Full wwPDB EM Validation Report ⓘ

Feb 5, 2024 – 11:21 PM EST

PDB ID	:	7U8Q
EMDB ID	:	EMD-26387
Title	:	Structure of porcine kidney V-ATPase with SidK, Rotary State 2
Authors	:	Tan, Y.Z.; Keon, K.A.
Deposited on	:	2022-03-09
Resolution	:	4.10 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:

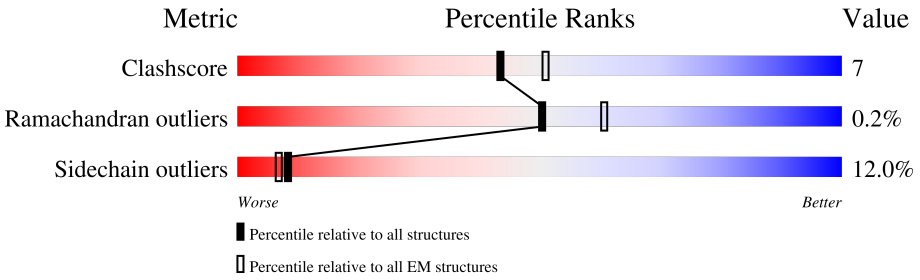
EMDB validation analysis	:	0.0.1.dev70
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 4.10 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=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 <=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	617	71% 25%
1	B	617	73% 21%
1	C	617	6% 69% 22% 5%
2	D	515	64% 22% 11%
2	E	515	68% 19% 11%
2	F	515	67% 21% 11%
3	G	382	49% 67% 24% 6%
4	H	247	65% 19% 14%

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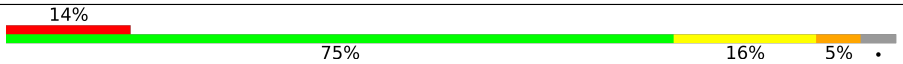
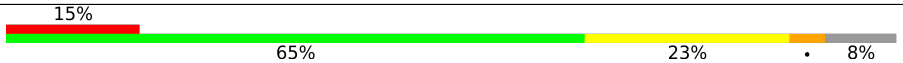
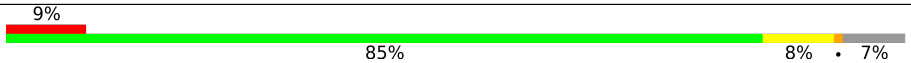
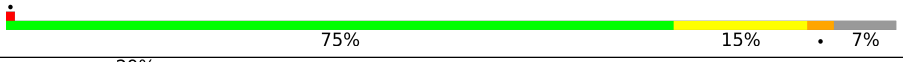
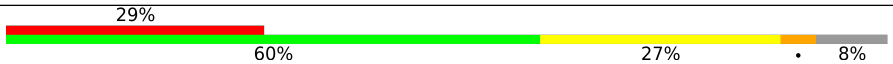
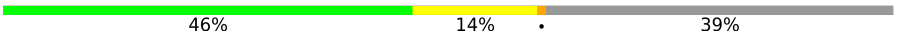
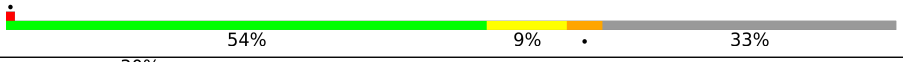
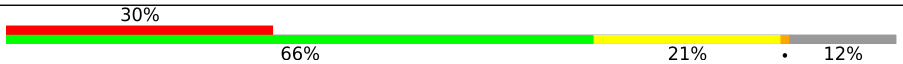
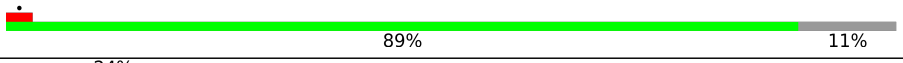
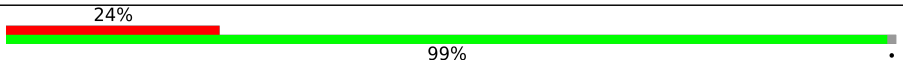
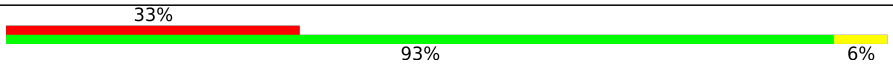
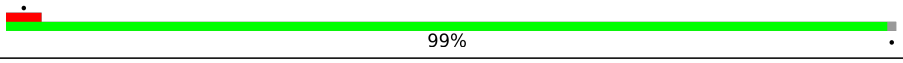
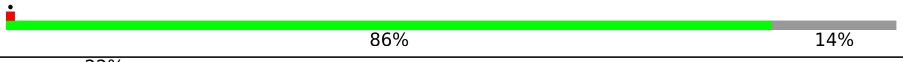
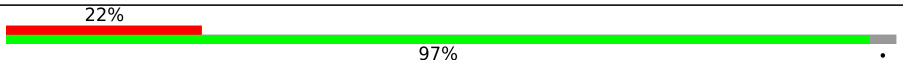
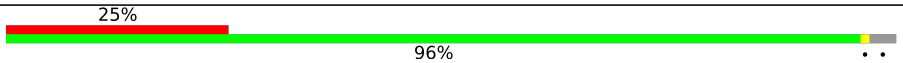
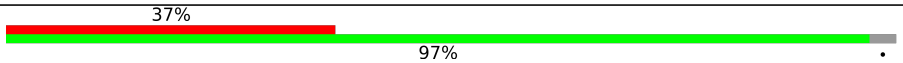
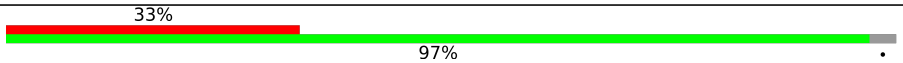
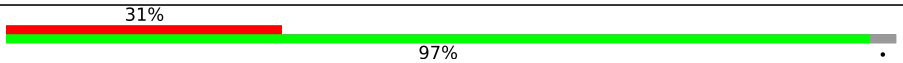
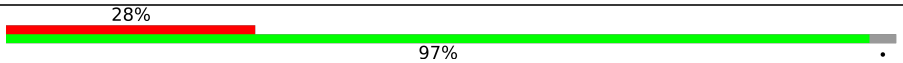
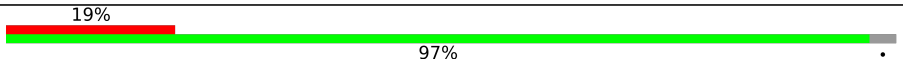
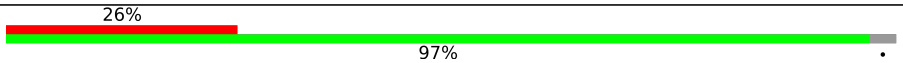
Mol	Chain	Length	Quality of chain
5	I	226	
5	J	226	
5	K	226	
6	L	119	
7	M	118	
7	N	118	
7	O	118	
8	Q	337	
8	R	337	
8	S	337	
9	T	483	
10	a	838	
11	b	205	
12	c	469	
13	d	351	
14	e	81	
15	f	98	
16	g	155	
16	h	155	
16	i	155	
16	j	155	
16	k	155	
16	l	155	
16	m	155	
16	n	155	

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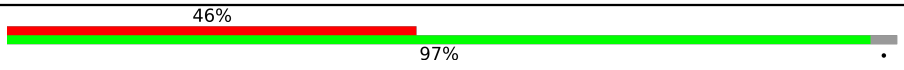
Mol	Chain	Length	Quality of chain
16	o	155	
17	p	351	

2 Entry composition (i)

There are 18 unique types of molecules in this entry. The entry contains 62638 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 V-type proton ATPase catalytic subunit A.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	600	Total	C	N	O	S	0	0
			4661	2957	790	889	25		
1	B	600	Total	C	N	O	S	0	0
			4661	2957	790	889	25		
1	C	587	Total	C	N	O	S	0	0
			4577	2904	776	873	24		

- Molecule 2 is a protein called Vacuolar proton pump subunit B.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	458	Total	C	N	O	S	0	0
			3590	2278	615	676	21		
2	E	456	Total	C	N	O	S	0	0
			3572	2266	611	674	21		
2	F	456	Total	C	N	O	S	0	0
			3572	2266	611	674	21		

- Molecule 3 is a protein called V-type proton ATPase subunit C.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	G	360	Total	C	N	O	S	0	0
			2935	1880	496	549	10		

- Molecule 4 is a protein called V-type proton ATPase subunit D.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	H	213	Total	C	N	O	S	0	0
			1717	1089	309	314	5		

- Molecule 5 is a protein called V-type proton ATPase subunit E 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	I	217	Total	C	N	O	S	0	0
			1416	880	263	269	4		
5	J	218	Total	C	N	O	S	0	0
			1773	1118	317	329	9		
5	K	217	Total	C	N	O	S	0	0
			1766	1113	316	328	9		

- Molecule 6 is a protein called V-type proton ATPase subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	L	109	Total	C	N	O	S	0	0
			865	548	153	162	2		

- Molecule 7 is a protein called V-type proton ATPase subunit G.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	M	110	Total	C	N	O	S	0	0
			673	413	129	130	1		
7	N	110	Total	C	N	O	S	0	0
			906	556	172	175	3		
7	O	108	Total	C	N	O	S	0	0
			894	548	170	173	3		

- Molecule 8 is a protein called Bacterial effector protein SidK.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	Q	224	Total	C	N	O	S	0	0
			1824	1162	306	346	10		
8	R	206	Total	C	N	O	S	0	0
			1685	1073	285	319	8		
8	S	226	Total	C	N	O	S	0	0
			1836	1169	308	348	11		

- Molecule 9 is a protein called V-type proton ATPase subunit H.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	T	427	Total	C	N	O	S	0	0
			3510	2230	606	651	23		

- Molecule 10 is a protein called V-type proton ATPase subunit a.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	a	750	Total 3707	C 2207	N 750	O 750	0	0

- Molecule 11 is a protein called V-type proton ATPase 21 kDa proteolipid subunit isoform 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	b	203	Total 989	C 583	N 203	O 203	0	0

- Molecule 12 is a protein called ATPase H+ transporting accessory protein 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	c	206	Total 1016	C 604	N 206	O 206	0	0

- Molecule 13 is a protein called V-type proton ATPase subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	d	350	Total 2835	C 1829	N 462	O 530	S 14	0	0

- Molecule 14 is a protein called V-type proton ATPase subunit.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	e	80	Total 394	C 234	N 80	O 80	0	0

- Molecule 15 is a protein called Ribonuclease kappa.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	f	84	Total 412	C 244	N 84	O 84	0	0

- Molecule 16 is a protein called V-type proton ATPase proteolipid subunit.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	g	150	Total 729	C 429	N 150	O 150	0	0
16	h	150	Total 729	C 429	N 150	O 150	0	0
16	i	150	Total 729	C 429	N 150	O 150	0	0

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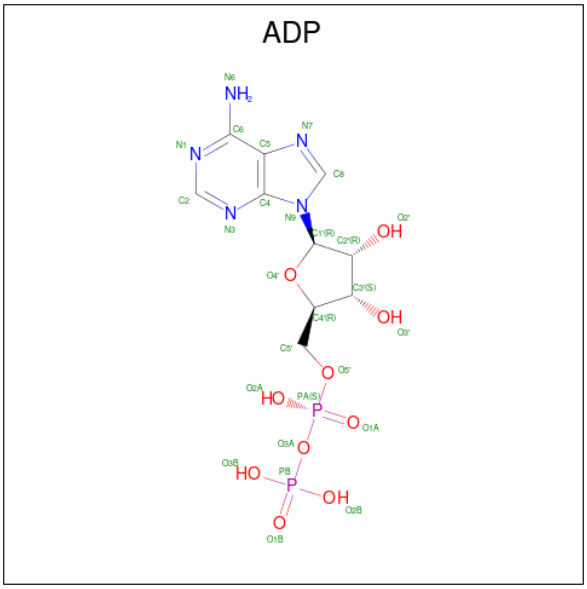
Mol	Chain	Residues	Atoms				AltConf	Trace
16	j	150	Total	C	N	O	0	0
			729	429	150	150		
16	k	150	Total	C	N	O	0	0
			729	429	150	150		
16	l	150	Total	C	N	O	0	0
			729	429	150	150		
16	m	150	Total	C	N	O	0	0
			729	429	150	150		
16	n	150	Total	C	N	O	0	0
			729	429	150	150		
16	o	150	Total	C	N	O	0	0
			729	429	150	150		

- Molecule 17 is a protein called ATPase H(+)-transporting lysosomal accessory protein 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	p	53	Total	C	N	O	0	0
			264	158	53	53		

- Molecule 18 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



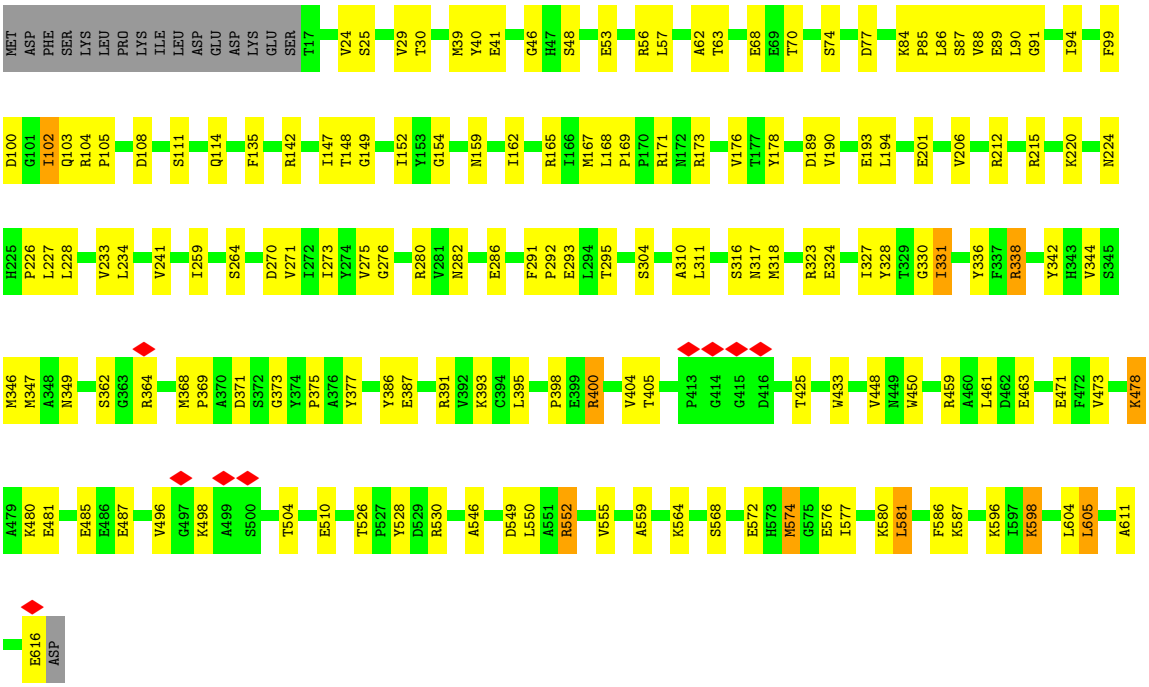
Mol	Chain	Residues	Atoms					AltConf
18	B	1	Total	C	N	O	P	0
			27	10	5	10	2	

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

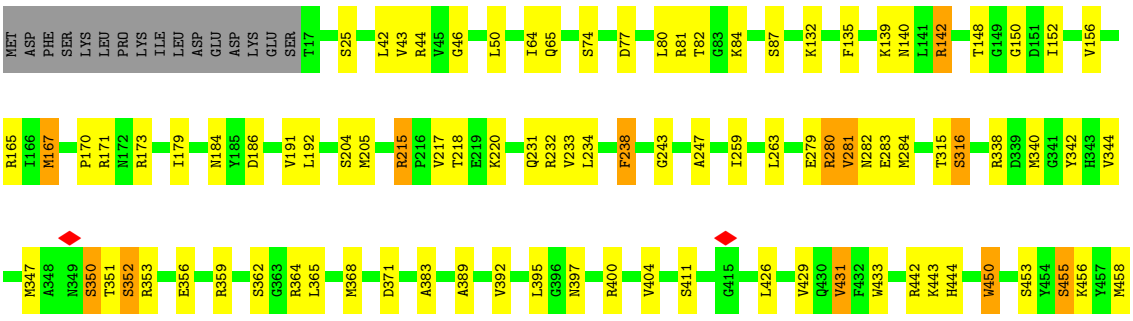
• Molecule 1: V-type proton ATPase catalytic subunit A

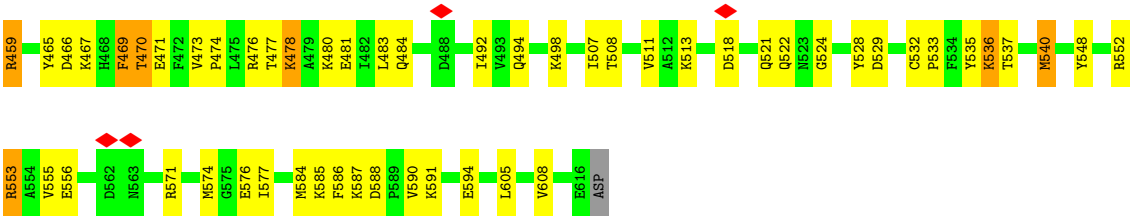
Chain A:



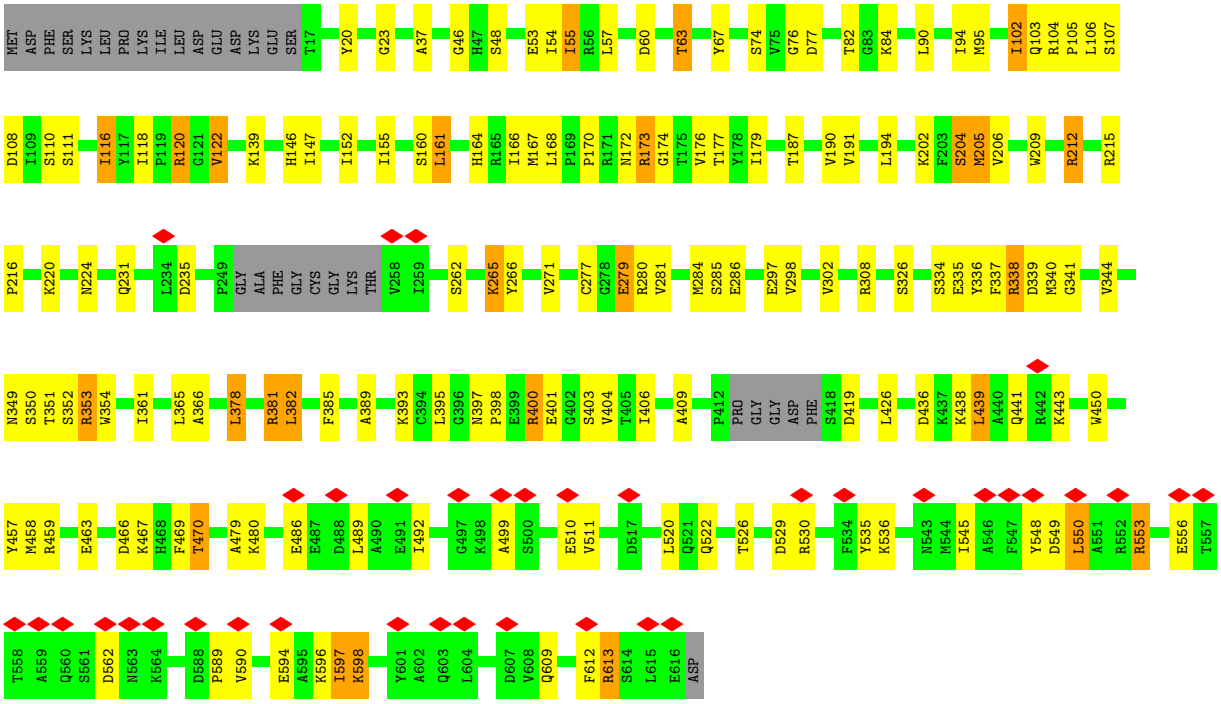
• Molecule 1: V-type proton ATPase catalytic subunit A

Chain B:

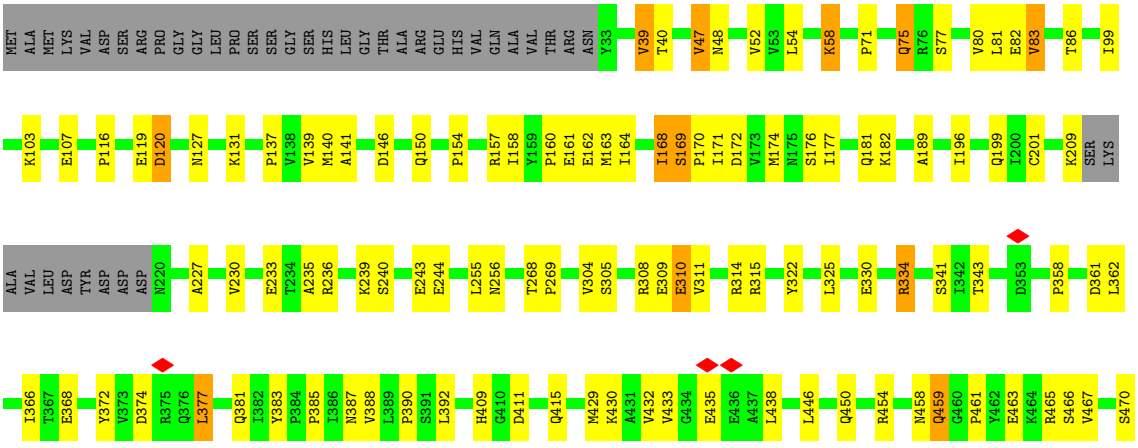


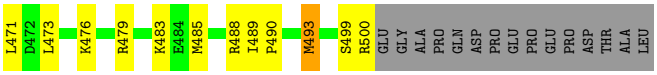


• Molecule 1: V-type proton ATPase catalytic subunit A



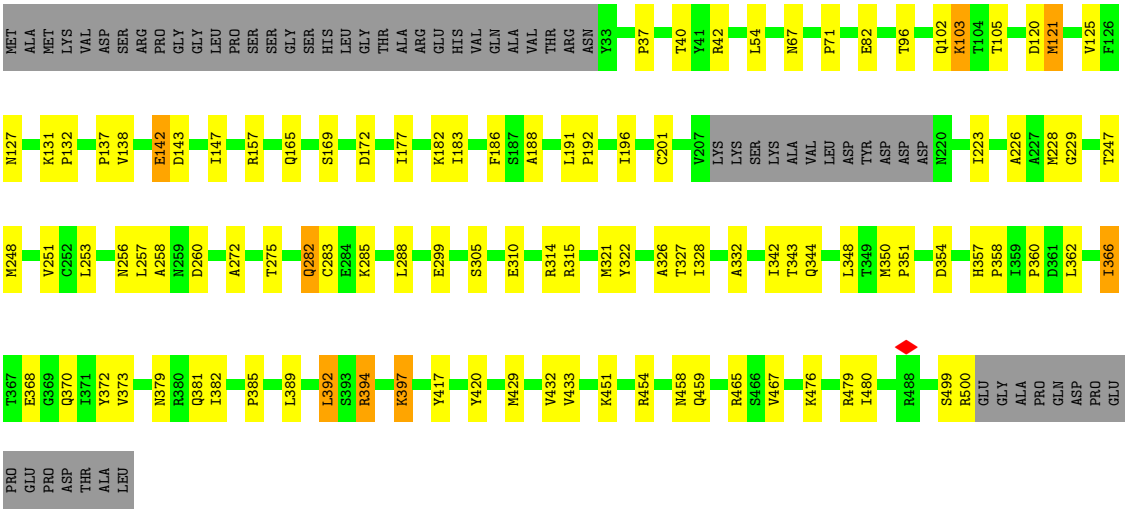
• Molecule 2: Vacuolar proton pump subunit B





