



Full wwPDB EM Validation Report ⓘ

Apr 1, 2026 – 06:33 PM JST

PDB ID : 9X2A / pdb_00009x2a
EMDB ID : EMD-66475
Title : Cryo-EM structure of PsoA in cofactor bound state (PsoA-PKS-II)
Authors : Sun, L.; Bai, L.
Deposited on : 2025-10-04
Resolution : 3.36 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

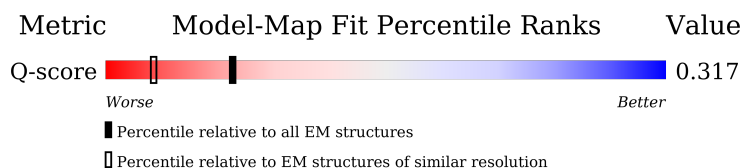
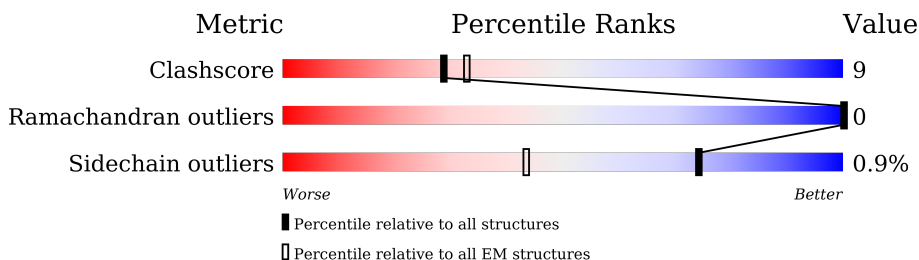
EMDB validation analysis : 0.0.1.dev132
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.48.1

1 Overall quality at a glance i

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

The reported resolution of this entry is 3.36 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	14332 (2.86 - 3.86)

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 $\leq 5\%$. 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	4007	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">16%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 16%, orange 16%, yellow 12%, green 48%, grey 41%);"></div> <div style="text-align: center;">48%</div> <div style="text-align: center;">12%</div> <div style="text-align: center;">41%</div> </div>
1	B	4007	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">22%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 22%, orange 22%, yellow 11%, green 48%, grey 41%);"></div> <div style="text-align: center;">48%</div> <div style="text-align: center;">11%</div> <div style="text-align: center;">41%</div> </div>

2 Entry composition [i](#)

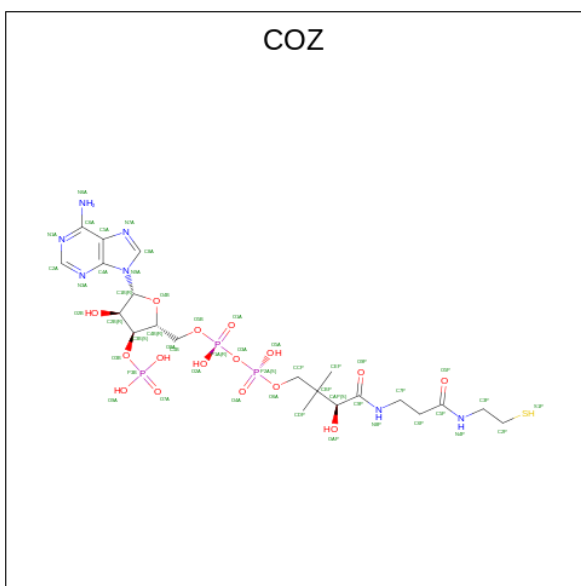
There are 3 unique types of molecules in this entry. The entry contains 72870 atoms, of which 36214 are hydrogens and 0 are deuteriums.

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 PKS-NRPS hybrid synthetase psoA.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	A	2382	Total	C	H	N	O	S	0	0
			36281	11461	18049	3198	3492	81		
1	B	2382	Total	C	H	N	O	S	0	0
			36281	11461	18049	3198	3492	81		

- Molecule 2 is COENZYME A (CCD ID: COZ) (formula: $C_{21}H_{36}N_7O_{16}P_3S$) (labeled as "Ligand of Interest" by depositor).



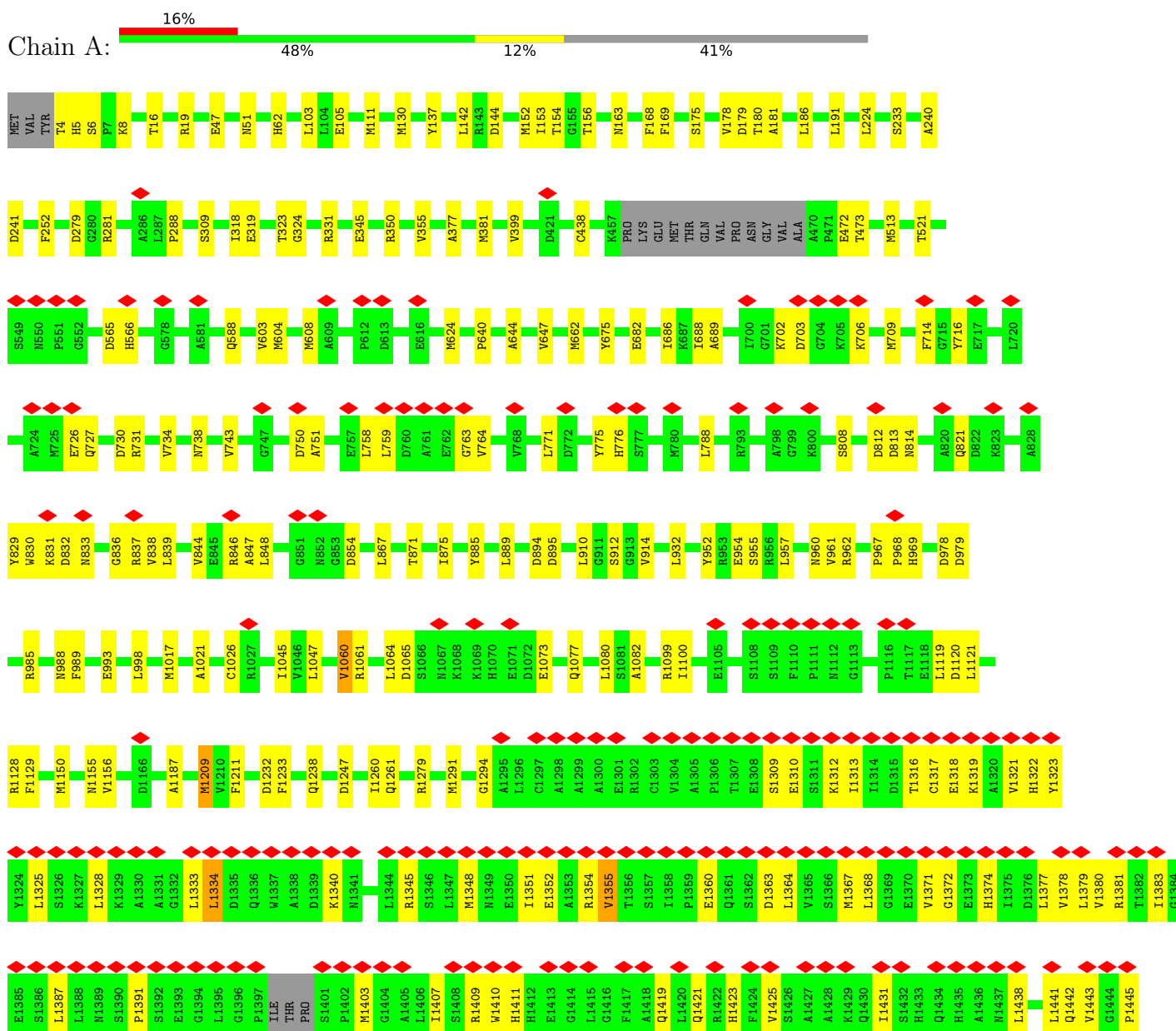
Mol	Chain	Residues	Atoms						AltConf	
			Total	C	H	N	O	P		S
2	A	1	Total	C	H	N	O	P	S	0
			80	21	32	7	16	3	1	
2	B	1	Total	C	H	N	O	P	S	0
			80	21	32	7	16	3	1	

- Molecule 3 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (CCD ID: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$) (labeled as "Ligand of Interest" by depositor).

3 Residue-property plots

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: PKS-NRPS hybrid synthetase psoA



L1368	G1369	E1370	V1371	G1372	E1373	H1374	I1375	D1376	L1377	V1378	L1379	V1380	R1381	T1382	I1383	G1384	E1385	S1386	L1387	L1388	N1389	S1390	P1391	S1392	E1393	G1394	L1395	G1396	P1397	I1398	THR	PRO	S1401	P1402	M1403	G1404	A1405	L1406	I1407	S1408	R1409	M1410	H1411	H1412	A1413	G1414	L1415	G1416	F1417	A1418	Q1419	L1420	Q1421	R1422	H1423	F1424	S1425	A1426	A1427	
A1428	K1429	Q1430	S1432	H1433	H1435	A1436	N1437	R1438	L1439	I1440	L1441	Q1442	T1443	G1444	P1445	S1446	L1447	P1448	G1449	L1450	L1451	R1452	S1453	V1454	G1455	Q1456	E1457	L1458	G1459	R1460	S1461	L1462	L1463	R1464	Y1465	T1466	L1467	V1468	D1469	D1470	S1471	E1472	Q1473	M1533	L1534	L1535	R1536	P1537	M1478	K1479	S1480	A1481	L1482	A1483	A1484	Q1485	L1486	L1487		
R1488	V1489	D1490	F1491	T1492	T1493	A1494	S1495	V1496	E1497	N1498	G1499	I1500	D1501	A1502	V1503	M1504	H1505	L1506	T1507	S1508	A1509	G1510	G1511	F1512	D1513	L1514	V1515	I1516	V1517	H1518	K1519	A1520	F1521	T1522	K1523	Q1524	V1525	T1526	A1527	L1528	K1529	M1530	V1531	E1472	Q1473	M1533	L1534	L1535	R1536	P1537	G1538	G1539	F1540	M1541	L1542	M1543	M1544	A1545	A1546	T1547
G1548	A1549	Q1550	L1551	F1552	F1553	P1554	F1555	M1556	L1557	M1558	S1559	T1560	L1561	P1562	S1563	L1564	D1565	D1566	E1567	L1568	L1569	A1570	Q1571	T1572	L1635	F1574	I1575	I1576	A1577	T1578	R1579	A1580	E1581	T1582	H1583	D1584	L1585	L1586	R1587	Q1588	I1589	G1590	F1591	S1592	G1593	V1594	D1595	S1596	I1597	A1598	L1599	D1600	M1601	V1602	F1603	D1604	K1605	H1606	T1607	
F1608	S1609	V1610	V1611	V1612	S1613	Q1614	A1615	L1616	D1617	D1618	H1619	A1621	F1622	L1623	R1624	S1625	P1626	L1627	T1628	S1629	P1630	G1631	P1632	L1635	S1636	G1637	M1638	L1639	L1640	V1641	V1642	G1643	G1644	F1645	S1646	A1647	D1648	I1649	K1651	L1652	A1653	T1654	A1655	L1656	Q1657	L1659	V1660	S1661	V1664	H1665	G1666	D1667	I1668	I1669						
M1670	V1671	R1672	T1673	L1674	A1675	E1676	L1677	D1678	D1679	E1680	A1681	T1682	V1684	E1685	A1686	V1687	L1688	S1689	D1692	L1693	D1694	R1695	P1696	V1697	L1698	E1699	D1700	V1701	R1702	A1703	P1704	T1705	F1706	R1707	G1708	L1709	Q1710	R1711	L1712	F1713	S1714	E1715	A1716	K1717	T1718	H1724	R1725	A1726	K1727	M1728	D1729	N1730	H1733	M1734	A1735					
G1738	F1743	P1748	K1749	K1750	F1754	L1755	D1756	V1757	D1758	T1759	L1760	D1761	E1762	V1763	E1764	S1766	A1766	I1767	A1768	E1769	T1770	F1771	L1772	K1773	L1774	I1775	G1776	M1779	M1780	R1781	M1782	S1783	M1784	P1785	A1786	D1787	P1788	T1789	R1790	F1791	L1791	M1792	T1793	L1794	E1795	P1796	E1797	L1800	E1801	M1802	G1803	K1804	L1805	L1806						
V1807	P1808	R1809	L1810	F1811	P1812	D1813	T1814	E1815	R1816	M1817	D1818	R1819	L1820	M1821	A1822	L1823	R1824	R1825	K1826	V1827	Q1828	T1829	Q1830	V1831	S1832	V1833	E1834	L1835	L1840	S1841	R1842	S1843	A1844	Q1845	S1846	D1847	Q1848	V1849	A1850	Y1851	T1852	A1853	E1854	A1855	V1856	H1857	F1858	H1859	R1860	D1861	L1862	A1863	D1864	G1865	A1866	T1867	D1868			
P1869	V1870	T1871	I1872	Q1873	L1874	E1875	L1876	C1877	L1878	T1879	E1880	P1881	I1882	L1883	P1884	M1885	I1886	D1887	M1888	E1889	D1890	K1891	L1892	F1893	C1894	L1894	V1895	G1896	R1897	L1898	S1899	E1900	G1901	A1902	R1903	L1904	V1905	G1906	L1907	T1908	S1910	M1911	S1912	S1913	V1914	V1915	K1916	V1917	P1918	R1919	E1920	M1921	S1922	V1923	P1924	V1925	D1926	K1927	H1928	
T1929	S1930	H1931	D1932	Q1933	G1934	A1935	F1936	V1937	L1938	E1939	L1940	R1941	M1942	E1943	I1944	Q1945	S1946	L1947	V1948	I1949	A1950	K1951	S1952	I1953	P1954	P1955	G1956	S1957	T1958	T1959	L1960	I1961	Y1962	E1963	P1964	D1965	P1966	H1967	L1968	A1969	A1970	S1971	L1972	Q1973	R1974	P1975	G1976	P1977	P1978	A1979	T1980	S1981	S1982	V1983	S1984	F1985	R1986	A1987	R1988	
S1989	T1990	V1991	S1992	I1993	P1994	G1995	S1996	H1997	L1998	L1999	I2000	D2001	P2002	H2003	A2004	S2005	R2006	K2007	D2008	I2009	Q2010	A2011	K2012	V2013	P2014	P2015	K2016	T2017	R2018	M2019	L2020	I2021	H2022	M2023	E2024	Q2025	G2026	P2027	E2028	T2029	C2030	E2031	F2032	L2033	A2034	L2035	R2036	Q2037	A2038	L2039	P2040	P2041	Y2042	A2043	T2044	V2045	V2046	A2047	F2048	
M2049	D2050	L2051	A2052	A2053	D2054	D2055	V2056	M2057	P2058	R2059	E2060	L2061	L2062	A2063	E2064	A2065	L2066	S2067	I2068	L2069	R2070	G2071	D2072	S2073	Q2074	S2075	T2076	K2077	V2078	P2079	F2080	D2081	P2082	S2083	S2084	V2085	V2086	K2087	A2088	S2089	A2090	L2091	V2092	A2093	G2094	G2095	T2096	R2097	E2098	H2099	A2100	M2101	A2102	A2103	V2104	V2105	D2106	W2107	T2108	
G2109	A2110	Q2111	S2112	T2113	T2114	L2115	S2116	P2117	R2118	E2123	S2127	L2133	G2136	L2137	G2152	T2160	R2162	H2163	P2164	E2165	Q2166	Q2167	Q2168	Q2169	L2170	W2171	R2172	E2173	E2174	L2175	L2176	R2177	Q2178	G2179	V2180	N2181	V2182	L2184	E2185	A2186	A2187	D2188	G2189	V2190	K2191	E2192	H2193	L2196	D2197	L2198										

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	107200	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.616	Depositor
Minimum map value	-0.426	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.015	Depositor
Recommended contour level	0.08	Depositor
Map size (\AA)	426.24, 426.24, 426.24	wwPDB
Map dimensions	576, 576, 576	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	0.74, 0.74, 0.74	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: COZ, NDP

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	0.12	0/18627	0.30	0/25329
1	B	0.12	0/18627	0.30	0/25329
All	All	0.12	0/37254	0.30	0/50658

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	18232	18049	18046	345	0
1	B	18232	18049	18046	334	0
2	A	48	32	32	2	0
2	B	48	32	32	2	0
3	A	48	26	26	2	0
3	B	48	26	26	2	0
All	All	36656	36214	36208	672	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 9.

