



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 05:20 AM UTC

PDB ID : 8ZQI / pdb_00008zqi
Title : Glucose bound Toxascaris leonina galectin (Tl-gal) W77F/W212F
Authors : Ha, M.S.; Jang, S.B.; Jeong, M.S.
Deposited on : 2024-06-03
Resolution : 2.98 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

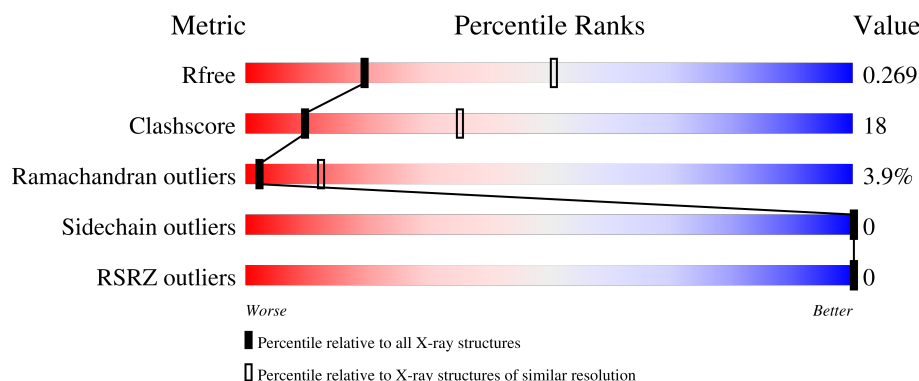
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.98 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	3580 (3.00-2.96)
Clashscore	190562	3904 (3.00-2.96)
Ramachandran outliers	187476	3761 (3.00-2.96)
Sidechain outliers	187428	3764 (3.00-2.96)
RSRZ outliers	180081	3579 (3.00-2.96)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	278	 67% 30% .
1	B	278	 68% 31% .
1	C	278	 63% 36% .
1	D	278	 57% 40% .
1	E	278	 64% 35% .

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Mol	Chain	Length	Quality of chain
1	F	278	 67% 32% .
1	G	278	 53% 45% .
1	H	278	 65% 33% .

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 17856 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 Galectin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	278	Total	C	N	O	S	0	0	0
			2220	1410	382	425	3			
1	B	278	Total	C	N	O	S	0	0	0
			2220	1410	382	425	3			
1	C	278	Total	C	N	O	S	0	0	0
			2220	1410	382	425	3			
1	D	278	Total	C	N	O	S	0	0	0
			2220	1410	382	425	3			
1	E	278	Total	C	N	O	S	0	0	0
			2220	1410	382	425	3			
1	F	278	Total	C	N	O	S	0	0	0
			2220	1410	382	425	3			
1	G	278	Total	C	N	O	S	0	0	0
			2220	1410	382	425	3			
1	H	278	Total	C	N	O	S	0	0	0
			2220	1410	382	425	3			

There are 16 discrepancies between the modelled and reference sequences:

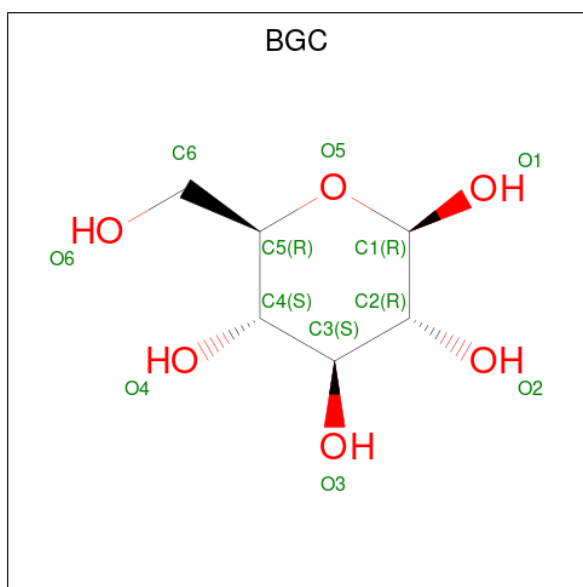
Chain	Residue	Modelled	Actual	Comment	Reference
A	77	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
A	212	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
B	77	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
B	212	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
C	77	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
C	212	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
D	77	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
D	212	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
E	77	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
E	212	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
F	77	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
F	212	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
G	77	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7

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Chain	Residue	Modelled	Actual	Comment	Reference
G	212	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
H	77	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7
H	212	PHE	TRP	engineered mutation	UNP A0A1L1QJZ7

- Molecule 2 is beta-D-glucopyranose (CCD ID: BGC) (formula: C₆H₁₂O₆) (labeled as "Ligand of Interest" by depositor).

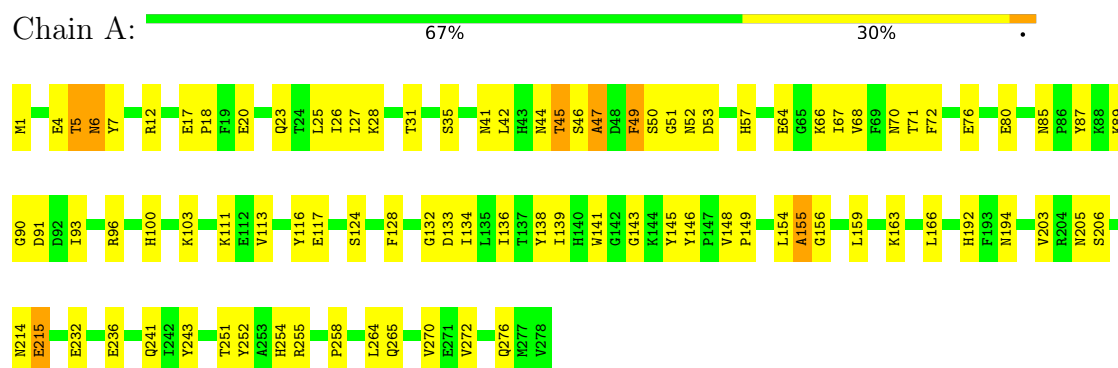


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			12	6	6		
2	B	1	Total	C	O	0	0
			12	6	6		
2	C	1	Total	C	O	0	0
			12	6	6		
2	D	1	Total	C	O	0	0
			12	6	6		
2	E	1	Total	C	O	0	0
			12	6	6		
2	F	1	Total	C	O	0	0
			12	6	6		
2	G	1	Total	C	O	0	0
			12	6	6		
2	H	1	Total	C	O	0	0
			12	6	6		

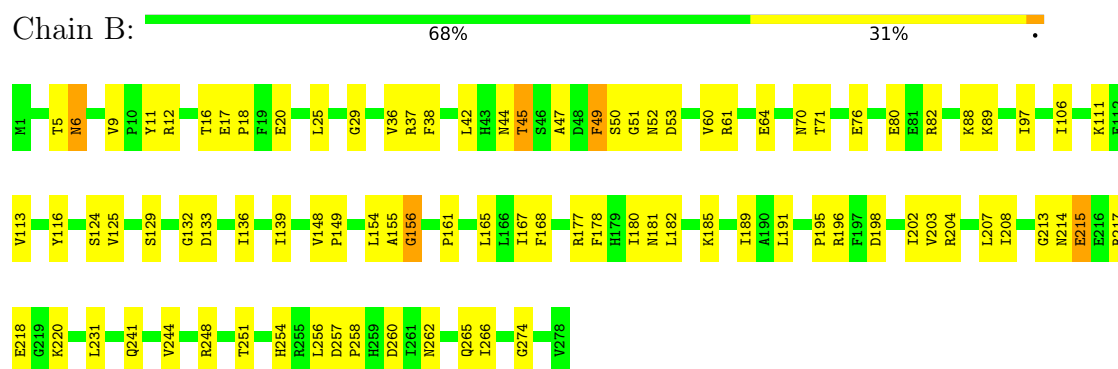
3 Residue-property plots

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

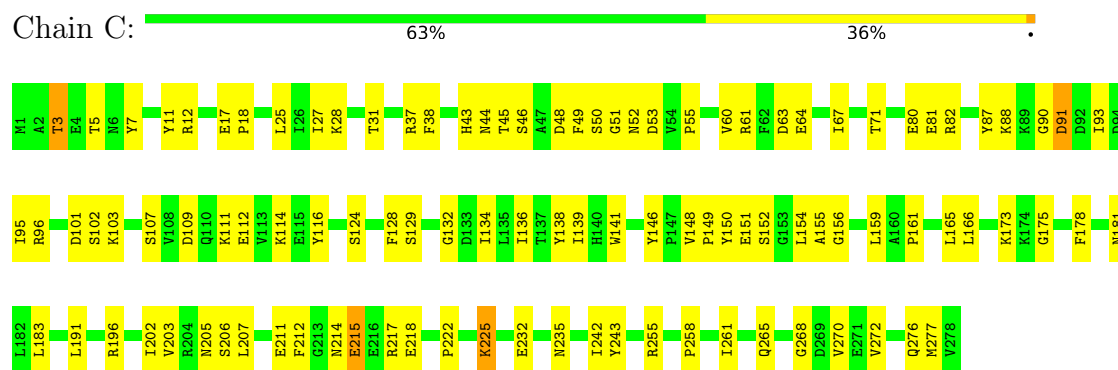
• Molecule 1: Galectin



• Molecule 1: Galectin

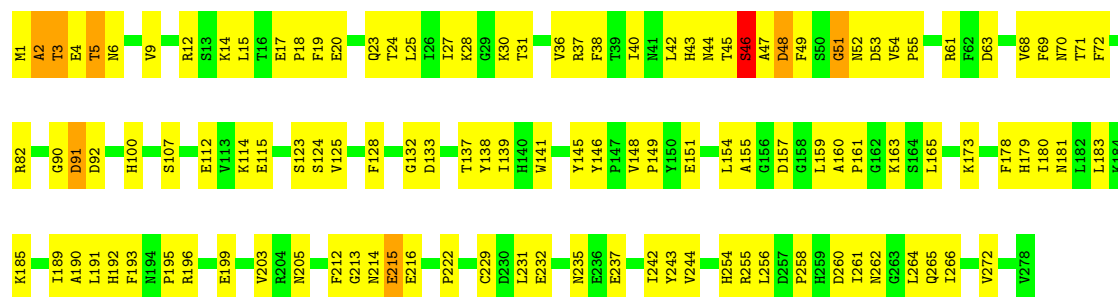


• Molecule 1: Galectin



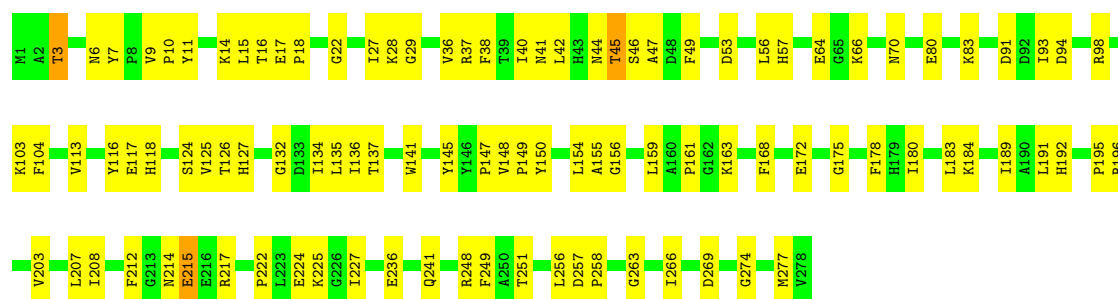
- Molecule 1: Galectin

Chain D:  57% 40%



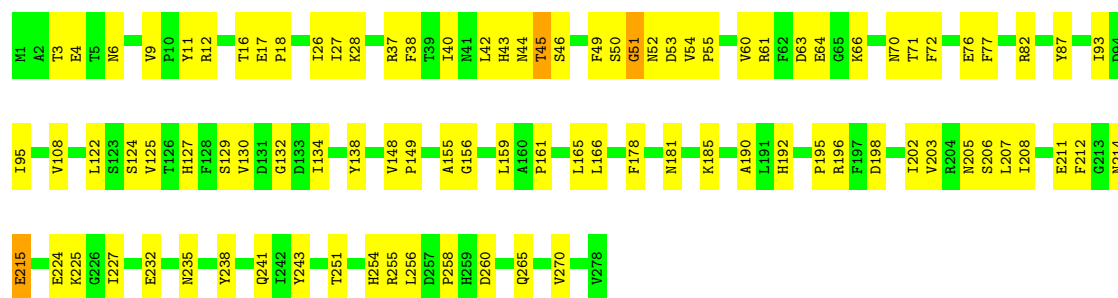
- Molecule 1: Galectin

Chain E:  64% 35%



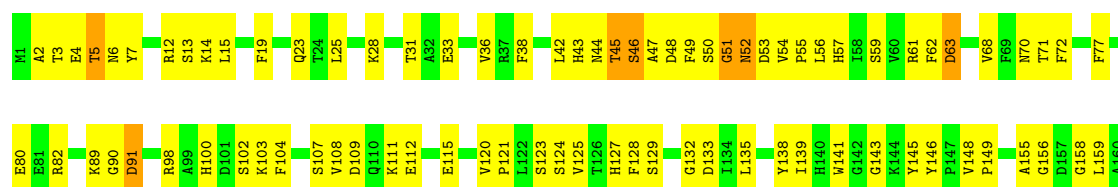
- Molecule 1: Galectin

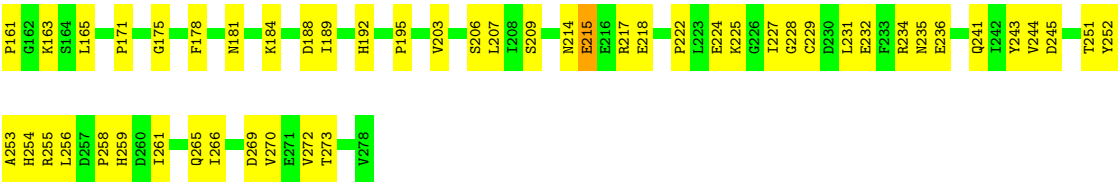
Chain F:  67% 32%



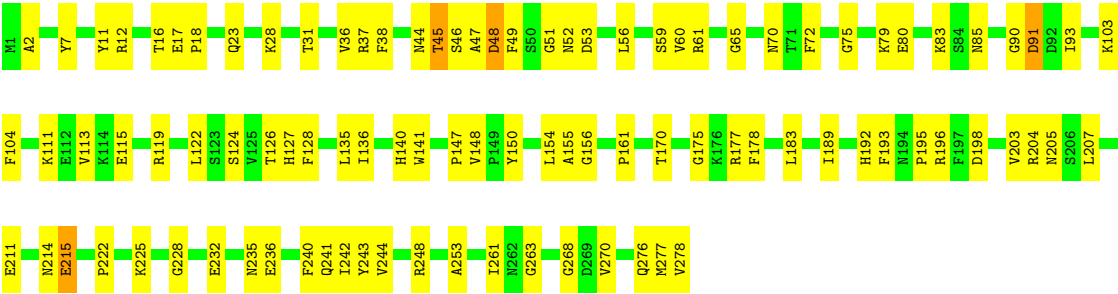
- Molecule 1: Galectin

Chain G:  53% 45%





• Molecule 1: Galectin



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	78.48Å 81.38Å 112.32Å 90.32° 89.91° 90.37°	Depositor
Resolution (Å)	34.35 – 2.98 34.35 – 2.98	Depositor EDS
% Data completeness (in resolution range)	96.8 (34.35-2.98) 96.3 (34.35-2.98)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	6.40 (at 2.95Å)	Xtriage
Refinement program	PHENIX 1.14_3260, PHENIX 1.14_3260	Depositor
R, R_{free}	0.193 , 0.269 0.194 , 0.269	Depositor DCC
R_{free} test set	2884 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å ²)	51.5	Xtriage
Anisotropy	0.095	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 24.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.015 for -k,h,l 0.015 for k,-h,l 0.187 for h,-k,-l 0.186 for -h,k,-l 0.410 for -h,-k,l 0.027 for -k,-h,-l 0.026 for k,h,-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	17856	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.37% 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: BGC

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	0.47	0/2273	0.73	2/3065 (0.1%)
1	B	0.46	1/2273 (0.0%)	0.71	1/3065 (0.0%)
1	C	0.51	1/2273 (0.0%)	0.73	0/3065
1	D	0.45	0/2273	0.75	2/3065 (0.1%)
1	E	0.48	0/2273	0.74	0/3065
1	F	0.46	0/2273	0.71	0/3065
1	G	0.45	0/2273	0.75	2/3065 (0.1%)
1	H	0.47	0/2273	0.73	0/3065
All	All	0.47	2/18184 (0.0%)	0.73	7/24520 (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	A	0	1
1	D	0	1
1	H	0	1
All	All	0	3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	218	GLU	CD-OE1	7.85	1.40	1.25
1	B	218	GLU	CD-OE1	5.80	1.36	1.25

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	5	THR	CA-C-N	5.29	131.64	121.54
1	A	5	THR	C-N-CA	5.29	131.64	121.54
1	B	29	GLY	N-CA-C	5.26	118.26	110.63
1	D	46	SER	CA-C-N	5.21	131.49	121.54
1	D	46	SER	C-N-CA	5.21	131.49	121.54
1	G	46	SER	CA-C-N	5.06	131.20	121.54
1	G	46	SER	C-N-CA	5.06	131.20	121.54

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	47	ALA	Peptide
1	D	4	GLU	Peptide
1	H	46	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	2220	0	2165	69	1
1	B	2220	0	2165	74	0
1	C	2220	0	2165	72	1
1	D	2220	0	2165	88	0
1	E	2220	0	2165	70	1
1	F	2220	0	2165	75	0
1	G	2220	0	2165	109	0
1	H	2220	0	2165	75	1
2	A	12	0	12	2	0
2	B	12	0	11	3	0
2	C	12	0	12	3	0
2	D	12	0	12	1	0
2	E	12	0	12	1	0
2	F	12	0	11	2	0
2	G	12	0	11	2	0
2	H	12	0	12	3	0
All	All	17856	0	17413	622	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 18.