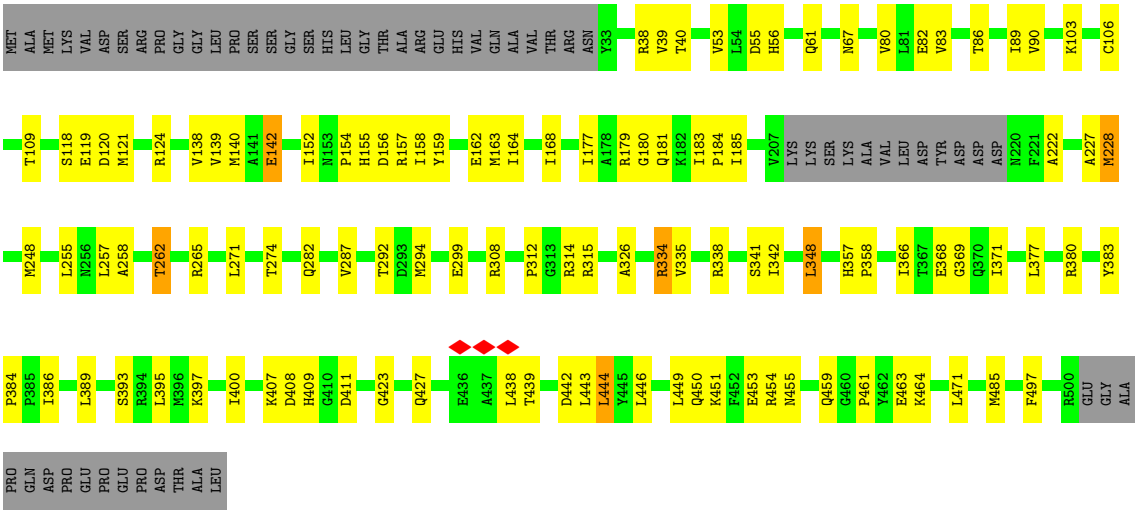
• Molecule 2: Vacuolar proton pump subunit B

Chain E:



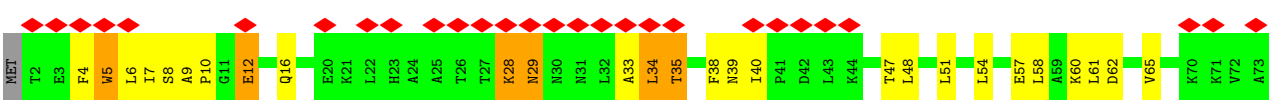
• Molecule 2: Vacuolar proton pump subunit B

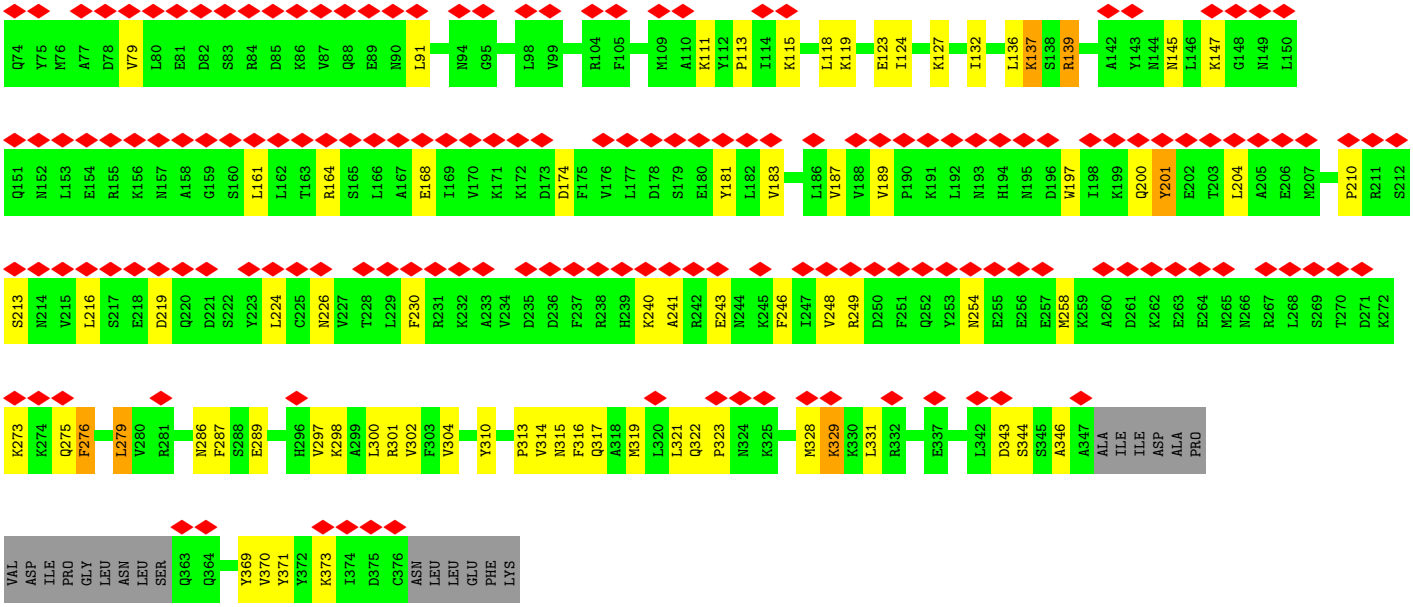
Chain F:



• Molecule 3: V-type proton ATPase subunit C

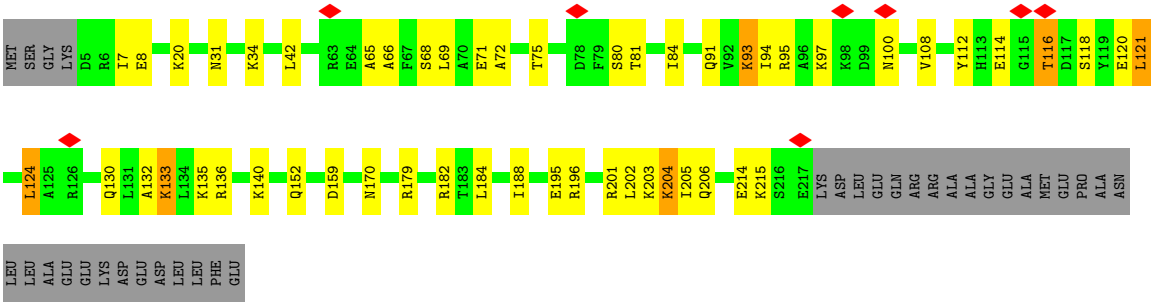
Chain G:





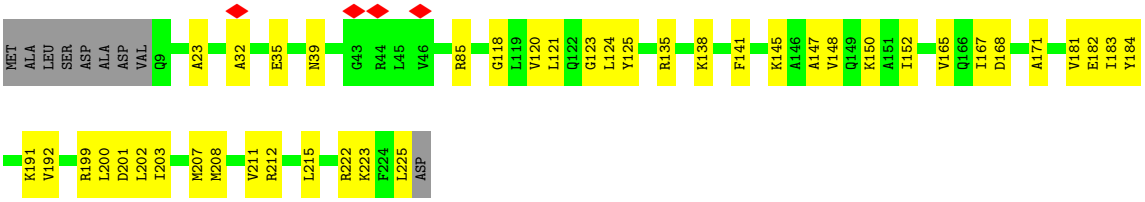
• Molecule 4: V-type proton ATPase subunit D

Chain H:



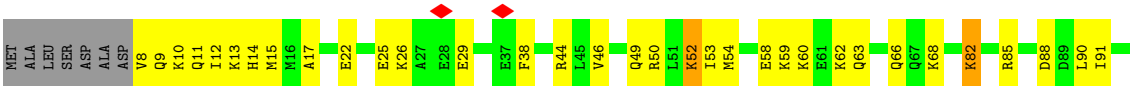
• Molecule 5: V-type proton ATPase subunit E 1

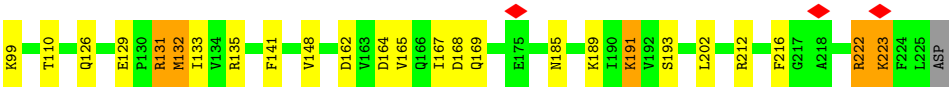
Chain I:



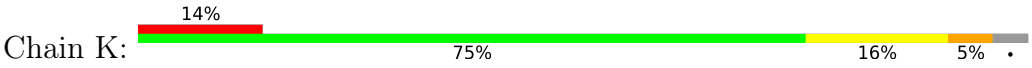
• Molecule 5: V-type proton ATPase subunit E 1

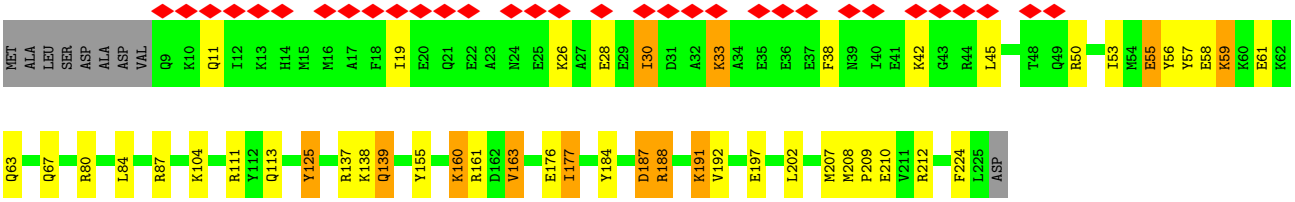
Chain J:



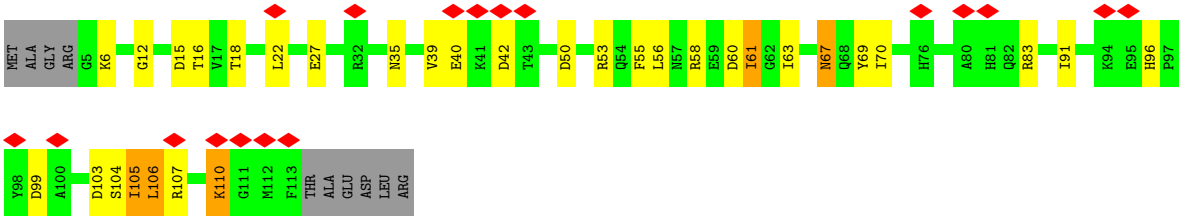


• Molecule 5: V-type proton ATPase subunit E 1

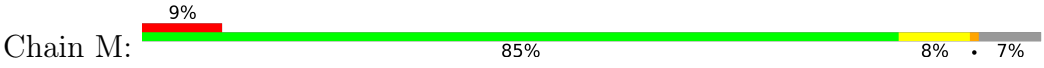


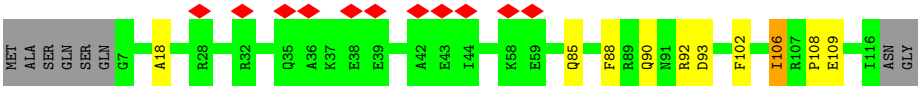


• Molecule 6: V-type proton ATPase subunit F

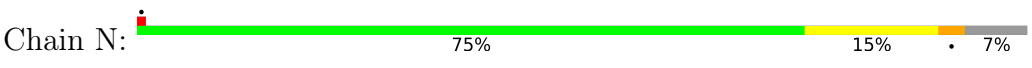


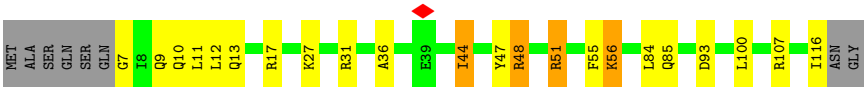
• Molecule 7: V-type proton ATPase subunit G



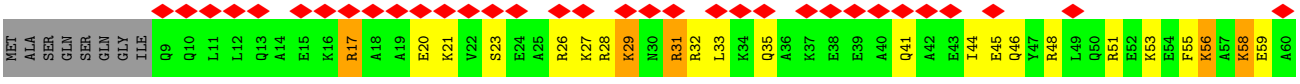


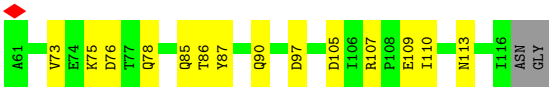
• Molecule 7: V-type proton ATPase subunit G





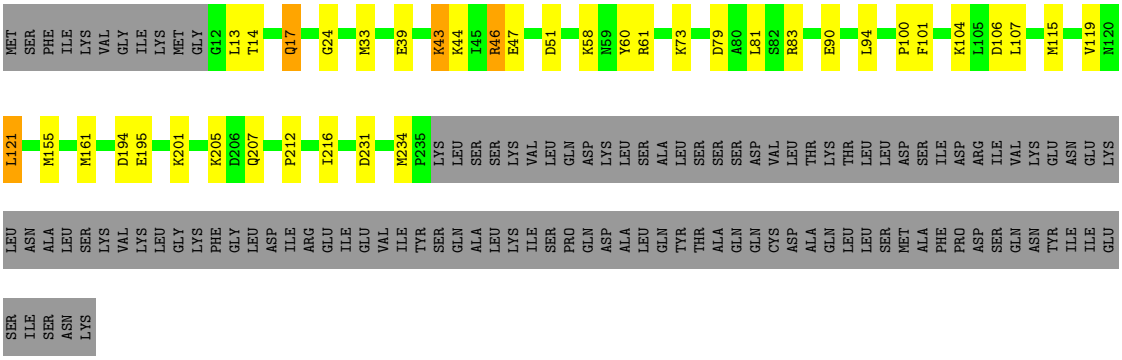
• Molecule 7: V-type proton ATPase subunit G





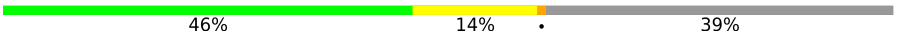
• Molecule 8: Bacterial effector protein SidK

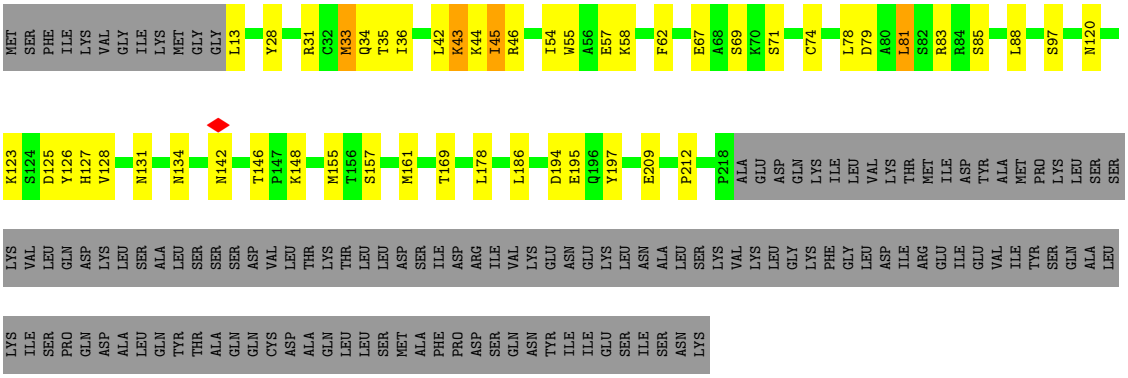
Chain Q:



• Molecule 8: Bacterial effector protein SidK

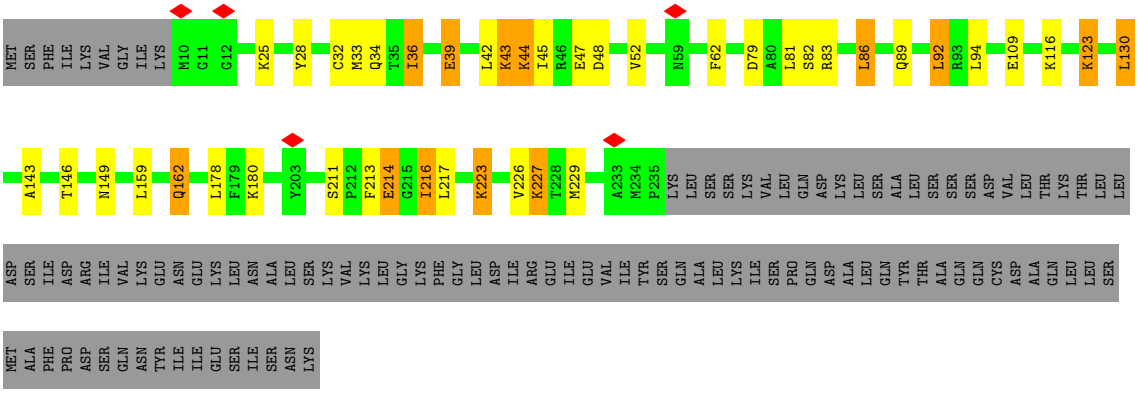
Chain R:





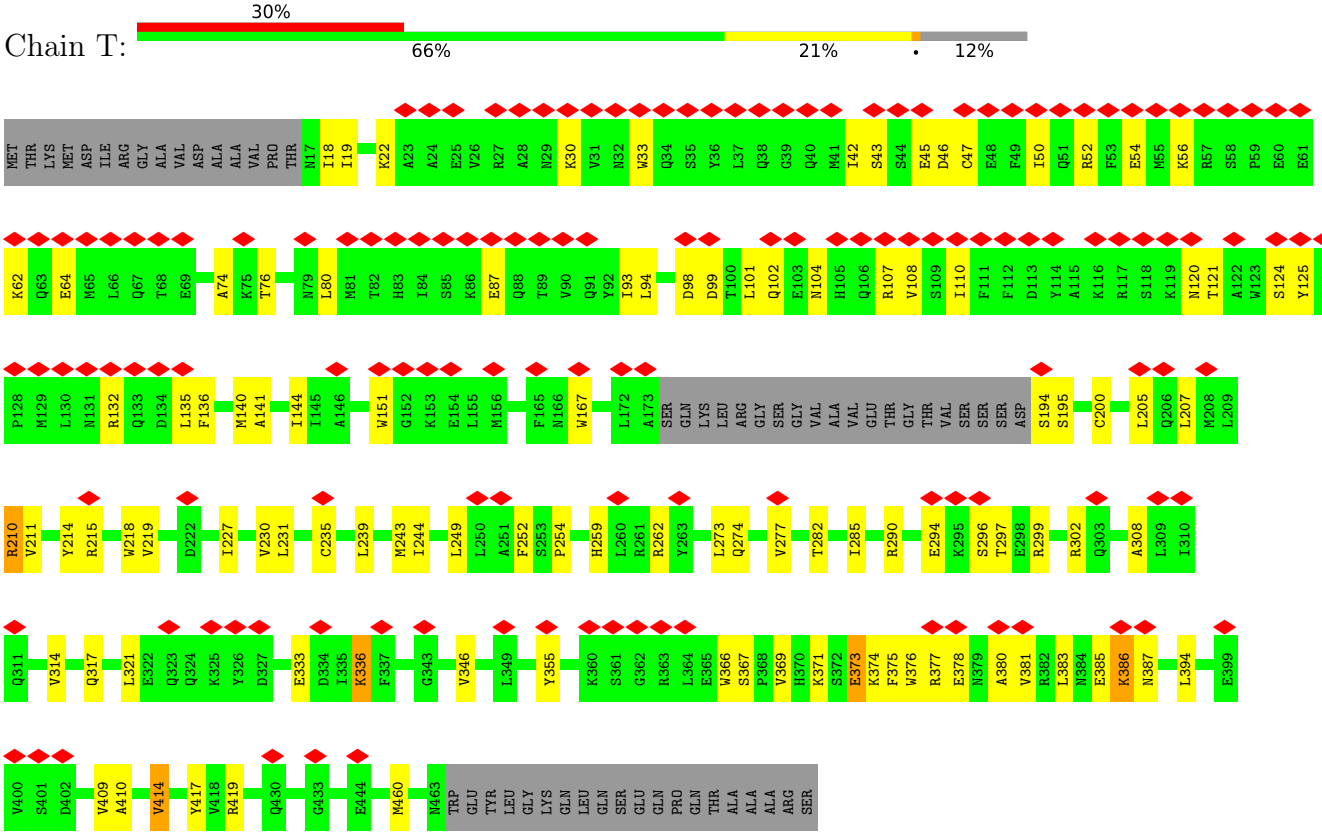
• Molecule 8: Bacterial effector protein SidK

Chain S:



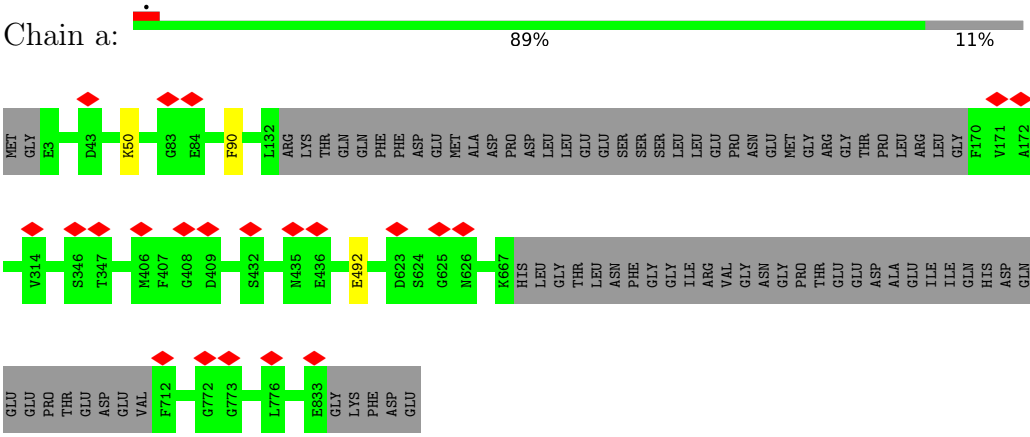
• Molecule 9: V-type proton ATPase subunit H

