



Full wwPDB EM Validation Report ⓘ

Jan 12, 2026 – 02:54 PM EST

PDB ID : 9O5E / pdb_00009o5e
EMDB ID : EMD-70141
Title : The dimeric KICSTOR-GATOR1 supercomplex
Authors : Bayly-Jones, C.; Lupton, C.J.; Chang, Y.G.; Ellisdon, A.M.
Deposited on : 2025-04-10
Resolution : 5.00 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

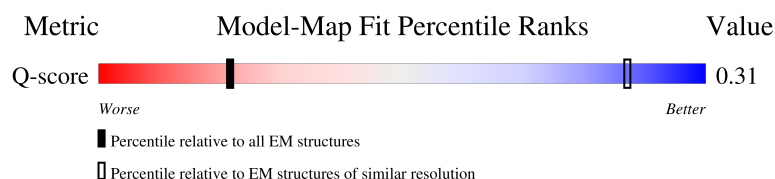
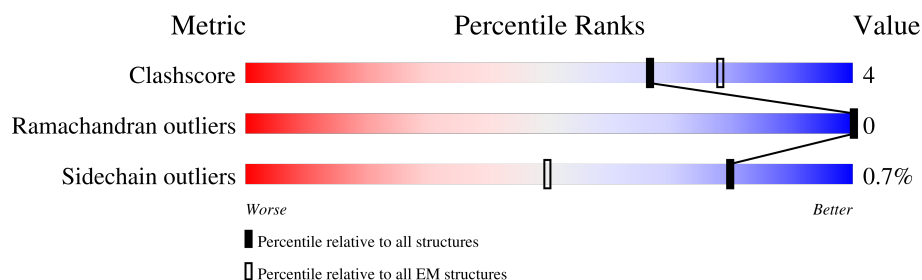
EMDB validation analysis : 0.0.1.dev129
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.47

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 5.00 Å.

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



Metric	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	1057 (4.50 - 5.50)

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

Mol	Chain	Length	Quality of chain
1	C	590	 73% 23%
1	F	590	 72% 23%
2	D	401	 80% 12% 8%
2	G	401	 79% 12% 8%

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Mol	Chain	Length	Quality of chain
3	E	3451	22%75%
3	I	3451	22%75%
4	H	1621	51%7%42%
4	J	1621	51%7%42%

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 42158 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 GATOR complex protein NPRL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	C	452	Total	C	N	O	S	0	0
			3605	2308	634	642	21		
1	F	452	Total	C	N	O	S	0	0
			3605	2308	634	642	21		

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-20	MET	-	expression tag	UNP Q12980
C	-19	GLY	-	expression tag	UNP Q12980
C	-18	TYR	-	expression tag	UNP Q12980
C	-17	PRO	-	expression tag	UNP Q12980
C	-16	TYR	-	expression tag	UNP Q12980
C	-15	ASP	-	expression tag	UNP Q12980
C	-14	VAL	-	expression tag	UNP Q12980
C	-13	PRO	-	expression tag	UNP Q12980
C	-12	ASP	-	expression tag	UNP Q12980
C	-11	TYR	-	expression tag	UNP Q12980
C	-10	ALA	-	expression tag	UNP Q12980
C	-9	ASP	-	expression tag	UNP Q12980
C	-8	LEU	-	expression tag	UNP Q12980
C	-7	ASN	-	expression tag	UNP Q12980
C	-6	GLY	-	expression tag	UNP Q12980
C	-5	GLY	-	expression tag	UNP Q12980
C	-4	GLY	-	expression tag	UNP Q12980
C	-3	GLY	-	expression tag	UNP Q12980
C	-2	GLY	-	expression tag	UNP Q12980
C	-1	SER	-	expression tag	UNP Q12980
C	0	THR	-	expression tag	UNP Q12980
F	-20	MET	-	expression tag	UNP Q12980
F	-19	GLY	-	expression tag	UNP Q12980
F	-18	TYR	-	expression tag	UNP Q12980
F	-17	PRO	-	expression tag	UNP Q12980
F	-16	TYR	-	expression tag	UNP Q12980

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Chain	Residue	Modelled	Actual	Comment	Reference
F	-15	ASP	-	expression tag	UNP Q12980
F	-14	VAL	-	expression tag	UNP Q12980
F	-13	PRO	-	expression tag	UNP Q12980
F	-12	ASP	-	expression tag	UNP Q12980
F	-11	TYR	-	expression tag	UNP Q12980
F	-10	ALA	-	expression tag	UNP Q12980
F	-9	ASP	-	expression tag	UNP Q12980
F	-8	LEU	-	expression tag	UNP Q12980
F	-7	ASN	-	expression tag	UNP Q12980
F	-6	GLY	-	expression tag	UNP Q12980
F	-5	GLY	-	expression tag	UNP Q12980
F	-4	GLY	-	expression tag	UNP Q12980
F	-3	GLY	-	expression tag	UNP Q12980
F	-2	GLY	-	expression tag	UNP Q12980
F	-1	SER	-	expression tag	UNP Q12980
F	0	THR	-	expression tag	UNP Q12980

- Molecule 2 is a protein called GATOR complex protein NPRL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	368	Total	C	N	O	S	0	0
			2977	1906	498	554	19		
2	G	368	Total	C	N	O	S	0	0
			2977	1906	498	554	19		

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-20	MET	-	expression tag	UNP Q8WTW4
D	-19	GLY	-	expression tag	UNP Q8WTW4
D	-18	TYR	-	expression tag	UNP Q8WTW4
D	-17	PRO	-	expression tag	UNP Q8WTW4
D	-16	TYR	-	expression tag	UNP Q8WTW4
D	-15	ASP	-	expression tag	UNP Q8WTW4
D	-14	VAL	-	expression tag	UNP Q8WTW4
D	-13	PRO	-	expression tag	UNP Q8WTW4
D	-12	ASP	-	expression tag	UNP Q8WTW4
D	-11	TYR	-	expression tag	UNP Q8WTW4
D	-10	ALA	-	expression tag	UNP Q8WTW4
D	-9	ASP	-	expression tag	UNP Q8WTW4
D	-8	LEU	-	expression tag	UNP Q8WTW4
D	-7	ASN	-	expression tag	UNP Q8WTW4

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-6	GLY	-	expression tag	UNP Q8WTW4
D	-5	GLY	-	expression tag	UNP Q8WTW4
D	-4	GLY	-	expression tag	UNP Q8WTW4
D	-3	GLY	-	expression tag	UNP Q8WTW4
D	-2	GLY	-	expression tag	UNP Q8WTW4
D	-1	SER	-	expression tag	UNP Q8WTW4
D	0	THR	-	expression tag	UNP Q8WTW4
G	-20	MET	-	expression tag	UNP Q8WTW4
G	-19	GLY	-	expression tag	UNP Q8WTW4
G	-18	TYR	-	expression tag	UNP Q8WTW4
G	-17	PRO	-	expression tag	UNP Q8WTW4
G	-16	TYR	-	expression tag	UNP Q8WTW4
G	-15	ASP	-	expression tag	UNP Q8WTW4
G	-14	VAL	-	expression tag	UNP Q8WTW4
G	-13	PRO	-	expression tag	UNP Q8WTW4
G	-12	ASP	-	expression tag	UNP Q8WTW4
G	-11	TYR	-	expression tag	UNP Q8WTW4
G	-10	ALA	-	expression tag	UNP Q8WTW4
G	-9	ASP	-	expression tag	UNP Q8WTW4
G	-8	LEU	-	expression tag	UNP Q8WTW4
G	-7	ASN	-	expression tag	UNP Q8WTW4
G	-6	GLY	-	expression tag	UNP Q8WTW4
G	-5	GLY	-	expression tag	UNP Q8WTW4
G	-4	GLY	-	expression tag	UNP Q8WTW4
G	-3	GLY	-	expression tag	UNP Q8WTW4
G	-2	GLY	-	expression tag	UNP Q8WTW4
G	-1	SER	-	expression tag	UNP Q8WTW4
G	0	THR	-	expression tag	UNP Q8WTW4

- Molecule 3 is a protein called KICSTOR complex protein SZT2.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	846	Total	C	N	O	S	0	0
			6719	4336	1140	1208	35		
3	I	846	Total	C	N	O	S	0	0
			6719	4336	1140	1208	35		

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	-18	MET	-	expression tag	UNP Q5T011
E	-17	GLU	-	expression tag	UNP Q5T011

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-16	MET	-	expression tag	UNP Q5T011
E	-15	ASP	-	expression tag	UNP Q5T011
E	-14	TYR	-	expression tag	UNP Q5T011
E	-13	LYS	-	expression tag	UNP Q5T011
E	-12	ASP	-	expression tag	UNP Q5T011
E	-11	ASP	-	expression tag	UNP Q5T011
E	-10	ASP	-	expression tag	UNP Q5T011
E	-9	ASP	-	expression tag	UNP Q5T011
E	-8	LYS	-	expression tag	UNP Q5T011
E	-7	GLY	-	expression tag	UNP Q5T011
E	-6	GLY	-	expression tag	UNP Q5T011
E	-5	GLY	-	expression tag	UNP Q5T011
E	-4	GLY	-	expression tag	UNP Q5T011
E	-3	GLY	-	expression tag	UNP Q5T011
E	-2	ALA	-	expression tag	UNP Q5T011
E	-1	SER	-	expression tag	UNP Q5T011
E	0	THR	-	expression tag	UNP Q5T011
I	-18	MET	-	expression tag	UNP Q5T011
I	-17	GLU	-	expression tag	UNP Q5T011
I	-16	MET	-	expression tag	UNP Q5T011
I	-15	ASP	-	expression tag	UNP Q5T011
I	-14	TYR	-	expression tag	UNP Q5T011
I	-13	LYS	-	expression tag	UNP Q5T011
I	-12	ASP	-	expression tag	UNP Q5T011
I	-11	ASP	-	expression tag	UNP Q5T011
I	-10	ASP	-	expression tag	UNP Q5T011
I	-9	ASP	-	expression tag	UNP Q5T011
I	-8	LYS	-	expression tag	UNP Q5T011
I	-7	GLY	-	expression tag	UNP Q5T011
I	-6	GLY	-	expression tag	UNP Q5T011
I	-5	GLY	-	expression tag	UNP Q5T011
I	-4	GLY	-	expression tag	UNP Q5T011
I	-3	GLY	-	expression tag	UNP Q5T011
I	-2	ALA	-	expression tag	UNP Q5T011
I	-1	SER	-	expression tag	UNP Q5T011
I	0	THR	-	expression tag	UNP Q5T011

- Molecule 4 is a protein called GATOR1 complex protein DEPDC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	H	946	Total	C	N	O	S	0	0
			7778	5025	1283	1426	44		

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Mol	Chain	Residues	Atoms					AltConf	Trace
4	J	946	Total	C	N	O	S	0	0
			7778	5025	1283	1426	44		

