



Full wwPDB EM Validation Report ⓘ

Mar 25, 2026 – 02:10 PM UTC

PDB ID : 6J6I / pdb_00006j6i
EMDB ID : EMD-0688
Title : Reconstitution and structure of a plant NLR resistosome conferring immunity
Authors : Wang, J.Z.; Wang, J.; Hu, M.J.; Wang, H.W.; Zhou, J.M.; Chai, J.J.
Deposited on : 2019-01-15
Resolution : 3.70 Å (reported)
Based on initial model : 3TL8

This is a Full wwPDB EM 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/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>.

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

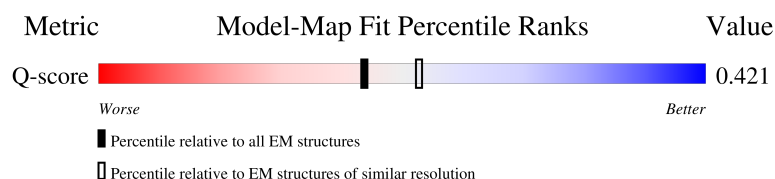
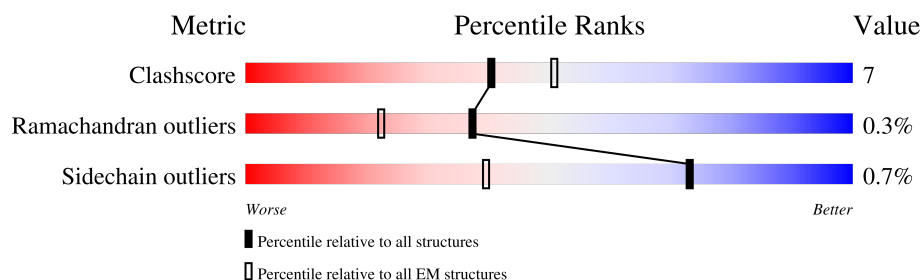
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
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:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.70 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	11569 (3.20 - 4.20)

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 ≥ 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	A	426	
2	B	351	
3	C	852	
3	F	852	

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Mol	Chain	Length	Quality of chain
3	G	852	9% 75% 18% 7%
3	L	852	9% 74% 18% 7%
3	O	852	8% 74% 18% 7%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 35991 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 Probable serine/threonine-protein kinase PBL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	195	Total	C	N	O	S	0	0
			1523	983	261	273	6		

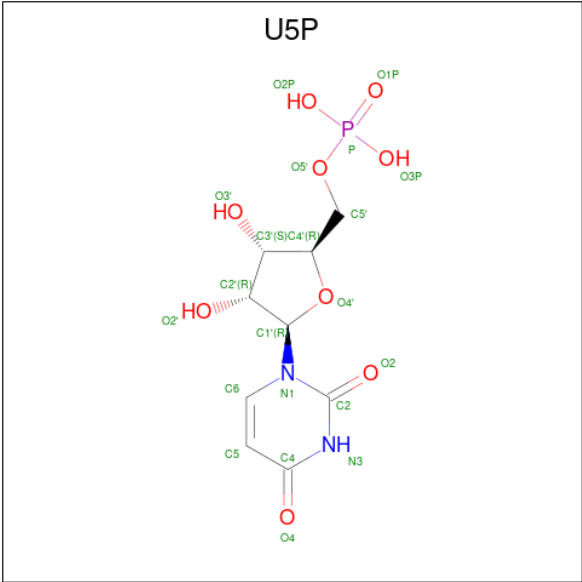
- Molecule 2 is a protein called Protein kinase superfamily protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	327	Total	C	N	O	S	0	0
			2629	1686	447	479	17		

- Molecule 3 is a protein called Disease resistance RPP13-like protein 4.

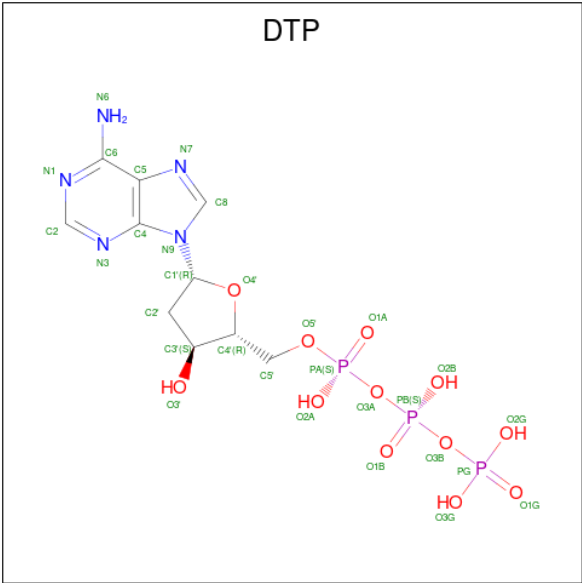
Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	790	Total	C	N	O	S	0	0
			6330	4002	1088	1201	39		
3	F	790	Total	C	N	O	S	0	0
			6330	4002	1088	1201	39		
3	G	790	Total	C	N	O	S	0	0
			6330	4002	1088	1201	39		
3	L	790	Total	C	N	O	S	0	0
			6330	4002	1088	1201	39		
3	O	790	Total	C	N	O	S	0	0
			6330	4002	1088	1201	39		

- Molecule 4 is URIDINE-5'-MONOPHOSPHATE (CCD ID: U5P) (formula: C₉H₁₃N₂O₉P).



Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total	C	N	O	P	0
			19	9	1	8	1	
4	A	1	Total	C	N	O	P	0
			20	9	2	8	1	

- Molecule 5 is 2'-DEOXYADENOSINE 5'-TRIPHOSPHATE (CCD ID: DTP) (formula: $C_{10}H_{16}N_5O_{12}P_3$)



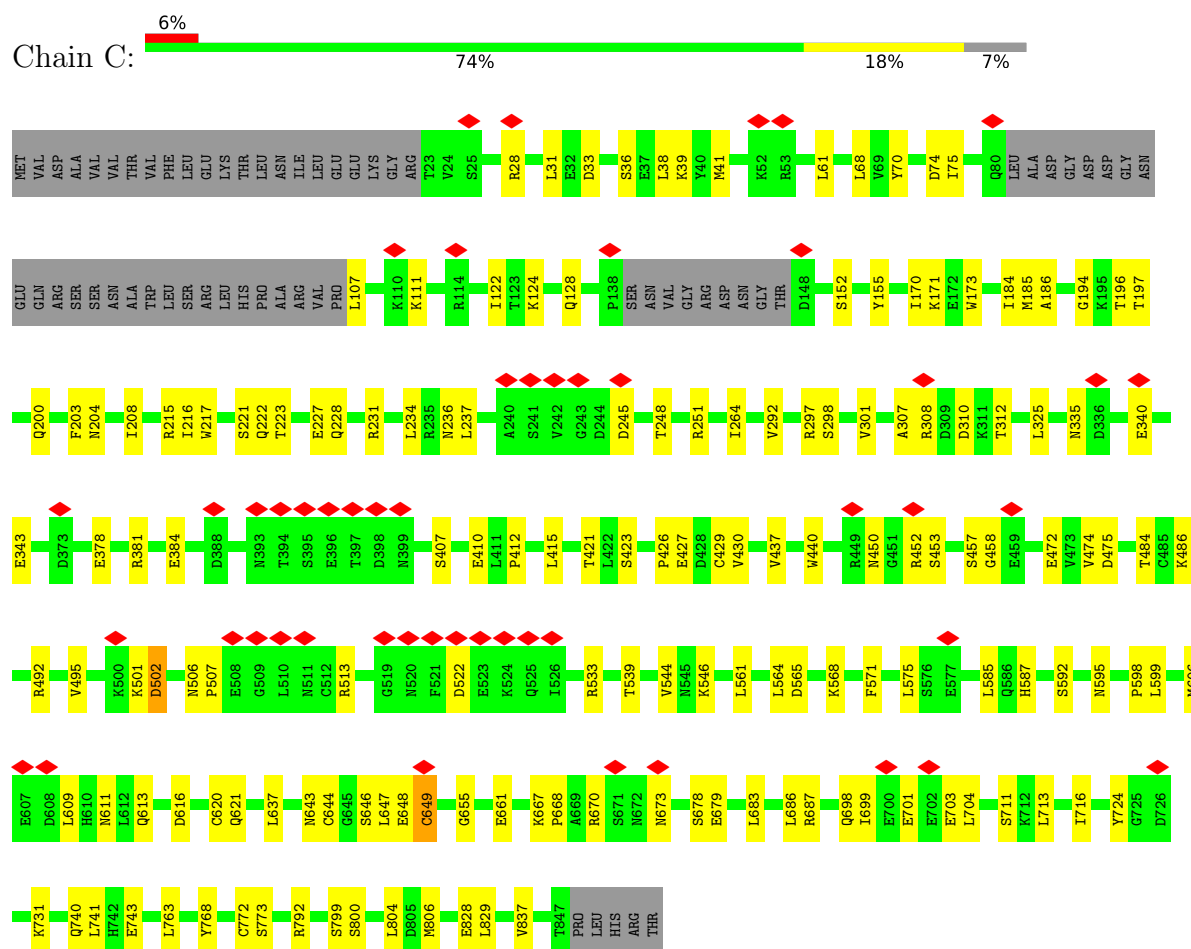
Mol	Chain	Residues	Atoms					AltConf
5	C	1	Total	C	N	O	P	0
			30	10	5	12	3	
5	F	1	Total	C	N	O	P	0
			30	10	5	12	3	

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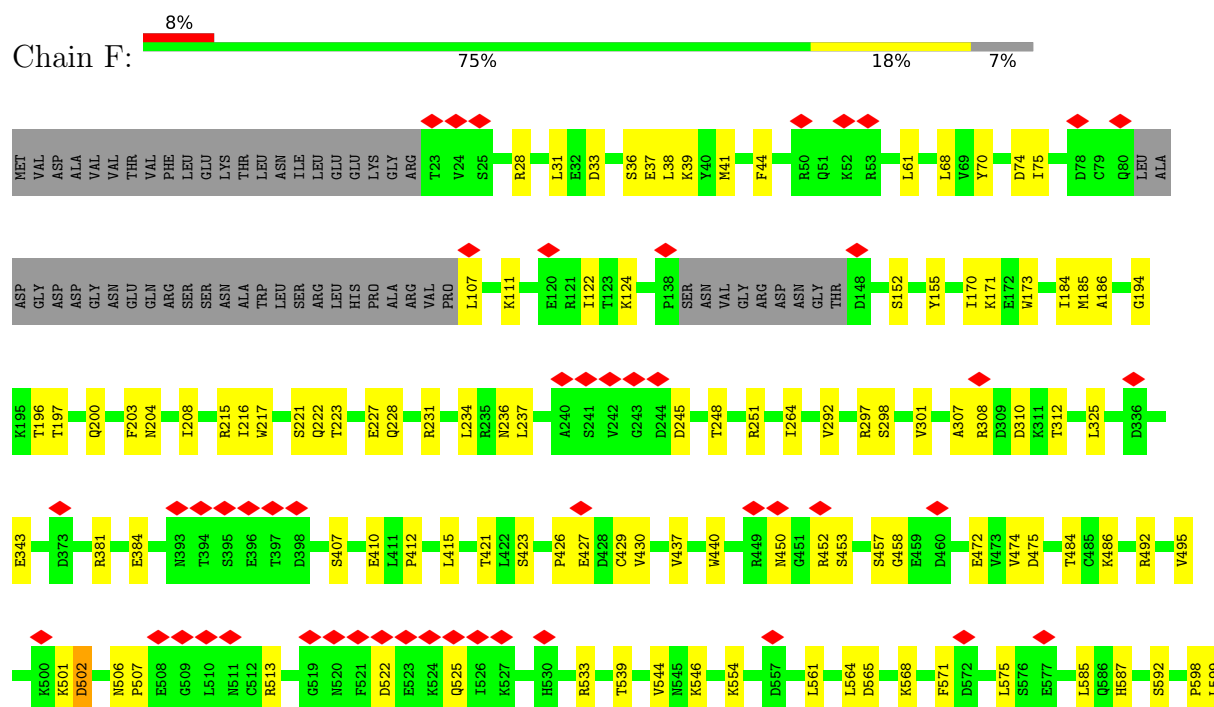
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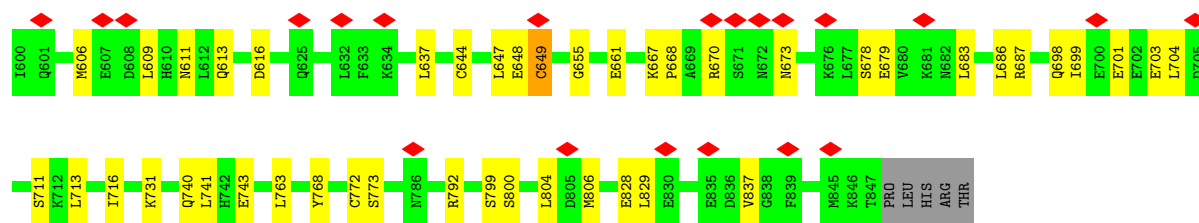
Mol	Chain	Residues	Atoms					AltConf
5	G	1	Total	C	N	O	P	0
			30	10	5	12	3	
5	L	1	Total	C	N	O	P	0
			30	10	5	12	3	
5	O	1	Total	C	N	O	P	0
			30	10	5	12	3	

- Molecule 3: Disease resistance RPP13-like protein 4

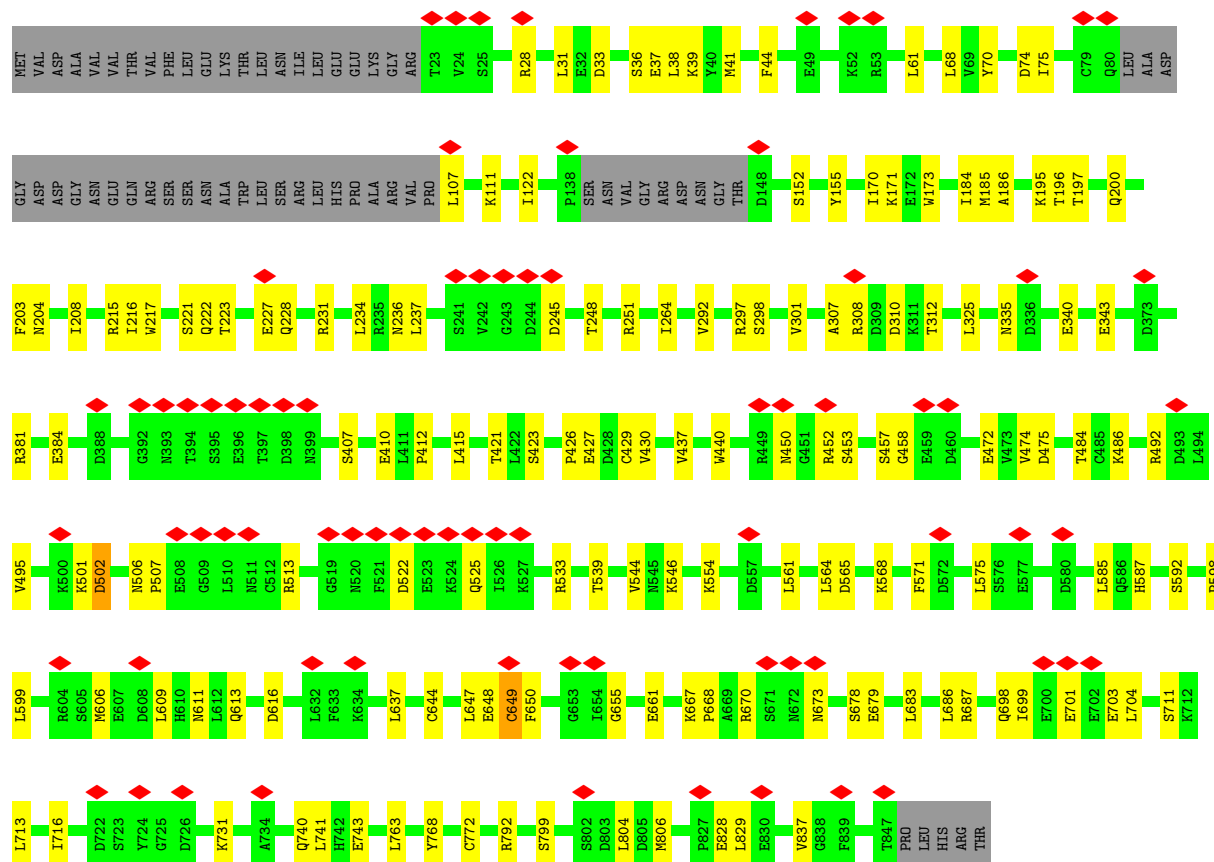
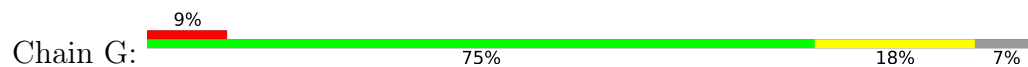


