Integrative Structure Validation Report

October 28, 2026 - 02:58 PM PDT

The following software was used in the production of this report:

IHMValidation Version 3.4
Python-IHM Version 2.11
MolProbity Version 4.5.2
remolprobity Version 0.1.0
EMDB validation analysis Version 0.0.1.dev137
EMDB validation analysis Version 0.0.1.dev152
EMDB validation analysis Version 0.1.0.dev0 (fit to the map)
jqscore Version 0.2.0
Mol Version 4.18.0*

PDB ID	9AB1 | pdb_00009ab1
Structure Title	Integrative structure of the human nuclear pore complex nuclear basket: 1-spoke structure
Structure Authors	Obarska-Kosinska, A.; Zhu, Y.; Geissler, K.; Rosenkranz, R.R.E.; Yokoyama, N.; Kreysing, J.P.; Xing, H.; Glushkova, D.; Kubanska, M.A.; Boehm, S.; Kraeusslich, H.G.; Turonova, B.; Liu, F.; Beck, M.
Deposited on	2026-07-09

This is a PDB-IHM Structure Validation Report.

We welcome your comments at helpdesk@pdb-ihm.org

A user guide is available at https://pdb-ihm.org/validation_help.html with specific help available everywhere you see the ? symbol.

List of references used to build this report is available here.

1. Overview

1.1. Summary

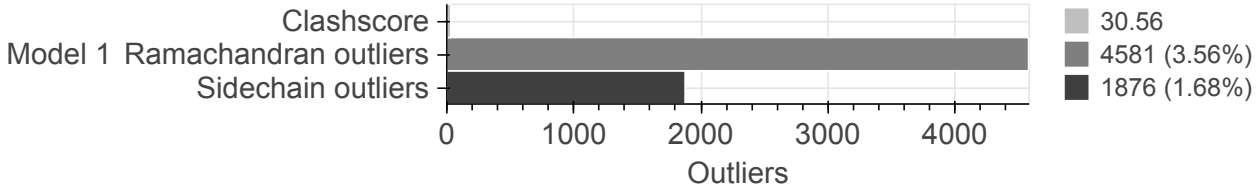
This entry consists of 1 model(s). A total of 45 dataset(s) were used to build this entry.

Name	Type	Count
3DEM volume	Experimental data	2
Crosslinking-MS data	Experimental data	3
De Novo model	Starting model	40

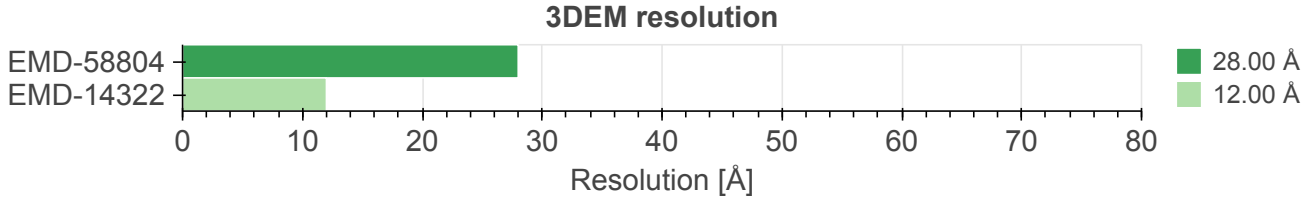
1.2. Overall quality

This validation report contains model quality assessments for all structures, data quality and fit to model assessments for SAS, crosslinking-MS and 3DEM datasets. Data quality and fit to model assessments for other datasets and model uncertainty are under development. Number of plots is limited to 256.

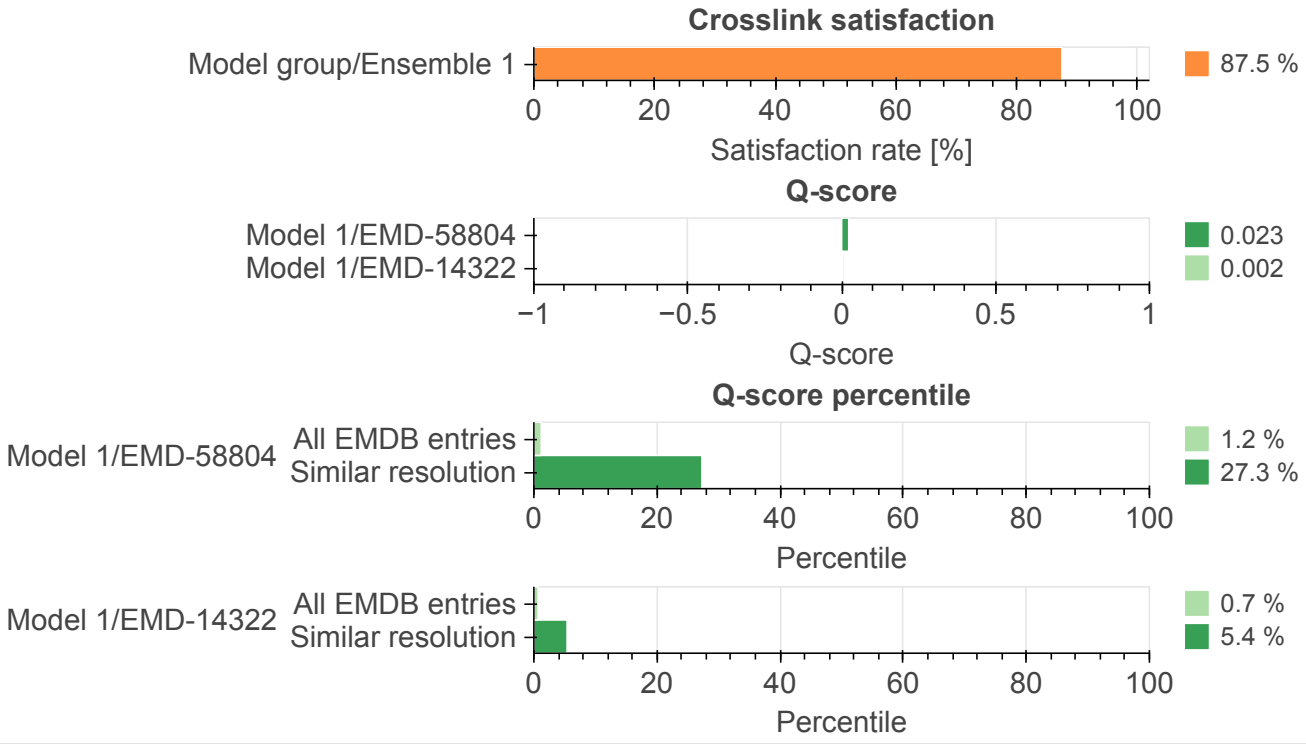
Model Quality: MolProbity Analysis



Data Quality



Fit to Data Used for Modeling



2. Model Details

2.1. Ensemble information

This entry consists of 0 distinct ensembles.

2.2. Representation

This entry has 1 representation(s).

ID	Model(s)	Entity ID	Molecule name	Chain(s) [auth]	Total residues	Rigid segments	Flexible segments	Model coverage/ Starting model coverage (%)	Scale
1	1	1	E3 SUMO-protein ligase RanBP2	A [0], B [016], C [024], D [032], E [08]	3224	-	1-3224	100.00 / 100.00	Atomic
1	1	2	Nuclear pore membrane glycoprotein 210	F [1], G [116], H [124], I [132], J [140], K [148], L [156], M [18]	1887	-	1-1887	100.00 / 100.00	Atomic
1	1	3	Nuclear pore complex protein TPR	N [2], O [3], R [5], S [6]	2363	-	1-2363	100.00 / 100.00	Atomic

ID	Model(s)	Entity ID	Molecule name	Chain(s) [auth]	Total residues	Rigid segments	Flexible segments	Model coverage/ Starting model coverage (%)	Scale
1	1	4	ALADIN	P [4], Q [48]	546	-	1-546	100.00 / 100.00	Atomic
1	1	5	Germinal-center associated nuclear protein	T [7]	1980	-	1-1980	100.00 / 100.00	Atomic
1	1	6	Nuclear pore complex protein Nup50	U [8], V [816], W [824], X [832], Y [840], Z [88]	468	-	1-468	100.00 / 100.00	Atomic
1	1	7	Nuclear pore complex protein Nup93	AA [A], BA [A16], CA [A24], DA [A32], EA [A40], FA [A48], GA [A8]	819	-	1-819	100.00 / 100.00	Atomic
1	1	13	Sphingomyelin phosphodiesterase 4	AB [G], BB [G8]	866	-	1-866	100.00 / 100.00	Atomic
1	1	21	Nuclear pore complex protein Nup153	AC [Y], BC [Y16], CC [Y8]	1475	-	1-1475	100.00 / 100.00	Atomic
1	1	32	Nuclear pore complex protein Nup98	AD [U16], BD [U24], CD [U8], ZC [U]	880	-	1-880	100.00 / 100.00	Atomic
1	1	39	Nuclear pore complex protein Nup43	AE [Q16], BE [Q24], CE [Q8], ZD [Q]	380	-	1-380	100.00 / 100.00	Atomic
1	1	14	Nuclear pore complex protein Nup133	CB [K], DB [K16], EB [K24], FB [K8]	1156	-	1-1156	100.00 / 100.00	Atomic
1	1	22	Centrin-2	DC [a]	172	-	1-172	100.00 / 100.00	Atomic
1	1	33	Nuclear pore complex protein Nup214	DD [V], ED [V8]	2090	-	1-2090	100.00 / 100.00	Atomic
1	1	40	Nuclear pore complex protein ELYS	DE [T], EE [T8]	2266	-	1-2266	100.00 / 100.00	Atomic
1	1	23	Transcription/export complex protein 2 homolog	EC [b], FC [b16], GC [b24], HC [b8]	101	-	1-101	100.00 / 100.00	Atomic
1	1	34	Nuclear envelope pore membrane protein POM 121	FD [Z], GD [Z8]	1249	-	1-1249	100.00 / 100.00	Atomic
1	1	15	Nuclear pore complex protein Nup107	GB [L], HB [L16], IB [L24], JB [L8]	925	-	1-925	100.00 / 100.00	Atomic

ID	Model(s)	Entity ID	Molecule name	Chain(s) [auth]	Total residues	Rigid segments	Flexible segments	Model coverage/ Starting model coverage (%)	Scale
1	1	8	Nuclear pore complex protein Nup188	HA [B], IA [B8]	1749	-	1-1749	100.00 / 100.00	Atomic
1	1	35	Nuclear pore complex protein Nup62	HD [J16], ID [J24], JD [J32], KD [J40], LD [J8], MD [J]	522	-	1-522	100.00 / 100.00	Atomic
1	1	24	PCI domain-containing protein 2	IC [c]	399	-	1-399	100.00 / 100.00	Atomic
1	1	9	Nuclear pore complex protein Nup205	JA [C], KA [C16], LA [C24], MA [C32], NA [C8]	2012	-	1-2012	100.00 / 100.00	Atomic
1	1	25	26S proteasome complex subunit SEM1	JC [d]	70	-	1-70	100.00 / 100.00	Atomic
1	1	16	Nuclear pore complex protein Nup96 (NUP96 part of NUP98-NUP96 precursor, P52948)	KB [M], LB [M16], MB [M24], NB [M8]	937	-	1-937	100.00 / 100.00	Atomic
1	1	26	Spliceosome RNA helicase DDX39B	KC [e]	428	-	1-428	100.00 / 100.00	Atomic
1	1	27	ATP-dependent RNA helicase DDX19B	LC [f8], OC [f]	479	-	1-479	100.00 / 100.00	Atomic
1	1	28	Nuclear pore complex protein GLE1	MC [g8], PC [g]	698	-	1-698	100.00 / 100.00	Atomic
1	1	29	Nuclear pore complex protein Nup42	NC [h8], QC [h]	423	-	1-423	100.00 / 100.00	Atomic
1	1	36	Protein SEC13 homolog	ND [N], OD [N16], PD [N24], QD [N8]	322	-	1-322	100.00 / 100.00	Atomic
1	1	10	Nuclear pore complex protein Nup155	OA [D], PA [D16], QA [D24], RA [D32], SA [D40], TA [D8]	1391	-	1-1391	100.00 / 100.00	Atomic
1	1	17	Nuclear pore complex protein Nup160	OB [R], PB [R16], QB [R24], RB [R8]	1436	-	1-1436	100.00 / 100.00	Atomic
1	1	30	Nuclear pore complex protein Nup54	RC [H], SC [H16], TC [H24], UC [H8]	507	-	1-507	100.00 / 100.00	Atomic

ID	Model(s)	Entity ID	Molecule name	Chain(s) [auth]	Total residues	Rigid segments	Flexible segments	Model coverage/ Starting model coverage (%)	Scale
1	1	37	Nucleoporin Seh1	RD [O], SD [O16], TD [O24], UD [O8]	360	-	1-360	100.00 / 100.00	Atomic
1	1	18	Nuclear pore complex protein Nup37	SB [S], TB [S16], UB [S24], VB [S8]	326	-	1-326	100.00 / 100.00	Atomic
1	1	11	Nuclear envelope protein NDC1	UA [E], VA [E8]	674	-	1-674	100.00 / 100.00	Atomic
1	1	31	Nuclear pore complex protein Nup58	VC [I], WC [I16], XC [I24], YC [I8]	599	-	1-599	100.00 / 100.00	Atomic
1	1	38	Nuclear pore complex protein Nup85	VD [P], WD [P16], XD [P24], YD [P8]	656	-	1-656	100.00 / 100.00	Atomic
1	1	12	Nuclear pore complex protein Nup35	WA [F], XA [F24], YA [F40], ZA [F8]	326	-	1-326	100.00 / 100.00	Atomic
1	1	19	Nuclear pore complex protein Nup88	WB [W], XB [W8]	741	-	1-741	100.00 / 100.00	Atomic
1	1	20	Transmembrane protein 209	YB [X], ZB [X8]	561	-	1-561	100.00 / 100.00	Atomic

2.3. Datasets used for modeling

There are 45 unique datasets used to build the models in this entry.

ID	Dataset type	Database name	Data access code
1	3DEM volume	EMDB	EMD-58804
6	Crosslinking-MS data	PRIDE	PXD080872
7	Crosslinking-MS data	PRIDE	PXD081158
8	3DEM volume	EMDB	EMD-14322
9	Crosslinking-MS data	PRIDE	PXD081113
10	De Novo model	Not available	Not available
11	De Novo model	Not available	Not available
12	De Novo model	Not available	Not available
13	De Novo model	Not available	Not available
14	De Novo model	Not available	Not available
15	De Novo model	Not available	Not available
16	De Novo model	Not available	Not available

ID	Dataset type	Database name	Data access code
17	De Novo model	Not available	Not available
18	De Novo model	Not available	Not available
19	De Novo model	Not available	Not available
20	De Novo model	Not available	Not available
21	De Novo model	Not available	Not available
22	De Novo model	Not available	Not available
23	De Novo model	Not available	Not available
24	De Novo model	Not available	Not available
25	De Novo model	Not available	Not available
26	De Novo model	Not available	Not available
27	De Novo model	Not available	Not available
28	De Novo model	Not available	Not available
29	De Novo model	Not available	Not available
30	De Novo model	Not available	Not available
31	De Novo model	Not available	Not available
32	De Novo model	Not available	Not available
33	De Novo model	Not available	Not available
34	De Novo model	Not available	Not available
35	De Novo model	Not available	Not available
36	De Novo model	Not available	Not available
37	De Novo model	Not available	Not available
38	De Novo model	Not available	Not available
39	De Novo model	Not available	Not available
40	De Novo model	Not available	Not available
41	De Novo model	Not available	Not available
42	De Novo model	Not available	Not available
43	De Novo model	Not available	Not available
44	De Novo model	Not available	Not available
45	De Novo model	Not available	Not available
47	De Novo model	Not available	Not available
48	De Novo model	Not available	Not available
49	De Novo model	Not available	Not available
50	De Novo model	Not available	Not available

2.4. Methodology and software

This entry is a result of 1 distinct protocol.