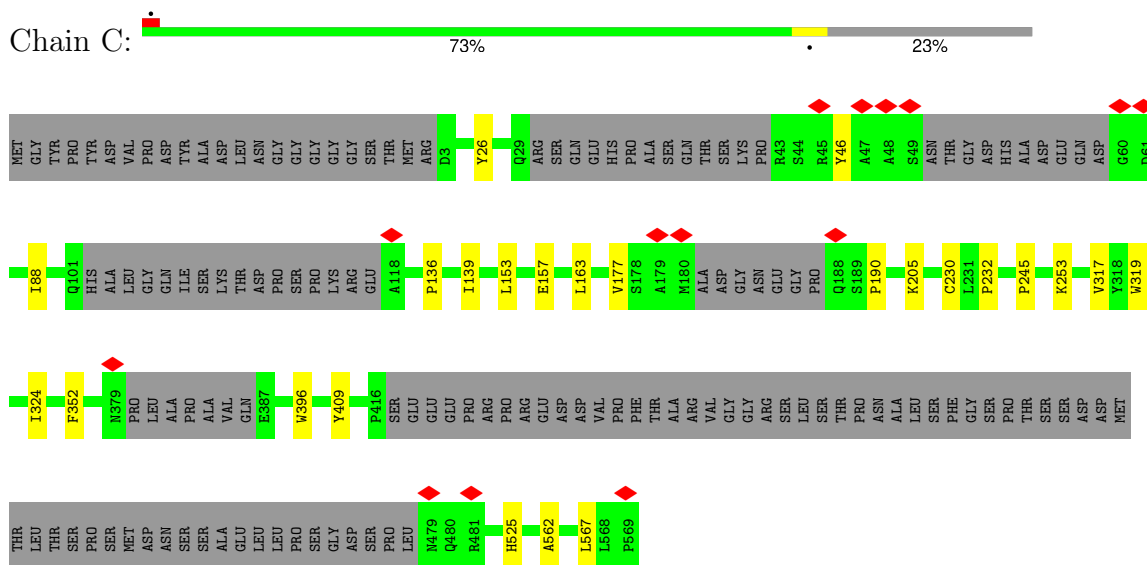
There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	-17	MET	-	expression tag	UNP O75140
H	-16	GLY	-	expression tag	UNP O75140
H	-15	ASP	-	expression tag	UNP O75140
H	-14	TYR	-	expression tag	UNP O75140
H	-13	LYS	-	expression tag	UNP O75140
H	-12	ASP	-	expression tag	UNP O75140
H	-11	ASP	-	expression tag	UNP O75140
H	-10	ASP	-	expression tag	UNP O75140
H	-9	ASP	-	expression tag	UNP O75140
H	-8	LYS	-	expression tag	UNP O75140
H	-7	GLY	-	expression tag	UNP O75140
H	-6	GLY	-	expression tag	UNP O75140
H	-5	GLY	-	expression tag	UNP O75140
H	-4	GLY	-	expression tag	UNP O75140
H	-3	GLY	-	expression tag	UNP O75140
H	-2	ALA	-	expression tag	UNP O75140
H	-1	SER	-	expression tag	UNP O75140
H	0	THR	-	expression tag	UNP O75140
J	-17	MET	-	expression tag	UNP O75140
J	-16	GLY	-	expression tag	UNP O75140
J	-15	ASP	-	expression tag	UNP O75140
J	-14	TYR	-	expression tag	UNP O75140
J	-13	LYS	-	expression tag	UNP O75140
J	-12	ASP	-	expression tag	UNP O75140
J	-11	ASP	-	expression tag	UNP O75140
J	-10	ASP	-	expression tag	UNP O75140
J	-9	ASP	-	expression tag	UNP O75140
J	-8	LYS	-	expression tag	UNP O75140
J	-7	GLY	-	expression tag	UNP O75140
J	-6	GLY	-	expression tag	UNP O75140
J	-5	GLY	-	expression tag	UNP O75140
J	-4	GLY	-	expression tag	UNP O75140
J	-3	GLY	-	expression tag	UNP O75140
J	-2	ALA	-	expression tag	UNP O75140
J	-1	SER	-	expression tag	UNP O75140
J	0	THR	-	expression tag	UNP O75140

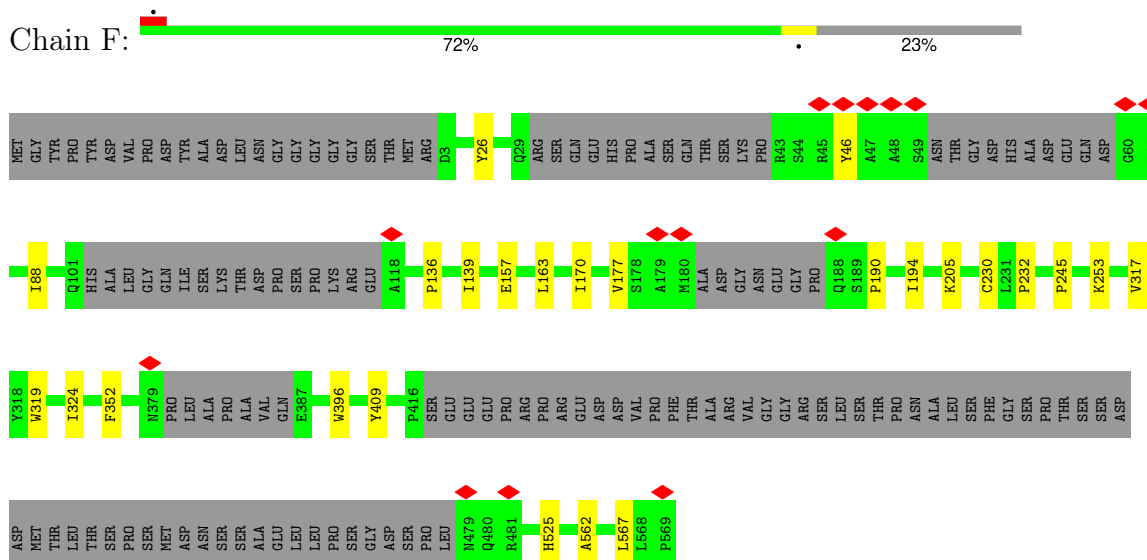
3 Residue-property plots

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: GATOR complex protein NPRL3

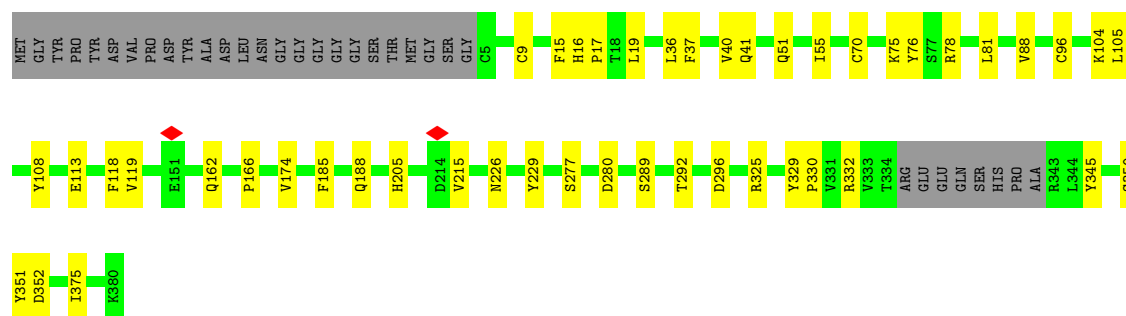


• Molecule 1: GATOR complex protein NPRL3



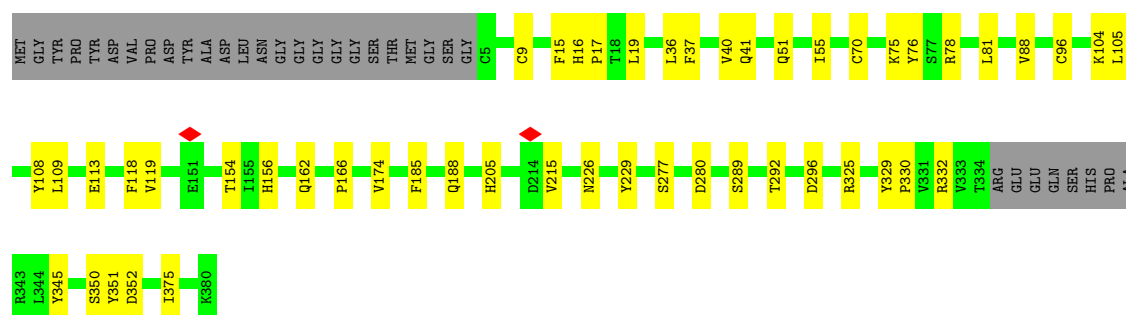
• Molecule 2: GATOR complex protein NPRL2

Chain D:  80% 12% 8%



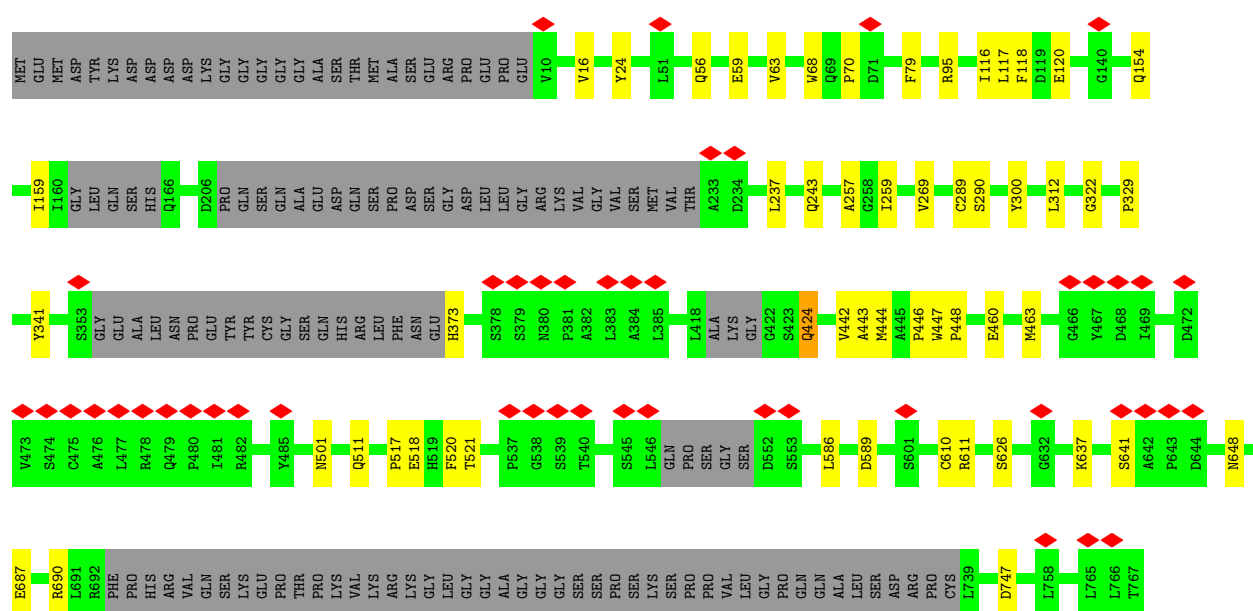
• Molecule 2: GATOR complex protein NPRL2

