



## Full wwPDB EM Validation Report ⓘ

Nov 21, 2022 – 05:39 PM JST

PDB ID : 7D72  
EMDB ID : EMD-30599  
Title : Cryo-EM structures of human GMPPA/GMPPB complex bound to GDP-Mannose  
Authors : Zheng, L.; Liu, Z.; Wang, Y.; Yang, F.; Wang, J.; Qing, J.; Cai, X.; Mo, X.; Gao, N.; Jia, D.  
Deposited on : 2020-10-02  
Resolution : 3.40 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

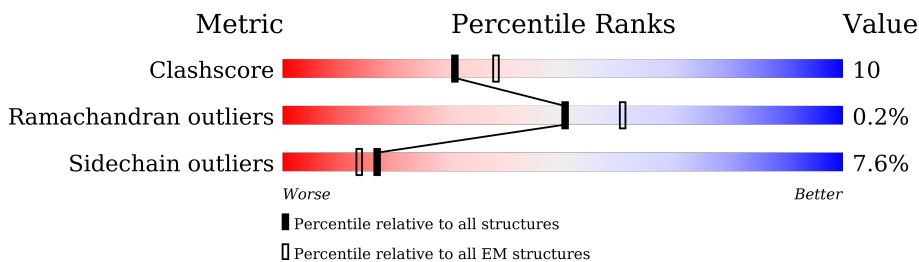
EMDB validation analysis : 0.0.1.dev43  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.3

# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:  
*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.40 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)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	E	360	
1	F	360	
1	G	360	
1	H	360	
1	I	360	
1	J	360	
1	K	360	
1	L	360	

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Mol	Chain	Length	Quality of chain
2	A	420	 <p>77% 18% . .</p>
2	B	420	 <p>80% 14% . .</p>
2	C	420	 <p>81% 14% . .</p>
2	D	420	 <p>81% 15% . .</p>

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 35458 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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.

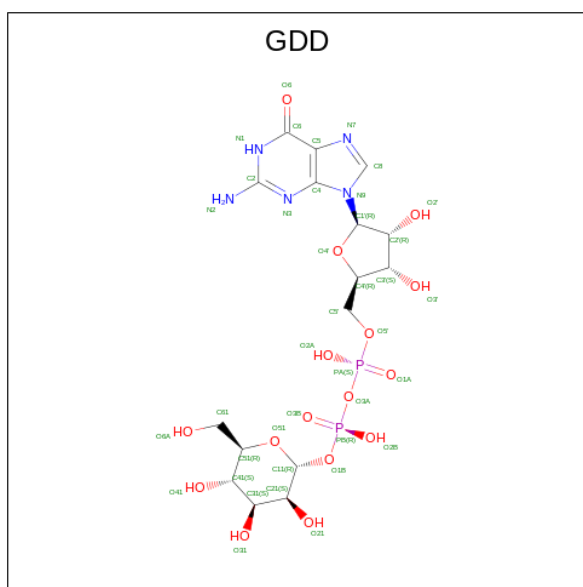
- Molecule 1 is a protein called Mannose-1-phosphate guanyltrtransferase beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	K	360	2787	1770	488	507	22	0	0
1	I	360	2789	1772	488	507	22	0	0
1	E	360	2789	1772	488	507	22	0	0
1	F	360	2789	1772	488	507	22	0	0
1	G	360	2789	1772	488	507	22	0	0
1	H	360	2789	1772	488	507	22	0	0
1	J	360	2789	1772	488	507	22	0	0
1	L	360	2787	1770	488	507	22	0	0

- Molecule 2 is a protein called Mannose-1-phosphate guanyltrtransferase alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A	407	3172	2031	561	569	11	0	0
2	B	406	3167	2028	560	568	11	0	0
2	C	406	3167	2028	560	568	11	0	0
2	D	406	3167	2028	560	568	11	0	0

- Molecule 3 is GUANOSINE-5'-DIPHOSPHATE-ALPHA-D-MANNOSE (three-letter code: GDD) (formula:  $C_{16}H_{25}N_5O_{16}P_2$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf	
			Total	C	N	O		P
3	K	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	I	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	A	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	B	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	C	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	D	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	E	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	F	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	G	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	H	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	J	1	Total	C	N	O	P	0
			39	16	5	16	2	
3	L	1	Total	C	N	O	P	0
			39	16	5	16	2	

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	AltConf
4	E	1	Total Mg 1 1	0
4	F	1	Total Mg 1 1	0
4	G	1	Total Mg 1 1	0

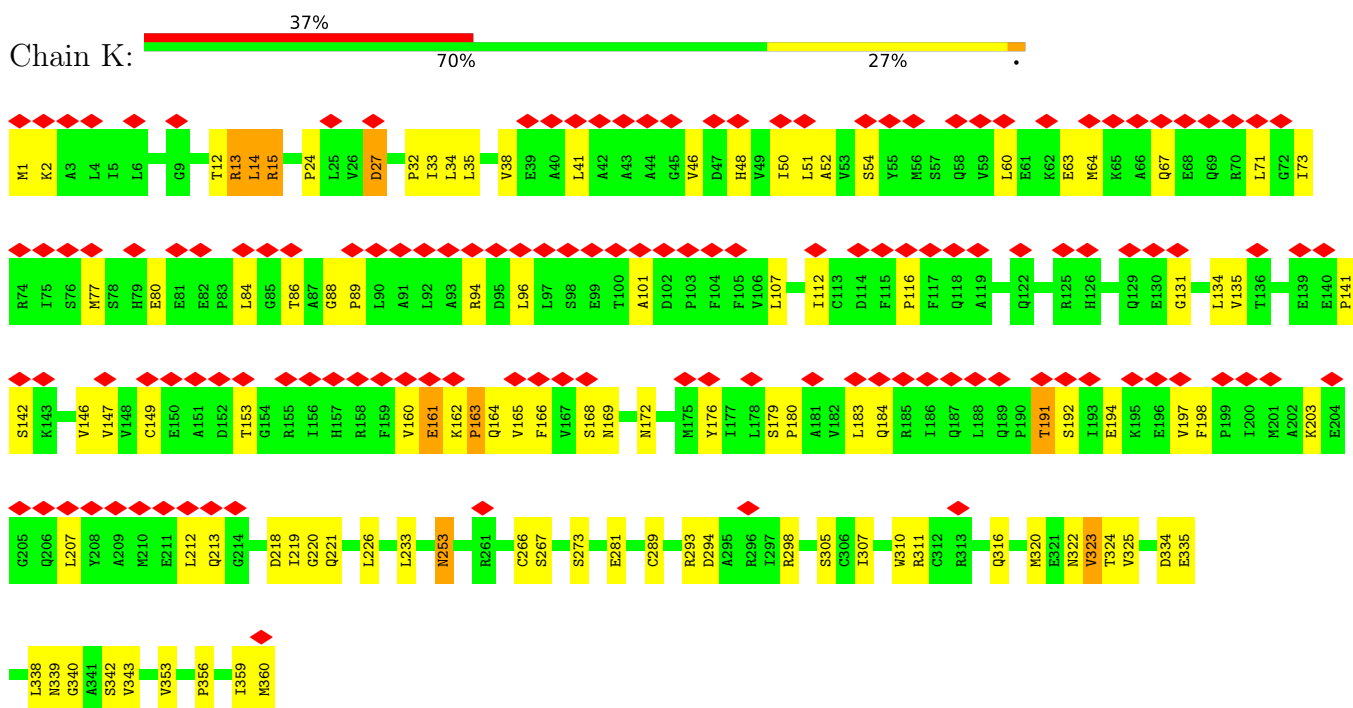
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	AltConf
5	E	2	Total O 2 2	0
5	F	2	Total O 2 2	0
5	G	2	Total O 2 2	0

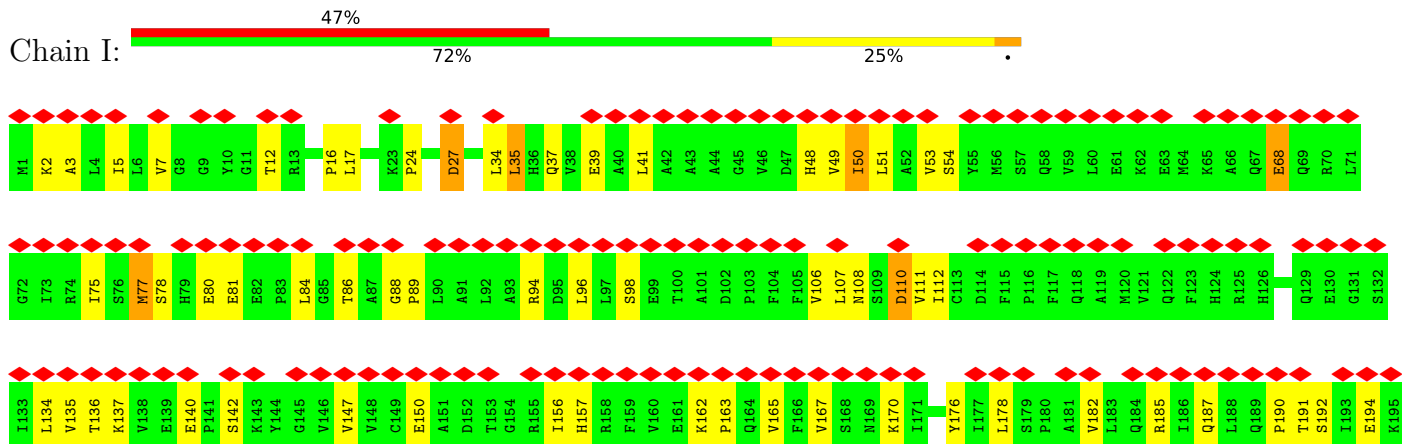
### 3 Residue-property plots [i](#)

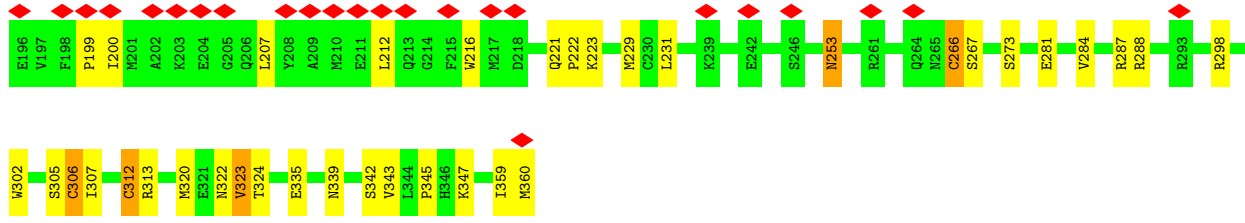
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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: Mannose-1-phosphate guanyltransferase beta

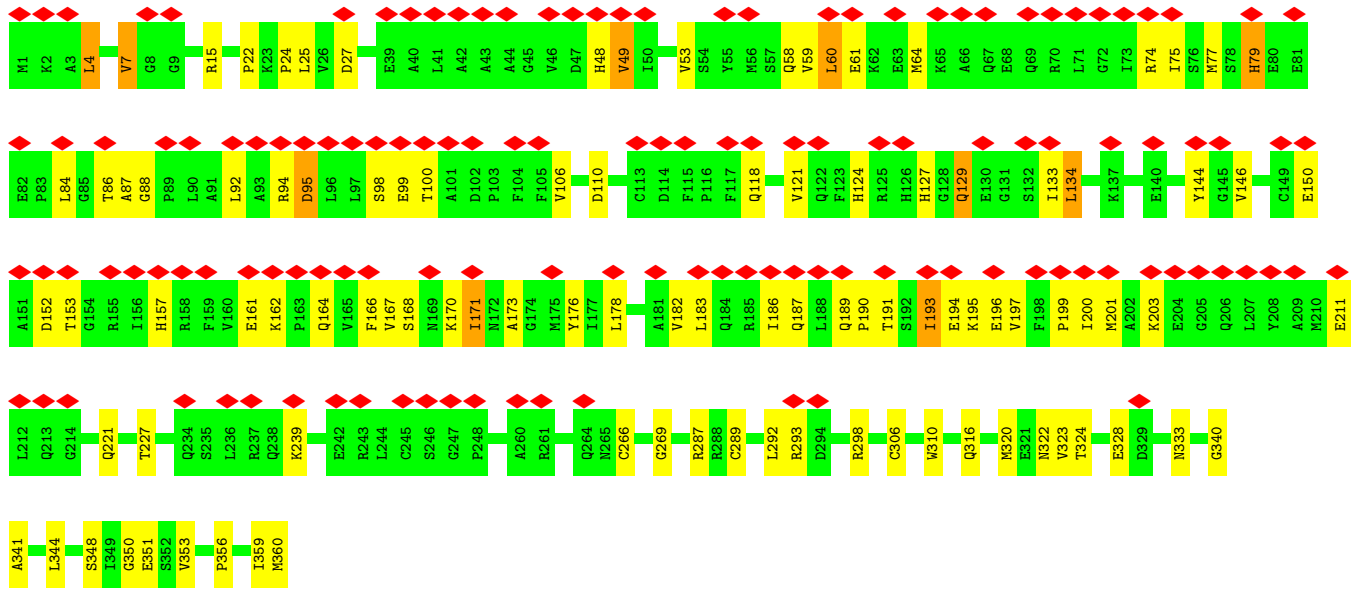


- Molecule 1: Mannose-1-phosphate guanyltransferase beta

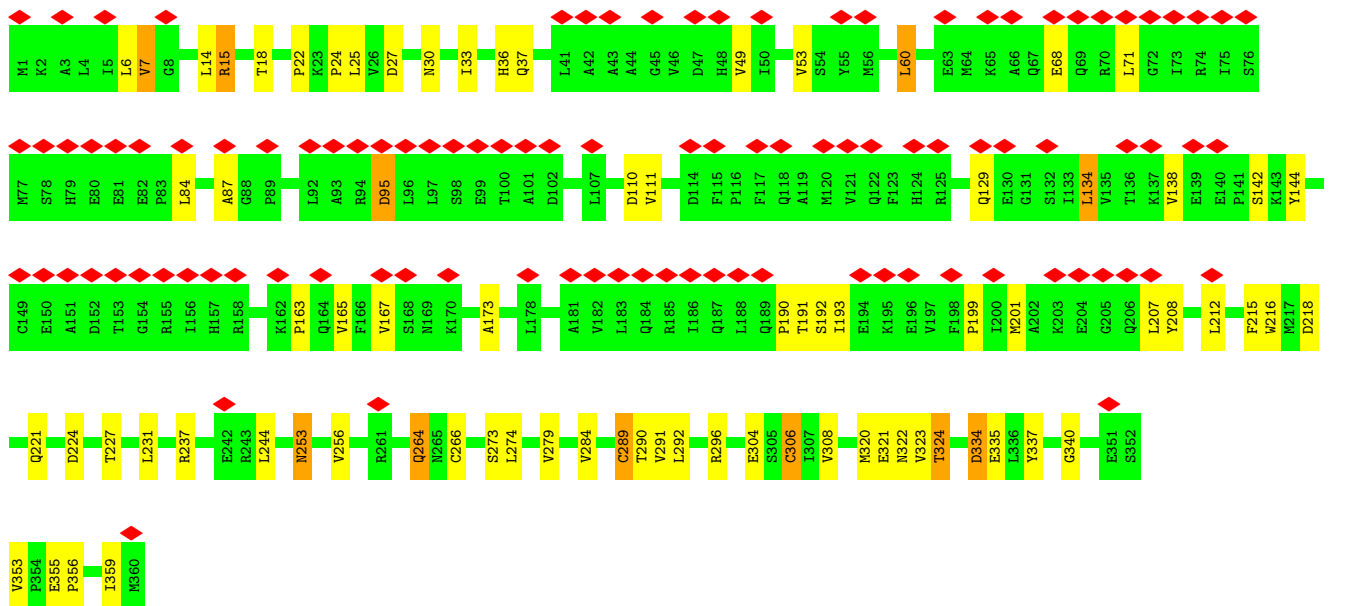
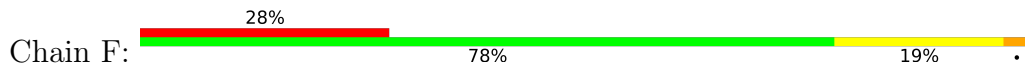




• Molecule 1: Mannose-1-phosphate guanylttransferase beta

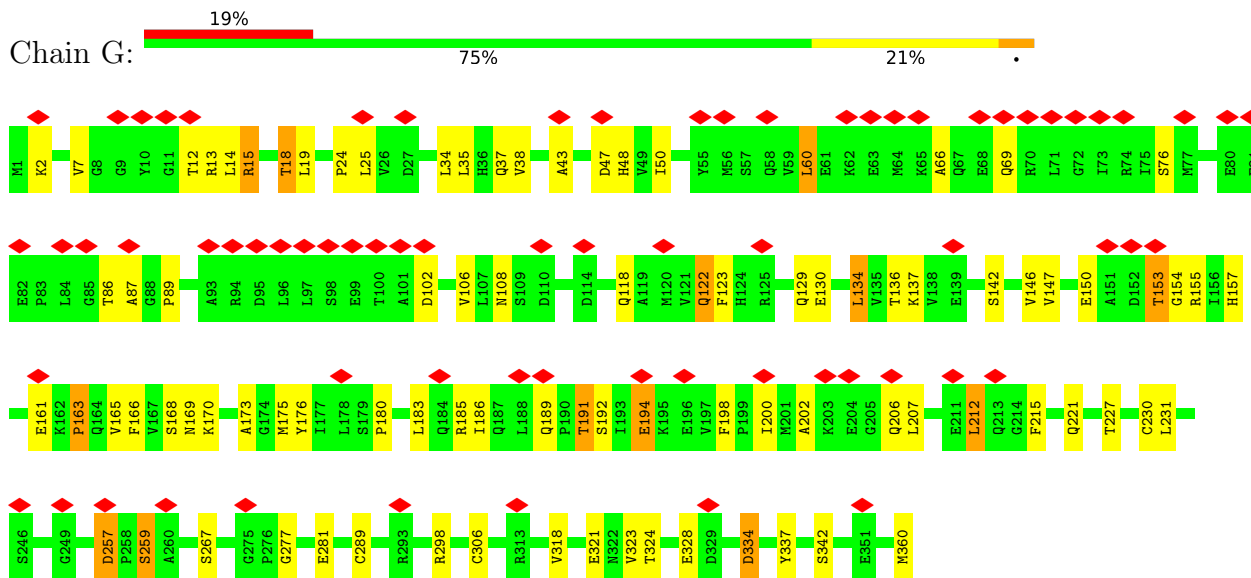


• Molecule 1: Mannose-1-phosphate guanylttransferase beta

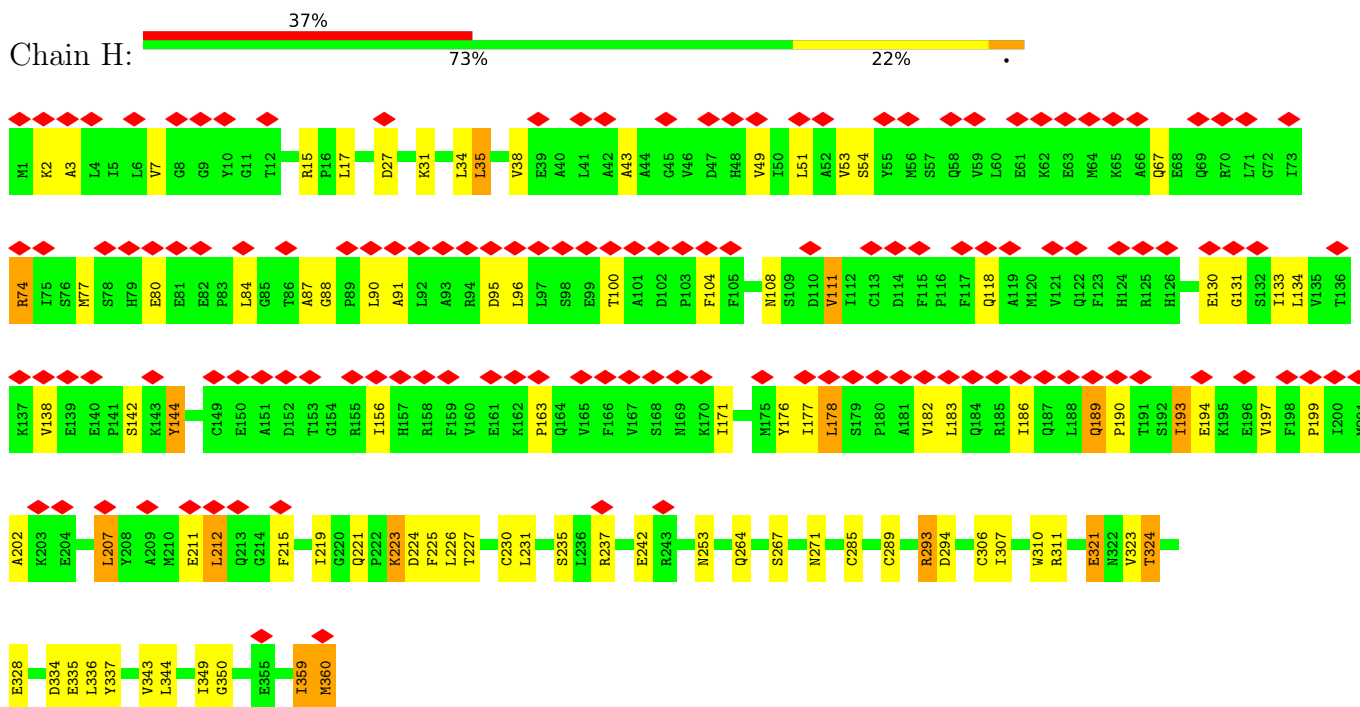




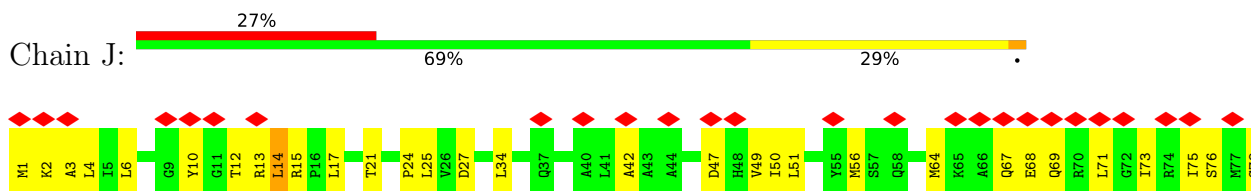
• Molecule 1: Mannose-1-phosphate guanyltransferase beta

