WORLDWIDE PDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Feb 16, 2026 – 04:57 PM EST

PDB ID	:	9PWQ / pdb_00009pwq
EMDB ID	:	EMD-71938
Title	:	Cryo-EM structure of receptor tyrosine kinase ROS1 extracellular domain in complex with NELL2
Authors	:	Li, H.; Klein, D.
Deposited on	:	2025-08-05
Resolution	:	4.45 Å(reported)

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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 4.45 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		14
Ramachandran outliers		0.1%
Sidechain outliers		0

Worse   *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.186

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	3027 (3.95 - 4.95)

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	1853	56% 27% 17%
2	B	830	18% 8% 74%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 14039 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 Proto-oncogene tyrosine-protein kinase ROS.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1542	12242	7896	2006	2291	49	0	0

There are 34 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1848	GLY	-	expression tag	UNP Q78DX7
A	1849	GLY	-	expression tag	UNP Q78DX7
A	1850	GLY	-	expression tag	UNP Q78DX7
A	1851	SER	-	expression tag	UNP Q78DX7
A	1852	SER	-	expression tag	UNP Q78DX7
A	1853	ALA	-	expression tag	UNP Q78DX7
A	1854	TRP	-	expression tag	UNP Q78DX7
A	1855	SER	-	expression tag	UNP Q78DX7
A	1856	HIS	-	expression tag	UNP Q78DX7
A	1857	PRO	-	expression tag	UNP Q78DX7
A	1858	GLN	-	expression tag	UNP Q78DX7
A	1859	PHE	-	expression tag	UNP Q78DX7
A	1860	GLU	-	expression tag	UNP Q78DX7
A	1861	LYS	-	expression tag	UNP Q78DX7
A	1862	GLY	-	expression tag	UNP Q78DX7
A	1863	GLY	-	expression tag	UNP Q78DX7
A	1864	GLY	-	expression tag	UNP Q78DX7
A	1865	SER	-	expression tag	UNP Q78DX7
A	1866	GLY	-	expression tag	UNP Q78DX7
A	1867	GLY	-	expression tag	UNP Q78DX7
A	1868	GLY	-	expression tag	UNP Q78DX7
A	1869	SER	-	expression tag	UNP Q78DX7
A	1870	GLY	-	expression tag	UNP Q78DX7
A	1871	GLY	-	expression tag	UNP Q78DX7
A	1872	SER	-	expression tag	UNP Q78DX7
A	1873	ALA	-	expression tag	UNP Q78DX7
A	1874	TRP	-	expression tag	UNP Q78DX7
A	1875	SER	-	expression tag	UNP Q78DX7

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1876	HIS	-	expression tag	UNP Q78DX7
A	1877	PRO	-	expression tag	UNP Q78DX7
A	1878	GLN	-	expression tag	UNP Q78DX7
A	1879	PHE	-	expression tag	UNP Q78DX7
A	1880	GLU	-	expression tag	UNP Q78DX7
A	1881	LYS	-	expression tag	UNP Q78DX7

- Molecule 2 is a protein called Protein kinase C-binding protein NELL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	213	1657	1000	290	332	35	0	0

There are 35 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	817	GLY	-	expression tag	UNP Q99435
B	818	GLY	-	expression tag	UNP Q99435
B	819	GLY	-	expression tag	UNP Q99435
B	820	GLY	-	expression tag	UNP Q99435
B	821	SER	-	expression tag	UNP Q99435
B	822	SER	-	expression tag	UNP Q99435
B	823	ALA	-	expression tag	UNP Q99435
B	824	TRP	-	expression tag	UNP Q99435
B	825	SER	-	expression tag	UNP Q99435
B	826	HIS	-	expression tag	UNP Q99435
B	827	PRO	-	expression tag	UNP Q99435
B	828	GLN	-	expression tag	UNP Q99435
B	829	PHE	-	expression tag	UNP Q99435
B	830	GLU	-	expression tag	UNP Q99435
B	831	LYS	-	expression tag	UNP Q99435
B	832	GLY	-	expression tag	UNP Q99435
B	833	GLY	-	expression tag	UNP Q99435
B	834	GLY	-	expression tag	UNP Q99435
B	835	SER	-	expression tag	UNP Q99435
B	836	GLY	-	expression tag	UNP Q99435
B	837	GLY	-	expression tag	UNP Q99435
B	838	GLY	-	expression tag	UNP Q99435
B	839	SER	-	expression tag	UNP Q99435
B	840	GLY	-	expression tag	UNP Q99435
B	841	GLY	-	expression tag	UNP Q99435
B	842	SER	-	expression tag	UNP Q99435

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Chain	Residue	Modelled	Actual	Comment	Reference
B	843	ALA	-	expression tag	UNP Q99435
B	844	TRP	-	expression tag	UNP Q99435
B	845	SER	-	expression tag	UNP Q99435
B	846	HIS	-	expression tag	UNP Q99435
B	847	PRO	-	expression tag	UNP Q99435
B	848	GLN	-	expression tag	UNP Q99435
B	849	PHE	-	expression tag	UNP Q99435
B	850	GLU	-	expression tag	UNP Q99435
B	851	LYS	-	expression tag	UNP Q99435

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).
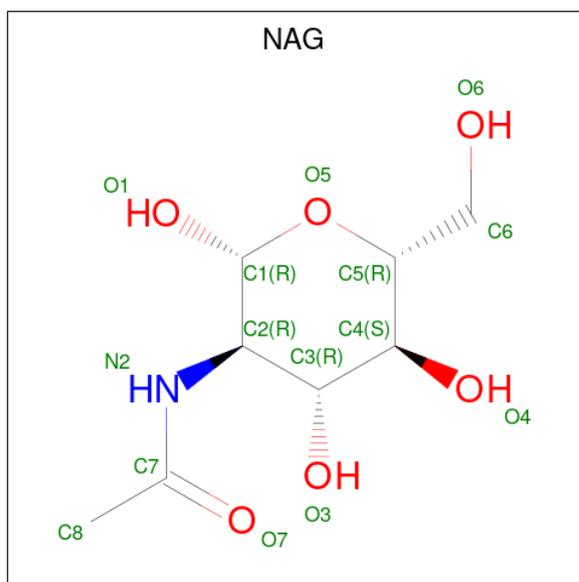
Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	

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Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	
3	A	1	Total	C	N	O	0
			14	8	1	5	

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: Proto-oncogene tyrosine-protein kinase ROS

• Molecule 2: Protein kinase C-binding protein NELL2

Chain B:

18% 8% 74%

MET ASN ARG LEU ASP GLN CYS TYR CYS E271 M276 E283 W287 I288 D289 G290 C291 C294 T295 C296 G299 T300 I301 Q302 C303 L306 P311 D312 C313 P314 L315 K316 S317 A318 L319 A320 K328 E329 C330 K331 S332 I333 R339 T340 Y341 R346 N347 T348 L358

Y359 E360 C361 M366 K367 L368 V369 T386 L387 V394 C395 K396 F400 N410 R414 R419 A420 C424 R425 F428 Y437 C438 A445 E446 G447 R448 H449 Y450 C451 R452 E453 N454 T455 M465 C468 K469 T470 Y478 S479 H483 ASP CYS ILE THR.

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

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

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

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

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

LYS HIS GLY THR GLU CYS THR LEU CYS GLN CYS LYS ASN GLY HIS ILE CYS CYS SER VAL ASP PRO GLN LEU GLN GLU LEU GLY GLY GLY GLY SER GLY GLY SER ALA TRP SER HIS PRO GLN

PHE GLU LYS

4   Experimental information   ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	59436	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)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.478	Depositor
Minimum map value	-0.316	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.0248	Depositor
Map size (Å)	532.48, 532.48, 532.48	wwPDB
Map dimensions	640, 640, 640	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83199996, 0.83199996, 0.83199996	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: NAG

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	0.11	0/12595	0.31	0/17178
2	B	0.11	0/1685	0.34	0/2268
All	All	0.11	0/14280	0.32	0/19446

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	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	406	ASN	Peptide

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.

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	12242	0	12006	342	0
2	B	1657	0	1524	50	0
3	A	140	0	130	2	0
All	All	14039	0	13660	385	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 14.

