WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Dec 12, 2022 – 07:58 am GMT

PDB ID	:	5A5T
EMDB ID	:	EMD-3056
Title	:	Structure of mammalian eIF3 in the context of the 43S preinitiation complex
Authors	:	des-Georges, A.; Dhote, V.; Kuhn, L.; Hellen, C.U.T.; Pestova, T.V.; Frank, J.; Hashem, Y.
Deposited on	:	2015-06-21
Resolution	:	6.00 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 (i) symbol.

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

The following versions of software and data (see references (i)) were used in the production of this report:
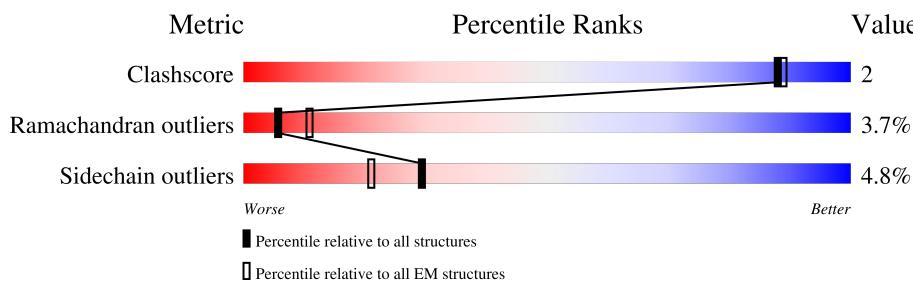
|		
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY
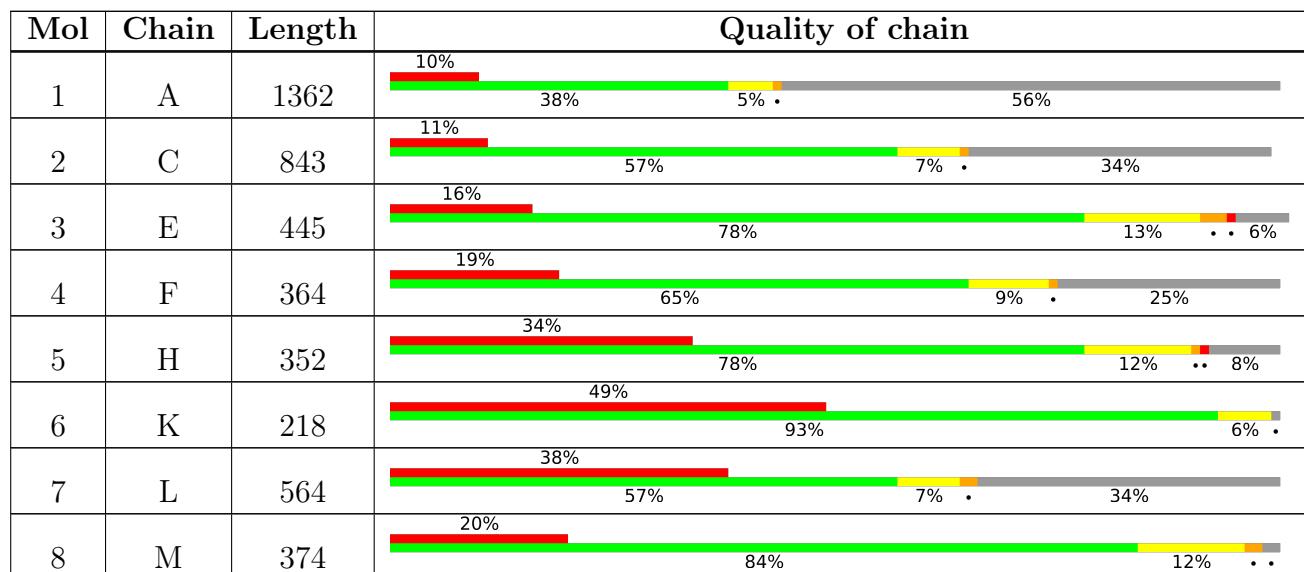
The reported resolution of this entry is 6.00 Å.

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		2
Ramachandran outliers		3.7%
Sidechain outliers		4.8%

Worse　　　　　*Better*

■ Percentile relative to all structures

▯ Percentile relative to all EM structures

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

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

Mol	Chain	Length	Quality of chain
1	A	1362	10% / 38% 5% · 56%
2	C	843	11% / 57% 7% · 34%
3	E	445	16% / 78% 13% · · 6%
4	F	364	19% / 65% 9% · 25%
5	H	352	34% / 78% 12% ·· 8%
6	K	218	49% / 93% 6% ·
7	L	564	38% / 57% 7% · 34%
8	M	374	20% / 84% 12% ··

2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 25432 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 EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT A.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	600	Total 4935	C 3107	N 893	O 914	S 21	0	1

- Molecule 2 is a protein called EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT C.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	558	Total 4529	C 2842	N 805	O 849	S 33	0	1

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	577	TYR	ALA	conflict	UNP G1U971

- Molecule 3 is a protein called EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT E.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	420	Total 3466	C 2220	N 587	O 639	S 20	0	1

- Molecule 4 is a protein called EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT F.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	F	272	Total 2111	C 1330	N 359	O 410	S 12	0	0

- Molecule 5 is a protein called EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT H.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	H	324	Total 2624	C 1654	N 452	O 503	S 15	0	0

- Molecule 6 is a protein called EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT K.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	K	216	Total 1738	C 1109	N 286	O 330	S 13	0	1

- Molecule 7 is a protein called UNCHARACTERIZED PROTEIN.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	L	373	Total 3110	C 2010	N 520	O 563	S 17	0	1
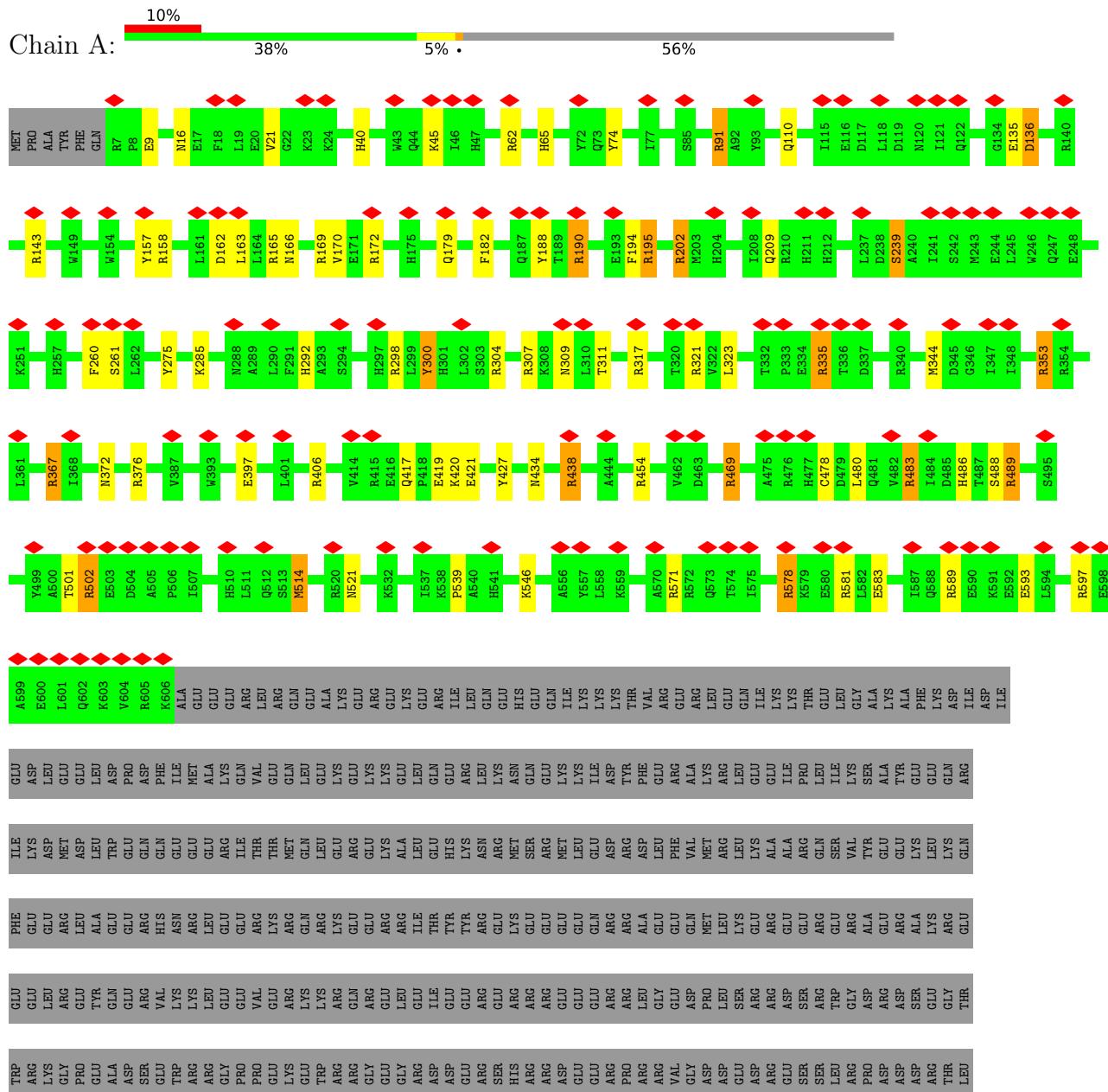
- Molecule 8 is a protein called EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT M.
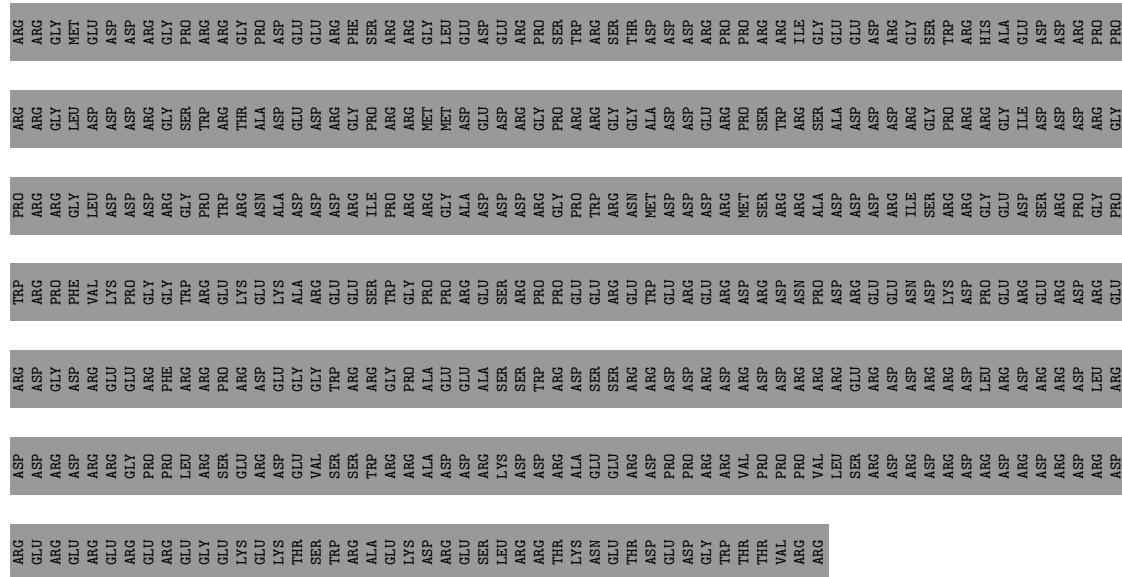
Mol	Chain	Residues	Atoms					AltConf	Trace
8	M	366	Total 2919	C 1850	N 494	O 558	S 17	0	1