Chain G:  79% 12% 8%



• Molecule 3: KICSTOR complex protein SZT2

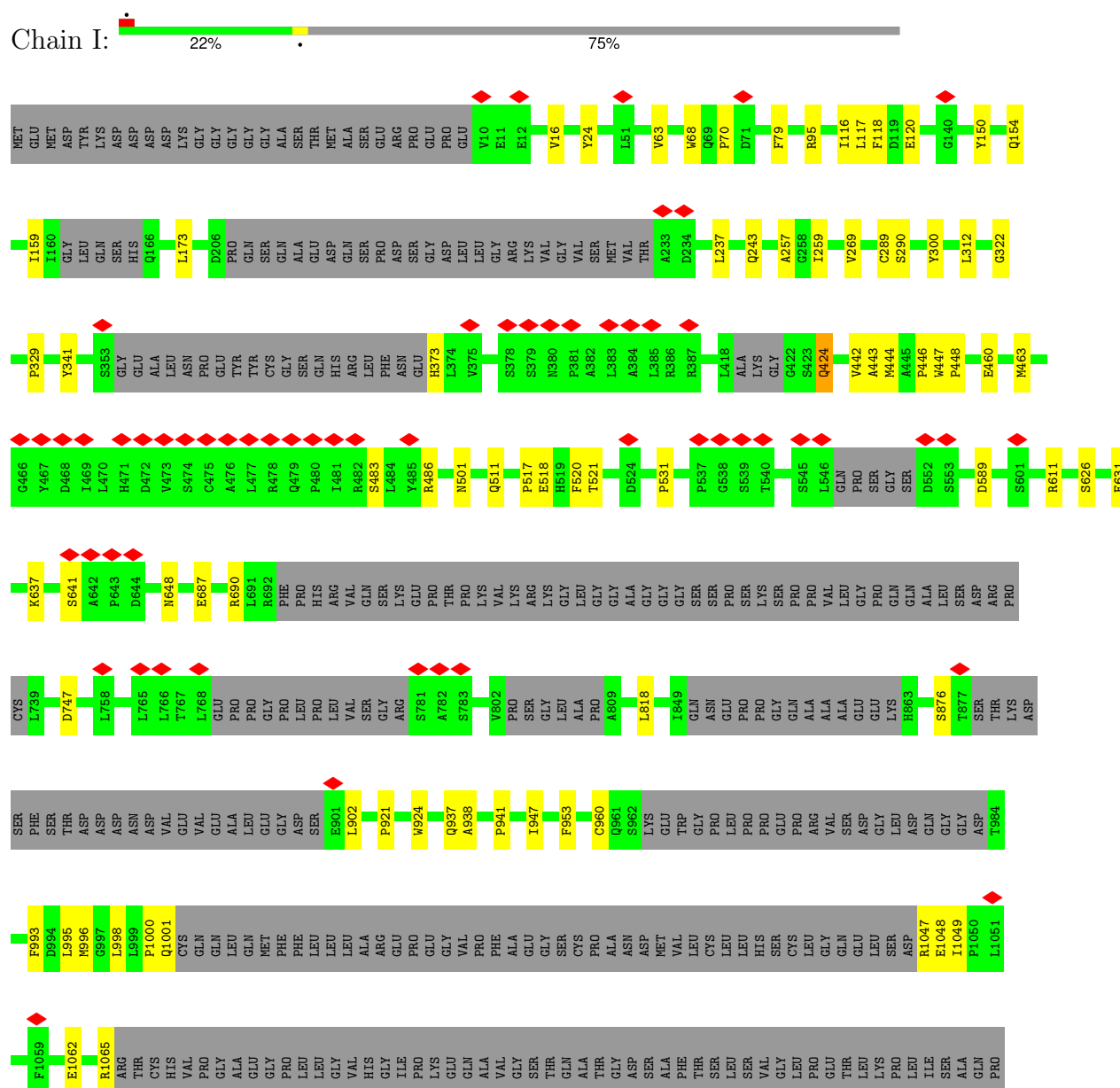
Chain E:  22% 75%







- Molecule 3: KICSTOR complex protein SZT2

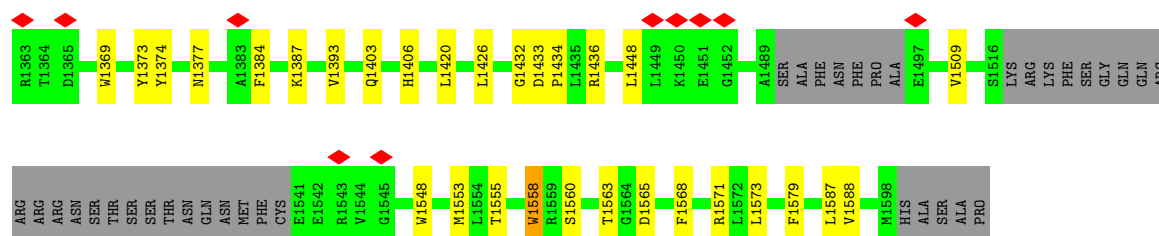




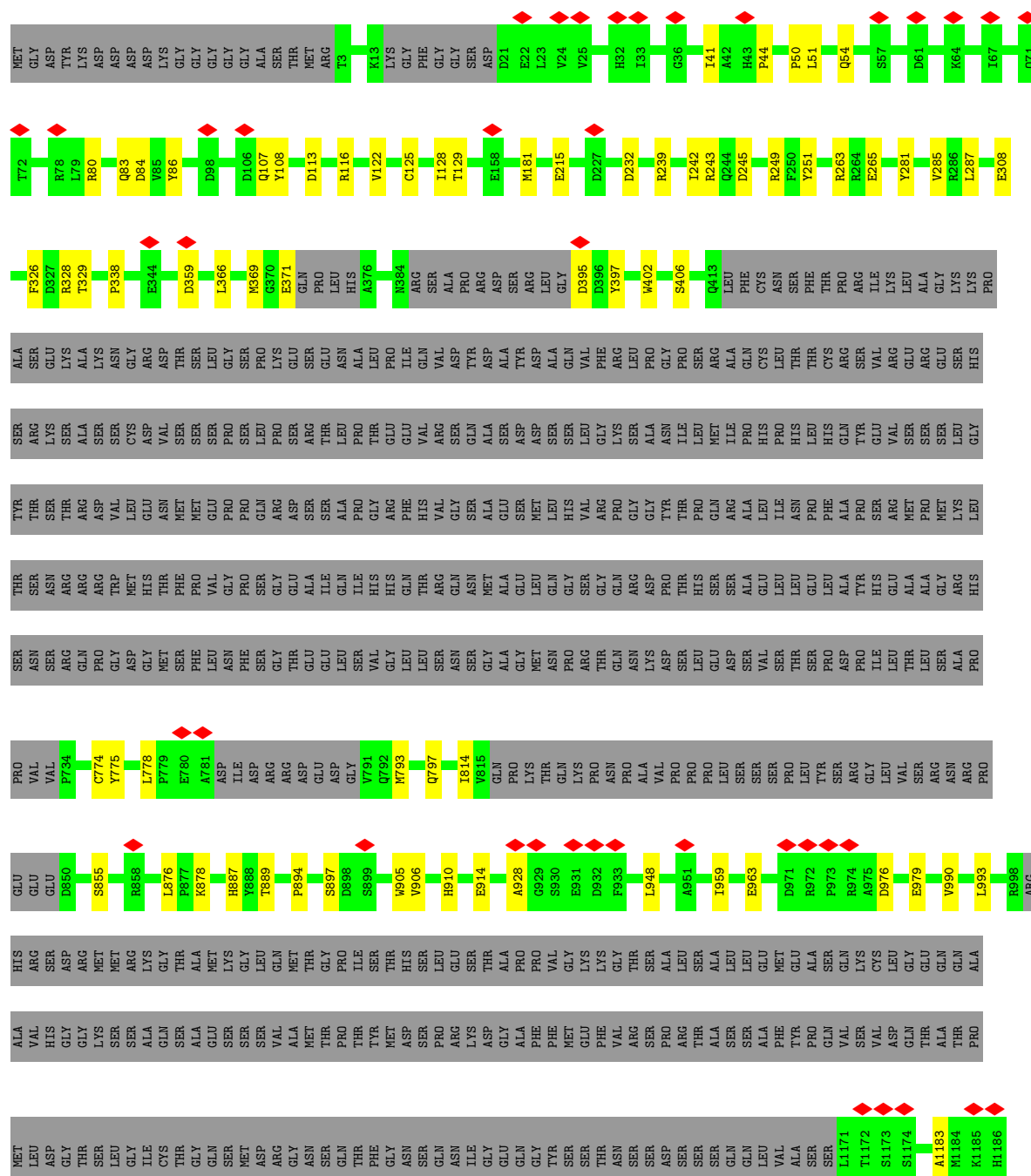
- Molecule 4: GATOR1 complex protein DEPDC5

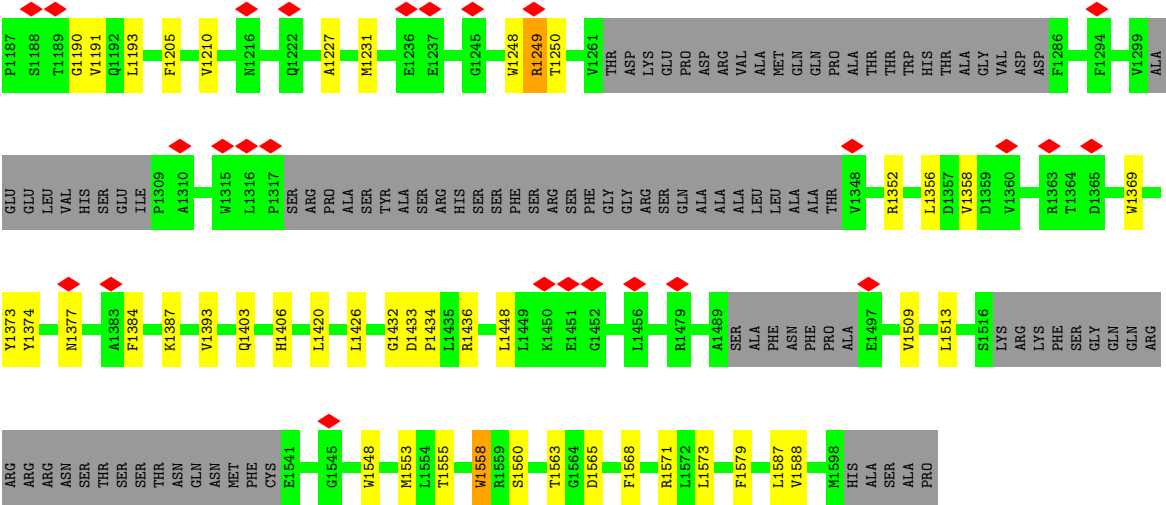






• Molecule 4: GATOR1 complex protein DEPDC5





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	13688	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS TALOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	1.0	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	11.512	Depositor
Minimum map value	-0.064	Depositor
Average map value	0.083	Depositor
Map value standard deviation	0.613	Depositor
Recommended contour level	3	Depositor
Map size ($\text{\AA}$)	320.0, 320.0, 320.0	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	1.0, 1.0, 1.0	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	C	0.17	0/3678	0.35	0/4984
1	F	0.17	0/3678	0.35	0/4984
2	D	0.18	0/3037	0.37	0/4115
2	G	0.18	0/3037	0.37	0/4115
3	E	0.17	0/6885	0.36	0/9372
3	I	0.17	0/6885	0.36	0/9372
4	H	0.17	0/7978	0.38	0/10810
4	J	0.17	0/7978	0.38	0/10810
All	All	0.17	0/43156	0.37	0/58562

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	3605	0	3678	15	0
1	F	3605	0	3678	15	0
2	D	2977	0	3018	22	0
2	G	2977	0	3018	24	0
3	E	6719	0	6765	42	0
3	I	6719	0	6765	45	0
4	H	7778	0	7570	79	0
4	J	7778	0	7570	79	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	42158	0	42062	309	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 4.