All (385) 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)
2:B:320:ALA:HB3	2:B:331:LYS:HD3	1.62	0.80
1:A:682:LEU:HB2	1:A:696:LEU:HB2	1.66	0.78
2:B:400:PHE:HB2	2:B:420:ALA:HB2	1.67	0.76
2:B:428:PHE:HB3	2:B:438:CYS:HB3	1.67	0.76
1:A:488:MET:SD	1:A:499:ARG:NH1	2.58	0.75
1:A:471:LYS:NZ	1:A:514:CYS:O	2.20	0.74
1:A:115:PRO:HD2	1:A:193:SER:HB3	1.70	0.73
2:B:294:CYS:HA	2:B:303:CYS:HA	1.70	0.73
1:A:711:ASN:HA	1:A:727:LEU:HB2	1.71	0.73
1:A:177:ARG:HH22	1:A:189:TYR:HA	1.53	0.72
1:A:382:ILE:HG22	1:A:393:PHE:HB2	1.71	0.72
1:A:1046:PHE:HB2	1:A:1062:GLU:HB3	1.71	0.72
1:A:613:GLN:NE2	1:A:642:THR:OG1	2.24	0.70
1:A:1304:THR:HB	1:A:1306:GLN:HE22	1.56	0.70
1:A:305:LEU:HD21	1:A:540:VAL:HG21	1.74	0.70
1:A:1319:ARG:NH1	1:A:1322:CYS:SG	2.65	0.69
2:B:329:GLU:HB2	2:B:331:LYS:HZ1	1.57	0.69
2:B:300:THR:HG22	2:B:301:ILE:H	1.57	0.69
1:A:303:LEU:HD13	1:A:520:LEU:HD22	1.75	0.69
2:B:452:ARG:HB3	2:B:479:SER:HB2	1.74	0.69
1:A:907:GLN:NE2	1:A:909:THR:OG1	2.26	0.68
1:A:242:LEU:HB3	1:A:249:LEU:HB2	1.75	0.68
1:A:1004:LEU:HD22	1:A:1008:THR:HG21	1.75	0.68
1:A:331:ILE:HG23	1:A:351:GLU:HG3	1.75	0.68
1:A:1152:LEU:HD21	1:A:1390:TYR:CD2	2.29	0.68
1:A:829:VAL:HG22	1:A:845:VAL:HG22	1.76	0.67
1:A:325:CYS:H	1:A:363:MET:HE2	1.60	0.67
2:B:452:ARG:HG3	2:B:453:GLU:H	1.58	0.67
1:A:357:MET:SD	1:A:370:ARG:NH1	2.68	0.66
1:A:835:ASP:HB3	1:A:840:LEU:H	1.60	0.66
1:A:1289:SER:HB3	1:A:1294:GLN:HE22	1.60	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1531:GLU:HB2	1:A:1534:GLU:HB2	1.76	0.66
1:A:572:GLN:HE22	1:A:591:ALA:H	1.43	0.66
1:A:458:ARG:HD3	1:A:461:GLU:HB3	1.77	0.66
1:A:673:PHE:HD2	1:A:675:MET:HE3	1.61	0.66
1:A:1006:PRO:HG3	1:A:1072:ASN:H	1.61	0.66
1:A:746:ALA:HB1	1:A:788:MET:HB2	1.79	0.65
1:A:252:GLY:H	2:B:419:ARG:NH2	1.96	0.64
1:A:981:GLU:HB2	1:A:1013:SER:HB2	1.79	0.64
1:A:408:SER:OG	1:A:409:ASN:N	2.31	0.63
1:A:1232:ARG:HB3	1:A:1252:LEU:HB2	1.80	0.63
1:A:605:THR:HG23	1:A:648:SER:HB2	1.80	0.63
1:A:465:LEU:HA	1:A:480:PHE:HE1	1.63	0.63
1:A:805:VAL:HG23	1:A:818:LEU:HB2	1.80	0.63
2:B:410:ASN:HB3	2:B:438:CYS:HB2	1.79	0.63
1:A:313:LYS:NZ	1:A:360:ALA:O	2.31	0.63
1:A:814:SER:O	1:A:859:ARG:NH2	2.32	0.63
1:A:1516:PHE:N	1:A:1546:THR:OG1	2.32	0.62
2:B:296:CYS:HB2	2:B:302:GLN:HB2	1.81	0.62
1:A:342:ALA:HB2	1:A:563:GLN:HE21	1.64	0.62
1:A:1234:LEU:HB3	1:A:1250:VAL:HB	1.80	0.62
1:A:381:SER:HB3	1:A:394:ILE:HD12	1.82	0.62
1:A:122:SER:HA	1:A:199:HIS:HB2	1.80	0.61
1:A:1127:PHE:HA	1:A:1132:PRO:HA	1.82	0.61
1:A:438:ARG:NH2	1:A:463:GLY:O	2.33	0.61
1:A:767:ARG:HH11	1:A:778:VAL:HG22	1.66	0.61
1:A:314:ARG:HG2	1:A:538:PHE:HE2	1.66	0.61
1:A:756:LEU:HD23	1:A:770:VAL:HG12	1.83	0.60
1:A:585:ILE:HD11	1:A:630:LEU:HD23	1.84	0.60
1:A:673:PHE:CD2	1:A:675:MET:HE3	2.37	0.60
1:A:222:GLU:HG2	1:A:259:GLN:HG3	1.84	0.60
1:A:723:TYR:HB3	1:A:735:ASN:HB2	1.83	0.60
1:A:828:LYS:NZ	1:A:829:VAL:O	2.35	0.59
1:A:1253:GLU:HG3	1:A:1528:TYR:HB2	1.83	0.59
2:B:295:THR:N	2:B:302:GLN:O	2.34	0.59
2:B:329:GLU:HB2	2:B:331:LYS:NZ	2.18	0.59
1:A:1293:HIS:ND1	1:A:1331:LEU:O	2.36	0.58
1:A:1006:PRO:HG3	1:A:1072:ASN:N	2.18	0.58
1:A:1272:ILE:HD11	1:A:1333:GLY:HA3	1.84	0.58
1:A:1195:ALA:HA	1:A:1200:LEU:HA	1.85	0.58
1:A:243:ILE:HG13	1:A:270:ARG:HH21	1.68	0.58
1:A:1047:ILE:H	1:A:1148:PRO:HG3	1.68	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:283:GLU:HA	2:B:299:GLY:HA3	1.85	0.58
1:A:239:ASN:HB2	1:A:274:ALA:HB3	1.85	0.57
1:A:1167:GLN:NE2	1:A:1169:GLN:OE1	2.36	0.57
1:A:459:ILE:HD11	1:A:493:ASP:C	2.29	0.57
1:A:312:ARG:NH2	1:A:548:GLU:OE2	2.37	0.57
1:A:177:ARG:NH2	1:A:179:VAL:HG22	2.19	0.57
1:A:340:VAL:HG23	1:A:347:VAL:HG12	1.87	0.57
1:A:259:GLN:NE2	1:A:260:PHE:O	2.38	0.57
1:A:1117:GLU:HA	1:A:1144:SER:HB3	1.86	0.57
1:A:1344:ARG:HD2	1:A:1344:ARG:O	2.05	0.57
1:A:1385:ASP:HA	1:A:1430:LEU:HD11	1.86	0.57
1:A:608:VAL:HG22	1:A:645:VAL:HG22	1.87	0.57
1:A:142:GLN:HB3	1:A:177:ARG:HG3	1.86	0.57
1:A:252:GLY:O	2:B:419:ARG:NH2	2.38	0.57
1:A:716:SER:HB3	1:A:722:VAL:HG22	1.85	0.56
1:A:871:PHE:HD2	1:A:908:ARG:HH22	1.52	0.56
1:A:669:THR:OG1	1:A:670:GLU:N	2.37	0.56
1:A:980:VAL:HG22	1:A:1014:VAL:HG22	1.88	0.56
1:A:177:ARG:HH12	1:A:189:TYR:HB3	1.71	0.56
1:A:391:MET:N	1:A:402:CYS:O	2.36	0.56
1:A:1551:PRO:HG3	1:A:1584:VAL:HG13	1.87	0.55
1:A:706:MET:HE1	1:A:921:GLN:HB3	1.87	0.55
1:A:951:SER:O	1:A:953:ARG:NH1	2.39	0.55
1:A:265:PRO:HG2	1:A:294:PRO:HG3	1.87	0.55
1:A:547:ILE:HG12	2:B:368:LEU:HD22	1.89	0.55
1:A:691:GLY:HA2	1:A:916:PRO:HD2	1.88	0.55
1:A:242:LEU:HD11	1:A:269:TYR:HB3	1.88	0.55
1:A:301:GLN:NE2	1:A:518:ASP:OD2	2.39	0.55
1:A:738:ILE:HG22	1:A:740:SER:H	1.71	0.55
1:A:1239:LYS:HD2	1:A:1270:THR:HG23	1.89	0.55
1:A:1353:GLN:HG3	1:A:1371:VAL:HB	1.89	0.55
1:A:979:SER:HB2	1:A:1017:TYR:HE2	1.71	0.55
2:B:425:ARG:HE	2:B:428:PHE:HE2	1.54	0.55
1:A:1068:PRO:HG2	1:A:1071:GLU:HG2	1.89	0.54
1:A:566:PRO:HB2	1:A:604:TRP:HH2	1.72	0.54
1:A:684:SER:HB3	1:A:694:GLU:HB3	1.88	0.54
1:A:750:GLU:OE1	1:A:757:TYR:OH	2.23	0.54
1:A:247:GLN:OE1	1:A:269:TYR:OH	2.20	0.54
1:A:512:PHE:HB2	1:A:521:ILE:HG22	1.89	0.54
1:A:978:TYR:HB2	1:A:994:GLN:HG3	1.89	0.54
1:A:142:GLN:N	1:A:177:ARG:O	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:415:PRO:HG2	1:A:418:LEU:HB2	1.88	0.54
1:A:803:TYR:HH	1:A:823:TRP:CD1	2.25	0.54
1:A:841:LEU:N	1:A:856:ALA:O	2.39	0.54
1:A:697:SER:OG	1:A:699:ASP:OD2	2.25	0.54
1:A:959:SER:O	1:A:1003:GLY:N	2.37	0.54
2:B:395:CYS:SG	2:B:396:LYS:N	2.82	0.53
1:A:1557:ILE:HG21	1:A:1626:MET:HE1	1.91	0.53
1:A:115:PRO:HB2	1:A:127:LEU:HD12	1.91	0.53
1:A:789:ALA:HB3	1:A:798:TYR:HB2	1.91	0.53
1:A:1126:VAL:O	1:A:1133:GLY:N	2.41	0.53
1:A:177:ARG:NH2	1:A:189:TYR:HA	2.23	0.52
1:A:1295:MET:HB3	1:A:1308:VAL:HB	1.91	0.52
1:A:1045:ILE:HD13	1:A:1120:VAL:HG23	1.91	0.52
1:A:1392:ILE:HD11	1:A:1423:ILE:HG23	1.91	0.52
1:A:532:SER:OG	1:A:533:LEU:N	2.40	0.52
1:A:798:TYR:HE2	1:A:858:LEU:HD12	1.73	0.52
1:A:303:LEU:HD12	1:A:557:ILE:HG12	1.91	0.52
1:A:1288:VAL:HG22	1:A:1293:HIS:HD2	1.75	0.52
1:A:342:ALA:O	1:A:345:GLN:NE2	2.43	0.52
1:A:1158:ASN:HA	1:A:1179:ASP:HA	1.90	0.52
1:A:431:GLY:HA2	1:A:446:LEU:HD23	1.90	0.52
1:A:782:LYS:HG3	1:A:783:LEU:HD12	1.92	0.52
1:A:413:ILE:HG12	1:A:447:PRO:HG3	1.92	0.52
2:B:276:MET:SD	2:B:276:MET:N	2.83	0.52
1:A:261:TYR:HB3	2:B:339:ARG:HH21	1.75	0.51
1:A:357:MET:HG3	1:A:372:PHE:HB2	1.91	0.51
1:A:979:SER:HB3	1:A:1015:THR:HB	1.91	0.51
1:A:212:ASN:OD1	1:A:224:SER:OG	2.18	0.51
1:A:340:VAL:HG21	1:A:558:PHE:CG	2.46	0.51
1:A:1125:ARG:HB3	1:A:1135:PHE:HA	1.93	0.51
1:A:211:LEU:H	1:A:225:TRP:HA	1.75	0.51
1:A:708:TRP:CG	1:A:925:ILE:HG12	2.46	0.51
1:A:233:GLY:HA3	1:A:277:ASN:HD22	1.74	0.51
1:A:1590:MET:SD	1:A:1593:LEU:HB2	2.51	0.50
2:B:318:ALA:HB3	2:B:333:ILE:HG21	1.92	0.50
1:A:1164:ASP:HB2	1:A:1171:LEU:HD21	1.93	0.50
2:B:296:CYS:HB3	2:B:300:THR:C	2.36	0.50
1:A:391:MET:SD	1:A:393:PHE:HB3	2.51	0.50
1:A:703:VAL:HA	1:A:717:ASP:HA	1.93	0.50
2:B:346:ARG:HH21	2:B:358:LEU:HD22	1.77	0.50
1:A:874:TRP:CD1	1:A:903:GLN:HE21	2.29	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:341:TYR:OH	2:B:347:ASN:ND2	2.45	0.50
1:A:306:SER:HB2	1:A:338:ILE:HD11	1.93	0.50
1:A:242:LEU:HD23	1:A:249:LEU:HD12	1.94	0.50
1:A:706:MET:HG3	1:A:715:TYR:HB3	1.94	0.50
1:A:989:LEU:HD11	1:A:999:PHE:HZ	1.76	0.50
1:A:1058:GLU:HB3	1:A:1206:ARG:HH22	1.75	0.50
1:A:267:THR:H	1:A:291:THR:HG1	1.56	0.49
1:A:406:ASN:OD1	1:A:407:CYS:N	2.44	0.49
2:B:455:THR:HA	2:B:468:CYS:HA	1.93	0.49
1:A:169:HIS:O	1:A:172:THR:OG1	2.25	0.49
1:A:1487:GLU:OE2	1:A:1489:ASN:ND2	2.45	0.49
1:A:721:ASN:ND2	1:A:723:TYR:OH	2.44	0.49
1:A:875:SER:N	1:A:903:GLN:HE22	2.09	0.49
1:A:1084:ILE:HD11	1:A:1111:LEU:HD13	1.94	0.49
2:B:410:ASN:ND2	2:B:438:CYS:O	2.37	0.49
1:A:1351:LYS:O	1:A:1353:GLN:N	2.46	0.49
2:B:387:LEU:HD11	2:B:394:VAL:HB	1.95	0.49
1:A:386:TRP:O	1:A:387:LEU:HB2	2.12	0.49
2:B:315:LEU:O	2:B:316:LYS:HG2	2.13	0.49
2:B:361:CYS:HB2	2:B:366:MET:HE1	1.95	0.49
1:A:217:SER:HB2	1:A:220:THR:OG1	2.12	0.49
1:A:1401:ILE:HB	1:A:1415:VAL:HG23	1.95	0.49
2:B:319:LEU:HB3	2:B:328:LYS:HE3	1.95	0.49
1:A:844:LEU:HD11	1:A:879:ILE:HD13	1.95	0.49
1:A:963:ILE:O	1:A:999:PHE:N	2.45	0.49
1:A:979:SER:OG	1:A:992:GLU:OE2	2.30	0.49
1:A:214:GLU:OE1	1:A:216:TRP:CD1	2.66	0.48
1:A:325:CYS:N	1:A:363:MET:HE2	2.27	0.48
1:A:1254:HIS:ND1	1:A:1504:GLN:OE1	2.46	0.48
1:A:1553:ALA:HB1	1:A:1641:SER:HA	1.95	0.48
2:B:311:PRO:HG2	2:B:319:LEU:HD11	1.94	0.48
1:A:158:VAL:HG21	1:A:163:TYR:HB2	1.95	0.48
1:A:247:GLN:NE2	1:A:262:SER:O	2.37	0.48
1:A:750:GLU:HG2	1:A:753:GLY:H	1.78	0.48
1:A:962:GLN:HG2	1:A:1000:THR:HG23	1.96	0.48
1:A:1037:PRO:HD3	1:A:1128:THR:OG1	2.13	0.48
1:A:713:LEU:N	1:A:725:ARG:O	2.42	0.48
1:A:205:GLU:HB2	1:A:230:PHE:HB3	1.96	0.47
1:A:469:ALA:HB3	1:A:478:ILE:HB	1.96	0.47
1:A:436:LEU:HA	1:A:441:ILE:HD13	1.96	0.47
