



Full wwPDB EM Validation Report ⓘ

Oct 13, 2024 – 07:28 am BST

PDB ID : 7OMM
EMDB ID : EMD-12990
Title : Cryo-EM structure of *N. gonorrhoeae* LptDE in complex with ProMacrobodies (MBPs have not been built de novo)
Authors : Botte, M.; Ni, D.; Schenck, S.; Zimmermann, I.; Chami, M.; Bocquet, N.; Egloff, P.; Bucher, D.; Trabuco, M.; Cheng, R.K.Y.; Brunner, J.D.; Seeger, M.A.; Stahlberg, H.; Hennig, M.
Deposited on : 2021-05-24
Resolution : 3.40 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.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

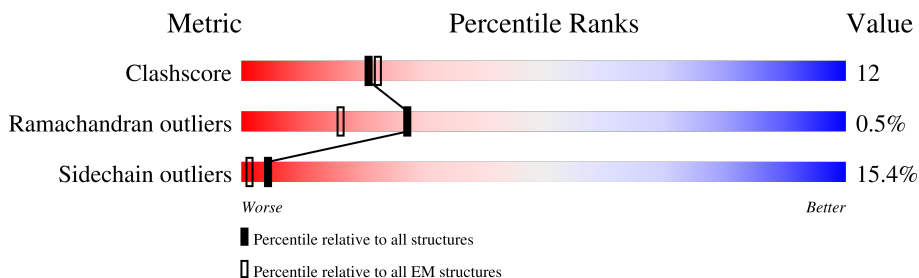
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.40 Å.

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



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

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	801	
2	B	165	
3	C	520	
4	D	526	

2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 13981 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 LPS-assembly protein LptD.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	698	5462	3430	985	1038	9	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	13	SER	ALA	conflict	UNP Q5F651

- Molecule 2 is a protein called LPS-assembly lipoprotein LptE.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	128	1020	640	179	198	3	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	160	HIS	-	expression tag	UNP A0A5K1Q6A7
B	161	HIS	-	expression tag	UNP A0A5K1Q6A7
B	162	HIS	-	expression tag	UNP A0A5K1Q6A7
B	163	HIS	-	expression tag	UNP A0A5K1Q6A7
B	164	HIS	-	expression tag	UNP A0A5K1Q6A7
B	165	HIS	-	expression tag	UNP A0A5K1Q6A7

- Molecule 3 is a protein called ProMacroboddy 21,Maltodextrin-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	479	3731	2397	614	710	10	0	0

There are 37 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	484	PRO	-	expression tag	UNP A0A0F8L1I7
C	485	GLY	-	expression tag	UNP A0A0F8L1I7
C	486	SER	-	expression tag	UNP A0A0F8L1I7
C	487	GLY	-	expression tag	UNP A0A0F8L1I7
C	488	GLY	-	expression tag	UNP A0A0F8L1I7
C	489	GLY	-	expression tag	UNP A0A0F8L1I7
C	490	SER	-	expression tag	UNP A0A0F8L1I7
C	491	ALA	-	expression tag	UNP A0A0F8L1I7
C	492	TRP	-	expression tag	UNP A0A0F8L1I7
C	493	SER	-	expression tag	UNP A0A0F8L1I7
C	494	HIS	-	expression tag	UNP A0A0F8L1I7
C	495	PRO	-	expression tag	UNP A0A0F8L1I7
C	496	GLN	-	expression tag	UNP A0A0F8L1I7
C	497	PHE	-	expression tag	UNP A0A0F8L1I7
C	498	GLU	-	expression tag	UNP A0A0F8L1I7
C	499	LYS	-	expression tag	UNP A0A0F8L1I7
C	500	GLY	-	expression tag	UNP A0A0F8L1I7
C	501	GLY	-	expression tag	UNP A0A0F8L1I7
C	502	GLY	-	expression tag	UNP A0A0F8L1I7
C	503	SER	-	expression tag	UNP A0A0F8L1I7
C	504	GLY	-	expression tag	UNP A0A0F8L1I7
C	505	GLY	-	expression tag	UNP A0A0F8L1I7
C	506	GLY	-	expression tag	UNP A0A0F8L1I7
C	507	SER	-	expression tag	UNP A0A0F8L1I7
C	508	GLY	-	expression tag	UNP A0A0F8L1I7
C	509	GLY	-	expression tag	UNP A0A0F8L1I7
C	510	SER	-	expression tag	UNP A0A0F8L1I7
C	511	ALA	-	expression tag	UNP A0A0F8L1I7
C	512	TRP	-	expression tag	UNP A0A0F8L1I7
C	513	SER	-	expression tag	UNP A0A0F8L1I7
C	514	HIS	-	expression tag	UNP A0A0F8L1I7
C	515	PRO	-	expression tag	UNP A0A0F8L1I7
C	516	GLN	-	expression tag	UNP A0A0F8L1I7
C	517	PHE	-	expression tag	UNP A0A0F8L1I7
C	518	GLU	-	expression tag	UNP A0A0F8L1I7
C	519	LYS	-	expression tag	UNP A0A0F8L1I7
C	520	ALA	-	expression tag	UNP A0A0F8L1I7

- Molecule 4 is a protein called ProMacrobody 51, Maltodextrin-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	489	3768	2422	614	723	9	0	0

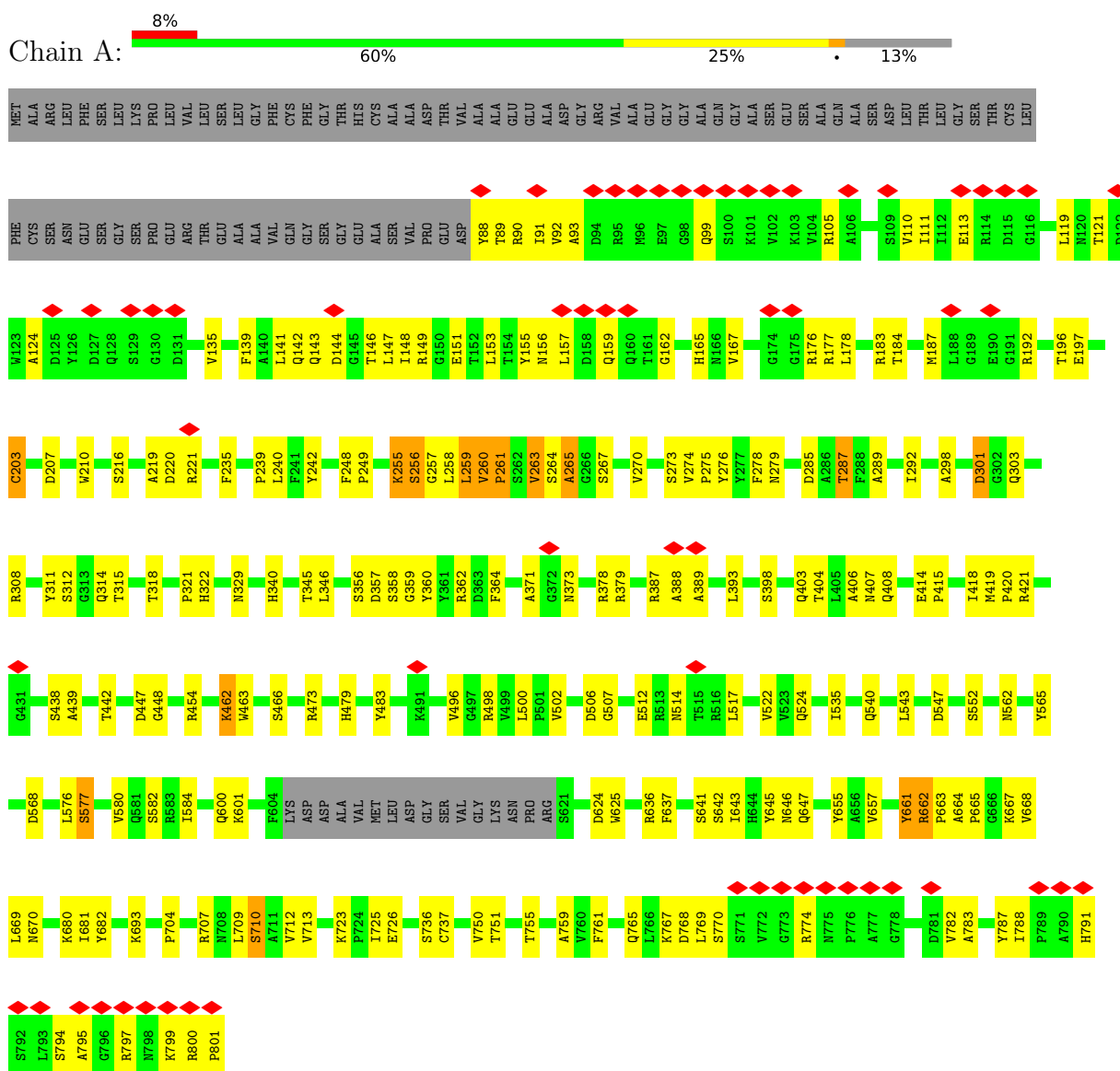
There are 37 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	490	PRO	-	expression tag	UNP A0A0F8L1I7
D	491	GLY	-	expression tag	UNP A0A0F8L1I7
D	492	SER	-	expression tag	UNP A0A0F8L1I7
D	493	GLY	-	expression tag	UNP A0A0F8L1I7
D	494	GLY	-	expression tag	UNP A0A0F8L1I7
D	495	GLY	-	expression tag	UNP A0A0F8L1I7
D	496	SER	-	expression tag	UNP A0A0F8L1I7
D	497	ALA	-	expression tag	UNP A0A0F8L1I7
D	498	TRP	-	expression tag	UNP A0A0F8L1I7
D	499	SER	-	expression tag	UNP A0A0F8L1I7
D	500	HIS	-	expression tag	UNP A0A0F8L1I7
D	501	PRO	-	expression tag	UNP A0A0F8L1I7
D	502	GLN	-	expression tag	UNP A0A0F8L1I7
D	503	PHE	-	expression tag	UNP A0A0F8L1I7
D	504	GLU	-	expression tag	UNP A0A0F8L1I7
D	505	LYS	-	expression tag	UNP A0A0F8L1I7
D	506	GLY	-	expression tag	UNP A0A0F8L1I7
D	507	GLY	-	expression tag	UNP A0A0F8L1I7
D	508	GLY	-	expression tag	UNP A0A0F8L1I7
D	509	SER	-	expression tag	UNP A0A0F8L1I7
D	510	GLY	-	expression tag	UNP A0A0F8L1I7
D	511	GLY	-	expression tag	UNP A0A0F8L1I7
D	512	GLY	-	expression tag	UNP A0A0F8L1I7
D	513	SER	-	expression tag	UNP A0A0F8L1I7
D	514	GLY	-	expression tag	UNP A0A0F8L1I7
D	515	GLY	-	expression tag	UNP A0A0F8L1I7
D	516	SER	-	expression tag	UNP A0A0F8L1I7
D	517	ALA	-	expression tag	UNP A0A0F8L1I7
D	518	TRP	-	expression tag	UNP A0A0F8L1I7
D	519	SER	-	expression tag	UNP A0A0F8L1I7
D	520	HIS	-	expression tag	UNP A0A0F8L1I7
D	521	PRO	-	expression tag	UNP A0A0F8L1I7
D	522	GLN	-	expression tag	UNP A0A0F8L1I7
D	523	PHE	-	expression tag	UNP A0A0F8L1I7
D	524	GLU	-	expression tag	UNP A0A0F8L1I7
D	525	LYS	-	expression tag	UNP A0A0F8L1I7
D	526	ALA	-	expression tag	UNP A0A0F8L1I7