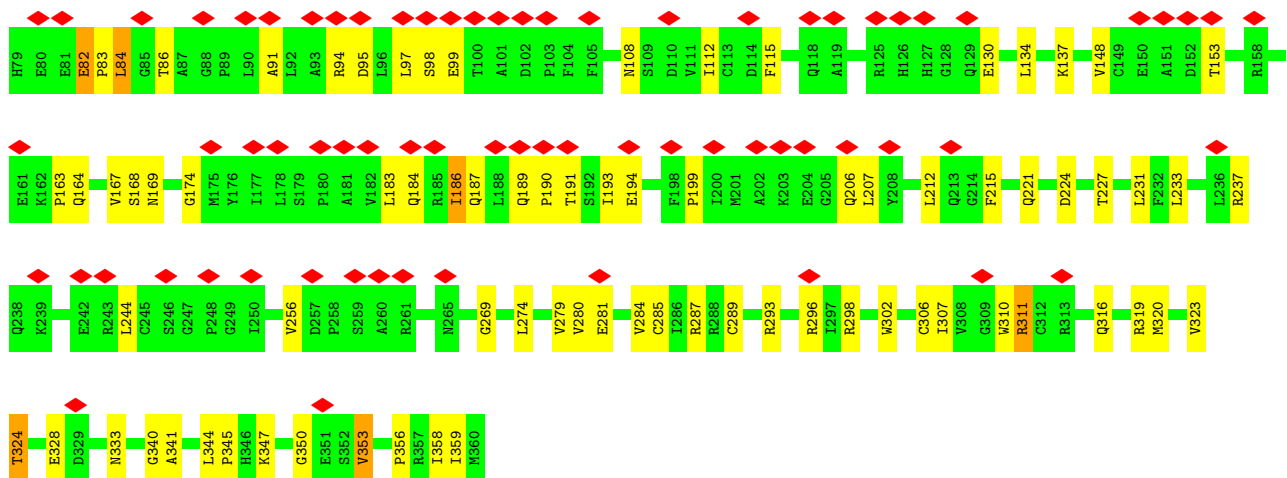


• Molecule 1: Mannose-1-phosphate guanyltransferase beta

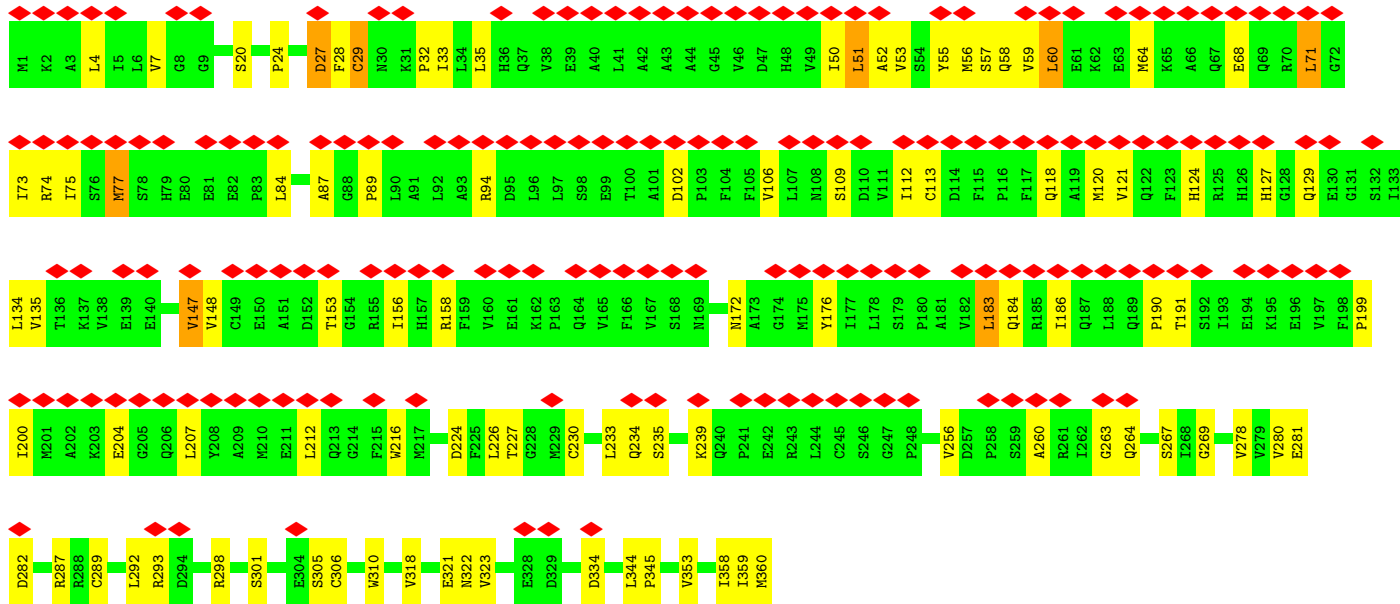


• Molecule 1: Mannose-1-phosphate guanyltransferase beta

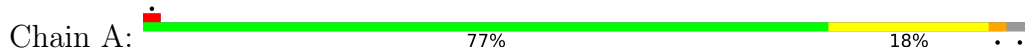




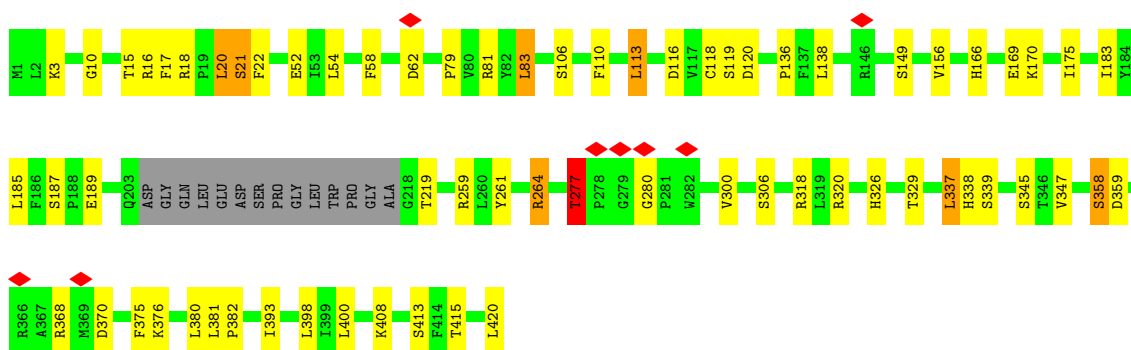
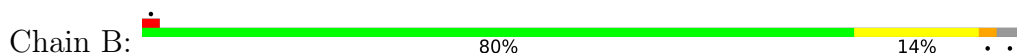
• Molecule 1: Mannose-1-phosphate guanyltransferase beta



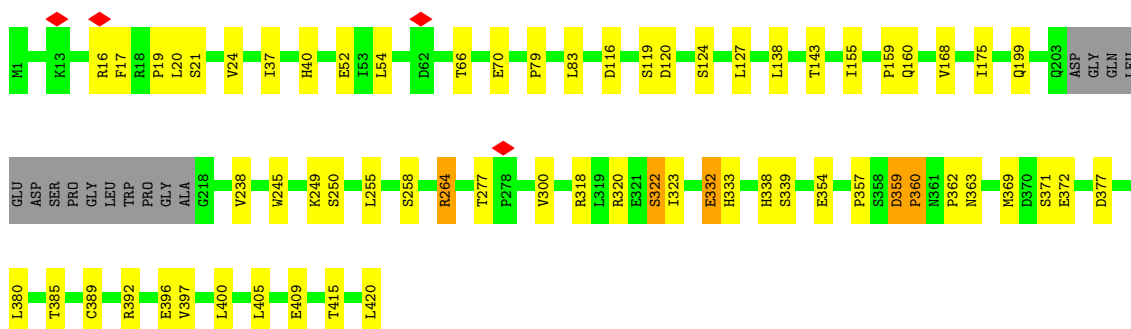
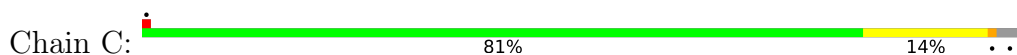
• Molecule 2: Mannose-1-phosphate guanyltransferase alpha



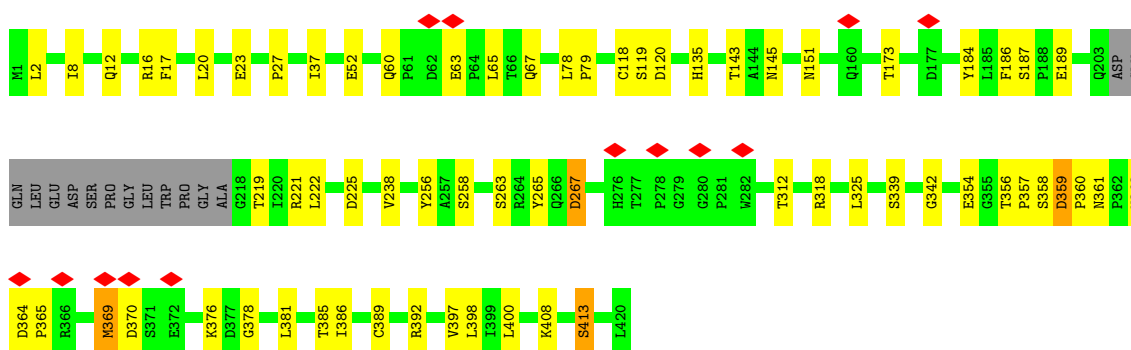
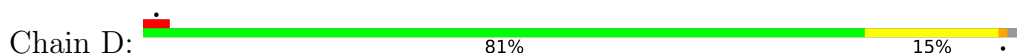
• Molecule 2: Mannose-1-phosphate guanyltransferase alpha



• Molecule 2: Mannose-1-phosphate guanyltransferase alpha



• Molecule 2: Mannose-1-phosphate guanyltransferase alpha



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	57299	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	64	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.136	Depositor
Minimum map value	-0.077	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	253.68001, 253.68001, 253.68001	wwPDB
Map dimensions	240, 240, 240	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.057, 1.057, 1.057	Depositor

## 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: GDD, MG

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	E	0.37	0/2844	0.62	0/3854
1	F	0.40	0/2844	0.60	0/3854
1	G	0.37	0/2844	0.60	0/3854
1	H	0.41	0/2844	0.61	0/3854
1	I	0.41	0/2844	0.67	0/3854
1	J	0.37	0/2844	0.62	0/3854
1	K	0.41	0/2842	0.66	0/3851
1	L	0.37	0/2842	0.63	0/3851
2	A	0.51	0/3253	0.57	0/4427
2	B	0.48	0/3248	0.56	0/4420
2	C	0.49	0/3248	0.57	0/4420
2	D	0.46	0/3248	0.57	0/4420
All	All	0.43	0/35745	0.61	0/48513

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [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	E	2789	0	2838	61	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2789	0	2840	47	0
1	G	2789	0	2838	77	0
1	H	2789	0	2840	97	0
1	I	2789	0	2840	61	0
1	J	2789	0	2838	59	0
1	K	2787	0	2833	70	0
1	L	2787	0	2831	83	0
2	A	3172	0	3189	63	0
2	B	3167	0	3184	37	0
2	C	3167	0	3184	39	0
2	D	3167	0	3184	39	0
3	A	39	0	23	1	0
3	B	39	0	23	1	0
3	C	39	0	23	0	0
3	D	39	0	23	0	0
3	E	39	0	23	2	0
3	F	39	0	23	2	0
3	G	39	0	23	4	0
3	H	39	0	23	5	0
3	I	39	0	23	4	0
3	J	39	0	23	1	0
3	K	39	0	23	6	0
3	L	39	0	23	2	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
4	G	1	0	0	0	0
5	E	2	0	0	0	0
5	F	2	0	0	2	0
5	G	2	0	0	1	0
All	All	35458	0	35715	700	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 10.

All (700) 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)
2:A:359:ASP:HB3	2:A:360:PRO:CD	1.49	1.40
1:H:344:LEU:CB	1:H:360:MET:O	1.69	1.38
1:G:15:ARG:HB3	1:H:360:MET:CE	1.57	1.34
1:J:21:THR:CG2	1:J:25:LEU:HD23	1.68	1.24