1:A:573:GLU:OE1	1:A:588:THR:OG1	2.28	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1267:ALA:HB1	1:A:1271:ILE:HD11	1.95	0.47
1:A:520:LEU:HD23	1:A:527:ILE:HG21	1.96	0.47
1:A:984:THR:HG22	1:A:1010:PHE:HB3	1.96	0.47
1:A:302:TRP:CD1	1:A:313:LYS:HE2	2.49	0.47
1:A:336:THR:OG1	1:A:350:SER:OG	2.25	0.47
1:A:487:PHE:HE2	1:A:521:ILE:HG21	1.79	0.47
1:A:206:THR:HG21	1:A:229:HIS:HB2	1.97	0.47
1:A:1162:PHE:HD1	1:A:1171:LEU:HD12	1.80	0.47
1:A:1247:ILE:HG23	1:A:1262:VAL:HB	1.96	0.47
1:A:1288:VAL:HG22	1:A:1293:HIS:CD2	2.50	0.47
1:A:131:PRO:HD3	1:A:161:LEU:HD21	1.97	0.47
1:A:171:PHE:CZ	1:A:234:PRO:HD3	2.51	0.46
1:A:480:PHE:HA	1:A:487:PHE:HA	1.97	0.46
1:A:774:HIS:NE2	1:A:776:ASP:OD2	2.48	0.46
1:A:1044:ARG:NH2	1:A:1167:GLN:OE1	2.48	0.46
1:A:352:GLY:O	1:A:379:VAL:HG22	2.15	0.46
1:A:893:TRP:CZ3	1:A:895:ASN:HA	2.51	0.46
1:A:314:ARG:HD3	1:A:323:ALA:HB2	1.96	0.46
1:A:889:GLY:O	1:A:890:ARG:NH1	2.49	0.46
1:A:958:THR:HG22	1:A:1035:SER:HB2	1.97	0.46
1:A:961:PHE:CG	1:A:1033:PRO:HG2	2.50	0.46
1:A:243:ILE:HB	1:A:270:ARG:HB3	1.96	0.46
1:A:1219:VAL:HG13	1:A:1222:ILE:HD12	1.97	0.46
1:A:1251:ASP:O	1:A:1257:LYS:NZ	2.39	0.46
1:A:1385:ASP:HB3	1:A:1425:ALA:HB1	1.97	0.46
2:B:410:ASN:O	2:B:424:CYS:HB3	2.15	0.46
1:A:1436:LYS:HA	1:A:1529:TYR:CD1	2.51	0.46
2:B:291:CYS:HB2	2:B:437:TYR:CD2	2.50	0.46
1:A:1035:SER:N	1:A:1072:ASN:O	2.37	0.46
1:A:1153:ILE:HG22	1:A:1160:ILE:HD11	1.98	0.46
1:A:1337:VAL:HG22	1:A:1347:ILE:HG12	1.97	0.46
1:A:1460:LEU:HD11	1:A:1521:ILE:HD13	1.96	0.46
2:B:330:CYS:C	2:B:331:LYS:HD2	2.40	0.46
1:A:835:ASP:HB2	1:A:842:TYR:CE2	2.51	0.46
1:A:1268:HIS:CD2	1:A:1269:THR:HG23	2.50	0.46
1:A:799:TRP:HH2	1:A:808:THR:HG23	1.81	0.46
1:A:1155:LEU:HD11	1:A:1183:VAL:HG12	1.98	0.46
1:A:572:GLN:N	1:A:572:GLN:OE1	2.49	0.46
1:A:697:SER:OG	1:A:725:ARG:NH2	2.49	0.46
1:A:1251:ASP:N	1:A:1260:ARG:HH22	2.14	0.45
1:A:243:ILE:N	1:A:270:ARG:O	2.39	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1140:MET:HG3	1:A:1142:LYS:NZ	2.30	0.45
1:A:397:LYS:HB2	1:A:420:ALA:HA	1.97	0.45
2:B:288:ILE:HD12	2:B:306:LEU:HD12	1.98	0.45
1:A:144:LYS:NZ	1:A:145:TYR:O	2.40	0.45
1:A:252:GLY:H	2:B:419:ARG:HH22	1.65	0.45
1:A:926:GLN:HB3	1:A:929:LEU:HG	1.99	0.45
1:A:152:TRP:CZ3	1:A:177:ARG:HG2	2.51	0.45
1:A:506:LEU:HD13	1:A:523:ASP:HB3	1.99	0.45
1:A:844:LEU:HD22	1:A:851:ILE:HD11	1.97	0.45
1:A:751:TRP:CE2	1:A:792:SER:HB3	2.52	0.45
1:A:1051:GLY:HA3	1:A:1206:ARG:HB3	1.99	0.45
1:A:1294:GLN:HG3	1:A:1296:PHE:HE2	1.82	0.45
1:A:1487:GLU:HG2	1:A:1489:ASN:H	1.82	0.45
2:B:313:CYS:SG	2:B:319:LEU:HD22	2.56	0.45
1:A:1039:ALA:HB2	1:A:1134:PRO:HB2	1.99	0.45
1:A:1627:LYS:HE2	1:A:1643:PRO:HD3	1.99	0.45
1:A:1439:LEU:O	1:A:1527:ASN:ND2	2.45	0.45
2:B:287:TRP:HZ2	2:B:301:ILE:HG23	1.82	0.45
1:A:390:ARG:NE	1:A:403:GLU:OE2	2.50	0.44
1:A:525:LYS:HA	1:A:550:PHE:H	1.82	0.44
1:A:853:LEU:HB3	1:A:871:PHE:HB2	1.98	0.44
1:A:1010:PHE:HE1	1:A:1032:ALA:HA	1.82	0.44
1:A:171:PHE:CE2	1:A:233:GLY:HA2	2.52	0.44
1:A:278:GLU:HG2	1:A:279:VAL:HG23	1.99	0.44
1:A:1496:ARG:HD2	1:A:1496:ARG:HA	1.84	0.44
1:A:325:CYS:HB2	1:A:542:CYS:HB2	1.51	0.44
1:A:528:PHE:HD1	1:A:537:GLU:HA	1.82	0.44
2:B:287:TRP:CZ2	2:B:301:ILE:HG23	2.51	0.44
1:A:387:LEU:HD11	1:A:566:PRO:HD3	1.99	0.44
1:A:1008:THR:HB	1:A:1032:ALA:HB2	1.99	0.44
1:A:1122:PHE:O	1:A:1138:ILE:HA	2.18	0.44
1:A:140:ILE:CG2	1:A:179:VAL:HB	2.48	0.44
1:A:685:LYS:NZ	1:A:689:SER:O	2.47	0.44
1:A:962:GLN:OE1	1:A:1000:THR:OG1	2.33	0.44
1:A:1183:VAL:HG23	1:A:1194:PHE:HB3	1.99	0.44
1:A:166:GLU:O	1:A:168:LEU:N	2.46	0.44
1:A:418:LEU:HD23	1:A:437:LEU:HD21	1.98	0.44
1:A:715:TYR:OH	1:A:735:ASN:ND2	2.49	0.44
1:A:878:GLU:O	1:A:896:GLY:N	2.51	0.44
1:A:947:VAL:HG23	1:A:1016:PRO:HG3	1.99	0.44
1:A:324:HIS:HB3	1:A:363:MET:HG3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:349:PHE:CE2	1:A:356:TRP:HB2	2.53	0.44
1:A:835:ASP:HB2	1:A:842:TYR:HE2	1.83	0.44
1:A:1230:ILE:HD12	1:A:1278:PRO:HB2	1.99	0.44
1:A:883:ALA:HB2	1:A:921:GLN:NE2	2.33	0.44
1:A:1350:THR:HG21	1:A:1379:ILE:HG21	1.98	0.44
1:A:751:TRP:CD1	1:A:752:LEU:HG	2.53	0.43
1:A:942:VAL:HG21	1:A:1020:TRP:CD2	2.52	0.43
1:A:1297:TYR:HD1	1:A:1308:VAL:HG22	1.84	0.43
1:A:430:ASN:HD21	1:A:475:LYS:HG2	1.84	0.43
1:A:491:PHE:HD1	1:A:493:ASP:H	1.66	0.43
1:A:239:ASN:N	1:A:274:ALA:O	2.37	0.43
1:A:685:LYS:HE3	1:A:914:SER:HB2	2.00	0.43
1:A:1148:PRO:HG2	1:A:1151:TYR:CE2	2.53	0.43
1:A:1348:TYR:CE2	1:A:1357:ALA:HB2	2.54	0.43
1:A:1454:THR:HA	1:A:1547:LYS:HE2	2.00	0.43
2:B:358:LEU:HB2	2:B:369:VAL:HB	2.00	0.43
1:A:423:LYS:HE3	1:A:467:ASP:HB2	2.00	0.43
2:B:289:ASP:OD1	2:B:289:ASP:N	2.49	0.43
1:A:834:LEU:HD23	1:A:834:LEU:H	1.83	0.43
1:A:1338:ASP:N	1:A:1346:TRP:O	2.43	0.43
1:A:206:THR:HB	1:A:230:PHE:H	1.84	0.43
1:A:208:PRO:HG3	1:A:275:ALA:HB2	2.00	0.43
1:A:769:SER:HB3	1:A:774:HIS:H	1.82	0.43
1:A:1369:ILE:HD11	1:A:1389:ILE:HD12	2.01	0.43
2:B:450:TYR:HB2	2:B:478:TYR:CE2	2.53	0.43
1:A:979:SER:HB2	1:A:1017:TYR:CE2	2.54	0.43
1:A:1059:VAL:HG21	1:A:1143:THR:HB	2.01	0.43
1:A:1075:LEU:HD22	1:A:1126:VAL:HG21	2.00	0.43
1:A:1085:SER:O	1:A:1119:THR:N	2.41	0.43
1:A:764:VAL:HA	1:A:780:HIS:HA	2.00	0.42
1:A:856:ALA:HB2	1:A:868:ILE:HD13	2.00	0.42
1:A:1013:SER:HA	1:A:1027:SER:HA	2.00	0.42
1:A:140:ILE:HG22	1:A:179:VAL:HB	2.01	0.42
1:A:1041:GLU:N	1:A:1041:GLU:OE1	2.52	0.42
1:A:728:ASN:OD1	1:A:728:ASN:N	2.52	0.42
1:A:1044:ARG:HE	1:A:1046:PHE:HZ	1.66	0.42
2:B:359:TYR:HB3	2:B:366:MET:SD	2.60	0.42
1:A:169:HIS:HB2	1:A:172:THR:HG21	2.01	0.42
1:A:336:THR:O	1:A:554:ASN:ND2	2.50	0.42
1:A:648:SER:HA	1:A:653:PRO:HA	2.01	0.42
1:A:833:THR:O	1:A:841:LEU:HD12	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:250:ASP:N	2:B:386:THR:OG1	2.52	0.42
2:B:319:LEU:HD12	2:B:328:LYS:HB3	2.02	0.42
1:A:466:LYS:HD3	1:A:510:LYS:HA	2.02	0.42
1:A:1146:ILE:HB	1:A:1428:SER:HB3	2.01	0.42
1:A:171:PHE:CE2	1:A:200:PRO:HA	2.55	0.42
1:A:732:ILE:HG23	1:A:732:ILE:O	2.20	0.42
1:A:1465:VAL:HG21	1:A:1479:SER:HB2	2.01	0.42
1:A:1249:ASN:ND2	1:A:1260:ARG:HH21	2.18	0.42
1:A:1486:MET:SD	1:A:1498:HIS:HA	2.60	0.42
1:A:808:THR:HG22	1:A:815:SER:HA	2.01	0.42
1:A:947:VAL:HG11	1:A:965:TRP:CD1	2.55	0.42
1:A:1127:PHE:CE2	1:A:1132:PRO:HB3	2.54	0.42
1:A:1163:LEU:HD23	1:A:1170:VAL:HA	2.02	0.42
1:A:120:ILE:HG22	1:A:125:VAL:HG13	2.02	0.41
1:A:235:ILE:HG21	1:A:238:TYR:CZ	2.55	0.41
1:A:278:GLU:O	2:B:414:ARG:NE	2.52	0.41
1:A:674:ILE:HD12	1:A:924:ILE:HG12	2.02	0.41
1:A:738:ILE:O	1:A:741:ILE:HG22	2.20	0.41
1:A:1189:ASP:OD1	1:A:1189:ASP:N	2.52	0.41
1:A:1390:TYR:HE1	1:A:1403:GLN:HG3	1.85	0.41
1:A:302:TRP:CG	1:A:313:LYS:HE2	2.55	0.41
1:A:303:LEU:HB2	1:A:316:LEU:HD11	2.02	0.41
1:A:795:GLY:O	1:A:809:ARG:HG3	2.20	0.41
1:A:683:TRP:CE3	1:A:692:PRO:HB2	2.55	0.41
1:A:895:ASN:HB3	1:A:901:THR:HG21	2.02	0.41
1:A:1580:PRO:HB2	1:A:1583:SER:HB2	2.02	0.41
1:A:355:ILE:HG23	1:A:372:PHE:HB3	2.02	0.41
1:A:510:LYS:H	1:A:523:ASP:HA	1.85	0.41
1:A:964:LEU:HB3	1:A:998:ILE:HG13	2.01	0.41
2:B:452:ARG:O	2:B:455:THR:HG22	2.20	0.41
1:A:675:MET:HE1	1:A:684:SER:HB2	2.02	0.41
1:A:978:TYR:CZ	1:A:997:PRO:HB3	2.56	0.41
1:A:636:GLN:HG3	1:A:639:THR:OG1	2.20	0.41
1:A:827:LYS:HB3	1:A:845:VAL:HG11	2.01	0.41
1:A:1115:SER:HB2	1:A:1118:TYR:CE1	2.55	0.41
1:A:1239:LYS:HE3	1:A:1271:ILE:H	1.86	0.41
1:A:146:ALA:HB3	1:A:173:GLU:HG3	2.03	0.41
1:A:893:TRP:HZ3	1:A:895:ASN:HA	1.86	0.41
1:A:350:SER:HB3	1:A:382:ILE:HD13	2.02	0.41
1:A:765:ILE:HB	1:A:778:VAL:HB	2.02	0.41
1:A:1187:THR:HG22	1:A:1426:TYR:CE1	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:576:VAL:HG12	1:A:585:ILE:HG22	2.03	0.41
1:A:800:THR:OG1	1:A:805:VAL:HG12	2.21	0.41
2:B:347:ASN:OD1	2:B:348:THR:N	2.52	0.41
1:A:328:SER:HB3	1:A:331:ILE:HD12	2.02	0.41
1:A:388:TYR:HB3	1:A:390:ARG:HD3	2.01	0.41
1:A:459:ILE:HD11	1:A:494:GLY:N	2.35	0.41
1:A:898:ARG:O	1:A:919:PHE:N	2.54	0.41
1:A:1078:PHE:CZ	1:A:1104:PRO:HG3	2.56	0.41
1:A:1436:LYS:HD3	1:A:1529:TYR:HD1	1.85	0.41
2:B:447:GLY:HA2	2:B:449:HIS:CE1	2.55	0.41
1:A:462:SER:HB2	1:A:465:LEU:HD13	2.03	0.40
1:A:487:PHE:HD2	1:A:519:PHE:HZ	1.70	0.40
1:A:385:ASP:HB3	1:A:390:ARG:HB2	2.03	0.40
1:A:722:VAL:HG23	1:A:744:ALA:HB3	2.03	0.40
1:A:947:VAL:HG22	1:A:968:PRO:HD3	2.04	0.40
1:A:1061:VAL:HG11	1:A:1120:VAL:HG21	2.03	0.40
1:A:1147:LYS:N	1:A:1148:PRO:HD3	2.36	0.40
1:A:1239:LYS:HA	1:A:1239:LYS:HD3	1.89	0.40
2:B:465:MET:SD	2:B:465:MET:N	2.94	0.40
1:A:406:ASN:HB3	3:A:1901:NAG:H82	2.02	0.40
1:A:483:THR:HG21	3:A:1907:NAG:H62	2.03	0.40
1:A:1445:MET:HE1	1:A:1525:VAL:HB	2.02	0.40
1:A:1548:SER:HB2	1:A:1633:PRO:HG2	2.03	0.40
1:A:728:ASN:HB2	1:A:730:MET:HE1	2.03	0.40
1:A:1049:SER:HA	1:A:1059:VAL:HG12	2.03	0.40
1:A:1589:VAL:HG22	1:A:1595:PRO:HB3	2.04	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	1540/1853 (83%)	1458 (95%)	80 (5%)	2 (0%)	48	83
2	B	211/830 (25%)	195 (92%)	16 (8%)	0	100	100
All	All	1751/2683 (65%)	1653 (94%)	96 (6%)	2 (0%)	50	83