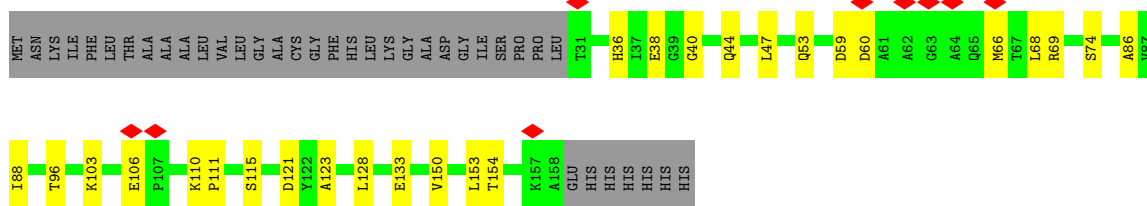
3 Residue-property plots

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.

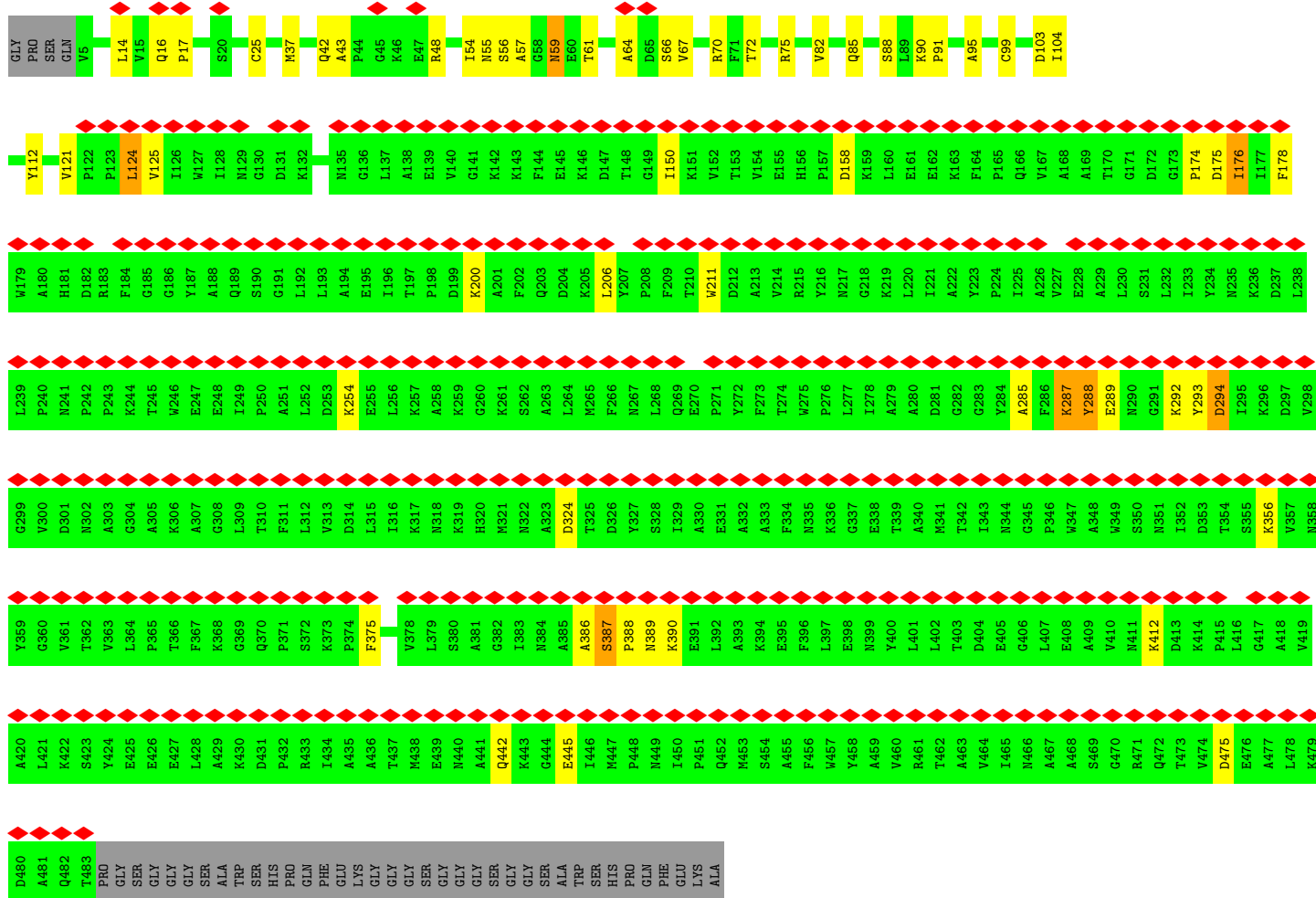
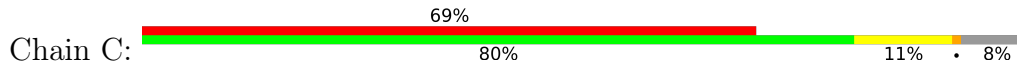
- Molecule 1: LPS-assembly protein LptD



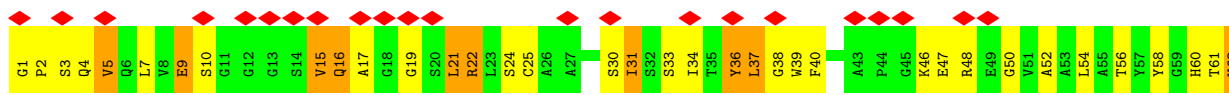
- Molecule 2: LPS-assembly lipoprotein LptE



● Molecule 3: ProMacrobody 21, Maltodextrin-binding protein



● Molecule 4: ProMacrobody 51, Maltodextrin-binding protein



GLY	E433	F373	A313	E253	Y193	V131	Y63
GLY	L434	K374	G314	E254	A194	I132	A64
GLY	A435	G375	L315	I255	Q195	M133	D65
SER	K436	Q376	T316	P256	S196	I134	S66
ALA	D437	P377	F317	A257	G197	M135	V67
TRP	P438	S378	L318	L258	L198	G139	K68
SER	R439	K379	V319	D259	L199	Y140	F71
HIS	I440	P380	D320	K260	A200	M141	T72
PRO	A441	F381	L321	E261	E201	G142	V73
GLN	A442	V382	I322	L262	I202	L143	S74
PHE	T443	G383	K323	K263	T203	A144	L75
GLU	M444	V384	N324	A264	P204	E145	D76
GLY	E445	L385	K265	K266	D205	V146	K79
GLY	N446	S386	H326	G266	K206	G147	M80
SER	A447	A387	M327	K267	A207	K148	T81
GLY	Q448	G388	N328	S268	F208	K149	V82
SER	K449	I389	A329	A269	Q209	F150	Y83
GLY	G450	N390	D330	L270	D210	E151	L84
GLY	E451	A391	T331	M271	K211	K152	Q85
ALA	I452	A392	D332	F272	L212	D153	M86
TRP	M453	S393	Y333	M273	Y213	T154	L89
SER	P454	P394	S334	L274	P214	G155	K90
HIS	N455	N395	S335	Q275	F215	I156	P91
PRO	I456	K396	I335	E276	T216	K157	E92
GLN	P457	E397	A336	P277	M217	V158	D93
PHE	Q458	L398	E337	Y278	D218	T159	L96
GLU	M459	A399	A338	F279	A219	V160	Y97
LYS	S460	K400	A339	T280	V220	E161	Y98
ALA	A461	E401	F340	M281	K221	H162	C99
ALA	F462	F402	N341	P282	Y222	P163	A100
ALA	W463	L403	K342	L283	N223	D164	A101
GLY	Y464	E404	G343	L284	G224	K165	S104
GLY	A465	M405	E344	I284	K225	L166	G105
GLY	V466	Y406	T345	A285	K226	E167	I106
GLY	R467	L407	A346	A286	L226	E168	W107
GLY	T468	L408	M347	D287	I227	K169	L110
GLY	A469	T409	T348	G288	A228	F170	G111
GLY	V470	D410	I349	G289	Y229	P171	V112
SER	I471	E411	N350	Y290	P230	Q172	W113
ALA	N472	G412	G351	A291	I231	V173	A114
ALA	A473	L413	P352	F292	A232	A174	T115
ALA	A474	E414	W353	K293	V233	A175	Y116
HIS	S475	A415	A354	Y294	E234	T176	E117
HIS	G476	V416	W355	E295	A235	G177	Y118
GLN	R477	M417	S356	N296	L236	G178	W119
GLN	Q478	K418	N357	G297	L238	D178	G120
GLY	T479	D419	I358	K298	L239	G179	Q121
GLY	V480	K420	D359	Y299	Y240	P180	V125
GLY	D481	P421	T360	D300	I301	D181	T126
GLY	E482	L422	S361	I301	K241	I182	V127
GLY	A483	G423	K362	K302	K242	I183	P128
GLY	L484	A424	V363	D303	D243	F184	P129
GLY	K485	V425	N364	V304	L244	V185	L130
GLY	D486	A426	Y365	G305	L245	A186	
GLY	A487	L427	G366	V306	P246	H187	
GLY	A487	K428	V367	D307	N247	D188	
GLY	Q488	S429	T368	N308	P248	R189	
PRO	T489	Y430	L370	A309	K250	G191	
GLY	E431	E431	P371	G310	T251	G192	
SER	SER	E432	T372	A311	W252		

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	184206	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 ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	3.965	Depositor
Minimum map value	-1.718	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.048	Depositor
Recommended contour level	0.45	Depositor
Map size (Å)	344.4, 344.4, 344.4	wwPDB
Map dimensions	390, 390, 390	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8830769, 0.8830769, 0.8830769	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	0.38	0/5594	0.59	0/7569
2	B	0.27	0/1034	0.44	0/1400
3	C	0.63	0/3829	0.87	0/5208
4	D	0.63	0/3865	0.74	0/5260
All	All	0.52	0/14322	0.71	0/19437

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	5462	0	5221	127	0
2	B	1020	0	1024	20	0
3	C	3731	0	3645	32	0
4	D	3768	0	3692	153	0
All	All	13981	0	13582	321	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 12.