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.
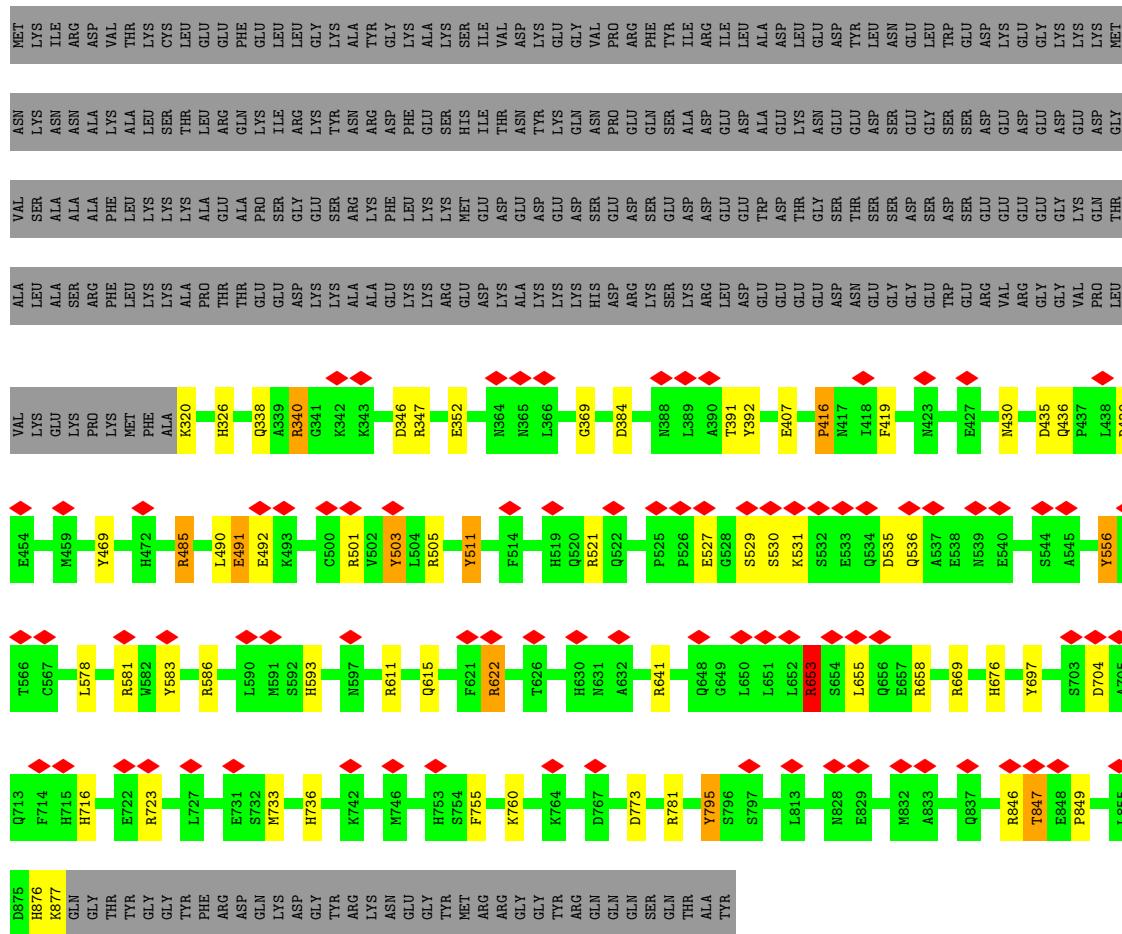
• Molecule 1: EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT A

• Molecule 2: EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT C

Chain C:

11%

57% 7% • 34%

• Molecule 3: EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT E

Chain E:

Chain E protein sequence diagram with residues MET ALA GLU Y4 D5 L6 T7 T8 R9 I10 A11 H17 L18 V19 L22 L23 E24 F25 L26 I31 Y32 N33 E34 L38 D43 D47 T48 N49 M50 F53 Y58 D65 I66 P67 H68 R74 T75 T76 T88 E89 P90 M94 F95 E96 M104 R108

D109 G110 R111 M112 D115 K120 R124 Q125 Y134 E140 N143 P159 D162 R163 L166 W170 L189 T190 L192 K193 E194 R211 W217 S218 L219 F220 V221 F222 F223 N224 R229 D230 N231 L237 Y238 Q239 P240 N244 A245 I246 Q247 T248 M249

C250 P251 H252 R255 Y256 A260 V261 I262 R268 K269 R270 R271 K275 I281 Q282 Q283 Y286 T287 Y288 K289 N302 F303 D304 F305 D306 K310 R313 E316 S317 V320 V326 A327 D331 F332 R337 L338 F339 T343 F344 I347 H348 I353

D358 N361 R369 R376 N377 A378 R379 L380 D381 A382 M393 A397 V398 S399 Q402 Q403 E406 K407 T408 F413 E423 LYS LYS LEU ASN GLN ASN SER ARG SER GLU ALA PRO ASN TRP ALA THR GLN ASP SER GLY PHE TYR

• Molecule 4: EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT F

Chain F:

Chain F protein sequence diagram with residues MET ALA THR PRO ALA VAL SER ALA SER ALA PRO PRO ALA THR PRO PRO ALA ALA THR PRO PRO ALA ALA ALA ALA PRO ALA SER ALA PRO ALA ALA PRO ALA PRO ALA PRO THR PRO PRO ALA PRO ALA ALA PRO ALA PRO ALA PRO ALA GLY ALA ALA PRO ALA ALA ALA ASP PRO ALA ALA

ALA ALA ALA GLY THR GLY GLN GLN THR PRO ALA SER ALA GLN ALA PRO ALA GLN THR SER ALA PRO SER LEU PRO GLY PRO ALA LEU PRO GLY PRO F106 P107 G108 G109 R110 R113 L114 H115 P116 D124 E127 R128 R129 N130 E131 R135 V136 I137 L140 K146 P158

H159 N160 E161 S162 E163 D164 E165 V166 E171 K182 E187 L188 I189 T195 G196 H197 D198 I199 H202 L205 I206 H207 R212 E213 A214 P217 I218 H219 L226 Q227 N228 G229 R230 M231 S232 I233 M241 G242 V243 P244 G245 R246 T247 M248 G249 V250 M251 F252 L255

Y259 A260 Y261 Y262 V269 S278 P279 N280 R281 V282 I283 R298 V313 L314 S315 G316 K317 V318 S319 A320 D321 R326 M329 Q334 V335 I338 V339 D342 F343 M346 Y359 L377

• Molecule 5: EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT H

Chain H:

Chain H protein sequence diagram with residues MET ALA SER ARG LYS GLU GLY THR GLY SER GLY GLY THR SER SER SER ALA THR GLY VAL VAL GLY LYS GLY LYS GLY LYS G29 G32 D33 S34 A35 V36 K37 I41 L44 K51 H52 Y53 Q54 E55 E56 G57 Q58 G59 T60 E61 V62 V63 Q64 L67 L70

E73 D74 R75 N80 P85 Q86 H87 T88 E89 D90 D91 A92 D93 F94 D95 E96 Y99 M103 M104 L107 I112 D113 H114 L115 H116 S122 T123 Y124 Y125 G126 S127 T130 R131 F138 S139 Y140 Q141 H142 A143 I144 E145 E146 S147 V148 Y152 D153 P154 T157 A158

Q159 G160 S161 L162 S163 R168 K172 E175 K180 D181 F182 S183 P184 K188 T193 F194 E195 H196 M197 F198 E199 E200 V201 P202 I203 V204 I205 K206 H209 N212 E217 K220 Q221 S222 A223 V224 A225 D226 K227 H228 E229 L230 L231 S232 L233 A234 S235 S236 N237 H238

L239 G240 K241 N242 L243 Q244 L245 L246 M247 D248 R249 V250 D251 Q255 Y260 Y263 M264 R265 S268 K274 Q278 Q279 R280 R281 Q282 Q283 E284 N285 M286 Q287 R288 Q289 S290 R291 G292 E293 P294 P295 E298 E299 D300 L301 S302 K303 L304 F305 K306 P307 P308 Q309 P310 P311 A312

R313 M314 D315 S316 I319 I323 Y326 F342 N351 N352

• Molecule 6: EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT K

Chain K:

49%
93%   6% •

MET A2 M3 Q6 M7 R8 A9 N10 V11 G12 K13 L14 L15 K16 G17 I18 D19 R20 Y21 N22 P23 E24 A27 R31 E34 T35 Q36 A37 K38 E39 N40 A41 Y42 D43 L44 E45 A46 N47 L48 A49 V50 L51 K52 L53 Y54 N57 P58 A59 F60 F61 Q62 T63 T66 A67

Q68 I69 L70 L71 K72 A73 N76 H79 T80 D81 F82 K86 C87 M88 I89 D90 Q91 Q94 E95 E96 R97 P98 I99 R100 Q101 I102 I103 Y104 L109 E110 T111 F114 Q115 A116 Q119 E123 N124 M125 D126 L127 L128 E129 G130 I131 T132 G133 F134 E135 R139 K140

C143 I153 D154 R155 L162 G163 D164 L165 T166 D167 L170 K176 D182 E183 S184 G185 S191 Q192 E193 E194 S195 I196 K197 P198 K199 N200 I201 V202 E203 K204 I205 S217 GLN

• Molecule 7: UNCHARACTERIZED PROTEIN

Chain L:

38%
57%   7% •   34%

MET SER TYR PRO ALA ASP ASP TYR GLU SER GLU ALA TYR ASP VAL TYR ASP PRO TYR ALA TYR PRO SER ASP TYR ASP MET HIS THR GLY ASP PRO LYS GLN ASP ASP LEU ALA TYR GLU ARG GLN GLN TYR GLU GLN THR TYR GLN VAL ILE PRO GLU VAL ILE ARG ASN PHE ILE GLN GLN TYR PHE HIS

LYS THR VAL SER LEU ASP ILE ILE ASP GLN LYS VAL TYR GLU LEU GLN LEU GLN ALA SER ARG VAL SER ASP VAL ILE GLN SER GLY LYS VAL TYR GLU ILE GLN ASP ILE TYR GLU ASN SER TRP THR LYS LEU THR GLU ARG PHE PHE LYS ASN THR PRO TRP PRO GLU GLU GLU ALA GLU THR ILE ALA PRO

GLN VAL GLY ASN ASP ALA VAL PHE LEU ILE LEU TYR LYS GLU LEU TYR LEU GLN ALA ARG PHE GLU SER TYR TYR ASN CYS ASN LEU PHE ASN THR ILE LEU ASN ALA GLY PRO ALA PRO LEU GLU LEU PRO ASN

