Full wwPDB EM Validation Report ⓘ

May 13, 2025 – 11:40 am BST

PDB ID	:	9F58 / pdb_00009f58
EMDB ID	:	EMD-50188
Title	:	Gcn2 dimer bound to the 60S ribosomal subunit
Authors	:	Paternoga, H.; Dimitrova-Paternoga, L.; Wilson, D.N.
Deposited on	:	2024-04-28
Resolution	:	3.10 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

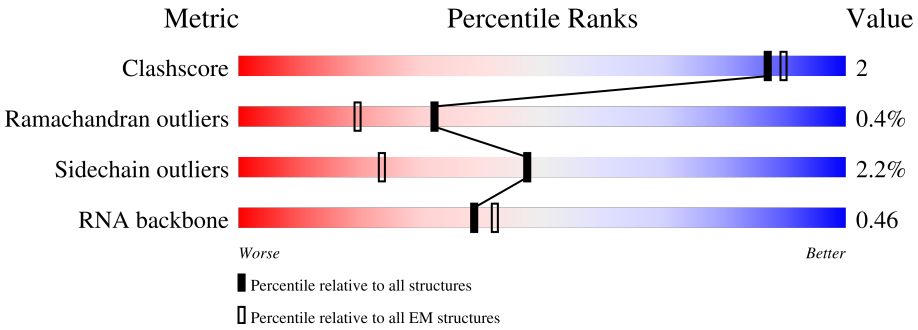
EMDB validation analysis	:	0.0.1.dev118
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

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 3.10 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	1659	19% 19% 81%
1	C	1659	16% 15% 84%
1	D	1659	29% 24% 71%
1	E	1659	28% 26% 71%
1	H	1659	6% 6% 94%
1	I	1659	7% 6% 93%
2	P	25	60% 60% 40%

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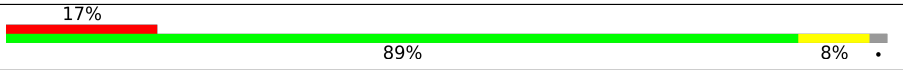
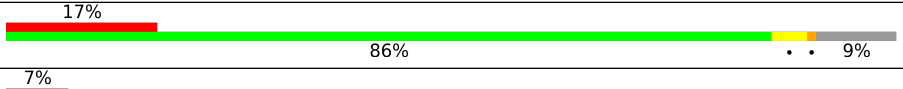
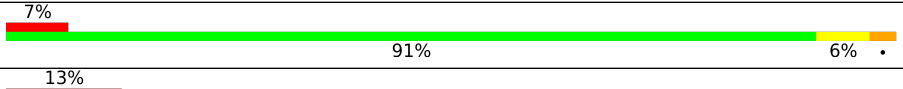
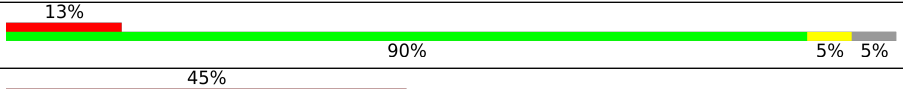
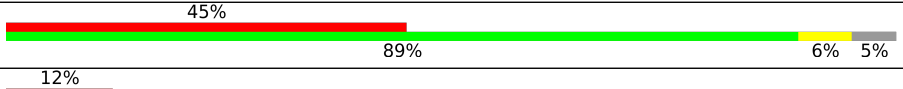
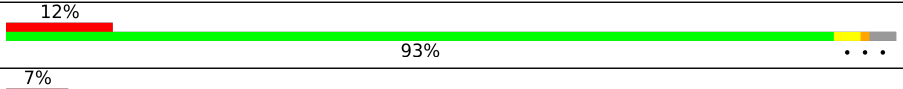
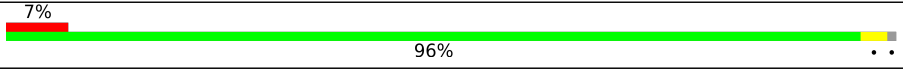
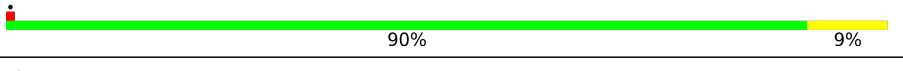
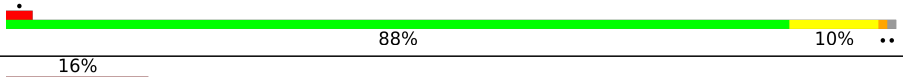
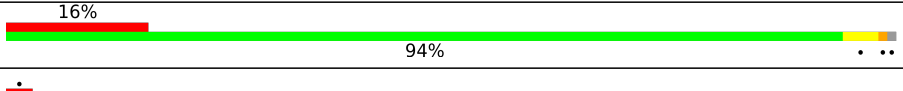
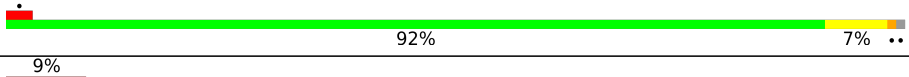
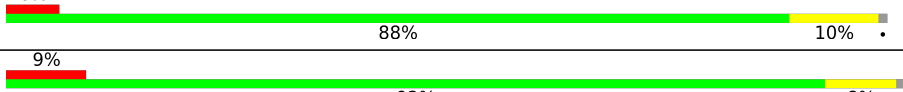
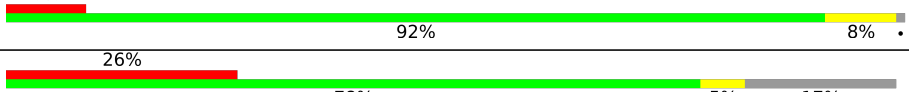
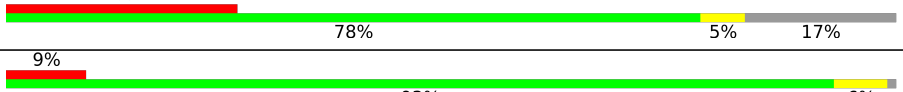
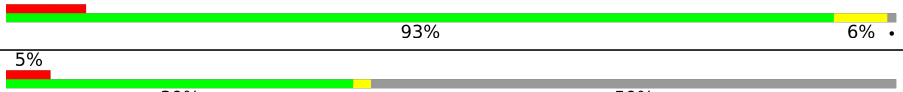
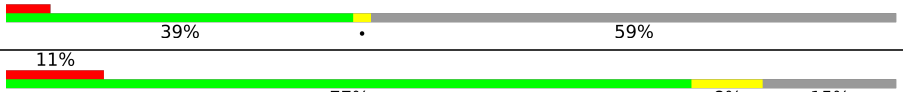
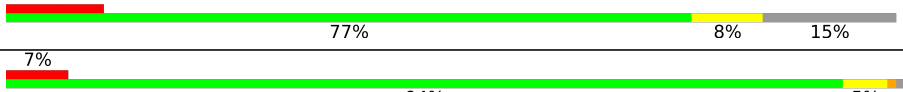
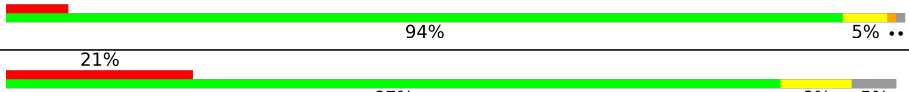
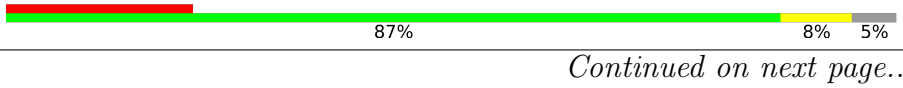
Mol	Chain	Length	Quality of chain
3	4	158	
4	b	121	
5	d	387	
6	e	297	
7	f	176	
8	g	244	
9	h	256	
10	i	191	
11	j	221	
12	k	174	
13	m	199	
14	n	138	
15	o	204	
16	p	199	
17	q	184	
18	r	186	
19	s	189	
20	t	172	
21	u	160	
22	v	121	
23	w	137	
24	y	155	
25	z	142	
26	J	127	
27	K	136	

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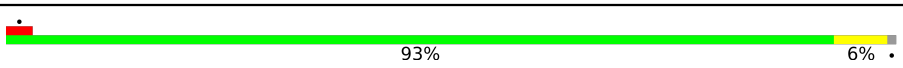
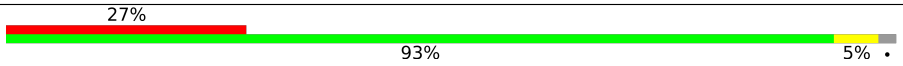
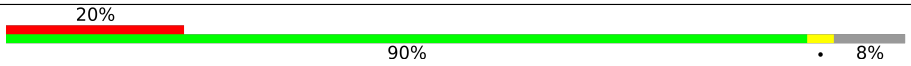
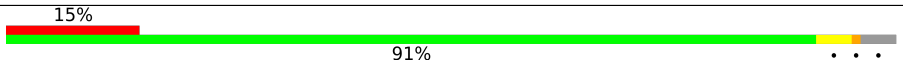
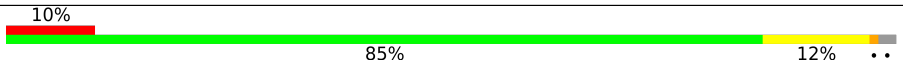
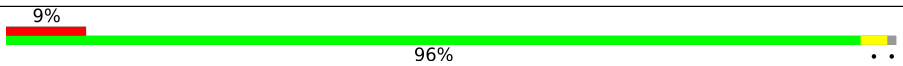
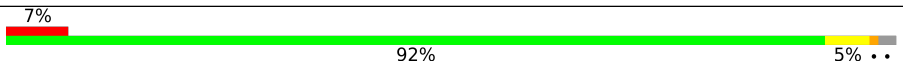
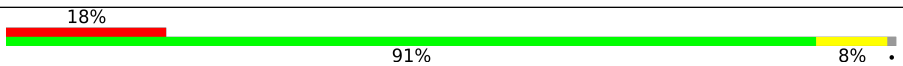
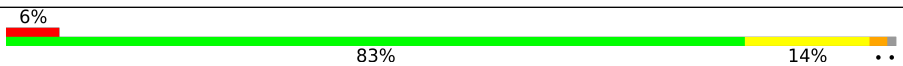
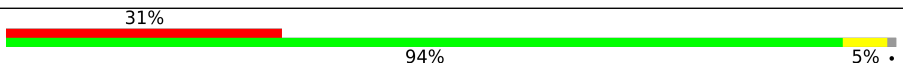
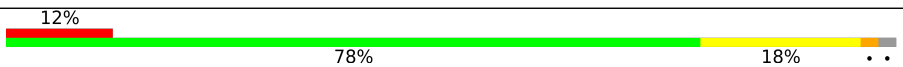
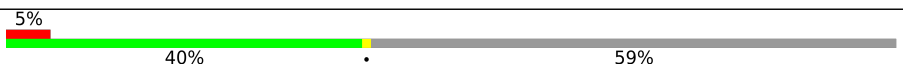
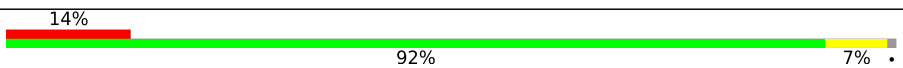
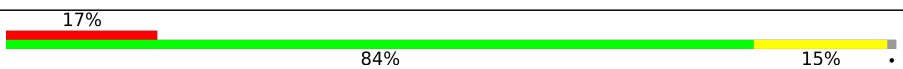
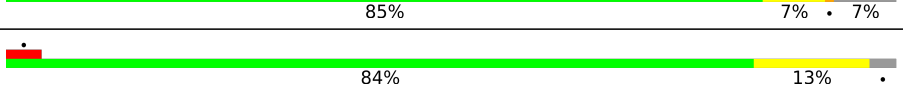
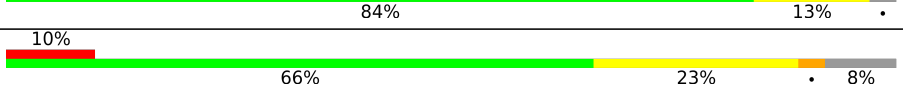
Mol	Chain	Length	Quality of chain
28	L	149	
29	M	59	
30	N	105	
31	O	113	
32	Q	130	
33	R	107	
34	T	120	
35	U	100	
36	V	88	
37	W	78	
38	X	51	
39	Y	128	
40	Z	106	
41	0	92	
42	3	362	
43	S	121	
44	c	254	
45	a	3396	

2 Entry composition

There are 46 unique types of molecules in this entry. The entry contains 135896 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 eIF-2-alpha kinase GCN2.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	322	Total	C	N	O	S	0	0
			2590	1683	417	477	13		
1	H	104	Total	C	N	O	S	2	0
			845	531	150	160	4		
1	I	108	Total	C	N	O	S	0	0
			864	543	155	164	2		
1	C	259	Total	C	N	O	S	0	0
			2125	1358	366	392	9		
1	D	474	Total	C	N	O	S	0	0
			3796	2430	637	720	9		
1	E	473	Total	C	N	O	S	0	0
			3790	2429	634	718	9		

- Molecule 2 is a protein called Large ribosomal subunit protein eL41B.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	P	15	Total	C	N	O	S	0	0
			144	89	38	16	1		

- Molecule 3 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	4	158	Total	C	N	O	P	0	0
			3354	1500	586	1110	158		

- Molecule 4 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	b	121	Total	C	N	O	P	0	0
			2580	1152	461	846	121		

- Molecule 5 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	d	386	Total	C	N	O	S	0	0
			3075	1950	584	533	8		

- Molecule 6 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	e	291	Total	C	N	O	S	0	0
			2333	1474	407	450	2		

- Molecule 7 is a protein called 60S ribosomal protein L6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	f	156	Total	C	N	O	S	0	0
			1239	800	222	216	1		

- Molecule 8 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	g	218	Total	C	N	O	S	0	0
			1754	1133	319	301	1		

- Molecule 9 is a protein called 60S ribosomal protein L8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	h	233	Total	C	N	O	S	0	0
			1804	1151	323	327	3		

- Molecule 10 is a protein called 60S ribosomal protein L9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	i	191	Total	C	N	O	S	0	0
			1518	963	274	277	4		

- Molecule 11 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	j	210	Total	C	N	O	S	0	0
			1700	1080	321	293	6		

- Molecule 12 is a protein called 60S ribosomal protein L11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	k	166	Total	C	N	O	S	0	0
			1327	832	247	244	4		

- Molecule 13 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	m	193	Total	C	N	O	0	0
			1543	962	315	266		

- Molecule 14 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	n	136	Total	C	N	O	S	0	0
			1053	675	199	177	2		

- Molecule 15 is a protein called 60S ribosomal protein L15-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	o	203	Total	C	N	O	S	0	0
			1720	1077	361	281	1		

- Molecule 16 is a protein called 60S ribosomal protein L16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	p	197	Total	C	N	O	S	0	0
			1555	1003	289	262	1		

- Molecule 17 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	q	183	Total	C	N	O	0	0
			1420	882	281	257		

- Molecule 18 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	r	185	Total	C	N	O	S	0	0
			1441	908	290	241	2		

- Molecule 19 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	s	155	Total 1249	C 776	N 264	O 209	0	0

- Molecule 20 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	t	170	Total 1432	C 922	N 265	O 242	S 3	0	0

- Molecule 21 is a protein called 60S ribosomal protein L21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	u	159	Total 1276	C 805	N 246	O 221	S 4	0	0

- Molecule 22 is a protein called 60S ribosomal protein L22-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
22	v	100	Total 796	C 516	N 131	O 149	0	0

- Molecule 23 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	w	136	Total 1003	C 628	N 189	O 179	S 7	0	0

- Molecule 24 is a protein called 60S ribosomal protein L24-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	y	63	Total 521	C 336	N 102	O 82	S 1	0	0

- Molecule 25 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	z	121	Total 964	C 620	N 169	O 173	S 2	0	0

- Molecule 26 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
26	J	126	Total 993	C 625	N 192	O 176	0	0

- Molecule 27 is a protein called 60S ribosomal protein L27-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
27	K	129	Total 1046	C 684	N 193	O 169	0	0

- Molecule 28 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	L	148	Total 1173	C 749	N 231	O 190	S 3	0	0

- Molecule 29 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	M	58	Total 462	C 289	N 100	O 73	0	0

- Molecule 30 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	N	97	Total 743	C 479	N 124	O 139	S 1	0	0

- Molecule 31 is a protein called 60S ribosomal protein L31-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	O	109	Total 876	C 556	N 167	O 152	S 1	0	0

- Molecule 32 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Q	127	Total 1020	C 647	N 205	O 167	S 1	0	0

- Molecule 33 is a protein called 60S ribosomal protein L33-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	R	106	Total	C	N	O	S	0	0
			850	540	165	144	1		

- Molecule 34 is a protein called 60S ribosomal protein L35-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	T	117	Total	C	N	O	S	0	0
			960	610	184	165	1		

- Molecule 35 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	U	99	Total	C	N	O	S	0	0
			771	481	156	132	2		

- Molecule 36 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	V	87	Total	C	N	O	S	0	0
			681	414	148	114	5		

- Molecule 37 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	W	77	Total	C	N	O	0	0
			612	391	115	106		

- Molecule 38 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	X	50	Total	C	N	O	S	0	0
			436	272	97	65	2		

- Molecule 39 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	Y	52	Total	C	N	O	S	0	0
			417	259	86	67	5		

- Molecule 40 is a protein called 60S ribosomal protein L42-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	Z	105	Total	C	N	O	S	0	0
			847	534	170	138	5		

- Molecule 41 is a protein called 60S ribosomal protein L43-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	0	91	Total	C	N	O	S	0	0
			694	429	138	121	6		

- Molecule 42 is a protein called 60S ribosomal protein L4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	3	356	Total	C	N	O	S	0	0
			2714	1710	516	485	3		

- Molecule 43 is a protein called 60S ribosomal protein L34-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	S	112	Total	C	N	O	S	0	0
			880	545	179	152	4		

- Molecule 44 is a protein called 60S ribosomal protein L2-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	c	246	Total	C	N	O	S	0	0
			1874	1168	380	325	1		

- Molecule 45 is a RNA chain called 25S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	a	3134	Total	C	N	O	P	0	0
			67031	29941	12080	21876	3134		

- Molecule 46 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
46	V	1	Total	Zn	0
			1	1	
46	Y	1	Total	Zn	0
			1	1	
46	Z	1	Total	Zn	0
			1	1	

Continued on next page...

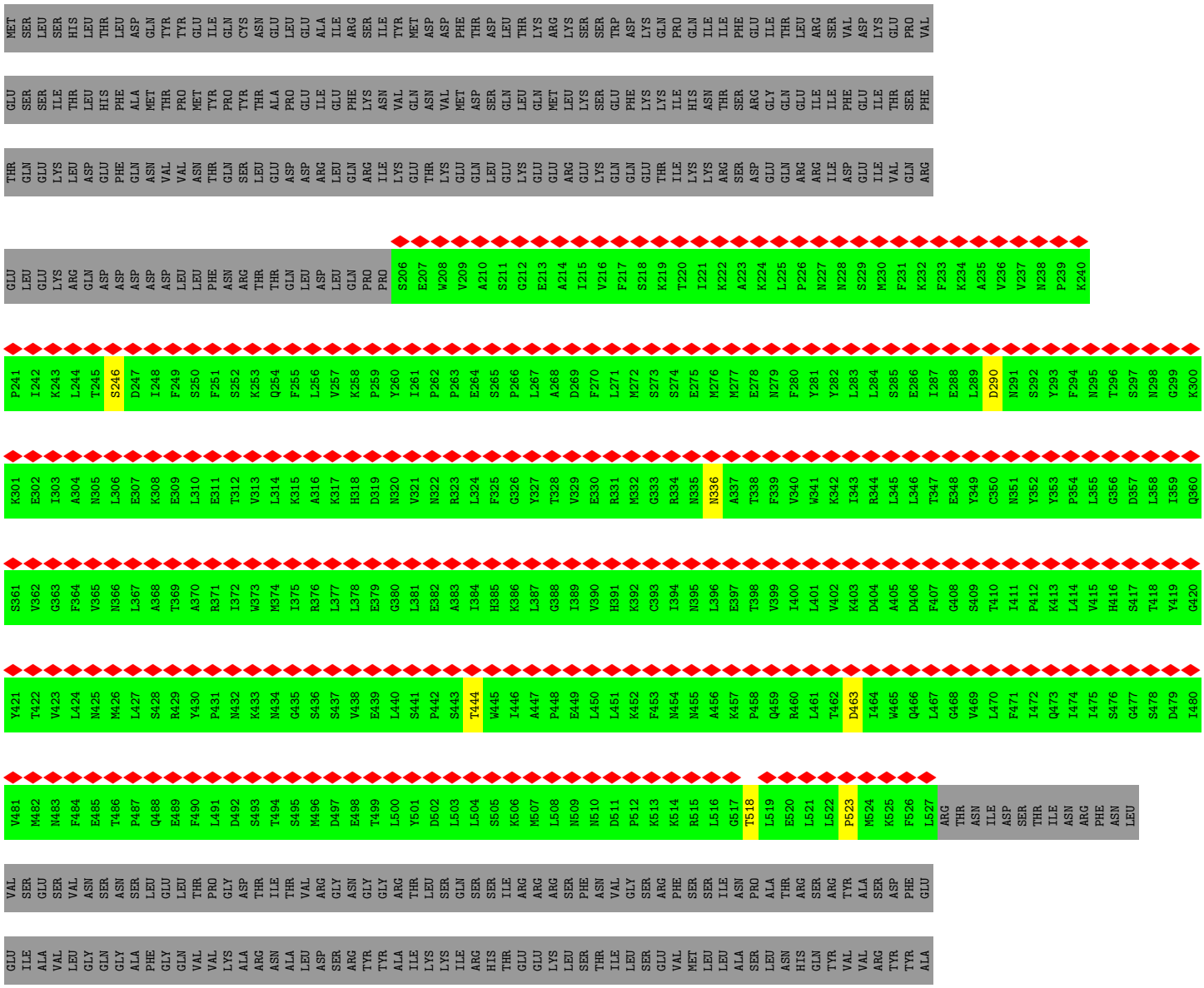
Continued from previous page...

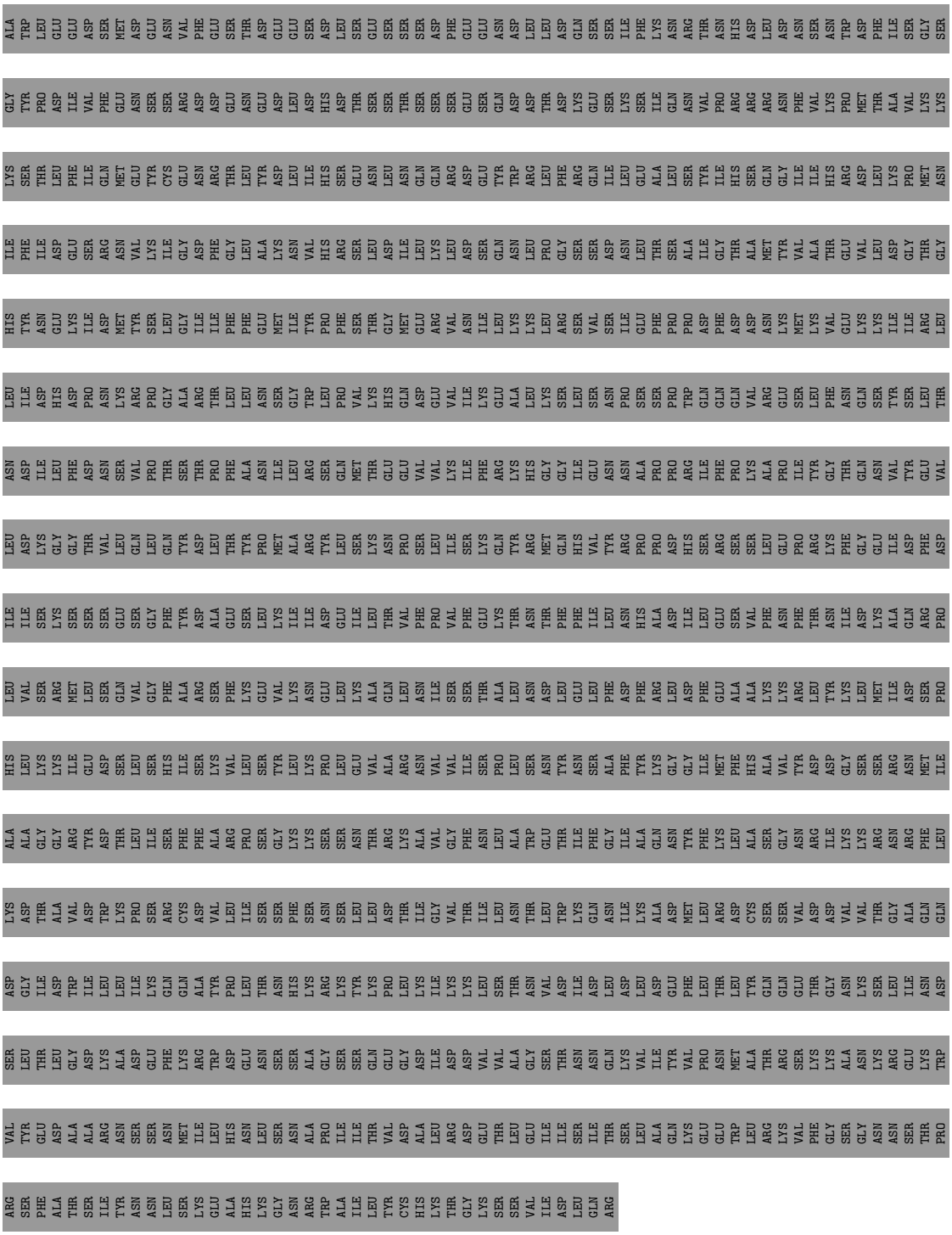
Mol	Chain	Residues	Atoms	AltConf
46	0	1	Total Zn 1 1	0
46	S	1	Total Zn 1 1	0

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.

