Full wwPDB EM Validation Report

Feb 5, 2026 – 03:41 pm GMT

PDB ID	:	9RN1 / pdb_00009rn1
EMDB ID	:	EMD-54077
Title	:	Structure of BAF-nucleosome complex with OCT4-SOX2 at SHL+6 in ADP-bound state, BAF47 bound to ATPase lobe 2
Authors	:	Domjan, D.; Weiss, J.; Cavadini, S.; Veccia, L.; Kempf, G.; Kater, L.; Pathare, G.; Thoma, N.H.
Deposited on	:	2025-06-19
Resolution	:	5.90 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

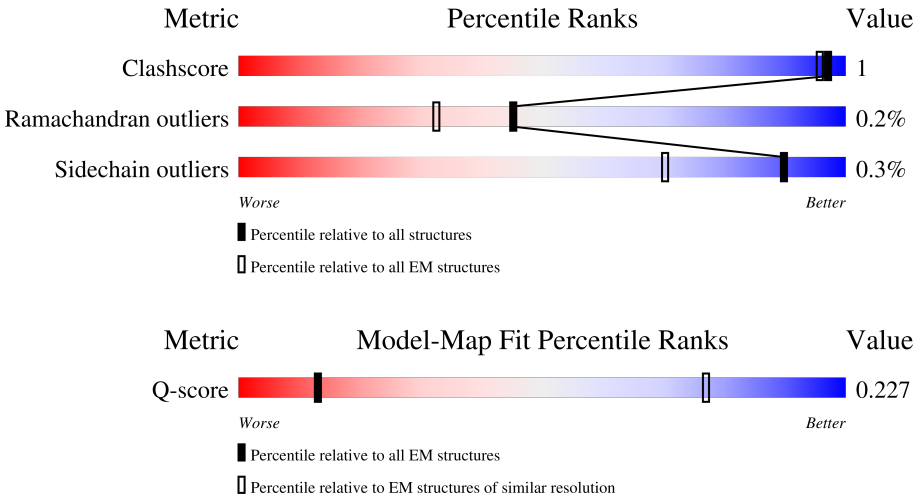
EMDB validation analysis	:	0.0.1.dev129
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.47

1 Overall quality at a glance

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

The reported resolution of this entry is 5.90 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	501 (5.40 - 6.40)

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

Mol	Chain	Length	Quality of chain
1	A	139	67% · 32%
1	E	139	65% · 32%
2	B	106	· 77% 23%
2	F	106	· 75% 25%

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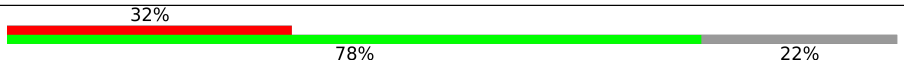
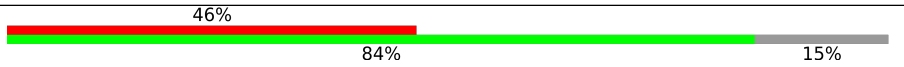
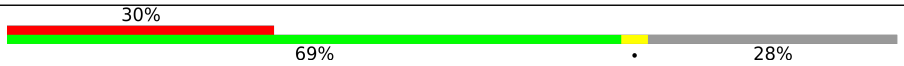
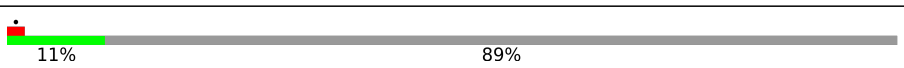
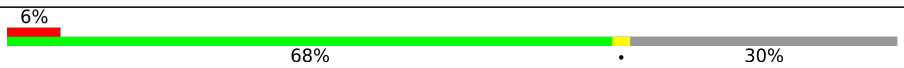
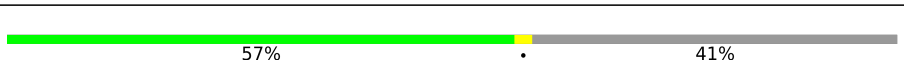
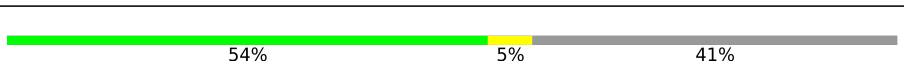
Mol	Chain	Length	Quality of chain
3	C	133	
3	G	133	
4	D	128	
4	H	128	
5	I	1647	
6	J	429	
7	K	375	
8	L	2285	
9	M	385	
10	N	1214	
10	O	1214	
11	P	515	
12	Q	411	
13	R	435	
14	V	645	
15	W	105	
16	X	227	
17	Y	227	

2 Entry composition (i)

There are 17 unique types of molecules in this entry. The entry contains 29765 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 Histone H3.1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	95	Total	C	N	O	S	0	0
			783	494	150	135	4		
1	E	95	Total	C	N	O	S	0	0
			783	494	150	135	4		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	expression tag	UNP P68431
A	-1	SER	-	expression tag	UNP P68431
A	0	HIS	-	expression tag	UNP P68431
E	-2	GLY	-	expression tag	UNP P68431
E	-1	SER	-	expression tag	UNP P68431
E	0	HIS	-	expression tag	UNP P68431

- Molecule 2 is a protein called Histone H4.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	82	Total	C	N	O	S	0	0
			653	412	127	113	1		
2	F	80	Total	C	N	O	S	0	0
			641	405	125	110	1		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-2	GLY	-	expression tag	UNP P62805
B	-1	SER	-	expression tag	UNP P62805
B	0	HIS	-	expression tag	UNP P62805
F	-2	GLY	-	expression tag	UNP P62805
F	-1	SER	-	expression tag	UNP P62805
F	0	HIS	-	expression tag	UNP P62805

- Molecule 3 is a protein called Histone H2A type 1-B/E.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	C	110	Total 844	C 531	N 167	O 146	0	0
3	G	110	Total 844	C 531	N 167	O 146	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-2	GLY	-	expression tag	UNP P04908
C	-1	SER	-	expression tag	UNP P04908
C	0	HIS	-	expression tag	UNP P04908
G	-2	GLY	-	expression tag	UNP P04908
G	-1	SER	-	expression tag	UNP P04908
G	0	HIS	-	expression tag	UNP P04908

- Molecule 4 is a protein called Histone H2B type 1-J.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	93	Total 726	C 456	N 130	O 138	S 2	0	0
4	H	92	Total 720	C 453	N 129	O 136	S 2	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-2	GLY	-	expression tag	UNP P06899
D	-1	SER	-	expression tag	UNP P06899
D	0	HIS	-	expression tag	UNP P06899
H	-2	GLY	-	expression tag	UNP P06899
H	-1	SER	-	expression tag	UNP P06899
H	0	HIS	-	expression tag	UNP P06899

- Molecule 5 is a protein called Transcription activator BRG1.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	I	762	Total 3822	C 2298	N 762	O 762	0	0

- Molecule 6 is a protein called Actin-like protein 6A.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	J	334	Total 1677	C 1009	N 334	O 334	0	0

- Molecule 7 is a protein called Actin, cytoplasmic 1, N-terminally processed.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	K	317	Total 1600	C 966	N 317	O 317	0	0

- Molecule 8 is a protein called AT-rich interactive domain-containing protein 1A.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	L	466	Total 2357	C 1425	N 466	O 466	0	0

- Molecule 9 is a protein called SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily B member 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	M	286	Total 1443	C 871	N 286	O 286	0	0

- Molecule 10 is a protein called SWI/SNF complex subunit SMARCC2.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	N	270	Total 1358	C 818	N 270	O 270	0	0
10	O	325	Total 1655	C 1005	N 325	O 325	0	0

- Molecule 11 is a protein called SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily D member 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	P	369	Total 2774	C 1744	N 502	O 516	S 12	0	0

- Molecule 12 is a protein called SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily E member 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	Q	105	Total	C	N	O	0	0
			529	319	105	105		

- Molecule 13 is a protein called Zinc finger protein ubi-d4.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	R	70	Total	C	N	O	0	0
			351	211	70	70		

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
R	392	GLY	-	expression tag	UNP Q92785
R	393	THR	-	expression tag	UNP Q92785
R	394	LEU	-	expression tag	UNP Q92785
R	395	GLU	-	expression tag	UNP Q92785
R	396	VAL	-	expression tag	UNP Q92785
R	397	LEU	-	expression tag	UNP Q92785
R	398	PHE	-	expression tag	UNP Q92785
R	399	GLN	-	expression tag	UNP Q92785
R	400	GLY	-	expression tag	UNP Q92785
R	401	PRO	-	expression tag	UNP Q92785
R	402	GLY	-	expression tag	UNP Q92785
R	403	GLY	-	expression tag	UNP Q92785
R	404	SER	-	expression tag	UNP Q92785
R	405	GLY	-	expression tag	UNP Q92785
R	406	SER	-	expression tag	UNP Q92785
R	407	ALA	-	expression tag	UNP Q92785
R	408	TRP	-	expression tag	UNP Q92785
R	409	SER	-	expression tag	UNP Q92785
R	410	HIS	-	expression tag	UNP Q92785
R	411	PRO	-	expression tag	UNP Q92785
R	412	GLN	-	expression tag	UNP Q92785
R	413	PHE	-	expression tag	UNP Q92785
R	414	GLU	-	expression tag	UNP Q92785
R	415	LYS	-	expression tag	UNP Q92785
R	416	GLY	-	expression tag	UNP Q92785
R	417	GLY	-	expression tag	UNP Q92785
R	418	GLY	-	expression tag	UNP Q92785
R	419	SER	-	expression tag	UNP Q92785
R	420	GLY	-	expression tag	UNP Q92785
R	421	GLY	-	expression tag	UNP Q92785
R	422	GLY	-	expression tag	UNP Q92785

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Chain	Residue	Modelled	Actual	Comment	Reference
R	423	SER	-	expression tag	UNP Q92785
R	424	GLY	-	expression tag	UNP Q92785
R	425	GLY	-	expression tag	UNP Q92785
R	426	SER	-	expression tag	UNP Q92785
R	427	ALA	-	expression tag	UNP Q92785
R	428	TRP	-	expression tag	UNP Q92785
R	429	SER	-	expression tag	UNP Q92785
R	430	HIS	-	expression tag	UNP Q92785
R	431	PRO	-	expression tag	UNP Q92785
R	432	GLN	-	expression tag	UNP Q92785
R	433	PHE	-	expression tag	UNP Q92785
R	434	GLU	-	expression tag	UNP Q92785
R	435	LYS	-	expression tag	UNP Q92785

- Molecule 14 is a protein called Green fluorescent protein,POU domain, class 5, transcription factor 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
14	V	68	338	202	68	68	0	0

There are 52 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
V	-272	MET	-	initiating methionine	UNP P42212
V	-271	ASP	-	expression tag	UNP P42212
V	-270	TRP	-	expression tag	UNP P42212
V	-269	SER	-	expression tag	UNP P42212
V	-268	HIS	-	expression tag	UNP P42212
V	-267	PRO	-	expression tag	UNP P42212
V	-266	GLN	-	expression tag	UNP P42212
V	-265	PHE	-	expression tag	UNP P42212
V	-264	GLU	-	expression tag	UNP P42212
V	-263	LYS	-	expression tag	UNP P42212
V	-262	SER	-	expression tag	UNP P42212
V	-261	ALA	-	expression tag	UNP P42212
V	-260	VAL	-	expression tag	UNP P42212
V	-259	ASP	-	expression tag	UNP P42212
V	-258	GLU	-	expression tag	UNP P42212
V	-257	ASN	-	expression tag	UNP P42212
V	-256	LEU	-	expression tag	UNP P42212
V	-255	TYR	-	expression tag	UNP P42212

