Full wwPDB EM Validation Report ⓘ

Oct 29, 2022 – 09:25 am BST

PDB ID	:	8A7E
EMDB ID	:	EMD-15221
Title	:	PAPP-A dimer in complex with its inhibitor STC2
Authors	:	Kobbero, S.D.; Gajhede, M.; Mirza, O.A.; Boesen, T.; Oxvig, C.
Deposited on	:	2022-06-20
Resolution	:	5.02 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:

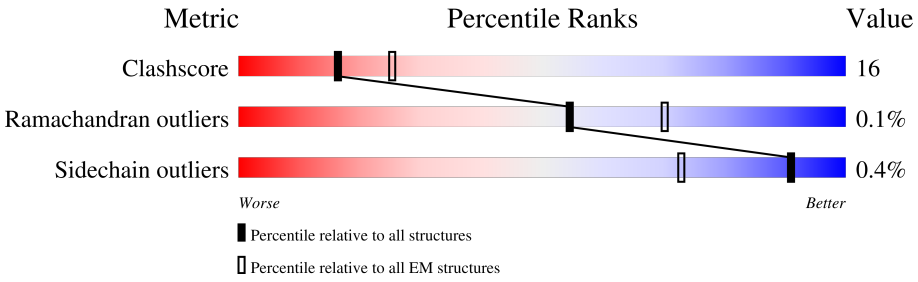
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

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 5.02 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	168	70% 30%
1	P	168	57% 43%
2	C	1536	64% 35%
2	Q	1536	65% 33%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 26442 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 Stanniocalcin-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	P	168	Total	C	N	O	S	0	0
			1315	822	237	239	17		
1	A	168	Total	C	N	O	S	0	0
			1315	822	237	239	17		

- Molecule 2 is a protein called Pappalysin-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	1524	Total	C	N	O	S	0	0
			11897	7436	2062	2294	105		
2	Q	1524	Total	C	N	O	S	0	0
			11897	7436	2062	2294	105		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	563	GLN	GLU	engineered mutation	UNP Q13219
Q	563	GLN	GLU	engineered mutation	UNP Q13219

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
3	C	1	Total	Zn	0
			1	1	
3	Q	1	Total	Zn	0
			1	1	

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca) (labeled as "Ligand of Interest" by depositor).

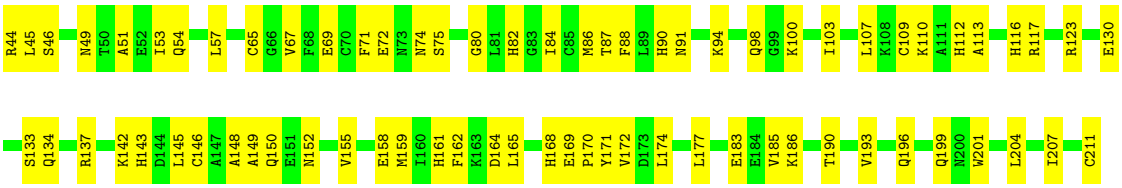
Mol	Chain	Residues	Atoms	AltConf
4	C	8	Total Ca 8 8	0
4	Q	8	Total Ca 8 8	0

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.

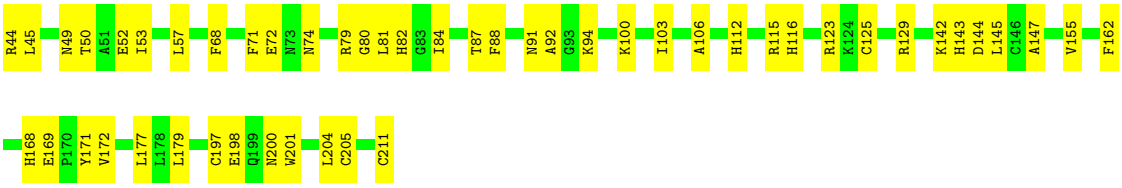
• Molecule 1: Stanniocalcin-2

Chain P:



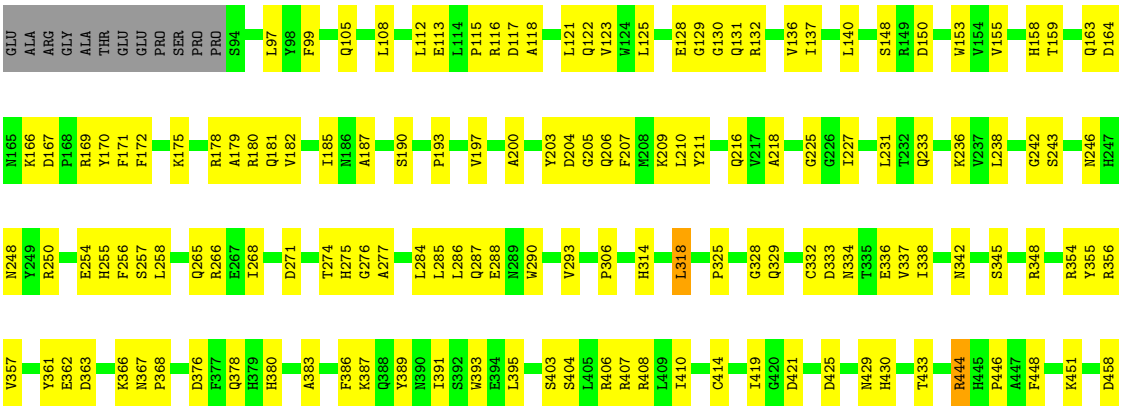
• Molecule 1: Stanniocalcin-2

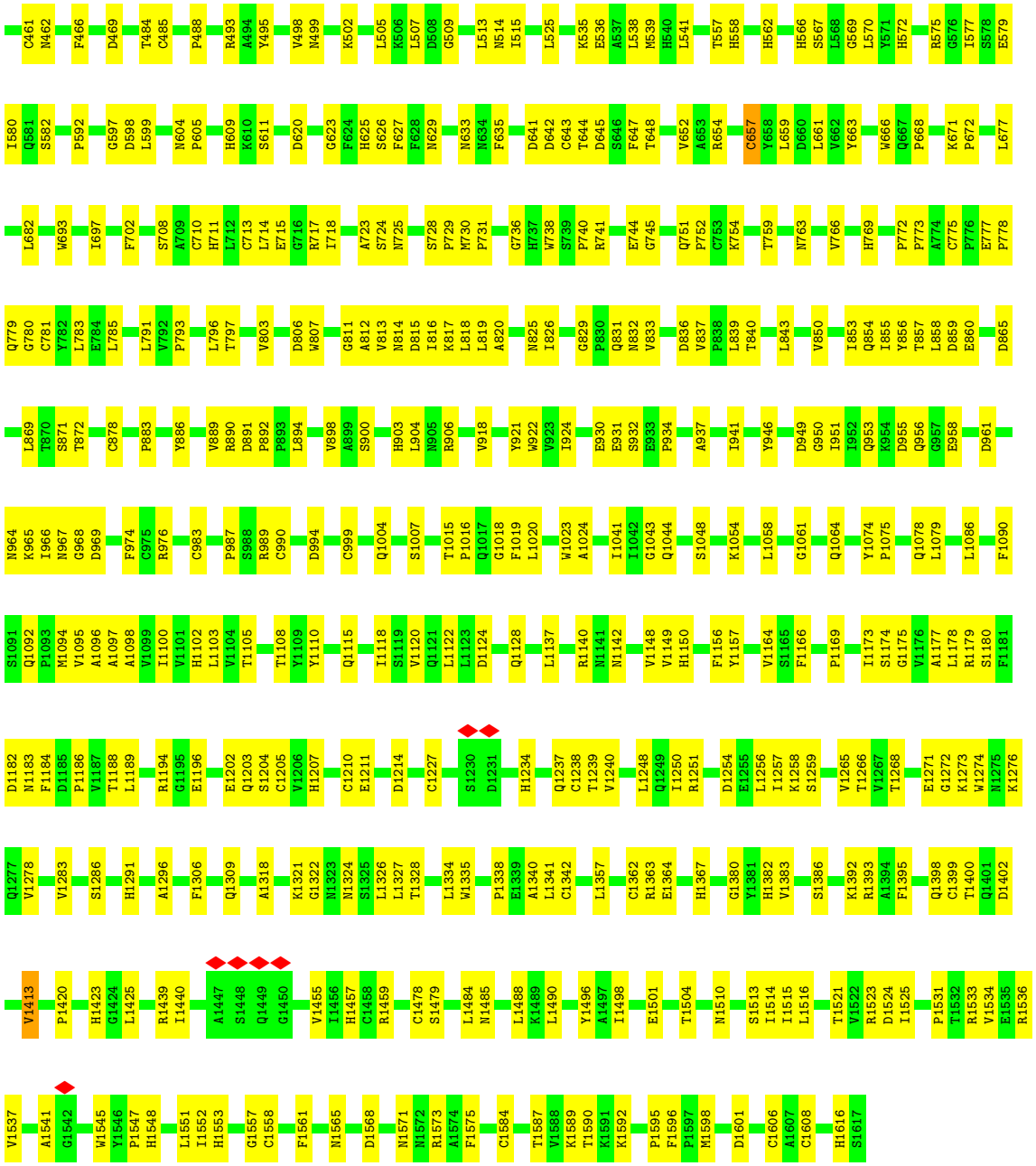
Chain A:



• Molecule 2: Pappalysin-1

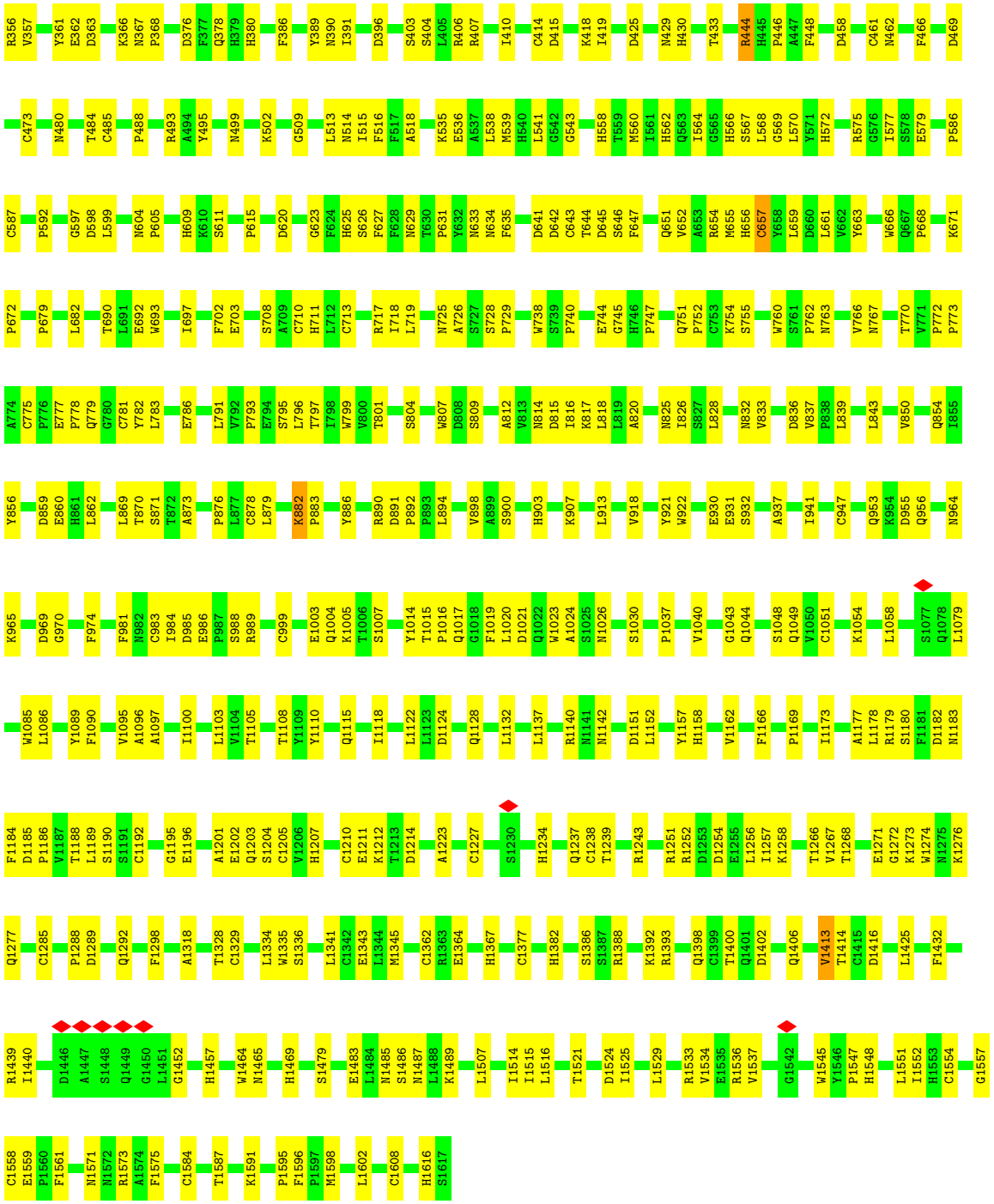
Chain C:





• Molecule 2: Pappalysin-1

Chain Q:


R356 V357 Y361 E362 D363 K366 N367 P368 D376 F377 Q378 H379 H380 F386 Y389 N390 I391 D396 S403 S404 L405 R406 R407 I410 C414 D415 K418 I419 D425 N429 H430 T433 R444 H445 P446 A447 F448 D458 C461 N462 F466 D469
C473 N480 T484 C485 P488 R493 A494 Y495 N499 K502 G509 L513 N514 I515 F516 F517 A518 K535 E536 A537 L538 M539 H540 L541 G542 G543 H558 T559 M560 I561 H562 Q563 I564 G565 H566 S567 L568 G569 L570 Y571 H572 R575 G576 I577 S578 E579 P586
C587 P592 G597 D598 L599 N604 P605 H609 K610 S611 P615 D620 G623 F624 H625 S626 F627 F628 N629 T630 P631 Y632 N633 N634 F635 D641 D642 C643 T644 D645 S646 F647 Q651 V652 A653 R654 M655 H656 C657 Y658 L659 D660 L661 V662 Y663 W666 Q667 P668 K671
P672 P679 L682 T690 L691 E692 W693 I697 F702 E703 S708 A709 C710 H711 L712 C713 R717 I718 L719 N725 A726 S727 S728 P729 W738 S739 P740 E744 G745 H746 P747 Q751 P752 C753 K754 S755 W760 S761 P762 N763 V766 N767 T770 V771 P772 P773
A774 C775 P776 E777 P778 Q779 G780 C781 Y782 L783 E786 L791 V792 P793 E794 S795 L796 T797 I798 W799 V800 T801 S804 W807 D808 S809 A812 V813 N814 D815 I816 K817 L818 L819 A820 N825 I826 S827 L828 N832 V833 D836 V837 P838 L839 L843 V850 Q854 I855
Y856 D859 E860 H861 L862 L869 T870 S871 T872 A873 P876 L877 C878 L879 K882 P883 Y886 R890 D891 P892 P893 L894 V898 A899 S900 H903 K907 L913 V918 Y921 W922 E930 E931 S932 A937 I941 C947 Q953 K954 D955 Q956 N964
K965 D969 G970 F974 F981 N982 C983 I984 D985 E986 P987 S988 R989 C999 E1003 Q1004 K1005 T1006 S1007 Y1014 T1015 P1016 Q1017 G1018 F1019 L1020 D1021 Q1022 W1023 A1024 S1025 N1026 S1030 P1037 V1040 G1043 Q1044 S1048 Q1049 W1050 C1051 K1054 L1058 S1077 Q1078 L1079
W1085 L1086 Y1089 F1090 V1095 A1096 A1097 I1100 L1103 V1104 T1105 T1108 Y1109 Y1110 Q1115 I1118 L1122 L1123 D1124 Q1128 L1132 L1137 R1140 N1141 N1142 D1151 L1152 Y1157 H1158 V1162 F1166 P1169 I1173 A1177 L1178 R1179 S1180 F1181 D1182 N1183
F1184 D1185 P1186 V1187 T1188 L1189 S1190 S1191 C1192 G1195 E1196 A1201 E1202 Q1203 S1204 C1205 V1206 H1207 C1210 E1211 K1212 T1213 D1214 A1223 C1227 S1230 H1234 Q1237 C1238 T1239 R1243 R1251 R1252 D1253 D1254 E1255 L1256 I1257 K1258 T1266 V1267 T1268 E1271 G1272 K1273 W1274 N1275 K1276
Q1277 C1285 P1288 D1289 Q1292 F1298 A1318 T1328 C1329 L1334 W1335 S1336 L1341 C1342 E1343 L1344 M1345 C1362 R1363 E1364 H1367 C1377 H1382 S1386 S1387 R1388 K1392 R1393 Q1398 C1399 T1400 Q1401 D1402 Q1406 V1413 T1414 C1415 D1416 L1425 F1432
R1439 I1440 D1446 A1447 S1448 Q1449 G1450 L1451 G1452 H1457 W1464 N1465 H1469 S1479 E1483 L1484 N1485 S1486 N1487 L1488 K1489 L1507 I1514 I1515 L1516 T1521 D1524 I1525 L1529 R1533 V1534 E1535 R1536 V1537 G1542 W1545 Y1546 P1547 H1548 L1551 I1552 H1553 C1554 G1557
C1558 E1559 P1560 F1561 N1571 N1572 R1573 A1574 F1575 C1584 T1587 K1591 P1595 F1596 P1597 M1598 L1602 C1608 H1616 S1617

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	3	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 ($e^-/Å^2$)	58, 59	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k), GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	25.960	Depositor
Minimum map value	-13.178	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	0.939	Depositor
Recommended contour level	1.7	Depositor
Map size (Å)	303.59998, 303.59998, 303.59998	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1859374, 1.1859374, 1.1859374	Depositor

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.25	0/1337	0.48	0/1799
1	P	0.28	0/1337	0.51	0/1799
2	C	0.25	0/12217	0.49	1/16633 (0.0%)
2	Q	0.25	0/12217	0.48	1/16633 (0.0%)
All	All	0.25	0/27108	0.49	2/36864 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	Q	318	LEU	CA-CB-CG	6.00	129.09	115.30
2	C	318	LEU	CA-CB-CG	5.16	127.17	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1315	0	1290	34	0
1	P	1315	0	1290	52	0
2	C	11897	0	11211	373	0
2	Q	11897	0	11213	381	0
3	C	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	Q	1	0	0	0	0
4	C	8	0	0	0	0
4	Q	8	0	0	0	0
All	All	26442	0	25004	810	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 16.

