WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Feb 22, 2026 – 10:20 PM JST

PDB ID	:	9LXP / pdb_00009lxp
EMDB ID	:	EMD-63488
Title	:	A Cryo-EM structure of LA-PTH-PTH1R-B-arrestin1 complex (state 2 conformation)
Authors	:	Zhao, L.; Yuan, Q.
Deposited on	:	2025-02-19
Resolution	:	3.20 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.dev132
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.48.1

1   Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.20 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	Percentile Ranks	Value
Clashscore		10
Ramachandran outliers		0.1%
Sidechain outliers		0.7%

Worse   *Better*

▌ Percentile relative to all structures

◻ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.383

Worse   *Better*

▌ Percentile relative to all EM structures

◻ Percentile relative to EM structures of similar resolution

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	15020 (2.70 - 3.70)

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

Mol	Chain	Length	Quality of chain
1	B	374	7% 82% 11% 7%
2	C	230	10% 80% 10% 11%
3	E	215	20% 90% 6% ·
4	L	36	8% 56% 33% · 8%

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Mol	Chain	Length	Quality of chain
5	R	482	14% 46% 16% · 36%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 8509 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 Beta-arrestin-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	346	Total	C	N	O	S	0	0
			2715	1735	470	497	13		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	3	MET	-	initiating methionine	UNP P49407
B	14	CYS	PRO	conflict	UNP P49407
B	81	CYS	VAL	conflict	UNP P49407
B	279	CYS	ALA	conflict	UNP P49407

- Molecule 2 is a protein called Fab30H.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	205	Total	C	N	O	S	0	0
			1537	978	254	299	6		

- Molecule 3 is a protein called Fab30L.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	207	Total	C	N	O	S	0	0
			1527	960	255	307	5		

- Molecule 4 is a protein called LA-PTH.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	L	33	Total	C	N	O	S	0	0
			278	177	57	43	1		

- Molecule 5 is a protein called Parathyroid hormone/parathyroid hormone-related peptide receptor.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	N	O	P	S		
5	R	308	2452	1617	390	424	4	17	0	0

There is a discrepancy between the modelled and reference sequences:

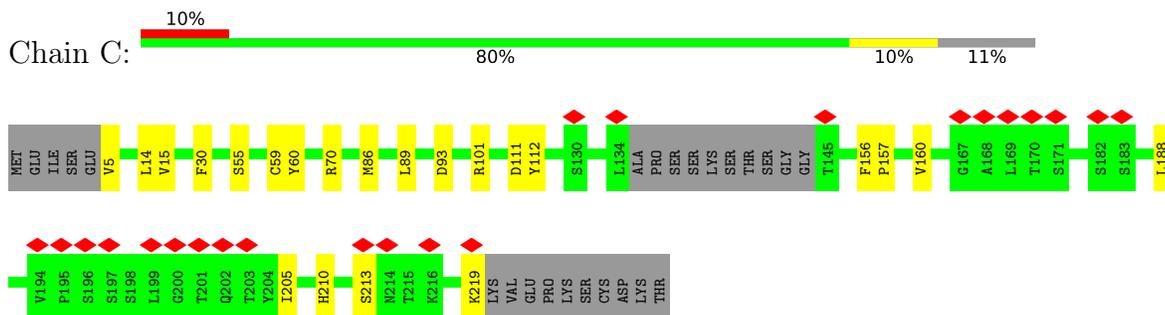| Chain	Residue	Modelled	Actual	Comment	Reference
R	508	GLY	-	expression tag	UNP Q03431

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.
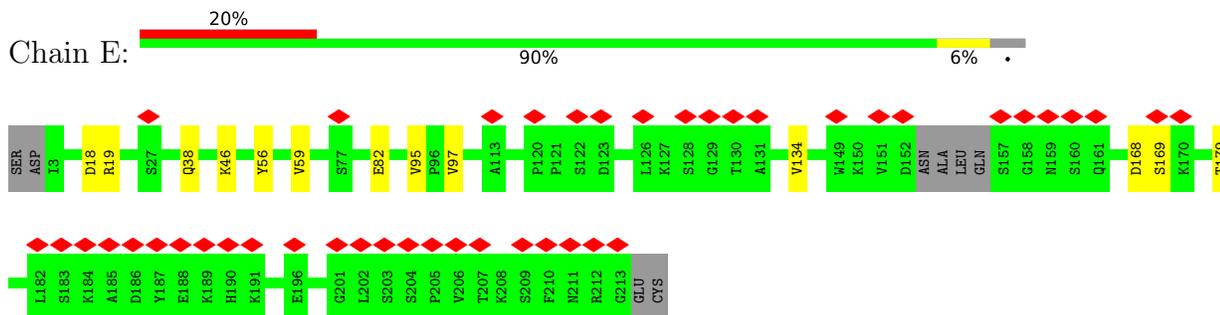
- Molecule 1: Beta-arrestin-1

Chain B:

- Molecule 2: Fab30H

Chain C:

- Molecule 3: Fab30L

Chain E:

- Molecule 4: LA-PTH

8%

Chain L: 56% 33% • 8%

A1 V2 Q6 L7 Q10 R11 A12 Q16 D17 A18 R19 R20 R21 L24 I28 A29 E30 I31 H32 T33 ALA GLU ILE

• Molecule 5: Parathyroid hormone/parathyroid hormone-related peptide receptor

14%

Chain R: 46% 16% • 36%

ASP ALA ASP ASP V31 M32 T33 K34 E35 L40 L41 H42 R43 A44 GLN ALA GLN CYS GLU LYS ARG LEU LYS GLU VAL LEU GLN ARG PRO ALA SER ILE MET GLU SER ASP LYS GLY TRP THR SER ALA SER THR SER GLY LYS PRO ARG LYS ASP LYS ALA SER GLY LYS LEU TYR PRO

GLU SER GLU GLU ASP LYS GLU ALA PRO THR GLY SER ARG TYR ARG GLY ARG PRO CYS LEU PRO GLU GLU TRP ASP HIS ILE LEU CYS TRP PRO LEU GLY ALA PRO GLY GLU VAL VAL ALA VAL PRO C131 P132 D133 Y134 I135 F138 ASN HIS LYS GLY HIS ALA TYR ARG ARG CYS ASP ARG

ASN GLY SER TRP GLU LEU VAL PRO GLY HIS ASN ARG THR TRP ALA N166 Y167 S168 E169 C170 V171 K172 F173 L174 T175 N176 E177 L187 G188 Y191 L199 L202 T203 V206 L207 I208 L209 A210 Y211 F212 R213 R214 L215 R219 N220 M231 V239 V243 G247 ALA

THR LEU ASP GLU ALA GLU ARG LEU THR GLU GLU GLU LEU ARG ALA ILE ALA GLN ALA PRO PRO PRO ALA THR ALA A275 A276 G277 Y278 C281 Y290 F291 L292 A293 T294 N295 Y296 Y297 W298 I299 L300 L309 M312 A313 F314 F315 S316 E317 K318 K319 W329 V334 F335

