



wwPDB EM Validation Summary Report ⓘ

Jun 20, 2024 – 05:10 AM JST

PDB ID : 7WOT
EMDB ID : EMD-32658
Title : Cryo-EM structure of the inner ring monomer of the *Saccharomyces cerevisiae* nuclear pore complex
Authors : Li, Z.Q.; Chen, S.J.B.; Zhao, L.; Sui, S.F.
Deposited on : 2022-01-22
Resolution : 3.73 Å(reported)

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

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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.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

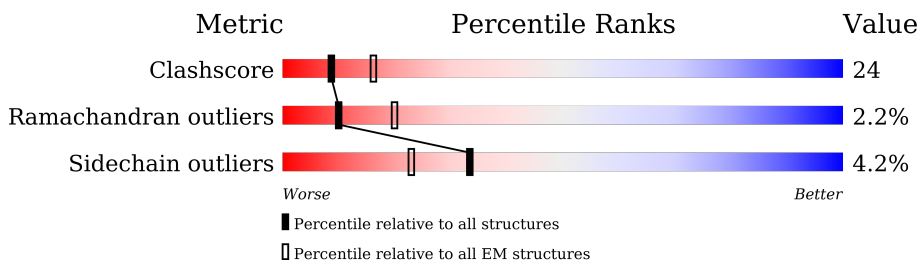
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.73 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.



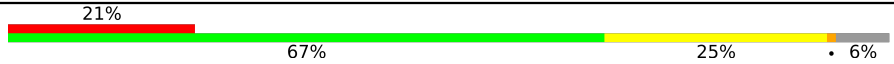


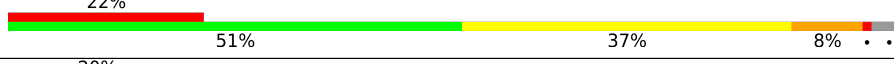










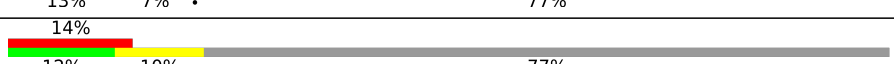
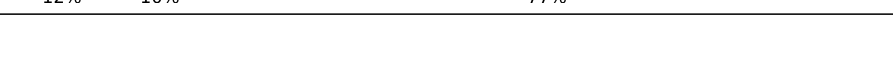
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	839	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">78%</div> </div>
1	M	839	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">79%</div> </div>
1	N	839	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">29%</div> </div>
1	Z	839	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">29%</div> </div>
2	C	1391	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">95%</div> </div>
2	O	1391	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">95%</div> </div>
3	D	1502	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">70%</div> </div>
3	P	1502	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">70%</div> </div>

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Mol	Chain	Length	Quality of chain
4	E	1655	
4	Q	1655	
5	F	1683	
5	R	1683	
6	G	472	
6	J	472	
6	S	472	
6	V	472	
7	H	541	
7	K	541	
7	T	541	
7	W	541	
8	I	823	
8	L	823	
8	U	823	
8	X	823	

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 133827 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 Nucleoporin NIC96.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	732	Total	C	N	O	S	0	0
			5720	3628	975	1101	16		
1	M	729	Total	C	N	O	S	0	0
			5697	3616	972	1093	16		
1	N	746	Total	C	N	O	S	0	0
			5766	3656	976	1119	15		
1	Z	746	Total	C	N	O	S	0	0
			5767	3658	976	1118	15		

- Molecule 2 is a protein called Nucleoporin NUP157.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	1325	Total	C	N	O	S	0	0
			10452	6664	1736	2018	34		
2	O	1325	Total	C	N	O	S	0	0
			10452	6664	1736	2018	34		

- Molecule 3 is a protein called Nucleoporin NUP170.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	1398	Total	C	N	O	S	0	0
			10966	7012	1811	2111	32		
3	P	1398	Total	C	N	O	S	0	0
			10956	7005	1811	2108	32		

- Molecule 4 is a protein called Nucleoporin NUP188.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	1552	Total	C	N	O	S	0	0
			12362	8017	1981	2337	27		
4	Q	1552	Total	C	N	O	S	0	0
			12362	8017	1981	2337	27		

- Molecule 5 is a protein called Nucleoporin NUP192.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	F	1622	Total	C	N	O	S	0	0
			12239	7813	2031	2364	31		
5	R	1622	Total	C	N	O	S	0	0
			12239	7813	2031	2364	31		

- Molecule 6 is a protein called Nucleoporin NUP49/NSP49.

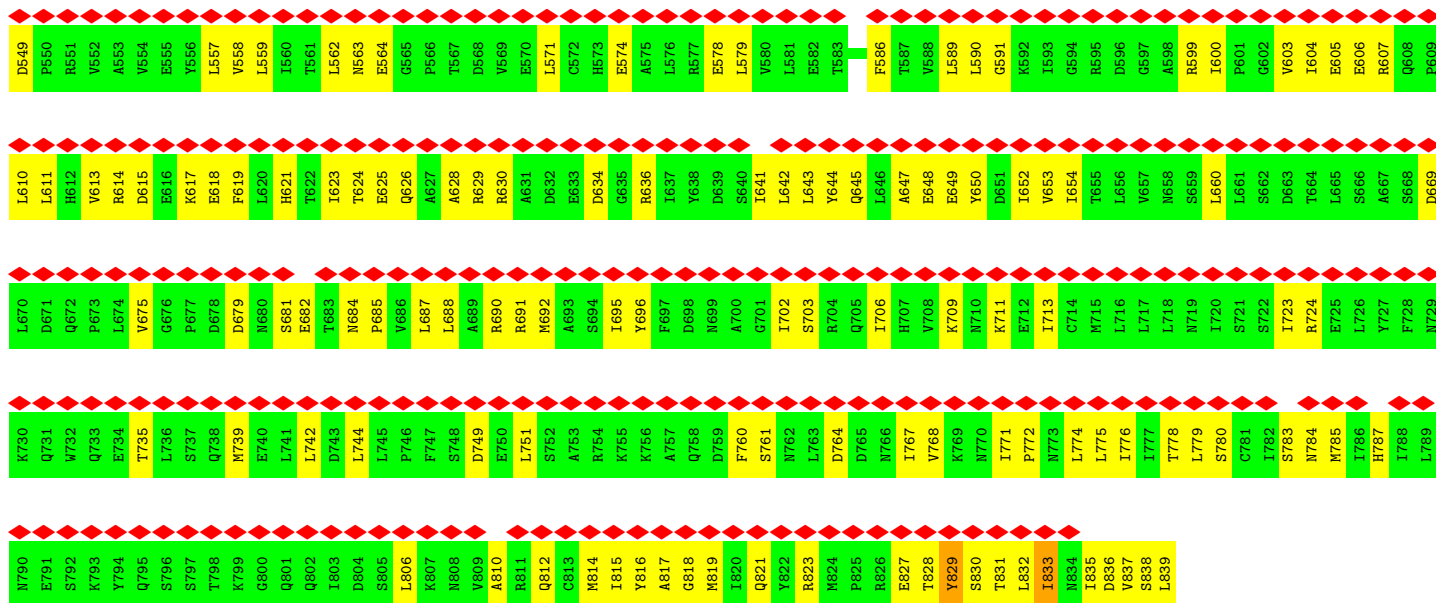
Mol	Chain	Residues	Atoms					AltConf	Trace
6	G	200	Total	C	N	O	S	0	0
			1533	973	251	307	2		
6	J	195	Total	C	N	O	S	0	0
			1492	938	251	302	1		
6	S	200	Total	C	N	O	S	0	0
			1529	970	250	307	2		
6	V	195	Total	C	N	O	S	0	0
			1492	938	251	302	1		

- Molecule 7 is a protein called Nucleoporin NUP57.

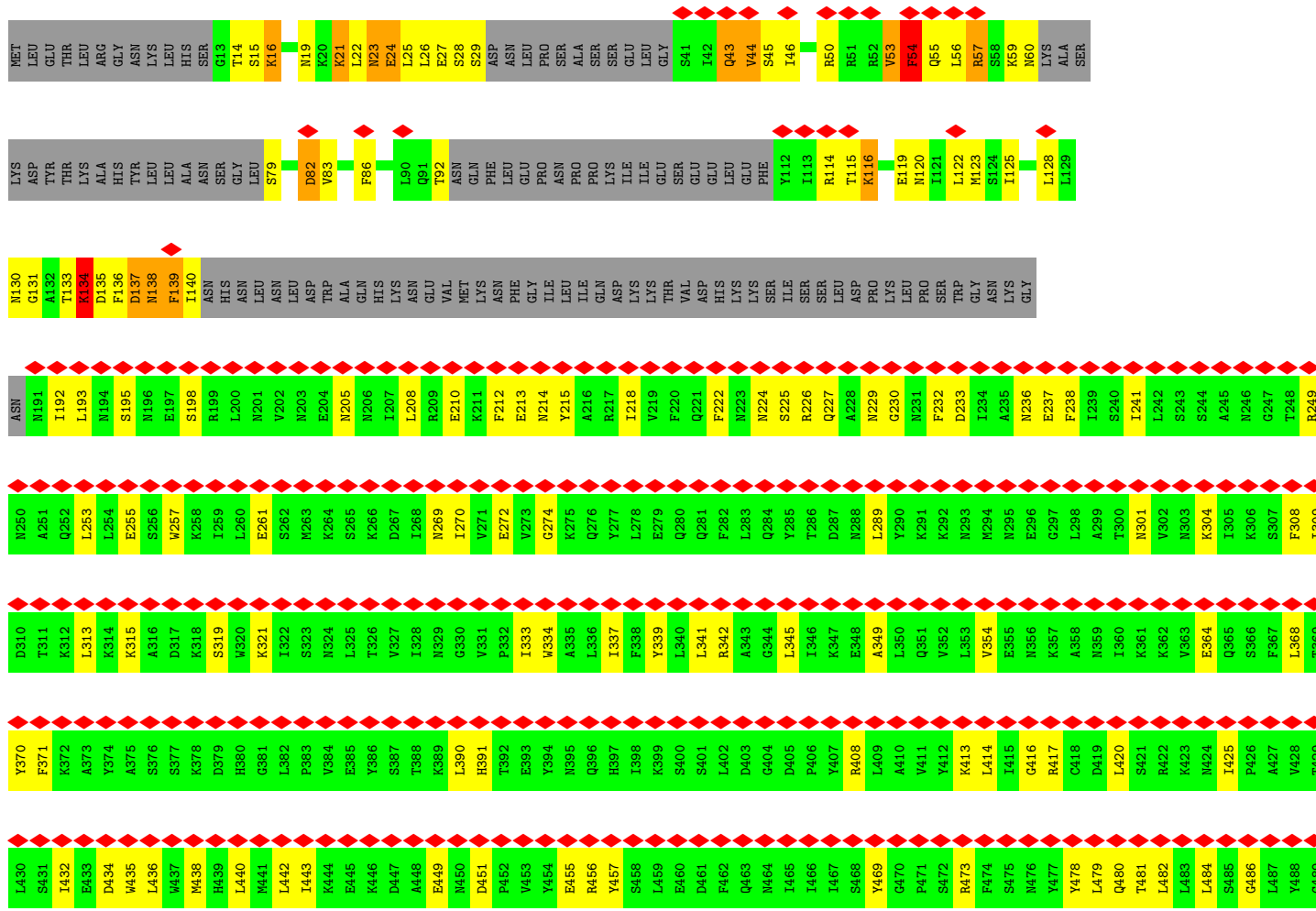
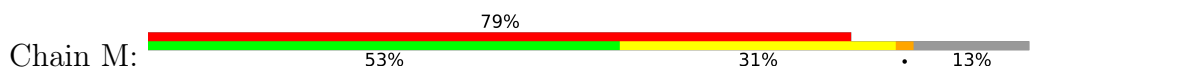
Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	246	Total	C	N	O	S	0	0
			1811	1128	332	348	3		
7	K	254	Total	C	N	O	S	0	0
			1808	1126	334	345	3		
7	T	246	Total	C	N	O	S	0	0
			1811	1128	332	348	3		
7	W	254	Total	C	N	O	S	0	0
			1805	1123	334	345	3		

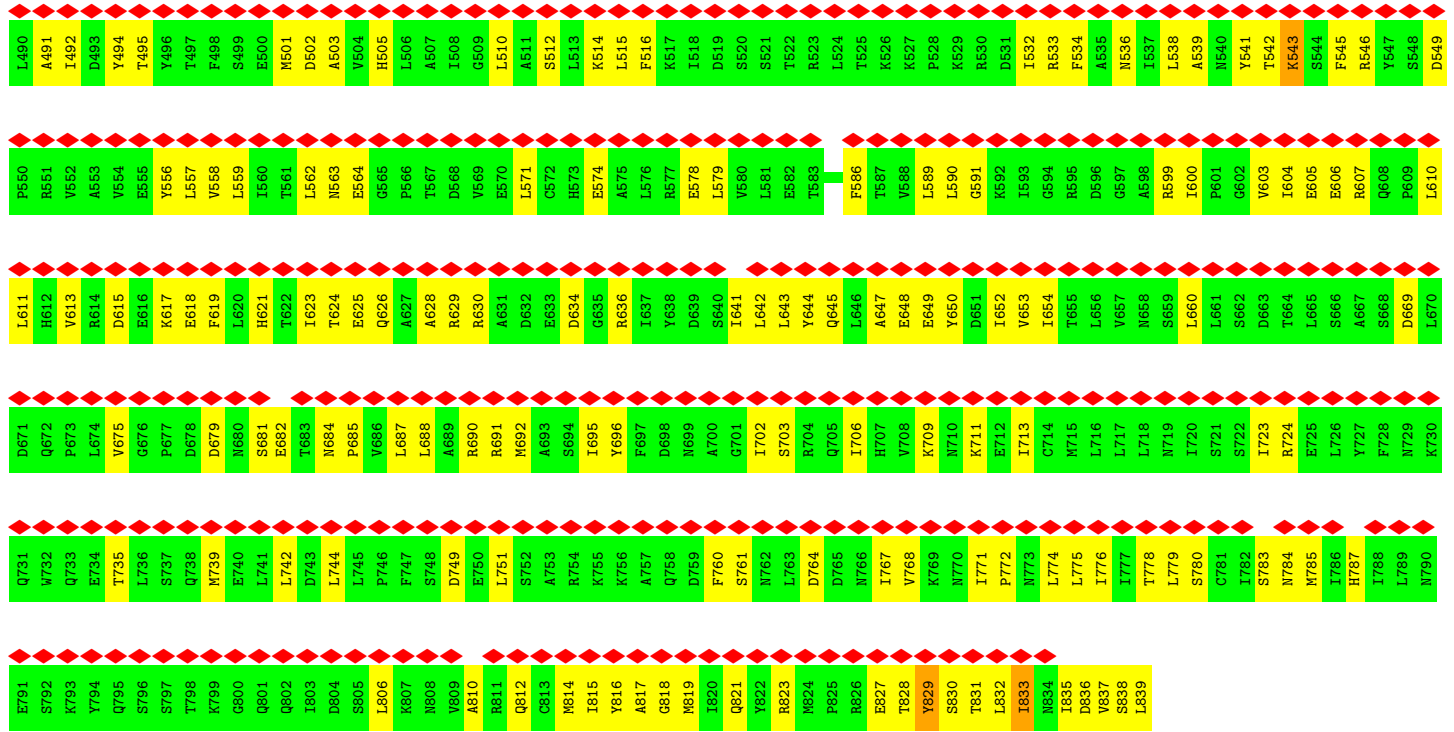
- Molecule 8 is a protein called Nucleoporin NSP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	187	Total	C	N	O	S	0	0
			1418	862	244	311	1		
8	L	187	Total	C	N	O	S	0	0
			1366	830	240	295	1		
8	U	187	Total	C	N	O	S	0	0
			1418	862	244	311	1		
8	X	187	Total	C	N	O	S	0	0
			1366	830	240	295	1		

