wwPDB EM Validation Summary Report (i)

Feb 20, 2023 – 02:22 PM JST

PDB ID	:	7X13
EMDB ID	:	EMD-32933
Title	:	Structure of IgG-Fc hexamer
Authors	:	Yuan, D.; Weixin, Y.; Xiao, F.
Deposited on	:	2022-02-23
Resolution	:	3.70 Å(reported)

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

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

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

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

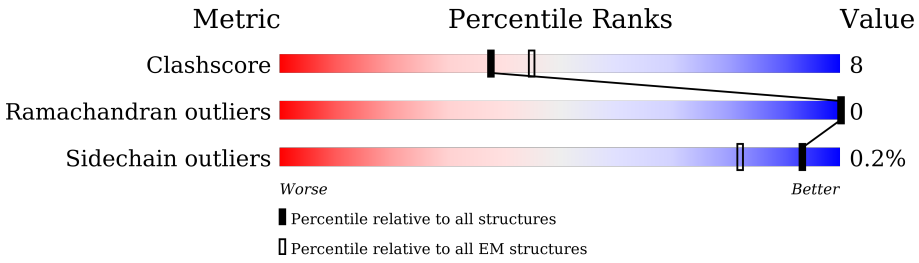
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.1

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.70 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	245	37% 72% 20% 9%
1	B	245	27% 75% 16% 9%
1	C	245	18% 77% 13% 9%
1	D	245	20% 68% 22% 9%
1	E	245	15% 73% 17% 9%
1	F	245	21% 71% 20% 9%
1	G	245	20% 76% 14% 10%
1	H	245	24% 71% 20% 9%

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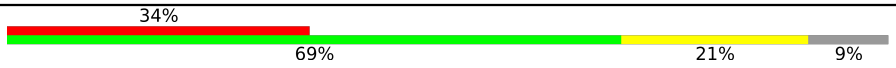
Mol	Chain	Length	Quality of chain
1	I	245	
1	J	245	
1	K	245	
1	L	245	

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 21248 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 Immunoglobulin gamma-1 heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	224	Total	C	N	O	S	0	0
			1783	1131	299	344	9		
1	B	223	Total	C	N	O	S	0	0
			1775	1127	298	341	9		
1	C	223	Total	C	N	O	S	0	0
			1775	1127	298	341	9		
1	D	222	Total	C	N	O	S	0	0
			1769	1124	297	339	9		
1	E	222	Total	C	N	O	S	0	0
			1769	1124	297	339	9		
1	F	222	Total	C	N	O	S	0	0
			1769	1124	297	339	9		
1	G	221	Total	C	N	O	S	0	0
			1761	1119	296	338	8		
1	H	223	Total	C	N	O	S	0	0
			1775	1127	298	341	9		
1	I	223	Total	C	N	O	S	0	0
			1775	1127	298	341	9		
1	J	223	Total	C	N	O	S	0	0
			1775	1127	298	341	9		
1	K	221	Total	C	N	O	S	0	0
			1761	1119	296	338	8		
1	L	221	Total	C	N	O	S	0	0
			1761	1119	296	338	8		

There are 324 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	309	CYS	LEU	conflict	UNP P0DOX5
A	356	GLU	ASP	conflict	UNP P0DOX5
A	358	MET	LEU	conflict	UNP P0DOX5
A	442	ASP	-	expression tag	UNP P0DOX5
A	443	LYS	-	expression tag	UNP P0DOX5
A	444	SER	-	expression tag	UNP P0DOX5

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Chain	Residue	Modelled	Actual	Comment	Reference
A	445	THR	-	expression tag	UNP P0DOX5
A	446	GLY	-	expression tag	UNP P0DOX5
A	447	LYS	-	expression tag	UNP P0DOX5
A	448	PRO	-	expression tag	UNP P0DOX5
A	449	THR	-	expression tag	UNP P0DOX5
A	450	LEU	-	expression tag	UNP P0DOX5
A	451	TYR	-	expression tag	UNP P0DOX5
A	452	ASN	-	expression tag	UNP P0DOX5
A	453	VAL	-	expression tag	UNP P0DOX5
A	454	SER	-	expression tag	UNP P0DOX5
A	455	LEU	-	expression tag	UNP P0DOX5
A	456	ILE	-	expression tag	UNP P0DOX5
A	457	MET	-	expression tag	UNP P0DOX5
A	458	SER	-	expression tag	UNP P0DOX5
A	459	ASP	-	expression tag	UNP P0DOX5
A	460	THR	-	expression tag	UNP P0DOX5
A	461	GLY	-	expression tag	UNP P0DOX5
A	462	GLY	-	expression tag	UNP P0DOX5
A	463	THR	-	expression tag	UNP P0DOX5
A	464	CYS	-	expression tag	UNP P0DOX5
A	465	TYR	-	expression tag	UNP P0DOX5
B	309	CYS	LEU	conflict	UNP P0DOX5
B	356	GLU	ASP	conflict	UNP P0DOX5
B	358	MET	LEU	conflict	UNP P0DOX5
B	442	ASP	-	expression tag	UNP P0DOX5
B	443	LYS	-	expression tag	UNP P0DOX5
B	444	SER	-	expression tag	UNP P0DOX5
B	445	THR	-	expression tag	UNP P0DOX5
B	446	GLY	-	expression tag	UNP P0DOX5
B	447	LYS	-	expression tag	UNP P0DOX5
B	448	PRO	-	expression tag	UNP P0DOX5
B	449	THR	-	expression tag	UNP P0DOX5
B	450	LEU	-	expression tag	UNP P0DOX5
B	451	TYR	-	expression tag	UNP P0DOX5
B	452	ASN	-	expression tag	UNP P0DOX5
B	453	VAL	-	expression tag	UNP P0DOX5
B	454	SER	-	expression tag	UNP P0DOX5
B	455	LEU	-	expression tag	UNP P0DOX5
B	456	ILE	-	expression tag	UNP P0DOX5
B	457	MET	-	expression tag	UNP P0DOX5
B	458	SER	-	expression tag	UNP P0DOX5
B	459	ASP	-	expression tag	UNP P0DOX5

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Chain	Residue	Modelled	Actual	Comment	Reference
B	460	THR	-	expression tag	UNP P0DOX5
B	461	GLY	-	expression tag	UNP P0DOX5
B	462	GLY	-	expression tag	UNP P0DOX5
B	463	THR	-	expression tag	UNP P0DOX5
B	464	CYS	-	expression tag	UNP P0DOX5
B	465	TYR	-	expression tag	UNP P0DOX5
C	309	CYS	LEU	conflict	UNP P0DOX5
C	356	GLU	ASP	conflict	UNP P0DOX5
C	358	MET	LEU	conflict	UNP P0DOX5
C	442	ASP	-	expression tag	UNP P0DOX5
C	443	LYS	-	expression tag	UNP P0DOX5
C	444	SER	-	expression tag	UNP P0DOX5
C	445	THR	-	expression tag	UNP P0DOX5
C	446	GLY	-	expression tag	UNP P0DOX5
C	447	LYS	-	expression tag	UNP P0DOX5
C	448	PRO	-	expression tag	UNP P0DOX5
C	449	THR	-	expression tag	UNP P0DOX5
C	450	LEU	-	expression tag	UNP P0DOX5
C	451	TYR	-	expression tag	UNP P0DOX5
C	452	ASN	-	expression tag	UNP P0DOX5
C	453	VAL	-	expression tag	UNP P0DOX5
C	454	SER	-	expression tag	UNP P0DOX5
C	455	LEU	-	expression tag	UNP P0DOX5
C	456	ILE	-	expression tag	UNP P0DOX5
C	457	MET	-	expression tag	UNP P0DOX5
C	458	SER	-	expression tag	UNP P0DOX5
C	459	ASP	-	expression tag	UNP P0DOX5
C	460	THR	-	expression tag	UNP P0DOX5
C	461	GLY	-	expression tag	UNP P0DOX5
C	462	GLY	-	expression tag	UNP P0DOX5
C	463	THR	-	expression tag	UNP P0DOX5
C	464	CYS	-	expression tag	UNP P0DOX5
C	465	TYR	-	expression tag	UNP P0DOX5
D	309	CYS	LEU	conflict	UNP P0DOX5
D	356	GLU	ASP	conflict	UNP P0DOX5
D	358	MET	LEU	conflict	UNP P0DOX5
D	442	ASP	-	expression tag	UNP P0DOX5
D	443	LYS	-	expression tag	UNP P0DOX5
D	444	SER	-	expression tag	UNP P0DOX5
D	445	THR	-	expression tag	UNP P0DOX5
D	446	GLY	-	expression tag	UNP P0DOX5
D	447	LYS	-	expression tag	UNP P0DOX5