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Chain	Residue	Modelled	Actual	Comment	Reference
V	-254	PHE	-	expression tag	UNP P42212
V	-253	GLN	-	expression tag	UNP P42212
V	-252	GLY	-	expression tag	UNP P42212
V	-251	GLY	-	expression tag	UNP P42212
V	-250	GLY	-	expression tag	UNP P42212
V	-249	ARG	-	expression tag	UNP P42212
V	-248	MET	-	expression tag	UNP P42212
V	-247	VAL	-	expression tag	UNP P42212
V	-184	LEU	PHE	conflict	UNP P42212
V	-183	THR	SER	conflict	UNP P42212
V	-42	LYS	ALA	conflict	UNP P42212
V	-17	LEU	HIS	conflict	UNP P42212
V	-9	GLU	-	linker	UNP P42212
V	-8	ALA	-	linker	UNP P42212
V	-7	ALA	-	linker	UNP P42212
V	-6	ALA	-	linker	UNP P42212
V	-5	LYS	-	linker	UNP P42212
V	-4	GLU	-	linker	UNP P42212
V	-3	ALA	-	linker	UNP P42212
V	-2	ALA	-	linker	UNP P42212
V	-1	ALA	-	linker	UNP P42212
V	0	LYS	-	linker	UNP P42212
V	361	LEU	-	expression tag	UNP Q01860
V	362	PRO	-	expression tag	UNP Q01860
V	363	GLU	-	expression tag	UNP Q01860
V	364	THR	-	expression tag	UNP Q01860
V	365	GLY	-	expression tag	UNP Q01860
V	366	GLY	-	expression tag	UNP Q01860
V	367	HIS	-	expression tag	UNP Q01860
V	368	HIS	-	expression tag	UNP Q01860
V	369	HIS	-	expression tag	UNP Q01860
V	370	HIS	-	expression tag	UNP Q01860
V	371	HIS	-	expression tag	UNP Q01860
V	372	HIS	-	expression tag	UNP Q01860

- Molecule 15 is a protein called Transcription factor SOX-2.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	W	73	Total	C	N	O	0	0
			373	227	73	73		

There are 23 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
W	14	MET	-	initiating methionine	UNP P48431
W	15	ASP	-	expression tag	UNP P48431
W	16	TRP	-	expression tag	UNP P48431
W	17	SER	-	expression tag	UNP P48431
W	18	HIS	-	expression tag	UNP P48431
W	19	PRO	-	expression tag	UNP P48431
W	20	GLN	-	expression tag	UNP P48431
W	21	PHE	-	expression tag	UNP P48431
W	22	GLU	-	expression tag	UNP P48431
W	23	LYS	-	expression tag	UNP P48431
W	24	SER	-	expression tag	UNP P48431
W	25	ALA	-	expression tag	UNP P48431
W	26	VAL	-	expression tag	UNP P48431
W	27	ASP	-	expression tag	UNP P48431
W	28	GLU	-	expression tag	UNP P48431
W	29	ASN	-	expression tag	UNP P48431
W	30	LEU	-	expression tag	UNP P48431
W	31	TYR	-	expression tag	UNP P48431
W	32	PHE	-	expression tag	UNP P48431
W	33	GLN	-	expression tag	UNP P48431
W	34	GLY	-	expression tag	UNP P48431
W	35	GLY	-	expression tag	UNP P48431
W	36	MET	-	expression tag	UNP P48431

- Molecule 16 is a DNA chain called DNA (148-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
16	X	134	Total	C	N	O	P	0	0
			2727	1296	486	811	134		

- Molecule 17 is a DNA chain called DNA (148-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Y	134	Total	C	N	O	P	0	0
			2767	1307	529	797	134		

3 Residue-property plots (i)

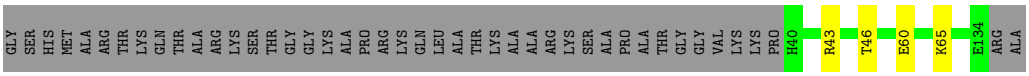
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

• Molecule 1: Histone H3.1

Chain A:

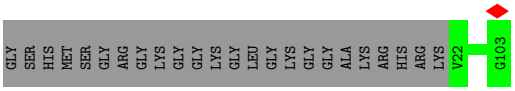
• Molecule 1: Histone H3.1

Chain E:



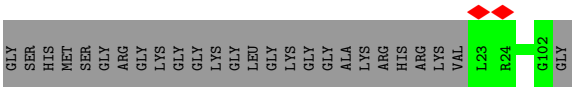
• Molecule 2: Histone H4

Chain B:



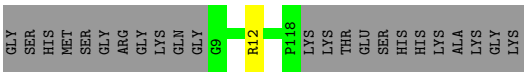
• Molecule 2: Histone H4

Chain F:



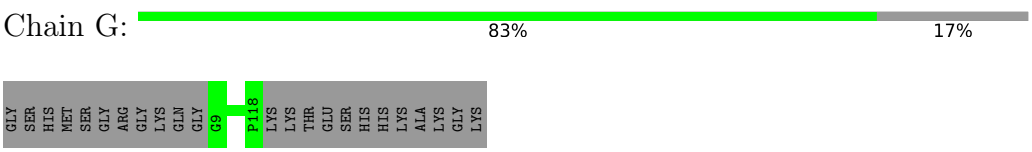
• Molecule 3: Histone H2A type 1-B/E

Chain C:



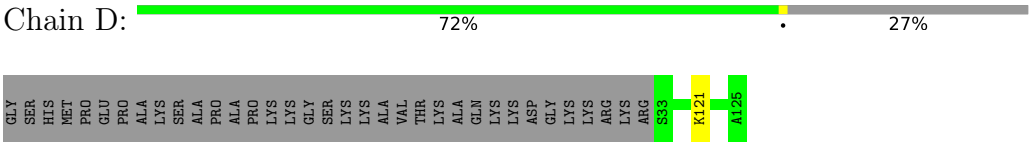
• Molecule 3: Histone H2A type 1-B/E

Chain G:



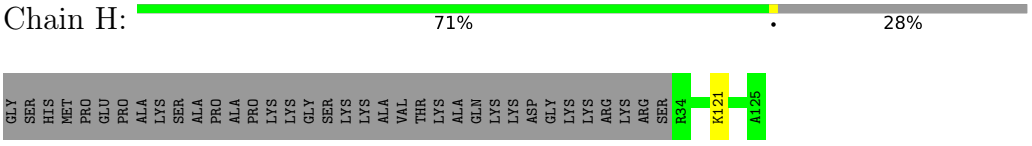
• Molecule 4: Histone H2B type 1-J

Chain D:



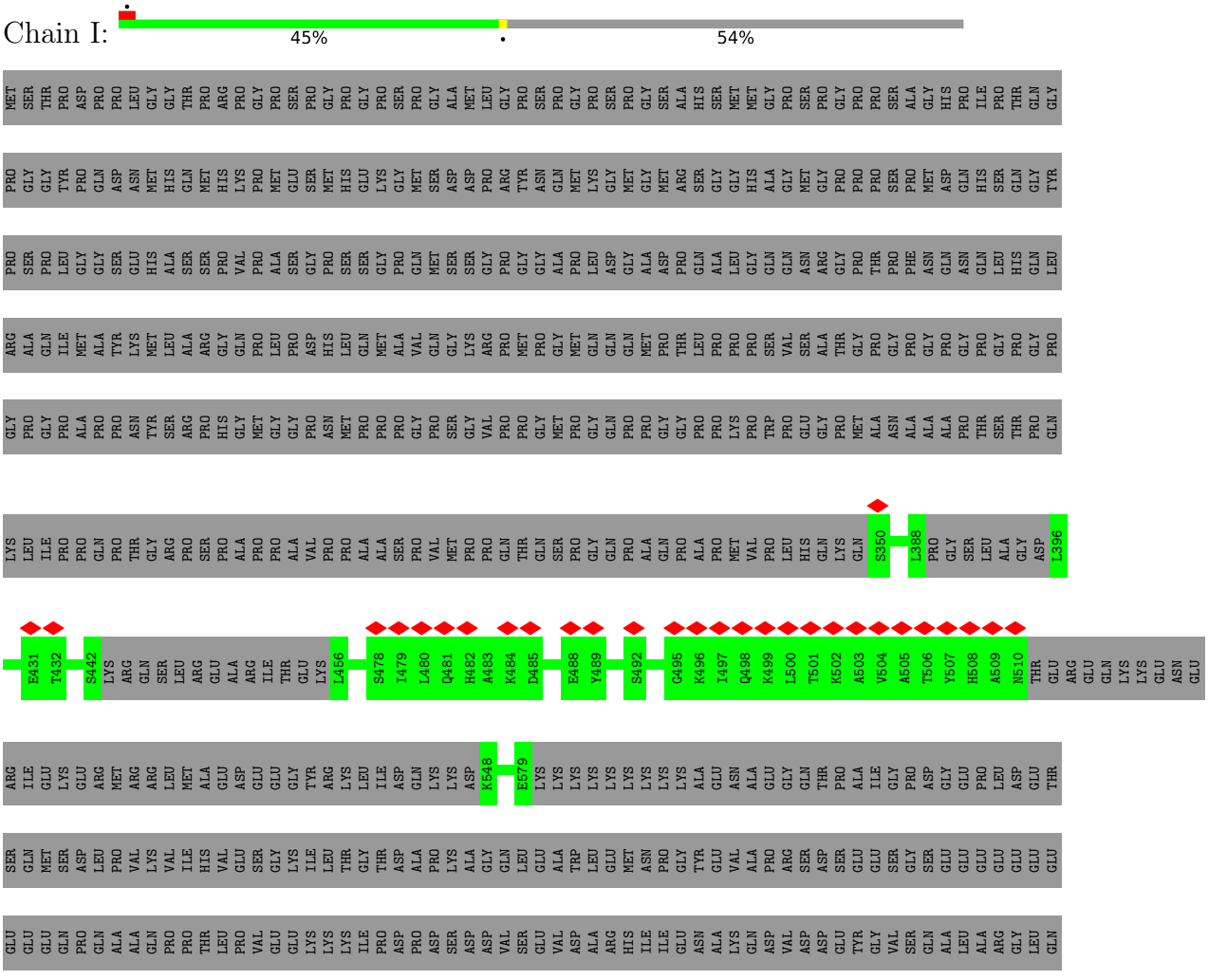
• Molecule 4: Histone H2B type 1-J

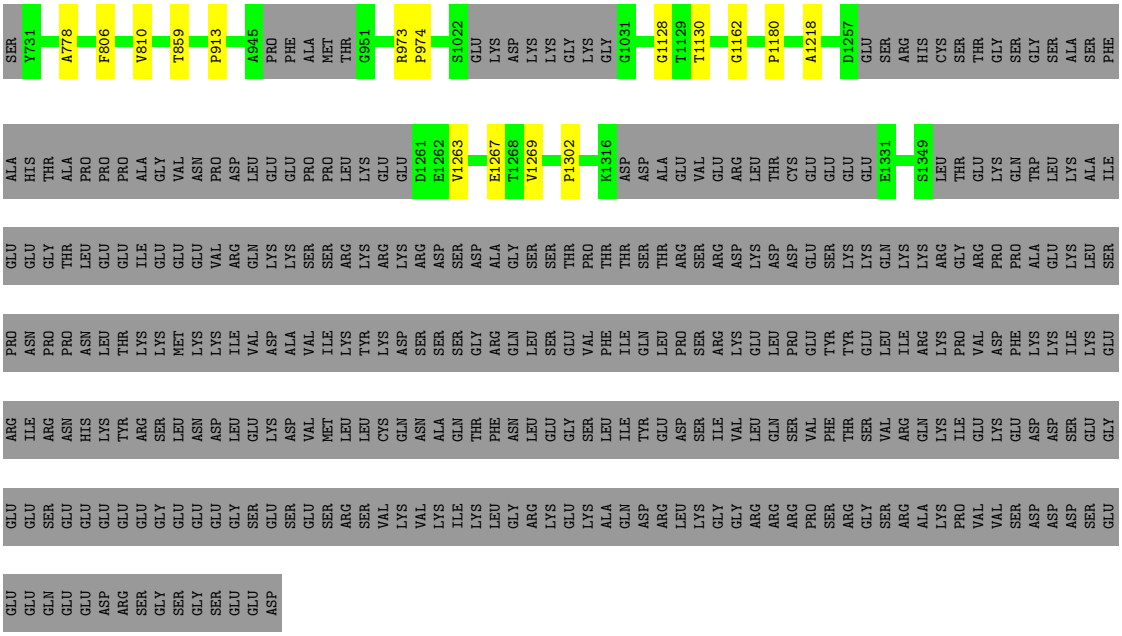
Chain H:



• Molecule 5: Transcription activator BRG1

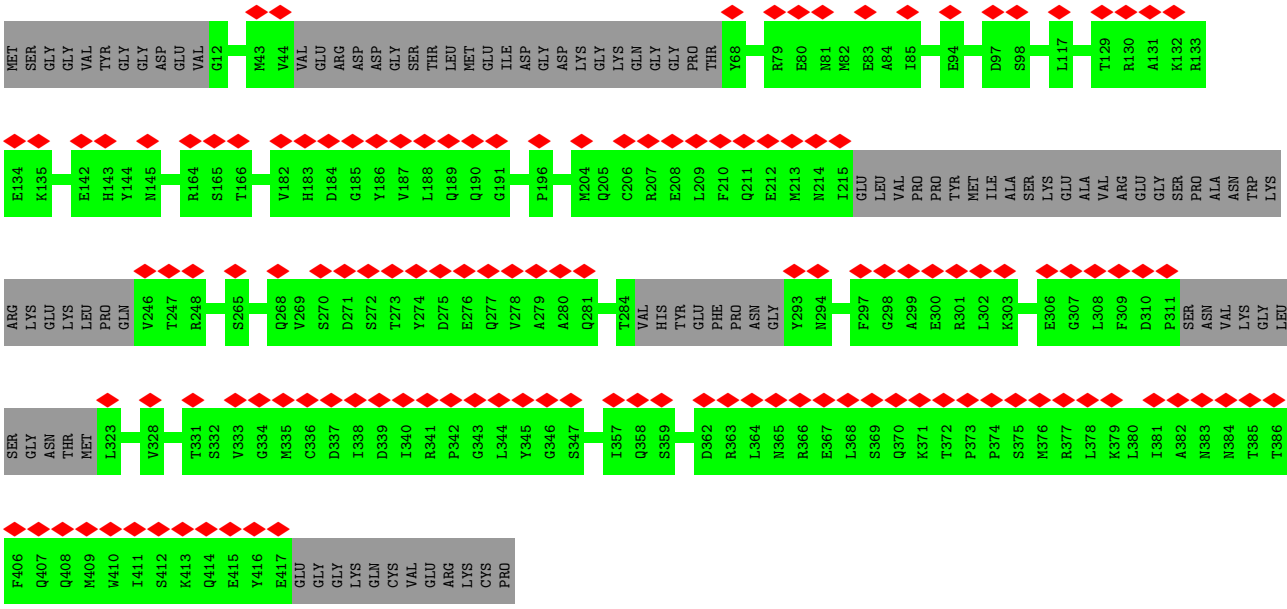
Chain I:





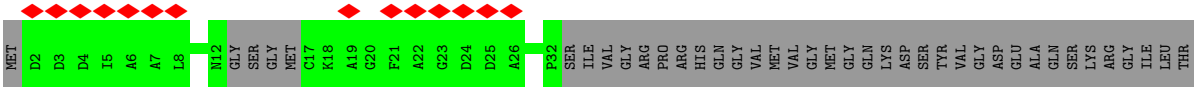
• Molecule 6: Actin-like protein 6A

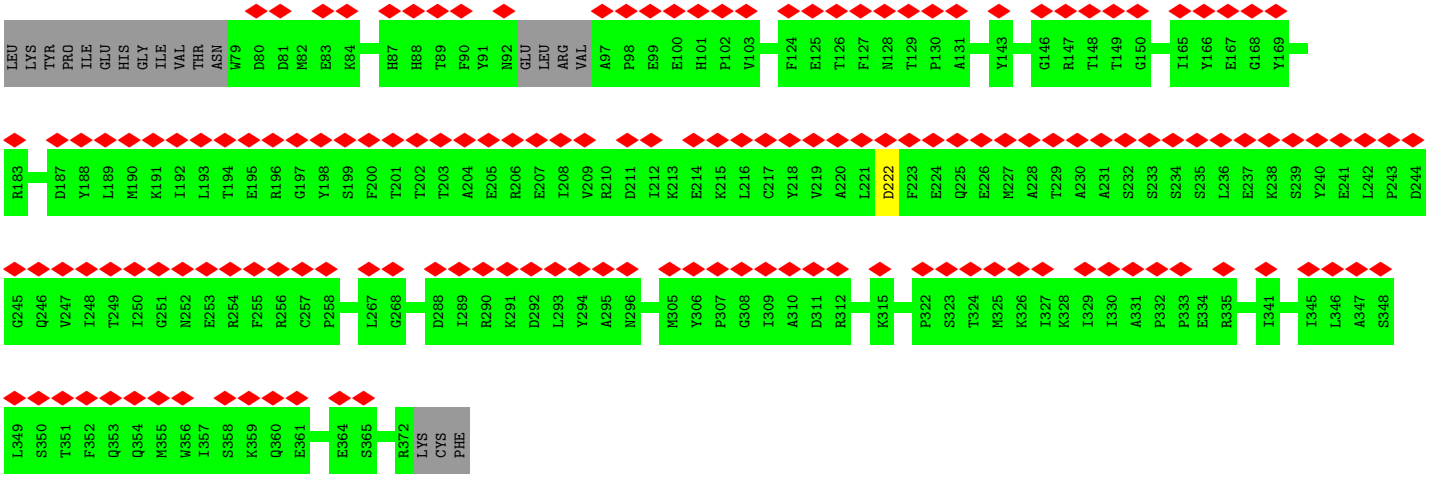
Chain J:



• Molecule 7: Actin, cytoplasmic 1, N-terminally processed

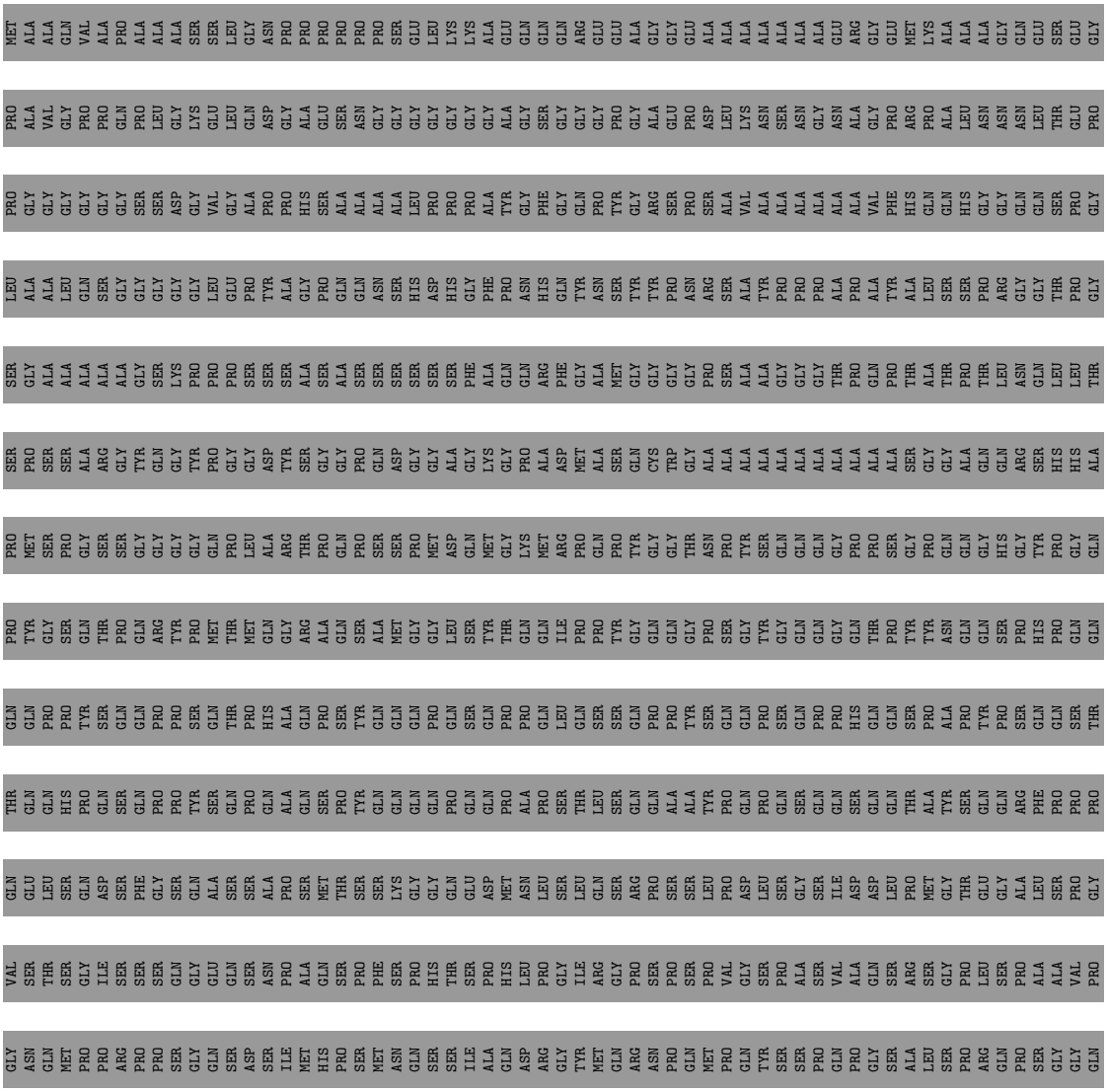
Chain K:

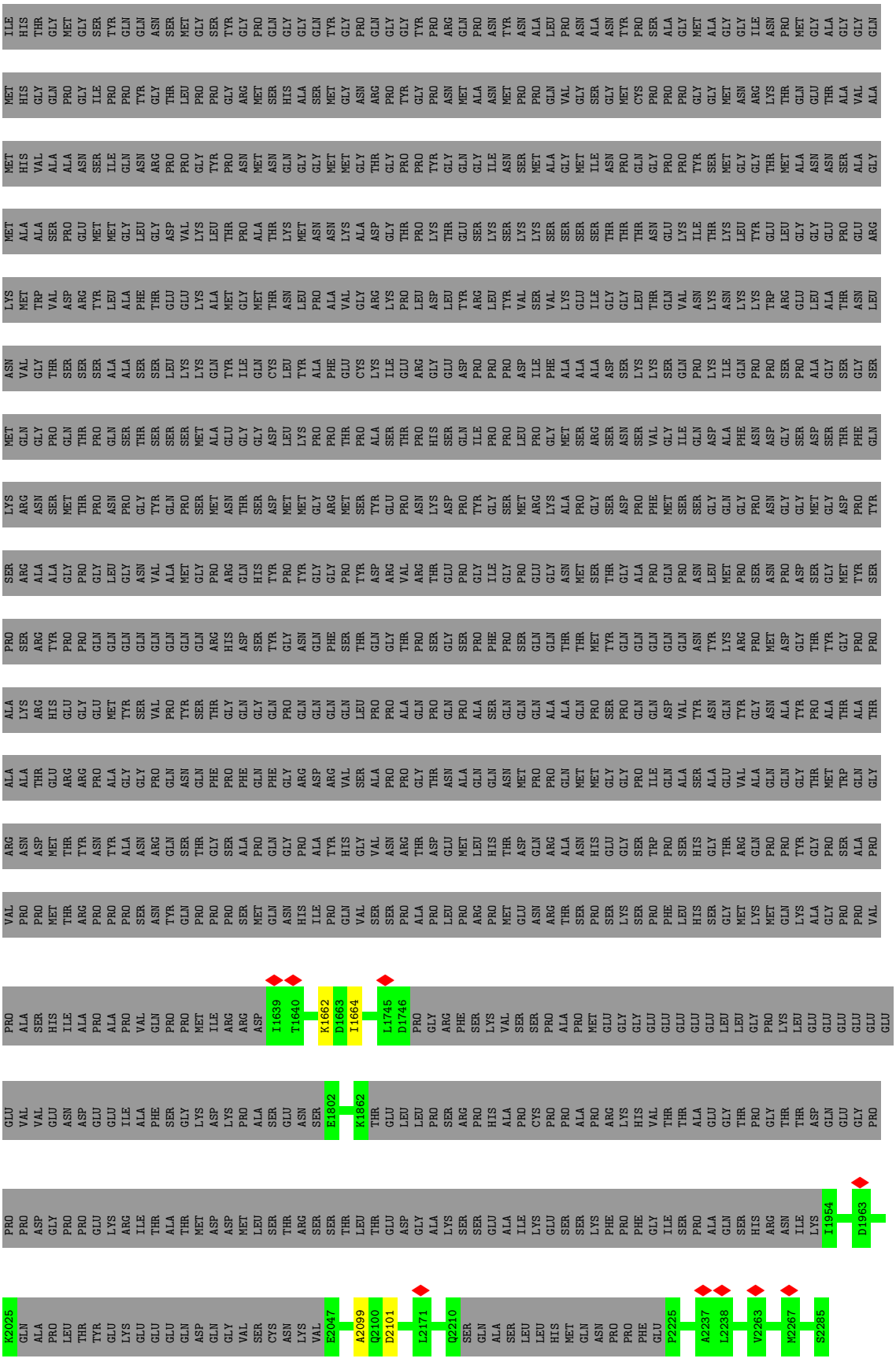




• Molecule 8: AT-rich interactive domain-containing protein 1A

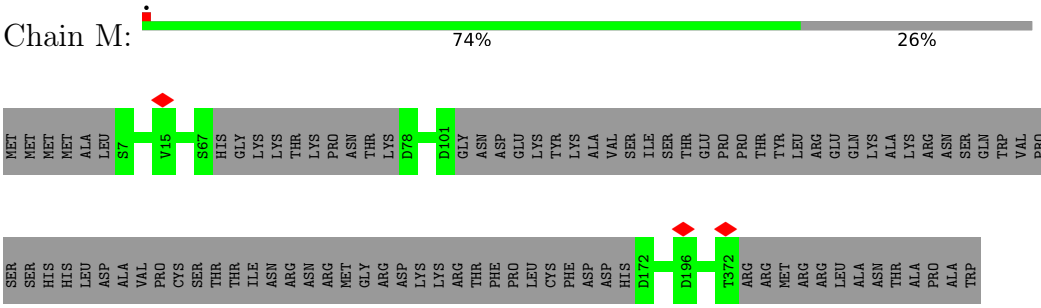
Chain L: 20% 80%




I1639
T1640
K1662
D1663
I1664
L1745
D1746
E1802
K1862
I1954
D1963
R2025
E2047
A2099
Q2100
D2101
L2171
Q2210
P2225
A2237
L2238
V2263
M2267
S2285

