



## wwPDB EM Validation Summary Report ⓘ

Dec 10, 2022 – 09:45 am GMT

PDB ID : 5FM1  
EMDB ID : EMD-1731  
Title : Structure of gamma-tubulin small complex based on a cryo-EM map, chemical cross-links, and a remotely related structure  
Authors : Greenberg, C.H.; Kollman, J.; Zelter, A.; Johnson, R.; MacCoss, M.J.; Davis, T.N.; Agard, D.A.; Sali, A.  
Deposited on : 2015-10-30  
Resolution : 8.00 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

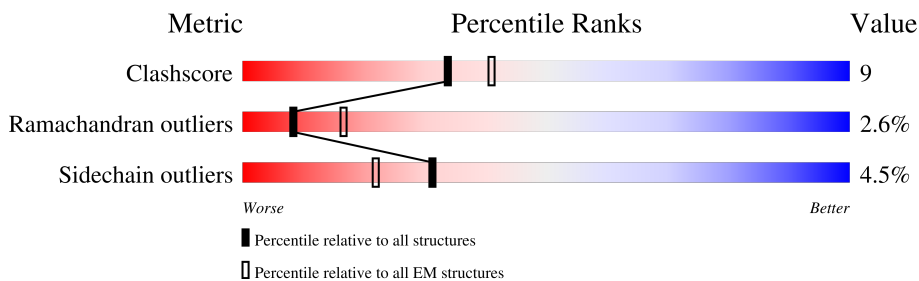
EMDB validation analysis : 0.0.1.dev43  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP)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

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 8.00 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	1-A	823	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>70%</p> <p>43% 22% 5% 5% 30%</p> </div> </div>
1	10-A	823	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>42% 22% 5% 5% 30%</p> </div> </div>
1	2-A	823	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>44% 20% 5% 5% 30%</p> </div> </div>
1	3-A	823	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>45% 21% 5% 5% 30%</p> </div> </div>
1	4-A	823	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>47% 18% 5% 5% 30%</p> </div> </div>
1	5-A	823	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>44% 20% 5% 5% 30%</p> </div> </div>
1	6-A	823	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>46% 19% 5% 5% 30%</p> </div> </div>
1	7-A	823	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>45% 21% 5% 5% 30%</p> </div> </div>










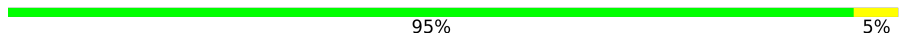
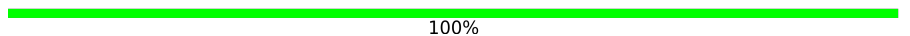
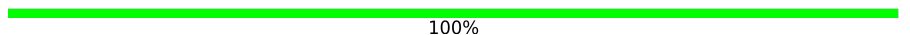

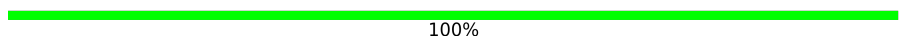
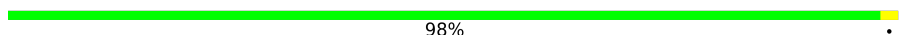
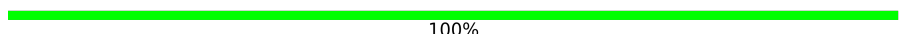
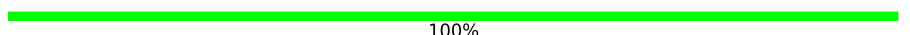
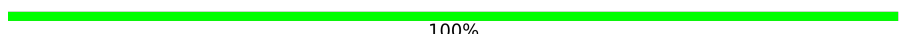
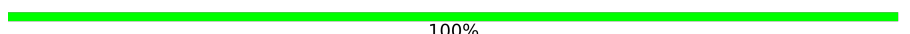
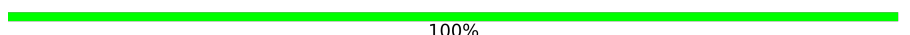
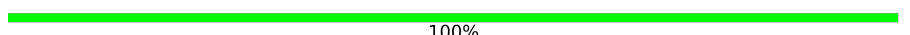
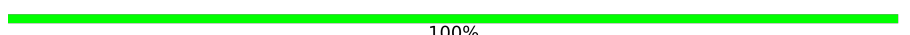
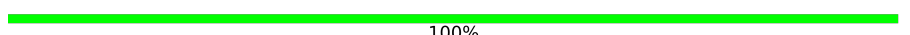
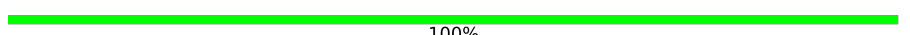
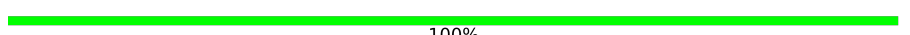
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Mol	Chain	Length	Quality of chain
1	8-A	823	45% 20% . . 30%
1	9-A	823	47% 18% . . 30%
2	1-B	846	43% 19% . 33% 67%
2	10-B	846	42% 21% . . 33%
2	2-B	846	44% 19% . 33%
2	3-B	846	46% 17% . . 33%
2	4-B	846	44% 18% . . 33%
2	5-B	846	44% 20% . 33%
2	6-B	846	41% 21% . . 33%
2	7-B	846	42% 20% . . 33%
2	8-B	846	44% 18% . 33%
2	9-B	846	47% 16% . 33%
3	1-C	473	63% 25% 5% 6% 94%
3	1-D	473	66% 25% . 6% 94%
3	10-C	473	67% 21% 5% 6%
3	10-D	473	64% 23% 6% 6%
3	2-C	473	67% 22% . 6%
3	2-D	473	65% 25% . 6%
3	3-C	473	66% 23% 5% 6%
3	3-D	473	67% 22% . 6%
3	4-C	473	72% 17% 5% 6%
3	4-D	473	63% 27% . . 6%
3	5-C	473	65% 24% . . 6%
3	5-D	473	64% 25% . . 6%
3	6-C	473	64% 25% 5% 6%

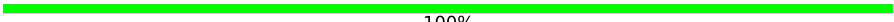
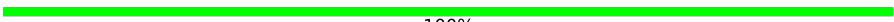
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Mol	Chain	Length	Quality of chain
3	6-D	473	 64% 25% 5% 6%
3	7-C	473	 66% 23% 5% 6%
3	7-D	473	 65% 25% 5% 6%
3	8-C	473	 64% 26% 5% 6%
3	8-D	473	 67% 22% 5% 6%
3	9-C	473	 65% 24% 5% 6%
3	9-D	473	 65% 24% 5% 6%
4	1-E	44	 100%
4	1-F	44	 98%
4	10-E	44	 95% 5%
4	10-F	44	 100%
4	2-E	44	 100%
4	2-F	44	 100%
4	3-E	44	 100%
4	3-F	44	 98%
4	4-E	44	 100%
4	4-F	44	 100%
4	5-E	44	 100%
4	5-F	44	 100%
4	6-E	44	 100%
4	6-F	44	 100%
4	7-E	44	 100%
4	7-F	44	 100%
4	8-E	44	 100%
4	8-F	44	 100%

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Mol	Chain	Length	Quality of chain
4	9-E	44	 100%
4	9-F	44	 100%

## 2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 169380 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 SPINDLE POLE BODY COMPONENT SPC97.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	1-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	2-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	3-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	4-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	5-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	6-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	7-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	8-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	9-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		
1	10-A	575	Total	C	N	O	S	0	0
			4831	3110	806	889	26		

- Molecule 2 is a protein called SPINDLE POLE BODY COMPONENT SPC98.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	1-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		
2	2-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		
2	3-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		
2	4-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		
2	5-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	6-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		
2	7-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		
2	8-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		
2	9-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		
2	10-B	565	Total	C	N	O	S	0	0
			4701	3058	775	853	15		

- Molecule 3 is a protein called TUBULIN GAMMA CHAIN.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	1-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	2-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	3-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	4-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	5-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	6-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	7-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	8-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	9-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	10-C	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	1-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	2-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	3-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	4-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		

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Mol	Chain	Residues	Atoms					AltConf	Trace
3	5-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	6-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	7-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	8-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	9-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		
3	10-D	445	Total	C	N	O	S	0	0
			3483	2179	591	696	17		

- Molecule 4 is a protein called SPINDLE POLE BODY COMPONENT 110.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	1-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	2-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	3-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	4-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	5-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	6-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	7-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	8-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	9-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	10-E	44	Total	C	N	O	0	0
			220	132	44	44		
4	1-F	44	Total	C	N	O	0	0
			220	132	44	44		
4	2-F	44	Total	C	N	O	0	0
			220	132	44	44		
4	3-F	44	Total	C	N	O	0	0
			220	132	44	44		

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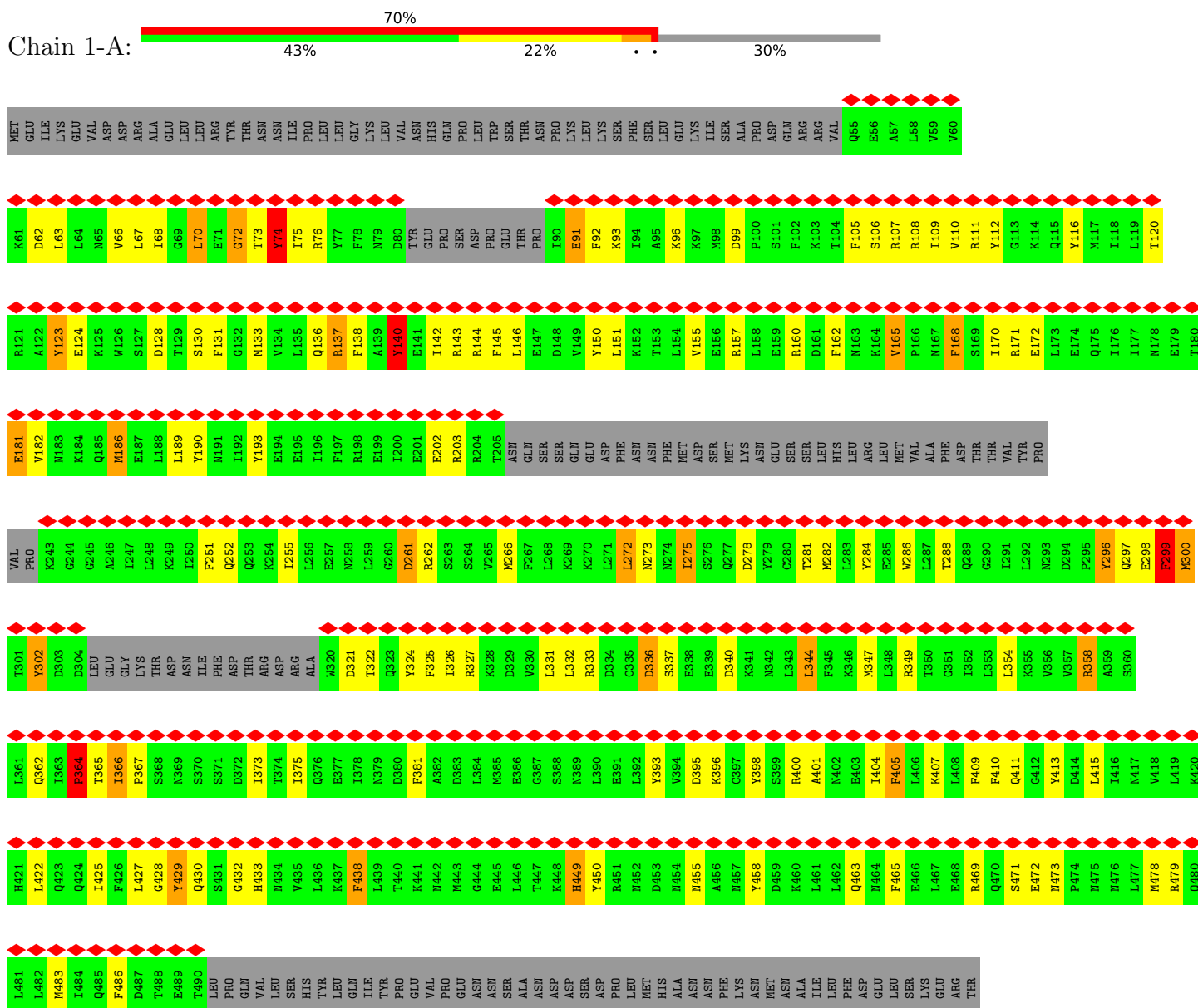
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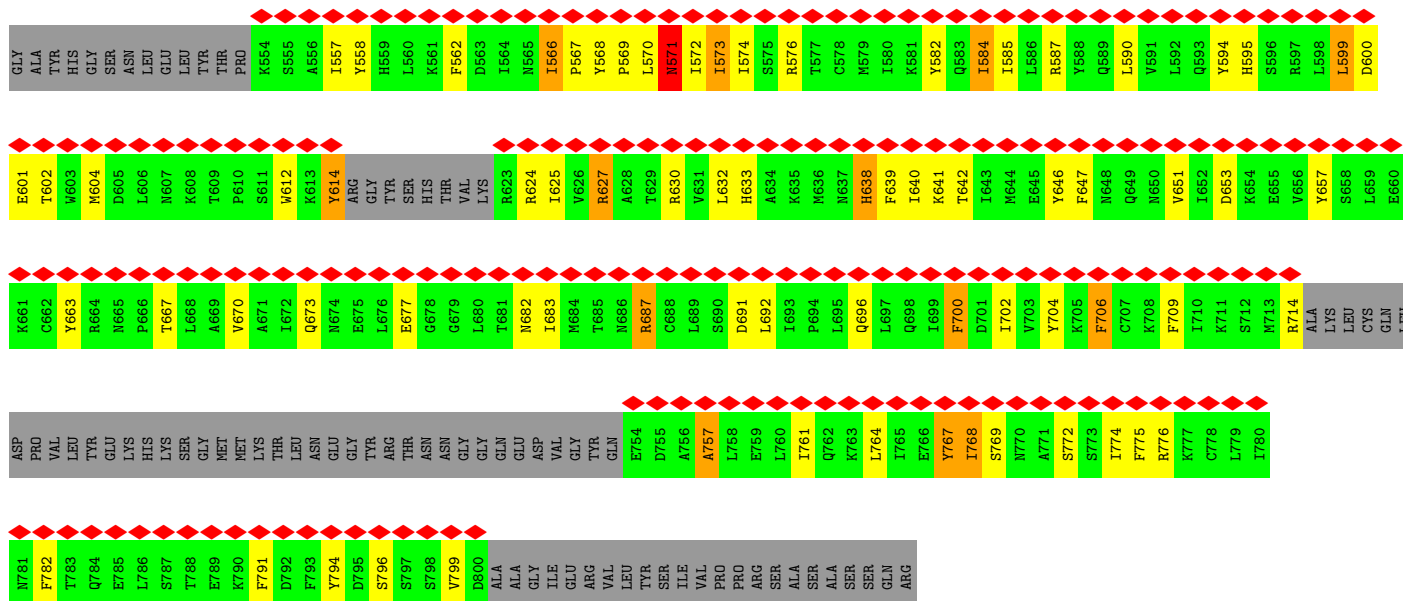
<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>				<b>AltConf</b>	<b>Trace</b>
4	4-F	44	Total 220	C 132	N 44	O 44	0	0
4	5-F	44	Total 220	C 132	N 44	O 44	0	0
4	6-F	44	Total 220	C 132	N 44	O 44	0	0
4	7-F	44	Total 220	C 132	N 44	O 44	0	0
4	8-F	44	Total 220	C 132	N 44	O 44	0	0
4	9-F	44	Total 220	C 132	N 44	O 44	0	0
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### 3 Residue-property plots

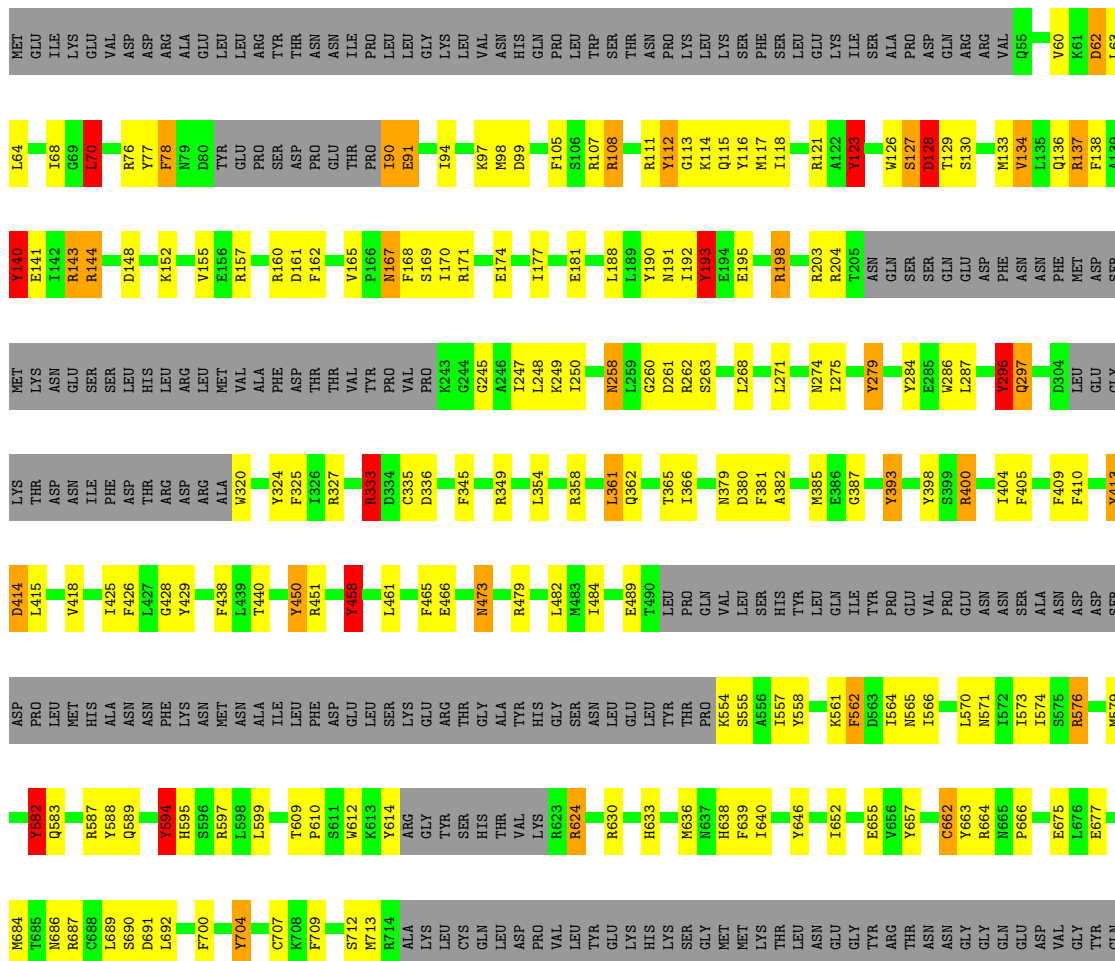
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: SPINDLE POLE BODY COMPONENT SPC97



