Full wwPDB EM Validation Report

Sep 1, 2025 – 02:02 pm BST

PDB ID	:	9QE7 / pdb_00009qe7
EMDB ID	:	EMD-53049
Title	:	Membrane-distal part of extracellular domain of the Fap2 autotransporter adhesin from Fusobacterium nucleatum ATCC23726
Authors	:	Schoepf, F.; Marongiu, G.L.; Milaj, K.; Sprink, T.; Kikhney, J.; Moter, A.; Roderer, D.
Deposited on	:	2025-03-07
Resolution	:	4.40 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:

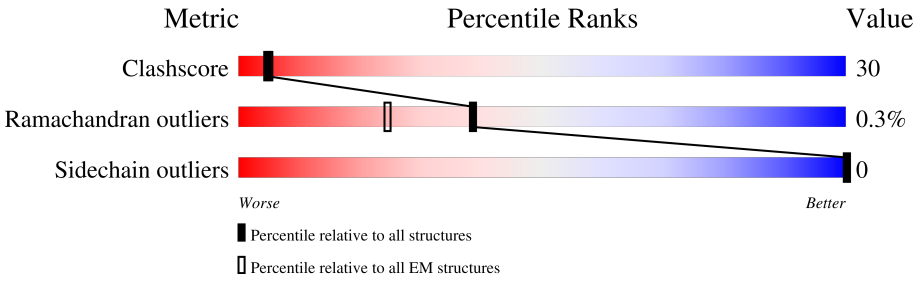
EMDB validation analysis	:	0.0.1.dev126
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 4.40 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	3250	17% 22% 24% 54%

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 10826 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 Outer membrane autotransporter barrel domain protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1483	10826	6651	1867	2289	19	0	0

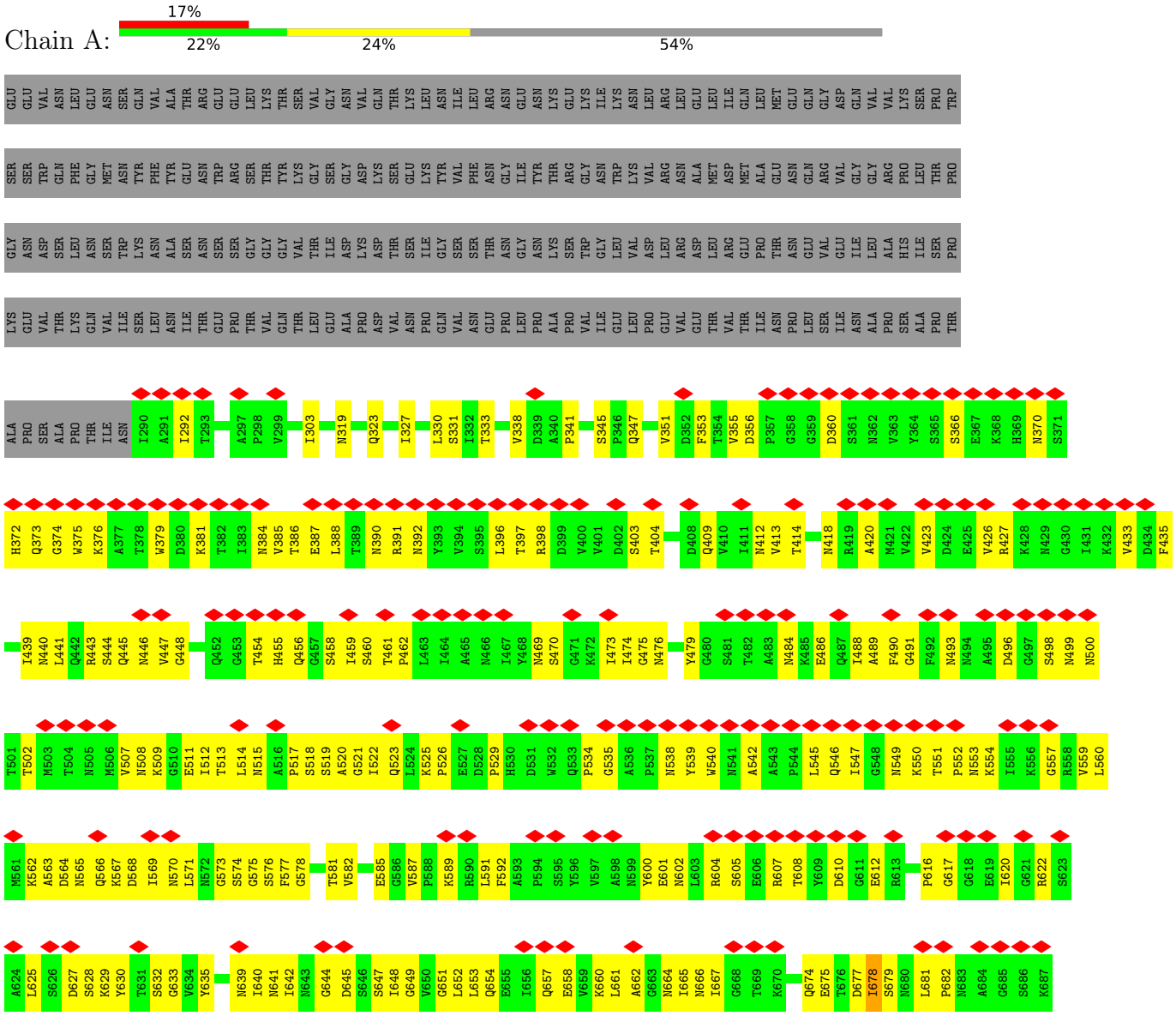
There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	3272	GLY	-	expression tag	UNP D5RBA4
A	3273	SER	-	expression tag	UNP D5RBA4
A	3274	ALA	-	expression tag	UNP D5RBA4
A	3275	HIS	-	expression tag	UNP D5RBA4
A	3276	HIS	-	expression tag	UNP D5RBA4
A	3277	HIS	-	expression tag	UNP D5RBA4
A	3278	HIS	-	expression tag	UNP D5RBA4
A	3279	HIS	-	expression tag	UNP D5RBA4
A	3280	HIS	-	expression tag	UNP D5RBA4
A	3281	HIS	-	expression tag	UNP D5RBA4
A	3282	HIS	-	expression tag	UNP D5RBA4
A	3283	SER	-	expression tag	UNP D5RBA4
A	3284	ALA	-	expression tag	UNP D5RBA4
A	3285	GLY	-	expression tag	UNP D5RBA4
A	3286	GLU	-	expression tag	UNP D5RBA4
A	3287	ASN	-	expression tag	UNP D5RBA4
A	3288	LEU	-	expression tag	UNP D5RBA4
A	3289	TYR	-	expression tag	UNP D5RBA4
A	3290	PHE	-	expression tag	UNP D5RBA4
A	3291	GLN	-	expression tag	UNP D5RBA4

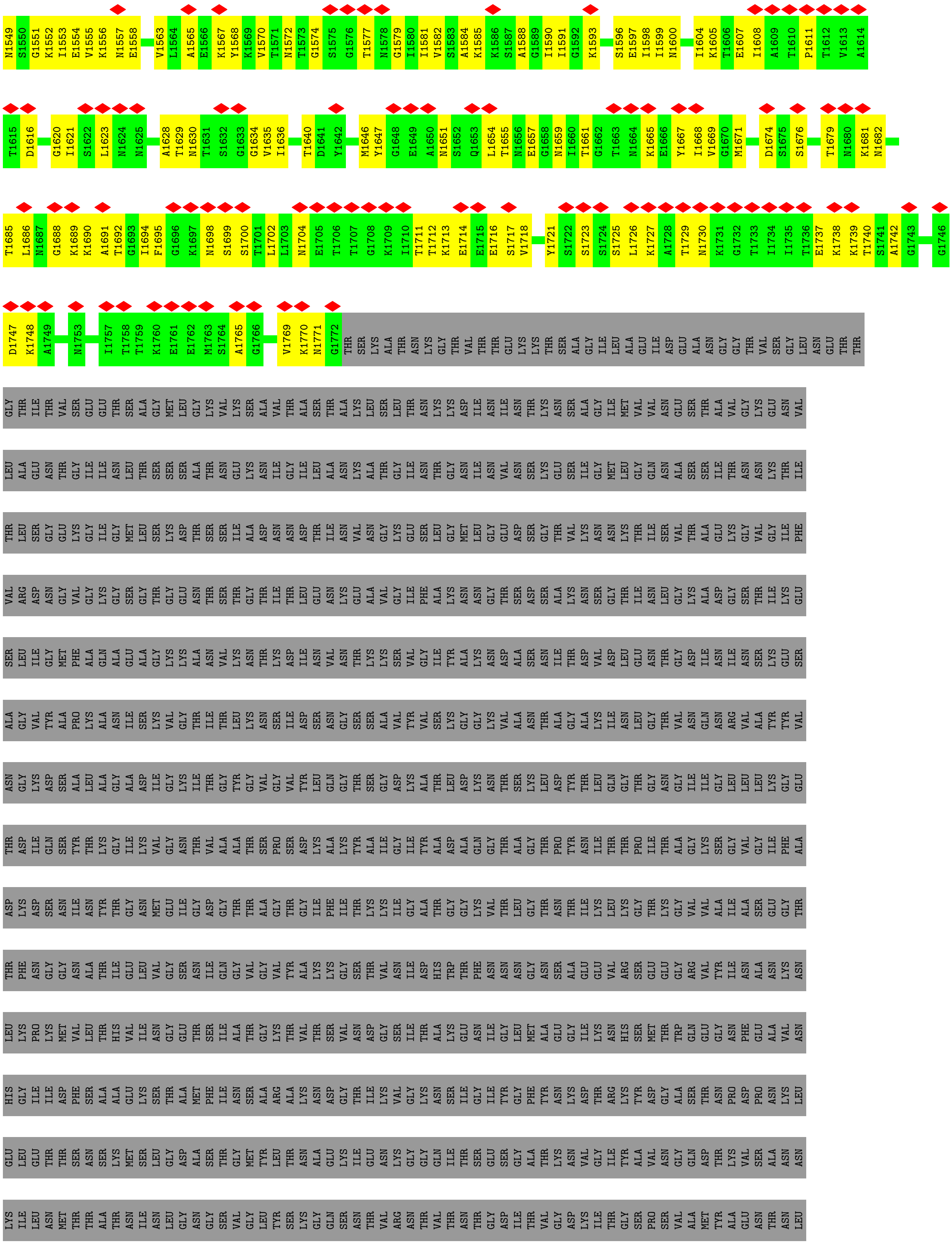
3 Residue-property plots (i)

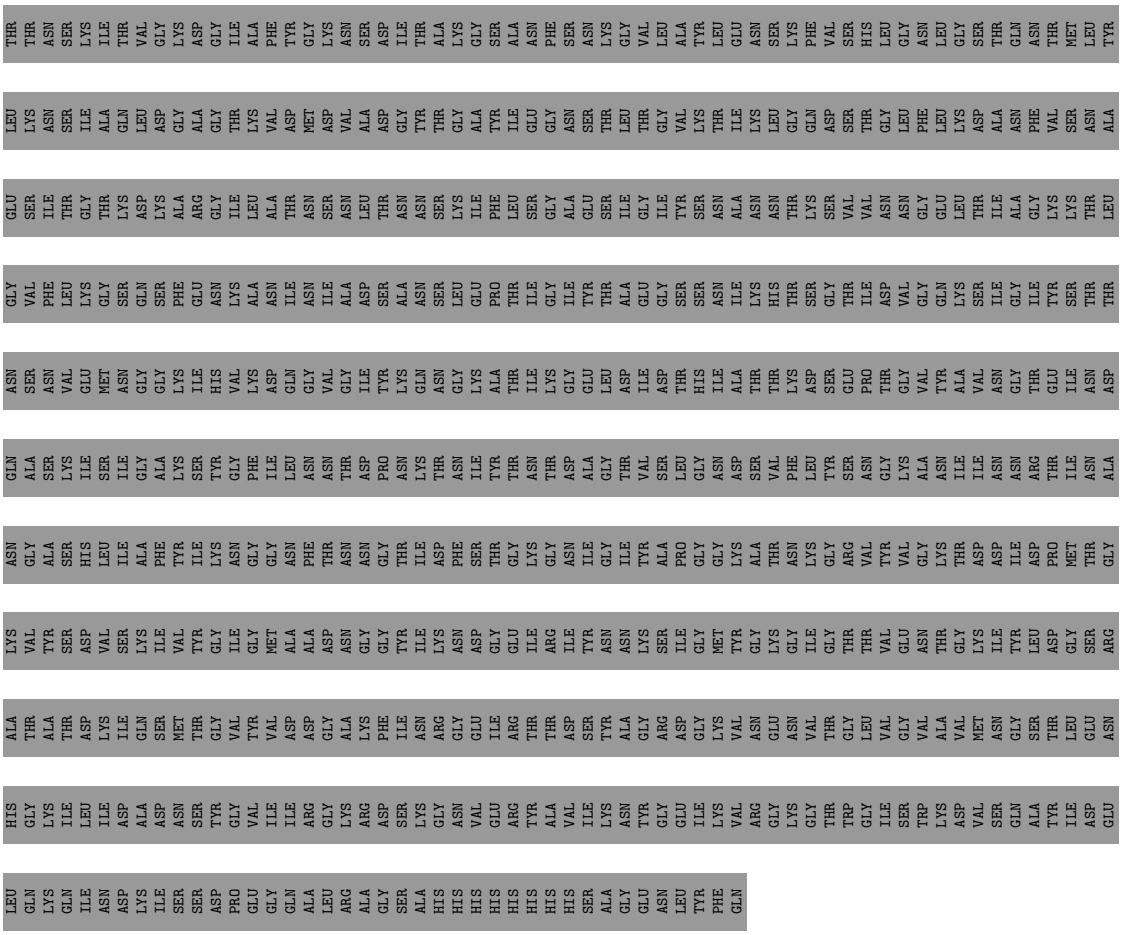
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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