All (810) 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)
2:Q:984:ILE:O	2:Q:988:SER:HA	1.69	0.90
1:A:88:PHE:HB3	1:A:103:ILE:HD11	1.54	0.87
2:Q:332:CYS:CB	2:Q:657:CYS:SG	2.64	0.86
2:C:562:HIS:CD2	2:C:566:HIS:NE2	2.45	0.83
2:C:488:PRO:HA	2:C:493:ARG:HD3	1.62	0.81
2:C:1254:ASP:HB2	2:Q:1202:GLU:HB3	1.63	0.81
2:Q:488:PRO:HA	2:Q:493:ARG:HD3	1.64	0.79
2:Q:1318:ALA:HA	2:Q:1343:GLU:O	1.81	0.79
2:C:266:ARG:HH12	2:C:987:PRO:HG2	1.49	0.77
2:C:1210:CYS:SG	2:C:1211:GLU:N	2.58	0.77
2:C:562:HIS:CD2	2:C:566:HIS:HE2	1.97	0.76
2:C:1565:ASN:HD21	2:C:1589:LYS:HG2	1.50	0.75
2:C:535:LYS:HD3	2:C:745:GLY:HA3	1.68	0.74
2:Q:572:HIS:ND1	2:Q:579:GLU:OE2	2.19	0.73
2:Q:1210:CYS:SG	2:Q:1211:GLU:N	2.60	0.73
2:C:1150:HIS:HB2	2:Q:1152:LEU:HD12	1.70	0.72
2:C:1098:ALA:HB3	2:C:1179:ARG:HD2	1.71	0.72
2:Q:153:TRP:HB2	2:Q:172:PHE:HE1	1.55	0.72
2:C:1210:CYS:O	2:C:1211:GLU:HG3	1.90	0.72
2:C:266:ARG:HH21	2:C:989:ARG:HB3	1.55	0.72
2:C:921:TYR:O	2:C:937:ALA:HA	1.90	0.71
2:C:1420:PRO:O	2:C:1423:HIS:ND1	2.21	0.71
2:Q:1210:CYS:O	2:Q:1211:GLU:HG3	1.90	0.71
2:Q:1595:PRO:HG2	2:Q:1598:MET:HA	1.72	0.71
2:Q:804:SER:HG	2:Q:807:TRP:HE1	1.38	0.71
2:C:1322:GLY:HA3	2:C:1340:ALA:HA	1.74	0.70
1:A:68:PHE:HB3	1:A:81:LEU:HB3	1.74	0.70
2:Q:246:ASN:OD1	2:Q:248:ASN:ND2	2.25	0.70
2:C:122:GLN:HG3	2:C:257:SER:HB3	1.74	0.69
2:C:817:LYS:HB2	2:C:854:GLN:HB2	1.73	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:123:VAL:HG12	2:C:256:PHE:HA	1.74	0.69
2:Q:999:CYS:SG	2:Q:1004:GLN:NE2	2.65	0.69
2:C:1595:PRO:HG2	2:C:1598:MET:HA	1.72	0.69
2:C:1184:PHE:H	2:C:1203:GLN:HE21	1.41	0.69
2:C:1202:GLU:HB3	2:Q:1254:ASP:HB2	1.74	0.69
2:C:246:ASN:OD1	2:C:248:ASN:ND2	2.26	0.69
2:C:105:GLN:NE2	2:C:248:ASN:OD1	2.26	0.69
2:Q:1096:ALA:HA	2:Q:1180:SER:HA	1.74	0.68
2:C:153:TRP:HB2	2:C:172:PHE:HE1	1.58	0.68
2:Q:717:ARG:NH1	2:Q:878:CYS:O	2.26	0.68
2:C:717:ARG:NH1	2:C:878:CYS:O	2.25	0.68
2:C:1095:VAL:HG21	2:C:1156:PHE:HB3	1.76	0.68
2:Q:921:TYR:O	2:Q:937:ALA:HA	1.94	0.68
1:A:197:CYS:O	1:A:201:TRP:HB2	1.93	0.68
2:Q:1100:ILE:HB	2:Q:1177:ALA:HB3	1.75	0.67
1:P:145:LEU:HD23	1:P:177:LEU:HD23	1.76	0.67
2:Q:918:VAL:HG22	2:Q:941:ILE:HG12	1.77	0.67
2:Q:1118:ILE:HG22	2:Q:1166:PHE:HB3	1.76	0.67
2:Q:1547:PRO:HB2	2:Q:1552:ILE:HD11	1.75	0.67
2:C:572:HIS:ND1	2:C:579:GLU:OE2	2.28	0.67
2:C:1258:LYS:NZ	2:Q:1020:LEU:O	2.27	0.67
1:P:107:LEU:HD22	1:P:110:LYS:HZ1	1.60	0.67
2:Q:181:GLN:NE2	2:Q:1048:SER:OG	2.28	0.66
2:Q:661:LEU:HD13	2:Q:697:ILE:HG13	1.78	0.66
2:C:577:ILE:HD13	2:C:627:PHE:HE1	1.60	0.66
2:C:886:TYR:HB2	2:C:903:HIS:HB2	1.78	0.66
2:C:179:ALA:HA	2:Q:1334:LEU:HD11	1.78	0.65
2:Q:777:GLU:O	2:Q:779:GLN:N	2.27	0.65
1:P:109:CYS:SG	1:P:142:LYS:NZ	2.64	0.65
1:P:130:GLU:O	1:P:134:GLN:NE2	2.30	0.65
1:P:201:TRP:HB3	1:P:204:LEU:HB2	1.77	0.65
2:C:567:SER:O	2:C:663:TYR:OH	2.15	0.65
2:C:659:LEU:HD23	2:C:663:TYR:HD2	1.61	0.65
2:Q:164:ASP:O	2:Q:166:LYS:NZ	2.28	0.65
2:C:231:LEU:HD11	2:Q:1341:LEU:HD23	1.79	0.65
2:Q:1382:HIS:HD2	2:Q:1413:VAL:HG22	1.61	0.65
2:Q:1364:GLU:O	2:Q:1367:HIS:NE2	2.30	0.65
2:Q:1251:ARG:HG2	2:Q:1257:ILE:HG12	1.77	0.64
2:C:1547:PRO:HB2	2:C:1552:ILE:HD11	1.77	0.64
2:Q:833:VAL:HG22	2:Q:839:LEU:HD11	1.79	0.64
2:C:777:GLU:O	2:C:779:GLN:N	2.27	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:163:GLN:O	2:C:1140:ARG:NH2	2.30	0.64
2:C:169:ARG:HB3	2:C:187:ALA:HB3	1.79	0.64
2:Q:1388:ARG:NH1	2:Q:1416:ASP:OD1	2.29	0.64
1:P:88:PHE:HB3	1:P:103:ILE:HD11	1.79	0.64
2:C:803:VAL:HG21	2:C:833:VAL:HG11	1.80	0.64
2:Q:568:LEU:HD13	2:Q:663:TYR:HE2	1.61	0.64
2:C:129:GLY:O	2:C:250:ARG:NH2	2.31	0.63
2:Q:348:ARG:O	2:Q:390:ASN:ND2	2.31	0.63
2:C:1382:HIS:HD2	2:C:1413:VAL:HG22	1.62	0.63
1:P:87:THR:O	1:P:91:ASN:ND2	2.26	0.63
2:C:731:PRO:HG3	2:C:766:VAL:HG12	1.81	0.63
2:Q:1251:ARG:O	2:Q:1277:GLN:HB2	1.98	0.63
2:C:974:PHE:HB2	2:C:976:ARG:HH21	1.63	0.63
2:Q:129:GLY:O	2:Q:250:ARG:NH2	2.31	0.63
2:Q:566:HIS:CE1	2:Q:572:HIS:NE2	2.66	0.63
2:Q:378:GLN:HG3	2:Q:560:MET:HE2	1.80	0.63
2:C:113:GLU:OE2	2:C:233:GLN:NE2	2.31	0.63
2:C:820:ALA:HA	2:C:850:VAL:HA	1.81	0.63
2:Q:139:GLY:HA3	2:Q:154:VAL:HG12	1.81	0.63
2:C:731:PRO:HB2	2:C:773:PRO:HG2	1.81	0.62
2:C:1334:LEU:HD11	2:Q:179:ALA:HA	1.80	0.62
2:Q:123:VAL:HG12	2:Q:256:PHE:HA	1.81	0.62
2:C:1097:ALA:N	2:C:1179:ARG:O	2.32	0.62
2:C:592:PRO:HG3	2:C:604:ASN:HA	1.81	0.62
2:C:207:PHE:HB3	2:C:209:LYS:HE3	1.82	0.62
2:C:635:PHE:HA	2:C:644:THR:HB	1.82	0.62
2:C:1273:LYS:NZ	2:C:1274:TRP:O	2.29	0.62
2:C:1590:THR:O	2:C:1592:LYS:NZ	2.33	0.62
2:C:1364:GLU:O	2:C:1367:HIS:NE2	2.33	0.61
2:Q:271:ASP:O	2:Q:274:THR:OG1	2.16	0.61
2:C:1096:ALA:HA	2:C:1180:SER:HA	1.82	0.61
1:P:65:CYS:O	1:P:69:GLU:N	2.33	0.61
2:C:132:ARG:NH1	2:C:246:ASN:OD1	2.34	0.61
2:C:1079:LEU:HD22	2:C:1169:PRO:HG3	1.82	0.61
2:Q:970:GLY:HA2	2:Q:981:PHE:HD2	1.65	0.61
2:C:661:LEU:HD13	2:C:697:ILE:HG13	1.82	0.60
2:C:1118:ILE:HG22	2:C:1166:PHE:HB3	1.81	0.60
1:A:145:LEU:HD23	1:A:177:LEU:HD23	1.82	0.60
2:Q:158:HIS:HD2	2:Q:171:PHE:CG	2.19	0.60
2:C:818:LEU:HA	2:C:853:ILE:HD12	1.84	0.60
2:Q:277:ALA:O	2:Q:287:GLN:NE2	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:345:SER:HA	2:Q:348:ARG:HE	1.65	0.60
2:C:818:LEU:HB3	2:C:826:ILE:HB	1.82	0.60
2:C:108:LEU:HD22	2:C:238:LEU:HD23	1.83	0.60
2:C:334:ASN:HB3	2:C:337:VAL:HG12	1.84	0.60
2:C:1196:GLU:HB2	2:C:1207:HIS:HA	1.84	0.60
2:C:1214:ASP:N	2:C:1272:GLY:O	2.35	0.59
2:C:1291:HIS:CG	2:Q:180:ARG:HH12	2.20	0.59
2:Q:570:LEU:HD23	2:Q:654:ARG:HE	1.66	0.59
2:Q:816:ILE:HB	2:Q:828:LEU:HB2	1.83	0.59
1:A:45:LEU:O	1:A:123:ARG:NE	2.31	0.59
2:Q:809:SER:O	2:Q:832:ASN:ND2	2.35	0.59
1:P:67:VAL:HG12	1:P:71:PHE:HE2	1.68	0.59
2:C:140:LEU:HD11	2:C:236:LYS:HB3	1.83	0.59
2:Q:1214:ASP:N	2:Q:1272:GLY:O	2.36	0.59
2:C:118:ALA:HA	2:C:203:TYR:O	2.02	0.59
1:P:67:VAL:HG12	1:P:71:PHE:CE2	2.37	0.59
2:C:751:GLN:HE22	2:C:754:LYS:HB2	1.67	0.59
2:Q:318:LEU:HD21	2:Q:692:GLU:HB2	1.84	0.59
2:Q:1416:ASP:O	2:Q:1464:TRP:NE1	2.31	0.59
2:Q:558:HIS:ND1	2:Q:644:THR:O	2.36	0.59
2:Q:947:CYS:O	2:Q:965:LYS:NZ	2.33	0.59
2:Q:1188:THR:HG22	2:Q:1205:CYS:HB3	1.85	0.59
1:P:146:CYS:O	1:P:150:GLN:NE2	2.36	0.58
2:Q:389:TYR:OH	2:Q:647:PHE:N	2.31	0.58
2:Q:1196:GLU:HB2	2:Q:1207:HIS:HA	1.84	0.58
2:C:116:ARG:O	2:C:227:ILE:N	2.34	0.58
2:Q:376:ASP:O	2:Q:380:HIS:ND1	2.31	0.58
2:C:536:GLU:HA	2:C:539:MET:HB3	1.85	0.58
2:C:1184:PHE:HB3	2:Q:1189:LEU:HB3	1.85	0.58
2:Q:363:ASP:H	2:Q:403:SER:HB3	1.67	0.58
2:Q:569:GLY:O	2:Q:654:ARG:NH2	2.36	0.58
2:C:536:GLU:OE2	2:C:536:GLU:N	2.31	0.58
2:C:818:LEU:HD22	2:C:826:ILE:HD12	1.85	0.58
2:Q:751:GLN:NE2	2:Q:752:PRO:O	2.36	0.58
2:C:169:ARG:HG2	2:C:190:SER:HA	1.86	0.58
2:C:964:ASN:ND2	2:C:969:ASP:OD2	2.37	0.58
2:Q:163:GLN:O	2:Q:1140:ARG:NH2	2.36	0.58
2:Q:493:ARG:NH1	2:Q:495:TYR:O	2.36	0.58
2:C:999:CYS:SG	2:C:1004:GLN:NE2	2.77	0.58
2:C:609:HIS:NE2	2:C:611:SER:OG	2.36	0.58
2:C:1094:MET:HE1	2:C:1203:GLN:HB3	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:354:ARG:HG3	2:Q:668:PRO:HD3	1.86	0.58
2:C:499:ASN:HA	2:C:502:LYS:HD2	1.85	0.57
2:C:983:CYS:HB3	2:C:990:CYS:HA	1.85	0.57
2:C:1514:ILE:HG22	2:C:1533:ARG:HA	1.86	0.57
2:Q:258:LEU:HD23	2:Q:285:LEU:HD23	1.86	0.57
2:C:354:ARG:HG3	2:C:668:PRO:HD3	1.85	0.57
2:C:672:PRO:HD3	2:C:930:GLU:HB3	1.86	0.57
2:C:566:HIS:HE1	2:C:572:HIS:NE2	2.02	0.57
2:C:918:VAL:HG22	2:C:941:ILE:HG12	1.86	0.57
2:Q:795:SER:HG	2:Q:870:THR:HG1	1.35	0.57
2:C:811:GLY:HA2	2:C:833:VAL:HG12	1.87	0.57
1:P:71:PHE:O	1:P:74:ASN:ND2	2.37	0.57
2:C:153:TRP:HB2	2:C:172:PHE:CE1	2.39	0.57
2:Q:128:GLU:O	2:Q:131:GLN:NE2	2.34	0.57
2:C:558:HIS:ND1	2:C:641:ASP:O	2.37	0.57
2:C:558:HIS:ND1	2:C:644:THR:O	2.37	0.57
2:Q:1486:SER:O	2:Q:1489:LYS:NZ	2.38	0.57
2:C:386:PHE:HD1	2:C:393:TRP:HE1	1.53	0.57
2:C:592:PRO:HG3	2:C:605:PRO:HD3	1.87	0.56
2:C:807:TRP:HH2	2:C:859:ASP:HA	1.70	0.56
2:C:1149:VAL:HG13	2:Q:1151:ASP:HA	1.86	0.56
2:Q:260:LYS:HG2	2:Q:285:LEU:HB2	1.86	0.56
2:Q:338:ILE:O	2:Q:342:ASN:ND2	2.37	0.56
2:Q:536:GLU:HG2	2:Q:541:LEU:HD23	1.87	0.56
2:Q:558:HIS:ND1	2:Q:641:ASP:O	2.38	0.56
2:Q:1479:SER:O	2:Q:1545:TRP:NE1	2.38	0.56
2:Q:1537:VAL:HG12	2:Q:1547:PRO:HD2	1.87	0.56
1:P:86:MET:O	1:P:90:HIS:ND1	2.29	0.56
2:C:117:ASP:OD1	2:C:118:ALA:N	2.38	0.56
2:C:751:GLN:NE2	2:C:752:PRO:O	2.38	0.56
2:Q:1024:ALA:O	2:Q:1043:GLY:N	2.38	0.56
2:C:671:LYS:NZ	2:C:931:GLU:O	2.38	0.56
2:C:493:ARG:NH1	2:C:495:TYR:O	2.38	0.56
2:C:723:ALA:HB1	2:C:785:LEU:HD12	1.87	0.56
2:C:796:LEU:HB2	2:C:843:LEU:HD11	1.87	0.56
2:C:812:ALA:HB1	2:C:859:ASP:HB2	1.88	0.56
2:Q:334:ASN:HB3	2:Q:337:VAL:HG22	1.87	0.56
2:Q:812:ALA:HB1	2:Q:859:ASP:HB2	1.88	0.56
2:Q:106:LEU:HD12	2:Q:297:TRP:HB3	1.88	0.56
2:Q:1514:ILE:HG22	2:Q:1533:ARG:HA	1.86	0.56
2:C:814:ASN:N	2:C:856:TYR:O	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:1079:LEU:HD22	2:Q:1169:PRO:HG3	1.89	0.56
2:Q:1398:GLN:H	2:Q:1406:GLN:HG2	1.71	0.56
2:C:1485:ASN:HB2	2:C:1488:LEU:HB3	1.87	0.55
2:Q:1273:LYS:NZ	2:Q:1274:TRP:O	2.29	0.55
2:C:535:LYS:NZ	2:C:744:GLU:O	2.25	0.55
2:Q:332:CYS:HB3	2:Q:657:CYS:SG	2.45	0.55
2:C:778:PRO:HA	2:C:858:LEU:HD21	1.89	0.55
2:Q:461:CYS:HA	2:Q:466:PHE:HD2	1.69	0.55
2:Q:708:SER:O	2:Q:711:HIS:ND1	2.39	0.55
1:P:44:ARG:N	1:P:123:ARG:O	2.38	0.55