All (622) 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:B:12:ARG:NH2	1:B:50:SER:OG	1.66	1.27
1:F:12:ARG:HD3	1:F:129:SER:OG	1.49	1.11
1:H:59:SER:CB	1:H:61:ARG:HH21	1.75	1.00
1:B:217:ARG:HB2	1:B:217:ARG:NH1	1.75	0.99
1:B:37:ARG:HD2	1:D:5:THR:HA	1.52	0.89
1:F:12:ARG:NH2	1:F:50:SER:OG	2.07	0.87
1:B:185:LYS:HZ2	1:B:260:ASP:HB3	1.43	0.84
1:D:28:LYS:HB2	1:D:138:TYR:HB3	1.59	0.83
1:D:205:ASN:HD22	1:D:212:PHE:HD2	1.27	0.83
1:C:27:ILE:HG12	1:C:139:ILE:HD13	1.58	0.82
1:B:49:PHE:CE1	1:B:52:ASN:HB2	2.14	0.82
1:B:12:ARG:HH22	1:B:50:SER:HG	1.24	0.82
1:H:154:LEU:HD13	1:H:277:MET:HE1	1.60	0.82
1:G:7:TYR:HE2	1:G:139:ILE:HG12	1.44	0.82
1:A:45:THR:HB	1:A:49:PHE:H	1.42	0.82
1:E:154:LEU:HD13	1:E:277:MET:HE1	1.59	0.81
1:B:217:ARG:HB2	1:B:217:ARG:HH11	1.44	0.81
1:E:241:GLN:NE2	1:E:251:THR:HG22	1.96	0.80
1:G:206:SER:HG	1:G:252:TYR:HH	1.22	0.80
1:B:185:LYS:HG2	1:B:262:ASN:ND2	1.95	0.80
1:F:159:LEU:O	1:F:235:ASN:ND2	2.15	0.79
1:F:185:LYS:HE3	1:F:260:ASP:HB3	1.64	0.79
1:A:27:ILE:CG1	1:A:139:ILE:HD13	2.12	0.79
1:A:27:ILE:HG13	1:A:139:ILE:HD13	1.65	0.78
1:F:159:LEU:CD2	1:F:235:ASN:HB2	2.13	0.78
1:G:51:GLY:O	1:G:52:ASN:ND2	2.17	0.77
1:A:206:SER:HG	1:A:252:TYR:HH	1.31	0.77
1:F:208:ILE:HG12	1:F:256:LEU:HD21	1.66	0.77
1:A:214:ASN:OD1	1:A:255:ARG:NH2	2.17	0.77
1:C:28:LYS:HB2	1:C:138:TYR:HB3	1.67	0.75
1:E:208:ILE:HG12	1:E:256:LEU:HD21	1.68	0.74
1:B:45:THR:HB	1:B:49:PHE:HB2	1.70	0.73
1:D:185:LYS:HD2	1:D:260:ASP:HB3	1.68	0.73
1:B:44:ASN:HB3	1:B:124:SER:O	1.88	0.73
1:D:181:ASN:HB3	1:D:183:LEU:HD21	1.69	0.73
1:E:41:ASN:OD1	1:E:57:HIS:ND1	2.21	0.73
1:F:37:ARG:HD3	1:G:5:THR:HA	1.71	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:103:LYS:HE3	1:H:115:GLU:CD	2.14	0.72
1:C:214:ASN:OD1	1:C:255:ARG:NH2	2.22	0.72
1:E:180:ILE:HG12	1:E:266:ILE:HG12	1.69	0.72
1:F:159:LEU:HD22	1:F:235:ASN:HB2	1.71	0.72
1:H:59:SER:OG	1:H:61:ARG:NH2	2.22	0.71
1:D:12:ARG:HH21	1:D:45:THR:HG21	1.55	0.71
1:F:224:GLU:HB3	1:F:227:ILE:HG12	1.72	0.71
1:F:12:ARG:CD	1:F:129:SER:OG	2.34	0.71
1:A:44:ASN:HB3	1:A:124:SER:O	1.91	0.71
1:A:26:ILE:HG23	1:A:96:ARG:HG2	1.72	0.70
1:B:45:THR:HA	1:B:49:PHE:HD1	1.56	0.69
1:B:217:ARG:HB2	1:B:217:ARG:CZ	2.23	0.69
1:G:214:ASN:OD1	1:G:215:GLU:N	2.26	0.69
1:G:31:THR:OG1	1:G:90:GLY:O	2.09	0.68
1:E:45:THR:HB	1:E:49:PHE:H	1.57	0.68
1:C:87:TYR:OH	1:C:109:ASP:OD2	2.06	0.68
1:C:71:THR:HG1	1:C:116:TYR:HH	1.39	0.68
1:G:2:ALA:HB3	1:G:135:LEU:HD13	1.74	0.68
1:H:189:ILE:HG13	1:H:207:LEU:HB3	1.76	0.67
1:A:28:LYS:HB2	1:A:138:TYR:HB3	1.75	0.67
1:G:4:GLU:C	1:G:6:ASN:H	2.01	0.67
1:H:31:THR:OG1	1:H:90:GLY:O	2.12	0.67
1:C:60:VAL:HG12	1:C:67:ILE:HG23	1.74	0.67
1:B:215:GLU:OE1	2:B:301:BGC:O3	2.10	0.67
1:H:12:ARG:NH1	1:H:48:ASP:OD2	2.28	0.67
1:F:3:THR:HG22	1:F:4:GLU:H	1.59	0.66
1:B:196:ARG:NH2	2:B:301:BGC:H2	2.11	0.66
1:D:31:THR:OG1	1:D:90:GLY:O	2.13	0.66
1:F:44:ASN:HB3	1:F:124:SER:O	1.95	0.66
1:C:37:ARG:HG2	1:C:61:ARG:HB3	1.77	0.66
1:D:20:GLU:H	1:D:23:GLN:NE2	1.94	0.66
1:D:27:ILE:HD12	1:D:40:ILE:HD13	1.77	0.66
1:H:178:PHE:CZ	1:H:195:PRO:HG2	2.31	0.66
1:H:183:LEU:HB2	1:H:263:GLY:HA3	1.75	0.66
1:A:203:VAL:HG13	1:A:215:GLU:HG3	1.76	0.66
1:C:93:ILE:HD13	1:C:95:ILE:HD12	1.76	0.66
1:B:12:ARG:HD3	1:B:129:SER:OG	1.96	0.65
1:D:181:ASN:HB2	1:D:265:GLN:HB3	1.79	0.65
1:B:64:GLU:OE2	1:B:82:ARG:NH1	2.30	0.64
1:D:37:ARG:HG2	1:D:61:ARG:HB3	1.77	0.64
1:A:232:GLU:HB3	1:A:243:TYR:HB2	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:207:LEU:HD23	1:F:212:PHE:CE1	2.32	0.64
1:E:203:VAL:HG13	1:E:215:GLU:HG3	1.80	0.64
1:E:44:ASN:HB3	1:E:124:SER:O	1.96	0.64
1:D:19:PHE:HD2	1:D:23:GLN:HE21	1.43	0.64
1:A:214:ASN:O	1:A:215:GLU:HB3	1.97	0.64
1:D:2:ALA:O	1:D:3:THR:O	2.15	0.63
1:H:49:PHE:HD2	1:H:52:ASN:HD22	1.45	0.63
1:G:158:GLY:O	1:G:163:LYS:NZ	2.31	0.63
1:D:231:LEU:HD23	1:D:244:VAL:HG22	1.80	0.63
1:G:217:ARG:HH11	1:G:217:ARG:HB3	1.64	0.63
1:A:4:GLU:OE2	1:A:4:GLU:HA	1.98	0.63
1:H:23:GLN:OE1	1:H:141:TRP:NE1	2.32	0.63
1:A:205:ASN:OD1	1:A:206:SER:N	2.31	0.63
1:F:17:GLU:HB3	1:F:18:PRO:HD2	1.80	0.63
1:E:215:GLU:HG2	1:E:217:ARG:HH12	1.62	0.62
1:H:214:ASN:O	1:H:215:GLU:HB3	1.98	0.62
1:H:38:PHE:CZ	1:H:60:VAL:HG11	2.34	0.62
1:H:240:PHE:HZ	1:H:261:ILE:HD13	1.64	0.62
1:D:42:LEU:HB3	1:D:125:VAL:HG13	1.81	0.62
1:E:36:VAL:HG12	1:E:37:ARG:HG3	1.80	0.62
1:C:25:LEU:HD11	1:C:139:ILE:HD11	1.80	0.62
1:C:27:ILE:CG1	1:C:139:ILE:HD13	2.30	0.62
1:F:38:PHE:HA	1:F:132:GLY:HA3	1.81	0.62
1:G:215:GLU:HG2	1:G:217:ARG:HH12	1.64	0.62
1:C:207:LEU:HD13	1:C:212:PHE:CD1	2.35	0.62
1:A:214:ASN:OD1	1:A:215:GLU:N	2.33	0.62
1:B:181:ASN:HB2	1:B:265:GLN:HB2	1.82	0.61
1:E:17:GLU:HB2	1:E:18:PRO:HD2	1.82	0.61
1:H:59:SER:HB3	1:H:61:ARG:HH21	1.63	0.61
1:A:103:LYS:HB2	1:A:117:GLU:HA	1.80	0.61
1:H:44:ASN:HB3	1:H:124:SER:O	2.00	0.61
1:G:38:PHE:HA	1:G:132:GLY:HA3	1.82	0.61
1:A:192:HIS:NE2	2:A:301:BGC:H1	2.15	0.61
1:A:206:SER:OG	1:A:252:TYR:OH	2.05	0.61
1:F:38:PHE:CZ	1:F:60:VAL:HG11	2.35	0.61
1:B:217:ARG:HH11	1:B:217:ARG:CB	2.14	0.61
1:B:38:PHE:CZ	1:B:60:VAL:HG11	2.35	0.61
1:G:158:GLY:O	1:G:163:LYS:CE	2.49	0.61
1:H:2:ALA:HB3	1:H:135:LEU:HD13	1.81	0.61
1:A:25:LEU:HD11	1:A:139:ILE:HD11	1.82	0.61
1:B:45:THR:HG22	1:B:49:PHE:HB3	1.81	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:19:PHE:HD2	1:D:23:GLN:NE2	1.98	0.60
1:H:122:LEU:O	1:H:122:LEU:HD12	2.01	0.60
1:E:27:ILE:HD12	1:E:40:ILE:HD13	1.83	0.60
1:G:44:ASN:HB3	1:G:124:SER:O	2.01	0.60
1:D:205:ASN:HD21	1:D:213:GLY:H	1.48	0.60
1:E:178:PHE:CZ	1:E:195:PRO:HG2	2.36	0.60
1:G:31:THR:OG1	1:G:91:ASP:O	2.20	0.60
1:G:70:ASN:HD22	1:G:80:GLU:HA	1.66	0.60
1:B:136:ILE:HD13	1:B:139:ILE:HD11	1.83	0.60
1:A:72:PHE:HA	1:A:76:GLU:O	2.01	0.60
1:A:103:LYS:HB2	1:A:116:TYR:O	2.01	0.60
1:B:45:THR:HA	1:B:49:PHE:CD1	2.36	0.60
1:B:76:GLU:OE1	1:D:14:LYS:HD2	2.01	0.60
1:D:148:VAL:HA	1:D:149:PRO:C	2.27	0.59
1:D:25:LEU:HD12	1:D:141:TRP:HB3	1.84	0.59
1:B:203:VAL:HG13	1:B:215:GLU:HG3	1.82	0.59
1:B:254:HIS:CE1	1:B:258:PRO:HB3	2.38	0.59
1:C:203:VAL:HG13	1:C:215:GLU:HG3	1.83	0.59
1:H:103:LYS:HD3	1:H:115:GLU:HB3	1.84	0.59
1:G:253:ALA:HB2	1:H:253:ALA:HB2	1.85	0.59
1:A:17:GLU:HB3	1:A:18:PRO:HD2	1.85	0.59
1:G:148:VAL:HA	1:G:149:PRO:C	2.28	0.59
1:B:16:THR:OG1	1:B:17:GLU:OE1	2.18	0.59
1:G:7:TYR:CE2	1:G:139:ILE:HG12	2.33	0.59
1:B:198:ASP:N	1:B:198:ASP:OD1	2.35	0.59
1:F:64:GLU:OE2	1:F:82:ARG:NH1	2.36	0.59
1:E:241:GLN:HE22	1:E:251:THR:CG2	2.16	0.58
1:A:27:ILE:HG13	1:A:139:ILE:CD1	2.32	0.58
1:H:16:THR:HG22	1:H:17:GLU:HG3	1.85	0.58
1:F:45:THR:CB	1:F:49:PHE:HB2	2.33	0.58
1:H:59:SER:CB	1:H:61:ARG:NH2	2.57	0.58
1:H:215:GLU:OE1	2:H:301:BGC:O3	2.17	0.58
1:G:139:ILE:O	1:G:139:ILE:HG13	2.02	0.58
1:A:166:LEU:HB3	1:A:276:GLN:HG2	1.85	0.58
1:E:241:GLN:NE2	1:E:251:THR:CG2	2.65	0.58
1:B:168:PHE:HD1	1:B:274:GLY:HA3	1.69	0.57
1:B:189:ILE:HG13	1:B:207:LEU:HB3	1.86	0.57
1:E:70:ASN:ND2	1:E:80:GLU:HG2	2.20	0.57
1:A:49:PHE:CD1	1:A:52:ASN:HB2	2.38	0.57
1:G:159:LEU:HD21	1:G:235:ASN:HB2	1.86	0.57
1:B:17:GLU:HB3	1:B:18:PRO:HD2	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:16:THR:CB	1:B:17:GLU:OE1	2.52	0.57
1:E:148:VAL:HA	1:E:149:PRO:C	2.30	0.57
1:F:42:LEU:HB3	1:F:125:VAL:HG13	1.87	0.57
1:F:76:GLU:OE1	1:G:14:LYS:HD2	2.05	0.56
1:F:215:GLU:OE1	2:F:301:BGC:O3	2.22	0.56
1:C:44:ASN:HB3	1:C:124:SER:O	2.05	0.56
1:D:51:GLY:O	1:D:52:ASN:OD1	2.24	0.56
1:D:216:GLU:OE2	1:D:255:ARG:NH2	2.33	0.56
1:B:185:LYS:NZ	1:B:260:ASP:HB3	2.17	0.56
1:F:159:LEU:CD2	1:F:235:ASN:CB	2.84	0.56
1:G:54:VAL:HB	1:G:72:PHE:HB3	1.88	0.56
1:C:148:VAL:HG21	1:C:270:VAL:O	2.05	0.56
1:B:45:THR:CB	1:B:49:PHE:HB2	2.35	0.56
1:D:205:ASN:HD21	1:D:213:GLY:N	2.03	0.56
1:H:79:LYS:O	1:H:119:ARG:NH2	2.39	0.56
1:B:38:PHE:CE2	1:B:60:VAL:HG11	2.40	0.56
1:D:264:LEU:HD12	1:D:265:GLN:H	1.71	0.56
1:C:232:GLU:HB3	1:C:243:TYR:HB2	1.88	0.56
1:C:258:PRO:HA	1:C:261:ILE:HD11	1.86	0.56
1:C:217:ARG:CZ	1:C:217:ARG:HB2	2.35	0.56
1:B:38:PHE:HA	1:B:132:GLY:HA3	1.87	0.56
1:D:36:VAL:HG12	1:D:133:ASP:OD2	2.06	0.55
1:A:70:ASN:ND2	1:A:80:GLU:HG3	2.21	0.55
1:B:208:ILE:HG12	1:B:256:LEU:HD21	1.88	0.55
1:C:202:ILE:HD11	1:C:222:PRO:HD2	1.88	0.55
1:E:3:THR:O	1:E:135:LEU:HD11	2.07	0.55
1:E:159:LEU:HD23	1:E:163:LYS:HB3	1.89	0.55
1:B:37:ARG:NH1	1:D:5:THR:HG23	2.22	0.55
1:C:87:TYR:CZ	1:C:93:ILE:HA	2.41	0.55
1:F:87:TYR:CD1	1:F:93:ILE:HG22	2.42	0.55
1:F:207:LEU:HD23	1:F:212:PHE:CD1	2.42	0.55
1:D:180:ILE:HG23	1:D:266:ILE:HG12	1.88	0.55
1:F:232:GLU:HB3	1:F:243:TYR:HB2	1.88	0.55
1:B:37:ARG:HH21	1:B:61:ARG:HD3	1.72	0.55
1:G:217:ARG:HB3	1:G:217:ARG:NH1	2.21	0.55
1:C:214:ASN:OD1	1:C:215:GLU:N	2.41	0.54
1:C:31:THR:OG1	1:C:90:GLY:O	2.19	0.54
1:C:102:SER:OG	1:C:103:LYS:HG2	2.06	0.54
1:G:72:PHE:HD2	1:G:77:PHE:CE1	2.25	0.54
1:D:191:LEU:HD21	1:D:242:ILE:HD11	1.89	0.54
1:G:111:LYS:HG2	1:G:227:ILE:HD12	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:70:ASN:ND2	1:H:80:GLU:HG2	2.22	0.54
1:A:254:HIS:CE1	1:A:258:PRO:HB3	2.43	0.54
1:C:45:THR:HB	1:C:48:ASP:HA	1.90	0.54
1:D:1:MET:HE1	1:D:9:VAL:H	1.73	0.53
1:H:178:PHE:O	1:H:195:PRO:HD2	2.08	0.53