Chain T:



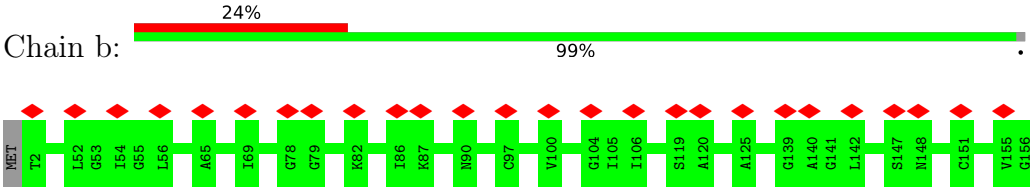
• Molecule 10: V-type proton ATPase subunit a

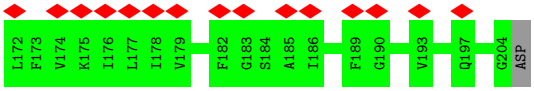
Chain a:



• Molecule 11: V-type proton ATPase 21 kDa proteolipid subunit isoform 1

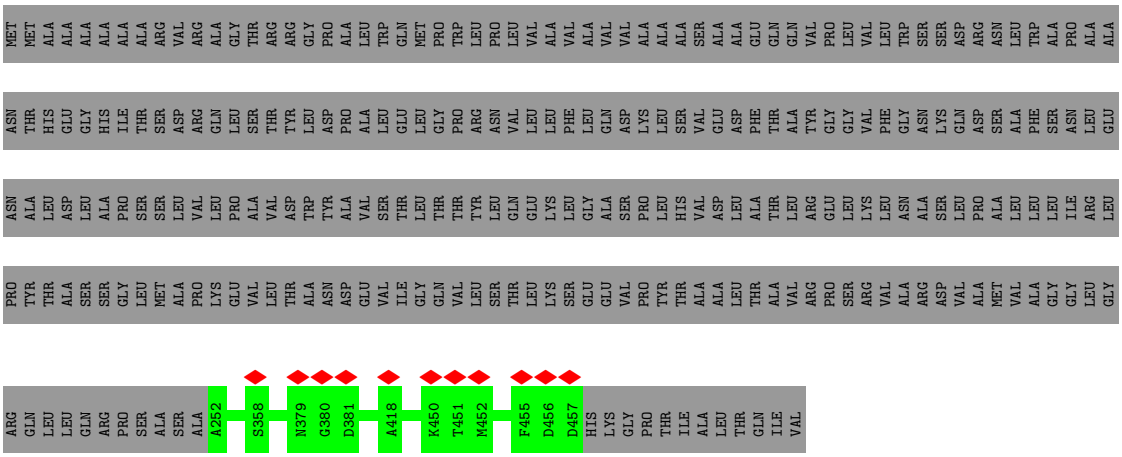
Chain b:





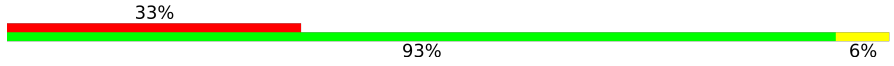
• Molecule 12: ATPase H+ transporting accessory protein 1

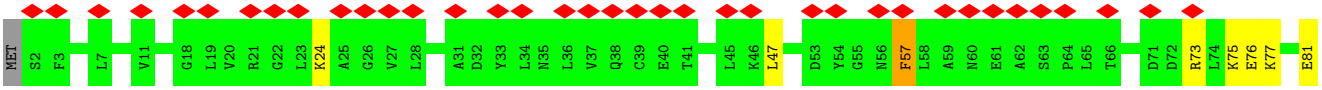
Chain c:

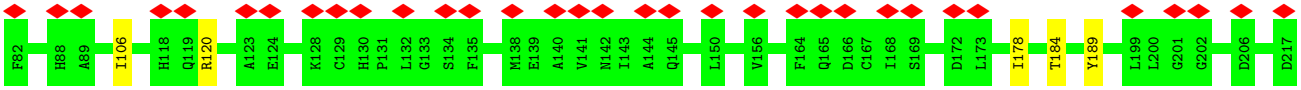


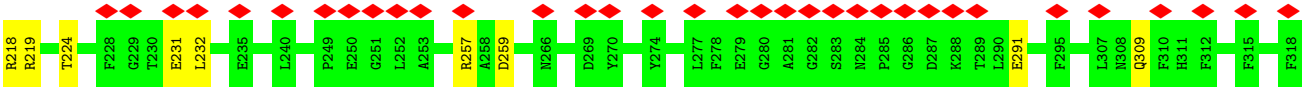
• Molecule 13: V-type proton ATPase subunit

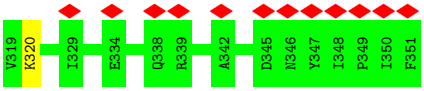
Chain d:





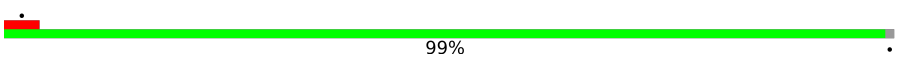


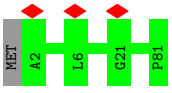




• Molecule 14: V-type proton ATPase subunit

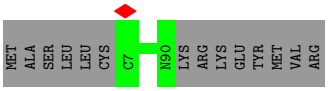
Chain e:





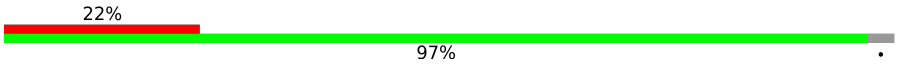
• Molecule 15: Ribonuclease kappa

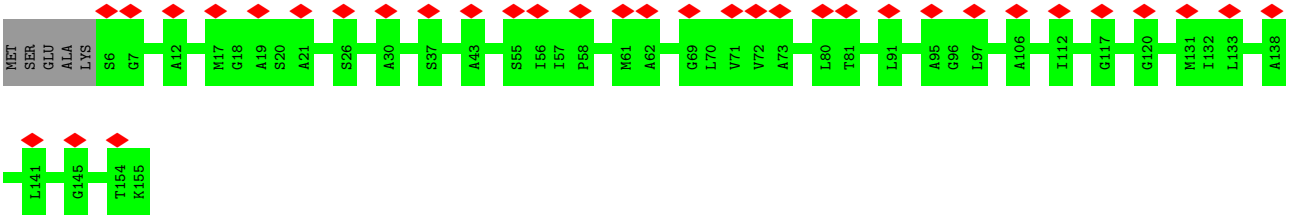
Chain f:



• Molecule 16: V-type proton ATPase proteolipid subunit

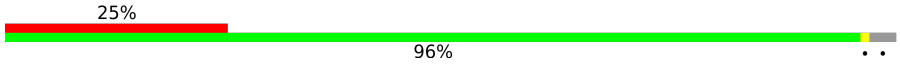
Chain g:

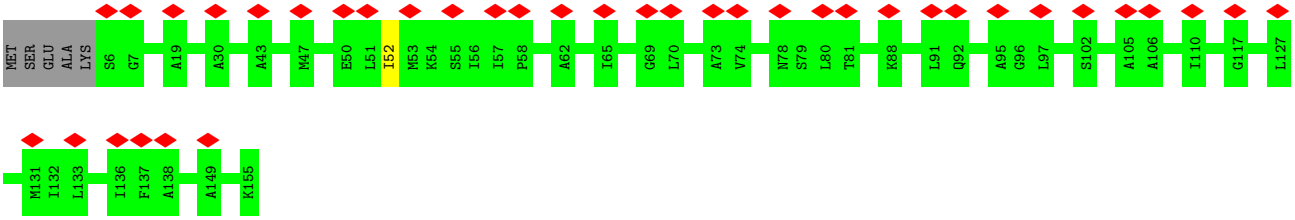




• Molecule 16: V-type proton ATPase proteolipid subunit

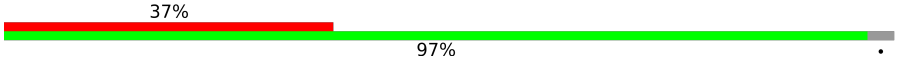
Chain h:

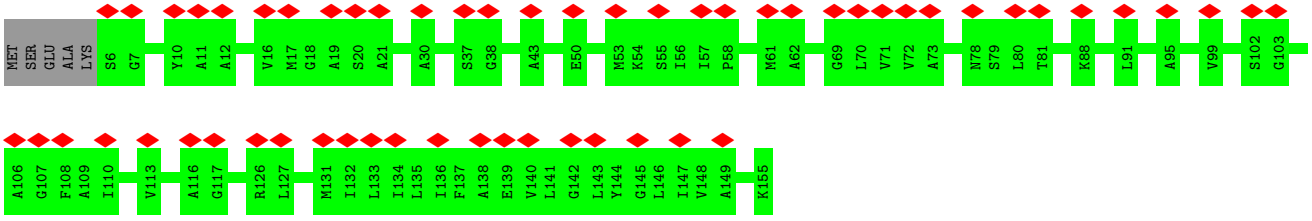




• Molecule 16: V-type proton ATPase proteolipid subunit

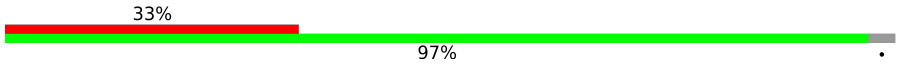
Chain i:

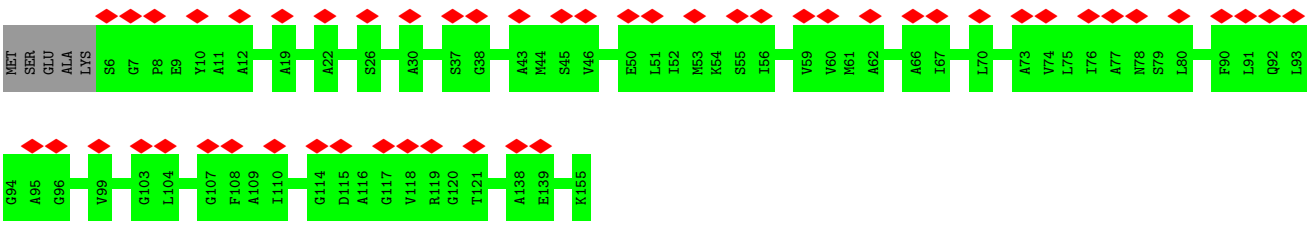




• Molecule 16: V-type proton ATPase proteolipid subunit

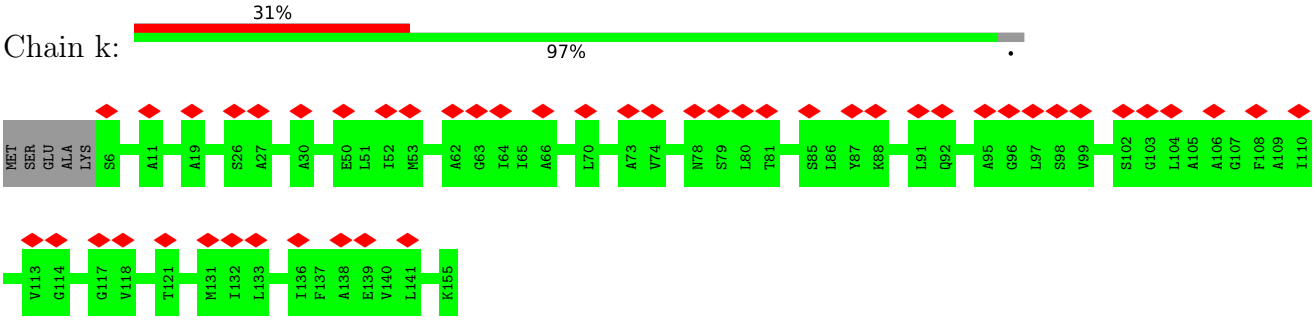
Chain j:





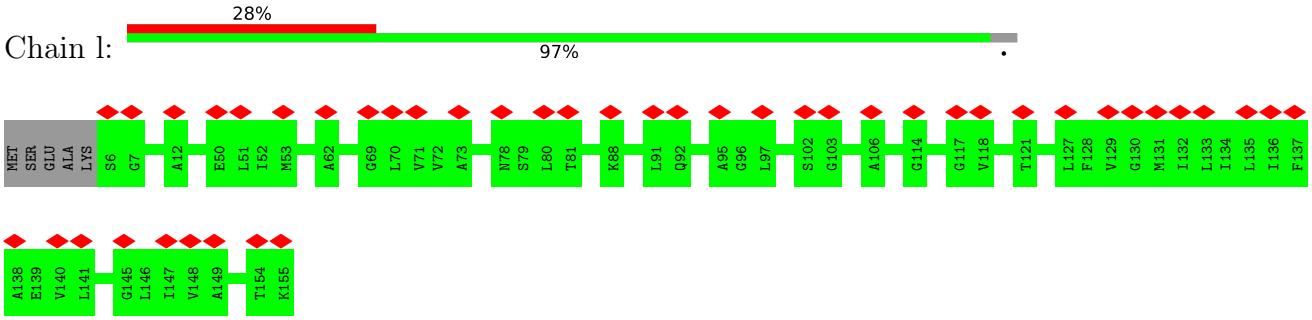
• Molecule 16: V-type proton ATPase proteolipid subunit

Chain k:



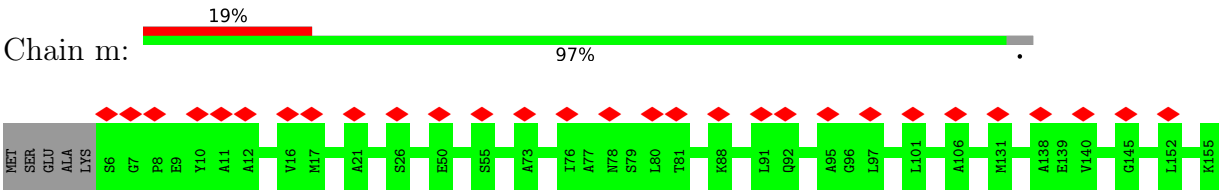
• Molecule 16: V-type proton ATPase proteolipid subunit

Chain l:



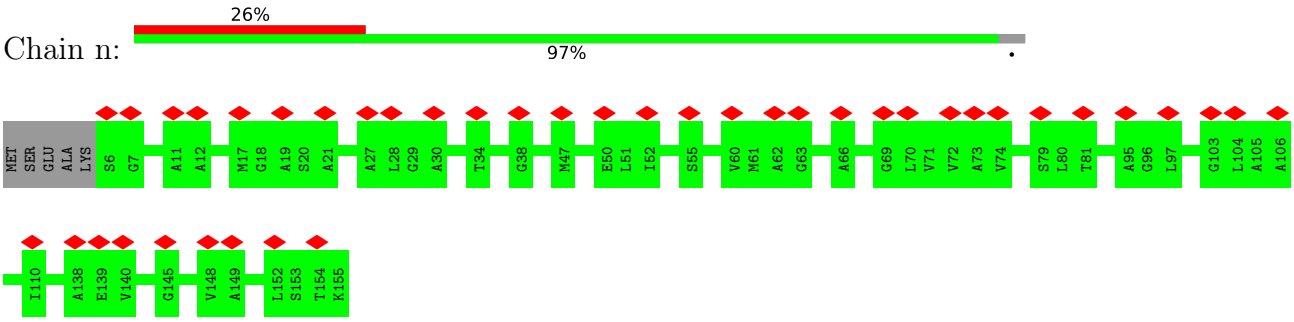
• Molecule 16: V-type proton ATPase proteolipid subunit

Chain m:



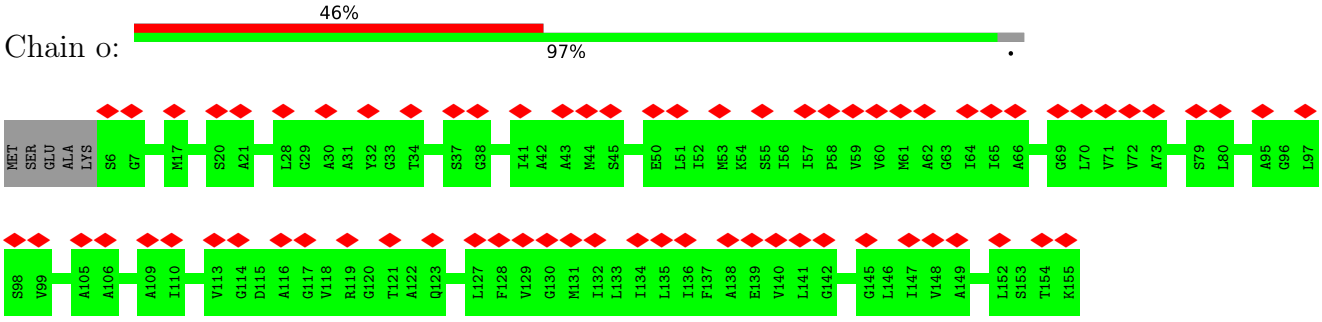
• Molecule 16: V-type proton ATPase proteolipid subunit

Chain n:



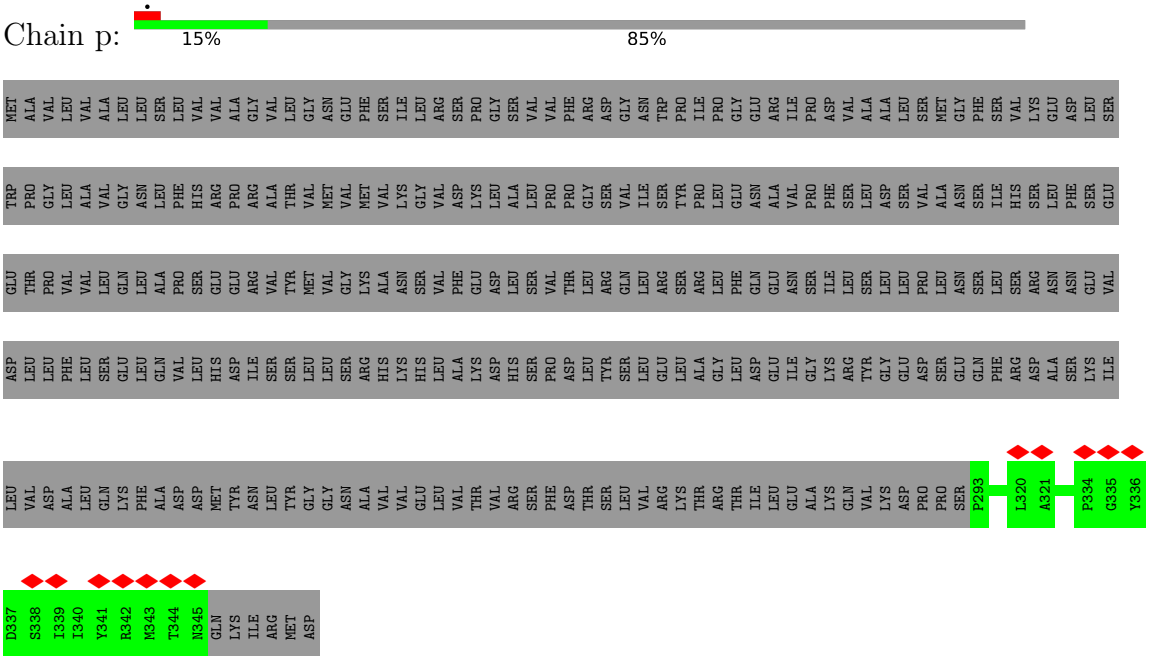
• Molecule 16: V-type proton ATPase proteolipid subunit

Chain o:



• Molecule 17: ATPase H(+)-transporting lysosomal accessory protein 2

Chain p:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	14746	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	100.00	Depositor
Maximum defocus (nm)	3911.445	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.390	Depositor
Minimum map value	-0.440	Depositor
Average map value	0.146	Depositor
Map value standard deviation	0.244	Depositor
Recommended contour level	0.6	Depositor
Map size (Å)	184.88861, 215.4487, 307.129	wwPDB
Map dimensions	121, 141, 201	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.528005, 1.528005, 1.528005	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 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	A	0.53	0/4757	0.80	0/6446
1	B	0.57	0/4757	0.80	0/6446
1	C	0.56	0/4668	0.80	0/6324
2	D	0.57	0/3662	0.81	0/4961
2	E	0.55	0/3644	0.81	0/4939
2	F	0.55	0/3644	0.76	0/4939
3	G	0.49	0/2989	0.75	0/4038
4	H	0.51	0/1735	0.76	0/2321
5	I	0.39	0/1427	0.57	0/1948
5	J	0.50	0/1790	0.74	0/2396
5	K	0.54	0/1783	0.78	0/2386
6	L	0.54	0/879	0.82	0/1186
7	M	0.39	0/678	0.49	0/933
7	N	0.41	0/914	0.71	0/1218
7	O	0.55	0/902	0.74	0/1202
8	Q	0.56	0/1858	0.75	0/2505
8	R	0.53	0/1717	0.76	0/2315
8	S	0.54	0/1870	0.72	0/2520
9	T	0.43	0/3576	0.68	0/4818
10	a	0.27	0/3704	0.42	0/5155
11	b	0.24	0/988	0.38	0/1366
12	c	0.25	0/1015	0.48	0/1411
13	d	0.40	0/2901	0.66	0/3930
14	e	0.24	0/393	0.37	0/545
15	f	0.26	0/411	0.35	0/569
16	g	0.25	0/728	0.37	0/1005
16	h	0.26	0/728	0.38	0/1005
16	i	0.26	0/728	0.39	0/1005
16	j	0.25	0/728	0.37	0/1005
16	k	0.25	0/728	0.37	0/1005
16	l	0.25	0/728	0.37	0/1005
16	m	0.25	0/728	0.37	0/1005

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
16	n	0.25	0/728	0.37	0/1005
16	o	0.25	0/728	0.38	0/1005
17	p	0.23	0/263	0.38	0/366
All	All	0.48	0/63477	0.70	0/86228

