Full wwPDB EM Validation Report ⓘ

Jul 8, 2025 – 03:49 PM JST

PDB ID	:	9J78 / pdb_00009j78
EMDB ID	:	EMD-61197
Title	:	Cryo-EM structure of CRL2-FEM1B (dimer 2)
Authors	:	Zhao, S.; Xu, C.
Deposited on	:	2024-08-18
Resolution	:	3.88 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:

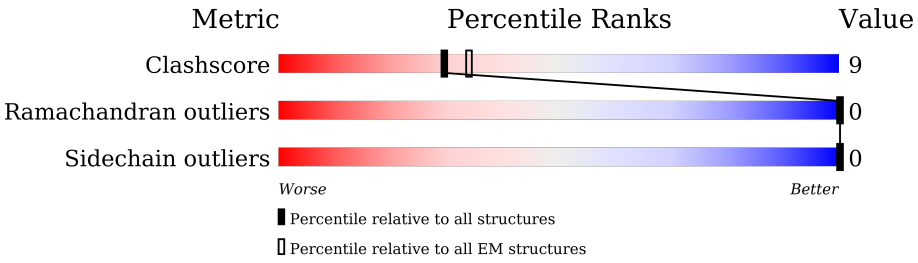
EMDB validation analysis	:	FAILED
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.88 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)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Mol	Chain	Length	Quality of chain
1	D	121	55% 24% 21%
1	H	121	58% 26% 17%
2	A	750	78% 19% .
2	B	750	76% 21% .
3	C	96	71% 29%
3	G	96	75% 25%
4	F	627	76% 24%
4	J	627	75% 25%
5	E	96	12% 6% 81%

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Mol	Chain	Length	Quality of chain
5	I	96	9% 86%
6	K	9	100%
7	L	8	88% 12%

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 25192 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 Elongin-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	H	101	Total	C	N	O	S	0	0
			798	504	134	156	4		
1	D	96	Total	C	N	O	S	0	0
			759	483	129	144	3		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	-2	GLY	-	expression tag	UNP Q15370
H	-1	GLY	-	expression tag	UNP Q15370
H	0	SER	-	expression tag	UNP Q15370
D	-2	GLY	-	expression tag	UNP Q15370
D	-1	GLY	-	expression tag	UNP Q15370
D	0	SER	-	expression tag	UNP Q15370

- Molecule 2 is a protein called Cullin-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	725	Total	C	N	O	S	0	0
			5947	3781	1009	1113	44		
2	A	725	Total	C	N	O	S	0	0
			5947	3781	1009	1113	44		

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-19	SER	-	expression tag	UNP Q13617
B	-18	ALA	-	expression tag	UNP Q13617
B	-17	SER	-	expression tag	UNP Q13617
B	-16	TRP	-	expression tag	UNP Q13617
B	-15	SER	-	expression tag	UNP Q13617
B	-14	HIS	-	expression tag	UNP Q13617
B	-13	PRO	-	expression tag	UNP Q13617

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-12	GLN	-	expression tag	UNP Q13617
B	-11	PHE	-	expression tag	UNP Q13617
B	-10	GLU	-	expression tag	UNP Q13617
B	-9	LYS	-	expression tag	UNP Q13617
B	-8	GLY	-	expression tag	UNP Q13617
B	-7	GLY	-	expression tag	UNP Q13617
B	-6	GLY	-	expression tag	UNP Q13617
B	-5	SER	-	expression tag	UNP Q13617
B	-4	GLY	-	expression tag	UNP Q13617
B	-3	GLY	-	expression tag	UNP Q13617
B	-2	GLY	-	expression tag	UNP Q13617
B	-1	SER	-	expression tag	UNP Q13617
B	0	GLY	-	expression tag	UNP Q13617
B	1	THR	-	expression tag	UNP Q13617
B	?	-	LYS	deletion	UNP Q13617
B	?	-	LEU	deletion	UNP Q13617
B	?	-	THR	deletion	UNP Q13617
B	?	-	GLU	deletion	UNP Q13617
B	?	-	ALA	deletion	UNP Q13617
B	?	-	ASP	deletion	UNP Q13617
B	?	-	LEU	deletion	UNP Q13617
B	?	-	GLN	deletion	UNP Q13617
B	?	-	TYR	deletion	UNP Q13617
B	?	-	TYR	deletion	UNP Q13617
B	?	-	VAL	deletion	UNP Q13617
B	?	-	ASP	deletion	UNP Q13617
B	?	-	MET	deletion	UNP Q13617
B	?	-	ASN	deletion	UNP Q13617
B	?	-	GLU	deletion	UNP Q13617
A	-19	SER	-	expression tag	UNP Q13617
A	-18	ALA	-	expression tag	UNP Q13617
A	-17	SER	-	expression tag	UNP Q13617
A	-16	TRP	-	expression tag	UNP Q13617
A	-15	SER	-	expression tag	UNP Q13617
A	-14	HIS	-	expression tag	UNP Q13617
A	-13	PRO	-	expression tag	UNP Q13617
A	-12	GLN	-	expression tag	UNP Q13617
A	-11	PHE	-	expression tag	UNP Q13617
A	-10	GLU	-	expression tag	UNP Q13617
A	-9	LYS	-	expression tag	UNP Q13617
A	-8	GLY	-	expression tag	UNP Q13617
A	-7	GLY	-	expression tag	UNP Q13617

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	GLY	-	expression tag	UNP Q13617
A	-5	SER	-	expression tag	UNP Q13617
A	-4	GLY	-	expression tag	UNP Q13617
A	-3	GLY	-	expression tag	UNP Q13617
A	-2	GLY	-	expression tag	UNP Q13617
A	-1	SER	-	expression tag	UNP Q13617
A	0	GLY	-	expression tag	UNP Q13617
A	1	THR	-	expression tag	UNP Q13617
A	?	-	LYS	deletion	UNP Q13617
A	?	-	LEU	deletion	UNP Q13617
A	?	-	THR	deletion	UNP Q13617
A	?	-	GLU	deletion	UNP Q13617
A	?	-	ALA	deletion	UNP Q13617
A	?	-	ASP	deletion	UNP Q13617
A	?	-	LEU	deletion	UNP Q13617
A	?	-	GLN	deletion	UNP Q13617
A	?	-	TYR	deletion	UNP Q13617
A	?	-	TYR	deletion	UNP Q13617
A	?	-	VAL	deletion	UNP Q13617
A	?	-	ASP	deletion	UNP Q13617
A	?	-	MET	deletion	UNP Q13617
A	?	-	ASN	deletion	UNP Q13617
A	?	-	GLU	deletion	UNP Q13617

- Molecule 3 is a protein called Elongin-C.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	96	Total	C	N	O	S	0	0
			760	487	122	145	6		
3	G	96	Total	C	N	O	S	0	0
			760	487	122	145	6		

- Molecule 4 is a protein called Protein fem-1 homolog B.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	J	627	Total	C	N	O	S	0	0
			4932	3092	882	929	29		
4	F	627	Total	C	N	O	S	0	0
			4932	3092	882	929	29		

- Molecule 5 is a protein called E3 ubiquitin-protein ligase RBX1, N-terminally processed.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	E	18	Total 159	C 109	N 27	O 23	0	0
5	I	13	Total 113	C 78	N 19	O 16	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	13	SER	-	expression tag	UNP P62877
E	14	HIS	-	expression tag	UNP P62877
E	15	MET	-	expression tag	UNP P62877
I	13	SER	-	expression tag	UNP P62877
I	14	HIS	-	expression tag	UNP P62877
I	15	MET	-	expression tag	UNP P62877

- Molecule 6 is a protein called Poly-UNK.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	K	9	Total 45	C 27	N 9	O 9	0	0

- Molecule 7 is a protein called Poly-UNK.

