



Full wwPDB EM Validation Report ⓘ

Nov 24, 2025 – 12:54 pm GMT

PDB ID : 9HHL / pdb_00009hhl
EMDB ID : EMD-52171
Title : Structure of Dynein-Dynactin-NuMA-LIS1
Authors : d'Amico, E.A.; Carter, A.P.
Deposited on : 2024-11-21
Resolution : 6.53 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

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:

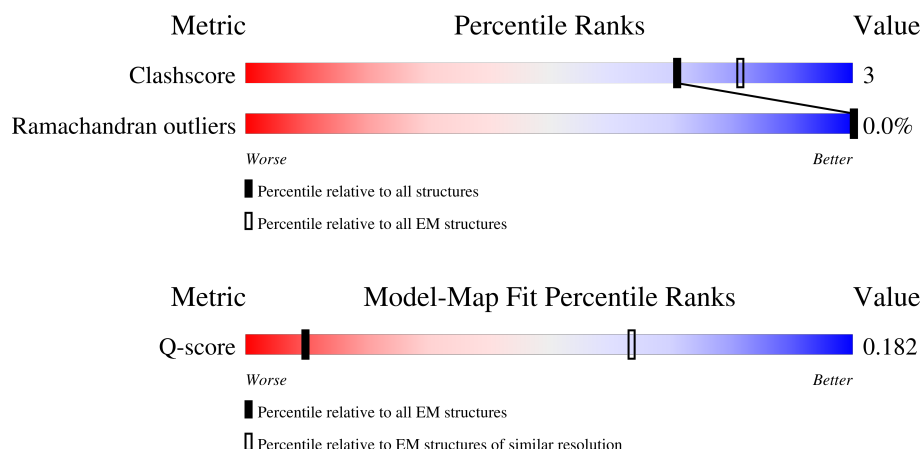
EMDB validation analysis : 0.0.1.dev129
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up 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) : 2.46

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 6.53 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.



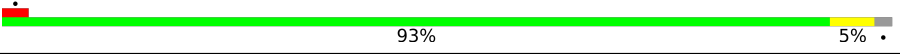
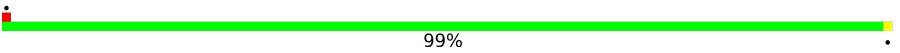
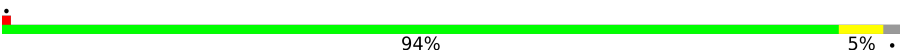
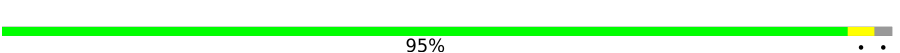
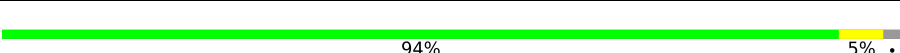
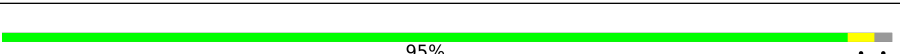
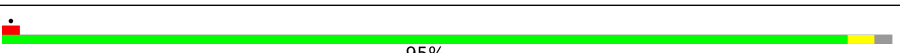
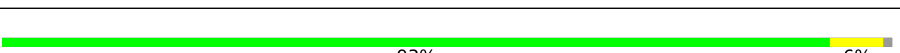
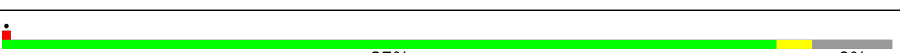
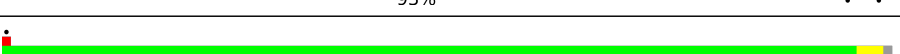
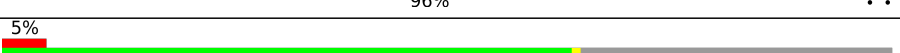
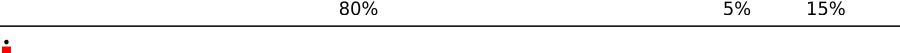
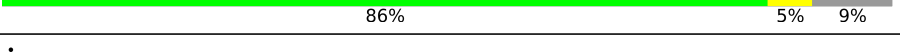
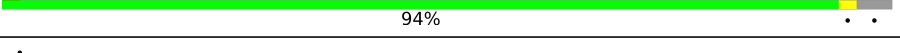
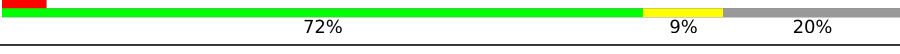
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Q-score	-	25397	500 (6.03 - 7.02)

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	g	612	16% 59% 5% 36%
1	h	612	6% 61% • 35%
1	o	612	15% 58% 6% 36%
1	p	612	40% 65% • 34%
2	1	889	• 22% • 77%

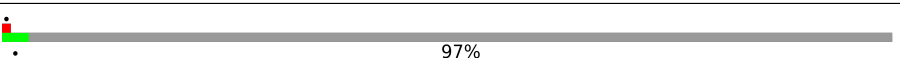
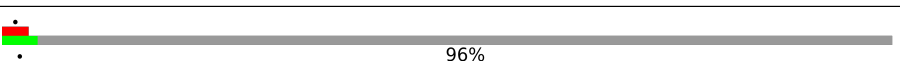
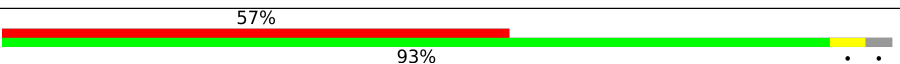
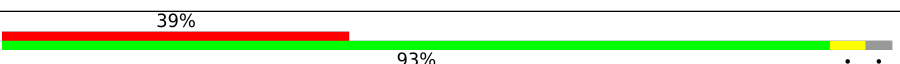
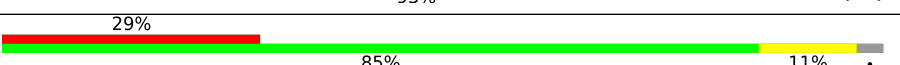
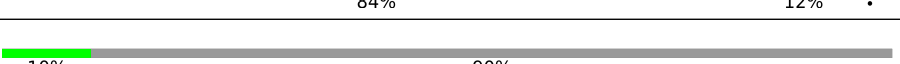
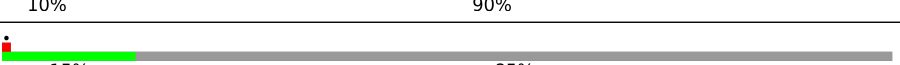
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Mol	Chain	Length	Quality of chain
2	2	889	
3	A	376	
3	B	376	
3	C	376	
3	D	376	
3	E	376	
3	F	376	
3	G	376	
3	I	376	
4	H	375	
5	J	417	
6	K	286	
7	L	272	
8	M	405	
8	N	405	
8	P	405	
8	Q	405	
8	V	405	
9	O	186	
9	R	186	
10	U	190	
11	W	182	
12	Y	467	
13	e	4646	
13	f	4646	

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Mol	Chain	Length	Quality of chain
13	m	4646	
13	n	4646	
14	j	492	
14	q	492	
14	u	492	
15	s	96	
15	t	96	
15	w	96	
15	z	96	
16	S	1281	
16	T	1281	

2 Entry composition [i](#)

There are 19 unique types of molecules in this entry. The entry contains 64583 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 Cytoplasmic dynein 1 intermediate chain 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
1	p	401	Total	C	N	O	0	0
			1980	1178	401	401		
1	g	394	Total	C	N	O	0	0
			1946	1158	394	394		
1	h	396	Total	C	N	O	0	0
			1955	1163	396	396		
1	o	394	Total	C	N	O	0	0
			1946	1158	394	394		

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
p	484	SER	THR	conflict	UNP Q13409
p	499	GLY	ASP	conflict	UNP Q13409
g	510	SER	THR	conflict	UNP Q13409
g	525	GLY	ASP	conflict	UNP Q13409
h	510	SER	THR	conflict	UNP Q13409
h	525	GLY	ASP	conflict	UNP Q13409
o	510	SER	THR	conflict	UNP Q13409
o	525	GLY	ASP	conflict	UNP Q13409

- Molecule 2 is a protein called Nuclear mitotic apparatus protein 1,Methylated-DNA--protein-cysteine methyltransferase.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	1	205	Total	C	N	O	0	0
			1021	611	205	205		
2	2	193	Total	C	N	O	0	0
			962	576	193	193		

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	706	GLY	-	linker	UNP Q14980
1	707	SER	-	linker	UNP Q14980
1	737	ARG	GLU	engineered mutation	UNP P16455
1	739	ILE	LYS	engineered mutation	UNP P16455
1	740	PHE	LEU	engineered mutation	UNP P16455
1	769	ALA	CYS	engineered mutation	UNP P16455
1	822	SER	GLN	engineered mutation	UNP P16455
1	823	HIS	GLN	engineered mutation	UNP P16455
1	832	ALA	LYS	engineered mutation	UNP P16455
1	834	THR	ALA	engineered mutation	UNP P16455
1	835	ALA	ARG	engineered mutation	UNP P16455
1	838	LYS	GLY	engineered mutation	UNP P16455
1	839	THR	GLY	engineered mutation	UNP P16455
1	841	LEU	MET	engineered mutation	UNP P16455
1	842	SER	ARG	engineered mutation	UNP P16455
1	857	GLN	CYS	engineered mutation	UNP P16455
1	858	GLY	SER	engineered mutation	UNP P16455
1	859	ASP	SER	engineered mutation	UNP P16455
1	860	LEU	GLY	engineered mutation	UNP P16455
1	861	ASP	ALA	engineered mutation	UNP P16455
1	864	GLY	ASN	engineered mutation	UNP P16455
1	866	GLU	SER	engineered mutation	UNP P16455
2	706	GLY	-	linker	UNP Q14980
2	707	SER	-	linker	UNP Q14980
2	737	ARG	GLU	engineered mutation	UNP P16455
2	739	ILE	LYS	engineered mutation	UNP P16455
2	740	PHE	LEU	engineered mutation	UNP P16455
2	769	ALA	CYS	engineered mutation	UNP P16455
2	822	SER	GLN	engineered mutation	UNP P16455
2	823	HIS	GLN	engineered mutation	UNP P16455
2	832	ALA	LYS	engineered mutation	UNP P16455
2	834	THR	ALA	engineered mutation	UNP P16455
2	835	ALA	ARG	engineered mutation	UNP P16455
2	838	LYS	GLY	engineered mutation	UNP P16455
2	839	THR	GLY	engineered mutation	UNP P16455
2	841	LEU	MET	engineered mutation	UNP P16455
2	842	SER	ARG	engineered mutation	UNP P16455
2	857	GLN	CYS	engineered mutation	UNP P16455
2	858	GLY	SER	engineered mutation	UNP P16455
2	859	ASP	SER	engineered mutation	UNP P16455
2	860	LEU	GLY	engineered mutation	UNP P16455
2	861	ASP	ALA	engineered mutation	UNP P16455
2	864	GLY	ASN	engineered mutation	UNP P16455

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Chain	Residue	Modelled	Actual	Comment	Reference
2	866	GLU	SER	engineered mutation	UNP P16455

- Molecule 3 is a protein called ARP1 actin related protein 1 homolog A.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	A	370	Total	C	N	O	0	0
			1822	1082	370	370		
3	B	370	Total	C	N	O	0	0
			1822	1082	370	370		
3	D	370	Total	C	N	O	0	0
			1822	1082	370	370		
3	E	370	Total	C	N	O	0	0
			1822	1082	370	370		
3	F	370	Total	C	N	O	0	0
			1822	1082	370	370		
3	G	370	Total	C	N	O	0	0
			1822	1082	370	370		
3	I	370	Total	C	N	O	0	0
			1822	1082	370	370		
3	C	375	Total	C	N	O	0	0
			1847	1097	375	375		

- Molecule 4 is a protein called Actin, cytoplasmic 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	H	370	Total	C	N	O	0	0
			1822	1082	370	370		

- Molecule 5 is a protein called Arp11.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	J	379	Total	C	N	O	0	0
			1868	1110	379	379		

- Molecule 6 is a protein called Capping protein (Actin filament) muscle Z-line, alpha 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	K	278	Total	C	N	O	0	0
			1378	822	278	278		

- Molecule 7 is a protein called F-actin-capping protein subunit beta.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	L	269	Total	C	N	O	0	0
			1327	789	269	269		

- Molecule 8 is a protein called Dynactin subunit 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	M	265	Total	C	N	O	0	0
			1320	790	265	265		
8	N	280	Total	C	N	O	0	0
			1394	834	280	280		
8	P	343	Total	C	N	O	0	0
			1707	1021	343	343		
8	Q	325	Total	C	N	O	0	0
			1612	962	325	325		
8	V	75	Total	C	N	O	0	0
			369	219	75	75		

- Molecule 9 is a protein called Dynactin subunit 3.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	O	170	Total	C	N	O	0	0
			844	504	170	170		
9	R	179	Total	C	N	O	0	0
			888	530	179	179		

- Molecule 10 is a protein called Dynactin 6.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	U	169	Total	C	N	O	0	0
			832	494	169	169		

- Molecule 11 is a protein called Dynactin subunit 5.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	W	179	Total	C	N	O	0	0
			881	523	179	179		

- Molecule 12 is a protein called Dynactin subunit 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	Y	375	Total	C	N	O	0	0
			1863	1113	375	375		

- Molecule 13 is a protein called Cytoplasmic dynein 1 heavy chain 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	e	807	Total	C	N	O	0	0
			4004	2390	807	807		
13	f	1017	Total	C	N	O	0	0
			5046	3012	1017	1017		
13	m	795	Total	C	N	O	0	0
			3946	2356	795	795		
13	n	744	Total	C	N	O	0	0
			3693	2205	744	744		

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
e	1567	GLU	ARG	engineered mutation	UNP Q14204
e	1610	GLU	LYS	engineered mutation	UNP Q14204
f	1567	GLU	ARG	engineered mutation	UNP Q14204
f	1610	GLU	LYS	engineered mutation	UNP Q14204
m	1567	GLU	ARG	engineered mutation	UNP Q14204
m	1610	GLU	LYS	engineered mutation	UNP Q14204
n	1567	GLU	ARG	engineered mutation	UNP Q14204
n	1610	GLU	LYS	engineered mutation	UNP Q14204

- Molecule 14 is a protein called Cytoplasmic dynein 1 light intermediate chain 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	j	296	Total	C	N	O	0	0
			1465	873	296	296		
14	q	15	Total	C	N	O	0	0
			75	45	15	15		
14	u	18	Total	C	N	O	0	0
			90	54	18	18		

- Molecule 15 is a protein called Dynein light chain roadblock-type 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	s	93	Total	C	N	O	0	0
			462	276	93	93		
15	t	93	Total	C	N	O	0	0
			462	276	93	93		
15	w	93	Total	C	N	O	0	0
			462	276	93	93		

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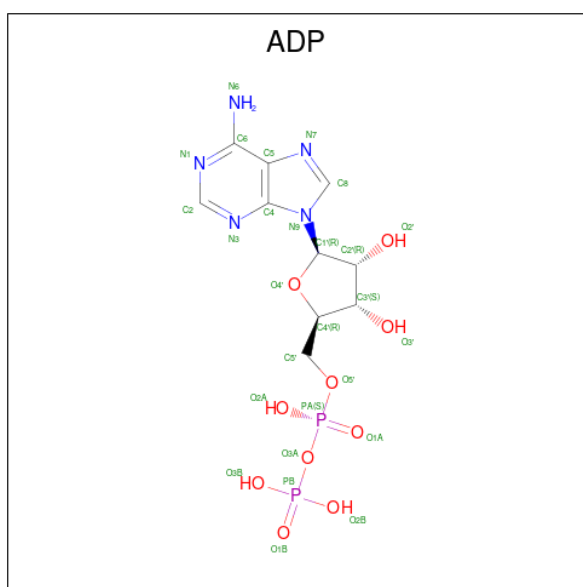
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Mol	Chain	Residues	Atoms				AltConf	Trace
15	z	93	Total	C	N	O	0	0
			462	276	93	93		

- Molecule 16 is a protein called Dynactin subunit 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	S	134	Total	C	N	O	0	0
			667	399	134	134		
16	T	192	Total	C	N	O	0	0
			952	568	192	192		

- Molecule 17 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



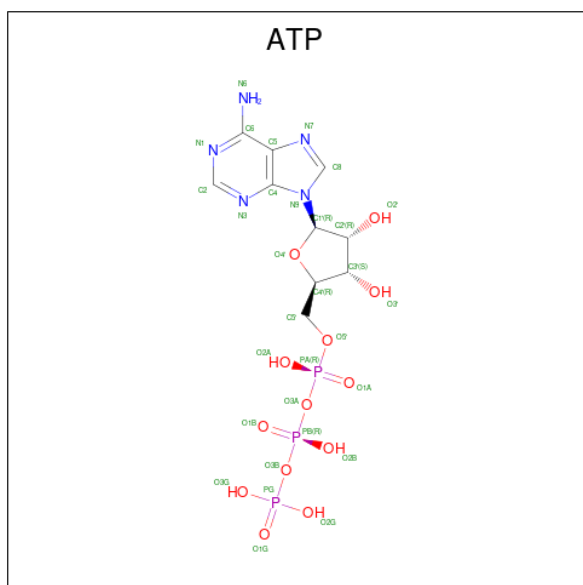
Mol	Chain	Residues	Atoms					AltConf
17	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	B	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	D	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	E	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	F	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	G	1	Total	C	N	O	P	0
			27	10	5	10	2	

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Mol	Chain	Residues	Atoms					AltConf
17	I	1	Total	C	N	O	P	0
			27	10	5	10	2	
17	C	1	Total	C	N	O	P	0
			27	10	5	10	2	

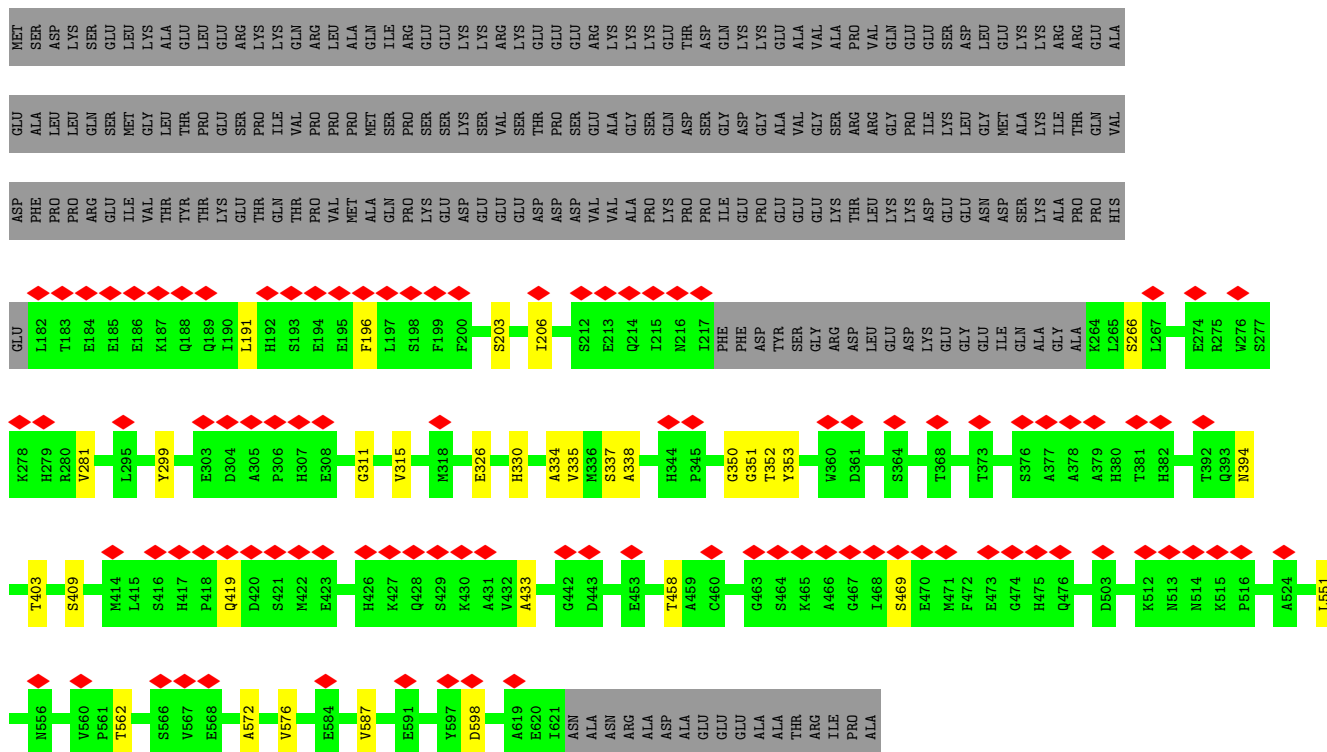
- Molecule 18 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



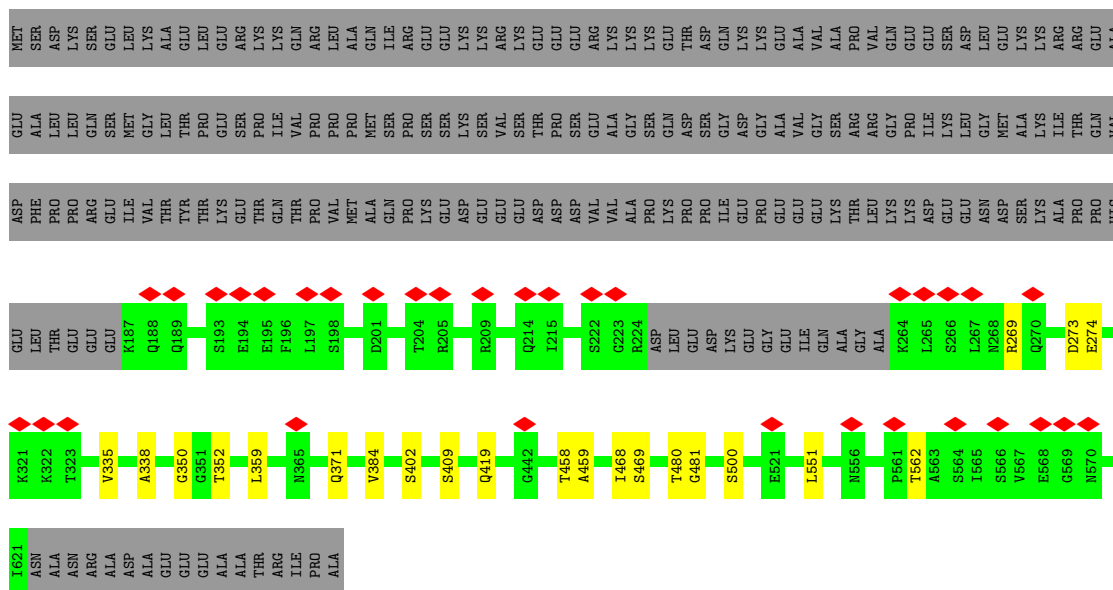
Mol	Chain	Residues	Atoms					AltConf
18	H	1	Total	C	N	O	P	0
			31	10	5	13	3	
18	J	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 19 is ZINC ION (CCD ID: ZN) (formula: Zn).