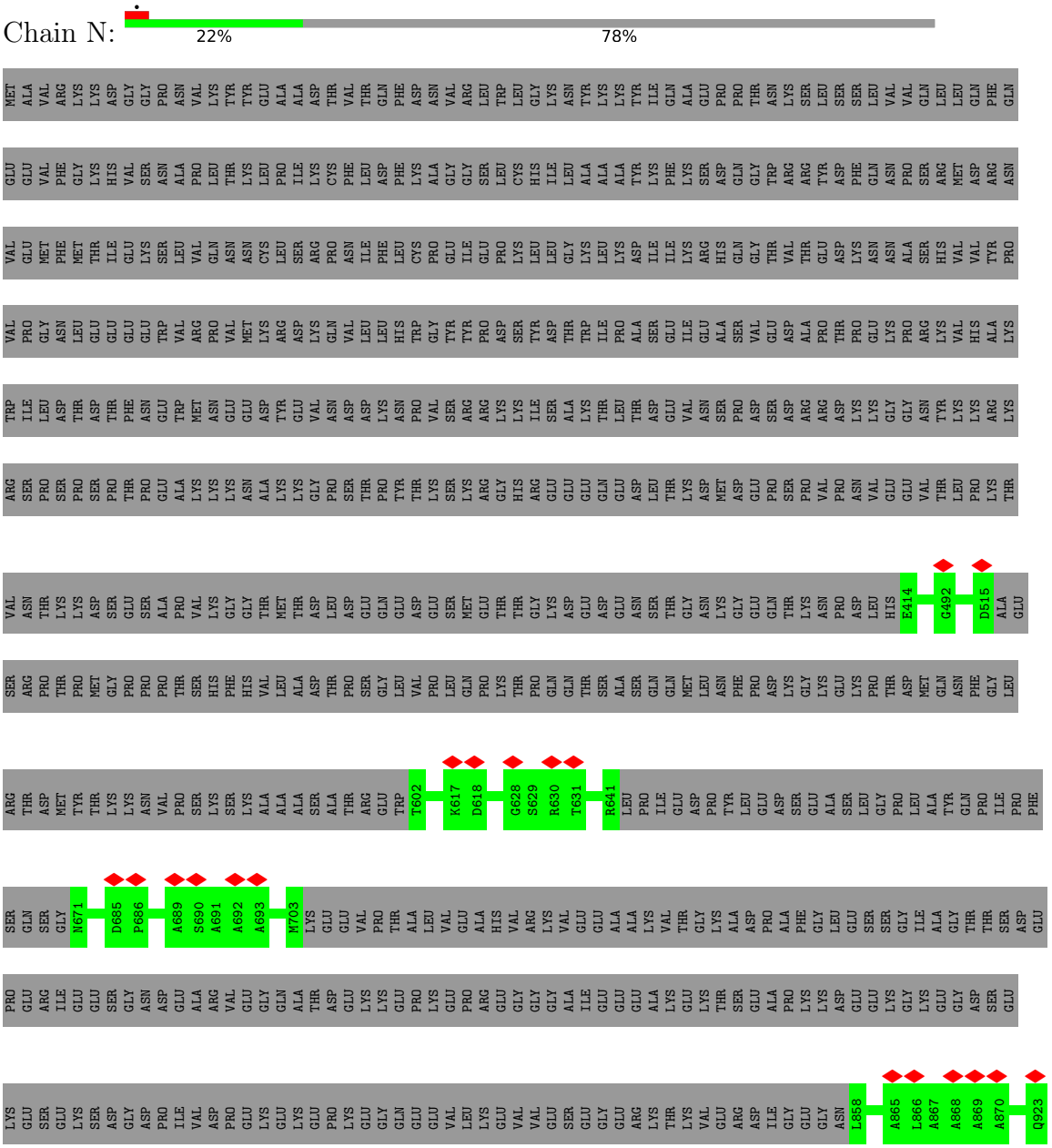
• Molecule 9: SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily B member 1

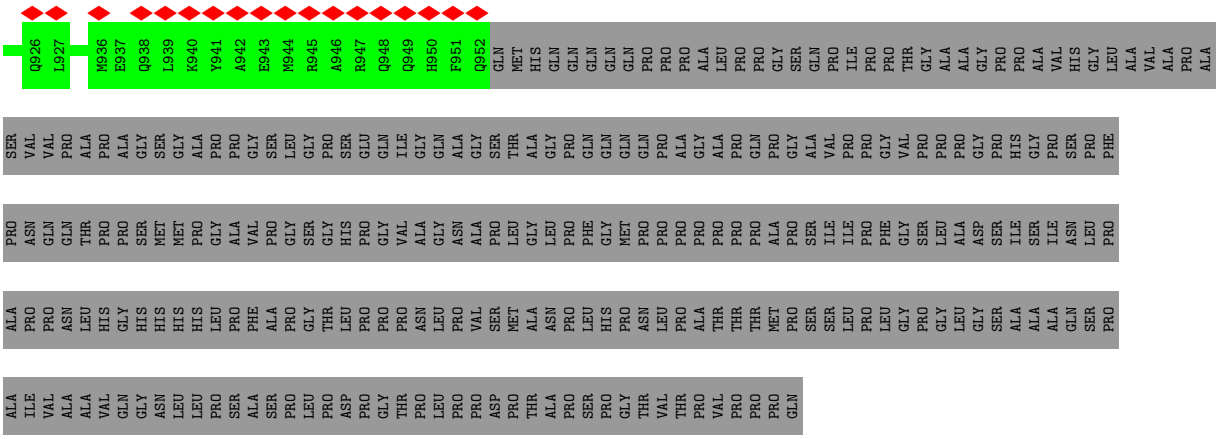
Chain M:



• Molecule 10: SWI/SNF complex subunit SMARCC2

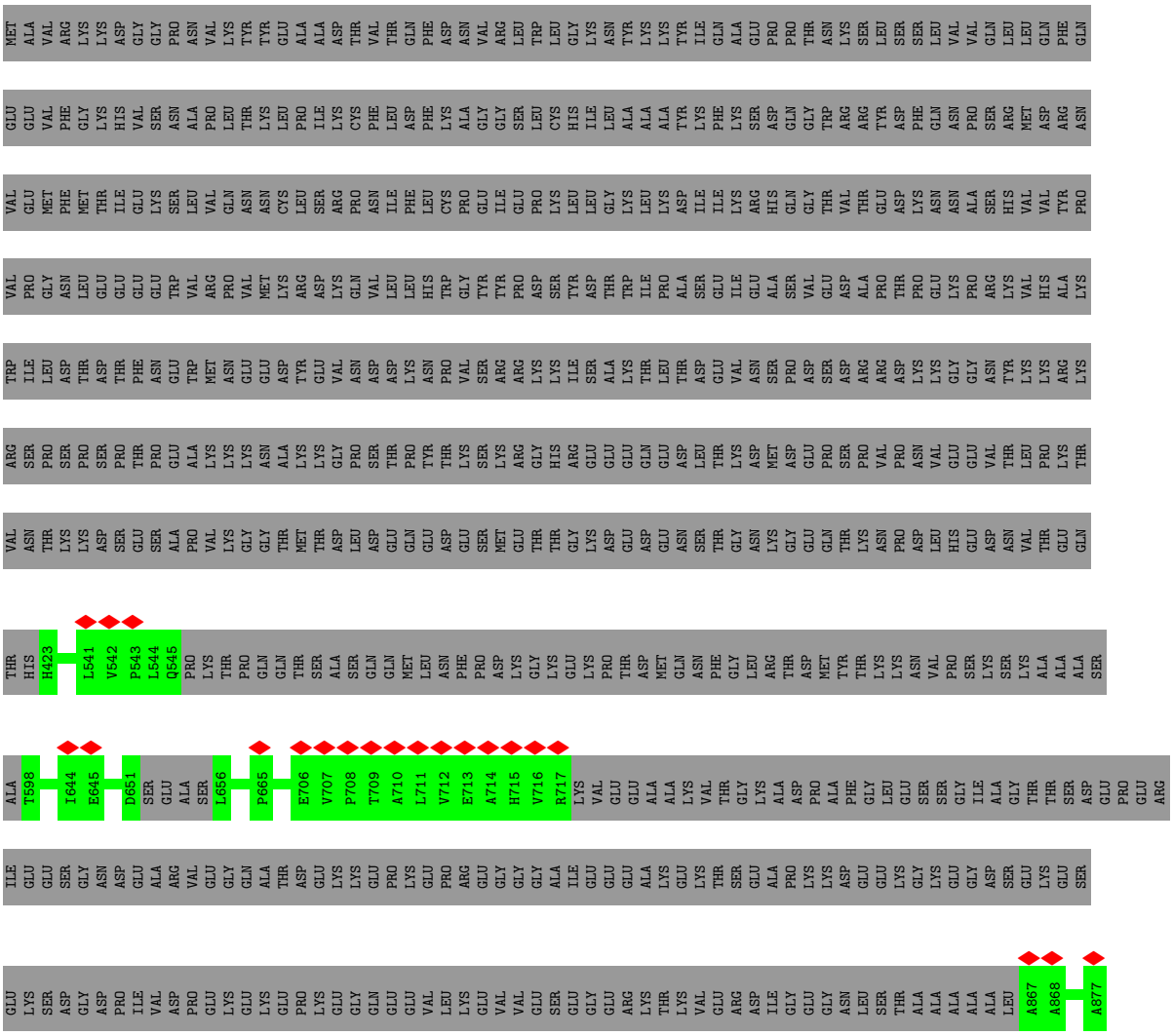
Chain N:

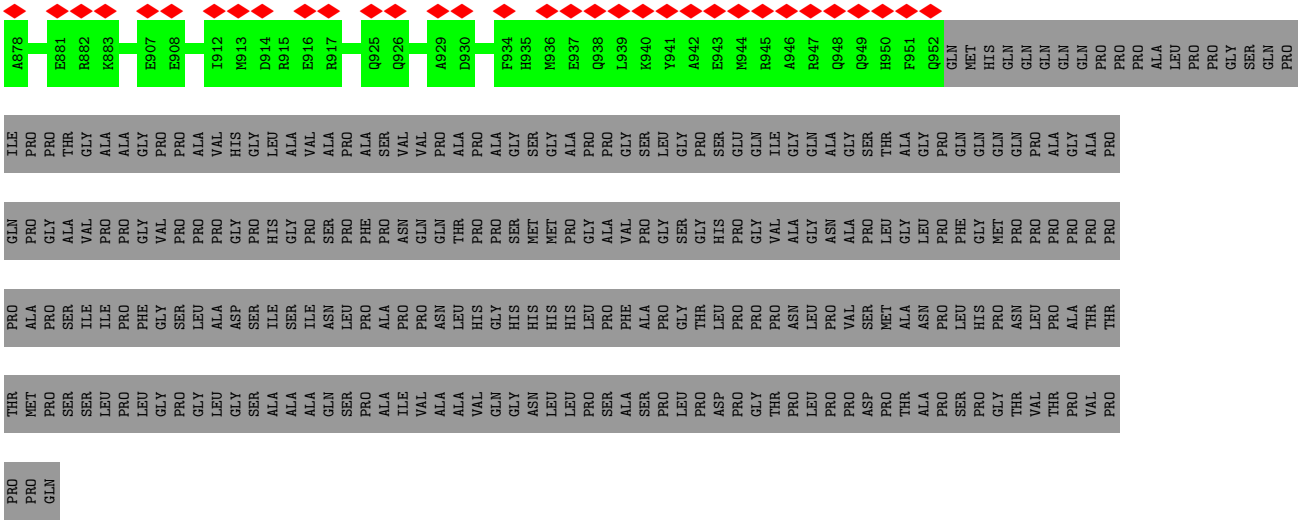




• Molecule 10: SWI/SNF complex subunit SMARCC2

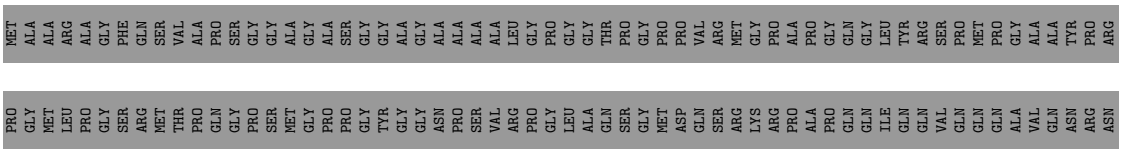
Chain O:

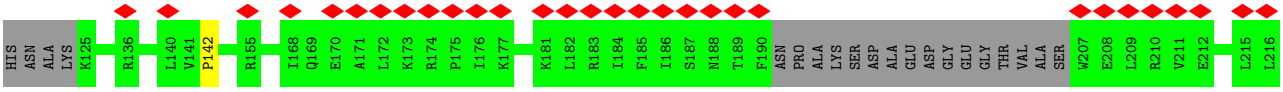


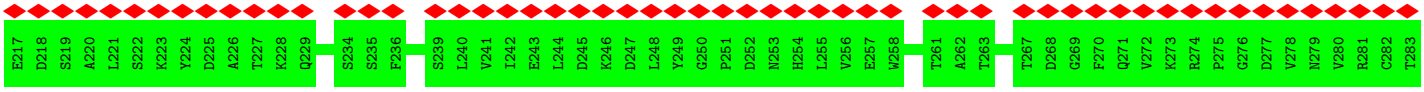


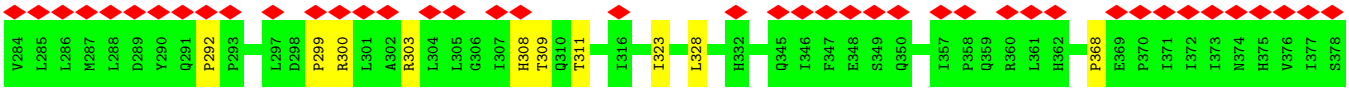
• Molecule 11: SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily D member 1

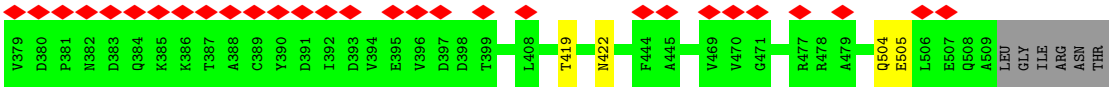
Chain P:





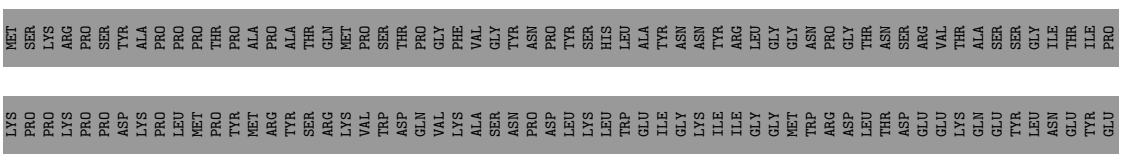


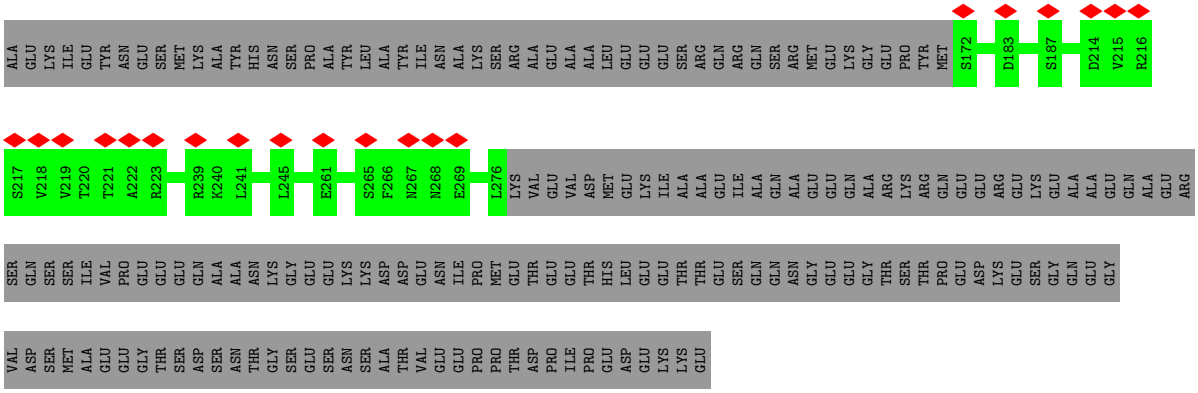




• Molecule 12: SWI/SNF-related matrix-associated actin-dependent regulator of chromatin subfamily E member 1

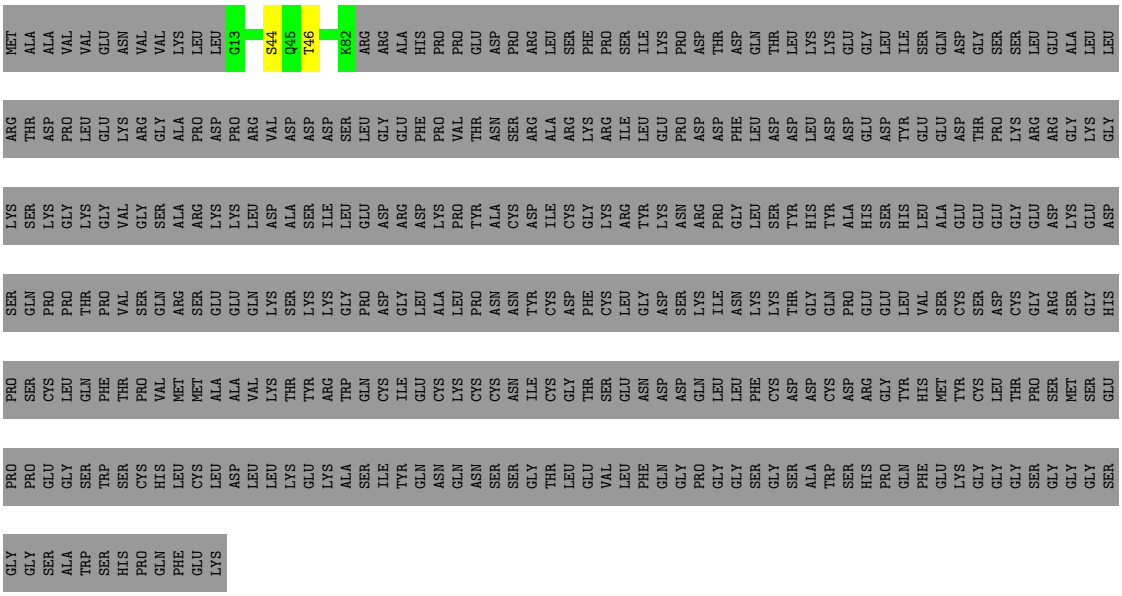
Chain Q:





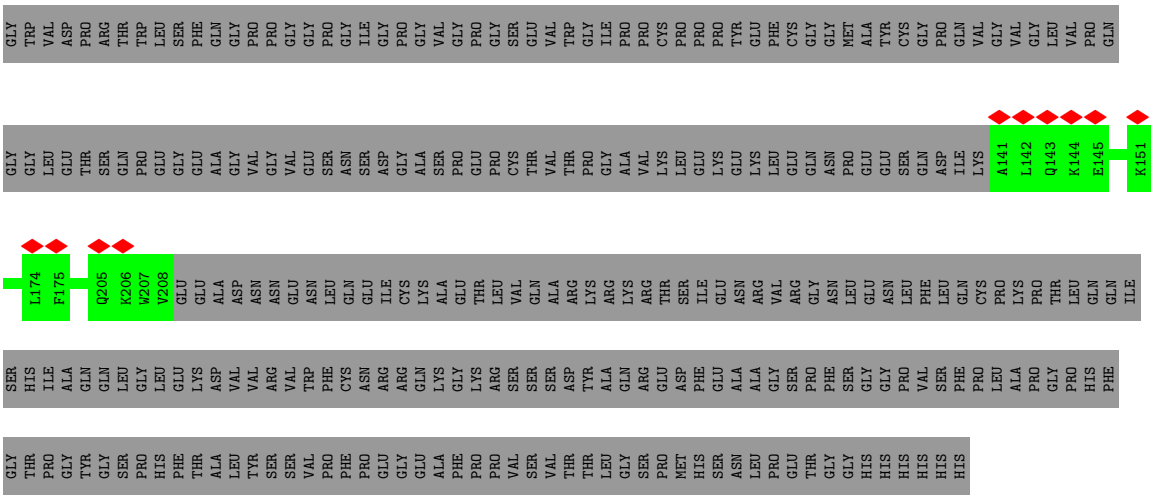
• Molecule 13: Zinc finger protein ubi-d4

Chain R:

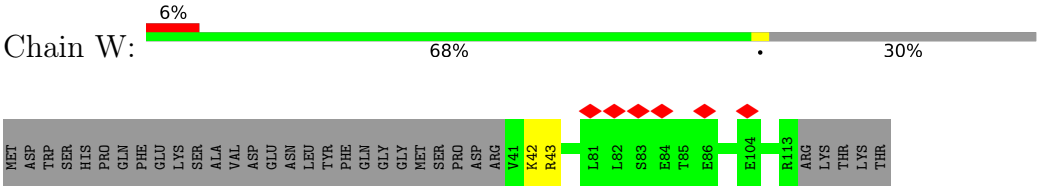


• Molecule 14: Green fluorescent protein,POU domain, class 5, transcription factor 1

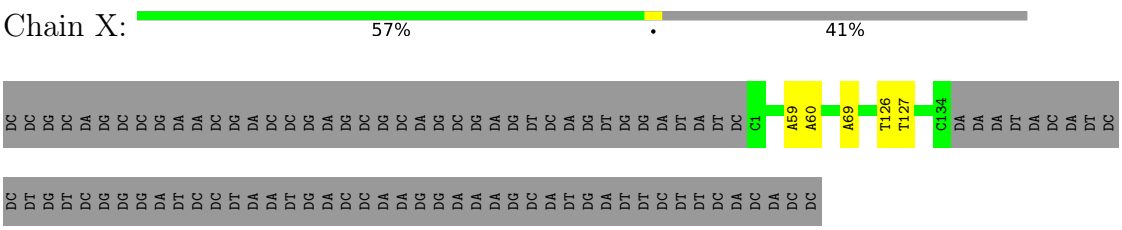
Chain V:



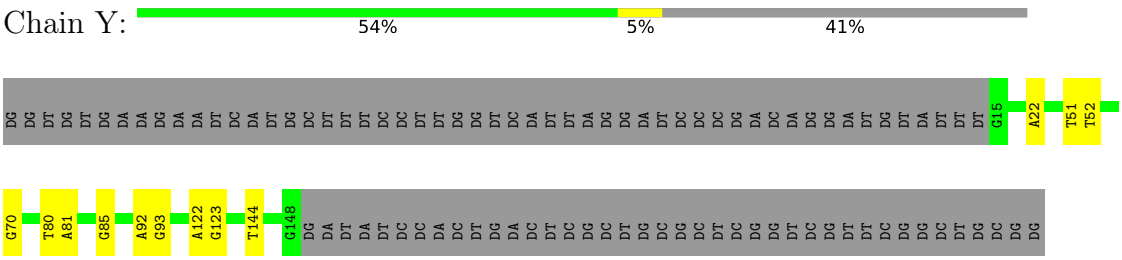
• Molecule 15: Transcription factor SOX-2



