Full wwPDB EM Validation Report ⓘ

Mar 8, 2026 – 09:29 AM UTC

PDB ID	:	5YWD / pdb_00005ywd
EMDB ID	:	EMD-6853
Title	:	Structure of pancreatic ATP-sensitive potassium channel bound with Mg-ADP (focused refinement of SUR1 ABC transporter module at 4.22A)
Authors	:	Chen, L.; Wu, J.X.
Deposited on	:	2017-11-29
Resolution	:	4.20 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

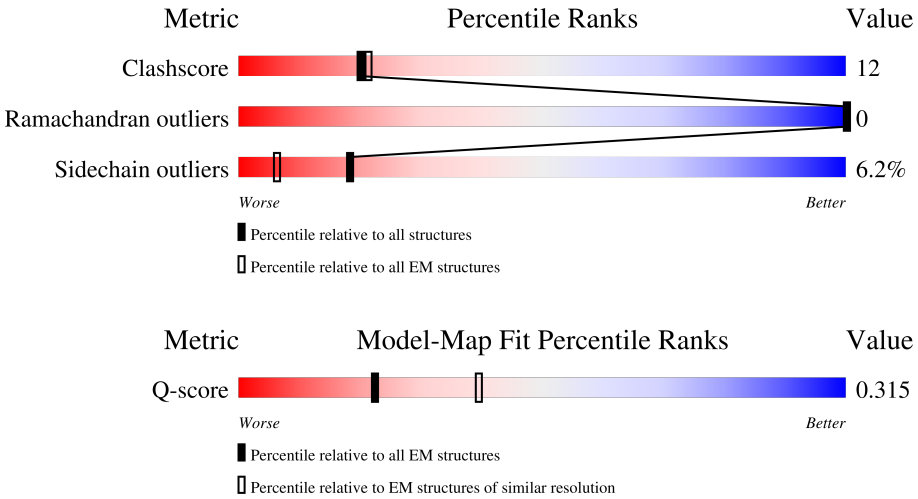
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 4.20 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	5410 (3.70 - 4.70)

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	B	1582	52% 20% 27%

2 Entry composition

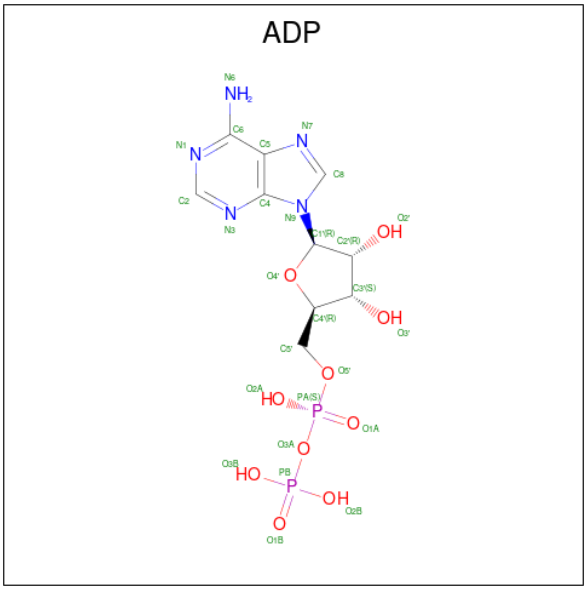
There are 3 unique types of molecules in this entry. The entry contains 8997 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 ATP-binding cassette sub-family C member 8 isoform X2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	B	1154	8941	5786	1523	1585	47	0	0

- Molecule 2 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	B	1	27	10	5	10	2	0
			Total	C	N	O	P	
2	B	1	27	10	5	10	2	0

- Molecule 3 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

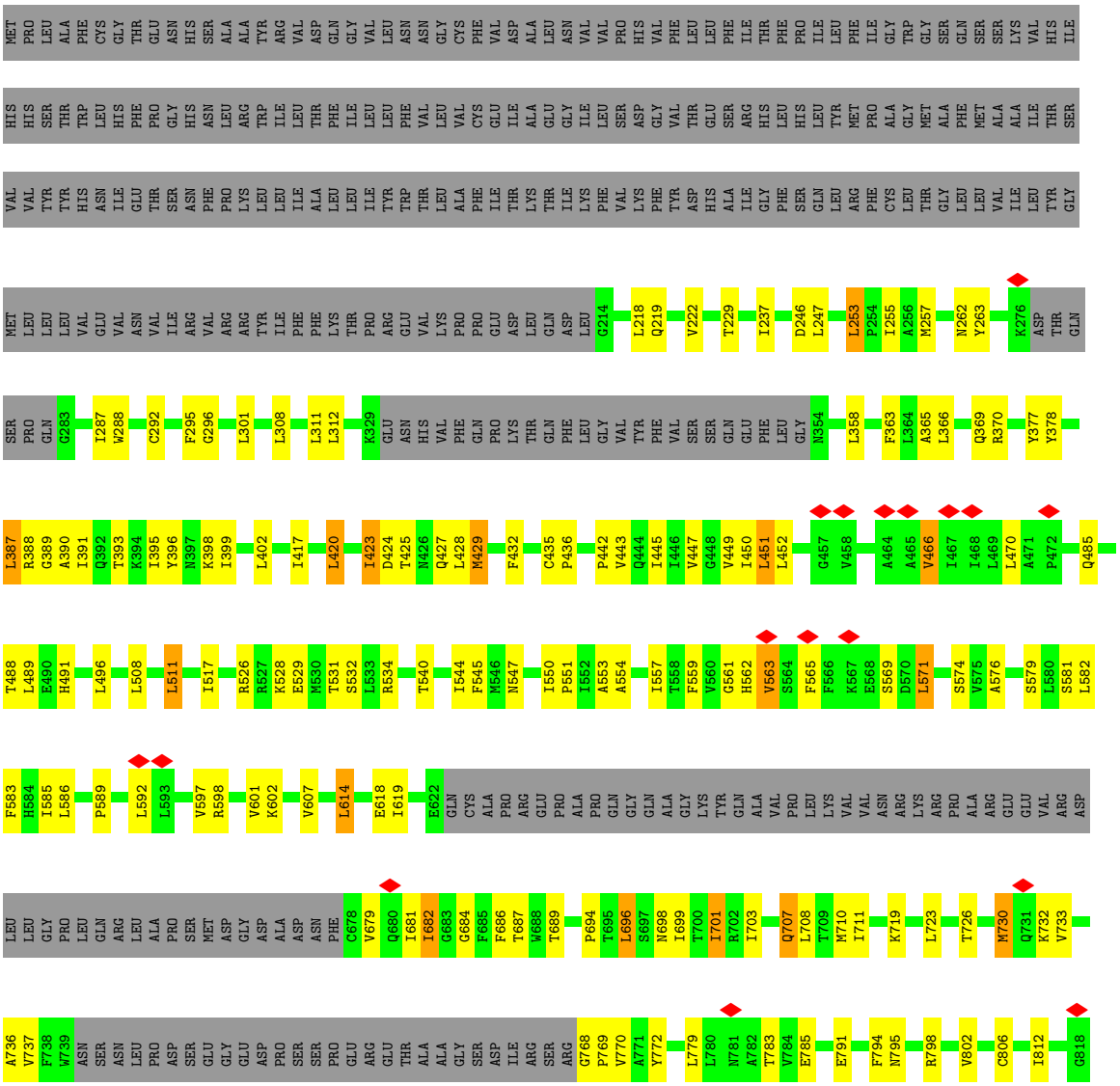
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
3	B	2	2	2	0

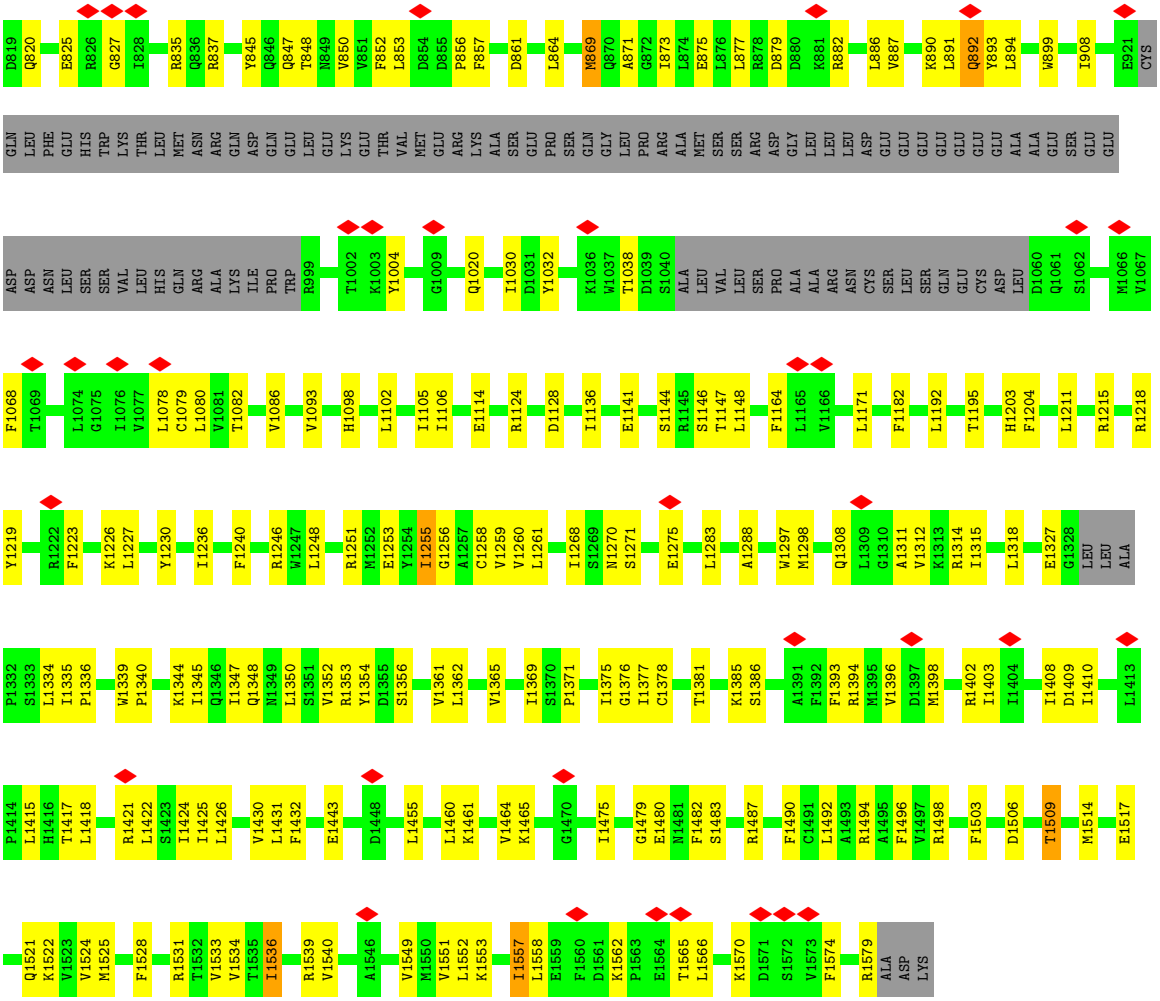
3 Residue-property plots (i)