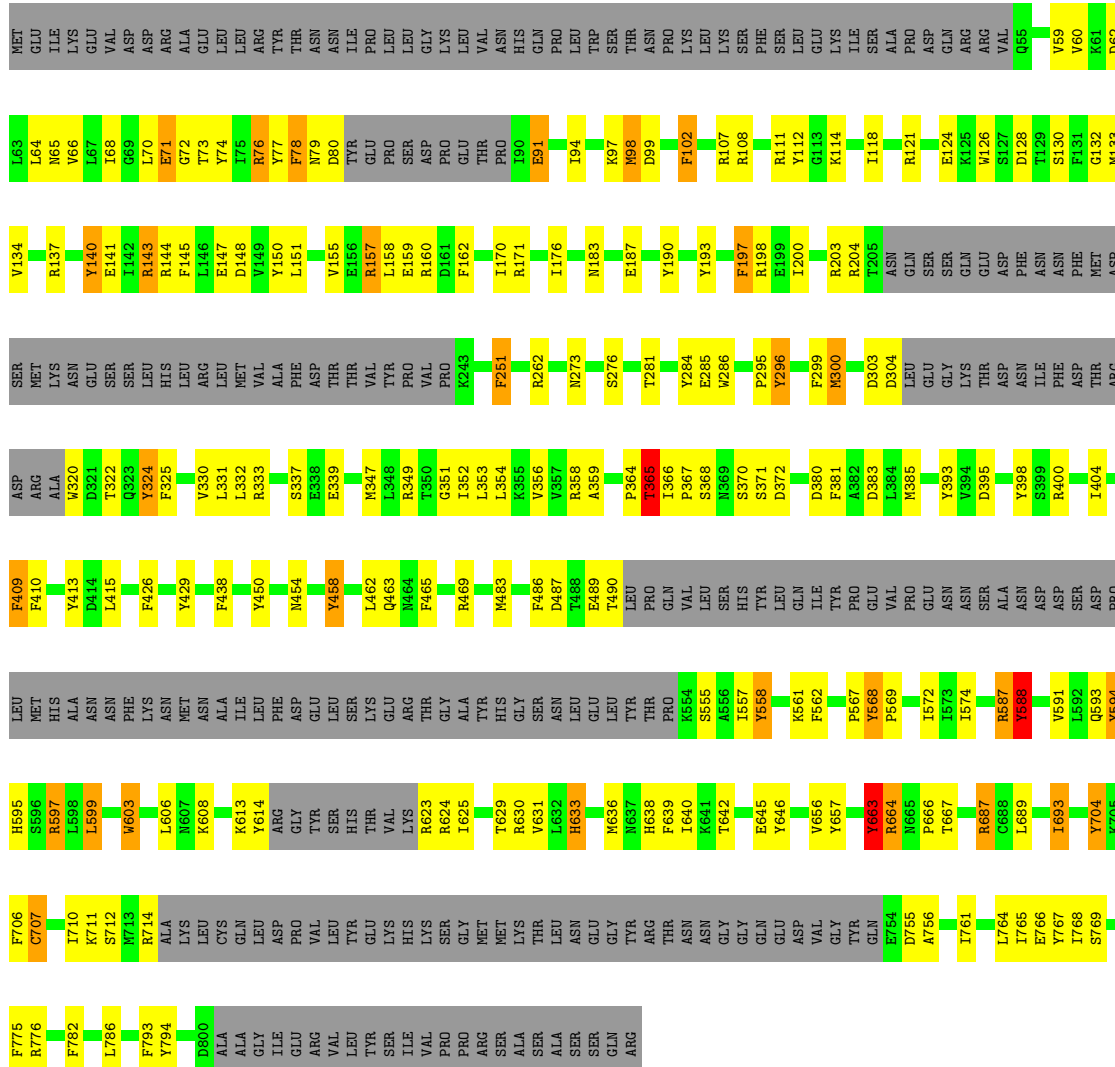


• Molecule 1: SPINDLE POLE BODY COMPONENT SPC97

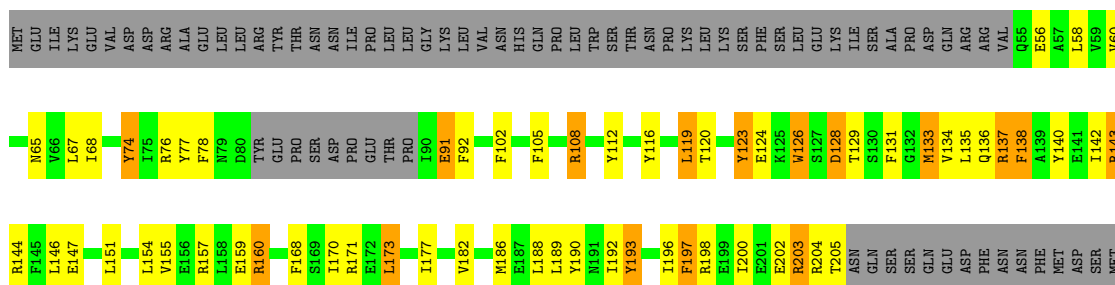


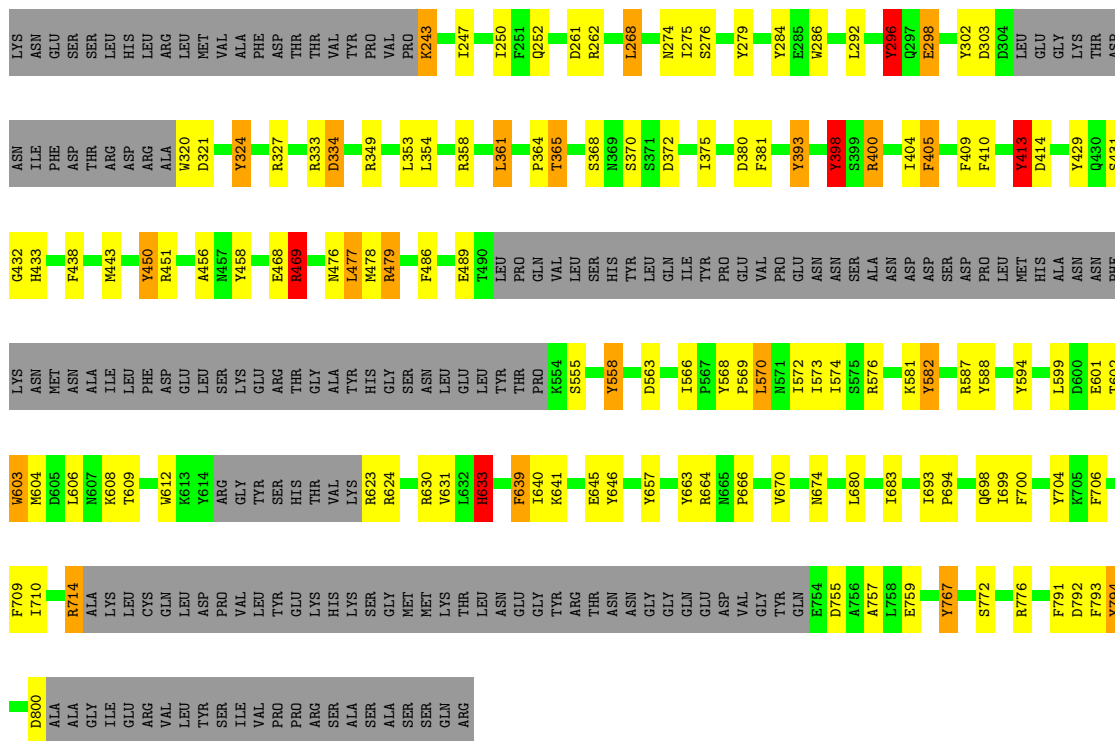


• Molecule 1: SPINDLE POLE BODY COMPONENT SPC97

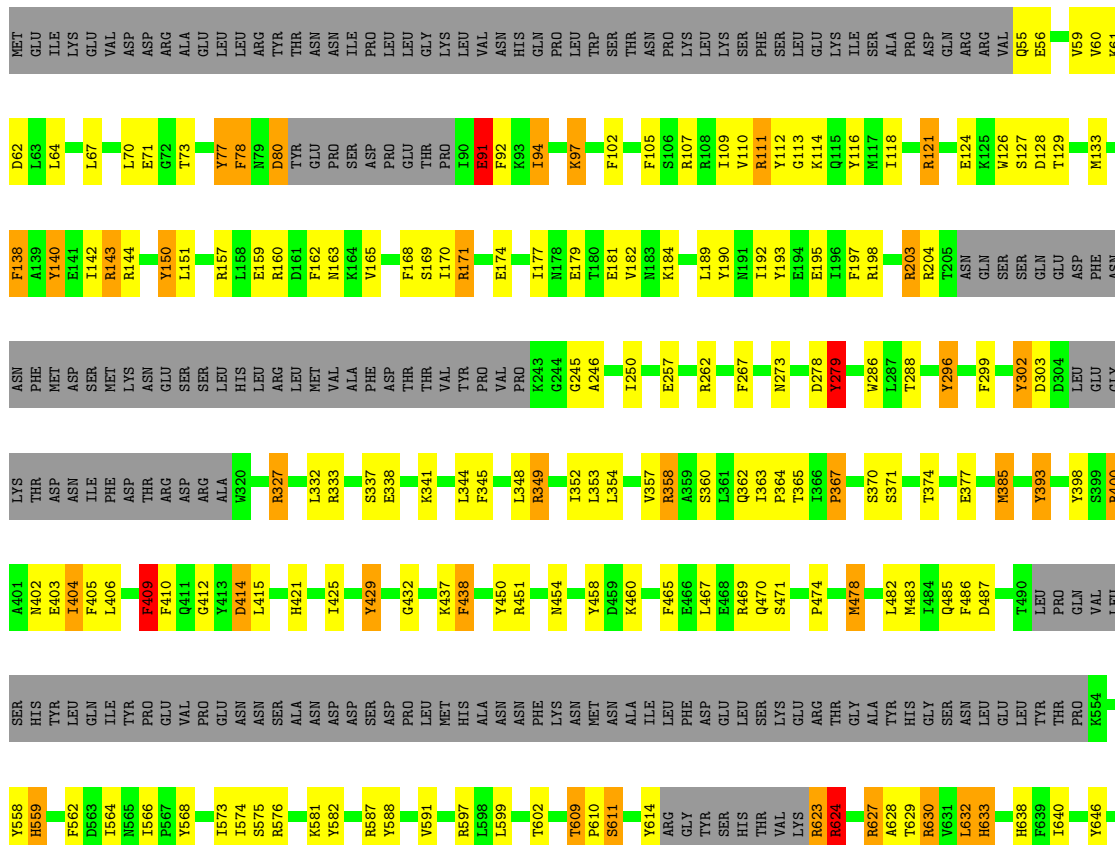


• Molecule 1: SPINDLE POLE BODY COMPONENT SPC97

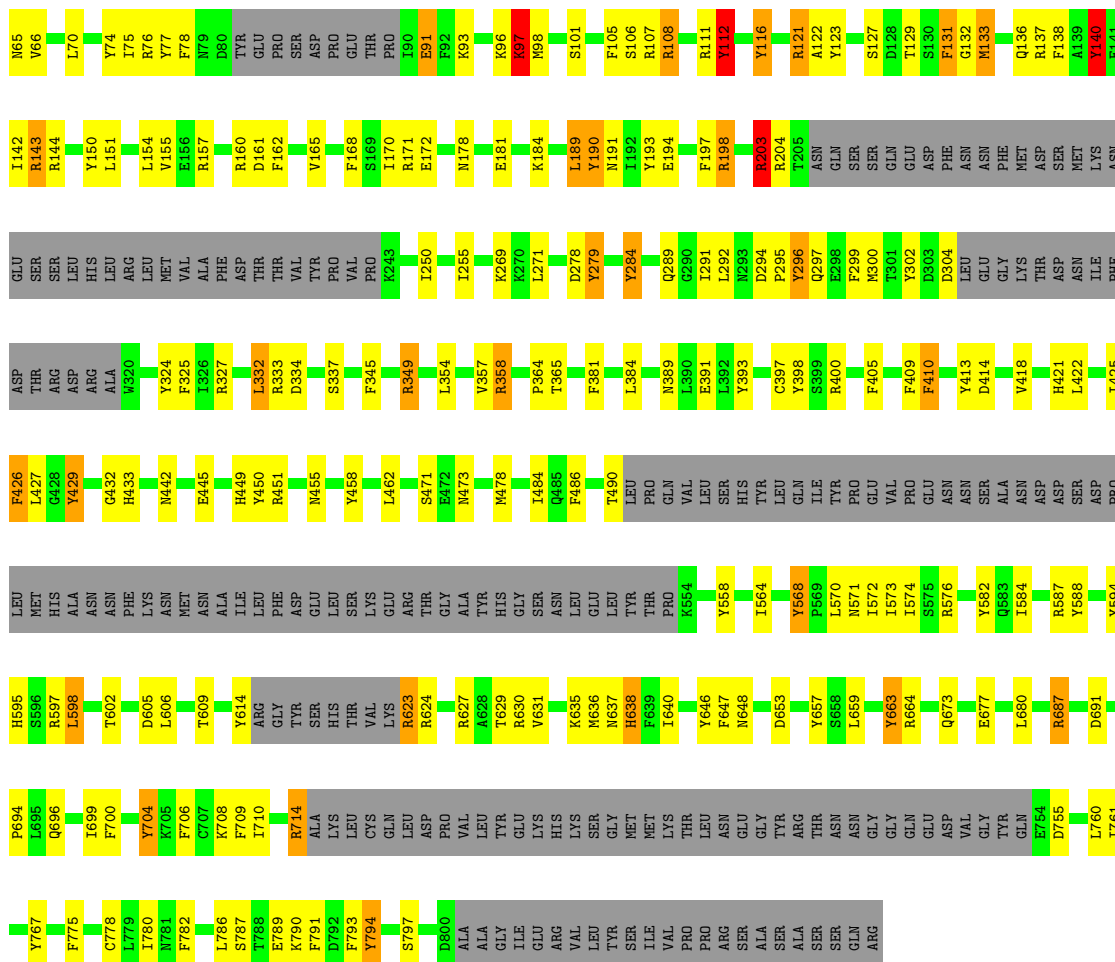




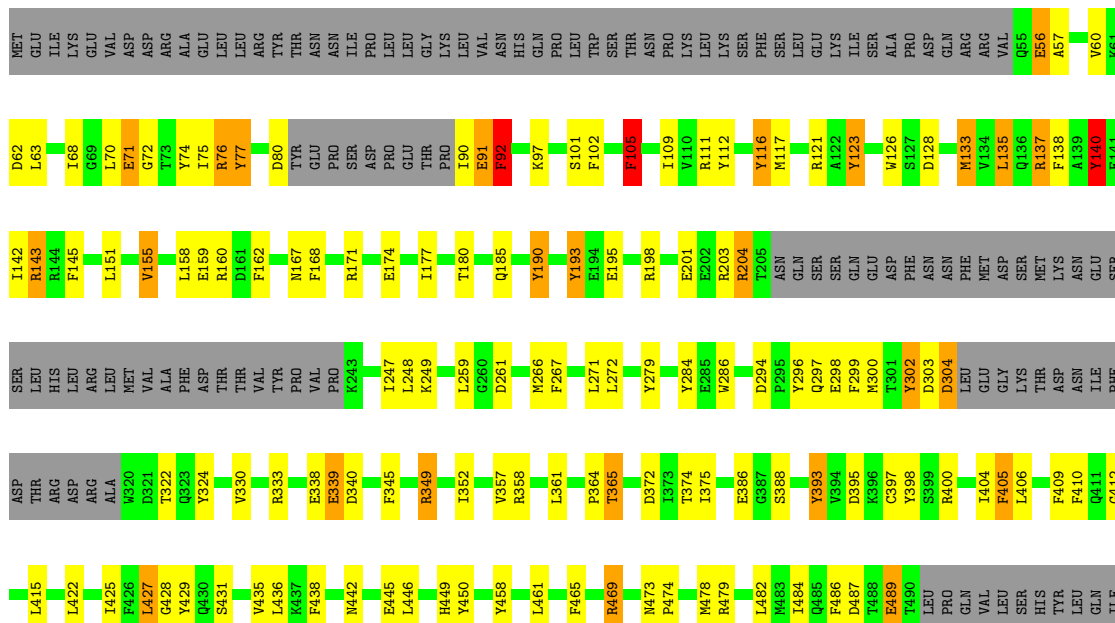
● Molecule 1: SPINDLE POLE BODY COMPONENT SPC97