All (672) 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:808:SER:HG	1:A:829:TYR:HH	1.16	0.93
1:B:1061:ARG:NH1	1:B:1077:GLN:OE1	2.02	0.91
1:B:1442:GLN:OE1	1:B:1465:TYR:OH	1.91	0.87
1:A:2007:LYS:NZ	1:B:1247:ASP:OD2	2.08	0.87
1:A:1496:VAL:HG22	1:A:1500:ILE:HD11	1.59	0.85
1:B:1885:ASN:ND2	1:B:2049:ASN:O	2.11	0.83
1:B:1795:GLU:N	1:B:1795:GLU:OE1	2.12	0.83
1:A:1944:ILE:HG23	1:A:2061:LEU:HD21	1.60	0.83
1:B:1841:SER:O	1:B:1852:THR:OG1	1.97	0.83
1:B:1944:ILE:HG23	1:B:2061:LEU:HD21	1.60	0.81
1:B:505:GLU:N	1:B:505:GLU:OE2	2.13	0.81
1:B:1323:TYR:CE1	1:B:1364:LEU:HD22	2.16	0.81
1:A:1830:GLN:OE1	1:A:2112:SER:OG	1.99	0.80
1:A:702:LYS:NZ	1:A:730:ASP:OD1	2.15	0.80
1:A:1841:SER:O	1:A:1852:THR:OG1	1.98	0.80
1:A:1323:TYR:CE1	1:A:1364:LEU:HD22	2.17	0.79
1:A:345:GLU:N	1:A:345:GLU:OE2	2.15	0.79
1:B:759:LEU:HD13	1:B:766:ASN:HD21	1.47	0.79
1:A:1795:GLU:N	1:A:1795:GLU:OE1	2.15	0.79
1:A:776:HIS:NE2	1:A:833:ASN:O	2.15	0.78
1:B:59:ASP:OD1	1:B:60:GLY:N	2.17	0.78
1:A:47:GLU:O	1:A:962:ARG:NH1	2.16	0.78
1:B:1289:GLN:OE1	1:B:1295:ALA:HB3	1.83	0.77
1:A:2264:ILE:HD13	1:A:2361:THR:O	1.84	0.77
1:A:1885:ASN:ND2	1:A:2049:ASN:O	2.18	0.76
1:B:510:ARG:NH2	1:B:935:PRO:O	2.19	0.76
1:A:1411:HIS:ND1	1:A:1446:SER:O	2.19	0.76
1:A:1452:ARG:NH2	1:A:2399:ALA:O	2.19	0.75
1:A:144:ASP:OD1	1:A:955:SER:OG	2.00	0.75
1:B:1841:SER:OG	1:B:1852:THR:OG1	2.03	0.75
1:B:910:LEU:HD23	1:B:914:VAL:HG11	1.68	0.75
1:B:2301:ASP:O	1:B:2361:THR:OG1	2.04	0.75
1:A:2358:GLU:OE1	1:A:2358:GLU:N	2.20	0.75
1:B:1817:ASN:O	1:B:1821:ASN:N	2.19	0.74
1:B:1313:ILE:HG12	1:B:1371:VAL:HG13	1.69	0.74
1:B:1532:ARG:NH2	1:B:1616:LEU:O	2.20	0.74
1:B:2247:GLU:O	1:B:2251:SER:OG	2.05	0.74
1:A:1354:ARG:NH1	1:A:1549:ALA:O	2.21	0.74
1:A:734:VAL:O	1:A:837:ARG:NE	2.21	0.74
1:B:1411:HIS:ND1	1:B:1446:SER:O	2.19	0.74
1:B:1150:MET:CE	1:B:1187:ALA:HB1	2.18	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1787:ASP:OD2	1:A:1790:ARG:NE	2.21	0.73
1:A:1553:PHE:CZ	1:A:1557:LEU:HD11	2.23	0.73
1:A:1717:LYS:NZ	1:A:1718:THR:OG1	2.20	0.73
1:B:1874:VAL:N	1:B:1913:SER:O	2.21	0.73
1:B:1830:GLN:OE1	1:B:2112:SER:OG	2.07	0.73
1:A:1407:ILE:HG22	1:A:1411:HIS:CE1	2.24	0.72
1:B:1368:LEU:HD23	1:B:1377:LEU:HD11	1.71	0.72
1:B:1340:LYS:HD3	1:B:1564:LEU:HD21	1.71	0.72
1:A:1232:ASP:OD1	1:A:1233:PHE:N	2.21	0.72
1:B:1026:CYS:SG	1:B:1100:ILE:HD13	2.29	0.72
1:A:309:SER:O	1:A:350:ARG:NH2	2.23	0.71
1:B:309:SER:O	1:B:350:ARG:NH2	2.22	0.71
1:A:1841:SER:OG	1:A:1852:THR:OG1	2.08	0.71
1:A:1325:LEU:HD22	1:A:1334:LEU:HD21	1.72	0.70
1:B:1360:GLU:O	1:B:1364:LEU:N	2.23	0.70
1:B:1764:GLU:OE2	1:B:1764:GLU:N	2.24	0.70
1:A:1733:HIS:O	1:A:1736:THR:OG1	2.09	0.70
1:A:1442:GLN:OE1	1:A:1465:TYR:OH	2.03	0.70
1:B:2317:ASP:OD1	1:B:2318:LYS:N	2.25	0.70
1:A:1960:LEU:HD11	1:A:2013:VAL:HG22	1.73	0.70
1:B:2386:ILE:HG22	1:B:2386:ILE:O	1.90	0.70
1:B:491:ARG:NH2	1:B:548:GLY:O	2.25	0.70
1:B:1232:ASP:OD1	1:B:1233:PHE:N	2.25	0.70
1:B:1322:HIS:ND1	1:B:1351:ILE:O	2.24	0.70
1:B:1407:ILE:HG22	1:B:1411:HIS:CE1	2.27	0.69
1:A:281:ARG:NH1	1:B:168:PHE:O	2.25	0.69
1:A:813:ASP:O	1:A:846:ARG:NH1	2.25	0.69
1:B:702:LYS:NZ	1:B:730:ASP:O	2.23	0.68
1:B:1854:GLU:OE1	1:B:1855:ALA:N	2.27	0.68
1:B:47:GLU:O	1:B:962:ARG:NH1	2.26	0.68
1:B:1875:GLU:OE2	1:B:1897:ARG:NE	2.27	0.68
1:A:1563:SER:O	1:A:1569:LEU:HD11	1.94	0.67
1:B:970:PRO:O	1:B:988:ASN:ND2	2.27	0.67
1:A:1368:LEU:HD23	1:A:1377:LEU:HD11	1.76	0.67
1:A:894:ASP:OD1	1:A:895:ASP:N	2.28	0.67
1:A:1600:ASP:OD1	1:A:1601:ASN:N	2.28	0.67
1:A:1441:LEU:HD13	1:A:1506:LEU:HD21	1.75	0.67
1:A:1360:GLU:O	1:A:1364:LEU:N	2.28	0.66
1:B:1948:VAL:HG22	1:B:2056:VAL:HG11	1.77	0.66
1:A:1817:ASN:O	1:A:1821:ASN:N	2.25	0.66
1:B:957:LEU:HD11	1:B:978:ASP:HB3	1.76	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1717:LYS:NZ	1:B:1718:THR:OG1	2.28	0.66
1:A:1556:MET:O	1:A:1559:SER:OG	2.14	0.66
1:A:1883:ILE:HD11	1:A:2061:LEU:HD23	1.78	0.66
1:A:988:ASN:OD1	1:A:989:PHE:N	2.28	0.66
1:A:2247:GLU:O	1:A:2251:SER:OG	2.14	0.66
1:B:566:HIS:O	1:B:568:ARG:N	2.28	0.66
1:B:1600:ASP:OD1	1:B:1601:ASN:N	2.30	0.65
1:A:808:SER:OG	1:A:829:TYR:OH	2.01	0.65
1:A:1442:GLN:OE1	1:A:1451:VAL:HG22	1.97	0.65
1:A:1340:LYS:HD3	1:A:1564:LEU:HD21	1.78	0.65
1:A:910:LEU:HD23	1:A:914:VAL:HG11	1.78	0.65
1:A:2301:ASP:O	1:A:2361:THR:OG1	2.15	0.65
1:A:750:ASP:OD1	1:A:751:ALA:N	2.30	0.65
1:A:2262:SER:OG	1:A:2301:ASP:OD1	2.12	0.64
1:B:1445:PRO:HG3	1:B:1467:LEU:HD21	1.79	0.64
1:A:624:MET:HE3	1:A:624:MET:HA	1.79	0.64
1:A:2367:LYS:O	1:A:2369:VAL:HG23	1.98	0.64
1:B:1026:CYS:SG	1:B:1100:ILE:HG21	2.38	0.64
1:A:706:LYS:HE3	1:A:706:LYS:HA	1.80	0.63
1:A:1150:MET:HE1	1:A:1187:ALA:HB1	1.80	0.63
1:A:1322:HIS:ND1	1:A:1351:ILE:O	2.31	0.63
1:A:2248:GLU:OE1	1:A:2249:VAL:HG23	1.99	0.63
1:B:2020:LEU:HD11	1:B:2035:LEU:HD23	1.80	0.63
1:A:1374:HIS:O	1:A:1378:VAL:HG23	1.99	0.62
1:A:1518:HIS:ND1	1:A:1544:MET:SD	2.72	0.62
1:B:882:GLU:N	1:B:882:GLU:OE2	2.33	0.62
1:B:1328:LEU:HD23	1:B:1333:LEU:HD12	1.81	0.62
1:A:233:SER:OG	1:A:323:THR:O	2.17	0.62
1:A:832:ASP:O	1:A:836:GLY:N	2.31	0.62
1:A:1325:LEU:O	1:A:1334:LEU:HD22	1.99	0.62
1:B:1333:LEU:HD22	1:B:1391:PRO:HB3	1.82	0.62
1:A:1875:GLU:OE2	1:A:1897:ARG:NE	2.33	0.62
1:B:218:TYR:O	1:B:222:THR:OG1	2.17	0.62
1:B:964:ARG:HG2	1:B:965:VAL:HG13	1.80	0.62
1:A:1443:VAL:HG13	1:A:1496:VAL:HG21	1.81	0.62
1:A:1723:THR:HG21	1:A:1726:ALA:HB2	1.82	0.62
1:A:2009:ILE:O	1:A:2013:VAL:N	2.33	0.62
1:B:2021:ILE:CG2	1:B:2051:LEU:HD11	2.30	0.62
1:A:1445:PRO:HG3	1:A:1467:LEU:HD21	1.82	0.61
1:B:2056:VAL:HG22	1:B:2061:LEU:HD22	1.81	0.61
1:A:2323:MET:O	1:A:2327:ILE:HD12	1.99	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2367:LYS:O	1:B:2369:VAL:HG23	2.00	0.61
1:A:1759:THR:OG1	1:A:1761:ASP:OD1	2.15	0.61
1:B:1441:LEU:HD13	1:B:1506:LEU:HD21	1.82	0.61
1:A:1893:CYS:SG	1:A:1940:LEU:HD23	2.40	0.61
1:B:1787:ASP:OD2	1:B:1790:ARG:NE	2.32	0.61
1:B:2056:VAL:O	1:B:2056:VAL:HG13	2.01	0.61
1:B:821:GLN:O	1:B:825:LEU:HD12	1.99	0.61
1:A:1937:VAL:HG12	1:A:1941:ARG:HD2	1.82	0.61
1:B:1289:GLN:HA	1:B:1806:LEU:HD23	1.83	0.60
1:A:1120:ASP:HB3	1:A:2170:LEU:HD22	1.83	0.60
1:B:2009:ILE:O	1:B:2013:VAL:N	2.34	0.60
1:A:565:ASP:OD1	1:A:566:HIS:N	2.35	0.60
1:B:1714:SER:O	1:B:1750:LYS:NZ	2.35	0.60
1:B:1506:LEU:HD23	1:B:1512:PHE:CZ	2.37	0.60
1:A:1155:ASN:O	1:A:1156:VAL:HG23	2.01	0.59
1:B:616:GLU:OE2	1:B:616:GLU:N	2.31	0.59
1:A:1065:ASP:O	1:A:1065:ASP:OD2	2.20	0.59
1:A:985:ARG:HH22	1:B:1057:LEU:HD21	1.65	0.59
1:A:2209:VAL:HG11	1:A:2212:ILE:HD11	1.84	0.59
1:A:1874:VAL:N	1:A:1913:SER:O	2.33	0.59
1:A:608:MET:HE2	1:A:608:MET:HA	1.85	0.58
1:A:1378:VAL:HG21	1:A:1409:ARG:HH12	1.68	0.58
1:B:1378:VAL:HG21	1:B:1409:ARG:HH12	1.69	0.58
1:B:2021:ILE:HG23	1:B:2051:LEU:HD11	1.85	0.58
1:A:1378:VAL:HG21	1:A:1409:ARG:NH1	2.18	0.58
1:B:1452:ARG:NH2	1:B:2399:ALA:O	2.36	0.58
1:B:1640:LEU:HD23	1:B:1641:VAL:N	2.19	0.58
1:B:1305:ALA:HA	1:B:1602:VAL:HG11	1.85	0.58
1:B:1378:VAL:HG21	1:B:1409:ARG:NH1	2.19	0.58
1:B:1883:ILE:HD11	1:B:2061:LEU:HD23	1.85	0.58
1:B:1023:LYS:NZ	1:B:1216:THR:O	2.31	0.58
1:B:1513:ASP:OD1	1:B:1536:ARG:NE	2.36	0.58
1:A:993:GLU:OE1	1:A:993:GLU:N	2.34	0.58
1:A:1317:CYS:O	1:A:1321:VAL:HG23	2.04	0.58
1:B:1657:GLN:NE2	1:B:1670:ASN:OD1	2.37	0.57
1:A:163:ASN:OD1	1:A:175:SER:OG	2.17	0.57
1:A:1328:LEU:HD23	1:A:1333:LEU:HD12	1.86	0.57
1:B:1893:CYS:SG	1:B:1940:LEU:HD23	2.44	0.57
1:B:2170:LEU:C	1:B:2170:LEU:HD23	2.28	0.57
1:A:2000:ILE:HD11	1:A:2013:VAL:HG23	1.85	0.57
1:A:2172:ARG:HG3	1:A:2182:ILE:HG21	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2230:GLU:OE1	1:A:2230:GLU:N	2.37	0.57
1:B:275:CYS:SG	1:B:276:VAL:N	2.77	0.57
1:A:142:LEU:HD21	1:A:152:MET:HE1	1.86	0.57
1:B:1579:ARG:NH2	1:B:1595:ASP:OD1	2.36	0.57
1:B:1478:MET:SD	1:B:1478:MET:N	2.77	0.57
1:B:600:VAL:HG21	1:B:651:LYS:HD3	1.87	0.57
1:A:1948:VAL:HG22	1:A:2056:VAL:HG11	1.86	0.56
1:B:1322:HIS:CG	1:B:1355:VAL:HG23	2.40	0.56
1:B:2192:GLU:N	1:B:2192:GLU:OE1	2.35	0.56
1:B:1291:MET:O	1:B:1294:GLY:N	2.38	0.56
1:B:103:LEU:HD22	1:B:130:MET:CE	2.35	0.56
1:B:750:ASP:OD1	1:B:751:ALA:N	2.38	0.56
1:B:1563:SER:O	1:B:1569:LEU:HD11	2.05	0.56
1:B:1961:ILE:O	1:B:1985:PHE:N	2.39	0.56
1:A:1500:ILE:HG22	1:A:1506:LEU:HB2	1.88	0.56
1:B:1374:HIS:O	1:B:1378:VAL:HG23	2.04	0.56
1:A:998:LEU:HD21	1:A:1047:LEU:CD1	2.35	0.56
1:A:1985:PHE:CZ	1:A:2000:ILE:HD12	2.41	0.56
1:A:1584:ASP:OD1	1:A:1587:ARG:NH2	2.38	0.56
1:B:1640:LEU:HD12	1:B:1684:VAL:HG21	1.88	0.56
1:B:1851:TYR:OH	1:B:1879:THR:O	2.20	0.56
1:A:703:ASP:CG	1:A:703:ASP:O	2.49	0.56
1:B:1801:GLU:O	1:B:1802:ASN:ND2	2.39	0.56
1:B:1832:SER:O	1:B:1835:THR:OG1	2.23	0.56
1:B:1972:LEU:O	1:B:1977:ARG:NE	2.38	0.56
1:A:2165:GLU:OE1	1:A:2165:GLU:N	2.35	0.55
1:B:2262:SER:OG	1:B:2263:SER:N	2.38	0.55
1:A:867:LEU:O	1:A:871:THR:HG22	2.06	0.55
1:A:1334:LEU:HD23	1:A:1352:GLU:OE2	2.06	0.55
1:A:1671:VAL:HG11	1:A:1677:LEU:HD22	1.87	0.55
1:B:2176:LEU:HD21	1:B:2182:ILE:HG22	1.87	0.55
1:A:1321:VAL:HG13	1:A:1553:PHE:CD2	2.40	0.55
1:B:2240:VAL:HG12	1:B:2282:PHE:CE1	2.41	0.55
1:A:1780:MET:SD	1:A:1780:MET:C	2.89	0.55
1:A:1846:SER:OG	1:A:1848:GLN:O	2.24	0.55
1:A:2056:VAL:HG22	1:A:2061:LEU:HD22	1.89	0.55
1:B:734:VAL:O	1:B:837:ARG:NE	2.39	0.55
1:B:1027:ARG:NH2	1:B:1064:LEU:HD23	2.21	0.55
1:A:1532:ARG:NH2	1:A:1616:LEU:O	2.39	0.55
1:A:854:ASP:N	1:A:854:ASP:OD1	2.37	0.55
1:A:2056:VAL:O	1:A:2056:VAL:HG13	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:312:GLU:OE2	1:B:312:GLU:N	2.38	0.55
1:A:1150:MET:CE	1:A:1187:ALA:HB1	2.35	0.55
1:B:813:ASP:O	1:B:846:ARG:NH1	2.35	0.55
1:B:2346:GLU:N	1:B:2346:GLU:OE1	2.40	0.55
1:A:682:GLU:N	1:A:682:GLU:OE1	2.35	0.55
1:B:1496:VAL:HG22	1:B:1500:ILE:HD11	1.89	0.54
1:A:998:LEU:HD21	1:A:1047:LEU:HD11	1.89	0.54
1:A:1333:LEU:HD22	1:A:1391:PRO:HB3	1.88	0.54
1:B:1619:HIS:CB	1:B:1780:MET:HE2	2.38	0.54
1:A:1961:ILE:O	1:A:1985:PHE:N	2.39	0.54
1:B:1553:PHE:CZ	1:B:1557:LEU:HD11	2.42	0.54
1:B:521:THR:HG21	1:B:912:SER:CB	2.37	0.54
1:B:1419:GLN:O	1:B:1423:HIS:ND1	2.41	0.54
1:B:1443:VAL:HG13	1:B:1496:VAL:HG21	1.89	0.54
1:A:1247:ASP:OD2	1:B:2007:LYS:NZ	2.34	0.54
1:A:1383:ILE:O	1:A:1387:LEU:HD12	2.08	0.54
1:A:1313:ILE:HB	1:A:1371:VAL:HG13	1.89	0.54
1:B:1671:VAL:HG11	1:B:1677:LEU:HD22	1.90	0.54
1:A:1407:ILE:HG12	1:A:1558:MET:HE1	1.89	0.54
1:B:2369:VAL:HG22	1:B:2389:PRO:HG3	1.89	0.54
1:A:1940:LEU:N	1:A:2069:ILE:HD11	2.22	0.54
1:B:1150:MET:HE2	1:B:1187:ALA:HB1	1.89	0.54
1:A:1478:MET:SD	1:A:1478:MET:N	2.80	0.53
1:A:2192:GLU:OE1	1:A:2192:GLU:N	2.39	0.53
1:B:521:THR:HG21	1:B:912:SER:HB3	1.89	0.53
1:A:714:PHE:HE1	1:A:764:VAL:HG21	1.73	0.53
1:A:1120:ASP:OD1	1:A:1121:LEU:N	2.42	0.53
1:A:1313:ILE:HG22	1:A:1371:VAL:HA	1.89	0.53
1:A:1379:LEU:HB3	1:A:1383:ILE:HD12	1.89	0.53
1:B:727:GLN:O	1:B:731:ARG:NH1	2.41	0.53
1:B:1985:PHE:CZ	1:B:2000:ILE:HD12	2.43	0.53
1:A:1128:ARG:HD3	1:A:2320:VAL:HG12	1.90	0.53
1:A:513:MET:HE3	1:A:513:MET:HA	1.89	0.53
1:A:1443:VAL:CG1	1:A:1496:VAL:HG21	2.39	0.53
1:B:320:ALA:O	1:B:357:SER:OG	2.20	0.53
1:B:767:ARG:NE	2:B:4101:COZ:O8A	2.41	0.53
1:A:1920:GLU:OE2	1:A:2059:ARG:NH1	2.41	0.53
1:B:725:MET:HE2	1:B:725:MET:N	2.23	0.53
1:B:2185:GLU:OE1	1:B:2201:ARG:NE	2.41	0.53
1:A:1660:VAL:HG23	1:A:1772:LEU:HD21	1.90	0.53
1:B:1990:THR:HG22	1:B:1999:LEU:HD21	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:399:VAL:HG12	1:A:399:VAL:O	2.09	0.52
1:B:1438:LEU:HD21	1:B:1514:LEU:HD22	1.91	0.52
1:B:2013:VAL:HG11	1:B:2038:ALA:HB1	1.92	0.52
1:A:178:VAL:HG21	1:A:191:LEU:CD1	2.39	0.52
1:A:624:MET:HE3	1:A:624:MET:CA	2.38	0.52
1:A:1468:VAL:HG11	1:A:1500:ILE:HD13	1.91	0.52
1:B:860:GLU:C	1:B:861:ILE:HD13	2.34	0.52
1:B:1694:ASP:OD1	1:B:1694:ASP:C	2.52	0.52
1:B:1882:VAL:HB	1:B:1944:ILE:HG21	1.92	0.52
1:A:1403:MET:O	1:A:1407:ILE:HG13	2.09	0.52
1:B:2133:LEU:HB3	1:B:2212:ILE:HG23	1.92	0.52
1:A:967:PRO:O	1:A:969:HIS:N	2.42	0.52
1:B:2000:ILE:HD11	1:B:2013:VAL:HG23	1.90	0.52
1:B:998:LEU:HD21	1:B:1047:LEU:HD11	1.90	0.52
1:B:1940:LEU:HD13	1:B:2069:ILE:HD12	1.92	0.52
1:B:2056:VAL:CG2	1:B:2061:LEU:HD22	2.39	0.52
1:A:662:MET:SD	1:A:847:ALA:HB1	2.50	0.52
1:A:2021:ILE:CG2	1:A:2051:LEU:HD11	2.40	0.52
1:B:1940:LEU:CA	1:B:2069:ILE:HD11	2.39	0.52
1:A:224:LEU:CD1	1:B:153:ILE:HG21	2.40	0.52
1:A:1824:ARG:O	1:A:1824:ARG:NH1	2.43	0.52
1:B:998:LEU:HD21	1:B:1047:LEU:CD1	2.40	0.52
1:A:1026:CYS:SG	1:A:1100:ILE:HG21	2.50	0.51
1:A:1368:LEU:HA	1:A:1377:LEU:HD21	1.91	0.51
1:A:1541:MET:SD	1:A:1613:SER:N	2.83	0.51
1:B:988:ASN:OD1	1:B:989:PHE:N	2.42	0.51
1:B:1379:LEU:HB3	1:B:1383:ILE:HD12	1.92	0.51
1:A:844:VAL:O	1:A:848:LEU:HD23	2.10	0.51
1:A:1073:GLU:OE2	1:A:1099:ARG:NH1	2.43	0.51
1:A:1387:LEU:HD11	1:A:1557:LEU:HD13	1.91	0.51
1:A:1506:LEU:HD23	1:A:1512:PHE:CZ	2.46	0.51
1:B:1528:LEU:HB2	1:B:1589:ILE:HD13	1.92	0.51
1:A:2262:SER:OG	1:A:2263:SER:N	2.43	0.51
1:B:1383:ILE:O	1:B:1387:LEU:HD12	2.10	0.51
1:A:1720:LEU:HD12	1:A:1721:TRP:N	2.26	0.51
1:B:2161:SER:OG	3:B:4102:NDP:O2B	2.29	0.51
1:B:1940:LEU:N	1:B:2069:ILE:HD11	2.26	0.51
1:A:2125:LEU:O	1:A:2125:LEU:HD23	2.11	0.50
1:B:2136:GLY:O	1:B:2137:LEU:HD12	2.11	0.50
1:A:377:ALA:O	1:A:381:MET:HG3	2.12	0.50
1:A:1209:MET:HE2	1:A:1211:PHE:CZ	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2088:ALA:O	1:A:2092:VAL:HG23	2.11	0.50
1:A:2125:LEU:HD23	1:A:2125:LEU:C	2.36	0.50
1:B:2240:VAL:HG12	1:B:2282:PHE:CD1	2.46	0.50
1:A:1310:GLU:CD	1:A:1313:ILE:HD11	2.36	0.50
1:A:2195:LEU:HB2	1:A:2249:VAL:HG21	1.94	0.50
1:B:1003:VAL:HG21	1:B:1202:MET:HE1	1.93	0.50
1:B:1825:ARG:HA	1:B:1825:ARG:NE	2.25	0.50
1:A:168:PHE:O	1:B:281:ARG:NH1	2.44	0.50
1:A:1061:ARG:O	1:A:1061:ARG:HG2	2.11	0.50
1:A:472:GLU:OE1	1:A:472:GLU:N	2.44	0.50
1:A:2176:LEU:HD11	1:A:2182:ILE:HG22	1.93	0.50
1:B:825:LEU:HD12	1:B:825:LEU:H	1.77	0.50
1:A:6:SER:OG	1:A:8:LYS:O	2.27	0.50
1:B:1467:LEU:N	1:B:1490:ASP:O	2.40	0.50
1:B:2172:ARG:HG2	1:B:2182:ILE:HG21	1.93	0.50
1:B:759:LEU:O	1:B:763:GLY:N	2.41	0.50
1:A:759:LEU:O	1:A:763:GLY:N	2.40	0.50
1:B:2137:LEU:HD21	1:B:2261:PHE:HE2	1.77	0.49
1:A:2162:ARG:NE	3:A:4102:NDP:O3X	2.45	0.49
1:A:788:LEU:HD23	1:A:788:LEU:O	2.11	0.49
1:A:1309:SER:O	1:A:1313:ILE:HG12	2.12	0.49
1:B:1321:VAL:O	1:B:1325:LEU:HD12	2.12	0.49
1:A:979:ASP:OD2	1:A:979:ASP:C	2.55	0.49
1:A:1500:ILE:HG21	1:A:1506:LEU:HD22	1.95	0.49
1:B:1432:SER:HB2	1:B:1458:LEU:HD11	1.95	0.49
1:A:688:ILE:HD13	1:A:830:TRP:NE1	2.27	0.49
1:A:1421:GLN:O	1:A:1425:VAL:HG23	2.12	0.49
1:A:1752:LEU:HD23	1:A:1753:GLN:N	2.28	0.49
1:A:2312:GLN:OE1	1:A:2312:GLN:C	2.56	0.49
1:A:821:GLN:N	1:A:821:GLN:OE1	2.46	0.49
1:A:2056:VAL:CG2	1:A:2061:LEU:HD22	2.42	0.49
1:B:2386:ILE:O	1:B:2386:ILE:CG2	2.60	0.49
1:A:1279:ARG:HB2	1:A:2333:MET:HE1	1.95	0.49
1:A:1419:GLN:O	1:A:1423:HIS:ND1	2.46	0.49
1:B:967:PRO:N	1:B:968:PRO:CD	2.76	0.49
1:B:979:ASP:C	1:B:979:ASP:OD1	2.56	0.49
1:B:1619:HIS:HB3	1:B:1780:MET:HE2	1.94	0.49
1:A:1045:ILE:HD11	1:A:1082:ALA:CB	2.43	0.49
1:A:2369:VAL:HG22	1:A:2389:PRO:HG3	1.94	0.49
1:A:647:VAL:HG13	1:A:675:TYR:CE2	2.47	0.48
1:B:1338:ALA:HB1	1:B:1345:ARG:HB2	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1874:VAL:HG22	1:B:1894:PHE:CD1	2.48	0.48
1:A:1940:LEU:CA	1:A:2069:ILE:HD11	2.43	0.48
1:A:967:PRO:N	1:A:968:PRO:CD	2.76	0.48
1:A:1328:LEU:HB2	1:A:1334:LEU:HD13	1.95	0.48
1:A:1506:LEU:HD23	1:A:1512:PHE:CE2	2.49	0.48
1:A:1541:MET:O	1:A:1542:LEU:HD23	2.13	0.48
1:A:1714:SER:O	1:A:1750:LYS:NZ	2.46	0.48
1:A:1883:ILE:CD1	1:A:2061:LEU:HD23	2.43	0.48
1:B:1262:ILE:C	1:B:1263:GLU:OE1	2.56	0.48
1:B:2020:LEU:HD23	1:B:2021:ILE:N	2.28	0.48
1:A:1328:LEU:HD13	1:A:1334:LEU:HD13	1.96	0.48
1:B:822:ASP:HA	1:B:825:LEU:HD13	1.96	0.48