Step number	Protocol ID	Method name	Method type	Method description	Number of computed models	Multi state modeling	Multi scale modeling
1	1	Starting model generation	AlphaFold prediction	Subcomplex and nucleoporin structures were predicted with AlphaFold 3 (server and standalone). TPR homodimers were modeled with AF3x guided by XL-MS cross-links, and the TPR tetramer (residues 1-320 and 660-1460) with ColabFold using the top homodimer models as custom templates. The highest-ranked models (USalign, pLDDT, PAE and agreement with XL-MS data) were selected as starting models.	1	False	False

Step number	Protocol ID	Method name	Method type	Method description	Number of computed models	Multi state modeling	Multi scale modeling
2	1	Systematic fitting	Superposition and systematic rigid-body fitting	The scaffold was assembled ring by ring, using the previously published human NPC models (Mosalaganti et al.) and the cryo-ET map of the human macrophage NPC. Inner ring (IR): an initial IR model was built from the published constricted-state NPC model; AF3 models of the previously assigned NUPs and their subcomplexes were superposed onto their counterparts in that structure, and the newly identified subcomplexes (NUP155-SMPD4, TMEM209 CTD-(NUP98-NUP93-NUP62-NUP58-NUP54)x2, NUP93-NUP35x2) were positioned by systematic rigid-body fitting with Assembline; the resulting IR model was then fitted as a rigid body into the dilated-state macrophage cryo-ET map. Nuclear ring (NR) and nuclear basket: modeled using the macrophage cryo-ET map and the published model; AF3 models of the previously assigned NUPs and their subcomplexes were superposed onto the corresponding components in the published structure fitted into the map, and the newly identified subcomplexes (NUP85-SEH1-NUP43-GANP-NUP153, NUP205-NUP93-GANP, NUP96-NUP107-TPRx2-NUP153-GANP) were positioned by systematic fitting with Assembline; the NUP85-SEH1-NUP43-GANP-NUP153-Centrin-2-ENY2x2 subcomplex was placed by superposition onto the NUP85-SEH1-NUP43-GANP-NUP153 model and used as a reference to position GANP-ENY2x4; the inner TPR insertion region (TPRx2-NUP153-GANP) and the TPR tetramer were placed manually and locally refined in ChimeraX. Cytoplasmic ring (CR): generated with the same approach as the NR; the second copy of the NUP214 subcomplex was positioned by systematic fitting with Assembline. Luminal ring (LR): initial coordinates	1	False	False

Step number	Protocol ID	Method name	Method type	Method description	Number of computed models	Multi state modeling	Multi scale modeling
				were taken directly from the previously published dilated-state NPC model. Systematic-fitting runs used 100,000 random placements requiring at least 30% map overlap, scored by cross-correlation about the mean (cam score) and assessed via Fisher-transformed z-scores and Benjamini-Hochberg-adjusted p-values.			
3	1	Integrative refinement	Assembline/IMP refinement	The assembled NPC model was refined with Assembline built on the Integrative Modeling Platform (IMP v2.15) and the Python Modeling Interface (PMI). Models were divided into rigid-body segments in a C-alpha-only representation; the scoring function combined EM-fit restraints, steric-clash penalties (SoftSpherePairScore), connectivity restraints between sequentially adjacent domains, and elastic-network restraints derived from AF3 subcomplex models. Refined C-alpha representations were back-mapped to the atomic AF3 models.	1	False	False
4	1	Flexible and disordered region building	MODELLER/ISOLDE	AF3 models of flexible domains and all disordered regions were placed in arbitrary positions and connected within chains using MODELLER and ISOLDE; remaining clashes were removed with MODELLER.	1	False	False

There are 10 software packages reported in this entry.

ID	Software name	Software version	Software classification	Software location
1	AlphaFold 3	Not available	model building	https://alphafold.ebi.ac.uk/
4	Assembline	Not available	integrative model building	https://assembline.readthedocs.io/
5	Integrative Modeling Platform (IMP)	2.15	integrative model building	https://integrativemodeling.org/
8	MODELLER	Not available	model building	https://salilab.org/modeller/
2	AF3x	Not available	model building	https://github.com/KosinskiLab/af3x
3	ColabFold	Not available	model building	https://github.com/sokrypton/ColabFold
6	Python Modeling Interface (PMI)	Not available	integrative model building	https://github.com/salilab/pmi
7	UCSF Chimera	Not available	model building	https://www.cgl.ucsf.edu/chimera/

ID	Software name	Software version	Software classification	Software location
9	ISOLDE	Not available	model building	https://isolde.cimr.cam.ac.uk/
10	UCSF ChimeraX	1.10/v10	model building	https://www.rbvi.ucsf.edu/chimerax/

3. Data quality

3.2. Crosslinking-MS

At the moment, data validation is only available for crosslinking-MS data deposited as a fully compliant dataset in the PRIDE Crosslinking database. Correspondence between crosslinking-MS and entry entities is established using pyHMMER. Only residue pairs that passed the reported threshold are used for the analysis. The values in the report have to be interpreted in the context of the experiment (i.e. only a minor fraction of in-situ or in-vivo dataset can be used for modeling).

Crosslinking-MS dataset is not available in the PRIDE Crosslinking database.

3.3. 3DEM

This section describes the quality of the 3DEM datasets.

EMD-58804

3.3.1. Experimental information

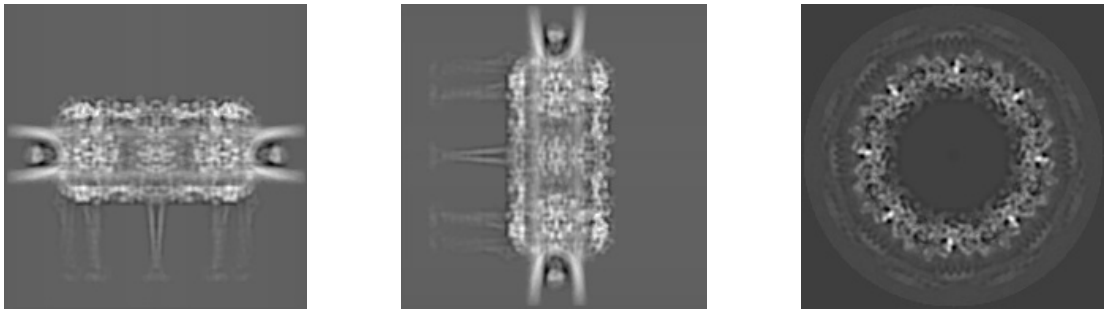
EM reconstruction method:	SUBTOMOGRAM AVERAGING
Resolution:	28.00 Å
Recommended level:	0.050
Estimated volume:	381727.59 nm³
Specimen preparation:	Preparation ID 1 Vitrification
Map-only validation report:	wwPDB validation report

3.3.2. Map visualisation

This section contains visualisations of the EMDB entry EMD-58804. 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.

3.3.2.1. Orthogonal projections

Primary map



X **Y** **Z**

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

3.3.2.2. Central slices

Primary map



X Index: 96 **Y Index: 96** **Z Index: 96**

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

3.3.2.3. Largest variance slices

Primary map

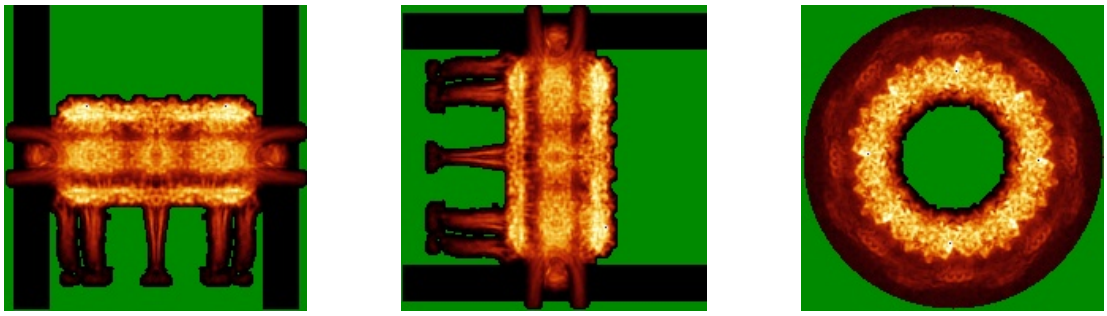


X Index: 52 **Y Index: 52** **Z Index: 122**

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

3.3.2.4. Orthogonal standard-deviation projections (false-color)

Primary map

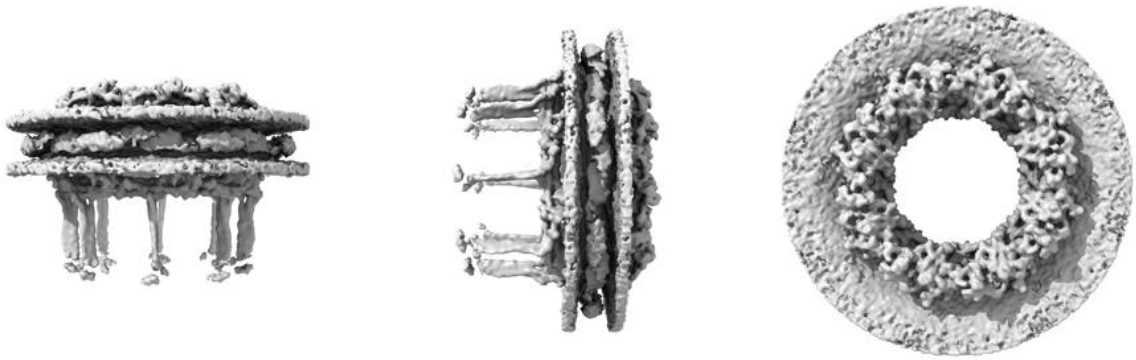


X **Y** **Z**

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

3.3.2.5. Orthogonal surface views

Primary map



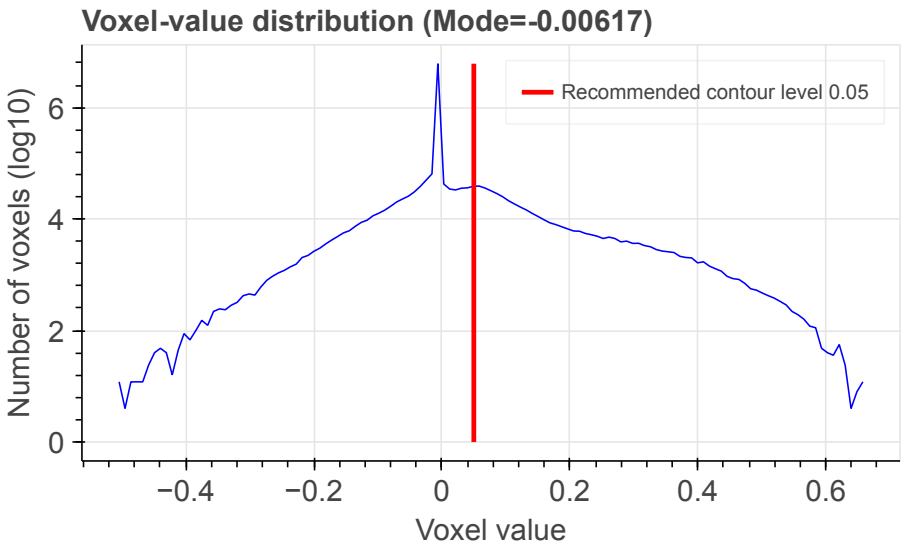
X **Y** **Z**

The images above show the 3D surface view of the map at the recommended contour level 0.050 . These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

3.3.3. Map analysis

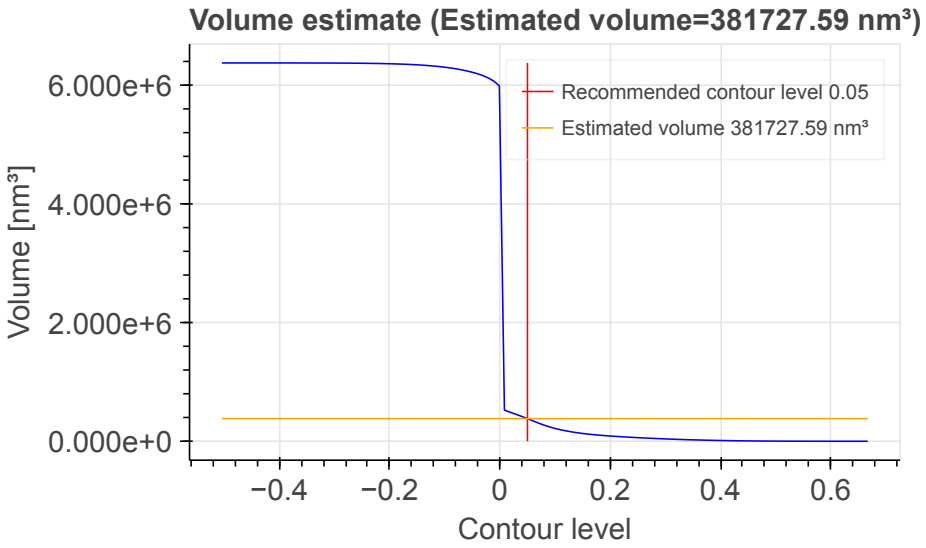
This section contains the results of statistical analysis of the map.

3.3.3.1. 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.

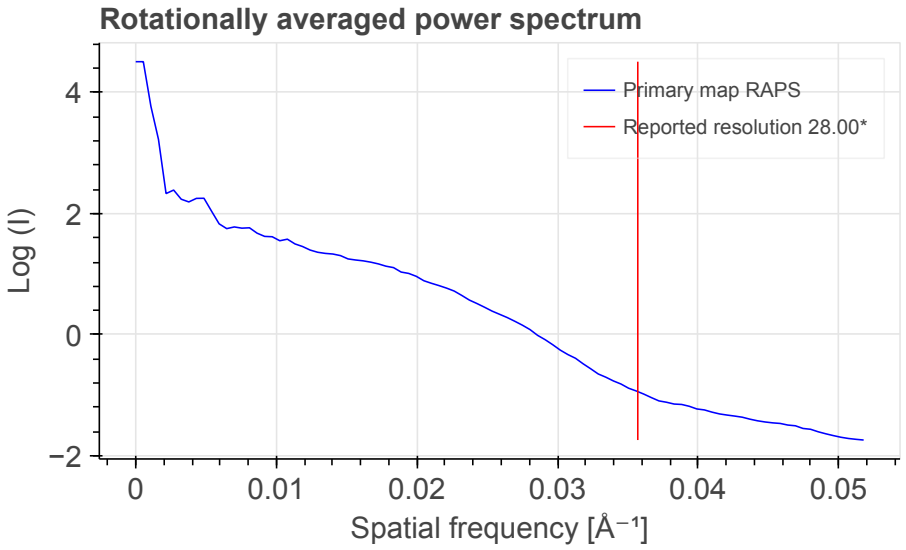
3.3.3.2. Volume estimate



The volume at the recommended contour level is 381727.59 nm³.

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.

3.3.3.3. Rotationally averaged power spectrum



*Reported resolution corresponds to spatial frequency of 0.036 Å⁻¹

3.3.4. Fourier-Shell correlation

3.3.4.2. Resolution estimates

Resolution estimate (Å)	Estimation criterion (FSC cut-off)			
	0.143	0.5	Half-bit	Other
Reported by author	-	-	-	28.00

Author-provided FSC curve is not available.

EMD-14322

3.3.1. Experimental information

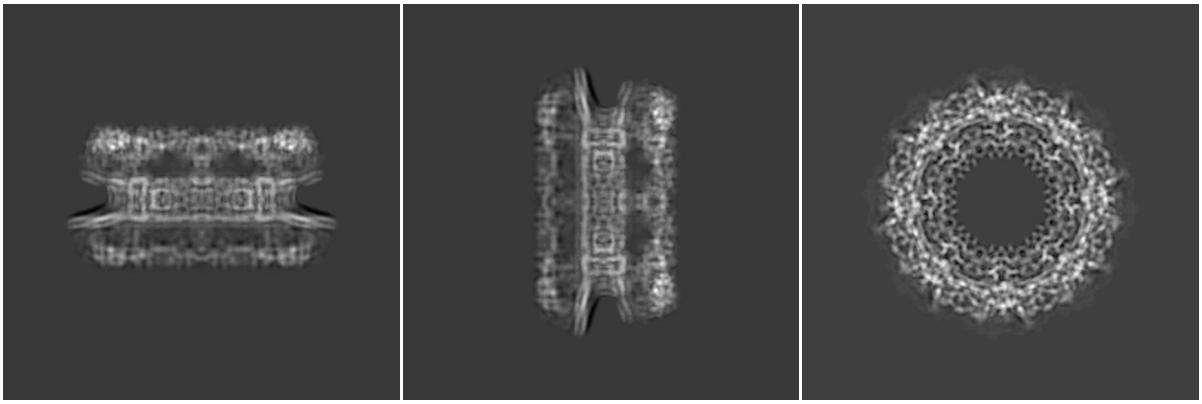
EM reconstruction method:	SUBTOMOGRAM AVERAGING
Resolution:	12.00 Å
Recommended level:	3.500
Estimated volume:	92616.23 nm³
Specimen preparation:	Preparation ID 1 Vitrification
Map-only validation report:	wwPDB validation report

3.3.2. Map visualisation

This section contains visualisations of the EMDB entry EMD-14322. 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.