- Molecule 3: Disease resistance RPP13-like protein 4

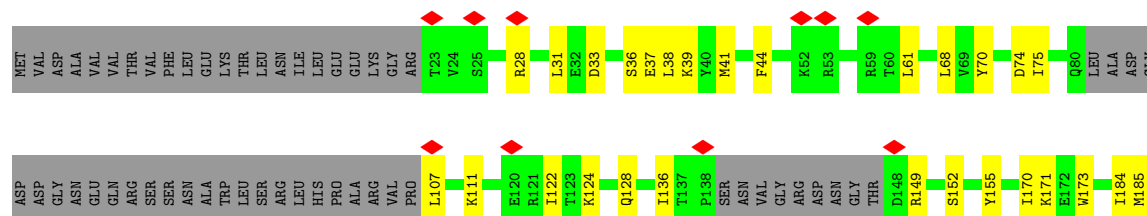
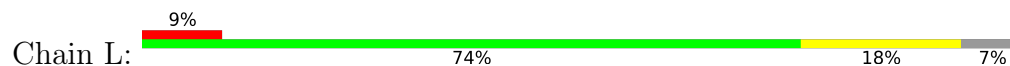


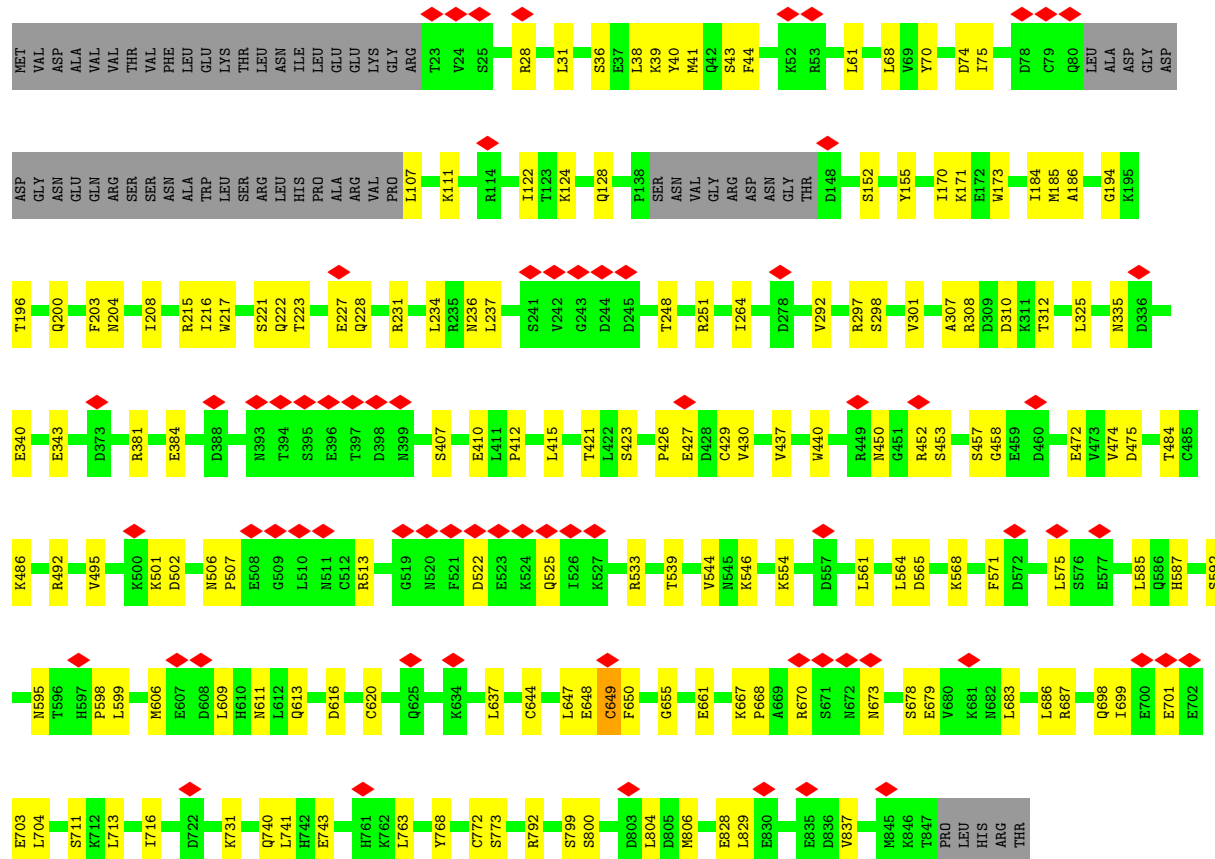


• Molecule 3: Disease resistance RPP13-like protein 4



• Molecule 3: Disease resistance RPP13-like protein 4





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	376858	Depositor
Resolution determination method	Not provided	
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50.00	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	900	Depositor
Magnification	105000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.074	Depositor
Minimum map value	-0.032	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.013	Depositor
Map size (Å)	392.75998, 392.75998, 392.75998	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.091, 1.091, 1.091	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: U5P, DTP

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	0.26	0/1553	0.61	0/2099
2	B	0.36	0/2683	0.76	2/3621 (0.1%)
3	C	0.29	0/6449	0.63	0/8710
3	F	0.29	0/6449	0.63	0/8710
3	G	0.29	0/6449	0.63	0/8710
3	L	0.29	0/6449	0.63	0/8710
3	O	0.29	0/6449	0.63	0/8710
All	All	0.29	0/36481	0.64	2/49270 (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
2	B	0	4
3	C	0	4
3	F	0	4
3	G	0	4
3	L	0	4
3	O	0	4
All	All	0	25

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	80	GLU	CA-C-N	5.30	131.67	121.54
2	B	80	GLU	C-N-CA	5.30	131.67	121.54

There are no chirality outliers.

All (25) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	169	TYR	Peptide
2	B	130	PHE	Peptide
2	B	131	PRO	Peptide
2	B	132	PHE	Peptide
2	B	296	ILE	Peptide
3	C	502	ASP	Peptide
3	C	506	ASN	Peptide
3	C	648	GLU	Peptide
3	C	649	CYS	Peptide
3	F	502	ASP	Peptide
3	F	506	ASN	Peptide
3	F	648	GLU	Peptide
3	F	649	CYS	Peptide
3	G	502	ASP	Peptide
3	G	506	ASN	Peptide
3	G	648	GLU	Peptide
3	G	649	CYS	Peptide
3	L	502	ASP	Peptide
3	L	506	ASN	Peptide
3	L	648	GLU	Peptide
3	L	649	CYS	Peptide
3	O	502	ASP	Peptide
3	O	506	ASN	Peptide
3	O	648	GLU	Peptide
3	O	649	CYS	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	1523	0	1550	31	0
2	B	2629	0	2654	41	0
3	C	6330	0	6346	96	0
3	F	6330	0	6346	90	0
3	G	6330	0	6346	90	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	L	6330	0	6346	95	0
3	O	6330	0	6346	88	0
4	A	39	0	20	0	0
5	C	30	0	12	4	0
5	F	30	0	12	4	0
5	G	30	0	12	4	0
5	L	30	0	12	5	0
5	O	30	0	12	3	0
All	All	35991	0	36014	504	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 7.