1:B:1963:GLU:N	1:B:1985:PHE:O	2.46	0.48
1:B:2020:LEU:HD22	1:B:2022:HIS:CD2	2.48	0.48
1:B:240:ALA:HB1	1:B:324:GLY:O	2.13	0.48
1:B:583:TRP:O	1:B:586:MET:HE2	2.13	0.48
1:A:1874:VAL:HG22	1:A:1894:PHE:CD1	2.47	0.48
1:B:894:ASP:OD1	1:B:895:ASP:N	2.45	0.48
1:B:2048:PHE:HA	1:B:2051:LEU:HD12	1.96	0.48
1:A:1972:LEU:O	1:A:1977:ARG:NE	2.46	0.48
1:A:1729:ASP:OD1	1:A:1729:ASP:C	2.56	0.48
1:A:2144:SER:OG	1:A:2341:HIS:NE2	2.43	0.47
1:B:647:VAL:HG13	1:B:675:TYR:CE1	2.48	0.47
1:A:318:ILE:HG23	1:A:355:VAL:HG23	1.96	0.47
1:A:1862:LEU:HD12	1:A:2127:SER:CB	2.44	0.47
1:A:1944:ILE:HG23	1:A:2061:LEU:CD2	2.39	0.47
1:A:1017:MET:CE	1:A:1080:LEU:HD22	2.44	0.47
1:A:1500:ILE:HG22	1:A:1500:ILE:O	2.14	0.47
1:B:1017:MET:CE	1:B:1080:LEU:HD22	2.44	0.47
1:A:1319:LYS:HA	1:A:1355:VAL:HG21	1.96	0.47
1:B:1045:ILE:HD11	1:B:1082:ALA:CB	2.44	0.47
1:B:1873:GLN:OE1	1:B:1914:VAL:HG22	2.13	0.47
1:B:1944:ILE:O	1:B:1948:VAL:HG23	2.14	0.47
1:A:1689:SER:O	1:A:1690:LEU:HD23	2.15	0.47
1:A:2020:LEU:HD12	1:A:2039:LEU:HD11	1.95	0.47
1:A:137:TYR:HD2	1:A:156:THR:HG22	1.78	0.47
1:A:1328:LEU:CB	1:A:1334:LEU:HD13	2.45	0.47
1:A:2032:PHE:CD1	1:A:2032:PHE:C	2.93	0.47
1:B:1923:ILE:HD12	1:B:2062:LEU:HG	1.96	0.47
1:A:288:PRO:O	1:A:331:ARG:NH1	2.45	0.47
1:A:1438:LEU:HD21	1:A:1514:LEU:HD22	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1692:ASP:OD2	1:A:1721:TRP:NE1	2.46	0.47
1:B:964:ARG:HG2	1:B:965:VAL:N	2.29	0.47
1:B:1325:LEU:HD11	1:B:1553:PHE:CD1	2.49	0.47
1:B:1325:LEU:HD13	1:B:1351:ILE:HG22	1.97	0.47
1:B:1347:LEU:HD21	1:B:1552:ARG:HD3	1.95	0.47
1:B:1354:ARG:NH1	1:B:1549:ALA:O	2.48	0.47
1:B:1937:VAL:HG12	1:B:1941:ARG:HD2	1.96	0.47
1:A:1312:LYS:O	1:A:1316:THR:OG1	2.27	0.47
1:B:1936:PHE:CD1	1:B:2069:ILE:HG21	2.50	0.47
1:B:1334:LEU:HB3	1:B:1348:MET:HE3	1.97	0.47
1:B:1438:LEU:HD21	1:B:1514:LEU:CD2	2.45	0.47
1:A:186:LEU:HD23	1:A:438:CYS:HB2	1.96	0.47
1:A:1238:GLN:OE1	1:A:1845:GLN:NE2	2.43	0.47
1:A:2314:SER:OG	1:A:2321:SER:OG	2.20	0.47
1:B:288:PRO:O	1:B:331:ARG:NH1	2.47	0.47
1:B:400:LYS:HD2	1:B:400:LYS:O	2.14	0.47
1:B:1758:ASP:OD1	1:B:1758:ASP:N	2.42	0.47
1:A:588:GLN:HG3	1:A:624:MET:HE1	1.97	0.46
1:A:604:MET:HE1	1:A:644:ALA:HA	1.97	0.46
1:A:738:ASN:ND2	2:A:4101:COZ:O9P	2.48	0.46
1:A:871:THR:HG21	1:A:885:TYR:CE2	2.50	0.46
1:B:1155:ASN:O	1:B:1156:VAL:HG23	2.15	0.46
1:A:1541:MET:SD	1:A:1613:SER:OG	2.69	0.46
1:A:1686:ALA:CB	1:A:1775:ILE:HD11	2.45	0.46
1:B:1338:ALA:HB2	1:B:1348:MET:SD	2.55	0.46
1:B:1879:THR:HG22	1:B:2105:VAL:CG2	2.45	0.46
1:A:153:ILE:HG23	1:A:154:THR:HG23	1.97	0.46
1:B:203:ILE:HG22	1:B:204:SER:N	2.31	0.46
1:B:1962:TYR:O	1:B:2023:MET:HE3	2.15	0.46
1:A:758:LEU:HD23	1:A:758:LEU:O	2.15	0.46
1:A:1368:LEU:HD13	1:A:1381:ARG:NE	2.31	0.46
1:A:2120:VAL:HG21	1:A:2345:ALA:CB	2.46	0.46
1:B:1113:GLY:O	1:B:1115:ARG:N	2.49	0.46
1:B:1368:LEU:HA	1:B:1377:LEU:HD21	1.97	0.46
1:B:1512:PHE:HE2	1:B:1534:LEU:HD22	1.80	0.46
1:B:1771:PHE:O	1:B:1775:ILE:HG12	2.16	0.46
1:B:1161:VAL:HG21	1:B:1181:CYS:SG	2.55	0.46
1:A:180:THR:O	1:A:181:ALA:HB3	2.16	0.46
1:B:1443:VAL:HG12	1:B:1519:LYS:HD2	1.96	0.46
1:B:1536:ARG:NH1	1:B:1789:THR:OG1	2.49	0.46
1:A:2048:PHE:HA	1:A:2051:LEU:HD12	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1660:VAL:HG23	1:B:1772:LEU:HD21	1.98	0.46
1:B:2261:PHE:CD1	1:B:2300:ILE:HD11	2.51	0.46
1:A:1150:MET:HE1	1:A:1187:ALA:CB	2.44	0.46
1:A:2392:ALA:O	1:A:2396:ALA:N	2.49	0.46
1:B:1527:ALA:O	1:B:1531:VAL:HG23	2.16	0.46
1:B:1905:VAL:CG1	1:B:2066:LEU:HD11	2.45	0.46
1:A:51:ASN:N	1:A:961:VAL:O	2.48	0.46
1:B:318:ILE:CG2	1:B:355:VAL:HG23	2.46	0.46
1:B:623:ILE:CD1	1:B:641:VAL:HG13	2.45	0.46
1:B:1434:GLN:O	1:B:1435:HIS:ND1	2.49	0.46
1:A:812:ASP:O	1:A:814:ASN:ND2	2.49	0.45
1:A:1077:GLN:N	1:A:1077:GLN:OE1	2.49	0.45
1:A:1528:LEU:HB2	1:A:1589:ILE:HD13	1.98	0.45
1:A:2275:ASN:OD1	1:A:2276:TYR:N	2.49	0.45
1:B:696:THR:OG1	1:B:780:MET:HE1	2.16	0.45
1:B:787:TYR:CZ	1:B:791:ILE:HD11	2.52	0.45
1:B:233:SER:OG	1:B:323:THR:O	2.32	0.45
1:B:1944:ILE:HG23	1:B:2061:LEU:CD2	2.40	0.45
1:B:2217:MET:HE1	3:B:4102:NDP:H2D	1.99	0.45
1:B:107:VAL:HG21	1:B:165:LEU:HD13	1.98	0.45
1:B:1118:GLU:OE1	1:B:1118:GLU:N	2.50	0.45
1:B:1878:SER:O	1:B:1911:ASN:ND2	2.49	0.45
1:A:241:ASP:OD2	1:A:241:ASP:N	2.49	0.45
1:A:319:GLU:O	1:A:319:GLU:HG3	2.15	0.45
1:A:716:TYR:OH	1:A:837:ARG:NH1	2.45	0.45
1:A:1554:PRO:O	1:A:1558:MET:HG3	2.16	0.45
1:A:1825:ARG:HA	1:A:1825:ARG:NE	2.31	0.45
1:A:2125:LEU:HD21	1:A:2348:ILE:HG21	1.98	0.45
1:B:272:ARG:NH1	1:B:443:GLU:OE2	2.34	0.45
1:B:1120:ASP:OD2	1:B:1121:LEU:N	2.50	0.45
1:B:1818:ASP:HA	1:B:1821:ASN:HB2	1.98	0.45
1:A:521:THR:HG21	1:A:912:SER:HB3	1.98	0.45
1:A:1379:LEU:CB	1:A:1383:ILE:HD12	2.47	0.45
1:A:1729:ASP:OD1	1:A:1729:ASP:O	2.34	0.45
1:A:1940:LEU:HD12	1:A:2065:ALA:HB1	1.98	0.45
1:A:2255:LEU:H	1:A:2255:LEU:HD12	1.82	0.45
1:A:1882:VAL:HB	1:A:1944:ILE:HG21	1.99	0.45
1:B:1685:GLU:C	1:B:1685:GLU:CD	2.84	0.45
1:B:2091:LEU:HD22	1:B:2105:VAL:HG22	1.99	0.45
1:A:2020:LEU:HD23	1:A:2021:ILE:N	2.32	0.45
1:B:1318:GLU:O	1:B:1319:LYS:C	2.59	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1905:VAL:HG11	1:B:2066:LEU:HD11	1.97	0.45
1:A:1387:LEU:HD11	1:A:1557:LEU:CD1	2.47	0.45
1:A:2333:MET:HE3	1:A:2364:GLU:HB2	1.98	0.45
1:B:399:VAL:HG12	1:B:399:VAL:O	2.16	0.45
1:B:861:ILE:HD13	1:B:861:ILE:N	2.32	0.45
1:A:771:LEU:HD11	2:A:4101:COZ:H21	1.98	0.45
1:A:2141:ILE:O	1:A:2145:ILE:HG12	2.17	0.45
1:B:1322:HIS:CG	1:B:1351:ILE:O	2.70	0.45
1:B:2230:GLU:N	1:B:2230:GLU:OE1	2.49	0.45
1:A:1260:ILE:HG22	1:A:1261:GLN:N	2.31	0.44
1:A:1725:ARG:N	1:A:1756:ASP:OD1	2.50	0.44
1:A:1998:ILE:HG22	1:A:1999:LEU:N	2.32	0.44
1:B:1027:ARG:HH21	1:B:1064:LEU:HD23	1.82	0.44
1:B:1515:VAL:HG23	1:B:1535:LEU:HD21	1.98	0.44
1:B:2236:MET:O	1:B:2240:VAL:HG22	2.17	0.44
1:A:4:THR:HG22	1:A:5:HIS:N	2.33	0.44
1:B:1318:GLU:HB3	1:B:1355:VAL:HG22	1.99	0.44
1:A:2239:LYS:O	1:A:2243:SER:OG	2.33	0.44
1:B:691:TYR:CD2	1:B:790:ALA:HB1	2.51	0.44
1:B:821:GLN:OE1	1:B:821:GLN:N	2.50	0.44
1:B:1379:LEU:CB	1:B:1383:ILE:HD12	2.48	0.44
1:A:889:LEU:HD21	1:A:895:ASP:OD2	2.18	0.44
1:A:1129:PHE:CZ	1:A:1187:ALA:HB2	2.52	0.44
1:A:1345:ARG:HA	1:A:1348:MET:HB2	1.99	0.44
1:A:2120:VAL:HG21	1:A:2345:ALA:HB3	1.98	0.44
1:A:714:PHE:O	1:A:743:VAL:HG22	2.18	0.44
1:A:1579:ARG:NH2	1:A:1595:ASP:OD1	2.50	0.44
1:B:2032:PHE:CD1	1:B:2032:PHE:C	2.95	0.44
1:A:1984:SER:N	1:A:1996:SER:OG	2.49	0.44
1:A:2386:ILE:HG22	1:A:2386:ILE:O	2.17	0.44
1:B:572:ILE:HD11	1:B:857:LEU:HD23	1.99	0.44
1:B:2323:MET:O	1:B:2327:ILE:HG12	2.17	0.44
1:A:19:ARG:NH2	1:A:105:GLU:OE1	2.50	0.44
1:A:1431:ILE:HD13	1:A:1514:LEU:HD13	2.00	0.44
1:A:1895:VAL:HG22	1:A:1905:VAL:HG23	2.00	0.44
1:A:1990:THR:HG22	1:A:1999:LEU:CD1	2.47	0.44
1:B:1355:VAL:HG12	1:B:1357:SER:H	1.83	0.44
1:A:1334:LEU:HG	1:A:1348:MET:SD	2.58	0.44
1:A:1374:HIS:O	1:A:1378:VAL:N	2.39	0.44
1:A:2388:ASP:HB2	1:A:2391:ALA:HB2	2.00	0.44
1:B:966:ASP:N	1:B:966:ASP:OD1	2.49	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1842:ARG:NH1	1:B:1880:GLU:OE1	2.49	0.44
1:A:1291:MET:O	1:A:1294:GLY:N	2.51	0.44
1:A:1363:ASP:O	1:A:1367:MET:HG2	2.17	0.44
1:A:1513:ASP:OD1	1:A:1536:ARG:NE	2.50	0.44
1:B:832:ASP:O	1:B:836:GLY:N	2.44	0.44
1:B:846:ARG:NE	1:B:850:GLU:OE2	2.39	0.44
1:B:1260:ILE:HG22	1:B:1261:GLN:N	2.33	0.44
1:A:1774:LEU:C	1:A:1774:LEU:HD23	2.42	0.43
1:B:428:VAL:HG12	1:B:429:ASN:N	2.32	0.43
1:B:1800:LEU:HD21	1:B:1805:TYR:CE2	2.53	0.43
1:A:2260:PHE:HB2	1:A:2299:VAL:HG22	1.98	0.43
1:A:2266:VAL:HA	1:A:2277:VAL:HG13	2.00	0.43
1:B:330:PRO:HA	1:B:399:VAL:HG22	2.01	0.43
1:A:1492:THR:HG21	1:A:1503:VAL:CG1	2.49	0.43
1:A:1758:ASP:OD1	1:A:1758:ASP:N	2.42	0.43
1:A:2240:VAL:HG13	1:A:2282:PHE:CZ	2.53	0.43
1:B:1324:TYR:HD1	1:B:1388:LEU:HD12	1.82	0.43
1:B:1940:LEU:HD12	1:B:2065:ALA:HB1	1.99	0.43
1:B:1960:LEU:HD11	1:B:2013:VAL:HG22	2.01	0.43
1:A:103:LEU:HD22	1:A:130:MET:CE	2.47	0.43
1:A:848:LEU:HD21	1:A:875:ILE:CD1	2.48	0.43
1:A:1021:ALA:HB1	1:A:1060:VAL:HG21	1.99	0.43
1:A:1800:LEU:HD11	1:A:1805:TYR:CE1	2.53	0.43
1:B:631:ARG:NE	1:B:634:GLU:OE2	2.47	0.43
1:B:1500:ILE:O	1:B:1500:ILE:CG2	2.66	0.43
1:B:1724:HIS:CD2	1:B:1760:LEU:HD21	2.53	0.43
1:B:1854:GLU:OE1	1:B:1855:ALA:C	2.62	0.43
1:B:2199:ARG:HA	1:B:2202:ILE:HG22	2.01	0.43
1:A:521:THR:HG21	1:A:912:SER:CB	2.48	0.43
1:A:1883:ILE:HD12	1:A:1907:LEU:HD13	2.00	0.43
1:A:2013:VAL:HG11	1:A:2038:ALA:HB1	1.99	0.43
1:B:1291:MET:HE1	1:B:1597:ILE:HG21	1.99	0.43
1:B:1340:LYS:CD	1:B:1564:LEU:HD21	2.46	0.43
1:B:2047:ALA:O	1:B:2051:LEU:N	2.50	0.43
1:A:1529:LYS:NZ	1:A:1589:ILE:O	2.47	0.43
1:A:1851:TYR:OH	1:A:1879:THR:O	2.33	0.43
1:B:521:THR:HG21	1:B:912:SER:HB2	2.01	0.43
1:B:1020:GLU:OE1	1:B:1171:ILE:HG23	2.19	0.43
1:B:1965:ASP:OD2	1:B:1967:HIS:N	2.52	0.43
1:B:2236:MET:O	1:B:2237:LYS:C	2.61	0.43
1:B:365:THR:O	1:B:369:ALA:HB2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1292:LEU:HD23	1:B:1292:LEU:O	2.18	0.43
1:B:1403:MET:O	1:B:1407:ILE:HG13	2.18	0.43
1:B:1794:ILE:HD12	1:B:1794:ILE:H	1.83	0.43
1:A:179:ASP:O	1:B:177:SER:OG	2.31	0.43
1:A:726:GLU:OE1	1:A:726:GLU:C	2.61	0.43
1:A:1321:VAL:CG1	1:A:1553:PHE:CB	2.97	0.43
1:A:1706:PHE:HA	1:A:1709:LEU:HD12	2.00	0.43
1:B:385:THR:HG22	1:B:386:ILE:N	2.34	0.43
1:B:767:ARG:NH1	2:B:4101:COZ:O1A	2.52	0.43
1:B:1079:THR:O	1:B:1079:THR:HG23	2.18	0.43
1:B:1300:ALA:O	1:B:1599:LEU:HD12	2.19	0.43
1:B:1656:ILE:O	1:B:1660:VAL:HG12	2.19	0.43
1:A:2225:ILE:HD12	1:A:2225:ILE:H	1.84	0.43
1:B:1223:SER:C	1:B:1253:SER:HG	2.26	0.43
1:B:1891:LEU:CD1	1:B:1909:THR:HG22	2.49	0.43
1:A:16:THR:HG22	1:A:252:PHE:CD1	2.54	0.42
1:B:1443:VAL:CG1	1:B:1496:VAL:HG21	2.49	0.42
1:B:1862:LEU:HD12	1:B:2127:SER:CB	2.49	0.42
1:A:111:MET:HE1	1:A:169:PHE:CD1	2.53	0.42
1:B:61:GLU:OE1	1:B:225:HIS:NE2	2.49	0.42
1:B:2300:ILE:CG2	1:B:2347:ALA:HB2	2.49	0.42
1:A:1961:ILE:HD13	1:A:1972:LEU:HD13	2.01	0.42
1:B:1064:LEU:O	1:B:1065:ASP:HB3	2.19	0.42
1:B:2365:THR:O	1:B:2365:THR:OG1	2.36	0.42
1:A:1310:GLU:O	1:A:1313:ILE:HG13	2.19	0.42
1:A:1873:GLN:OE1	1:A:1914:VAL:HG22	2.20	0.42
1:B:1547:THR:OG1	1:B:1609:SER:OG	2.20	0.42
1:A:240:ALA:HB1	1:A:324:GLY:O	2.19	0.42
1:A:1318:GLU:O	1:A:1321:VAL:N	2.53	0.42
1:A:1515:VAL:HG23	1:A:1535:LEU:HD21	2.00	0.42
1:A:2020:LEU:HD22	1:A:2022:HIS:ND1	2.34	0.42
1:B:758:LEU:HD23	1:B:758:LEU:O	2.19	0.42
1:B:811:TYR:N	1:B:811:TYR:CD1	2.85	0.42
1:B:1247:ASP:OD1	1:B:1247:ASP:C	2.62	0.42
1:B:1321:VAL:HG13	1:B:1553:PHE:CB	2.50	0.42
1:B:2259:LEU:HD21	1:B:2347:ALA:HB1	2.01	0.42
1:B:2388:ASP:HB2	1:B:2391:ALA:HB2	2.01	0.42
1:A:1697:VAL:HG11	1:A:1709:LEU:HD21	2.01	0.42
1:B:1282:TYR:HB2	1:B:1813:ASP:HB3	2.01	0.42
1:B:1440:ILE:HD11	1:B:1458:LEU:HD22	2.02	0.42
1:A:838:VAL:C	1:A:839:LEU:HD12	2.45	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1794:ILE:H	1:A:1794:ILE:HD12	1.85	0.42
1:A:1833:VAL:HA	1:A:1838:ILE:HD12	2.01	0.42
1:B:623:ILE:HD13	1:B:641:VAL:HG13	2.00	0.42
1:A:1310:GLU:HA	1:A:1313:ILE:HG12	2.02	0.42
1:A:1379:LEU:O	1:A:1380:VAL:C	2.63	0.42
1:B:957:LEU:HD12	1:B:977:PRO:HB2	2.02	0.42
1:B:2198:LEU:O	1:B:2202:ILE:HG22	2.19	0.42
1:A:727:GLN:O	1:A:731:ARG:NH1	2.53	0.42
1:A:1064:LEU:HD12	1:A:1065:ASP:N	2.35	0.42
1:A:1372:GLY:O	1:A:1377:LEU:HD22	2.20	0.42
1:A:1879:THR:HG22	1:A:2105:VAL:CG2	2.50	0.42
1:A:1698:LEU:HD12	1:A:1735:ALA:HB3	2.00	0.41
1:B:178:VAL:HG21	1:B:191:LEU:CD1	2.49	0.41
1:B:1325:LEU:HD22	1:B:1351:ILE:HB	2.02	0.41
1:B:1379:LEU:O	1:B:1380:VAL:C	2.62	0.41
1:B:1452:ARG:NH2	1:B:1485:ASP:OD2	2.53	0.41
1:A:137:TYR:CD2	1:A:156:THR:HG22	2.54	0.41
1:A:1839:SER:HA	1:A:1912:SER:HA	2.02	0.41
1:B:812:ASP:OD1	1:B:813:ASP:N	2.53	0.41
1:B:1374:HIS:O	1:B:1378:VAL:N	2.41	0.41
1:B:1543:MET:O	1:B:1611:VAL:N	2.39	0.41
1:B:2136:GLY:N	1:B:2160:THR:O	2.43	0.41
1:A:2047:ALA:O	1:A:2051:LEU:N	2.54	0.41
1:A:2140:HIS:HA	1:A:2143:GLN:HG3	2.03	0.41
1:A:2170:LEU:HD23	1:A:2170:LEU:C	2.45	0.41
1:B:565:ASP:OD1	1:B:566:HIS:N	2.53	0.41
1:B:734:VAL:O	1:B:734:VAL:HG23	2.20	0.41
1:A:1438:LEU:HD21	1:A:1514:LEU:CD2	2.51	0.41
1:A:1905:VAL:HG11	1:A:2066:LEU:HD21	2.03	0.41
1:B:682:GLU:OE1	1:B:682:GLU:N	2.42	0.41
1:B:690:TYR:O	1:B:694:VAL:HG23	2.20	0.41
1:B:2099:HIS:HB3	1:B:2102:ALA:HB2	2.01	0.41
1:A:473:THR:O	1:A:473:THR:HG22	2.20	0.41
1:A:608:MET:HE3	1:A:686:ILE:HG23	2.02	0.41
1:A:1363:ASP:O	1:A:1367:MET:HE2	2.20	0.41
1:A:1454:VAL:HG11	1:A:1465:TYR:HE2	1.85	0.41
1:A:1739:LEU:HD21	1:A:2224:PHE:CZ	2.56	0.41
1:A:2195:LEU:HD12	1:A:2195:LEU:N	2.35	0.41
1:B:1674:LEU:HA	1:B:1677:LEU:HD23	2.02	0.41
1:B:2198:LEU:O	1:B:2198:LEU:HD23	2.20	0.41
1:B:2239:LYS:HG2	1:B:2283:MET:HE2	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2260:PHE:HB2	1:B:2299:VAL:HG22	2.02	0.41
1:A:1318:GLU:O	1:A:1319:LYS:C	2.64	0.41
1:A:1469:ASP:O	1:A:1494:ALA:N	2.54	0.41
1:B:1120:ASP:HB2	1:B:2170:LEU:HD13	2.03	0.41
1:A:1878:SER:HB2	1:A:1941:ARG:HE	1.85	0.41
1:A:1960:LEU:CD1	1:A:2013:VAL:HG22	2.48	0.41
1:B:1403:MET:O	1:B:1403:MET:HE3	2.20	0.41
1:B:1474:THR:O	1:B:1478:MET:HG2	2.21	0.41
1:A:1360:GLU:H	1:A:1363:ASP:HB2	1.85	0.41
1:A:1940:LEU:HD13	1:A:2069:ILE:HD12	2.02	0.41
1:B:59:ASP:OD1	1:B:59:ASP:C	2.64	0.41
1:B:662:MET:SD	1:B:847:ALA:HB1	2.60	0.41
1:B:1655:ALA:O	1:B:1659:LEU:HD23	2.21	0.41
1:B:1824:ARG:O	1:B:1825:ARG:HD2	2.21	0.41
1:B:2096:THR:O	1:B:2100:ALA:N	2.53	0.41
1:A:788:LEU:HD12	1:A:831:LYS:HE2	2.03	0.41
1:A:952:TYR:CD2	1:A:954:GLU:HG2	2.56	0.41
1:A:1064:LEU:O	1:A:1065:ASP:HB3	2.20	0.41
1:A:2243:SER:OG	1:A:2283:MET:SD	2.79	0.41
1:B:759:LEU:HD13	1:B:766:ASN:ND2	2.26	0.41
1:B:1281:PHE:HZ	1:B:2335:VAL:HG22	1.86	0.41
1:B:1379:LEU:HG	1:B:1403:MET:HE1	2.03	0.41
1:B:1990:THR:HG22	1:B:1999:LEU:CD2	2.51	0.41
1:A:709:MET:HE1	1:A:775:TYR:HB2	2.02	0.40
1:B:834:LEU:O	1:B:834:LEU:HD23	2.21	0.40
1:B:967:PRO:O	1:B:969:HIS:N	2.55	0.40
1:B:1492:THR:HG21	1:B:1503:VAL:CG1	2.51	0.40
1:B:1568:ARG:O	1:B:1572:THR:HG23	2.21	0.40
1:B:2220:ASP:OD2	1:B:2222:LYS:NZ	2.54	0.40
1:A:640:PRO:HA	1:A:689:ALA:HB1	2.03	0.40
1:A:1499:GLY:HA2	1:A:1530:THR:HG21	2.04	0.40
1:A:1616:LEU:HD21	1:A:1624:ARG:HD2	2.03	0.40
1:A:1818:ASP:O	1:A:1822:ALA:N	2.48	0.40
1:A:2137:LEU:O	1:A:2142:GLY:HA3	2.21	0.40
1:B:111:MET:HE2	1:B:121:MET:HE2	2.03	0.40
1:B:1345:ARG:HA	1:B:1348:MET:HB3	2.03	0.40
1:B:1554:PRO:C	1:B:1558:MET:HE3	2.46	0.40
1:B:1688:LEU:C	1:B:1688:LEU:HD23	2.46	0.40
1:B:1963:GLU:N	1:B:1964:PRO:CD	2.85	0.40
1:A:1818:ASP:HA	1:A:1821:ASN:HB2	2.02	0.40
1:B:964:ARG:HH12	1:B:1027:ARG:CD	2.35	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1061:ARG:O	1:B:1061:ARG:HG2	2.22	0.40
1:A:932:LEU:C	1:A:932:LEU:HD23	2.45	0.40
1:A:1325:LEU:CD1	1:A:1351:ILE:HB	2.50	0.40
1:A:1640:LEU:HD12	1:A:1641:VAL:N	2.36	0.40
1:A:1723:THR:HG23	1:A:1733:HIS:HB3	2.02	0.40
1:A:2163:HIS:N	3:A:4102:NDP:O2X	2.47	0.40
1:A:2255:LEU:HD12	1:A:2255:LEU:N	2.36	0.40
1:A:2300:ILE:HG22	1:A:2359:LEU:HD12	2.03	0.40
1:B:822:ASP:OD1	1:B:823:LYS:N	2.54	0.40
1:B:1553:PHE:HB3	1:B:1554:PRO:HD3	2.04	0.40
1:A:103:LEU:HD23	1:A:103:LEU:HA	1.97	0.40
1:A:957:LEU:HD11	1:A:978:ASP:HB3	2.02	0.40
1:A:1586:LEU:CD1	1:A:1611:VAL:HG11	2.51	0.40
1:A:1944:ILE:O	1:A:1948:VAL:HG23	2.21	0.40
1:B:564:PHE:N	1:B:564:PHE:CD2	2.89	0.40
1:B:630:SER:OG	1:B:632:LEU:HD23	2.22	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	2376/4007 (59%)	2273 (96%)	103 (4%)	0	100	100
1	B	2376/4007 (59%)	2273 (96%)	103 (4%)	0	100	100
All	All	4752/8014 (59%)	4546 (96%)	206 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1977/3338 (59%)	1963 (99%)	14 (1%)	81	89
1	B	1977/3338 (59%)	1955 (99%)	22 (1%)	70	82
All	All	3954/6676 (59%)	3918 (99%)	36 (1%)	74	87