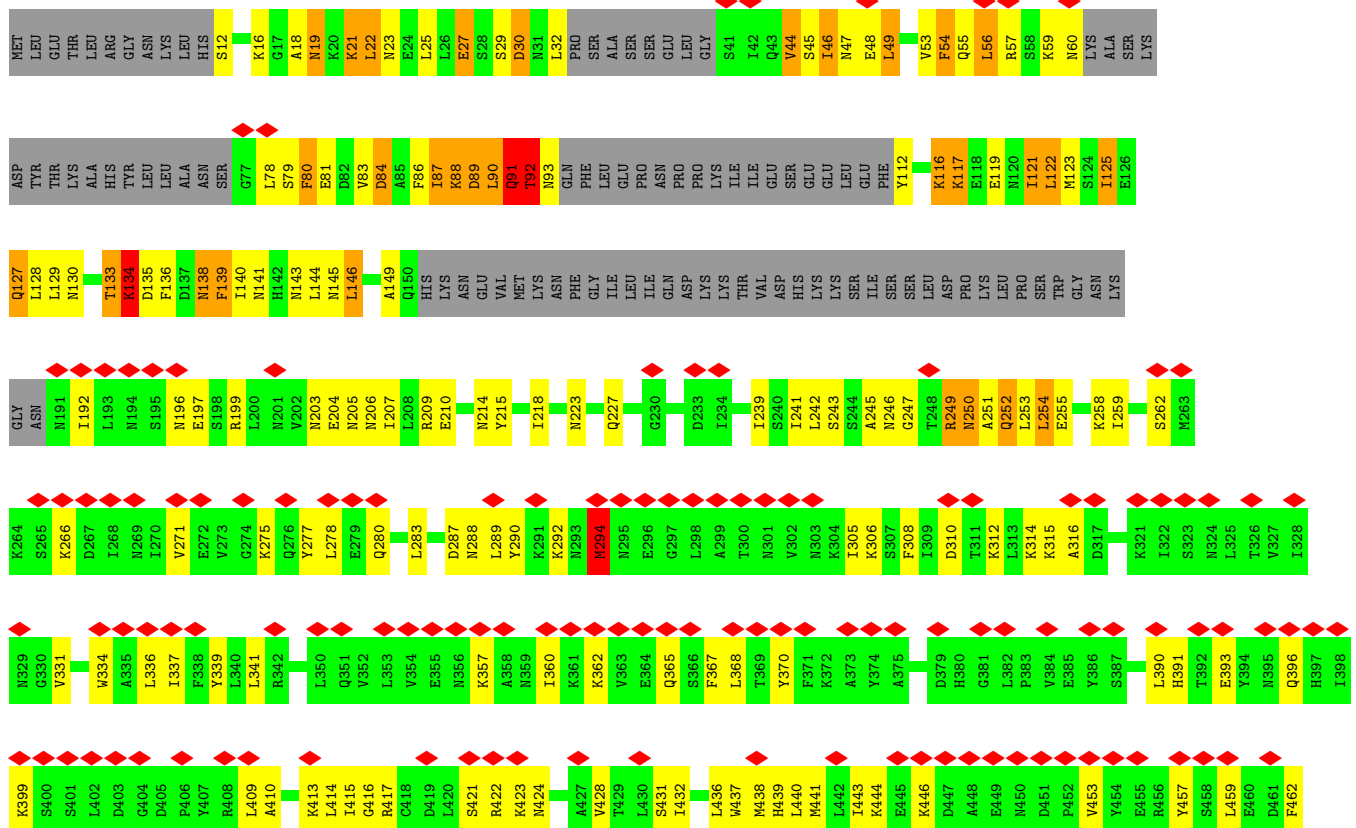


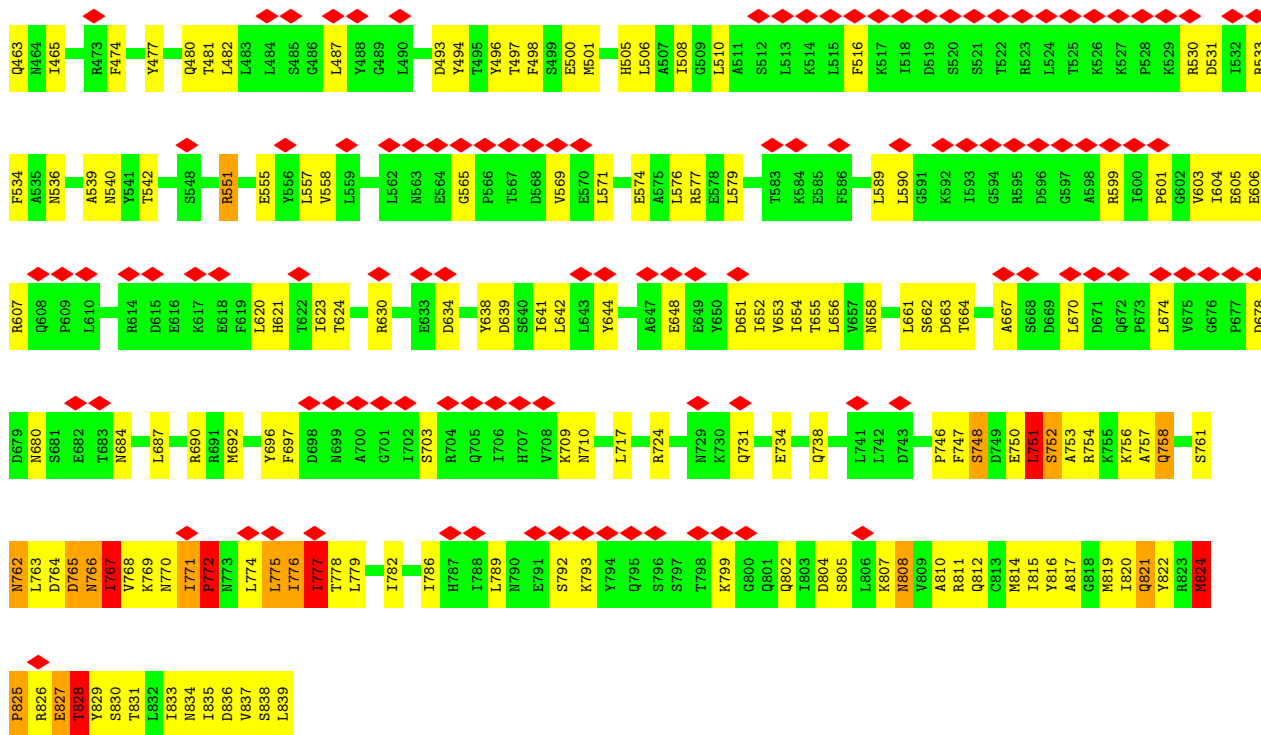
● Molecule 1: Nucleoporin NIC96



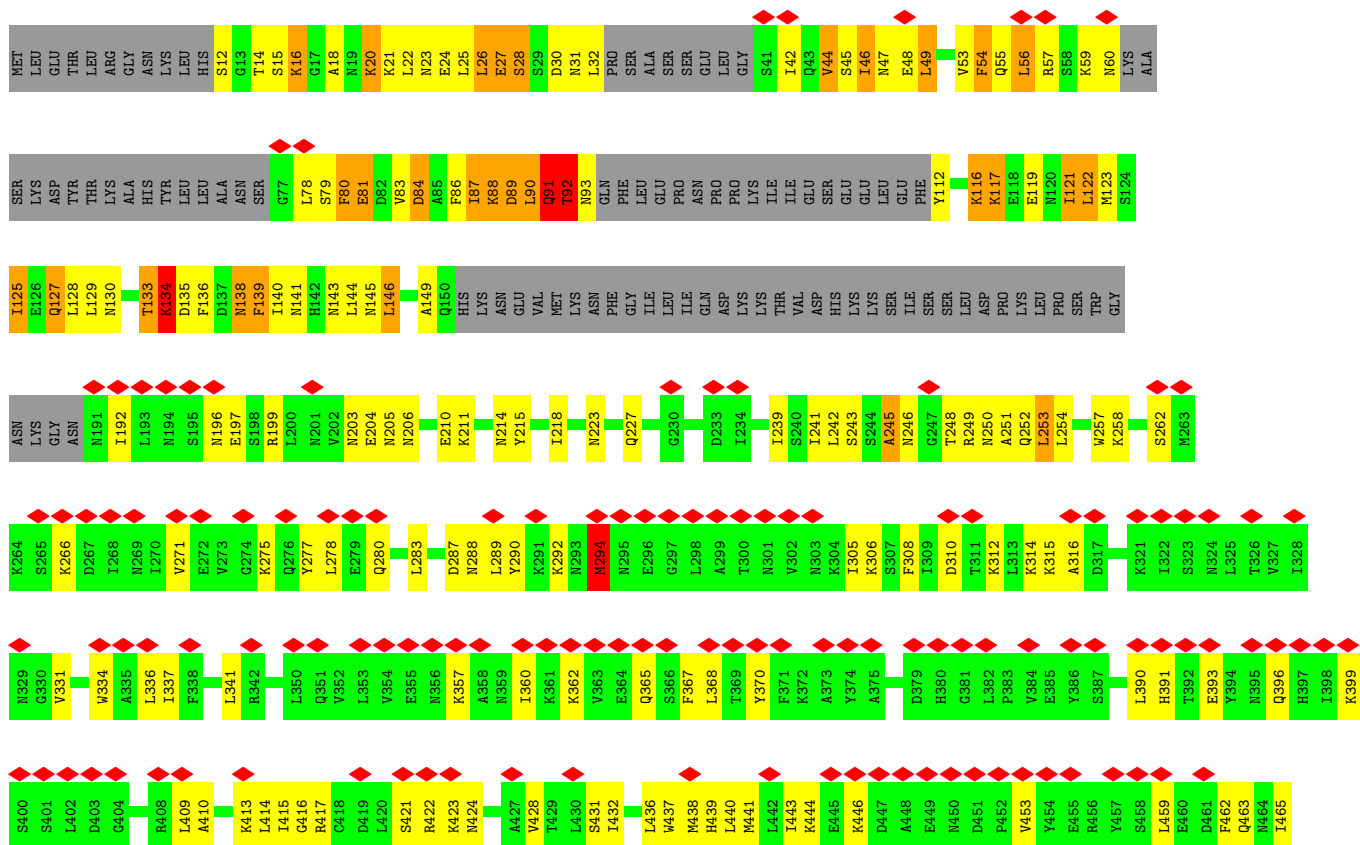


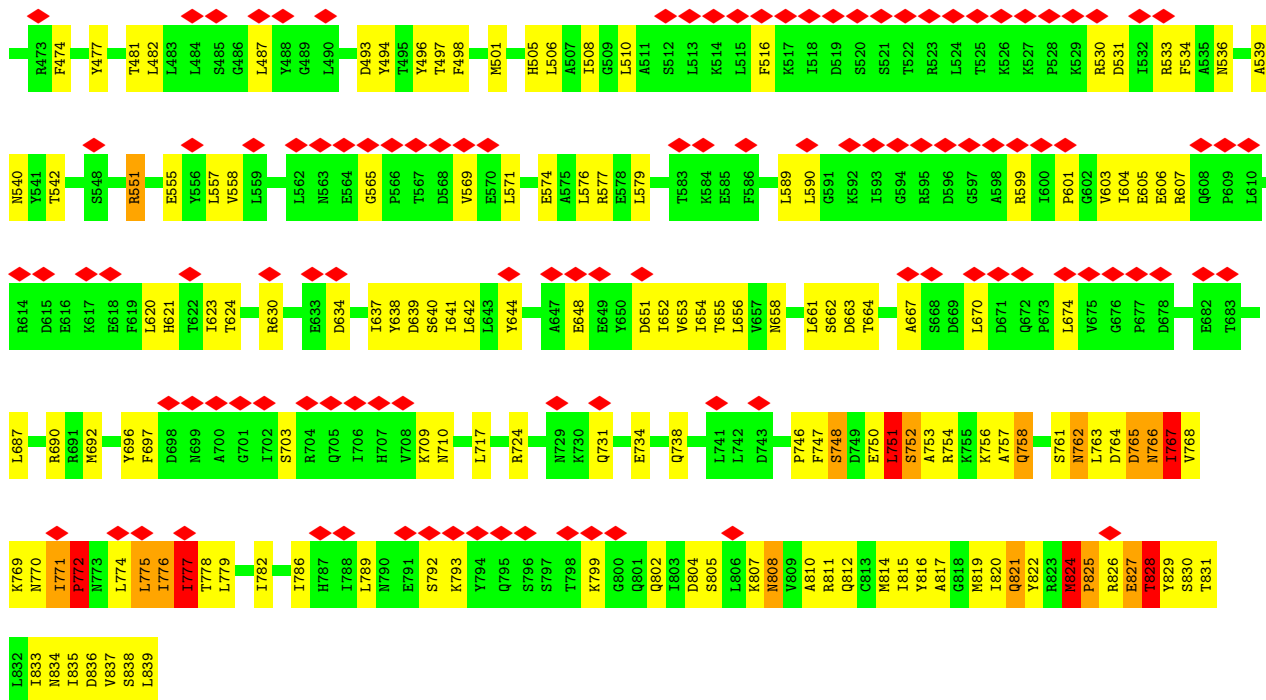
● Molecule 1: Nucleoporin NIC96



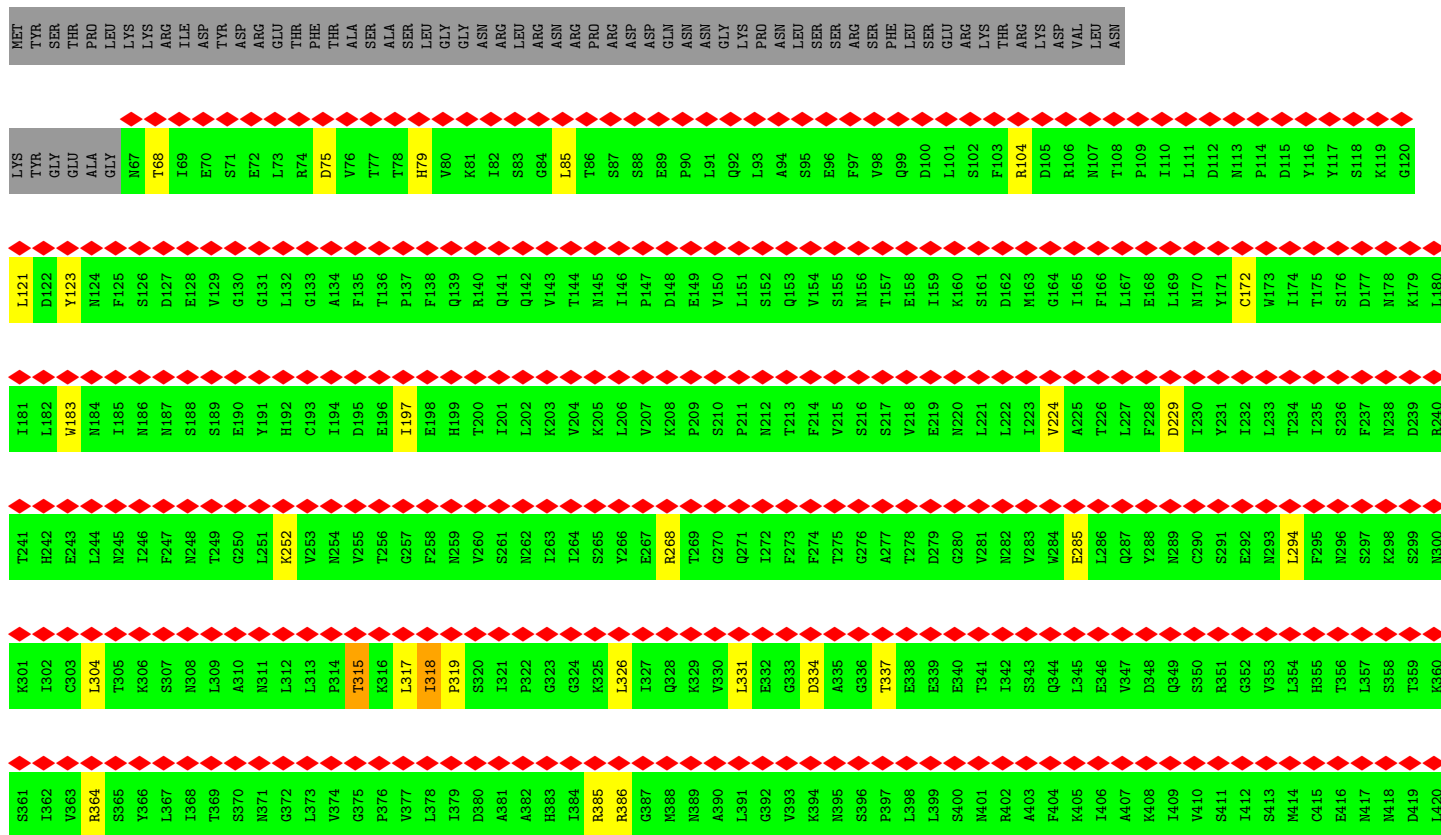
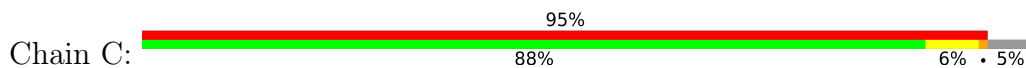