V336 A337 V338 W339 V340 S341 V342 R343 D353 L354 S355 S356 G357 N358 K359 K360 W361 I362 I363 Q364 V365 P366 I367 L368 A369 S370 I371 V372 L373 N374 F375 I376 N380 I381 V382 R383 V384 L385 K388 LEU ARG GLU THR N393 A394 G395 R396 C397 D398 T399 R400 Q401 Q402 Y403 R404 K408

S409 T410 L411 L416 I422 V423 F424 M425 A426 T427 P428 Y429 T430 E431 V432 S433 G434 W437 Q440 M441 M445 A456 V466 Q467 A468 E469 I470 K471 K472 S473 TRP SER ARG TRP THR LEU ALA LEU ASP PHE LYS ARG LYS ALA ARG SER GLY SER SER SER TYR SER TYR

GLY PRO MET V500 S501 H502 T503 S504 V505 T506 N507 G508

4　Experimental information　ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	101089	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	8000	Depositor
Maximum defocus (nm)	18000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	3.699	Depositor
Minimum map value	-1.481	Depositor
Average map value	0.006	Depositor
Map value standard deviation	0.034	Depositor
Recommended contour level	0.273	Depositor
Map size (Å)	321.2, 321.2, 321.2	wwPDB
Map dimensions	440, 440, 440	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.73, 0.73, 0.73	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

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

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	B	0.31	0/2773	0.59	4/3764 (0.1%)
2	C	0.10	0/1577	0.26	0/2155
3	E	0.11	0/1561	0.29	0/2130
4	L	0.84	0/283	1.49	2/379 (0.5%)
5	R	0.55	0/2471	0.91	2/3353 (0.1%)
All	All	0.38	0/8665	0.67	8/11781 (0.1%)

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	70	VAL	CA-CB-CG1	9.42	126.41	110.40
5	R	432	VAL	N-CA-C	-7.11	104.91	111.67
4	L	7	LEU	CA-C-N	6.08	128.43	120.28
4	L	7	LEU	C-N-CA	6.08	128.43	120.28
5	R	425	MET	CB-CA-C	-5.99	109.68	116.63
1	B	69	ASP	CA-C-N	5.10	128.22	120.77
1	B	69	ASP	C-N-CA	5.10	128.22	120.77
1	B	69	ASP	CA-CB-CG	5.04	117.64	112.60

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	B	2715	0	2732	34	0
2	C	1537	0	1472	13	0
3	E	1527	0	1444	7	0
4	L	278	0	292	20	0
5	R	2452	0	2378	115	0
All	All	8509	0	8318	162	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 10.

