:HB2	1:C:393:VAL:O	1.92	0.68
2:D:70:GLU:HB3	7:D:114:HOH:O	1.91	0.68
2:D:73:LYS:HD3	7:D:125:HOH:O	1.93	0.68
1:A:402:ILE:HB	1:A:442:LEU:HD23	1.75	0.68
1:C:150:ILE:HD11	7:C:610:HOH:O	1.94	0.68
2:D:45:GLU:O	2:D:46:ASN:HB2	1.93	0.68
1:A:129:VAL:HG13	7:A:534:HOH:O	1.94	0.68
2:B:17:CYS:O	2:B:37:SER:HB2	1.93	0.68
1:A:238:CYS:SG	1:A:266:ARG:NH1	2.67	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:286:CYS:SG	1:C:291:VAL:HG12	2.34	0.67
1:A:229:PRO:CB	1:A:308:MET:HE1	2.24	0.67
2:B:65:ARG:O	2:B:67:LEU:HD12	1.95	0.67
1:A:299:PRO:HB2	1:A:424:ASN:O	1.94	0.67
1:C:222:VAL:HG21	7:C:584:HOH:O	1.95	0.67
1:C:262:CYS:SG	1:C:266:ARG:NH1	2.66	0.67
2:B:45:GLU:O	2:B:46:ASN:HB2	1.93	0.67
1:C:299:PRO:HB2	1:C:424:ASN:O	1.94	0.67
1:A:396:LEU:HD12	1:A:396:LEU:H	1.59	0.67
1:C:161:GLU:O	1:C:165:ARG:HG2	1.95	0.67
1:A:130:ALA:HB2	1:A:162:ALA:HA	1.77	0.67
1:C:273:ASP:OD2	1:C:336:PHE:HD1	1.78	0.67
1:A:345:VAL:HG22	1:A:419:ILE:HG12	1.78	0.66
1:C:243:LEU:O	1:C:247:VAL:HG23	1.95	0.66
1:A:286:CYS:SG	1:A:291:VAL:HG12	2.36	0.66
1:C:276:LEU:O	1:C:278:PRO:HD3	1.96	0.66
1:A:186:THR:OG1	1:A:191:ARG:HG2	1.96	0.66
2:D:65:ARG:O	2:D:67:LEU:HD12	1.97	0.65
1:C:402:ILE:HB	1:C:442:LEU:HD23	1.77	0.65
1:C:423:ARG:HD2	1:C:429:TYR:CE1	2.26	0.65
1:A:243:LEU:O	1:A:247:VAL:HG23	1.96	0.65
2:B:9:ILE:HD13	2:B:22:GLN:HA	1.77	0.65
1:A:272:ALA:O	1:A:275:ILE:HG13	1.96	0.65
1:A:180:GLU:HB3	1:A:181:PRO:HD3	1.80	0.64
1:C:53:LEU:HB2	7:C:597:HOH:O	1.96	0.64
1:A:100:VAL:HG11	7:A:576:HOH:O	1.97	0.64
1:A:199:PHE:CE2	1:A:313:ASP:HA	2.32	0.64
1:A:45:GLN:HE22	1:A:69:ARG:NH2	1.94	0.64
1:C:272:ALA:O	1:C:275:ILE:HG13	1.97	0.64
1:C:41:LEU:HA	7:C:562:HOH:O	1.96	0.64
1:C:396:LEU:N	1:C:396:LEU:HD12	2.13	0.64
1:A:445:LEU:HD12	1:A:445:LEU:N	2.13	0.64
1:C:131:TYR:O	1:C:134:GLU:HB2	1.98	0.64
1:C:245:GLN:HG2	7:C:620:HOH:O	1.98	0.64
1:A:122:ILE:CG2	1:A:158:ALA:HB2	2.27	0.64
1:A:131:TYR:O	1:A:134:GLU:HB2	1.98	0.63
1:A:161:GLU:O	1:A:165:ARG:HG2	1.98	0.63
1:A:230:ASN:HD21	1:A:330:THR:H	1.46	0.63
1:C:230:ASN:HD21	1:C:330:THR:H	1.45	0.63
1:A:55:ALA:O	1:A:135:VAL:HG21	1.98	0.63
1:A:396:LEU:HD12	1:A:396:LEU:N	2.13	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:43:THR:HG21	7:A:562:HOH:O	1.98	0.63
1:C:229:PRO:CG	1:C:308:MET:HE1	2.28	0.63
1:A:308:MET:HE3	1:A:328:LEU:HD21	1.81	0.62
1:C:199:PHE:CE2	1:C:313:ASP:HA	2.34	0.62
1:C:249:ILE:HG22	2:D:38:ARG:NH2	2.13	0.62
1:C:45:GLN:HE22	1:C:69:ARG:NH2	1.97	0.62
1:C:396:LEU:HD12	1:C:396:LEU:H	1.62	0.62
1:C:396:LEU:HD22	7:C:577:HOH:O	1.98	0.62
2:B:30:HIS:HB3	2:B:37:SER:HA	1.81	0.62
1:C:194:PRO:HB3	1:C:224:HIS:CE1	2.35	0.62
1:C:410:THR:HG22	7:C:475:HOH:O	1.99	0.62
1:A:364:GLU:HB2	1:A:393:VAL:O	1.99	0.62
1:C:204:HIS:HE1	1:C:220:GLN:O	1.83	0.62
1:A:74:ILE:HG13	7:A:535:HOH:O	2.00	0.62
1:A:45:GLN:NE2	1:A:69:ARG:HH22	1.96	0.62
2:B:43:ALA:O	2:B:64:GLU:HG3	1.99	0.62
1:A:167:ASN:ND2	3:E:1:NAG:O7	2.32	0.62
1:C:176:LEU:HB3	1:C:267:SER:HB2	1.81	0.62
2:D:58:TYR:HD2	7:D:124:HOH:O	1.82	0.62
1:A:189:LEU:O	1:A:190:VAL:HG23	2.00	0.62
3:E:1:NAG:O7	3:E:1:NAG:C1	2.46	0.61
1:C:281:PHE:HB2	7:C:520:HOH:O	2.00	0.61
1:A:185:GLY:H	1:A:220:GLN:NE2	1.98	0.61
1:C:122:ILE:CG2	1:C:158:ALA:HB2	2.29	0.61
1:C:229:PRO:CD	1:C:308:MET:HE1	2.30	0.61
1:A:350:LYS:HG3	7:A:547:HOH:O	2.00	0.61
2:D:30:HIS:HB3	2:D:37:SER:HA	1.83	0.61
2:D:43:ALA:O	2:D:64:GLU:HG3	1.99	0.61
1:A:75:ILE:HG22	1:A:76:HIS:O	2.00	0.61
1:C:284:PHE:CE1	1:C:300:CYS:SG	2.94	0.61
1:C:180:GLU:HB3	1:C:181:PRO:HD3	1.83	0.60
1:A:224:HIS:HD2	1:A:319:THR:HA	1.65	0.60
1:A:194:PRO:HB3	1:A:224:HIS:CE1	2.35	0.60
1:C:26:LYS:HA	7:C:614:HOH:O	2.01	0.60
2:D:18:LEU:H	2:D:22:GLN:HE22	1.49	0.60
1:C:186:THR:OG1	1:C:191:ARG:HG2	2.00	0.60
1:A:55:ALA:O	1:A:57:PRO:HD3	2.01	0.60
2:B:49:CYS:SG	2:B:85:GLY:O	2.60	0.60
2:B:28:CYS:SG	2:B:37:SER:HB3	2.42	0.60
1:C:31:SER:C	1:C:33:LYS:H	2.10	0.60
1:C:445:LEU:N	1:C:445:LEU:HD12	2.17	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:60:ILE:HD11	1:A:140:LEU:HG	1.83	0.59
1:A:126:GLY:HA3	1:A:161:GLU:CB	2.31	0.59
1:A:176:LEU:HB3	1:A:267:SER:HB2	1.84	0.59
1:A:411:LEU:HB3	1:A:438:ARG:HH21	1.66	0.59
1:C:55:ALA:O	1:C:135:VAL:HG21	2.02	0.59
1:C:75:ILE:HG22	1:C:76:HIS:O	2.02	0.59
1:A:423:ARG:HD2	1:A:429:TYR:CE1	2.26	0.59
1:C:411:LEU:HB3	1:C:438:ARG:HH21	1.67	0.59
1:C:72:ARG:HA	1:C:148:HIS:O	2.02	0.59
1:A:35:VAL:HA	1:A:110:GLY:CA	2.33	0.59
1:A:184:GLN:HG3	1:A:220:GLN:HG3	1.84	0.59
1:A:221:THR:HG21	1:A:323:SER:CB	2.32	0.59
1:A:344:SER:HB3	1:A:384:SER:OG	2.03	0.59
1:C:126:GLY:HA3	1:C:161:GLU:CB	2.31	0.59
1:C:45:GLN:NE2	1:C:69:ARG:HH22	2.01	0.59
1:C:356:ILE:HD12	7:C:571:HOH:O	2.00	0.59
1:A:229:PRO:CG	1:A:308:MET:HE1	2.33	0.59
1:A:78:PHE:CD2	1:A:79:ILE:HG12	2.38	0.59
1:A:204:HIS:HE1	1:A:220:GLN:O	1.85	0.59
1:A:446:ASN:HB3	1:A:447:PRO:HD2	1.85	0.59
1:C:224:HIS:HD2	1:C:319:THR:HA	1.68	0.58
3:E:1:NAG:C5	3:E:2:NAG:H2	2.29	0.58
1:C:55:ALA:O	1:C:57:PRO:HD3	2.02	0.58
1:A:31:SER:C	1:A:33:LYS:H	2.10	0.58
1:C:81:LYS:HB3	1:C:108:LYS:CB	2.33	0.58
1:A:72:ARG:HA	1:A:148:HIS:O	2.03	0.58
1:A:229:PRO:CD	1:A:308:MET:HE1	2.33	0.58
1:C:308:MET:HE3	1:C:328:LEU:HD21	1.84	0.58
1:A:81:LYS:HB3	1:A:108:LYS:CB	2.33	0.58
1:A:126:GLY:HA3	1:A:161:GLU:HB3	1.84	0.58
1:A:379:PRO:O	1:A:380:ASP:HB2	2.03	0.58
2:B:45:GLU:HG2	2:B:46:ASN:OD1	2.04	0.58
2:D:28:CYS:SG	2:D:37:SER:HB3	2.43	0.58
1:A:418:LYS:HA	1:A:431:PHE:O	2.04	0.57
1:C:188:GLU:HG3	1:C:193:ASP:OD2	2.04	0.57
1:C:221:THR:HG21	1:C:323:SER:CB	2.34	0.57
1:C:299:PRO:HG3	1:C:426:GLY:HA2	1.86	0.57
1:A:258:ASP:O	1:A:262:CYS:HB2	2.04	0.57
1:A:357:LEU:HD23	1:A:369:GLN:HB3	1.86	0.57
1:C:35:VAL:HA	1:C:110:GLY:CA	2.34	0.57
1:C:189:LEU:O	1:C:190:VAL:HG23	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:344:SER:HB3	1:C:384:SER:OG	2.05	0.57
1:C:181:PRO:O	1:C:183:PHE:HD1	1.87	0.57
1:C:345:VAL:HB	7:C:571:HOH:O	2.03	0.57
1:C:60:ILE:HD11	1:C:140:LEU:HG	1.84	0.57
1:C:238:CYS:SG	1:C:266:ARG:NH1	2.78	0.57
1:C:418:LYS:HA	1:C:431:PHE:O	2.05	0.57
1:A:108:LYS:HA	1:A:111:SER:OG	2.05	0.57
1:C:144:PRO:O	1:C:170:ILE:HA	2.05	0.57
2:D:30:HIS:CE1	2:D:32:THR:O	2.58	0.57
2:D:68:THR:HG22	2:D:70:GLU:HG3	1.87	0.57
1:A:161:GLU:OE1	1:A:165:ARG:HD3	2.04	0.57
2:B:18:LEU:H	2:B:22:GLN:HE22	1.52	0.57
1:A:335:ASN:OD1	1:A:336:PHE:N	2.38	0.56
1:A:409:PRO:HA	7:A:505:HOH:O	2.03	0.56
2:D:49:CYS:SG	2:D:85:GLY:O	2.63	0.56
1:A:167:ASN:ND2	3:E:1:NAG:C7	2.64	0.56
1:A:407:ILE:HG12	1:A:439:GLU:CD	2.30	0.56
1:A:188:GLU:HG3	1:A:193:ASP:OD2	2.06	0.56
1:A:66:ARG:HB2	7:A:562:HOH:O	2.05	0.56
1:A:418:LYS:HG3	1:A:432:CYS:SG	2.44	0.56
1:C:357:LEU:HD23	1:C:369:GLN:HB3	1.86	0.56
1:A:3:VAL:HG23	1:A:11:PHE:HB2	1.88	0.56
1:C:407:ILE:HG12	1:C:439:GLU:CD	2.31	0.56
1:A:181:PRO:O	1:A:183:PHE:HD1	1.88	0.56
1:A:203:ILE:HG22	1:A:205:THR:HG23	1.88	0.56
1:A:417:SER:O	1:A:432:CYS:HA	2.06	0.56
1:C:185:GLY:H	1:C:220:GLN:NE2	2.04	0.56
1:A:249:ILE:HG22	2:B:38:ARG:NH2	2.21	0.56
1:A:404:TYR:CD2	2:B:65:ARG:NH1	2.73	0.56
1:A:299:PRO:HG3	1:A:426:GLY:HA2	1.87	0.55
1:C:126:GLY:HA3	1:C:161:GLU:HB3	1.86	0.55
1:C:258:ASP:O	1:C:262:CYS:HB2	2.05	0.55
1:A:76:HIS:CE1	1:A:80:ASP:O	2.59	0.55
1:C:30:TRP:CH2	1:C:113:THR:HB	2.41	0.55
1:C:78:PHE:CD2	1:C:79:ILE:HG12	2.42	0.55
1:A:283:GLY:O	1:A:305:CYS:SG	2.63	0.55
3:F:1:NAG:O6	3:F:2:NAG:H2	2.05	0.55
1:C:200:VAL:HB	1:C:223:GLY:HA2	1.89	0.55
1:A:357:LEU:HB3	1:A:402:ILE:HG23	1.89	0.55
1:C:203:ILE:HG22	1:C:205:THR:HG23	1.88	0.55
1:A:144:PRO:O	1:A:170:ILE:HA	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:357:LEU:HB3	1:C:402:ILE:HG23	1.88	0.55
1:C:361:PHE:HB2	1:C:398:LYS:HG3	1.88	0.55
1:A:13:ASP:HB3	1:A:28:LEU:HD13	1.89	0.55
2:B:80:THR:O	2:B:82:THR:HG23	2.06	0.55
2:B:90:VAL:HB	7:B:135:HOH:O	2.07	0.55
1:C:81:LYS:HB3	1:C:108:LYS:HB3	1.88	0.55
2:B:16:LEU:HD12	2:B:38:ARG:HG3	1.89	0.55
1:C:360:LEU:HD21	1:C:387:PHE:HZ	1.72	0.55
1:C:379:PRO:O	1:C:380:ASP:HB2	2.06	0.55
2:D:80:THR:O	2:D:82:THR:HG23	2.07	0.55
1:C:417:SER:O	1:C:432:CYS:HA	2.06	0.54
2:D:16:LEU:HD12	2:D:38:ARG:HG3	1.87	0.54
2:D:72:ASP:C	2:D:73:LYS:HD2	2.32	0.54
2:B:69:CYS:SG	2:B:85:GLY:C	2.90	0.54
1:A:66:ARG:HD3	1:A:69:ARG:HE	1.72	0.54
1:C:3:VAL:HG23	1:C:11:PHE:HB2	1.88	0.54
1:C:161:GLU:OE1	1:C:165:ARG:HD3	2.07	0.54
1:C:345:VAL:HG22	1:C:419:ILE:HG12	1.88	0.54
1:A:230:ASN:ND2	1:A:330:THR:H	2.05	0.54
1:C:293:THR:HG22	7:C:595:HOH:O	2.08	0.54
1:A:343:VAL:HG23	1:A:421:VAL:HG13	1.89	0.54
1:C:184:GLN:HG3	1:C:220:GLN:HG3	1.88	0.54
1:C:208:ALA:HB2	1:C:233:LYS:CE	2.36	0.54
1:C:235:MET:HB2	1:C:263:ASN:OD1	2.07	0.54
1:C:411:LEU:HD12	1:C:438:ARG:HE	1.72	0.54
1:A:340:ARG:NH1	1:A:386:GLU:HG3	2.23	0.54
1:C:46:ASN:ND2	1:C:64:ASN:HD22	2.05	0.54
2:B:44:ARG:HH11	2:B:44:ARG:CG	2.21	0.54
1:A:208:ALA:HB2	1:A:233:LYS:CE	2.35	0.54
1:C:108:LYS:HA	1:C:111:SER:OG	2.08	0.54
1:C:209:PRO:HD2	1:C:213:ASN:HD21	1.72	0.54
1:C:284:PHE:CE1	1:C:305:CYS:SG	3.01	0.54
1:C:418:LYS:HG3	1:C:432:CYS:SG	2.49	0.54
1:A:79:ILE:HG22	1:A:79:ILE:O	2.08	0.53
1:A:284:PHE:CE1	1:A:305:CYS:SG	3.01	0.53
1:A:334:SER:HB3	7:A:574:HOH:O	2.08	0.53
1:C:446:ASN:HB3	1:C:447:PRO:HD2	1.90	0.53
1:A:69:ARG:HG2	7:A:518:HOH:O	2.07	0.53
1:C:97:VAL:HG23	1:C:98:GLU:HB2	1.89	0.53
1:C:229:PRO:HD3	1:C:308:MET:HE1	1.89	0.53
1:A:122:ILE:HD11	1:A:154:LEU:HG	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:129:VAL:O	1:A:133:VAL:HG23	2.07	0.53
1:C:343:VAL:HG23	1:C:421:VAL:HG13	1.89	0.53
2:B:68:THR:HG22	2:B:70:GLU:HG3	1.90	0.53
1:C:404:TYR:CD2	2:D:65:ARG:NH1	2.77	0.53
1:A:30:TRP:CH2	1:A:113:THR:HB	2.44	0.53
1:A:360:LEU:HD21	1:A:387:PHE:HZ	1.73	0.53
2:B:30:HIS:CE1	2:B:32:THR:O	2.61	0.53
1:A:411:LEU:HD12	1:A:438:ARG:HE	1.72	0.53
1:C:339:TRP:CE2	1:C:392:GLU:HB2	2.44	0.53
1:C:356:ILE:CD1	1:C:373:TYR:HB3	2.29	0.52
2:D:49:CYS:SG	2:D:87:CYS:SG	3.08	0.52
1:A:97:VAL:HG23	1:A:98:GLU:HB2	1.90	0.52
1:A:145:SER:O	1:A:171:GLU:HB2	2.09	0.52
1:C:88:SER:O	1:C:92:LYS:HG2	2.09	0.52