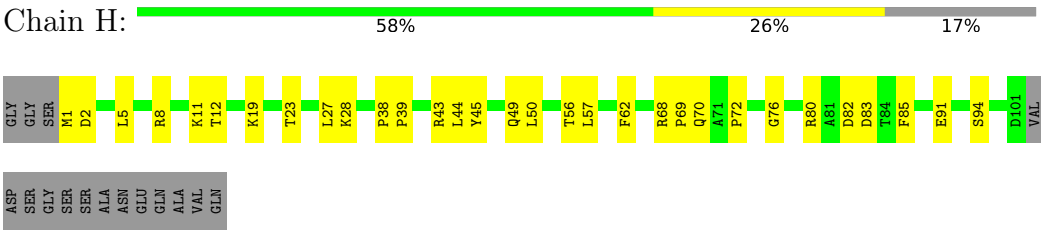
Mol	Chain	Residues	Atoms				AltConf	Trace
7	L	8	Total 40	C 24	N 8	O 8	0	0

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. 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. 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.

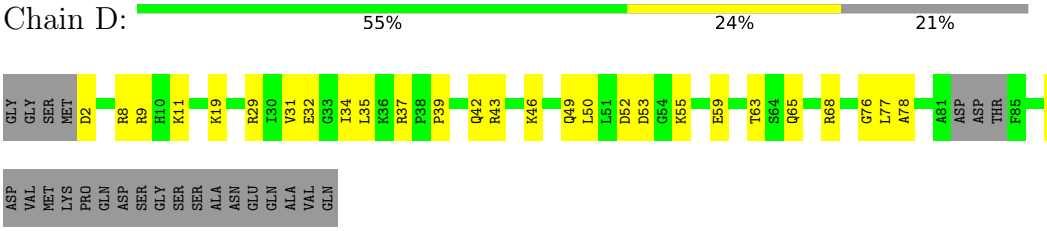
- Molecule 1: Elongin-B

Chain H:



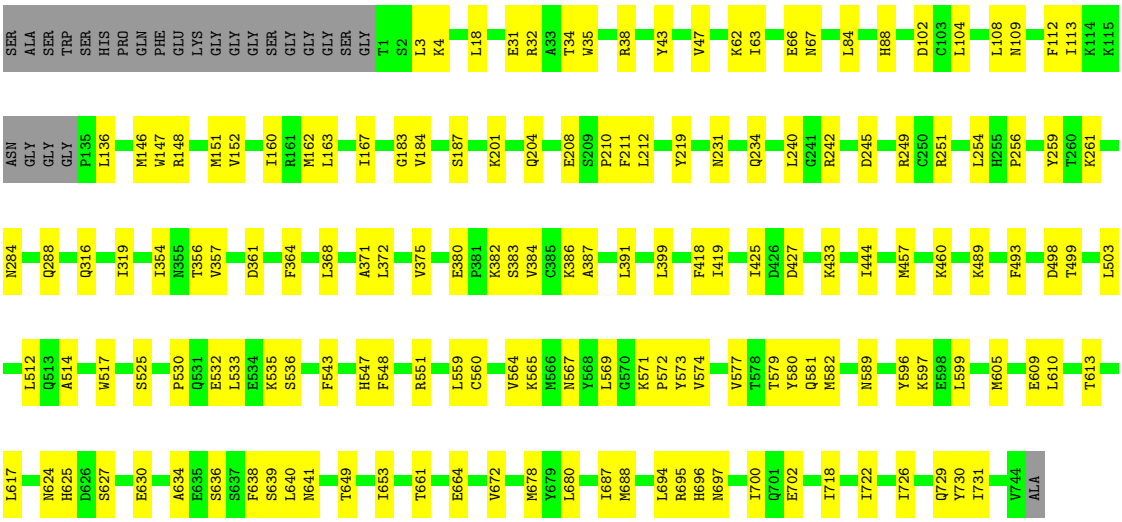
- Molecule 1: Elongin-B

Chain D:



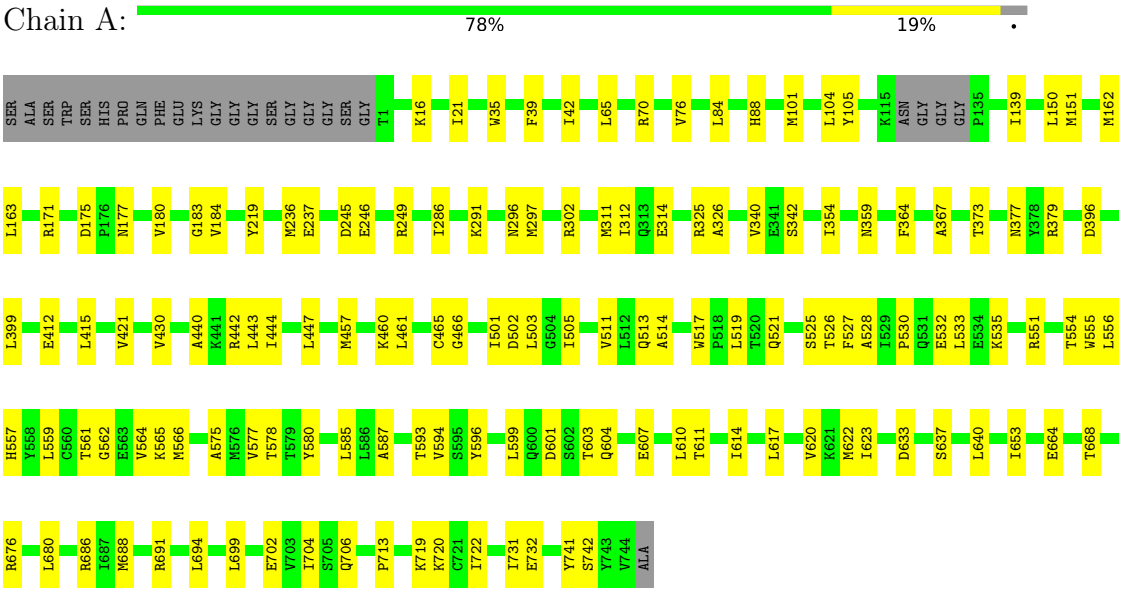
- Molecule 2: Cullin-2

Chain B:



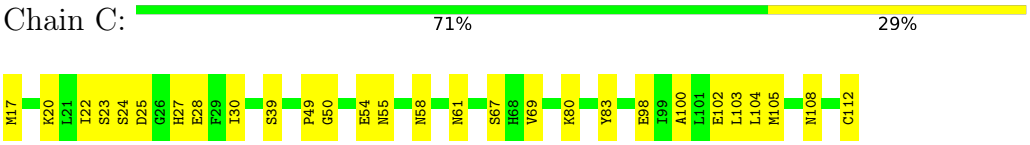
- Molecule 2: Cullin-2

Chain A:



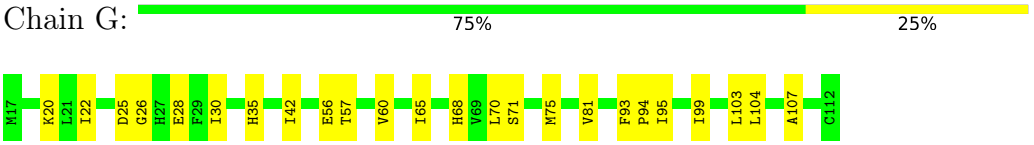
• Molecule 3: Elongin-C

Chain C:



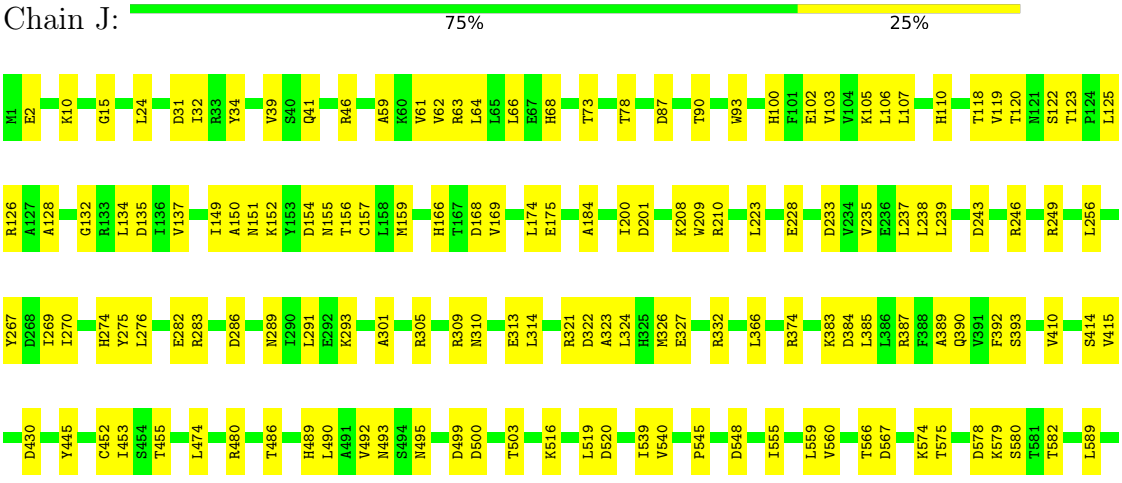
• Molecule 3: Elongin-C

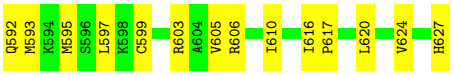
Chain G:



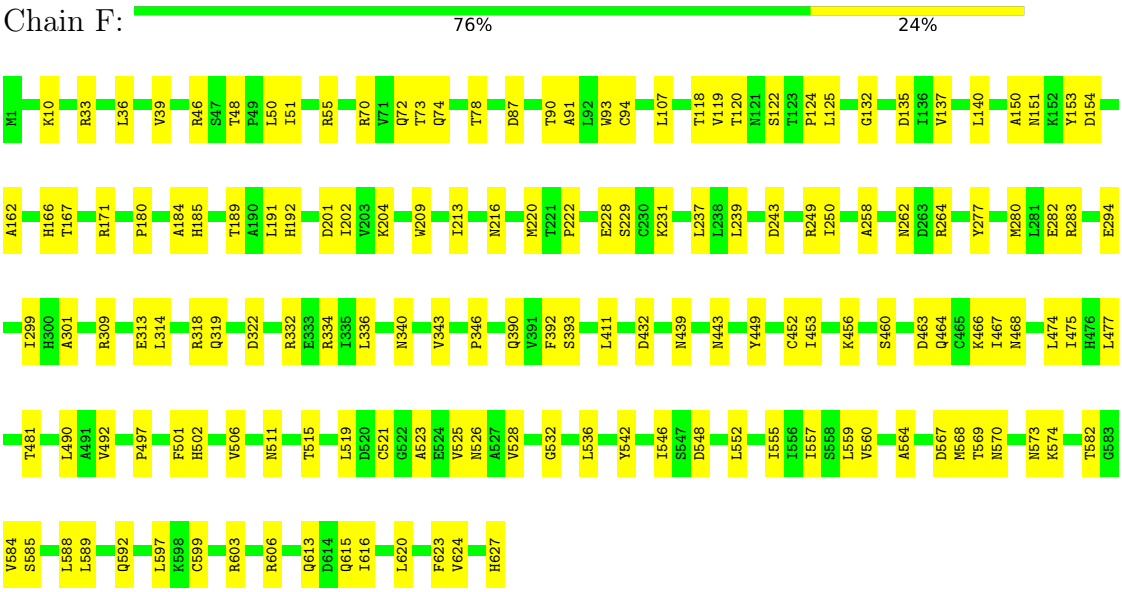
• Molecule 4: Protein fem-1 homolog B

Chain J:

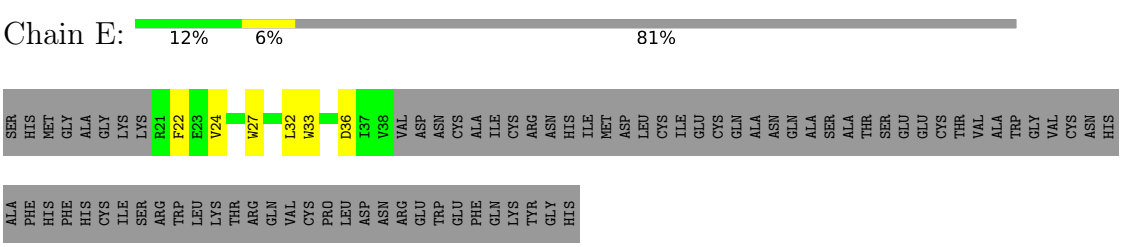




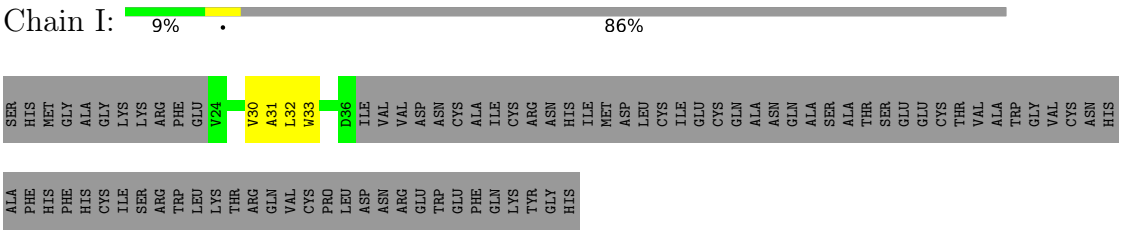
• Molecule 4: Protein fem-1 homolog B



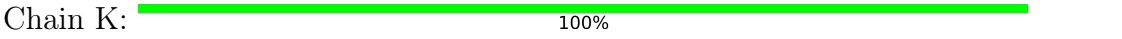
• Molecule 5: E3 ubiquitin-protein ligase RBX1, N-terminally processed



• Molecule 5: E3 ubiquitin-protein ligase RBX1, N-terminally processed

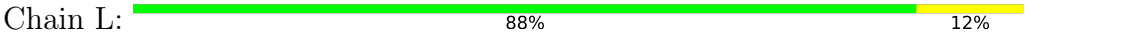


• Molecule 6: Poly-UNK



There are no outlier residues recorded for this chain.

• Molecule 7: Poly-UNK




X131
X134
X138

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	137665	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	55.8	Depositor
Minimum defocus (nm)	1800	Depositor
Maximum defocus (nm)	2900	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	D	0.12	0/774	0.33	0/1045
1	H	0.15	0/814	0.38	0/1101
2	A	0.17	0/6063	0.35	0/8166
2	B	0.19	0/6063	0.40	0/8166
3	C	0.19	0/777	0.43	0/1050
3	G	0.21	0/777	0.44	0/1050
4	F	0.13	0/5018	0.32	0/6803
4	J	0.14	0/5018	0.34	0/6803
5	E	0.18	0/165	0.32	0/225
5	I	0.14	0/118	0.36	0/162
All	All	0.16	0/25587	0.36	0/34571

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

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	D	759	0	761	20	0
1	H	798	0	793	21	0
2	A	5947	0	5952	96	0
2	B	5947	0	5952	104	0
3	C	760	0	749	22	0
3	G	760	0	749	16	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	F	4932	0	4912	92	0
4	J	4932	0	4912	109	0
5	E	159	0	157	7	0
5	I	113	0	109	7	0
6	K	45	0	13	0	0
7	L	40	0	10	1	0
All	All	25192	0	25069	454	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 9.