• Molecule 1: Nucleoporin NIC96



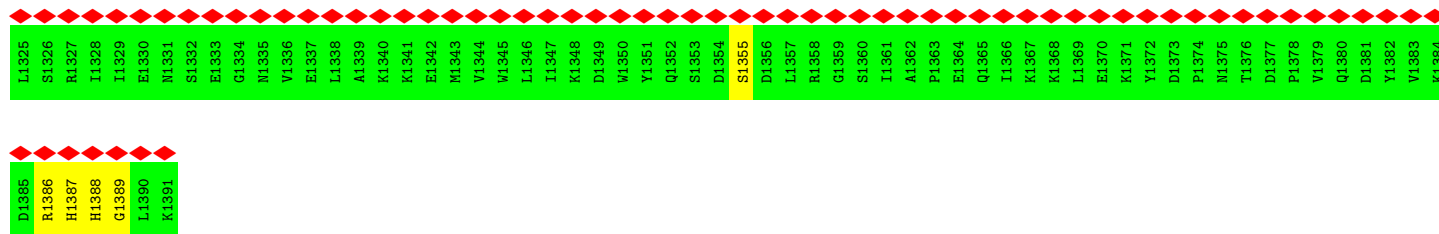


• Molecule 2: Nucleoporin NUP157

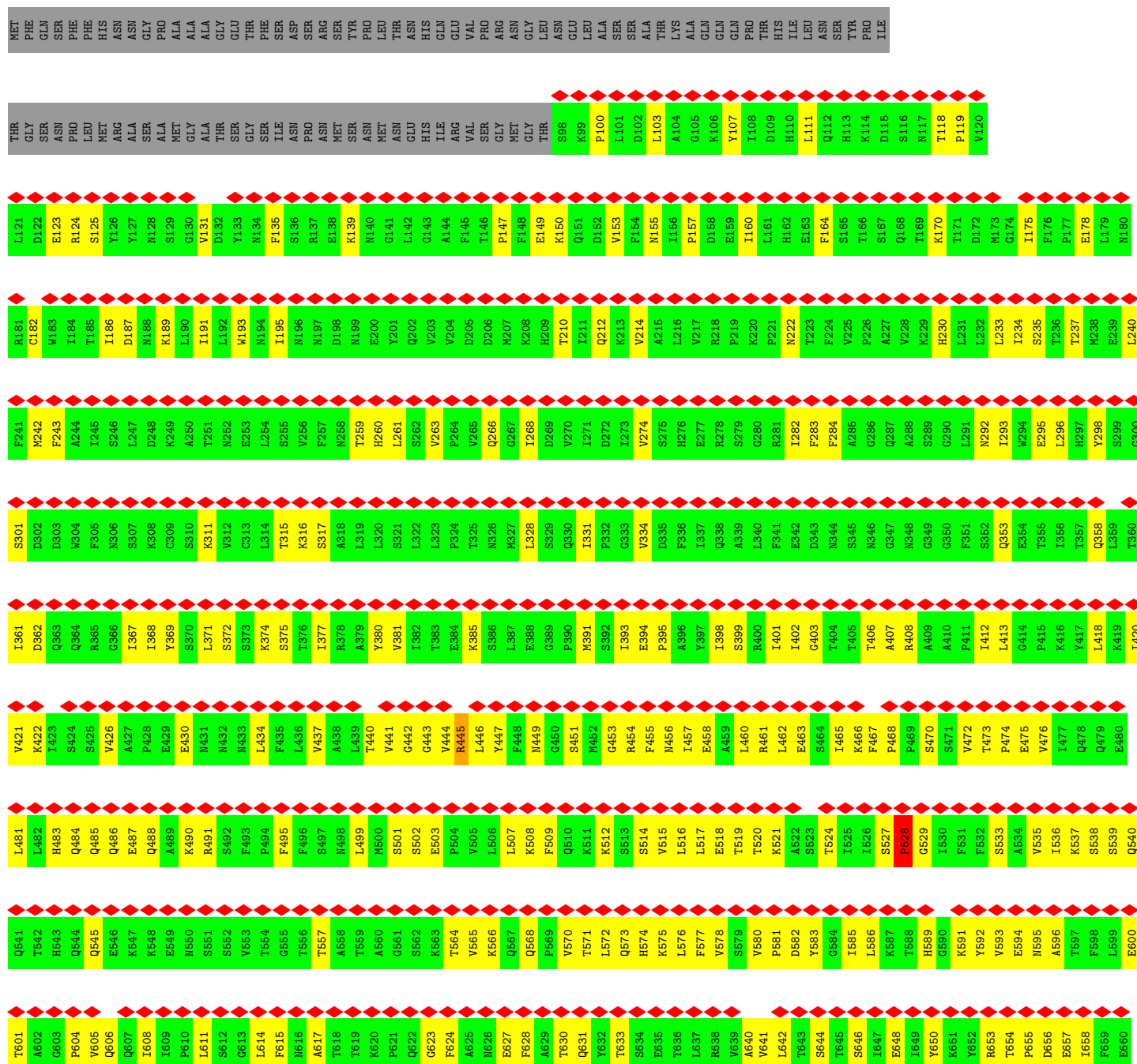


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F1147	P1082	E1022	K962	L902	E942	S782	Q722	L662	A602	A542	P482	L422
D1148	Y1083	Q1023	T963	C903	E943	M783	I723	A663	V603	P543	L483	A423
Q1149	L1084	S1024	V964	Y904	F944	A784	M724	F664	L604	D544	S484	V424
K1150	K1085	P1025	G965	R905	F945	I785	E725	F665	T605	Y545	T485	I425
P1151	E1086	S1026	F966	A906	D946	T786	E726	S666	S606	G546	Q486	T426
A1152	R1087	I1027	L967	G907	L847	A787	R727	A667	M607	I547	K487	T427
L1153	A1088	A1028	L968	E908	K948	S788	V728	G668	A608	L548	A488	T428
V1154	E1089	R969	R969	H909	F949	D789	F729	I669	L609	K549	S489	G429
Q1155	K1090	M1029	F970	H909	H850	A790	V730	P670	E610	N550	S490	V430
L1156	S1091	S1031	A971	E911	D851	E791	F731	G671	I611	Y551	T491	R431
S1157	L1092	I1032	D972	A912	L852	S792	K732	V672	Y612	G552	Y492	L432
E1158	E1093	K973	K973	F953	F853	I793	R733	G673	C613	K553	I493	Y433
M1159	I1094	S1034	I974	Q914	T854	A794	A734	E674	Y614	K554	I494	F434
I1160	S1095	P1035	D975	K915	P855	M795	S735	I675	R615	V555	T495	K435
N1161	N1096	A1036	K976	F916	N856	M796	K736	K676	T616	E556	T496	G436
L1162	L1097	S1037	G977	E917	A857	A797	T737	P677	P617	N557	C497	S437
V1163	L1098	S1038	N978	M918	K858	L798	E738	K678	D618	T558	A498	I438
F1164	F1100	L1039	Q979	I919	T859	I799	K739	S679	E619	A559	S499	S439
D1165	F1101	K1040	A980	D920	K860	L800	M740	S680	V620	L560	T500	R440
I1166	L1102	R1041	Q981	S921	Q861	L801	D741	R681	F621	L561	I501	R441
S1168	F1103	E982	E982	K922	L862	L802	A742	E882	E622	D562	I502	I442
I1169	K1104	Y983	Y983	I923	L863	M803	F743	S883	S623	T563	S503	I443
Q1170	E1105	Y1044	V984	S924	K864	S804	G744	G684	L624	T564	P504	G444
D1171	E1106	S1045	S985	R925	E865	L805	I745	S685	I625	D565	G505	S445
L1172	H1107	V1046	R986	N926	L866	K806	S746	P687	E626	E566	I506	L446
F1173	F1108	I1047	G987	H927	L867	D807	I747	P688	M627	I567	Y507	K447
L1174	L1109	M1048	C988	L928	L868	A808	T748	P688	P628	K568	F508	L448
M1175	E1110	M1049	N989	D929	E869	L809	R749	I689	L629	E569	T509	D449
L1176	A1111	S1050	T990	T930	V670	S810	P750	S690	P630	I570	C510	S450
V1177	A1112	M1051	A991	A931	V671	L811	Q751	Q891	F631	V571	V511	V451
R1178	D1113	M1052	D992	I932	N872	L812	V752	N692	I632	P572	R512	K452
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E1180	L1115	F1054	R994	L934	N874	V614	V754	F694	S634	T574	R514	P454
T1181	Y1116	K995	K995	Y835	L875	F815	Y755	D895	Y635	R575	A515	P455
R1182	A1117	H1056	V996	E936	A876	Y816	L756	K696	G636	S576	N516	T456
I1183	L1118	Y1057	F997	R937	S877	E817	S757	S697	L637	F577	S517	S457
D1184	A1119	C1058	Y998	C938	G878	D818	S758	E698	S638	N578	G518	I458
E1185	S1120	F1059	D999	A939	T879	I619	I759	E699	E639	Y579	E519	S459
L1186	S1121	Y1060	K1000	E940	S880	D820	S760	C700	A640	T580	L520	S460
R1187	D1122	D1061	R1001	N941	A881	A621	V761	D701	C641	S581	S521	S461
R1188	F1123	W1062	I1002	I942	D882	F822	L762	G702	S642	T582	K522	L462
K1189	L1124	L1063	M1003	E943	Y883	K623	A763	I703	T643	P683	G523	E463
Q1190	L1125	V1064	V1004	L944	L884	S824	D764	V704	A644	Q584	I524	Q464
L1191	K1126	Y1005	Y1005	C945	V885	L825	F765	L705	L645	G585	T525	N465
T1192	L1127	T1006	T1006	E946	N886	L826	F766	S706	Y646	G586	N526	K466
L1193	S1128	L1007	L1007	L947	V887	N827	M767	F707	L647	A687	K527	S467
K1194	E1129	I1008	I1008	R948	L888	T828	I768	R708	A648	N888	A528	F468
L1195	D1070	F1009	F1009	R949	K889	L829	H769	F709	C649	V889	L529	I469
M1196	Y1071	E1010	E1010	V950	E990	M830	R770	Y710	K650	F590	L530	I470
G1197	E1131	L1072	I1011	Y951	R891	G831	F771	G711	F651	A591	E531	G471
R1198	E1132	D952	F992	D952	F892	A832	S772	S712	N652	S192	N532	H472
V1199	G1139	K1013	G893	I953	G893	G833	F773	A713	K653	Q593	K533	H473
L1200	L1140	S1014	S894	M954	S894	G834	V774	L714	S654	Y594	E534	P474
P1201	C1141	V1015	F995	Y955	F995	V835	S775	L715	E555	S595	E535	L475
L1202	D1142	D1016	C996	K956	C996	Y836	F776	I716	H656	A596	H536	M476
L1203	S1143	D1017	H897	L957	H897	D837	V777	T717	I657	E597	K537	T477
D1204	S1144	I1018	S898	N958	S898	S838	P778	R718	K658	P598	L538	H478
L1205	T1145	T1019	A899	Y959	A899	K639	F779	L719	S859	L599	Y539	D479
		V1080	S1020	Q960	D900	T840	K780	F720	S660	K600	V540	T480

I1265	L1205	T1145	L1081	I1021	P961	1901	R641	G781	S721	A661	V601	S541
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M1267	N1207	F1147	Y1083	Q1023	T963	C903	Y943	M783	I723	A663	V603	P643
T1268	D1208	D1148	L1084	S1024	V964	Y904	F944	A784	M724	F664	L604	D644
L1269	C1209	Q1149	K1085	P1025	G965	R905	F945	I785	E725	T665	T605	Y645
I1270	A1210	K1150	E1086	S1026	F966	A906	D946	T786	E726	S666	S606	G646
R1271	D1211	P1151	R1087	I1027	L967	G907	L947	A787	R727	A667	N607	I547
I1272	P1212	A1152	A1088	A1028	R968	E908	K948	S788	V728	G668	A608	L648
K1273	L1213	L1153	E1089	M1029	F969	H909	F949	D789	F729	I669	L609	K649
T1275	D1214	V1154	K1090	I1030	R970	L910	H850	A790	V730	P670	E610	N650
T1276	Y1215	Q1155	S1091	S1031	A971	E911	D851	E791	F731	G671	I611	Y651
T1277	Y1216	L1156	L1092	I1032	D972	A912	L852	S792	K732	V672	E612	G652
R1278	E1217	S1157	E1093	F1033	K973	A913	F853	I793	R733	G673	C613	K653
D1279	I1218	E1158	I1094	S1034	I974	Q914	T854	A794	A734	E674	E614	Y654
T1279	K1219	M1159	S1095	P1035	D975	K915	P855	M795	S735	I675	R615	V655
D1280	L1220	I1160	N1096	A1036	K976	F916	N856	M796	K736	K676	T616	E656
V1281	R1221	H1161	L1097	S1037	G977	E917	A857	A797	T737	P677	P617	N657
F1283	F1223	L1163	L1098	S1038	N978	M918	K858	L798	E738	K678	D618	T658
P1284	K1224	F1164	F1100	K1040	Q979	I919	T859	I799	K739	S679	E619	A659
V1285	V1225	D1165	F1101	K1041	A980	D920	K860	L800	M740	S680	V620	L660
H1286	S1226	I1166	L1102	R1042	Q821	S821	Q861	I801	D741	R681	F621	L661
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L1293	V1232	D1172	F1108	M1048	C988	L928	I868	A808	T748	P688	P628	K668
I1294	I1234	L1173	L1109	S1049	N989	D929	E869	L809	R749	I689	L629	E669
S1295	Q1235	M1175	E1111	M1051	T990	T930	V870	S810	Q750	S690	P630	I670
F1296	G1236	L1176	A1112	N1052	A991	A931	V871	L811	Q751	Q691	F631	V671
I1297	E1237	D1113	L1112	N1053	D992	I932	N872	I812	V752	N692	I632	P672
D1298	M1238	R1177	V1114	F1053	P993	D933	A873	N813	E753	L693	H633	L673
K1299	N1239	L1178	L1115	F1054	R994	L934	N874	V814	Y754	F694	S634	T674
S1300	R1240	M1179	L1116	F1055	K995	Y935	I875	F815	Y755	D695	Y635	R675
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A1302	L1242	T1181	A1118	Y1057	F997	R937	S877	E817	S757	S697	L637	F577
A1303	D1243	R1182	L1118	C1058	G998	C938	S878	D818	S758	G698	S638	N578
D1304	S1244	I1183	A1119	F1059	D999	A939	T879	I819	I759	E699	E639	Y579
S1305	M1245	D1184	S1120	Y1060	D999	A939	S880	D820	S760	C700	A640	T580
S1306	K1246	E1185	S1121	D1061	K1000	E940	S880	D820	S760	C700	A640	T580
V1307	N1247	D1186	D1122	W1062	R1001	N941	A881	A821	V761	D701	C641	S681
C1308	M1248	Y1187	F1123	L1063	I1002	I942	A882	A822	A763	I703	T643	P683
S1309	A1248	R1188	D1124	V1064	M1003	E943	Y883	K823	A763	I703	T643	P683
M1310	P1249	K1189	L1125	V1064	V1004	L944	I884	S824	D764	V704	A644	Q684
M1310	S1250	Q1190	K1126	Y1005	Y885	C945	V885	L825	F765	L705	L645	G685
F1311	P1251	L1191	L1127	M1066	N886	E946	N886	L826	F766	S706	L646	G686
L1312	D1252	L1192	L1068	L1007	V887	L947	V887	L827	M767	P707	L647	A687
L1313	V1253	T1192	I1068	L1007	V887	L947	V887	L827	M767	P707	L647	A687
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S1318	G1258	M1196	V1012	L1072	F922	D952	F922	A832	S772	S712	N652	S692
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Y1322	L1262	D1142	D1017	S1077	H897	L957	H897	D837	V777	T717	I657	E697
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● Molecule 3: Nucleoporin NUP170