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1352	ARG
1	A	1148	PRO

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	1373/1641 (84%)	1373 (100%)	0	100	100
2	B	193/731 (26%)	193 (100%)	0	100	100
All	All	1566/2372 (66%)	1566 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	142	GLN
1	A	343	GLN
1	A	344	GLN
1	A	481	ASN
1	A	554	ASN
1	A	563	GLN
1	A	613	GLN
1	A	811	ASN
1	A	849	GLN
1	A	907	GLN
1	A	1011	ASN
1	A	1249	ASN

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Mol	Chain	Res	Type
1	A	1294	GLN
1	A	1306	GLN
1	A	1414	GLN
2	B	337	GLN
2	B	415	ASN
2	B	417	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

10 ligands 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	$\#|Z| > 2$
3	NAG	A	1905	1	14,14,15	0.68	0	17,19,21	0.89	1 (5%)
3	NAG	A	1907	-	14,14,15	0.71	0	17,19,21	0.78	0
3	NAG	A	1910	-	14,14,15	0.71	0	17,19,21	0.75	0
3	NAG	A	1908	1	14,14,15	0.71	0	17,19,21	0.79	0
3	NAG	A	1904	1	14,14,15	0.73	0	17,19,21	1.06	2 (11%)
3	NAG	A	1909	-	14,14,15	0.72	0	17,19,21	0.76	0
3	NAG	A	1901	-	14,14,15	0.73	0	17,19,21	0.77	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
3	NAG	A	1902	1	14,14,15	0.74	0	17,19,21	0.76	0
3	NAG	A	1903	1	14,14,15	0.72	0	17,19,21	0.84	0
3	NAG	A	1906	-	14,14,15	0.71	0	17,19,21	0.76	0