All (309) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:H:1555:THR:HG1	4:H:1558:TRP:CD1	2.11	0.68
2:G:325:ARG:NH1	2:G:352:ASP:OD2	2.28	0.67
2:D:325:ARG:NH1	2:D:352:ASP:OD2	2.28	0.67
4:J:1555:THR:HG1	4:J:1558:TRP:CD1	2.12	0.66
4:H:285:VAL:HG23	4:H:287:LEU:HG	1.78	0.66
4:J:285:VAL:HG23	4:J:287:LEU:HG	1.78	0.65
3:E:16:VAL:HG22	3:E:63:VAL:HG13	1.81	0.63
4:H:1193:LEU:HD22	4:H:1205:PHE:HB3	1.81	0.62
4:J:1193:LEU:HD22	4:J:1205:PHE:HB3	1.81	0.62
3:I:16:VAL:HG22	3:I:63:VAL:HG13	1.81	0.61
4:H:308:GLU:OE1	4:H:308:GLU:N	2.32	0.59
1:F:562:ALA:HB1	1:F:567:LEU:HB2	1.84	0.59
3:I:447:TRP:CD2	3:I:448:PRO:HA	2.39	0.58
1:C:562:ALA:HB1	1:C:567:LEU:HB2	1.84	0.58
4:H:245:ASP:OD1	4:H:249:ARG:N	2.34	0.58
3:E:447:TRP:CD2	3:E:448:PRO:HA	2.39	0.58
4:H:959:ILE:HA	4:H:963:GLU:HB3	1.86	0.57
4:J:959:ILE:HA	4:J:963:GLU:HB3	1.86	0.57
4:J:1183:ALA:O	4:J:1190:GLY:HA3	2.05	0.57
4:J:308:GLU:OE1	4:J:308:GLU:N	2.32	0.57
4:J:1403:GLN:HA	4:J:1406:HIS:CD2	2.40	0.57
3:E:589:ASP:OD2	3:E:611:ARG:N	2.39	0.56
4:H:1403:GLN:HA	4:H:1406:HIS:CD2	2.40	0.56
4:J:239:ARG:HA	4:J:242:ILE:HD13	1.87	0.56
4:H:1183:ALA:O	4:H:1190:GLY:HA3	2.05	0.56
3:I:589:ASP:OD2	3:I:611:ARG:N	2.39	0.56
4:H:239:ARG:HA	4:H:242:ILE:HD13	1.87	0.56
4:J:245:ASP:OD1	4:J:249:ARG:N	2.34	0.56
4:J:395:ASP:N	4:J:397:TYR:HH	2.03	0.55
3:I:116:ILE:HG22	3:I:118:PHE:H	1.72	0.55
4:H:395:ASP:N	4:H:397:TYR:HH	2.03	0.55
4:H:887:HIS:CG	4:J:878:LYS:HD2	2.42	0.55
1:F:46:TYR:HA	4:J:50:PRO:HD2	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:116:ILE:HG22	3:E:118:PHE:H	1.72	0.55
4:H:878:LYS:HD2	4:J:887:HIS:CG	2.42	0.55
2:G:185:PHE:HB2	2:G:188:GLN:HG3	1.89	0.55
3:I:517:PRO:HA	3:I:520:PHE:CZ	2.42	0.55
4:H:107:GLN:O	4:H:329:THR:OG1	2.24	0.54
2:D:185:PHE:HB2	2:D:188:GLN:HG3	1.89	0.54
2:G:15:PHE:CE1	2:G:78:ARG:HD2	2.43	0.54
2:D:166:PRO:HD3	2:D:229:TYR:CD1	2.43	0.54
4:H:774:CYS:SG	4:H:775:TYR:N	2.81	0.54
2:D:15:PHE:CE1	2:D:78:ARG:HD2	2.43	0.53
1:C:46:TYR:HA	4:H:50:PRO:HD2	1.89	0.53
3:E:517:PRO:HA	3:E:520:PHE:CZ	2.42	0.53
2:G:166:PRO:HD3	2:G:229:TYR:CD1	2.43	0.53
4:J:1560:SER:H	4:J:1563:THR:HG1	1.54	0.53
4:J:774:CYS:SG	4:J:775:TYR:N	2.81	0.53
4:H:265:GLU:N	4:H:265:GLU:OE1	2.42	0.52
4:J:128:ILE:HG22	4:J:129:THR:HG23	1.91	0.52
1:C:409:TYR:CZ	1:C:525:HIS:HB3	2.45	0.52
3:I:463:MET:SD	3:I:463:MET:N	2.83	0.52
4:H:128:ILE:HG22	4:H:129:THR:HG23	1.91	0.52
1:F:409:TYR:CZ	1:F:525:HIS:HB3	2.45	0.52
4:J:265:GLU:N	4:J:265:GLU:OE1	2.42	0.52
3:E:1062:GLU:OE1	3:E:1065:ARG:NH1	2.42	0.51
2:D:37:PHE:O	2:D:41:GLN:N	2.44	0.51
4:H:736:PHE:CG	4:H:737:CYS:N	2.79	0.51
3:I:687:GLU:HA	3:I:690:ARG:HD2	1.93	0.51
4:H:181:MET:HE2	4:H:338:PRO:HD3	1.93	0.51
4:J:107:GLN:O	4:J:329:THR:OG1	2.24	0.51
4:J:181:MET:HE2	4:J:338:PRO:HD3	1.92	0.51
3:E:463:MET:SD	3:E:463:MET:N	2.83	0.51
2:G:37:PHE:O	2:G:41:GLN:N	2.44	0.51
4:J:990:VAL:HA	4:J:993:LEU:HG	1.93	0.51
3:E:518:GLU:HA	3:E:521:THR:HG22	1.93	0.50
1:F:26:TYR:CZ	1:F:205:LYS:HG3	2.46	0.50
3:E:687:GLU:HA	3:E:690:ARG:HD2	1.93	0.50
4:H:990:VAL:HA	4:H:993:LEU:HG	1.93	0.50
4:H:1555:THR:HG1	4:H:1558:TRP:HD1	1.55	0.50
4:J:1248:TRP:HB3	4:J:1250:THR:HG23	1.94	0.50
4:J:1565:ASP:OD1	4:J:1568:PHE:N	2.45	0.50
1:C:26:TYR:CZ	1:C:205:LYS:HG3	2.46	0.49
4:J:814:ILE:HD11	4:J:855:SER:HB3	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:80:ARG:HB2	4:J:83:GLN:HB2	1.94	0.49
3:E:1249:LEU:HB3	3:E:1253:MET:HE3	1.94	0.49
3:I:1249:LEU:HB3	3:I:1253:MET:HE3	1.94	0.49
3:I:953:PHE:CE1	3:I:1246:LEU:HD13	2.48	0.49
3:I:1255:GLY:O	3:I:1257:GLN:NE2	2.43	0.49
3:E:993:PHE:CZ	3:E:995:LEU:HB2	2.48	0.49
3:I:518:GLU:HA	3:I:521:THR:HG22	1.93	0.48
1:C:177:VAL:HG21	1:C:190:PRO:HA	1.95	0.48
3:I:259:ILE:O	3:I:290:SER:N	2.43	0.48
4:H:80:ARG:HB2	4:H:83:GLN:HB2	1.94	0.48
4:H:215:GLU:HG3	4:H:328:ARG:HE	1.78	0.48
3:I:993:PHE:CZ	3:I:995:LEU:HB2	2.48	0.48
3:I:1062:GLU:OE1	3:I:1065:ARG:NH1	2.42	0.48
3:I:937:GLN:O	3:I:941:PRO:HD3	2.14	0.48
2:D:9:CYS:HB3	2:D:88:VAL:HB	1.95	0.48
3:E:68:TRP:CH2	3:E:70:PRO:HA	2.49	0.48
4:J:215:GLU:HG3	4:J:328:ARG:HE	1.78	0.48
1:F:177:VAL:HG21	1:F:190:PRO:HA	1.95	0.48
4:J:1448:LEU:HD23	4:J:1588:VAL:HG12	1.96	0.48
3:E:953:PHE:CE1	3:E:1246:LEU:HD13	2.48	0.48
2:G:9:CYS:HB3	2:G:88:VAL:HB	1.95	0.48
3:E:937:GLN:O	3:E:941:PRO:HD3	2.14	0.48
4:H:793:MET:HE2	4:H:797:GLN:HB3	1.96	0.48
4:H:814:ILE:HD11	4:H:855:SER:HB3	1.95	0.48
4:H:1565:ASP:OD1	4:H:1568:PHE:N	2.45	0.48
3:E:259:ILE:O	3:E:290:SER:N	2.44	0.47
4:H:1356:LEU:O	4:H:1369:TRP:HA	2.14	0.47
4:J:402:TRP:CD1	4:J:402:TRP:H	2.32	0.47
4:J:1356:LEU:O	4:J:1369:TRP:HA	2.14	0.47
3:E:95:ARG:HG3	3:E:257:ALA:HA	1.96	0.47
3:I:68:TRP:CH2	3:I:70:PRO:HA	2.49	0.47
1:C:136:PRO:HA	1:C:139:ILE:HD12	1.97	0.47
3:I:424:GLN:HA	3:I:446:PRO:HA	1.97	0.47
4:H:1248:TRP:HB3	4:H:1250:THR:HG23	1.94	0.47
4:H:1373:TYR:HB2	4:H:1387:LYS:HB2	1.96	0.47
4:H:1227:ALA:O	4:H:1231:MET:HG2	2.15	0.47
4:H:1448:LEU:HD23	4:H:1588:VAL:HG12	1.96	0.47
4:J:1373:TYR:HB2	4:J:1387:LYS:HB2	1.96	0.47
4:H:281:TYR:O	4:H:285:VAL:HG22	2.15	0.47
4:H:402:TRP:H	4:H:402:TRP:CD1	2.32	0.47
3:I:95:ARG:HG3	3:I:257:ALA:HA	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:894:PRO:HG2	4:J:897:SER:HB3	1.97	0.47
4:J:1420:LEU:HG	4:J:1553:MET:HG2	1.97	0.47
3:E:237:LEU:HD23	3:E:269:VAL:HG23	1.97	0.47
3:E:424:GLN:HA	3:E:446:PRO:HA	1.97	0.47
1:F:136:PRO:HA	1:F:139:ILE:HD12	1.96	0.47
2:G:16:HIS:HB3	2:G:19:LEU:HB2	1.97	0.47
2:D:16:HIS:HB3	2:D:19:LEU:HB2	1.97	0.47
4:J:793:MET:HE2	4:J:797:GLN:HB3	1.96	0.47
2:D:113:GLU:HA	2:D:118:PHE:H	1.80	0.46
4:H:44:PRO:HA	4:H:86:TYR:CE2	2.49	0.46
2:G:113:GLU:HA	2:G:118:PHE:H	1.80	0.46
3:I:329:PRO:O	3:I:341:TYR:OH	2.28	0.46
4:J:44:PRO:HA	4:J:86:TYR:CE2	2.49	0.46
4:H:366:LEU:O	4:H:406:SER:N	2.49	0.46
3:I:237:LEU:HD23	3:I:269:VAL:HG23	1.97	0.46
2:D:70:CYS:HA	2:D:81:LEU:O	2.16	0.46
3:E:329:PRO:O	3:E:341:TYR:OH	2.28	0.46
3:E:996:MET:O	3:E:1000:PRO:HD2	2.15	0.46
4:J:1558:TRP:CD1	4:J:1558:TRP:N	2.83	0.46
3:E:960:CYS:HA	3:E:1047:ARG:HD3	1.96	0.46
4:J:366:LEU:O	4:J:406:SER:N	2.49	0.46
3:E:641:SER:N	3:E:648:ASN:OD1	2.49	0.46
3:I:818:LEU:HD21	3:I:947:ILE:HG12	1.97	0.46
3:E:818:LEU:HD21	3:E:947:ILE:HG12	1.97	0.46
4:H:1420:LEU:HG	4:H:1553:MET:HG2	1.97	0.46
3:E:1255:GLY:O	3:E:1257:GLN:NE2	2.43	0.46
4:H:887:HIS:CD2	4:J:878:LYS:HD2	2.50	0.46
2:G:330:PRO:HD3	2:G:351:TYR:HD1	1.80	0.46
3:I:960:CYS:HA	3:I:1047:ARG:HD3	1.97	0.46
4:J:232:ASP:HA	4:J:239:ARG:CZ	2.46	0.46
2:D:330:PRO:HD3	2:D:351:TYR:HD1	1.80	0.46
4:H:1560:SER:H	4:H:1563:THR:HG1	1.57	0.46
4:J:281:TYR:O	4:J:285:VAL:HG22	2.15	0.46
4:J:371:GLU:N	4:J:371:GLU:OE1	2.49	0.46
4:J:1227:ALA:O	4:J:1231:MET:HG2	2.15	0.46
4:H:1558:TRP:CD1	4:H:1558:TRP:N	2.83	0.45
4:H:371:GLU:N	4:H:371:GLU:OE1	2.49	0.45
3:I:996:MET:O	3:I:1000:PRO:HD2	2.15	0.45
4:J:948:LEU:HB3	4:J:1384:PHE:HB3	1.99	0.45
4:H:894:PRO:HG2	4:H:897:SER:HB3	1.97	0.45
3:I:641:SER:N	3:I:648:ASN:OD1	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:H:243:ARG:HB2	4:H:251:TYR:CZ	2.52	0.45
3:E:154:GLN:HE22	3:E:243:GLN:HB3	1.81	0.45
3:E:921:PRO:HD2	3:E:924:TRP:CZ2	2.52	0.45
4:H:1248:TRP:HD1	4:H:1250:THR:HG23	1.82	0.45
1:C:46:TYR:CE2	4:H:50:PRO:HG2	2.52	0.45
4:H:54:GLN:HB2	4:H:125:CYS:SG	2.57	0.45
2:G:70:CYS:HA	2:G:81:LEU:O	2.16	0.45
2:G:332:ARG:HA	2:G:375:ILE:HD13	1.99	0.45
4:J:54:GLN:HB2	4:J:125:CYS:SG	2.57	0.45