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: ATP-binding cassette sub-family C member 8 isoform X2

Chain B:




D819 Q820 E825 R826 G827 I828 R835 Q836 R837 Y845 Q846 Q847 T848 N849 V850 V851 F852 L853 D854 D855 P856 F857 D861 L864 M869 Q870 A871 G872 I873 L874 E875 L876 L877 R878 D879 D880 K881 R882 L886 V887 K890 L891 Q892 Y893 L894 W899 I908 E921 CYS
GLN LEU PHE GLU HIS TRP LYS THR LEU MET ASN ARG GLN ASP GLN GLU LEU GLU LYS GLU THR VAL MET GLU ARG LYS ALA SER GLU PRO SER GLN GLY LEU PRO ARG ALA MET SER SER ARG ASP GLY LEU LEU LEU ASP GLU GLU GLU GLU GLU GLU GLU ALA ALA GLU SER GLU GLU
ASP ASP ASN LEU SER SER VAL LEU HIS GLN ARG ALA LYS ILE PRO TRP R999 T1002 K1003 Y1004 G1009 Q1020 I1030 D1031 Y1032 K1036 W1037 T1038 D1039 S1040 ALA LEU VAL LEU SER PRO ALA ALA ARG ASN CYS SER LEU SER GLN GLU CYS ASP LEU D1060 Q1061 S1062 M1066 V1067
F1068 T1069 L1074 G1075 I1076 V1077 L1078 C1079 L1080 V1081 T1082 V1086 V1093 H1098 L1102 I1105 I1106 E1114 R1124 D1128 I1136 E1141 S1144 R1145 S1146 T1147 L1148 F1164 L1165 V1166 L1171 F1182 L1192 T1195 H1203 F1204 L1211 R1215 R1218
Y1219 R1222 F1223 K1226 L1227 Y1230 I1236 F1240 R1246 W1247 L1248 R1251 M1252 E1253 Y1254 I1255 G1256 A1257 C1258 V1259 V1260 L1261 I1268 S1269 N1270 S1271 E1275 L1283 A1288 W1297 M1298 Q1308 L1309 G1310 A1311 V1312 K1313 R1314 I1315 L1318 E1327 G1328 LEU LEU ALA
P1332 S1333 L1334 I1335 P1336 W1339 P1340 K1344 I1345 Q1346 I1347 Q1348 N1349 L1350 S1351 V1352 R1353 Y1354 D1355 S1356 V1361 L1362 V1365 I1369 S1370 P1371 I1375 G1376 I1377 C1378 T1381 K1385 S1386 A1391 F1392 F1393 R1394 M1395 V1396 D1397 M1398 R1402 I1403 I1404 I1408 D1409 I1410 L1413
P1414 L1415 H1416 T1417 L1418 R1421 L1422 S1423 I1424 I1425 L1426 V1430 L1431 F1432 E1443 D1448 L1455 L1460 K1461 V1464 K1465 G1470 I1475 G1479 E1480 M1481 F1482 S1483 R1487 F1490 C1491 L1492 A1493 R1494 A1495 F1496 V1497 R1498 F1503 D1506 T1509 M1514 E1517
Q1521 K1522 V1523 V1524 M1525 F1528 R1531 T1532 V1533 V1534 T1535 I1536 R1539 V1540 A1546 V1549 M1550 V1551 L1552 K1553 I1557 L1558 E1559 F1560 D1561 K1562 P1563 E1564 T1565 L1566 K1570 D1571 S1572 V1573 F1574 R1579 ALA ASP LYS

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	721684	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.263	Depositor
Minimum map value	-0.114	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.025	Depositor
Map size (Å)	329.15997, 329.15997, 329.15997	wwPDB
Map dimensions	312, 312, 312	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.055, 1.055, 1.055	Depositor

5 Model quality

5.1 Standard geometry

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

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	B	0.18	0/9108	0.39	1/12357 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	296	GLY	N-CA-C	6.28	122.89	110.77

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	B	8941	0	9196	224	0
2	B	54	0	24	4	0
3	B	2	0	0	0	0
All	All	8997	0	9220	224	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 12.

All (224) 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:B:295:PHE:CZ	1:B:387:LEU:HB2	2.01	0.94
1:B:1124:ARG:HH11	1:B:1314:ARG:HD3	1.49	0.78
1:B:1271:SER:HA	1:B:1275:GLU:HB3	1.66	0.78
1:B:1421:ARG:HG3	1:B:1422:LEU:HG	1.67	0.76
1:B:387:LEU:HD21	1:B:428:LEU:HB3	1.69	0.72
1:B:1334:LEU:HD13	1:B:1408:ILE:HG23	1.72	0.71
1:B:682:ILE:HG23	1:B:736:ALA:HB3	1.73	0.70
1:B:301:LEU:C	1:B:301:LEU:HD23	2.16	0.70
1:B:287:ILE:HD11	1:B:607:VAL:HG13	1.75	0.69
1:B:1394:ARG:HD2	1:B:1410:ILE:HG21	1.73	0.68
1:B:562:HIS:NE2	1:B:569:SER:O	2.26	0.68
1:B:873:ILE:HA	1:B:877:LEU:HD12	1.77	0.67
1:B:551:PRO:HB3	1:B:583:PHE:CZ	2.30	0.67
1:B:869:MET:HA	1:B:873:ILE:HD12	1.75	0.66
1:B:466:VAL:HG11	1:B:554:ALA:HB2	1.76	0.66
1:B:511:LEU:HD23	1:B:1426:LEU:HD21	1.79	0.65
1:B:1480:GLU:OE1	2:B:2501:ADP:N6	2.30	0.64
1:B:710:MET:HE3	1:B:893:TYR:HB3	1.79	0.64
1:B:1509:THR:HG23	1:B:1517:GLU:HG2	1.79	0.63
1:B:1347:ILE:HG23	1:B:1403:ILE:HG12	1.80	0.63
1:B:1506:ASP:HA	1:B:1536:ILE:HG13	1.80	0.62
1:B:365:ALA:O	1:B:369:GLN:HG3	1.98	0.62
1:B:681:ILE:HB	1:B:701:ILE:HG23	1.80	0.62
1:B:783:THR:HB	1:B:820:GLN:HA	1.80	0.62
1:B:295:PHE:HZ	1:B:387:LEU:HB2	1.63	0.62
1:B:592:LEU:HD11	1:B:1297:TRP:HH2	1.63	0.62
1:B:1032:TYR:HA	1:B:1283:LEU:HD11	1.80	0.62
1:B:369:GLN:HB2	1:B:370:ARG:NH2	2.15	0.61
1:B:551:PRO:HB3	1:B:583:PHE:HZ	1.64	0.61
1:B:301:LEU:HD23	1:B:301:LEU:O	2.01	0.61
1:B:699:ILE:HG23	1:B:908:ILE:HD11	1.82	0.60
1:B:561:GLY:HA2	1:B:565:PHE:HB3	1.82	0.60
1:B:389:GLY:O	1:B:393:THR:HG22	2.02	0.60
1:B:1171:LEU:HD11	1:B:1255:ILE:HG23	1.84	0.60
1:B:1350:LEU:HB3	1:B:1365:VAL:HB	1.83	0.60
1:B:1362:LEU:HD13	1:B:1365:VAL:HG21	1.83	0.60
1:B:785:GLU:HB3	1:B:794:PHE:HZ	1.67	0.59
1:B:312:LEU:HB2	1:B:369:GLN:HG2	1.84	0.59
1:B:1553:LYS:HE3	1:B:1558:LEU:HB2	1.83	0.59
1:B:1344:LYS:HB2	1:B:1371:PRO:HG3	1.85	0.58
1:B:1377:ILE:HB	1:B:1536:ILE:HG23	1.85	0.58
1:B:686:PHE:H	1:B:696:LEU:HB3	1.69	0.57