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
3	NAG	A	1905	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1907	-	-	2/6/23/26	0/1/1/1
3	NAG	A	1910	-	-	0/6/23/26	0/1/1/1
3	NAG	A	1908	1	-	3/6/23/26	0/1/1/1
3	NAG	A	1904	1	-	1/6/23/26	0/1/1/1
3	NAG	A	1909	-	-	0/6/23/26	0/1/1/1
3	NAG	A	1901	-	-	2/6/23/26	0/1/1/1
3	NAG	A	1902	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1903	1	-	2/6/23/26	0/1/1/1
3	NAG	A	1906	-	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1904	NAG	C1-O5-C5	-2.40	108.97	112.19
3	A	1905	NAG	O5-C1-C2	-2.30	107.73	111.29
3	A	1904	NAG	O5-C1-C2	-2.20	107.88	111.29

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1905	NAG	C4-C5-C6-O6
3	A	1908	NAG	O5-C5-C6-O6
3	A	1902	NAG	O5-C5-C6-O6
3	A	1901	NAG	O5-C5-C6-O6
3	A	1903	NAG	O5-C5-C6-O6
3	A	1908	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
3	A	1905	NAG	O5-C5-C6-O6
3	A	1907	NAG	C4-C5-C6-O6
3	A	1902	NAG	C4-C5-C6-O6
3	A	1901	NAG	C4-C5-C6-O6
3	A	1903	NAG	C4-C5-C6-O6
3	A	1907	NAG	O5-C5-C6-O6
3	A	1904	NAG	O5-C5-C6-O6
3	A	1906	NAG	C4-C5-C6-O6
3	A	1906	NAG	O5-C5-C6-O6
3	A	1908	NAG	C1-C2-N2-C7

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1907	NAG	1	0
3	A	1901	NAG	1	0

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 (i)

This section contains visualisations of the EMDB entry EMD-71938. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections (i)

6.1.1 Primary map

X   Y   Z

6.1.2 Raw map

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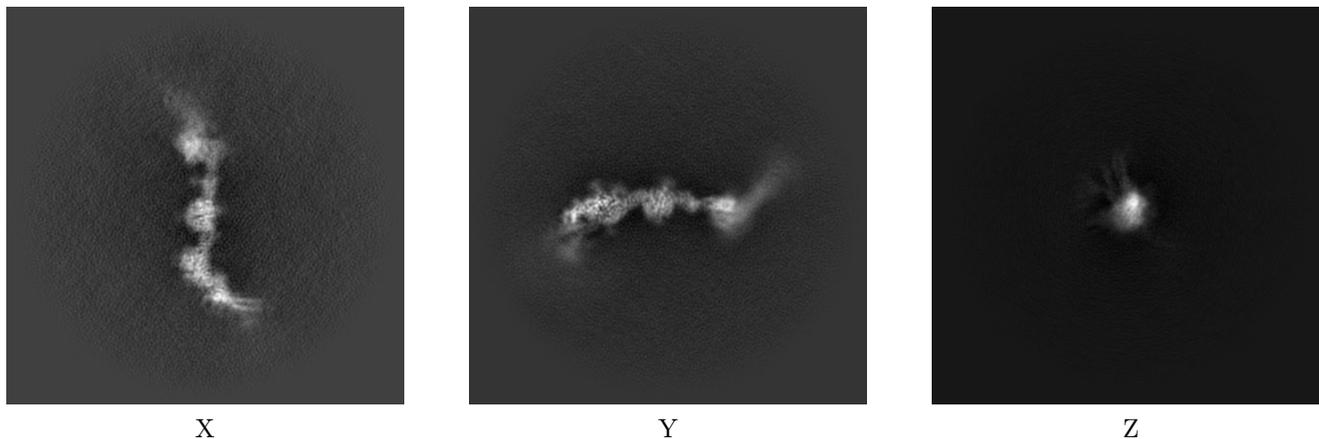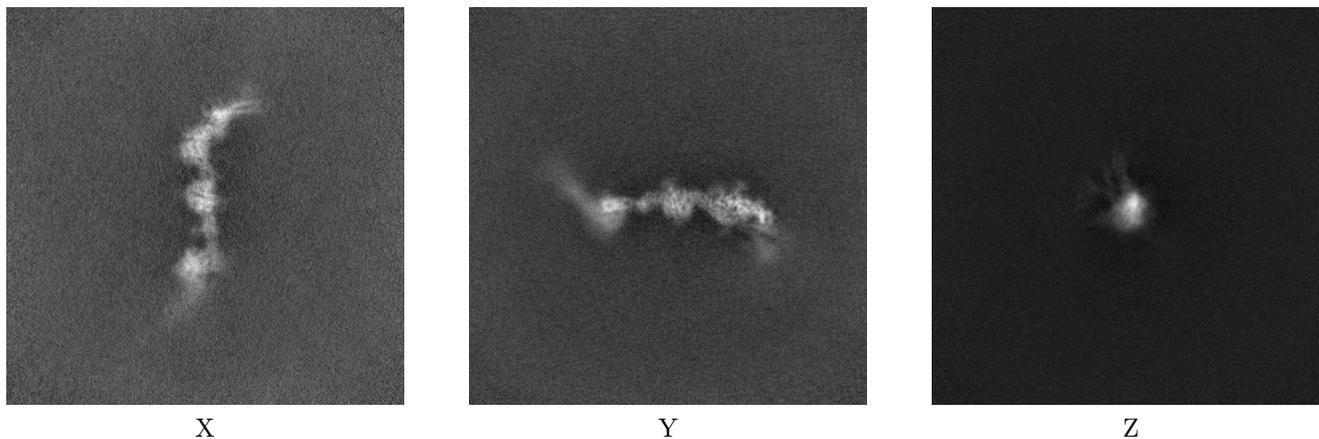
The images above show the map projected in three orthogonal directions.

6.2　Central slices ⓘ

6.2.1　Primary map
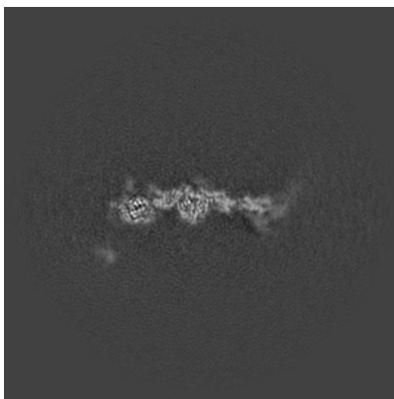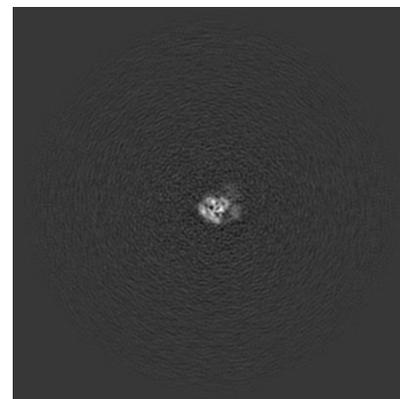
| X Index: 320 | Y Index: 320 | Z Index: 320 |

6.2.2　Raw map
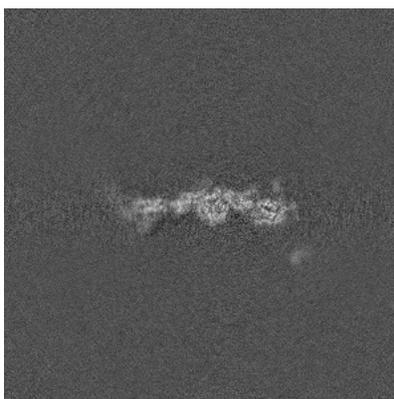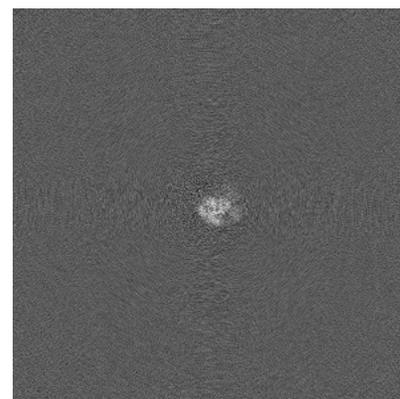
| X Index: 320 | Y Index: 320 | Z Index: 320 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
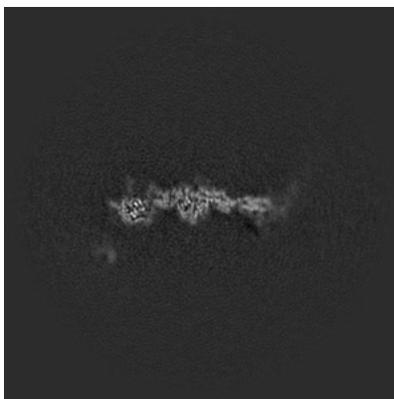
X Index: 325   Y Index: 322   Z Index: 219
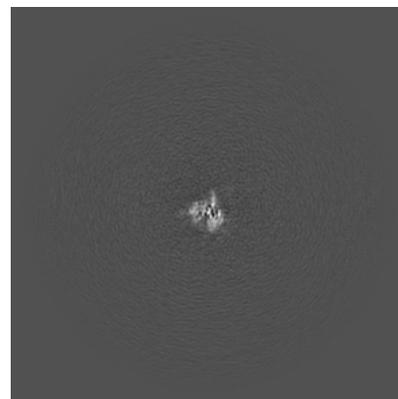
6.3.2 Raw map
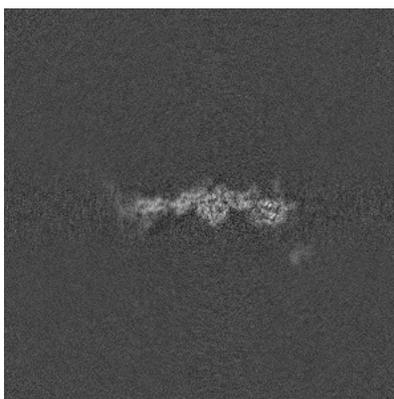
X Index: 321   Y Index: 321   Z Index: 0
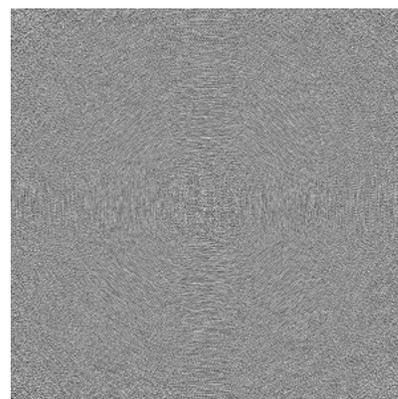
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
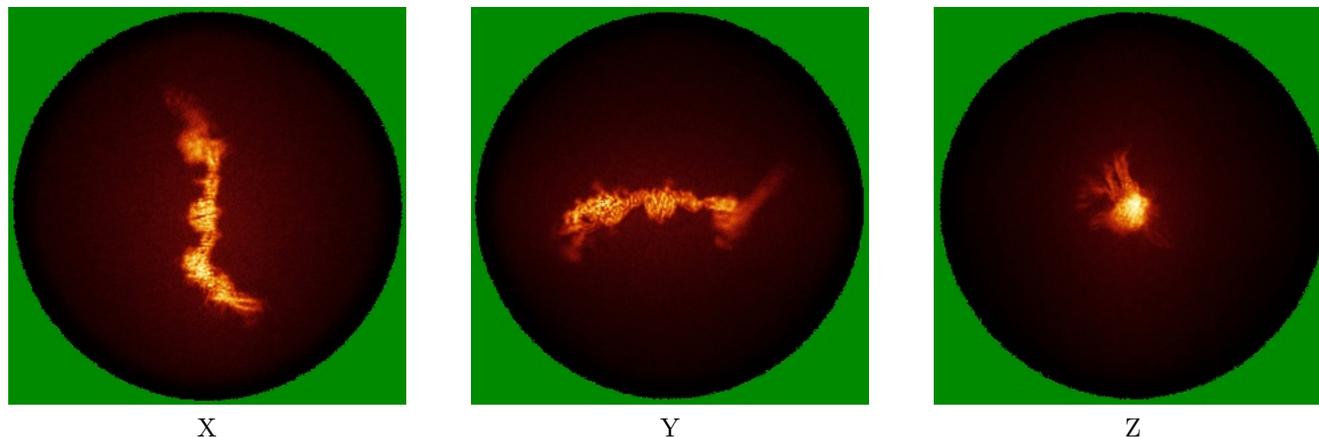
X

