



Full wwPDB EM Validation Report ⓘ

Jun 10, 2024 – 02:30 AM EDT

PDB ID : 8FMA
EMDB ID : EMD-29290
Title : Nodavirus RNA replication proto-crown, detergent-solublized C11 multimer
Authors : Zhan, H.; Unchwaniwala, N.; Rebolledo Viveros, A.; Pennington, J.; Horswill, M.; Broadberry, R.; Myers, J.; den Boon, J.; Grant, T.; Ahlquist, P.
Deposited on : 2022-12-22
Resolution : 3.10 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

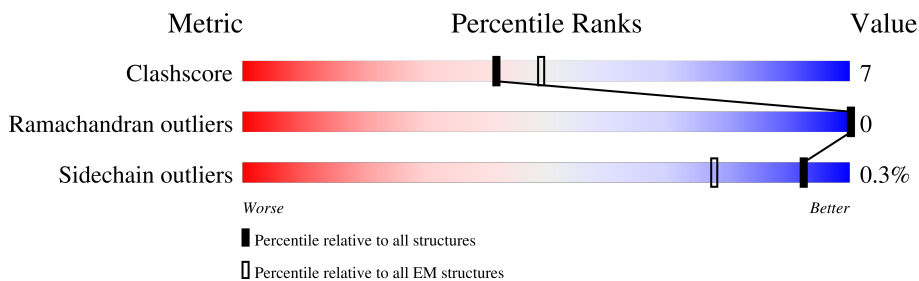
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.10 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	A	1011	27% 68%
1	B	1011	28% 68%
1	C	1011	28% 68%
1	D	1011	28% 68%
1	E	1011	28% 68%
1	F	1011	27% 68%
1	G	1011	28% 68%
1	H	1011	28% 68%

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Mol	Chain	Length	Quality of chain
1	I	1011	28% 68%
1	J	1011	27% 68%
1	K	1011	28% 68%
1	L	1011	21% 33% 67%
1	M	1011	21% 33% 67%
1	N	1011	22% 33% 67%
1	O	1011	21% 33% 67%
1	P	1011	21% 33% 67%
1	Q	1011	22% 33% 67%
1	R	1011	22% 33% 67%
1	S	1011	21% 33% 67%
1	T	1011	22% 33% 67%
1	U	1011	21% 33% 67%
1	V	1011	21% 33% 67%

2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 72974 atoms, of which 28633 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 RNA-directed RNA polymerase.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
1	B	324	5223	1673	2603	459	479	9	0	0
1	C	324	5223	1673	2603	459	479	9	0	0
1	D	324	5223	1673	2603	459	479	9	0	0
1	E	324	5223	1673	2603	459	479	9	0	0
1	F	324	5223	1673	2603	459	479	9	0	0
1	G	324	5223	1673	2603	459	479	9	0	0
1	H	324	5223	1673	2603	459	479	9	0	0
1	I	324	5223	1673	2603	459	479	9	0	0
1	J	324	5223	1673	2603	459	479	9	0	0
1	K	324	5223	1673	2603	459	479	9	0	0
1	A	324	5223	1673	2603	459	479	9	0	0
1	L	333	1411	724	338	349			0	0
1	M	333	1411	724	338	349			0	0
1	N	333	1411	724	338	349			0	0
1	O	333	1411	724	338	349			0	0
1	P	333	1411	724	338	349			0	0
1	Q	333	1411	724	338	349			0	0

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Mol	Chain	Residues	Atoms				AltConf	Trace
1	R	333	Total	C	N	O	0	0
			1411	724	338	349		
1	S	333	Total	C	N	O	0	0
			1411	724	338	349		
1	T	333	Total	C	N	O	0	0
			1411	724	338	349		
1	U	333	Total	C	N	O	0	0
			1411	724	338	349		
1	V	333	Total	C	N	O	0	0
			1411	724	338	349		

There are 308 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	897	LEU	MET	conflict	UNP Q66929
B	999	SER	-	expression tag	UNP Q66929
B	1000	ARG	-	expression tag	UNP Q66929
B	1001	LEU	-	expression tag	UNP Q66929
B	1002	GLU	-	expression tag	UNP Q66929
B	1003	GLU	-	expression tag	UNP Q66929
B	1004	GLU	-	expression tag	UNP Q66929
B	1005	LEU	-	expression tag	UNP Q66929
B	1006	ARG	-	expression tag	UNP Q66929
B	1007	ARG	-	expression tag	UNP Q66929
B	1008	ARG	-	expression tag	UNP Q66929
B	1009	LEU	-	expression tag	UNP Q66929
B	1010	THR	-	expression tag	UNP Q66929
B	1011	GLU	-	expression tag	UNP Q66929
C	897	LEU	MET	conflict	UNP Q66929
C	999	SER	-	expression tag	UNP Q66929
C	1000	ARG	-	expression tag	UNP Q66929
C	1001	LEU	-	expression tag	UNP Q66929
C	1002	GLU	-	expression tag	UNP Q66929
C	1003	GLU	-	expression tag	UNP Q66929
C	1004	GLU	-	expression tag	UNP Q66929
C	1005	LEU	-	expression tag	UNP Q66929
C	1006	ARG	-	expression tag	UNP Q66929
C	1007	ARG	-	expression tag	UNP Q66929
C	1008	ARG	-	expression tag	UNP Q66929
C	1009	LEU	-	expression tag	UNP Q66929
C	1010	THR	-	expression tag	UNP Q66929
C	1011	GLU	-	expression tag	UNP Q66929
D	897	LEU	MET	conflict	UNP Q66929

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Chain	Residue	Modelled	Actual	Comment	Reference
D	999	SER	-	expression tag	UNP Q66929
D	1000	ARG	-	expression tag	UNP Q66929
D	1001	LEU	-	expression tag	UNP Q66929
D	1002	GLU	-	expression tag	UNP Q66929
D	1003	GLU	-	expression tag	UNP Q66929
D	1004	GLU	-	expression tag	UNP Q66929
D	1005	LEU	-	expression tag	UNP Q66929
D	1006	ARG	-	expression tag	UNP Q66929
D	1007	ARG	-	expression tag	UNP Q66929
D	1008	ARG	-	expression tag	UNP Q66929
D	1009	LEU	-	expression tag	UNP Q66929
D	1010	THR	-	expression tag	UNP Q66929
D	1011	GLU	-	expression tag	UNP Q66929
E	897	LEU	MET	conflict	UNP Q66929
E	999	SER	-	expression tag	UNP Q66929
E	1000	ARG	-	expression tag	UNP Q66929
E	1001	LEU	-	expression tag	UNP Q66929
E	1002	GLU	-	expression tag	UNP Q66929
E	1003	GLU	-	expression tag	UNP Q66929
E	1004	GLU	-	expression tag	UNP Q66929
E	1005	LEU	-	expression tag	UNP Q66929
E	1006	ARG	-	expression tag	UNP Q66929
E	1007	ARG	-	expression tag	UNP Q66929
E	1008	ARG	-	expression tag	UNP Q66929
E	1009	LEU	-	expression tag	UNP Q66929
E	1010	THR	-	expression tag	UNP Q66929
E	1011	GLU	-	expression tag	UNP Q66929
F	897	LEU	MET	conflict	UNP Q66929
F	999	SER	-	expression tag	UNP Q66929
F	1000	ARG	-	expression tag	UNP Q66929
F	1001	LEU	-	expression tag	UNP Q66929
F	1002	GLU	-	expression tag	UNP Q66929
F	1003	GLU	-	expression tag	UNP Q66929
F	1004	GLU	-	expression tag	UNP Q66929
F	1005	LEU	-	expression tag	UNP Q66929
F	1006	ARG	-	expression tag	UNP Q66929
F	1007	ARG	-	expression tag	UNP Q66929
F	1008	ARG	-	expression tag	UNP Q66929
F	1009	LEU	-	expression tag	UNP Q66929
F	1010	THR	-	expression tag	UNP Q66929
F	1011	GLU	-	expression tag	UNP Q66929
G	897	LEU	MET	conflict	UNP Q66929

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Chain	Residue	Modelled	Actual	Comment	Reference
G	999	SER	-	expression tag	UNP Q66929
G	1000	ARG	-	expression tag	UNP Q66929
G	1001	LEU	-	expression tag	UNP Q66929
G	1002	GLU	-	expression tag	UNP Q66929
G	1003	GLU	-	expression tag	UNP Q66929
G	1004	GLU	-	expression tag	UNP Q66929
G	1005	LEU	-	expression tag	UNP Q66929
G	1006	ARG	-	expression tag	UNP Q66929
G	1007	ARG	-	expression tag	UNP Q66929
G	1008	ARG	-	expression tag	UNP Q66929
G	1009	LEU	-	expression tag	UNP Q66929
G	1010	THR	-	expression tag	UNP Q66929
G	1011	GLU	-	expression tag	UNP Q66929
H	897	LEU	MET	conflict	UNP Q66929
H	999	SER	-	expression tag	UNP Q66929
H	1000	ARG	-	expression tag	UNP Q66929
H	1001	LEU	-	expression tag	UNP Q66929
H	1002	GLU	-	expression tag	UNP Q66929
H	1003	GLU	-	expression tag	UNP Q66929
H	1004	GLU	-	expression tag	UNP Q66929
H	1005	LEU	-	expression tag	UNP Q66929
H	1006	ARG	-	expression tag	UNP Q66929
H	1007	ARG	-	expression tag	UNP Q66929
H	1008	ARG	-	expression tag	UNP Q66929
H	1009	LEU	-	expression tag	UNP Q66929
H	1010	THR	-	expression tag	UNP Q66929
H	1011	GLU	-	expression tag	UNP Q66929
I	897	LEU	MET	conflict	UNP Q66929
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I	1004	GLU	-	expression tag	UNP Q66929
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I	1006	ARG	-	expression tag	UNP Q66929
I	1007	ARG	-	expression tag	UNP Q66929
I	1008	ARG	-	expression tag	UNP Q66929
I	1009	LEU	-	expression tag	UNP Q66929
I	1010	THR	-	expression tag	UNP Q66929
I	1011	GLU	-	expression tag	UNP Q66929
J	897	LEU	MET	conflict	UNP Q66929

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Chain	Residue	Modelled	Actual	Comment	Reference
J	999	SER	-	expression tag	UNP Q66929
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J	1001	LEU	-	expression tag	UNP Q66929
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J	1003	GLU	-	expression tag	UNP Q66929
J	1004	GLU	-	expression tag	UNP Q66929
J	1005	LEU	-	expression tag	UNP Q66929
J	1006	ARG	-	expression tag	UNP Q66929
J	1007	ARG	-	expression tag	UNP Q66929
J	1008	ARG	-	expression tag	UNP Q66929
J	1009	LEU	-	expression tag	UNP Q66929
J	1010	THR	-	expression tag	UNP Q66929
J	1011	GLU	-	expression tag	UNP Q66929
K	897	LEU	MET	conflict	UNP Q66929
K	999	SER	-	expression tag	UNP Q66929
K	1000	ARG	-	expression tag	UNP Q66929
K	1001	LEU	-	expression tag	UNP Q66929
K	1002	GLU	-	expression tag	UNP Q66929
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K	1008	ARG	-	expression tag	UNP Q66929
K	1009	LEU	-	expression tag	UNP Q66929
K	1010	THR	-	expression tag	UNP Q66929
K	1011	GLU	-	expression tag	UNP Q66929
A	897	LEU	MET	conflict	UNP Q66929
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A	1010	THR	-	expression tag	UNP Q66929
A	1011	GLU	-	expression tag	UNP Q66929
L	897	LEU	MET	conflict	UNP Q66929

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Chain	Residue	Modelled	Actual	Comment	Reference
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L	1004	GLU	-	expression tag	UNP Q66929
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L	1008	ARG	-	expression tag	UNP Q66929
L	1009	LEU	-	expression tag	UNP Q66929
L	1010	THR	-	expression tag	UNP Q66929
L	1011	GLU	-	expression tag	UNP Q66929
M	897	LEU	MET	conflict	UNP Q66929
M	999	SER	-	expression tag	UNP Q66929
M	1000	ARG	-	expression tag	UNP Q66929
M	1001	LEU	-	expression tag	UNP Q66929
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M	1005	LEU	-	expression tag	UNP Q66929
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M	1008	ARG	-	expression tag	UNP Q66929
M	1009	LEU	-	expression tag	UNP Q66929
M	1010	THR	-	expression tag	UNP Q66929
M	1011	GLU	-	expression tag	UNP Q66929
N	897	LEU	MET	conflict	UNP Q66929
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N	1003	GLU	-	expression tag	UNP Q66929
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N	1011	GLU	-	expression tag	UNP Q66929
O	897	LEU	MET	conflict	UNP Q66929

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Chain	Residue	Modelled	Actual	Comment	Reference
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O	1003	GLU	-	expression tag	UNP Q66929
O	1004	GLU	-	expression tag	UNP Q66929
O	1005	LEU	-	expression tag	UNP Q66929
O	1006	ARG	-	expression tag	UNP Q66929
O	1007	ARG	-	expression tag	UNP Q66929
O	1008	ARG	-	expression tag	UNP Q66929
O	1009	LEU	-	expression tag	UNP Q66929
O	1010	THR	-	expression tag	UNP Q66929
O	1011	GLU	-	expression tag	UNP Q66929
P	897	LEU	MET	conflict	UNP Q66929
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P	1002	GLU	-	expression tag	UNP Q66929
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P	1004	GLU	-	expression tag	UNP Q66929
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P	1006	ARG	-	expression tag	UNP Q66929
P	1007	ARG	-	expression tag	UNP Q66929
P	1008	ARG	-	expression tag	UNP Q66929
P	1009	LEU	-	expression tag	UNP Q66929
P	1010	THR	-	expression tag	UNP Q66929
P	1011	GLU	-	expression tag	UNP Q66929
Q	897	LEU	MET	conflict	UNP Q66929
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Q	1009	LEU	-	expression tag	UNP Q66929
Q	1010	THR	-	expression tag	UNP Q66929
Q	1011	GLU	-	expression tag	UNP Q66929
R	897	LEU	MET	conflict	UNP Q66929

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Chain	Residue	Modelled	Actual	Comment	Reference
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R	1000	ARG	-	expression tag	UNP Q66929
R	1001	LEU	-	expression tag	UNP Q66929
R	1002	GLU	-	expression tag	UNP Q66929
R	1003	GLU	-	expression tag	UNP Q66929
R	1004	GLU	-	expression tag	UNP Q66929
R	1005	LEU	-	expression tag	UNP Q66929
R	1006	ARG	-	expression tag	UNP Q66929
R	1007	ARG	-	expression tag	UNP Q66929
R	1008	ARG	-	expression tag	UNP Q66929
R	1009	LEU	-	expression tag	UNP Q66929
R	1010	THR	-	expression tag	UNP Q66929
R	1011	GLU	-	expression tag	UNP Q66929
S	897	LEU	MET	conflict	UNP Q66929
S	999	SER	-	expression tag	UNP Q66929
S	1000	ARG	-	expression tag	UNP Q66929
S	1001	LEU	-	expression tag	UNP Q66929
S	1002	GLU	-	expression tag	UNP Q66929
S	1003	GLU	-	expression tag	UNP Q66929
S	1004	GLU	-	expression tag	UNP Q66929
S	1005	LEU	-	expression tag	UNP Q66929
S	1006	ARG	-	expression tag	UNP Q66929
S	1007	ARG	-	expression tag	UNP Q66929
S	1008	ARG	-	expression tag	UNP Q66929
S	1009	LEU	-	expression tag	UNP Q66929
S	1010	THR	-	expression tag	UNP Q66929
S	1011	GLU	-	expression tag	UNP Q66929
T	897	LEU	MET	conflict	UNP Q66929
T	999	SER	-	expression tag	UNP Q66929
T	1000	ARG	-	expression tag	UNP Q66929
T	1001	LEU	-	expression tag	UNP Q66929
T	1002	GLU	-	expression tag	UNP Q66929
T	1003	GLU	-	expression tag	UNP Q66929
T	1004	GLU	-	expression tag	UNP Q66929
T	1005	LEU	-	expression tag	UNP Q66929
T	1006	ARG	-	expression tag	UNP Q66929
T	1007	ARG	-	expression tag	UNP Q66929
T	1008	ARG	-	expression tag	UNP Q66929
T	1009	LEU	-	expression tag	UNP Q66929
T	1010	THR	-	expression tag	UNP Q66929
T	1011	GLU	-	expression tag	UNP Q66929
U	897	LEU	MET	conflict	UNP Q66929