All (504) 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)
3:C:472:GLU:OE2	3:C:486:LYS:NZ	2.13	0.82
3:O:472:GLU:OE2	3:O:486:LYS:NZ	2.13	0.81
3:L:472:GLU:OE2	3:L:486:LYS:NZ	2.13	0.80
3:G:472:GLU:OE2	3:G:486:LYS:NZ	2.13	0.80
3:F:472:GLU:OE2	3:F:486:LYS:NZ	2.13	0.80
3:O:227:GLU:OE2	3:O:231:ARG:NH2	2.17	0.77
3:F:227:GLU:OE2	3:F:231:ARG:NH2	2.17	0.77
3:C:227:GLU:OE2	3:C:231:ARG:NH2	2.17	0.77
3:L:227:GLU:OE2	3:L:231:ARG:NH2	2.17	0.76
3:G:227:GLU:OE2	3:G:231:ARG:NH2	2.17	0.76
2:B:93:GLU:OE2	2:B:100:ARG:NH2	2.26	0.67
3:G:647:LEU:HD23	3:G:649:CYS:H	1.60	0.67
3:C:647:LEU:HD23	3:C:649:CYS:H	1.60	0.66
2:B:54:LEU:HD12	2:B:59:ASN:HD22	1.60	0.66
3:O:647:LEU:HD23	3:O:649:CYS:H	1.60	0.65
3:L:647:LEU:HD23	3:L:649:CYS:H	1.60	0.65
3:F:647:LEU:HD23	3:F:649:CYS:H	1.60	0.65
3:L:248:THR:HG22	3:L:251:ARG:HH21	1.62	0.65
2:B:95:THR:HG22	2:B:98:ARG:HH22	1.62	0.65
3:F:670:ARG:HB2	3:F:673:ASN:HD22	1.62	0.65
1:A:210:GLU:OE2	1:A:358:LYS:NZ	2.27	0.64
3:O:804:LEU:N	3:O:828:GLU:OE2	2.31	0.64
3:O:670:ARG:HB2	3:O:673:ASN:HD22	1.63	0.64
2:B:224:GLU:HG3	2:B:244:PHE:HB3	1.79	0.64
3:C:804:LEU:N	3:C:828:GLU:OE2	2.31	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:381:ARG:NH2	3:O:450:ASN:O	2.30	0.63
3:C:248:THR:HG22	3:C:251:ARG:HH21	1.62	0.63
3:F:248:THR:HG22	3:F:251:ARG:HH21	1.62	0.63
3:G:248:THR:HG22	3:G:251:ARG:HH21	1.62	0.63
3:L:670:ARG:HB2	3:L:673:ASN:HD22	1.63	0.63
3:O:248:THR:HG22	3:O:251:ARG:HH21	1.62	0.63
2:B:47:SER:H	3:C:646:SER:HB3	1.62	0.63
3:F:804:LEU:N	3:F:828:GLU:OE2	2.31	0.63
3:L:70:TYR:O	3:L:74:ASP:HB2	1.99	0.63
3:F:423:SER:HB3	3:F:495:VAL:HG12	1.81	0.63
3:G:804:LEU:N	3:G:828:GLU:OE2	2.31	0.63
3:L:804:LEU:N	3:L:828:GLU:OE2	2.31	0.63
3:C:670:ARG:HB2	3:C:673:ASN:HD22	1.62	0.63
3:G:670:ARG:HB2	3:G:673:ASN:HD22	1.63	0.63
3:C:36:SER:O	3:C:39:LYS:HB3	2.00	0.62
3:F:36:SER:O	3:F:39:LYS:HB3	1.99	0.62
3:G:423:SER:HB3	3:G:495:VAL:HG12	1.81	0.62
3:G:36:SER:O	3:G:39:LYS:HB3	2.00	0.62
3:O:36:SER:O	3:O:39:LYS:HB3	2.00	0.62
3:C:70:TYR:O	3:C:74:ASP:HB2	1.99	0.62
3:F:70:TYR:O	3:F:74:ASP:HB2	1.99	0.62
3:O:70:TYR:O	3:O:74:ASP:HB2	1.99	0.62
3:L:423:SER:HB3	3:L:495:VAL:HG12	1.81	0.62
3:G:70:TYR:O	3:G:74:ASP:HB2	1.99	0.62
3:O:423:SER:HB3	3:O:495:VAL:HG12	1.81	0.61
3:C:423:SER:HB3	3:C:495:VAL:HG12	1.81	0.61
3:L:450:ASN:O	3:O:381:ARG:NH2	2.33	0.61
3:L:36:SER:O	3:L:39:LYS:HB3	2.00	0.61
3:C:450:ASN:O	3:F:381:ARG:NH2	2.35	0.60
3:F:450:ASN:O	3:L:381:ARG:NH2	2.34	0.60
3:O:427:GLU:HA	3:O:492:ARG:HH22	1.67	0.60
3:F:427:GLU:HA	3:F:492:ARG:HH22	1.67	0.60
3:G:743:GLU:HG2	3:G:768:TYR:HB2	1.83	0.60
3:C:427:GLU:HA	3:C:492:ARG:HH22	1.67	0.60
3:L:427:GLU:HA	3:L:492:ARG:HH22	1.67	0.59
3:G:427:GLU:HA	3:G:492:ARG:HH22	1.67	0.59
3:G:713:LEU:HD21	3:G:716:ILE:HD11	1.85	0.59
3:F:743:GLU:HG2	3:F:768:TYR:HB2	1.83	0.59
3:L:743:GLU:HG2	3:L:768:TYR:HB2	1.83	0.59
3:O:203:PHE:O	3:O:215:ARG:NH1	2.36	0.59
3:C:743:GLU:HG2	3:C:768:TYR:HB2	1.83	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:743:GLU:HG2	3:O:768:TYR:HB2	1.83	0.59
3:O:713:LEU:HD21	3:O:716:ILE:HD11	1.85	0.59
3:G:203:PHE:O	3:G:215:ARG:NH1	2.36	0.59
3:L:203:PHE:O	3:L:215:ARG:NH1	2.36	0.58
3:C:152:SER:O	3:C:200:GLN:NE2	2.37	0.58
3:L:792:ARG:NH1	3:O:343:GLU:OE1	2.36	0.58
3:O:152:SER:O	3:O:200:GLN:NE2	2.37	0.58
3:F:203:PHE:O	3:F:215:ARG:NH1	2.36	0.58
3:L:713:LEU:HD21	3:L:716:ILE:HD11	1.85	0.58
3:F:152:SER:O	3:F:200:GLN:NE2	2.37	0.58
3:L:152:SER:O	3:L:200:GLN:NE2	2.37	0.58
3:C:203:PHE:O	3:C:215:ARG:NH1	2.36	0.58
3:G:152:SER:O	3:G:200:GLN:NE2	2.37	0.58
3:C:713:LEU:HD21	3:C:716:ILE:HD11	1.85	0.57
3:F:713:LEU:HD21	3:F:716:ILE:HD11	1.85	0.57
3:L:195:LYS:NZ	5:L:901:DTP:O1G	2.37	0.57
3:G:453:SER:HB2	3:G:661:GLU:OE2	2.05	0.57
3:L:513:ARG:O	3:L:533:ARG:N	2.37	0.57
3:L:453:SER:HB2	3:L:661:GLU:OE2	2.05	0.57
3:O:453:SER:HB2	3:O:661:GLU:OE2	2.05	0.57
2:B:19:ALA:HA	2:B:22:TRP:HD1	1.70	0.57
2:B:97:LYS:HE3	2:B:99:HIS:HE1	1.70	0.57
3:F:792:ARG:NH1	3:L:343:GLU:OE1	2.38	0.57
3:C:124:LYS:NZ	3:G:33:ASP:OD2	2.31	0.57
3:O:513:ARG:O	3:O:533:ARG:N	2.37	0.57
2:B:321:ARG:HA	2:B:324:LYS:HE2	1.86	0.56
3:C:453:SER:HB2	3:C:661:GLU:OE2	2.05	0.56
2:B:23:PHE:HD2	2:B:24:LEU:HD12	1.70	0.56
2:B:108:ILE:HG12	2:B:135:LEU:HD21	1.87	0.56
3:F:453:SER:HB2	3:F:661:GLU:OE2	2.05	0.56
2:B:305:THR:HA	2:B:308:GLN:HB2	1.86	0.56
3:C:343:GLU:OE1	3:G:792:ARG:NH1	2.39	0.56
1:A:151:ASN:ND2	1:A:200:GLY:O	2.39	0.56
3:F:513:ARG:O	3:F:533:ARG:N	2.37	0.56
3:L:772:CYS:HA	3:L:799:SER:HB3	1.88	0.56
2:B:222:ARG:NH1	2:B:224:GLU:OE2	2.39	0.56
3:C:196:THR:HG23	5:C:901:DTP:O1B	2.06	0.55
3:F:772:CYS:HA	3:F:799:SER:HB3	1.88	0.55
3:O:772:CYS:HA	3:O:799:SER:HB3	1.88	0.55
1:A:219:ASP:O	1:A:224:ASN:ND2	2.39	0.55
1:A:255:LYS:HB2	2:B:228:VAL:HG13	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:358:LYS:HD3	1:A:360:SER:H	1.72	0.55
3:C:513:ARG:O	3:C:533:ARG:N	2.37	0.55
3:F:107:LEU:O	3:F:111:LYS:NZ	2.38	0.55
3:L:412:PRO:HD2	3:L:415:LEU:HD12	1.89	0.55
3:G:412:PRO:HD2	3:G:415:LEU:HD12	1.89	0.54
3:O:412:PRO:HD2	3:O:415:LEU:HD12	1.89	0.54
1:A:190:THR:HB	1:A:193:ILE:HD12	1.90	0.54
3:F:412:PRO:HD2	3:F:415:LEU:HD12	1.89	0.54
3:L:475:ASP:OD1	3:L:484:THR:OG1	2.24	0.54
3:C:412:PRO:HD2	3:C:415:LEU:HD12	1.89	0.54
3:C:772:CYS:HA	3:C:799:SER:HB3	1.88	0.54
3:F:171:LYS:HG2	3:F:208:ILE:HD11	1.90	0.54
3:G:772:CYS:HA	3:G:799:SER:HB3	1.88	0.54
1:A:214:GLN:HE21	1:A:216:ILE:HD12	1.73	0.54
1:A:219:ASP:OD2	1:A:224:ASN:ND2	2.39	0.53
3:L:193:LEU:N	5:L:901:DTP:O2B	2.39	0.53
3:O:565:ASP:OD1	3:O:565:ASP:N	2.40	0.53
3:C:171:LYS:HG2	3:C:208:ILE:HD11	1.90	0.53
3:F:475:ASP:OD1	3:F:484:THR:OG1	2.24	0.53
3:L:149:ARG:NH1	5:L:901:DTP:O2G	2.38	0.53
3:F:170:ILE:HG23	3:F:185:MET:HE1	1.91	0.53
3:G:343:GLU:OE1	3:O:792:ARG:NH1	2.41	0.53
3:O:475:ASP:OD1	3:O:484:THR:OG1	2.24	0.53
2:B:186:ILE:HB	2:B:216:LEU:HD12	1.90	0.53
3:C:829:LEU:HB2	3:C:837:VAL:HG11	1.91	0.53
3:L:170:ILE:HG23	3:L:185:MET:HE1	1.91	0.53
3:L:184:ILE:HG22	3:L:292:VAL:HB	1.91	0.53
3:O:170:ILE:HG23	3:O:185:MET:HE1	1.91	0.53
3:O:171:LYS:HG2	3:O:208:ILE:HD11	1.90	0.53
3:L:197:THR:HG23	5:L:901:DTP:O1A	2.09	0.53
3:O:184:ILE:HG22	3:O:292:VAL:HB	1.91	0.53
3:G:513:ARG:O	3:G:533:ARG:N	2.37	0.53
3:L:565:ASP:OD1	3:L:565:ASP:N	2.40	0.53
3:O:107:LEU:O	3:O:111:LYS:NZ	2.38	0.53
3:O:773:SER:HG	3:O:800:SER:HG	1.54	0.53
3:F:606:MET:HG3	3:F:609:LEU:HD12	1.91	0.53
2:B:160:LEU:HB2	2:B:165:ARG:HE	1.73	0.53
3:C:606:MET:HG3	3:C:609:LEU:HD12	1.91	0.52
3:L:173:TRP:HE3	3:L:185:MET:HE3	1.74	0.52
3:C:184:ILE:HG22	3:C:292:VAL:HB	1.91	0.52
3:G:171:LYS:HG2	3:G:208:ILE:HD11	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:173:TRP:HE3	3:C:185:MET:HE3	1.75	0.52
3:C:170:ILE:HG23	3:C:185:MET:HE1	1.91	0.52
3:G:173:TRP:HE3	3:G:185:MET:HE3	1.75	0.52
3:G:195:LYS:NZ	5:G:901:DTP:O1G	2.42	0.52
3:C:184:ILE:HG13	3:C:307:ALA:HA	1.92	0.52
3:L:107:LEU:O	3:L:111:LYS:NZ	2.38	0.52
3:O:173:TRP:HE3	3:O:185:MET:HE3	1.74	0.52
3:F:184:ILE:HG22	3:F:292:VAL:HB	1.91	0.52
3:F:829:LEU:HB2	3:F:837:VAL:HG11	1.91	0.52
3:L:829:LEU:HB2	3:L:837:VAL:HG11	1.91	0.52
3:C:430:VAL:HG13	3:C:474:VAL:HG21	1.92	0.52
3:F:173:TRP:HE3	3:F:185:MET:HE3	1.74	0.52
3:G:829:LEU:HB2	3:G:837:VAL:HG11	1.91	0.52
3:O:606:MET:HG3	3:O:609:LEU:HD12	1.91	0.52
3:F:430:VAL:HG13	3:F:474:VAL:HG21	1.92	0.52
3:L:171:LYS:HG2	3:L:208:ILE:HD11	1.90	0.52
3:O:430:VAL:HG13	3:O:474:VAL:HG21	1.92	0.52
3:O:829:LEU:HB2	3:O:837:VAL:HG11	1.91	0.52
1:A:216:ILE:HG23	1:A:278:ASP:OD2	2.10	0.52
3:C:475:ASP:OD1	3:C:484:THR:OG1	2.24	0.52
3:G:430:VAL:HG13	3:G:474:VAL:HG21	1.92	0.52
3:G:184:ILE:HG22	3:G:292:VAL:HB	1.91	0.51
3:G:606:MET:HG3	3:G:609:LEU:HD12	1.91	0.51
3:O:184:ILE:HG13	3:O:307:ALA:HA	1.92	0.51
3:G:565:ASP:OD1	3:G:565:ASP:N	2.40	0.51
3:L:606:MET:HG3	3:L:609:LEU:HD12	1.91	0.51
3:C:792:ARG:NH1	3:F:343:GLU:OE1	2.44	0.51
3:L:184:ILE:HG13	3:L:307:ALA:HA	1.92	0.51
3:G:298:SER:HB2	3:G:301:VAL:HG22	1.93	0.51
1:A:262:TYR:HA	1:A:284:VAL:HG21	1.93	0.51
3:F:184:ILE:HG13	3:F:307:ALA:HA	1.92	0.51
3:F:196:THR:HG23	5:F:901:DTP:O1B	2.11	0.51
3:O:381:ARG:HA	3:O:384:GLU:HG3	1.93	0.51
1:A:159:CYS:HB2	1:A:161:GLU:HG3	1.93	0.51
3:G:170:ILE:HG23	3:G:185:MET:HE1	1.91	0.51
3:L:430:VAL:HG13	3:L:474:VAL:HG21	1.92	0.51
3:F:216:ILE:HB	3:F:264:ILE:HG22	1.93	0.51
3:F:699:ILE:HG13	3:F:731:LYS:HE3	1.93	0.51
2:B:123:LEU:HD21	2:B:135:LEU:HD22	1.93	0.51
3:C:216:ILE:HB	3:C:264:ILE:HG22	1.93	0.51
3:G:184:ILE:HG13	3:G:307:ALA:HA	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:178:GLU:HA	1:A:182:PHE:HD2	1.77	0.50
3:C:298:SER:HB2	3:C:301:VAL:HG22	1.93	0.50
3:C:699:ILE:HG13	3:C:731:LYS:HE3	1.93	0.50
3:G:216:ILE:HB	3:G:264:ILE:HG22	1.93	0.50
3:O:186:ALA:HB3	3:O:312:THR:HG22	1.94	0.50
3:C:539:THR:HG21	3:C:568:LYS:HB2	1.94	0.50
3:G:699:ILE:HG13	3:G:731:LYS:HE3	1.93	0.50
3:F:298:SER:HB2	3:F:301:VAL:HG22	1.93	0.50
3:O:668:PRO:O	3:O:698:GLN:NE2	2.44	0.50
3:F:539:THR:HG21	3:F:568:LYS:HB2	1.93	0.50
3:F:668:PRO:O	3:F:698:GLN:NE2	2.44	0.50
3:G:475:ASP:OD1	3:G:484:THR:OG1	2.24	0.50
3:L:186:ALA:HB3	3:L:312:THR:HG22	1.94	0.50
3:L:228:GLN:HA	3:L:231:ARG:HG2	1.93	0.50
3:O:216:ILE:HB	3:O:264:ILE:HG22	1.93	0.50
3:C:297:ARG:HH11	3:C:407:SER:HB2	1.77	0.50
3:C:565:ASP:OD1	3:C:565:ASP:N	2.40	0.50
3:G:107:LEU:O	3:G:111:LYS:NZ	2.38	0.50
3:G:186:ALA:HB3	3:G:312:THR:HG22	1.93	0.50
3:L:668:PRO:O	3:L:698:GLN:NE2	2.44	0.50
3:F:565:ASP:OD1	3:F:565:ASP:N	2.40	0.50
3:O:298:SER:HB2	3:O:301:VAL:HG22	1.93	0.50
3:G:539:THR:HG21	3:G:568:LYS:HB2	1.94	0.50
3:O:655:GLY:HA2	3:O:683:LEU:HD21	1.94	0.50
1:A:275:ALA:HA	1:A:278:ASP:OD2	2.12	0.50
3:C:655:GLY:HA2	3:C:683:LEU:HD21	1.94	0.50
3:O:28:ARG:O	3:O:31:LEU:HB3	2.12	0.50
3:C:381:ARG:HA	3:C:384:GLU:HG3	1.93	0.50
3:C:668:PRO:O	3:C:698:GLN:NE2	2.44	0.50
3:F:228:GLN:HA	3:F:231:ARG:HG2	1.93	0.50
3:L:298:SER:HB2	3:L:301:VAL:HG22	1.93	0.50
3:O:196:THR:HG23	5:O:901:DTP:O1B	2.12	0.50
3:F:381:ARG:HA	3:F:384:GLU:HG3	1.93	0.49
3:G:28:ARG:O	3:G:31:LEU:HB3	2.12	0.49
3:G:668:PRO:O	3:G:698:GLN:NE2	2.44	0.49
3:L:699:ILE:HG13	3:L:731:LYS:HE3	1.93	0.49
3:L:773:SER:HG	3:L:800:SER:HG	1.60	0.49
2:B:44:PRO:HG3	3:C:643:ASN:HD22	1.77	0.49
3:F:197:THR:HG23	5:F:901:DTP:O1A	2.12	0.49
3:L:655:GLY:HA2	3:L:683:LEU:HD21	1.94	0.49
3:C:186:ALA:HB3	3:C:312:THR:HG22	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:297:ARG:HH11	3:L:407:SER:HB2	1.77	0.49
3:L:381:ARG:HA	3:L:384:GLU:HG3	1.93	0.49
3:O:297:ARG:HH11	3:O:407:SER:HB2	1.77	0.49
3:G:228:GLN:HA	3:G:231:ARG:HG2	1.93	0.49
3:O:539:THR:HG21	3:O:568:LYS:HB2	1.93	0.49
3:C:228:GLN:HA	3:C:231:ARG:HG2	1.93	0.49
3:C:571:PHE:HB2	3:C:598:PRO:HG2	1.95	0.49
3:F:571:PHE:HB2	3:F:598:PRO:HG2	1.95	0.49
3:G:197:THR:HG23	5:G:901:DTP:O1A	2.13	0.49
3:L:68:LEU:HD21	3:L:122:ILE:HG12	1.95	0.49
3:C:28:ARG:O	3:C:31:LEU:HB3	2.12	0.49
3:C:197:THR:HG23	5:C:901:DTP:O1A	2.12	0.49
3:L:216:ILE:HB	3:L:264:ILE:HG22	1.93	0.49
3:C:68:LEU:HD21	3:C:122:ILE:HG12	1.95	0.49
3:L:28:ARG:O	3:L:31:LEU:HB3	2.12	0.49
3:O:228:GLN:HA	3:O:231:ARG:HG2	1.93	0.49
3:F:222:GLN:HB2	3:F:410:GLU:OE2	2.13	0.49
3:F:297:ARG:HH11	3:F:407:SER:HB2	1.77	0.49
3:G:381:ARG:HA	3:G:384:GLU:HG3	1.93	0.49
3:O:222:GLN:HB2	3:O:410:GLU:OE2	2.13	0.49
3:F:655:GLY:HA2	3:F:683:LEU:HD21	1.94	0.49
3:O:699:ILE:HG13	3:O:731:LYS:HE3	1.93	0.49
3:F:28:ARG:O	3:F:31:LEU:HB3	2.12	0.48
3:F:186:ALA:HB3	3:F:312:THR:HG22	1.93	0.48
3:G:655:GLY:HA2	3:G:683:LEU:HD21	1.94	0.48