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4661	0	4653	72	0
1	B	4661	0	4653	69	0
1	C	4577	0	4577	76	0
2	D	3590	0	3581	53	0
2	E	3572	0	3555	54	0
2	F	3572	0	3555	47	0
3	G	2935	0	2970	77	0
4	H	1717	0	1822	30	0
5	I	1416	0	1167	24	0
5	J	1773	0	1855	27	0
5	K	1766	0	1846	23	0
6	L	865	0	872	20	0
7	M	673	0	476	4	0
7	N	906	0	913	18	0
7	O	894	0	899	15	0
8	Q	1824	0	1835	15	0
8	R	1685	0	1691	19	0
8	S	1836	0	1847	19	0
9	T	3510	0	3493	56	0
10	a	3707	0	1627	0	0
11	b	989	0	489	0	0
12	c	1016	0	457	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
13	d	2835	0	2770	0	0
14	e	394	0	167	0	0
15	f	412	0	190	0	0
16	g	729	0	388	0	0
16	h	729	0	388	0	0
16	i	729	0	388	0	0
16	j	729	0	388	0	0
16	k	729	0	388	0	0
16	l	729	0	388	0	0
16	m	729	0	388	0	0
16	n	729	0	388	0	0
16	o	729	0	388	0	0
17	p	264	0	116	0	0
18	B	27	0	12	1	0
All	All	62638	0	55580	654	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 (654) 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:G:343:ASP:HB2	3:G:346:ALA:HB3	1.60	0.82
9:T:43:SER:H	9:T:80:LEU:HD13	1.48	0.79
2:D:168:ILE:HG22	2:D:170:PRO:HD2	1.65	0.78
1:A:91:GLY:HA3	1:A:206:VAL:HG22	1.66	0.77
1:C:350:SER:HB3	1:C:353:ARG:HB2	1.69	0.74
2:D:374:ASP:HB2	2:D:387:ASN:HB2	1.70	0.73
9:T:19:ILE:HD12	9:T:200:CYS:HB2	1.69	0.73
2:E:121:MET:HE3	2:E:275:THR:HG23	1.70	0.72
1:C:389:ALA:HA	1:C:404:VAL:HG12	1.70	0.72
1:A:328:TYR:HA	1:A:331:ILE:HG22	1.71	0.72
1:C:511:VAL:HG21	1:C:548:TYR:HB2	1.71	0.72
5:I:120:VAL:HG12	5:I:181:VAL:HG21	1.72	0.71
1:B:46:GLY:HA2	1:B:77:ASP:HB3	1.71	0.71
3:G:8:SER:HB3	3:G:370:VAL:HB	1.71	0.71
2:E:451:LYS:HD2	2:E:480:ILE:HD11	1.73	0.71
1:C:499:ALA:O	4:H:100:ASN:ND2	2.24	0.70
4:H:31:ASN:OD1	4:H:34:LYS:NZ	2.25	0.70
3:G:28:LYS:HG3	3:G:33:ALA:HB3	1.72	0.70
5:I:118:GLY:HA3	7:M:106:ILE:HD13	1.72	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:56:ARG:NH2	1:A:57:LEU:O	2.25	0.69
3:G:276:PHE:HA	3:G:279:LEU:HD23	1.74	0.69
9:T:45:GLU:HB2	9:T:76:THR:HG21	1.74	0.69
9:T:87:GLU:HB3	9:T:135:LEU:HD11	1.73	0.69
4:H:93:LYS:HB2	4:H:112:TYR:HD2	1.58	0.68
9:T:373:GLU:HA	9:T:376:TRP:HD1	1.56	0.68
1:A:241:VAL:HG23	1:A:461:LEU:HD21	1.75	0.68
5:I:138:LYS:O	5:I:141:PHE:HB3	1.93	0.68
2:D:490:PRO:HG2	2:D:493:MET:HB2	1.74	0.67
9:T:99:ASP:OD1	9:T:102:GLN:NE2	2.28	0.66
3:G:111:LYS:NZ	3:G:289:GLU:OE1	2.29	0.66
2:E:188:ALA:H	2:E:191:LEU:HD12	1.58	0.66
2:F:185:ILE:HA	2:F:371:ILE:HB	1.77	0.66
2:E:315:ARG:HG3	2:E:358:PRO:HD3	1.78	0.66
4:H:66:ALA:HA	4:H:69:LEU:HD12	1.77	0.66
2:F:282:GLN:HA	5:K:224:PHE:HB3	1.78	0.66
3:G:187:VAL:HG22	3:G:248:VAL:HG22	1.78	0.65
1:B:338:ARG:HD3	1:B:404:VAL:HG23	1.78	0.65
3:G:9:ALA:HB3	3:G:317:GLN:HB3	1.79	0.65
1:A:152:ILE:HD13	1:A:167:MET:HB3	1.77	0.65
8:R:97:SER:OG	8:R:134:ASN:ND2	2.29	0.64
1:B:25:SER:HA	2:E:82:GLU:HG2	1.80	0.64
3:G:297:VAL:HG13	3:G:301:ARG:NH1	2.12	0.64
1:C:522:GLN:HG3	1:C:529:ASP:HB3	1.79	0.64
2:D:47:VAL:HG13	2:D:52:VAL:HG22	1.80	0.64
3:G:139:ARG:HD3	3:G:279:LEU:HB2	1.80	0.64
1:C:20:TYR:HB2	1:C:76:GLY:HA2	1.80	0.63
4:H:80:SER:HB2	6:L:18:THR:HG21	1.81	0.63
1:B:215:ARG:HB2	1:B:338:ARG:HH12	1.64	0.62
2:D:172:ASP:O	2:D:176:SER:HB3	1.99	0.62
2:D:430:LYS:HB2	2:D:438:LEU:HD11	1.82	0.62
3:G:297:VAL:O	3:G:301:ARG:HG2	2.00	0.62
1:A:56:ARG:HB3	1:A:63:THR:HB	1.81	0.62
5:K:53:ILE:HD11	7:O:44:ILE:HG23	1.80	0.62
3:G:161:LEU:HG	3:G:219:ASP:HB2	1.82	0.62
6:L:103:ASP:HB3	6:L:106:LEU:HB3	1.80	0.62
1:A:234:LEU:HD22	1:A:433:TRP:CD1	2.35	0.61
3:G:58:LEU:HD23	3:G:61:LEU:HD12	1.82	0.61
5:I:182:GLU:OE2	5:I:191:LYS:HB2	2.01	0.61
2:D:227:ALA:HB1	2:D:230:VAL:HG21	1.83	0.61
3:G:174:ASP:HB3	3:G:216:LEU:HD22	1.82	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:L:15:ASP:OD1	6:L:16:THR:N	2.33	0.60
9:T:380:ALA:HA	9:T:383:LEU:HD12	1.83	0.60
3:G:216:LEU:HD11	3:G:224:LEU:HD23	1.83	0.60
8:S:213:PHE:HB2	8:S:217:LEU:HD21	1.84	0.60
3:G:297:VAL:HG13	3:G:301:ARG:CZ	2.32	0.60
5:J:8:VAL:O	5:J:11:GLN:NE2	2.34	0.60
8:R:125:ASP:HA	8:R:128:VAL:HG12	1.85	0.59
1:B:232:ARG:HG2	1:B:537:THR:HG23	1.84	0.59
9:T:46:ASP:HB3	9:T:76:THR:HB	1.85	0.59
4:H:69:LEU:HD13	6:L:15:ASP:HB2	1.85	0.59
2:D:172:ASP:HB3	2:D:467:VAL:HG23	1.84	0.59
5:J:10:LYS:O	5:J:14:HIS:ND1	2.33	0.59
3:G:54:LEU:HD11	3:G:119:LYS:HA	1.85	0.58
3:G:161:LEU:O	3:G:249:ARG:NH2	2.36	0.58
1:C:297:GLU:HG3	1:C:302:VAL:HG22	1.85	0.58
3:G:5:TRP:HZ3	3:G:323:PRO:HG3	1.67	0.58
7:N:7:GLY:N	7:N:9:GLN:OE1	2.36	0.58
8:S:44:LYS:HG3	8:S:109:GLU:HG2	1.85	0.58
9:T:282:THR:HA	9:T:285:ILE:HG22	1.86	0.58
1:B:518:ASP:HA	1:B:585:LYS:HD3	1.86	0.58
9:T:56:LYS:O	9:T:62:LYS:NZ	2.27	0.58
1:A:168:LEU:HD12	1:A:169:PRO:HD2	1.85	0.58
1:C:160:SER:O	1:C:161:LEU:HB2	2.02	0.58
1:B:232:ARG:HH11	1:B:536:LYS:HE2	1.68	0.57
5:J:90:LEU:HD11	7:N:85:GLN:HG3	1.86	0.57
2:E:165:GLN:NE2	2:E:172:ASP:OD2	2.37	0.57
3:G:6:LEU:HD22	3:G:302:VAL:HG21	1.85	0.57
5:J:53:ILE:HD11	7:N:44:ILE:HG23	1.87	0.57
1:A:317:ASN:HB3	2:D:330:GLU:HB2	1.87	0.57
1:B:44:ARG:HB2	1:B:80:LEU:HB3	1.86	0.57
2:E:357:HIS:CG	2:E:358:PRO:HD2	2.39	0.57
1:A:291:PHE:CD2	1:A:311:LEU:HD11	2.40	0.56
3:G:241:ALA:HB1	3:G:246:PHE:HB2	1.86	0.56
5:J:53:ILE:HG12	7:N:48:ARG:HE	1.70	0.56
9:T:167:TRP:HE1	9:T:205:LEU:HD13	1.71	0.56
1:A:526:THR:O	1:A:530:ARG:HG3	2.05	0.56
1:C:397:ASN:HB3	8:S:28:TYR:CG	2.40	0.56
2:D:322:TYR:HD2	2:D:362:LEU:HD12	1.70	0.56
5:I:147:ALA:HA	5:I:150:LYS:HG2	1.87	0.56
1:A:39:MET:HG3	1:A:40:TYR:CD2	2.41	0.56
1:C:536:LYS:HD2	1:C:589:PRO:HG3	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:124:ILE:HA	3:G:127:LYS:HE3	1.87	0.56
4:H:31:ASN:HA	4:H:34:LYS:NZ	2.20	0.56
8:R:33:MET:HA	8:R:36:ILE:HG22	1.88	0.56
2:F:312:PRO:HD2	4:H:205:ILE:HD11	1.88	0.56
5:K:53:ILE:HA	7:O:48:ARG:HH11	1.71	0.56
1:A:398:PRO:HB2	1:A:400:ARG:HD3	1.87	0.56
3:G:5:TRP:CZ3	3:G:323:PRO:HG3	2.41	0.56
1:A:273:ILE:HG12	1:A:310:ALA:HB3	1.88	0.55
6:L:40:GLU:HG2	6:L:42:ASP:H	1.71	0.55
9:T:132:ARG:HB3	9:T:135:LEU:HD12	1.88	0.55
1:C:77:ASP:OD1	7:O:113:ASN:ND2	2.31	0.55
2:E:71:PRO:HB3	2:E:103:LYS:HB3	1.89	0.55
9:T:33:TRP:HB3	9:T:42:ILE:HG21	1.89	0.55
2:E:392:LEU:HD11	2:E:394:ARG:HE	1.72	0.55
2:F:80:VAL:HG22	2:F:90:VAL:HG22	1.87	0.55
9:T:33:TRP:CZ2	9:T:93:ILE:HA	2.42	0.55
9:T:108:VAL:O	9:T:110:ILE:N	2.39	0.55
5:J:9:GLN:HB3	5:J:13:LYS:HE2	1.87	0.55
4:H:93:LYS:HB2	4:H:112:TYR:CD2	2.41	0.55
8:Q:194:ASP:OD1	8:Q:195:GLU:N	2.40	0.54
2:F:177:ILE:HG12	2:F:183:ILE:HG13	1.89	0.54
1:C:466:ASP:HA	1:C:470:THR:HA	1.89	0.54
2:D:409:HIS:HA	2:D:471:LEU:HD21	1.89	0.54
2:E:332:ALA:HA	2:E:342:ILE:HB	1.89	0.54
2:E:351:PRO:HG2	2:E:357:HIS:CE1	2.42	0.54
2:F:334:ARG:HB3	2:F:341:SER:HB2	1.90	0.54
3:G:240:LYS:O	3:G:243:GLU:HG3	2.08	0.54
8:S:159:LEU:HA	8:S:178:LEU:HD13	1.89	0.54
1:B:540:MET:HG2	1:B:584:MET:HE2	1.90	0.54
9:T:47:CYS:HA	9:T:50:ILE:HB	1.90	0.54
2:D:235:ALA:HB1	2:D:255:LEU:HD21	1.90	0.54
4:H:114:GLU:HG3	4:H:116:THR:HG23	1.89	0.54
1:A:84:LYS:HD2	1:A:87:SER:HB2	1.89	0.54
1:C:271:VAL:HB	1:C:344:VAL:HG22	1.90	0.54
3:G:310:TYR:HB2	3:G:314:VAL:HG11	1.88	0.54
5:J:148:VAL:HG21	5:J:167:ILE:HD11	1.89	0.54
1:B:508:THR:HG22	1:B:548:TYR:HE1	1.74	0.53
5:J:38:PHE:CD2	7:N:36:ALA:HB2	2.43	0.53
2:F:38:ARG:HD3	2:F:109:THR:HA	1.90	0.53
2:F:384:PRO:HB2	2:F:386:ILE:HG13	1.89	0.53
3:G:298:LYS:NZ	3:G:373:LYS:O	2.34	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:389:ALA:HB2	1:C:406:ILE:HG12	1.90	0.53
2:E:169:SER:N	2:E:459:GLN:OE1	2.38	0.53
2:F:294:MET:HB2	2:F:348:LEU:HG	1.90	0.53
9:T:30:LYS:NZ	9:T:54:GLU:OE2	2.41	0.53
2:F:56:HIS:HA	2:F:86:THR:HB	1.90	0.53
5:K:125:TYR:HE1	5:K:155:TYR:HA	1.73	0.53
1:A:100:ASP:HB3	1:A:104:ARG:H	1.73	0.53
1:C:441:GLN:HG2	2:F:389:LEU:HD11	1.91	0.53
1:A:280:ARG:HD3	2:D:368:GLU:HG3	1.91	0.53
1:A:546:ALA:HB3	1:A:605:LEU:HD11	1.91	0.53
2:D:374:ASP:HB3	2:D:377:LEU:HB2	1.91	0.53
2:F:142:GLU:O	5:K:209:PRO:HB3	2.08	0.53
1:C:161:LEU:HD11	1:C:298:VAL:HG11	1.90	0.53
2:D:383:TYR:HE2	2:D:461:PRO:HA	1.73	0.53
1:B:220:LYS:NZ	1:B:389:ALA:O	2.42	0.53
2:F:55:ASP:OD1	2:F:56:HIS:N	2.42	0.53
5:I:121:LEU:HG	5:I:125:TYR:CE2	2.44	0.53
5:I:211:VAL:HG13	5:I:215:LEU:HD12	1.89	0.53
1:C:479:ALA:HB2	1:C:545:ILE:HD11	1.90	0.53
2:D:137:PRO:HG3	5:I:85:ARG:HA	1.91	0.53
2:D:415:GLN:HB2	2:D:488:ARG:HB2	1.91	0.53
5:I:148:VAL:HG21	5:I:167:ILE:HD11	1.91	0.53
5:J:88:ASP:HA	5:J:91:ILE:HD12	1.91	0.52
1:C:23:GLY:HA2	2:F:83:VAL:HG12	1.91	0.52
3:G:58:LEU:HB3	3:G:301:ARG:CZ	2.40	0.52
3:G:57:GLU:HA	3:G:60:LYS:HE2	1.92	0.52
9:T:231:LEU:HD13	9:T:243:MET:HB2	1.91	0.52
2:F:168:ILE:HA	2:F:459:GLN:OE1	2.10	0.52
1:B:352:SER:HB2	1:B:411:SER:H	1.73	0.52
4:H:65:ALA:O	4:H:68:SER:OG	2.24	0.52
1:A:152:ILE:HD12	1:A:165:ARG:HB3	1.92	0.52
9:T:230:VAL:HG12	9:T:239:LEU:HD21	1.92	0.52
1:A:369:PRO:HB2	1:A:373:GLY:HA2	1.92	0.52
1:C:231:GLN:O	1:C:235:ASP:HB2	2.09	0.52
3:G:12:GLU:HG2	3:G:314:VAL:HG23	1.92	0.52
5:I:145:LYS:HD3	5:I:167:ILE:HD12	1.92	0.52
3:G:58:LEU:O	3:G:301:ARG:NE	2.42	0.52
1:B:466:ASP:HA	1:B:470:THR:HA	1.92	0.51
2:E:368:GLU:HA	2:E:394:ARG:HD2	1.91	0.51
2:F:450:GLN:HG3	2:F:454:ARG:HH11	1.73	0.51
3:G:28:LYS:HD3	3:G:28:LYS:H	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:204:LEU:HD22	3:G:240:LYS:HB3	1.91	0.51
2:F:164:ILE:HD11	2:F:179:ARG:HA	1.91	0.51
5:K:53:ILE:HG12	7:O:48:ARG:HE	1.75	0.51
2:E:350:MET:SD	2:E:360:PRO:HB3	2.49	0.51
7:N:13:GLN:O	7:N:17:ARG:HG2	2.09	0.51
1:C:535:TYR:HE1	1:C:597:ILE:HG12	1.75	0.51
3:G:343:ASP:OD1	3:G:344:SER:N	2.43	0.51
7:O:28:ARG:O	7:O:32:ARG:HG2	2.10	0.51
9:T:52:ARG:HD2	9:T:64:GLU:HG2	1.91	0.51
9:T:218:TRP:HE1	9:T:227:ILE:HD11	1.76	0.51
9:T:274:GLN:HB2	9:T:317:GLN:HE21	1.76	0.51
1:B:152:ILE:HD13	1:B:167:MET:HB3	1.93	0.51
1:C:74:SER:HA	2:F:61:GLN:HA	1.93	0.51
9:T:296:SER:HA	9:T:302:ARG:HD2	1.92	0.51
1:A:88:VAL:HG12	1:A:103:GLN:HG3	1.93	0.51
1:B:281:VAL:HA	1:B:315:THR:HG21	1.92	0.51
2:F:181:GLN:NE2	2:F:393:SER:OG	2.41	0.51
9:T:273:LEU:HD11	9:T:321:LEU:HD11	1.93	0.51
1:A:24:VAL:HG13	1:A:29:VAL:HG22	1.92	0.51
1:A:102:ILE:HG13	1:A:104:ARG:HG3	1.92	0.51
2:D:432:VAL:HG23	2:D:433:VAL:HG13	1.91	0.51
3:G:216:LEU:HD23	3:G:226:ASN:HB2	1.92	0.51
4:H:120:GLU:HG2	4:H:121:LEU:HG	1.93	0.51
9:T:101:LEU:O	9:T:104:ASN:ND2	2.39	0.51
1:B:165:ARG:HG3	1:B:340:MET:HG2	1.91	0.51
1:C:489:LEU:O	1:C:492:ILE:HG22	2.11	0.51
2:E:165:GLN:OE1	2:E:467:VAL:N	2.43	0.50
3:G:61:LEU:O	3:G:65:VAL:HG23	2.11	0.50
6:L:67:ASN:HB2	6:L:70:ILE:HD12	1.93	0.50
8:R:67:GLU:O	8:R:71:SER:N	2.42	0.50
2:D:430:LYS:HE2	2:D:435:GLU:HB3	1.92	0.50
2:F:53:VAL:HG22	2:F:89:ILE:HG12	1.94	0.50
5:I:120:VAL:O	5:I:124:LEU:HG	2.12	0.50
1:A:178:TYR:HB3	1:A:193:GLU:HB2	1.93	0.50
1:C:350:SER:CB	1:C:353:ARG:HB2	2.41	0.50
1:C:589:PRO:HB3	1:C:597:ILE:HD13	1.92	0.50
2:D:127:ASN:ND2	2:D:131:LYS:HB3	2.26	0.50
4:H:94:ILE:HG21	6:L:63:ILE:HD11	1.93	0.50
8:Q:161:MET:HG3	8:Q:216:ILE:HG12	1.93	0.50
5:J:12:ILE:HD12	7:N:10:GLN:HG3	1.93	0.50
1:B:316:SER:HB3	2:E:322:TYR:HE2	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:118:LEU:HD13	3:G:304:VAL:HG22	1.94	0.50
8:R:209:GLU:HB2	8:R:212:PRO:HG3	1.94	0.50
1:A:105:PRO:HB2	1:A:108:ASP:HB2	1.92	0.50
1:A:135:PHE:CE1	1:A:154:GLY:HA3	2.47	0.50
2:E:379:ASN:O	2:E:381:GLN:NE2	2.44	0.50
3:G:5:TRP:CD1	3:G:373:LYS:HA	2.47	0.50
4:H:72:ALA:HA	4:H:130:GLN:HE22	1.76	0.50
8:S:94:LEU:HA	8:S:130:LEU:HD21	1.94	0.50
1:A:46:GLY:HA2	1:A:77:ASP:HB3	1.94	0.50
2:E:127:ASN:OD1	2:E:131:LYS:N	2.45	0.50
4:H:135:LYS:HG2	6:L:22:LEU:HB3	1.93	0.50
9:T:235:CYS:SG	9:T:239:LEU:HD22	2.52	0.50
2:E:37:PRO:HG2	5:J:126:GLN:HG3	1.93	0.49
2:E:228:MET:HA	2:E:256:ASN:HB3	1.93	0.49
9:T:141:ALA:HA	9:T:144:ILE:HD12	1.94	0.49
7:N:9:GLN:HA	7:N:12:LEU:HD12	1.94	0.49
1:B:132:LYS:HB3	1:B:184:ASN:HB3	1.94	0.49
2:E:125:VAL:HG13	2:E:253:LEU:HB2	1.95	0.49
2:F:262:THR:O	2:F:265:ARG:HB2	2.12	0.49
6:L:55:PHE:HB3	6:L:61:ILE:HG21	1.94	0.49
6:L:69:TYR:HB3	6:L:96:HIS:CD2	2.48	0.49
1:B:43:VAL:HG11	1:B:64:ILE:HD12	1.93	0.49
3:G:181:TYR:HB3	3:G:230:PHE:CE1	2.47	0.49
3:G:300:LEU:HB2	3:G:301:ARG:NH2	2.28	0.49
1:C:152:ILE:HB	1:C:398:PRO:HG2	1.95	0.49
8:R:120:ASN:HB3	8:R:123:LYS:NZ	2.28	0.49
1:A:39:MET:HG3	1:A:40:TYR:CE2	2.48	0.49
1:B:42:LEU:HD13	1:B:44:ARG:HH12	1.76	0.49
1:B:280:ARG:HB2	1:B:283:GLU:HG2	1.94	0.49
2:F:228:MET:HB3	2:F:265:ARG:HG2	1.94	0.49
2:F:438:LEU:HD13	2:F:446:LEU:HD11	1.94	0.49
1:A:25:SER:HA	2:D:82:GLU:HG2	1.95	0.49
2:E:192:PRO:O	2:E:196:ILE:HG12	2.12	0.49
3:G:164:ARG:NH1	3:G:168:GLU:OE1	2.42	0.49
1:B:243:GLY:HA2	1:B:404:VAL:O	2.12	0.49
5:J:223:LYS:H	5:J:223:LYS:HG2	1.46	0.49
8:Q:90:GLU:HG3	8:Q:121:LEU:HG	1.93	0.49
1:B:511:VAL:HG11	1:B:548:TYR:HB2	1.94	0.48
7:N:27:LYS:HB3	7:N:31:ARG:HH22	1.78	0.48
1:A:559:ALA:HA	1:A:564:LYS:HB3	1.95	0.48
1:C:37:ALA:HB1	1:C:54:ILE:HD13	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:389:LEU:HB2	2:E:420:TYR:HE2	1.78	0.48
1:A:30:THR:HA	1:A:62:ALA:O	2.13	0.48
1:B:431:VAL:HG13	1:B:455:SER:HB2	1.95	0.48
1:C:116:ILE:HG22	2:F:156:ASP:HB3	1.95	0.48
3:G:58:LEU:HB3	3:G:301:ARG:NE	2.28	0.48
8:Q:207:GLN:HG3	8:Q:212:PRO:HG3	1.95	0.48
9:T:290:ARG:O	9:T:294:GLU:CB	2.61	0.48
1:C:55:ILE:HG13	1:C:63:THR:HB	1.96	0.48
3:G:28:LYS:HE3	3:G:35:THR:HG23	1.96	0.48
1:A:574:MET:HG2	1:A:611:ALA:HB1	1.96	0.48
8:R:155:MET:HB2	8:R:178:LEU:HD11	1.96	0.48
3:G:329:LYS:H	3:G:329:LYS:HG3	1.47	0.48
9:T:94:LEU:HB3	9:T:140:MET:CE	2.44	0.48
9:T:121:THR:HB	9:T:125:TYR:HB3	1.95	0.48
1:B:397:ASN:HB3	8:R:28:TYR:CD1	2.49	0.47
1:C:190:VAL:HG21	1:C:202:LYS:HD3	1.95	0.47
2:D:315:ARG:HB2	2:D:358:PRO:HG3	1.94	0.47
6:L:67:ASN:ND2	6:L:91:ILE:HG23	2.29	0.47
6:L:69:TYR:HB3	6:L:96:HIS:HD2	1.79	0.47
8:R:43:LYS:HA	8:R:43:LYS:HD3	1.59	0.47
8:R:69:SER:HA	8:R:74:CYS:HB2	1.95	0.47
3:G:204:LEU:O	3:G:240:LYS:HG3	2.14	0.47
1:A:148:THR:HG22	8:Q:24:GLY:HA3	1.95	0.47
1:C:102:ILE:H	1:C:102:ILE:HG12	1.39	0.47
4:H:152:GLN:HG2	6:L:105:ILE:HG12	1.95	0.47
5:I:135:ARG:NH2	5:I:184:TYR:OH	2.47	0.47
5:K:184:TYR:HB3	5:K:188:ARG:HA	1.95	0.47
9:T:290:ARG:O	9:T:294:GLU:HB3	2.13	0.47
3:G:189:VAL:HG13	3:G:246:PHE:CE1	2.49	0.47
5:I:145:LYS:HZ2	5:I:167:ILE:HD12	1.79	0.47
1:A:395:LEU:HD21	8:Q:13:LEU:HD11	1.96	0.47
1:C:90:LEU:HA	1:C:94:ILE:HD11	1.97	0.47
2:D:170:PRO:O	2:D:174:MET:HB3	2.14	0.47
2:E:132:PRO:HG3	2:E:137:PRO:O	2.13	0.47
2:E:382:ILE:HG23	2:E:458:ASN:HB2	1.96	0.47
5:J:49:GLN:HB2	7:N:44:ILE:HG13	1.97	0.47
1:B:263:LEU:HD11	1:B:347:MET:SD	2.54	0.47
2:D:429:MET:O	2:D:433:VAL:HG22	2.14	0.47
9:T:207:LEU:HA	9:T:210:ARG:HE	1.79	0.47
1:A:226:PRO:HG3	1:A:461:LEU:HD22	1.97	0.47
1:B:383:ALA:HB1	2:F:258:ALA:HB1	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:147:ILE:HD11	1:C:168:LEU:HD13	1.95	0.47
1:C:164:HIS:CE1	1:C:336:TYR:HE2	2.33	0.47
1:C:174:GLY:HA3	1:C:194:LEU:HB3	1.97	0.47
4:H:179:ARG:HG2	4:H:182:ARG:HH11	1.80	0.47
5:K:57:TYR:CD2	7:O:51:ARG:HB3	2.50	0.47
8:S:36:ILE:HG13	8:S:92:LEU:HA	1.97	0.47
8:S:39:GLU:H	8:S:39:GLU:HG2	1.48	0.47
1:B:528:TYR:HB3	1:B:586:PHE:HA	1.96	0.47
1:B:577:ILE:CG2	1:B:608:VAL:HG22	2.44	0.47
2:D:446:LEU:O	2:D:450:GLN:OE1	2.32	0.47
2:F:222:ALA:HB3	2:F:287:VAL:HG22	1.97	0.47
3:G:275:GLN:O	3:G:279:LEU:HB3	2.15	0.47
1:C:393:LYS:HB2	1:C:393:LYS:HE3	1.69	0.47
2:E:459:GLN:HG2	2:E:465:ARG:CZ	2.45	0.47
5:K:33:LYS:HB2	5:K:33:LYS:HE3	1.64	0.47
1:A:338:ARG:HD3	1:A:404:VAL:HG23	1.96	0.46
2:F:409:HIS:HA	2:F:471:LEU:HD21	1.98	0.46
3:G:119:LYS:NZ	3:G:123:GLU:OE2	2.41	0.46
8:Q:46:ARG:HA	8:Q:46:ARG:HD2	1.68	0.46
8:Q:205:LYS:HA	8:Q:205:LYS:HD3	1.68	0.46
8:R:55:TRP:CH2	8:R:74:CYS:HA	2.50	0.46
9:T:151:TRP:HZ2	9:T:210:ARG:HB2	1.79	0.46
5:J:53:ILE:HA	7:N:48:ARG:HH11	1.81	0.46
9:T:333:GLU:O	9:T:336:LYS:HG3	2.14	0.46
2:D:58:LYS:H	2:D:58:LYS:HG2	1.59	0.46
2:E:479:ARG:HA	2:E:479:ARG:HD2	1.71	0.46
1:B:444:HIS:CE1	1:B:450:TRP:HZ2	2.34	0.46
9:T:394:LEU:HD23	9:T:414:VAL:HG23	1.98	0.46
1:C:164:HIS:HE1	1:C:336:TYR:HE2	1.63	0.46
2:D:169:SER:HB3	2:D:470:SER:HB3	1.97	0.46
2:F:439:THR:HG23	2:F:442:ASP:H	1.81	0.46
9:T:355:TYR:HB2	9:T:369:VAL:HG21	1.97	0.46
1:B:389:ALA:HA	1:B:404:VAL:HB	1.97	0.46
5:K:139:GLN:H	5:K:139:GLN:HG3	1.55	0.46
8:S:211:SER:HB3	8:S:214:GLU:HB3	1.98	0.46
2:E:366:ILE:H	2:E:366:ILE:HG13	1.46	0.46
3:G:79:VAL:CG2	3:G:279:LEU:HD21	2.46	0.46
8:Q:106:ASP:OD1	8:Q:107:LEU:N	2.49	0.46
8:S:223:LYS:HA	8:S:223:LYS:HD3	1.60	0.46
1:A:276:GLY:HA2	1:A:349:ASN:HB2	1.98	0.46
1:B:356:GLU:HG3	1:B:359:ARG:HH11	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:507:ILE:HD11	1:B:555:VAL:HG21	1.97	0.46
1:C:104:ARG:HE	1:C:122:VAL:HG12	1.81	0.46
1:C:381:ARG:HD2	1:C:381:ARG:HA	1.71	0.46
1:A:86:LEU:HD11	1:A:102:ILE:HG22	1.98	0.45
1:C:173:ARG:HE	1:C:173:ARG:HB3	1.52	0.45
3:G:7:ILE:HA	3:G:370:VAL:O	2.16	0.45
5:I:125:TYR:HE2	7:M:108:PRO:HB2	1.81	0.45
7:O:31:ARG:HD3	7:O:31:ARG:HA	1.74	0.45
7:O:56:LYS:HE2	7:O:56:LYS:HB2	1.55	0.45
1:A:291:PHE:CE2	1:A:311:LEU:HD11	2.51	0.45
1:C:176:VAL:HA	1:C:194:LEU:HD23	1.98	0.45
3:G:16:GLN:HB3	3:G:317:GLN:HG2	1.97	0.45
1:B:465:TYR:O	1:B:469:PHE:N	2.47	0.45
2:E:229:GLY:N	2:E:256:ASN:O	2.48	0.45
9:T:386:LYS:HE2	9:T:386:LYS:HB2	1.68	0.45
2:D:154:PRO:HA	2:D:157:ARG:HG3	1.98	0.45
8:S:162:GLN:HE21	8:S:162:GLN:HB3	1.60	0.45
9:T:22:LYS:HG2	9:T:136:PHE:CD1	2.51	0.45
5:I:152:ILE:HD11	5:I:165:VAL:HB	1.97	0.45
5:J:191:LYS:HB2	5:J:191:LYS:HE2	1.53	0.45
2:F:152:ILE:HG21	2:F:157:ARG:HG3	1.98	0.45
3:G:65:VAL:HG21	3:G:297:VAL:HG21	1.98	0.45
4:H:81:THR:HA	4:H:84:ILE:HG12	1.98	0.45
7:N:10:GLN:HA	7:N:13:GLN:NE2	2.32	0.45
8:Q:100:PRO:HG2	8:Q:101:PHE:CE2	2.52	0.45
1:A:292:PRO:HG2	1:A:293:GLU:OE1	2.16	0.45
1:A:317:ASN:HD21	2:D:157:ARG:HH12	1.65	0.45
1:B:150:GLY:HA2	1:B:167:MET:HE2	1.97	0.45
1:C:212:ARG:H	1:C:212:ARG:HG2	1.67	0.45
1:C:341:GLY:HA3	1:C:400:ARG:HG3	1.99	0.45
2:E:177:ILE:HG12	2:E:183:ILE:HD12	1.97	0.45
1:A:159:ASN:OD1	1:A:162:ILE:N	2.40	0.45
1:A:393:LYS:HA	1:A:393:LYS:HD3	1.56	0.45
1:B:238:PHE:CZ	1:B:450:TRP:HA	2.52	0.45
2:D:39:VAL:HG13	5:I:192:VAL:HB	1.99	0.45
3:G:187:VAL:HG21	3:G:197:TRP:CZ2	2.52	0.45
2:D:71:PRO:HG3	2:D:103:LYS:HB2	1.98	0.45
3:G:7:ILE:HD12	3:G:321:LEU:HD22	1.98	0.45
8:S:42:LEU:HB3	8:S:45:ILE:HB	1.98	0.45
1:B:218:THR:OG1	1:B:395:LEU:HA	2.16	0.45
1:C:426:LEU:HD13	2:D:189:ALA:HB1	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:354:ASP:HB3	2:E:357:HIS:HB2	1.99	0.45
3:G:54:LEU:O	3:G:58:LEU:HB2	2.16	0.45
4:H:204:LYS:HD3	4:H:204:LYS:HA	1.57	0.45
5:J:12:ILE:HD13	5:J:15:MET:HE1	1.99	0.45
1:B:215:ARG:HB2	1:B:338:ARG:NH1	2.32	0.44
2:D:476:LYS:HA	2:D:479:ARG:HD2	1.98	0.44
2:F:82:GLU:HB3	2:F:89:ILE:HB	1.99	0.44
2:F:357:HIS:CD2	2:F:358:PRO:HD2	2.52	0.44
3:G:200:GLN:O	3:G:204:LEU:HG	2.16	0.44
5:I:123:GLY:HA3	5:I:183:ILE:HD12	1.99	0.44
7:N:47:TYR:HA	7:N:51:ARG:HH11	1.82	0.44
1:A:552:ARG:HE	1:A:552:ARG:HB2	1.61	0.44
1:B:217:VAL:O	8:R:13:LEU:HD21	2.17	0.44
1:B:234:LEU:HD22	1:B:433:TRP:CG	2.52	0.44
1:C:598:LYS:HD2	1:C:598:LYS:HA	1.35	0.44
5:K:155:TYR:CE1	5:K:163:VAL:HB	2.52	0.44
6:L:99:ASP:OD1	6:L:99:ASP:N	2.50	0.44
7:O:17:ARG:HA	7:O:17:ARG:HD3	1.60	0.44
1:C:120:ARG:HE	1:C:120:ARG:HB3	1.71	0.44
3:G:54:LEU:HD21	3:G:119:LYS:HB2	1.97	0.44
8:R:194:ASP:OD1	8:R:195:GLU:N	2.51	0.44
1:A:149:GLY:HA2	1:A:168:LEU:HB3	1.99	0.44
1:A:295:THR:HG22	1:A:304:SER:HA	2.00	0.44
1:C:105:PRO:HG2	1:C:108:ASP:HB2	1.99	0.44
2:D:199:GLN:HE22	2:D:459:GLN:HG2	1.82	0.44
2:E:103:LYS:HD3	2:E:103:LYS:HA	1.40	0.44
4:H:140:LYS:HD3	4:H:140:LYS:HA	1.67	0.44
8:S:123:LYS:HA	8:S:123:LYS:HD3	1.64	0.44
9:T:94:LEU:O	9:T:98:ASP:HB2	2.17	0.44
8:R:126:TYR:CE1	8:R:169:THR:HA	2.53	0.44
1:C:53:GLU:HB2	1:C:67:TYR:HE1	1.83	0.44
1:C:457:TYR:HE1	2:D:233:GLU:HG3	1.83	0.44
8:Q:43:LYS:HA	8:Q:43:LYS:HD3	1.70	0.44
8:R:125:ASP:OD1	8:R:126:TYR:N	2.50	0.44
1:A:271:VAL:HB	1:A:344:VAL:HG22	1.99	0.44
1:A:377:TYR:HA	2:E:299:GLU:OE2	2.18	0.44
1:C:349:ASN:O	1:C:409:ALA:HB3	2.18	0.44
2:D:116:PRO:CB	2:D:141:ALA:HB2	2.48	0.44
4:H:201:ARG:O	4:H:205:ILE:HG13	2.18	0.44
5:K:59:LYS:HG3	5:K:63:GLN:HE22	1.83	0.44
9:T:254:PRO:O	9:T:297:THR:OG1	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:340:MET:HB3	1:B:342:TYR:HD2	1.83	0.44
1:C:436:ASP:HB3	1:C:439:LEU:HB2	2.00	0.44
1:C:458:MET:SD	1:C:459:ARG:N	2.91	0.44
2:F:181:GLN:NE2	2:F:183:ILE:HD11	2.32	0.44
5:K:38:PHE:HD2	7:O:32:ARG:HB2	1.83	0.44
6:L:27:GLU:H	6:L:35:ASN:HB2	1.83	0.44
7:N:27:LYS:HB3	7:N:31:ARG:NH2	2.33	0.44
8:S:226:VAL:HA	8:S:229:MET:HG2	2.00	0.44
1:B:135:PHE:HB2	1:B:156:VAL:HG22	2.00	0.44
2:F:227:ALA:HA	2:F:292:THR:HG22	2.00	0.44
3:G:201:TYR:CE2	3:G:213:SER:HB3	2.53	0.44
1:A:90:LEU:HB3	1:A:336:TYR:CE2	2.53	0.43
1:A:282:ASN:HD21	2:D:181:GLN:HA	1.83	0.43
1:A:598:LYS:HB2	1:A:598:LYS:HE2	1.51	0.43
1:A:478:LYS:HE3	1:A:478:LYS:HB3	1.66	0.43
1:B:316:SER:HB2	2:E:326:ALA:HB1	2.00	0.43
1:C:467:LYS:HB3	1:C:467:LYS:HE3	1.76	0.43
2:E:432:VAL:HA	4:H:170:ASN:HB3	2.00	0.43
3:G:137:LYS:HE3	3:G:137:LYS:HB3	1.56	0.43
1:A:111:SER:O	1:A:114:GLN:NE2	2.38	0.43
2:E:186:PHE:CE1	2:E:348:LEU:HD21	2.53	0.43
3:G:39:ASN:O	3:G:40:ILE:HD13	2.18	0.43
4:H:31:ASN:HA	4:H:34:LYS:HZ3	1.83	0.43
9:T:62:LYS:HG2	9:T:107:ARG:HD2	2.00	0.43
7:O:55:PHE:HA	7:O:58:LYS:HD2	2.00	0.43
9:T:366:TRP:CE3	9:T:409:VAL:HG22	2.53	0.43
1:A:41:GLU:HA	1:A:85:PRO:HA	2.00	0.43
1:B:473:VAL:HB	1:B:474:PRO:HD3	2.01	0.43
1:C:395:LEU:HD23	1:C:395:LEU:HA	1.82	0.43
2:F:227:ALA:HB3	2:F:255:LEU:HA	2.00	0.43
3:G:210:PRO:HD3	5:K:11:GLN:HB2	1.99	0.43
3:G:369:TYR:CE1	3:G:371:TYR:HB2	2.53	0.43
1:A:331:ILE:HA	1:A:346:MET:SD	2.58	0.43
1:B:528:TYR:HD1	1:B:588:ASP:HB2	1.82	0.43
1:C:378:LEU:HD23	1:C:378:LEU:HA	1.74	0.43
2:D:120:ASP:HB2	2:D:139:VAL:HG11	2.00	0.43
2:E:315:ARG:HG3	2:E:358:PRO:CD	2.46	0.43
2:F:162:GLU:OE1	2:F:162:GLU:N	2.48	0.43
8:R:42:LEU:HB3	8:R:45:ILE:HG13	2.00	0.43
9:T:244:ILE:HD13	9:T:285:ILE:HD12	2.00	0.43
1:A:176:VAL:HA	1:A:194:LEU:HD23	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:350:SER:HB3	1:B:353:ARG:HB2	2.01	0.43
1:B:535:TYR:CZ	1:B:594:GLU:HG2	2.54	0.43
1:C:82:THR:HG22	1:C:84:LYS:H	1.82	0.43
1:C:106:LEU:HD13	2:F:154:PRO:HD2	2.00	0.43
1:C:277:CYS:O	1:C:350:SER:HB2	2.19	0.43
2:F:184:PRO:HD2	2:F:369:GLY:O	2.19	0.43
6:L:15:ASP:OD1	6:L:16:THR:HG23	2.19	0.43
2:F:383:TYR:HE2	2:F:461:PRO:HA	1.83	0.43
4:H:7:ILE:HA	4:H:179:ARG:HH11	1.84	0.43
7:N:10:GLN:HA	7:N:13:GLN:CD	2.39	0.43
8:S:227:LYS:HD2	8:S:227:LYS:HA	1.35	0.43
2:E:223:ILE:HB	2:E:251:VAL:HG22	2.01	0.43
2:E:357:HIS:CD2	2:E:358:PRO:HD2	2.54	0.43
3:G:6:LEU:HD11	3:G:38:PHE:CD2	2.53	0.43
3:G:47:THR:HG22	5:J:22:GLU:HG2	2.00	0.43
3:G:62:ASP:HA	3:G:297:VAL:HG11	2.01	0.43
3:G:181:TYR:CG	5:K:19:ILE:HG12	2.54	0.43
4:H:132:ALA:HA	4:H:135:LYS:HD3	1.99	0.43
6:L:110:LYS:HA	6:L:110:LYS:HD3	1.80	0.43
8:S:143:ALA:HB1	8:S:149:ASN:ND2	2.34	0.43
1:A:581:LEU:HD12	1:A:581:LEU:HA	1.80	0.43
1:C:337:PHE:HB3	1:C:344:VAL:HG21	2.00	0.43
1:C:382:LEU:HA	1:C:382:LEU:HD13	1.85	0.43
2:E:321:MET:HE3	2:E:321:MET:HA	2.00	0.43
5:I:138:LYS:O	5:I:141:PHE:CB	2.64	0.43
1:A:580:LYS:HD2	1:A:604:LEU:HD13	2.01	0.42
1:B:139:LYS:HA	1:B:139:LYS:HD3	1.53	0.42
1:B:247:ALA:HB2	1:B:429:VAL:HG21	2.00	0.42
2:E:429:MET:O	2:E:433:VAL:HG22	2.19	0.42
2:F:444:LEU:HD12	2:F:444:LEU:HA	1.73	0.42
9:T:194:SER:OG	9:T:195:SER:N	2.52	0.42
2:D:227:ALA:O	2:D:256:ASN:HB3	2.18	0.42
5:J:131:ARG:HE	5:J:131:ARG:HB2	1.58	0.42
8:Q:231:ASP:O	8:Q:234:MET:HG3	2.20	0.42
2:E:288:LEU:HD23	2:E:343:THR:HB	2.01	0.42
1:A:605:LEU:HD12	1:A:605:LEU:HA	1.70	0.42
1:C:550:LEU:HB3	1:C:612:PHE:CD2	2.53	0.42
2:D:236:ARG:HA	2:D:239:LYS:HG2	2.01	0.42
3:G:34:LEU:HB3	3:G:322:GLN:HB3	2.01	0.42
5:K:160:LYS:HD3	5:K:160:LYS:HA	1.32	0.42
1:A:270:ASP:HB2	1:A:342:TYR:HB3	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:136:LEU:HD21	3:G:286:ASN:HB2	2.00	0.42
5:J:132:MET:HB2	5:J:165:VAL:HG22	2.01	0.42
1:A:89:GLU:HG2	1:A:206:VAL:HG11	2.02	0.42
1:A:386:TYR:HE2	1:A:425:THR:HG22	1.84	0.42
1:C:170:PRO:HG2	1:C:209:TRP:CZ3	2.55	0.42
1:C:262:SER:O	1:C:265:LYS:HG2	2.20	0.42
2:E:397:LYS:H	2:E:397:LYS:HG3	1.43	0.42
4:H:121:LEU:HB3	4:H:124:LEU:HD22	2.01	0.42
1:C:146:HIS:HB3	8:S:62:PHE:CD2	2.55	0.42
2:D:310:GLU:H	2:D:310:GLU:HG3	1.67	0.42
2:E:321:MET:HA	2:E:321:MET:CE	2.50	0.42
4:H:31:ASN:HA	4:H:34:LYS:HZ2	1.85	0.42
5:K:38:PHE:HE2	7:O:29:LYS:HG3	1.85	0.42
6:L:12:GLY:HA2	6:L:70:ILE:HD12	2.01	0.42
1:A:90:LEU:O	1:A:206:VAL:HG13	2.19	0.42
1:A:234:LEU:HD21	1:A:448:VAL:HG11	2.02	0.42
1:B:50:LEU:HD12	1:B:50:LEU:H	1.83	0.42
2:E:283:CYS:HB3	2:E:285:LYS:HE2	2.02	0.42
5:I:35:GLU:O	5:I:39:ASN:N	2.38	0.42
8:Q:58:LYS:HB3	8:Q:60:TYR:CE1	2.54	0.42
9:T:18:ILE:HG23	9:T:136:PHE:HE2	1.85	0.42
1:B:478:LYS:HD3	1:B:478:LYS:HA	1.72	0.42
1:B:553:ARG:O	1:B:556:GLU:HG3	2.20	0.42
2:D:158:ILE:HB	2:D:334:ARG:HB2	2.01	0.42
2:D:372:TYR:CD2	2:D:390:PRO:HB2	2.54	0.42
2:D:459:GLN:O	2:D:463:GLU:HB2	2.20	0.42
2:D:499:SER:O	2:D:500:ARG:HG2	2.19	0.42
3:G:254:ASN:H	3:G:258:MET:HE1	1.85	0.42
1:A:362:SER:OG	1:A:375:PRO:HB3	2.20	0.42
1:B:282:ASN:HD22	1:B:282:ASN:HA	1.69	0.42
2:F:326:ALA:HA	2:F:366:ILE:HG21	2.01	0.42
8:S:43:LYS:HB3	8:S:43:LYS:HE3	1.36	0.42
9:T:120:ASN:O	9:T:124:SER:OG	2.37	0.42
1:A:271:VAL:O	1:A:344:VAL:HA	2.19	0.41
1:C:215:ARG:HA	1:C:216:PRO:HD3	1.94	0.41
2:E:372:TYR:O	2:E:372:TYR:CD2	2.73	0.41
2:F:443:LEU:HA	2:F:446:LEU:HD12	2.02	0.41
3:G:9:ALA:HB1	3:G:10:PRO:CD	2.49	0.41
5:K:187:ASP:O	5:K:188:ARG:HB2	2.20	0.41
7:N:10:GLN:HG2	7:N:11:LEU:HD12	2.02	0.41
1:B:455:SER:O	1:B:458:MET:HG2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:K:137:ARG:HD3	5:K:177:ILE:HG22	2.02	0.41
7:O:75:LYS:HB2	7:O:75:LYS:HE2	1.87	0.41
9:T:394:LEU:HD11	9:T:410:ALA:HA	2.01	0.41
1:B:459:ARG:H	1:B:459:ARG:HG3	1.45	0.41
2:D:196:ILE:HD11	2:D:385:PRO:HD2	2.01	0.41
2:D:454:ARG:HA	2:D:458:ASN:HD22	1.85	0.41
1:B:231:GLN:HG3	1:B:259:ILE:CD1	2.51	0.41
2:E:257:LEU:N	2:E:260:ASP:OD2	2.53	0.41
2:E:373:VAL:CG2	2:E:385:PRO:HG2	2.50	0.41
2:F:423:GLY:HA3	2:F:449:LEU:HD13	2.03	0.41
5:K:55:GLU:HG3	5:K:56:TYR:N	2.35	0.41
8:Q:104:LYS:NZ	8:Q:106:ASP:H	2.18	0.41
1:C:152:ILE:HD13	1:C:167:MET:HB3	2.03	0.41
1:C:335:GLU:HA	1:C:338:ARG:CG	2.50	0.41
3:G:314:VAL:HG13	3:G:315:ASN:O	2.20	0.41
5:I:222:ARG:HB3	5:I:225:LEU:HD21	2.02	0.41
5:J:82:LYS:HB2	5:J:82:LYS:HE2	1.46	0.41
8:R:127:HIS:CD2	8:R:131:ASN:HD21	2.39	0.41
3:G:313:PRO:HD3	5:J:17:ALA:HB1	2.03	0.41
5:I:23:ALA:CB	7:M:18:ALA:HB1	2.50	0.41
5:I:125:TYR:CE2	7:M:108:PRO:HB2	2.55	0.41
5:I:168:ASP:OD2	5:I:171:ALA:HB3	2.20	0.41
7:O:58:LYS:HE3	7:O:58:LYS:HB3	1.48	0.41
9:T:277:VAL:HA	9:T:282:THR:HG21	2.01	0.41
9:T:308:ALA:HB1	9:T:314:VAL:HB	2.03	0.41
1:A:387:GLU:HG3	2:E:258:ALA:HB3	2.03	0.41
1:B:142:ARG:HD3	1:B:142:ARG:HA	1.84	0.41
1:B:533:PRO:HB2	1:B:535:TYR:CE2	2.56	0.41
2:F:181:GLN:NE2	2:F:395:LEU:HB2	2.36	0.41
3:G:79:VAL:HG22	3:G:279:LEU:HD21	2.02	0.41
8:R:81:LEU:HD12	8:R:81:LEU:HA	1.74	0.41
1:A:577:ILE:HD13	1:A:577:ILE:HA	1.87	0.41
1:B:132:LYS:HD3	1:B:186:ASP:HB3	2.03	0.41
1:B:456:LYS:HA	1:B:456:LYS:HD2	1.76	0.41
1:C:280:ARG:HD3	2:F:368:GLU:HG3	2.01	0.41
2:F:180:GLY:HA2	2:F:342:ILE:O	2.21	0.41
3:G:48:LEU:HA	3:G:51:LEU:HD12	2.03	0.41
3:G:58:LEU:HD22	3:G:301:ARG:NH2	2.36	0.41
6:L:12:GLY:O	6:L:39:VAL:N	2.54	0.41
8:Q:14:THR:HG23	8:Q:17:GLN:H	1.86	0.41
1:B:238:PHE:HZ	1:B:450:TRP:HA	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:259:ILE:HD13	1:B:259:ILE:HA	1.94	0.41
1:B:535:TYR:CD1	1:B:536:LYS:N	2.88	0.41
1:C:46:GLY:HA2	1:C:77:ASP:HB3	2.02	0.41
2:D:80:VAL:HG11	2:D:83:VAL:HG13	2.02	0.41
2:D:116:PRO:HB2	2:D:141:ALA:HB2	2.02	0.41
2:D:240:SER:O	2:D:243:GLU:HG3	2.20	0.41
2:E:186:PHE:HB2	2:E:372:TYR:HA	2.02	0.41
2:E:226:ALA:HB2	2:E:272:ALA:HB2	2.03	0.41
4:H:68:SER:HA	4:H:71:GLU:OE1	2.21	0.41
5:K:26:LYS:HE3	5:K:30:ILE:HG13	2.02	0.41
7:N:13:GLN:HB2	7:N:17:ARG:NH2	2.36	0.41
7:O:23:SER:HA	7:O:26:ARG:HG2	2.03	0.41
8:R:88:LEU:HD12	8:R:88:LEU:HA	1.86	0.41
8:S:216:ILE:HD13	8:S:217:LEU:HD23	2.03	0.41
1:A:189:ASP:OD1	1:A:190:VAL:N	2.54	0.41
1:C:279:GLU:HG3	1:C:284:MET:HB2	2.03	0.41
2:D:127:ASN:OD1	2:D:131:LYS:N	2.54	0.41
4:H:133:LYS:HB2	4:H:133:LYS:HE2	1.69	0.41
5:K:50:ARG:HA	5:K:53:ILE:HD12	2.03	0.41
8:S:86:LEU:HD13	8:S:86:LEU:HA	1.86	0.41
9:T:94:LEU:HB3	9:T:140:MET:HE1	2.03	0.41
1:B:170:PRO:O	1:B:171:ARG:HB2	2.22	0.40
1:B:471:GLU:O	1:B:474:PRO:HD2	2.20	0.40
1:C:187:THR:HA	1:C:205:MET:HG3	2.03	0.40
2:E:476:LYS:O	2:E:479:ARG:HB2	2.21	0.40
2:F:357:HIS:CG	2:F:358:PRO:HD2	2.56	0.40
5:J:22:GLU:O	5:J:26:LYS:HG2	2.21	0.40
5:J:141:PHE:CE1	5:J:169:GLN:HG3	2.56	0.40
9:T:33:TRP:HZ2	9:T:93:ILE:HA	1.86	0.40
1:B:220:LYS:HD2	1:B:392:VAL:HG12	2.03	0.40
1:C:550:LEU:HG	1:C:613:ARG:HH12	1.86	0.40
1:C:553:ARG:O	1:C:556:GLU:HG3	2.21	0.40
2:E:282:GLN:HB3	5:J:222:ARG:HG2	2.03	0.40
3:G:91:LEU:HD12	3:G:287:PHE:CE2	2.56	0.40
1:A:528:TYR:CD1	1:A:586:PHE:HA	2.56	0.40
1:B:232:ARG:HG3	1:B:532:CYS:SG	2.61	0.40
1:B:279:GLU:HG3	1:B:284:MET:CE	2.52	0.40
1:C:335:GLU:O	1:C:338:ARG:HG3	2.21	0.40
2:D:75:GLN:HE21	2:D:75:GLN:HB3	1.56	0.40
2:D:268:THR:N	2:D:269:PRO:HD2	2.36	0.40
3:G:8:SER:HA	3:G:317:GLN:O	2.20	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:113:PRO:HB3	3:G:115:LYS:HZ3	1.86	0.40
5:J:25:GLU:O	5:J:29:GLU:OE1	2.39	0.40
5:K:191:LYS:HE2	5:K:191:LYS:HB2	1.36	0.40
9:T:299:ARG:O	9:T:299:ARG:NH2	2.48	0.40
1:A:94:ILE:HD12	1:A:99:PHE:CZ	2.56	0.40
1:B:524:GLY:H	18:B:701:ADP:HN62	1.69	0.40
1:C:286:GLU:HB2	2:F:159:TYR:CE1	2.56	0.40
1:C:351:THR:O	1:C:354:TRP:HB3	2.22	0.40
3:G:9:ALA:HB3	3:G:317:GLN:CB	2.50	0.40
6:L:12:GLY:HA2	6:L:70:ILE:CD1	2.52	0.40
7:N:56:LYS:HD2	7:N:56:LYS:HA	1.76	0.40
9:T:19:ILE:HG12	9:T:136:PHE:HD2	1.86	0.40
9:T:259:HIS:HB3	9:T:262:ARG:NH1	2.36	0.40
1:A:275:VAL:HG21	1:A:330:GLY:HA3	2.04	0.40
1:C:204:SER:C	1:C:206:VAL:N	2.74	0.40
2:E:142:GLU:HG3	5:J:212:ARG:HD3	2.04	0.40
4:H:72:ALA:HA	4:H:130:GLN:NE2	2.36	0.40
5:I:32:ALA:HB1	9:T:249:LEU:HD21	2.03	0.40
5:J:52:LYS:HD3	5:J:52:LYS:HA	1.53	0.40
9:T:249:LEU:HD23	9:T:249:LEU:HA	1.85	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	598/617 (97%)	568 (95%)	29 (5%)	1 (0%)	47	80
1	B	598/617 (97%)	559 (94%)	38 (6%)	1 (0%)	47	80
1	C	581/617 (94%)	534 (92%)	44 (8%)	3 (0%)	29	67
2	D	454/515 (88%)	420 (92%)	32 (7%)	2 (0%)	34	71