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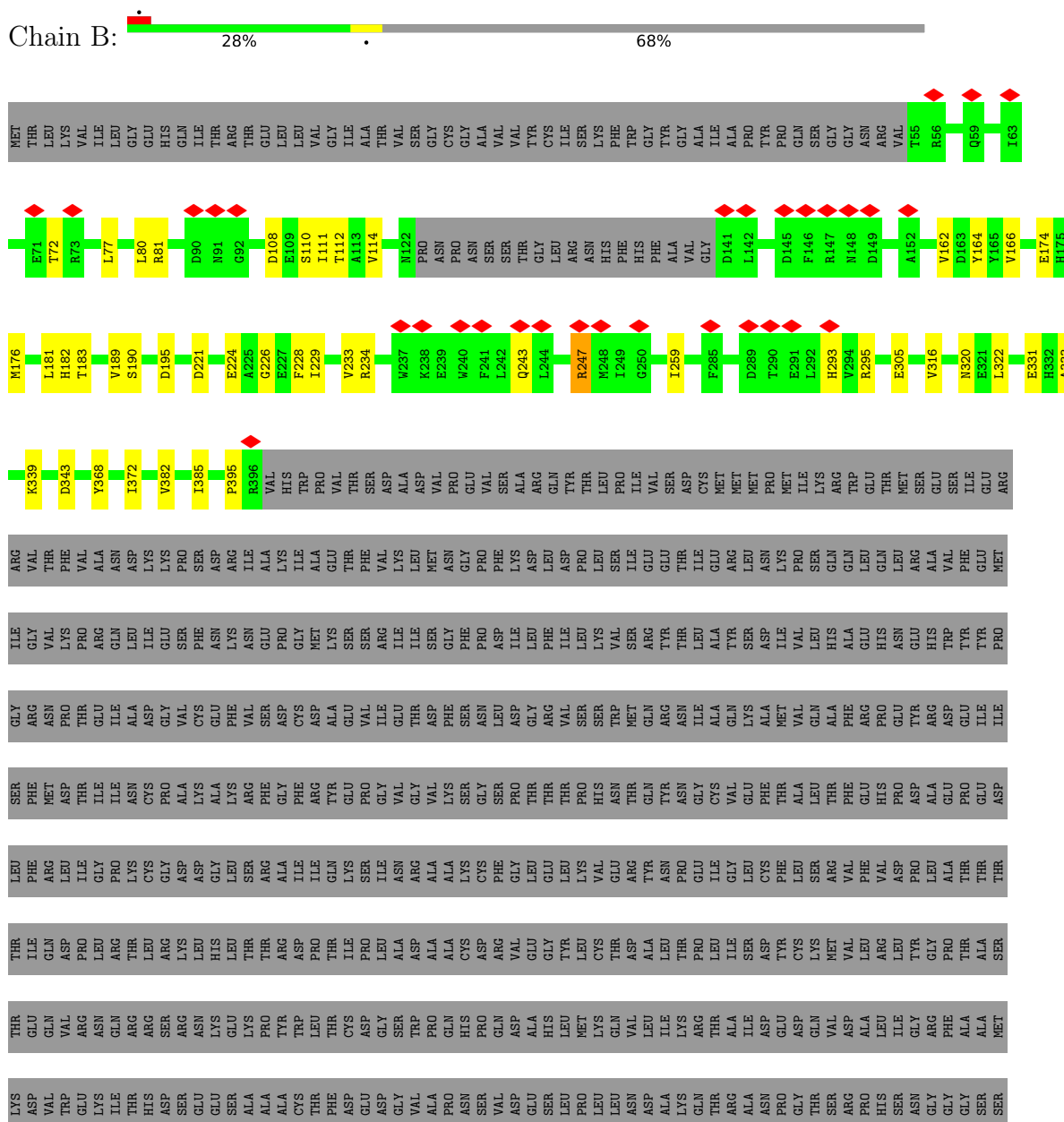
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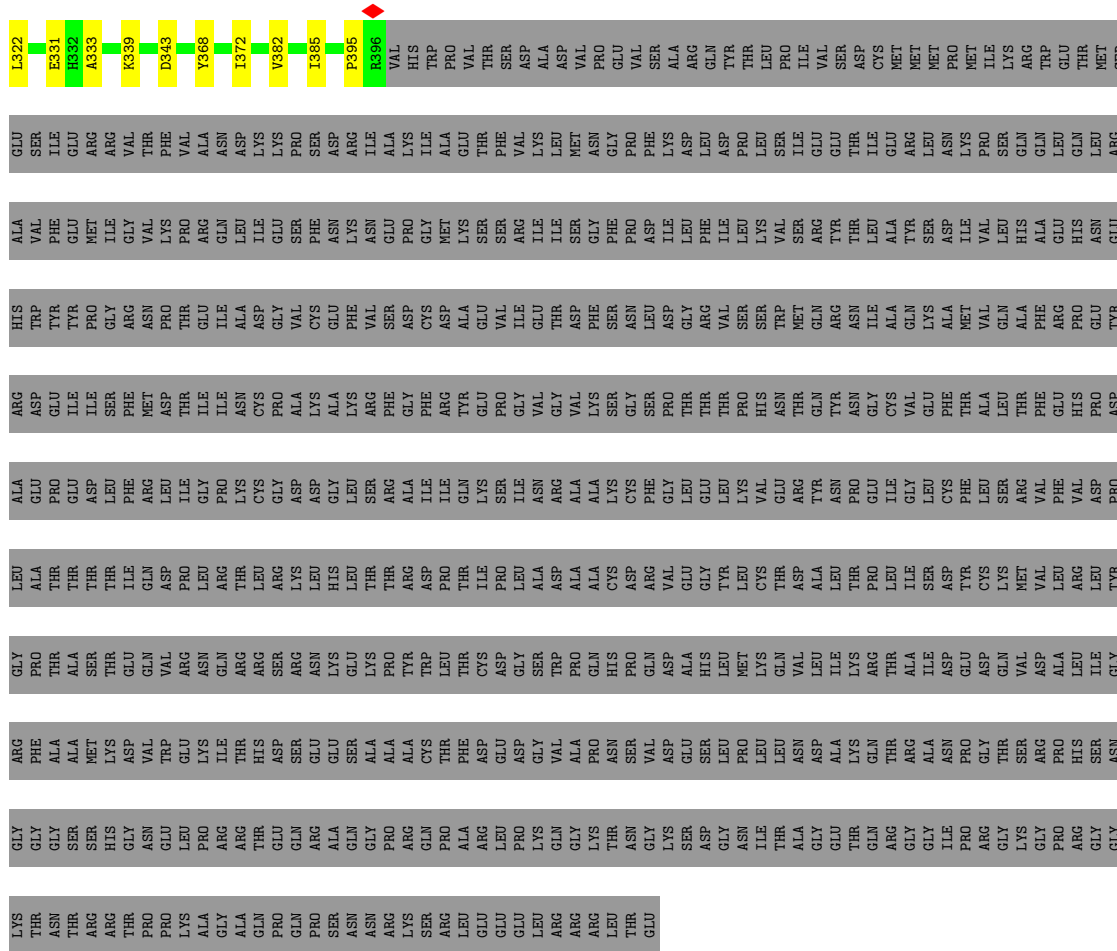
Chain	Residue	Modelled	Actual	Comment	Reference
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U	1000	ARG	-	expression tag	UNP Q66929
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U	1002	GLU	-	expression tag	UNP Q66929
U	1003	GLU	-	expression tag	UNP Q66929
U	1004	GLU	-	expression tag	UNP Q66929
U	1005	LEU	-	expression tag	UNP Q66929
U	1006	ARG	-	expression tag	UNP Q66929
U	1007	ARG	-	expression tag	UNP Q66929
U	1008	ARG	-	expression tag	UNP Q66929
U	1009	LEU	-	expression tag	UNP Q66929
U	1010	THR	-	expression tag	UNP Q66929
U	1011	GLU	-	expression tag	UNP Q66929
V	897	LEU	MET	conflict	UNP Q66929
V	999	SER	-	expression tag	UNP Q66929
V	1000	ARG	-	expression tag	UNP Q66929
V	1001	LEU	-	expression tag	UNP Q66929
V	1002	GLU	-	expression tag	UNP Q66929
V	1003	GLU	-	expression tag	UNP Q66929
V	1004	GLU	-	expression tag	UNP Q66929
V	1005	LEU	-	expression tag	UNP Q66929
V	1006	ARG	-	expression tag	UNP Q66929
V	1007	ARG	-	expression tag	UNP Q66929
V	1008	ARG	-	expression tag	UNP Q66929
V	1009	LEU	-	expression tag	UNP Q66929
V	1010	THR	-	expression tag	UNP Q66929
V	1011	GLU	-	expression tag	UNP Q66929

3 Residue-property plots

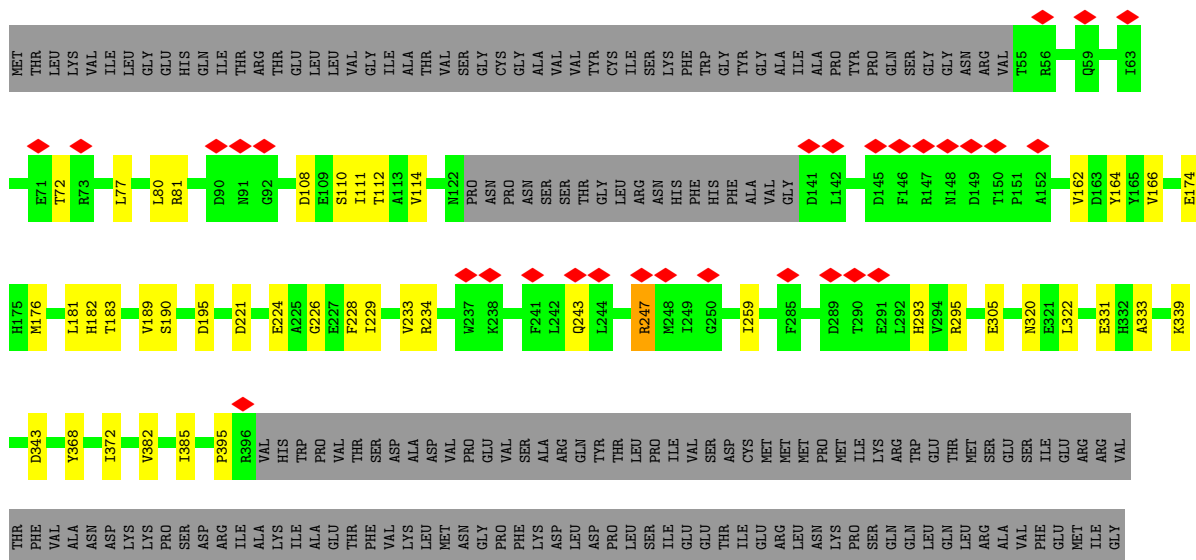
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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.

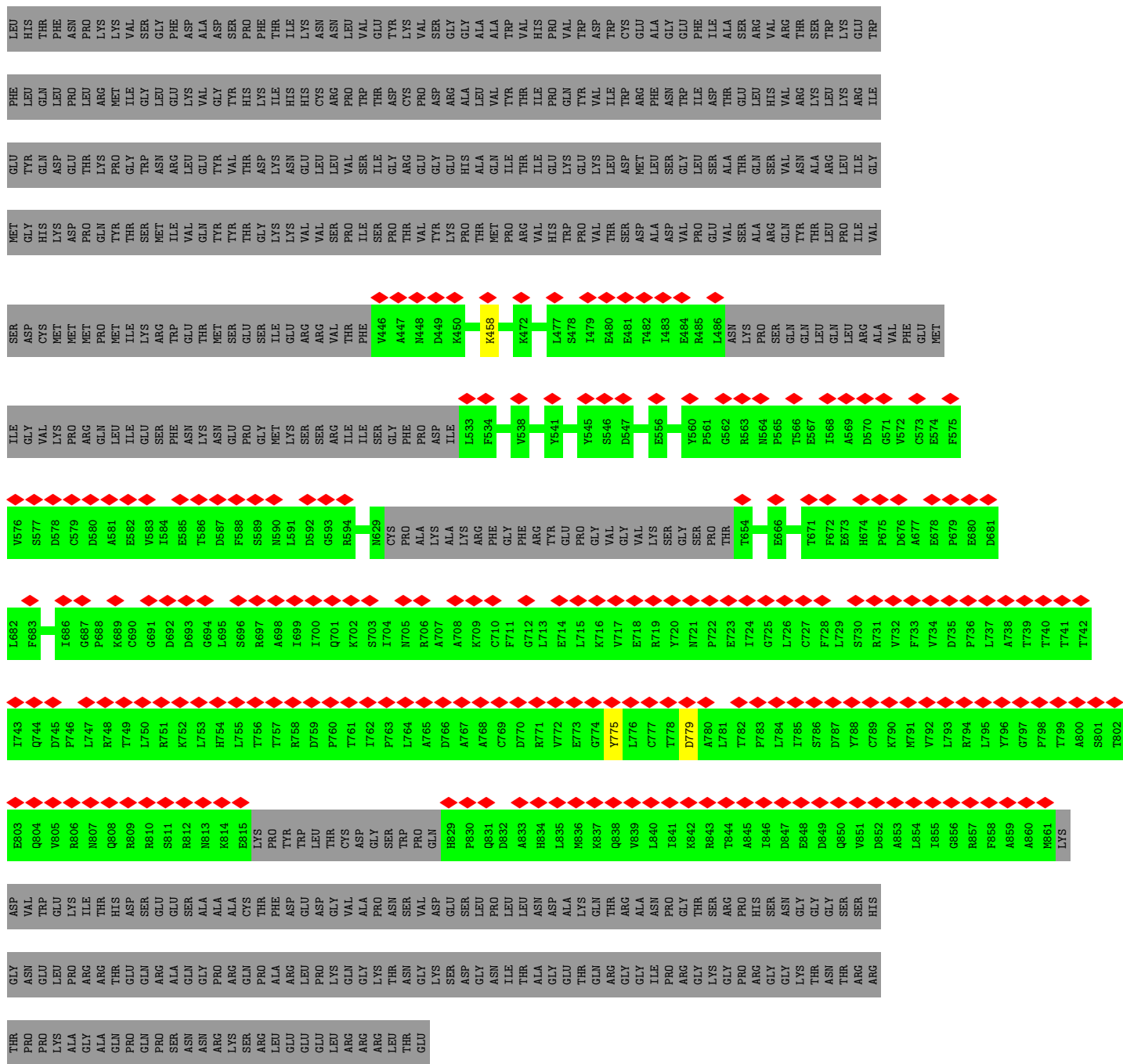
- Molecule 1: RNA-directed RNA polymerase





• Molecule 1: RNA-directed RNA polymerase





Molecule 1: RNA-directed RNA polymerase



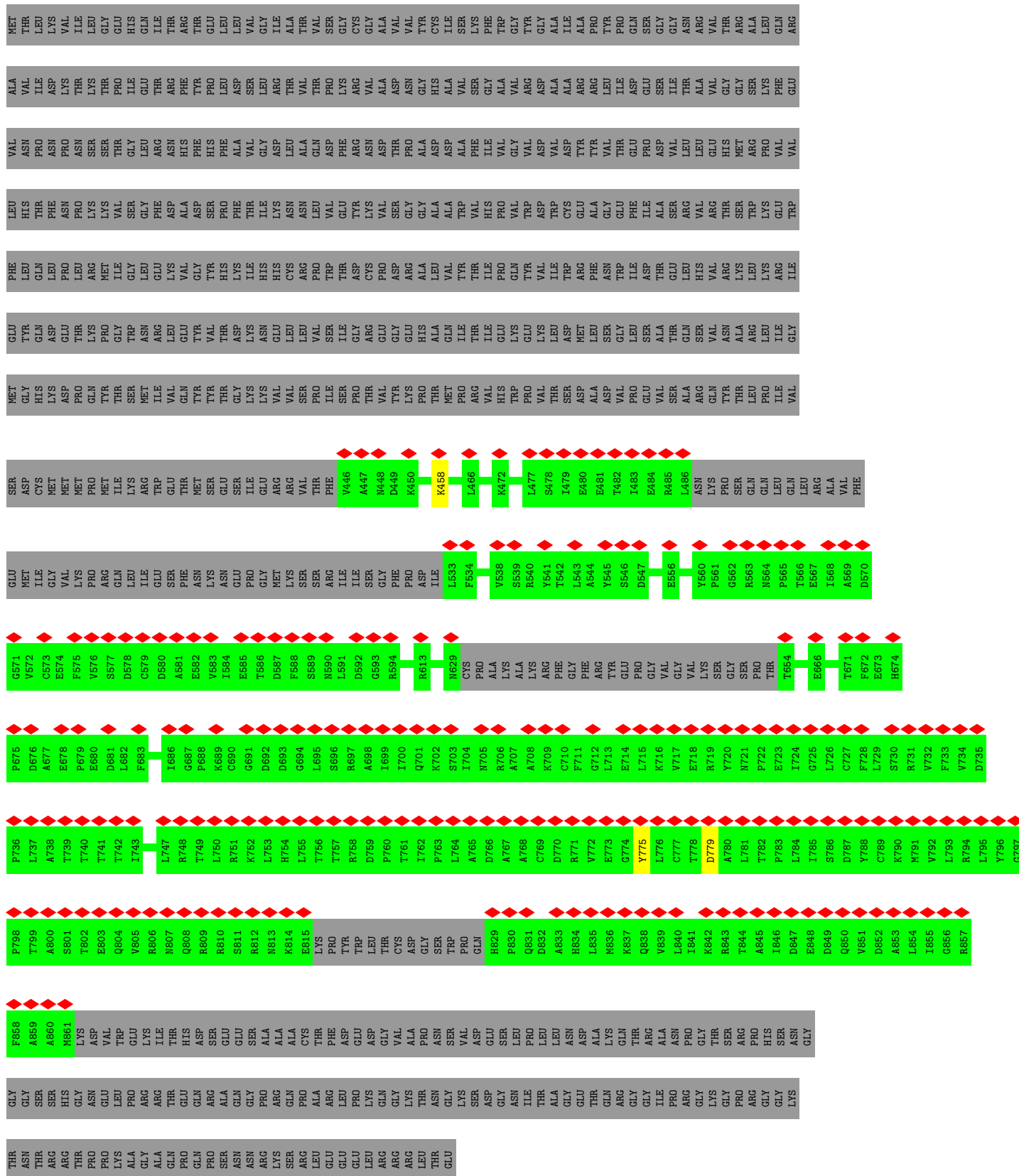
Metamatrix of amino acid residues for Chain N:

MET	THR	PRO	GLY	ASN	VAL	ASP
THR	LEU	PRO	GLY	ASN	VAL	ASP
LEU	LEU	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
LEU	LEU	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
PRO	PRO	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
GLN	GLN	PRO	GLY	ASN	VAL	ASP
ILE	ILE	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ARG	ARG	PRO	GLY	ASN	VAL	ASP
ALA	ALA	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ALA	ALA	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ARG	ARG	PRO	GLY	ASN	VAL	ASP
LEU	LEU	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ALA	ALA	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ARG	ARG	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ALA	ALA	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ARG	ARG	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ALA	ALA	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ARG	ARG	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ALA	ALA	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
GLY	GLY	PRO	GLY	ASN	VAL	ASP
THR	THR	PRO	GLY	ASN	VAL	ASP
ARG	ARG	PRO	GLY	ASN	VAL	ASP
VAL	VAL	PRO	GLY	ASN	VAL	ASP

ALA	VAL	LEU	VAL	SER	ASP	V572	P679	A800	A860	SER	THR
ILE	ASN	HIS	GLN	E680	CYS	C573	E681	S801	M661	HIS	ARG
ASP	ASN	GLY	VAL	D681	MET	E574	D682	T802	LYS	THR	ARG
THR	PRO	LEU	L682	F575	MET	F575	F683	F803	VAL	ASN	PRO
LYS	ASN	PRO	PRO	V576	MET	V576	F684	Q804	TRP	LEU	PRO
THR	LYS	LYS	ARG	S577	PRO	S577	T686	R805	GLU	PRO	ALA
THR	LYS	VAL	MET	D578	GLN	D578	G687	R806	LYS	ARG	GLY
PRO	GLY	ILE	ILE	C579	LEU	C579	P688	N807	ILE	THR	ALA
ILE	GLY	LEU	ARG	D580	LEU	D580	P689	Q808	HIS	THR	ALA
GLU	ASN	GLY	GLU	A581	GLU	A581	K689	R809	THR	GLN	GLN
THR	ASN	PHE	LEU	E582	PHE	E582	C690	R810	ASP	GLU	GLN
ARG	ASN	GLY	VAL	F583	ASN	F583	G691	R811	SER	GLU	PRO
PHE	HIS	VAL	GLN	I584	LYS	I584	D692	S811	ALA	GLU	ASN
TYR	PHE	ALA	THR	E585	ASN	E585	D693	N812	GLY	GLN	ASN
LEU	LEU	ASP	THR	T586	PRO	T586	G694	N813	ALA	ALA	ARG
LEU	LEU	ILE	GLY	D587	GLY	D587	L695	K814	ALA	ALA	LYS
ARG	ASP	HIS	VAL	F588	MET	F588	S696	E815	ALA	CYS	ARG
VAL	VAL	HIS	VAL	S589	LEU	S589	R697	E815	ALA	THR	ARG
VAL	GLN	ARG	VAL	A698	SER	A698	I699	PRO	PHE	THR	GLU
GLN	TRP	ASP	TRP	L591	ARG	L591	I700	TRP	ASP	GLY	GLU
PRO	VAL	TRP	ILE	D592	ILE	D592	T701	LEU	ASP	GLY	LEU
LYS	GLY	THR	SER	G593	SER	G593	K702	THR	GLY	THR	LYS
LYS	VAL	PRO	PRO	R594	GLY	R594	S703	CYS	ALA	ASP	GLY
GLY	ASP	ASP	ASP	R613	PRO	R613	T704	GLY	PRO	THR	THR
ALA	ALA	PRO	ASP	M629	ILE	M629	N705	TRP	ASP	TRP	THR
HIS	ALA	PRO	HIS	F534	ILE	F534	R706	PRO	VAL	VAL	GLY
ALA	ALA	GLN	VAL	V538	CYS	V538	A707	GLN	ASP	ASP	SER
ALA	TRP	TRP	TRP	S539	PRO	S539	K709	LEU	GLY	GLY	ASP
ILE	ILE	ILE	ILE	R540	ALA	R540	C710	PRO	LEU	LEU	LEU
PRO	PRO	PRO	PRO	Y541	LYS	Y541	F711	D832	LEU	LEU	LEU
VAL	VAL	VAL	VAL	T545	ARG	T545	G712	A833	LEU	LEU	LEU
ASP	ASP	ASP	ASP	S546	PHE	S546	L713	H834	ALA	ASP	GLY
ARG	ARG	ARG	ARG	D547	GLY	D547	E714	L835	LYS	ALA	THR
ALA	ALA	ALA	ALA	N555	ARG	N555	L715	M836	GLY	GLN	THR
LEU	LEU	LEU	LEU	E556	TYR	E556	K716	K837	GLN	THR	ARG
THR	THR	THR	THR	Y559	GLU	Y559	W717	Q838	THR	GLY	GLY
GLM	GLM	GLM	GLM	P561	PRO	P561	E718	V839	ALA	ALA	GLY
VAL	VAL	VAL	VAL	G562	GLY	G562	R719	L840	PRO	PRO	ARG
VAL	VAL	VAL	VAL	R563	SER	R563	Y720	D779	THR	THR	GLY
ASN	ASN	ASN	ASN	H564	PRO	H564	N721	A780	LYS	SER	LYS
LEU	LEU	LEU	LEU	P565	VAL	P565	F722	L781	ARG	ARG	GLY
ARG	ARG	ARG	ARG	T566	SER	T566	E723	T844	PRO	PRO	ARG
ALA	ALA	ALA	ALA	I568	THR	I568	I724	A845	HIS	HIS	GLY
VAL	VAL	VAL	VAL	A569	THR	A569	G725	I846	ASN	ASN	GLY
VAL	VAL	VAL	VAL	D570	THR	D570	L726	D847	GLY	GLY	THR
PHE	PHE	PHE	PHE	G571	THR	G571	T654	E848	THR	THR	ASN
GLU	GLU	GLU	GLU	H674	THR	H674	T671	D849	GLY	GLY	GLY
GLU	GLU	GLU	GLU	P675	THR	P675	F676	Q850	GLY	GLY	GLY
GLU	GLU	GLU	GLU	D676	THR	D676	A677	D787	THR	THR	THR
GLU	GLU	GLU	GLU	E678	THR	E678	T739	F728	THR	THR	THR
GLU	GLU	GLU	GLU		THR			L729	THR	THR	THR
GLU	GLU	GLU	GLU		THR			S730	THR	THR	THR
GLU	GLU	GLU	GLU		THR			R731	THR	THR	THR
GLU	GLU	GLU	GLU		THR			W732	THR	THR	THR
GLU	GLU	GLU	GLU		THR			F733	THR	THR	THR
GLU	GLU	GLU	GLU		THR			D735	THR	THR	THR
GLU	GLU	GLU	GLU		THR			F736	THR	THR	THR
GLU	GLU	GLU	GLU		THR			L737	THR	THR	THR
GLU	GLU	GLU	GLU		THR			A738	THR	THR	THR
GLU	GLU	GLU	GLU		THR			T739	THR	THR	THR
GLU	GLU	GLU	GLU		THR			F798	THR	THR	THR
GLU	GLU	GLU	GLU		THR			T799	THR	THR	THR

• Molecule 1: RNA-directed RNA polymerase





• Molecule 1: RNA-directed RNA polymerase

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C11	Depositor
Number of particles used	13701	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 ($e^-/\text{\AA}^2$)	100	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	32.812	Depositor
Minimum map value	-20.300	Depositor
Average map value	-0.008	Depositor
Map value standard deviation	0.592	Depositor
Recommended contour level	3.09	Depositor
Map size (Å)	479.808, 479.808, 479.808	wwPDB
Map dimensions	576, 576, 576	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.833, 0.833, 0.833	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	0.24	0/2688	0.50	0/3655
1	B	0.24	0/2688	0.50	0/3655
1	C	0.24	0/2688	0.50	0/3655
1	D	0.24	0/2688	0.50	0/3655
1	E	0.24	0/2688	0.50	0/3655
1	F	0.24	0/2688	0.50	0/3655
1	G	0.24	0/2688	0.50	0/3655
1	H	0.24	0/2688	0.50	0/3655
1	I	0.24	0/2688	0.50	0/3655
1	J	0.24	0/2688	0.50	0/3655
1	K	0.24	0/2688	0.50	0/3655
1	L	0.23	0/1409	0.43	0/1766
1	M	0.23	0/1409	0.43	0/1766
1	N	0.23	0/1409	0.43	0/1766
1	O	0.23	0/1409	0.43	0/1766
1	P	0.23	0/1409	0.43	0/1766
1	Q	0.23	0/1409	0.43	0/1766
1	R	0.23	0/1409	0.43	0/1766
1	S	0.23	0/1409	0.43	0/1766
1	T	0.23	0/1409	0.43	0/1766
1	U	0.23	0/1409	0.43	0/1766
1	V	0.23	0/1409	0.43	0/1766
All	All	0.24	0/45067	0.48	0/59631

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2620	2603	2600	53	0
1	B	2620	2603	2600	52	0
1	C	2620	2603	2600	52	0
1	D	2620	2603	2600	50	0
1	E	2620	2603	2600	50	0
1	F	2620	2603	2600	55	0
1	G	2620	2603	2600	52	0
1	H	2620	2603	2600	53	0
1	I	2620	2603	2600	50	0
1	J	2620	2603	2600	51	0
1	K	2620	2603	2600	50	0
1	L	1411	0	464	4	0
1	M	1411	0	464	3	0
1	N	1411	0	464	3	0
1	O	1411	0	464	3	0
1	P	1411	0	464	4	0
1	Q	1411	0	464	3	0
1	R	1411	0	464	3	0
1	S	1411	0	464	3	0
1	T	1411	0	464	3	0
1	U	1411	0	464	4	0
1	V	1411	0	464	3	0
All	All	44341	28633	33704	571	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 7.

All (571) 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:B:174:GLU:OE2	1:B:234:ARG:HA	1.20	1.35
1:J:174:GLU:OE2	1:J:234:ARG:HA	1.20	1.35
1:C:174:GLU:OE2	1:C:234:ARG:HA	1.20	1.34
1:I:174:GLU:OE2	1:I:234:ARG:HA	1.20	1.34
1:G:174:GLU:OE2	1:G:234:ARG:HA	1.20	1.34

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:174:GLU:OE2	1:F:234:ARG:HA	1.20	1.33
1:E:174:GLU:OE2	1:E:234:ARG:HA	1.20	1.30
1:K:174:GLU:OE2	1:K:234:ARG:HA	1.20	1.29
1:A:174:GLU:OE2	1:A:234:ARG:HA	1.20	1.28
1:D:174:GLU:OE2	1:D:234:ARG:HA	1.20	1.28
1:H:174:GLU:OE2	1:H:234:ARG:HA	1.20	1.27
1:K:77:LEU:HD23	1:K:80:LEU:CD1	1.77	1.15
1:A:77:LEU:HD23	1:A:80:LEU:CD1	1.77	1.15
1:D:77:LEU:HD23	1:D:80:LEU:CD1	1.77	1.14
1:G:77:LEU:HD23	1:G:80:LEU:CD1	1.77	1.14
1:E:77:LEU:HD23	1:E:80:LEU:CD1	1.77	1.14
1:J:77:LEU:HD23	1:J:80:LEU:CD1	1.77	1.14
1:H:77:LEU:HD23	1:H:80:LEU:CD1	1.77	1.14
1:F:77:LEU:HD23	1:F:80:LEU:CD1	1.77	1.13
1:C:77:LEU:HD23	1:C:80:LEU:HD12	1.13	1.13
1:C:77:LEU:HD23	1:C:80:LEU:CD1	1.77	1.13
1:H:77:LEU:HD23	1:H:80:LEU:HD12	1.13	1.13
1:G:77:LEU:HD23	1:G:80:LEU:HD12	1.13	1.13
1:B:77:LEU:HD23	1:B:80:LEU:CD1	1.77	1.13
1:I:77:LEU:HD23	1:I:80:LEU:CD1	1.77	1.12
1:D:77:LEU:HD23	1:D:80:LEU:HD12	1.13	1.12
1:B:77:LEU:HD23	1:B:80:LEU:HD12	1.13	1.11
1:I:77:LEU:HD23	1:I:80:LEU:HD12	1.13	1.11
1:A:77:LEU:HD23	1:A:80:LEU:HD12	1.13	1.10
1:F:77:LEU:HD23	1:F:80:LEU:HD12	1.13	1.10
1:E:77:LEU:HD23	1:E:80:LEU:HD12	1.13	1.09
1:J:77:LEU:HD23	1:J:80:LEU:HD12	1.13	1.08
1:K:77:LEU:HD23	1:K:80:LEU:HD12	1.13	1.07
1:K:77:LEU:CD2	1:K:80:LEU:CD1	2.37	1.02
1:E:77:LEU:CD2	1:E:80:LEU:CD1	2.37	1.02
1:F:77:LEU:CD2	1:F:80:LEU:CD1	2.37	1.02
1:J:77:LEU:CD2	1:J:80:LEU:CD1	2.37	1.02
1:A:77:LEU:CD2	1:A:80:LEU:CD1	2.37	1.02
1:C:77:LEU:CD2	1:C:80:LEU:CD1	2.37	1.02
1:H:77:LEU:CD2	1:H:80:LEU:CD1	2.37	1.02
1:D:77:LEU:CD2	1:D:80:LEU:CD1	2.37	1.01
1:G:77:LEU:CD2	1:G:80:LEU:CD1	2.37	1.01
1:I:77:LEU:CD2	1:I:80:LEU:CD1	2.37	1.01
1:B:77:LEU:CD2	1:B:80:LEU:CD1	2.37	1.00
1:B:174:GLU:OE2	1:B:234:ARG:CA	2.10	1.00
1:C:174:GLU:OE2	1:C:234:ARG:CA	2.10	1.00