T688 Y689 D690 K691 N692 K693 V694 E695 E696 A697 V698 G699 V700 F701 A702 G703 V704 P705 V709 K710 P711 G712 E713 K714 D715 T716 L717 I718 N719 S720 S721 G722 A723 R724 N725 L730 V731 G732 T733 E734 T735 V736 E737 I738 N739 G740 N741 I742 S743 L744 G745 E746 Q750 S751 I752 G753 A754
L755 V756 G757 D758 T759 E760 I761 D762 L763 N764 K765 G766 Q767 L768 T769 E770 K775 G776 S777 N778 V779 D780 R781 K782 L783 K784 R785 S786 I789 T790 A791 K792 S793 N794 S795 V796 I797 N798 V799 G800 G801 K802 K803 N804 Y805 G806 F807 V808 N811 S812 A813 H814 S815 S816 K817 F818 G819
T820 T821 V822 D823 S824 L825 E826 Y827 D830 K831 T832 H833 H834 G835 K836 N839 E840 G841 I842 I843 N844 I845 I846 G847 D848 E849 S850 V851 G852 F853 A854 M855 I856 K857 G858 G859 N860 S861 K862 S863 S864 V869 K870 D871 N872 A873 E874 N875 S876 I877 G878 F879 Y880 G881 K882 E883 D884
S885 F886 S889 G890 T891 I892 E893 V894 T895 S896 A897 K898 K899 K900 N901 K902 A903 V904 V905 L906 D907 G908 T909 N910 A911 S912 N913 K914 I915 N916 F917 T918 N919 T920 G921 N922 N926 T927 S928 D929 N930 N931 N932 T933 N934 L935 D936 G937 N940 I941 G942 I943 Y944 A945 Q946 G947 N948
Y949 K950 V951 E952 H953 N954 S955 G956 I957 V958 K959 A960 G961 K962 D963 V964 I965 A966 F967 K970 D971 S972 T973 G974 N977 I978 N979 A980 P981 I982 E983 L984 A985 N986 S987 S988 K989 G990 T991 T992 I995 Y996 S997 D998 G999 N1000 A1001 K1002 V1003 K1004 F1005 G1006 T1007 G1008 S1009 K1010 L1011
K1012 I1013 K1016 A1017 Y1021 S1022 A1023 D1024 P1025 T1026 K1027 F1028 N1029 N1030 T1031 F1032 K1033 T1034 E1035 S1036 G1037 K1038 T1039 L1040 D1041 V1042 E1043 L1044 G1045 K1046 N1047 S1048 T1049 F1050 G1051 L1052 L1053 N1054 G1055 N1056 N1057 T1058 V1059 T1060 N1061 S1062 P1063 L1064 L1065 S1066 K1067 Y1068 L1069 N1070 N1071 N1072 T1073 S1074
D1075 K1076 I1077 N1078 I1079 V1080 S1081 F1082 G1083 E1084 L1088 F1089 Y1090 A1091 T1092 S1093 K1094 A1095 K1096 L1099 D1100 E1101 D1102 Y1103 K1104 V1105 T1106 N1107 G1108 D1109 A1110 I1111 S1112 T1113 A1114 V1115 L1116 V1117 A1118 N1119 N1120 G1121 A1122 N1123 V1124 E1125 I1126 A1127 S1128 G1129 K1130 K1131 L1132 E1133 T1134 N1135 T1136 N1137
A1138 G1139 L1140 I1141 A1142 T1146 V1147 G1148 F1149 T1150 S1151 V1152 A1153 K1154 N1155 N1156 G1157 T1158 T1162 R1163 I1164 D1165 K1166 G1167 I1168 G1169 I1170 Y1171 T1172 S1173 A1174 A1175 N1176 G1177 E1178 N1179 S1180 G1181 T1182 I1183 T1184 M1185 Q1186 N1187 K1188 N1189 A1190 V1191 L1194 G1195 S1196 K1197 N1200 L1201 K1202 N1203
T1204 G1205 K1206 I1207 E1208 L1209 E1210 V1217 Y1218 A1219 M1224 I1225 N1226 S1227 G1228 T1229 E1232 V1235 N1236 K1237 E1238 T1239 S1240 V1241 G1242 I1243 Y1244 T1248 S1249 I1250 S1251 S1252 V1253 S1254 K1255 N1256 V1257 K1258 N1259 E1260 G1261 K1262 I1263 E1264 I1265 K1266 A1267 D1268 G1269 D1270 G1271 K1272 S1273 A1274 G1275
I1276 Y1277 S1278 K1279 K1280 E1281 A1284 T1287 I1288 E1289 N1290 T1291 I1294 E1295 V1296 A1297 Q1298 K1299 A1302 G1303 I1304 Y1305 A1306 K1307 N1308 E1309 S1310 T1311 Q1312 A1313 N1314 T1315 Q1316 S1317 E1318 V1319 T1320 N1321 S1322 G1323 L1324 V1325 K1326 M1327 S1328 A1329 E1330 N1331 S1332 I1333 G1334 I1335 M1336 G1337 E1338 K1339
S1340 K1341 I1342 T1343 N1344 T1345 G1346 T1347 G1348 T1349 K1350 G1351 I1354 V1355 E1356 K1357 K1358 S1359 I1362 L1363 V1364 T1365 N1366 E1367 S1368 I1371 N1372 S1373 G1374 R1375 I1376 S1377 L1378 S1381 S1382 I1383 S1384 A1385 S1386 S1387 D1388 G1389 L1390 V1391 G1392 V1395 S1399 N1403 D1404 A1405 E1408 I1409
K1410 V1411 D1412 T1417 G1418 M1419 L1420 S1421 S1422 G1423 I1426 A1429 G1430 K1431 I1432 A1433 L1434 E1435 K1436 K1437 E1438 S1439 M1442 Y1443 A1444 T1445 N1446 A1447 N1448 V1449 T1450 G1453 A1454 T1455 P1456 K1457 F1460 I1461 K1462 D1463 E1464 K1465 S1466 V1467 G1468 I1469 I1473 N1474 S1475 S1476 S1477 I1478 A1479
N1480 K1481 N1485 S1486 G1487 T1488 I1489 D1490 I1491 A1492 G1493 T1494 S1495 K1496 T1497 G1498 I1502 Y1503 E1507 S1508 G1509 A1510 T1511 K1512 K1513 L1514 S1515 V1516 V1517 N1518 N1519 G1520 T1523 I1524 N1525 Q1526 K1527 V1530 G1531 I1532 Y1533 N1536 E1537 S1538 S1539 H1540 A1541 N1542 T1543 E1544 S1545 D1546 V1547 T1548


N1549 S1550 G1551 K1552 I1553 E1554 V1555 K1556 N1557 E1558 V1563 L1564 A1565 E1566 K1567 Y1568 K1569 V1570 T1571 N1572 T1573 G1574 S1575 G1576 T1577 N1578 G1579 I1580 I1581 V1582 S1583 A1584 K1585 K1586 S1587 A1588 G1589 I1590 I1591 G1592 K1593 S1596 E1597 I1598 I1599 N1600 I1604 K1605 T1606 E1607 I1608 A1609 T1610 P1611 T1612 V1613 A1614
T1615 D1616 G1620 I1621 S1622 L1623 N1624 N1625 A1628 T1629 N1630 T1631 S1632 G1633 G1634 V1635 I1636 T1640 D1641 Y1642 M1646 Y1647 G1648 E1649 A1650 N1651 S1652 Q1653 L1654 T1655 N1656 E1657 G1658 N1659 I1660 T1661 G1662 T1663 N1664 K1665 E1666 Y1667 I1668 V1669 G1670 M1671 D1674 S1675 S1676 T1679 N1680 K1681 N1682
T1685 L1686 N1687 G1688 K1689 K1690 A1691 T1692 G1693 I1694 F1695 G1696 K1697 N1698 S1699 S1700 T1701 L1702 L1703 N1704 E1705 T1706 T1707 G1708 K1709 I1710 T1711 T1712 K1713 E1714 E1715 E1716 S1717 V1718 Y1721 S1722 S1723 S1724 S1725 L1726 K1727 A1728 T1729 N1730 K1731 G1732 T1733 I1734 I1735 T1736 E1737 K1738 K1739 T1740 S1741 A1742 G1743 G1746
D1747 K1748 A1749 N1753 I1757 T1758 T1759 K1760 E1761 E1762 M1763 S1764 A1765 G1766 V1769 K1770 N1771 G1772 THR SER LYS ALA THR ASN LYS GLY THR VAL THR THR GLU LYS LYS THR SER ALA GLY ILE LEU ALA GLU ILE ASP GLU ALA ASN GLY GLY THR VAL SER GLY LEU ASN GLU THR THR
GLY THR ILE THR VAL SER GLU GLU THR SER ALA GLY MET LEU GLY LYS VAL LYS SER ALA VAL THR ALA SER THR ALA LYS LEU SER LEU THR ASN LYS LYS ASP ILE ASN ILE ASN THR LYS ASN SER ALA GLY ILE MET VAL VAL ASN GLU SER THR ALA VAL GLY LYS GLU ASN VAL
LEU ALA GLU ASN THR GLY ILE ILE ASN LEU THR SER SER SER ALA THR ASN GLU LYS ASN ILE GLY ILE LEU ALA ASN LYS ALA THR GLY ILE ASN THR GLY ASN ILE ASN VAL ASN SER LYS GLU SER ILE GLY MET LEU GLY GLN ASN ALA SER SER ILE THR ASN ASN LYS THR ILE
THR LEU SER GLY GLU LYS GLY ILE GLY MET LEU SER LYS ASP THR SER SER ILE ALA ASP ASN ASN ASP THR ILE ASN VAL ASN GLY LYS GLU SER LEU GLY MET LEU GLY GLU ASP SER GLY THR VAL LYS ASN ASN LYS THR ILE SER VAL THR ALA GLU LYS GLY VAL GLY ILE PHE
VAL ARG ASP ASN GLY VAL GLY LYS GLY SER GLY THR GLY GLU ASN THR SER THR GLY THR ILE THR LEU GLU ASN LYS GLU ALA VAL GLY ILE PHE ALA LYS ASN ASN GLY THR SER ASP SER ALA LYS ASN SER GLY THR ILE ASN LEU GLY LYS ALA ASP GLY SER THR ILE LYS GLU
SER LEU ILE GLY MET PHE ALA GLN ALA GLU ALA GLY LYS LYS ALA ASN VAL LYS ASN THR LYS ASP ILE ASN VAL ASN THR LYS LYS SER VAL GLY ILE TYR ALA LYS ASN ASP ALA SER ASN ILE THR ASP VAL ASP LEU GLU ASN THR GLY ASP ILE ASN ILE ASN SER LYS GLU SER
ALA GLY VAL TYR ALA PRO LYS ALA ASN ILE SER LYS VAL GLY THR ILE THR LEU LYS ASN SER ILE ASP SER ASN GLY SER SER ALA VAL TYR VAL SER LYS GLY GLY LYS VAL ALA ASN THR ALA GLY ALA LYS ILE ASN LEU GLY THR VAL ASN GLN ASN ARG VAL ALA TYR TYR VAL
ASN GLY LYS ASP SER ALA LEU ALA GLY ALA ASP ILE GLY LYS ILE THR GLY TYR GLY VAL GLY VAL TYR LEU GLN GLY THR SER GLY ASP LYS ALA THR LEU ASP LYS ASN THR SER LYS LEU ASP TYR THR LEU GLN GLY THR GLY ASN GLY ILE ILE GLY LEU LEU LEU LYS GLY GLU
THR ASP ILE GLN SER TYR THR THR LYS GLY ILE LYS VAL GLY ASN THR VAL ALA ALA THR SER PRO SER ASP LYS ALA LYS TYR ALA ILE GLY ILE TYR ALA ASP ALA GLN GLY THR ALA GLY THR PRO TYR ASN ILE THR THR PRO ILE THR ALA GLY LYS SER GLY VAL GLY ILE PHE ALA
ASP LYS ASP SER ASN ILE ASN TYR THR GLY ASN MET GLU ILE GLY ASP GLY THR THR ALA GLY THR GLY ILE PHE ILE THR LYS LYS ILE GLY ALA THR GLY GLY LYS VAL THR LEU GLY THR ASN THR ILE LYS LEU LYS GLY THR LYS GLY VAL VAL ALA ILE ALA SER GLU GLY THR
THR PHE ASN GLY GLY ASN ALA THR ILE GLU LEU VAL GLY SER ASN ILE GLN GLY VAL GLY VAL TYR ALA LYS LYS GLY SER THR VAL ASN ILE ASP HIS TRP THR PHE ASN ASN ASN GLY ASN SER ALA GLU GLU VAL ARG SER GLU GLU GLY ARG VAL TYR ILE ASN ALA ASN LYS ASN
LEU LYS PRO LYS MET VAL LEU THR HIS VAL ILE ASN GLY GLU THR SER ILE ALA THR GLY LYS THR VAL THR SER VAL ASN ASP GLY SER ILE THR ALA LYS GLU ASN ILE GLY LEU MET ALA GLU GLY ILE LYS ASN HIS SER MET THR TRP GLN GLU GLY ASN PHE GLU ALA VAL ASN
HIS GLY ILE ILE ASP PHE SER ALA ALA GLU LYS SER THR ALA MET PHE ILE ASN SER ALA ARG ALA LYS ASN ASP GLY THR ILE LYS VAL GLY LYS ASN SER ILE GLY ILE TYR GLY PHE TYR ASN LYS ASP THR ARG LYS TYR ASP GLY ALA SER THR ASN PRO ASP PRO ASN LYS LEU
GLU LEU GLU THR THR SER ASN SER LYS MET SER LEU GLY ASP ALA SER THR GLY MET TYR LEU THR ASN ALA GLU LYS ILE GLU ASN LYS GLY GLY GLN ILE THR SER GLU SER GLY ALA THR LYS ASN VAL GLY ILE TYR ALA VAL ASN GLY GLN ASP THR LYS VAL SER ALA ASN ASN
LYS ILE LEU ASN MET THR THR ALA THR ASN ILE ASN LEU GLY ASN GLY SER VAL GLY LEU TYR SER LYS GLY GLN SER ASN THR VAL ARG ASN THR VAL THR ASN THR GLY ASP ILE THR VAL GLY ASP LYS ILE THR GLY SER PRO SER VAL ALA MET TYR ALA GLU ASN THR ASN LEU


THR THR ASN SER LYS ILE THR VAL GLY LYS ASP GLY ILE ALA PHE TYR GLY LYS ASN SER ASP ILE THR ALA LYS GLY SER ALA ASN PHE SER ASN LYS GLY VAL LEU ALA TYR LEU GLU ASN SER LYS PHE VAL SER HIS LEU GLY ASN LEU GLY SER THR GLN ASN THR MET LEU TYR
LEU LYS ASN SER ILE ALA GLN LEU ASP GLY ALA ALA GLY THR LYS VAL ASP MET ASP VAL ALA ASP GLY TYR THR GLY ALA TYR ILE GLU GLY ASN SER THR LEU THR GLY VAL LYS THR ILE LYS LEU GLY GLN ASP SER THR GLY LEU PHE LEU LYS ASP ALA ASN PHE VAL SER ASN ALA
GLU SER ILE THR GLY THR LYS ASP LYS ALA ARG GLY ILE LEU ALA THR ASN SER ASN LEU THR ASN ASN SER LYS ILE PHE LEU SER GLY ALA GLU SER ILE GLY ILE TYR SER ASN ALA ASN ASN THR LYS SER VAL VAL ASN ASN GLY GLU LEU THR ILE ILE ALA GLY GLY ILE
GLY VAL PHE LEU LYS GLY SER GLN SER PHE GLU ASN LYS ALA ASN ILE ASN ILE ALA ASP SER ALA ASN SER LEU GLU PRO THR ILE GLY ILE TYR THR ALA GLU GLY SER SER ASN ILE LYS HIS THR SER GLY THR ILE ASP VAL GLY GLN LYS SER ILE GLY ILE ARG SER THR
ASN SER ASN VAL GLU MET ASN GLY GLY LYS ILE HIS VAL LYS ASP GLN GLY VAL GLY ILE TYR LYS GLN GLY LYS ALA THR ILE LYS GLY GLU LEU ASP ILE ASP THR HIS ILE ALA THR THR LYS ASP SER GLU PRO THR GLY VAL TYR ALA ALA VAL ASN GLY THR ILE ASN
GLN ALA SER LYS ILE SER ILE GLY ALA LYS SER TYR GLY PHE ILE LEU ASN ASN THR ASP PRO ASN LYS THR ASN ILE TYR THR ASN THR ASP ALA GLY THR VAL SER LEU GLY ASN ASP SER VAL PHE LEU TYR SER ASN GLY LYS ALA ASN ILE LEU ASN ASN ARG THR ILE ASN ALA
ASN GLY ALA SER HIS LEU ILE ALA PHE TYR ILE LYS ASN GLY GLY ASN PHE THR ASN ASN GLY THR ILE ASP PHE SER THR GLY LYS GLY ASN ILE GLY ILE TYR ASN ASN LYS SER ILE GLY MET TYR GLY LYS GLY ILE GLY THR THR VAL GLU ASN THR GLY LYS THR ASP ASP ILE ASP PRO MET THR GLY
LYS VAL TYR SER ASP VAL SER LYS ILE VAL TYR GLY ILE GLY MET ALA ALA ASP ASN GLY GLY TYR ILE LYS ASN ASP GLY GLU ILE ARG THR ILE ASP ASN LYS SER ILE GLY GLY MET TYR GLY LYS GLY ILE GLY THR THR VAL GLU ASN THR GLY LYS THR ASP ASP ILE ASP PRO MET THR GLY
ALA THR ALA THR ASP LYS ILE GLN SER MET THR GLY VAL TYR VAL ASP ASP GLY ALA LYS PHE ILE ASN ARG GLY GLU ILE ARG THR THR ASP SER TYR ALA GLY ARG ASP GLY LYS VAL ASN GLU ASN VAL THR GLY LEU VAL GLY VAL ALA ALA VAL MET ASN GLY SER THR LEU GLU ASN
HIS GLY LYS ILE LEU ILE ASP ALA ASP SER TYR GLY VAL ILE ILE ARG GLY LYS ARG ASP SER LYS GLY ASN VAL GLU ARG TYR ALA VAL ILE LYS ASN TYR GLY GLU ILE LYS VAL ARG GLY LYS GLY THR TRP GLY ILE SER TRP LYS ASP VAL SER GLN ALA TYR ILE ASP GLU
LEU GLN LYS GLN ILE ASN ASP LYS ILE SER SER ASP PRO GLU GLY GLN ALA LEU ARG ALA GLY SER ALA HIS HIS HIS HIS HIS HIS HIS HIS SER ALA GLY GLU ASN LEU TYR PHE GLN

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	151825	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 ($e^-/Å^2$)	58.8	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2600	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.460	Depositor
Minimum map value	-0.001	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.016	Depositor
Recommended contour level	0.25	Depositor
Map size (Å)	407.03998, 407.03998, 407.03998	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

5 Model quality

5.1 Standard geometry

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.19	0/10944	0.53	2/14805 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1376	ILE	N-CA-C	-5.26	106.30	111.88
1	A	678	ILE	N-CA-C	-5.09	106.70	111.48

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1102	ASP	Peptide

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	10826	0	10829	644	0
All	All	10826	0	10829	644	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 30.

