Full wwPDB EM Validation Report ⓘ

Apr 21, 2025 – 11:50 AM JST

PDB ID	:	9JG6 / pdb_00009jg6
EMDB ID	:	EMD-61457
Title	:	The tail-complex structure of phage P22
Authors	:	Liu, H.R.; Xiao, H.
Deposited on	:	2024-09-06
Resolution	:	3.21 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:

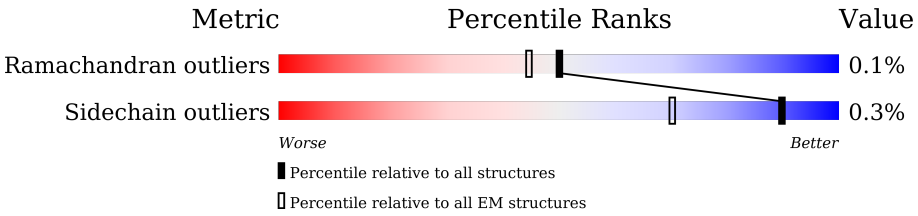
EMDB validation analysis	:	0.0.1.dev117
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.42

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.21 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)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	725	84% 16%
1	B	725	84% 16%
1	C	725	84% 16%
1	D	725	84% 16%
1	E	725	84% 16%
1	F	725	83% 16%
1	G	725	84% 16%
1	H	725	84% 16%
1	I	725	84% 16%

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Mol	Chain	Length	Quality of chain
1	J	725	84% 16%
1	K	725	83% 16%
1	L	725	83% 16%
2	M	667	22% 78%
2	N	667	22% 78%
2	O	667	22% 78%
2	P	667	22% 78%
2	Q	667	22% 78%
2	R	667	22% 78%
2	S	667	22% 78%
2	T	667	22% 78%
2	U	667	22% 78%
2	V	667	22% 78%
2	W	667	22% 78%
2	X	667	22% 78%
2	Y	667	22% 78%
2	Z	667	22% 78%
2	s	667	22% 78%
2	v	667	22% 78%
2	w	667	22% 78%
2	x	667	22% 78%
3	a	472	99%
3	b	472	99%
3	c	472	99%
3	d	472	99%

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Mol	Chain	Length	Quality of chain
3	e	472	99%
3	f	472	99%
4	g	166	92% 8%
4	h	166	92% 8%
4	i	166	92% 8%
4	j	166	92% 8%
4	k	166	92% 8%
4	l	166	92% 8%
4	m	166	92% 8%
4	n	166	92% 8%
4	o	166	92% 8%
4	p	166	92% 8%
4	q	166	92% 8%
4	r	166	92% 8%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 115680 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 Portal protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	B	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	C	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	D	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	E	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	F	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	G	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	H	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	I	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	J	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	K	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		
1	L	608	Total	C	N	O	S	0	0
			4908	3090	840	957	21		

- Molecule 2 is a protein called Endorhamnosidase.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	M	147	Total	C	N	O	S	0	0
			1129	717	185	226	1		
2	N	147	Total	C	N	O	S	0	0
			1129	717	185	226	1		
2	O	147	Total	C	N	O	S	0	0
			1129	717	185	226	1		

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Mol	Chain	Residues	Atoms					AltConf	Trace
2	P	149	Total	C	N	O	S	0	0
			1161	740	191	229	1		
2	Q	149	Total	C	N	O	S	0	0
			1161	740	191	229	1		
2	R	149	Total	C	N	O	S	0	0
			1161	740	191	229	1		
2	S	149	Total	C	N	O	S	0	0
			1161	740	191	229	1		
2	T	149	Total	C	N	O	S	0	0
			1161	740	191	229	1		
2	U	149	Total	C	N	O	S	0	0
			1148	727	190	230	1		
2	V	149	Total	C	N	O	S	0	0
			1148	727	190	230	1		
2	W	149	Total	C	N	O	S	0	0
			1148	727	190	230	1		
2	X	149	Total	C	N	O	S	0	0
			1148	727	190	230	1		
2	Y	149	Total	C	N	O	S	0	0
			1148	727	190	230	1		
2	Z	147	Total	C	N	O	S	0	0
			1129	717	185	226	1		
2	s	147	Total	C	N	O	S	0	0
			1129	717	185	226	1		
2	v	149	Total	C	N	O	S	0	0
			1161	740	191	229	1		
2	w	149	Total	C	N	O	S	0	0
			1148	727	190	230	1		
2	x	147	Total	C	N	O	S	0	0
			1129	717	185	226	1		

- Molecule 3 is a protein called Phage stabilisation protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	a	470	Total	C	N	O	S	0	0
			3676	2320	630	708	18		
3	b	470	Total	C	N	O	S	0	0
			3676	2320	630	708	18		
3	c	470	Total	C	N	O	S	0	0
			3676	2320	630	708	18		
3	d	470	Total	C	N	O	S	0	0
			3676	2320	630	708	18		

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Mol	Chain	Residues	Atoms					AltConf	Trace
3	e	470	Total	C	N	O	S	0	0
			3676	2320	630	708	18		
3	f	470	Total	C	N	O	S	0	0
			3676	2320	630	708	18		

- Molecule 4 is a protein called P22 tail accessory factor.

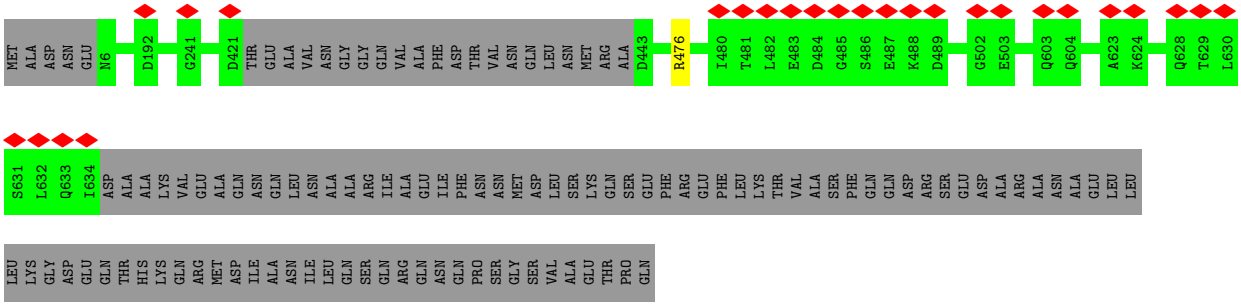
Mol	Chain	Residues	Atoms					AltConf	Trace
4	g	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	h	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	i	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	j	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	k	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	l	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	m	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	n	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	o	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	p	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	q	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		
4	r	153	Total	C	N	O	S	0	0
			1175	736	202	231	6		

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.

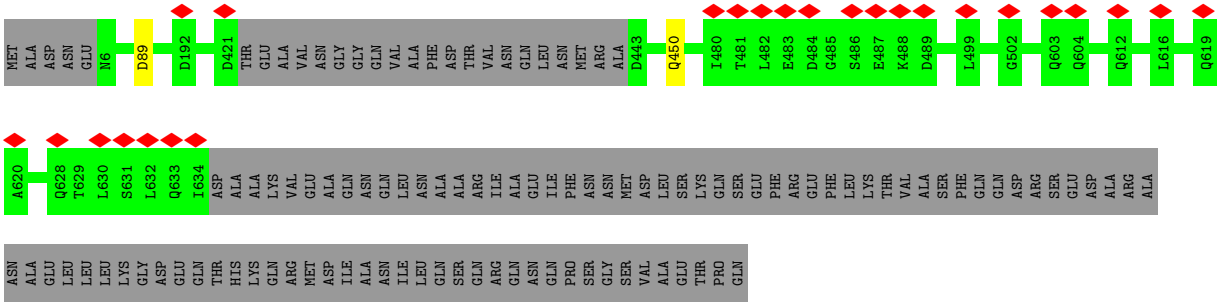
• Molecule 1: Portal protein

Chain A:



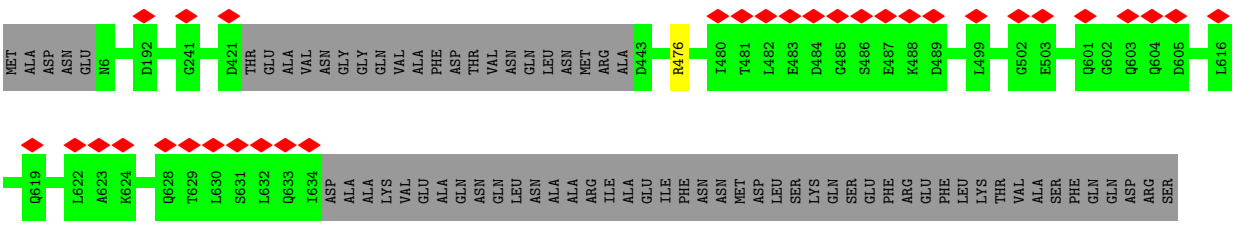
• Molecule 1: Portal protein

Chain B:



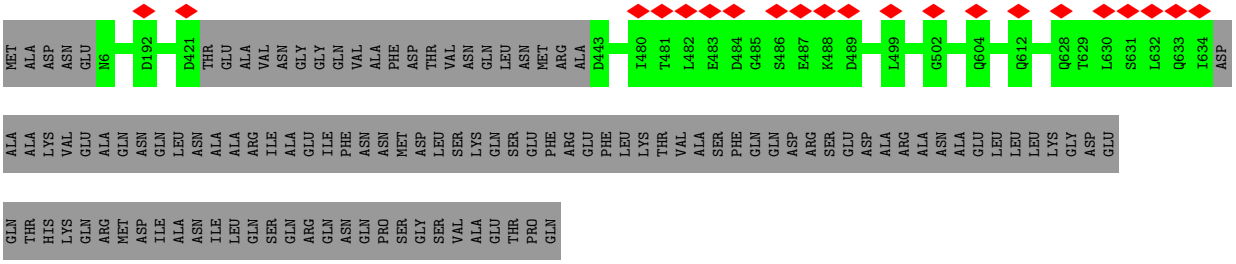
• Molecule 1: Portal protein

Chain C:



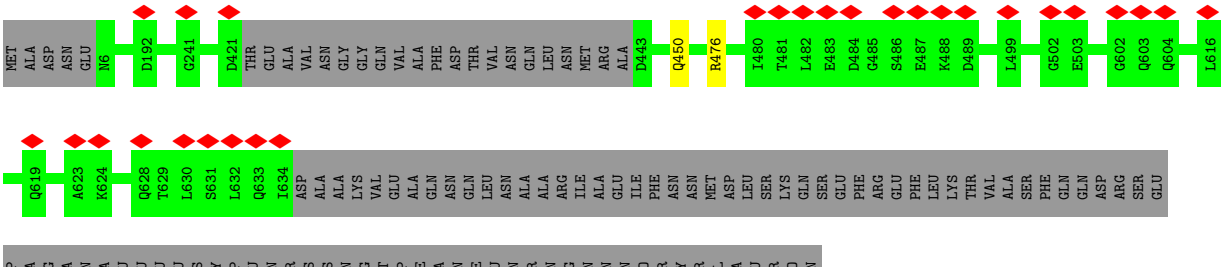
• Molecule 1: Portal protein

Chain D:



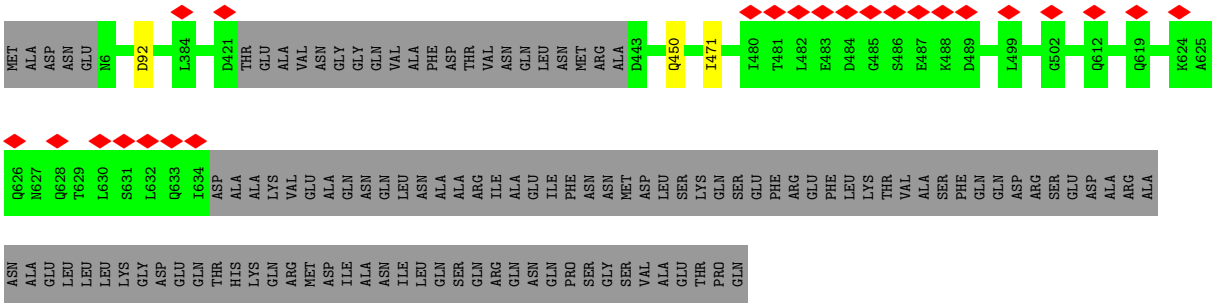
• Molecule 1: Portal protein

Chain E:



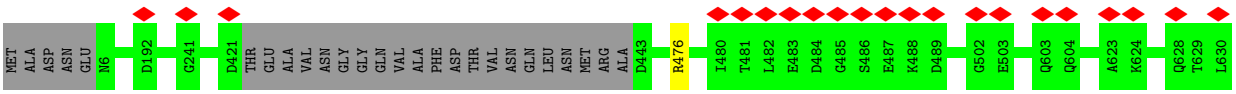
• Molecule 1: Portal protein

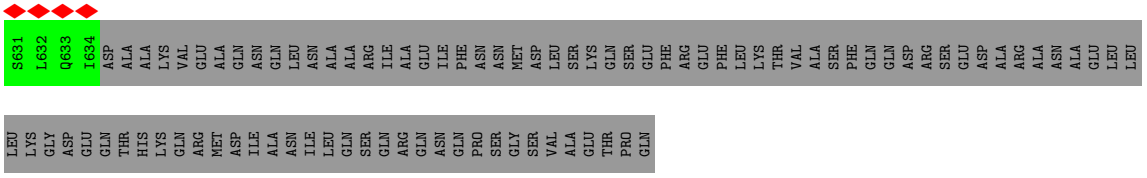
Chain F:



• Molecule 1: Portal protein

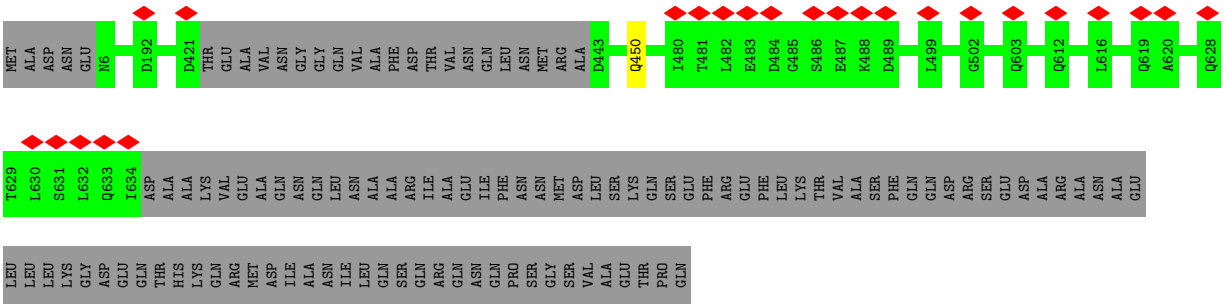
Chain G:





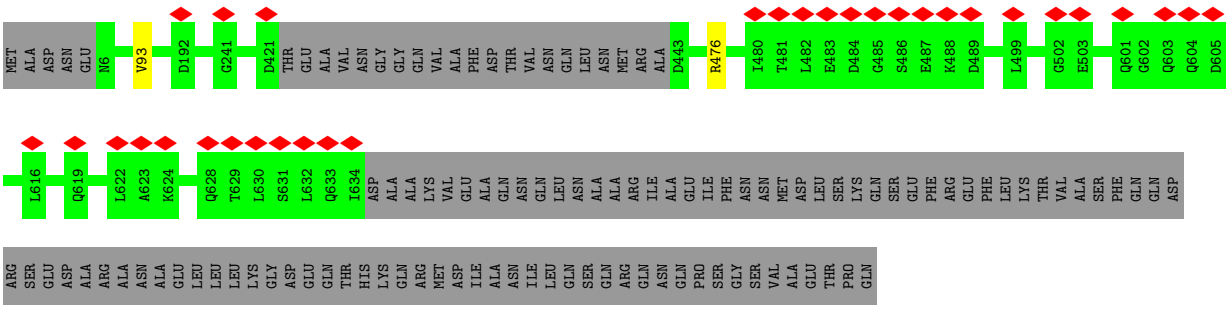
• Molecule 1: Portal protein

Chain H:



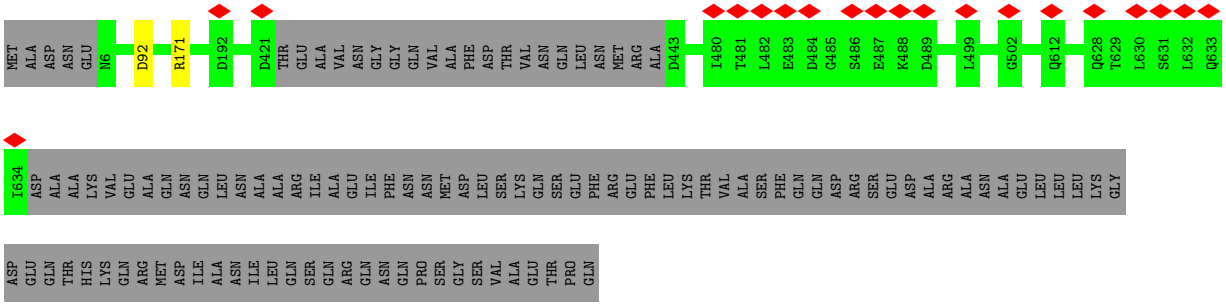
• Molecule 1: Portal protein

Chain I:



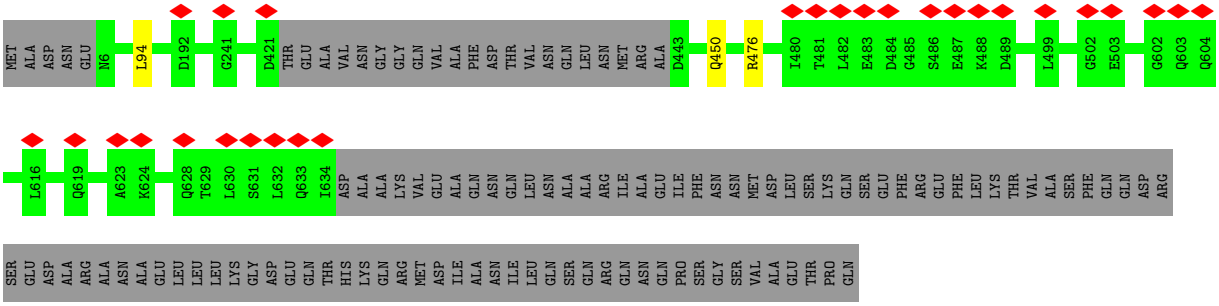
• Molecule 1: Portal protein

Chain J:



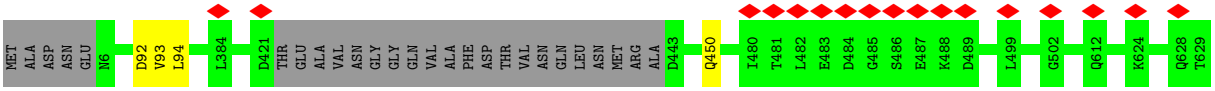
• Molecule 1: Portal protein

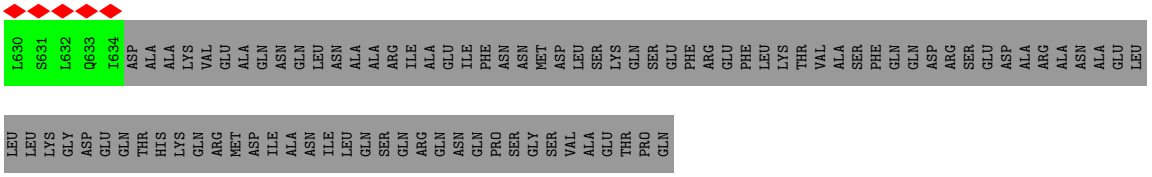
Chain K:



• Molecule 1: Portal protein

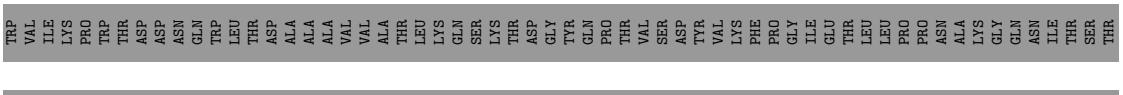
Chain L:

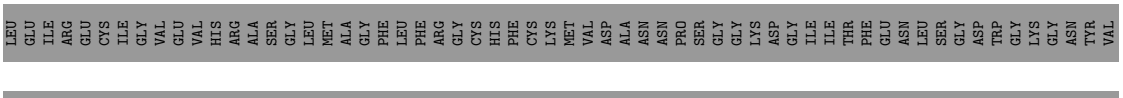


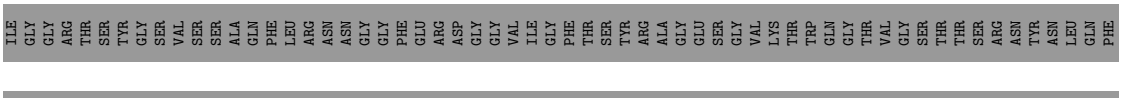


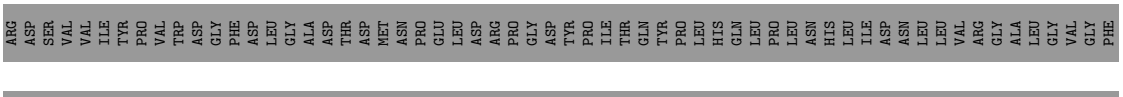
• Molecule 2: Endorhamnosidase

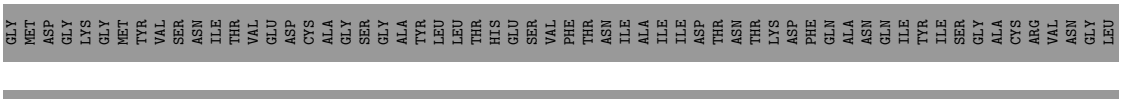
Chain M:

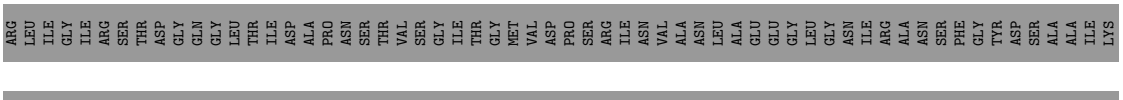


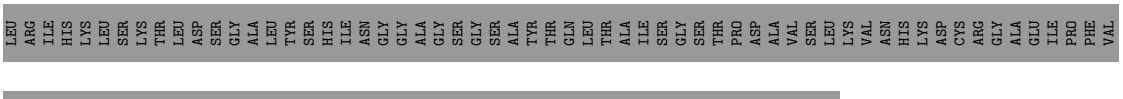






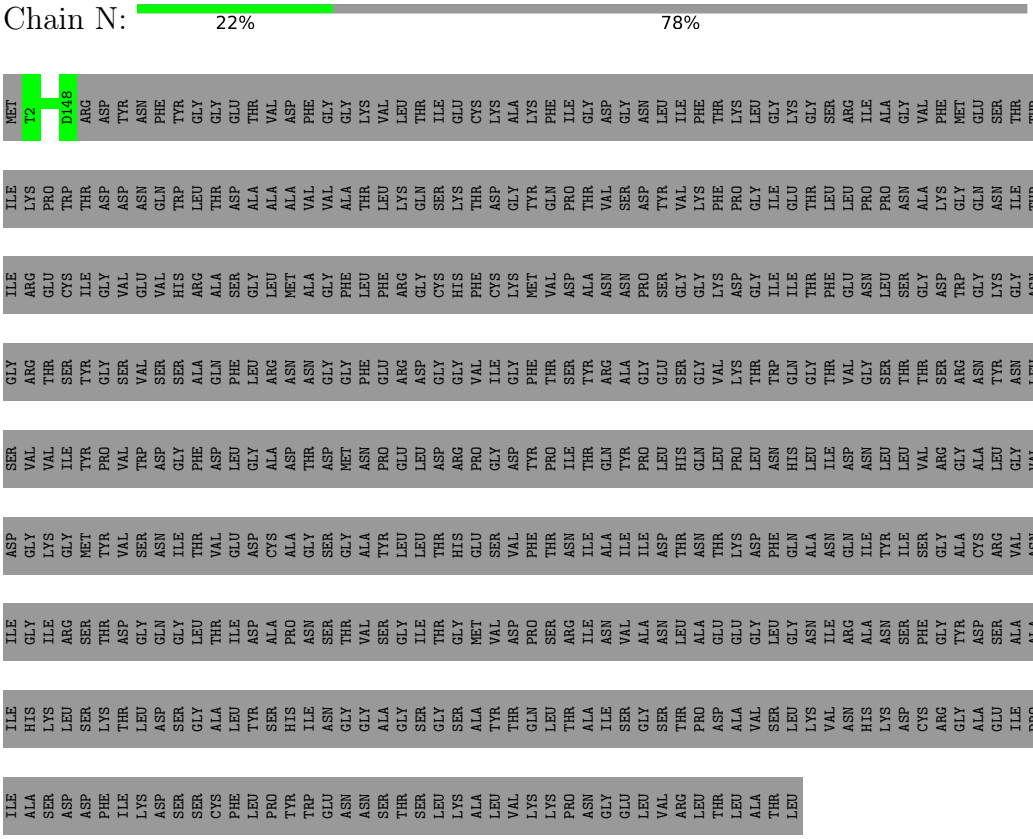






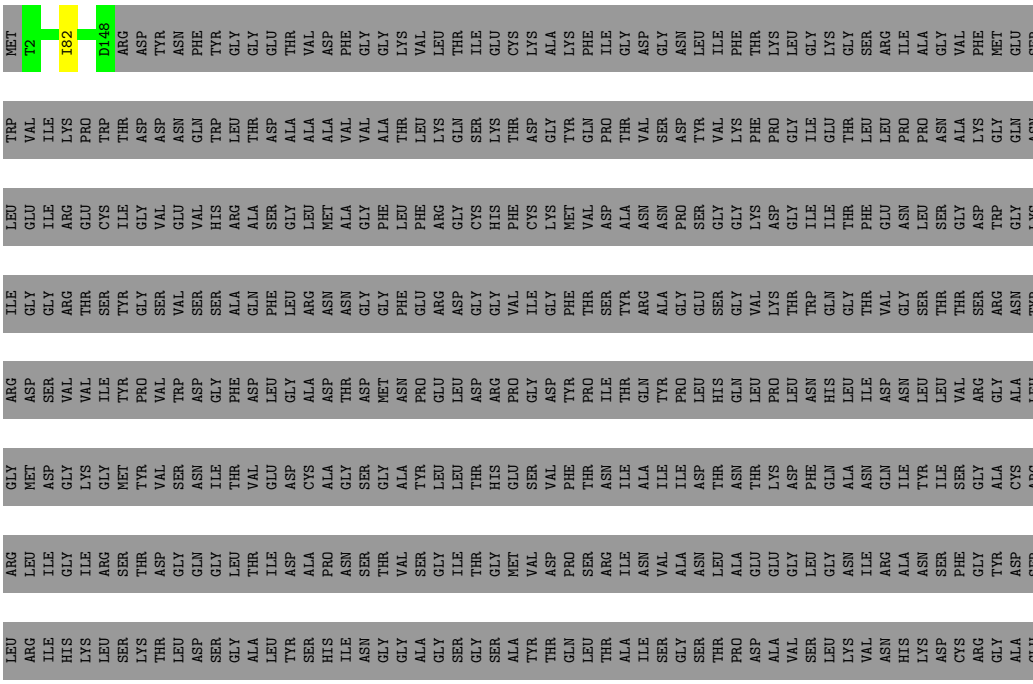
• Molecule 2: Endorhamnosidase

Chain N:



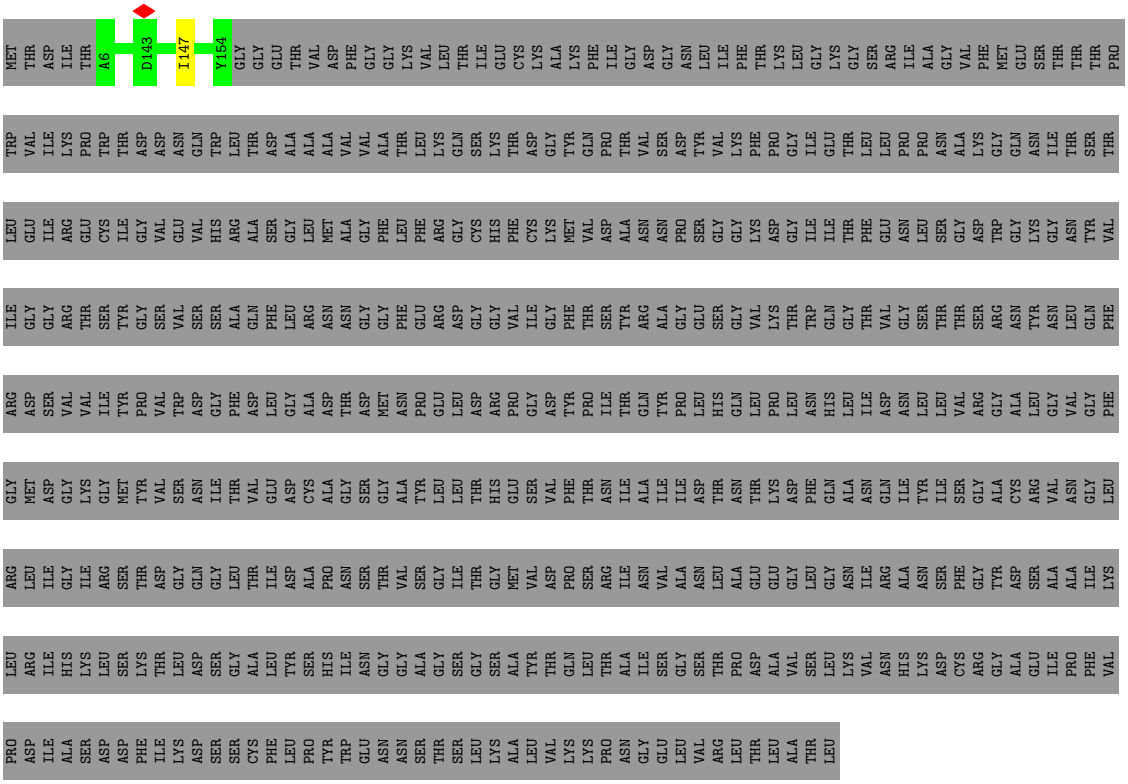
• Molecule 2: Endorhamnosidase

Chain O:



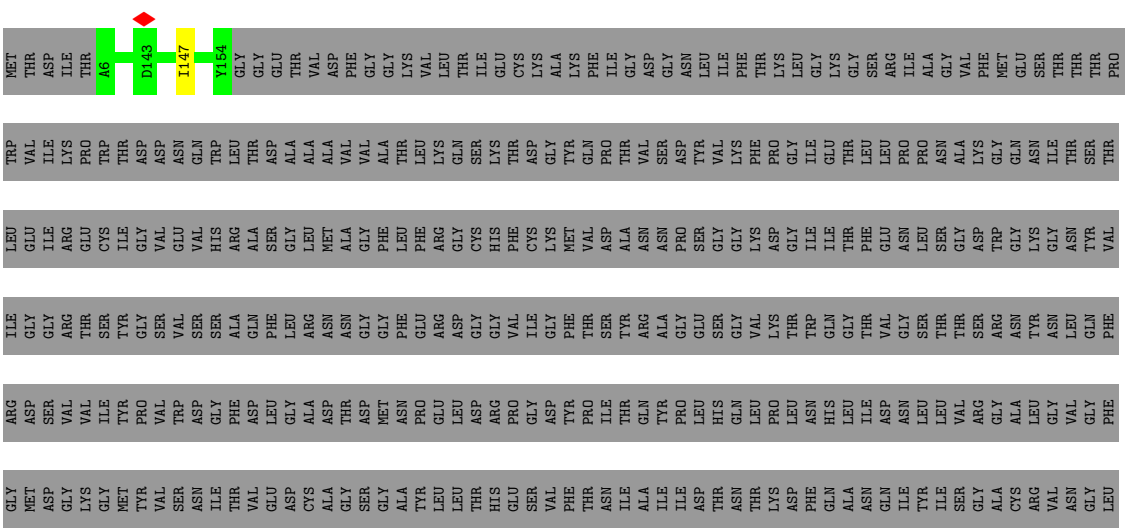
• Molecule 2: Endorhamnosidase

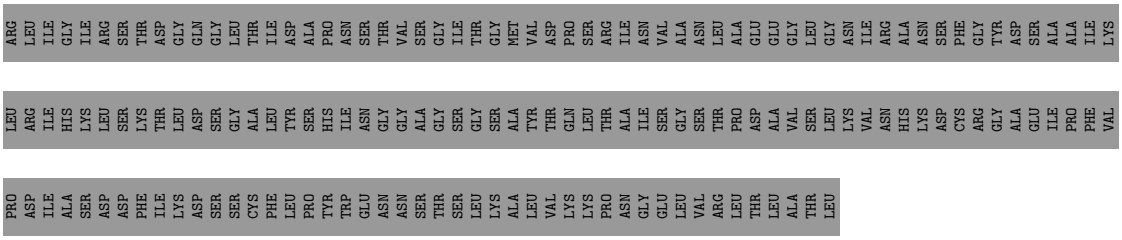
Chain P:



• Molecule 2: Endorhamnosidase

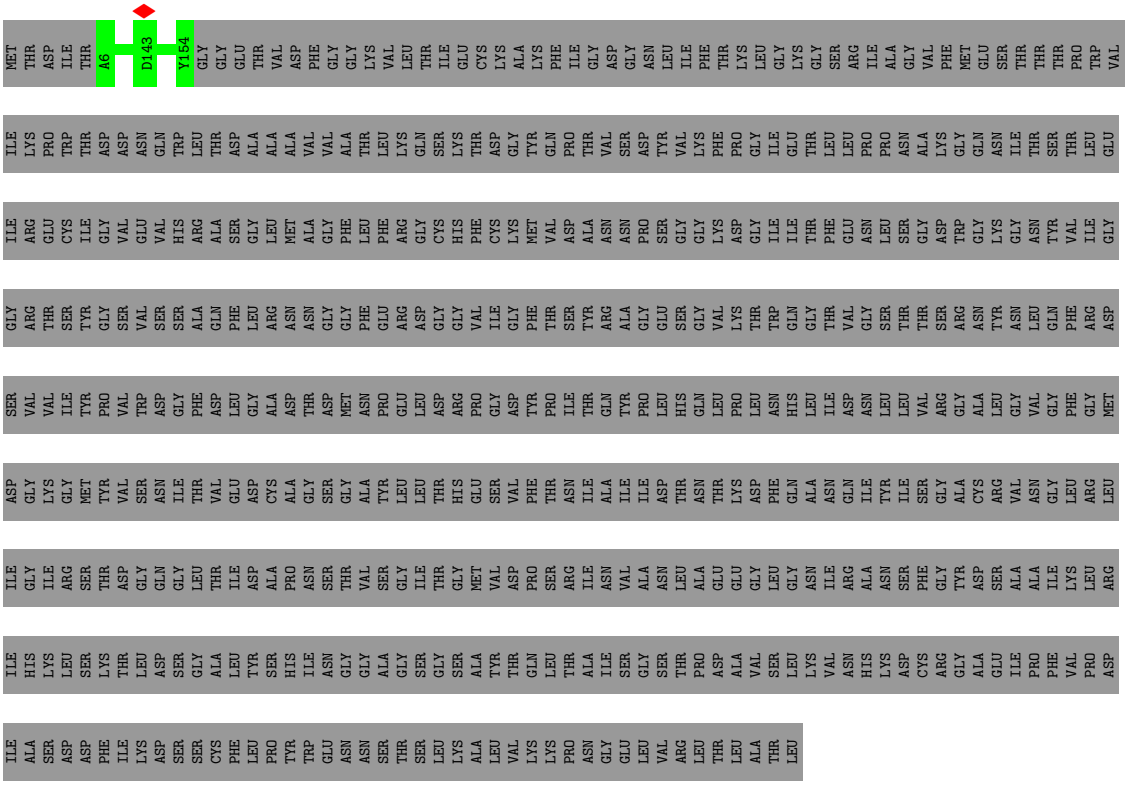
Chain Q:





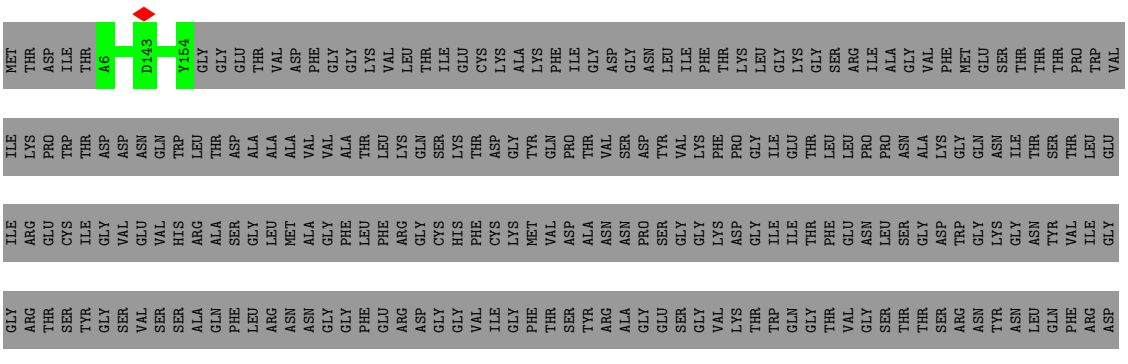
• Molecule 2: Endorhamnosidase

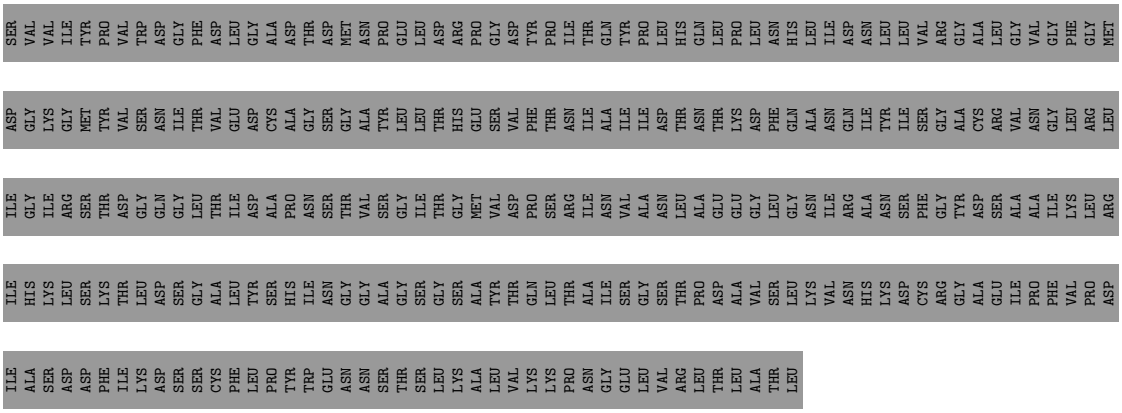
Chain R:



• Molecule 2: Endorhamnosidase

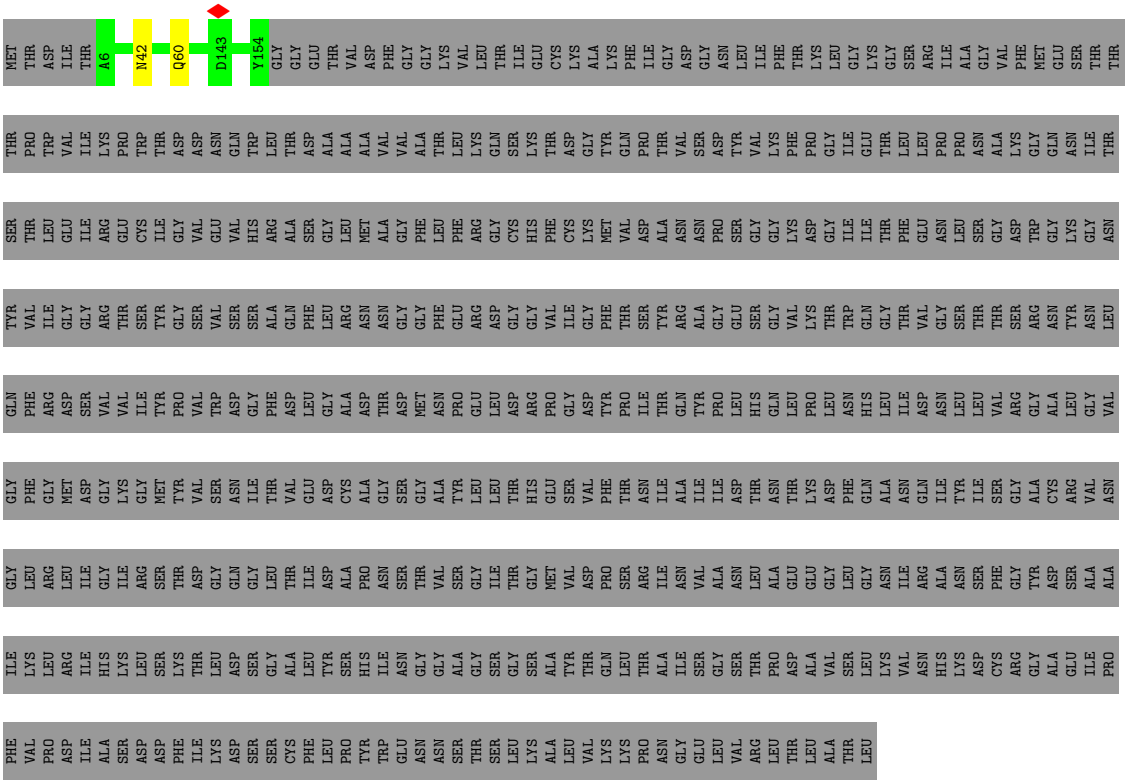
Chain S:





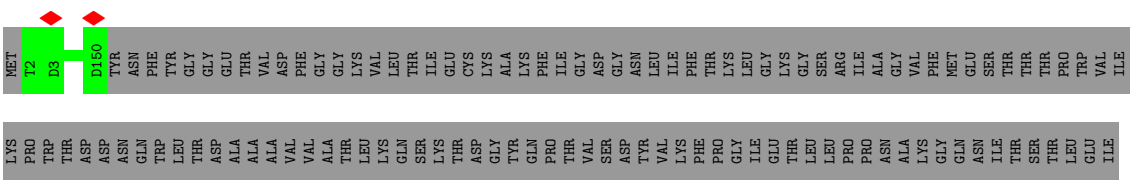
• Molecule 2: Endorhamnosidase

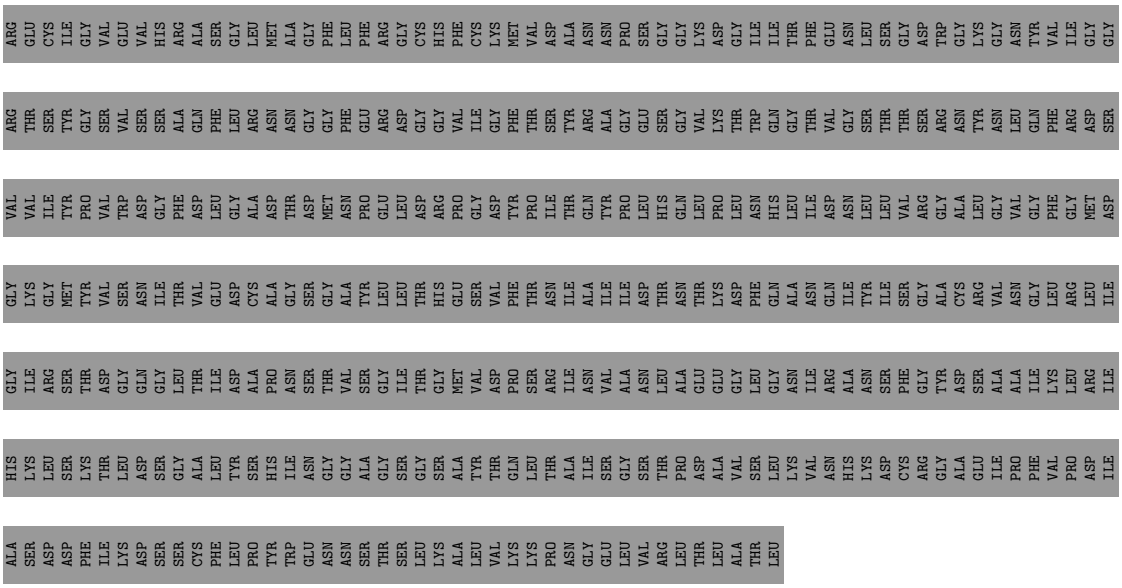
Chain T:



• Molecule 2: Endorhamnosidase

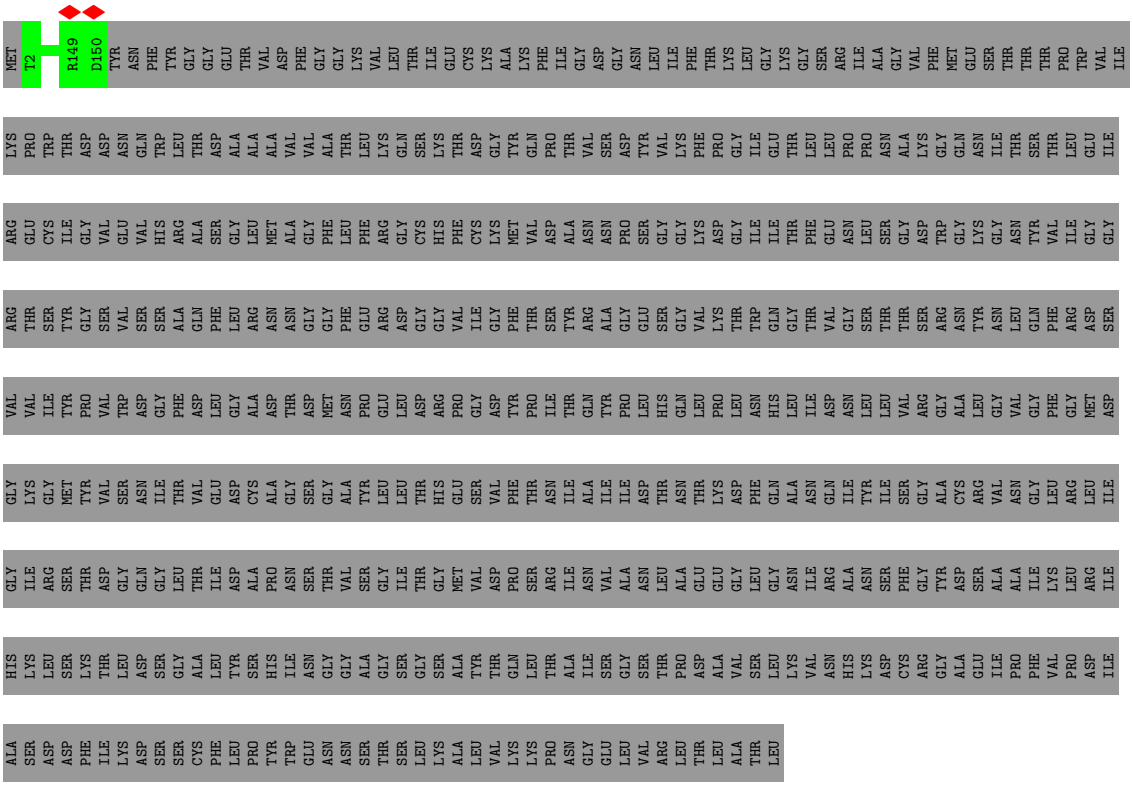
Chain U:





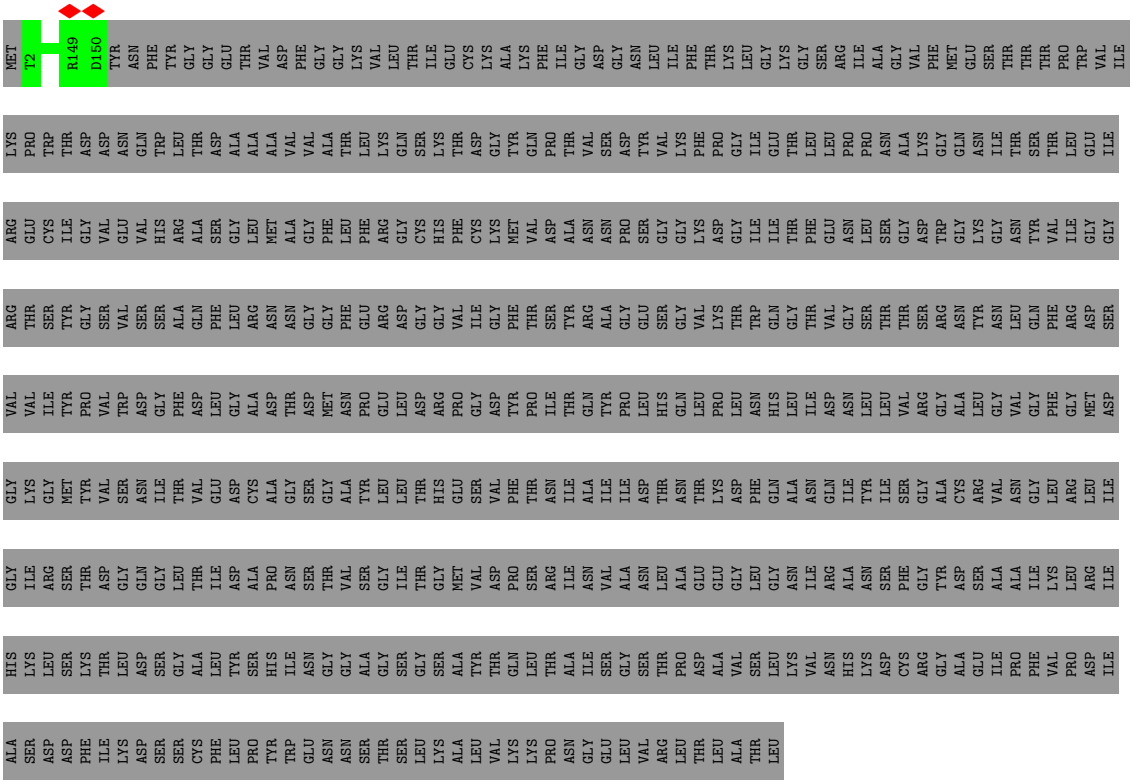
• Molecule 2: Endorhamnosidase

Chain V:



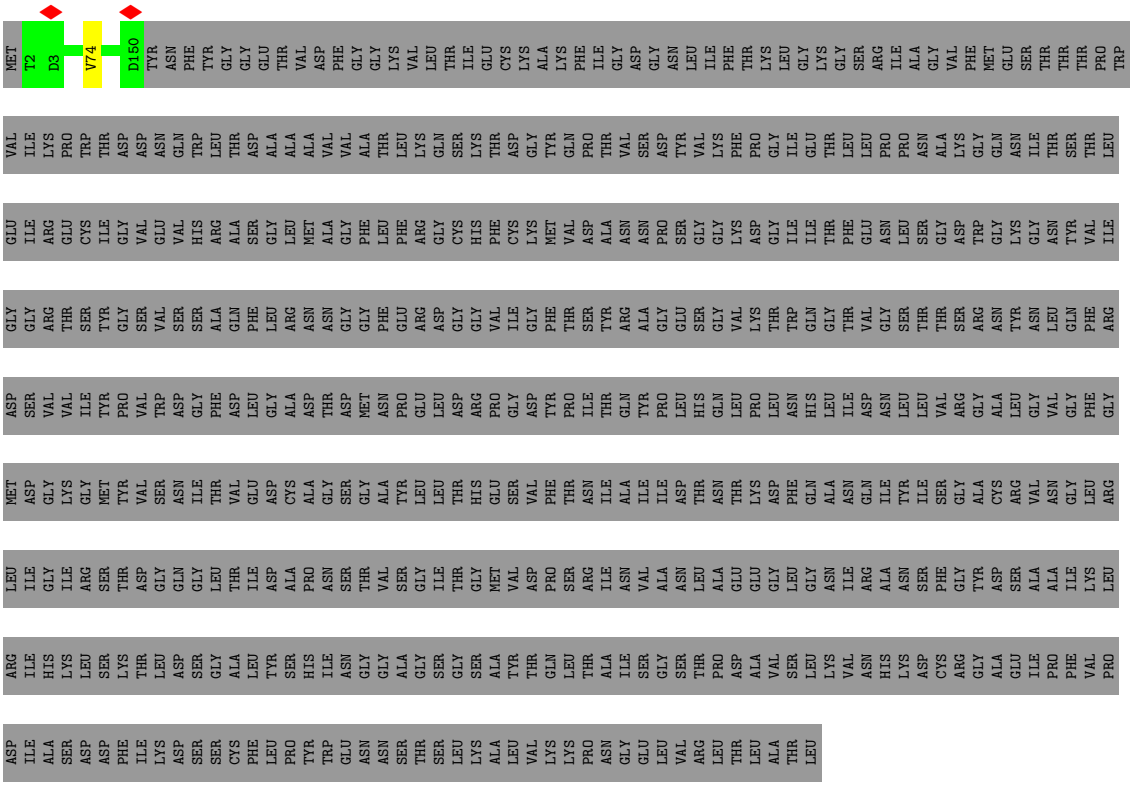
• Molecule 2: Endorhamnosidase

Chain W:



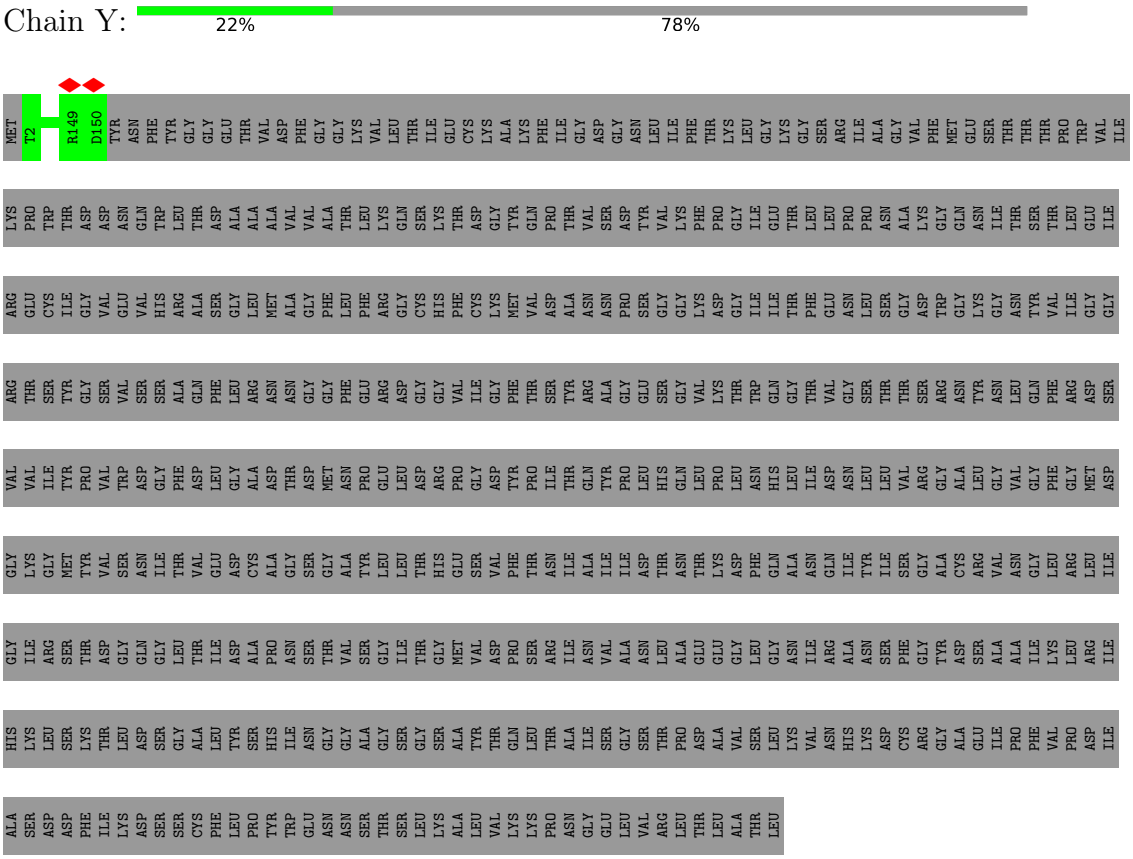
• Molecule 2: Endorhamnosidase

Chain X:



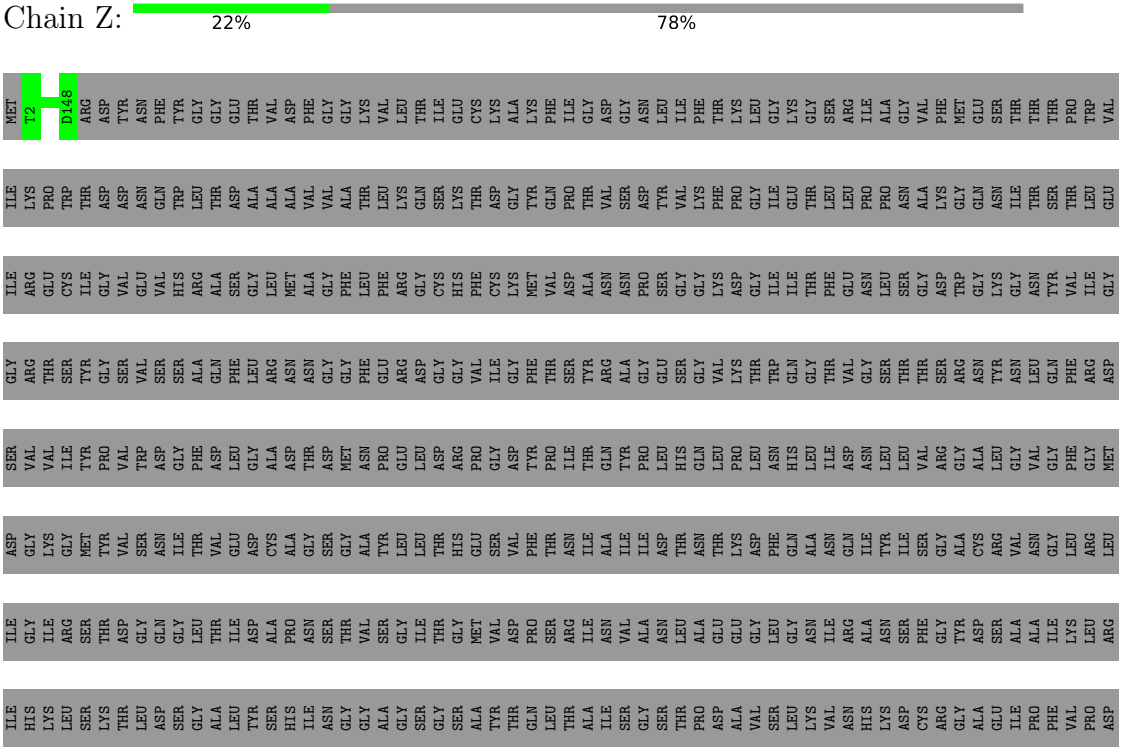
• Molecule 2: Endorhamnosidase

Chain Y:



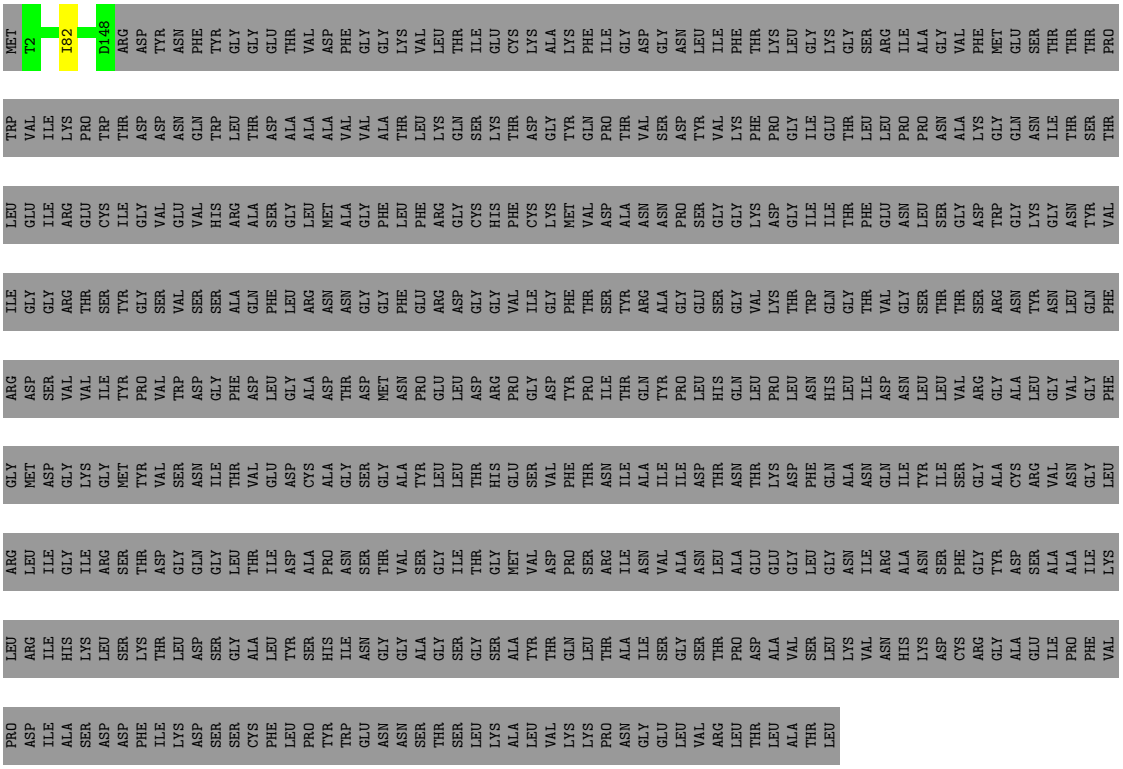
• Molecule 2: Endorhamnosidase

Chain Z:



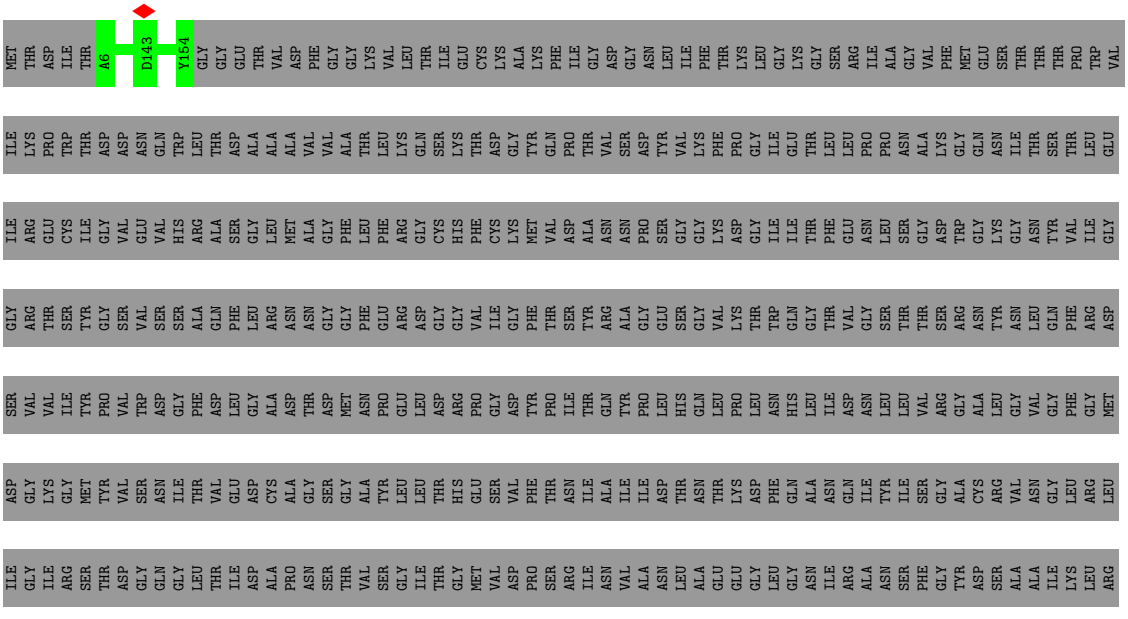
• Molecule 2: Endorhamnosidase

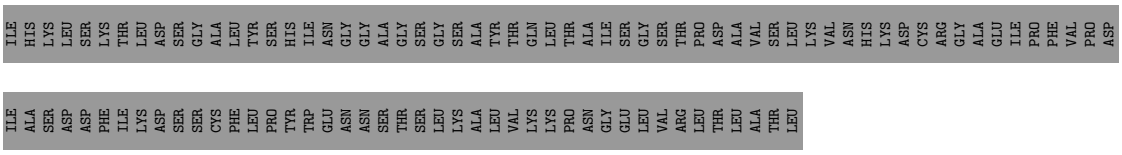
Chain s:



• Molecule 2: Endorhamnosidase

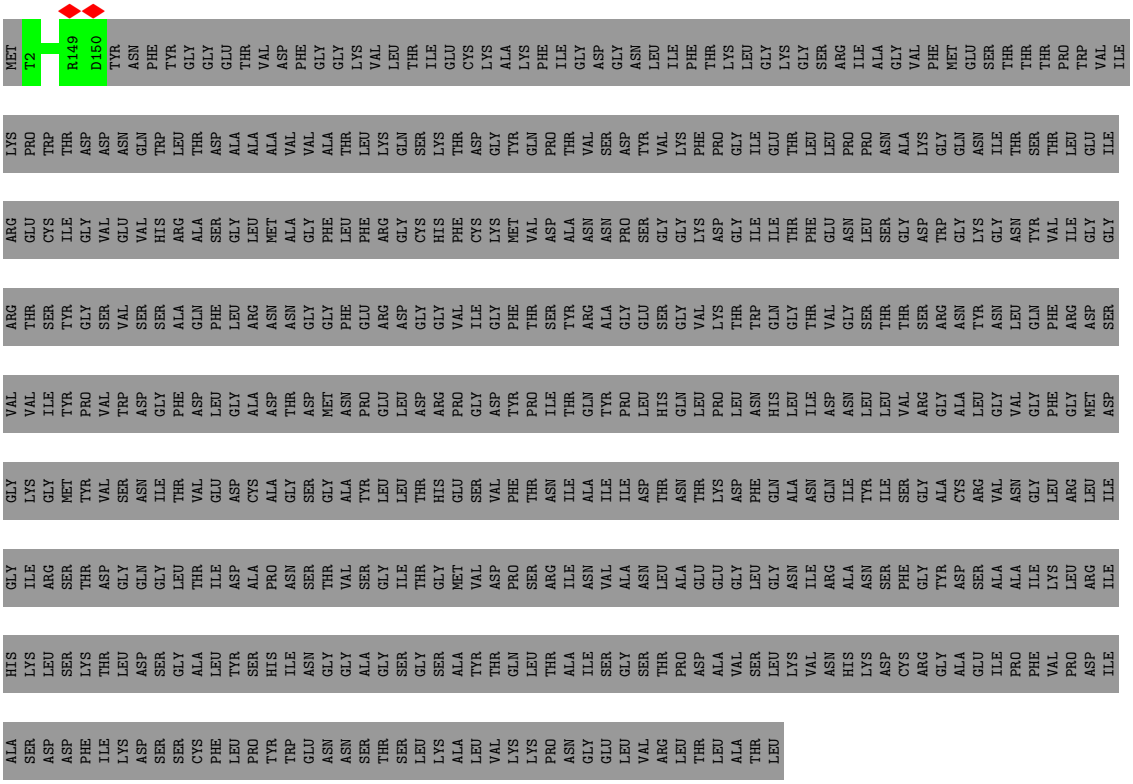
Chain v:





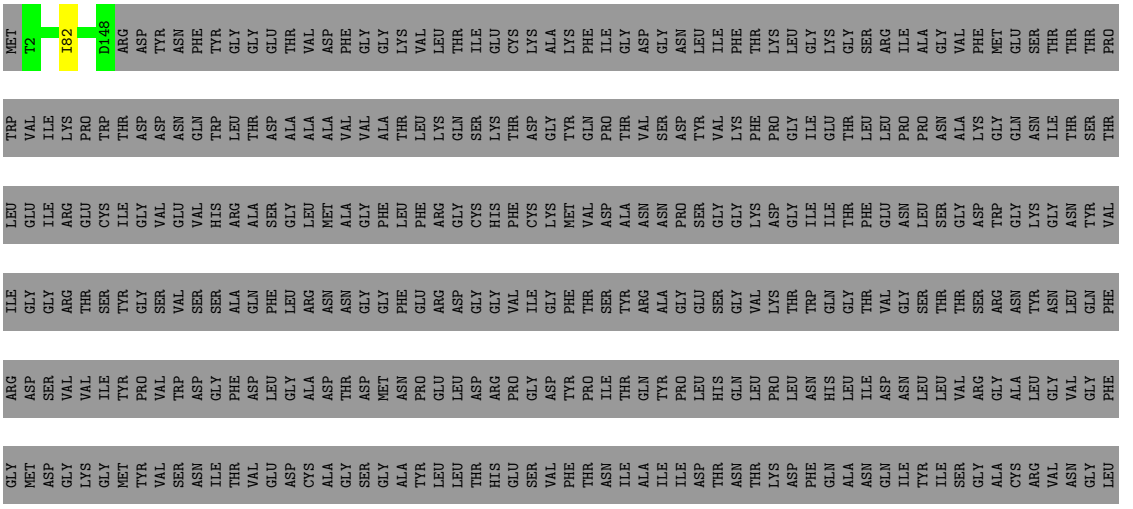
• Molecule 2: Endorhamnosidase

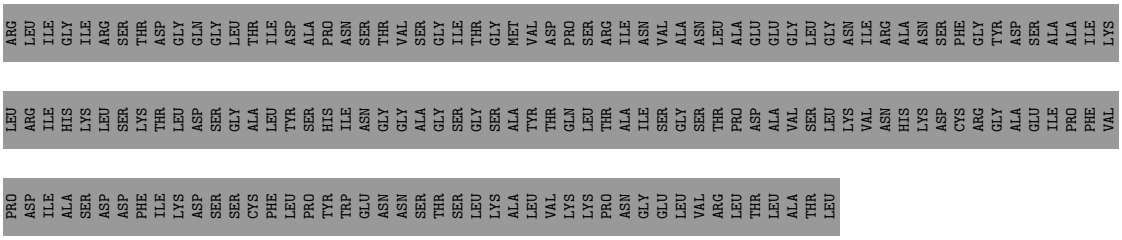
Chain w:



• Molecule 2: Endorhamnosidase

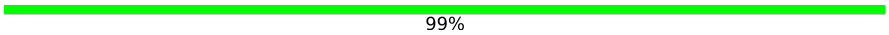
Chain x:

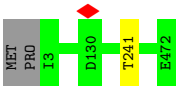




• Molecule 3: Phage stabilisation protein

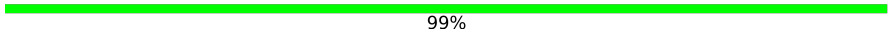
Chain a:

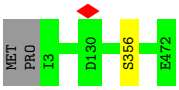




• Molecule 3: Phage stabilisation protein

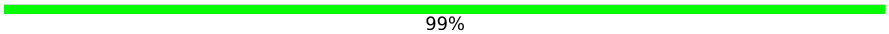
Chain b:

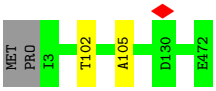




• Molecule 3: Phage stabilisation protein

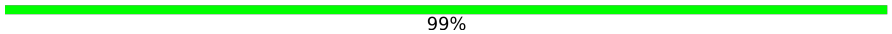
Chain c:

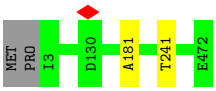




• Molecule 3: Phage stabilisation protein

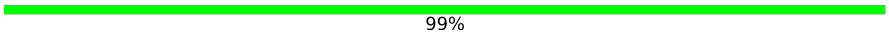
Chain d:

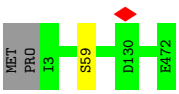




• Molecule 3: Phage stabilisation protein

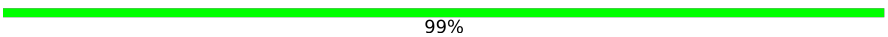
Chain e:

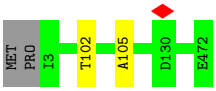




• Molecule 3: Phage stabilisation protein

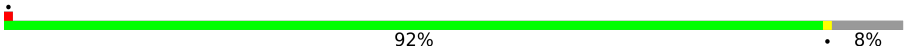
Chain f:

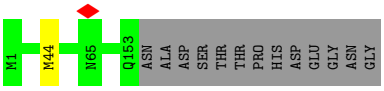




• Molecule 4: P22 tail accessory factor

Chain g:



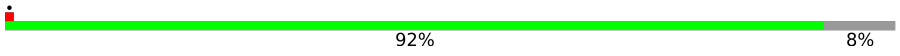


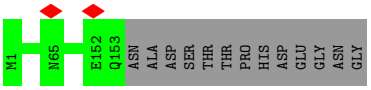
• Molecule 4: P22 tail accessory factor

Chain h:

• Molecule 4: P22 tail accessory factor

Chain i:



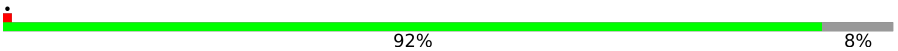


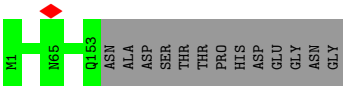
• Molecule 4: P22 tail accessory factor

Chain j:

• Molecule 4: P22 tail accessory factor

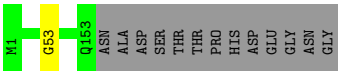
Chain k:





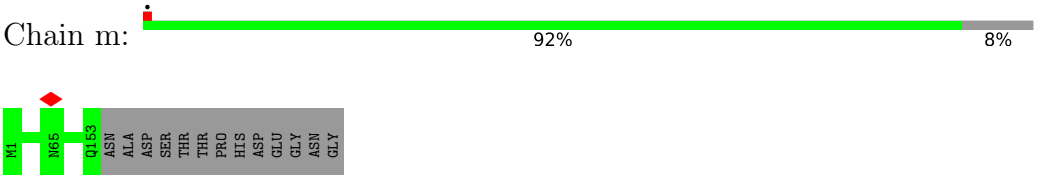
• Molecule 4: P22 tail accessory factor

Chain l:



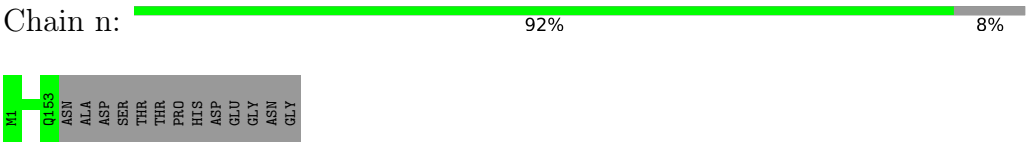
• Molecule 4: P22 tail accessory factor

Chain m:



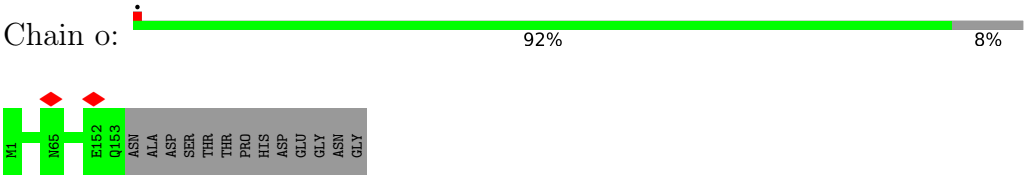
• Molecule 4: P22 tail accessory factor

Chain n:



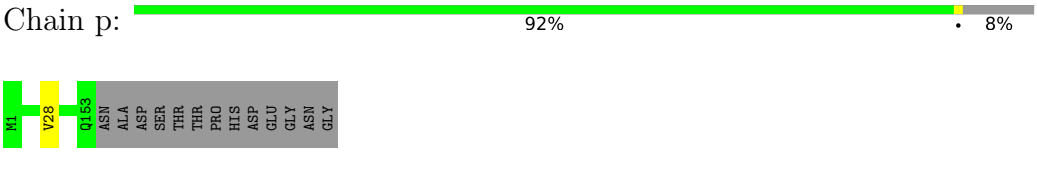
• Molecule 4: P22 tail accessory factor

Chain o:



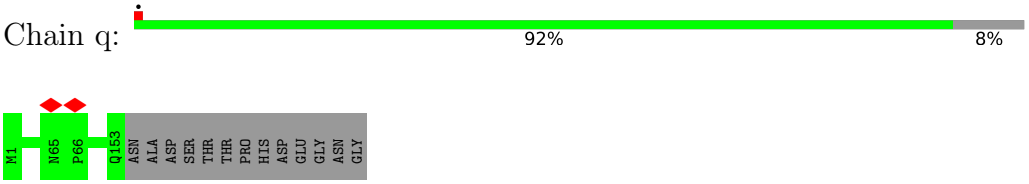
• Molecule 4: P22 tail accessory factor

Chain p:



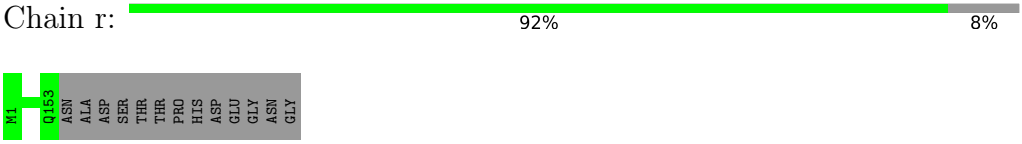
• Molecule 4: P22 tail accessory factor

Chain q:



• Molecule 4: P22 tail accessory factor

Chain r:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	82501	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	32	Depositor
Minimum defocus (nm)	1600	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	30.704	Depositor
Minimum map value	-16.371	Depositor
Average map value	0.005	Depositor
Map value standard deviation	1.237	Depositor
Recommended contour level	3	Depositor
Map size (Å)	544.0, 544.0, 544.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.36, 1.36, 1.36	Depositor

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.25	0/5009	0.48	0/6794
1	B	0.26	0/5009	0.48	0/6794
1	C	0.25	0/5009	0.48	0/6794
1	D	0.25	0/5009	0.48	0/6794
1	E	0.25	0/5009	0.49	0/6794
1	F	0.26	0/5009	0.48	0/6794
1	G	0.25	0/5009	0.49	0/6794
1	H	0.26	0/5009	0.49	0/6794
1	I	0.26	0/5009	0.48	0/6794
1	J	0.25	0/5009	0.48	0/6794
1	K	0.26	0/5009	0.49	0/6794
1	L	0.26	0/5009	0.48	0/6794
2	M	0.28	0/1150	0.49	0/1570
2	N	0.28	0/1150	0.50	0/1570
2	O	0.28	0/1150	0.51	0/1570
2	P	0.25	0/1185	0.48	0/1616
2	Q	0.25	0/1185	0.48	0/1616
2	R	0.25	0/1185	0.47	0/1616
2	S	0.25	0/1185	0.47	0/1616
2	T	0.25	0/1185	0.48	0/1616
2	U	0.26	0/1169	0.45	0/1595
2	V	0.26	0/1169	0.46	0/1595
2	W	0.26	0/1169	0.44	0/1595
2	X	0.28	0/1169	0.47	0/1595
2	Y	0.26	0/1169	0.46	0/1595
2	Z	0.30	0/1150	0.49	0/1570
2	s	0.29	0/1150	0.51	0/1570
2	v	0.25	0/1185	0.47	0/1616
2	w	0.26	0/1169	0.45	0/1595
2	x	0.28	0/1150	0.50	0/1570
3	a	0.27	0/3756	0.54	0/5086
3	b	0.27	0/3756	0.54	0/5086
3	c	0.28	0/3756	0.53	0/5086
3	d	0.27	0/3756	0.54	0/5086

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
3	e	0.28	0/3756	0.54	0/5086
3	f	0.28	0/3756	0.53	0/5086
4	g	0.44	0/1200	0.56	0/1626
4	h	0.29	0/1200	0.50	0/1626
4	i	0.29	0/1200	0.50	0/1626
4	j	0.29	0/1200	0.52	0/1626
4	k	0.30	0/1200	0.50	0/1626
4	l	0.30	0/1200	0.51	0/1626
4	m	0.29	0/1200	0.51	0/1626
4	n	0.31	0/1200	0.50	0/1626
4	o	0.29	0/1200	0.51	0/1626
4	p	0.32	0/1200	0.51	0/1626
4	q	0.30	0/1200	0.51	0/1626
4	r	0.32	0/1200	0.52	0/1626
All	All	0.27	0/118068	0.50	0/160242