2:D:45:GLU:HG2	2:D:46:ASN:OD1	2.09	0.52
1:A:46:ASN:ND2	1:A:64:ASN:HD22	2.07	0.52
1:A:209:PRO:HD2	1:A:213:ASN:HD21	1.74	0.52
1:A:361:PHE:HB2	1:A:398:LYS:HG3	1.90	0.52
3:F:1:NAG:H5	3:F:2:NAG:C2	2.39	0.52
2:B:4:PRO:O	2:B:18:LEU:HD13	2.09	0.52
1:A:200:VAL:HB	1:A:223:GLY:HA2	1.90	0.52
1:C:254:GLU:HG2	7:C:569:HOH:O	2.10	0.52
1:C:283:GLY:O	1:C:305:CYS:SG	2.68	0.52
1:A:296:LYS:HD3	7:A:546:HOH:O	2.08	0.52
1:C:152:HIS:HE2	1:C:264:HIS:CD2	2.28	0.52
1:C:13:ASP:HB2	7:C:614:HOH:O	2.10	0.52
1:A:352:VAL:HG11	1:A:414:VAL:HG21	1.91	0.51
2:B:32:THR:HB	7:B:174:HOH:O	2.11	0.51
2:D:69:CYS:SG	2:D:85:GLY:C	2.94	0.51
1:A:182:CYS:HG	6:A:457:BME:HS2	0.58	0.51
1:A:209:PRO:CD	1:A:213:ASN:HD21	2.23	0.51
1:A:235:MET:N	1:A:235:MET:HE2	2.25	0.51
1:A:405:ASN:O	1:A:406:VAL:HG23	2.10	0.51
1:C:23:ARG:HH11	1:C:182:CYS:HB2	1.75	0.51
1:A:78:PHE:CE2	1:A:79:ILE:HG12	2.45	0.51
1:A:81:LYS:HB3	1:A:108:LYS:HB3	1.90	0.51
1:A:229:PRO:HD3	1:A:308:MET:HE1	1.93	0.51
2:B:76:VAL:O	2:B:79:ILE:HG12	2.11	0.51
1:C:335:ASN:OD1	1:C:336:PHE:N	2.44	0.51
1:A:406:VAL:HG11	7:A:572:HOH:O	2.10	0.51
1:C:352:VAL:HG11	1:C:414:VAL:HG21	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:44:ASN:OD1	1:A:99:SER:HA	2.10	0.51
1:A:157:HIS:CD2	1:A:183:PHE:CD2	2.99	0.51
1:C:72:ARG:HB3	7:C:610:HOH:O	2.10	0.51
1:C:52:GLU:C	1:C:53:LEU:HD12	2.36	0.51
1:C:78:PHE:CE2	1:C:79:ILE:HG12	2.46	0.51
1:C:224:HIS:CD2	1:C:319:THR:HG22	2.46	0.51
1:A:339:TRP:CE2	1:A:392:GLU:HB2	2.46	0.51
2:B:49:CYS:SG	2:B:85:GLY:C	2.94	0.51
1:C:44:ASN:OD1	1:C:99:SER:HA	2.10	0.51
2:D:4:PRO:HB3	2:D:36:LEU:CD2	2.39	0.51
1:C:152:HIS:NE2	1:C:264:HIS:CD2	2.80	0.50
1:C:152:HIS:ND1	5:C:456:C8E:H202	2.26	0.50
1:C:266:ARG:HG2	1:C:266:ARG:NH1	2.23	0.50
2:B:4:PRO:HB3	2:B:36:LEU:CD2	2.36	0.50
1:C:13:ASP:HB3	1:C:28:LEU:HD13	1.93	0.50
1:C:209:PRO:CD	1:C:213:ASN:HD21	2.24	0.50
1:A:53:LEU:HD23	1:A:60:ILE:HG22	1.94	0.50
1:C:145:SER:O	1:C:171:GLU:HB2	2.11	0.50
1:C:314:ARG:HG2	7:C:578:HOH:O	2.10	0.50
2:D:15:GLU:O	2:D:38:ARG:HG2	2.11	0.50
1:A:45:GLN:N	1:A:45:GLN:OE1	2.44	0.50
1:C:355:HIS:CD2	1:C:374:LYS:HD3	2.46	0.50
1:C:417:SER:HA	1:C:433:SER:O	2.11	0.50
2:D:44:ARG:HH11	2:D:44:ARG:CG	2.23	0.50
1:A:67:MET:HB2	1:A:142:TYR:CD1	2.47	0.50
1:C:18:ALA:HB3	7:C:614:HOH:O	2.11	0.50
1:C:199:PHE:CZ	1:C:201:ASP:HB3	2.47	0.50
1:A:256:THR:HG22	7:A:459:HOH:O	2.10	0.50
2:D:54:LEU:HD23	7:D:107:HOH:O	2.11	0.50
1:C:17:TRP:HH2	1:C:164:ARG:HH21	1.60	0.50
1:C:221:THR:HG21	1:C:323:SER:HB3	1.94	0.50
1:A:239:GLN:HB3	7:A:583:HOH:O	2.12	0.50
1:C:53:LEU:HD23	1:C:60:ILE:HG22	1.94	0.50
1:A:5:PHE:CD1	1:A:32:PRO:HD2	2.47	0.50
2:B:89:ASN:HD22	2:B:90:VAL:H	1.59	0.50
1:C:122:ILE:HD11	1:C:154:LEU:HG	1.94	0.50
1:C:218:MET:SD	7:C:584:HOH:O	2.60	0.50
1:A:88:SER:O	1:A:92:LYS:HG2	2.12	0.49
1:C:319:THR:O	1:C:321:GLY:N	2.44	0.49
1:A:52:GLU:C	1:A:53:LEU:HD12	2.37	0.49
1:A:276:LEU:C	1:A:278:PRO:HD3	2.36	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:230:ASN:ND2	1:C:330:THR:H	2.08	0.49
2:D:4:PRO:O	2:D:18:LEU:HD13	2.11	0.49
2:D:5:ARG:HD3	2:D:18:LEU:HD21	1.94	0.49
2:B:5:ARG:HD3	2:B:18:LEU:HD21	1.93	0.49
1:C:340:ARG:NH1	1:C:386:GLU:HG3	2.27	0.49
1:A:97:VAL:HG11	1:A:275:ILE:HG22	1.95	0.49
1:A:284:PHE:CE1	1:A:300:CYS:SG	3.05	0.49
2:B:15:GLU:O	2:B:38:ARG:HG2	2.13	0.49
1:C:76:HIS:CE1	1:C:80:ASP:O	2.65	0.49
1:A:77:GLY:HA2	1:A:107:TRP:HZ2	1.77	0.49
1:A:253:TRP:CE2	1:A:257:ARG:HD2	2.47	0.49
1:A:254:GLU:HG2	7:A:550:HOH:O	2.11	0.49
1:C:405:ASN:O	1:C:406:VAL:HG23	2.11	0.49
1:A:242:ILE:HG23	1:A:259:PHE:CE1	2.48	0.49
1:A:266:ARG:NH1	1:A:266:ARG:HG2	2.24	0.49
1:A:199:PHE:CZ	1:A:201:ASP:HB3	2.48	0.49
2:B:4:PRO:HG3	2:B:36:LEU:HB3	1.95	0.49
1:C:121:ASN:OD1	1:C:121:ASN:N	2.44	0.49
1:A:194:PRO:HB3	1:A:224:HIS:ND1	2.28	0.49
1:A:221:THR:HG21	1:A:323:SER:HB3	1.95	0.49
1:C:163:GLY:HA2	1:C:170:ILE:HD11	1.95	0.49
1:C:284:PHE:HE1	1:C:300:CYS:SG	2.33	0.49
1:A:152:HIS:NE2	1:A:264:HIS:CD2	2.81	0.48
1:C:242:ILE:HG23	1:C:259:PHE:CE1	2.47	0.48
1:A:122:ILE:HG22	1:A:158:ALA:CB	2.39	0.48
1:C:46:ASN:CG	1:C:64:ASN:HD22	2.22	0.48
1:C:411:LEU:HD12	1:C:438:ARG:NE	2.28	0.48
1:A:43:THR:HG22	1:A:44:ASN:H	1.78	0.48
1:A:285:PRO:CG	1:A:301:PRO:HG2	2.43	0.48
1:A:295:ASN:CG	1:A:386:GLU:HG2	2.37	0.48
1:C:43:THR:HG22	1:C:44:ASN:H	1.78	0.48
1:C:207:ALA:O	1:C:208:ALA:HB3	2.13	0.48
2:D:76:VAL:O	2:D:79:ILE:HG12	2.12	0.48
3:F:1:NAG:H5	3:F:2:NAG:O5	2.07	0.48
1:A:78:PHE:O	1:A:79:ILE:HB	2.13	0.48
2:B:53:THR:HG23	2:B:56:GLY:H	1.78	0.48
2:B:65:ARG:HH11	2:B:65:ARG:CG	2.25	0.48
2:B:72:ASP:C	2:B:73:LYS:HD2	2.38	0.48
1:C:5:PHE:CD1	1:C:32:PRO:HD2	2.48	0.48
1:C:249:ILE:HG22	2:D:38:ARG:CZ	2.44	0.48
1:A:66:ARG:HD2	7:A:519:HOH:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:1:NAG:H5	3:E:2:NAG:O7	2.13	0.48
1:A:117:GLN:HG2	7:A:494:HOH:O	2.13	0.48
1:A:224:HIS:CD2	1:A:319:THR:HG22	2.48	0.48
1:A:306:PRO:HG3	1:A:326:PHE:CE2	2.49	0.48
2:B:22:GLN:HG2	7:B:152:HOH:O	2.14	0.48
2:B:49:CYS:HA	2:B:61:CYS:O	2.14	0.48
1:C:45:GLN:N	1:C:45:GLN:OE1	2.46	0.48
1:C:319:THR:C	1:C:321:GLY:H	2.21	0.48
2:D:8:ILE:HD13	7:D:118:HOH:O	2.12	0.48
2:D:49:CYS:HA	2:D:61:CYS:O	2.14	0.48
1:A:29:PRO:HB3	1:A:124:ILE:CD1	2.44	0.48
1:A:417:SER:HA	1:A:433:SER:O	2.14	0.48
1:C:78:PHE:O	1:C:79:ILE:HB	2.14	0.48
2:D:42:LYS:HG3	2:D:62:PRO:O	2.14	0.48
2:D:89:ASN:HD22	2:D:90:VAL:H	1.62	0.48
1:A:107:TRP:CZ3	1:A:111:SER:HB3	2.49	0.47
1:A:224:HIS:ND1	1:A:224:HIS:N	2.62	0.47
1:C:222:VAL:HG12	1:C:223:GLY:N	2.27	0.47
1:C:346:THR:O	1:C:416:ALA:HA	2.14	0.47
1:A:163:GLY:HA2	1:A:170:ILE:HD11	1.97	0.47
1:A:411:LEU:HD12	1:A:438:ARG:NE	2.28	0.47
1:C:23:ARG:HH11	1:C:23:ARG:HG3	1.79	0.47
1:C:122:ILE:HG22	1:C:158:ALA:CB	2.43	0.47
1:A:110:GLY:O	1:A:113:THR:HG22	2.15	0.47
1:A:152:HIS:HE2	1:A:264:HIS:CD2	2.32	0.47
1:A:164:ARG:HH12	3:E:4:BMA:H4	1.79	0.47
1:C:284:PHE:N	1:C:327:TYR:O	2.45	0.47
1:A:17:TRP:CZ2	1:A:164:ARG:NH2	2.82	0.47
1:A:46:ASN:CG	1:A:64:ASN:HD22	2.22	0.47
1:C:295:ASN:CG	1:C:386:GLU:HG2	2.39	0.47
1:A:35:VAL:HA	1:A:110:GLY:HA3	1.97	0.47
1:A:39:PHE:CG	1:A:132:PHE:CE2	3.03	0.47
2:B:69:CYS:SG	2:B:85:GLY:CA	3.02	0.47
1:C:79:ILE:HG22	1:C:79:ILE:O	2.14	0.47
2:D:44:ARG:HH11	2:D:44:ARG:HG2	1.79	0.47
2:D:58:TYR:HB3	2:D:60:LYS:O	2.15	0.47
1:A:31:SER:O	1:A:33:LYS:N	2.43	0.47
1:A:273:ASP:OD2	1:A:336:PHE:CD1	2.62	0.47
1:A:341:TYR:OH	1:A:393:VAL:HG22	2.15	0.47
1:A:370:TYR:CZ	1:A:389:SER:HA	2.50	0.47
1:A:422:GLU:HG3	1:A:427:LYS:O	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:164:ARG:HH12	3:F:4:BMA:C1	2.27	0.47
1:A:66:ARG:HD3	1:A:69:ARG:NE	2.30	0.47
1:A:207:ALA:O	1:A:208:ALA:HB3	2.15	0.47
1:C:66:ARG:HD3	1:C:69:ARG:HE	1.79	0.47
1:C:77:GLY:HA2	1:C:107:TRP:HZ2	1.80	0.47
1:C:157:HIS:CD2	1:C:183:PHE:CD2	3.02	0.47
1:C:229:PRO:HB3	1:C:308:MET:CE	2.41	0.47
1:C:17:TRP:CZ2	1:C:164:ARG:NH2	2.83	0.47
1:C:229:PRO:HD3	1:C:308:MET:CE	2.44	0.47
2:D:4:PRO:HG3	2:D:36:LEU:HB3	1.97	0.47
1:A:112:ARG:CG	1:A:112:ARG:HH11	2.28	0.47
1:A:211:ILE:HA	1:A:212:PRO:HA	1.70	0.47
1:A:335:ASN:OD1	1:A:335:ASN:C	2.58	0.47
1:C:182:CYS:HG	6:C:457:BME:HS2	0.63	0.47
1:C:319:THR:HG21	7:C:493:HOH:O	2.15	0.47
1:A:43:THR:HB	1:A:46:ASN:ND2	2.30	0.46
1:A:440:GLU:HG3	2:B:65:ARG:HB2	1.96	0.46
1:C:203:ILE:HG22	1:C:205:THR:CG2	2.45	0.46
1:C:285:PRO:CG	1:C:301:PRO:HG2	2.45	0.46
1:A:152:HIS:CE1	1:A:264:HIS:CD2	3.03	0.46
1:A:81:LYS:HB3	1:A:108:LYS:HB2	1.97	0.46
1:C:35:VAL:HA	1:C:110:GLY:HA3	1.98	0.46
1:C:235:MET:N	1:C:235:MET:HE2	2.30	0.46
1:C:423:ARG:NH1	1:C:427:LYS:HD3	2.30	0.46
1:A:320:ASN:CG	1:A:320:ASN:O	2.58	0.46
1:C:93:ASN:HB2	1:C:275:ILE:HD12	1.96	0.46
1:C:358:VAL:HG23	1:C:372:ILE:HG13	1.98	0.46
1:A:249:ILE:HG22	2:B:38:ARG:CZ	2.45	0.46
1:C:67:MET:HB2	1:C:142:TYR:CD1	2.50	0.46
1:C:306:PRO:HG3	1:C:326:PHE:CE2	2.50	0.46
1:C:350:LYS:HD2	1:C:351:LYS:H	1.81	0.46
1:A:266:ARG:O	1:A:269:LYS:HB2	2.16	0.46
1:C:129:VAL:O	1:C:133:VAL:HG23	2.14	0.46
1:C:172:ARG:HG3	1:C:199:PHE:CD2	2.51	0.46
1:A:95:PHE:CE1	1:A:100:VAL:HG12	2.51	0.46
1:A:355:HIS:CD2	1:A:374:LYS:HD3	2.51	0.46
2:B:58:TYR:HB3	2:B:60:LYS:O	2.16	0.46
1:A:23:ARG:HH11	1:A:182:CYS:HB2	1.80	0.46
1:A:117:GLN:O	1:A:121:ASN:OD1	2.34	0.46
1:C:39:PHE:CG	1:C:132:PHE:CE2	3.04	0.46
1:C:46:ASN:N	1:C:46:ASN:HD22	2.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:266:ARG:O	1:C:269:LYS:HB2	2.16	0.46
1:C:298:PHE:CZ	1:C:424:ASN:HA	2.51	0.46
1:A:45:GLN:NE2	1:A:69:ARG:NH2	2.59	0.46
1:A:356:ILE:CD1	1:A:373:TYR:HB3	2.32	0.46
1:C:156:SER:O	1:C:159:ALA:HB3	2.16	0.46
1:A:43:THR:HG22	1:A:44:ASN:N	2.31	0.45
1:A:261:ALA:HB1	1:A:264:HIS:HB3	1.98	0.45
1:C:261:ALA:HB1	1:C:264:HIS:HB3	1.97	0.45
1:C:338:ARG:HA	1:C:338:ARG:HD3	1.63	0.45
1:A:222:VAL:HG12	1:A:223:GLY:N	2.31	0.45
1:A:235:MET:HB2	1:A:263:ASN:OD1	2.16	0.45
1:A:346:THR:O	1:A:416:ALA:HA	2.16	0.45
1:C:194:PRO:HB3	1:C:224:HIS:ND1	2.31	0.45
2:D:71:GLY:HA3	2:D:85:GLY:HA2	1.97	0.45
3:E:1:NAG:H3	3:E:2:NAG:O6	2.15	0.45
1:A:29:PRO:HB3	1:A:124:ILE:HD12	1.98	0.45
1:A:322:VAL:O	1:A:323:SER:HB2	2.16	0.45
1:C:95:PHE:CE1	1:C:100:VAL:HG12	2.51	0.45
1:C:282:ALA:HB2	1:C:307:GLN:HE22	1.80	0.45
1:C:322:VAL:O	1:C:323:SER:HB2	2.15	0.45
1:A:285:PRO:HG3	1:A:301:PRO:HG2	1.97	0.45
1:A:298:PHE:CZ	1:A:424:ASN:HA	2.52	0.45
2:B:44:ARG:HH11	2:B:44:ARG:HG2	1.81	0.45
2:B:73:LYS:HD3	7:B:139:HOH:O	2.16	0.45
1:A:10:CYS:C	1:A:11:PHE:CD1	2.95	0.45
1:A:261:ALA:O	1:A:265:LEU:HG	2.17	0.45
1:A:322:VAL:HG21	1:C:322:VAL:CG2	2.46	0.45
1:C:31:SER:O	1:C:33:LYS:N	2.45	0.45
1:A:22:GLN:N	1:A:22:GLN:OE1	2.49	0.45
1:A:56:ASP:O	1:A:59:THR:N	2.50	0.45
1:C:30:TRP:O	1:C:124:ILE:CD1	2.64	0.45
1:C:276:LEU:C	1:C:278:PRO:HD3	2.42	0.45
1:A:204:HIS:ND1	1:A:218:MET:O	2.49	0.45
2:B:44:ARG:CG	2:B:44:ARG:NH1	2.78	0.45
1:C:370:TYR:CZ	1:C:389:SER:HA	2.52	0.45
2:D:30:HIS:ND1	2:D:32:THR:O	2.50	0.45
1:A:31:SER:C	1:A:33:LYS:N	2.74	0.45
1:A:324:GLN:HB2	1:A:326:PHE:HE1	1.82	0.45
1:A:54:VAL:HG23	1:A:56:ASP:H	1.82	0.45
1:A:152:HIS:CE1	1:A:264:HIS:HD2	2.35	0.45