All (644) 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:1126:ILE:HB	1:A:1155:ASN:HA	1.61	0.83
1:A:1235:VAL:HB	1:A:1265:ILE:HG23	1.59	0.82
1:A:882:LYS:HB3	1:A:909:THR:HA	1.62	0.81
1:A:1238:GLU:HB2	1:A:1272:LYS:HB3	1.64	0.78
1:A:439:ILE:HB	1:A:473:ILE:HG22	1.65	0.77
1:A:927:THR:HA	1:A:961:GLY:HA2	1.66	0.77
1:A:797:ILE:HD12	1:A:843:ILE:HG12	1.67	0.77
1:A:587:VAL:HG21	1:A:591:LEU:HD12	1.65	0.76
1:A:1104:LYS:HE3	1:A:1133:GLU:HB3	1.66	0.76
1:A:1030:ASN:O	1:A:1033:LYS:NZ	2.17	0.76
1:A:1383:ILE:HB	1:A:1436:LYS:HD2	1.67	0.76
1:A:1092:THR:HG22	1:A:1119:ASN:HB3	1.67	0.76
1:A:1280:LYS:NZ	1:A:1310:SER:OG	2.18	0.76
1:A:885:SER:HB2	1:A:919:ASN:HA	1.66	0.76
1:A:814:HIS:HA	1:A:827:TYR:HE1	1.51	0.75
1:A:984:LEU:O	1:A:1012:LYS:NZ	2.19	0.74
1:A:1011:LEU:HB3	1:A:1042:VAL:HG22	1.70	0.74
1:A:1079:ILE:O	1:A:1103:TYR:OH	2.04	0.74
1:A:1099:LEU:HD12	1:A:1132:LEU:HD23	1.68	0.74
1:A:427:ARG:HB2	1:A:454:THR:HG21	1.68	0.74
1:A:1453:GLY:HA2	1:A:1457:LYS:HE2	1.70	0.74
1:A:569:ILE:O	1:A:641:ASN:N	2.20	0.73
1:A:739:ASN:O	1:A:794:ASN:ND2	2.20	0.73
1:A:962:LYS:HB3	1:A:988:SER:HB3	1.68	0.73
1:A:627:ASP:OD2	1:A:629:LYS:NZ	2.21	0.72
1:A:1025:PRO:HA	1:A:1028:PHE:HB3	1.72	0.72
1:A:695:GLU:OE2	1:A:750:GLN:NE2	2.22	0.72
1:A:1769:VAL:HG22	1:A:1771:ASN:H	1.54	0.72
1:A:1419:MET:HB2	1:A:1442:MET:HA	1.71	0.71
1:A:1155:ASN:O	1:A:1180:SER:N	2.20	0.71
1:A:1374:GLY:O	1:A:1410:LYS:NZ	2.23	0.71
1:A:1123:ASN:ND2	1:A:1152:VAL:O	2.24	0.71
1:A:1598:ILE:HD13	1:A:1628:ALA:HA	1.74	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1201:LEU:H	1:A:1224:MET:HA	1.57	0.70
1:A:667:ILE:HB	1:A:744:LEU:HD13	1.74	0.70
1:A:1210:GLU:HA	1:A:1236:ASN:HB2	1.73	0.70
1:A:1454:ALA:HB2	1:A:1487:GLY:HA2	1.73	0.70
1:A:570:ASN:HA	1:A:641:ASN:HB2	1.73	0.69
1:A:1304:ILE:HG23	1:A:1336:MET:H	1.57	0.69
1:A:396:LEU:HD12	1:A:423:VAL:HG22	1.74	0.69
1:A:674:GLN:HB2	1:A:691:LYS:HA	1.74	0.69
1:A:1395:VAL:HG12	1:A:1421:SER:HA	1.74	0.69
1:A:1102:ASP:OD2	1:A:1104:LYS:NZ	2.24	0.69
1:A:1457:LYS:O	1:A:1488:THR:OG1	2.11	0.68
1:A:892:ILE:O	1:A:926:ASN:ND2	2.25	0.68
1:A:909:THR:HG21	1:A:912:SER:HB3	1.75	0.68
1:A:1442:MET:HB2	1:A:1469:ILE:HG22	1.75	0.68
1:A:856:ILE:HA	1:A:910:ASN:HD22	1.58	0.68
1:A:345:SER:O	1:A:347:GLN:NE2	2.27	0.68
1:A:384:ASN:O	1:A:392:ASN:ND2	2.27	0.68
1:A:1133:GLU:OE2	1:A:1162:THR:OG1	2.11	0.67
1:A:1140:LEU:HB3	1:A:1170:ILE:HG22	1.75	0.67
1:A:1066:SER:HA	1:A:1100:ASP:HA	1.75	0.67
1:A:1229:THR:HA	1:A:1261:GLY:HA2	1.76	0.67
1:A:1527:LYS:NZ	1:A:1558:GLU:OE2	2.28	0.67
1:A:951:VAL:HG11	1:A:967:PHE:HZ	1.60	0.67
1:A:303:ILE:HD11	1:A:1498:GLY:HA2	1.76	0.67
1:A:967:PHE:HB2	1:A:995:ILE:HA	1.75	0.67
1:A:514:LEU:HD13	1:A:519:SER:HB3	1.78	0.66
1:A:1496:LYS:HB3	1:A:1526:GLN:HE21	1.61	0.66
1:A:1551:GLY:O	1:A:1579:GLY:N	2.28	0.66
1:A:391:ARG:NH2	1:A:540:TRP:O	2.29	0.66
1:A:1094:LYS:NZ	1:A:1146:THR:OG1	2.29	0.66
1:A:665:ILE:HB	1:A:742:ILE:HA	1.77	0.66
1:A:1308:ASN:HD22	1:A:1339:LYS:HB2	1.60	0.66
1:A:1702:LEU:HG	1:A:1704:ASN:H	1.61	0.66
1:A:1604:ILE:HB	1:A:1636:ILE:HA	1.79	0.66
1:A:562:LYS:NZ	1:A:563:ALA:O	2.29	0.65
1:A:1042:VAL:HB	1:A:1079:ILE:HG23	1.78	0.65
1:A:1636:ILE:O	1:A:1661:THR:OG1	2.15	0.65
1:A:476:ASN:HA	1:A:515:ASN:HD22	1.59	0.65
1:A:750:GLN:HB3	1:A:803:LYS:HG3	1.78	0.65
1:A:1105:VAL:HG23	1:A:1136:THR:HG21	1.77	0.65
1:A:1162:THR:HG23	1:A:1186:GLN:HB2	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1523:THR:HA	1:A:1554:GLU:HB2	1.78	0.65
1:A:913:ASN:O	1:A:916:ASN:ND2	2.30	0.65
1:A:724:ARG:NH1	1:A:725:ASN:O	2.30	0.65
1:A:1572:ASN:HD22	1:A:1600:ASN:HA	1.62	0.64
1:A:649:GLY:N	1:A:698:VAL:O	2.31	0.64
1:A:1412:ASP:OD1	1:A:1436:LYS:NZ	2.29	0.64
1:A:840:GLU:OE2	1:A:862:LYS:NZ	2.31	0.64
1:A:744:LEU:HB2	1:A:799:VAL:HA	1.79	0.64
1:A:1129:GLY:O	1:A:1131:LYS:NZ	2.28	0.64
1:A:1256:ASN:HB2	1:A:1258:LYS:HE3	1.79	0.64
1:A:1679:THR:OG1	1:A:1681:LYS:NZ	2.31	0.64
1:A:604:ARG:HB3	1:A:763:LEU:HA	1.80	0.64
1:A:1165:ASP:OD1	1:A:1189:ASN:ND2	2.30	0.64
1:A:639:ASN:HA	1:A:664:ASN:HB2	1.80	0.64
1:A:855:MET:HB3	1:A:881:GLY:HA2	1.79	0.64
1:A:1688:GLY:H	1:A:1714:GLU:HG3	1.63	0.64
1:A:1069:LEU:HD23	1:A:1103:TYR:HA	1.79	0.63
1:A:758:ASP:OD2	1:A:857:LYS:NZ	2.31	0.63
1:A:1174:ALA:H	1:A:1197:LYS:HB3	1.63	0.63
1:A:1209:LEU:HD12	1:A:1235:VAL:HG22	1.79	0.63
1:A:1289:GLU:HG2	1:A:1320:THR:HG23	1.80	0.63
1:A:508:ASN:HB3	1:A:566:GLN:H	1.64	0.63
1:A:1525:ASN:O	1:A:1557:ASN:ND2	2.31	0.63
1:A:1163:ARG:NH1	1:A:1166:LYS:O	2.32	0.62
1:A:658:GLU:OE1	1:A:733:THR:N	2.32	0.62
1:A:1117:VAL:HG12	1:A:1141:ILE:HB	1.80	0.62
1:A:751:SER:O	1:A:805:TYR:N	2.32	0.62
1:A:848:ASP:HA	1:A:873:ALA:HB1	1.80	0.62
1:A:1461:ILE:HB	1:A:1491:ILE:HB	1.82	0.62
1:A:1700:SER:O	1:A:1725:SER:OG	2.17	0.62
1:A:475:GLY:O	1:A:515:ASN:N	2.29	0.62
1:A:1116:LEU:HG	1:A:1140:LEU:HD13	1.80	0.62
1:A:518:SER:N	1:A:574:SER:O	2.28	0.62
1:A:366:SER:OG	1:A:397:THR:O	2.19	0.61
1:A:1356:GLU:HG3	1:A:1357:LYS:H	1.65	0.61
1:A:815:SER:OG	1:A:834:HIS:ND1	2.29	0.61
1:A:1044:LEU:HD13	1:A:1082:PHE:HE1	1.65	0.61
1:A:1088:LEU:HB2	1:A:1115:VAL:O	2.00	0.61
1:A:385:VAL:O	1:A:414:THR:OG1	2.18	0.61
1:A:882:LYS:NZ	1:A:910:ASN:OD1	2.29	0.61
1:A:1088:LEU:HD13	1:A:1115:VAL:HA	1.81	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:366:SER:HB3	1:A:396:LEU:HA	1.81	0.61
1:A:1536:ASN:ND2	1:A:1538:SER:O	2.34	0.61
1:A:1747:ASP:OD2	1:A:1748:LYS:NZ	2.34	0.61
1:A:1172:THR:HB	1:A:1175:ALA:HB3	1.81	0.61
1:A:1217:VAL:HG13	1:A:1243:ILE:HA	1.82	0.60
1:A:1248:THR:HA	1:A:1281:GLU:HG3	1.83	0.60
1:A:758:ASP:OD1	1:A:786:SER:OG	2.19	0.60
1:A:812:SER:HB3	1:A:814:HIS:NE2	2.15	0.60
1:A:896:SER:O	1:A:899:LYS:NZ	2.33	0.60
1:A:1598:ILE:O	1:A:1629:THR:OG1	2.17	0.60
1:A:1671:MET:HB3	1:A:1694:ILE:HA	1.82	0.60
1:A:800:GLY:O	1:A:804:ASN:ND2	2.34	0.60
1:A:1263:ILE:HB	1:A:1294:ILE:HG22	1.84	0.60
1:A:1376:ILE:HD12	1:A:1409:ILE:HA	1.84	0.60
1:A:447:VAL:HG22	1:A:488:ILE:HD11	1.84	0.60
1:A:808:VAL:HG22	1:A:854:ALA:HB3	1.83	0.60
1:A:859:GLY:N	1:A:883:GLU:OE1	2.34	0.60
1:A:1226:ASN:HB2	1:A:1259:ASN:HA	1.84	0.60
1:A:1623:LEU:HD22	1:A:1654:LEU:HG	1.82	0.60
1:A:750:GLN:HA	1:A:804:ASN:HA	1.83	0.60
1:A:776:GLY:O	1:A:778:ASN:ND2	2.34	0.60
1:A:522:ILE:N	1:A:578:GLY:O	2.33	0.60
1:A:906:LEU:O	1:A:945:ALA:HB2	2.02	0.60
1:A:1179:ASN:HD21	1:A:1207:ILE:HD11	1.67	0.60
1:A:575:GLY:N	1:A:647:SER:OG	2.34	0.60
1:A:1178:GLU:HG2	1:A:1202:LYS:HB3	1.83	0.59
1:A:1304:ILE:HD11	1:A:1319:VAL:HG11	1.84	0.59
1:A:1434:LEU:HB3	1:A:1461:ILE:HG23	1.84	0.59
1:A:1508:SER:HB3	1:A:1537:GLU:HB2	1.84	0.59
1:A:1665:LYS:HB2	1:A:1668:ILE:HD13	1.84	0.59
1:A:642:ILE:HB	1:A:667:ILE:HA	1.84	0.59
1:A:752:ILE:HG13	1:A:805:TYR:HB2	1.83	0.59
1:A:724:ARG:HD2	1:A:725:ASN:O	2.02	0.59
1:A:1335:ILE:HB	1:A:1362:ILE:HA	1.85	0.59
1:A:763:LEU:HB2	1:A:781:ARG:HB3	1.85	0.59
1:A:576:SER:OG	1:A:577:PHE:N	2.34	0.59
1:A:807:PHE:O	1:A:853:PHE:HA	2.03	0.59
1:A:370:ASN:ND2	1:A:374:GLY:O	2.36	0.58
1:A:1327:MET:HE1	1:A:1356:GLU:HB3	1.85	0.58
1:A:1704:ASN:HD22	1:A:1730:ASN:HA	1.68	0.58
1:A:1013:ILE:HB	1:A:1044:LEU:HG	1.84	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:744:LEU:HB2	1:A:800:GLY:H	1.68	0.58
1:A:1572:ASN:ND2	1:A:1600:ASN:OD1	2.36	0.58
1:A:1654:LEU:HD22	1:A:1671:MET:HE1	1.85	0.58
1:A:1572:ASN:ND2	1:A:1599:ILE:O	2.36	0.58
1:A:370:ASN:OD1	1:A:373:GLN:NE2	2.34	0.58
1:A:714:LYS:HD2	1:A:724:ARG:HH12	1.68	0.58
1:A:806:GLY:N	1:A:851:VAL:O	2.25	0.58
1:A:1201:LEU:O	1:A:1225:ILE:N	2.36	0.58
1:A:1344:ASN:ND2	1:A:1375:ARG:O	2.34	0.58
1:A:898:LYS:O	1:A:899:LYS:NZ	2.37	0.57
1:A:1219:ALA:N	1:A:1244:TYR:O	2.36	0.57
1:A:815:SER:OG	1:A:817:LYS:NZ	2.31	0.57
1:A:1051:GLY:O	1:A:1090:TYR:N	2.37	0.57
1:A:1276:ILE:HG13	1:A:1304:ILE:HA	1.85	0.57
1:A:1050:PHE:CZ	1:A:1079:ILE:HB	2.40	0.57
1:A:744:LEU:HD23	1:A:799:VAL:HG12	1.86	0.57
1:A:1059:VAL:HG21	1:A:1095:ALA:HA	1.85	0.57
1:A:1702:LEU:O	1:A:1729:THR:OG1	2.22	0.57
1:A:666:ASN:OD1	1:A:743:SER:OG	2.22	0.57
1:A:1278:SER:C	1:A:1279:LYS:HD3	2.30	0.57
1:A:1747:ASP:HA	1:A:1770:LYS:HD3	1.85	0.57
1:A:1070:ASN:HA	1:A:1101:GLU:HB2	1.87	0.57
1:A:1141:ILE:HG23	1:A:1171:TYR:HD2	1.69	0.57
1:A:602:ASN:OD1	1:A:604:ARG:NH1	2.37	0.57
1:A:645:ASP:HA	1:A:694:VAL:HG23	1.86	0.57
1:A:746:GLU:O	1:A:802:LYS:NZ	2.33	0.56
1:A:1243:ILE:HB	1:A:1276:ILE:HG22	1.86	0.56
1:A:1259:ASN:ND2	1:A:1290:ASN:OD1	2.38	0.56
1:A:454:THR:HG22	1:A:456:GLN:H	1.69	0.56
1:A:1046:LYS:NZ	1:A:1084:GLU:O	2.35	0.56
1:A:493:ASN:HA	1:A:525:LYS:HD3	1.86	0.56
1:A:1021:TYR:CE1	1:A:1052:LEU:HD22	2.41	0.56
1:A:1530:VAL:HG13	1:A:1563:VAL:HA	1.86	0.56
1:A:567:LYS:HG3	1:A:568:ASP:H	1.71	0.56
1:A:554:LYS:HB2	1:A:610:ASP:HB2	1.88	0.56
1:A:585:GLU:O	1:A:602:ASN:ND2	2.37	0.56
1:A:1264:GLU:HA	1:A:1295:GLU:HB3	1.87	0.56
1:A:1462:LYS:O	1:A:1496:LYS:NZ	2.34	0.56
1:A:1322:SER:HA	1:A:1345:THR:HB	1.88	0.56
1:A:816:SER:HB3	1:A:825:LEU:HD11	1.88	0.56
1:A:1025:PRO:HG2	1:A:1059:VAL:HG13	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1156:ASN:OD1	1:A:1180:SER:OG	2.22	0.56
1:A:360:ASP:O	1:A:391:ARG:NH1	2.39	0.56
1:A:697:ALA:O	1:A:752:ILE:N	2.32	0.56
1:A:1265:ILE:HB	1:A:1296:VAL:HA	1.88	0.56
1:A:1325:VAL:N	1:A:1351:GLY:O	2.34	0.56
1:A:1607:GLU:O	1:A:1640:THR:OG1	2.18	0.56
1:A:1137:ASN:OD1	1:A:1163:ARG:NH1	2.39	0.56
1:A:1265:ILE:HD12	1:A:1296:VAL:HG22	1.88	0.56
1:A:977:ASN:OD1	1:A:979:ASN:ND2	2.39	0.55
1:A:1166:LYS:HD2	1:A:1189:ASN:HB3	1.88	0.55
1:A:882:LYS:O	1:A:909:THR:OG1	2.23	0.55
1:A:1288:ILE:HB	1:A:1319:VAL:HG12	1.86	0.55
1:A:479:TYR:HB2	1:A:484:ASN:HD21	1.71	0.55
1:A:770:GLU:HG3	1:A:827:TYR:HB3	1.89	0.55
1:A:1162:THR:O	1:A:1187:ASN:ND2	2.40	0.55
1:A:1574:GLY:HA3	1:A:1579:GLY:HA3	1.88	0.55
1:A:458:SER:OG	1:A:461:THR:OG1	2.14	0.55