Y

Z

6.4.2 Raw map

X

Y

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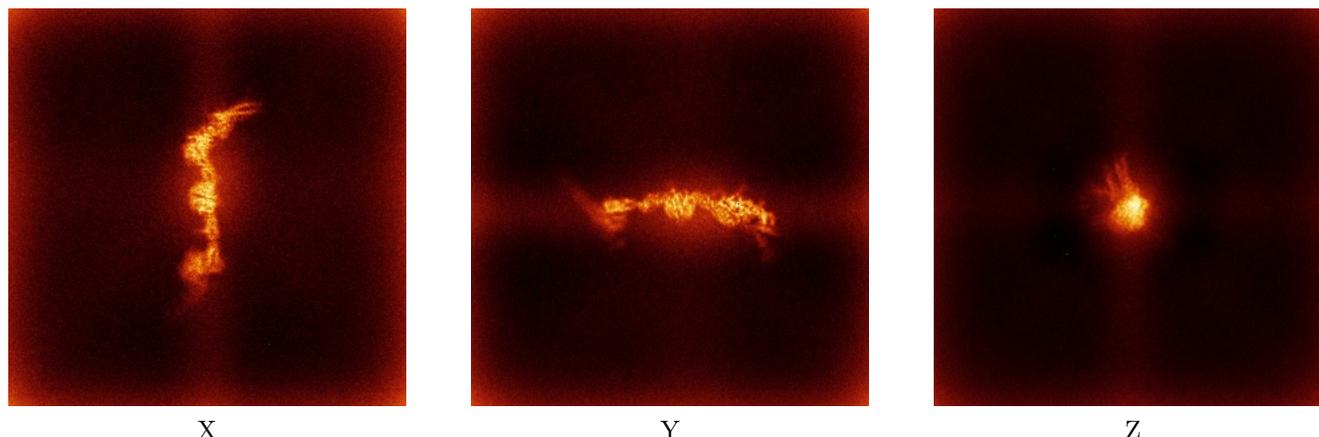
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z
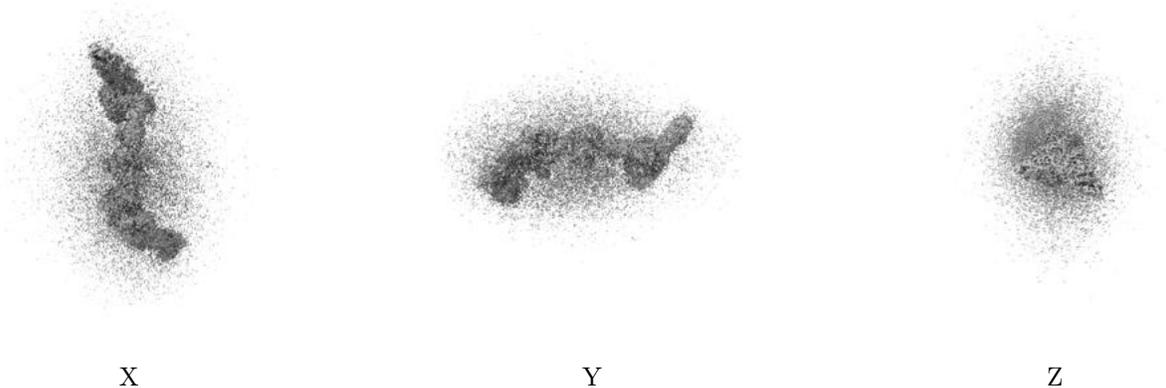
The images above show the 3D surface view of the map at the recommended contour level 0.0248. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X   Y   Z
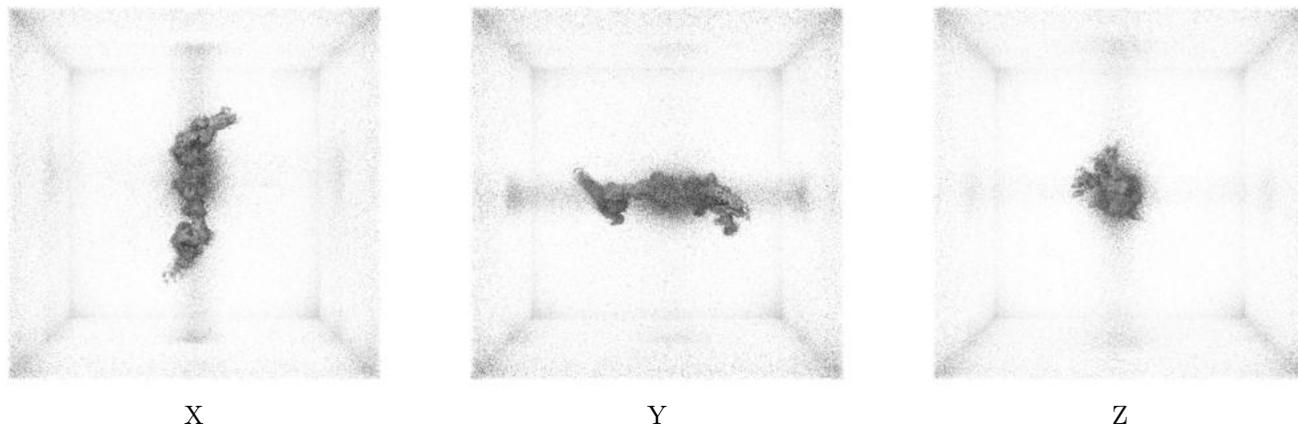
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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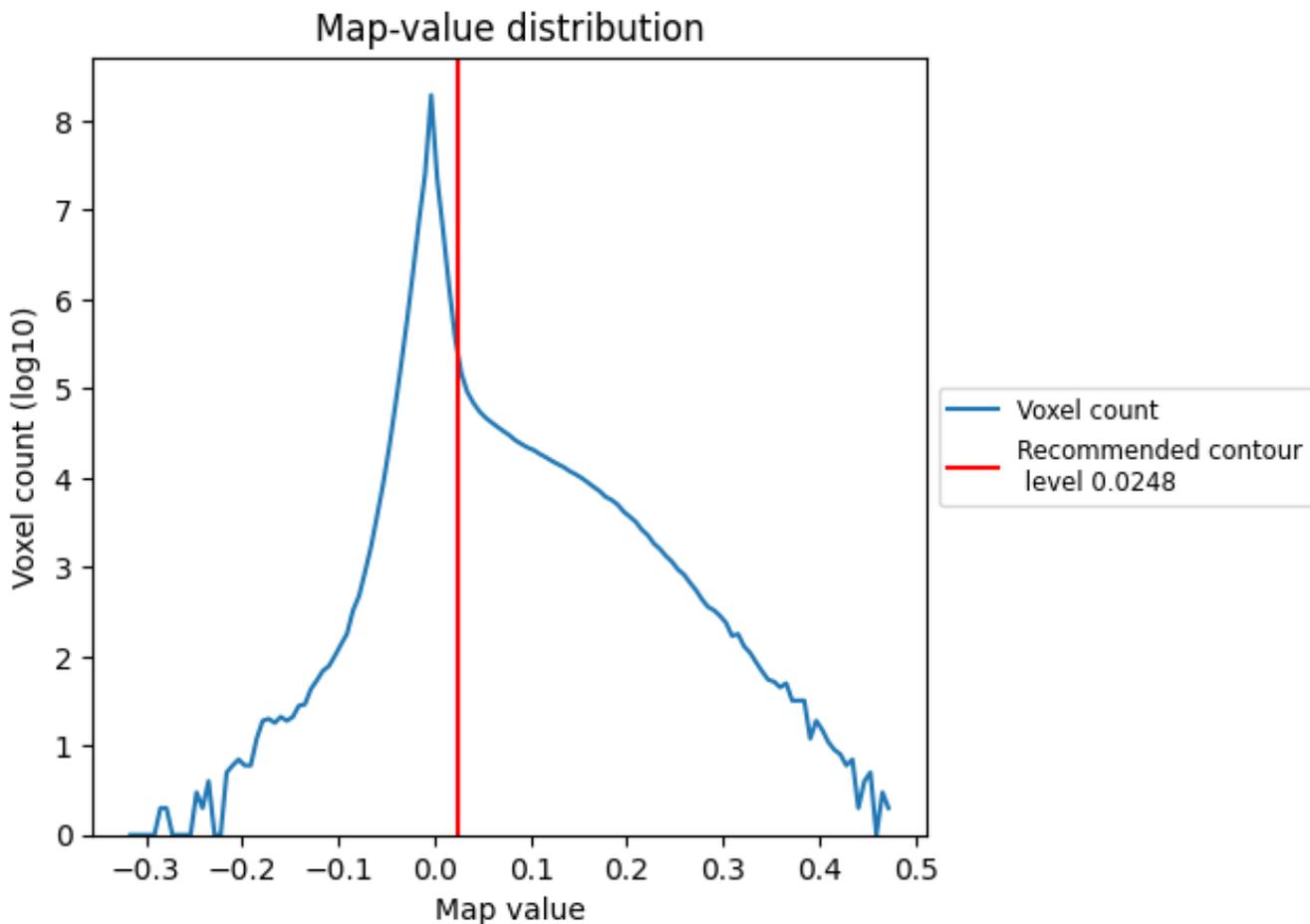
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2　Volume estimate ⓘ
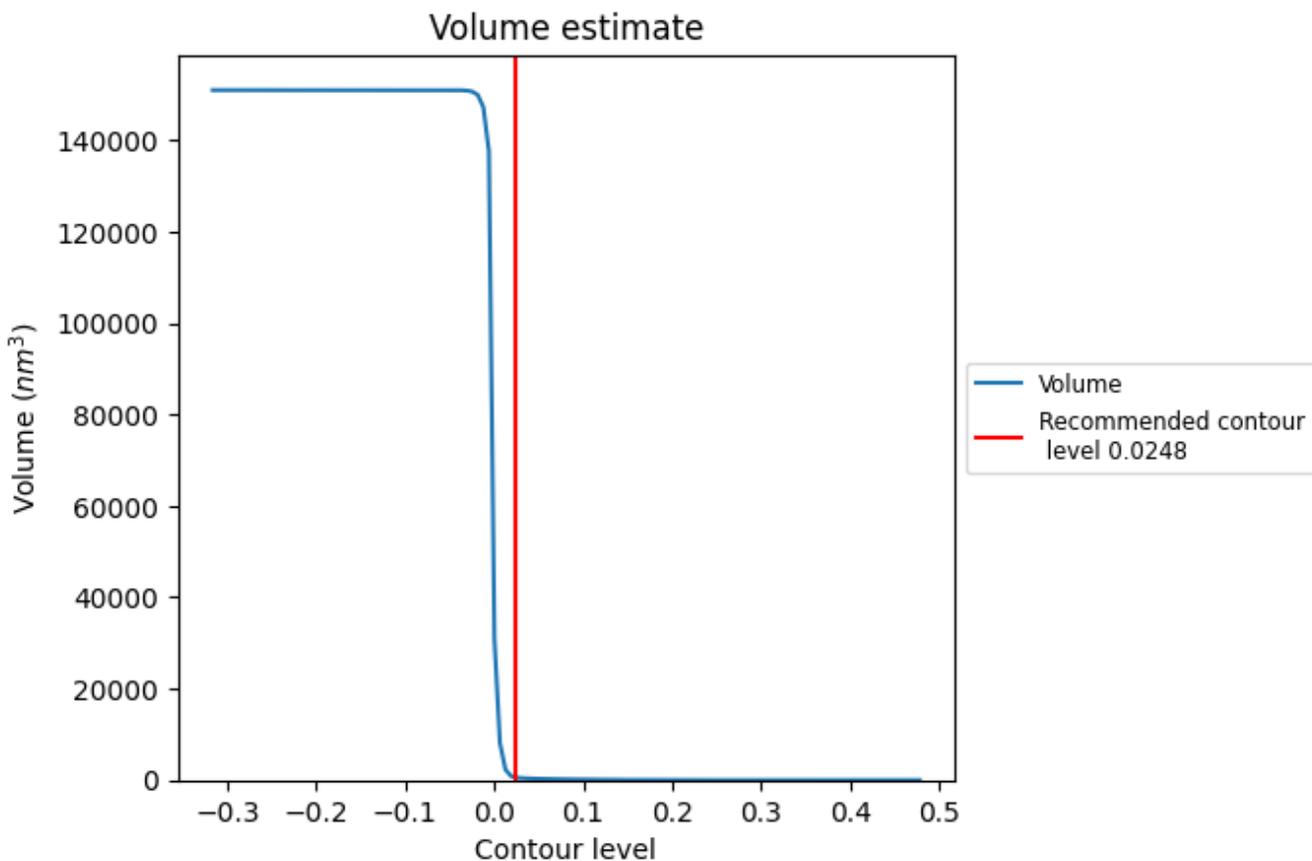
The volume at the recommended contour level is 562 nm^3; this corresponds to an approximate mass of 508 kDa.