All (321) 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)
4:D:131:VAL:HB	4:D:180:PRO:HB3	1.36	1.07
4:D:333:TYR:O	4:D:333:TYR:HD1	1.40	1.04
4:D:401:GLU:OE1	4:D:401:GLU:O	1.82	0.97
4:D:333:TYR:O	4:D:333:TYR:CD1	2.28	0.87
4:D:333:TYR:CD1	4:D:333:TYR:C	2.43	0.86
3:C:57:ALA:HB3	3:C:59:ASN:ND2	1.90	0.85
4:D:262:LEU:HD23	4:D:267:LYS:O	1.78	0.84
4:D:1:GLY:N	4:D:2:PRO:CD	2.41	0.83
3:C:57:ALA:HB3	3:C:59:ASN:HD21	1.45	0.81
1:A:378:ARG:HH11	1:A:403:GLN:HB2	1.48	0.77
4:D:107:TRP:HD1	4:D:112:VAL:HG22	1.49	0.76
4:D:333:TYR:HD1	4:D:333:TYR:C	1.84	0.75
1:A:256:SER:HB2	1:A:279:ASN:HB3	1.68	0.74
4:D:1:GLY:H3	4:D:2:PRO:HD3	1.52	0.74
1:A:680:LYS:HD2	2:B:123:ALA:HB1	1.69	0.74
4:D:40:PHE:HA	4:D:50:GLY:HA3	1.70	0.73
4:D:296:ASN:OD1	4:D:297:GLY:N	2.22	0.72
4:D:262:LEU:HB3	4:D:267:LYS:O	1.88	0.72
4:D:1:GLY:H2	4:D:2:PRO:HD2	1.56	0.71
1:A:121:THR:HG21	1:A:135:VAL:HB	1.74	0.70
4:D:286:ALA:HB2	4:D:378:SER:HA	1.72	0.69
4:D:133:TRP:CG	4:D:180:PRO:HD2	2.27	0.69
1:A:151:GLU:HB2	1:A:165:HIS:HB2	1.76	0.68
4:D:1:GLY:H2	4:D:2:PRO:CD	2.03	0.68
3:C:91:PRO:CG	3:C:150:ILE:HG23	2.23	0.68
4:D:105:GLY:HA3	4:D:114:ALA:HB2	1.76	0.68
4:D:139:GLY:H	4:D:420:LYS:HB2	1.59	0.68
4:D:202:ILE:HG23	4:D:389:ILE:HD11	1.74	0.68
4:D:16:GLN:HA	4:D:128:PRO:HD2	1.75	0.67
4:D:135:ASN:H	4:D:166:LEU:HD22	1.59	0.67
4:D:262:LEU:CD2	4:D:267:LYS:O	2.43	0.67
2:B:66:MET:HG2	2:B:103:LYS:HD3	1.76	0.66
4:D:16:GLN:HB2	4:D:394:PRO:HD2	1.75	0.66
4:D:1:GLY:N	4:D:2:PRO:HD3	2.07	0.66
1:A:662:ARG:HG3	1:A:668:VAL:HG12	1.77	0.65
4:D:434:LEU:HD13	4:D:440:ILE:HG21	1.78	0.63
1:A:404:THR:HG21	1:A:415:PRO:HD2	1.80	0.63
2:B:68:LEU:HD22	2:B:153:LEU:HD11	1.81	0.63
4:D:387:ALA:HB1	4:D:403:LEU:HD22	1.79	0.63
3:C:175:ASP:HA	3:C:387:SER:HB2	1.81	0.62
4:D:208:PHE:HZ	4:D:408:LEU:HD13	1.64	0.62
1:A:276:TYR:CD1	1:A:278:PHE:HD2	2.16	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:624:ASP:HA	1:A:646:ASN:HA	1.82	0.62
3:C:91:PRO:HD2	3:C:150:ILE:HG12	1.82	0.61
4:D:399:ALA:O	4:D:403:LEU:HG	2.01	0.61
1:A:119:LEU:HD13	1:A:141:LEU:HD12	1.82	0.61
1:A:362:ARG:HG3	1:A:751:THR:HB	1.81	0.61
4:D:425:VAL:HG21	4:D:430:TYR:HB3	1.83	0.60
3:C:206:LEU:HD12	3:C:211:TRP:CZ2	2.36	0.60
2:B:69:ARG:NH2	2:B:106:GLU:OE2	2.34	0.60
1:A:88:TYR:OH	1:A:90:ARG:NH2	2.33	0.60
3:C:66:SER:O	3:C:70:ARG:NH2	2.34	0.60
4:D:15:VAL:HG21	4:D:19:GLY:HA3	1.82	0.60
1:A:636:ARG:HB2	1:A:661:TYR:HD1	1.67	0.60
1:A:418:ILE:HG23	1:A:442:THR:HG23	1.83	0.59
1:A:419:MET:HB2	1:A:420:PRO:HD3	1.85	0.59
3:C:91:PRO:HG2	3:C:150:ILE:HG23	1.83	0.59
1:A:265:ALA:HB1	1:A:761:PHE:HA	1.85	0.59
1:A:498:ARG:NH1	1:A:540:GLN:OE1	2.36	0.58
1:A:301:ASP:N	1:A:301:ASP:OD1	2.35	0.58
1:A:259:LEU:HG	1:A:276:TYR:HD2	1.69	0.58
4:D:353:TRP:HB2	4:D:420:LYS:HG2	1.86	0.58
1:A:454:ARG:NH1	1:A:568:ASP:OD1	2.37	0.58
4:D:380:PRO:HG3	4:D:446:ASN:HB3	1.85	0.58
1:A:162:GLY:H	1:A:187:MET:HB3	1.67	0.57
3:C:88:SER:O	3:C:90:LYS:NZ	2.37	0.57
4:D:91:PRO:HG2	4:D:157:LYS:H	1.69	0.57
4:D:170:PHE:HB3	4:D:193:TYR:CE1	2.39	0.57
4:D:5:VAL:HG23	4:D:119:TRP:HB3	1.86	0.57
1:A:311:TYR:HB3	1:A:340:HIS:CD2	2.39	0.57
1:A:496:VAL:HG11	1:A:543:LEU:HD11	1.87	0.57
4:D:107:TRP:CD1	4:D:112:VAL:HG22	2.35	0.57
3:C:42:GLN:HB2	3:C:48:ARG:HG3	1.86	0.57
4:D:139:GLY:H	4:D:420:LYS:CB	2.18	0.56
4:D:189:ARG:HB3	4:D:193:TYR:CZ	2.40	0.56
4:D:372:THR:HA	4:D:377:PRO:HA	1.86	0.56
2:B:36:HIS:ND1	2:B:59:ASP:O	2.39	0.56
4:D:154:THR:HG23	4:D:156:ILE:HB	1.87	0.56
4:D:181:ASP:HA	4:D:390:ASN:HB3	1.86	0.56
4:D:208:PHE:CZ	4:D:408:LEU:HD13	2.41	0.56
4:D:132:ILE:HG23	4:D:182:ILE:HG12	1.86	0.56
4:D:167:GLU:HB3	4:D:185:TRP:HE1	1.70	0.55
4:D:270:LEU:HD21	4:D:349:ILE:HG13	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:196:THR:HA	1:A:216:SER:HA	1.89	0.55
4:D:255:ILE:HD11	4:D:371:PRO:HG2	1.88	0.55
1:A:88:TYR:HE1	1:A:90:ARG:HD2	1.71	0.55
1:A:664:ALA:HB1	1:A:665:PRO:HD2	1.88	0.55
4:D:389:ILE:HG23	4:D:399:ALA:HB3	1.89	0.55
4:D:402:PHE:HD1	4:D:406:TYR:HB2	1.73	0.54
1:A:144:ASP:N	1:A:144:ASP:OD1	2.41	0.54
4:D:369:VAL:HG11	4:D:449:LYS:NZ	2.23	0.54
1:A:625:TRP:HB2	1:A:645:TYR:HB3	1.89	0.53
1:A:765:GLN:HG3	1:A:787:TYR:CE2	2.44	0.53
1:A:287:THR:HG23	1:A:303:GLN:HG2	1.91	0.53
1:A:322:HIS:HA	1:A:329:ASN:HA	1.89	0.53
1:A:301:ASP:HB3	1:A:318:THR:HG23	1.89	0.53
4:D:417:ASN:HA	4:D:421:PRO:HA	1.89	0.53
1:A:447:ASP:OD1	1:A:448:GLY:N	2.40	0.53
1:A:552:SER:HB3	2:B:121:ASP:HB2	1.89	0.53
4:D:356:SER:HB2	4:D:421:PRO:HD3	1.89	0.53
1:A:751:THR:OG1	1:A:755:THR:OG1	2.27	0.52
2:B:40:GLY:O	2:B:44:GLN:NE2	2.35	0.52
1:A:255:LYS:HG3	1:A:258:LEU:HB2	1.91	0.52
1:A:387:ARG:O	1:A:389:ALA:N	2.42	0.52
1:A:421:ARG:NH2	1:A:442:THR:OG1	2.42	0.52
1:A:438:SER:OG	1:A:439:ALA:N	2.43	0.52
4:D:167:GLU:HG2	4:D:168:GLU:H	1.74	0.52
4:D:189:ARG:HB3	4:D:193:TYR:CE1	2.44	0.52
4:D:231:ILE:HB	4:D:385:LEU:HD23	1.92	0.52
4:D:22:ARG:HG2	4:D:83:TYR:HB3	1.92	0.52
1:A:371:ALA:HB2	2:B:88:ILE:HD13	1.92	0.52
4:D:133:TRP:CE3	4:D:179:GLY:HA2	2.45	0.52
4:D:133:TRP:CD2	4:D:180:PRO:HD2	2.45	0.52
1:A:248:PHE:HB3	1:A:795:ALA:HB2	1.92	0.52
4:D:294:TYR:HD1	4:D:298:LYS:HG2	1.75	0.52
1:A:750:VAL:HG13	2:B:86:ALA:HB2	1.92	0.51
1:A:92:VAL:H	1:A:111:ILE:HG22	1.76	0.51
1:A:235:PHE:HB3	1:A:240:LEU:HD22	1.92	0.51
4:D:135:ASN:HA	4:D:163:PRO:HD2	1.93	0.51
4:D:183:ILE:O	4:D:387:ALA:HA	2.11	0.51
4:D:233:VAL:HG13	4:D:384:VAL:HG23	1.93	0.51
1:A:93:ALA:HB2	1:A:110:VAL:HG12	1.93	0.51
3:C:91:PRO:CD	3:C:150:ILE:HG12	2.40	0.51
4:D:291:ALA:HB2	4:D:381:PHE:HZ	1.76	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:454:ARG:NH2	1:A:547:ASP:OD2	2.44	0.51
4:D:231:ILE:HA	4:D:408:LEU:HG	1.93	0.51
1:A:183:ARG:HB3	1:A:197:GLU:HB3	1.93	0.50
1:A:483:TYR:OH	1:A:568:ASP:OD1	2.29	0.50
1:A:641:SER:OG	1:A:642:SER:N	2.43	0.50
3:C:72:THR:HG23	3:C:85:GLN:HB3	1.93	0.50
4:D:129:PRO:HB3	4:D:157:LYS:C	2.31	0.50
4:D:401:GLU:OE1	4:D:401:GLU:C	2.50	0.50
1:A:498:ARG:HD2	1:A:500:LEU:HD13	1.94	0.50
1:A:260:VAL:HG23	1:A:275:PRO:HB2	1.94	0.50
2:B:110:LYS:HD2	2:B:111:PRO:HD2	1.93	0.50
1:A:466:SER:OG	2:B:53:GLN:NE2	2.40	0.50
1:A:371:ALA:O	1:A:373:ASN:ND2	2.43	0.50
1:A:219:ALA:HB1	1:A:799:LYS:HE3	1.92	0.50
4:D:231:ILE:HD11	4:D:407:LEU:HD23	1.93	0.50
4:D:416:VAL:HB	4:D:422:LEU:HD11	1.93	0.50
4:D:38:GLY:H	4:D:100:ALA:HB3	1.77	0.50
2:B:36:HIS:NE2	2:B:38:GLU:OE2	2.40	0.49
3:C:75:ARG:HB2	3:C:82:VAL:HG12	1.94	0.49
4:D:403:LEU:HA	4:D:407:LEU:HB2	1.94	0.49
1:A:637:PHE:H	1:A:661:TYR:HB2	1.76	0.49
4:D:131:VAL:CB	4:D:180:PRO:HB3	2.26	0.49
1:A:565:TYR:CE2	2:B:133:GLU:HA	2.47	0.49
4:D:353:TRP:HA	4:D:421:PRO:HD2	1.95	0.49
3:C:104:ILE:HD11	3:C:112:TYR:CD1	2.48	0.49
4:D:36:TYR:HB2	4:D:56:THR:HG22	1.93	0.49
3:C:25:CYS:HB3	3:C:82:VAL:HG22	1.95	0.49
4:D:222:TYR:HB3	4:D:227:ILE:HG12	1.95	0.49
1:A:358:SER:O	1:A:362:ARG:NH1	2.46	0.48
1:A:765:GLN:HG3	1:A:787:TYR:CD2	2.48	0.48
4:D:16:GLN:HB3	4:D:17:ALA:H	1.49	0.48
4:D:187:HIS:HE1	4:D:453:MET:HG3	1.78	0.48
4:D:62:TYR:CG	4:D:111:GLY:HA2	2.49	0.48
1:A:360:TYR:CZ	1:A:364:PHE:HE2	2.31	0.48
3:C:17:PRO:HB2	3:C:389:ASN:HD21	1.79	0.48
4:D:291:ALA:HB2	4:D:381:PHE:CZ	2.48	0.48
1:A:263:VAL:HG23	1:A:273:SER:HB3	1.95	0.48
4:D:183:ILE:HD11	4:D:185:TRP:HB2	1.95	0.48
1:A:91:ILE:HG22	1:A:93:ALA:H	1.79	0.47
4:D:16:GLN:HG2	4:D:128:PRO:HG2	1.96	0.47