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:545:PHE:HB2	1:B:1080:LEU:HD13	1.86	0.57
1:B:1385:LYS:HB2	1:B:1536:ILE:HG21	1.86	0.57
1:B:366:LEU:O	1:B:370:ARG:HG2	2.04	0.57
1:B:681:ILE:HD11	1:B:726:THR:HG22	1.87	0.56
1:B:377:TYR:HB3	1:B:1246:ARG:HE	1.70	0.56
1:B:466:VAL:HG13	1:B:550:ILE:HG22	1.86	0.56
1:B:1475:ILE:HD12	1:B:1482:PHE:HE2	1.71	0.55
1:B:1455:LEU:HD13	1:B:1464:VAL:HG21	1.88	0.55
1:B:1353:ARG:HE	1:B:1398:MET:HE3	1.71	0.55
1:B:1528:PHE:HD1	1:B:1531:ARG:HD2	1.71	0.55
1:B:686:PHE:HD1	1:B:733:VAL:HG23	1.71	0.54
1:B:1086:VAL:HG11	1:B:1141:GLU:HB2	1.89	0.54
1:B:1562:LYS:HB3	1:B:1565:THR:HB	1.90	0.54
1:B:526:ARG:HE	1:B:1098:HIS:CG	2.25	0.54
1:B:719:LYS:HB3	1:B:887:VAL:HG11	1.89	0.54
1:B:1311:ALA:O	1:B:1314:ARG:HG2	2.08	0.54
1:B:1540:VAL:HG11	1:B:1579:ARG:HA	1.89	0.54
1:B:791:GLU:HB3	1:B:1219:TYR:HE2	1.73	0.54
1:B:769:PRO:O	1:B:848:THR:OG1	2.26	0.54
1:B:366:LEU:HD23	1:B:1260:VAL:HG11	1.89	0.53
1:B:1226:LYS:HG2	1:B:1230:TYR:HE1	1.73	0.53
1:B:363:PHE:HB2	1:B:1261:LEU:HD13	1.89	0.53
1:B:827:GLY:O	1:B:835:ARG:NH2	2.42	0.53
1:B:442:PRO:O	1:B:445:ILE:HG13	2.08	0.53
1:B:517:ILE:HD11	1:B:1443:GLU:HG2	1.91	0.52
1:B:1393:PHE:CZ	1:B:1422:LEU:HB2	2.44	0.52
1:B:1124:ARG:NH1	1:B:1314:ARG:HD3	2.22	0.52
1:B:562:HIS:CD2	1:B:571:LEU:HD23	2.44	0.52
1:B:1528:PHE:CD1	1:B:1531:ARG:HD2	2.45	0.52
1:B:1455:LEU:HD22	1:B:1460:LEU:HD23	1.92	0.52
1:B:679:VAL:HB	1:B:703:ILE:HD12	1.93	0.51
1:B:559:PHE:O	1:B:563:VAL:HG22	2.10	0.51
1:B:779:LEU:HD11	1:B:835:ARG:HG2	1.92	0.51
1:B:686:PHE:HB2	1:B:732:LYS:HA	1.93	0.51
1:B:768:GLY:O	1:B:1218:ARG:NH2	2.44	0.51
1:B:687:THR:HB	1:B:694:PRO:HA	1.93	0.51
1:B:847:GLN:HA	1:B:882:ARG:HH12	1.76	0.51
1:B:295:PHE:CE1	1:B:387:LEU:HB2	2.46	0.50
1:B:308:LEU:O	1:B:311:LEU:HG	2.11	0.50
1:B:423:ILE:O	1:B:427:GLN:HG2	2.11	0.50
1:B:508:LEU:HD13	1:B:1430:VAL:HG12	1.94	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:798:ARG:NH2	1:B:847:GLN:OE1	2.45	0.50
1:B:1004:TYR:HE1	1:B:1093:VAL:HG11	1.77	0.50
1:B:1347:ILE:HG21	1:B:1350:LEU:HD22	1.93	0.50
1:B:686:PHE:CD1	1:B:733:VAL:HG23	2.46	0.49
1:B:1496:PHE:HA	1:B:1528:PHE:HZ	1.77	0.49
1:B:402:LEU:O	1:B:1215:ARG:NH1	2.45	0.49
1:B:363:PHE:CD1	1:B:1261:LEU:HB2	2.48	0.49
1:B:864:LEU:HD11	1:B:1381:THR:HG21	1.94	0.49
1:B:1339:TRP:CD2	1:B:1340:PRO:HD2	2.48	0.49
1:B:1353:ARG:NE	1:B:1398:MET:HE3	2.28	0.48
1:B:1553:LYS:HZ1	1:B:1558:LEU:HD13	1.77	0.48
1:B:785:GLU:OE1	1:B:820:GLN:NE2	2.41	0.48
1:B:1182:PHE:CD2	1:B:1248:LEU:HD22	2.48	0.48
1:B:1461:LYS:HE2	1:B:1465:LYS:HE2	1.95	0.48
1:B:526:ARG:NH1	1:B:529:GLU:OE1	2.46	0.48
1:B:1570:LYS:HD3	1:B:1574:PHE:HB2	1.95	0.48
1:B:253:LEU:HD13	1:B:1236:ILE:HB	1.95	0.48
1:B:449:VAL:HA	1:B:452:LEU:HG	1.96	0.48
1:B:301:LEU:C	1:B:301:LEU:CD2	2.85	0.48
1:B:581:SER:O	1:B:585:ILE:HG12	2.14	0.48
1:B:1353:ARG:HE	1:B:1398:MET:HB3	1.77	0.48
1:B:526:ARG:HE	1:B:1098:HIS:CD2	2.32	0.47
1:B:485:GLN:HE22	1:B:598:ARG:HG3	1.79	0.47
1:B:1128:ASP:OD1	1:B:1311:ALA:HB1	2.14	0.47
1:B:550:ILE:HB	1:B:551:PRO:HD3	1.96	0.47
1:B:711:ILE:HB	1:B:887:VAL:HG13	1.96	0.47
1:B:1375:ILE:HB	1:B:1534:VAL:HG22	1.97	0.47
1:B:1425:ILE:HD13	1:B:1492:LEU:HD12	1.97	0.47
1:B:1345:ILE:HD11	1:B:1369:ILE:HD12	1.97	0.47
1:B:370:ARG:HD2	1:B:1253:GLU:CD	2.40	0.47
1:B:396:TYR:OH	1:B:1223:PHE:HB3	2.15	0.47
1:B:795:ASN:HB2	1:B:798:ARG:HB3	1.95	0.47
1:B:892:GLN:H	1:B:892:GLN:HG3	1.41	0.47
1:B:489:LEU:HD11	1:B:602:LYS:HE3	1.97	0.47
1:B:488:THR:OG1	1:B:532:SER:HB3	2.14	0.46
1:B:1226:LYS:HG2	1:B:1230:TYR:CE1	2.49	0.46
1:B:388:ARG:HD3	1:B:429:MET:SD	2.56	0.46
1:B:853:LEU:HB2	1:B:886:LEU:HG	1.97	0.46
1:B:592:LEU:HD11	1:B:1297:TRP:CH2	2.48	0.46
1:B:398:LYS:CD	1:B:614:LEU:HA	2.45	0.46
1:B:396:TYR:CD1	1:B:1227:LEU:HD13	2.49	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1490:PHE:O	1:B:1494:ARG:HG3	2.16	0.46
1:B:701:ILE:HD11	1:B:703:ILE:HD11	1.98	0.46
1:B:1078:LEU:O	1:B:1082:THR:HG23	2.15	0.46
1:B:1356:SER:HA	1:B:1398:MET:HE2	1.98	0.46
1:B:802:VAL:HG11	1:B:845:TYR:HB2	1.97	0.46
1:B:553:ALA:O	1:B:557:ILE:HG12	2.15	0.46
1:B:1503:PHE:HB2	1:B:1533:VAL:HG22	1.97	0.46
1:B:1260:VAL:HG23	1:B:1288:ALA:HB1	1.98	0.46
1:B:1352:VAL:HG13	1:B:1361:VAL:HB	1.97	0.46
1:B:1514:MET:HG2	1:B:1539:ARG:NH2	2.31	0.46
1:B:447:VAL:HA	1:B:450:ILE:HG22	1.98	0.45
1:B:263:TYR:HB2	1:B:393:THR:HG21	1.98	0.45
1:B:1353:ARG:O	1:B:1398:MET:HB2	2.17	0.45
1:B:288:TRP:CE3	1:B:607:VAL:HG11	2.52	0.45
1:B:219:GLN:HG2	1:B:378:TYR:CZ	2.52	0.45
1:B:253:LEU:HG	1:B:257:MET:HB3	1.98	0.45
1:B:312:LEU:CB	1:B:369:GLN:HG2	2.47	0.45
1:B:511:LEU:HD12	1:B:511:LEU:HA	1.73	0.45
1:B:395:ILE:O	1:B:399:ILE:HG13	2.17	0.44
1:B:540:THR:O	1:B:544:ILE:HG12	2.17	0.44
1:B:592:LEU:HD21	1:B:1297:TRP:CH2	2.52	0.44
1:B:1460:LEU:HD21	1:B:1490:PHE:CE1	2.52	0.44
1:B:1079:CYS:O	1:B:1082:THR:OG1	2.27	0.44
1:B:853:LEU:HD23	1:B:856:PRO:HG3	1.99	0.44
1:B:576:ALA:O	1:B:579:SER:OG	2.34	0.44
1:B:1030:ILE:HD11	1:B:1068:PHE:CE1	2.52	0.44
1:B:1256:GLY:O	1:B:1260:VAL:HG12	2.18	0.44
1:B:1327:GLU:HB3	1:B:1415:LEU:H	1.81	0.44
1:B:1509:THR:HG21	1:B:1539:ARG:HB2	2.00	0.44
1:B:1369:ILE:HD13	1:B:1375:ILE:HG13	2.00	0.44
1:B:1479:GLY:O	1:B:1487:ARG:NH1	2.51	0.44
1:B:1483:SER:O	1:B:1487:ARG:HG3	2.18	0.44
1:B:288:TRP:HE3	1:B:607:VAL:HG11	1.83	0.44
1:B:684:GLY:O	1:B:698:ASN:N	2.51	0.44
1:B:730:MET:HE3	1:B:730:MET:HB3	1.89	0.44
1:B:1386:SER:OG	2:B:2502:ADP:O1A	2.36	0.44
1:B:491:HIS:CE1	1:B:528:LYS:HB3	2.53	0.44
1:B:1192:LEU:HA	1:B:1195:THR:HG22	2.00	0.44
1:B:1020:GLN:HB3	1:B:1148:LEU:HD11	1.99	0.43
1:B:1105:ILE:HD11	1:B:1318:LEU:HD21	2.00	0.43
1:B:391:ILE:O	1:B:395:ILE:HG23	2.18	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:592:LEU:HD21	1:B:1297:TRP:CZ2	2.54	0.43
1:B:1004:TYR:CE1	1:B:1093:VAL:HG11	2.53	0.43
1:B:1431:LEU:HD12	1:B:1487:ARG:HG2	2.00	0.43
1:B:1102:LEU:HD23	1:B:1102:LEU:HA	1.76	0.43
1:B:1106:ILE:HD13	1:B:1106:ILE:HA	1.89	0.43
1:B:263:TYR:HB2	1:B:393:THR:CG2	2.49	0.43
1:B:255:ILE:HD12	1:B:255:ILE:H	1.83	0.43
1:B:295:PHE:HZ	1:B:387:LEU:CD1	2.30	0.43
1:B:586:LEU:O	1:B:589:PRO:HD2	2.19	0.43
1:B:772:TYR:HD1	1:B:852:PHE:HB2	1.83	0.43
1:B:262:ASN:HB3	1:B:390:ALA:HB2	2.00	0.43
1:B:551:PRO:CB	1:B:583:PHE:HZ	2.30	0.42
1:B:806:CYS:O	1:B:837:ARG:HD2	2.18	0.42
1:B:875:GLU:O	1:B:879:ASP:HB2	2.19	0.42
1:B:1255:ILE:HD13	1:B:1255:ILE:HA	1.93	0.42
1:B:1345:ILE:HG12	1:B:1369:ILE:HB	2.00	0.42
1:B:1494:ARG:O	1:B:1498:ARG:HG3	2.19	0.42
1:B:1521:GLN:HA	1:B:1524:VAL:HG12	2.01	0.42
1:B:219:GLN:HG2	1:B:378:TYR:OH	2.19	0.42
1:B:1246:ARG:HA	1:B:1246:ARG:HD3	1.65	0.42
1:B:571:LEU:HD12	1:B:571:LEU:O	2.20	0.42
1:B:1146:SER:HB3	1:B:1298:MET:HB2	2.02	0.42
1:B:1354:TYR:HA	1:B:1396:VAL:HG13	2.00	0.42
1:B:1020:GLN:HB3	1:B:1148:LEU:CD1	2.50	0.42
1:B:1203:HIS:CD2	1:B:1227:LEU:HD12	2.54	0.42
1:B:417:ILE:O	1:B:420:LEU:HB3	2.20	0.42
1:B:531:THR:O	1:B:534:ARG:HG2	2.20	0.42
1:B:1256:GLY:HA2	1:B:1259:VAL:HG12	2.02	0.42
1:B:253:LEU:HD12	1:B:253:LEU:HA	1.77	0.42
1:B:869:MET:HB3	1:B:869:MET:HE3	1.77	0.42
1:B:812:ILE:HD13	1:B:812:ILE:HA	1.91	0.41
1:B:857:PHE:HE2	1:B:886:LEU:HD21	1.85	0.41
1:B:1144:SER:O	1:B:1147:THR:HG22	2.20	0.41
1:B:1164:PHE:HZ	1:B:1259:VAL:HG23	1.85	0.41
1:B:1394:ARG:HE	1:B:1415:LEU:HD11	1.86	0.41
1:B:246:ASP:OD1	1:B:247:LEU:N	2.49	0.41
1:B:435:CYS:HB3	1:B:436:PRO:HD3	2.02	0.41
1:B:1552:LEU:HD23	1:B:1557:ILE:HG12	2.03	0.41
1:B:1114:GLU:OE1	2:B:2502:ADP:N6	2.52	0.41
1:B:1348:GLN:CG	1:B:1402:ARG:HB2	2.51	0.41
1:B:1415:LEU:HA	1:B:1418:LEU:HD12	2.03	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1521:GLN:O	1:B:1525:MET:HG2	2.20	0.41
1:B:1335:ILE:N	1:B:1336:PRO:HD2	2.35	0.41
1:B:423:ILE:HG13	1:B:424:ASP:N	2.37	0.40
1:B:451:LEU:HD13	1:B:582:LEU:HD21	2.01	0.40
1:B:1308:GLN:O	1:B:1312:VAL:HG23	2.20	0.40
1:B:489:LEU:HD21	1:B:602:LYS:HG2	2.03	0.40
1:B:1376:GLY:O	1:B:1549:VAL:HA	2.21	0.40
1:B:1480:GLU:HB2	2:B:2501:ADP:C6	2.57	0.40
1:B:427:GLN:OE1	1:B:602:LYS:HD3	2.21	0.40
1:B:707:GLN:HE21	1:B:899:TRP:CD1	2.39	0.40
1:B:825:GLU:OE1	1:B:825:GLU:N	2.48	0.40
1:B:890:LYS:HB2	1:B:893:TYR:CE2	2.55	0.40
1:B:496:LEU:HD23	1:B:496:LEU:HA	1.88	0.40
1:B:547:ASN:O	1:B:551:PRO:HG2	2.21	0.40
1:B:597:VAL:O	1:B:601:VAL:HG12	2.21	0.40
1:B:618:GLU:HG2	1:B:619:ILE:H	1.87	0.40
1:B:871:ALA:O	1:B:875:GLU:HB2	2.22	0.40
1:B:1226:LYS:O	1:B:1230:TYR:HD1	2.03	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	B	1138/1582 (72%)	1091 (96%)	47 (4%)	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	B	968/1371 (71%)	908 (94%)	60 (6%)	16 39