3.3.2.1. Orthogonal projections

Primary map

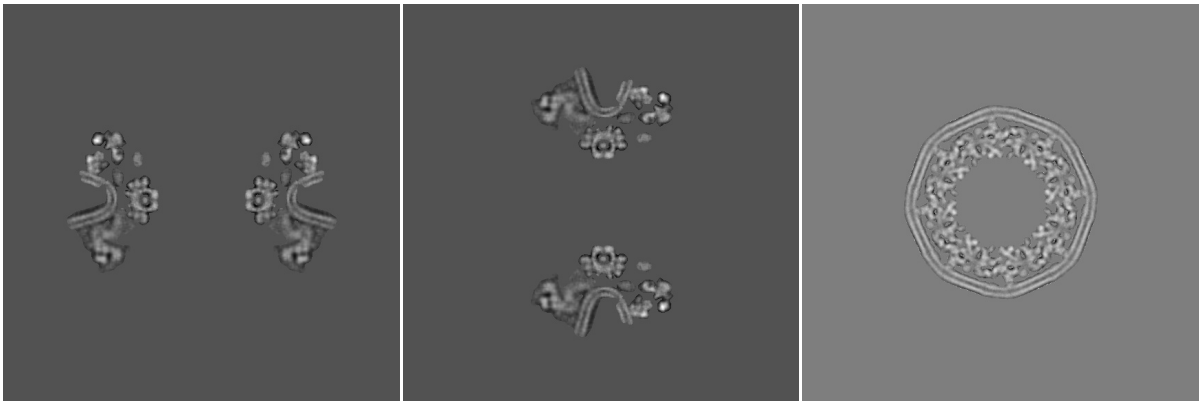


X **Y** **Z**

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

3.3.2.2. Central slices

Primary map

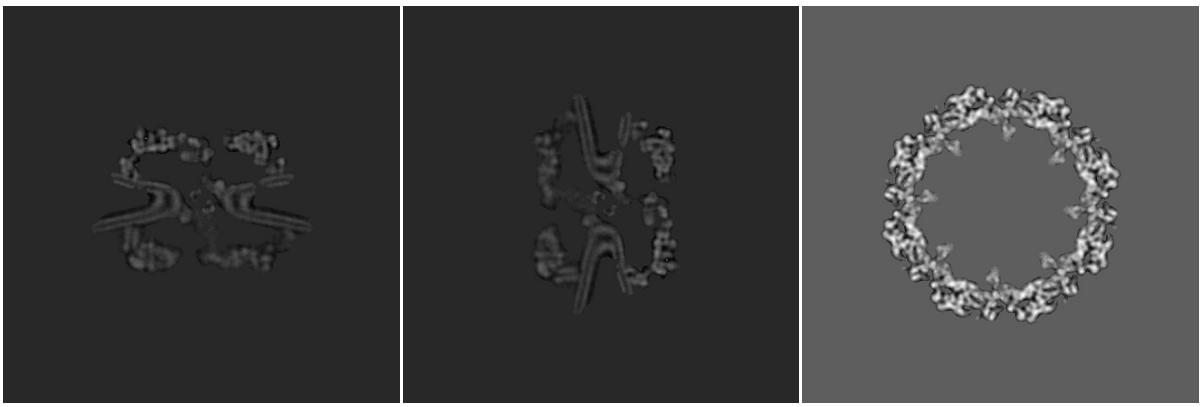


X Index: 288 **Y Index: 288** **Z Index: 288**

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

3.3.2.3. Largest variance slices

Primary map

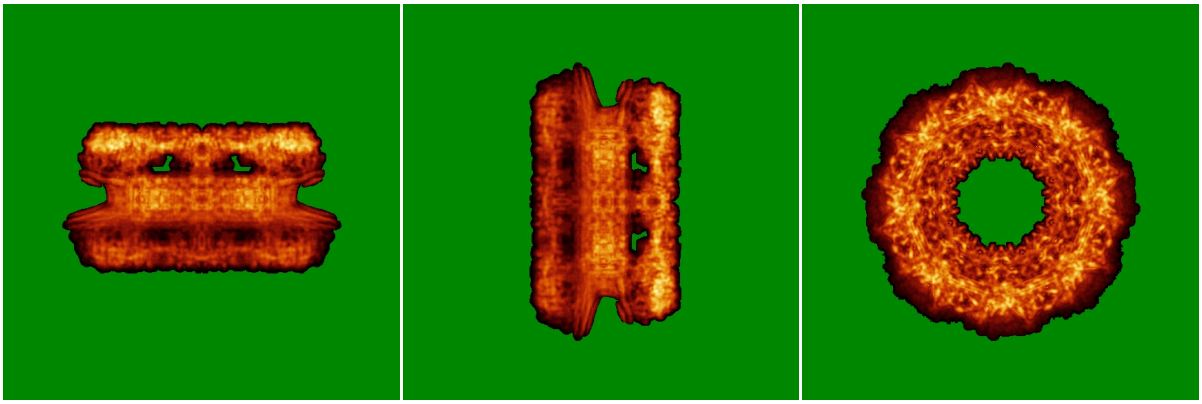


X Index: 404 **Y Index: 172** **Z Index: 370**

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

3.3.2.4. Orthogonal standard-deviation projections (false-color)

Primary map

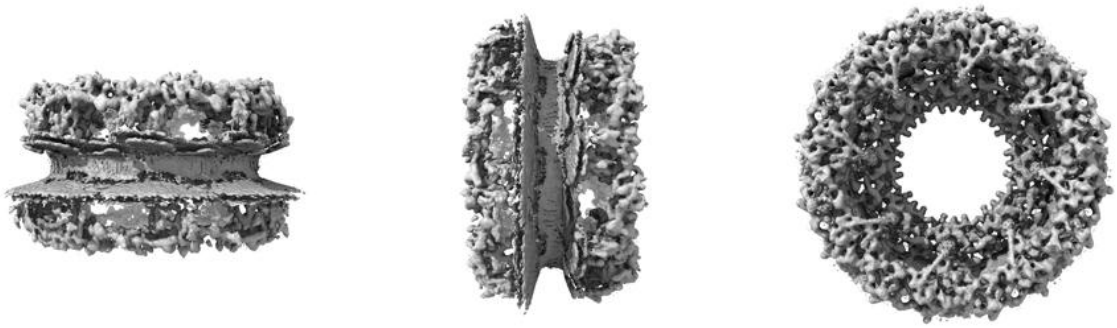


X **Y** **Z**

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

3.3.2.5. Orthogonal surface views

Primary map



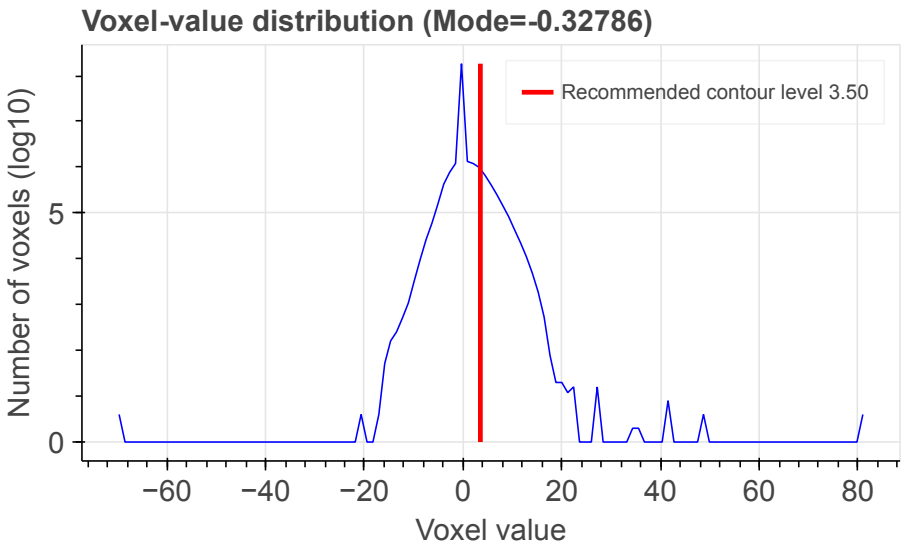
X **Y** **Z**

The images above show the 3D surface view of the map at the recommended contour level 3.500 . These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

3.3.3. Map analysis

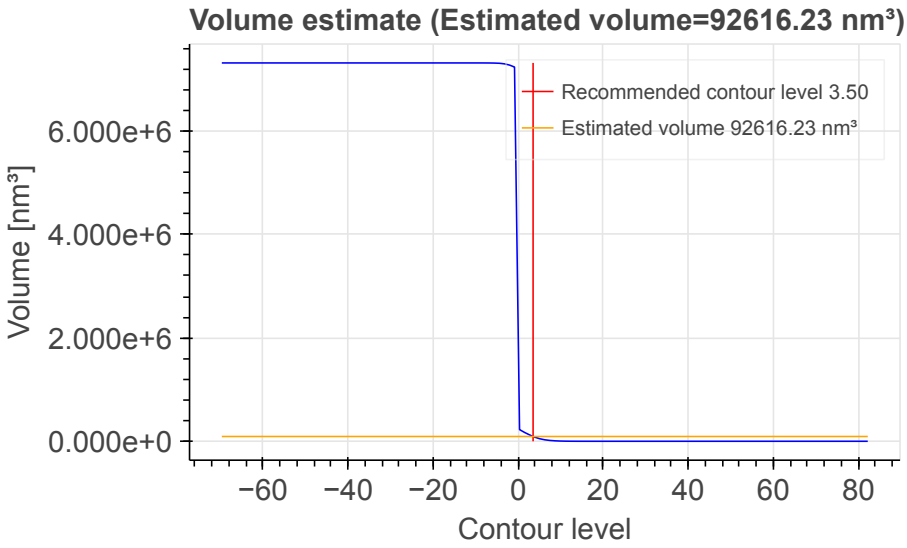
This section contains the results of statistical analysis of the map.

3.3.3.1. 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.

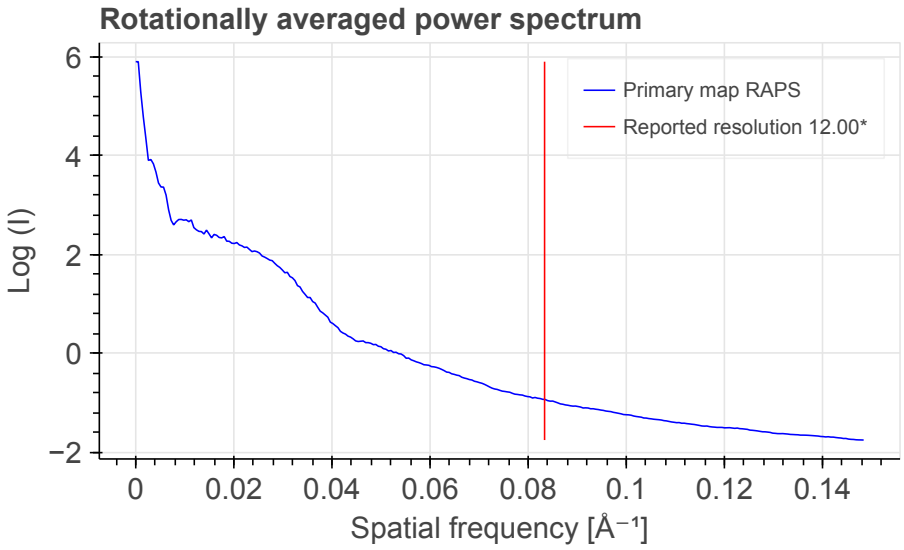
3.3.3.2. Volume estimate



The volume at the recommended contour level is 92616.23 nm³.

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.

3.3.3.3. Rotationally averaged power spectrum



*Reported resolution corresponds to spatial frequency of 0.083 Å⁻¹

3.3.4. Fourier-Shell correlation

3.3.4.2. Resolution estimates

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	12.00	-	-

Author-provided FSC curve is not available.

4. Model quality

For models with atomic structures, MolProbity analysis is performed. For models with coarse-grained or multi-scale structures, excluded volume analysis is performed.

4.1b. MolProbity Analysis

Standard geometry

The Z score of a bond length (or angle) is the number of standard deviations it is from its ideal value, as MolProbity scores it with the conformation-dependent library; hydrogens are left out. A bond length (or angle) with |Z| > 5 is an outlier worth inspection. RMSZ is the root-mean-square of the Z scores of a chain's bond lengths (or angles). For a chain in several models, the table shows the mean ± the standard deviation over the models; the All row pools every chain of every model. Only the first 100 of 135 chains are listed.

Mol	Chain	Bond lengths RMSZ	Bond lengths #|Z|>5	Bond angles RMSZ	Bond angles #|Z|>5
1	A	1.39	3/25719 (0.0%)	1.49	262/34757 (0.8%)
1	B	1.40	4/25719 (0.0%)	1.49	242/34757 (0.7%)
1	C	1.39	7/25719 (0.0%)	1.48	224/34757 (0.6%)
1	D	1.39	2/25719 (0.0%)	1.51	269/34757 (0.8%)
1	E	0.86	4/25734 (0.0%)	1.38	147/34787 (0.4%)

Mol	Chain	Bond lengths RMSZ	Bond lengths #|Z|>5	Bond angles RMSZ	Bond angles #|Z|>5
2	F	1.50	2/14777 (0.0%)	1.51	112/20154 (0.6%)
2	G	1.48	8/14777 (0.1%)	1.48	109/20154 (0.5%)
2	H	1.47	7/14777 (0.0%)	1.46	97/20154 (0.5%)
2	I	1.50	1/14777 (0.0%)	1.52	115/20154 (0.6%)
2	J	1.49	5/14777 (0.0%)	1.49	111/20154 (0.6%)
2	K	1.49	6/14777 (0.0%)	1.49	111/20154 (0.6%)
2	L	1.48	4/14777 (0.0%)	1.48	103/20154 (0.5%)
2	M	1.49	1/14777 (0.0%)	1.52	117/20154 (0.6%)
3	N	1.43	2/18902 (0.0%)	1.46	70/25443 (0.3%)
3	O	1.44	1/18901 (0.0%)	1.49	72/25441 (0.3%)
4	P	0.80	2/3905 (0.1%)	1.04	5/5342 (0.1%)
4	Q	0.78	1/3905 (0.0%)	0.99	0/5342 (0.0%)
3	R	1.51	3/18905 (0.0%)	1.48	72/25449 (0.3%)
3	S	1.43	1/18901 (0.0%)	1.47	62/25441 (0.2%)
5	T	1.44	1/15670 (0.0%)	1.52	136/21229 (0.6%)
6	U	0.87	1/3586 (0.0%)	1.30	14/4841 (0.3%)
6	V	0.88	2/3586 (0.1%)	1.30	13/4841 (0.3%)
6	W	1.43	1/3586 (0.0%)	1.53	36/4841 (0.7%)
6	X	0.88	1/3586 (0.0%)	1.31	16/4841 (0.3%)
6	Y	1.43	1/3586 (0.0%)	1.52	40/4841 (0.8%)
6	Z	1.44	1/3586 (0.0%)	1.51	34/4841 (0.7%)
7	AA	0.81	11/5963 (0.2%)	1.07	7/8059 (0.1%)
7	BA	0.88	4/6695 (0.1%)	1.15	13/9048 (0.1%)
7	CA	1.44	0/6695 (0.0%)	1.57	76/9048 (0.8%)
7	DA	1.92	8/6695 (0.1%)	1.28	18/9048 (0.2%)
7	EA	0.76	3/6695 (0.0%)	1.13	6/9048 (0.1%)
7	FA	0.87	13/5963 (0.2%)	1.15	22/8059 (0.3%)
7	GA	1.80	14/5963 (0.2%)	1.19	9/8059 (0.1%)
8	HA	0.93	7/14026 (0.0%)	1.10	18/19034 (0.1%)
8	IA	0.77	7/14026 (0.0%)	1.09	23/19034 (0.1%)
9	JA	1.43	0/16310 (0.0%)	1.50	115/22104 (0.5%)
9	KA	1.43	1/16310 (0.0%)	1.51	101/22104 (0.5%)
9	LA	1.44	2/16310 (0.0%)	1.49	129/22104 (0.6%)
9	MA	1.45	0/16310 (0.0%)	1.53	122/22104 (0.6%)
9	NA	1.42	0/16310 (0.0%)	1.50	144/22104 (0.7%)

Mol	Chain	Bond lengths RMSZ	Bond lengths #|Z|>5	Bond angles RMSZ	Bond angles #|Z|>5
10	OA	1.44	1/10626 (0.0%)	1.52	80/14401 (0.6%)
10	PA	1.45	2/10626 (0.0%)	1.54	95/14401 (0.7%)
10	QA	1.44	2/10626 (0.0%)	1.51	82/14401 (0.6%)
10	RA	1.45	1/10626 (0.0%)	1.51	86/14401 (0.6%)
10	SA	1.45	3/10626 (0.0%)	1.54	90/14401 (0.6%)
10	TA	1.45	0/10626 (0.0%)	1.53	91/14401 (0.6%)
11	UA	1.42	0/4531 (0.0%)	1.57	45/6171 (0.7%)
11	VA	1.43	0/4531 (0.0%)	1.54	47/6171 (0.8%)
12	WA	1.43	0/1891 (0.0%)	1.49	17/2569 (0.7%)
12	XA	1.17	5/1891 (0.3%)	1.47	17/2569 (0.7%)
12	YA	3.27	2/1891 (0.1%)	1.72	26/2569 (1.0%)
12	ZA	1.42	0/1891 (0.0%)	1.57	19/2569 (0.7%)
13	AB	0.83	6/7122 (0.1%)	1.07	3/9696 (0.0%)
13	BB	0.83	6/7122 (0.1%)	1.07	2/9696 (0.0%)
14	CB	1.43	0/8708 (0.0%)	1.58	117/11806 (1.0%)
14	DB	1.41	0/8708 (0.0%)	1.50	66/11806 (0.6%)
14	EB	0.80	1/8708 (0.0%)	1.08	14/11806 (0.1%)
14	FB	0.81	2/8708 (0.0%)	1.09	22/11806 (0.2%)
15	GB	0.78	2/6518 (0.0%)	1.13	4/8821 (0.0%)
15	HB	0.78	4/6518 (0.1%)	1.06	7/8821 (0.1%)
15	IB	1.41	0/6518 (0.0%)	1.51	44/8821 (0.5%)
15	JB	1.41	0/6518 (0.0%)	1.52	48/8821 (0.5%)
16	KB	1.46	0/5586 (0.0%)	1.57	53/7582 (0.7%)
16	LB	1.42	0/5586 (0.0%)	1.54	50/7582 (0.7%)
16	MB	1.45	0/5586 (0.0%)	1.54	33/7582 (0.4%)
16	NB	1.44	1/5586 (0.0%)	1.56	36/7582 (0.5%)
17	OB	0.81	6/11371 (0.1%)	0.97	5/15448 (0.0%)
17	PB	1.41	0/11371 (0.0%)	1.48	56/15448 (0.4%)
17	QB	0.82	7/11371 (0.1%)	0.96	2/15448 (0.0%)
17	RB	0.83	8/11371 (0.1%)	0.96	1/15448 (0.0%)
18	SB	0.81	2/2623 (0.1%)	0.91	1/3570 (0.0%)
18	TB	1.45	0/2622 (0.0%)	1.56	42/3568 (1.2%)
18	UB	0.80	1/2623 (0.0%)	0.92	0/3570 (0.0%)
18	VB	0.81	2/2623 (0.1%)	0.91	1/3570 (0.0%)
19	WB	1.43	0/5972 (0.0%)	1.55	58/8107 (0.7%)