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:134:LEU:HD21	1:G:212:LEU:CD1	1.69	1.23
2:C:359:ASP:HB3	2:C:360:PRO:CD	1.66	1.21
2:D:20:LEU:HD21	2:D:386:ILE:CG2	1.72	1.20
1:I:110:ASP:OD2	3:I:401:GDD:O3'	1.64	1.16
1:K:142:SER:HA	1:K:163:PRO:HG2	1.20	1.13
1:L:51:LEU:HD21	1:L:77:MET:CB	1.79	1.12
2:D:23:GLU:OE2	2:D:389:CYS:SG	2.05	1.12
1:H:156:ILE:HD12	1:H:207:LEU:HD12	1.31	1.11
1:J:21:THR:HG22	1:J:25:LEU:HD23	1.19	1.09
2:A:359:ASP:HB3	2:A:360:PRO:HD2	1.33	1.09
2:D:20:LEU:HD21	2:D:386:ILE:HG23	1.24	1.09
2:D:20:LEU:CD2	2:D:386:ILE:CG2	2.31	1.09
1:H:344:LEU:HB2	1:H:360:MET:C	1.74	1.08
2:A:359:ASP:HB3	2:A:360:PRO:HD3	1.28	1.08
1:L:51:LEU:HD21	1:L:77:MET:HB3	1.10	1.07
1:G:15:ARG:CB	1:H:360:MET:HE2	1.84	1.07
1:H:202:ALA:HA	1:H:207:LEU:HD21	1.35	1.06
1:G:134:LEU:HD21	1:G:212:LEU:HD13	1.33	1.05
1:L:28:PHE:O	1:L:29:CYS:SG	2.13	1.05
1:K:15:ARG:NH2	1:L:345:PRO:O	1.90	1.05
2:A:359:ASP:CB	2:A:360:PRO:CD	2.36	1.04
1:H:177:ILE:C	1:H:178:LEU:HD23	1.80	1.01
1:H:221:GLN:NE2	1:H:223:LYS:HE2	1.76	1.01
1:H:344:LEU:HB2	1:H:360:MET:O	0.83	1.00
2:C:359:ASP:HB3	2:C:360:PRO:HD2	1.41	0.97
1:L:51:LEU:CD2	1:L:77:MET:CB	2.42	0.96
2:D:20:LEU:CD2	2:D:386:ILE:HG21	1.94	0.95
1:E:194:GLU:OE2	3:E:401:GDD:H21	1.67	0.95
1:L:51:LEU:CD2	1:L:77:MET:HB3	1.97	0.94
2:A:406:PRO:O	2:B:18:ARG:NH2	1.99	0.94
1:H:156:ILE:CD1	1:H:207:LEU:HD12	1.97	0.94
1:G:134:LEU:HD21	1:G:212:LEU:HD12	1.46	0.93
1:G:321:GLU:OE1	1:G:337:TYR:CE1	2.22	0.93
2:C:359:ASP:CB	2:C:360:PRO:CD	2.47	0.91
1:L:28:PHE:CD2	1:L:29:CYS:SG	2.63	0.91
1:G:142:SER:HA	1:G:163:PRO:HG3	1.52	0.91
1:G:15:ARG:CB	1:H:360:MET:CE	2.44	0.90
1:G:108:ASN:OD1	3:G:401:GDD:H4'	1.71	0.89
1:G:15:ARG:HB3	1:H:360:MET:HE2	0.89	0.89
2:C:359:ASP:HB3	2:C:360:PRO:HD3	1.55	0.89
2:B:17:PHE:O	2:B:21:SER:HB3	1.74	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:359:ASP:CB	2:A:360:PRO:HD3	1.96	0.88
1:L:28:PHE:C	1:L:29:CYS:SG	2.52	0.88
1:G:321:GLU:OE1	1:G:337:TYR:HE1	1.55	0.87
1:J:21:THR:CG2	1:J:25:LEU:CD2	2.54	0.85
1:K:305:SER:O	1:K:323:VAL:HA	1.76	0.85
1:G:142:SER:HA	1:G:163:PRO:CG	2.07	0.85
1:L:57:SER:HA	1:L:60:LEU:HD23	1.59	0.84
1:L:51:LEU:HD11	1:L:64:MET:CE	2.07	0.84
2:A:359:ASP:H	2:A:369:MET:HE1	1.43	0.83
1:F:60:LEU:HD12	1:F:60:LEU:O	1.79	0.83
1:G:15:ARG:CB	1:H:360:MET:HG3	2.09	0.83
1:L:51:LEU:HD23	1:L:51:LEU:O	1.77	0.83
1:H:344:LEU:CG	1:H:360:MET:O	2.27	0.82
1:L:51:LEU:HD11	1:L:64:MET:HE1	1.62	0.81
1:H:202:ALA:CA	1:H:207:LEU:HD21	2.10	0.81
1:I:110:ASP:OD2	3:I:401:GDD:C3'	2.30	0.79
1:G:134:LEU:HD11	1:G:212:LEU:HD12	1.64	0.79
2:C:359:ASP:CB	2:C:360:PRO:HD3	2.11	0.79
1:H:80:GLU:OE2	3:H:401:GDD:N2	2.15	0.78
1:G:15:ARG:HB2	1:H:360:MET:HG3	1.65	0.77
1:J:64:MET:O	1:J:68:GLU:HB3	1.86	0.75
1:H:178:LEU:HD23	1:H:178:LEU:N	2.01	0.74
1:I:51:LEU:O	1:I:77:MET:SD	2.45	0.74
2:A:361:ASN:ND2	2:A:364:ASP:OD1	2.21	0.74
1:G:134:LEU:CD2	1:G:212:LEU:HD12	2.19	0.73
2:A:359:ASP:N	2:A:369:MET:HE1	2.04	0.72
1:J:328:GLU:HB3	1:J:345:PRO:HB3	1.72	0.72
1:F:306:CYS:HB2	1:F:324:THR:HG23	1.70	0.71
1:H:221:GLN:HE22	1:H:223:LYS:HE2	1.51	0.71
2:A:338:HIS:NE2	2:A:357:PRO:HG3	2.05	0.71
1:H:131:GLY:O	1:H:207:LEU:HA	1.90	0.70
1:E:146:VAL:HB	1:E:168:SER:OG	1.91	0.70
1:G:134:LEU:CD2	1:G:212:LEU:CD1	2.60	0.70
1:K:322:ASN:ND2	1:K:339:ASN:OD1	2.25	0.70
2:D:364:ASP:OD2	2:D:365:PRO:HD2	1.91	0.69
1:E:60:LEU:O	1:E:64:MET:HG3	1.93	0.69
1:J:289:CYS:SG	1:J:306:CYS:N	2.66	0.69
1:I:3:ALA:HB3	1:I:49:VAL:HG12	1.73	0.69
1:G:150:GLU:HB3	1:G:153:THR:HG23	1.73	0.69
1:F:218:ASP:OD1	5:F:501:HOH:O	2.11	0.69
1:G:15:ARG:HB3	1:H:360:MET:HE3	1.68	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:344:LEU:HD22	1:H:360:MET:O	1.94	0.68
1:L:4:LEU:HA	1:L:50:ILE:O	1.93	0.68
2:A:359:ASP:HA	2:A:369:MET:HE1	1.76	0.68
1:H:344:LEU:CD2	1:H:360:MET:O	2.42	0.67
1:K:194:GLU:OE1	3:K:401:GDD:O21	2.12	0.67
2:A:359:ASP:H	2:A:369:MET:CE	2.07	0.67
1:G:15:ARG:CG	1:H:360:MET:HE3	2.24	0.67
1:F:6:LEU:HB3	3:F:401:GDD:HI'	1.75	0.67
1:E:60:LEU:O	1:E:60:LEU:HD12	1.94	0.67
1:J:94:ARG:O	1:J:98:SER:HB3	1.94	0.67
1:F:53:VAL:HG12	1:F:60:LEU:HD21	1.77	0.66
1:H:3:ALA:HB3	1:H:49:VAL:HG12	1.78	0.66
1:E:320:MET:HB3	1:E:324:THR:HG21	1.78	0.66
1:G:15:ARG:HG2	1:H:360:MET:HG3	1.77	0.66
1:I:54:SER:HA	1:I:80:GLU:HB3	1.77	0.66
2:A:359:ASP:N	2:A:369:MET:CE	2.59	0.66
1:L:289:CYS:SG	1:L:306:CYS:N	2.69	0.66
3:F:401:GDD:O6A	5:F:502:HOH:O	2.14	0.66
2:B:18:ARG:HG3	2:B:22:PHE:CZ	2.31	0.65
1:G:153:THR:O	1:G:155:ARG:N	2.29	0.65
1:I:178:LEU:HD12	1:I:182:VAL:HG11	1.78	0.65
1:G:289:CYS:SG	1:G:306:CYS:N	2.69	0.65
1:E:289:CYS:SG	1:E:306:CYS:N	2.69	0.65
1:I:162:LYS:HD3	1:I:163:PRO:HD2	1.78	0.65
2:C:17:PHE:HB2	2:C:250:SER:HB3	1.78	0.65
2:D:364:ASP:OD2	2:D:365:PRO:CD	2.44	0.65
1:F:22:PRO:HG2	1:F:25:LEU:HD23	1.79	0.65
1:L:33:ILE:HD11	1:L:112:ILE:HB	1.79	0.65
1:K:15:ARG:HH11	1:K:15:ARG:HG3	1.62	0.65
1:K:48:HIS:HE1	1:K:96:LEU:HD21	1.61	0.65
2:D:145:ASN:HB2	2:D:363:ASN:O	1.97	0.65
1:H:202:ALA:HA	1:H:207:LEU:CD2	2.19	0.65
1:L:51:LEU:CD2	1:L:77:MET:HA	2.27	0.64
1:H:221:GLN:HE21	1:H:223:LYS:HE2	1.57	0.64
1:I:137:LYS:HG2	1:I:170:LYS:HG2	1.79	0.64
1:K:164:GLN:HA	1:K:164:GLN:HE21	1.63	0.64
2:C:338:HIS:CD2	2:C:357:PRO:HB3	2.32	0.64
1:E:164:GLN:HB2	1:E:167:VAL:HG23	1.78	0.64
1:K:142:SER:CA	1:K:163:PRO:HG2	2.13	0.64
1:H:293:ARG:HG2	1:H:310:TRP:HD1	1.63	0.63
1:J:71:LEU:HD22	1:J:73:ILE:HB	1.81	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:15:ARG:CG	1:H:360:MET:HG3	2.28	0.63
1:E:293:ARG:HG2	1:E:310:TRP:HD1	1.63	0.63
1:K:35:LEU:HD11	1:K:67:GLN:HG3	1.81	0.62
1:L:28:PHE:C	1:L:29:CYS:HG	1.93	0.62
1:L:51:LEU:CD2	1:L:77:MET:HB2	2.30	0.62
2:B:136:PRO:HA	2:B:187:SER:HB3	1.80	0.62
1:H:34:LEU:C	1:H:34:LEU:HD12	2.19	0.62
1:H:134:LEU:HD21	1:H:212:LEU:HD13	1.81	0.62
1:K:33:ILE:HD13	1:K:219:ILE:HD11	1.81	0.62
1:E:194:GLU:OE2	3:E:401:GDD:C21	2.46	0.62
1:H:336:LEU:HD11	1:H:350:GLY:HA2	1.82	0.62
1:I:2:LYS:HG2	1:I:48:HIS:HB3	1.80	0.62
1:K:12:THR:HA	1:K:15:ARG:CD	2.30	0.62
2:A:359:ASP:HA	2:A:369:MET:CE	2.29	0.62
1:G:321:GLU:OE1	1:G:337:TYR:CZ	2.53	0.62
2:A:359:ASP:CA	2:A:369:MET:HE1	2.30	0.61
1:G:134:LEU:CD1	1:G:212:LEU:HD12	2.29	0.61
1:L:56:MET:O	1:L:56:MET:HG2	1.98	0.61
2:A:363:ASN:O	1:G:166:PHE:CD1	2.53	0.61
1:L:7:VAL:HG13	1:L:24:PRO:HG3	1.82	0.61
2:A:420:LEU:O	2:B:18:ARG:NH1	2.33	0.61
1:K:116:PRO:HG3	1:K:212:LEU:HD13	1.83	0.61
2:D:20:LEU:HD23	2:D:386:ILE:HG21	1.79	0.61
1:G:323:VAL:HG23	1:G:323:VAL:O	2.01	0.61
1:I:347:LYS:HE2	1:J:12:THR:HG22	1.82	0.61
1:K:323:VAL:O	1:K:323:VAL:HG23	2.00	0.61
1:I:345:PRO:O	1:J:15:ARG:NH2	2.33	0.61
1:E:134:LEU:HB3	1:E:173:ALA:HB3	1.83	0.61
1:F:60:LEU:HD12	1:F:60:LEU:C	2.21	0.61
1:G:13:ARG:HG2	1:G:221:GLN:HG2	1.82	0.61
1:K:15:ARG:HH11	1:K:15:ARG:CG	2.14	0.61
1:H:90:LEU:HD13	1:H:193:ILE:HD13	1.82	0.61
1:E:324:THR:O	1:E:324:THR:HG23	2.01	0.61
1:L:84:LEU:HA	1:L:190:PRO:HB3	1.81	0.61
1:F:289:CYS:SG	1:F:290:THR:N	2.75	0.60
1:F:320:MET:HB3	1:F:324:THR:HG21	1.82	0.60
1:K:12:THR:HA	1:K:15:ARG:HD3	1.83	0.60
1:F:323:VAL:O	1:F:323:VAL:HG23	2.01	0.60
1:L:57:SER:O	1:L:58:GLN:C	2.39	0.60
2:A:18:ARG:NH2	2:A:384:ILE:O	2.35	0.60
1:E:53:VAL:HG23	1:E:53:VAL:O	2.00	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:49:VAL:HB	1:J:75:ILE:HG22	1.84	0.60
2:D:325:LEU:HD12	2:D:342:GLY:HA2	1.82	0.60
1:L:51:LEU:CD2	1:L:77:MET:CA	2.80	0.60
1:K:142:SER:HA	1:K:163:PRO:CG	2.14	0.60
2:B:358:SER:O	2:B:358:SER:OG	2.17	0.59
1:F:53:VAL:CG1	1:F:60:LEU:HD21	2.32	0.59
1:L:323:VAL:HG12	1:L:323:VAL:O	2.02	0.59
2:D:364:ASP:OD2	2:D:365:PRO:N	2.35	0.59
1:E:323:VAL:HG23	1:E:323:VAL:O	2.03	0.59
1:J:323:VAL:HG23	1:J:323:VAL:O	2.01	0.59
1:J:168:SER:OG	1:J:169:ASN:N	2.34	0.59
2:A:359:ASP:CA	2:A:369:MET:CE	2.80	0.59
2:D:256:TYR:HB2	2:D:359:ASP:HB3	1.84	0.59
1:J:94:ARG:HH21	1:J:184:GLN:HA	1.67	0.59
1:H:207:LEU:H	1:H:207:LEU:HD23	1.68	0.59
1:G:7:VAL:O	3:G:401:GDD:O2'	2.19	0.59
1:J:221:GLN:HB2	1:J:224:ASP:HB2	1.85	0.59
1:I:323:VAL:HG23	1:I:323:VAL:O	2.01	0.59
1:H:177:ILE:O	1:H:178:LEU:HD23	2.03	0.59
1:L:57:SER:O	1:L:60:LEU:N	2.31	0.58
2:A:417:GLN:HG2	2:B:375:PHE:HB2	1.84	0.58
1:E:87:ALA:HB1	1:E:186:ILE:HD11	1.85	0.58
1:H:323:VAL:HG23	1:H:323:VAL:O	2.03	0.58
1:I:335:GLU:OE1	2:C:320:ARG:NH1	2.36	0.58
2:A:136:PRO:HA	2:A:187:SER:HB2	1.84	0.58
1:F:27:ASP:HB2	1:F:292:LEU:HD22	1.85	0.58
1:G:321:GLU:OE1	1:G:337:TYR:OH	2.18	0.58
1:L:344:LEU:HD22	1:L:360:MET:HG2	1.84	0.58
2:A:120:ASP:OD1	2:A:264:ARG:NH2	2.36	0.58
2:D:63:GLU:O	2:D:67:GLN:HB2	2.04	0.58
1:E:84:LEU:HB3	1:E:88:GLY:HA3	1.86	0.58
1:L:147:VAL:HG12	1:L:156:ILE:HG12	1.86	0.58
1:H:108:ASN:OD1	3:H:401:GDD:H4'	2.04	0.58
1:I:24:PRO:HB2	1:I:34:LEU:HG	1.84	0.58
1:I:140:GLU:HG2	1:I:142:SER:H	1.68	0.58
1:F:87:ALA:HB3	1:F:191:THR:HG23	1.86	0.58
1:G:15:ARG:CB	1:H:360:MET:HE3	2.29	0.58
1:J:2:LYS:HE3	1:J:97:LEU:HA	1.86	0.58
1:H:221:GLN:NE2	1:H:223:LYS:CE	2.62	0.58
1:L:293:ARG:HG2	1:L:310:TRP:HD1	1.68	0.57
1:K:307:ILE:HB	1:K:325:VAL:HG12	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:84:LEU:HB3	1:H:88:GLY:HA3	1.87	0.57
1:K:14:LEU:O	1:K:14:LEU:HD23	2.03	0.57
1:L:51:LEU:H	1:L:51:LEU:HD22	1.69	0.57
1:L:27:ASP:OD2	1:L:293:ARG:NH2	2.37	0.57
2:C:120:ASP:OD1	2:C:264:ARG:NH2	2.38	0.57
1:J:67:GLN:HE22	1:J:71:LEU:HD12	1.68	0.56
1:I:281:GLU:HG3	1:I:298:ARG:HA	1.85	0.56
2:A:108:GLU:OE1	2:A:134:ARG:NH2	2.38	0.56
2:C:168:VAL:HG11	2:C:175:ILE:HG13	1.86	0.56
1:E:94:ARG:HG3	1:E:183:LEU:HD13	1.88	0.56
1:H:193:ILE:O	1:H:197:VAL:HB	2.05	0.56
1:H:321:GLU:OE1	1:H:337:TYR:CE1	2.59	0.56
1:K:218:ASP:OD1	3:K:401:GDD:O6A	2.15	0.56
1:H:34:LEU:HD12	1:H:35:LEU:N	2.20	0.56
1:I:84:LEU:HB3	1:I:88:GLY:HA3	1.88	0.56
1:K:212:LEU:HG	1:K:213:GLN:N	2.21	0.56
1:I:320:MET:HB3	1:I:324:THR:HG21	1.88	0.56
1:E:269:GLY:HA3	1:E:287:ARG:HG2	1.88	0.56
1:L:77:MET:SD	1:L:77:MET:N	2.73	0.56
1:L:281:GLU:HG3	1:L:298:ARG:HA	1.87	0.56
1:L:51:LEU:CD2	1:L:51:LEU:H	2.18	0.56
1:F:110:ASP:OD2	1:F:110:ASP:N	2.39	0.56
1:G:180:PRO:O	1:G:183:LEU:HB2	2.05	0.56
1:L:212:LEU:HD23	1:L:216:TRP:HB2	1.87	0.55
2:D:119:SER:OG	2:D:120:ASP:N	2.40	0.55
1:G:24:PRO:HB2	1:G:34:LEU:HB2	1.89	0.55
1:H:84:LEU:HA	1:H:190:PRO:HB3	1.87	0.55
1:K:146:VAL:HG21	1:K:168:SER:HB3	1.88	0.55
2:B:320:ARG:HB3	2:B:337:LEU:HD23	1.89	0.55
1:H:311:ARG:NH2	1:H:328:GLU:OE2	2.38	0.55
1:L:51:LEU:HD23	1:L:51:LEU:C	2.27	0.55
1:K:293:ARG:HG2	1:K:310:TRP:HD1	1.72	0.55
1:I:68:GLU:HG2	1:I:75:ILE:HG12	1.89	0.55
1:I:343:VAL:HG22	1:I:359:ILE:HD12	1.89	0.55
1:K:134:LEU:HD21	1:K:212:LEU:HB2	1.89	0.55
1:H:223:LYS:HE3	1:H:224:ASP:OD1	2.07	0.55
1:H:343:VAL:HG11	1:H:349:ILE:HD11	1.89	0.55
1:L:269:GLY:HA3	1:L:287:ARG:HG2	1.89	0.55
2:A:42:GLU:OE2	2:A:46:GLN:NE2	2.40	0.55
1:G:194:GLU:HA	1:G:198:PHE:HD2	1.71	0.55
1:I:185:ARG:O	1:I:187:GLN:NE2	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:322:SER:OG	2:C:323:ILE:N	2.40	0.54
1:I:306:CYS:HB2	1:I:324:THR:HG22	1.89	0.54
1:F:321:GLU:OE1	1:F:337:TYR:HE1	1.90	0.54
1:L:51:LEU:HD23	1:L:77:MET:CB	2.35	0.54
1:I:12:THR:OG1	1:J:347:LYS:NZ	2.41	0.54
1:I:17:LEU:HD11	1:I:307:ILE:HG21	1.90	0.54
1:I:266:CYS:HB2	1:I:284:VAL:H	1.72	0.54
2:A:60:GLN:OE1	2:D:60:GLN:NE2	2.40	0.54
1:H:156:ILE:HB	1:H:207:LEU:CD1	2.38	0.54
1:E:344:LEU:HD22	1:E:360:MET:HG2	1.90	0.54
1:K:52:ALA:CB	3:K:401:GDD:H2N2	2.21	0.54
1:I:110:ASP:OD2	3:I:401:GDD:H3'	2.07	0.54
1:K:320:MET:HG2	1:K:338:LEU:HB2	1.90	0.54
2:C:16:ARG:HD2	2:C:19:PRO:HA	1.88	0.54
1:E:310:TRP:HB2	1:E:328:GLU:HG3	1.89	0.54
1:H:138:VAL:HG22	1:H:171:ILE:HD13	1.90	0.54
2:D:16:ARG:HH22	2:D:370:ASP:HB3	1.72	0.54
1:H:194:GLU:HG2	3:H:401:GDD:O21	2.08	0.54
1:F:321:GLU:OE1	1:F:337:TYR:CE1	2.61	0.54
1:H:130:GLU:HG2	1:H:182:VAL:HG22	1.89	0.54
1:H:237:ARG:HD2	1:H:253:ASN:HB3	1.90	0.54
2:A:352:ARG:NE	2:A:354:GLU:OE1	2.40	0.54
2:C:54:LEU:HD22	2:C:83:LEU:HD11	1.90	0.54
1:K:32:PRO:HD2	1:K:35:LEU:HD22	1.89	0.54
1:K:52:ALA:HB1	3:K:401:GDD:N2	2.23	0.54
2:A:338:HIS:CD2	2:A:357:PRO:HG3	2.43	0.54
1:G:185:ARG:HD3	1:G:200:ILE:HD11	1.90	0.54
1:H:74:ARG:HG3	1:H:74:ARG:O	2.08	0.53
1:L:94:ARG:NH1	1:L:183:LEU:O	2.41	0.53
1:G:37:GLN:NE2	1:G:108:ASN:O	2.36	0.53
1:G:360:MET:HB3	1:H:15:ARG:HG2	1.88	0.53
2:B:52:GLU:OE2	2:B:81:ARG:NE	2.41	0.53
1:K:94:ARG:HA	1:K:183:LEU:HD21	1.89	0.53
1:E:127:HIS:CD2	1:E:129:GLN:H	2.26	0.53
1:G:142:SER:HA	1:G:163:PRO:HG2	1.90	0.53
1:H:2:LYS:NZ	1:H:96:LEU:O	2.40	0.53
2:A:354:GLU:HB3	2:A:400:LEU:HD12	1.90	0.53
1:L:127:HIS:CD2	1:L:129:GLN:H	2.27	0.53
1:K:164:GLN:HA	1:K:164:GLN:NE2	2.22	0.53
1:F:253:ASN:N	1:F:253:ASN:OD1	2.42	0.53
1:G:168:SER:OG	1:G:169:ASN:N	2.40	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:130:GLU:HB2	1:J:206:GLN:HB3	1.90	0.53
1:K:101:ALA:HA	1:K:180:PRO:HG2	1.91	0.53
1:E:298:ARG:HB3	1:E:316:GLN:HG3	1.91	0.53
1:F:68:GLU:HA	1:F:71:LEU:HD12	1.91	0.53
1:F:215:PHE:HB2	1:F:231:LEU:HG	1.89	0.53
1:H:95:ASP:OD1	1:H:95:ASP:N	2.33	0.53
1:I:84:LEU:HA	1:I:190:PRO:HB3	1.90	0.52
2:A:158:ASN:HB2	2:A:165:LEU:HD11	1.91	0.52
2:B:113:LEU:HD23	2:B:183:ILE:HG12	1.91	0.52
2:C:354:GLU:O	2:C:385:THR:OG1	2.23	0.52
1:L:224:ASP:HA	1:L:227:THR:HG22	1.91	0.52
2:A:119:SER:OG	2:A:120:ASP:N	2.42	0.52
2:D:52:GLU:HG3	2:D:79:PRO:HG2	1.90	0.52
2:D:360:PRO:O	2:D:361:ASN:C	2.45	0.52
1:E:110:ASP:OD2	1:E:110:ASP:N	2.42	0.52
1:E:200:ILE:HA	1:E:203:LYS:HG2	1.90	0.52
1:F:191:THR:OG1	1:F:192:SER:N	2.42	0.52
1:G:281:GLU:HG3	1:G:298:ARG:HA	1.90	0.52
1:J:148:VAL:HG12	1:J:168:SER:HB2	1.91	0.52
1:J:215:PHE:HB2	1:J:231:LEU:HG	1.90	0.52
1:L:113:CYS:HB3	1:L:216:TRP:HA	1.92	0.52
1:I:287:ARG:NH2	2:C:396:GLU:OE2	2.37	0.52
2:C:155:ILE:HG21	2:C:238:VAL:HG21	1.90	0.52
1:F:134:LEU:HB3	1:F:173:ALA:HB3	1.91	0.52
2:A:16:ARG:HD3	2:A:20:LEU:H	1.75	0.52
1:J:298:ARG:HD3	1:J:316:GLN:HG2	1.92	0.52
1:L:51:LEU:CD2	1:L:51:LEU:N	2.73	0.52
1:K:52:ALA:HB2	1:K:89:PRO:HB3	1.90	0.52
2:C:377:ASP:N	2:C:377:ASP:OD1	2.43	0.52
1:G:87:ALA:HB1	1:G:186:ILE:HD11	1.90	0.52
1:F:212:LEU:HD23	1:F:216:TRP:HB2	1.92	0.52
1:F:334:ASP:OD1	1:F:334:ASP:N	2.42	0.52
1:J:134:LEU:HD21	1:J:212:LEU:HD13	1.92	0.52
1:L:235:SER:OG	1:L:239:LYS:NZ	2.43	0.52
2:D:398:LEU:H	2:D:413:SER:HB2	1.74	0.52
1:G:153:THR:C	1:G:155:ARG:H	2.12	0.52
2:A:54:LEU:HD22	2:A:83:LEU:HD11	1.92	0.52
2:B:116:ASP:OD2	3:B:501:GDD:H3'	2.09	0.52
1:J:42:ALA:HB2	1:J:71:LEU:HD21	1.92	0.52
2:B:156:VAL:HB	2:B:166:HIS:HB3	1.92	0.51
1:G:50:ILE:HA	1:G:76:SER:O	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:52:ALA:HB1	3:K:401:GDD:H2N2	1.75	0.51
1:I:27:ASP:OD1	1:I:27:ASP:N	2.43	0.51
1:J:340:GLY:HA3	1:J:356:PRO:HB3	1.93	0.51
1:I:77:MET:SD	1:I:78:SER:N	2.84	0.51
1:K:1:MET:HB3	1:K:46:VAL:HG22	1.92	0.51
1:I:37:GLN:NE2	1:I:108:ASN:O	2.39	0.51
2:A:52:GLU:OE2	2:A:81:ARG:NE	2.42	0.51
2:B:54:LEU:HD22	2:B:83:LEU:HD11	1.91	0.51
1:F:84:LEU:HA	1:F:190:PRO:HB3	1.91	0.51
1:H:221:GLN:HE21	1:H:223:LYS:CE	2.24	0.51
1:I:306:CYS:HB2	1:I:324:THR:CG2	2.39	0.51
2:C:52:GLU:HG3	2:C:79:PRO:HG2	1.93	0.51
1:I:5:ILE:HG12	1:I:107:LEU:HD12	1.91	0.51
1:G:15:ARG:CG	1:H:360:MET:CE	2.87	0.51
1:G:134:LEU:HB3	1:G:175:MET:HB3	1.92	0.51
2:A:177:ASP:OD1	2:A:177:ASP:N	2.44	0.51
2:C:16:ARG:NH2	2:C:21:SER:O	2.43	0.51
1:G:215:PHE:HB2	1:G:231:LEU:HG	1.91	0.51
1:E:95:ASP:N	1:E:95:ASP:OD1	2.43	0.51
1:H:293:ARG:NH1	1:H:294:ASP:OD1	2.43	0.51
1:J:3:ALA:HB3	1:J:49:VAL:HG22	1.93	0.51
1:F:256:VAL:HG22	1:F:274:LEU:HD12	1.94	0.50
1:J:50:ILE:HA	1:J:76:SER:O	2.11	0.50
1:L:94:ARG:HA	1:L:183:LEU:HD11	1.94	0.50
1:E:7:VAL:HG12	1:E:24:PRO:HG3	1.94	0.50
1:K:212:LEU:HD12	1:K:213:GLN:H	1.77	0.50
1:I:212:LEU:HD23	1:I:216:TRP:HB2	1.92	0.50
2:C:116:ASP:OD1	2:C:249:LYS:NZ	2.41	0.50
1:E:124:HIS:HA	1:E:127:HIS:CE1	2.46	0.50
1:H:230:CYS:SG	1:H:271:ASN:ND2	2.85	0.50
1:H:321:GLU:OE1	1:H:337:TYR:HE1	1.95	0.50
1:L:87:ALA:HB1	1:L:186:ILE:HD11	1.94	0.50
2:C:400:LEU:HD23	2:C:415:THR:HG23	1.93	0.50
2:D:23:GLU:CD	2:D:389:CYS:SG	2.88	0.50
1:J:24:PRO:HB2	1:J:34:LEU:HB2	1.92	0.50
2:A:361:ASN:OD1	2:A:362:PRO:HD2	2.12	0.50
2:A:400:LEU:HD23	2:A:415:THR:HG23	1.94	0.50
1:K:298:ARG:HB3	1:K:316:GLN:HG3	1.92	0.50
1:J:187:GLN:HB2	1:J:189:GLN:HE21	1.77	0.50
1:I:156:ILE:HD12	1:I:207:LEU:HB3	1.94	0.49
1:J:293:ARG:HG2	1:J:310:TRP:HD1	1.76	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:19:PRO:HG3	2:B:420:LEU:HD13	1.94	0.49
2:B:18:ARG:O	2:B:22:PHE:CD2	2.65	0.49
2:C:159:PRO:HG2	2:C:160:GLN:HE21	1.78	0.49
1:E:25:LEU:CD2	1:E:60:LEU:HD13	2.42	0.49
2:C:37:ILE:HA	2:C:40:HIS:HD2	1.75	0.49
1:K:131:GLY:O	1:K:207:LEU:HA	2.13	0.49
1:K:194:GLU:O	1:K:198:PHE:HB2	2.12	0.49
1:K:343:VAL:HG22	1:K:359:ILE:HD12	1.95	0.49
1:K:353:VAL:HG21	1:K:359:ILE:HD11	1.93	0.49
2:B:106:SER:O	2:B:106:SER:OG	2.28	0.49
1:E:118:GLN:HA	1:E:121:VAL:HG12	1.93	0.49
1:K:164:GLN:HE21	1:K:164:GLN:CA	2.24	0.49
1:H:215:PHE:HB2	1:H:231:LEU:HG	1.94	0.49
1:L:120:MET:HE2	1:L:134:LEU:HD13	1.92	0.49
2:D:20:LEU:CD2	2:D:386:ILE:HG23	2.11	0.49
1:G:122:GLN:HG2	1:G:123:PHE:N	2.27	0.49
1:I:320:MET:HE2	1:I:324:THR:CG2	2.43	0.49
2:A:62:ASP:OD1	2:A:62:ASP:N	2.44	0.49
2:A:335:CYS:SG	2:A:352:ARG:NH1	2.85	0.49
2:B:15:THR:C	2:B:17:PHE:H	2.16	0.49
2:D:376:LYS:HB2	2:D:381:LEU:HD21	1.94	0.49
2:D:356:THR:CG2	2:D:357:PRO:HD2	2.43	0.48
1:L:51:LEU:HD11	1:L:64:MET:HE3	1.90	0.48
1:E:53:VAL:CG2	1:E:79:HIS:HB3	2.43	0.48
1:E:353:VAL:HG11	1:E:359:ILE:HD11	1.94	0.48
2:A:13:LYS:HG3	2:A:58:PHE:HZ	1.78	0.48
2:C:362:PRO:HB3	1:J:164:GLN:HA	1.96	0.48
1:H:224:ASP:HA	1:H:227:THR:HG22	1.95	0.48
1:H:306:CYS:HB3	1:H:324:THR:HG23	1.95	0.48
1:J:108:ASN:ND2	1:J:174:GLY:O	2.47	0.48
1:L:71:LEU:N	1:L:71:LEU:HD23	2.27	0.48
2:C:119:SER:OG	2:C:120:ASP:N	2.47	0.48
1:E:94:ARG:NH2	1:E:183:LEU:O	2.46	0.48
2:A:405:LEU:HD11	2:B:420:LEU:HD21	1.95	0.48
2:B:119:SER:OG	2:B:120:ASP:N	2.44	0.48
1:E:178:LEU:HD12	1:E:182:VAL:HG21	1.96	0.48
1:K:335:GLU:OE2	2:D:318:ARG:NE	2.46	0.48
1:G:257:ASP:OD2	1:G:259:SER:N	2.47	0.48
1:H:7:VAL:HG13	1:H:53:VAL:HG12	1.96	0.48
1:L:28:PHE:HD2	1:L:29:CYS:SG	2.34	0.48
2:B:52:GLU:HG3	2:B:79:PRO:HG2	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:322:ASN:ND2	1:E:322:ASN:O	2.46	0.48
1:H:34:LEU:CD1	1:H:35:LEU:HD22	2.44	0.48
1:L:118:GLN:HA	1:L:121:VAL:HG12	1.95	0.48
1:K:161:GLU:O	1:K:163:PRO:HD3	2.14	0.47
1:K:334:ASP:OD2	1:K:334:ASP:N	2.42	0.47
2:A:138:LEU:HB3	2:A:185:LEU:HB3	1.95	0.47
2:B:400:LEU:HD23	2:B:415:THR:HG23	1.96	0.47
1:H:51:LEU:HG	1:H:77:MET:HG2	1.96	0.47
1:K:15:ARG:CG	1:K:15:ARG:NH1	2.73	0.47
1:E:84:LEU:HA	1:E:190:PRO:HB3	1.96	0.47
1:G:14:LEU:O	1:G:18:THR:OG1	2.32	0.47
1:K:33:ILE:HG22	1:K:112:ILE:HD12	1.96	0.47
2:B:20:LEU:N	2:B:20:LEU:HD13	2.29	0.47
1:F:14:LEU:O	1:F:18:THR:OG1	2.27	0.47
1:L:156:ILE:HD12	1:L:207:LEU:HB3	1.97	0.47
1:J:194:GLU:HG2	3:J:401:GDD:O21	2.15	0.47
1:I:322:ASN:ND2	1:I:339:ASN:OD1	2.48	0.47
2:A:322:SER:OG	2:A:323:ILE:N	2.46	0.47
1:G:134:LEU:HD23	1:G:173:ALA:HB3	1.97	0.47
1:L:301:SER:OG	1:L:318:VAL:O	2.29	0.47
1:I:221:GLN:HG2	1:I:222:PRO:HD2	1.96	0.47
2:A:329:THR:HB	2:A:346:THR:HG23	1.95	0.47
1:E:144:TYR:HB2	1:E:171:ILE:HD13	1.96	0.47
1:F:340:GLY:HA3	1:F:356:PRO:HB3	1.96	0.47
1:G:180:PRO:HA	1:G:183:LEU:HD23	1.97	0.47
1:H:178:LEU:N	1:H:178:LEU:CD2	2.73	0.47
1:J:21:THR:HG23	1:J:25:LEU:HD23	1.83	0.47
1:G:66:ALA:O	1:G:69:GLN:NE2	2.47	0.47
1:I:305:SER:O	1:I:323:VAL:HA	2.15	0.47
2:B:62:ASP:N	2:B:62:ASP:OD1	2.47	0.47
2:B:318:ARG:NE	1:F:335:GLU:OE2	2.48	0.47
1:E:127:HIS:HD2	1:E:129:GLN:H	1.62	0.47
1:L:135:VAL:HG12	1:L:147:VAL:HG21	1.96	0.47
2:A:362:PRO:HB2	1:G:142:SER:OG	2.14	0.46
1:E:48:HIS:CE1	1:E:74:ARG:HE	2.34	0.46
1:L:51:LEU:HD23	1:L:77:MET:HB2	1.94	0.46
1:K:84:LEU:HB3	1:K:88:GLY:HA3	1.98	0.46
1:I:7:VAL:HB	1:I:53:VAL:HG22	1.97	0.46
1:I:89:PRO:HG3	3:I:401:GDD:N2	2.30	0.46
1:G:89:PRO:HG3	3:G:401:GDD:N2	2.31	0.46
1:K:253:ASN:N	1:K:253:ASN:OD1	2.47	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:197:VAL:O	1:E:201:MET:HB2	2.16	0.46
1:J:94:ARG:NH2	1:J:183:LEU:O	2.47	0.46
1:J:333:ASN:HD22	1:J:350:GLY:HA2	1.80	0.46
1:J:82:GLU:HG2	1:J:83:PRO:HD2	1.97	0.46
1:I:150:GLU:HG3	1:I:157:HIS:CE1	2.51	0.46
1:E:61:GLU:HG2	1:E:77:MET:HG2	1.97	0.46
1:F:129:GLN:HG3	1:F:208:TYR:HE2	1.80	0.46
1:H:321:GLU:OE1	1:H:337:TYR:OH	2.24	0.46
2:C:380:LEU:N	2:D:378:GLY:O	2.39	0.46
2:D:369:MET:H	2:D:369:MET:HG3	1.53	0.46
1:L:57:SER:O	1:L:59:VAL:N	2.48	0.46
1:F:353:VAL:HG21	1:F:359:ILE:HD11	1.98	0.46
1:L:148:VAL:HB	1:L:158:ARG:O	2.16	0.46
2:A:332:GLU:OE2	2:A:349:ARG:NH1	2.49	0.46
1:J:341:ALA:HB2	1:J:353:VAL:HG21	1.97	0.46
1:I:77:MET:SD	1:I:77:MET:C	2.94	0.46
1:E:189:GLN:H	1:E:189:GLN:HG3	1.62	0.46
1:F:237:ARG:HH21	1:F:244:LEU:HD22	1.81	0.46
1:H:108:ASN:HB2	1:H:111:VAL:HG12	1.97	0.46
2:D:8:ILE:HB	2:D:27:PRO:HG2	1.98	0.45
2:D:267:ASP:N	2:D:267:ASP:OD1	2.49	0.45
1:J:84:LEU:HA	1:J:190:PRO:HB3	1.98	0.45
1:J:281:GLU:OE2	1:J:296:ARG:NH2	2.50	0.45
1:K:305:SER:O	1:K:323:VAL:CA	2.55	0.45
1:E:341:ALA:HB2	1:E:353:VAL:HG21	1.97	0.45
1:F:221:GLN:HB2	1:F:224:ASP:HB2	1.98	0.45
1:G:15:ARG:HG2	1:H:360:MET:CG	2.45	0.45
1:G:259:SER:OG	1:G:277:GLY:N	2.49	0.45
2:B:277:THR:HG22	2:B:280:GLY:H	1.82	0.45
2:C:116:ASP:OD1	2:C:249:LYS:HE2	2.16	0.45
1:H:133:ILE:HG12	1:H:176:TYR:HD1	1.81	0.45
2:C:116:ASP:OD1	2:C:249:LYS:CE	2.64	0.45
2:D:78:LEU:HD12	2:D:78:LEU:HA	1.84	0.45
2:B:320:ARG:HH21	2:B:338:HIS:HE1	1.62	0.45
1:G:155:ARG:HH12	1:G:157:HIS:HA	1.81	0.45
2:D:186:PHE:HZ	2:D:222:LEU:HD21	1.80	0.45
1:H:156:ILE:CG2	1:H:207:LEU:HD11	2.46	0.45
1:H:226:LEU:HD23	1:H:226:LEU:HA	1.82	0.45
1:L:264:GLN:NE2	1:L:282:ASP:OD2	2.46	0.45
1:I:135:VAL:HG11	1:I:147:VAL:HG21	1.99	0.45
1:E:22:PRO:HG2	1:E:25:LEU:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:401:GDD:O5'	3:K:401:GDD:H8	2.17	0.45
1:I:253:ASN:N	1:I:253:ASN:OD1	2.50	0.45
1:H:35:LEU:HD11	1:H:67:GLN:HE21	1.82	0.45
1:K:166:PHE:O	1:K:166:PHE:CD1	2.70	0.45
1:F:224:ASP:HA	1:F:227:THR:HG22	1.99	0.45
1:G:35:LEU:HA	1:G:38:VAL:HG22	1.99	0.45
1:J:320:MET:HB3	1:J:324:THR:HG21	1.98	0.45
1:L:353:VAL:HG21	1:L:359:ILE:HD11	1.99	0.45
1:K:27:ASP:N	1:K:27:ASP:OD1	2.50	0.45
2:B:138:LEU:HB3	2:B:185:LEU:HB3	1.99	0.45
2:B:376:LYS:HB2	2:B:381:LEU:HD21	1.99	0.45
1:E:27:ASP:HB2	1:E:292:LEU:HD22	1.99	0.45
1:E:333:ASN:HD22	1:E:350:GLY:HA2	1.82	0.45
1:L:55:TYR:CD2	1:L:55:TYR:O	2.70	0.45
1:G:43:ALA:O	1:G:118:GLN:NE2	2.50	0.44
1:H:43:ALA:O	1:H:118:GLN:NE2	2.50	0.44
1:E:166:PHE:O	1:E:166:PHE:CD1	2.70	0.44
1:H:34:LEU:HD12	1:H:35:LEU:HD22	1.98	0.44
1:E:166:PHE:O	1:E:166:PHE:CG	2.70	0.44
1:I:320:MET:CE	1:I:324:THR:HG21	2.47	0.44
2:A:192:LYS:HA	2:A:192:LYS:HD2	1.84	0.44
2:B:368:ARG:NH2	2:B:382:PRO:O	2.45	0.44
1:G:191:THR:OG1	1:G:192:SER:N	2.51	0.44
1:L:55:TYR:O	1:L:55:TYR:CG	2.70	0.44
1:L:172:ASN:ND2	1:L:176:TYR:OH	2.48	0.44
1:E:49:VAL:HG23	1:E:75:ILE:HG23	2.00	0.44
1:F:291:VAL:HA	1:F:308:VAL:HG22	2.00	0.44
1:H:74:ARG:CD	1:H:74:ARG:C	2.86	0.44
1:L:322:ASN:HB3	1:L:323:VAL:H	1.47	0.44
1:H:34:LEU:C	1:H:34:LEU:CD1	2.85	0.44
1:K:141:PRO:HB3	1:K:168:SER:HB2	1.99	0.44
2:A:249:LYS:HD3	2:A:249:LYS:HA	1.89	0.44
2:C:332:GLU:HB2	2:C:333:HIS:CD2	2.53	0.44
1:L:51:LEU:HD22	1:L:51:LEU:N	2.31	0.44
1:I:191:THR:OG1	1:I:192:SER:N	2.51	0.44
1:I:320:MET:CE	1:I:324:THR:CG2	2.96	0.44
3:H:401:GDD:O5'	3:H:401:GDD:H8	2.17	0.44
1:K:13:ARG:HB3	1:K:220:GLY:O	2.17	0.43
1:E:162:LYS:HD2	1:E:162:LYS:HA	1.69	0.43
1:G:2:LYS:HZ2	1:G:48:HIS:HB3	1.82	0.43
1:G:153:THR:C	1:G:155:ARG:N	2.69	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:401:GDD:O5'	3:L:401:GDD:H8	2.18	0.43
1:K:13:ARG:HG2	1:K:221:GLN:HG2	1.99	0.43
2:D:17:PHE:CD2	2:D:17:PHE:O	2.70	0.43
2:D:359:ASP:OD2	2:D:359:ASP:N	2.51	0.43
1:G:161:GLU:OE1	1:G:161:GLU:HA	2.18	0.43
1:J:237:ARG:HH21	1:J:244:LEU:HD22	1.82	0.43
2:A:20:LEU:HD21	2:A:340:ILE:HG21	2.00	0.43
1:E:239:LYS:HA	1:E:239:LYS:HD3	1.75	0.43
1:F:142:SER:HA	1:F:163:PRO:HG2	2.01	0.43
1:G:118:GLN:H	1:G:118:GLN:HG2	1.65	0.43
1:K:48:HIS:CE1	1:K:96:LEU:HD21	2.48	0.43
2:A:312:THR:O	2:A:312:THR:OG1	2.35	0.43
1:F:60:LEU:C	1:F:60:LEU:CD1	2.86	0.43
1:L:68:GLU:HB3	1:L:75:ILE:HD12	1.99	0.43
1:L:84:LEU:HB2	1:L:89:PRO:HD3	2.00	0.43
1:K:135:VAL:HG11	1:K:147:VAL:HG21	2.01	0.43
2:A:266:GLN:HE21	2:A:286:ASN:HD21	1.66	0.43
2:D:354:GLU:HB3	2:D:400:LEU:HD12	1.99	0.43
1:K:203:LYS:HA	1:K:203:LYS:HD3	1.74	0.43
1:F:264:GLN:H	1:F:264:GLN:HG3	1.66	0.43
1:K:60:LEU:O	1:K:64:MET:HB2	2.19	0.43
1:K:360:MET:HB2	1:L:358:ILE:HD13	2.00	0.43
1:I:50:ILE:HD12	1:I:96:LEU:HD23	2.00	0.43
2:B:259:ARG:NH2	2:B:359:ASP:OD2	2.51	0.43
1:F:37:GLN:NE2	1:F:111:VAL:O	2.52	0.43
1:F:304:GLU:O	1:F:321:GLU:HA	2.18	0.43
3:G:401:GDD:O3B	5:G:501:HOH:O	2.21	0.43
1:J:13:ARG:HA	1:J:13:ARG:HD3	1.70	0.43
2:A:253:SER:OG	2:A:371:SER:OG	2.32	0.43
1:F:266:CYS:HB2	1:F:284:VAL:H	1.84	0.43
1:K:166:PHE:O	1:K:166:PHE:HD1	2.02	0.43
1:K:212:LEU:CG	1:K:213:GLN:N	2.81	0.43
2:A:253:SER:HG	2:A:371:SER:HG	1.65	0.43
1:F:279:VAL:HB	1:F:296:ARG:HG3	2.01	0.43
1:H:334:ASP:OD1	1:H:334:ASP:N	2.49	0.43
1:L:305:SER:O	1:L:322:ASN:O	2.37	0.43
1:K:2:LYS:HG2	1:K:48:HIS:CE1	2.54	0.43
2:A:17:PHE:HB2	2:A:250:SER:HB3	2.00	0.43
2:C:405:LEU:HD22	2:C:420:LEU:HD23	2.01	0.43
2:D:392:ARG:HE	2:D:392:ARG:HB2	1.69	0.43
1:J:91:ALA:HB2	1:J:186:ILE:HD13	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:81:GLU:H	1:I:81:GLU:HG3	1.68	0.42
2:A:359:ASP:CA	2:A:369:MET:HE3	2.48	0.42
1:E:187:GLN:HB2	1:E:189:GLN:HE21	1.82	0.42
1:F:7:VAL:HG12	1:F:24:PRO:HG3	2.01	0.42
1:G:15:ARG:HG3	1:H:360:MET:HE3	1.97	0.42
1:L:106:VAL:HB	1:L:176:TYR:HB2	2.00	0.42
1:L:263:GLY:N	1:L:280:VAL:O	2.51	0.42
1:I:312:CYS:SG	1:I:313:ARG:N	2.92	0.42
2:B:10:GLY:HA3	2:B:58:PHE:CE2	2.54	0.42
2:B:169:GLU:HG3	2:B:170:LYS:HG2	2.01	0.42
2:D:354:GLU:O	2:D:385:THR:OG1	2.31	0.42
1:G:334:ASP:OD2	1:G:334:ASP:N	2.52	0.42
1:L:52:ALA:HB2	1:L:89:PRO:HB3	2.01	0.42
1:L:226:LEU:HD23	1:L:226:LEU:HA	1.91	0.42
1:I:302:TRP:NE1	2:C:396:GLU:OE1	2.45	0.42
1:E:164:GLN:HB2	1:E:167:VAL:CG2	2.47	0.42
1:E:340:GLY:HA3	1:E:356:PRO:HB3	2.00	0.42
1:G:25:LEU:HD21	1:G:60:LEU:HB2	2.02	0.42
1:H:35:LEU:HA	1:H:38:VAL:HG22	2.00	0.42
1:J:86:THR:HG23	1:J:193:ILE:H	1.84	0.42
2:A:347:VAL:HA	2:A:393:ILE:HB	2.01	0.42
2:C:409:GLU:H	2:D:12:GLN:HE21	1.67	0.42
1:L:32:PRO:HB2	1:L:35:LEU:HD23	2.02	0.42
1:K:294:ASP:HB3	1:K:311:ARG:HG2	2.00	0.42
1:K:340:GLY:HA3	1:K:356:PRO:HB3	2.02	0.42
2:A:352:ARG:NH2	1:H:335:GLU:O	2.53	0.42
1:H:359:ILE:O	1:H:360:MET:C	2.57	0.42
2:A:364:ASP:HB2	2:A:367:ALA:HB2	2.01	0.42
2:D:221:ARG:NH2	2:D:225:ASP:OD1	2.52	0.42
1:J:279:VAL:HB	1:J:296:ARG:HG3	2.02	0.42
1:J:25:LEU:O	1:J:25:LEU:HG	2.19	0.42
1:J:207:LEU:HD23	1:J:207:LEU:HA	1.87	0.42
1:K:24:PRO:HB2	1:K:34:LEU:HB2	2.00	0.42
1:K:160:VAL:HG12	1:K:162:LYS:O	2.20	0.42
2:A:8:ILE:HB	2:A:27:PRO:HG2	2.02	0.42
2:A:31:VAL:HG21	2:A:248:ILE:HD13	2.02	0.42
2:A:295:VAL:HG22	2:A:313:VAL:HB	2.01	0.42
2:B:120:ASP:OD1	2:B:264:ARG:NH2	2.53	0.42
1:F:95:ASP:OD1	1:F:95:ASP:N	2.53	0.42
1:H:91:ALA:HB2	1:H:186:ILE:HD13	2.02	0.42
1:L:94:ARG:HG3	1:L:183:LEU:HD21	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:21:SER:OG	2:A:24:VAL:O	2.28	0.42
2:B:3:LYS:O	2:B:110:PHE:HA	2.19	0.42
2:C:127:LEU:HD12	2:C:127:LEU:HA	1.83	0.42
2:C:119:SER:HB2	2:C:245:TRP:HD1	1.85	0.42
1:E:161:GLU:HG2	1:E:195:LYS:HB3	2.01	0.42
1:L:260:ALA:HB1	1:L:278:VAL:HG22	2.02	0.42
2:C:332:GLU:H	2:C:332:GLU:HG2	1.55	0.41
2:D:37:ILE:H	2:D:37:ILE:HG12	1.70	0.41
1:F:33:ILE:HA	1:F:36:HIS:HD2	1.85	0.41
1:G:15:ARG:HD2	1:G:15:ARG:HA	1.69	0.41
1:J:4:LEU:HD13	1:J:50:ILE:HG23	2.02	0.41
1:J:311:ARG:HE	1:J:311:ARG:HB3	1.69	0.41
1:K:71:LEU:HG	1:K:73:ILE:HB	2.02	0.41
1:I:35:LEU:O	1:I:39:GLU:HB2	2.20	0.41
1:I:94:ARG:O	1:I:98:SER:HB3	2.19	0.41
2:B:16:ARG:NH2	2:B:370:ASP:OD2	2.53	0.41
1:E:170:LYS:NZ	1:E:211:GLU:OE2	2.53	0.41
1:F:201:MET:HG2	1:F:207:LEU:HD13	2.01	0.41
1:G:130:GLU:HB2	1:G:206:GLN:HB3	2.03	0.41
1:J:14:LEU:H	1:J:14:LEU:HG	1.40	0.41
1:J:256:VAL:HG13	1:J:274:LEU:HD12	2.02	0.41
1:L:200:ILE:O	1:L:204:GLU:HG3	2.20	0.41
1:L:292:LEU:HD13	1:L:292:LEU:HA	1.89	0.41
1:I:112:ILE:HD13	1:I:112:ILE:HA	1.81	0.41
3:A:501:GDD:H8	3:A:501:GDD:H2'	1.88	0.41
1:E:4:LEU:HD22	1:E:106:VAL:HG22	2.02	0.41
1:E:86:THR:HG23	1:E:193:ILE:H	1.85	0.41
1:F:24:PRO:HG2	1:F:25:LEU:HD22	2.02	0.41
1:G:150:GLU:HG3	1:G:157:HIS:HE1	1.84	0.41
1:H:156:ILE:HG21	1:H:207:LEU:HD11	2.02	0.41
1:L:124:HIS:HA	1:L:127:HIS:CE1	2.55	0.41
1:I:16:PRO:HG3	1:I:342:SER:HB3	2.01	0.41
1:F:15:ARG:HD2	1:F:15:ARG:HA	1.80	0.41
1:H:87:ALA:HA	1:H:193:ILE:HB	2.00	0.41
1:H:142:SER:HA	1:H:163:PRO:HD2	2.01	0.41
1:J:269:GLY:HA3	1:J:287:ARG:HG2	2.03	0.41
1:J:285:CYS:HB3	1:J:302:TRP:HD1	1.84	0.41
1:L:53:VAL:HG13	1:L:57:SER:OG	2.20	0.41
2:C:138:LEU:HD12	2:C:138:LEU:HA	1.92	0.41
2:C:66:THR:O	2:C:70:GLU:HG2	2.21	0.41
1:H:219:ILE:HG22	1:H:225:PHE:HA	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:353:VAL:HG11	1:J:359:ILE:HD11	2.02	0.41
2:A:63:GLU:O	2:A:67:GLN:HB2	2.21	0.41
1:E:99:GLU:H	1:E:99:GLU:HG3	1.69	0.41
1:H:104:PHE:HE2	1:H:183:LEU:HD11	1.85	0.41
1:K:172:ASN:ND2	1:K:176:TYR:OH	2.48	0.41
1:E:133:ILE:HG13	1:E:176:TYR:CD1	2.55	0.41
1:G:106:VAL:HB	1:G:176:TYR:HB2	2.02	0.41
1:H:144:TYR:HB3	3:H:401:GDD:O41	2.20	0.41
2:D:187:SER:HB3	2:D:189:GLU:HG2	2.03	0.41
1:E:221:GLN:HE21	1:E:221:GLN:HB3	1.61	0.41
1:G:137:LYS:HE3	1:G:170:LYS:HZ2	1.85	0.41
1:H:27:ASP:OD1	1:H:27:ASP:N	2.53	0.41
1:J:137:LYS:HG2	1:J:169:ASN:HD22	1.84	0.41
1:L:71:LEU:O	1:L:73:ILE:HG12	2.21	0.41
1:L:109:SER:N	3:L:401:GDD:O3'	2.50	0.41
1:L:233:LEU:HA	1:L:233:LEU:HD23	1.81	0.41
1:E:150:GLU:HB3	1:E:157:HIS:CE1	2.55	0.41
1:G:202:ALA:HB2	1:G:207:LEU:HD12	2.03	0.41
1:H:189:GLN:H	1:H:189:GLN:HG3	1.57	0.41
1:E:161:GLU:H	1:E:161:GLU:HG3	1.60	0.40
1:H:17:LEU:HD11	1:H:307:ILE:HG21	2.03	0.40
1:L:51:LEU:HD23	1:L:77:MET:HA	2.02	0.40
1:K:226:LEU:HD23	1:K:226:LEU:HA	1.91	0.40
2:B:175:ILE:HD13	2:B:175:ILE:HA	1.92	0.40
2:C:37:ILE:HA	2:C:40:HIS:CD2	2.54	0.40
1:H:223:LYS:CE	1:H:224:ASP:OD1	2.70	0.40
1:H:226:LEU:HD12	1:H:323:VAL:HG12	2.02	0.40
1:L:267:SER:O	1:L:267:SER:OG	2.38	0.40
1:K:191:THR:OG1	1:K:192:SER:N	2.53	0.40
1:I:96:LEU:HD12	1:I:96:LEU:HA	1.97	0.40
1:I:178:LEU:HD13	1:I:178:LEU:HA	1.92	0.40
1:I:335:GLU:OE2	2:C:318:ARG:NE	2.54	0.40
1:I:324:THR:O	1:I:324:THR:HG23	2.22	0.40
1:G:129:GLN:HE21	1:G:129:GLN:HB3	1.57	0.40
1:G:136:THR:HG22	1:G:173:ALA:HB2	2.04	0.40
1:J:112:ILE:HD13	1:J:115:PHE:HZ	1.85	0.40
1:I:360:MET:SD	1:J:358:ILE:HD11	2.61	0.40
2:B:347:VAL:HA	2:B:393:ILE:HB	2.03	0.40
1:G:122:GLN:CG	1:G:123:PHE:N	2.84	0.40
1:J:17:LEU:HD11	1:J:307:ILE:HG21	2.03	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 PDB entries followed by that with respect to all EM entries.