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	604/725 (83%)	569 (94%)	35 (6%)	0	100	100
1	B	604/725 (83%)	567 (94%)	37 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	604/725 (83%)	572 (95%)	32 (5%)	0	100	100
1	D	604/725 (83%)	568 (94%)	36 (6%)	0	100	100
1	E	604/725 (83%)	569 (94%)	35 (6%)	0	100	100
1	F	604/725 (83%)	567 (94%)	37 (6%)	0	100	100
1	G	604/725 (83%)	568 (94%)	36 (6%)	0	100	100
1	H	604/725 (83%)	568 (94%)	36 (6%)	0	100	100
1	I	604/725 (83%)	565 (94%)	39 (6%)	0	100	100
1	J	604/725 (83%)	567 (94%)	37 (6%)	0	100	100
1	K	604/725 (83%)	569 (94%)	35 (6%)	0	100	100
1	L	604/725 (83%)	567 (94%)	37 (6%)	0	100	100
2	M	145/667 (22%)	133 (92%)	11 (8%)	1 (1%)	19	53
2	N	145/667 (22%)	134 (92%)	11 (8%)	0	100	100
2	O	145/667 (22%)	135 (93%)	9 (6%)	1 (1%)	19	53
2	P	147/667 (22%)	140 (95%)	6 (4%)	1 (1%)	19	53
2	Q	147/667 (22%)	138 (94%)	8 (5%)	1 (1%)	19	53
2	R	147/667 (22%)	139 (95%)	8 (5%)	0	100	100
2	S	147/667 (22%)	140 (95%)	7 (5%)	0	100	100
2	T	147/667 (22%)	139 (95%)	8 (5%)	0	100	100
2	U	147/667 (22%)	142 (97%)	5 (3%)	0	100	100
2	V	147/667 (22%)	141 (96%)	6 (4%)	0	100	100
2	W	147/667 (22%)	144 (98%)	3 (2%)	0	100	100
2	X	147/667 (22%)	143 (97%)	4 (3%)	0	100	100
2	Y	147/667 (22%)	141 (96%)	6 (4%)	0	100	100
2	Z	145/667 (22%)	134 (92%)	11 (8%)	0	100	100
2	s	145/667 (22%)	135 (93%)	9 (6%)	1 (1%)	19	53
2	v	147/667 (22%)	140 (95%)	7 (5%)	0	100	100
2	w	147/667 (22%)	143 (97%)	4 (3%)	0	100	100
2	x	145/667 (22%)	135 (93%)	9 (6%)	1 (1%)	19	53
3	a	468/472 (99%)	430 (92%)	38 (8%)	0	100	100
3	b	468/472 (99%)	432 (92%)	35 (8%)	1 (0%)	44	74
3	c	468/472 (99%)	432 (92%)	35 (8%)	1 (0%)	44	74

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
3	d	468/472 (99%)	431 (92%)	36 (8%)	1 (0%)	44 74
3	e	468/472 (99%)	432 (92%)	36 (8%)	0	100 100
3	f	468/472 (99%)	432 (92%)	35 (8%)	1 (0%)	44 74
4	g	151/166 (91%)	142 (94%)	9 (6%)	0	100 100
4	h	151/166 (91%)	138 (91%)	13 (9%)	0	100 100
4	i	151/166 (91%)	141 (93%)	10 (7%)	0	100 100
4	j	151/166 (91%)	138 (91%)	13 (9%)	0	100 100
4	k	151/166 (91%)	143 (95%)	8 (5%)	0	100 100
4	l	151/166 (91%)	137 (91%)	13 (9%)	1 (1%)	19 53
4	m	151/166 (91%)	143 (95%)	8 (5%)	0	100 100
4	n	151/166 (91%)	139 (92%)	12 (8%)	0	100 100
4	o	151/166 (91%)	140 (93%)	11 (7%)	0	100 100
4	p	151/166 (91%)	138 (91%)	13 (9%)	0	100 100
4	q	151/166 (91%)	142 (94%)	9 (6%)	0	100 100
4	r	151/166 (91%)	138 (91%)	13 (9%)	0	100 100
All	All	14502/25530 (57%)	13580 (94%)	911 (6%)	11 (0%)	50 79

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	b	356	SER
3	d	181	ALA
4	l	53	GLY
3	c	105	ALA
3	f	105	ALA
2	x	82	ILE
2	M	82	ILE
2	O	82	ILE
2	s	82	ILE
2	P	147	ILE
2	Q	147	ILE

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	533/630 (85%)	532 (100%)	1 (0%)	92	96
1	B	533/630 (85%)	531 (100%)	2 (0%)	89	93
1	C	533/630 (85%)	532 (100%)	1 (0%)	92	96
1	D	533/630 (85%)	533 (100%)	0	100	100
1	E	533/630 (85%)	531 (100%)	2 (0%)	89	93
1	F	533/630 (85%)	530 (99%)	3 (1%)	84	91
1	G	533/630 (85%)	532 (100%)	1 (0%)	92	96
1	H	533/630 (85%)	532 (100%)	1 (0%)	92	96
1	I	533/630 (85%)	531 (100%)	2 (0%)	89	93
1	J	533/630 (85%)	531 (100%)	2 (0%)	89	93
1	K	533/630 (85%)	530 (99%)	3 (1%)	84	91
1	L	533/630 (85%)	529 (99%)	4 (1%)	79	89
2	M	125/548 (23%)	125 (100%)	0	100	100
2	N	125/548 (23%)	125 (100%)	0	100	100
2	O	125/548 (23%)	125 (100%)	0	100	100
2	P	127/548 (23%)	127 (100%)	0	100	100
2	Q	127/548 (23%)	127 (100%)	0	100	100
2	R	127/548 (23%)	127 (100%)	0	100	100
2	S	127/548 (23%)	127 (100%)	0	100	100
2	T	127/548 (23%)	125 (98%)	2 (2%)	58	78
2	U	127/548 (23%)	127 (100%)	0	100	100
2	V	127/548 (23%)	127 (100%)	0	100	100
2	W	127/548 (23%)	127 (100%)	0	100	100
2	X	127/548 (23%)	126 (99%)	1 (1%)	79	89
2	Y	127/548 (23%)	127 (100%)	0	100	100
2	Z	125/548 (23%)	125 (100%)	0	100	100
2	s	125/548 (23%)	125 (100%)	0	100	100
2	v	127/548 (23%)	127 (100%)	0	100	100
2	w	127/548 (23%)	127 (100%)	0	100	100
2	x	125/548 (23%)	125 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	a	393/395 (100%)	392 (100%)	1 (0%)	91 95
3	b	393/395 (100%)	393 (100%)	0	100 100
3	c	393/395 (100%)	392 (100%)	1 (0%)	91 95
3	d	393/395 (100%)	392 (100%)	1 (0%)	91 95
3	e	393/395 (100%)	392 (100%)	1 (0%)	91 95
3	f	393/395 (100%)	392 (100%)	1 (0%)	91 95
4	g	121/131 (92%)	120 (99%)	1 (1%)	79 89
4	h	121/131 (92%)	120 (99%)	1 (1%)	79 89
4	i	121/131 (92%)	121 (100%)	0	100 100
4	j	121/131 (92%)	120 (99%)	1 (1%)	79 89
4	k	121/131 (92%)	121 (100%)	0	100 100
4	l	121/131 (92%)	121 (100%)	0	100 100
4	m	121/131 (92%)	121 (100%)	0	100 100
4	n	121/131 (92%)	121 (100%)	0	100 100
4	o	121/131 (92%)	121 (100%)	0	100 100
4	p	121/131 (92%)	120 (99%)	1 (1%)	79 89
4	q	121/131 (92%)	121 (100%)	0	100 100
4	r	121/131 (92%)	121 (100%)	0	100 100
All	All	12480/21366 (58%)	12446 (100%)	34 (0%)	90 95

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	476	ARG
1	B	89	ASP
1	B	450	GLN
1	C	476	ARG
1	E	450	GLN
1	E	476	ARG
1	F	92	ASP
1	F	450	GLN
1	F	471	ILE
1	G	476	ARG
1	H	450	GLN
1	I	93	VAL
1	I	476	ARG

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Mol	Chain	Res	Type
1	J	92	ASP
1	J	171	ARG
1	K	94	LEU
1	K	450	GLN
1	K	476	ARG
1	L	92	ASP
1	L	93	VAL
1	L	94	LEU
1	L	450	GLN
2	T	42	ASN
2	T	60	GLN
2	X	74	VAL
3	a	241	THR
3	c	102	THR
3	d	241	THR
3	e	59	SER
3	f	102	THR
4	g	44	MET
4	h	49	GLN
4	j	50	ASP
4	p	28	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	327	GLN
1	E	590	GLN
1	F	469	ASN
1	J	327	GLN
1	L	150	HIS
2	M	28	ASN
2	M	78	GLN
2	N	78	GLN
2	P	63	GLN
2	Q	63	GLN
2	R	53	ASN
2	S	63	GLN
3	a	178	GLN
3	e	56	ASN
4	h	49	GLN
4	i	49	GLN
4	o	31	GLN

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Mol	Chain	Res	Type
4	o	49	GLN
2	x	28	ASN
2	x	78	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

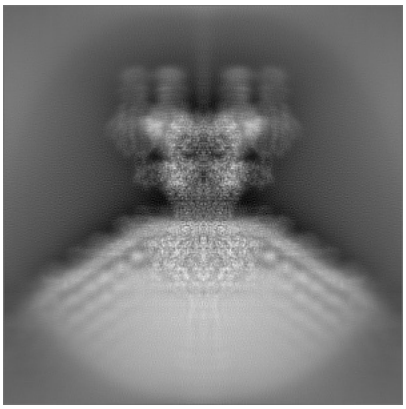
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-61457. These allow visual inspection of the internal detail of the map and identification of artifacts.

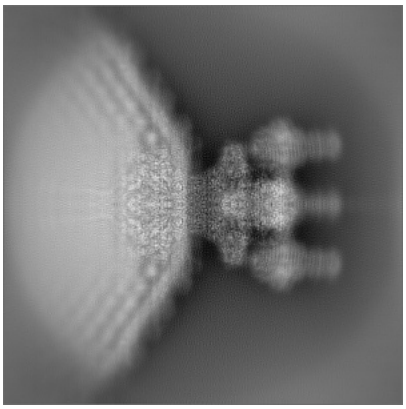
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

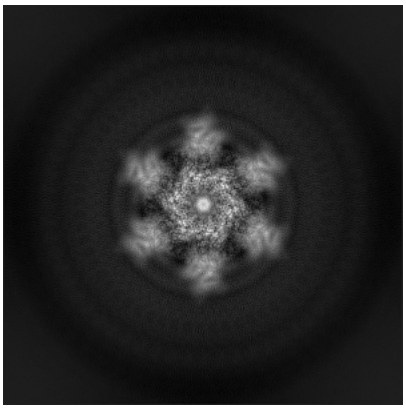
6.1.1 Primary map



X

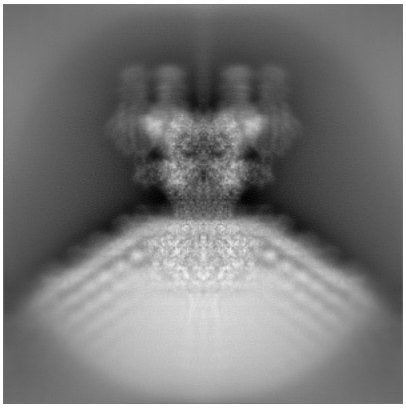


Y

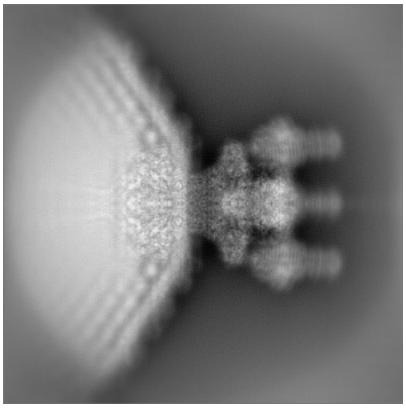


Z

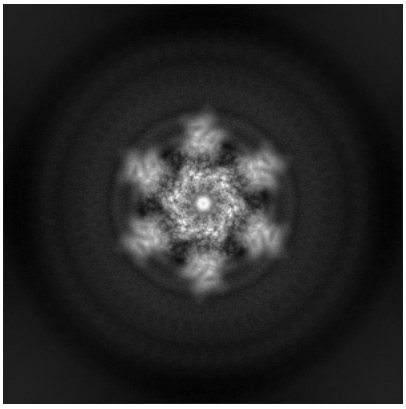
6.1.2 Raw map



X



Y

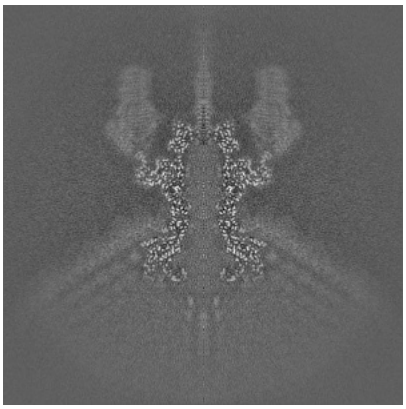


Z

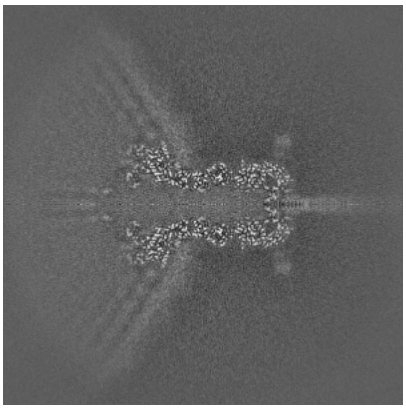
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

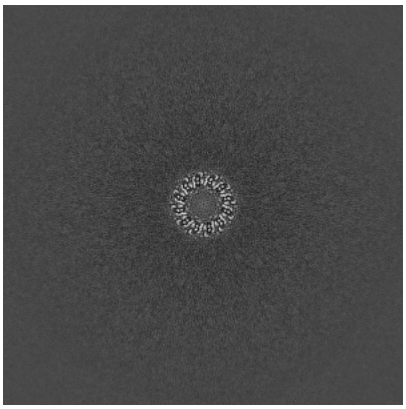
6.2.1 Primary map



X Index: 200

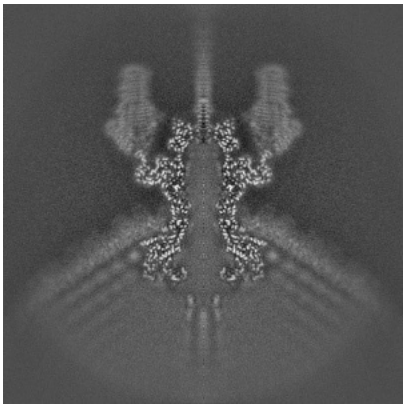


Y Index: 200

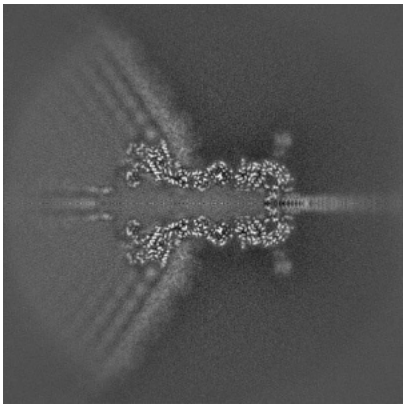


Z Index: 200

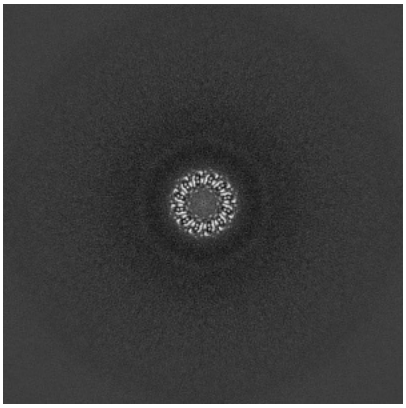
6.2.2 Raw map



X Index: 200



Y Index: 200

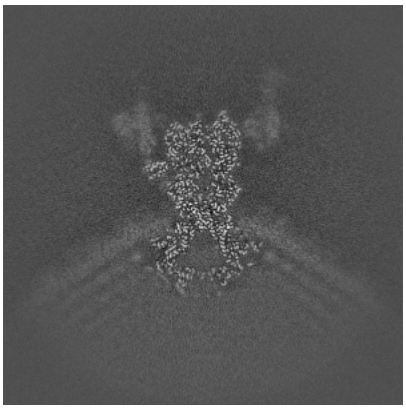


Z Index: 200

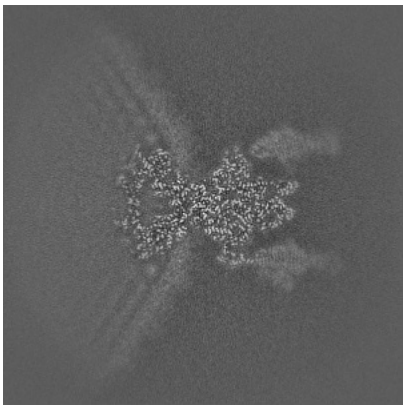
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