All (36) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	62	HIS
1	A	279	ASP
1	A	603	VAL
1	A	960	ASN
1	A	1060	VAL
1	A	1119	LEU
1	A	1209	MET
1	A	1334	LEU
1	A	1355	VAL
1	A	1410	TRP
1	A	1794	ILE
1	A	1999	LEU
1	A	2019	MET
1	A	2339	ASP
1	B	47	GLU
1	B	152	MET
1	B	485	SER
1	B	557	THR
1	B	601	ILE
1	B	714	PHE
1	B	783	CYS
1	B	960	ASN
1	B	1052	ASP
1	B	1065	ASP
1	B	1066	SER
1	B	1133	MET
1	B	1313	ILE

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Mol	Chain	Res	Type
1	B	1325	LEU
1	B	1401	SER
1	B	1410	TRP
1	B	1478	MET
1	B	1500	ILE
1	B	2169	GLN
1	B	2217	MET
1	B	2240	VAL
1	B	2369	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	113	ASN
1	A	390	GLN
1	A	391	HIS
1	A	450	HIS
1	A	518	HIS
1	A	550	ASN
1	A	666	HIS
1	A	1070	HIS
1	A	1183	GLN
1	A	1665	HIS
1	A	1821	ASN
1	A	1967	HIS
1	A	2022	HIS
1	A	2143	GLN
1	A	2151	GLN
1	B	63	HIS
1	B	99	GLN
1	B	321	HIS
1	B	390	GLN
1	B	394	ASN
1	B	721	ASN
1	B	738	ASN
1	B	963	HIS
1	B	1032	GLN
1	B	1097	HIS
1	B	1256	ASN
1	B	1261	GLN
1	B	1322	HIS
1	B	1657	GLN