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	E	358/360 (99%)	338 (94%)	20 (6%)	0	100	100
1	F	358/360 (99%)	343 (96%)	15 (4%)	0	100	100
1	G	358/360 (99%)	339 (95%)	16 (4%)	3 (1%)	19	51
1	H	358/360 (99%)	333 (93%)	25 (7%)	0	100	100
1	I	358/360 (99%)	344 (96%)	14 (4%)	0	100	100
1	J	358/360 (99%)	333 (93%)	24 (7%)	1 (0%)	41	72
1	K	358/360 (99%)	333 (93%)	23 (6%)	2 (1%)	25	57
1	L	358/360 (99%)	342 (96%)	16 (4%)	0	100	100
2	A	403/420 (96%)	384 (95%)	17 (4%)	2 (0%)	29	61
2	B	402/420 (96%)	382 (95%)	19 (5%)	1 (0%)	47	78
2	C	402/420 (96%)	381 (95%)	19 (5%)	2 (0%)	29	61
2	D	402/420 (96%)	390 (97%)	12 (3%)	0	100	100
All	All	4473/4560 (98%)	4242 (95%)	220 (5%)	11 (0%)	50	78

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	A	359	ASP
1	G	163	PRO
2	C	359	ASP
2	C	360	PRO
1	G	154	GLY
1	K	163	PRO
2	A	360	PRO
1	K	165	VAL
2	B	277	THR
1	J	163	PRO
1	G	165	VAL