1:A:153:LEU:HD21	1:A:155:TYR:CZ	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:131:VAL:O	4:D:181:ASP:HB2	2.14	0.47
1:A:146:THR:O	1:A:146:THR:OG1	2.32	0.47
2:B:96:THR:HG22	2:B:115:SER:HB2	1.96	0.47
1:A:139:PHE:CE1	1:A:153:LEU:HD22	2.49	0.47
1:A:502:VAL:HG22	1:A:535:ILE:HG12	1.95	0.47
1:A:267:SER:HB3	1:A:759:ALA:HA	1.96	0.47
1:A:276:TYR:CE1	1:A:278:PHE:HD2	2.33	0.47
1:A:767:LYS:HG2	1:A:768:ASP:OD1	2.15	0.47
4:D:355:TRP:HA	4:D:358:ILE:HD12	1.95	0.47
1:A:751:THR:HG1	1:A:755:THR:HG1	1.54	0.47
2:B:74:SER:HG	2:B:96:THR:HG1	1.61	0.47
3:C:91:PRO:CD	3:C:150:ILE:HG23	2.45	0.47
1:A:577:SER:HA	1:A:601:LYS:HA	1.96	0.46
1:A:765:GLN:OE1	1:A:770:SER:OG	2.27	0.46
4:D:62:TYR:HB3	4:D:112:VAL:HG23	1.97	0.46
3:C:176:ILE:HD11	3:C:178:PHE:CE1	2.50	0.46
1:A:668:VAL:HG11	1:A:782:VAL:HG21	1.97	0.46
4:D:40:PHE:HB2	4:D:98:TYR:HB2	1.97	0.46
4:D:117:GLU:HB3	4:D:119:TRP:CE2	2.50	0.46
4:D:253:GLU:O	4:D:256:PRO:HD2	2.15	0.46
1:A:249:PRO:HD2	1:A:794:SER:OG	2.16	0.46
4:D:9:GLU:H	4:D:121:GLN:HB3	1.80	0.46
4:D:231:ILE:HB	4:D:385:LEU:HB3	1.96	0.46
4:D:152:LYS:HE2	4:D:152:LYS:HB3	1.74	0.46
4:D:427:LEU:HD13	4:D:427:LEU:HA	1.80	0.46
1:A:90:ARG:HE	1:A:91:ILE:H	1.63	0.46
3:C:54:ILE:HD12	3:C:61:THR:HG22	1.97	0.46
1:A:345:THR:OG1	1:A:346:LEU:HD12	2.16	0.46
4:D:323:LYS:HA	4:D:323:LYS:HD3	1.63	0.46
1:A:782:VAL:HG23	1:A:783:ALA:N	2.31	0.45
3:C:43:ALA:HA	3:C:95:ALA:HA	1.97	0.45
4:D:40:PHE:HA	4:D:50:GLY:CA	2.42	0.45
1:A:156:ASN:O	1:A:157:LEU:HG	2.17	0.45
4:D:79:LYS:HG2	4:D:83:TYR:HE1	1.82	0.45
4:D:242:LYS:HB3	4:D:242:LYS:HE3	1.72	0.45
4:D:31:ILE:H	4:D:31:ILE:HG13	1.35	0.45
1:A:681:ILE:HG22	1:A:682:TYR:HB3	1.99	0.45
4:D:17:ALA:HB1	4:D:156:ILE:HG12	1.97	0.45
3:C:125:VAL:HB	3:C:174:PRO:HA	1.99	0.45
4:D:37:LEU:HB3	4:D:101:ALA:H	1.82	0.45
4:D:434:LEU:HD22	4:D:440:ILE:HD13	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:278:PHE:O	1:A:278:PHE:CD1	2.70	0.45
4:D:390:ASN:O	4:D:396:LYS:HB3	2.17	0.45
4:D:401:GLU:O	4:D:401:GLU:CD	2.51	0.45
1:A:483:TYR:HB2	1:A:496:VAL:HG22	1.99	0.44
1:A:625:TRP:N	1:A:645:TYR:O	2.43	0.44
1:A:723:LYS:HD3	3:C:103:ASP:O	2.17	0.44
4:D:135:ASN:N	4:D:166:LEU:HD22	2.29	0.44
1:A:791:HIS:CE1	1:A:797:ARG:HH22	2.35	0.44
4:D:79:LYS:C	4:D:81:THR:H	2.21	0.44
1:A:139:PHE:CZ	1:A:153:LEU:HD13	2.53	0.44
4:D:239:ILE:HG23	4:D:367:VAL:HG22	1.98	0.44
1:A:547:ASP:HB2	2:B:128:LEU:HB3	1.98	0.44
4:D:21:LEU:HD13	4:D:21:LEU:HA	1.73	0.44
4:D:283:LEU:HD23	4:D:283:LEU:HA	1.74	0.44
1:A:356:SER:OG	1:A:357:ASP:N	2.49	0.44
1:A:506:ASP:OD1	1:A:507:GLY:N	2.51	0.44
1:A:143:GLN:HG3	1:A:144:ASP:OD1	2.17	0.44
4:D:357:ASN:HB2	4:D:420:LYS:HZ1	1.83	0.44
4:D:367:VAL:HB	4:D:439:ARG:HA	1.98	0.44
1:A:210:TRP:CH2	1:A:769:LEU:HD21	2.52	0.44
3:C:124:LEU:HD22	3:C:124:LEU:HA	1.77	0.44
4:D:144:ALA:O	4:D:148:LYS:N	2.47	0.44
4:D:187:HIS:HB2	4:D:455:ASN:HB3	2.00	0.44
4:D:362:LYS:HB2	4:D:362:LYS:HE2	1.60	0.44
2:B:150:VAL:O	2:B:154:THR:HG23	2.18	0.43
3:C:386:ALA:O	3:C:388:PRO:HD3	2.18	0.43
3:C:75:ARG:HA	3:C:82:VAL:HA	1.99	0.43
4:D:68:LYS:HB2	4:D:68:LYS:HE2	1.42	0.43
4:D:184:PHE:HA	4:D:386:SER:O	2.18	0.43
4:D:39:TRP:O	4:D:50:GLY:HA3	2.18	0.43
3:C:288:TYR:HB2	3:C:294:ASP:HB2	2.01	0.43
4:D:189:ARG:N	4:D:189:ARG:HD3	2.34	0.43
4:D:19:GLY:O	4:D:89:LEU:HB2	2.18	0.43
3:C:292:LYS:NZ	3:C:294:ASP:HB2	2.34	0.43
3:C:64:ALA:HB3	3:C:67:VAL:HG22	2.01	0.43
4:D:374:LYS:HB3	4:D:374:LYS:HE3	1.59	0.43
4:D:385:LEU:HD12	4:D:385:LEU:HA	1.75	0.43
1:A:298:ALA:O	1:A:321:PRO:HD2	2.19	0.43
2:B:47:LEU:HD23	2:B:47:LEU:HA	1.94	0.43
4:D:167:GLU:HG2	4:D:168:GLU:N	2.33	0.43
4:D:322:ILE:HD13	4:D:474:ALA:HA	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:514:ASN:O	1:A:517:LEU:HD23	2.19	0.42
1:A:667:LYS:HG2	1:A:704:PRO:HD2	2.01	0.42
4:D:63:TYR:CE1	4:D:72:THR:HA	2.54	0.42
4:D:262:LEU:HD23	4:D:267:LYS:HB2	1.99	0.42
1:A:358:SER:HB3	1:A:406:ALA:H	1.84	0.42
1:A:725:ILE:HG22	1:A:726:GLU:HG3	2.01	0.42
1:A:462:LYS:HE3	1:A:462:LYS:HB3	1.54	0.42
1:A:242:TYR:HB3	4:D:107:TRP:HB3	2.02	0.42
1:A:308:ARG:HG3	1:A:311:TYR:CZ	2.55	0.42
4:D:206:LYS:HA	4:D:206:LYS:HD2	1.64	0.42
4:D:232:ALA:HB1	4:D:425:VAL:HA	2.01	0.42
4:D:183:ILE:HG12	4:D:193:TYR:HE2	1.85	0.42
4:D:425:VAL:HG11	4:D:430:TYR:HD2	1.84	0.42
1:A:220:ASP:OD1	1:A:221:ARG:N	2.52	0.42
1:A:274:VAL:HG13	1:A:274:VAL:O	2.20	0.42
3:C:37:MET:HG3	3:C:82:VAL:HG11	2.02	0.42
4:D:385:LEU:HD21	4:D:422:LEU:HD22	2.02	0.42
1:A:221:ARG:HG2	1:A:799:LYS:NZ	2.35	0.42
1:A:255:LYS:HA	1:A:255:LYS:HD2	1.86	0.42
1:A:647:GLN:OE1	1:A:647:GLN:N	2.44	0.42
4:D:413:LEU:HD13	4:D:413:LEU:HA	1.72	0.42
1:A:89:THR:HA	1:A:113:GLU:HB3	2.00	0.42
2:B:36:HIS:CE1	2:B:60:ASP:HA	2.54	0.42
4:D:202:ILE:HG22	4:D:400:LYS:HG2	2.02	0.42
4:D:434:LEU:HD23	4:D:434:LEU:HA	1.83	0.42
1:A:517:LEU:HB2	1:A:522:VAL:HG23	2.01	0.42
4:D:271:MET:HB2	4:D:345:THR:HG21	2.02	0.42
4:D:282:PRO:HA	4:D:379:LYS:O	2.18	0.42
4:D:463:TRP:HA	4:D:463:TRP:CE3	2.54	0.42
1:A:661:TYR:CZ	1:A:663:PRO:HG3	2.55	0.42
3:C:37:MET:HB2	3:C:54:ILE:HG22	2.02	0.42
4:D:199:LEU:HA	4:D:199:LEU:HD22	1.77	0.42
4:D:403:LEU:HG	4:D:403:LEU:H	1.74	0.42
1:A:314:GLN:HE21	1:A:314:GLN:HB2	1.61	0.41
1:A:643:ILE:HG13	1:A:655:TYR:HB3	2.01	0.41
4:D:165:LYS:O	4:D:169:LYS:HB2	2.20	0.41
1:A:148:ILE:HG23	1:A:167:VAL:HG13	2.01	0.41
3:C:56:SER:HA	3:C:75:ARG:NH1	2.36	0.41
1:A:767:LYS:HG3	1:A:788:ILE:HG21	2.01	0.41
4:D:238:LEU:HG	4:D:371:PRO:HD3	2.01	0.41
1:A:239:PRO:HG3	4:D:60:HIS:CE1	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:257:GLY:H	1:A:278:PHE:HA	1.86	0.41
1:A:379:ARG:NH1	1:A:398:SER:OG	2.53	0.41
1:A:707:ARG:H	1:A:707:ARG:HG2	1.51	0.41
4:D:52:ALA:HB1	4:D:73:VAL:HG22	2.02	0.41
4:D:276:GLU:HB2	4:D:279:PHE:HB2	2.03	0.41
4:D:433:GLU:H	4:D:433:GLU:HG3	1.75	0.41
1:A:105:ARG:HG3	1:A:124:ALA:O	2.20	0.41
4:D:306:VAL:HA	4:D:484:LEU:HD13	2.03	0.41
1:A:203:CYS:HB2	1:A:737:CYS:HB3	1.53	0.41
1:A:704:PRO:HA	1:A:710:SER:HA	2.03	0.41
4:D:183:ILE:HG12	4:D:193:TYR:CE2	2.56	0.41
4:D:356:SER:CB	4:D:421:PRO:HD3	2.51	0.41
1:A:184:THR:O	1:A:196:THR:OG1	2.38	0.41
2:B:128:LEU:HD23	2:B:128:LEU:HA	1.87	0.41
4:D:434:LEU:HB3	4:D:440:ILE:HG21	2.02	0.41
1:A:242:TYR:CE1	4:D:58:TYR:HD1	2.39	0.41
4:D:75:LEU:HD13	4:D:75:LEU:HA	1.90	0.41
4:D:132:ILE:HB	4:D:160:VAL:HG13	2.03	0.41
1:A:256:SER:HB2	1:A:279:ASN:CB	2.45	0.41
1:A:289:ALA:HB3	1:A:301:ASP:O	2.20	0.41
4:D:263:LYS:HD3	4:D:263:LYS:HA	1.68	0.41
1:A:192:ARG:HG2	1:A:220:ASP:OD1	2.20	0.40
1:A:404:THR:HG21	1:A:414:GLU:HA	2.04	0.40
4:D:401:GLU:OE1	4:D:401:GLU:CA	2.69	0.40
1:A:147:LEU:HD21	1:A:149:ARG:HH22	1.86	0.40
1:A:359:GLY:HA2	1:A:362:ARG:NH1	2.36	0.40
4:D:183:ILE:HG13	4:D:184:PHE:N	2.35	0.40
4:D:451:GLU:H	4:D:451:GLU:HG3	1.67	0.40
1:A:276:TYR:CE1	1:A:278:PHE:CD2	3.09	0.40
4:D:270:LEU:HA	4:D:347:MET:O	2.21	0.40
1:A:407:ASN:OD1	1:A:408:GLN:N	2.50	0.40
1:A:800:ARG:HE	1:A:801:PRO:HD2	1.87	0.40
3:C:287:LYS:HD3	3:C:287:LYS:HA	1.88	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	694/801 (87%)	570 (82%)	120 (17%)	4 (1%)	22	50
2	B	126/165 (76%)	118 (94%)	8 (6%)	0	100	100
3	C	477/520 (92%)	457 (96%)	17 (4%)	3 (1%)	22	50
4	D	487/526 (93%)	464 (95%)	21 (4%)	2 (0%)	30	60
All	All	1784/2012 (89%)	1609 (90%)	166 (9%)	9 (0%)	27	54