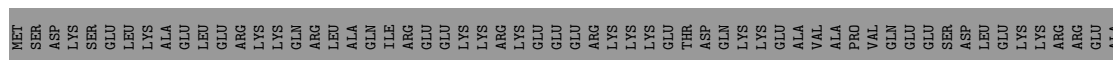
Mol	Chain	Residues	Atoms		AltConf
19	Y	3	Total	Zn	0
			3	3	

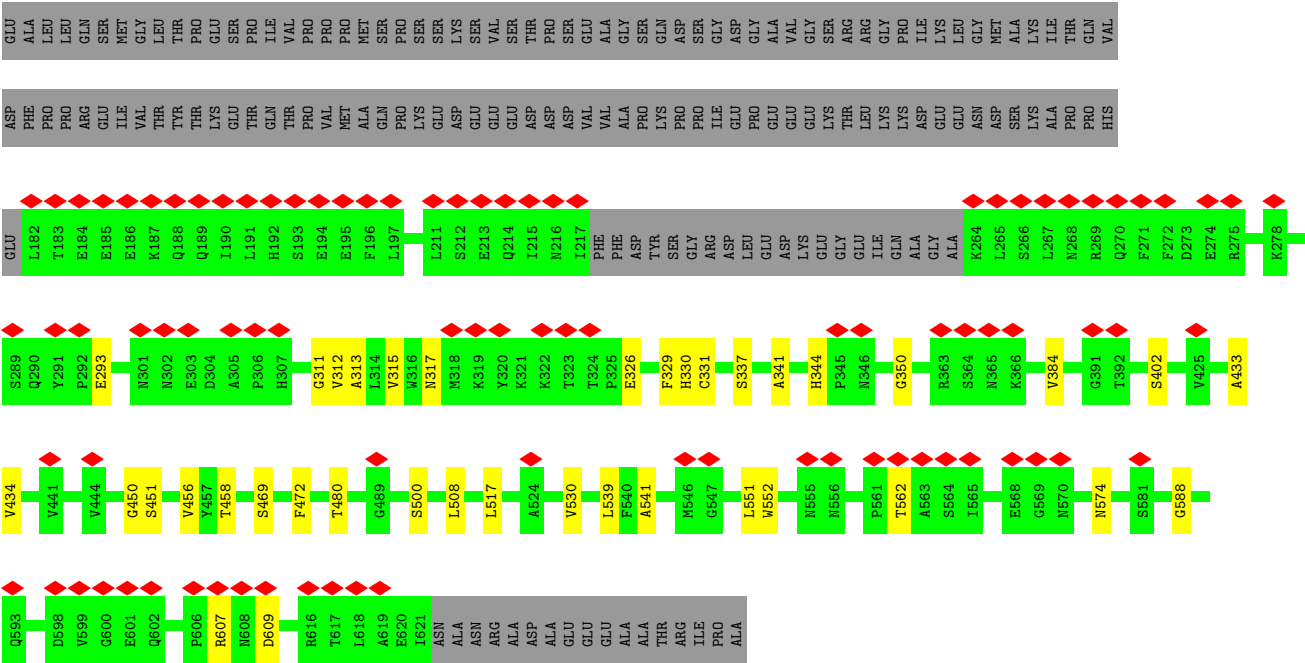


- Molecule 1: Cytoplasmic dynein 1 intermediate chain 2

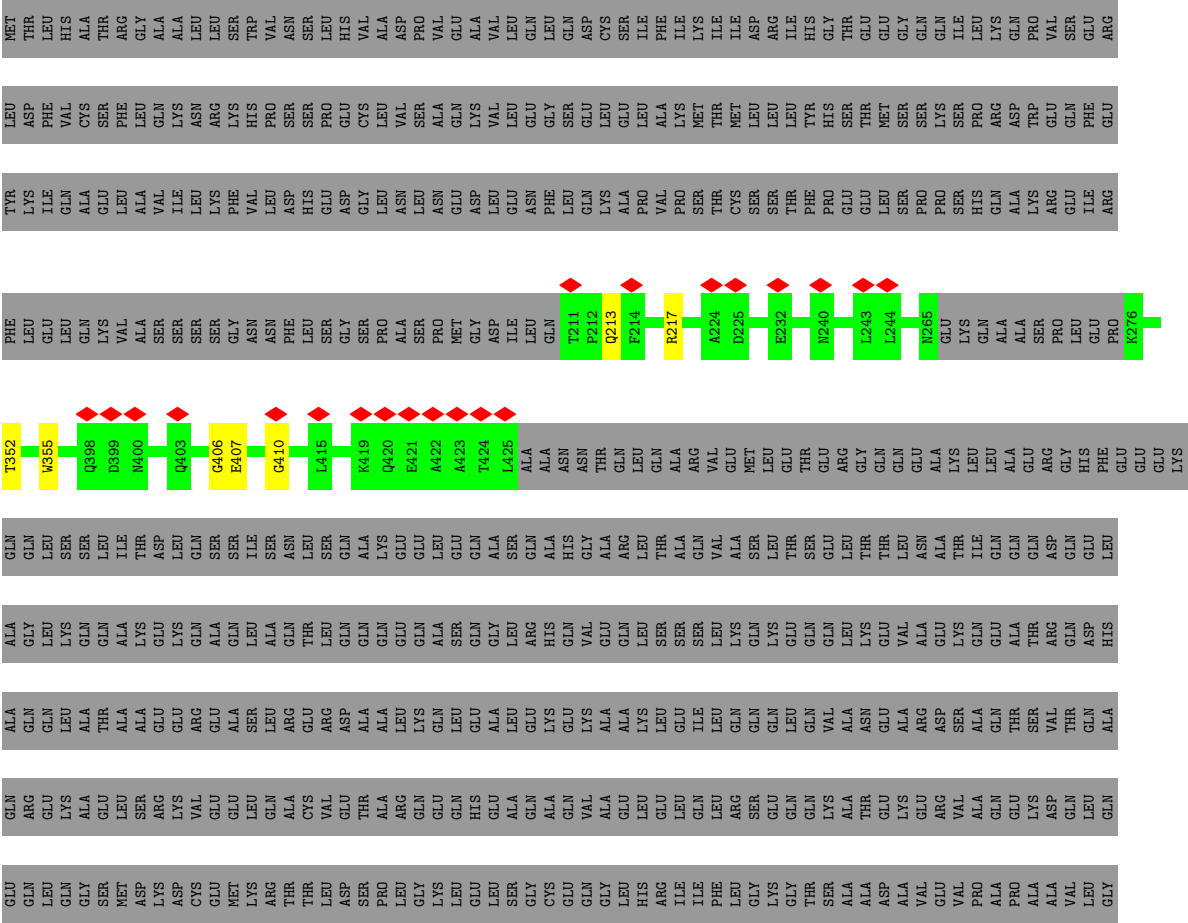


- Molecule 1: Cytoplasmic dynein 1 intermediate chain 2



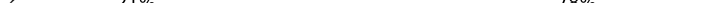


• Molecule 2: Nuclear mitotic apparatus protein 1,Methylated-DNA--protein-cysteine methyl-transferase



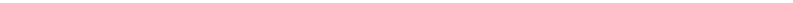
ARG	SER	GLY
LEU	HIS	PRO
GLY	LEU	GLU
LYS	ALA	PRO
PRO	ALA	LEU
GLY	LEU	MET
LEU	ALA	GLN
GLY	ASN	THR
GLY	PRO	ALA
	ALA	TRP
	ALA	LEU
	THR	ASN
	ALA	ALA
	ALA	TYR
	VAL	PHE
	LYS	HIS
	THR	GLN
	LEU	PRO
	LEU	GLU
	SER	ALA
	GLY	ILE
	ASN	GLU
	PRO	GLU
	VAL	PHE
	ILE	VAL
	LEU	PRO
	ILE	ALA
	PRO	LEU
	CYS	HIS
	HIS	HIS
	ARG	PRO
	VAL	VAL
	VAL	PHE
	GLN	GLN
	GLY	GLN
	ASP	GLU
	LEU	SER
	ASP	PHE
	VAL	THR
	GLY	ARG
	TYR	GLN
	GLU	VAL
	GLY	LEU
	GLY	TRP
	LEU	LYS
	ALA	LEU
	VAL	LEU
	LYS	LYS
	GLU	VAL
	TRP	LYS
	LEU	PHE
	LEU	GLY
	ALA	GLU
	HIS	VAL
	GLU	ILE
	GLY	THR
	HIS	SER

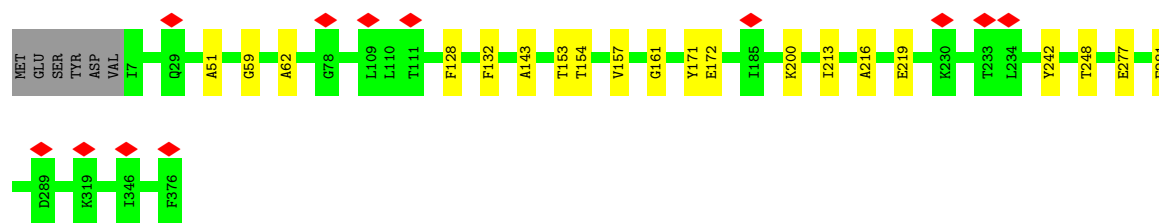
- Molecule 2: Nuclear mitotic apparatus protein 1, Methylated-DNA--protein-cysteine methyltransferase

Chain 2:  21% 78%

[illegible]

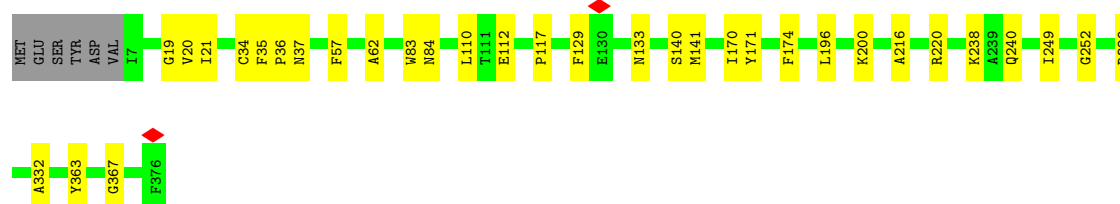
- Molecule 3: ARP1 actin related protein 1 homolog A

Chain A:  93% 5%



- Molecule 3: ARP1 actin related protein 1 homolog A

Chain B: 90% 9%



- Molecule 3: ARP1 actin related protein 1 homolog A

Chain D: 94% 5%



- Molecule 3: ARP1 actin related protein 1 homolog A

Chain E: 95% 5%



- Molecule 3: ARP1 actin related protein 1 homolog A

Chain F: 94% 5%

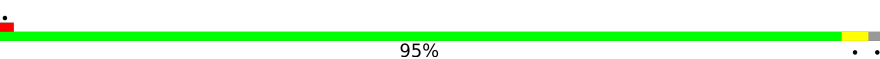


- Molecule 3: ARP1 actin related protein 1 homolog A

Chain G: 95% 5%

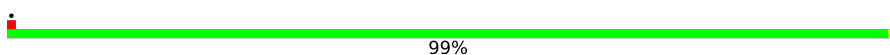


- Molecule 3: ARP1 actin related protein 1 homolog A

Chain I:  95%

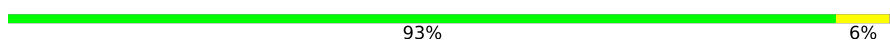


- Molecule 3: ARP1 actin related protein 1 homolog A

Chain C:  99%



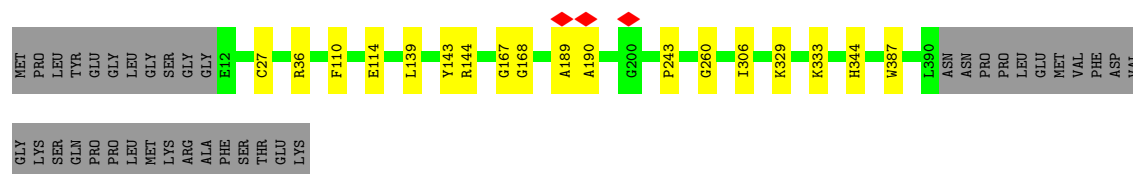
- Molecule 4: Actin, cytoplasmic 1

Chain H:  93%

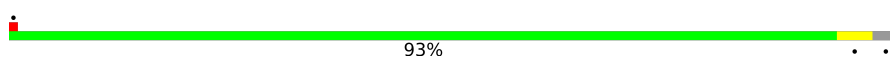


- Molecule 5: Arp11

Chain J:  87%

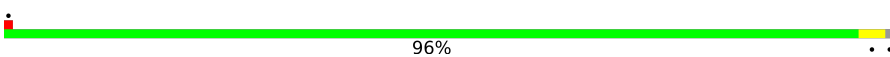


- Molecule 6: Capping protein (Actin filament) muscle Z-line, alpha 1

Chain K:  93%



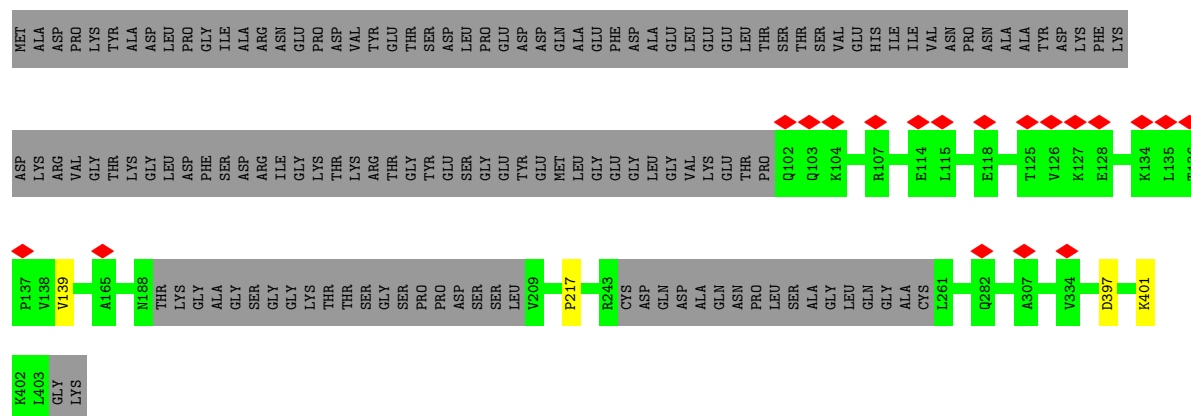
- Molecule 7: F-actin-capping protein subunit beta

Chain L:  96%

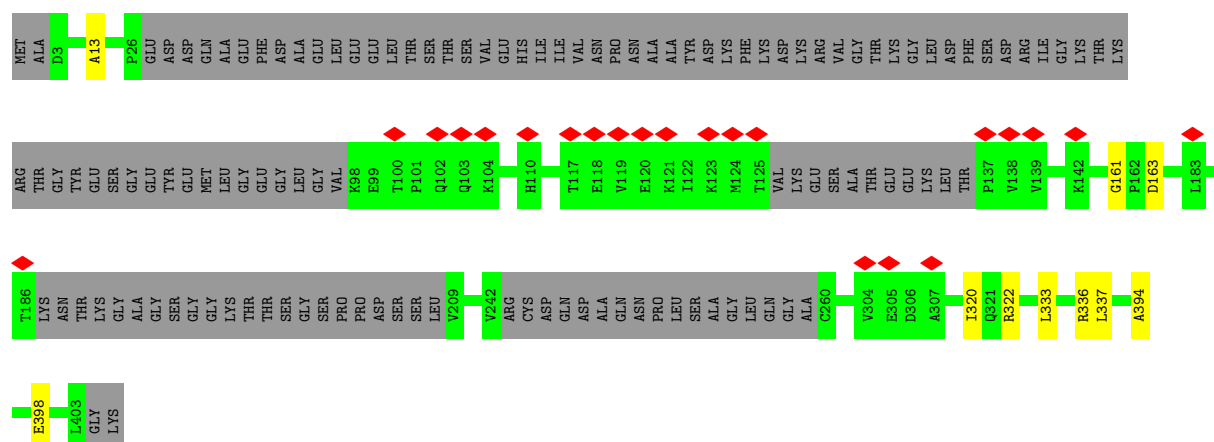


- Molecule 8: Dynactin subunit 2

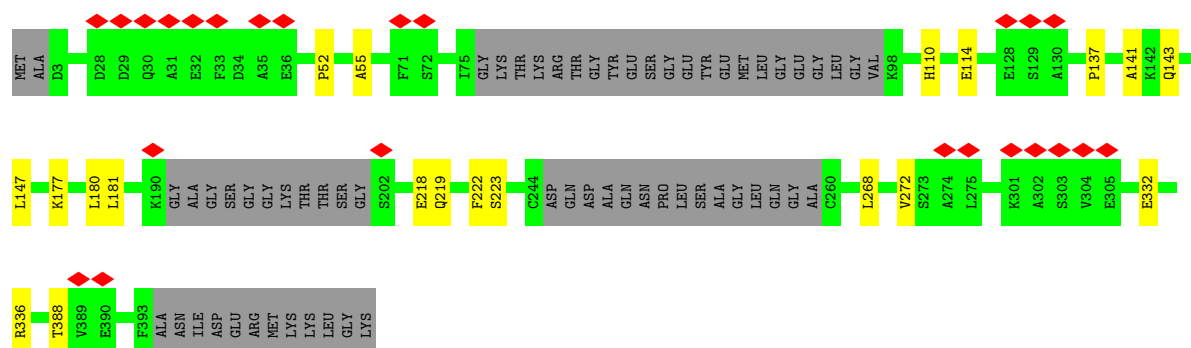
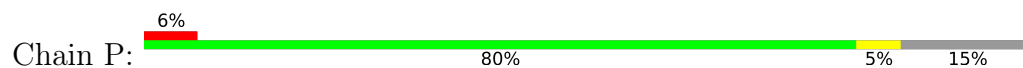
Chain M:  5%