Mol	Chain	Bond lengths RMSZ	Bond lengths #|Z|>5	Bond angles RMSZ	Bond angles #|Z|>5
19	XB	1.42	3/5972 (0.1%)	1.52	46/8107 (0.6%)
20	YB	0.89	7/4552 (0.2%)	1.10	6/6199 (0.1%)
20	ZB	1.43	1/4552 (0.0%)	1.50	35/6199 (0.6%)
21	AC	1.37	1/9196 (0.0%)	1.49	120/12464 (1.0%)
21	BC	1.39	1/9196 (0.0%)	1.47	114/12464 (0.9%)
21	CC	1.38	2/9196 (0.0%)	1.49	122/12464 (1.0%)
22	DC	0.68	0/1391 (0.0%)	1.02	2/1847 (0.1%)
23	EC	0.77	0/813 (0.0%)	1.04	0/1087 (0.0%)
23	FC	0.77	1/813 (0.1%)	1.04	0/1087 (0.0%)
23	GC	0.78	1/813 (0.1%)	1.07	0/1087 (0.0%)
23	HC	0.85	1/813 (0.1%)	1.18	2/1087 (0.2%)
24	IC	0.73	0/3307 (0.0%)	1.01	1/4460 (0.0%)
25	JC	0.76	1/596 (0.2%)	1.05	0/807 (0.0%)
26	KC	0.71	0/3496 (0.0%)	1.04	1/4709 (0.0%)
27	LC	0.71	0/3840 (0.0%)	1.02	0/5185 (0.0%)
28	MC	0.73	0/2636 (0.0%)	1.02	0/3559 (0.0%)
29	NC	0.77	0/362 (0.0%)	1.07	1/492 (0.2%)
27	OC	0.71	0/3840 (0.0%)	1.02	0/5185 (0.0%)
28	PC	0.73	0/2636 (0.0%)	1.02	0/3559 (0.0%)
29	QC	0.77	0/362 (0.0%)	1.06	1/492 (0.2%)
30	RC	0.75	0/3971 (0.0%)	1.10	7/5374 (0.1%)
30	SC	0.77	1/3971 (0.0%)	1.12	8/5374 (0.1%)
30	TC	0.77	1/3971 (0.0%)	1.10	7/5374 (0.1%)
30	UC	0.77	1/3971 (0.0%)	1.11	6/5374 (0.1%)
31	VC	0.89	4/4311 (0.1%)	1.30	18/5851 (0.3%)
All	All	1.30	366/1022731 (0.0%)	1.40	6666/1387110 (0.5%)

All unique bond length outliers are listed below, sorted by the |Z| of their worst occurrence. The output is limited to 100 rows.

Mol	Chain	Res	Type	Atoms	Z	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
7	DA	92	PRO	N-CD	141.82	3.46	1.47	1	1
12	YA	122	PRO	N-CD	136.26	3.38	1.47	1	1
32	BD	554	PRO	N-CD	135.53	3.37	1.47	1	1
7	GA	173	PRO	N-CD	123.39	3.20	1.47	1	1
8	HA	1521	PRO	N-CD	55.50	2.25	1.47	1	1
3	R	1149	CYS	SG-SG	47.86	2.99	2.03	1	1

Mol	Chain	Res	Type	Atoms	Z	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
3	R	630	ALA	C-OXT	46.51	2.16	1.23	1	1
7	BA	164	PRO	N-CD	28.21	1.87	1.47	1	1
7	BA	92	PRO	N-CD	23.36	1.80	1.47	1	1
32	ZC	556	PRO	N-CD	22.03	1.78	1.47	1	1
32	ZC	547	PRO	N-CD	21.91	1.78	1.47	1	1
32	BD	556	PRO	N-CD	21.48	1.77	1.47	1	1
32	BD	526	PRO	N-CD	21.44	1.77	1.47	1	1
12	XA	114	PRO	N-CD	21.26	1.77	1.47	1	1
34	FD	270	PRO	N-CD	20.38	1.76	1.47	1	1
12	XA	122	PRO	N-CD	19.96	1.75	1.47	1	1
39	CE	296	PRO	N-CD	19.87	1.75	1.47	1	1
39	ZD	296	PRO	N-CD	19.71	1.75	1.47	1	1
8	HA	1511	PRO	N-CD	19.41	1.74	1.47	1	1
12	XA	145	PRO	N-CD	19.27	1.74	1.47	1	1
38	XD	158	PRO	N-CD	18.54	1.73	1.47	1	1
32	AD	584	PRO	N-CD	17.18	1.71	1.47	1	1
32	ZC	562	PRO	N-CD	16.74	1.71	1.47	1	1
8	HA	1522	PRO	N-CD	16.59	1.71	1.47	1	1
3	N	75	CYS	SG-SG	16.58	2.36	2.03	1	1
13	AB	244	PRO	N-CD	16.55	1.70	1.47	1	1
13	BB	244	PRO	N-CD	16.53	1.70	1.47	1	1
7	BA	89	PRO	N-CD	16.28	1.70	1.47	1	1
32	ZC	485	PRO	N-CD	16.07	1.70	1.47	1	1
7	EA	172	PRO	N-CD	15.89	1.70	1.47	1	1
32	AD	538	PRO	N-CD	15.40	1.69	1.47	1	1
8	IA	1521	PRO	N-CD	15.17	1.69	1.47	1	1
12	YA	107	PRO	N-CD	15.01	1.68	1.47	1	1
3	R	1460	ALA	C-OXT	14.63	1.52	1.23	1	1
39	BE	296	PRO	N-CD	14.59	1.68	1.47	1	1
7	DA	173	PRO	N-CD	14.45	1.68	1.47	1	1
32	BD	584	PRO	N-CD	14.28	1.67	1.47	1	1
31	XC	342	PRO	N-CD	14.22	1.67	1.47	1	1
31	VC	342	PRO	N-CD	14.17	1.67	1.47	1	1
20	YB	300	PRO	N-CD	13.09	1.66	1.47	1	1
20	YB	62	PRO	N-CD	13.05	1.66	1.47	1	1

Mol	Chain	Res	Type	Atoms	Z	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
20	YB	197	PRO	N-CD	13.02	1.66	1.47	1	1
17	OB	464	PRO	N-CD	13.02	1.66	1.47	1	1
17	RB	464	PRO	N-CD	13.00	1.66	1.47	1	1
39	ZD	253	PRO	N-CD	12.67	1.65	1.47	1	1
39	BE	253	PRO	N-CD	12.67	1.65	1.47	1	1
38	WD	245	PRO	N-CD	12.66	1.65	1.47	1	1
39	CE	253	PRO	N-CD	12.64	1.65	1.47	1	1
35	ID	464	PRO	N-CD	12.34	1.65	1.47	1	1
35	JD	464	PRO	N-CD	12.33	1.65	1.47	1	1
35	KD	464	PRO	N-CD	12.23	1.64	1.47	1	1
4	P	35	PRO	N-CD	12.17	1.64	1.47	1	1
35	HD	464	PRO	N-CD	12.17	1.64	1.47	1	1
7	FA	167	ILE	CA-C	12.03	1.68	1.52	1	1
4	Q	35	PRO	N-CD	12.00	1.64	1.47	1	1
13	BB	347	PRO	N-CD	11.96	1.64	1.47	1	1
7	DA	237	PRO	N-CD	11.91	1.64	1.47	1	1
13	AB	347	PRO	N-CD	11.86	1.64	1.47	1	1
7	DA	365	PRO	N-CD	11.77	1.64	1.47	1	1
31	VC	482	PRO	N-CD	11.64	1.64	1.47	1	1
12	XA	274	PRO	N-CD	11.62	1.64	1.47	1	1
40	EE	395	PRO	N-CD	11.55	1.63	1.47	1	1
17	QB	1025	PRO	N-CD	11.29	1.63	1.47	1	1
15	GB	918	PRO	N-CD	11.28	1.63	1.47	1	1
7	FA	168	SER	C-N	11.27	1.48	1.33	1	1
35	MD	420	THR	C-N	11.26	1.49	1.33	1	1
7	DA	306	PRO	N-CD	11.19	1.63	1.47	1	1
17	RB	1201	PRO	N-CD	11.15	1.63	1.47	1	1
35	MD	419	GLY	C-N	11.14	1.49	1.33	1	1
13	BB	730	PRO	N-CD	11.13	1.63	1.47	1	1
13	AB	730	PRO	N-CD	11.10	1.63	1.47	1	1
38	WD	161	PRO	N-CD	11.09	1.63	1.47	1	1
17	QB	464	PRO	N-CD	11.06	1.63	1.47	1	1
7	FA	306	PRO	N-CD	11.06	1.63	1.47	1	1
7	GA	306	PRO	N-CD	11.01	1.63	1.47	1	1
35	JD	299	PRO	N-CD	11.00	1.63	1.47	1	1

Mol	Chain	Res	Type	Atoms	Z	Observed (Å)	Ideal (Å)	Model ID (Worst)	Models (Total)
7	AA	306	PRO	N-CD	10.99	1.63	1.47	1	1
35	ID	299	PRO	N-CD	10.95	1.63	1.47	1	1
30	TC	424	PRO	N-CD	10.94	1.63	1.47	1	1
7	DA	774	PRO	N-CD	10.91	1.63	1.47	1	1
13	AB	558	PRO	N-CD	10.77	1.62	1.47	1	1
30	UC	290	PRO	N-CD	10.74	1.62	1.47	1	1
7	FA	166	TYR	N-CA	10.74	1.60	1.46	1	1
7	DA	431	PRO	N-CD	10.72	1.62	1.47	1	1
13	BB	558	PRO	N-CD	10.72	1.62	1.47	1	1
20	YB	185	PRO	N-CD	10.69	1.62	1.47	1	1
30	SC	290	PRO	N-CD	10.63	1.62	1.47	1	1
7	FA	166	TYR	CA-C	10.60	1.67	1.52	1	1
7	FA	168	SER	N-CA	10.47	1.58	1.46	1	1
32	AD	593	PRO	N-CD	10.16	1.62	1.47	1	1
7	FA	166	TYR	C-N	10.06	1.47	1.33	1	1
38	YD	570	PRO	N-CD	9.86	1.61	1.47	1	1
32	ZC	593	PRO	N-CD	9.82	1.61	1.47	1	1
40	EE	508	PRO	N-CD	9.77	1.61	1.47	1	1
20	YB	466	PRO	N-CD	9.56	1.61	1.47	1	1
32	BD	522	PRO	N-CD	9.50	1.61	1.47	1	1
7	FA	167	ILE	C-N	9.47	1.46	1.33	1	1
34	FD	1201	PHE	CA-C	9.38	1.63	1.52	1	1
32	ZC	522	PRO	N-CD	9.34	1.60	1.47	1	1
7	AA	119	LYS	C-N	-9.31	1.21	1.33	1	1

All unique bond angle outliers are listed below, sorted by the |Z| of their worst occurrence. The output is limited to 100 rows.

Mol	Chain	Res	Type	Atoms	Z	Observed (°)	Ideal (°)	Model ID (Worst)	Models (Total)
7	DA	92	PRO	CA-N-CD	-51.32	40.16	112.00	1	1
12	YA	122	PRO	CA-N-CD	-48.63	43.92	112.00	1	1
32	BD	554	PRO	CA-N-CD	-48.45	44.17	112.00	1	1
7	GA	173	PRO	CA-N-CD	-43.94	50.49	112.00	1	1
35	MD	464	PRO	CA-N-CD	-28.61	71.94	112.00	1	1
32	AD	610	LEU	O-C-OXT	-23.40	47.81	118.00	1	1
35	MD	502	VAL	O-C-OXT	-23.06	48.82	118.00	1	1
35	MD	464	PRO	N-CA-CB	22.13	126.48	103.25	1	1

Mol	Chain	Res	Type	Atoms	Z	Observed (°)	Ideal (°)	Model ID (Worst)	Models (Total)
12	XA	121	SER	C-N-CD	-21.72	35.95	125.00	1	1
12	XA	113	GLN	C-N-CD	-21.42	37.20	125.00	1	1
32	ZC	555	ARG	C-N-CD	-21.31	37.62	125.00	1	1
8	IA	1710	PRO	N-CA-CB	21.08	125.39	103.25	1	1
12	XA	144	GLN	C-N-CD	-20.72	40.05	125.00	1	1
8	IA	1710	PRO	CA-N-CD	-20.68	83.04	112.00	1	1
32	BD	482	PRO	CA-N-CD	-20.54	83.24	112.00	1	1
35	MD	420	THR	O-C-N	-20.51	95.31	122.59	1	1
32	BD	525	ASP	C-N-CD	-19.97	43.11	125.00	1	1
32	ZC	561	ARG	C-N-CD	-19.92	43.33	125.00	1	1
8	HA	1521	PRO	CA-N-CD	-19.77	84.32	112.00	1	1
32	BD	555	ARG	C-N-CD	-19.32	45.80	125.00	1	1
35	MD	419	GLY	O-C-N	-18.91	98.12	122.70	1	1
7	BA	163	GLU	C-N-CD	-18.90	47.51	125.00	1	1
39	ZD	295	VAL	C-N-CD	-18.81	47.86	125.00	1	1
39	CE	295	VAL	C-N-CD	-18.80	47.90	125.00	1	1
34	FD	305	ASP	N-CA-CB	-18.38	92.36	111.29	1	1
7	EA	171	GLY	C-N-CD	-18.34	49.80	125.00	1	1
8	IA	1709	SER	C-N-CD	-18.33	49.84	125.00	1	1
32	AD	583	GLU	C-N-CD	-17.95	51.42	125.00	1	1
8	IA	1520	ARG	C-N-CD	-17.56	53.02	125.00	1	1
35	MD	463	ALA	C-N-CD	-17.45	53.44	125.00	1	1
8	HA	1716	PRO	N-CA-CB	17.21	121.32	103.25	1	1
32	BD	583	GLU	C-N-CD	-16.99	55.35	125.00	1	1
8	HA	1716	PRO	C-CA-CB	-16.81	83.83	111.56	1	1
8	HA	1521	PRO	C-N-CD	-16.79	56.18	125.00	1	1
34	FD	304	PRO	N-CA-CB	16.33	120.40	103.25	1	1
34	FD	304	PRO	CA-N-CD	-16.22	89.29	112.00	1	1
34	FD	1180	THR	CA-C-N	16.03	143.93	118.44	1	1
32	AD	537	ASN	C-N-CD	-15.84	60.07	125.00	1	1
8	HA	1715	LEU	C-N-CD	-15.58	61.13	125.00	1	1
12	YA	129	THR	C-N-CD	-15.35	62.07	125.00	1	1
8	IA	1710	PRO	C-CA-CB	-15.20	86.49	111.56	1	1
38	XD	342	PRO	N-CA-CB	15.13	119.14	103.25	1	1
38	XD	342	PRO	CA-N-CD	-14.83	91.23	112.00	1	1