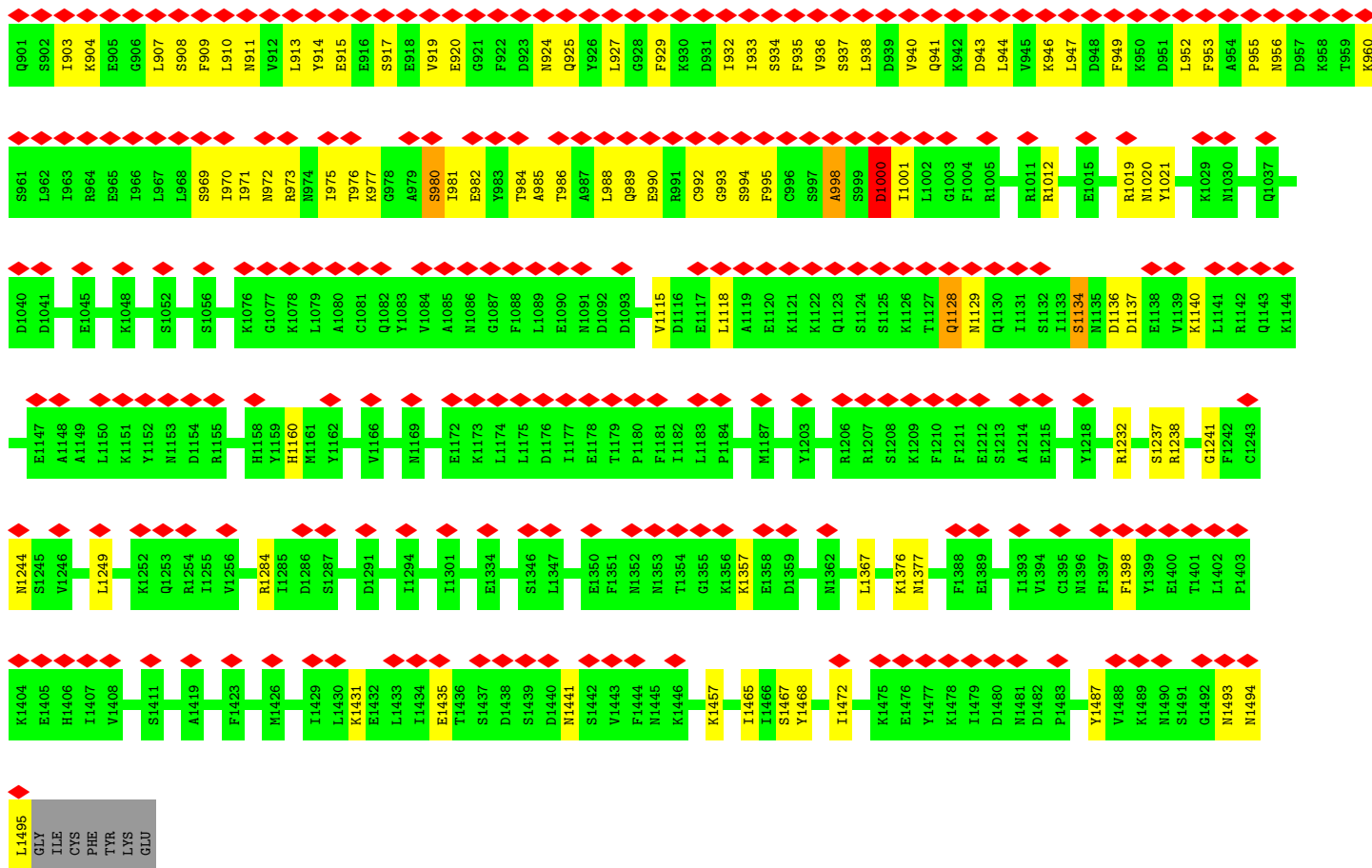
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• Molecule 3: Nucleoporin NUP170

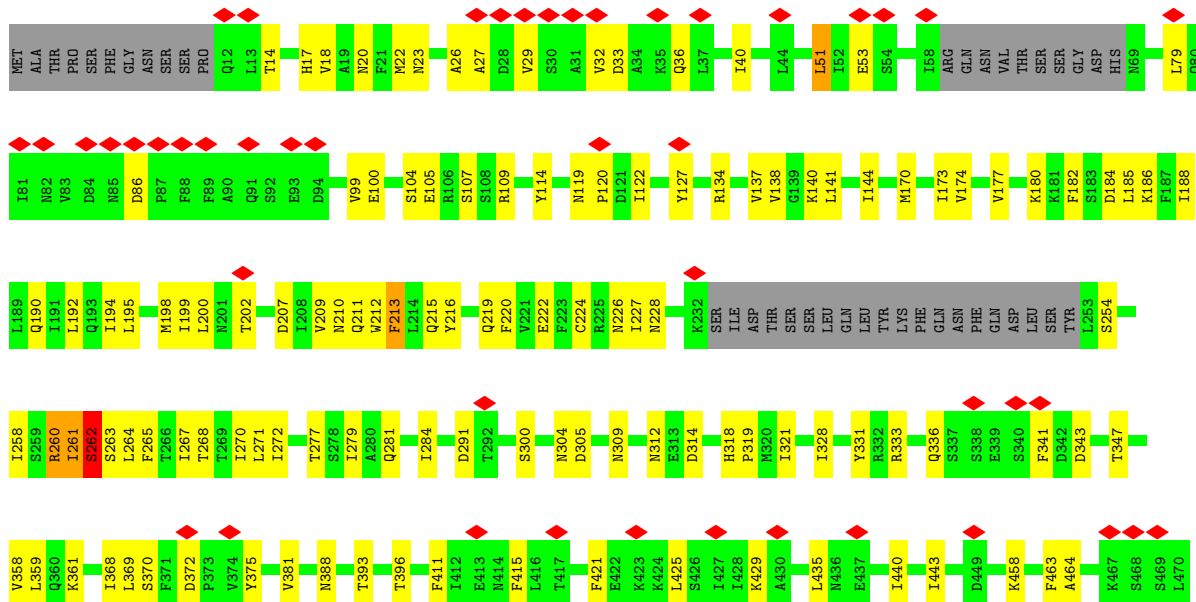


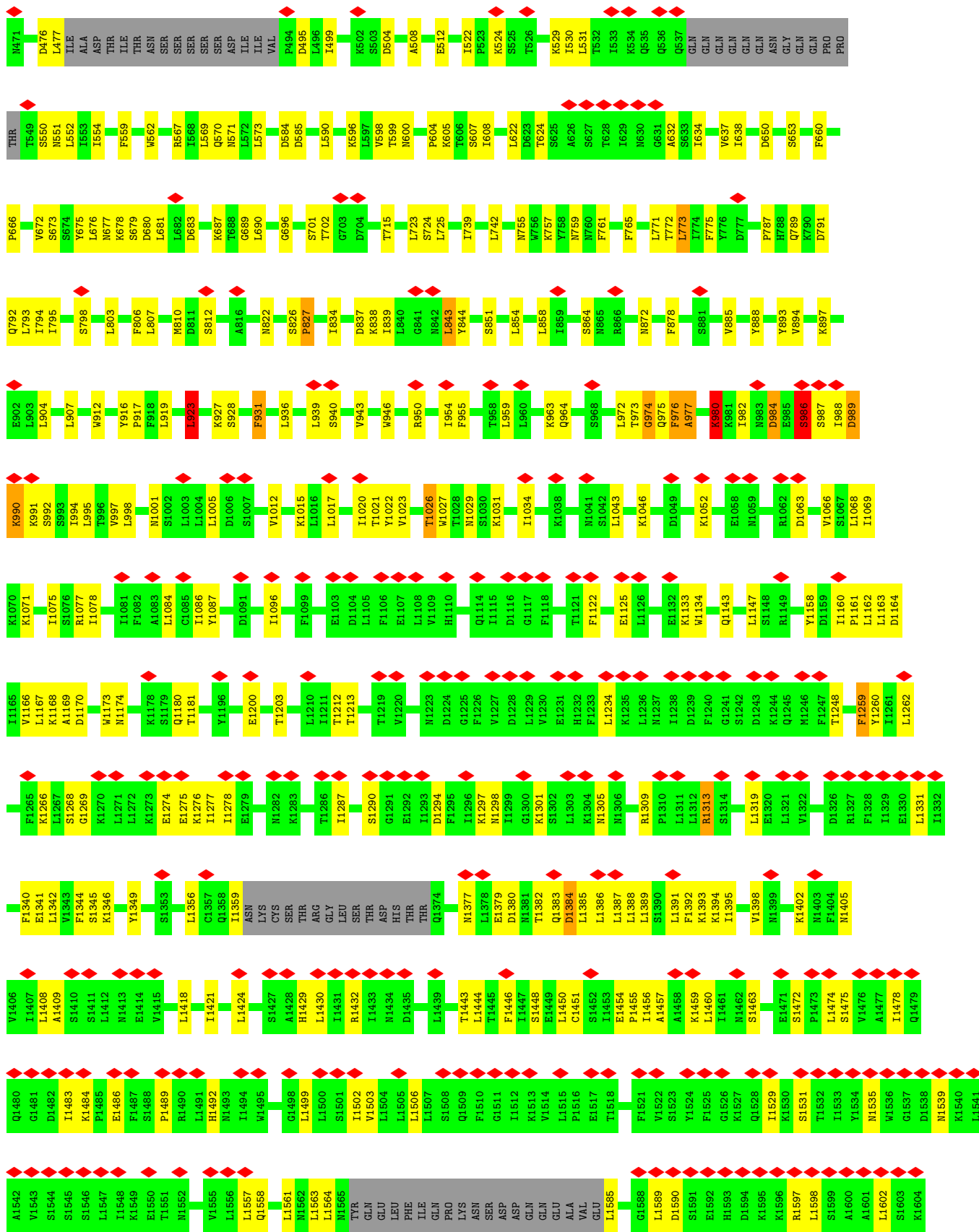
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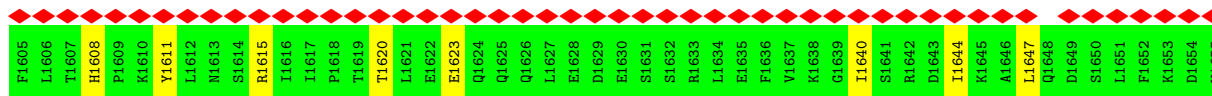
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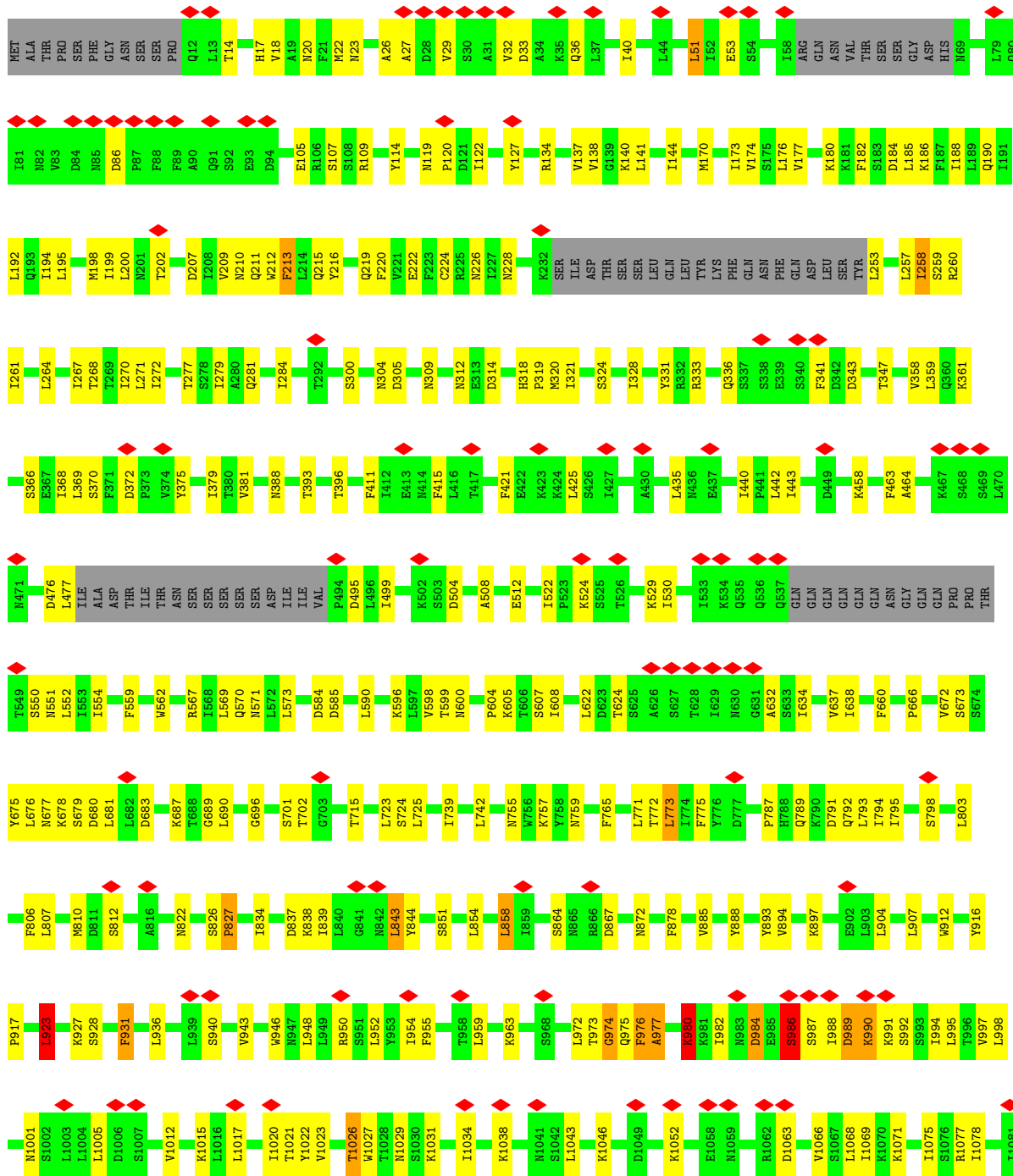
• Molecule 4: Nucleoporin NUP188