All (162) 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)
5:R:339:TRP:HB2	5:R:362:ILE:HD11	1.31	1.05
5:R:381:ILE:O	5:R:384:VAL:HG22	1.60	1.02
5:R:339:TRP:CB	5:R:362:ILE:HD11	1.93	0.98
5:R:339:TRP:HB2	5:R:362:ILE:CD1	1.94	0.97
5:R:361:TRP:CE3	5:R:364:GLN:OE1	2.19	0.95
5:R:375:PHE:HB2	5:R:422:ILE:HD11	1.57	0.87
5:R:381:ILE:O	5:R:384:VAL:CG2	2.21	0.87
5:R:361:TRP:HE3	5:R:364:GLN:OE1	1.56	0.85
4:L:6:GLN:NE2	5:R:429:TYR:HA	1.96	0.79
5:R:293:ALA:HA	5:R:367:ILE:HD11	1.65	0.79
5:R:191:TYR:HB3	5:R:445:MET:HG3	1.63	0.79
5:R:381:ILE:C	5:R:384:VAL:HG22	2.07	0.79
5:R:358:ASN:HA	5:R:361:TRP:CD1	2.18	0.78
1:B:107:LYS:NZ	5:R:507:ASN:O	2.17	0.78
1:B:65:ARG:HH12	5:R:309:LEU:HD22	1.52	0.75
5:R:278:TYR:HA	5:R:281:CYS:SG	2.27	0.75
1:B:65:ARG:NH1	5:R:309:LEU:HD22	2.02	0.75
5:R:375:PHE:HB2	5:R:422:ILE:CD1	2.17	0.75
5:R:385:LEU:CD2	5:R:409:SER:CB	2.66	0.74
5:R:371:ILE:HG22	5:R:422:ILE:HD13	1.69	0.73
5:R:385:LEU:HD21	5:R:409:SER:CB	2.19	0.73
5:R:432:VAL:HG23	5:R:437:TRP:CE3	2.23	0.73
1:B:68:LEU:O	1:B:70:VAL:HG23	1.90	0.71
5:R:339:TRP:CD1	5:R:362:ILE:HD11	2.26	0.71
5:R:429:TYR:O	5:R:430:THR:OG1	2.09	0.71
5:R:403:TYR:CE1	5:R:404:ARG:HG3	2.28	0.69
5:R:361:TRP:CZ3	5:R:364:GLN:OE1	2.45	0.69
4:L:6:GLN:HG3	5:R:429:TYR:CD2	2.28	0.68
1:B:244:PHE:HE1	5:R:388:LYS:CB	2.06	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:L:6:GLN:HG3	5:R:429:TYR:CE2	2.29	0.67
5:R:278:TYR:O	5:R:281:CYS:SG	2.53	0.67
5:R:385:LEU:CD2	5:R:409:SER:HB3	2.24	0.67
5:R:339:TRP:CG	5:R:362:ILE:HD11	2.30	0.65
5:R:427:THR:HB	5:R:440:GLN:HE22	1.60	0.65
5:R:203:THR:HG22	5:R:231:MET:HE3	1.79	0.64
1:B:297:ASP:OD2	2:C:60:TYR:OH	2.17	0.62
5:R:187:LEU:HD12	5:R:445:MET:HG2	1.80	0.61
5:R:432:VAL:HG23	5:R:437:TRP:CZ3	2.35	0.61
5:R:429:TYR:HD1	5:R:429:TYR:H	1.49	0.60
2:C:160:VAL:HG22	2:C:210:HIS:HD2	1.66	0.60
5:R:385:LEU:HD21	5:R:409:SER:HB3	1.82	0.60
4:L:16:GLN:HG3	5:R:354:LEU:HD11	1.82	0.59
5:R:363:ILE:O	5:R:366:PRO:HD2	2.02	0.59
1:B:8:VAL:HG21	1:B:104:LEU:HD21	1.85	0.59
1:B:359:GLU:N	1:B:359:GLU:OE1	2.34	0.59
1:B:280:ASN:OD1	1:B:281:ASN:ND2	2.36	0.58
2:C:205:ILE:HD12	2:C:219:LYS:O	2.03	0.58
2:C:101:ARG:NH1	2:C:111:ASP:OD2	2.36	0.58
4:L:19:ARG:HB3	5:R:34:LYS:HE3	1.86	0.57
5:R:403:TYR:CD1	5:R:404:ARG:HG3	2.39	0.57
1:B:65:ARG:HH12	5:R:309:LEU:HD13	1.69	0.56
1:B:242:CYS:HB2	1:B:246:THR:HG22	1.88	0.56
5:R:365:VAL:HA	5:R:368:LEU:HD12	1.88	0.56
5:R:424:PHE:CZ	5:R:440:GLN:HA	2.41	0.56
4:L:2:VAL:CG1	5:R:367:ILE:HG21	2.36	0.56
4:L:28:ILE:HD13	5:R:170:CYS:SG	2.46	0.56
3:E:82:GLU:N	3:E:82:GLU:OE1	2.39	0.55
1:B:48:LEU:O	1:B:50:GLU:N	2.39	0.55
5:R:424:PHE:CE2	5:R:440:GLN:HA	2.41	0.55
5:R:381:ILE:CA	5:R:384:VAL:HG22	2.37	0.55
5:R:371:ILE:HG22	5:R:422:ILE:CD1	2.37	0.55
5:R:431:GLU:O	5:R:437:TRP:CD1	2.60	0.55
2:C:210:HIS:ND1	2:C:213:SER:OG	2.21	0.54
5:R:290:TYR:HB2	5:R:336:VAL:HG21	1.88	0.54
5:R:290:TYR:HA	5:R:336:VAL:HG21	1.90	0.54
2:C:55:SER:O	2:C:59:CYS:N	2.39	0.54
5:R:381:ILE:O	5:R:384:VAL:HG23	2.07	0.54
5:R:368:LEU:HA	5:R:371:ILE:HD12	1.90	0.53
3:E:18:ASP:OD1	3:E:19:ARG:N	2.41	0.53
5:R:336:VAL:O	5:R:340:VAL:HG23	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:R:199:LEU:O	5:R:203:THR:HG23	2.09	0.53
2:C:14:LEU:HD23	2:C:15:VAL:N	2.23	0.52
4:L:20:ARG:HE	5:R:32:MET:HE1	1.74	0.52
5:R:296:TYR:CD2	5:R:367:ILE:HD12	2.43	0.52
5:R:371:ILE:CG2	5:R:422:ILE:HD13	2.36	0.52
1:B:169:ARG:CZ	1:B:293:LEU:HG	2.40	0.52
3:E:168:ASP:OD1	3:E:169:SER:N	2.42	0.52
5:R:334:VAL:O	5:R:338:VAL:HG23	2.10	0.52
5:R:381:ILE:HA	5:R:384:VAL:HG22	1.91	0.51
5:R:429:TYR:CD1	5:R:429:TYR:N	2.77	0.51
5:R:33:THR:OG1	5:R:34:LYS:N	2.42	0.51
5:R:380:ASN:O	5:R:384:VAL:HG13	2.11	0.51
5:R:381:ILE:HA	5:R:384:VAL:CG2	2.40	0.51
5:R:432:VAL:HG13	5:R:433:SER:N	2.27	0.50
5:R:430:THR:O	5:R:431:GLU:HB2	2.11	0.50
1:B:360:PRO:O	1:B:361:PRO:C	2.55	0.50
5:R:362:ILE:O	5:R:366:PRO:HD3	2.12	0.49
5:R:300:LEU:HD21	5:R:370:SER:O	2.12	0.49
5:R:429:TYR:O	5:R:437:TRP:HD1	1.94	0.49
4:L:6:GLN:HE21	5:R:429:TYR:HA	1.77	0.49
5:R:432:VAL:HA	5:R:437:TRP:CG	2.48	0.49
5:R:429:TYR:C	5:R:430:THR:HG1	2.18	0.49
5:R:215:LEU:HD21	5:R:466:VAL:HG22	1.95	0.49
5:R:432:VAL:O	5:R:434:GLY:N	2.46	0.49
1:B:29:ASP:OD2	1:B:170:LYS:NZ	2.44	0.48
1:B:72:GLY:HA3	5:R:408:LYS:CG	2.43	0.48
1:B:244:PHE:CE1	5:R:388:LYS:CB	2.93	0.48
4:L:10:GLN:NE2	5:R:429:TYR:CD2	2.81	0.48
5:R:293:ALA:HA	5:R:367:ILE:CD1	2.41	0.48
5:R:375:PHE:CB	5:R:422:ILE:HD11	2.35	0.48
5:R:432:VAL:C	5:R:434:GLY:N	2.71	0.48
4:L:10:GLN:NE2	5:R:429:TYR:HD2	2.12	0.48
4:L:21:ARG:O	4:L:24:LEU:HG	2.14	0.48
1:B:72:GLY:HA3	5:R:408:LYS:HG2	1.95	0.48
5:R:432:VAL:HG23	5:R:437:TRP:CD2	2.48	0.48
2:C:5:VAL:HG13	2:C:30:PHE:CD1	2.49	0.47
2:C:188:LEU:C	2:C:188:LEU:HD12	2.40	0.47
1:B:360:PRO:N	1:B:361:PRO:CD	2.78	0.47
5:R:209:LEU:HA	5:R:215:LEU:HD23	1.96	0.47
1:B:159:HIS:O	1:B:160:LYS:HB3	2.15	0.47
3:E:134:VAL:HG12	3:E:179:THR:HG22	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:95:VAL:O	3:E:97:VAL:N	2.48	0.46
4:L:17:ASP:HA	4:L:20:ARG:HD3	1.98	0.46
5:R:353:ASP:OD1	5:R:353:ASP:N	2.49	0.46
5:R:427:THR:HB	5:R:440:GLN:NE2	2.30	0.46
4:L:12:ALA:O	4:L:16:GLN:HG2	2.16	0.46
5:R:290:TYR:CA	5:R:336:VAL:HG21	2.45	0.46
4:L:2:VAL:HG12	5:R:367:ILE:HG21	1.98	0.46
1:B:65:ARG:HH12	5:R:309:LEU:CD2	2.25	0.45
5:R:385:LEU:CD2	5:R:409:SER:HB2	2.47	0.45
2:C:111:ASP:OD1	2:C:112:TYR:N	2.48	0.45
5:R:290:TYR:CB	5:R:336:VAL:HG21	2.46	0.45
5:R:375:PHE:CB	5:R:422:ILE:CD1	2.93	0.44
1:B:233:ILE:HD12	1:B:325:VAL:HG12	1.99	0.44
2:C:86:MET:HB3	2:C:89:LEU:HD21	1.99	0.44
5:R:335:PHE:CE2	5:R:366:PRO:HB3	2.53	0.44
1:B:41:VAL:HG12	1:B:113:TYR:O	2.18	0.43
1:B:28:VAL:HG22	1:B:173:TYR:HE2	1.83	0.43
5:R:343:ARG:NH1	5:R:356:SER:OG	2.52	0.43
1:B:242:CYS:SG	1:B:242:CYS:O	2.76	0.43
1:B:242:CYS:SG	1:B:246:THR:CG2	3.06	0.43
1:B:299:ASN:ND2	1:B:300:LEU:O	2.50	0.43
4:L:1:ALA:N	5:R:426:ALA:HA	2.34	0.43
5:R:426:ALA:O	5:R:427:THR:C	2.62	0.43
5:R:432:VAL:C	5:R:434:GLY:H	2.25	0.43
4:L:1:ALA:HA	5:R:368:LEU:HD21	2.01	0.42
5:R:187:LEU:HD11	5:R:441:MET:HB3	2.01	0.42
5:R:385:LEU:HD23	5:R:409:SER:HB2	1.99	0.42
1:B:47:TYR:O	1:B:51:ARG:NH2	2.52	0.42
4:L:16:GLN:O	4:L:20:ARG:HG3	2.19	0.42
5:R:343:ARG:NH2	5:R:354:LEU:O	2.48	0.42
5:R:188:GLY:HA2	5:R:191:TYR:CE2	2.55	0.42
1:B:152:GLU:OE1	1:B:152:GLU:N	2.49	0.42
2:C:70:ARG:NH2	2:C:93:ASP:OD2	2.49	0.42
4:L:6:GLN:HE22	5:R:429:TYR:HA	1.78	0.42
1:B:251:CYS:HB2	5:R:314:PHE:CZ	2.55	0.41
5:R:239:VAL:O	5:R:243:VAL:HG23	2.19	0.41
1:B:81:CYS:N	5:R:397:CYS:SG	2.93	0.41
3:E:38:GLN:O	3:E:46:LYS:N	2.42	0.41
5:R:278:TYR:CA	5:R:281:CYS:SG	3.05	0.41
5:R:385:LEU:HD21	5:R:409:SER:OG	2.20	0.41
1:B:242:CYS:SG	1:B:246:THR:HG22	2.61	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:R:202:LEU:HD23	5:R:456:ALA:HB2	2.02	0.41
5:R:202:LEU:O	5:R:206:VAL:HG23	2.21	0.40
5:R:402:GLN:O	5:R:403:TYR:C	2.63	0.40
5:R:291:PHE:HA	5:R:294:THR:HG22	2.02	0.40
4:L:21:ARG:HA	4:L:24:LEU:HD21	2.02	0.40
5:R:298:TRP:HE1	5:R:329:TRP:CD1	2.39	0.40
1:B:318:ILE:HD12	1:B:318:ILE:N	2.37	0.40
3:E:56:TYR:O	3:E:59:VAL:HG12	2.22	0.40
1:B:219:HIS:HE1	1:B:267:THR:HG23	1.87	0.40
2:C:156:PHE:HB3	2:C:157:PRO:HD3	2.02	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	B	340/374 (91%)	323 (95%)	17 (5%)	0	100	100
2	C	201/230 (87%)	197 (98%)	4 (2%)	0	100	100
3	E	203/215 (94%)	188 (93%)	15 (7%)	0	100	100
4	L	31/36 (86%)	31 (100%)	0	0	100	100
5	R	292/482 (61%)	276 (94%)	15 (5%)	1 (0%)	37	69
All	All	1067/1337 (80%)	1015 (95%)	51 (5%)	1 (0%)	50	80