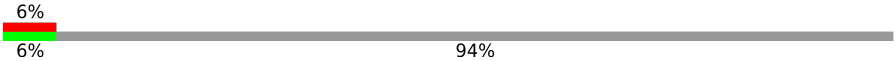
- Molecule 1: eIF-2-alpha kinase GCN2

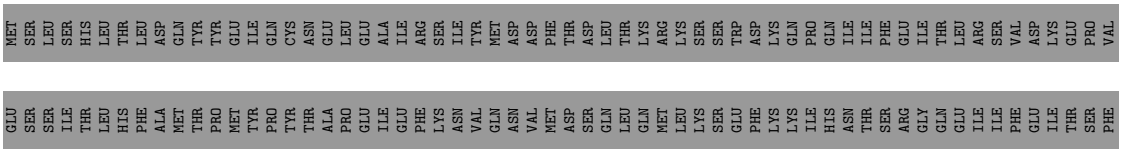


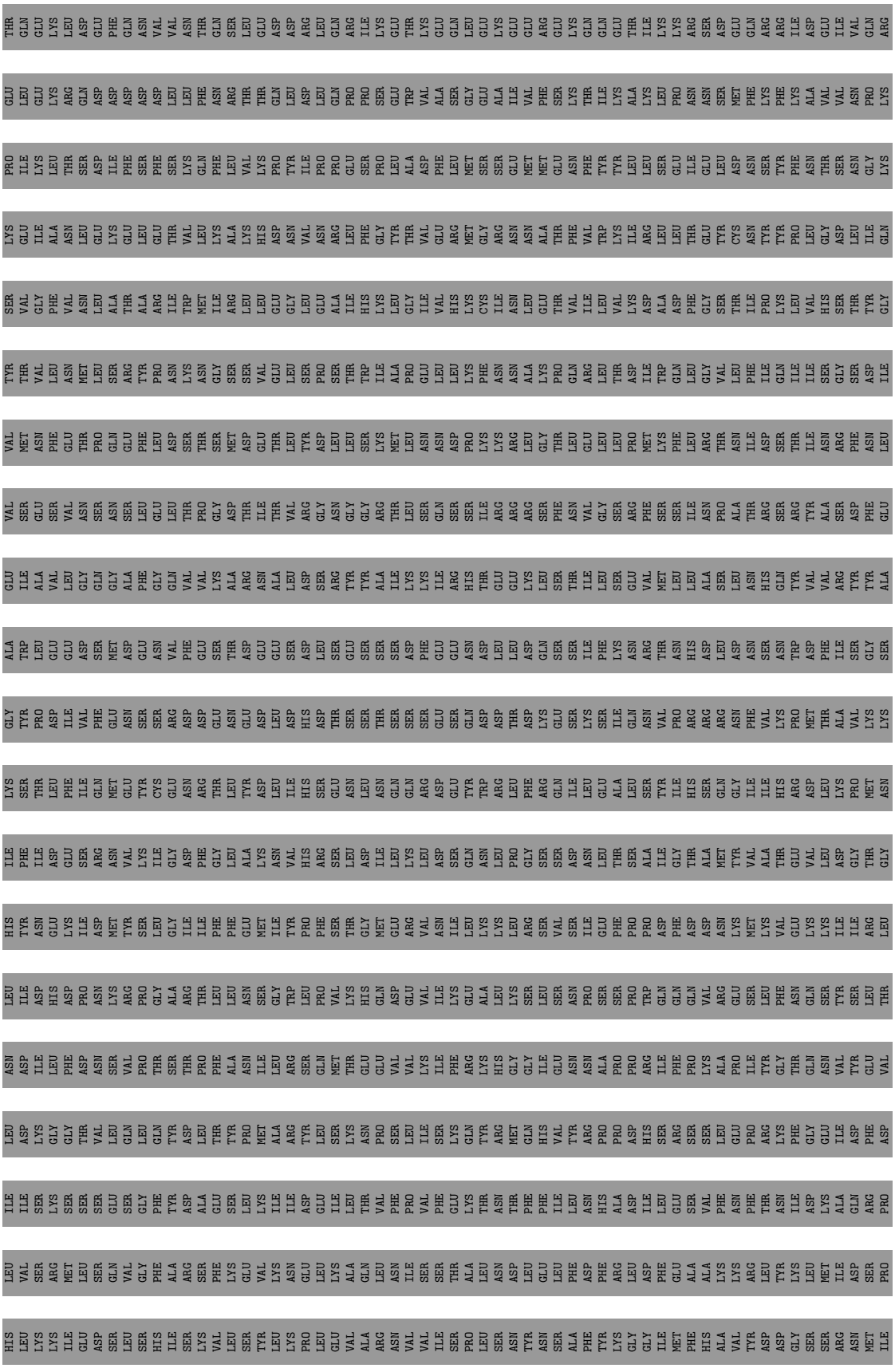


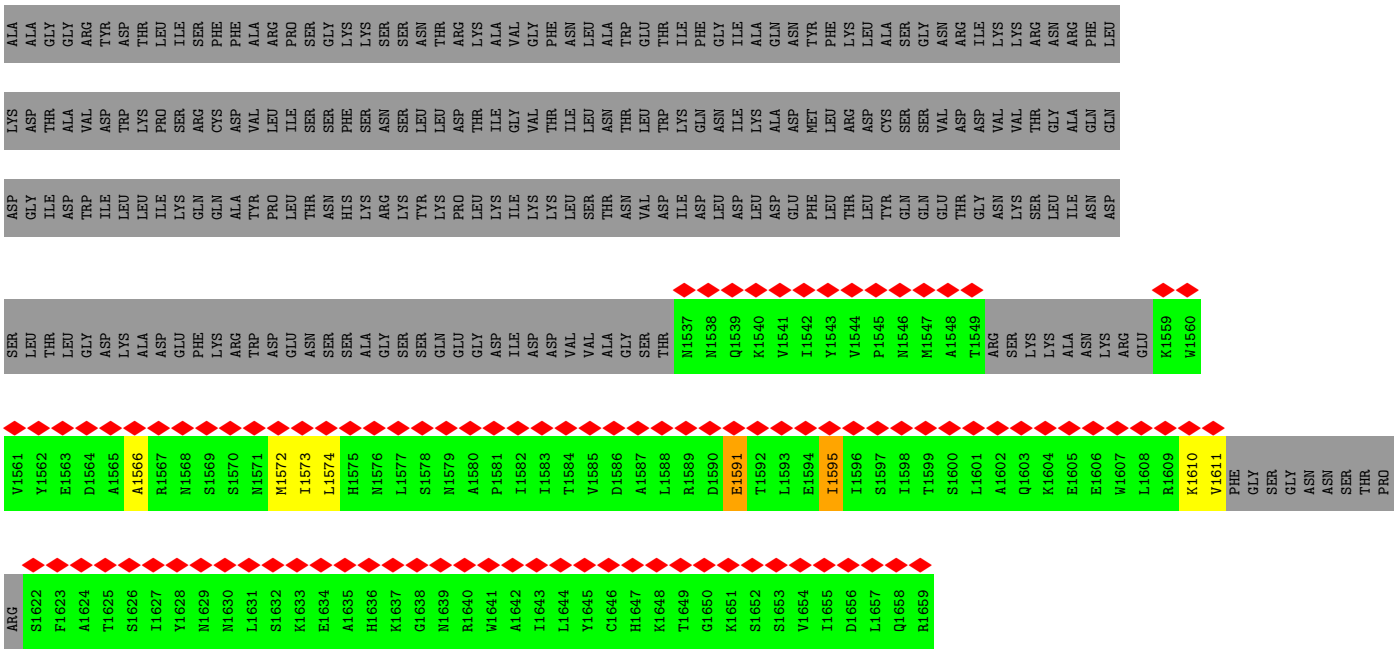
• Molecule 1: eIF-2-alpha kinase GCN2

Chain H:



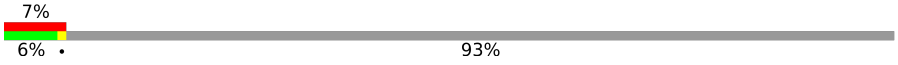


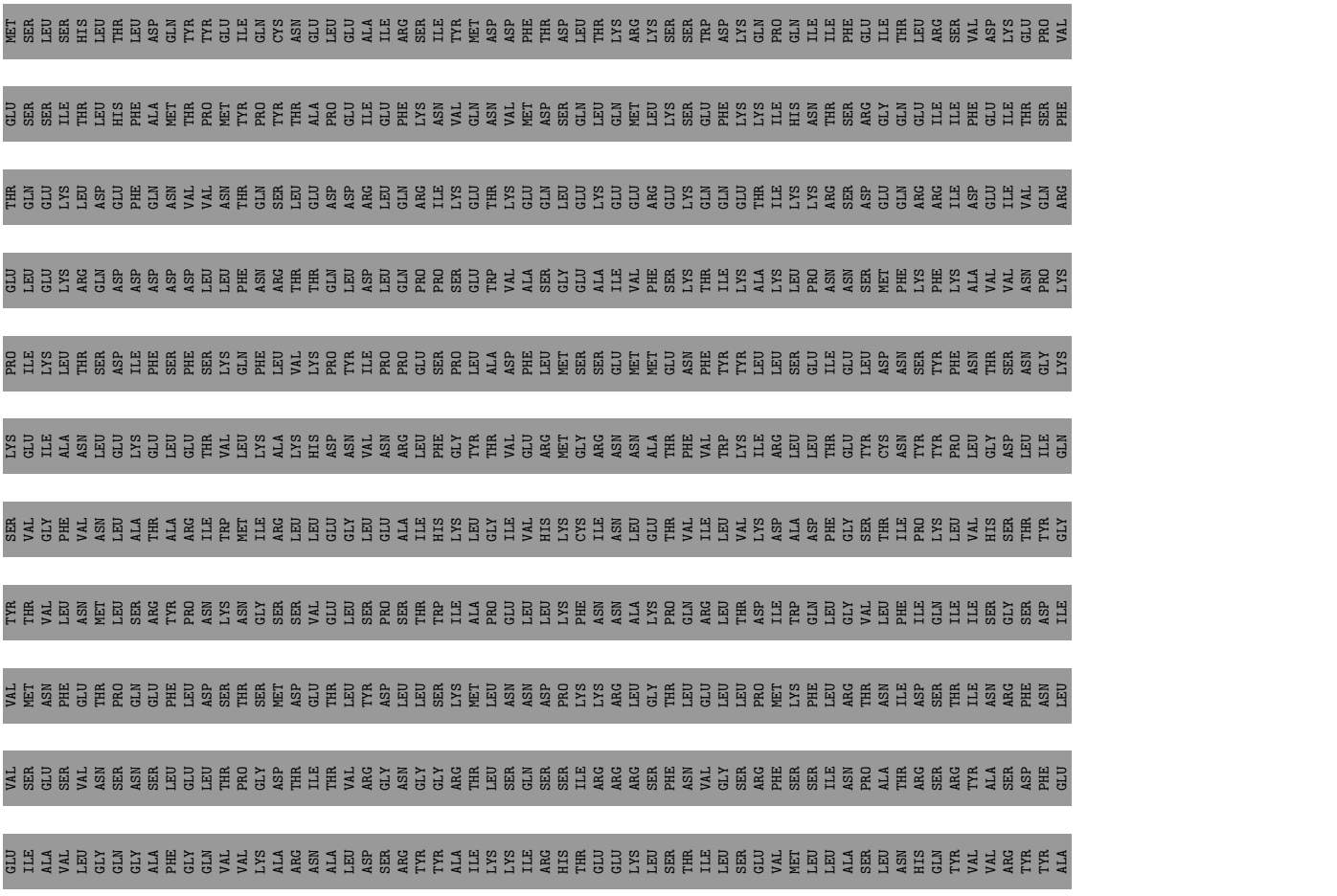


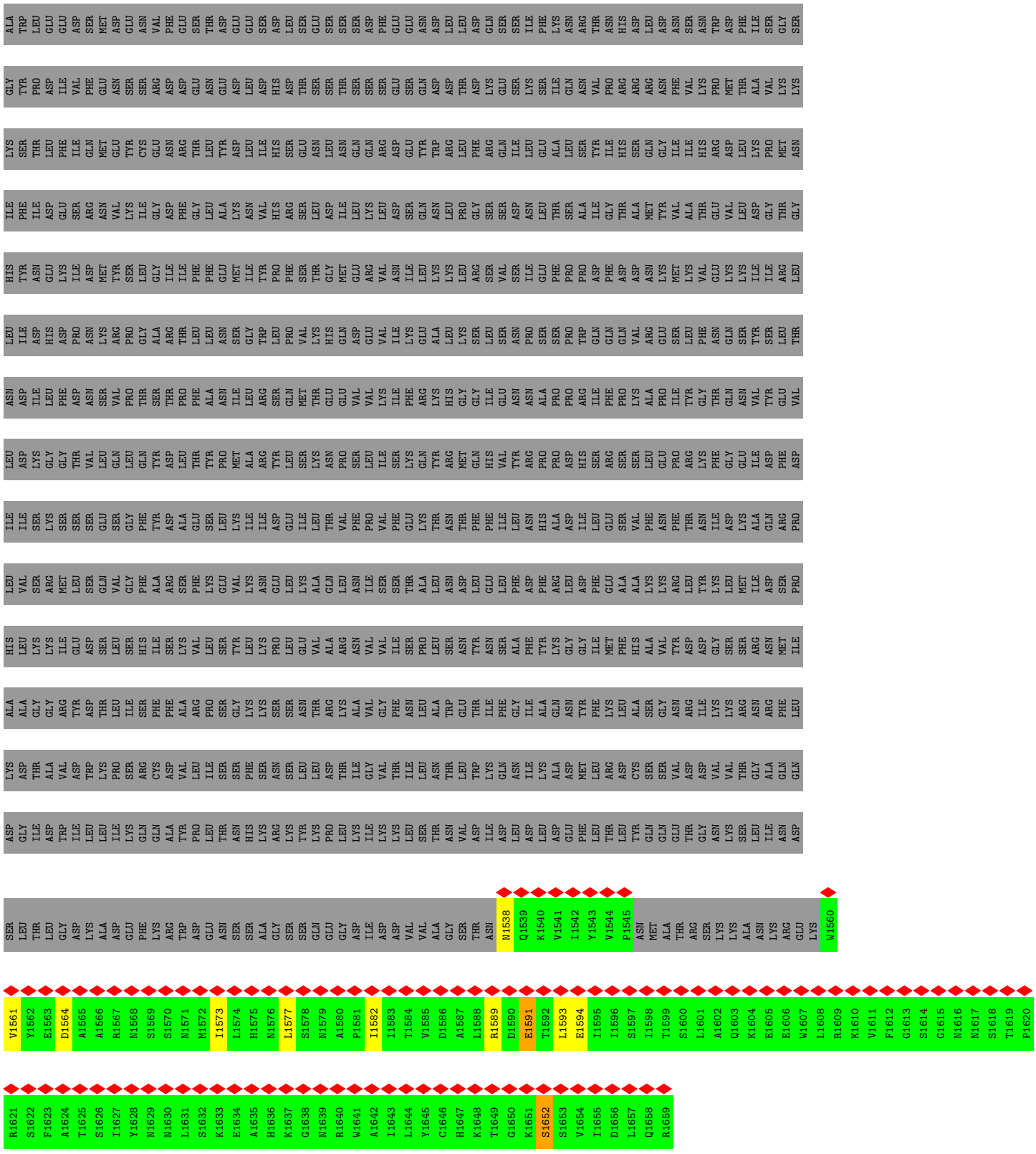


• Molecule 1: eIF-2-alpha kinase GCN2

Chain I:







• Molecule 1: eIF-2-alpha kinase GCN2

Chain C:

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

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

THR GLN GLU LYS LEU ASP GLU PHE GLN ASN VAL VAL ASN THR GLN SER LEU GLU ASP ASP ARG LEU GLN ARG ILE LYS GLU THR LYS GLU GLN LEU GLU LYS GLU GLU ARG GLU LYS GLN GLN GLU THR ILE LYS LYS ARG SER ASP GLU GLN ARG ARG ILE ASP GLU ILE VAL GLN ARG

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

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

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

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

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

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

VAL SER GLU SER VAL ASN SER ASN SER LEU GLU LEU THR PRO GLY ASP THR ILE THR VAL ARG GLY ASN GLY GLY ARG THR LEU SER GLN SER SER ILE ARG ARG ARG SER PHE ASN VAL GLY SER ARG PHE SER SER ILE ASN PRO ALA THR ARG SER R594 Y595 A596 S597 D598 F599 E600

E601 I602 A603 V604 L605 G606 Q607 G608 A609 F610 G611 Q612 V613 V614 K615 A616 R617 N618 A619 L620 D621 S622 R623 Y624 Y625 A626 I627 K628 K629 I630 R631 H632 T633 E634 E635 K636 L637 S638 T639 I640 L641 S642 E643 V644 M645 L646 L647 A648 S649 L650 N651 H652 Q653 Y654 V655 V656 R657 Y658 Y659 A660

A661 W662 L663 E664 E665 ASP SER MET ASP GLU ASN VAL PHE GLU SER THR ASP GLU GLU SER ASP LEU SER GLU SER SER SER ASP PHE GLU GLU ASN ASP LEU LEU ASP GLN SER SER ILE PHE LYS ASN ARG THR ASN HIS ASP LEU ASP ASN SER ASN TRP ASP PHE ILE SER GLY SER

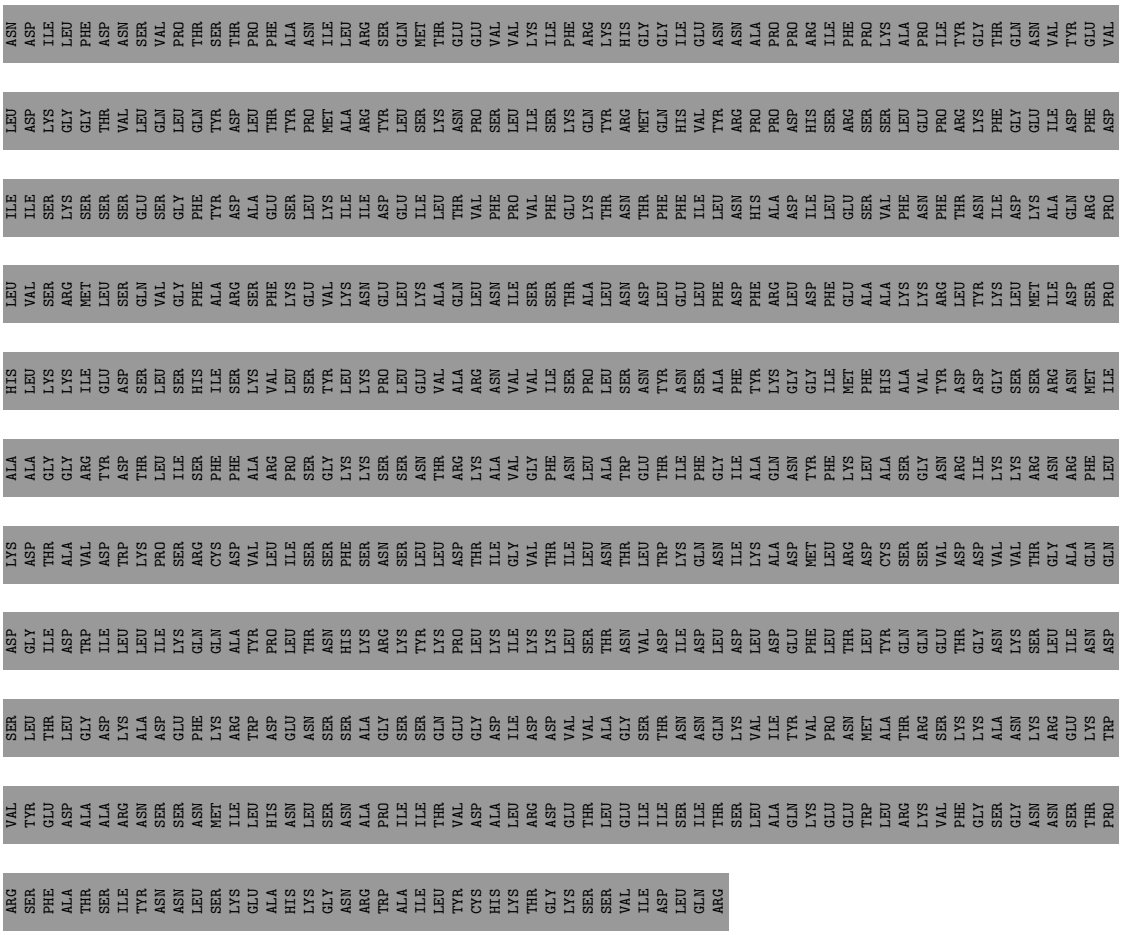
GLY TYR PRO ASP ILE VAL PHE GLU ASN SER SER ARG ASP ASP GLU ASN GLU ASP LEU ASP HIS ASP THR SER SER THR SER SER SER GLU SER GLN ASP ASP THR ASP LYS GLU SER LYS SER ILE GLN ASN VAL PRO ARG ARG ARG ASN PHE VAL LYS PRO MET THR ALA VAL LYS LYS

K781 S782 T783 L784 F785 I786 Q787 M788 E789 Y790 C791 E792 N793 R794 T795 L796 Y797 D798 L799 I800 H801 S802 E803 N804 L805 N806 Q807 Q808 R809 D810 E811 Y812 W813 R814 L815 F816 R817 Q818 I819 L820 E821 A822 L823 S824 Y825 I826 H827 S828 Q829 G830 I831 I832 H833 R834 D835 L836 K837 P838 M839 N840

I841 F842 I843 D844 E845 S846 R847 N848 V849 K850 I851 G852 D853 F854 G855 L856 A857 K858 N859 V860 H861 R862 S863 L864 D865 I866 L867 LYS LEU ASP SER GLN ASN LEU PRO GLY SER SER D879 N880 L881 T882 S883 A884 I885 G886 T887 A888 M889 Y890 V891 A892 T893 E894 V895 L896 D897 G898 T899 G900

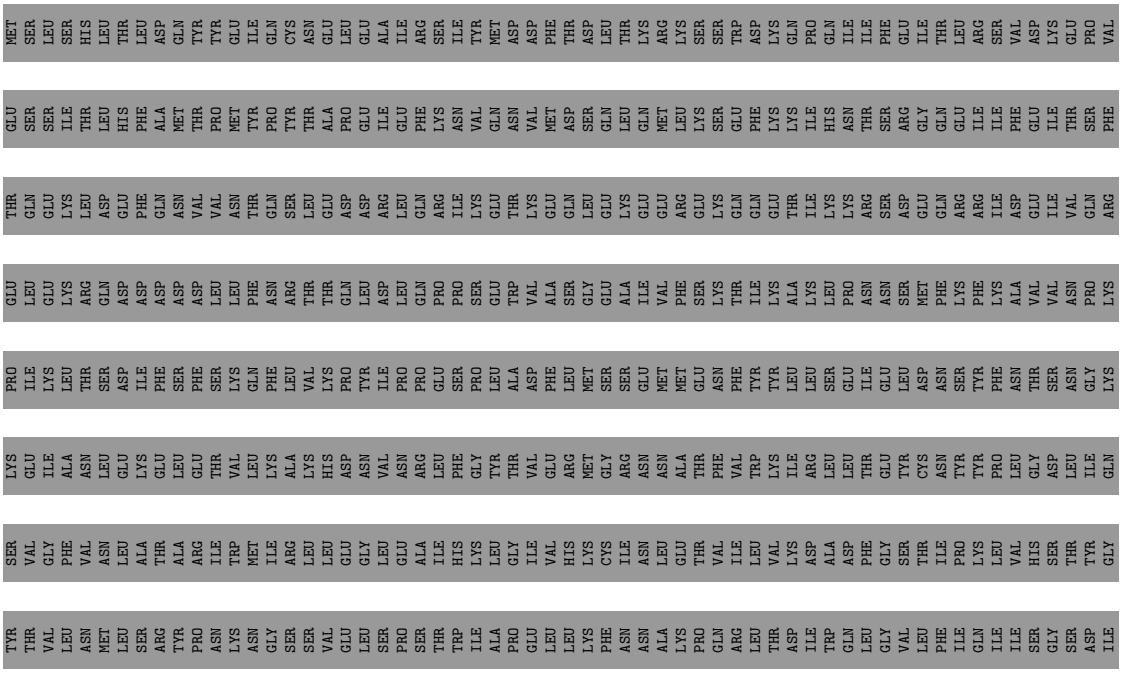
H901 Y902 N903 E904 K905 I906 D907 M908 Y909 S910 L911 G912 I913 I914 F915 F916 E917 M918 I919 Y920 P921 F922 S923 T924 G925 M926 E927 R928 V929 N930 I931 L932 K933 K934 L935 R936 S937 V938 S939 I940 E941 F942 P943 P944 D945 F946 D947 D948 N949 K950 M951 K952 V953 E954 K955 K956 I957 I958 R959 L960

L961 I962 D963 H964 D965 P966 N967 K968 R969 P970 G971 A972 R973 T974 L975 L976 N977 S978 GLY TRP LEU PRO VAL LYS HIS GLN ASP GLU VAL ILE LYS GLU ALA LEU LYS SER LEU SER ASN PRO SER SER PRO TRP GLN GLN GLN VAL ARG GLU SER LEU PHE ASN GLN SER TYR SER LEU THR



• Molecule 1: eIF-2-alpha kinase GCN2

Chain D:



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

VAL SER GLU SER VAL ASN SER ASN SER LEU GLU LEU THR PRO GLY ASP THR ILE THR VAL ARG GLY ASN GLY GLY ARG THR LEU SER GLN SER SER ILE ARG ARG SER PHE ASN VAL GLY SER ARG PHE SER SER ILE ASN PRO ALA THR ARG SER ARG TYR ALA SER ASP PHE GLU

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

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

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

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

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

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

LEU ILE ASP HIS ASP PRO ASN LYS ARG PRO GLY ALA ARG THR LEU LEU ASN SER GLY TRP LEU PRO VAL LYS HIS GLN D987 E988 V989 I990 K991 E992 A993 L994 K995 S996 L997 S998 N999 P1000 S1001 S1002 P1003 W1004 Q1005 Q1006 Q1007 V1008 R1009 E1010 S1011 L1012 F1013 N1014 Q1015 S1016 Y1017 S1018 L1019 T1020

N1021 D1022 I1023 L1024 F1025 D1026 N1027 S1028 V1029 P1030 T1031 S1032 T1033 P1034 F1035 A1036 N1037 I1038 L1039 R1040 S1041 Q1042 M1043 T1044 E1045 E1046 V1047 V1048 K1049 I1050 F1051 R1052 K1053 H1054 G1055 G1056 I1057 E1058 N1059 N1060 A1061 P1062 P1063 R1064 I1065 F1066 P1067 K1068 A1069 P1070 I1071 Y1072 G1073 T1074 Q1075 N1076 V1077 Y1078 E1079 V1080

L1081 D1082 K1083 G1084 G1085 T1086 V1087 L1088 Q1089 L1090 Q1091 Y1092 D1093 L1094 T1095 Y1096 P1097 M1098 A1099 R1100 Y1101 L1102 S1103 K1104 N1105 P1106 S1107 L1108 I1109 S1110 K1111 Q1112 Y1113 R1114 M1115 Q1116 H1117 V1118 Y1119 R1120 P1121 P1122 D1123 H1124 S1125 R1126 S1127 S1128 L1129 E1130 P1131 R1132 K1133 F1134 G1135 E1136 I1137 D1138 F1139 D1140

I1141 I1142 S1143 K1144 S1145 S1146 S1147 E1148 S1149 G1150 F1151 Y1152 D1153 A1154 E1155 S1156 L1157 K1158 I1159 I1160 D1161 E1162 I1163 L1164 T1165 V1166 F1167 P1168 V1169 F1170 E1171 K1172 T1173 N1174 T1175 F1176 F1177 I1178 L1179 N1180 H1181 A1182 D1183 I1184 L1185 E1186 S1187 V1188 F1189 N1190 F1191 T1192 N1193 I1194 D1195 K1196 A1197 Q1198 R1199 P1200

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H1261 L1262 K1263 K1264 I1265 E1266 D1267 S1268 L1269 S1270 H1271 I1272 S1273 K1274 V1275 L1276 S1277 Y1278 L1279 K1280 P1281 L1282 E1283 V1284 A1285 R1286 N1287 V1288 V1289 I1290 S1291 P1292 L1293 S1294 N1295 Y1296 N1297 S1298 A1299 F1300 Y1301 K1302 G1303 G1304 I1305 M1306 F1307 H1308 A1309 V1310 Y1311 D1312 D1313 G1314 S1315 S1316 R1317 N1318 M1319 I1320

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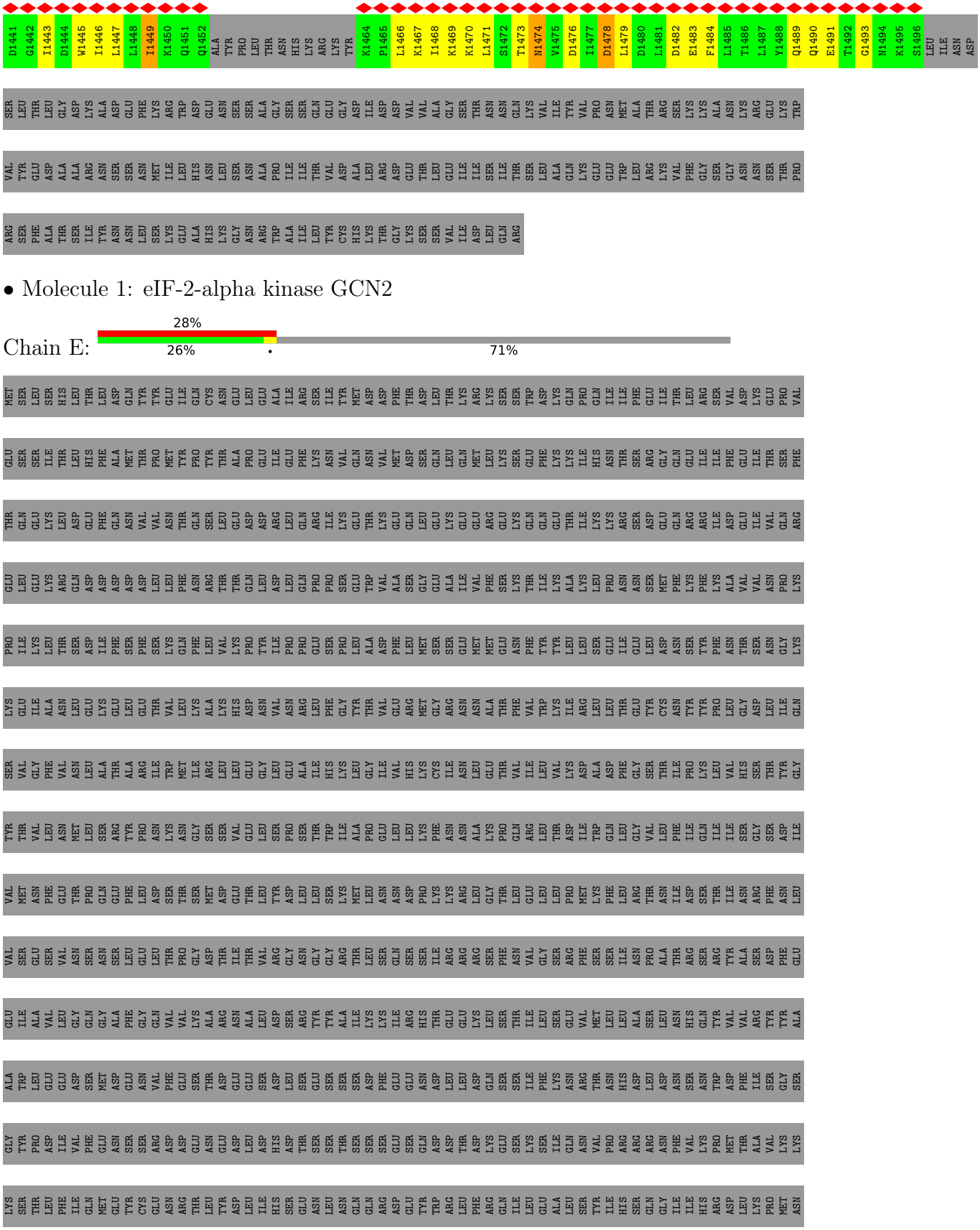
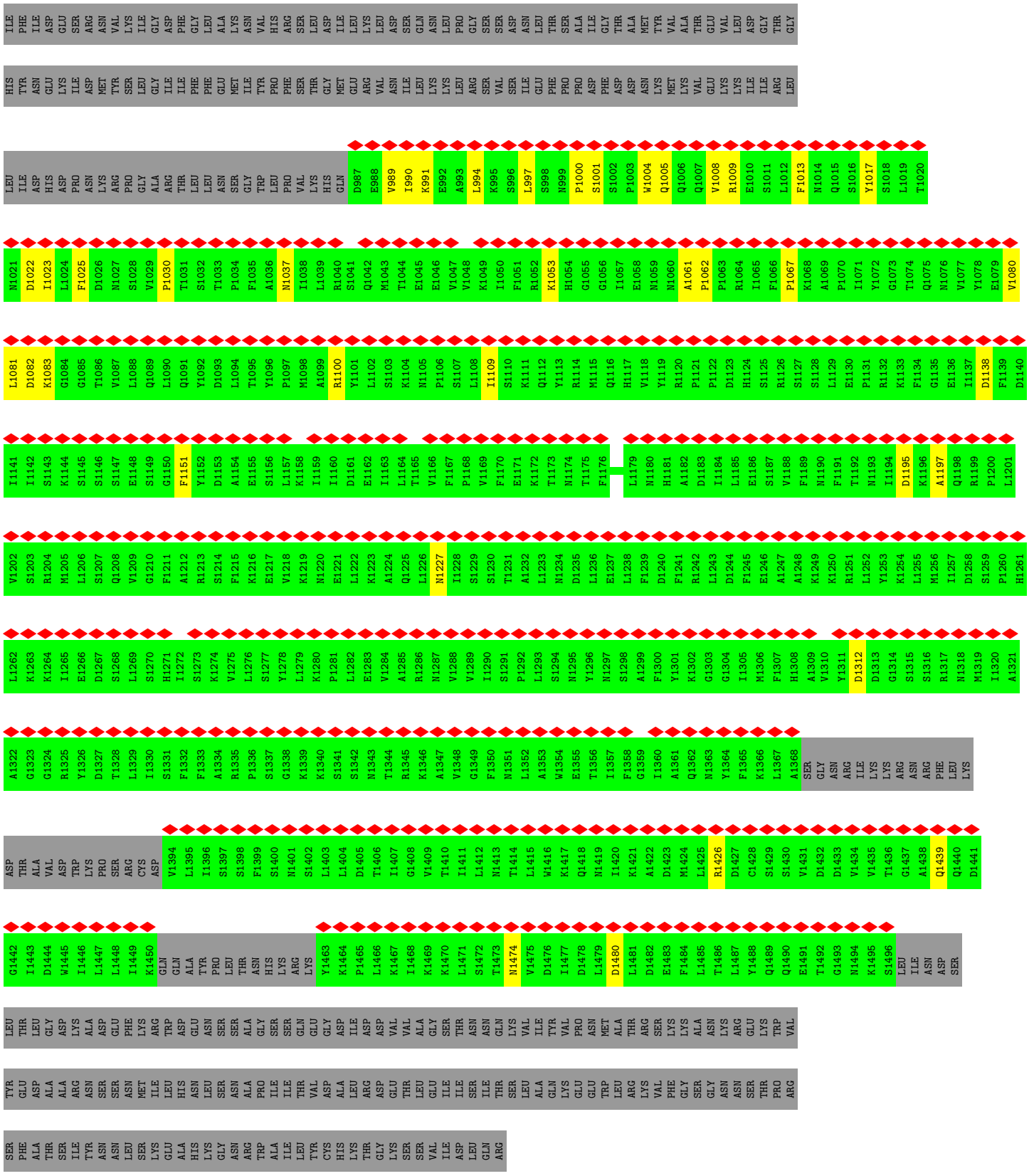
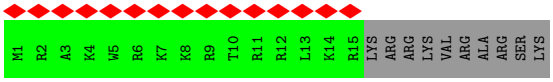
LYS ASP THR ALA VAL ASP TRP LYS PRO SER ARG CYS ASP V1394 L1395 I1396 S1397 S1398 F1399 S1400 N1401 S1402 L1403 L1404 D1405 T1406 I1407 G1408 V1409 T1410 I1411 L1412 N1413 T1414 L1415 W1416 K1417 Q1418 N1419 I1420 K1421 A1422 D1423 M1424 L1425 R1426 D1427 C1428 S1429 S1430 V1431 D1432 D1433 V1434 V1435 T1436 G1437 A1438 Q1439 Q1440