### 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 PDB entries followed by that with respect to all EM entries.

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	E	311/311 (100%)	286 (92%)	25 (8%)	12	38
1	F	311/311 (100%)	289 (93%)	22 (7%)	14	44
1	G	311/311 (100%)	284 (91%)	27 (9%)	10	34
1	H	311/311 (100%)	285 (92%)	26 (8%)	11	36
1	I	311/311 (100%)	282 (91%)	29 (9%)	9	31
1	J	311/311 (100%)	283 (91%)	28 (9%)	9	32
1	K	310/311 (100%)	278 (90%)	32 (10%)	7	26
1	L	310/311 (100%)	290 (94%)	20 (6%)	17	46
2	A	344/354 (97%)	326 (95%)	18 (5%)	23	53
2	B	344/354 (97%)	321 (93%)	23 (7%)	16	46
2	C	344/354 (97%)	324 (94%)	20 (6%)	20	50
2	D	344/354 (97%)	322 (94%)	22 (6%)	17	47
All	All	3862/3904 (99%)	3570 (92%)	292 (8%)	17	41

All (292) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	K	13	ARG
1	K	14	LEU
1	K	15	ARG
1	K	27	ASP
1	K	38	VAL
1	K	41	LEU
1	K	50	ILE
1	K	51	LEU
1	K	54	SER
1	K	63	GLU
1	K	77	MET
1	K	80	GLU
1	K	86	THR
1	K	107	LEU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	K	149	CYS
1	K	153	THR
1	K	161	GLU
1	K	169	ASN
1	K	179	SER
1	K	184	GLN
1	K	191	THR
1	K	197	VAL
1	K	233	LEU
1	K	253	ASN
1	K	266	CYS
1	K	267	SER
1	K	273	SER
1	K	281	GLU
1	K	289	CYS
1	K	323	VAL
1	K	324	THR
1	K	342	SER
1	I	27	ASP
1	I	35	LEU
1	I	41	LEU
1	I	50	ILE
1	I	68	GLU
1	I	77	MET
1	I	86	THR
1	I	106	VAL
1	I	110	ASP
1	I	111	VAL
1	I	134	LEU
1	I	136	THR
1	I	165	VAL
1	I	167	VAL
1	I	176	TYR
1	I	194	GLU
1	I	199	PRO
1	I	200	ILE
1	I	223	LYS
1	I	229	MET
1	I	231	LEU
1	I	253	ASN
1	I	266	CYS
1	I	267	SER

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	I	273	SER
1	I	288	ARG
1	I	306	CYS
1	I	312	CYS
1	I	323	VAL
2	A	118	CYS
2	A	134	ARG
2	A	177	ASP
2	A	187	SER
2	A	219	THR
2	A	246	SER
2	A	258	SER
2	A	264	ARG
2	A	265	TYR
2	A	300	VAL
2	A	306	SER
2	A	312	THR
2	A	322	SER
2	A	363	ASN
2	A	369	MET
2	A	380	LEU
2	A	397	VAL
2	A	402	SER
2	B	20	LEU
2	B	21	SER
2	B	83	LEU
2	B	113	LEU
2	B	118	CYS
2	B	149	SER
2	B	189	GLU
2	B	219	THR
2	B	261	TYR
2	B	264	ARG
2	B	277	THR
2	B	300	VAL
2	B	306	SER
2	B	326	HIS
2	B	329	THR
2	B	337	LEU
2	B	339	SER
2	B	345	SER
2	B	358	SER

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	380	LEU
2	B	398	LEU
2	B	408	LYS
2	B	413	SER
2	C	20	LEU
2	C	24	VAL
2	C	124	SER
2	C	143	THR
2	C	199	GLN
2	C	255	LEU
2	C	258	SER
2	C	264	ARG
2	C	277	THR
2	C	300	VAL
2	C	322	SER
2	C	332	GLU
2	C	339	SER
2	C	363	ASN
2	C	369	MET
2	C	371	SER
2	C	372	GLU
2	C	389	CYS
2	C	392	ARG
2	C	397	VAL
2	D	2	LEU
2	D	65	LEU
2	D	118	CYS
2	D	135	HIS
2	D	143	THR
2	D	151	ASN
2	D	173	THR
2	D	184	TYR
2	D	219	THR
2	D	238	VAL
2	D	258	SER
2	D	263	SER
2	D	265	TYR
2	D	267	ASP
2	D	312	THR
2	D	339	SER
2	D	358	SER
2	D	359	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	D	369	MET
2	D	397	VAL
2	D	408	LYS
2	D	413	SER
1	E	4	LEU
1	E	7	VAL
1	E	15	ARG
1	E	49	VAL
1	E	58	GLN
1	E	59	VAL
1	E	60	LEU
1	E	79	HIS
1	E	92	LEU
1	E	95	ASP
1	E	98	SER
1	E	100	THR
1	E	129	GLN
1	E	134	LEU
1	E	152	ASP
1	E	153	THR
1	E	171	ILE
1	E	191	THR
1	E	193	ILE
1	E	196	GLU
1	E	199	PRO
1	E	227	THR
1	E	266	CYS
1	E	348	SER
1	E	351	GLU
1	F	7	VAL
1	F	15	ARG
1	F	30	ASN
1	F	49	VAL
1	F	60	LEU
1	F	95	ASP
1	F	134	LEU
1	F	138	VAL
1	F	144	TYR
1	F	165	VAL
1	F	167	VAL
1	F	193	ILE
1	F	199	PRO

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	F	253	ASN
1	F	264	GLN
1	F	273	SER
1	F	289	CYS
1	F	306	CYS
1	F	322	ASN
1	F	324	THR
1	F	334	ASP
1	F	355	GLU
1	G	12	THR
1	G	15	ARG
1	G	18	THR
1	G	19	LEU
1	G	47	ASP
1	G	60	LEU
1	G	86	THR
1	G	102	ASP
1	G	122	GLN
1	G	134	LEU
1	G	146	VAL
1	G	147	VAL
1	G	153	THR
1	G	189	GLN
1	G	191	THR
1	G	194	GLU
1	G	212	LEU
1	G	227	THR
1	G	230	CYS
1	G	257	ASP
1	G	259	SER
1	G	267	SER
1	G	318	VAL
1	G	324	THR
1	G	328	GLU
1	G	334	ASP
1	G	342	SER
1	H	31	LYS
1	H	35	LEU
1	H	54	SER
1	H	74	ARG
1	H	100	THR
1	H	111	VAL

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	H	144	TYR
1	H	178	LEU
1	H	189	GLN
1	H	193	ILE
1	H	199	PRO
1	H	207	LEU
1	H	211	GLU
1	H	212	LEU
1	H	223	LYS
1	H	235	SER
1	H	242	GLU
1	H	264	GLN
1	H	267	SER
1	H	285	CYS
1	H	289	CYS
1	H	293	ARG
1	H	321	GLU
1	H	324	THR
1	H	359	ILE
1	H	360	MET
1	J	1	MET
1	J	6	LEU
1	J	10	TYR
1	J	14	LEU
1	J	27	ASP
1	J	47	ASP
1	J	51	LEU
1	J	56	MET
1	J	69	GLN
1	J	78	SER
1	J	82	GLU
1	J	84	LEU
1	J	95	ASP
1	J	99	GLU
1	J	153	THR
1	J	167	VAL
1	J	186	ILE
1	J	191	THR
1	J	199	PRO
1	J	227	THR
1	J	233	LEU
1	J	280	VAL

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Mol	Chain	Res	Type
1	J	284	VAL
1	J	311	ARG
1	J	319	ARG
1	J	324	THR
1	J	344	LEU
1	J	353	VAL
1	L	20	SER
1	L	27	ASP
1	L	29	CYS
1	L	51	LEU
1	L	60	LEU
1	L	71	LEU
1	L	74	ARG
1	L	77	MET
1	L	102	ASP
1	L	147	VAL
1	L	153	THR
1	L	183	LEU
1	L	184	GLN
1	L	191	THR
1	L	199	PRO
1	L	230	CYS
1	L	234	GLN
1	L	256	VAL
1	L	321	GLU
1	L	334	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (55) such sidechains are listed below:

Mol	Chain	Res	Type
1	K	30	ASN
1	K	48	HIS
1	K	67	GLN
1	K	164	GLN
1	I	157	HIS
2	A	40	HIS
2	A	199	GLN
2	A	286	ASN
2	A	401	ASN
2	B	40	HIS
2	B	199	GLN
2	B	201	ASN

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	B	331	GLN
2	B	338	HIS
2	B	363	ASN
2	B	401	ASN
2	C	40	HIS
2	C	160	GLN
2	C	199	GLN
2	C	201	ASN
2	C	286	ASN
2	C	304	ASN
2	C	338	HIS
2	C	401	ASN
2	D	12	GLN
2	D	60	GLN
2	D	145	ASN
2	D	199	GLN
2	D	201	ASN
2	D	338	HIS
2	D	401	ASN
2	D	407	HIS
1	E	79	HIS
1	E	127	HIS
1	E	221	GLN
1	E	333	ASN
1	F	108	ASN
1	F	122	GLN
1	F	129	GLN
1	F	271	ASN
1	G	30	ASN
1	G	129	GLN
1	G	157	HIS
1	H	67	GLN
1	H	127	HIS
1	H	157	HIS
1	H	221	GLN
1	H	271	ASN
1	J	67	GLN
1	J	157	HIS
1	J	169	ASN
1	J	333	ASN
1	L	127	HIS
1	L	169	ASN

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Mol	Chain	Res	Type
1	L	346	HIS

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 15 ligands modelled in this entry, 3 are monoatomic - leaving 12 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
3	GDD	B	501	-	35,42,42	1.14	3 (8%)	46,65,65	1.52	5 (10%)
3	GDD	A	501	-	35,42,42	1.17	3 (8%)	46,65,65	1.58	6 (13%)
3	GDD	H	401	-	35,42,42	0.92	2 (5%)	46,65,65	1.42	6 (13%)
3	GDD	I	401	-	35,42,42	0.89	1 (2%)	46,65,65	1.33	4 (8%)
3	GDD	L	401	-	35,42,42	0.94	2 (5%)	46,65,65	1.39	6 (13%)
3	GDD	D	501	-	35,42,42	1.05	3 (8%)	46,65,65	1.48	5 (10%)
3	GDD	K	401	-	35,42,42	0.92	2 (5%)	46,65,65	1.42	6 (13%)
3	GDD	C	501	-	35,42,42	1.07	3 (8%)	46,65,65	1.53	6 (13%)
3	GDD	F	401	4	35,42,42	0.89	1 (2%)	46,65,65	1.38	6 (13%)
3	GDD	J	401	-	35,42,42	0.89	1 (2%)	46,65,65	1.45	5 (10%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	GDD	E	401	4	35,42,42	0.89	1 (2%)	46,65,65	1.34	4 (8%)
3	GDD	G	401	-	35,42,42	0.92	2 (5%)	46,65,65	1.40	5 (10%)

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	GDD	B	501	-	-	9/19/59/59	0/4/4/4
3	GDD	A	501	-	-	9/19/59/59	0/4/4/4
3	GDD	H	401	-	-	4/19/59/59	0/4/4/4
3	GDD	I	401	-	-	5/19/59/59	0/4/4/4
3	GDD	L	401	-	-	4/19/59/59	0/4/4/4
3	GDD	D	501	-	-	7/19/59/59	0/4/4/4
3	GDD	K	401	-	-	4/19/59/59	0/4/4/4
3	GDD	C	501	-	-	8/19/59/59	0/4/4/4
3	GDD	F	401	4	-	2/19/59/59	0/4/4/4
3	GDD	J	401	-	-	4/19/59/59	0/4/4/4
3	GDD	E	401	4	-	2/19/59/59	0/4/4/4
3	GDD	G	401	-	-	4/19/59/59	0/4/4/4

All (24) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	501	GDD	C5-C6	-4.21	1.38	1.47
3	B	501	GDD	C5-C6	-4.19	1.38	1.47
3	C	501	GDD	C5-C6	-4.08	1.39	1.47
3	D	501	GDD	C5-C6	-3.95	1.39	1.47
3	L	401	GDD	C5-C6	-3.69	1.39	1.47
3	H	401	GDD	C5-C6	-3.50	1.40	1.47
3	G	401	GDD	C5-C6	-3.48	1.40	1.47
3	K	401	GDD	C5-C6	-3.48	1.40	1.47
3	E	401	GDD	C5-C6	-3.41	1.40	1.47
3	F	401	GDD	C5-C6	-3.30	1.40	1.47
3	I	401	GDD	C5-C6	-3.29	1.40	1.47
3	J	401	GDD	C5-C6	-3.17	1.41	1.47
3	A	501	GDD	C6-N1	-2.74	1.33	1.37
3	B	501	GDD	C6-N1	-2.62	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	501	GDD	C6-N1	-2.46	1.34	1.37
3	A	501	GDD	C5-C4	-2.44	1.36	1.43
3	K	401	GDD	C6-N1	-2.31	1.34	1.37
3	H	401	GDD	C6-N1	-2.29	1.34	1.37
3	B	501	GDD	C5-C4	-2.29	1.37	1.43
3	C	501	GDD	C6-N1	-2.20	1.34	1.37
3	L	401	GDD	C6-N1	-2.15	1.34	1.37
3	C	501	GDD	C5-C4	-2.11	1.37	1.43
3	D	501	GDD	C5-C4	-2.06	1.37	1.43
3	G	401	GDD	C6-N1	-2.05	1.34	1.37

All (64) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	501	GDD	C2-N1-C6	-5.45	115.06	125.10
3	D	501	GDD	C2-N1-C6	-5.35	115.25	125.10
3	B	501	GDD	C2-N1-C6	-5.31	115.33	125.10
3	C	501	GDD	C2-N1-C6	-5.27	115.39	125.10
3	K	401	GDD	C2-N1-C6	-5.16	115.60	125.10
3	H	401	GDD	C2-N1-C6	-5.16	115.61	125.10
3	J	401	GDD	C2-N1-C6	-5.08	115.75	125.10
3	G	401	GDD	C2-N1-C6	-5.06	115.78	125.10
3	L	401	GDD	C2-N1-C6	-5.00	115.90	125.10
3	E	401	GDD	C2-N1-C6	-4.88	116.11	125.10
3	F	401	GDD	C2-N1-C6	-4.87	116.14	125.10
3	I	401	GDD	C2-N1-C6	-4.75	116.35	125.10
3	A	501	GDD	C5-C6-N1	4.45	121.81	113.95
3	D	501	GDD	C5-C6-N1	4.20	121.37	113.95
3	B	501	GDD	C5-C6-N1	4.12	121.22	113.95
3	C	501	GDD	C5-C6-N1	3.99	121.00	113.95
3	K	401	GDD	C5-C6-N1	3.94	120.92	113.95
3	H	401	GDD	C5-C6-N1	3.94	120.91	113.95
3	E	401	GDD	C5-C6-N1	3.87	120.79	113.95
3	J	401	GDD	C5-C6-N1	3.80	120.65	113.95
3	G	401	GDD	C5-C6-N1	3.72	120.52	113.95
3	F	401	GDD	C5-C6-N1	3.64	120.38	113.95
3	L	401	GDD	C5-C6-N1	3.58	120.27	113.95
3	I	401	GDD	C5-C6-N1	3.56	120.24	113.95
3	G	401	GDD	C8-N7-C5	3.13	108.96	102.99
3	J	401	GDD	C8-N7-C5	3.09	108.88	102.99
3	I	401	GDD	C8-N7-C5	3.08	108.85	102.99
3	F	401	GDD	C8-N7-C5	3.06	108.81	102.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	501	GDD	O6-C6-C5	-3.03	118.45	124.37
3	K	401	GDD	C8-N7-C5	3.00	108.71	102.99
3	H	401	GDD	C8-N7-C5	3.00	108.70	102.99
3	B	501	GDD	O6-C6-C5	-2.95	118.61	124.37
3	D	501	GDD	C8-N7-C5	2.94	108.60	102.99
3	A	501	GDD	C8-N7-C5	2.94	108.60	102.99
3	A	501	GDD	O6-C6-C5	-2.91	118.69	124.37
3	E	401	GDD	C8-N7-C5	2.84	108.39	102.99
3	C	501	GDD	C8-N7-C5	2.82	108.35	102.99
3	L	401	GDD	C8-N7-C5	2.81	108.34	102.99
3	D	501	GDD	O6-C6-C5	-2.79	118.93	124.37
3	B	501	GDD	C8-N7-C5	2.69	108.12	102.99
3	G	401	GDD	O6-C6-C5	-2.59	119.32	124.37
3	J	401	GDD	C61-C51-C41	-2.57	107.00	113.00
3	E	401	GDD	O6-C6-C5	-2.52	119.45	124.37
3	C	501	GDD	O2'-C2'-C3'	-2.50	103.73	111.82
3	L	401	GDD	O6-C6-C5	-2.47	119.54	124.37
3	L	401	GDD	C61-C51-C41	-2.45	107.26	113.00
3	D	501	GDD	O4'-C1'-C2'	-2.39	103.44	106.93
3	F	401	GDD	C61-C51-C41	-2.38	107.42	113.00
3	F	401	GDD	O6-C6-C5	-2.36	119.76	124.37
3	J	401	GDD	O6-C6-C5	-2.31	119.86	124.37
3	I	401	GDD	O6-C6-C5	-2.23	120.02	124.37
3	A	501	GDD	O2'-C2'-C3'	-2.22	104.63	111.82
3	C	501	GDD	C5'-C4'-C3'	-2.18	107.02	115.18
3	G	401	GDD	C61-C51-C41	-2.16	107.94	113.00
3	K	401	GDD	O6-C6-C5	-2.15	120.17	124.37
3	F	401	GDD	C3'-C2'-C1'	2.14	104.20	100.98
3	B	501	GDD	O31-C31-C21	-2.14	105.41	110.35
3	H	401	GDD	O6-C6-C5	-2.14	120.20	124.37
3	L	401	GDD	N1-C2-N3	2.10	127.25	123.32
3	H	401	GDD	N1-C2-N3	2.06	127.17	123.32
3	K	401	GDD	C3'-C2'-C1'	2.06	104.08	100.98
3	H	401	GDD	C3'-C2'-C1'	2.05	104.07	100.98
3	K	401	GDD	N1-C2-N3	2.05	127.15	123.32
3	A	501	GDD	C61-C51-C41	-2.04	108.22	113.00

There are no chirality outliers.

All (62) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	K	401	GDD	C5'-O5'-PA-O1A

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Mol	Chain	Res	Type	Atoms
3	K	401	GDD	C5'-O5'-PA-O2A
3	K	401	GDD	C5'-O5'-PA-O3A
3	K	401	GDD	C11-O1B-PB-O3A
3	I	401	GDD	C5'-O5'-PA-O2A
3	I	401	GDD	C5'-O5'-PA-O3A
3	A	501	GDD	C5'-O5'-PA-O3A
3	B	501	GDD	C5'-O5'-PA-O3A
3	C	501	GDD	C5'-O5'-PA-O1A
3	C	501	GDD	C5'-O5'-PA-O2A
3	C	501	GDD	C5'-O5'-PA-O3A
3	C	501	GDD	C11-O1B-PB-O3A
3	D	501	GDD	C5'-O5'-PA-O3A
3	E	401	GDD	C11-O1B-PB-O3A
3	F	401	GDD	C11-O1B-PB-O3A
3	G	401	GDD	C5'-O5'-PA-O2A
3	G	401	GDD	C5'-O5'-PA-O3A
3	H	401	GDD	C5'-O5'-PA-O1A
3	H	401	GDD	C5'-O5'-PA-O2A
3	H	401	GDD	C5'-O5'-PA-O3A
3	H	401	GDD	C11-O1B-PB-O3A
3	J	401	GDD	C5'-O5'-PA-O3A
3	L	401	GDD	C5'-O5'-PA-O2A
3	L	401	GDD	C5'-O5'-PA-O3A
3	L	401	GDD	C11-O1B-PB-O3A
3	A	501	GDD	O4'-C4'-C5'-O5'
3	B	501	GDD	O4'-C4'-C5'-O5'
3	D	501	GDD	O4'-C4'-C5'-O5'
3	A	501	GDD	O51-C51-C61-O6A
3	I	401	GDD	C11-O1B-PB-O3A
3	A	501	GDD	C41-C51-C61-O6A
3	A	501	GDD	C3'-C4'-C5'-O5'
3	J	401	GDD	C11-O1B-PB-O3A
3	D	501	GDD	C3'-C4'-C5'-O5'
3	G	401	GDD	C11-O1B-PB-O3A
3	B	501	GDD	O51-C51-C61-O6A
3	D	501	GDD	C11-O1B-PB-O3A
3	A	501	GDD	C11-O1B-PB-O3A
3	E	401	GDD	C5'-O5'-PA-O3A
3	A	501	GDD	PB-O3A-PA-O2A
3	D	501	GDD	PB-O3A-PA-O2A
3	I	401	GDD	C5'-O5'-PA-O1A
3	A	501	GDD	C5'-O5'-PA-O2A

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Mol	Chain	Res	Type	Atoms
3	B	501	GDD	C5'-O5'-PA-O1A
3	B	501	GDD	C5'-O5'-PA-O2A
3	D	501	GDD	C5'-O5'-PA-O2A
3	G	401	GDD	C5'-O5'-PA-O1A
3	J	401	GDD	C5'-O5'-PA-O2A
3	L	401	GDD	C5'-O5'-PA-O1A
3	B	501	GDD	C3'-C4'-C5'-O5'
3	C	501	GDD	PB-O3A-PA-O2A
3	I	401	GDD	C21-C11-O1B-PB
3	C	501	GDD	O4'-C4'-C5'-O5'
3	F	401	GDD	C21-C11-O1B-PB
3	B	501	GDD	PB-O3A-PA-O2A
3	C	501	GDD	PB-O3A-PA-O1A
3	B	501	GDD	C41-C51-C61-O6A
3	A	501	GDD	C5'-O5'-PA-O1A
3	D	501	GDD	C5'-O5'-PA-O1A
3	J	401	GDD	C5'-O5'-PA-O1A
3	C	501	GDD	O51-C51-C61-O6A
3	B	501	GDD	C11-O1B-PB-O3A

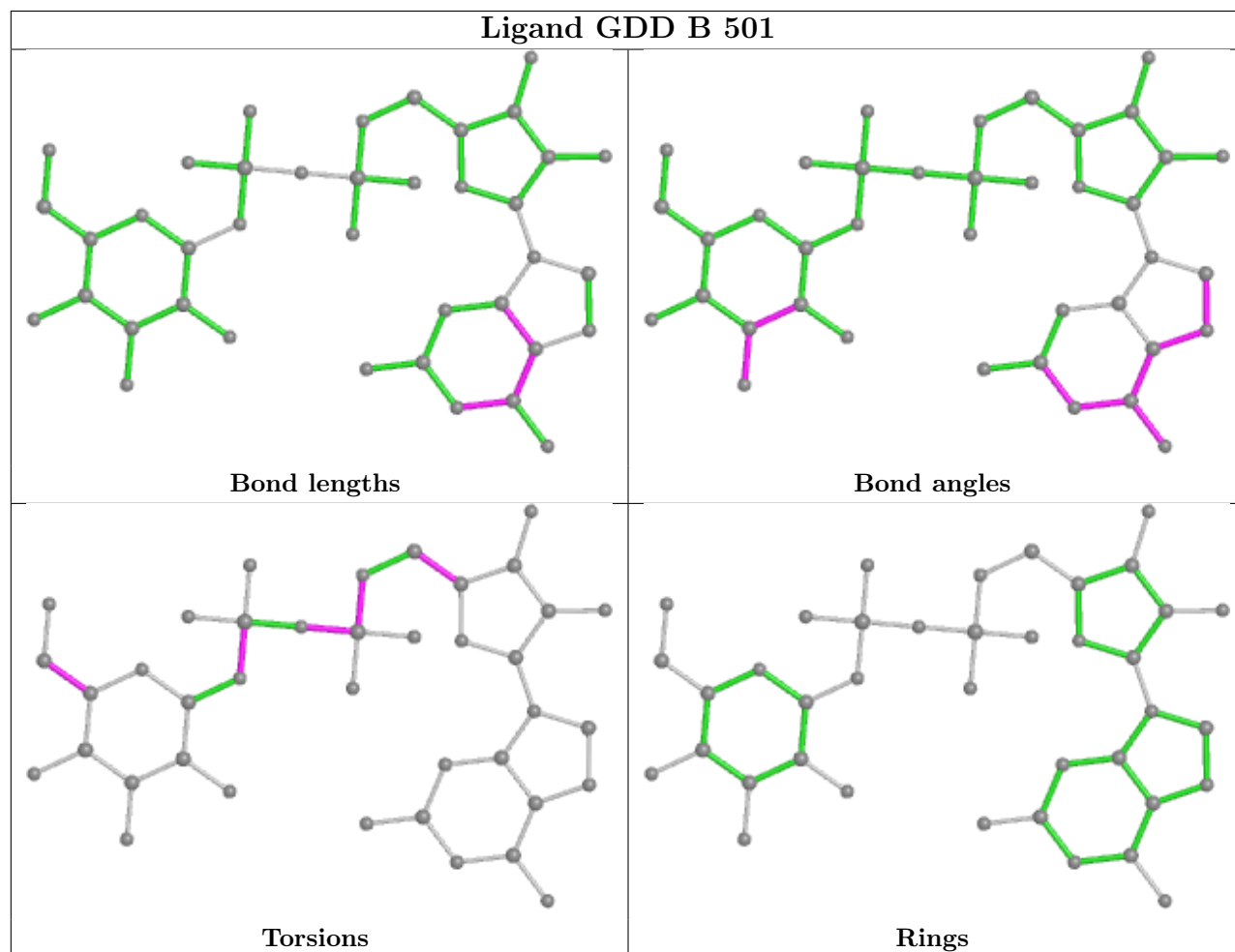
There are no ring outliers.

