Full wwPDB EM Validation Report ⓘ

Nov 14, 2024 – 12:49 pm GMT

PDB ID	:	8S24
EMDB ID	:	EMD-19653
Title	:	Structure of the E3 ubiquitin ligase RNF213, determined by cryoEM
Authors	:	Naydenova, K.; Randow, F.
Deposited on	:	2024-02-16
Resolution	:	3.00 Å(reported)
Based on initial model	:	.

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:

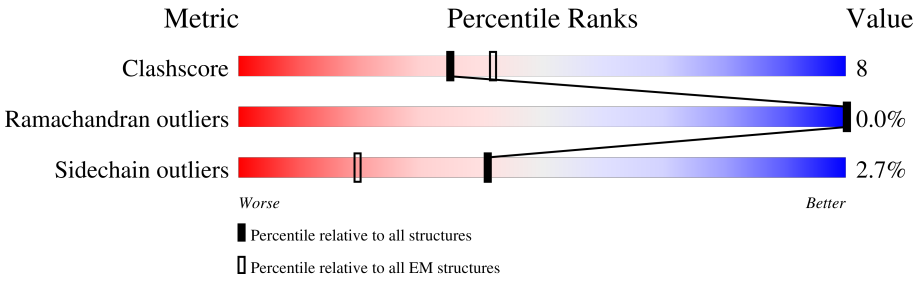
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 3.00 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)
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% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	5247	66% 16% 16%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 35357 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 E3 ubiquitin-protein ligase RNF213.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	4387	35324	22575	6081	6455	213	0	0

There are 41 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-39	MET	-	initiating methionine	UNP Q63HN8
A	-38	ALA	-	expression tag	UNP Q63HN8
A	-37	SER	-	expression tag	UNP Q63HN8
A	-36	TRP	-	expression tag	UNP Q63HN8
A	-35	SER	-	expression tag	UNP Q63HN8
A	-34	HIS	-	expression tag	UNP Q63HN8
A	-33	PRO	-	expression tag	UNP Q63HN8
A	-32	GLN	-	expression tag	UNP Q63HN8
A	-31	PHE	-	expression tag	UNP Q63HN8
A	-30	GLU	-	expression tag	UNP Q63HN8
A	-29	LYS	-	expression tag	UNP Q63HN8
A	-28	GLY	-	expression tag	UNP Q63HN8
A	-27	SER	-	expression tag	UNP Q63HN8
A	-26	ALA	-	expression tag	UNP Q63HN8
A	-25	GLY	-	expression tag	UNP Q63HN8
A	-24	SER	-	expression tag	UNP Q63HN8
A	-23	ALA	-	expression tag	UNP Q63HN8
A	-22	ALA	-	expression tag	UNP Q63HN8
A	-21	GLY	-	expression tag	UNP Q63HN8
A	-20	SER	-	expression tag	UNP Q63HN8
A	-19	GLY	-	expression tag	UNP Q63HN8
A	-18	ALA	-	expression tag	UNP Q63HN8
A	-17	GLY	-	expression tag	UNP Q63HN8
A	-16	TRP	-	expression tag	UNP Q63HN8
A	-15	SER	-	expression tag	UNP Q63HN8
A	-14	HIS	-	expression tag	UNP Q63HN8
A	-13	PRO	-	expression tag	UNP Q63HN8
A	-12	GLN	-	expression tag	UNP Q63HN8

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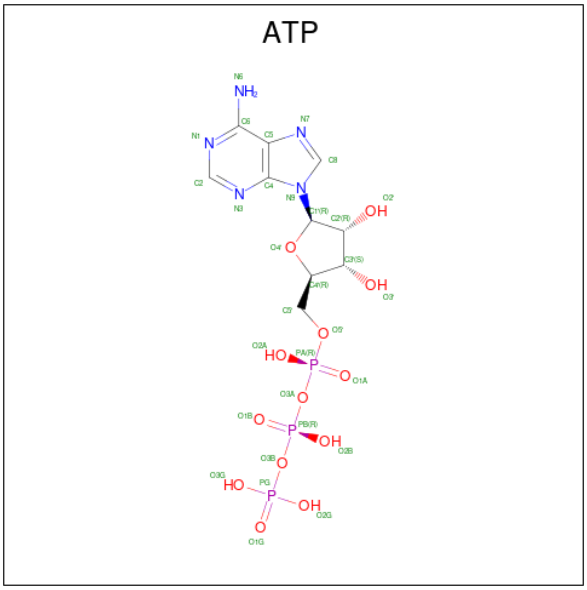
Chain	Residue	Modelled	Actual	Comment	Reference
A	-11	PHE	-	expression tag	UNP Q63HN8
A	-10	GLU	-	expression tag	UNP Q63HN8
A	-9	LYS	-	expression tag	UNP Q63HN8
A	-8	GLU	-	expression tag	UNP Q63HN8
A	-7	ASN	-	expression tag	UNP Q63HN8
A	-6	LEU	-	expression tag	UNP Q63HN8
A	-5	TYR	-	expression tag	UNP Q63HN8
A	-4	PHE	-	expression tag	UNP Q63HN8
A	-3	GLN	-	expression tag	UNP Q63HN8
A	-2	ALA	-	expression tag	UNP Q63HN8
A	-1	MET	-	expression tag	UNP Q63HN8
A	0	SER	-	expression tag	UNP Q63HN8
A	1045	ASP	ASN	variant	UNP Q63HN8

- Molecule 2 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
3	A	1	Total	Mg	0
			1	1	

- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn).

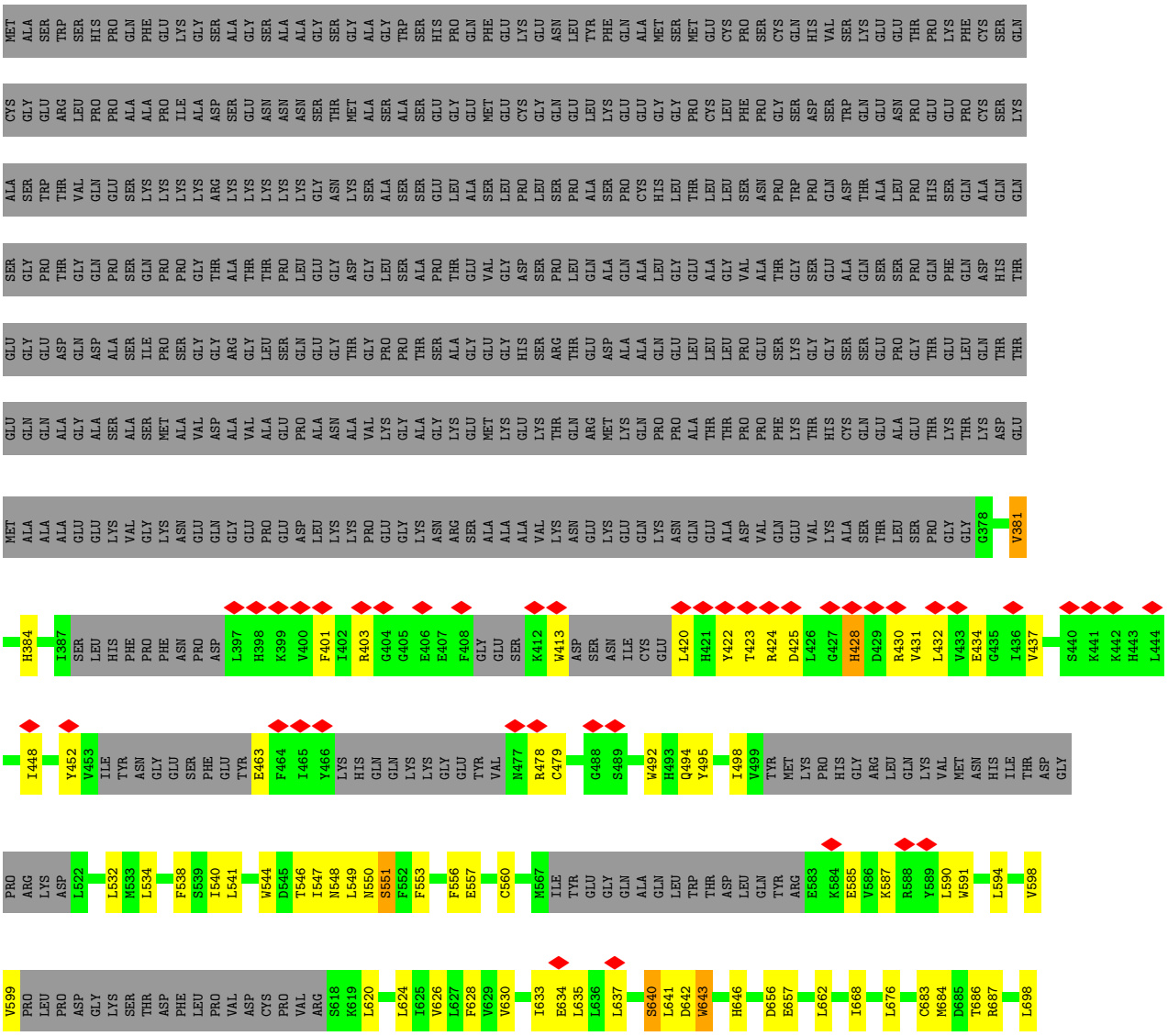
Mol	Chain	Residues	Atoms	AltConf
4	A	1	Total Zn 1 1	0

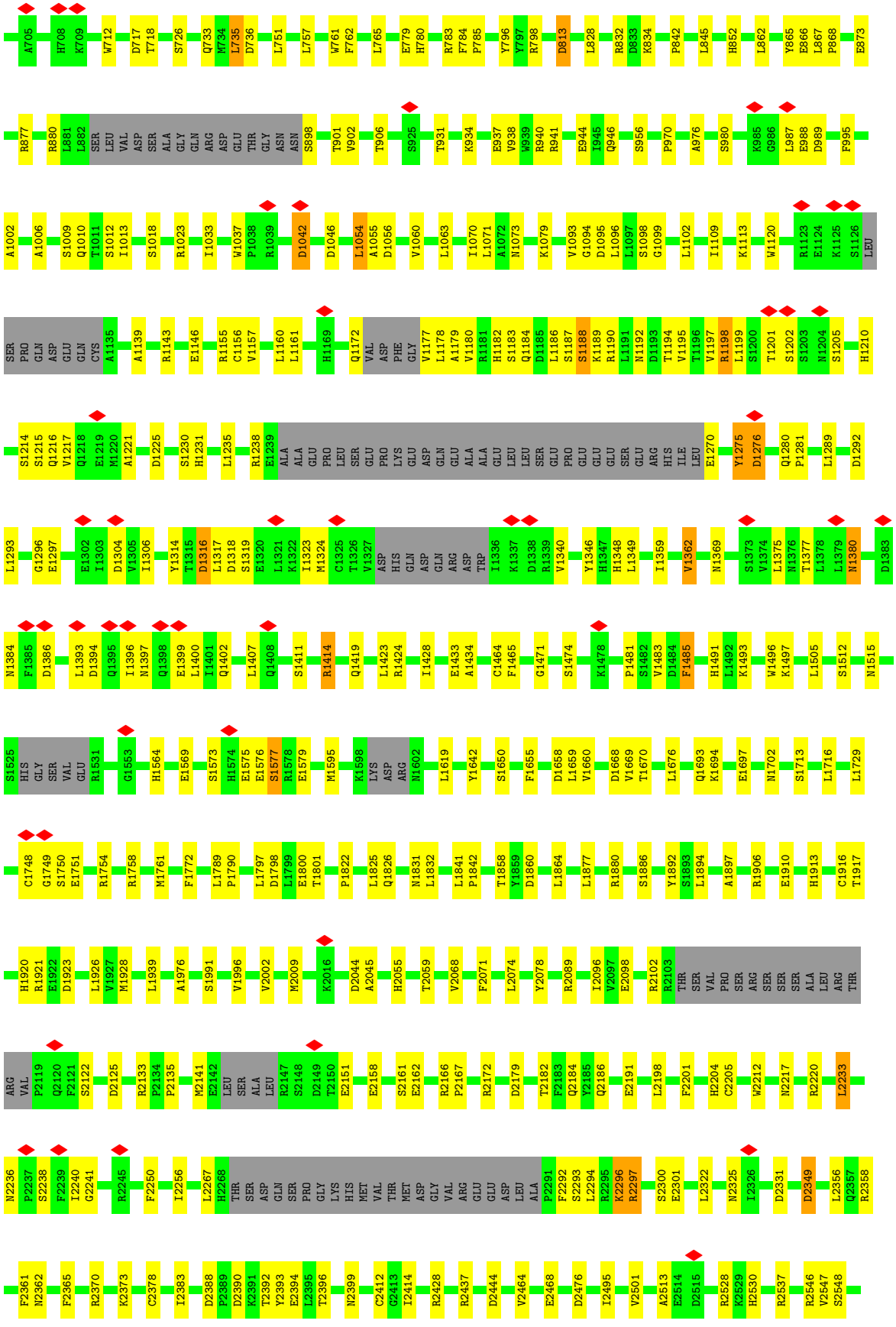
3 Residue-property plots (i)