3:L:197:THR:HG21	5:L:901:DTP:H2'2	1.95	0.48
1:A:137:TRP:HH2	1:A:162:GLY:HA2	1.77	0.48
3:C:107:LEU:O	3:C:111:LYS:NZ	2.38	0.48
3:F:68:LEU:HD21	3:F:122:ILE:HG12	1.95	0.48
3:L:539:THR:HG21	3:L:568:LYS:HB2	1.93	0.48
3:O:701:GLU:OE2	3:O:731:LYS:NZ	2.47	0.48
1:A:199:VAL:HG21	1:A:366:LEU:HD11	1.94	0.48
3:C:194:GLY:N	5:C:901:DTP:O2B	2.35	0.48
3:C:222:GLN:HB2	3:C:410:GLU:OE2	2.13	0.48
3:O:571:PHE:HB2	3:O:598:PRO:HG2	1.95	0.48
3:G:297:ARG:HH11	3:G:407:SER:HB2	1.77	0.48
3:O:68:LEU:HD21	3:O:122:ILE:HG12	1.95	0.48
2:B:288:GLU:O	2:B:291:LYS:NZ	2.40	0.48
1:A:258:GLY:O	2:B:240:HIS:NE2	2.47	0.48
3:G:68:LEU:HD21	3:G:122:ILE:HG12	1.95	0.48
3:G:222:GLN:HB2	3:G:410:GLU:OE2	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:701:GLU:OE2	3:L:731:LYS:NZ	2.46	0.48
3:L:773:SER:OG	3:L:800:SER:OG	2.31	0.48
3:F:701:GLU:OE2	3:F:731:LYS:NZ	2.47	0.48
3:F:804:LEU:HD11	3:F:806:MET:HE3	1.96	0.48
3:L:222:GLN:HB2	3:L:410:GLU:OE2	2.13	0.48
3:C:381:ARG:NH2	3:G:450:ASN:O	2.45	0.48
3:G:196:THR:HG23	5:G:901:DTP:O1B	2.14	0.48
3:G:701:GLU:OE2	3:G:731:LYS:NZ	2.47	0.48
3:L:234:LEU:HD23	3:L:237:LEU:HD12	1.96	0.48
3:C:234:LEU:HD23	3:C:237:LEU:HD12	1.96	0.47
3:G:571:PHE:HB2	3:G:598:PRO:HG2	1.95	0.47
3:F:194:GLY:N	5:F:901:DTP:O2B	2.39	0.47
3:F:773:SER:OG	3:F:800:SER:OG	2.31	0.47
3:L:804:LEU:HD11	3:L:806:MET:HE3	1.96	0.47
3:O:661:GLU:HA	3:O:686:LEU:HA	1.96	0.47
3:F:661:GLU:HA	3:F:686:LEU:HA	1.96	0.47
3:L:571:PHE:HB2	3:L:598:PRO:HG2	1.95	0.47
3:F:452:ARG:O	3:F:457:SER:OG	2.28	0.47
3:G:661:GLU:HA	3:G:686:LEU:HA	1.96	0.47
3:O:194:GLY:N	5:O:901:DTP:O2B	2.38	0.47
3:O:687:ARG:HA	3:O:713:LEU:HA	1.97	0.47
1:A:135:LYS:HD2	1:A:136:GLU:HG3	1.95	0.47
3:F:687:ARG:HA	3:F:713:LEU:HA	1.97	0.47
3:L:661:GLU:HA	3:L:686:LEU:HA	1.96	0.47
3:O:234:LEU:HD23	3:O:237:LEU:HD12	1.96	0.47
3:F:234:LEU:HD23	3:F:237:LEU:HD12	1.96	0.47
3:L:687:ARG:HA	3:L:713:LEU:HA	1.97	0.47
2:B:48:PHE:HB2	2:B:127:CYS:HB2	1.97	0.47
3:O:40:TYR:O	3:O:43:SER:OG	2.26	0.47
3:O:678:SER:HB3	3:O:703:GLU:OE2	2.15	0.47
1:A:268:VAL:HG11	2:B:237:PRO:HB3	1.98	0.46
3:C:701:GLU:OE2	3:C:731:LYS:NZ	2.47	0.46
3:G:575:LEU:HD12	3:G:599:LEU:HB2	1.97	0.46
3:O:804:LEU:HD11	3:O:806:MET:HE3	1.96	0.46
3:F:575:LEU:HD12	3:F:599:LEU:HB2	1.98	0.46
3:G:804:LEU:HD11	3:G:806:MET:HE3	1.96	0.46
3:C:33:ASP:OD2	3:F:124:LYS:NZ	2.38	0.46
3:F:678:SER:HB3	3:F:703:GLU:OE2	2.15	0.46
3:G:234:LEU:HD23	3:G:237:LEU:HD12	1.96	0.46
3:G:678:SER:HB3	3:G:703:GLU:OE2	2.16	0.46
3:L:575:LEU:HD12	3:L:599:LEU:HB2	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:305:THR:HB	2:B:309:ARG:HG3	1.97	0.46
3:C:661:GLU:HA	3:C:686:LEU:HA	1.96	0.46
3:G:687:ARG:HA	3:G:713:LEU:HA	1.97	0.46
3:O:613:GLN:O	3:O:637:LEU:N	2.46	0.46
3:G:197:THR:HG21	5:G:901:DTP:H2'2	1.97	0.46
3:O:592:SER:HA	3:O:616:ASP:HB3	1.98	0.46
3:C:644:CYS:O	3:C:667:LYS:NZ	2.49	0.46
3:C:804:LEU:HD11	3:C:806:MET:HE3	1.96	0.46
3:O:525:GLN:OE1	3:O:554:LYS:NZ	2.44	0.46
3:C:452:ARG:O	3:C:457:SER:OG	2.28	0.45
3:G:221:SER:OG	3:G:223:THR:O	2.35	0.45
1:A:209:HIS:HE1	1:A:278:ASP:OD2	1.98	0.45
3:C:575:LEU:HD12	3:C:599:LEU:HB2	1.98	0.45
3:L:699:ILE:HD12	3:L:704:LEU:HD21	1.99	0.45
2:B:33:GLU:OE2	2:B:105:TYR:HB3	2.16	0.45
3:O:155:TYR:HE1	3:O:204:ASN:HD22	1.65	0.45
3:O:221:SER:OG	3:O:223:THR:O	2.35	0.45
3:F:221:SER:OG	3:F:223:THR:O	2.35	0.45
3:L:678:SER:HB3	3:L:703:GLU:OE2	2.16	0.45
3:O:575:LEU:HD12	3:O:599:LEU:HB2	1.98	0.45
3:F:592:SER:HA	3:F:616:ASP:HB3	1.98	0.45
3:G:155:TYR:HE1	3:G:204:ASN:HD22	1.65	0.45
3:G:613:GLN:O	3:G:637:LEU:N	2.46	0.45
3:O:196:THR:OG1	5:O:901:DTP:O1A	2.26	0.45
3:C:155:TYR:HE1	3:C:204:ASN:HD22	1.65	0.45
3:C:561:LEU:HD11	3:C:564:LEU:HB2	1.99	0.45
3:C:687:ARG:HA	3:C:713:LEU:HA	1.97	0.45
3:F:561:LEU:HD11	3:F:564:LEU:HB2	1.99	0.45
3:F:613:GLN:O	3:F:637:LEU:N	2.46	0.45
3:G:699:ILE:HD12	3:G:704:LEU:HD21	1.99	0.45
2:B:91:GLU:OE2	2:B:131:PRO:HG3	2.17	0.45
3:L:221:SER:OG	3:L:223:THR:O	2.35	0.45
3:O:426:PRO:HG2	3:O:429:CYS:HB3	1.99	0.45
3:O:561:LEU:HD11	3:O:564:LEU:HB2	1.99	0.45
1:A:350:ASN:O	1:A:356:ARG:NH2	2.51	0.44
3:C:699:ILE:HD12	3:C:704:LEU:HD21	1.99	0.44
3:G:592:SER:HA	3:G:616:ASP:HB3	1.98	0.44
3:L:592:SER:HA	3:L:616:ASP:HB3	1.99	0.44
1:A:172:MET:HE1	1:A:234:LYS:HD2	1.98	0.44
3:C:678:SER:HB3	3:C:703:GLU:OE2	2.15	0.44
3:G:561:LEU:HB3	3:G:585:LEU:HD11	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:L:426:PRO:HG2	3:L:429:CYS:HB3	1.99	0.44
3:L:561:LEU:HB3	3:L:585:LEU:HD11	1.99	0.44
3:O:561:LEU:HB3	3:O:585:LEU:HD11	1.99	0.44
3:C:221:SER:OG	3:C:223:THR:O	2.35	0.44
3:L:155:TYR:HE1	3:L:204:ASN:HD22	1.65	0.44
3:L:452:ARG:O	3:L:457:SER:OG	2.28	0.44
3:O:452:ARG:O	3:O:457:SER:OG	2.28	0.44
1:A:272:ARG:NH1	1:A:273:LEU:O	2.50	0.44
3:C:452:ARG:N	3:F:381:ARG:HH22	2.16	0.44
3:F:699:ILE:HD12	3:F:704:LEU:HD21	1.99	0.44
3:L:437:VAL:HG13	3:L:458:GLY:HA3	2.00	0.44
3:L:561:LEU:HD11	3:L:564:LEU:HB2	1.99	0.44
3:G:561:LEU:HD11	3:G:564:LEU:HB2	1.99	0.44
3:L:711:SER:O	3:L:740:GLN:NE2	2.46	0.44
2:B:292:LEU:HB3	2:B:313:GLU:HG2	2.00	0.44
3:C:592:SER:HA	3:C:616:ASP:HB3	1.98	0.44
3:O:644:CYS:O	3:O:667:LYS:NZ	2.49	0.44
3:O:699:ILE:HD12	3:O:704:LEU:HD21	1.99	0.44
3:F:437:VAL:HG13	3:F:458:GLY:HA3	2.00	0.44
3:C:426:PRO:HG2	3:C:429:CYS:HB3	1.99	0.43
3:F:155:TYR:HE1	3:F:204:ASN:HD22	1.65	0.43
3:G:421:THR:HG21	3:G:440:TRP:HE1	1.83	0.43
1:A:250:THR:OG1	1:A:251:HIS:N	2.49	0.43
3:C:421:THR:HG21	3:C:440:TRP:HE1	1.83	0.43
3:G:711:SER:O	3:G:740:GLN:NE2	2.46	0.43
1:A:212:LYS:HD3	1:A:215:VAL:H	1.82	0.43
2:B:45:ILE:N	3:C:621:GLN:OE1	2.51	0.43
3:F:561:LEU:HB3	3:F:585:LEU:HD11	1.99	0.43
3:L:37:GLU:HB2	3:O:128:GLN:HE21	1.82	0.43
3:F:644:CYS:O	3:F:667:LYS:NZ	2.49	0.43
3:G:426:PRO:HG2	3:G:429:CYS:HB3	1.99	0.43
3:O:650:PHE:HD1	3:O:650:PHE:HA	1.70	0.43
3:F:426:PRO:HG2	3:F:429:CYS:HB3	2.00	0.43
3:F:525:GLN:OE1	3:F:554:LYS:NZ	2.44	0.43
3:L:502:ASP:OD1	3:L:502:ASP:N	2.52	0.43
3:C:308:ARG:HH21	3:C:310:ASP:HB3	1.84	0.43
3:C:437:VAL:HG13	3:C:458:GLY:HA3	2.00	0.43
3:C:711:SER:O	3:C:740:GLN:NE2	2.46	0.43
3:G:437:VAL:HG13	3:G:458:GLY:HA3	2.00	0.43
2:B:285:GLU:HA	2:B:288:GLU:HG2	2.01	0.43
3:C:502:ASP:OD1	3:C:502:ASP:N	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:561:LEU:HB3	3:C:585:LEU:HD11	1.99	0.43
3:F:452:ARG:N	3:L:381:ARG:HH22	2.16	0.43
3:F:711:SER:O	3:F:740:GLN:NE2	2.46	0.43
3:O:421:THR:HG21	3:O:440:TRP:HE1	1.83	0.43
1:A:228:ASP:OD2	1:A:234:LYS:HE3	2.18	0.42
3:F:197:THR:HG21	5:F:901:DTP:H2'2	2.00	0.42
3:F:308:ARG:HE	3:F:310:ASP:HB3	1.84	0.42
3:C:773:SER:OG	3:C:800:SER:OG	2.31	0.42
3:F:33:ASP:OD2	3:L:124:LYS:NZ	2.31	0.42
3:L:421:THR:HG21	3:L:440:TRP:HE1	1.83	0.42
3:O:437:VAL:HG13	3:O:458:GLY:HA3	2.00	0.42
1:A:288:GLU:OE2	1:A:293:ARG:N	2.52	0.42
2:B:180:HIS:NE2	2:B:250:ASP:OD2	2.52	0.42
2:B:304:ILE:HD12	2:B:306:SER:H	1.85	0.42
3:C:587:HIS:HA	3:C:611:ASN:HD22	1.84	0.42
3:L:33:ASP:OD1	3:L:33:ASP:N	2.52	0.42
3:L:136:ILE:H	3:L:136:ILE:HG13	1.73	0.42
3:L:587:HIS:HA	3:L:611:ASN:HD22	1.84	0.42
2:B:82:ARG:HD2	2:B:84:TYR:CZ	2.54	0.42
3:C:128:GLN:HE21	3:G:37:GLU:HB2	1.84	0.42
3:L:525:GLN:OE1	3:L:554:LYS:NZ	2.44	0.42
3:O:308:ARG:HH21	3:O:310:ASP:HB3	1.84	0.42
3:C:38:LEU:HA	3:C:41:MET:HG2	2.01	0.42
3:F:308:ARG:HH21	3:F:310:ASP:HB3	1.84	0.42
3:G:502:ASP:OD1	3:G:502:ASP:N	2.52	0.42
3:L:38:LEU:HA	3:L:41:MET:HG2	2.01	0.42
3:F:421:THR:HG21	3:F:440:TRP:HE1	1.83	0.42
3:G:308:ARG:HE	3:G:310:ASP:HB3	1.84	0.42
3:F:217:TRP:O	3:F:236:ASN:ND2	2.53	0.42
2:B:154:ASN:ND2	2:B:159:LEU:O	2.50	0.42
2:B:193:LYS:HB3	2:B:196:HIS:CD2	2.55	0.42
3:G:308:ARG:HH21	3:G:310:ASP:HB3	1.84	0.42
3:O:587:HIS:HA	3:O:611:ASN:HD22	1.84	0.42
1:A:361:GLU:HA	1:A:364:VAL:HG22	2.02	0.42
3:C:217:TRP:O	3:C:236:ASN:ND2	2.53	0.42
3:F:37:GLU:HB2	3:L:128:GLN:HE21	1.83	0.42
3:L:33:ASP:OD2	3:O:124:LYS:NZ	2.29	0.42
3:L:308:ARG:HE	3:L:310:ASP:HB3	1.84	0.42
3:L:381:ARG:O	3:L:385:HIS:N	2.43	0.42
3:O:308:ARG:HE	3:O:310:ASP:HB3	1.84	0.42
3:C:245:ASP:O	3:C:248:THR:OG1	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:522:ASP:HB2	3:C:546:LYS:HG3	2.02	0.41
3:F:38:LEU:HA	3:F:41:MET:HG2	2.01	0.41
3:F:587:HIS:HA	3:F:611:ASN:HD22	1.84	0.41
3:G:587:HIS:HA	3:G:611:ASN:HD22	1.84	0.41
3:L:644:CYS:O	3:L:667:LYS:NZ	2.49	0.41
3:C:773:SER:HG	3:C:800:SER:HG	1.64	0.41
3:F:245:ASP:O	3:F:248:THR:OG1	2.36	0.41
3:F:522:ASP:HB2	3:F:546:LYS:HG3	2.02	0.41
3:O:38:LEU:HA	3:O:41:MET:HG2	2.01	0.41
3:O:217:TRP:O	3:O:236:ASN:ND2	2.53	0.41
3:O:522:ASP:HB2	3:O:546:LYS:HG3	2.02	0.41
3:C:33:ASP:OD1	3:C:33:ASP:N	2.52	0.41
3:G:525:GLN:OE1	3:G:554:LYS:NZ	2.44	0.41
3:L:217:TRP:O	3:L:236:ASN:ND2	2.53	0.41
1:A:156:VAL:HG11	1:A:170:GLU:HG3	2.02	0.41
3:F:502:ASP:N	3:F:502:ASP:OD1	2.52	0.41
3:G:38:LEU:HA	3:G:41:MET:HG2	2.01	0.41
3:G:217:TRP:O	3:G:236:ASN:ND2	2.53	0.41
3:G:650:PHE:HD1	3:G:650:PHE:HA	1.70	0.41
3:L:595:ASN:N	3:L:620:CYS:SG	2.93	0.41
2:B:193:LYS:HG2	2:B:195:MET:H	1.84	0.41
3:G:655:GLY:HA3	3:G:679:GLU:HB2	2.02	0.41
3:L:655:GLY:HA3	3:L:679:GLU:HB2	2.02	0.41
2:B:65:PHE:HZ	2:B:68:GLN:HB3	1.86	0.41
3:C:544:VAL:HA	3:C:568:LYS:HB3	2.03	0.41
3:C:613:GLN:O	3:C:637:LEU:N	2.46	0.41
3:C:655:GLY:HA3	3:C:679:GLU:HB2	2.02	0.41
3:F:655:GLY:HA3	3:F:679:GLU:HB2	2.02	0.41
3:G:33:ASP:OD1	3:G:33:ASP:N	2.52	0.41
3:G:452:ARG:O	3:G:457:SER:OG	2.28	0.41
3:L:308:ARG:HH21	3:L:310:ASP:HB3	1.84	0.41
3:O:544:VAL:HA	3:O:568:LYS:HB3	2.03	0.41
3:G:41:MET:O	3:G:44:PHE:HB3	2.21	0.41
3:L:41:MET:O	3:L:44:PHE:HB3	2.21	0.41
3:O:595:ASN:N	3:O:620:CYS:SG	2.93	0.41
3:C:595:ASN:N	3:C:620:CYS:SG	2.93	0.41
3:G:245:ASP:O	3:G:248:THR:OG1	2.36	0.41
3:G:644:CYS:O	3:G:667:LYS:NZ	2.49	0.41
1:A:210:GLU:N	1:A:210:GLU:OE1	2.54	0.41
2:B:82:ARG:HE	3:C:724:TYR:HD1	1.68	0.41
2:B:172:ILE:HD12	2:B:254:PHE:HE1	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:299:ARG:H	2:B:299:ARG:HD3	1.85	0.41
3:C:378:GLU:HA	3:C:381:ARG:HG3	2.03	0.41
3:F:41:MET:O	3:F:44:PHE:HB3	2.21	0.41
3:O:41:MET:O	3:O:44:PHE:HB3	2.21	0.41
3:O:335:ASN:HB3	3:O:340:GLU:OE2	2.21	0.41
3:O:655:GLY:HA3	3:O:679:GLU:HB2	2.02	0.41
3:C:308:ARG:HE	3:C:310:ASP:HB3	1.85	0.41
3:G:522:ASP:HB2	3:G:546:LYS:HG3	2.02	0.41
3:L:522:ASP:HB2	3:L:546:LYS:HG3	2.02	0.41
1:A:225:ILE:H	1:A:225:ILE:HG13	1.64	0.40
2:B:78:GLU:HA	2:B:83:SER:HA	2.03	0.40
3:L:222:GLN:HG3	3:L:223:THR:HG23	2.03	0.40
2:B:287:CYS:HA	2:B:292:LEU:HD22	2.03	0.40
3:C:222:GLN:HG3	3:C:223:THR:HG23	2.03	0.40
3:C:335:ASN:HB3	3:C:340:GLU:OE2	2.21	0.40
3:F:33:ASP:OD1	3:F:33:ASP:N	2.52	0.40
3:G:544:VAL:HA	3:G:568:LYS:HB3	2.03	0.40
3:O:711:SER:O	3:O:740:GLN:NE2	2.46	0.40
3:G:335:ASN:HB3	3:G:340:GLU:OE2	2.21	0.40
3:G:381:ARG:HH22	3:O:452:ARG:N	2.19	0.40
3:G:592:SER:O	3:G:592:SER:OG	2.38	0.40
3:L:335:ASN:HB3	3:L:340:GLU:OE2	2.21	0.40
1:A:205:LEU:HA	1:A:205:LEU:HD23	1.83	0.40
2:B:145:MET:HE2	2:B:197:VAL:HB	2.04	0.40
2:B:170:LYS:HG3	2:B:344:GLU:OE2	2.22	0.40
3:C:197:THR:HG21	5:C:901:DTP:H2'2	2.03	0.40
3:F:544:VAL:HA	3:F:568:LYS:HB3	2.03	0.40
3:L:704:LEU:HD13	3:L:734:ALA:HB3	2.04	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	A	189/426 (44%)	162 (86%)	27 (14%)	0	100	100
2	B	323/351 (92%)	291 (90%)	30 (9%)	2 (1%)	21	52
3	C	784/852 (92%)	704 (90%)	78 (10%)	2 (0%)	36	65
3	F	784/852 (92%)	704 (90%)	78 (10%)	2 (0%)	36	65
3	G	784/852 (92%)	704 (90%)	78 (10%)	2 (0%)	36	65
3	L	784/852 (92%)	704 (90%)	78 (10%)	2 (0%)	36	65
3	O	784/852 (92%)	704 (90%)	78 (10%)	2 (0%)	36	65
All	All	4432/5037 (88%)	3973 (90%)	447 (10%)	12 (0%)	37	65