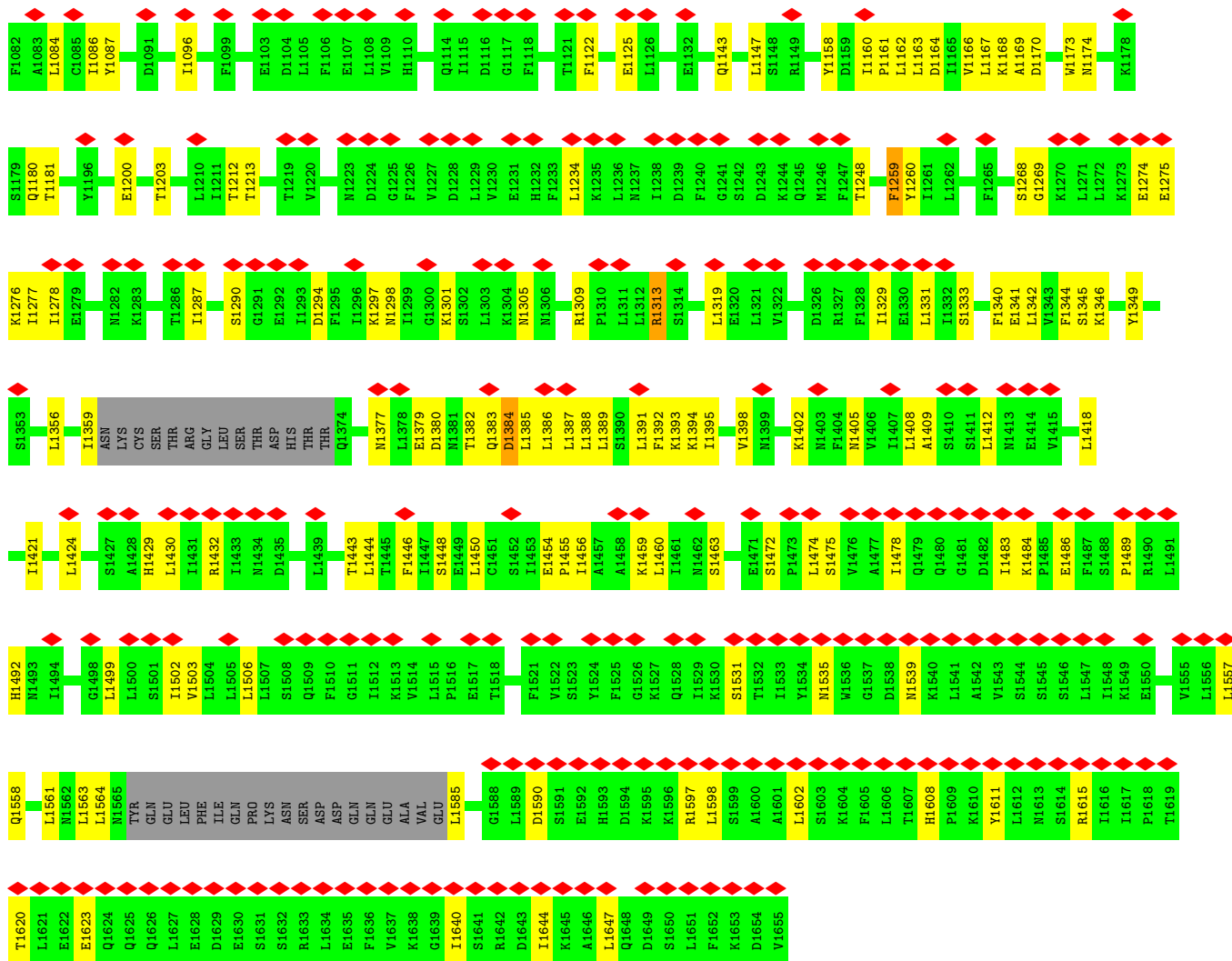




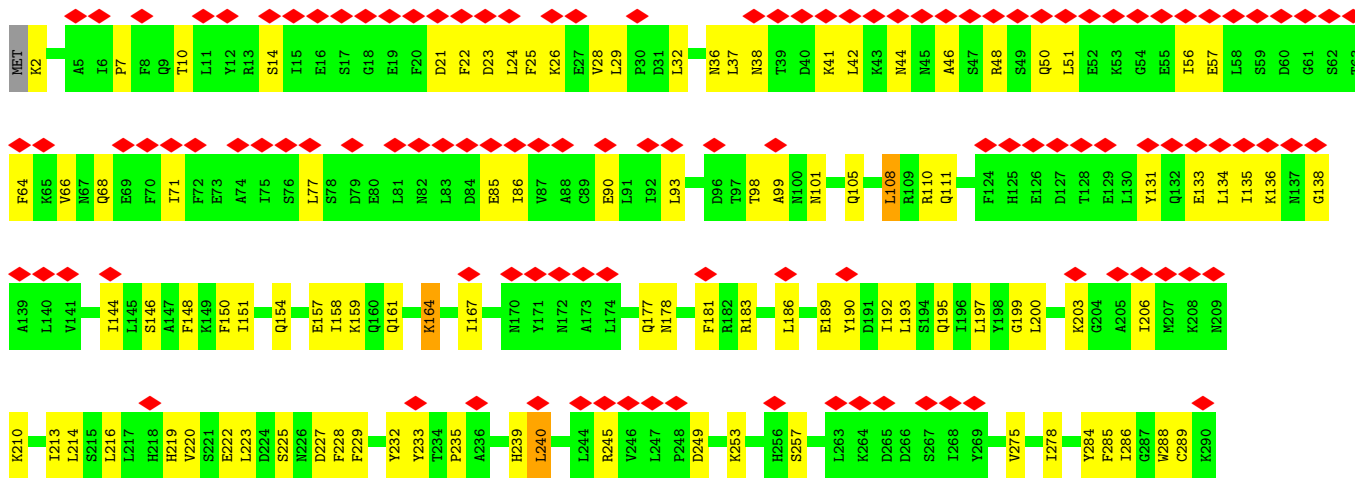


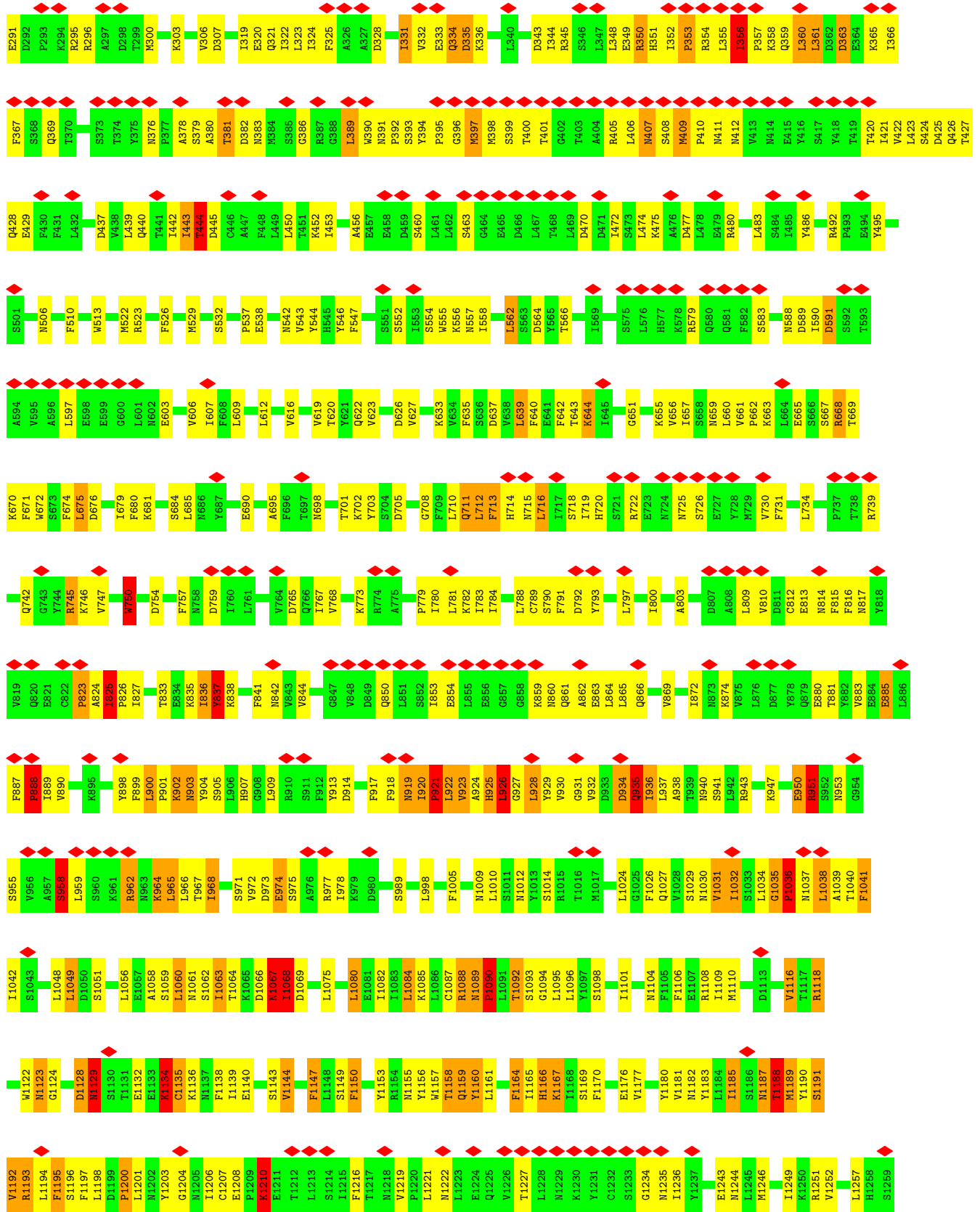
● Molecule 4: Nucleoporin NUP188

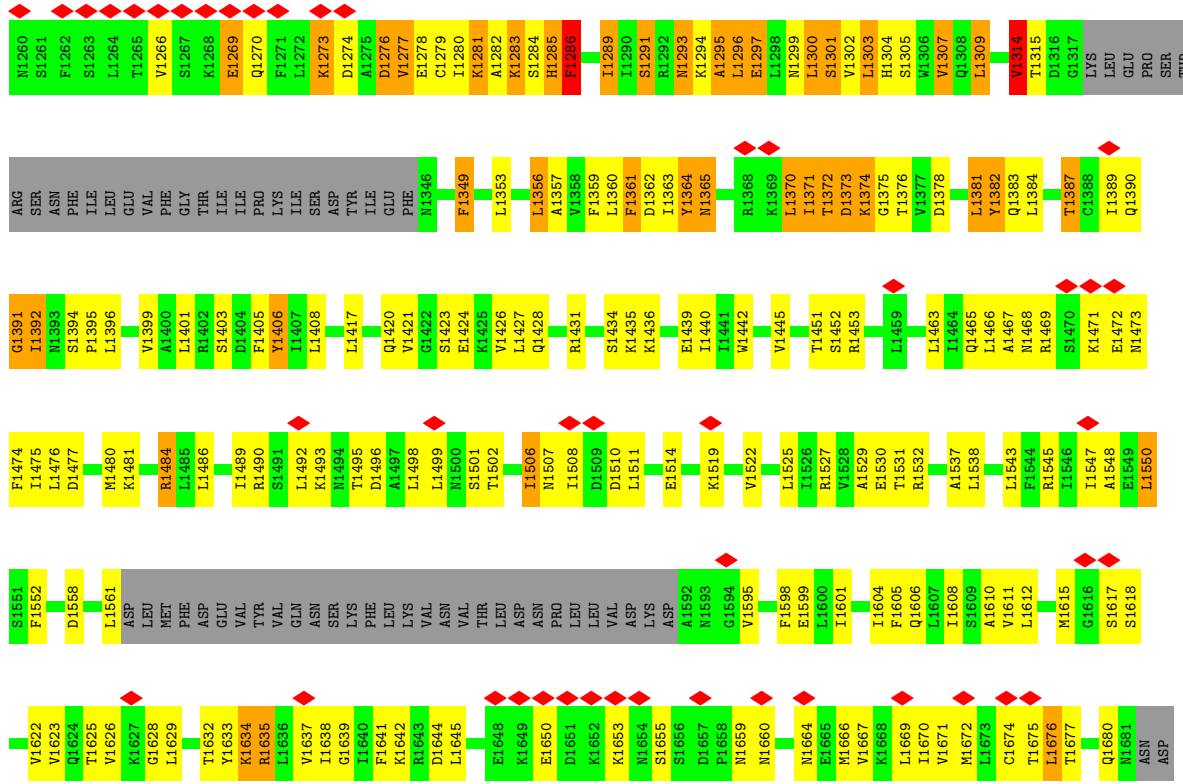




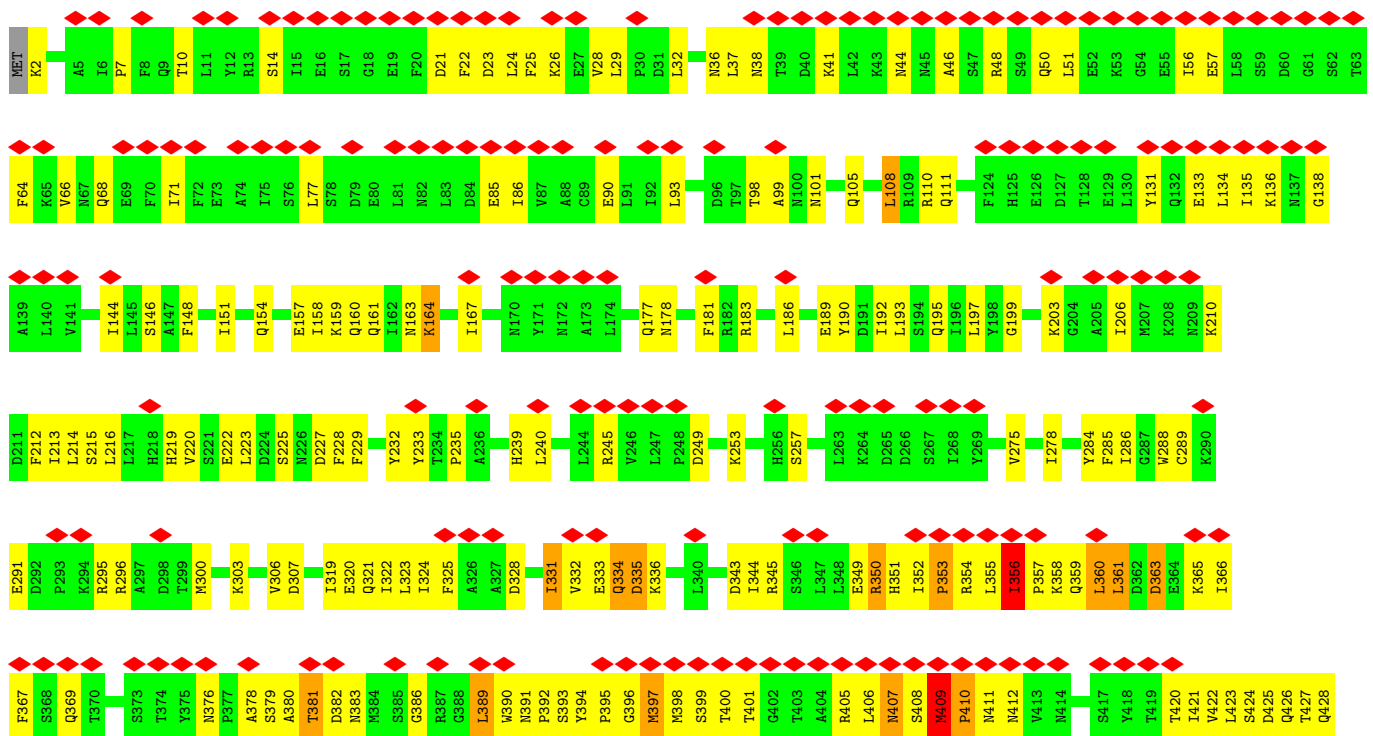
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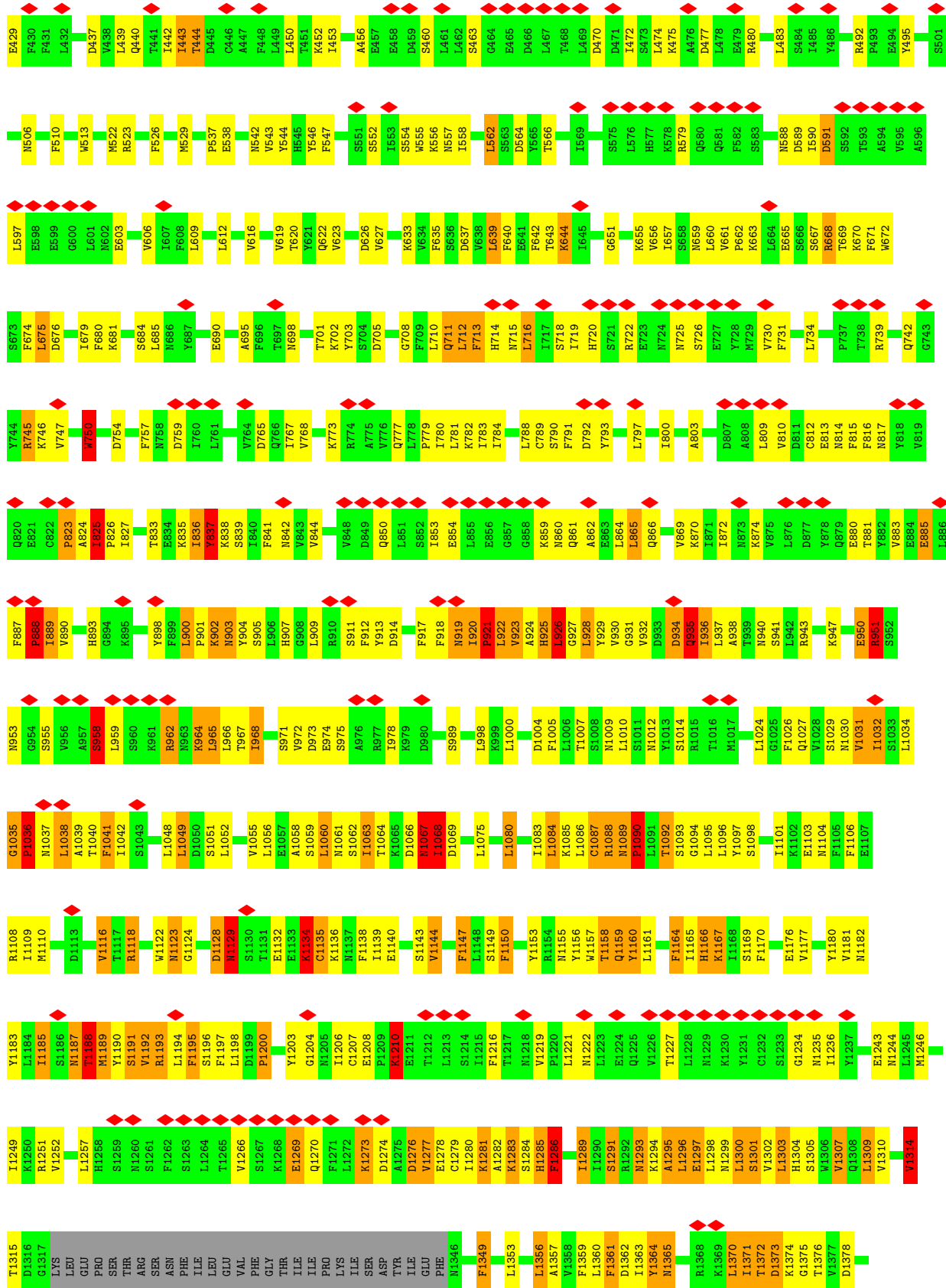