1:D:165:LEU:HD21	1:D:264:LEU:HD22	1.89	0.53
1:G:45:THR:HA	1:G:49:PHE:HB2	1.91	0.53
1:G:255:ARG:O	1:G:256:LEU:HD23	2.08	0.53
1:B:177:ARG:HB3	1:B:196:ARG:HA	1.91	0.53
1:C:38:PHE:CD2	1:C:134:ILE:HD12	2.43	0.53
1:G:203:VAL:HG11	2:G:301:BGC:O2	2.08	0.53
1:D:189:ILE:HG21	1:D:192:HIS:HB2	1.91	0.53
1:E:217:ARG:NH1	1:E:217:ARG:HB3	2.23	0.53
1:H:45:THR:HB	1:H:49:PHE:H	1.72	0.53
1:D:5:THR:HG21	1:D:137:THR:HG22	1.90	0.53
1:G:235:ASN:HD21	1:G:254:HIS:CE1	2.26	0.53
1:C:88:LYS:HE2	1:C:91:ASP:OD2	2.09	0.53
1:F:159:LEU:HD21	1:F:235:ASN:HB2	1.91	0.53
1:B:16:THR:HB	1:B:17:GLU:OE1	2.08	0.53
1:G:214:ASN:OD1	1:G:255:ARG:NH2	2.42	0.53
1:H:16:THR:HB	1:H:141:TRP:CH2	2.44	0.53
1:A:87:TYR:CZ	1:A:93:ILE:HA	2.45	0.52
1:D:214:ASN:O	1:D:215:GLU:CB	2.57	0.52
1:A:5:THR:O	1:A:6:ASN:HB2	2.10	0.52
1:C:154:LEU:HD13	1:C:277:MET:HE1	1.92	0.52
1:C:205:ASN:OD1	1:C:206:SER:N	2.41	0.52
1:D:24:THR:O	1:D:141:TRP:HA	2.07	0.52
1:E:184:LYS:HE2	1:E:257:ASP:O	2.08	0.52
1:F:45:THR:HB	1:F:49:PHE:HB2	1.91	0.52
1:F:178:PHE:CZ	1:F:195:PRO:HG2	2.44	0.52
1:G:45:THR:O	1:G:49:PHE:HD1	1.92	0.52
1:A:27:ILE:HG12	1:A:139:ILE:HD13	1.89	0.52
1:E:183:LEU:HB2	1:E:263:GLY:HA3	1.91	0.52
1:G:36:VAL:HG12	1:G:133:ASP:OD2	2.09	0.52
1:G:158:GLY:O	1:G:163:LYS:HE3	2.09	0.52
1:G:28:LYS:HB2	1:G:138:TYR:HB3	1.91	0.52
1:G:254:HIS:CD2	1:G:258:PRO:HG3	2.45	0.52
1:D:17:GLU:HB3	1:D:18:PRO:HD2	1.92	0.52
1:G:254:HIS:CE1	1:G:258:PRO:HB3	2.44	0.52
1:A:264:LEU:HD12	1:A:265:GLN:H	1.74	0.51
1:A:1:MET:HE3	1:A:4:GLU:OE1	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:114:LYS:HE3	1:D:115:GLU:O	2.09	0.51
1:G:15:LEU:HD21	1:G:128:PHE:HD1	1.76	0.51
1:G:148:VAL:HG11	1:G:270:VAL:O	2.09	0.51
1:D:44:ASN:HB3	1:D:124:SER:O	2.10	0.51
1:E:103:LYS:HB2	1:E:116:TYR:O	2.10	0.51
1:F:9:VAL:HA	1:F:11:TYR:N	2.26	0.51
1:F:198:ASP:OD1	1:F:198:ASP:N	2.36	0.51
1:A:12:ARG:HH11	1:A:12:ARG:HB2	1.76	0.51
1:F:254:HIS:CE1	1:F:258:PRO:HB3	2.46	0.51
1:H:59:SER:HB3	1:H:61:ARG:NH2	2.25	0.51
1:E:154:LEU:O	1:E:156:GLY:N	2.44	0.51
1:F:95:ILE:HD13	1:F:108:VAL:HG22	1.93	0.51
1:A:7:TYR:HB3	1:A:136:ILE:HB	1.93	0.51
1:A:192:HIS:NE2	1:A:194:ASN:HB2	2.26	0.51
1:G:128:PHE:HZ	1:G:139:ILE:HD12	1.76	0.51
1:B:248:ARG:HH11	1:B:251:THR:HG23	1.75	0.51
1:C:49:PHE:HD2	1:C:52:ASN:HD22	1.58	0.51
1:F:207:LEU:HD22	1:F:211:GLU:O	2.10	0.51
1:G:178:PHE:CZ	1:G:195:PRO:HG2	2.45	0.51
1:H:203:VAL:HG13	1:H:215:GLU:HG3	1.93	0.51
1:D:107:SER:HA	1:D:112:GLU:HA	1.93	0.51
1:A:25:LEU:HD22	1:A:42:LEU:HD21	1.93	0.50
1:E:56:LEU:HB2	1:E:104:PHE:CE2	2.46	0.50
1:F:205:ASN:OD1	1:F:206:SER:N	2.43	0.50
1:A:7:TYR:CE2	1:A:139:ILE:HG22	2.46	0.50
1:A:31:THR:OG1	1:A:90:GLY:O	2.26	0.50
1:D:68:VAL:HG13	1:D:82:ARG:HG2	1.92	0.50
1:E:214:ASN:O	1:E:215:GLU:HB3	2.11	0.50
1:E:224:GLU:HB3	1:E:227:ILE:HG12	1.94	0.50
1:F:159:LEU:HD22	1:F:235:ASN:CB	2.40	0.50
1:G:57:HIS:NE2	1:G:59:SER:HB2	2.26	0.50
1:D:151:GLU:HG3	1:D:265:GLN:HG3	1.92	0.50
1:F:45:THR:CA	1:F:49:PHE:HB2	2.42	0.50
1:F:70:ASN:OD1	1:F:71:THR:N	2.43	0.50
1:F:165:LEU:HD12	1:F:166:LEU:H	1.75	0.50
1:B:70:ASN:ND2	1:B:80:GLU:HG2	2.27	0.50
1:B:148:VAL:HA	1:B:149:PRO:C	2.36	0.50
1:E:217:ARG:HB3	1:E:217:ARG:HH11	1.75	0.50
1:C:7:TYR:HB3	1:C:136:ILE:HB	1.92	0.50
1:H:103:LYS:CD	1:H:115:GLU:HB3	2.41	0.50
1:C:38:PHE:CE2	1:C:134:ILE:HD12	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:81:GLU:OE1	1:C:114:LYS:NZ	2.27	0.50
1:B:182:LEU:HD12	1:B:191:LEU:HD23	1.93	0.50
1:E:147:PRO:O	1:E:150:TYR:HB2	2.10	0.50
1:H:17:GLU:HB3	1:H:18:PRO:HD2	1.93	0.50
1:E:222:PRO:HD3	1:E:249:PHE:CE1	2.47	0.49
1:H:178:PHE:CE1	1:H:195:PRO:HG2	2.47	0.49
1:F:45:THR:HA	1:F:49:PHE:HB2	1.94	0.49
1:E:103:LYS:HB2	1:E:116:TYR:C	2.38	0.49
1:H:207:LEU:HD12	1:H:211:GLU:O	2.11	0.49
1:C:63:ASP:OD2	1:C:64:GLU:HG3	2.13	0.49
1:D:161:PRO:HA	1:D:235:ASN:O	2.12	0.49
1:D:196:ARG:HD2	1:D:203:VAL:HG23	1.95	0.49
1:D:254:HIS:CE1	1:D:258:PRO:HB3	2.46	0.49
1:E:28:LYS:HA	1:E:93:ILE:O	2.12	0.49
1:G:234:ARG:HB3	1:G:241:GLN:HB2	1.94	0.49
1:D:146:TYR:HB2	1:D:272:VAL:O	2.12	0.49
1:H:65:GLY:C	1:H:85:ASN:HB3	2.37	0.49
1:G:159:LEU:HD21	1:G:235:ASN:CB	2.41	0.49
1:A:26:ILE:O	1:A:139:ILE:HD12	2.12	0.49
1:B:61:ARG:NH1	1:B:64:GLU:OE1	2.38	0.49
1:F:37:ARG:NH2	1:F:61:ARG:HD3	2.27	0.49
1:G:266:ILE:HG21	1:G:272:VAL:HG21	1.93	0.49
1:G:72:PHE:HD2	1:G:77:PHE:CD1	2.30	0.49
1:G:159:LEU:C	1:G:159:LEU:HD23	2.38	0.49
1:H:83:LYS:HG2	1:H:113:VAL:HG12	1.95	0.49
1:H:170:THR:HA	1:H:228:GLY:HA2	1.95	0.49
1:C:3:THR:O	1:C:5:THR:N	2.39	0.49
1:D:43:HIS:HB3	1:D:54:VAL:HG22	1.94	0.49
1:E:248:ARG:HE	1:E:251:THR:HG23	1.78	0.49
1:F:49:PHE:CE2	1:F:52:ASN:HB2	2.48	0.49
1:C:31:THR:OG1	1:C:91:ASP:O	2.31	0.48
1:E:15:LEU:HB2	1:E:126:THR:O	2.13	0.48
1:A:68:VAL:HG13	1:A:80:GLU:HG2	1.95	0.48
1:D:46:SER:HB2	1:D:49:PHE:HD1	1.77	0.48
1:F:51:GLY:O	1:F:52:ASN:OD1	2.31	0.48
1:H:36:VAL:C	1:H:37:ARG:HG2	2.38	0.48
1:E:183:LEU:HD23	1:E:189:ILE:HA	1.96	0.48
1:H:72:PHE:CZ	1:H:75:GLY:HA2	2.48	0.48
1:A:64:GLU:O	1:A:66:LYS:NZ	2.36	0.48
1:B:71:THR:HG1	1:B:116:TYR:HH	1.53	0.48
1:D:45:THR:O	1:D:46:SER:HB2	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:42:LEU:HB3	1:E:125:VAL:CG1	2.42	0.48
1:H:196:ARG:NH2	2:H:301:BGC:H2	2.28	0.48
1:B:97:ILE:HG23	1:B:106:ILE:HG13	1.96	0.48
1:G:214:ASN:O	1:G:215:GLU:CB	2.62	0.48
1:H:7:TYR:HB2	1:H:136:ILE:HB	1.95	0.48
1:E:29:GLY:HA2	1:E:137:THR:HG23	1.94	0.48
1:G:184:LYS:NZ	1:G:259:HIS:O	2.46	0.48
1:D:232:GLU:HB3	1:D:243:TYR:HB2	1.96	0.48
1:F:148:VAL:HA	1:F:149:PRO:C	2.38	0.48
1:C:37:ARG:NH2	1:C:64:GLU:OE1	2.47	0.48
1:D:203:VAL:HG11	2:D:301:BGC:O2	2.14	0.48
1:F:28:LYS:HD2	1:F:138:TYR:HD2	1.79	0.48
1:G:222:PRO:HG2	1:G:244:VAL:HG11	1.96	0.48
1:B:241:GLN:NE2	1:B:251:THR:HB	2.29	0.47
1:G:161:PRO:HA	1:G:235:ASN:O	2.14	0.47
1:B:180:ILE:HG12	1:B:266:ILE:HG12	1.95	0.47
1:C:12:ARG:HE	1:C:43:HIS:HE1	1.62	0.47
1:D:178:PHE:CZ	1:D:195:PRO:HG2	2.49	0.47
1:G:4:GLU:HA	1:G:4:GLU:OE2	2.13	0.47
1:F:42:LEU:HB3	1:F:125:VAL:CG1	2.44	0.47
1:C:150:TYR:CE2	1:C:152:SER:HB3	2.50	0.47
1:F:241:GLN:CD	1:F:251:THR:HG22	2.40	0.47
1:B:220:LYS:H	1:B:220:LYS:HD2	1.79	0.47
1:G:15:LEU:HD21	1:G:128:PHE:CD1	2.50	0.47
1:G:49:PHE:O	1:G:50:SER:HB3	2.14	0.47
1:H:192:HIS:N	1:H:205:ASN:O	2.37	0.47
1:A:148:VAL:HA	1:A:149:PRO:C	2.39	0.47
1:B:9:VAL:HA	1:B:11:TYR:N	2.30	0.47
1:D:27:ILE:HG12	1:D:139:ILE:HD13	1.96	0.47
1:D:100:HIS:ND1	1:D:145:TYR:OH	2.31	0.47
1:F:66:LYS:NZ	1:G:232:GLU:OE2	2.37	0.47
1:G:218:GLU:CD	1:G:218:GLU:H	2.22	0.47
1:A:241:GLN:NE2	1:A:251:THR:HB	2.29	0.47
1:C:166:LEU:HD23	1:C:276:GLN:HE21	1.79	0.47
1:F:93:ILE:HD11	1:F:134:ILE:HD11	1.97	0.47
1:G:55:PRO:HG2	1:G:125:VAL:HG23	1.97	0.47
1:G:236:GLU:HG3	1:G:241:GLN:HG2	1.97	0.47
1:B:178:PHE:CZ	1:B:195:PRO:HG2	2.49	0.47
1:D:37:ARG:HD2	1:D:63:ASP:OD1	2.14	0.47
1:A:100:HIS:ND1	1:A:145:TYR:OH	2.37	0.47
1:E:161:PRO:HG3	1:E:258:PRO:HB2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:146:TYR:HB2	1:G:272:VAL:O	2.15	0.47
1:G:189:ILE:HG13	1:G:207:LEU:HB3	1.97	0.47
1:D:258:PRO:HA	1:D:261:ILE:HD11	1.97	0.46
1:F:161:PRO:HA	1:F:235:ASN:O	2.15	0.46
1:B:165:LEU:HD21	1:B:167:ILE:HD11	1.97	0.46
1:D:12:ARG:NH2	1:D:48:ASP:HA	2.30	0.46
1:D:30:LYS:HG2	1:D:92:ASP:OD1	2.16	0.46
1:G:181:ASN:HB2	1:G:265:GLN:HB2	1.97	0.46
1:H:103:LYS:HE3	1:H:115:GLU:OE1	2.15	0.46
1:C:12:ARG:HD3	1:C:48:ASP:OD1	2.15	0.46
1:C:80:GLU:OE1	1:C:82:ARG:NH2	2.43	0.46
1:C:159:LEU:HD11	1:C:165:LEU:HB2	1.96	0.46
1:D:185:LYS:HG3	1:D:262:ASN:OD1	2.15	0.46
1:A:49:PHE:CE1	1:A:52:ASN:HB2	2.50	0.46
1:E:241:GLN:CD	1:E:251:THR:HG22	2.41	0.46
1:F:54:VAL:HB	1:F:72:PHE:HB3	1.98	0.46
1:G:175:GLY:HA3	1:G:269:ASP:HB3	1.98	0.46
1:G:128:PHE:CZ	1:G:139:ILE:HD12	2.50	0.46
1:A:93:ILE:O	1:A:93:ILE:HG13	2.15	0.46
1:B:111:LYS:HD3	1:B:113:VAL:HG12	1.98	0.46
1:F:148:VAL:HG21	1:F:270:VAL:O	2.16	0.46
1:G:12:ARG:HG3	1:G:129:SER:OG	2.16	0.46
1:G:108:VAL:O	1:G:109:ASP:C	2.58	0.46
1:B:196:ARG:HH22	2:B:301:BGC:H2	1.81	0.46
1:D:54:VAL:HB	1:D:72:PHE:HB3	1.97	0.46
1:G:43:HIS:CE1	1:G:127:HIS:HB2	2.51	0.46
1:E:38:PHE:HA	1:E:132:GLY:HA3	1.98	0.46
1:E:64:GLU:O	1:E:66:LYS:HG2	2.16	0.46
1:D:69:PHE:CD1	1:D:69:PHE:N	2.84	0.45
1:A:132:GLY:O	1:A:134:ILE:N	2.49	0.45
1:C:49:PHE:CD2	1:C:52:ASN:ND2	2.81	0.45
1:A:45:THR:CB	1:A:49:PHE:H	2.19	0.45
1:B:214:ASN:O	1:B:215:GLU:HB3	2.16	0.45
1:E:14:LYS:HE3	1:E:127:HIS:CE1	2.52	0.45
1:E:70:ASN:HD22	1:E:80:GLU:HG2	1.81	0.45
1:F:192:HIS:CD2	2:F:301:BGC:H5	2.51	0.45
1:H:126:THR:OG1	1:H:127:HIS:HD2	2.00	0.45
1:B:5:THR:O	1:B:6:ASN:O	2.35	0.45
1:H:154:LEU:HD23	1:H:154:LEU:HA	1.82	0.45
1:H:222:PRO:HG2	1:H:244:VAL:HG11	1.98	0.45
1:B:161:PRO:HD3	1:B:258:PRO:O	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:238:TYR:C	1:F:254:HIS:CD2	2.94	0.45
1:E:172:GLU:HG3	1:E:269:ASP:C	2.41	0.45
1:G:189:ILE:HG21	1:G:192:HIS:HB2	1.97	0.45
1:A:35:SER:HB3	1:A:133:ASP:HB2	1.99	0.45
1:A:241:GLN:HE22	1:A:251:THR:HB	1.82	0.45
1:B:25:LEU:HD23	1:B:97:ILE:HD12	1.98	0.45
1:C:101:ASP:OD1	1:C:102:SER:N	2.49	0.45
1:C:107:SER:HA	1:C:112:GLU:HA	1.98	0.45
1:D:70:ASN:OD1	1:D:71:THR:N	2.45	0.45
1:F:77:PHE:O	1:G:13:SER:HA	2.17	0.45