• Molecule 16: DNA (148-MER)



• Molecule 17: DNA (148-MER)



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	40517	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.880	Depositor
Minimum map value	-0.110	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.020	Depositor
Recommended contour level	0.0883	Depositor
Map size (Å)	486.72003, 486.72003, 486.72003	wwPDB
Map dimensions	576, 576, 576	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.845, 0.845, 0.845	Depositor

5 Model quality

5.1 Standard geometry

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	0.13	0/794	0.29	0/1065
1	E	0.12	0/794	0.31	0/1065
2	B	0.13	0/660	0.30	0/883
2	F	0.13	0/648	0.29	0/868
3	C	0.11	0/854	0.30	0/1151
3	G	0.13	0/854	0.32	0/1151
4	D	0.13	0/737	0.35	0/990
4	H	0.11	0/731	0.26	0/982
5	I	0.13	0/3835	0.39	0/5353
6	J	0.10	0/1687	0.30	0/2352
7	K	0.09	0/1613	0.27	0/2254
8	L	0.10	0/2377	0.30	0/3325
9	M	0.09	0/1453	0.27	0/2032
10	N	0.08	0/1360	0.24	0/1900
10	O	0.09	0/1670	0.28	0/2342
11	P	0.11	0/2822	0.27	0/3829
12	Q	0.12	0/531	0.28	0/743
13	R	0.13	0/353	0.33	0/492
14	V	0.16	0/338	0.32	0/470
15	W	0.18	0/377	0.41	0/529
16	X	0.31	0/3052	0.55	0/4704
17	Y	0.30	0/3110	0.51	0/4802
All	All	0.17	0/30650	0.37	0/43282

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	783	0	818	2	0
1	E	783	0	818	4	0
2	B	653	0	696	0	0
2	F	641	0	684	0	0
3	C	844	0	905	1	0
3	G	844	0	905	0	0
4	D	726	0	745	1	0
4	H	720	0	740	0	0
5	I	3822	0	1810	6	0
6	J	1677	0	833	0	0
7	K	1600	0	818	0	0
8	L	2357	0	1151	2	0
9	M	1443	0	695	0	0
10	N	1358	0	675	0	0
10	O	1655	0	854	0	0
11	P	2774	0	2537	6	0
12	Q	529	0	241	0	0
13	R	351	0	177	1	0
14	V	338	0	156	0	0
15	W	373	0	187	2	0
16	X	2727	0	1507	3	0
17	Y	2767	0	1500	10	0
All	All	29765	0	19452	31	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 1.

All (31) 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)
11:P:292:PRO:HB2	11:P:311:THR:HG21	1.73	0.69
15:W:43:ARG:H	17:Y:22:DA:H4'	1.66	0.59
1:E:43:ARG:NH1	17:Y:70:DG:OP1	2.42	0.53
13:R:44:SER:O	13:R:46:THR:N	2.42	0.52
5:I:1180:PRO:HG3	5:I:1218:ALA:HB1	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:I:778:ALA:HB1	5:I:913:PRO:HG3	1.93	0.50
3:C:12:ARG:HA	4:D:121:LYS:HE2	1.93	0.49
1:E:46:THR:HG23	17:Y:144:DT:H5"	1.94	0.49
11:P:299:PRO:O	11:P:303:ARG:HG2	2.13	0.49
17:Y:51:DT:C2'	17:Y:52:DT:H71	2.44	0.48
5:I:1128:GLY:C	5:I:1130:THR:H	2.22	0.48
17:Y:92:DA:H2"	17:Y:93:DG:H8	1.79	0.48
1:E:60:GLU:H	1:E:60:GLU:CD	2.22	0.47
5:I:973:ARG:N	5:I:974:PRO:HD2	2.32	0.44
8:L:2099:ALA:O	8:L:2101:ASP:N	2.47	0.44
15:W:42:LYS:HA	17:Y:22:DA:O5'	2.17	0.44
1:A:41:ARG:HG2	17:Y:85:DG:H5"	2.00	0.44
11:P:419:THR:HA	11:P:422:ASN:HD21	1.84	0.43
8:L:1662:LYS:C	8:L:1664:ILE:H	2.28	0.42
5:I:810:VAL:O	5:I:859:THR:HA	2.20	0.42
17:Y:122:DA:H2"	17:Y:123:DG:C8	2.54	0.42
1:E:65:LYS:HD2	1:E:65:LYS:H	1.85	0.41
16:X:126:DT:H2'	16:X:127:DT:C5	2.55	0.41
17:Y:80:DT:H2"	17:Y:81:DA:C8	2.55	0.41
16:X:59:DA:H2"	16:X:60:DA:C8	2.55	0.41
11:P:323:ILE:HG23	11:P:328:LEU:HB2	2.02	0.41
11:P:504:GLN:HE21	11:P:504:GLN:HB2	1.66	0.41
1:A:43:ARG:NH2	16:X:69:DA:OP1	2.48	0.41
5:I:1267:GLU:O	5:I:1269:VAL:N	2.54	0.41
11:P:308:HIS:CD2	11:P:309:THR:HG23	2.57	0.40
17:Y:92:DA:H2"	17:Y:93:DG:C8	2.57	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	93/139 (67%)	92 (99%)	1 (1%)	0	100	100
1	E	93/139 (67%)	91 (98%)	2 (2%)	0	100	100
2	B	80/106 (76%)	77 (96%)	3 (4%)	0	100	100
2	F	78/106 (74%)	76 (97%)	2 (3%)	0	100	100
3	C	108/133 (81%)	106 (98%)	2 (2%)	0	100	100
3	G	108/133 (81%)	105 (97%)	3 (3%)	0	100	100
4	D	91/128 (71%)	90 (99%)	1 (1%)	0	100	100
4	H	90/128 (70%)	90 (100%)	0	0	100	100
5	I	744/1647 (45%)	687 (92%)	53 (7%)	4 (0%)	25	65
6	J	324/429 (76%)	309 (95%)	15 (5%)	0	100	100
7	K	309/375 (82%)	297 (96%)	11 (4%)	1 (0%)	37	73
8	L	456/2285 (20%)	442 (97%)	14 (3%)	0	100	100
9	M	280/385 (73%)	273 (98%)	7 (2%)	0	100	100
10	N	262/1214 (22%)	260 (99%)	2 (1%)	0	100	100
10	O	317/1214 (26%)	312 (98%)	5 (2%)	0	100	100
11	P	365/515 (71%)	351 (96%)	12 (3%)	2 (0%)	25	65
12	Q	103/411 (25%)	101 (98%)	2 (2%)	0	100	100
13	R	68/435 (16%)	64 (94%)	4 (6%)	0	100	100
14	V	66/645 (10%)	66 (100%)	0	0	100	100
15	W	71/105 (68%)	71 (100%)	0	0	100	100
All	All	4106/10672 (38%)	3960 (96%)	139 (3%)	7 (0%)	45	78

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
11	P	368	PRO
5	I	806	PHE
5	I	1162	GLY
5	I	1263	VAL
7	K	222	ASP
11	P	142	PRO
5	I	1302	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	A	83/113 (74%)	83 (100%)	0	100 100
1	E	83/113 (74%)	83 (100%)	0	100 100
2	B	67/81 (83%)	67 (100%)	0	100 100
2	F	66/81 (82%)	66 (100%)	0	100 100
3	C	85/102 (83%)	85 (100%)	0	100 100
3	G	85/102 (83%)	85 (100%)	0	100 100
4	D	79/106 (74%)	79 (100%)	0	100 100
4	H	78/106 (74%)	77 (99%)	1 (1%)	65 77
5	I	22/1422 (2%)	22 (100%)	0	100 100
6	J	15/364 (4%)	15 (100%)	0	100 100
7	K	17/318 (5%)	17 (100%)	0	100 100
8	L	25/1845 (1%)	25 (100%)	0	100 100
9	M	13/346 (4%)	13 (100%)	0	100 100
10	N	6/1030 (1%)	6 (100%)	0	100 100
10	O	19/1030 (2%)	19 (100%)	0	100 100
11	P	259/442 (59%)	257 (99%)	2 (1%)	79 85
12	Q	3/361 (1%)	3 (100%)	0	100 100
13	R	3/373 (1%)	3 (100%)	0	100 100
14	V	1/537 (0%)	1 (100%)	0	100 100
15	W	5/95 (5%)	5 (100%)	0	100 100
All	All	1014/8967 (11%)	1011 (100%)	3 (0%)	90 92

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	H	121	LYS
11	P	300	ARG
11	P	505	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
2	F	26	ASN
3	G	25	GLN
3	G	83	HIS
4	H	48	GLN
11	P	178	GLN
11	P	308	HIS
11	P	375	HIS
11	P	432	ASN
11	P	453	ASN
11	P	484	GLN
11	P	501	GLN
11	P	504	GLN
11	P	508	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

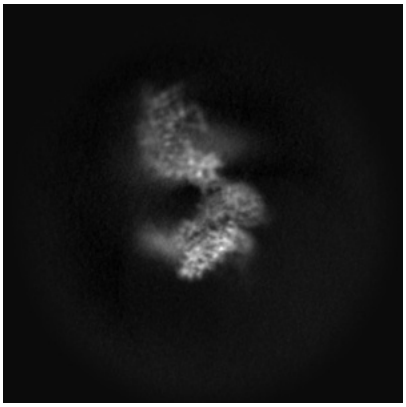
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-54077. These allow visual inspection of the internal detail of the map and identification of artifacts.

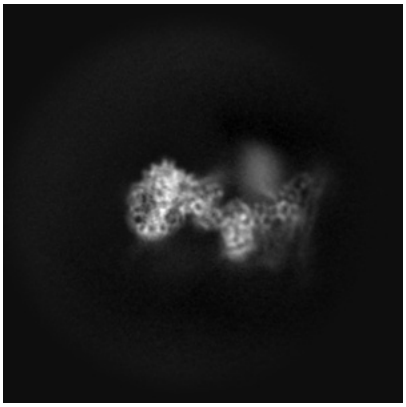
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

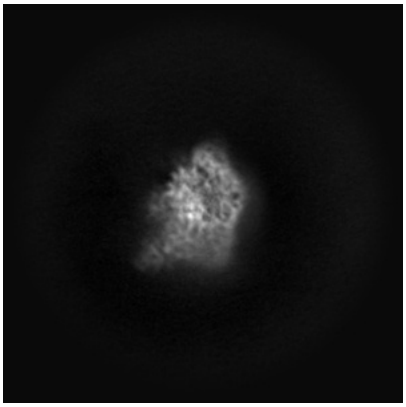
6.1.1 Primary map



X



Y

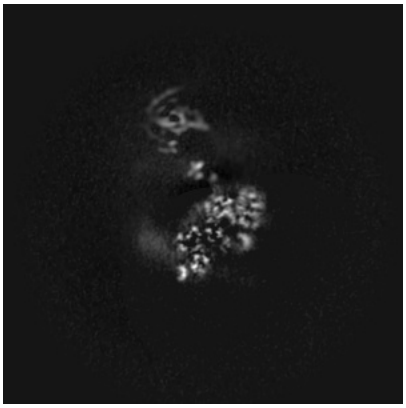


Z

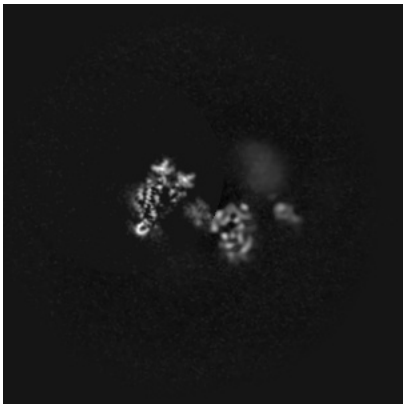
The images above show the map projected in three orthogonal directions.