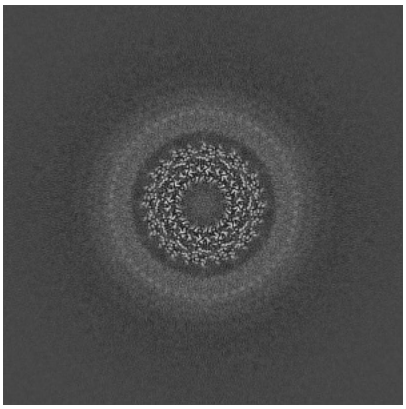
6.3.1 Primary map



X Index: 218

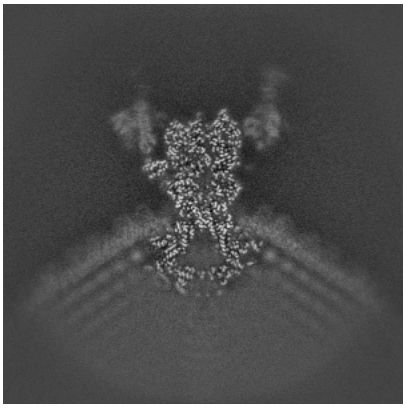


Y Index: 221

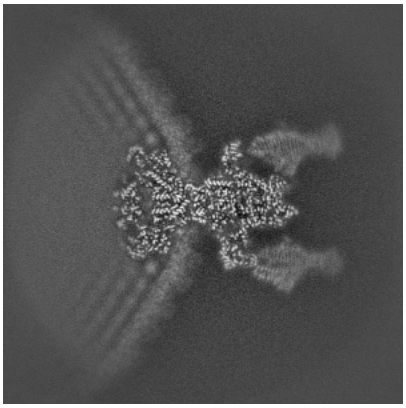


Z Index: 159

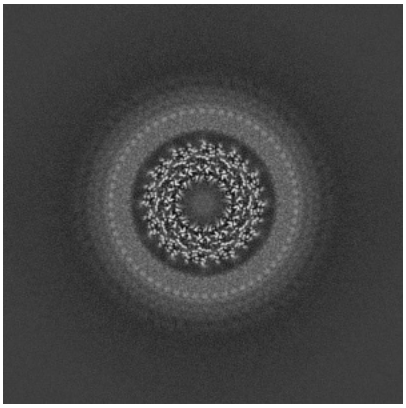
6.3.2 Raw map



X Index: 218



Y Index: 226

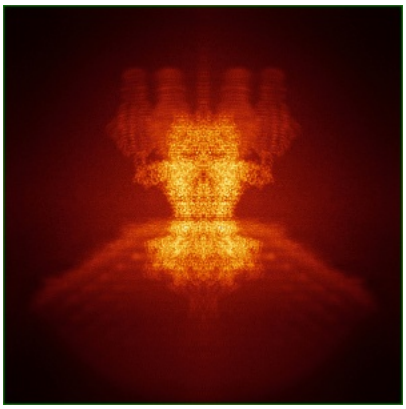


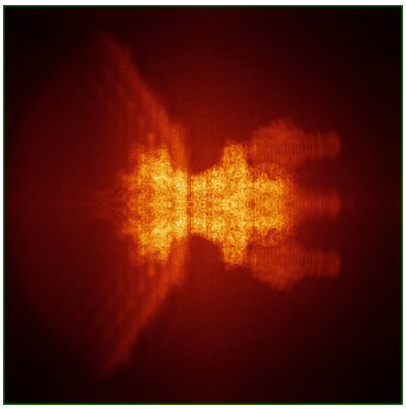
Z Index: 159

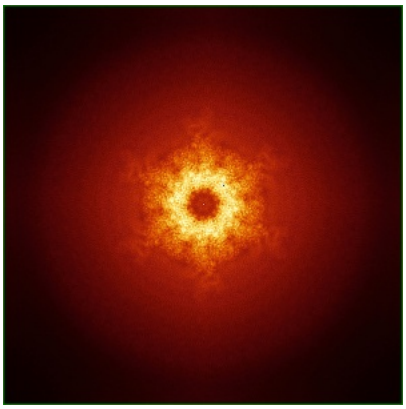
The images above show the largest variance slices of the map in three orthogonal directions.

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

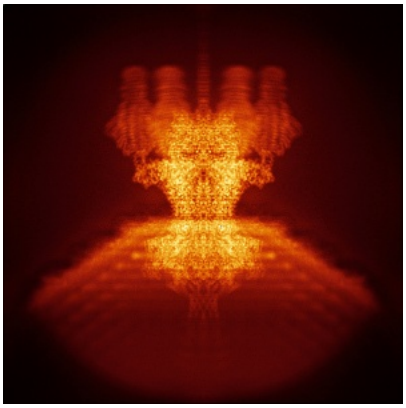
6.4.1 Primary map

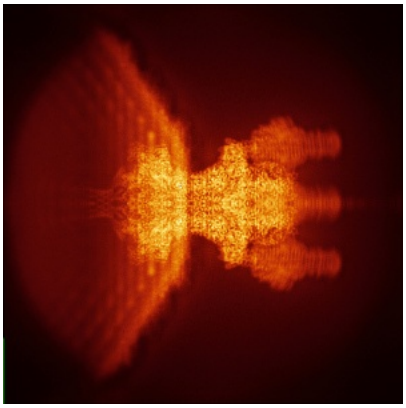

X

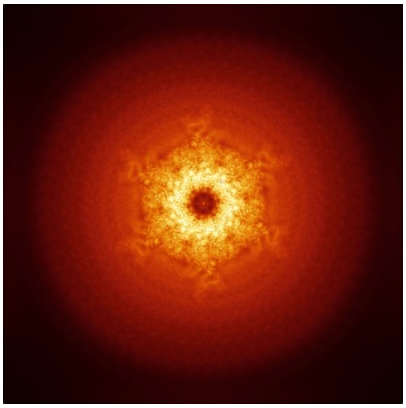

Y


Z

6.4.2 Raw map


X

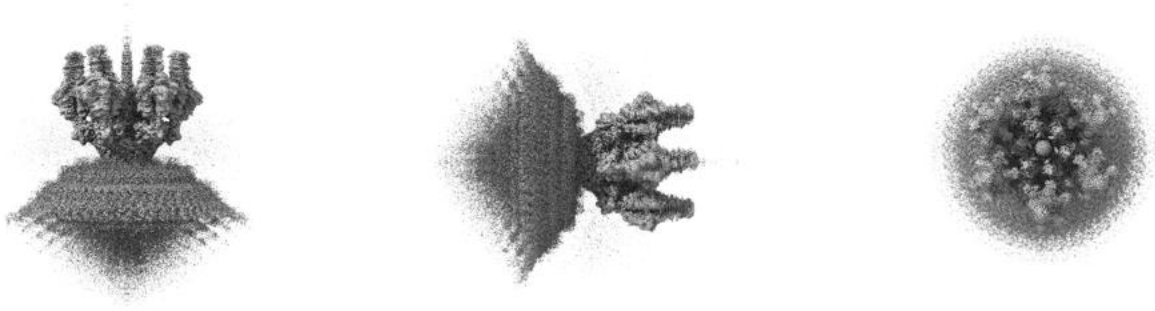

Y


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)

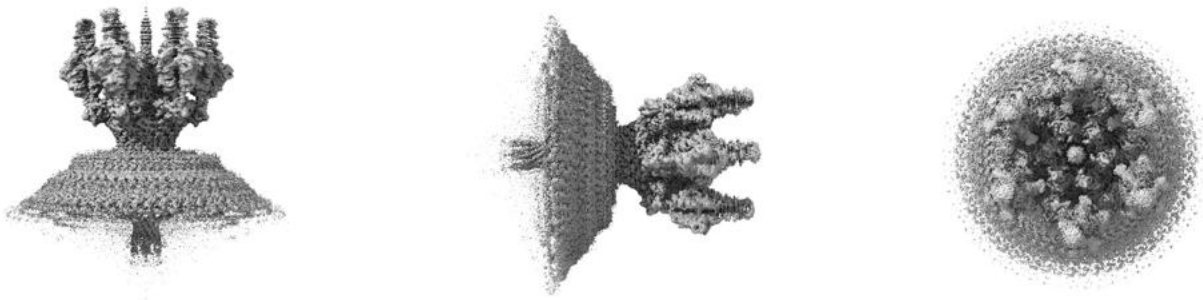
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 3.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

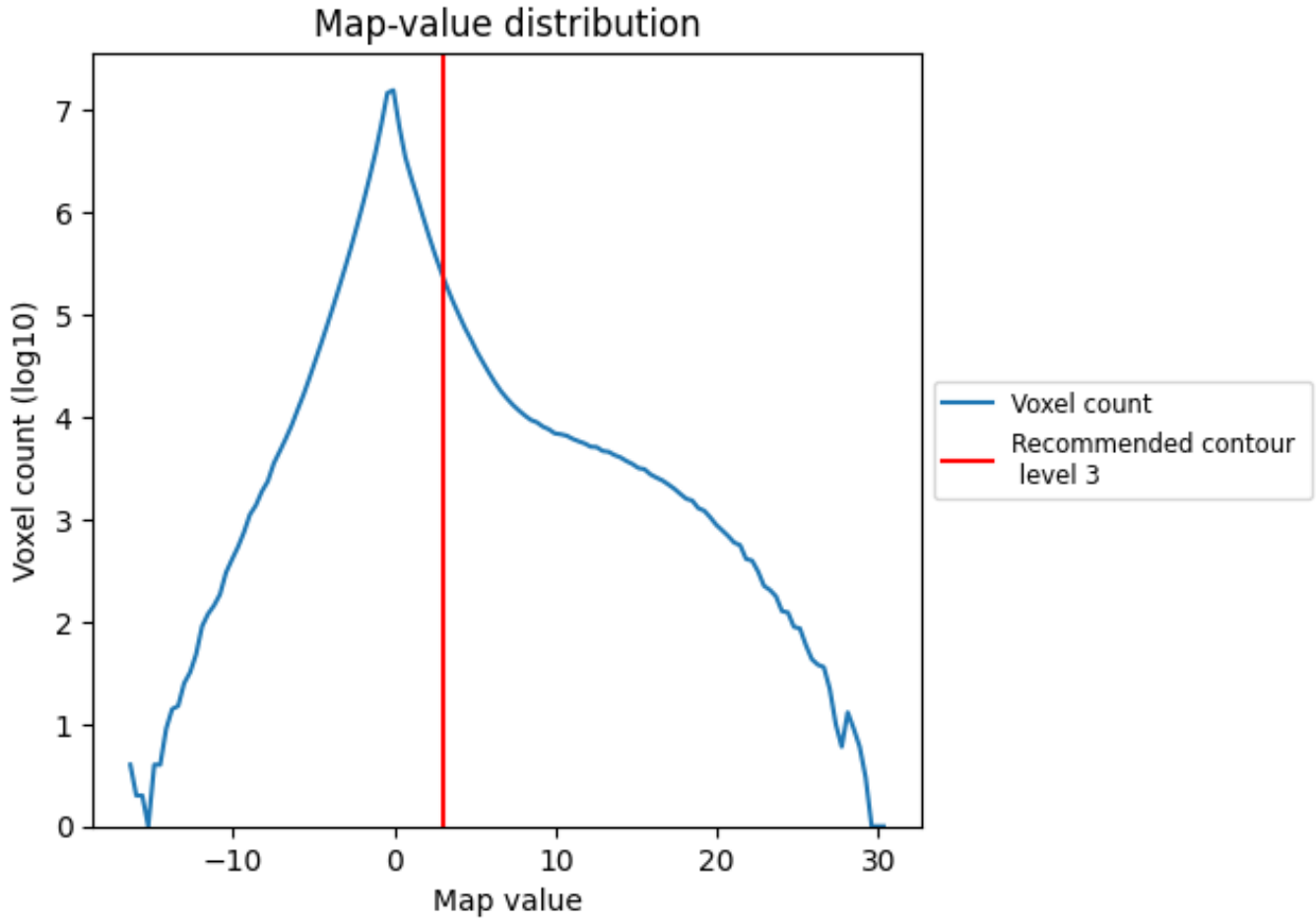
6.6 Mask visualisation (i)

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

7 Map analysis

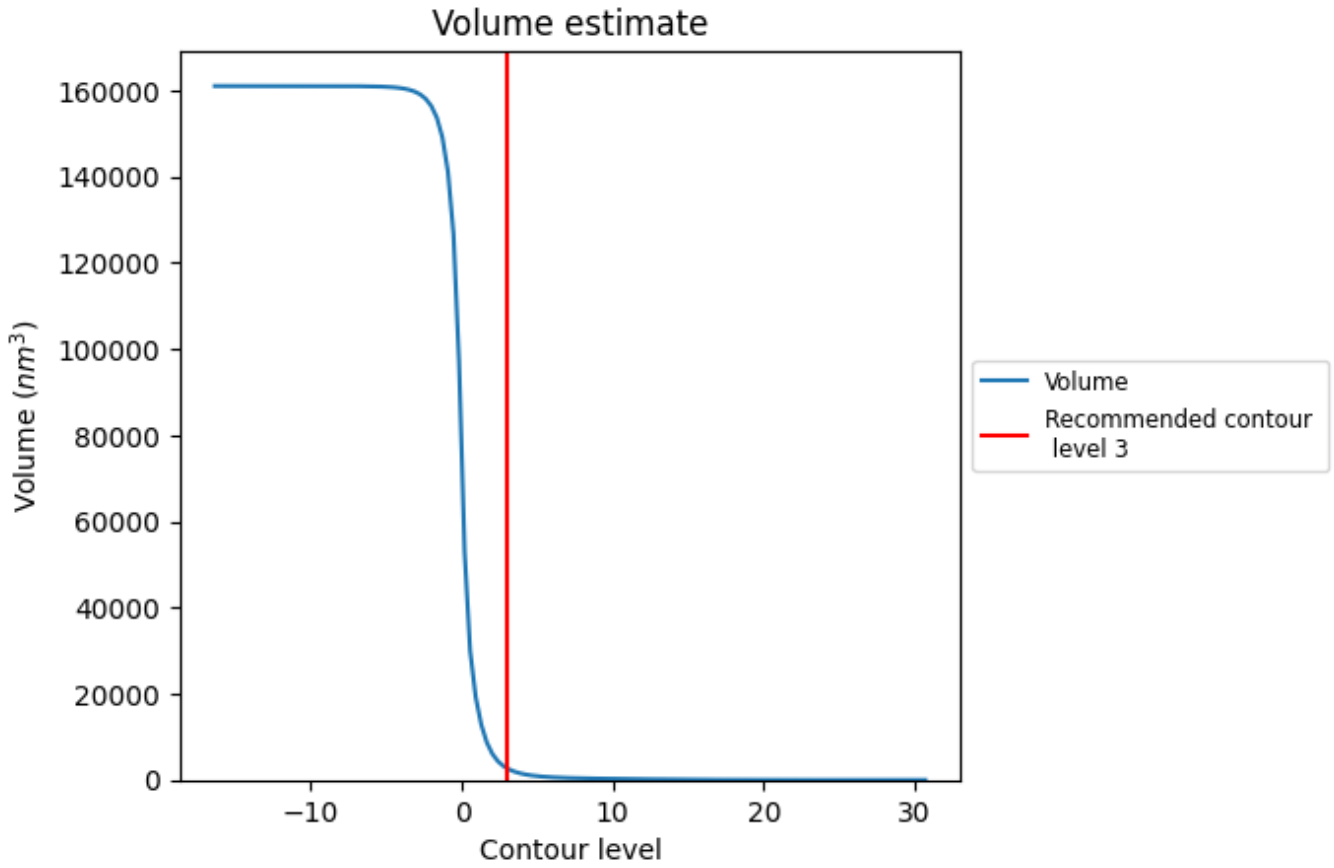
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