All (454) 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)
1:H:68:ARG:HH11	1:H:69:PRO:HD2	1.53	0.74
1:H:28:LYS:HB3	1:H:39:PRO:HB3	1.70	0.74
4:F:599:CYS:SG	4:F:627:HIS:NE2	2.65	0.70
1:H:2:ASP:HB3	1:H:19:LYS:HD2	1.73	0.68
4:J:545:PRO:HG3	4:J:582:THR:HG21	1.75	0.68
4:F:519:LEU:HD11	4:F:559:LEU:HD23	1.74	0.68
2:B:444:ILE:HG21	2:B:559:LEU:HD13	1.77	0.67
4:F:340:ASN:HB3	4:F:343:VAL:HB	1.77	0.67
4:J:305:ARG:HH21	4:J:327:GLU:HG2	1.58	0.67
4:J:63:ARG:HB2	4:J:106:LEU:HD22	1.77	0.66
2:A:526:THR:HG22	2:A:528:ALA:H	1.59	0.66
2:B:356:THR:HG23	2:B:357:VAL:HG13	1.77	0.66
2:B:599:LEU:HD23	2:B:610:LEU:HD11	1.76	0.66
4:J:151:ASN:HB2	4:J:155:ASN:HB3	1.78	0.66
4:J:566:THR:HG21	4:J:593:MET:HA	1.78	0.66
4:F:526:ASN:HB3	4:F:568:MET:HE1	1.78	0.65
4:F:492:VAL:HG22	4:F:555:ILE:HD11	1.78	0.64
4:F:250:ILE:HG21	4:F:283:ARG:HG3	1.78	0.64
4:F:570:ASN:HD21	4:F:574:LYS:HB2	1.62	0.63
2:B:680:LEU:HD21	2:B:718:ILE:HG13	1.80	0.63
4:F:597:LEU:HD21	3:G:103:LEU:HG	1.79	0.63
4:F:213:ILE:HG23	4:F:222:PRO:HD2	1.81	0.62
4:J:134:LEU:HD22	4:J:168:ASP:HB2	1.81	0.62
4:F:620:LEU:HD12	4:F:623:PHE:HB3	1.80	0.62
2:B:354:ILE:HD11	2:B:364:PHE:HB3	1.81	0.62
4:F:150:ALA:HB1	4:F:154:ASP:HA	1.82	0.62
2:A:620:VAL:HG21	2:A:653:ILE:HG22	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:678:MET:HE2	2:A:291:LYS:HE2	1.81	0.61
3:G:42:ILE:HD11	3:G:60:VAL:HG21	1.83	0.61
2:B:596:TYR:HB2	2:B:636:SER:HB2	1.81	0.61
2:A:503:LEU:HB2	2:A:505:ILE:HG12	1.82	0.61
2:A:593:THR:HB	2:A:637:SER:HB3	1.83	0.61
2:B:514:ALA:HB2	5:E:32:LEU:HB3	1.83	0.61
2:A:561:THR:HA	2:A:578:THR:HA	1.82	0.60
2:A:326:ALA:HB1	2:A:342:SER:HB3	1.83	0.60
4:F:55:ARG:NH2	4:F:94:CYS:SG	2.73	0.60
4:J:66:LEU:HD13	4:J:110:HIS:HB3	1.84	0.60
3:C:98:GLU:HA	1:D:99:LEU:HD13	1.82	0.60
4:J:120:THR:HA	4:J:152:LYS:HG3	1.81	0.60
4:F:452:CYS:SG	4:F:511:ASN:ND2	2.75	0.60
4:F:249:ARG:NH1	4:F:282:GLU:OE2	2.34	0.60
2:A:530:PRO:HG2	2:A:533:LEU:HD23	1.84	0.59
2:A:528:ALA:HB3	2:A:604:GLN:HE21	1.65	0.59
2:B:548:PHE:HE2	2:B:551:ARG:HD2	1.67	0.59
4:J:390:GLN:HG3	4:J:503:THR:HG23	1.84	0.59
2:A:246:GLU:OE1	2:A:249:ARG:NH1	2.35	0.59
2:B:208:GLU:O	2:B:212:LEU:HB2	2.03	0.59
1:D:29:ARG:HH21	1:D:39:PRO:HB2	1.67	0.59
4:J:66:LEU:HD11	4:J:107:LEU:HD23	1.83	0.59
4:J:276:LEU:HB3	4:J:314:LEU:HD21	1.84	0.59
2:B:245:ASP:OD2	2:B:249:ARG:NH2	2.36	0.59
4:F:154:ASP:HB2	4:F:184:ALA:HA	1.83	0.59
1:D:37:ARG:NH1	1:D:42:GLN:OE1	2.35	0.58
4:J:575:THR:HG23	4:J:578:ASP:H	1.68	0.58
2:B:113:ILE:HG23	2:B:136:LEU:HB2	1.84	0.58
2:B:284:ASN:O	2:B:288:GLN:NE2	2.36	0.58
1:H:8:ARG:NH2	1:H:91:GLU:O	2.36	0.58
4:J:123:THR:OG1	4:J:126:ARG:NH1	2.36	0.58
4:J:605:VAL:HG22	4:J:610:ILE:HD11	1.86	0.58
2:A:599:LEU:O	2:A:603:THR:OG1	2.22	0.58
2:B:32:ARG:NH2	3:C:49:PRO:O	2.37	0.58
2:B:32:ARG:NH2	3:C:50:GLY:O	2.34	0.57
2:B:560:CYS:SG	5:E:27:TRP:NE1	2.77	0.57
4:J:560:VAL:HG21	4:J:592:GLN:HB3	1.85	0.57
2:B:565:LYS:HG3	2:B:574:VAL:HG22	1.85	0.57
4:J:267:TYR:OH	4:J:321:ARG:NH2	2.36	0.57
2:A:521:GLN:NE2	2:A:580:TYR:OH	2.37	0.57
1:D:9:ARG:HD3	1:D:78:ALA:HA	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:392:PHE:HB3	4:F:453:ILE:HG21	1.87	0.57
2:B:102:ASP:OD1	2:B:109:ASN:ND2	2.38	0.57
4:J:310:ASN:HB2	4:J:313:GLU:HB2	1.87	0.56
4:F:439:ASN:O	4:F:443:ASN:ND2	2.38	0.56
2:A:691:ARG:NH2	2:A:702:GLU:OE1	2.38	0.56
4:J:78:THR:HA	4:J:87:ASP:HA	1.87	0.56
4:J:102:GLU:HA	4:J:105:LYS:HE3	1.86	0.56
4:J:392:PHE:HB3	4:J:453:ILE:HG21	1.87	0.56
2:B:361:ASP:HB3	2:B:364:PHE:HD2	1.71	0.56
2:A:373:THR:O	2:A:377:ASN:ND2	2.39	0.56
1:D:43:ARG:NH1	1:D:53:ASP:OD1	2.38	0.56
4:J:239:LEU:HD21	4:J:249:ARG:HG3	1.88	0.56
4:J:275:TYR:OH	4:F:546:ILE:O	2.21	0.56
1:D:32:GLU:HB2	1:D:39:PRO:HB3	1.86	0.56
2:A:620:VAL:HG13	2:A:622:MET:H	1.70	0.56
2:B:84:LEU:HD22	2:B:162:MET:HG3	1.88	0.56
1:H:80:ARG:NH1	1:H:82:ASP:O	2.38	0.56
4:J:24:LEU:HD12	4:J:32:ILE:HD12	1.88	0.55
2:A:511:VAL:HG23	5:I:31:ALA:HB3	1.88	0.55
2:B:319:ILE:HD13	2:B:368:LEU:HD13	1.89	0.55
4:F:411:LEU:HD12	4:F:467:ILE:HD12	1.87	0.55
4:J:208:LYS:O	4:J:210:ARG:NH1	2.38	0.55
4:F:262:ASN:HB2	4:F:346:PRO:HB3	1.87	0.55
4:F:204:LYS:HE3	4:F:237:LEU:HD11	1.89	0.55
1:H:1:MET:SD	1:H:2:ASP:N	2.79	0.55
2:B:661:THR:HG23	2:B:664:GLU:H	1.71	0.55
4:J:246:ARG:NH2	4:J:282:GLU:O	2.40	0.55
4:F:264:ARG:NH1	7:L:134:UNK:O	2.39	0.55
4:F:124:PRO:HB2	4:F:140:LEU:HD11	1.88	0.55
4:J:249:ARG:HH22	4:F:584:VAL:HG23	1.72	0.55