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	501	LYS
3	F	501	LYS
3	G	501	LYS
3	L	501	LYS
3	O	501	LYS
3	O	507	PRO
2	B	231	THR
3	C	507	PRO
3	F	507	PRO
3	G	507	PRO
3	L	507	PRO
2	B	81	ASP

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 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	A	160/355 (45%)	159 (99%)	1 (1%)	78	79
2	B	293/314 (93%)	290 (99%)	3 (1%)	68	74
3	C	719/772 (93%)	714 (99%)	5 (1%)	76	77
3	F	719/772 (93%)	714 (99%)	5 (1%)	76	77

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	G	719/772 (93%)	714 (99%)	5 (1%)	76	77
3	L	719/772 (93%)	714 (99%)	5 (1%)	76	77
3	O	719/772 (93%)	714 (99%)	5 (1%)	76	77
All	All	4048/4529 (89%)	4019 (99%)	29 (1%)	73	77

All (29) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	225	ILE
2	B	121	LEU
2	B	259	LEU
2	B	344	GLU
3	C	61	LEU
3	C	75	ILE
3	C	325	LEU
3	C	741	LEU
3	C	763	LEU
3	F	61	LEU
3	F	75	ILE
3	F	325	LEU
3	F	741	LEU
3	F	763	LEU
3	G	61	LEU
3	G	75	ILE
3	G	325	LEU
3	G	741	LEU
3	G	763	LEU
3	L	61	LEU
3	L	75	ILE
3	L	325	LEU
3	L	741	LEU
3	L	763	LEU
3	O	61	LEU
3	O	75	ILE
3	O	325	LEU
3	O	741	LEU
3	O	763	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (105) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	142	ASN
1	A	209	HIS
1	A	214	GLN
1	A	350	ASN
2	B	26	ASN
2	B	59	ASN
2	B	119	ASN
3	C	51	GLN
3	C	80	GLN
3	C	119	ASN
3	C	128	GLN
3	C	273	ASN
3	C	322	ASN
3	C	377	HIS
3	C	385	HIS
3	C	467	ASN
3	C	511	ASN
3	C	587	HIS
3	C	595	ASN
3	C	627	GLN
3	C	643	ASN
3	C	672	ASN
3	C	673	ASN
3	C	698	GLN
3	C	742	HIS
3	C	786	ASN
3	F	51	GLN
3	F	80	GLN
3	F	119	ASN
3	F	128	GLN
3	F	273	ASN
3	F	288	GLN
3	F	322	ASN
3	F	385	HIS
3	F	467	ASN
3	F	511	ASN
3	F	587	HIS
3	F	595	ASN
3	F	621	GLN
3	F	627	GLN
3	F	643	ASN
3	F	672	ASN
3	F	673	ASN

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Mol	Chain	Res	Type
3	F	698	GLN
3	F	742	HIS
3	F	786	ASN
3	G	51	GLN
3	G	80	GLN
3	G	119	ASN
3	G	273	ASN
3	G	322	ASN
3	G	377	HIS
3	G	385	HIS
3	G	467	ASN
3	G	511	ASN
3	G	587	HIS
3	G	595	ASN
3	G	621	GLN
3	G	627	GLN
3	G	643	ASN
3	G	672	ASN
3	G	673	ASN
3	G	698	GLN
3	G	742	HIS
3	G	786	ASN
3	L	51	GLN
3	L	80	GLN
3	L	119	ASN
3	L	128	GLN
3	L	254	GLN
3	L	273	ASN
3	L	322	ASN
3	L	385	HIS
3	L	467	ASN
3	L	511	ASN
3	L	587	HIS
3	L	595	ASN
3	L	621	GLN
3	L	627	GLN
3	L	643	ASN
3	L	672	ASN
3	L	673	ASN
3	L	698	GLN
3	L	742	HIS
3	L	786	ASN

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Mol	Chain	Res	Type
3	O	51	GLN
3	O	80	GLN
3	O	119	ASN
3	O	128	GLN
3	O	273	ASN
3	O	288	GLN
3	O	322	ASN
3	O	385	HIS
3	O	467	ASN
3	O	511	ASN
3	O	587	HIS
3	O	595	ASN
3	O	621	GLN
3	O	627	GLN
3	O	643	ASN
3	O	672	ASN
3	O	673	ASN
3	O	698	GLN
3	O	742	HIS
3	O	786	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

7 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
4	U5P	A	501	1	15,18,22	1.90	2 (13%)	14,22,33	3.29	6 (42%)
5	DTP	C	901	-	31,32,32	0.52	0	46,50,50	0.64	0
5	DTP	F	901	-	31,32,32	0.51	0	46,50,50	0.64	0
5	DTP	O	901	-	31,32,32	0.52	0	46,50,50	0.63	0
5	DTP	G	901	-	31,32,32	0.50	0	46,50,50	0.67	0
4	U5P	A	502	1	18,21,22	2.07	9 (50%)	25,30,33	2.08	8 (32%)
5	DTP	L	901	-	31,32,32	0.53	0	46,50,50	0.69	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	U5P	A	501	1	-	4/8/18/26	0/1/1/2
5	DTP	C	901	-	-	3/22/34/34	0/3/3/3
5	DTP	F	901	-	-	4/22/34/34	0/3/3/3
5	DTP	O	901	-	-	5/22/34/34	0/3/3/3
5	DTP	G	901	-	-	4/22/34/34	0/3/3/3
4	U5P	A	502	1	-	3/7/25/26	0/2/2/2
5	DTP	L	901	-	-	4/22/34/34	0/3/3/3

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	501	U5P	C5-C4	-6.36	1.38	1.48
4	A	502	U5P	C4-N3	-3.52	1.32	1.38
4	A	502	U5P	C5-C4	-3.43	1.36	1.43
4	A	502	U5P	O4-C4	-2.97	1.18	1.24
4	A	502	U5P	C6-N1	-2.45	1.32	1.38
4	A	502	U5P	C3'-C2'	-2.43	1.46	1.53
4	A	502	U5P	C1'-N1	-2.42	1.40	1.47
4	A	502	U5P	O2-C2	-2.40	1.18	1.23
4	A	502	U5P	O4'-C1'	2.20	1.47	1.42
4	A	502	U5P	C2-N1	-2.16	1.35	1.38
4	A	501	U5P	C2'-C3'	-2.16	1.50	1.53

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	501	U5P	C5-C4-N3	9.80	120.49	113.84
4	A	502	U5P	C4-N3-C2	-5.68	119.56	126.61
4	A	501	U5P	O2-C2-N3	-4.40	117.90	124.59
4	A	502	U5P	C5-C4-N3	4.20	120.68	114.80
4	A	502	U5P	N3-C2-N1	3.57	119.54	114.89
4	A	501	U5P	C6-C5-C4	-3.05	118.87	122.22
4	A	502	U5P	O4-C4-C5	-2.99	120.01	125.16
4	A	501	U5P	O3'-C3'-C2'	-2.52	105.99	111.97
4	A	502	U5P	C3'-C2'-C1'	2.47	106.13	101.46
4	A	502	U5P	C2'-C3'-C4'	2.45	107.35	102.61
4	A	501	U5P	O4'-C4'-C3'	2.37	106.82	104.63
4	A	502	U5P	O2-C2-N1	-2.29	119.81	122.80
4	A	501	U5P	O4-C4-C5	-2.25	119.32	122.70
4	A	502	U5P	C4'-O4'-C1'	-2.05	104.94	109.47

There are no chirality outliers.

All (27) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	501	U5P	C5-C4-N3-C2
4	A	501	U5P	O4-C4-N3-C2
4	A	501	U5P	N3-C4-C5-C6
4	A	501	U5P	O4-C4-C5-C6
5	G	901	DTP	O4'-C1'-N9-C4
5	L	901	DTP	PB-O3B-PG-O2G
5	L	901	DTP	PB-O3B-PG-O3G
4	A	502	U5P	C3'-C4'-C5'-O5'
4	A	502	U5P	O4'-C4'-C5'-O5'
5	C	901	DTP	C2'-C1'-N9-C4
5	F	901	DTP	C2'-C1'-N9-C4
5	G	901	DTP	C2'-C1'-N9-C4
5	O	901	DTP	C2'-C1'-N9-C4
5	C	901	DTP	O4'-C1'-N9-C4
5	F	901	DTP	O4'-C1'-N9-C4
5	O	901	DTP	O4'-C1'-N9-C4
5	L	901	DTP	O4'-C4'-C5'-O5'
5	C	901	DTP	O4'-C1'-N9-C8
5	F	901	DTP	O4'-C1'-N9-C8
5	G	901	DTP	O4'-C1'-N9-C8
5	O	901	DTP	O4'-C1'-N9-C8
5	L	901	DTP	C4'-C5'-O5'-PA

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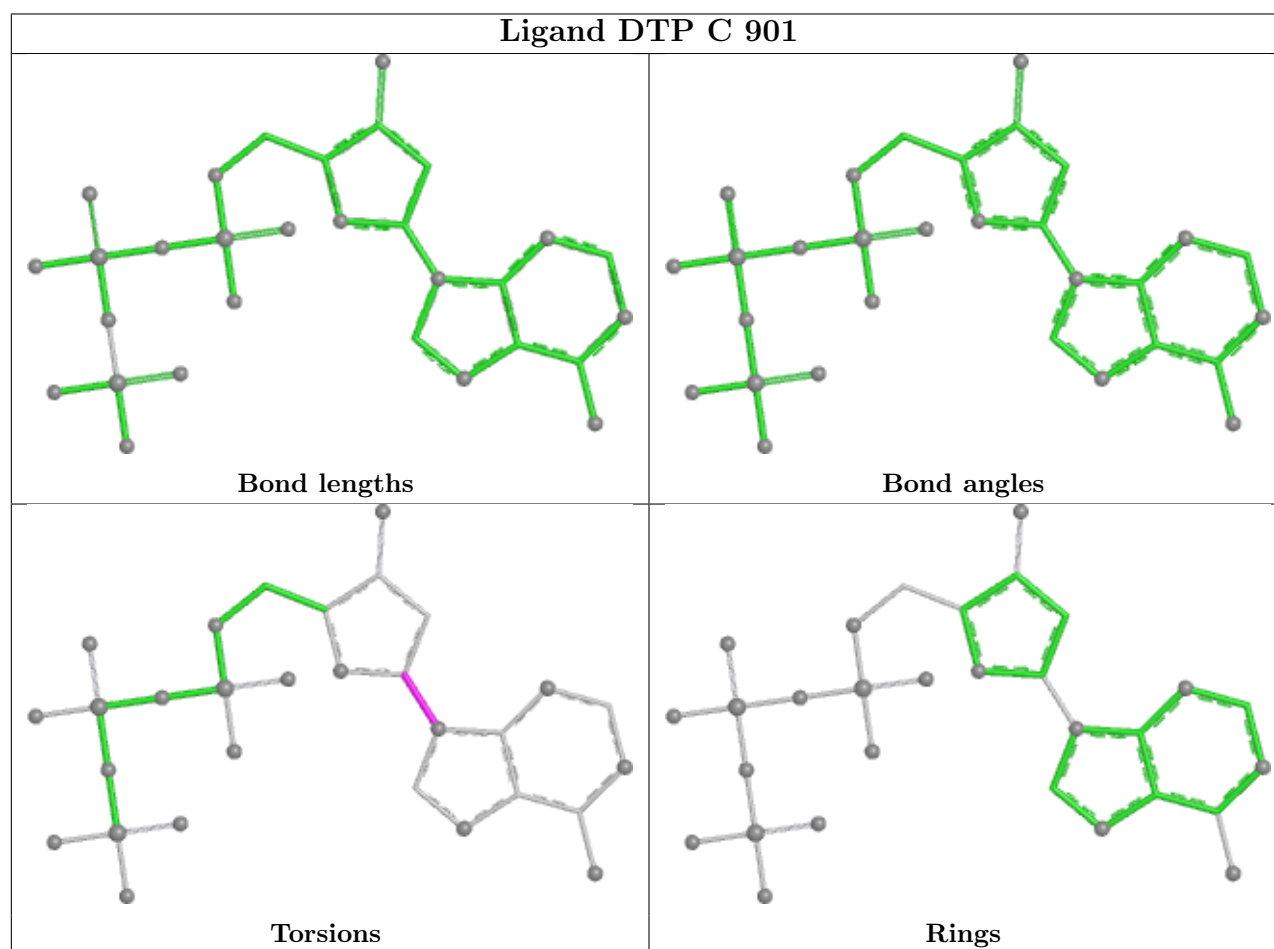
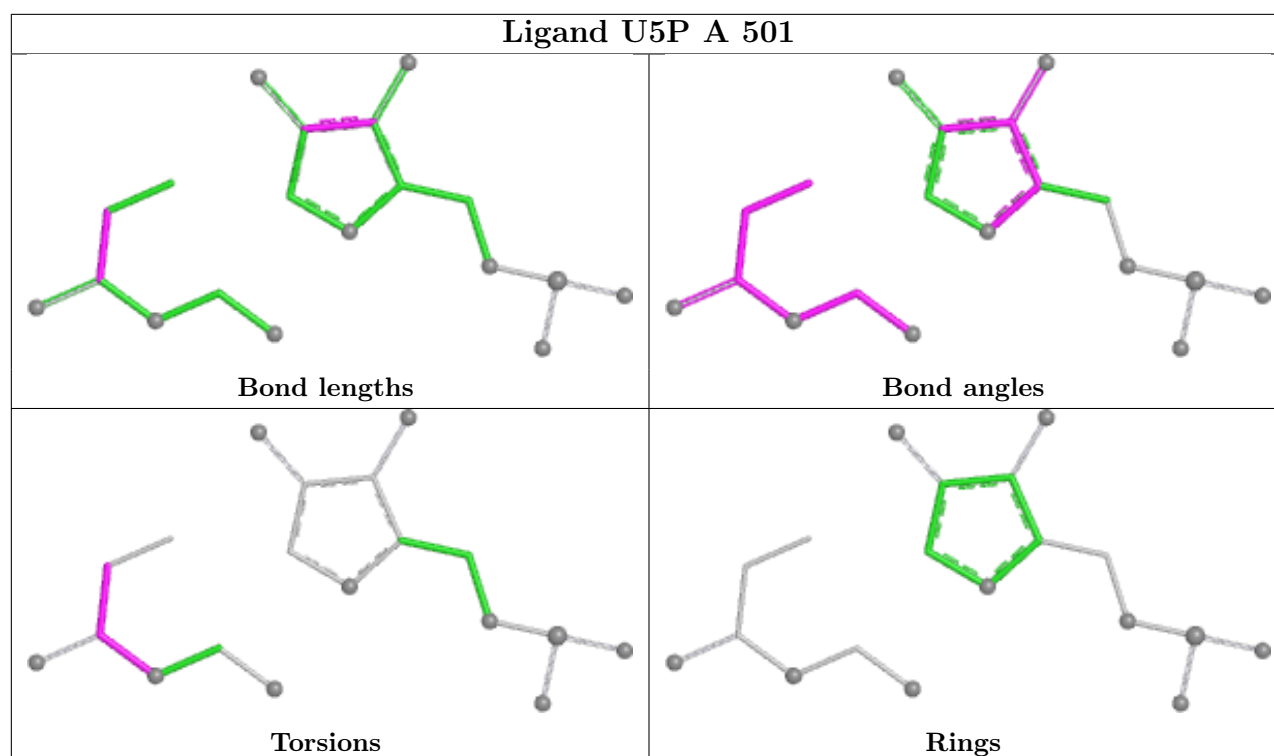
Mol	Chain	Res	Type	Atoms
5	O	901	DTP	PA-O3A-PB-O1B
4	A	502	U5P	C4'-C5'-O5'-P
5	F	901	DTP	PA-O3A-PB-O2B
5	G	901	DTP	PA-O3A-PB-O2B
5	O	901	DTP	PA-O3A-PB-O2B