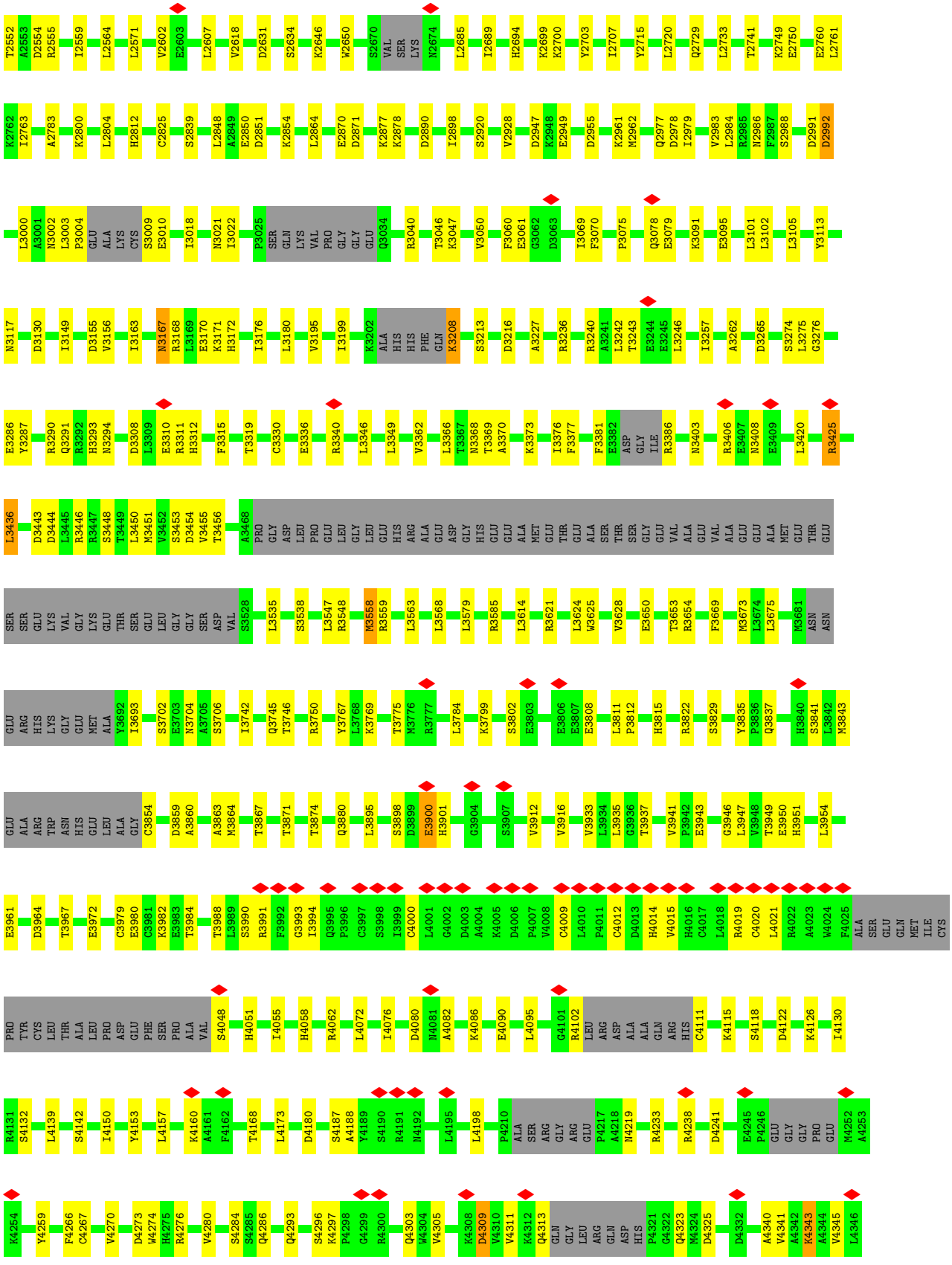
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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.

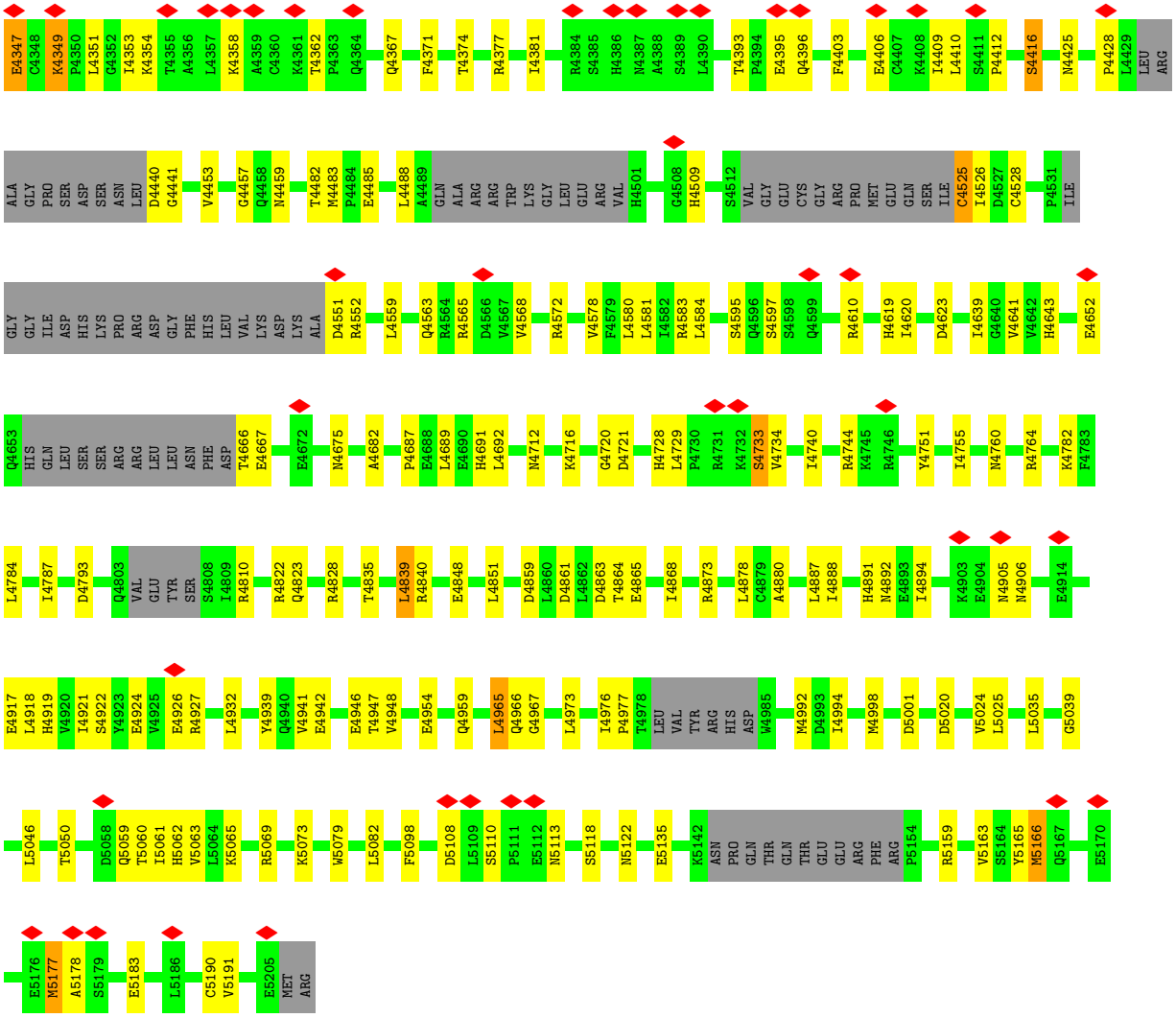
- Molecule 1: E3 ubiquitin-protein ligase RNF213

Chain A:




A705 H708 K709 W712 D717 T718 S726 Q733 M734 L735 D736 L751 L757 W761 F762 L765 E779 H780 R783 F784 P785 Y796 Y797 R798 D813 L828 R832 D833 K834 P842 L845 H852 L862 Y865 E866 L867 P868 E873
B877 R880 L881 L882 S898 T901 V902 T906 S925 T931 K934 E937 V938 W939 R940 R941 E944 I945 Q946 S956 P970 A976 S980 K985 G986 L987 E988 D989 F995
A1002 A1006 S1009 Q1010 T1011 S1012 I1013 S1018 R1023 I1033 W1037 P1038 R1039 D1042 D1046 L1054 A1055 D1056 V1060 L1063 I1070 L1071 A1072 N1073 K1079 V1093 G1094 D1095 L1096 L1097 S1098 G1099 L1102 I1109 K1113 W1120 R1123 E1124 K1125 S1126 LEU
SER PRO GLN ASP GLU GLN CYS A1135 A1139 R1143 E1146 R1155 C1156 V1157 L1160 L1161 H1169 Q1172 VAL ASP PHE GLY V1177 L1178 A1179 V1180 R1181 H1182 S1183 Q1184 D1185 L1186 S1187 S1188 K1189 R1190 L1191 N1192 D1193 T1194 V1195 T1196 V1197 R1198 L1199 S1200 T1201 S1202 S1203 N1204 S1205 H1210
S1214 S1215 Q1216 V1217 Q1218 E1219 M1220 A1221 D1225 S1230 H1231 L1235 R1238 E1239 ALA ALA GLU PRO LEU SER GLU PRO LYS GLU ASP GLN GLU ALA ALA GLU LEU LEU SER GLU PRO GLU GLU GLU SER GLU ARG HIS ILE LEU E1270 Y1275 D1276 Q1280 P1281 L1289 D1292
L1293 G1296 E1297 E1302 I1303 D1304 V1305 I1306 Y1314 T1315 D1316 L1317 D1318 S1319 E1320 L1321 K1322 I1323 M1324 C1325 T1326 V1327 ASP HIS GLN ASP GLN ARG ASP TRP I1336 K1337 D1338 R1339 V1340 Y1346 H1347 H1348 L1349 I1359 V1362 N1369 S1373 V1374 L1375 N1376 T1377 L1378 L1379 N1380 D1383
N1384 F1385 D1386 L1393 D1394 Q1395 I1396 N1397 Q1398 E1399 L1400 K1401 Q1402 L1407 Q1408 S1411 R1414 Q1419 L1423 R1424 I1428 E1433 A1434 C1464 F1465 G1471 S1474 K1478 P1481 S1482 V1483 D1484 F1485 H1491 L1492 K1493 W1496 K1497 L1505 S1512 N1515
S1525 HIS GLY SER VAL GLU R1531 G1553 H1564 E1569 S1573 H1574 E1575 E1576 S1577 R1578 E1579 M1595 K1598 LYS ASP ARG N1602 L1619 Y1642 S1650 F1655 D1658 L1659 V1660 D1668 V1669 T1670 L1676 Q1693 K1694 E1697 N1702 S1713 L1716 L1729
C1748 G1749 S1750 E1751 R1754 R1758 M1761 F1772 L1789 P1790 L1797 D1798 L1799 E1800 T1801 P1822 L1825 Q1826 N1831 L1832 L1841 P1842 T1858 Y1859 D1860 L1864 L1877 R1880 S1886 Y1892 S1893 L1894 A1897 R1906 E1910 H1913 C1916 T1917
H1920 R1921 E1922 D1923 L1926 V1927 M1928 L1939 A1976 S1991 V1996 V2002 M2009 K2016 D2044 A2045 H2055 T2059 V2068 F2071 L2074 Y2078 R2089 I2096 V2097 E2098 R2102 R2103 THR SER VAL PRO SER ARG SER SER SER ALA LEU ARG THR
ARG VAL P2119 Q2120 F2121 S2122 D2125 R2133 P2134 P2135 M2141 E2142 LEU SER ALA LEU R2147 S2148 D2149 T2150 E2151 E2158 S2161 E2162 R2166 P2167 R2172 D2179 T2182 F2183 Q2184 Y2185 Q2186 E2191 L2198 F2201 H2204 C2205 W2212 N2217 R2220 L2233
N2236 P2237 S2238 F2239 I2240 G2241 R2245 F2250 I2256 L2267 H2268 THR SER ASP GLN SER PRO GLY LYS HIS MET VAL THR MET ASP GLY VAL ARG GLU GLU ASP LEU ALA P2291 F2292 S2293 L2294 R2295 K2296 R2297 S2300 E2301 L2322 N2325 I2326 D2331 D2349 L2356 G2357 R2358
F2361 N2362 F2365 R2370 K2373 C2378 I2383 D2388 P2389 D2390 K2391 T2392 Y2393 E2394 L2395 T2396 N2399 C2412 G2413 I2414 R2428 R2437 D2444 V2464 E2468 D2476 I2495 V2501 A2513 E2514 D2515 R2528 K2529 H2530 R2537 R2546 V2547 S2548




E4347 C4348 K4349 P4350 L4351 G4352 I4353 K4354 T4355 A4356 L4357 K4358 A4359 C4360 K4361 T4362 P4363 Q4364 Q4367 F4371 T4374 R4377 I4381 R4384 S4385 H4386 N4387 A4388 S4389 L4390 T4393 P4394 E4395 Q4396 F4403 E4406 C4407 K4408 I4409 L4410 S4411 P4412 S4416 N4425 P4428 L4429 LEU ARG
ALA GLY PRO SER ASP SER ASN LEU D4440 G4441 V4453 G4457 Q4458 N4459 T4482 M4483 P4484 E4485 L4488 A4489 GLN ALA ARG ARG TRP LYS GLY LEU GLU ARG VAL H4501 G4508 H4509 S4512 VAL GLY GLU CYS GLY ARG PRO MET GLU GLN SER ILE C4525 I4526 D4527 C4528 P4531 ILE
GLY GLY ILE ASP HIS LYS PRO ARG ASP GLY PHE HIS LEU VAL LYS ASP LYS ALA D4551 R4552 L4559 Q4563 R4564 R4565 D4566 V4567 V4568 R4572 V4578 F4579 L4580 L4581 I4582 R4583 L4584 S4595 Q4596 S4597 S4598 Q4599 R4610 H4619 I4620 D4623 I4639 G4640 V4641 V4642 H4643 E4652
Q4653 HIS GLN LEU SER SER ARG ARG LEU LEU ASN PHE ASP T4666 E4667 E4672 M4675 A4682 P4687 E4688 L4689 E4690 H4691 L4692 N4712 K4716 G4720 D4721 H4728 L4729 P4730 R4731 K4732 S4733 V4734 I4740 R4744 K4745 R4746 Y4751 I4755 N4760 R4764 K4782 F4783
L4784 I4787 D4793 Q4803 VAL GLU TYR SER S4808 I4809 R4810 R4822 Q4823 R4828 T4835 L4839 R4840 E4848 L4851 D4859 L4860 D4861 L4862 D4863 T4864 E4865 I4868 R4873 L4878 C4879 A4880 L4887 I4888 H4891 N4892 E4893 I4894 K4903 E4904 N4905 N4906 E4914
E4917 L4918 H4919 V4920 I4921 S4922 Y4923 E4924 V4925 E4926 R4927 L4932 Y4939 Q4940 V4941 E4942 E4946 T4947 V4948 E4954 Q4959 L4965 Q4966 G4967 L4973 I4976 P4977 T4978 LEU VAL TYR ARG HIS ASP W4985 M4992 D4993 I4994 M4998 D5001 D5020 V5024 L5025 L5035 G5039
L5046 T5050 D5058 Q5059 T5060 I5061 H5062 V5063 L5064 K5065 R5069 K5073 W5079 L5082 F5098 D5108 L5109 S5110 P5111 E5112 N5113 S5118 N5122 E5135 K5142 ASN PRO GLN THR GLN THR GLU GLU ARG PHE ARG P5154 R5159 V5163 S5164 Y5165 M5166 Q5167 E5170
E5176 M5177 A5178 S5179 E5183 L5186 C5190 V5191 E5205 MET ARG

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	143490	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	29.8	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.055	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.007	Depositor
Map size (Å)	471.552, 471.552, 471.552	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.921, 0.921, 0.921	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, ATP, ZN

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.33	0/36047	0.40	0/48733

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	A	35324	0	35571	553	0
2	A	31	0	12	0	0
3	A	1	0	0	0	0
4	A	1	0	0	0	0
All	All	35357	0	35583	553	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 8.