4:J:574:LYS:HD3	4:J:579:LYS:HE2	1.89	0.54
3:C:27:HIS:HA	1:D:11:LYS:HB3	1.88	0.54
4:J:283:ARG:NH1	4:J:291:LEU:O	2.38	0.54
1:H:57:LEU:HB3	1:H:62:PHE:HB2	1.89	0.54
2:B:532:GLU:HG2	2:B:533:LEU:HD12	1.90	0.54
4:F:528:VAL:HB	4:F:532:GLY:HA2	1.90	0.54
2:A:412:GLU:O	2:A:460:LYS:NZ	2.41	0.54
4:F:216:ASN:ND2	4:F:220:MET:O	2.40	0.54
4:F:542:TYR:HD2	4:F:552:LEU:HD12	1.72	0.54
2:A:587:ALA:HB1	2:A:594:VAL:HG11	1.90	0.53
2:A:688:MET:HE3	2:A:731:ILE:HG12	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:596:TYR:OH	2:A:607:GLU:O	2.26	0.53
2:B:384:VAL:O	2:B:386:LYS:NZ	2.41	0.53
4:F:93:TRP:NE1	4:F:122:SER:OG	2.41	0.53
4:F:616:ILE:HB	4:F:620:LEU:HD23	1.91	0.53
2:B:433:LYS:HD2	2:B:672:VAL:HG22	1.90	0.53
2:B:729:GLN:HB3	2:A:359:ASN:ND2	2.23	0.53
2:B:564:VAL:HG22	5:E:24:VAL:HG12	1.90	0.53
4:F:463:ASP:HA	4:F:466:LYS:HD3	1.90	0.53
4:F:515:THR:HG21	4:F:555:ILE:HG13	1.91	0.53
4:J:599:CYS:SG	4:J:627:HIS:NE2	2.79	0.53
2:B:730:TYR:HE1	2:A:302:ARG:HH11	1.57	0.52
2:B:167:ILE:HG21	2:B:211:PHE:HE1	1.74	0.52
4:J:384:ASP:OD1	4:J:387:ARG:NH1	2.43	0.52
4:J:486:THR:HG23	4:J:489:HIS:H	1.72	0.52
4:J:567:ASP:OD2	4:J:603:ARG:NE	2.38	0.52
2:B:569:LEU:HB2	2:B:572:PRO:HG3	1.90	0.52
2:A:513:GLN:HA	5:I:33:TRP:HB3	1.91	0.52
2:B:419:ILE:HG13	2:B:460:LYS:HB3	1.91	0.52
2:B:625:HIS:NE2	2:B:627:SER:OG	2.40	0.52
2:B:579:THR:HA	2:B:582:MET:HE3	1.92	0.52
1:H:5:LEU:HA	1:H:72:PRO:HB2	1.91	0.51
4:J:125:LEU:HD11	4:J:137:VAL:HG13	1.92	0.51
2:B:31:GLU:HG3	2:B:34:THR:H	1.75	0.51
4:F:73:THR:O	4:F:90:THR:OG1	2.29	0.51
2:A:577:VAL:HG12	2:A:653:ILE:HG12	1.92	0.51
1:H:49:GLN:NE2	1:H:50:LEU:O	2.44	0.51
2:A:694:LEU:HD22	2:A:699:LEU:HD12	1.93	0.51
2:B:204:GLN:OE1	2:B:261:LYS:NZ	2.44	0.51
2:B:4:LYS:HD2	3:C:105:MET:HE1	1.93	0.51
1:D:8:ARG:O	1:D:77:LEU:N	2.43	0.51
2:B:47:VAL:HG13	4:J:617:PRO:HB3	1.92	0.51
2:B:548:PHE:CE2	2:B:551:ARG:HD2	2.45	0.51
4:J:100:HIS:HB2	4:J:103:VAL:HG12	1.91	0.51
4:F:390:GLN:HG2	4:F:501:PHE:HB3	1.92	0.51
1:H:27:LEU:HD23	1:H:44:LEU:HD13	1.93	0.51
2:A:84:LEU:HD21	2:A:163:LEU:HD13	1.91	0.51
2:A:175:ASP:OD1	2:A:175:ASP:N	2.43	0.51
2:A:676:ARG:O	2:A:680:LEU:N	2.41	0.51
2:B:512:LEU:HD22	2:B:517:TRP:CZ2	2.45	0.51
4:J:73:THR:O	4:J:90:THR:OG1	2.29	0.51
4:F:582:THR:HG22	4:F:585:SER:H	1.76	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:551:ARG:HE	5:I:33:TRP:CD1	2.29	0.51
2:A:219:TYR:OH	2:A:246:GLU:OE1	2.25	0.50
2:A:379:ARG:H	2:A:379:ARG:HD3	1.75	0.50
2:A:623:ILE:HG22	2:A:640:LEU:HG	1.93	0.50
4:F:468:ASN:ND2	4:F:521:CYS:SG	2.73	0.50
2:A:237:GLU:OE2	2:A:296:ASN:ND2	2.45	0.50
3:C:80:LYS:NZ	4:J:595:MET:O	2.40	0.50
4:J:90:THR:HG23	4:J:93:TRP:H	1.75	0.50
4:F:167:THR:OG1	4:F:171:ARG:NH2	2.44	0.50
4:F:393:SER:OG	4:F:502:HIS:O	2.29	0.50
1:D:2:ASP:OD1	1:D:2:ASP:N	2.44	0.50
2:B:148:ARG:HA	2:B:152:VAL:HG12	1.93	0.50
2:B:580:TYR:HB3	2:B:605:MET:HE1	1.93	0.50
3:C:22:ILE:HG13	3:C:28:GLU:HG3	1.93	0.50
1:D:31:VAL:O	1:D:35:LEU:HB2	2.12	0.50
4:J:156:THR:H	4:J:159:MET:HE3	1.77	0.50
4:J:269:ILE:HD11	4:J:324:LEU:HB3	1.94	0.50
3:C:55:ASN:OD1	3:C:58:ASN:ND2	2.45	0.49
4:J:228:GLU:OE2	4:J:332:ARG:NH2	2.34	0.49
2:A:514:ALA:HB2	5:I:32:LEU:HB3	1.94	0.49
3:C:22:ILE:HB	3:C:61:ASN:HA	1.94	0.49
2:B:503:LEU:HD22	2:B:536:SER:HA	1.94	0.49
4:F:277:TYR:HD1	4:F:314:LEU:HD23	1.78	0.49
2:B:399:LEU:HD11	2:B:457:MET:HG2	1.94	0.49
2:A:84:LEU:HD11	2:A:184:VAL:HG21	1.93	0.49
2:A:396:ASP:OD1	2:A:442:ARG:NH1	2.46	0.49
4:J:415:VAL:HG22	4:J:474:LEU:HB2	1.93	0.49
2:A:177:ASN:HB2	2:A:180:VAL:HB	1.94	0.49
4:J:286:ASP:OD2	4:J:289:ASN:ND2	2.43	0.48
3:C:17:MET:N	3:C:54:GLU:O	2.45	0.48
3:C:103:LEU:HD11	4:J:597:LEU:HD21	1.95	0.48
2:B:425:ILE:HG23	2:B:427:ASP:H	1.78	0.48
3:G:20:LYS:HG3	3:G:30:ILE:HG12	1.93	0.48
1:D:63:THR:HG23	1:D:65:GLN:H	1.78	0.48
4:J:150:ALA:HB1	4:J:154:ASP:HA	1.94	0.48
4:J:305:ARG:NH2	4:J:323:ALA:O	2.47	0.48
4:F:73:THR:HB	4:F:107:LEU:HD22	1.95	0.48
2:B:231:ASN:ND2	2:B:234:GLN:OE1	2.47	0.48
2:A:440:ALA:HB1	2:A:519:LEU:HD21	1.96	0.48
1:H:80:ARG:HA	1:H:85:PHE:HA	1.94	0.48
4:J:616:ILE:HD12	4:J:620:LEU:HB3	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:606:ARG:NH1	4:F:624:VAL:O	2.46	0.48
2:B:512:LEU:HB2	5:E:32:LEU:HD23	1.95	0.48
4:J:154:ASP:HB3	4:J:184:ALA:HA	1.96	0.48
4:F:536:LEU:HD21	4:F:589:LEU:HD11	1.95	0.48
3:C:103:LEU:HD21	4:J:597:LEU:HD11	1.96	0.48
4:J:175:GLU:HG3	4:J:209:TRP:HZ2	1.78	0.48