1:A:219:SER:O	1:A:220:GLN:C	2.60	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:219:SER:O	1:C:220:GLN:C	2.60	0.45
1:A:229:PRO:HD3	1:A:308:MET:CE	2.47	0.44
1:A:253:TRP:HH2	5:A:455:C8E:H102	1.82	0.44
1:A:113:THR:OG1	1:A:114:GLY:N	2.49	0.44
1:A:284:PHE:HB2	1:A:292:PHE:CE1	2.52	0.44
1:A:338:ARG:HA	1:A:338:ARG:HD3	1.63	0.44
1:A:358:VAL:HG23	1:A:372:ILE:HG13	1.99	0.44
1:A:100:VAL:HG21	7:A:576:HOH:O	2.17	0.44
1:A:183:PHE:O	1:A:191:ARG:HG2	2.16	0.44
1:C:171:GLU:OE2	1:C:198:LYS:HD3	2.18	0.44
2:D:69:CYS:SG	2:D:85:GLY:CA	3.05	0.44
1:C:78:PHE:HB2	1:C:154:LEU:CD2	2.47	0.44
1:C:112:ARG:HH11	1:C:112:ARG:CG	2.30	0.44
1:C:209:PRO:HB2	1:C:211:ILE:O	2.18	0.44
2:D:49:CYS:SG	2:D:85:GLY:C	3.00	0.44
1:A:78:PHE:HB2	1:A:154:LEU:CD2	2.47	0.44
1:C:97:VAL:HG11	1:C:275:ILE:HG22	1.99	0.44
1:C:181:PRO:O	1:C:183:PHE:CD1	2.69	0.44
1:C:343:VAL:HG12	1:C:372:ILE:HD12	1.98	0.44
1:C:396:LEU:H	1:C:396:LEU:CD1	2.30	0.44
2:D:68:THR:CG2	2:D:70:GLU:HG3	2.47	0.44
1:A:17:TRP:HH2	1:A:164:ARG:HH21	1.64	0.44
1:A:33:LYS:HB3	1:A:33:LYS:HE3	1.65	0.44
1:A:396:LEU:H	1:A:396:LEU:CD1	2.27	0.44
1:C:43:THR:HG22	1:C:44:ASN:N	2.32	0.44
2:D:6:GLY:O	2:D:8:ILE:HG22	2.17	0.44
1:A:121:ASN:OD1	1:A:121:ASN:N	2.50	0.44
1:C:373:TYR:HA	7:C:570:HOH:O	2.18	0.44
1:C:41:LEU:HD12	1:C:42:TYR:H	1.83	0.44
1:C:113:THR:OG1	1:C:114:GLY:N	2.50	0.44
1:C:221:THR:HG22	1:C:226:ASP:CG	2.42	0.44
1:C:43:THR:HB	1:C:46:ASN:ND2	2.33	0.44
1:A:352:VAL:HG12	1:A:377:LEU:HB2	2.00	0.43
1:C:440:GLU:HG3	2:D:65:ARG:HB2	2.00	0.43
2:B:44:ARG:HG2	2:B:47:SER:OG	2.18	0.43
1:C:185:GLY:O	1:C:186:THR:O	2.36	0.43
1:C:303:GLU:HG3	1:C:304:GLY:N	2.33	0.43
1:A:204:HIS:O	1:A:229:PRO:HD2	2.17	0.43
1:C:23:ARG:NH1	1:C:182:CYS:O	2.51	0.43
3:F:2:NAG:C6	3:F:3:BMA:O2	2.66	0.43
1:A:40:LEU:CD1	1:A:40:LEU:N	2.81	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:54:VAL:C	1:A:56:ASP:H	2.27	0.43
1:A:93:ASN:HB2	1:A:275:ILE:HD12	1.99	0.43
1:C:29:PRO:HB3	1:C:124:ILE:CD1	2.49	0.43
1:C:422:GLU:HG3	1:C:427:LYS:O	2.17	0.43
1:A:30:TRP:O	1:A:124:ILE:CD1	2.66	0.43
1:A:172:ARG:HG3	1:A:199:PHE:CD2	2.53	0.43
2:B:51:ALA:O	2:B:52:PHE:C	2.61	0.43
1:C:224:HIS:ND1	1:C:224:HIS:N	2.66	0.43
1:C:355:HIS:NE2	1:C:374:LYS:HD3	2.33	0.43
1:A:35:VAL:HA	1:A:110:GLY:N	2.33	0.43
1:A:171:GLU:OE2	1:A:198:LYS:HD3	2.17	0.43
2:B:90:VAL:HA	7:B:136:HOH:O	2.18	0.43
1:C:8:LEU:HD12	1:C:32:PRO:HG3	2.00	0.43
1:C:41:LEU:HD12	1:C:42:TYR:N	2.33	0.43
1:C:54:VAL:HG23	1:C:56:ASP:H	1.83	0.43
1:C:56:ASP:O	1:C:59:THR:N	2.51	0.43
1:A:130:ALA:O	1:A:134:GLU:HG2	2.19	0.43
1:A:228:PHE:N	1:A:228:PHE:CD1	2.87	0.43
1:A:271:TYR:OH	1:A:310:HIS:ND1	2.46	0.43
1:A:423:ARG:NH1	1:A:427:LYS:HD3	2.34	0.43
1:C:22:GLN:N	1:C:22:GLN:OE1	2.51	0.43
1:C:341:TYR:OH	1:C:393:VAL:HG22	2.17	0.43
2:D:51:ALA:HB2	2:D:73:LYS:HE2	2.01	0.43
1:A:181:PRO:O	1:A:183:PHE:CD1	2.70	0.43
1:A:203:ILE:HG22	1:A:205:THR:CG2	2.48	0.43
1:A:298:PHE:CD1	1:A:299:PRO:HA	2.53	0.43
1:C:110:GLY:O	1:C:113:THR:HG22	2.18	0.43
1:C:325:VAL:C	1:C:326:PHE:CD1	2.97	0.43
1:A:136:LEU:HD12	1:A:142:TYR:CB	2.48	0.43
1:A:266:ARG:HH11	1:A:266:ARG:CG	2.28	0.43
1:A:282:ALA:HB2	1:A:307:GLN:HE22	1.83	0.43
1:C:10:CYS:C	1:C:11:PHE:CD1	2.96	0.43
1:C:83:GLU:O	1:C:84:GLU:C	2.62	0.43
1:C:152:HIS:CE1	1:C:264:HIS:HD2	2.37	0.43
1:C:371:GLU:HG3	1:C:372:ILE:H	1.82	0.43
1:A:31:SER:HB3	1:A:34:ASP:OD1	2.19	0.43
1:A:253:TRP:HA	1:A:253:TRP:CE3	2.53	0.43
1:A:319:THR:O	1:C:320:ASN:HA	2.19	0.43
1:C:164:ARG:NH1	3:F:4:BMA:C1	2.82	0.43
1:C:320:ASN:O	1:C:320:ASN:CG	2.61	0.43
1:A:345:VAL:HG22	1:A:419:ILE:CG1	2.48	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:360:LEU:HD21	1:A:387:PHE:CZ	2.53	0.42
1:C:29:PRO:HB3	1:C:124:ILE:HD12	2.01	0.42
1:C:222:VAL:CG1	1:C:223:GLY:N	2.81	0.42
1:C:227:PHE:CZ	1:C:306:PRO:HB2	2.54	0.42
1:C:261:ALA:O	1:C:265:LEU:HG	2.18	0.42
1:C:409:PRO:HA	7:C:549:HOH:O	2.18	0.42
3:F:2:NAG:H62	3:F:3:BMA:O2	2.19	0.42
1:A:23:ARG:HH11	1:A:23:ARG:HG3	1.84	0.42
1:A:168:GLY:N	7:A:578:HOH:O	2.52	0.42
1:A:227:PHE:CZ	1:A:306:PRO:HB2	2.55	0.42
1:C:41:LEU:CD1	7:C:562:HOH:O	2.67	0.42
1:C:81:LYS:CB	1:C:108:LYS:HB3	2.48	0.42
1:C:273:ASP:OD2	1:C:336:PHE:CD1	2.66	0.42
2:B:48:GLU:HB3	2:B:60:LYS:HD3	2.00	0.42
1:A:325:VAL:C	1:A:326:PHE:CD1	2.98	0.42
1:C:7:ARG:CZ	1:C:7:ARG:HB2	2.50	0.42
1:C:81:LYS:HB3	1:C:108:LYS:HB2	2.00	0.42
1:C:227:PHE:CE2	1:C:306:PRO:HB2	2.55	0.42
1:A:8:LEU:HD12	1:A:32:PRO:HG3	2.01	0.42
1:C:284:PHE:HB2	1:C:292:PHE:CE1	2.54	0.42
1:C:360:LEU:HD21	1:C:387:PHE:CZ	2.52	0.42
2:B:19:ASN:OD1	2:B:21:ALA:HB3	2.19	0.42
1:C:54:VAL:C	1:C:56:ASP:H	2.27	0.42
1:C:121:ASN:O	1:C:124:ILE:HB	2.20	0.42
2:D:53:THR:HG23	2:D:56:GLY:H	1.85	0.42
1:A:81:LYS:CB	1:A:108:LYS:HB3	2.50	0.42
1:A:117:GLN:NE2	1:A:121:ASN:OD1	2.52	0.42
1:A:152:HIS:NE2	1:A:264:HIS:HD2	2.17	0.42
1:A:209:PRO:HB2	1:A:211:ILE:O	2.19	0.42
2:B:42:LYS:HG3	2:B:62:PRO:O	2.20	0.42
2:B:49:CYS:SG	2:B:87:CYS:SG	3.17	0.42
1:C:16:PRO:HA	1:C:20:ILE:CG2	2.50	0.42
1:C:152:HIS:CE1	1:C:264:HIS:CD2	3.07	0.42
1:C:153:SER:O	1:C:156:SER:OG	2.37	0.42
1:C:253:TRP:CE2	1:C:257:ARG:HD2	2.55	0.42
2:D:8:ILE:HG23	2:D:11:LEU:CD2	2.44	0.42
3:E:1:NAG:C5	3:E:2:NAG:C2	2.93	0.42
1:A:4:CYS:HA	1:A:10:CYS:HA	2.00	0.42
1:A:227:PHE:CD1	1:A:227:PHE:N	2.88	0.42
1:C:41:LEU:HB3	1:C:51:GLN:HB2	2.01	0.42
1:C:96:LYS:HB3	1:C:96:LYS:HE3	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:136:LEU:HD12	1:C:142:TYR:CB	2.50	0.42
1:C:224:HIS:CE1	7:C:616:HOH:O	2.72	0.42
1:A:227:PHE:CD2	1:A:308:MET:HB2	2.55	0.42
1:A:253:TRP:HA	1:A:253:TRP:HE3	1.84	0.42
1:C:23:ARG:N	1:C:24:PRO:CD	2.83	0.42
1:C:47:GLN:H	1:C:47:GLN:HG2	1.45	0.42
1:C:94:LEU:HG	1:C:275:ILE:HD13	2.02	0.42
1:C:277:ASN:OD1	1:C:337:ALA:HB2	2.20	0.42
2:B:89:ASN:HD22	2:B:90:VAL:N	2.18	0.41
1:A:46:ASN:N	1:A:46:ASN:HD22	2.18	0.41
1:A:94:LEU:HG	1:A:275:ILE:HD13	2.02	0.41
1:C:227:PHE:HB3	1:C:308:MET:HE3	2.02	0.41
1:C:352:VAL:HG12	1:C:377:LEU:HB2	2.00	0.41
2:D:20:SER:HA	2:D:28:CYS:HB2	2.03	0.41
1:A:41:LEU:HB3	1:A:51:GLN:HB2	2.01	0.41
1:A:41:LEU:HD12	1:A:42:TYR:H	1.85	0.41
1:A:154:LEU:HD12	1:A:154:LEU:HA	1.90	0.41
1:C:253:TRP:HA	1:C:253:TRP:CE3	2.55	0.41
1:C:271:TYR:OH	1:C:310:HIS:ND1	2.45	0.41
1:C:356:ILE:H	1:C:356:ILE:HG12	1.74	0.41
1:A:96:LYS:HE3	1:A:96:LYS:HB3	1.83	0.41
1:A:227:PHE:HB3	1:A:308:MET:HE3	2.02	0.41
1:A:378:GLN:HE21	1:A:381:ASN:HD21	1.69	0.41
2:B:75:LEU:O	2:B:76:VAL:C	2.62	0.41
1:C:23:ARG:H	1:C:24:PRO:HD3	1.85	0.41
1:C:130:ALA:O	1:C:134:GLU:HG2	2.20	0.41
1:C:152:HIS:HE2	1:C:264:HIS:HD2	1.69	0.41
1:C:153:SER:OG	1:C:264:HIS:NE2	2.53	0.41
1:C:211:ILE:HA	1:C:212:PRO:HA	1.68	0.41
1:A:121:ASN:O	1:A:124:ILE:HB	2.21	0.41
1:A:165:ARG:HG2	1:A:165:ARG:H	1.61	0.41
1:A:221:THR:O	1:A:222:VAL:CG2	2.59	0.41
1:A:284:PHE:HE1	1:A:300:CYS:SG	2.44	0.41
2:B:7:ILE:HD12	2:B:7:ILE:HA	1.81	0.41
1:C:41:LEU:HD13	7:C:562:HOH:O	2.20	0.41
1:C:53:LEU:HD12	1:C:53:LEU:N	2.35	0.41
1:C:66:ARG:HD3	1:C:69:ARG:NE	2.35	0.41
1:C:126:GLY:HA3	1:C:161:GLU:HB2	2.01	0.41
1:C:199:PHE:HE2	1:C:313:ASP:HA	1.84	0.41
1:C:209:PRO:HD2	1:C:213:ASN:ND2	2.36	0.41
1:C:285:PRO:HG3	1:C:301:PRO:HG2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:335:ASN:OD1	1:C:335:ASN:C	2.62	0.41
1:A:23:ARG:H	1:A:24:PRO:CD	2.33	0.41
1:A:131:TYR:HA	1:A:134:GLU:HG3	2.03	0.41
1:A:188:GLU:HG2	7:C:461:HOH:O	2.20	0.41
1:A:343:VAL:HG12	1:A:372:ILE:HD12	2.01	0.41
2:D:7:ILE:HD12	2:D:7:ILE:HA	1.81	0.41
2:D:19:ASN:OD1	2:D:21:ALA:HB3	2.20	0.41
3:F:1:NAG:O6	3:F:2:NAG:C2	2.68	0.41
1:A:227:PHE:CE2	1:A:306:PRO:HB2	2.55	0.41
1:A:319:THR:O	1:A:321:GLY:N	2.54	0.41
1:A:319:THR:C	1:A:321:GLY:H	2.29	0.41
1:C:40:LEU:N	1:C:40:LEU:CD1	2.83	0.41
1:C:204:HIS:ND1	1:C:218:MET:O	2.50	0.41
1:C:249:ILE:HG22	2:D:38:ARG:HH21	1.80	0.41
1:A:256:THR:O	1:A:259:PHE:HB3	2.21	0.41
1:A:308:MET:HG2	1:A:309:GLY:N	2.35	0.41
1:A:16:PRO:HA	1:A:20:ILE:CG2	2.50	0.41
1:A:23:ARG:H	1:A:24:PRO:HD3	1.86	0.41
1:A:41:LEU:HD12	1:A:42:TYR:N	2.35	0.41
1:A:122:ILE:CD1	1:A:154:LEU:HG	2.50	0.41
1:A:350:LYS:HD2	1:A:351:LYS:H	1.86	0.41
1:A:422:GLU:HA	1:A:427:LYS:O	2.21	0.41
2:B:6:GLY:O	2:B:8:ILE:HG22	2.21	0.41
2:B:71:GLY:HA3	2:B:85:GLY:HA2	2.03	0.41
1:C:23:ARG:H	1:C:24:PRO:CD	2.34	0.41
1:C:221:THR:O	1:C:222:VAL:CG2	2.56	0.41
1:C:313:ASP:OD1	1:C:314:ARG:HD2	2.21	0.41
1:C:396:LEU:N	1:C:396:LEU:CD1	2.84	0.41
2:D:89:ASN:HD22	2:D:90:VAL:N	2.18	0.41
1:A:411:LEU:N	1:A:412:PRO:HD3	2.36	0.41
1:C:35:VAL:HG22	1:C:121:ASN:HB3	2.02	0.41
1:C:78:PHE:HB2	1:C:154:LEU:HD22	2.03	0.41
1:C:86:TRP:HB2	1:C:268:TYR:CD1	2.55	0.41
1:C:152:HIS:NE2	1:C:264:HIS:HD2	2.17	0.41
1:C:205:THR:HG21	1:C:267:SER:HA	2.03	0.41
1:C:297:CYS:SG	1:C:297:CYS:O	2.79	0.41
1:A:76:HIS:ND1	1:A:80:ASP:O	2.54	0.40
1:C:256:THR:O	1:C:259:PHE:HB3	2.21	0.40
1:A:331:GLY:HA2	1:A:338:ARG:CZ	2.51	0.40
1:C:45:GLN:NE2	1:C:69:ARG:NH2	2.63	0.40
1:C:285:PRO:HG2	7:C:487:HOH:O	2.19	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:422:GLU:HA	1:C:427:LYS:O	2.21	0.40
1:A:418:LYS:CD	1:A:432:CYS:SG	3.09	0.40
1:C:107:TRP:CZ3	1:C:111:SER:HB3	2.56	0.40
1:C:378:GLN:HE21	1:C:381:ASN:HD21	1.70	0.40
1:A:22:GLN:O	1:A:182:CYS:HA	2.20	0.40
1:A:156:SER:O	1:A:159:ALA:HB3	2.21	0.40
1:A:221:THR:HG22	1:A:226:ASP:CG	2.46	0.40
2:B:68:THR:CG2	2:B:70:GLU:HG3	2.52	0.40
1:C:35:VAL:HA	1:C:110:GLY:N	2.37	0.40
1:C:227:PHE:CD2	1:C:308:MET:HB2	2.57	0.40
1:C:378:GLN:HG3	1:C:381:ASN:ND2	2.37	0.40
1:A:191:ARG:HH21	1:A:193:ASP:CB	2.35	0.40
1:A:209:PRO:HD2	1:A:213:ASN:ND2	2.36	0.40
2:B:65:ARG:HG3	2:B:65:ARG:NH1	2.27	0.40
1:C:228:PHE:N	1:C:228:PHE:CD1	2.89	0.40
1:C:328:LEU:HD23	1:C:328:LEU:N	2.36	0.40
2:D:51:ALA:O	2:D:52:PHE:C	2.64	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	446/448 (100%)	361 (81%)	66 (15%)	19 (4%)	2 7
1	C	446/448 (100%)	363 (81%)	63 (14%)	20 (4%)	2 7
2	B	85/95 (90%)	75 (88%)	8 (9%)	2 (2%)	4 17
2	D	85/95 (90%)	76 (89%)	7 (8%)	2 (2%)	4 17
All	All	1062/1086 (98%)	875 (82%)	144 (14%)	43 (4%)	2 8