2:C:1234:HIS:HB3	2:C:1271:GLU:HA	1.87	0.55
2:C:1513:SER:OG	2:C:1533:ARG:NH1	2.40	0.55
2:Q:172:PHE:HB3	2:Q:210:LEU:HD11	1.88	0.55
2:Q:609:HIS:NE2	2:Q:611:SER:OG	2.39	0.55
2:Q:635:PHE:HA	2:Q:644:THR:HB	1.87	0.55
2:C:211:TYR:CD1	2:C:216:GLN:HA	2.42	0.55
1:P:152:ASN:HB3	1:P:155:VAL:HB	1.88	0.55
2:C:159:THR:HA	2:C:167:ASP:O	2.07	0.55
2:C:376:ASP:O	2:C:380:HIS:ND1	2.33	0.55
2:Q:763:ASN:ND2	2:Q:860:GLU:O	2.32	0.55
2:Q:890:ARG:NE	2:Q:892:PRO:O	2.30	0.55
2:Q:754:LYS:NZ	2:Q:755:SER:O	2.39	0.55
2:C:1439:ARG:HG2	2:C:1455:VAL:HG13	1.87	0.55
2:C:164:ASP:O	2:C:166:LYS:HG3	2.06	0.55
1:P:201:TRP:HE3	1:P:204:LEU:HB3	1.72	0.54
2:C:158:HIS:HD2	2:C:171:PHE:CG	2.25	0.54
2:C:271:ASP:O	2:C:274:THR:OG1	2.22	0.54
2:C:1020:LEU:HB3	2:Q:1258:LYS:HD3	1.88	0.54
2:C:604:ASN:ND2	2:C:629:ASN:O	2.40	0.54
2:C:738:TRP:CD1	2:C:740:PRO:HD3	2.42	0.54
2:Q:410:ILE:HG23	2:Q:518:ALA:HA	1.89	0.54
2:Q:1548:HIS:HB3	2:Q:1551:LEU:HG	1.89	0.54
2:C:702:PHE:HA	2:C:883:PRO:HA	1.89	0.54
2:C:1400:THR:OG1	2:C:1402:ASP:OD1	2.19	0.54
2:Q:985:ASP:OD1	2:Q:986:GLU:N	2.39	0.54
1:P:45:LEU:O	1:P:123:ARG:NE	2.36	0.54
2:C:277:ALA:O	2:C:287:GLN:NE2	2.39	0.54
2:C:1533:ARG:NH1	2:C:1534:VAL:O	2.39	0.54
2:Q:480:ASN:O	2:Q:484:THR:OG1	2.19	0.54
2:C:1362:CYS:HA	2:C:1367:HIS:CE1	2.42	0.54
1:A:94:LYS:HE2	1:A:155:VAL:HG13	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:404:SER:O	2:Q:407:ARG:NH1	2.41	0.54
2:Q:1186:PRO:HA	2:Q:1189:LEU:HB2	1.89	0.54
2:Q:1377:CYS:N	2:Q:1393:ARG:O	2.37	0.54
2:Q:1400:THR:OG1	2:Q:1402:ASP:OD1	2.20	0.54
1:P:207:ILE:HD12	1:A:179:LEU:HD12	1.89	0.54
2:C:1324:ASN:ND2	2:C:1326:LEU:O	2.41	0.54
2:Q:625:HIS:ND1	2:Q:626:SER:O	2.41	0.54
2:C:448:PHE:HB2	2:C:466:PHE:HE2	1.72	0.54
2:C:1024:ALA:O	2:C:1043:GLY:N	2.39	0.54
2:C:854:GLN:HB3	2:C:856:TYR:HE1	1.72	0.54
1:P:165:LEU:HD23	1:P:171:TYR:HB3	1.89	0.54
1:A:168:HIS:HB2	1:A:171:TYR:HD1	1.72	0.54
2:Q:728:SER:HB3	2:Q:783:LEU:HD12	1.89	0.54
2:Q:1256:LEU:HD23	2:Q:1258:LYS:HE3	1.90	0.54
1:P:183:GLU:HA	1:P:186:LYS:HE3	1.89	0.54
2:C:672:PRO:HG2	2:C:932:SER:HB3	1.90	0.54
2:C:1237:GLN:HG2	2:C:1268:THR:HG23	1.89	0.54
2:Q:181:GLN:O	2:Q:223:GLN:NE2	2.41	0.54
2:Q:356:ARG:HA	2:Q:396:ASP:O	2.08	0.54
2:C:448:PHE:HB3	2:C:451:LYS:HD2	1.89	0.53
2:C:1100:ILE:HB	2:C:1177:ALA:HB3	1.89	0.53
2:Q:564:ILE:HG23	2:Q:568:LEU:HD23	1.90	0.53
2:C:509:GLY:O	2:C:666:TRP:NE1	2.33	0.53
2:C:1531:PRO:HD2	2:C:1575:PHE:HD2	1.72	0.53
2:Q:356:ARG:NH1	2:Q:514:ASN:OD1	2.40	0.53
2:C:158:HIS:HD2	2:C:171:PHE:CD1	2.26	0.53
2:C:461:CYS:HA	2:C:466:PHE:HD2	1.74	0.53
2:C:1521:THR:H	2:C:1524:ASP:HB2	1.74	0.53
2:C:569:GLY:O	2:C:654:ARG:NH2	2.41	0.53
2:Q:767:ASN:ND2	2:Q:770:THR:OG1	2.41	0.53
2:Q:1557:GLY:HA2	2:Q:1573:ARG:HH22	1.73	0.53
2:C:817:LYS:HE3	2:C:825:ASN:HB2	1.91	0.53
2:C:951:ILE:O	2:C:953:GLN:NE2	2.42	0.53
2:C:682:LEU:HA	2:C:965:LYS:HE3	1.91	0.53
2:C:121:LEU:O	2:C:200:ALA:HA	2.09	0.53
2:C:185:ILE:HG12	2:C:218:ALA:HB1	1.90	0.53
1:P:72:GLU:HG3	1:P:82:HIS:HB2	1.91	0.53
2:C:242:GLY:HA3	2:C:248:ASN:HA	1.91	0.53
2:C:1240:VAL:HG21	2:C:1278:VAL:HG21	1.90	0.53
2:Q:566:HIS:HE1	2:Q:572:HIS:NE2	2.04	0.53
2:Q:1237:GLN:HG2	2:Q:1268:THR:HG23	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:336:GLU:HG2	2:C:974:PHE:HE2	1.74	0.53
2:Q:796:LEU:HB2	2:Q:843:LEU:HD11	1.90	0.53
2:C:254:GLU:HA	2:C:290:TRP:HE1	1.74	0.53
2:Q:1214:ASP:HB3	2:Q:1273:LYS:HD3	1.90	0.52
1:P:130:GLU:CD	1:P:134:GLN:HE22	2.13	0.52
2:C:1015:THR:HG1	2:C:1019:PHE:HE2	1.57	0.52
2:Q:797:THR:HA	2:Q:839:LEU:O	2.10	0.52
2:Q:351:LYS:HZ2	2:Q:659:LEU:HB2	1.73	0.52
2:Q:671:LYS:NZ	2:Q:931:GLU:O	2.41	0.52
2:Q:672:PRO:HD3	2:Q:930:GLU:HB3	1.92	0.52
2:Q:814:ASN:N	2:Q:856:TYR:O	2.41	0.52
2:C:389:TYR:OH	2:C:647:PHE:N	2.36	0.52
2:Q:284:LEU:HD21	2:Q:287:GLN:HB2	1.90	0.52
2:Q:367:ASN:O	2:Q:406:ARG:NE	2.42	0.52
2:Q:818:LEU:HD22	2:Q:826:ILE:HD12	1.91	0.52
2:Q:1023:TRP:NE1	2:Q:1044:GLN:OE1	2.43	0.52
2:C:1227:CYS:HA	2:C:1238:CYS:HA	1.91	0.52
2:C:1510:ASN:O	2:C:1557:GLY:N	2.41	0.52
2:Q:448:PHE:HB2	2:Q:466:PHE:HE2	1.74	0.52
2:Q:752:PRO:HA	2:Q:801:THR:HG23	1.92	0.52
2:Q:1525:ILE:HG23	2:Q:1529:LEU:HD23	1.92	0.52
2:C:577:ILE:HD13	2:C:627:PHE:CE1	2.44	0.52
2:Q:738:TRP:CD1	2:Q:740:PRO:HD3	2.45	0.52
2:C:994:ASP:OD1	2:C:1007:SER:OG	2.27	0.52
2:C:715:GLU:O	2:C:718:ILE:HG12	2.09	0.52
2:Q:1021:ASP:OD2	2:Q:1179:ARG:NH2	2.43	0.52
2:C:625:HIS:ND1	2:C:626:SER:O	2.42	0.51
2:C:1124:ASP:HB3	2:C:1157:TYR:HD1	1.74	0.51
1:P:94:LYS:HZ1	1:P:158:GLU:HG2	1.75	0.51
2:C:1484:LEU:HD21	2:C:1490:LEU:HG	1.93	0.51
2:Q:604:ASN:ND2	2:Q:629:ASN:O	2.43	0.51
2:C:1398:GLN:NE2	2:C:1399:CYS:O	2.44	0.51
2:C:1558:CYS:HB2	2:C:1571:ASN:HA	1.91	0.51
2:Q:290:TRP:HE3	2:Q:293:VAL:HG22	1.76	0.51
2:Q:351:LYS:HG3	2:Q:656:HIS:HD2	1.75	0.51
2:Q:567:SER:O	2:Q:663:TYR:OH	2.28	0.51
2:Q:818:LEU:HB3	2:Q:826:ILE:HB	1.92	0.51
2:C:633:ASN:O	2:C:645:ASP:N	2.32	0.51
2:C:1054:LYS:HB3	2:C:1110:TYR:HA	1.92	0.51
2:C:815:ASP:OD1	2:C:829:GLY:N	2.41	0.51
2:C:1120:VAL:HG12	2:C:1164:VAL:HG22	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:116:ARG:O	2:Q:227:ILE:N	2.39	0.51
2:Q:175:LYS:HB2	2:Q:182:VAL:HG22	1.93	0.51
2:Q:332:CYS:HA	2:Q:657:CYS:SG	2.50	0.51
2:Q:672:PRO:HG2	2:Q:932:SER:HB3	1.93	0.51
2:C:1016:PRO:HB2	2:Q:1190:SER:HB3	1.92	0.51
2:C:1561:PHE:HB2	2:C:1571:ASN:HD21	1.75	0.51
2:C:1608:CYS:O	2:C:1616:HIS:NE2	2.37	0.51
2:Q:766:VAL:HG11	2:Q:773:PRO:HD2	1.92	0.51
2:Q:1559:GLU:N	2:Q:1571:ASN:OD1	2.44	0.51
2:C:180:ARG:HH22	2:Q:1292:GLN:HB2	1.75	0.51
1:A:87:THR:O	1:A:91:ASN:ND2	2.33	0.51
2:Q:97:LEU:HD12	2:Q:306:PRO:HG2	1.93	0.51
2:C:131:GLN:HE22	2:C:250:ARG:HB3	1.75	0.51
2:C:1122:LEU:HB3	2:C:1157:TYR:HE1	1.75	0.51
1:A:80:GLY:O	1:A:84:ILE:N	2.31	0.51
2:Q:833:VAL:HG22	2:Q:839:LEU:HD21	1.93	0.51
1:A:49:ASN:O	1:A:53:ILE:HG12	2.11	0.50
2:Q:121:LEU:O	2:Q:200:ALA:HA	2.10	0.50
2:Q:729:PRO:HG3	2:Q:782:TYR:CE1	2.46	0.50
2:Q:817:LYS:HE3	2:Q:825:ASN:HB2	1.93	0.50
2:C:570:LEU:HA	2:C:654:ARG:HH21	1.76	0.50
2:C:708:SER:O	2:C:711:HIS:ND1	2.42	0.50
2:C:1058:LEU:HD22	2:C:1105:THR:HG21	1.94	0.50
2:C:1558:CYS:H	2:C:1573:ARG:NH2	2.08	0.50
2:Q:1487:ASN:HB3	2:Q:1554:CYS:HB2	1.94	0.50
2:Q:719:LEU:HD23	2:Q:791:LEU:HD13	1.92	0.50
2:Q:1362:CYS:HA	2:Q:1367:HIS:CE1	2.47	0.50
2:C:1183:ASN:HB2	2:Q:1189:LEU:O	2.11	0.50
2:Q:288:GLU:HG3	2:Q:290:TRP:H	1.75	0.50
2:C:210:LEU:HB3	2:C:218:ALA:HB3	1.94	0.50
2:C:329:GLN:N	2:C:333:ASP:OD2	2.41	0.50
2:Q:266:ARG:HA	2:Q:269:LEU:HD12	1.94	0.50
2:Q:509:GLY:O	2:Q:666:TRP:NE1	2.29	0.50
2:C:265:GLN:HA	2:C:268:ILE:HG12	1.93	0.50
2:C:290:TRP:HE3	2:C:293:VAL:HG22	1.76	0.50
2:C:1318:ALA:HB1	2:C:1342:CYS:HB3	1.94	0.50
2:Q:118:ALA:HA	2:Q:203:TYR:O	2.12	0.50
2:C:562:HIS:HE1	2:C:572:HIS:CD2	2.30	0.49
2:Q:389:TYR:HB3	2:Q:652:VAL:HG13	1.94	0.49
2:Q:562:HIS:CD2	2:Q:566:HIS:NE2	2.79	0.49
2:Q:1234:HIS:HB3	2:Q:1271:GLU:HA	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:338:ILE:O	2:C:342:ASN:ND2	2.42	0.49
2:Q:461:CYS:O	2:Q:469:ASP:N	2.46	0.49
1:P:149:ALA:HB1	1:P:185:VAL:HG11	1.94	0.49
2:C:136:VAL:HG21	2:C:243:SER:HB3	1.94	0.49
2:C:983:CYS:CB	2:C:990:CYS:HA	2.43	0.49
2:C:1537:VAL:HG12	2:C:1547:PRO:HD2	1.95	0.49
2:Q:120:THR:HA	2:Q:201:ALA:O	2.11	0.49
2:Q:160:ILE:HG12	2:Q:167:ASP:HB3	1.93	0.49
2:Q:170:TYR:O	2:Q:187:ALA:N	2.44	0.49
2:Q:254:GLU:HA	2:Q:290:TRP:HE1	1.77	0.49
2:C:890:ARG:NE	2:C:892:PRO:O	2.30	0.49
2:C:1357:LEU:HD23	2:C:1363:ARG:HE	1.77	0.49
2:C:1188:THR:HG22	2:C:1205:CYS:HB3	1.94	0.49
2:C:1568:ASP:OD2	2:C:1571:ASN:ND2	2.45	0.49
2:Q:718:ILE:HG22	2:Q:873:ALA:HA	1.95	0.49
1:A:92:ALA:HB3	2:Q:1596:PHE:HE1	1.78	0.49
2:Q:894:LEU:HD13	2:Q:898:VAL:HB	1.95	0.49
2:Q:1124:ASP:OD1	2:Q:1128:GLN:N	2.45	0.49
2:C:204:ASP:OD2	2:C:206:GLN:NE2	2.46	0.49
2:C:345:SER:HA	2:C:348:ARG:HE	1.77	0.49
2:C:728:SER:HB3	2:C:783:LEU:HD12	1.94	0.49
2:C:728:SER:HG	2:C:738:TRP:HD1	1.58	0.49
2:C:1103:LEU:HD23	2:C:1173:ILE:HG12	1.93	0.49
2:Q:1086:LEU:HD21	2:Q:1173:ILE:HD12	1.93	0.49
1:P:155:VAL:HG12	1:P:159:MET:HE1	1.94	0.49
1:A:84:ILE:HG13	1:A:171:TYR:CZ	2.48	0.49
2:Q:260:LYS:HE3	2:Q:285:LEU:HD22	1.94	0.49
2:Q:1122:LEU:HD12	2:Q:1132:LEU:HD21	1.95	0.49
2:Q:1329:CYS:HB2	2:Q:1335:TRP:CZ3	2.48	0.49
1:P:133:SER:OG	1:P:137:ARG:NH1	2.44	0.49
2:C:1103:LEU:O	2:C:1142:ASN:ND2	2.46	0.49
2:Q:1285:CYS:SG	2:Q:1334:LEU:N	2.86	0.49
2:Q:1239:THR:HA	2:Q:1266:THR:HA	1.95	0.48
2:C:386:PHE:HB3	2:C:391:ILE:HB	1.94	0.48
2:Q:142:ASP:O	2:Q:149:ARG:NH1	2.41	0.48
2:Q:351:LYS:NZ	2:Q:656:HIS:O	2.46	0.48
2:Q:462:ASN:ND2	2:Q:484:THR:O	2.28	0.48
2:C:1086:LEU:HD21	2:C:1173:ILE:HD12	1.95	0.48
2:Q:389:TYR:CZ	2:Q:647:PHE:HB2	2.48	0.48
2:Q:592:PRO:HG3	2:Q:605:PRO:HD3	1.93	0.48
2:C:181:GLN:NE2	2:C:1048:SER:OG	2.45	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1573:ARG:NE	2:C:1575:PHE:HB3	2.28	0.48
2:Q:361:TYR:CZ	2:Q:368:PRO:HB3	2.49	0.48
2:C:710:CYS:HA	2:C:713:CYS:SG	2.53	0.48
2:Q:536:GLU:HA	2:Q:539:MET:HB3	1.95	0.48
2:Q:793:PRO:HB2	2:Q:843:LEU:HD12	1.94	0.48
2:Q:1425:LEU:HD23	2:Q:1440:ILE:HD11	1.95	0.48
2:C:538:LEU:H	2:C:538:LEU:HD23	1.78	0.48
2:Q:126:ARG:HG3	2:Q:196:TRP:CD2	2.49	0.48
2:Q:1345:MET:HB2	2:Q:1367:HIS:H	1.77	0.48
2:Q:1608:CYS:O	2:Q:1616:HIS:NE2	2.33	0.48