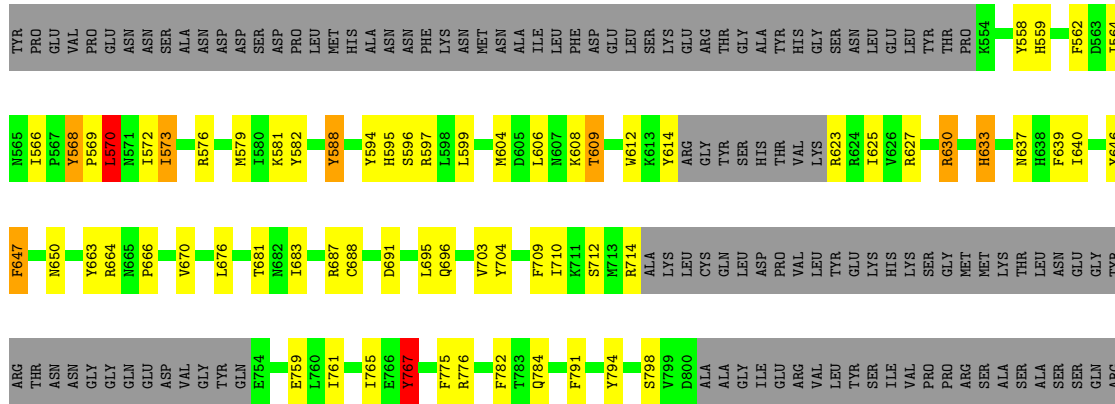




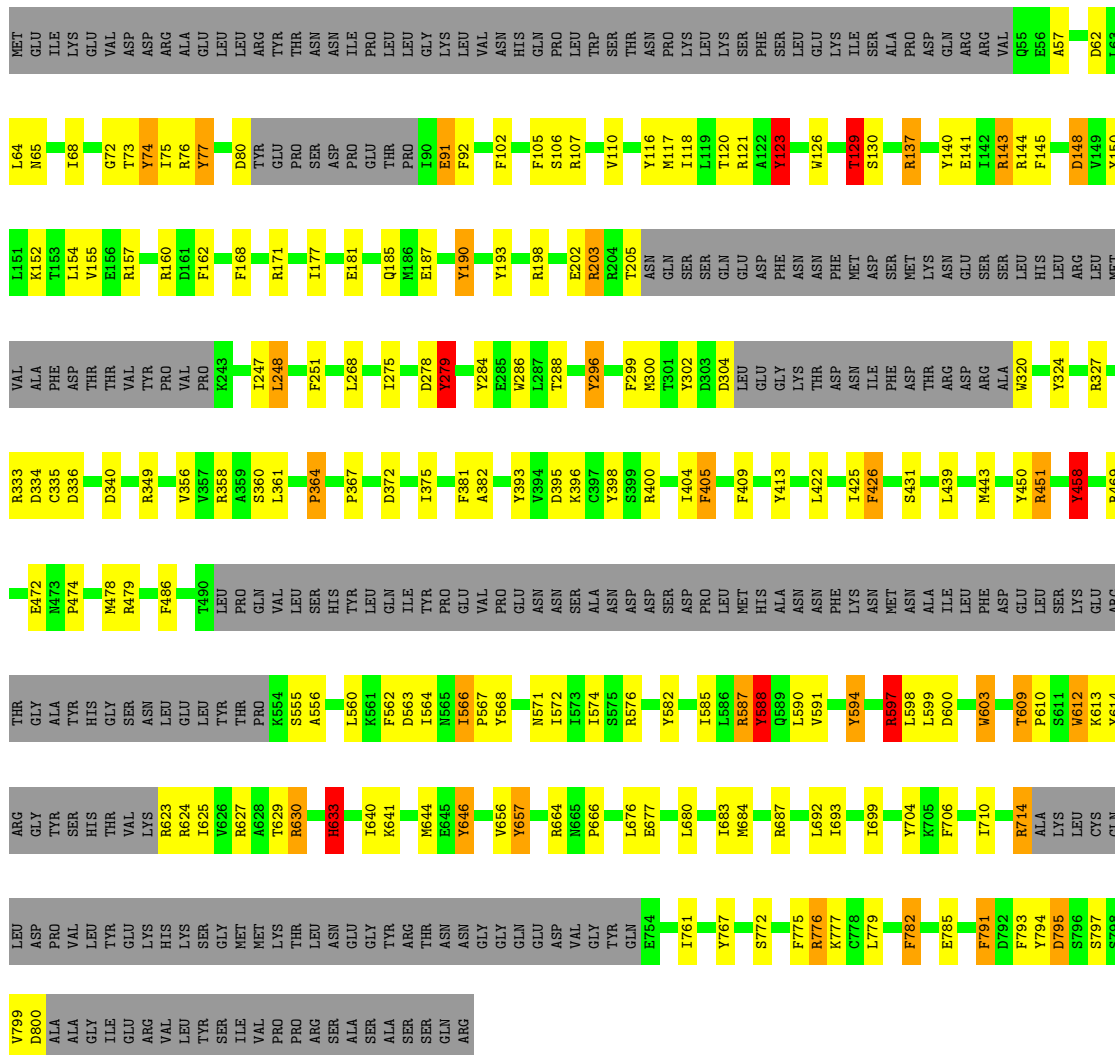


● Molecule 1: SPINDLE POLE BODY COMPONENT SPC97





● Molecule 1: SPINDLE POLE BODY COMPONENT SPC97



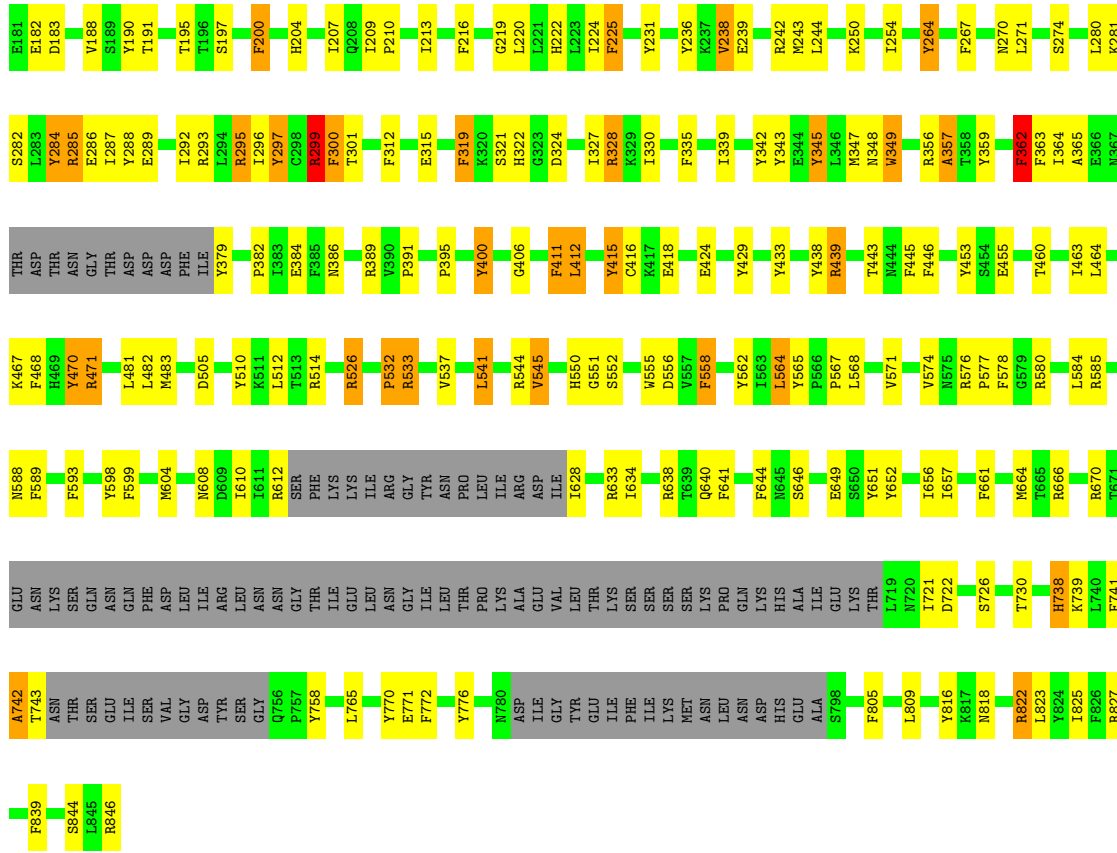
● Molecule 1: SPINDLE POLE BODY COMPONENT SPC97



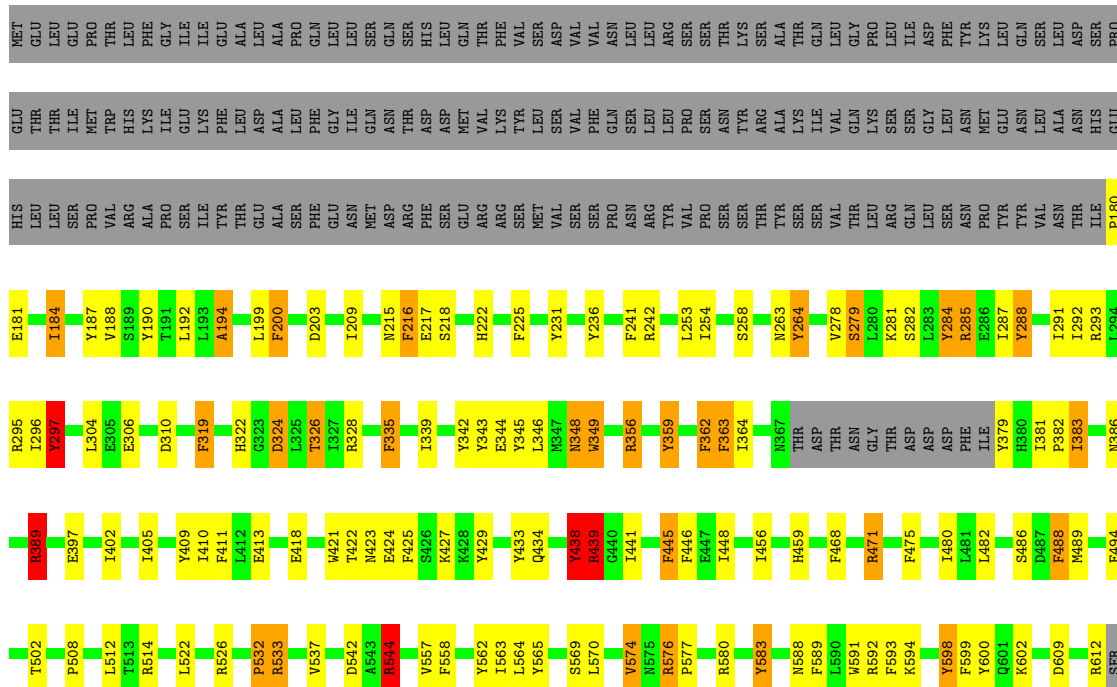


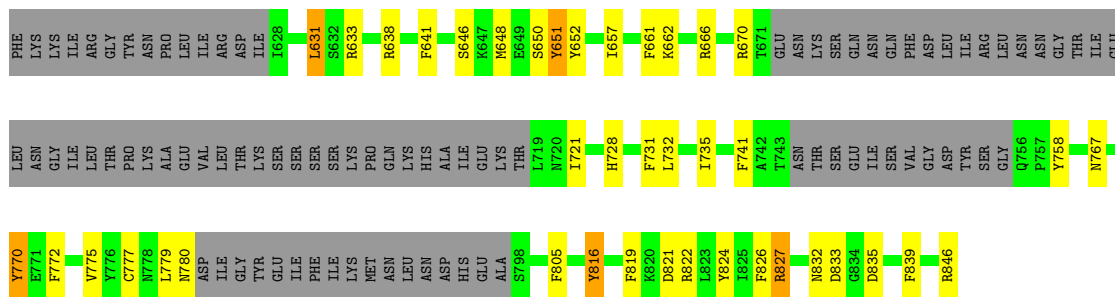




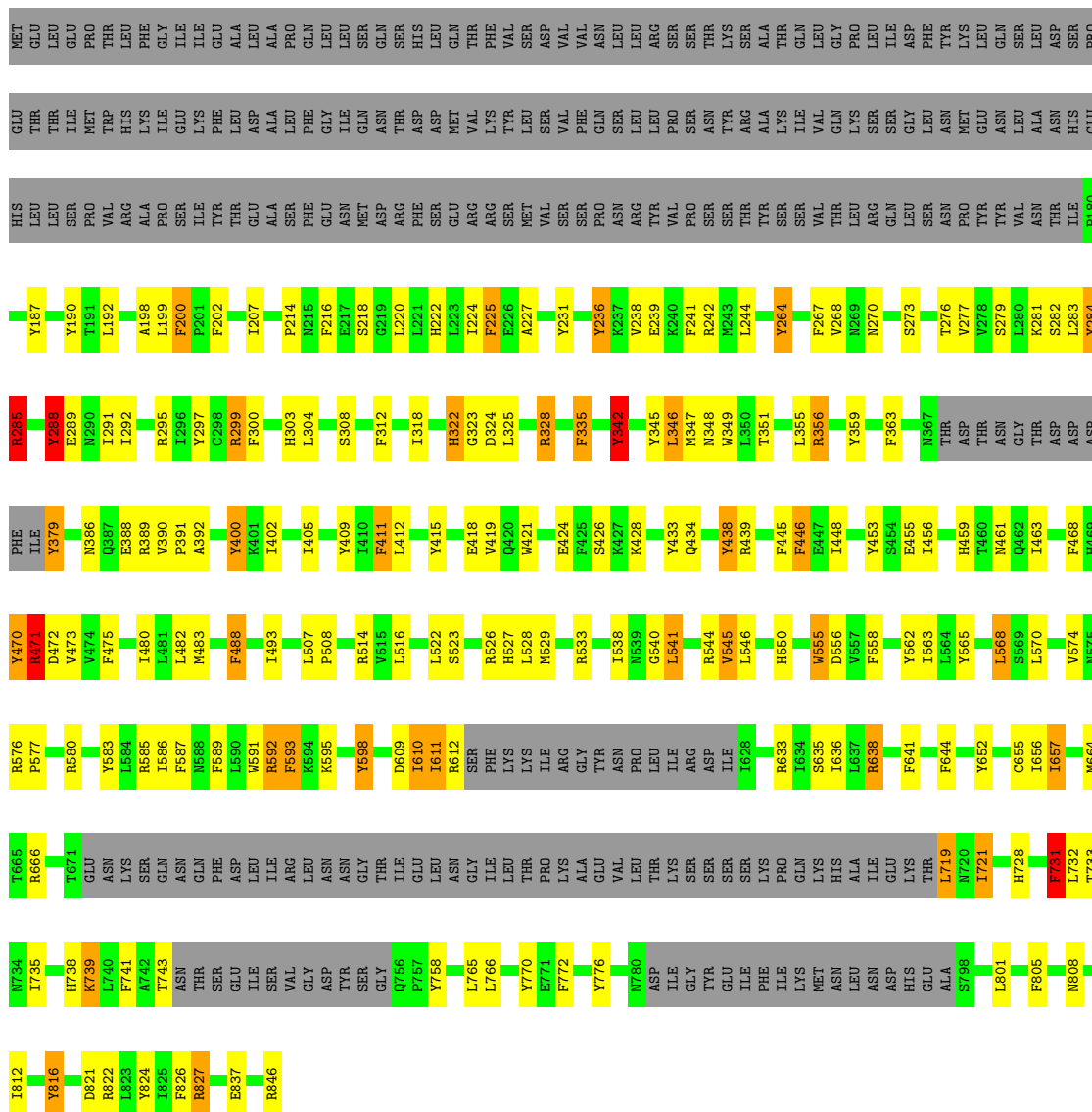


● Molecule 2: SPINDLE POLE BODY COMPONENT SPC98





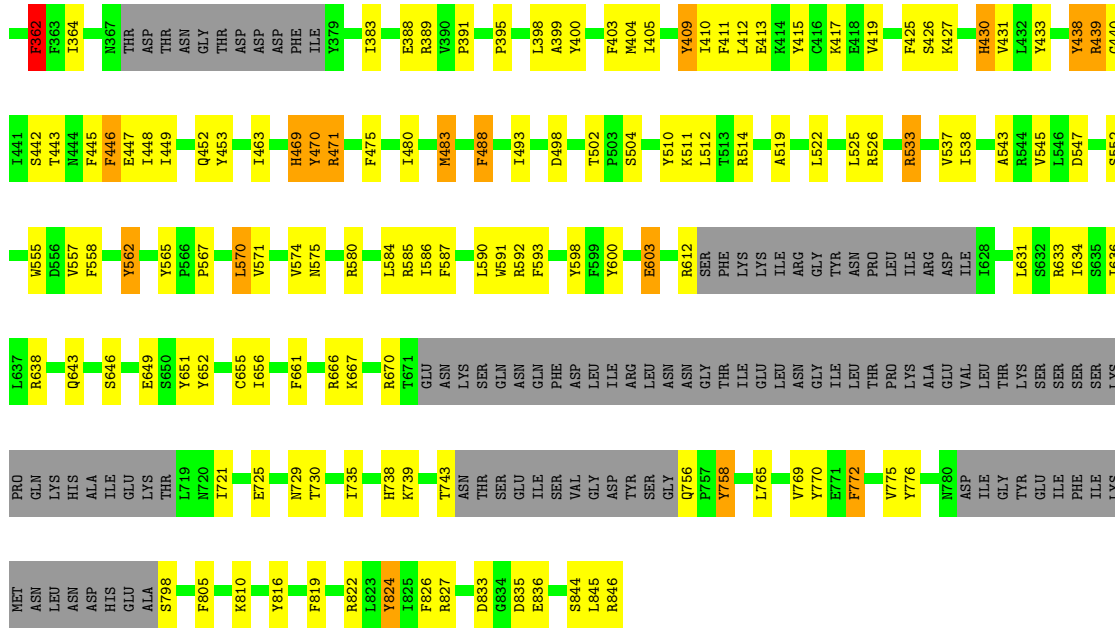
● Molecule 2: SPINDLE POLE BODY COMPONENT SPC98