All (553) 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:A:5061:ILE:O	1:A:5065:LYS:NZ	2.02	0.92
1:A:3979:CYS:O	1:A:3982:LYS:O	1.89	0.91
1:A:4525:CYS:SG	1:A:4526:ILE:N	2.47	0.87
1:A:1096:LEU:O	1:A:1143:ARG:NH1	2.08	0.86
1:A:687:ARG:NH2	1:A:733:GLN:OE1	2.10	0.84
1:A:1172:GLN:O	1:A:1270:GLU:N	2.10	0.84
1:A:4483:MET:O	1:A:4572:ARG:NH2	2.10	0.83
1:A:1094:GLY:O	1:A:1098:SER:OG	1.96	0.83
1:A:3381:PHE:O	1:A:3425:ARG:NH2	2.12	0.83
1:A:1023:ARG:NH2	1:A:1073:ASN:O	2.12	0.82
1:A:1155:ARG:NH2	1:A:1225:ASP:OD1	2.12	0.82
1:A:2864:LEU:O	1:A:2878:LYS:NZ	2.12	0.81
1:A:4509:HIS:ND1	1:A:4528:CYS:SG	2.54	0.81
1:A:3654:ARG:NH2	1:A:3704:ASN:O	2.14	0.81
1:A:403:ARG:NH1	1:A:413:TRP:O	2.15	0.80
1:A:2741:THR:O	1:A:2961:LYS:NZ	2.15	0.80
1:A:4341:VAL:HG12	1:A:4353:ILE:HD12	1.63	0.80
1:A:3199:ILE:O	1:A:3208:LYS:NZ	2.15	0.80
1:A:3937:THR:HG23	1:A:3941:VAL:HG23	1.64	0.79
1:A:2694:HIS:O	1:A:2700:LYS:NZ	2.17	0.78
1:A:2172:ARG:NH2	1:A:2191:GLU:OE1	2.16	0.78
1:A:4095:LEU:O	1:A:4115:LYS:NZ	2.12	0.78
1:A:4233:ARG:NH1	1:A:4740:ILE:O	2.16	0.78
1:A:3961:GLU:N	1:A:3961:GLU:OE1	2.17	0.77
1:A:880:ARG:NH1	1:A:946:GLN:O	2.18	0.77
1:A:2158:GLU:O	1:A:2161:SER:OG	2.03	0.76
1:A:3403:ASN:OD1	1:A:3406:ARG:NE	2.20	0.75
1:A:2296:LYS:NZ	1:A:2301:GLU:OE1	2.18	0.75
1:A:4293:GLN:O	1:A:4296:SER:OG	2.05	0.74
1:A:1095:ASP:O	1:A:1099:GLY:N	2.20	0.74
1:A:587:LYS:NZ	1:A:634:GLU:OE1	2.15	0.74
1:A:1033:ILE:HD11	1:A:1060:VAL:HG21	1.68	0.74
1:A:1564:HIS:ND1	1:A:1579:GLU:OE2	2.21	0.74
1:A:4000:CYS:SG	1:A:4019:ARG:NH2	2.61	0.74
1:A:2198:LEU:HD21	1:A:2212:TRP:CH2	2.23	0.73
1:A:2631:ASP:OD2	1:A:2699:LYS:NZ	2.16	0.73
1:A:2729:GLN:NE2	1:A:2750:GLU:OE1	2.21	0.73
1:A:2548:SER:O	1:A:2552:THR:HG23	1.89	0.73
1:A:5024:VAL:HG22	1:A:5063:VAL:HG13	1.71	0.73
1:A:1694:LYS:NZ	1:A:1800:GLU:OE1	2.21	0.73
1:A:3242:LEU:HD23	1:A:3243:THR:N	2.03	0.73
1:A:3558:MET:SD	1:A:3558:MET:N	2.62	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4946:GLU:OE1	1:A:4946:GLU:N	2.22	0.73
1:A:5183:GLU:N	1:A:5183:GLU:OE1	2.22	0.73
1:A:4062:ARG:NE	1:A:4122:ASP:OD2	2.22	0.73
1:A:4393:THR:N	1:A:4396:GLN:OE1	2.22	0.73
1:A:3176:ILE:HG21	1:A:3227:ALA:HB1	1.72	0.72
1:A:3654:ARG:NH1	1:A:3706:SER:OG	2.22	0.72
1:A:2236:ASN:OD1	1:A:2238:SER:OG	2.05	0.72
1:A:3585:ARG:NH1	1:A:3669:PHE:O	2.22	0.72
1:A:1758:ARG:NH1	1:A:1761:MET:SD	2.64	0.71
1:A:684:MET:O	1:A:687:ARG:NH1	2.23	0.71
1:A:762:PHE:O	1:A:798:ARG:NH2	2.24	0.71
1:A:2365:PHE:O	1:A:2373:LYS:NZ	2.16	0.71
1:A:3585:ARG:NH2	1:A:3675:LEU:O	2.24	0.71
1:A:2122:SER:OG	1:A:2125:ASP:OD2	2.09	0.70
1:A:4425:ASN:O	1:A:4425:ASN:ND2	2.24	0.70
1:A:3843:MET:SD	1:A:3843:MET:N	2.65	0.70
1:A:1897:ALA:HB1	1:A:1939:LEU:HD23	1.72	0.70
1:A:478:ARG:NH2	1:A:498:ILE:O	2.25	0.70
1:A:976:ALA:O	1:A:980:SER:OG	2.09	0.69
1:A:1396:ILE:HG23	1:A:1397:ASN:H	1.56	0.69
1:A:4412:PRO:O	1:A:4416:SER:OG	2.11	0.69
1:A:1184:GLN:OE1	1:A:1210:HIS:NE2	2.26	0.69
1:A:2217:ASN:OD1	1:A:2220:ARG:NH2	2.26	0.69
1:A:3450:LEU:HD13	1:A:3625:TRP:CE3	2.27	0.69
1:A:642:ASP:OD1	1:A:643:TRP:N	2.26	0.69
1:A:3021:ASN:ND2	1:A:3170:GLU:OE1	2.24	0.69
1:A:1749:GLY:O	1:A:1754:ARG:NH2	2.26	0.68
1:A:2977:GLN:NE2	1:A:2978:ASP:OD1	2.27	0.68
1:A:3559:ARG:NH1	1:A:3650:GLU:OE2	2.26	0.68
1:A:3061:GLU:OE1	1:A:3061:GLU:N	2.25	0.68
1:A:3990:SER:OG	1:A:3993:GLY:N	2.27	0.68
1:A:3091:LYS:NZ	1:A:3095:GLU:OE2	2.19	0.68
1:A:862:LEU:HD11	1:A:938:VAL:HG21	1.74	0.68
1:A:3294:ASN:ND2	1:A:3454:ASP:OD2	2.26	0.68
1:A:2528:ARG:NH2	1:A:2634:SER:O	2.26	0.67
1:A:5118:SER:O	1:A:5122:ASN:ND2	2.27	0.67
1:A:2984:LEU:O	1:A:2988:SER:OG	2.09	0.67
1:A:3964:ASP:O	1:A:3967:THR:OG1	2.11	0.67
1:A:5159:ARG:HH21	1:A:5163:VAL:HG23	1.60	0.67
1:A:4187:SER:OG	1:A:4926:GLU:O	2.07	0.67
1:A:5190:CYS:SG	1:A:5191:VAL:N	2.68	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1377:THR:O	1:A:1380:ASN:ND2	2.27	0.67
1:A:3075:PRO:O	1:A:3078:GLN:NE2	2.27	0.67
1:A:1573:SER:OG	1:A:1575:GLU:OE1	2.13	0.66
1:A:2293:SER:O	1:A:2294:LEU:HD23	1.95	0.66
1:A:1402:GLN:N	1:A:1402:GLN:OE1	2.29	0.66
1:A:1569:GLU:N	1:A:1569:GLU:OE1	2.29	0.66
1:A:1913:HIS:O	1:A:1917:THR:HG23	1.96	0.66
1:A:3946:GLY:O	1:A:3949:THR:HG22	1.95	0.65
1:A:970:PRO:HB3	1:A:1002:ALA:HB1	1.77	0.65
1:A:2074:LEU:O	1:A:2089:ARG:NH1	2.29	0.65
1:A:2322:LEU:HD12	1:A:2361:PHE:CD2	2.32	0.65
1:A:620:LEU:HD13	1:A:662:LEU:CD2	2.27	0.65
1:A:2325:ASN:ND2	1:A:2331:ASP:OD2	2.29	0.65
1:A:2812:HIS:O	1:A:2854:LYS:NZ	2.29	0.65
1:A:4563:GLN:OE1	1:A:4563:GLN:N	2.30	0.65
1:A:2133:ARG:NH1	1:A:2141:MET:SD	2.70	0.64
1:A:4482:THR:HG22	1:A:4583:ARG:HG2	1.78	0.64
1:A:2044:ASP:OD1	1:A:2045:ALA:N	2.30	0.64
1:A:1892:TYR:O	1:A:1926:LEU:HD12	1.97	0.64
1:A:2962:MET:SD	1:A:2986:ASN:ND2	2.72	0.63
1:A:3455:VAL:O	1:A:3456:THR:HG22	1.98	0.63
1:A:1858:THR:OG1	1:A:1860:ASP:OD1	2.15	0.63
1:A:1375:LEU:HD21	1:A:1485:PHE:CZ	2.34	0.63
1:A:1186:LEU:HD23	1:A:1189:LYS:HD3	1.80	0.63
1:A:3808:GLU:N	1:A:3808:GLU:OE1	2.32	0.63
1:A:3444:ASP:OD2	1:A:3621:ARG:NH1	2.31	0.63
1:A:3450:LEU:HD12	1:A:3451:MET:N	2.14	0.63
1:A:2870:GLU:N	1:A:2870:GLU:OE1	2.32	0.62
1:A:5135:GLU:OE2	1:A:5165:TYR:OH	2.16	0.62
1:A:3742:ILE:O	1:A:3746:THR:HG23	1.98	0.62
1:A:2602:VAL:HG22	1:A:2607:LEU:HG	1.80	0.62
1:A:4782:LYS:NZ	1:A:4924:GLU:OE2	2.32	0.62
1:A:452:TYR:O	1:A:463:GLU:N	2.32	0.62
1:A:5062:HIS:ND1	1:A:5062:HIS:O	2.32	0.62
1:A:585:GLU:OE1	1:A:585:GLU:N	2.32	0.62
1:A:1375:LEU:HD11	1:A:1485:PHE:HE1	1.63	0.62
1:A:2370:ARG:NH2	1:A:2390:ASP:O	2.33	0.62
1:A:4568:VAL:HG21	1:A:4580:LEU:HD13	1.82	0.62
1:A:1318:ASP:OD2	1:A:1319:SER:N	2.33	0.61
1:A:3673:MET:SD	1:A:3673:MET:N	2.74	0.61
1:A:2825:CYS:SG	1:A:2839:SER:OG	2.57	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:598:VAL:HG13	1:A:599:VAL:HG23	1.81	0.61
1:A:944:GLU:O	1:A:946:GLN:NE2	2.34	0.61
1:A:1575:GLU:OE1	1:A:1575:GLU:N	2.33	0.61
1:A:432:LEU:HD12	1:A:532:LEU:HD13	1.83	0.61
1:A:4393:THR:OG1	1:A:4395:GLU:OE2	2.18	0.60
1:A:3912:VAL:O	1:A:3916:VAL:HG23	2.02	0.60
1:A:4362:THR:O	1:A:4367:GLN:NE2	2.34	0.60
1:A:598:VAL:HG11	1:A:643:TRP:CZ2	2.37	0.60
1:A:717:ASP:OD1	1:A:718:THR:N	2.35	0.60
1:A:1297:GLU:N	1:A:1297:GLU:OE1	2.34	0.60
1:A:2618:VAL:HG11	1:A:2685:LEU:HD11	1.84	0.60
1:A:5020:ASP:O	1:A:5024:VAL:HG23	2.02	0.60
1:A:1822:PRO:HD2	1:A:1825:LEU:HD12	1.84	0.60
1:A:4840:ARG:NH1	1:A:4859:ASP:OD1	2.35	0.59
1:A:3370:ALA:O	1:A:3373:LYS:NZ	2.35	0.59
1:A:2537:ARG:NH1	1:A:2631:ASP:O	2.35	0.59
1:A:3837:GLN:O	1:A:3841:SER:OG	2.11	0.59
1:A:5001:ASP:N	1:A:5073:LYS:O	2.36	0.59
1:A:1160:LEU:HD11	1:A:1221:ALA:HB2	1.84	0.59
1:A:3980:GLU:C	1:A:3982:LYS:O	2.40	0.59
1:A:4377:ARG:HA	1:A:4381:ILE:HD12	1.83	0.59
1:A:1369:ASN:N	1:A:1481:PRO:O	2.36	0.59
1:A:425:ASP:HA	1:A:431:VAL:HG23	1.85	0.59
1:A:1194:THR:OG1	1:A:1195:VAL:N	2.35	0.59
1:A:5035:LEU:O	1:A:5039:GLY:N	2.35	0.59
1:A:1433:GLU:OE1	1:A:1434:ALA:N	2.36	0.59
1:A:4485:GLU:OE2	1:A:4675:ASN:ND2	2.35	0.59
1:A:865:TYR:OH	1:A:937:GLU:OE2	2.20	0.58
1:A:779:GLU:OE1	1:A:783:ARG:NH1	2.35	0.58
1:A:1713:SER:OG	1:A:1797:LEU:O	2.16	0.58
1:A:2322:LEU:N	1:A:2362:ASN:OD1	2.36	0.58
1:A:401:PHE:HA	1:A:420:LEU:HD13	1.86	0.58
1:A:988:GLU:OE1	1:A:988:GLU:N	2.33	0.58
1:A:3368:ASN:OD1	1:A:3369:THR:N	2.34	0.58
1:A:4584:LEU:HD11	1:A:4620:ILE:HG23	1.84	0.58
1:A:1716:LEU:HD21	1:A:1729:LEU:HD11	1.86	0.58
1:A:5110:SER:OG	1:A:5113:ASN:ND2	2.36	0.58
1:A:656:ASP:OD1	1:A:657:GLU:N	2.37	0.58
1:A:1375:LEU:HD11	1:A:1485:PHE:CE1	2.38	0.58
1:A:1143:ARG:NH2	1:A:1198:ARG:O	2.37	0.58
1:A:2162:GLU:OE2	1:A:2166:ARG:NH1	2.34	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2650:TRP:HB2	1:A:2761:LEU:HD21	1.85	0.57
1:A:3308:ASP:OD2	1:A:3311:ARG:NH1	2.37	0.57
1:A:3448:SER:OG	1:A:3451:MET:O	2.14	0.57
1:A:4325:ASP:OD1	1:A:4377:ARG:NE	2.36	0.57
1:A:1006:ALA:HB1	1:A:1013:ILE:HD11	1.85	0.57
1:A:4198:LEU:HD21	1:A:4259:TYR:HB2	1.85	0.57
1:A:2646:LYS:HG2	1:A:2761:LEU:HD22	1.86	0.57
1:A:1323:ILE:HG23	1:A:1324:MET:HE2	1.86	0.57
1:A:4048:SER:O	1:A:4051:HIS:NE2	2.38	0.57
1:A:1493:LYS:O	1:A:1497:LYS:NZ	2.33	0.57
1:A:3336:GLU:O	1:A:3340:ARG:NH2	2.36	0.57
1:A:550:ASN:OD1	1:A:551:SER:N	2.39	0.56
1:A:594:LEU:O	1:A:598:VAL:HG12	2.05	0.56
1:A:2715:TYR:HA	1:A:2720:LEU:HD23	1.87	0.56
1:A:4733:SER:OG	1:A:4734:VAL:N	2.38	0.56
1:A:1198:ARG:NH1	1:A:1199:LEU:O	2.35	0.56
1:A:3274:SER:OG	1:A:3276:GLY:O	2.24	0.56
1:A:4764:ARG:NE	1:A:4954:GLU:OE2	2.31	0.56
1:A:591:TRP:CH2	1:A:630:VAL:HG11	2.40	0.56
1:A:3980:GLU:O	1:A:3982:LYS:O	2.23	0.56
1:A:3563:LEU:HD22	1:A:3653:THR:HG21	1.87	0.56