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Chain	Residue	Modelled	Actual	Comment	Reference
D	448	PRO	-	expression tag	UNP P0DOX5
D	449	THR	-	expression tag	UNP P0DOX5
D	450	LEU	-	expression tag	UNP P0DOX5
D	451	TYR	-	expression tag	UNP P0DOX5
D	452	ASN	-	expression tag	UNP P0DOX5
D	453	VAL	-	expression tag	UNP P0DOX5
D	454	SER	-	expression tag	UNP P0DOX5
D	455	LEU	-	expression tag	UNP P0DOX5
D	456	ILE	-	expression tag	UNP P0DOX5
D	457	MET	-	expression tag	UNP P0DOX5
D	458	SER	-	expression tag	UNP P0DOX5
D	459	ASP	-	expression tag	UNP P0DOX5
D	460	THR	-	expression tag	UNP P0DOX5
D	461	GLY	-	expression tag	UNP P0DOX5
D	462	GLY	-	expression tag	UNP P0DOX5
D	463	THR	-	expression tag	UNP P0DOX5
D	464	CYS	-	expression tag	UNP P0DOX5
D	465	TYR	-	expression tag	UNP P0DOX5
E	309	CYS	LEU	conflict	UNP P0DOX5
E	356	GLU	ASP	conflict	UNP P0DOX5
E	358	MET	LEU	conflict	UNP P0DOX5
E	442	ASP	-	expression tag	UNP P0DOX5
E	443	LYS	-	expression tag	UNP P0DOX5
E	444	SER	-	expression tag	UNP P0DOX5
E	445	THR	-	expression tag	UNP P0DOX5
E	446	GLY	-	expression tag	UNP P0DOX5
E	447	LYS	-	expression tag	UNP P0DOX5
E	448	PRO	-	expression tag	UNP P0DOX5
E	449	THR	-	expression tag	UNP P0DOX5
E	450	LEU	-	expression tag	UNP P0DOX5
E	451	TYR	-	expression tag	UNP P0DOX5
E	452	ASN	-	expression tag	UNP P0DOX5
E	453	VAL	-	expression tag	UNP P0DOX5
E	454	SER	-	expression tag	UNP P0DOX5
E	455	LEU	-	expression tag	UNP P0DOX5
E	456	ILE	-	expression tag	UNP P0DOX5
E	457	MET	-	expression tag	UNP P0DOX5
E	458	SER	-	expression tag	UNP P0DOX5
E	459	ASP	-	expression tag	UNP P0DOX5
E	460	THR	-	expression tag	UNP P0DOX5
E	461	GLY	-	expression tag	UNP P0DOX5
E	462	GLY	-	expression tag	UNP P0DOX5

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Chain	Residue	Modelled	Actual	Comment	Reference
E	463	THR	-	expression tag	UNP P0DOX5
E	464	CYS	-	expression tag	UNP P0DOX5
E	465	TYR	-	expression tag	UNP P0DOX5
F	309	CYS	LEU	conflict	UNP P0DOX5
F	356	GLU	ASP	conflict	UNP P0DOX5
F	358	MET	LEU	conflict	UNP P0DOX5
F	442	ASP	-	expression tag	UNP P0DOX5
F	443	LYS	-	expression tag	UNP P0DOX5
F	444	SER	-	expression tag	UNP P0DOX5
F	445	THR	-	expression tag	UNP P0DOX5
F	446	GLY	-	expression tag	UNP P0DOX5
F	447	LYS	-	expression tag	UNP P0DOX5
F	448	PRO	-	expression tag	UNP P0DOX5
F	449	THR	-	expression tag	UNP P0DOX5
F	450	LEU	-	expression tag	UNP P0DOX5
F	451	TYR	-	expression tag	UNP P0DOX5
F	452	ASN	-	expression tag	UNP P0DOX5
F	453	VAL	-	expression tag	UNP P0DOX5
F	454	SER	-	expression tag	UNP P0DOX5
F	455	LEU	-	expression tag	UNP P0DOX5
F	456	ILE	-	expression tag	UNP P0DOX5
F	457	MET	-	expression tag	UNP P0DOX5
F	458	SER	-	expression tag	UNP P0DOX5
F	459	ASP	-	expression tag	UNP P0DOX5
F	460	THR	-	expression tag	UNP P0DOX5
F	461	GLY	-	expression tag	UNP P0DOX5
F	462	GLY	-	expression tag	UNP P0DOX5
F	463	THR	-	expression tag	UNP P0DOX5
F	464	CYS	-	expression tag	UNP P0DOX5
F	465	TYR	-	expression tag	UNP P0DOX5
G	309	CYS	LEU	conflict	UNP P0DOX5
G	356	GLU	ASP	conflict	UNP P0DOX5
G	358	MET	LEU	conflict	UNP P0DOX5
G	442	ASP	-	expression tag	UNP P0DOX5
G	443	LYS	-	expression tag	UNP P0DOX5
G	444	SER	-	expression tag	UNP P0DOX5
G	445	THR	-	expression tag	UNP P0DOX5
G	446	GLY	-	expression tag	UNP P0DOX5
G	447	LYS	-	expression tag	UNP P0DOX5
G	448	PRO	-	expression tag	UNP P0DOX5
G	449	THR	-	expression tag	UNP P0DOX5
G	450	LEU	-	expression tag	UNP P0DOX5

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Chain	Residue	Modelled	Actual	Comment	Reference
G	451	TYR	-	expression tag	UNP P0DOX5
G	452	ASN	-	expression tag	UNP P0DOX5
G	453	VAL	-	expression tag	UNP P0DOX5
G	454	SER	-	expression tag	UNP P0DOX5
G	455	LEU	-	expression tag	UNP P0DOX5
G	456	ILE	-	expression tag	UNP P0DOX5
G	457	MET	-	expression tag	UNP P0DOX5
G	458	SER	-	expression tag	UNP P0DOX5
G	459	ASP	-	expression tag	UNP P0DOX5
G	460	THR	-	expression tag	UNP P0DOX5
G	461	GLY	-	expression tag	UNP P0DOX5
G	462	GLY	-	expression tag	UNP P0DOX5
G	463	THR	-	expression tag	UNP P0DOX5
G	464	CYS	-	expression tag	UNP P0DOX5
G	465	TYR	-	expression tag	UNP P0DOX5
H	309	CYS	LEU	conflict	UNP P0DOX5
H	356	GLU	ASP	conflict	UNP P0DOX5
H	358	MET	LEU	conflict	UNP P0DOX5
H	442	ASP	-	expression tag	UNP P0DOX5
H	443	LYS	-	expression tag	UNP P0DOX5
H	444	SER	-	expression tag	UNP P0DOX5
H	445	THR	-	expression tag	UNP P0DOX5
H	446	GLY	-	expression tag	UNP P0DOX5
H	447	LYS	-	expression tag	UNP P0DOX5
H	448	PRO	-	expression tag	UNP P0DOX5
H	449	THR	-	expression tag	UNP P0DOX5
H	450	LEU	-	expression tag	UNP P0DOX5
H	451	TYR	-	expression tag	UNP P0DOX5
H	452	ASN	-	expression tag	UNP P0DOX5
H	453	VAL	-	expression tag	UNP P0DOX5
H	454	SER	-	expression tag	UNP P0DOX5
H	455	LEU	-	expression tag	UNP P0DOX5
H	456	ILE	-	expression tag	UNP P0DOX5
H	457	MET	-	expression tag	UNP P0DOX5
H	458	SER	-	expression tag	UNP P0DOX5
H	459	ASP	-	expression tag	UNP P0DOX5
H	460	THR	-	expression tag	UNP P0DOX5
H	461	GLY	-	expression tag	UNP P0DOX5
H	462	GLY	-	expression tag	UNP P0DOX5
H	463	THR	-	expression tag	UNP P0DOX5
H	464	CYS	-	expression tag	UNP P0DOX5
H	465	TYR	-	expression tag	UNP P0DOX5

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Chain	Residue	Modelled	Actual	Comment	Reference
I	309	CYS	LEU	conflict	UNP P0DOX5
I	356	GLU	ASP	conflict	UNP P0DOX5
I	358	MET	LEU	conflict	UNP P0DOX5
I	442	ASP	-	expression tag	UNP P0DOX5
I	443	LYS	-	expression tag	UNP P0DOX5
I	444	SER	-	expression tag	UNP P0DOX5
I	445	THR	-	expression tag	UNP P0DOX5
I	446	GLY	-	expression tag	UNP P0DOX5
I	447	LYS	-	expression tag	UNP P0DOX5
I	448	PRO	-	expression tag	UNP P0DOX5
I	449	THR	-	expression tag	UNP P0DOX5
I	450	LEU	-	expression tag	UNP P0DOX5
I	451	TYR	-	expression tag	UNP P0DOX5
I	452	ASN	-	expression tag	UNP P0DOX5
I	453	VAL	-	expression tag	UNP P0DOX5
I	454	SER	-	expression tag	UNP P0DOX5
I	455	LEU	-	expression tag	UNP P0DOX5
I	456	ILE	-	expression tag	UNP P0DOX5
I	457	MET	-	expression tag	UNP P0DOX5
I	458	SER	-	expression tag	UNP P0DOX5
I	459	ASP	-	expression tag	UNP P0DOX5
I	460	THR	-	expression tag	UNP P0DOX5
I	461	GLY	-	expression tag	UNP P0DOX5
I	462	GLY	-	expression tag	UNP P0DOX5
I	463	THR	-	expression tag	UNP P0DOX5
I	464	CYS	-	expression tag	UNP P0DOX5
I	465	TYR	-	expression tag	UNP P0DOX5
J	309	CYS	LEU	conflict	UNP P0DOX5
J	356	GLU	ASP	conflict	UNP P0DOX5
J	358	MET	LEU	conflict	UNP P0DOX5
J	442	ASP	-	expression tag	UNP P0DOX5
J	443	LYS	-	expression tag	UNP P0DOX5
J	444	SER	-	expression tag	UNP P0DOX5
J	445	THR	-	expression tag	UNP P0DOX5
J	446	GLY	-	expression tag	UNP P0DOX5
J	447	LYS	-	expression tag	UNP P0DOX5
J	448	PRO	-	expression tag	UNP P0DOX5
J	449	THR	-	expression tag	UNP P0DOX5
J	450	LEU	-	expression tag	UNP P0DOX5
J	451	TYR	-	expression tag	UNP P0DOX5
J	452	ASN	-	expression tag	UNP P0DOX5
J	453	VAL	-	expression tag	UNP P0DOX5