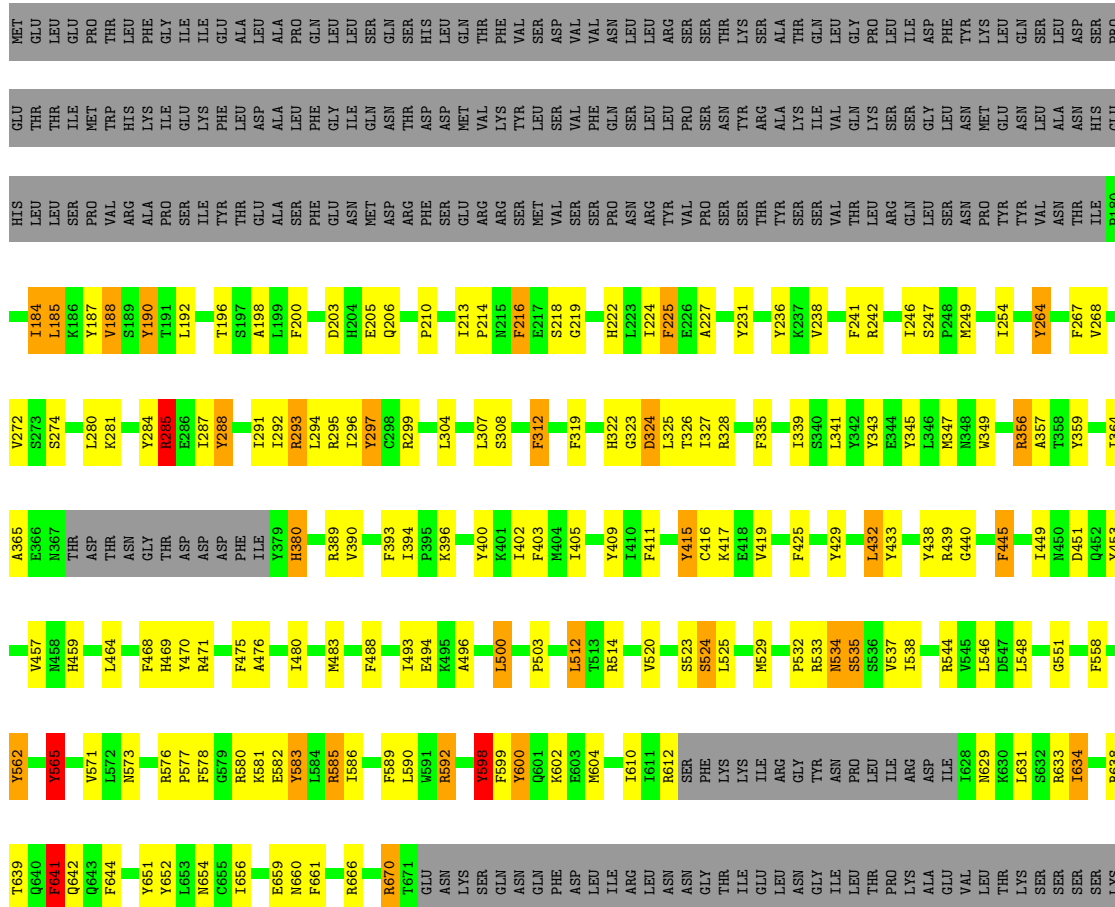
● Molecule 2: SPINDLE POLE BODY COMPONENT SPC98







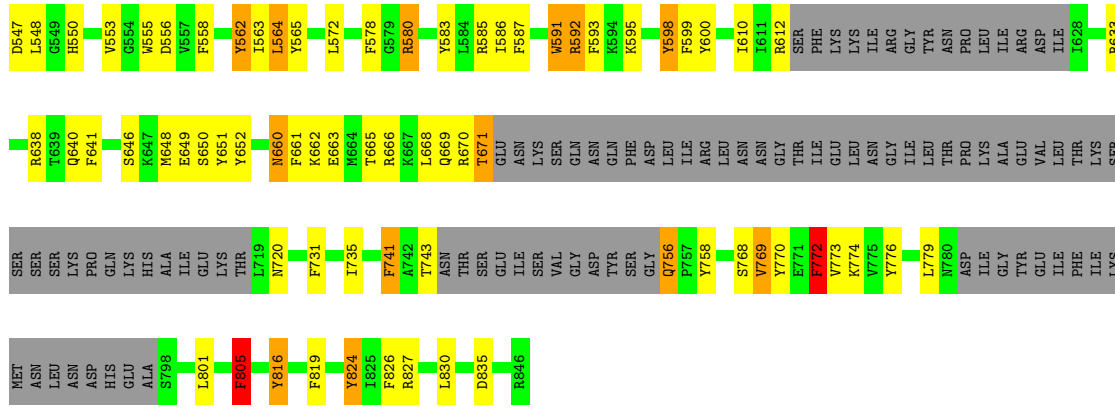
• Molecule 2: SPINDLE POLE BODY COMPONENT SPC98



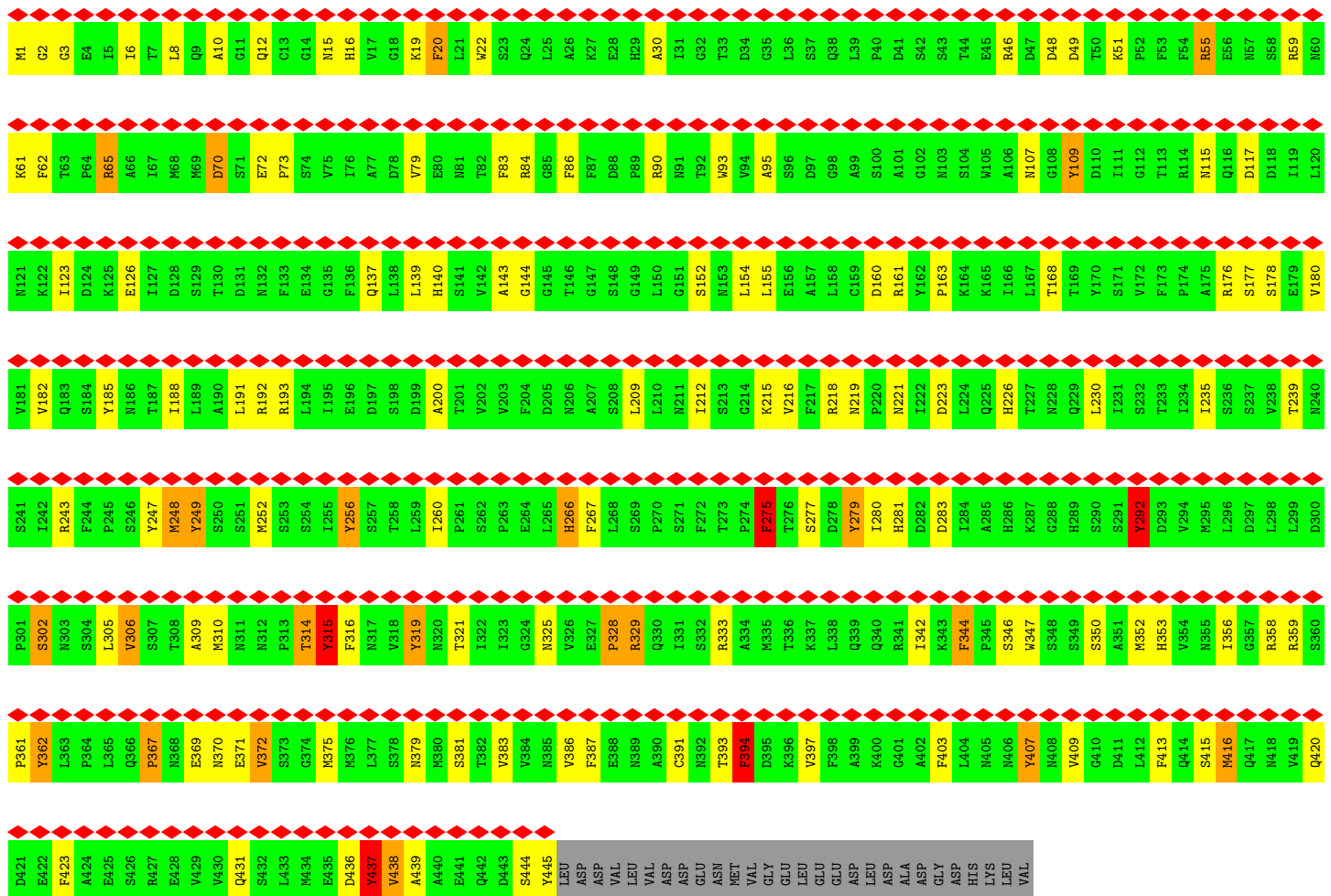








• Molecule 3: TUBULIN GAMMA CHAIN



• Molecule 3: TUBULIN GAMMA CHAIN



M1	G2	G3	E4	I6	I6	I7	L8	Q9	A10	G11	Q12	C13	G14	M15	H16	V17	G18	K19	F20	L21	W22	S23	Q24	L25	A26	K27	E28	H29	A30	I31	G32	T33	D34	G35	L36	S37	Q38	L39	P40	D41	S42	S43	T44	E45	R46	D47	D48	T49	D50	K51	P52	F53	F54	R55	E56	N57	S58	R59	N60		
R61	F62	T63	P64	R65	A66	I67	M68	N69	D70	S71	E72	F73	S74	V75	I76	A77	D78	V79	E80	H81	L82	T82	F83	R84	G85	F86	F87	D88	P89	R90	N91	G92	T92	N93	V94	A95	S96	D97	Q98	L99	S100	A101	G102	M103	S104	V105	I106	M107	G108	Y109	D110	I111	G112	T113	R114	M115	D116	D117	S118	I119	L120
M121	K122	I123	D124	K125	I126	I127	D128	S129	T130	D131	M132	F133	E134	G135	F136	Q137	L138	L139	H140	S141	V142	A143	G144	G145	T146	G147	S148	G149	L150	G151	S152	M153	L154	L155	E156	A157	L158	C159	D160	R161	Y162	P163	K164	K165	I166	L167	T168	T169	Y170	S171	V172	F173	P174	M175	R176	S177	D178	E179	V180		
V181	V182	Q183	S184	Y185	M186	T187	I188	L189	A190	L191	R192	L193	E194	G195	F196	D197	S198	D199	A200	T201	V202	V203	F204	D205	N206	A207	S208	L209	L210	N211	I212	S213	G214	K215	V216	F217	R218	N219	P220	N221	Y222	D223	L224	Q225	H226	T227	N228	Q229	L230	I231	S232	T233	I234	I235	S236	S237	V238	T239	N240		
S241	I242	R243	F244	P245	S246	Y247	M248	Y249	S250	S251	M252	S253	S254	I255	Y256	S257	T258	L259	L260	S261	I262	S263	E264	L265	H266	F267	L268	S269	P270	S271	T272	T273	P274	F275	T276	S277	D278	Y279	L280	H281	D282	D283	L284	A285	H286	K287	G288	H289	S290	S291	Y292	D293	V294	I295	L296	D297	L298	L299	D300		
P301	S302	N303	S304	L305	V306	S307	T308	A309	M310	N311	N312	P313	T314	Y315	F316	N317	V318	Y319	N320	T321	I322	V323	G324	N325	V326	E327	P328	R329	Q330	I331	S332	R333	A334	M335	T336	K337	Q338	Q339	Q340	R341	R342	K343	F344	P345	S346	W347	S348	S349	S350	A351	M352	H353	V354	N355	I356	G357	L358	R359	S360		
F361	Y362	L363	P364	L365	Q366	P367	N368	E369	N370	E371	V372	G374	M375	M376	L377	S378	N379	M380	S381	T382	V383	V384	N385	V386	F387	E388	N389	A390	C391	N392	T393	F394	D395	K396	V397	F398	A399	K400	G401	A402	F403	L404	M405	N406	Y407	N408	V409	G410	D411	L412	F413	Q414	S415	M416	Q417	N418	V419	Q420			
D421	E422	F423	A424	E425	S426	R427	E428	V429	M430	Q431	S432	L433	M434	E435	D436	Y437	V438	A439	A440	E441	Q442	D443	S444	Y445	LEU	ASP	ASP	VAL	LEU	VAL	VAL	GLU	ASP	GLU	ASN	MET	VAL	GLY	GLU	LEU	GLU	GLU	ASP	ASP	ALA	ASP	GLY	ASP	GLY	HIS	LYS	LEU	VAL								

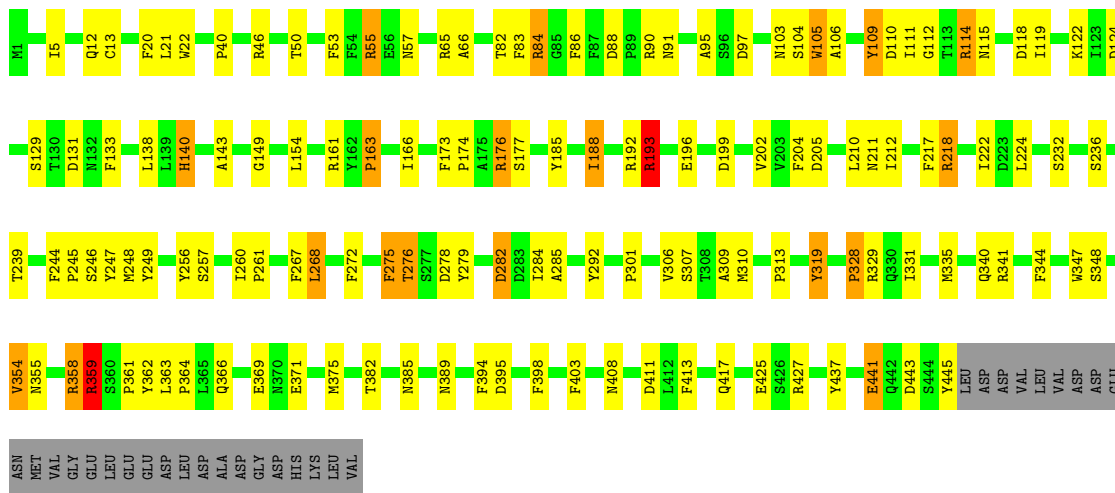
• Molecule 3: TUBULIN GAMMA CHAIN

Chain 2-C: 67% 22% 6%

M1	I6	C13	G14	N15	W22	L39	P40	D41	S42	E45	R46	D47	D48	R59	R65	D70	S74	R84	G85	F86	F87	N90	N91	S96	D97	G98	A99	D10	T113	R114	D117	D118	I127	T130	L138	L139	H140	S141	L259	I260	P261	L155	C159	D160	R161	Y162	P163	T168	T169	Y170	S171	V172	R176	V182	Y185	I186	I188	R192	R193	L194	D197	S198	D199	A200	F204	N211	I212	R218	L224	I342	K343	F344	W347	S348	S349	S350	A351	M352	H353	V354	N355	I356	G357	L358	R359	T393
L285	F272	T273	P274	F275	T276	S277	D278	Y279	D283	I284	Y292	D297	N311	F316	T187	V318	Y319	N320	I323	G324	N325	R329	S332	R333	K337	L338	Q339	Q340	I342	K343	F344	W347	I242	R243	F244	Y247	N248	Y249	I255	Y256	M375	M376	L377	L259	I260	P261																																								
F394	D395	K396	V397	F403	Y407	N408	V409	F413	M416	D421	E422	F423	V429	E435	D436	V437	A438	Y437	V438	Y437	A439	A439	D443	Y445	LEU	ASP	ASP	VAL	VAL	VAL	GLU	ASP	GLU	ASN	MET	VAL	GLY	GLU	LEU	GLU	GLU	ASP	ASP	ALA	ASP	GLY	ASP	GLY	HIS	LYS	LEU	VAL																																		