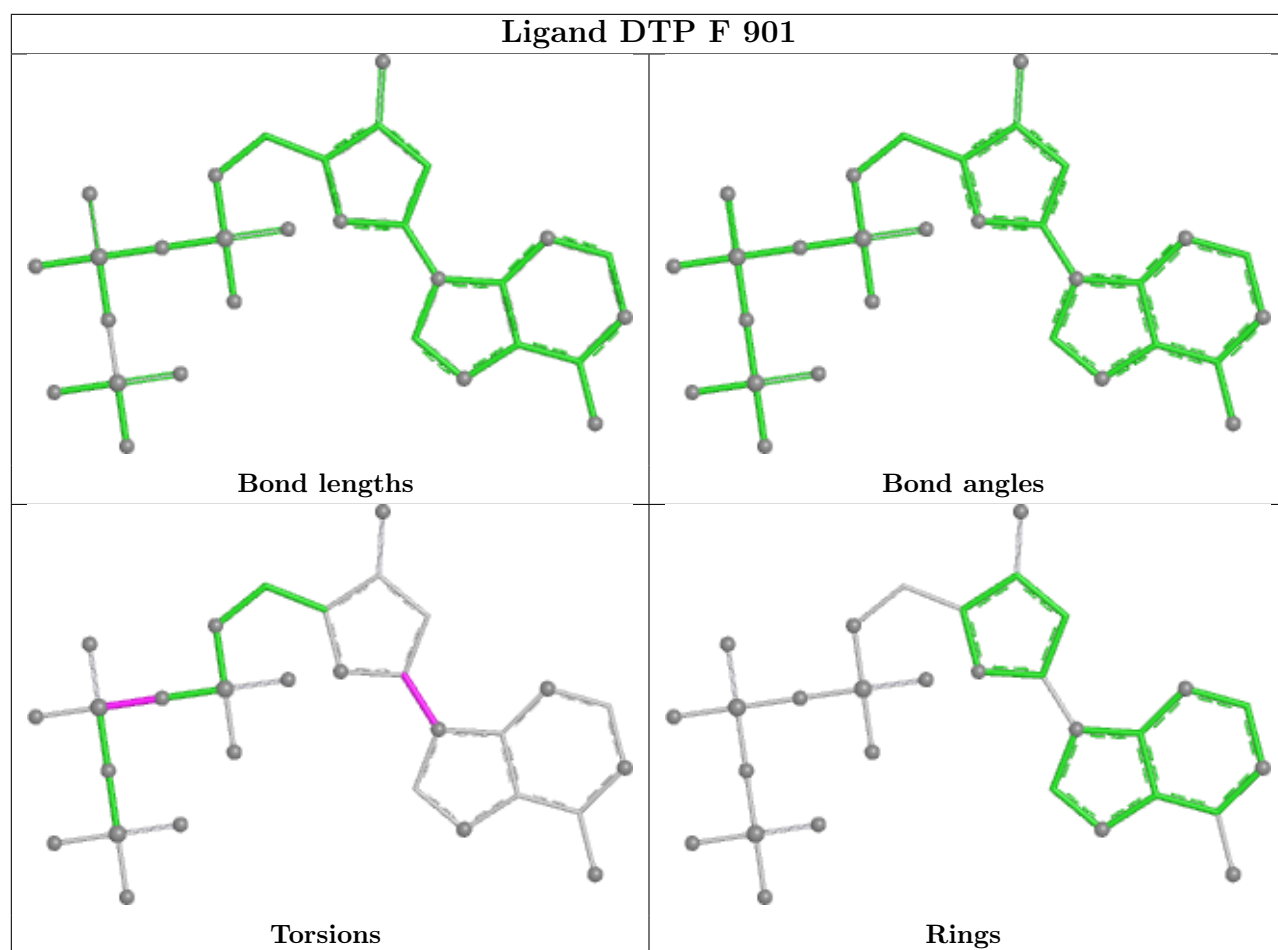
There are no ring outliers.

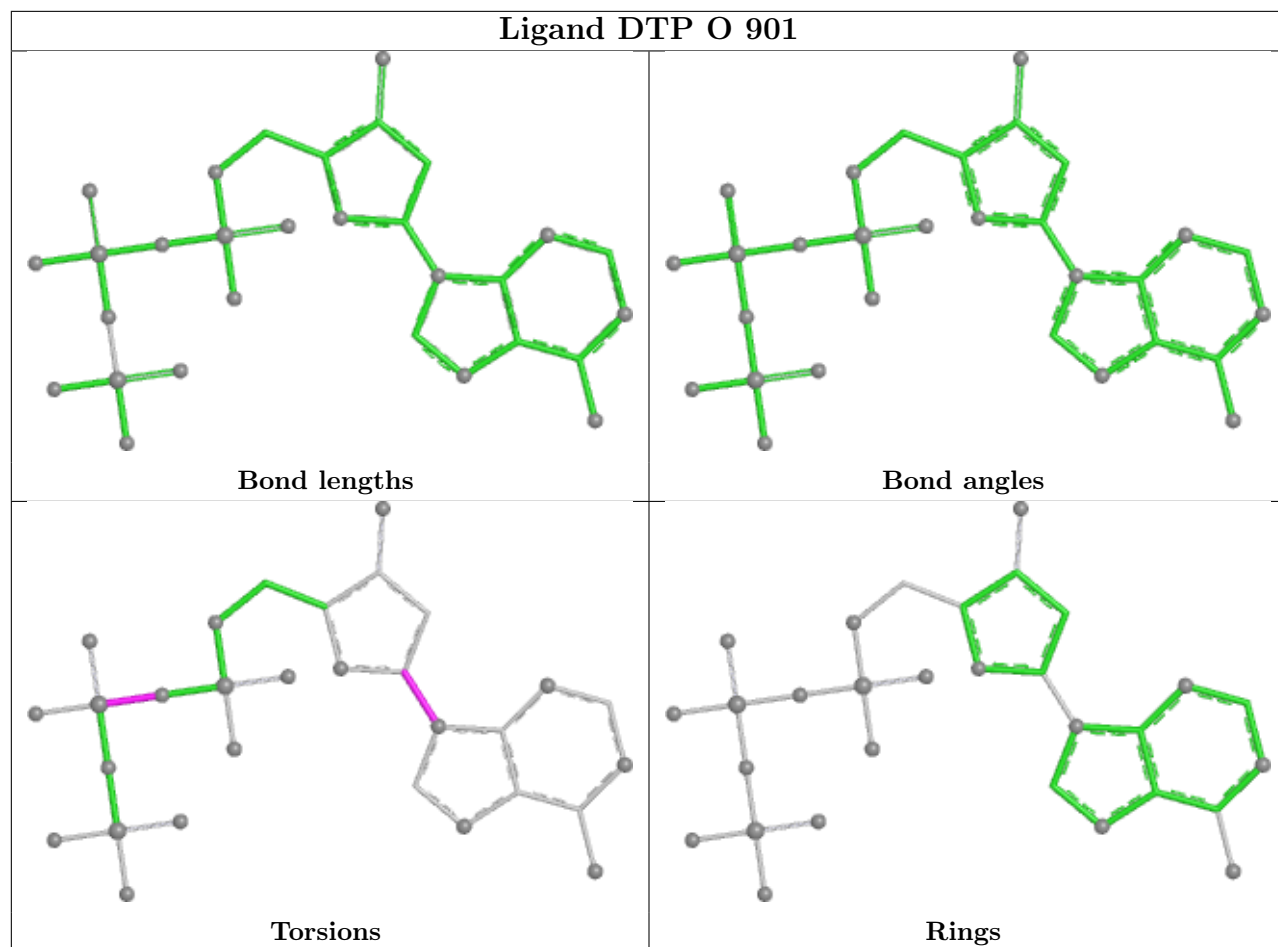
5 monomers are involved in 20 short contacts:

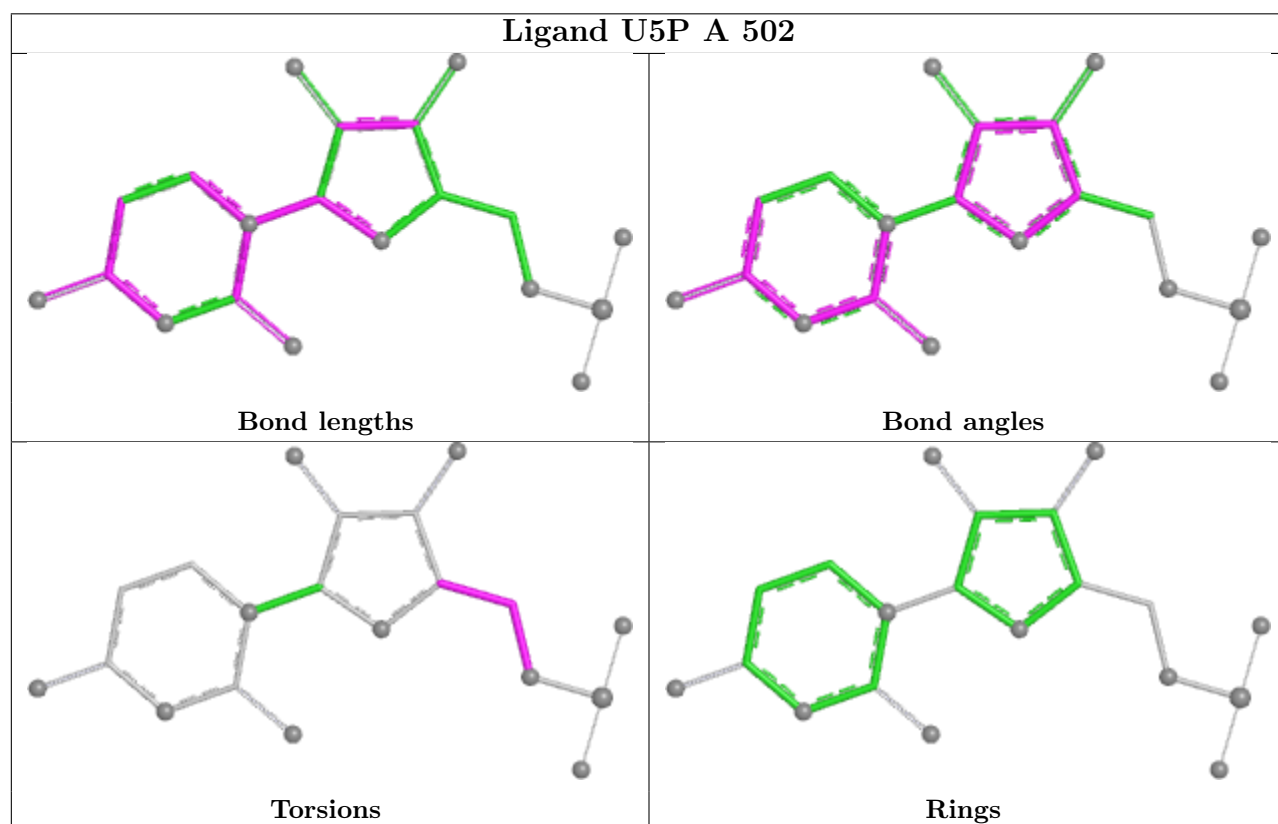
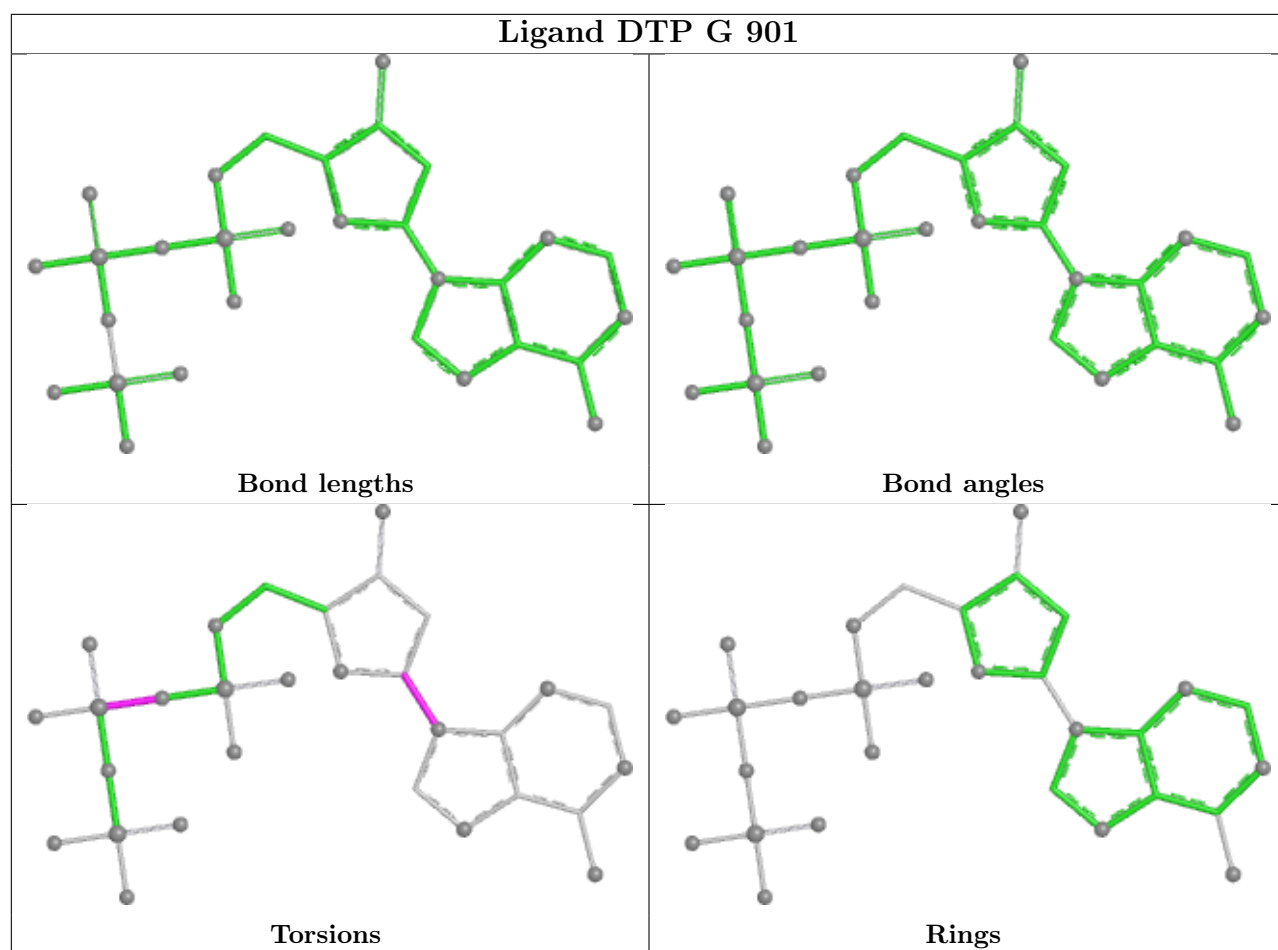
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	901	DTP	4	0
5	F	901	DTP	4	0
5	O	901	DTP	3	0
5	G	901	DTP	4	0
5	L	901	DTP	5	0

