



## Full wwPDB EM Validation Report ⓘ

Feb 24, 2024 – 10:36 AM EST

PDB ID : 7LHW  
EMDB ID : EMD-23352  
Title : Structure of the LRRK2 monomer  
Authors : Myasnikov, A.; Zhu, H.; Hixson, P.; Xie, B.; Yu, K.; Pitre, A.; Peng, J.; Sun, J.  
Deposited on : 2021-01-26  
Resolution : 3.70 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](mailto: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>.

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

EMDB validation analysis : 0.0.1.dev70  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

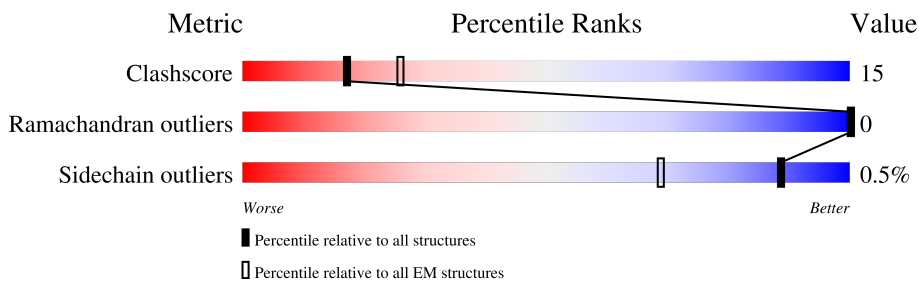
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.70 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  $\geq 3$ , 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  $\leq 5\%$ . 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	2527	

## 2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 14306 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.

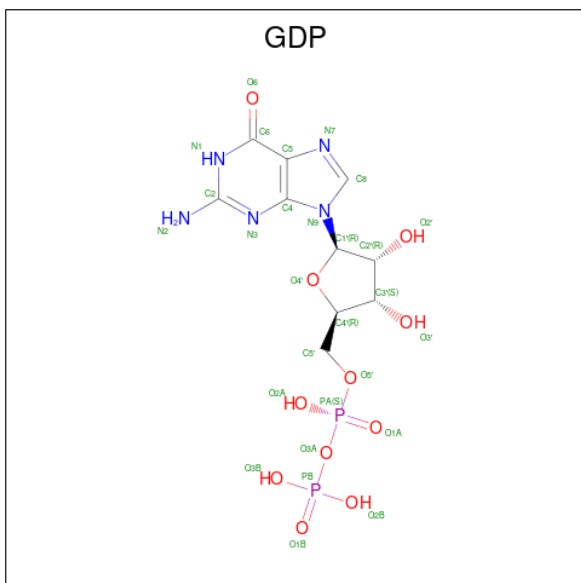
- Molecule 1 is a protein called Leucine-rich repeat serine/threonine-protein kinase 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1813	14247	9112	2458	2587	90	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	50	HIS	ARG	variant	UNP Q5S007
A	1647	THR	SER	variant	UNP Q5S007
A	2397	THR	MET	variant	UNP Q5S007

- Molecule 2 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula:  $C_{10}H_{15}N_5O_{11}P_2$ ) (labeled as "Ligand of Interest" by depositor).

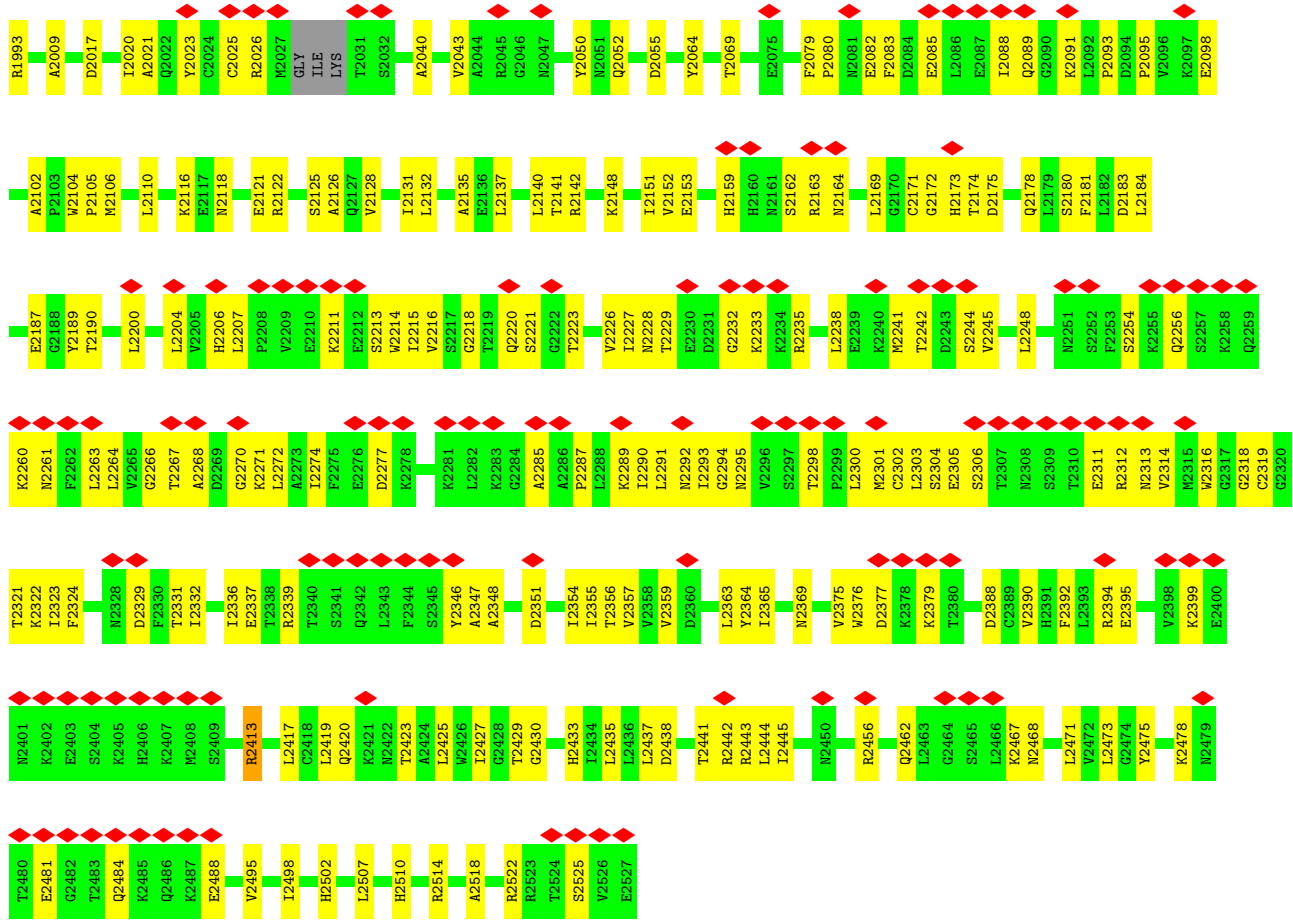


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	A	1	28	10	5	11	2	0





A840	R841	M842	V843	I844	M848	A851	V852	E853	E854	GLY	THR	THR	ALA	ARG	ASP	ASP	GLY	GLY	ASN	PHE	SER	SER	GLU	GLU	VAL	VAL	LEU	LEU	ARG	ASN	ASN	LEU	LEU	GLN	ARG	ASN	CYS	SER	PRO	PRO	ILE	ILE	PRO	ASP	ASP	SER	SER	MET	ASP	SER	VAL	VAL	PHE	ALA	ALA	GLN	GLN	ASP	ASP	LEU	LEU	LEU	LEU	ASP	ASP	ASP	GLY	GLY	LEU	LEU	LEU	LEU	ARG	ARG	GLY	GLY	GLU	GLU	GLU	GLU	PHE																																																																																																																																																																																																																																																																																																																																																					
M1068	V1075	L1085	L1090	S1091	Y1092	M1093	E1100	M1101	V1106	E1107	K1108	L1109	L1112	J1113	L1114	S1120	G1121	F1122	L1128	L1131	S1137	K1138	M1139	H1140	L1144	L1149	S1157	F1158	R1161	M1162	M1163	F1169	F1170	L1171	P1172	M1175	T1176	L1177	L1178	K1179	L1180	M1183	I1188	P1189	E1190	L1193	M1194	L1195	L1198	G1212	G1213	P1214	S1219	L1220	N1221	L1222	R1223	E1224	L1225	L1226	F1227	N1230	S1238	L1243	M1244	S1245	K1249	L1250	H1251	L1252	M1255	K1256	L1257	I1260	E1263	N1269	V1275	N1278	L1281	R1282	K1374	D1375	W1376	P1377	I1378	R1381	D1382	K1383	L1299	H1303	D1307	F1308	K1309	H1310	I1311	C1313	K1314	D1317	R1320	R1325	R1334	M1335	K1336	L1337	M1338	I1339	G1340	M1342	K1347	T1348	T1349	L1350	L1351	L1354	M1355	K1358	K1359	S1360	D1361	L1362	G1363	M1364	T1368	I1371	D1372	V1373	K1374	D1375	W1376	P1377	I1378	R1381	D1382	K1383	L1394	K1395	V1399	W1399	V1392	M1393	R1398	Y1402	H1407	F1408	R1442	V1418	Y1419	E1427	P1433	W1434	I1448	M1454	V1557	R1558	E1559	M1560	Q1561	L1562	Q1563	L1564	D1565	E1566	L1569	H1571	A1572	V1573	H1574	F1575	L1576	V1581	L1582	H1583	H1584	F1585	Q1586	D1587	P1588	A1589	L1590	Q1591	A1592	D1593	D1594	L1595	F1597	V1598	P1600	K1601	W1602	L1603	C1604	K1605	I1606	Q1609	V1613	K1614	V1615	E1616	G1617	C1618	P1619	K1620	H1621	P1622	K1623	I1625	Q1630	VAL	GLU	GLY	PHE	LEU	SER	SER	LYS	LYS	ARG	LYS	ARG	PHE	P1642	K1643	Q1648	Y1649	F1650	K1651	L1652	L1653	E1654	K1655	F1656	Q1657	A1658	A1659	LEU	PRO	I1673	S1674	V1679	I1680	E1681	P1682	P1683	M1684	M1687	S1688	E1689	I1692	R1693	L1694	Y1695	P1701	M1702	G1703	F1704	W1705	S1706	R1707	L1708	I1709	L1713	E1714	I1715	S1716	P1717	Y1718	M1719	L1720	SER	GLY	ARG	GLU	ARG	A1726	L1727	R1728	P1729	W1734	R1735	Q1736	G1737	L1738	Y1739	L1740	M1741	S1743	P1744	E1745	G1748	L1749	V1750	G1751	S1752	M1757	E1760	L1763	T1766	R1771	K1772	G1773	C1774	I1775	Q1779	V1780	V1781	D1782	H1783	I1784	E1789	E1790	W1791	L1796	D1799	I1800	C1801	G1802	E1803	G1804	E1805	T1806	L1807	L1808	K1809	K1810	W1811	A1812	L1813	W1734	R1735	Q1736	M1817	D1818	G1819	E1820	E1821	H1822	Q1823	L1826	D1829	K1832	K1833	E1836	G1837	D1838	L1839	L1840	V1841	D1844	Q1845	P1846	R1847	G1848	T1849	I1850	P1851	I1852	S1853	Q1854	D1858	L1859	I1860	L1861	A1862	D1863	L1864	P1865	R1866	H1867	I1868	M1869	L1870	L1875	E1876	F1877	E1878	Q1879	A1880	F1883	S1889	F1890	Y1894	A1897	Y1898	E1899	G1900	V1905	K1906	L1907	K1910	H1911	T1912	R1918	G1919	E1920	C1925	H1928	S1931	A1937	G1939	I1940	R1941	P1942	R1943	V1946	L1955	D1956	L1959	D1962	K1963	A1964	S1965	L1966	T1967	R1968	T1969	Q1971	H1977	R1983	H1986	I1990	I1991	Y1992



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	129744	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	81	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.440	Depositor
Minimum map value	-1.328	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.054	Depositor
Recommended contour level	0.5	Depositor
Map size (Å)	396.47998, 396.47998, 396.47998	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.826, 0.826, 0.826	Depositor



## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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

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	0.27	0/14514	0.49	0/19633

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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	14247	0	14531	440	0
2	A	28	0	12	1	0
3	A	31	0	12	0	0
All	All	14306	0	14555	440	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 15.