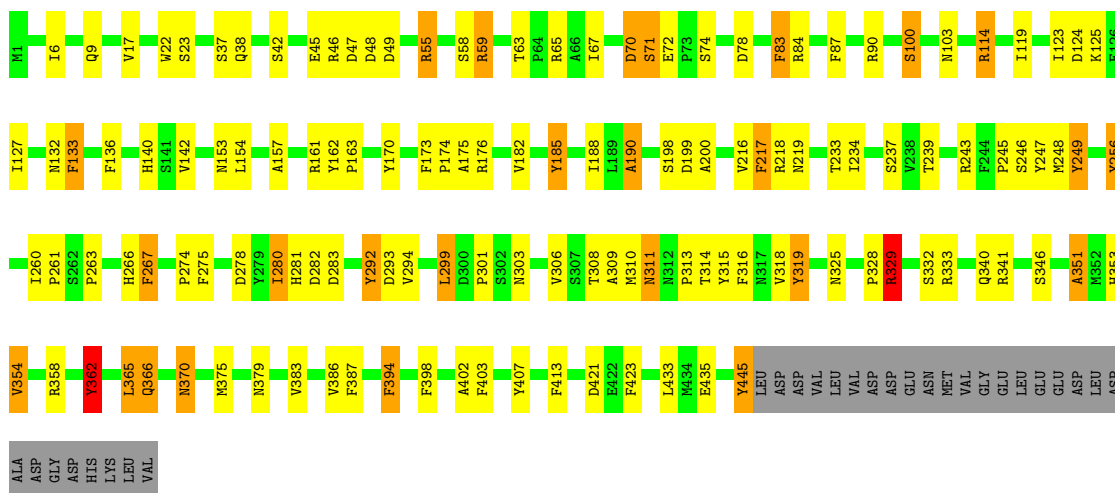
• Molecule 3: TUBULIN GAMMA CHAIN

Chain 2-D: 65% 25% 6%



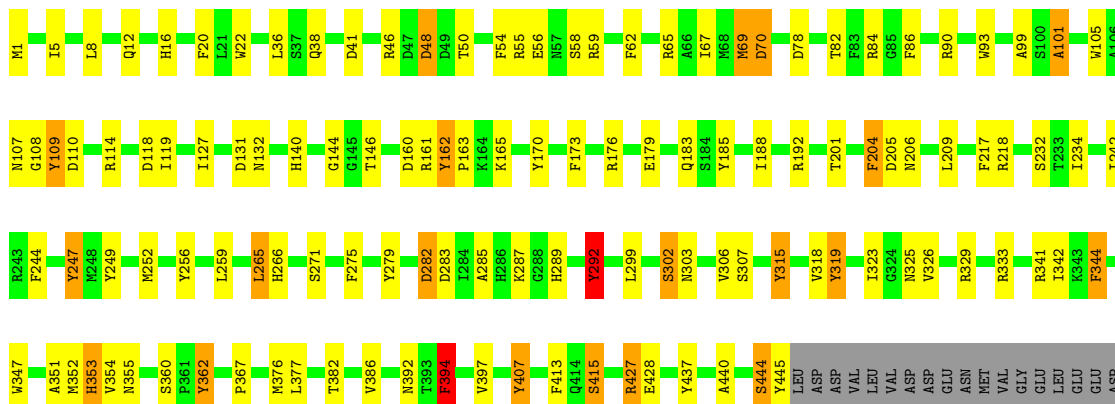
• Molecule 3: TUBULIN GAMMA CHAIN

Chain 3-C: 66% 23% 5% 6%



• Molecule 3: TUBULIN GAMMA CHAIN

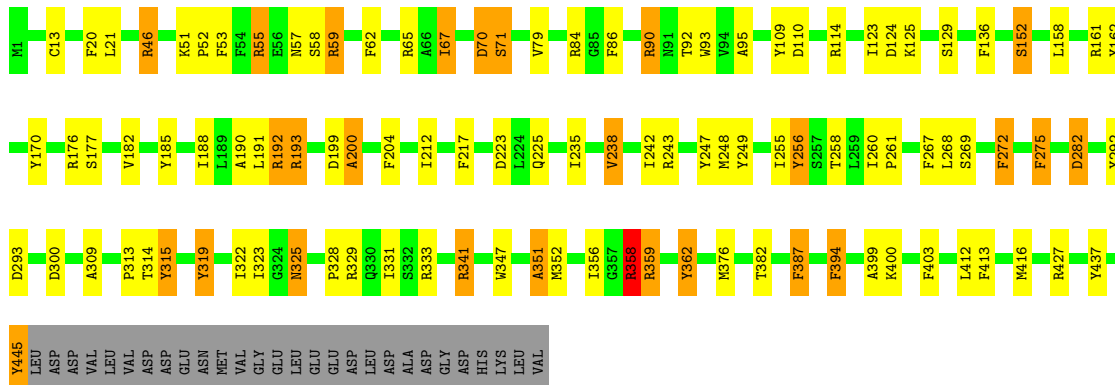
Chain 3-D: 67% 22% 6%



LEU  
ASP  
ALA  
ASP  
GLY  
ASP  
HIS  
LYS  
LEU  
VAL

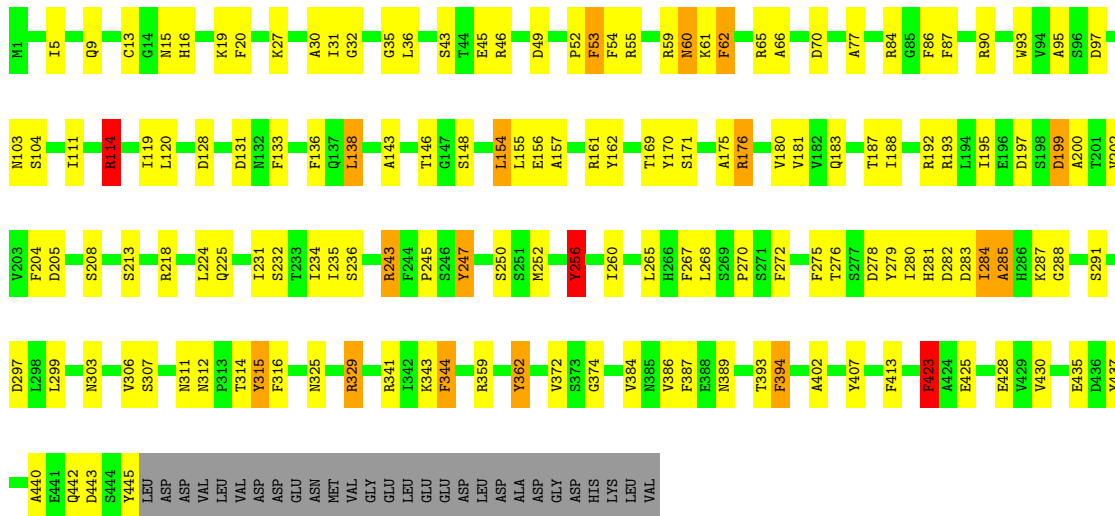
• Molecule 3: TUBULIN GAMMA CHAIN

Chain 4-C: 72% 17% 5% 6%



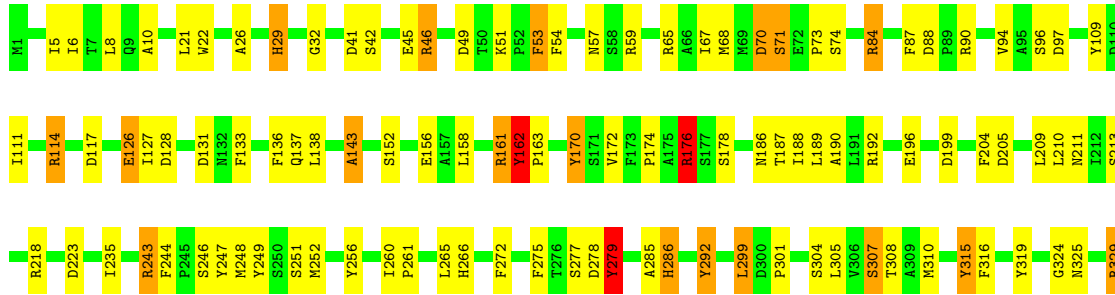
• Molecule 3: TUBULIN GAMMA CHAIN

Chain 4-D: 63% 27% 6%



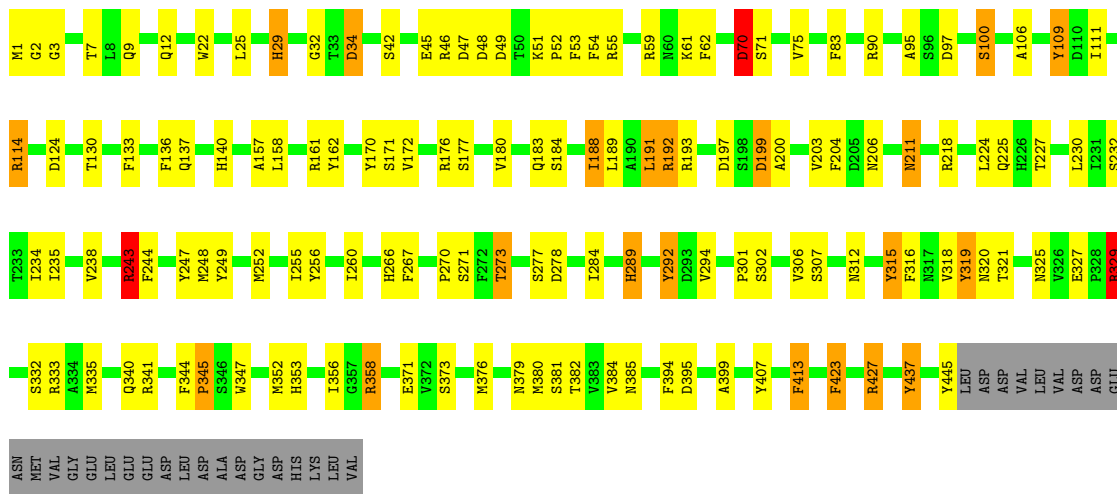
• Molecule 3: TUBULIN GAMMA CHAIN

Chain 5-C: 65% 24% 6%

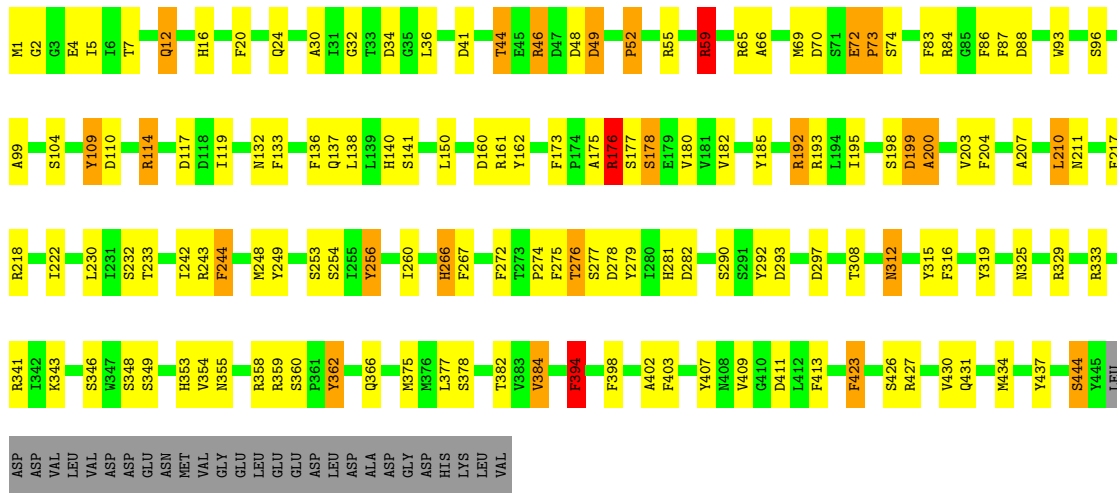




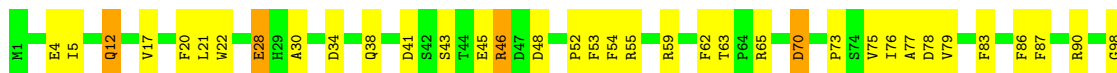
• Molecule 3: TUBULIN GAMMA CHAIN

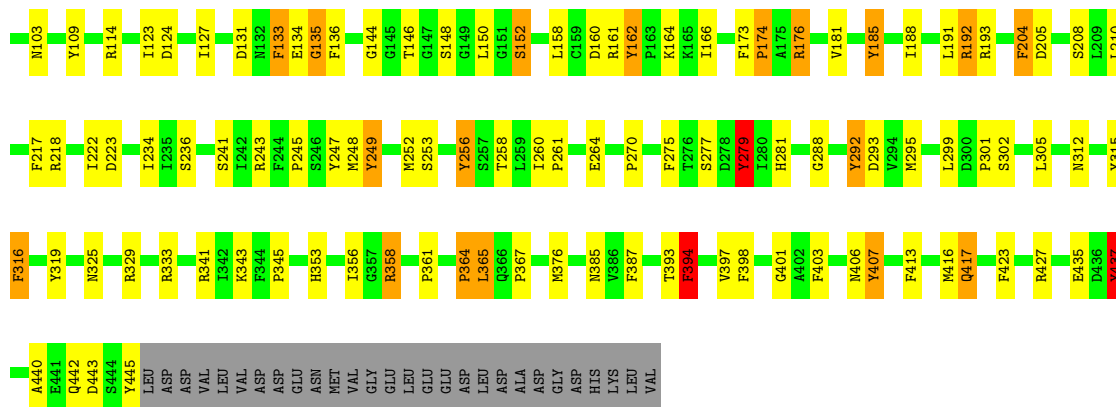


• Molecule 3: TUBULIN GAMMA CHAIN

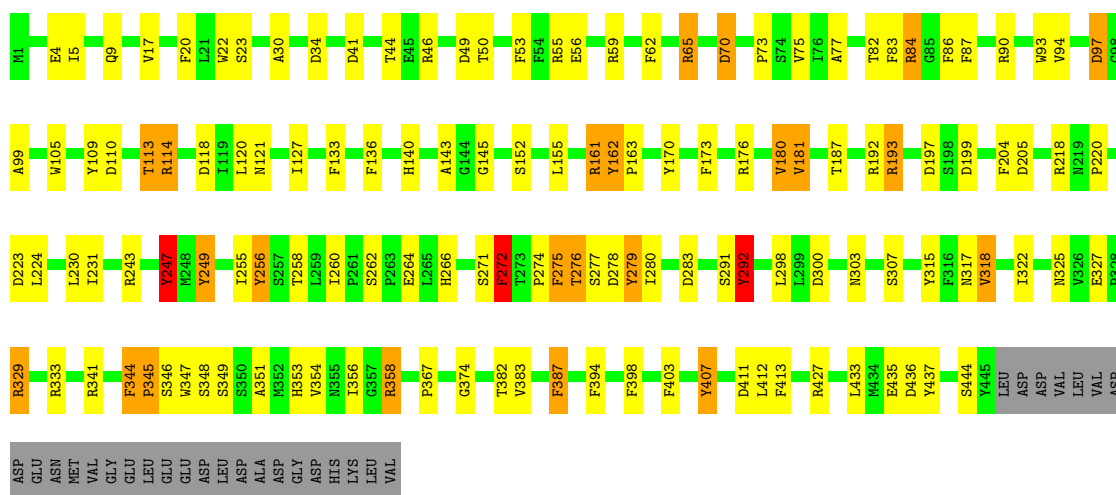


• Molecule 3: TUBULIN GAMMA CHAIN

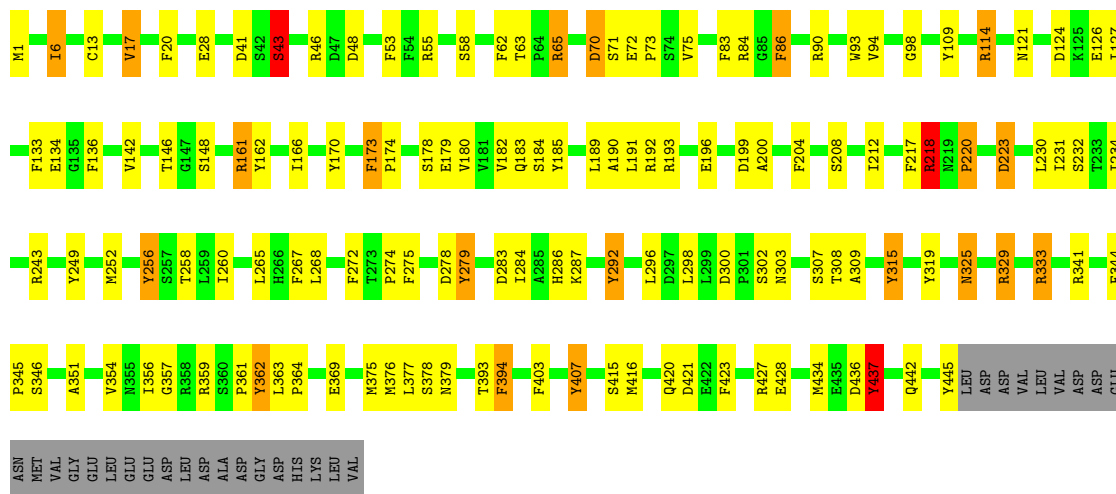




● Molecule 3: TUBULIN GAMMA CHAIN

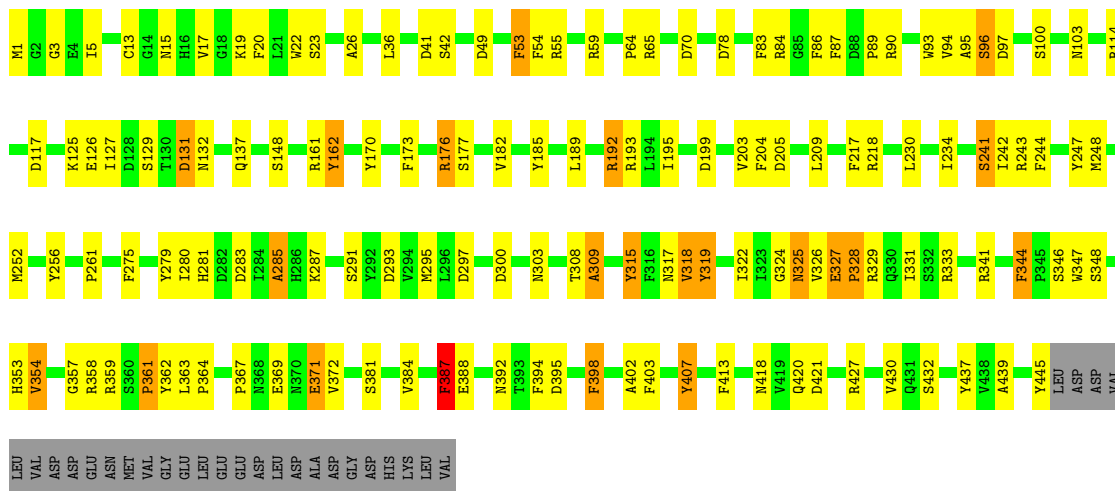


● Molecule 3: TUBULIN GAMMA CHAIN



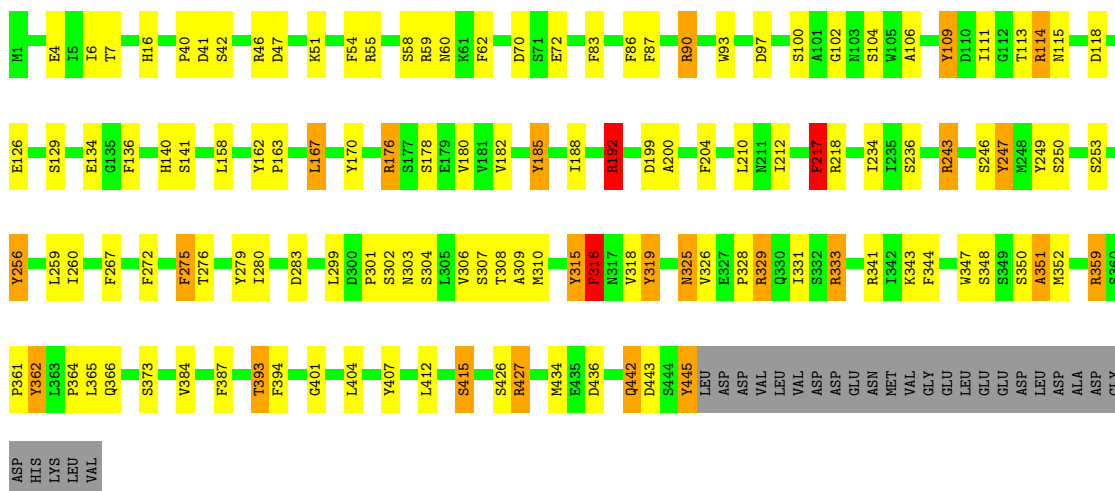
- Molecule 3: TUBULIN GAMMA CHAIN

Chain 8-C:  64% 26% 6%



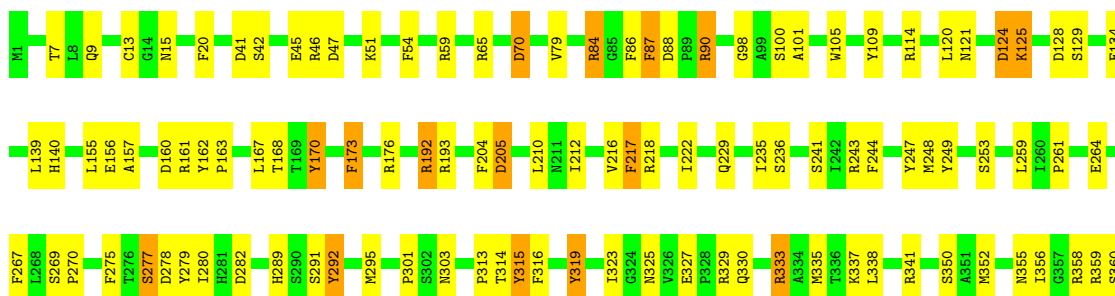
- Molecule 3: TUBULIN GAMMA CHAIN

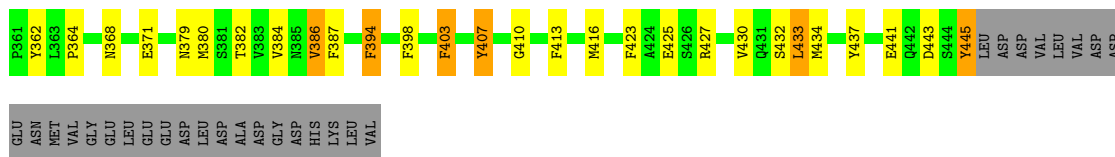
Chain 8-D:  67% 22% 5% 6%



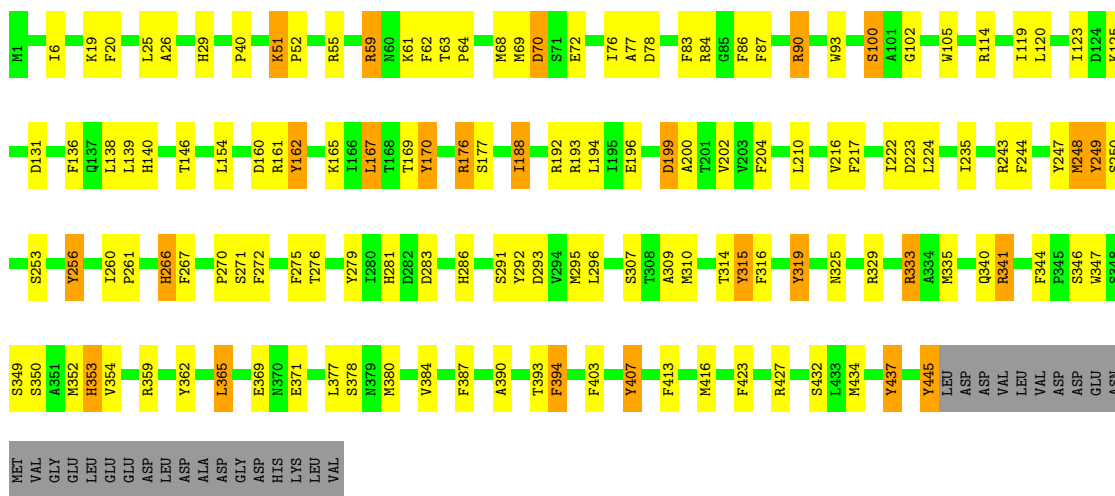
- Molecule 3: TUBULIN GAMMA CHAIN

Chain 9-C:  65% 24% 5% 6%

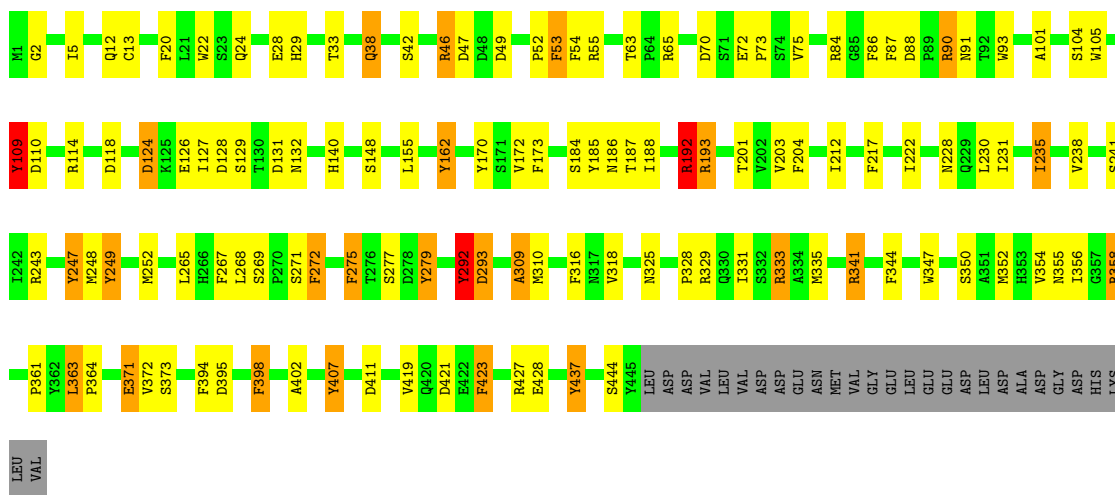




• Molecule 3: TUBULIN GAMMA CHAIN



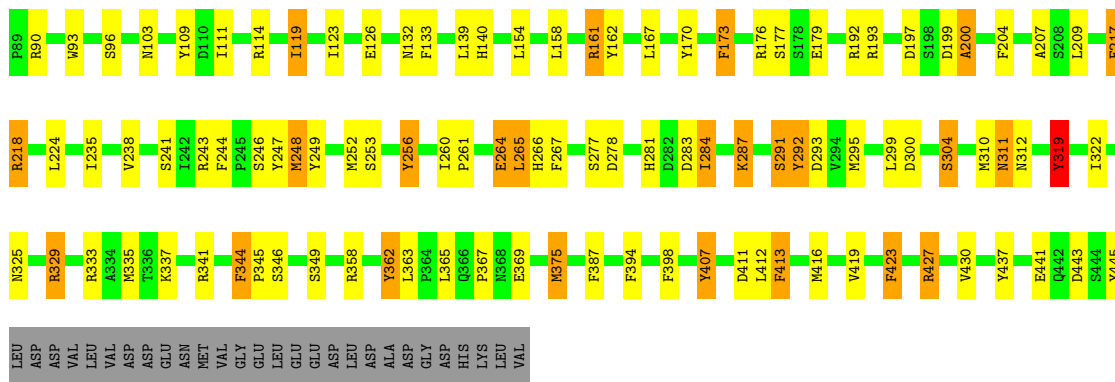
• Molecule 3: TUBULIN GAMMA CHAIN



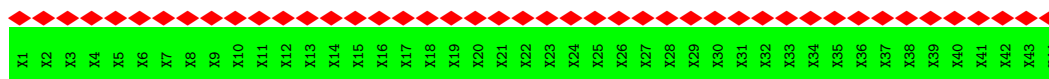
• Molecule 3: TUBULIN GAMMA CHAIN



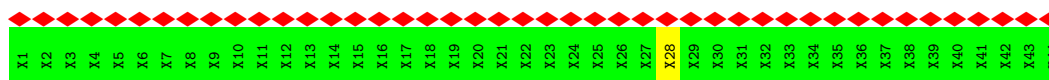




● Molecule 4: SPINDLE POLE BODY COMPONENT 110



● Molecule 4: SPINDLE POLE BODY COMPONENT 110



● Molecule 4: SPINDLE POLE BODY COMPONENT 110



There are no outlier residues recorded for this chain.

● Molecule 4: SPINDLE POLE BODY COMPONENT 110



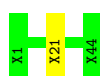
There are no outlier residues recorded for this chain.

● Molecule 4: SPINDLE POLE BODY COMPONENT 110



There are no outlier residues recorded for this chain.

● Molecule 4: SPINDLE POLE BODY COMPONENT 110



● Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 4-E:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 4-F:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 5-E:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 5-F:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 6-E:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 6-F:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 7-E:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 7-F:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 8-E:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 8-F:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 9-E:  100%

There are no outlier residues recorded for this chain.

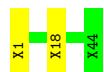
- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 9-F:  100%

There are no outlier residues recorded for this chain.

- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 10-E:  95% 5%



- Molecule 4: SPINDLE POLE BODY COMPONENT 110

Chain 10-F:  100%

There are no outlier residues recorded for this chain.

## 4 Experimental information

Property	Value	Source
EM reconstruction method	HELICAL	Depositor
Imposed symmetry	HELICAL, twist=Not provided°, rise=Not provided Å, axial sym=Not provided	Depositor
Number of segments used	Not provided	
Resolution determination method	Not provided	
CTF correction method	WHOLE MICROGRAPH	Depositor
Microscope	FEI TECNAI F20	Depositor
Voltage (kV)	200	Depositor
Electron dose ( $e^-/\text{Å}^2$ )	20	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	60000	Depositor
Image detector	TVIPS TEMCAM-F816 (8k x 8k)	Depositor
Maximum map value	6.278	Depositor
Minimum map value	-3.005	Depositor
Average map value	1.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	2.5	Depositor
Map size (Å)	380.8, 380.8, 380.8	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90, 90, 90	wwPDB
Pixel spacing (Å)	1.19, 1.19, 1.19	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

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	1-A	1.71	38/4917 (0.8%)	2.02	155/6616 (2.3%)
1	2-A	1.77	53/4917 (1.1%)	1.95	137/6616 (2.1%)
1	3-A	1.69	39/4917 (0.8%)	1.95	144/6616 (2.2%)
1	4-A	1.75	55/4917 (1.1%)	1.99	142/6616 (2.1%)
1	5-A	1.73	45/4917 (0.9%)	1.96	127/6616 (1.9%)
1	6-A	1.77	59/4917 (1.2%)	1.99	132/6616 (2.0%)
1	7-A	1.74	42/4917 (0.9%)	2.03	143/6616 (2.2%)