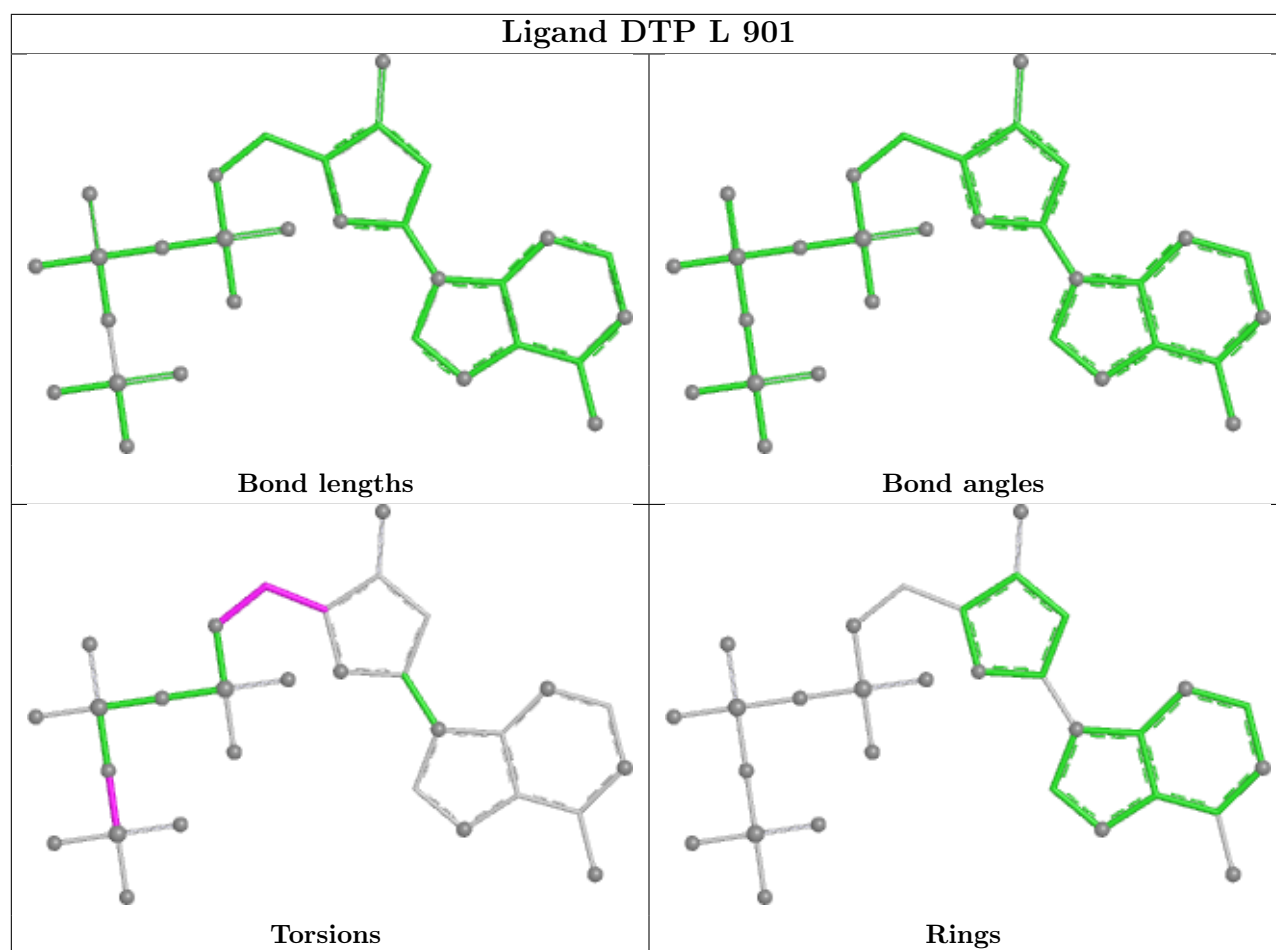
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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











5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

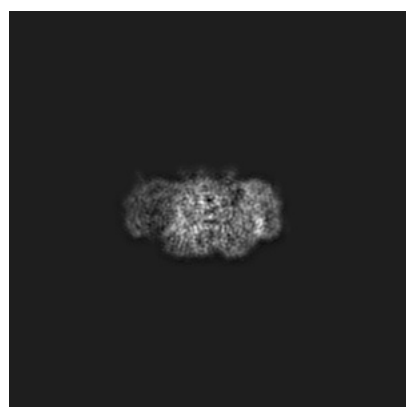
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0688. These allow visual inspection of the internal detail of the map and identification of artifacts.

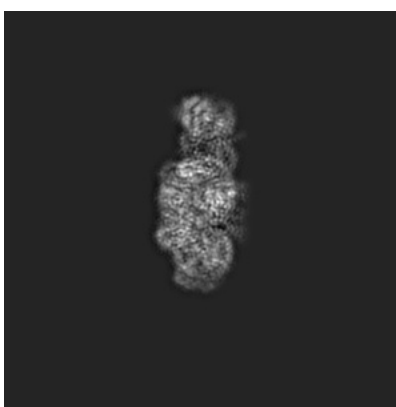
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

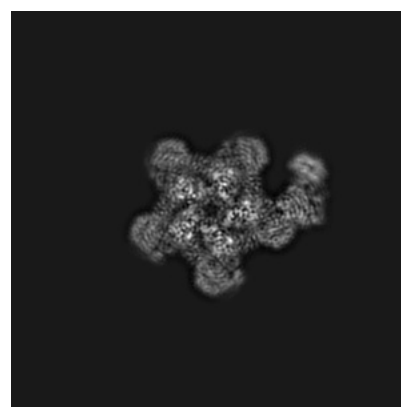
6.1.1 Primary map



X



Y

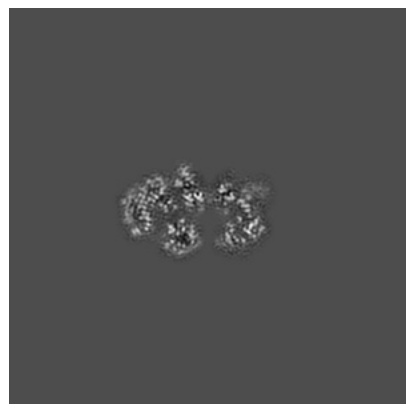


Z

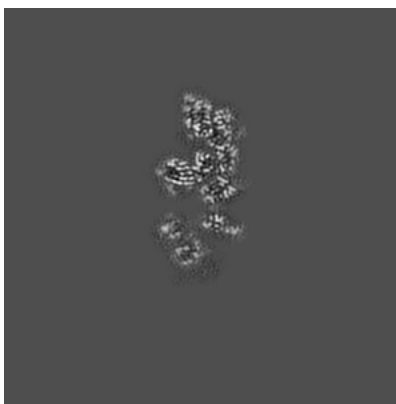
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

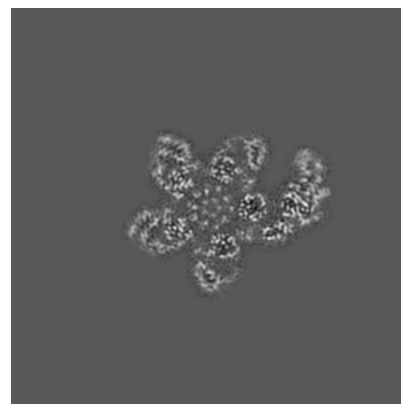
6.2.1 Primary map



X Index: 180



Y Index: 180

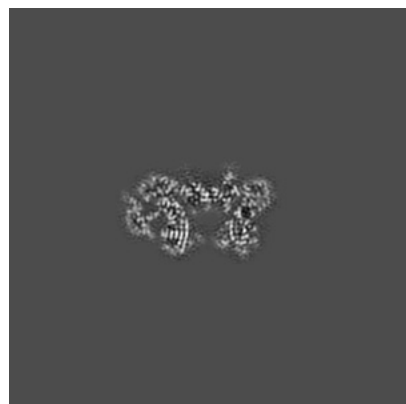


Z Index: 180

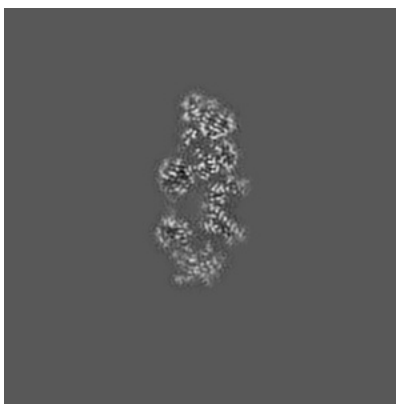
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

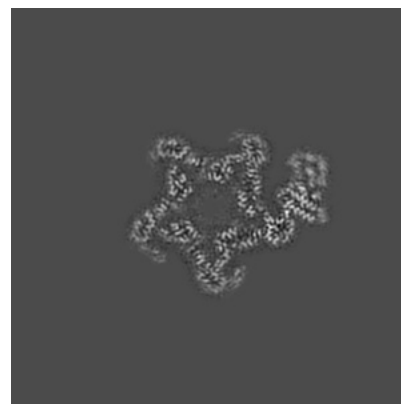
6.3.1 Primary map



X Index: 187



Y Index: 173

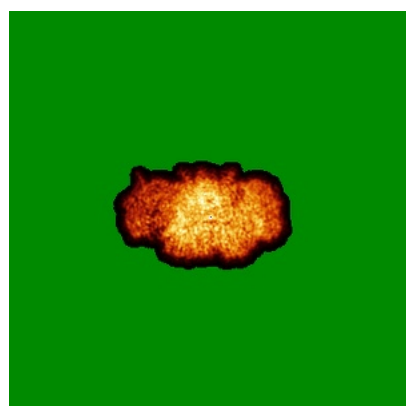


Z Index: 172

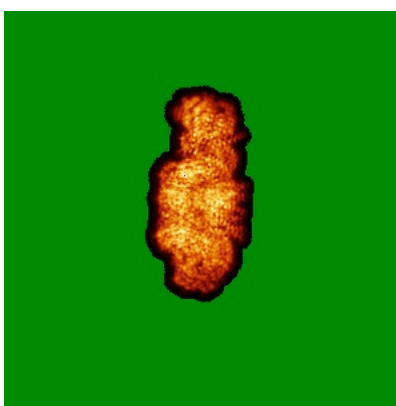
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

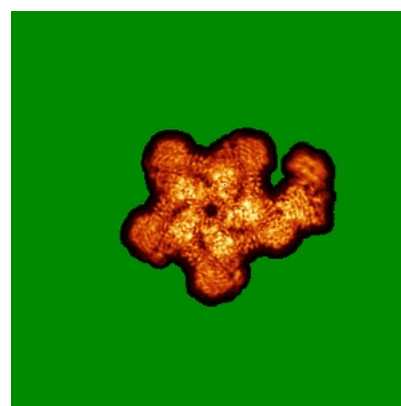
6.4.1 Primary map



X



Y

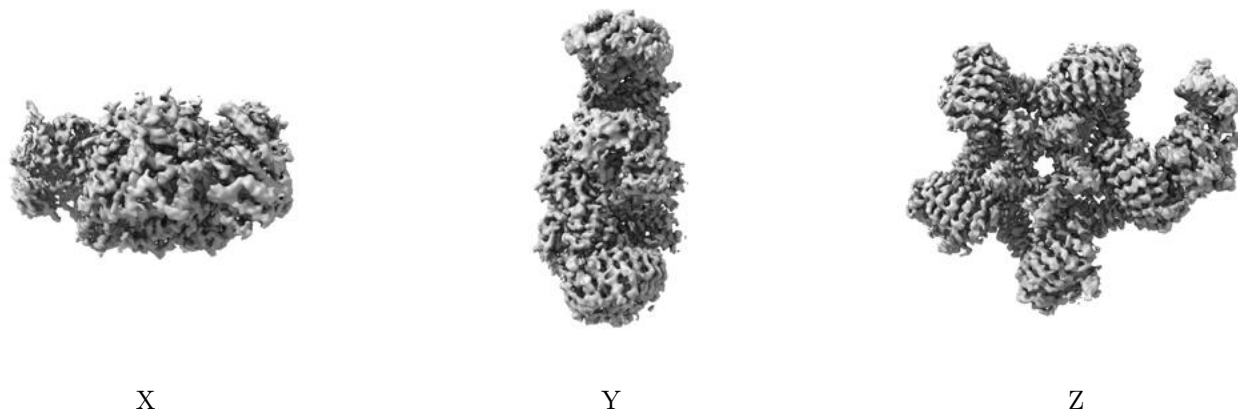


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.013. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

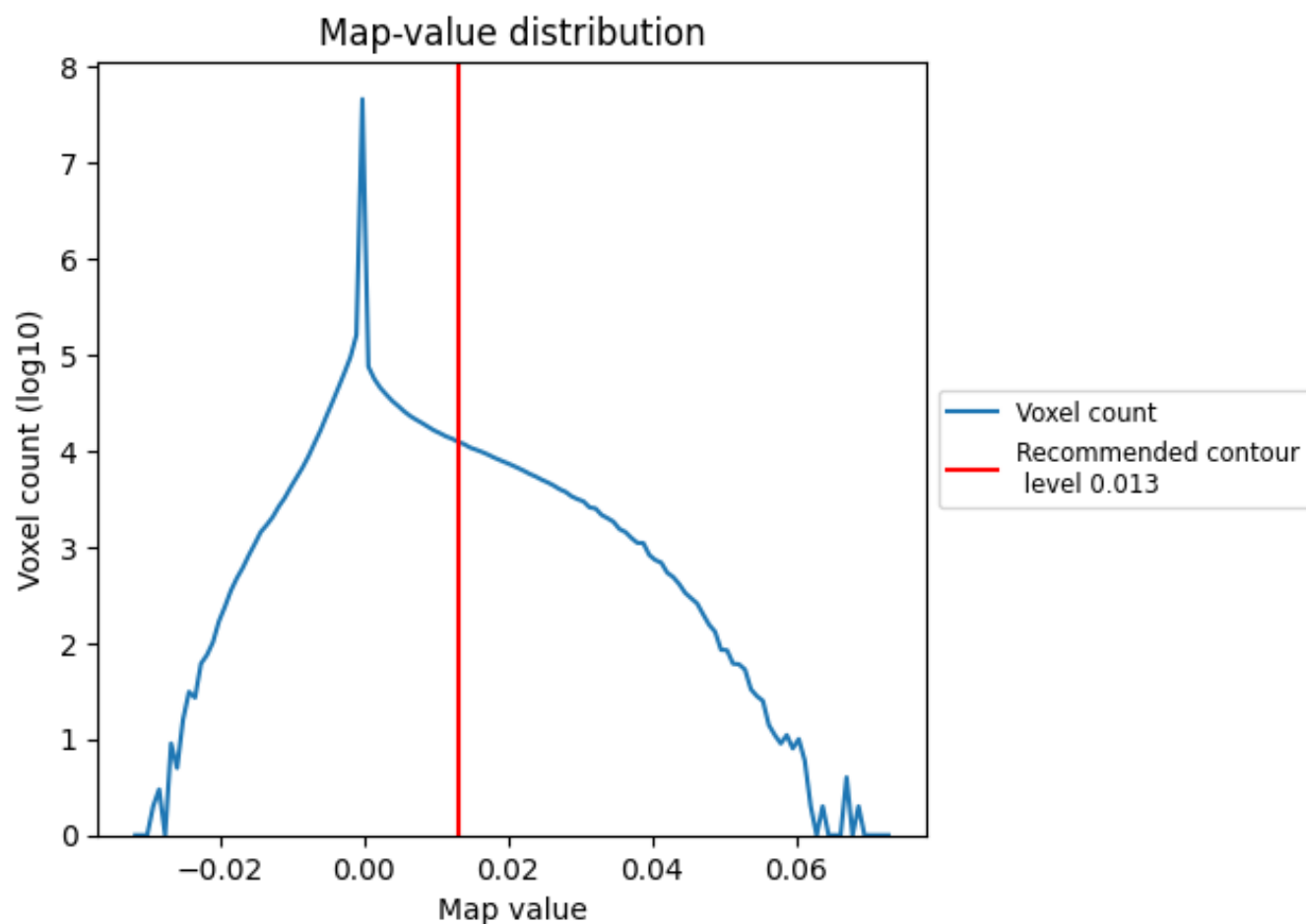
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