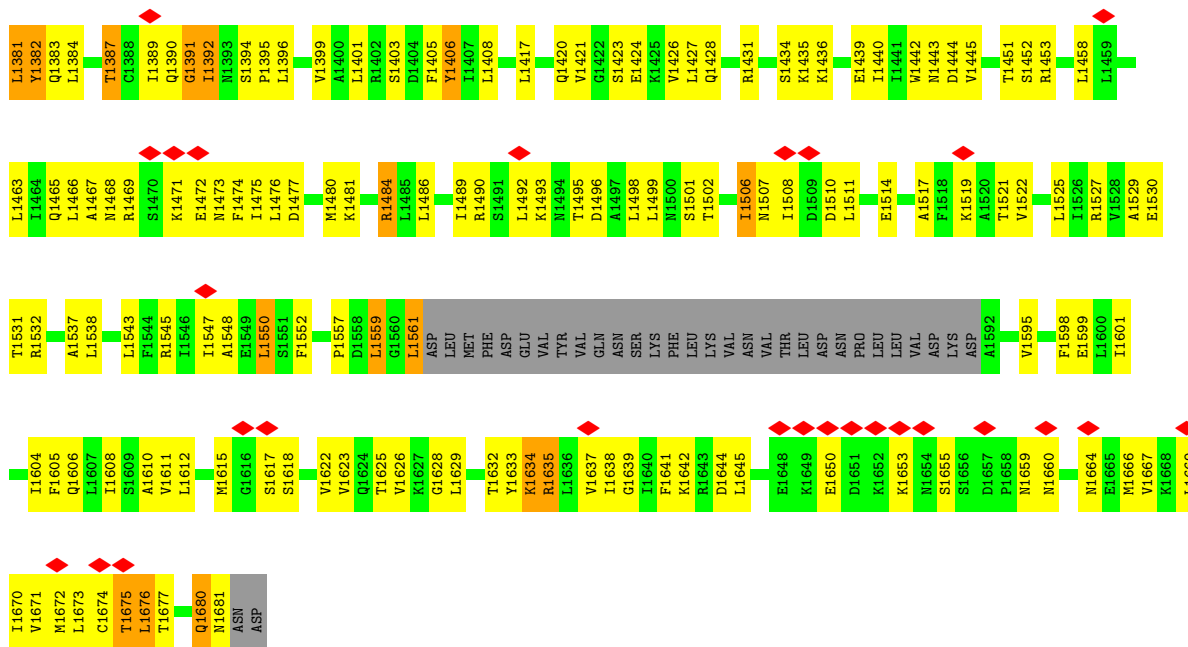




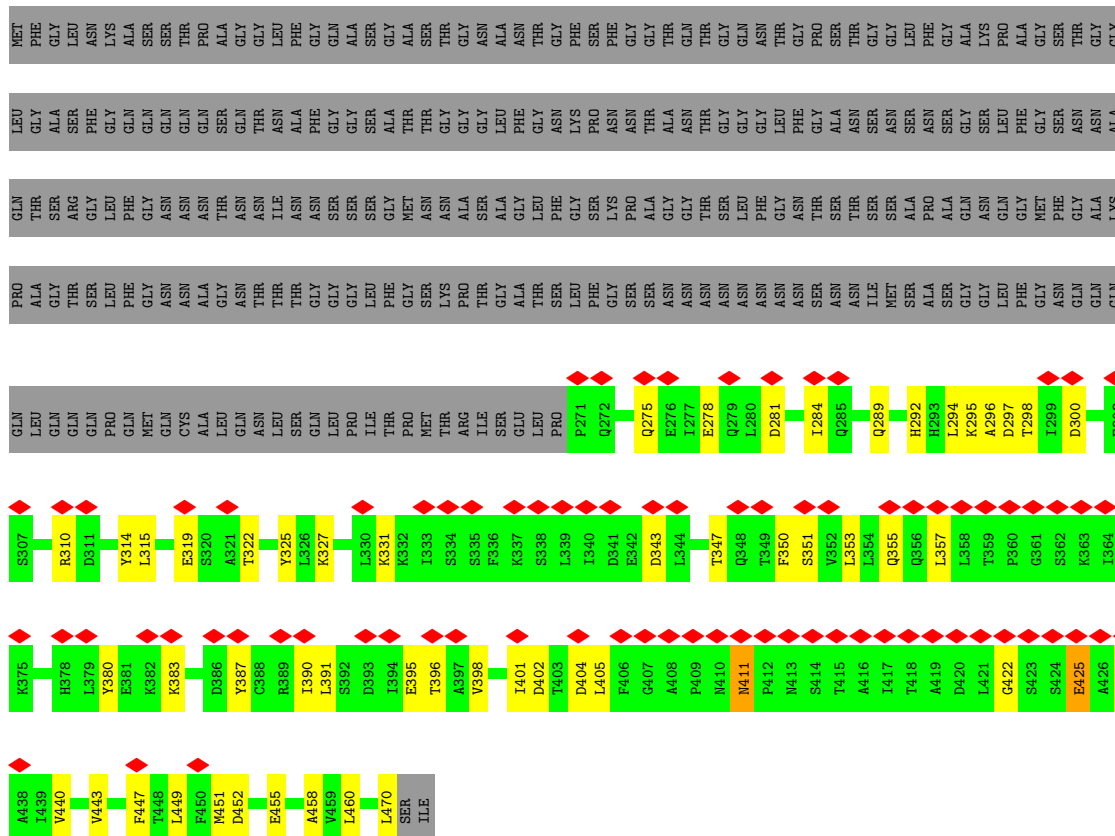
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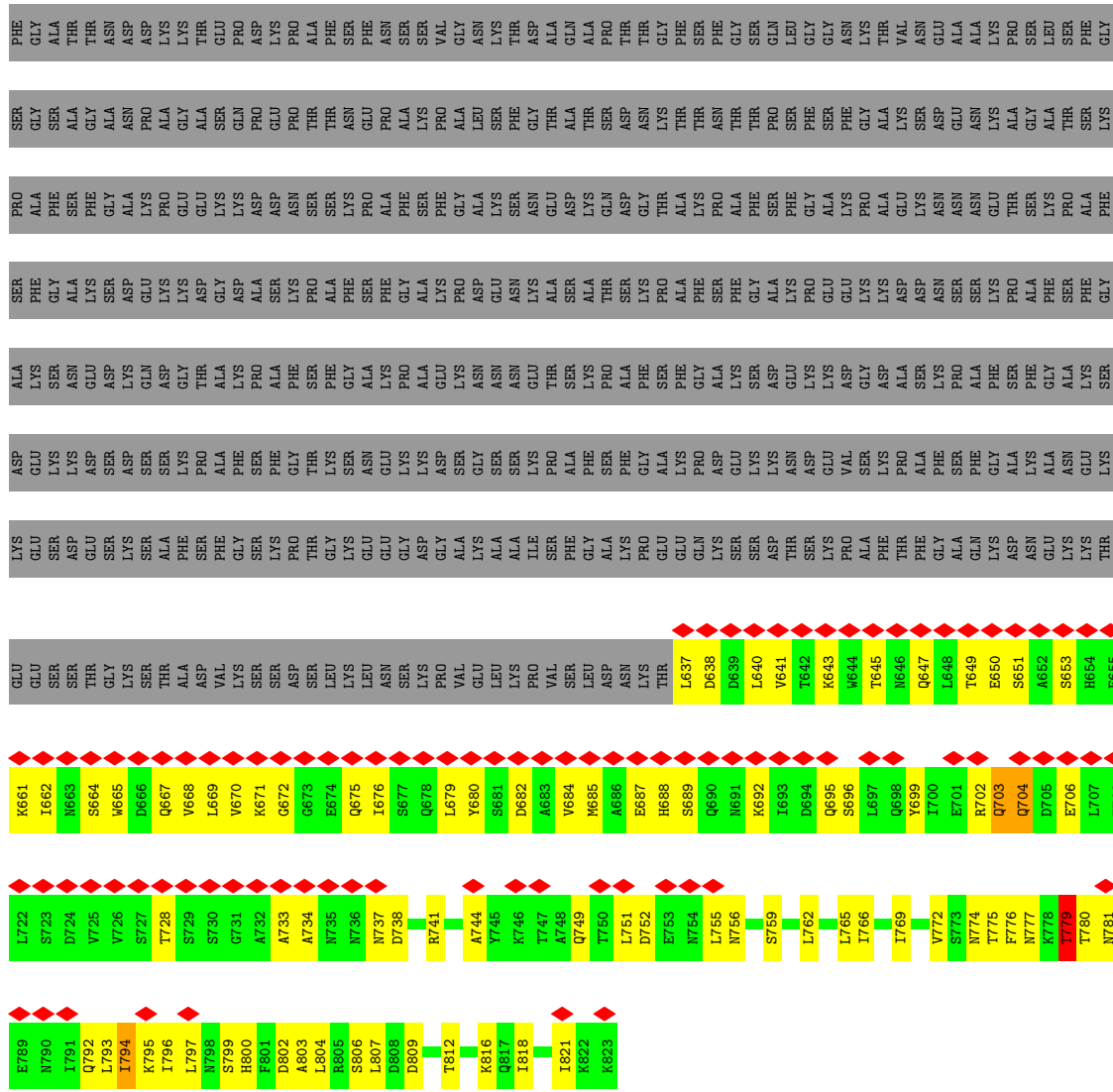




● Molecule 6: Nucleoporin NUP49/NSP49



● Molecule 6: Nucleoporin NUP49/NSP49



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	633134	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 ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.483	Depositor
Minimum map value	-1.449	Depositor
Average map value	0.006	Depositor
Map value standard deviation	0.048	Depositor
Recommended contour level	0.18	Depositor
Map size (\AA)	467.59998, 467.59998, 467.59998	wwPDB
Map dimensions	350, 350, 350	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.336, 1.336, 1.336	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	A	0.37	0/5810	0.59	6/7863 (0.1%)
1	M	0.36	0/5787	0.58	5/7832 (0.1%)
1	N	0.46	0/5852	0.82	9/7931 (0.1%)
1	Z	0.46	0/5853	0.84	11/7931 (0.1%)
2	C	0.66	0/10658	0.90	22/14443 (0.2%)
2	O	0.66	0/10658	0.90	23/14443 (0.2%)
3	D	0.46	0/11182	0.63	5/15160 (0.0%)
3	P	0.46	0/11171	0.63	5/15145 (0.0%)
4	E	0.43	0/12583	0.68	9/17054 (0.1%)
4	Q	0.43	0/12583	0.68	8/17054 (0.0%)
5	F	0.63	5/12443 (0.0%)	1.18	91/16898 (0.5%)
5	R	0.63	5/12443 (0.0%)	1.18	90/16898 (0.5%)
6	G	0.35	0/1553	0.62	0/2104
6	J	0.50	0/1509	1.00	11/2042 (0.5%)
6	S	0.35	0/1549	0.62	0/2100
6	V	0.50	0/1509	1.02	11/2042 (0.5%)
7	H	0.61	2/1832 (0.1%)	0.88	10/2482 (0.4%)
7	K	0.56	1/1829 (0.1%)	0.96	12/2485 (0.5%)
7	T	0.61	2/1832 (0.1%)	0.88	11/2482 (0.4%)
7	W	0.61	1/1826 (0.1%)	1.03	15/2481 (0.6%)
8	I	0.59	0/1431	0.93	4/1940 (0.2%)
8	L	0.40	0/1378	0.74	1/1873 (0.1%)
8	U	0.59	0/1431	0.93	4/1940 (0.2%)
8	X	0.40	0/1378	0.74	1/1873 (0.1%)
All	All	0.53	16/136080 (0.0%)	0.85	364/184496 (0.2%)

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	N	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	Z	0	1
5	F	0	4
5	R	0	4
6	G	0	1
6	S	0	1
7	H	0	1
7	K	0	2
7	T	0	1
7	W	0	2
All	All	0	19

The worst 5 of 16 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	F	750	TRP	C-N	10.13	1.53	1.34
5	R	750	TRP	C-N	10.13	1.53	1.34
7	H	427	LEU	C-N	10.05	1.53	1.34
7	T	427	LEU	C-N	10.01	1.53	1.34
7	T	425	ARG	C-N	9.00	1.49	1.33

The worst 5 of 364 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	F	1090	PRO	CA-N-CD	-37.79	58.60	111.50
5	R	1090	PRO	CA-N-CD	-37.74	58.66	111.50
7	T	425	ARG	C-N-CA	-13.43	94.11	122.30
7	H	425	ARG	C-N-CA	-13.39	94.18	122.30
6	V	388	CYS	CB-CA-C	-12.61	85.19	110.40

There are no chirality outliers.

5 of 19 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	F	1185	ILE	Mainchain
5	F	1188	THR	Mainchain
5	F	360	LEU	Mainchain
5	F	814	ASN	Mainchain
6	G	422	GLY	Mainchain

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	5720	0	5578	305	0
1	M	5697	0	5563	302	0
1	N	5766	0	5590	494	0
1	Z	5767	0	5596	531	0
2	C	10452	0	10392	51	0
2	O	10452	0	10392	50	0
3	D	10966	0	10812	459	0
3	P	10956	0	10803	473	0
4	E	12362	0	12566	356	0
4	Q	12362	0	12566	336	0
5	F	12239	0	11567	842	0
5	R	12239	0	11568	850	0
6	G	1533	0	1515	124	0
6	J	1492	0	1465	287	0
6	S	1529	0	1504	112	0
6	V	1492	0	1465	323	0
7	H	1811	0	1697	146	0
7	K	1808	0	1614	306	0
7	T	1811	0	1697	152	0
7	W	1805	0	1605	321	0
8	I	1418	0	1293	168	0
8	L	1366	0	1211	160	0
8	U	1418	0	1293	168	0
8	X	1366	0	1211	145	0
All	All	133827	0	130563	6256	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 24.

The worst 5 of 6256 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:N:810:ALA:CB	1:N:836:ASP:HA	1.26	1.63
6:G:451:MET:CE	1:M:14:THR:HG21	1.19	1.62
1:A:15:SER:HB2	6:S:447:PHE:CZ	1.35	1.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:955:PRO:CB	3:D:994:SER:CB	1.78	1.61
5:R:1357:ALA:HB2	5:R:1381:LEU:CB	1.19	1.60

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	722/839 (86%)	702 (97%)	18 (2%)	2 (0%)	41	74
1	M	719/839 (86%)	699 (97%)	18 (2%)	2 (0%)	41	74
1	N	736/839 (88%)	680 (92%)	39 (5%)	17 (2%)	6	38
1	Z	736/839 (88%)	681 (92%)	38 (5%)	17 (2%)	6	38
2	C	1323/1391 (95%)	1269 (96%)	41 (3%)	13 (1%)	15	51
2	O	1323/1391 (95%)	1270 (96%)	40 (3%)	13 (1%)	15	51
3	D	1396/1502 (93%)	1275 (91%)	113 (8%)	8 (1%)	25	61
3	P	1396/1502 (93%)	1275 (91%)	113 (8%)	8 (1%)	25	61
4	E	1538/1655 (93%)	1374 (89%)	150 (10%)	14 (1%)	17	53
4	Q	1538/1655 (93%)	1376 (90%)	149 (10%)	13 (1%)	19	56
5	F	1616/1683 (96%)	1200 (74%)	321 (20%)	95 (6%)	1	20
5	R	1616/1683 (96%)	1196 (74%)	324 (20%)	96 (6%)	1	20
6	G	198/472 (42%)	188 (95%)	9 (4%)	1 (0%)	29	65
6	J	191/472 (40%)	172 (90%)	15 (8%)	4 (2%)	7	40
6	S	198/472 (42%)	188 (95%)	9 (4%)	1 (0%)	29	65
6	V	191/472 (40%)	171 (90%)	16 (8%)	4 (2%)	7	40
7	H	242/541 (45%)	202 (84%)	36 (15%)	4 (2%)	9	43
7	K	252/541 (47%)	208 (82%)	33 (13%)	11 (4%)	2	25

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
7	T	242/541 (45%)	202 (84%)	36 (15%)	4 (2%)	9	43
7	W	252/541 (47%)	209 (83%)	32 (13%)	11 (4%)	2	25
8	I	185/823 (22%)	158 (85%)	16 (9%)	11 (6%)	1	20
8	L	185/823 (22%)	164 (89%)	15 (8%)	6 (3%)	4	32
8	U	185/823 (22%)	158 (85%)	16 (9%)	11 (6%)	1	20
8	X	185/823 (22%)	164 (89%)	15 (8%)	6 (3%)	4	32
All	All	17165/23162 (74%)	15181 (88%)	1612 (9%)	372 (2%)	10	39

5 of 372 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	44	VAL
2	C	319	PRO
2	C	468	PHE
2	C	476	ASN
2	C	694	PHE

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	608/762 (80%)	583 (96%)	25 (4%)	30	59
1	M	605/762 (79%)	578 (96%)	27 (4%)	27	57
1	N	609/762 (80%)	554 (91%)	55 (9%)	9	37
1	Z	609/762 (80%)	554 (91%)	55 (9%)	9	37
2	C	1177/1250 (94%)	1152 (98%)	25 (2%)	53	74
2	O	1177/1250 (94%)	1152 (98%)	25 (2%)	53	74
3	D	1212/1353 (90%)	1199 (99%)	13 (1%)	73	85
3	P	1210/1353 (89%)	1197 (99%)	13 (1%)	73	85
4	E	1421/1557 (91%)	1397 (98%)	24 (2%)	60	79
4	Q	1421/1557 (91%)	1397 (98%)	24 (2%)	60	79

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	F	1261/1538 (82%)	1165 (92%)	96 (8%)	13	43
5	R	1261/1538 (82%)	1163 (92%)	98 (8%)	12	43
6	G	167/377 (44%)	165 (99%)	2 (1%)	71	84
6	J	162/377 (43%)	145 (90%)	17 (10%)	7	31
6	S	166/377 (44%)	164 (99%)	2 (1%)	71	84
6	V	162/377 (43%)	148 (91%)	14 (9%)	10	40
7	H	171/439 (39%)	166 (97%)	5 (3%)	42	66
7	K	153/439 (35%)	134 (88%)	19 (12%)	4	24
7	T	171/439 (39%)	166 (97%)	5 (3%)	42	66
7	W	152/439 (35%)	128 (84%)	24 (16%)	2	17
8	I	152/674 (23%)	135 (89%)	17 (11%)	6	29
8	L	138/674 (20%)	137 (99%)	1 (1%)	84	91
8	U	152/674 (23%)	135 (89%)	17 (11%)	6	29
8	X	138/674 (20%)	137 (99%)	1 (1%)	84	91
All	All	14455/20404 (71%)	13851 (96%)	604 (4%)	33	58

5 of 604 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	R	1301	SER
1	Z	125	ILE
5	R	1382	TYR
5	R	1300	LEU
6	V	401	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 229 such sidechains are listed below:

Mol	Chain	Res	Type
1	N	738	GLN
1	Z	464	ASN
4	Q	770	HIS
1	Z	396	GLN
7	W	402	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.