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	E	452/515 (88%)	428 (95%)	22 (5%)	2 (0%)	34	71
2	F	452/515 (88%)	424 (94%)	28 (6%)	0	100	100
3	G	356/382 (93%)	343 (96%)	12 (3%)	1 (0%)	41	75
4	H	211/247 (85%)	203 (96%)	8 (4%)	0	100	100
5	I	215/226 (95%)	203 (94%)	12 (6%)	0	100	100
5	J	216/226 (96%)	213 (99%)	3 (1%)	0	100	100
5	K	215/226 (95%)	207 (96%)	8 (4%)	0	100	100
6	L	107/119 (90%)	99 (92%)	8 (8%)	0	100	100
7	M	108/118 (92%)	108 (100%)	0	0	100	100
7	N	108/118 (92%)	104 (96%)	4 (4%)	0	100	100
7	O	106/118 (90%)	104 (98%)	2 (2%)	0	100	100
8	Q	222/337 (66%)	211 (95%)	11 (5%)	0	100	100
8	R	204/337 (60%)	197 (97%)	5 (2%)	2 (1%)	15	52
8	S	224/337 (66%)	212 (95%)	12 (5%)	0	100	100
9	T	423/483 (88%)	400 (95%)	22 (5%)	1 (0%)	47	80
10	a	744/838 (89%)	714 (96%)	27 (4%)	3 (0%)	34	71
11	b	201/205 (98%)	197 (98%)	4 (2%)	0	100	100
12	c	204/469 (44%)	187 (92%)	17 (8%)	0	100	100
13	d	348/351 (99%)	330 (95%)	16 (5%)	2 (1%)	25	63
14	e	78/81 (96%)	77 (99%)	1 (1%)	0	100	100
15	f	82/98 (84%)	82 (100%)	0	0	100	100
16	g	148/155 (96%)	144 (97%)	4 (3%)	0	100	100
16	h	148/155 (96%)	140 (95%)	7 (5%)	1 (1%)	22	60
16	i	148/155 (96%)	147 (99%)	1 (1%)	0	100	100
16	j	148/155 (96%)	146 (99%)	2 (1%)	0	100	100
16	k	148/155 (96%)	145 (98%)	3 (2%)	0	100	100
16	l	148/155 (96%)	146 (99%)	2 (1%)	0	100	100
16	m	148/155 (96%)	146 (99%)	2 (1%)	0	100	100
16	n	148/155 (96%)	145 (98%)	3 (2%)	0	100	100
16	o	148/155 (96%)	145 (98%)	3 (2%)	0	100	100
17	p	51/351 (14%)	49 (96%)	2 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	8890/10458 (85%)	8477 (95%)	394 (4%)	19 (0%)	50 80