Mol	Chain	Res	Type	Atoms	Z	Observed (°)	Ideal (°)	Model ID (Worst)	Models (Total)
7	FA	165	SER	O-C-N	-14.63	103.13	122.59	1	1
3	N	75	CYS	SG-SG-CB	14.42	134.47	104.20	1	1
12	YA	100	SER	C-N-CD	-14.39	66.01	125.00	1	1
34	FD	269	SER	C-N-CD	-14.35	66.16	125.00	1	1
34	FD	306	PRO	CA-N-CD	-14.10	92.26	112.00	1	1
7	FA	167	ILE	C-N-CA	13.94	144.85	121.86	1	1
3	R	1460	ALA	CA-C-OXT	-13.93	79.20	121.00	1	1
34	FD	306	PRO	N-CA-CB	13.81	117.75	103.25	1	1
7	DA	172	PRO	C-CA-CB	13.76	127.70	110.92	1	1
7	BA	173	PRO	CA-N-CD	-13.75	92.75	112.00	1	1
7	DA	92	PRO	N-CA-CB	13.61	117.54	103.25	1	1
8	HA	1521	PRO	N-CA-CB	13.37	116.05	103.08	1	1
8	HA	1716	PRO	CA-N-CD	-13.23	93.47	112.00	1	1
3	R	75	CYS	SG-SG-CB	13.18	131.88	104.20	1	1
32	ZC	584	PRO	CA-N-CD	-12.97	93.84	112.00	1	1
12	YA	122	PRO	N-CD-CG	-12.83	83.95	103.20	1	1
35	LD	160	PHE	N-CA-C	12.81	126.07	110.19	1	1
7	DA	92	PRO	N-CD-CG	-12.80	84.00	103.20	1	1
35	MD	465	ALA	N-CA-CB	-12.78	88.90	110.49	1	1
8	IA	1710	PRO	N-CD-CG	12.68	122.22	103.20	1	1
15	GB	584	LYS	N-CA-CB	12.58	131.76	110.49	1	1
3	R	75	CYS	CB-SG-SG	12.57	130.60	104.20	1	1
35	MD	422	TYR	O-C-N	-12.51	105.95	122.59	1	1
7	GA	173	PRO	N-CA-CB	12.47	116.35	103.25	1	1
32	BD	554	PRO	N-CA-CB	12.24	116.10	103.25	1	1
31	XC	243	LYS	N-CA-CB	12.15	131.03	110.49	1	1
20	YB	216	ARG	N-CA-C	12.14	128.23	108.32	1	1
32	BD	554	PRO	N-CD-CG	-12.09	85.06	103.20	1	1
12	YA	123	LEU	N-CA-CB	-12.09	93.82	110.38	1	1
32	BD	485	PRO	C-CA-CB	11.99	131.34	111.56	1	1
35	MD	421	ILE	O-C-N	-11.90	107.70	122.57	1	1
39	CE	302	PHE	CA-CB-CG	-11.85	101.95	113.80	1	1
7	FA	168	SER	N-CA-C	11.73	128.09	109.79	1	1
12	XA	139	PRO	CA-N-CD	-11.45	95.97	112.00	1	1
7	FA	172	PRO	C-CA-CB	11.45	124.89	110.92	1	1

Mol	Chain	Res	Type	Atoms	Z	Observed (°)	Ideal (°)	Model ID (Worst)	Models (Total)
1	E	181	LEU	C-N-CA	11.41	135.57	120.28	1	1
7	AA	164	PRO	CA-N-CD	-11.26	96.23	112.00	1	1
32	CD	289	PHE	CA-CB-CG	-11.21	102.59	113.80	1	1
35	MD	464	PRO	N-CD-CG	11.21	120.01	103.20	1	1
35	JD	27	THR	CA-C-N	11.21	125.64	117.68	1	1
35	ID	27	THR	CA-C-N	11.19	125.62	117.68	1	1
1	E	760	GLY	C-N-CA	11.17	133.81	119.84	1	1
7	BA	158	PHE	CA-CB-CG	-10.92	102.88	113.80	1	1
7	GA	172	PRO	C-N-CD	-10.91	80.27	125.00	1	1
14	FB	497	PRO	CA-N-CD	-10.89	96.76	112.00	1	1
34	FD	1180	THR	CA-C-O	-10.82	105.33	120.16	1	1
7	FA	164	PRO	CA-N-CD	-10.79	96.90	112.00	1	1
38	XD	156	VAL	N-CA-CB	10.77	129.00	111.23	1	1
34	FD	725	PRO	CA-C-N	10.75	130.83	117.93	1	1
40	EE	887	ARG	N-CA-CB	10.75	128.66	110.49	1	1
7	GA	173	PRO	N-CD-CG	-10.70	87.15	103.20	1	1
10	SA	339	PHE	CA-CB-CG	-10.58	103.22	113.80	1	1
7	FA	165	SER	CA-C-N	10.56	134.91	116.84	1	1
35	MD	421	ILE	C-N-CA	10.52	141.63	121.54	1	1
32	CD	576	PHE	CA-CB-CG	-10.50	103.30	113.80	1	1
10	PA	339	PHE	CA-CB-CG	-10.49	103.31	113.80	1	1
32	CD	68	PHE	CA-CB-CG	-10.48	103.32	113.80	1	1

Too-close contacts

The all-atom clashscore, from a MolProbity analysis, is the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 30.56. The table below contains the clashscores of all atomic models in this entry.

Model ID	Clash score	Number of clashes
1	30.56	61014

All unique clashes are listed below, sorted by their clash magnitude. A clash is an overlap of 0.4 Å or more between two atoms. The output is limited to 100 rows.

Atom 1	Atom 2	Clash (Å)	Distance (Å)	Model ID (Worst)	Models (Total)
33:ED:906:ILE:CG2	39:ZD:62:GLU:HA	1.65	1.24	1	1
1:C:54:ASN:CB	16:KB:901:ARG:HB2	1.65	1.22	1	1
15:HB:852:LEU:HD21	15:HB:853:CYS:SG	1.65	1.12	1	1
3:R:1262:LEU:HB3	3:S:1262:LEU:CD1	1.64	1.24	1	1

Atom 1	Atom 2	Clash (Å)	Distance (Å)	Model ID (Worst)	Models (Total)
6:X:113:PHE:HB2	21:BC:480:THR:CG2	1.61	1.31	1	1
7:DA:658:SER:HB2	9:LA:1696:VAL:CG1	1.61	1.20	1	1
10:OA:1316:ARG:HD3	17:OB:793:GLU:CB	1.61	1.29	1	1
12:YA:100:SER:HB2	12:YA:106:THR:CG2	1.61	1.31	1	1
9:NA:475:ILE:CG2	17:OB:1209:SER:CB	1.60	1.79	1	1
3:O:726:GLU:HB3	3:S:1250:GLN:CG	1.60	1.20	1	1
7:CA:365:PRO:HG2	10:TA:1132:SER:CA	1.59	1.19	1	1
1:B:6:ALA:CA	38:VD:620:GLU:HG2	1.59	1.24	1	1
7:DA:657:GLN:HG3	20:YB:181:VAL:CB	1.59	1.29	1	1
1:B:6:ALA:HA	38:VD:620:GLU:CG	1.58	1.13	1	1
1:B:70:TYR:CE1	37:RD:96:LYS:HE2	1.58	1.38	1	1
2:K:1824:MET:CE	2:L:1827:ALA:HB3	1.58	1.11	1	1
1:B:46:LYS:HZ2	37:RD:96:LYS:CD	1.57	1.15	1	1
38:VD:251:LEU:CD1	19:XB:84:ARG:HD3	1.57	1.12	1	1
6:V:120:GLY:CA	21:CC:508:LEU:HB3	1.56	1.18	1	1
10:OA:1316:ARG:CD	17:OB:793:GLU:HB3	1.56	1.31	1	1
33:DD:614:SER:HB2	35:LD:311:THR:CG2	1.56	1.34	1	1
7:CA:365:PRO:CG	10:TA:1132:SER:HA	1.56	1.35	1	1
3:N:1131:TRP:CD1	3:O:1131:TRP:CD1	1.55	1.89	1	1
33:ED:851:VAL:CG1	19:XB:704:ILE:HG13	1.55	1.13	1	1
1:A:61:LYS:HZ1	16:KB:602:GLN:CD	1.54	1.15	1	1
10:QA:1237:SER:HB3	10:RA:732:LEU:CD1	1.54	1.32	1	1
2:J:1862:THR:CB	10:TA:159:PRO:HG3	1.54	1.34	1	1
14:FB:806:VAL:CB	14:FB:858:TRP:NE1	1.54	1.71	1	1
4:P:68:ALA:CB	10:OA:202:PRO:HB2	1.54	1.09	1	1
10:OA:506:GLN:HB3	10:TA:993:PRO:CB	1.53	1.37	1	1
38:VD:256:LEU:HD13	19:XB:478:PRO:CD	1.53	1.30	1	1
2:J:1862:THR:CG2	10:TA:159:PRO:HG3	1.53	1.38	1	1
15:HB:403:TYR:CD1	16:LB:480:LEU:HB2	1.53	1.41	1	1
3:O:726:GLU:CB	3:S:1250:GLN:HG3	1.53	1.10	1	1
4:P:68:ALA:HB1	10:OA:202:PRO:CB	1.52	1.09	1	1
34:FD:562:VAL:CG1	34:FD:568:ILE:HG21	1.52	1.33	1	1
9:NA:1703:GLU:CG	19:XB:259:LYS:NZ	1.52	1.71	1	1
7:CA:365:PRO:HG2	10:TA:1132:SER:C	1.52	1.27	1	1
3:N:929:SER:CB	3:O:930:ASN:ND2	1.52	1.68	1	1

Atom 1	Atom 2	Clash (Å)	Distance (Å)	Model ID (Worst)	Models (Total)
38:VD:251:LEU:HD12	19:XB:84:ARG:CG	1.51	1.36	1	1
7:CA:365:PRO:CB	10:TA:1133:SER:N	1.51	1.70	1	1
9:LA:1913:LEU:CD1	9:LA:1914:HIS:N	1.51	1.68	1	1
12:YA:101:PRO:CD	12:YA:106:THR:HB	1.51	1.39	1	1
1:B:46:LYS:HZ2	37:RD:96:LYS:CE	1.50	1.19	1	1
33:ED:851:VAL:HG11	19:XB:704:ILE:CG1	1.50	1.05	1	1
35:ID:446:ARG:CB	9:KA:875:ILE:HG12	1.50	1.42	1	1
38:VD:355:PHE:CE1	19:XB:142:LYS:NZ	1.49	1.80	1	1
38:VD:256:LEU:HD13	19:XB:478:PRO:CG	1.49	1.40	1	1
39:BE:319:GLN:CG	39:BE:324:GLN:HG3	1.49	1.36	1	1
1:E:31:TYR:CZ	15:GB:242:VAL:CG2	1.49	1.96	1	1
2:K:1828:TYR:CE1	2:L:1831:VAL:HG11	1.49	1.44	1	1
1:B:70:TYR:HE1	37:RD:96:LYS:CE	1.49	1.21	1	1
7:DA:657:GLN:CG	20:YB:181:VAL:HB	1.48	1.39	1	1
1:E:335:LYS:CG	15:GB:733:GLU:HB3	1.48	1.38	1	1
12:YA:101:PRO:HG3	12:YA:106:THR:CB	1.48	1.01	1	1
9:NA:529:TYR:CZ	17:OB:1206:VAL:HG21	1.48	1.48	1	1
3:R:1252:THR:CG2	3:S:1252:THR:HB	1.48	1.43	1	1
6:V:120:GLY:CA	21:CC:508:LEU:CB	1.48	1.92	1	1
38:VD:251:LEU:HD12	19:XB:84:ARG:CD	1.48	1.00	1	1
12:YA:100:SER:CB	12:YA:106:THR:HG21	1.48	1.42	1	1
8:HA:1517:ARG:C	8:HA:1521:PRO:HG3	1.48	1.39	1	1
31:XC:342:PRO:CD	31:XC:342:PRO:N	1.48	1.67	1	1
31:VC:342:PRO:CD	31:VC:342:PRO:N	1.47	1.67	1	1
15:HB:403:TYR:CE1	16:LB:480:LEU:HB2	1.47	1.47	1	1
23:EC:1:MET:SD	23:HC:61:HIS:CE1	1.47	2.08	1	1
10:OA:428:ASN:CG	10:TA:1009:ASN:HA	1.47	1.38	1	1
12:YA:101:PRO:CG	12:YA:106:THR:HB	1.46	1.02	1	1
6:X:113:PHE:CB	21:BC:480:THR:HG22	1.46	1.43	1	1
1:B:46:LYS:NZ	37:RD:96:LYS:HE3	1.46	1.29	1	1
10:OA:455:ASP:CB	10:TA:1008:PRO:HG2	1.46	1.42	1	1
3:N:356:ALA:CB	3:O:356:ALA:HB1	1.46	1.40	1	1
12:YA:106:THR:CG2	12:YA:107:PRO:HD2	1.46	1.44	1	1
33:DD:634:PRO:CD	33:ED:692:GLN:HE21	1.45	1.30	1	1
2:M:1876:PRO:HG3	7:CA:545:ARG:NH2	1.45	1.29	1	1

Atom 1	Atom 2	Clash (Å)	Distance (Å)	Model ID (Worst)	Models (Total)
15:JB:502:LYS:NZ	36:ND:174:GLN:CD	1.45	1.75	1	1
7:DA:777:VAL:HB	10:RA:91:PRO:CG	1.45	1.42	1	1
2:J:1837:LEU:HD11	10:TA:689:LYS:NZ	1.45	1.12	1	1
37:RD:2:PHE:CE2	37:RD:319:LEU:HD21	1.45	1.50	1	1
7:DA:777:VAL:CB	10:RA:91:PRO:HG2	1.44	1.44	1	1
7:EA:91:GLU:CG	31:XC:381:THR:HG21	1.44	1.46	1	1
1:C:696:ASN:ND2	1:D:41:GLU:CD	1.44	1.76	1	1
1:E:553:LEU:CD2	15:GB:167:SER:H	1.44	1.29	1	1
7:DA:153:GLU:O	9:LA:1913:LEU:CD2	1.44	1.65	1	1
34:FD:309:LYS:HD3	10:OA:1194:ASP:CB	1.44	1.43	1	1
15:HB:852:LEU:CD2	15:HB:853:CYS:SG	1.44	2.02	1	1
7:CA:92:PRO:CG	30:UC:450:GLU:HB3	1.44	0.98	1	1
1:E:541:ARG:HD2	15:GB:630:LEU:CA	1.44	1.46	1	1
17:OB:1245:GLY:O	17:OB:1248:PHE:CD1	1.44	1.71	1	1
40:EE:861:ARG:NH2	17:QB:959:ARG:NH1	1.43	1.65	1	1
2:I:1840:PRO:HD3	10:TA:693:ARG:NH2	1.43	1.18	1	1
1:C:54:ASN:HB2	16:KB:901:ARG:CB	1.43	1.46	1	1
1:B:6:ALA:CA	38:VD:620:GLU:CG	1.43	1.83	1	1
7:DA:279:HIS:HB2	10:PA:876:LYS:CG	1.43	1.46	1	1
9:LA:1913:LEU:HD12	9:LA:1914:HIS:CA	1.43	1.48	1	1
15:JB:403:TYR:CD2	16:NB:483:SER:O	1.43	1.71	1	1
7:BA:88:GLU:CB	31:VC:381:THR:HB	1.43	1.45	1	1
34:FD:562:VAL:HG11	34:FD:568:ILE:CB	1.42	1.50	1	1
3:O:733:GLU:CB	3:S:1254:LYS:HB2	1.42	1.45	1	1
17:QB:87:TYR:CE1	17:QB:549:HIS:NE2	1.42	1.87	1	1
32:ZC:485:PRO:CD	32:ZC:485:PRO:N	1.42	1.70	1	1

Torsion angles: Protein backbone

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues. For a chain in several models, the counts are the mean ± the standard deviation over the models; the All row pools every chain of every model. Only the first 100 of 135 chains are listed.