1:A:4009:CYS:HA	1:A:4015:VAL:HG12	1.87	0.56
1:A:4267:CYS:O	1:A:4276:ARG:NH1	2.36	0.56
1:A:4744:ARG:NH2	1:A:4939:TYR:OH	2.36	0.56
1:A:1054:LEU:HD23	1:A:1055:ALA:H	1.71	0.56
1:A:2850:GLU:OE2	1:A:2890:ASP:N	2.38	0.56
1:A:845:LEU:HD22	1:A:902:VAL:HG11	1.88	0.56
1:A:2240:ILE:HD12	1:A:2241:GLY:N	2.20	0.56
1:A:3941:VAL:HG23	1:A:3941:VAL:O	2.06	0.56
1:A:4086:LYS:NZ	1:A:4090:GLU:OE2	2.30	0.55
1:A:423:THR:HG21	1:A:434:GLU:HG3	1.88	0.55
1:A:540:ILE:O	1:A:548:ASN:ND2	2.38	0.55
1:A:5059:GLN:OE1	1:A:5059:GLN:N	2.39	0.55
1:A:428:HIS:O	1:A:430:ARG:NH2	2.39	0.55
1:A:3624:LEU:O	1:A:3628:VAL:HG23	2.06	0.55
1:A:2468:GLU:OE2	1:A:2513:ALA:N	2.38	0.55
1:A:4687:PRO:O	1:A:4691:HIS:ND1	2.39	0.55
1:A:1906:ARG:NH1	1:A:1910:GLU:OE2	2.39	0.55
1:A:2059:THR:O	1:A:2102:ARG:NH2	2.40	0.55
1:A:751:LEU:HD23	1:A:757:LEU:HD23	1.87	0.55
1:A:538:PHE:CD1	1:A:541:LEU:HD12	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1991:SER:CB	1:A:1996:VAL:HG21	2.37	0.54
1:A:2184:GLN:O	1:A:2186:GLN:NE2	2.39	0.54
1:A:4266:PHE:CE1	1:A:4270:VAL:HG21	2.42	0.54
1:A:4020:CYS:SG	1:A:4021:LEU:N	2.81	0.54
1:A:5177:MET:SD	1:A:5178:ALA:N	2.81	0.54
1:A:3822:ARG:NH1	1:A:4917:GLU:OE2	2.41	0.54
1:A:1577:SER:OG	1:A:1577:SER:O	2.20	0.54
1:A:4274:TRP:CE2	1:A:4729:LEU:HD22	2.43	0.54
1:A:4341:VAL:HG12	1:A:4353:ILE:CD1	2.36	0.54
1:A:1595:MET:O	1:A:3091:LYS:NZ	2.39	0.54
1:A:3102:LEU:HD22	1:A:3105:LEU:HB2	1.90	0.54
1:A:4311:VAL:O	1:A:4311:VAL:HG13	2.07	0.54
1:A:1396:ILE:HG23	1:A:1397:ASN:N	2.23	0.54
1:A:3535:LEU:HD21	1:A:3628:VAL:HG12	1.90	0.53
1:A:4666:THR:OG1	1:A:4667:GLU:N	2.41	0.53
1:A:637:LEU:HD22	1:A:641:LEU:HD13	1.90	0.53
1:A:3262:ALA:O	1:A:3287:TYR:OH	2.12	0.53
1:A:765:LEU:O	1:A:798:ARG:NH2	2.39	0.53
1:A:3117:ASN:OD1	1:A:3168:ARG:NH2	2.36	0.53
1:A:4102:ARG:NE	1:A:4111:CYS:SG	2.81	0.53
1:A:1380:ASN:O	1:A:1384:ASN:ND2	2.42	0.53
1:A:548:ASN:OD1	1:A:549:LEU:N	2.41	0.53
1:A:1289:LEU:HD11	1:A:1306:ILE:HD13	1.90	0.53
1:A:1642:TYR:O	1:A:1669:VAL:HG21	2.08	0.53
1:A:4180:ASP:OD1	1:A:4744:ARG:NH2	2.42	0.53
1:A:1042:ASP:OD2	1:A:1042:ASP:N	2.41	0.53
1:A:1275:TYR:O	1:A:1280:GLN:N	2.39	0.53
1:A:1464:CYS:O	1:A:1465:PHE:HB3	2.09	0.53
1:A:3859:ASP:OD1	1:A:3860:ALA:N	2.41	0.53
1:A:2292:PHE:CZ	1:A:2564:LEU:HD22	2.44	0.53
1:A:3319:THR:OG1	1:A:3420:LEU:HD12	2.09	0.53
1:A:3837:GLN:OE1	1:A:3837:GLN:N	2.38	0.53
1:A:1177:VAL:O	1:A:1180:VAL:N	2.42	0.52
1:A:3213:SER:OG	1:A:3216:ASP:OD2	2.26	0.52
1:A:3863:ALA:O	1:A:3867:THR:HG23	2.09	0.52
1:A:4891:HIS:HE2	1:A:4965:LEU:HD13	1.73	0.52
1:A:1655:PHE:CD1	1:A:1660:VAL:HG11	2.44	0.52
1:A:4565:ARG:NH2	1:A:4619:HIS:O	2.42	0.52
1:A:2135:PRO:HB3	1:A:2198:LEU:HD22	1.91	0.52
1:A:4921:ILE:HD11	1:A:4965:LEU:HD11	1.91	0.52
1:A:898:SER:N	1:A:901:THR:HG1	2.07	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1177:VAL:HG23	1:A:1178:LEU:N	2.25	0.52
1:A:4482:THR:HB	1:A:4559:LEU:HD11	1.91	0.52
1:A:598:VAL:HG11	1:A:643:TRP:HZ2	1.74	0.52
1:A:3240:ARG:CD	1:A:3246:LEU:HD11	2.39	0.52
1:A:2871:ASP:N	1:A:2871:ASP:OD1	2.42	0.51
1:A:2618:VAL:HG23	1:A:2707:ILE:HG13	1.91	0.51
1:A:3547:LEU:O	1:A:3548:ARG:NH1	2.40	0.51
1:A:423:THR:OG1	1:A:424:ARG:N	2.43	0.51
1:A:2763:ILE:HG21	1:A:2898:ILE:HD12	1.93	0.51
1:A:3799:LYS:O	1:A:3802:SER:OG	2.20	0.51
1:A:4072:LEU:HD12	1:A:4076:ILE:HD12	1.91	0.51
1:A:2370:ARG:NH1	1:A:2393:TYR:O	2.43	0.51
1:A:1864:LEU:HD13	1:A:2068:VAL:HG13	1.93	0.51
1:A:3050:VAL:HG11	1:A:3176:ILE:HG12	1.93	0.51
1:A:3069:ILE:HB	1:A:3102:LEU:HD23	1.92	0.51
1:A:4153:TYR:CE1	1:A:4157:LEU:HD11	2.45	0.51
1:A:4822:ARG:NE	1:A:4823:GLN:OE1	2.34	0.51
1:A:735:LEU:HD12	1:A:736:ASP:N	2.26	0.51
1:A:712:TRP:HZ3	1:A:796:TYR:HH	1.58	0.50
1:A:1156:CYS:HB3	1:A:1221:ALA:HB1	1.92	0.50
1:A:2871:ASP:OD2	1:A:2877:LYS:NZ	2.41	0.50
1:A:4115:LYS:NZ	1:A:4118:SER:O	2.42	0.50
1:A:4395:GLU:OE1	1:A:4395:GLU:N	2.42	0.50
1:A:2055:HIS:NE2	1:A:2098:GLU:OE1	2.45	0.50
1:A:3330:CYS:SG	1:A:3346:LEU:HD22	2.51	0.50
1:A:4716:LYS:O	1:A:4720:GLY:N	2.40	0.50
1:A:1424:ARG:O	1:A:1428:ILE:HD12	2.12	0.50
1:A:3979:CYS:O	1:A:3982:LYS:C	2.50	0.50
1:A:1146:GLU:HB3	1:A:1195:VAL:HG11	1.93	0.50
1:A:1877:LEU:HD23	1:A:1894:LEU:HD13	1.93	0.50
1:A:640:SER:O	1:A:640:SER:OG	2.27	0.50
1:A:1826:GLN:N	1:A:1831:ASN:OD1	2.42	0.50
1:A:2552:THR:OG1	1:A:2555:ARG:NH2	2.45	0.50
1:A:4273:ASP:HB2	1:A:4729:LEU:HD23	1.92	0.50
1:A:4353:ILE:HG23	1:A:4403:PHE:CE1	2.47	0.50
1:A:4891:HIS:NE2	1:A:4965:LEU:HD13	2.27	0.50
1:A:553:PHE:CE1	1:A:668:ILE:HD13	2.47	0.50
1:A:624:LEU:HD11	1:A:662:LEU:CD1	2.41	0.50
1:A:780:HIS:O	1:A:784:PHE:N	2.44	0.50
1:A:1702:ASN:O	1:A:1880:ARG:NH1	2.45	0.50
1:A:4641:VAL:HG22	1:A:4692:LEU:HD22	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2233:LEU:HD23	1:A:2233:LEU:H	1.77	0.49
1:A:3880:GLN:HG3	1:A:3935:LEU:HD11	1.94	0.49
1:A:1214:SER:O	1:A:1217:VAL:N	2.45	0.49
1:A:1991:SER:HB2	1:A:1996:VAL:HG21	1.93	0.49
1:A:3240:ARG:HD3	1:A:3246:LEU:HD11	1.93	0.49
1:A:590:LEU:HD13	1:A:635:LEU:HD11	1.94	0.49
1:A:1393:LEU:O	1:A:1396:ILE:HG22	2.12	0.49
1:A:1668:ASP:OD2	1:A:1670:THR:OG1	2.29	0.49
1:A:2296:LYS:HD2	1:A:2297:ARG:H	1.76	0.49
1:A:4921:ILE:CD1	1:A:4965:LEU:HD11	2.42	0.49
1:A:492:TRP:NE1	1:A:494:GLN:OE1	2.37	0.49
1:A:4080:ASP:OD2	1:A:4082:ALA:N	2.46	0.49
1:A:4966:GLN:NE2	1:A:4967:GLY:O	2.42	0.49
1:A:5159:ARG:NH2	1:A:5163:VAL:HG23	2.25	0.49
1:A:3547:LEU:HD23	1:A:3693:ILE:HB	1.94	0.49
1:A:751:LEU:HD21	1:A:761:TRP:CZ3	2.48	0.49
1:A:3078:GLN:N	1:A:3079:GLU:OE1	2.45	0.49
1:A:4891:HIS:NE2	1:A:4919:HIS:O	2.44	0.49
1:A:620:LEU:HD13	1:A:662:LEU:HD21	1.95	0.49
1:A:2240:ILE:HD12	1:A:2241:GLY:C	2.32	0.49
1:A:2322:LEU:HD12	1:A:2361:PHE:CE2	2.48	0.49
1:A:3242:LEU:HD23	1:A:3243:THR:H	1.78	0.49
1:A:1693:GLN:NE2	1:A:1697:GLU:OE2	2.46	0.48
1:A:765:LEU:O	1:A:798:ARG:NH1	2.47	0.48
1:A:934:LYS:O	1:A:938:VAL:HG23	2.12	0.48
1:A:2979:ILE:O	1:A:2983:VAL:HG23	2.13	0.48
1:A:3767:TYR:OH	1:A:3815:HIS:NE2	2.39	0.48
1:A:4584:LEU:HD13	1:A:4623:ASP:HB3	1.95	0.48
1:A:1231:HIS:NE2	1:A:1235:LEU:HD11	2.29	0.48
1:A:3769:LYS:HD3	1:A:3784:LEU:HD21	1.95	0.48
1:A:4347:GLU:OE1	1:A:4349:LYS:HB3	2.14	0.48
1:A:4409:ILE:HG13	1:A:4410:LEU:HD12	1.95	0.48
1:A:3900:GLU:N	1:A:3900:GLU:OE1	2.47	0.48
1:A:1292:ASP:O	1:A:1296:GLY:N	2.41	0.48
1:A:4851:LEU:HD21	1:A:4878:LEU:HB3	1.95	0.48
1:A:1161:LEU:N	1:A:1161:LEU:HD23	2.29	0.48
1:A:813:ASP:OD1	1:A:813:ASP:N	2.44	0.48
1:A:1323:ILE:HG23	1:A:1324:MET:CE	2.43	0.48
1:A:4810:ARG:NH2	1:A:4863:ASP:OD2	2.47	0.48
1:A:2689:ILE:HG23	1:A:2703:TYR:OH	2.14	0.47
1:A:3568:LEU:HA	1:A:3579:LEU:HD13	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:676:LEU:HD13	1:A:698:LEU:HA	1.94	0.47
1:A:3009:SER:OG	1:A:3010:GLU:N	2.45	0.47
1:A:4459:ASN:ND2	1:A:4652:GLU:OE1	2.43	0.47
1:A:4888:ILE:HG22	1:A:4892:ASN:OD1	2.13	0.47
1:A:1054:LEU:HD23	1:A:1055:ALA:N	2.29	0.47
1:A:3176:ILE:HG22	1:A:3180:LEU:HG	1.96	0.47
1:A:4219:ASN:O	1:A:4219:ASN:ND2	2.47	0.47
1:A:5025:LEU:HD13	1:A:5082:LEU:HB2	1.97	0.47
1:A:3315:PHE:HB2	1:A:3436:LEU:O	2.15	0.47
1:A:4861:ASP:OD1	1:A:4861:ASP:N	2.46	0.47
1:A:2378:CYS:O	1:A:2383:ILE:N	2.48	0.47
1:A:1789:LEU:N	1:A:1790:PRO:CD	2.77	0.47
1:A:3450:LEU:HD13	1:A:3625:TRP:CZ3	2.50	0.47
1:A:381:VAL:HG12	1:A:437:VAL:HG13	1.97	0.47
1:A:1359:ILE:O	1:A:1362:VAL:HG12	2.15	0.47
1:A:1576:GLU:N	1:A:1576:GLU:OE1	2.47	0.47
1:A:4012:CYS:O	1:A:4014:HIS:ND1	2.47	0.47
1:A:4440:ASP:OD1	1:A:4441:GLY:N	2.42	0.47
1:A:2495:ILE:HD11	1:A:2571:LEU:HD23	1.96	0.47
1:A:1197:VAL:CG2	1:A:1199:LEU:HD21	2.45	0.47
1:A:1483:VAL:HG23	1:A:1483:VAL:O	2.13	0.47
1:A:2204:HIS:HB3	1:A:2256:ILE:HD12	1.97	0.47
1:A:4280:VAL:HG23	1:A:4305:VAL:HG12	1.97	0.47
1:A:5025:LEU:HD11	1:A:5079:TRP:CD1	2.49	0.47
1:A:2559:ILE:HG21	1:A:2564:LEU:HD21	1.97	0.46
1:A:4835:THR:O	1:A:4839:LEU:HD23	2.16	0.46
1:A:2267:LEU:HD12	1:A:2294:LEU:HB3	1.97	0.46
1:A:2392:THR:OG1	1:A:2428:ARG:NH2	2.48	0.46
1:A:3242:LEU:O	1:A:3243:THR:OG1	2.31	0.46
1:A:3362:VAL:HG12	1:A:3366:LEU:HD12	1.96	0.46
1:A:4994:ILE:O	1:A:4998:MET:N	2.49	0.46
1:A:3408:ASN:N	1:A:3408:ASN:OD1	2.47	0.46
1:A:3947:LEU:HD11	1:A:3984:THR:HG21	1.98	0.46
1:A:4309:ASP:OD1	1:A:4309:ASP:N	2.47	0.46
1:A:423:THR:HG21	1:A:434:GLU:CG	2.45	0.46
1:A:1139:ALA:O	1:A:1143:ARG:HG2	2.16	0.46
1:A:1317:LEU:HD21	1:A:1340:VAL:CG2	2.46	0.46
1:A:4130:ILE:HG21	1:A:4157:LEU:HD13	1.98	0.46
1:A:1864:LEU:HD11	1:A:2071:PHE:HD2	1.81	0.46
1:A:2733:LEU:HD22	1:A:2749:LYS:HG2	1.97	0.46
1:A:3898:SER:OG	1:A:3900:GLU:OE1	2.33	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4861:ASP:H	1:A:4864:THR:HG1	1.64	0.46