- Molecule 1: eIF-2-alpha kinase GCN2

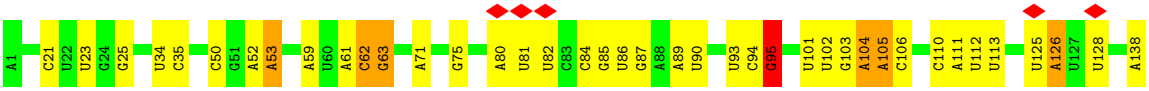


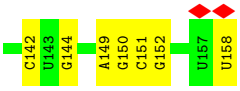
• Molecule 2: Large ribosomal subunit protein eL41B



• Molecule 3: 5.8S rRNA

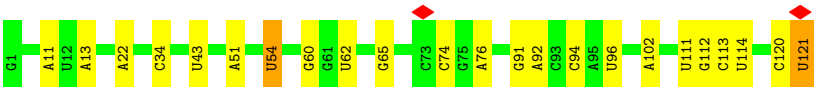
Chain 4:





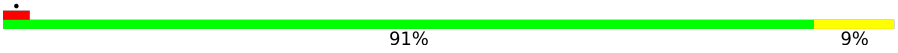
• Molecule 4: 5S rRNA

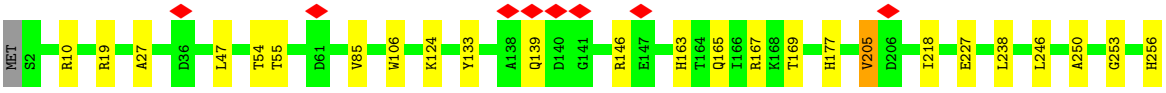
Chain b:

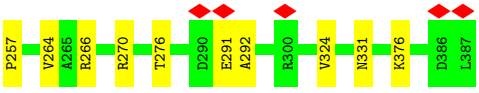


• Molecule 5: 60S ribosomal protein L3

Chain d:

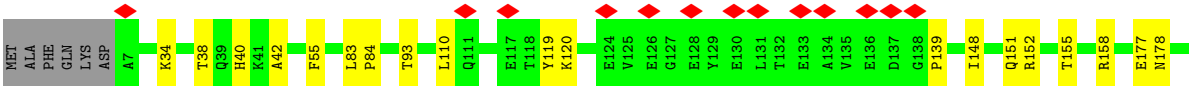


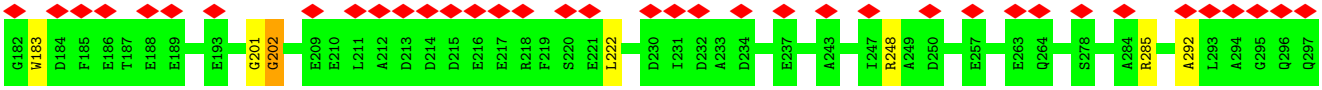




• Molecule 6: 60S ribosomal protein L5

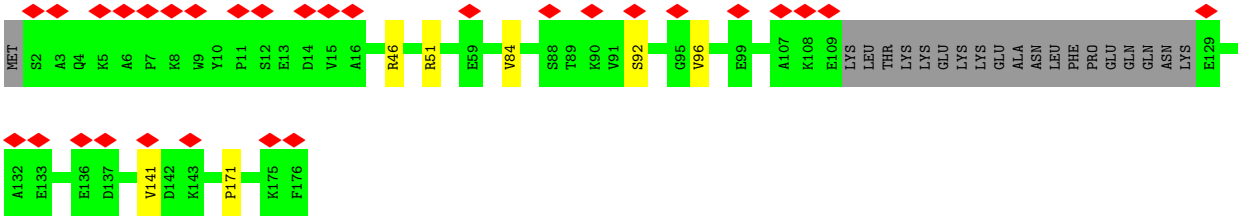
Chain e:



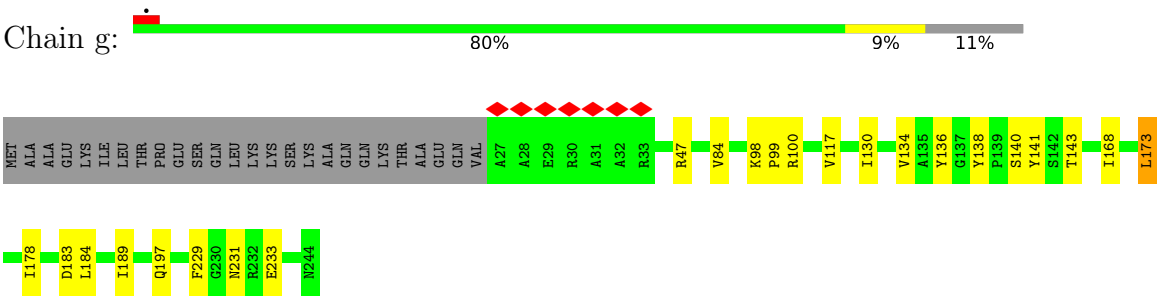


• Molecule 7: 60S ribosomal protein L6-A

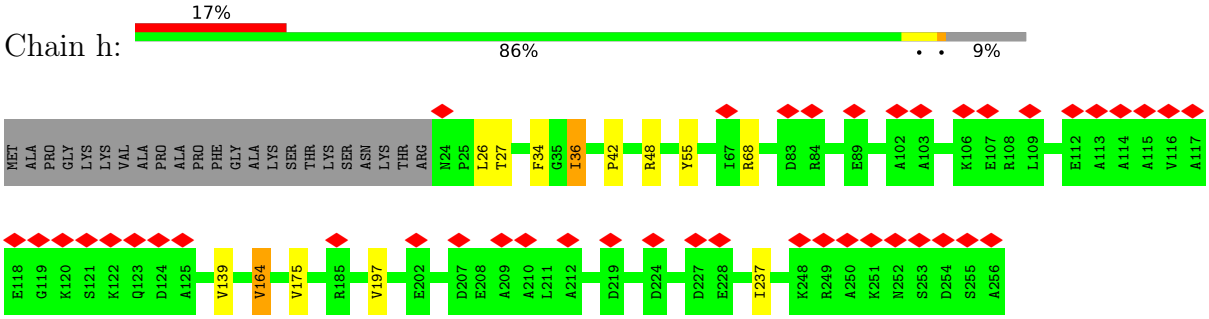
Chain f:



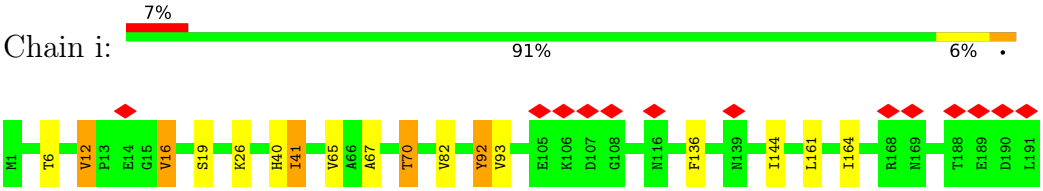
• Molecule 8: 60S ribosomal protein L7-A



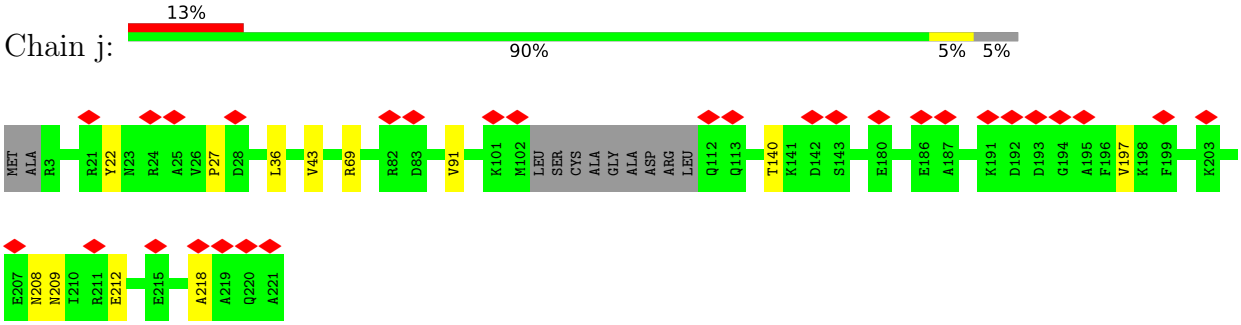
• Molecule 9: 60S ribosomal protein L8-A



• Molecule 10: 60S ribosomal protein L9-A

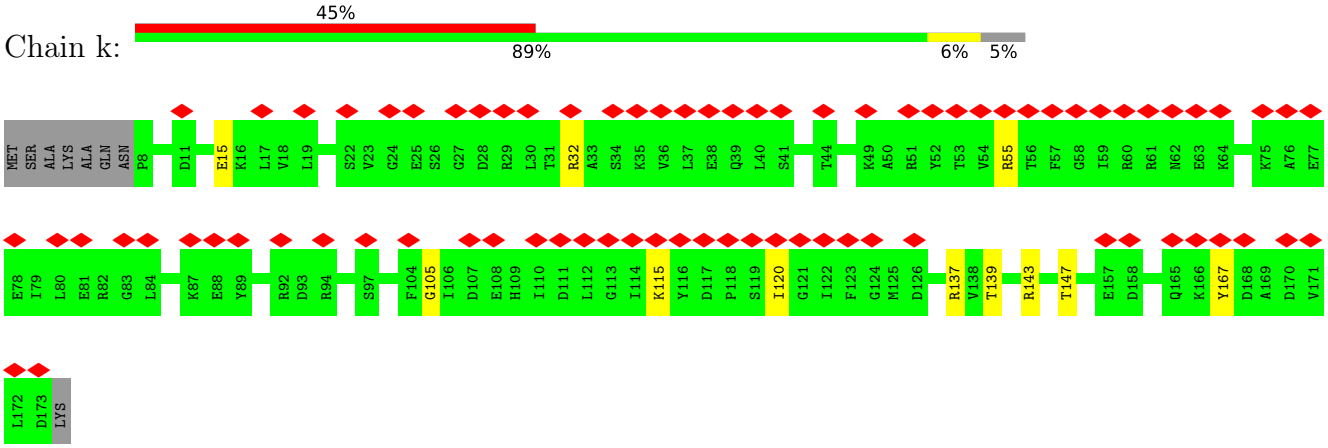


• Molecule 11: 60S ribosomal protein L10



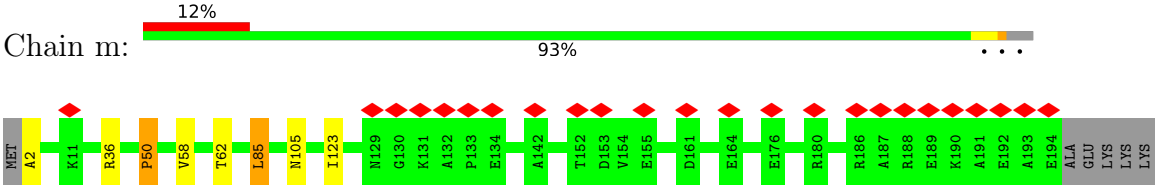
• Molecule 12: 60S ribosomal protein L11-A

Chain k:



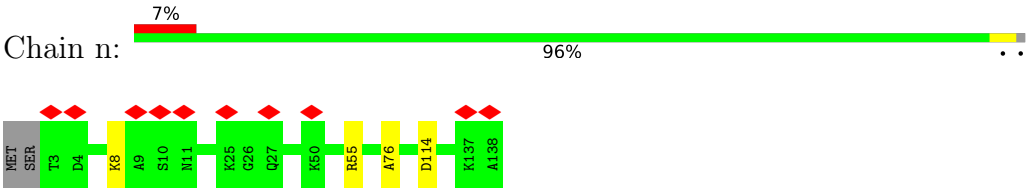
• Molecule 13: 60S ribosomal protein L13-A

Chain m:



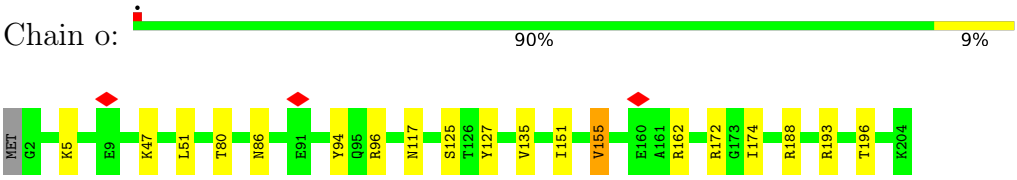
• Molecule 14: 60S ribosomal protein L14-A

Chain n:



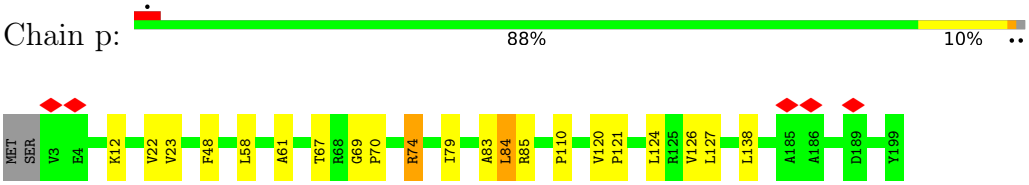
• Molecule 15: 60S ribosomal protein L15-A

Chain o:



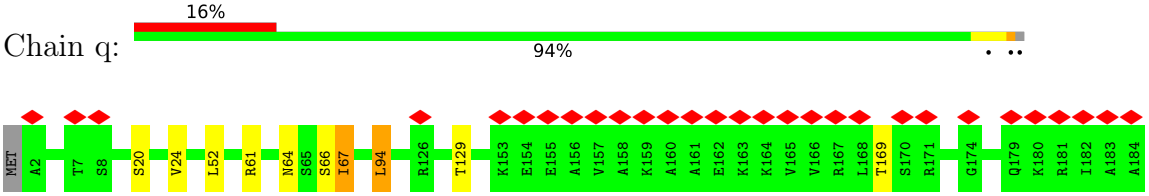
• Molecule 16: 60S ribosomal protein L16-A

Chain p:



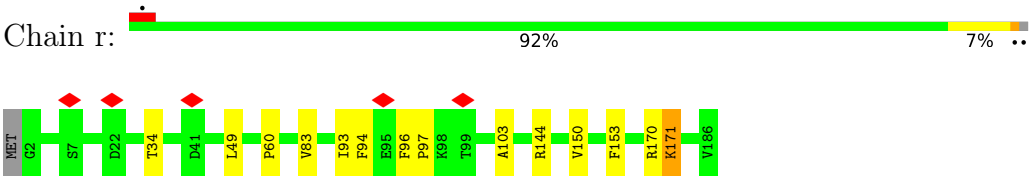
• Molecule 17: 60S ribosomal protein L17-A

Chain q:



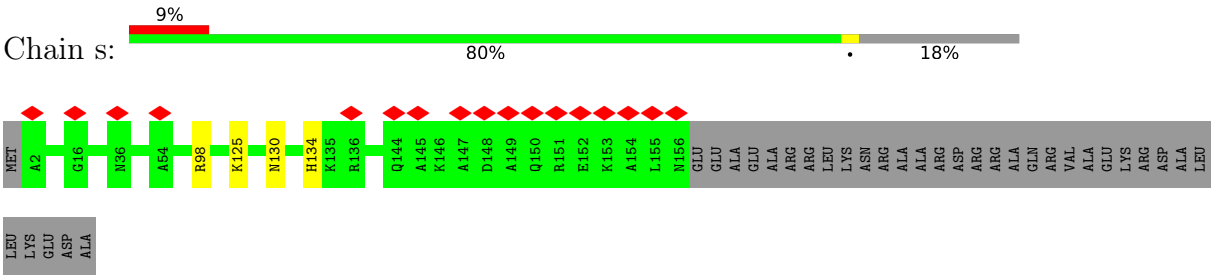
• Molecule 18: 60S ribosomal protein L18-A

Chain r:



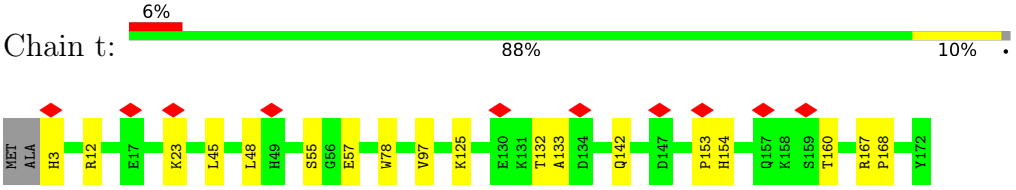
• Molecule 19: 60S ribosomal protein L19-A

Chain s:



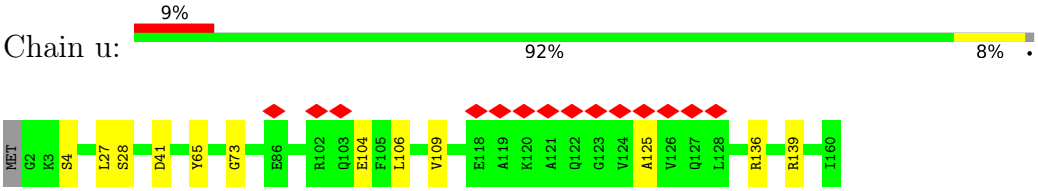
• Molecule 20: 60S ribosomal protein L20-A

Chain t:



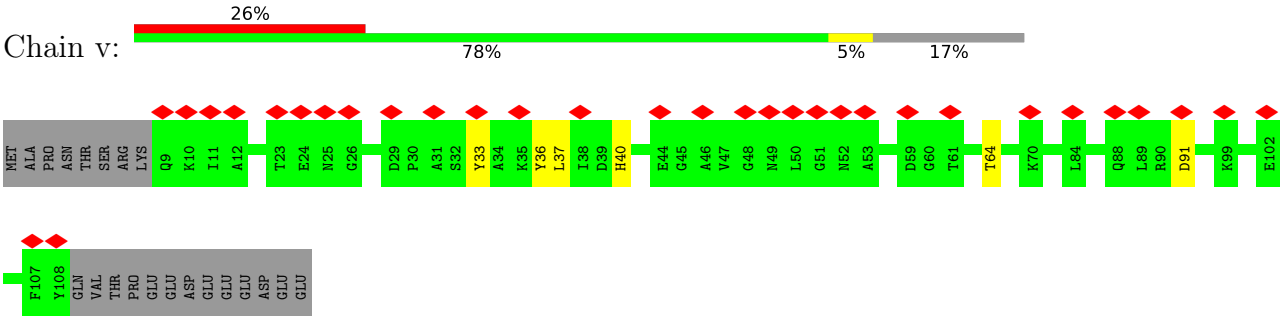
• Molecule 21: 60S ribosomal protein L21-A

Chain u:



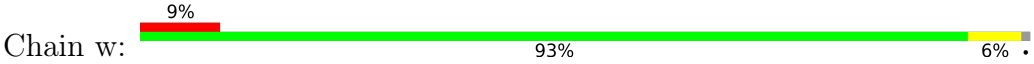
• Molecule 22: 60S ribosomal protein L22-A

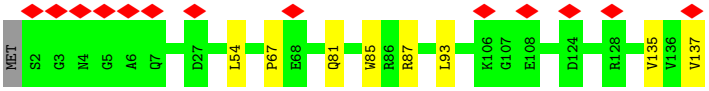
Chain v:



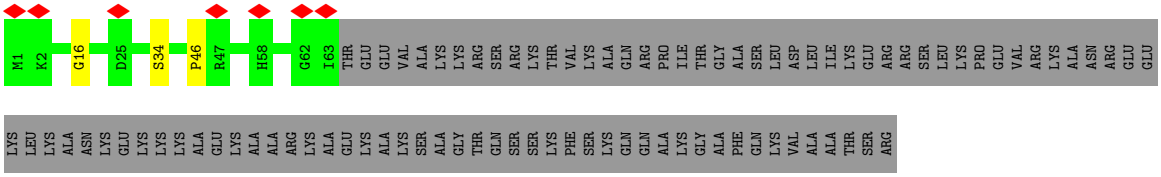
• Molecule 23: 60S ribosomal protein L23-A

Chain w:

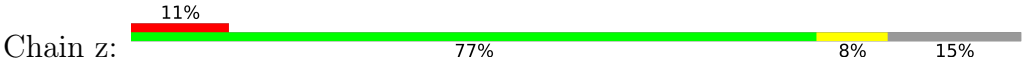


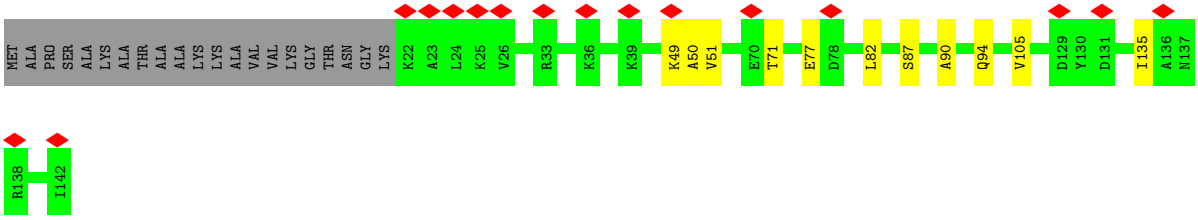


• Molecule 24: 60S ribosomal protein L24-A

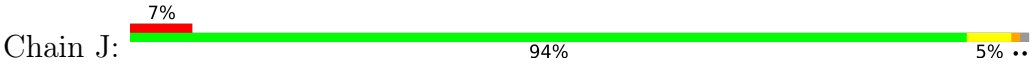


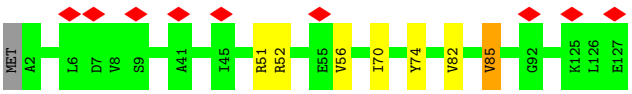
• Molecule 25: 60S ribosomal protein L25



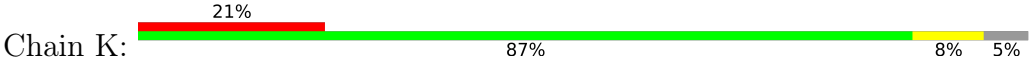


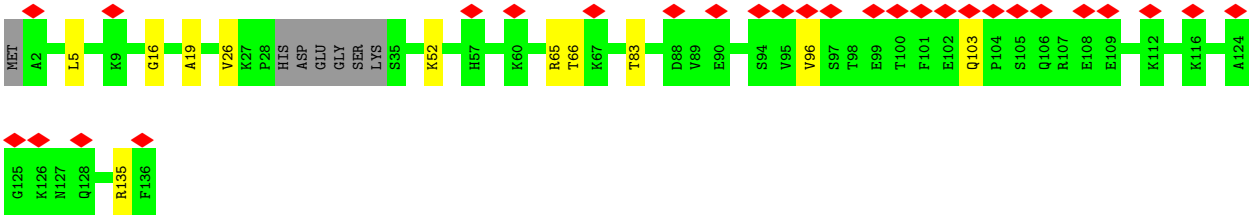
• Molecule 26: 60S ribosomal protein L26-A



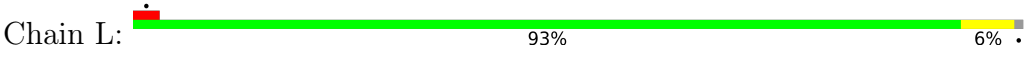


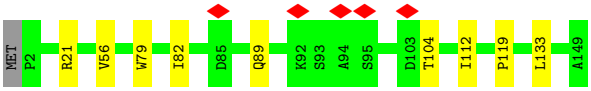
• Molecule 27: 60S ribosomal protein L27-A



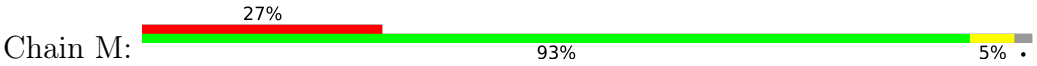


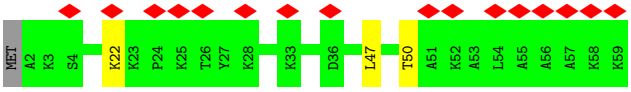
• Molecule 28: 60S ribosomal protein L28



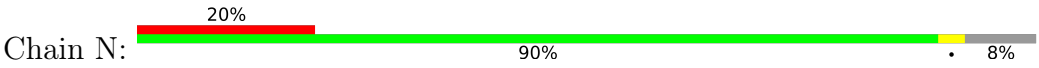


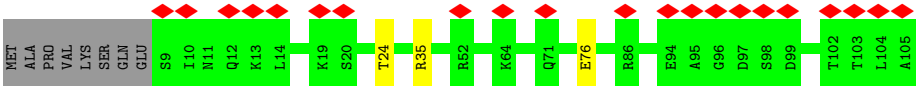
• Molecule 29: 60S ribosomal protein L29



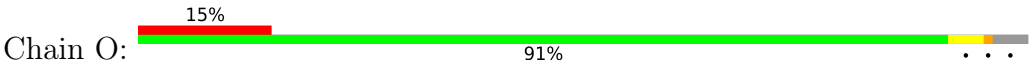


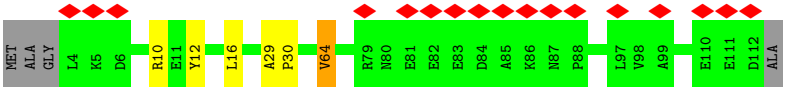
• Molecule 30: 60S ribosomal protein L30



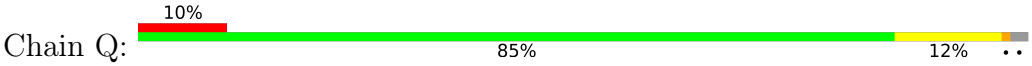


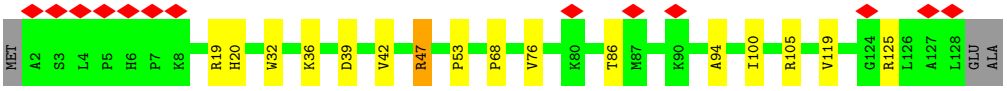
• Molecule 31: 60S ribosomal protein L31-A



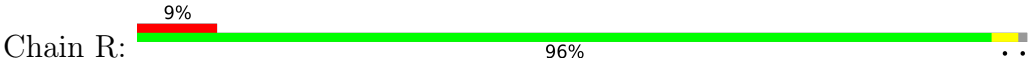


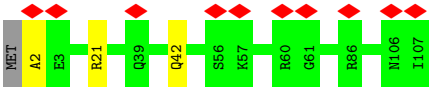
• Molecule 32: 60S ribosomal protein L32



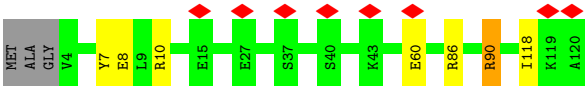


• Molecule 33: 60S ribosomal protein L33-A



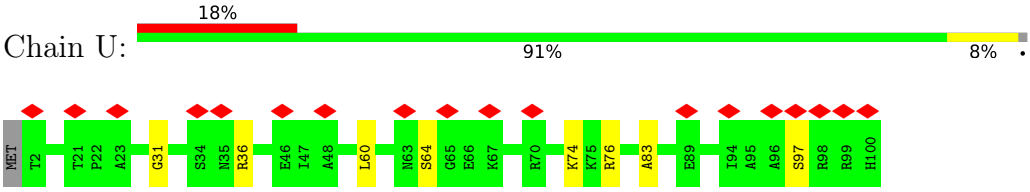


• Molecule 34: 60S ribosomal protein L35-A



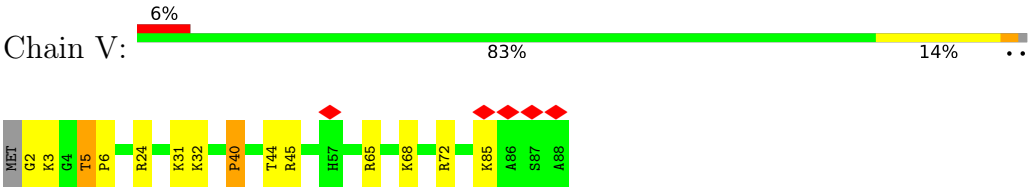
• Molecule 35: 60S ribosomal protein L36-A