1	8-A	1.75	45/4917 (0.9%)	1.99	130/6616 (2.0%)
1	9-A	1.72	47/4917 (1.0%)	1.97	132/6616 (2.0%)
1	10-A	1.75	47/4917 (1.0%)	2.05	150/6616 (2.3%)
2	1-B	1.74	49/4803 (1.0%)	2.00	139/6481 (2.1%)
2	2-B	1.76	53/4803 (1.1%)	1.93	115/6481 (1.8%)
2	3-B	1.74	54/4803 (1.1%)	1.98	129/6481 (2.0%)
2	4-B	1.74	50/4803 (1.0%)	1.93	123/6481 (1.9%)
2	5-B	1.75	44/4803 (0.9%)	2.01	137/6481 (2.1%)
2	6-B	1.75	50/4803 (1.0%)	2.01	138/6481 (2.1%)
2	7-B	1.75	49/4803 (1.0%)	1.94	130/6481 (2.0%)
2	8-B	1.73	40/4803 (0.8%)	1.96	118/6481 (1.8%)
2	9-B	1.72	33/4803 (0.7%)	1.98	134/6481 (2.1%)
2	10-B	1.74	46/4803 (1.0%)	1.93	132/6481 (2.0%)
3	1-C	1.71	22/3558 (0.6%)	1.96	95/4831 (2.0%)
3	1-D	1.72	36/3558 (1.0%)	1.93	99/4831 (2.0%)
3	2-C	1.72	23/3558 (0.6%)	2.00	104/4831 (2.2%)
3	2-D	1.70	30/3558 (0.8%)	1.96	89/4831 (1.8%)
3	3-C	1.70	30/3558 (0.8%)	1.94	96/4831 (2.0%)
3	3-D	1.73	25/3558 (0.7%)	1.92	81/4831 (1.7%)
3	4-C	1.71	27/3558 (0.8%)	2.00	83/4831 (1.7%)
3	4-D	1.76	35/3558 (1.0%)	2.02	110/4831 (2.3%)
3	5-C	1.74	34/3558 (1.0%)	1.95	92/4831 (1.9%)
3	5-D	1.69	23/3558 (0.6%)	1.89	72/4831 (1.5%)
3	6-C	1.77	42/3558 (1.2%)	1.95	93/4831 (1.9%)
3	6-D	1.72	36/3558 (1.0%)	1.99	98/4831 (2.0%)
3	7-C	1.75	44/3558 (1.2%)	2.01	96/4831 (2.0%)
3	7-D	1.70	28/3558 (0.8%)	1.94	99/4831 (2.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
3	8-C	1.73	28/3558 (0.8%)	1.93	99/4831 (2.0%)
3	8-D	1.72	31/3558 (0.9%)	1.92	83/4831 (1.7%)
3	9-C	1.73	39/3558 (1.1%)	2.02	109/4831 (2.3%)
3	9-D	1.69	32/3558 (0.9%)	1.99	94/4831 (1.9%)
3	10-C	1.74	32/3558 (0.9%)	1.98	100/4831 (2.1%)
3	10-D	1.74	35/3558 (1.0%)	1.93	90/4831 (1.9%)
All	All	1.73	1570/168360 (0.9%)	1.97	4569/227590 (2.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	1-A	0	19
1	2-A	0	16
1	3-A	0	15
1	4-A	0	16
1	5-A	0	18
1	6-A	0	24
1	7-A	0	19
1	8-A	0	21
1	9-A	0	19
1	10-A	0	20
2	1-B	0	25
2	2-B	0	18
2	3-B	0	17
2	4-B	0	21
2	5-B	0	7
2	6-B	0	19
2	7-B	0	23
2	8-B	0	28
2	9-B	0	15
2	10-B	0	25
3	1-C	0	15
3	1-D	0	9
3	2-C	0	9
3	2-D	0	6
3	3-C	0	16
3	3-D	0	12
3	4-C	0	13
3	4-D	0	13

*Continued on next page...*

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
3	5-C	0	8
3	5-D	0	10
3	6-C	0	12
3	6-D	1	8
3	7-C	0	9
3	7-D	0	11
3	8-C	0	9
3	8-D	0	14
3	9-C	0	8
3	9-D	0	14
3	10-C	0	11
3	10-D	0	17
All	All	1	609

The worst 5 of 1570 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	2-D	279	TYR	CG-CD1	10.47	1.52	1.39
3	4-D	43	SER	CA-CB	9.95	1.67	1.52
3	10-C	148	SER	CA-CB	9.75	1.67	1.52
3	1-D	341	ARG	NE-CZ	9.66	1.45	1.33
1	8-A	333	ARG	CZ-NH1	9.58	1.45	1.33

The worst 5 of 4569 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	7-A	714	ARG	NE-CZ-NH1	20.47	130.54	120.30
2	9-B	343	TYR	CB-CG-CD2	-18.96	109.62	121.00
3	9-C	427	ARG	NE-CZ-NH2	-18.13	111.23	120.30
3	5-C	333	ARG	NE-CZ-NH1	18.03	129.32	120.30
3	7-C	84	ARG	NE-CZ-NH1	17.76	129.18	120.30

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	6-D	73	PRO	CA

5 of 609 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	1-A	112	TYR	Sidechain
1	1-A	123	TYR	Sidechain

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Mol	Chain	Res	Type	Group
1	1-A	140	TYR	Sidechain
1	1-A	181	GLU	Peptide
1	1-A	74	TYR	Sidechain

## 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	1-A	4831	0	4863	190	0
1	2-A	4831	0	4863	139	0
1	3-A	4831	0	4863	114	0
1	4-A	4831	0	4862	119	0
1	5-A	4831	0	4863	124	0
1	6-A	4831	0	4862	112	0
1	7-A	4831	0	4863	112	0
1	8-A	4831	0	4862	142	0
1	9-A	4831	0	4863	146	0
1	10-A	4831	0	4863	153	0
2	1-B	4701	0	4727	182	0
2	2-B	4701	0	4731	142	0
2	3-B	4701	0	4731	119	0
2	4-B	4701	0	4729	135	0
2	5-B	4701	0	4729	144	0
2	6-B	4701	0	4729	177	0
2	7-B	4701	0	4729	124	0
2	8-B	4701	0	4731	179	0
2	9-B	4701	0	4727	123	0
2	10-B	4701	0	4729	134	0
3	1-C	3483	0	3340	46	0
3	1-D	3483	0	3340	37	0
3	2-C	3483	0	3340	40	0
3	2-D	3483	0	3340	48	0
3	3-C	3483	0	3340	50	0
3	3-D	3483	0	3340	40	0
3	4-C	3483	0	3340	53	0
3	4-D	3483	0	3340	42	0
3	5-C	3483	0	3340	32	0
3	5-D	3483	0	3340	50	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	6-C	3483	0	3340	26	0
3	6-D	3483	0	3340	62	0
3	7-C	3483	0	3340	31	0
3	7-D	3483	0	3340	46	0
3	8-C	3483	0	3340	23	0
3	8-D	3483	0	3340	44	0
3	9-C	3483	0	3340	28	0
3	9-D	3483	0	3340	40	0
3	10-C	3483	0	3340	44	0
3	10-D	3483	0	3340	27	0
4	1-E	220	0	46	0	0
4	1-F	220	0	46	1	0
4	2-E	220	0	46	0	0
4	2-F	220	0	46	0	0
4	3-E	220	0	46	0	0
4	3-F	220	0	46	1	0
4	4-E	220	0	46	0	0
4	4-F	220	0	46	0	0
4	5-E	220	0	46	0	0
4	5-F	220	0	46	0	0
4	6-E	220	0	46	0	0
4	6-F	220	0	46	0	0
4	7-E	220	0	46	0	0
4	7-F	220	0	46	0	0
4	8-E	220	0	46	0	0
4	8-F	220	0	46	0	0
4	9-E	220	0	46	0	0
4	9-F	220	0	46	0	0
4	10-E	220	0	46	2	0
4	10-F	220	0	46	0	0
All	All	169380	0	163639	2991	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 9.