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	266	TYR
10	a	90	PHE
2	E	96	THR
13	d	57	PHE
1	C	161	LEU
2	E	248	MET
8	R	54	ILE
9	T	74	ALA
10	a	50	LYS
16	h	52	ILE
1	A	498	LYS
1	B	498	LYS
3	G	29	ASN
8	R	57	GLU
10	a	492	GLU
1	C	366	ALA
2	D	119	GLU
13	d	231	GLU
2	D	171	ILE

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	508/525 (97%)	446 (88%)	62 (12%)	5 23
1	B	508/525 (97%)	441 (87%)	67 (13%)	4 21
1	C	501/525 (95%)	427 (85%)	74 (15%)	3 17
2	D	392/438 (90%)	337 (86%)	55 (14%)	3 19
2	E	390/438 (89%)	356 (91%)	34 (9%)	10 35

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	F	390/438 (89%)	343 (88%)	47 (12%)	5 23
3	G	325/344 (94%)	303 (93%)	22 (7%)	16 44
4	H	184/211 (87%)	158 (86%)	26 (14%)	3 19
5	I	96/197 (49%)	87 (91%)	9 (9%)	8 31
5	J	191/197 (97%)	159 (83%)	32 (17%)	2 14
5	K	190/197 (96%)	156 (82%)	34 (18%)	2 11
6	L	93/100 (93%)	79 (85%)	14 (15%)	3 17
7	M	33/101 (33%)	25 (76%)	8 (24%)	0 4
7	N	95/101 (94%)	85 (90%)	10 (10%)	7 27
7	O	94/101 (93%)	67 (71%)	27 (29%)	0 2
8	Q	203/305 (67%)	184 (91%)	19 (9%)	8 31
8	R	188/305 (62%)	166 (88%)	22 (12%)	5 24
8	S	204/305 (67%)	176 (86%)	28 (14%)	3 20
9	T	385/429 (90%)	362 (94%)	23 (6%)	19 47
13	d	305/306 (100%)	283 (93%)	22 (7%)	14 42
All	All	5275/6088 (87%)	4640 (88%)	635 (12%)	8 23

All (635) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	48	SER
1	A	53	GLU
1	A	68	GLU
1	A	70	THR
1	A	74	SER
1	A	102	ILE
1	A	142	ARG
1	A	147	ILE
1	A	171	ARG
1	A	173	ARG
1	A	201	GLU
1	A	212	ARG
1	A	215	ARG
1	A	220	LYS
1	A	224	ASN
1	A	227	LEU
1	A	228	LEU

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Mol	Chain	Res	Type
1	A	233	VAL
1	A	259	ILE
1	A	264	SER
1	A	286	GLU
1	A	316	SER
1	A	318	MET
1	A	323	ARG
1	A	324	GLU
1	A	327	ILE
1	A	331	ILE
1	A	338	ARG
1	A	347	MET
1	A	364	ARG
1	A	368	MET
1	A	371	ASP
1	A	391	ARG
1	A	400	ARG
1	A	405	THR
1	A	450	TRP
1	A	459	ARG
1	A	463	GLU
1	A	471	GLU
1	A	473	VAL
1	A	478	LYS
1	A	480	LYS
1	A	481	GLU
1	A	485	GLU
1	A	487	GLU
1	A	496	VAL
1	A	504	THR
1	A	510	GLU
1	A	549	ASP
1	A	550	LEU
1	A	552	ARG
1	A	555	VAL
1	A	568	SER
1	A	572	GLU
1	A	574	MET
1	A	576	GLU
1	A	581	LEU
1	A	587	LYS
1	A	596	LYS

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Mol	Chain	Res	Type
1	A	598	LYS
1	A	605	LEU
1	A	616	GLU
1	B	65	GLN
1	B	74	SER
1	B	81	ARG
1	B	82	THR
1	B	84	LYS
1	B	87	SER
1	B	140	ASN
1	B	142	ARG
1	B	148	THR
1	B	167	MET
1	B	173	ARG
1	B	179	ILE
1	B	191	VAL
1	B	192	LEU
1	B	204	SER
1	B	205	MET
1	B	215	ARG
1	B	233	VAL
1	B	238	PHE
1	B	280	ARG
1	B	281	VAL
1	B	316	SER
1	B	344	VAL
1	B	350	SER
1	B	351	THR
1	B	352	SER
1	B	362	SER
1	B	364	ARG
1	B	365	LEU
1	B	368	MET
1	B	371	ASP
1	B	400	ARG
1	B	426	LEU
1	B	431	VAL
1	B	442	ARG
1	B	443	LYS
1	B	450	TRP
1	B	453	SER
1	B	455	SER

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Mol	Chain	Res	Type
1	B	459	ARG
1	B	467	LYS
1	B	469	PHE
1	B	470	THR
1	B	476	ARG
1	B	477	THR
1	B	478	LYS
1	B	480	LYS
1	B	481	GLU
1	B	483	LEU
1	B	484	GLN
1	B	492	ILE
1	B	494	GLN
1	B	513	LYS
1	B	521	GLN
1	B	522	GLN
1	B	529	ASP
1	B	536	LYS
1	B	540	MET
1	B	552	ARG
1	B	553	ARG
1	B	571	ARG
1	B	574	MET
1	B	576	GLU
1	B	587	LYS
1	B	590	VAL
1	B	591	LYS
1	B	605	LEU
1	C	48	SER
1	C	55	ILE
1	C	57	LEU
1	C	60	ASP
1	C	63	THR
1	C	95	MET
1	C	102	ILE
1	C	103	GLN
1	C	107	SER
1	C	110	SER
1	C	111	SER
1	C	116	ILE
1	C	118	ILE
1	C	120	ARG

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Mol	Chain	Res	Type
1	C	122	VAL
1	C	139	LYS
1	C	155	ILE
1	C	166	ILE
1	C	172	ASN
1	C	173	ARG
1	C	177	THR
1	C	179	ILE
1	C	191	VAL
1	C	204	SER
1	C	205	MET
1	C	212	ARG
1	C	220	LYS
1	C	224	ASN
1	C	265	LYS
1	C	279	GLU
1	C	281	VAL
1	C	285	SER
1	C	308	ARG
1	C	326	SER
1	C	334	SER
1	C	338	ARG
1	C	339	ASP
1	C	340	MET
1	C	352	SER
1	C	353	ARG
1	C	361	ILE
1	C	365	LEU
1	C	378	LEU
1	C	381	ARG
1	C	382	LEU
1	C	385	PHE
1	C	400	ARG
1	C	401	GLU
1	C	403	SER
1	C	419	ASP
1	C	438	LYS
1	C	439	LEU
1	C	443	LYS
1	C	450	TRP
1	C	463	GLU
1	C	469	PHE

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Mol	Chain	Res	Type
1	C	470	THR
1	C	480	LYS
1	C	486	GLU
1	C	510	GLU
1	C	520	LEU
1	C	526	THR
1	C	530	ARG
1	C	549	ASP
1	C	550	LEU
1	C	553	ARG
1	C	562	ASP
1	C	590	VAL
1	C	594	GLU
1	C	596	LYS
1	C	597	ILE
1	C	598	LYS
1	C	609	GLN
1	C	613	ARG
2	D	39	VAL
2	D	40	THR
2	D	47	VAL
2	D	48	ASN
2	D	54	LEU
2	D	58	LYS
2	D	75	GLN
2	D	77	SER
2	D	81	LEU
2	D	83	VAL
2	D	86	THR
2	D	99	ILE
2	D	107	GLU
2	D	120	ASP
2	D	140	MET
2	D	146	ASP
2	D	150	GLN
2	D	160	PRO
2	D	161	GLU
2	D	162	GLU
2	D	163	MET
2	D	164	ILE
2	D	168	ILE
2	D	169	SER

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Mol	Chain	Res	Type
2	D	177	ILE
2	D	182	LYS
2	D	201	CYS
2	D	209	LYS
2	D	244	GLU
2	D	304	VAL
2	D	305	SER
2	D	308	ARG
2	D	309	GLU
2	D	310	GLU
2	D	311	VAL
2	D	314	ARG
2	D	325	LEU
2	D	334	ARG
2	D	341	SER
2	D	343	THR
2	D	361	ASP
2	D	366	ILE
2	D	377	LEU
2	D	381	GLN
2	D	388	VAL
2	D	392	LEU
2	D	411	ASP
2	D	459	GLN
2	D	465	ARG
2	D	466	SER
2	D	473	LEU
2	D	483	LYS
2	D	485	MET
2	D	489	ILE
2	D	493	MET
2	E	40	THR
2	E	42	ARG
2	E	54	LEU
2	E	67	ASN
2	E	102	GLN
2	E	103	LYS
2	E	105	THR
2	E	120	ASP
2	E	121	MET
2	E	138	VAL
2	E	142	GLU

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Mol	Chain	Res	Type
2	E	143	ASP
2	E	147	ILE
2	E	157	ARG
2	E	182	LYS
2	E	201	CYS
2	E	247	THR
2	E	282	GLN
2	E	305	SER
2	E	310	GLU
2	E	314	ARG
2	E	327	THR
2	E	328	ILE
2	E	344	GLN
2	E	362	LEU
2	E	366	ILE
2	E	370	GLN
2	E	392	LEU
2	E	394	ARG
2	E	397	LYS
2	E	417	TYR
2	E	454	ARG
2	E	499	SER
2	E	500	ARG
2	F	39	VAL
2	F	40	THR
2	F	67	ASN
2	F	103	LYS
2	F	106	CYS
2	F	118	SER
2	F	119	GLU
2	F	120	ASP
2	F	121	MET
2	F	124	ARG
2	F	138	VAL
2	F	139	VAL
2	F	140	MET
2	F	142	GLU
2	F	155	HIS
2	F	158	ILE
2	F	163	MET
2	F	228	MET
2	F	248	MET