Chain U:



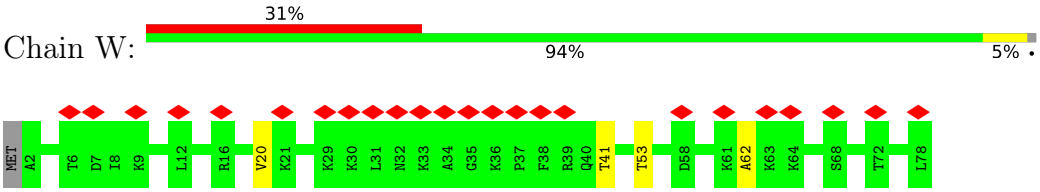
• Molecule 36: 60S ribosomal protein L37-A

Chain V:



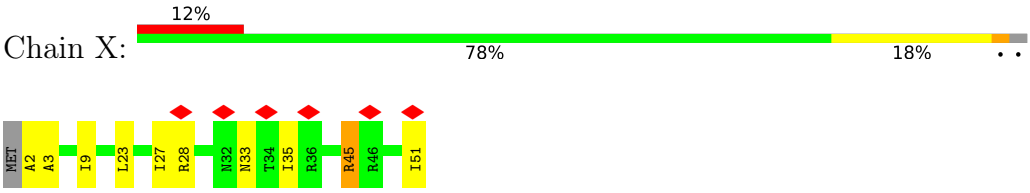
• Molecule 37: 60S ribosomal protein L38

Chain W:



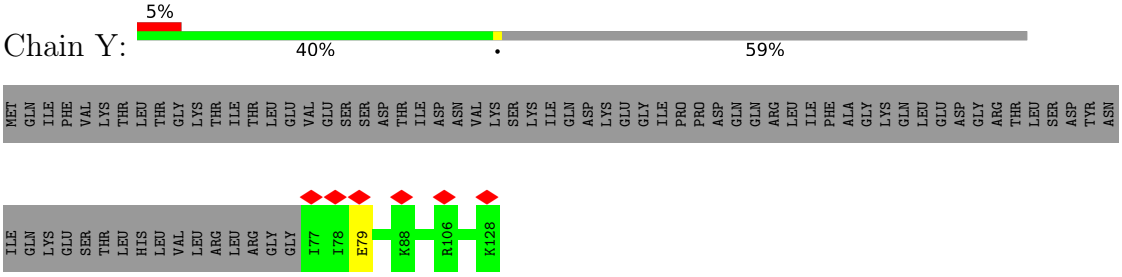
• Molecule 38: 60S ribosomal protein L39

Chain X:



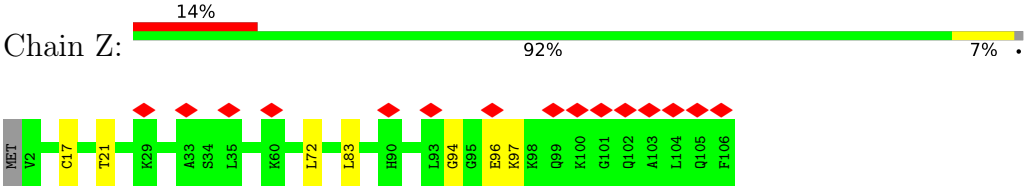
• Molecule 39: Ubiquitin-60S ribosomal protein L40

Chain Y:



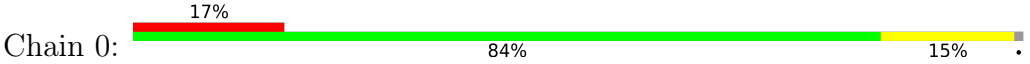
• Molecule 40: 60S ribosomal protein L42-A

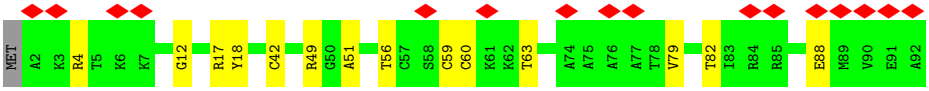
Chain Z:



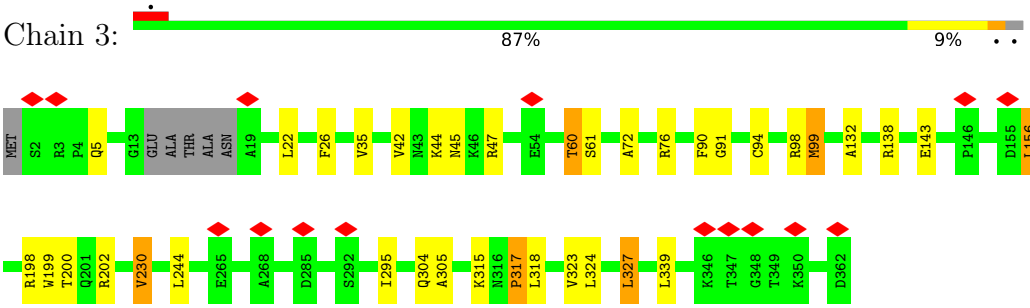
• Molecule 41: 60S ribosomal protein L43-A

Chain 0:

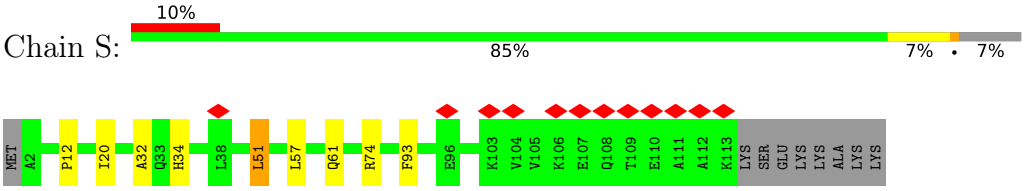




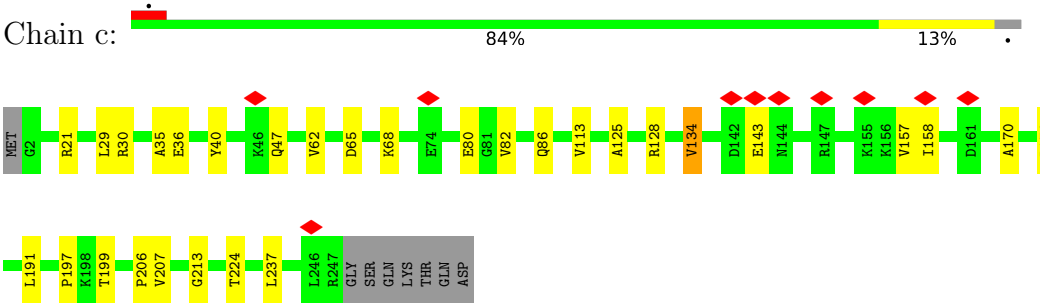
• Molecule 42: 60S ribosomal protein L4-A



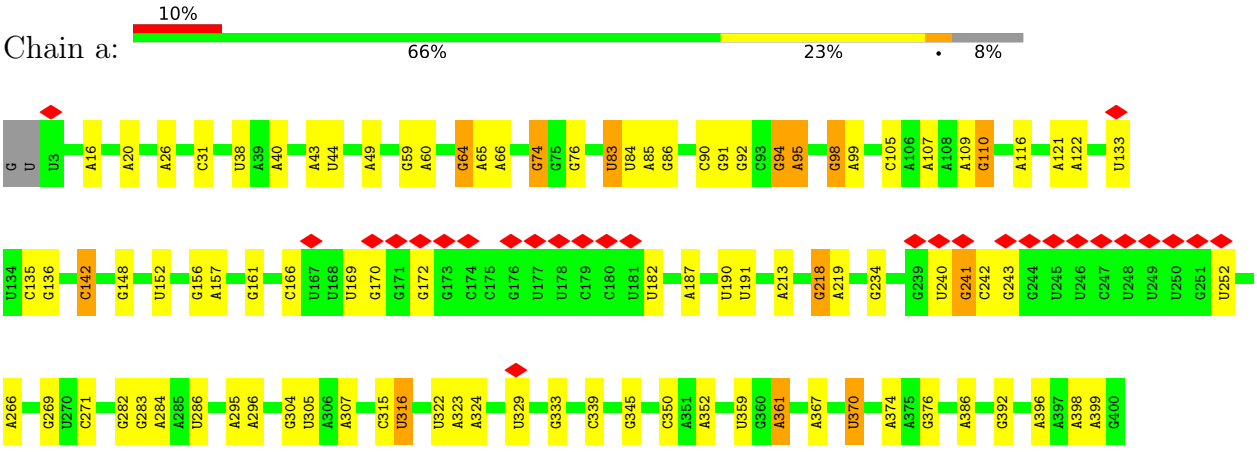
• Molecule 43: 60S ribosomal protein L34-A

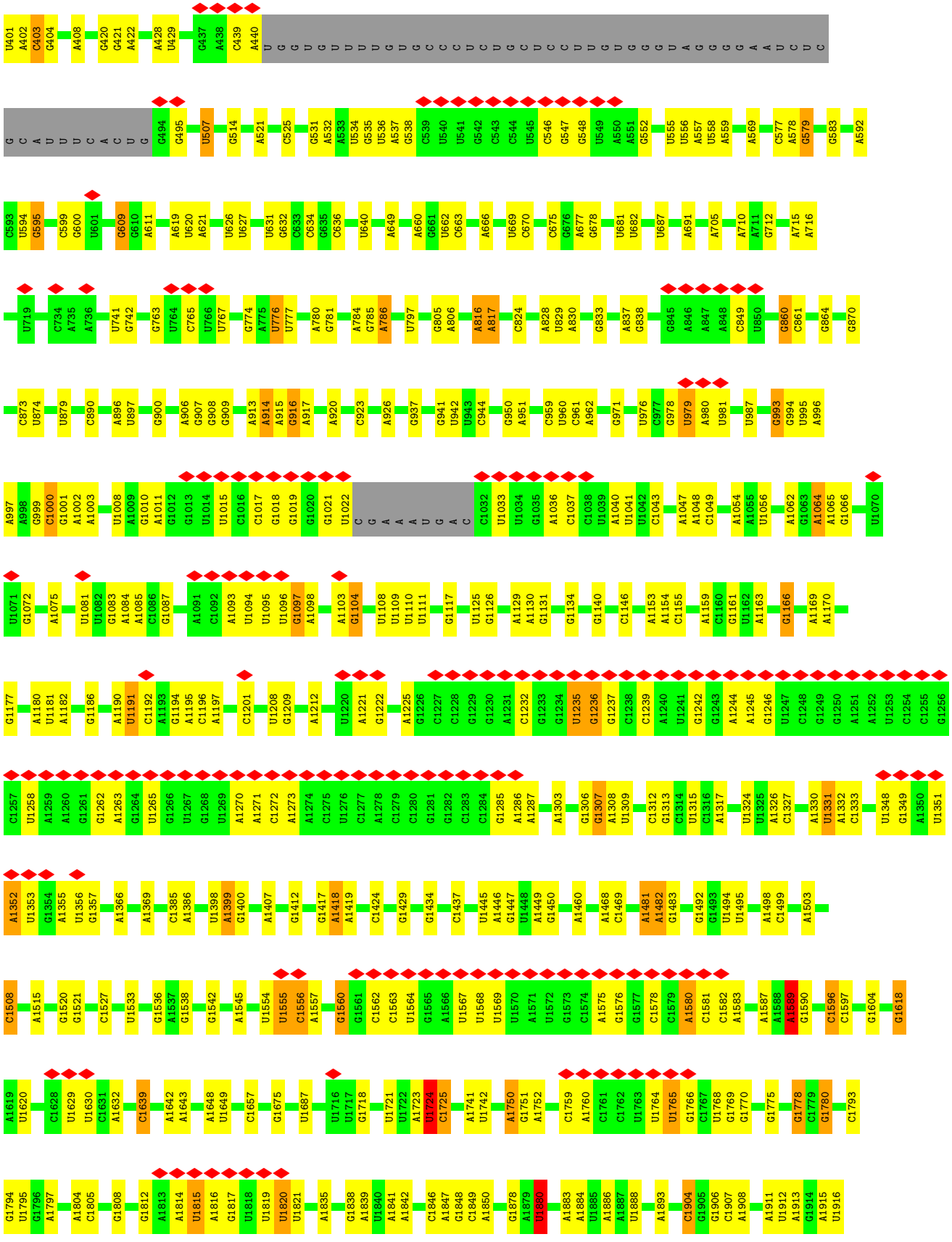


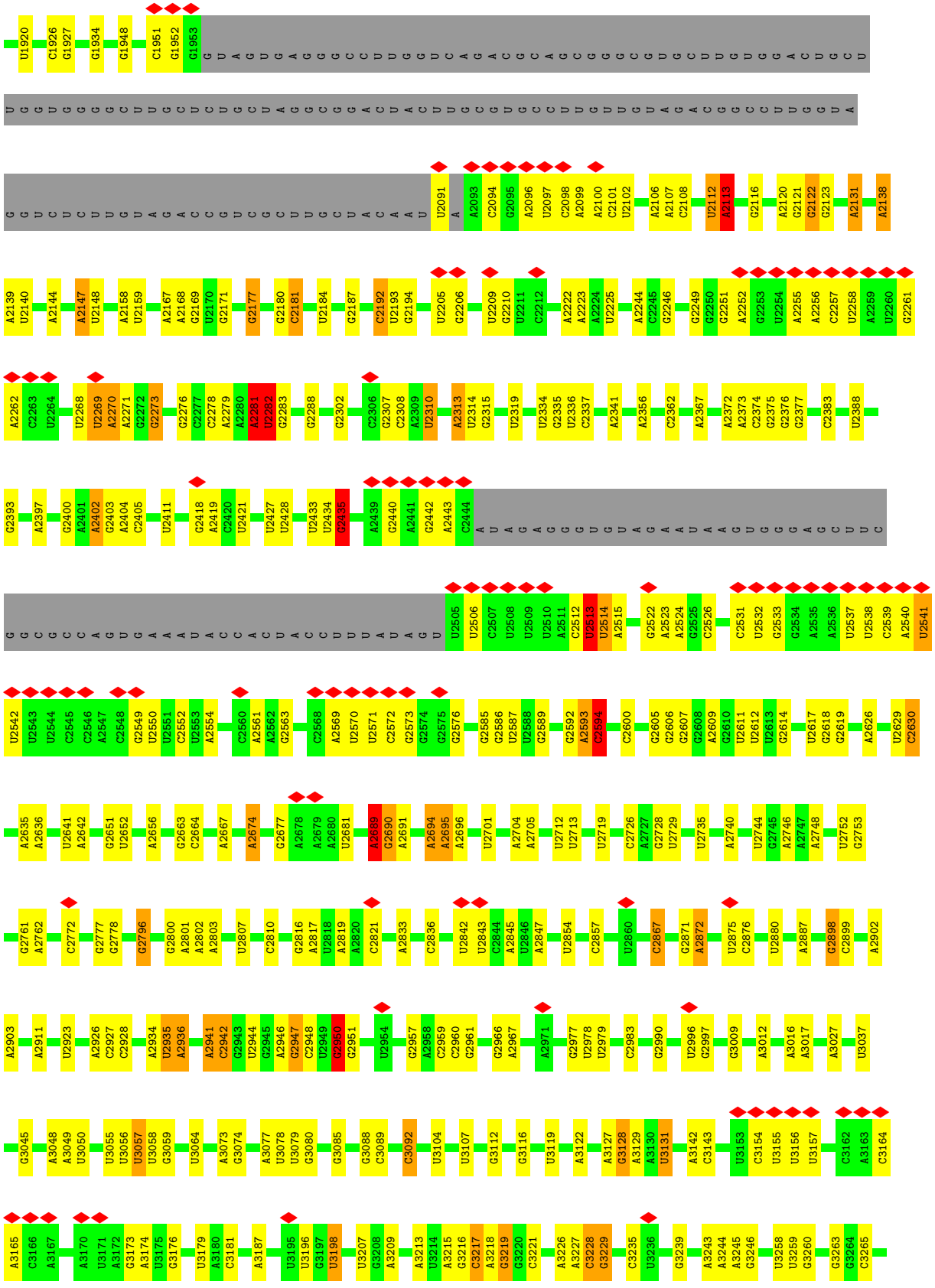
• Molecule 44: 60S ribosomal protein L2-A

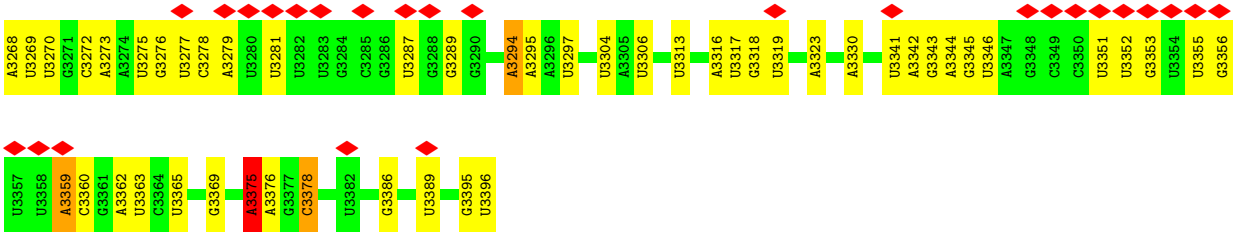


• Molecule 45: 25S rRNA








A3268
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C3272
A3273
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C3278
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U3281
U3282
U3283
G3284
C3285
G3286
U3287
G3288
G3289
G3290
A3294
A3295
A3296
U3297
U3304
A3305
U3306
U3313
A3316
U3317
G3318
U3319
A3323
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A3342
G3343
A3344
G3345
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A3347
G3348
C3349
C3350
U3351
U3352
G3353
U3354
U3355
G3356
U3357
U3358
A3359
C3360
G3361
A3362
U3363
C3364
U3365
G3369
A3375
A3376
G3377
C3378
U3382
G3386
U3389
G3395
U3396

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	14552	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	400	Depositor
Maximum defocus (nm)	900	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.174	Depositor
Minimum map value	-0.101	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.0279	Depositor
Map size (Å)	395.52, 395.52, 395.52	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.03, 1.03, 1.03	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

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

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	0.66	0/2649	0.90	3/3588 (0.1%)
1	C	0.68	0/2165	0.95	2/2916 (0.1%)
1	D	0.63	0/3873	0.97	4/5234 (0.1%)
1	E	0.63	0/3868	0.94	4/5228 (0.1%)
1	H	0.60	0/858	0.97	0/1157
1	I	0.60	0/880	0.97	0/1190
2	P	0.57	0/145	0.98	0/186
3	4	0.55	0/3747	0.97	9/5832 (0.2%)
4	b	0.57	0/2884	0.96	9/4491 (0.2%)
5	d	0.63	0/3146	0.96	2/4228 (0.0%)
6	e	0.56	0/2382	0.98	0/3214
7	f	0.58	0/1260	0.92	0/1694
8	g	0.60	0/1791	0.97	1/2410 (0.0%)
9	h	0.57	0/1836	0.98	1/2481 (0.0%)
10	i	0.58	0/1539	0.93	1/2073 (0.0%)
11	j	0.60	0/1736	0.94	0/2328
12	k	0.56	0/1348	0.98	0/1807
13	m	0.59	0/1568	1.00	1/2106 (0.0%)
14	n	0.57	0/1068	0.98	0/1438
15	o	0.61	0/1757	1.00	1/2354 (0.0%)
16	p	0.64	0/1585	1.02	3/2128 (0.1%)
17	q	0.63	0/1443	0.95	0/1944
18	r	0.62	0/1465	0.98	1/1965 (0.1%)
19	s	0.61	0/1266	1.01	0/1690
20	t	0.61	0/1468	0.98	2/1973 (0.1%)
21	u	0.60	0/1300	0.91	1/1743 (0.1%)
22	v	0.53	0/812	0.94	0/1099
23	w	0.64	0/1018	0.98	0/1369
24	y	0.62	0/533	0.89	0/707
25	z	0.56	0/979	0.97	0/1321
26	J	0.60	0/1004	0.99	0/1341
27	K	0.58	0/1070	0.93	0/1432

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
28	L	0.65	0/1204	0.94	0/1612
29	M	0.66	0/473	0.98	0/629
30	N	0.57	0/751	0.93	0/1008
31	O	0.56	0/890	0.96	1/1196 (0.1%)
32	Q	0.61	0/1041	0.96	1/1394 (0.1%)
33	R	0.61	0/868	0.87	0/1168
34	T	0.58	0/969	1.01	0/1289
35	U	0.61	0/778	0.95	0/1034
36	V	0.68	0/696	1.02	2/923 (0.2%)
37	W	0.59	0/618	0.95	0/826
38	X	0.58	0/443	0.96	0/588
39	Y	0.63	0/423	1.00	0/562
40	Z	0.60	0/860	0.93	0/1136
41	0	0.63	0/701	1.05	0/934
42	3	0.62	0/2765	1.02	4/3740 (0.1%)
43	S	0.63	0/890	0.99	1/1189 (0.1%)
44	c	0.66	0/1908	0.96	0/2564
45	a	0.57	0/75028	0.99	211/116969 (0.2%)
All	All	0.59	0/145749	0.98	265/213428 (0.1%)

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
5	d	0	1
14	n	0	1
15	o	0	1
16	p	0	1
20	t	0	1
35	U	0	1
45	a	0	2
All	All	0	8

There are no bond length outliers.