1:A:1611:PRO:HD3	1:A:1640:THR:HG23	1.88	0.55
1:A:1338:GLU:OE1	1:A:1366:ASN:ND2	2.40	0.55
1:A:1674:ASP:OD1	1:A:1698:ASN:ND2	2.40	0.55
1:A:648:ILE:HD13	1:A:698:VAL:HB	1.88	0.55
1:A:1607:GLU:OE1	1:A:1608:ILE:N	2.40	0.55
1:A:1454:ALA:O	1:A:1457:LYS:NZ	2.39	0.55
1:A:734:GLU:HG2	1:A:735:THR:HG23	1.88	0.54
1:A:899:LYS:HE3	1:A:937:GLY:HA2	1.89	0.54
1:A:1289:GLU:OE2	1:A:1322:SER:N	2.36	0.54
1:A:681:LEU:HG	1:A:682:PRO:HD2	1.89	0.54
1:A:851:VAL:HG23	1:A:877:ILE:HG23	1.87	0.54
1:A:1423:GLY:N	1:A:1446:ASN:OD1	2.40	0.54
1:A:1600:ASN:HB3	1:A:1634:GLY:HA3	1.89	0.54
1:A:1044:LEU:HB2	1:A:1082:PHE:CD1	2.42	0.54
1:A:569:ILE:HB	1:A:640:ILE:HA	1.90	0.54
1:A:507:VAL:HA	1:A:566:GLN:HE21	1.73	0.54
1:A:553:ASN:OD1	1:A:554:LYS:N	2.39	0.54
1:A:1147:VAL:HG13	1:A:1148:GLY:H	1.71	0.54
1:A:385:VAL:HG11	1:A:420:ALA:HA	1.90	0.54
1:A:971:ASP:O	1:A:1000:ASN:HB2	2.07	0.54
1:A:1007:THR:HG23	1:A:1038:LYS:HA	1.89	0.54
1:A:1336:MET:HE3	1:A:1337:GLY:H	1.73	0.54
1:A:1263:ILE:O	1:A:1295:GLU:N	2.30	0.54
1:A:793:SER:HA	1:A:842:ILE:HG12	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:882:LYS:HE2	1:A:907:ASP:HB3	1.88	0.54
1:A:1154:LYS:HE3	1:A:1156:ASN:HD21	1.73	0.54
1:A:1382:SER:O	1:A:1384:SER:N	2.40	0.54
1:A:372:HIS:ND1	1:A:398:ARG:O	2.41	0.54
1:A:398:ARG:HH22	1:A:427:ARG:HH21	1.54	0.54
1:A:1209:LEU:HB2	1:A:1235:VAL:HA	1.89	0.54
1:A:1423:GLY:N	1:A:1447:ALA:HB2	2.23	0.54
1:A:1308:ASN:HB3	1:A:1339:LYS:HB2	1.88	0.53
1:A:1241:VAL:HG23	1:A:1274:ALA:HB3	1.91	0.53
1:A:1382:SER:C	1:A:1384:SER:H	2.16	0.53
1:A:1651:ASN:HA	1:A:1676:SER:HA	1.89	0.53
1:A:943:ILE:N	1:A:966:ALA:O	2.41	0.53
1:A:1024:ASP:OD2	1:A:1027:LYS:NZ	2.40	0.53
1:A:1324:LEU:HD21	1:A:1326:LYS:HD3	1.90	0.53
1:A:1621:ILE:O	1:A:1647:TYR:N	2.41	0.53
1:A:454:THR:O	1:A:502:THR:OG1	2.24	0.53
1:A:915:ILE:O	1:A:917:PHE:N	2.42	0.53
1:A:373:GLN:HE22	1:A:376:LYS:HA	1.72	0.53
1:A:500:ASN:HA	1:A:559:VAL:HA	1.91	0.53
1:A:1554:GLU:HG3	1:A:1556:LYS:HZ3	1.72	0.53
1:A:1195:GLY:HA3	1:A:1201:LEU:HD21	1.91	0.53
1:A:1357:LYS:HG2	1:A:1388:ASP:HA	1.90	0.53
1:A:833:HIS:HB3	1:A:834:HIS:CE1	2.43	0.53
1:A:1010:LYS:NZ	1:A:1043:GLU:OE1	2.33	0.53
1:A:1279:LYS:HA	1:A:1307:LYS:HB2	1.91	0.53
1:A:331:SER:HG	1:A:991:THR:HG1	1.55	0.53
1:A:476:ASN:HA	1:A:515:ASN:ND2	2.24	0.52
1:A:797:ILE:HB	1:A:843:ILE:HA	1.91	0.52
1:A:1271:GLY:N	1:A:1299:LYS:O	2.42	0.52
1:A:582:VAL:HA	1:A:653:LEU:HD12	1.90	0.52
1:A:1339:LYS:HG2	1:A:1366:ASN:HB3	1.92	0.52
1:A:1099:LEU:CD2	1:A:1126:ILE:HA	2.39	0.52
1:A:1306:ALA:H	1:A:1337:GLY:HA2	1.75	0.52
1:A:1530:VAL:HG11	1:A:1533:TYR:HD2	1.75	0.52
1:A:752:ILE:HA	1:A:805:TYR:O	2.08	0.52
1:A:1025:PRO:HD3	1:A:1055:GLY:HA2	1.91	0.52
1:A:549:ASN:OD1	1:A:551:THR:HG23	2.10	0.52
1:A:1084:GLU:OE2	1:A:1113:THR:OG1	2.19	0.52
1:A:376:LYS:HB3	1:A:379:TRP:NE1	2.25	0.52
1:A:752:ILE:HG21	1:A:755:LEU:HB2	1.92	0.52
1:A:1069:LEU:HD22	1:A:1103:TYR:HD1	1.74	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1657:GLU:O	1:A:1682:ASN:ND2	2.43	0.52
1:A:538:ASN:OD1	1:A:542:ALA:N	2.38	0.52
1:A:622:ARG:HB3	1:A:709:VAL:HG22	1.92	0.52
1:A:1168:ILE:HA	1:A:1191:VAL:HB	1.92	0.52
1:A:1364:VAL:HB	1:A:1368:SER:HB2	1.91	0.52
1:A:1473:ILE:HD11	1:A:1514:LEU:HB2	1.91	0.52
1:A:562:LYS:HZ1	1:A:635:TYR:HB3	1.73	0.51
1:A:907:ASP:CG	1:A:908:GLY:H	2.17	0.51
1:A:1243:ILE:N	1:A:1275:GLY:O	2.38	0.51
1:A:1433:ALA:HA	1:A:1460:PHE:O	2.09	0.51
1:A:1088:LEU:HD22	1:A:1115:VAL:HG13	1.91	0.51
1:A:1409:ILE:HD13	1:A:1432:ILE:HG13	1.93	0.51
1:A:1073:THR:HG22	1:A:1074:SER:H	1.75	0.51
1:A:1344:ASN:O	1:A:1374:GLY:HA3	2.10	0.51
1:A:1403:ASN:OD1	1:A:1429:ALA:N	2.43	0.51
1:A:1686:LEU:HD23	1:A:1691:ALA:HB1	1.93	0.51
1:A:330:LEU:HD13	1:A:1052:LEU:HD11	1.92	0.51
1:A:488:ILE:HG22	1:A:520:ALA:HB3	1.93	0.51
1:A:881:GLY:O	1:A:906:LEU:HA	2.11	0.51
1:A:1426:ILE:HD11	1:A:1449:VAL:HG22	1.93	0.51
1:A:617:GLY:O	1:A:654:GLN:NE2	2.44	0.51
1:A:950:LYS:HD3	1:A:977:ASN:HB2	1.92	0.51
1:A:459:ILE:HD13	1:A:719:ASN:HD21	1.76	0.51
1:A:797:ILE:HG22	1:A:799:VAL:HG13	1.93	0.51
1:A:1372:ASN:HB3	1:A:1376:ILE:HD11	1.92	0.51
1:A:412:ASN:HA	1:A:440:ASN:HB2	1.92	0.51
1:A:811:ASN:O	1:A:857:LYS:HG3	2.10	0.51
1:A:662:ALA:HA	1:A:740:GLY:HA3	1.92	0.50
1:A:1093:SER:H	1:A:1120:ASN:HB3	1.76	0.50
1:A:1590:ILE:N	1:A:1620:GLY:O	2.30	0.50
1:A:404:THR:HB	1:A:433:VAL:HB	1.93	0.50
1:A:589:LYS:HA	1:A:592:PHE:HB2	1.93	0.50
1:A:789:ILE:HB	1:A:807:PHE:HZ	1.76	0.50
1:A:387:GLU:HA	1:A:418:ASN:HB3	1.93	0.50
1:A:768:LEU:HB3	1:A:775:LYS:HB2	1.94	0.50
1:A:831:LYS:HA	1:A:836:LYS:HD3	1.94	0.50
1:A:521:GLY:N	1:A:577:PHE:O	2.32	0.50
1:A:604:ARG:HD2	1:A:762:ASP:O	2.12	0.50
1:A:742:ILE:HG23	1:A:797:ILE:HA	1.92	0.50
1:A:803:LYS:HB3	1:A:849:GLU:OE2	2.11	0.50
1:A:711:PRO:HD3	1:A:730:LEU:HB2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1538:SER:OG	1:A:1540:HIS:ND1	2.40	0.50
1:A:1621:ILE:HB	1:A:1646:MET:HA	1.92	0.50
1:A:1118:ALA:HB3	1:A:1142:ALA:HA	1.93	0.50
1:A:1446:ASN:HB2	1:A:1479:ALA:HB3	1.94	0.50
1:A:1408:GLU:O	1:A:1410:LYS:NZ	2.33	0.50
1:A:857:LYS:HB3	1:A:911:ALA:HB3	1.93	0.50
1:A:1493:GLY:O	1:A:1557:ASN:ND2	2.44	0.49
1:A:356:ASP:HB2	1:A:388:LEU:HD13	1.95	0.49
1:A:550:LYS:NZ	1:A:601:GLU:OE1	2.45	0.49
1:A:844:ASN:OD1	1:A:870:LYS:HB2	2.12	0.49
1:A:996:TYR:HE1	1:A:1022:SER:HA	1.76	0.49
1:A:1513:LYS:HA	1:A:1544:GLU:HB3	1.92	0.49
1:A:1044:LEU:HB2	1:A:1082:PHE:HD1	1.77	0.49
1:A:909:THR:HB	1:A:915:ILE:HA	1.95	0.49
1:A:1118:ALA:N	1:A:1141:ILE:O	2.29	0.49
1:A:1327:MET:HG2	1:A:1354:ILE:HG23	1.93	0.49
1:A:1343:THR:HA	1:A:1371:ILE:HB	1.93	0.49
1:A:443:ARG:HB2	1:A:446:ASN:HD21	1.76	0.49
1:A:1013:ILE:HG23	1:A:1017:ALA:HB3	1.94	0.49
1:A:853:PHE:HB3	1:A:879:PHE:CD1	2.48	0.49
1:A:1503:TYR:HD1	1:A:1533:TYR:HB3	1.77	0.49
1:A:761:ILE:HB	1:A:783:LEU:HB3	1.95	0.49
1:A:1695:PHE:HA	1:A:1721:TYR:HB3	1.94	0.49
1:A:469:ASN:OD1	1:A:509:LYS:N	2.46	0.49
1:A:736:VAL:HB	1:A:789:ILE:HA	1.93	0.49
1:A:1342:ILE:O	1:A:1371:ILE:N	2.34	0.49
1:A:581:THR:OG1	1:A:652:LEU:HD12	2.13	0.49
1:A:803:LYS:HA	1:A:850:SER:HA	1.94	0.49
1:A:1178:GLU:HA	1:A:1202:LYS:O	2.13	0.49
1:A:1244:TYR:CE2	1:A:1279:LYS:HE3	2.48	0.49
1:A:1689:LYS:NZ	1:A:1716:GLU:OE1	2.33	0.49
1:A:667:ILE:O	1:A:745:GLY:N	2.25	0.48
1:A:1073:THR:O	1:A:1076:LYS:NZ	2.45	0.48
1:A:853:PHE:O	1:A:879:PHE:HA	2.13	0.48
1:A:856:ILE:HG23	1:A:857:LYS:HG2	1.95	0.48
1:A:893:GLU:OE2	1:A:926:ASN:ND2	2.46	0.48
1:A:1084:GLU:HG2	1:A:1108:GLY:HA3	1.94	0.48
1:A:1527:LYS:HD3	1:A:1557:ASN:ND2	2.28	0.48
1:A:658:GLU:CD	1:A:733:THR:H	2.22	0.48
1:A:970:LYS:NZ	1:A:998:ASP:OD2	2.45	0.48
1:A:1502:ILE:HB	1:A:1532:ILE:HA	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:507:VAL:HA	1:A:566:GLN:NE2	2.29	0.48
1:A:777:SER:O	1:A:779:VAL:N	2.47	0.48
1:A:935:LEU:HD22	1:A:962:LYS:HB2	1.96	0.48
1:A:1392:GLY:N	1:A:1417:THR:O	2.39	0.48
1:A:475:GLY:N	1:A:513:THR:O	2.44	0.48
1:A:600:TYR:CZ	1:A:602:ASN:HB2	2.49	0.48
1:A:698:VAL:HG22	1:A:752:ILE:HB	1.95	0.48
1:A:951:VAL:HG22	1:A:953:HIS:HD1	1.78	0.48
1:A:1423:GLY:H	1:A:1447:ALA:HB2	1.79	0.48
1:A:1518:ASN:ND2	1:A:1549:ASN:OD1	2.46	0.48
1:A:1581:ILE:HG13	1:A:1605:LYS:NZ	2.29	0.48
1:A:1712:THR:OG1	1:A:1737:GLU:OE2	2.27	0.48
1:A:519:SER:H	1:A:576:SER:HB2	1.79	0.48
1:A:534:PRO:HA	1:A:547:ILE:HA	1.95	0.48
1:A:698:VAL:HG22	1:A:752:ILE:HD13	1.95	0.48
1:A:736:VAL:HB	1:A:789:ILE:HG12	1.96	0.48
1:A:1069:LEU:HD22	1:A:1103:TYR:CD1	2.49	0.48
1:A:1101:GLU:O	1:A:1131:LYS:N	2.37	0.48
1:A:905:VAL:HG13	1:A:944:TYR:HD2	1.78	0.47
1:A:940:ASN:HB2	1:A:964:VAL:HG22	1.96	0.47
1:A:1718:VAL:HG12	1:A:1742:ALA:HB3	1.95	0.47
1:A:386:THR:C	1:A:418:ASN:HD22	2.21	0.47
1:A:1277:TYR:CE2	1:A:1279:LYS:HD2	2.49	0.47
1:A:1552:LYS:HA	1:A:1579:GLY:H	1.80	0.47
1:A:1555:VAL:HB	1:A:1582:VAL:HA	1.94	0.47
1:A:715:ASP:O	1:A:724:ARG:HD3	2.15	0.47
1:A:1536:ASN:HD22	1:A:1567:LYS:HB3	1.79	0.47
1:A:441:LEU:HD11	1:A:448:GLY:HA2	1.96	0.47
1:A:1025:PRO:HB2	1:A:1063:PRO:HG3	1.95	0.47
1:A:1026:THR:HA	1:A:1061:ASN:O	2.14	0.47
1:A:1518:ASN:O	1:A:1551:GLY:N	2.47	0.47
1:A:323:GLN:HG2	1:A:1166:LYS:HB3	1.97	0.47
1:A:1074:SER:C	1:A:1076:LYS:H	2.21	0.47
1:A:1713:LYS:O	1:A:1738:LYS:NZ	2.48	0.47
1:A:475:GLY:HA3	1:A:514:LEU:HD23	1.96	0.47
1:A:644:GLY:HA2	1:A:679:SER:HB2	1.97	0.47
1:A:877:ILE:HD13	1:A:902:LYS:HB2	1.96	0.47
1:A:1194:LEU:HD13	1:A:1218:TYR:HB3	1.96	0.47
1:A:1243:ILE:HD12	1:A:1276:ILE:HG22	1.96	0.47
1:A:1291:THR:O	1:A:1350:LYS:NZ	2.42	0.47
1:A:1628:ALA:O	1:A:1655:THR:OG1	2.25	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:535:GLY:N	1:A:546:GLN:O	2.48	0.47
1:A:571:LEU:HB2	1:A:642:ILE:HD13	1.96	0.47
1:A:1395:VAL:O	1:A:1422:SER:OG	2.25	0.47
1:A:661:LEU:O	1:A:739:ASN:N	2.39	0.47
1:A:1332:SER:O	1:A:1359:SER:HA	2.15	0.47
1:A:1403:ASN:OD1	1:A:1430:GLY:N	2.38	0.47
1:A:608:THR:OG1	1:A:612:GLU:O	2.24	0.47
1:A:737:GLU:OE2	1:A:792:LYS:HG2	2.15	0.47
1:A:982:ILE:HG21	1:A:1011:LEU:HD12	1.96	0.47
1:A:1073:THR:HG22	1:A:1074:SER:N	2.30	0.47
1:A:1421:SER:HB3	1:A:1444:ALA:HA	1.97	0.47
1:A:381:LYS:NZ	1:A:409:GLN:HE21	2.14	0.46
1:A:639:ASN:ND2	1:A:641:ASN:OD1	2.49	0.46
1:A:951:VAL:HG11	1:A:967:PHE:CZ	2.45	0.46
1:A:1016:LYS:HA	1:A:1047:ASN:O	2.15	0.46
1:A:1502:ILE:HG21	1:A:1516:VAL:HG21	1.96	0.46
1:A:1515:SER:OG	1:A:1546:ASP:OD2	2.31	0.46
1:A:375:TRP:H	1:A:403:SER:HB2	1.79	0.46
1:A:622:ARG:N	1:A:716:THR:OG1	2.49	0.46
1:A:754:ALA:HB3	1:A:807:PHE:CD1	2.50	0.46
1:A:953:HIS:HD2	1:A:980:ALA:HB3	1.79	0.46
1:A:1110:ALA:C	1:A:1137:ASN:HD22	2.23	0.46
1:A:1134:THR:O	1:A:1162:THR:N	2.44	0.46
1:A:1137:ASN:HA	1:A:1163:ARG:HD2	1.97	0.46
1:A:1152:VAL:HA	1:A:1176:ASN:O	2.15	0.46
1:A:1461:ILE:N	1:A:1490:ASP:O	2.38	0.46
1:A:1502:ILE:N	1:A:1531:GLY:O	2.48	0.46
1:A:882:LYS:HG3	1:A:910:ASN:ND2	2.31	0.46