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	R	433	SER

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	B	300/334 (90%)	300 (100%)	0	100	100
2	C	168/194 (87%)	168 (100%)	0	100	100
3	E	168/190 (88%)	168 (100%)	0	100	100
4	L	27/29 (93%)	26 (96%)	1 (4%)	29	62
5	R	249/408 (61%)	244 (98%)	5 (2%)	50	75
All	All	912/1155 (79%)	906 (99%)	6 (1%)	80	92

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	L	20	ARG
5	R	32	MET
5	R	360	LYS
5	R	425	MET
5	R	429	TYR
5	R	445	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	101	GLN
1	B	223	ASN
4	L	6	GLN
4	L	10	GLN
5	R	37	GLN
5	R	220	ASN
5	R	223	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

4 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	TPO	R	503	5	8,10,11	1.08	0	10,14,16	1.88	1 (10%)
5	TPO	R	506	5	8,10,11	1.09	0	10,14,16	1.85	1 (10%)
5	SEP	R	504	5	8,9,10	1.56	1 (12%)	8,12,14	1.70	2 (25%)
5	SEP	R	501	5	8,9,10	1.55	1 (12%)	8,12,14	1.65	2 (25%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	TPO	R	503	5	-	1/9/11/13	-
5	TPO	R	506	5	-	2/9/11/13	-
5	SEP	R	504	5	-	0/5/8/10	-
5	SEP	R	501	5	-	1/5/8/10	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	R	504	SEP	P-O1P	3.38	1.61	1.50
5	R	501	SEP	P-O1P	3.37	1.61	1.50

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	R	503	TPO	P-OG1-CB	-5.31	107.18	123.21
5	R	506	TPO	P-OG1-CB	-5.28	107.27	123.21
5	R	504	SEP	P-OG-CB	-3.14	109.64	118.30
5	R	504	SEP	OG-CB-CA	3.09	111.15	108.14
5	R	501	SEP	OG-CB-CA	3.05	111.11	108.14

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	R	501	SEP	P-OG-CB	-2.94	110.19	118.30

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	R	501	SEP	CA-CB-OG-P
5	R	506	TPO	N-CA-CB-OG1
5	R	503	TPO	O-C-CA-CB
5	R	506	TPO	O-C-CA-CB

There are no ring outliers.

No monomer is involved in short contacts.

5.5   Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6   Ligand geometry ⓘ

There are no ligands in this entry.

5.7   Other polymers ⓘ

There are no such residues in this entry.

5.8   Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-63488. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections ⓘ