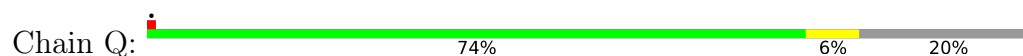
- Molecule 8: Dynactin subunit 2

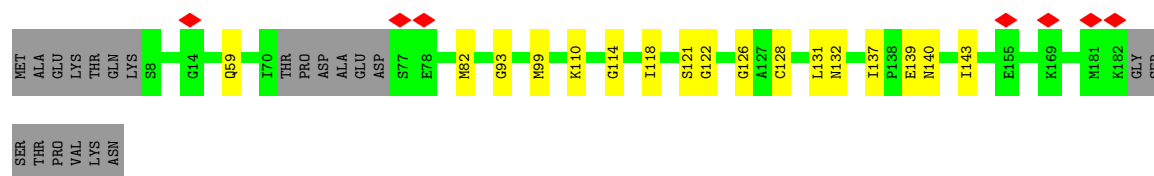


- Molecule 8: Dynactin subunit 2



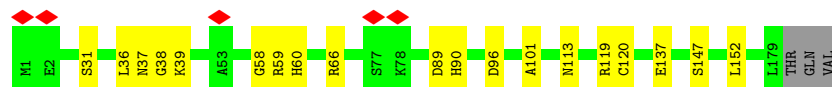
- Molecule 8: Dynactin subunit 2





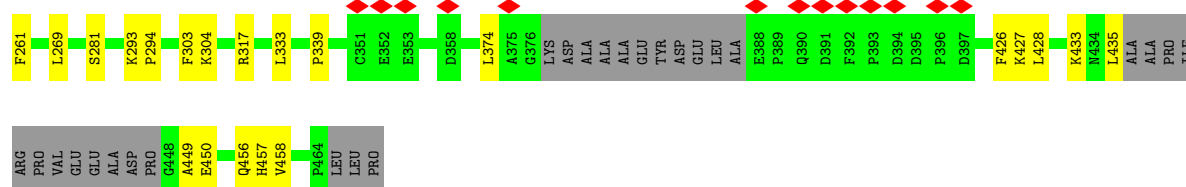
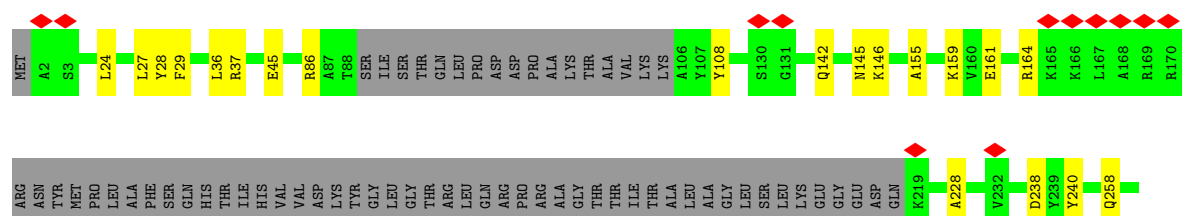
- Molecule 11: Dynactin subunit 5

Chain W: 88% 10%



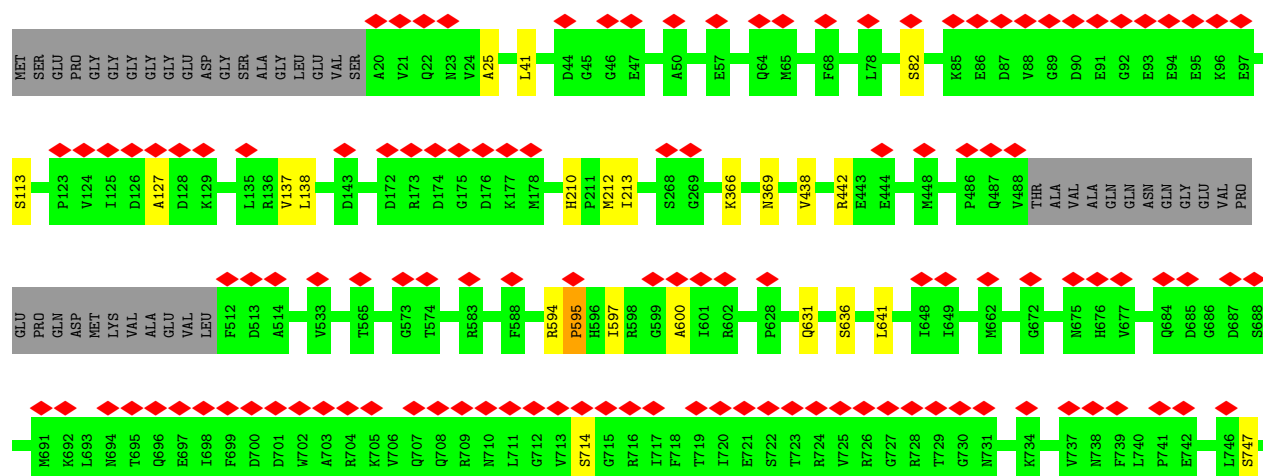
- Molecule 12: Dynactin subunit 4

Chain Y: 5% 72% 9% 20%



- Molecule 13: Cytoplasmic dynein 1 heavy chain 1

Chain e: 17% 83%

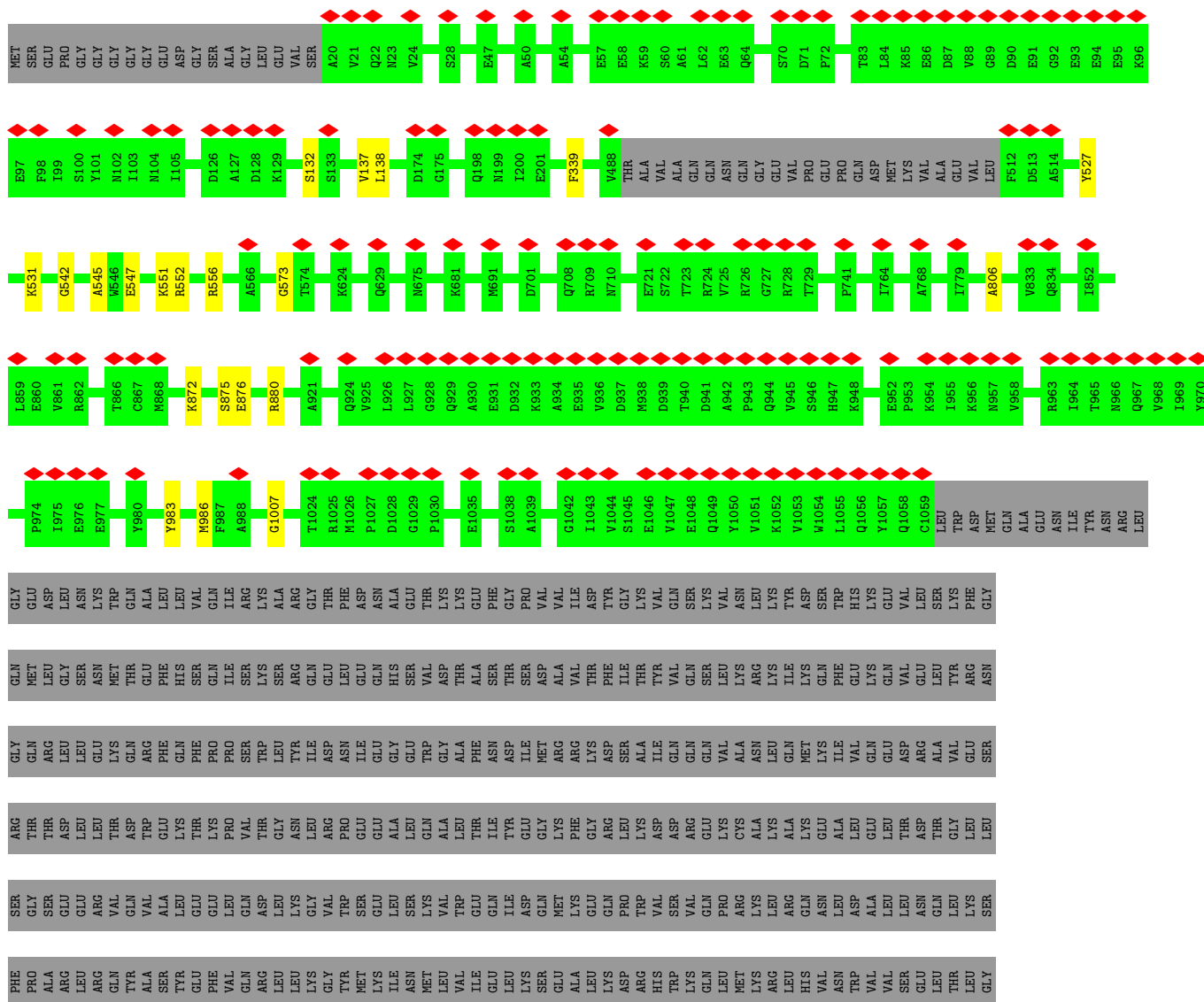








- Molecule 13: Cytoplasmic dynein 1 heavy chain 1





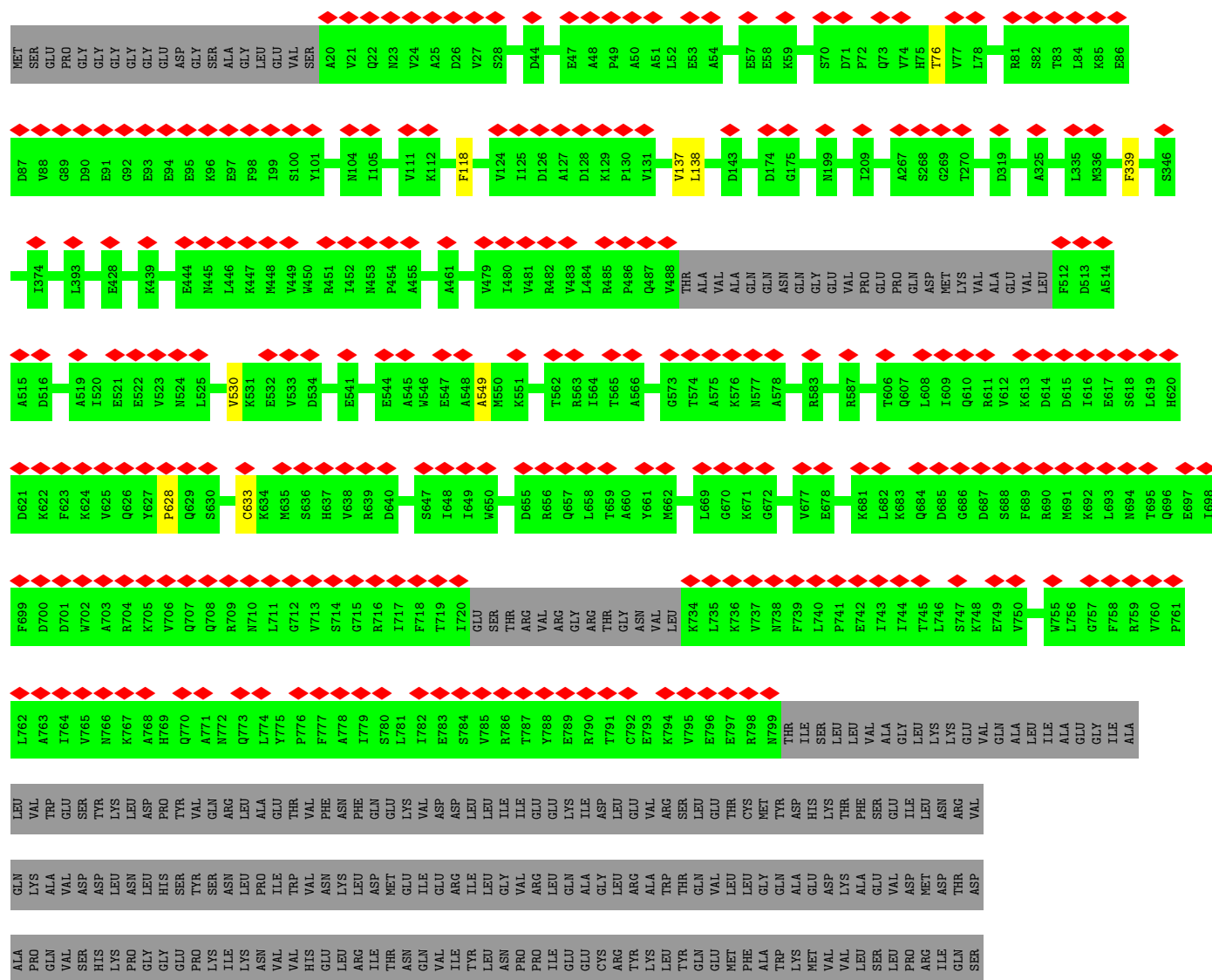








- Molecule 13: Cytoplasmic dynein 1 heavy chain 1









Chain j:





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	8092	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.195	Depositor
Minimum map value	-0.758	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.072	Depositor
Recommended contour level	0.4	Depositor
Map size (Å)	878.39996, 878.39996, 878.39996	wwPDB
Map dimensions	488, 488, 488	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.8, 1.8, 1.8	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ATP, ZN, ADP

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	g	0.12	0/1944	0.34	0/2704
1	h	0.12	0/1953	0.37	0/2716
1	o	0.12	0/1944	0.36	0/2704
1	p	0.30	0/1978	0.70	0/2751
2	1	0.29	0/1019	0.66	0/1421
2	2	0.25	0/959	0.64	1/1336 (0.1%)
3	A	0.19	0/1821	0.66	0/2531
3	B	0.21	0/1821	0.67	0/2531
3	C	0.35	0/1846	0.80	4/2566 (0.2%)
3	D	0.19	0/1821	0.60	0/2531
3	E	0.47	1/1821 (0.1%)	0.68	3/2531 (0.1%)
3	F	0.19	0/1821	0.62	0/2531
3	G	0.16	0/1821	0.56	0/2531
3	I	0.16	0/1821	0.56	0/2531
4	H	0.16	0/1821	0.55	0/2531
5	J	0.15	0/1867	0.53	0/2596
6	K	0.15	0/1377	0.51	0/1919
7	L	0.24	0/1326	0.59	0/1844
8	M	0.12	0/1317	0.42	0/1836
8	N	0.11	0/1389	0.40	0/1933
8	P	0.16	0/1703	0.53	0/2373
8	Q	0.33	1/1609 (0.1%)	0.61	0/2240
8	V	0.15	0/367	0.52	0/507
9	O	0.19	0/843	0.60	2/1175 (0.2%)
9	R	0.20	0/887	0.59	0/1236
10	U	0.16	0/830	0.45	0/1151
11	W	0.12	0/880	0.35	0/1222
12	Y	0.17	0/1858	0.51	2/2586 (0.1%)
13	e	0.15	0/4002	0.46	1/5581 (0.0%)
13	f	0.18	1/5044 (0.0%)	0.46	0/7035
13	m	0.19	1/3943 (0.0%)	0.51	0/5498
13	n	0.16	1/3690 (0.0%)	0.45	0/5145

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
14	j	0.14	0/1463	0.39	0/2036
14	q	0.10	0/74	0.34	0/102
14	u	0.15	0/89	0.48	0/123
15	s	0.16	0/461	0.50	0/642
15	t	0.15	0/461	0.39	0/642
15	w	0.13	0/461	0.34	0/642
15	z	0.17	0/461	0.38	0/642
16	S	0.68	0/662	1.36	6/917 (0.7%)
16	T	0.31	0/951	0.76	0/1325
All	All	0.22	5/64226 (0.0%)	0.55	19/89394 (0.0%)

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	41	ARG	C-N	17.63	1.51	1.33
8	Q	207	SER	C-N	-9.07	1.21	1.33
13	f	339	PHE	C-N	6.93	1.39	1.33
13	m	339	PHE	C-N	5.20	1.37	1.33
13	n	339	PHE	C-N	5.12	1.45	1.33

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
16	S	1127	PRO	CA-C-N	8.64	128.27	118.85
16	S	1127	PRO	C-N-CA	8.64	128.27	118.85
3	E	41	ARG	O-C-N	-7.70	114.10	121.57
16	S	1136	LEU	CA-C-N	7.03	127.62	120.38
16	S	1136	LEU	C-N-CA	7.03	127.62	120.38
3	C	324	LYS	CA-C-N	5.88	132.76	121.54
3	C	324	LYS	C-N-CA	5.88	132.76	121.54
16	S	1137	PRO	N-CA-CB	5.69	108.60	103.08
3	E	41	ARG	CA-C-N	5.61	127.14	120.23
3	E	41	ARG	C-N-CA	5.61	127.14	120.23
12	Y	269	LEU	CA-C-N	-5.61	115.05	122.56
12	Y	269	LEU	C-N-CA	-5.61	115.05	122.56
9	O	14	LEU	CA-C-N	-5.41	112.59	122.38
9	O	14	LEU	C-N-CA	-5.41	112.59	122.38
3	C	98	GLN	CA-C-N	5.27	131.61	121.54
3	C	98	GLN	C-N-CA	5.27	131.61	121.54
2	2	358	LYS	N-CA-CB	5.18	118.31	110.28
16	S	1127	PRO	N-CA-CB	5.17	108.10	103.08
13	e	714	SER	CB-CA-C	-5.02	109.81	115.79

There are no chirality outliers.

There are no planarity outliers.

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	g	1946	0	874	18	0
1	h	1955	0	879	13	0
1	o	1946	0	874	19	0
1	p	1980	0	889	2	0
2	1	1021	0	448	7	0
2	2	962	0	424	1	0
3	A	1822	0	820	14	0
3	B	1822	0	820	23	0
3	C	1847	0	830	2	0
3	D	1822	0	820	15	0
3	E	1822	0	820	7	0
3	F	1822	0	820	12	0
3	G	1822	0	820	9	0
3	I	1822	0	820	8	0
4	H	1822	0	835	15	0
5	J	1868	0	823	12	0
6	K	1378	0	611	7	0
7	L	1327	0	585	4	0
8	M	1320	0	604	2	0
8	N	1394	0	632	6	0
8	P	1707	0	769	12	0
8	Q	1612	0	747	15	0
8	V	369	0	161	1	0
9	O	844	0	385	5	0
9	R	888	0	413	2	0
10	U	832	0	371	10	0
11	W	881	0	379	14	0
12	Y	1863	0	794	23	0
13	e	4004	0	1786	15	0
13	f	5046	0	2235	13	0
13	m	3946	0	1760	6	0
13	n	3693	0	1641	5	0
14	j	1465	0	642	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
14	q	75	0	32	0	0
14	u	90	0	41	0	0
15	s	462	0	192	2	0
15	t	462	0	192	4	0
15	w	462	0	192	8	0
15	z	462	0	192	10	0
16	S	667	0	285	4	0
16	T	952	0	434	3	0
17	A	27	0	12	2	0
17	B	27	0	12	0	0
17	C	27	0	12	0	0
17	D	27	0	12	5	0
17	E	27	0	12	0	0
17	F	27	0	12	0	0
17	G	27	0	12	2	0
17	I	27	0	12	1	0
18	H	31	0	12	2	0
18	J	31	0	12	1	0
19	Y	3	0	0	0	0
All	All	64583	0	28811	304	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 3.