All (265) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	a	420	G	O3'-P-O5'	-10.02	88.97	104.00
42	3	317	PRO	N-CA-C	-9.12	97.73	111.41
45	a	873	C	C2'-C3'-O3'	-9.10	100.05	113.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	a	2313	A	O3'-P-O5'	-8.73	90.91	104.00
45	a	1417	G	O3'-P-O5'	-8.71	90.94	104.00
45	a	361	A	O3'-P-O5'	-8.64	91.04	104.00
3	4	110	C	O3'-P-O5'	-8.57	91.14	104.00
45	a	1398	U	O3'-P-O5'	-8.35	91.48	104.00
45	a	1324	U	O3'-P-O5'	-8.32	91.52	104.00
45	a	110	G	O3'-P-O5'	-8.30	91.55	104.00
45	a	2514	U	C4'-C3'-O3'	8.15	121.63	109.40
45	a	817	A	O3'-P-O5'	-7.90	92.15	104.00
45	a	2100	A	O3'-P-O5'	-7.77	92.34	104.00
45	a	2513	U	C3'-C2'-C1'	-7.75	93.75	101.50
18	r	60	PRO	N-CA-CB	7.62	107.46	103.19
45	a	3107	U	O3'-P-O5'	-7.48	92.78	104.00
31	O	64	VAL	N-CA-CB	7.41	120.05	110.57
20	t	97	VAL	N-CA-CB	-7.34	104.14	112.21
45	a	169	U	C2'-C3'-O3'	7.24	120.36	109.50
4	b	76	A	O3'-P-O5'	-7.23	93.15	104.00
45	a	3228	C	C2'-C3'-O3'	7.23	120.35	109.50
45	a	2147	A	O3'-P-O5'	-7.22	93.17	104.00
45	a	2867	C	O3'-P-O5'	-7.17	93.24	104.00
45	a	1838	G	O3'-P-O5'	-7.16	93.26	104.00
45	a	1554	U	C4'-C3'-O3'	7.12	120.09	109.40
45	a	74	G	O3'-P-O5'	-7.12	93.32	104.00
45	a	599	C	O3'-P-O5'	-7.09	93.36	104.00
45	a	666	A	O3'-P-O5'	-7.07	93.40	104.00
45	a	2748	A	O3'-P-O5'	-6.99	93.51	104.00
45	a	3375	A	O3'-P-O5'	-6.96	93.56	104.00
45	a	2761	G	O3'-P-O5'	-6.95	93.58	104.00
45	a	3359	A	O3'-P-O5'	-6.93	93.61	104.00
45	a	1418	A	O3'-P-O5'	-6.90	93.64	104.00
45	a	403	C	C2'-C3'-O3'	-6.88	103.38	113.70
45	a	1880	U	O3'-P-O5'	-6.85	93.73	104.00
45	a	2944	U	C2'-C3'-O3'	-6.84	103.44	113.70
45	a	1618	G	O3'-P-O5'	-6.80	93.80	104.00
45	a	913	A	O3'-P-O5'	-6.79	93.81	104.00
45	a	1907	C	O3'-P-O5'	-6.79	93.82	104.00
3	4	89	A	O3'-P-O5'	-6.76	93.86	104.00
45	a	1604	G	O3'-P-O5'	-6.76	93.86	104.00
45	a	2593	A	O3'-P-O5'	-6.76	93.87	104.00
5	d	205	VAL	N-CA-CB	6.74	118.44	110.55
45	a	1445	U	C4'-C3'-O3'	-6.74	102.89	113.00
45	a	1481	A	O3'-P-O5'	-6.70	93.96	104.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	a	374	A	O3'-P-O5'	-6.67	94.00	104.00
45	a	2898	G	O3'-P-O5'	-6.67	94.00	104.00
36	V	40	PRO	N-CA-CB	-6.65	95.29	102.60
45	a	2192	C	O3'-P-O5'	-6.64	94.03	104.00
45	a	1303	A	O3'-P-O5'	-6.59	94.11	104.00
45	a	979	U	C4'-C3'-O3'	6.58	119.27	109.40
45	a	2434	U	C4'-C3'-O3'	6.55	119.22	109.40
45	a	352	A	O3'-P-O5'	-6.53	94.20	104.00
45	a	1097	G	C2'-C3'-O3'	6.52	119.29	109.50
45	a	2541	U	C2'-C3'-O3'	6.49	119.24	109.50
45	a	1888	U	O3'-P-O5'	-6.46	94.30	104.00
45	a	2222	A	O3'-P-O5'	-6.46	94.31	104.00
45	a	1446	A	O3'-P-O5'	-6.44	94.33	104.00
45	a	91	G	O3'-P-O5'	-6.44	94.34	104.00
45	a	386	A	O3'-P-O5'	-6.43	94.35	104.00
4	b	120	C	O3'-P-O5'	-6.43	94.36	104.00
45	a	860	G	O3'-P-O5'	-6.41	94.38	104.00
45	a	2735	U	O3'-P-O5'	-6.40	94.40	104.00
45	a	870	G	O3'-P-O5'	-6.37	94.44	104.00
45	a	1385	C	C4'-C3'-O3'	-6.36	103.45	113.00
45	a	3119	U	O3'-P-O5'	-6.33	94.50	104.00
3	4	150	G	O3'-P-O5'	-6.30	94.54	104.00
45	a	1883	A	O3'-P-O5'	-6.30	94.55	104.00
15	o	155	VAL	N-CA-CB	6.30	119.11	110.54
16	p	110	PRO	N-CA-CB	6.29	106.49	103.22
45	a	396	A	O3'-P-O5'	-6.26	94.61	104.00
45	a	2131	A	O3'-P-O5'	-6.23	94.65	104.00
45	a	1000	C	O3'-P-O5'	-6.21	94.68	104.00
42	3	98	ARG	CG-CD-NE	-6.19	98.39	112.00
45	a	3077	A	C4'-C3'-O3'	-6.19	103.72	113.00
32	Q	39	ASP	CA-CB-CG	6.16	118.76	112.60
45	a	3317	U	C2'-C3'-O3'	6.15	118.72	109.50
45	a	1848	G	O3'-P-O5'	-6.14	94.78	104.00
45	a	324	A	O3'-P-O5'	-6.14	94.80	104.00
45	a	1724	U	O3'-P-O5'	-6.13	94.80	104.00
45	a	1589	A	O3'-P-O5'	-6.05	94.93	104.00
45	a	1352	A	C4'-C3'-O3'	6.05	118.47	109.40
1	C	844	ASP	CA-CB-CG	6.02	118.62	112.60
45	a	1545	A	O3'-P-O5'	-6.02	94.97	104.00
1	E	1138	ASP	CA-CB-CG	6.01	118.61	112.60
45	a	2402	A	C2'-C3'-O3'	6.01	118.51	109.50
4	b	96	U	O3'-P-O5'	-6.00	95.00	104.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	b	92	A	O3'-P-O5'	-5.98	95.03	104.00
1	D	1138	ASP	CA-CB-CG	5.98	118.58	112.60
45	a	1934	G	O3'-P-O5'	-5.98	95.03	104.00
45	a	1315	U	O3'-P-O5'	-5.97	95.05	104.00
45	a	1538	G	O3'-P-O5'	-5.96	95.06	104.00
45	a	218	G	O3'-P-O5'	-5.95	95.08	104.00
45	a	1494	U	O3'-P-O5'	-5.95	95.08	104.00
45	a	1721	U	O3'-P-O5'	-5.94	95.08	104.00
45	a	2927	C	O3'-P-O5'	-5.93	95.11	104.00
45	a	2302	G	O3'-P-O5'	-5.90	95.16	104.00
45	a	1317	A	O3'-P-O5'	-5.90	95.16	104.00
45	a	3351	U	C4'-C3'-O3'	5.88	118.22	109.40
45	a	2594	C	O3'-P-O5'	-5.87	95.19	104.00
45	a	1515	A	C4'-C3'-O3'	-5.87	104.19	113.00
45	a	2948	C	C3'-C2'-O2'	5.86	119.49	110.70
45	a	1424	C	O3'-P-O5'	-5.86	95.22	104.00
1	D	1082	ASP	CA-CB-CG	5.84	118.44	112.60
45	a	152	U	O3'-P-O5'	-5.84	95.24	104.00
13	m	50	PRO	N-CA-CB	-5.83	97.12	103.25
45	a	816	A	C2'-C3'-O3'	5.82	118.23	109.50
16	p	67	THR	CA-CB-OG1	-5.81	100.89	109.60
45	a	367	A	O3'-P-O5'	-5.80	95.31	104.00
45	a	2524	A	O3'-P-O5'	-5.79	95.31	104.00
45	a	3258	U	O3'-P-O5'	-5.78	95.33	104.00
45	a	94	G	C4'-C3'-O3'	-5.78	104.34	113.00
45	a	1911	A	O3'-P-O5'	-5.77	95.34	104.00
1	D	1476	ASP	CA-CB-CG	5.77	118.37	112.60
45	a	2950	G	O3'-P-O5'	-5.77	95.35	104.00
45	a	2269	U	O3'-P-O5'	-5.75	95.37	104.00
45	a	2400	G	C2'-C3'-O3'	-5.75	105.08	113.70
4	b	111	U	O3'-P-O5'	-5.74	95.39	104.00
45	a	1542	G	O3'-P-O5'	-5.74	95.39	104.00
45	a	3112	G	O3'-P-O5'	-5.73	95.40	104.00
45	a	2605	G	O3'-P-O5'	-5.73	95.41	104.00
45	a	2630	C	O3'-P-O5'	-5.72	95.41	104.00
45	a	993	G	O3'-P-O5'	-5.71	95.43	104.00
45	a	2177	G	O3'-P-O5'	-5.70	95.45	104.00
45	a	1815	U	C2'-C3'-O3'	5.69	118.04	109.50
45	a	148	G	O3'-P-O5'	-5.69	95.47	104.00
45	a	2641	U	O3'-P-O5'	-5.68	95.48	104.00
45	a	786	A	O3'-P-O5'	-5.67	95.50	104.00
45	a	2941	A	O3'-P-O5'	-5.65	95.52	104.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	a	941	G	O3'-P-O5'	-5.65	95.53	104.00
45	a	763	G	O3'-P-O5'	-5.65	95.53	104.00
45	a	2833	A	O3'-P-O5'	-5.64	95.54	104.00
8	g	229	PHE	CA-CB-CG	5.62	119.42	113.80
45	a	2421	U	O3'-P-O5'	-5.62	95.57	104.00
45	a	282	G	C2'-C3'-O3'	-5.62	105.28	113.70
45	a	915	A	O3'-P-O5'	-5.60	95.60	104.00
45	a	2113	A	O3'-P-O5'	-5.60	95.60	104.00
45	a	1904	C	C2'-C3'-O3'	-5.60	105.30	113.70
45	a	2282	U	O3'-P-O5'	-5.59	95.61	104.00
1	E	1082	ASP	CA-CB-CG	5.58	118.18	112.60
1	C	621	ASP	CA-CB-CG	5.58	118.18	112.60
45	a	2362	C	O3'-P-O5'	-5.58	95.63	104.00
45	a	408	A	O3'-P-O5'	-5.56	95.66	104.00
45	a	1632	A	O3'-P-O5'	-5.55	95.68	104.00
45	a	2187	G	O3'-P-O5'	-5.55	95.68	104.00
3	4	101	U	O3'-P-O5'	-5.55	95.68	104.00
45	a	3216	G	O3'-P-O5'	-5.50	95.75	104.00
3	4	112	U	O3'-P-O5'	-5.50	95.75	104.00
45	a	3092	C	O3'-P-O5'	-5.50	95.76	104.00
45	a	1582	C	O3'-P-O5'	-5.49	95.76	104.00
45	a	85	A	O3'-P-O5'	-5.49	95.77	104.00
4	b	34	C	O3'-P-O5'	-5.49	95.77	104.00
45	a	1407	A	C2'-C3'-O3'	-5.49	105.47	113.70
1	D	1431	VAL	N-CA-CB	5.49	116.97	110.55
45	a	2367	A	O3'-P-O5'	-5.48	95.77	104.00
45	a	626	U	O3'-P-O5'	-5.48	95.78	104.00
45	a	2192	C	C4'-C3'-O3'	-5.48	104.78	113.00
45	a	1104	G	O3'-P-O5'	-5.48	95.78	104.00
45	a	514	G	O3'-P-O5'	-5.47	95.79	104.00
45	a	1169	A	O3'-P-O5'	-5.47	95.80	104.00
45	a	316	U	O3'-P-O5'	-5.47	95.80	104.00
45	a	2957	G	O3'-P-O5'	-5.47	95.80	104.00
45	a	2934	A	C2'-C3'-O3'	-5.46	105.50	113.70
45	a	916	G	C2'-C3'-O3'	-5.46	105.51	113.70
10	i	92	TYR	N-CA-CB	5.45	117.98	109.97
42	3	98	ARG	N-CA-CB	5.45	118.57	110.29
45	a	2926	A	O3'-P-O5'	-5.45	95.83	104.00
45	a	1306	G	O3'-P-O5'	-5.44	95.84	104.00
16	p	84	LEU	N-CA-CB	-5.44	102.08	110.13
42	3	230	VAL	N-CA-CB	5.44	117.27	110.47
45	a	2609	A	C4'-C3'-O3'	-5.44	104.84	113.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	a	2701	U	C4'-C3'-O3'	-5.42	104.88	113.00
45	a	1632	A	C4'-C3'-O3'	-5.40	104.89	113.00
45	a	816	A	C4'-C3'-O3'	-5.40	101.30	109.40
45	a	2689	A	O3'-P-O5'	-5.39	95.92	104.00
45	a	2107	A	O3'-P-O5'	-5.39	95.92	104.00
1	A	463	ASP	CA-CB-CG	5.38	117.97	112.60
45	a	2978	U	O3'-P-O5'	-5.36	95.95	104.00
45	a	942	U	O3'-P-O5'	-5.36	95.96	104.00
45	a	2273	G	C3'-C2'-C1'	-5.34	96.16	101.50
45	a	3009	G	O3'-P-O5'	-5.34	96.00	104.00
45	a	2434	U	C2'-C3'-O3'	-5.33	101.50	109.50
45	a	2587	U	O3'-P-O5'	-5.33	96.01	104.00
3	4	61	A	O3'-P-O5'	-5.32	96.02	104.00
45	a	578	A	O3'-P-O5'	-5.32	96.02	104.00
45	a	94	G	C2'-C3'-O3'	5.32	121.68	113.70
45	a	3037	U	O3'-P-O5'	-5.31	96.03	104.00
45	a	1056	U	O3'-P-O5'	-5.31	96.04	104.00
1	A	523	PRO	N-CA-C	5.30	123.40	112.47
45	a	1140	G	O3'-P-O5'	-5.30	96.05	104.00
45	a	3221	C	O3'-P-O5'	-5.30	96.05	104.00
45	a	2148	U	O3'-P-O5'	-5.28	96.07	104.00
4	b	54	U	O3'-P-O5'	-5.28	96.09	104.00
45	a	1177	G	O3'-P-O5'	-5.27	96.09	104.00
45	a	2854	U	O3'-P-O5'	-5.27	96.10	104.00
4	b	43	U	O3'-P-O5'	-5.27	96.10	104.00
45	a	1812	G	O3'-P-O5'	-5.27	96.10	104.00
45	a	864	G	C1'-C2'-O2'	5.27	116.30	108.40
45	a	1333	C	O3'-P-O5'	-5.27	96.10	104.00
43	S	51	LEU	N-CA-CB	5.26	118.28	110.29
45	a	3226	A	O3'-P-O5'	-5.25	96.12	104.00
45	a	3346	U	O3'-P-O5'	-5.25	96.12	104.00
45	a	3365	U	O3'-P-O5'	-5.25	96.13	104.00
45	a	2959	C	O3'-P-O5'	-5.24	96.14	104.00
45	a	682	U	O3'-P-O5'	-5.24	96.15	104.00
45	a	1769	G	O3'-P-O5'	-5.23	96.16	104.00
45	a	1125	U	O3'-P-O5'	-5.23	96.16	104.00
45	a	2106	A	O3'-P-O5'	-5.23	96.16	104.00
45	a	1366	A	O3'-P-O5'	-5.22	96.17	104.00
45	a	1820	U	O3'-P-O5'	-5.22	96.17	104.00
45	a	2278	C	O3'-P-O5'	-5.22	96.17	104.00
45	a	678	G	O3'-P-O5'	-5.22	96.17	104.00
1	E	1480	ASP	CA-CB-CG	5.21	117.81	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	a	2746	A	O3'-P-O5'	-5.21	96.19	104.00
5	d	10	ARG	CG-CD-NE	-5.21	100.55	112.00
45	a	926	A	O3'-P-O5'	-5.20	96.20	104.00
45	a	2936	A	O3'-P-O5'	-5.20	96.20	104.00
3	4	142	C	O3'-P-O5'	-5.19	96.22	104.00
45	a	1062	A	O3'-P-O5'	-5.18	96.24	104.00
45	a	2935	U	C1'-C2'-O2'	-5.18	104.04	111.80
3	4	110	C	C4'-C3'-O3'	-5.17	105.24	113.00
45	a	2807	U	C4'-C3'-O3'	-5.17	105.25	113.00
45	a	2123	G	O3'-P-O5'	-5.16	96.26	104.00
45	a	1723	A	O3'-P-O5'	-5.16	96.26	104.00
45	a	107	A	O3'-P-O5'	-5.16	96.27	104.00
45	a	3395	G	O3'-P-O5'	-5.14	96.29	104.00
45	a	2979	U	O3'-P-O5'	-5.13	96.30	104.00
45	a	2857	C	C4'-C3'-O3'	-5.12	105.33	113.00
45	a	2273	G	O3'-P-O5'	-5.11	96.33	104.00
45	a	38	U	C1'-C2'-O2'	5.11	116.06	108.40
45	a	2744	U	O3'-P-O5'	-5.11	96.34	104.00
20	t	142	GLN	CB-CA-C	-5.10	102.27	110.74
45	a	1778	G	C2'-C3'-O3'	5.10	117.16	109.50
45	a	1166	G	O3'-P-O5'	-5.10	96.35	104.00
45	a	2872	A	O3'-P-O5'	-5.10	96.35	104.00
45	a	333	G	O3'-P-O5'	-5.09	96.36	104.00
45	a	3323	A	O3'-P-O5'	-5.09	96.37	104.00
45	a	64	G	O3'-P-O5'	-5.09	96.37	104.00
45	a	374	A	C4'-C3'-O3'	5.09	117.03	109.40
45	a	534	U	O3'-P-O5'	-5.08	96.38	104.00
45	a	600	G	O3'-P-O5'	-5.08	96.39	104.00
45	a	987	U	O3'-P-O5'	-5.08	96.39	104.00
3	4	95	G	O3'-P-O5'	-5.07	96.40	104.00
4	b	94	C	O3'-P-O5'	-5.07	96.40	104.00
36	V	44	THR	CA-CB-OG1	-5.07	102.00	109.60
45	a	296	A	C4'-C3'-O3'	-5.07	105.40	113.00
45	a	1161	G	O3'-P-O5'	-5.07	96.40	104.00
45	a	2537	U	C2'-C3'-O3'	5.07	117.10	109.50
45	a	234	G	O3'-P-O5'	-5.06	96.40	104.00
1	E	1312	ASP	CA-CB-CG	5.05	117.65	112.60
45	a	1482	A	C4'-C3'-O3'	5.05	116.98	109.40
21	u	41	ASP	CA-CB-CG	5.05	117.65	112.60
45	a	2341	A	O3'-P-O5'	-5.05	96.43	104.00
1	A	290	ASP	CA-CB-CG	5.05	117.65	112.60
45	a	1075	A	O3'-P-O5'	-5.04	96.43	104.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	a	98	G	O3'-P-O5'	-5.04	96.44	104.00
45	a	3215	A	O3'-P-O5'	-5.04	96.44	104.00
9	h	164	VAL	N-CA-CB	5.03	116.76	110.47
45	a	2283	G	O3'-P-O5'	-5.03	96.45	104.00
45	a	2942	C	O3'-P-O5'	-5.03	96.46	104.00
45	a	142	C	O3'-P-O5'	-5.03	96.46	104.00
45	a	90	C	O3'-P-O5'	-5.02	96.47	104.00
45	a	2435	G	O3'-P-O5'	-5.02	96.47	104.00
45	a	1768	U	O3'-P-O5'	-5.01	96.48	104.00
45	a	2184	U	O3'-P-O5'	-5.01	96.49	104.00

There are no chirality outliers.

All (8) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
35	U	31	GLY	Peptide
45	a	2281	A	Sidechain
45	a	2950	G	Sidechain
5	d	253	GLY	Peptide
14	n	8	LYS	Peptide
15	o	127	TYR	Peptide
16	p	74	ARG	Sidechain
20	t	153	PRO	Peptide

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	2590	0	2636	1	0
1	C	2125	0	2127	21	0
1	D	3796	0	3812	66	0
1	E	3790	0	3805	56	0
1	H	845	0	844	6	0
1	I	864	0	860	3	0
2	P	144	0	174	0	0
3	4	3354	0	1695	14	0
4	b	2580	0	1304	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	d	3075	0	3142	17	0
6	e	2333	0	2286	11	0
7	f	1239	0	1326	3	0
8	g	1754	0	1834	10	0
9	h	1804	0	1877	10	0
10	i	1518	0	1587	7	0
11	j	1700	0	1731	5	0
12	k	1327	0	1357	3	0
13	m	1543	0	1608	5	0
14	n	1053	0	1149	2	0
15	o	1720	0	1779	10	0
16	p	1555	0	1659	12	0
17	q	1420	0	1437	3	0
18	r	1441	0	1543	9	0
19	s	1249	0	1336	2	0
20	t	1432	0	1470	6	0
21	u	1276	0	1323	5	0
22	v	796	0	812	2	0
23	w	1003	0	1048	3	0
24	y	521	0	551	2	0
25	z	964	0	1025	4	0
26	J	993	0	1081	5	0
27	K	1046	0	1116	7	0
28	L	1173	0	1215	5	0
29	M	462	0	491	1	0
30	N	743	0	797	2	0
31	O	876	0	912	2	0
32	Q	1020	0	1090	7	0
33	R	850	0	880	3	0
34	T	960	0	1070	5	0
35	U	771	0	849	3	0
36	V	681	0	683	8	0
37	W	612	0	682	1	0
38	X	436	0	475	9	0
39	Y	417	0	455	0	0
40	Z	847	0	914	2	0
41	0	694	0	734	8	0
42	3	2714	0	2829	15	0
43	S	880	0	941	5	0
44	c	1874	0	1943	17	0
45	a	67031	0	33688	167	0
46	0	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
46	S	1	0	0	0	0
46	V	1	0	0	0	0
46	Y	1	0	0	0	0
46	Z	1	0	0	0	0
All	All	135896	0	101982	450	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 2.