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:174:GLU:OE2	1:D:234:ARG:CA	2.10	1.00
1:I:174:GLU:OE2	1:I:234:ARG:CA	2.10	1.00
1:H:174:GLU:OE2	1:H:234:ARG:CA	2.10	1.00
1:J:174:GLU:OE2	1:J:234:ARG:CA	2.10	1.00
1:G:174:GLU:OE2	1:G:234:ARG:CA	2.10	1.00
1:E:174:GLU:OE2	1:E:234:ARG:CA	2.10	0.99
1:A:174:GLU:OE2	1:A:234:ARG:CA	2.10	0.99
1:K:174:GLU:OE2	1:K:234:ARG:CA	2.10	0.99
1:F:174:GLU:OE2	1:F:234:ARG:CA	2.10	0.99
1:A:77:LEU:HD21	1:A:80:LEU:HG	1.54	0.89
1:C:77:LEU:HD21	1:C:80:LEU:HG	1.54	0.89
1:B:77:LEU:HD21	1:B:80:LEU:HG	1.55	0.89
1:H:77:LEU:HD21	1:H:80:LEU:HG	1.55	0.88
1:G:77:LEU:HD21	1:G:80:LEU:HG	1.54	0.88
1:I:77:LEU:HD21	1:I:80:LEU:HG	1.54	0.88
1:K:77:LEU:HD21	1:K:80:LEU:HG	1.55	0.88
1:J:77:LEU:HD21	1:J:80:LEU:HG	1.54	0.87
1:D:77:LEU:HD21	1:D:80:LEU:HG	1.55	0.87
1:F:77:LEU:HD21	1:F:80:LEU:HG	1.55	0.87
1:E:77:LEU:HD21	1:E:80:LEU:HG	1.55	0.85
1:G:77:LEU:CD2	1:G:80:LEU:HG	2.11	0.81
1:D:77:LEU:CD2	1:D:80:LEU:HG	2.11	0.81
1:I:77:LEU:CD2	1:I:80:LEU:HG	2.11	0.81
1:K:77:LEU:CD2	1:K:80:LEU:HG	2.11	0.81
1:A:77:LEU:CD2	1:A:80:LEU:HG	2.11	0.81
1:E:77:LEU:CD2	1:E:80:LEU:HG	2.11	0.81
1:B:77:LEU:CD2	1:B:80:LEU:HG	2.11	0.81
1:F:77:LEU:CD2	1:F:80:LEU:HG	2.11	0.80
1:J:77:LEU:CD2	1:J:80:LEU:HG	2.11	0.80
1:C:77:LEU:CD2	1:C:80:LEU:HG	2.11	0.80
1:D:81:ARG:HD2	1:I:395:PRO:HG3	1.64	0.80
1:H:77:LEU:CD2	1:H:80:LEU:HG	2.11	0.80
1:C:81:ARG:HD2	1:H:395:PRO:HG3	1.64	0.79
1:B:81:ARG:HD2	1:G:395:PRO:HG3	1.65	0.78
1:F:395:PRO:HG3	1:A:81:ARG:HD2	1.68	0.76
1:C:77:LEU:CD2	1:C:80:LEU:HD12	2.01	0.76
1:G:77:LEU:HD21	1:G:80:LEU:CG	2.16	0.76
1:C:77:LEU:HD21	1:C:80:LEU:CG	2.16	0.75
1:H:77:LEU:HD21	1:H:80:LEU:CG	2.16	0.75
1:F:77:LEU:CD2	1:F:80:LEU:CG	2.65	0.75
1:K:77:LEU:HD21	1:K:80:LEU:CG	2.16	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:77:LEU:CD2	1:J:80:LEU:CG	2.65	0.75
1:B:77:LEU:HD21	1:B:80:LEU:CG	2.16	0.74
1:J:77:LEU:HD21	1:J:80:LEU:CG	2.16	0.74
1:A:77:LEU:HD21	1:A:80:LEU:CG	2.16	0.74
1:D:77:LEU:HD21	1:D:80:LEU:CG	2.16	0.74
1:E:174:GLU:HG3	1:E:233:VAL:C	2.08	0.74
1:J:174:GLU:HG3	1:J:233:VAL:C	2.08	0.74
1:K:77:LEU:CD2	1:K:80:LEU:CG	2.65	0.74
1:K:174:GLU:HG3	1:K:233:VAL:C	2.08	0.74
1:E:77:LEU:CD2	1:E:80:LEU:CG	2.65	0.74
1:F:174:GLU:HG3	1:F:233:VAL:C	2.08	0.74
1:H:174:GLU:HG3	1:H:233:VAL:C	2.08	0.74
1:A:174:GLU:HG3	1:A:233:VAL:C	2.08	0.74
1:B:77:LEU:CD2	1:B:80:LEU:CG	2.65	0.74
1:G:174:GLU:HG3	1:G:233:VAL:C	2.08	0.74
1:F:77:LEU:HD21	1:F:80:LEU:CG	2.16	0.74
1:H:77:LEU:CD2	1:H:80:LEU:CG	2.65	0.74
1:C:174:GLU:HG3	1:C:233:VAL:C	2.08	0.74
1:B:174:GLU:HG3	1:B:233:VAL:C	2.08	0.74
1:D:174:GLU:HG3	1:D:233:VAL:C	2.08	0.74
1:E:77:LEU:HD21	1:E:80:LEU:CG	2.16	0.74
1:I:77:LEU:CD2	1:I:80:LEU:CG	2.65	0.74
1:D:77:LEU:CD2	1:D:80:LEU:CG	2.65	0.74
1:I:77:LEU:HD21	1:I:80:LEU:CG	2.16	0.74
1:A:77:LEU:CD2	1:A:80:LEU:CG	2.65	0.74
1:C:77:LEU:CD2	1:C:80:LEU:CG	2.65	0.73
1:G:77:LEU:CD2	1:G:80:LEU:CG	2.65	0.73
1:D:395:PRO:HG3	1:J:81:ARG:HD2	1.69	0.73
1:I:174:GLU:HG3	1:I:233:VAL:C	2.08	0.73
1:G:77:LEU:HD11	1:G:110:SER:HB2	1.71	0.73
1:G:81:ARG:HD2	1:A:395:PRO:HG3	1.70	0.72
1:K:77:LEU:HD11	1:K:110:SER:HB2	1.71	0.72
1:E:77:LEU:HD11	1:E:110:SER:HB2	1.71	0.72
1:H:77:LEU:HD11	1:H:110:SER:HB2	1.71	0.72
1:J:77:LEU:HD11	1:J:110:SER:HB2	1.72	0.72
1:F:77:LEU:HD11	1:F:110:SER:HB2	1.71	0.72
1:A:77:LEU:HD11	1:A:110:SER:HB2	1.72	0.72
1:K:77:LEU:HD21	1:K:80:LEU:CD1	2.20	0.72
1:I:77:LEU:HD11	1:I:110:SER:HB2	1.71	0.72
1:B:77:LEU:HD11	1:B:110:SER:HB2	1.71	0.72
1:E:81:ARG:HD2	1:J:395:PRO:HG3	1.70	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:77:LEU:HD11	1:D:110:SER:HB2	1.71	0.72
1:F:77:LEU:HD21	1:F:80:LEU:CD1	2.20	0.72
1:G:77:LEU:CD2	1:G:80:LEU:HD12	2.01	0.71
1:C:77:LEU:HD11	1:C:110:SER:HB2	1.71	0.71
1:B:77:LEU:HD21	1:B:80:LEU:CD1	2.20	0.71
1:E:77:LEU:HD21	1:E:80:LEU:CD1	2.20	0.71
1:A:77:LEU:HD21	1:A:80:LEU:CD1	2.20	0.71
1:D:77:LEU:CD2	1:D:80:LEU:HD12	2.01	0.70
1:D:77:LEU:HD21	1:D:80:LEU:CD1	2.20	0.70
1:E:395:PRO:HG3	1:K:81:ARG:HD2	1.72	0.70
1:F:81:ARG:HD2	1:K:395:PRO:HG3	1.73	0.70
1:H:77:LEU:HD21	1:H:80:LEU:CD1	2.20	0.70
1:I:77:LEU:HD21	1:I:80:LEU:CD1	2.20	0.70
1:J:77:LEU:HD21	1:J:80:LEU:CD1	2.20	0.70
1:K:174:GLU:CG	1:K:234:ARG:N	2.55	0.70
1:F:174:GLU:CG	1:F:234:ARG:N	2.55	0.70
1:H:174:GLU:CG	1:H:234:ARG:N	2.55	0.70
1:J:174:GLU:CG	1:J:234:ARG:N	2.55	0.70
1:C:77:LEU:HD21	1:C:80:LEU:CD1	2.20	0.70
1:C:174:GLU:CG	1:C:234:ARG:N	2.55	0.70
1:G:174:GLU:CG	1:G:234:ARG:N	2.55	0.70
1:E:174:GLU:CG	1:E:234:ARG:N	2.55	0.69
1:H:77:LEU:CD2	1:H:80:LEU:HD12	2.01	0.69
1:G:77:LEU:HD21	1:G:80:LEU:CD1	2.20	0.69
1:A:174:GLU:CG	1:A:234:ARG:N	2.55	0.69
1:B:174:GLU:CG	1:B:234:ARG:N	2.55	0.69
1:I:174:GLU:CG	1:I:234:ARG:N	2.55	0.69
1:D:174:GLU:CG	1:D:234:ARG:N	2.55	0.69
1:J:174:GLU:HG2	1:J:234:ARG:HG3	1.75	0.69
1:K:174:GLU:HG2	1:K:234:ARG:HG3	1.75	0.68
1:B:174:GLU:HG2	1:B:234:ARG:HG3	1.75	0.68
1:H:174:GLU:HG2	1:H:234:ARG:HG3	1.75	0.68
1:G:174:GLU:HG2	1:G:234:ARG:HG3	1.75	0.67
1:I:174:GLU:HG2	1:I:234:ARG:HG3	1.75	0.67
1:E:174:GLU:HG2	1:E:234:ARG:HG3	1.75	0.67
1:C:174:GLU:HG2	1:C:234:ARG:HG3	1.75	0.67
1:A:174:GLU:HG2	1:A:234:ARG:HG3	1.75	0.67
1:B:395:PRO:HG3	1:H:81:ARG:HD2	1.76	0.67
1:C:395:PRO:HG3	1:I:81:ARG:HD2	1.75	0.67
1:D:174:GLU:HG2	1:D:234:ARG:HG3	1.75	0.67
1:F:174:GLU:HG2	1:F:234:ARG:HG3	1.75	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:108:ASP:O	1:K:112:THR:HG23	1.97	0.65
1:E:108:ASP:O	1:E:112:THR:HG23	1.97	0.65
1:F:108:ASP:O	1:F:112:THR:HG23	1.97	0.65
1:A:108:ASP:O	1:A:112:THR:HG23	1.97	0.65
1:D:108:ASP:O	1:D:112:THR:HG23	1.97	0.65
1:I:108:ASP:O	1:I:112:THR:HG23	1.97	0.65
1:J:108:ASP:O	1:J:112:THR:HG23	1.97	0.65
1:H:108:ASP:O	1:H:112:THR:HG23	1.97	0.64
1:B:108:ASP:O	1:B:112:THR:HG23	1.97	0.64
1:I:77:LEU:CD2	1:I:80:LEU:HD12	2.01	0.64
1:G:108:ASP:O	1:G:112:THR:HG23	1.97	0.64
1:C:108:ASP:O	1:C:112:THR:HG23	1.97	0.63
1:H:77:LEU:CD2	1:H:80:LEU:HD11	2.29	0.63
1:F:174:GLU:HG3	1:F:233:VAL:CA	2.29	0.63
1:B:174:GLU:HG3	1:B:233:VAL:CA	2.29	0.63
1:D:77:LEU:CD2	1:D:80:LEU:HD11	2.29	0.63
1:I:174:GLU:HG3	1:I:233:VAL:CA	2.29	0.63
1:J:174:GLU:HG3	1:J:233:VAL:CA	2.29	0.62
1:A:174:GLU:HG3	1:A:233:VAL:CA	2.29	0.62
1:C:77:LEU:CD2	1:C:80:LEU:HD11	2.29	0.62
1:C:174:GLU:HG3	1:C:233:VAL:CA	2.29	0.62
1:G:174:GLU:HG3	1:G:233:VAL:CA	2.29	0.62
1:K:174:GLU:HG3	1:K:233:VAL:CA	2.29	0.62
1:E:174:GLU:HG3	1:E:233:VAL:CA	2.29	0.62
1:A:77:LEU:CD2	1:A:80:LEU:HD12	2.01	0.62
1:H:174:GLU:HG3	1:H:233:VAL:CA	2.29	0.61
1:D:174:GLU:HG3	1:D:233:VAL:CA	2.29	0.61
1:F:77:LEU:CD2	1:F:80:LEU:HD11	2.29	0.61
1:J:77:LEU:CD2	1:J:80:LEU:HD11	2.29	0.61
1:E:77:LEU:CD2	1:E:80:LEU:HD11	2.29	0.60
1:A:77:LEU:CD2	1:A:80:LEU:HD11	2.29	0.60
1:B:229:ILE:HD11	1:B:259:ILE:HD12	1.84	0.60
1:G:77:LEU:CD2	1:G:80:LEU:HD11	2.29	0.60
1:H:229:ILE:HD11	1:H:259:ILE:HD12	1.84	0.60
1:K:229:ILE:HD11	1:K:259:ILE:HD12	1.84	0.60
1:C:229:ILE:HD11	1:C:259:ILE:HD12	1.84	0.60
1:E:229:ILE:HD11	1:E:259:ILE:HD12	1.84	0.60
1:J:229:ILE:HD11	1:J:259:ILE:HD12	1.84	0.60
1:F:229:ILE:HD11	1:F:259:ILE:HD12	1.84	0.60
1:B:174:GLU:HG2	1:B:234:ARG:CG	2.32	0.60
1:D:229:ILE:HD11	1:D:259:ILE:HD12	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:229:ILE:HD11	1:G:259:ILE:HD12	1.84	0.60
1:I:229:ILE:HD11	1:I:259:ILE:HD12	1.84	0.60
1:J:77:LEU:CD2	1:J:80:LEU:HD12	2.01	0.60
1:A:229:ILE:HD11	1:A:259:ILE:HD12	1.84	0.60
1:K:77:LEU:CD2	1:K:80:LEU:HD12	2.01	0.59
1:C:174:GLU:HG2	1:C:234:ARG:CG	2.32	0.59
1:C:331:GLU:OE2	1:C:333:ALA:HB3	2.03	0.59
1:F:174:GLU:HG2	1:F:234:ARG:CG	2.32	0.59
1:C:226:GLY:O	1:C:295:ARG:NH1	2.36	0.59
1:G:174:GLU:HG2	1:G:234:ARG:CG	2.32	0.59
1:I:331:GLU:OE2	1:I:333:ALA:HB3	2.03	0.59
1:F:226:GLY:O	1:F:295:ARG:NH1	2.36	0.59
1:G:331:GLU:OE2	1:G:333:ALA:HB3	2.03	0.59
1:H:331:GLU:OE2	1:H:333:ALA:HB3	2.03	0.59
1:I:174:GLU:HG2	1:I:234:ARG:CG	2.32	0.59
1:I:226:GLY:O	1:I:295:ARG:NH1	2.36	0.59
1:A:331:GLU:OE2	1:A:333:ALA:HB3	2.03	0.59
1:B:331:GLU:OE2	1:B:333:ALA:HB3	2.03	0.59
1:H:226:GLY:O	1:H:295:ARG:NH1	2.36	0.59
1:D:331:GLU:OE2	1:D:333:ALA:HB3	2.03	0.59
1:I:77:LEU:CD2	1:I:80:LEU:HD11	2.29	0.59
1:D:226:GLY:O	1:D:295:ARG:NH1	2.36	0.59
1:K:331:GLU:OE2	1:K:333:ALA:HB3	2.03	0.59
1:F:331:GLU:OE2	1:F:333:ALA:HB3	2.03	0.59
1:B:226:GLY:O	1:B:295:ARG:NH1	2.36	0.59
1:J:174:GLU:HG2	1:J:234:ARG:CG	2.32	0.59
1:A:174:GLU:HG2	1:A:234:ARG:CG	2.32	0.59
1:B:77:LEU:CD2	1:B:80:LEU:HD11	2.28	0.58
1:E:174:GLU:HG2	1:E:234:ARG:CG	2.32	0.58
1:K:226:GLY:O	1:K:295:ARG:NH1	2.36	0.58
1:G:226:GLY:O	1:G:295:ARG:NH1	2.36	0.58
1:H:174:GLU:HG2	1:H:234:ARG:CG	2.32	0.58
1:K:174:GLU:HG2	1:K:234:ARG:CG	2.32	0.58
1:A:305:GLU:OE2	1:A:305:GLU:N	2.29	0.58
1:J:226:GLY:O	1:J:295:ARG:NH1	2.36	0.58
1:J:331:GLU:OE2	1:J:333:ALA:HB3	2.03	0.58
1:D:174:GLU:HG2	1:D:234:ARG:CG	2.32	0.58
1:E:226:GLY:O	1:E:295:ARG:NH1	2.36	0.58
1:A:226:GLY:O	1:A:295:ARG:NH1	2.36	0.58
1:G:305:GLU:OE2	1:G:305:GLU:N	2.29	0.58
1:E:331:GLU:OE2	1:E:333:ALA:HB3	2.03	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:174:GLU:HG3	1:F:234:ARG:N	2.20	0.57
1:J:174:GLU:HG3	1:J:234:ARG:N	2.20	0.57
1:B:305:GLU:OE2	1:B:305:GLU:N	2.29	0.57
1:E:174:GLU:HG3	1:E:234:ARG:N	2.19	0.57
1:E:305:GLU:OE2	1:E:305:GLU:N	2.29	0.57
1:D:174:GLU:HG3	1:D:234:ARG:N	2.20	0.57
1:I:174:GLU:HG3	1:I:234:ARG:N	2.20	0.56
1:A:174:GLU:HG3	1:A:234:ARG:N	2.20	0.56
1:B:174:GLU:HG3	1:B:234:ARG:N	2.19	0.56
1:H:305:GLU:OE2	1:H:305:GLU:N	2.29	0.56
1:K:77:LEU:CD2	1:K:80:LEU:HD11	2.29	0.56
1:B:382:VAL:HG13	1:B:382:VAL:O	2.06	0.56
1:G:382:VAL:O	1:G:382:VAL:HG13	2.06	0.56
1:A:382:VAL:O	1:A:382:VAL:HG13	2.06	0.56
1:H:382:VAL:O	1:H:382:VAL:HG13	2.06	0.56
1:F:382:VAL:O	1:F:382:VAL:HG13	2.06	0.55
1:H:174:GLU:HG3	1:H:234:ARG:N	2.20	0.55
1:D:382:VAL:HG13	1:D:382:VAL:O	2.06	0.55
1:E:382:VAL:HG13	1:E:382:VAL:O	2.06	0.55
1:G:174:GLU:HG3	1:G:234:ARG:N	2.20	0.55
1:I:382:VAL:O	1:I:382:VAL:HG13	2.06	0.55
1:K:382:VAL:HG13	1:K:382:VAL:O	2.06	0.55
1:C:305:GLU:OE2	1:C:305:GLU:N	2.29	0.55
1:C:382:VAL:HG13	1:C:382:VAL:O	2.06	0.55
1:J:382:VAL:HG13	1:J:382:VAL:O	2.06	0.55
1:C:174:GLU:HG3	1:C:234:ARG:N	2.20	0.55
1:K:174:GLU:HG3	1:K:234:ARG:N	2.20	0.55
1:D:293:HIS:ND1	1:I:164:TYR:OH	2.40	0.54
1:G:181:LEU:HD23	1:G:182:HIS:N	2.23	0.54
1:F:181:LEU:HD23	1:F:182:HIS:N	2.23	0.54
1:K:181:LEU:HD23	1:K:182:HIS:N	2.23	0.54
1:C:293:HIS:ND1	1:H:164:TYR:OH	2.41	0.53
1:F:195:ASP:OD1	1:A:320:ASN:ND2	2.41	0.53
1:K:305:GLU:OE2	1:K:305:GLU:N	2.29	0.53
1:I:181:LEU:HD23	1:I:182:HIS:N	2.23	0.53
1:D:181:LEU:HD23	1:D:182:HIS:N	2.23	0.53
1:H:181:LEU:HD23	1:H:182:HIS:N	2.23	0.53
1:C:181:LEU:HD23	1:C:182:HIS:N	2.23	0.53
1:E:181:LEU:HD23	1:E:182:HIS:N	2.23	0.53
1:A:181:LEU:HD23	1:A:182:HIS:N	2.23	0.53
1:I:305:GLU:OE2	1:I:305:GLU:N	2.29	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:181:LEU:HD23	1:J:182:HIS:N	2.23	0.53
1:B:181:LEU:HD23	1:B:182:HIS:N	2.23	0.53
1:C:320:ASN:ND2	1:H:195:ASP:OD1	2.42	0.52
1:D:320:ASN:ND2	1:I:195:ASP:OD1	2.42	0.52
1:S:775:TYR:O	1:S:779:ASP:N	2.34	0.52
1:U:775:TYR:O	1:U:779:ASP:N	2.34	0.52
1:B:293:HIS:ND1	1:G:164:TYR:OH	2.42	0.52
1:H:174:GLU:HG2	1:H:234:ARG:N	2.25	0.52
1:D:305:GLU:OE2	1:D:305:GLU:N	2.29	0.51
1:R:775:TYR:O	1:R:779:ASP:N	2.34	0.51
1:V:775:TYR:O	1:V:779:ASP:N	2.34	0.51
1:D:174:GLU:HG2	1:D:234:ARG:N	2.25	0.51
1:C:174:GLU:HG2	1:C:234:ARG:N	2.25	0.51
1:K:174:GLU:HG2	1:K:234:ARG:N	2.25	0.51
1:J:174:GLU:HG2	1:J:234:ARG:N	2.25	0.51
1:A:174:GLU:HG2	1:A:234:ARG:N	2.25	0.51
1:B:174:GLU:HG2	1:B:234:ARG:N	2.25	0.51
1:L:458:LYS:H	1:L:458:LYS:HD2	1.76	0.51
1:V:458:LYS:H	1:V:458:LYS:HD2	1.76	0.51
1:L:775:TYR:O	1:L:779:ASP:N	2.34	0.50
1:T:458:LYS:H	1:T:458:LYS:HD2	1.76	0.50
1:I:174:GLU:HG2	1:I:234:ARG:N	2.25	0.50
1:M:458:LYS:H	1:M:458:LYS:HD2	1.76	0.50
1:R:458:LYS:H	1:R:458:LYS:HD2	1.76	0.50
1:S:458:LYS:H	1:S:458:LYS:HD2	1.76	0.50
1:U:458:LYS:H	1:U:458:LYS:HD2	1.76	0.50
1:Q:775:TYR:O	1:Q:779:ASP:N	2.34	0.50
1:B:320:ASN:ND2	1:G:195:ASP:OD1	2.43	0.50
1:F:305:GLU:OE2	1:F:305:GLU:N	2.29	0.50
1:Q:458:LYS:H	1:Q:458:LYS:HD2	1.76	0.50
1:F:174:GLU:HG2	1:F:234:ARG:N	2.25	0.50
1:N:458:LYS:H	1:N:458:LYS:HD2	1.76	0.50