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 ⓘ

Rotationally averaged power spectrum
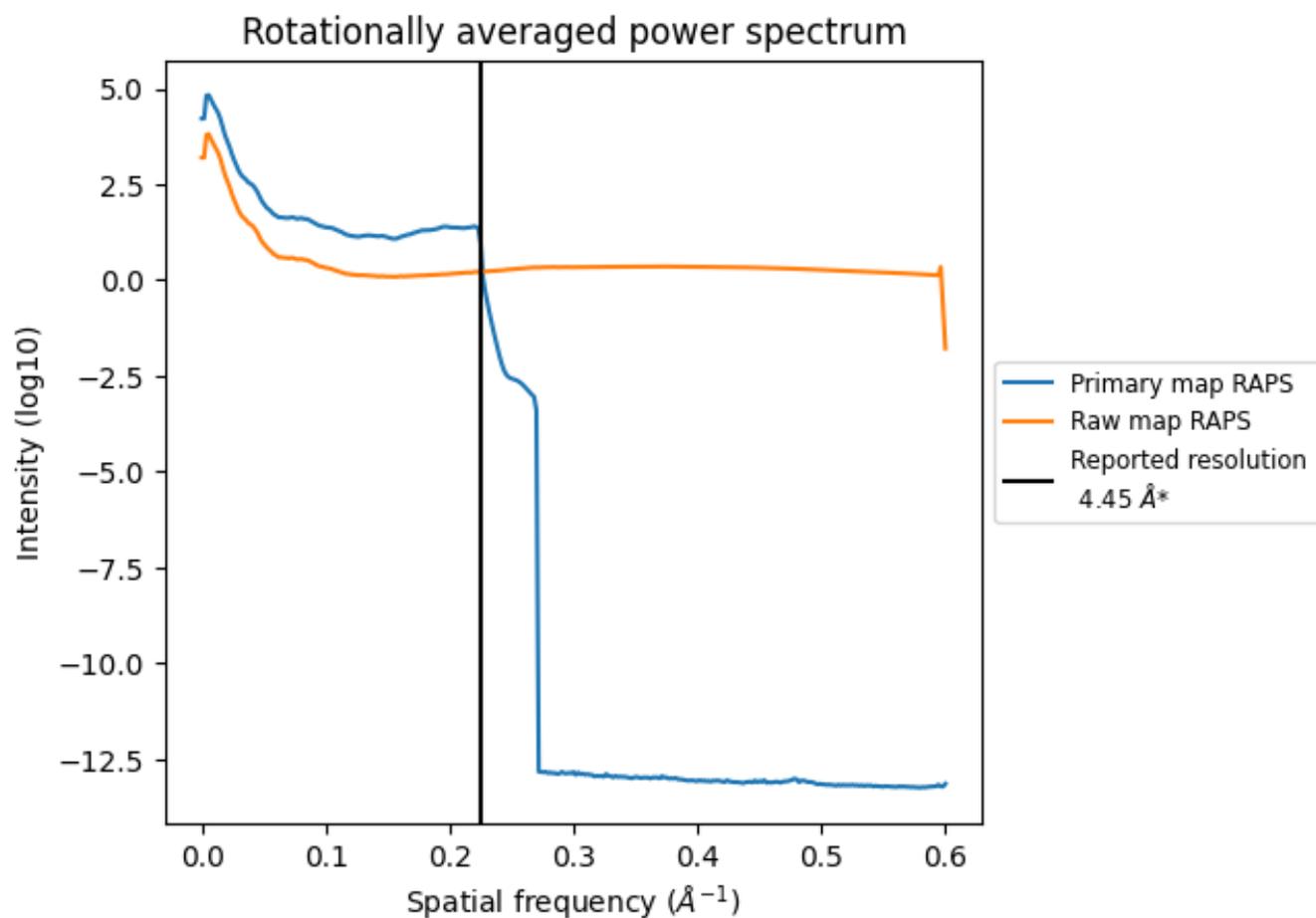
*Reported resolution corresponds to spatial frequency of 0.225 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ
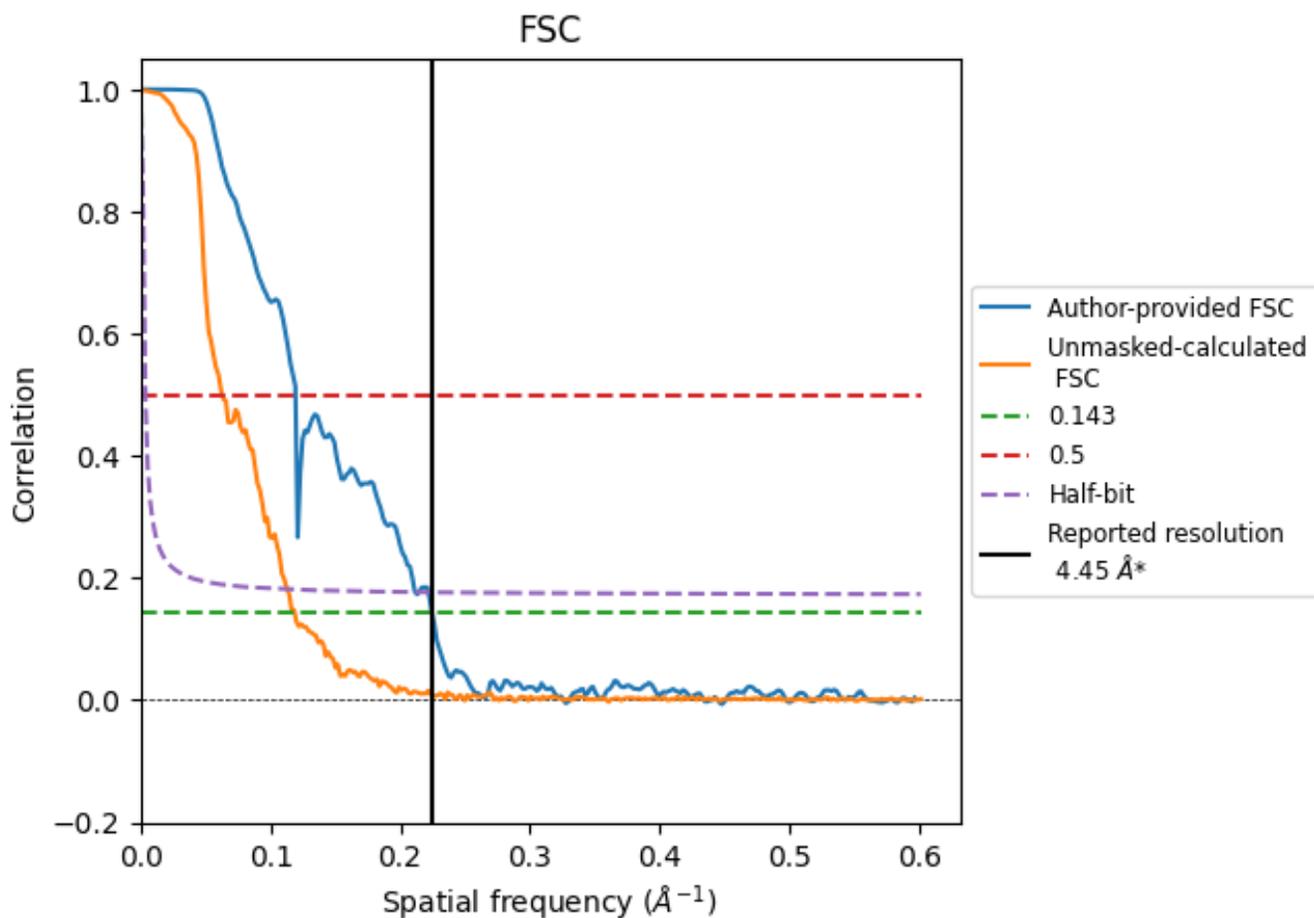
*Reported resolution corresponds to spatial frequency of 0.225 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.45	-	-
Author-provided FSC curve	4.45	8.38	4.73
Unmasked-calculated*	8.42	15.90	8.85

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 8.42 differs from the reported value 4.45 by more than 10 %

9　Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-71938 and PDB model 9PWQ. Per-residue inclusion information can be found in section 3 on page 7.