All (450) 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:D:1000:PRO:HA	1:D:1005:GLN:OE1	1.36	1.25
1:E:1000:PRO:HA	1:E:1005:GLN:OE1	1.36	1.20
1:D:989:VAL:HG11	1:E:989:VAL:HG11	1.36	1.07
1:D:1004:TRP:CZ3	1:E:990:ILE:HG23	1.89	1.07
1:D:990:ILE:HG23	1:E:1004:TRP:CZ3	1.97	0.98
1:D:1100:ARG:NH1	1:E:1022:ASP:OD1	2.08	0.87
1:D:990:ILE:HG23	1:E:1004:TRP:CH2	2.14	0.83
43:S:74:ARG:NH2	45:a:1639:C:OP2	2.13	0.82
28:L:21:ARG:NH2	45:a:640:U:OP1	2.14	0.81
1:D:1004:TRP:CH2	1:E:990:ILE:HG23	2.16	0.81
1:D:1080:VAL:HG13	1:E:1080:VAL:HG13	1.63	0.81
15:o:188:ARG:NH2	45:a:31:C:OP2	2.17	0.78
1:D:1013:PHE:CD1	1:D:1083:LYS:HG2	2.22	0.75
1:D:1013:PHE:CG	1:D:1083:LYS:HG2	2.22	0.74
1:D:1004:TRP:CZ3	1:E:990:ILE:CG2	2.71	0.73
1:D:1022:ASP:HA	1:E:1067:PRO:HG2	1.71	0.72
41:0:17:ARG:NH1	45:a:860:G:OP1	2.23	0.72
1:D:1067:PRO:HD3	1:E:1025:PHE:CD1	2.26	0.71
1:A:336:ASN:ND2	45:a:2276:G:OP2	2.25	0.70
15:o:155:VAL:O	15:o:162:ARG:NH2	2.25	0.70
41:0:4:ARG:NH2	45:a:838:G:O6	2.25	0.69
1:D:990:ILE:CG2	1:E:1004:TRP:CZ3	2.75	0.69
1:C:848:ASN:OD1	1:E:991:LYS:NZ	2.26	0.69
1:E:1474:ASN:HD21	45:a:3027:A:N6	1.93	0.66
1:C:654:TYR:HE1	1:E:991:LYS:HZ3	1.42	0.66
45:a:1495:U:H5	45:a:1835:A:N1	1.94	0.65
1:C:623:ARG:HH21	1:D:1016:SER:HB3	1.60	0.64
15:o:135:VAL:HG21	15:o:151:ILE:HG21	1.80	0.64
3:4:126:A:O2'	3:4:128:U:OP2	2.15	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:1595:ILE:HD11	1:H:1611:VAL:HG23	1.80	0.63
42:3:324:LEU:O	42:3:327:LEU:O	2.17	0.63
1:C:601:GLU:N	1:E:1197:ALA:HB1	2.14	0.63
36:V:2:GLY:N	45:a:2138:A:HO2'	1.97	0.63
1:C:600:GLU:HA	1:E:1197:ALA:HA	1.80	0.62
1:D:994:LEU:HG	1:E:1004:TRP:HH2	1.64	0.62
20:t:12:ARG:NH1	20:t:57:GLU:OE1	2.33	0.62
1:D:1109:ILE:HD11	1:E:1037:ASN:HB2	1.80	0.62
45:a:577:C:O2'	45:a:579:G:OP1	2.17	0.62
23:w:87:ARG:HH22	23:w:137:VAL:HG21	1.65	0.61
25:z:82:LEU:HD11	25:z:135:ILE:HD11	1.80	0.61
26:J:82:VAL:HB	26:J:85:VAL:CG1	2.30	0.61
5:d:266:ARG:HH11	5:d:266:ARG:HG2	1.66	0.61
1:D:1394:VAL:HA	1:D:1445:TRP:HB2	1.84	0.60
43:S:20:ILE:HD12	43:S:32:ALA:HB1	1.84	0.60
45:a:359:U:C6	45:a:920:A:C2	2.90	0.60
1:H:1591:GLU:O	1:H:1595:ILE:HG23	2.02	0.59
1:D:997:LEU:HD21	1:D:1008:VAL:HG21	1.83	0.59
32:Q:105:ARG:NH2	45:a:1412:G:OP1	2.34	0.59
1:D:1013:PHE:CE2	1:D:1083:LYS:HA	2.36	0.59
45:a:2435:G:N2	45:a:2513:U:O4	2.35	0.59
1:E:997:LEU:HD21	1:E:1008:VAL:HG21	1.83	0.59
42:3:35:VAL:HG21	42:3:244:LEU:HD21	1.84	0.59
1:D:994:LEU:HG	1:E:1004:TRP:CH2	2.38	0.58
45:a:1110:U:H2'	45:a:1111:U:C6	2.38	0.58
45:a:2108:C:H1'	45:a:3344:A:C8	2.39	0.58
1:D:1446:ILE:HB	1:D:1469:LYS:HB3	1.86	0.57
1:C:818:GLN:NE2	1:E:991:LYS:NZ	2.51	0.57
24:y:34:SER:OG	45:a:3085:G:OP1	2.20	0.56
44:c:128:ARG:NH2	45:a:2177:G:OP2	2.38	0.56
10:i:6:THR:HG21	10:i:65:VAL:HG22	1.88	0.56
1:D:1000:PRO:HA	1:D:1005:GLN:CD	2.27	0.56
13:m:36:ARG:NH2	45:a:687:U:OP2	2.39	0.56
11:j:22:TYR:CZ	45:a:1048:A:H2'	2.41	0.56
1:D:1336:PRO:HB3	1:E:1023:ILE:HD13	1.87	0.55
1:E:1000:PRO:HA	1:E:1005:GLN:CD	2.26	0.55
30:N:76:GLU:OE1	30:N:76:GLU:N	2.39	0.55
18:r:93:ILE:HG22	45:a:784:A:C6	2.42	0.55
1:D:1467:LYS:HA	1:D:1478:ASP:HA	1.88	0.55
45:a:1108:U:H2'	45:a:1109:U:C6	2.42	0.55
13:m:123:ILE:HG22	34:T:118:ILE:HG22	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:1105:ASN:HA	1:E:1030:PRO:HG3	1.88	0.55
38:X:45:ARG:HH11	38:X:45:ARG:CG	2.18	0.55
1:C:818:GLN:NE2	1:E:991:LYS:HZ1	2.05	0.55
1:D:1109:ILE:HD11	1:E:1037:ASN:CB	2.37	0.54
8:g:47:ARG:NH1	8:g:183:ASP:OD2	2.40	0.54
27:K:52:LYS:O	27:K:65:ARG:NE	2.37	0.54
25:z:105:VAL:HG11	25:z:135:ILE:HD13	1.89	0.54
1:D:1148:GLU:HG2	1:E:1426:ARG:HD3	1.90	0.54
9:h:36:ILE:HD13	44:c:35:ALA:HA	1.88	0.54
45:a:999:G:C6	45:a:1000:C:N4	2.76	0.54
16:p:79:ILE:HG21	16:p:138:LEU:HD11	1.90	0.53
36:V:45:ARG:NH2	45:a:361:A:O3'	2.41	0.53
45:a:2193:U:H5'	45:a:2194:G:H5'	1.90	0.53
32:Q:76:VAL:HG11	32:Q:94:ALA:HB1	1.91	0.53
16:p:61:ALA:HA	16:p:70:PRO:HD2	1.90	0.53
1:C:601:GLU:H	1:E:1197:ALA:C	2.16	0.53
1:D:1037:ASN:CB	1:E:1109:ILE:HD11	2.40	0.52
1:D:1004:TRP:HH2	1:E:994:LEU:HG	1.73	0.52
44:c:197:PRO:HB2	45:a:2147:A:O3'	2.10	0.52
1:D:1004:TRP:CH2	1:E:994:LEU:HG	2.43	0.52
7:f:96:VAL:HG13	7:f:141:VAL:HG23	1.91	0.52
43:S:20:ILE:HD11	43:S:34:HIS:CE1	2.44	0.52
45:a:1011:A:C2	45:a:1040:A:C2	2.97	0.52
42:3:72:ALA:O	42:3:76:ARG:NH1	2.43	0.52
12:k:105:GLY:HA3	45:a:2674:A:H5"	1.91	0.51
1:D:1070:PRO:HG3	1:E:1017:TYR:CG	2.46	0.51
45:a:3278:C:H2'	45:a:3278:C:O2	2.09	0.51
1:D:1037:ASN:HB2	1:E:1109:ILE:HD11	1.92	0.51
45:a:2108:C:H1'	45:a:3344:A:H8	1.73	0.51
45:a:1134:G:O2'	45:a:2642:A:N3	2.38	0.51
27:K:135:ARG:NH1	45:a:1808:G:OP1	2.44	0.51
13:m:85:LEU:N	13:m:85:LEU:HD23	2.26	0.51
42:3:156:LEU:HD23	42:3:159:ILE:HD12	1.92	0.51
1:E:1013:PHE:CD1	1:E:1083:LYS:HE2	2.45	0.51
45:a:2405:C:O2	45:a:2819:A:N1	2.43	0.51
1:C:600:GLU:HA	1:E:1197:ALA:CA	2.41	0.50
15:o:193:ARG:O	15:o:196:THR:HG22	2.11	0.50
20:t:132:THR:O	20:t:133:ALA:HB3	2.11	0.50
42:3:60:THR:OG1	42:3:61:SER:N	2.44	0.50
1:D:1336:PRO:HB3	1:E:1023:ILE:CD1	2.41	0.50
6:e:201:GLY:O	6:e:202:GLY:C	2.53	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
34:T:10:ARG:NH1	34:T:60:GLU:OE1	2.45	0.50
1:E:1013:PHE:CG	1:E:1083:LYS:HE2	2.47	0.50
23:w:85:TRP:CE2	23:w:93:LEU:HD21	2.47	0.50
26:J:82:VAL:HB	26:J:85:VAL:HG13	1.92	0.50
45:a:2270:A:H2'	45:a:2271:A:C8	2.47	0.50
45:a:3278:C:O2	45:a:3278:C:C2'	2.59	0.50
1:D:1013:PHE:CZ	1:D:1082:ASP:C	2.90	0.50
1:D:1405:ASP:HA	1:D:1426:ARG:HH22	1.77	0.50
5:d:250:ALA:HB3	45:a:2880:U:H1'	1.94	0.50
34:T:7:TYR:CE1	34:T:8:GLU:HG3	2.47	0.50
18:r:94:PHE:CZ	28:L:119:PRO:HD3	2.46	0.50
45:a:2512:C:O2	45:a:2513:U:O4	2.30	0.50
16:p:69:GLY:HA2	16:p:70:PRO:C	2.37	0.49
45:a:86:G:O2'	45:a:98:G:O6	2.23	0.49
1:H:1595:ILE:HD13	1:H:1610:LYS:HB3	1.92	0.49
9:h:48:ARG:NH2	45:a:2526:C:C2	2.80	0.49
45:a:1912:U:N3	45:a:2122:G:OP2	2.44	0.49
45:a:627:U:H4'	45:a:1399:A:H1'	1.94	0.49
1:C:848:ASN:OD1	1:E:991:LYS:CE	2.60	0.49
1:D:1022:ASP:OD1	1:E:1100:ARG:NH1	2.42	0.49
41:0:4:ARG:NH1	45:a:837:A:OP2	2.41	0.49
32:Q:47:ARG:NH1	45:a:634:C:O3'	2.46	0.49
45:a:3217:C:O2	45:a:3217:C:C2'	2.61	0.49
45:a:2512:C:O2	45:a:2513:U:C4	2.66	0.49
5:d:165:GLN:OE1	5:d:167:ARG:NH2	2.45	0.48
5:d:54:THR:OG1	5:d:55:THR:N	2.41	0.48
16:p:12:LYS:O	20:t:167:ARG:NH2	2.45	0.48
17:q:67:ILE:HD11	45:a:1447:G:H3'	1.93	0.48
6:e:55:PHE:CE2	6:e:158:ARG:HG3	2.48	0.48
41:0:49:ARG:NH2	45:a:1793:C:OP2	2.46	0.48
1:D:1489:GLN:O	1:D:1490:GLN:C	2.56	0.48
5:d:291:GLU:O	5:d:292:ALA:HB3	2.13	0.48
15:o:47:LYS:HE3	15:o:51:LEU:HD11	1.96	0.48
25:z:90:ALA:HA	25:z:94:GLN:OE1	2.14	0.48
1:I:1589:ARG:HH21	1:I:1591:GLU:HG3	1.79	0.48
1:D:1009:ARG:CD	1:D:1085:GLY:CA	2.92	0.48
1:C:604:VAL:CG2	1:E:1227:ASN:HD22	2.27	0.48
45:a:1108:U:H2'	45:a:1109:U:H6	1.78	0.48
1:D:1479:LEU:HB3	1:D:1483:GLU:HB2	1.96	0.48
8:g:141:TYR:HA	8:g:189:ILE:HD12	1.96	0.48
8:g:197:GLN:OE1	8:g:197:GLN:N	2.45	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
45:a:950:G:H5'	45:a:971:G:OP1	2.14	0.47
45:a:2282:U:O2	45:a:2310:U:H4'	2.13	0.47
3:4:102:U:O4	36:V:65:ARG:NH2	2.46	0.47
10:i:161:LEU:O	10:i:164:ILE:HG22	2.14	0.47
45:a:1596:C:H2'	45:a:1597:C:C6	2.49	0.47
45:a:2960:C:H2'	45:a:2961:G:C8	2.50	0.47
16:p:58:LEU:HD11	16:p:74:ARG:NH1	2.29	0.47
45:a:1498:A:H2'	45:a:1499:C:C6	2.50	0.47
45:a:1560:G:C2	45:a:1580:A:N1	2.82	0.47
8:g:136:TYR:CE2	8:g:231:ASN:HB2	2.49	0.47
25:z:49:LYS:O	25:z:51:VAL:N	2.48	0.47
28:L:104:THR:HG21	28:L:112:ILE:HD11	1.96	0.47
11:j:209:ASN:O	11:j:212:GLU:O	2.33	0.47
42:3:91:GLY:O	42:3:94:CYS:N	2.46	0.47
43:S:57:LEU:HB3	43:S:61:GLN:HB2	1.96	0.47
45:a:1778:G:O2'	45:a:1780:G:OP2	2.27	0.47
45:a:2592:G:H4'	45:a:2594:C:C2	2.49	0.47
6:e:148:ILE:HG23	6:e:151:GLN:HB3	1.96	0.47
9:h:26:LEU:HD13	27:K:66:THR:HG21	1.96	0.47
21:u:136:ARG:HD2	21:u:139:ARG:HH12	1.79	0.47
23:w:87:ARG:HH22	23:w:137:VAL:CG2	2.25	0.47
42:3:304:GLN:O	42:3:305:ALA:HB3	2.15	0.47
1:D:1411:ILE:HD13	1:D:1466:LEU:HD21	1.96	0.47
6:e:93:THR:CG2	6:e:158:ARG:HH21	2.28	0.47
44:c:82:VAL:HA	44:c:86:GLN:OE1	2.15	0.47
45:a:1913:A:N3	45:a:2120:A:H2'	2.29	0.47
1:D:1013:PHE:CD1	1:D:1083:LYS:HE2	2.49	0.47
1:C:848:ASN:ND2	1:E:991:LYS:HE2	2.29	0.47
44:c:113:VAL:HG23	44:c:134:VAL:HG22	1.97	0.47
11:j:43:VAL:HG21	11:j:197:VAL:HB	1.97	0.46
22:v:36:TYR:CE1	22:v:40:HIS:CE1	3.03	0.46
19:s:98:ARG:NH2	19:s:130:ASN:OD1	2.48	0.46
45:a:1764:U:H3'	45:a:1765:U:H4'	1.97	0.46
1:E:1439:GLN:NE2	45:a:3027:A:O2'	2.40	0.46
45:a:662:U:H2'	45:a:663:C:C6	2.51	0.46
45:a:828:A:H2'	45:a:829:U:C6	2.51	0.46
1:C:600:GLU:OE2	1:C:617:ARG:NH1	2.42	0.46
6:e:178:ASN:HA	6:e:183:TRP:CD2	2.51	0.46
45:a:2635:A:H4'	45:a:2636:A:O5'	2.15	0.46
16:p:83:ALA:O	45:a:1312:C:O2'	2.33	0.46
45:a:1750:A:N3	45:a:1752:A:C8	2.83	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:4:52:A:N6	38:X:27:ILE:HD13	2.31	0.46
5:d:106:TRP:HB2	5:d:133:TYR:CE2	2.51	0.46
22:v:33:TYR:CZ	22:v:37:LEU:HD21	2.51	0.46
36:V:5:THR:N	36:V:6:PRO:CD	2.79	0.46
16:p:127:LEU:HD11	20:t:168:PRO:HG3	1.98	0.46
38:X:23:LEU:HD11	38:X:35:ILE:HG22	1.98	0.46
42:3:317:PRO:O	42:3:318:LEU:CB	2.64	0.46
44:c:80:GLU:HG3	44:c:170:ALA:HA	1.98	0.46
45:a:2946:A:H5"	45:a:2947:G:H5'	1.98	0.46
10:i:67:ALA:O	10:i:70:THR:HG22	2.16	0.46
11:j:36:LEU:HD11	11:j:69:ARG:HD3	1.97	0.46
32:Q:20:HIS:CG	32:Q:42:VAL:HG21	2.51	0.46
41:0:42:CYS:SG	41:0:59:CYS:SG	3.14	0.46
1:D:1416:TRP:O	1:E:1053:LYS:HE3	2.16	0.45
1:E:1195:ASP:OD2	1:E:1197:ALA:HB3	2.16	0.45
3:4:25:G:N3	45:a:345:G:O2'	2.46	0.45
38:X:45:ARG:HH11	38:X:45:ARG:HG3	1.81	0.45
45:a:1555:U:H3'	45:a:1556:C:H5'	1.98	0.45
45:a:2946:A:C5'	45:a:2947:G:H5'	2.46	0.45
45:a:3375:A:O2'	45:a:3378:C:OP2	2.34	0.45
27:K:83:THR:HG22	43:S:93:PHE:CZ	2.51	0.45
33:R:42:GLN:HE22	45:a:583:G:H21	1.63	0.45
45:a:2902:A:H2'	45:a:2903:A:O4'	2.16	0.45
10:i:26:LYS:HB2	45:a:3198:U:O4	2.17	0.45
32:Q:100:ILE:O	32:Q:105:ARG:NH1	2.49	0.45
1:D:1470:LYS:O	1:D:1471:LEU:C	2.60	0.45
6:e:120:LYS:O	6:e:248:ARG:NH2	2.47	0.45
12:k:32:ARG:NH1	12:k:120:ILE:O	2.47	0.45
45:a:1307:G:C2	45:a:1308:A:C2	3.05	0.45
6:e:93:THR:HG22	6:e:158:ARG:HH21	1.80	0.45
44:c:183:GLY:O	44:c:186:PHE:HB3	2.16	0.45
1:C:818:GLN:HE22	1:E:991:LYS:HZ1	1.64	0.45
1:C:848:ASN:CG	1:E:991:LYS:HE2	2.41	0.45
3:4:95:G:OP2	36:V:72:ARG:NH1	2.49	0.45
4:b:121:U:O2	4:b:121:U:O4'	2.35	0.45
5:d:376:LYS:NZ	45:a:3330:A:OP2	2.50	0.45
10:i:40:HIS:CE1	10:i:41:ILE:HD11	2.52	0.45
32:Q:94:ALA:O	32:Q:119:VAL:HA	2.17	0.45
45:a:1468:A:N1	45:a:1880:U:O2'	2.48	0.45
45:a:2651:G:C4	45:a:2796:G:C2	3.05	0.45
8:g:140:SER:O	8:g:143:THR:HG22	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:h:139:VAL:HG11	9:h:197:VAL:HG11	1.98	0.45
27:K:26:VAL:HG11	27:K:96:VAL:HG13	1.99	0.44
45:a:776:U:H5	45:a:2719:U:O2	2.00	0.44
3:4:149:A:N3	9:h:55:TYR:OH	2.46	0.44
8:g:98:LYS:N	8:g:99:PRO:HD2	2.32	0.44
45:a:1129:A:C6	45:a:1130:A:C6	3.05	0.44
10:i:12:VAL:HG23	10:i:16:VAL:HG22	2.00	0.44
37:W:41:THR:HG21	37:W:62:ALA:HB1	1.99	0.44
45:a:631:U:H2'	45:a:632:G:C8	2.53	0.44
45:a:2180:G:H2'	45:a:2181:C:C6	2.52	0.44
3:4:71:A:O2'	26:J:52:ARG:NH2	2.51	0.44
28:L:79:TRP:CE3	28:L:82:ILE:HD12	2.53	0.44
45:a:2268:U:H2'	45:a:2269:U:H5'	1.99	0.44
45:a:2376:G:H2'	45:a:2377:G:C8	2.53	0.44
1:C:623:ARG:NH2	1:D:1016:SER:HB3	2.30	0.44
1:D:1404:LEU:HD13	1:D:1426:ARG:HG2	2.00	0.44
36:V:65:ARG:HG3	36:V:65:ARG:HH11	1.82	0.44
45:a:83:U:H2'	45:a:84:U:O4'	2.17	0.44
45:a:1804:A:H2'	45:a:1805:C:O4'	2.18	0.44
5:d:19:ARG:NH2	45:a:3045:G:OP1	2.51	0.44
19:s:125:LYS:NZ	45:a:1724:U:O4	2.50	0.44
44:c:191:LEU:HD21	45:a:1795:U:OP1	2.17	0.44
45:a:370:U:H4'	45:a:404:G:H5'	2.00	0.44
45:a:2836:C:O2	45:a:2836:C:O4'	2.36	0.44
16:p:126:VAL:HG13	16:p:127:LEU:HD23	2.00	0.44
45:a:595:G:H1	45:a:609:G:H5"	1.81	0.44
45:a:776:U:C5	45:a:2719:U:O2	2.71	0.44
4:b:62:U:O3'	6:e:285:ARG:NH1	2.51	0.44
45:a:2694:A:C6	45:a:2695:A:C6	3.05	0.44
7:f:46:ARG:HD3	45:a:3270:U:C4	2.53	0.43
18:r:96:PHE:CD2	18:r:97:PRO:HD2	2.52	0.43
45:a:595:G:N1	45:a:609:G:H5"	2.33	0.43
1:D:1009:ARG:HD2	1:D:1085:GLY:CA	2.48	0.43
13:m:2:ALA:HB1	45:a:797:U:H5"	2.00	0.43
1:D:1489:GLN:HA	1:D:1493:GLY:HA3	1.99	0.43
9:h:34:PHE:CD2	9:h:42:PRO:HD3	2.53	0.43
15:o:125:SER:HB3	45:a:2433:U:H1'	2.01	0.43
45:a:741:U:H2'	45:a:742:G:O4'	2.18	0.43
45:a:1495:U:C5	45:a:1835:A:N1	2.81	0.43
45:a:2427:U:H2'	45:a:2428:U:C6	2.53	0.43
45:a:2966:G:C6	45:a:2967:A:C6	3.06	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:g:138:TYR:CD2	8:g:233:GLU:HA	2.53	0.43
45:a:3306:U:O2	45:a:3306:U:O5'	2.36	0.43
1:C:811:GLU:CD	1:C:814:ARG:HH21	2.25	0.43
1:D:1473:THR:O	1:D:1474:ASN:C	2.61	0.43
20:t:78:TRP:CZ3	20:t:125:LYS:HE3	2.54	0.43
21:u:65:TYR:CE2	21:u:73:GLY:HA3	2.53	0.43
26:J:52:ARG:O	26:J:70:ILE:O	2.37	0.43
5:d:27:ALA:HB3	5:d:218:ILE:HG22	2.00	0.43
8:g:173:LEU:HB3	8:g:178:ILE:HB	2.00	0.43
11:j:208:ASN:C	11:j:208:ASN:OD1	2.62	0.43
1:E:997:LEU:O	1:E:1005:GLN:NE2	2.52	0.43
3:4:52:A:H62	38:X:27:ILE:HD13	1.83	0.43
15:o:172:ARG:CZ	15:o:174:ILE:CD1	2.97	0.43
27:K:16:GLY:O	27:K:19:ALA:N	2.51	0.43
38:X:9:ILE:HD12	38:X:51:ILE:HG23	2.00	0.43
45:a:900:G:H1'	45:a:1589:A:N6	2.34	0.43
45:a:1449:A:C2	45:a:2356:A:C4	3.07	0.43
45:a:1724:U:H1'	45:a:1725:C:C6	2.54	0.43
45:a:3343:G:H21	45:a:3362:A:H2	1.66	0.43
8:g:130:ILE:HD12	8:g:134:VAL:HG11	2.01	0.43
40:Z:72:LEU:HD11	40:Z:83:LEU:HD12	2.00	0.43
42:3:202:ARG:HA	42:3:202:ARG:NE	2.33	0.43
45:a:1084:A:C6	45:a:1085:A:C6	3.07	0.43
45:a:2513:U:O2	45:a:2513:U:C2'	2.66	0.43
5:d:47:LEU:N	5:d:47:LEU:HD22	2.34	0.43
15:o:5:LYS:NZ	45:a:266:A:OP1	2.52	0.43
33:R:2:ALA:N	45:a:3219:G:N7	2.67	0.43
45:a:241:G:C6	45:a:242:C:C4	3.06	0.43
1:D:1067:PRO:HD3	1:E:1025:PHE:CE1	2.53	0.42
1:D:1394:VAL:HG13	1:D:1447:LEU:HD13	2.01	0.42
3:4:104:A:C8	3:4:105:A:C8	3.07	0.42
5:d:246:LEU:HD12	5:d:246:LEU:C	2.44	0.42
21:u:27:LEU:O	21:u:28:SER:C	2.62	0.42
1:D:1395:LEU:HB2	1:D:1443:ILE:HG21	2.01	0.42
1:D:1398:SER:HB2	1:D:1449:ILE:HB	2.01	0.42
5:d:124:LYS:NZ	45:a:3297:U:O4	2.52	0.42
21:u:106:LEU:HA	21:u:109:VAL:HG22	2.02	0.42
44:c:224:THR:HA	44:c:237:LEU:O	2.19	0.42
45:a:2689:A:H2'	45:a:2689:A:N3	2.35	0.42
1:D:997:LEU:O	1:D:1005:GLN:NE2	2.52	0.42
6:e:40:HIS:CE1	6:e:42:ALA:HB3	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:r:170:ARG:O	18:r:171:LYS:HB2	2.19	0.42
29:M:47:LEU:HA	29:M:50:THR:HG22	2.01	0.42
45:a:2116:G:C2	45:a:3064:U:H5'	2.55	0.42
45:a:2617:U:O2	45:a:2617:U:O5'	2.37	0.42
1:C:600:GLU:HA	1:E:1197:ALA:O	2.19	0.42
3:4:53:A:C2	38:X:35:ILE:HD11	2.55	0.42
9:h:68:ARG:HD2	9:h:237:ILE:O	2.19	0.42
28:L:21:ARG:HD2	45:a:1369:A:H5"	2.00	0.42
31:O:10:ARG:HB2	31:O:12:TYR:CE2	2.54	0.42
32:Q:32:TRP:CZ2	32:Q:53:PRO:HD2	2.54	0.42
45:a:2112:U:H4'	45:a:2113:A:O5'	2.19	0.42
45:a:2966:G:C6	45:a:2967:A:N6	2.87	0.42
5:d:227:GLU:HG2	5:d:270:ARG:HD3	2.02	0.42
6:e:83:LEU:N	6:e:84:PRO:CD	2.83	0.42
16:p:48:PHE:CE1	45:a:1191:U:C2	3.08	0.42
45:a:669:U:H2'	45:a:670:C:O4'	2.20	0.42
45:a:1235:U:H4'	45:a:1236:G:H5'	2.02	0.42
1:C:809:ARG:HA	1:C:812:TYR:CE1	2.55	0.42
42:3:315:LYS:HB2	42:3:323:VAL:HG21	2.02	0.42
45:a:1146:C:H4'	45:a:1331:U:C4	2.54	0.42
45:a:1326:A:H2'	45:a:1327:C:O4'	2.19	0.42
45:a:3016:A:H2'	45:a:3017:A:C8	2.55	0.42
1:D:1013:PHE:CD1	1:D:1083:LYS:CG	2.98	0.42
1:E:1005:GLN:OE1	1:E:1009:ARG:NH1	2.52	0.42
42:3:44:LYS:HB3	42:3:47:ARG:HH11	1.83	0.42
44:c:206:PRO:HG3	44:c:213:GLY:HA3	2.00	0.42
45:a:94:G:C2'	45:a:95:A:O5'	2.67	0.42
45:a:1064:A:O4'	45:a:1066:G:C8	2.73	0.42
45:a:1915:A:H2'	45:a:1916:U:C6	2.55	0.42
16:p:22:VAL:HG11	16:p:120:VAL:HG11	2.02	0.42
38:X:2:ALA:CB	45:a:1492:G:N7	2.83	0.42
42:3:198:ARG:HB3	42:3:199:TRP:CD1	2.54	0.42
45:a:951:A:C4	45:a:1369:A:C2	3.07	0.42
45:a:1008:U:C2	45:a:1043:C:C2	3.08	0.42
15:o:80:THR:HG21	15:o:86:ASN:O	2.20	0.42
20:t:45:LEU:O	20:t:48:LEU:N	2.45	0.42
41:0:49:ARG:HG2	41:0:49:ARG:HH11	1.85	0.42
42:3:22:LEU:HD22	42:3:26:PHE:CD2	2.55	0.42
1:H:1573:ILE:HD11	1:I:1652:SER:HB3	2.02	0.42
1:H:1595:ILE:HD11	1:H:1611:VAL:CG2	2.46	0.42
4:b:113:C:H2'	4:b:114:U:O4'	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:d:256:HIS:HA	5:d:257:PRO:C	2.44	0.42
5:d:266:ARG:HG2	5:d:266:ARG:NH1	2.31	0.42
8:g:84:VAL:HG23	8:g:117:VAL:HB	2.01	0.42
10:i:136:PHE:CE1	10:i:144:ILE:HD12	2.54	0.42
12:k:139:THR:HG22	12:k:147:THR:HA	2.01	0.42
42:3:99:MET:HE2	45:a:1429:G:C6	2.54	0.42
45:a:537:A:H2'	45:a:538:G:O4'	2.20	0.42
1:D:1424:MET:HE2	1:E:1151:PHE:CZ	2.55	0.41
5:d:331:ASN:OD1	5:d:331:ASN:N	2.52	0.41
33:R:21:ARG:O	45:a:634:C:H5'	2.20	0.41
36:V:31:LYS:O	36:V:32:LYS:C	2.63	0.41
45:a:345:G:OP1	45:a:1429:G:N1	2.46	0.41
45:a:2836:C:O2	45:a:2836:C:O5'	2.37	0.41
1:H:1566:ALA:HB1	1:I:1582:ILE:HG21	2.01	0.41
1:D:1414:THR:O	1:D:1418:GLN:HG2	2.20	0.41
3:4:62:C:H4'	3:4:63:G:O5'	2.20	0.41
36:V:3:LYS:HE2	45:a:2139:A:C4	2.55	0.41
1:E:1061:ALA:N	1:E:1062:PRO:CD	2.83	0.41
18:r:83:VAL:O	18:r:103:ALA:HA	2.21	0.41
45:a:2611:U:H2'	45:a:2612:U:C6	2.55	0.41
1:D:1009:ARG:CD	1:D:1085:GLY:HA3	2.51	0.41
13:m:105:ASN:OD1	13:m:105:ASN:C	2.64	0.41
44:c:30:ARG:HH11	44:c:36:GLU:HG3	1.85	0.41
44:c:199:THR:HG21	45:a:914:A:C8	2.55	0.41
45:a:64:G:C6	45:a:322:U:C5	3.07	0.41
45:a:1469:C:N3	45:a:1508:C:N3	2.68	0.41
21:u:4:SER:OG	45:a:2630:C:H3'	2.21	0.41
1:D:1468:ILE:HD11	1:D:1484:PHE:HB2	2.03	0.41
5:d:163:HIS:HA	5:d:177:HIS:O	2.20	0.41
45:a:507:U:O2'	45:a:1166:G:H4'	2.20	0.41
45:a:1225:A:C2	45:a:3116:G:C4	3.08	0.41
1:C:848:ASN:CG	1:E:991:LYS:NZ	2.78	0.41
1:D:1404:LEU:HA	1:D:1408:GLY:HA3	2.03	0.41
3:4:75:G:OP2	26:J:74:TYR:OH	2.37	0.41
18:r:150:VAL:HA	18:r:153:PHE:CD1	2.56	0.41
45:a:428:A:H2'	45:a:429:U:C6	2.56	0.41
1:D:1435:VAL:HG22	1:D:1446:ILE:HD13	2.03	0.41
15:o:94:TYR:CE2	15:o:96:ARG:HB2	2.56	0.41
17:q:94:LEU:HD12	17:q:94:LEU:HA	1.97	0.41
18:r:34:THR:HA	18:r:49:LEU:HD22	2.02	0.41
35:U:60:LEU:O	35:U:64:SER:N	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
41:0:56:THR:HG22	41:0:63:THR:HG23	2.01	0.41
45:a:304:G:H5'	45:a:304:G:N3	2.36	0.41
1:D:1061:ALA:N	1:D:1062:PRO:CD	2.83	0.41
1:D:1403:LEU:HD13	1:D:1407:ILE:HD12	2.03	0.41
6:e:119:TYR:OH	6:e:139:PRO:O	2.36	0.41
9:h:27:THR:HG22	45:a:2563:G:H5"	2.02	0.41
9:h:36:ILE:HD13	44:c:35:ALA:CA	2.51	0.41
14:n:55:ARG:NH2	14:n:76:ALA:O	2.53	0.41
16:p:23:VAL:HG11	16:p:84:LEU:HD11	2.02	0.41
27:K:5:LEU:HD22	30:N:35:ARG:HD2	2.01	0.41
40:Z:72:LEU:HD11	40:Z:83:LEU:CD1	2.50	0.41
45:a:996:A:C2	45:a:1054:A:C4	3.09	0.41
45:a:1948:G:C2	45:a:2099:A:C2	3.09	0.41
45:a:2663:G:H2'	45:a:2664:C:O4'	2.21	0.41
45:a:3055:U:H1'	45:a:3057:U:OP2	2.21	0.41
45:a:3228:C:H4'	45:a:3229:G:O5'	2.21	0.41
45:a:3294:A:H2'	45:a:3295:A:O4'	2.20	0.41
16:p:85:ARG:NH2	45:a:2383:C:OP2	2.54	0.41
17:q:61:ARG:O	17:q:64:ASN:ND2	2.53	0.41
38:X:28:ARG:HA	38:X:33:ASN:ND2	2.36	0.41
45:a:1926:C:H5'	45:a:1927:G:C8	2.56	0.41
3:4:102:U:C4	3:4:103:G:C6	3.09	0.40
41:0:79:VAL:O	41:0:82:THR:HG22	2.21	0.40
44:c:65:ASP:HB3	44:c:68:LYS:O	2.20	0.40
45:a:1520:G:H2'	45:a:1521:G:O4'	2.21	0.40
45:a:1648:A:H2'	45:a:1649:U:O4'	2.21	0.40
45:a:3131:U:O2	45:a:3131:U:H2'	2.20	0.40
1:C:654:TYR:CE1	1:E:991:LYS:NZ	2.88	0.40
1:D:1012:LEU:HB3	1:E:1081:LEU:HD22	2.03	0.40
18:r:144:ARG:NH2	45:a:976:U:OP1	2.53	0.40
18:r:170:ARG:O	18:r:171:LYS:CB	2.69	0.40
24:y:16:GLY:O	45:a:3050:U:O2'	2.40	0.40
31:O:29:ALA:HB3	31:O:30:PRO:HD3	2.02	0.40
35:U:76:ARG:HA	35:U:76:ARG:NE	2.36	0.40
1:D:1005:GLN:OE1	1:D:1009:ARG:NH1	2.53	0.40
34:T:86:ARG:CZ	34:T:90:ARG:HH12	2.35	0.40
34:T:90:ARG:NH1	45:a:20:A:OP2	2.54	0.40
35:U:74:LYS:HA	35:U:83:ALA:HB2	2.02	0.40
45:a:2144:A:H1'	45:a:2281:A:N6	2.37	0.40
45:a:2167:A:C6	45:a:2168:A:N1	2.89	0.40
45:a:3088:G:H2'	45:a:3089:C:O4'	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:1009:ARG:HD2	1:D:1085:GLY:HA2	2.03	0.40
3:4:93:U:H2'	3:4:94:C:O4'	2.21	0.40
7:f:51:ARG:NH1	14:n:114:ASP:OD2	2.54	0.40
44:c:21:ARG:HD3	45:a:824:C:H5"	2.04	0.40
45:a:996:A:H2'	45:a:997:A:O4'	2.22	0.40
45:a:3127:A:C2'	45:a:3128:G:O5'	2.70	0.40
9:h:36:ILE:HD13	44:c:35:ALA:CB	2.52	0.40
42:3:42:VAL:HA	42:3:45:ASN:ND2	2.36	0.40
44:c:40:TYR:O	45:a:2550:U:H5	2.04	0.40
45:a:1194:G:H2'	45:a:1195:A:C8	2.56	0.40
45:a:2667:A:C2	45:a:2690:G:C4	3.10	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	320/1659 (19%)	314 (98%)	6 (2%)	0	100	100
1	C	253/1659 (15%)	245 (97%)	7 (3%)	1 (0%)	30	63
1	D	468/1659 (28%)	440 (94%)	26 (6%)	2 (0%)	30	63
1	E	467/1659 (28%)	459 (98%)	8 (2%)	0	100	100
1	H	100/1659 (6%)	100 (100%)	0	0	100	100
1	I	104/1659 (6%)	104 (100%)	0	0	100	100
2	P	13/25 (52%)	13 (100%)	0	0	100	100
5	d	384/387 (99%)	362 (94%)	21 (6%)	1 (0%)	37	68
6	e	289/297 (97%)	273 (94%)	14 (5%)	2 (1%)	19	51
7	f	152/176 (86%)	143 (94%)	9 (6%)	0	100	100
8	g	216/244 (88%)	210 (97%)	6 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	h	231/256 (90%)	219 (95%)	12 (5%)	0	100	100
10	i	189/191 (99%)	180 (95%)	9 (5%)	0	100	100
11	j	206/221 (93%)	193 (94%)	12 (6%)	1 (0%)	25	58
12	k	164/174 (94%)	155 (94%)	7 (4%)	2 (1%)	11	38
13	m	191/199 (96%)	178 (93%)	13 (7%)	0	100	100
14	n	134/138 (97%)	126 (94%)	8 (6%)	0	100	100
15	o	201/204 (98%)	188 (94%)	13 (6%)	0	100	100
16	p	195/199 (98%)	187 (96%)	8 (4%)	0	100	100
17	q	181/184 (98%)	166 (92%)	14 (8%)	1 (1%)	22	53
18	r	183/186 (98%)	170 (93%)	12 (7%)	1 (0%)	25	58
19	s	153/189 (81%)	148 (97%)	5 (3%)	0	100	100
20	t	168/172 (98%)	156 (93%)	11 (6%)	1 (1%)	22	53
21	u	157/160 (98%)	147 (94%)	9 (6%)	1 (1%)	22	53
22	v	98/121 (81%)	88 (90%)	10 (10%)	0	100	100
23	w	134/137 (98%)	129 (96%)	5 (4%)	0	100	100
24	y	61/155 (39%)	60 (98%)	1 (2%)	0	100	100
25	z	119/142 (84%)	111 (93%)	7 (6%)	1 (1%)	16	48
26	J	124/127 (98%)	120 (97%)	4 (3%)	0	100	100
27	K	125/136 (92%)	118 (94%)	6 (5%)	1 (1%)	16	48
28	L	146/149 (98%)	135 (92%)	11 (8%)	0	100	100
29	M	56/59 (95%)	51 (91%)	5 (9%)	0	100	100
30	N	95/105 (90%)	91 (96%)	4 (4%)	0	100	100
31	O	107/113 (95%)	100 (94%)	7 (6%)	0	100	100
32	Q	125/130 (96%)	121 (97%)	4 (3%)	0	100	100
33	R	104/107 (97%)	99 (95%)	5 (5%)	0	100	100
34	T	115/120 (96%)	109 (95%)	6 (5%)	0	100	100
35	U	97/100 (97%)	87 (90%)	9 (9%)	1 (1%)	13	42
36	V	85/88 (97%)	78 (92%)	6 (7%)	1 (1%)	11	38
37	W	75/78 (96%)	70 (93%)	5 (7%)	0	100	100
38	X	48/51 (94%)	44 (92%)	3 (6%)	1 (2%)	5	25
39	Y	50/128 (39%)	47 (94%)	2 (4%)	1 (2%)	6	26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
40	Z	103/106 (97%)	92 (89%)	8 (8%)	3 (3%)	3 20
41	0	89/92 (97%)	81 (91%)	5 (6%)	3 (3%)	3 17
42	3	352/362 (97%)	324 (92%)	24 (7%)	4 (1%)	12 39
43	S	110/121 (91%)	106 (96%)	4 (4%)	0	100 100
44	c	244/254 (96%)	224 (92%)	17 (7%)	3 (1%)	11 38
All	All	7781/16537 (47%)	7361 (95%)	388 (5%)	32 (0%)	32 63

All (32) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	e	202	GLY
18	r	171	LYS
36	V	85	LYS
12	k	55	ARG
17	q	66	SER
20	t	154	HIS
41	0	18	TYR
42	3	90	PHE
1	D	1478	ASP
5	d	139	GLN
11	j	218	ALA
12	k	167	TYR
25	z	50	ALA
38	X	3	ALA
1	D	1474	ASN
27	K	103	GLN
35	U	97	SER
40	Z	94	GLY
41	0	51	ALA
42	3	132	ALA
44	c	125	ALA
44	c	143	GLU
44	c	180	LEU
6	e	292	ALA
39	Y	79	GLU
40	Z	96	GLU
42	3	5	GLN
21	u	125	ALA
40	Z	17	CYS
1	C	940	ILE

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Mol	Chain	Res	Type
42	3	192	GLY
41	0	12	GLY

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	294/1520 (19%)	291 (99%)	3 (1%)	73 86
1	C	232/1520 (15%)	230 (99%)	2 (1%)	75 88
1	D	429/1520 (28%)	424 (99%)	5 (1%)	67 83
1	E	428/1520 (28%)	427 (100%)	1 (0%)	92 96
1	H	94/1520 (6%)	90 (96%)	4 (4%)	25 55
1	I	96/1520 (6%)	87 (91%)	9 (9%)	7 27
2	P	14/23 (61%)	14 (100%)	0	100 100
5	d	320/323 (99%)	312 (98%)	8 (2%)	42 69
6	e	240/245 (98%)	233 (97%)	7 (3%)	37 65
7	f	134/153 (88%)	131 (98%)	3 (2%)	47 71
8	g	183/205 (89%)	179 (98%)	4 (2%)	47 71
9	h	187/208 (90%)	184 (98%)	3 (2%)	58 79
10	i	171/171 (100%)	163 (95%)	8 (5%)	22 52
11	j	177/187 (95%)	174 (98%)	3 (2%)	56 78
12	k	144/150 (96%)	140 (97%)	4 (3%)	38 66
13	m	154/159 (97%)	150 (97%)	4 (3%)	41 68
14	n	107/109 (98%)	107 (100%)	0	100 100
15	o	175/176 (99%)	174 (99%)	1 (1%)	84 91
16	p	160/162 (99%)	158 (99%)	2 (1%)	65 82
17	q	140/146 (96%)	133 (95%)	7 (5%)	20 50
18	r	150/151 (99%)	150 (100%)	0	100 100
19	s	128/154 (83%)	127 (99%)	1 (1%)	79 89

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
20	t	155/156 (99%)	151 (97%)	4 (3%)	41 68
21	u	136/137 (99%)	135 (99%)	1 (1%)	81 90
22	v	87/107 (81%)	85 (98%)	2 (2%)	45 70
23	w	104/105 (99%)	100 (96%)	4 (4%)	28 59
24	y	55/129 (43%)	54 (98%)	1 (2%)	54 76
25	z	104/118 (88%)	101 (97%)	3 (3%)	37 65
26	J	109/110 (99%)	106 (97%)	3 (3%)	38 66
27	K	110/116 (95%)	110 (100%)	0	100 100
28	L	118/119 (99%)	115 (98%)	3 (2%)	42 69
29	M	46/47 (98%)	45 (98%)	1 (2%)	47 71
30	N	81/88 (92%)	80 (99%)	1 (1%)	67 83
31	O	92/97 (95%)	90 (98%)	2 (2%)	47 71
32	Q	109/111 (98%)	103 (94%)	6 (6%)	18 47
33	R	90/91 (99%)	90 (100%)	0	100 100
34	T	104/105 (99%)	103 (99%)	1 (1%)	73 86
35	U	81/82 (99%)	80 (99%)	1 (1%)	67 83
36	V	70/71 (99%)	66 (94%)	4 (6%)	17 46
37	W	68/69 (99%)	66 (97%)	2 (3%)	37 65
38	X	45/46 (98%)	44 (98%)	1 (2%)	47 71
39	Y	47/116 (40%)	47 (100%)	0	100 100
40	Z	90/91 (99%)	88 (98%)	2 (2%)	47 71
41	0	71/72 (99%)	69 (97%)	2 (3%)	38 66
42	3	285/289 (99%)	274 (96%)	11 (4%)	27 58
43	S	95/103 (92%)	93 (98%)	2 (2%)	48 72
44	c	189/196 (96%)	181 (96%)	8 (4%)	25 56
All	All	6698/14613 (46%)	6554 (98%)	144 (2%)	47 72

All (144) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	246	SER
1	A	444	THR
1	A	518	THR