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Chain	Residue	Modelled	Actual	Comment	Reference
J	454	SER	-	expression tag	UNP P0DOX5
J	455	LEU	-	expression tag	UNP P0DOX5
J	456	ILE	-	expression tag	UNP P0DOX5
J	457	MET	-	expression tag	UNP P0DOX5
J	458	SER	-	expression tag	UNP P0DOX5
J	459	ASP	-	expression tag	UNP P0DOX5
J	460	THR	-	expression tag	UNP P0DOX5
J	461	GLY	-	expression tag	UNP P0DOX5
J	462	GLY	-	expression tag	UNP P0DOX5
J	463	THR	-	expression tag	UNP P0DOX5
J	464	CYS	-	expression tag	UNP P0DOX5
J	465	TYR	-	expression tag	UNP P0DOX5
K	309	CYS	LEU	conflict	UNP P0DOX5
K	356	GLU	ASP	conflict	UNP P0DOX5
K	358	MET	LEU	conflict	UNP P0DOX5
K	442	ASP	-	expression tag	UNP P0DOX5
K	443	LYS	-	expression tag	UNP P0DOX5
K	444	SER	-	expression tag	UNP P0DOX5
K	445	THR	-	expression tag	UNP P0DOX5
K	446	GLY	-	expression tag	UNP P0DOX5
K	447	LYS	-	expression tag	UNP P0DOX5
K	448	PRO	-	expression tag	UNP P0DOX5
K	449	THR	-	expression tag	UNP P0DOX5
K	450	LEU	-	expression tag	UNP P0DOX5
K	451	TYR	-	expression tag	UNP P0DOX5
K	452	ASN	-	expression tag	UNP P0DOX5
K	453	VAL	-	expression tag	UNP P0DOX5
K	454	SER	-	expression tag	UNP P0DOX5
K	455	LEU	-	expression tag	UNP P0DOX5
K	456	ILE	-	expression tag	UNP P0DOX5
K	457	MET	-	expression tag	UNP P0DOX5
K	458	SER	-	expression tag	UNP P0DOX5
K	459	ASP	-	expression tag	UNP P0DOX5
K	460	THR	-	expression tag	UNP P0DOX5
K	461	GLY	-	expression tag	UNP P0DOX5
K	462	GLY	-	expression tag	UNP P0DOX5
K	463	THR	-	expression tag	UNP P0DOX5
K	464	CYS	-	expression tag	UNP P0DOX5
K	465	TYR	-	expression tag	UNP P0DOX5
L	309	CYS	LEU	conflict	UNP P0DOX5
L	356	GLU	ASP	conflict	UNP P0DOX5
L	358	MET	LEU	conflict	UNP P0DOX5

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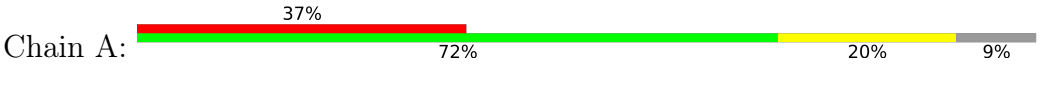
Chain	Residue	Modelled	Actual	Comment	Reference
L	442	ASP	-	expression tag	UNP P0DOX5
L	443	LYS	-	expression tag	UNP P0DOX5
L	444	SER	-	expression tag	UNP P0DOX5
L	445	THR	-	expression tag	UNP P0DOX5
L	446	GLY	-	expression tag	UNP P0DOX5
L	447	LYS	-	expression tag	UNP P0DOX5
L	448	PRO	-	expression tag	UNP P0DOX5
L	449	THR	-	expression tag	UNP P0DOX5
L	450	LEU	-	expression tag	UNP P0DOX5
L	451	TYR	-	expression tag	UNP P0DOX5
L	452	ASN	-	expression tag	UNP P0DOX5
L	453	VAL	-	expression tag	UNP P0DOX5
L	454	SER	-	expression tag	UNP P0DOX5
L	455	LEU	-	expression tag	UNP P0DOX5
L	456	ILE	-	expression tag	UNP P0DOX5
L	457	MET	-	expression tag	UNP P0DOX5
L	458	SER	-	expression tag	UNP P0DOX5
L	459	ASP	-	expression tag	UNP P0DOX5
L	460	THR	-	expression tag	UNP P0DOX5
L	461	GLY	-	expression tag	UNP P0DOX5
L	462	GLY	-	expression tag	UNP P0DOX5
L	463	THR	-	expression tag	UNP P0DOX5
L	464	CYS	-	expression tag	UNP P0DOX5
L	465	TYR	-	expression tag	UNP P0DOX5

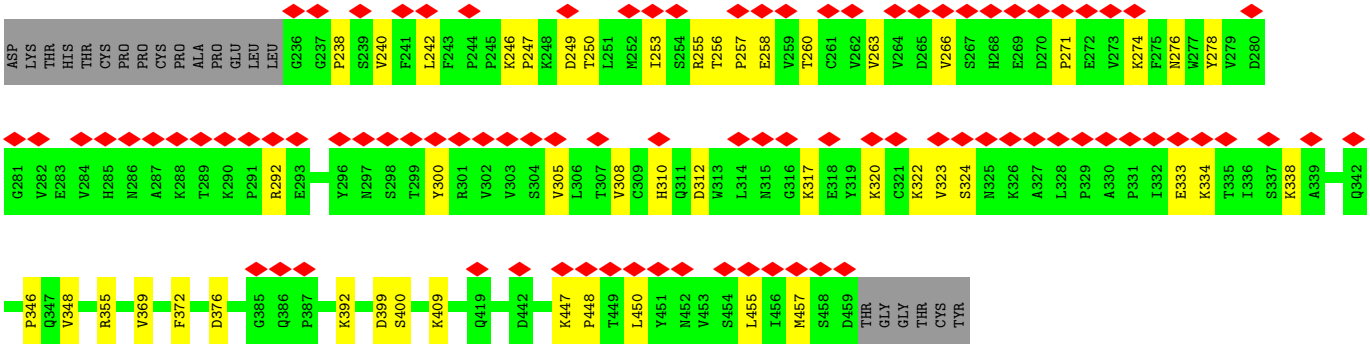
3 Residue-property plots (i)

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: Immunoglobulin gamma-1 heavy chain

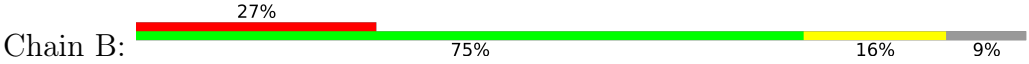
Chain A:

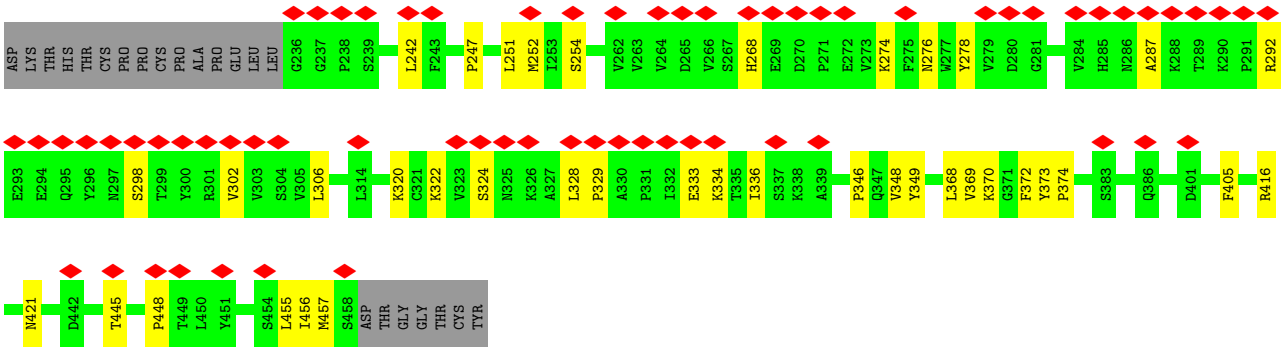




• Molecule 1: Immunoglobulin gamma-1 heavy chain

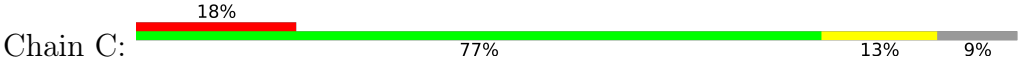
Chain B:

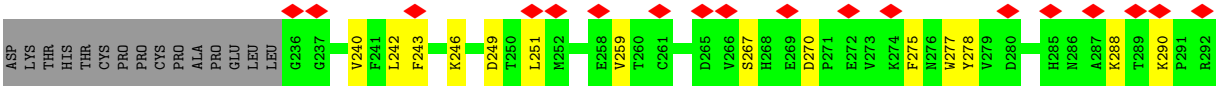


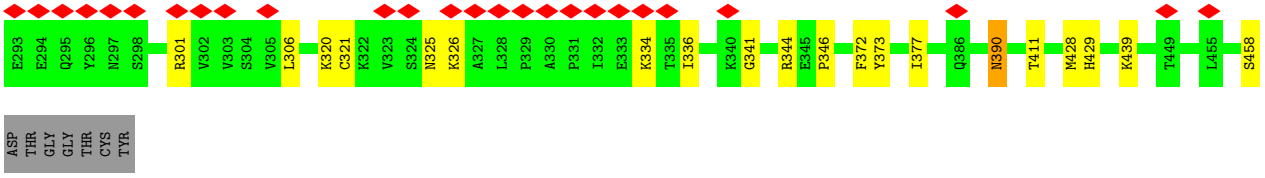


• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain C:

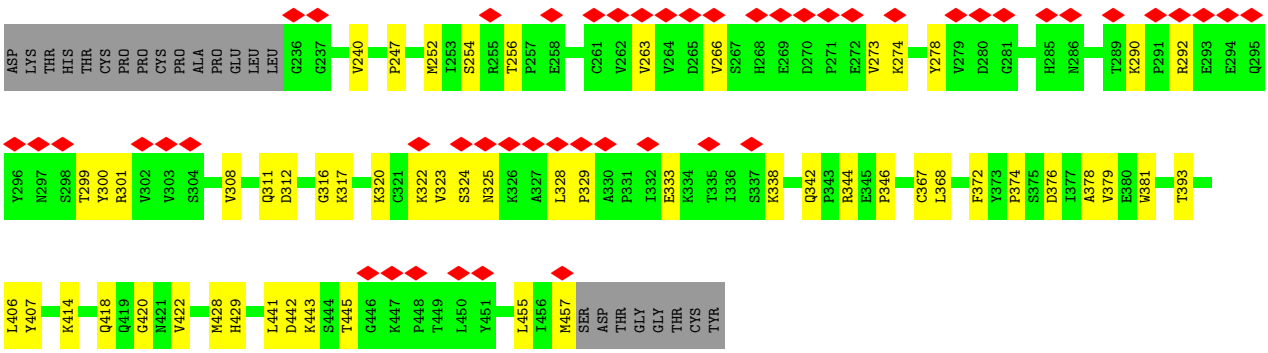






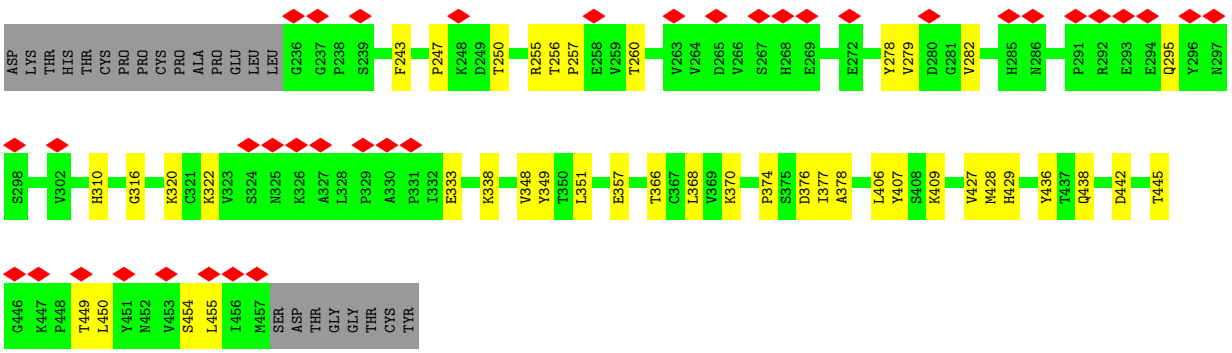
• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain D:



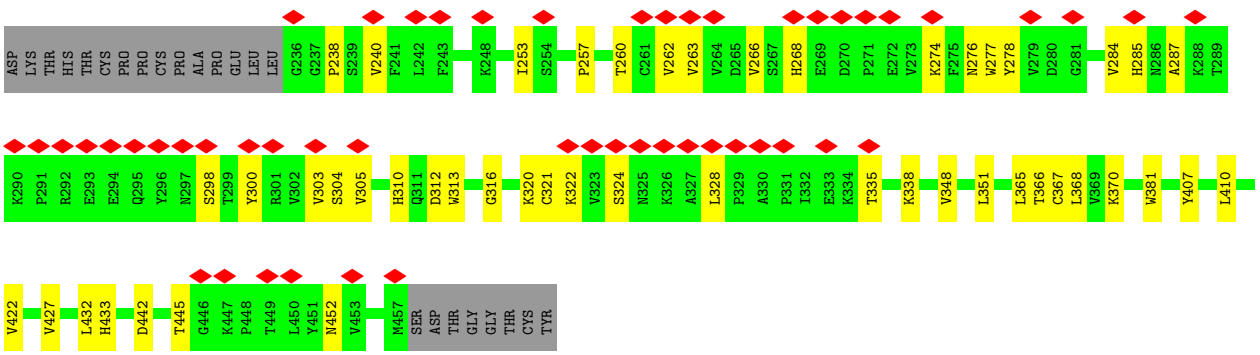
• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain E:



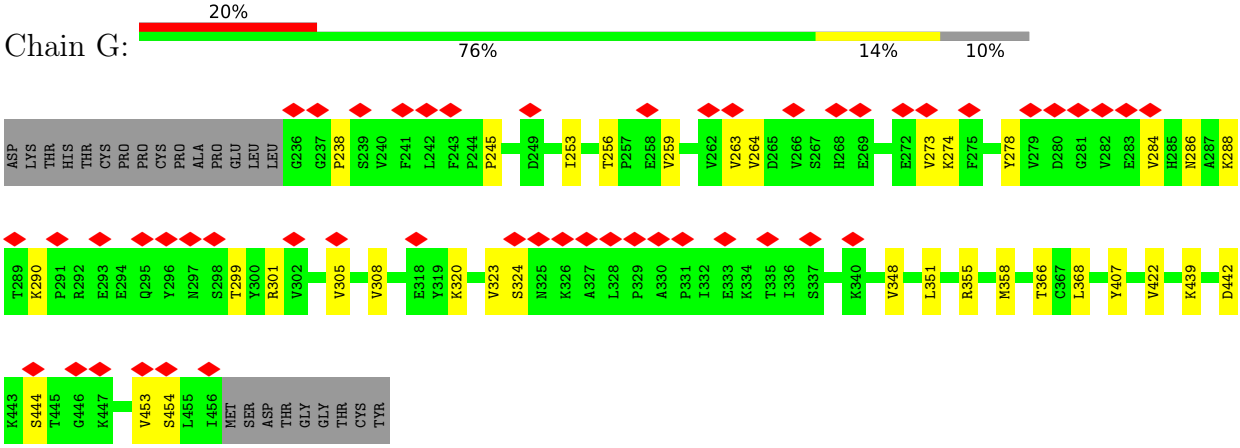
• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain F:



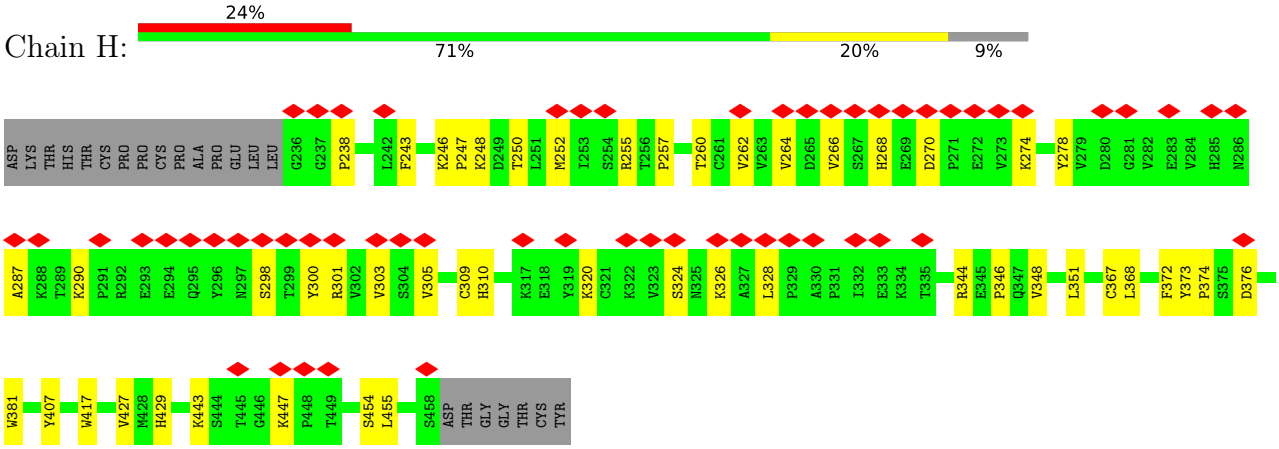
• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain G:



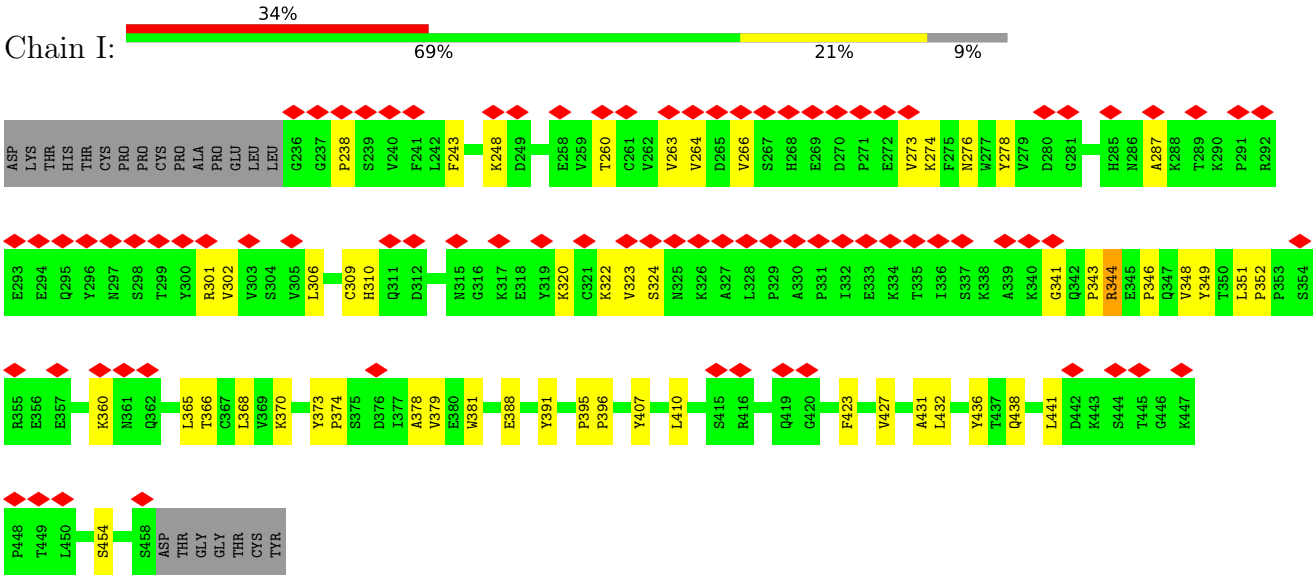
• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain H:



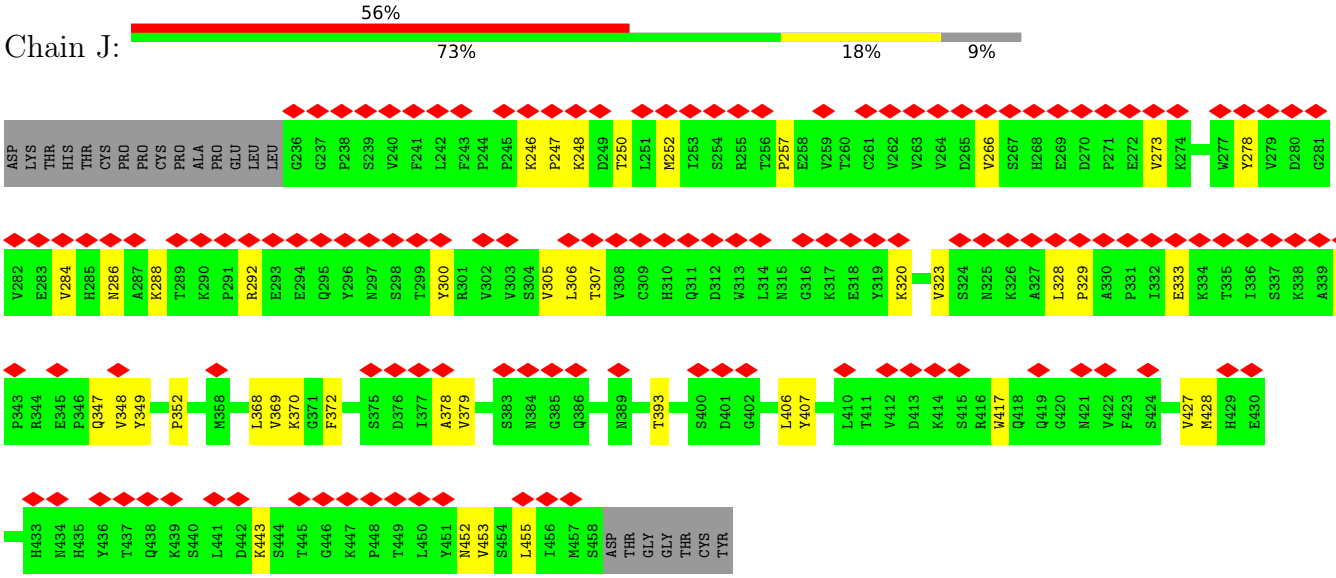
• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain I:



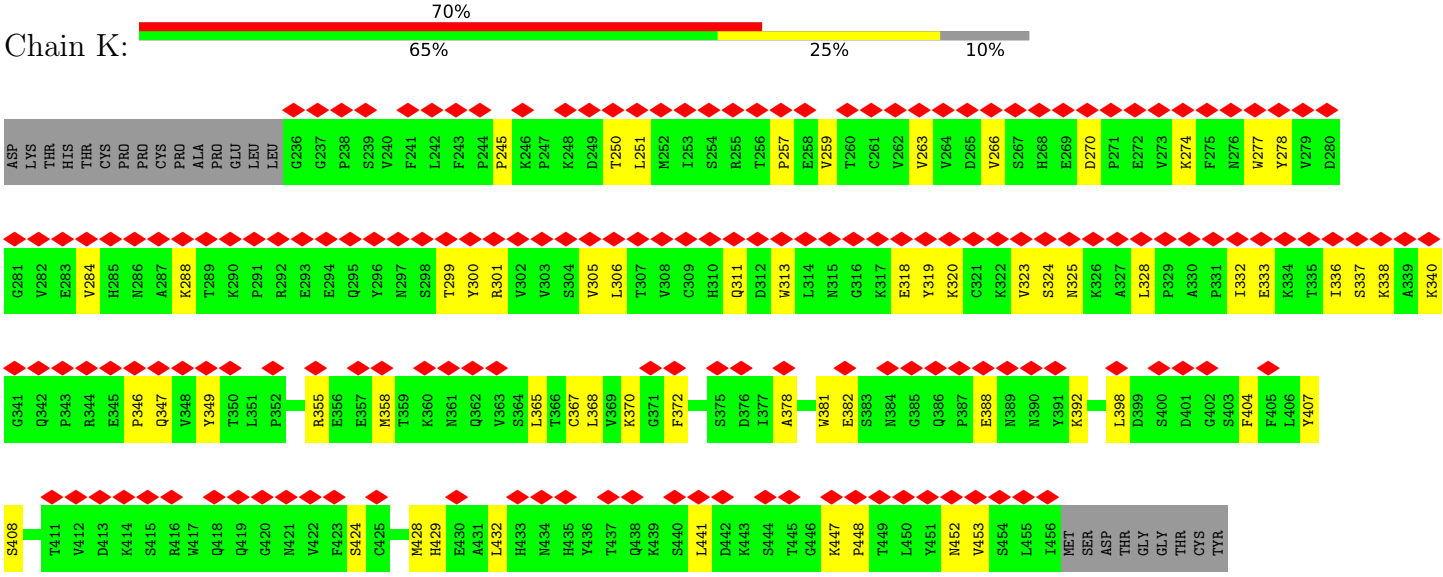
• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain J:



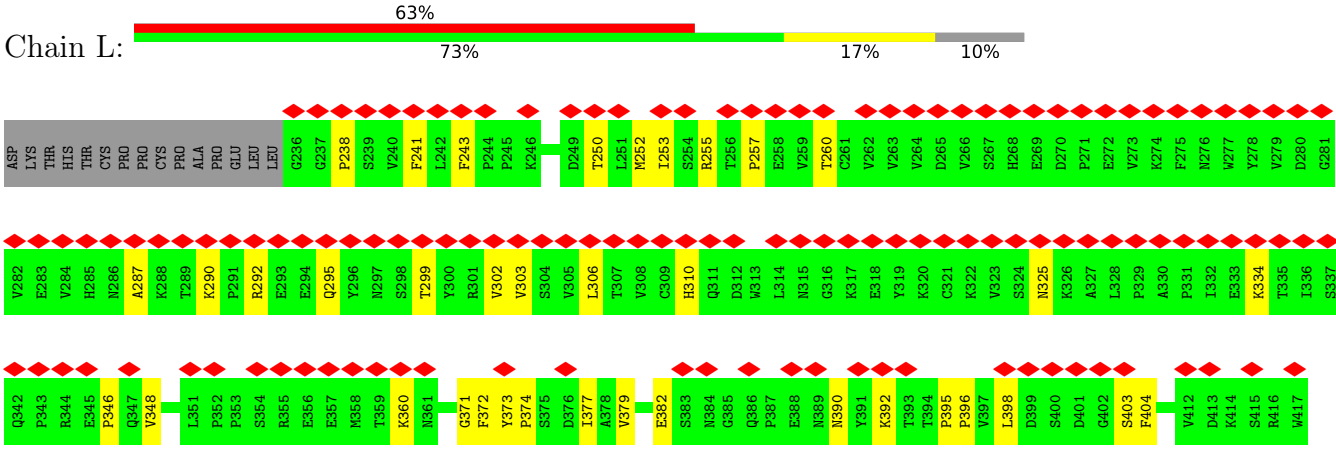
• Molecule 1: Immunoglobulin gamma-1 heavy chain

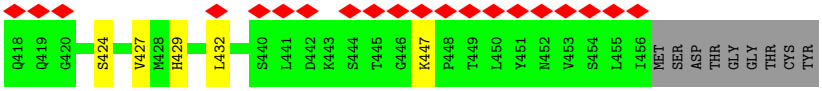
Chain K:



• Molecule 1: Immunoglobulin gamma-1 heavy chain

Chain L:




Q418
Q419
G420
S424
V427
M428
H429
L432
S440
L441
D442
K443
S444
T445
G446
K447
P448
T449
L450
Y451
N452
V453
S454
L455
I456
MET
SER
ASP
THR
GLY
GLY
THR
CYS
TYR

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	300561	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 ($e^-/Å^2$)	1.1	Depositor
Minimum defocus (nm)	1100	Depositor
Maximum defocus (nm)	1900	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.117	Depositor
Minimum map value	-0.080	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.0127	Depositor
Map size (Å)	204.0, 204.0, 204.0	wwPDB
Map dimensions	240, 240, 240	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.85, 0.85, 0.85	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	0/1831	0.42	0/2492
1	B	0.23	0/1823	0.42	0/2481
1	C	0.24	0/1823	0.42	0/2481
1	D	0.24	0/1817	0.42	0/2473
1	E	0.24	0/1817	0.42	0/2473
1	F	0.24	0/1817	0.43	0/2473
1	G	0.24	0/1809	0.42	0/2463
1	H	0.24	0/1823	0.42	0/2481
1	I	0.24	0/1823	0.42	0/2481
1	J	0.24	0/1823	0.42	0/2481
1	K	0.24	0/1809	0.43	0/2463
1	L	0.24	0/1809	0.42	0/2463
All	All	0.24	0/21824	0.42	0/29705

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

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	1783	0	1746	37	0
1	B	1775	0	1742	24	0
1	C	1775	0	1742	26	0
1	D	1769	0	1737	31	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	1769	0	1737	33	0
1	F	1769	0	1737	32	0
1	G	1761	0	1728	24	0
1	H	1775	0	1742	29	0
1	I	1775	0	1742	34	0
1	J	1775	0	1742	30	0
1	K	1761	0	1728	38	0
1	L	1761	0	1728	27	0
All	All	21248	0	20851	340	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 8.