1:P:458:LYS:H	1:P:458:LYS:HD2	1.76	0.50
1:M:775:TYR:O	1:M:779:ASP:N	2.34	0.49
1:G:174:GLU:HG2	1:G:234:ARG:N	2.25	0.49
1:D:164:TYR:OH	1:J:293:HIS:ND1	2.45	0.49
1:F:77:LEU:CD2	1:F:80:LEU:HD12	2.01	0.49
1:P:775:TYR:O	1:P:779:ASP:N	2.34	0.49
1:N:775:TYR:O	1:N:779:ASP:N	2.34	0.49
1:E:174:GLU:HG2	1:E:234:ARG:N	2.25	0.49
1:I:174:GLU:HG3	1:I:233:VAL:HA	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:174:GLU:HG3	1:J:233:VAL:HA	1.94	0.49
1:C:174:GLU:HG3	1:C:233:VAL:HA	1.94	0.49
1:O:458:LYS:H	1:O:458:LYS:HD2	1.76	0.49
1:E:195:ASP:OD1	1:K:320:ASN:ND2	2.44	0.49
1:D:174:GLU:HG3	1:D:233:VAL:HA	1.94	0.49
1:J:305:GLU:OE2	1:J:305:GLU:N	2.29	0.48
1:O:775:TYR:O	1:O:779:ASP:N	2.34	0.48
1:E:320:ASN:ND2	1:J:195:ASP:OD1	2.44	0.48
1:F:164:TYR:OH	1:A:293:HIS:ND1	2.46	0.48
1:F:174:GLU:HG3	1:F:233:VAL:HA	1.94	0.48
1:A:174:GLU:HG3	1:A:233:VAL:HA	1.95	0.48
1:E:293:HIS:ND1	1:J:164:TYR:OH	2.47	0.48
1:K:174:GLU:HG3	1:K:233:VAL:HA	1.94	0.48
1:T:775:TYR:O	1:T:779:ASP:N	2.34	0.48
1:B:174:GLU:HG3	1:B:233:VAL:HA	1.94	0.48
1:G:293:HIS:ND1	1:A:164:TYR:OH	2.46	0.48
1:F:293:HIS:ND1	1:K:164:TYR:OH	2.47	0.47
1:G:368:TYR:CE1	1:G:372:ILE:HD11	2.49	0.47
1:H:174:GLU:HG3	1:H:233:VAL:HA	1.95	0.47
1:A:368:TYR:CE1	1:A:372:ILE:HD11	2.49	0.47
1:G:174:GLU:HG3	1:G:233:VAL:HA	1.94	0.47
1:E:174:GLU:HG3	1:E:233:VAL:HA	1.94	0.47
1:B:368:TYR:CE1	1:B:372:ILE:HD11	2.49	0.47
1:C:195:ASP:OD1	1:I:320:ASN:ND2	2.47	0.47
1:C:368:TYR:CE1	1:C:372:ILE:HD11	2.49	0.47
1:D:228:PHE:O	1:D:229:ILE:HD13	2.15	0.47
1:F:368:TYR:CE1	1:F:372:ILE:HD11	2.49	0.47
1:H:228:PHE:O	1:H:229:ILE:HD13	2.15	0.47
1:I:228:PHE:O	1:I:229:ILE:HD13	2.15	0.47
1:I:368:TYR:CE1	1:I:372:ILE:HD11	2.49	0.47
1:J:228:PHE:O	1:J:229:ILE:HD13	2.15	0.47
1:B:72:THR:O	1:B:72:THR:HG22	2.15	0.47
1:H:368:TYR:CE1	1:H:372:ILE:HD11	2.49	0.47
1:C:228:PHE:O	1:C:229:ILE:HD13	2.15	0.47
1:D:72:THR:O	1:D:72:THR:HG22	2.15	0.47
1:J:368:TYR:CE1	1:J:372:ILE:HD11	2.49	0.47
1:K:72:THR:HG22	1:K:72:THR:O	2.15	0.47
1:D:368:TYR:CE1	1:D:372:ILE:HD11	2.49	0.47
1:K:228:PHE:O	1:K:229:ILE:HD13	2.15	0.47
1:E:368:TYR:CE1	1:E:372:ILE:HD11	2.49	0.46
1:F:72:THR:HG22	1:F:72:THR:O	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:228:PHE:O	1:G:229:ILE:HD13	2.15	0.46
1:H:72:THR:HG22	1:H:72:THR:O	2.15	0.46
1:E:228:PHE:O	1:E:229:ILE:HD13	2.15	0.46
1:K:368:TYR:CE1	1:K:372:ILE:HD11	2.49	0.46
1:K:229:ILE:HD11	1:K:259:ILE:CD1	2.46	0.46
1:E:229:ILE:HD11	1:E:259:ILE:CD1	2.46	0.46
1:F:229:ILE:HD11	1:F:259:ILE:CD1	2.46	0.46
1:J:229:ILE:HD11	1:J:259:ILE:CD1	2.46	0.46
1:G:72:THR:O	1:G:72:THR:HG22	2.15	0.46
1:H:174:GLU:CG	1:H:233:VAL:C	2.82	0.46
1:I:72:THR:O	1:I:72:THR:HG22	2.15	0.46
1:J:72:THR:HG22	1:J:72:THR:O	2.15	0.46
1:S:458:LYS:HD2	1:S:458:LYS:N	2.31	0.46
1:C:229:ILE:HD11	1:C:259:ILE:CD1	2.46	0.46
1:D:229:ILE:HD11	1:D:259:ILE:CD1	2.46	0.46
1:F:228:PHE:O	1:F:229:ILE:HD13	2.15	0.46
1:H:229:ILE:HD11	1:H:259:ILE:CD1	2.46	0.46
1:I:229:ILE:HD11	1:I:259:ILE:CD1	2.46	0.46
1:A:229:ILE:HD11	1:A:259:ILE:CD1	2.46	0.46
1:M:458:LYS:HD2	1:M:458:LYS:N	2.31	0.46
1:R:458:LYS:HD2	1:R:458:LYS:N	2.31	0.46
1:T:458:LYS:HD2	1:T:458:LYS:N	2.31	0.46
1:B:229:ILE:HD11	1:B:259:ILE:CD1	2.46	0.46
1:G:229:ILE:HD11	1:G:259:ILE:CD1	2.46	0.46
1:A:228:PHE:O	1:A:229:ILE:HD13	2.15	0.46
1:N:458:LYS:HD2	1:N:458:LYS:N	2.31	0.46
1:C:72:THR:HG22	1:C:72:THR:O	2.15	0.46
1:B:228:PHE:O	1:B:229:ILE:HD13	2.15	0.46
1:B:339:LYS:O	1:B:343:ASP:OD1	2.34	0.46
1:D:195:ASP:OD1	1:J:320:ASN:ND2	2.48	0.46
1:Q:458:LYS:HD2	1:Q:458:LYS:N	2.31	0.46
1:B:195:ASP:OD1	1:H:320:ASN:ND2	2.48	0.45
1:H:339:LYS:O	1:H:343:ASP:OD1	2.34	0.45
1:L:458:LYS:HD2	1:L:458:LYS:N	2.31	0.45
1:U:458:LYS:HD2	1:U:458:LYS:N	2.31	0.45
1:C:339:LYS:O	1:C:343:ASP:OD1	2.34	0.45
1:E:339:LYS:O	1:E:343:ASP:OD1	2.34	0.45
1:G:339:LYS:O	1:G:343:ASP:OD1	2.34	0.45
1:J:339:LYS:O	1:J:343:ASP:OD1	2.35	0.45
1:D:339:LYS:O	1:D:343:ASP:OD1	2.34	0.45
1:F:339:LYS:O	1:F:343:ASP:OD1	2.34	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:331:GLU:OE2	1:G:333:ALA:N	2.50	0.45
1:J:331:GLU:OE2	1:J:333:ALA:N	2.50	0.45
1:K:331:GLU:OE2	1:K:333:ALA:N	2.50	0.45
1:A:72:THR:HG22	1:A:72:THR:O	2.15	0.45
1:E:243:GLN:O	1:E:247:ARG:N	2.45	0.45
1:I:331:GLU:OE2	1:I:333:ALA:N	2.50	0.45
1:I:339:LYS:O	1:I:343:ASP:OD1	2.34	0.45
1:K:339:LYS:O	1:K:343:ASP:OD1	2.35	0.45
1:C:331:GLU:OE2	1:C:333:ALA:N	2.50	0.45
1:G:320:ASN:ND2	1:A:195:ASP:OD1	2.48	0.45
1:J:243:GLN:O	1:J:247:ARG:N	2.45	0.45
1:A:331:GLU:OE2	1:A:333:ALA:N	2.50	0.45
1:A:339:LYS:O	1:A:343:ASP:OD1	2.34	0.45
1:C:322:LEU:HD23	1:C:339:LYS:HD3	1.98	0.45
1:E:72:THR:HG22	1:E:72:THR:O	2.15	0.45
1:P:458:LYS:HD2	1:P:458:LYS:N	2.31	0.45
1:H:322:LEU:HD23	1:H:339:LYS:HD3	1.98	0.45
1:O:458:LYS:HD2	1:O:458:LYS:N	2.31	0.45
1:V:458:LYS:HD2	1:V:458:LYS:N	2.31	0.45
1:B:331:GLU:OE2	1:B:333:ALA:N	2.50	0.45
1:K:243:GLN:O	1:K:247:ARG:N	2.45	0.45
1:D:331:GLU:OE2	1:D:333:ALA:N	2.50	0.45
1:F:331:GLU:OE2	1:F:333:ALA:N	2.50	0.44
1:B:322:LEU:HD23	1:B:339:LYS:HD3	1.98	0.44
1:C:162:VAL:O	1:C:166:VAL:HG22	2.18	0.44
1:H:331:GLU:OE2	1:H:333:ALA:N	2.50	0.44
1:I:322:LEU:HD23	1:I:339:LYS:HD3	1.98	0.44
1:J:162:VAL:O	1:J:166:VAL:HG22	2.18	0.44
1:B:162:VAL:O	1:B:166:VAL:HG22	2.18	0.44
1:D:243:GLN:O	1:D:247:ARG:N	2.45	0.44
1:E:331:GLU:OE2	1:E:333:ALA:N	2.50	0.44
1:F:322:LEU:HD23	1:F:339:LYS:HD3	1.98	0.44
1:K:162:VAL:O	1:K:166:VAL:HG22	2.18	0.44
1:A:322:LEU:HD23	1:A:339:LYS:HD3	1.99	0.44
1:G:162:VAL:O	1:G:166:VAL:HG22	2.18	0.44
1:I:243:GLN:O	1:I:247:ARG:N	2.45	0.44
1:K:322:LEU:HD23	1:K:339:LYS:HD3	1.98	0.44
1:E:322:LEU:HD23	1:E:339:LYS:HD3	1.98	0.44
1:J:322:LEU:HD23	1:J:339:LYS:HD3	1.98	0.44
1:A:162:VAL:O	1:A:166:VAL:HG22	2.18	0.44
1:D:162:VAL:O	1:D:166:VAL:HG22	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:164:TYR:OH	1:K:293:HIS:ND1	2.51	0.44
1:F:243:GLN:O	1:F:247:ARG:N	2.45	0.44
1:G:322:LEU:HD23	1:G:339:LYS:HD3	1.98	0.44
1:D:322:LEU:HD23	1:D:339:LYS:HD3	1.98	0.43
1:H:110:SER:O	1:H:114:VAL:HG22	2.18	0.43
1:F:162:VAL:O	1:F:166:VAL:HG22	2.18	0.43
1:E:181:LEU:HD22	1:E:183:THR:HB	2.00	0.43
1:J:110:SER:O	1:J:114:VAL:HG22	2.19	0.43
1:B:110:SER:O	1:B:114:VAL:HG22	2.18	0.43
1:C:110:SER:O	1:C:114:VAL:HG22	2.18	0.43
1:I:162:VAL:O	1:I:166:VAL:HG22	2.18	0.43
1:H:162:VAL:O	1:H:166:VAL:HG22	2.18	0.43
1:K:181:LEU:HD22	1:K:183:THR:HB	2.00	0.43
1:F:110:SER:O	1:F:114:VAL:HG22	2.19	0.43
1:I:110:SER:O	1:I:114:VAL:HG22	2.18	0.43
1:A:110:SER:O	1:A:114:VAL:HG22	2.19	0.43
1:L:465:LYS:HE3	1:L:465:LYS:HB3	1.90	0.43
1:F:181:LEU:HD22	1:F:183:THR:HB	2.00	0.43
1:J:181:LEU:HD22	1:J:183:THR:HB	2.01	0.43
1:E:162:VAL:O	1:E:166:VAL:HG22	2.18	0.43
1:A:181:LEU:HD22	1:A:183:THR:HB	2.00	0.43
1:B:164:TYR:OH	1:H:293:HIS:ND1	2.52	0.43
1:D:110:SER:O	1:D:114:VAL:HG22	2.19	0.43
1:E:110:SER:O	1:E:114:VAL:HG22	2.19	0.43
1:U:465:LYS:HE3	1:U:465:LYS:HB3	1.90	0.43
1:C:243:GLN:O	1:C:247:ARG:N	2.45	0.43
1:F:174:GLU:CG	1:F:233:VAL:C	2.82	0.43
1:A:77:LEU:HD21	1:A:80:LEU:HD11	1.96	0.43
1:G:110:SER:O	1:G:114:VAL:HG22	2.18	0.42
1:I:111:ILE:O	1:I:114:VAL:CG2	2.67	0.42
1:A:221:ASP:OD1	1:A:224:GLU:HB2	2.20	0.42
1:D:181:LEU:HD22	1:D:183:THR:HB	2.00	0.42
1:E:111:ILE:O	1:E:114:VAL:CG2	2.67	0.42
1:F:111:ILE:O	1:F:114:VAL:CG2	2.67	0.42
1:A:243:GLN:O	1:A:247:ARG:N	2.45	0.42
1:B:111:ILE:O	1:B:114:VAL:CG2	2.67	0.42
1:B:181:LEU:HD22	1:B:183:THR:HB	2.00	0.42
1:C:189:VAL:O	1:C:190:SER:OG	2.37	0.42
1:F:77:LEU:HD21	1:F:80:LEU:HD11	1.96	0.42
1:F:320:ASN:ND2	1:K:195:ASP:OD1	2.49	0.42
1:H:111:ILE:O	1:H:114:VAL:CG2	2.67	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:111:ILE:O	1:J:114:VAL:CG2	2.67	0.42
1:J:176:MET:HG3	1:J:176:MET:O	2.20	0.42
1:B:221:ASP:OD1	1:B:224:GLU:HB2	2.20	0.42
1:C:164:TYR:OH	1:I:293:HIS:ND1	2.52	0.42
1:C:181:LEU:HD22	1:C:183:THR:HB	2.00	0.42
1:E:176:MET:HG3	1:E:176:MET:O	2.20	0.42
1:G:181:LEU:HD22	1:G:183:THR:HB	2.00	0.42
1:H:221:ASP:OD1	1:H:224:GLU:HB2	2.19	0.42
1:C:176:MET:O	1:C:176:MET:HG3	2.20	0.42
1:D:176:MET:O	1:D:176:MET:HG3	2.20	0.42
1:G:77:LEU:HD21	1:G:80:LEU:HD11	1.96	0.42
1:K:111:ILE:O	1:K:114:VAL:CG2	2.67	0.42
1:A:111:ILE:O	1:A:114:VAL:CG2	2.67	0.42
1:B:176:MET:HG3	1:B:176:MET:O	2.20	0.42
1:C:111:ILE:O	1:C:114:VAL:CG2	2.67	0.42
1:G:111:ILE:O	1:G:114:VAL:CG2	2.67	0.42
1:H:176:MET:O	1:H:176:MET:HG3	2.20	0.42
1:I:176:MET:HG3	1:I:176:MET:O	2.20	0.42
1:I:181:LEU:HD22	1:I:183:THR:HB	2.00	0.42
1:K:110:SER:O	1:K:114:VAL:HG22	2.19	0.42
1:K:176:MET:O	1:K:176:MET:HG3	2.20	0.42
1:F:176:MET:O	1:F:176:MET:HG3	2.20	0.42
1:H:189:VAL:O	1:H:190:SER:OG	2.37	0.42
1:G:176:MET:HG3	1:G:176:MET:O	2.20	0.42
1:G:385:ILE:HG23	1:G:385:ILE:O	2.20	0.42
1:A:176:MET:O	1:A:176:MET:HG3	2.20	0.42
1:E:221:ASP:OD1	1:E:224:GLU:HB2	2.20	0.42
1:F:221:ASP:OD1	1:F:224:GLU:HB2	2.20	0.42
1:H:243:GLN:O	1:H:247:ARG:N	2.45	0.42
1:K:77:LEU:HD21	1:K:80:LEU:HD11	1.96	0.42
1:K:385:ILE:HG23	1:K:385:ILE:O	2.20	0.42
1:P:465:LYS:HE3	1:P:465:LYS:HB3	1.90	0.42
1:H:181:LEU:HD22	1:H:183:THR:HB	2.01	0.41
1:K:221:ASP:OD1	1:K:224:GLU:HB2	2.20	0.41
1:D:111:ILE:O	1:D:114:VAL:CG2	2.67	0.41
1:B:189:VAL:O	1:B:190:SER:OG	2.37	0.41
1:B:385:ILE:HG23	1:B:385:ILE:O	2.20	0.41
1:D:221:ASP:OD1	1:D:224:GLU:HB2	2.19	0.41
1:G:221:ASP:OD1	1:G:224:GLU:HB2	2.20	0.41
1:G:243:GLN:O	1:G:247:ARG:N	2.45	0.41
1:I:221:ASP:OD1	1:I:224:GLU:HB2	2.19	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:385:ILE:O	1:J:385:ILE:HG23	2.20	0.41
1:D:385:ILE:HG23	1:D:385:ILE:O	2.20	0.41
1:B:77:LEU:HD21	1:B:80:LEU:HD11	1.96	0.41
1:A:385:ILE:O	1:A:385:ILE:HG23	2.20	0.41
1:B:243:GLN:O	1:B:247:ARG:N	2.45	0.41
1:J:221:ASP:OD1	1:J:224:GLU:HB2	2.19	0.41
1:F:385:ILE:O	1:F:385:ILE:HG23	2.20	0.41
1:C:385:ILE:O	1:C:385:ILE:HG23	2.20	0.41
1:E:385:ILE:O	1:E:385:ILE:HG23	2.20	0.41
1:F:260:HIS:O	1:F:275:TYR:N	2.51	0.41
1:C:221:ASP:OD1	1:C:224:GLU:HB2	2.19	0.41
1:G:189:VAL:O	1:G:190:SER:OG	2.37	0.41
1:C:77:LEU:HD21	1:C:80:LEU:HD11	1.96	0.41
1:E:275:TYR:HE2	1:E:277:ILE:HD11	1.86	0.41
1:F:275:TYR:HE2	1:F:277:ILE:HD11	1.86	0.41
1:A:275:TYR:HE2	1:A:277:ILE:HD11	1.86	0.41
1:F:111:ILE:O	1:F:114:VAL:HG22	2.22	0.40
1:H:111:ILE:O	1:H:114:VAL:HG22	2.22	0.40
1:I:385:ILE:O	1:I:385:ILE:HG23	2.20	0.40
1:B:111:ILE:O	1:B:114:VAL:HG22	2.22	0.40
1:G:111:ILE:O	1:G:114:VAL:HG22	2.22	0.40
1:H:385:ILE:HG23	1:H:385:ILE:O	2.20	0.40
1:A:111:ILE:O	1:A:114:VAL:HG22	2.22	0.40
1:A:152:ALA:O	1:A:177:ARG:NH2	2.54	0.40
1:C:316:VAL:HG22	1:C:322:LEU:CD1	2.51	0.40
1:E:77:LEU:HD21	1:E:80:LEU:HD11	1.96	0.40
1:F:316:VAL:HG22	1:F:322:LEU:CD1	2.51	0.40
1:I:152:ALA:O	1:I:177:ARG:NH2	2.54	0.40
1:J:152:ALA:O	1:J:177:ARG:NH2	2.54	0.40
1:J:275:TYR:HE2	1:J:277:ILE:HD11	1.86	0.40
1:B:316:VAL:HG22	1:B:322:LEU:CD1	2.51	0.40
1:D:152:ALA:O	1:D:177:ARG:NH2	2.54	0.40
1:H:316:VAL:HG22	1:H:322:LEU:CD1	2.51	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	B	320/1011 (32%)	308 (96%)	12 (4%)	0	100	100
1	C	320/1011 (32%)	308 (96%)	12 (4%)	0	100	100
1	D	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	E	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	F	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	G	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	H	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	I	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	J	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	K	320/1011 (32%)	309 (97%)	11 (3%)	0	100	100
1	L	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	M	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	N	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	O	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	P	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	Q	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	R	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	S	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	T	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	U	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
1	V	325/1011 (32%)	319 (98%)	6 (2%)	0	100	100
All	All	7095/22242 (32%)	6906 (97%)	189 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