All (304) 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)
2:1:406:GLY:HA2	11:W:37:ASN:HA	1.48	0.96
8:P:388:THR:CB	16:S:1171:VAL:CB	2.48	0.90
3:A:154:THR:HA	3:A:171:TYR:HA	1.55	0.89
3:A:153:THR:CB	3:A:172:GLU:HA	2.03	0.87
2:1:213:GLN:O	2:1:217:ARG:N	2.12	0.82
3:D:162:ASP:N	17:D:800:ADP:O1B	2.11	0.81
10:U:82:MET:CB	10:U:99:MET:HA	2.13	0.79
15:z:22:VAL:HA	15:z:88:LEU:HA	1.65	0.78
12:Y:433:LYS:HA	12:Y:450:GLU:HA	1.66	0.77
3:A:200:LYS:O	3:B:117:PRO:HA	1.85	0.76
5:J:144:ARG:O	5:J:167:GLY:N	2.16	0.76
2:1:407:GLU:N	11:W:36:LEU:O	2.18	0.76
15:t:16:GLY:O	15:t:93:ASN:N	2.18	0.76
5:J:143:TYR:O	5:J:168:GLY:N	2.18	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:P:219:GLN:O	8:P:223:SER:N	2.19	0.76
3:E:200:LYS:O	3:F:117:PRO:HA	1.87	0.74
8:P:110:HIS:O	8:P:114:GLU:N	2.16	0.74
13:f:573:GLY:HA3	1:g:394:ASN:CB	2.19	0.73
13:e:138:LEU:HA	13:f:137:VAL:O	1.89	0.72
3:B:170:ILE:HA	3:B:174:PHE:O	1.89	0.72
8:N:333:LEU:HA	8:N:336:ARG:CB	2.20	0.72
13:f:806:ALA:HB1	14:j:355:ALA:HA	1.72	0.71
3:A:277:GLU:O	3:A:281:PHE:CB	2.39	0.71
13:e:137:VAL:O	13:f:138:LEU:HA	1.91	0.71
13:e:631:GLN:CB	1:g:572:ALA:HB2	2.22	0.69
8:Q:232:GLU:HA	8:Q:235:LEU:CB	2.23	0.69
11:W:58:GLY:HA3	11:W:89:ASP:HA	1.75	0.69
3:F:200:LYS:O	3:G:117:PRO:HA	1.93	0.68
12:Y:435:LEU:H	12:Y:449:ALA:HB1	1.58	0.68
1:g:335:VAL:HA	1:g:352:THR:HA	1.74	0.68
10:U:118:ILE:O	10:U:137:ILE:N	2.23	0.67
15:w:76:ASN:HA	15:w:92:GLN:O	1.94	0.67
3:D:19:GLY:N	17:D:800:ADP:O2B	2.24	0.67
12:Y:294:PRO:HA	12:Y:303:PHE:CB	2.25	0.67
1:h:551:LEU:O	1:h:562:THR:N	2.26	0.66
2:1:406:GLY:HA2	11:W:37:ASN:CA	2.23	0.66
3:F:334:GLN:HA	8:N:13:ALA:HB3	1.76	0.66
12:Y:427:LYS:HA	12:Y:457:HIS:HA	1.77	0.66
15:s:58:ARG:HA	15:s:61:ASP:O	1.96	0.66
13:e:597:ILE:HA	13:e:600:ALA:HB3	1.77	0.66
12:Y:428:LEU:N	12:Y:456:GLN:O	2.29	0.65
3:D:18:SER:N	17:D:800:ADP:O2B	2.29	0.65
11:W:38:GLY:HA3	11:W:59:ARG:HA	1.77	0.65
13:m:138:LEU:HA	13:n:137:VAL:O	1.97	0.65
15:s:16:GLY:O	15:s:93:ASN:N	2.25	0.65
15:z:23:VAL:HA	15:z:29:PRO:HA	1.79	0.65
11:W:147:SER:O	11:W:152:LEU:N	2.29	0.65
7:L:256:GLU:HA	7:L:259:LYS:CB	2.27	0.64
11:W:96:ASP:O	11:W:113:ASN:HA	1.97	0.64
3:G:200:LYS:O	4:H:112:PRO:HA	1.98	0.64
3:G:171:TYR:N	3:G:174:PHE:O	2.27	0.63
3:B:129:PHE:O	3:B:133:ASN:HA	1.98	0.63
1:o:313:ALA:N	1:o:329:PHE:O	2.27	0.63
5:J:143:TYR:N	18:J:800:ATP:O1G	2.30	0.63
1:g:206:ILE:CB	15:z:81:ALA:HB1	2.29	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:h:480:THR:N	1:h:500:SER:O	2.29	0.62
3:A:59:GLY:O	3:A:62:ALA:HB3	1.99	0.62
1:g:191:LEU:HA	1:g:196:PHE:CB	2.29	0.62
1:g:337:SER:O	1:g:351:GLY:N	2.27	0.62
3:F:363:TYR:O	3:F:367:GLY:N	2.30	0.62
1:g:315:VAL:O	1:g:326:GLU:N	2.32	0.62
15:w:78:ILE:HA	15:w:90:VAL:O	2.00	0.62
3:B:112:GLU:N	3:B:140:SER:O	2.30	0.61
3:B:196:LEU:O	3:B:200:LYS:CB	2.48	0.61
3:B:20:VAL:HA	3:B:35:PHE:O	2.00	0.61
13:f:527:TYR:O	13:f:531:LYS:N	2.34	0.61
3:A:219:GLU:HA	17:A:800:ADP:C2	2.35	0.61
1:g:551:LEU:O	1:g:562:THR:N	2.34	0.60
1:o:574:ASN:N	1:o:588:GLY:O	2.32	0.60
8:M:397:ASP:O	8:M:401:LYS:N	2.33	0.60
11:W:60:HIS:O	11:W:90:HIS:HA	2.02	0.60
4:H:237:GLU:CB	4:H:251:GLY:HA2	2.32	0.60
9:O:158:THR:CB	16:S:1169:THR:O	2.49	0.60
13:n:628:PRO:HA	13:n:633:CYS:CB	2.31	0.60
3:F:199:ARG:HA	3:F:203:TYR:O	2.02	0.60
15:w:17:VAL:HA	15:w:92:GLN:CB	2.31	0.60
8:Q:114:GLU:HA	8:Q:117:THR:CB	2.32	0.59
8:Q:226:ALA:O	8:Q:229:ALA:HB3	2.02	0.59
3:A:153:THR:O	3:A:172:GLU:N	2.36	0.59
3:D:219:GLU:HA	17:D:800:ADP:C2	2.37	0.59
8:Q:222:PHE:HA	8:Q:225:ALA:HB3	1.84	0.59
1:o:458:THR:O	1:o:469:SER:N	2.24	0.59
9:O:118:ALA:O	9:O:122:HIS:N	2.35	0.59
15:w:68:PHE:O	15:z:72:ARG:N	2.36	0.59
3:D:20:VAL:HA	3:D:36:PRO:HA	1.84	0.59
3:E:51:ALA:HB2	3:G:173:GLY:HA3	1.85	0.59
3:F:107:PRO:CB	3:F:136:ALA:HB3	2.34	0.58
12:Y:45:GLU:N	12:Y:281:SER:O	2.36	0.58
3:D:51:ALA:CB	3:F:173:GLY:HA3	2.33	0.58
3:D:107:PRO:CB	3:D:136:ALA:HB3	2.34	0.58
8:Q:120:GLU:O	8:Q:123:LYS:N	2.36	0.58
12:Y:28:TYR:O	12:Y:37:ARG:N	2.23	0.57
3:F:58:ILE:N	3:F:62:ALA:HB2	2.20	0.57
4:H:42:GLY:HA3	5:J:387:TRP:HA	1.86	0.57
5:J:110:PHE:O	5:J:114:GLU:HA	2.03	0.57
6:K:67:ILE:H	6:K:71:GLU:HA	1.69	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:f:983:TYR:HA	13:f:986:MET:CB	2.34	0.57
3:B:171:TYR:N	3:B:174:PHE:O	2.33	0.57
1:o:480:THR:N	1:o:500:SER:O	2.37	0.57
3:D:363:TYR:O	3:D:367:GLY:N	2.37	0.56
11:W:101:ALA:HB1	11:W:120:CYS:O	2.05	0.56
12:Y:339:PRO:O	12:Y:374:LEU:N	2.24	0.56
3:B:332:ALA:H	8:Q:86:GLY:HA3	1.70	0.56
4:H:55:GLY:O	4:H:58:ALA:HB3	2.06	0.56
13:n:530:VAL:HA	13:n:549:ALA:HB1	1.88	0.56
5:J:243:PRO:O	5:J:260:GLY:HA3	2.06	0.56
8:N:161:GLY:O	16:S:1185:SER:O	2.24	0.56
12:Y:29:PHE:HA	12:Y:36:LEU:HA	1.88	0.56
3:D:200:LYS:O	3:E:117:PRO:HA	2.05	0.55
1:o:311:GLY:O	1:o:331:CYS:N	2.32	0.55
4:H:79:TRP:O	4:H:82:MET:N	2.40	0.55
3:D:219:GLU:HA	17:D:800:ADP:N1	2.21	0.55
7:L:109:ASP:O	7:L:113:GLU:HA	2.06	0.55
1:o:315:VAL:O	1:o:326:GLU:N	2.40	0.55
1:o:341:ALA:HB3	1:o:344:HIS:O	2.06	0.55
13:e:747:SER:HA	13:e:768:ALA:HB1	1.88	0.54
1:o:551:LEU:O	1:o:562:THR:N	2.38	0.54
3:D:361:LYS:O	3:D:365:GLU:CB	2.55	0.54
3:I:20:VAL:HA	3:I:36:PRO:HA	1.90	0.54
3:B:110:LEU:O	3:B:140:SER:N	2.32	0.54
12:Y:161:GLU:HA	12:Y:164:ARG:CB	2.37	0.54
13:m:522:GLU:HA	13:m:525:LEU:CB	2.38	0.54
3:B:112:GLU:O	3:B:141:MET:HA	2.08	0.54
12:Y:428:LEU:O	12:Y:456:GLN:N	2.31	0.54
1:g:334:ALA:O	1:g:353:TYR:N	2.39	0.53
12:Y:86:ARG:N	12:Y:108:TYR:O	2.40	0.53
3:B:21:ILE:N	3:B:35:PHE:O	2.38	0.53
13:e:636:SER:O	13:e:641:LEU:N	2.35	0.53
3:I:154:THR:HA	3:I:172:GLU:H	1.74	0.53
8:P:218:GLU:O	8:P:222:PHE:N	2.28	0.53
3:E:77:HIS:HA	3:E:163:GLY:HA3	1.91	0.52
4:H:79:TRP:O	4:H:80:ASP:C	2.52	0.52
6:K:67:ILE:O	6:K:71:GLU:N	2.42	0.52
1:g:338:ALA:HA	1:g:350:GLY:HA2	1.91	0.52
3:B:216:ALA:O	3:B:220:ARG:CB	2.58	0.52
10:U:82:MET:HA	10:U:99:MET:O	2.10	0.52
10:U:114:GLY:HA3	10:U:132:ASN:HA	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:h:269:ARG:O	1:h:596:ILE:N	2.28	0.52
2:2:211:THR:O	2:2:214:PHE:N	2.42	0.52
11:W:39:LYS:N	11:W:59:ARG:O	2.43	0.52
3:A:161:GLY:HA3	17:A:800:ADP:O2B	2.10	0.51
1:o:456:VAL:O	1:o:472:PHE:N	2.41	0.51
13:f:872:LYS:O	13:f:875:SER:N	2.42	0.51
3:A:242:TYR:HA	3:A:248:THR:HA	1.93	0.50
15:z:23:VAL:N	15:z:87:PHE:O	2.44	0.50
3:G:77:HIS:HA	3:G:163:GLY:O	2.12	0.50
8:Q:254:ALA:HB2	16:T:1099:ALA:HB2	1.93	0.50
3:A:143:ALA:HB1	3:A:157:VAL:CB	2.42	0.49
3:I:17:GLY:HA2	17:I:800:ADP:O3B	2.12	0.49
1:o:312:VAL:HA	1:o:330:HIS:HA	1.94	0.49
6:K:95:SER:N	6:K:109:GLN:O	2.40	0.49
7:L:52:ASP:O	7:L:56:GLY:N	2.43	0.49
2:1:410:GLY:N	11:W:31:SER:O	2.43	0.49
12:Y:161:GLU:O	12:Y:164:ARG:CB	2.61	0.49
1:g:266:SER:O	1:g:598:ASP:N	2.40	0.49
10:U:122:GLY:O	10:U:140:ASN:HA	2.12	0.49
15:t:16:GLY:O	15:t:92:GLN:HA	2.12	0.49
1:h:273:ASP:O	1:h:277:SER:N	2.45	0.49
6:K:203:ASN:O	7:L:191:GLY:HA2	2.12	0.49
8:Q:230:GLU:O	8:Q:234:ARG:N	2.38	0.49
3:B:19:GLY:O	3:B:37:ASN:N	2.40	0.48
9:R:23:GLY:HA2	9:R:27:SER:HA	1.95	0.48
13:m:783:GLU:HA	13:m:786:ARG:CB	2.43	0.48
12:Y:24:LEU:HA	12:Y:27:LEU:CB	2.43	0.48
13:f:876:GLU:O	13:f:880:ARG:N	2.31	0.48
8:M:139:VAL:CB	16:S:1195:LEU:CB	2.91	0.48
8:P:52:PRO:HA	8:P:55:ALA:HB3	1.95	0.48
13:m:137:VAL:O	13:n:138:LEU:HA	2.13	0.48
1:g:409:SER:O	1:g:419:GLN:N	2.47	0.48
8:P:177:LYS:HA	8:P:180:LEU:CB	2.43	0.48
3:B:238:LYS:HA	3:B:252:GLY:HA2	1.96	0.48
3:I:104:GLU:HA	3:I:133:ASN:O	2.13	0.48
13:e:366:LYS:O	13:e:369:ASN:N	2.46	0.48
3:F:108:VAL:O	3:F:137:LEU:HA	2.15	0.47
8:P:137:PRO:O	8:P:141:ALA:N	2.47	0.47
13:e:41:LEU:HA	13:f:132:SER:CB	2.44	0.47
1:g:403:THR:O	1:g:433:ALA:HA	2.15	0.47
4:H:297:THR:O	4:H:330:ILE:N	2.33	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:e:82:SER:HA	13:e:113:SER:CB	2.44	0.47
8:P:177:LYS:O	8:P:181:LEU:N	2.47	0.47
10:U:126:GLY:N	10:U:143:ILE:O	2.48	0.47
1:g:311:GLY:O	1:g:330:HIS:HA	2.15	0.47
1:g:458:THR:O	1:g:469:SER:N	2.30	0.47
10:U:121:SER:O	10:U:139:GLU:CB	2.63	0.47
1:o:433:ALA:O	1:o:451:SER:HA	2.15	0.47
2:1:352:THR:O	2:1:355:TRP:CB	2.63	0.46
3:I:99:LEU:O	3:I:100:GLN:C	2.58	0.46
8:N:320:ILE:C	8:N:322:ARG:H	2.23	0.46
15:w:71:ILE:HA	15:z:68:PHE:O	2.14	0.46
15:t:16:GLY:C	15:t:93:ASN:H	2.18	0.46
3:D:330:ILE:O	8:Q:19:VAL:HA	2.16	0.46
3:D:51:ALA:HB2	3:F:173:GLY:HA3	1.97	0.46
3:E:145:LEU:O	3:E:343:GLY:HA3	2.16	0.46
1:o:293:GLU:O	1:o:317:ASN:HA	2.15	0.46
5:J:189:ALA:O	5:J:190:ALA:HB3	2.15	0.46
1:o:508:LEU:O	1:o:517:LEU:N	2.48	0.46
3:F:51:ALA:HB2	4:H:168:GLY:HA3	1.97	0.46
1:h:458:THR:O	1:h:469:SER:N	2.24	0.46
1:o:607:ARG:CB	1:o:609:ASP:H	2.29	0.46
13:e:210:HIS:O	13:e:212:MET:N	2.49	0.46
15:w:58:ARG:HA	15:w:61:ASP:O	2.16	0.46
1:h:335:VAL:HA	1:h:352:THR:HA	1.98	0.46
1:h:481:GLY:O	1:h:500:SER:N	2.48	0.46
3:E:301:SER:HA	3:E:336:ARG:CB	2.46	0.45
3:I:154:THR:CA	3:I:172:GLU:H	2.28	0.45
13:f:1007:GLY:HA2	13:m:647:SER:CB	2.47	0.45
8:P:332:GLU:O	8:P:336:ARG:CB	2.64	0.45
11:W:119:ARG:O	11:W:137:GLU:HA	2.16	0.45
12:Y:293:LYS:O	12:Y:304:LYS:N	2.49	0.45
12:Y:317:ARG:O	12:Y:333:LEU:N	2.41	0.45
3:B:19:GLY:O	3:B:36:PRO:HA	2.17	0.45
12:Y:155:ALA:O	12:Y:159:LYS:N	2.48	0.45
1:h:359:LEU:N	1:h:371:GLN:O	2.47	0.45
3:G:20:VAL:HA	3:G:36:PRO:HA	1.98	0.45
4:H:237:GLU:HA	4:H:251:GLY:HA2	1.98	0.45
13:e:594:ARG:O	13:e:595:PRO:C	2.60	0.45
6:K:186:ALA:N	6:K:216:VAL:O	2.49	0.45
8:P:268:LEU:O	8:P:272:VAL:N	2.44	0.45
3:B:363:TYR:O	3:B:367:GLY:N	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:I:224:LEU:N	3:I:308:LYS:O	2.31	0.45
8:Q:138:VAL:O	8:Q:141:ALA:HB3	2.17	0.45
1:g:576:VAL:HA	1:g:587:VAL:HA	1.99	0.45
13:m:333:ASN:HA	13:m:336:MET:CB	2.47	0.45
1:o:530:VAL:HA	1:o:541:ALA:O	2.17	0.45
12:Y:238:ASP:C	12:Y:240:TYR:H	2.25	0.44
1:o:337:SER:O	1:o:350:GLY:HA2	2.16	0.44
5:J:139:LEU:O	5:J:306:ILE:N	2.33	0.44
9:R:91:GLU:O	9:R:95:LEU:N	2.47	0.44
15:z:73:SER:N	15:z:76:ASN:O	2.44	0.44
11:W:66:ARG:O	11:W:96:ASP:HA	2.17	0.44
10:U:110:LYS:O	10:U:128:CYS:HA	2.18	0.44
9:O:74:ASP:O	9:O:77:ALA:HB3	2.18	0.44
1:h:274:GLU:HA	1:h:278:LYS:CB	2.47	0.44
1:p:312:ALA:HA	1:p:324:GLY:HA2	2.00	0.44
4:H:302:GLY:HA3	18:H:401:ATP:H5'2	2.00	0.44
3:B:240:GLN:HA	3:B:249:ILE:O	2.18	0.43
1:h:409:SER:O	1:h:419:GLN:N	2.51	0.43
15:w:18:GLN:H	15:w:92:GLN:HA	1.83	0.43
3:B:83:TRP:O	3:B:84:ASN:C	2.60	0.43
1:h:384:VAL:HA	1:h:402:SER:HA	2.00	0.43
1:h:459:ALA:HB2	1:h:468:ILE:HA	1.99	0.43
8:P:219:GLN:CB	16:T:1237:ALA:HB1	2.48	0.43
4:H:262:PHE:O	4:H:273:GLY:HA3	2.17	0.43
8:N:394:ALA:O	8:N:398:GLU:CB	2.66	0.43
1:o:434:VAL:HA	1:o:450:GLY:O	2.18	0.43
3:B:329:ARG:HA	8:Q:89:GLU:HA	2.01	0.43
8:Q:231:LEU:O	8:Q:235:LEU:N	2.51	0.43
3:A:51:ALA:HA	3:C:173:GLY:HA2	2.00	0.43
13:e:25:ALA:HA	13:e:127:ALA:HB2	1.99	0.43
1:g:281:VAL:O	1:g:299:TYR:HA	2.19	0.43
13:e:210:HIS:O	13:e:213:ILE:N	2.49	0.43
3:G:161:GLY:HA3	17:G:800:ADP:O1B	2.19	0.43
12:Y:142:GLN:HA	12:Y:145:ASN:CB	2.49	0.42
3:B:57:PHE:C	3:B:62:ALA:HB2	2.44	0.42
6:K:250:MET:O	6:K:254:THR:N	2.53	0.42
13:f:542:GLY:HA2	13:f:545:ALA:HB3	2.01	0.42
1:o:539:LEU:HA	1:o:552:TRP:O	2.19	0.42
13:e:597:ILE:HA	13:e:600:ALA:CB	2.47	0.42
13:e:438:VAL:O	13:e:442:ARG:CB	2.67	0.42
3:B:200:LYS:O	3:C:117:PRO:HA	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:Q:129:SER:O	8:Q:133:GLU:CB	2.68	0.42
8:V:65:GLY:N	8:V:85:SER:O	2.53	0.42
12:Y:142:GLN:O	12:Y:146:LYS:N	2.34	0.42
15:z:23:VAL:CB	15:z:43:ALA:HB1	2.49	0.42
4:H:239:SER:HA	4:H:248:ILE:O	2.20	0.42
6:K:64:PRO:HA	6:K:75:LEU:HA	2.02	0.42
12:Y:258:GLN:O	12:Y:261:PHE:O	2.37	0.42
3:F:159:ASP:O	3:F:165:THR:HA	2.20	0.42
15:w:69:LEU:HA	15:z:70:ARG:O	2.19	0.42
2:1:410:GLY:HA2	11:W:31:SER:CB	2.50	0.42
3:A:213:ILE:O	3:A:216:ALA:HB3	2.20	0.42
12:Y:426:PHE:O	12:Y:458:VAL:N	2.48	0.42
13:f:552:ARG:O	13:f:556:ARG:N	2.48	0.42
1:h:338:ALA:HA	1:h:350:GLY:HA2	2.01	0.42
16:T:1144:SER:O	16:T:1148:ALA:HB2	2.20	0.42
4:H:195:GLU:O	3:I:117:PRO:HA	2.20	0.42
9:O:4:VAL:O	9:O:7:VAL:N	2.51	0.42
3:A:128:PHE:O	3:A:132:PHE:O	2.38	0.41
3:D:99:LEU:O	3:D:100:GLN:C	2.63	0.41
10:U:114:GLY:N	10:U:131:LEU:O	2.53	0.41
3:D:329:ARG:HA	8:Q:21:GLU:HA	2.02	0.41
5:J:329:LYS:O	5:J:333:LYS:N	2.52	0.41
5:J:144:ARG:C	5:J:167:GLY:HA3	2.46	0.41
1:g:203:SER:HA	15:z:81:ALA:O	2.20	0.41
3:B:238:LYS:HA	3:B:252:GLY:CA	2.51	0.41
8:P:143:GLN:O	8:P:147:LEU:N	2.38	0.41
3:E:160:SER:HA	3:E:165:THR:HA	2.01	0.41
13:n:76:THR:HA	13:n:118:PHE:O	2.21	0.41
1:p:547:LEU:HA	1:p:563:ASP:HA	2.02	0.41
3:G:170:ILE:CB	3:G:175:ALA:HB2	2.50	0.41
4:H:13:GLY:HA3	4:H:16:MET:O	2.21	0.41
5:J:27:CYS:O	5:J:36:ARG:N	2.54	0.41
5:J:344:HIS:HA	12:Y:228:ALA:HA	2.03	0.41
8:N:333:LEU:O	8:N:337:LEU:N	2.51	0.41
9:O:19:ARG:O	9:O:23:GLY:HA2	2.20	0.41
15:t:17:VAL:HA	15:t:92:GLN:HA	2.03	0.41
3:A:153:THR:C	3:A:172:GLU:H	2.29	0.41
3:B:21:ILE:O	3:B:34:CYS:HA	2.20	0.40
3:G:303:GLY:HA3	17:G:800:ADP:H5'2	2.02	0.40
13:f:547:GLU:O	13:f:551:LYS:N	2.55	0.40
4:H:214:GLU:HA	18:H:401:ATP:N1	2.36	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:U:59:GLN:CB	10:U:93:GLY:H	2.35	0.40
8:Q:353:LEU:O	8:Q:357:LEU:N	2.54	0.40
1:o:384:VAL:HA	1:o:402:SER:HA	2.02	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	g	390/612 (64%)	386 (99%)	4 (1%)	0	100	100
1	h	392/612 (64%)	388 (99%)	4 (1%)	0	100	100
1	o	390/612 (64%)	380 (97%)	10 (3%)	0	100	100
1	p	397/612 (65%)	383 (96%)	14 (4%)	0	100	100
2	1	201/889 (23%)	195 (97%)	6 (3%)	0	100	100
2	2	187/889 (21%)	187 (100%)	0	0	100	100
3	A	368/376 (98%)	359 (98%)	9 (2%)	0	100	100
3	B	368/376 (98%)	354 (96%)	14 (4%)	0	100	100
3	C	373/376 (99%)	358 (96%)	15 (4%)	0	100	100
3	D	368/376 (98%)	360 (98%)	8 (2%)	0	100	100
3	E	368/376 (98%)	350 (95%)	18 (5%)	0	100	100
3	F	368/376 (98%)	353 (96%)	15 (4%)	0	100	100
3	G	368/376 (98%)	357 (97%)	11 (3%)	0	100	100
3	I	368/376 (98%)	351 (95%)	17 (5%)	0	100	100
4	H	368/375 (98%)	354 (96%)	14 (4%)	0	100	100
5	J	377/417 (90%)	364 (97%)	13 (3%)	0	100	100
6	K	276/286 (96%)	266 (96%)	10 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
7	L	267/272 (98%)	265 (99%)	2 (1%)	0	100	100
8	M	259/405 (64%)	253 (98%)	5 (2%)	1 (0%)	30	68
8	N	270/405 (67%)	262 (97%)	7 (3%)	1 (0%)	30	68
8	P	335/405 (83%)	320 (96%)	15 (4%)	0	100	100
8	Q	319/405 (79%)	310 (97%)	9 (3%)	0	100	100
8	V	71/405 (18%)	69 (97%)	2 (3%)	0	100	100
9	O	168/186 (90%)	159 (95%)	9 (5%)	0	100	100
9	R	177/186 (95%)	164 (93%)	13 (7%)	0	100	100
10	U	165/190 (87%)	154 (93%)	11 (7%)	0	100	100
11	W	177/182 (97%)	172 (97%)	5 (3%)	0	100	100
12	Y	365/467 (78%)	343 (94%)	22 (6%)	0	100	100
13	e	803/4646 (17%)	779 (97%)	23 (3%)	1 (0%)	48	83
13	f	1013/4646 (22%)	989 (98%)	24 (2%)	0	100	100
13	m	789/4646 (17%)	782 (99%)	7 (1%)	0	100	100
13	n	738/4646 (16%)	724 (98%)	14 (2%)	0	100	100
14	j	292/492 (59%)	286 (98%)	6 (2%)	0	100	100
14	q	13/492 (3%)	13 (100%)	0	0	100	100
14	u	16/492 (3%)	16 (100%)	0	0	100	100
15	s	91/96 (95%)	85 (93%)	6 (7%)	0	100	100
15	t	91/96 (95%)	86 (94%)	5 (6%)	0	100	100
15	w	91/96 (95%)	85 (93%)	6 (7%)	0	100	100
15	z	91/96 (95%)	82 (90%)	9 (10%)	0	100	100
16	S	124/1281 (10%)	117 (94%)	6 (5%)	1 (1%)	16	55
16	T	190/1281 (15%)	180 (95%)	9 (5%)	1 (0%)	25	64
All	All	12842/34826 (37%)	12440 (97%)	397 (3%)	5 (0%)	100	100