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	261	PRO
3	C	390	LYS
4	D	163	PRO
1	A	207	ASP
1	A	265	ALA
4	D	294	TYR
1	A	388	ALA
3	C	285	ALA
3	C	294	ASP

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	556/632 (88%)	509 (92%)	47 (8%)	8	29
2	B	108/136 (79%)	108 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	C	384/409 (94%)	361 (94%)	23 (6%)	16	41
4	D	387/409 (95%)	236 (61%)	151 (39%)	0	0
All	All	1435/1586 (90%)	1214 (85%)	221 (15%)	4	9

All (221) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	99	GLN
1	A	142	GLN
1	A	159	GLN
1	A	176	ARG
1	A	177	ARG
1	A	178	LEU
1	A	203	CYS
1	A	255	LYS
1	A	256	SER
1	A	259	LEU
1	A	260	VAL
1	A	261	PRO
1	A	263	VAL
1	A	264	SER
1	A	270	VAL
1	A	285	ASP
1	A	287	THR
1	A	292	ILE
1	A	301	ASP
1	A	312	SER
1	A	315	THR
1	A	393	LEU
1	A	462	LYS
1	A	463	TRP
1	A	473	ARG
1	A	479	HIS
1	A	512	GLU
1	A	524	GLN
1	A	562	ASN
1	A	576	LEU
1	A	577	SER
1	A	580	VAL
1	A	582	SER
1	A	584	ILE

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Mol	Chain	Res	Type
1	A	600	GLN
1	A	657	VAL
1	A	661	TYR
1	A	662	ARG
1	A	669	LEU
1	A	670	ASN
1	A	693	LYS
1	A	709	LEU
1	A	710	SER
1	A	712	VAL
1	A	713	VAL
1	A	736	SER
1	A	774	ARG
3	C	14	LEU
3	C	16	GLN
3	C	55	ASN
3	C	59	ASN
3	C	99	CYS
3	C	121	VAL
3	C	124	LEU
3	C	158	ASP
3	C	176	ILE
3	C	200	LYS
3	C	254	LYS
3	C	287	LYS
3	C	288	TYR
3	C	289	GLU
3	C	293	TYR
3	C	324	ASP
3	C	356	LYS
3	C	375	PHE
3	C	387	SER
3	C	412	LYS
3	C	442	GLN
3	C	445	GLU
3	C	475	ASP
4	D	3	SER
4	D	4	GLN
4	D	5	VAL
4	D	7	LEU
4	D	9	GLU
4	D	10	SER

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Mol	Chain	Res	Type
4	D	15	VAL
4	D	16	GLN
4	D	21	LEU
4	D	22	ARG
4	D	24	SER
4	D	25	CYS
4	D	30	SER
4	D	31	ILE
4	D	33	SER
4	D	34	ILE
4	D	36	TYR
4	D	37	LEU
4	D	46	LYS
4	D	47	GLU
4	D	48	ARG
4	D	54	LEU
4	D	61	THR
4	D	62	TYR
4	D	65	ASP
4	D	66	SER
4	D	68	LYS
4	D	72	THR
4	D	73	VAL
4	D	75	LEU
4	D	76	ASP
4	D	79	LYS
4	D	81	THR
4	D	82	VAL
4	D	84	LEU
4	D	86	MET
4	D	92	GLU
4	D	96	LEU
4	D	104	SER
4	D	110	LEU
4	D	115	THR
4	D	117	GLU
4	D	125	VAL
4	D	126	THR
4	D	127	VAL
4	D	130	LEU
4	D	131	VAL
4	D	133	TRP