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	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	B	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	C	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	D	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	E	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	F	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	G	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	H	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	I	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	J	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	K	286/877 (33%)	285 (100%)	1 (0%)	92	96
1	L	17/877 (2%)	17 (100%)	0	100	100
1	M	17/877 (2%)	17 (100%)	0	100	100
1	N	17/877 (2%)	17 (100%)	0	100	100
1	O	17/877 (2%)	17 (100%)	0	100	100
1	P	17/877 (2%)	17 (100%)	0	100	100
1	Q	17/877 (2%)	17 (100%)	0	100	100
1	R	17/877 (2%)	17 (100%)	0	100	100
1	S	17/877 (2%)	17 (100%)	0	100	100
1	T	17/877 (2%)	17 (100%)	0	100	100
1	U	17/877 (2%)	17 (100%)	0	100	100
1	V	17/877 (2%)	17 (100%)	0	100	100
All	All	3333/19294 (17%)	3322 (100%)	11 (0%)	92	96

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	247	ARG
1	C	247	ARG
1	D	247	ARG
1	E	247	ARG
1	F	247	ARG
1	G	247	ARG
1	H	247	ARG
1	I	247	ARG
1	J	247	ARG
1	K	247	ARG
1	A	247	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

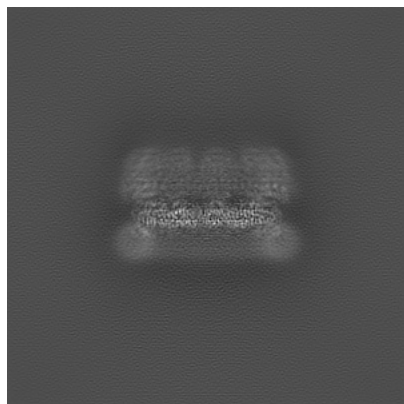
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29290. These allow visual inspection of the internal detail of the map and identification of artifacts.

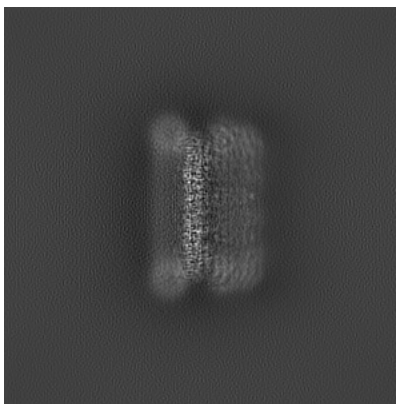
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

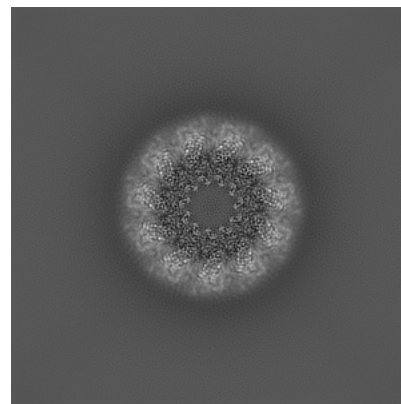
6.1.1 Primary map



X

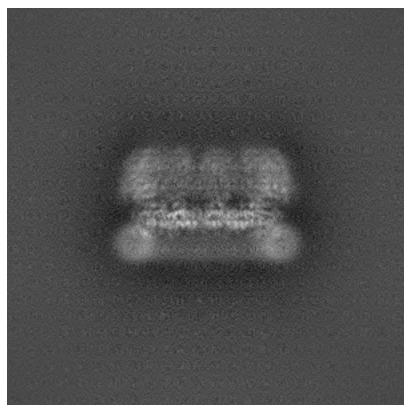


Y

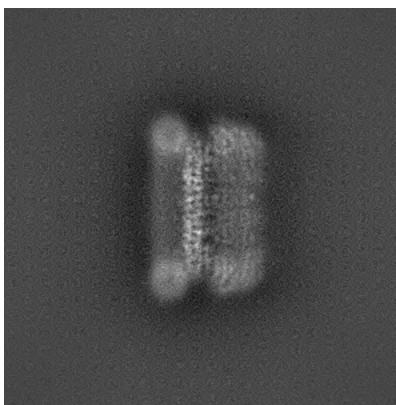


Z

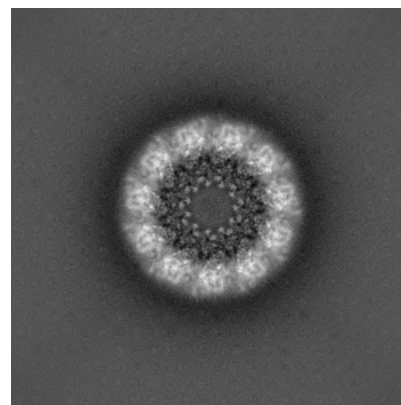
6.1.2 Raw map



X



Y

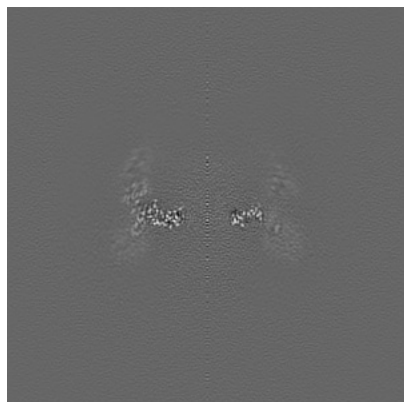


Z

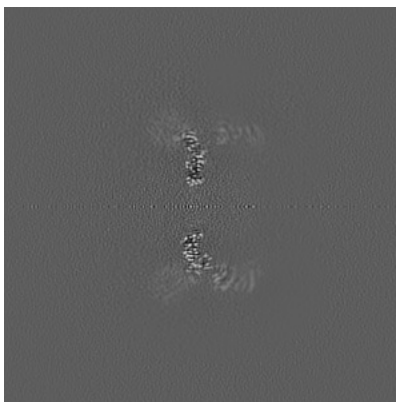
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

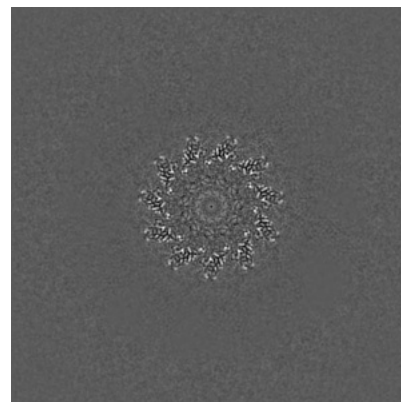
6.2.1 Primary map



X Index: 288

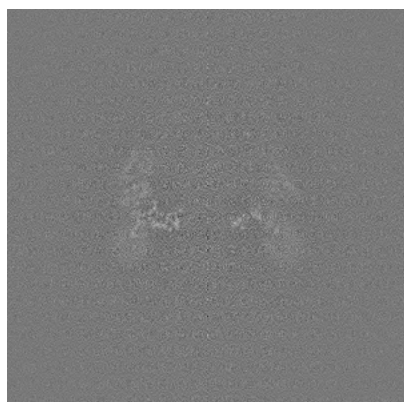


Y Index: 288

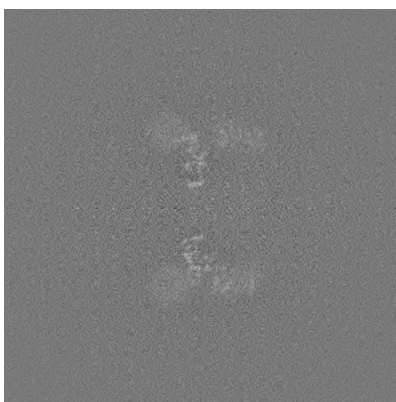


Z Index: 288

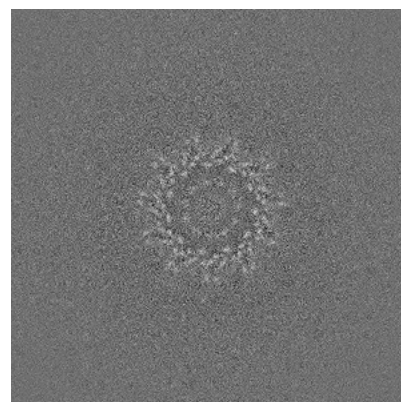
6.2.2 Raw map



X Index: 288



Y Index: 288

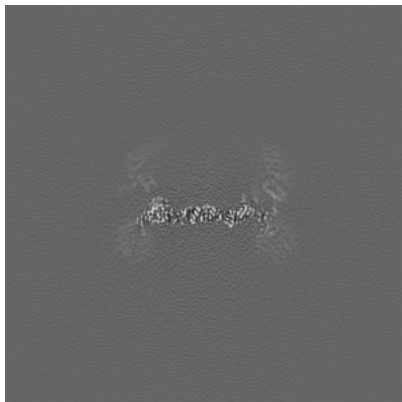


Z Index: 288

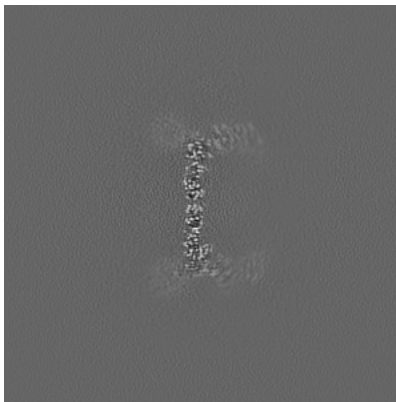
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