1:A:953:HIS:NE2	1:A:978:ILE:HG23	2.31	0.46
1:A:1318:GLU:HA	1:A:1340:SER:HA	1.98	0.46
1:A:1513:LYS:HD3	1:A:1544:GLU:HA	1.97	0.46
1:A:1542:ASN:HD21	1:A:1597:GLU:HG2	1.80	0.46
1:A:512:ILE:HD13	1:A:569:ILE:HD13	1.98	0.46
1:A:783:LEU:HG	1:A:785:ARG:HD2	1.97	0.46
1:A:1006:GLY:HA2	1:A:1038:LYS:HB3	1.97	0.46
1:A:1169:GLY:N	1:A:1191:VAL:O	2.48	0.46
1:A:1593:LYS:N	1:A:1596:SER:OG	2.48	0.46
1:A:338:VAL:HG12	1:A:341:PRO:HD3	1.97	0.46
1:A:376:LYS:HB3	1:A:379:TRP:HE1	1.81	0.46
1:A:1033:LYS:HA	1:A:1067:LYS:NZ	2.31	0.46
1:A:1635:VAL:HA	1:A:1659:ASN:HD21	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1685:THR:HG22	1:A:1711:THR:HB	1.97	0.46
1:A:540:TRP:HA	1:A:545:LEU:HD21	1.97	0.46
1:A:962:LYS:HA	1:A:992:THR:HG22	1.97	0.46
1:A:526:PRO:HG3	1:A:620:ILE:HD11	1.98	0.46
1:A:649:GLY:HA3	1:A:699:GLY:HA2	1.98	0.46
1:A:355:VAL:H	1:A:493:ASN:ND2	2.13	0.46
1:A:879:PHE:HB2	1:A:904:VAL:HG23	1.97	0.46
1:A:1174:ALA:N	1:A:1197:LYS:HB3	2.30	0.46
1:A:1702:LEU:HG	1:A:1704:ASN:N	2.29	0.45
1:A:981:PRO:HA	1:A:1010:LYS:H	1.82	0.45
1:A:292:ILE:O	1:A:1721:TYR:OH	2.33	0.45
1:A:831:LYS:HA	1:A:836:LYS:CD	2.47	0.45
1:A:941:ILE:HD12	1:A:944:TYR:HB2	1.99	0.45
1:A:714:LYS:HB3	1:A:724:ARG:CZ	2.46	0.45
1:A:1147:VAL:O	1:A:1149:PHE:N	2.47	0.45
1:A:1184:THR:HG22	1:A:1208:GLU:HG2	1.99	0.45
1:A:1226:ASN:HD21	1:A:1243:ILE:HD11	1.82	0.45
1:A:1267:ALA:HB3	1:A:1298:GLN:CD	2.41	0.45
1:A:1716:GLU:HA	1:A:1740:THR:O	2.17	0.45
1:A:560:LEU:HB3	1:A:632:SER:OG	2.17	0.45
1:A:714:LYS:HD2	1:A:724:ARG:NH1	2.30	0.45
1:A:882:LYS:HD2	1:A:908:GLY:O	2.17	0.45
1:A:1308:ASN:H	1:A:1338:GLU:HB2	1.81	0.45
1:A:333:THR:O	1:A:1021:TYR:OH	2.22	0.45
1:A:617:GLY:HA3	1:A:785:ARG:HH12	1.81	0.45
1:A:1044:LEU:HD23	1:A:1048:SER:HB2	1.97	0.45
1:A:1154:LYS:HG3	1:A:1178:GLU:OE1	2.15	0.45
1:A:1726:LEU:HG	1:A:1727:LYS:HG2	1.99	0.45
1:A:1739:LYS:C	1:A:1740:THR:HG1	2.20	0.45
1:A:1043:GLU:C	1:A:1044:LEU:HD12	2.41	0.45
1:A:674:GLN:NE2	1:A:690:ASP:O	2.39	0.45
1:A:1336:MET:SD	1:A:1363:LEU:HB3	2.57	0.45
1:A:1469:ILE:HD11	1:A:1485:ASN:HD21	1.82	0.45
1:A:1742:ALA:HA	1:A:1765:ALA:O	2.16	0.45
1:A:710:LYS:HE2	1:A:730:LEU:HD13	1.99	0.45
1:A:798:ASN:HA	1:A:844:ASN:HB3	1.97	0.44
1:A:629:LYS:HE2	1:A:630:TYR:OH	2.17	0.44
1:A:784:LYS:HB3	1:A:814:HIS:HB3	1.99	0.44
1:A:330:LEU:HD21	1:A:1090:TYR:CD2	2.52	0.44
1:A:1280:LYS:HE2	1:A:1308:ASN:OD1	2.18	0.44
1:A:1669:VAL:HG22	1:A:1692:THR:HB	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:814:HIS:HA	1:A:827:TYR:CE1	2.41	0.44
1:A:1074:SER:HA	1:A:1076:LYS:NZ	2.33	0.44
1:A:1130:LYS:O	1:A:1158:THR:N	2.50	0.44
1:A:1588:ALA:HB1	1:A:1591:ILE:HD11	1.99	0.44
1:A:917:PHE:HE2	1:A:951:VAL:HA	1.82	0.44
1:A:1248:THR:OG1	1:A:1249:SER:N	2.49	0.44
1:A:1256:ASN:HA	1:A:1287:THR:O	2.18	0.44
1:A:569:ILE:N	1:A:639:ASN:O	2.38	0.44
1:A:903:ALA:H	1:A:941:ILE:HG12	1.82	0.44
1:A:1372:ASN:C	1:A:1408:GLU:H	2.25	0.44
1:A:1426:ILE:O	1:A:1450:THR:OG1	2.24	0.44
1:A:469:ASN:C	1:A:509:LYS:HB3	2.43	0.44
1:A:455:HIS:C	1:A:499:ASN:HB2	2.43	0.44
1:A:1162:THR:HG22	1:A:1187:ASN:ND2	2.33	0.44
1:A:1239:THR:N	1:A:1272:LYS:O	2.51	0.44
1:A:360:ASP:OD2	1:A:360:ASP:N	2.51	0.44
1:A:491:GLY:HA2	1:A:523:GLN:H	1.83	0.44
1:A:1279:LYS:HG3	1:A:1307:LYS:HG3	1.99	0.44
1:A:327:ILE:HG12	1:A:1117:VAL:HG21	1.99	0.43
1:A:526:PRO:HG2	1:A:654:GLN:HG2	1.98	0.43
1:A:1296:VAL:O	1:A:1328:SER:N	2.51	0.43
1:A:869:VAL:HG12	1:A:871:ASP:H	1.83	0.43
1:A:1437:LYS:HD2	1:A:1465:LYS:HE2	2.00	0.43
1:A:1448:ASN:N	1:A:1481:LYS:HE2	2.33	0.43
1:A:959:LYS:HB3	1:A:959:LYS:HE3	1.81	0.43
1:A:1308:ASN:O	1:A:1312:GLN:NE2	2.51	0.43
1:A:1454:ALA:HA	1:A:1488:THR:HG23	2.00	0.43
1:A:554:LYS:NZ	1:A:610:ASP:O	2.41	0.43
1:A:770:GLU:O	1:A:775:LYS:NZ	2.44	0.43
1:A:1547:VAL:HB	1:A:1570:VAL:HA	2.01	0.43
1:A:351:VAL:O	1:A:353:PHE:N	2.51	0.43
1:A:645:ASP:OD2	1:A:689:TYR:HB3	2.19	0.43
1:A:330:LEU:HD21	1:A:1090:TYR:CG	2.53	0.43
1:A:459:ILE:HD13	1:A:719:ASN:ND2	2.34	0.43
1:A:982:ILE:HG22	1:A:1010:LYS:O	2.19	0.43
1:A:1130:LYS:HA	1:A:1130:LYS:HD3	1.76	0.43
1:A:1422:SER:HA	1:A:1445:THR:O	2.19	0.43
1:A:1565:ALA:HB1	1:A:1568:TYR:HB2	2.00	0.43
1:A:1630:ASN:O	1:A:1657:GLU:HB3	2.18	0.43
1:A:573:GLY:O	1:A:644:GLY:HA3	2.19	0.43
1:A:1147:VAL:HG13	1:A:1148:GLY:N	2.31	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1278:SER:O	1:A:1307:LYS:N	2.47	0.43
1:A:1302:ALA:HB2	1:A:1333:ILE:HB	2.01	0.43
1:A:386:THR:OG1	1:A:390:ASN:HB3	2.19	0.43
1:A:473:ILE:HD12	1:A:489:ALA:HB1	2.01	0.43
1:A:1001:ALA:O	1:A:1031:THR:HA	2.19	0.43
1:A:423:VAL:HG12	1:A:426:VAL:HG21	2.00	0.43
1:A:508:ASN:ND2	1:A:565:ASN:OD1	2.30	0.43
1:A:987:SER:HB3	1:A:992:THR:HG23	2.00	0.43
1:A:1013:ILE:N	1:A:1043:GLU:O	2.41	0.43
1:A:1319:VAL:HG22	1:A:1340:SER:HB3	2.01	0.43
1:A:1411:VAL:O	1:A:1436:LYS:HG2	2.19	0.43
1:A:444:SER:HB3	1:A:486:GLU:HG2	2.01	0.43
1:A:863:SER:O	1:A:889:SER:N	2.52	0.43
1:A:1299:LYS:HB3	1:A:1331:ASN:HB3	2.00	0.43
1:A:1588:ALA:CB	1:A:1591:ILE:HD11	2.49	0.43
1:A:1699:SER:HA	1:A:1725:SER:HA	2.00	0.43
1:A:1065:LEU:HD11	1:A:1068:TYR:CE2	2.54	0.42
1:A:1405:ALA:O	1:A:1431:LYS:NZ	2.37	0.42
1:A:445:GLN:HG3	1:A:486:GLU:HG3	2.01	0.42
1:A:651:GLY:HA2	1:A:701:PHE:HB3	1.99	0.42
1:A:860:ASN:ND2	1:A:885:SER:O	2.47	0.42
1:A:949:TYR:OH	1:A:974:GLY:HA3	2.18	0.42
1:A:490:PHE:O	1:A:522:ILE:HA	2.20	0.42
1:A:1298:GLN:N	1:A:1298:GLN:OE1	2.52	0.42
1:A:1330:GLU:HB2	1:A:1357:LYS:HB2	2.01	0.42
1:A:1356:GLU:OE2	1:A:1357:LYS:NZ	2.53	0.42
1:A:1611:PRO:HB3	1:A:1616:ASP:O	2.19	0.42
1:A:496:ASP:OD2	1:A:539:TYR:OH	2.27	0.42
1:A:661:LEU:HB2	1:A:738:ILE:HG23	2.00	0.42
1:A:1178:GLU:OE2	1:A:1204:THR:OG1	2.38	0.42
1:A:1689:LYS:HE3	1:A:1690:LYS:HG3	2.02	0.42
1:A:517:PRO:HG2	1:A:677:ASP:HA	2.01	0.42
1:A:589:LYS:HD2	1:A:589:LYS:N	2.35	0.42
1:A:830:ASP:OD2	1:A:833:HIS:N	2.35	0.42
1:A:965:ILE:HG21	1:A:996:TYR:HB3	2.02	0.42
1:A:1088:LEU:HD21	1:A:1103:TYR:HD2	1.85	0.42
1:A:1099:LEU:HD12	1:A:1132:LEU:CD2	2.43	0.42
1:A:1239:THR:HG22	1:A:1272:LYS:HG2	2.00	0.42
1:A:1553:ILE:O	1:A:1581:ILE:HB	2.19	0.42
1:A:460:SER:O	1:A:625:LEU:HD22	2.19	0.42
1:A:562:LYS:HD2	1:A:633:GLY:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:635:TYR:CD1	1:A:660:LYS:HG3	2.54	0.42
1:A:719:ASN:HB2	1:A:723:ALA:HB3	2.01	0.42
1:A:1331:ASN:HA	1:A:1358:LYS:HB3	2.01	0.42
1:A:856:ILE:HG13	1:A:910:ASN:HB2	2.02	0.42
1:A:1248:THR:HG23	1:A:1250:ILE:H	1.85	0.42
1:A:413:VAL:HG12	1:A:420:ALA:HB2	2.01	0.42
1:A:435:PHE:O	1:A:470:SER:N	2.49	0.42
1:A:632:SER:O	1:A:657:GLN:HB3	2.19	0.42
1:A:839:ASN:O	1:A:864:SER:OG	2.29	0.42
1:A:1185:MET:SD	1:A:1185:MET:N	2.93	0.42
1:A:1367:GLU:H	1:A:1399:SER:CB	2.33	0.42
1:A:962:LYS:O	1:A:964:VAL:HG23	2.20	0.42
1:A:1251:SER:OG	1:A:1253:VAL:HG12	2.20	0.42
1:A:1437:LYS:NZ	1:A:1463:ASP:OD1	2.35	0.42
1:A:1694:ILE:HD13	1:A:1702:LEU:HD22	2.02	0.42
1:A:564:ASP:HA	1:A:635:TYR:O	2.20	0.41
1:A:792:LYS:HA	1:A:792:LYS:HD3	1.85	0.41
1:A:962:LYS:O	1:A:963:ASP:OD1	2.38	0.41
1:A:987:SER:OG	1:A:1017:ALA:HB2	2.20	0.41
1:A:1000:ASN:HB3	1:A:1027:LYS:HD2	2.01	0.41
1:A:1308:ASN:O	1:A:1339:LYS:HG3	2.20	0.41
1:A:1429:ALA:O	1:A:1457:LYS:HD2	2.19	0.41
1:A:605:SER:HB3	1:A:607:ARG:HH21	1.85	0.41
1:A:1082:PHE:HB2	1:A:1107:ASN:OD1	2.21	0.41
1:A:1344:ASN:HB3	1:A:1374:GLY:H	1.85	0.41
1:A:1496:LYS:O	1:A:1526:GLN:HG2	2.20	0.41
1:A:681:LEU:HD23	1:A:682:PRO:O	2.20	0.41
1:A:1467:VAL:HG11	1:A:1503:TYR:HB2	2.02	0.41
1:A:1691:ALA:O	1:A:1717:SER:OG	2.37	0.41
1:A:366:SER:HA	1:A:370:ASN:HB3	2.01	0.41
1:A:511:GLU:N	1:A:511:GLU:OE1	2.54	0.41
1:A:627:ASP:HB3	1:A:630:TYR:CD2	2.56	0.41
1:A:845:ILE:HB	1:A:869:VAL:HG22	2.02	0.41
1:A:1577:THR:O	1:A:1581:ILE:HD11	2.21	0.41
1:A:657:GLN:HE22	1:A:709:VAL:H	1.67	0.41
1:A:550:LYS:HG2	1:A:552:PRO:HD3	2.02	0.41
1:A:1010:LYS:HA	1:A:1010:LYS:HD2	1.86	0.41
1:A:1503:TYR:HE1	1:A:1533:TYR:HD1	1.67	0.41
1:A:1011:LEU:O	1:A:1042:VAL:HA	2.20	0.41
1:A:1096:LYS:NZ	1:A:1123:ASN:OD1	2.36	0.41
1:A:1136:THR:O	1:A:1163:ARG:HD2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1248:THR:OG1	1:A:1281:GLU:OE2	2.26	0.41
1:A:1657:GLU:C	1:A:1682:ASN:HD22	2.28	0.41
1:A:370:ASN:O	1:A:373:GLN:HG3	2.20	0.41
1:A:529:PRO:HA	1:A:557:GLY:HA3	2.03	0.41
1:A:605:SER:C	1:A:616:PRO:HB3	2.46	0.41
1:A:660:LYS:HA	1:A:737:GLU:O	2.20	0.41
1:A:1025:PRO:HG3	1:A:1053:LEU:HD21	2.03	0.41
1:A:1115:VAL:HG23	1:A:1139:GLY:HA2	2.03	0.41
1:A:1259:ASN:HD22	1:A:1290:ASN:CG	2.29	0.41
1:A:1277:TYR:HA	1:A:1305:TYR:O	2.21	0.41
1:A:1366:ASN:N	1:A:1399:SER:OG	2.53	0.41
1:A:1532:ILE:H	1:A:1563:VAL:HG12	1.86	0.41
1:A:1294:ILE:HD11	1:A:1325:VAL:HG22	2.03	0.41
1:A:1558:GLU:HA	1:A:1584:ALA:HB1	2.03	0.41
1:A:744:LEU:CB	1:A:800:GLY:H	2.34	0.40
1:A:758:ASP:OD1	1:A:814:HIS:HD2	2.04	0.40
1:A:474:ILE:HA	1:A:513:THR:HB	2.02	0.40
1:A:545:LEU:HD23	1:A:545:LEU:HA	1.91	0.40
1:A:627:ASP:OD1	1:A:628:SER:N	2.54	0.40
1:A:1142:ALA:HB3	1:A:1172:THR:HG22	2.03	0.40
1:A:1252:SER:HA	1:A:1284:ALA:HB2	2.03	0.40
1:A:455:HIS:HD2	1:A:498:SER:HA	1.87	0.40
1:A:1050:PHE:CE1	1:A:1082:PHE:HZ	2.39	0.40
1:A:1309:GLU:OE2	1:A:1338:GLU:HG3	2.22	0.40
1:A:1497:THR:HB	1:A:1527:LYS:HB2	2.04	0.40
1:A:665:ILE:HG22	1:A:667:ILE:HD11	2.03	0.40
1:A:710:LYS:HB2	1:A:713:GLU:HB2	2.02	0.40
1:A:835:GLY:O	1:A:836:LYS:HD2	2.21	0.40
1:A:1243:ILE:HB	1:A:1276:ILE:HA	2.03	0.40
1:A:1585:LYS:NZ	1:A:1611:PRO:HA	2.37	0.40
1:A:462:PRO:HB2	1:A:630:TYR:HD1	1.86	0.40
1:A:635:TYR:HA	1:A:660:LYS:O	2.21	0.40
1:A:675:GLU:HB2	1:A:678:ILE:HD12	2.04	0.40
1:A:1131:LYS:HA	1:A:1158:THR:O	2.22	0.40
1:A:1224:MET:CE	1:A:1243:ILE:HD13	2.51	0.40
1:A:1686:LEU:HA	1:A:1686:LEU:HD12	1.87	0.40
1:A:1721:TYR:HE1	1:A:1723:SER:HB2	1.87	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	1481/3250 (46%)	1316 (89%)	160 (11%)	5 (0%)	37 72