All (440) 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:2200:LEU:CD1	1:A:2220:GLN:HG3	1.48	1.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2200:LEU:HD11	1:A:2220:GLN:CG	1.70	1.20
1:A:2200:LEU:CD1	1:A:2220:GLN:CG	2.26	1.12
1:A:2200:LEU:HD13	1:A:2220:GLN:HG3	1.31	1.06
1:A:2200:LEU:HD11	1:A:2220:GLN:HG3	1.23	1.04
1:A:631:LEU:HD21	1:A:652:ILE:HD11	1.60	0.83
1:A:1719:MET:HG3	1:A:1772:LYS:HD2	1.62	0.81
1:A:665:LEU:O	1:A:668:HIS:HB3	1.81	0.79
1:A:1354:LEU:O	1:A:1501:ARG:NH1	2.17	0.78
1:A:990:SER:O	1:A:1021:ASN:ND2	2.18	0.77
1:A:2080:PRO:HA	1:A:2083:PHE:HB3	1.68	0.76
1:A:2355:ILE:HG22	1:A:2356:THR:HG23	1.69	0.75
1:A:2369:ASN:HA	1:A:2413:ARG:HG3	1.69	0.73
1:A:2043:VAL:HA	1:A:2050:TYR:HE1	1.55	0.72
1:A:1968:ARG:NH2	1:A:1971:GLN:OE1	2.23	0.72
1:A:1034:LEU:HD11	1:A:1037:LEU:HD22	1.73	0.71
1:A:2110:LEU:HD11	1:A:2128:VAL:HG23	1.71	0.71
1:A:762:LEU:HD11	1:A:790:LEU:HD23	1.71	0.70
1:A:1739:TYR:HA	1:A:1748:CYS:O	1.92	0.69
1:A:2272:LEU:HB2	1:A:2291:LEU:HB2	1.75	0.69
1:A:801:ASN:HB3	1:A:984:ILE:HA	1.74	0.69
1:A:992:ASN:O	1:A:1021:ASN:ND2	2.26	0.69
1:A:2183:ASP:OD1	1:A:2184:LEU:N	2.25	0.69
1:A:1512:LYS:HA	1:A:1517:LEU:H	1.57	0.68
1:A:1694:LEU:HB2	1:A:1811:TRP:HB2	1.74	0.68
1:A:2417:LEU:HD12	1:A:2425:LEU:HD11	1.74	0.68
1:A:1993:ARG:HH21	1:A:2050:TYR:HB2	1.56	0.68
1:A:1260:ILE:HG12	1:A:1281:LEU:HD11	1.74	0.68
1:A:1670:PRO:HB3	1:A:1709:ILE:HD11	1.75	0.68
1:A:2227:ILE:HD13	1:A:2235:ARG:HB3	1.76	0.68
1:A:2200:LEU:HD11	1:A:2220:GLN:CD	2.13	0.68
1:A:2390:VAL:HB	1:A:2394:ARG:HG3	1.77	0.67
1:A:1275:VAL:O	1:A:1278:ASN:ND2	2.28	0.67
1:A:2270:GLY:HA2	1:A:2300:LEU:HB2	1.76	0.67
1:A:2271:LYS:HE3	1:A:2292:ASN:HB2	1.76	0.66
1:A:1701:PRO:HG2	1:A:1704:PHE:HB2	1.77	0.66
1:A:2471:LEU:HD22	1:A:2495:VAL:HG22	1.76	0.66
1:A:664:LYS:HG3	1:A:708:LEU:HD21	1.77	0.66
1:A:2213:SER:O	1:A:2229:THR:OG1	2.12	0.66
1:A:2462:GLN:HB2	1:A:2467:LYS:HD2	1.78	0.66
1:A:1195:LEU:O	1:A:1219:SER:OG	2.12	0.66
1:A:2321:THR:HG21	1:A:2339:ARG:HG3	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2365:ILE:HD13	1:A:2376:TRP:HD1	1.59	0.66
1:A:1180:LEU:O	1:A:1183:ASN:ND2	2.29	0.65
1:A:1317:ASP:OD1	1:A:1320:ARG:NH1	2.29	0.65
1:A:2200:LEU:HD13	1:A:2220:GLN:CG	2.07	0.65
1:A:2314:VAL:HG13	1:A:2316:TRP:HE1	1.59	0.65
1:A:1614:LYS:HE3	1:A:1614:LYS:HA	1.79	0.65
1:A:556:ASN:HA	1:A:560:GLN:HE22	1.61	0.65
1:A:2478:LYS:HB2	1:A:2488:GLU:HB2	1.78	0.65
1:A:2132:LEU:HA	1:A:2137:LEU:HD21	1.79	0.64
1:A:1583:LEU:HD13	1:A:1600:PRO:HB3	1.78	0.64
1:A:1741:ASN:HD22	1:A:1741:ASN:H	1.44	0.64
1:A:2438:ASP:HB2	1:A:2445:ILE:HD11	1.78	0.64
1:A:2363:LEU:HB3	1:A:2365:ILE:HD11	1.80	0.64
1:A:1011:GLU:OE2	1:A:1035:LYS:NZ	2.31	0.64
1:A:2293:ILE:HD12	1:A:2332:ILE:HD11	1.80	0.63
1:A:2318:GLY:HA3	1:A:2354:ILE:HD13	1.79	0.63
1:A:2211:LYS:HE3	1:A:2211:LYS:HA	1.80	0.63
1:A:981:ARG:HG3	1:A:982:GLU:HG2	1.80	0.63
1:A:556:ASN:HA	1:A:560:GLN:NE2	2.14	0.63
1:A:1337:LEU:HD22	1:A:1392:VAL:HG12	1.81	0.63
1:A:2392:PHE:HB3	1:A:2444:LEU:HD12	1.81	0.63
1:A:1905:VAL:HG12	1:A:1946:VAL:HG22	1.81	0.62
1:A:1433:PRO:O	1:A:1437:ASN:ND2	2.32	0.62
1:A:1446:PRO:HD3	1:A:1511:PHE:CE1	2.34	0.62
1:A:838:THR:HG22	1:A:841:ARG:HH11	1.64	0.62
1:A:1195:LEU:HD12	1:A:1198:LEU:HD12	1.80	0.61
1:A:1472:GLU:O	1:A:1477:ARG:NH2	2.33	0.61
1:A:1334:ARG:O	1:A:1412:ARG:NH1	2.32	0.61
1:A:1484:ASP:OD1	1:A:1485:TYR:N	2.33	0.61
1:A:1509:LEU:HA	1:A:1519:VAL:HG11	1.81	0.61
1:A:2093:PRO:HB2	1:A:2098:GLU:HG3	1.83	0.61
1:A:684:MET:O	1:A:685:GLU:HG2	2.00	0.60
1:A:1526:CYS:HB3	1:A:1564:LEU:HD11	1.83	0.60
1:A:1303:HIS:HB3	1:A:1514:ARG:HD2	1.84	0.60
1:A:2125:SER:HA	1:A:2128:VAL:HG12	1.84	0.60
1:A:2245:VAL:HA	1:A:2267:THR:HA	1.83	0.59
1:A:648:GLY:O	1:A:652:ILE:HD12	2.03	0.59
1:A:1833:LYS:HD3	1:A:1859:LEU:HD22	1.83	0.59
1:A:2173:HIS:CD2	1:A:2174:THR:HG23	2.36	0.59
1:A:1813:LEU:HD21	1:A:1826:LEU:HD23	1.85	0.59
1:A:2216:VAL:HG21	1:A:2263:LEU:HD11	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:683:ILE:HG21	1:A:692:LEU:HD13	1.86	0.58
1:A:1816:PHE:HA	1:A:1850:ILE:HD11	1.85	0.58
1:A:1986:HIS:CE1	1:A:2052:GLN:HB3	2.39	0.58
1:A:672:ASP:HA	1:A:675:ILE:HG22	1.85	0.58
1:A:1468:LYS:O	1:A:1472:GLU:N	2.36	0.58
1:A:2151:ILE:O	1:A:2172:GLY:N	2.33	0.58
1:A:2510:HIS:CE1	1:A:2514:ARG:HD2	2.39	0.57
1:A:672:ASP:HB2	1:A:676:PHE:CE2	2.38	0.57
1:A:1227:PHE:O	1:A:1230:ASN:ND2	2.37	0.57
1:A:1695:TYR:HB2	1:A:1763:LEU:HB3	1.85	0.57
1:A:1845:GLN:OE1	1:A:1847:ARG:HG2	2.03	0.57
1:A:2104:TRP:NE1	1:A:2137:LEU:O	2.29	0.57
1:A:1836:GLU:O	1:A:1941:ARG:NH1	2.37	0.57
1:A:1760:GLU:OE2	1:A:1760:GLU:N	2.38	0.57
1:A:1779:GLN:O	1:A:1783:HIS:ND1	2.32	0.57
1:A:753:SER:HB2	1:A:757:LEU:HD23	1.86	0.57
1:A:1557:VAL:HG12	1:A:1562:LEU:HD12	1.87	0.57
1:A:1692:ILE:HG12	1:A:1766:THR:HG22	1.87	0.57
1:A:2118:ASN:HB3	1:A:2121:GLU:HB2	1.87	0.56
1:A:1171:LEU:HD22	1:A:1175:MET:HE3	1.85	0.56
1:A:1488:VAL:HG21	1:A:1497:LEU:HD13	1.87	0.56
1:A:676:PHE:HZ	1:A:712:MET:HG2	1.71	0.56
1:A:1224:GLU:HG2	1:A:1249:LYS:HD3	1.87	0.56
1:A:1584:HIS:ND1	1:A:1586:GLN:OE1	2.38	0.56
1:A:2441:THR:O	1:A:2443:ARG:NH2	2.39	0.56
1:A:2040:ALA:HB3	1:A:2043:VAL:HG23	1.86	0.56
1:A:2339:ARG:HG2	1:A:2351:ASP:HA	1.89	0.55
1:A:1068:ASN:O	1:A:1093:ASN:ND2	2.39	0.55
1:A:2270:GLY:HA3	1:A:2294:GLY:H	1.71	0.55
1:A:1708:LEU:HD11	1:A:1784:ILE:HG12	1.89	0.55
1:A:1225:LEU:HD22	1:A:1227:PHE:HE2	1.72	0.55
1:A:1176:THR:HG22	1:A:1177:ILE:HG13	1.89	0.55
1:A:666:LEU:HG	1:A:671:PHE:HB2	1.87	0.55
1:A:2159:HIS:O	1:A:2162:SER:OG	2.25	0.55
1:A:1437:ASN:OD1	1:A:1702:MET:N	2.40	0.54
1:A:2206:HIS:HA	1:A:2213:SER:HA	1.89	0.54
1:A:1342:ASN:ND2	1:A:1427:GLU:OE2	2.41	0.54
1:A:2009:ALA:O	1:A:2510:HIS:NE2	2.39	0.54
1:A:1161:ARG:O	1:A:1163:ASN:ND2	2.41	0.54
1:A:1531:GLU:HB2	1:A:1576:LEU:HD11	1.90	0.54
1:A:1838:ASP:O	1:A:1941:ARG:NH1	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1075:VAL:HG12	1:A:1100:GLU:HB2	1.89	0.54
1:A:2221:SER:HG	1:A:2223:THR:HG1	1.55	0.54
1:A:606:GLY:O	1:A:610:ILE:HG12	2.07	0.54
1:A:2082:GLU:HA	1:A:2085:GLU:HG2	1.90	0.54
1:A:1925:CYS:O	1:A:1928:HIS:NE2	2.40	0.54
1:A:672:ASP:OD1	1:A:673:LEU:HD12	2.07	0.53
1:A:1252:LEU:O	1:A:1255:ASN:ND2	2.41	0.53
1:A:1190:GLU:HA	1:A:1193:LEU:HD13	1.90	0.53
1:A:1038:THR:HG23	1:A:1039:HIS:ND1	2.23	0.53
1:A:1741:ASN:HD22	1:A:1741:ASN:N	2.02	0.53
1:A:672:ASP:OD1	1:A:673:LEU:N	2.42	0.53
1:A:1734:TRP:CZ2	1:A:1737:GLY:HA3	2.42	0.53
1:A:1992:TYR:N	1:A:2055:ASP:OD2	2.41	0.53
1:A:2348:ALA:HA	1:A:2351:ASP:HB3	1.90	0.53
1:A:1983:ARG:HG3	1:A:2126:ALA:HA	1.91	0.53
1:A:2152:VAL:HG21	1:A:2169:LEU:HB3	1.91	0.53
1:A:2311:GLU:HG3	1:A:2314:VAL:HG12	1.91	0.53
1:A:1493:GLU:OE2	1:A:1501:ARG:NH2	2.40	0.53
1:A:2116:LYS:O	1:A:2122:ARG:NH2	2.32	0.53
1:A:1092:TYR:CG	1:A:1883:PHE:HB3	2.43	0.52
1:A:1221:ASN:OD1	1:A:1223:ARG:NE	2.31	0.52
1:A:2151:ILE:HG12	1:A:2173:HIS:HB3	1.91	0.52