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Mol	Chain	Res	Type
2	F	257	LEU
2	F	262	THR
2	F	271	LEU
2	F	274	THR
2	F	299	GLU
2	F	308	ARG
2	F	314	ARG
2	F	315	ARG
2	F	334	ARG
2	F	335	VAL
2	F	338	ARG
2	F	348	LEU
2	F	377	LEU
2	F	380	ARG
2	F	397	LYS
2	F	400	ILE
2	F	407	LYS
2	F	408	ASP
2	F	411	ASP
2	F	427	GLN
2	F	444	LEU
2	F	451	LYS
2	F	453	GLU
2	F	455	ASN
2	F	463	GLU
2	F	464	LYS
2	F	485	MET
2	F	497	PHE
3	G	4	PHE
3	G	5	TRP
3	G	12	GLU
3	G	28	LYS
3	G	29	ASN
3	G	34	LEU
3	G	35	THR
3	G	132	ILE
3	G	137	LYS
3	G	139	ARG
3	G	145	ASN
3	G	147	LYS
3	G	183	VAL
3	G	201	TYR

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Mol	Chain	Res	Type
3	G	273	LYS
3	G	276	PHE
3	G	279	LEU
3	G	316	PHE
3	G	319	MET
3	G	328	MET
3	G	329	LYS
3	G	331	LEU
4	H	8	GLU
4	H	20	LYS
4	H	42	LEU
4	H	75	THR
4	H	91	GLN
4	H	93	LYS
4	H	95	ARG
4	H	97	LYS
4	H	108	VAL
4	H	116	THR
4	H	118	SER
4	H	121	LEU
4	H	124	LEU
4	H	133	LYS
4	H	136	ARG
4	H	159	ASP
4	H	184	LEU
4	H	188	ILE
4	H	195	GLU
4	H	196	ARG
4	H	202	LEU
4	H	203	LYS
4	H	204	LYS
4	H	206	GLN
4	H	214	GLU
4	H	215	LYS
5	I	199	ARG
5	I	200	LEU
5	I	201	ASP
5	I	202	LEU
5	I	203	ILE
5	I	207	MET
5	I	208	MET
5	I	212	ARG

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Mol	Chain	Res	Type
5	I	223	LYS
5	J	44	ARG
5	J	46	VAL
5	J	50	ARG
5	J	52	LYS
5	J	54	MET
5	J	58	GLU
5	J	59	LYS
5	J	60	LYS
5	J	62	LYS
5	J	63	GLN
5	J	66	GLN
5	J	68	LYS
5	J	82	LYS
5	J	85	ARG
5	J	99	LYS
5	J	110	THR
5	J	129	GLU
5	J	131	ARG
5	J	132	MET
5	J	133	ILE
5	J	135	ARG
5	J	162	ASP
5	J	164	ASP
5	J	168	ASP
5	J	185	ASN
5	J	189	LYS
5	J	191	LYS
5	J	193	SER
5	J	202	LEU
5	J	216	PHE
5	J	222	ARG
5	J	223	LYS
5	K	28	GLU
5	K	30	ILE
5	K	33	LYS
5	K	42	LYS
5	K	45	LEU
5	K	55	GLU
5	K	58	GLU
5	K	59	LYS
5	K	61	GLU

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Mol	Chain	Res	Type
5	K	67	GLN
5	K	80	ARG
5	K	84	LEU
5	K	87	ARG
5	K	104	LYS
5	K	111	ARG
5	K	113	GLN
5	K	125	TYR
5	K	138	LYS
5	K	139	GLN
5	K	160	LYS
5	K	161	ARG
5	K	163	VAL
5	K	176	GLU
5	K	177	ILE
5	K	187	ASP
5	K	188	ARG
5	K	191	LYS
5	K	192	VAL
5	K	197	GLU
5	K	202	LEU
5	K	207	MET
5	K	208	MET
5	K	210	GLU
5	K	212	ARG
6	L	6	LYS
6	L	50	ASP
6	L	53	ARG
6	L	56	LEU
6	L	58	ARG
6	L	60	ASP
6	L	61	ILE
6	L	67	ASN
6	L	83	ARG
6	L	104	SER
6	L	105	ILE
6	L	106	LEU
6	L	107	ARG
6	L	110	LYS
7	M	85	GLN
7	M	88	PHE
7	M	90	GLN

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Mol	Chain	Res	Type
7	M	92	ARG
7	M	93	ASP
7	M	102	PHE
7	M	106	ILE
7	M	109	GLU
7	N	44	ILE
7	N	48	ARG
7	N	51	ARG
7	N	55	PHE
7	N	56	LYS
7	N	84	LEU
7	N	93	ASP
7	N	100	LEU
7	N	107	ARG
7	N	116	ILE
7	O	17	ARG
7	O	20	GLU
7	O	21	LYS
7	O	27	LYS
7	O	29	LYS
7	O	31	ARG
7	O	33	LEU
7	O	35	GLN
7	O	41	GLN
7	O	45	GLU
7	O	46	GLN
7	O	53	LYS
7	O	56	LYS
7	O	58	LYS
7	O	59	GLU
7	O	73	VAL
7	O	76	ASP
7	O	78	GLN
7	O	85	GLN
7	O	86	THR
7	O	87	TYR
7	O	90	GLN
7	O	97	ASP
7	O	105	ASP
7	O	107	ARG
7	O	109	GLU
7	O	110	ILE

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Mol	Chain	Res	Type
8	Q	17	GLN
8	Q	33	MET
8	Q	39	GLU
8	Q	43	LYS
8	Q	44	LYS
8	Q	46	ARG
8	Q	47	GLU
8	Q	51	ASP
8	Q	61	ARG
8	Q	73	LYS
8	Q	79	ASP
8	Q	81	LEU
8	Q	83	ARG
8	Q	94	LEU
8	Q	115	MET
8	Q	119	VAL
8	Q	121	LEU
8	Q	155	MET
8	Q	201	LYS
8	R	31	ARG
8	R	33	MET
8	R	34	GLN
8	R	35	THR
8	R	43	LYS
8	R	44	LYS
8	R	45	ILE
8	R	46	ARG
8	R	58	LYS
8	R	62	PHE
8	R	78	LEU
8	R	79	ASP
8	R	81	LEU
8	R	83	ARG
8	R	85	SER
8	R	142	ASN
8	R	146	THR
8	R	148	LYS
8	R	157	SER
8	R	161	MET
8	R	186	LEU
8	R	197	TYR
8	S	25	LYS

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Mol	Chain	Res	Type
8	S	32	CYS
8	S	33	MET
8	S	34	GLN
8	S	36	ILE
8	S	39	GLU
8	S	43	LYS
8	S	44	LYS
8	S	47	GLU
8	S	48	ASP
8	S	52	VAL
8	S	79	ASP
8	S	81	LEU
8	S	82	SER
8	S	83	ARG
8	S	86	LEU
8	S	89	GLN
8	S	92	LEU
8	S	116	LYS
8	S	123	LYS
8	S	130	LEU
8	S	146	THR
8	S	162	GLN
8	S	180	LYS
8	S	214	GLU
8	S	216	ILE
8	S	223	LYS
8	S	227	LYS
9	T	210	ARG
9	T	211	VAL
9	T	214	TYR
9	T	215	ARG
9	T	219	VAL
9	T	252	PHE
9	T	336	LYS
9	T	346	VAL
9	T	367	SER
9	T	371	LYS
9	T	373	GLU
9	T	374	LYS
9	T	375	PHE
9	T	377	ARG
9	T	378	GLU

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Mol	Chain	Res	Type
9	T	381	VAL
9	T	385	GLU
9	T	386	LYS
9	T	387	ASN
9	T	414	VAL
9	T	417	TYR
9	T	419	ARG
9	T	460	MET
13	d	24	LYS
13	d	47	LEU
13	d	57	PHE
13	d	73	ARG
13	d	75	LYS
13	d	76	GLU
13	d	77	LYS
13	d	81	GLU
13	d	106	ILE
13	d	120	ARG
13	d	178	ILE
13	d	184	THR
13	d	189	TYR
13	d	218	ARG
13	d	219	ARG
13	d	224	THR
13	d	232	LEU
13	d	257	ARG
13	d	259	ASP
13	d	291	GLU
13	d	309	GLN
13	d	320	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	282	ASN
1	B	282	ASN
1	C	164	HIS
1	C	523	ASN
1	C	609	GLN
2	D	75	GLN
2	D	199	GLN
2	F	427	GLN

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Mol	Chain	Res	Type
2	F	455	ASN
4	H	91	GLN
5	K	63	GLN
6	L	54	GLN
6	L	67	ASN
7	O	41	GLN
7	O	90	GLN
8	Q	127	HIS
8	R	134	ASN
8	S	89	GLN
8	S	162	GLN
9	T	420	HIS
13	d	88	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

1 ligand is 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	$\#\|Z\| > 2$
18	ADP	B	701	-	24,29,29	0.71	0	29,45,45	0.83	1 (3%)

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
18	ADP	B	701	-	-	3/12/32/32	0/3/3/3

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
18	B	701	ADP	C5-C6-N6	2.05	123.46	120.35

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
18	B	701	ADP	C5'-O5'-PA-O2A
18	B	701	ADP	C5'-O5'-PA-O3A
18	B	701	ADP	C5'-O5'-PA-O1A

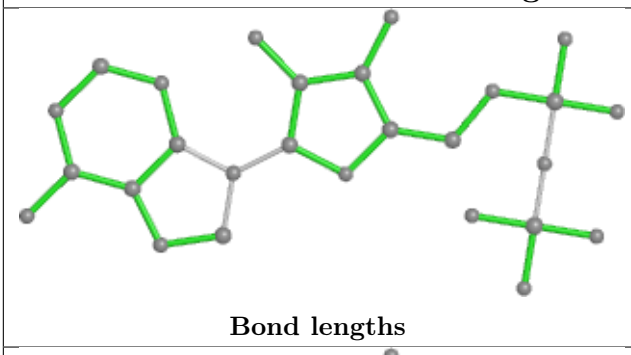
There are no ring outliers.

1 monomer is involved in 1 short contact:

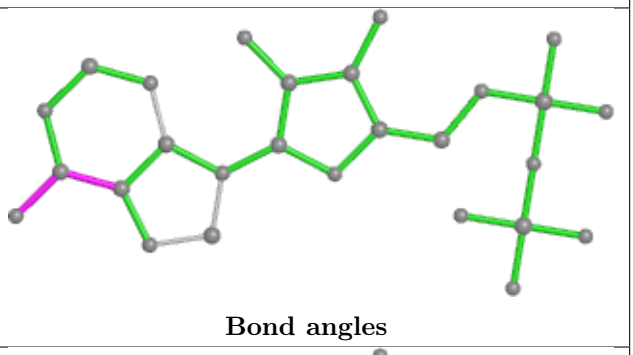
Mol	Chain	Res	Type	Clashes	Symm-Clashes
18	B	701	ADP	1	0

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 then 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.

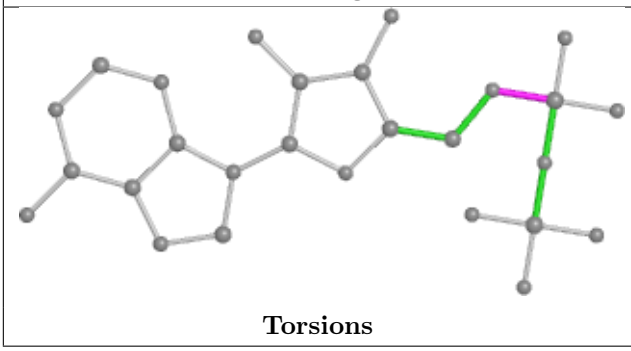
Ligand ADP B 701



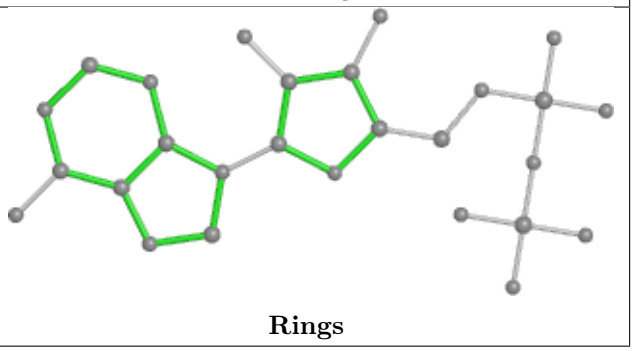
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

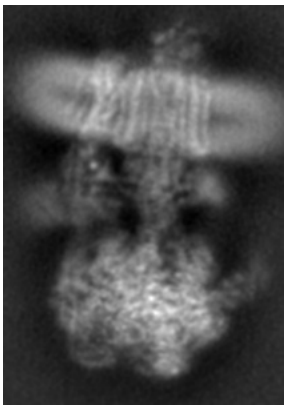
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-26387. These allow visual inspection of the internal detail of the map and identification of artifacts.

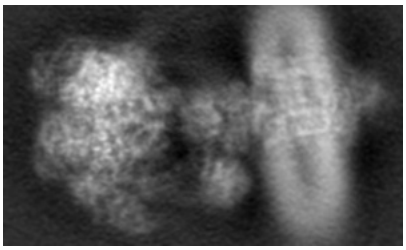
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

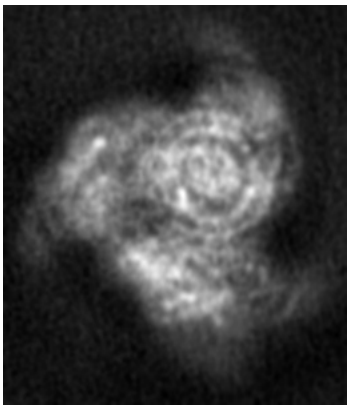
6.1.1 Primary map



X

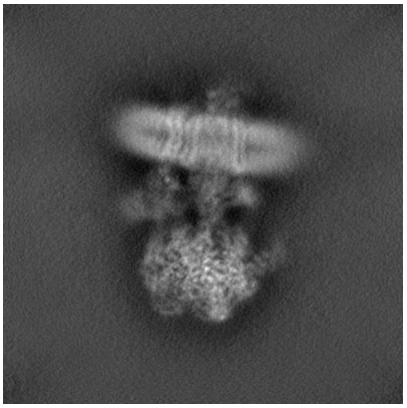


Y

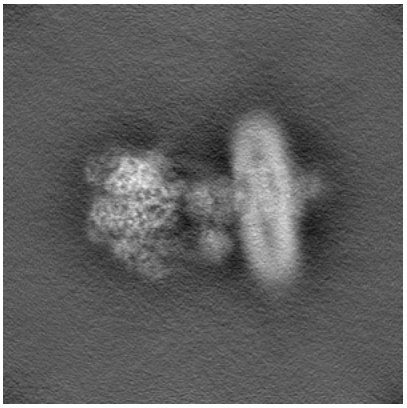


Z

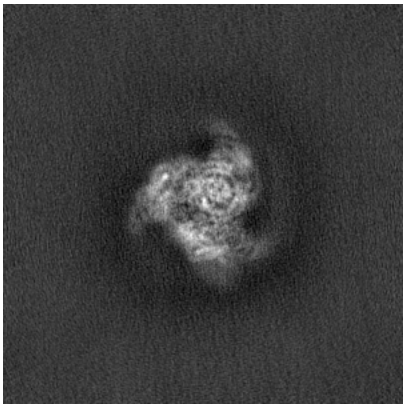
6.1.2 Raw map



X



Y



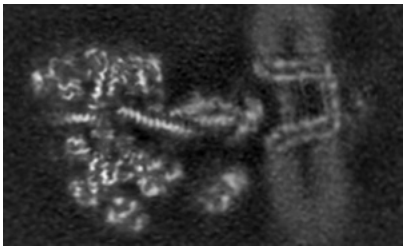
Z

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

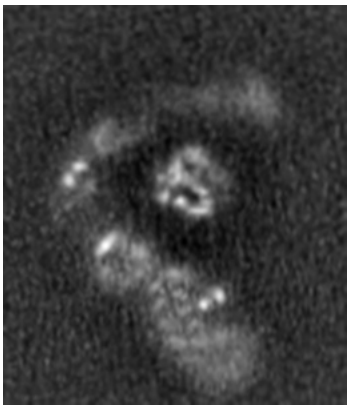
6.2 Central slices (i)

6.2.1 Primary map

X Index: 60

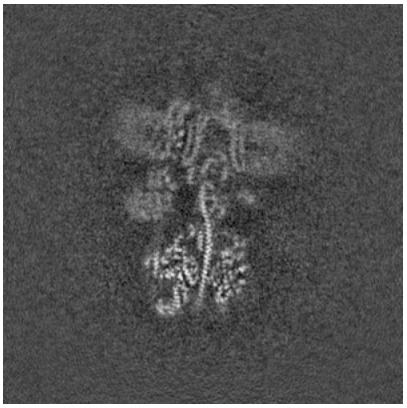


Y Index: 70

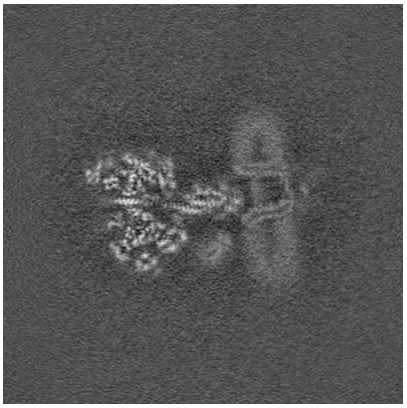


Z Index: 100

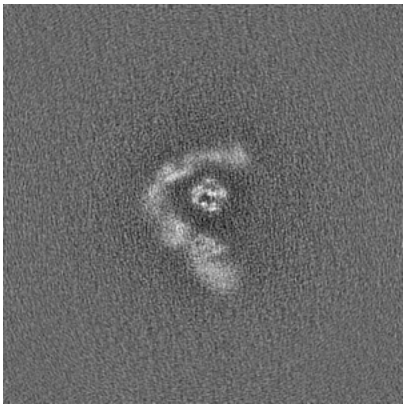
6.2.2 Raw map



X Index: 150



Y Index: 150



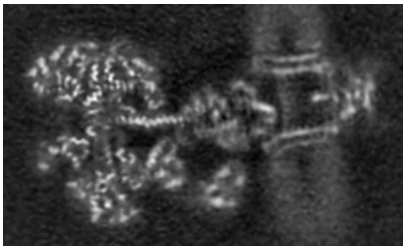
Z Index: 150

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

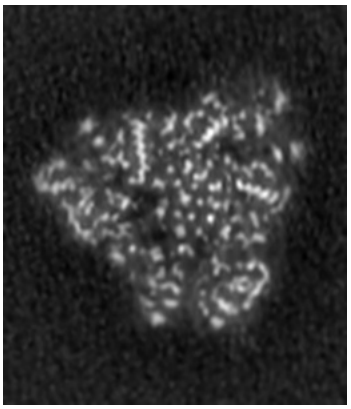
6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 62

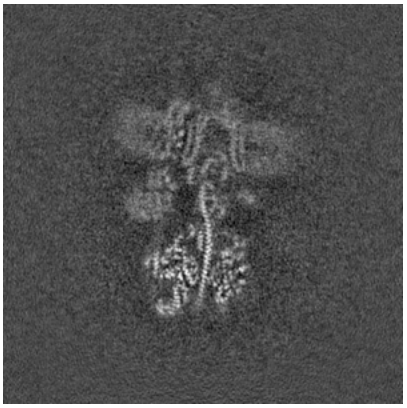


Y Index: 76

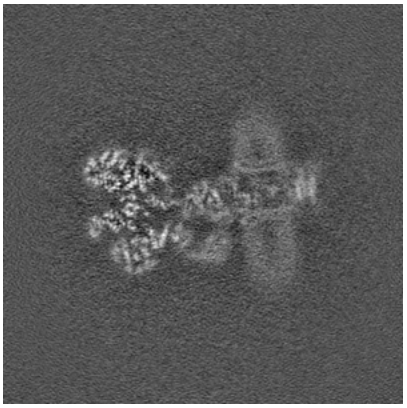


Z Index: 46

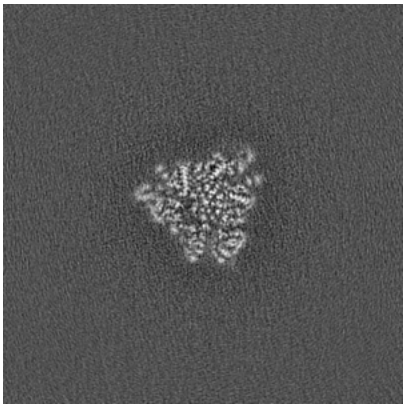
6.3.2 Raw map



X Index: 150



Y Index: 156

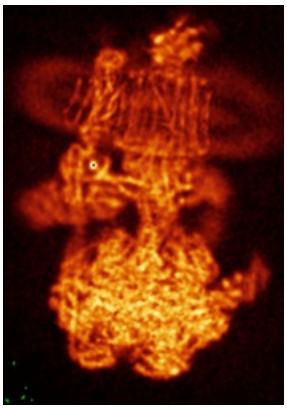


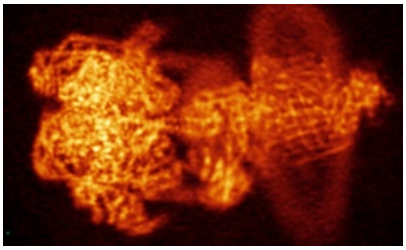
Z Index: 94

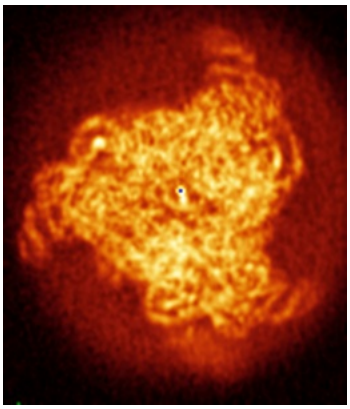
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

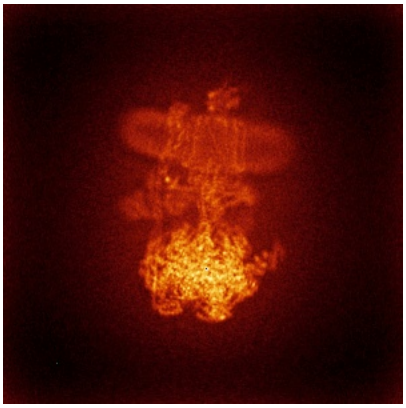
6.4.1 Primary map

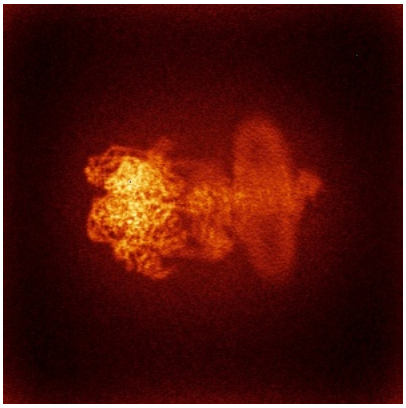

X

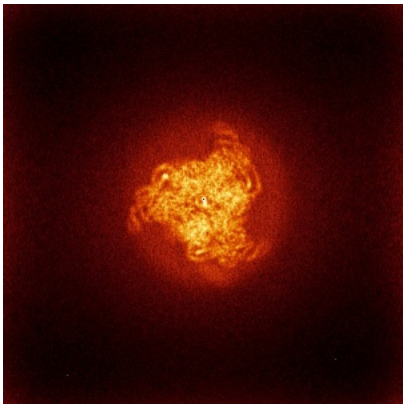

Y


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

X

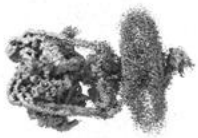
Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.6. 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

X



Y

Z

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.