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Mol	Chain	Res	Type
4	D	134	ILE
4	D	143	LEU
4	D	149	LYS
4	D	151	GLU
4	D	152	LYS
4	D	156	ILE
4	D	159	THR
4	D	160	VAL
4	D	166	LEU
4	D	170	PHE
4	D	182	ILE
4	D	183	ILE
4	D	184	PHE
4	D	187	HIS
4	D	188	ASP
4	D	189	ARG
4	D	195	GLN
4	D	196	SER
4	D	198	LEU
4	D	199	LEU
4	D	202	ILE
4	D	203	THR
4	D	221	ARG
4	D	233	VAL
4	D	237	SER
4	D	238	LEU
4	D	239	ILE
4	D	241	ASN
4	D	242	LYS
4	D	243	ASP
4	D	244	LEU
4	D	247	ASN
4	D	250	LYS
4	D	251	THR
4	D	252	TRP
4	D	262	LEU
4	D	263	LYS
4	D	268	SER
4	D	270	LEU
4	D	276	GLU
4	D	283	LEU
4	D	287	ASP

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Mol	Chain	Res	Type
4	D	293	LYS
4	D	301	ILE
4	D	302	LYS
4	D	304	VAL
4	D	308	ASN
4	D	318	LEU
4	D	321	LEU
4	D	323	LYS
4	D	325	LYS
4	D	327	MET
4	D	328	ASN
4	D	330	ASP
4	D	332	ASP
4	D	333	TYR
4	D	334	SER
4	D	342	LYS
4	D	350	ASN
4	D	362	LYS
4	D	369	VAL
4	D	370	LEU
4	D	374	LYS
4	D	376	GLN
4	D	378	SER
4	D	379	LYS
4	D	381	PHE
4	D	384	VAL
4	D	385	LEU
4	D	386	SER
4	D	389	ILE
4	D	393	SER
4	D	395	ASN
4	D	396	LYS
4	D	400	LYS
4	D	401	GLU
4	D	403	LEU
4	D	408	LEU
4	D	409	THR
4	D	410	ASP
4	D	413	LEU
4	D	416	VAL
4	D	418	LYS
4	D	420	LYS

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Mol	Chain	Res	Type
4	D	422	LEU
4	D	427	LEU
4	D	429	SER
4	D	437	ASP
4	D	443	THR
4	D	445	GLU
4	D	448	GLN
4	D	451	GLU
4	D	452	ILE
4	D	455	ASN
4	D	456	ILE
4	D	468	THR
4	D	479	THR
4	D	480	VAL
4	D	481	ASP
4	D	482	GLU
4	D	484	LEU
4	D	485	LYS
4	D	488	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	201	ASN
1	A	314	GLN
1	A	434	GLN
1	A	581	GLN
3	C	59	ASN
3	C	100	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

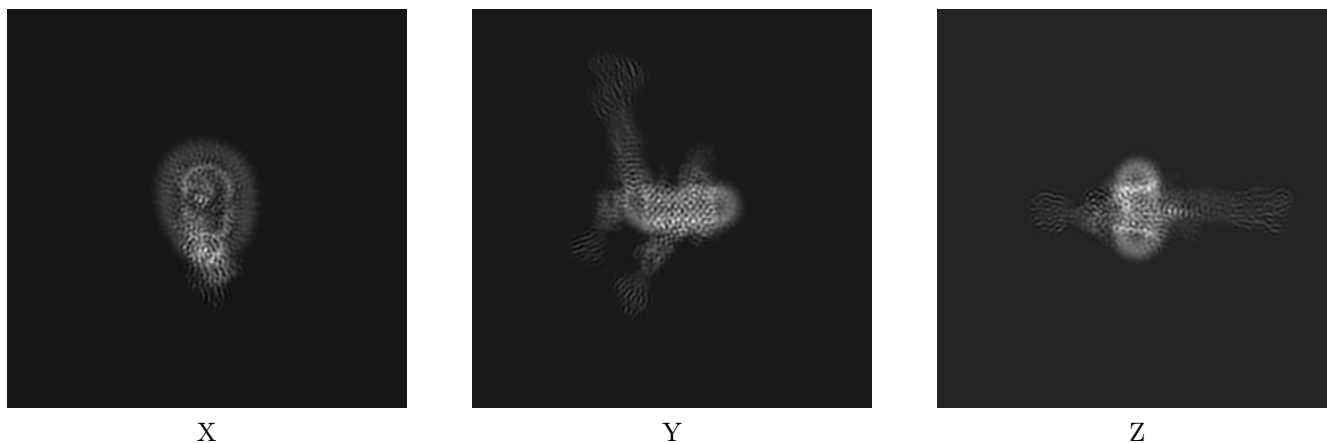
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-12990. 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 [i](#)

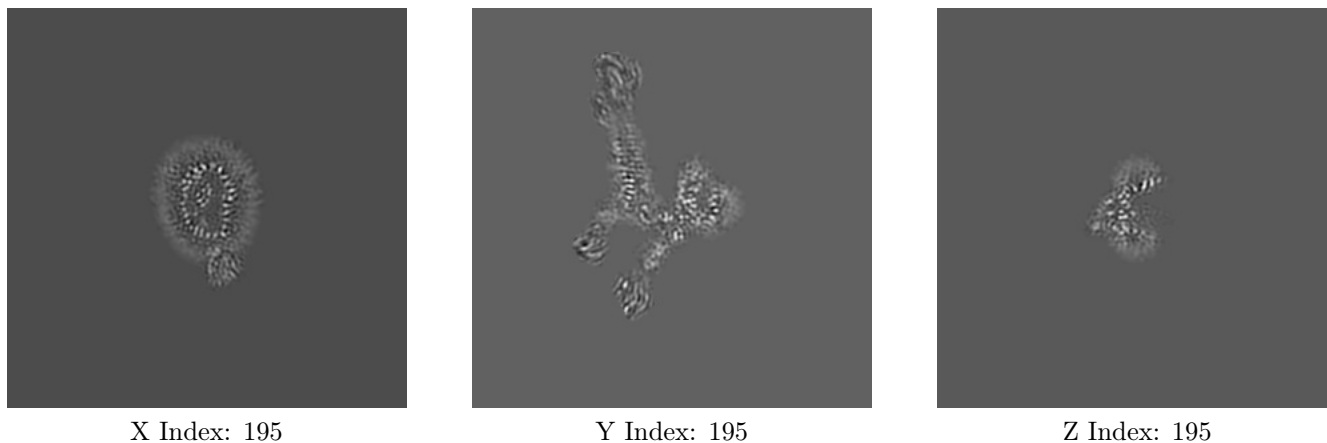
6.1.1 Primary map



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

6.2 Central slices [i](#)

6.2.1 Primary map



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

6.3 Largest variance slices [\(i\)](#)

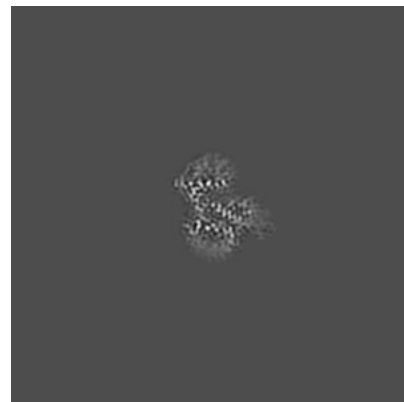
6.3.1 Primary map



X Index: 185



Y Index: 189



Z Index: 216

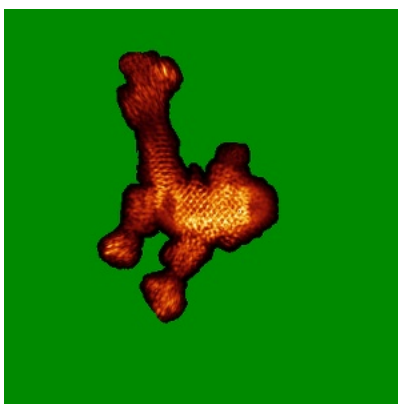
The images above show the largest variance slices of the map in three orthogonal directions.

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

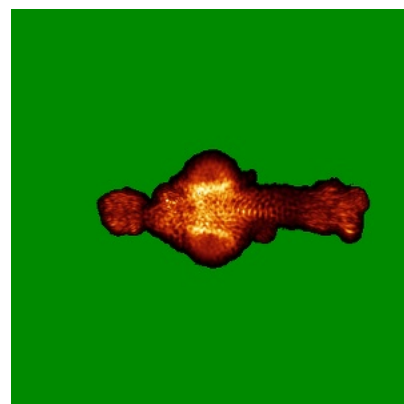
6.4.1 Primary map



X



Y

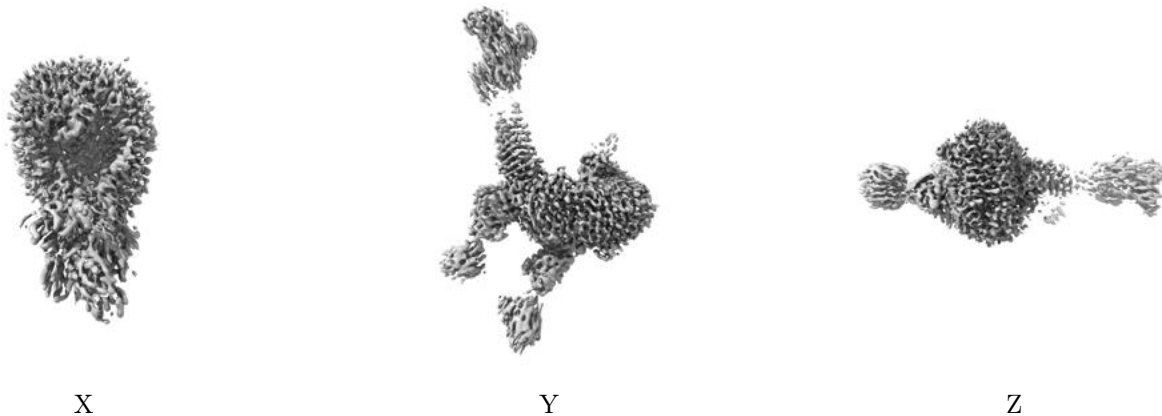


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.45. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