1:A:2153:GLU:N	1:A:2153:GLU:OE1	2.42	0.52
1:A:1090:LEU:HB2	1:A:1114:LEU:HD23	1.91	0.52
1:A:567:ILE:HA	1:A:570:ILE:HG22	1.91	0.52
1:A:1800:ILE:H	1:A:1800:ILE:HD12	1.74	0.52
1:A:2356:THR:OG1	1:A:2417:LEU:HD23	2.10	0.52
1:A:2043:VAL:HA	1:A:2050:TYR:CE1	2.40	0.52
1:A:2106:MET:HB2	1:A:2140:LEU:HD23	1.90	0.52
1:A:2142:ARG:NH2	1:A:2187:GLU:OE2	2.33	0.52
1:A:1841:VAL:O	1:A:1849:THR:OG1	2.17	0.52
1:A:1966:LEU:HB3	1:A:1971:GLN:HE21	1.75	0.52
1:A:676:PHE:CZ	1:A:712:MET:HG2	2.44	0.52
1:A:1149:LEU:HB3	1:A:1172:PRO:HD3	1.93	0.51
1:A:731:LEU:HD21	1:A:843:VAL:HG11	1.92	0.51
1:A:1341:GLY:O	1:A:1434:TRP:NE1	2.43	0.51
1:A:2289:LYS:HE3	1:A:2291:LEU:HD21	1.90	0.51
1:A:848:MET:O	1:A:852:VAL:HG22	2.10	0.51
1:A:2200:LEU:HD11	1:A:2220:GLN:NE2	2.25	0.51
1:A:2437:LEU:HA	1:A:2443:ARG:O	2.10	0.51
1:A:738:ALA:HB3	1:A:743:SER:HA	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:835:ILE:O	1:A:839:LEU:HG	2.10	0.51
1:A:2302:CYS:SG	1:A:2303:LEU:N	2.84	0.51
1:A:726:GLU:HB2	1:A:760:LEU:HD13	1.91	0.51
1:A:2329:ASP:OD2	1:A:2331:THR:OG1	2.26	0.51
1:A:2514:ARG:O	1:A:2518:ALA:N	2.43	0.51
1:A:684:MET:HG3	1:A:835:ILE:HD13	1.92	0.51
1:A:996:ASP:OD1	1:A:997:ILE:N	2.42	0.51
1:A:2163:ARG:HG3	1:A:2164:ASN:H	1.74	0.51
1:A:1441:ARG:NH2	1:A:1791:TRP:O	2.43	0.51
1:A:1569:LEU:HA	1:A:1572:ALA:HB3	1.93	0.51
1:A:2043:VAL:HG13	1:A:2050:TYR:CE1	2.46	0.51
1:A:2017:ASP:O	1:A:2020:ILE:HG12	2.11	0.50
1:A:2204:LEU:HA	1:A:2215:ILE:HD12	1.92	0.50
1:A:2306:SER:HA	1:A:2359:VAL:HG11	1.93	0.50
1:A:2271:LYS:HA	1:A:2292:ASN:HA	1.92	0.50
1:A:2312:ARG:O	1:A:2312:ARG:HG3	2.11	0.50
1:A:791:LEU:HD22	1:A:805:LEU:HD21	1.92	0.50
1:A:1310:HIS:HB3	1:A:1574:HIS:CE1	2.46	0.50
1:A:1351:LEU:HD11	1:A:1392:VAL:HG11	1.94	0.50
1:A:2468:ASN:ND2	1:A:2498:ILE:HG21	2.26	0.50
1:A:2244:SER:O	1:A:2268:ALA:N	2.45	0.50
1:A:1774:CYS:SG	1:A:1863:ASP:HA	2.52	0.50
1:A:2481:GLU:OE1	1:A:2484:GLN:NE2	2.45	0.50
1:A:2302:CYS:SG	1:A:2357:VAL:HG12	2.52	0.49
1:A:1648:GLN:HA	1:A:1651:LYS:HB2	1.94	0.49
1:A:1739:TYR:HB2	1:A:1749:LEU:HD13	1.93	0.49
1:A:2079:PHE:HB3	1:A:2082:GLU:OE1	2.11	0.49
1:A:2413:ARG:O	1:A:2430:GLY:N	2.34	0.49
1:A:734:ASP:OD1	1:A:734:ASP:N	2.45	0.49
1:A:745:ILE:HD12	1:A:745:ILE:H	1.78	0.49
1:A:2346:TYR:HE2	1:A:2348:ALA:HB3	1.77	0.49
1:A:1709:ILE:HB	1:A:1738:ILE:HD11	1.93	0.49
1:A:2319:CYS:HB2	1:A:2324:PHE:CE2	2.48	0.49
1:A:838:THR:O	1:A:842:MET:HG3	2.12	0.49
1:A:1670:PRO:HA	1:A:1673:LEU:HD22	1.94	0.49
1:A:2207:LEU:HD13	1:A:2214:TRP:HD1	1.78	0.49
1:A:1308:PHE:HD1	1:A:1309:LYS:HG3	1.78	0.49
1:A:1347:LYS:HG3	1:A:1418:VAL:HG21	1.94	0.48
1:A:2105:PRO:HG3	1:A:2142:ARG:HA	1.94	0.48
1:A:2304:SER:OG	1:A:2305:GLU:N	2.46	0.48
1:A:998:ASP:O	1:A:1001:SER:OG	2.25	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2238:LEU:HD22	1:A:2285:ALA:H	1.77	0.48
1:A:1286:ASN:OD1	1:A:1325:ARG:NE	2.26	0.48
1:A:1652:LEU:O	1:A:1656:PHE:N	2.43	0.48
1:A:1870:LEU:HA	1:A:1937:ALA:HB1	1.95	0.48
1:A:2175:ASP:OD1	1:A:2175:ASP:N	2.47	0.48
1:A:1368:THR:O	1:A:1398:ARG:NH2	2.45	0.48
1:A:2478:LYS:N	1:A:2488:GLU:O	2.36	0.48
1:A:1307:ASP:O	1:A:1310:HIS:NE2	2.46	0.48
1:A:1782:ASP:HB2	1:A:1918:ARG:HH22	1.78	0.48
1:A:2264:LEU:HG	1:A:2274:ILE:HD12	1.96	0.48
1:A:1011:GLU:HA	1:A:1034:LEU:HA	1.96	0.48
1:A:1047:PHE:HB2	1:A:1068:ASN:HB3	1.95	0.48
1:A:1188:ILE:HD12	1:A:1212:PRO:HD2	1.96	0.48
1:A:2266:GLY:HA2	1:A:2300:LEU:HD23	1.94	0.48
1:A:1695:TYR:OH	1:A:1781:VAL:HG23	2.14	0.48
1:A:2085:GLU:O	1:A:2088:ILE:HG22	2.14	0.48
1:A:1509:LEU:HD23	1:A:1519:VAL:HG21	1.95	0.47
1:A:1576:LEU:HD12	1:A:1581:VAL:HG21	1.96	0.47
1:A:2135:ALA:HB2	1:A:2507:LEU:HD23	1.96	0.47
1:A:542:ILE:HG22	1:A:543:HIS:N	2.29	0.47
1:A:2514:ARG:HB3	1:A:2514:ARG:NH1	2.29	0.47
1:A:672:ASP:OD2	1:A:715:ARG:NE	2.47	0.47
1:A:1238:SER:HA	1:A:1263:GLU:HG2	1.95	0.47
1:A:1376:TRP:CH2	1:A:1378:ILE:HD11	2.49	0.47
1:A:1392:VAL:C	1:A:1393:TRP:HD1	2.17	0.47
1:A:1920:GLU:HB3	1:A:2021:ALA:HB1	1.96	0.47
1:A:2151:ILE:H	1:A:2173:HIS:HB3	1.78	0.47
1:A:550:LEU:O	1:A:554:ILE:HG13	2.15	0.47
1:A:1085:LEU:HD23	1:A:1106:VAL:HG11	1.96	0.47
1:A:1573:VAL:HG21	1:A:1596:TYR:CE2	2.50	0.47
1:A:1709:ILE:O	1:A:1713:LEU:HB2	2.15	0.47
1:A:1193:LEU:HD21	1:A:1212:PRO:HG2	1.95	0.47
1:A:1962:ASP:OD2	1:A:1965:SER:OG	2.27	0.47
1:A:1851:PRO:HG2	1:A:1854:GLN:HB2	1.97	0.47
1:A:2241:MET:HG3	1:A:2242:THR:H	1.80	0.47
1:A:1810:LYS:O	1:A:1829:ASP:HB2	2.15	0.47
1:A:1703:GLY:HA3	1:A:1707:ARG:NH2	2.29	0.46
1:A:2306:SER:OG	1:A:2313:ASN:HA	2.15	0.46
1:A:568:SER:HB3	1:A:609:LEU:HD11	1.97	0.46
1:A:773:LYS:O	1:A:776:THR:OG1	2.27	0.46
1:A:1548:ILE:HD12	1:A:1598:VAL:HG21	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:767:ARG:O	1:A:771:VAL:HG23	2.16	0.46
1:A:1601:LYS:HA	1:A:1604:CYS:SG	2.55	0.46
1:A:2323:ILE:HG23	1:A:2336:ILE:HB	1.96	0.46
1:A:1605:LYS:HB2	1:A:1605:LYS:HE2	1.68	0.46
1:A:2300:LEU:HD12	1:A:2318:GLY:O	2.15	0.46
1:A:1545:PHE:CE2	1:A:1547:VAL:HB	2.51	0.46
1:A:1651:LYS:O	1:A:1655:LYS:HD3	2.16	0.46
1:A:1977:HIS:HD2	1:A:2514:ARG:HH21	1.63	0.46
1:A:1592:LEU:HD11	1:A:1652:LEU:HD13	1.98	0.46
1:A:1597:PHE:HE1	1:A:1602:TRP:HZ3	1.63	0.46
1:A:1650:PHE:O	1:A:1654:GLU:HG3	2.15	0.46
1:A:1729:PRO:HB3	1:A:1742:TRP:CD2	2.51	0.46
1:A:1729:PRO:HG3	1:A:1740:LEU:HD12	1.96	0.46
1:A:2180:SER:HB2	1:A:2189:TYR:CE2	2.51	0.46
1:A:1350:LEU:HD11	1:A:1450:VAL:HG11	1.97	0.46
1:A:1373:VAL:HG22	1:A:1393:TRP:CG	2.50	0.46
1:A:1879:GLN:HG2	1:A:1894:TYR:CE2	2.51	0.46
1:A:2316:TRP:CE3	1:A:2363:LEU:HD21	2.51	0.46
1:A:747:GLN:HA	1:A:750:GLU:HB2	1.97	0.46
1:A:1590:LEU:HG	1:A:1655:LYS:HB3	1.98	0.46
1:A:829:LEU:HD23	1:A:830:ARG:O	2.16	0.45
1:A:1359:LYS:HG3	1:A:1360:SER:H	1.81	0.45
1:A:2128:VAL:HA	1:A:2131:ILE:HG22	1.97	0.45
1:A:652:ILE:O	1:A:656:LEU:HG	2.16	0.45
1:A:992:ASN:O	1:A:994:LEU:N	2.46	0.45
1:A:1214:PRO:O	1:A:1243:LEU:HD23	2.16	0.45
1:A:1371:ILE:HD13	1:A:1408:PHE:CD2	2.52	0.45
1:A:2218:GLY:HA3	1:A:2245:VAL:HG11	1.98	0.45
1:A:2228:ASN:OD1	1:A:2229:THR:N	2.48	0.45
1:A:768:GLU:OE2	1:A:772:ARG:NH1	2.49	0.45
1:A:1912:THR:O	1:A:1943:ARG:NH2	2.49	0.45
1:A:2181:PHE:HB3	1:A:2190:THR:OG1	2.16	0.45
1:A:599:ASP:O	1:A:603:GLN:HG2	2.16	0.45
1:A:744:LEU:O	1:A:748:VAL:HG23	2.17	0.45
1:A:1687:ASN:HB3	1:A:1819:GLY:HA2	1.97	0.45
1:A:2089:GLN:O	1:A:2091:LYS:N	2.44	0.45
1:A:2256:GLN:HG2	1:A:2260:LYS:HD2	1.98	0.45
1:A:1225:LEU:HD23	1:A:1225:LEU:HA	1.89	0.45
1:A:1282:ARG:NH2	1:A:1303:HIS:H	2.14	0.45
1:A:2267:THR:HG22	1:A:2268:ALA:N	2.32	0.45
1:A:2287:PRO:HB2	1:A:2290:ILE:HG12	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2395:GLU:OE1	1:A:2395:GLU:N	2.49	0.45
1:A:1931:SER:HB3	1:A:2514:ARG:HH22	1.81	0.45
1:A:2064:TYR:CE2	1:A:2095:PRO:HG3	2.52	0.45
1:A:2377:ASP:OD1	1:A:2379:LYS:N	2.50	0.45
1:A:2419:LEU:HG	1:A:2420:GLN:O	2.17	0.45
1:A:2429:THR:HG21	1:A:2433:HIS:HB2	1.98	0.45
1:A:726:GLU:O	1:A:730:LEU:HG	2.16	0.44