4:J:243:ARG:HB2	4:J:251:TYR:CZ	2.52	0.45
4:H:232:ASP:HA	4:H:239:ARG:CZ	2.46	0.45
4:H:1548:TRP:CZ2	4:H:1573:LEU:HB2	2.51	0.45
4:J:1248:TRP:CD1	4:J:1250:THR:HG23	2.52	0.45
4:H:948:LEU:HB3	4:H:1384:PHE:HB3	1.98	0.45
4:H:44:PRO:HA	4:H:86:TYR:CZ	2.52	0.44
1:F:46:TYR:CE2	4:J:50:PRO:HG2	2.52	0.44
3:I:1048:GLU:HG2	3:I:1049:ILE:N	2.33	0.44
2:D:289:SER:H	2:D:292:THR:HB	1.82	0.44
4:H:1248:TRP:CD1	4:H:1250:THR:HG23	2.52	0.44
2:G:289:SER:H	2:G:292:THR:HB	1.82	0.44
3:I:154:GLN:HE22	3:I:243:GLN:HB3	1.81	0.44
4:J:44:PRO:HA	4:J:86:TYR:CZ	2.52	0.44
4:J:928:ALA:HA	4:J:1369:TRP:CH2	2.52	0.44
4:H:928:ALA:HA	4:H:1369:TRP:CH2	2.52	0.44
1:C:352:PHE:HB2	1:C:396:TRP:CH2	2.53	0.44
2:D:332:ARG:HA	2:D:375:ILE:HD13	1.99	0.44
3:E:747:ASP:OD1	3:E:747:ASP:N	2.51	0.44
4:J:1248:TRP:HD1	4:J:1250:THR:HG23	1.82	0.44
4:J:1548:TRP:CZ2	4:J:1573:LEU:HB2	2.52	0.44
4:H:1579:PHE:CE2	4:H:1587:LEU:HD13	2.53	0.44
3:I:921:PRO:HD2	3:I:924:TRP:CZ2	2.52	0.44
4:J:1579:PHE:CE2	4:J:1587:LEU:HD13	2.53	0.44
3:E:63:VAL:HG11	3:E:79:PHE:HB2	1.99	0.43
3:E:1048:GLU:HG2	3:E:1049:ILE:N	2.33	0.43
1:F:317:VAL:HG21	1:F:324:ILE:HD11	1.99	0.43
2:D:96:CYS:HB3	2:D:162:GLN:HG3	1.99	0.43
3:I:63:VAL:HG11	3:I:79:PHE:HB2	1.99	0.43
4:J:181:MET:HG2	4:J:338:PRO:HG3	2.00	0.43
2:D:329:TYR:CZ	2:D:350:SER:HB3	2.54	0.43
4:H:878:LYS:HD2	4:J:887:HIS:CD2	2.52	0.43
3:I:747:ASP:OD1	3:I:747:ASP:N	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:230:CYS:HB2	1:F:319:TRP:CH2	2.53	0.43
4:H:181:MET:HG2	4:H:338:PRO:HG3	2.00	0.43
2:G:329:TYR:CZ	2:G:350:SER:HB3	2.54	0.43
4:J:889:THR:HG22	4:J:905:TRP:HB3	2.01	0.43
1:C:230:CYS:HB2	1:C:319:TRP:CH2	2.53	0.43
4:H:128:ILE:O	4:H:129:THR:OG1	2.32	0.43
4:H:1248:TRP:CG	4:H:1249:ARG:H	2.37	0.43
1:C:317:VAL:HG21	1:C:324:ILE:HD11	1.99	0.43
2:D:113:GLU:OE1	2:D:119:VAL:N	2.52	0.43
4:H:359:ASP:OD2	4:H:910:HIS:NE2	2.43	0.43
4:H:889:THR:HG22	4:H:905:TRP:HB3	2.01	0.43
4:H:1191:VAL:HG11	4:H:1210:VAL:HG22	2.01	0.43
1:F:352:PHE:HB2	1:F:396:TRP:CH2	2.53	0.43
2:G:154:THR:OG1	2:G:156:HIS:NE2	2.46	0.43
4:J:108:TYR:N	4:J:326:PHE:O	2.51	0.43
4:J:1248:TRP:CG	4:J:1249:ARG:H	2.37	0.43
3:E:442:VAL:HB	3:E:460:GLU:HG2	2.00	0.42
3:E:626:SER:H	3:E:637:LYS:HA	1.84	0.42
3:E:995:LEU:HB3	3:E:996:MET:HE2	2.00	0.42
2:G:96:CYS:HB3	2:G:162:GLN:HG3	1.99	0.42
3:I:995:LEU:HB3	3:I:996:MET:HE2	2.00	0.42
3:E:117:LEU:HA	3:E:120:GLU:HB3	2.01	0.42
4:H:1352:ARG:HB3	4:H:1374:TYR:CZ	2.54	0.42
3:I:269:VAL:H	3:I:312:LEU:HD21	1.84	0.42
3:I:626:SER:H	3:I:637:LYS:HA	1.84	0.42
4:H:41:ILE:O	4:H:51:LEU:N	2.53	0.42
3:E:443:ALA:C	3:E:444:MET:HG3	2.44	0.42
1:F:232:PRO:HB2	1:F:245:PRO:HB3	2.01	0.42
3:I:443:ALA:C	3:I:444:MET:HG3	2.44	0.42
4:J:41:ILE:O	4:J:51:LEU:N	2.53	0.42
4:J:1352:ARG:HB3	4:J:1374:TYR:CZ	2.54	0.42
4:J:1433:ASP:HB3	4:J:1436:ARG:HB3	2.02	0.42
2:D:75:LYS:HE3	2:D:76:TYR:CZ	2.54	0.42
4:H:878:LYS:NZ	4:H:914:GLU:OE2	2.47	0.42
4:H:1433:ASP:HB3	4:H:1436:ARG:HB3	2.02	0.42
4:J:83:GLN:HG2	4:J:84:ASP:N	2.35	0.42
4:H:113:ASP:OD1	4:H:116:ARG:NH1	2.46	0.42
4:H:876:LEU:HD13	4:H:914:GLU:HG3	2.02	0.42
2:G:104:LYS:HE2	2:G:108:TYR:OH	2.20	0.42
4:J:359:ASP:OD2	4:J:910:HIS:NE2	2.43	0.42
3:E:269:VAL:H	3:E:312:LEU:HD21	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:H:108:TYR:N	4:H:326:PHE:O	2.51	0.42
2:G:109:LEU:HD23	2:G:109:LEU:HA	1.84	0.42
3:I:117:LEU:HA	3:I:120:GLU:HB3	2.01	0.42
2:G:75:LYS:HE3	2:G:76:TYR:CZ	2.54	0.41
4:J:1191:VAL:HG11	4:J:1210:VAL:HG22	2.01	0.41
4:J:1426:LEU:O	4:J:1432:GLY:HA3	2.20	0.41
4:J:1509:VAL:HG21	4:J:1548:TRP:CZ2	2.55	0.41
4:J:1555:THR:HG1	4:J:1558:TRP:NE1	2.18	0.41
1:C:232:PRO:HB2	1:C:245:PRO:HB3	2.01	0.41
2:D:174:VAL:HG22	2:D:205:HIS:HA	2.03	0.41
4:H:906:VAL:HG11	4:H:1434:PRO:HB3	2.02	0.41
3:I:876:SER:HB3	3:I:902:LEU:HD13	2.02	0.41
4:J:876:LEU:HD13	4:J:914:GLU:HG3	2.02	0.41
4:H:83:GLN:HG2	4:H:84:ASP:N	2.34	0.41
4:H:1509:VAL:HG21	4:H:1548:TRP:CZ2	2.55	0.41
3:I:289:CYS:O	3:I:322:GLY:HA3	2.20	0.41
2:D:51:GLN:HG2	2:D:70:CYS:HB3	2.03	0.41
3:E:938:ALA:O	3:E:941:PRO:HD2	2.21	0.41
4:H:1426:LEU:O	4:H:1432:GLY:HA3	2.20	0.41
2:G:51:GLN:HG2	2:G:70:CYS:HB3	2.03	0.41
3:I:442:VAL:HB	3:I:460:GLU:HG2	2.00	0.41
4:J:113:ASP:OD1	4:J:116:ARG:NH1	2.46	0.41
4:J:976:ASP:O	4:J:979:GLU:HB2	2.20	0.41
2:D:36:LEU:O	2:D:40:VAL:HG23	2.19	0.41
3:E:876:SER:HB3	3:E:902:LEU:HD13	2.02	0.41
4:H:1406:HIS:NE2	4:H:1558:TRP:CZ3	2.88	0.41
4:J:959:ILE:O	4:J:1571:ARG:NH1	2.50	0.41
4:J:1358:VAL:HG11	4:J:1393:VAL:HG13	2.02	0.41
2:D:104:LYS:HE2	2:D:108:TYR:OH	2.20	0.41
2:G:113:GLU:OE1	2:G:119:VAL:N	2.52	0.41
2:G:174:VAL:HG22	2:G:205:HIS:HA	2.03	0.41
3:E:517:PRO:HA	3:E:520:PHE:CE2	2.56	0.41
4:H:1358:VAL:HG11	4:H:1393:VAL:HG13	2.02	0.41
1:F:88:ILE:HG22	2:G:55:ILE:HG12	2.02	0.41
2:G:36:LEU:O	2:G:40:VAL:HG23	2.19	0.41
3:I:938:ALA:O	3:I:941:PRO:HD2	2.21	0.41
4:J:906:VAL:HG11	4:J:1434:PRO:HB3	2.01	0.41
4:J:1406:HIS:NE2	4:J:1558:TRP:CZ3	2.88	0.41
4:H:338:PRO:HA	4:H:369:MET:HB2	2.03	0.41
4:H:380:PHE:O	4:H:397:TYR:HA	2.21	0.41
2:G:16:HIS:CG	2:G:17:PRO:HD2	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:778:LEU:HD23	4:J:778:LEU:HA	1.93	0.41
4:H:200:LEU:HD23	4:H:200:LEU:HA	1.95	0.41
4:H:959:ILE:O	4:H:1571:ARG:NH1	2.50	0.41
1:F:253:LYS:HG2	3:I:373:HIS:CE1	2.56	0.41
3:I:483:SER:HB3	3:I:486:ARG:HD3	2.03	0.41
1:C:153:LEU:HD23	1:C:153:LEU:HA	1.94	0.40
2:D:16:HIS:CG	2:D:17:PRO:HD2	2.56	0.40
1:F:157:GLU:OE1	1:F:163:LEU:N	2.54	0.40
3:I:531:PRO:HG2	3:I:631:GLU:HB2	2.03	0.40
4:J:108:TYR:HA	4:J:329:THR:OG1	2.22	0.40
1:C:88:ILE:HG22	2:D:55:ILE:HG12	2.02	0.40
1:C:157:GLU:OE1	1:C:163:LEU:N	2.54	0.40
1:F:170:ILE:HG23	1:F:194:ILE:HD13	2.03	0.40
4:J:338:PRO:HA	4:J:369:MET:HB2	2.03	0.40
3:I:517:PRO:HA	3:I:520:PHE:CE2	2.56	0.40
3:I:998:LEU:HA	3:I:1001:GLN:HB2	2.02	0.40
4:J:263:ARG:CZ	4:J:1555:THR:HB	2.51	0.40
3:E:56:GLN:HB2	3:E:59:GLU:HG2	2.03	0.40
3:E:289:CYS:O	3:E:322:GLY:HA3	2.20	0.40
3:E:586:LEU:HB2	3:E:610:CYS:SG	2.62	0.40
4:H:263:ARG:CZ	4:H:1555:THR:HB	2.51	0.40
4:H:976:ASP:O	4:H:979:GLU:HB2	2.20	0.40
3:I:150:TYR:CE2	3:I:173:LEU:HB2	2.57	0.40
3:I:447:TRP:CG	3:I:448:PRO:HA	2.56	0.40
4:J:878:LYS:NZ	4:J:914:GLU:OE2	2.47	0.40
4:J:1553:MET:O	4:J:1555:THR:HG23	2.22	0.40
1:C:253:LYS:HG2	3:E:373:HIS:CE1	2.56	0.40
4:H:1211:VAL:HG21	4:H:1253:TYR:CE1	2.56	0.40
4:J:878:LYS:HA	4:J:878:LYS:HD3	1.80	0.40
4:J:1513:LEU:HD23	4:J:1513:LEU:HA	1.93	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	438/590 (74%)	433 (99%)	5 (1%)	0	100	100
1	F	438/590 (74%)	433 (99%)	5 (1%)	0	100	100
2	D	364/401 (91%)	358 (98%)	6 (2%)	0	100	100
2	G	364/401 (91%)	358 (98%)	6 (2%)	0	100	100
3	E	818/3451 (24%)	799 (98%)	19 (2%)	0	100	100
3	I	818/3451 (24%)	799 (98%)	19 (2%)	0	100	100
4	H	920/1621 (57%)	889 (97%)	31 (3%)	0	100	100
4	J	920/1621 (57%)	889 (97%)	31 (3%)	0	100	100
All	All	5080/12126 (42%)	4958 (98%)	122 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	C	404/518 (78%)	404 (100%)	0	100	100
1	F	404/518 (78%)	404 (100%)	0	100	100
2	D	342/365 (94%)	335 (98%)	7 (2%)	50	68
2	G	342/365 (94%)	335 (98%)	7 (2%)	50	68
3	E	760/2970 (26%)	754 (99%)	6 (1%)	79	85
3	I	760/2970 (26%)	754 (99%)	6 (1%)	79	85
4	H	856/1423 (60%)	852 (100%)	4 (0%)	86	89
4	J	856/1423 (60%)	852 (100%)	4 (0%)	86	89
All	All	4724/10552 (45%)	4690 (99%)	34 (1%)	80	87