The worst 5 of 340 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:E:255:ARG:NH1	1:E:256:THR:HG22	1.60	1.14
1:E:255:ARG:NH1	1:E:256:THR:CG2	2.25	0.99
1:E:255:ARG:HH12	1:E:256:THR:CG2	1.79	0.95
1:A:246:LYS:HD2	1:A:247:PRO:HD2	1.52	0.91
1:E:255:ARG:HH11	1:E:256:THR:HG22	1.39	0.85

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	222/245 (91%)	219 (99%)	3 (1%)	0	100	100
1	B	221/245 (90%)	218 (99%)	3 (1%)	0	100	100
1	C	221/245 (90%)	213 (96%)	8 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	220/245 (90%)	216 (98%)	4 (2%)	0	100	100
1	E	220/245 (90%)	219 (100%)	1 (0%)	0	100	100
1	F	220/245 (90%)	217 (99%)	3 (1%)	0	100	100
1	G	219/245 (89%)	212 (97%)	7 (3%)	0	100	100
1	H	221/245 (90%)	217 (98%)	4 (2%)	0	100	100
1	I	221/245 (90%)	219 (99%)	2 (1%)	0	100	100
1	J	221/245 (90%)	220 (100%)	1 (0%)	0	100	100
1	K	219/245 (89%)	213 (97%)	6 (3%)	0	100	100
1	L	219/245 (89%)	215 (98%)	4 (2%)	0	100	100
All	All	2644/2940 (90%)	2598 (98%)	46 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	208/226 (92%)	208 (100%)	0	100	100
1	B	207/226 (92%)	207 (100%)	0	100	100
1	C	207/226 (92%)	205 (99%)	2 (1%)	76	86
1	D	206/226 (91%)	205 (100%)	1 (0%)	88	94
1	E	206/226 (91%)	206 (100%)	0	100	100
1	F	206/226 (91%)	206 (100%)	0	100	100
1	G	205/226 (91%)	205 (100%)	0	100	100
1	H	207/226 (92%)	207 (100%)	0	100	100
1	I	207/226 (92%)	206 (100%)	1 (0%)	88	94
1	J	207/226 (92%)	207 (100%)	0	100	100
1	K	205/226 (91%)	204 (100%)	1 (0%)	88	94
1	L	205/226 (91%)	205 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	2476/2712 (91%)	2471 (100%)	5 (0%)	93 97

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	301	ARG
1	C	390	ASN
1	D	311	GLN
1	I	344	ARG
1	K	311	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	E	438	GLN
1	J	347	GLN
1	K	315	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

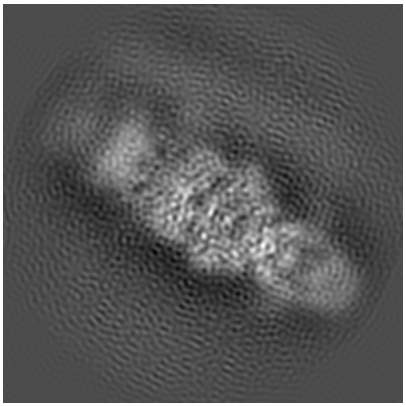
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-32933. These allow visual inspection of the internal detail of the map and identification of artifacts.

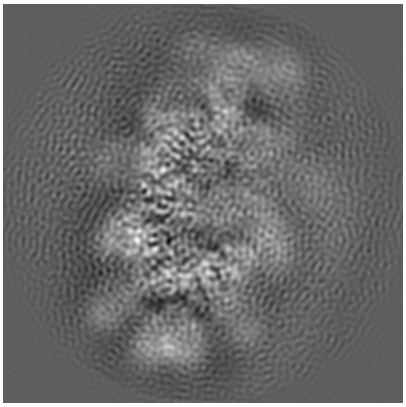
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

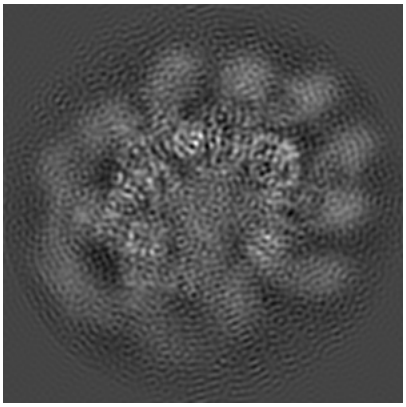
6.1.1 Primary map



X



Y

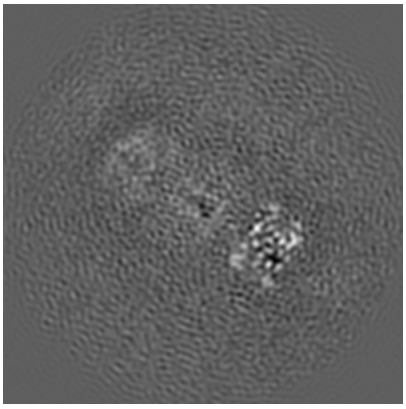


Z

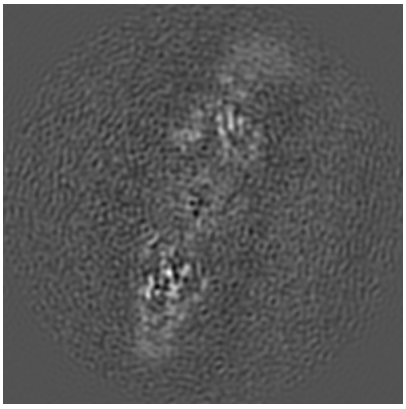
The images above show the map projected in three orthogonal directions.

6.2 Central slices

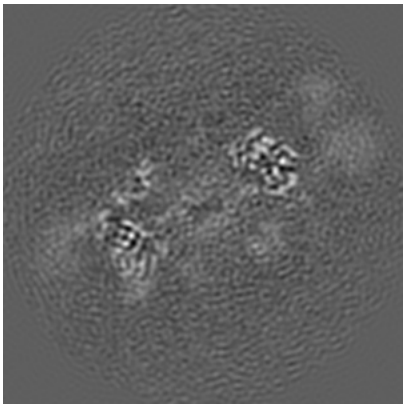
6.2.1 Primary map



X Index: 120



Y Index: 120

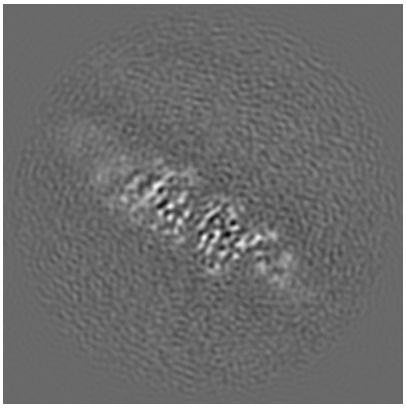


Z Index: 120

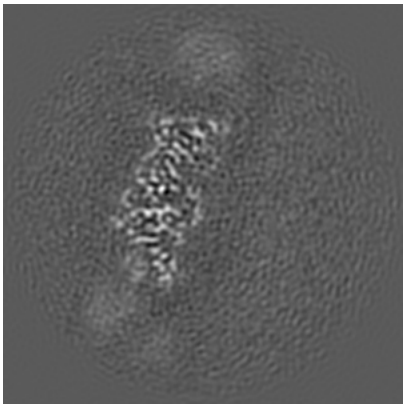
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

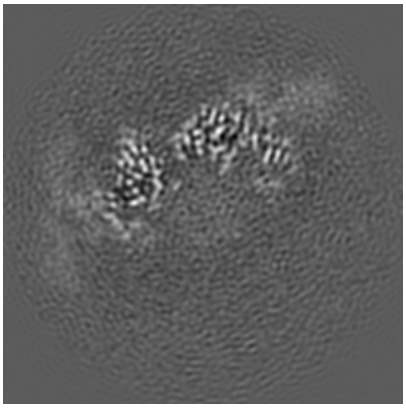
6.3.1 Primary map



X Index: 78



Y Index: 156



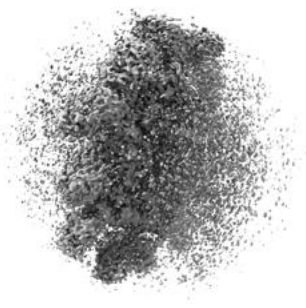
Z Index: 99

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X



Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.0127. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