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1383	ILE
1	A	319	ASN
1	A	778	ASN
1	A	1667	TYR
1	A	915	ILE

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	1208/2632 (46%)	1208 (100%)	0	100 100

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	409	GLN
1	A	440	ASN
1	A	500	ASN
1	A	533	GLN

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Mol	Chain	Res	Type
1	A	680	ASN
1	A	683	ASN
1	A	839	ASN
1	A	986	ASN
1	A	1047	ASN
1	A	1061	ASN
1	A	1203	ASN
1	A	1308	ASN
1	A	1572	ASN
1	A	1600	ASN
1	A	1664	ASN
1	A	1704	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

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.

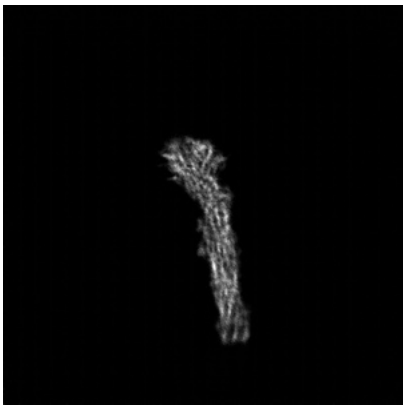
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-53049. These allow visual inspection of the internal detail of the map and identification of artifacts.

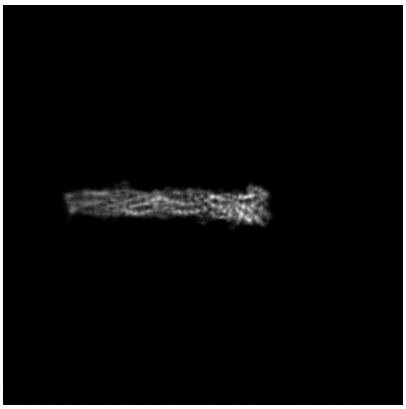
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

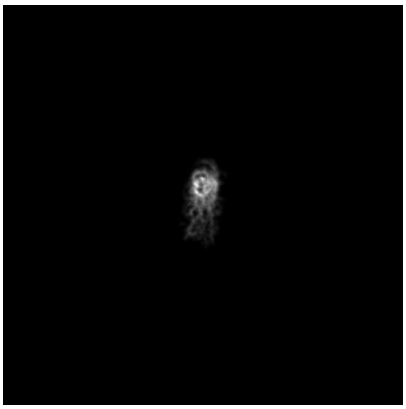
6.1.1 Primary map



X

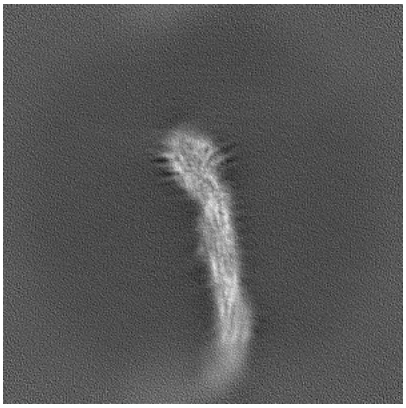


Y

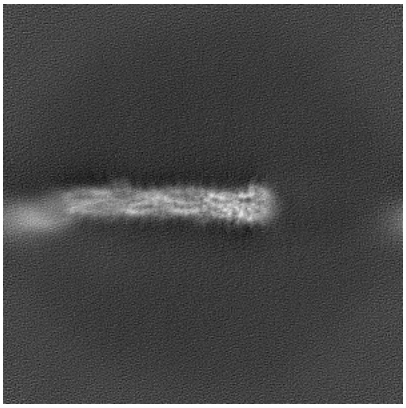


Z

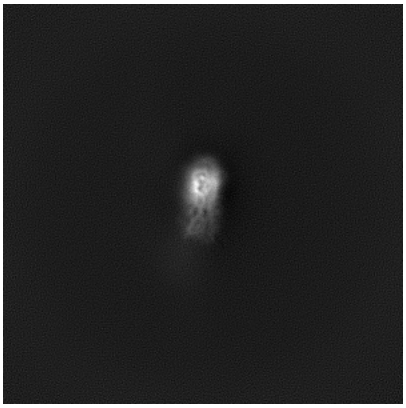
6.1.2 Raw map



X



Y



Z

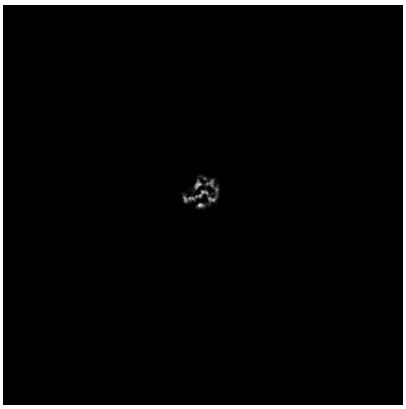
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

6.2.1 Primary map

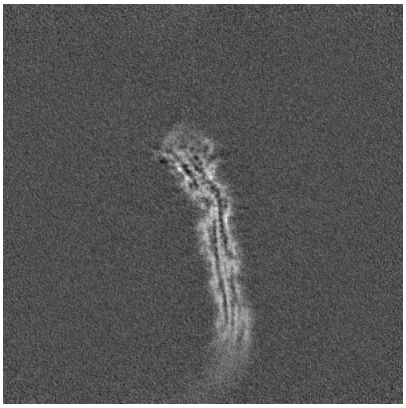
X Index: 192

Y Index: 192

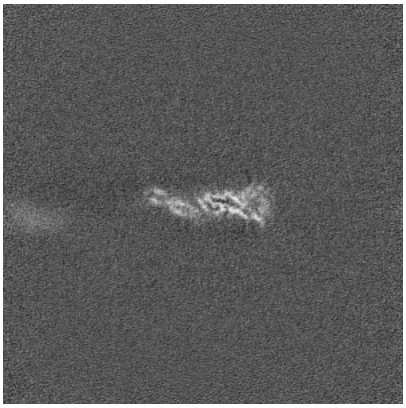


Z Index: 192

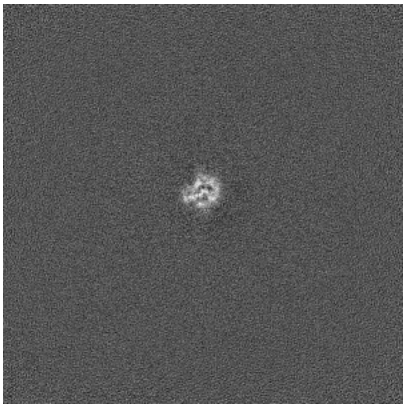
6.2.2 Raw map



X Index: 192



Y Index: 192



Z Index: 192

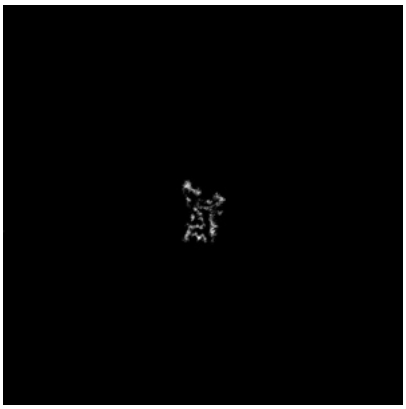
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 185

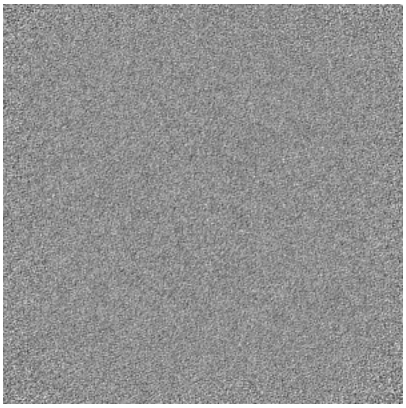
Y Index: 213



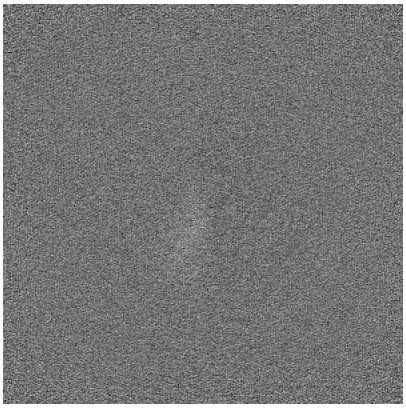
Z Index: 236

6.3.2 Raw map

X Index: 185



Y Index: 0

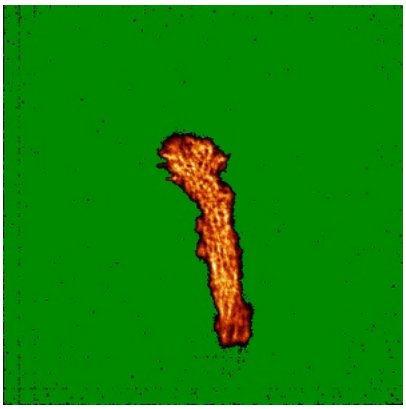


Z Index: 0

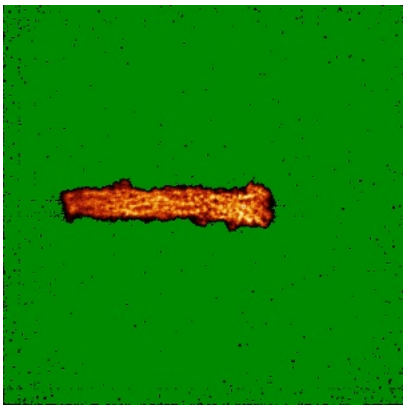
The images above show the largest variance slices of the map in three orthogonal directions.