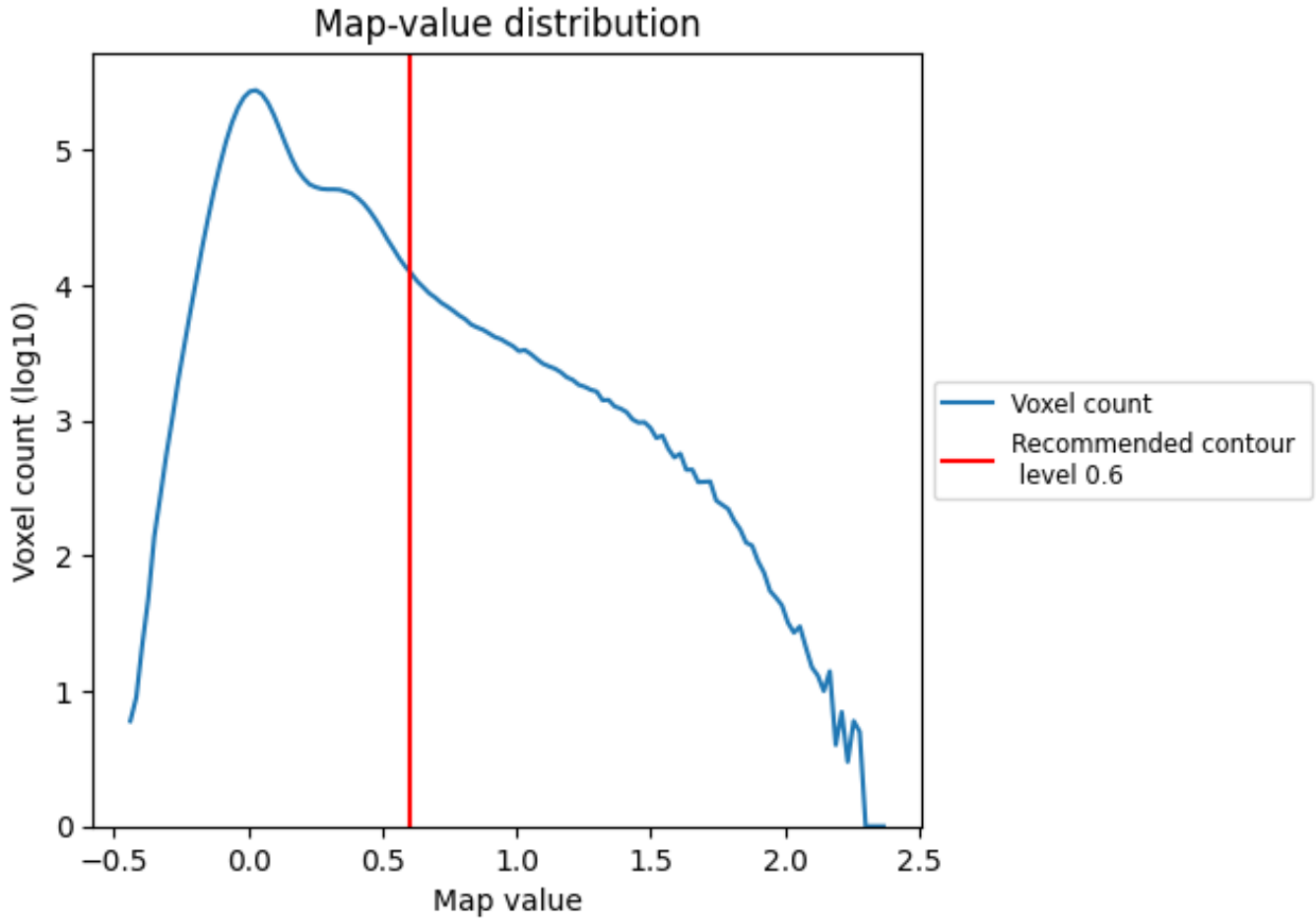
6.6 Mask visualisation (i)

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

7 Map analysis

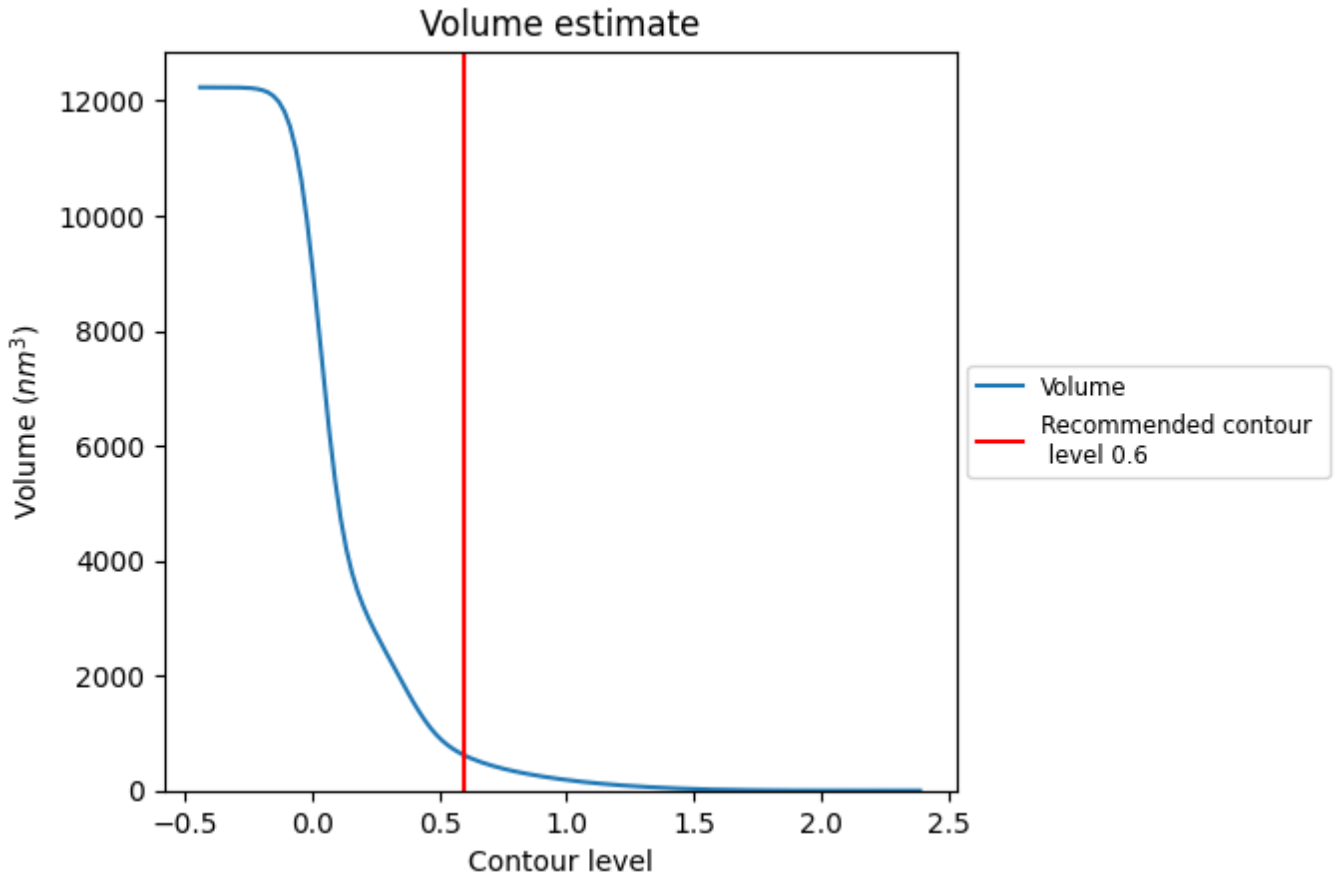
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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



The volume at the recommended contour level is 611 nm^3; this corresponds to an approximate mass of 552 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.

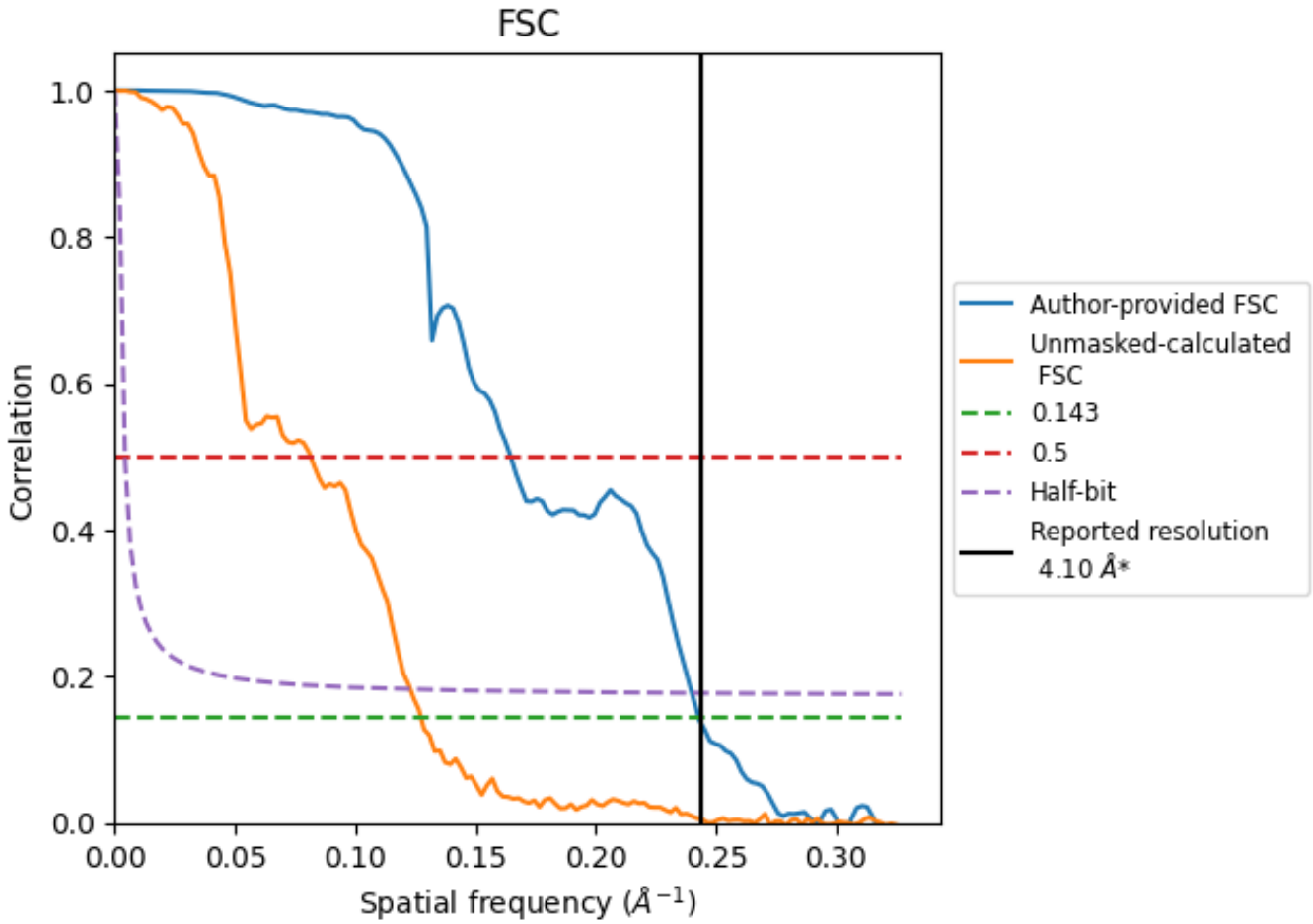
7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.244 Å^{-1}

8.2 Resolution estimates (i)

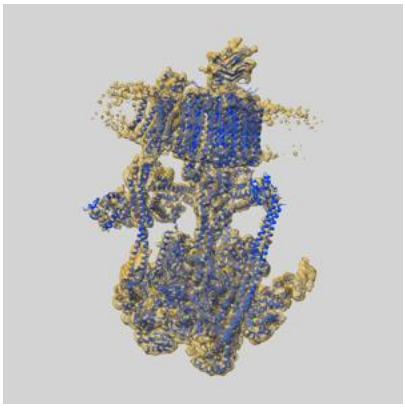
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.10	-	-
Author-provided FSC curve	4.12	6.07	4.17
Unmasked-calculated*	7.84	12.27	8.13

*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 7.84 differs from the reported value 4.1 by more than 10 %

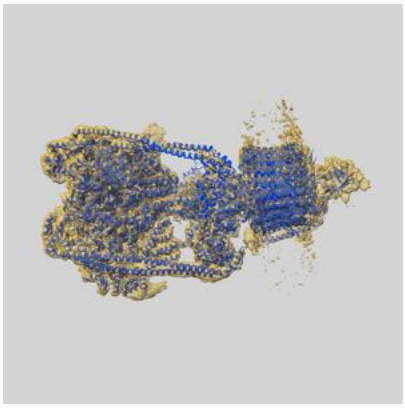
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-26387 and PDB model 7U8Q. Per-residue inclusion information can be found in section 3 on page 9.

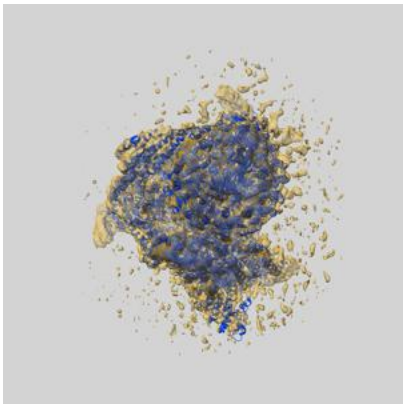
9.1 Map-model overlay



X



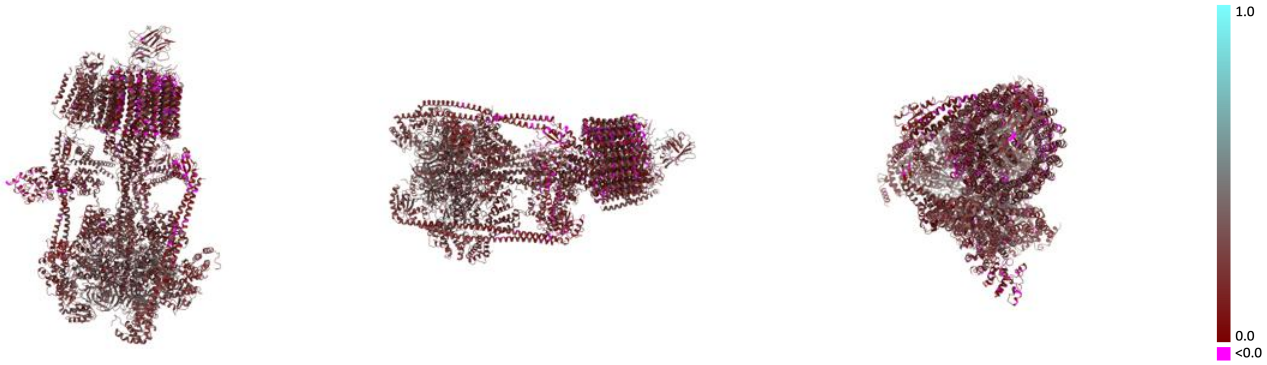
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.6 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.

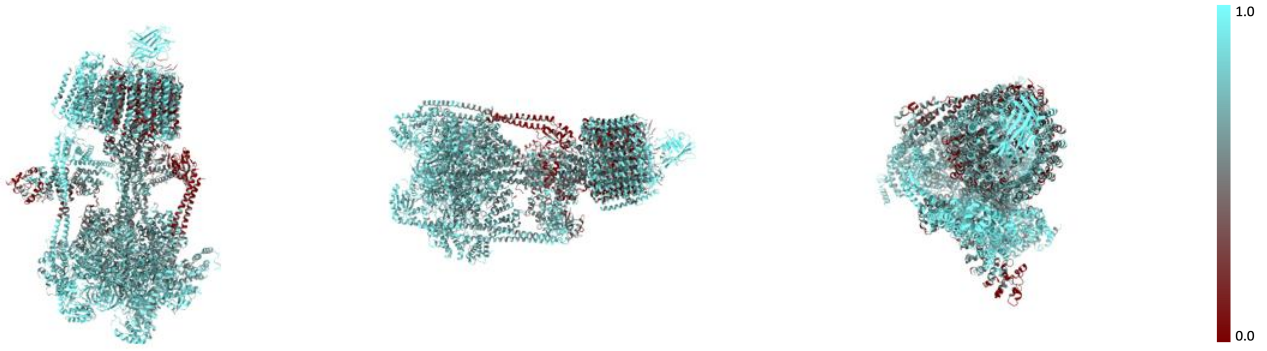
9.2 Q-score mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according 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.

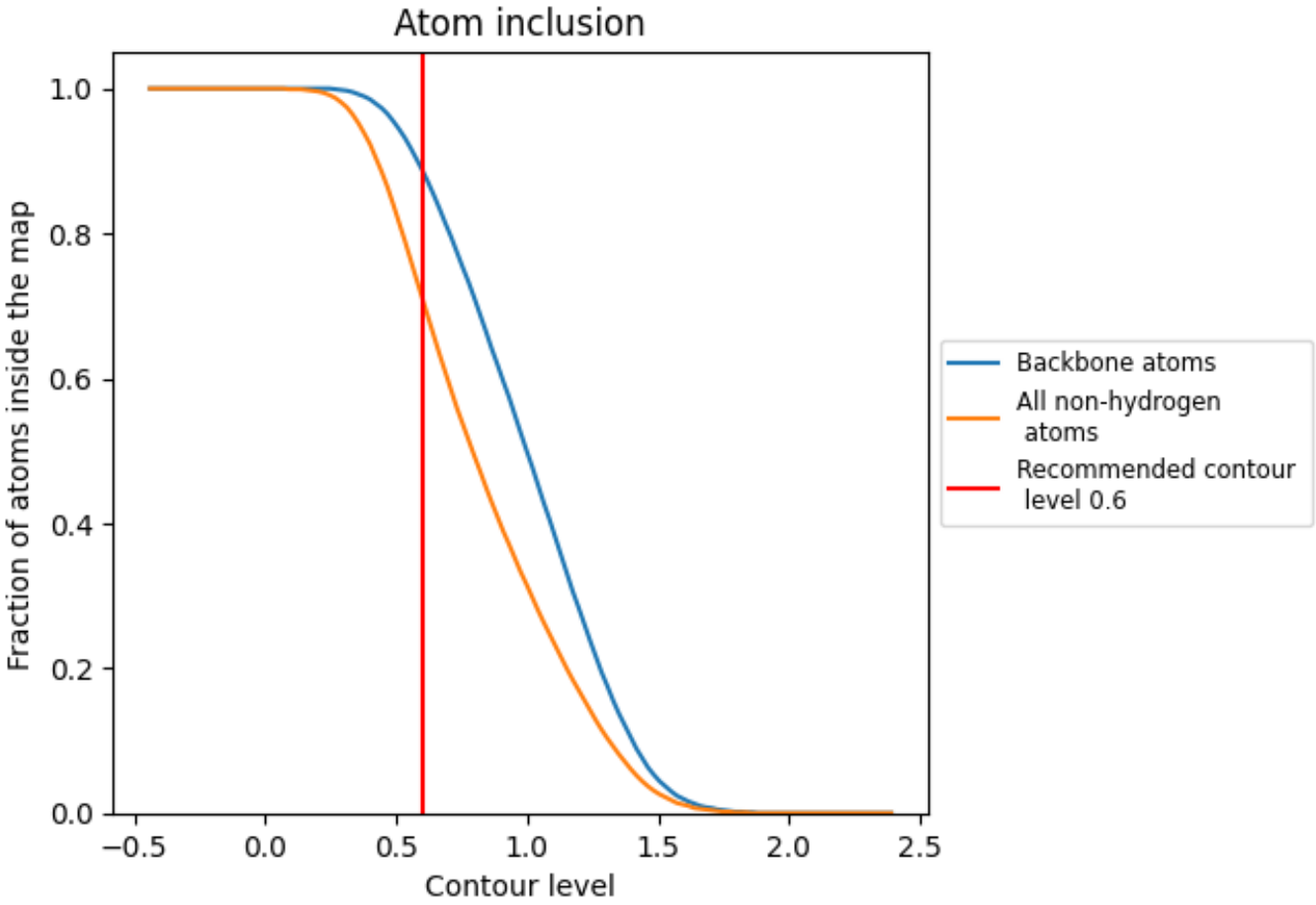
9.3 Atom inclusion mapped to coordinate model



X Y Z

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 (0.6).

9.4 Atom inclusion (i)



At the recommended contour level, 89% of all backbone atoms, 71% 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 (0.6) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7100	0.2470
A	0.7670	0.2910
B	0.7810	0.3060
C	0.7420	0.2960
D	0.7850	0.3080
E	0.7800	0.3040
F	0.7780	0.3130
G	0.3680	0.1350
H	0.6660	0.2510
I	0.8640	0.2900
J	0.7700	0.2300
K	0.6640	0.2280
L	0.5950	0.2440
M	0.8070	0.2380
N	0.7500	0.2150
O	0.5340	0.2000
Q	0.7610	0.2360
R	0.7390	0.2400
S	0.7460	0.2200
T	0.4870	0.1410
a	0.8990	0.2590
b	0.6940	0.2200
c	0.9030	0.2650
d	0.4940	0.1870
e	0.8830	0.2590
f	0.8910	0.2590
g	0.7190	0.1990
h	0.6570	0.1910
i	0.6090	0.1520
j	0.6460	0.1710
k	0.6250	0.1790
l	0.6540	0.1980
m	0.7200	0.2310
n	0.6750	0.2040
o	0.5290	0.1570
p	0.7310	0.2570