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	D	105	LEU
2	D	215	VAL
2	D	226	ASN
2	D	277	SER
2	D	280	ASP
2	D	296	ASP
2	D	345	TYR
3	E	24	TYR
3	E	159	ILE
3	E	300	TYR
3	E	424	GLN
3	E	501	ASN
3	E	511	GLN
4	H	122	VAL
4	H	1249	ARG
4	H	1377	ASN
4	H	1558	TRP
2	G	105	LEU
2	G	215	VAL
2	G	226	ASN
2	G	277	SER
2	G	280	ASP
2	G	296	ASP
2	G	345	TYR
3	I	24	TYR
3	I	159	ILE
3	I	300	TYR
3	I	424	GLN
3	I	501	ASN
3	I	511	GLN
4	J	122	VAL
4	J	1249	ARG
4	J	1377	ASN
4	J	1558	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (45) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	143	HIS
1	C	220	HIS
1	C	308	GLN
2	D	162	GLN
2	D	207	GLN

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Mol	Chain	Res	Type
2	D	226	ASN
2	D	240	GLN
2	D	307	HIS
3	E	40	HIS
3	E	189	GLN
3	E	243	GLN
3	E	390	HIS
3	E	424	GLN
3	E	435	HIS
3	E	863	HIS
3	E	940	HIS
4	H	238	ASN
4	H	246	HIS
4	H	355	GLN
4	H	398	ASN
4	H	812	GLN
4	H	923	GLN
4	H	1217	HIS
1	F	143	HIS
1	F	220	HIS
1	F	308	GLN
2	G	162	GLN
2	G	207	GLN
2	G	226	ASN
2	G	240	GLN
2	G	307	HIS
3	I	40	HIS
3	I	189	GLN
3	I	243	GLN
3	I	390	HIS
3	I	424	GLN
3	I	435	HIS
3	I	863	HIS
3	I	940	HIS
4	J	246	HIS
4	J	355	GLN
4	J	398	ASN
4	J	812	GLN
4	J	923	GLN
4	J	1217	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

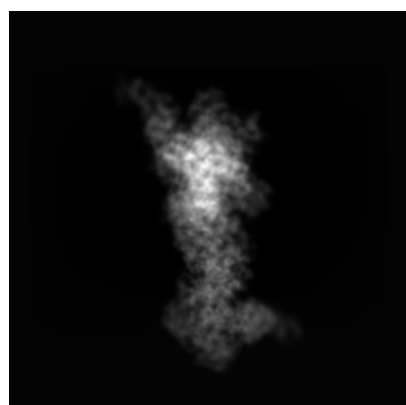
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-70141. These allow visual inspection of the internal detail of the map and identification of artifacts.

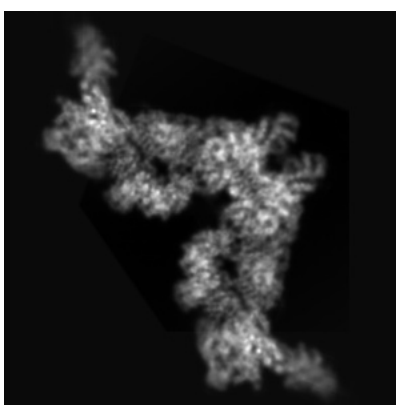
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

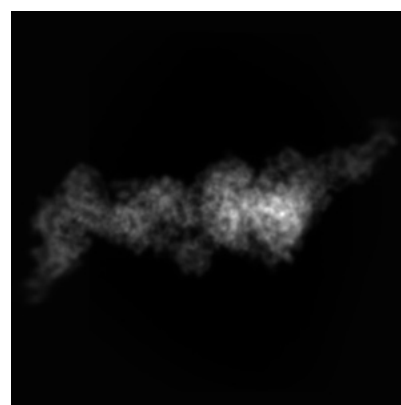
6.1.1 Primary map



X



Y

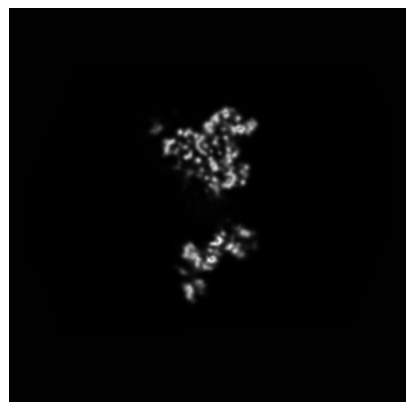


Z

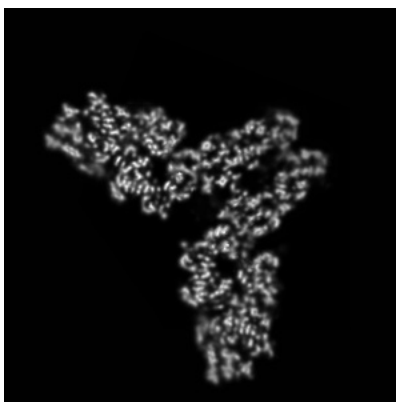
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

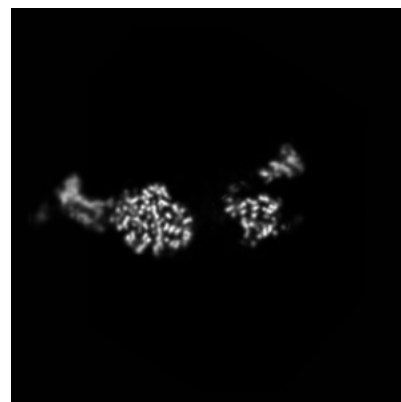
6.2.1 Primary map



X Index: 160



Y Index: 160

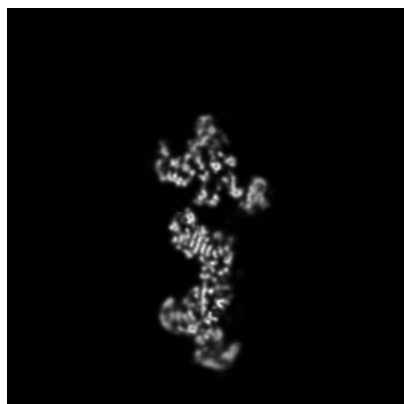


Z Index: 160

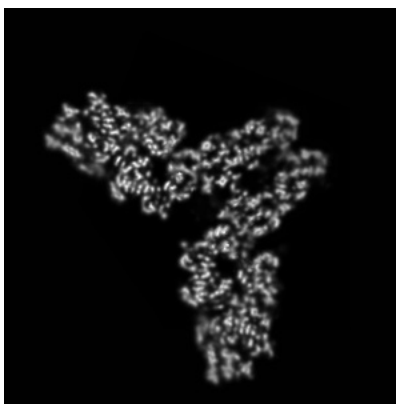
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

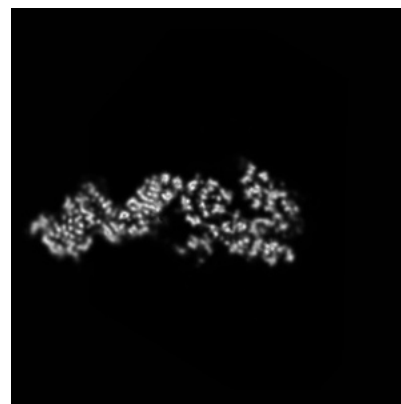
6.3.1 Primary map



X Index: 216



Y Index: 160

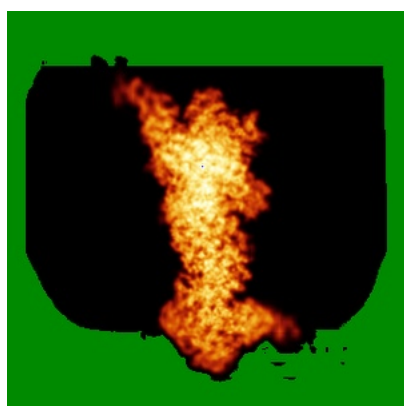


Z Index: 202

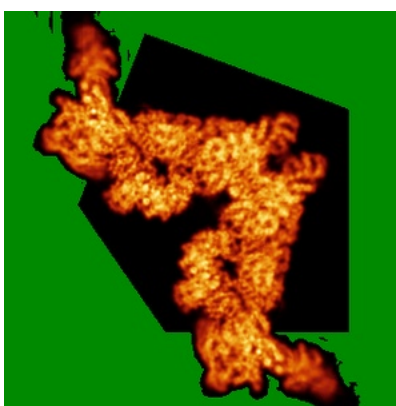
The images above show the largest variance slices of the map in three orthogonal directions.