All (60) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	218	LEU
1	B	222	VAL
1	B	229	THR
1	B	237	ILE
1	B	253	LEU
1	B	292	CYS
1	B	358	LEU
1	B	387	LEU
1	B	420	LEU
1	B	423	ILE
1	B	425	THR
1	B	429	MET
1	B	432	PHE
1	B	443	VAL
1	B	451	LEU
1	B	466	VAL
1	B	470	LEU
1	B	511	LEU
1	B	563	VAL
1	B	571	LEU
1	B	574	SER
1	B	614	LEU
1	B	682	ILE
1	B	689	THR
1	B	696	LEU
1	B	701	ILE
1	B	707	GLN
1	B	708	LEU
1	B	723	LEU
1	B	730	MET
1	B	737	VAL
1	B	770	VAL
1	B	850	VAL
1	B	861	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	869	MET
1	B	891	LEU
1	B	892	GLN
1	B	894	LEU
1	B	1038	THR
1	B	1136	ILE
1	B	1204	PHE
1	B	1211	LEU
1	B	1240	PHE
1	B	1251	ARG
1	B	1255	ILE
1	B	1258	CYS
1	B	1268	ILE
1	B	1270	ASN
1	B	1315	ILE
1	B	1378	CYS
1	B	1409	ASP
1	B	1417	THR
1	B	1424	ILE
1	B	1432	PHE
1	B	1509	THR
1	B	1522	LYS
1	B	1536	ILE
1	B	1551	VAL
1	B	1557	ILE
1	B	1566	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	223	ASN
1	B	416	GLN
1	B	707	GLN
1	B	863	HIS
1	B	1203	HIS
1	B	1373	GLN
1	B	1518	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)

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 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	ADP	B	2501	3	28,29,29	1.40	4 (14%)	43,45,45	1.79	9 (20%)
2	ADP	B	2502	3	28,29,29	1.39	4 (14%)	43,45,45	1.78	7 (16%)

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	ADP	B	2501	3	-	0/16/32/32	0/3/3/3
2	ADP	B	2502	3	-	4/16/32/32	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2502	ADP	C5-C4	4.62	1.47	1.39
2	B	2501	ADP	C5-C4	4.57	1.47	1.39
2	B	2501	ADP	C5-C6	2.71	1.48	1.41
2	B	2502	ADP	C5-C6	2.61	1.48	1.41
2	B	2501	ADP	C8-N7	2.30	1.36	1.31
2	B	2502	ADP	C5-N7	-2.29	1.34	1.39

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2502	ADP	C8-N7	2.25	1.36	1.31
2	B	2501	ADP	C5-N7	-2.23	1.35	1.39

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	2502	ADP	C5-C4-N3	-5.82	118.70	126.72
2	B	2501	ADP	C5-C4-N3	-5.72	118.84	126.72
2	B	2502	ADP	N3-C4-N9	4.69	135.15	127.17
2	B	2501	ADP	N3-C4-N9	4.49	134.80	127.17
2	B	2502	ADP	C2-N3-C4	3.71	120.89	111.83
2	B	2501	ADP	C2-N3-C4	3.71	120.88	111.83
2	B	2501	ADP	C4-C5-N7	-3.35	106.75	110.58
2	B	2501	ADP	N3-C2-N1	-3.27	123.63	128.58
2	B	2502	ADP	C4-C5-N7	-3.26	106.85	110.58
2	B	2502	ADP	N3-C2-N1	-3.24	123.67	128.58
2	B	2502	ADP	C4-N9-C8	2.62	108.49	105.74
2	B	2501	ADP	C4-N9-C8	2.60	108.47	105.74
2	B	2502	ADP	C5-N7-C8	2.45	107.31	103.45
2	B	2501	ADP	C5-N7-C8	2.39	107.21	103.45
2	B	2501	ADP	C3'-C2'-C1'	2.39	105.98	101.46
2	B	2501	ADP	C6-C5-N7	2.12	136.18	132.09

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	2502	ADP	C5'-O5'-PA-O3A
2	B	2502	ADP	O4'-C4'-C5'-O5'
2	B	2502	ADP	C3'-C4'-C5'-O5'
2	B	2502	ADP	C5'-O5'-PA-O2A

There are no ring outliers.

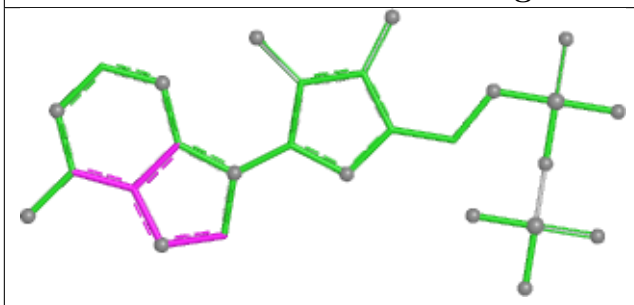
2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	2501	ADP	2	0
2	B	2502	ADP	2	0

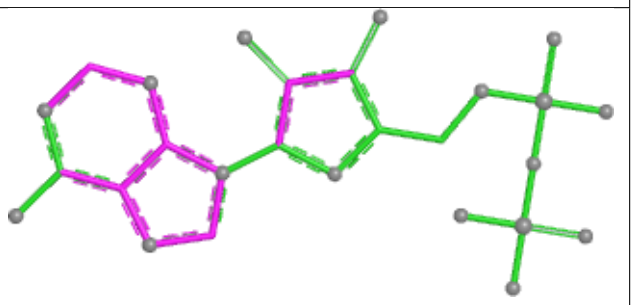
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

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.