Mol	Chain	Analysed	Favoured	Allowed	Outliers
1	A	3222/3224 (99.9%)	2440 (75.7%)	622 (19.3%)	160 (5.0%)
1	B	3222/3224 (99.9%)	2241 (69.6%)	721 (22.4%)	260 (8.1%)
1	C	3222/3224 (99.9%)	2354 (73.1%)	659 (20.5%)	209 (6.5%)
1	D	3222/3224 (99.9%)	2555 (79.3%)	540 (16.8%)	127 (3.9%)

Mol	Chain	Analysed	Favoured	Allowed	Outliers
1	E	3222/3224 (99.9%)	2851 (88.5%)	275 (8.5%)	96 (3.0%)
2	F	1885/1887 (99.9%)	1618 (85.8%)	225 (11.9%)	42 (2.2%)
2	G	1885/1887 (99.9%)	1582 (83.9%)	246 (13.1%)	57 (3.0%)
2	H	1885/1887 (99.9%)	1606 (85.2%)	224 (11.9%)	55 (2.9%)
2	I	1885/1887 (99.9%)	1676 (88.9%)	174 (9.2%)	35 (1.9%)
2	J	1885/1887 (99.9%)	1485 (78.8%)	294 (15.6%)	106 (5.6%)
2	K	1885/1887 (99.9%)	1528 (81.1%)	272 (14.4%)	85 (4.5%)
2	L	1885/1887 (99.9%)	1503 (79.7%)	289 (15.3%)	93 (4.9%)
2	M	1885/1887 (99.9%)	1716 (91.0%)	150 (8.0%)	19 (1.0%)
3	N	2361/2363 (99.9%)	1973 (83.6%)	328 (13.9%)	60 (2.5%)
3	O	2361/2363 (99.9%)	2106 (89.2%)	203 (8.6%)	52 (2.2%)
4	P	488/490 (99.6%)	468 (95.9%)	17 (3.5%)	3 (0.6%)
4	Q	488/490 (99.6%)	467 (95.7%)	19 (3.9%)	2 (0.4%)
3	R	2361/2363 (99.9%)	2031 (86.0%)	270 (11.4%)	60 (2.5%)
3	S	2361/2363 (99.9%)	1980 (83.9%)	309 (13.1%)	72 (3.0%)
5	T	1978/1980 (99.9%)	1512 (76.4%)	370 (18.7%)	96 (4.9%)
6	U	466/468 (99.6%)	384 (82.4%)	68 (14.6%)	14 (3.0%)
6	V	466/468 (99.6%)	386 (82.8%)	67 (14.4%)	13 (2.8%)
6	W	466/468 (99.6%)	352 (75.5%)	92 (19.7%)	22 (4.7%)
6	X	466/468 (99.6%)	382 (82.0%)	69 (14.8%)	15 (3.2%)
6	Y	466/468 (99.6%)	335 (71.9%)	109 (23.4%)	22 (4.7%)
6	Z	466/468 (99.6%)	325 (69.7%)	117 (25.1%)	24 (5.2%)
7	AA	723/725 (99.7%)	699 (96.7%)	20 (2.8%)	4 (0.6%)
7	BA	817/819 (99.8%)	783 (95.8%)	22 (2.7%)	12 (1.5%)
7	CA	817/819 (99.8%)	733 (89.7%)	72 (8.8%)	12 (1.5%)
7	DA	817/819 (99.8%)	781 (95.6%)	26 (3.2%)	10 (1.2%)
7	EA	817/819 (99.8%)	789 (96.6%)	19 (2.3%)	9 (1.1%)
7	FA	723/725 (99.7%)	694 (96.0%)	22 (3.0%)	7 (1.0%)
7	GA	723/725 (99.7%)	701 (97.0%)	16 (2.2%)	6 (0.8%)
8	HA	1747/1749 (99.9%)	1679 (96.1%)	48 (2.7%)	20 (1.1%)
8	IA	1747/1749 (99.9%)	1677 (96.0%)	48 (2.7%)	22 (1.3%)
9	JA	2006/2008 (99.9%)	1597 (79.6%)	286 (14.3%)	123 (6.1%)
9	KA	2006/2008 (99.9%)	1668 (83.2%)	275 (13.7%)	63 (3.1%)
9	LA	2006/2008 (99.9%)	1588 (79.2%)	313 (15.6%)	105 (5.2%)
9	MA	2006/2008 (99.9%)	1631 (81.3%)	289 (14.4%)	86 (4.3%)

Mol	Chain	Analysed	Favoured	Allowed	Outliers
9	NA	2006/2008 (99.9%)	1828 (91.1%)	147 (7.3%)	31 (1.5%)
10	OA	1317/1321 (99.7%)	1067 (81.0%)	198 (15.0%)	52 (3.9%)
10	PA	1317/1321 (99.7%)	1202 (91.3%)	98 (7.4%)	17 (1.3%)
10	QA	1317/1321 (99.7%)	1071 (81.3%)	197 (15.0%)	49 (3.7%)
10	RA	1317/1321 (99.7%)	1023 (77.7%)	228 (17.3%)	66 (5.0%)
10	SA	1317/1321 (99.7%)	1181 (89.7%)	120 (9.1%)	16 (1.2%)
10	TA	1317/1321 (99.7%)	1158 (87.9%)	134 (10.2%)	25 (1.9%)
11	UA	539/543 (99.3%)	496 (92.0%)	39 (7.2%)	4 (0.7%)
11	VA	539/543 (99.3%)	470 (87.2%)	60 (11.1%)	9 (1.7%)
12	WA	240/242 (99.2%)	157 (65.4%)	52 (21.7%)	31 (12.9%)
12	XA	240/242 (99.2%)	189 (78.8%)	32 (13.3%)	19 (7.9%)
12	YA	240/242 (99.2%)	191 (79.6%)	25 (10.4%)	24 (10.0%)
12	ZA	240/242 (99.2%)	173 (72.1%)	39 (16.2%)	28 (11.7%)
13	AB	864/866 (99.8%)	787 (91.1%)	56 (6.5%)	21 (2.4%)
13	BB	864/866 (99.8%)	787 (91.1%)	57 (6.6%)	20 (2.3%)
14	CB	1080/1082 (99.8%)	1005 (93.1%)	66 (6.1%)	9 (0.8%)
14	DB	1080/1082 (99.8%)	903 (83.6%)	147 (13.6%)	30 (2.8%)
14	EB	1080/1082 (99.8%)	1029 (95.3%)	26 (2.4%)	25 (2.3%)
14	FB	1080/1082 (99.8%)	1029 (95.3%)	31 (2.9%)	20 (1.9%)
15	GB	780/782 (99.7%)	751 (96.3%)	23 (2.9%)	6 (0.8%)
15	HB	780/782 (99.7%)	763 (97.8%)	8 (1.0%)	9 (1.2%)
15	IB	780/782 (99.7%)	671 (86.0%)	93 (11.9%)	16 (2.1%)
15	JB	780/782 (99.7%)	662 (84.9%)	96 (12.3%)	22 (2.8%)
16	KB	669/673 (99.4%)	628 (93.9%)	36 (5.4%)	5 (0.7%)
16	LB	669/673 (99.4%)	637 (95.2%)	26 (3.9%)	6 (0.9%)
16	MB	669/673 (99.4%)	570 (85.2%)	82 (12.3%)	17 (2.5%)
16	NB	669/673 (99.4%)	584 (87.3%)	72 (10.8%)	13 (1.9%)
17	OB	1397/1399 (99.9%)	1334 (95.5%)	48 (3.4%)	15 (1.1%)
17	PB	1397/1399 (99.9%)	1195 (85.5%)	177 (12.7%)	25 (1.8%)
17	QB	1397/1399 (99.9%)	1331 (95.3%)	55 (3.9%)	11 (0.8%)
17	RB	1397/1399 (99.9%)	1322 (94.6%)	60 (4.3%)	15 (1.1%)
18	SB	320/322 (99.4%)	309 (96.6%)	11 (3.4%)	0 (0.0%)
18	TB	320/322 (99.4%)	269 (84.1%)	43 (13.4%)	8 (2.5%)
18	UB	320/322 (99.4%)	309 (96.6%)	10 (3.1%)	1 (0.3%)
18	VB	320/322 (99.4%)	309 (96.6%)	11 (3.4%)	0 (0.0%)

Mol	Chain	Analysed	Favoured	Allowed	Outliers
19	WB	733/735 (99.7%)	645 (88.0%)	61 (8.3%)	27 (3.7%)
19	XB	733/735 (99.7%)	623 (85.0%)	80 (10.9%)	30 (4.1%)
20	YB	559/561 (99.6%)	518 (92.7%)	34 (6.1%)	7 (1.3%)
20	ZB	559/561 (99.6%)	390 (69.8%)	123 (22.0%)	46 (8.2%)
21	AC	1234/1236 (99.8%)	811 (65.7%)	277 (22.4%)	146 (11.8%)
21	BC	1234/1236 (99.8%)	764 (61.9%)	313 (25.4%)	157 (12.7%)
21	CC	1234/1236 (99.8%)	746 (60.5%)	325 (26.3%)	163 (13.2%)
22	DC	170/172 (98.8%)	153 (90.0%)	11 (6.5%)	6 (3.5%)
23	EC	99/101 (98.0%)	97 (98.0%)	1 (1.0%)	1 (1.0%)
23	FC	99/101 (98.0%)	99 (100.0%)	0 (0.0%)	0 (0.0%)
23	GC	99/101 (98.0%)	99 (100.0%)	0 (0.0%)	0 (0.0%)
23	HC	99/101 (98.0%)	97 (98.0%)	1 (1.0%)	1 (1.0%)
24	IC	397/399 (99.5%)	394 (99.2%)	3 (0.8%)	0 (0.0%)
25	JC	68/70 (97.1%)	61 (89.7%)	7 (10.3%)	0 (0.0%)
26	KC	426/428 (99.5%)	388 (91.1%)	31 (7.3%)	7 (1.6%)
27	LC	477/479 (99.6%)	458 (96.0%)	15 (3.1%)	4 (0.8%)
28	MC	317/319 (99.4%)	313 (98.7%)	4 (1.3%)	0 (0.0%)
29	NC	42/44 (95.5%)	40 (95.2%)	1 (2.4%)	1 (2.4%)
27	OC	477/479 (99.6%)	458 (96.0%)	15 (3.1%)	4 (0.8%)
28	PC	317/319 (99.4%)	313 (98.7%)	4 (1.3%)	0 (0.0%)
29	QC	42/44 (95.5%)	40 (95.2%)	1 (2.4%)	1 (2.4%)
30	RC	505/507 (99.6%)	478 (94.7%)	20 (4.0%)	7 (1.4%)
30	SC	505/507 (99.6%)	476 (94.3%)	24 (4.8%)	5 (1.0%)
30	TC	505/507 (99.6%)	481 (95.2%)	20 (4.0%)	4 (0.8%)
30	UC	505/507 (99.6%)	475 (94.1%)	24 (4.8%)	6 (1.2%)
31	VC	592/594 (99.7%)	513 (86.7%)	57 (9.6%)	22 (3.7%)
All	All	128594/128888 (99.8%)	108810 (84.6%)	15203 (11.8%)	4581 (3.6%)

All (4581) unique Ramachandran outliers are listed below, sorted by the number of models they are in. The output is limited to 100 rows.

Mol	Chain	Res	Type	Models (Total)
1	A	55	VAL	1
1	A	89	LEU	1
1	A	107	ASN	1
1	A	116	TYR	1
1	A	160	VAL	1

Mol	Chain	Res	Type	Models (Total)
1	A	389	LEU	1
1	A	460	LEU	1
1	A	505	SER	1
1	A	727	SER	1
1	A	764	LYS	1
1	A	765	ASN	1
1	A	778	SER	1
1	A	781	SER	1
1	A	786	SER	1
1	A	790	SER	1
1	A	792	SER	1
1	A	793	TYR	1
1	A	830	LEU	1
1	A	852	PRO	1
1	A	860	THR	1
1	A	880	SER	1
1	A	902	VAL	1
1	A	909	PRO	1
1	A	926	VAL	1
1	A	933	MET	1
1	A	938	MET	1
1	A	956	PRO	1
1	A	966	VAL	1
1	A	968	GLN	1
1	A	970	SER	1
1	A	999	ILE	1
1	A	1001	PHE	1
1	A	1004	THR	1
1	A	1007	VAL	1
1	A	1066	LEU	1
1	A	1079	ASP	1
1	A	1087	ILE	1
1	A	1115	MET	1
1	A	1141	VAL	1
1	A	1157	ASP	1

Mol	Chain	Res	Type	Models (Total)
1	A	1196	CYS	1
1	A	1207	GLU	1
1	A	1226	THR	1
1	A	1238	GLN	1
1	A	1245	ASN	1
1	A	1331	ASN	1
1	A	1343	ASN	1
1	A	1344	PHE	1
1	A	1360	SER	1
1	A	1374	SER	1
1	A	1437	ALA	1
1	A	1450	SER	1
1	A	1501	ALA	1
1	A	1510	LEU	1
1	A	1519	ALA	1
1	A	1520	SER	1
1	A	1531	THR	1
1	A	1533	LYS	1
1	A	1535	GLY	1
1	A	1578	VAL	1
1	A	1597	SER	1
1	A	1603	PHE	1
1	A	1607	GLU	1
1	A	1614	VAL	1
1	A	1628	ALA	1
1	A	1641	ALA	1
1	A	1642	VAL	1
1	A	1656	SER	1
1	A	1699	SER	1
1	A	1701	VAL	1
1	A	1702	SER	1
1	A	1708	GLU	1
1	A	1715	SER	1
1	A	1732	VAL	1
1	A	1756	THR	1

Mol	Chain	Res	Type	Models (Total)
1	A	1758	ALA	1
1	A	1767	ILE	1
1	A	1776	GLU	1
1	A	1781	ARG	1
1	A	1806	ALA	1
1	A	1814	ILE	1
1	A	1816	GLU	1
1	A	1822	THR	1
1	A	1828	LYS	1
1	A	1830	HIS	1
1	A	1832	SER	1
1	A	1866	GLN	1
1	A	1891	ILE	1
1	A	1908	GLN	1
1	A	1909	GLU	1
1	A	1916	LEU	1
1	A	1923	GLN	1
1	A	1929	GLY	1
1	A	1930	GLN	1
1	A	1950	LEU	1
1	A	1951	ALA	1
1	A	2001	ASP	1
1	A	2004	LYS	1
1	A	2067	VAL	1
1	A	2079	GLN	1

Torsion angles: Protein sidechains

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues other than glycine and alanine, which have no rotamers. For a chain in several models, the counts are the mean ± the standard deviation over the models; the All row pools every chain of every model. Only the first 100 of 135 chains are listed.

Mol	Chain	Analysed	Rotameric	Outliers
1	A	2818/2818 (100.0%)	2756 (97.8%)	62 (2.2%)
1	B	2818/2818 (100.0%)	2739 (97.2%)	79 (2.8%)
1	C	2818/2818 (100.0%)	2764 (98.1%)	54 (1.9%)
1	D	2818/2818 (100.0%)	2749 (97.6%)	69 (2.4%)
1	E	2818/2818 (100.0%)	2759 (97.9%)	59 (2.1%)

Mol	Chain	Analysed	Rotameric	Outliers
2	F	1608/1608 (100.0%)	1590 (98.9%)	18 (1.1%)
2	G	1608/1608 (100.0%)	1592 (99.0%)	16 (1.0%)
2	H	1608/1608 (100.0%)	1591 (98.9%)	17 (1.1%)
2	I	1608/1608 (100.0%)	1594 (99.1%)	14 (0.9%)
2	J	1608/1608 (100.0%)	1589 (98.8%)	19 (1.2%)
2	K	1608/1608 (100.0%)	1586 (98.6%)	22 (1.4%)
2	L	1608/1608 (100.0%)	1587 (98.7%)	21 (1.3%)
2	M	1608/1608 (100.0%)	1591 (98.9%)	17 (1.1%)
3	N	2125/2125 (100.0%)	2112 (99.4%)	13 (0.6%)
3	O	2125/2125 (100.0%)	2094 (98.5%)	31 (1.5%)
4	P	416/416 (100.0%)	411 (98.8%)	5 (1.2%)
4	Q	416/416 (100.0%)	411 (98.8%)	5 (1.2%)
3	R	2125/2125 (100.0%)	2106 (99.1%)	19 (0.9%)
3	S	2125/2125 (100.0%)	2114 (99.5%)	11 (0.5%)
5	T	1719/1719 (100.0%)	1695 (98.6%)	24 (1.4%)
6	U	393/393 (100.0%)	381 (96.9%)	12 (3.1%)
6	V	393/393 (100.0%)	379 (96.4%)	14 (3.6%)
6	W	393/393 (100.0%)	383 (97.5%)	10 (2.5%)
6	X	393/393 (100.0%)	379 (96.4%)	14 (3.6%)
6	Y	393/393 (100.0%)	381 (96.9%)	12 (3.1%)
6	Z	393/393 (100.0%)	383 (97.5%)	10 (2.5%)
7	AA	646/646 (100.0%)	639 (98.9%)	7 (1.1%)
7	BA	726/726 (100.0%)	712 (98.1%)	14 (1.9%)
7	CA	726/726 (100.0%)	714 (98.3%)	12 (1.7%)
7	DA	726/726 (100.0%)	713 (98.2%)	13 (1.8%)
7	EA	726/726 (100.0%)	714 (98.3%)	12 (1.7%)
7	FA	646/646 (100.0%)	642 (99.4%)	4 (0.6%)
7	GA	646/646 (100.0%)	639 (98.9%)	7 (1.1%)
8	HA	1541/1541 (100.0%)	1515 (98.3%)	26 (1.7%)
8	IA	1541/1541 (100.0%)	1514 (98.2%)	27 (1.8%)
9	JA	1774/1774 (100.0%)	1756 (99.0%)	18 (1.0%)
9	KA	1774/1774 (100.0%)	1761 (99.3%)	13 (0.7%)
9	LA	1774/1774 (100.0%)	1752 (98.8%)	22 (1.2%)
9	MA	1774/1774 (100.0%)	1758 (99.1%)	16 (0.9%)
9	NA	1774/1774 (100.0%)	1754 (98.9%)	20 (1.1%)