1:F:195:PRO:HA	1:F:202:ILE:HA	1.99	0.45
1:G:100:HIS:ND1	1:G:145:TYR:OH	2.39	0.45
1:D:42:LEU:HB3	1:D:125:VAL:CG1	2.47	0.45
1:D:205:ASN:ND2	1:D:212:PHE:HD2	2.04	0.45
1:A:23:GLN:HG2	1:A:143:GLY:O	2.17	0.45
1:C:45:THR:HB	1:C:49:PHE:H	1.82	0.45
1:E:212:PHE:CE1	2:E:301:BGC:H1	2.52	0.45
1:E:236:GLU:HG3	1:E:241:GLN:HG2	1.99	0.45
1:F:49:PHE:HE2	1:F:52:ASN:CG	2.24	0.45
1:G:107:SER:HA	1:G:112:GLU:HA	1.99	0.45
1:G:224:GLU:HG2	1:G:227:ILE:HG12	1.98	0.45
1:H:147:PRO:O	1:H:150:TYR:HB2	2.16	0.45
1:A:25:LEU:CD1	1:A:139:ILE:HD11	2.47	0.45
1:B:195:PRO:HA	1:B:202:ILE:HA	1.99	0.45
1:D:38:PHE:HA	1:D:132:GLY:HA3	1.98	0.45
1:E:189:ILE:HG13	1:E:207:LEU:HB3	1.98	0.45
1:H:11:TYR:HE2	1:H:128:PHE:HE2	1.65	0.45
1:H:232:GLU:HB3	1:H:243:TYR:HB2	2.00	0.45
1:B:70:ASN:HD22	1:B:80:GLU:HG2	1.82	0.44
1:D:222:PRO:HG2	1:D:244:VAL:HG11	1.98	0.44
1:E:56:LEU:HD22	1:E:104:PHE:CG	2.52	0.44
1:E:14:LYS:HG3	1:E:127:HIS:CE1	2.52	0.44
1:G:98:ARG:CZ	1:G:273:THR:HG22	2.47	0.44
1:G:175:GLY:O	1:G:225:LYS:HE3	2.16	0.44
1:C:212:PHE:CD1	2:C:301:BGC:H5	2.52	0.44
1:H:49:PHE:CD2	1:H:52:ASN:ND2	2.86	0.44
1:H:236:GLU:HG3	1:H:241:GLN:HG2	1.98	0.44
1:H:178:PHE:HA	1:H:268:GLY:HA3	1.99	0.44
1:B:202:ILE:O	1:B:204:ARG:HD3	2.17	0.44
1:G:63:ASP:OD1	1:G:63:ASP:N	2.48	0.44
1:G:165:LEU:HA	1:G:165:LEU:HD12	1.76	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:161:PRO:HA	1:H:235:ASN:O	2.18	0.44
1:C:17:GLU:HB3	1:C:18:PRO:HD2	2.00	0.44
1:A:41:ASN:O	1:A:128:PHE:HA	2.18	0.44
1:D:266:ILE:HG21	1:D:272:VAL:HG21	1.98	0.44
1:F:55:PRO:HG2	1:F:125:VAL:HG22	2.00	0.44
1:H:36:VAL:HG12	1:H:37:ARG:HG2	2.00	0.44
1:B:203:VAL:HG22	1:B:217:ARG:HG2	1.99	0.44
1:F:64:GLU:CD	1:F:82:ARG:HH12	2.26	0.44
1:F:214:ASN:H	1:F:255:ARG:HH12	1.66	0.44
1:G:235:ASN:ND2	1:G:254:HIS:CE1	2.86	0.44
1:H:177:ARG:HB3	1:H:196:ARG:HA	2.00	0.44
1:B:37:ARG:HB3	1:B:61:ARG:HA	1.99	0.43
1:B:136:ILE:HG21	1:B:139:ILE:HD11	1.99	0.43
1:C:3:THR:C	1:C:5:THR:H	2.22	0.43
1:D:154:LEU:N	1:D:262:ASN:O	2.51	0.43
1:G:25:LEU:HD12	1:G:141:TRP:HB3	2.00	0.43
1:G:258:PRO:HA	1:G:261:ILE:HD11	2.00	0.43
1:E:9:VAL:HA	1:E:10:PRO:C	2.42	0.43
1:G:23:GLN:HG3	1:G:143:GLY:O	2.19	0.43
1:G:33:GLU:O	1:G:33:GLU:HG2	2.18	0.43
1:H:49:PHE:HD2	1:H:52:ASN:ND2	2.13	0.43
1:H:175:GLY:O	1:H:225:LYS:HD3	2.18	0.43
1:H:196:ARG:NH1	1:H:203:VAL:HG21	2.33	0.43
1:C:207:LEU:HD12	1:C:211:GLU:C	2.44	0.43
1:D:5:THR:HG22	1:D:5:THR:O	2.18	0.43
1:D:159:LEU:HD23	1:D:159:LEU:HA	1.82	0.43
1:E:103:LYS:CB	1:E:117:GLU:HA	2.48	0.43
1:E:241:GLN:HE22	1:E:251:THR:HG21	1.83	0.43
1:G:19:PHE:HE2	1:G:23:GLN:HB3	1.84	0.43
1:G:42:LEU:O	1:G:55:PRO:HD2	2.18	0.43
1:D:149:PRO:HD2	1:E:118:HIS:HB3	2.00	0.43
1:E:154:LEU:HA	1:E:154:LEU:HD23	1.73	0.43
1:H:16:THR:HB	1:H:141:TRP:HH2	1.81	0.43
1:H:248:ARG:HE	1:H:248:ARG:HB3	1.46	0.43
1:A:203:VAL:HG11	2:A:301:BGC:O2	2.19	0.43
1:H:90:GLY:O	1:H:91:ASP:OD1	2.37	0.43
1:A:41:ASN:HD22	1:A:57:HIS:HA	1.82	0.43
1:C:166:LEU:HD23	1:C:276:GLN:NE2	2.33	0.43
1:G:120:VAL:HG12	1:G:121:PRO:HD2	2.00	0.43
1:A:128:PHE:HE1	1:A:141:TRP:CE3	2.36	0.43
1:D:36:VAL:HG13	1:D:37:ARG:N	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:28:LYS:HE3	1:E:94:ASP:OD2	2.18	0.43
1:F:43:HIS:CE1	1:F:127:HIS:HB2	2.54	0.43
1:G:71:THR:HG21	1:G:120:VAL:HG23	2.00	0.43
1:C:181:ASN:HB2	1:C:265:GLN:HB2	2.01	0.43
1:E:16:THR:HG23	1:E:141:TRP:CZ2	2.54	0.43
1:F:181:ASN:HB2	1:F:265:GLN:HB3	2.00	0.43
1:F:190:ALA:HA	1:F:256:LEU:HD12	2.00	0.43
1:G:232:GLU:HB3	1:G:243:TYR:HB2	2.00	0.43
1:C:196:ARG:NH2	2:C:301:BGC:H2	2.33	0.43
1:C:214:ASN:O	1:C:215:GLU:HB3	2.19	0.43
1:D:179:HIS:HD2	1:D:181:ASN:ND2	2.16	0.43
1:E:22:GLY:HA2	1:E:145:TYR:CE1	2.54	0.43
1:G:23:GLN:O	1:G:98:ARG:HG3	2.19	0.43
1:G:206:SER:OG	1:G:252:TYR:OH	2.04	0.43
1:A:45:THR:HB	1:A:49:PHE:N	2.22	0.42
1:C:11:TYR:O	1:C:129:SER:HA	2.19	0.42
1:C:111:LYS:HE2	1:C:111:LYS:HB3	1.67	0.42
1:C:183:LEU:HD11	1:C:265:GLN:CD	2.44	0.42
1:C:207:LEU:HD13	1:C:212:PHE:CE1	2.53	0.42
1:D:193:PHE:HE1	1:D:242:ILE:HG21	1.84	0.42
1:G:4:GLU:C	1:G:6:ASN:N	2.70	0.42
1:C:212:PHE:CG	2:C:301:BGC:H5	2.54	0.42
1:D:196:ARG:NH1	1:D:199:GLU:OE1	2.53	0.42
1:E:83:LYS:HG2	1:E:113:VAL:HG12	2.01	0.42
1:G:90:GLY:O	1:G:91:ASP:OD1	2.38	0.42
1:D:237:GLU:H	1:D:237:GLU:CD	2.27	0.42
1:A:20:GLU:HB2	1:A:23:GLN:OE1	2.19	0.42
1:A:70:ASN:HD22	1:A:80:GLU:HG3	1.81	0.42
1:D:191:LEU:CD2	1:D:242:ILE:HD11	2.50	0.42
1:E:196:ARG:NH1	1:E:203:VAL:HG21	2.35	0.42
1:A:214:ASN:O	1:A:215:GLU:CB	2.65	0.42
1:B:18:PRO:HG2	1:B:20:GLU:OE1	2.19	0.42
1:D:90:GLY:O	1:D:91:ASP:O	2.37	0.42
1:A:71:THR:OG1	1:A:116:TYR:OH	2.08	0.42
1:D:203:VAL:HG13	1:D:215:GLU:HG3	2.00	0.42
1:F:238:TYR:C	1:F:254:HIS:HD2	2.28	0.42
1:G:102:SER:OG	1:G:103:LYS:HG2	2.20	0.42
1:H:111:LYS:O	1:H:113:VAL:HG23	2.20	0.42
1:A:236:GLU:HG3	1:A:241:GLN:HG2	2.02	0.42
1:C:128:PHE:HE1	1:C:141:TRP:CE3	2.38	0.42
1:C:151:GLU:HG2	1:C:265:GLN:HG3	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:45:THR:C	1:E:49:PHE:HB2	2.45	0.42
1:H:28:LYS:HA	1:H:93:ILE:O	2.20	0.42
1:C:173:LYS:O	1:C:173:LYS:HD3	2.19	0.42
1:F:203:VAL:HG13	1:F:215:GLU:HG3	2.02	0.42
1:H:148:VAL:HG21	1:H:270:VAL:O	2.20	0.42
1:A:103:LYS:CB	1:A:117:GLU:HA	2.46	0.42
1:B:42:LEU:HB3	1:B:125:VAL:CG1	2.49	0.42
1:B:49:PHE:HB3	1:B:50:SER:H	1.71	0.42
1:F:38:PHE:CE2	1:F:60:VAL:HG11	2.54	0.42
1:G:5:THR:O	1:G:6:ASN:HB2	2.20	0.42
1:G:25:LEU:HD11	1:G:128:PHE:CZ	2.55	0.42
1:G:192:HIS:NE2	2:G:301:BGC:H1	2.35	0.42
1:B:36:VAL:HG12	1:B:133:ASP:OD2	2.20	0.42
1:E:9:VAL:HA	1:E:11:TYR:N	2.35	0.42
1:E:175:GLY:O	1:E:225:LYS:HE2	2.19	0.42
1:F:196:ARG:NH1	1:F:203:VAL:HG21	2.34	0.42
1:G:68:VAL:HG22	1:G:82:ARG:HG2	2.00	0.42
1:C:146:TYR:HB2	1:C:272:VAL:O	2.20	0.41
1:C:191:LEU:HD21	1:C:242:ILE:HD11	2.00	0.41
1:D:19:PHE:HA	1:D:23:GLN:HE22	1.84	0.41
1:D:181:ASN:N	1:D:265:GLN:O	2.51	0.41
1:E:103:LYS:HB2	1:E:117:GLU:HA	2.01	0.41
1:E:7:TYR:HB2	1:E:136:ILE:HB	2.02	0.41
1:E:42:LEU:HB3	1:E:125:VAL:HG11	2.02	0.41
1:E:191:LEU:HD12	1:E:192:HIS:N	2.33	0.41
1:F:40:ILE:HG12	1:F:130:VAL:HG22	2.01	0.41
1:G:31:THR:HG21	1:G:62:PHE:HZ	1.86	0.41
1:A:154:LEU:O	1:A:155:ALA:C	2.63	0.41
1:B:256:LEU:O	1:B:257:ASP:C	2.64	0.41
1:C:7:TYR:HD1	1:C:11:TYR:CE1	2.37	0.41
1:D:42:LEU:O	1:D:55:PRO:HD2	2.20	0.41
1:F:37:ARG:NH1	1:F:63:ASP:OD1	2.53	0.41
1:F:122:LEU:O	1:F:125:VAL:HG23	2.20	0.41
1:A:159:LEU:HD12	1:A:163:LYS:HB3	2.03	0.41
1:G:181:ASN:HB2	1:G:265:GLN:CB	2.50	0.41
1:G:231:LEU:HD23	1:G:244:VAL:HG22	2.02	0.41
1:H:56:LEU:HB2	1:H:104:PHE:CE2	2.55	0.41
1:D:173:LYS:O	1:D:173:LYS:HD3	2.20	0.41
1:F:46:SER:HG	1:F:49:PHE:HE1	1.65	0.41
1:G:103:LYS:HD2	1:G:115:GLU:HB3	2.01	0.41
1:G:171:PRO:HD2	1:G:227:ILE:O	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:35:SER:O	1:A:89:LYS:HE2	2.20	0.41
1:B:88:LYS:O	1:B:89:LYS:C	2.63	0.41
1:C:132:GLY:O	1:C:134:ILE:N	2.47	0.41
1:C:175:GLY:O	1:C:225:LYS:HE2	2.20	0.41
1:D:15:LEU:HD21	1:D:128:PHE:CD1	2.56	0.41
1:D:45:THR:HB	1:D:49:PHE:H	1.85	0.41
1:E:168:PHE:HD1	1:E:274:GLY:HA3	1.86	0.41
1:F:76:GLU:OE2	1:G:127:HIS:NE2	2.54	0.41
1:F:225:LYS:HB2	1:F:225:LYS:HE2	1.88	0.41
1:H:31:THR:OG1	1:H:91:ASP:O	2.38	0.41
1:B:154:LEU:O	1:B:156:GLY:N	2.53	0.41
1:C:173:LYS:O	1:C:225:LYS:HD3	2.20	0.41
1:D:160:ALA:H	1:D:163:LYS:HG3	1.86	0.41
1:D:163:LYS:HE3	1:D:163:LYS:HB3	1.69	0.41
1:E:196:ARG:CZ	1:E:203:VAL:HG21	2.51	0.41
1:F:203:VAL:CG1	1:F:215:GLU:HG3	2.50	0.41
1:H:31:THR:OG1	1:H:90:GLY:C	2.63	0.41
1:H:198:ASP:OD1	1:H:198:ASP:N	2.53	0.41
1:A:67:ILE:HG13	1:A:85:ASN:HB2	2.03	0.41
1:G:203:VAL:HG13	1:G:215:GLU:HG3	2.03	0.41
1:H:192:HIS:CD2	2:H:301:BGC:O2	2.73	0.41
1:C:25:LEU:O	1:C:96:ARG:HA	2.21	0.41
1:C:43:HIS:HA	1:C:55:PRO:HD2	2.03	0.41
1:C:148:VAL:HA	1:C:149:PRO:C	2.46	0.41
1:E:93:ILE:HD11	1:E:134:ILE:HD11	2.03	0.41
1:E:98:ARG:HH11	1:E:98:ARG:HD3	1.75	0.41
1:F:207:LEU:HB2	1:F:212:PHE:CE2	2.56	0.41
1:G:33:GLU:HA	1:G:89:LYS:HB3	2.03	0.41
1:G:229:CYS:HA	1:G:245:ASP:OD2	2.21	0.41
1:H:193:PHE:CE1	1:H:242:ILE:HG21	2.55	0.41
1:H:278:VAL:HG12	1:H:278:VAL:O	2.21	0.41
1:C:178:PHE:HA	1:C:268:GLY:HA3	2.03	0.41
1:D:214:ASN:O	1:D:215:GLU:HB2	2.21	0.41
1:G:56:LEU:HB2	1:G:104:PHE:CE2	2.56	0.41
1:H:154:LEU:O	1:H:156:GLY:N	2.54	0.41
1:A:148:VAL:HG21	1:A:270:VAL:O	2.21	0.40
1:G:241:GLN:OE1	1:G:251:THR:HG22	2.21	0.40
1:A:146:TYR:HB2	1:A:272:VAL:O	2.20	0.40
1:C:161:PRO:HA	1:C:235:ASN:O	2.21	0.40
1:F:26:ILE:O	1:F:27:ILE:HG12	2.22	0.40
1:G:61:ARG:HB2	1:G:63:ASP:OD1	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:11:TYR:HE2	1:H:128:PHE:CE2	2.38	0.40
1:A:111:LYS:O	1:A:113:VAL:HG13	2.21	0.40
1:B:231:LEU:HD22	1:B:244:VAL:HG22	2.03	0.40
1:D:235:ASN:HD21	1:D:254:HIS:CE1	2.40	0.40
1:H:140:HIS:NE2	1:H:276:GLN:OE1	2.51	0.40
1:D:190:ALA:HA	1:D:256:LEU:HD12	2.02	0.40
1:G:188:ASP:HB3	1:G:207:LEU:O	2.21	0.40
1:G:228:GLY:O	1:G:229:CYS:HB3	2.20	0.40
1:H:192:HIS:O	1:H:204:ARG:HA	2.21	0.40
1:B:64:GLU:CD	1:B:82:ARG:HH12	2.28	0.40
1:G:12:ARG:NH1	1:G:48:ASP:OD1	2.55	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:C:7:TYR:OH	1:E:80:GLU:OE2[1_545]	2.03	0.17
1:A:7:TYR:OH	1:H:80:GLU:OE2[1_455]	2.16	0.04