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Mol	Chain	Res	Type
1	H	1572	MET
1	H	1574	LEU
1	H	1591	GLU
1	H	1595	ILE
1	I	1538	ASN
1	I	1561	VAL
1	I	1564	ASP
1	I	1573	ILE
1	I	1577	LEU
1	I	1591	GLU
1	I	1593	LEU
1	I	1594	GLU
1	I	1652	SER
1	C	881	LEU
1	C	923	SER
1	D	1001	SER
1	D	1431	VAL
1	D	1449	ILE
1	D	1482	ASP
1	D	1491	GLU
1	E	1001	SER
5	d	85	VAL
5	d	146	ARG
5	d	169	THR
5	d	205	VAL
5	d	238	LEU
5	d	264	VAL
5	d	276	THR
5	d	324	VAL
6	e	34	LYS
6	e	38	THR
6	e	110	LEU
6	e	152	ARG
6	e	155	THR
6	e	177	GLU
6	e	222	LEU
7	f	84	VAL
7	f	92	SER
7	f	171	PRO
8	g	100	ARG
8	g	168	ILE
8	g	173	LEU

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Mol	Chain	Res	Type
8	g	184	LEU
9	h	36	ILE
9	h	164	VAL
9	h	175	VAL
10	i	12	VAL
10	i	16	VAL
10	i	19	SER
10	i	41	ILE
10	i	70	THR
10	i	82	VAL
10	i	92	TYR
10	i	93	VAL
11	j	27	PRO
11	j	91	VAL
11	j	140	THR
12	k	15	GLU
12	k	115	LYS
12	k	137	ARG
12	k	143	ARG
13	m	50	PRO
13	m	58	VAL
13	m	62	THR
13	m	85	LEU
15	o	117	ASN
16	p	121	PRO
16	p	124	LEU
17	q	20	SER
17	q	24	VAL
17	q	52	LEU
17	q	67	ILE
17	q	94	LEU
17	q	129	THR
17	q	169	THR
19	s	134	HIS
20	t	3	HIS
20	t	23	LYS
20	t	55	SER
20	t	160	THR
21	u	104	GLU
22	v	64	THR
22	v	91	ASP
23	w	54	LEU

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Mol	Chain	Res	Type
23	w	67	PRO
23	w	81	GLN
23	w	135	VAL
24	y	46	PRO
25	z	71	THR
25	z	77	GLU
25	z	87	SER
26	J	51	ARG
26	J	56	VAL
26	J	85	VAL
28	L	56	VAL
28	L	89	GLN
28	L	133	LEU
29	M	22	LYS
30	N	24	THR
31	O	16	LEU
31	O	64	VAL
32	Q	19	ARG
32	Q	36	LYS
32	Q	47	ARG
32	Q	68	PRO
32	Q	86	THR
32	Q	125	ARG
34	T	90	ARG
35	U	36	ARG
36	V	5	THR
36	V	24	ARG
36	V	40	PRO
36	V	68	LYS
37	W	20	VAL
37	W	53	THR
38	X	45	ARG
40	Z	21	THR
40	Z	97	LYS
41	0	60	CYS
41	0	88	GLU
42	3	60	THR
42	3	99	MET
42	3	138	ARG
42	3	143	GLU
42	3	156	LEU
42	3	177	ASP

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Mol	Chain	Res	Type
42	3	200	THR
42	3	230	VAL
42	3	295	ILE
42	3	327	LEU
42	3	339	LEU
43	S	12	PRO
43	S	51	LEU
44	c	29	LEU
44	c	47	GLN
44	c	62	VAL
44	c	134	VAL
44	c	157	VAL
44	c	158	ILE
44	c	176	ASP
44	c	207	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (73) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	295	ASN
1	H	1576	ASN
1	H	1630	ASN
1	C	818	GLN
1	C	833	HIS
1	D	1007	GLN
1	D	1015	GLN
1	D	1091	GLN
1	E	1007	GLN
1	E	1015	GLN
1	E	1227	ASN
1	E	1439	GLN
1	E	1474	ASN
5	d	293	ASN
8	g	93	ASN
8	g	194	HIS
9	h	59	GLN
9	h	95	ASN
9	h	243	GLN
10	i	50	ASN
10	i	51	GLN
10	i	96	HIS
10	i	125	ASN

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Mol	Chain	Res	Type
11	j	163	GLN
12	k	20	ASN
12	k	90	GLN
13	m	120	GLN
15	o	95	GLN
15	o	194	GLN
16	p	26	GLN
16	p	50	ASN
16	p	55	HIS
16	p	193	GLN
17	q	45	GLN
17	q	133	HIS
17	q	137	ASN
18	r	58	ASN
18	r	73	GLN
18	r	136	ASN
19	s	144	GLN
19	s	156	ASN
20	t	46	GLN
21	u	16	GLN
21	u	134	GLN
23	w	98	ASN
25	z	85	GLN
26	J	81	GLN
27	K	106	GLN
27	K	123	GLN
28	L	120	ASN
30	N	11	ASN
31	O	21	HIS
31	O	57	GLN
32	Q	26	HIS
32	Q	49	ASN
33	R	5	HIS
33	R	42	GLN
34	T	59	ASN
36	V	30	GLN
36	V	79	GLN
38	X	19	GLN
38	X	33	ASN
39	Y	109	ASN
40	Z	3	ASN
42	3	5	GLN

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Mol	Chain	Res	Type
42	3	48	GLN
42	3	196	ASN
42	3	304	GLN
42	3	361	HIS
43	S	3	GLN
44	c	38	HIS
44	c	144	ASN
44	c	216	HIS

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
3	4	157/158 (99%)	30 (19%)	4 (2%)
4	b	120/121 (99%)	12 (10%)	0
45	a	3129/3396 (92%)	582 (18%)	0
All	All	3406/3675 (92%)	624 (18%)	4 (0%)

All (624) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
3	4	21	C
3	4	23	U
3	4	34	U
3	4	35	C
3	4	50	C
3	4	53	A
3	4	59	A
3	4	62	C
3	4	63	G
3	4	80	A
3	4	81	U
3	4	82	U
3	4	84	C
3	4	85	G
3	4	86	U
3	4	87	G
3	4	90	U
3	4	95	G
3	4	104	A
3	4	105	A
3	4	106	C

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Mol	Chain	Res	Type
3	4	111	A
3	4	113	U
3	4	125	U
3	4	126	A
3	4	138	A
3	4	144	G
3	4	151	C
3	4	152	G
3	4	158	U
4	b	11	A
4	b	13	A
4	b	22	A
4	b	51	A
4	b	54	U
4	b	60	G
4	b	65	G
4	b	74	C
4	b	91	G
4	b	102	A
4	b	112	G
4	b	121	U
45	a	16	A
45	a	26	A
45	a	40	A
45	a	43	A
45	a	44	U
45	a	49	A
45	a	59	G
45	a	60	A
45	a	65	A
45	a	66	A
45	a	74	G
45	a	76	G
45	a	83	U
45	a	92	G
45	a	95	A
45	a	99	A
45	a	105	C
45	a	109	A
45	a	110	G
45	a	116	A
45	a	121	A

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Mol	Chain	Res	Type
45	a	122	A
45	a	133	U
45	a	135	C
45	a	136	G
45	a	142	C
45	a	156	G
45	a	157	A
45	a	161	G
45	a	166	C
45	a	170	G
45	a	172	G
45	a	182	U
45	a	187	A
45	a	190	U
45	a	191	U
45	a	213	A
45	a	218	G
45	a	219	A
45	a	240	U
45	a	241	G
45	a	243	G
45	a	252	U
45	a	269	G
45	a	271	C
45	a	283	G
45	a	284	A
45	a	286	U
45	a	295	A
45	a	305	U
45	a	307	A
45	a	315	C
45	a	316	U
45	a	323	A
45	a	329	U
45	a	339	C
45	a	350	C
45	a	370	U
45	a	376	G
45	a	392	G
45	a	398	A
45	a	399	A
45	a	401	U

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Mol	Chain	Res	Type
45	a	402	A
45	a	403	C
45	a	421	G
45	a	422	A
45	a	439	C
45	a	440	A
45	a	495	G
45	a	507	U
45	a	521	A
45	a	525	C
45	a	531	G
45	a	532	A
45	a	535	G
45	a	536	U
45	a	546	C
45	a	547	G
45	a	548	G
45	a	552	G
45	a	555	U
45	a	556	U
45	a	557	A
45	a	558	U
45	a	559	A
45	a	569	A
45	a	579	G
45	a	592	A
45	a	594	U
45	a	595	G
45	a	609	G
45	a	611	A
45	a	619	A
45	a	620	U
45	a	621	A
45	a	636	C
45	a	649	A
45	a	660	A
45	a	675	C
45	a	677	A
45	a	681	U
45	a	691	A
45	a	705	A
45	a	710	A

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Mol	Chain	Res	Type
45	a	712	G
45	a	715	A
45	a	716	A
45	a	765	C
45	a	767	U
45	a	774	G
45	a	776	U
45	a	777	U
45	a	780	A
45	a	781	G
45	a	785	G
45	a	786	A
45	a	805	G
45	a	806	A
45	a	816	A
45	a	817	A
45	a	830	A
45	a	833	G
45	a	849	C
45	a	861	C
45	a	874	U
45	a	879	U
45	a	890	C
45	a	896	A
45	a	897	U
45	a	906	A
45	a	907	G
45	a	908	G
45	a	909	G
45	a	914	A
45	a	916	G
45	a	917	A
45	a	923	C
45	a	937	G
45	a	944	C
45	a	959	C
45	a	960	U
45	a	961	C
45	a	962	A
45	a	978	G
45	a	979	U
45	a	980	A

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Mol	Chain	Res	Type
45	a	981	U
45	a	993	G
45	a	994	G
45	a	995	U
45	a	1001	G
45	a	1002	A
45	a	1003	A
45	a	1010	G
45	a	1015	U
45	a	1017	C
45	a	1018	G
45	a	1019	G
45	a	1021	G
45	a	1022	U
45	a	1033	U
45	a	1036	A
45	a	1037	C
45	a	1041	U
45	a	1047	A
45	a	1049	C
45	a	1064	A
45	a	1065	A
45	a	1072	G
45	a	1081	U
45	a	1083	G
45	a	1087	G
45	a	1093	A
45	a	1094	U
45	a	1095	U
45	a	1096	U
45	a	1097	G
45	a	1098	A
45	a	1103	A
45	a	1104	G
45	a	1117	G
45	a	1126	G
45	a	1131	G
45	a	1153	A
45	a	1154	A
45	a	1155	C
45	a	1159	A
45	a	1163	A

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Mol	Chain	Res	Type
45	a	1170	A
45	a	1180	A
45	a	1181	U
45	a	1182	A
45	a	1186	G
45	a	1190	A
45	a	1191	U
45	a	1192	C
45	a	1196	C
45	a	1197	A
45	a	1201	C
45	a	1208	U
45	a	1209	G
45	a	1212	A
45	a	1221	A
45	a	1222	G
45	a	1232	C
45	a	1235	U
45	a	1236	G
45	a	1237	G
45	a	1239	C
45	a	1242	G
45	a	1244	A
45	a	1245	A
45	a	1246	G
45	a	1258	U
45	a	1262	G
45	a	1263	A
45	a	1265	U
45	a	1270	A
45	a	1271	A
45	a	1272	C
45	a	1273	A
45	a	1285	G
45	a	1286	A
45	a	1287	A
45	a	1307	G
45	a	1309	U
45	a	1313	G
45	a	1330	A
45	a	1331	U
45	a	1332	A

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Mol	Chain	Res	Type
45	a	1348	U
45	a	1349	G
45	a	1351	U
45	a	1352	A
45	a	1353	U
45	a	1355	A
45	a	1356	U
45	a	1357	G
45	a	1386	A
45	a	1399	A
45	a	1400	G
45	a	1418	A
45	a	1419	A
45	a	1434	G
45	a	1437	C
45	a	1450	G
45	a	1460	A
45	a	1481	A
45	a	1482	A
45	a	1483	G
45	a	1503	A
45	a	1508	C
45	a	1527	C
45	a	1533	U
45	a	1536	G
45	a	1555	U
45	a	1556	C
45	a	1557	A
45	a	1560	G
45	a	1562	C
45	a	1563	C
45	a	1564	U
45	a	1567	U
45	a	1568	U
45	a	1569	U
45	a	1575	A
45	a	1576	G
45	a	1578	C
45	a	1580	A
45	a	1581	C
45	a	1583	A
45	a	1587	A

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Mol	Chain	Res	Type
45	a	1589	A
45	a	1590	G
45	a	1596	C
45	a	1618	G
45	a	1620	U
45	a	1629	U
45	a	1630	U
45	a	1639	C
45	a	1642	A
45	a	1643	A
45	a	1657	C
45	a	1675	G
45	a	1687	U
45	a	1718	G
45	a	1724	U
45	a	1725	C
45	a	1741	A
45	a	1742	U
45	a	1750	A
45	a	1751	G
45	a	1759	C
45	a	1760	A
45	a	1765	U
45	a	1766	G
45	a	1770	G
45	a	1775	G
45	a	1780	G
45	a	1794	G
45	a	1797	A
45	a	1814	A
45	a	1815	U
45	a	1816	A
45	a	1817	G
45	a	1819	U
45	a	1820	U
45	a	1821	U
45	a	1839	A
45	a	1841	A
45	a	1842	A
45	a	1846	C
45	a	1847	A
45	a	1849	C

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Mol	Chain	Res	Type
45	a	1850	A
45	a	1878	G
45	a	1880	U
45	a	1884	A
45	a	1886	A
45	a	1893	A
45	a	1904	C
45	a	1906	G
45	a	1908	A
45	a	1920	U
45	a	1951	C
45	a	1952	G
45	a	2091	U
45	a	2094	C
45	a	2096	A
45	a	2097	U
45	a	2098	C
45	a	2101	C
45	a	2102	U
45	a	2112	U
45	a	2113	A
45	a	2121	G
45	a	2122	G
45	a	2131	A
45	a	2138	A
45	a	2140	U
45	a	2158	A
45	a	2159	U
45	a	2169	G
45	a	2171	G
45	a	2181	C
45	a	2192	C
45	a	2205	U
45	a	2206	G
45	a	2209	U
45	a	2210	G
45	a	2223	A
45	a	2225	U
45	a	2244	A
45	a	2246	G
45	a	2249	G
45	a	2251	G

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Mol	Chain	Res	Type
45	a	2252	A
45	a	2255	A
45	a	2256	A
45	a	2257	C
45	a	2258	U
45	a	2261	G
45	a	2262	A
45	a	2270	A
45	a	2273	G
45	a	2279	A
45	a	2281	A
45	a	2282	U
45	a	2288	G
45	a	2307	G
45	a	2308	C
45	a	2310	U
45	a	2313	A
45	a	2314	U
45	a	2315	G
45	a	2319	U
45	a	2334	U
45	a	2335	G
45	a	2336	U
45	a	2337	C
45	a	2372	A
45	a	2373	A
45	a	2374	C
45	a	2375	G
45	a	2388	U
45	a	2393	G
45	a	2397	A
45	a	2402	A
45	a	2403	G
45	a	2404	A
45	a	2411	U
45	a	2418	G
45	a	2419	A
45	a	2435	G
45	a	2440	G
45	a	2442	G
45	a	2443	A
45	a	2506	U

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Mol	Chain	Res	Type
45	a	2513	U
45	a	2514	U
45	a	2515	A
45	a	2522	G
45	a	2523	A
45	a	2531	C
45	a	2532	U
45	a	2533	G
45	a	2538	U
45	a	2539	C
45	a	2540	A
45	a	2541	U
45	a	2542	U
45	a	2549	G
45	a	2552	C
45	a	2554	A
45	a	2561	A
45	a	2569	A
45	a	2570	U
45	a	2571	U
45	a	2572	C
45	a	2573	G
45	a	2576	G
45	a	2585	G
45	a	2586	G
45	a	2589	G
45	a	2593	A
45	a	2594	C
45	a	2600	C
45	a	2606	G
45	a	2607	G
45	a	2614	G
45	a	2618	G
45	a	2619	G
45	a	2626	A
45	a	2629	U
45	a	2652	U
45	a	2656	A
45	a	2674	A
45	a	2677	G
45	a	2681	U
45	a	2689	A

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Mol	Chain	Res	Type
45	a	2690	G
45	a	2691	A
45	a	2694	A
45	a	2695	A
45	a	2696	A
45	a	2704	A
45	a	2705	A
45	a	2712	U
45	a	2713	U
45	a	2726	C
45	a	2728	G
45	a	2729	U
45	a	2740	A
45	a	2752	U
45	a	2753	G
45	a	2762	A
45	a	2772	C
45	a	2777	G
45	a	2778	G
45	a	2796	G
45	a	2800	G
45	a	2801	A
45	a	2802	A
45	a	2803	A
45	a	2810	C
45	a	2816	G
45	a	2817	A
45	a	2821	C
45	a	2842	U
45	a	2843	U
45	a	2845	A
45	a	2847	A
45	a	2867	C
45	a	2871	G
45	a	2872	A
45	a	2875	U
45	a	2876	C
45	a	2887	A
45	a	2898	G
45	a	2899	C
45	a	2911	A
45	a	2923	U

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Mol	Chain	Res	Type
45	a	2928	C
45	a	2935	U
45	a	2936	A
45	a	2941	A
45	a	2942	C
45	a	2947	G
45	a	2950	G
45	a	2951	G
45	a	2977	G
45	a	2983	C
45	a	2990	G
45	a	2996	U
45	a	2997	G
45	a	3012	A
45	a	3048	A
45	a	3049	A
45	a	3056	U
45	a	3057	U
45	a	3058	U
45	a	3059	G
45	a	3073	A
45	a	3074	G
45	a	3078	U
45	a	3079	U
45	a	3080	G
45	a	3092	C
45	a	3104	U
45	a	3122	A
45	a	3128	G
45	a	3129	A
45	a	3131	U
45	a	3142	A
45	a	3143	C
45	a	3154	C
45	a	3155	U
45	a	3156	U
45	a	3157	U
45	a	3164	C
45	a	3165	A
45	a	3173	G
45	a	3174	A
45	a	3176	G

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Mol	Chain	Res	Type
45	a	3179	U
45	a	3181	C
45	a	3187	A
45	a	3196	U
45	a	3198	U
45	a	3207	U
45	a	3209	A
45	a	3213	A
45	a	3217	C
45	a	3218	A
45	a	3219	G
45	a	3227	A
45	a	3229	G
45	a	3235	C
45	a	3239	G
45	a	3243	A
45	a	3244	A
45	a	3245	A
45	a	3246	G
45	a	3259	U
45	a	3260	G
45	a	3263	G
45	a	3265	C
45	a	3268	A
45	a	3269	U
45	a	3272	C
45	a	3273	A
45	a	3275	U
45	a	3276	G
45	a	3277	U
45	a	3279	A
45	a	3281	U
45	a	3287	U
45	a	3289	G
45	a	3294	A
45	a	3304	U
45	a	3313	U
45	a	3316	A
45	a	3318	G
45	a	3319	U
45	a	3341	U
45	a	3342	A

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Mol	Chain	Res	Type
45	a	3345	G
45	a	3352	U
45	a	3353	G
45	a	3355	U
45	a	3356	G
45	a	3359	A
45	a	3360	C
45	a	3363	U
45	a	3369	G
45	a	3375	A
45	a	3376	A
45	a	3378	C
45	a	3386	G
45	a	3389	U
45	a	3396	U

All (4) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	4	84	C
3	4	85	G
3	4	90	U
3	4	105	A

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 5 ligands modelled in this entry, 5 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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.

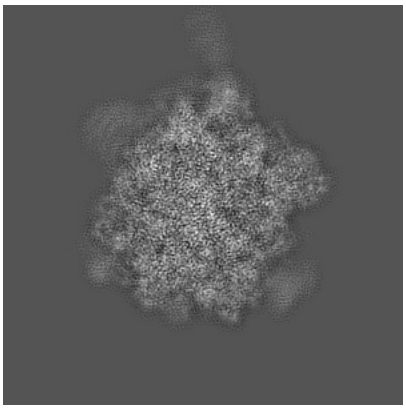
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-50188. These allow visual inspection of the internal detail of the map and identification of artifacts.

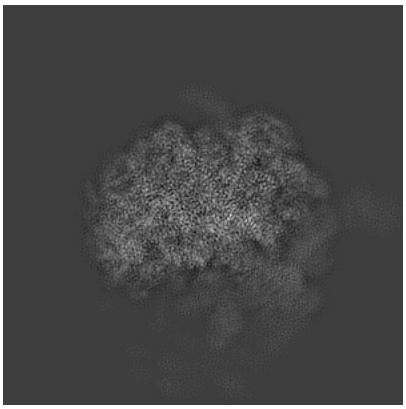
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

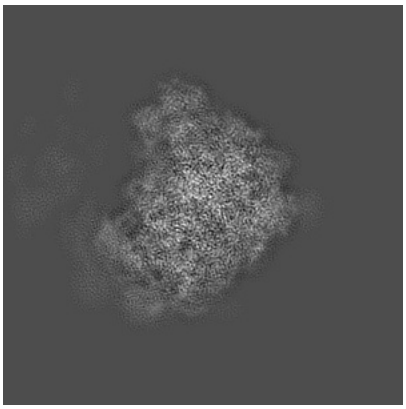
6.1.1 Primary map



X

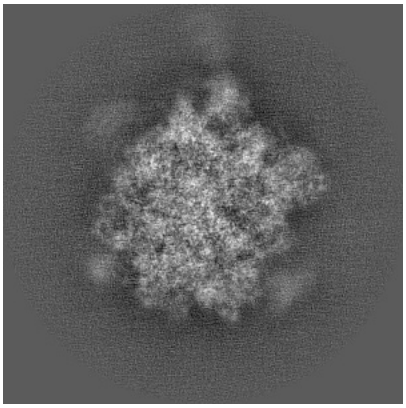


Y

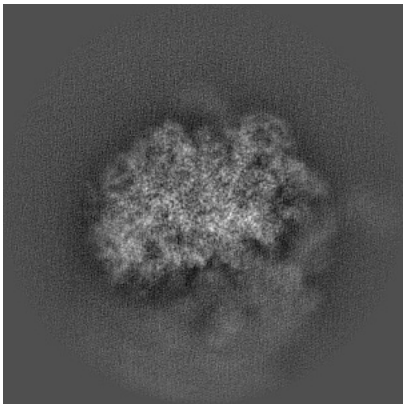


Z

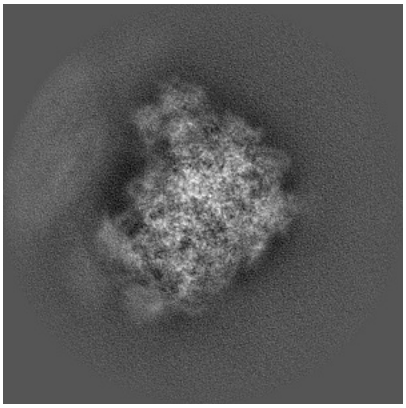
6.1.2 Raw map



X



Y

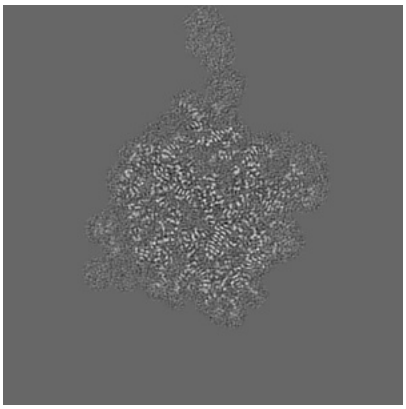


Z

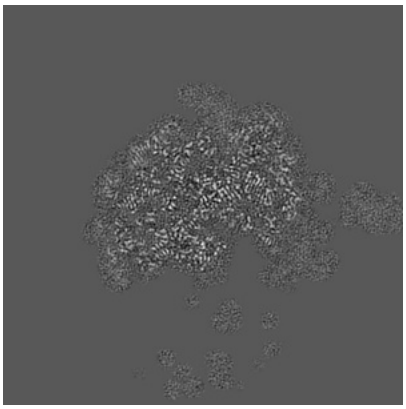
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

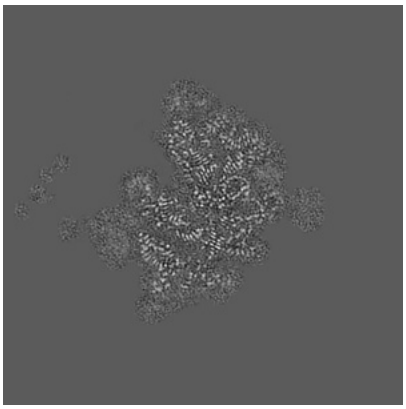
6.2.1 Primary map



X Index: 192

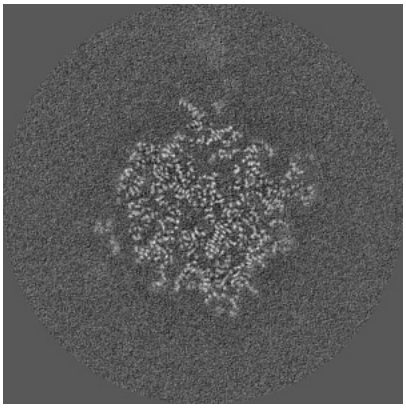


Y Index: 192

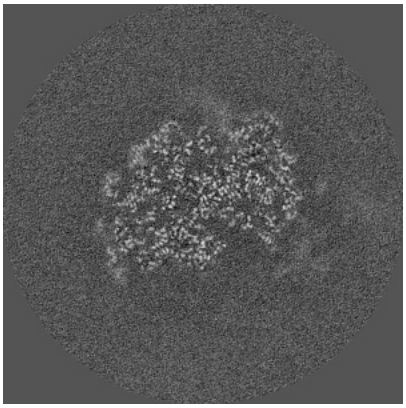


Z Index: 192

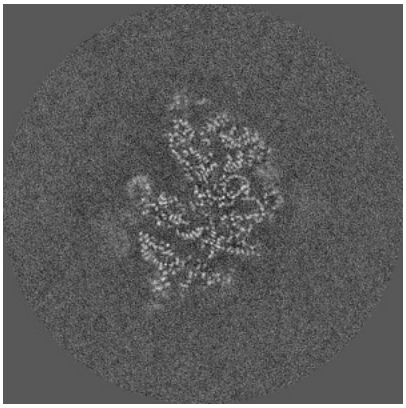
6.2.2 Raw map



X Index: 192



Y Index: 192

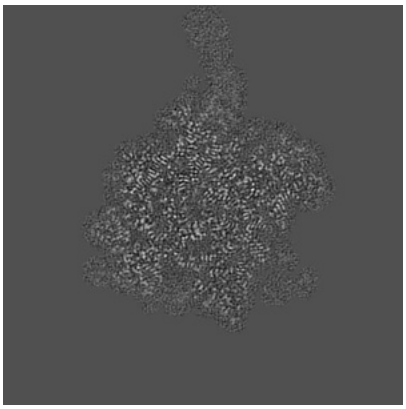


Z Index: 192

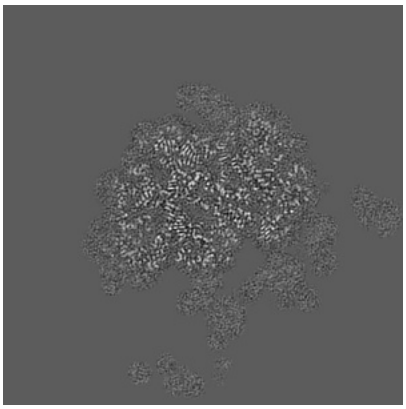
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

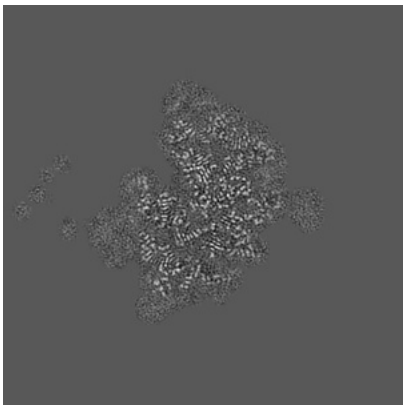
6.3.1 Primary map



X Index: 179

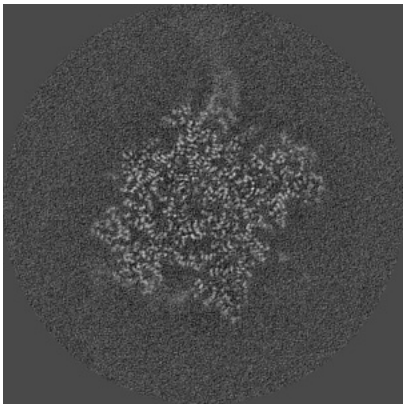


Y Index: 183

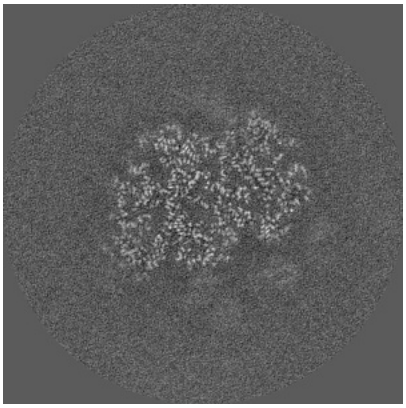


Z Index: 191

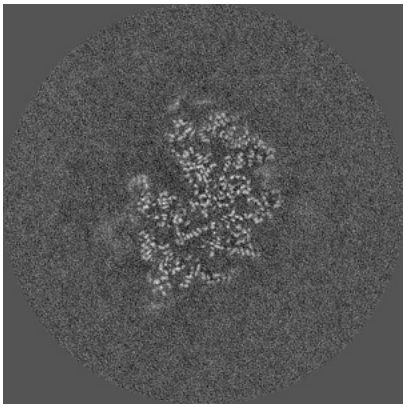
6.3.2 Raw map



X Index: 179



Y Index: 183

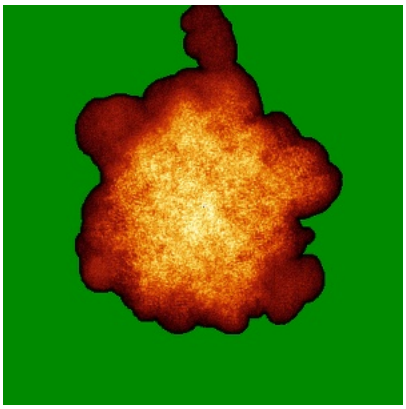


Z Index: 191

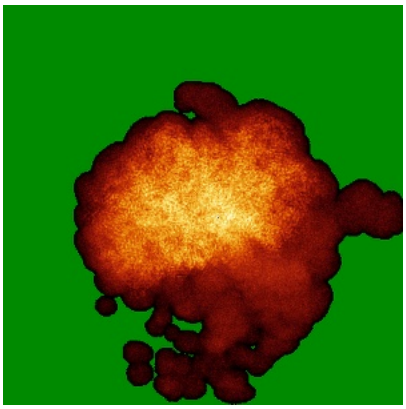
The images above show the largest variance slices of the map in three orthogonal directions.