Mol	Chain	Analysed	Rotameric	Outliers
10	OA	1163/1163 (100.0%)	1145 (98.5%)	18 (1.5%)
10	PA	1163/1163 (100.0%)	1152 (99.1%)	11 (0.9%)
10	QA	1163/1163 (100.0%)	1154 (99.2%)	9 (0.8%)
10	RA	1163/1163 (100.0%)	1156 (99.4%)	7 (0.6%)
10	SA	1163/1163 (100.0%)	1153 (99.1%)	10 (0.9%)
10	TA	1163/1163 (100.0%)	1150 (98.9%)	13 (1.1%)
11	UA	485/485 (100.0%)	475 (97.9%)	10 (2.1%)
11	VA	485/485 (100.0%)	479 (98.8%)	6 (1.2%)
12	WA	211/211 (100.0%)	204 (96.7%)	7 (3.3%)
12	XA	211/211 (100.0%)	202 (95.7%)	9 (4.3%)
12	YA	211/211 (100.0%)	203 (96.2%)	8 (3.8%)
12	ZA	211/211 (100.0%)	205 (97.2%)	6 (2.8%)
13	AB	756/756 (100.0%)	738 (97.6%)	18 (2.4%)
13	BB	756/756 (100.0%)	737 (97.5%)	19 (2.5%)
14	CB	954/954 (100.0%)	945 (99.1%)	9 (0.9%)
14	DB	954/954 (100.0%)	949 (99.5%)	5 (0.5%)
14	EB	954/954 (100.0%)	947 (99.3%)	7 (0.7%)
14	FB	954/954 (100.0%)	945 (99.1%)	9 (0.9%)
15	GB	701/701 (100.0%)	694 (99.0%)	7 (1.0%)
15	HB	701/701 (100.0%)	692 (98.7%)	9 (1.3%)
15	IB	701/701 (100.0%)	695 (99.1%)	6 (0.9%)
15	JB	701/701 (100.0%)	698 (99.6%)	3 (0.4%)
16	KB	602/602 (100.0%)	595 (98.8%)	7 (1.2%)
16	LB	602/602 (100.0%)	587 (97.5%)	15 (2.5%)
16	MB	602/602 (100.0%)	595 (98.8%)	7 (1.2%)
16	NB	602/602 (100.0%)	589 (97.8%)	13 (2.2%)
17	OB	1233/1233 (100.0%)	1214 (98.5%)	19 (1.5%)
17	PB	1233/1233 (100.0%)	1191 (96.6%)	42 (3.4%)
17	QB	1233/1233 (100.0%)	1210 (98.1%)	23 (1.9%)
17	RB	1233/1233 (100.0%)	1215 (98.5%)	18 (1.5%)
18	SB	278/278 (100.0%)	275 (98.9%)	3 (1.1%)
18	TB	278/278 (100.0%)	266 (95.7%)	12 (4.3%)
18	UB	278/278 (100.0%)	273 (98.2%)	5 (1.8%)
18	VB	278/278 (100.0%)	275 (98.9%)	3 (1.1%)
19	WB	661/661 (100.0%)	648 (98.0%)	13 (2.0%)

Mol	Chain	Analysed	Rotameric	Outliers
19	XB	661/661 (100.0%)	651 (98.5%)	10 (1.5%)
20	YB	499/499 (100.0%)	481 (96.4%)	18 (3.6%)
20	ZB	499/499 (100.0%)	484 (97.0%)	15 (3.0%)
21	AC	1040/1040 (100.0%)	1011 (97.2%)	29 (2.8%)
21	BC	1040/1040 (100.0%)	1005 (96.6%)	35 (3.4%)
21	CC	1040/1040 (100.0%)	1007 (96.8%)	33 (3.2%)
22	DC	152/152 (100.0%)	150 (98.7%)	2 (1.3%)
23	EC	88/88 (100.0%)	86 (97.7%)	2 (2.3%)
23	FC	88/88 (100.0%)	88 (100.0%)	0 (0.0%)
23	GC	88/88 (100.0%)	87 (98.9%)	1 (1.1%)
23	HC	88/88 (100.0%)	87 (98.9%)	1 (1.1%)
24	IC	353/353 (100.0%)	353 (100.0%)	0 (0.0%)
25	JC	63/63 (100.0%)	62 (98.4%)	1 (1.6%)
26	KC	381/381 (100.0%)	378 (99.2%)	3 (0.8%)
27	LC	418/418 (100.0%)	410 (98.1%)	8 (1.9%)
28	MC	281/281 (100.0%)	279 (99.3%)	2 (0.7%)
29	NC	42/42 (100.0%)	41 (97.6%)	1 (2.4%)
27	OC	418/418 (100.0%)	410 (98.1%)	8 (1.9%)
28	PC	281/281 (100.0%)	279 (99.3%)	2 (0.7%)
29	QC	42/42 (100.0%)	41 (97.6%)	1 (2.4%)
30	RC	425/425 (100.0%)	410 (96.5%)	15 (3.5%)
30	SC	425/425 (100.0%)	410 (96.5%)	15 (3.5%)
30	TC	425/425 (100.0%)	411 (96.7%)	14 (3.3%)
30	UC	425/425 (100.0%)	410 (96.5%)	15 (3.5%)
31	VC	455/455 (100.0%)	451 (99.1%)	4 (0.9%)
All	All	111452/111452 (100.0%)	109576 (98.3%)	1876 (1.7%)

All (1876) unique residues with a non-rotameric sidechain are listed below, sorted by the number of models they are in. The output is limited to 100 rows.

Mol	Chain	Res	Type	Models (Total)
1	A	729	LEU	1
1	A	769	ARG	1
1	A	791	LYS	1
1	A	831	ASN	1
1	A	888	LEU	1
1	A	889	LEU	1

Mol	Chain	Res	Type	Models (Total)
1	A	954	LEU	1
1	A	1076	LEU	1
1	A	1100	ASN	1
1	A	1141	VAL	1
1	A	1178	LEU	1
1	A	1225	LYS	1
1	A	1323	VAL	1
1	A	1407	ARG	1
1	A	1427	ARG	1
1	A	1453	HIS	1
1	A	1508	GLN	1
1	A	1527	GLU	1
1	A	1562	ARG	1
1	A	1578	VAL	1
1	A	1606	LYS	1
1	A	1697	THR	1
1	A	1753	GLN	1
1	A	1804	CYS	1
1	A	1873	MET	1
1	A	1914	LYS	1
1	A	1997	GLU	1
1	A	2011	ILE	1
1	A	2019	MET	1
1	A	2183	PHE	1
1	A	2212	LYS	1
1	A	2216	GLU	1
1	A	2223	GLU	1
1	A	2228	ASP	1
1	A	2229	LEU	1
1	A	2230	ARG	1
1	A	2232	ASP	1
1	A	2254	ARG	1
1	A	2259	ARG	1
1	A	2260	PHE	1
1	A	2268	ASN	1

Mol	Chain	Res	Type	Models (Total)
1	A	2272	LYS	1
1	A	2286	GLN	1
1	A	2294	ASP	1
1	A	2296	GLU	1
1	A	2303	GLU	1
1	A	2311	GLU	1
1	A	2316	LEU	1
1	A	2323	SER	1
1	A	2377	VAL	1
1	A	2446	ASP	1
1	A	2596	LEU	1
1	A	2633	LEU	1
1	A	2656	THR	1
1	A	2743	THR	1
1	A	2799	ILE	1
1	A	2813	MET	1
1	A	2825	ILE	1
1	A	2834	GLU	1
1	A	2944	ASP	1
1	A	3106	PHE	1
1	A	3146	GLU	1
7	AA	128	TYR	1
7	AA	156	LEU	1
7	AA	163	GLU	1
7	AA	236	THR	1
7	AA	247	SER	1
7	AA	283	LEU	1
7	AA	719	LEU	1
13	AB	86	ILE	1
13	AB	171	LEU	1
13	AB	260	THR	1
13	AB	313	TYR	1
13	AB	325	HIS	1
13	AB	328	LEU	1
13	AB	331	LEU	1

Mol	Chain	Res	Type	Models (Total)
13	AB	343	SER	1
13	AB	383	LEU	1
13	AB	397	THR	1
13	AB	562	ASP	1
13	AB	662	LEU	1
13	AB	680	THR	1
13	AB	746	THR	1
13	AB	750	LEU	1
13	AB	824	LEU	1
13	AB	841	LEU	1
13	AB	845	LEU	1
21	AC	327	ARG	1
21	AC	355	GLU	1
21	AC	377	THR	1
21	AC	477	LEU	1
21	AC	585	CYS	1
21	AC	588	THR	1
21	AC	592	ASP	1
21	AC	597	PHE	1
21	AC	612	LEU	1
21	AC	699	THR	1
21	AC	706	THR	1
21	AC	709	SER	1
21	AC	759	THR	1

5. Fit to Data Used for Modeling Assessment

5.2. Crosslinking-MS

5.2.1. Restraint types

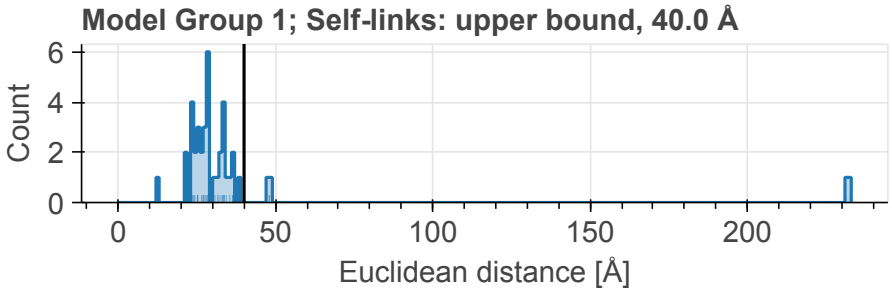
This table summarizes information about crosslinker(s) used for data generation, and how crosslinking information was translated into actual modeling restraints. Restraints assigned "by-residue" are interpreted as between CA atoms. Restraints between coarse-grained beads are indicated as "coarse-grained". Restraint group represents a set of crosslinking restraints applied collectively in the modeling.

There are 40 crosslinking restraints combined in 16 restraint groups.

Linker	Residue 1	Atom 1	Residue 2	Atom 2	Restraint type	Distance, Å	Count
Other	LYS	CA	LYS	CA	upper bound	40.00	40

Distograms of individual restraints

Distograms (i.e., histogram plots of distances) provide an overview of distributions of distances between residues for which chemical crosslinks were identified. The shift of the distogram relative to the threshold value may indicate a poor model. Restraints with identical thresholds are grouped into one plot. Only the best distance per restraint per model group/ensemble is plotted. Inter- and intramolecular (including self-links) restraints are also grouped into one plot. Distance for a restraint between coarse-grained beads is calculated as a minimal distance between shells; if beads intersect, the distance will be reported as 0.0. A bead with the highest available resolution for a given residue is used for the assessment.



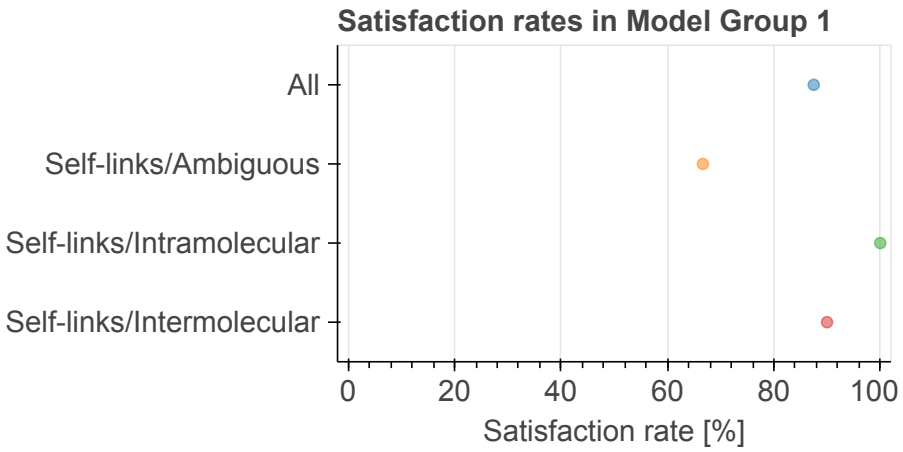
5.2.2. Satisfaction of restraints

Satisfaction of restraints is calculated on a restraint group (a set of crosslinking restraints applied collectively in the modeling) level. Satisfaction of a restraint group depends on satisfaction of individual restraints in the group and the conditionality (all/any). A restraint group is considered satisfied, if the condition was met in at least one model of the model group/ensemble. The number of measured restraints can be smaller than the total number of restraint groups if crosslinks involve non-modeled residues. Only deposited models are used for validation right now.

State group	State	Model group	# of Deposited models/Total	Restraint group type	Satisfied (%)	Violated (%)	Count (Total=16)
1	1	1	1/1	All	87.50	12.50	16
				Self-links/ Ambiguous	66.67	33.33	3
				Self-links/ Intramolecular	100.00	0.00	3
				Self-links/ Intermolecular	90.00	10.00	10

Per-model satisfaction rates in model groups/ensembles

Every point represents one model in a model group/ensemble. Where possible, boxplots with quartile marks are also plotted.



5.3. 3DEM

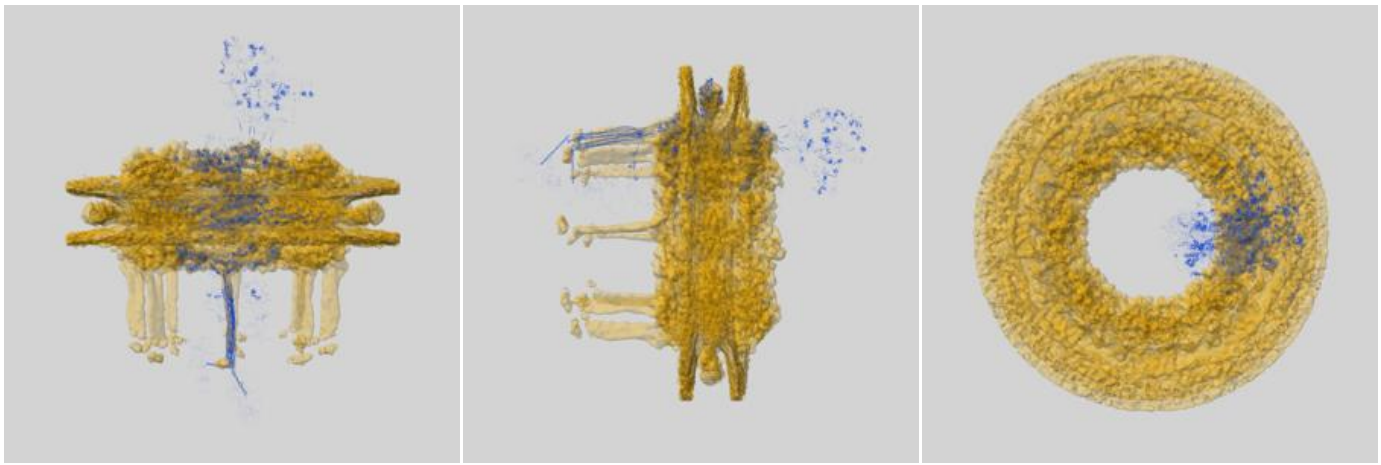
This section describes fit of models to the 3DEM data. Only results for the representative model (the first model with the largest number of asymmetric units) are shown.

EMD-58804

5.3.1. Map-model fit

Only results for the representative Model 1 are shown.