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
8	M	217	PRO
16	S	1137	PRO
8	N	163	ASP
16	T	1182	LYS
13	e	595	PRO

5.3.2 Protein sidechains [i](#)

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

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 13 ligands modelled in this entry, 3 are monoatomic - leaving 10 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	$\# Z > 2$
17	ADP	C	800	-	24,29,29	0.96	1 (4%)	29,45,45	1.45	4 (13%)
18	ATP	H	401	-	26,33,33	0.60	0	31,52,52	0.73	2 (6%)
17	ADP	G	800	-	24,29,29	0.97	1 (4%)	29,45,45	1.41	4 (13%)
17	ADP	F	800	-	24,29,29	0.97	1 (4%)	29,45,45	1.37	4 (13%)
17	ADP	A	800	-	24,29,29	0.96	1 (4%)	29,45,45	1.43	4 (13%)
17	ADP	I	800	-	24,29,29	0.96	1 (4%)	29,45,45	1.45	4 (13%)
17	ADP	D	800	-	24,29,29	0.96	1 (4%)	29,45,45	1.41	4 (13%)
18	ATP	J	800	-	26,33,33	0.59	0	31,52,52	0.76	2 (6%)
17	ADP	E	800	-	24,29,29	0.97	1 (4%)	29,45,45	1.40	4 (13%)
17	ADP	B	800	-	24,29,29	0.96	1 (4%)	29,45,45	1.44	4 (13%)

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
17	ADP	C	800	-	-	2/12/32/32	0/3/3/3
18	ATP	H	401	-	-	10/18/38/38	0/3/3/3
17	ADP	G	800	-	-	6/12/32/32	0/3/3/3
17	ADP	F	800	-	-	2/12/32/32	0/3/3/3
17	ADP	A	800	-	-	1/12/32/32	0/3/3/3
17	ADP	I	800	-	-	4/12/32/32	0/3/3/3
17	ADP	D	800	-	-	7/12/32/32	0/3/3/3
18	ATP	J	800	-	-	7/18/38/38	0/3/3/3
17	ADP	E	800	-	-	4/12/32/32	0/3/3/3
17	ADP	B	800	-	-	1/12/32/32	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
17	C	800	ADP	C5-C4	2.57	1.47	1.40
17	G	800	ADP	C5-C4	2.55	1.47	1.40
17	I	800	ADP	C5-C4	2.54	1.47	1.40
17	B	800	ADP	C5-C4	2.52	1.47	1.40
17	E	800	ADP	C5-C4	2.52	1.47	1.40
17	F	800	ADP	C5-C4	2.52	1.47	1.40
17	D	800	ADP	C5-C4	2.50	1.47	1.40
17	A	800	ADP	C5-C4	2.48	1.47	1.40

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
17	B	800	ADP	PA-O3A-PB	-3.72	120.07	132.83
17	I	800	ADP	PA-O3A-PB	-3.52	120.73	132.83
17	A	800	ADP	PA-O3A-PB	-3.51	120.78	132.83
17	C	800	ADP	C3'-C2'-C1'	3.41	106.11	100.98
17	E	800	ADP	PA-O3A-PB	-3.37	121.25	132.83
17	B	800	ADP	C3'-C2'-C1'	3.35	106.02	100.98
17	I	800	ADP	C3'-C2'-C1'	3.33	106.00	100.98
17	G	800	ADP	C3'-C2'-C1'	3.33	105.99	100.98
17	F	800	ADP	PA-O3A-PB	-3.32	121.42	132.83
17	D	800	ADP	C3'-C2'-C1'	3.30	105.95	100.98
17	D	800	ADP	PA-O3A-PB	-3.30	121.50	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
17	C	800	ADP	N3-C2-N1	-3.22	123.65	128.68
17	G	800	ADP	PA-O3A-PB	-3.21	121.79	132.83
17	A	800	ADP	N3-C2-N1	-3.21	123.67	128.68
17	E	800	ADP	C3'-C2'-C1'	3.17	105.75	100.98
17	F	800	ADP	C3'-C2'-C1'	3.14	105.71	100.98
17	G	800	ADP	N3-C2-N1	-3.12	123.80	128.68
17	I	800	ADP	N3-C2-N1	-3.10	123.83	128.68
17	F	800	ADP	N3-C2-N1	-3.09	123.85	128.68
17	C	800	ADP	PA-O3A-PB	-3.09	122.23	132.83
17	D	800	ADP	N3-C2-N1	-3.08	123.87	128.68
17	E	800	ADP	N3-C2-N1	-3.04	123.92	128.68
17	A	800	ADP	C3'-C2'-C1'	2.98	105.47	100.98
17	B	800	ADP	N3-C2-N1	-2.80	124.29	128.68
17	B	800	ADP	C4-C5-N7	-2.73	106.55	109.40
17	E	800	ADP	C4-C5-N7	-2.67	106.62	109.40
17	A	800	ADP	C4-C5-N7	-2.67	106.62	109.40
17	D	800	ADP	C4-C5-N7	-2.63	106.66	109.40
17	I	800	ADP	C4-C5-N7	-2.61	106.68	109.40
17	F	800	ADP	C4-C5-N7	-2.58	106.71	109.40
17	G	800	ADP	C4-C5-N7	-2.58	106.71	109.40
17	C	800	ADP	C4-C5-N7	-2.55	106.74	109.40
18	H	401	ATP	C5-C6-N6	2.30	123.85	120.35
18	J	800	ATP	C5-C6-N6	2.29	123.83	120.35
18	J	800	ATP	PB-O3B-PG	2.04	139.81	132.83
18	H	401	ATP	PB-O3B-PG	2.04	139.81	132.83

There are no chirality outliers.

All (44) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
17	D	800	ADP	C5'-O5'-PA-O1A
17	D	800	ADP	C5'-O5'-PA-O2A
17	D	800	ADP	C5'-O5'-PA-O3A
17	E	800	ADP	C5'-O5'-PA-O2A
17	E	800	ADP	C5'-O5'-PA-O3A
17	G	800	ADP	C5'-O5'-PA-O3A
17	G	800	ADP	C3'-C4'-C5'-O5'
17	I	800	ADP	C5'-O5'-PA-O1A
17	C	800	ADP	C5'-O5'-PA-O2A
17	C	800	ADP	C5'-O5'-PA-O3A
18	H	401	ATP	PB-O3B-PG-O2G
18	H	401	ATP	C5'-O5'-PA-O1A

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Mol	Chain	Res	Type	Atoms
18	H	401	ATP	C3'-C4'-C5'-O5'
18	J	800	ATP	C5'-O5'-PA-O1A
18	J	800	ATP	C5'-O5'-PA-O2A
18	J	800	ATP	C5'-O5'-PA-O3A
18	J	800	ATP	O4'-C4'-C5'-O5'
18	J	800	ATP	C3'-C4'-C5'-O5'
17	D	800	ADP	O4'-C4'-C5'-O5'
17	D	800	ADP	C3'-C4'-C5'-O5'
17	F	800	ADP	O4'-C4'-C5'-O5'
17	G	800	ADP	O4'-C4'-C5'-O5'
18	H	401	ATP	O4'-C4'-C5'-O5'
18	H	401	ATP	PB-O3B-PG-O1G
18	J	800	ATP	PB-O3B-PG-O1G
18	H	401	ATP	PG-O3B-PB-O1B
17	E	800	ADP	C3'-C4'-C5'-O5'
18	H	401	ATP	PB-O3A-PA-O5'
17	F	800	ADP	C3'-C4'-C5'-O5'
17	I	800	ADP	PA-O3A-PB-O3B
18	J	800	ATP	PB-O3B-PG-O2G
17	I	800	ADP	C5'-O5'-PA-O3A
17	D	800	ADP	PB-O3A-PA-O2A
17	G	800	ADP	C5'-O5'-PA-O2A
17	I	800	ADP	C5'-O5'-PA-O2A
18	H	401	ATP	C5'-O5'-PA-O2A
17	G	800	ADP	PB-O3A-PA-O2A
18	H	401	ATP	PA-O3A-PB-O2B
17	E	800	ADP	PA-O3A-PB-O2B
18	H	401	ATP	C5'-O5'-PA-O3A
17	A	800	ADP	O4'-C4'-C5'-O5'
17	D	800	ADP	PB-O3A-PA-O1A
17	G	800	ADP	PB-O3A-PA-O1A
17	B	800	ADP	O4'-C4'-C5'-O5'

There are no ring outliers.

6 monomers are involved in 13 short contacts:

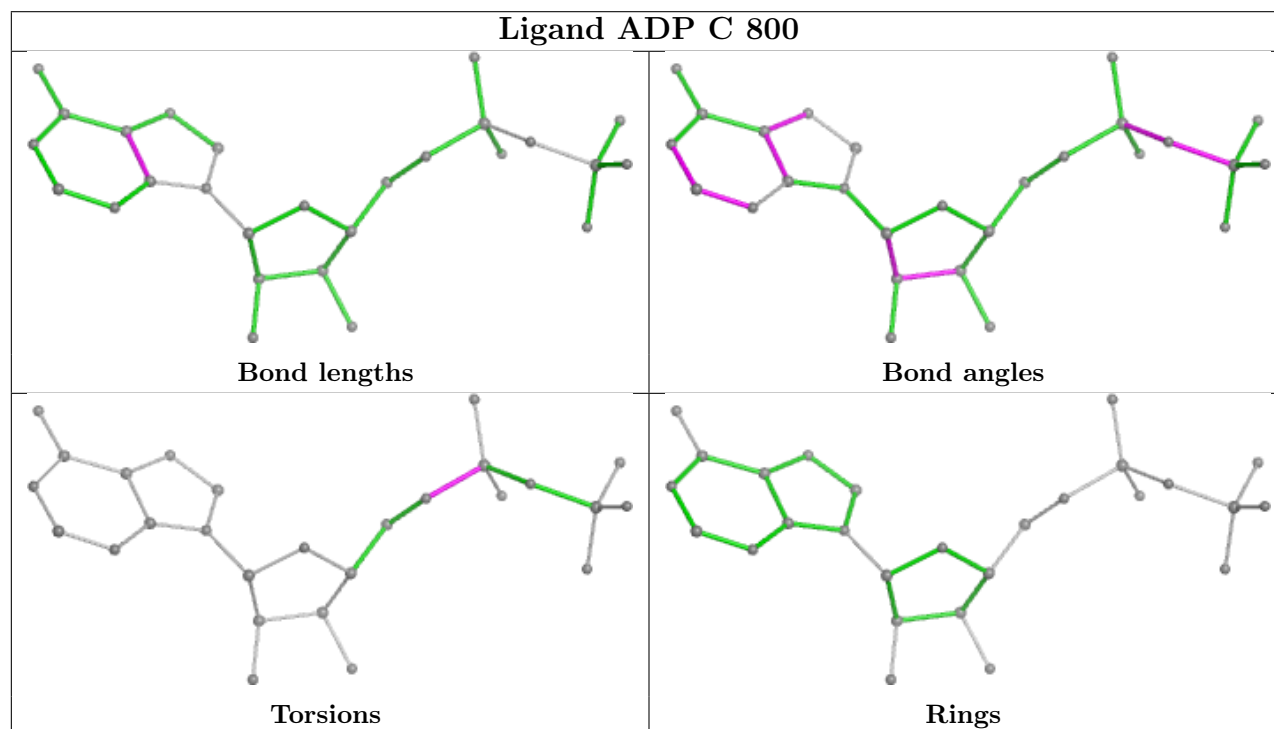
Mol	Chain	Res	Type	Clashes	Symm-Clashes
18	H	401	ATP	2	0
17	G	800	ADP	2	0
17	A	800	ADP	2	0
17	I	800	ADP	1	0
17	D	800	ADP	5	0