1:A:3018:ILE:HG22	1:A:3022:ILE:HD12	1.98	0.46
1:A:2002:VAL:HG22	1:A:2096:ILE:HG21	1.98	0.46
1:A:4130:ILE:HD12	1:A:4157:LEU:HD22	1.98	0.46
1:A:2198:LEU:HD21	1:A:2212:TRP:HH2	1.74	0.46
1:A:3895:LEU:O	1:A:3898:SER:OG	2.26	0.46
1:A:3265:ASP:OD1	1:A:3614:LEU:HD22	2.15	0.45
1:A:3346:LEU:HD12	1:A:3376:ILE:HB	1.98	0.45
1:A:495:TYR:OH	1:A:532:LEU:HB2	2.16	0.45
1:A:1471:GLY:HA3	1:A:1505:LEU:HD21	1.99	0.45
1:A:3900:GLU:OE1	1:A:3901:HIS:N	2.49	0.45
1:A:4241:ASP:OD1	1:A:4286:GLN:NE2	2.49	0.45
1:A:5166:MET:SD	1:A:5166:MET:N	2.90	0.45
1:A:1650:SER:HB3	1:A:1669:VAL:HG22	1.99	0.45
1:A:4168:THR:HG23	1:A:4740:ILE:CD1	2.46	0.45
1:A:4345:VAL:HG13	1:A:4396:GLN:HB3	1.98	0.45
1:A:5046:LEU:O	1:A:5050:THR:HG23	2.15	0.45
1:A:1054:LEU:HD22	1:A:1056:ASP:HB2	1.99	0.45
1:A:1976:ALA:HB1	1:A:2009:MET:SD	2.57	0.45
1:A:2955:ASP:OD1	1:A:3040:ARG:NH1	2.45	0.45
1:A:1407:LEU:HD21	1:A:1485:PHE:CZ	2.52	0.45
1:A:1748:CYS:HB3	1:A:1801:THR:HG23	1.98	0.45
1:A:1109:ILE:O	1:A:1113:LYS:N	2.50	0.45
1:A:4581:LEU:HD11	1:A:4689:LEU:HD21	1.99	0.45
1:A:683:CYS:H	1:A:686:THR:HG22	1.81	0.45
1:A:3002:ASN:HB2	1:A:3003:LEU:HD22	1.98	0.45
1:A:4639:ILE:HG22	1:A:4643:HIS:CD2	2.52	0.45
1:A:3984:THR:O	1:A:3988:THR:HG22	2.17	0.45
1:A:852:HIS:CD2	1:A:906:THR:HG23	2.52	0.44
1:A:3003:LEU:HB3	1:A:3004:PRO:HD2	1.99	0.44
1:A:4297:LYS:O	1:A:4303:GLN:NE2	2.47	0.44
1:A:4340:ALA:O	1:A:4343:LYS:HG3	2.17	0.44
1:A:4559:LEU:HD13	1:A:4583:ARG:NH2	2.33	0.44
1:A:3286:GLU:OE1	1:A:3290:ARG:NH1	2.50	0.44
1:A:3871:THR:O	1:A:3874:THR:OG1	2.33	0.44
1:A:1407:LEU:HD21	1:A:1485:PHE:HZ	1.83	0.44
1:A:1832:LEU:HD12	1:A:1928:MET:O	2.17	0.44
1:A:3933:VAL:HG12	1:A:3933:VAL:O	2.15	0.44
1:A:4721:ASP:OD2	1:A:4721:ASP:N	2.46	0.44
1:A:3101:LEU:HD23	1:A:3149:ILE:HB	1.99	0.44
1:A:3349:LEU:HD21	1:A:3377:PHE:HB3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3046:THR:OG1	1:A:3047:LYS:N	2.51	0.44
1:A:4751:TYR:CE2	1:A:4755:ILE:HD11	2.53	0.44
1:A:1512:SER:O	1:A:1515:ASN:N	2.50	0.44
1:A:4917:GLU:O	1:A:4918:LEU:HD12	2.16	0.44
1:A:1280:GLN:N	1:A:1281:PRO:HD2	2.32	0.44
1:A:2356:LEU:O	1:A:2358:ARG:NH1	2.51	0.44
1:A:3799:LYS:HA	1:A:3802:SER:HB3	1.99	0.44
1:A:557:GLU:HA	1:A:560:CYS:SG	2.58	0.43
1:A:1659:LEU:HD11	1:A:1761:MET:HG2	1.99	0.43
1:A:2166:ARG:HB3	1:A:2167:PRO:HD3	2.00	0.43
1:A:3167:ASN:N	1:A:3167:ASN:OD1	2.51	0.43
1:A:2133:ARG:NH2	1:A:2151:GLU:OE2	2.51	0.43
1:A:2201:PHE:O	1:A:2205:CYS:N	2.51	0.43
1:A:3000:LEU:O	1:A:3002:ASN:N	2.52	0.43
1:A:4293:GLN:NE2	1:A:4323:GLN:OE1	2.44	0.43
1:A:1094:GLY:O	1:A:1098:SER:CB	2.66	0.43
1:A:3745:GLN:O	1:A:3750:ARG:NH2	2.51	0.43
1:A:898:SER:O	1:A:902:VAL:HG23	2.18	0.43
1:A:4132:SER:HB3	1:A:4173:LEU:HD11	2.01	0.43
1:A:3195:VAL:O	1:A:3199:ILE:HG12	2.19	0.43
1:A:1414:ARG:NH1	1:A:1496:TRP:CD1	2.87	0.43
1:A:1474:SER:O	1:A:1491:HIS:NE2	2.51	0.43
1:A:4048:SER:O	1:A:4051:HIS:CD2	2.71	0.43
1:A:987:LEU:HD22	1:A:987:LEU:N	2.34	0.43
1:A:1289:LEU:HD23	1:A:1289:LEU:O	2.19	0.43
1:A:1314:TYR:OH	1:A:1348:HIS:NE2	2.51	0.43
1:A:1886:SER:OG	1:A:1921:ARG:NH1	2.52	0.43
1:A:1920:HIS:ND1	1:A:1921:ARG:O	2.52	0.43
1:A:1798:ASP:OD1	1:A:1798:ASP:N	2.50	0.42
1:A:2349:ASP:OD1	1:A:2349:ASP:N	2.50	0.42
1:A:4188:ALA:O	1:A:4927:ARG:NH2	2.52	0.42
1:A:4351:LEU:O	1:A:4354:LYS:HB3	2.19	0.42
1:A:1916:CYS:HA	1:A:1920:HIS:CD2	2.54	0.42
1:A:4947:THR:HG22	1:A:4948:VAL:N	2.35	0.42
1:A:546:THR:HG23	1:A:547:ILE:HD12	2.01	0.42
1:A:2464:VAL:HG21	1:A:2501:VAL:HG21	2.00	0.42
1:A:3943:GLU:OE1	1:A:3943:GLU:N	2.41	0.42
1:A:940:ARG:NH2	1:A:989:ASP:OD2	2.49	0.42
1:A:2444:ASP:N	1:A:2444:ASP:OD1	2.52	0.42
1:A:3105:LEU:N	1:A:3105:LEU:HD22	2.34	0.42
1:A:4891:HIS:O	1:A:4894:ILE:HG22	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4198:LEU:HD12	1:A:4238:ARG:HH22	1.85	0.42
1:A:633:ILE:HG22	1:A:633:ILE:O	2.19	0.42
1:A:726:SER:O	1:A:726:SER:OG	2.35	0.42
1:A:1375:LEU:HD21	1:A:1485:PHE:CE1	2.54	0.42
1:A:1419:GLN:NE2	1:A:1423:LEU:HD11	2.35	0.42
1:A:2396:THR:OG1	1:A:2399:ASN:OD1	2.33	0.42
1:A:2928:VAL:HG12	1:A:2928:VAL:O	2.19	0.42
1:A:1010:GLN:N	1:A:1010:GLN:OE1	2.52	0.42
1:A:3811:LEU:N	1:A:3812:PRO:CD	2.83	0.42
1:A:4198:LEU:C	1:A:4198:LEU:HD23	2.39	0.42
1:A:4428:PRO:HB3	1:A:4595:SER:HB2	2.01	0.42
1:A:4584:LEU:HD13	1:A:4623:ASP:CB	2.50	0.42
1:A:556:PHE:CZ	1:A:633:ILE:HD11	2.54	0.42
1:A:594:LEU:HD22	1:A:643:TRP:HH2	1.85	0.42
1:A:785:PRO:HG3	1:A:834:LYS:HG3	2.02	0.42
1:A:1179:ALA:O	1:A:1183:SER:OG	2.37	0.42
1:A:2412:CYS:SG	1:A:2414:ILE:HD12	2.60	0.42
1:A:547:ILE:HG22	1:A:548:ASN:N	2.34	0.42
1:A:1276:ASP:HA	1:A:1280:GLN:HB3	2.02	0.42
1:A:2992:ASP:OD1	1:A:2992:ASP:N	2.52	0.42
1:A:3864:MET:O	1:A:3867:THR:OG1	2.38	0.42
1:A:3950:GLU:OE1	1:A:3951:HIS:N	2.53	0.42
1:A:4343:LYS:O	1:A:4347:GLU:CG	2.68	0.42
1:A:4992:MET:N	1:A:4992:MET:SD	2.93	0.42
1:A:2783:ALA:HB2	1:A:2804:LEU:HD11	2.00	0.42
1:A:3155:ASP:OD1	1:A:3156:VAL:N	2.52	0.42
1:A:4784:LEU:HD12	1:A:4787:ILE:HD11	2.02	0.42
1:A:1093:VAL:HG21	1:A:1120:TRP:CD2	2.54	0.41
1:A:3070:PHE:HA	1:A:3105:LEU:HD21	2.02	0.41
1:A:3972:GLU:OE1	1:A:3972:GLU:N	2.52	0.41
1:A:4784:LEU:HD13	1:A:4887:LEU:HD12	2.00	0.41
1:A:5098:PHE:CD2	1:A:5191:VAL:HG13	2.55	0.41
1:A:384:HIS:HB2	1:A:495:TYR:HD1	1.84	0.41
1:A:448:ILE:O	1:A:448:ILE:HG22	2.19	0.41
1:A:1349:LEU:HD22	1:A:1400:LEU:HD13	2.02	0.41
1:A:1619:LEU:HD13	1:A:1676:LEU:HD22	2.01	0.41
1:A:4551:ASP:OD1	1:A:4552:ARG:N	2.51	0.41
1:A:4868:ILE:O	1:A:4880:ALA:HB2	2.20	0.41
1:A:867:LEU:HB2	1:A:868:PRO:HD3	2.02	0.41
1:A:1182:HIS:ND1	1:A:1182:HIS:O	2.52	0.41
1:A:1751:GLU:OE2	1:A:1754:ARG:NH1	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2552:THR:HG22	1:A:2851:ASP:OD2	2.20	0.41
1:A:3275:LEU:N	1:A:3275:LEU:HD22	2.35	0.41
1:A:4153:TYR:CZ	1:A:4157:LEU:HD11	2.56	0.41
1:A:4274:TRP:CZ2	1:A:4729:LEU:HD22	2.56	0.41
1:A:828:LEU:O	1:A:832:ARG:N	2.53	0.41
1:A:1063:LEU:C	1:A:1070:ILE:HD11	2.41	0.41
1:A:1216:GLN:CD	1:A:1217:VAL:HG23	2.40	0.41
1:A:2370:ARG:NE	1:A:2388:ASP:OD2	2.52	0.41
1:A:4139:LEU:HD21	1:A:4150:ILE:CD1	2.50	0.41
1:A:1304:ASP:CG	1:A:1346:TYR:HH	2.24	0.41
1:A:2547:VAL:CG2	1:A:2552:THR:HG22	2.49	0.41
1:A:2618:VAL:O	1:A:2707:ILE:HD11	2.20	0.41
1:A:4864:THR:HG22	1:A:4865:GLU:N	2.35	0.41
1:A:4873:ARG:HH11	1:A:4973:LEU:HD13	1.86	0.41
1:A:2383:ILE:HD11	1:A:2437:ARG:CG	2.50	0.41
1:A:3535:LEU:O	1:A:3538:SER:OG	2.32	0.41
1:A:866:GLU:OE2	1:A:941:ARG:NE	2.43	0.41
1:A:1102:LEU:HD12	1:A:1188:SER:C	2.41	0.41
1:A:1190:ARG:NE	1:A:1192:ASN:OD1	2.54	0.41
1:A:1316:ASP:OD1	1:A:1316:ASP:N	2.53	0.41
1:A:3455:VAL:HG12	1:A:3456:THR:N	2.36	0.41
1:A:4760:ASN:O	1:A:4760:ASN:ND2	2.53	0.41
1:A:1157:VAL:O	1:A:1161:LEU:HG	2.20	0.41
1:A:2530:HIS:CE1	1:A:2634:SER:HG	2.39	0.41
1:A:2949:GLU:O	1:A:3163:ILE:HG23	2.21	0.41
1:A:1184:GLN:CD	1:A:1210:HIS:HE2	2.24	0.41
1:A:1289:LEU:O	1:A:1293:LEU:HG	2.20	0.41
1:A:1658:ASP:OD1	1:A:1658:ASP:N	2.54	0.41
1:A:2394:GLU:HG3	1:A:2396:THR:HG23	2.03	0.41
1:A:2495:ILE:CD1	1:A:2571:LEU:HD23	2.51	0.41
1:A:2760:GLU:OE2	1:A:2800:LYS:N	2.53	0.41
1:A:3994:ILE:HG21	1:A:4058:HIS:ND1	2.36	0.41
1:A:4341:VAL:HG21	1:A:4374:THR:HB	2.02	0.41
1:A:842:PRO:O	1:A:845:LEU:HB2	2.21	0.41
1:A:4453:VAL:O	1:A:4457:GLY:N	2.52	0.41
1:A:873:GLU:O	1:A:877:ARG:HG2	2.21	0.40
1:A:1923:ASP:OD1	1:A:1923:ASP:N	2.50	0.40
1:A:2618:VAL:HG23	1:A:2707:ILE:CG1	2.51	0.40
1:A:4293:GLN:OE1	1:A:4712:ASN:ND2	2.54	0.40
1:A:4488:LEU:HD21	1:A:4848:GLU:HA	2.04	0.40
1:A:4932:LEU:HD11	1:A:4959:GLN:CB	2.51	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:594:LEU:HD21	1:A:626:VAL:HG22	2.04	0.40
1:A:1177:VAL:CG2	1:A:1178:LEU:N	2.83	0.40
1:A:2546:ARG:HD3	1:A:2848:LEU:HD23	2.02	0.40
1:A:3000:LEU:C	1:A:3002:ASN:H	2.24	0.40
1:A:3994:ILE:HD11	1:A:4055:ILE:HD13	2.03	0.40
1:A:4578:VAL:HG11	1:A:4682:ALA:CB	2.52	0.40
1:A:2179:ASP:OD1	1:A:2182:THR:HG22	2.22	0.40
1:A:3171:LYS:O	1:A:3172:HIS:CG	2.75	0.40
1:A:4941:VAL:HG12	1:A:4942:GLU:O	2.21	0.40
1:A:1071:LEU:O	1:A:1079:LYS:NZ	2.48	0.40
1:A:1841:LEU:HB2	1:A:1842:PRO:HD3	2.04	0.40
1:A:3236:ARG:NH2	1:A:3257:ILE:HD11	2.37	0.40
1:A:4793:ASP:OD2	1:A:4828:ARG:NH1	2.55	0.40
1:A:1199:LEU:HB2	1:A:1201:THR:HG23	2.02	0.40
1:A:3291:GLN:OE1	1:A:3293:HIS:NE2	2.45	0.40
1:A:4349:LYS:O	1:A:4349:LYS:HD2	2.22	0.40
1:A:4351:LEU:O	1:A:4354:LYS:N	2.54	0.40
1:A:4584:LEU:HD13	1:A:4623:ASP:CG	2.42	0.40
1:A:4976:ILE:HB	1:A:4977:PRO:HD3	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	4307/5247 (82%)	4098 (95%)	208 (5%)	1 (0%)	100 100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2297	ARG