6.2 Central slices

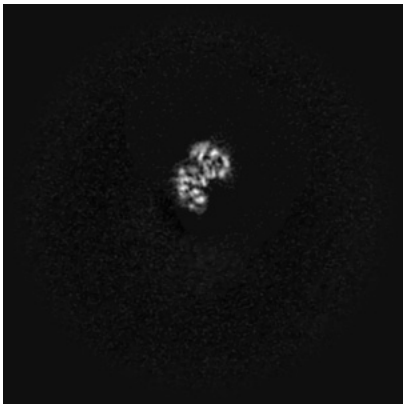
6.2.1 Primary map



X Index: 288



Y Index: 288

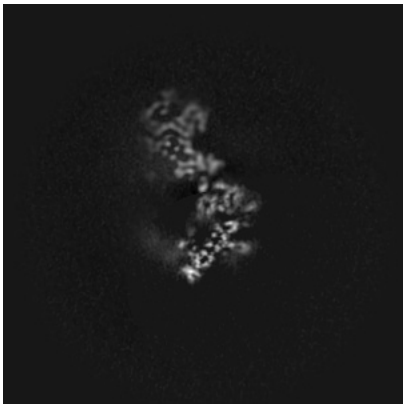


Z Index: 288

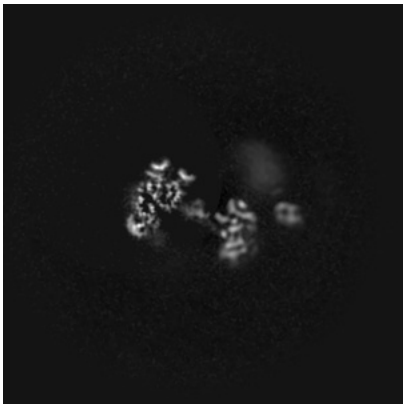
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

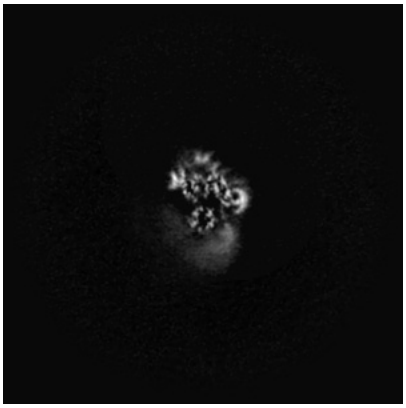
6.3.1 Primary map



X Index: 271



Y Index: 283

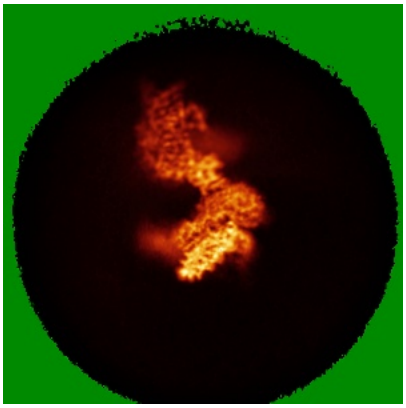


Z Index: 233

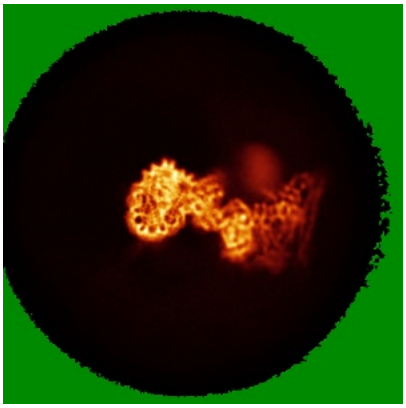
The images above show the largest variance slices of the map in three orthogonal directions.

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

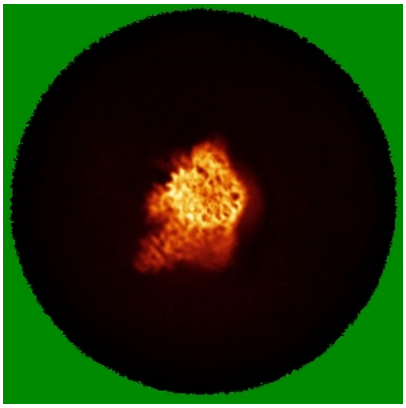
6.4.1 Primary map



X



Y



Z

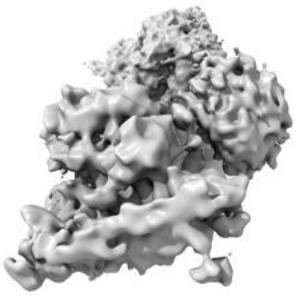
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X

Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0883. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

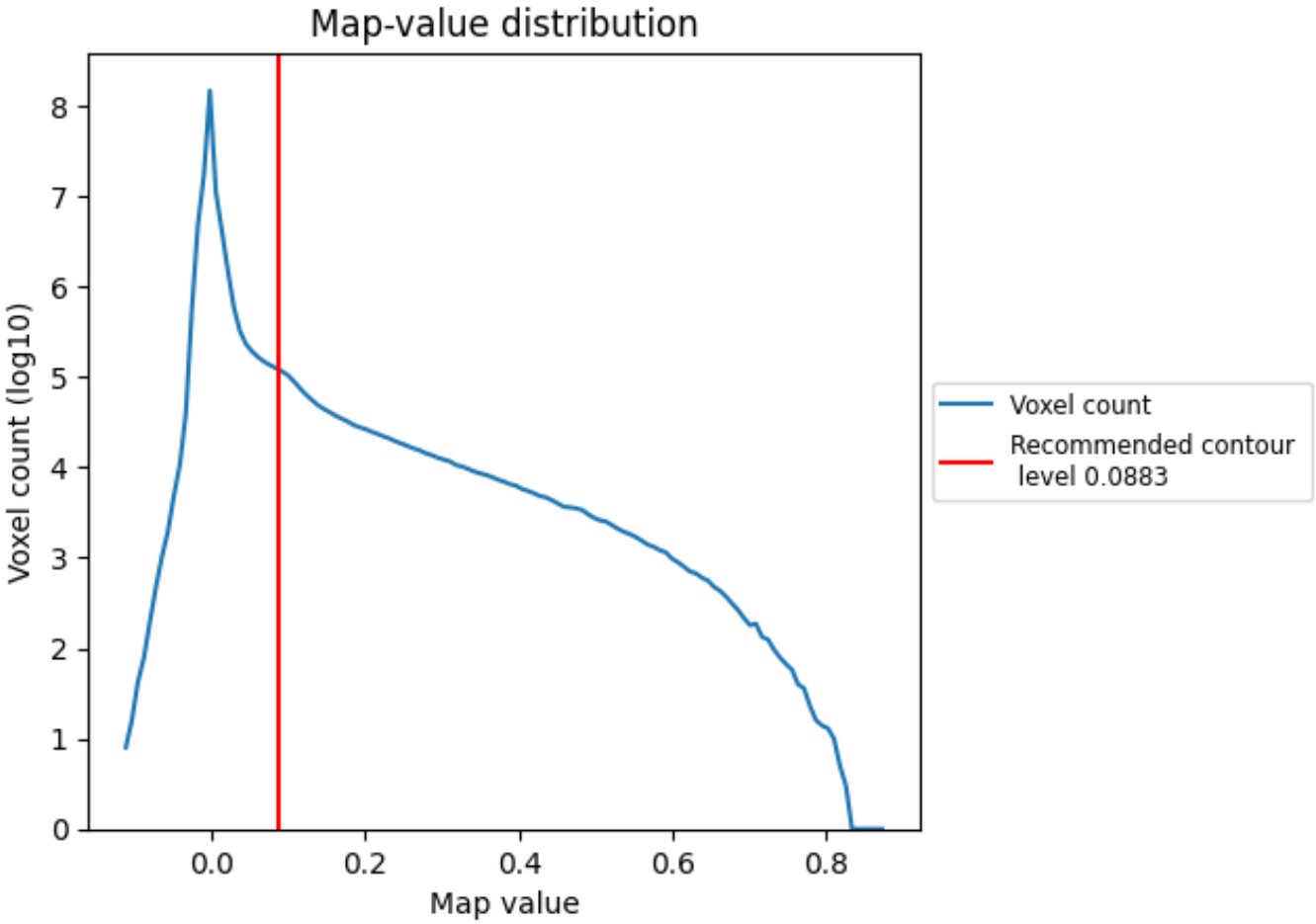
6.6 Mask visualisation (i)

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

7 Map analysis

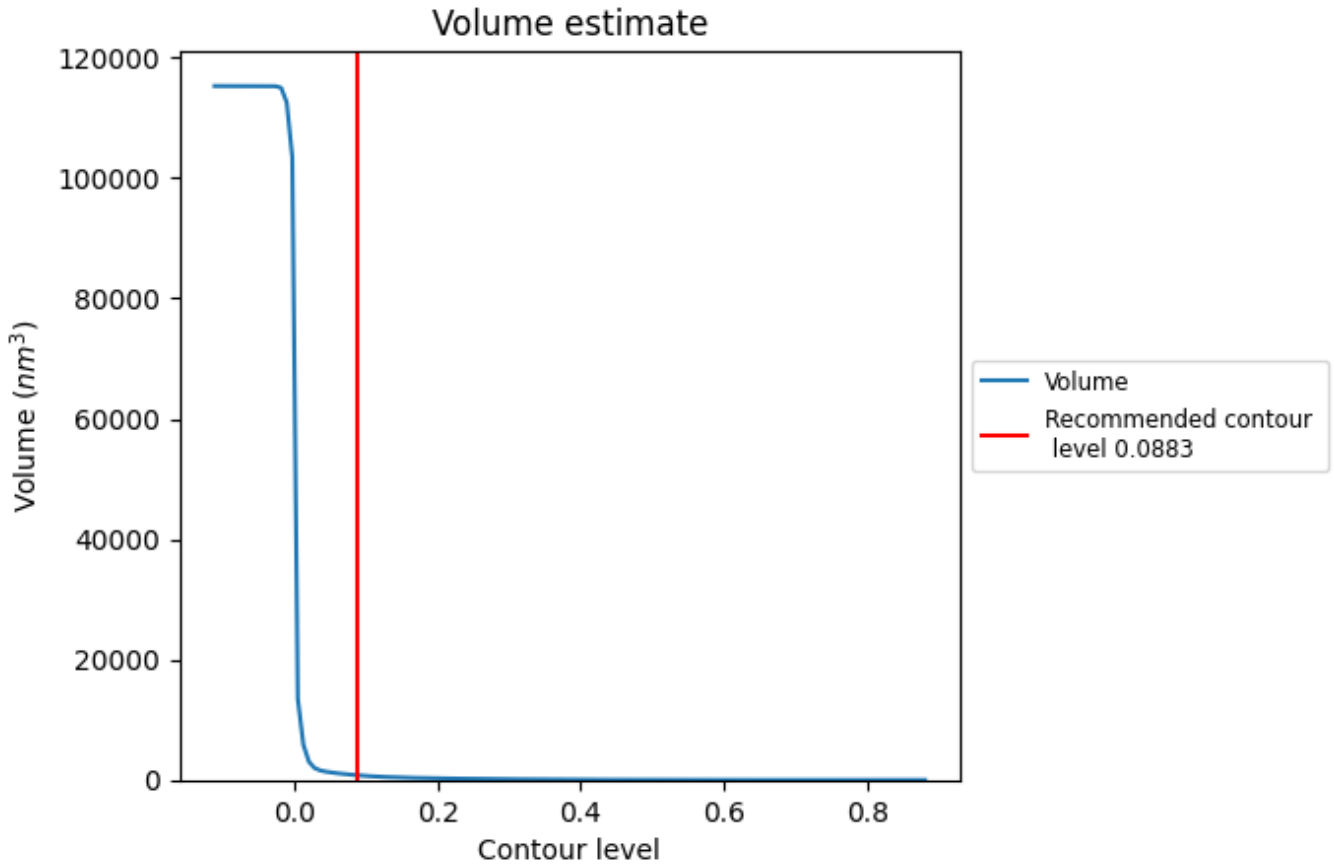
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