All (43) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	6	PRO
1	A	23	ARG
1	A	186	THR
1	C	23	ARG
1	C	186	THR
1	A	32	PRO
1	A	84	GLU
1	A	220	GLN
1	A	371	GLU
2	B	6	GLY
1	C	6	PRO
1	C	32	PRO
1	C	84	GLU
1	C	220	GLN
1	C	368	ARG
2	D	6	GLY
1	A	76	HIS
1	A	222	VAL
1	A	320	ASN
1	A	190	VAL
1	C	55	ALA
1	C	76	HIS
1	C	188	GLU
1	C	190	VAL
1	C	222	VAL
1	C	320	ASN
1	A	55	ALA
1	A	78	PHE
1	A	79	ILE
1	A	208	ALA
1	C	79	ILE
1	C	182	CYS
1	C	208	ALA
1	C	371	GLU
1	A	247	VAL
1	A	368	ARG
2	B	7	ILE
1	C	247	VAL
2	D	7	ILE
1	A	301	PRO
1	A	409	PRO
1	C	409	PRO
1	C	301	PRO

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	388/388 (100%)	298 (77%)	90 (23%)	1	3
1	C	388/388 (100%)	298 (77%)	90 (23%)	1	3
2	B	76/83 (92%)	60 (79%)	16 (21%)	1	4
2	D	76/83 (92%)	59 (78%)	17 (22%)	1	3
All	All	928/942 (98%)	715 (77%)	213 (23%)	1	3