Q181 W182 L183 W184 D185 I186 I187 F190 I191 Y192 Q193 F194 Q195 S196 F197 S198 R201 C202 K203 T204 A205 K206 K207 E211 I212 D213 F214 L215 R216 S217 N218 P219 K220 I221 W222 V224 H225 S226 H232 S233 L234 I240 N241 R242 Q243 L244 E245 V246 Y247 T248 S249 G250 G251 D252

P253 E254 G258 E259 Y260 G261 R262 H263 S264 L265 Y266 K267 G270 Y271 F272 S273 L274 L277 L278 R279 T280 H281 S282 L283 L284 G285 D286 Y287 Y288 I291 Q292 V293 L294 E295 N296 I297 E298 L299 N300 K301 K302 S303 M304 Y305 S306 R307 V308 P309 E310 C311 Q312 V313 Y316 Y318

V319 G320 F321 A322 M325 M326 R327 R328 D331 R334 V335 F336 I339 L340 L341 Y342 I343 Q344 R345 T346 K347 S348 M349 F350 Q351 R352 T353 T354 Y355 K356 Y357 E358 M359 K362 Q366 M367 H368 A369 L370 M377 Y378 P379 M380 R381 S385 I386 H387 L388 Q389 L390 R391 E392

K393 Y394 G395 Q402 K403 G404 D405 P406 Q407 V408 Y409 E410 E411 L412 F413 S414 Y415 P418 K419 F420 L421 S422 P423 V424 V425 P426 N427 Y428 D429 S430 V431 H432 P433 N434 V435 H436 K437 E438 P439 F440 L441 Q442 L447 S448 D449 Q453 S454 S458 R461 Y467 T468 T469 M470

P471 V472 A473 K474 F478 L481 T482 E483 Q484 E485 F486 R487 I488 Q489 L490 L491 K498 N499 L500 V501 W502 S507 A508 L509 D510 G511 E512 V519 D520 F521 Y522 I523 D524 K525 I528 K534 R537 F542 F543 I544 R545 Q546 I547 H548 K549 F550 E551 E552 L553 ASN ARG

THR LEU LYS LYS MET GLY GLN ARG PRO

• Molecule 8: EUKARYOTIC TRANSLATION INITIATION FACTOR 3 SUBUNIT M

Chain M:

20%

84%　　　　　12%

MET SER VAL PRO ALA F6 S10 E11 E12 D13 R19 G36 H39 V40 D41 L42 L53 K54 D57 V60 L70 L71 L72 I73 E80 F93 R94 E95 G96 E97 R98 R102 L105 N108 L109 F110 H111 G112 M113 D114 K115 N116 T117 R120 Y121

Y124 A132 I137 Q138 Y139 I140 E143 L144 D145 R148 K149 W150 I151 S152 D153 W154 R166 L167 L168 Y169 V173 D174 C175 K176 K177 S178 M185 G190 S191 Y192 T193 E194 D195 R201 A204 R210 A217 F218 L219 H222 L226 K227 P228 V229 K230

E235 L236 I237 L241 V245 L249 Y252 F255 D261 F262 I263 D264 S265 L266 G267 L268 L269 H270 R278 V287 E288 N289 K290 E291 I292 S293 F294 D295 E309 R317 M320 V321 Y322 C323 K324 R330 K331 V332 V333 V334 S335 H336 S337 T338 H339 R340 T341 F342

W347 Y351 D352 W357 L371 SER ASP THR

4　Experimental information　ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	87192	Depositor
Resolution determination method	Not provided	
CTF correction method	EACH PARTICLE	Depositor
Microscope	FEI/PHILIPS CM300FEG/HE	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	25	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	4500	Depositor
Magnification	30120	Depositor
Image detector	GATAN K2 (4k x 4k)	Depositor
Maximum map value	0.121	Depositor
Minimum map value	-0.062	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.025	Depositor
Map size (Å)	498.0, 498.0, 498.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.66, 1.66, 1.66	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	0.70	0/5021	1.22	40/6781 (0.6%)
2	C	0.70	0/4608	1.19	35/6219 (0.6%)
3	E	1.61	8/3539 (0.2%)	1.29	43/4788 (0.9%)
4	F	0.69	0/2149	1.23	14/2920 (0.5%)
5	H	0.71	0/2675	1.09	7/3609 (0.2%)
6	K	0.69	0/1773	1.09	5/2398 (0.2%)
7	L	0.74	0/3186	1.18	28/4298 (0.7%)
8	M	0.70	0/2964	1.20	19/4000 (0.5%)
All	All	0.88	8/25915 (0.0%)	1.20	191/35013 (0.5%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	22
2	C	1	18
3	E	1	11
4	F	0	6
5	H	1	8
6	K	0	4
7	L	2	12
8	M	1	13
All	All	6	94

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	189	LEU	CB-CG	53.28	3.07	1.52
3	E	217	TRP	CD2-CE3	30.41	1.85	1.40
3	E	217	TRP	CD2-CE2	30.28	1.77	1.41
3	E	217	TRP	CE2-CZ2	28.28	1.87	1.39

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	217	TRP	CE3-CZ3	22.94	1.77	1.38
3	E	217	TRP	CZ3-CH2	22.09	1.75	1.40
3	E	217	TRP	CZ2-CH2	22.06	1.79	1.37
3	E	251	PRO	C-N	14.84	1.68	1.34