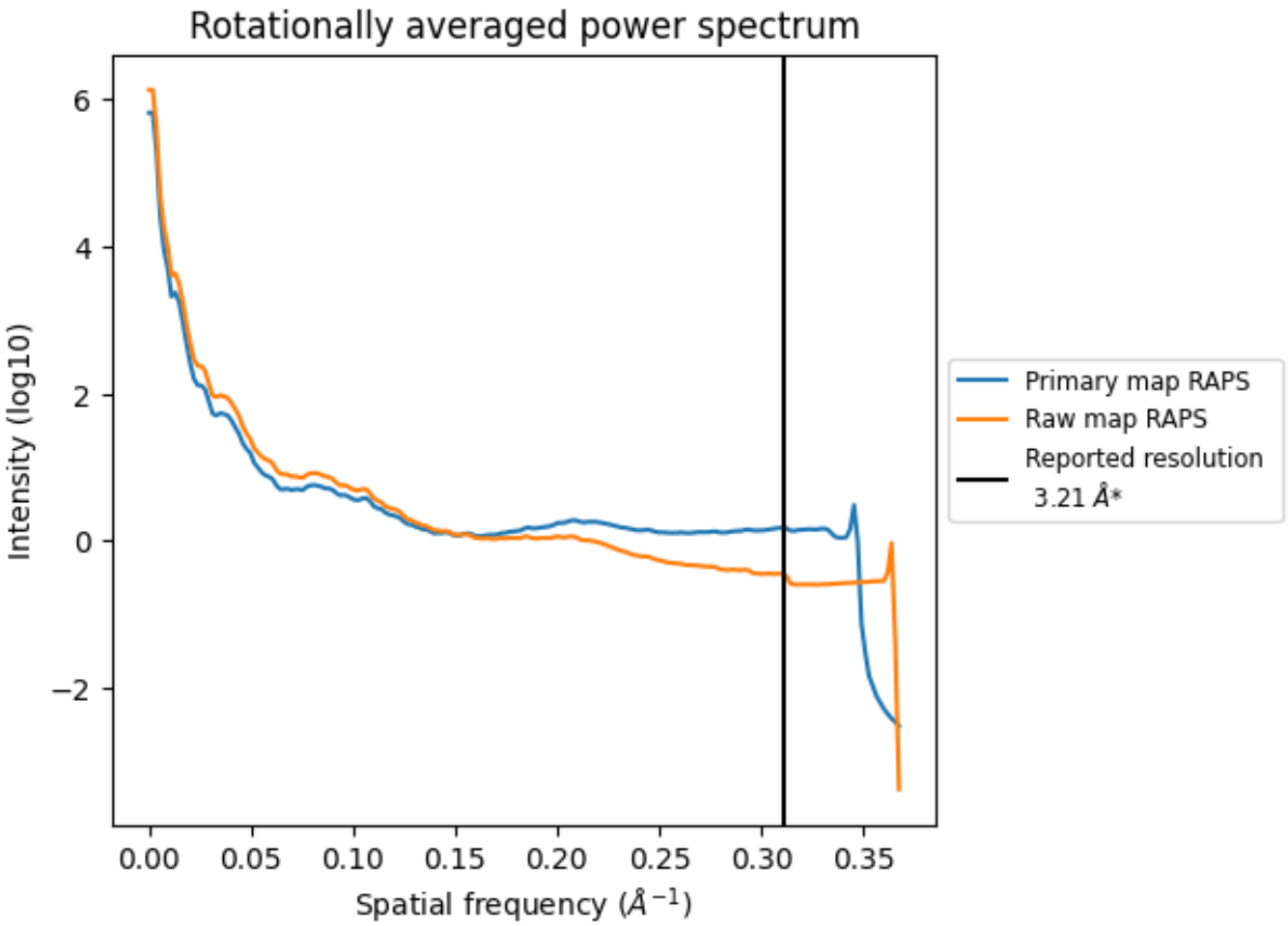
7.2 Volume estimate (i)



The volume at the recommended contour level is 2711 nm^3; this corresponds to an approximate mass of 2449 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)

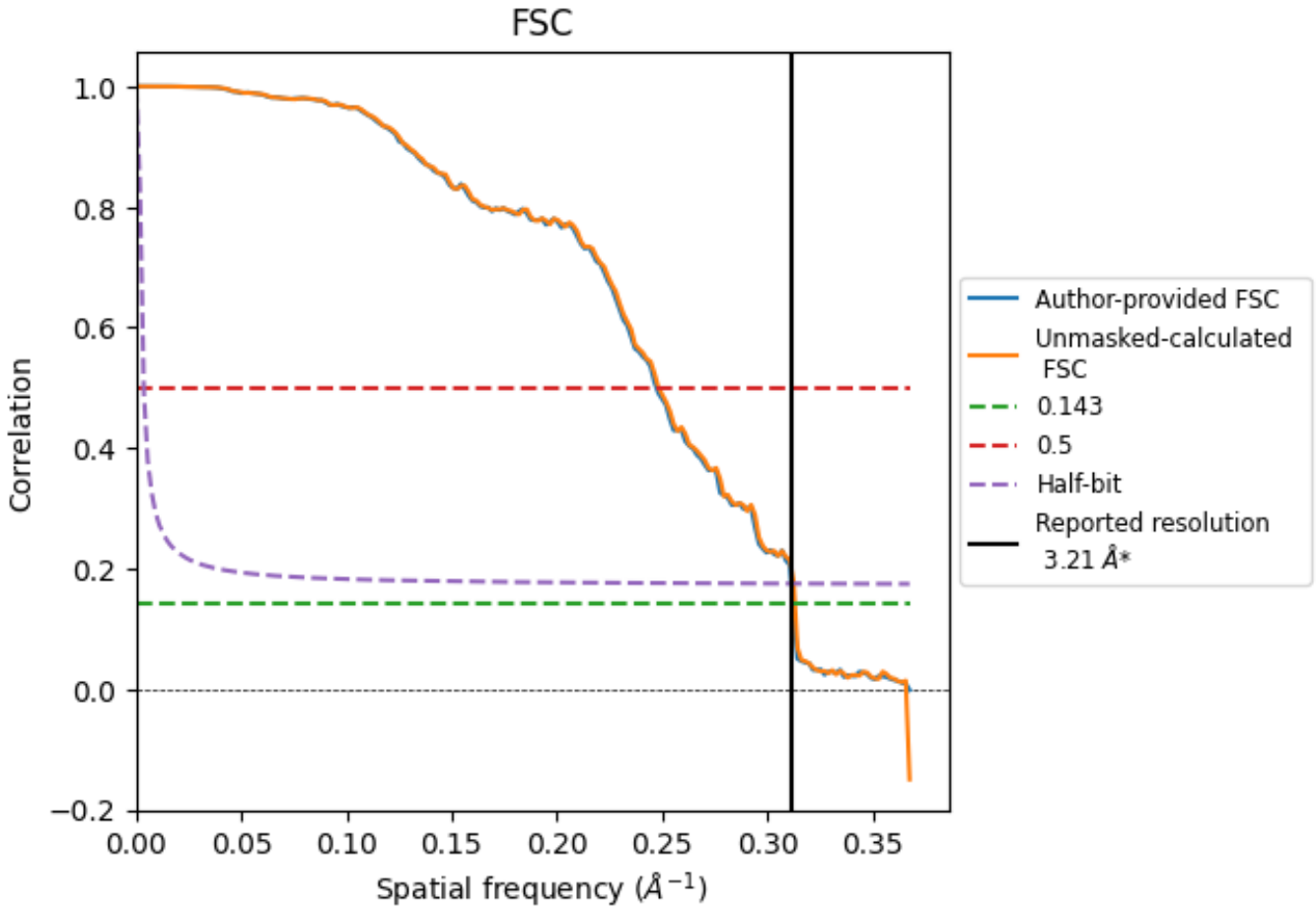


*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

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 0.312 Å^{-1}

8.2 Resolution estimates (i)

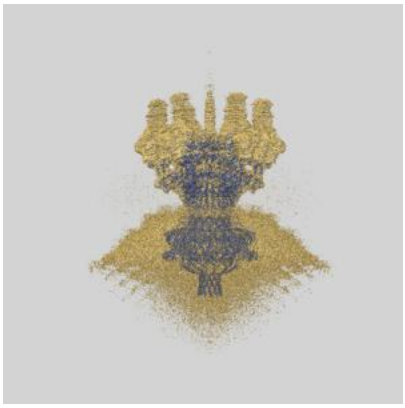
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.21	-	-
Author-provided FSC curve	3.21	4.04	3.21
Unmasked-calculated*	3.19	4.03	3.20

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

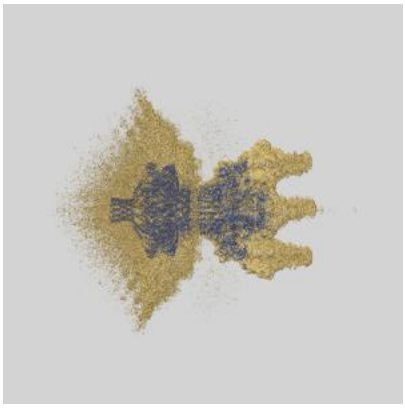
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-61457 and PDB model 9JG6. Per-residue inclusion information can be found in section 3 on page 8.

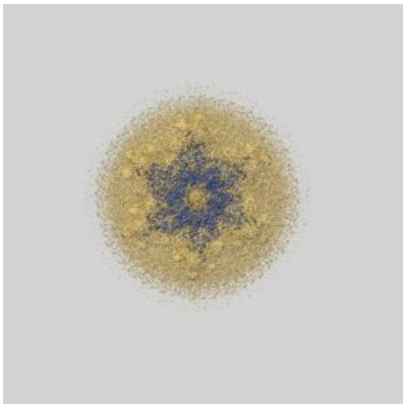
9.1 Map-model overlay



X



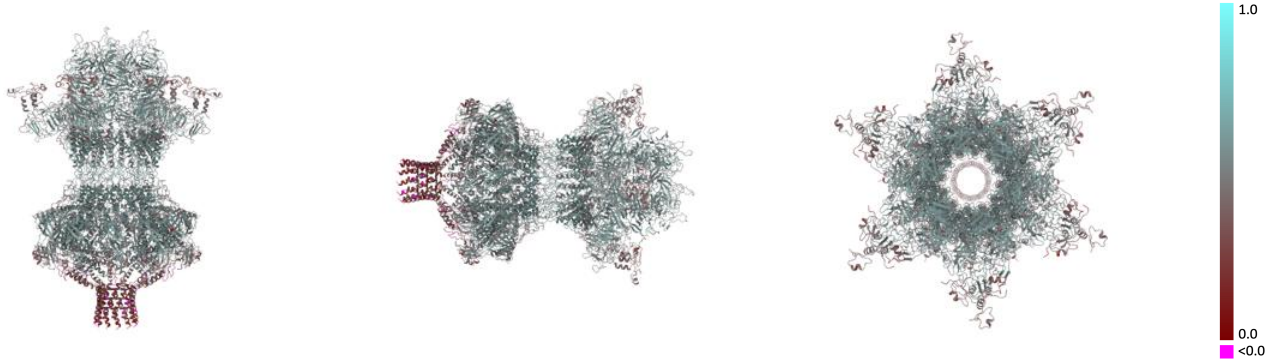
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 3.0 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.

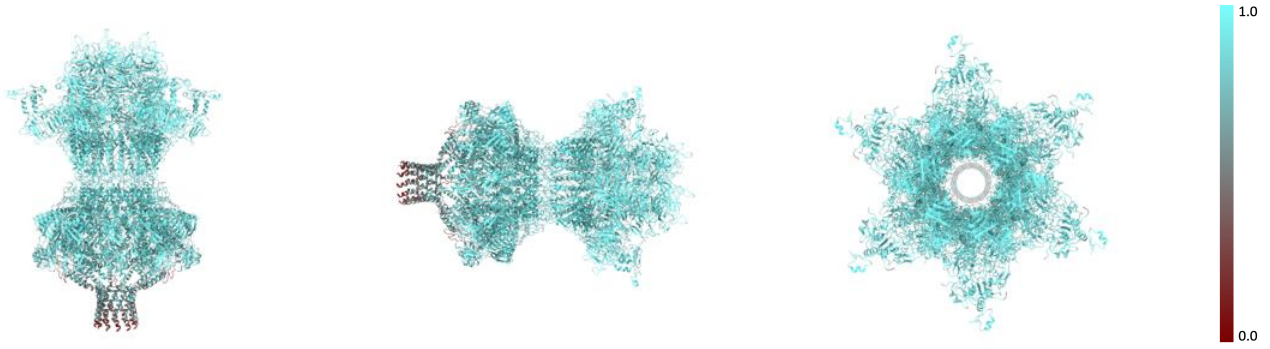
9.2 Q-score mapped to coordinate model (i)



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.

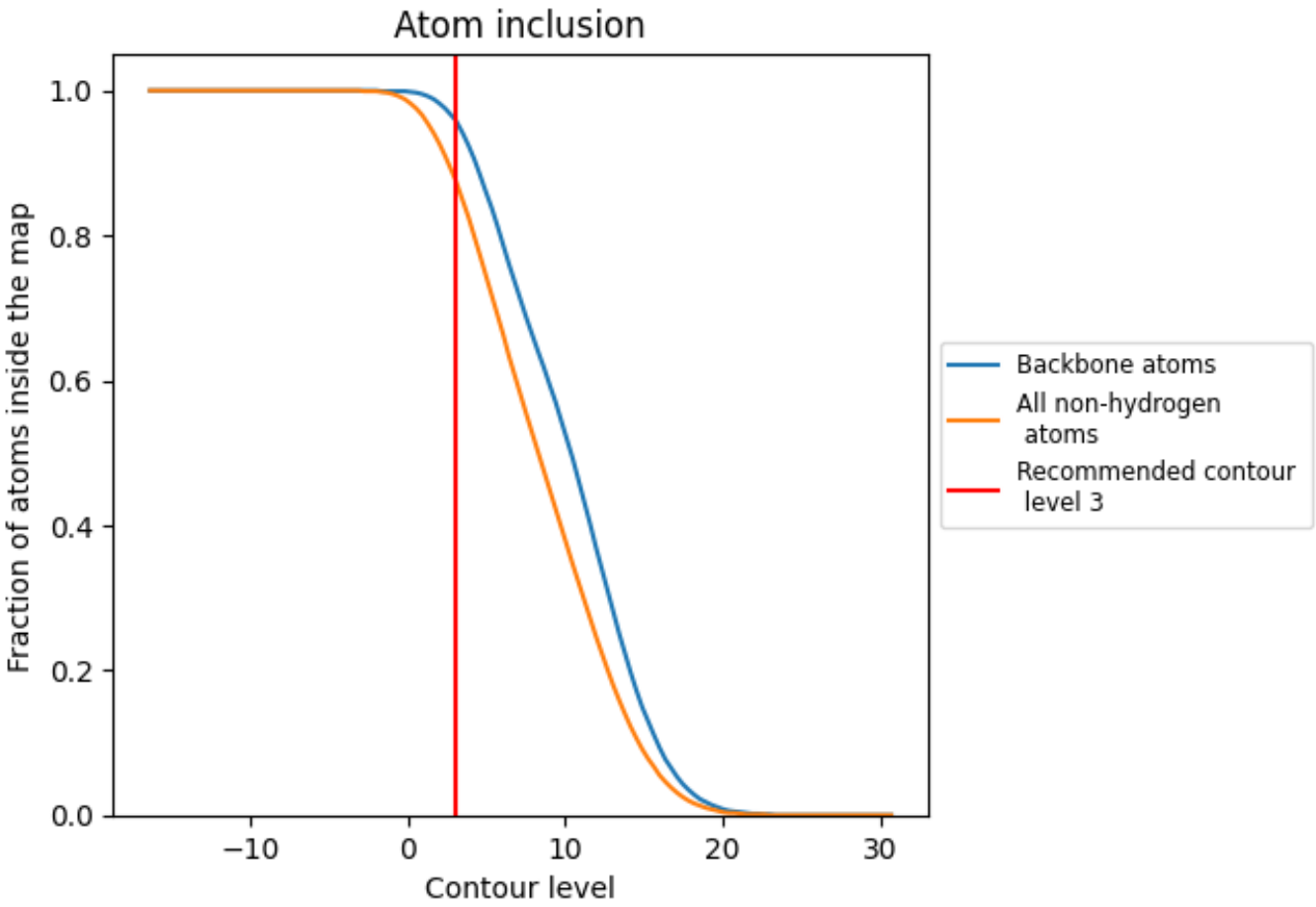
9.3 Atom inclusion mapped to coordinate model (i)



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 (3).

9.4 Atom inclusion (i)



At the recommended contour level, 96% of all backbone atoms, 88% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8780	0.5000
A	0.8420	0.4860
B	0.8400	0.4910
C	0.8400	0.4850
D	0.8440	0.4880
E	0.8420	0.4870
F	0.8380	0.4870
G	0.8440	0.4850
H	0.8410	0.4910
I	0.8420	0.4850
J	0.8460	0.4910
K	0.8450	0.4880
L	0.8410	0.4870
M	0.9190	0.4780
N	0.9180	0.4780
O	0.9180	0.4810
P	0.8950	0.4530
Q	0.8950	0.4510
R	0.8970	0.4490
S	0.8970	0.4530
T	0.8990	0.4550
U	0.9060	0.4950
V	0.9040	0.4920
W	0.9070	0.4920
X	0.9070	0.4960
Y	0.9000	0.4970
Z	0.9180	0.4830
a	0.9240	0.5420
b	0.9250	0.5420
c	0.9240	0.5420
d	0.9250	0.5420
e	0.9240	0.5410
f	0.9220	0.5430
g	0.9130	0.5140
h	0.9150	0.5240

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Chain	Atom inclusion	Q-score
i	0.9080	0.5170
j	0.9140	0.5250
k	0.9070	0.5160
l	0.9210	0.5260
m	0.9130	0.5130
n	0.9160	0.5210
o	0.9070	0.5160
p	0.9170	0.5270
q	0.9080	0.5110
r	0.9180	0.5230
s	0.9180	0.4840
v	0.9010	0.4540
w	0.9070	0.4940
x	0.9180	0.4790