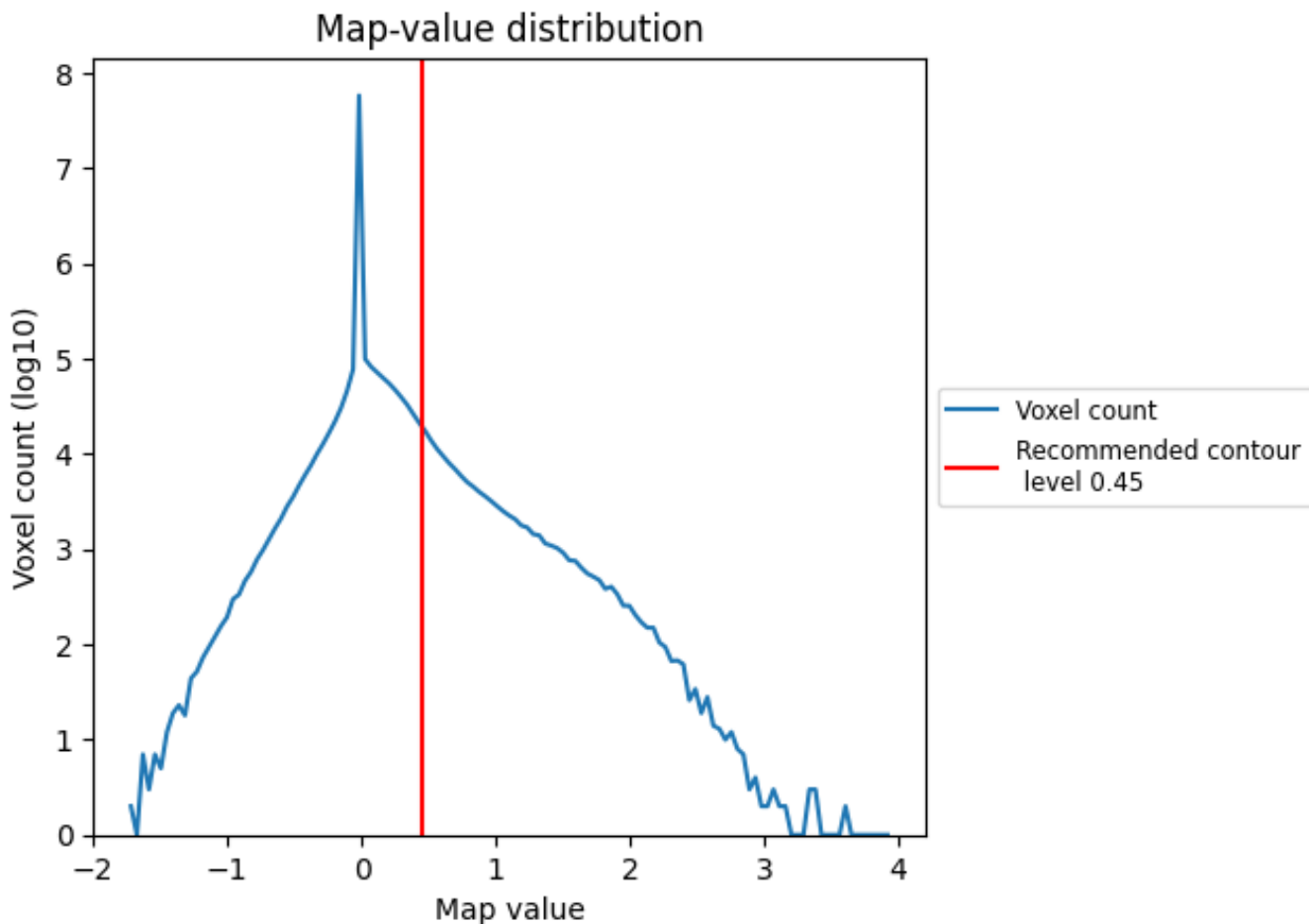
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

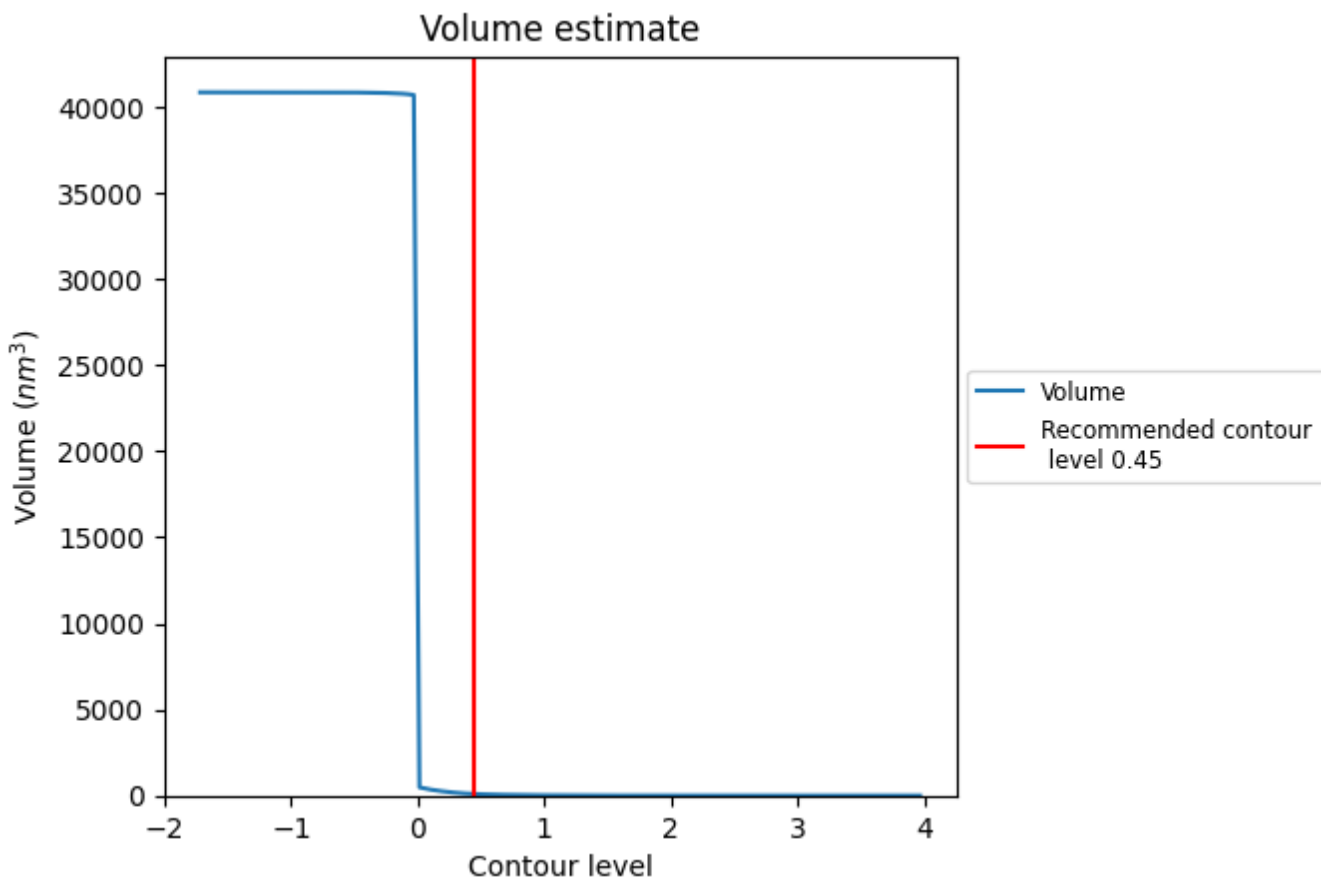
This section contains the results of statistical analysis of the map.

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.

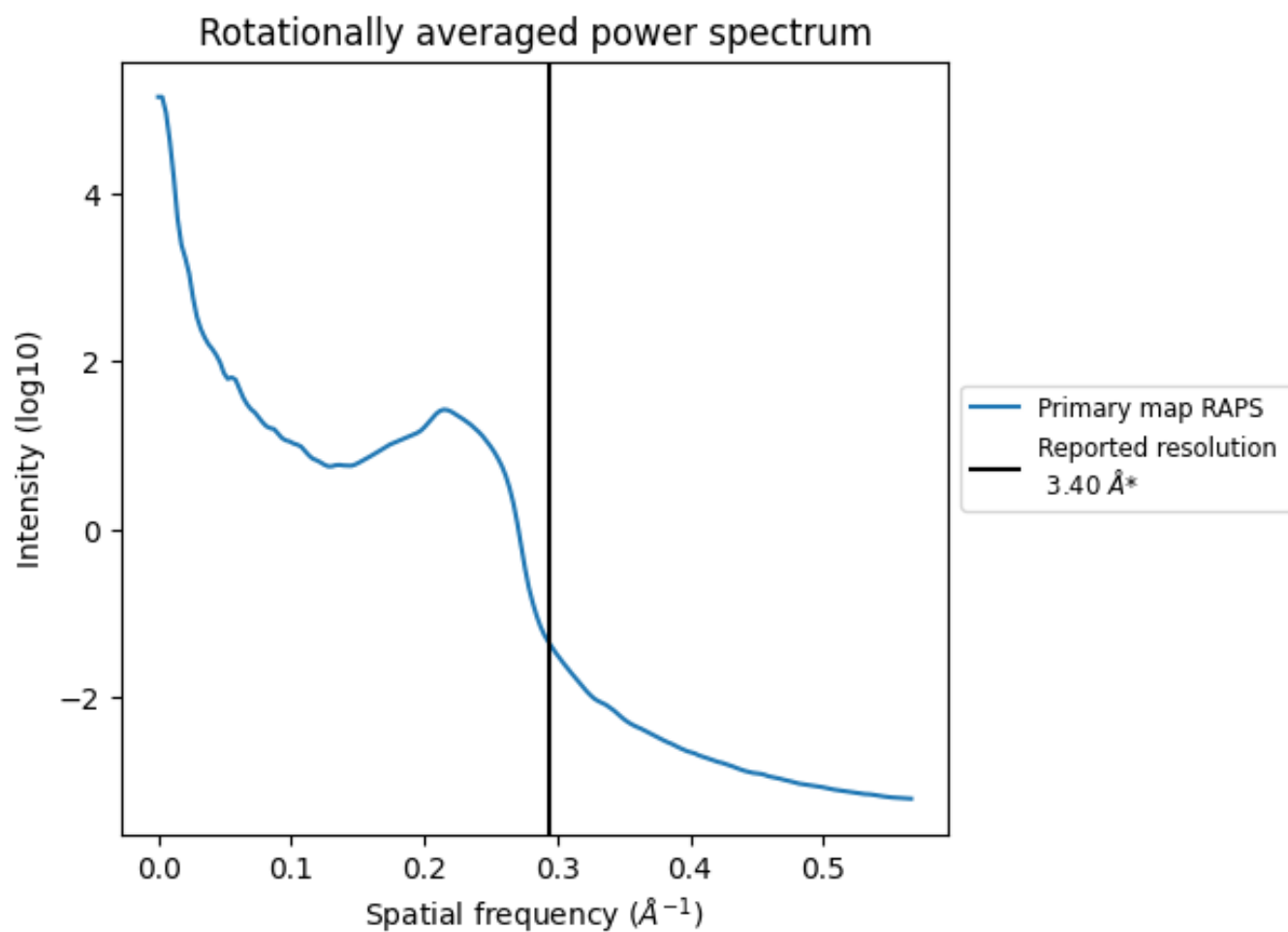
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 91 nm^3 ; this corresponds to an approximate mass of 82 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 0.294 Å⁻¹