9.1　Map-model overlay ⓘ
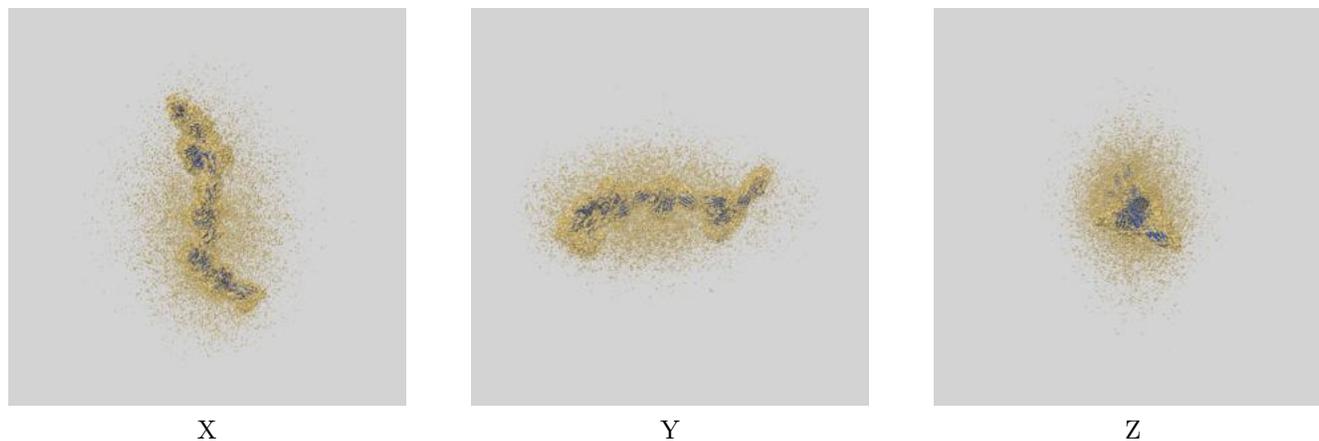

X　　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　　Z

The images above show the 3D surface view of the map at the recommended contour level 0.0248 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
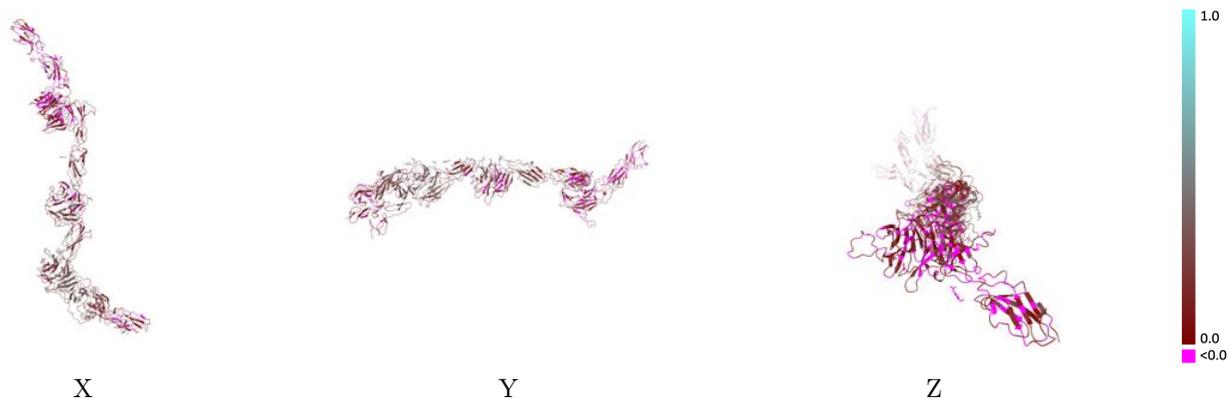
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
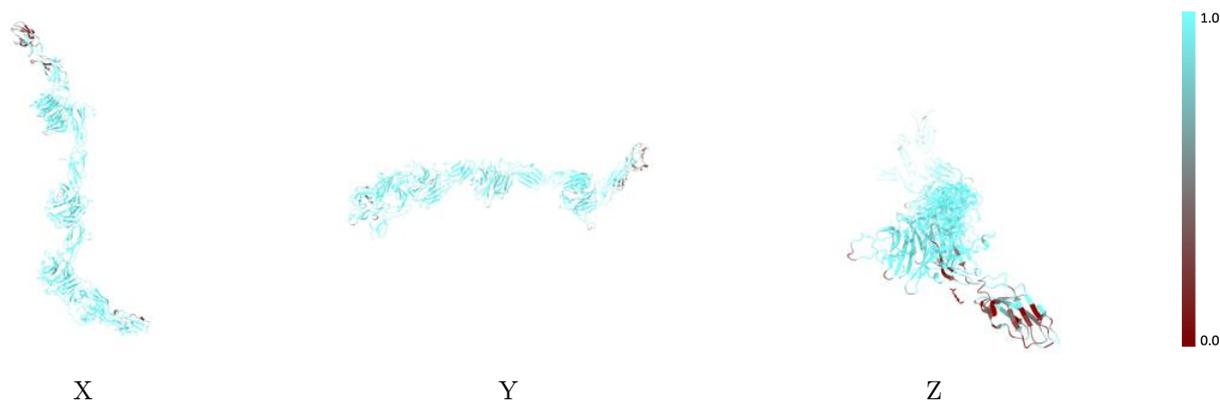
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0248).

9.4　Atom inclusion ⓘ
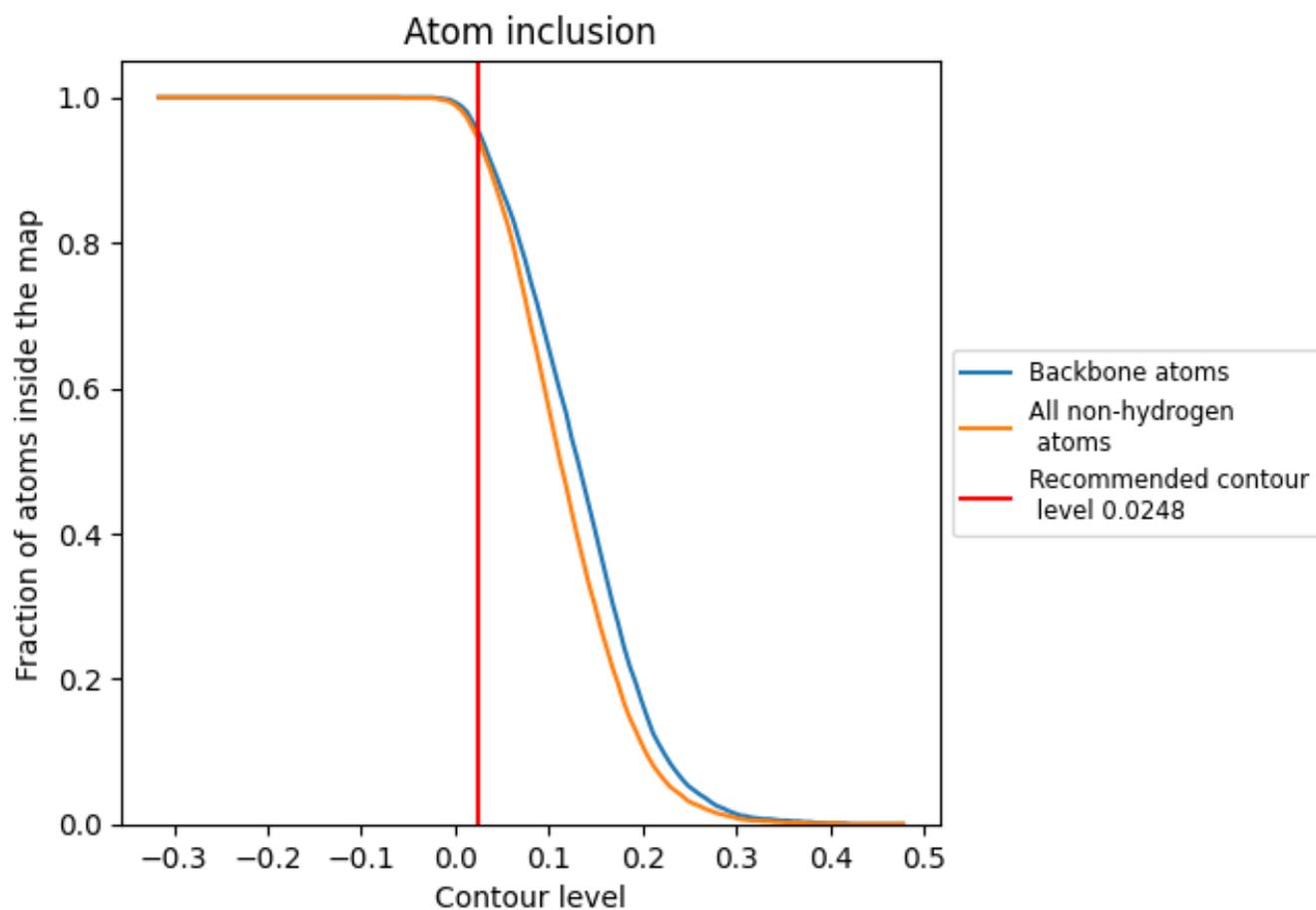
At the recommended contour level, 95% of all backbone atoms, 94% of all non-hydrogen atoms, are inside the map.

9.5　Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.0248) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9430	0.1860
A	0.9400	0.1790
B	0.9620	0.2400

1.0

0.0
<0.0