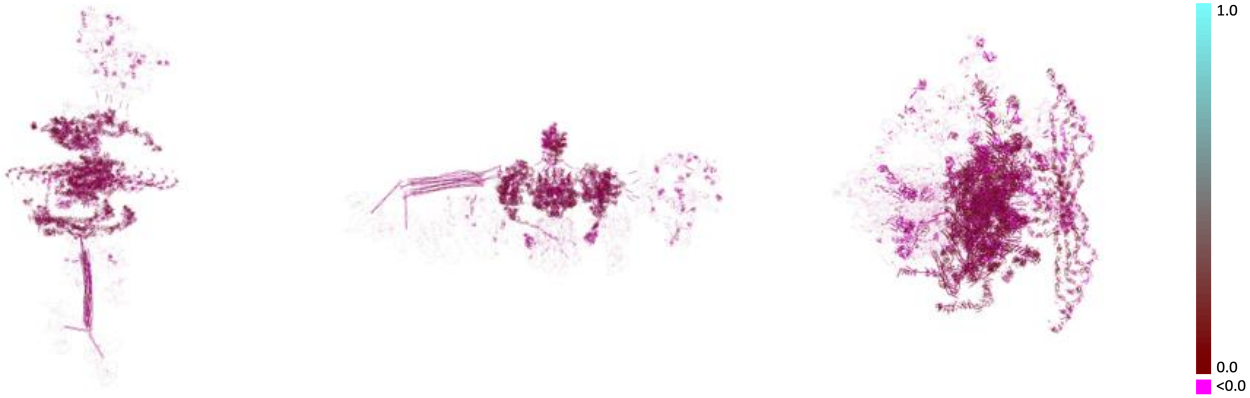
5.3.1.1. Map-model overlay



X **Y** **Z**

The images above show the 3D surface view of the map at the recommended contour level 0.050 at 50% transparency in yellow overlaid with a ribbon representation of the model colored in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

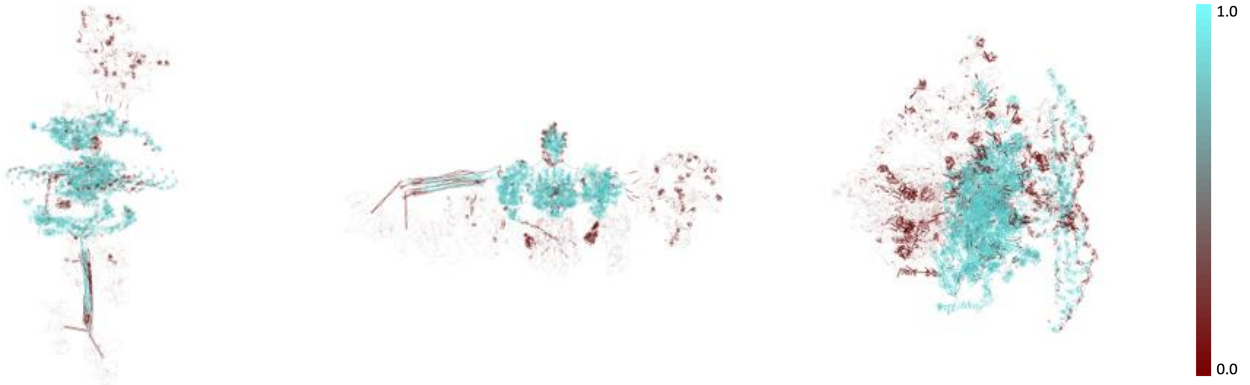
5.3.1.2. Q-score mapped to coordinate model



X **Y** **Z**

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

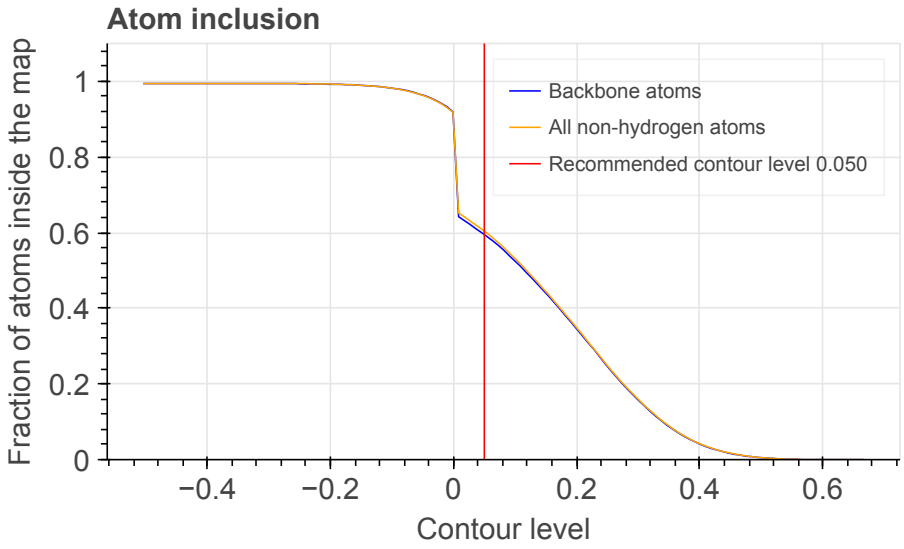
5.3.1.3. Atom inclusion mapped to coordinate model



X **Y** **Z**

The images above show the model with each residue colored according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level 0.050 .

5.3.1.4. Atom inclusion



At the recommended contour level, 60% of all backbone atoms, 60% of all non-hydrogen atoms, are inside the map.

5.3.1.5. Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.050) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.604	0.023
A	0.235	0.004
B	0.231	0.014
C	0.202	0.004
D	0.237	0.012
E	0.191	-0.004
F	0.772	0.030
G	0.675	0.021
H	0.424	0.019
I	0.534	0.021
J	0.709	0.032
K	0.838	0.041
L	0.629	0.033
M	0.723	0.017
N	0.386	0.007
O	0.364	0.005
P	0.970	0.038
Q	0.974	0.037
R	0.387	0.008
S	0.368	0.006
T	0.369	0.015
U	0.000	-0.003
V	0.000	0.003
W	0.000	0.003
X	0.000	-0.011
Y	0.000	0.010
Z	0.000	0.000
AA	0.953	0.040
BA	0.954	0.052
CA	0.879	0.037
DA	0.898	0.039



Chain	Atom inclusion	Q-score
EA	0.946	0.041
FA	0.959	0.046
GA	0.943	0.046
HA	0.910	0.043
IA	0.929	0.043
JA	0.849	0.032
KA	0.922	0.039
LA	0.916	0.040
MA	0.946	0.039
NA	0.947	0.043
OA	0.804	0.037
PA	0.854	0.032
QA	0.866	0.028
RA	0.952	0.048
SA	0.889	0.044
TA	0.921	0.045
UA	0.959	0.038
VA	0.962	0.032
WA	0.787	0.013
XA	0.737	0.008
YA	0.783	0.005
ZA	0.717	0.009
AB	0.521	0.008
BB	0.554	0.006
CB	0.828	0.044
DB	0.924	0.040
EB	0.911	0.042
FB	0.753	0.028
GB	0.941	0.040
HB	0.953	0.052
IB	0.957	0.048
JB	0.934	0.035
KB	0.946	0.048
LB	0.968	0.037
MB	0.981	0.055

Chain	Atom inclusion	Q-score
NB	0.904	0.036
OB	0.932	0.027
PB	0.960	0.041
QB	0.976	0.040
RB	0.958	0.041
SB	0.909	0.052
TB	0.993	0.049
UB	0.984	0.030
VB	0.792	0.039
WB	0.881	0.041
XB	0.896	0.040
YB	0.617	0.013
ZB	0.705	0.019
AC	0.079	-0.011
BC	0.061	-0.002
CC	0.058	-0.003
DC	0.751	0.025
EC	0.144	0.007
FC	0.000	-0.013
GC	0.000	0.010
HC	0.000	0.017
IC	0.000	-0.022
JC	0.000	-0.011
KC	0.000	-0.008
LC	0.000	-0.006
MC	0.000	-0.005
NC	0.000	0.025
OC	0.000	-0.015
PC	0.000	-0.014
QC	0.000	-0.008
RC	0.702	0.028
SC	0.771	0.036
TC	0.692	0.032
UC	0.767	0.029
VC	0.386	0.018

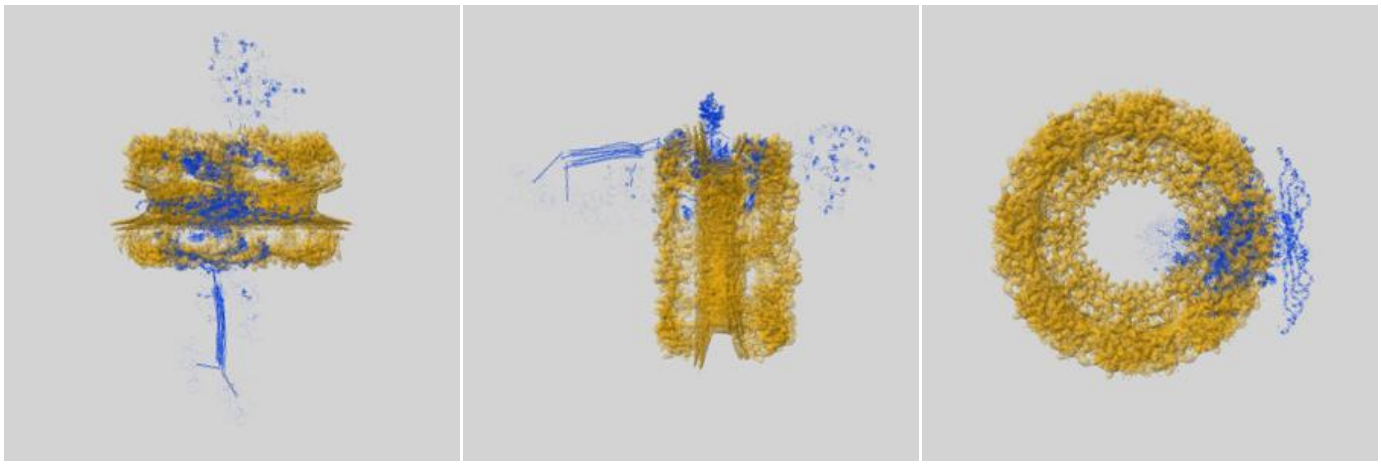
Chain	Atom inclusion	Q-score
WC	0.389	0.015
XC	0.357	0.010
YC	0.397	0.028
ZC	0.149	-0.010
AD	0.139	0.005
BD	0.129	-0.009
CD	0.170	0.007
DD	0.144	0.005
ED	0.125	0.004
FD	0.158	-0.006
GD	0.135	-0.000
HD	0.360	0.004
ID	0.420	0.021
JD	0.427	0.029
KD	0.344	0.011
LD	0.352	0.012
MD	0.355	-0.002
ND	0.938	0.026
OD	0.970	0.014
PD	0.985	0.041
QD	0.987	0.044
RD	0.965	0.041
SD	0.986	0.045
TD	0.967	0.039
UD	0.964	0.035
VD	0.924	0.041
WD	0.963	0.040
XD	0.966	0.035
YD	0.922	0.033
ZD	0.895	0.036
AE	0.968	0.038
BE	0.978	0.040
CE	0.964	0.049
DE	0.876	0.029
EE	0.689	0.013

EMD-14322

5.3.1. Map-model fit

Only results for the representative Model 1 are shown.

5.3.1.1. Map-model overlay



X **Y** **Z**

The images above show the 3D surface view of the map at the recommended contour level 3.500 at 50% transparency in yellow overlaid with a ribbon representation of the model colored in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

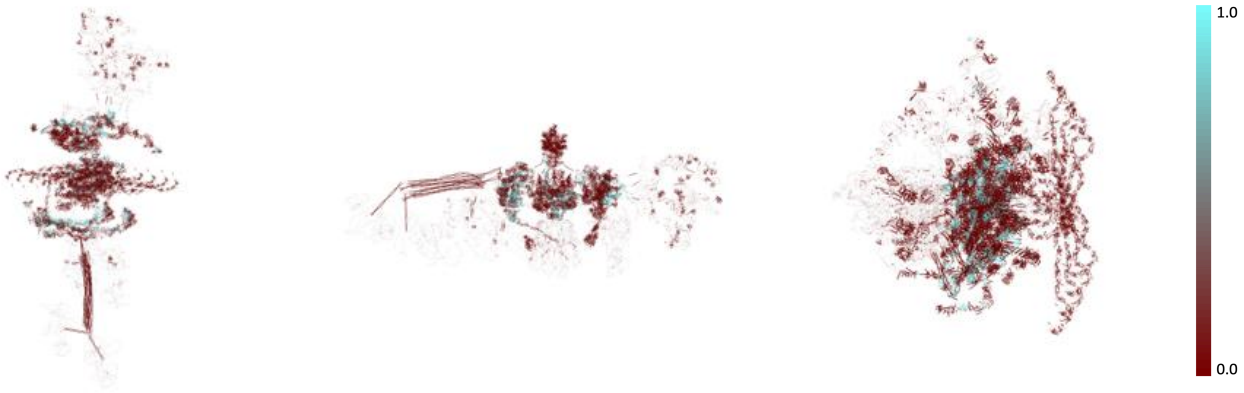
5.3.1.2. Q-score mapped to coordinate model



X **Y** **Z**

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

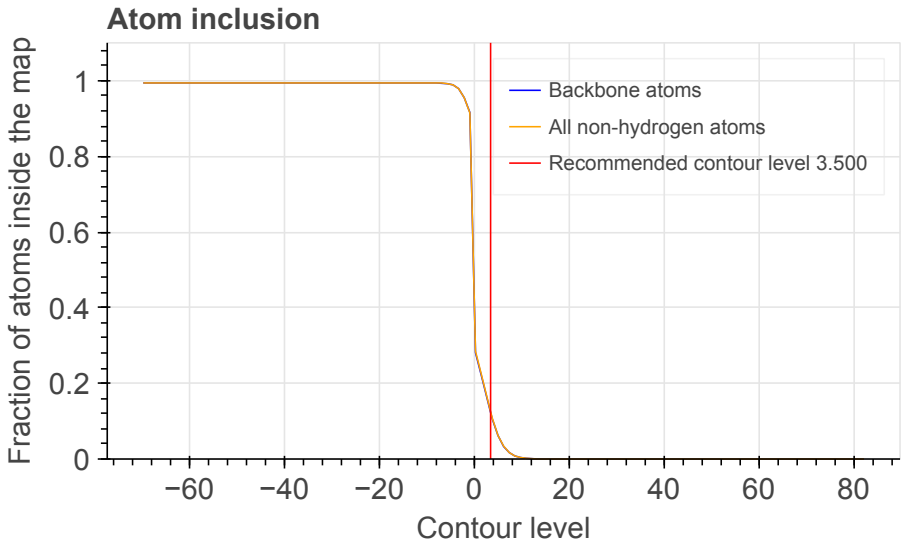
5.3.1.3. Atom inclusion mapped to coordinate model



X **Y** **Z**

The images above show the model with each residue colored according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level 3.500 .

5.3.1.4. Atom inclusion



At the recommended contour level, 12% of all backbone atoms, 12% of all non-hydrogen atoms, are inside the map.

5.3.1.5. Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (3.500) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.125	0.002
A	0.143	0.006
B	0.105	0.001
C	0.054	0.002
D	0.122	0.000
E	0.015	0.001
F	0.001	0.008
G	0.029	-0.003



Chain	Atom inclusion	Q-score
H	0.058	0.000
I	0.000	-0.002
J	0.000	-0.004
K	0.003	-0.002
L	0.012	-0.003
M	0.001	-0.010
N	0.007	-0.001
O	0.000	-0.001
P	0.000	0.013
Q	0.165	0.008
R	0.018	0.003
S	0.014	-0.001
T	0.149	0.008
U	0.000	0.000
V	0.000	0.000
W	0.000	0.000
X	0.000	0.007
Y	0.000	-0.003
Z	0.000	0.000
AA	0.164	-0.008
BA	0.268	-0.002
CA	0.199	-0.008
DA	0.162	0.008
EA	0.069	0.005
FA	0.211	-0.007
GA	0.061	0.002
HA	0.178	0.005
IA	0.043	0.010
JA	0.015	0.004
KA	0.314	0.004
LA	0.108	0.005
MA	0.410	0.020
NA	0.002	0.009
OA	0.151	0.008
PA	0.103	0.000

Chain	Atom inclusion	Q-score
QA	0.124	0.006
RA	0.168	0.010
SA	0.189	0.002
TA	0.152	0.004
UA	0.000	0.007
VA	0.376	0.019
WA	0.223	0.001
XA	0.150	0.016
YA	0.039	-0.009
ZA	0.384	0.030
AB	0.057	-0.015
BB	0.172	0.001
CB	0.124	-0.004
DB	0.171	-0.007
EB	0.209	0.003
FB	0.002	0.005
GB	0.017	0.019
HB	0.414	0.003
IB	0.317	-0.001
JB	0.200	-0.000
KB	0.388	0.001
LB	0.457	-0.000
MB	0.290	-0.011
NB	0.445	0.011
OB	0.281	0.002
PB	0.394	0.018
QB	0.325	0.006
RB	0.013	-0.005
SB	0.000	-0.002
TB	0.346	0.020
UB	0.160	-0.033
VB	0.004	0.012
WB	0.026	0.012
XB	0.024	-0.011
YB	0.269	0.010

Chain	Atom inclusion	Q-score
ZB	0.300	0.008
AC	0.039	0.002
BC	0.024	-0.003
CC	0.001	-0.000
DC	0.026	-0.015
EC	0.000	0.005
FC	0.186	0.006
GC	0.092	-0.045
HC	0.000	0.011
IC	0.000	0.004
JC	0.000	-0.040
KC	0.000	-0.008
LC	0.000	-0.006
MC	0.000	-0.002
NC	0.000	0.046
OC	0.000	0.006
PC	0.000	0.002
QC	0.000	0.013
RC	0.400	0.014
SC	0.228	0.004
TC	0.077	-0.023
UC	0.333	0.017
VC	0.189	0.006
WC	0.194	-0.006
XC	0.111	0.005
YC	0.261	0.007
ZC	0.198	0.006
AD	0.120	0.012
BD	0.062	0.001
CD	0.293	0.010
DD	0.025	0.005
ED	0.037	-0.003
FD	0.157	0.002
GD	0.024	-0.003
HD	0.194	0.001

Chain	Atom inclusion	Q-score
ID	0.160	0.007
JD	0.112	-0.002
KD	0.101	0.003
LD	0.051	0.004
MD	0.093	0.002
ND	0.425	0.006
OD	0.647	0.044
PD	0.186	-0.005
QD	0.412	-0.003
RD	0.548	0.011
SD	0.457	-0.003
TD	0.221	-0.020
UD	0.656	0.016
VD	0.133	0.007
WD	0.495	0.013
XD	0.298	0.002
YD	0.537	0.020
ZD	0.015	0.012
AE	0.373	0.002
BE	0.419	-0.003
CE	0.112	-0.035
DE	0.059	-0.018
EE	0.146	0.004

6. Fit to Data Used for Validation Assessment

Validation for this section is under development.

Acknowledgments

The development of integrative model validation metrics, implementation of a model validation pipeline, and creation of a validation report for integrative structures are funded by NSF awards to the PDB-IHM team (DBI-1756248, DBI-2112966, DBI-2112967, DBI-2112968, and DBI-1756250) and awards from NSF, NIH, and DOE to the RCSB PDB (DBI-2321666, R01GM157729, and DE-SC0019749). The PDB-IHM team and members of the Sali lab contributed model validation metrics and software packages.

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