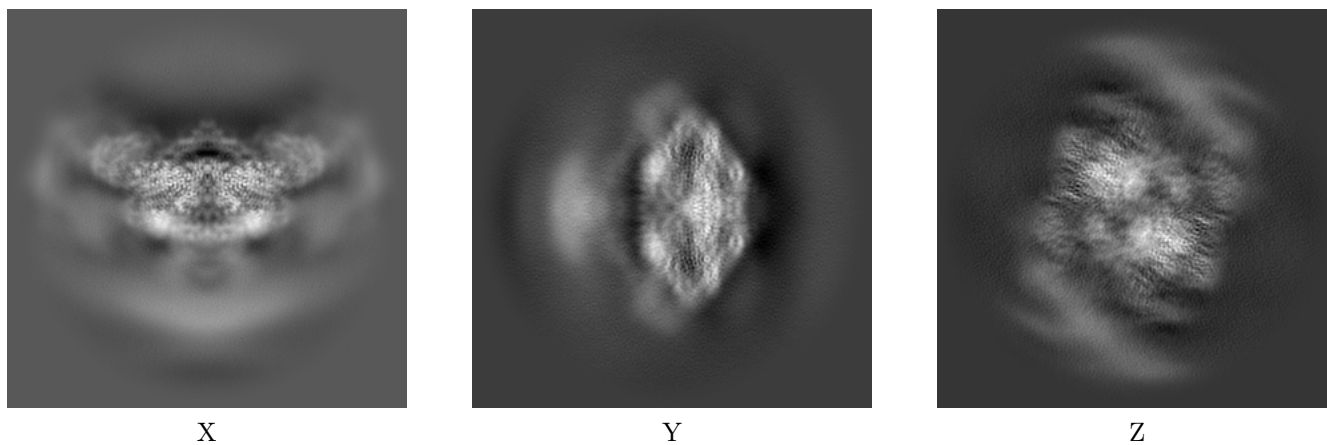
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-32658. 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](#)

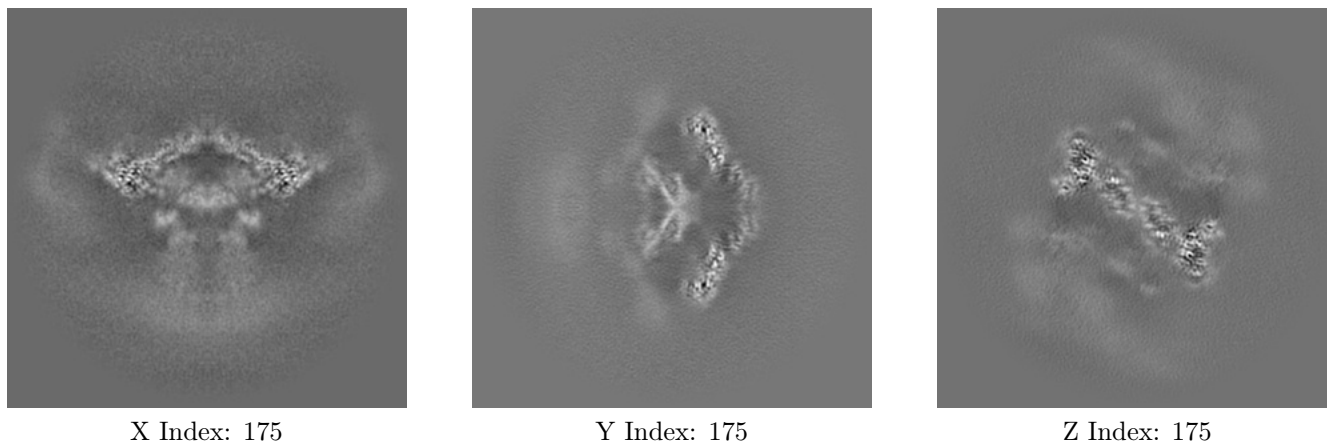
6.1.1 Primary map



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

6.2 Central slices [i](#)

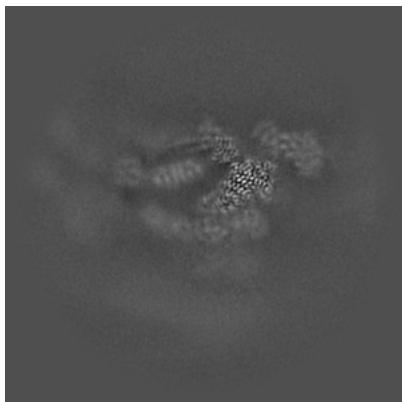
6.2.1 Primary map



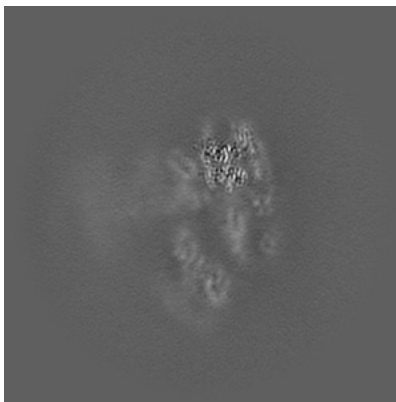
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

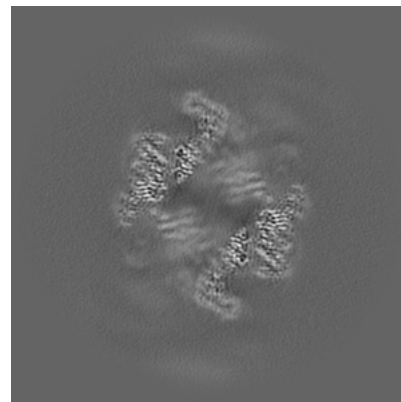
6.3.1 Primary map



X Index: 150



Y Index: 147

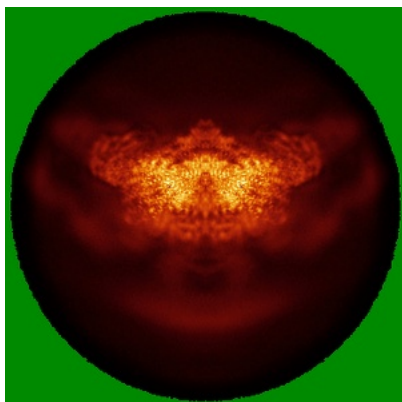


Z Index: 204

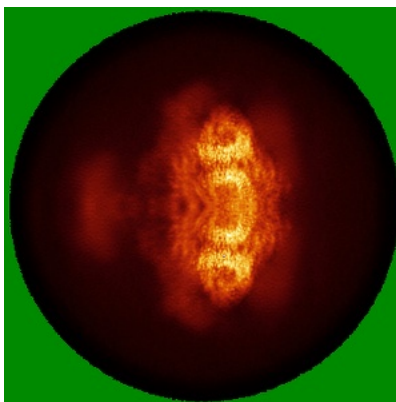
The images above show the largest variance slices of the map in three orthogonal directions.

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

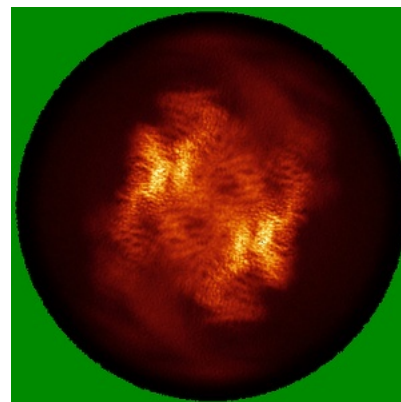
6.4.1 Primary map



X



Y

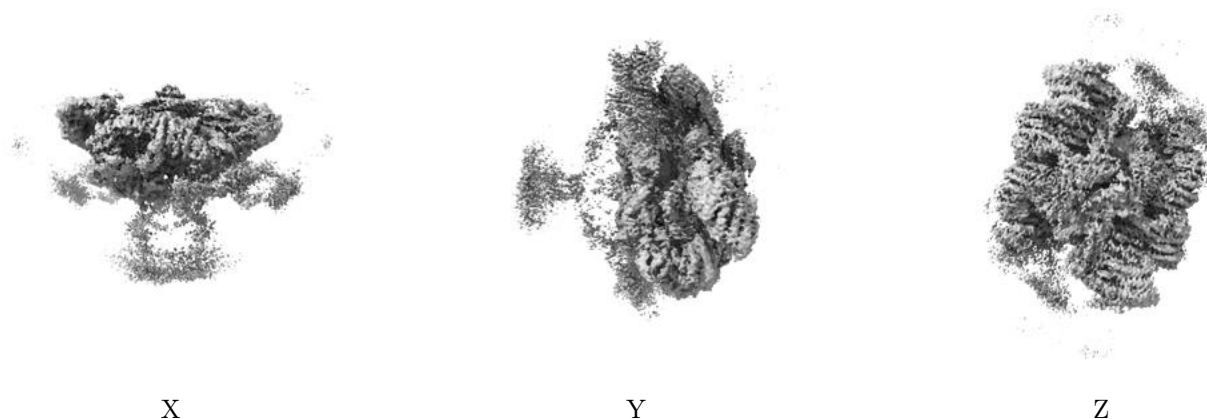


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.18. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

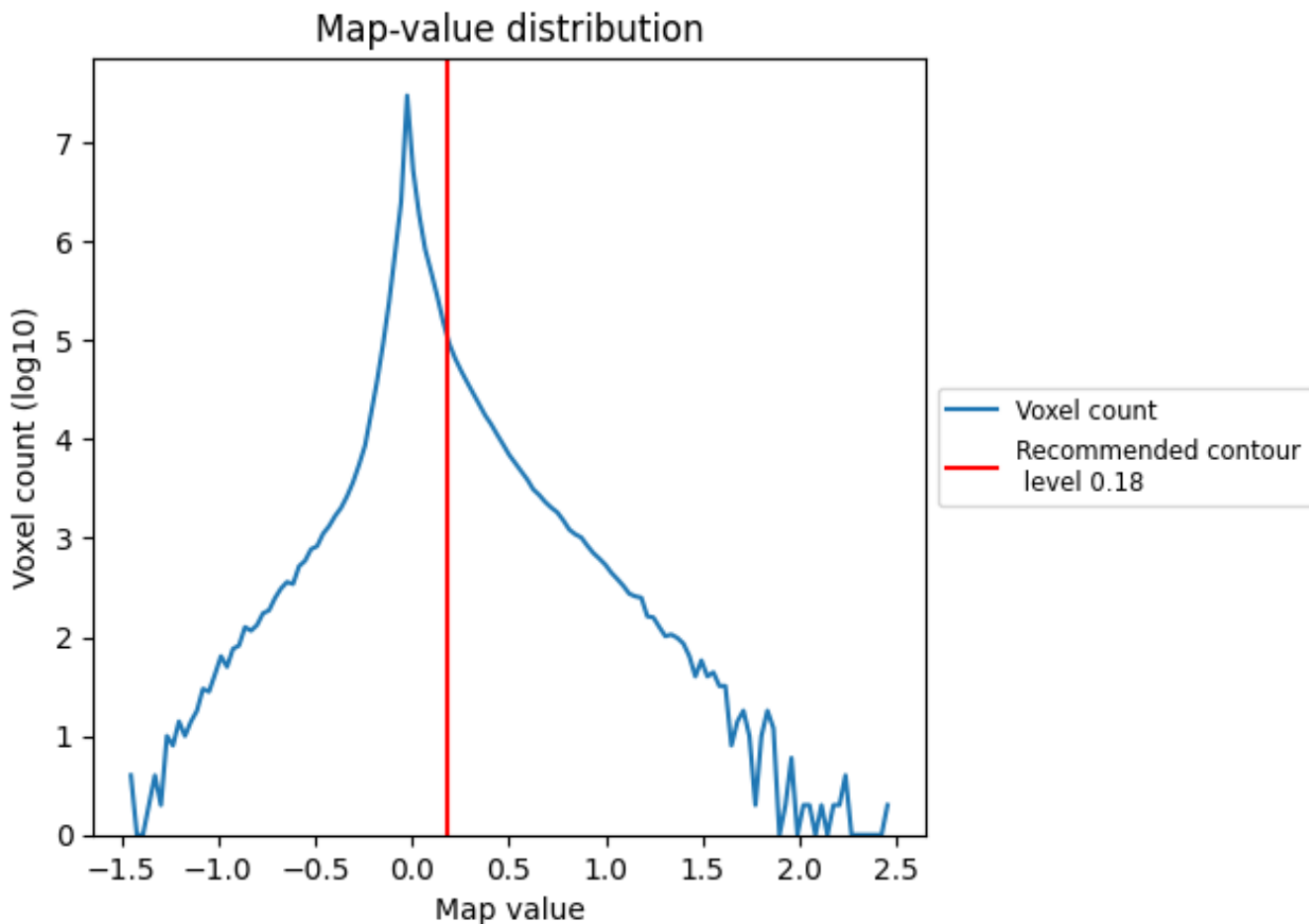
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