2:C:378:GLN:HE22	2:C:557:THR:HB	1.79	0.48
2:C:815:ASP:OD1	2:C:816:ILE:N	2.47	0.48
2:C:1098:ALA:HA	2:C:1148:VAL:HG23	1.95	0.48
1:A:71:PHE:O	1:A:74:ASN:ND2	2.47	0.48
2:Q:175:LYS:HB2	2:Q:182:VAL:HA	1.96	0.48
2:Q:183:THR:OG1	2:Q:222:GLU:OE1	2.21	0.48
2:Q:336:GLU:HG2	2:Q:974:PHE:HE2	1.78	0.48
2:Q:659:LEU:HD23	2:Q:663:TYR:HD2	1.78	0.48
2:C:361:TYR:CZ	2:C:368:PRO:HB3	2.49	0.48
2:Q:1097:ALA:N	2:Q:1179:ARG:O	2.47	0.48
2:C:175:LYS:HB2	2:C:182:VAL:HG22	1.94	0.48
2:C:404:SER:O	2:C:408:ARG:NE	2.43	0.48
2:Q:332:CYS:CA	2:Q:657:CYS:SG	3.01	0.48
2:Q:1561:PHE:HB2	2:Q:1571:ASN:HD21	1.79	0.48
1:P:98:GLN:HE22	1:P:148:ALA:HA	1.79	0.48
1:P:130:GLU:OE2	1:P:134:GLN:NE2	2.47	0.48
2:C:1023:TRP:NE1	2:C:1044:GLN:OE1	2.46	0.48
2:C:1334:LEU:HD21	2:Q:178:ARG:HB3	1.96	0.48
2:Q:575:ARG:NH1	2:Q:597:GLY:O	2.38	0.48
2:C:288:GLU:HG3	2:C:290:TRP:H	1.79	0.47
2:Q:1124:ASP:HB3	2:Q:1157:TYR:HB2	1.96	0.47
2:C:785:LEU:HB2	2:C:853:ILE:HG22	1.96	0.47
2:C:1478:CYS:N	2:C:1496:TYR:O	2.38	0.47
2:Q:415:ASP:HB2	2:Q:418:LYS:HG3	1.96	0.47
2:Q:1017:GLN:HG2	2:Q:1017:GLN:O	2.14	0.47
2:C:362:GLU:HG3	2:C:366:LYS:HG3	1.96	0.47
2:Q:458:ASP:HB2	2:Q:461:CYS:HB2	1.96	0.47
2:Q:876:PRO:HA	2:Q:879:LEU:HD23	1.95	0.47
2:Q:900:SER:HB2	2:Q:903:HIS:HE1	1.78	0.47
2:C:148:SER:OG	2:C:150:ASP:OD1	2.27	0.47
2:Q:211:TYR:CD1	2:Q:216:GLN:HA	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:265:GLN:OE1	2:Q:989:ARG:NH2	2.46	0.47
1:P:168:HIS:HB2	1:P:171:TYR:CD1	2.48	0.47
2:C:599:LEU:HD12	2:C:654:ARG:HH12	1.79	0.47
2:Q:1026:ASN:O	2:Q:1089:TYR:N	2.45	0.47
2:Q:1095:VAL:HG23	2:Q:1158:HIS:HD2	1.80	0.47
2:C:383:ALA:O	2:C:387:LYS:HG2	2.14	0.47
2:C:389:TYR:HB3	2:C:652:VAL:HG13	1.96	0.47
2:C:1568:ASP:HB3	2:C:1596:PHE:HD2	1.79	0.47
2:Q:153:TRP:HB2	2:Q:172:PHE:CE1	2.42	0.47
2:Q:642:ASP:OD1	2:Q:643:CYS:N	2.47	0.47
2:Q:775:CYS:HB3	2:Q:781:CYS:HB2	1.70	0.47
2:Q:1054:LYS:HB3	2:Q:1110:TYR:HA	1.97	0.47
1:P:162:PHE:HB2	1:P:196:GLN:HB3	1.97	0.47
2:C:150:ASP:OD1	2:C:150:ASP:N	2.47	0.47
2:C:1251:ARG:HG2	2:C:1257:ILE:HG12	1.97	0.47
2:Q:351:LYS:HE3	2:Q:656:HIS:HD2	1.80	0.47
2:Q:1017:GLN:OE1	2:Q:1017:GLN:N	2.45	0.47
2:C:275:HIS:O	2:C:314:HIS:ND1	2.39	0.47
2:C:642:ASP:OD1	2:C:643:CYS:N	2.47	0.47
2:Q:1003:GLU:HB3	2:Q:1007:SER:OG	2.15	0.47
2:Q:1185:ASP:CB	2:Q:1203:GLN:HB3	2.45	0.47
2:Q:1227:CYS:HA	2:Q:1238:CYS:HA	1.96	0.47
2:C:386:PHE:HD1	2:C:393:TRP:NE1	2.12	0.46
2:C:1250:ILE:HD13	2:C:1276:LYS:HD3	1.96	0.46
2:C:1309:GLN:HB3	2:C:1326:LEU:HD22	1.96	0.46
2:Q:242:GLY:HA3	2:Q:248:ASN:HA	1.98	0.46
2:Q:1030:SER:HB3	2:Q:1085:TRP:H	1.80	0.46
2:Q:1103:LEU:HD23	2:Q:1173:ILE:HG12	1.95	0.46
2:Q:1124:ASP:CB	2:Q:1157:TYR:HB2	2.45	0.46
2:C:791:LEU:HD12	2:C:871:SER:HB3	1.95	0.46
2:C:1074:TYR:HA	2:C:1079:LEU:HD21	1.97	0.46
2:C:1124:ASP:HB3	2:C:1157:TYR:CD1	2.51	0.46
2:Q:766:VAL:HG21	2:Q:772:PRO:HB3	1.97	0.46
2:Q:1185:ASP:HB2	2:Q:1203:GLN:HB3	1.96	0.46
2:C:814:ASN:H	2:C:857:THR:HA	1.80	0.46
2:C:1248:LEU:O	2:C:1259:SER:OG	2.25	0.46
2:Q:820:ALA:HA	2:Q:850:VAL:HA	1.98	0.46
2:Q:1015:THR:HB	2:Q:1019:PHE:CE2	2.50	0.46
2:Q:1037:PRO:HG2	2:Q:1040:VAL:HG13	1.97	0.46
2:Q:1558:CYS:HB2	2:Q:1571:ASN:HA	1.96	0.46
2:C:791:LEU:HD21	2:C:869:LEU:HD22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:44:ARG:NH2	1:P:75:SER:O	2.37	0.46
2:C:180:ARG:NH2	2:Q:1289:ASP:H	2.13	0.46
2:C:205:GLY:O	2:C:225:GLY:N	2.47	0.46
2:C:836:ASP:OD1	2:C:837:VAL:N	2.46	0.46
2:Q:538:LEU:HD23	2:Q:538:LEU:H	1.79	0.46
1:P:80:GLY:O	1:P:84:ILE:N	2.36	0.46
2:C:967:ASN:OD1	2:C:968:GLY:N	2.49	0.46
2:Q:791:LEU:HD21	2:Q:869:LEU:HD22	1.96	0.46
2:C:677:LEU:HD23	2:C:677:LEU:HA	1.85	0.46
2:Q:615:PRO:HG2	2:Q:627:PHE:HB2	1.98	0.46
2:Q:1457:HIS:N	2:Q:1465:ASN:OD1	2.44	0.46
2:C:255:HIS:CD2	2:C:276:GLY:HA2	2.51	0.46
2:C:1254:ASP:CG	2:Q:1204:SER:HB2	2.35	0.46
2:Q:516:PHE:HE2	2:Q:543:GLY:HA3	1.80	0.46
2:Q:535:LYS:NZ	2:Q:744:GLU:O	2.41	0.46
2:Q:818:LEU:HD21	2:Q:850:VAL:HG22	1.96	0.46
2:Q:886:TYR:O	2:Q:903:HIS:ND1	2.42	0.46
2:Q:1183:ASN:HD22	2:Q:1201:ALA:HA	1.81	0.46
2:C:819:LEU:HD11	2:C:854:GLN:HG3	1.97	0.46
2:C:1386:SER:HB3	2:C:1392:LYS:H	1.81	0.46
2:Q:473:CYS:HB3	2:Q:484:THR:HB	1.97	0.46
2:Q:891:ASP:HB2	2:Q:922:TRP:HH2	1.80	0.46
2:C:1327:LEU:HD21	2:C:1338:PRO:HA	1.98	0.45
2:Q:357:VAL:HA	2:Q:515:ILE:HB	1.97	0.45
2:Q:577:ILE:HD13	2:Q:627:PHE:CE1	2.51	0.45
2:Q:1515:ILE:HG13	2:Q:1534:VAL:HG21	1.98	0.45
2:Q:1595:PRO:HD3	2:Q:1602:LEU:HD21	1.98	0.45
2:C:284:LEU:HD21	2:C:287:GLN:HB2	1.99	0.45
2:C:1041:ILE:HG23	2:C:1175:GLY:HA2	1.98	0.45
2:Q:351:LYS:HE3	2:Q:656:HIS:CD2	2.52	0.45
1:P:57:LEU:HD21	1:P:71:PHE:CZ	2.51	0.45
2:Q:249:TYR:OH	2:Q:252:TYR:N	2.50	0.45
2:Q:777:GLU:HB3	2:Q:778:PRO:HD2	1.99	0.45
2:Q:1521:THR:H	2:Q:1524:ASP:HB2	1.82	0.45
2:C:97:LEU:HD12	2:C:306:PRO:HG2	1.98	0.45
2:C:112:LEU:HD13	2:C:286:LEU:HD12	1.98	0.45
2:C:444:ARG:HH12	2:C:446:PRO:HB2	1.81	0.45
2:C:780:GLY:HA3	2:C:856:TYR:HD2	1.82	0.45
1:A:84:ILE:O	1:A:88:PHE:HD2	2.00	0.45
2:Q:204:ASP:OD1	2:Q:207:PHE:N	2.46	0.45
2:C:332:CYS:SG	2:C:657:CYS:C	2.95	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:357:VAL:HA	2:C:515:ILE:HB	1.99	0.45
2:C:580:ILE:HD12	2:C:582:SER:O	2.15	0.45
2:C:1189:LEU:O	2:Q:1183:ASN:HB2	2.16	0.45
2:C:1309:GLN:HG2	2:C:1328:THR:HA	1.98	0.45
2:C:1380:GLY:H	2:C:1393:ARG:NH2	2.14	0.45
2:C:1382:HIS:ND1	2:C:1383:VAL:O	2.50	0.45
1:A:49:ASN:O	1:A:52:GLU:HG2	2.16	0.45
2:Q:260:LYS:HE3	2:Q:285:LEU:HD13	1.98	0.45
2:Q:631:PRO:HB2	2:Q:634:ASN:HB2	1.98	0.45
2:C:125:LEU:HD23	2:C:197:VAL:O	2.17	0.45
2:C:170:TYR:O	2:C:187:ALA:N	2.49	0.45
2:C:363:ASP:H	2:C:403:SER:HB3	1.82	0.45
2:C:956:GLN:HB2	2:C:958:GLU:HG3	1.99	0.45
2:C:1584:CYS:HB2	2:C:1587:THR:OG1	2.17	0.45
2:Q:859:ASP:HB3	2:Q:862:LEU:HB2	1.99	0.45
2:Q:1386:SER:HB3	2:Q:1392:LYS:H	1.81	0.45
1:P:196:GLN:HA	1:P:199:GLN:HG2	1.99	0.45
1:P:211:CYS:HB3	1:A:211:CYS:C	2.36	0.45
2:Q:108:LEU:HD22	2:Q:238:LEU:HD23	1.99	0.45
2:Q:692:GLU:HG2	2:Q:907:LYS:HA	1.99	0.45
2:Q:795:SER:OG	2:Q:870:THR:OG1	2.15	0.45
2:Q:1223:ALA:O	2:Q:1243:ARG:NH2	2.50	0.45
2:C:178:ARG:NH1	2:C:225:GLY:HA3	2.32	0.45
2:C:730:MET:H	2:C:736:GLY:HA3	1.81	0.45
2:C:777:GLU:HB3	2:C:778:PRO:HD2	1.99	0.45
2:C:1382:HIS:CD2	2:C:1413:VAL:HG22	2.47	0.45
2:Q:259:TRP:HH2	2:Q:281:LEU:HD22	1.81	0.45
2:Q:652:VAL:HG12	2:Q:656:HIS:CE1	2.52	0.45
2:C:900:SER:HB2	2:C:903:HIS:HE1	1.82	0.45
2:Q:278:HIS:NE2	2:Q:289:ASN:HB3	2.32	0.45
2:Q:378:GLN:CG	2:Q:560:MET:HE2	2.47	0.45
2:Q:1021:ASP:OD1	2:Q:1179:ARG:NE	2.50	0.45
1:P:172:VAL:HG21	1:A:204:LEU:HD22	1.99	0.44
2:Q:703:GLU:HB2	2:Q:882:LYS:HE3	1.98	0.44
2:Q:854:GLN:HB3	2:Q:856:TYR:HE1	1.81	0.44
2:Q:1051:CYS:HB2	2:Q:1142:ASN:HD22	1.83	0.44
1:A:106:ALA:HA	1:A:143:HIS:HD2	1.82	0.44
2:Q:679:PRO:HB3	2:Q:693:TRP:HB3	1.99	0.44
2:Q:1108:THR:HG22	2:Q:1115:GLN:HA	1.98	0.44
2:C:206:GLN:HE21	2:C:207:PHE:HD2	1.66	0.44
2:C:410:ILE:HD11	2:C:498:VAL:HA	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:485:CYS:SG	2:C:493:ARG:HA	2.57	0.44
2:C:894:LEU:HD13	2:C:898:VAL:HB	2.00	0.44
2:C:1095:VAL:HG22	2:C:1157:TYR:O	2.17	0.44
2:C:1256:LEU:HD11	2:C:1258:LYS:HE2	1.99	0.44
2:Q:122:GLN:HE22	2:Q:259:TRP:HE1	1.65	0.44
2:Q:255:HIS:CD2	2:Q:276:GLY:HA2	2.53	0.44
2:Q:259:TRP:CE2	2:Q:284:LEU:HD13	2.52	0.44
2:Q:900:SER:HB2	2:Q:903:HIS:CE1	2.53	0.44
2:Q:1196:GLU:CB	2:Q:1207:HIS:HA	2.48	0.44
2:C:859:ASP:OD1	2:C:860:GLU:N	2.49	0.44
2:Q:318:LEU:O	2:Q:318:LEU:HD12	2.18	0.44
2:Q:710:CYS:HA	2:Q:713:CYS:SG	2.58	0.44
1:P:168:HIS:HB2	1:P:171:TYR:HD1	1.83	0.44
2:C:575:ARG:NH1	2:C:597:GLY:O	2.41	0.44
2:C:924:ILE:HG13	2:C:934:PRO:HA	1.99	0.44
2:C:1321:LYS:N	2:C:1341:LEU:O	2.50	0.44
2:C:1516:LEU:HD11	2:C:1525:ILE:HD11	2.00	0.44
2:Q:122:GLN:HG3	2:Q:198:TYR:OH	2.17	0.44
2:Q:140:LEU:N	2:Q:153:TRP:O	2.42	0.44
2:Q:274:THR:HB	2:Q:277:ALA:HB3	1.99	0.44
2:C:407:ARG:HE	2:C:407:ARG:HB2	1.66	0.44
2:C:950:GLY:N	2:C:961:ASP:OD1	2.45	0.44
2:C:1425:LEU:HD23	2:C:1440:ILE:HD11	1.99	0.44
2:Q:126:ARG:O	2:Q:249:TYR:OH	2.33	0.44
2:Q:762:PRO:HB3	2:Q:775:CYS:SG	2.58	0.44
2:C:115:PRO:HD3	2:C:285:LEU:HD22	2.00	0.44
2:C:356:ARG:HD2	2:C:514:ASN:OD1	2.18	0.44
2:C:389:TYR:CZ	2:C:647:PHE:HB2	2.53	0.44
2:C:1102:HIS:HD1	2:C:1174:SER:HG	1.66	0.44
2:C:1214:ASP:HB3	2:C:1273:LYS:HD3	2.00	0.44
2:Q:682:LEU:HB2	2:Q:690:THR:HB	1.99	0.44
2:Q:725:ASN:HB3	2:Q:786:GLU:HB2	1.99	0.44
2:Q:1214:ASP:H	2:Q:1273:LYS:HB2	1.82	0.44
2:Q:1382:HIS:CD2	2:Q:1413:VAL:HG22	2.48	0.44
2:C:367:ASN:O	2:C:406:ARG:NE	2.44	0.44
2:C:1108:THR:HG22	2:C:1115:GLN:HA	2.00	0.44
2:Q:389:TYR:CE2	2:Q:647:PHE:HB2	2.53	0.44
2:Q:983:CYS:HB3	2:Q:988:SER:HB3	2.00	0.44
2:Q:1483:GLU:O	2:Q:1483:GLU:HG2	2.18	0.44
1:P:113:ALA:HA	1:P:117:ARG:HH11	1.83	0.44
2:C:178:ARG:HB3	2:Q:1334:LEU:HD21	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:1017:GLN:OE1	2:Q:1182:ASP:HA	2.18	0.44
2:Q:1195:GLY:HA2	2:Q:1212:LYS:NZ	2.33	0.44
1:P:112:HIS:CE1	1:P:117:ARG:HH12	2.35	0.43
2:C:793:PRO:HB3	2:C:869:LEU:HD11	2.00	0.43
2:C:1501:GLU:HG2	2:C:1536:ARG:HB2	1.99	0.43
1:A:44:ARG:N	1:A:123:ARG:O	2.51	0.43
2:Q:1516:LEU:HD11	2:Q:1525:ILE:HD11	1.99	0.43
2:C:128:GLU:O	2:C:131:GLN:NE2	2.34	0.43
2:C:797:THR:HG23	2:C:840:THR:HG22	2.00	0.43