All (213) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	VAL
1	A	7	ARG
1	A	12	SER
1	A	25	LEU
1	A	33	LYS
1	A	40	LEU
1	A	46	ASN
1	A	47	GLN
1	A	49	ASN
1	A	60	ILE
1	A	66	ARG
1	A	79	ILE
1	A	80	ASP
1	A	81	LYS
1	A	83	GLU
1	A	88	SER
1	A	103	ILE
1	A	112	ARG
1	A	117	GLN
1	A	119	SER
1	A	121	ASN
1	A	122	ILE
1	A	135	VAL
1	A	136	LEU

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Mol	Chain	Res	Type
1	A	140	LEU
1	A	153	SER
1	A	154	LEU
1	A	156	SER
1	A	165	ARG
1	A	189	LEU
1	A	191	ARG
1	A	210	ILE
1	A	213	ASN
1	A	218	MET
1	A	219	SER
1	A	220	GLN
1	A	221	THR
1	A	224	HIS
1	A	226	ASP
1	A	234	GLN
1	A	243	LEU
1	A	247	VAL
1	A	248	ASP
1	A	249	ILE
1	A	256	THR
1	A	258	ASP
1	A	266	ARG
1	A	267	SER
1	A	269	LYS
1	A	286	CYS
1	A	290	ASN
1	A	291	VAL
1	A	295	ASN
1	A	296	LYS
1	A	301	PRO
1	A	302	SER
1	A	319	THR
1	A	320	ASN
1	A	322	VAL
1	A	325	VAL
1	A	342	LYS
1	A	343	VAL
1	A	350	LYS
1	A	353	THR
1	A	356	ILE
1	A	357	LEU