10 monomers are involved in 28 short contacts:

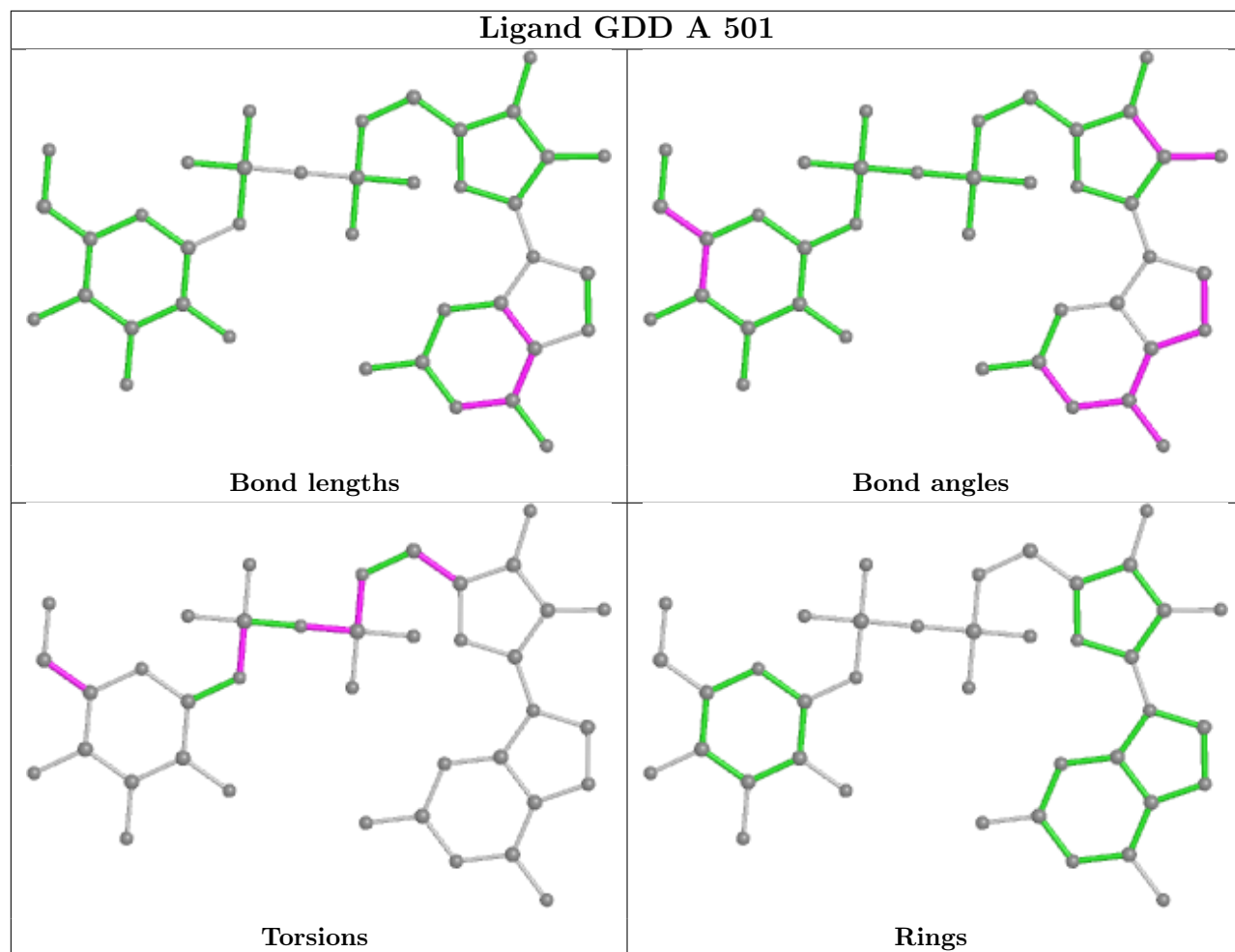
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	501	GDD	1	0
3	A	501	GDD	1	0
3	H	401	GDD	5	0
3	I	401	GDD	4	0
3	L	401	GDD	2	0
3	K	401	GDD	6	0
3	F	401	GDD	2	0
3	J	401	GDD	1	0
3	E	401	GDD	2	0
3	G	401	GDD	4	0

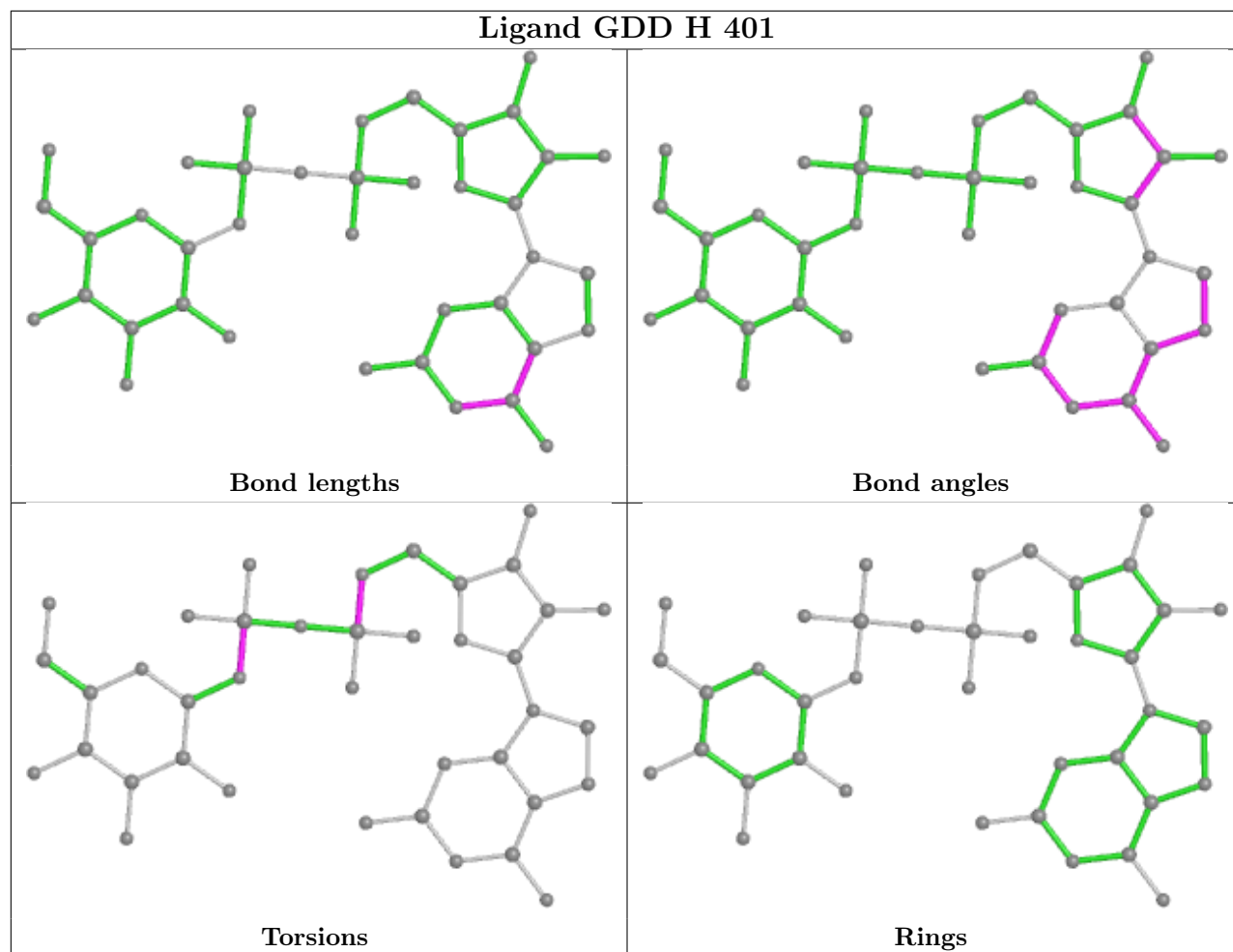
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

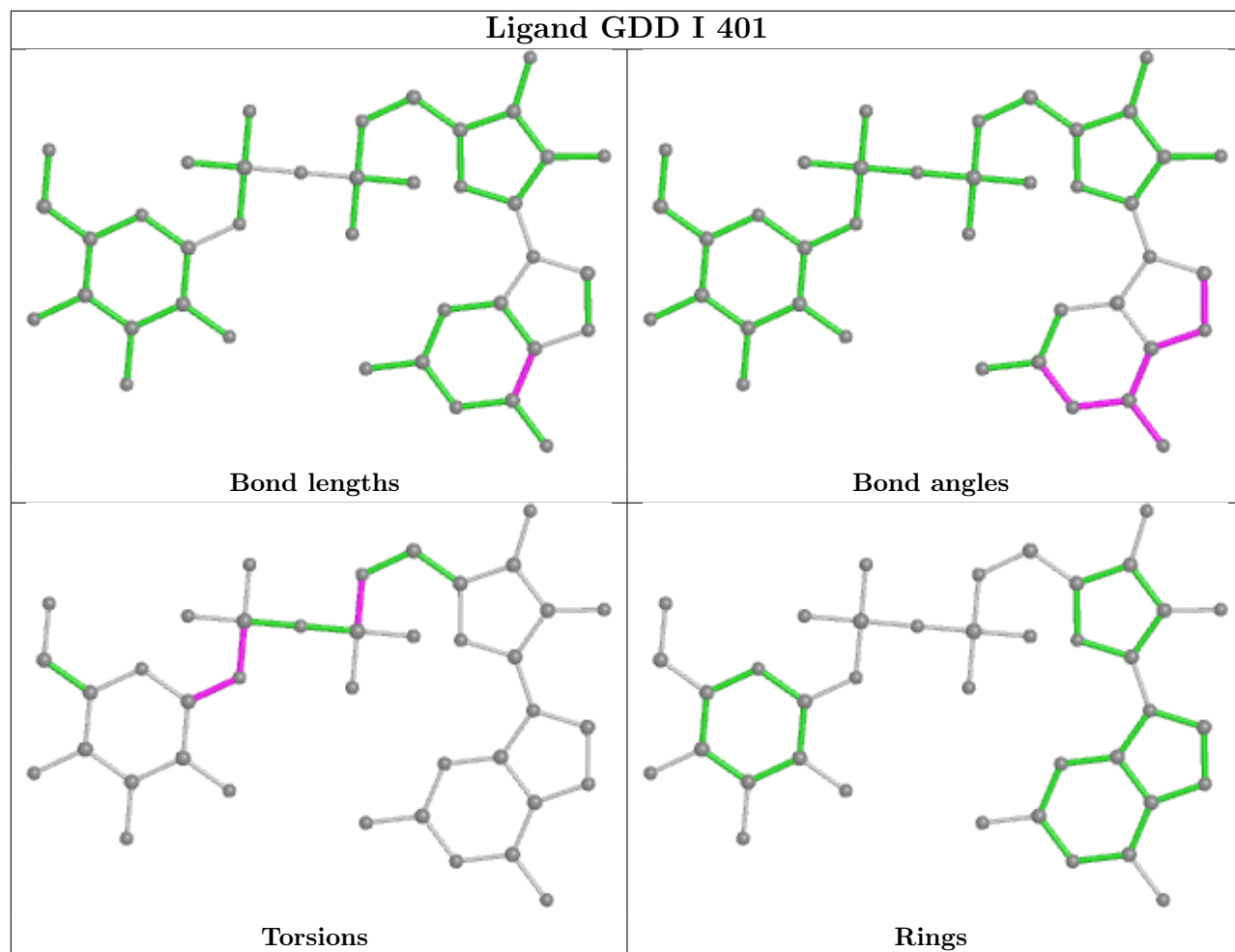
in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