6.1.1 Primary map

| X | Y | Z |
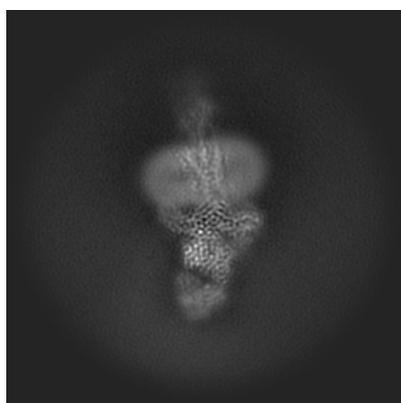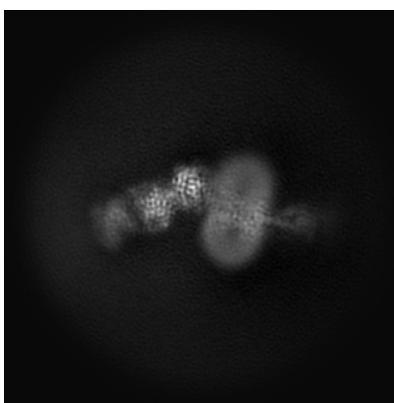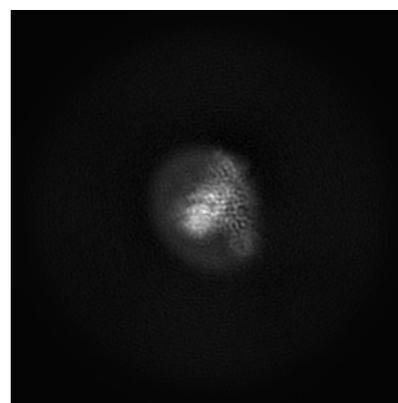
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
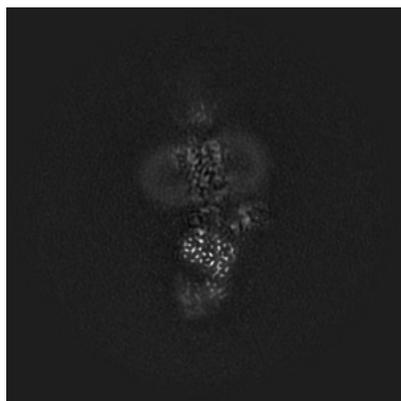
6.2.1 Primary map
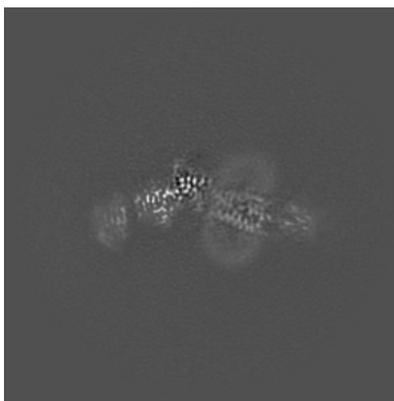
| X Index: 220 | Y Index: 220 | Z Index: 220 |
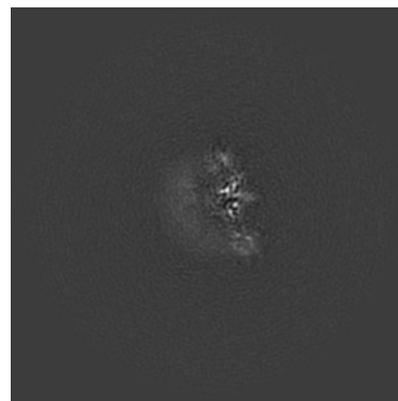
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map
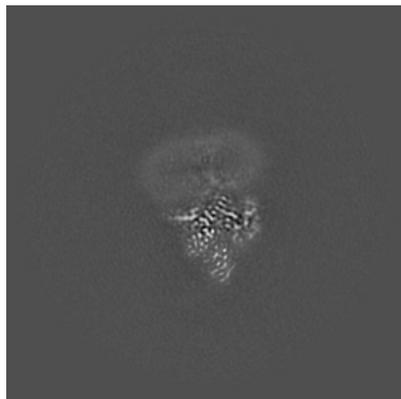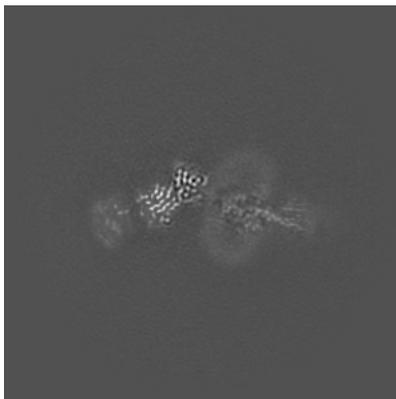
| X Index: 237 | Y Index: 215 | Z Index: 199 |
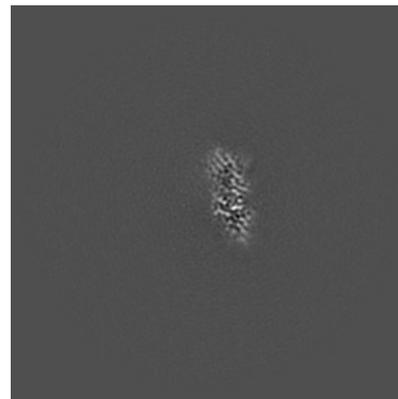
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map

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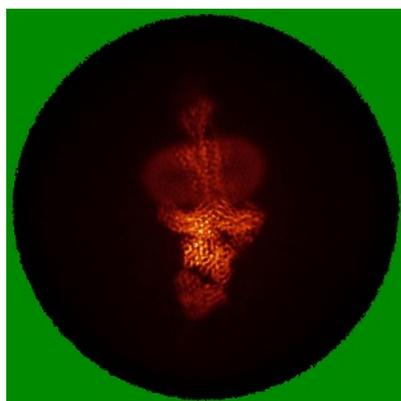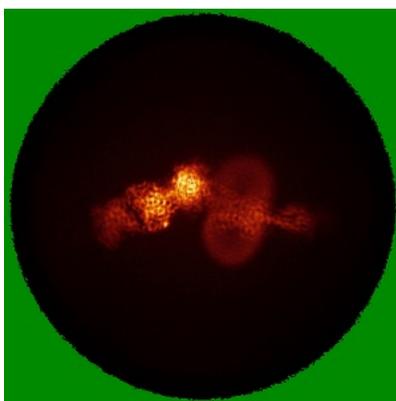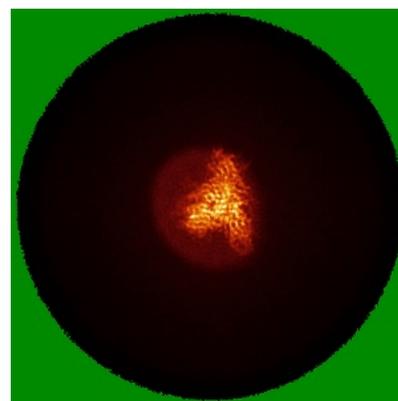
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X	Y	Z

The images above show the 3D surface view of the map at the recommended contour level 0.273. 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 ⓘ