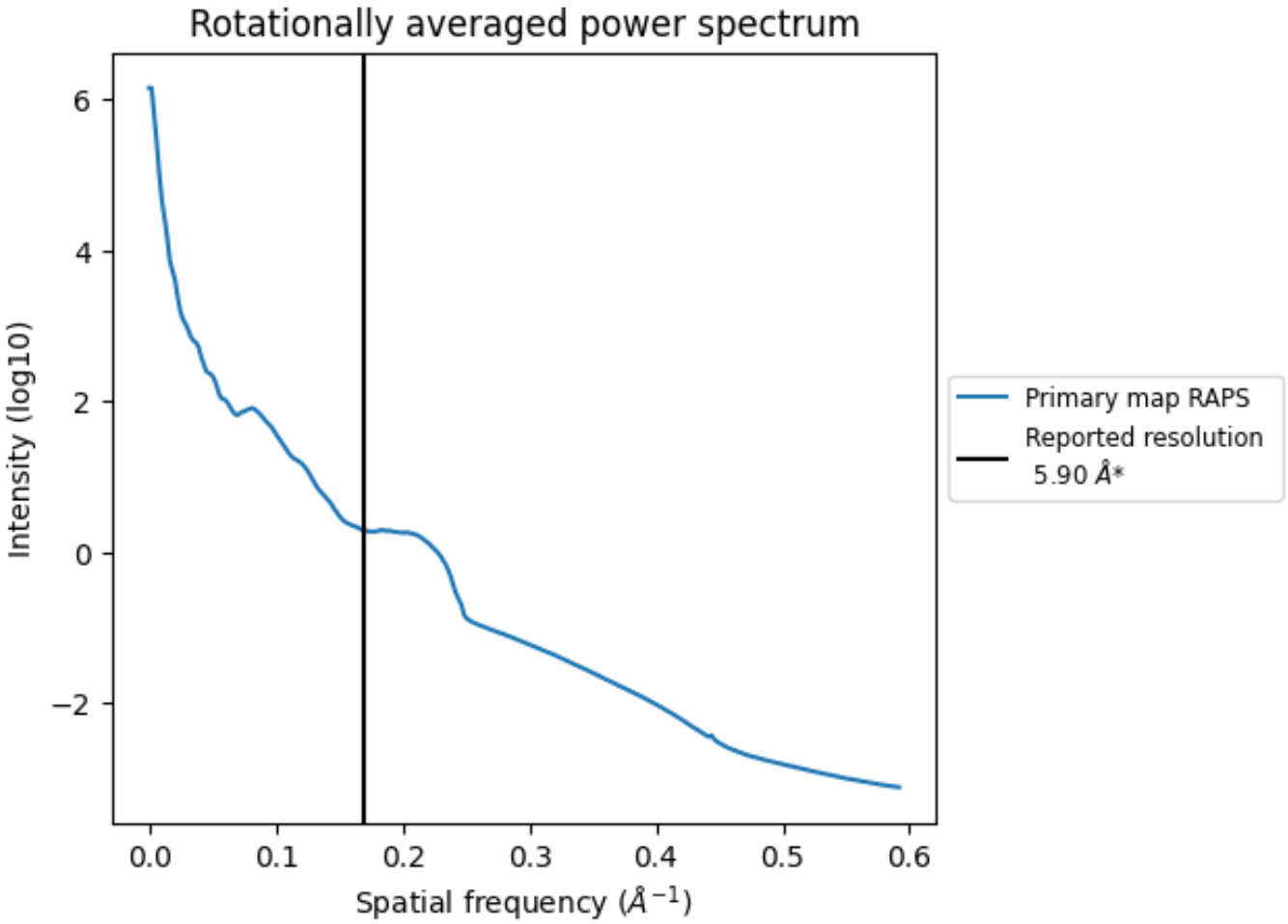
7.2 Volume estimate



The volume at the recommended contour level is 792 nm^3; this corresponds to an approximate mass of 715 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 0.169 $Å^{-1}$

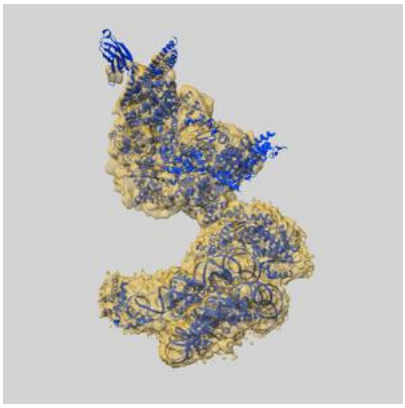
8 Fourier-Shell correlation

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

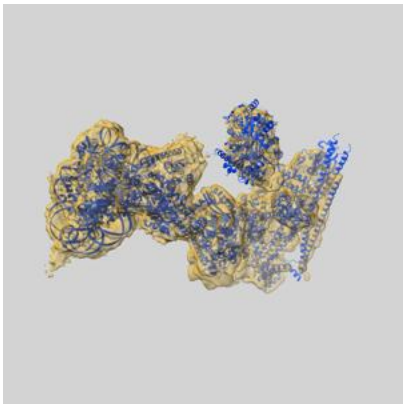
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-54077 and PDB model 9RN1. Per-residue inclusion information can be found in section 3 on page 11.

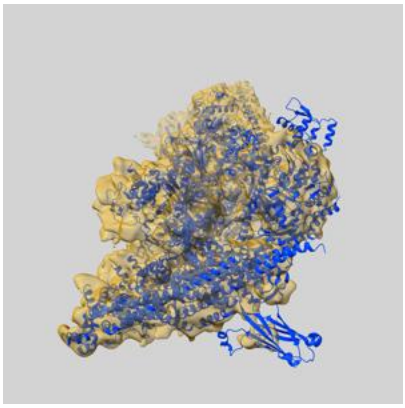
9.1 Map-model overlay



X



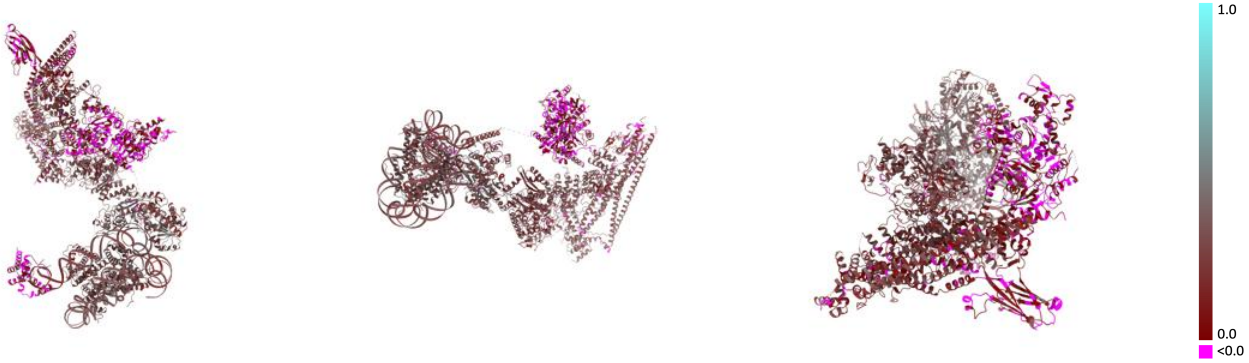
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0883 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.

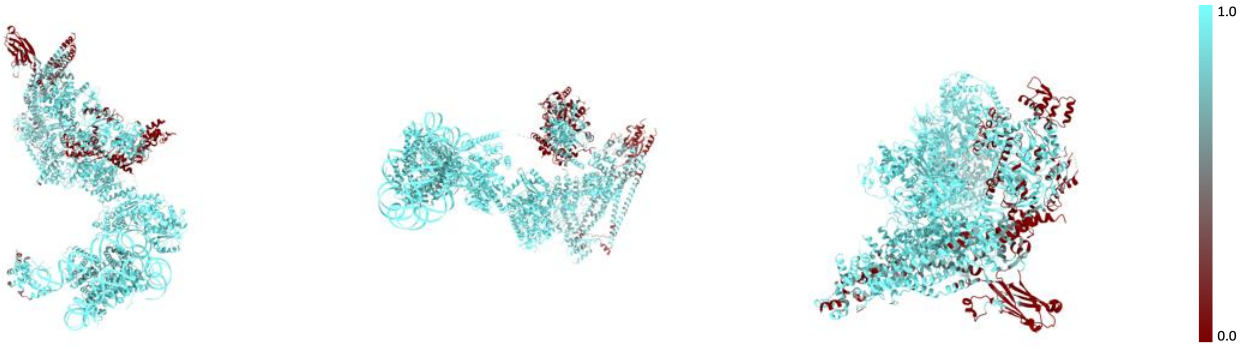
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

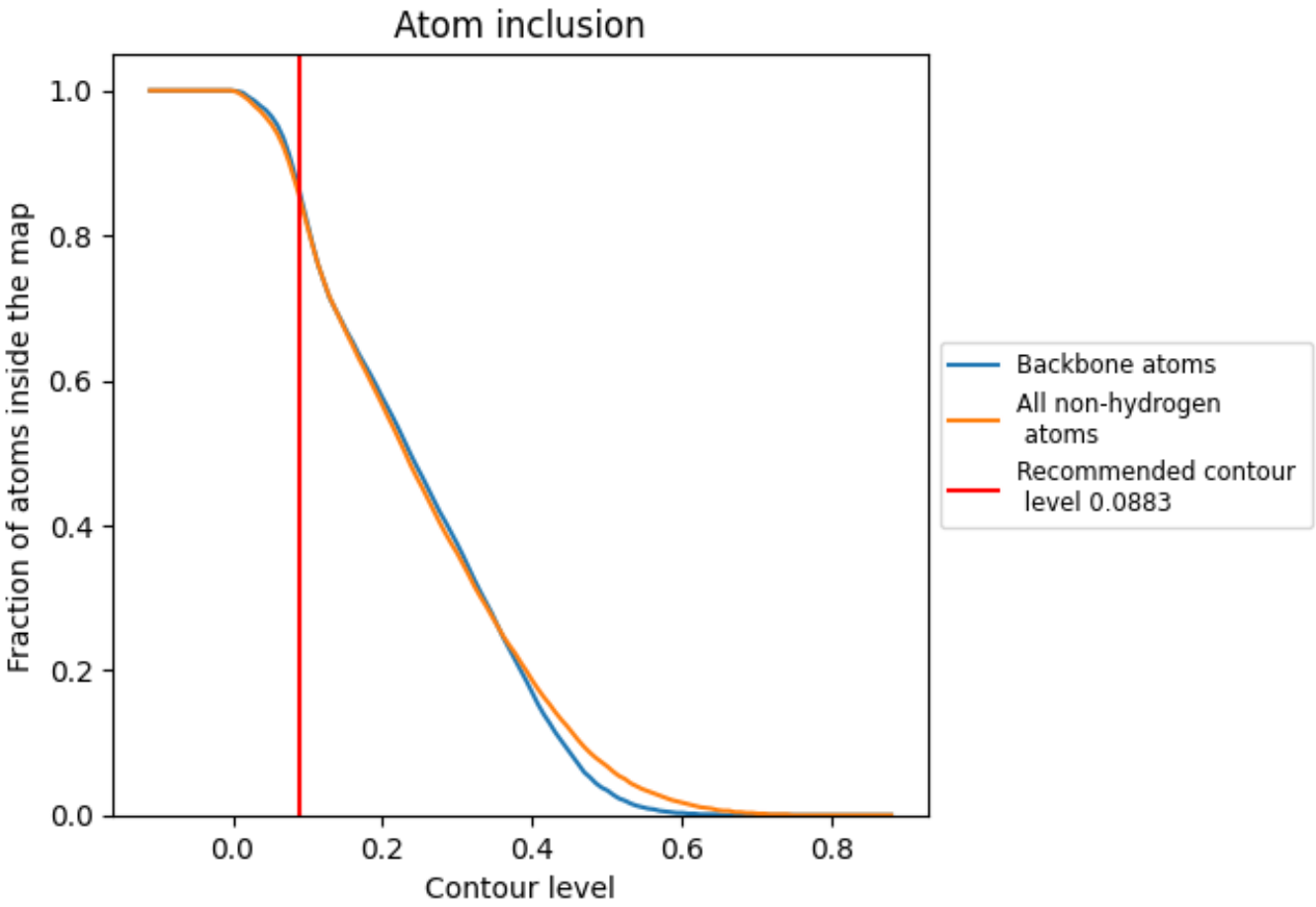
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0883).

9.4 Atom inclusion (i)



At the recommended contour level, 86% of all backbone atoms, 86% 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 (0.0883) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8570	0.2270
A	0.9670	0.3280
B	0.9540	0.3380
C	0.9500	0.3120
D	0.9650	0.3030
E	0.9420	0.3110
F	0.8980	0.3260
G	0.9190	0.3080
H	0.9420	0.3140
I	0.9550	0.2910
J	0.5830	0.0380
K	0.4640	0.0330
L	0.9530	0.2430
M	0.9880	0.2430
N	0.8340	0.2090
O	0.8190	0.2080
P	0.5320	0.1060
Q	0.7540	0.2160
R	1.0000	0.2650
V	0.8400	0.0790
W	0.9140	0.0510
X	0.9970	0.2810
Y	0.9980	0.2790