All (191) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	F	128	ARG	NE-CZ-NH1	14.34	127.47	120.30
3	E	251	PRO	CA-C-N	-13.42	87.67	117.20
3	E	251	PRO	C-N-CA	11.49	150.42	121.70
3	E	251	PRO	CA-C-O	11.39	147.53	120.20
3	E	189	LEU	CB-CG-CD1	11.26	130.14	111.00
1	A	74	TYR	CB-CG-CD2	-10.24	114.85	121.00
3	E	189	LEU	CB-CG-CD2	9.90	127.83	111.00
1	A	74	TYR	CB-CG-CD1	9.82	126.89	121.00
2	C	503	TYR	CB-CG-CD2	-9.57	115.26	121.00
4	F	128	ARG	NE-CZ-NH2	-9.42	115.59	120.30
2	C	441	ARG	NE-CZ-NH1	9.12	124.86	120.30
3	E	369	ARG	NE-CZ-NH1	9.10	124.85	120.30
1	A	62	ARG	NE-CZ-NH1	9.04	124.82	120.30
2	C	872	ARG	NE-CZ-NH1	8.89	124.74	120.30
8	M	210	ARG	NE-CZ-NH1	8.74	124.67	120.30
1	A	353	ARG	NE-CZ-NH1	8.72	124.66	120.30
1	A	335	ARG	NE-CZ-NH2	-8.46	116.07	120.30
1	A	335	ARG	NE-CZ-NH1	8.40	124.50	120.30
4	F	212	ARG	NE-CZ-NH1	8.39	124.50	120.30
3	E	256	TYR	CB-CG-CD2	-8.39	115.97	121.00
4	F	259	TYR	CB-CG-CD2	-8.31	116.01	121.00
5	H	168	ARG	NE-CZ-NH1	8.31	124.45	120.30
2	C	795	TYR	CB-CG-CD1	8.21	125.93	121.00
2	C	795	TYR	CB-CG-CD2	-8.20	116.08	121.00
6	K	54	TYR	CB-CG-CD2	-8.12	116.12	121.00
1	A	190	ARG	NE-CZ-NH1	8.11	124.35	120.30
3	E	256	TYR	CB-CG-CD1	8.06	125.84	121.00
1	A	578	ARG	NE-CZ-NH2	-8.01	116.29	120.30
8	M	98	ARG	NE-CZ-NH2	-7.93	116.33	120.30
3	E	250	CYS	CA-C-O	-7.89	103.52	120.10
3	E	250	CYS	O-C-N	-7.82	106.24	121.10
8	M	98	ARG	NE-CZ-NH1	7.59	124.10	120.30
3	E	189	LEU	CA-CB-CG	7.54	132.64	115.30
7	L	279	ARG	NE-CZ-NH1	7.51	124.05	120.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	706	ARG	NE-CZ-NH1	7.44	124.02	120.30
1	A	239	SER	N-CA-CB	7.43	121.65	110.50
2	C	505	ARG	NE-CZ-NH1	7.33	123.97	120.30
2	C	503	TYR	CB-CG-CD1	7.22	125.33	121.00
4	F	259	TYR	CB-CG-CD1	7.22	125.33	121.00
8	M	330	ARG	NE-CZ-NH1	7.21	123.91	120.30
2	C	391	THR	C-N-CA	7.20	139.70	121.70
7	L	381	ARG	NE-CZ-NH1	7.17	123.88	120.30
1	A	172	ARG	NE-CZ-NH2	-7.16	116.72	120.30
1	A	158	ARG	NE-CZ-NH1	7.15	123.88	120.30
2	C	653	ARG	NE-CZ-NH2	-7.14	116.73	120.30
2	C	511	TYR	CB-CG-CD2	-7.12	116.72	121.00
3	E	268	ARG	C-N-CA	7.11	139.47	121.70
7	L	328	ARG	NE-CZ-NH1	7.10	123.85	120.30
1	A	304	ARG	NE-CZ-NH2	-7.10	116.75	120.30
7	L	279	ARG	NE-CZ-NH2	-7.05	116.77	120.30
8	M	330	ARG	NE-CZ-NH2	-7.05	116.77	120.30
3	E	313	ARG	NE-CZ-NH1	6.99	123.80	120.30
6	K	54	TYR	CB-CG-CD1	6.97	125.18	121.00
7	L	216	ARG	NE-CZ-NH1	6.93	123.77	120.30
2	C	581	ARG	NE-CZ-NH1	6.91	123.75	120.30
1	A	195	ARG	NE-CZ-NH2	-6.91	116.85	120.30
1	A	157	TYR	CB-CG-CD2	-6.87	116.88	121.00
2	C	511	TYR	CB-CG-CD1	6.83	125.10	121.00
4	F	129	ARG	NE-CZ-NH1	6.79	123.69	120.30
3	E	332	PHE	CB-CG-CD1	6.78	125.55	120.80
2	C	847	THR	O-C-N	-6.78	111.85	122.70
1	A	469	ARG	NE-CZ-NH1	6.76	123.68	120.30
4	F	252	PHE	CB-CG-CD1	6.68	125.48	120.80
2	C	847	THR	C-N-CA	6.67	138.37	121.70
3	E	217	TRP	CG-CD1-NE1	6.67	116.77	110.10
7	L	185	ASP	CB-CG-OD1	6.65	124.29	118.30
3	E	211	ARG	NE-CZ-NH1	6.65	123.62	120.30
2	C	622	ARG	NE-CZ-NH2	-6.64	116.98	120.30
8	M	120	ARG	NE-CZ-NH1	6.62	123.61	120.30
7	L	391	ARG	NE-CZ-NH1	6.61	123.60	120.30
7	L	316	TYR	CB-CG-CD2	-6.59	117.05	121.00
3	E	143	ASN	C-N-CA	6.54	138.04	121.70
1	A	367	ARG	NE-CZ-NH1	6.53	123.57	120.30
8	M	124	TYR	CB-CG-CD2	-6.53	117.08	121.00
4	F	262	TYR	CB-CG-CD2	-6.52	117.09	121.00
3	E	108	ARG	NE-CZ-NH1	6.52	123.56	120.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	E	332	PHE	CB-CG-CD2	-6.45	116.29	120.80
1	A	202	ARG	NE-CZ-NH2	-6.39	117.11	120.30
4	F	110	ARG	NE-CZ-NH1	6.37	123.48	120.30
8	M	294	PHE	CB-CG-CD2	-6.34	116.36	120.80
2	C	586	ARG	NE-CZ-NH1	6.34	123.47	120.30
3	E	337	ARG	NE-CZ-NH1	6.33	123.47	120.30
2	C	658	ARG	NE-CZ-NH1	6.32	123.46	120.30
1	A	406	ARG	NE-CZ-NH1	6.29	123.44	120.30
1	A	298	ARG	NE-CZ-NH1	6.28	123.44	120.30
7	L	478	PHE	CB-CG-CD1	6.28	125.19	120.80
5	H	53	TYR	CB-CG-CD2	-6.27	117.24	121.00
1	A	62	ARG	NE-CZ-NH2	-6.26	117.17	120.30
7	L	327	ARG	NE-CZ-NH1	6.25	123.43	120.30
7	L	316	TYR	CB-CG-CD1	6.23	124.74	121.00
3	E	271	ARG	NE-CZ-NH1	6.23	123.41	120.30
1	A	157	TYR	CB-CG-CD1	6.22	124.73	121.00
1	A	502	ARG	NE-CZ-NH1	6.15	123.37	120.30
7	L	357	TYR	CB-CG-CD2	-6.15	117.31	121.00
4	F	135	ARG	NE-CZ-NH2	-6.12	117.24	120.30
1	A	275	TYR	CB-CG-CD2	-6.12	117.33	121.00
3	E	268	ARG	O-C-N	-6.05	113.01	122.70
4	F	359	TYR	CB-CG-CD2	-6.04	117.38	121.00
1	A	143	ARG	NE-CZ-NH1	6.00	123.30	120.30
1	A	91	ARG	NE-CZ-NH1	6.00	123.30	120.30
2	C	622	ARG	NE-CZ-NH1	6.00	123.30	120.30
3	E	143	ASN	O-C-N	-5.99	113.12	122.70
1	A	194	PHE	CB-CG-CD1	5.98	124.99	120.80
4	F	252	PHE	CB-CG-CD2	-5.98	116.61	120.80
7	L	478	PHE	CB-CG-CD2	-5.97	116.62	120.80
3	E	313	ARG	NE-CZ-NH2	-5.92	117.34	120.30
2	C	501	ARG	NE-CZ-NH2	-5.92	117.34	120.30
1	A	260	PHE	CB-CG-CD1	5.90	124.93	120.80
3	E	229	ARG	NE-CZ-NH2	-5.89	117.35	120.30
6	K	20	ARG	NE-CZ-NH1	5.89	123.25	120.30
3	E	217	TRP	CE2-CD2-CG	-5.89	102.59	107.30
8	M	322	TYR	CB-CG-CD2	-5.89	117.47	121.00
7	L	194	PHE	CB-CG-CD1	5.88	124.91	120.80
1	A	194	PHE	CB-CG-CD2	-5.87	116.69	120.80
1	A	489	ARG	NE-CZ-NH2	-5.84	117.38	120.30
1	A	260	PHE	CB-CG-CD2	-5.82	116.72	120.80
2	C	755	PHE	CB-CG-CD1	5.82	124.88	120.80
1	A	438	ARG	NE-CZ-NH1	5.82	123.21	120.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	304	ARG	NE-CZ-NH1	5.75	123.18	120.30
2	C	340	ARG	NE-CZ-NH2	-5.75	117.42	120.30
2	C	669	ARG	NE-CZ-NH2	-5.75	117.42	120.30
8	M	19	ARG	NE-CZ-NH1	5.71	123.16	120.30
7	L	461	ARG	NE-CZ-NH1	5.71	123.15	120.30
3	E	223	PHE	CB-CG-CD1	5.68	124.78	120.80
5	H	197	MET	CG-SD-CE	-5.68	91.12	100.20
7	L	272	PHE	CB-CG-CD1	5.65	124.75	120.80
7	L	334	ARG	NE-CZ-NH1	5.65	123.13	120.30
2	C	755	PHE	CB-CG-CD2	-5.64	116.86	120.80
1	A	376	ARG	NE-CZ-NH1	5.63	123.11	120.30
7	L	379	PRO	C-N-CA	5.63	135.78	121.70
3	E	191	ARG	NE-CZ-NH1	5.62	123.11	120.30
2	C	641	ARG	NE-CZ-NH2	-5.59	117.50	120.30
8	M	201	ARG	NE-CZ-NH1	5.58	123.09	120.30
2	C	441	ARG	NE-CZ-NH2	-5.57	117.51	120.30
3	E	223	PHE	CB-CG-CD2	-5.55	116.91	120.80
8	M	114	ASP	N-CA-CB	-5.55	100.61	110.60
2	C	521	ARG	NE-CZ-NH1	5.54	123.07	120.30
6	K	8	ARG	NE-CZ-NH1	5.51	123.06	120.30
2	C	723	ARG	NE-CZ-NH1	5.50	123.05	120.30
3	E	58	TYR	CB-CG-CD2	-5.49	117.70	121.00
3	E	189	LEU	CD1-CG-CD2	-5.46	94.11	110.50
3	E	9	ARG	NE-CZ-NH2	-5.46	117.57	120.30
3	E	53	PHE	CB-CG-CD2	-5.44	116.99	120.80
7	L	486	PHE	C-N-CA	5.44	135.30	121.70
3	E	9	ARG	NE-CZ-NH1	5.39	122.99	120.30
1	A	571	ARG	NE-CZ-NH1	5.38	122.99	120.30
5	H	221	LYS	C-N-CA	5.36	135.10	121.70
6	K	155	ARG	NE-CZ-NH2	-5.36	117.62	120.30
3	E	399	SER	N-CA-CB	5.35	118.52	110.50
2	C	669	ARG	NE-CZ-NH1	5.33	122.97	120.30
2	C	847	THR	CA-C-N	5.33	128.92	117.20
7	L	272	PHE	CB-CG-CD2	-5.33	117.07	120.80
1	A	182	PHE	CB-CG-CD1	5.32	124.53	120.80
3	E	53	PHE	CB-CG-CD1	5.32	124.52	120.80
2	C	560	ARG	NE-CZ-NH2	-5.30	117.65	120.30
7	L	194	PHE	CB-CG-CD2	-5.30	117.09	120.80
8	M	148	ARG	NE-CZ-NH1	5.29	122.95	120.30
7	L	537	ARG	NE-CZ-NH1	5.27	122.94	120.30
1	A	275	TYR	CB-CG-CD1	5.26	124.16	121.00
7	L	197	PHE	CB-CG-CD2	-5.26	117.12	120.80

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	124	ARG	NE-CZ-NH1	5.25	122.92	120.30
7	L	197	PHE	CB-CG-CD1	5.24	124.47	120.80
7	L	328	ARG	NE-CZ-NH2	-5.22	117.69	120.30
3	E	74	ARG	NE-CZ-NH1	5.22	122.91	120.30
8	M	322	TYR	CB-CG-CD1	5.22	124.13	121.00
8	M	115	LYS	C-N-CA	5.21	134.73	121.70
8	M	317	ARG	NE-CZ-NH1	5.21	122.90	120.30
2	C	435	ASP	N-CA-CB	5.19	119.94	110.60
2	C	485	ARG	NE-CZ-NH2	-5.18	117.71	120.30
1	A	483	ARG	NE-CZ-NH2	-5.17	117.71	120.30
2	C	391	THR	O-C-N	-5.17	114.42	122.70
7	L	486	PHE	O-C-N	-5.17	114.42	122.70
8	M	166	ARG	NE-CZ-NH1	5.15	122.88	120.30
1	A	427	TYR	CB-CG-CD2	-5.14	117.92	121.00
5	H	247	MET	CG-SD-CE	-5.12	92.01	100.20
2	C	490	LEU	C-N-CA	5.10	134.44	121.70
1	A	182	PHE	CB-CG-CD2	-5.09	117.24	120.80
8	M	124	TYR	CB-CG-CD1	5.09	124.05	121.00
8	M	294	PHE	CB-CG-CD1	5.06	124.34	120.80
1	A	489	ARG	NE-CZ-NH1	5.06	122.83	120.30
4	F	212	ARG	NE-CZ-NH2	-5.06	117.77	120.30
3	E	104	MET	CG-SD-CE	-5.06	92.11	100.20
5	H	53	TYR	CB-CG-CD1	5.05	124.03	121.00
3	E	211	ARG	NE-CZ-NH2	-5.04	117.78	120.30
3	E	48	THR	N-CA-CB	5.03	119.86	110.30
3	E	268	ARG	CA-C-N	5.03	128.26	117.20
7	L	409	TYR	CB-CG-CD2	-5.02	117.99	121.00
4	F	262	TYR	CB-CG-CD1	5.01	124.01	121.00
5	H	280	ARG	NE-CZ-NH1	5.01	122.81	120.30
3	E	393	MET	CG-SD-CE	-5.01	92.18	100.20
7	L	487	ARG	NE-CZ-NH1	5.00	122.80	120.30

All (6) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	C	513	LYS	CA
3	E	67	PRO	CA
5	H	223	ALA	CA
7	L	418	PRO	CA
7	L	439	PRO	CA
8	M	115	LYS	CA

All (94) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	165	ARG	Sidechain
1	A	169	ARG	Sidechain
1	A	190	ARG	Sidechain
1	A	195	ARG	Sidechain
1	A	202	ARG	Sidechain
1	A	300	TYR	Sidechain
1	A	307	ARG	Sidechain
1	A	317	ARG	Sidechain
1	A	321	ARG	Sidechain
1	A	367	ARG	Sidechain
1	A	438	ARG	Sidechain
1	A	454	ARG	Sidechain
1	A	469	ARG	Sidechain
1	A	483	ARG	Sidechain
1	A	489	ARG	Sidechain
1	A	502	ARG	Sidechain
1	A	514	MET	Peptide
1	A	578	ARG	Sidechain
1	A	581	ARG	Sidechain
1	A	589	ARG	Sidechain
1	A	597	ARG	Sidechain
1	A	91	ARG	Sidechain
2	C	320	LYS	Peptide
2	C	347	ARG	Sidechain
2	C	439	ARG	Sidechain
2	C	469	TYR	Sidechain
2	C	485	ARG	Sidechain
2	C	503	TYR	Sidechain
2	C	531	LYS	Peptide
2	C	536	GLN	Peptide
2	C	556	TYR	Sidechain
2	C	565	ARG	Sidechain
2	C	583	TYR	Sidechain
2	C	611	ARG	Sidechain
2	C	622	ARG	Sidechain
2	C	653	ARG	Sidechain
2	C	697	TYR	Sidechain
2	C	708	ARG	Sidechain
2	C	781	ARG	Sidechain
2	C	846	ARG	Sidechain
3	E	108	ARG	Sidechain
3	E	250	CYS	Peptide,Mainchain