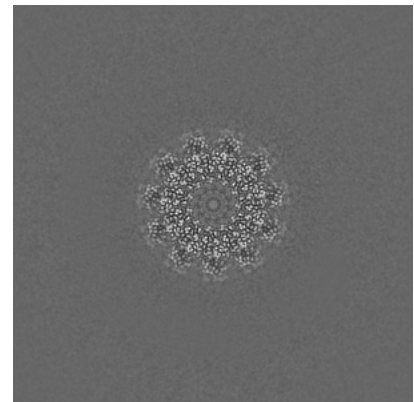
6.3.1 Primary map



X Index: 327

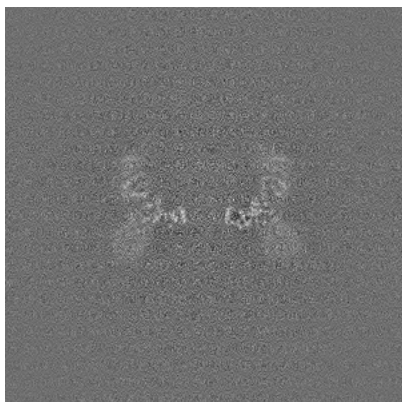


Y Index: 253

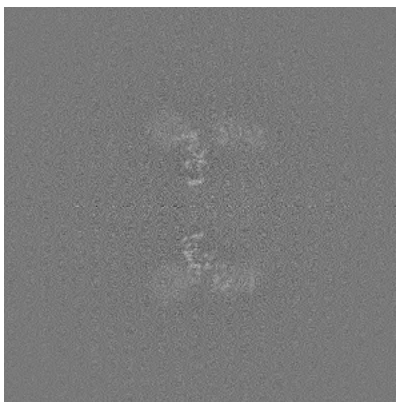


Z Index: 277

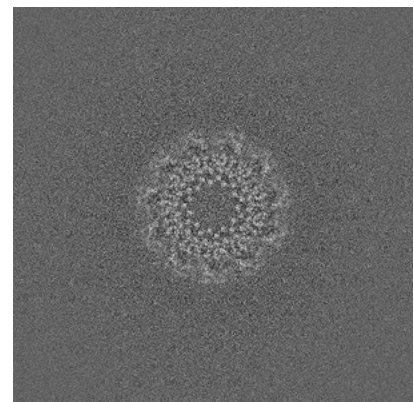
6.3.2 Raw map



X Index: 304



Y Index: 288

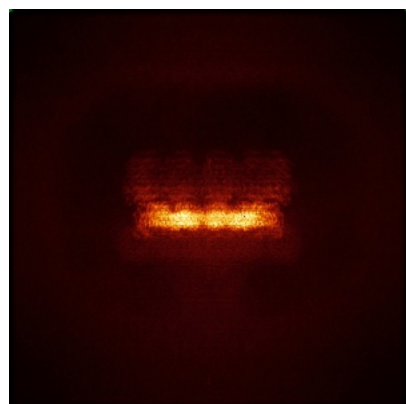


Z Index: 277

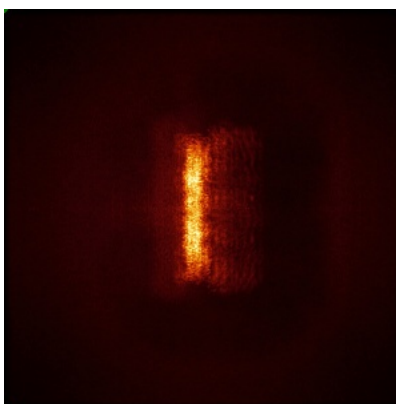
The images above show the largest variance slices of the map in three orthogonal directions.

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

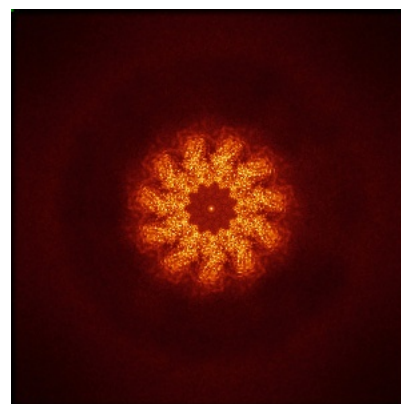
6.4.1 Primary map



X

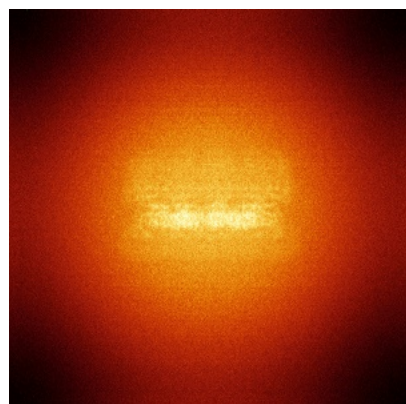


Y

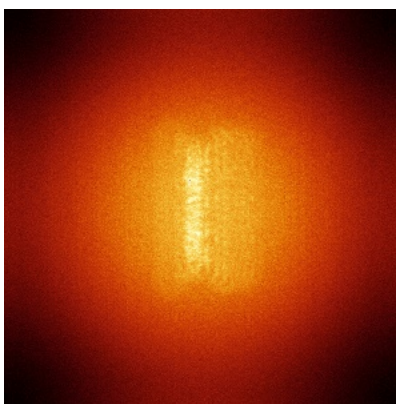


Z

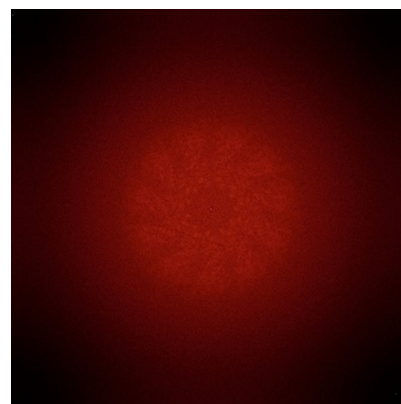
6.4.2 Raw map



X



Y

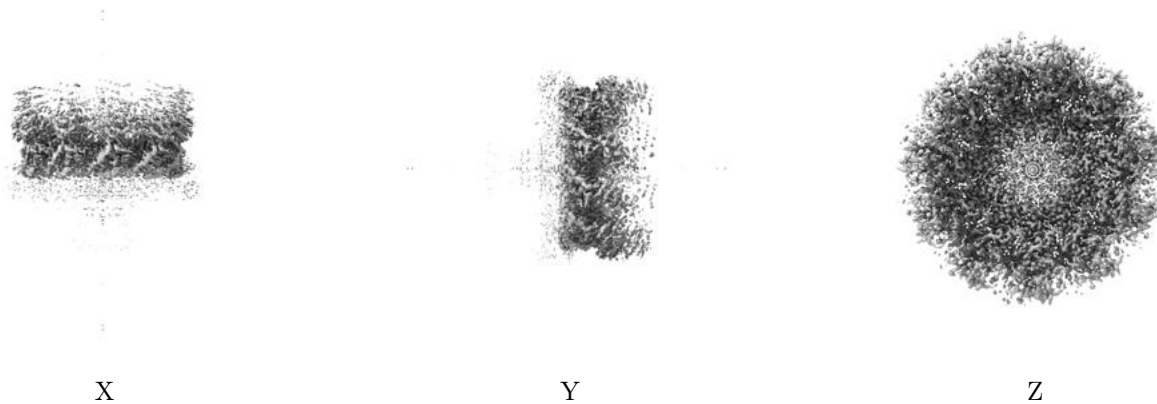


Z

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.

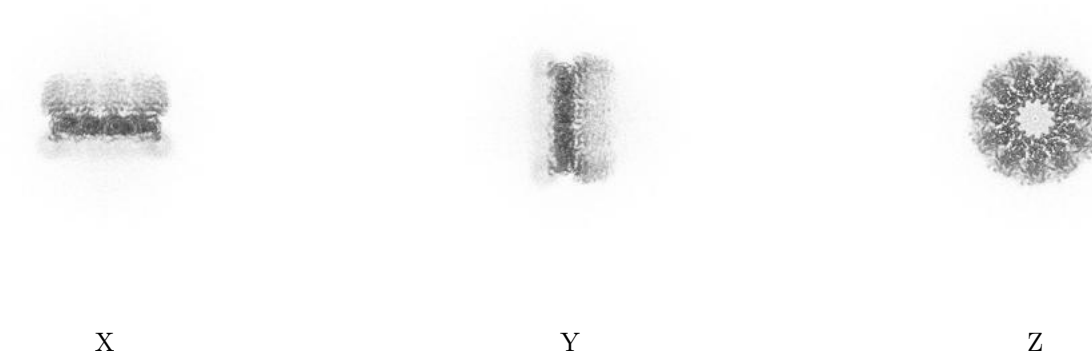
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 3.09. 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



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.

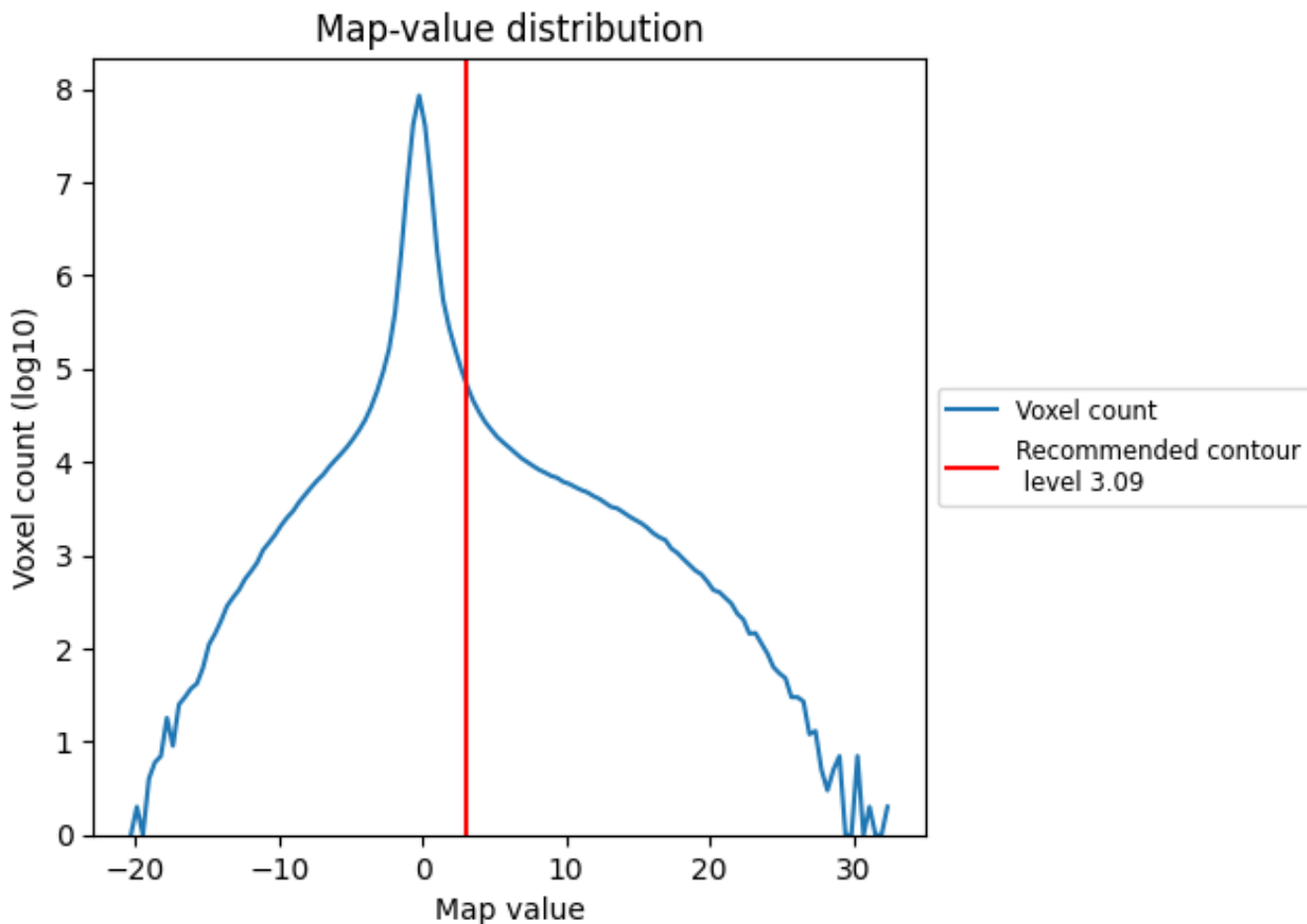
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

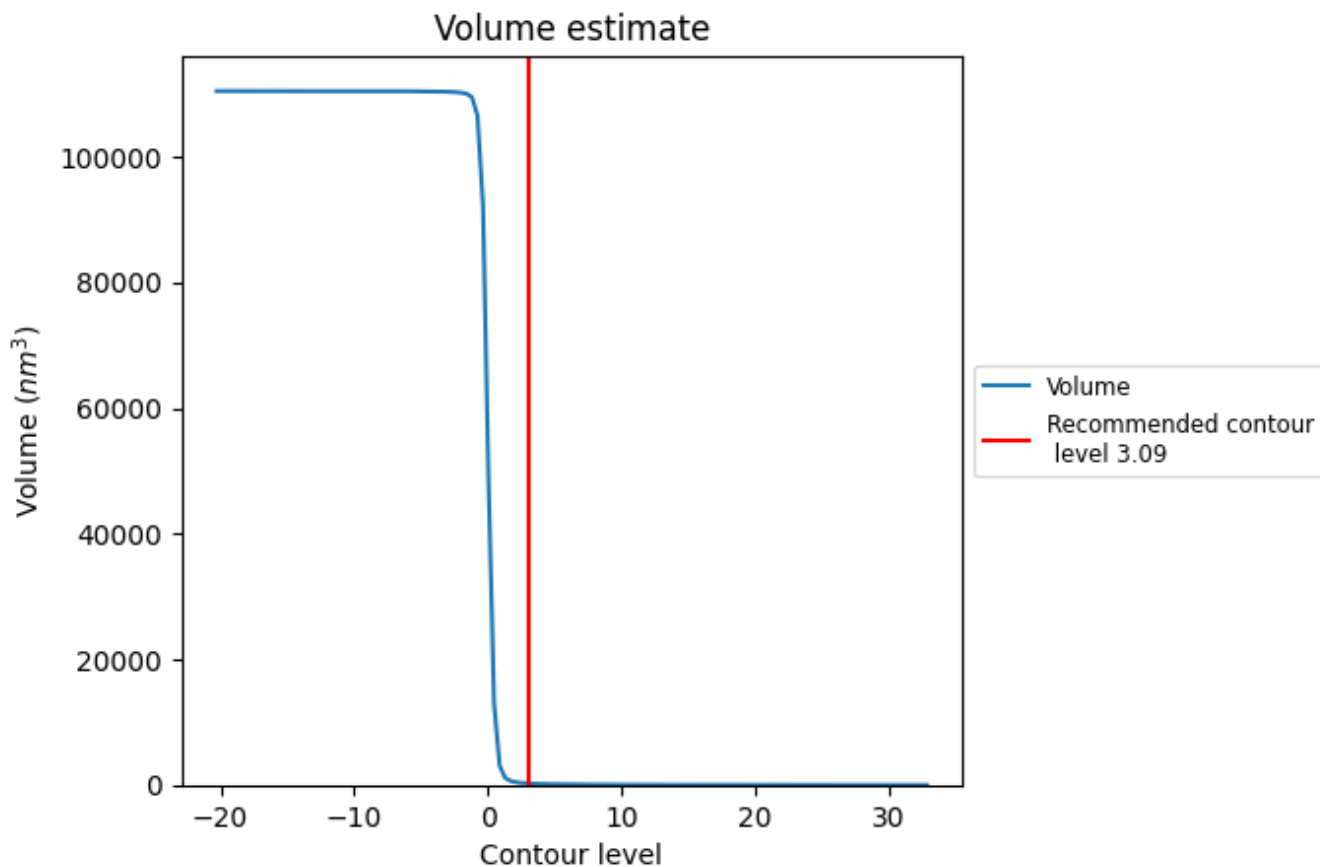
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