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

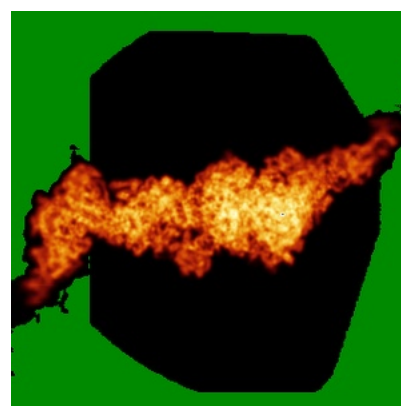
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 3.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

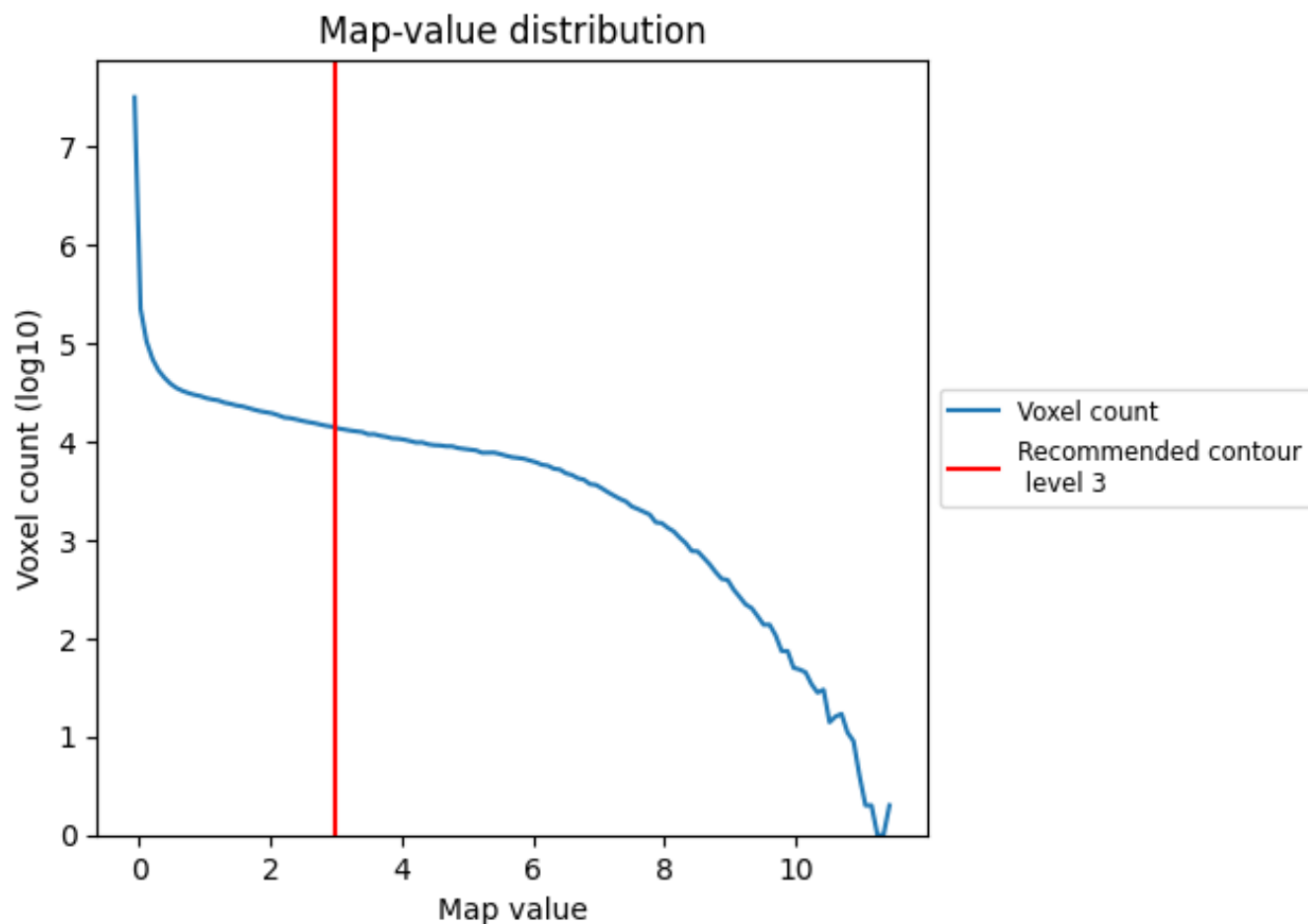
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

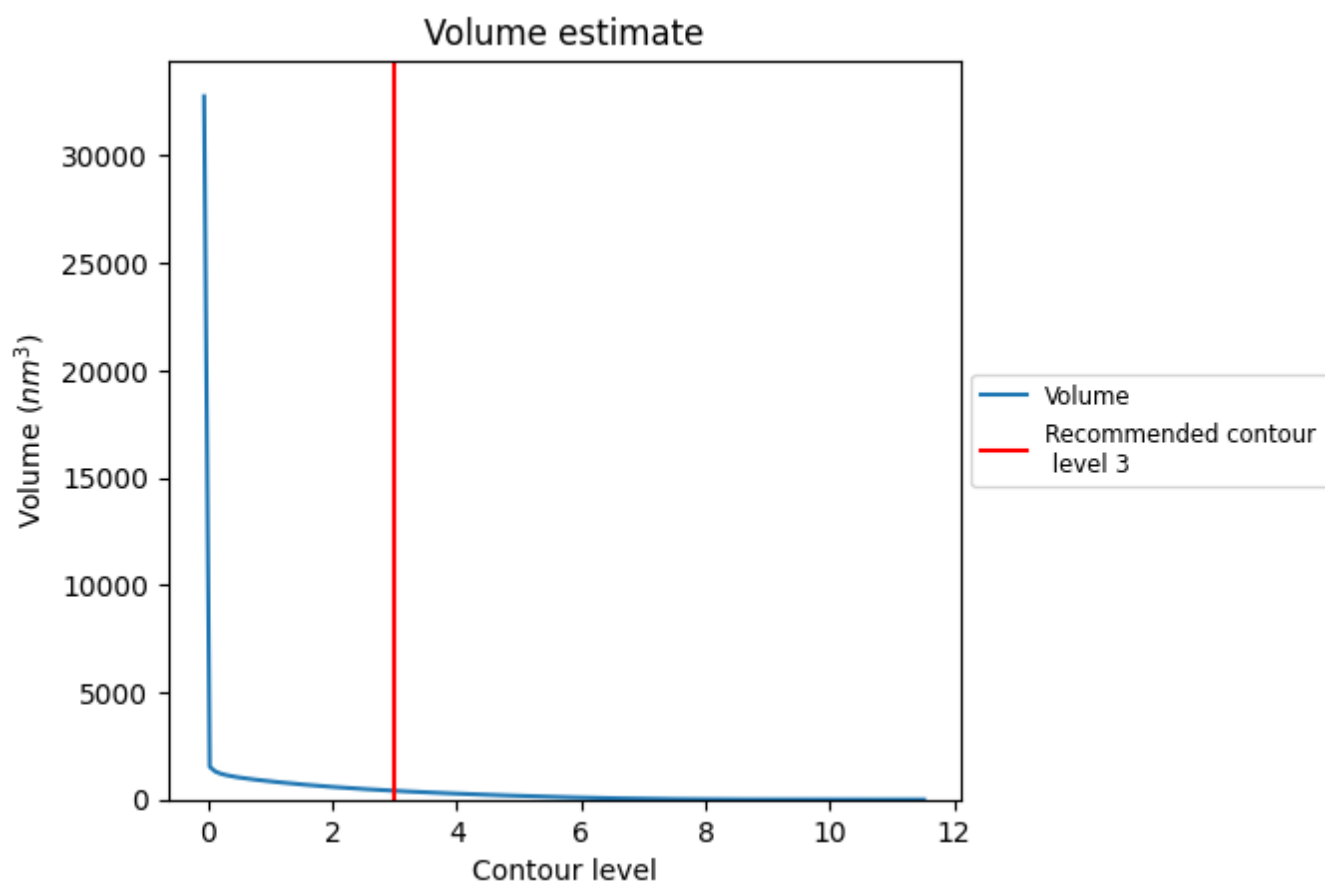
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