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	276/278 (99%)	240 (87%)	24 (9%)	12 (4%)	2	11
1	B	276/278 (99%)	246 (89%)	20 (7%)	10 (4%)	2	14
1	C	276/278 (99%)	241 (87%)	25 (9%)	10 (4%)	2	14
1	D	276/278 (99%)	245 (89%)	16 (6%)	15 (5%)	1	7
1	E	276/278 (99%)	249 (90%)	18 (6%)	9 (3%)	3	15
1	F	276/278 (99%)	241 (87%)	27 (10%)	8 (3%)	3	18
1	G	276/278 (99%)	240 (87%)	21 (8%)	15 (5%)	1	7

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	H	276/278 (99%)	248 (90%)	20 (7%)	8 (3%)	3	18
All	All	2208/2224 (99%)	1950 (88%)	171 (8%)	87 (4%)	2	12

All (87) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	6	ASN
1	A	46	SER
1	A	47	ALA
1	A	50	SER
1	A	53	ASP
1	A	91	ASP
1	B	6	ASN
1	B	49	PHE
1	B	53	ASP
1	C	3	THR
1	C	46	SER
1	C	50	SER
1	C	53	ASP
1	C	91	ASP
1	D	3	THR
1	D	5	THR
1	D	6	ASN
1	D	46	SER
1	D	53	ASP
1	D	91	ASP
1	D	155	ALA
1	D	215	GLU
1	E	6	ASN
1	E	155	ALA
1	F	6	ASN
1	F	53	ASP
1	G	5	THR
1	G	46	SER
1	G	47	ALA
1	G	53	ASP
1	G	91	ASP
1	H	47	ALA
1	H	53	ASP
1	H	91	ASP
1	H	155	ALA
1	A	215	GLU

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Mol	Chain	Res	Type
1	B	47	ALA
1	B	155	ALA
1	D	47	ALA
1	D	51	GLY
1	E	47	ALA
1	E	215	GLU
1	G	123	SER
1	G	215	GLU
1	H	45	THR
1	H	215	GLU
1	A	51	GLY
1	C	51	GLY
1	C	155	ALA
1	C	225	LYS
1	D	123	SER
1	E	3	THR
1	E	45	THR
1	E	46	SER
1	E	53	ASP
1	E	91	ASP
1	F	51	GLY
1	F	155	ALA
1	G	155	ALA
1	A	45	THR
1	A	155	ALA
1	B	45	THR
1	D	157	ASP
1	D	229	CYS
1	G	209	SER
1	B	215	GLU
1	C	215	GLU
1	D	2	ALA
1	F	16	THR
1	F	45	THR
1	F	156	GLY
1	F	215	GLU
1	G	3	THR
1	H	48	ASP
1	H	51	GLY
1	A	49	PHE
1	B	51	GLY
1	D	48	ASP

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Mol	Chain	Res	Type
1	G	45	THR
1	G	51	GLY
1	G	52	ASN
1	G	63	ASP
1	A	156	GLY
1	B	213	GLY
1	G	156	GLY
1	C	156	GLY
1	B	156	GLY

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	240/240 (100%)	240 (100%)	0	100	100
1	B	240/240 (100%)	240 (100%)	0	100	100
1	C	240/240 (100%)	240 (100%)	0	100	100
1	D	240/240 (100%)	240 (100%)	0	100	100
1	E	240/240 (100%)	240 (100%)	0	100	100
1	F	240/240 (100%)	240 (100%)	0	100	100
1	G	240/240 (100%)	240 (100%)	0	100	100
1	H	240/240 (100%)	240 (100%)	0	100	100
All	All	1920/1920 (100%)	1920 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	6	ASN
1	A	41	ASN
1	A	52	ASN
1	A	118	HIS

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Mol	Chain	Res	Type
1	A	254	HIS
1	A	276	GLN
1	B	23	GLN
1	B	41	ASN
1	B	140	HIS
1	B	235	ASN
1	C	41	ASN
1	C	43	HIS
1	C	52	ASN
1	C	179	HIS
1	C	241	GLN
1	C	254	HIS
1	C	276	GLN
1	D	6	ASN
1	D	23	GLN
1	D	179	HIS
1	D	205	ASN
1	D	235	ASN
1	D	254	HIS
1	E	52	ASN
1	E	241	GLN
1	F	52	ASN
1	F	186	ASN
1	F	194	ASN
1	G	70	ASN
1	G	235	ASN
1	G	254	HIS
1	H	52	ASN
1	H	179	HIS
1	H	186	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

8 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	BGC	C	301	-	12,12,12	1.40	2 (16%)	17,17,17	1.82	6 (35%)
2	BGC	A	301	-	12,12,12	1.36	1 (8%)	17,17,17	1.83	4 (23%)
2	BGC	D	301	-	12,12,12	1.33	1 (8%)	17,17,17	2.05	4 (23%)
2	BGC	E	301	-	12,12,12	1.49	2 (16%)	17,17,17	1.84	4 (23%)
2	BGC	B	301	-	12,12,12	1.45	2 (16%)	17,17,17	2.02	5 (29%)
2	BGC	G	301	-	12,12,12	1.31	2 (16%)	17,17,17	2.03	5 (29%)
2	BGC	F	301	-	12,12,12	1.35	2 (16%)	17,17,17	3.05	6 (35%)
2	BGC	H	301	-	12,12,12	1.47	2 (16%)	17,17,17	1.81	5 (29%)

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
2	BGC	C	301	-	-	0/2/22/22	0/1/1/1
2	BGC	A	301	-	-	2/2/22/22	0/1/1/1
2	BGC	D	301	-	-	1/2/22/22	0/1/1/1
2	BGC	E	301	-	-	2/2/22/22	0/1/1/1
2	BGC	B	301	-	-	1/2/22/22	0/1/1/1
2	BGC	G	301	-	-	2/2/22/22	0/1/1/1
2	BGC	F	301	-	-	1/2/22/22	0/1/1/1
2	BGC	H	301	-	-	2/2/22/22	0/1/1/1

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	301	BGC	O5-C1	4.01	1.52	1.42
2	H	301	BGC	O5-C1	3.83	1.52	1.42
2	C	301	BGC	O5-C1	3.68	1.51	1.42
2	B	301	BGC	O5-C1	3.55	1.51	1.42
2	D	301	BGC	O5-C1	3.35	1.51	1.42
2	A	301	BGC	O5-C1	3.19	1.50	1.42
2	F	301	BGC	O5-C1	3.10	1.50	1.42
2	G	301	BGC	O5-C1	3.07	1.50	1.42
2	H	301	BGC	O5-C5	2.43	1.50	1.44
2	B	301	BGC	O5-C5	2.34	1.50	1.44
2	E	301	BGC	O5-C5	2.15	1.49	1.44
2	C	301	BGC	O5-C5	2.06	1.49	1.44
2	F	301	BGC	C4-C3	-2.04	1.47	1.52
2	G	301	BGC	O5-C5	2.01	1.49	1.44

All (39) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	301	BGC	C3-C4-C5	-8.87	94.15	110.23
2	G	301	BGC	C4-C3-C2	-6.28	99.81	110.83
2	D	301	BGC	C4-C3-C2	-5.80	100.64	110.83
2	F	301	BGC	C4-C3-C2	-5.68	100.86	110.83
2	B	301	BGC	C3-C4-C5	-5.55	100.16	110.23
2	A	301	BGC	C4-C3-C2	-5.22	101.66	110.83
2	E	301	BGC	C3-C4-C5	-5.10	100.98	110.23
2	H	301	BGC	C4-C3-C2	-3.85	104.07	110.83
2	F	301	BGC	O3-C3-C2	3.74	119.19	110.38
2	C	301	BGC	C4-C3-C2	-3.69	104.35	110.83
2	H	301	BGC	C1-O5-C5	3.22	119.87	113.65
2	F	301	BGC	O5-C1-C2	3.14	115.81	110.30
2	B	301	BGC	O5-C5-C6	3.00	113.86	106.44
2	D	301	BGC	O3-C3-C2	2.94	117.30	110.38
2	C	301	BGC	O5-C5-C6	2.91	113.65	106.44
2	E	301	BGC	O5-C5-C6	2.90	113.62	106.44
2	H	301	BGC	C3-C4-C5	-2.76	105.22	110.23
2	G	301	BGC	O2-C2-C3	2.72	116.78	110.38
2	F	301	BGC	C1-O5-C5	-2.70	108.42	113.65
2	B	301	BGC	C4-C3-C2	-2.69	106.10	110.83
2	C	301	BGC	O2-C2-C3	2.66	116.65	110.38
2	B	301	BGC	C1-O5-C5	2.66	118.79	113.65
2	A	301	BGC	O5-C1-C2	2.64	114.94	110.30
2	F	301	BGC	O4-C4-C5	2.62	115.77	109.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	301	BGC	O4-C4-C5	2.50	115.47	109.32
2	C	301	BGC	O3-C3-C2	2.46	116.18	110.38
2	H	301	BGC	O5-C5-C4	2.43	114.08	109.70
2	E	301	BGC	O3-C3-C4	2.42	116.07	110.38
2	D	301	BGC	C3-C4-C5	-2.38	105.92	110.23
2	G	301	BGC	C3-C4-C5	-2.34	105.99	110.23
2	H	301	BGC	O3-C3-C2	2.33	115.88	110.38
2	D	301	BGC	O2-C2-C3	2.30	115.79	110.38
2	B	301	BGC	O4-C4-C5	2.24	114.84	109.32
2	E	301	BGC	O4-C4-C3	2.23	115.64	110.38
2	G	301	BGC	O3-C3-C2	2.16	115.48	110.38
2	G	301	BGC	O4-C4-C5	2.15	114.62	109.32
2	C	301	BGC	C1-O5-C5	2.08	117.67	113.65
2	A	301	BGC	C3-C4-C5	-2.05	106.52	110.23
2	C	301	BGC	C3-C4-C5	-2.03	106.55	110.23

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	BGC	O5-C5-C6-O6
2	H	301	BGC	O5-C5-C6-O6
2	A	301	BGC	C4-C5-C6-O6
2	E	301	BGC	C4-C5-C6-O6
2	H	301	BGC	C4-C5-C6-O6
2	G	301	BGC	C4-C5-C6-O6
2	G	301	BGC	O5-C5-C6-O6
2	E	301	BGC	O5-C5-C6-O6
2	F	301	BGC	O5-C5-C6-O6
2	B	301	BGC	O5-C5-C6-O6
2	D	301	BGC	C4-C5-C6-O6

There are no ring outliers.