2:C:891:ASP:HB2	2:C:922:TRP:HH2	1.83	0.43
1:A:72:GLU:HG3	1:A:82:HIS:HB3	2.00	0.43
2:Q:1345:MET:SD	2:Q:1345:MET:N	2.90	0.43
1:P:51:ALA:O	1:P:54:GLN:HG3	2.18	0.43
2:C:693:TRP:CZ2	2:C:906:ARG:HA	2.53	0.43
2:C:1383:VAL:HG21	2:C:1395:PHE:HB3	2.00	0.43
2:Q:131:GLN:HE22	2:Q:250:ARG:HB3	1.82	0.43
2:Q:181:GLN:NE2	2:Q:1049:GLN:HG2	2.33	0.43
2:Q:259:TRP:CH2	2:Q:281:LEU:HD22	2.53	0.43
1:P:109:CYS:HB2	1:P:143:HIS:NE2	2.33	0.43
2:C:153:TRP:HZ3	2:C:155:VAL:HG22	1.83	0.43
2:C:797:THR:HA	2:C:839:LEU:O	2.17	0.43
2:C:1023:TRP:HB3	2:C:1043:GLY:HA2	2.01	0.43
2:C:1479:SER:O	2:C:1545:TRP:NE1	2.47	0.43
1:A:169:GLU:O	1:A:172:VAL:HB	2.18	0.43
2:Q:1005:LYS:HA	2:Q:1014:TYR:CD1	2.53	0.43
2:Q:1016:PRO:HA	2:Q:1017:GLN:HA	1.48	0.43
2:Q:1095:VAL:HG22	2:Q:1157:TYR:O	2.18	0.43
2:Q:1252:ARG:NE	2:Q:1276:LYS:HG2	2.34	0.43
2:C:1090:PHE:CZ	2:C:1178:LEU:HG	2.53	0.43
2:C:1194:ARG:CZ	2:Q:1201:ALA:HB2	2.48	0.43
2:Q:122:GLN:HA	2:Q:199:LEU:O	2.19	0.43
2:Q:620:ASP:HB3	2:Q:623:GLY:HA2	2.00	0.43
2:Q:635:PHE:N	2:Q:646:SER:O	2.36	0.43
2:Q:815:ASP:OD1	2:Q:816:ILE:N	2.51	0.43
2:Q:1288:PRO:HB2	2:Q:1298:PHE:CD2	2.53	0.43
2:C:258:LEU:HD23	2:C:285:LEU:HD23	1.99	0.43
2:C:421:ASP:HA	2:C:769:HIS:NE2	2.34	0.43
2:C:1098:ALA:HB3	2:C:1179:ARG:HH11	1.83	0.43
2:C:1515:ILE:HG13	2:C:1534:VAL:HG21	1.99	0.43
2:Q:886:TYR:C	2:Q:903:HIS:HD1	2.20	0.43
2:Q:953:GLN:HB3	2:Q:956:GLN:HG2	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:1591:LYS:HD3	2:Q:1591:LYS:HA	1.79	0.43
2:C:458:ASP:HB2	2:C:461:CYS:HB2	2.00	0.43
2:C:1075:PRO:HG2	2:C:1078:GLN:HB2	2.00	0.43
2:C:193:PRO:HG3	2:C:837:VAL:HG13	1.99	0.43
2:C:462:ASN:ND2	2:C:484:THR:O	2.33	0.43
2:C:819:LEU:HD21	2:C:854:GLN:HG3	1.99	0.43
2:C:1283:VAL:O	2:C:1306:PHE:N	2.52	0.43
2:Q:836:ASP:OD1	2:Q:837:VAL:N	2.52	0.43
2:C:97:LEU:HB3	2:C:99:PHE:CE1	2.54	0.43
2:C:209:LYS:HB3	2:C:211:TYR:CZ	2.54	0.43
2:C:816:ILE:HD12	2:C:855:ILE:HG12	2.01	0.43
2:C:1061:GLY:HA2	2:C:1064:GLN:NE2	2.34	0.43
1:A:100:LYS:HA	1:A:103:ILE:HG22	2.01	0.43
2:Q:886:TYR:HB2	2:Q:903:HIS:HB2	2.01	0.43
2:Q:1122:LEU:HD23	2:Q:1162:VAL:HG22	2.00	0.43
2:Q:1252:ARG:HE	2:Q:1276:LYS:HG2	1.84	0.43
2:C:137:ILE:HG13	2:C:155:VAL:HG23	2.00	0.43
2:C:1239:THR:HA	2:C:1266:THR:HA	2.00	0.43
2:Q:325:PRO:HD2	2:Q:328:GLY:HA3	2.00	0.43
1:P:49:ASN:HD21	1:P:74:ASN:HA	1.84	0.42
2:C:318:LEU:HD12	2:C:318:LEU:O	2.18	0.42
1:A:162:PHE:HD2	1:A:200:ASN:HB2	1.84	0.42
2:Q:259:TRP:HA	2:Q:284:LEU:HA	2.00	0.42
2:Q:568:LEU:HD13	2:Q:663:TYR:CE2	2.49	0.42
1:P:164:ASP:OD1	1:P:168:HIS:ND1	2.52	0.42
1:P:169:GLU:N	1:P:170:PRO:HD2	2.34	0.42
2:C:572:HIS:O	2:C:598:ASP:HB3	2.19	0.42
2:C:806:ASP:N	2:C:806:ASP:OD1	2.49	0.42
2:C:1548:HIS:HB3	2:C:1551:LEU:HG	2.00	0.42
2:Q:633:ASN:O	2:Q:645:ASP:N	2.32	0.42
2:C:793:PRO:HB2	2:C:843:LEU:HD12	2.02	0.42
2:Q:188:HIS:NE2	2:Q:189:ARG:HG2	2.33	0.42
2:Q:286:LEU:HD21	2:Q:288:GLU:HB2	1.99	0.42
2:Q:326:LEU:HD21	2:Q:586:PRO:HG2	2.02	0.42
2:C:1156:PHE:HE1	2:Q:1152:LEU:HD22	1.84	0.42
2:C:1498:ILE:HD13	2:C:1541:ALA:HA	2.00	0.42
1:A:112:HIS:O	1:A:116:HIS:ND1	2.51	0.42
2:Q:362:GLU:HG3	2:Q:366:LYS:HG3	2.01	0.42
2:C:425:ASP:O	2:C:429:ASN:N	2.52	0.42
2:C:505:LEU:HB3	2:C:507:LEU:HG	2.02	0.42
2:Q:430:HIS:HB3	2:Q:433:THR:HG23	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:444:ARG:HH12	2:Q:446:PRO:HB2	1.83	0.42
2:Q:535:LYS:HD3	2:Q:745:GLY:HA3	2.02	0.42
2:C:1018:GLY:N	2:C:1182:ASP:HB2	2.34	0.42
2:C:1516:LEU:HD12	2:C:1553:HIS:NE2	2.33	0.42
2:Q:185:ILE:HD12	2:Q:185:ILE:HA	1.93	0.42
2:Q:572:HIS:O	2:Q:598:ASP:HB3	2.19	0.42
2:Q:1090:PHE:CZ	2:Q:1178:LEU:HG	2.54	0.42
1:P:161:HIS:O	1:P:165:LEU:HG	2.20	0.42
2:C:1092:GLN:OE1	2:Q:1257:ILE:HG13	2.20	0.42
2:C:1457:HIS:HB3	2:C:1459:ARG:HH21	1.85	0.42
2:Q:599:LEU:HB2	2:Q:654:ARG:NH1	2.35	0.42
2:Q:1561:PHE:HB2	2:Q:1571:ASN:ND2	2.34	0.42
1:P:65:CYS:O	1:P:69:GLU:HG2	2.19	0.42
2:C:889:VAL:HB	2:C:922:TRP:NE1	2.35	0.42
2:C:955:ASP:N	2:C:955:ASP:OD1	2.52	0.42
2:C:1592:LYS:HE2	2:C:1592:LYS:HB2	1.85	0.42
2:Q:180:ARG:O	2:Q:180:ARG:NE	2.52	0.42
2:Q:726:ALA:C	2:Q:740:PRO:HD2	2.39	0.42
2:C:1096:ALA:HB2	2:C:1178:LEU:HB3	2.02	0.42
2:C:1184:PHE:CD2	2:Q:1186:PRO:HB3	2.54	0.42
2:Q:386:PHE:HB3	2:Q:391:ILE:HB	2.02	0.42
2:Q:516:PHE:CE2	2:Q:543:GLY:HA3	2.55	0.42
2:C:286:LEU:HD21	2:C:288:GLU:HB2	2.02	0.42
2:C:430:HIS:HB3	2:C:433:THR:HG23	2.02	0.42
2:C:620:ASP:HB3	2:C:623:GLY:HA2	2.01	0.42
2:Q:592:PRO:HG3	2:Q:604:ASN:HA	2.02	0.42
2:Q:1328:THR:O	2:Q:1336:SER:N	2.53	0.42
2:C:718:ILE:HG22	2:C:872:THR:O	2.20	0.41
2:C:1186:PRO:HB3	2:Q:1184:PHE:CG	2.55	0.41
2:C:1248:LEU:HD21	2:C:1265:VAL:HG12	2.01	0.41
2:Q:1267:VAL:HG12	2:Q:1276:LYS:HE2	2.02	0.41
2:Q:1584:CYS:HB2	2:Q:1587:THR:OG1	2.20	0.41
2:C:1122:LEU:HD23	2:C:1122:LEU:HA	1.94	0.41
2:C:1204:SER:HB2	2:Q:1254:ASP:CG	2.41	0.41
2:Q:324:PRO:HA	2:Q:325:PRO:HD3	1.95	0.41
2:Q:499:ASN:HA	2:Q:502:LYS:HD2	2.02	0.41
2:Q:791:LEU:HD12	2:Q:871:SER:HB3	2.01	0.41
2:Q:1573:ARG:NE	2:Q:1575:PHE:HB3	2.34	0.41
2:C:775:CYS:HB3	2:C:781:CYS:HB2	1.69	0.41
2:C:1124:ASP:OD1	2:C:1128:GLN:N	2.53	0.41
1:A:144:ASP:OD2	1:A:147:ALA:HB3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:702:PHE:HA	2:Q:883:PRO:HA	2.02	0.41
2:C:1557:GLY:HA2	2:C:1573:ARG:HH12	1.85	0.41
1:A:49:ASN:ND2	1:A:52:GLU:OE2	2.53	0.41
2:Q:99:PHE:CE2	2:Q:306:PRO:HG3	2.56	0.41
2:Q:513:LEU:HB2	2:Q:666:TRP:CZ3	2.56	0.41
2:Q:682:LEU:HD13	2:Q:690:THR:HG22	2.03	0.41
1:P:100:LYS:HA	1:P:103:ILE:HG22	2.03	0.41
2:C:766:VAL:HG21	2:C:772:PRO:HB3	2.01	0.41
1:A:79:ARG:HB2	1:A:168:HIS:CD2	2.56	0.41
1:A:142:LYS:HG3	1:A:143:HIS:CE1	2.56	0.41
2:Q:114:LEU:HD13	2:Q:140:LEU:HD11	2.02	0.41
2:Q:170:TYR:HB2	2:Q:187:ALA:HB2	2.03	0.41
1:P:46:SER:HB3	1:P:49:ASN:HB2	2.03	0.41
1:P:53:ILE:O	1:P:57:LEU:HD23	2.20	0.41
2:C:714:LEU:HB2	2:C:718:ILE:HG13	2.02	0.41
2:C:1286:SER:O	2:C:1335:TRP:NE1	2.48	0.41
1:A:72:GLU:OE2	1:A:81:LEU:N	2.50	0.41
2:Q:108:LEU:HB3	2:Q:238:LEU:HB3	2.03	0.41
2:C:158:HIS:CD2	2:C:171:PHE:CG	3.07	0.41
2:C:729:PRO:HA	2:C:736:GLY:HA3	2.03	0.41
2:C:759:THR:HG22	2:C:865:ASP:HA	2.03	0.41
2:C:772:PRO:HD2	1:A:50:THR:HG21	2.03	0.41
2:C:777:GLU:HB3	2:C:778:PRO:CD	2.51	0.41
2:C:1504:THR:OG1	2:C:1534:VAL:O	2.37	0.41
2:Q:206:GLN:HE21	2:Q:207:PHE:HD2	1.68	0.41
2:Q:760:TRP:CD2	2:Q:783:LEU:HD22	2.56	0.41
2:Q:1058:LEU:HD22	2:Q:1105:THR:HG21	2.02	0.41
2:C:541:LEU:HD21	2:C:741:ARG:HH12	1.85	0.41
2:C:1196:GLU:CB	2:C:1207:HIS:HA	2.49	0.41
2:C:1601:ASP:O	2:C:1606:CYS:HB2	2.21	0.41
2:Q:425:ASP:O	2:Q:429:ASN:N	2.54	0.41
2:Q:485:CYS:SG	2:Q:493:ARG:HA	2.61	0.41
2:Q:807:TRP:CZ2	2:Q:812:ALA:HA	2.56	0.41
2:Q:955:ASP:N	2:Q:955:ASP:OD1	2.53	0.41
1:P:112:HIS:O	1:P:116:HIS:ND1	2.53	0.41
1:P:190:THR:HA	1:P:193:VAL:HG12	2.02	0.41
2:C:158:HIS:CD2	2:C:171:PHE:CD1	3.08	0.41
2:C:648:THR:O	2:C:652:VAL:HG23	2.20	0.41
2:C:763:ASN:O	2:C:766:VAL:HG22	2.21	0.41
2:C:1296:ALA:HB2	2:C:1342:CYS:SG	2.60	0.41
2:Q:122:GLN:NE2	2:Q:259:TRP:HE1	2.18	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:270:SER:O	2:Q:274:THR:HG23	2.20	0.41
2:Q:570:LEU:HA	2:Q:654:ARG:HH21	1.86	0.41
2:Q:651:GLN:O	2:Q:655:MET:HG2	2.21	0.41
2:Q:898:VAL:HG12	2:Q:900:SER:H	1.86	0.41
2:Q:913:LEU:HD23	2:Q:913:LEU:HA	1.94	0.41
2:Q:964:ASN:ND2	2:Q:969:ASP:OD2	2.53	0.41
2:Q:1534:VAL:HG11	2:Q:1552:ILE:HD13	2.03	0.41
2:C:946:TYR:CE1	2:C:949:ASP:HB3	2.55	0.41
2:C:1150:HIS:CD2	2:C:1157:TYR:HH	2.35	0.41
2:Q:726:ALA:HB1	2:Q:740:PRO:HG2	2.02	0.41
2:Q:859:ASP:OD1	2:Q:860:GLU:N	2.54	0.41
2:Q:1026:ASN:HB3	2:Q:1089:TYR:HB2	2.03	0.41
2:Q:1452:GLY:HA3	2:Q:1469:HIS:CD2	2.56	0.41
2:Q:1485:ASN:ND2	2:Q:1552:ILE:O	2.54	0.41
2:C:1309:GLN:HA	2:C:1327:LEU:O	2.21	0.40
1:A:57:LEU:HD23	1:A:115:ARG:HA	2.03	0.40
2:Q:1489:LYS:HE2	2:Q:1507:LEU:HD21	2.03	0.40
1:P:171:TYR:HA	1:P:174:LEU:HD12	2.04	0.40
2:C:130:GLY:O	2:C:832:ASN:HB2	2.21	0.40
2:C:724:SER:OG	2:C:725:ASN:N	2.54	0.40
2:Q:726:ALA:HB2	2:Q:744:GLU:HG3	2.04	0.40
2:C:325:PRO:HD2	2:C:328:GLY:HA3	2.03	0.40
2:C:355:TYR:CZ	2:C:395:LEU:HD13	2.57	0.40
2:C:461:CYS:O	2:C:469:ASP:N	2.54	0.40
2:C:813:VAL:HG13	2:C:831:GLN:H	1.85	0.40
2:C:883:PRO:HG2	2:C:904:LEU:HD23	2.02	0.40
2:C:964:ASN:HD21	2:C:966:ILE:HB	1.86	0.40
2:C:1534:VAL:HG11	2:C:1552:ILE:HD13	2.03	0.40
2:Q:747:PRO:HG3	2:Q:799:TRP:CE2	2.56	0.40
2:Q:1122:LEU:HB3	2:Q:1157:TYR:HE2	1.86	0.40
2:Q:1192:CYS:HA	2:Q:1196:GLU:OE2	2.21	0.40
2:Q:1414:THR:HG23	2:Q:1432:PHE:HB2	2.03	0.40
2:C:513:LEU:HB2	2:C:666:TRP:CZ3	2.56	0.40
2:C:525:LEU:HD23	2:C:525:LEU:HA	1.95	0.40
2:C:1103:LEU:HD11	2:C:1137:LEU:HD22	2.04	0.40
1:A:198:GLU:HG3	1:A:205:CYS:HB3	2.02	0.40
2:Q:109:ARG:HH21	2:Q:294:LYS:HG2	1.87	0.40
2:Q:854:GLN:HB3	2:Q:856:TYR:CE1	2.56	0.40
2:Q:1118:ILE:HD13	2:Q:1137:LEU:HD21	2.03	0.40
2:C:1186:PRO:HA	2:C:1189:LEU:HB2	2.03	0.40
1:A:125:CYS:O	1:A:129:ARG:HG3	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Q:259:TRP:HE3	2:Q:283:GLN: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	166/168 (99%)	162 (98%)	4 (2%)	0	100	100
1	P	166/168 (99%)	163 (98%)	3 (2%)	0	100	100
2	C	1522/1536 (99%)	1422 (93%)	98 (6%)	2 (0%)	51	86
2	Q	1522/1536 (99%)	1427 (94%)	93 (6%)	2 (0%)	51	86
All	All	3376/3408 (99%)	3174 (94%)	198 (6%)	4 (0%)	54	86