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Mol	Chain	Res	Type
1	B	1665	HIS
1	B	1670	ASN
1	B	1730	ASN
1	B	1945	GLN
1	B	2022	HIS
1	B	2233	GLN
1	B	2281	ASN
1	B	2377	HIS
1	B	2379	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

4 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
3	NDP	A	4102	-	45,52,52	2.29	5 (11%)	53,80,80	1.75	11 (20%)
3	NDP	B	4102	-	45,52,52	2.28	6 (13%)	53,80,80	1.70	9 (16%)
2	COZ	B	4101	-	41,50,50	1.00	1 (2%)	52,75,75	1.23	5 (9%)
2	COZ	A	4101	-	41,50,50	1.00	1 (2%)	52,75,75	1.19	5 (9%)

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
3	NDP	A	4102	-	-	14/30/77/77	0/5/5/5
3	NDP	B	4102	-	-	7/30/77/77	0/5/5/5
2	COZ	B	4101	-	-	5/44/64/64	0/3/3/3
2	COZ	A	4101	-	-	15/44/64/64	0/3/3/3

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	4102	NDP	P2B-O2B	12.53	1.83	1.59
3	B	4102	NDP	P2B-O2B	12.44	1.82	1.59
2	B	4101	COZ	P3B-O3B	5.01	1.68	1.59
2	A	4101	COZ	P3B-O3B	4.99	1.68	1.59
3	A	4102	NDP	PN-O5D	4.58	1.77	1.59
3	B	4102	NDP	PN-O5D	4.18	1.76	1.59
3	B	4102	NDP	O2B-C2B	-3.06	1.33	1.44
3	A	4102	NDP	O2B-C2B	-2.99	1.33	1.44
3	A	4102	NDP	C2A-N1A	2.28	1.38	1.33
3	B	4102	NDP	C2A-N1A	2.20	1.38	1.33
3	B	4102	NDP	C7N-N7N	2.02	1.38	1.33
3	A	4102	NDP	C7N-N7N	2.01	1.38	1.33
3	B	4102	NDP	O5D-C5D	-2.00	1.37	1.44

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	4102	NDP	PN-O3-PA	-7.13	108.36	132.83
3	B	4102	NDP	PN-O3-PA	-7.12	108.39	132.83
2	A	4101	COZ	C7P-N8P-C9P	3.44	128.72	122.59
3	B	4102	NDP	O2B-P2B-O1X	-3.39	96.32	109.39
2	B	4101	COZ	O6A-CCP-CBP	3.35	115.94	110.55
3	A	4102	NDP	O2B-P2B-O1X	-3.32	96.58	109.39
2	B	4101	COZ	C7P-N8P-C9P	3.18	128.26	122.59
3	A	4102	NDP	O4B-C4B-C3B	3.16	111.37	105.11
3	B	4102	NDP	PN-O5D-C5D	-2.98	104.22	121.68
2	A	4101	COZ	C7P-C6P-C5P	-2.89	107.55	112.36
3	B	4102	NDP	PA-O5B-C5B	-2.89	104.76	121.68
3	A	4102	NDP	PA-O5B-C5B	-2.74	105.62	121.68
2	A	4101	COZ	O6A-CCP-CBP	2.61	114.74	110.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	4102	NDP	O3X-P2B-O2X	2.57	117.46	107.64
3	B	4102	NDP	O3X-P2B-O2X	2.53	117.32	107.64
3	A	4102	NDP	PN-O5D-C5D	-2.36	107.85	121.68
2	A	4101	COZ	CDP-CBP-CCP	-2.33	104.42	108.23
3	B	4102	NDP	O2N-PN-O1N	2.29	123.58	112.24
2	B	4101	COZ	C3B-C2B-C1B	2.28	104.95	99.89
3	A	4102	NDP	C2A-N1A-C6A	-2.27	114.86	118.75
3	A	4102	NDP	O5D-PN-O1N	-2.27	100.18	109.07
3	B	4102	NDP	C2A-N1A-C6A	-2.27	114.88	118.75
3	B	4102	NDP	C5B-C4B-C3B	-2.25	106.75	115.18
3	A	4102	NDP	O2N-PN-O1N	2.22	123.20	112.24
2	A	4101	COZ	CEP-CBP-CCP	2.18	111.79	108.23
3	B	4102	NDP	O5D-PN-O1N	-2.17	100.59	109.07
3	A	4102	NDP	C5B-C4B-C3B	-2.15	107.12	115.18
3	A	4102	NDP	C5D-C4D-C3D	-2.10	107.30	115.18
2	B	4101	COZ	CEP-CBP-CCP	2.09	111.64	108.23
2	B	4101	COZ	CDP-CBP-CCP	-2.01	104.95	108.23

There are no chirality outliers.

All (41) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	4101	COZ	CCP-O6A-P2A-O3A
2	A	4101	COZ	CCP-O6A-P2A-O4A
2	A	4101	COZ	C9P-CAP-CBP-CCP
2	A	4101	COZ	C9P-CAP-CBP-CDP
2	A	4101	COZ	C9P-CAP-CBP-CEP
2	A	4101	COZ	O9P-C9P-CAP-CBP
2	A	4101	COZ	N8P-C9P-CAP-CBP
2	A	4101	COZ	O9P-C9P-CAP-OAP
2	A	4101	COZ	N8P-C9P-CAP-OAP
2	B	4101	COZ	C5B-O5B-P1A-O1A
2	B	4101	COZ	C5P-C6P-C7P-N8P
3	A	4102	NDP	C5B-O5B-PA-O1A
3	A	4102	NDP	C5B-O5B-PA-O2A
3	A	4102	NDP	C5D-O5D-PN-O1N
3	A	4102	NDP	C5D-O5D-PN-O2N
3	A	4102	NDP	O4D-C1D-N1N-C6N
3	A	4102	NDP	C2N-C3N-C7N-N7N
3	B	4102	NDP	C2D-C1D-N1N-C2N
3	B	4102	NDP	C2N-C3N-C7N-N7N
3	B	4102	NDP	C2D-C1D-N1N-C6N

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	A	4102	NDP	C4B-C5B-O5B-PA
2	A	4101	COZ	OAP-CAP-CBP-CDP
2	A	4101	COZ	OAP-CAP-CBP-CEP
2	B	4101	COZ	O4B-C4B-C5B-O5B
3	A	4102	NDP	O4D-C4D-C5D-O5D
2	A	4101	COZ	OAP-CAP-CBP-CCP
3	A	4102	NDP	C2N-C3N-C7N-O7N
3	B	4102	NDP	C2N-C3N-C7N-O7N
3	B	4102	NDP	O4D-C1D-N1N-C2N
3	A	4102	NDP	O4B-C4B-C5B-O5B
3	B	4102	NDP	O4D-C4D-C5D-O5D
2	A	4101	COZ	C5B-O5B-P1A-O3A
2	B	4101	COZ	C5B-O5B-P1A-O3A
3	A	4102	NDP	C5B-O5B-PA-O3
3	A	4102	NDP	C5D-O5D-PN-O3
3	B	4102	NDP	O4B-C4B-C5B-O5B
3	A	4102	NDP	PA-O3-PN-O1N
3	A	4102	NDP	PA-O3-PN-O2N
2	A	4101	COZ	C5B-O5B-P1A-O2A
2	A	4101	COZ	O4B-C4B-C5B-O5B
2	B	4101	COZ	C9P-CAP-CBP-CCP

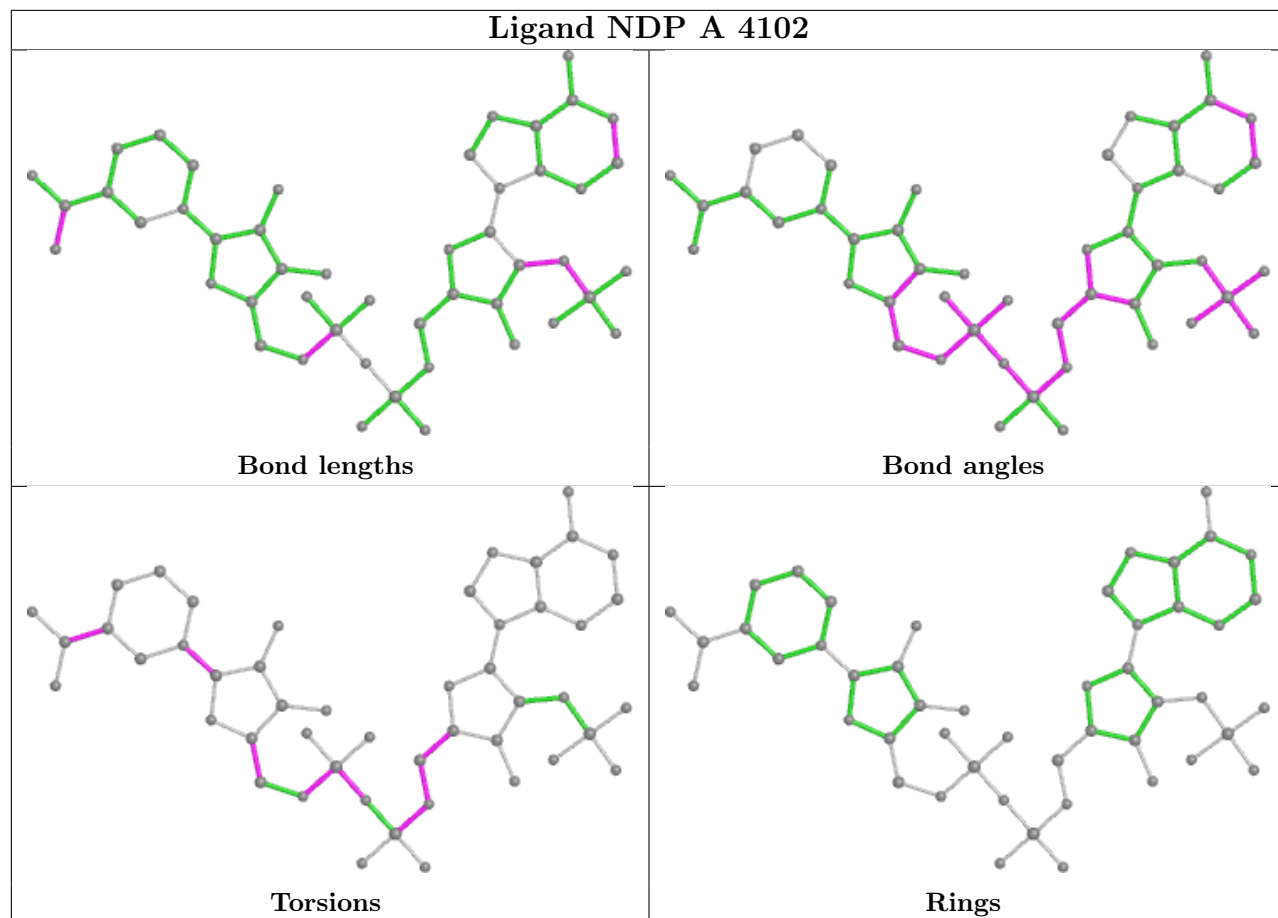
There are no ring outliers.