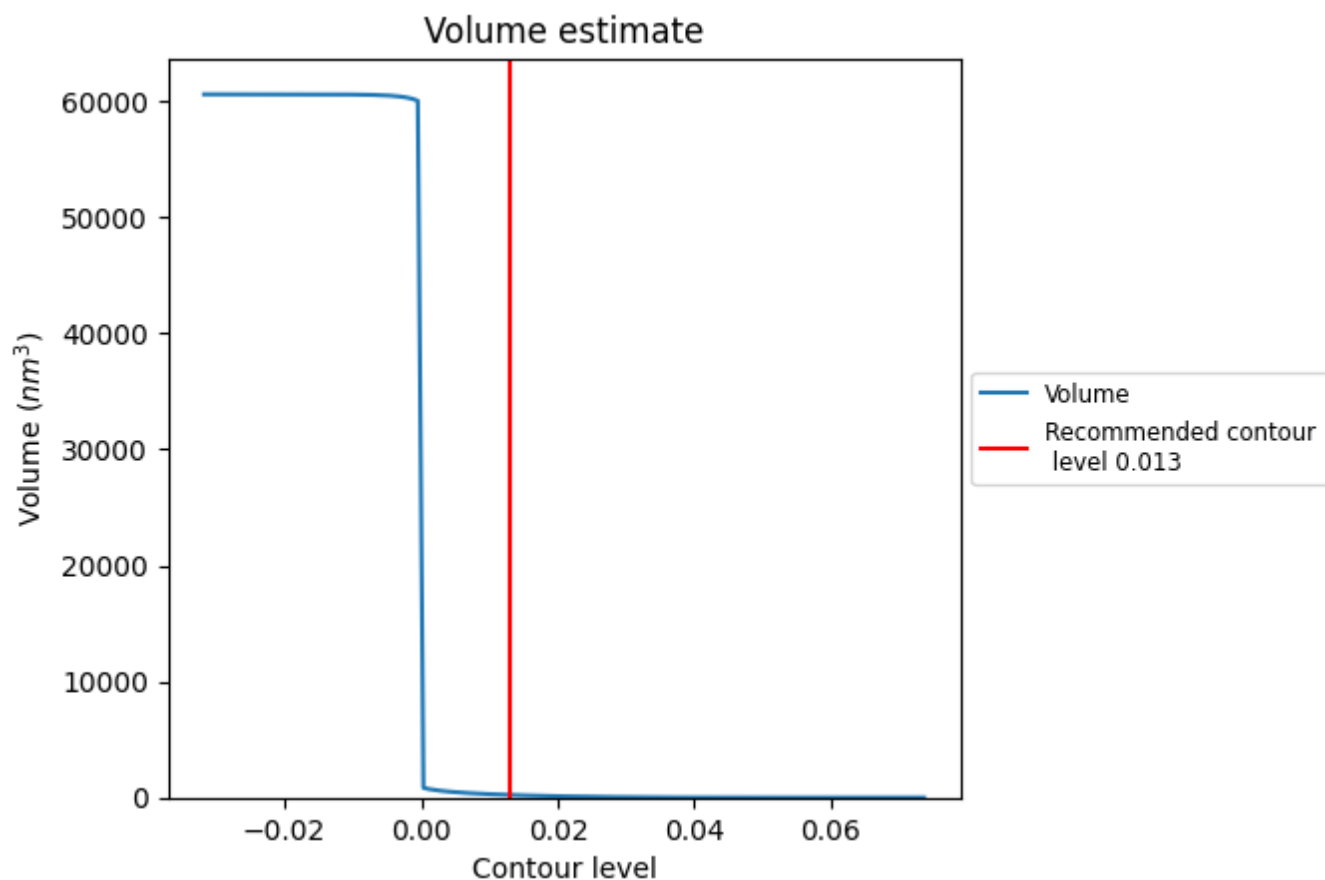
This section contains the results of statistical analysis of the map.

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.

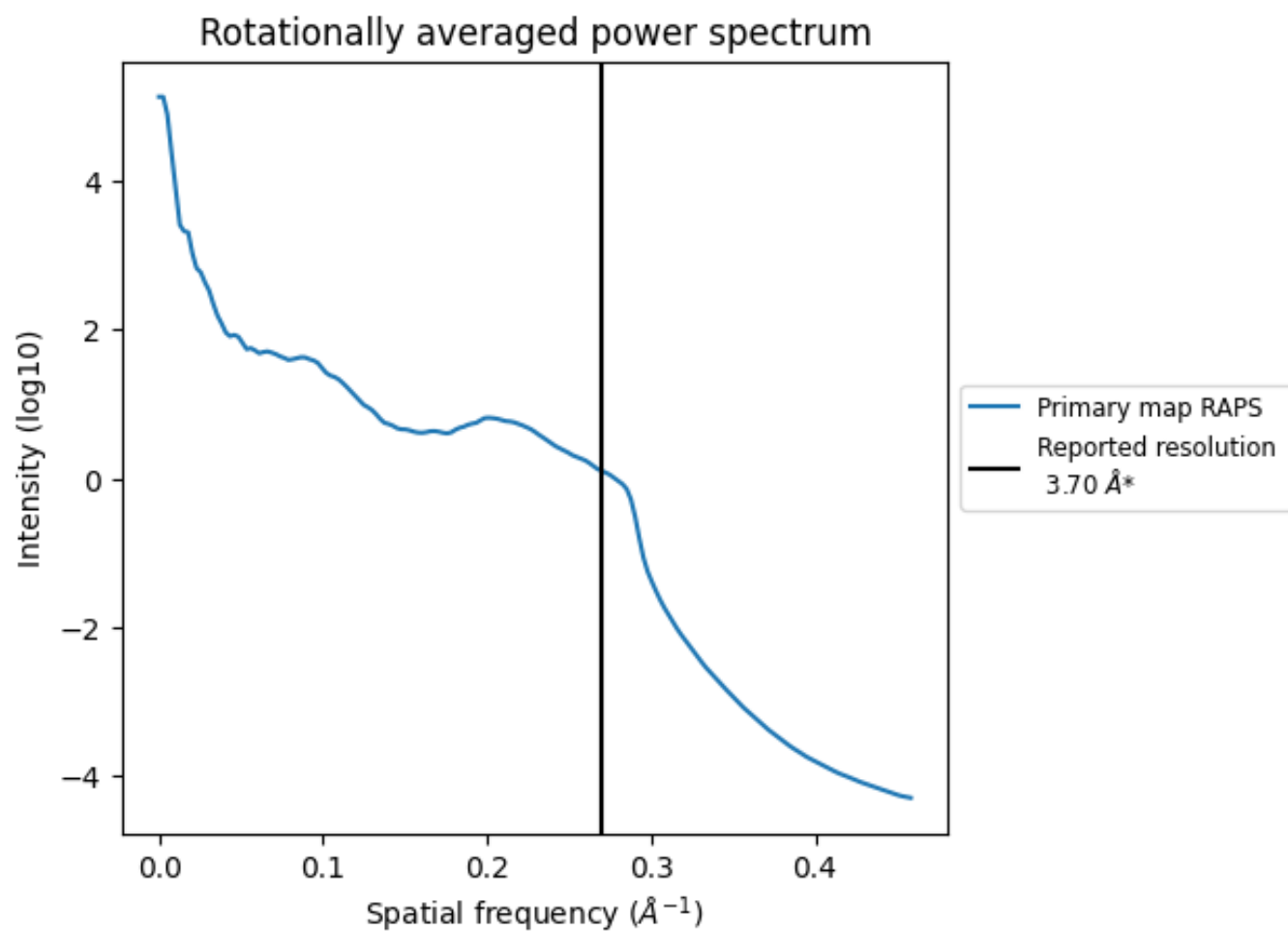
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 226 nm^3 ; this corresponds to an approximate mass of 204 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 ⓘ



*Reported resolution corresponds to spatial frequency of 0.270 Å⁻¹

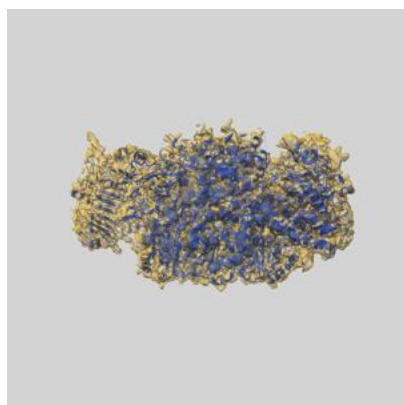
8 Fourier-Shell correlation

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

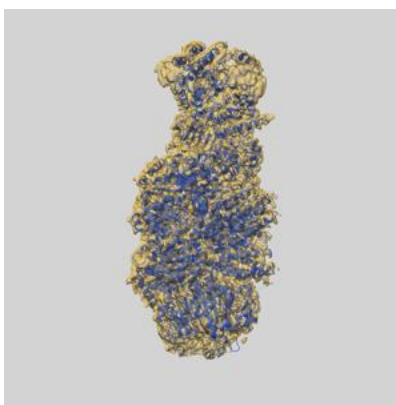
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-0688 and PDB model 6J6I. Per-residue inclusion information can be found in section [3](#) on page [7](#).

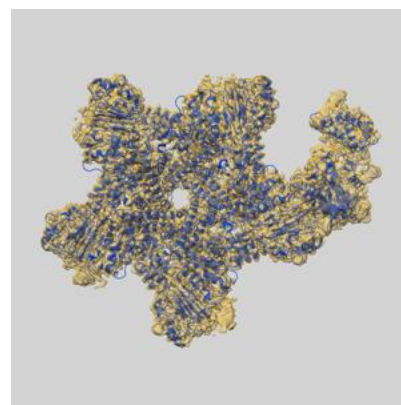
9.1 Map-model overlay [i](#)



X



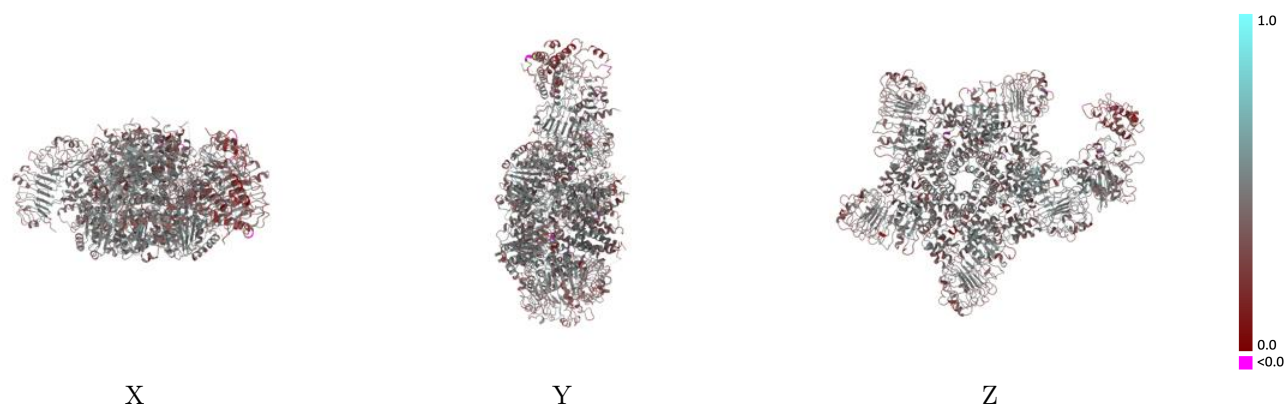
Y



Z

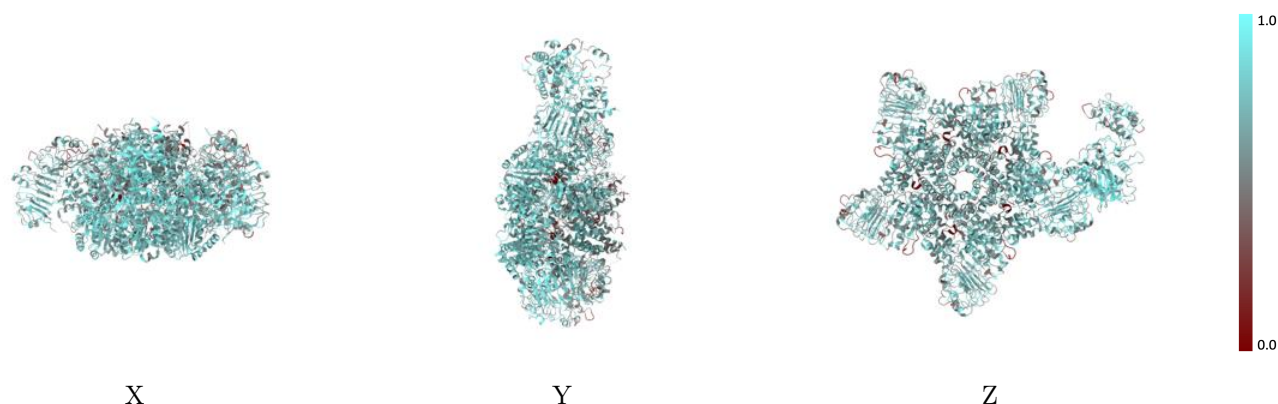
The images above show the 3D surface view of the map at the recommended contour level 0.013 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



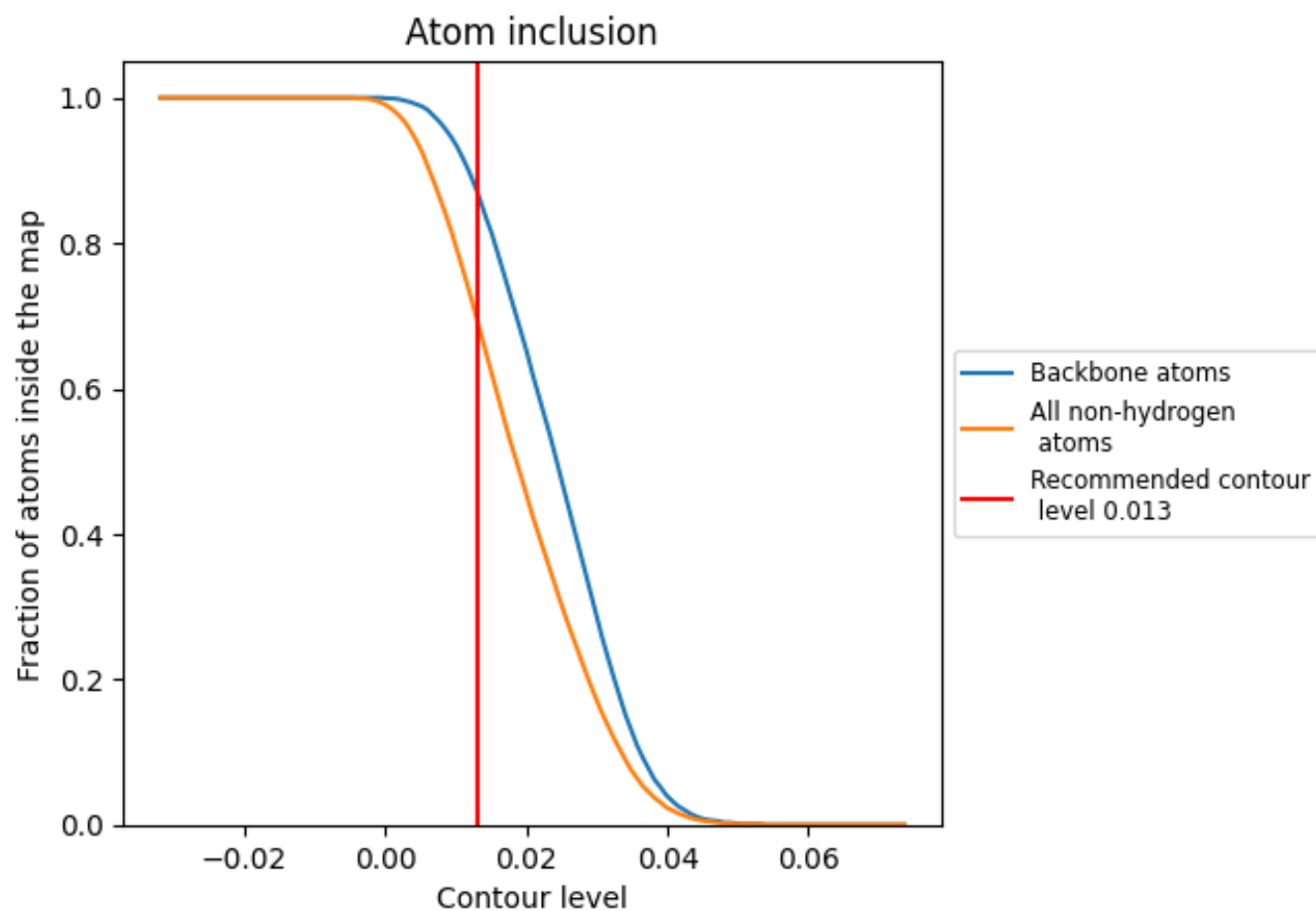
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.013).

9.4 Atom inclusion [i](#)



At the recommended contour level, 87% of all backbone atoms, 70% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.013) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6970	0.4210
A	0.6520	0.2670
B	0.7780	0.4240
C	0.7330	0.4510
F	0.6900	0.4260
G	0.6780	0.4200
L	0.6770	0.4220
O	0.6850	0.4230

1.0

0.0

<0.0