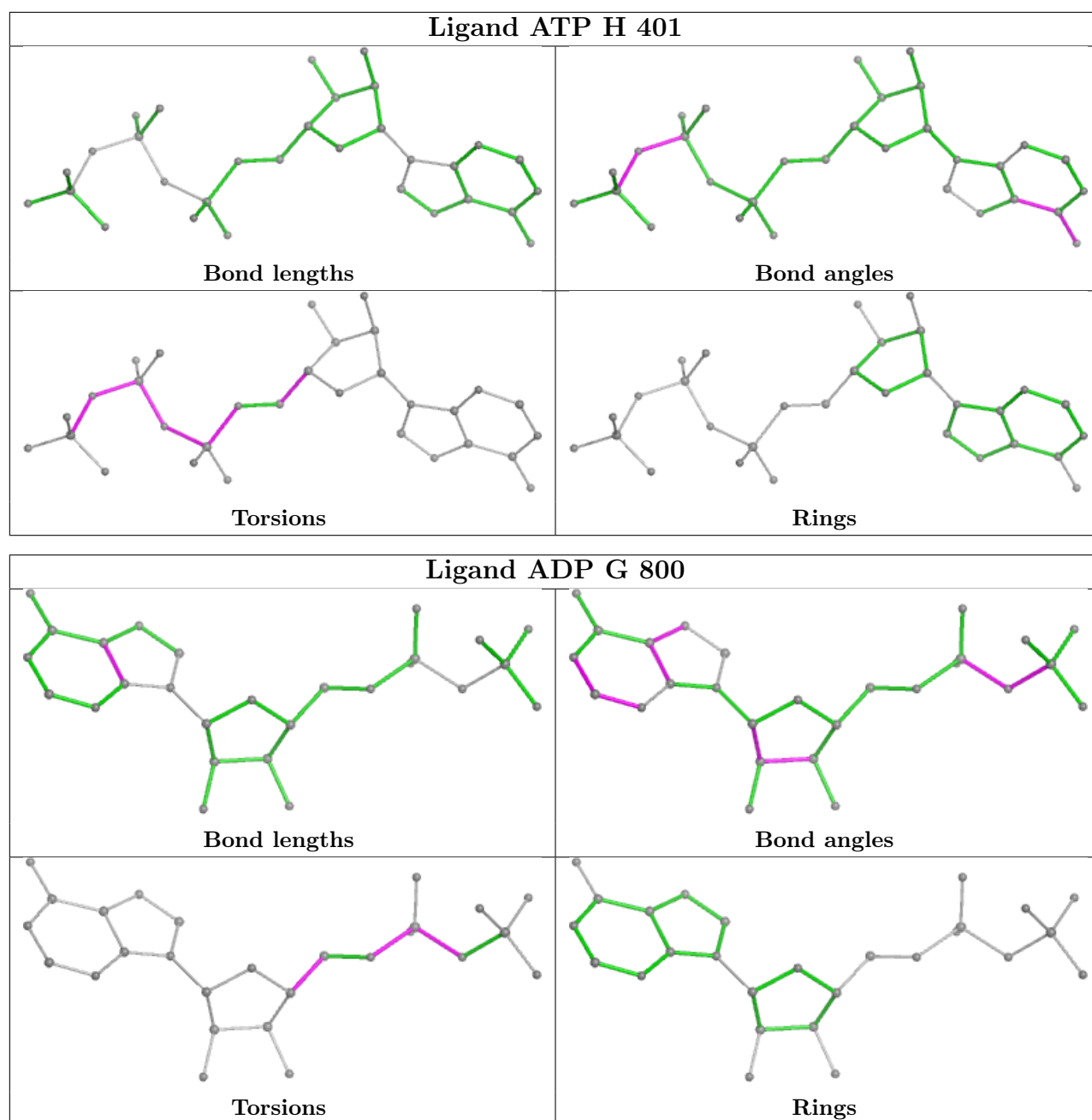
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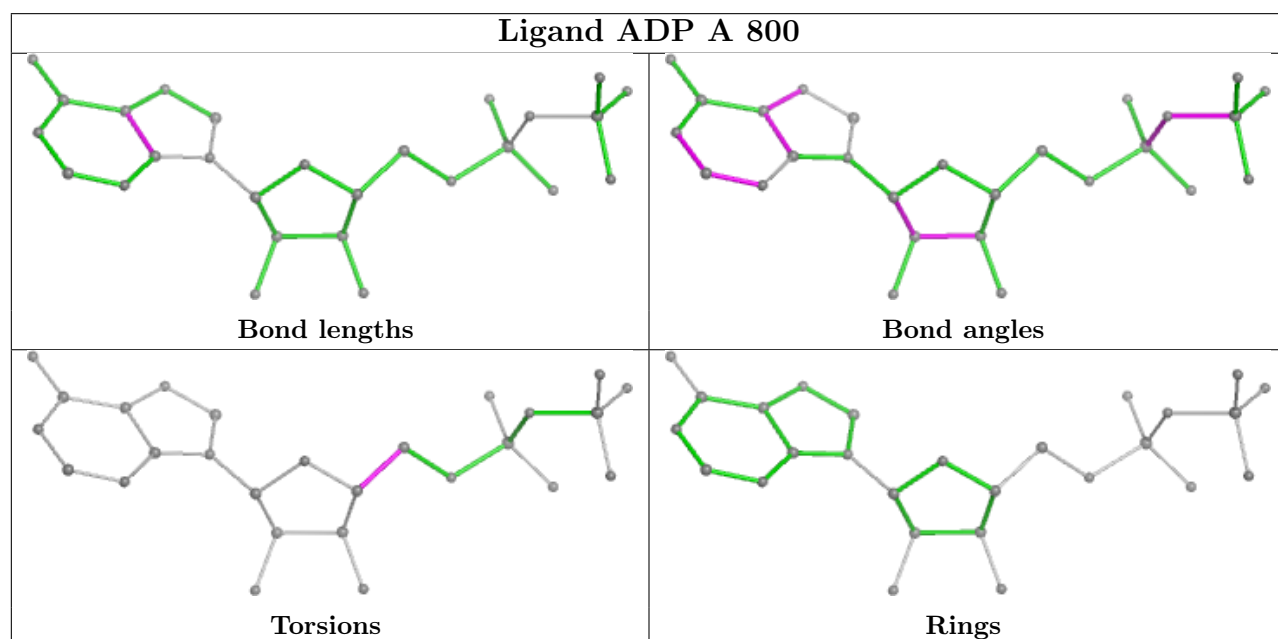
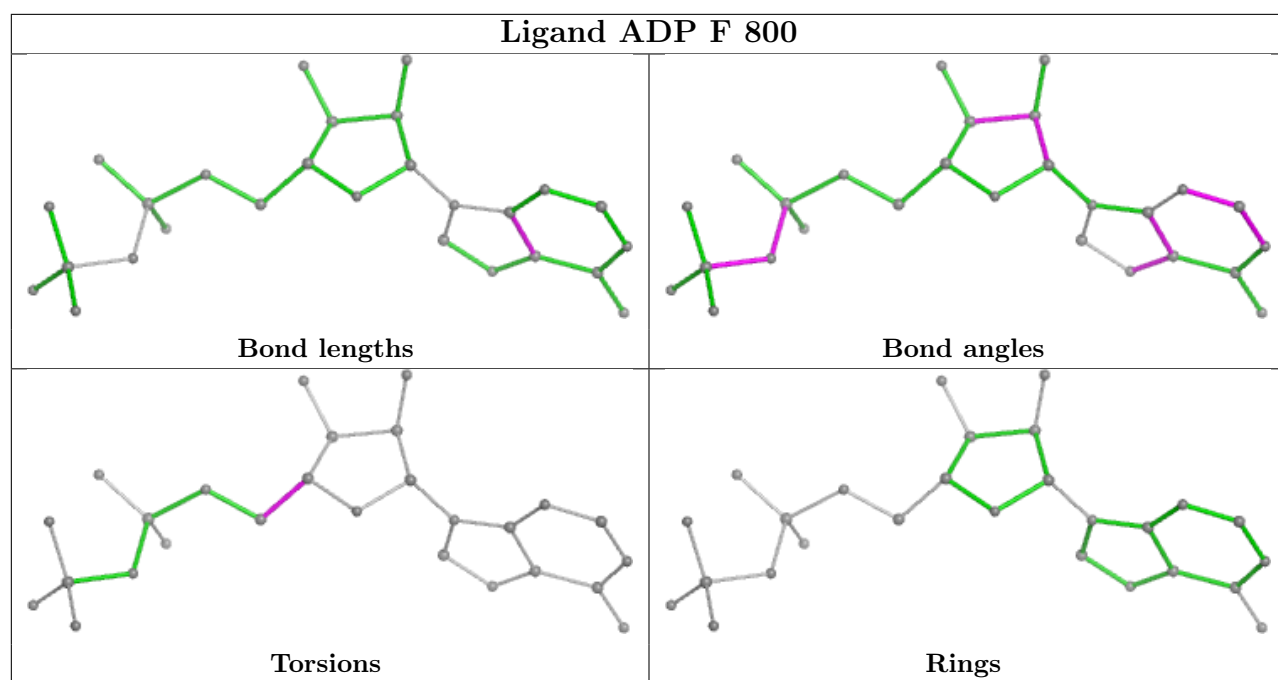
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
18	J	800	ATP	1	0

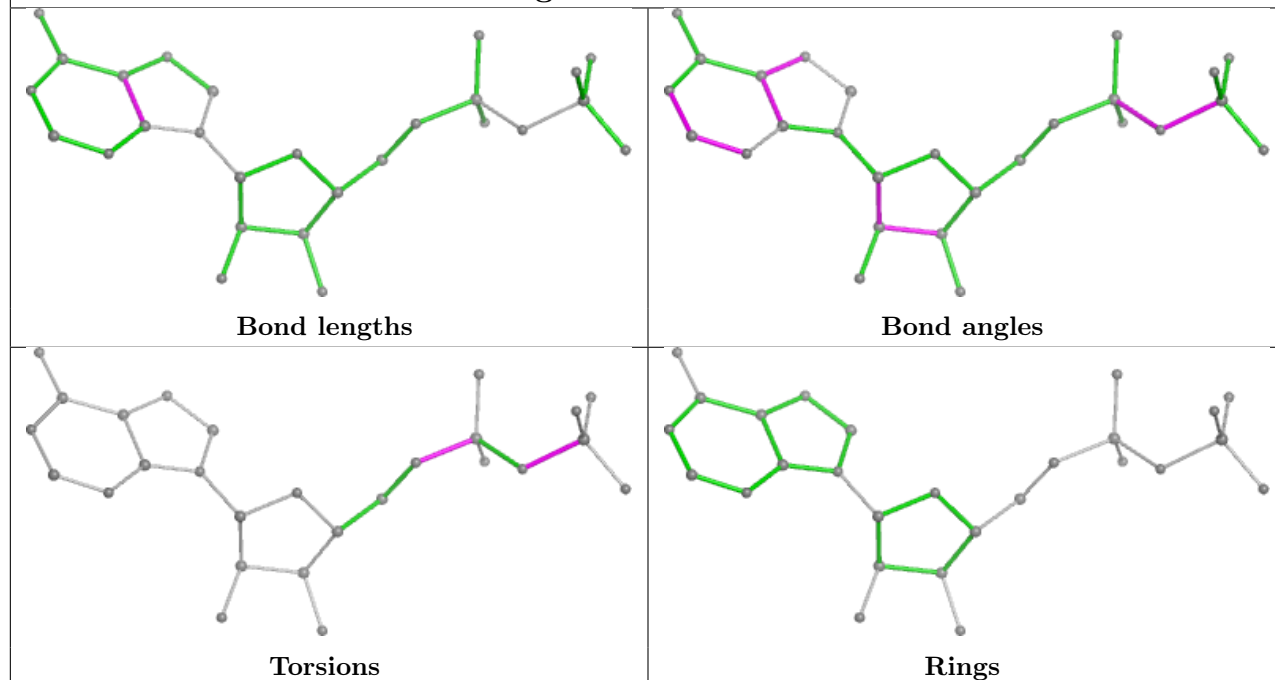
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



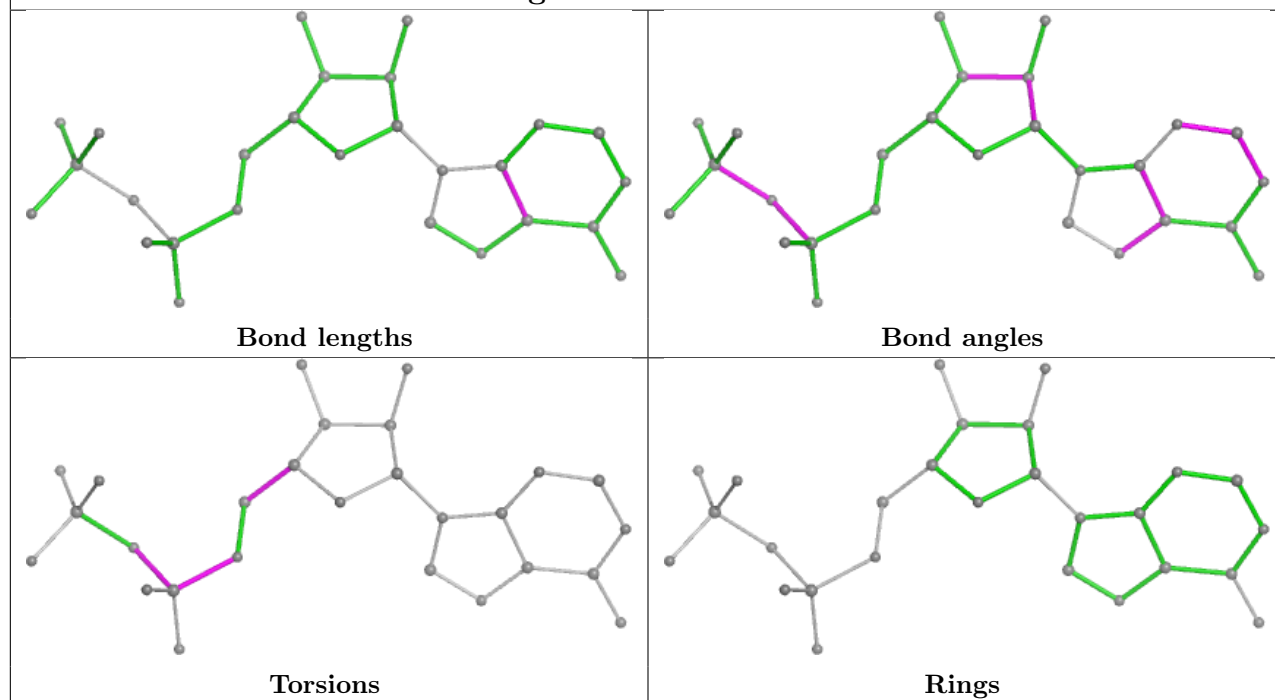


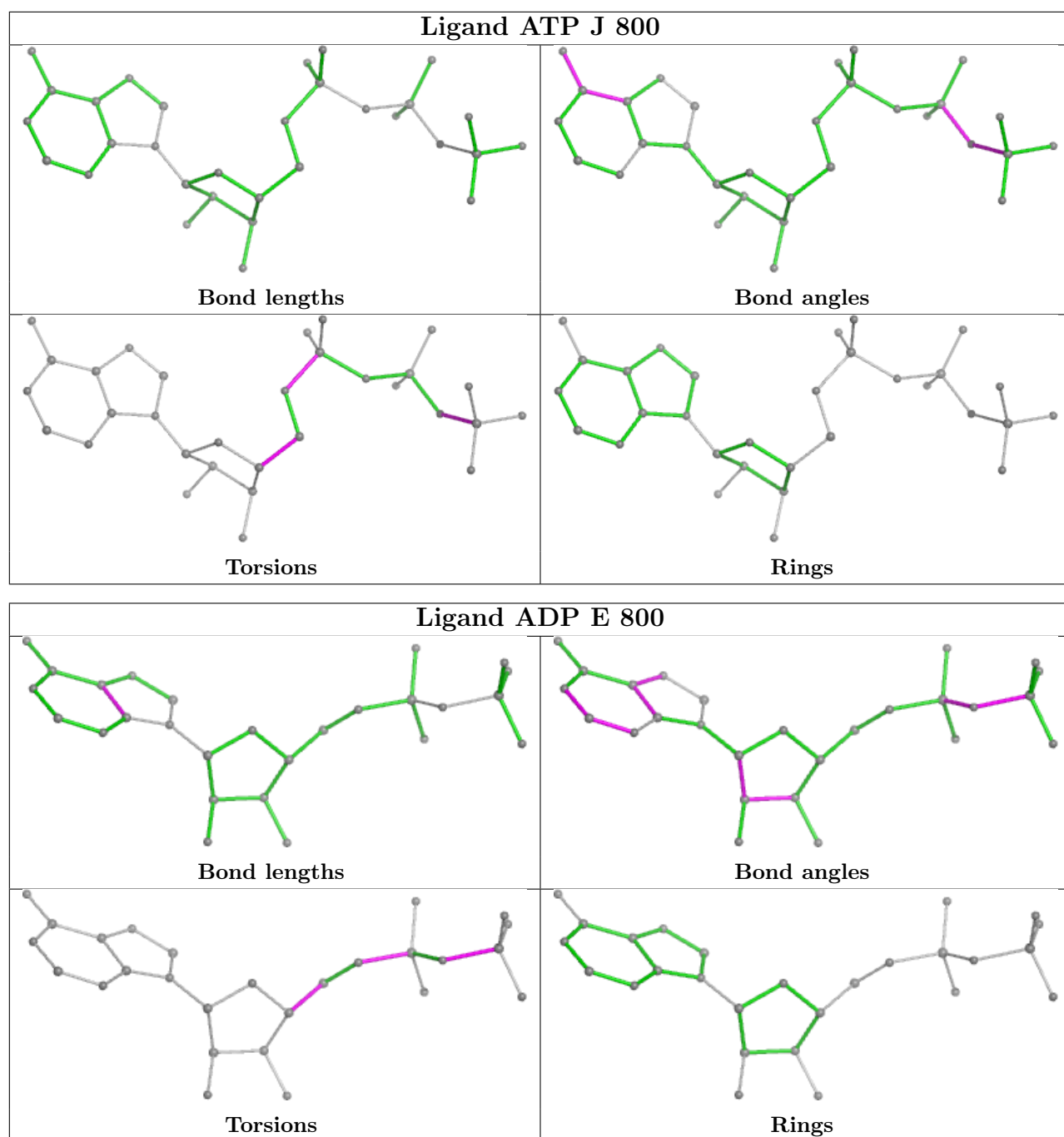


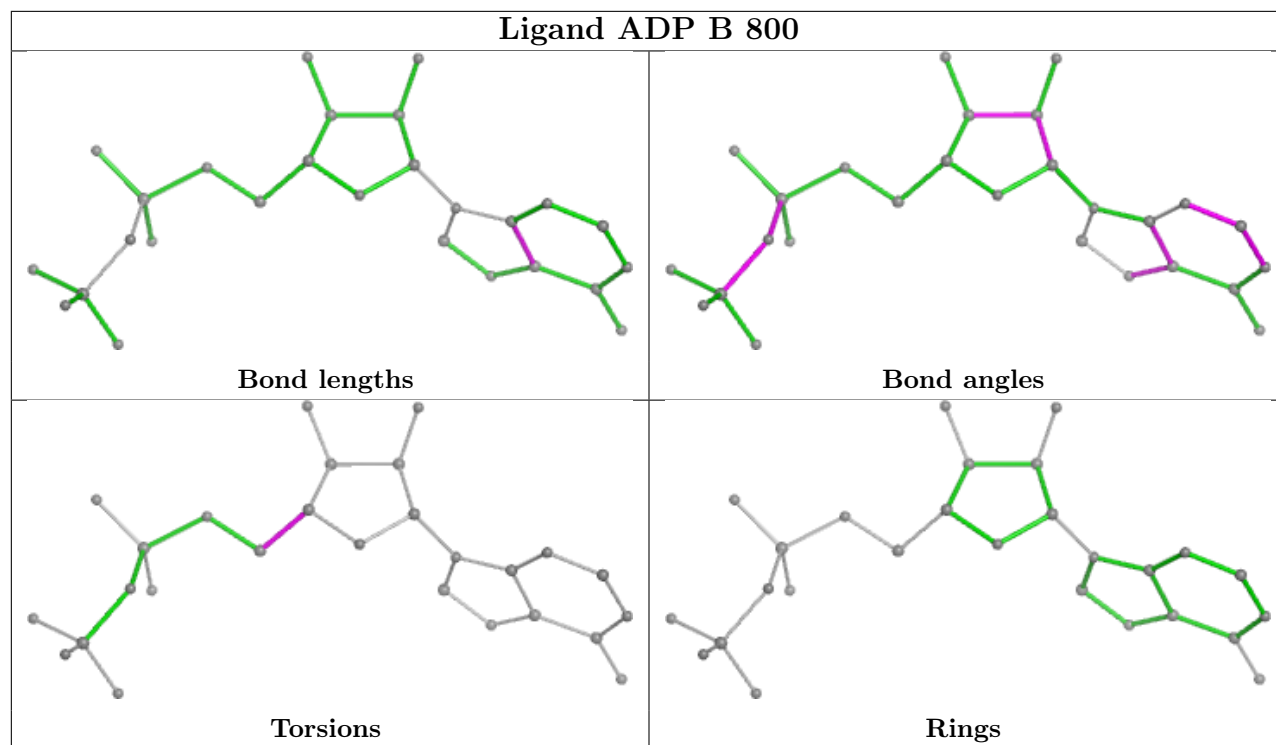
Ligand ADP I 800



Ligand ADP D 800







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.