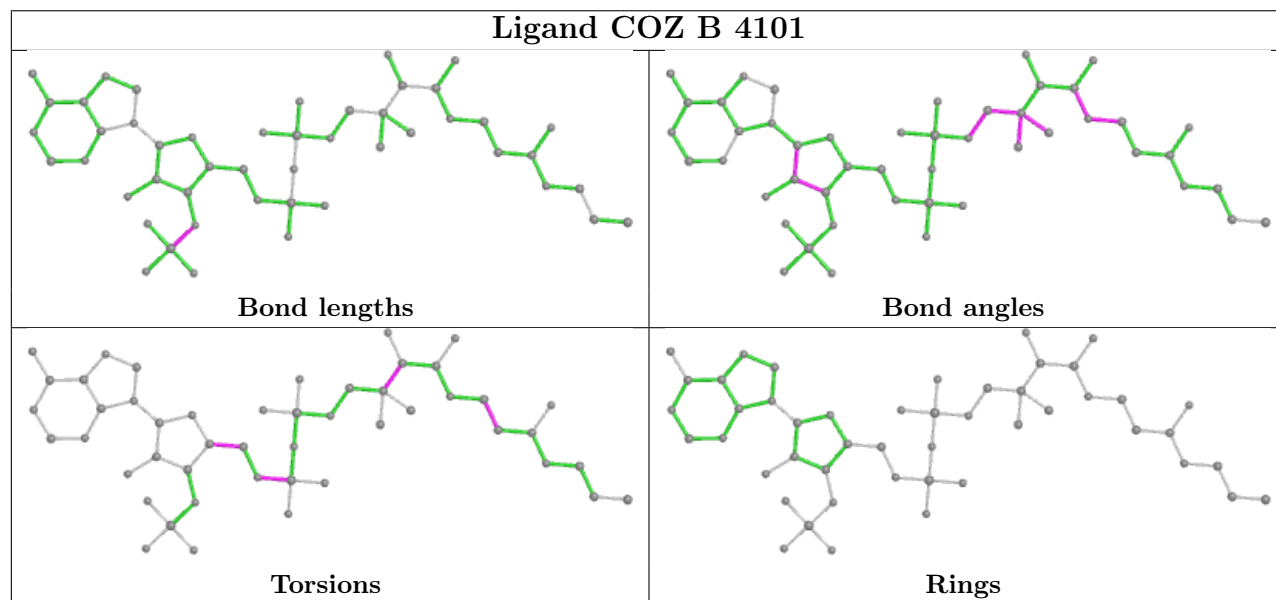
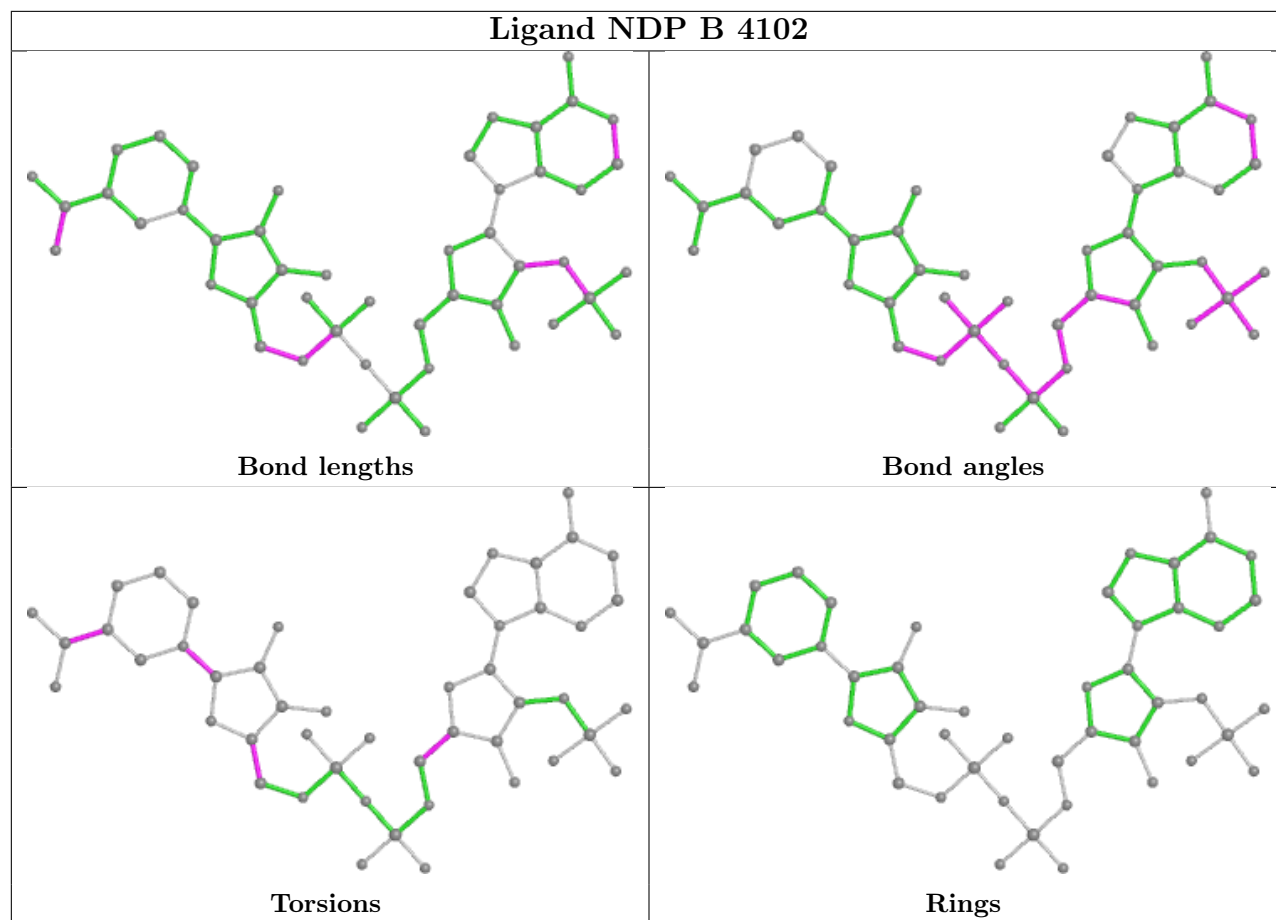
4 monomers are involved in 8 short contacts:

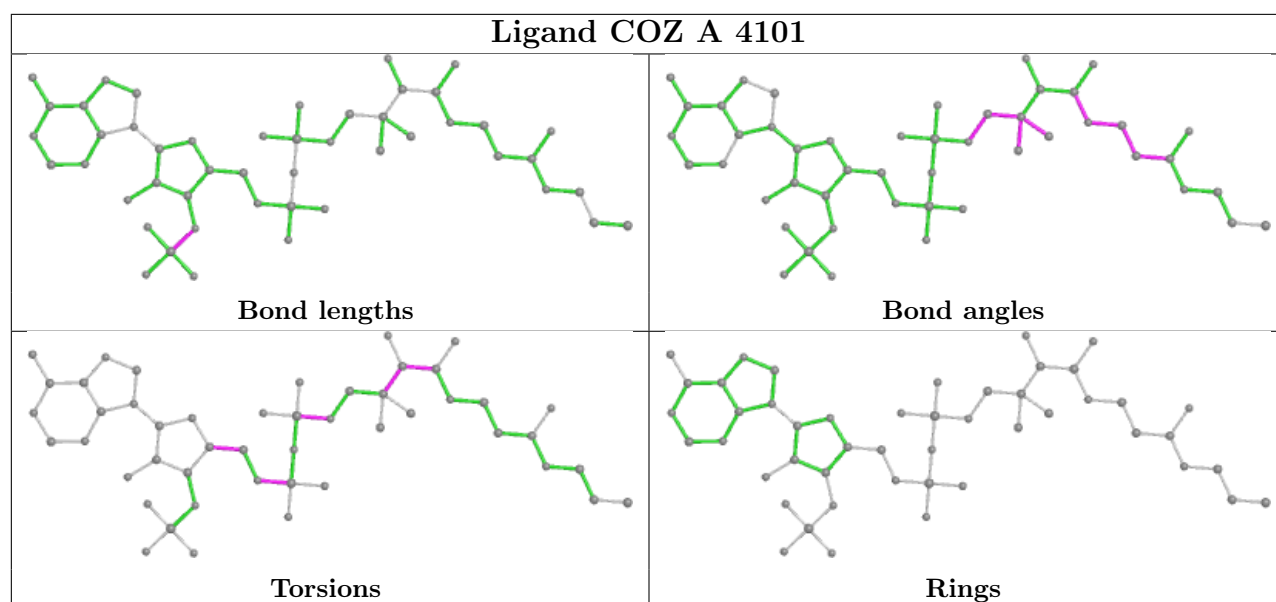
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	4102	NDP	2	0
3	B	4102	NDP	2	0
2	B	4101	COZ	2	0
2	A	4101	COZ	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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 [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [\(i\)](#)

There are no chain breaks in this entry.

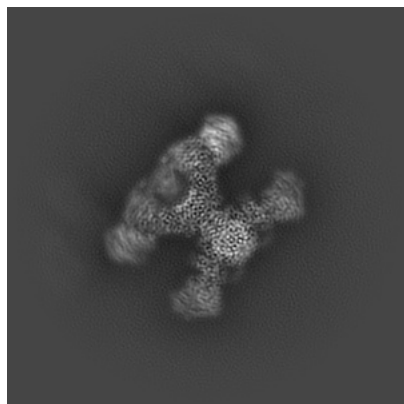
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-66475. These allow visual inspection of the internal detail of the map and identification of artifacts.

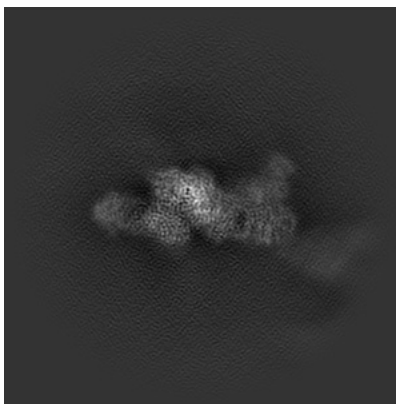
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

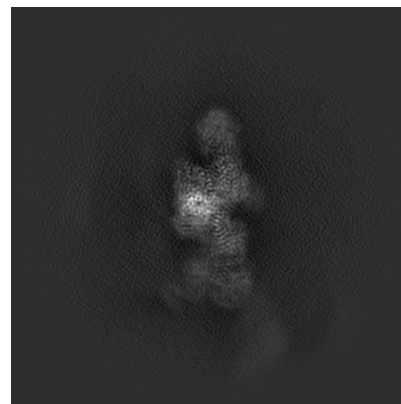
6.1.1 Primary map



X

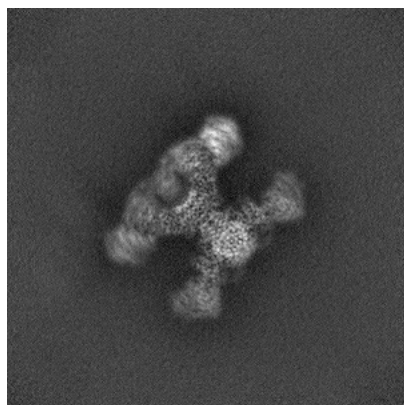


Y

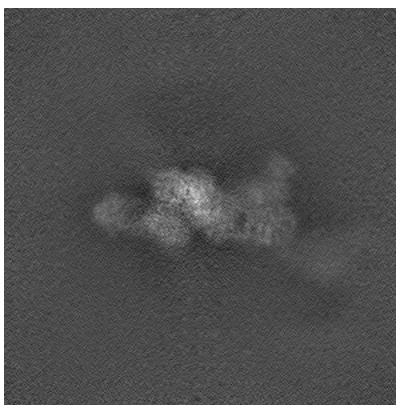


Z

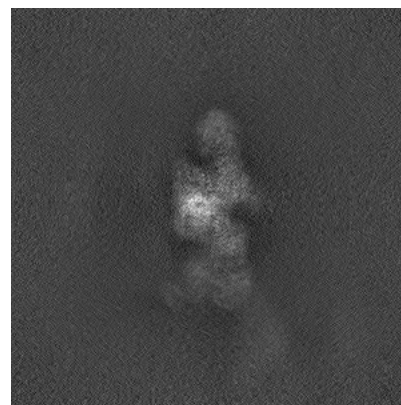
6.1.2 Raw map



X



Y

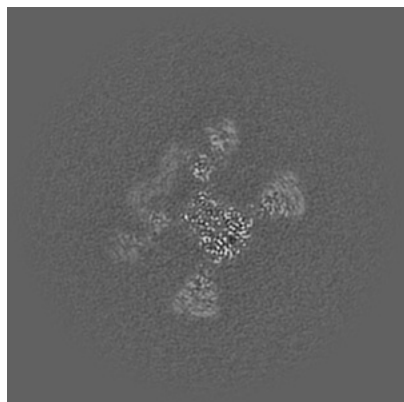


Z

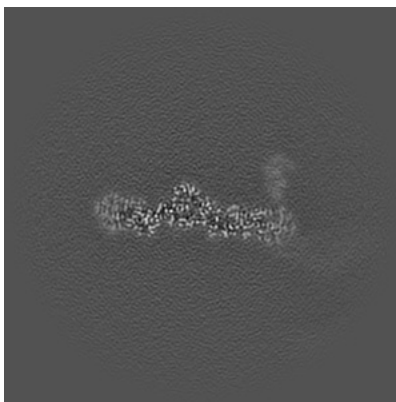
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 288

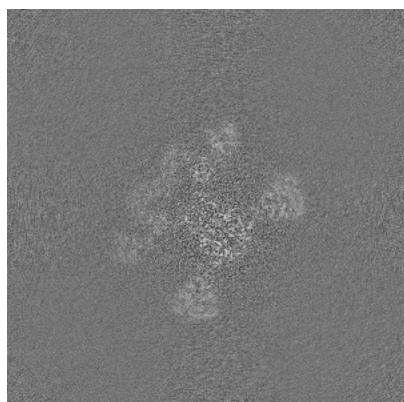


Y Index: 288

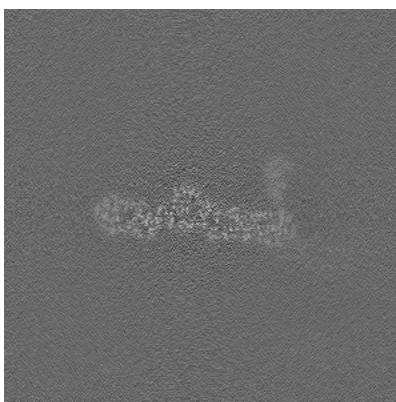


Z Index: 288

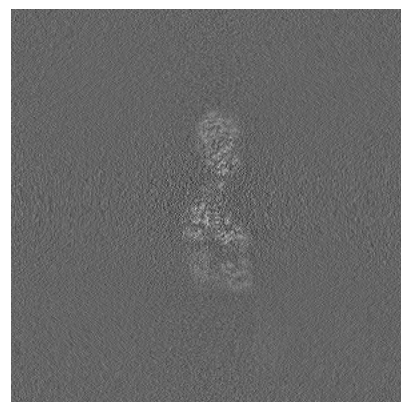
6.2.2 Raw map



X Index: 288



Y Index: 288

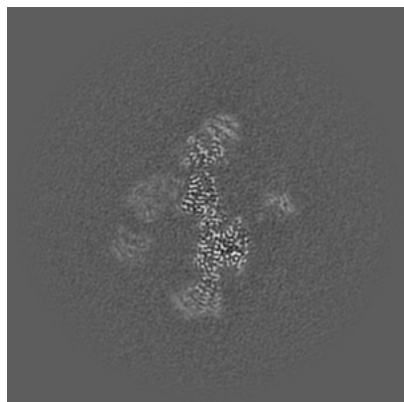


Z Index: 288

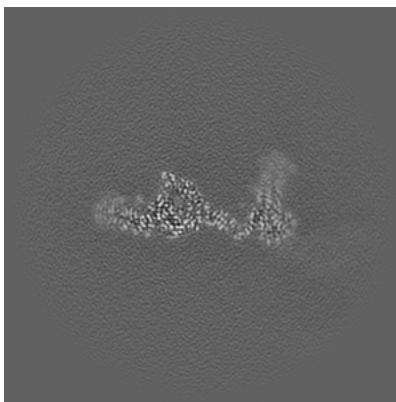
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