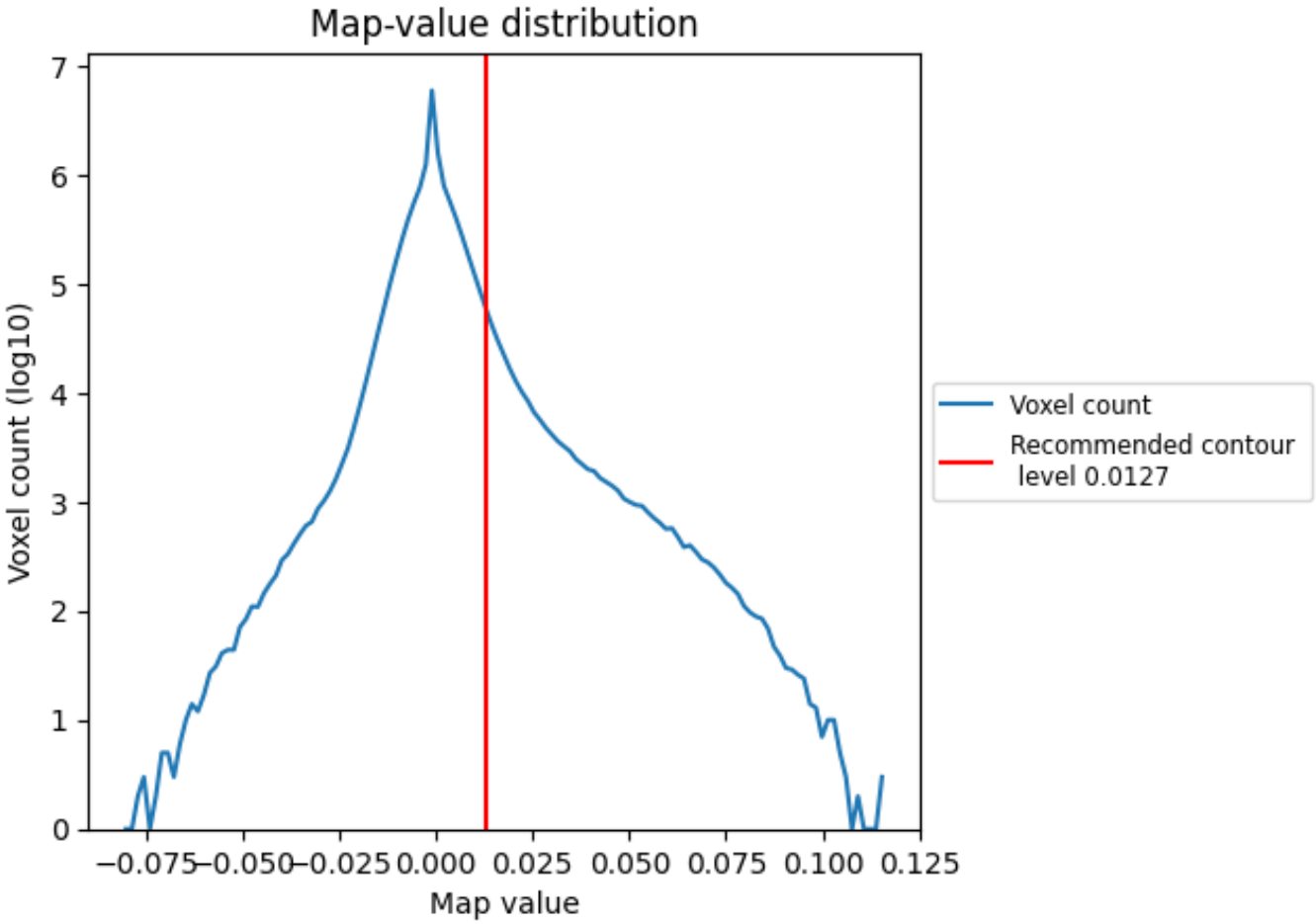
6.5 Mask visualisation (i)

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

7 Map analysis

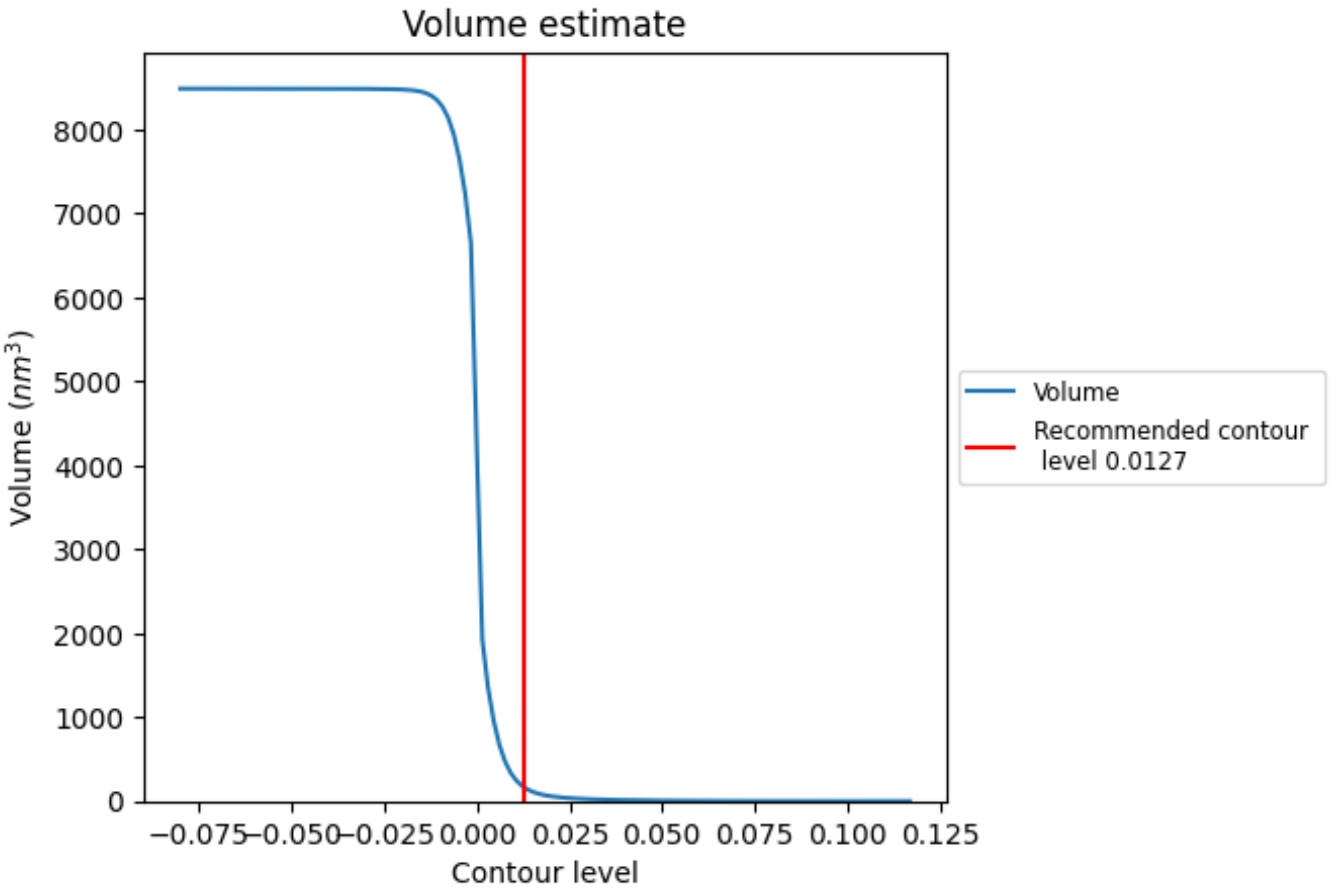
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

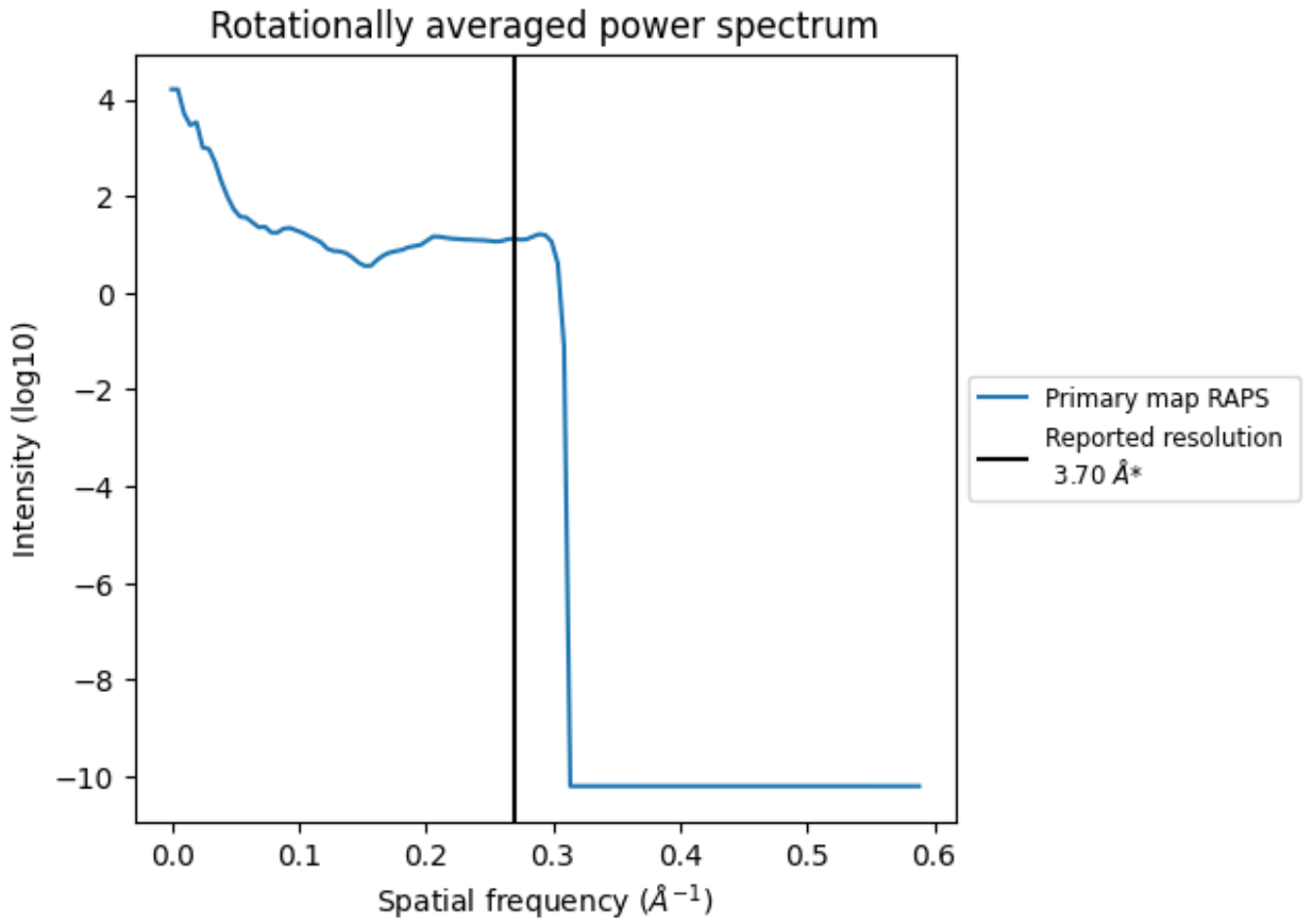
7.2 Volume estimate



The volume at the recommended contour level is 167 nm^3; this corresponds to an approximate mass of 151 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 0.270 Å^{-1}