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Group
3	E	255	ARG	Sidechain
3	E	270	ARG	Sidechain
3	E	286	TYR	Sidechain
3	E	369	ARG	Sidechain
3	E	376	ARG	Sidechain
3	E	4	TYR	Sidechain
3	E	49	ASN	Peptide
3	E	66	ILE	Peptide
4	F	113	ARG	Sidechain
4	F	128	ARG	Sidechain,Peptide
4	F	135	ARG	Sidechain
4	F	298	ARG	Sidechain
4	F	326	ARG	Sidechain
5	H	122	SER	Peptide
5	H	125	TYR	Sidechain
5	H	249	ARG	Sidechain
5	H	281	ARG	Sidechain
5	H	290	SER	Peptide
5	H	291	ARG	Sidechain
5	H	75	ARG	Sidechain
5	H	99	TYR	Sidechain
6	K	100	ARG	Sidechain
6	K	139	ARG	Sidechain
6	K	8	ARG	Sidechain
6	K	97	ARG	Sidechain
7	L	242	ARG	Sidechain
7	L	262	ARG	Sidechain
7	L	287	TYR	Sidechain
7	L	317	TYR	Sidechain
7	L	345	ARG	Sidechain
7	L	352	ARG	Sidechain
7	L	405	ASP	Peptide
7	L	434	ASN	Peptide
7	L	438	GLU	Peptide
7	L	467	TYR	Sidechain
7	L	487	ARG	Peptide
7	L	537	ARG	Sidechain
8	M	102	ARG	Sidechain
8	M	114	ASP	Peptide
8	M	121	TYR	Sidechain
8	M	13	ASP	Peptide
8	M	166	ARG	Sidechain

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Group
8	M	169	TYR	Sidechain
8	M	19	ARG	Sidechain
8	M	249	LEU	Peptide
8	M	278	ARG	Sidechain
8	M	289	ASN	Peptide
8	M	351	TYR	Sidechain
8	M	94	ARG	Sidechain
8	M	98	ARG	Sidechain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4935	0	5017	3	0
2	C	4529	0	4533	5	0
3	E	3466	0	3446	74	0
4	F	2111	0	2105	2	0
5	H	2624	0	2592	5	0
6	K	1738	0	1706	3	0
7	L	3110	0	3084	5	0
8	M	2919	0	2950	1	0
All	All	25432	0	25433	94	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 2.

All (94) 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)
3:E:217:TRP:CE3	3:E:217:TRP:CZ3	1.77	1.71
3:E:217:TRP:CZ3	3:E:217:TRP:CH2	1.75	1.62
3:E:217:TRP:CE2	3:E:217:TRP:CZ2	1.87	1.60
3:E:217:TRP:CH2	3:E:217:TRP:CZ2	1.79	1.59
3:E:217:TRP:CE3	3:E:217:TRP:CD2	1.86	1.59
3:E:217:TRP:CE2	3:E:217:TRP:CD2	1.77	1.52
3:E:189:LEU:HG	3:E:217:TRP:CD2	1.43	1.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:38:LEU:CD1	3:E:251:PRO:HD3	1.36	1.52
3:E:38:LEU:HD13	3:E:251:PRO:CD	1.43	1.46
3:E:251:PRO:C	3:E:252:HIS:N	1.68	1.45
3:E:189:LEU:HG	3:E:217:TRP:CE3	1.76	1.21
3:E:38:LEU:CD1	3:E:251:PRO:CD	2.10	1.18
3:E:189:LEU:CG	3:E:217:TRP:CE2	2.28	1.14
3:E:189:LEU:CB	3:E:217:TRP:CD2	2.30	1.13
3:E:189:LEU:CG	3:E:217:TRP:CD2	2.31	1.12
3:E:189:LEU:CB	3:E:217:TRP:CE2	2.31	1.12
3:E:189:LEU:CG	3:E:217:TRP:CE3	2.34	1.09
3:E:251:PRO:HB2	3:E:286:TYR:CE1	1.87	1.09
3:E:189:LEU:CG	3:E:217:TRP:CZ2	2.38	1.07
3:E:189:LEU:CG	3:E:217:TRP:CH2	2.38	1.06
3:E:251:PRO:N	3:E:252:HIS:H	1.53	1.06
3:E:189:LEU:CB	3:E:217:TRP:CZ2	2.39	1.06
3:E:189:LEU:CG	3:E:217:TRP:CZ3	2.41	1.03
3:E:251:PRO:CA	3:E:252:HIS:N	2.21	1.03
3:E:189:LEU:CB	3:E:217:TRP:CE3	2.42	1.02
3:E:189:LEU:CB	3:E:217:TRP:CZ3	2.43	1.01
3:E:189:LEU:CB	3:E:217:TRP:CH2	2.45	0.98
3:E:251:PRO:CD	3:E:252:HIS:H	1.77	0.96
3:E:251:PRO:HD2	3:E:252:HIS:HB2	1.43	0.95
3:E:189:LEU:HG	3:E:217:TRP:CE2	2.04	0.92
3:E:189:LEU:HB2	3:E:217:TRP:CE3	2.05	0.92
3:E:251:PRO:N	3:E:252:HIS:N	2.18	0.92
3:E:189:LEU:HB3	3:E:217:TRP:CH2	2.06	0.89
3:E:251:PRO:CD	3:E:252:HIS:HB2	2.05	0.85
3:E:38:LEU:HD13	3:E:251:PRO:CG	2.07	0.85
3:E:38:LEU:HD11	3:E:251:PRO:CD	2.04	0.84
3:E:189:LEU:CD1	3:E:217:TRP:CZ3	2.63	0.81
3:E:251:PRO:HB2	3:E:286:TYR:CZ	2.14	0.81
3:E:189:LEU:CD2	3:E:217:TRP:CZ2	2.67	0.77
3:E:38:LEU:CD1	3:E:251:PRO:HD2	2.15	0.77
3:E:38:LEU:HD13	3:E:251:PRO:HD3	0.76	0.76
3:E:189:LEU:CA	3:E:217:TRP:CE2	2.69	0.75
3:E:251:PRO:CG	3:E:252:HIS:HB2	2.18	0.74
3:E:251:PRO:HD2	3:E:252:HIS:CB	2.17	0.74
3:E:251:PRO:CB	3:E:286:TYR:CE1	2.70	0.74
3:E:189:LEU:CD2	3:E:217:TRP:CE2	2.70	0.74
3:E:189:LEU:HB3	3:E:217:TRP:CZ3	2.24	0.73
3:E:251:PRO:CG	3:E:252:HIS:N	2.51	0.73

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:189:LEU:HB2	3:E:217:TRP:CD2	2.22	0.73
3:E:38:LEU:HD11	3:E:251:PRO:HD2	1.71	0.68
3:E:251:PRO:CG	3:E:252:HIS:H	2.07	0.67
3:E:251:PRO:HG2	3:E:252:HIS:HB2	1.78	0.66
3:E:251:PRO:HG2	3:E:252:HIS:N	2.10	0.64
3:E:189:LEU:HD22	3:E:217:TRP:CZ2	2.36	0.59
7:L:358:GLU:H	7:L:358:GLU:CD	2.04	0.58
3:E:251:PRO:HB2	3:E:286:TYR:HE1	1.63	0.58
3:E:189:LEU:HA	3:E:217:TRP:CE2	2.38	0.58
3:E:189:LEU:HD23	3:E:217:TRP:CE2	2.39	0.56
3:E:251:PRO:CB	3:E:286:TYR:CZ	2.88	0.54
5:H:227:LYS:HD2	5:H:227:LYS:H	1.72	0.54
3:E:251:PRO:HG2	3:E:252:HIS:CB	2.38	0.53
3:E:250:CYS:N	3:E:251:PRO:HA	2.26	0.51
3:E:189:LEU:CD1	3:E:217:TRP:CH2	2.94	0.50
6:K:217:SER:N	7:L:534:LYS:NZ	2.60	0.50
1:A:285:LYS:HG2	1:A:292:HIS:CD2	2.46	0.50
3:E:189:LEU:CD1	3:E:217:TRP:CE3	2.94	0.50
3:E:249:MET:SD	3:E:251:PRO:HB3	2.53	0.49
6:K:196:ILE:HG13	6:K:197:LYS:H	1.77	0.48
3:E:38:LEU:HD13	3:E:251:PRO:HG3	1.94	0.48
3:E:189:LEU:C	3:E:217:TRP:CZ2	2.86	0.48
4:F:207:HIS:HE1	4:F:219:HIS:CE1	2.31	0.48
5:H:195:GLU:H	5:H:195:GLU:CD	2.17	0.48
3:E:344:PHE:CE1	3:E:348:HIS:CE1	3.01	0.48
3:E:251:PRO:CB	3:E:252:HIS:N	2.77	0.47
6:K:217:SER:N	7:L:534:LYS:HZ3	2.12	0.47
3:E:251:PRO:HG2	3:E:252:HIS:CA	2.45	0.47
3:E:112:MET:HA	3:E:115:ASP:HB2	1.98	0.46
1:A:353:ARG:HH11	5:H:90:ASP:CG	2.19	0.46
2:C:733:MET:HA	2:C:736:HIS:CD2	2.52	0.44
2:C:340:ARG:HE	2:C:384:ASP:CG	2.21	0.44
2:C:527:GLU:H	2:C:527:GLU:CD	2.22	0.43
7:L:242:ARG:HA	7:L:427:ASN:HD21	1.83	0.43
3:E:189:LEU:CA	3:E:217:TRP:CZ2	3.01	0.43
2:C:369:GLY:HA3	2:C:419:PHE:CG	2.54	0.42
2:C:877:LYS:N	5:H:280:ARG:NH2	2.66	0.42
3:E:96:GLU:H	3:E:96:GLU:CD	2.22	0.42
3:E:251:PRO:CD	3:E:252:HIS:CB	2.87	0.42
3:E:189:LEU:HD13	3:E:217:TRP:CZ3	2.54	0.42
5:H:217:GLU:CD	5:H:221:LYS:HZ1	2.23	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:486:HIS:CD2	1:A:488:SER:H	2.39	0.41
4:F:207:HIS:CE1	4:F:219:HIS:CE1	3.09	0.40
8:M:309:GLU:CD	8:M:331:LYS:HZ1	2.24	0.40
3:E:111:ARG:HB3	3:E:134:TYR:CZ	2.56	0.40
7:L:381:ARG:HH22	7:L:520:ASP:CG	2.24	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	598/1362 (44%)	544 (91%)	36 (6%)	18 (3%)	4	28
2	C	556/843 (66%)	512 (92%)	28 (5%)	16 (3%)	4	29
3	E	418/445 (94%)	362 (87%)	37 (9%)	19 (4%)	2	22
4	F	270/364 (74%)	234 (87%)	20 (7%)	16 (6%)	1	17
5	H	322/352 (92%)	277 (86%)	29 (9%)	16 (5%)	2	20
6	K	214/218 (98%)	200 (94%)	12 (6%)	2 (1%)	17	56
7	L	371/564 (66%)	331 (89%)	26 (7%)	14 (4%)	3	24
8	M	364/374 (97%)	320 (88%)	30 (8%)	14 (4%)	3	24
All	All	3113/4522 (69%)	2780 (89%)	218 (7%)	115 (4%)	6	25