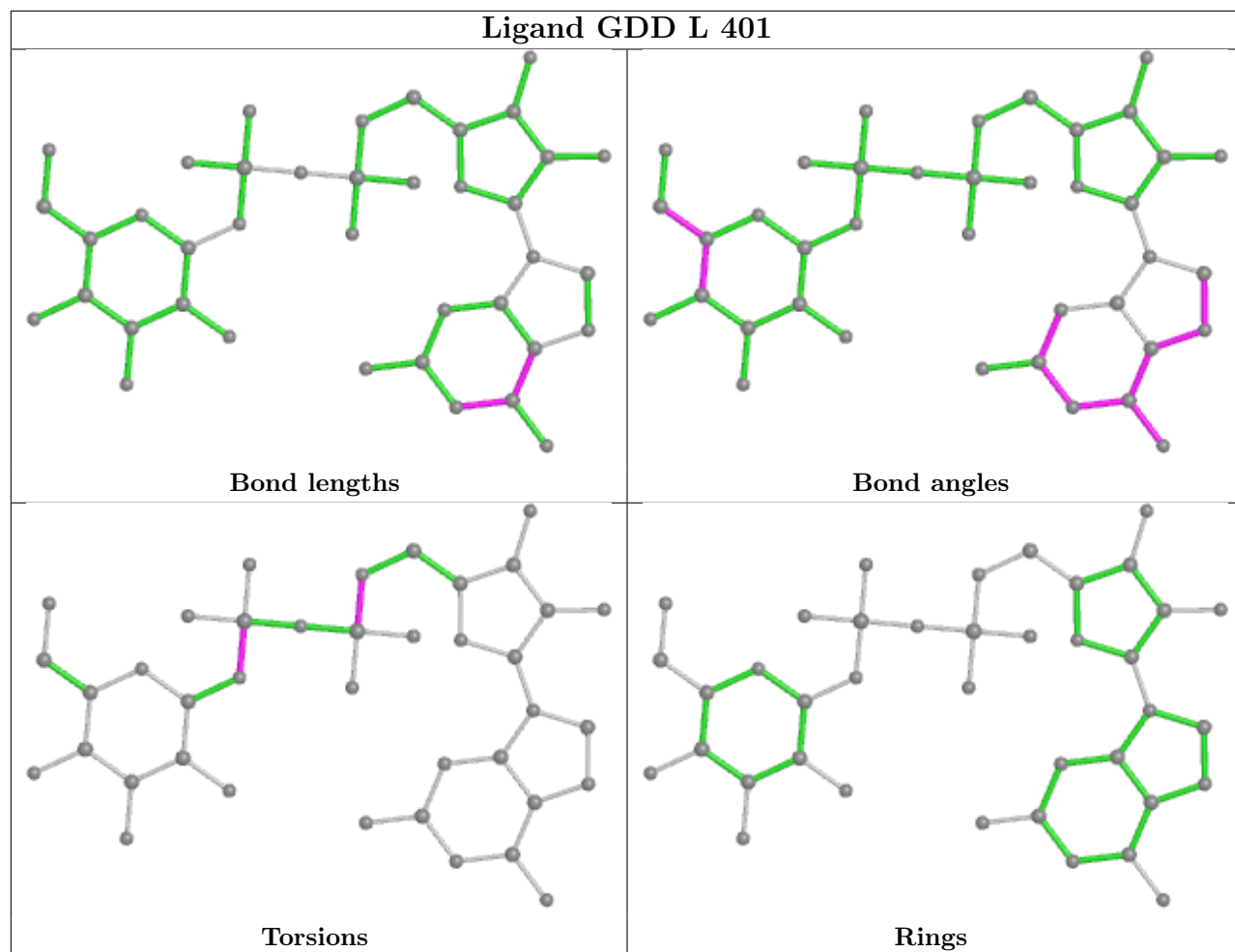


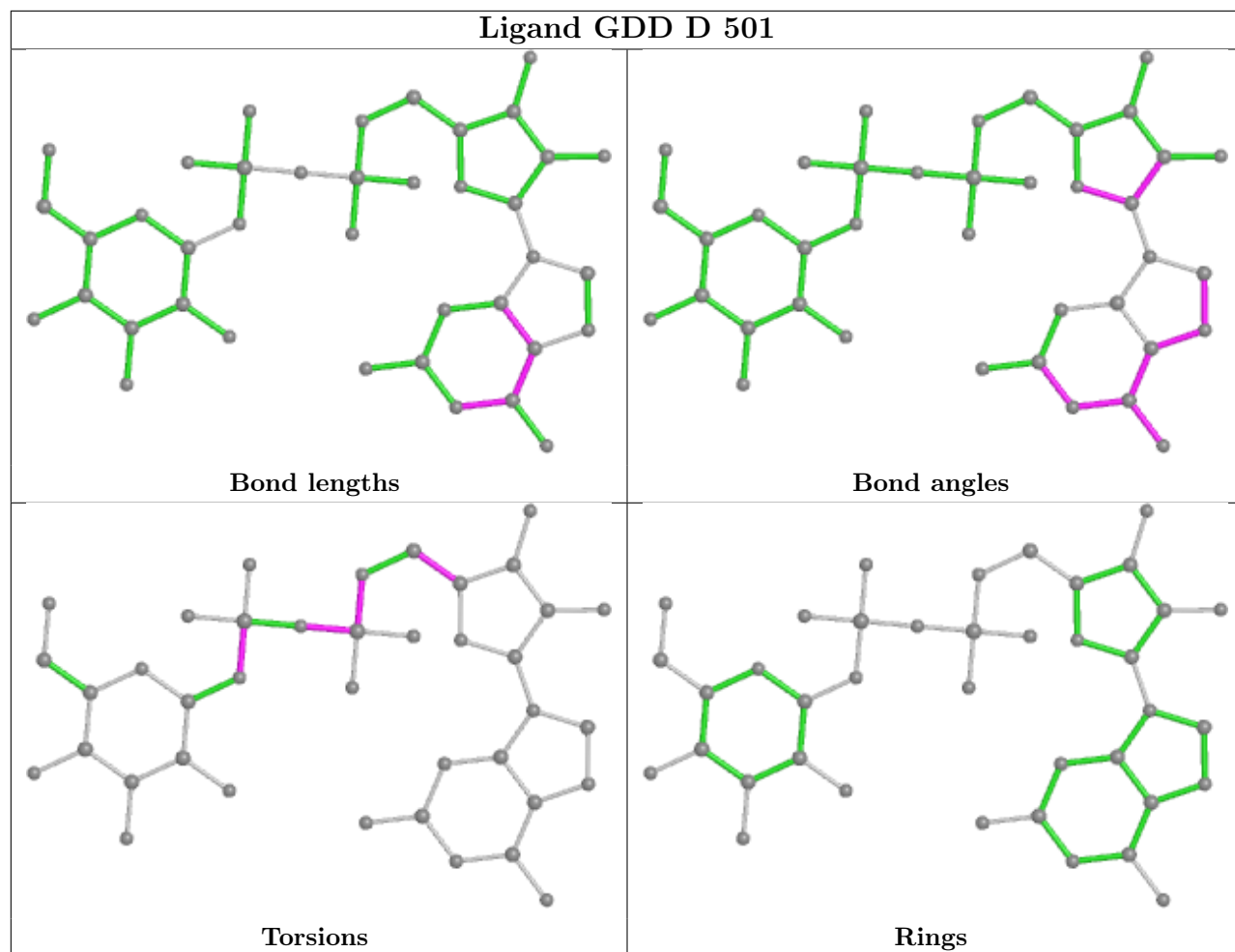


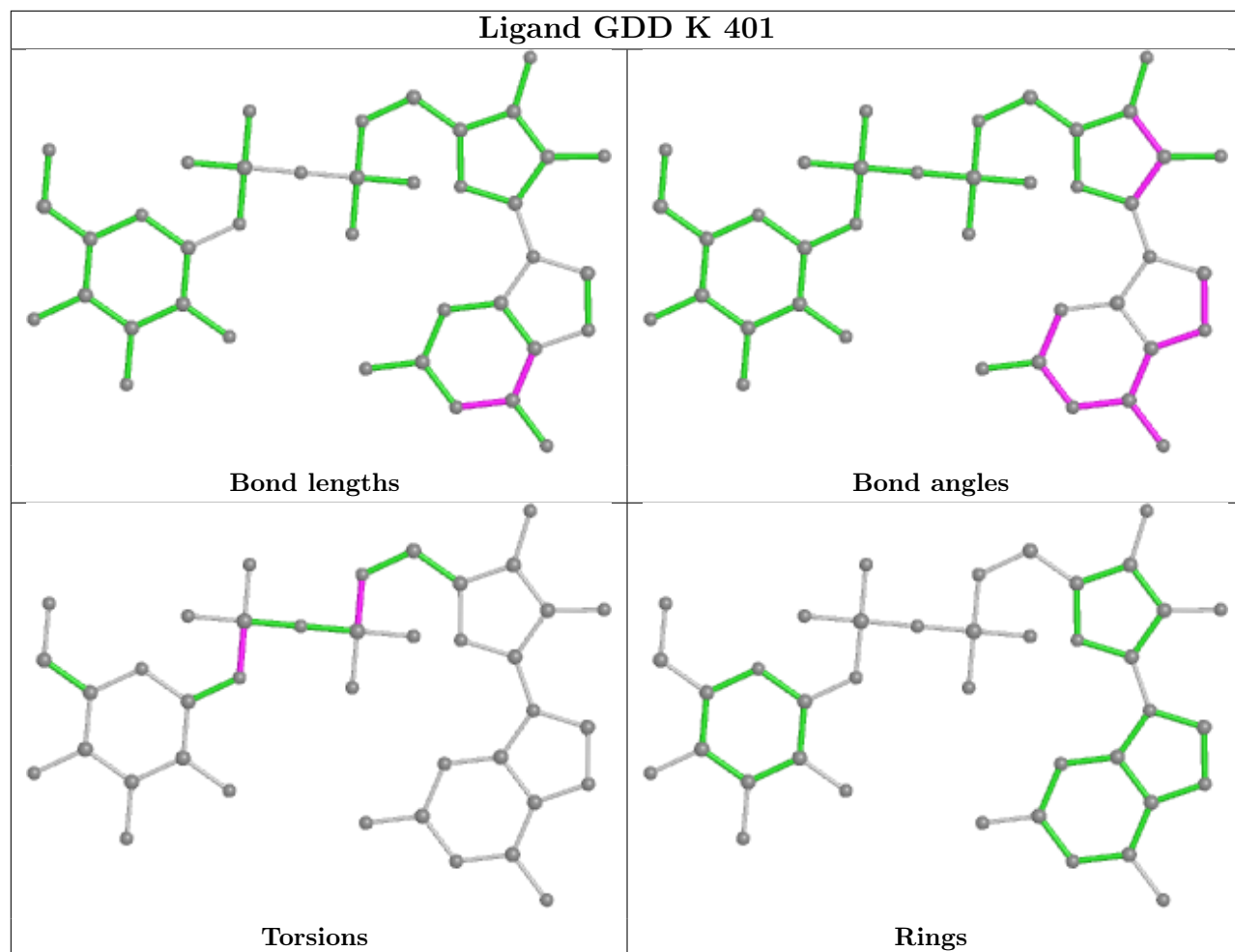


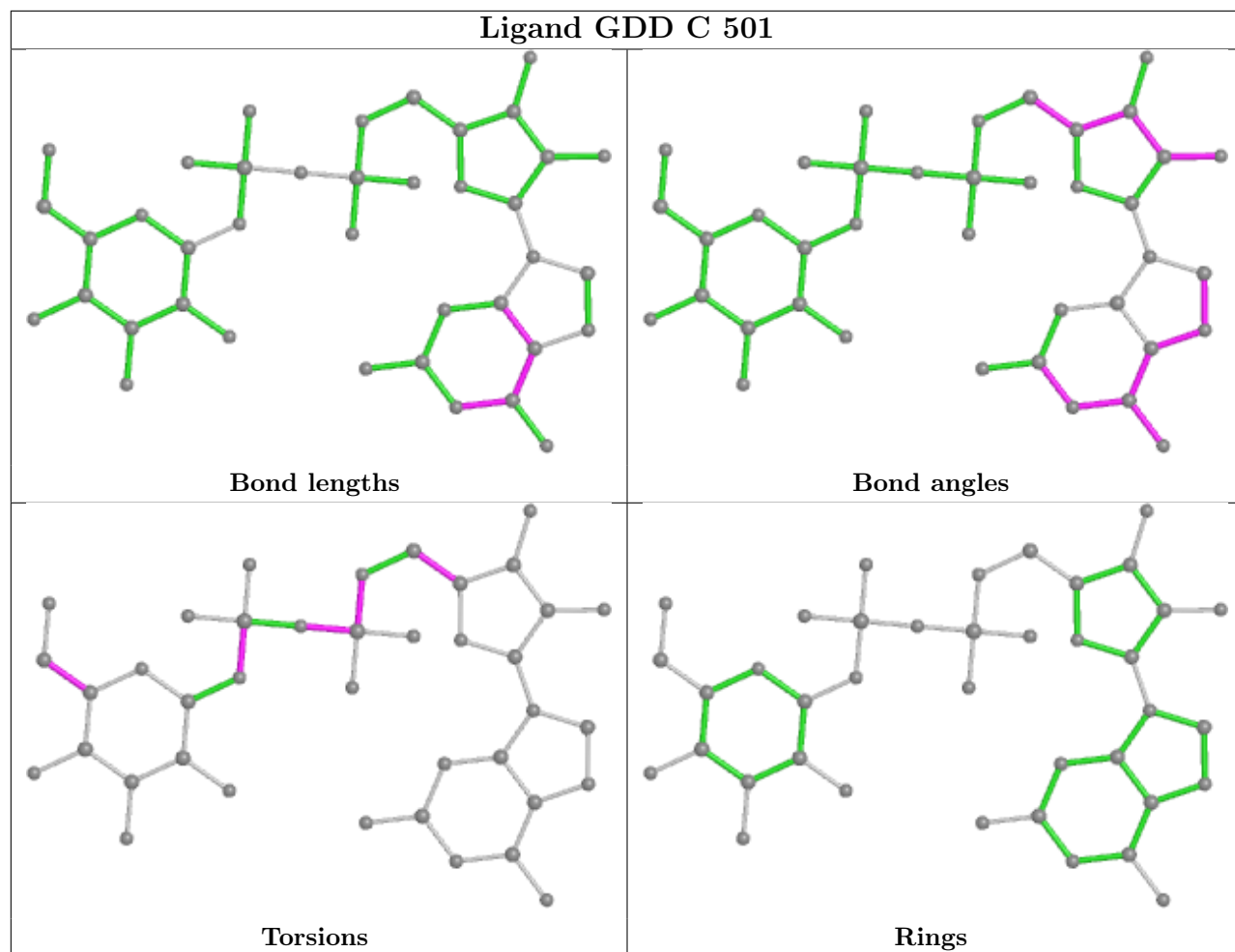


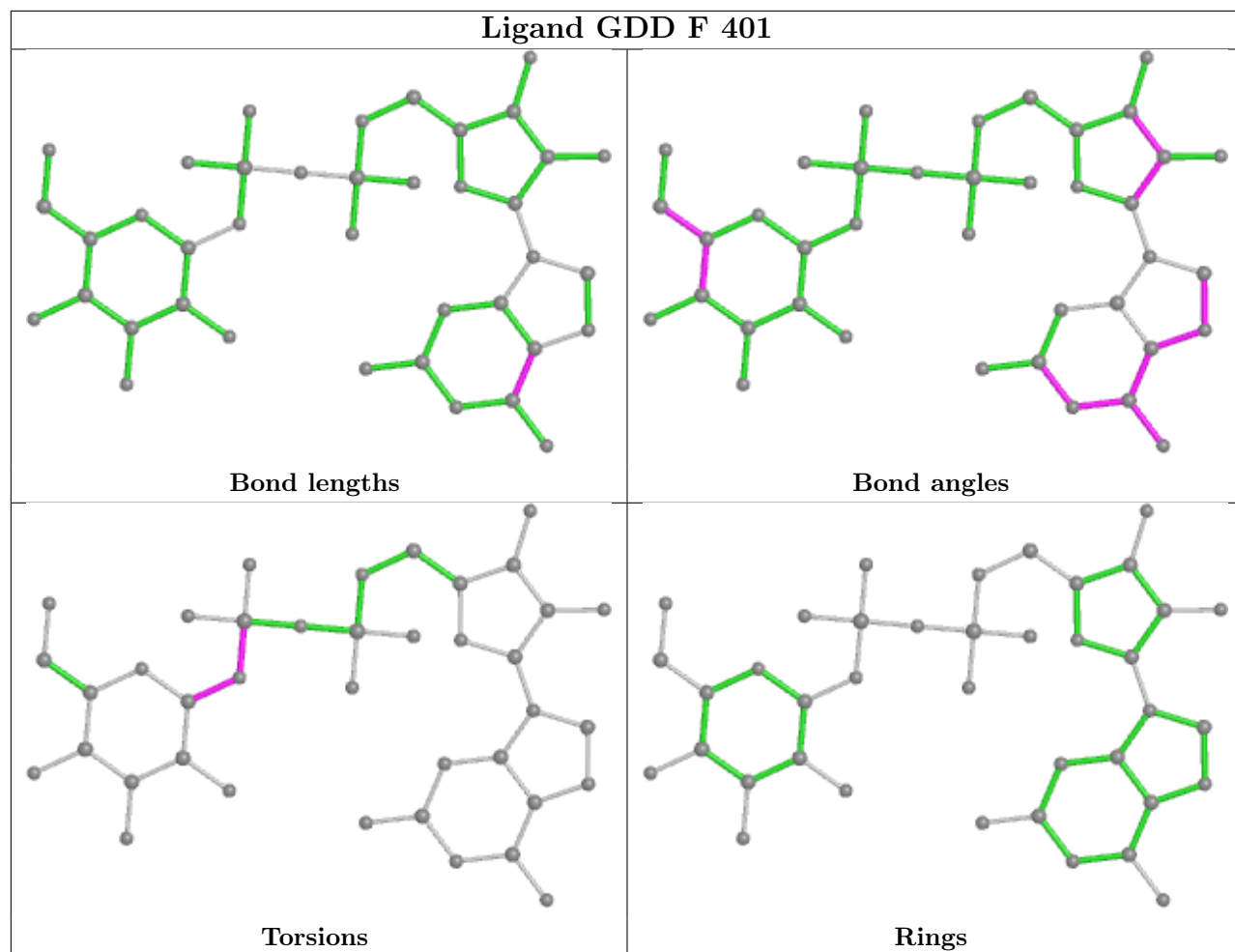




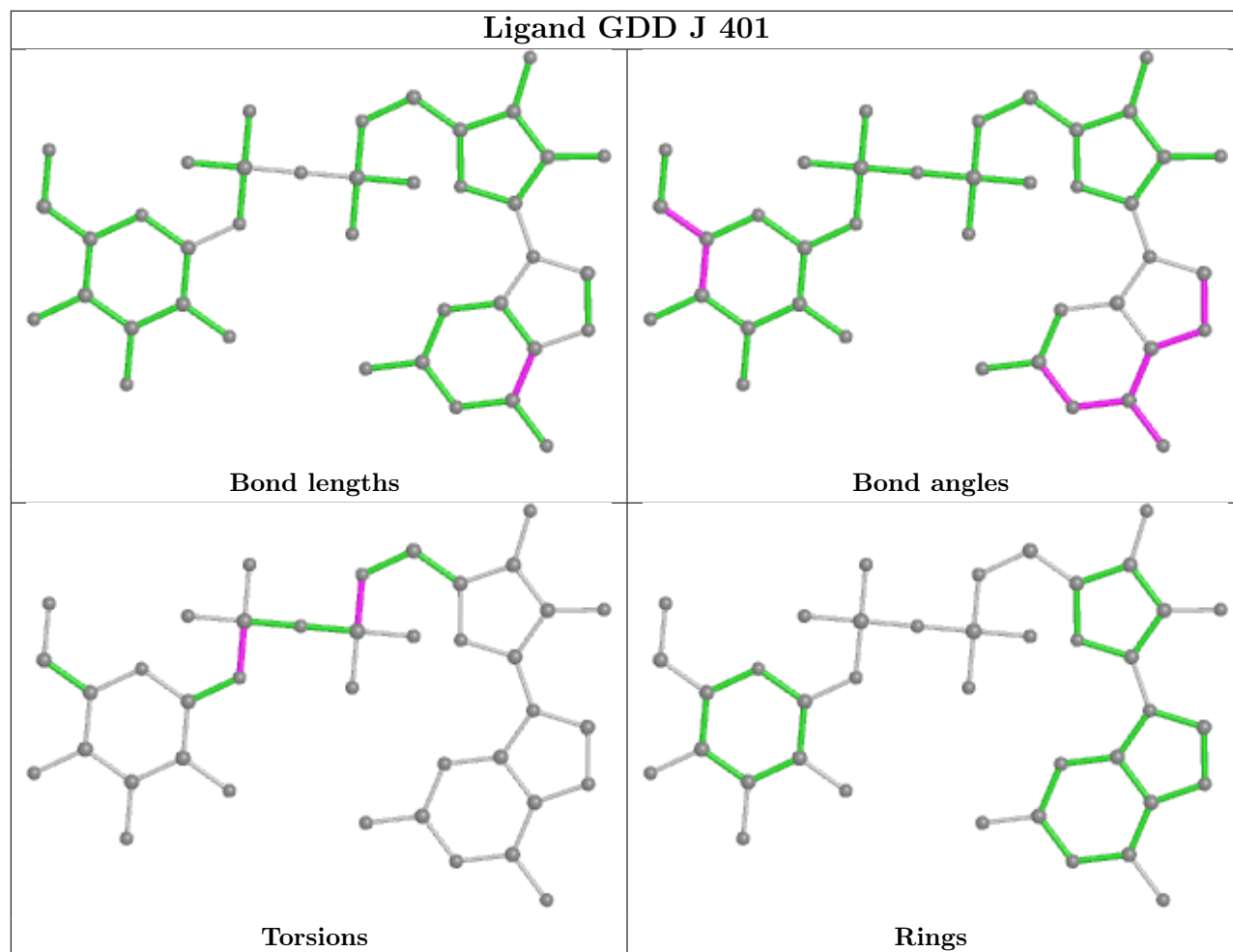


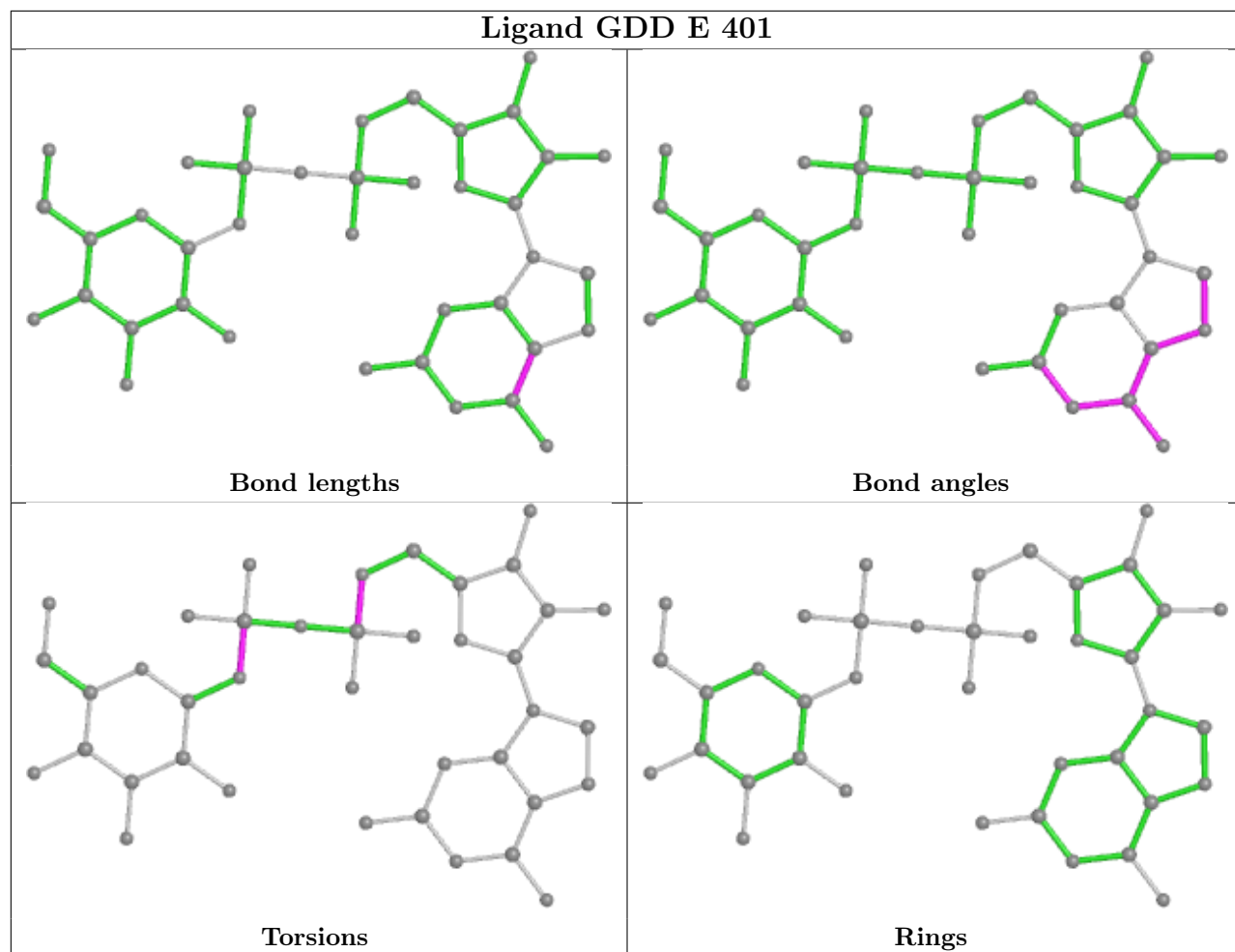


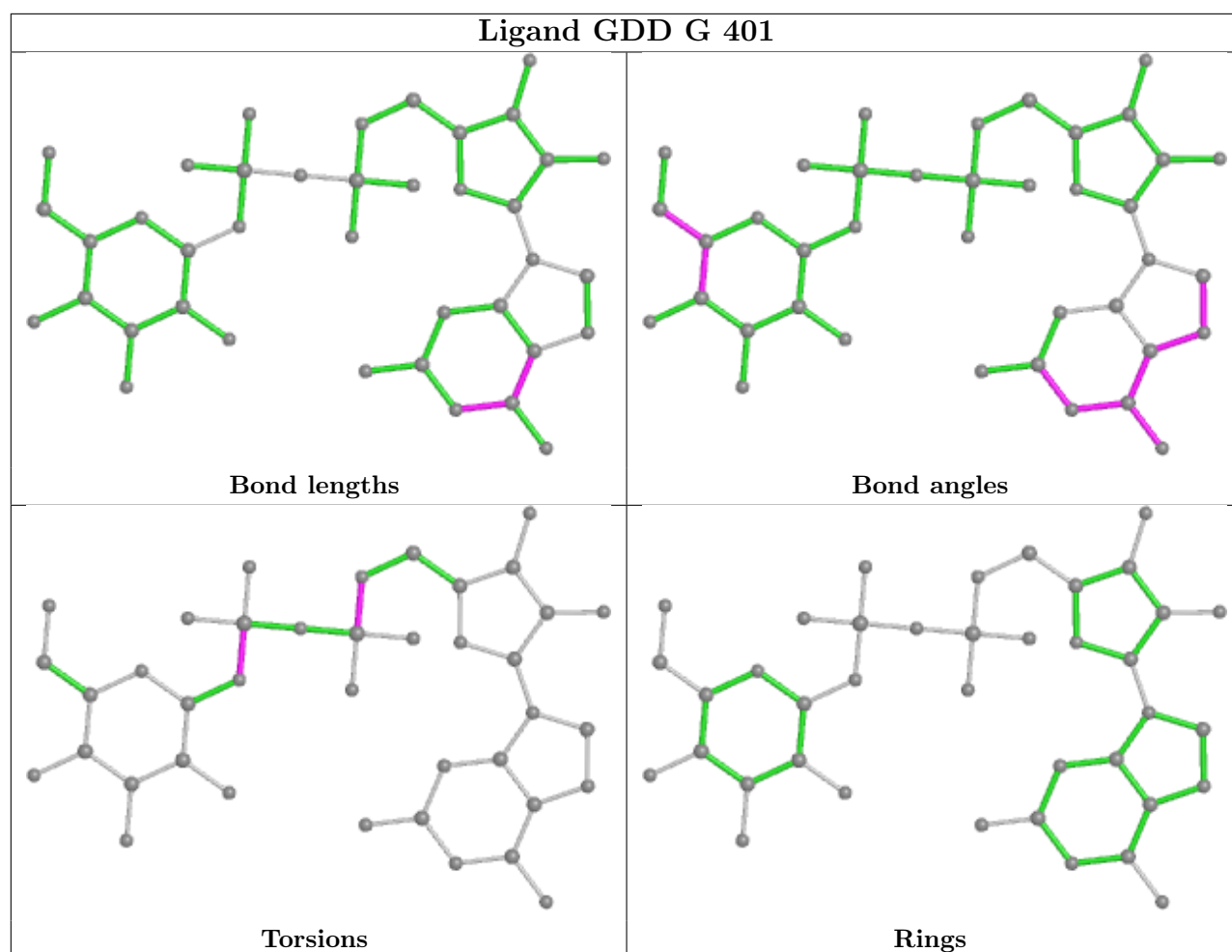












## 5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

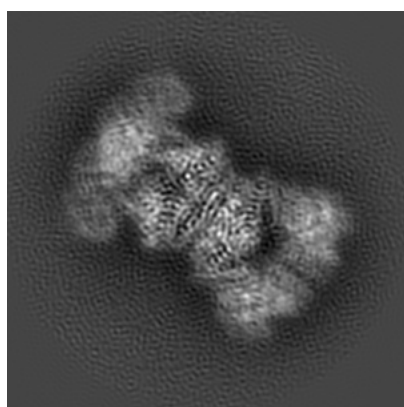
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30599. These allow visual inspection of the internal detail of the map and identification of artifacts.