The worst 5 of 2991 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:68:ILE:HD13	2:B:216:PHE:CG	1.27	1.67
2:B:405:ILE:CG2	2:B:456:ILE:HD12	1.28	1.57
1:A:68:ILE:CD1	2:B:216:PHE:HB3	1.21	1.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:131:PHE:CE2	2:B:322:HIS:NE2	1.71	1.54
1:A:68:ILE:HD13	2:B:216:PHE:CB	1.30	1.53

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	1-A	561/823 (68%)	518 (92%)	20 (4%)	23 (4%)	3	23
1	2-A	561/823 (68%)	534 (95%)	17 (3%)	10 (2%)	8	40
1	3-A	561/823 (68%)	522 (93%)	23 (4%)	16 (3%)	4	29
1	4-A	561/823 (68%)	529 (94%)	20 (4%)	12 (2%)	7	36
1	5-A	561/823 (68%)	525 (94%)	20 (4%)	16 (3%)	4	29
1	6-A	561/823 (68%)	538 (96%)	13 (2%)	10 (2%)	8	40
1	7-A	561/823 (68%)	529 (94%)	23 (4%)	9 (2%)	9	44
1	8-A	561/823 (68%)	523 (93%)	23 (4%)	15 (3%)	5	31
1	9-A	561/823 (68%)	530 (94%)	23 (4%)	8 (1%)	11	46
1	10-A	561/823 (68%)	521 (93%)	29 (5%)	11 (2%)	7	38
2	1-B	553/846 (65%)	519 (94%)	23 (4%)	11 (2%)	7	38
2	2-B	553/846 (65%)	520 (94%)	21 (4%)	12 (2%)	6	35
2	3-B	553/846 (65%)	521 (94%)	20 (4%)	12 (2%)	6	35
2	4-B	553/846 (65%)	515 (93%)	28 (5%)	10 (2%)	8	40
2	5-B	553/846 (65%)	516 (93%)	30 (5%)	7 (1%)	12	48
2	6-B	553/846 (65%)	513 (93%)	27 (5%)	13 (2%)	6	33
2	7-B	553/846 (65%)	514 (93%)	23 (4%)	16 (3%)	4	29
2	8-B	553/846 (65%)	525 (95%)	19 (3%)	9 (2%)	9	44

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	9-B	553/846 (65%)	521 (94%)	24 (4%)	8 (1%)	11	46
2	10-B	553/846 (65%)	517 (94%)	22 (4%)	14 (2%)	5	32
3	1-C	443/473 (94%)	392 (88%)	32 (7%)	19 (4%)	2	22
3	1-D	443/473 (94%)	404 (91%)	28 (6%)	11 (2%)	5	32
3	2-C	443/473 (94%)	400 (90%)	30 (7%)	13 (3%)	4	29
3	2-D	443/473 (94%)	411 (93%)	22 (5%)	10 (2%)	6	34
3	3-C	443/473 (94%)	384 (87%)	37 (8%)	22 (5%)	2	20
3	3-D	443/473 (94%)	402 (91%)	27 (6%)	14 (3%)	4	26
3	4-C	443/473 (94%)	399 (90%)	35 (8%)	9 (2%)	7	38
3	4-D	443/473 (94%)	392 (88%)	38 (9%)	13 (3%)	4	29
3	5-C	443/473 (94%)	408 (92%)	19 (4%)	16 (4%)	3	25
3	5-D	443/473 (94%)	399 (90%)	36 (8%)	8 (2%)	8	40
3	6-C	443/473 (94%)	396 (89%)	36 (8%)	11 (2%)	5	32
3	6-D	443/473 (94%)	400 (90%)	29 (6%)	14 (3%)	4	26
3	7-C	443/473 (94%)	406 (92%)	26 (6%)	11 (2%)	5	32
3	7-D	443/473 (94%)	393 (89%)	34 (8%)	16 (4%)	3	25
3	8-C	443/473 (94%)	399 (90%)	27 (6%)	17 (4%)	3	24
3	8-D	443/473 (94%)	395 (89%)	32 (7%)	16 (4%)	3	25
3	9-C	443/473 (94%)	396 (89%)	35 (8%)	12 (3%)	5	31
3	9-D	443/473 (94%)	399 (90%)	32 (7%)	12 (3%)	5	31
3	10-C	443/473 (94%)	404 (91%)	27 (6%)	12 (3%)	5	31
3	10-D	443/473 (94%)	390 (88%)	38 (9%)	15 (3%)	3	26
All	All	20000/26150 (76%)	18419 (92%)	1068 (5%)	513 (3%)	8	31

5 of 513 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	1-A	91	GLU
1	1-A	99	ASP
1	1-A	261	ASP
1	1-A	322	THR
1	1-A	364	PRO

### 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	1-A	542/766 (71%)	513 (95%)	29 (5%)	22	47
1	2-A	542/766 (71%)	509 (94%)	33 (6%)	18	44
1	3-A	542/766 (71%)	520 (96%)	22 (4%)	30	55
1	4-A	542/766 (71%)	518 (96%)	24 (4%)	28	53
1	5-A	542/766 (71%)	519 (96%)	23 (4%)	30	54
1	6-A	542/766 (71%)	511 (94%)	31 (6%)	20	45
1	7-A	542/766 (71%)	514 (95%)	28 (5%)	23	48
1	8-A	542/766 (71%)	510 (94%)	32 (6%)	19	45
1	9-A	542/766 (71%)	520 (96%)	22 (4%)	30	55
1	10-A	542/766 (71%)	513 (95%)	29 (5%)	22	47
2	1-B	528/787 (67%)	511 (97%)	17 (3%)	39	61
2	2-B	528/787 (67%)	508 (96%)	20 (4%)	33	57
2	3-B	528/787 (67%)	508 (96%)	20 (4%)	33	57
2	4-B	528/787 (67%)	501 (95%)	27 (5%)	24	48
2	5-B	528/787 (67%)	504 (96%)	24 (4%)	27	52
2	6-B	528/787 (67%)	504 (96%)	24 (4%)	27	52
2	7-B	528/787 (67%)	500 (95%)	28 (5%)	22	47
2	8-B	528/787 (67%)	519 (98%)	9 (2%)	60	78
2	9-B	528/787 (67%)	507 (96%)	21 (4%)	31	55
2	10-B	528/787 (67%)	496 (94%)	32 (6%)	18	44
3	1-C	395/420 (94%)	373 (94%)	22 (6%)	21	46
3	1-D	395/420 (94%)	383 (97%)	12 (3%)	41	63
3	2-C	395/420 (94%)	377 (95%)	18 (5%)	27	52
3	2-D	395/420 (94%)	376 (95%)	19 (5%)	25	51
3	3-C	395/420 (94%)	385 (98%)	10 (2%)	47	68
3	3-D	395/420 (94%)	380 (96%)	15 (4%)	33	57

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	4-C	395/420 (94%)	381 (96%)	14 (4%)	36	59
3	4-D	395/420 (94%)	387 (98%)	8 (2%)	55	74
3	5-C	395/420 (94%)	379 (96%)	16 (4%)	30	55
3	5-D	395/420 (94%)	367 (93%)	28 (7%)	14	39
3	6-C	395/420 (94%)	373 (94%)	22 (6%)	21	46
3	6-D	395/420 (94%)	382 (97%)	13 (3%)	38	61
3	7-C	395/420 (94%)	377 (95%)	18 (5%)	27	52
3	7-D	395/420 (94%)	378 (96%)	17 (4%)	29	53
3	8-C	395/420 (94%)	378 (96%)	17 (4%)	29	53
3	8-D	395/420 (94%)	375 (95%)	20 (5%)	24	48
3	9-C	395/420 (94%)	378 (96%)	17 (4%)	29	53
3	9-D	395/420 (94%)	379 (96%)	16 (4%)	30	55
3	10-C	395/420 (94%)	383 (97%)	12 (3%)	41	63
3	10-D	395/420 (94%)	376 (95%)	19 (5%)	25	51
All	All	18600/23930 (78%)	17772 (96%)	828 (4%)	31	52

5 of 828 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	6-C	141	SER
3	7-D	183	GLN
3	10-C	52	PRO
3	6-C	394	PHE
3	6-C	88	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 264 such sidechains are listed below:

Mol	Chain	Res	Type
1	10-A	136	GLN
1	10-A	781	ASN
3	10-D	325	ASN
3	4-D	9	GLN
3	4-C	24	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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

There are no such residues in this entry.

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

There are no chain breaks in this entry.

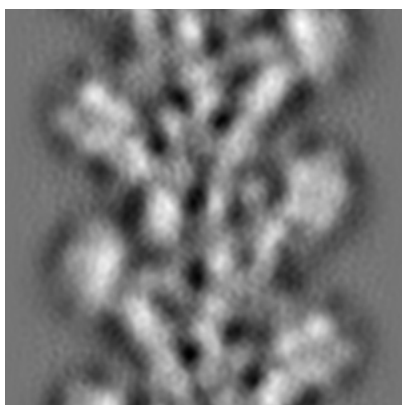
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-1731. These allow visual inspection of the internal detail of the map and identification of artifacts.

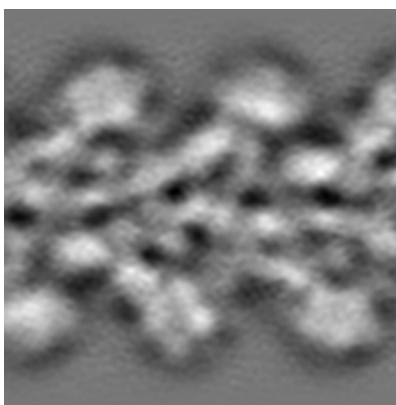
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

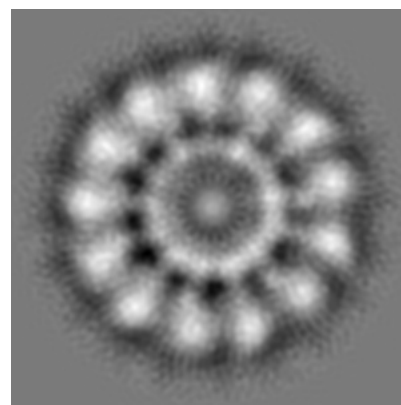
#### 6.1.1 Primary map



X



Y

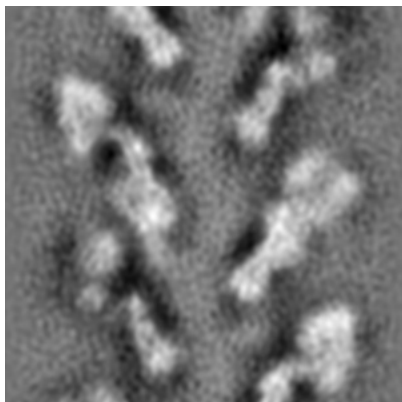


Z

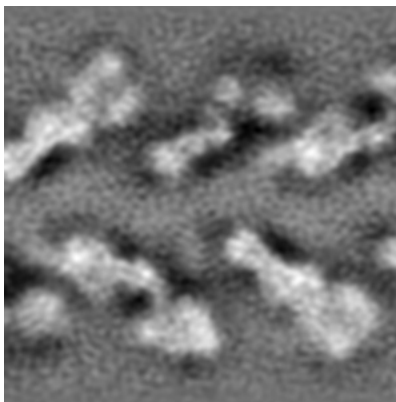
The images above show the map projected in three orthogonal directions.

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

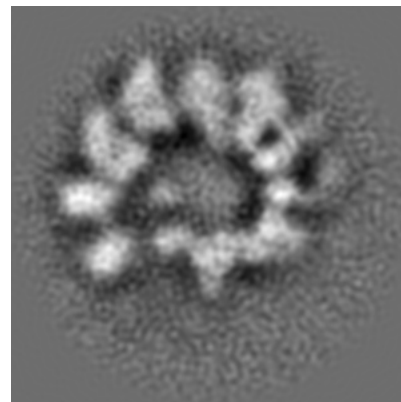
#### 6.2.1 Primary map



X Index: 160



Y Index: 160

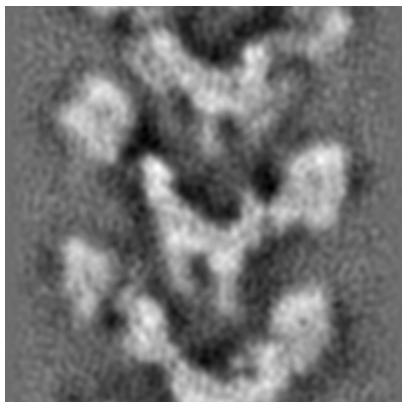


Z Index: 160

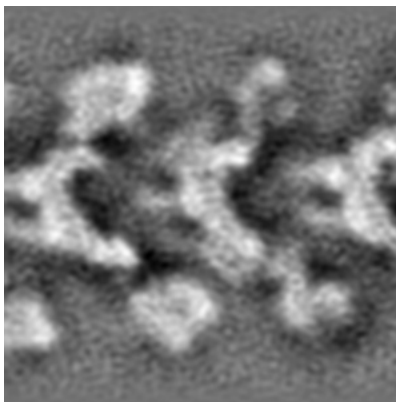
The images above show central slices of the map in three orthogonal directions.

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

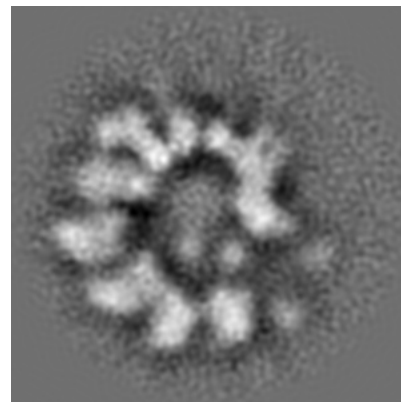
### 6.3.1 Primary map



X Index: 196



Y Index: 124



Z Index: 5

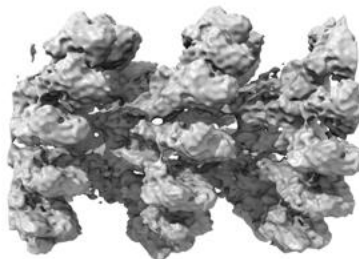
The images above show the largest variance slices of the map in three orthogonal directions.

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

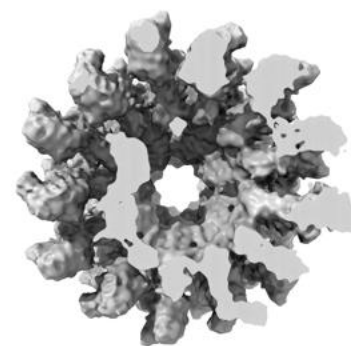
### 6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 2.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.