All (115) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	40	HIS
1	A	136	ASP
1	A	166	ASN
1	A	478	CYS
1	A	539	PRO

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	C	392	TYR
2	C	416	PRO
2	C	430	ASN
2	C	712	LYS
3	E	67	PRO
3	E	76	THR
3	E	246	ILE
3	E	399	SER
4	F	214	ALA
4	F	243	VAL
4	F	248	MET
4	F	339	VAL
5	H	154	PRO
5	H	183	SER
5	H	222	SER
7	L	273	SER
7	L	406	PRO
7	L	439	PRO
7	L	489	GLN
7	L	500	LEU
8	M	115	LYS
8	M	117	THR
8	M	268	LEU
8	M	290	LYS
8	M	334	VAL
1	A	21	VAL
1	A	163	LEU
1	A	188	TYR
1	A	311	THR
1	A	501	THR
2	C	326	HIS
2	C	530	SER
2	C	704	ASP
2	C	847	THR
3	E	26	LEU
3	E	88	THR
3	E	238	TYR
3	E	326	VAL
4	F	260	ALA
4	F	315	SER
4	F	338	ILE
5	H	54	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
5	H	127	SER
5	H	291	ARG
7	L	294	LEU
8	M	173	VAL
8	M	193	THR
8	M	194	GLU
8	M	292	ILE
8	M	338	THR
1	A	135	GLU
1	A	239	SER
2	C	346	ASP
2	C	529	SER
3	E	48	THR
3	E	50	MET
3	E	237	LEU
3	E	249	MET
3	E	269	LYS
3	E	327	ALA
3	E	397	ALA
4	F	129	ARG
4	F	146	LYS
4	F	314	LEU
4	F	317	LYS
5	H	53	TYR
5	H	57	GLY
5	H	125	TYR
5	H	205	ILE
5	H	305	PHE
7	L	404	GLY
7	L	435	TYR
7	L	486	PHE
8	M	113	MET
1	A	421	GLU
1	A	480	LEU
2	C	655	LEU
2	C	849	PRO
3	E	90	PRO
3	E	380	LEU
5	H	112	ILE
5	H	193	THR
7	L	418	PRO
7	L	487	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	65	HIS
2	C	491	GLU
2	C	653	ARG
3	E	22	LEU
3	E	221	VAL
4	F	131	GLU
4	F	280	ASN
7	L	349	MET
8	M	132	ALA
1	A	344	MET
2	C	707	ARG
5	H	203	ILE
6	K	201	ILE
7	L	182	TRP
8	M	236	LEU
4	F	278	SER
6	K	202	VAL
1	A	514	MET
2	C	436	GLN
4	F	108	GLY
8	M	60	VAL
5	H	295	PRO
5	H	85	PRO
7	L	291	ILE
1	A	417	GLN
4	F	282	VAL

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	551/1245 (44%)	528 (96%)	23 (4%)	30	54
2	C	503/750 (67%)	480 (95%)	23 (5%)	27	52
3	E	384/406 (95%)	361 (94%)	23 (6%)	19	44
4	F	239/282 (85%)	231 (97%)	8 (3%)	38	61

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	H	293/311 (94%)	270 (92%)	23 (8%)	12	36
6	K	190/193 (98%)	188 (99%)	2 (1%)	73	84
7	L	342/516 (66%)	325 (95%)	17 (5%)	24	49
8	M	327/335 (98%)	309 (94%)	18 (6%)	21	47
All	All	2829/4038 (70%)	2692 (95%)	137 (5%)	29	51

All (137) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	GLU
1	A	16	ASN
1	A	45	LYS
1	A	110	GLN
1	A	136	ASP
1	A	162	ASP
1	A	170	VAL
1	A	179	GLN
1	A	209	GLN
1	A	261	SER
1	A	300	TYR
1	A	309	ASN
1	A	323	LEU
1	A	335	ARG
1	A	372	ASN
1	A	397	GLU
1	A	419	GLU
1	A	420	LYS
1	A	434	ASN
1	A	521	ASN
1	A	546	LYS
1	A	583	GLU
1	A	593	GLU
2	C	338	GLN
2	C	352	GLU
2	C	407	GLU
2	C	416	PRO
2	C	491	GLU
2	C	492	GLU
2	C	511	TYR
2	C	535	ASP
2	C	556	TYR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	C	560	ARG
2	C	562	ASP
2	C	578	LEU
2	C	593	HIS
2	C	615	GLN
2	C	653	ARG
2	C	676	HIS
2	C	706	ARG
2	C	716	HIS
2	C	760	LYS
2	C	773	ASP
2	C	795	TYR
2	C	861	GLU
2	C	876	HIS
3	E	5	ASP
3	E	8	THR
3	E	33	ASN
3	E	48	THR
3	E	65	ASP
3	E	89	GLU
3	E	94	MET
3	E	109	ASP
3	E	134	TYR
3	E	189	LEU
3	E	193	LYS
3	E	194	GLU
3	E	224	ASN
3	E	248	THR
3	E	269	LYS
3	E	270	ARG
3	E	306	ASP
3	E	331	ASP
3	E	332	PHE
3	E	348	HIS
3	E	358	ASP
3	E	361	ASN
3	E	393	MET
4	F	115	HIS
4	F	140	LEU
4	F	171	GLU
4	F	202	HIS
4	F	269	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
4	F	281	ARG
4	F	283	ILE
4	F	329	MET
5	H	53	TYR
5	H	70	LEU
5	H	73	GLU
5	H	80	ASN
5	H	90	ASP
5	H	96	GLU
5	H	104	MET
5	H	141	GLN
5	H	145	GLU
5	H	146	GLU
5	H	157	THR
5	H	163	SER
5	H	212	ASN
5	H	221	LYS
5	H	248	ASP
5	H	251	ASP
5	H	255	GLN
5	H	260	TYR
5	H	268	SER
5	H	281	ARG
5	H	299	GLU
5	H	315	ASP
5	H	352	ASN
6	K	34	GLU
6	K	183	GLU
7	L	182	TRP
7	L	185	ASP
7	L	213	ASP
7	L	220	LYS
7	L	252	ASP
7	L	287	TYR
7	L	309	PRO
7	L	358	GLU
7	L	392	GLU
7	L	393	LYS
7	L	405	ASP
7	L	418	PRO
7	L	419	LYS
7	L	439	PRO

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
7	L	461	ARG
7	L	478	PHE
7	L	525	LYS
8	M	13	ASP
8	M	19	ARG
8	M	72	LEU
8	M	93	PHE
8	M	121	TYR
8	M	139	TYR
8	M	145	ASP
8	M	152	SER
8	M	153	ASP
8	M	185	MET
8	M	235	GLU
8	M	261	ASP
8	M	264	ASP
8	M	270	HIS
8	M	293	SER
8	M	294	PHE
8	M	295	ASP
8	M	352	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	550	HIS
2	C	326	HIS
2	C	572	HIS
2	C	840	GLN
3	E	85	GLN
3	E	216	HIS
3	E	349	GLN
4	F	207	HIS
5	H	328	GLN
7	L	546	GLN
8	M	205	HIS
8	M	348	GLN

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
3	E	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	251:PRO	C	252:HIS	N	1.68
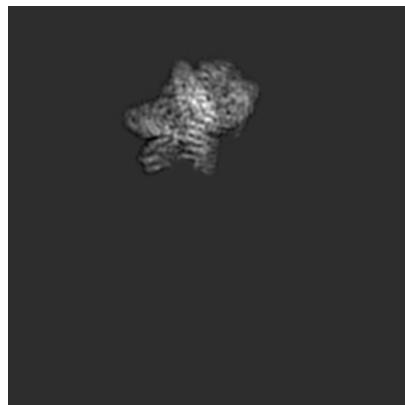
6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-3056. These allow visual inspection of the internal detail of the map and identification of artifacts.
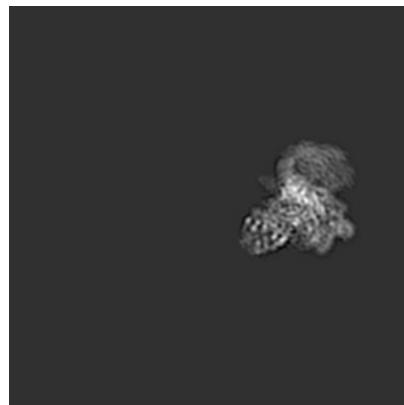
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections ⓘ
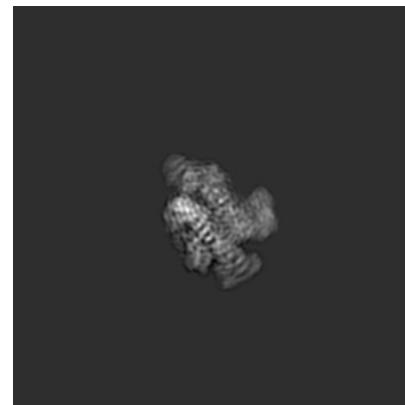
6.1.1 Primary map