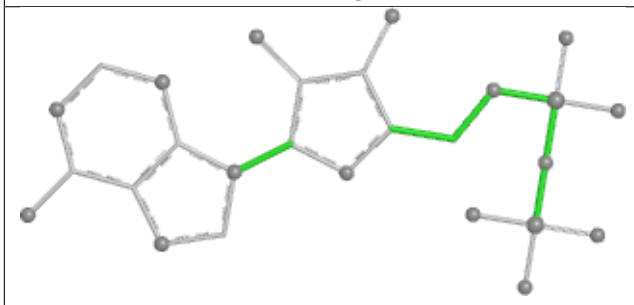
Ligand ADP B 2501



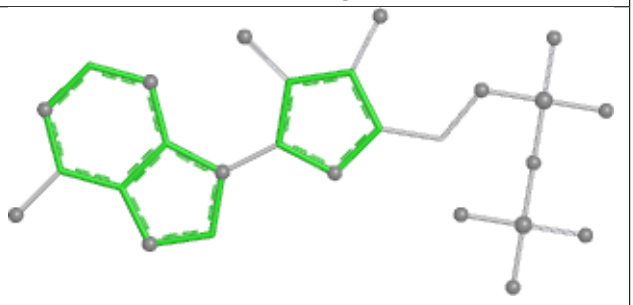
Bond lengths



Bond angles

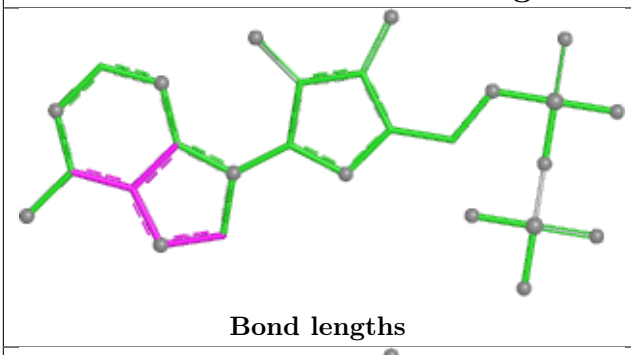


Torsions

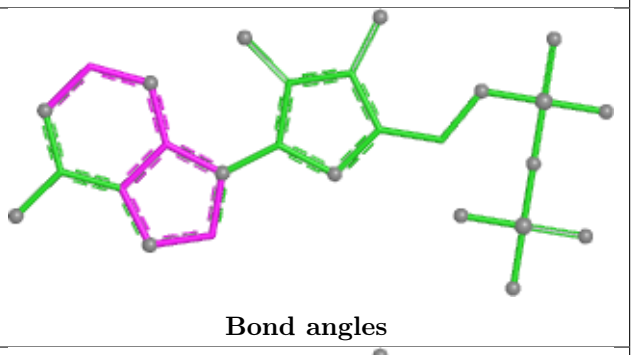


Rings

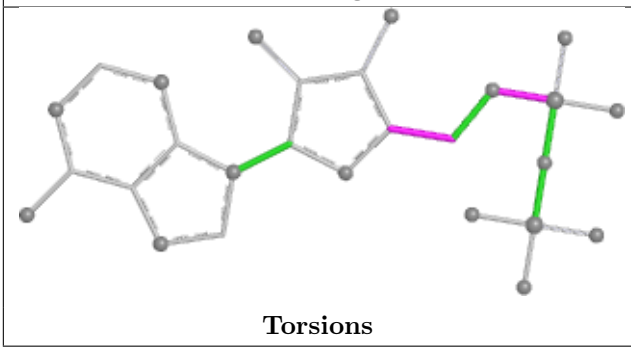
Ligand ADP B 2502



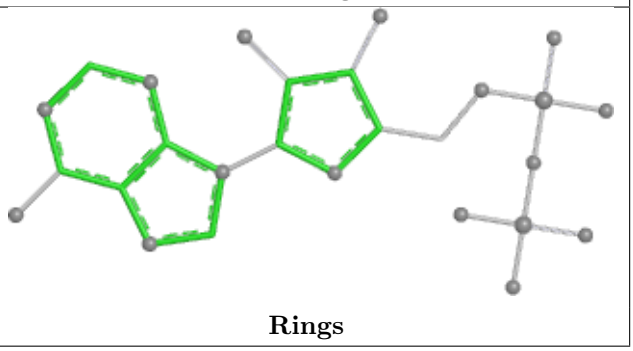
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Map visualisation

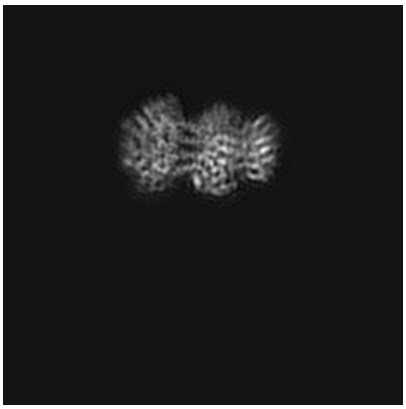
This section contains visualisations of the EMDB entry EMD-6853. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

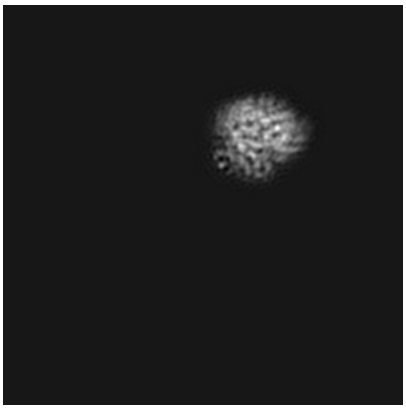
6.1 Orthogonal projections

6.1.1 Primary map

X

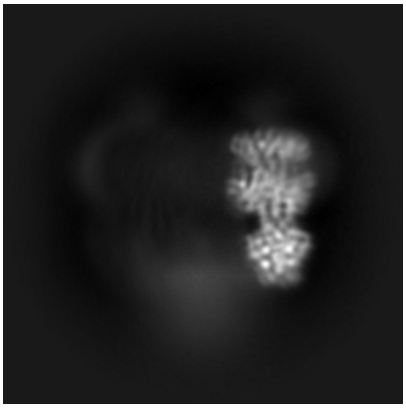


Y

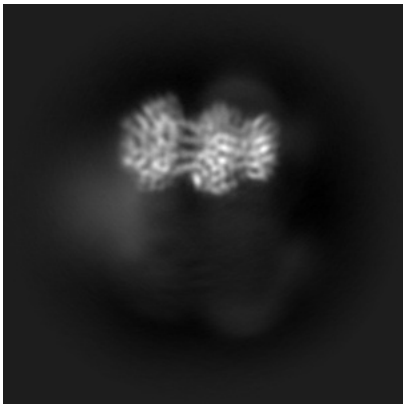


Z

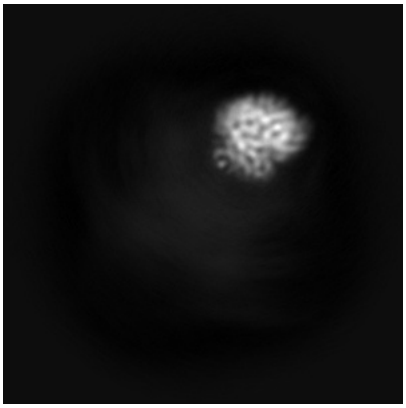
6.1.2 Raw map



X



Y

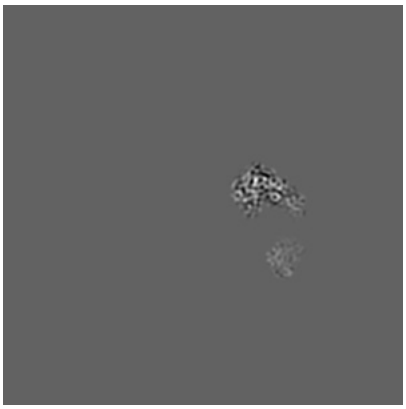


Z

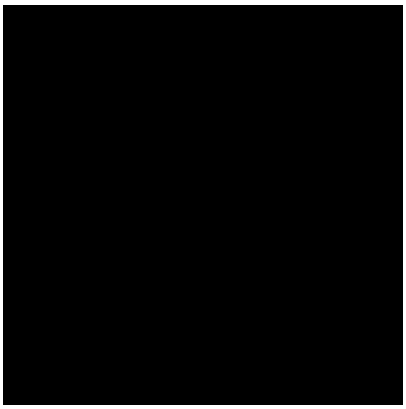
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