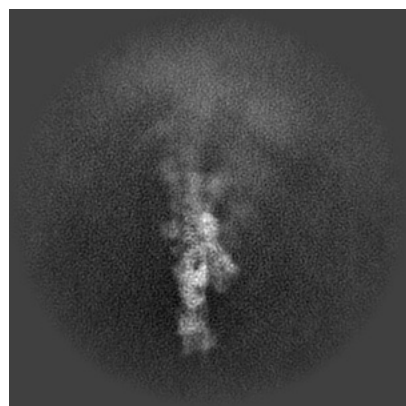
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-52171. These allow visual inspection of the internal detail of the map and identification of artifacts.

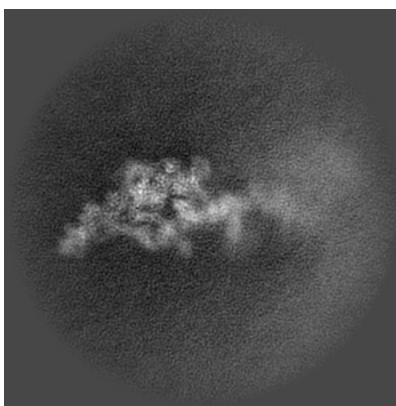
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

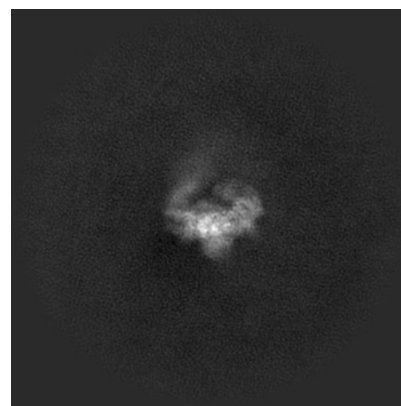
6.1.1 Primary map



X

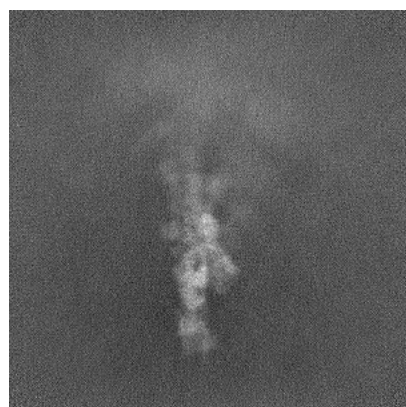


Y

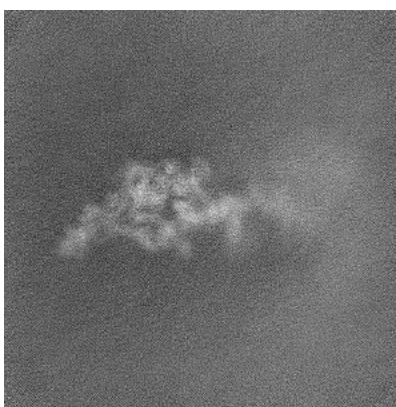


Z

6.1.2 Raw map



X



Y



Z

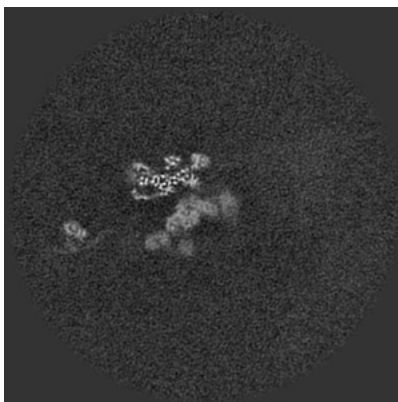
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

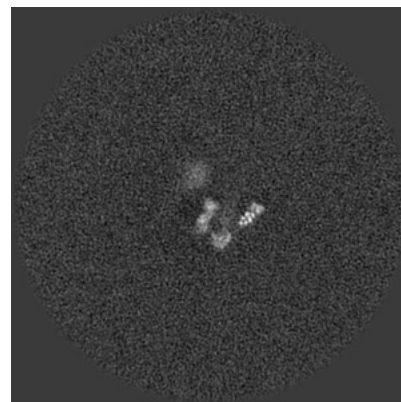
6.2.1 Primary map



X Index: 244



Y Index: 244



Z Index: 244

6.2.2 Raw map



X Index: 244



Y Index: 244

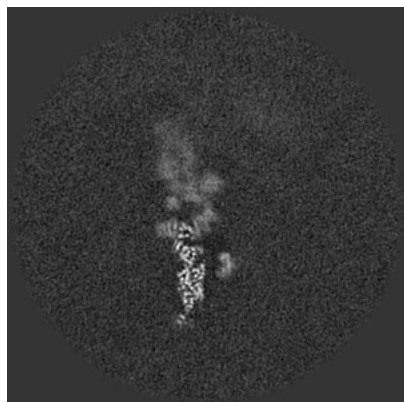


Z Index: 244

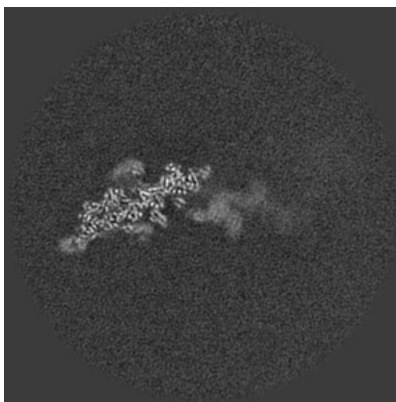
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

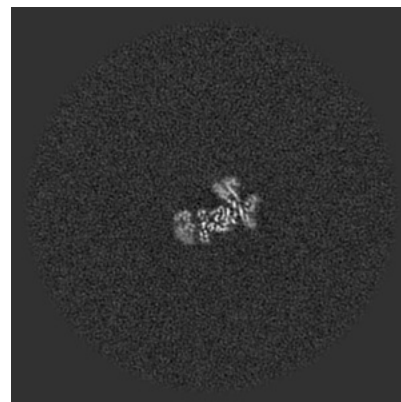
6.3.1 Primary map



X Index: 251

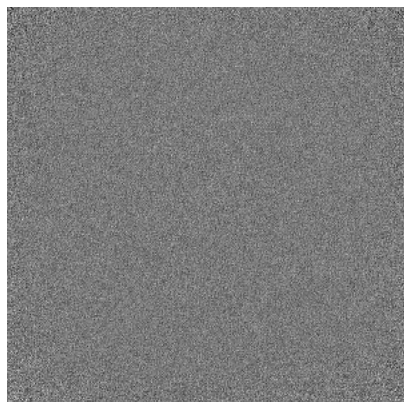


Y Index: 223

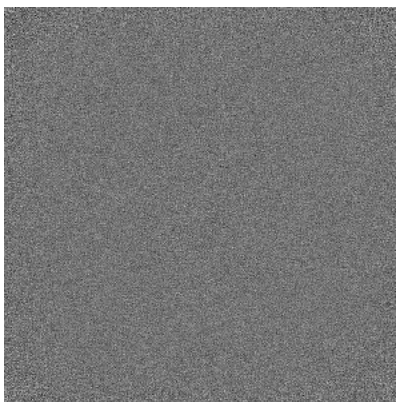


Z Index: 166

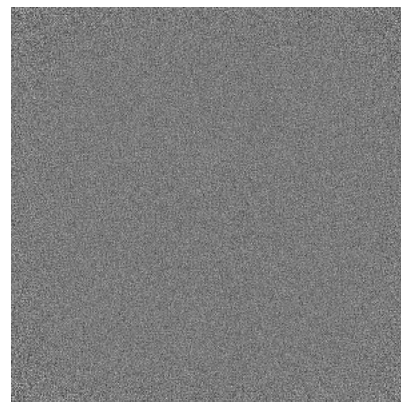
6.3.2 Raw map



X Index: 0



Y Index: 0

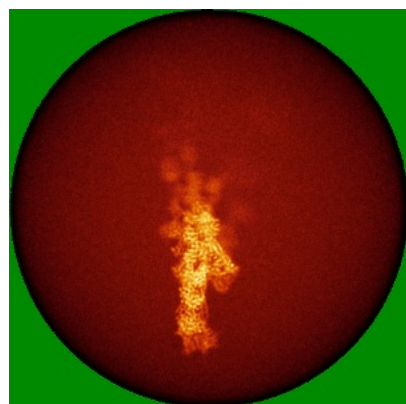


Z Index: 0

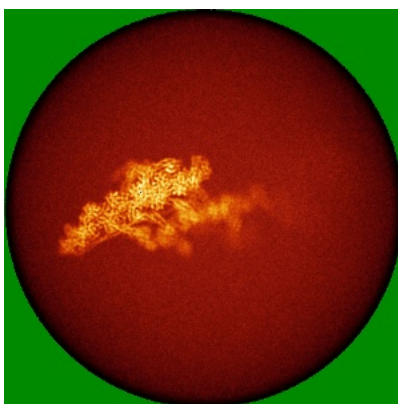
The images above show the largest variance slices of the map in three orthogonal directions.

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

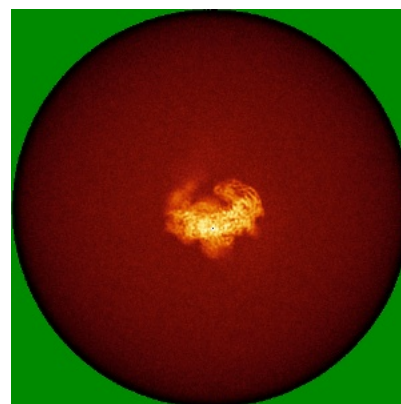
6.4.1 Primary map



X

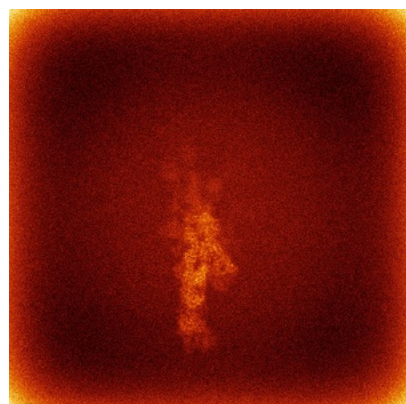


Y

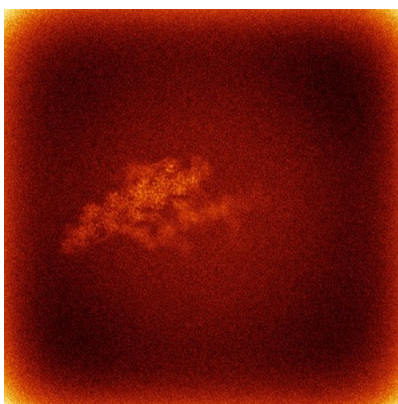


Z

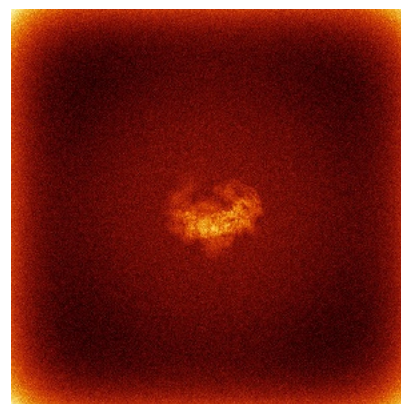
6.4.2 Raw map



X



Y

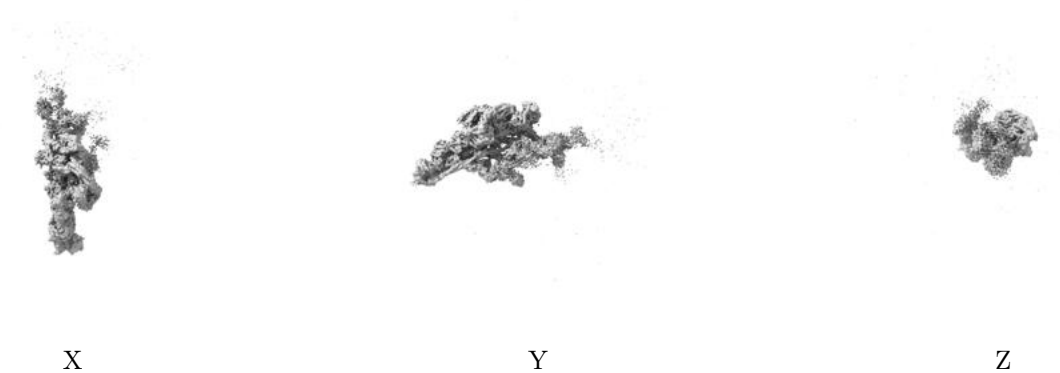


Z

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.

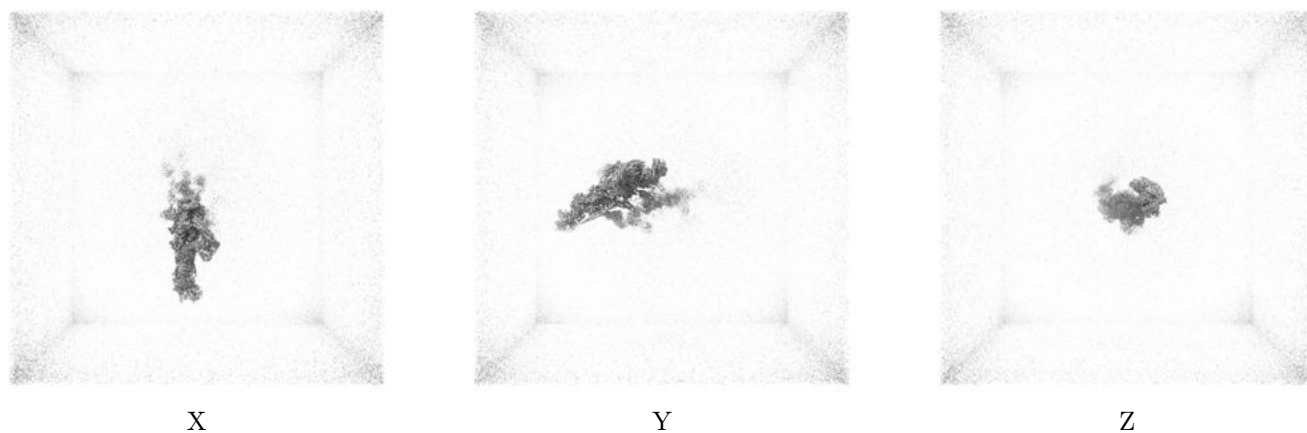
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.4. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

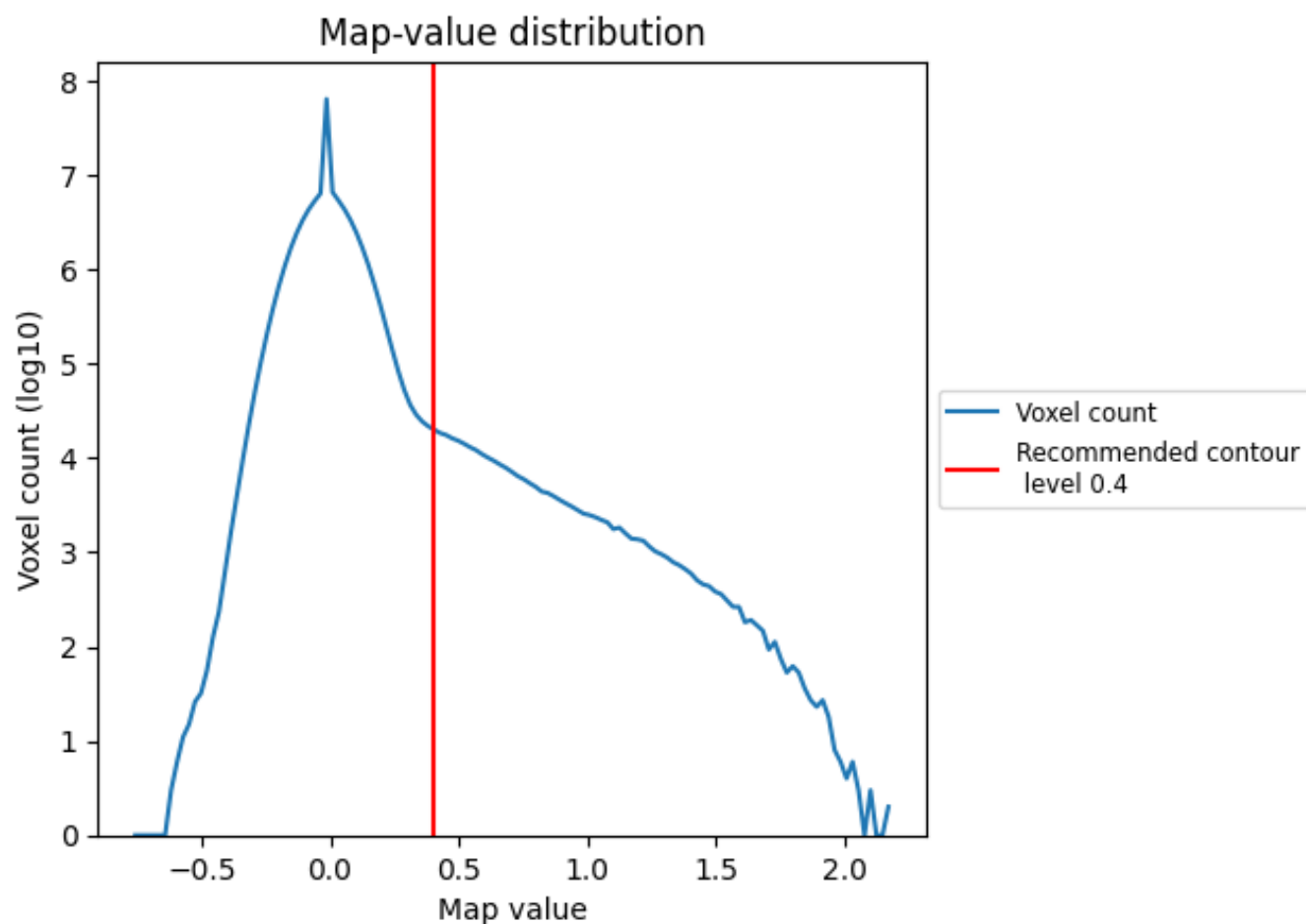
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

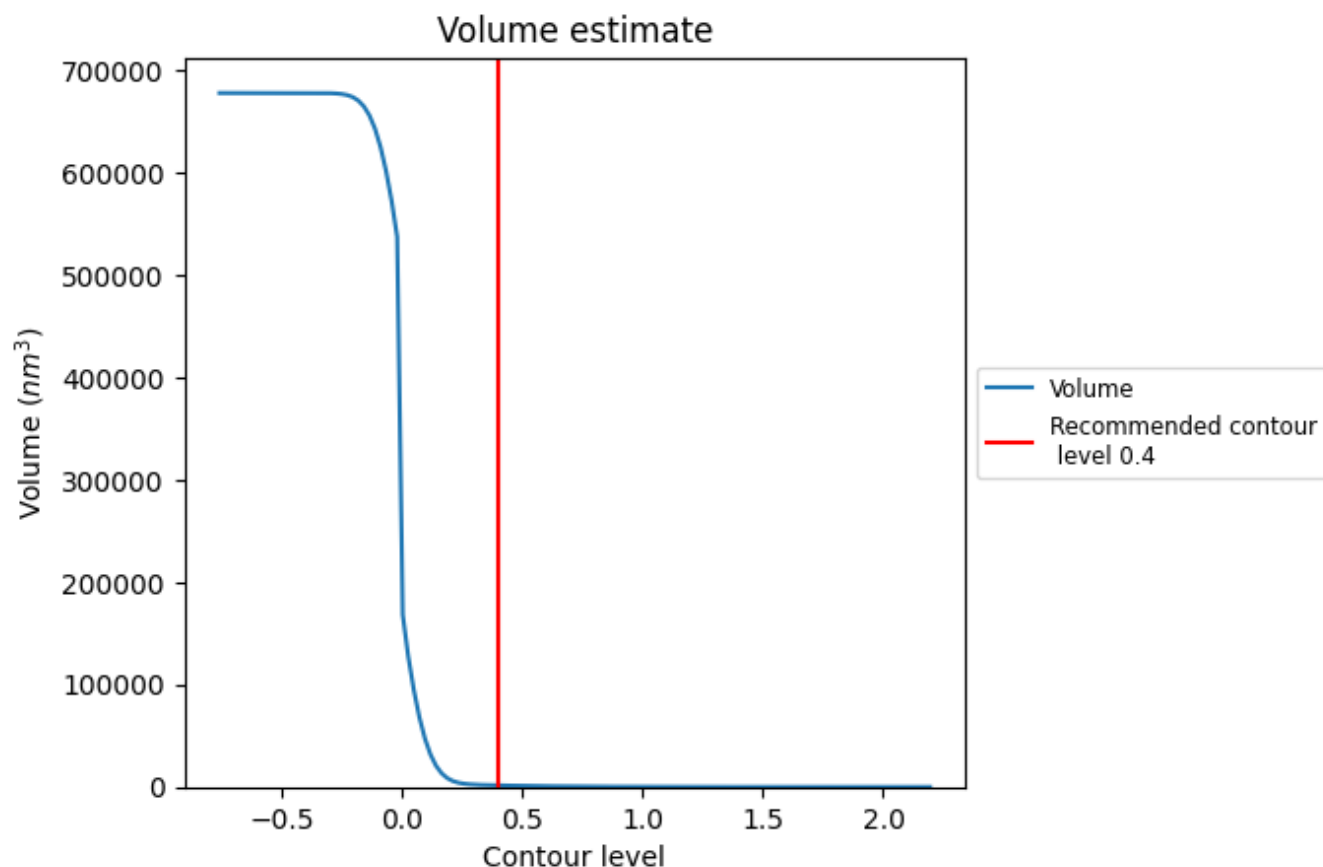
This section contains the results of statistical analysis of the map.