2:A:704:ILE:HG23	2:A:713:PRO:HD2	1.96	0.48
2:B:147:TRP:O	2:B:151:MET:HB3	2.14	0.47
3:C:100:ALA:O	3:C:102:GLU:N	2.46	0.47
2:B:624:ASN:H	2:B:641:ASN:HB2	1.79	0.47
4:J:41:GLN:HG3	4:J:46:ARG:HB3	1.96	0.47
2:A:732:GLU:O	2:A:742:SER:OG	2.32	0.47
3:C:83:TYR:OH	1:D:68:ARG:NH1	2.46	0.47
4:F:299:ILE:HG22	4:F:301:ALA:H	1.79	0.47
2:A:236:MET:HE1	2:A:297:MET:HE2	1.94	0.47
1:H:23:THR:HA	1:H:56:THR:HA	1.95	0.47
1:H:94:SER:O	3:G:68:HIS:ND1	2.47	0.47
3:C:39:SER:OG	3:C:112:CYS:SG	2.62	0.47
2:A:566:MET:HE3	2:A:575:ALA:HB3	1.97	0.47
4:J:2:GLU:OE2	4:J:34:TYR:OH	2.33	0.47
4:J:123:THR:HG23	4:J:149:ILE:HG21	1.97	0.47
4:J:589:LEU:O	4:J:593:MET:HG3	2.15	0.47
4:F:449:TYR:OH	4:F:497:PRO:O	2.31	0.47
4:F:548:ASP:N	4:F:548:ASP:OD1	2.48	0.47
2:A:561:THR:OG1	2:A:562:GLY:N	2.48	0.47
2:A:664:GLU:O	2:A:668:THR:N	2.46	0.47
2:B:208:GLU:O	2:B:212:LEU:CB	2.63	0.47
4:J:62:VAL:HG13	4:J:106:LEU:HD11	1.96	0.47
4:F:613:GLN:O	4:F:615:GLN:NE2	2.47	0.47
2:A:430:VAL:HG23	2:A:676:ARG:HH22	1.80	0.47
2:B:551:ARG:HD3	5:E:33:TRP:CE3	2.50	0.47
2:A:601:ASP:OD1	2:A:601:ASP:N	2.44	0.47
2:A:633:ASP:OD1	2:A:633:ASP:N	2.48	0.47
3:G:93:PHE:HD2	3:G:95:ILE:HG13	1.80	0.47
4:J:519:LEU:HD11	4:J:559:LEU:HD23	1.95	0.47
2:A:444:ILE:HD12	5:I:30:VAL:HG11	1.97	0.47
3:C:20:LYS:HA	3:C:30:ILE:HG13	1.96	0.46
4:F:560:VAL:HG11	4:F:592:GLN:HB3	1.96	0.46
2:A:65:LEU:HD21	2:A:101:MET:HE1	1.96	0.46
4:F:474:LEU:HA	4:F:477:LEU:HD12	1.96	0.46
2:A:443:LEU:HD12	2:A:517:TRP:HH2	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:385:LEU:HD21	4:J:414:SER:HA	1.96	0.46
2:A:105:TYR:HD2	2:A:139:ILE:HG12	1.80	0.46
2:B:184:VAL:O	2:B:187:SER:OG	2.27	0.46
4:J:539:ILE:HD13	4:J:555:ILE:HD13	1.98	0.46
2:A:312:ILE:HG23	2:A:367:ALA:HB2	1.96	0.46
4:J:390:GLN:NE2	4:J:499:ASP:OD2	2.49	0.46
2:B:525:SER:OG	2:B:609:GLU:OE2	2.32	0.46
4:J:168:ASP:OD1	4:J:169:VAL:N	2.48	0.46
4:F:192:HIS:CE1	4:F:222:PRO:HG3	2.50	0.46
4:J:430:ASP:OD1	4:J:430:ASP:N	2.48	0.46
2:B:688:MET:HE3	2:B:731:ILE:HD11	1.98	0.46
1:H:45:TYR:O	1:H:76:GLY:N	2.41	0.45
1:H:70:GLN:HG3	3:G:94:PRO:HD3	1.97	0.45
2:B:617:LEU:HD23	2:B:653:ILE:HG21	1.99	0.45
4:J:200:ILE:HD11	4:J:237:LEU:HD23	1.97	0.45
4:J:201:ASP:N	4:J:201:ASP:OD1	2.48	0.45
4:J:548:ASP:OD1	4:J:548:ASP:N	2.49	0.45
2:B:577:VAL:HB	2:B:581:GLN:HB2	1.98	0.45
3:C:108:ASN:HD21	4:J:620:LEU:HG	1.81	0.45
4:J:301:ALA:HB1	4:J:366:LEU:HD23	1.98	0.45
4:J:480:ARG:HD3	4:J:480:ARG:HA	1.82	0.45
4:F:201:ASP:OD1	4:F:201:ASP:N	2.48	0.45
4:F:456:LYS:NZ	4:F:506:VAL:O	2.38	0.45
1:D:52:ASP:HB2	1:D:55:LYS:HB2	1.98	0.45
4:J:233:ASP:N	4:J:233:ASP:OD1	2.50	0.45
4:F:120:THR:O	4:F:151:ASN:ND2	2.48	0.45
4:F:432:ASP:OD1	4:F:432:ASP:N	2.47	0.45
2:A:617:LEU:HD22	2:A:622:MET:HE2	1.97	0.45
2:B:387:ALA:HB1	2:B:425:ILE:HD11	1.99	0.45
4:J:118:THR:HG22	4:J:122:SER:H	1.80	0.45
4:F:51:ILE:HD11	4:F:91:ALA:HA	1.99	0.45
2:A:564:VAL:HG11	2:A:585:LEU:HD13	1.98	0.45
4:J:63:ARG:HD2	4:J:106:LEU:HB2	1.99	0.45
4:J:389:ALA:O	4:J:393:SER:OG	2.29	0.45
4:F:229:SER:O	4:F:231:LYS:NZ	2.46	0.45
4:F:318:ARG:NE	4:F:319:GLN:OE1	2.49	0.45
2:A:35:TRP:NE1	2:A:39:PHE:HE2	2.15	0.45
4:F:72:GLN:HG3	4:F:74:GLN:H	1.81	0.45
2:A:76:VAL:HG11	2:A:151:MET:HE1	1.97	0.45
2:B:256:PRO:HA	2:B:259:TYR:CZ	2.51	0.45
4:J:305:ARG:HH22	4:J:326:MET:HB2	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:457:MET:HE3	2:A:461:LEU:HG	1.98	0.45
3:G:71:SER:O	3:G:75:MET:HG2	2.17	0.45
4:F:78:THR:HA	4:F:87:ASP:HA	1.98	0.45
4:F:336:LEU:HD13	4:F:340:ASN:HD22	1.83	0.45
2:A:465:CYS:SG	2:A:466:GLY:N	2.88	0.45
2:A:502:ASP:O	2:A:535:LYS:NZ	2.48	0.45
1:D:19:LYS:HA	1:D:19:LYS:HD2	1.79	0.44
4:J:132:GLY:HA3	4:J:166:HIS:CG	2.52	0.44
4:F:48:THR:HG22	4:F:50:LEU:H	1.82	0.44
4:F:475:ILE:HG21	4:F:523:ALA:HA	1.99	0.44
4:F:460:SER:O	4:F:464:GLN:N	2.40	0.44
2:A:694:LEU:O	2:A:741:TYR:N	2.44	0.44
2:B:109:ASN:HA	2:B:113:ILE:HD12	2.00	0.44
2:B:573:TYR:HD1	2:B:649:THR:HA	1.83	0.44
4:J:31:ASP:OD1	4:J:31:ASP:N	2.51	0.44
4:J:374:ARG:HH22	4:J:383:LYS:HE2	1.83	0.44
4:J:516:LYS:NZ	4:J:520:ASP:OD2	2.48	0.44
4:J:606:ARG:NH2	4:J:624:VAL:O	2.50	0.44
1:H:11:LYS:NZ	3:G:25:ASP:O	2.50	0.44
2:B:386:LYS:HA	2:B:386:LYS:HD3	1.77	0.44
4:F:162:ALA:HA	4:F:202:ILE:HG21	2.00	0.44
4:F:309:ARG:N	4:F:313:GLU:OE2	2.51	0.44
2:A:556:LEU:HD22	5:I:32:LEU:HG	1.99	0.44
1:H:38:PRO:HA	1:H:39:PRO:HD3	1.88	0.44
2:B:382:LYS:HA	2:B:382:LYS:HD3	1.83	0.44