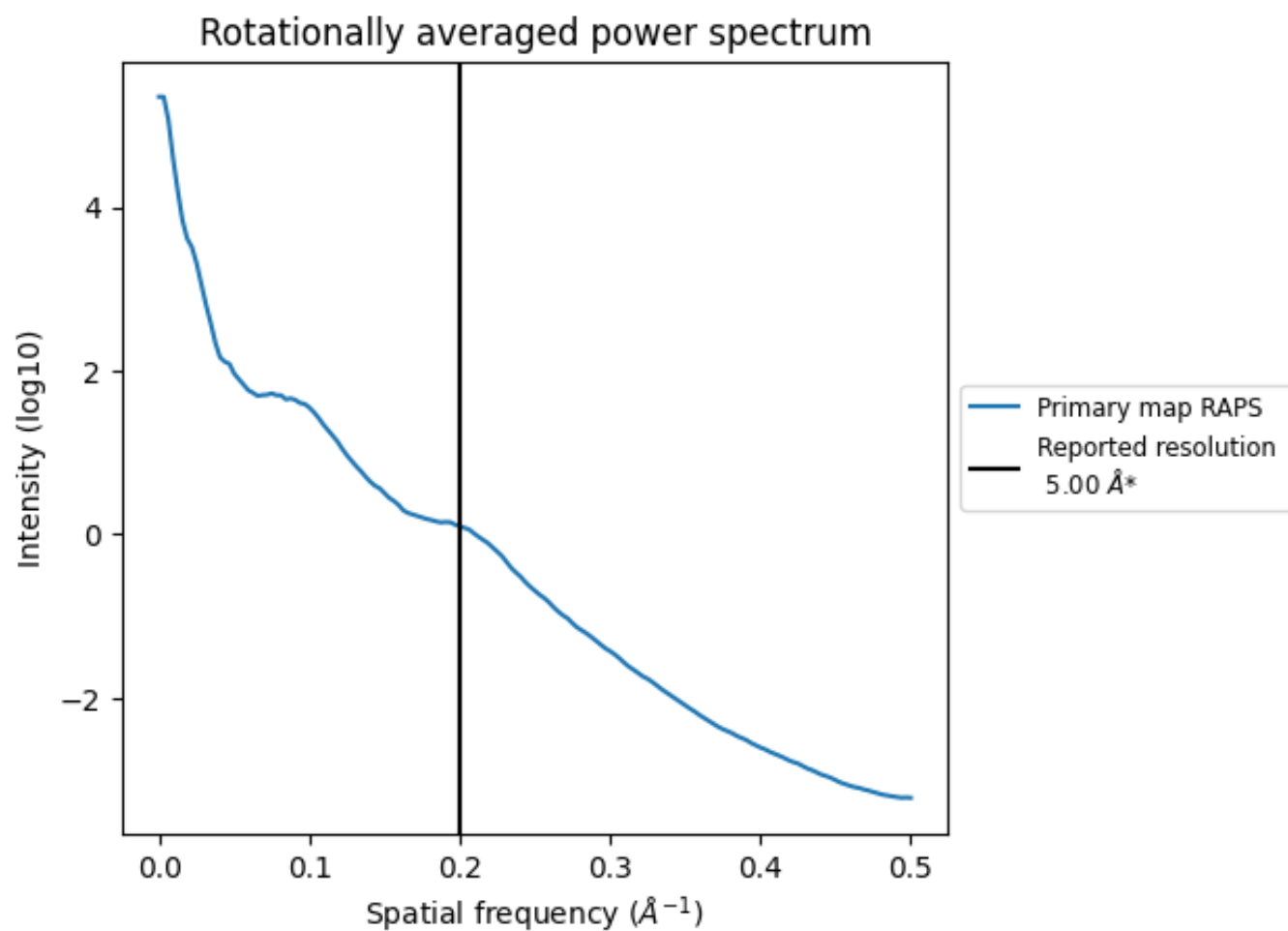
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 409 nm^3 ; this corresponds to an approximate mass of 369 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ



*Reported resolution corresponds to spatial frequency of 0.200 Å⁻¹

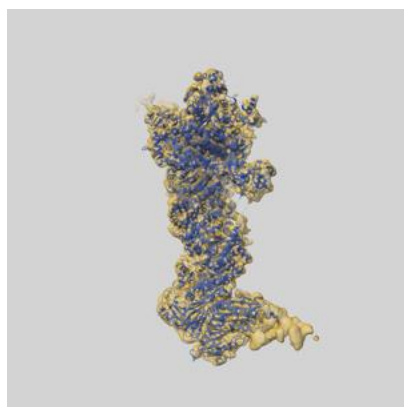
8 Fourier-Shell correlation ⓘ

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

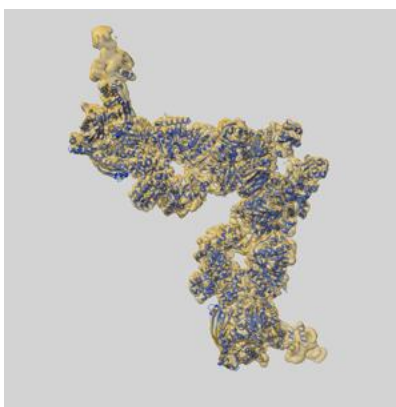
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-70141 and PDB model 9O5E. Per-residue inclusion information can be found in section [3](#) on page [9](#).

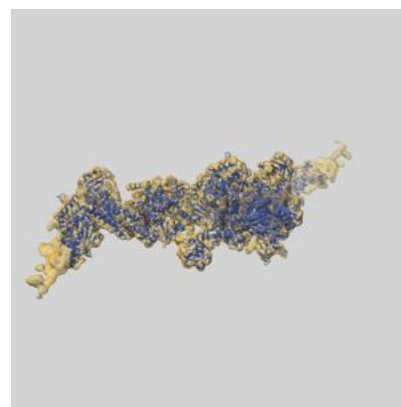
9.1 Map-model overlay [i](#)



X



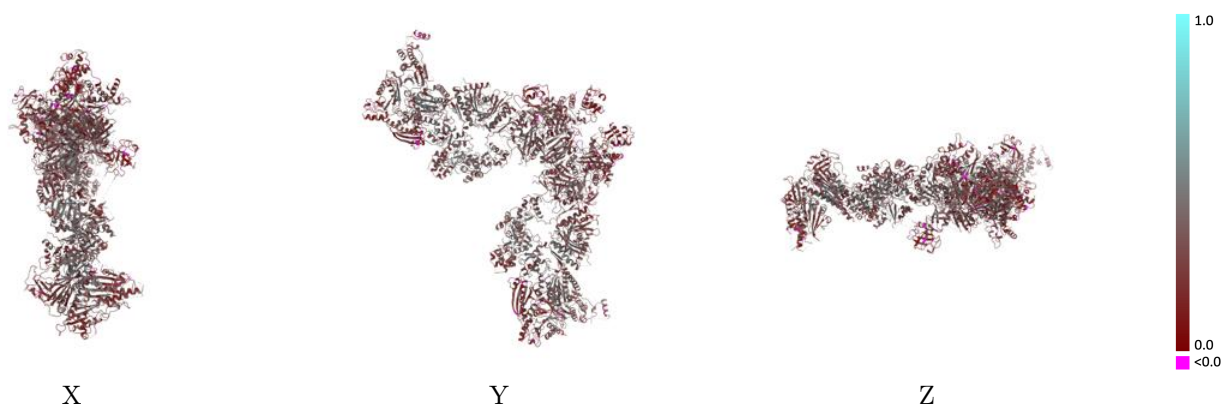
Y



Z

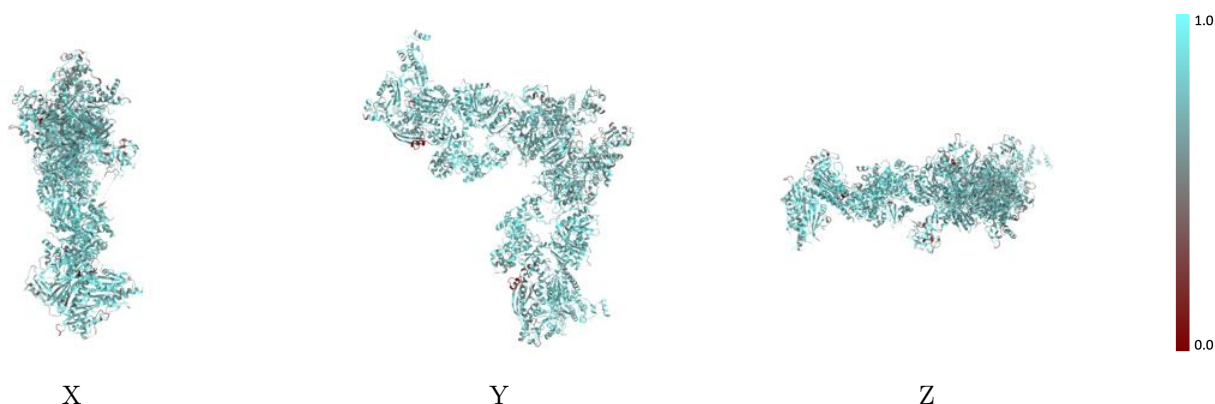
The images above show the 3D surface view of the map at the recommended contour level 3.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



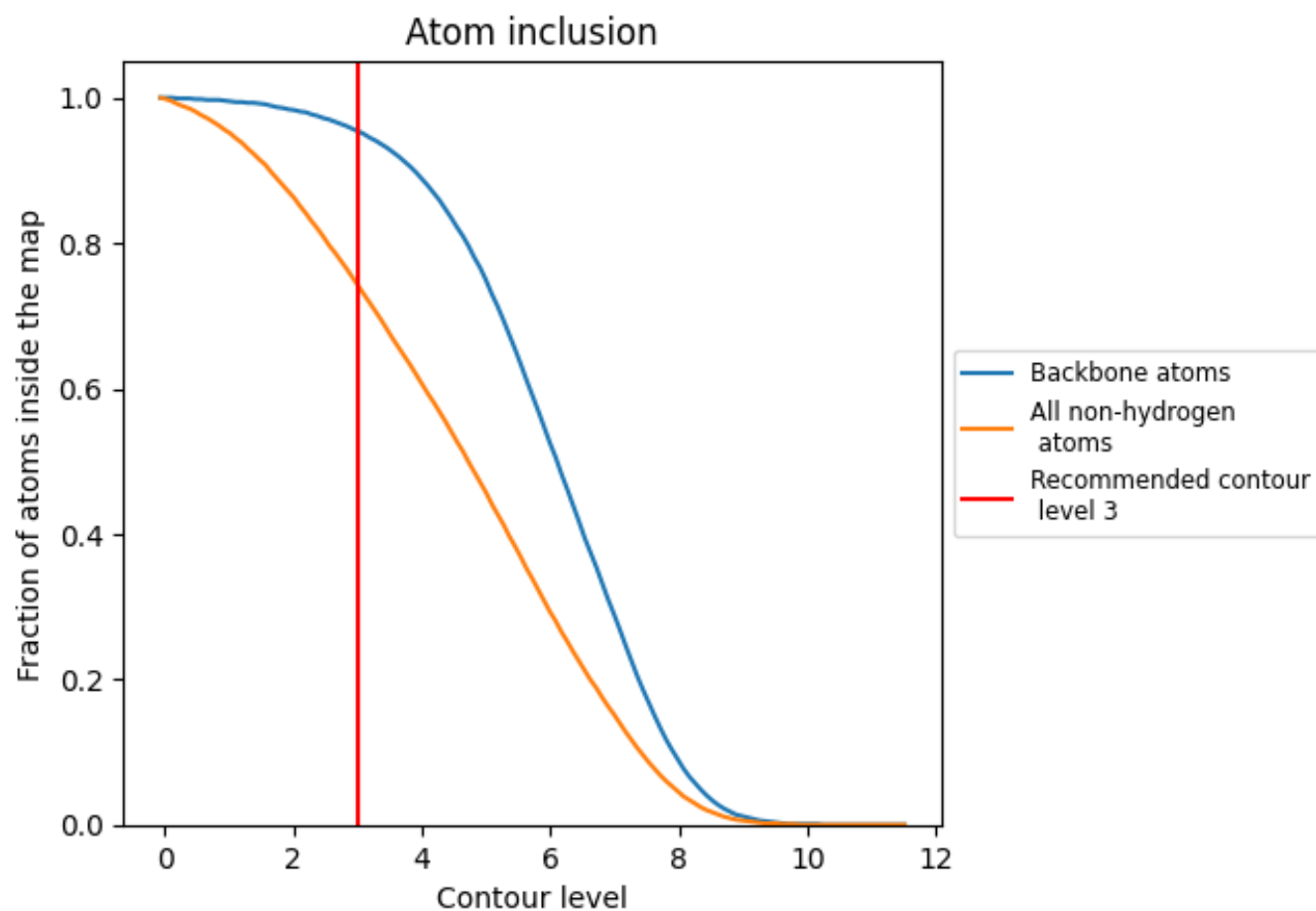
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (3).

9.4 Atom inclusion [i](#)



At the recommended contour level, 95% of all backbone atoms, 74% 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 (3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7430	0.3100
C	0.7860	0.3660
D	0.8120	0.3500
E	0.7380	0.3020
F	0.7810	0.3560
G	0.8060	0.3380
H	0.7070	0.2860
I	0.7350	0.2940
J	0.7050	0.2840

1.0

0.0

<0.0