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

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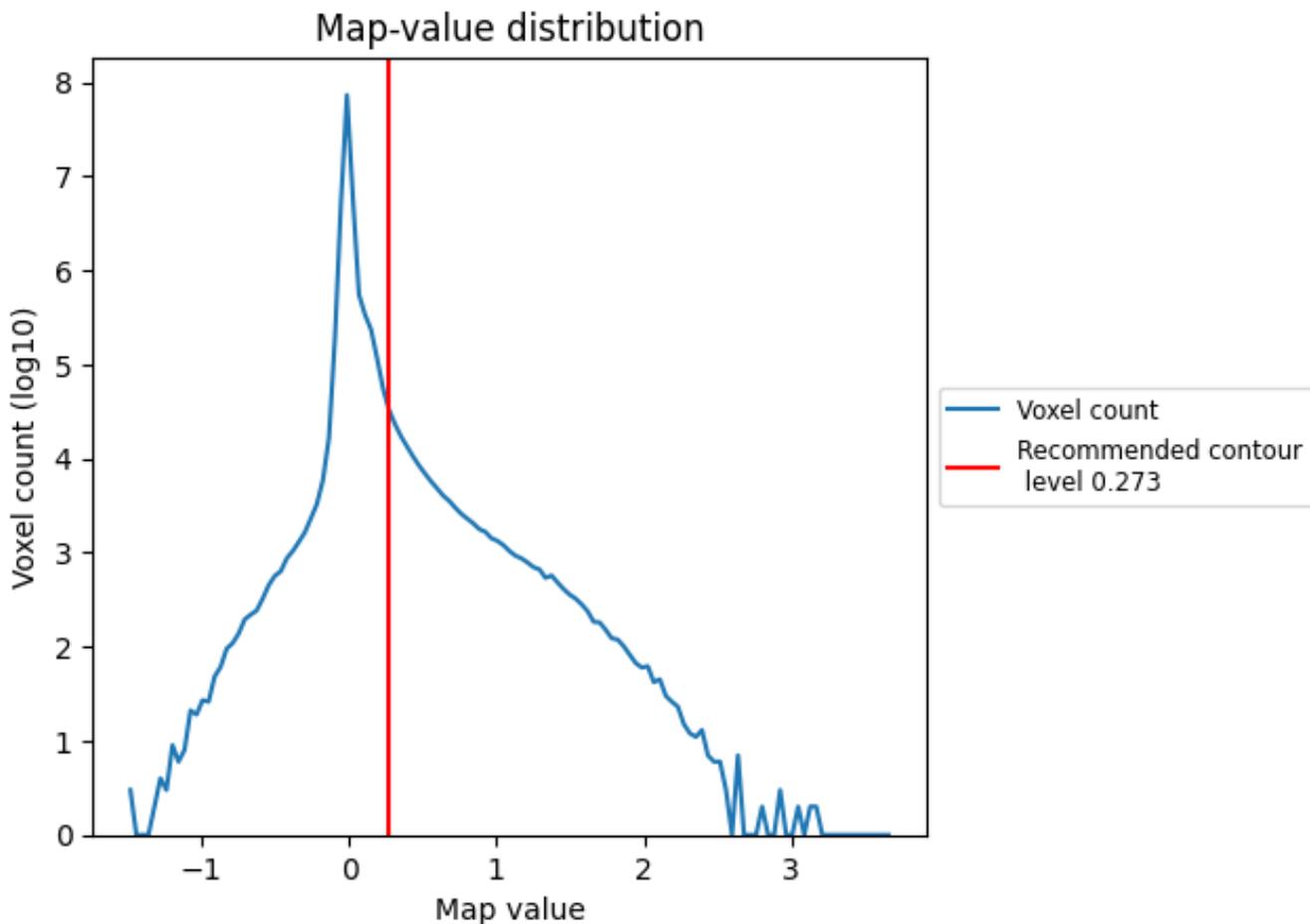
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
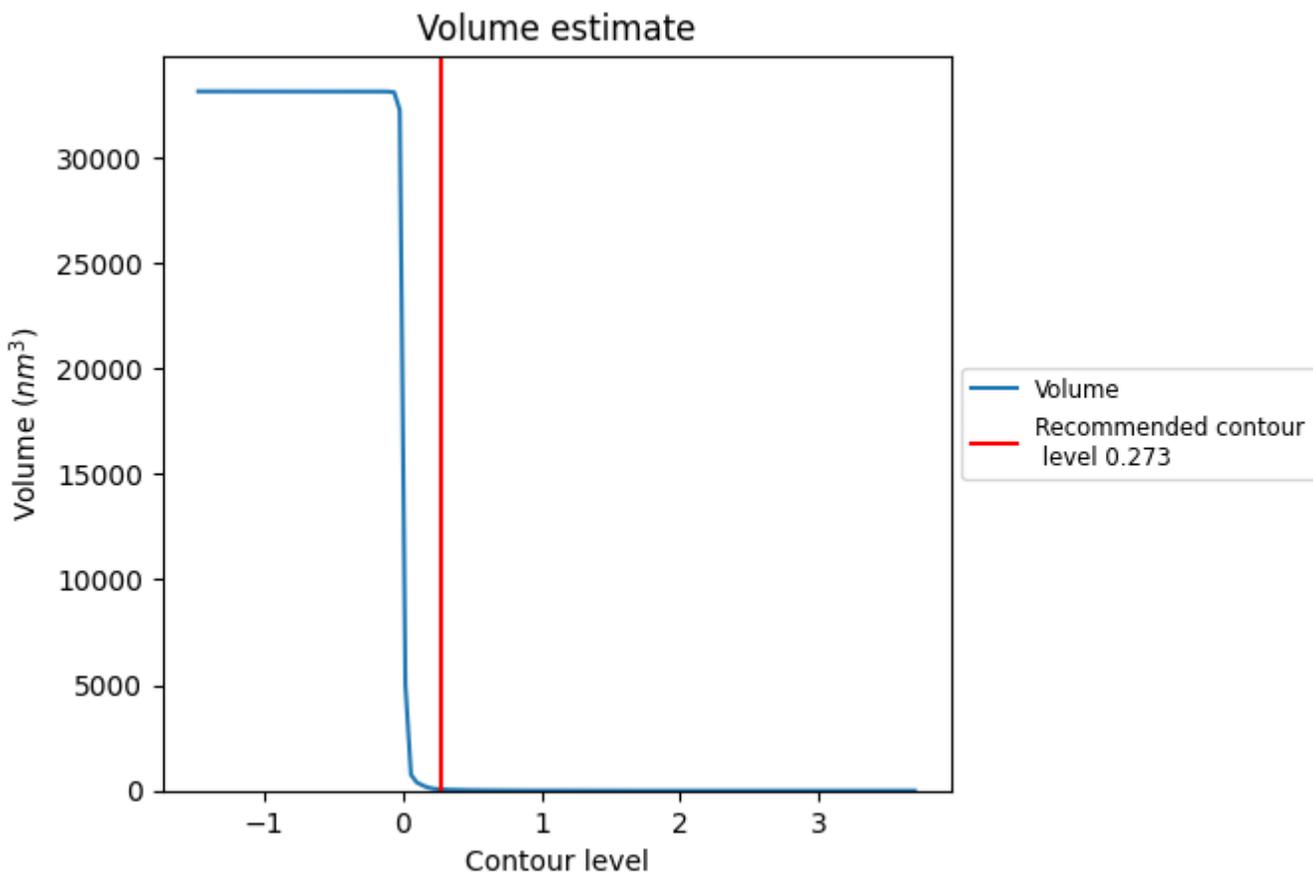
The volume at the recommended contour level is 62 nm^3; this corresponds to an approximate mass of 56 kDa.