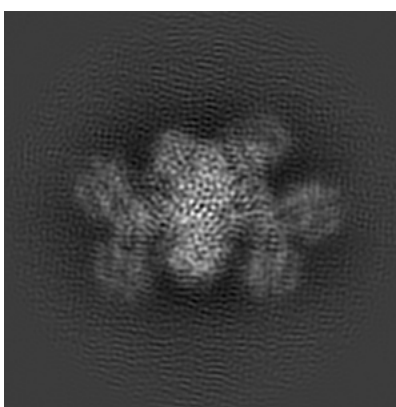
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

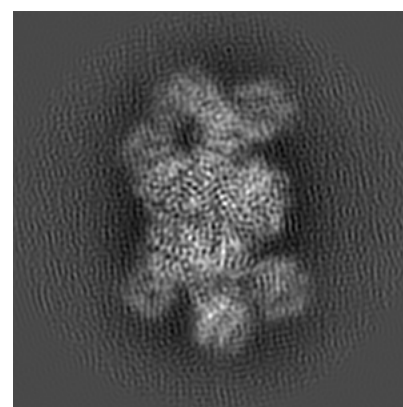
#### 6.1.1 Primary map



X



Y

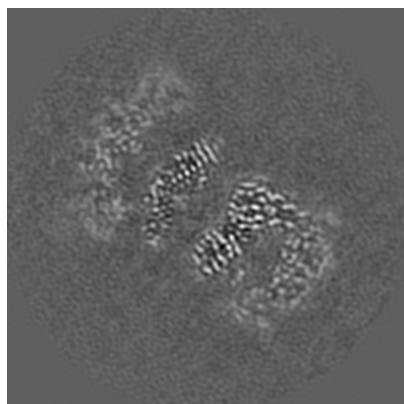


Z

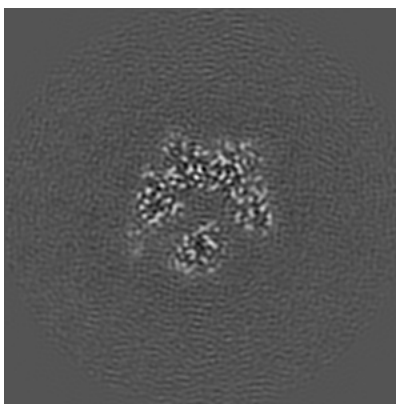
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

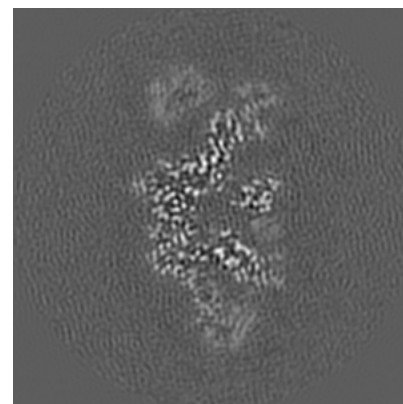
#### 6.2.1 Primary map



X Index: 120



Y Index: 120

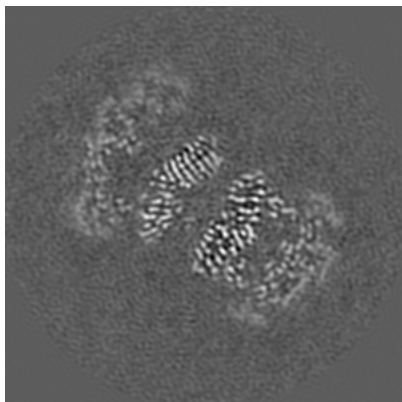


Z Index: 120

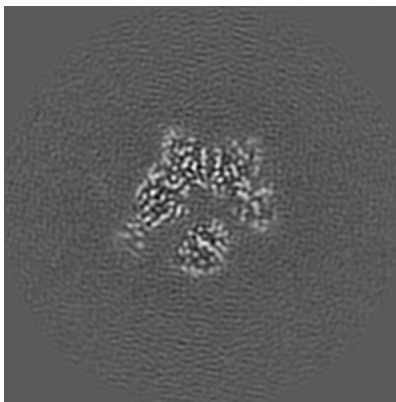
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

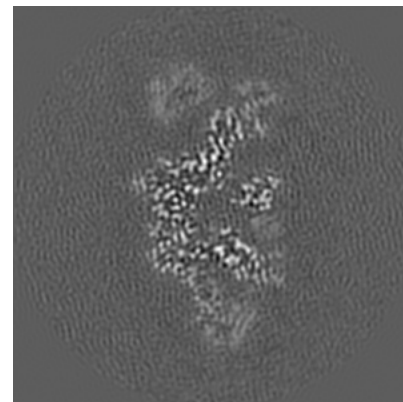
### 6.3.1 Primary map



X Index: 117



Y Index: 123

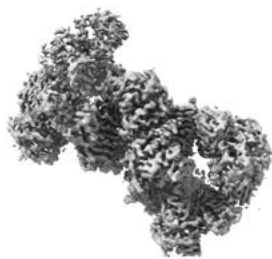


Z Index: 120

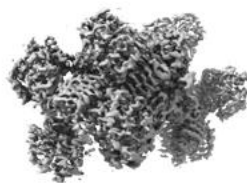
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal surface views [i](#)

### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

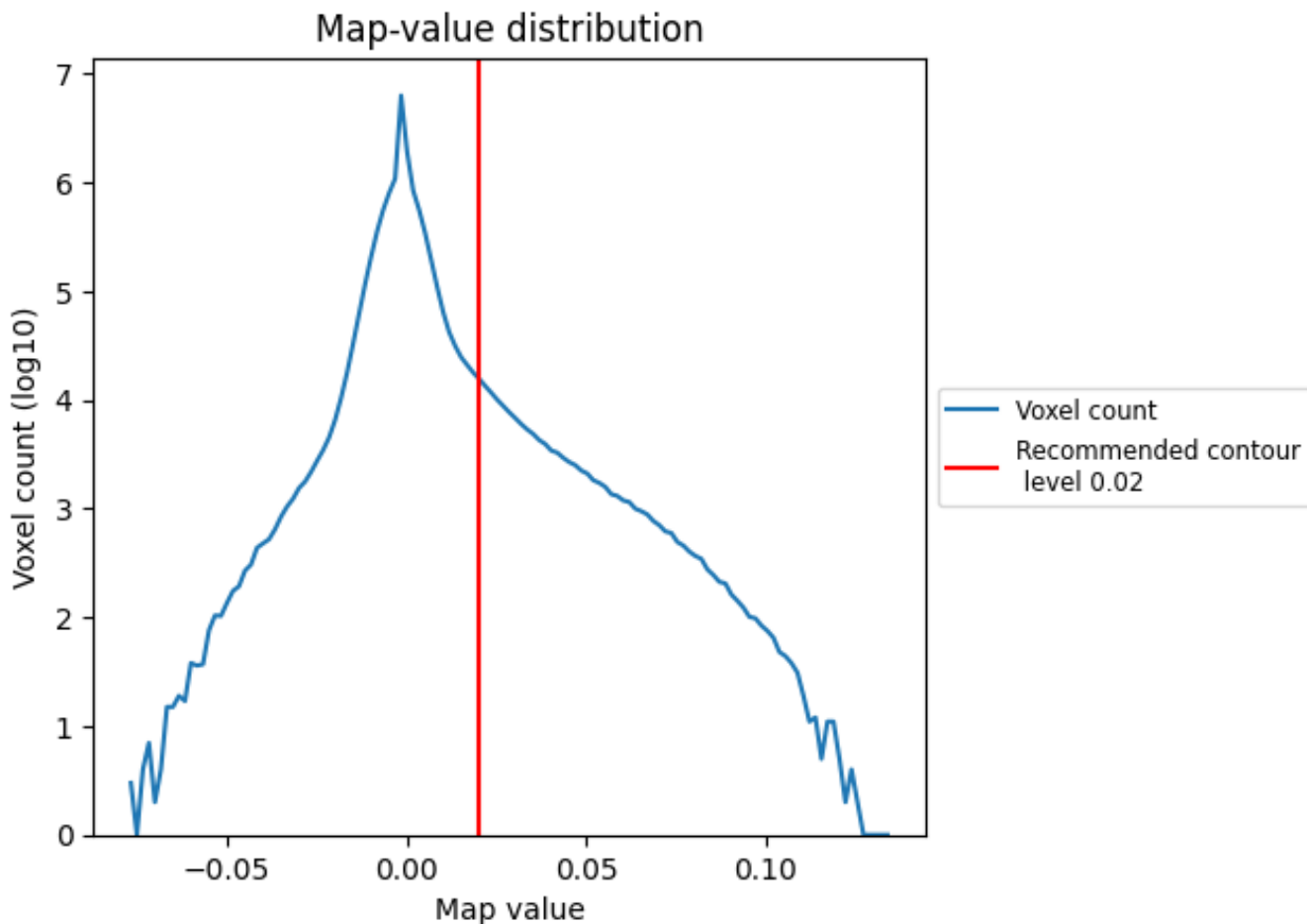
## 6.5 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

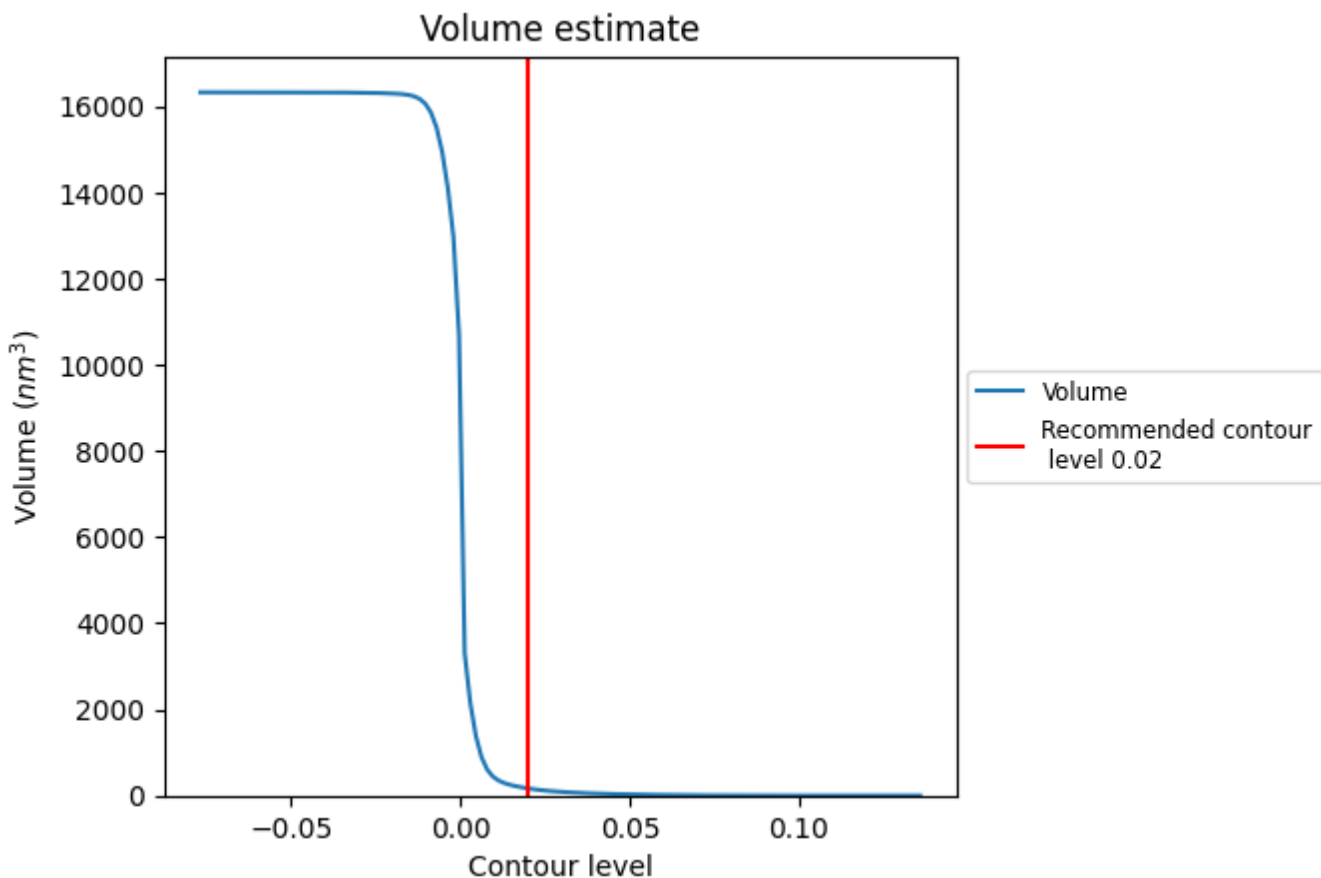
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

## 7.2 Volume estimate [i](#)

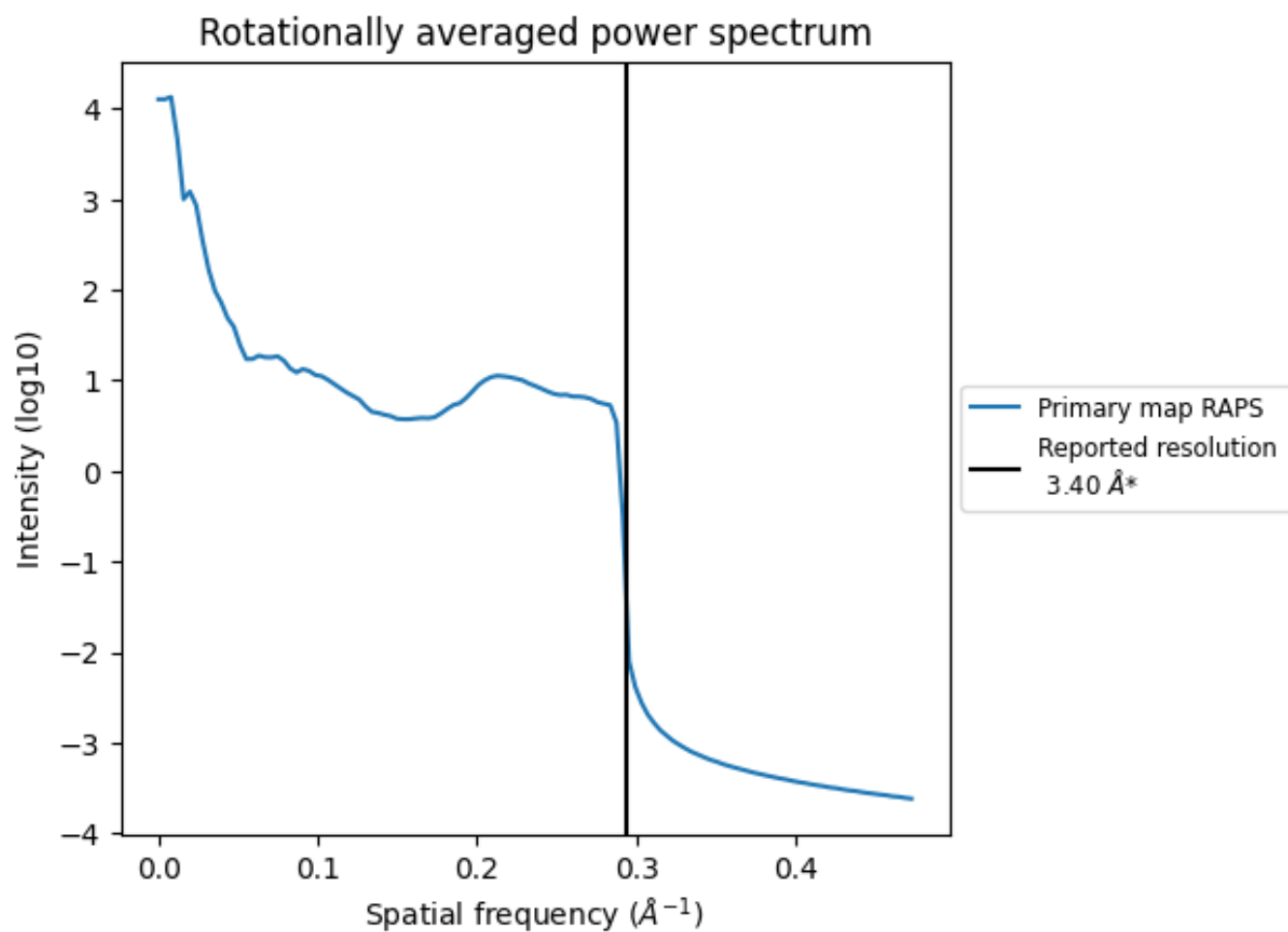


The volume at the recommended contour level is 166 nm<sup>3</sup>; this corresponds to an approximate mass of 150 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.



### 7.3 Rotationally averaged power spectrum [i](#)



\*Reported resolution corresponds to spatial frequency of 0.294 Å<sup>-1</sup>

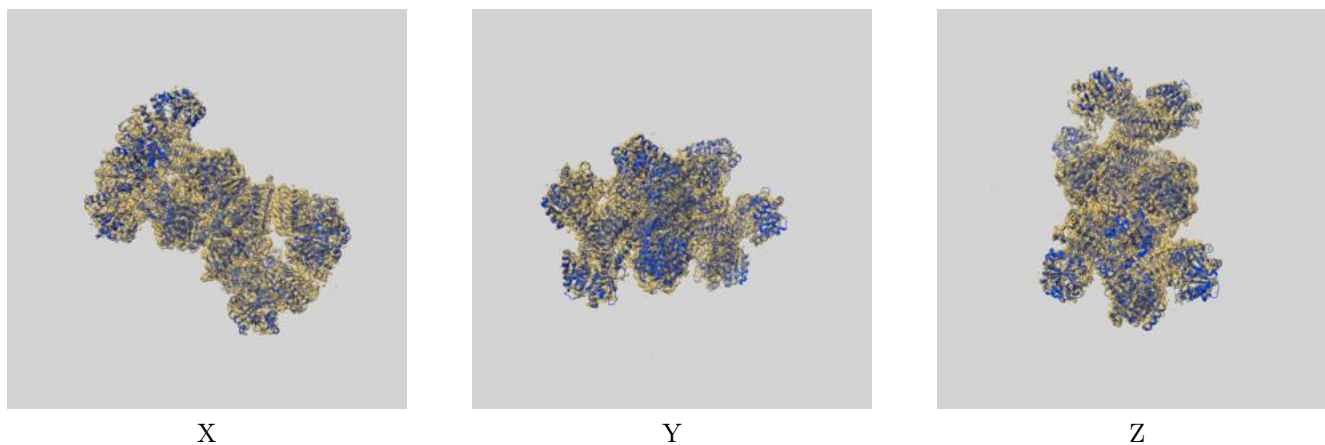
## 8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

## 9 Map-model fit [i](#)

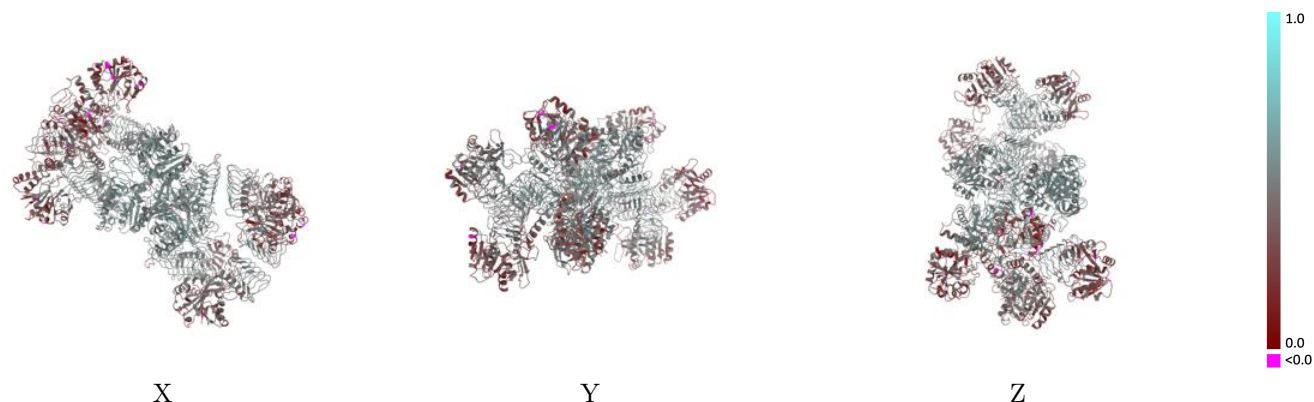
This section contains information regarding the fit between EMDB map EMD-30599 and PDB model 7D72. Per-residue inclusion information can be found in section 3 on page 7.

### 9.1 Map-model overlay [i](#)



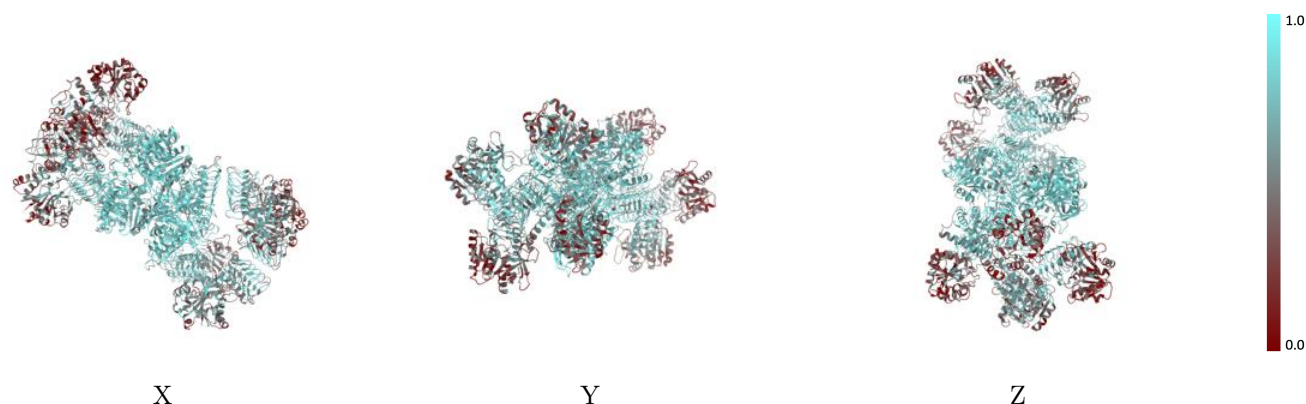
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



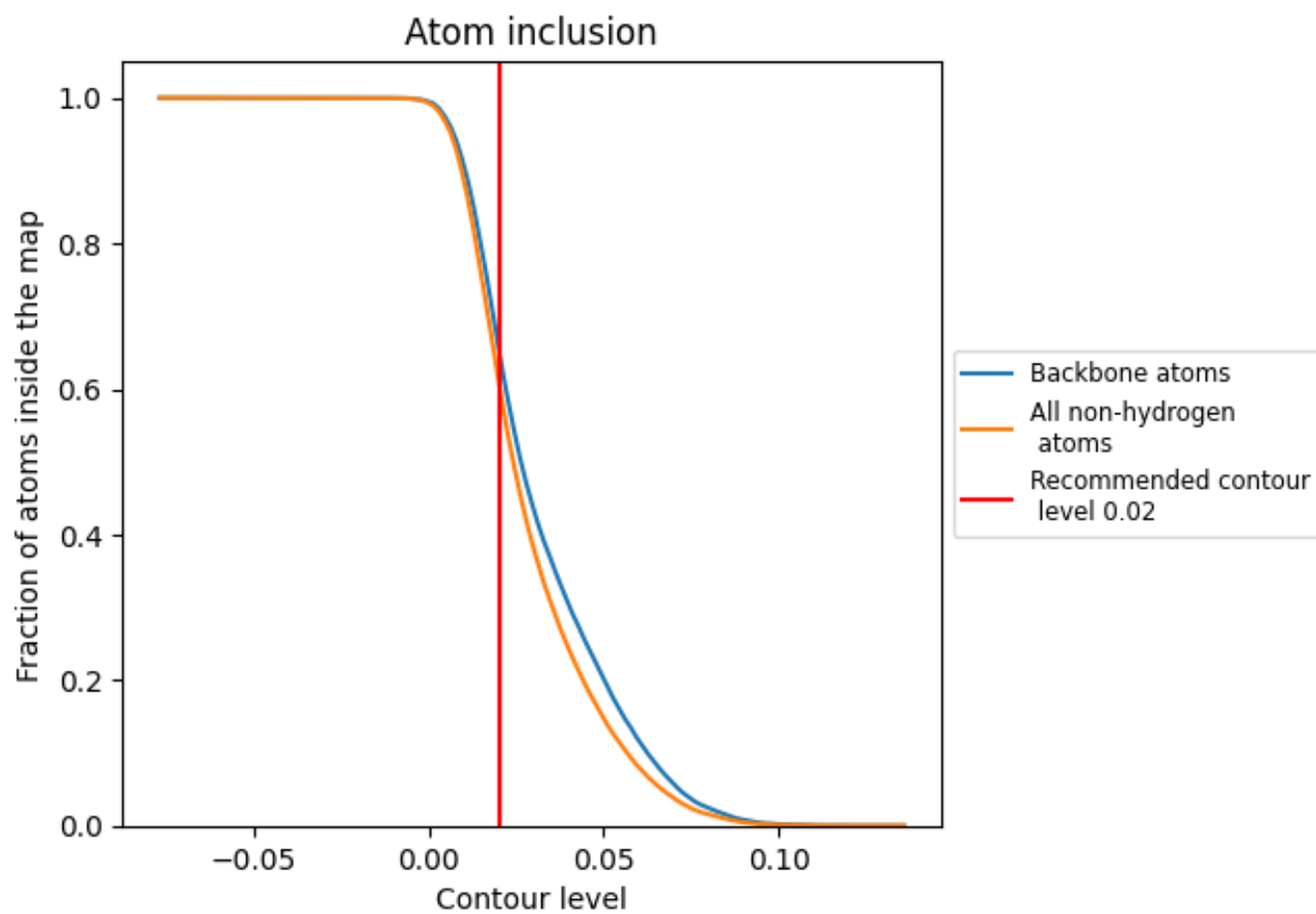
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.02).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 66% of all backbone atoms, 61% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6105	0.4440
A	0.8167	0.5330
B	0.8066	0.5250
C	0.8120	0.5300
D	0.7906	0.5230
E	0.4933	0.3940
F	0.5693	0.4140
G	0.5859	0.4310
H	0.5025	0.4040
I	0.4543	0.3770
J	0.5281	0.4030
K	0.5007	0.3940
L	0.4059	0.3580