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	A	3945/4653 (85%)	3838 (97%)	107 (3%)	40 71

All (107) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	381	VAL
1	A	422	TYR
1	A	428	HIS
1	A	479	CYS
1	A	534	LEU
1	A	544	TRP
1	A	551	SER
1	A	628	PHE
1	A	640	SER
1	A	643	TRP
1	A	646	HIS
1	A	735	LEU
1	A	813	ASP
1	A	931	THR
1	A	956	SER
1	A	995	PHE
1	A	1009	SER
1	A	1012	SER
1	A	1018	SER
1	A	1037	TRP
1	A	1042	ASP
1	A	1046	ASP
1	A	1054	LEU
1	A	1187	SER
1	A	1188	SER
1	A	1198	ARG
1	A	1202	SER
1	A	1205	SER
1	A	1215	SER
1	A	1230	SER

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Mol	Chain	Res	Type
1	A	1238	ARG
1	A	1275	TYR
1	A	1276	ASP
1	A	1316	ASP
1	A	1362	VAL
1	A	1380	ASN
1	A	1386	ASP
1	A	1394	ASP
1	A	1399	GLU
1	A	1411	SER
1	A	1414	ARG
1	A	1485	PHE
1	A	1577	SER
1	A	1750	SER
1	A	1772	PHE
1	A	2078	TYR
1	A	2233	LEU
1	A	2250	PHE
1	A	2296	LYS
1	A	2300	SER
1	A	2349	ASP
1	A	2476	ASP
1	A	2554	ASP
1	A	2920	SER
1	A	2947	ASP
1	A	2991	ASP
1	A	2992	ASP
1	A	3060	PHE
1	A	3113	TYR
1	A	3130	ASP
1	A	3167	ASN
1	A	3208	LYS
1	A	3310	GLU
1	A	3312	HIS
1	A	3386	ARG
1	A	3425	ARG
1	A	3436	LEU
1	A	3443	ASP
1	A	3446	ARG
1	A	3453	SER
1	A	3558	MET
1	A	3702	SER

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Mol	Chain	Res	Type
1	A	3775	THR
1	A	3829	SER
1	A	3835	TYR
1	A	3854	CYS
1	A	3900	GLU
1	A	3954	LEU
1	A	3991	ARG
1	A	4126	LYS
1	A	4142	SER
1	A	4160	LYS
1	A	4284	SER
1	A	4309	ASP
1	A	4313	GLN
1	A	4343	LYS
1	A	4347	GLU
1	A	4349	LYS
1	A	4358	LYS
1	A	4371	PHE
1	A	4406	GLU
1	A	4416	SER
1	A	4525	CYS
1	A	4597	SER
1	A	4610	ARG
1	A	4728	HIS
1	A	4733	SER
1	A	4839	LEU
1	A	4905	ASN
1	A	4906	ASN
1	A	4922	SER
1	A	4965	LEU
1	A	5060	THR
1	A	5069	ARG
1	A	5108	ASP
1	A	5166	MET
1	A	5177	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (19) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	477	ASN
1	A	946	GLN
1	A	1008	GLN

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Mol	Chain	Res	Type
1	A	1342	GLN
1	A	1369	ASN
1	A	1384	ASN
1	A	1679	GLN
1	A	1784	GLN
1	A	2787	GLN
1	A	3053	GLN
1	A	3704	ASN
1	A	4049	GLN
1	A	4081	ASN
1	A	4275	HIS
1	A	4507	ASN
1	A	4816	HIS
1	A	4905	ASN
1	A	4906	ASN
1	A	5113	ASN

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)

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	ATP	A	5301	3	26,33,33	0.86	1 (3%)	31,52,52	1.65	6 (19%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	ATP	A	5301	3	-	5/18/38/38	0/3/3/3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	5301	ATP	C5-C4	2.05	1.46	1.40

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	5301	ATP	PB-O3B-PG	-3.80	119.77	132.83
2	A	5301	ATP	PA-O3A-PB	-3.75	119.97	132.83
2	A	5301	ATP	N3-C2-N1	-3.28	123.55	128.68
2	A	5301	ATP	C3'-C2'-C1'	3.05	105.57	100.98
2	A	5301	ATP	C4-C5-N7	-2.58	106.72	109.40
2	A	5301	ATP	C1'-N9-C4	-2.05	123.03	126.64

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	5301	ATP	C5'-O5'-PA-O1A
2	A	5301	ATP	C5'-O5'-PA-O2A
2	A	5301	ATP	PG-O3B-PB-O2B
2	A	5301	ATP	C5'-O5'-PA-O3A
2	A	5301	ATP	O4'-C4'-C5'-O5'

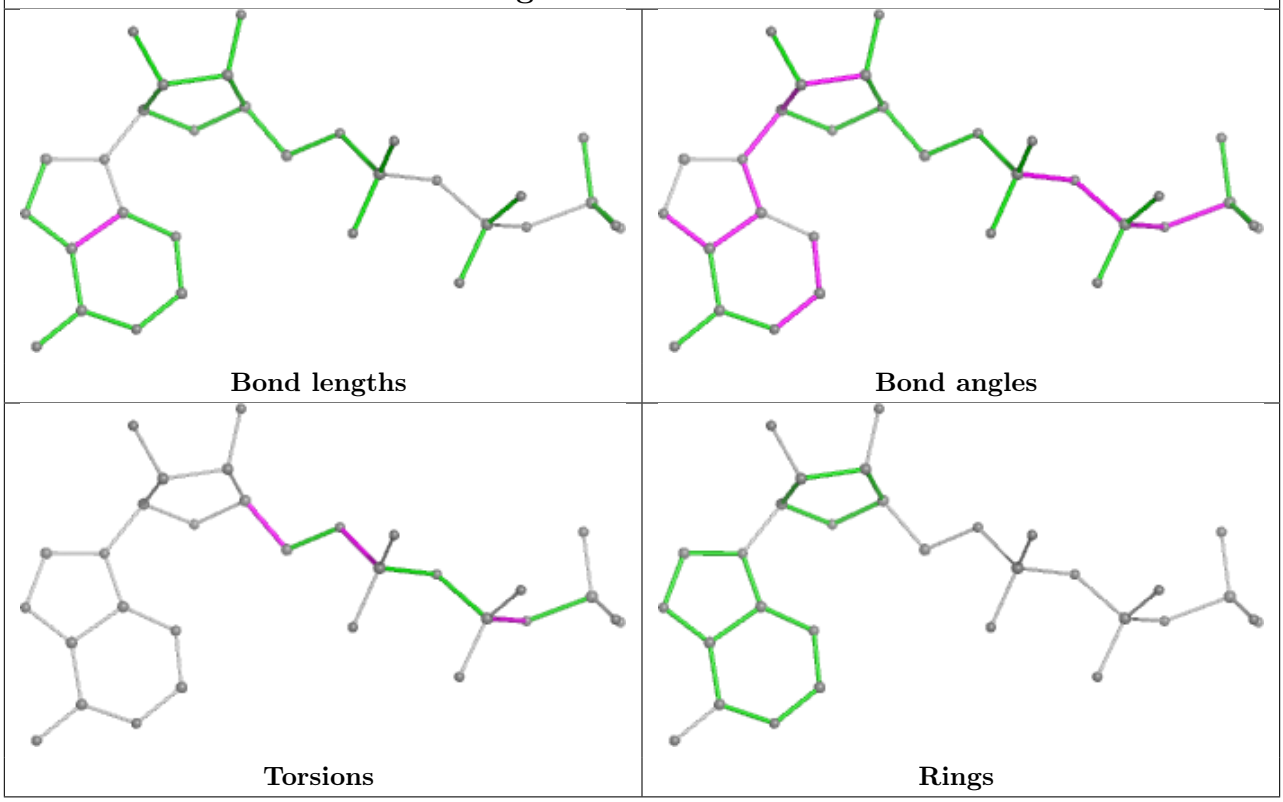
There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand ATP A 5301



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.