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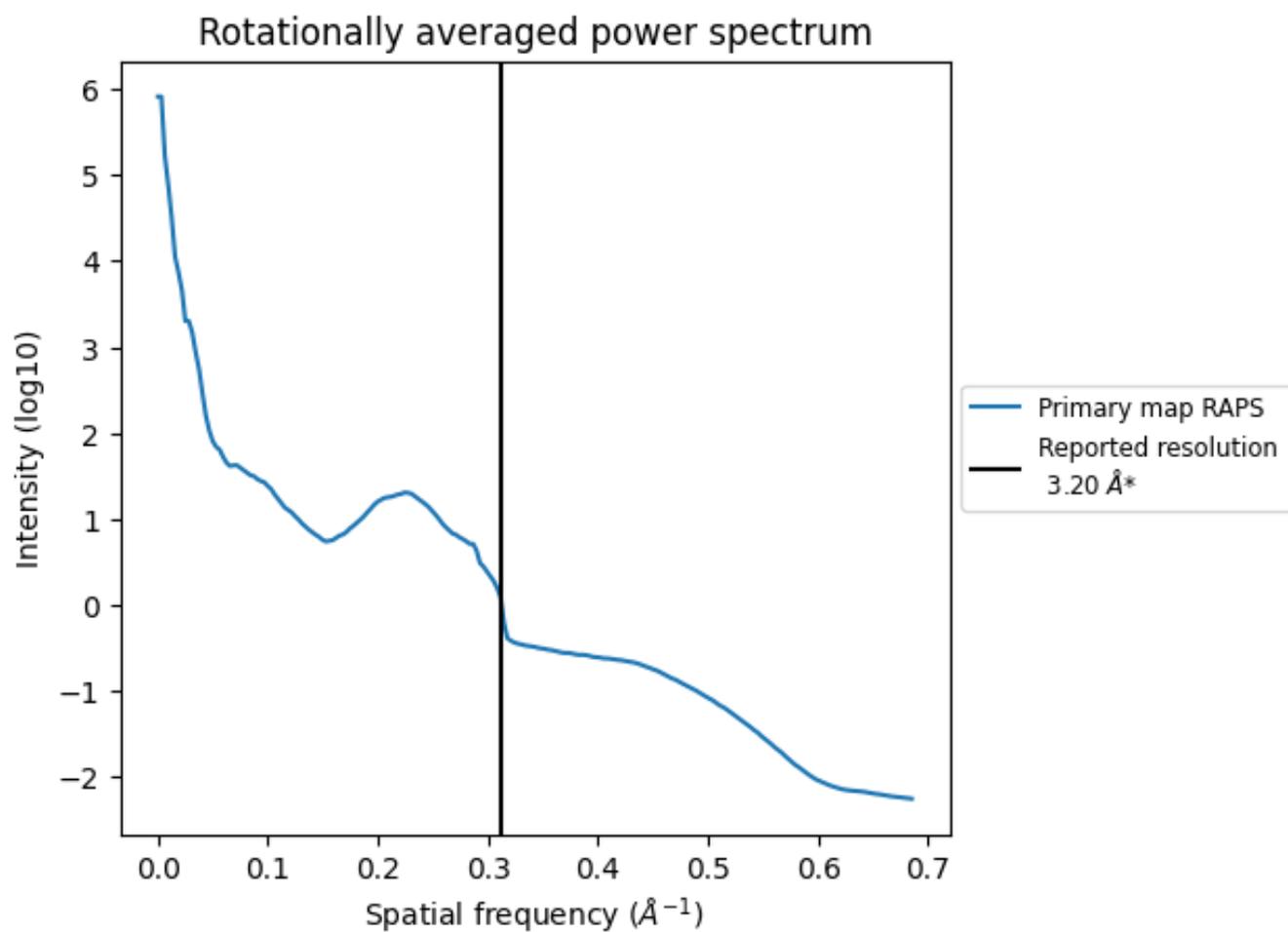
*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8 Fourier-Shell correlation ⓘ

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

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-63488 and PDB model 9LXP. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay ⓘ


X	Y	Z
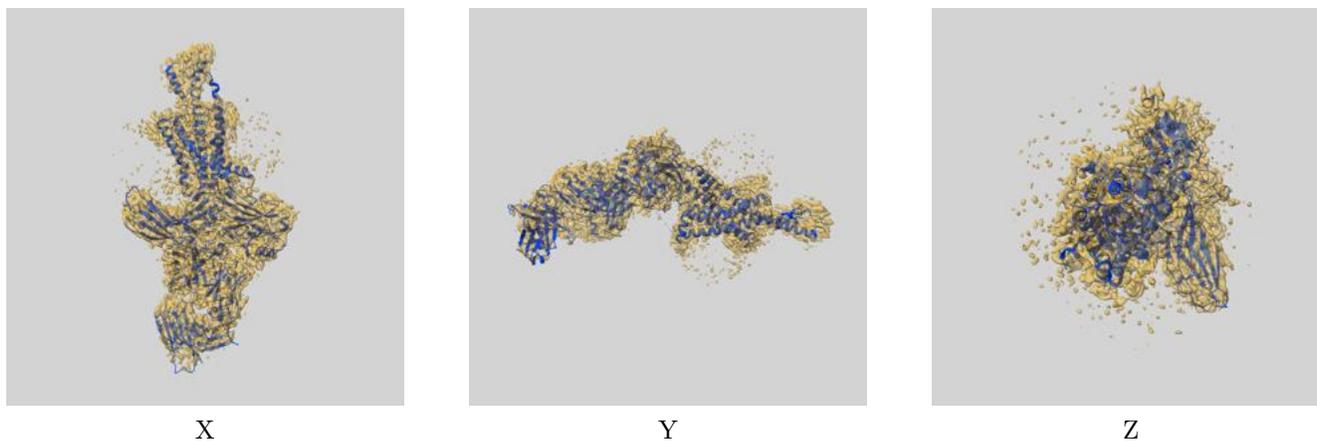
The images above show the 3D surface view of the map at the recommended contour level 0.273 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ


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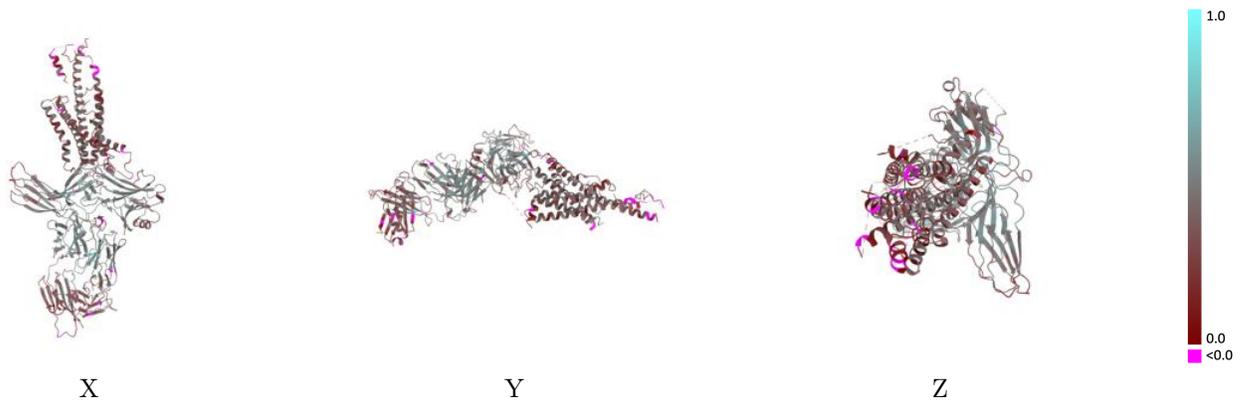
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model ⓘ

X	Y	Z
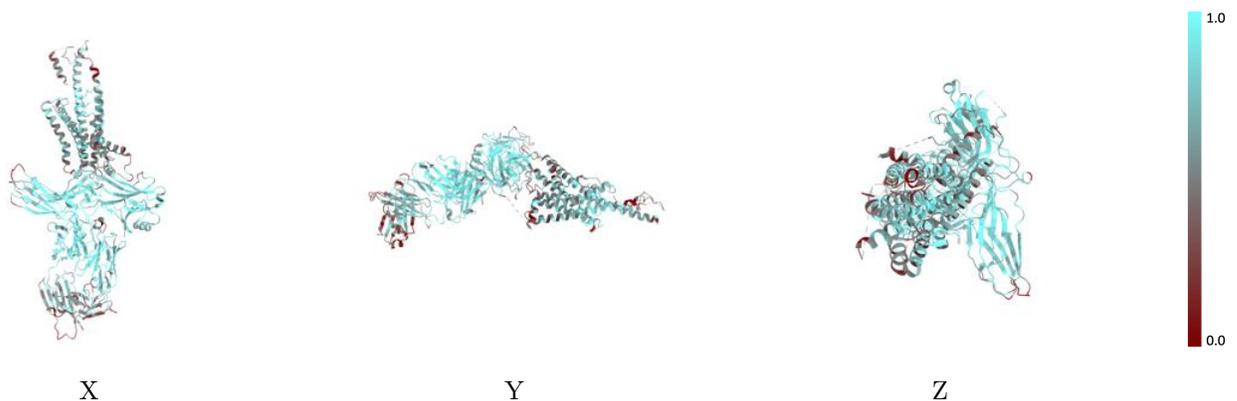
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.273).

9.4　Atom inclusion　ⓘ
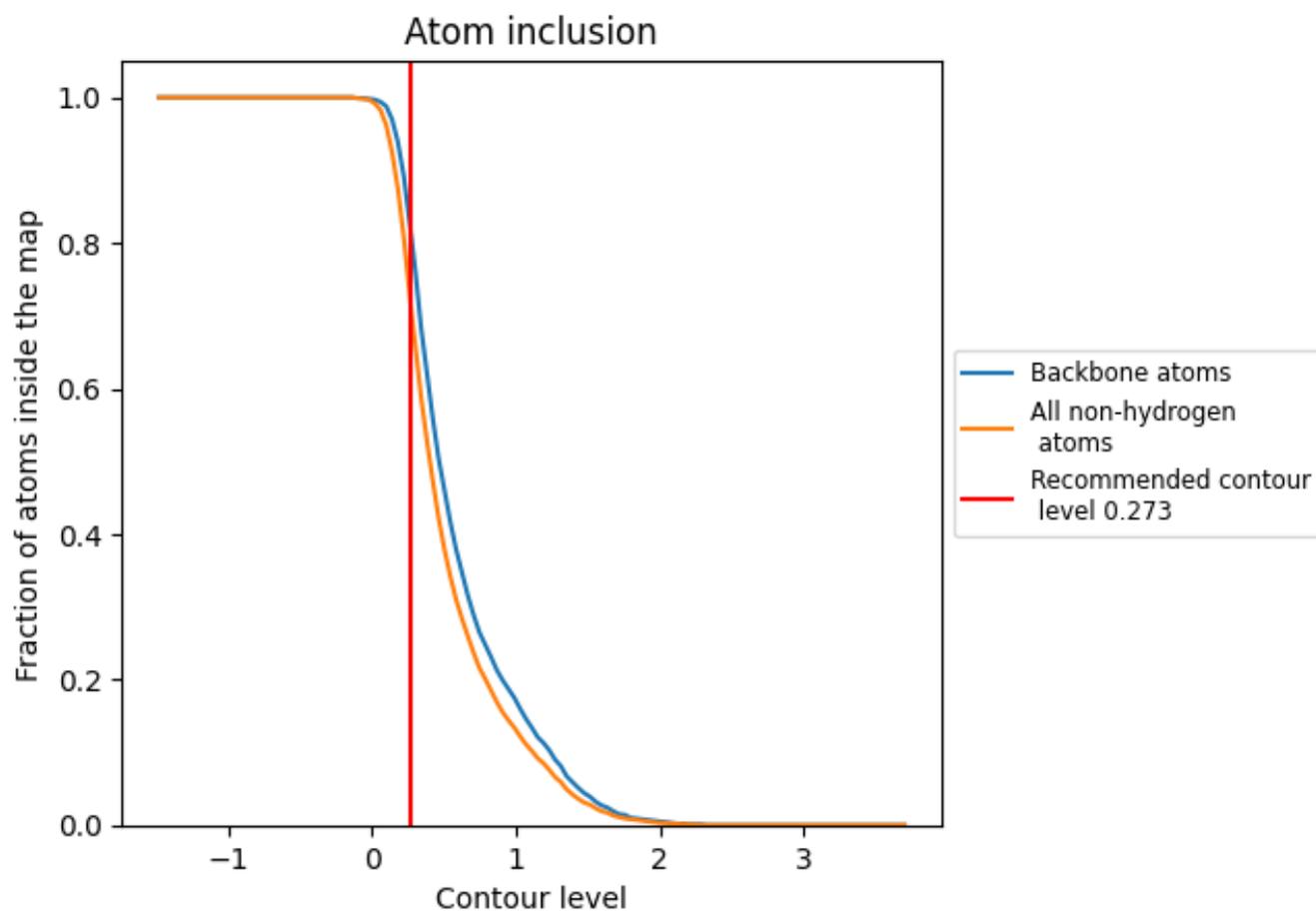
At the recommended contour level, 81% of all backbone atoms, 70% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.273) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7040	0.3830
B	0.7800	0.4370
C	0.7620	0.4170
E	0.6800	0.3780
L	0.7180	0.3150
R	0.5980	0.3110

1.0

0.0

<0.0