8 monomers are involved in 17 short contacts:

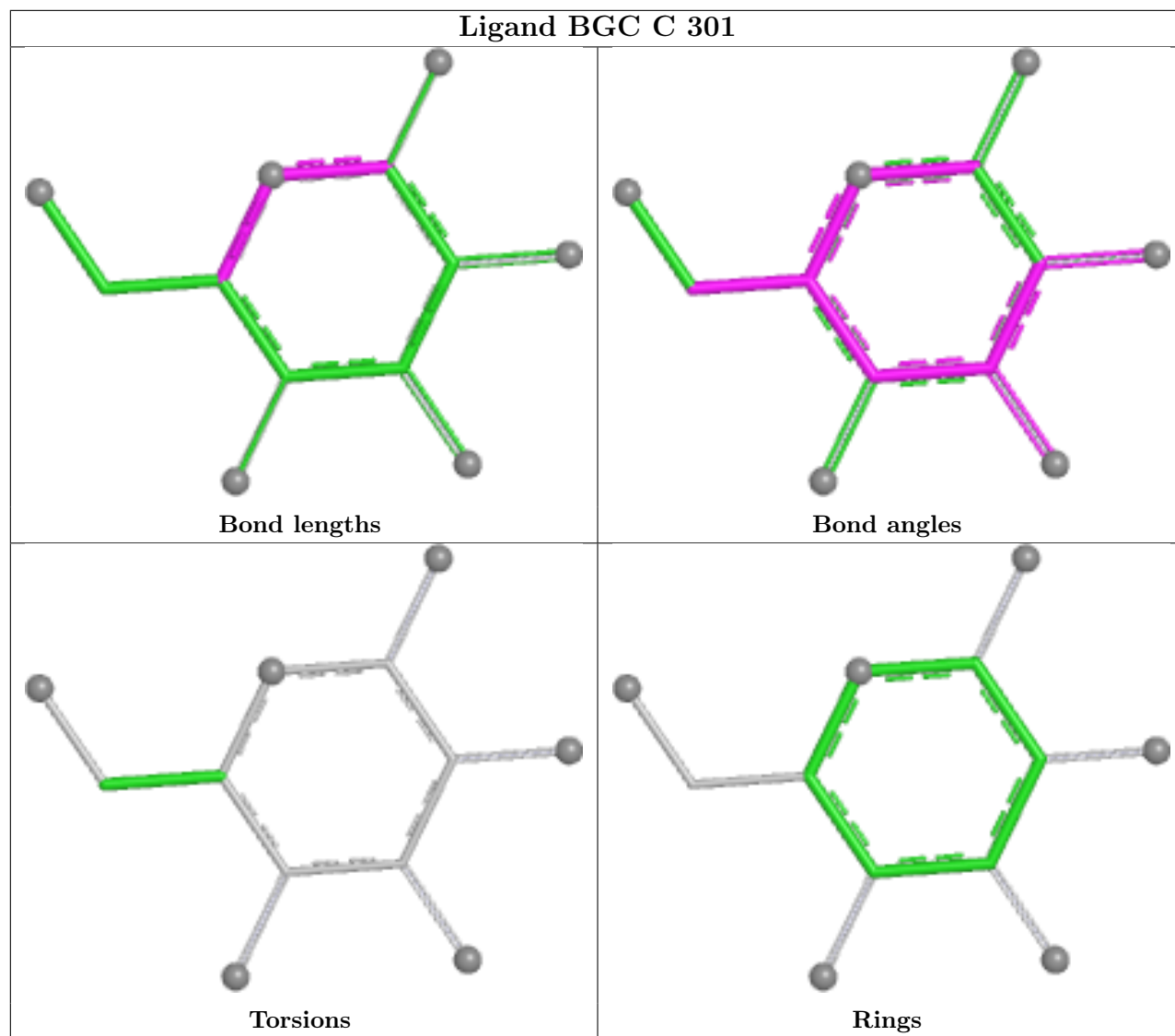
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	301	BGC	3	0
2	A	301	BGC	2	0
2	D	301	BGC	1	0
2	E	301	BGC	1	0
2	B	301	BGC	3	0

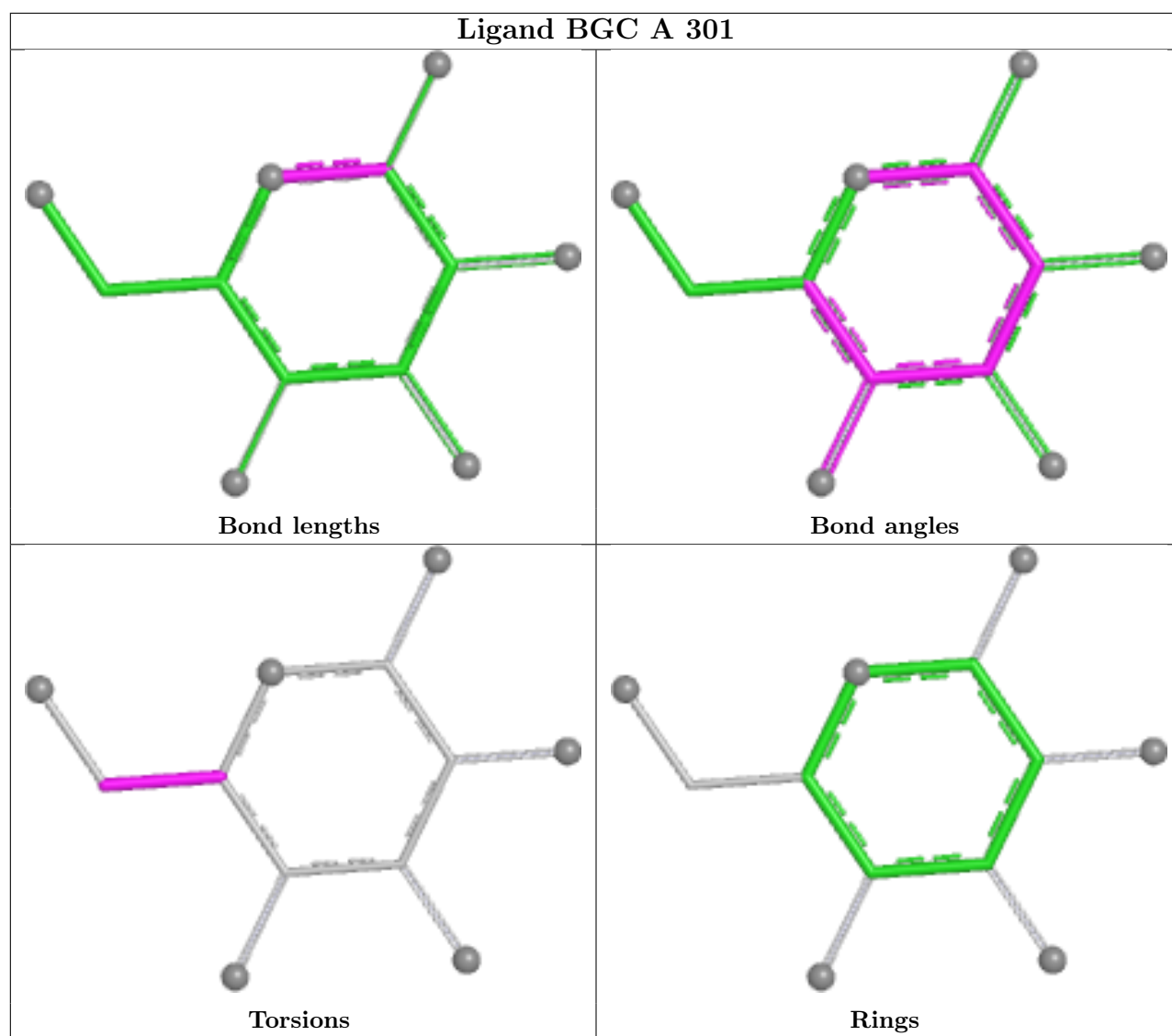
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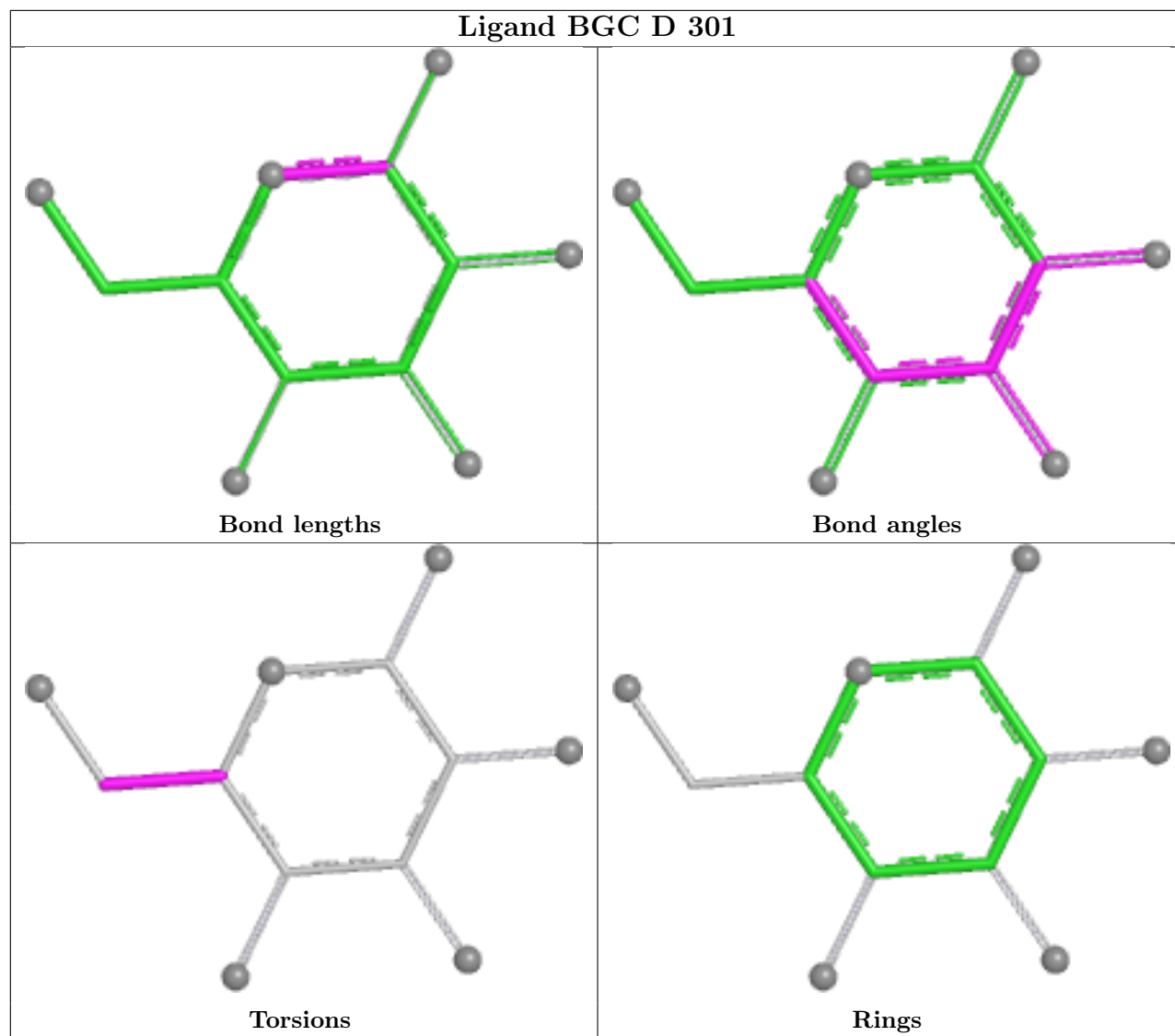
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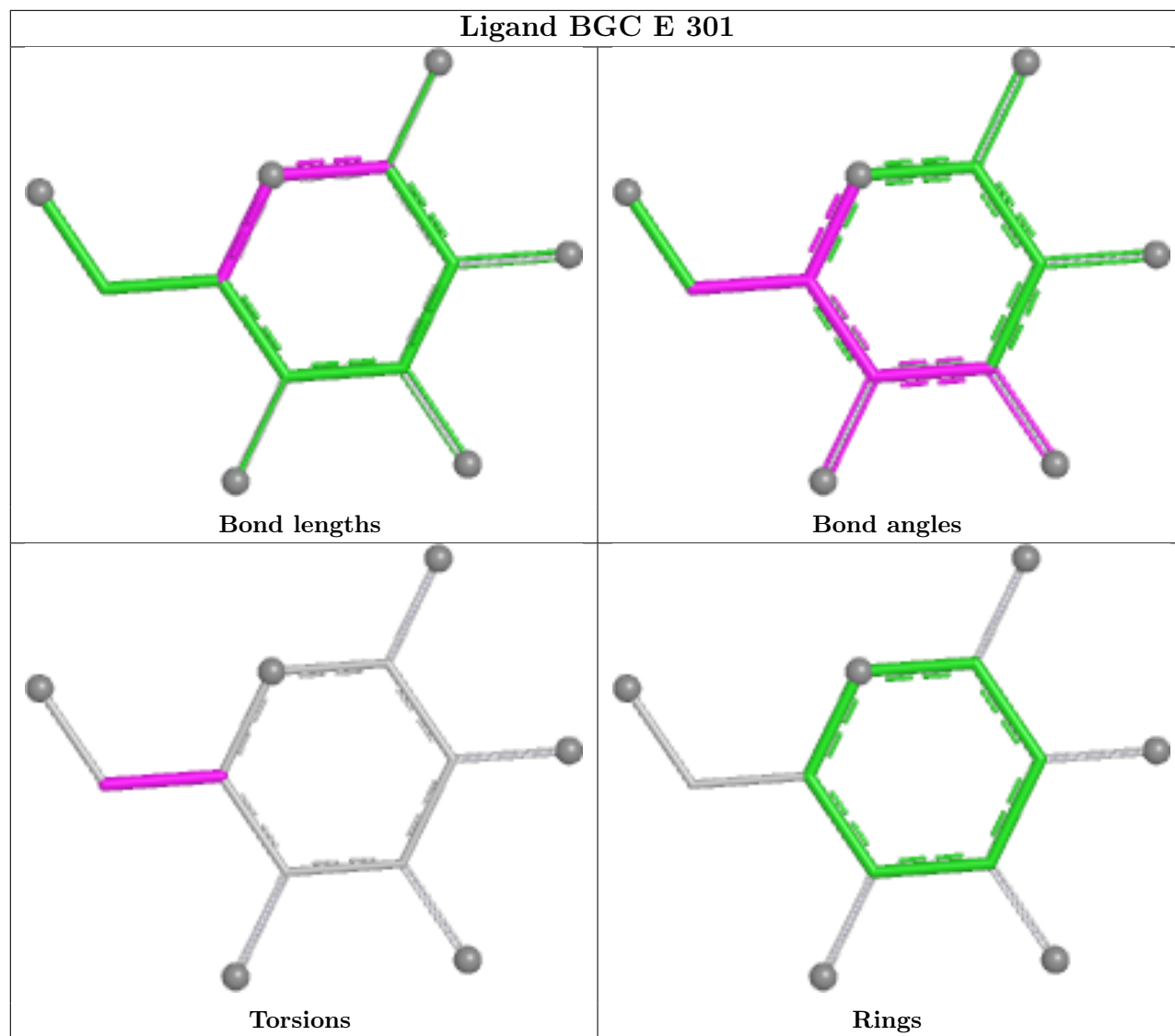
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	301	BGC	2	0
2	F	301	BGC	2	0
2	H	301	BGC	3	0

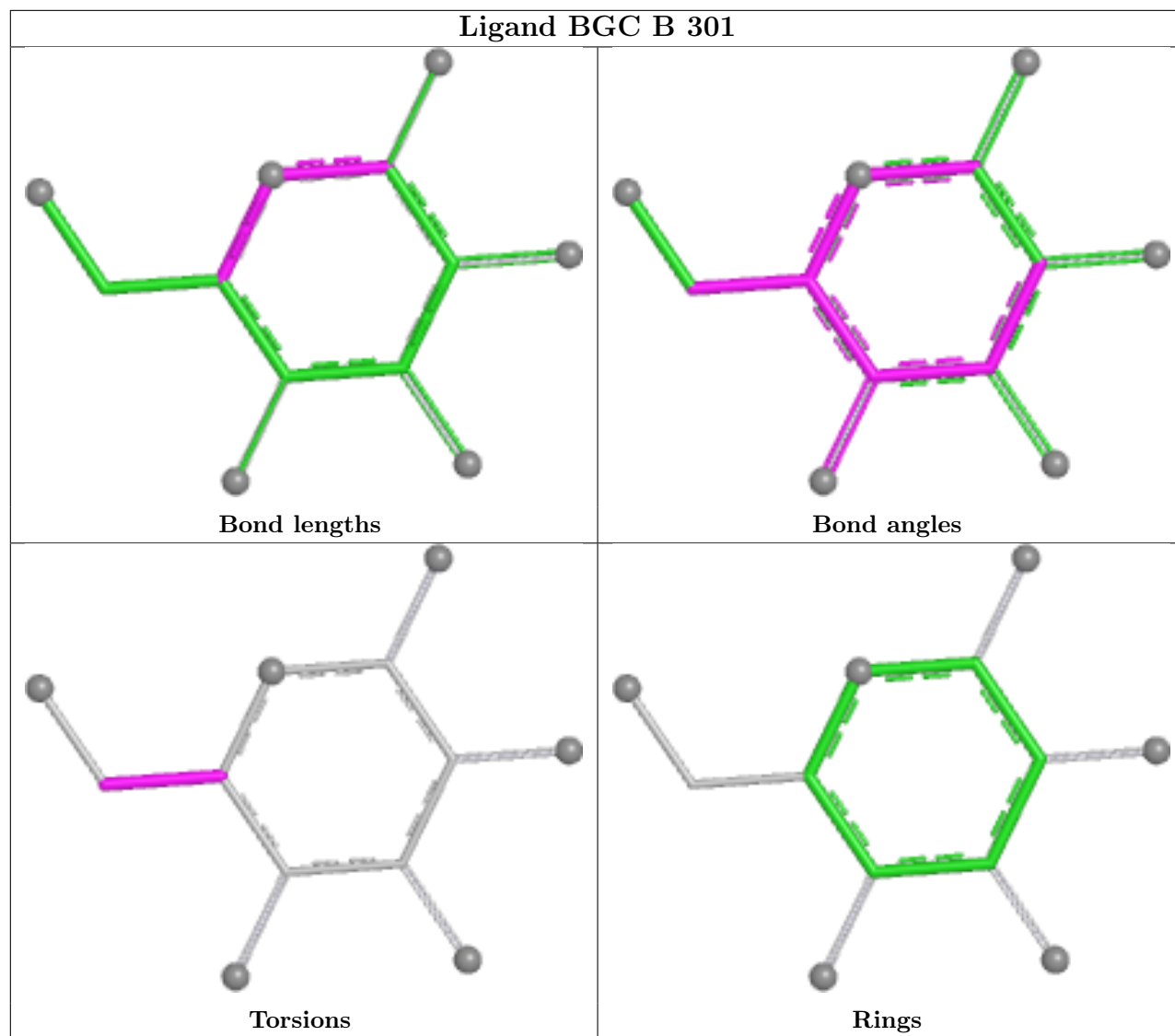
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.