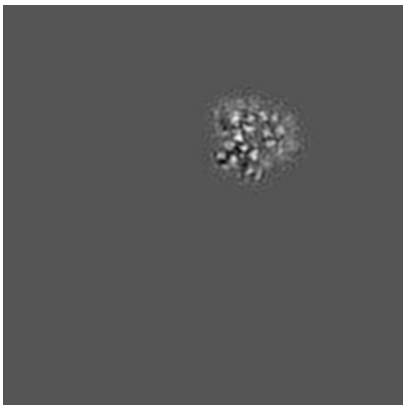
6.2.1 Primary map



X Index: 156

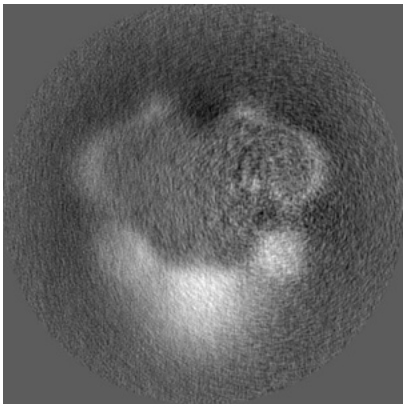


Y Index: 156

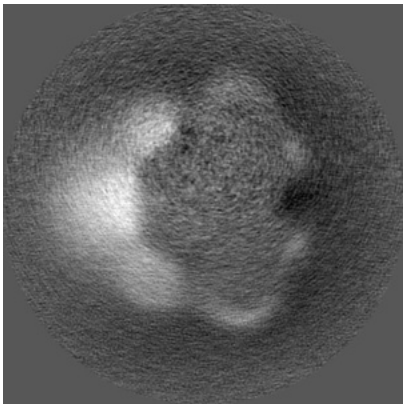


Z Index: 156

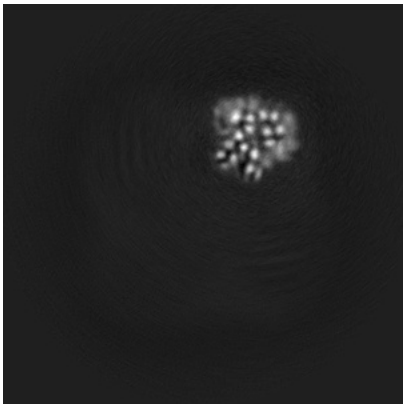
6.2.2 Raw map



X Index: 156



Y Index: 156



Z Index: 156

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

6.3 Largest variance slices (i)

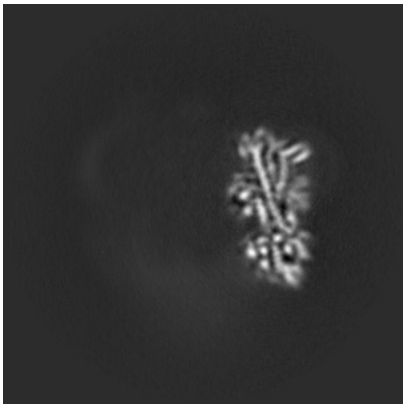
6.3.1 Primary map

X Index: 185

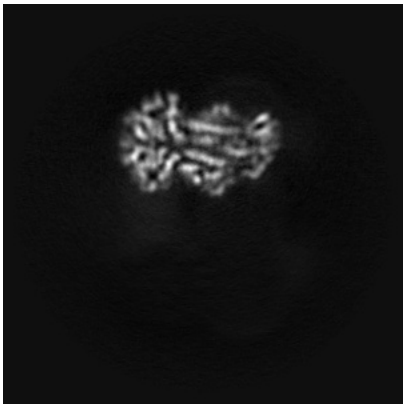
Y Index: 214

Z Index: 171

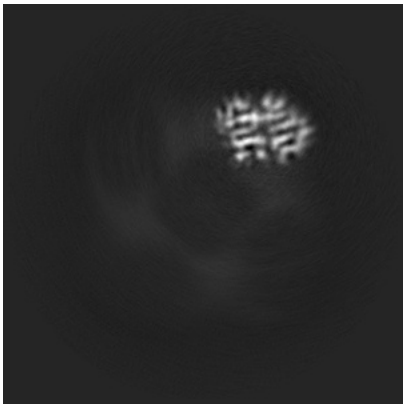
6.3.2 Raw map



X Index: 186



Y Index: 214

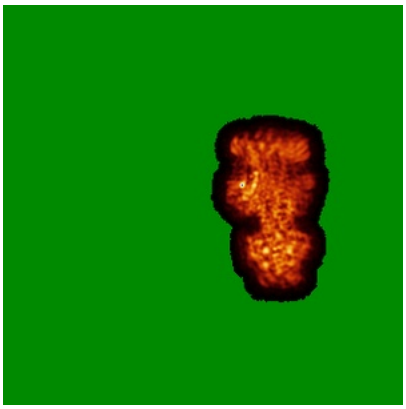


Z Index: 120

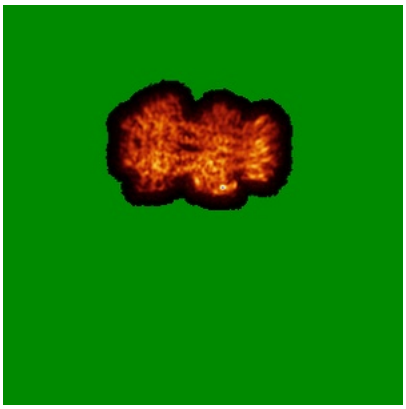
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



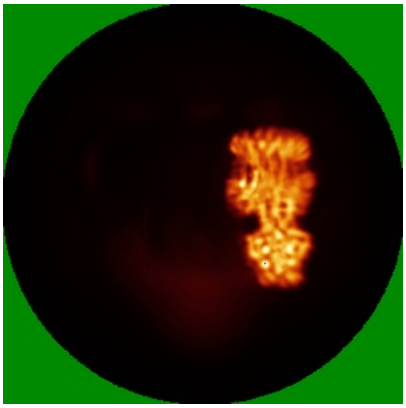
X



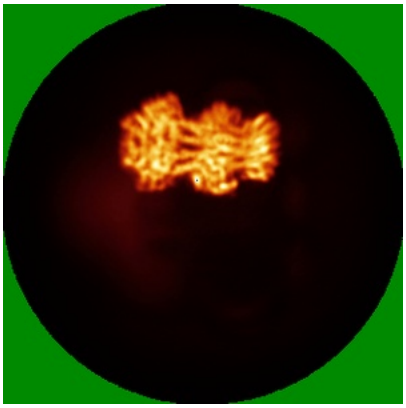
Y

Z

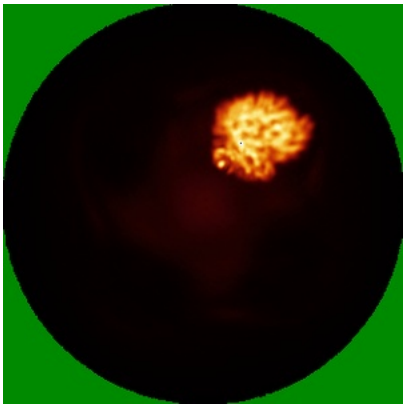
6.4.2 Raw map



X



Y

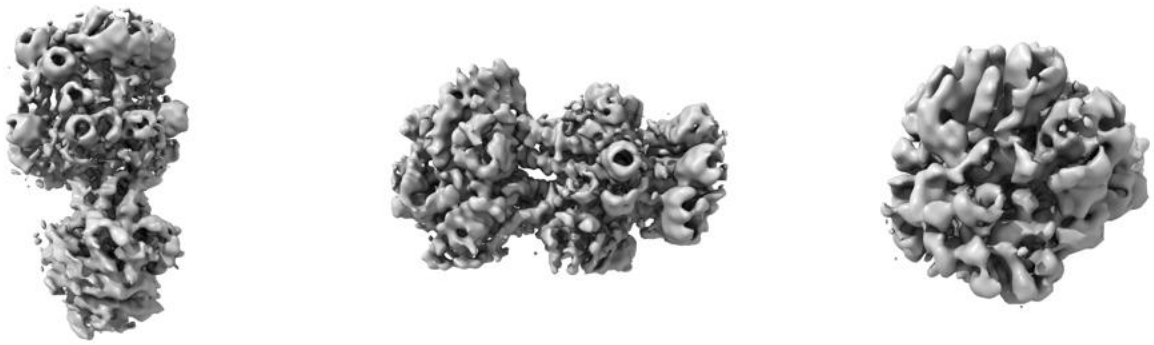


Z

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

6.5 Orthogonal surface views (i)

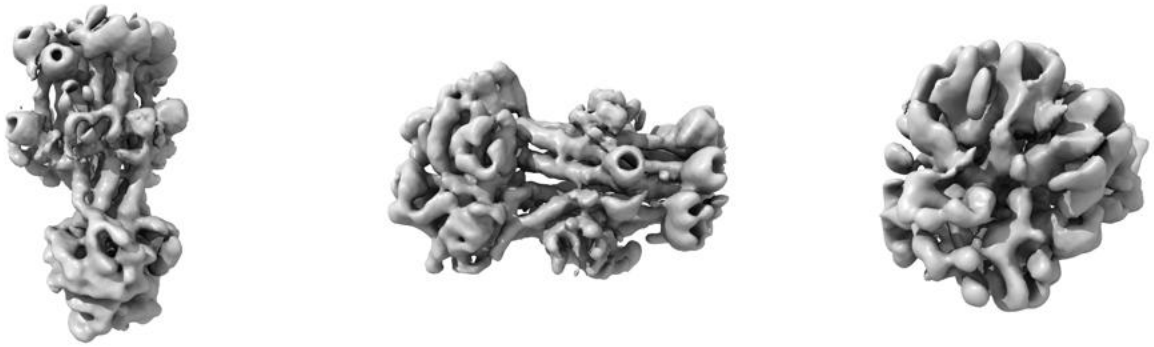
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

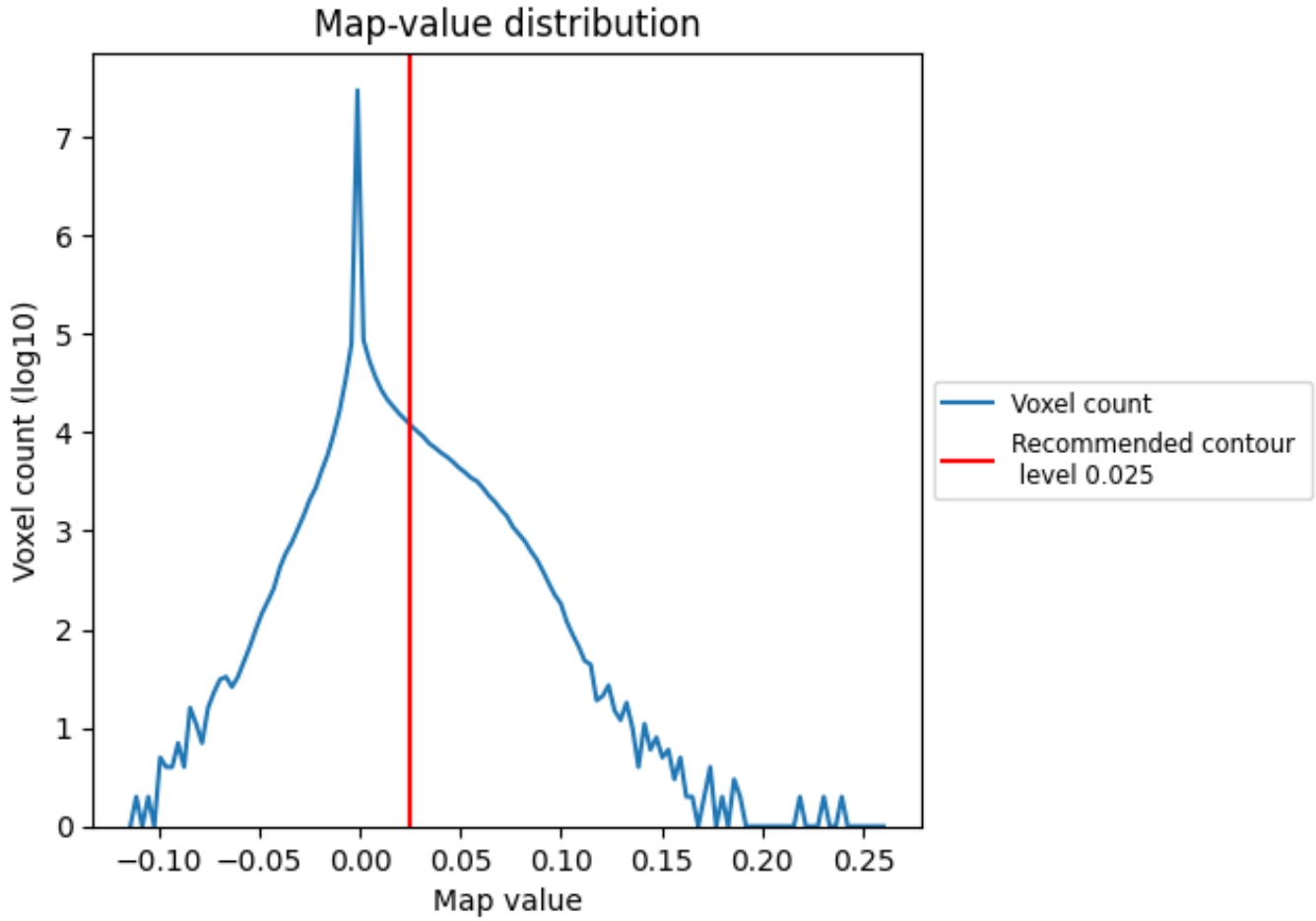
6.6 Mask visualisation (i)