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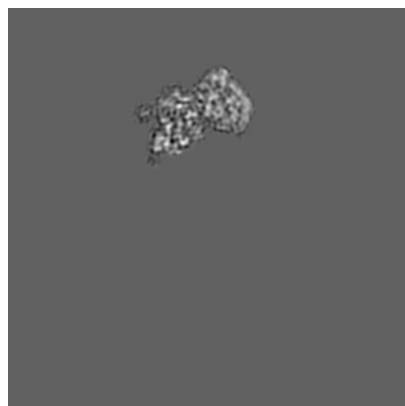
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
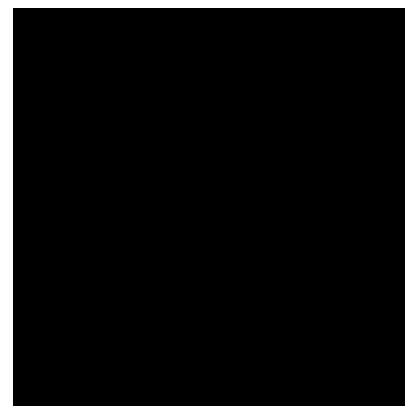
6.2.1 Primary map

| X Index: 150 | Y Index: 150 | Z Index: 150 |

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: 138 | Y Index: 147 | Z Index: 220 |
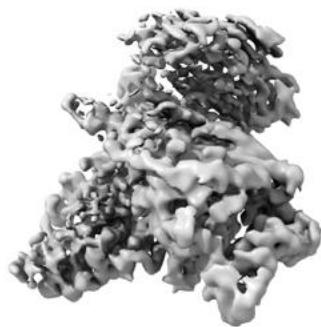
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)
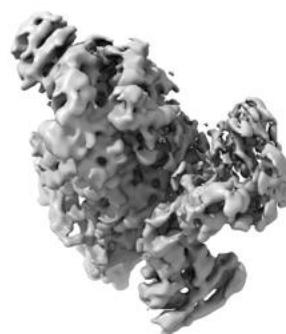
6.4.1 Primary map

| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.
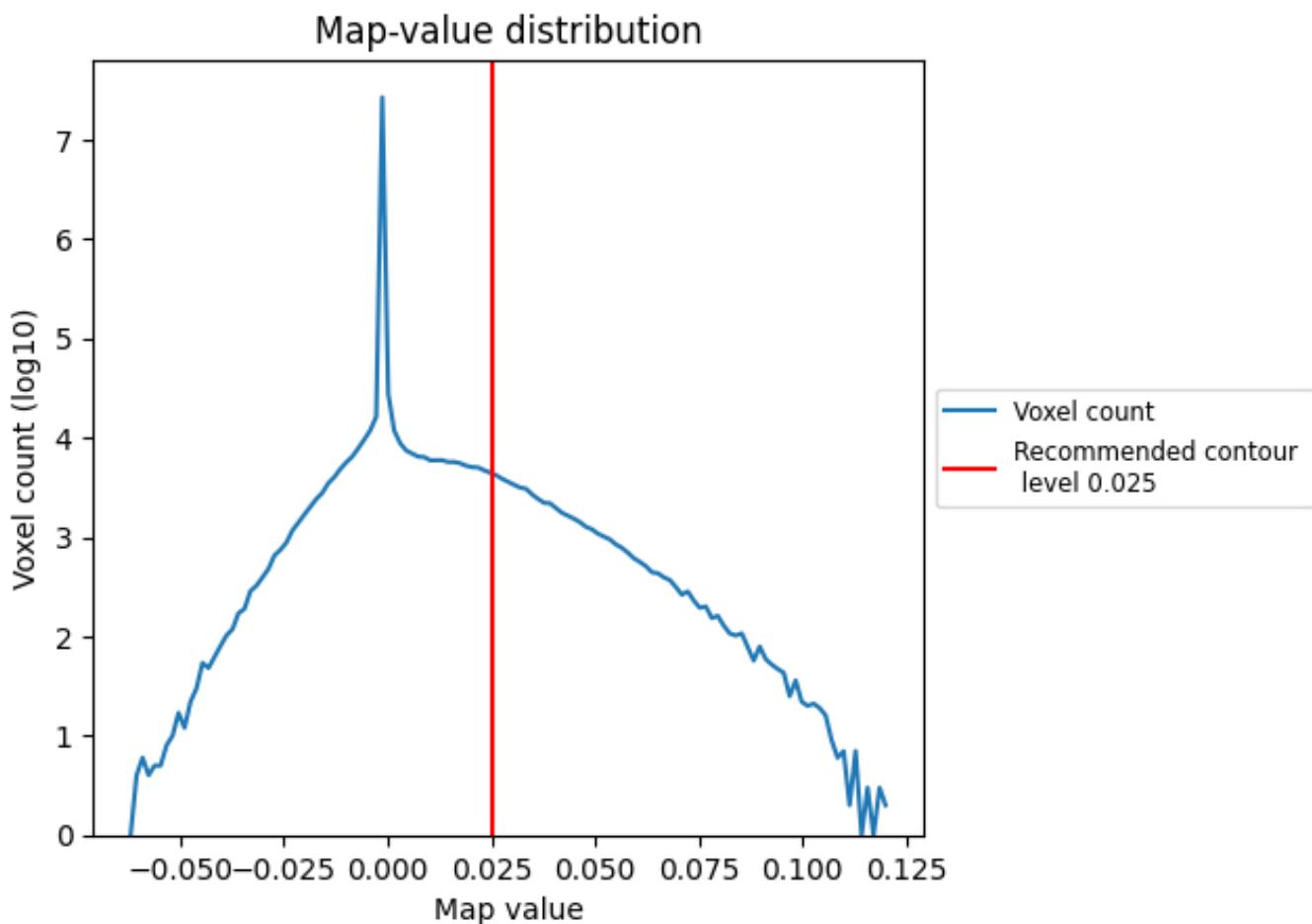
6.5 Mask visualisation (i)

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

7　Map analysis ⓘ
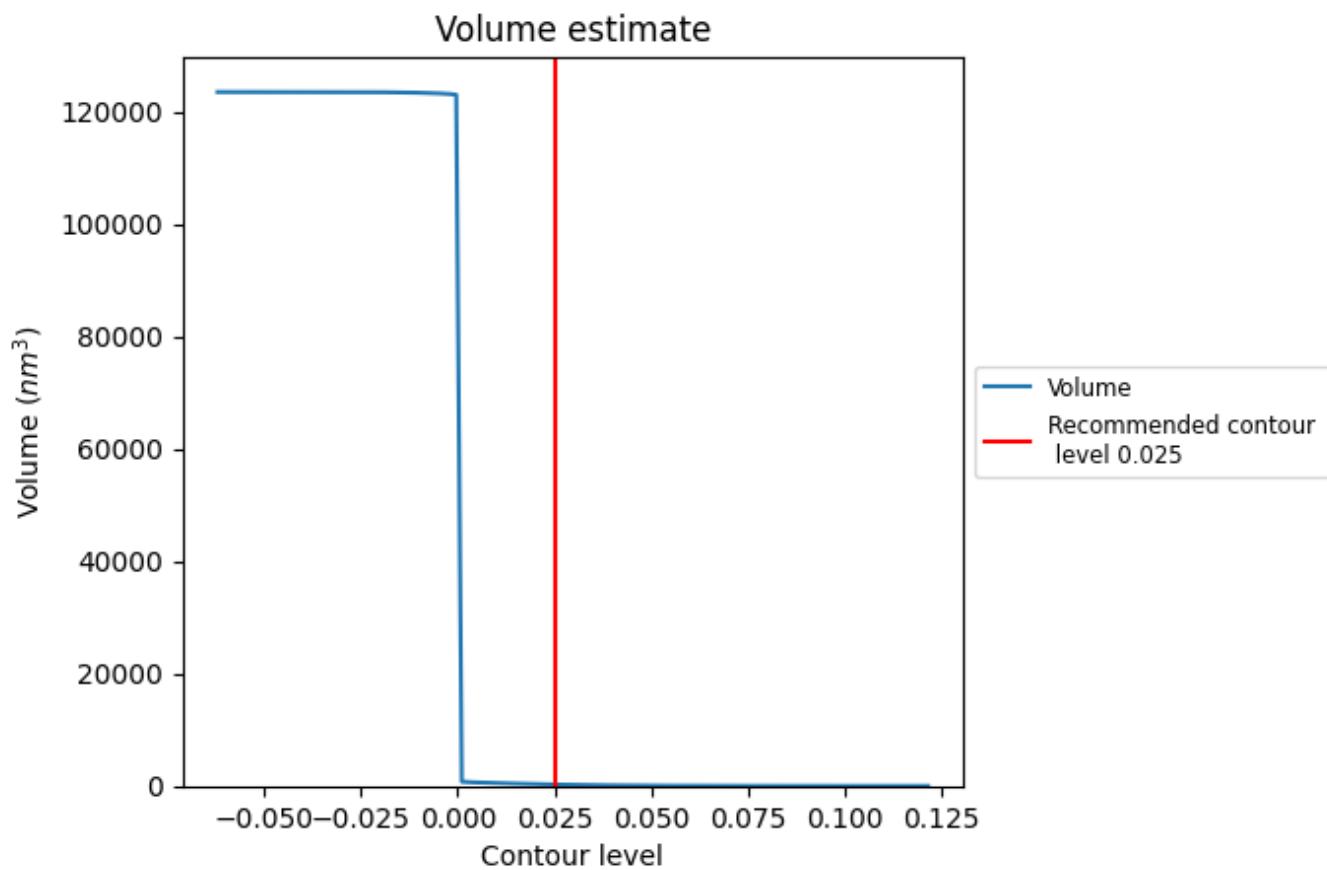
This section contains the results of statistical analysis of the map.

7.1　Map-value distribution ⓘ

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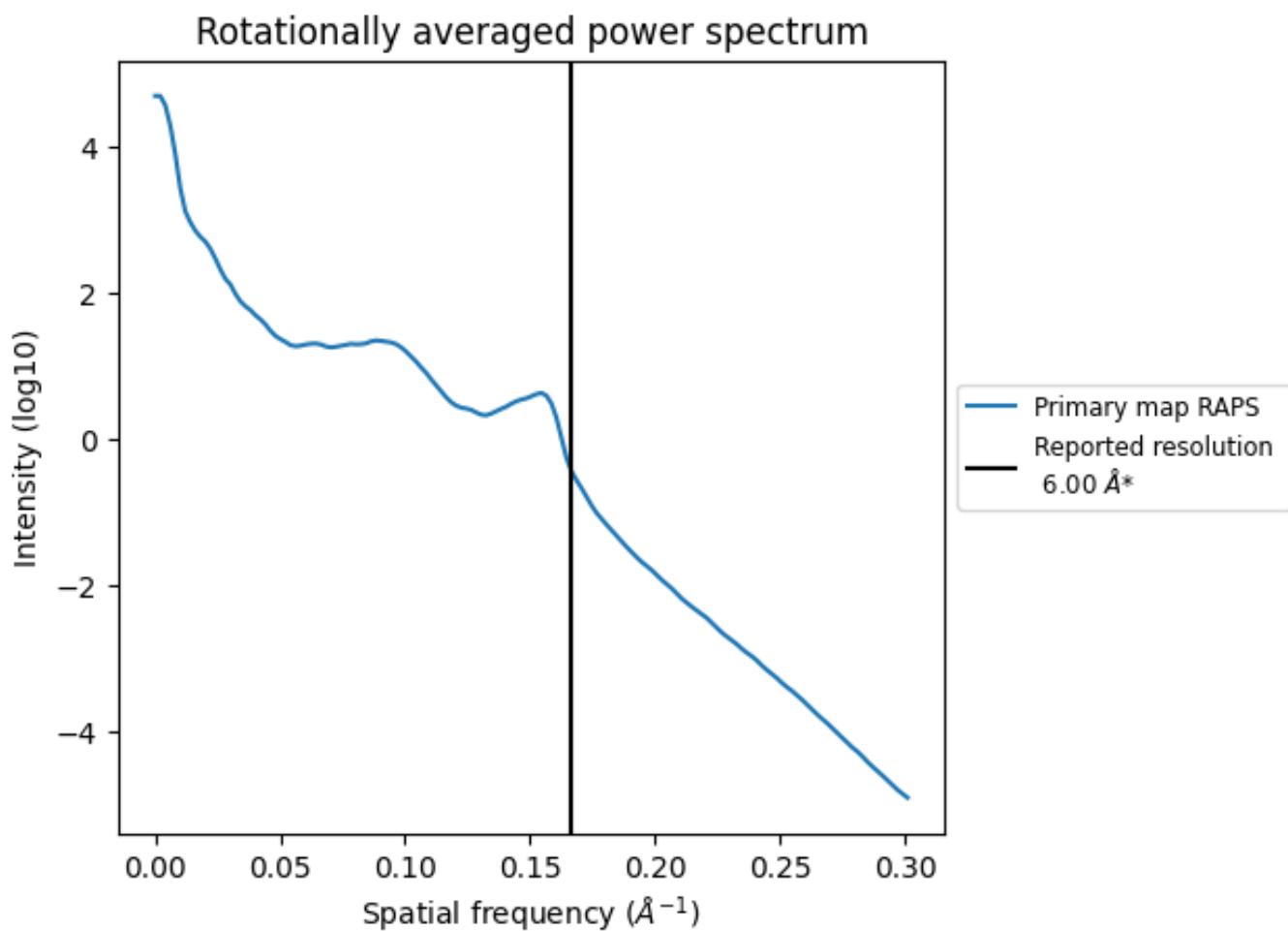
7.2　Volume estimate ⓘ