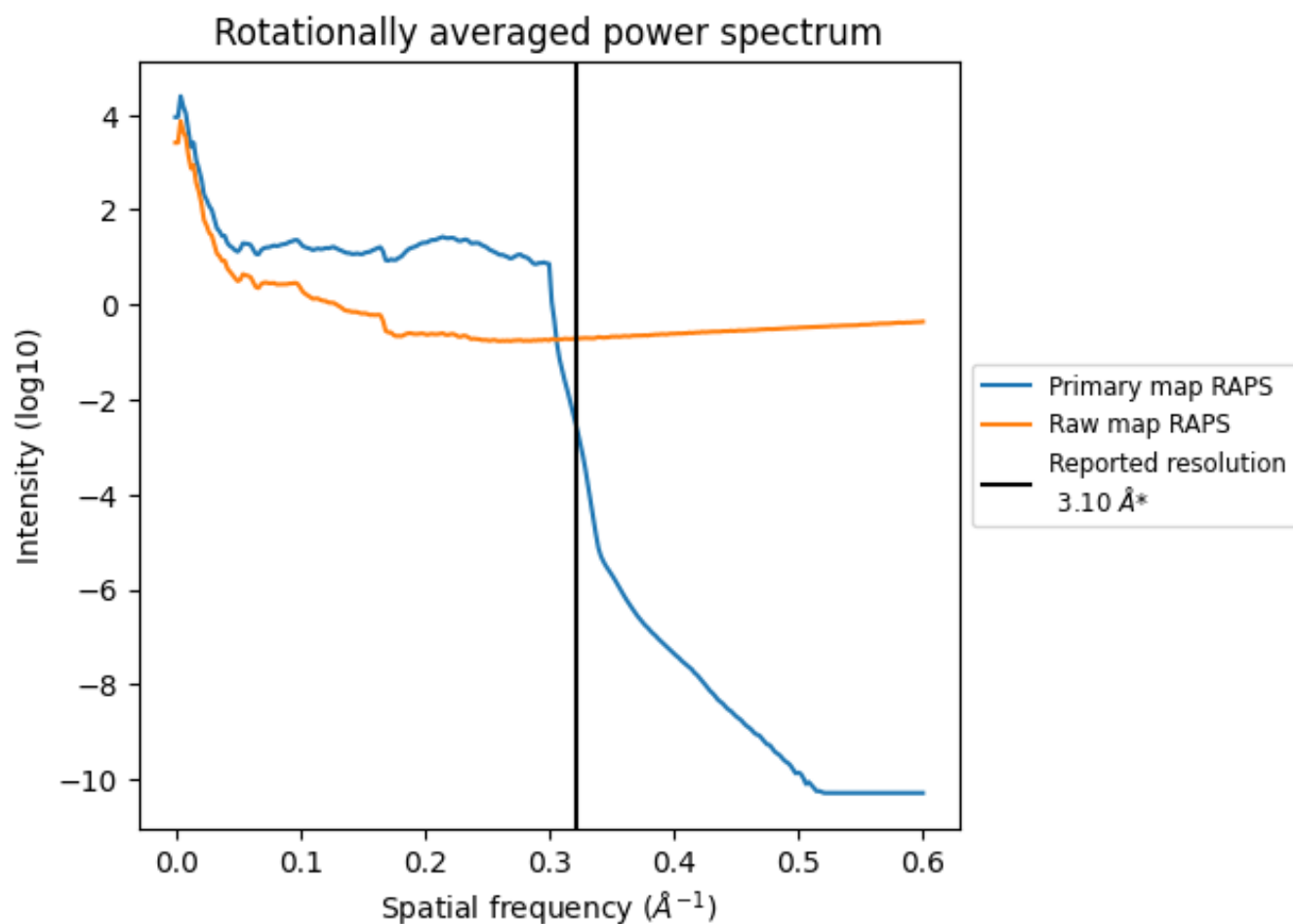
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 228 nm^3 ; this corresponds to an approximate mass of 206 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum [i](#)

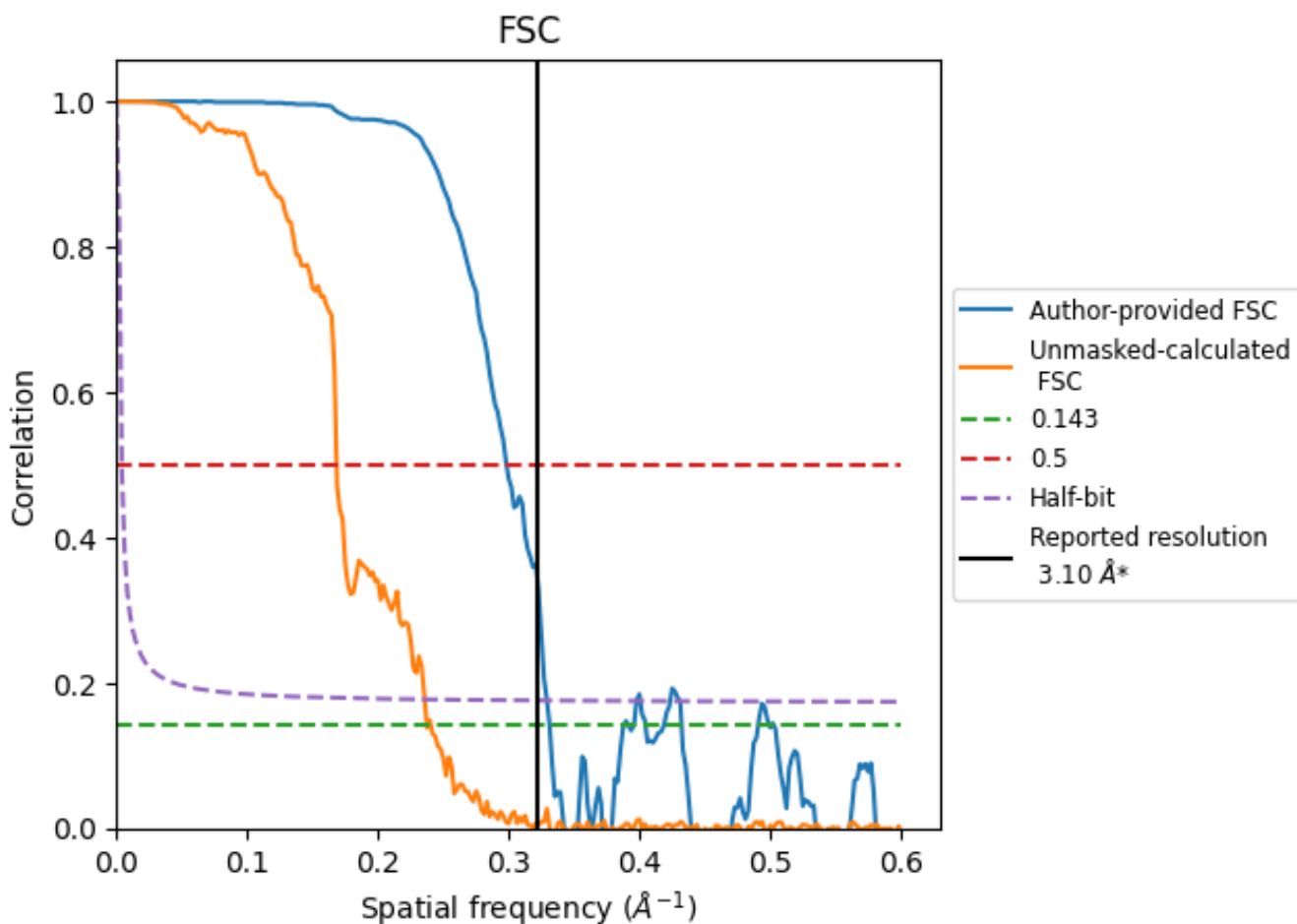


*Reported resolution corresponds to spatial frequency of 0.323 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.323 Å⁻¹

8.2 Resolution estimates [i](#)

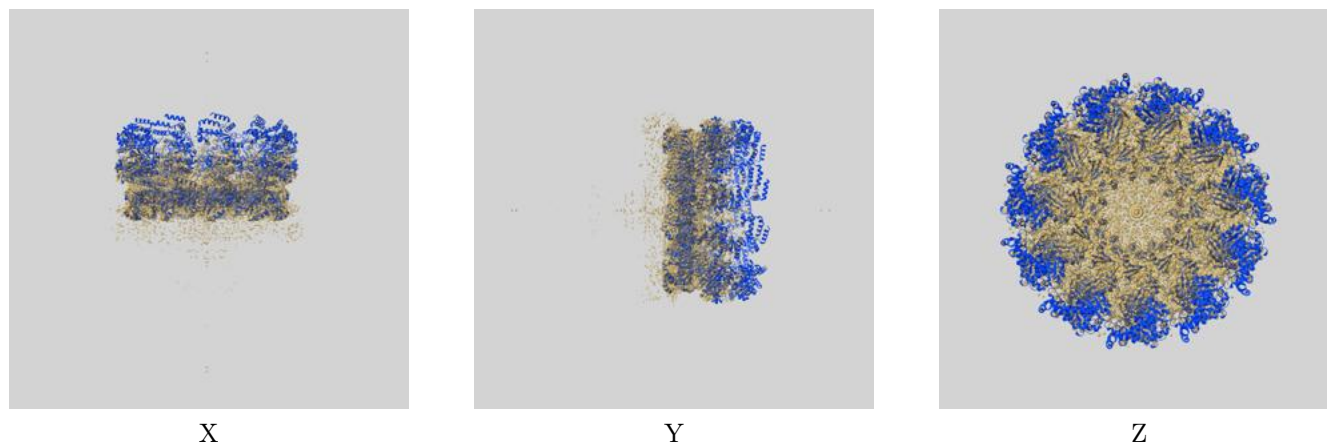
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.02	3.35	3.04
Unmasked-calculated*	4.21	5.94	4.24

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.21 differs from the reported value 3.1 by more than 10 %

9 Map-model fit [i](#)

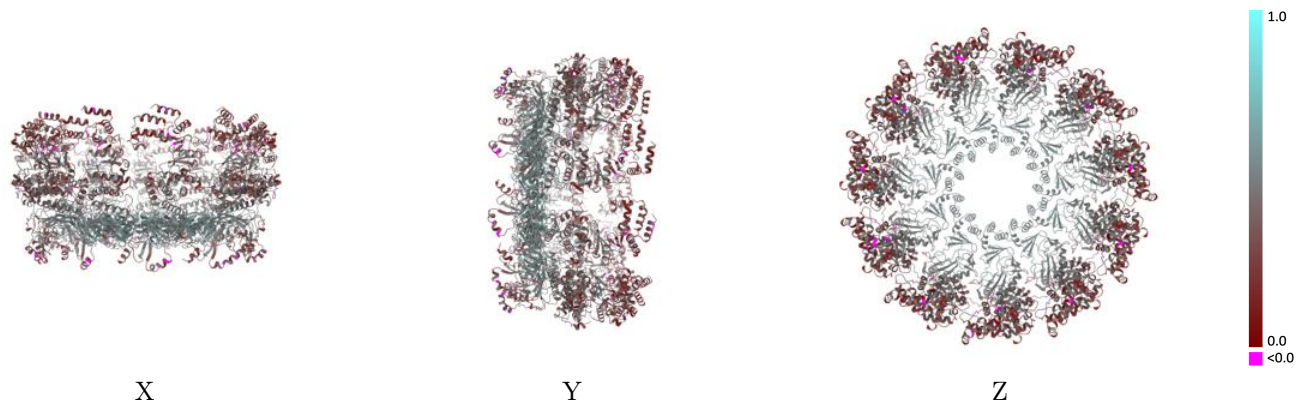
This section contains information regarding the fit between EMDB map EMD-29290 and PDB model 8FMA. Per-residue inclusion information can be found in section [3](#) on page [13](#).

9.1 Map-model overlay [i](#)



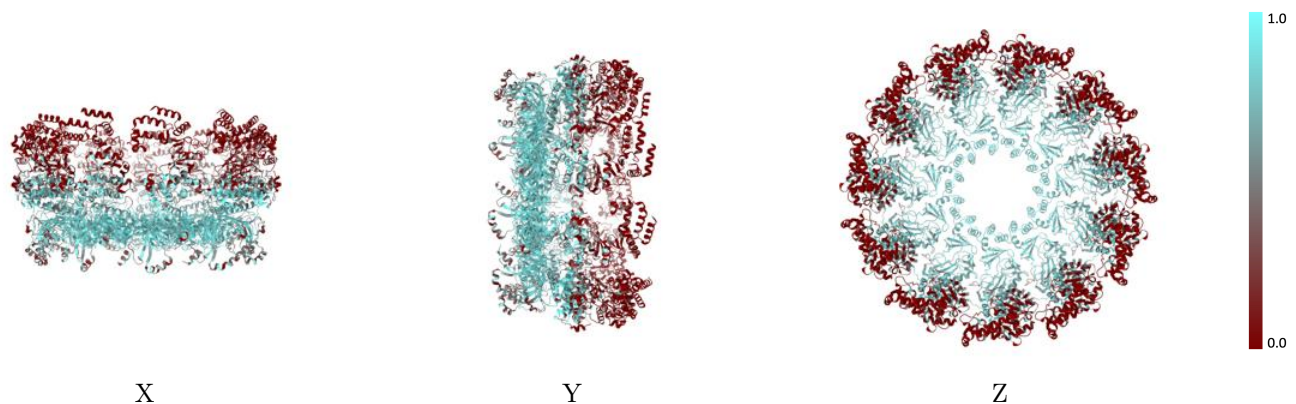
The images above show the 3D surface view of the map at the recommended contour level 3.09 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



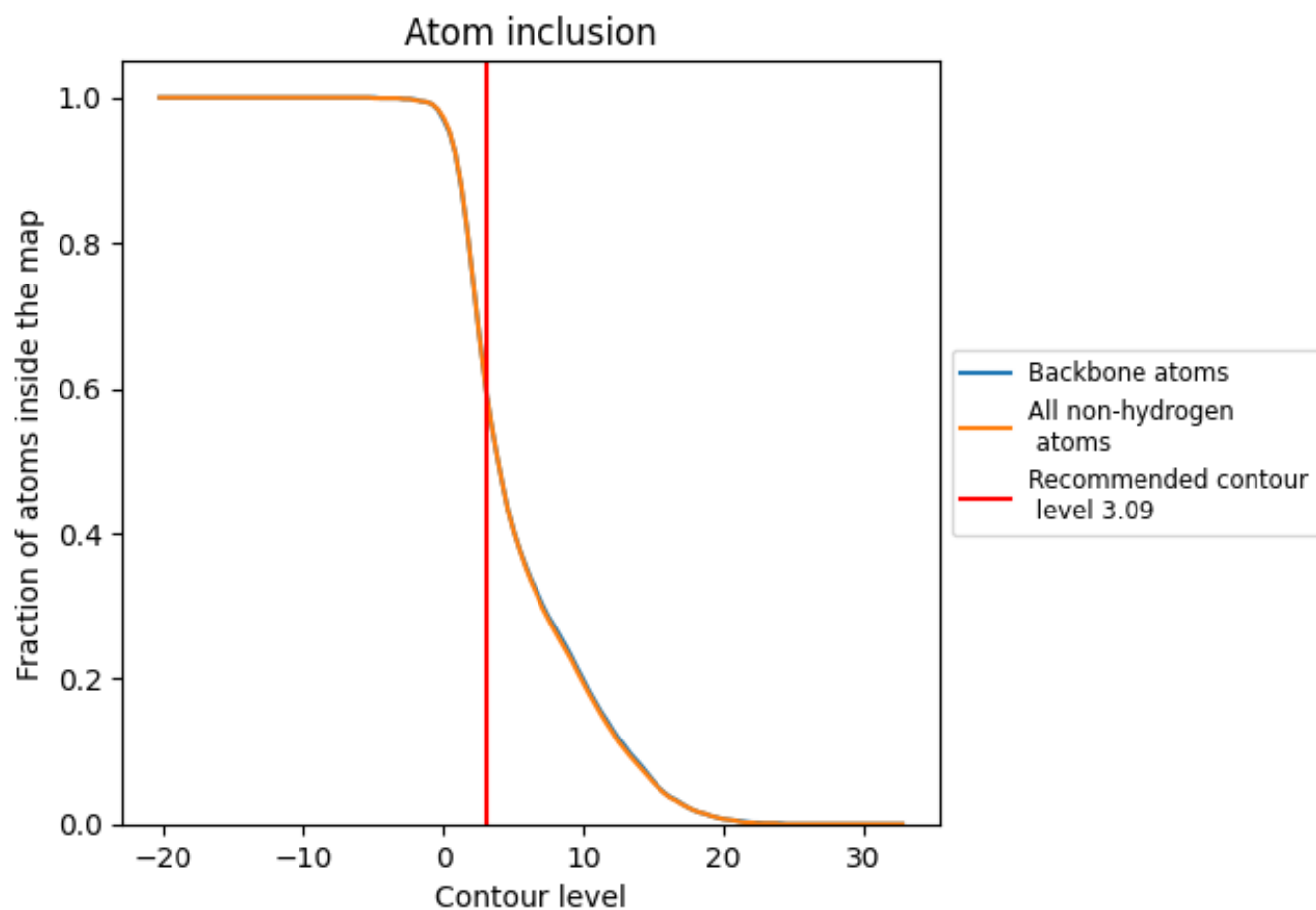
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (3.09).















































9.4 Atom inclusion [i](#)



At the recommended contour level, 59% of all backbone atoms, 59% 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 (3.09) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5890	 0.4240
A	 0.7530	 0.4720
B	 0.7560	 0.4730
C	 0.7520	 0.4710
D	 0.7540	 0.4730
E	 0.7600	 0.4730
F	 0.7480	 0.4730
G	 0.7490	 0.4710
H	 0.7520	 0.4710
I	 0.7570	 0.4710
J	 0.7570	 0.4740
K	 0.7530	 0.4730
L	 0.2910	 0.3340
M	 0.2990	 0.3350
N	 0.2780	 0.3390
O	 0.2910	 0.3350
P	 0.3010	 0.3370
Q	 0.2800	 0.3400
R	 0.2880	 0.3350
S	 0.2930	 0.3320
T	 0.2870	 0.3330
U	 0.2980	 0.3360
V	 0.2990	 0.3310