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

7 Map analysis

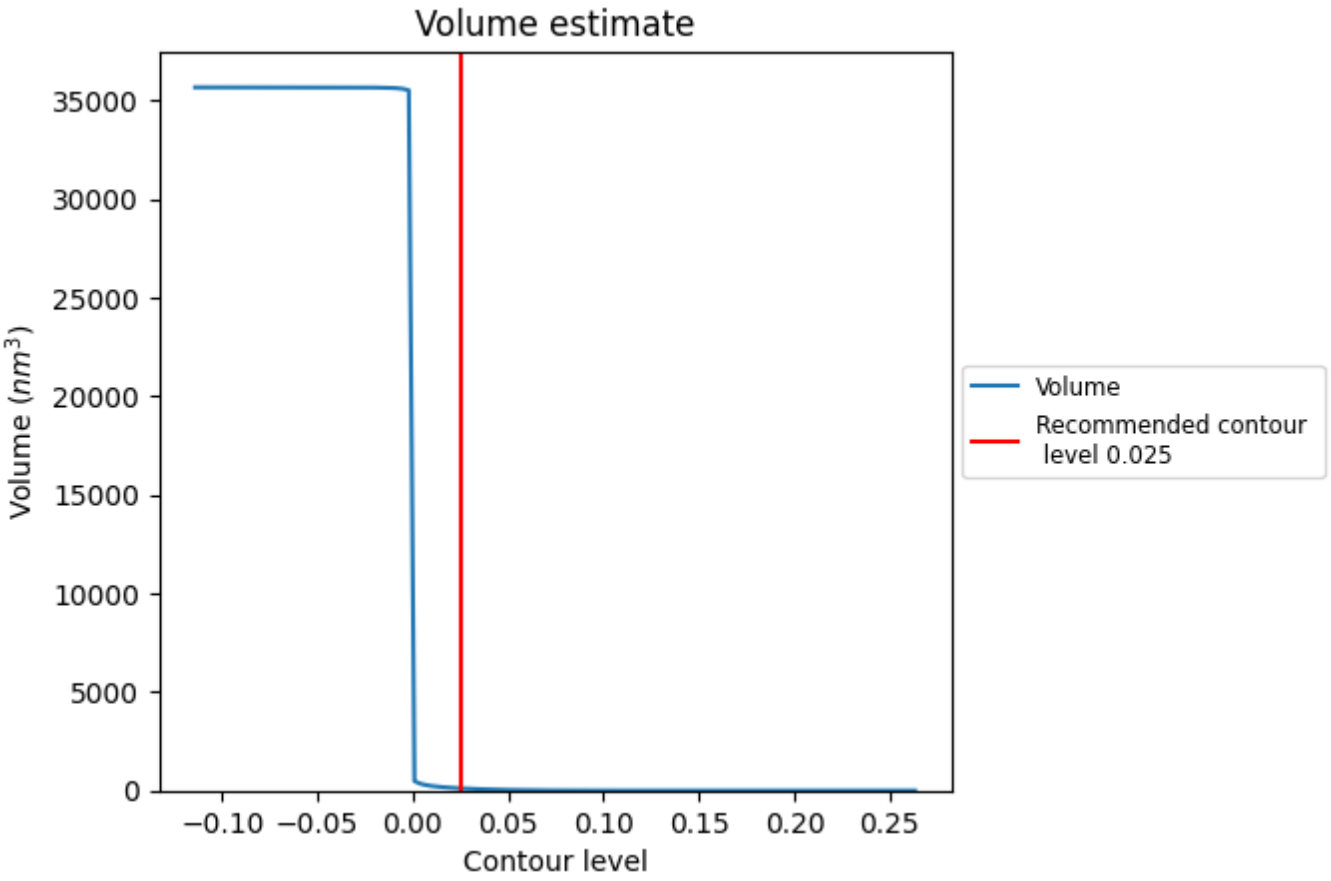
This section contains the results of statistical analysis of the map.

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.

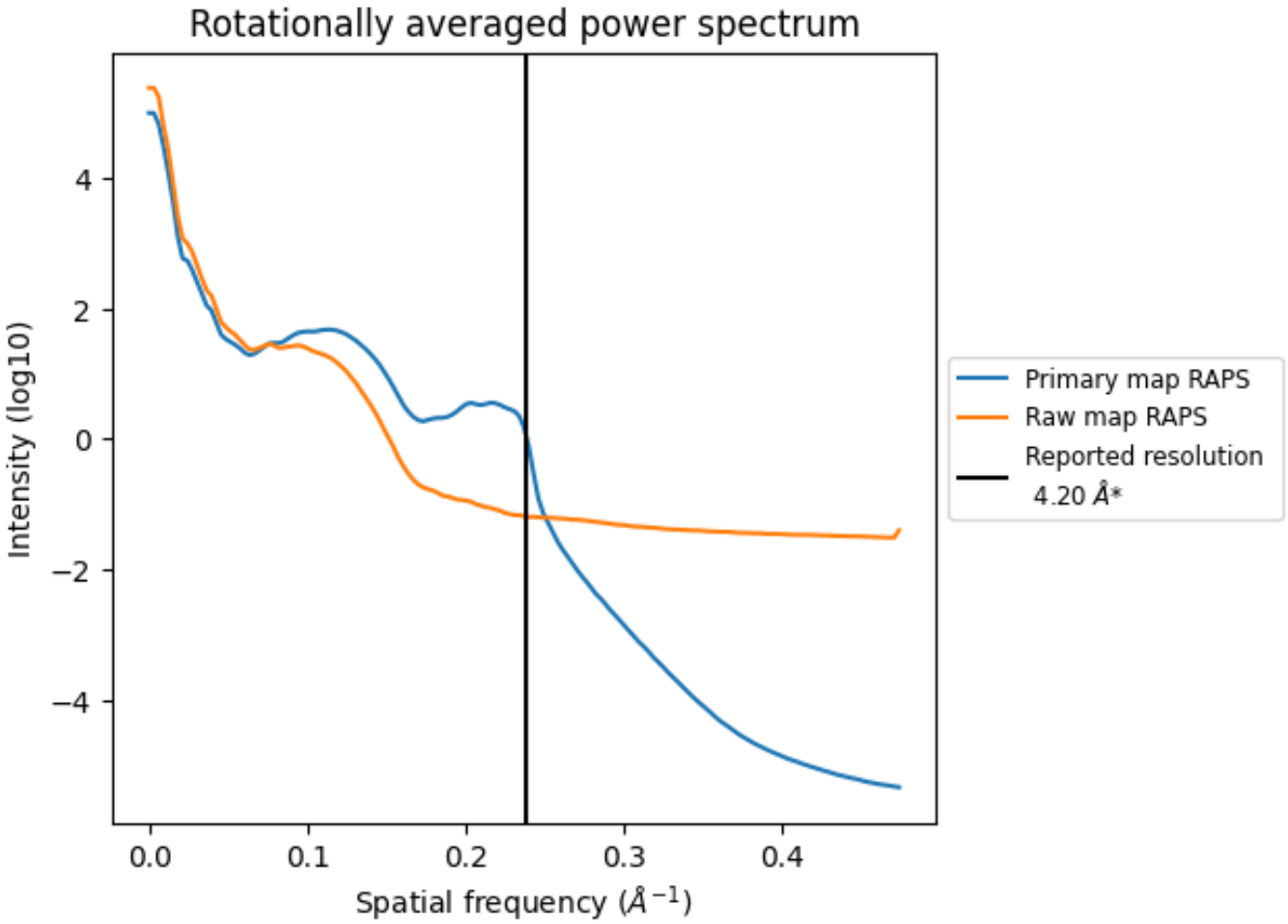
7.2 Volume estimate



The volume at the recommended contour level is 112 nm^3; this corresponds to an approximate mass of 101 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)