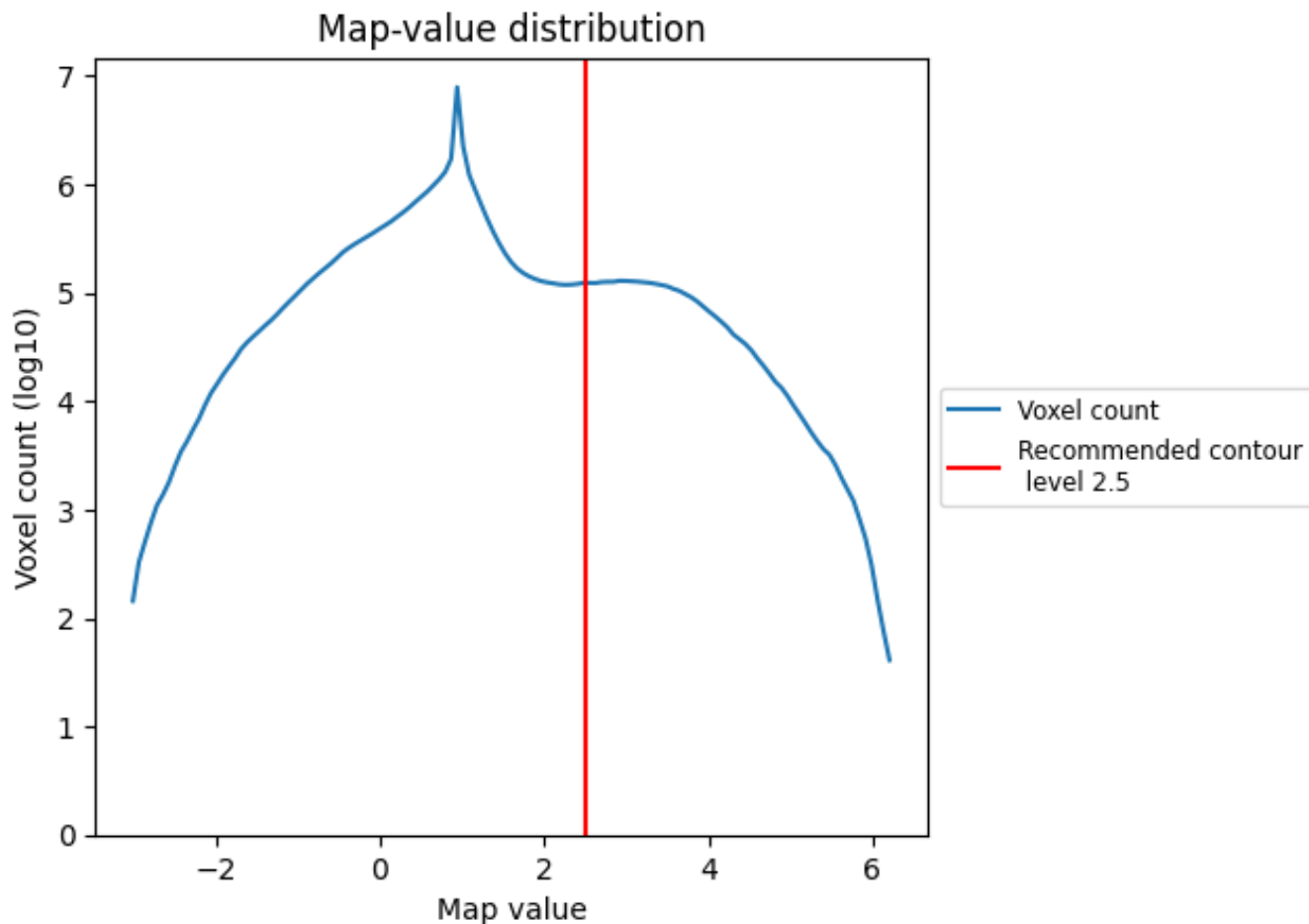
## 6.5 Mask visualisation

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

## 7 Map analysis [i](#)

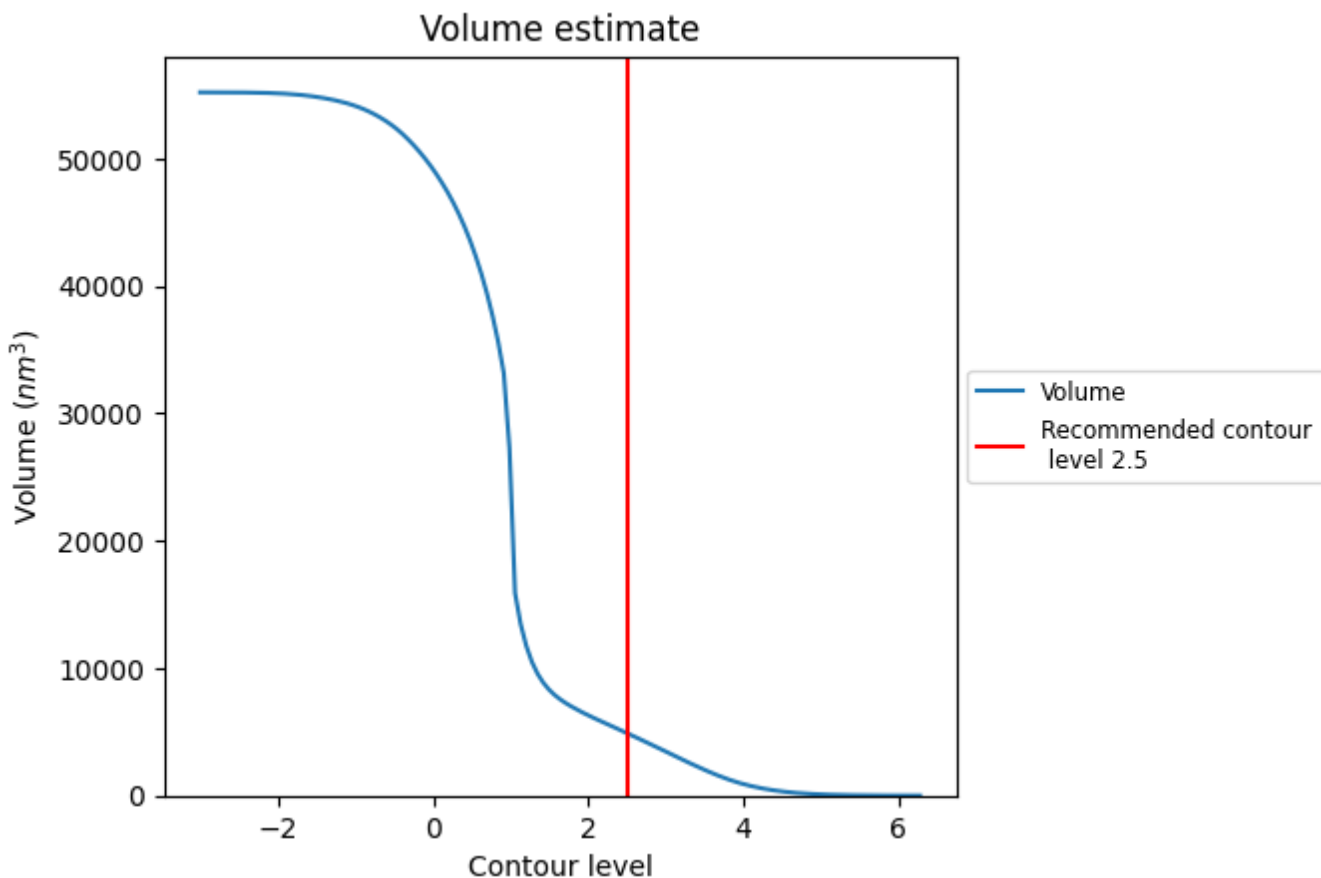
This section contains the results of statistical analysis of the map.

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



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

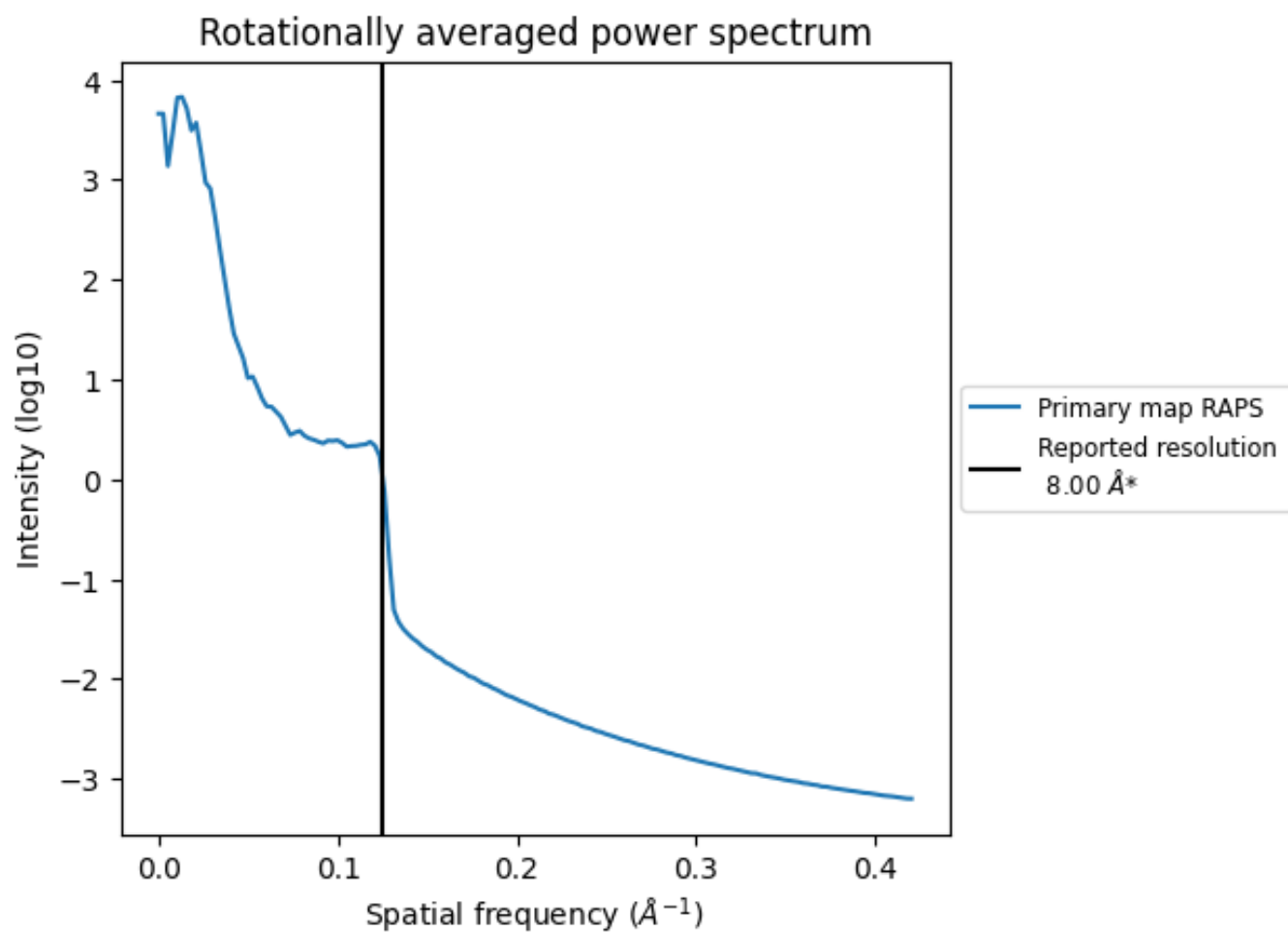
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 4902 nm<sup>3</sup>; this corresponds to an approximate mass of 4428 kDa.

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

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



\*Reported resolution corresponds to spatial frequency of  $0.125 \text{\AA}^{-1}$

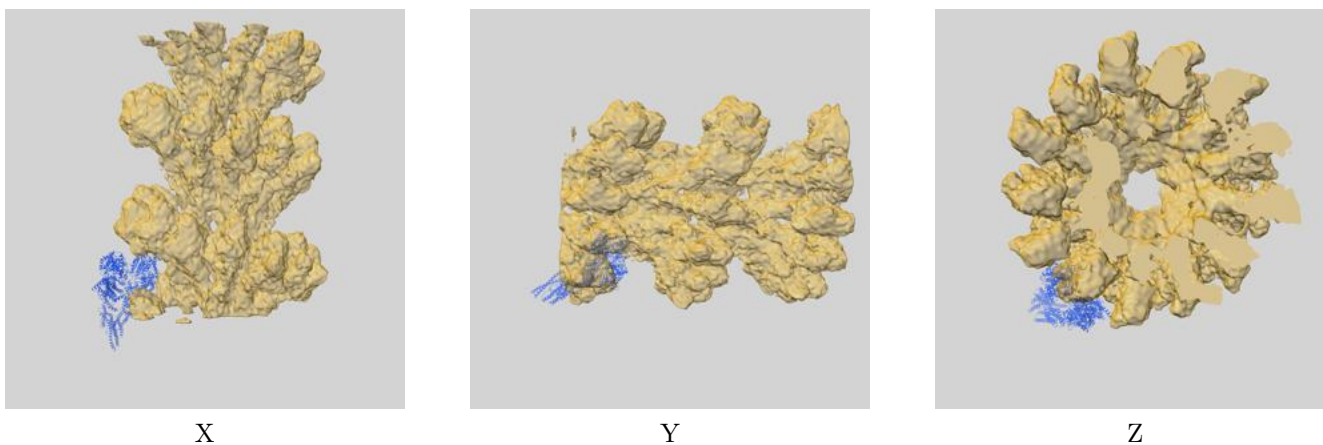
## 8 Fourier-Shell correlation

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

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

This section contains information regarding the fit between EMDB map EMD-1731 and PDB model 5FM1. Per-residue inclusion information can be found in section 3 on page 10.

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

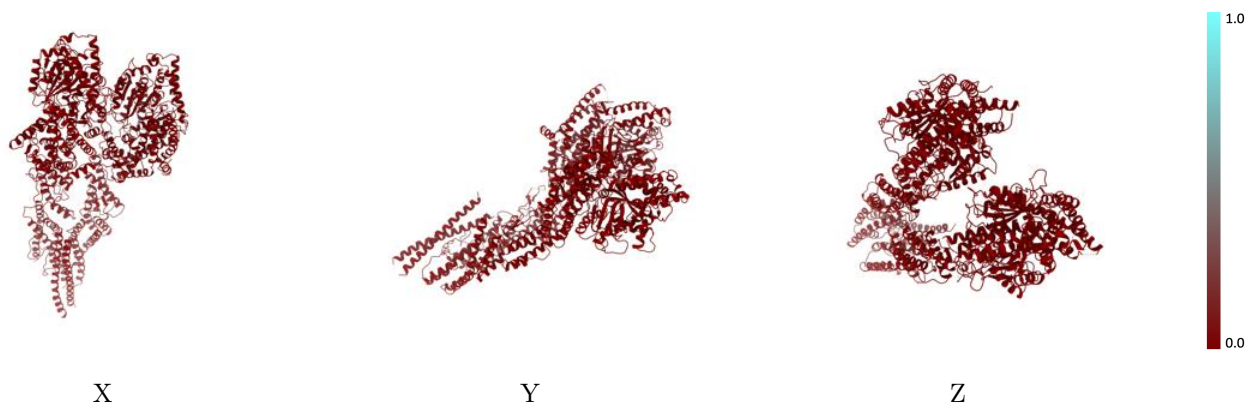


The images above show the 3D surface view of the map at the recommended contour level 2.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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

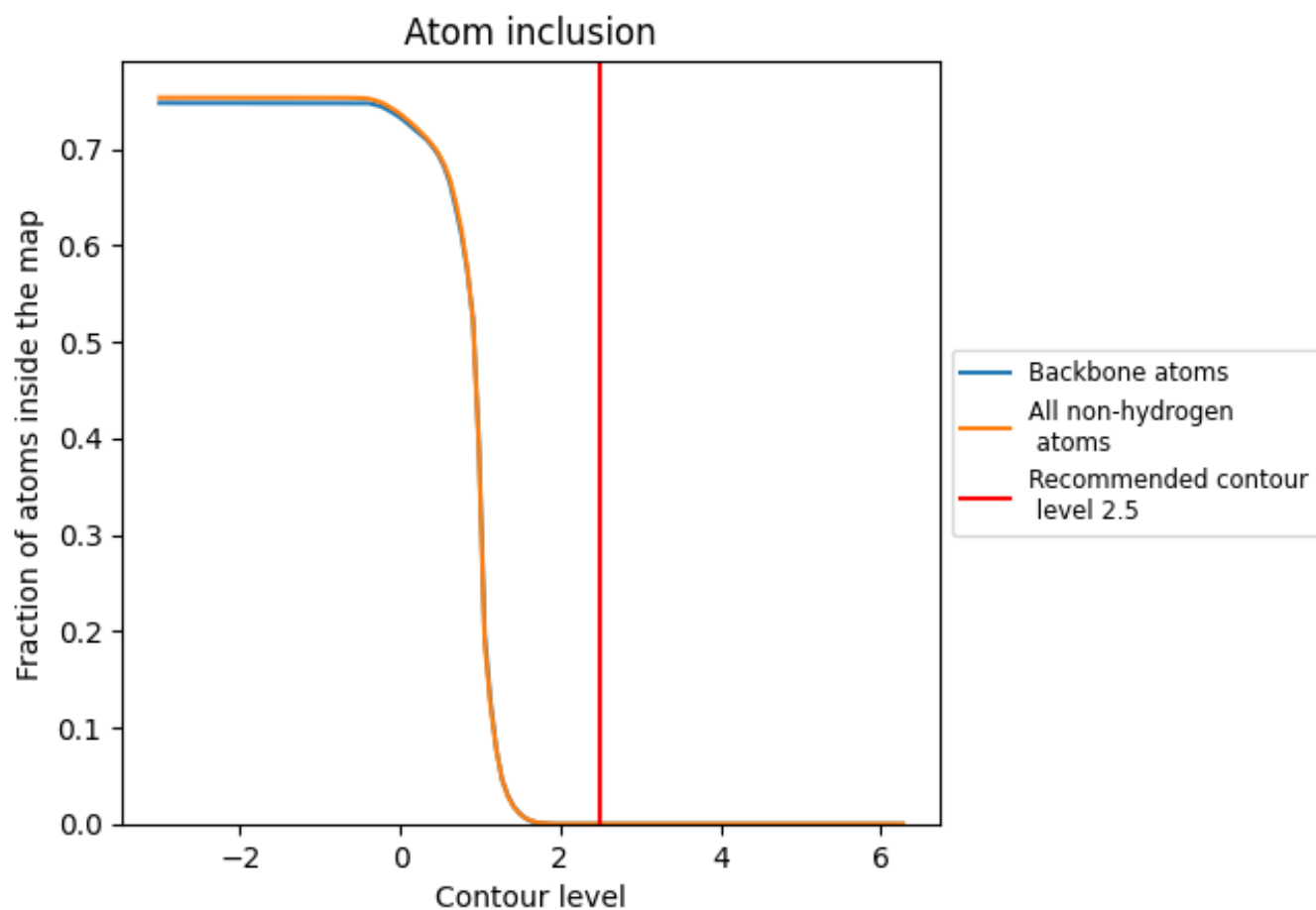
This section was not generated.

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (2.5).

## 9.4 Atom inclusion [i](#)










At the recommended contour level, 0% of all backbone atoms, 0% of all non-hydrogen atoms, are inside the map.



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

The table lists the average atom inclusion at the recommended contour level (2.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion
All	 0.0000
A	 0.0000
B	 0.0000
C	 0.0000
D	 0.0000
E	 0.0000
F	 0.0000