1:A:1109:LEU:HD21	1:A:1112:LEU:HB2	1.97	0.44
1:A:1263:GLU:OE2	1:A:1263:GLU:N	2.42	0.44
1:A:1372:ASP:OD2	1:A:1374:LYS:NZ	2.50	0.44
1:A:1875:LEU:HD12	1:A:1898:TYR:HB2	1.99	0.44
1:A:1993:ARG:NH1	1:A:2023:TYR:OH	2.50	0.44
1:A:2171:CYS:SG	1:A:2178:GLN:N	2.90	0.44
1:A:2522:ARG:O	1:A:2525:SER:OG	2.34	0.44
1:A:737:GLN:N	1:A:737:GLN:OE1	2.51	0.44
1:A:2295:ASN:N	1:A:2298:THR:OG1	2.36	0.44
1:A:1137:SER:OG	1:A:1138:LYS:HG3	2.17	0.44
1:A:2347:ALA:O	1:A:2351:ASP:N	2.45	0.44
1:A:1789:GLU:HB3	1:A:1796:LEU:HD21	2.00	0.44
1:A:2241:MET:HG3	1:A:2242:THR:N	2.33	0.44
1:A:1120:SER:HA	1:A:1140:HIS:O	2.18	0.44
1:A:1940:ILE:HG22	1:A:1941:ARG:H	1.83	0.44
1:A:1967:THR:HG23	1:A:1969:THR:HG22	1.99	0.44
1:A:2254:SER:HA	1:A:2260:LYS:HB3	1.97	0.44
1:A:1689:GLU:OE1	1:A:1689:GLU:N	2.49	0.44
1:A:1741:ASN:N	1:A:1741:ASN:ND2	2.64	0.44
1:A:1336:LYS:HE2	1:A:1338:MET:HE2	2.00	0.44
1:A:2456:ARG:HG3	1:A:2475:TYR:CZ	2.53	0.44
1:A:686:GLN:O	1:A:688:ASP:N	2.49	0.44
1:A:2152:VAL:HG13	1:A:2473:LEU:HD11	1.99	0.44
1:A:558:GLY:HA2	1:A:561:LYS:NZ	2.33	0.44
1:A:1361:ASP:N	1:A:1361:ASP:OD1	2.50	0.43
1:A:1476:LYS:C	1:A:1477:ARG:HD3	2.38	0.43
1:A:2088:ILE:HD12	1:A:2088:ILE:HA	1.83	0.43
1:A:2218:GLY:HA3	1:A:2248:LEU:HD11	2.00	0.43
1:A:1282:ARG:HA	1:A:1303:HIS:O	2.18	0.43
1:A:1505:ILE:O	1:A:1509:LEU:HG	2.17	0.43
1:A:573:PHE:HB2	1:A:574:PRO:HD2	2.00	0.43
1:A:683:ILE:HD13	1:A:683:ILE:HA	1.87	0.43
1:A:1832:LYS:HZ1	1:A:1859:LEU:HD12	1.83	0.43
1:A:1845:GLN:HA	1:A:1846:PRO:HD3	1.88	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1956:ASP:N	1:A:1956:ASP:OD1	2.49	0.43
1:A:2232:GLY:O	1:A:2235:ARG:NH2	2.51	0.43
1:A:568:SER:O	1:A:571:VAL:HG12	2.18	0.43
1:A:1705:TRP:CZ3	1:A:1708:LEU:HD23	2.53	0.43
1:A:1832:LYS:NZ	1:A:1859:LEU:HD12	2.33	0.43
1:A:1355:MET:HG2	1:A:1376:TRP:CD2	2.53	0.43
1:A:1735:ARG:HE	1:A:1735:ARG:HB2	1.60	0.43
1:A:1829:ASP:OD1	1:A:1859:LEU:HD11	2.18	0.43
1:A:1339:ILE:HD12	1:A:1351:LEU:HD13	2.01	0.43
1:A:1729:PRO:HB3	1:A:1742:TRP:CE2	2.53	0.43
1:A:1796:LEU:O	1:A:1796:LEU:HD12	2.19	0.43
1:A:1865:PRO:HG2	1:A:1925:CYS:SG	2.59	0.43
1:A:2337:GLU:OE2	1:A:2339:ARG:HB2	2.19	0.43
1:A:1341:GLY:N	1:A:1347:LYS:HD3	2.34	0.43
1:A:1351:LEU:HD21	1:A:1392:VAL:HG21	2.01	0.43
1:A:1554:LEU:HA	1:A:1557:VAL:HG22	2.00	0.43
1:A:1683:PRO:HG3	1:A:1744:PRO:HA	2.01	0.43
1:A:1858:ASP:OD1	1:A:1858:ASP:N	2.51	0.43
1:A:2221:SER:OG	1:A:2223:THR:OG1	2.31	0.43
1:A:642:ALA:O	1:A:645:GLN:NE2	2.52	0.43
1:A:1348:THR:OG1	2:A:2601:GDP:O1A	2.30	0.43
1:A:1705:TRP:CZ2	1:A:1752:SER:HB2	2.54	0.43
1:A:2025:CYS:SG	1:A:2026:ARG:N	2.92	0.43
1:A:2321:THR:HG22	1:A:2321:THR:O	2.18	0.43
1:A:1775:ILE:HG12	1:A:1863:ASP:O	2.19	0.43
1:A:2295:ASN:H	1:A:2298:THR:HG1	1.62	0.43
1:A:2364:TYR:CD2	1:A:2375:VAL:HG22	2.54	0.43
1:A:744:LEU:HA	1:A:747:GLN:NE2	2.34	0.43
1:A:1510:ASN:HB3	1:A:1512:LYS:HE2	2.01	0.43
1:A:1621:HIS:HB3	1:A:1625:ILE:HG23	2.01	0.43
1:A:1389:VAL:HG23	1:A:1389:VAL:O	2.19	0.42
1:A:1879:GLN:HG2	1:A:1894:TYR:HE2	1.84	0.42
1:A:643:GLU:O	1:A:646:THR:OG1	2.37	0.42
1:A:1737:GLY:HA2	1:A:1750:VAL:O	2.18	0.42
1:A:1250:LEU:HG	1:A:1252:LEU:HD23	2.01	0.42
1:A:1446:PRO:HD3	1:A:1511:PHE:HE1	1.81	0.42
1:A:1569:LEU:O	1:A:1573:VAL:HG12	2.18	0.42
1:A:1832:LYS:HZ3	1:A:1852:ILE:HG23	1.83	0.42
1:A:1870:LEU:HB2	1:A:1939:GLY:HA3	2.01	0.42
1:A:1003:LYS:HD3	1:A:1003:LYS:HA	1.84	0.42
1:A:1128:LEU:HD23	1:A:1128:LEU:HA	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2200:LEU:CD1	1:A:2220:GLN:HG2	2.35	0.42
1:A:656:LEU:HD22	1:A:663:SER:HB2	2.00	0.42
1:A:723:ILE:H	1:A:723:ILE:HD12	1.84	0.42
1:A:737:GLN:HE22	1:A:744:LEU:HD21	1.83	0.42
1:A:1108:LYS:HA	1:A:1108:LYS:HD3	1.85	0.42
1:A:1907:ILE:HD13	1:A:1907:ILE:HA	1.92	0.42
1:A:2233:LYS:HB3	1:A:2233:LYS:HE2	1.80	0.42
1:A:822:PHE:CD1	1:A:984:ILE:HD11	2.55	0.42
1:A:1963:LYS:HE3	1:A:2069:THR:OG1	2.20	0.42
1:A:2438:ASP:HB3	1:A:2442:ARG:O	2.20	0.42
1:A:1066:SER:HB2	1:A:1091:SER:HB2	2.02	0.42
1:A:1377:PRO:HA	1:A:1389:VAL:HG12	2.02	0.42
1:A:1569:LEU:N	1:A:1570:PRO:HD2	2.35	0.42
1:A:1877:PHE:CE1	1:A:1905:VAL:HG21	2.55	0.42
1:A:2140:LEU:HD12	1:A:2141:THR:H	1.85	0.42
1:A:1158:PHE:O	1:A:1178:LEU:HD12	2.19	0.42
1:A:2267:THR:HG22	1:A:2268:ALA:H	1.85	0.42
1:A:2301:MET:O	1:A:2301:MET:HG3	2.19	0.42
1:A:2346:TYR:CE2	1:A:2348:ALA:HB3	2.54	0.42
1:A:1220:LEU:HD23	1:A:1220:LEU:HA	1.94	0.42
1:A:1869:MET:CE	1:A:1870:LEU:H	2.32	0.42
1:A:2388:ASP:OD1	1:A:2390:VAL:HG22	2.20	0.42
1:A:1257:LEU:HD23	1:A:1257:LEU:HA	1.80	0.41
1:A:2216:VAL:HG12	1:A:2226:VAL:HG22	2.02	0.41
1:A:2478:LYS:HA	1:A:2478:LYS:HD3	1.84	0.41
1:A:568:SER:HB3	1:A:609:LEU:HD21	2.00	0.41
1:A:684:MET:SD	1:A:684:MET:N	2.92	0.41
1:A:1359:LYS:HG3	1:A:1360:SER:N	2.35	0.41
1:A:1402:TYR:O	1:A:1702:MET:HG3	2.20	0.41
1:A:1419:TYR:O	1:A:1427:GLU:HG2	2.20	0.41
1:A:1990:ILE:HD11	1:A:2020:ILE:HB	2.02	0.41
1:A:1090:LEU:HA	1:A:1090:LEU:HD23	1.86	0.41
1:A:1157:SER:HA	1:A:1177:ILE:O	2.19	0.41
1:A:2319:CYS:HB2	1:A:2324:PHE:HE2	1.84	0.41
1:A:2427:ILE:HB	1:A:2435:LEU:HB2	2.03	0.41
1:A:1013:LEU:HD12	1:A:1013:LEU:HA	1.76	0.41
1:A:1955:LEU:HG	1:A:1959:LEU:HD23	2.02	0.41
1:A:2322:LYS:HG2	1:A:2337:GLU:HG2	2.02	0.41
1:A:1860:ILE:O	1:A:1862:ALA:N	2.51	0.41
1:A:834:ASN:OD1	1:A:834:ASN:N	2.53	0.41
1:A:1170:PHE:O	1:A:1170:PHE:CG	2.73	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2423:THR:HG21	1:A:2502:HIS:CE1	2.55	0.41
1:A:677:HIS:O	1:A:681:SER:N	2.54	0.41
1:A:1968:ARG:HE	1:A:2102:ALA:HB3	1.85	0.41
1:A:2488:GLU:OE2	1:A:2488:GLU:N	2.54	0.41
1:A:1057:MET:SD	1:A:1060:ILE:HD12	2.61	0.41
1:A:1131:LEU:HD23	1:A:1131:LEU:HA	1.88	0.41
1:A:1144:LEU:HB2	1:A:1169:PRO:HG3	2.03	0.41
1:A:1799:ASP:OD1	1:A:1799:ASP:N	2.50	0.41
1:A:2148:LYS:NZ	1:A:2488:GLU:HB3	2.35	0.41
1:A:844:ILE:O	1:A:848:MET:HG3	2.21	0.41
1:A:1606:ILE:HA	1:A:1609:GLN:HG2	2.02	0.41
1:A:552:ARG:NH2	1:A:588:SER:HB2	2.36	0.40
1:A:725:VAL:HG11	1:A:757:LEU:HD12	2.02	0.40
1:A:1024:THR:HA	1:A:1047:PHE:CD1	2.56	0.40
1:A:1334:ARG:HG3	1:A:1389:VAL:O	2.21	0.40
1:A:1407:HIS:CE1	1:A:1791:TRP:HH2	2.39	0.40
1:A:680:SER:O	1:A:680:SER:OG	2.39	0.40
1:A:1876:GLU:HB2	1:A:1897:ALA:HB3	2.03	0.40
1:A:2043:VAL:HG22	1:A:2050:TYR:HD1	1.86	0.40
1:A:2261:ASN:O	1:A:2277:ASP:HB2	2.22	0.40
1:A:1609:GLN:O	1:A:1613:VAL:HG13	2.21	0.40
1:A:1806:THR:O	1:A:1808:LEU:N	2.54	0.40
1:A:2311:GLU:OE1	1:A:2311:GLU:N	2.49	0.40
1:A:1311:ILE:HD13	1:A:1586:GLN:HE21	1.87	0.40
1:A:1674:SER:O	1:A:1734:TRP:HB2	2.21	0.40
1:A:725:VAL:HG11	1:A:757:LEU:CD1	2.52	0.40
1:A:1245:SER:O	1:A:1269:ASN:HB2	2.22	0.40
1:A:1298:PRO:O	1:A:1299:LEU:HD23	2.21	0.40
1:A:1623:LYS:O	1:A:1673:LEU:HD12	2.21	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	1795/2527 (71%)	1597 (89%)	198 (11%)	0	100 100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	1588/2281 (70%)	1580 (100%)	8 (0%)	88 94