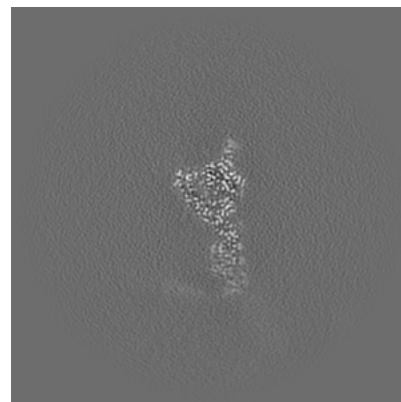
6.3.1 Primary map



X Index: 272

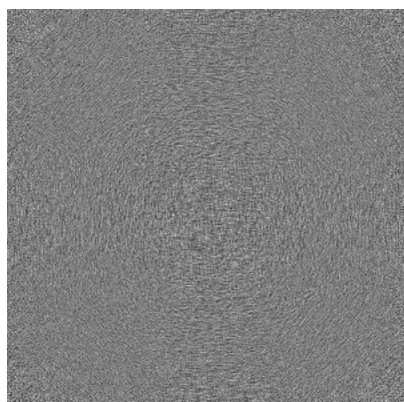


Y Index: 299

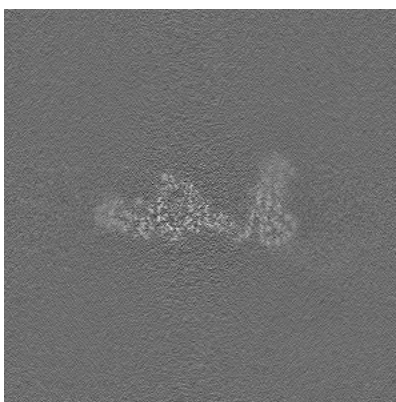


Z Index: 260

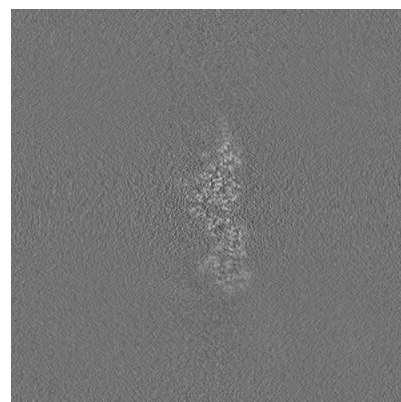
6.3.2 Raw map



X Index: 0



Y Index: 300

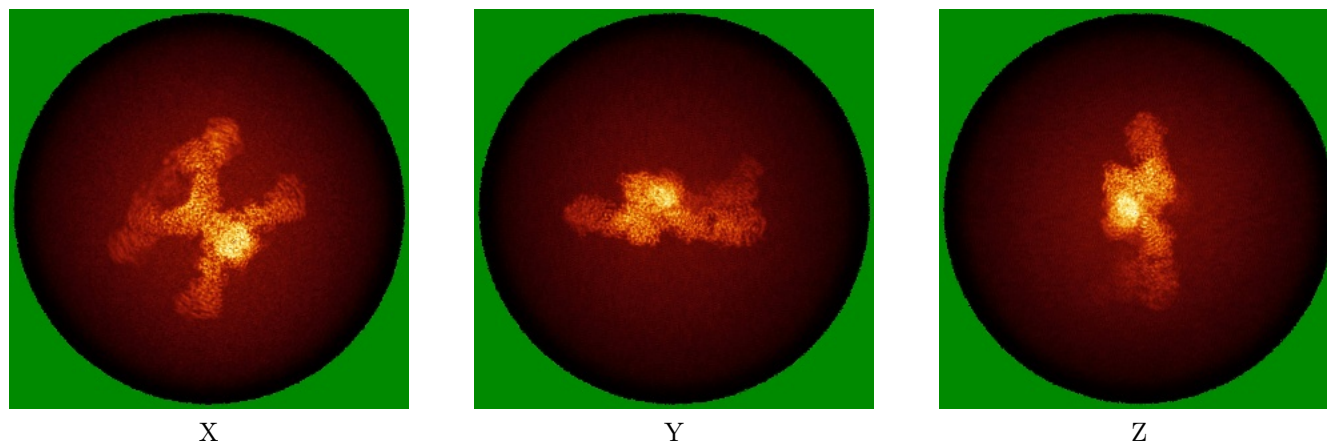


Z Index: 268

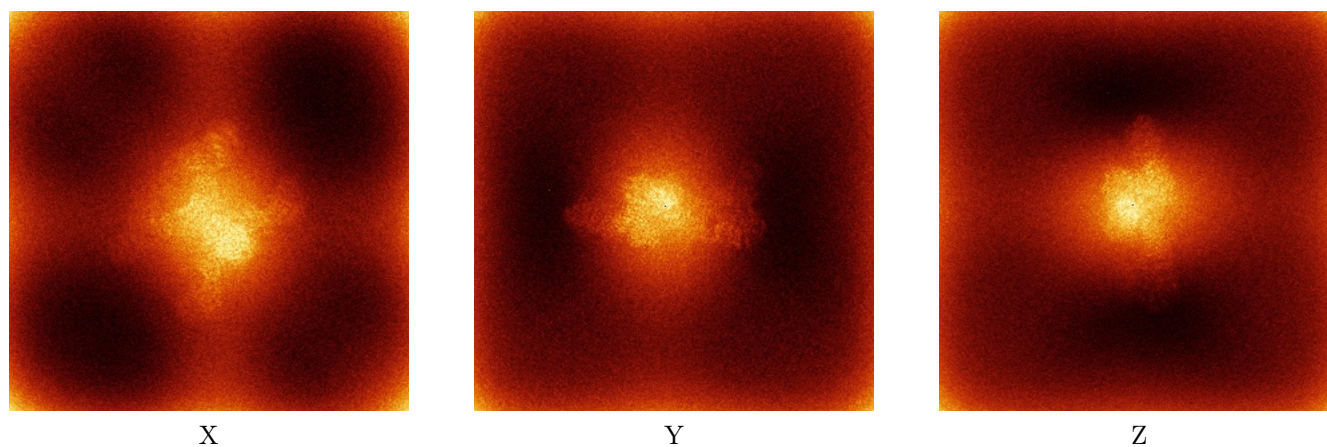
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



6.4.2 Raw map



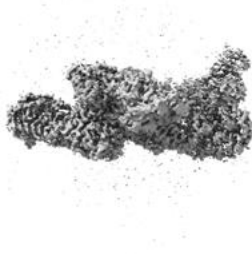
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



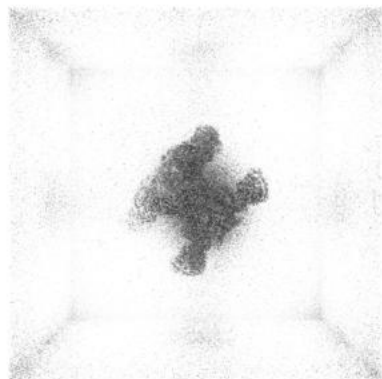
Y



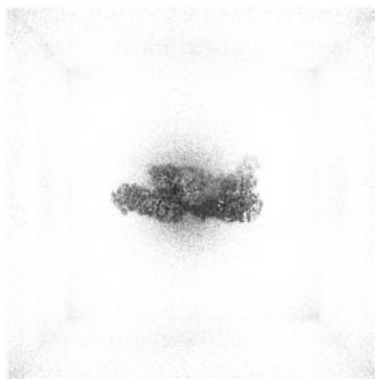
Z

The images above show the 3D surface view of the map at the recommended contour level 0.08. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

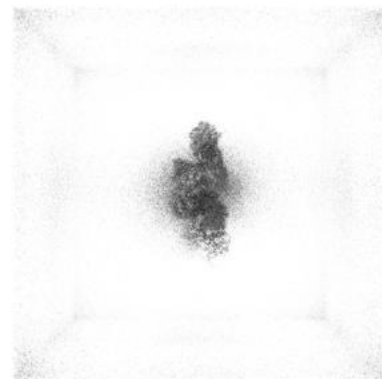
6.5.2 Raw map



X



Y



Z

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

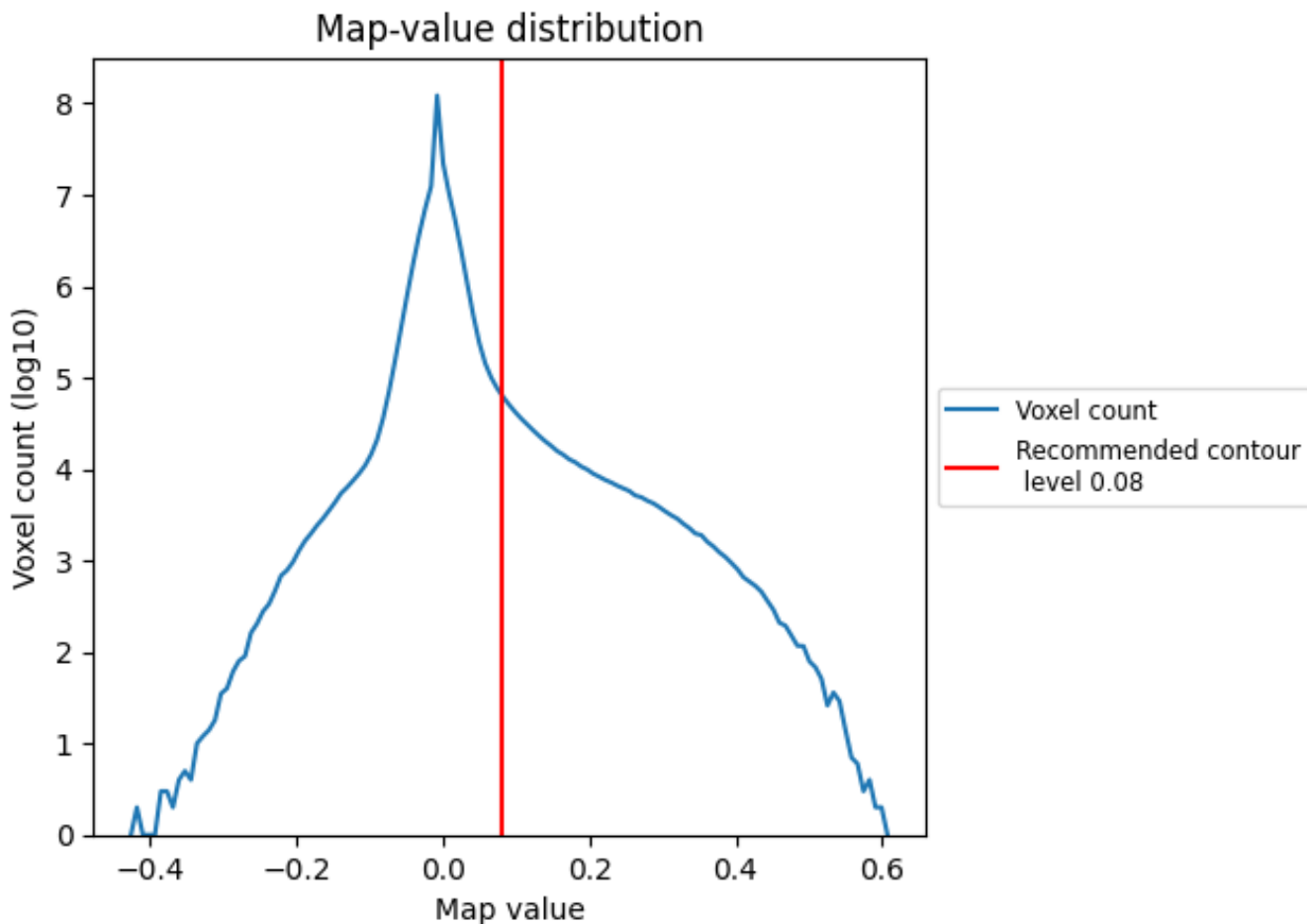
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

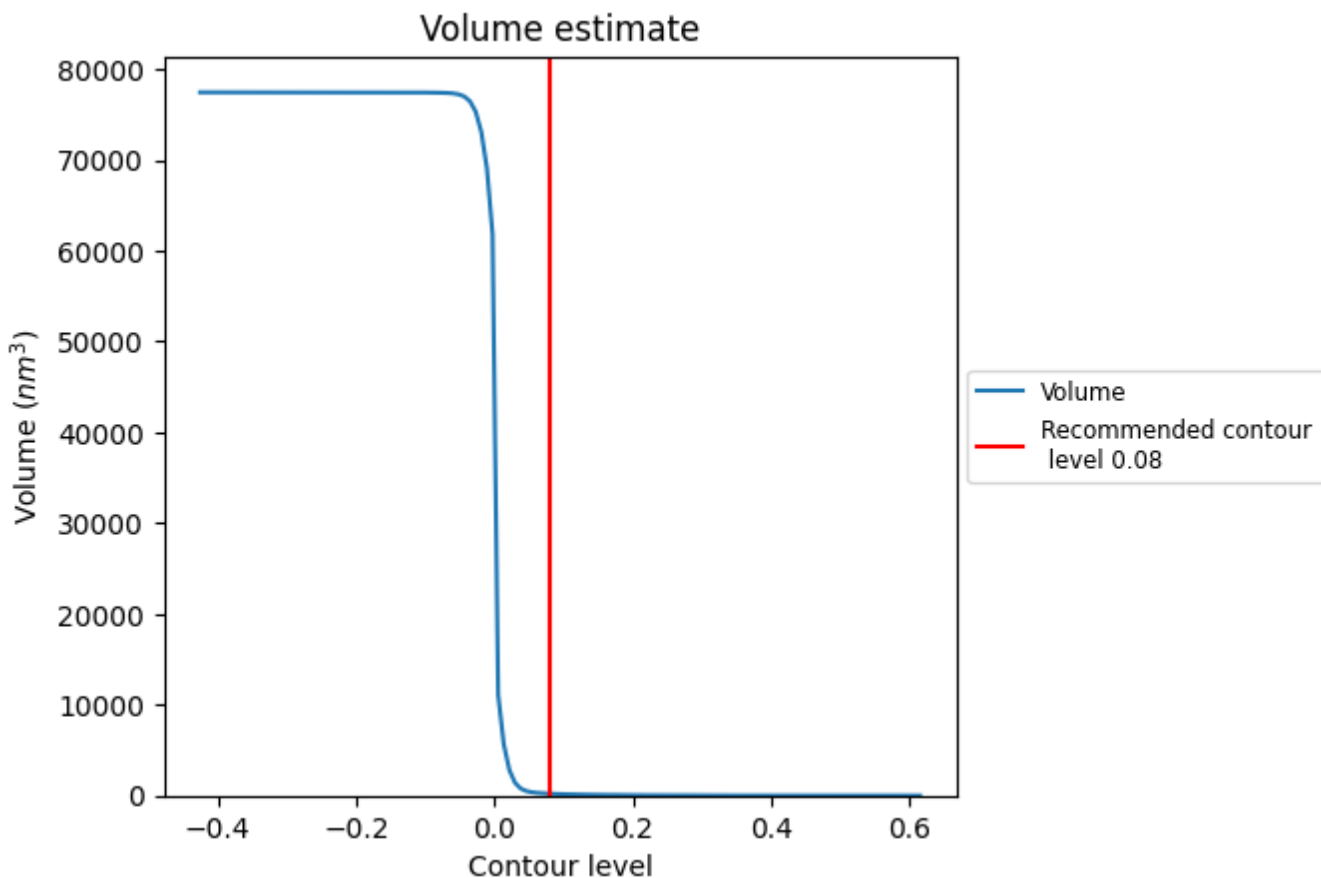
This section contains the results of statistical analysis of the map.

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.