The volume at the recommended contour level is 259 nm^3; this corresponds to an approximate mass of 234 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 0.167 Å^{-1}
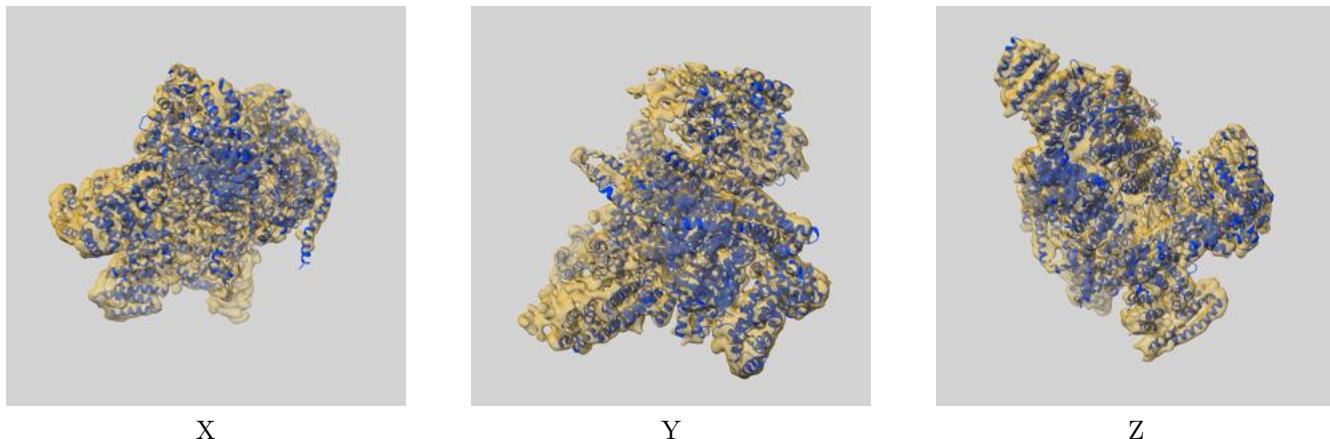
8 Fourier-Shell correlation (i)

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

9 Map-model fit ⓘ
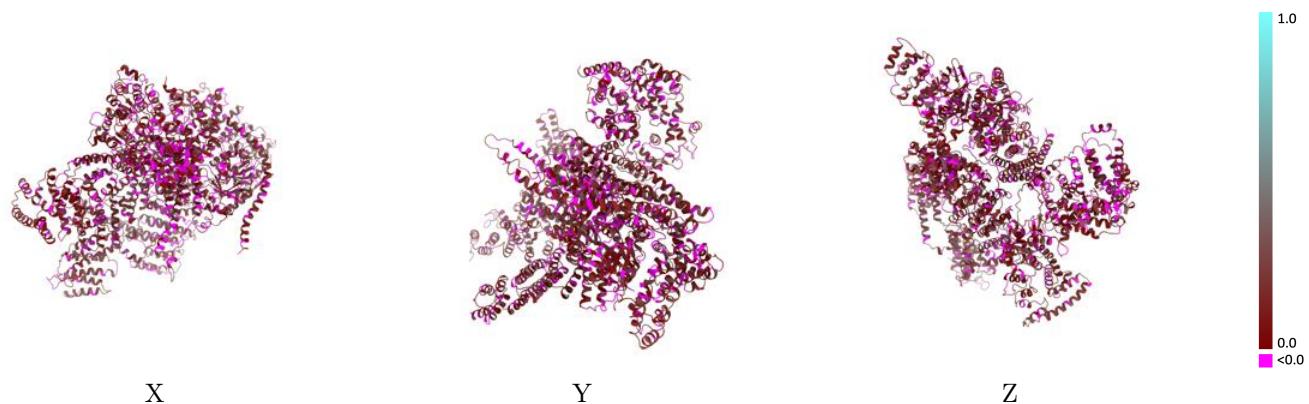
This section contains information regarding the fit between EMDB map EMD-3056 and PDB model 5A5T. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlay ⓘ

| X | Y | Z |
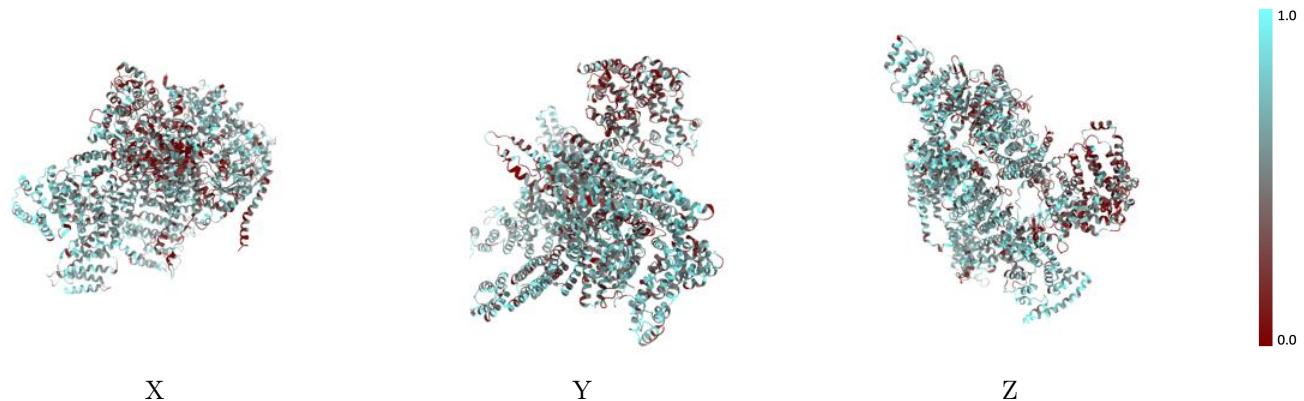
The images above show the 3D surface view of the map at the recommended contour level 0.025 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2　Q-score mapped to coordinate model　ⓘ

X　　　　　　　　　　Y　　　　　　　　　　Z
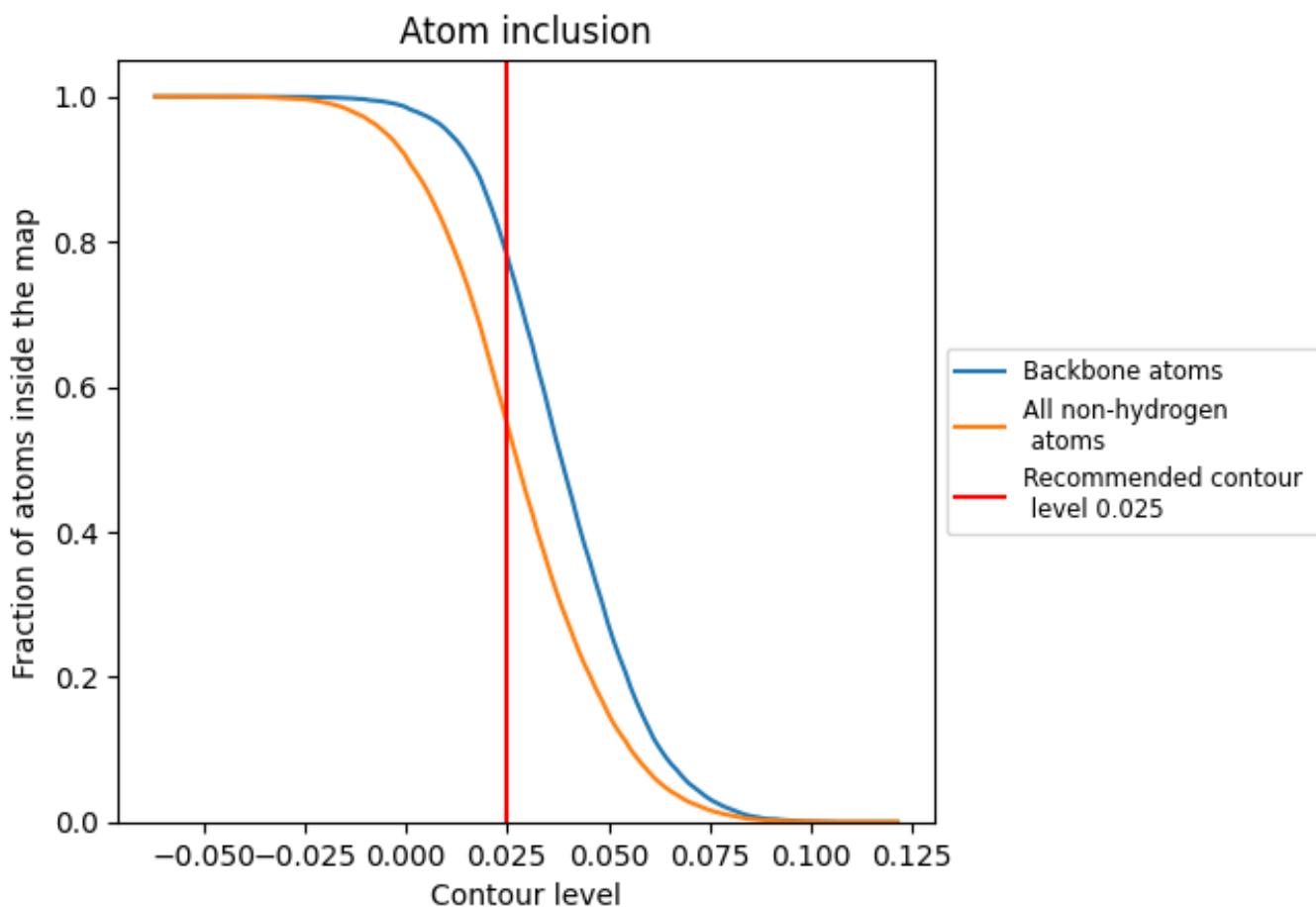
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.025).

9.4   Atom inclusion ⓘ

At the recommended contour level, 78% of all backbone atoms, 55% 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 (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5485	0.1070
A	0.5850	0.1150
C	0.6152	0.1230
E	0.6365	0.1200
F	0.5489	0.1010
H	0.4754	0.0830
K	0.4361	0.1020
L	0.3580	0.0800
M	0.6145	0.1110

1.0

0.0
<0.0