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

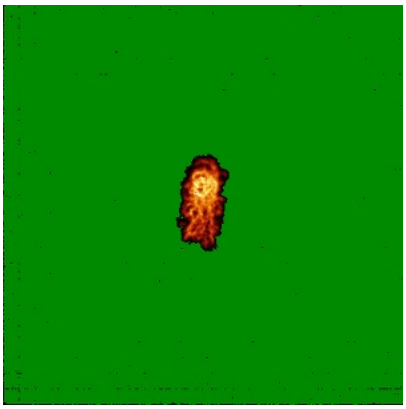
6.4.1 Primary map



X

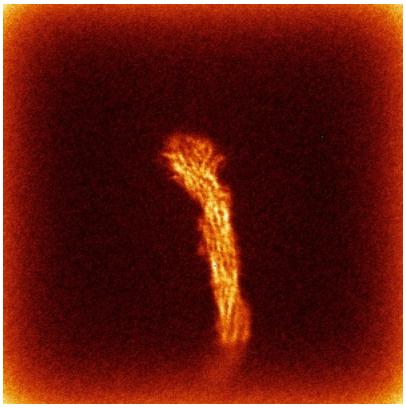


Y

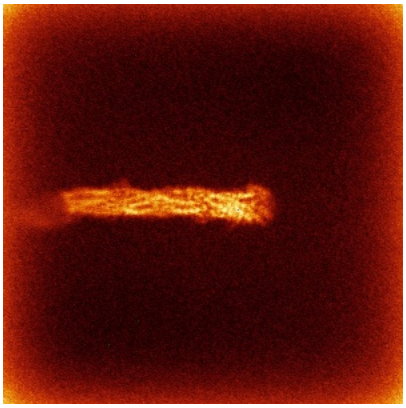


Z

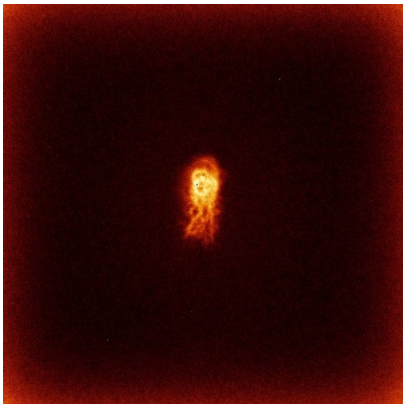
6.4.2 Raw map



X



Y

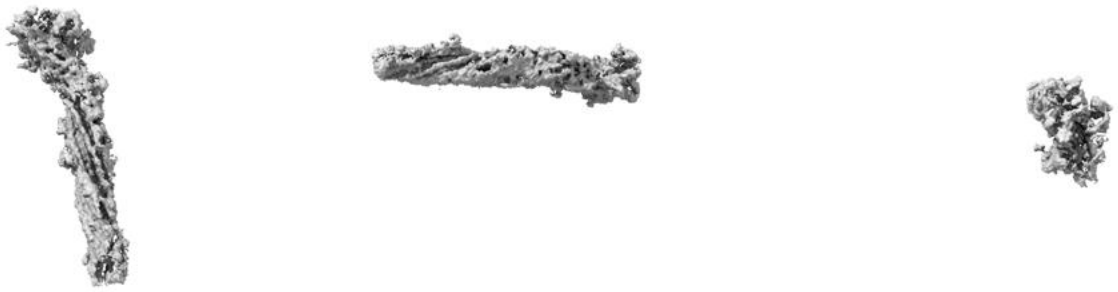


Z

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 0.25. 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.

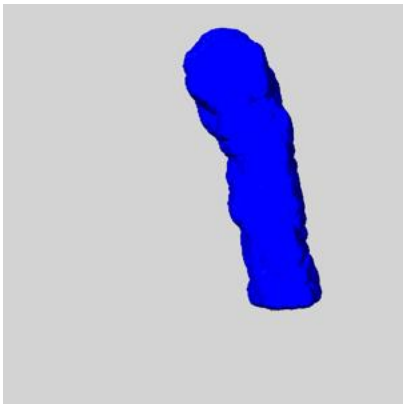
6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

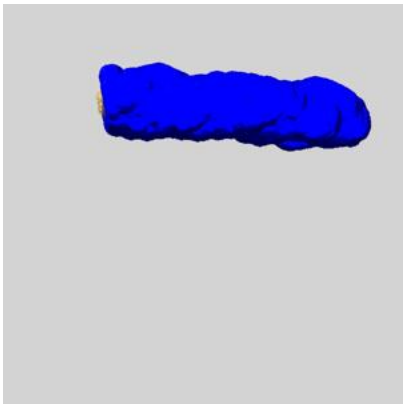
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

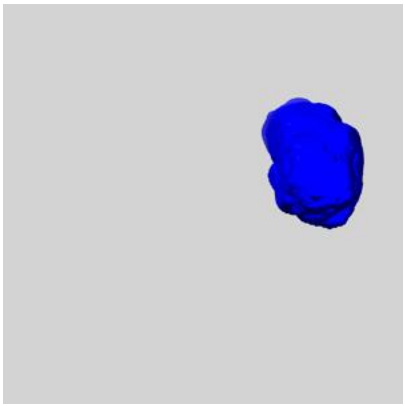
6.6.1 emd_53049_msk_1.map (i)



X



Y

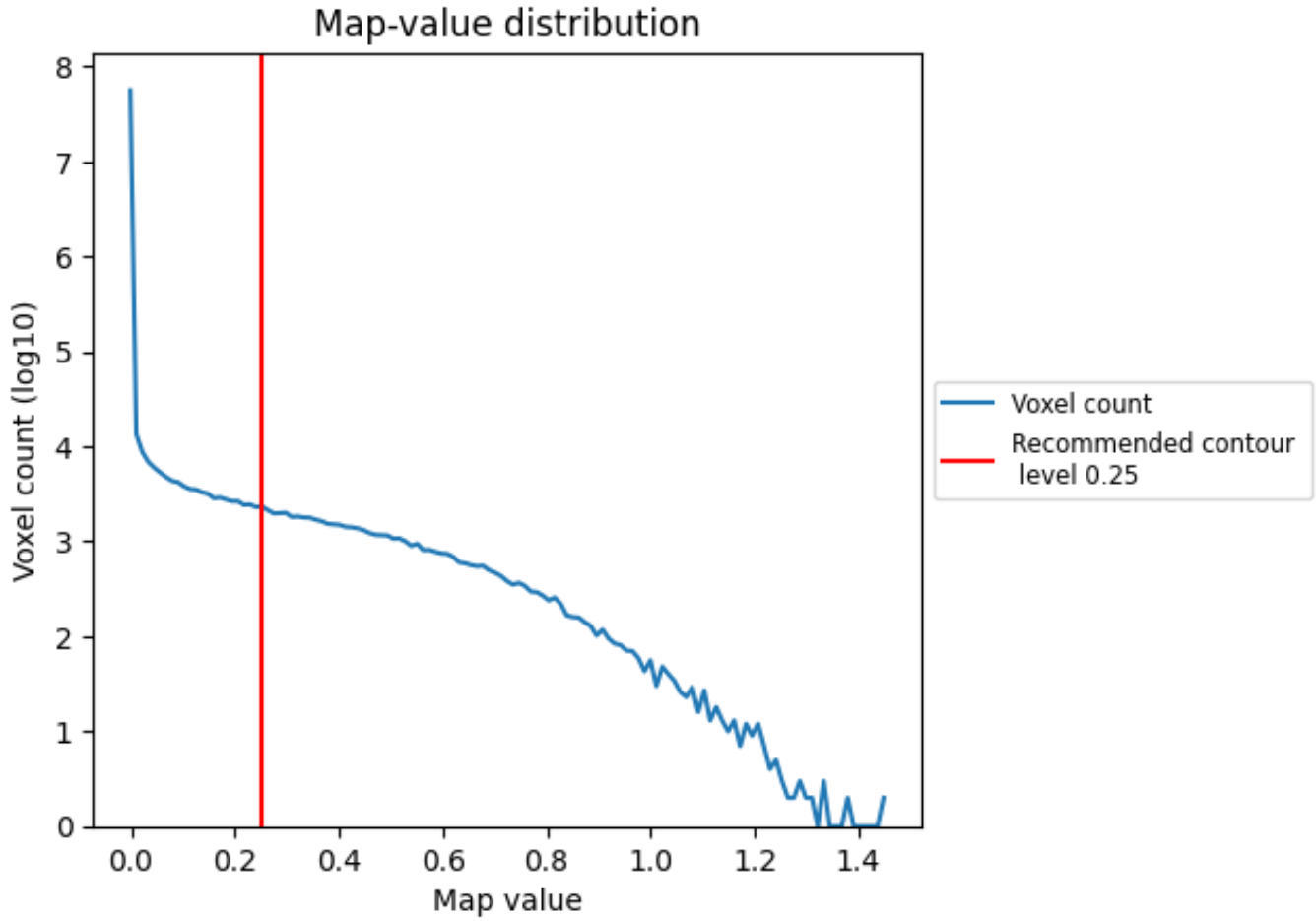


Z

7 Map analysis

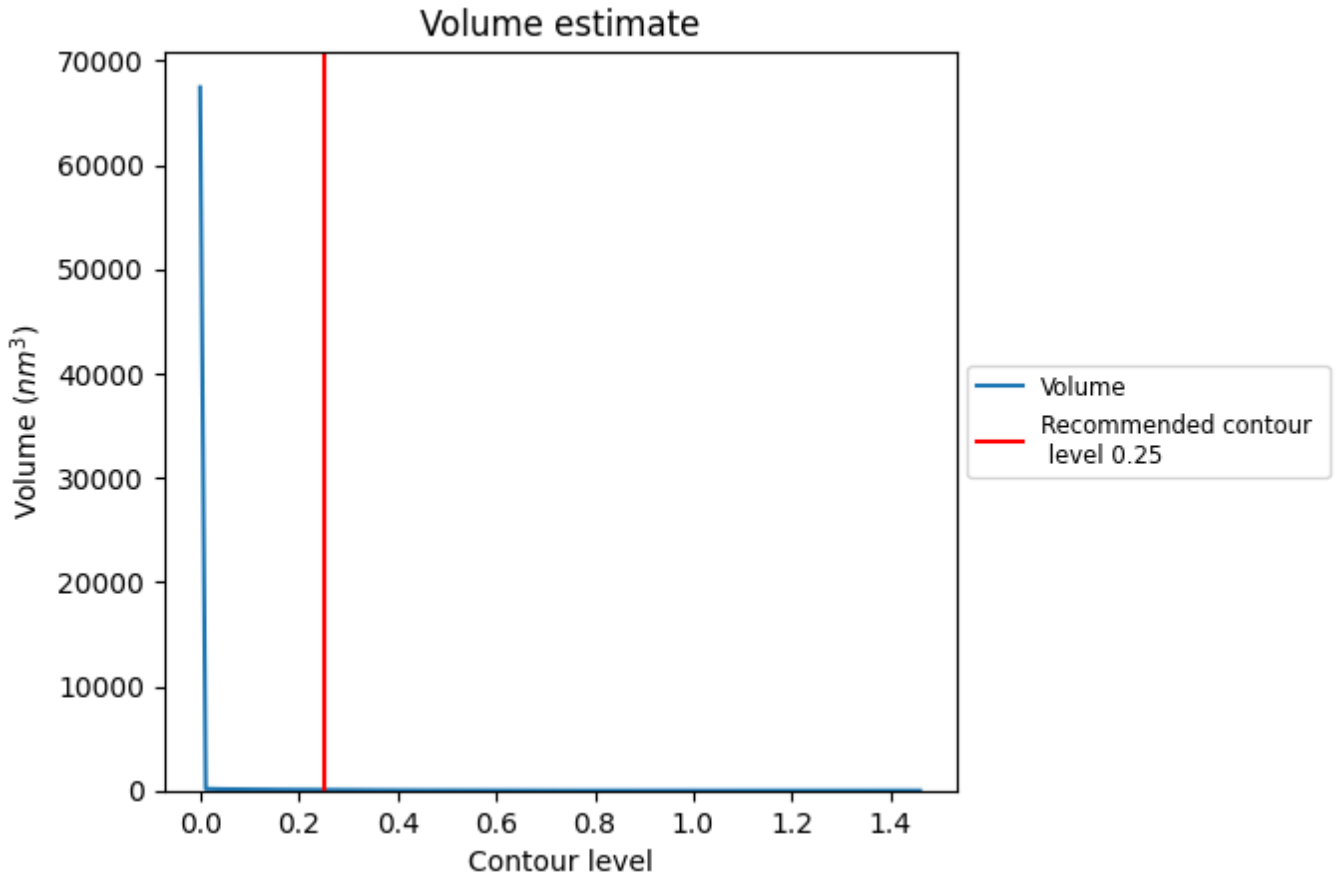
This section contains the results of statistical analysis of the map.

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.