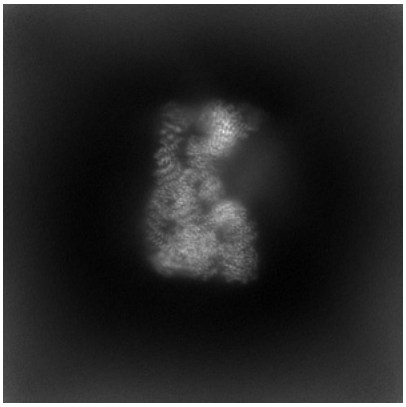
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-19653. These allow visual inspection of the internal detail of the map and identification of artifacts.

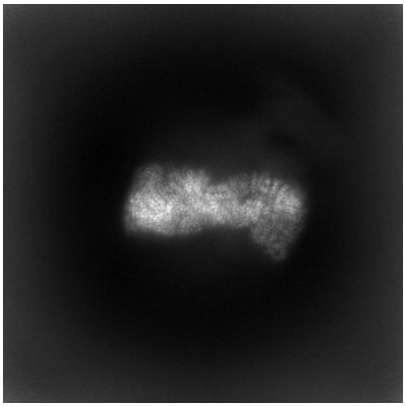
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

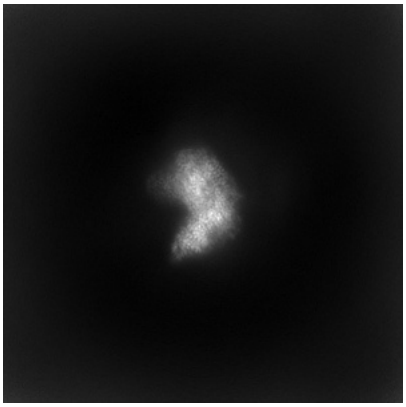
6.1.1 Primary map



X



Y

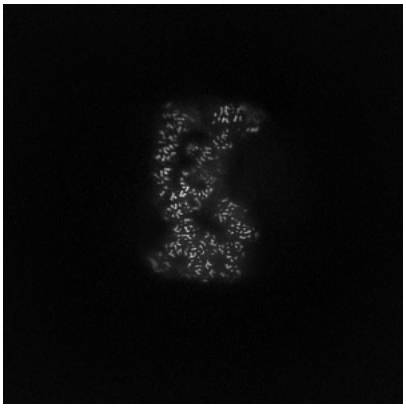


Z

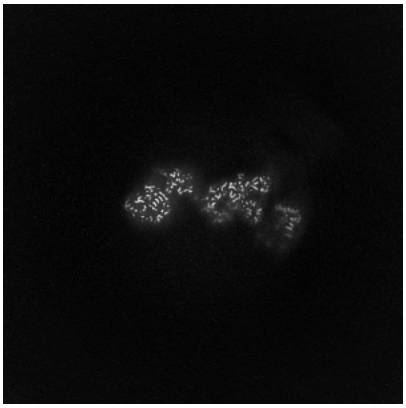
The images above show the map projected in three orthogonal directions.

6.2 Central slices

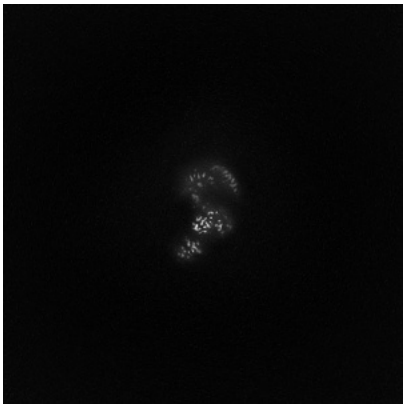
6.2.1 Primary map



X Index: 256



Y Index: 256

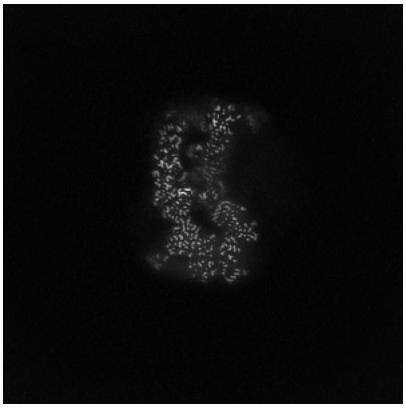


Z Index: 256

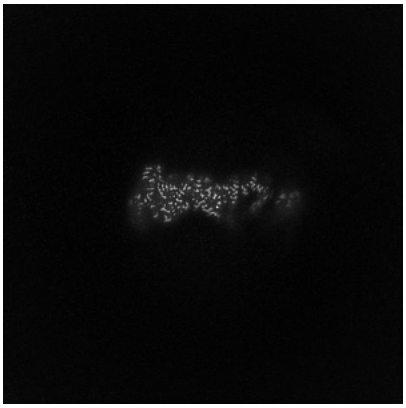
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

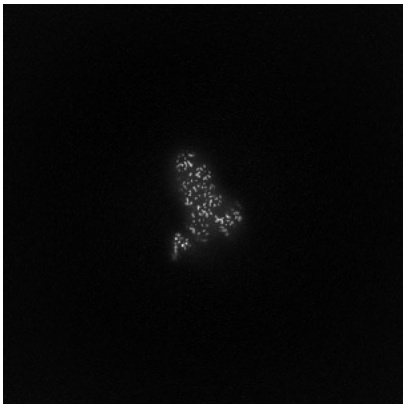
6.3.1 Primary map



X Index: 251



Y Index: 237

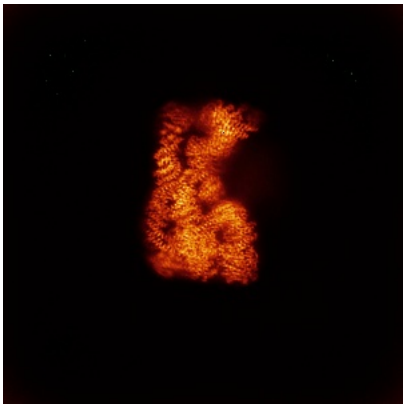


Z Index: 199

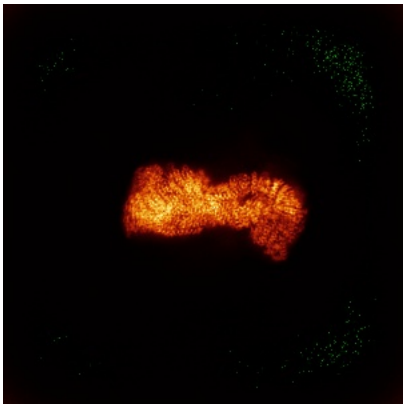
The images above show the largest variance slices of the map in three orthogonal directions.

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

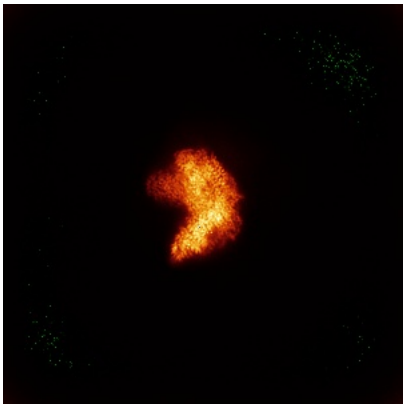
6.4.1 Primary map



X



Y

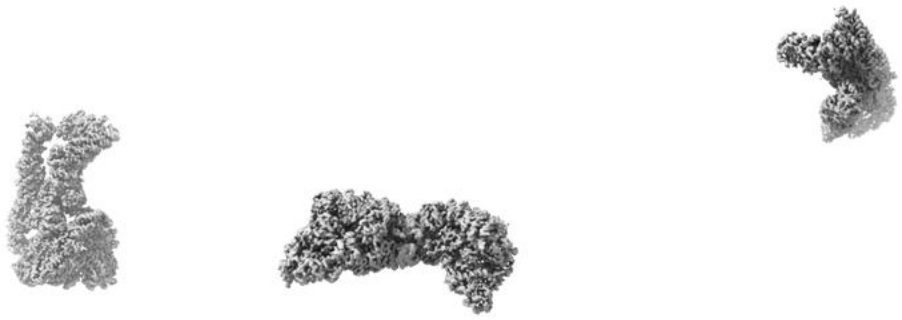


Z

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



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.007. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

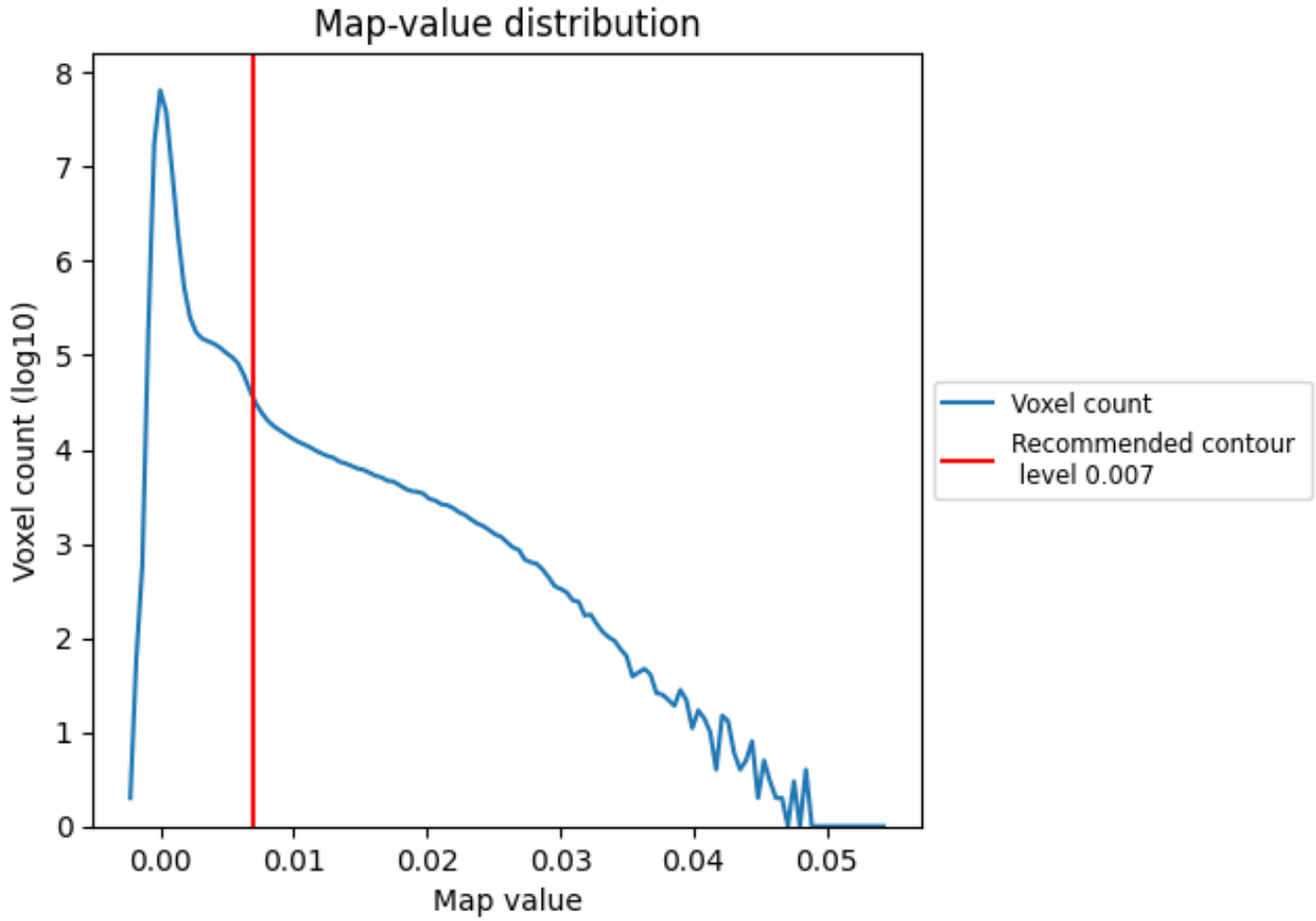
6.6 Mask visualisation (i)