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.

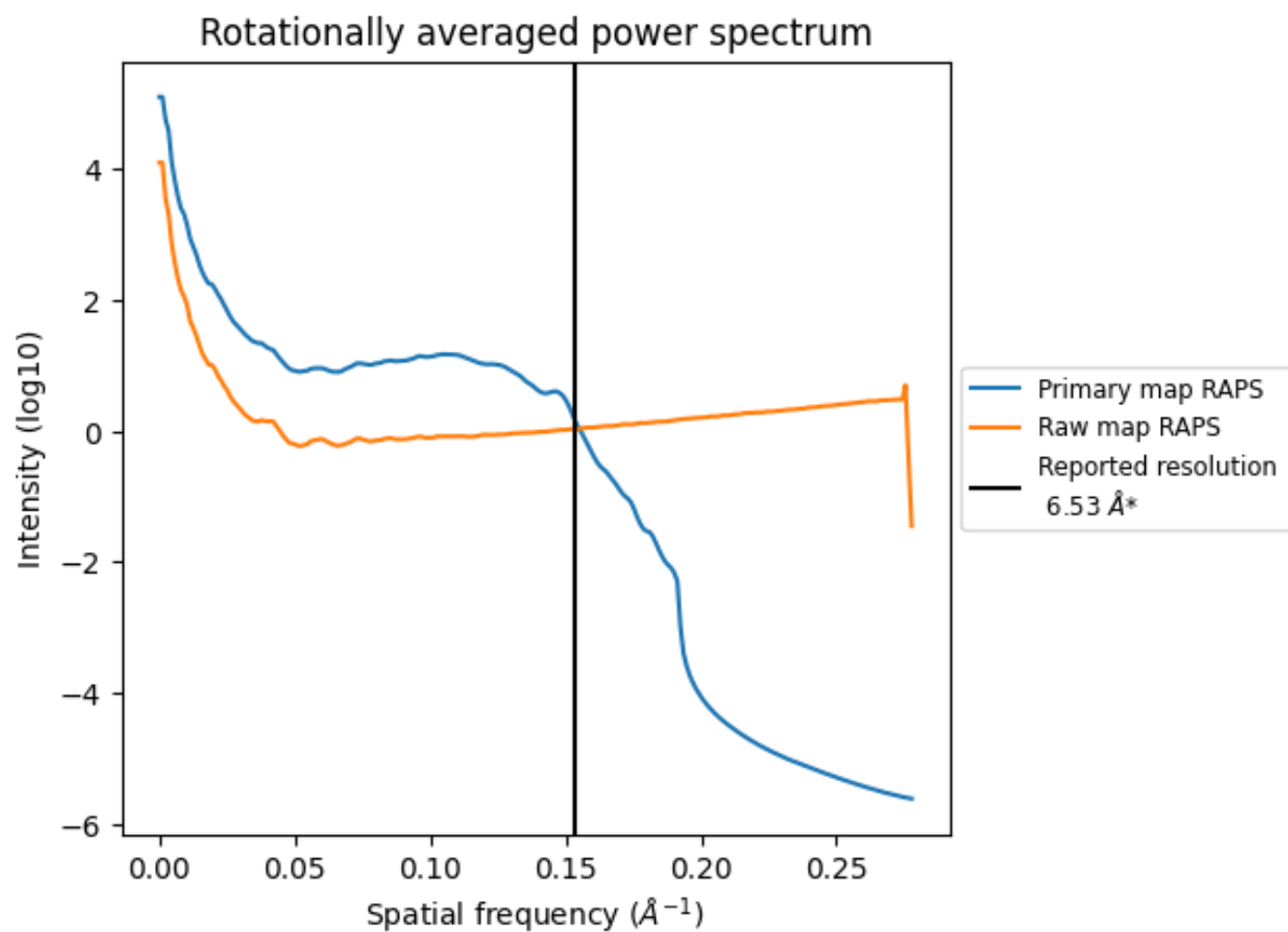
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1541 nm³; this corresponds to an approximate mass of 1392 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](#)

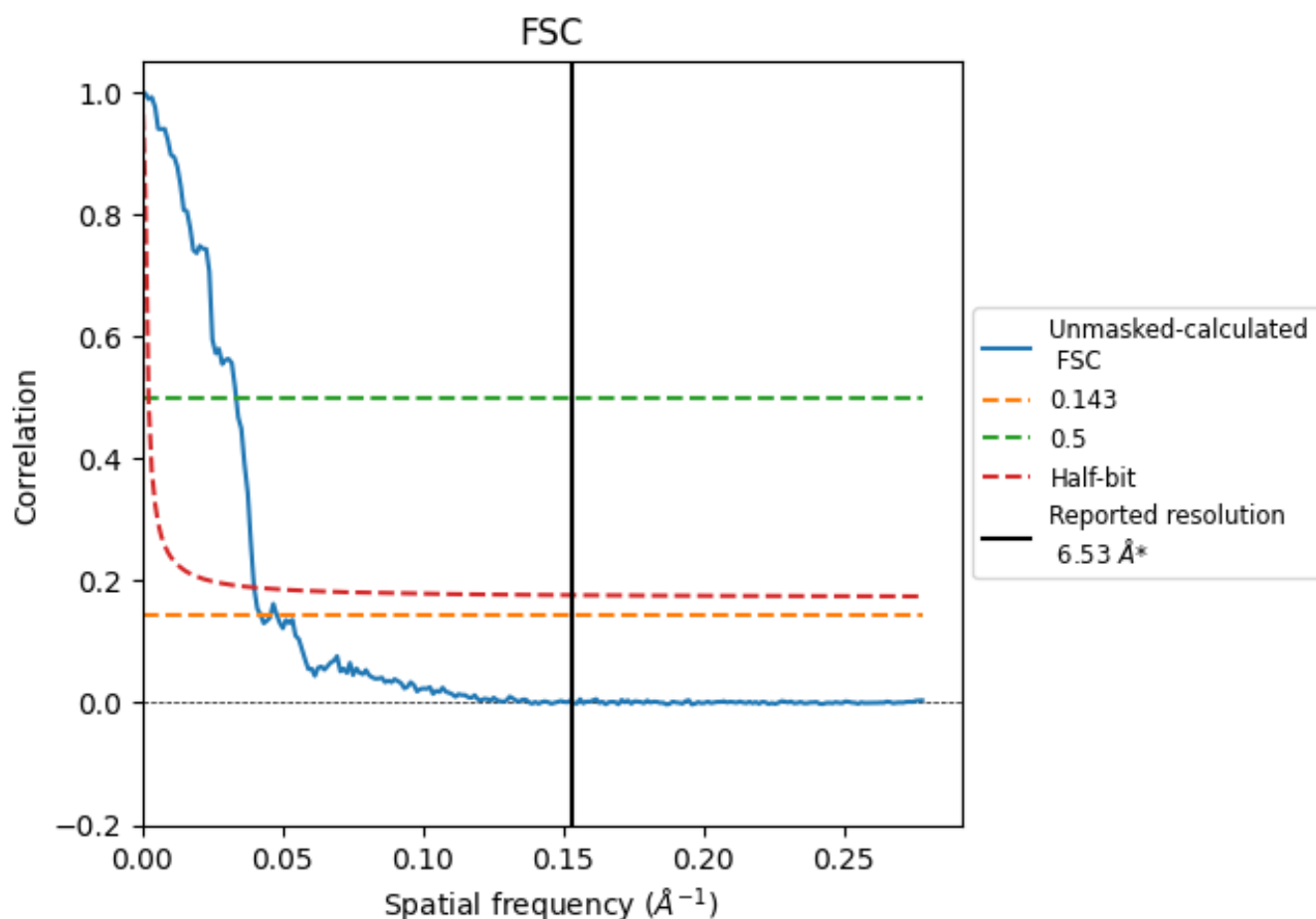


*Reported resolution corresponds to spatial frequency of 0.153 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.153 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

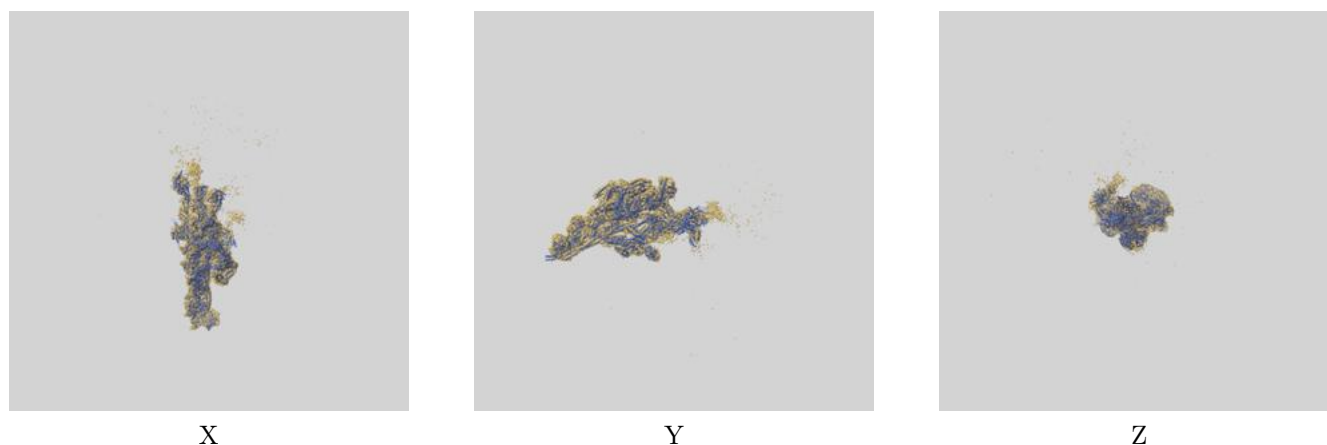
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	6.53	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	23.70	29.94	25.06

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 23.70 differs from the reported value 6.53 by more than 10 %

9 Map-model fit [i](#)

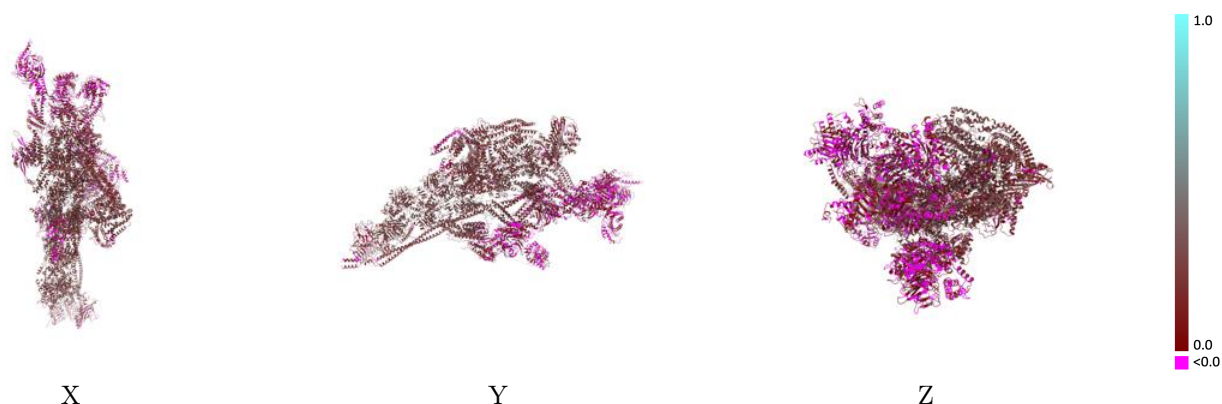
This section contains information regarding the fit between EMDB map EMD-52171 and PDB model 9HHL. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay [i](#)



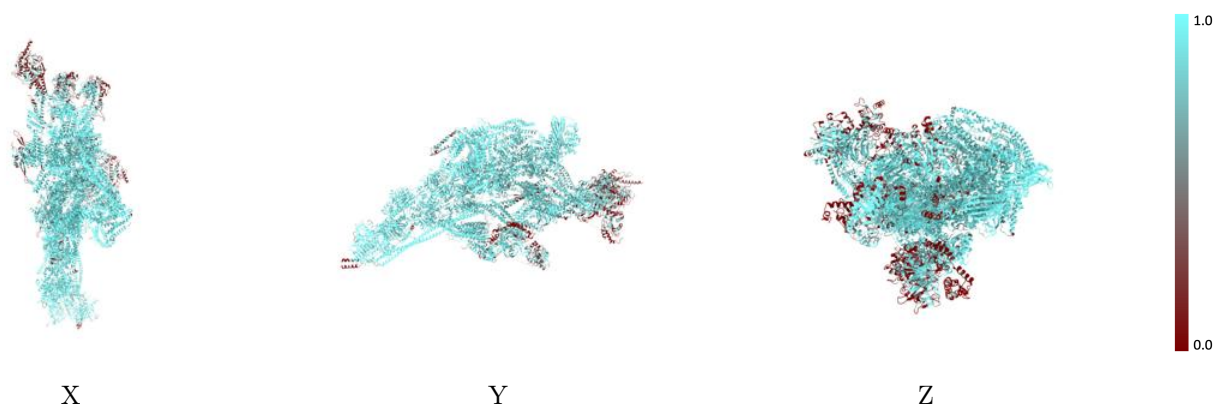
The images above show the 3D surface view of the map at the recommended contour level 0.4 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



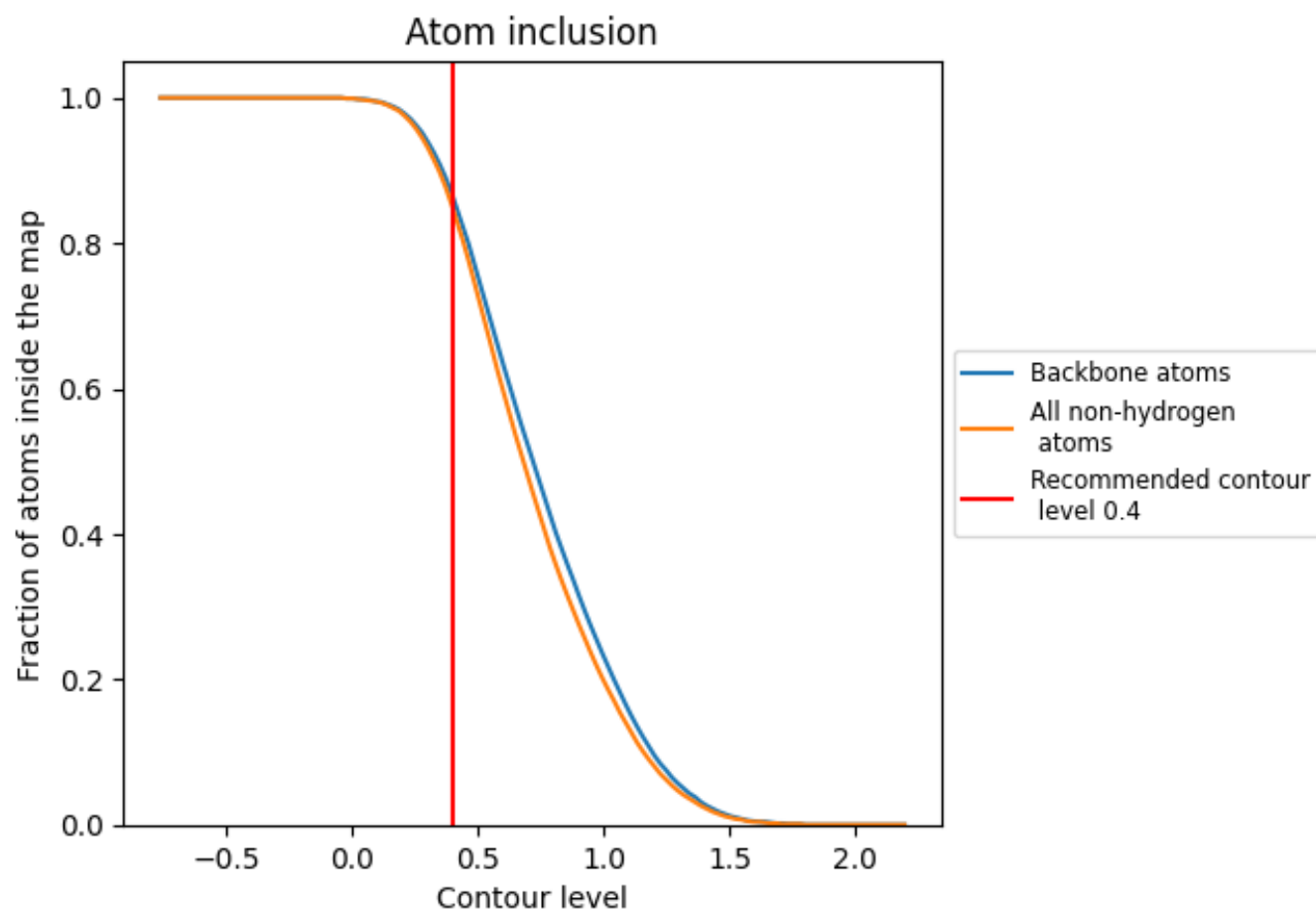
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.4).

9.4 Atom inclusion [i](#)



At the recommended contour level, 87% of all backbone atoms, 85% 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 (0.4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8500	 0.1820
1	 0.8750	 0.2260
2	 0.8470	 0.2370
A	 0.9350	 0.2240
B	 0.9600	 0.2420
C	 0.9620	 0.2430
D	 0.9780	 0.2620
E	 0.9850	 0.2690
F	 0.9870	 0.2710
G	 0.9860	 0.2690
H	 0.9830	 0.2740
I	 0.9660	 0.2570
J	 0.9750	 0.2570
K	 0.9640	 0.2080
L	 0.9550	 0.2370
M	 0.8950	 0.2020
N	 0.8970	 0.1900
O	 0.9680	 0.2120
P	 0.8930	 0.2300
Q	 0.9520	 0.2480
R	 0.9540	 0.2080
S	 0.9730	 0.2140
T	 0.9080	 0.2190
U	 0.9240	 0.1740
V	 0.9730	 0.2950
W	 0.9500	 0.1840
Y	 0.9200	 0.2120
e	 0.7730	 0.1540
f	 0.8340	 0.1670
g	 0.7310	 0.0350
h	 0.8970	 0.1160
j	 0.6180	 0.0570
m	 0.8020	 0.1460
n	 0.6270	 0.1060
o	 0.7520	 0.0530



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Chain	Atom inclusion	Q-score
p	 0.4010	 0.0390
q	 0.6000	 0.1290
s	 0.4180	 0.0560
t	 0.5910	 0.0880
u	 0.1110	 -0.0180
w	 0.6930	 0.0120
z	 0.5430	 0.0260