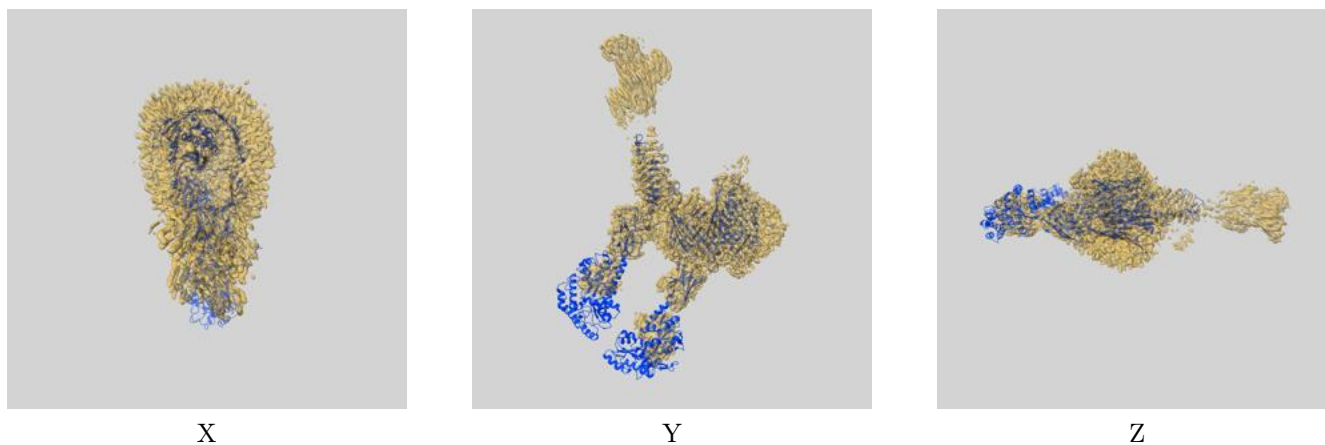
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

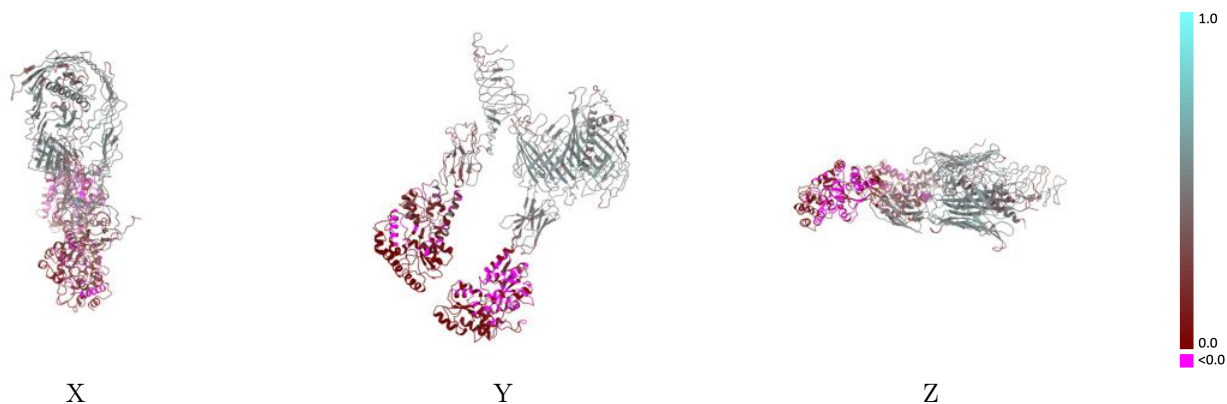
This section contains information regarding the fit between EMDB map EMD-12990 and PDB model 7OMM. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay [i](#)



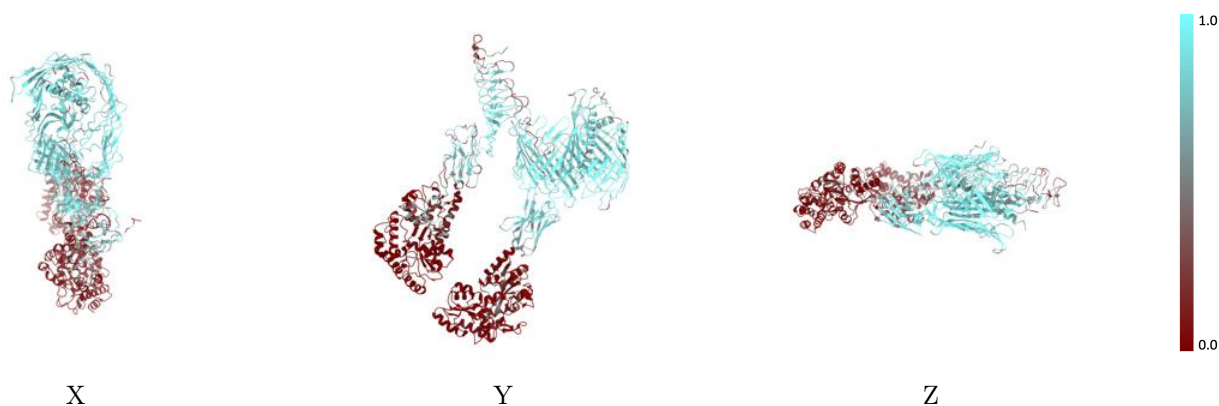
The images above show the 3D surface view of the map at the recommended contour level 0.45 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



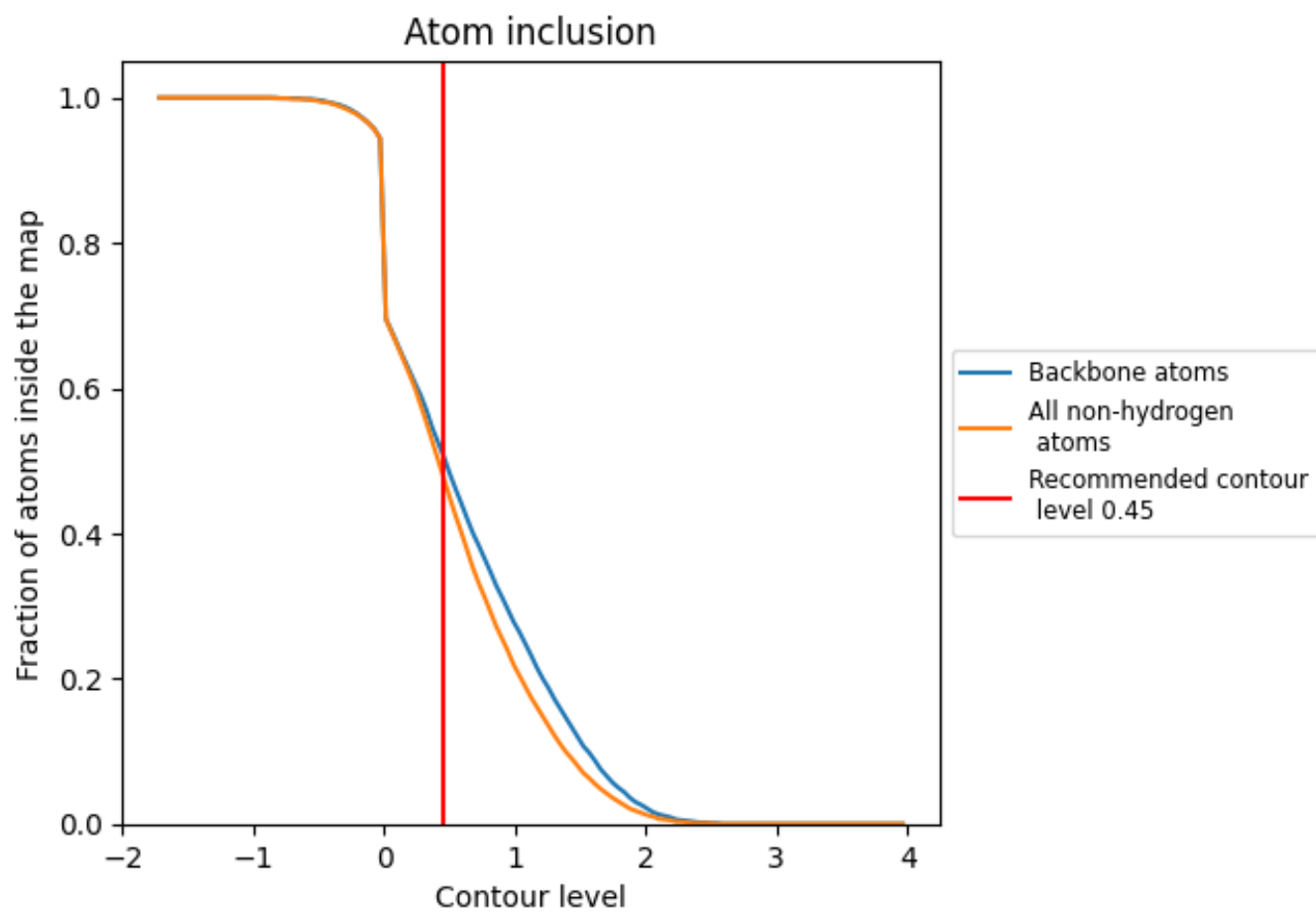
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.45).

9.4 Atom inclusion [i](#)



At the recommended contour level, 51% of all backbone atoms, 48% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.45) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4780	0.2830
A	0.7840	0.4720
B	0.7480	0.4570
C	0.2330	0.1050
D	0.2110	0.1380