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

7 Map analysis

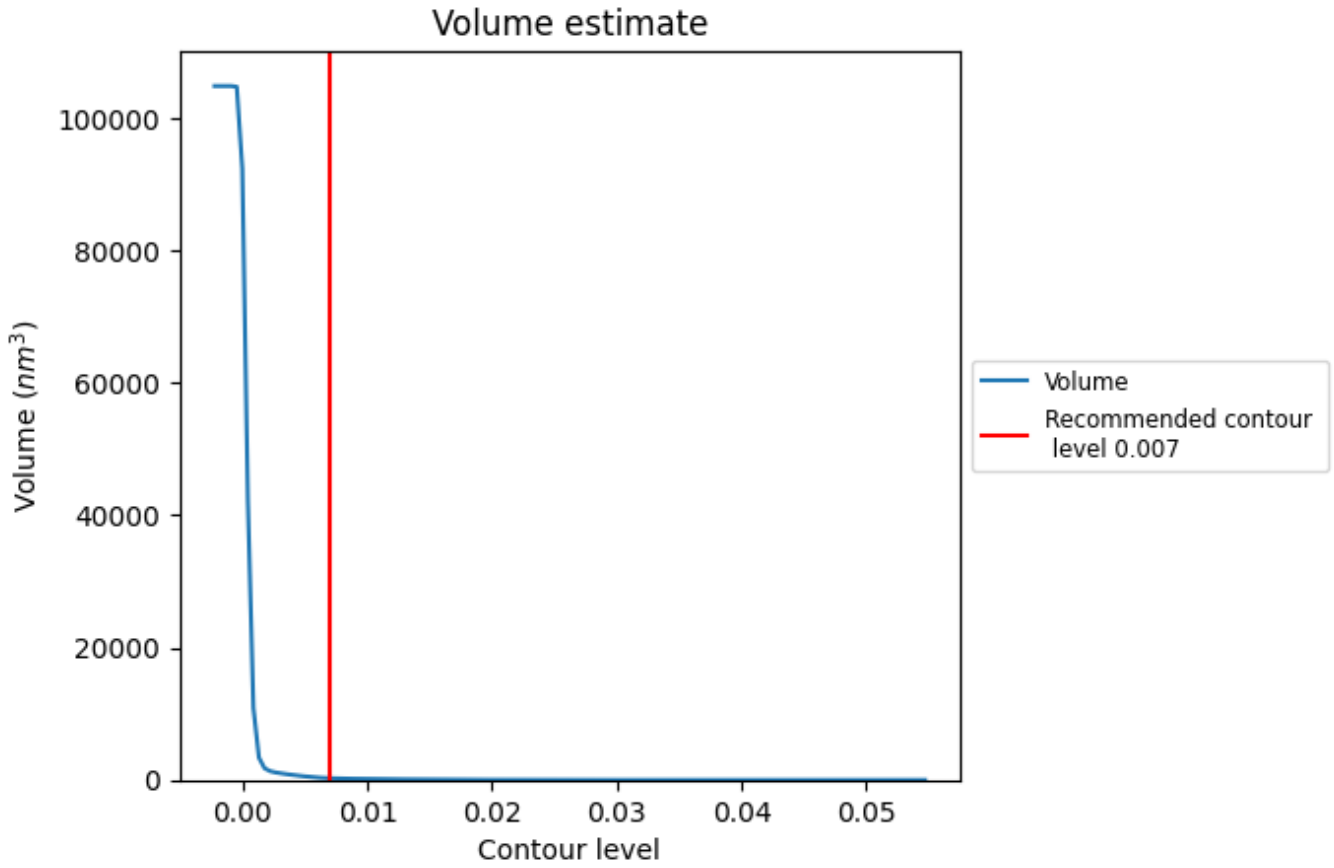
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

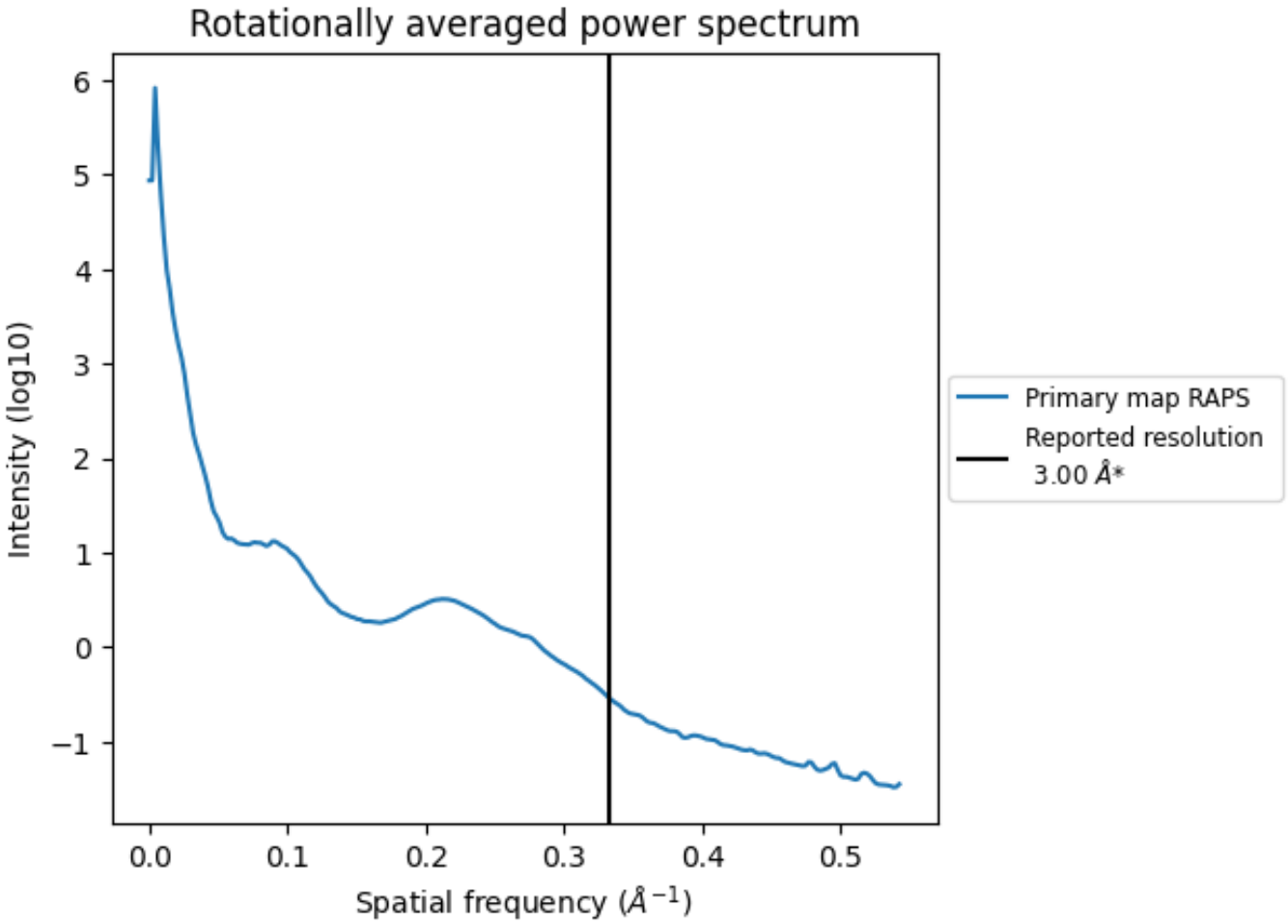
7.2 Volume estimate



The volume at the recommended contour level is 261 nm^3; this corresponds to an approximate mass of 236 kDa.

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

7.3 Rotationally averaged power spectrum (i)



*Reported resolution corresponds to spatial frequency of 0.333 Å^{-1}

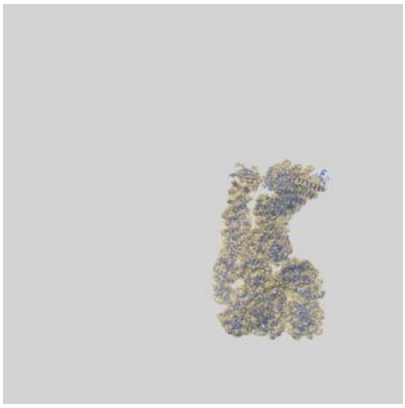
8 Fourier-Shell correlation (i)

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

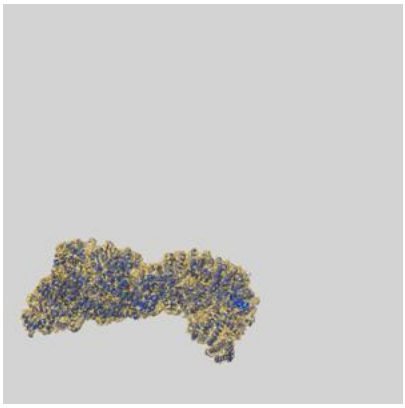
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-19653 and PDB model 8S24. Per-residue inclusion information can be found in section 3 on page 6.

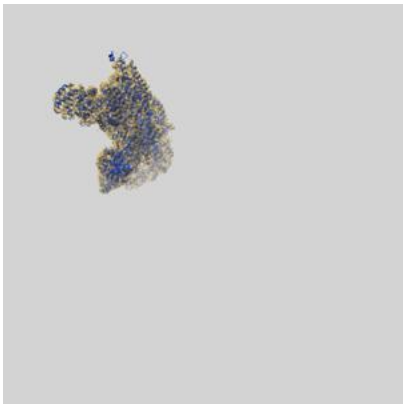
9.1 Map-model overlay



X



Y



Z

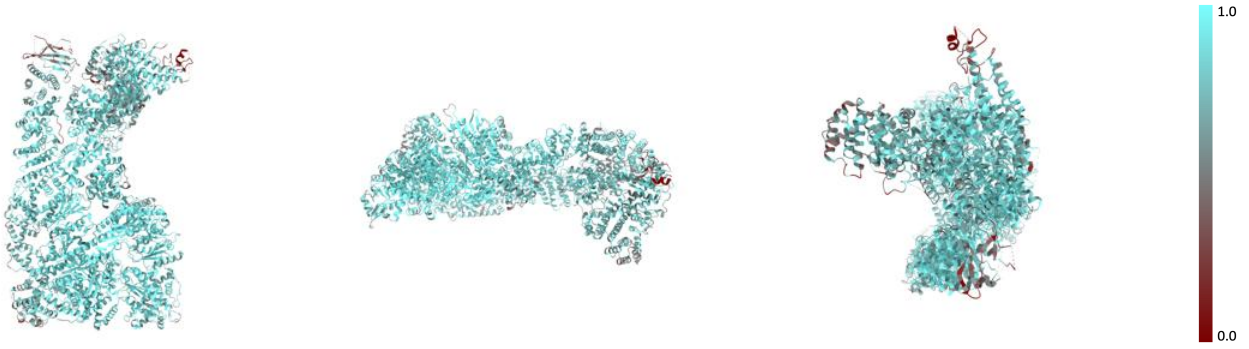
The images above show the 3D surface view of the map at the recommended contour level 0.007 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model

X Y Z

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

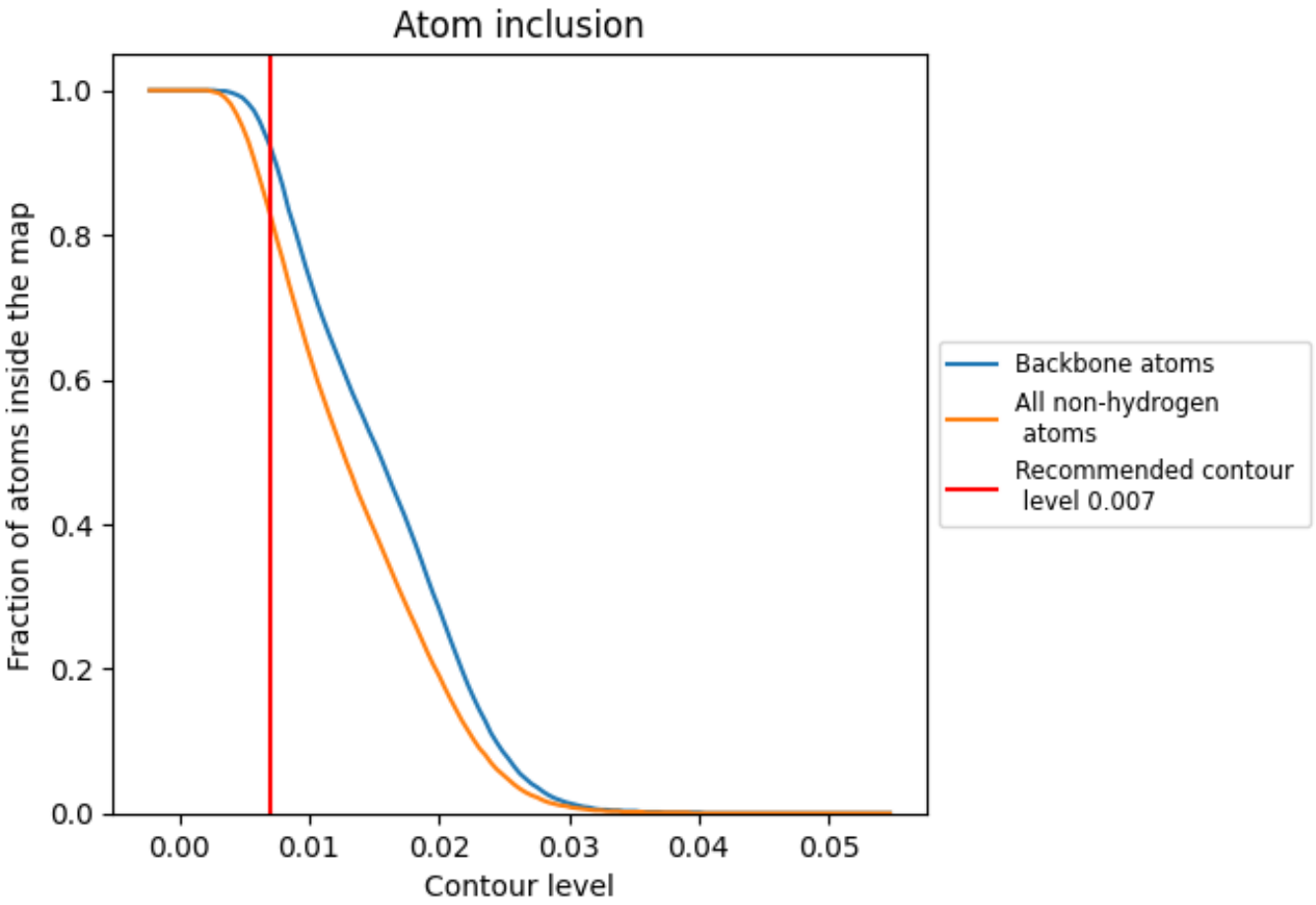
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.007).

9.4 Atom inclusion (i)



At the recommended contour level, 92% of all backbone atoms, 83% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.007) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8280	0.4820
A	0.8290	0.4820