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Mol	Chain	Res	Type
1	A	360	LEU
1	A	366	ASN
1	A	367	SER
1	A	368	ARG
1	A	371	GLU
1	A	374	LYS
1	A	384	SER
1	A	391	VAL
1	A	395	ASP
1	A	397	GLN
1	A	399	VAL
1	A	405	ASN
1	A	406	VAL
1	A	407	ILE
1	A	417	SER
1	A	418	LYS
1	A	423	ARG
1	A	430	ASP
1	A	435	GLU
1	A	440	GLU
1	A	441	VAL
1	A	443	LEU
1	A	444	THR
1	A	448	CYS
2	B	7	ILE
2	B	9	ILE
2	B	12	ASP
2	B	15	GLU
2	B	16	LEU
2	B	18	LEU
2	B	19	ASN
2	B	24	LYS
2	B	31	ASP
2	B	42	LYS
2	B	44	ARG
2	B	47	SER
2	B	65	ARG
2	B	68	THR
2	B	73	LYS
2	B	79	ILE
1	C	3	VAL
1	C	7	ARG

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Mol	Chain	Res	Type
1	C	12	SER
1	C	25	LEU
1	C	33	LYS
1	C	40	LEU
1	C	46	ASN
1	C	47	GLN
1	C	49	ASN
1	C	60	ILE
1	C	66	ARG
1	C	79	ILE
1	C	80	ASP
1	C	81	LYS
1	C	83	GLU
1	C	88	SER
1	C	100	VAL
1	C	103	ILE
1	C	112	ARG
1	C	117	GLN
1	C	119	SER
1	C	121	ASN
1	C	122	ILE
1	C	135	VAL
1	C	136	LEU
1	C	140	LEU
1	C	153	SER
1	C	154	LEU
1	C	156	SER
1	C	165	ARG
1	C	189	LEU
1	C	191	ARG
1	C	210	ILE
1	C	213	ASN
1	C	218	MET
1	C	219	SER
1	C	220	GLN
1	C	221	THR
1	C	224	HIS
1	C	226	ASP
1	C	234	GLN
1	C	243	LEU
1	C	247	VAL
1	C	248	ASP

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Mol	Chain	Res	Type
1	C	249	ILE
1	C	256	THR
1	C	258	ASP
1	C	266	ARG
1	C	267	SER
1	C	269	LYS
1	C	286	CYS
1	C	290	ASN
1	C	291	VAL
1	C	295	ASN
1	C	296	LYS
1	C	301	PRO
1	C	302	SER
1	C	319	THR
1	C	320	ASN
1	C	322	VAL
1	C	325	VAL
1	C	342	LYS
1	C	343	VAL
1	C	350	LYS
1	C	352	VAL
1	C	353	THR
1	C	356	ILE
1	C	357	LEU
1	C	360	LEU
1	C	366	ASN
1	C	368	ARG
1	C	371	GLU
1	C	374	LYS
1	C	384	SER
1	C	391	VAL
1	C	395	ASP
1	C	397	GLN
1	C	399	VAL
1	C	405	ASN
1	C	407	ILE
1	C	417	SER
1	C	418	LYS
1	C	423	ARG
1	C	430	ASP
1	C	435	GLU
1	C	440	GLU

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Mol	Chain	Res	Type
1	C	441	VAL
1	C	443	LEU
1	C	444	THR
1	C	448	CYS
2	D	7	ILE
2	D	9	ILE
2	D	12	ASP
2	D	15	GLU
2	D	16	LEU
2	D	18	LEU
2	D	19	ASN
2	D	24	LYS
2	D	31	ASP
2	D	42	LYS
2	D	44	ARG
2	D	47	SER
2	D	48	GLU
2	D	65	ARG
2	D	68	THR
2	D	73	LYS
2	D	79	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	46	ASN
1	A	49	ASN
1	A	64	ASN
1	A	93	ASN
1	A	117	GLN
1	A	220	GLN
1	A	224	HIS
1	A	230	ASN
1	A	264	HIS
1	A	320	ASN
1	A	329	ASN
1	A	366	ASN
1	A	381	ASN
1	A	383	HIS
1	A	446	ASN
2	B	81	ASN
2	B	88	HIS

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Mol	Chain	Res	Type
2	B	89	ASN
1	C	46	ASN
1	C	49	ASN
1	C	64	ASN
1	C	93	ASN
1	C	117	GLN
1	C	220	GLN
1	C	230	ASN
1	C	264	HIS
1	C	320	ASN
1	C	329	ASN
1	C	378	GLN
1	C	383	HIS
2	D	81	ASN
2	D	88	HIS
2	D	89	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](#)

10 monosaccharides 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	NAG	E	1	3,1	14,14,15	3.22	7 (50%)	17,19,21	4.90	11 (64%)
3	NAG	E	2	3	14,14,15	3.29	8 (57%)	17,19,21	3.47	10 (58%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	BMA	E	3	3	11,11,12	2.32	3 (27%)	15,15,17	2.50	8 (53%)
3	BMA	E	4	3	11,11,12	2.25	4 (36%)	15,15,17	3.56	8 (53%)
3	BMA	E	5	3	11,11,12	3.27	5 (45%)	15,15,17	2.17	6 (40%)
3	NAG	F	1	3,1	14,14,15	1.74	3 (21%)	17,19,21	3.44	8 (47%)
3	NAG	F	2	3	14,14,15	2.87	5 (35%)	17,19,21	4.46	12 (70%)
3	BMA	F	3	3	11,11,12	2.77	6 (54%)	15,15,17	3.03	6 (40%)
3	BMA	F	4	3	11,11,12	2.43	6 (54%)	15,15,17	4.09	11 (73%)
3	BMA	F	5	3	11,11,12	2.70	5 (45%)	15,15,17	1.99	3 (20%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	E	1	3,1	-	4/6/23/26	0/1/1/1
3	NAG	E	2	3	-	4/6/23/26	0/1/1/1
3	BMA	E	3	3	-	2/2/19/22	0/1/1/1
3	BMA	E	4	3	1/1/5/5	2/2/19/22	0/1/1/1
3	BMA	E	5	3	1/1/5/5	2/2/19/22	1/1/1/1
3	NAG	F	1	3,1	-	1/6/23/26	0/1/1/1
3	NAG	F	2	3	-	0/6/23/26	0/1/1/1
3	BMA	F	3	3	-	2/2/19/22	0/1/1/1
3	BMA	F	4	3	1/1/5/5	0/2/19/22	0/1/1/1
3	BMA	F	5	3	1/1/5/5	0/2/19/22	1/1/1/1

All (52) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	2	NAG	C4-C3	7.88	1.72	1.52
3	E	5	BMA	C2-C3	6.78	1.62	1.52
3	E	1	NAG	O5-C5	6.37	1.55	1.43
3	F	2	NAG	C1-C2	6.32	1.61	1.52
3	E	5	BMA	C4-C5	5.89	1.65	1.53
3	E	3	BMA	C2-C3	5.76	1.61	1.52
3	E	1	NAG	C4-C3	5.71	1.67	1.52
3	F	2	NAG	C4-C5	5.41	1.64	1.53
3	F	2	NAG	C4-C3	5.41	1.66	1.52
3	F	5	BMA	C2-C3	5.21	1.60	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	1	NAG	C3-C2	5.04	1.63	1.52
3	F	3	BMA	C4-C5	4.90	1.63	1.53
3	F	1	NAG	C3-C2	4.67	1.62	1.52
3	F	4	BMA	O5-C1	4.55	1.51	1.43
3	E	2	NAG	C4-C5	-4.43	1.43	1.53
3	E	5	BMA	C4-C3	3.96	1.62	1.52
3	F	5	BMA	O5-C5	3.96	1.51	1.43
3	E	4	BMA	C4-C3	3.93	1.62	1.52
3	E	4	BMA	C2-C3	3.83	1.58	1.52
3	E	1	NAG	C4-C5	3.76	1.61	1.53
3	E	1	NAG	C1-C2	3.69	1.57	1.52
3	F	5	BMA	C4-C5	3.68	1.60	1.53
3	E	2	NAG	C1-C2	3.68	1.57	1.52
3	E	2	NAG	C2-N2	3.63	1.52	1.46
3	F	5	BMA	C1-C2	3.47	1.60	1.52
3	F	3	BMA	C2-C3	3.38	1.57	1.52
3	E	4	BMA	C6-C5	3.33	1.63	1.51
3	F	3	BMA	O5-C5	3.32	1.49	1.43
3	E	3	BMA	O3-C3	3.30	1.51	1.43
3	E	2	NAG	C3-C2	3.28	1.59	1.52
3	E	2	NAG	O5-C5	-3.27	1.37	1.43
3	E	4	BMA	C1-C2	3.23	1.59	1.52
3	E	2	NAG	O4-C4	3.18	1.50	1.43
3	F	3	BMA	C1-C2	3.18	1.59	1.52
3	F	4	BMA	C4-C3	3.17	1.60	1.52
3	F	4	BMA	C4-C5	3.07	1.59	1.53
3	F	3	BMA	O5-C1	3.07	1.48	1.43
3	F	1	NAG	C8-C7	2.95	1.56	1.50
3	E	2	NAG	O5-C1	-2.82	1.39	1.43
3	E	3	BMA	C4-C3	2.82	1.59	1.52
3	F	4	BMA	C1-C2	2.80	1.58	1.52
3	F	4	BMA	O5-C5	2.61	1.48	1.43
3	E	5	BMA	O3-C3	2.57	1.49	1.43
3	F	3	BMA	O3-C3	2.52	1.49	1.43
3	F	4	BMA	C2-C3	-2.51	1.48	1.52
3	F	5	BMA	O3-C3	2.49	1.49	1.43
3	E	5	BMA	C6-C5	2.48	1.60	1.51
3	E	1	NAG	O4-C4	2.42	1.48	1.43
3	F	2	NAG	C8-C7	2.23	1.55	1.50
3	F	2	NAG	O4-C4	2.17	1.48	1.43
3	F	1	NAG	C1-C2	2.14	1.55	1.52
3	E	1	NAG	C6-C5	2.05	1.58	1.51