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	556	ASN
1	A	637	ARG
1	A	793	ARG
1	A	1101	ASN
1	A	1741	ASN
1	A	1771	ARG
1	A	2399	LYS
1	A	2413	ARG

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

Mol	Chain	Res	Type
1	A	1101	ASN
1	A	1183	ASN
1	A	1230	ASN
1	A	1407	HIS
1	A	1571	HIS
1	A	1586	GLN
1	A	1741	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](#)

2 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	GDP	A	2601	-	24,30,30	0.97	1 (4%)	30,47,47	1.41	4 (13%)
3	ATP	A	2602	-	26,33,33	0.90	1 (3%)	31,52,52	1.49	4 (12%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GDP	A	2601	-	-	3/12/32/32	0/3/3/3
3	ATP	A	2602	-	-	1/18/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2601	GDP	C6-N1	-2.58	1.34	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	2602	ATP	C2'-C1'	-2.05	1.50	1.53

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	2601	GDP	PA-O3A-PB	-4.49	117.42	132.83
3	A	2602	ATP	N3-C2-N1	-3.30	123.51	128.68
3	A	2602	ATP	PA-O3A-PB	-3.19	121.89	132.83
2	A	2601	GDP	C3'-C2'-C1'	3.10	105.65	100.98
3	A	2602	ATP	PB-O3B-PG	-2.69	123.59	132.83
2	A	2601	GDP	C5-C6-N1	2.45	118.27	113.95
3	A	2602	ATP	C3'-C2'-C1'	2.39	104.57	100.98
2	A	2601	GDP	C8-N7-C5	2.30	107.38	102.99

There are no chirality outliers.

All (4) torsion outliers are listed below:

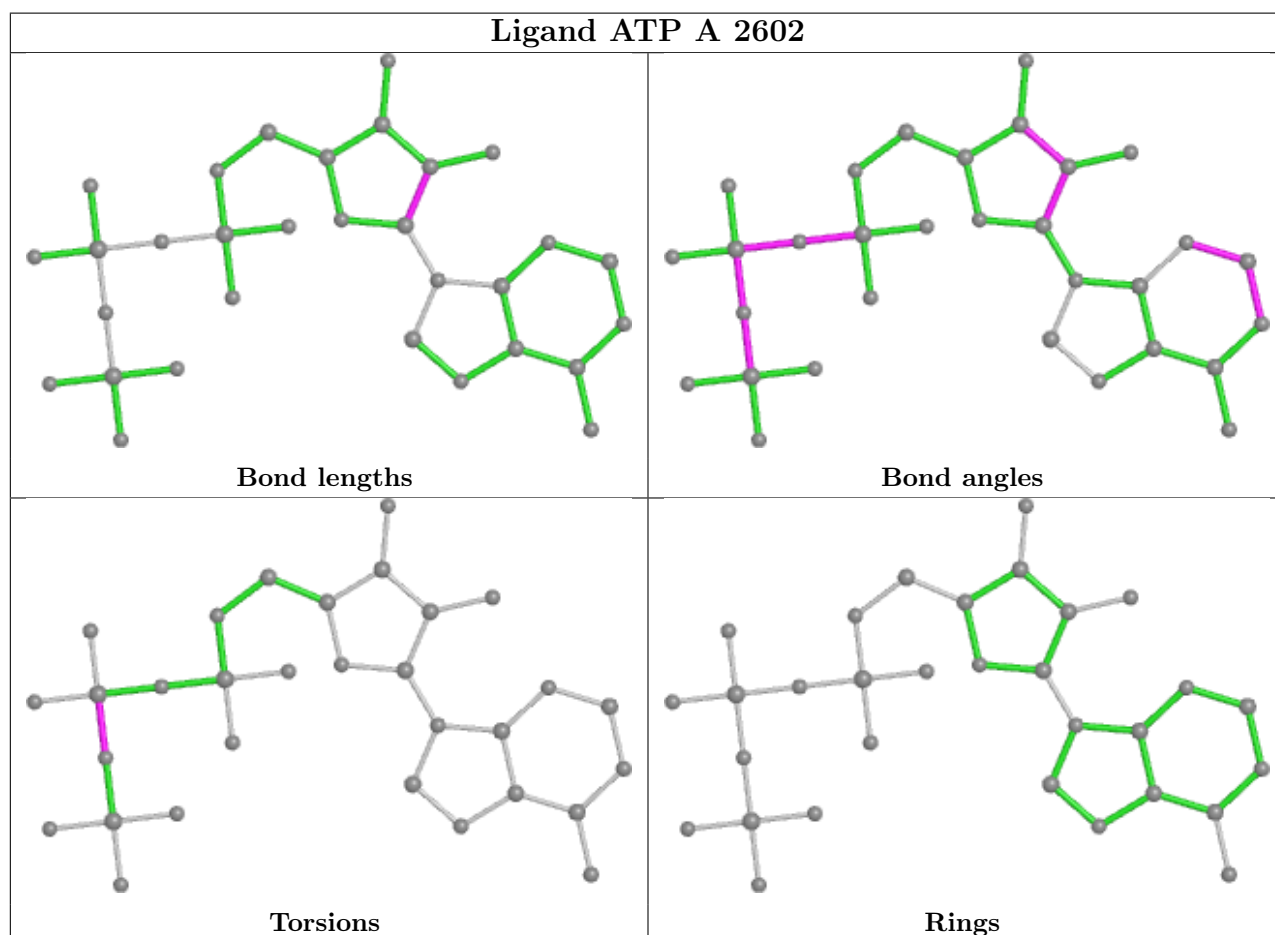
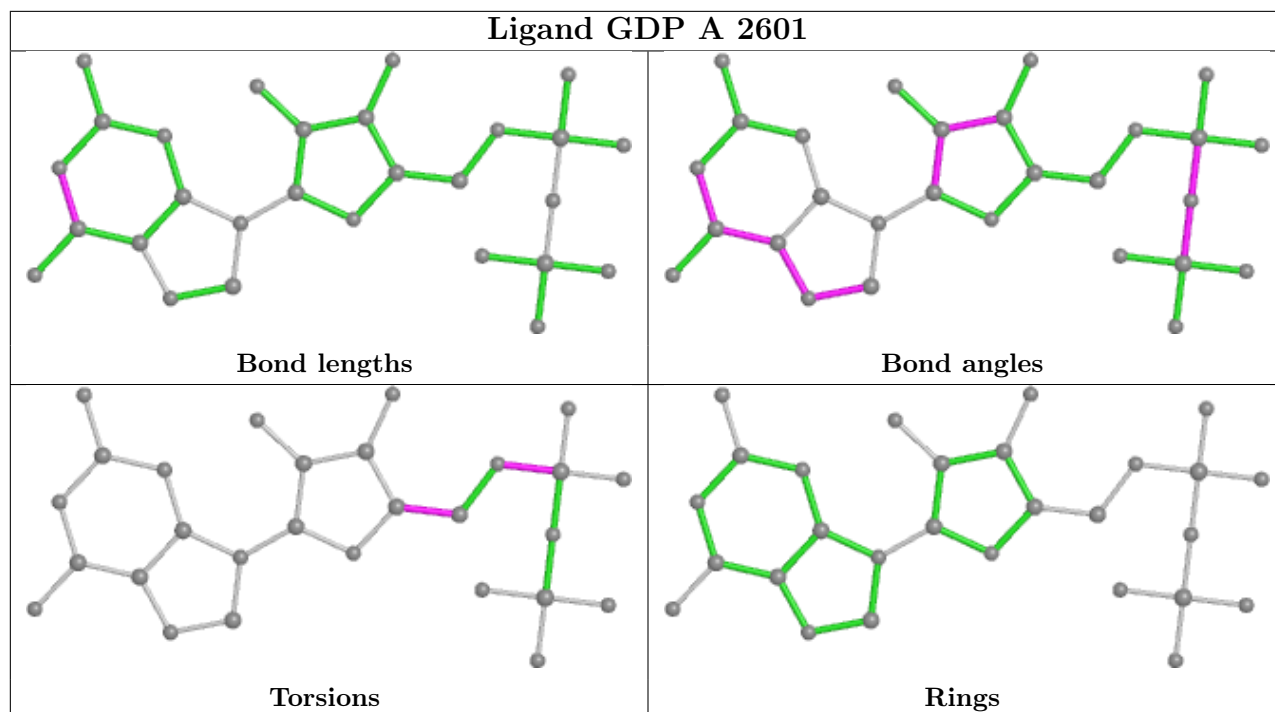
Mol	Chain	Res	Type	Atoms
2	A	2601	GDP	C3'-C4'-C5'-O5'
2	A	2601	GDP	O4'-C4'-C5'-O5'
3	A	2602	ATP	PG-O3B-PB-O2B
2	A	2601	GDP	C5'-O5'-PA-O3A

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	2601	GDP	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





## 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.

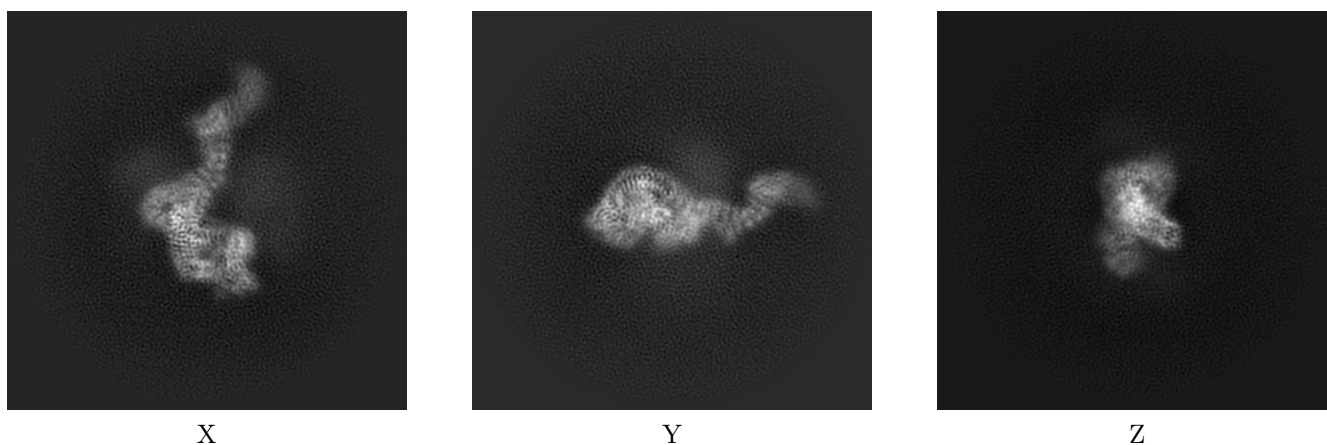
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-23352. 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 [i](#)

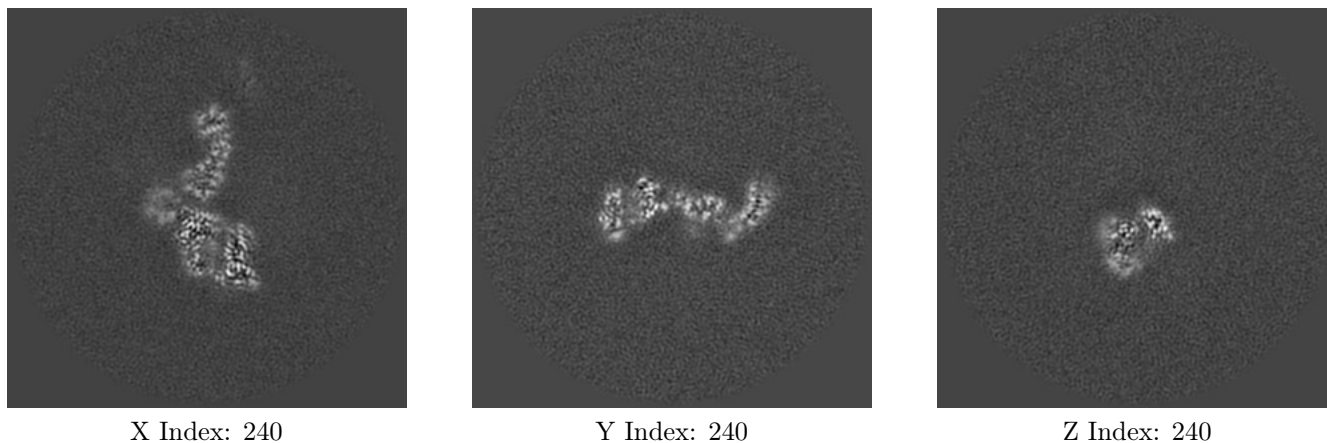
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

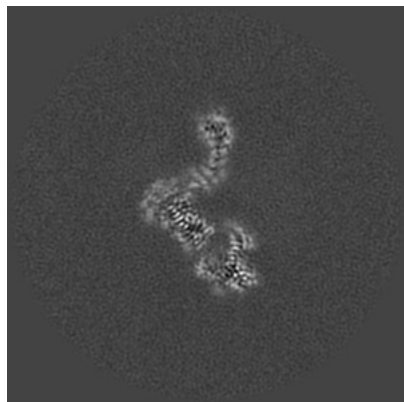
#### 6.2.1 Primary map



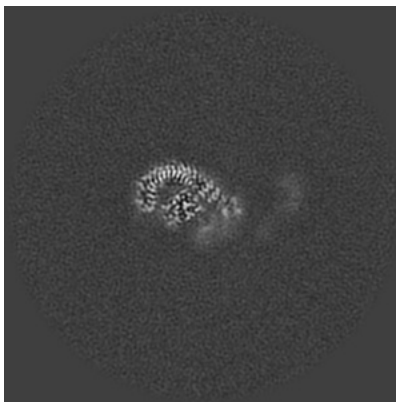
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

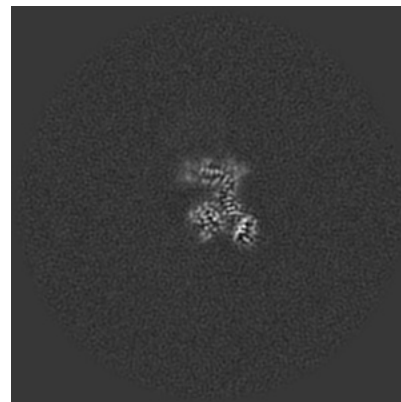
### 6.3.1 Primary map



X Index: 230



Y Index: 223

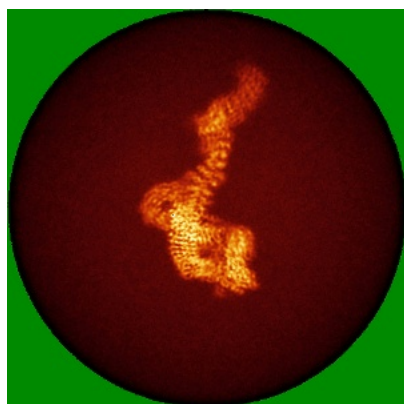


Z Index: 204

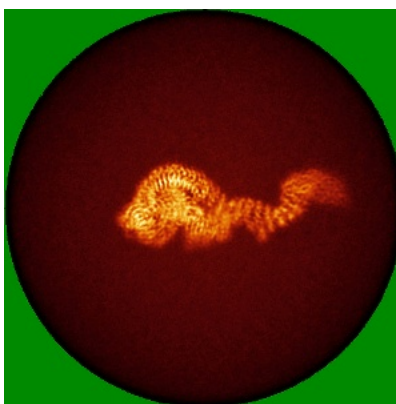
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