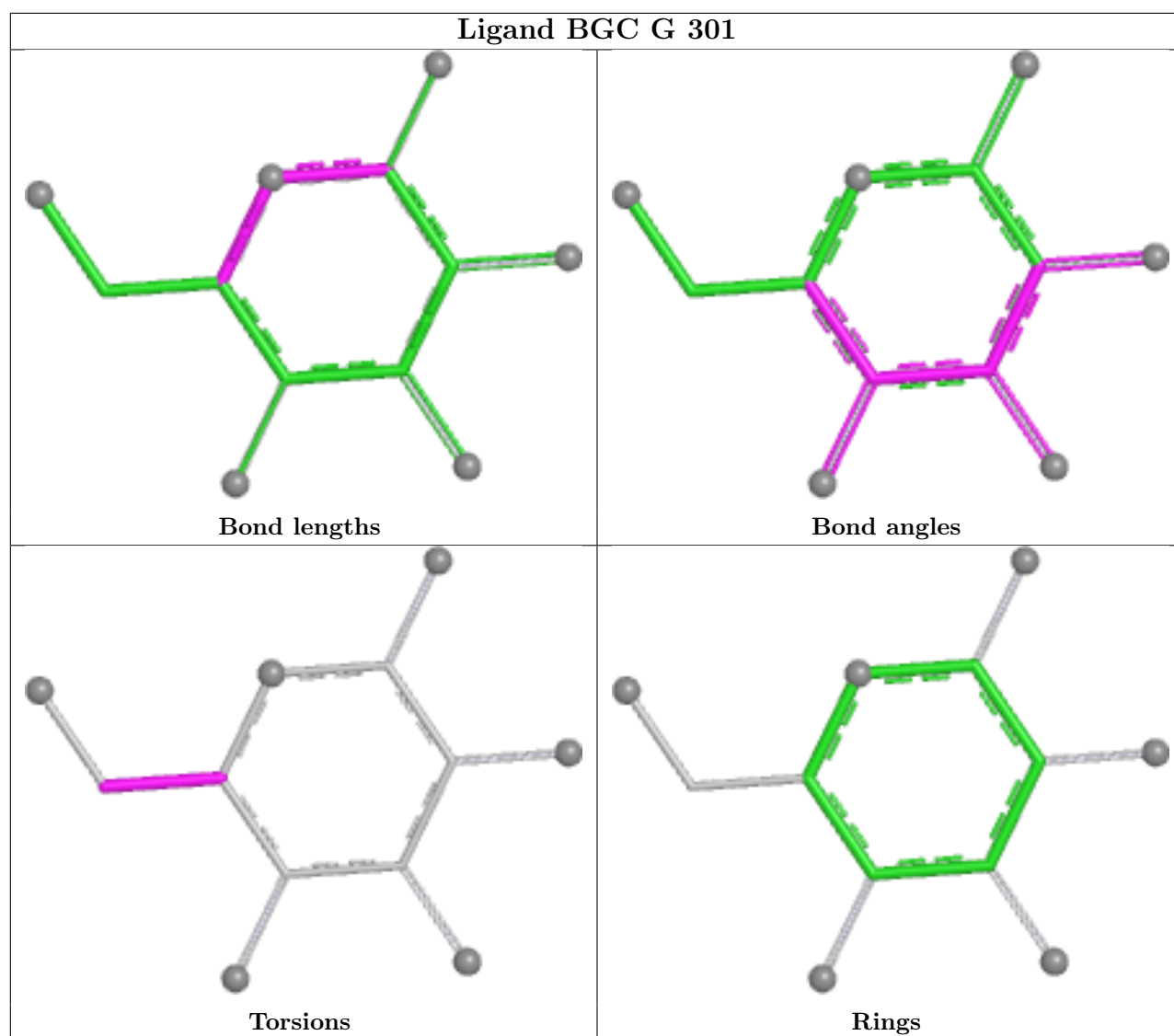


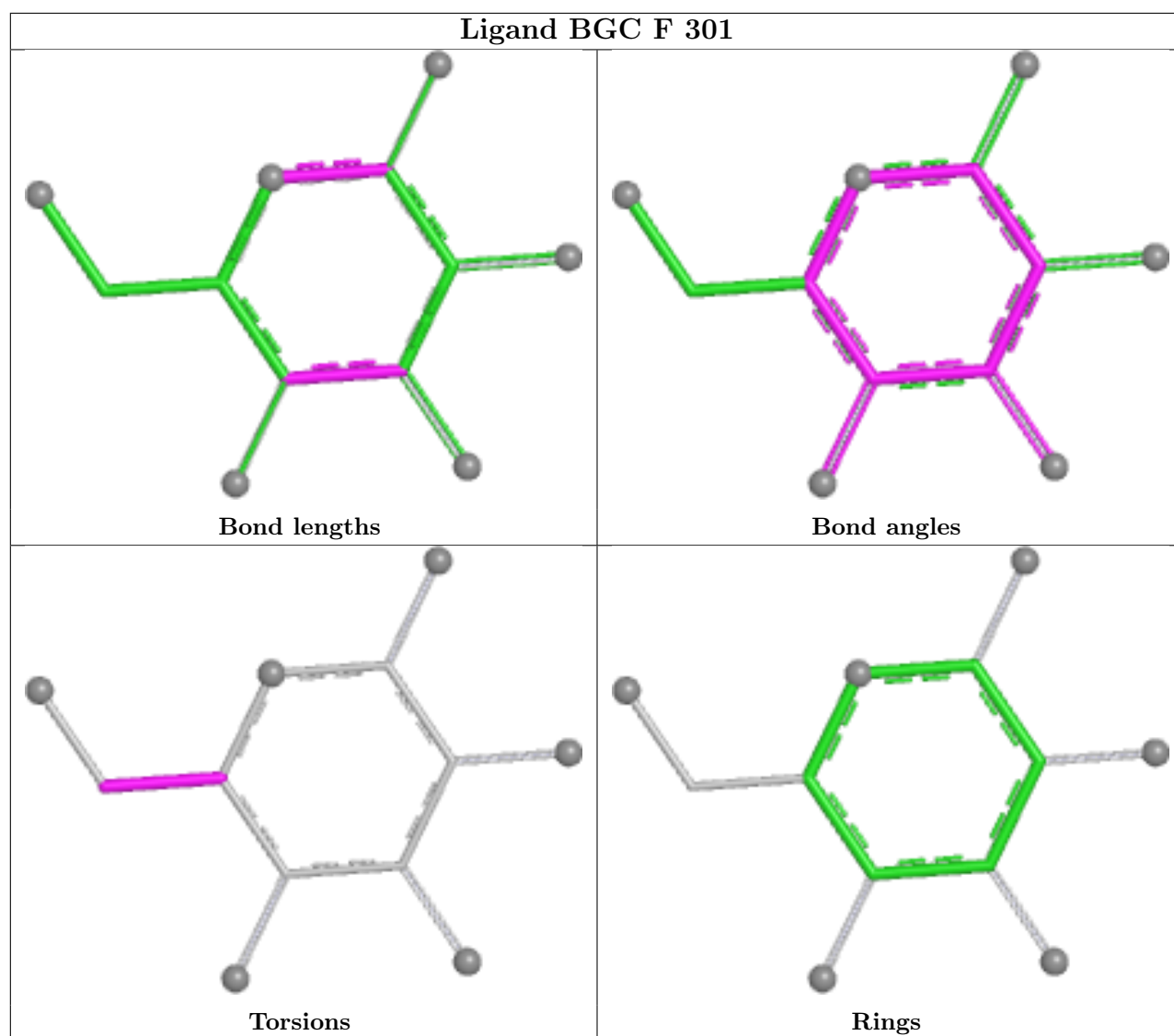


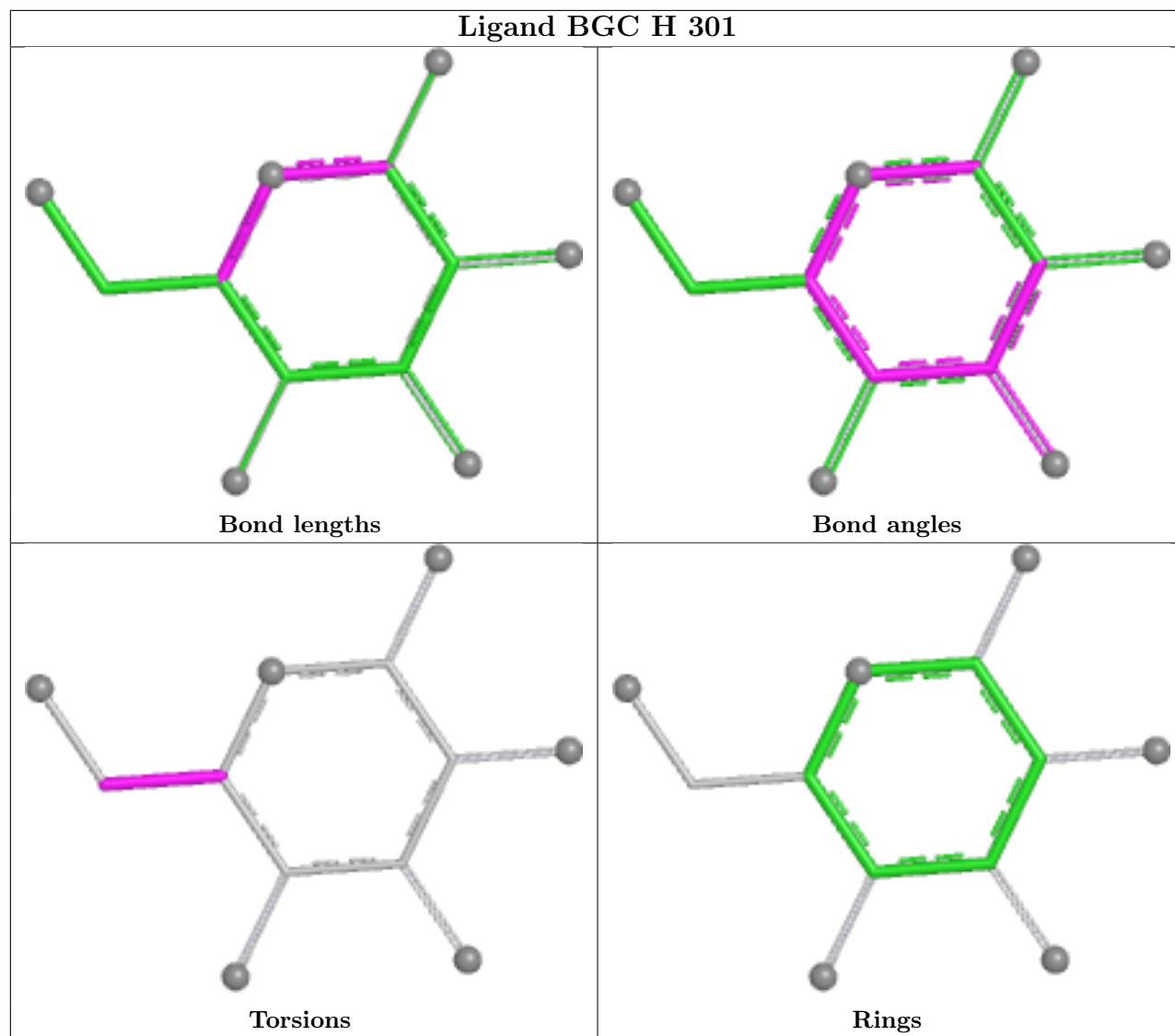












5.7 Other polymers [i](#)

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](#)

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	278/278 (100%)	-1.38	0 100 100	25, 42, 74, 132	0
1	B	278/278 (100%)	-1.32	0 100 100	27, 42, 77, 124	0
1	C	278/278 (100%)	-1.28	0 100 100	26, 42, 76, 126	0
1	D	278/278 (100%)	-1.30	0 100 100	27, 45, 74, 140	0
1	E	278/278 (100%)	-1.36	0 100 100	24, 40, 79, 133	0
1	F	278/278 (100%)	-1.34	0 100 100	24, 43, 79, 127	0
1	G	278/278 (100%)	-1.30	0 100 100	26, 45, 75, 138	0
1	H	278/278 (100%)	-1.39	0 100 100	25, 40, 75, 133	0
All	All	2224/2224 (100%)	-1.33	0 100 100	24, 42, 77, 140	0

There are no RSRZ outliers to report.

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](#)

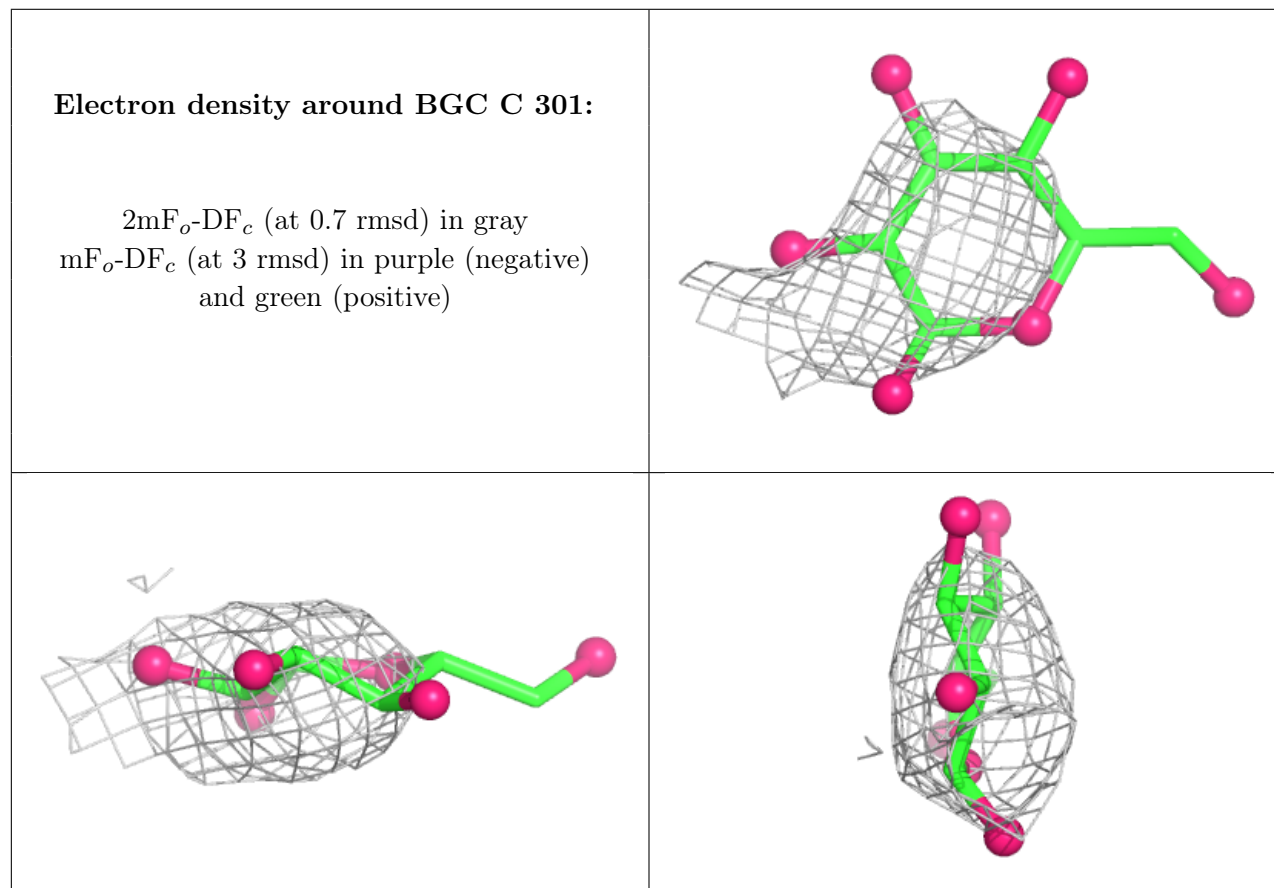
There are no oligosaccharides in this entry.