All (83) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	1	NAG	C2-N2-C7	-12.06	106.73	122.90
3	F	2	NAG	C6-C5-C4	11.59	141.49	113.02
3	E	4	BMA	C6-C5-C4	9.16	135.52	113.02
3	F	4	BMA	C2-C3-C4	-7.60	97.50	110.86
3	F	2	NAG	C3-C4-C5	-7.52	96.60	110.23
3	F	4	BMA	C3-C4-C5	-7.15	97.27	110.23
3	E	1	NAG	C4-C3-C2	-7.12	100.58	111.02
3	F	1	NAG	C1-O5-C5	7.04	121.62	112.19
3	E	1	NAG	C8-C7-N2	6.28	126.53	116.12
3	E	1	NAG	C1-O5-C5	6.22	120.52	112.19
3	E	1	NAG	O7-C7-C8	-6.12	111.16	122.05
3	F	3	BMA	C1-C2-C3	6.00	118.38	109.64
3	F	1	NAG	C2-N2-C7	-5.90	114.99	122.90
3	F	4	BMA	C1-O5-C5	5.85	120.03	112.19
3	E	1	NAG	O3-C3-C2	5.76	121.36	109.40
3	F	2	NAG	C1-O5-C5	5.62	119.71	112.19
3	E	2	NAG	C2-N2-C7	5.58	130.37	122.90
3	E	2	NAG	O7-C7-C8	-5.45	112.35	122.05
3	F	4	BMA	O4-C4-C5	5.33	122.45	109.32
3	F	3	BMA	O4-C4-C3	-5.28	97.92	110.38
3	F	3	BMA	C1-O5-C5	5.23	119.19	112.19
3	F	1	NAG	C4-C3-C2	-5.22	103.37	111.02
3	E	4	BMA	O5-C5-C4	-5.18	98.23	110.83
3	F	2	NAG	O4-C4-C5	4.84	121.24	109.32
3	E	2	NAG	C1-O5-C5	4.83	118.65	112.19
3	E	2	NAG	C8-C7-N2	4.81	124.10	116.12
3	E	1	NAG	O5-C1-C2	-4.77	103.92	111.29
3	E	5	BMA	C2-C3-C4	-4.75	102.51	110.86
3	F	1	NAG	C1-C2-N2	-4.64	103.13	110.43
3	E	2	NAG	C1-C2-N2	4.59	117.67	110.43
3	E	4	BMA	C2-C3-C4	-4.54	102.89	110.86
3	F	2	NAG	C4-C3-C2	-4.45	104.49	111.02
3	E	2	NAG	O4-C4-C3	4.45	120.86	110.38
3	F	5	BMA	C6-C5-C4	-4.31	102.45	113.02
3	E	1	NAG	O5-C5-C6	4.21	115.87	107.66
3	E	5	BMA	O3-C3-C2	4.20	118.62	110.05
3	E	2	NAG	C3-C4-C5	-4.18	102.65	110.23
3	F	1	NAG	C8-C7-N2	4.12	122.95	116.12
3	F	3	BMA	C3-C4-C5	4.11	117.68	110.23
3	F	2	NAG	O5-C5-C4	-4.11	100.84	110.83
3	E	3	BMA	C6-C5-C4	-4.05	103.08	113.02
3	E	4	BMA	O4-C4-C3	3.95	119.70	110.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	F	5	BMA	C1-C2-C3	3.94	115.38	109.64
3	F	1	NAG	O7-C7-C8	-3.93	115.05	122.05
3	F	4	BMA	O5-C5-C4	-3.91	101.33	110.83
3	F	1	NAG	O4-C4-C3	3.88	119.52	110.38
3	E	3	BMA	C1-C2-C3	3.87	115.28	109.64
3	E	4	BMA	C3-C4-C5	-3.87	103.22	110.23
3	F	3	BMA	O2-C2-C3	-3.82	102.24	110.15
3	E	2	NAG	C6-C5-C4	3.75	122.23	113.02
3	E	2	NAG	O5-C1-C2	-3.70	105.57	111.29
3	E	3	BMA	O3-C3-C2	3.69	117.59	110.05
3	F	2	NAG	O3-C3-C2	3.62	116.93	109.40
3	F	4	BMA	O3-C3-C4	3.55	118.73	110.38
3	E	3	BMA	O5-C1-C2	-3.34	102.83	110.79
3	F	4	BMA	O5-C5-C6	3.17	113.84	107.66
3	F	4	BMA	O2-C2-C3	-3.17	103.58	110.15
3	F	3	BMA	O3-C3-C2	3.11	116.41	110.05
3	F	1	NAG	O5-C5-C6	3.10	113.69	107.66
3	F	4	BMA	C6-C5-C4	3.08	120.59	113.02
3	E	3	BMA	O4-C4-C3	3.00	117.44	110.38
3	F	2	NAG	C2-N2-C7	2.94	126.83	122.90
3	F	4	BMA	O3-C3-C2	2.90	115.98	110.05
3	E	1	NAG	O4-C4-C3	2.88	117.16	110.38
3	F	2	NAG	O4-C4-C3	2.81	117.00	110.38
3	F	4	BMA	O5-C1-C2	2.76	117.37	110.79
3	E	3	BMA	C1-O5-C5	2.74	115.86	112.19
3	E	4	BMA	C1-O5-C5	2.73	115.85	112.19
3	F	2	NAG	C1-C2-N2	-2.73	106.14	110.43
3	E	4	BMA	O3-C3-C4	2.62	116.55	110.38
3	E	3	BMA	O2-C2-C3	-2.59	104.79	110.15
3	F	2	NAG	O5-C1-C2	2.47	115.11	111.29
3	E	5	BMA	C1-O5-C5	-2.27	109.14	112.19
3	E	2	NAG	O5-C5-C4	-2.25	105.36	110.83
3	E	3	BMA	O2-C2-C1	2.24	114.36	109.22
3	E	1	NAG	O3-C3-C4	2.23	115.64	110.38
3	E	1	NAG	O5-C5-C4	-2.18	105.53	110.83
3	E	5	BMA	O3-C3-C4	2.13	115.40	110.38
3	E	5	BMA	O2-C2-C3	2.11	114.52	110.15
3	E	5	BMA	O5-C1-C2	2.08	115.75	110.79
3	E	4	BMA	O6-C6-C5	2.08	118.41	111.33
3	F	2	NAG	O3-C3-C4	2.04	115.19	110.38
3	F	5	BMA	O3-C3-C2	2.03	114.20	110.05

All (4) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	E	4	BMA	C1
3	E	5	BMA	C1
3	F	4	BMA	C1
3	F	5	BMA	C1

All (17) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	E	4	BMA	C4-C5-C6-O6
3	E	2	NAG	O5-C5-C6-O6
3	E	1	NAG	C4-C5-C6-O6
3	E	4	BMA	O5-C5-C6-O6
3	E	1	NAG	O5-C5-C6-O6
3	E	2	NAG	C4-C5-C6-O6
3	E	3	BMA	O5-C5-C6-O6
3	F	3	BMA	C4-C5-C6-O6
3	F	3	BMA	O5-C5-C6-O6
3	E	3	BMA	C4-C5-C6-O6
3	F	1	NAG	O5-C5-C6-O6
3	E	2	NAG	C3-C2-N2-C7
3	E	5	BMA	C4-C5-C6-O6
3	E	2	NAG	C1-C2-N2-C7
3	E	5	BMA	O5-C5-C6-O6
3	E	1	NAG	C1-C2-N2-C7
3	E	1	NAG	C3-C2-N2-C7

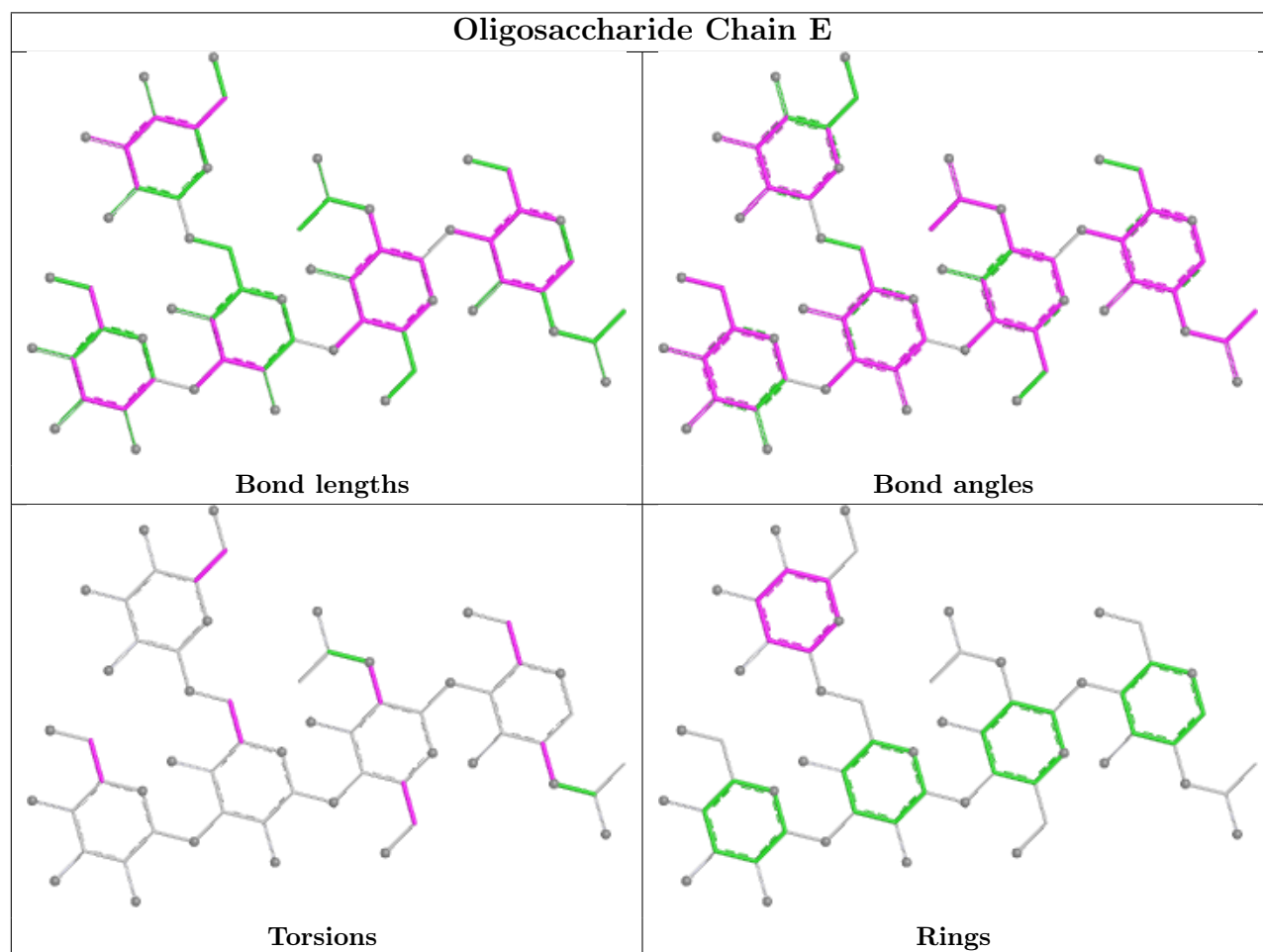
All (2) ring outliers are listed below:

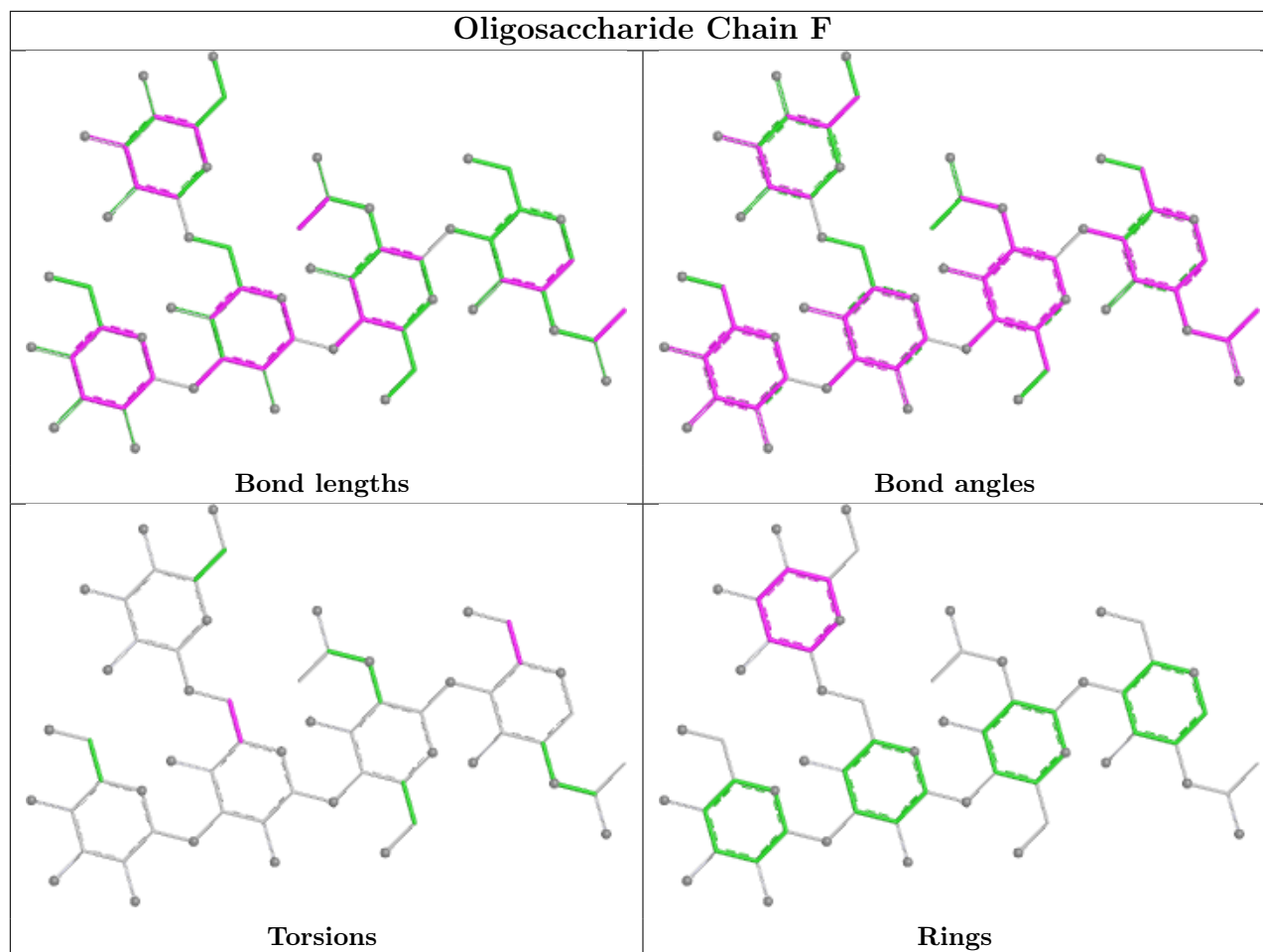
Mol	Chain	Res	Type	Atoms
3	F	5	BMA	C1-C2-C3-C4-C5-O5
3	E	5	BMA	C1-C2-C3-C4-C5-O5

7 monomers are involved in 21 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	4	BMA	2	0
3	E	1	NAG	9	0
3	F	2	NAG	6	0
3	E	2	NAG	7	0
3	F	4	BMA	2	0
3	F	1	NAG	5	0
3	F	3	BMA	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 oligosaccharide.





5.6 Ligand geometry [i](#)

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
5	C8E	A	456	-	20,20,20	1.16	1 (5%)	19,19,19	1.04	1 (5%)
5	C8E	A	455	-	20,20,20	1.10	1 (5%)	19,19,19	0.86	0
5	C8E	C	456	-	20,20,20	1.32	1 (5%)	19,19,19	1.08	1 (5%)
5	C8E	C	455	-	20,20,20	0.98	1 (5%)	19,19,19	0.97	1 (5%)
6	BME	A	457	-	3,3,3	0.35	0	2,2,2	0.19	0
6	BME	C	457	-	3,3,3	0.60	0	2,2,2	0.25	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
5	C8E	A	456	-	-	7/18/18/18	-
5	C8E	A	455	-	-	9/18/18/18	-
5	C8E	C	456	-	-	6/18/18/18	-
5	C8E	C	455	-	-	5/18/18/18	-
6	BME	A	457	-	-	0/1/1/1	-
6	BME	C	457	-	-	0/1/1/1	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	456	C8E	O21-C20	-2.40	1.29	1.42
5	A	455	C8E	O21-C20	-2.28	1.30	1.42
5	C	456	C8E	O21-C20	-2.24	1.30	1.42
5	C	455	C8E	O21-C20	-2.22	1.30	1.42

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	456	C8E	O21-C20-C19	2.27	125.18	111.82
5	C	456	C8E	C19-O18-C17	2.18	122.80	113.26
5	C	455	C8E	O18-C17-C16	-2.05	101.00	110.35

There are no chirality outliers.

All (27) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	C	456	C8E	C3-C4-C5-C6
5	C	456	C8E	C6-C7-C8-O9
5	C	456	C8E	C2-C3-C4-C5
5	A	456	C8E	C3-C4-C5-C6
5	A	455	C8E	O15-C16-C17-O18
5	A	456	C8E	C2-C3-C4-C5
5	C	455	C8E	C4-C5-C6-C7
5	A	456	C8E	C14-C13-O12-C11
5	C	456	C8E	C14-C13-O12-C11
5	A	455	C8E	C11-C10-O9-C8
5	A	455	C8E	O18-C19-C20-O21

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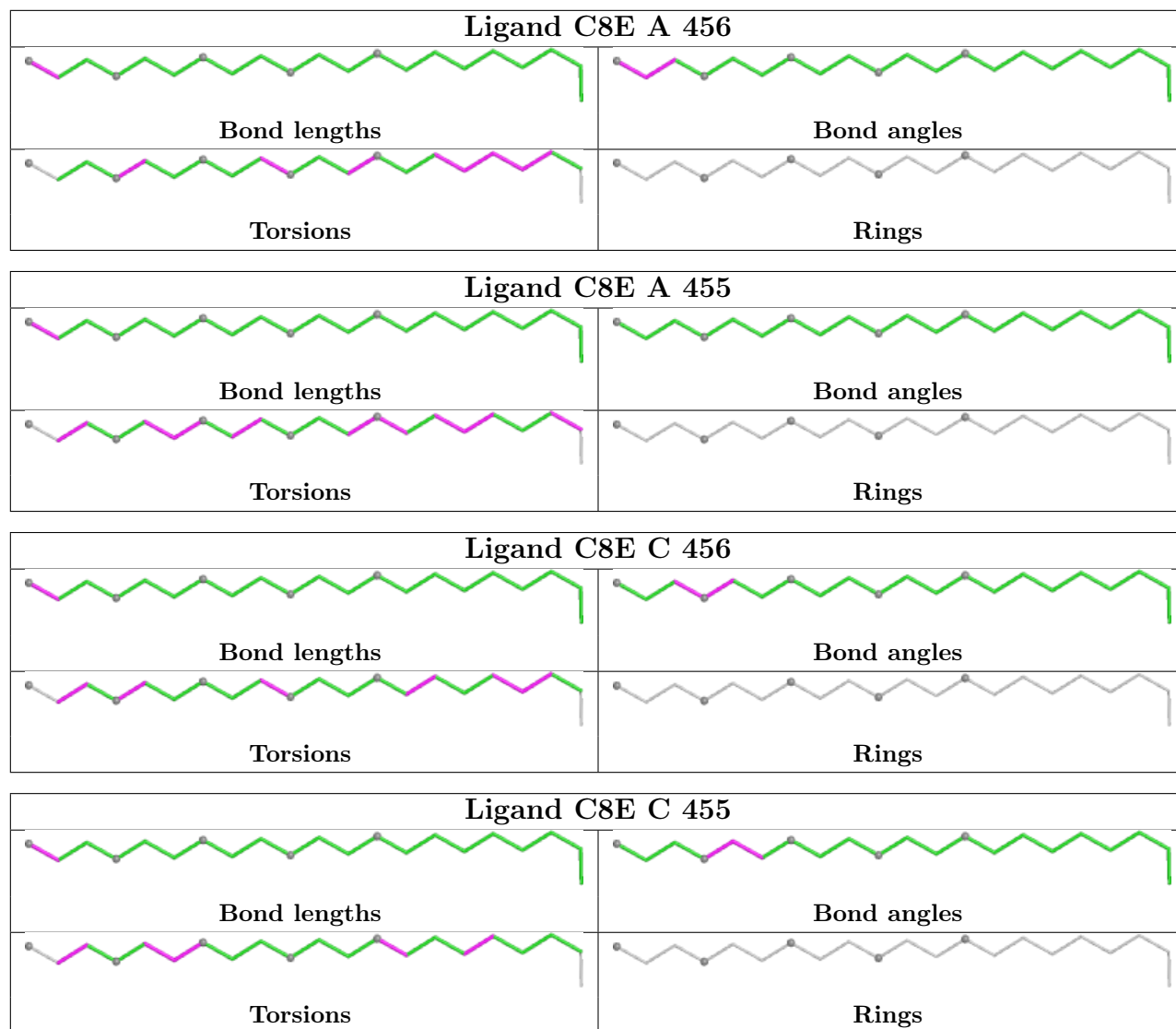
Mol	Chain	Res	Type	Atoms
5	A	455	C8E	C7-C8-O9-C10
5	A	456	C8E	C11-C10-O9-C8
5	A	455	C8E	O12-C13-C14-O15
5	A	456	C8E	C5-C6-C7-C8
5	C	455	C8E	O18-C19-C20-O21
5	C	456	C8E	O18-C19-C20-O21
5	A	456	C8E	C4-C5-C6-C7
5	C	456	C8E	C16-C17-O18-C19
5	C	455	C8E	C7-C8-O9-C10
5	C	455	C8E	C17-C16-O15-C14
5	C	455	C8E	O15-C16-C17-O18
5	A	455	C8E	C17-C16-O15-C14
5	A	456	C8E	C16-C17-O18-C19
5	A	455	C8E	C4-C5-C6-C7
5	A	455	C8E	C1-C2-C3-C4
5	A	455	C8E	C5-C6-C7-C8

There are no ring outliers.

4 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	455	C8E	1	0
5	C	456	C8E	1	0
6	A	457	BME	2	0
6	C	457	BME	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 [i](#)

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

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.