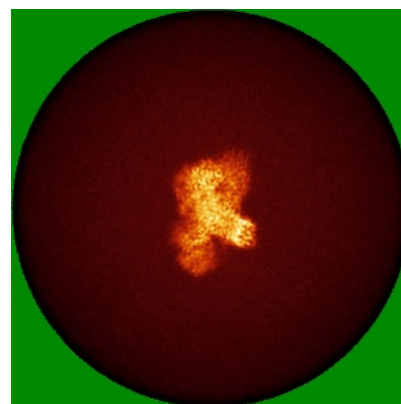
### 6.4.1 Primary map



X



Y



Z

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

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

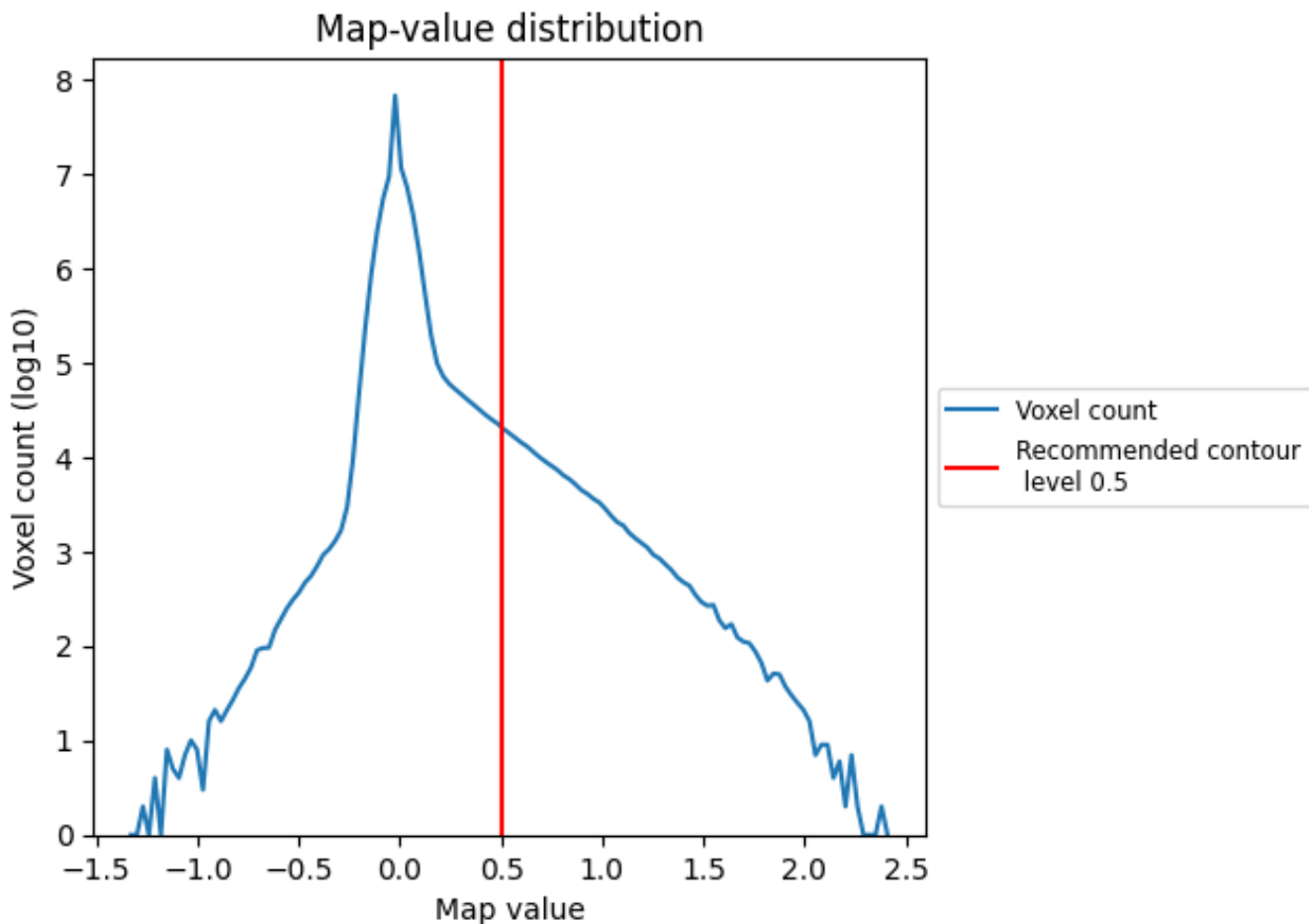
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

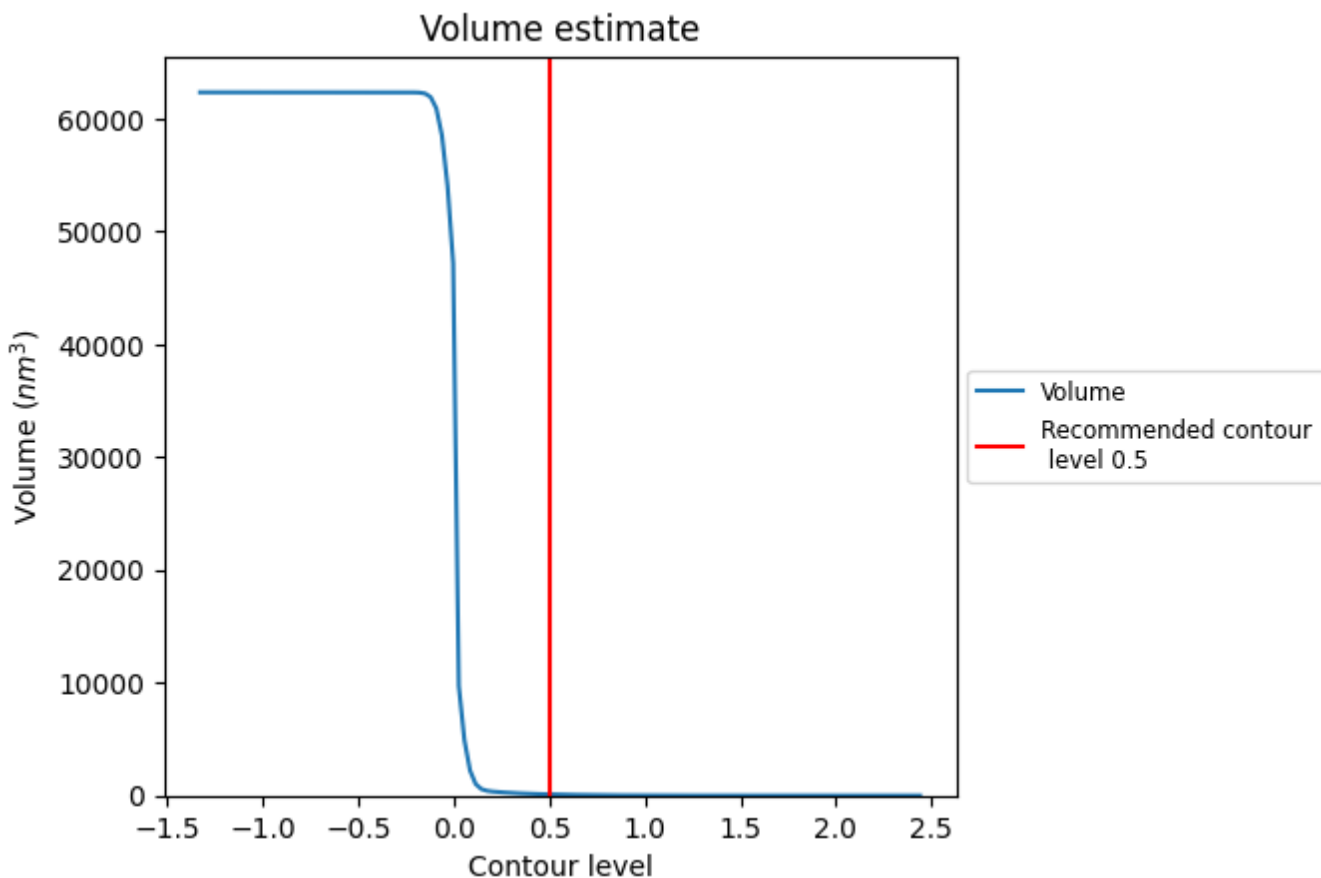
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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.

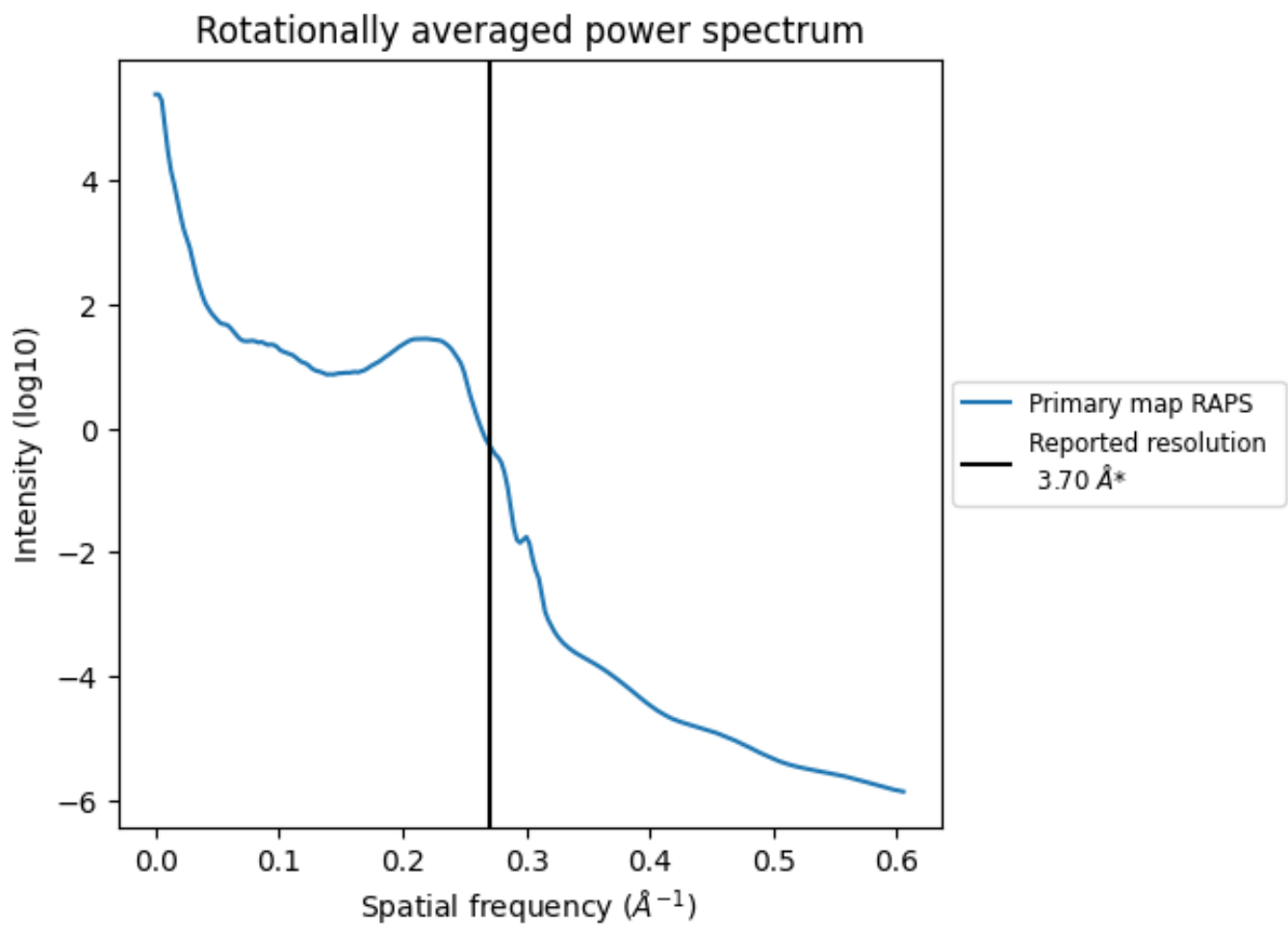
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 107 nm<sup>3</sup>; this corresponds to an approximate mass of 96 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  $0.270 \text{\AA}^{-1}$