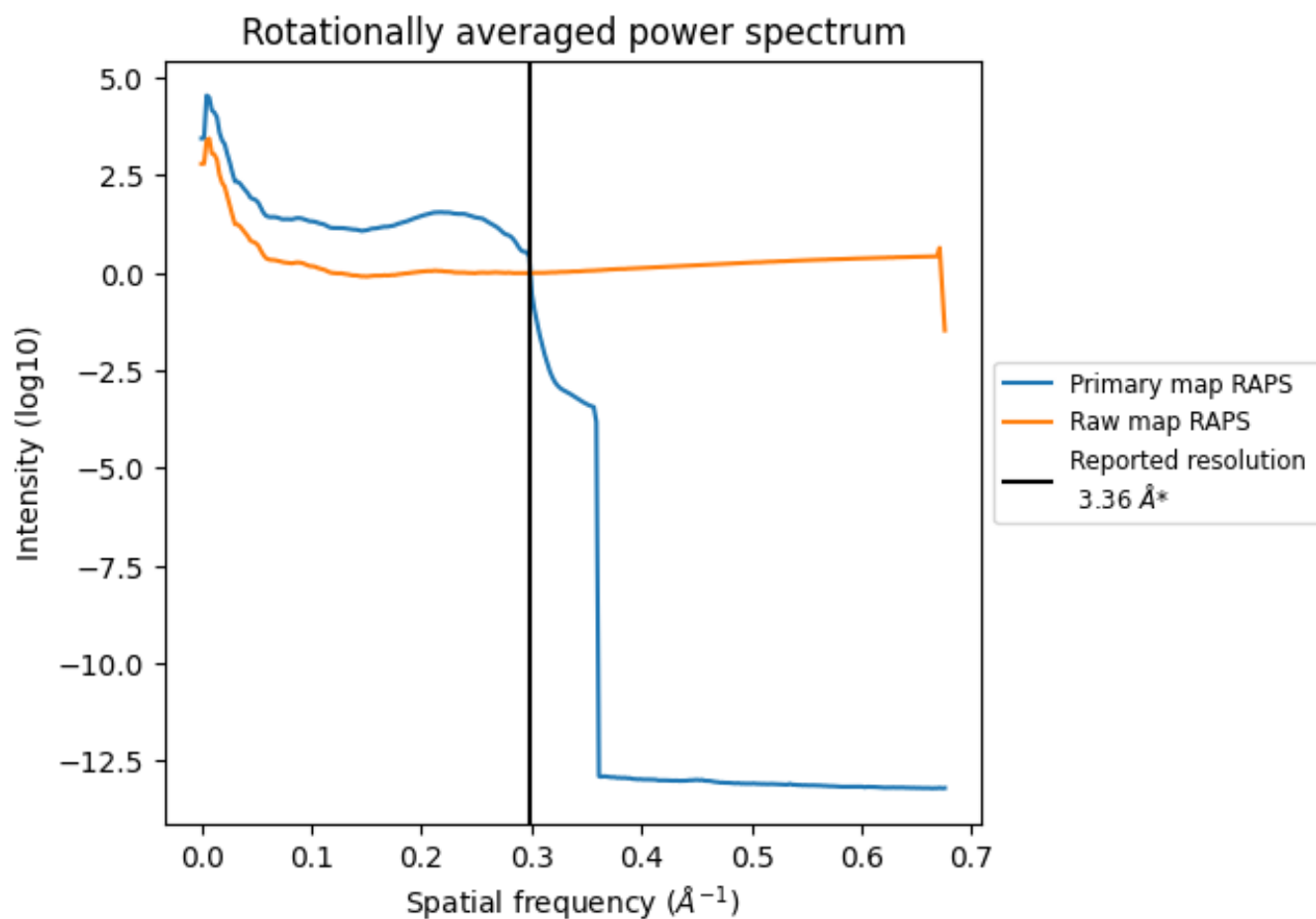
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 206 nm³; this corresponds to an approximate mass of 186 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](#)

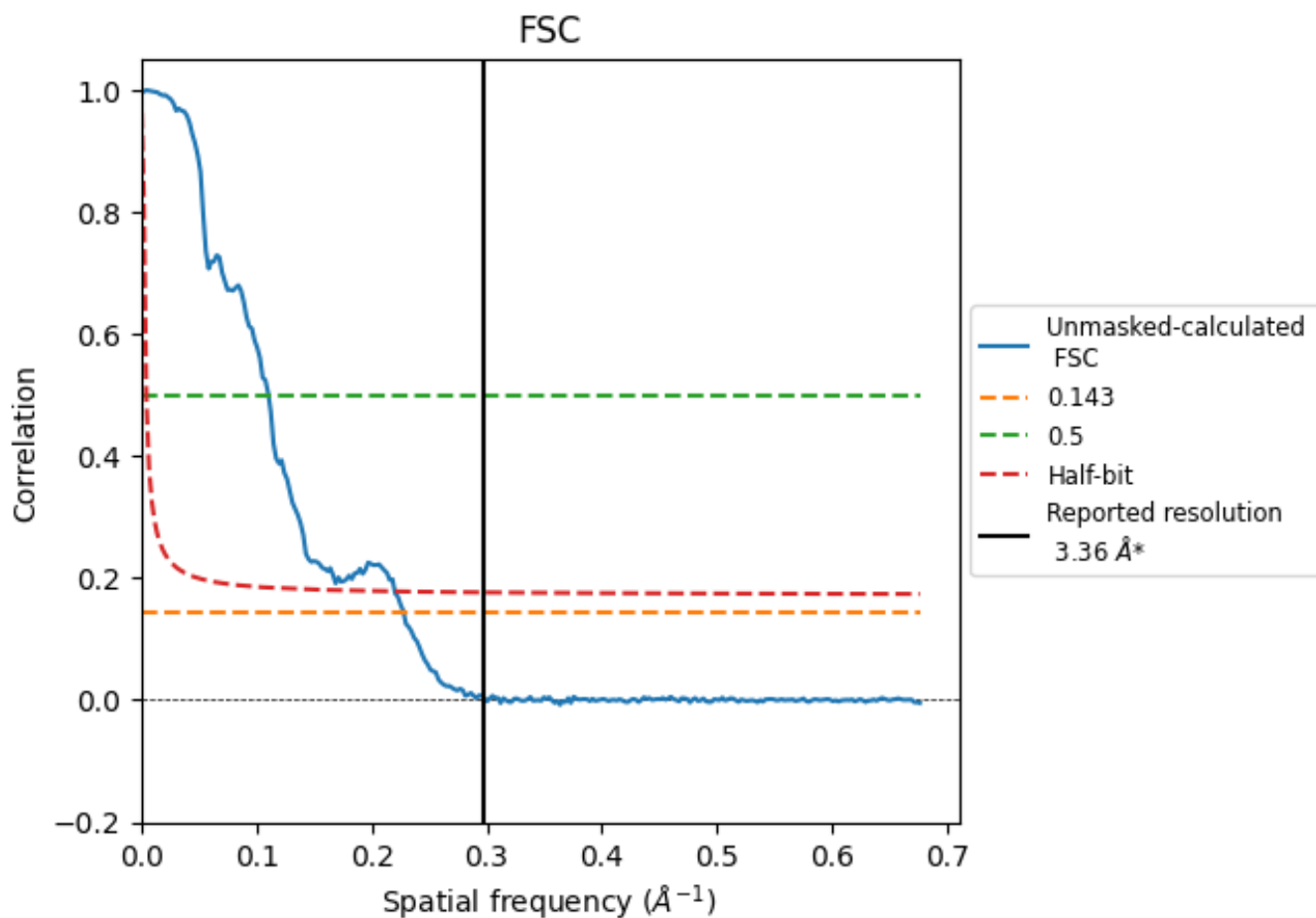


*Reported resolution corresponds to spatial frequency of 0.298 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.298 Å⁻¹

8.2 Resolution estimates [i](#)

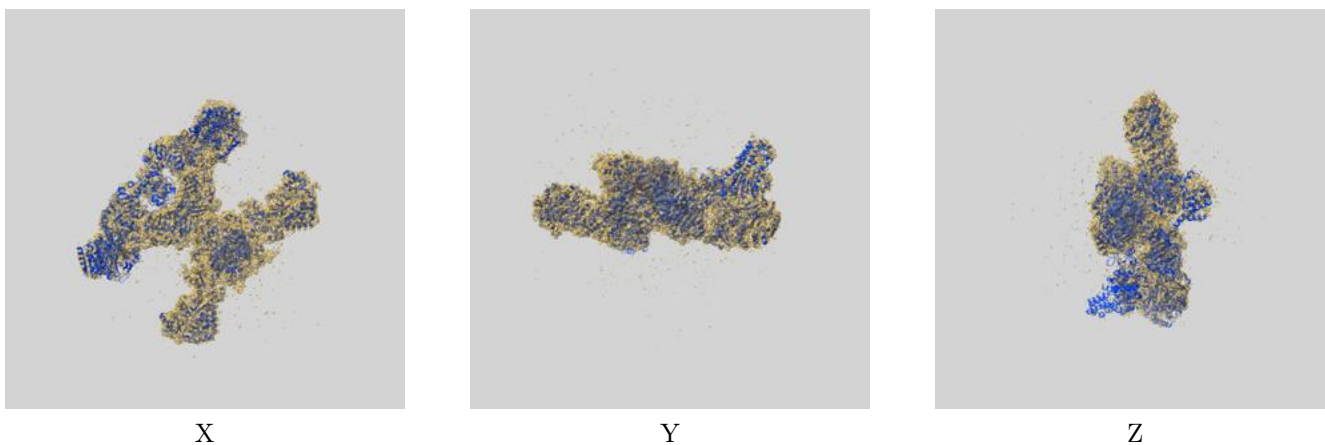
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.36	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.39	9.05	4.54

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.39 differs from the reported value 3.36 by more than 10 %

9 Map-model fit [i](#)

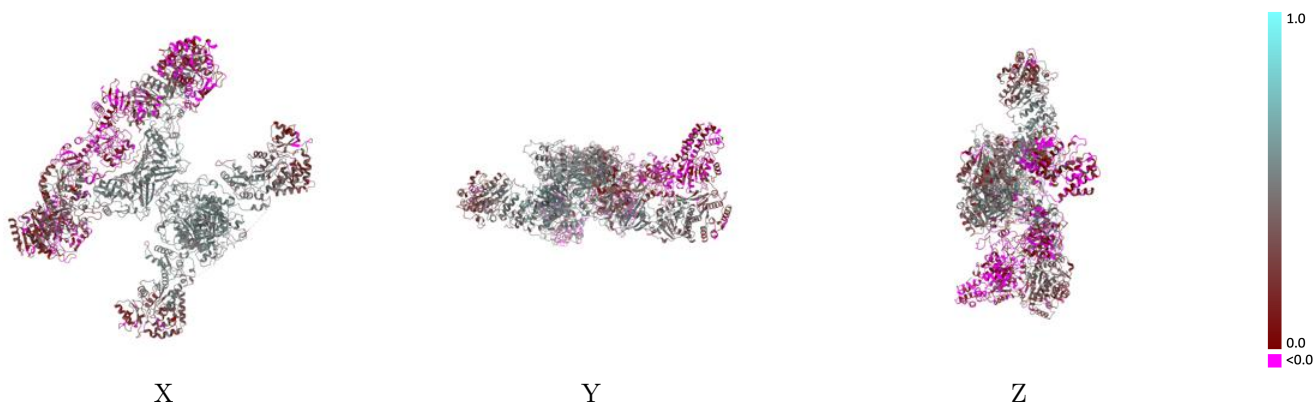
This section contains information regarding the fit between EMDB map EMD-66475 and PDB model 9X2A. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlay [i](#)



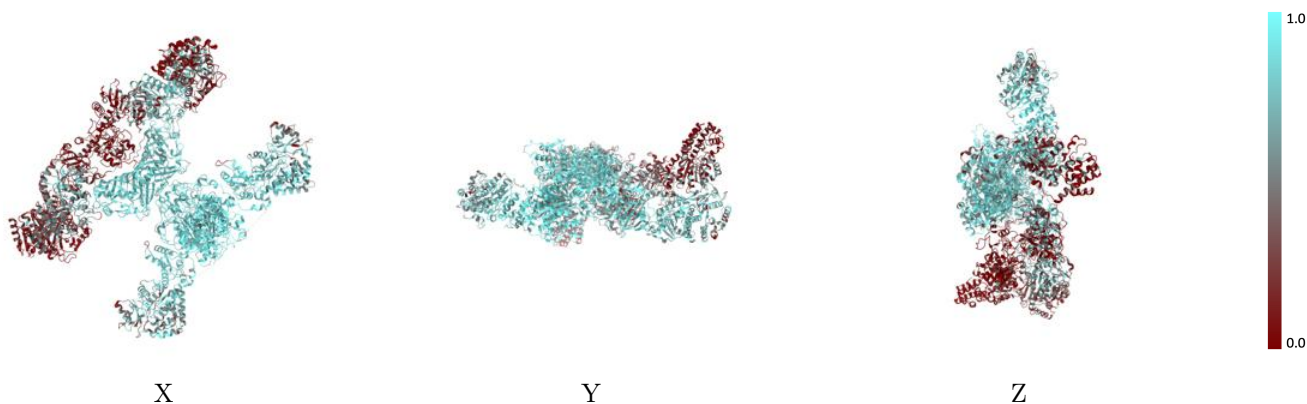
The images above show the 3D surface view of the map at the recommended contour level 0.08 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



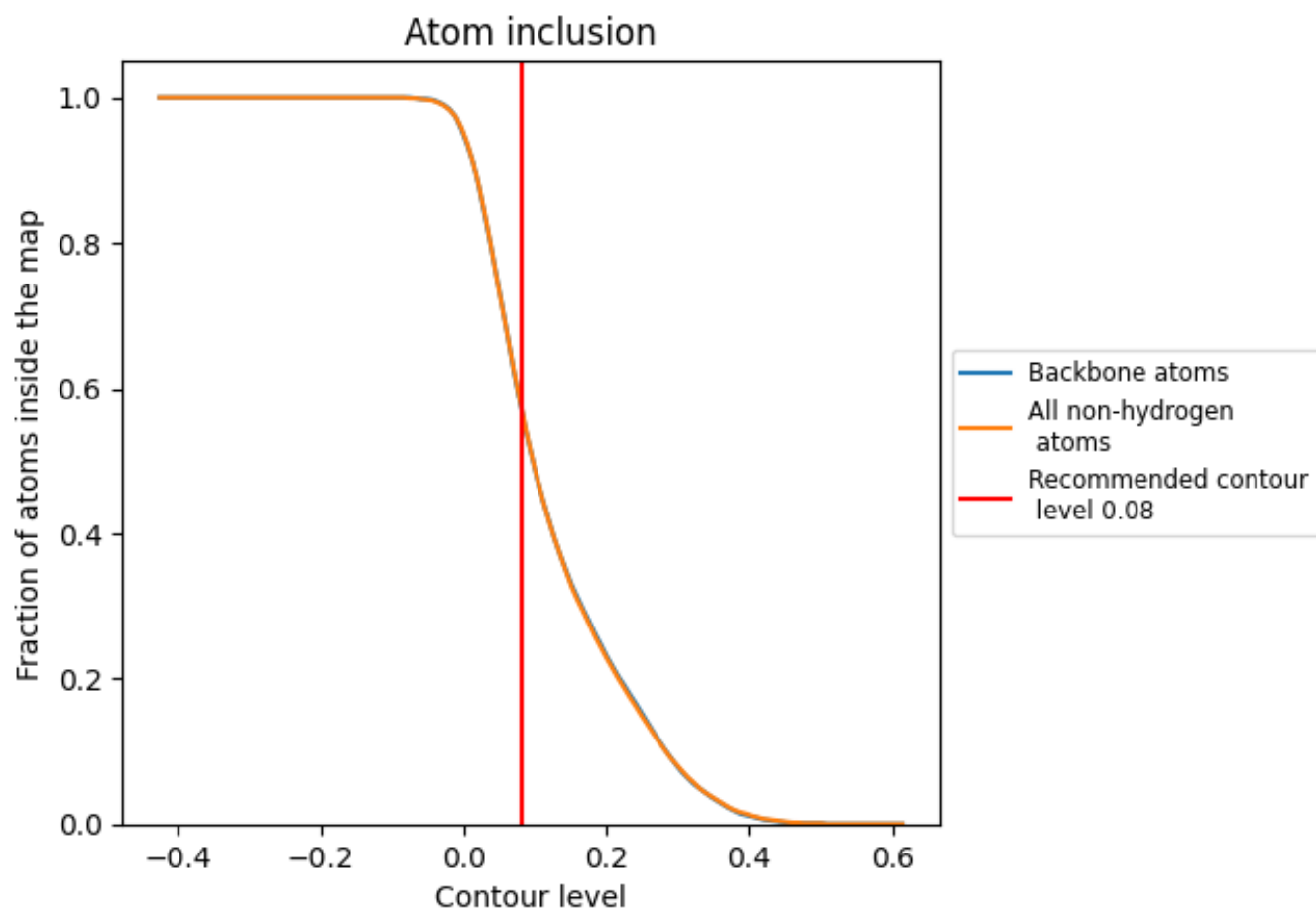
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.08).







9.4 Atom inclusion [i](#)



At the recommended contour level, 58% of all backbone atoms, 58% 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 (0.08) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5780	 0.3170
A	 0.6280	 0.3280
B	 0.5340	 0.3060