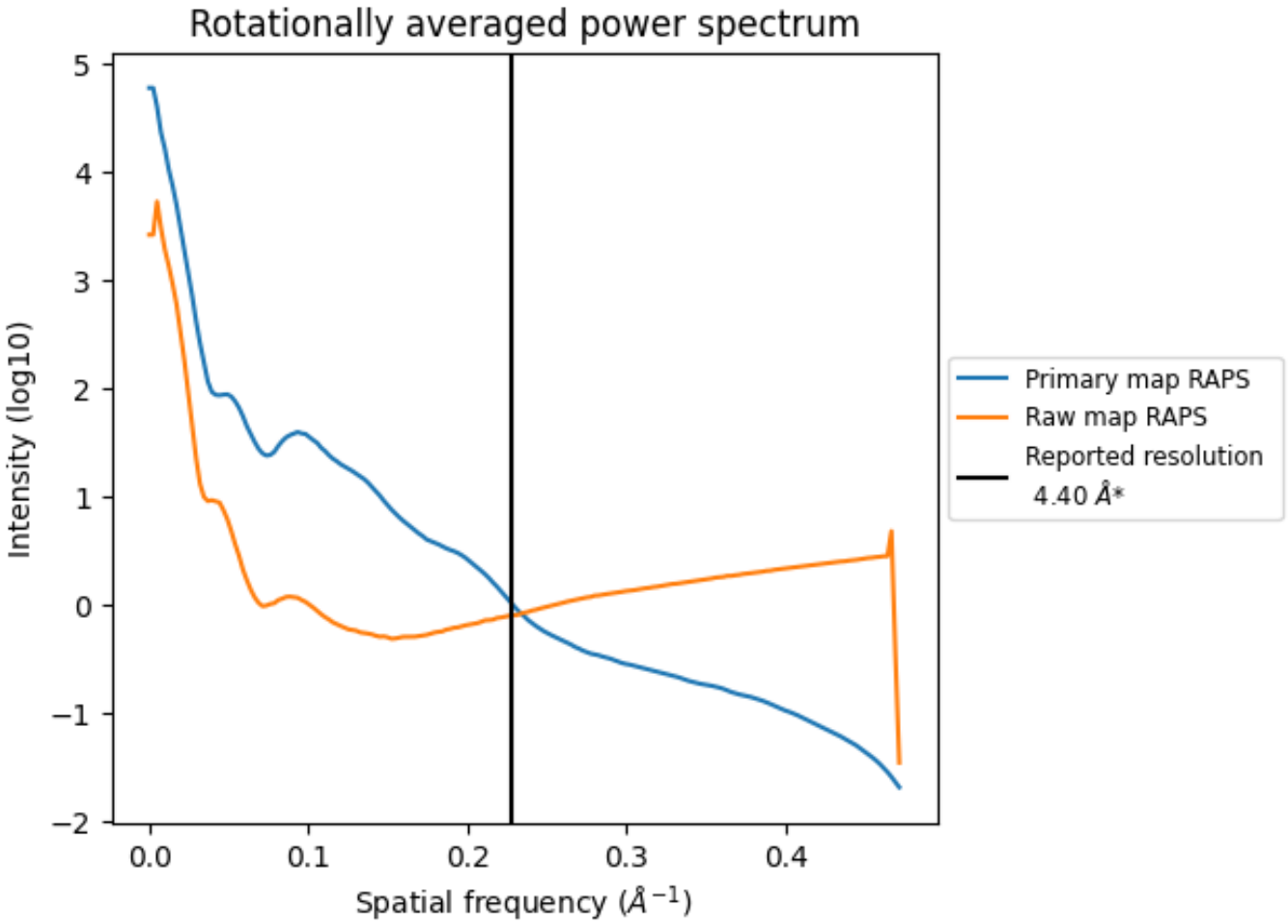
7.2 Volume estimate (i)



The volume at the recommended contour level is 65 nm^3; this corresponds to an approximate mass of 59 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)

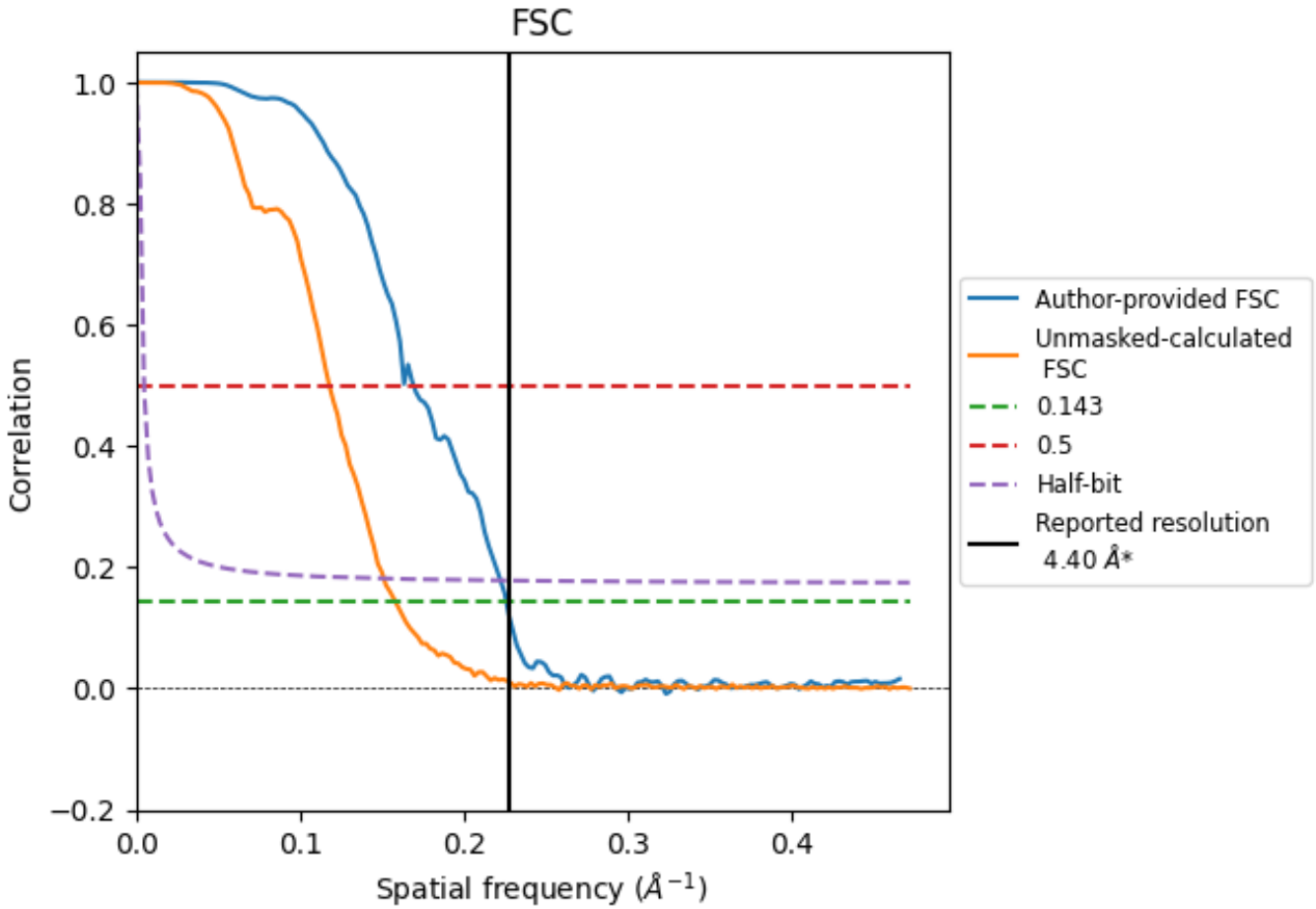


*Reported resolution corresponds to spatial frequency of 0.227 Å^{-1}

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 0.227 Å^{-1}

8.2 Resolution estimates (i)

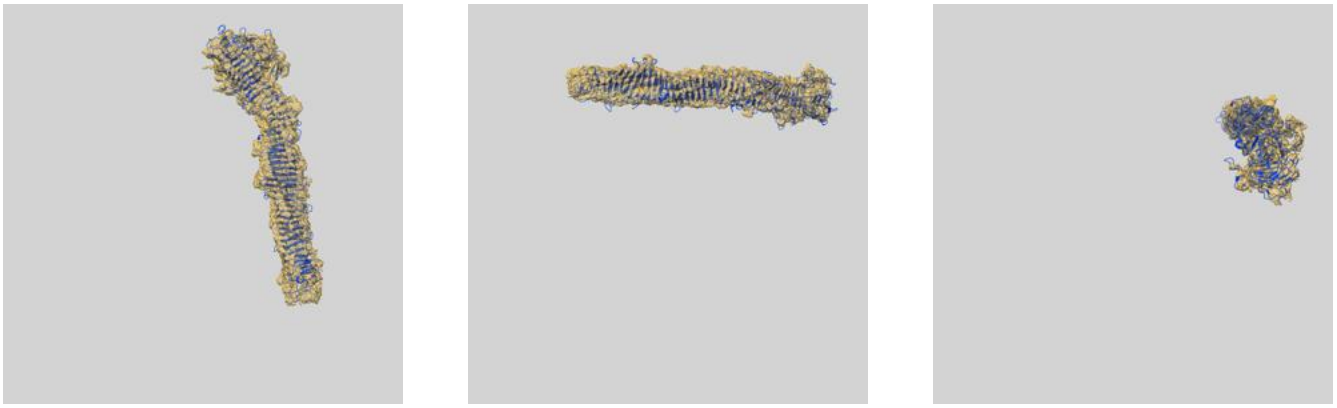
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.40	-	-
Author-provided FSC curve	4.43	5.91	4.50
Unmasked-calculated*	6.33	8.49	6.62

*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 6.33 differs from the reported value 4.4 by more than 10 %

9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-53049 and PDB model 9QE7. Per-residue inclusion information can be found in section 3 on page 4.

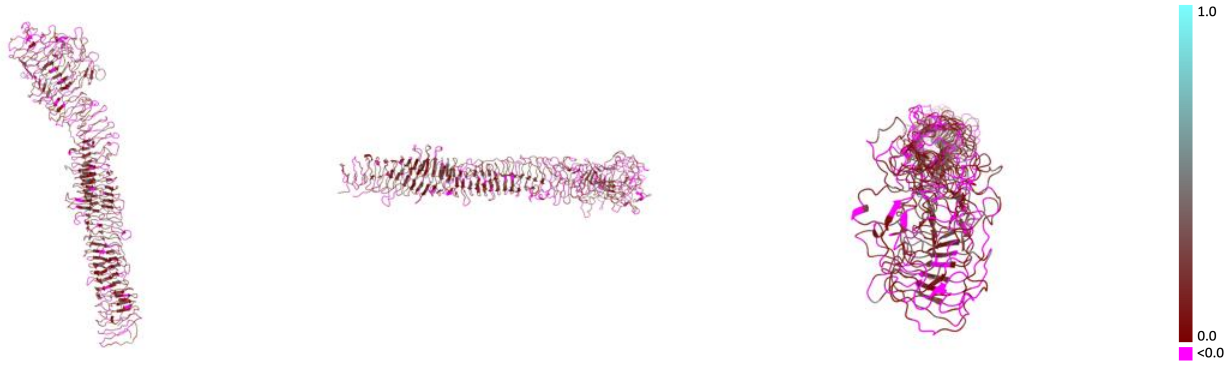
9.1 Map-model overlay



X Y Z

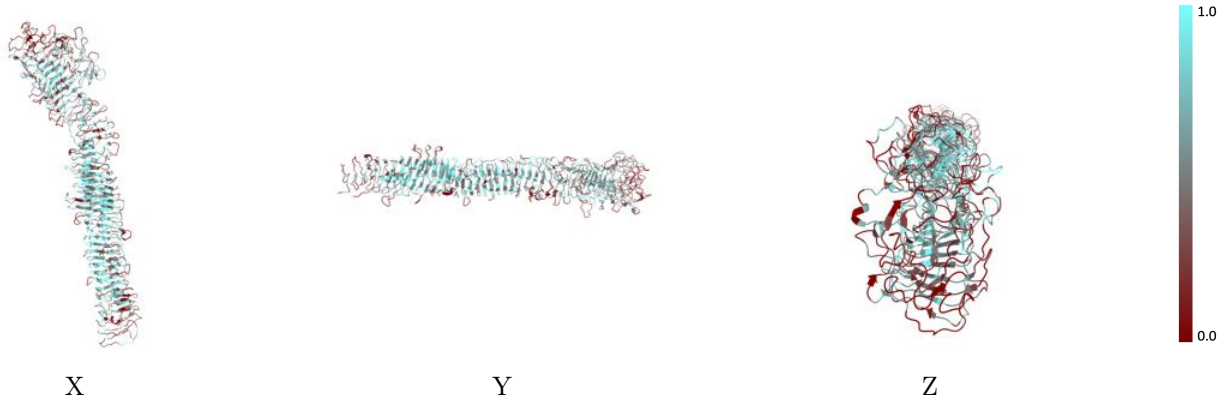
The images above show the 3D surface view of the map at the recommended contour level 0.25 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)



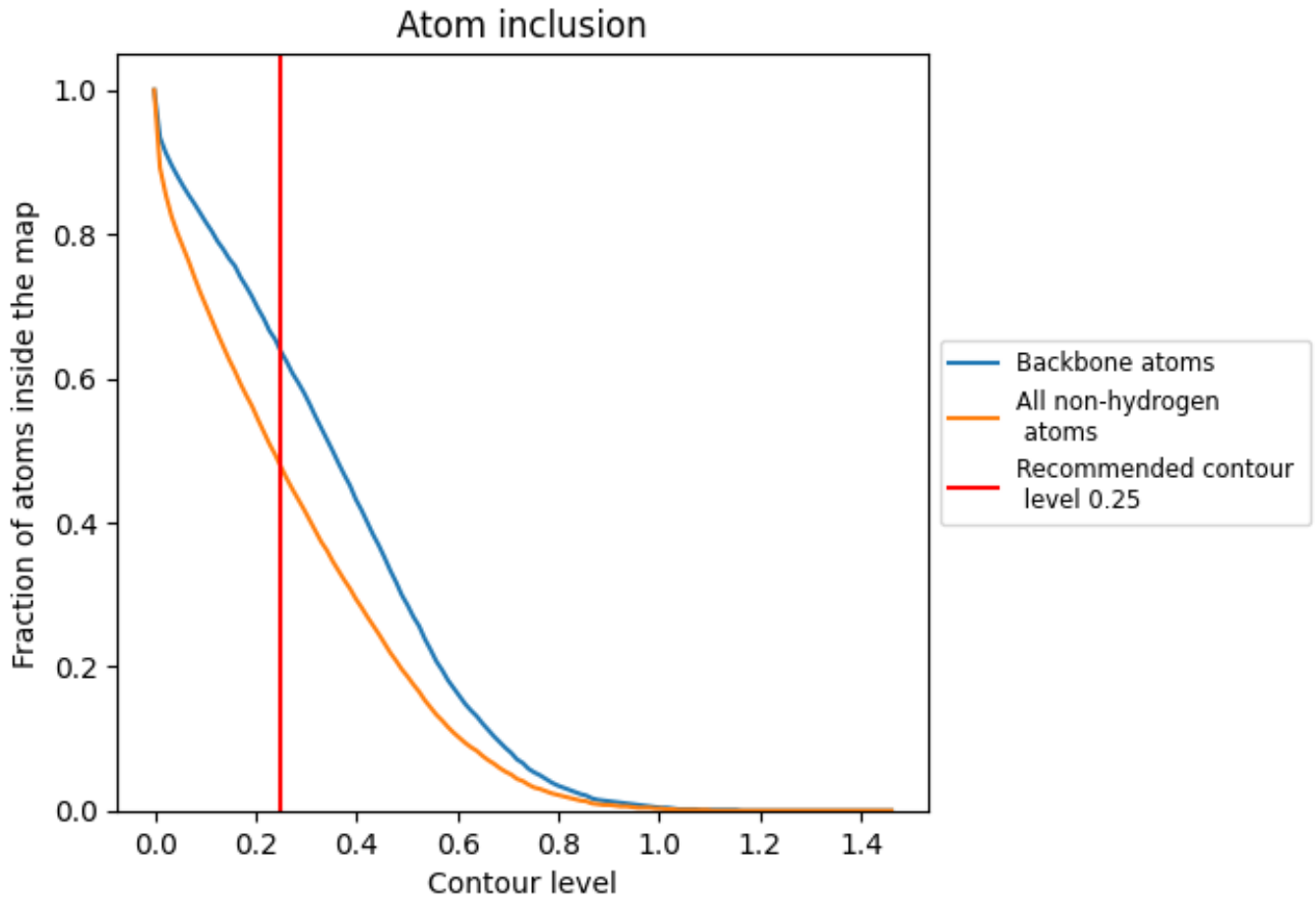
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model (i)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.25).

9.4 Atom inclusion (i)



At the recommended contour level, 64% of all backbone atoms, 48% 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 (0.25) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4770	0.1180
A	0.4770	0.1180