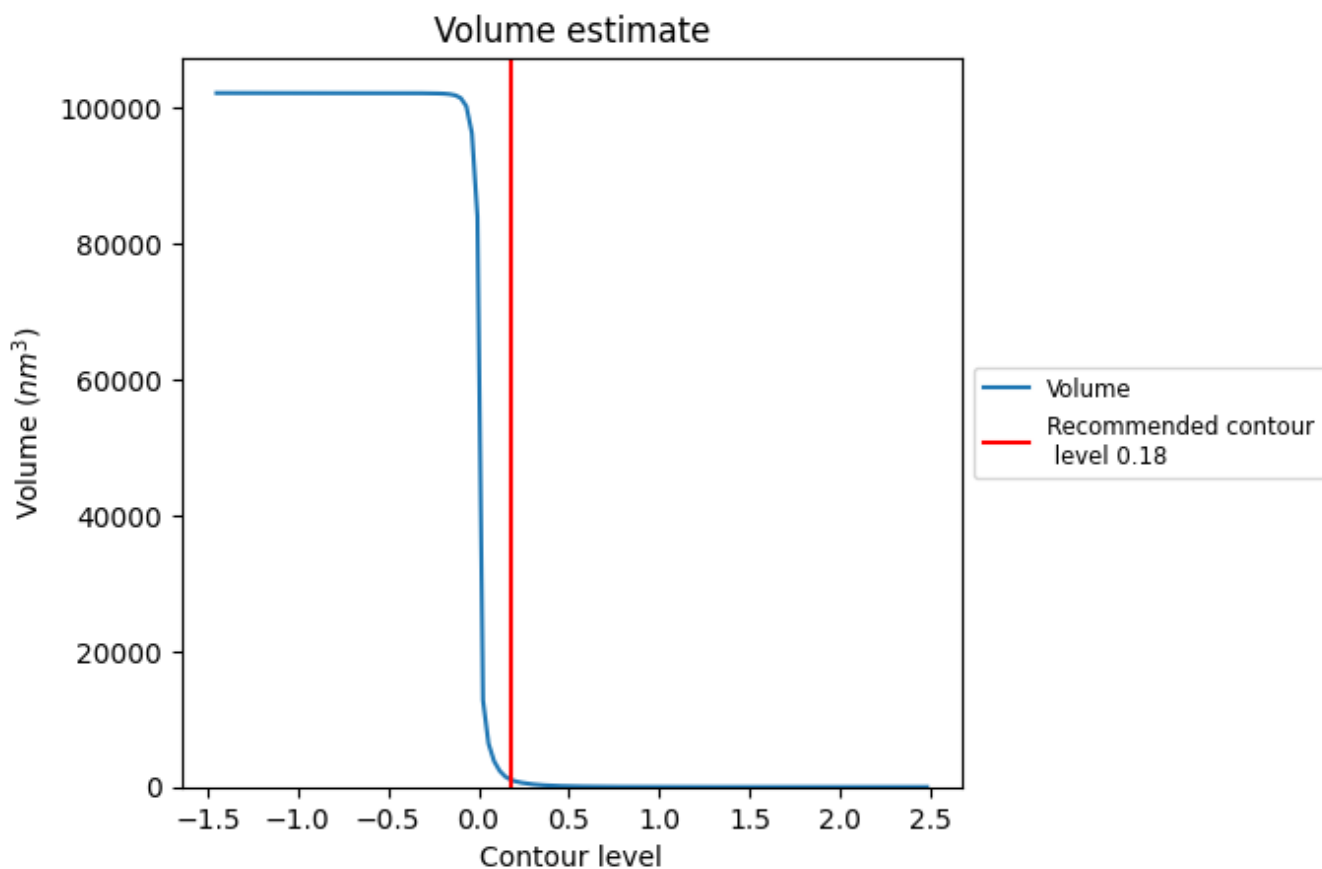
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

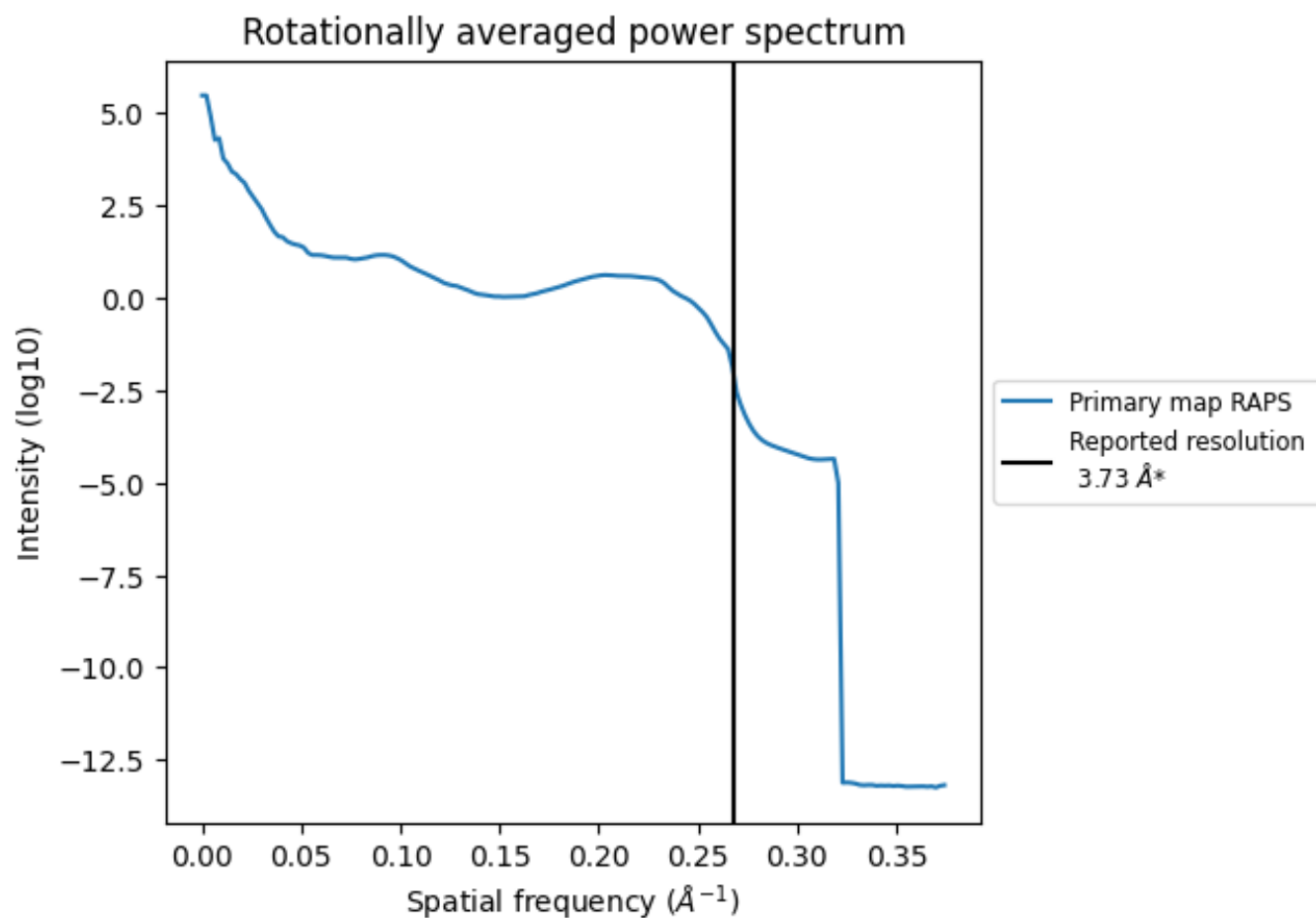
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1052 nm^3 ; this corresponds to an approximate mass of 950 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 0.268\AA^{-1}

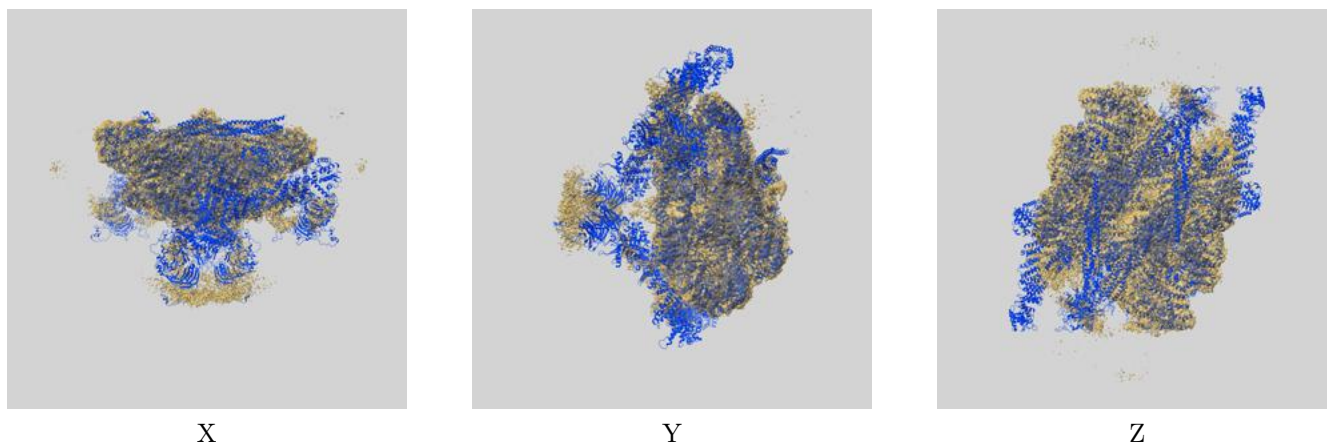
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

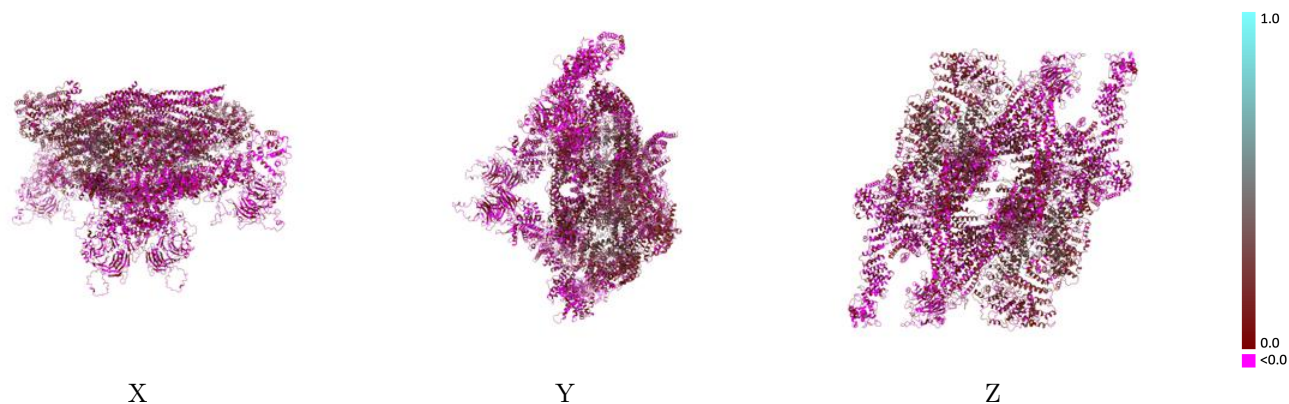
This section contains information regarding the fit between EMDB map EMD-32658 and PDB model 7WOT. Per-residue inclusion information can be found in section [3](#) on page [6](#).

9.1 Map-model overlay [i](#)



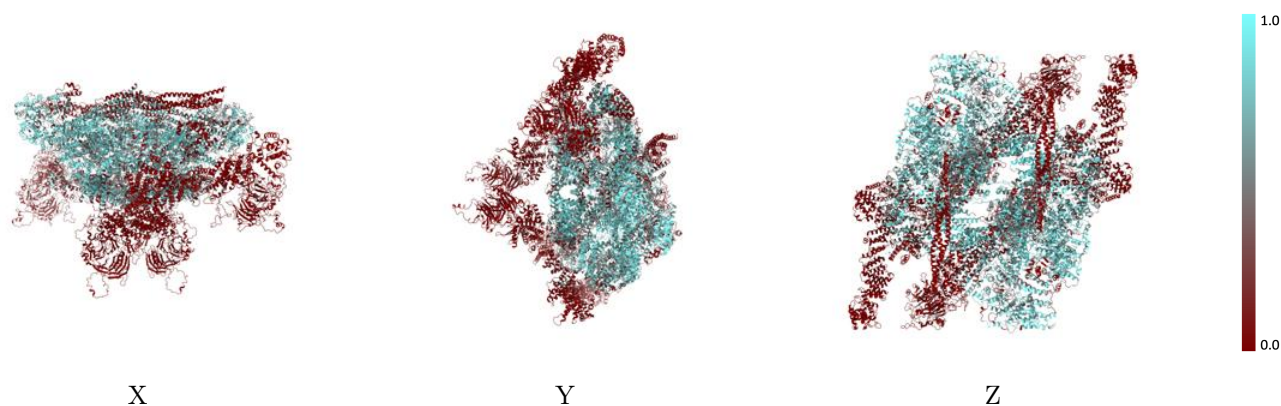
The images above show the 3D surface view of the map at the recommended contour level 0.18 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



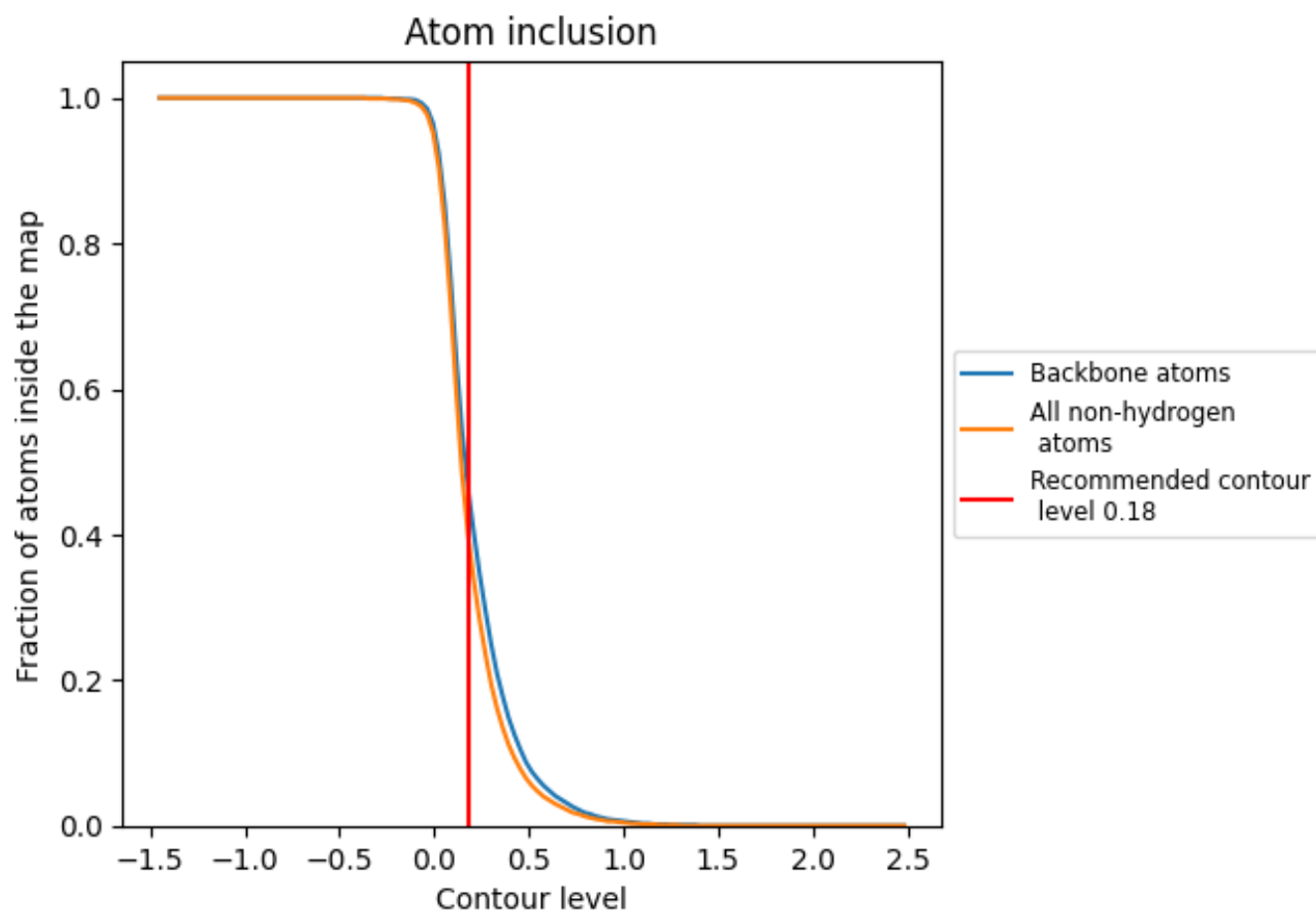
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.18).



















































9.4 Atom inclusion [i](#)



At the recommended contour level, 46% of all backbone atoms, 40% 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 (0.18) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.3970	 0.0910
A	 0.0870	 -0.0000
C	 0.0190	 0.0100
D	 0.2240	 0.0340
E	 0.6410	 0.1690
F	 0.6670	 0.1830
G	 0.4670	 0.0620
H	 0.4600	 0.0580
I	 0.5910	 0.1040
J	 0.3610	 0.0640
K	 0.2650	 0.0540
L	 0.3360	 0.0640
M	 0.0840	 0.0000
N	 0.5810	 0.1030
O	 0.0190	 0.0090
P	 0.2230	 0.0340
Q	 0.6450	 0.1740
R	 0.6700	 0.1830
S	 0.4670	 0.0620
T	 0.4610	 0.0570
U	 0.5940	 0.1070
V	 0.3640	 0.0620
W	 0.3030	 0.0730
X	 0.3330	 0.0650
Z	 0.5770	 0.1050