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	C	1413	VAL
2	Q	1413	VAL
2	C	419	ILE
2	Q	419	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	146/146 (100%)	146 (100%)	0	100 100
1	P	146/146 (100%)	146 (100%)	0	100 100
2	C	1338/1347 (99%)	1334 (100%)	4 (0%)	92 95
2	Q	1338/1347 (99%)	1331 (100%)	7 (0%)	88 93
All	All	2968/2986 (99%)	2957 (100%)	11 (0%)	91 94

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	C	414	CYS
2	C	444	ARG
2	C	657	CYS
2	C	1523	ARG
2	Q	414	CYS
2	Q	444	ARG
2	Q	587	CYS
2	Q	657	CYS
2	Q	882	LYS
2	Q	1439	ARG
2	Q	1536	ARG

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

Mol	Chain	Res	Type
1	P	49	ASN
1	P	112	HIS
1	P	134	GLN
1	P	150	GLN
2	C	233	GLN
2	C	255	HIS
2	C	566	HIS
2	C	751	GLN
2	C	1004	GLN
2	C	1290	HIS
2	Q	122	GLN
2	Q	181	GLN
2	Q	255	HIS
2	Q	378	GLN
2	Q	656	HIS
2	Q	1004	GLN

Continued on next page...

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Mol	Chain	Res	Type
2	Q	1022	GLN
2	Q	1049	GLN
2	Q	1183	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 18 ligands modelled in this entry, 18 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

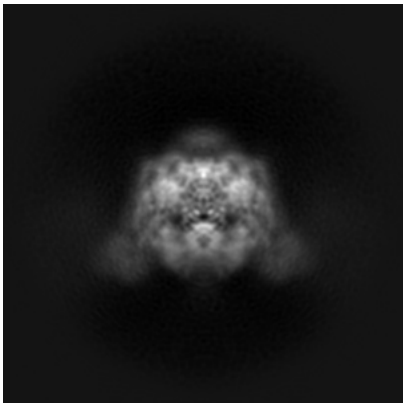
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-15221. These allow visual inspection of the internal detail of the map and identification of artifacts.

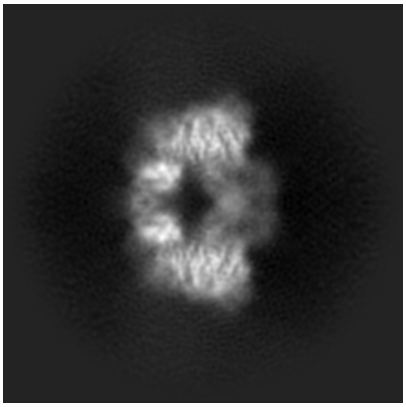
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

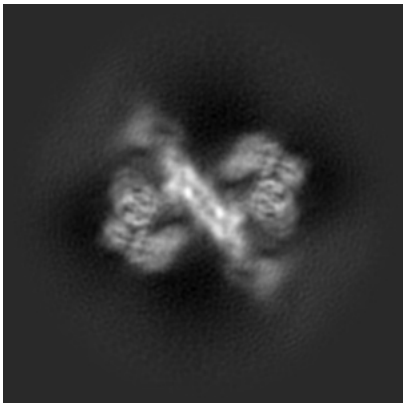
6.1.1 Primary map



X



Y

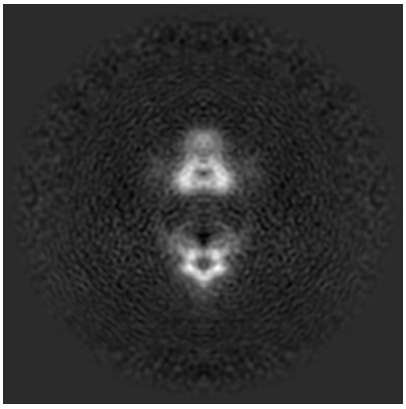


Z

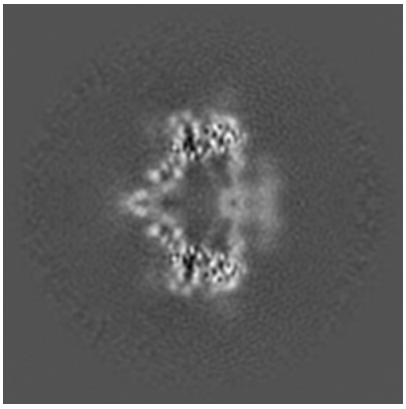
The images above show the map projected in three orthogonal directions.

6.2 Central slices

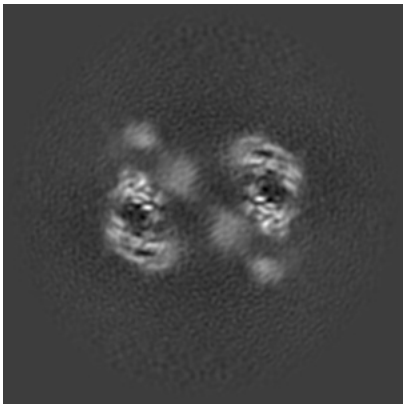
6.2.1 Primary map



X Index: 128



Y Index: 128

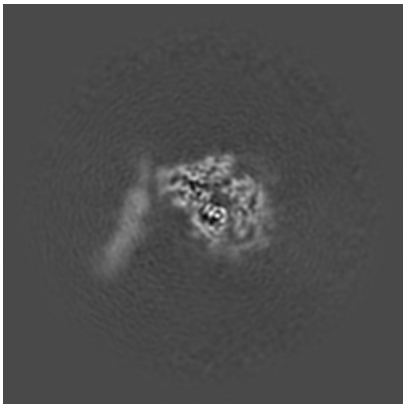


Z Index: 128

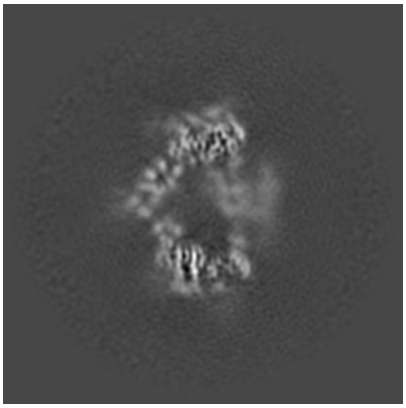
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

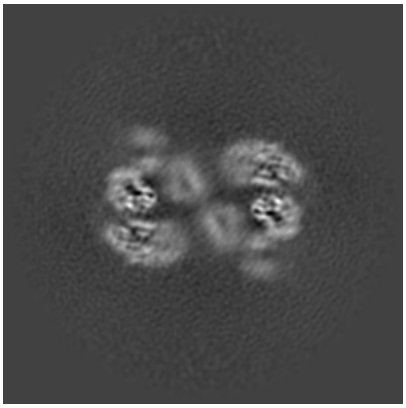
6.3.1 Primary map



X Index: 168



Y Index: 124



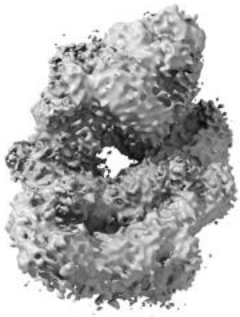
Z Index: 136

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X



Y

Z

The images above show the 3D surface view of the map at the recommended contour level 1.7. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

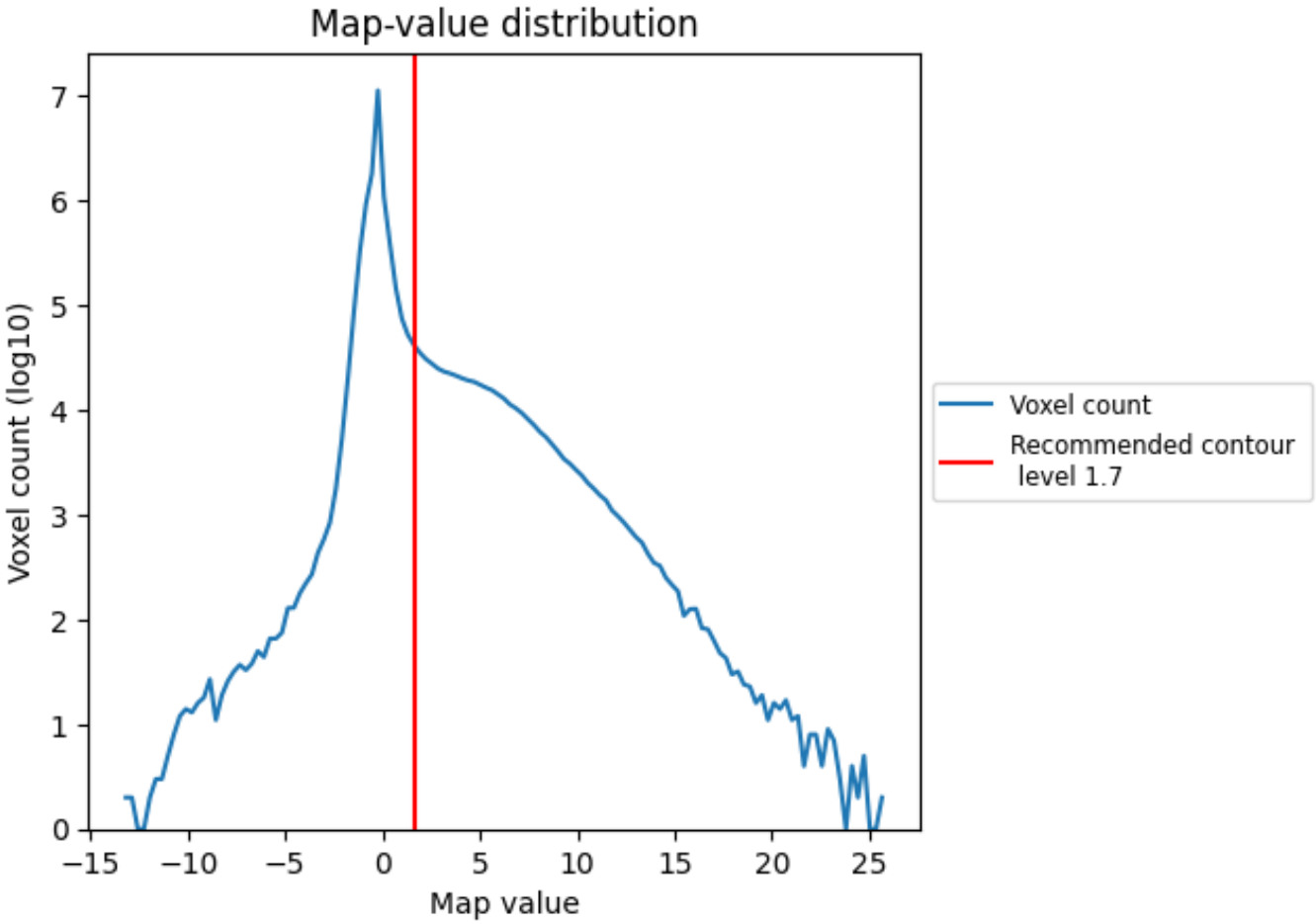
6.5 Mask visualisation (i)

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

7 Map analysis

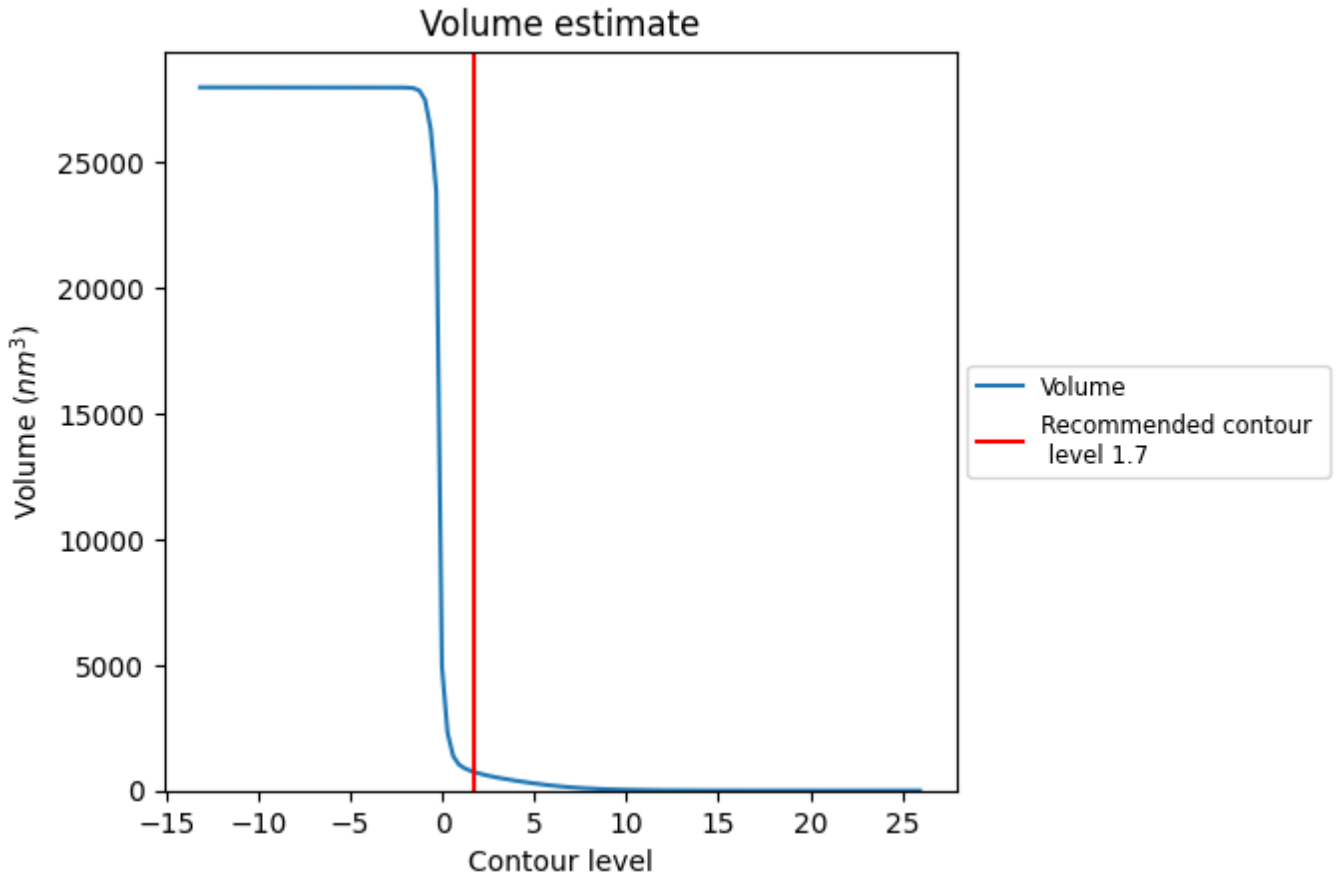
This section contains the results of statistical analysis of the map.