## 8 Fourier-Shell correlation

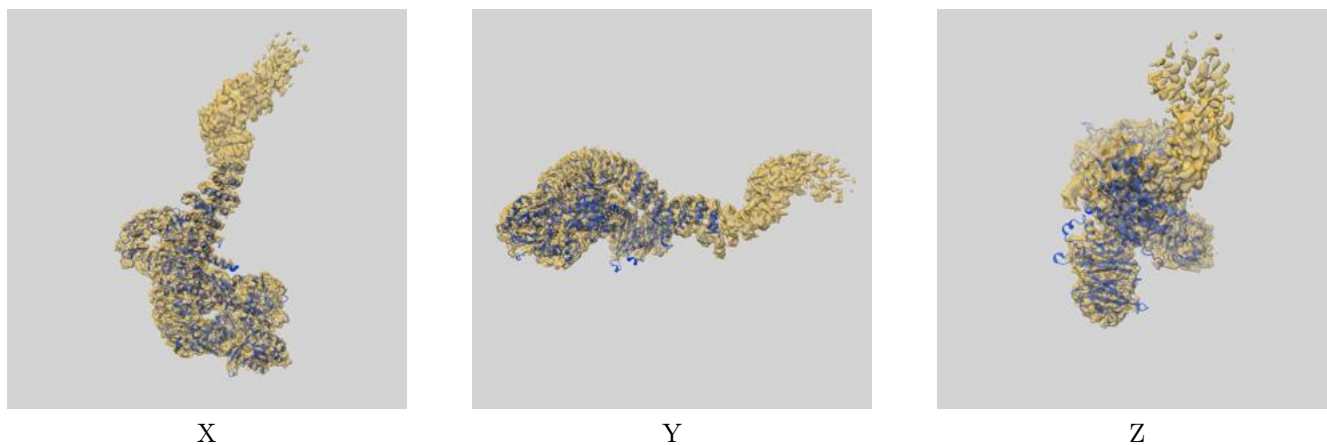
This section was not generated. No FSC curve or half-maps provided.



## 9 Map-model fit [i](#)

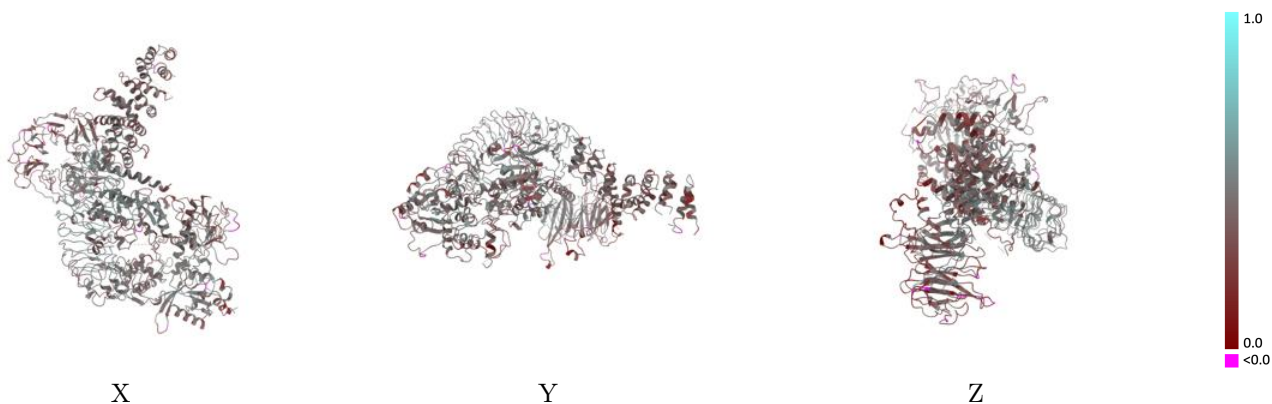
This section contains information regarding the fit between EMDB map EMD-23352 and PDB model 7LHW. Per-residue inclusion information can be found in section [3](#) on page [5](#).

### 9.1 Map-model overlay [i](#)



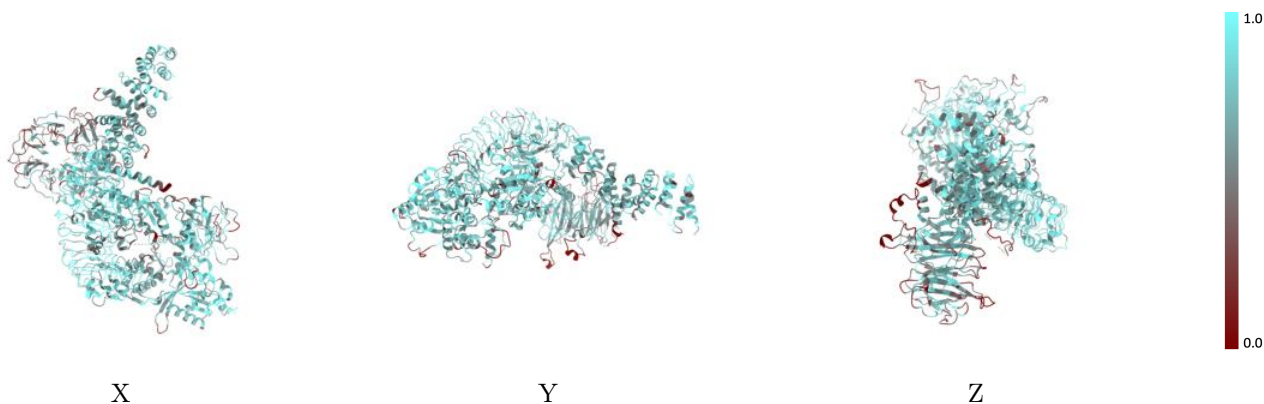
The images above show the 3D surface view of the map at the recommended contour level 0.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



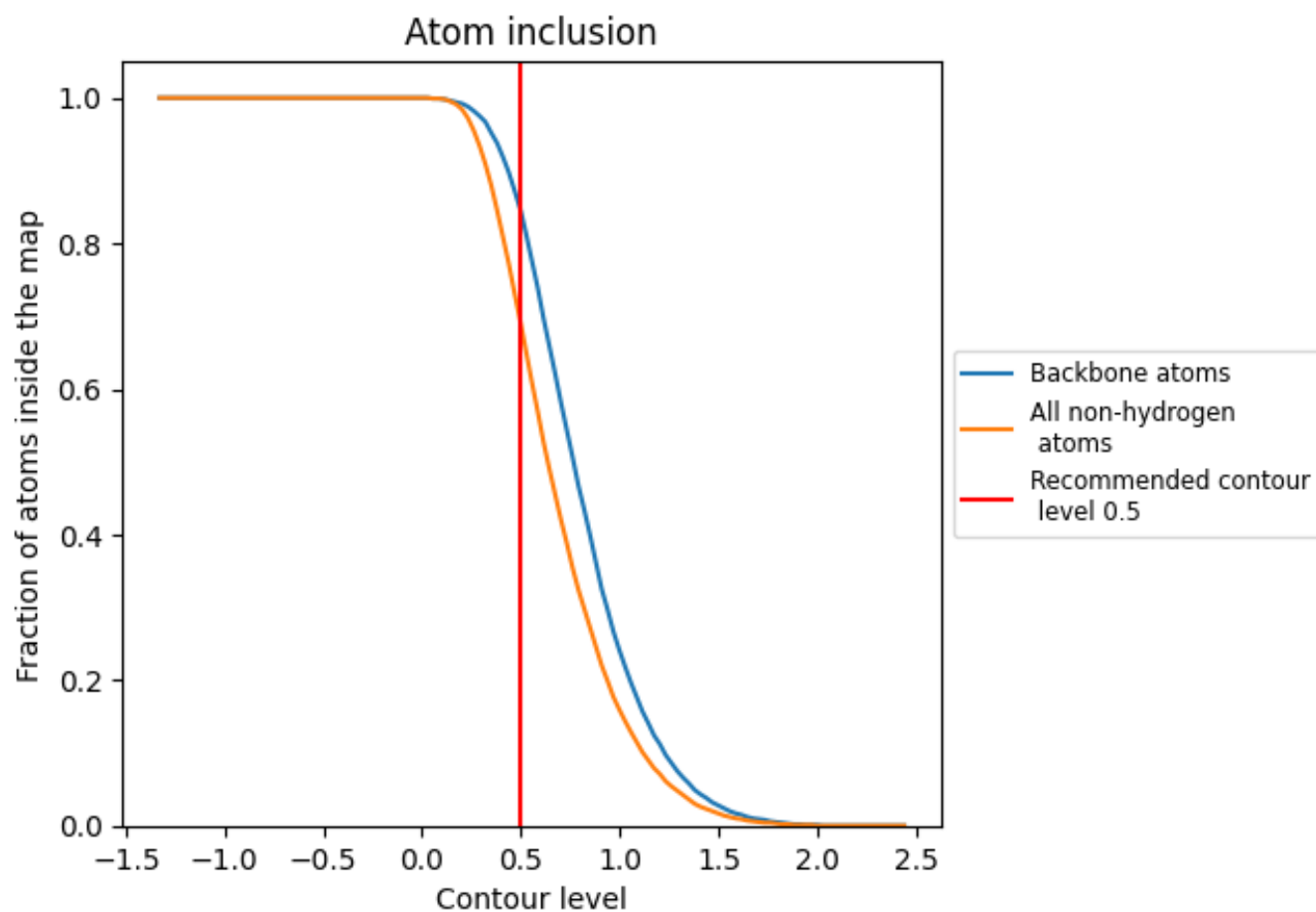
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.5).





## 9.4 Atom inclusion [i](#)



At the recommended contour level, 84% of all backbone atoms, 69% 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 (0.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6890	 0.4060
A	 0.6890	 0.4060