2:B:639:SER:OG	2:B:640:LEU:N	2.50	0.44
4:J:322:ASP:OD1	4:J:322:ASP:N	2.49	0.44
4:F:118:THR:HG22	4:F:122:SER:H	1.81	0.44
4:F:239:LEU:HD22	4:F:249:ARG:HG3	1.99	0.44
2:A:70:ARG:HG3	2:A:150:LEU:HD23	2.00	0.44
2:A:528:ALA:HB3	2:A:604:GLN:NE2	2.31	0.44
2:A:555:TRP:HB3	2:A:557:HIS:CE1	2.53	0.44
2:B:597:LYS:NZ	2:B:634:ALA:O	2.47	0.44
3:C:23:SER:OG	3:C:24:SER:N	2.50	0.44
1:D:31:VAL:HA	1:D:34:ILE:HG12	2.00	0.44
4:J:392:PHE:HE2	4:J:410:VAL:HG11	1.82	0.44
2:B:211:PHE:CE2	2:B:254:LEU:HD21	2.52	0.44
2:B:391:LEU:HD12	2:B:418:PHE:CE1	2.53	0.44
4:F:189:THR:O	4:F:191:LEU:N	2.50	0.44
2:A:554:THR:HB	5:I:32:LEU:HB2	2.00	0.44
2:B:63:ILE:O	2:B:67:ASN:ND2	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:696:HIS:O	2:B:700:ILE:HG12	2.18	0.43
2:B:730:TYR:HB2	2:A:359:ASN:ND2	2.33	0.43
3:G:35:HIS:CE1	3:G:81:VAL:HG11	2.52	0.43
2:B:493:PHE:CD2	2:B:543:PHE:HB2	2.53	0.43
2:B:530:PRO:HB2	2:B:533:LEU:HD13	2.00	0.43
3:C:30:ILE:HD12	3:C:30:ILE:H	1.83	0.43
4:J:293:LYS:HB2	4:J:309:ARG:HG2	2.00	0.43
4:F:33:ARG:HE	4:F:36:LEU:HD11	1.83	0.43
4:J:128:ALA:O	4:J:132:GLY:N	2.44	0.43
4:F:294:GLU:HG2	4:F:334:ARG:HD2	2.01	0.43
4:J:137:VAL:HG11	4:J:169:VAL:HG13	2.00	0.43
4:F:10:LYS:HA	4:F:10:LYS:HD3	1.87	0.43
4:F:39:VAL:HG21	4:F:46:ARG:HD2	2.00	0.43
4:F:132:GLY:HA3	4:F:166:HIS:CG	2.54	0.43
4:F:597:LEU:HD22	3:G:107:ALA:HB2	2.00	0.43
2:A:686:ARG:HH21	2:A:706:GLN:HE21	1.65	0.43
2:B:625:HIS:CE1	2:B:627:SER:HG	2.36	0.43
1:D:43:ARG:HH21	1:D:50:LEU:HD13	1.83	0.43
4:J:93:TRP:NE1	4:J:122:SER:OG	2.52	0.43
4:J:270:ILE:O	4:J:274:HIS:ND1	2.52	0.43
3:G:56:GLU:HG2	3:G:57:THR:HG23	2.00	0.43
2:B:201:LYS:HA	2:B:204:GLN:HB2	2.01	0.43
2:B:62:LYS:HE3	2:B:146:MET:HE3	2.01	0.43
2:A:325:ARG:HD2	5:E:36:ASP:O	2.18	0.43
2:B:88:HIS:CE1	2:B:183:GLY:HA3	2.53	0.43
3:G:65:ILE:HG21	3:G:70:LEU:HB2	2.01	0.43
1:D:32:GLU:HG2	1:D:37:ARG:O	2.18	0.43
2:A:42:ILE:HD13	2:A:42:ILE:HA	1.91	0.43
1:H:68:ARG:HD2	1:H:68:ARG:HA	1.91	0.43
2:A:21:ILE:HD12	2:A:21:ILE:HA	1.86	0.43
2:B:380:GLU:HB3	2:B:383:SER:HB3	2.01	0.42
2:B:489:LYS:HD3	2:B:547:HIS:CE1	2.54	0.42
1:H:80:ARG:HH11	1:H:83:ASP:HA	1.84	0.42
2:B:219:TYR:HE1	2:B:242:ARG:HD2	1.83	0.42
2:B:535:LYS:HE3	2:B:535:LYS:HB3	1.77	0.42
2:B:625:HIS:HD2	2:B:630:GLU:HA	1.84	0.42
2:B:722:ILE:O	2:B:726:ILE:HG13	2.19	0.42
4:J:174:LEU:HB3	4:J:209:TRP:CD1	2.54	0.42
4:J:492:VAL:HG22	4:J:555:ILE:HD11	2.01	0.42
4:J:126:ARG:HE	4:J:157:CYS:HB3	1.84	0.42
4:F:135:ASP:OD1	4:F:135:ASP:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:153:TYR:HA	4:F:185:HIS:HB2	2.00	0.42
4:F:258:ALA:HB1	4:F:332:ARG:HB2	2.00	0.42
4:F:216:ASN:HD21	4:F:220:MET:HB2	1.83	0.42
4:F:228:GLU:HG2	4:F:332:ARG:HH12	1.84	0.42
2:A:162:MET:HE2	2:A:162:MET:HB2	1.93	0.42
2:A:354:ILE:HD11	2:A:364:PHE:HB3	2.00	0.42
2:B:316:GLN:HG3	2:B:371:ALA:HB2	2.02	0.42
4:J:235:VAL:HG21	4:J:256:LEU:HD22	2.02	0.42
3:C:69:VAL:HG13	3:C:103:LEU:HA	2.01	0.42
4:J:500:ASP:OD1	4:J:500:ASP:N	2.52	0.42
4:F:280:MET:HE2	4:F:280:MET:HB2	1.88	0.42
2:A:501:ILE:HD11	2:A:535:LYS:HE2	2.02	0.42
4:J:15:GLY:HA2	4:J:61:VAL:HG11	2.01	0.42
2:A:447:LEU:HD23	2:A:447:LEU:HA	1.90	0.42
2:A:532:GLU:HG2	2:A:533:LEU:HD22	2.02	0.42
2:A:607:GLU:O	2:A:611:THR:OG1	2.28	0.42
2:B:38:ARG:HD3	2:B:38:ARG:HA	1.84	0.42
2:B:589:ASN:HB2	5:E:22:PHE:HB2	2.01	0.42
2:B:687:ILE:HD13	2:B:702:GLU:HB3	2.02	0.42
2:B:694:LEU:HD23	2:B:694:LEU:HA	1.89	0.42
4:J:135:ASP:OD1	4:J:135:ASP:N	2.53	0.42
4:F:33:ARG:HH22	4:F:70:ARG:H	1.67	0.42
4:F:588:LEU:HD23	4:F:588:LEU:HA	1.86	0.42
3:C:104:LEU:HD23	4:J:620:LEU:HD13	2.02	0.42
4:J:39:VAL:HG21	4:J:46:ARG:HD2	2.01	0.42
4:J:540:VAL:HB	4:J:580:SER:HA	2.02	0.42
4:F:180:PRO:HB3	4:F:209:TRP:HD1	1.84	0.42
4:F:557:ILE:HD13	4:F:557:ILE:HA	1.92	0.42
4:F:569:THR:HB	4:F:573:ASN:HA	2.02	0.42
2:B:240:LEU:HA	2:B:240:LEU:HD23	1.81	0.41
2:B:636:SER:HB3	2:B:638:PHE:HE2	1.85	0.41
4:J:617:PRO:HD2	4:J:620:LEU:HD12	2.01	0.41
2:A:444:ILE:HG13	2:A:559:LEU:HD13	2.01	0.41
2:B:63:ILE:O	2:B:66:GLU:HG3	2.19	0.41
4:J:59:ALA:HB1	4:J:106:LEU:HD21	2.02	0.41
4:J:620:LEU:HD23	4:J:620:LEU:HA	1.94	0.41
2:A:525:SER:O	2:A:525:SER:OG	2.36	0.41
2:A:610:LEU:O	2:A:614:ILE:HG12	2.20	0.41
2:A:720:LYS:HA	2:A:720:LYS:HD3	1.90	0.41
1:H:28:LYS:HZ1	1:H:43:ARG:HA	1.85	0.41
2:B:251:ARG:HG2	2:B:259:TYR:CZ	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:624:ASN:HB3	2:B:641:ASN:HD22	1.85	0.41