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.

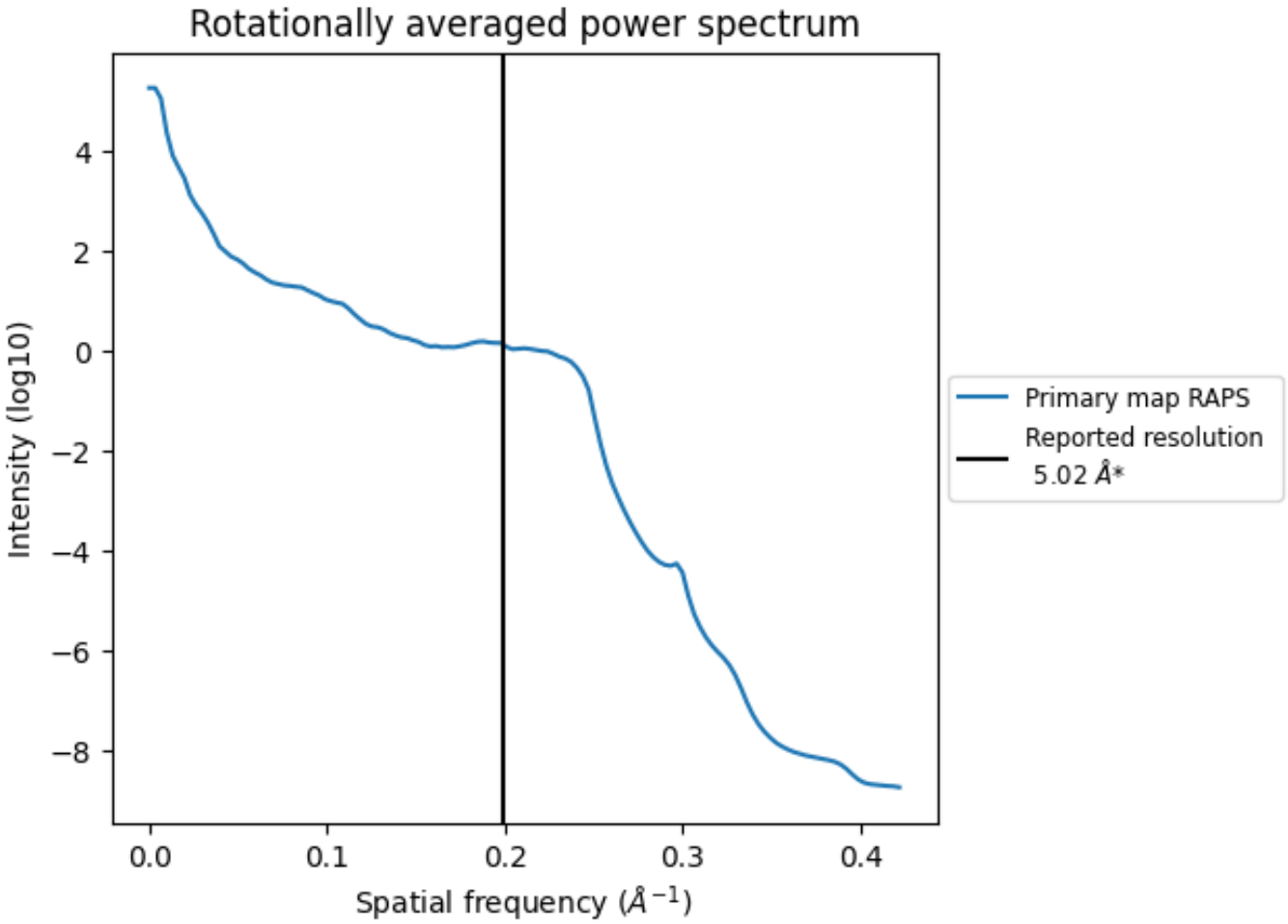
7.2 Volume estimate



The volume at the recommended contour level is 743 nm^3; this corresponds to an approximate mass of 671 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 0.199 Å^{-1}

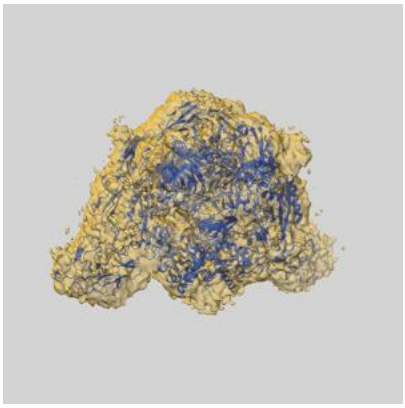
8 Fourier-Shell correlation

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

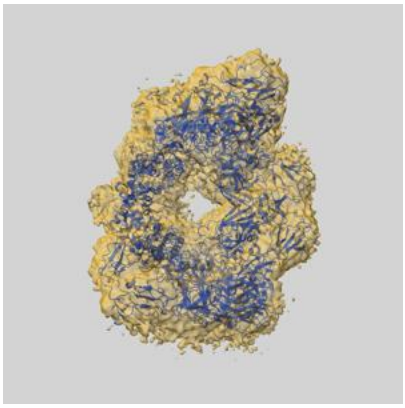
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-15221 and PDB model 8A7E. Per-residue inclusion information can be found in section 3 on page 5.

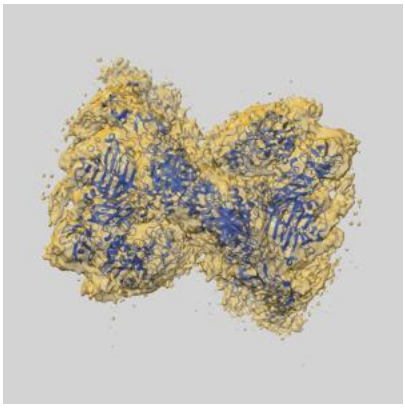
9.1 Map-model overlay



X



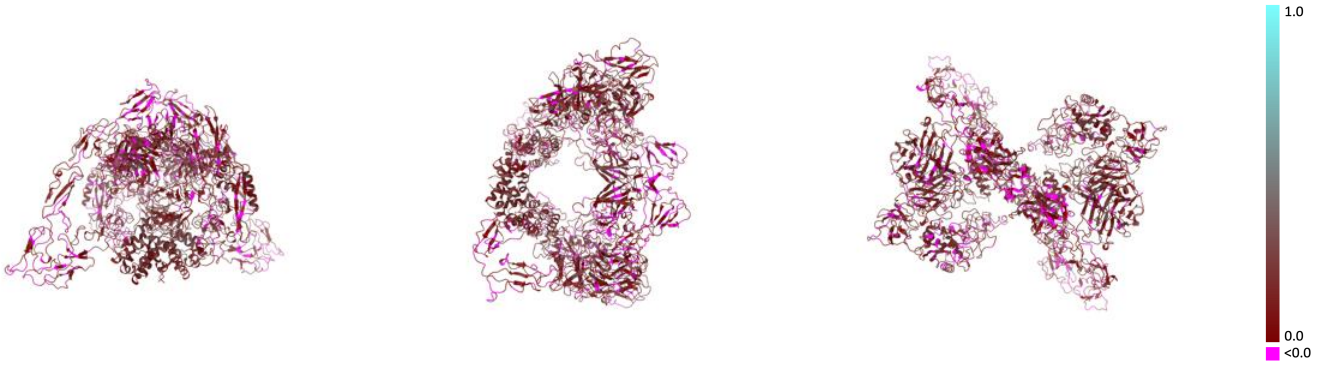
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 1.7 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.

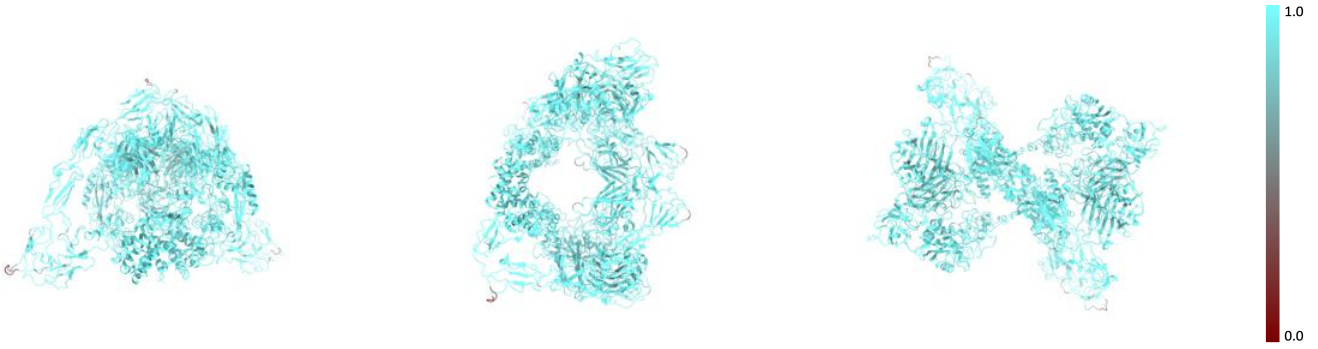
9.2 Q-score mapped to coordinate model (i)



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.

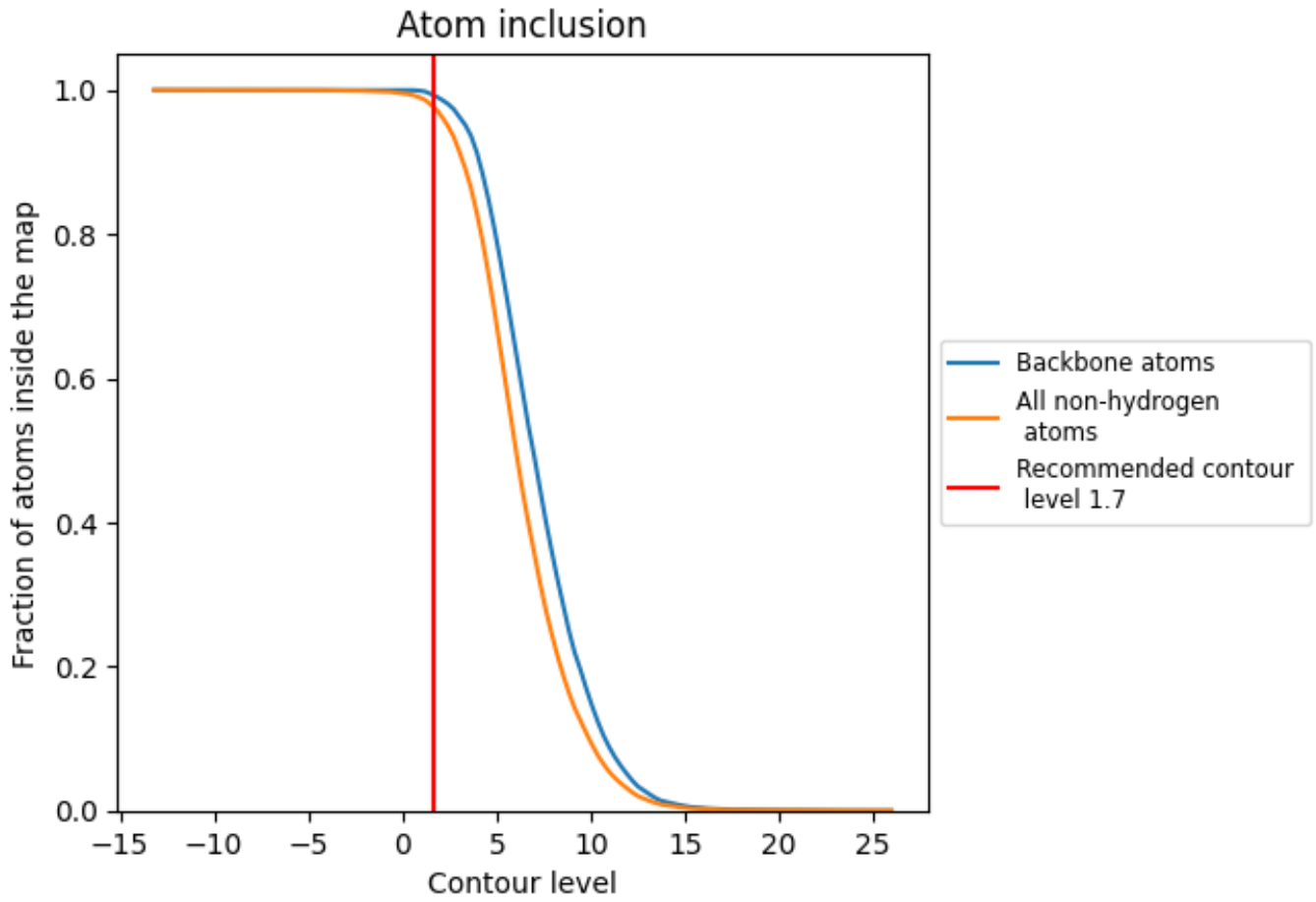
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (1.7).

9.4 Atom inclusion (i)



At the recommended contour level, 99% of all backbone atoms, 98% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (1.7) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9754	0.1470
A	0.9931	0.2210
C	0.9709	0.1300
P	0.9961	0.2160
Q	0.9757	0.1480