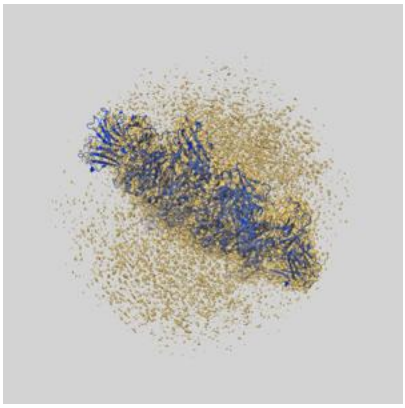
8 Fourier-Shell correlation (i)

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

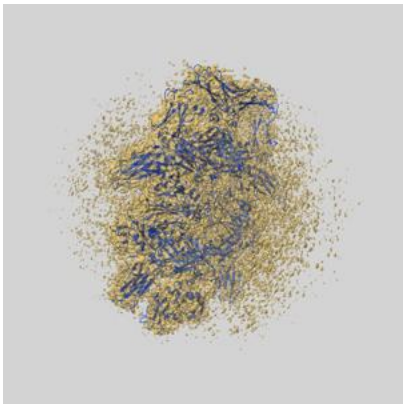
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-32933 and PDB model 7X13. Per-residue inclusion information can be found in section 3 on page 13.

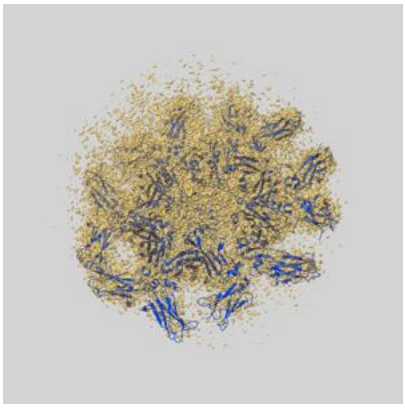
9.1 Map-model overlay



X



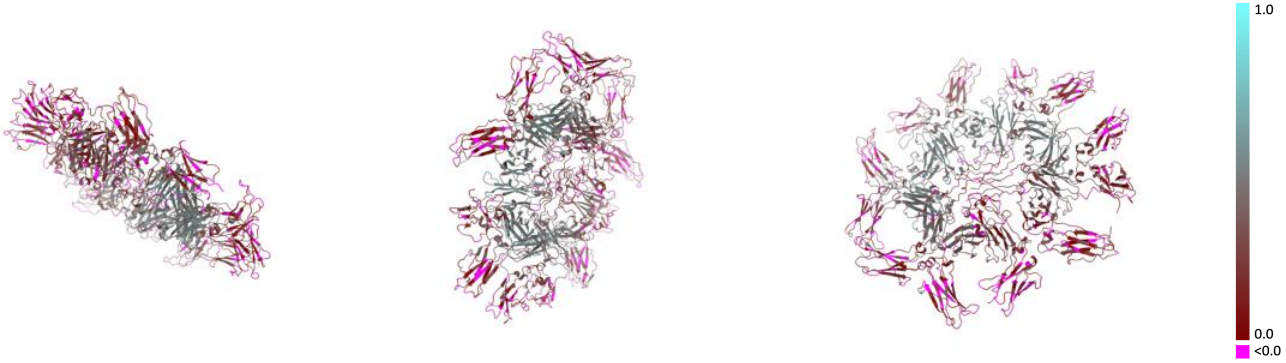
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0127 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.

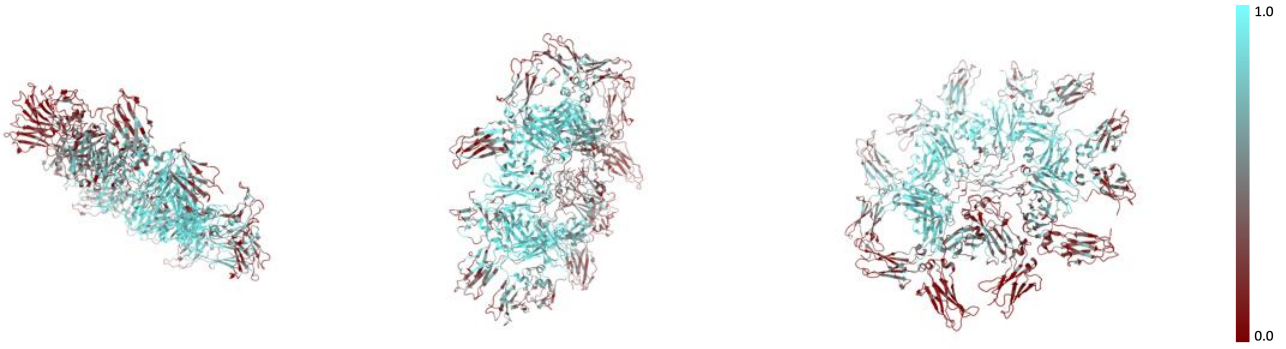
9.2 Q-score mapped to coordinate model (i)



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.

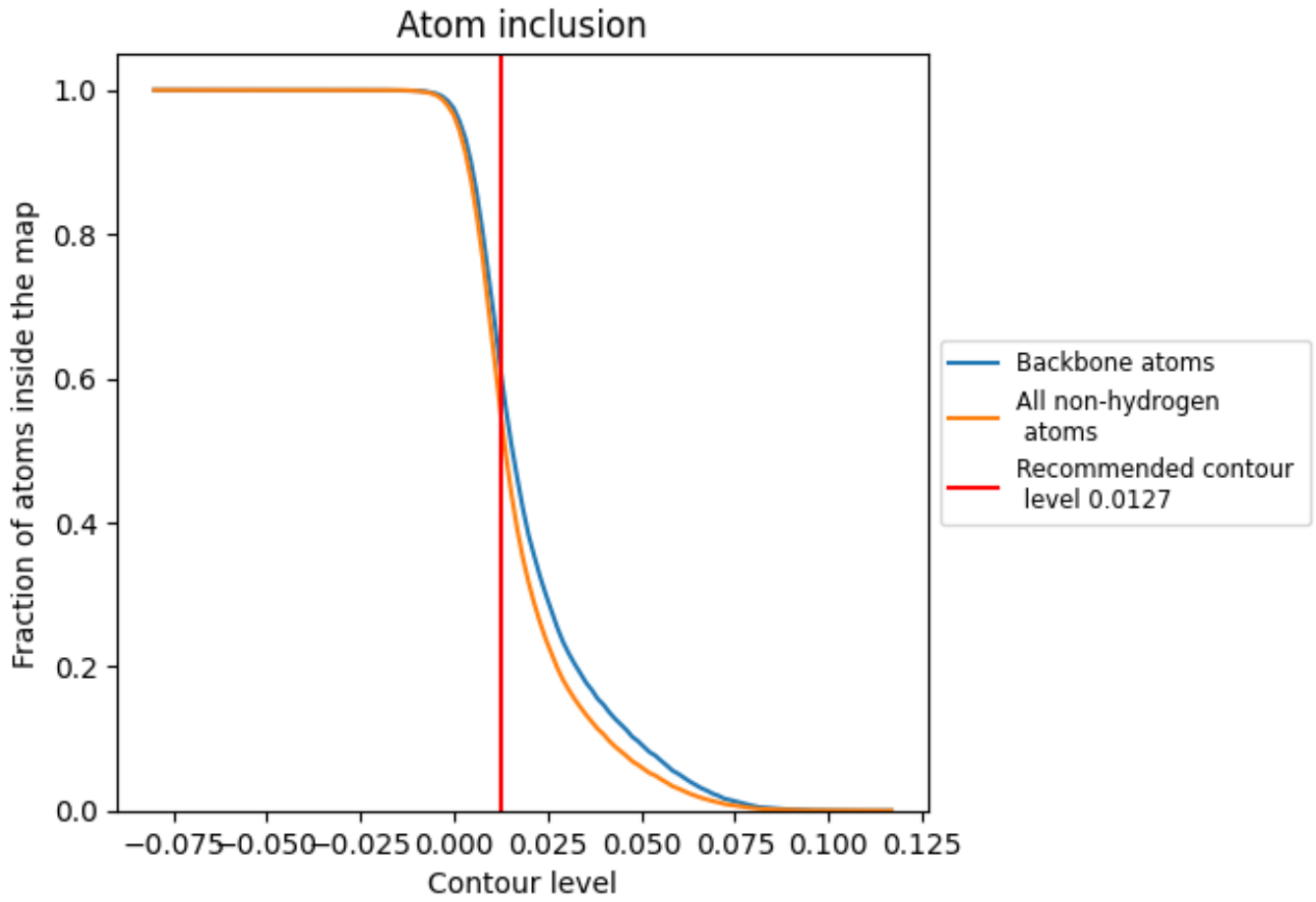
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.0127).

9.4 Atom inclusion (i)



At the recommended contour level, 60% of all backbone atoms, 54% 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 (0.0127) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5404	0.2730
A	0.5111	0.2640
B	0.5986	0.2960
C	0.6781	0.3320
D	0.6787	0.3260
E	0.7252	0.3460
F	0.6598	0.3140
G	0.6409	0.3040
H	0.6284	0.2870
I	0.5197	0.2680
J	0.3385	0.1810
K	0.2265	0.1740
L	0.2772	0.1840