4:J:493:ASN:HD21	4:J:495:ASN:HB2	1.84	0.41
4:F:118:THR:OG1	4:F:119:VAL:N	2.52	0.41
4:F:589:LEU:HA	4:F:589:LEU:HD12	1.78	0.41
2:B:372:LEU:HA	2:B:375:VAL:HB	2.01	0.41
1:D:55:LYS:HE3	1:D:59:GLU:HB3	2.01	0.41
1:D:76:GLY:HA3	1:D:88:LEU:HD11	2.02	0.41
4:J:10:LYS:HA	4:J:10:LYS:HD3	1.77	0.41
2:A:340:VAL:HG13	2:A:421:VAL:HG21	2.02	0.41
2:B:695:ARG:NH1	2:B:697:ASN:OD1	2.41	0.41
2:B:731:ILE:HD12	2:B:731:ILE:HA	1.97	0.41
4:J:118:THR:OG1	4:J:119:VAL:N	2.53	0.41
2:A:35:TRP:CZ3	2:A:104:LEU:HD12	2.55	0.41
2:A:691:ARG:HD2	2:A:694:LEU:HG	2.03	0.41
2:A:171:ARG:NE	2:A:246:GLU:OE2	2.52	0.41
3:G:68:HIS:HD2	3:G:99:ILE:HG13	1.84	0.41
2:B:498:ASP:OD1	2:B:499:THR:N	2.54	0.41
1:D:46:LYS:O	1:D:49:GLN:HG2	2.21	0.41
4:J:159:MET:HE1	4:J:184:ALA:HB2	2.03	0.41
4:J:243:ASP:OD1	4:J:243:ASP:N	2.54	0.41
4:F:125:LEU:HD11	4:F:137:VAL:HG13	2.03	0.41
2:B:567:ASN:HA	2:B:571:LYS:HA	2.02	0.41
2:A:88:HIS:CE1	2:A:183:GLY:HA3	2.56	0.41
2:A:286:ILE:HD12	2:A:314:GLU:HG3	2.01	0.41
2:A:527:PHE:HA	2:A:604:GLN:HG2	2.03	0.41
2:A:565:LYS:HB2	2:A:565:LYS:HE2	1.84	0.41
2:B:18:LEU:HD23	2:B:18:LEU:HA	1.92	0.41
2:B:84:LEU:HD12	2:B:84:LEU:HA	1.85	0.41
2:B:160:ILE:HD11	2:B:210:PRO:HB2	2.02	0.41
4:F:620:LEU:HD21	3:G:104:LEU:HG	2.02	0.41
2:A:16:LYS:HB2	2:A:16:LYS:HE3	1.87	0.41
4:J:276:LEU:HD23	4:J:276:LEU:HA	1.94	0.41
4:F:322:ASP:OD1	4:F:322:ASP:N	2.47	0.41
2:A:399:LEU:HD21	2:A:415:LEU:HD11	2.02	0.41
3:G:22:ILE:HD11	3:G:26:GLY:HA2	2.03	0.41
2:B:108:LEU:HD12	2:B:112:PHE:HB3	2.03	0.40
2:B:730:TYR:H	2:A:359:ASN:ND2	2.19	0.40
2:B:163:LEU:HD23	2:B:163:LEU:HA	1.94	0.40
4:J:223:LEU:HD13	4:J:238:LEU:HB2	2.03	0.40
4:J:445:TYR:HE1	4:J:490:LEU:HD22	1.86	0.40
4:F:481:THR:HG21	4:F:490:LEU:HD11	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:567:ASP:OD1	4:F:603:ARG:NH2	2.46	0.40
2:A:719:LYS:HA	2:A:722:ILE:HD12	2.02	0.40
1:H:12:THR:HG23	3:G:28:GLU:HB2	2.03	0.40
3:C:25:ASP:HB2	3:C:67:SER:HB3	2.02	0.40
4:J:126:ARG:HH21	4:J:157:CYS:HB3	1.87	0.40
4:J:452:CYS:O	4:J:455:THR:OG1	2.32	0.40
4:F:243:ASP:OD1	4:F:243:ASP:N	2.53	0.40
4:F:525:VAL:HG22	4:F:564:ALA:HB2	2.02	0.40
2:A:311:MET:HG2	2:A:364:PHE:HZ	1.87	0.40
2:B:580:TYR:HB2	2:B:613:THR:HG21	2.04	0.40
2:A:245:ASP:OD2	2:A:249:ARG:NH2	2.54	0.40
2:A:444:ILE:HD13	2:A:444:ILE:HA	1.92	0.40
2:A:562:GLY:N	2:A:577:VAL:O	2.53	0.40
2:B:3:LEU:HD22	2:B:43:TYR:CD2	2.56	0.40
2:B:35:TRP:CZ3	2:B:104:LEU:HD12	2.57	0.40
4:J:64:LEU:O	4:J:68:HIS:ND1	2.39	0.40
4:J:589:LEU:O	4:J:593:MET:N	2.55	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	92/121 (76%)	88 (96%)	4 (4%)	0	100	100
1	H	99/121 (82%)	96 (97%)	3 (3%)	0	100	100
2	A	721/750 (96%)	684 (95%)	37 (5%)	0	100	100
2	B	721/750 (96%)	687 (95%)	34 (5%)	0	100	100
3	C	94/96 (98%)	81 (86%)	13 (14%)	0	100	100
3	G	94/96 (98%)	83 (88%)	11 (12%)	0	100	100
4	F	625/627 (100%)	584 (93%)	41 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	J	625/627 (100%)	590 (94%)	35 (6%)	0	100	100
5	E	16/96 (17%)	15 (94%)	1 (6%)	0	100	100
5	I	11/96 (12%)	10 (91%)	1 (9%)	0	100	100
All	All	3098/3380 (92%)	2918 (94%)	180 (6%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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	D	84/104 (81%)	84 (100%)	0	100	100
1	H	89/104 (86%)	89 (100%)	0	100	100
2	A	666/679 (98%)	666 (100%)	0	100	100
2	B	666/679 (98%)	666 (100%)	0	100	100
3	C	85/85 (100%)	85 (100%)	0	100	100
3	G	85/85 (100%)	85 (100%)	0	100	100
4	F	536/536 (100%)	536 (100%)	0	100	100
4	J	536/536 (100%)	536 (100%)	0	100	100
5	E	15/82 (18%)	15 (100%)	0	100	100
5	I	10/82 (12%)	10 (100%)	0	100	100
All	All	2772/2972 (93%)	2772 (100%)	0	100	100

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (41) such sidechains are listed below:

Mol	Chain	Res	Type
1	H	49	GLN
1	H	65	GLN
2	B	67	ASN

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Mol	Chain	Res	Type
2	B	82	GLN
2	B	111	GLN
2	B	264	HIS
2	B	268	GLN
2	B	276	GLN
2	B	288	GLN
2	B	317	ASN
2	B	474	HIS
3	C	51	GLN
3	C	58	ASN
4	J	41	GLN
4	J	42	GLN
4	J	56	ASN
4	J	427	ASN
4	J	443	ASN
4	J	470	GLN
4	J	573	ASN
4	J	615	GLN
4	F	41	GLN
4	F	45	GLN
4	F	56	ASN
4	F	100	HIS
4	F	146	ASN
4	F	151	ASN
4	F	573	ASN
4	F	611	ASN
2	A	268	GLN
2	A	288	GLN
2	A	397	ASN
2	A	521	GLN
2	A	557	HIS
2	A	641	ASN
2	A	643	ASN
2	A	663	GLN
2	A	696	HIS
2	A	706	GLN
3	G	58	ASN
3	G	61	ASN

5.3.3 RNA

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.