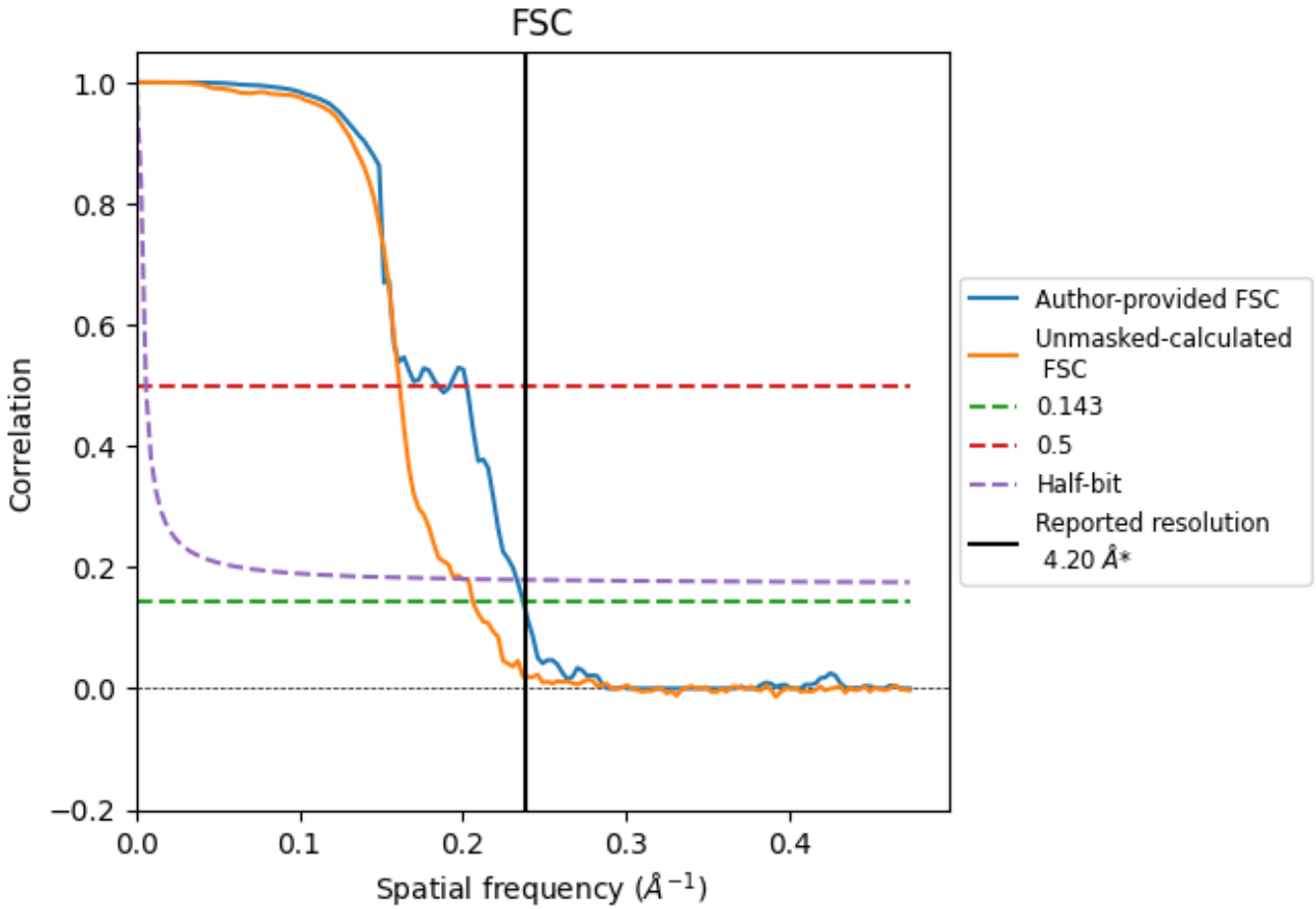


*Reported resolution corresponds to spatial frequency of 0.238 $Å^{-1}$

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.238 Å^{-1}

8.2 Resolution estimates (i)

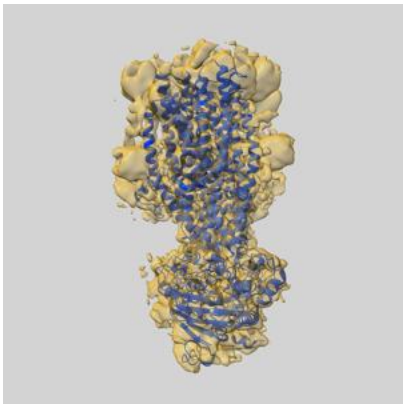
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.20	-	-
Author-provided FSC curve	4.22	5.41	4.29
Unmasked-calculated*	4.84	6.20	5.00

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.84 differs from the reported value 4.2 by more than 10 %

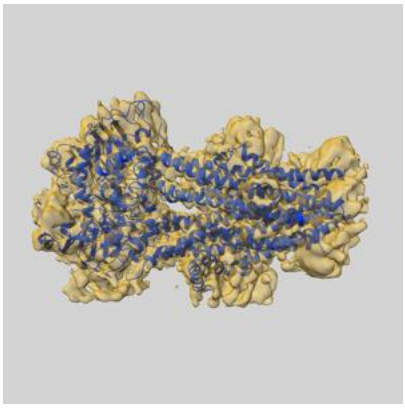
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-6853 and PDB model 5YWD. Per-residue inclusion information can be found in section 3 on page 4.

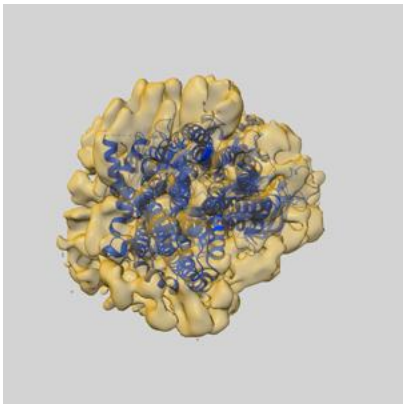
9.1 Map-model overlay



X



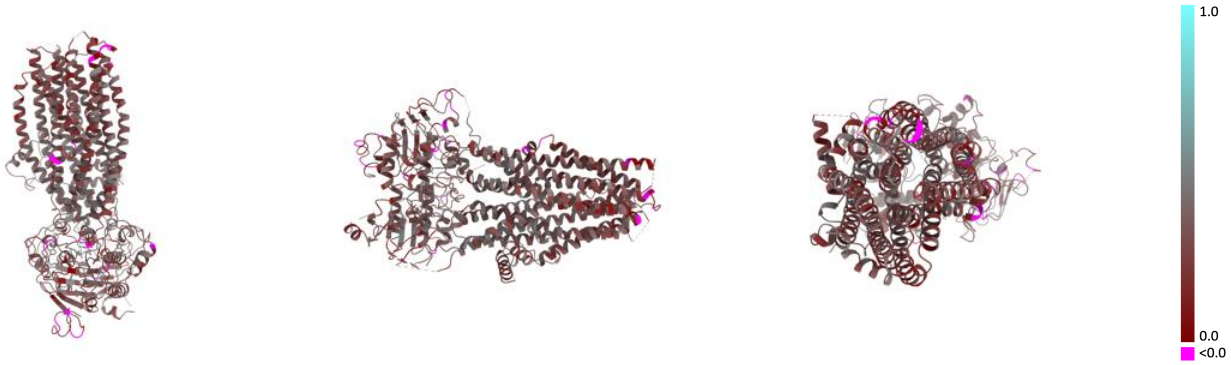
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.025 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



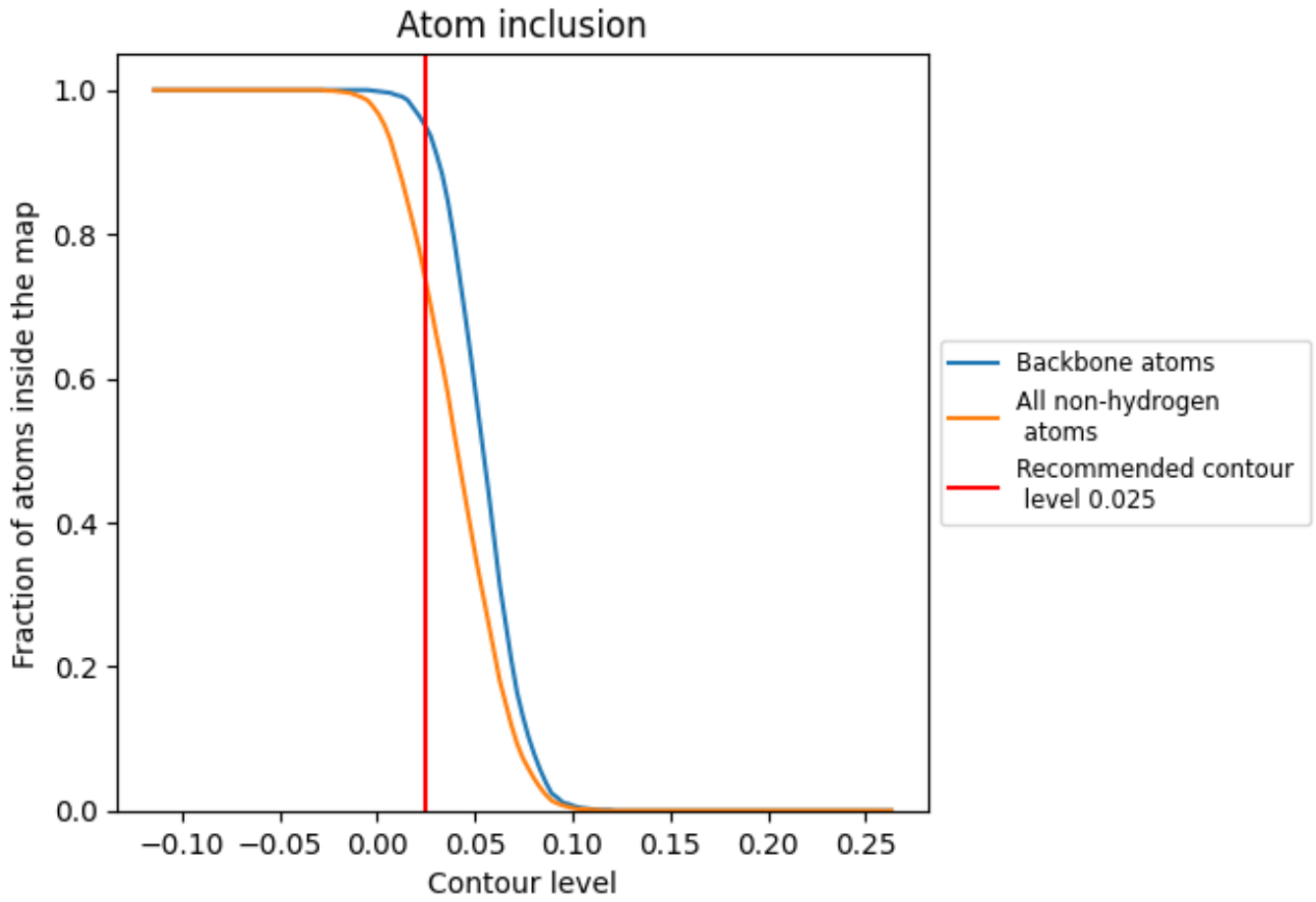
X Y Z

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

This section was not generated.

9.4 Atom inclusion (i)



At the recommended contour level, 95% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7330	0.3150
B	0.7330	0.3150