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

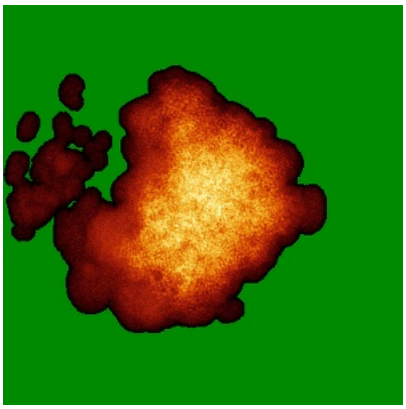
6.4.1 Primary map



X

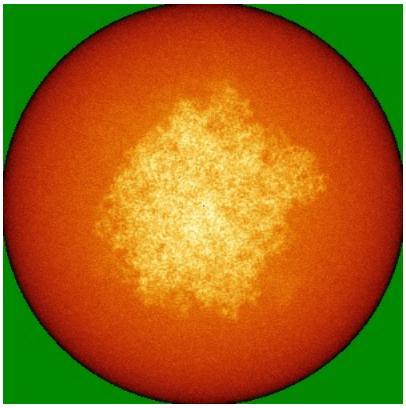


Y

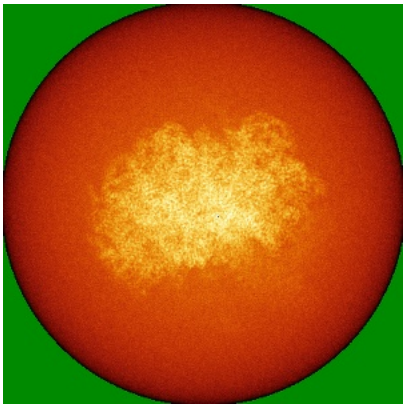


Z

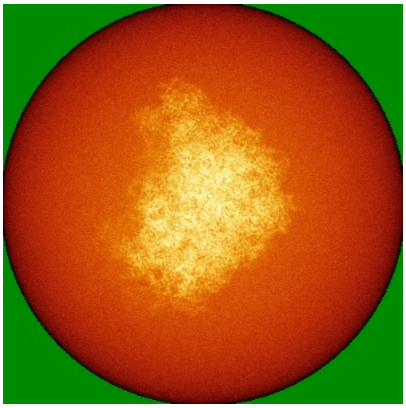
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0279. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

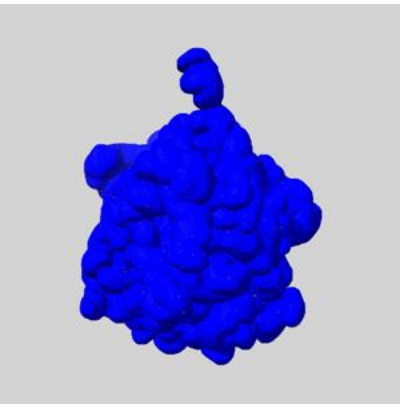
6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

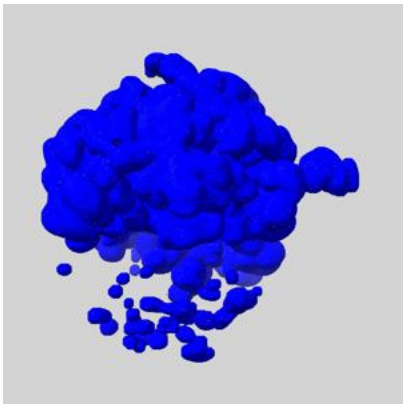
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

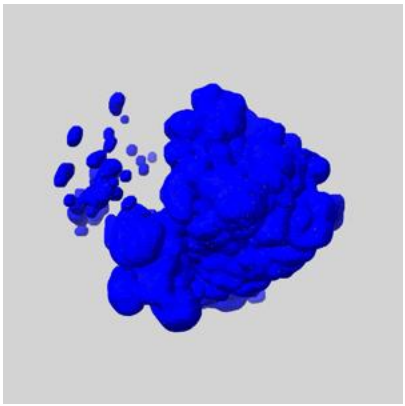
6.6.1 emd_50188_msk_1.map (i)



X



Y

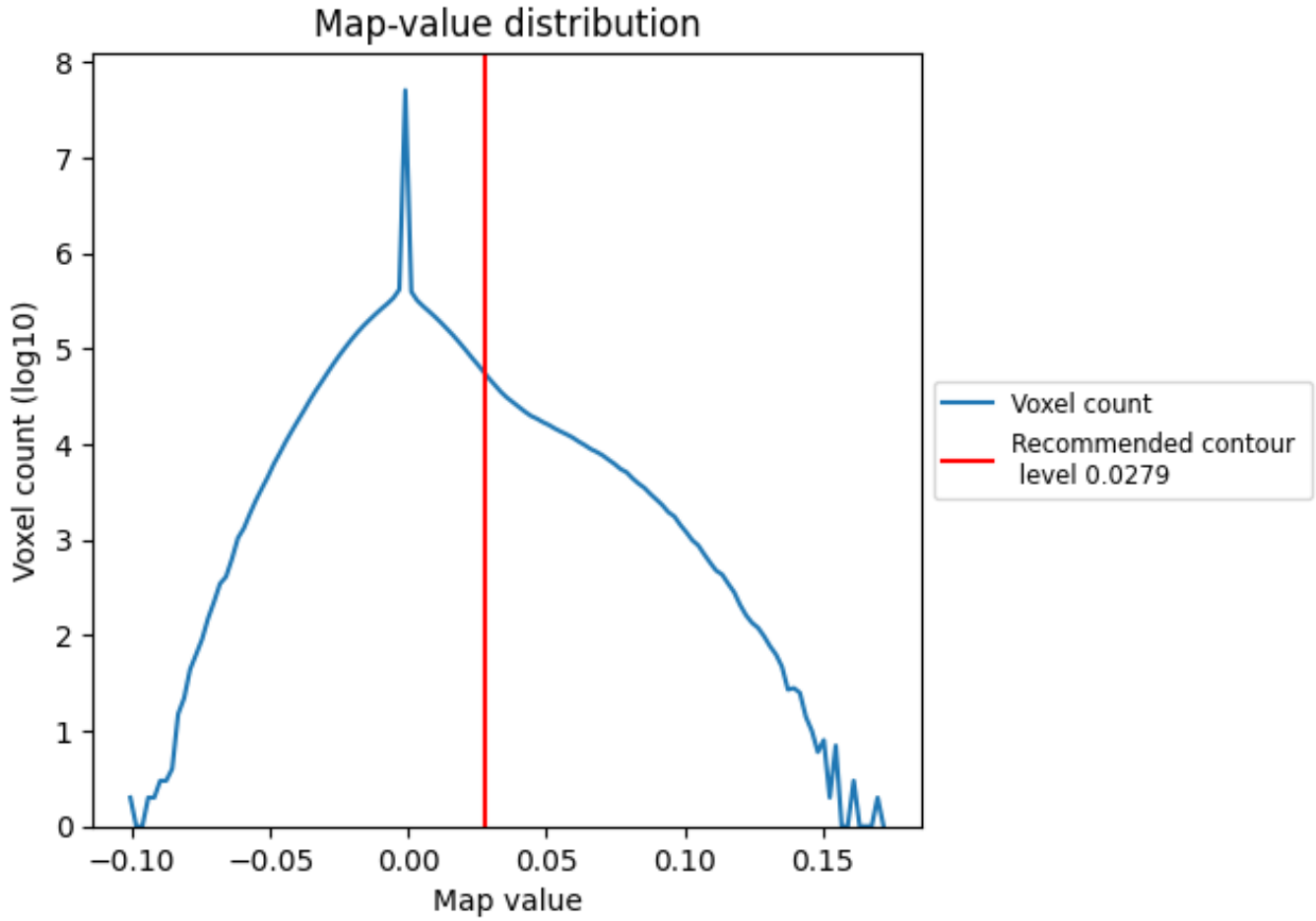


Z

7 Map analysis

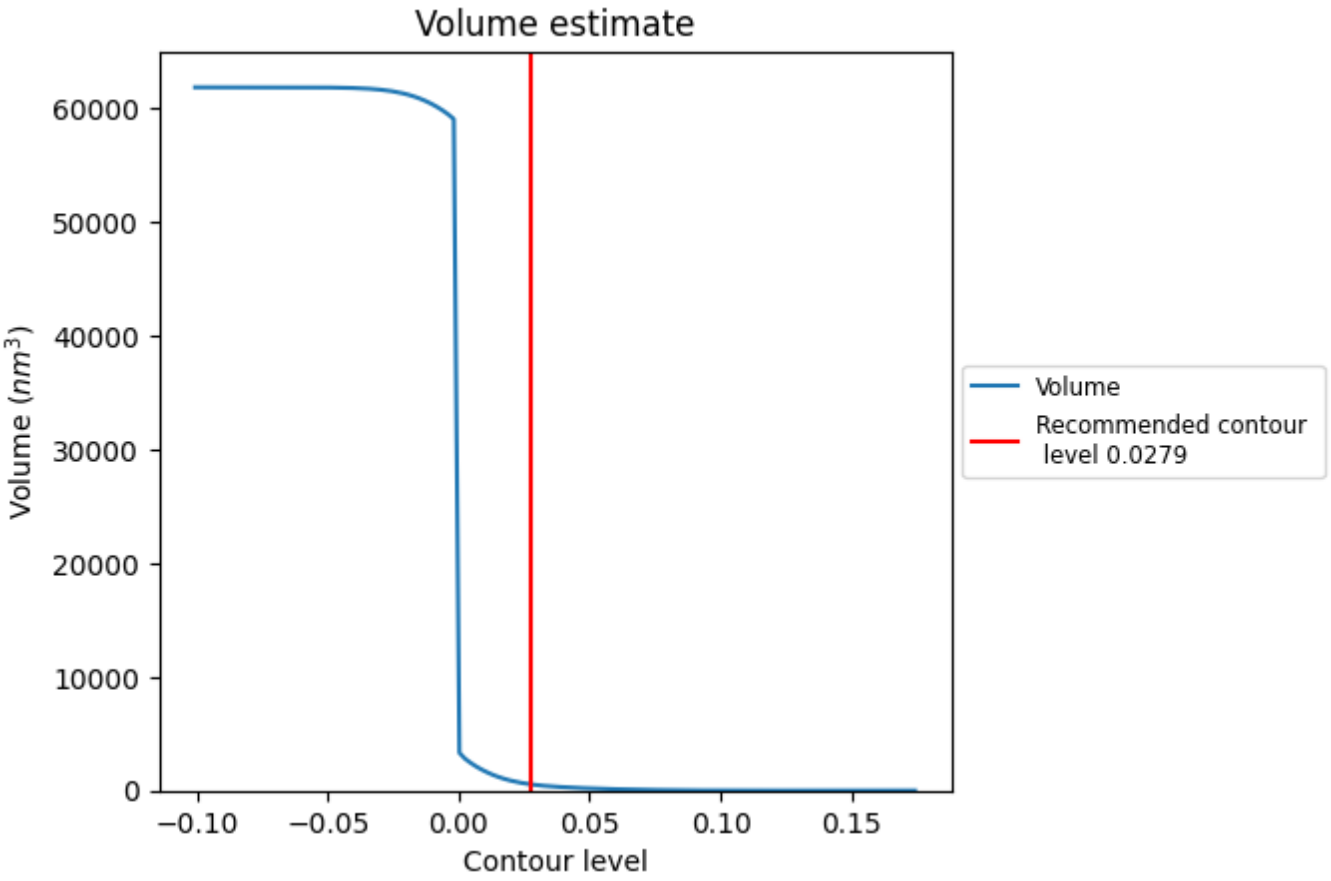
This section contains the results of statistical analysis of the map.

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.

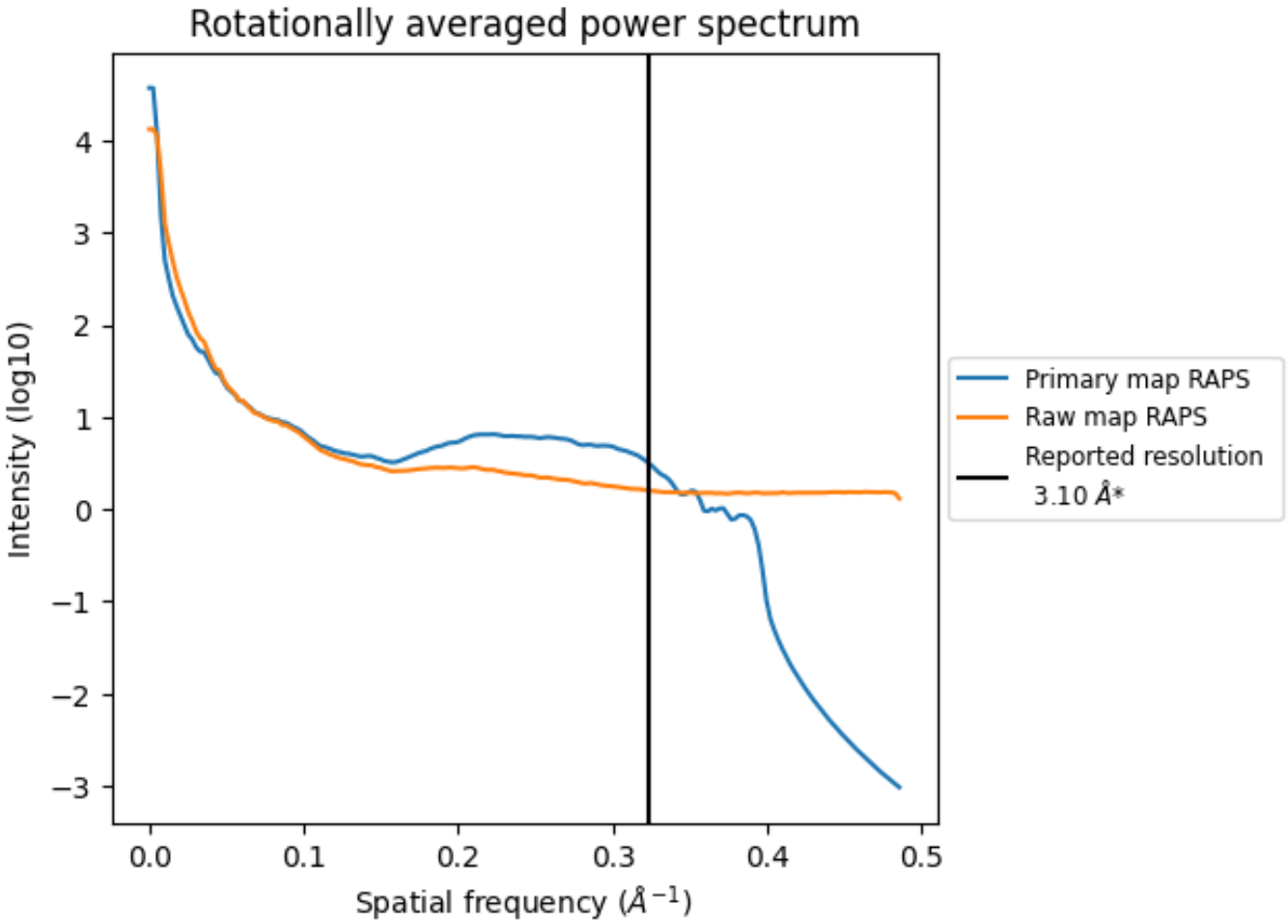
7.2 Volume estimate



The volume at the recommended contour level is 536 nm^3; this corresponds to an approximate mass of 485 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)

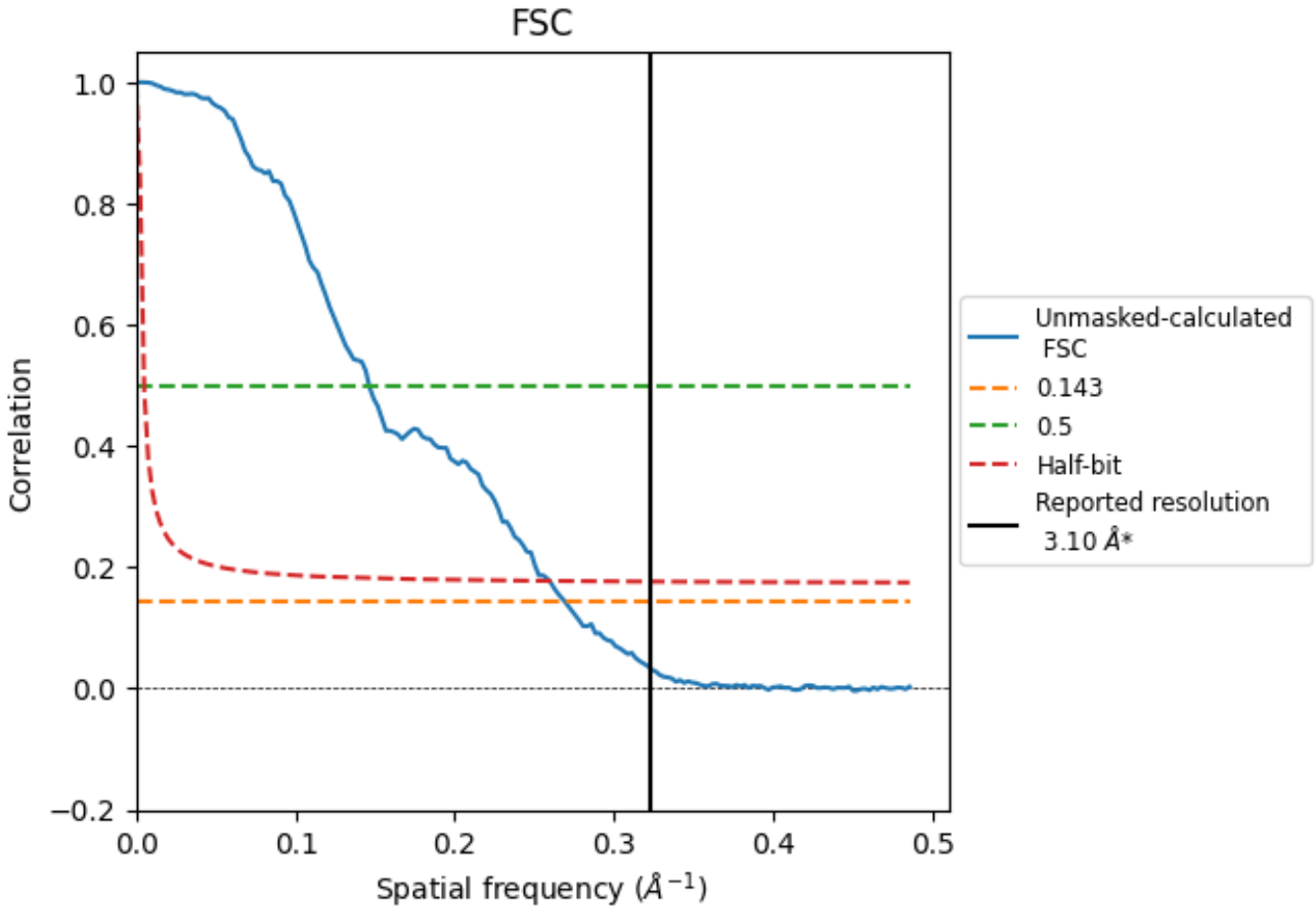


*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

8.2 Resolution estimates (i)

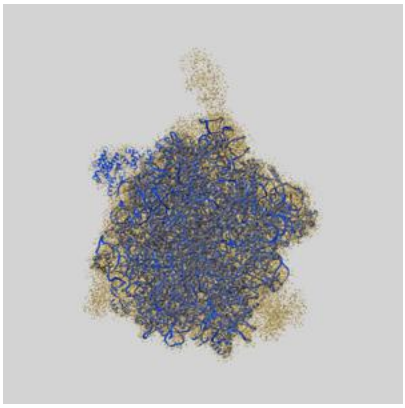
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.72	6.84	3.86

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.72 differs from the reported value 3.1 by more than 10 %

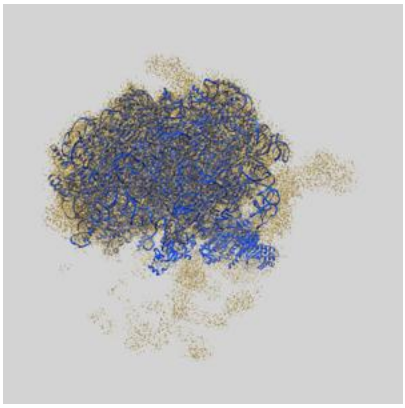
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-50188 and PDB model 9F58. Per-residue inclusion information can be found in section 3 on page 13.

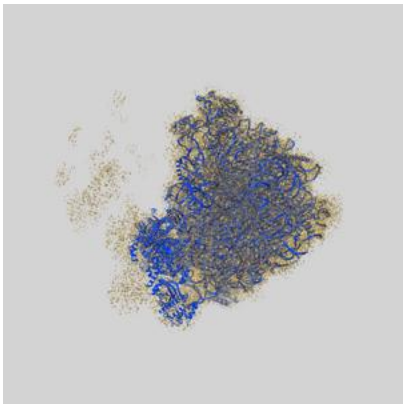
9.1 Map-model overlay



X



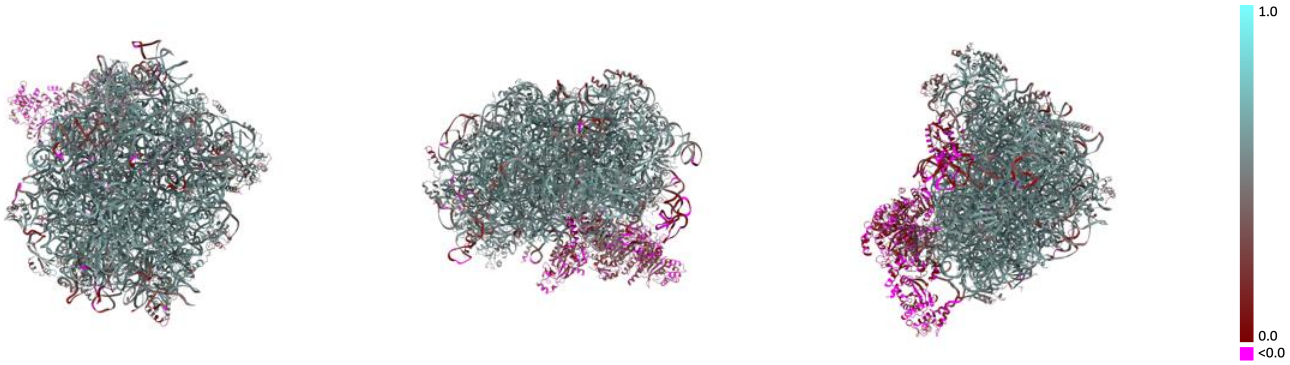
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0279 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.

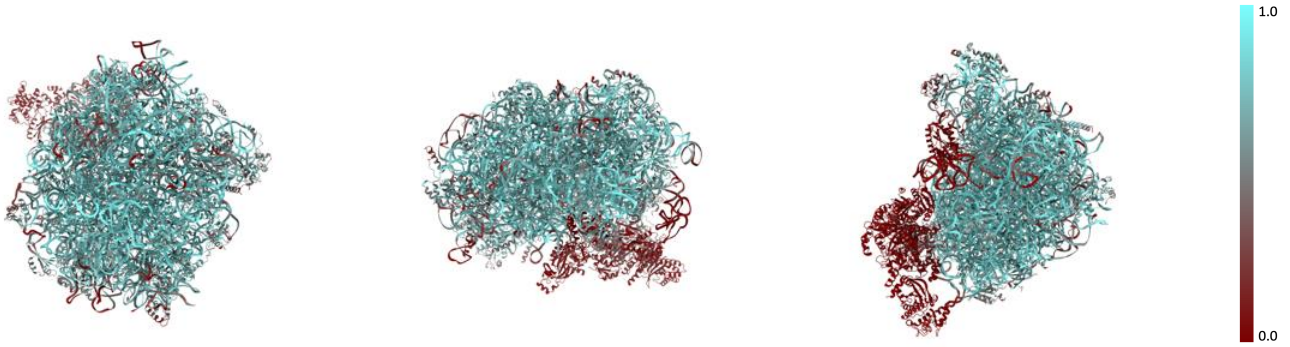
9.2 Q-score mapped to coordinate model (i)



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.

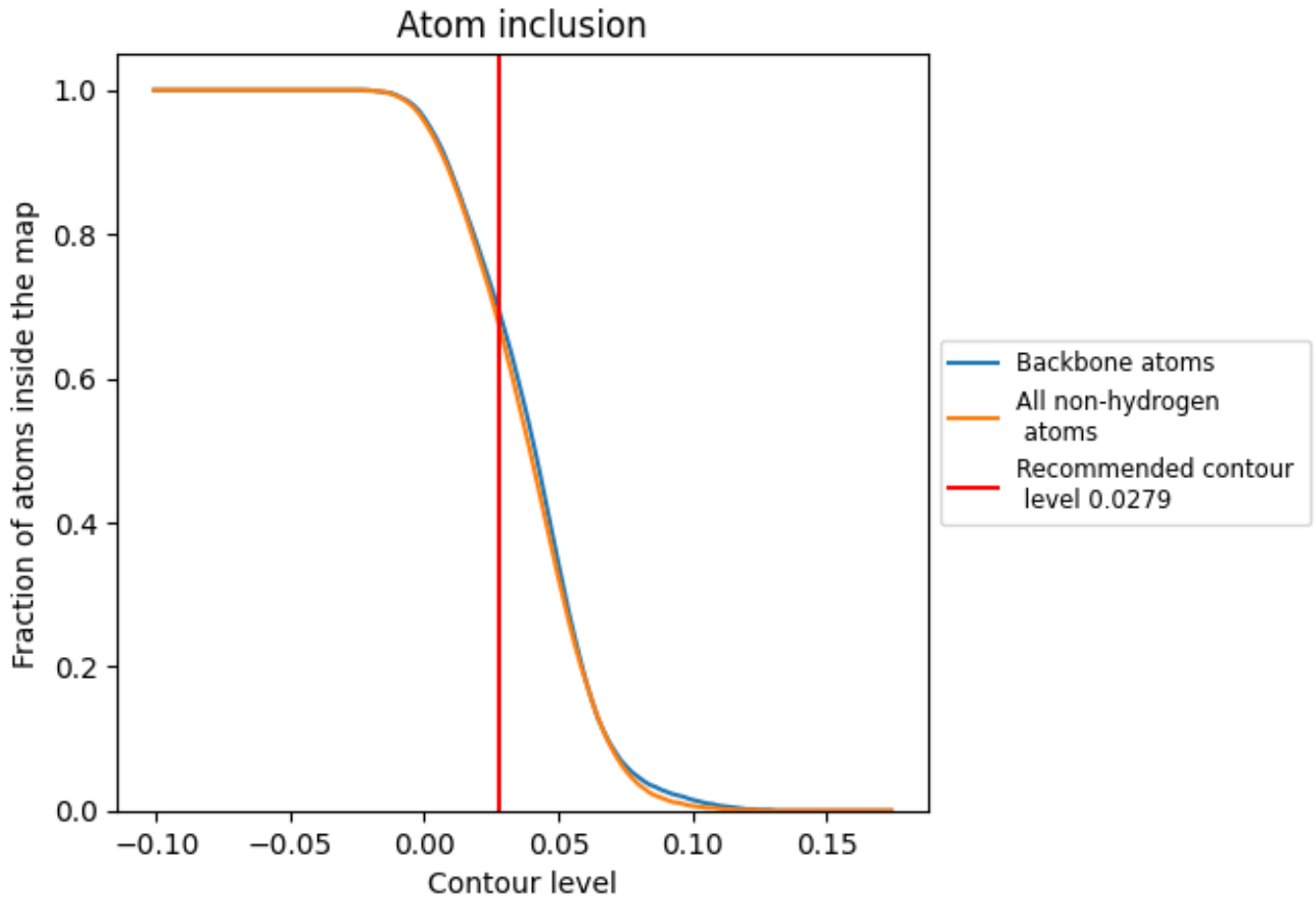
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.0279).

9.4 Atom inclusion (i)



At the recommended contour level, 69% of all backbone atoms, 67% 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 (0.0279) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6740	0.5070
0	0.6580	0.5420
3	0.7200	0.5700
4	0.8140	0.5780
A	0.0210	0.0720
C	0.0100	0.0320
D	0.0420	0.1130
E	0.0860	0.1820
H	0.0160	0.0960
I	0.0150	0.0320
J	0.7000	0.5700
K	0.5930	0.5090
L	0.7560	0.5910
M	0.5890	0.5080
N	0.5750	0.5140
O	0.6630	0.5420
P	0.0760	0.3490
Q	0.6870	0.5670
R	0.7600	0.5900
S	0.6800	0.5600
T	0.6780	0.5430
U	0.6050	0.4980
V	0.7940	0.6040
W	0.5290	0.4750
X	0.6990	0.5620
Y	0.7180	0.5500
Z	0.6140	0.5140
a	0.7820	0.5530
b	0.8280	0.5860
c	0.7750	0.6050
d	0.7790	0.5970
e	0.6210	0.5140
f	0.6190	0.5150
g	0.7630	0.5810
h	0.6080	0.5000

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Chain	Atom inclusion	Q-score
i	0.6930	0.5470
j	0.6490	0.5330
k	0.4380	0.4170
m	0.6870	0.5470
n	0.7140	0.5710
o	0.7930	0.6070
p	0.7900	0.5970
q	0.6910	0.5490
r	0.7320	0.5760
s	0.6830	0.5430
t	0.7560	0.5830
u	0.6980	0.5530
v	0.5130	0.4450
w	0.7150	0.5730
y	0.7090	0.5660
z	0.6660	0.5440