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.

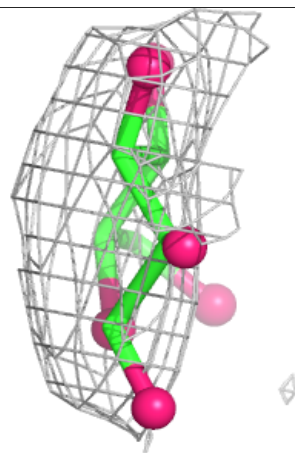
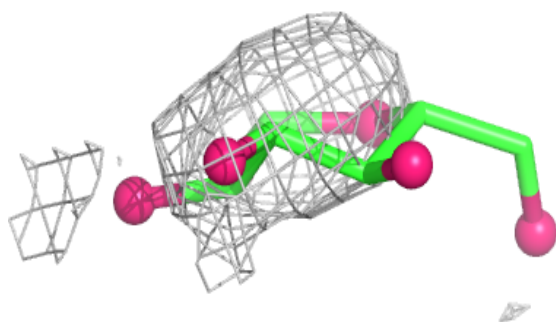
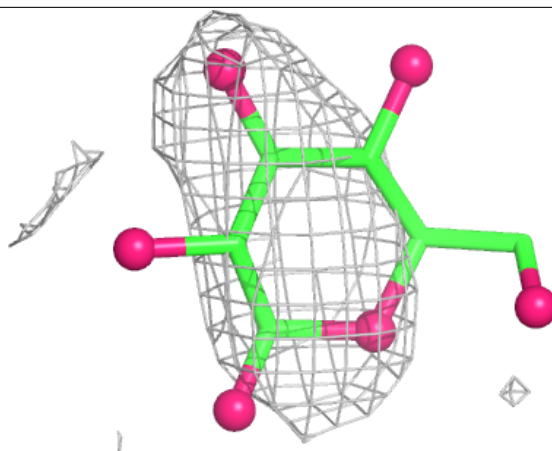
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	BGC	C	301	12/12	0.98	0.08	63,78,88,88	0
2	BGC	G	301	12/12	0.98	0.06	63,85,94,96	0
2	BGC	H	301	12/12	0.98	0.05	60,70,87,90	0
2	BGC	D	301	12/12	0.99	0.07	66,82,90,92	0
2	BGC	E	301	12/12	0.99	0.04	57,77,90,90	0
2	BGC	F	301	12/12	0.99	0.05	53,68,85,86	0
2	BGC	B	301	12/12	0.99	0.05	59,74,88,92	0
2	BGC	A	301	12/12	0.99	0.05	53,74,93,93	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.

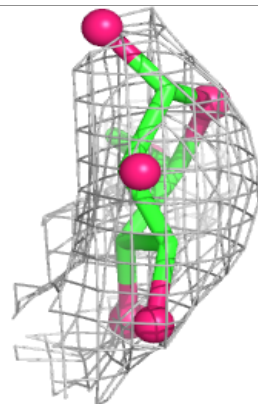
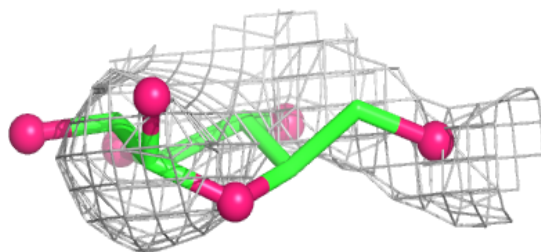
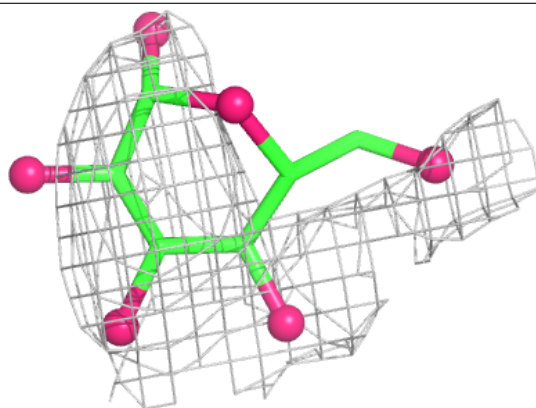


Electron density around BGC G 301:

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

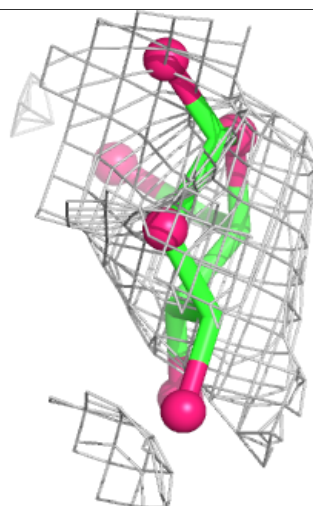
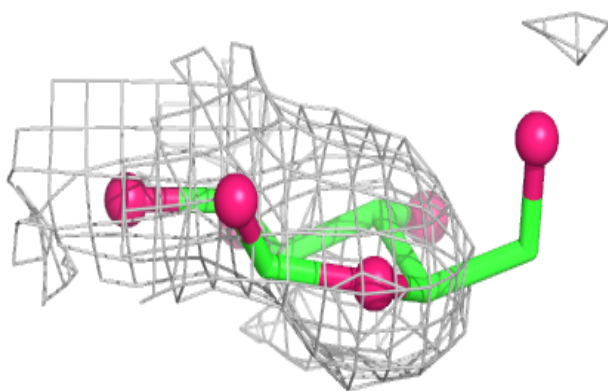
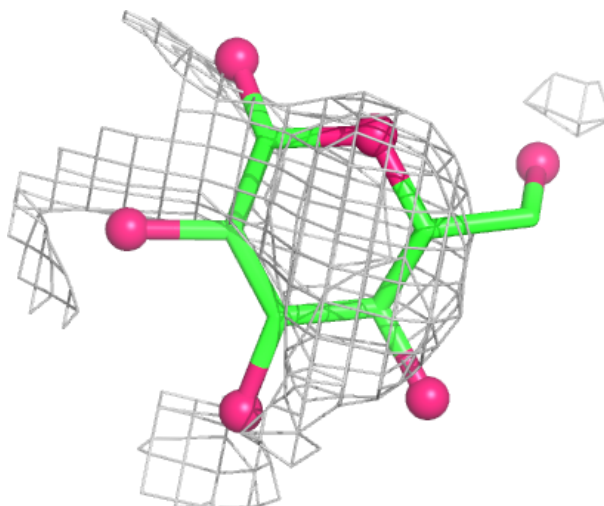
**Electron density around BGC H 301:**

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



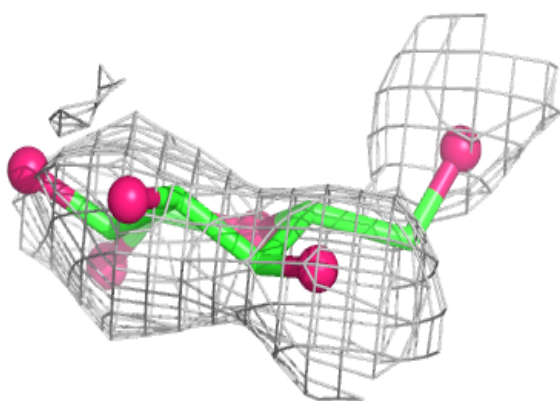
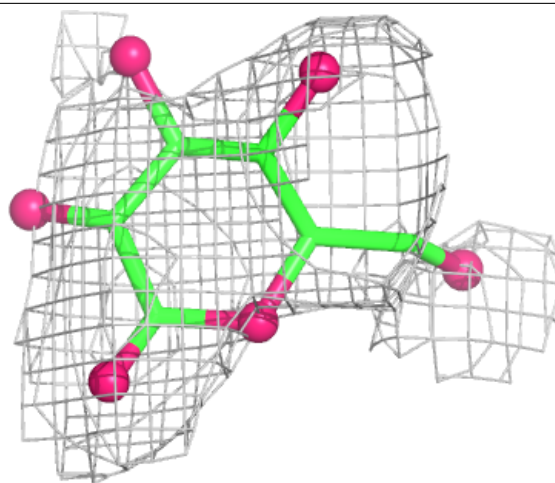
Electron density around BGC D 301:

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



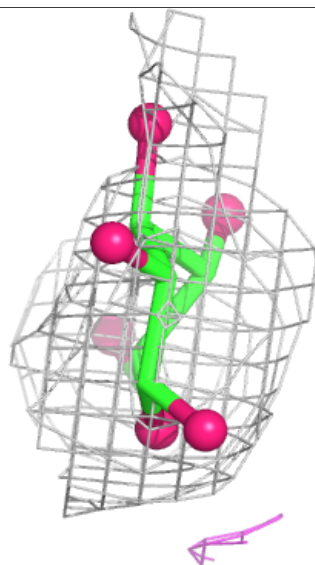
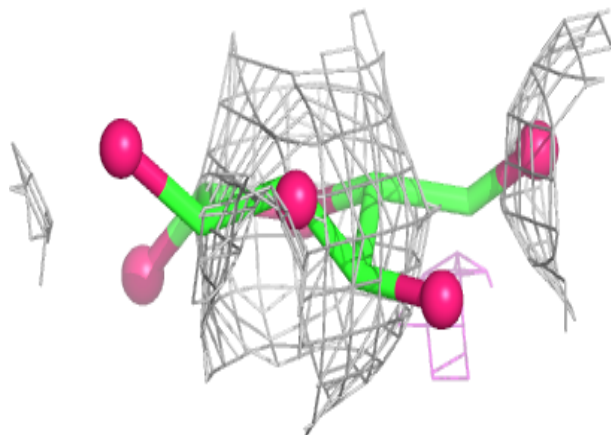
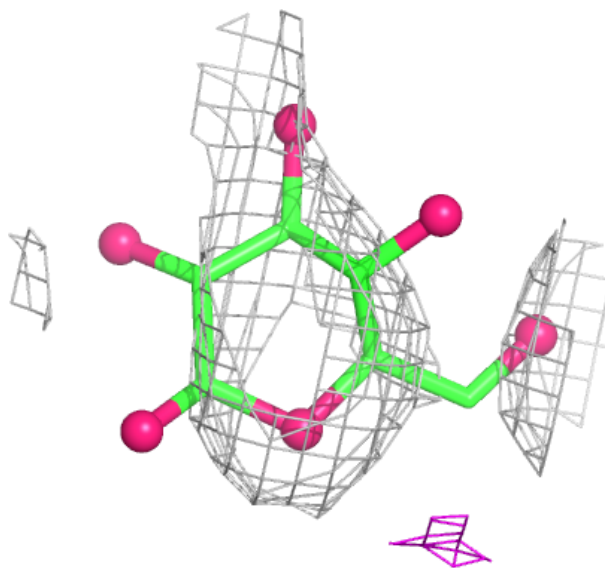
Electron density around BGC E 301:

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



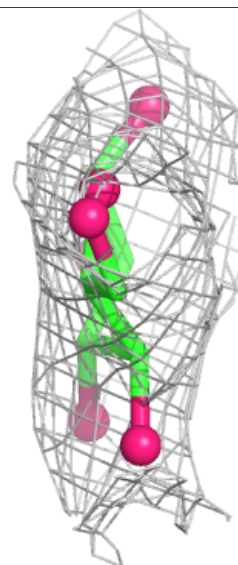
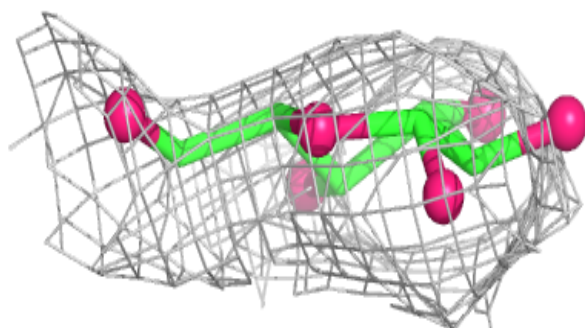
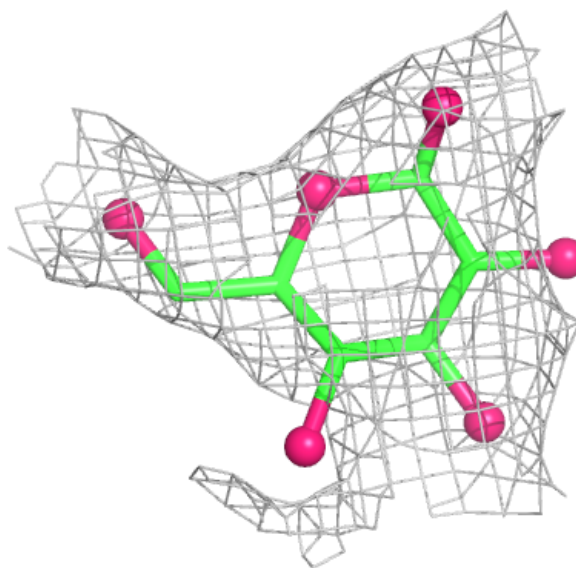
Electron density around BGC F 301:

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



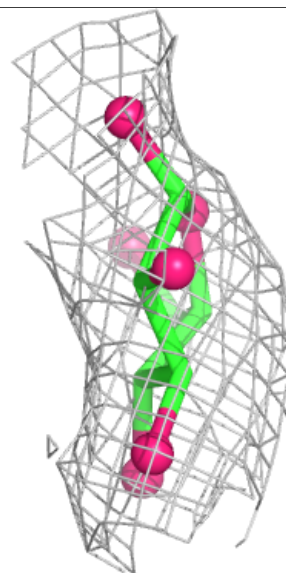
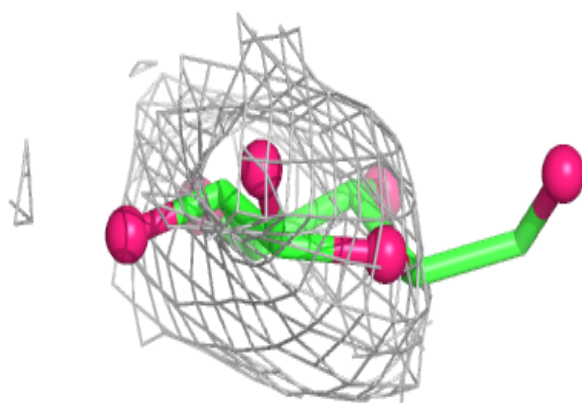
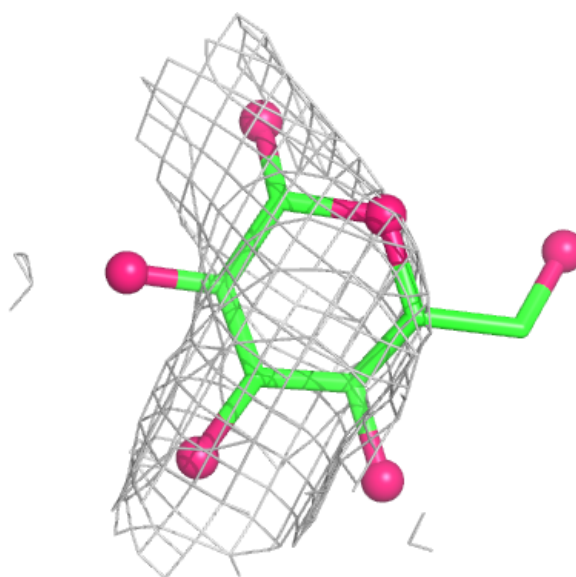
Electron density around BGC B 301:

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



Electron density around BGC A 301:

$2mF_o-DF_c$ (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.